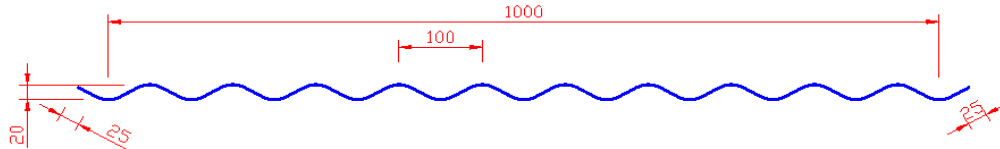
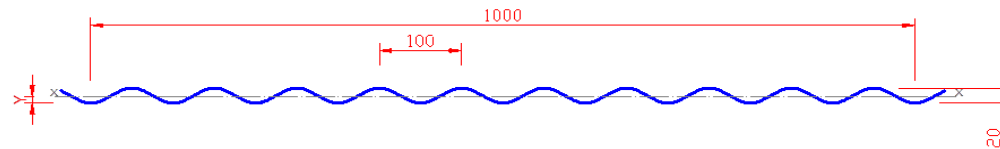


Properties of Wave Section-Wide Rib



Properties of Section



Thickness 1 mm

Area of section	A =	11.669	cm ²
Centroid	y =	1.02940	cm
Moment of Inertia	I _x =	5.5397	cm ⁴ / m

Thickness 2 mm

Area of section	A =	23.327	cm ²
Centroid	y =	1.083	cm
Moment of Inertia	I _x =	11.144	cm ⁴ / m

Thickness 1.2 mm

Area of section	A =	14.001	cm ²
Centroid	y =	1.04017	cm
Moment of Inertia	I _x =	6.6533	cm ⁴ / m

Thickness 2.5 mm

Area of section	A =	29.152	cm ²
Centroid	y =	1.110	cm
Moment of Inertia	I _x =	13.991	cm ⁴ / m

Thickness 1.5 mm

Area of section	A =	17.499	cm ²
Centroid	y =	1.05634	cm
Moment of Inertia	I _x =	8.3297	cm ⁴ / m

Thickness 3 mm

Area of section	A =	34.974	cm ²
Centroid	y =	1.137	cm
Moment of Inertia	I _x =	16.879	cm ⁴ / m

Thickness 1.7 mm

Area of section	A =	19.830	cm ²
Centroid	y =	1.06711	cm
Moment of Inertia	I _x =	9.4521	cm ⁴ / m

Thickness 3.5 mm

Area of section	A =	40.794	cm ²
Centroid	y =	1.164	cm
Moment of Inertia	I _x =	19.816	cm ⁴ / m

For Upper Position

$$Z_u = I_x / (2-y) \quad \text{cm}^3$$

For Lower Position

$$Z_l = I_x / y \quad \text{cm}^3$$

Structure Design

- Using Simple beam with single span.
- Using Continuous beam with two span.
- Using Continuous beam with three span.

Main Office : 40 El-Kayed Gohar st., Mansheya Soghra, Alexandria, (Egypt) - Tel.: (+203)4848506 - Fax.: (+203)4877552

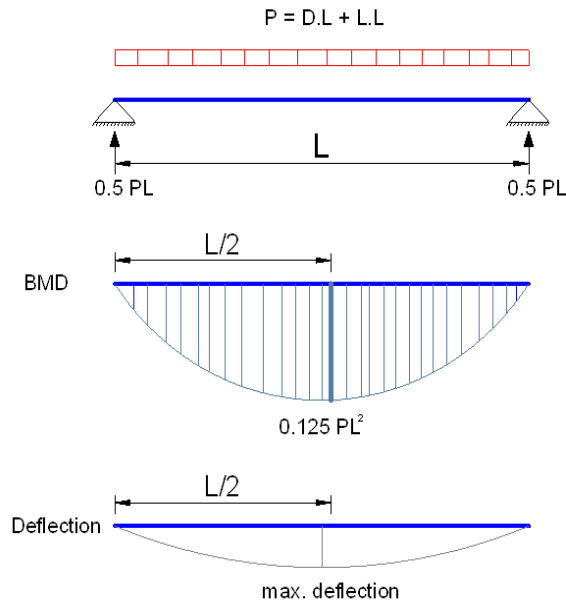
Contact Office : 69 Abou Daoud El - Zahry st., Nasr City Cairo (Egypt) - Tel.: (+202) 22737651 - Fax.: (+202) 22730879

Factory : Desert Road Km. 21 Mergham, Alexandria (Egypt) - Tel.: (+203) 2020158 - 2020159 - Fax.: (+203) 2023640

Website : www.alexform.com

E-mail : alexform@alexform.com

Simple Beam



Allowable Stress

$$P = F_b * Z_{U \text{ or } L} / 0.125 L^2$$

Maximum deflection

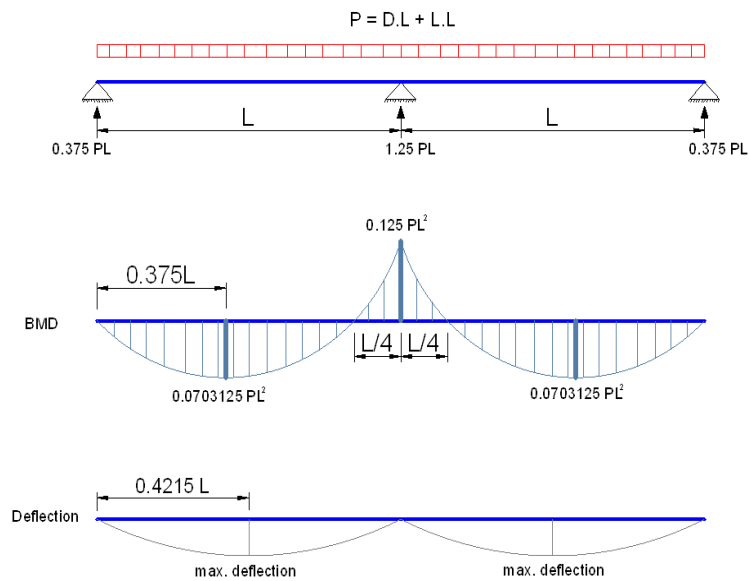
$$y_{\max} <= L / 200$$

$$P = 76.8 * EI / 200 L^3$$

$$y_{\max} <= L / 300$$

$$P = 76.8 * EI / 300 L^3$$

Continuous Beam with two Spans



Allowable Stress

$$P = F_b * Z_{U \text{ or } L} / 0.125 L^2$$

Maximum deflection

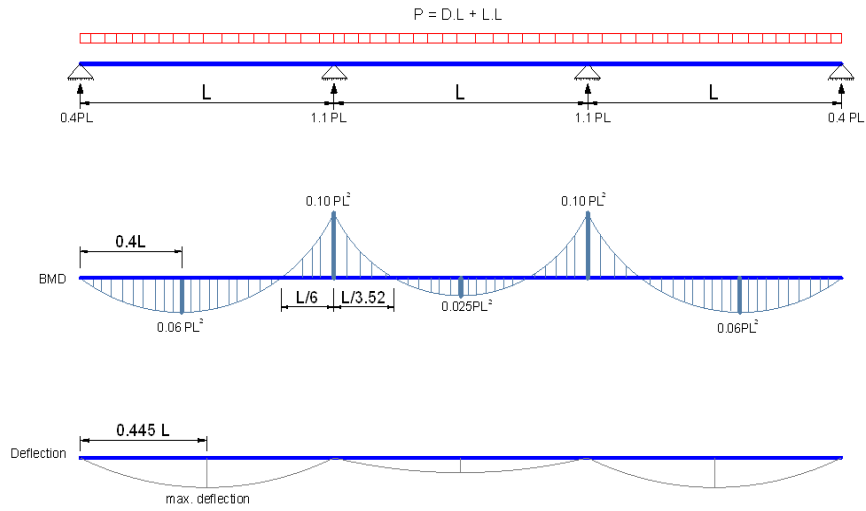
$$y_{\max} <= L / 200$$

$$P = 185 * EI / 200 L^3$$

$$y_{\max} <= L / 300$$

$$P = 185 * EI / 300 L^3$$

Continuous Beam with three Spans



Allowable Stress

$$P = F_b * Z_{U \text{ or } L} / 0.10 L^2$$

Maximum deflection

$$y_{\max} <= L / 200$$

$$P = 145.27 * EI / 200 L^3$$

$$y_{\max} <= L / 300$$

$$P = 145.27 * EI / 300 L^3$$

Table of Maximum Load

Data :

Steel Grade st.37
 F_b (t/cm²) = 1.4 E_s (t/cm²) = 2100

Span m		1.5	2	2.5	3	3.5	4	4.5	5
t	max. load	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²
1	stress	267.9	150.7	96.4	67.0	49.2	37.7	29.8	24.1
	L/ 200	132.4	55.8	28.6	16.5	10.4	7.0	4.9	3.6
	L/ 300	88.2	37.2	19.1	11.0	6.9	4.7	3.3	2.4
1.2	stress	318.4	179.1	114.6	79.6	58.5	44.8	35.4	28.7
	L/ 200	159.0	67.1	34.3	19.9	12.5	8.4	5.9	4.3
	L/ 300	106.0	44.7	22.9	13.2	8.3	5.6	3.9	2.9
1.5	stress	392.5	220.8	141.3	98.1	72.1	55.2	43.6	35.3
	L/ 200	199.0	84.0	43.0	24.9	15.7	10.5	7.4	5.4
	L/ 300	132.7	56.0	28.7	16.6	10.4	7.0	4.9	3.6
1.7	stress	440.9	248.0	158.7	110.2	81.0	62.0	49.0	39.7
	L/ 200	225.8	95.3	48.8	28.2	17.8	11.9	8.4	6.1
	L/ 300	150.6	63.5	32.5	18.8	11.9	7.9	5.6	4.1
2	stress	512.1	288.0	184.4	128.0	94.1	72.0	56.9	46.1
	L/ 200	266.3	112.3	57.5	33.3	21.0	14.0	9.9	7.2
	L/ 300	177.5	74.9	38.3	22.2	14.0	9.4	6.6	4.8
2.5	stress	627.3	352.9	225.8	156.8	115.2	88.2	69.7	56.5
	L/ 200	334.3	141.0	72.2	41.8	26.3	17.6	12.4	9.0
	L/ 300	222.9	94.0	48.1	27.9	17.5	11.8	8.3	6.0
3	stress	738.9	415.6	266.0	184.7	135.7	103.9	82.1	66.5
	L/ 200	403.3	170.1	87.1	50.4	31.7	21.3	14.9	10.9
	L/ 300	268.9	113.4	58.1	33.6	21.2	14.2	10.0	7.3
3.5	stress	847.4	476.6	305.0	211.8	155.6	119.2	94.2	76.3
	L/ 200	473.5	199.7	102.3	59.2	37.3	25.0	17.5	12.8
	L/ 300	315.6	133.2	68.2	39.5	24.8	16.6	11.7	8.5

Table of Maximum Load

Data :

Steel Grade st.37
 F_b (t/cm²) = 1.4 E_s (t/cm²) = 2100

Span m		1.5	2	2.5	3	3.5	4	4.5	5
t	max. load	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²
1	stress	267.9	150.7	96.4	67.0	49.2	37.7	29.8	24.1
	L/ 200	318.8	134.5	68.9	39.9	25.1	16.8	11.8	8.6
	L/ 300	212.6	89.7	45.9	26.6	16.7	11.2	7.9	5.7
1.2	stress	318.4	179.1	114.6	79.6	58.5	44.8	35.4	28.7
	L/ 200	382.9	161.5	82.7	47.9	30.1	20.2	14.2	10.3
	L/ 300	255.3	107.7	55.1	31.9	20.1	13.5	9.5	6.9
1.5	stress	392.5	220.8	141.3	98.1	72.1	55.2	43.6	35.3
	L/ 200	479.4	202.3	103.6	59.9	37.7	25.3	17.8	12.9
	L/ 300	319.6	134.8	69.0	40.0	25.2	16.9	11.8	8.6
1.7	stress	440.9	248.0	158.7	110.2	81.0	62.0	49.0	39.7
	L/ 200	544.0	229.5	117.5	68.0	42.8	28.7	20.1	14.7
	L/ 300	362.7	153.0	78.3	45.3	28.5	19.1	13.4	9.8
2	stress	512.1	288.0	184.4	128.0	94.1	72.0	56.9	46.1
	L/ 200	641.4	270.6	138.5	80.2	50.5	33.8	23.8	17.3
	L/ 300	427.6	180.4	92.4	53.5	33.7	22.5	15.8	11.5
2.5	stress	627.3	352.9	225.8	156.8	115.2	88.2	69.7	56.5
	L/ 200	805.3	339.7	173.9	100.7	63.4	42.5	29.8	21.7
	L/ 300	536.8	226.5	116.0	67.1	42.3	28.3	19.9	14.5
3	stress	738.9	415.6	266.0	184.7	135.7	103.9	82.1	66.5
	L/ 200	971.5	409.8	209.8	121.4	76.5	51.2	36.0	26.2
	L/ 300	647.7	273.2	139.9	81.0	51.0	34.2	24.0	17.5
3.5	stress	847.4	476.6	305.0	211.8	155.6	119.2	94.2	76.3
	L/ 200	1140.5	481.2	246.4	142.6	89.8	60.1	42.2	30.8
	L/ 300	760.3	320.8	164.2	95.0	59.9	40.1	28.2	20.5

Table of Maximum Load

Data :

Steel Grade st.37

F_b (t/cm²) = 1.4

E_s (t/cm²) = 2100

Span m		1.5	2	2.5	3	3.5	4	4.5	5
t	P	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²	kg/m ²
1	stress	334.8	188.4	120.5	83.7	61.5	47.1	37.2	30.1
	L/ 200	250.4	105.6	54.1	31.3	19.7	13.2	9.3	6.8
	L/ 300	166.9	70.4	36.1	20.9	13.1	8.8	6.2	4.5
1.2	stress	398.0	223.9	143.3	99.5	73.1	56.0	44.2	35.8
	L/ 200	300.7	126.9	65.0	37.6	23.7	15.9	11.1	8.1
	L/ 300	200.5	84.6	43.3	25.1	15.8	10.6	7.4	5.4
1.5	stress	490.6	276.0	176.6	122.7	90.1	69.0	54.5	44.2
	L/ 200	376.5	158.8	81.3	47.1	29.6	19.9	13.9	10.2
	L/ 300	251.0	105.9	54.2	31.4	19.8	13.2	9.3	6.8
1.7	stress	551.1	310.0	198.4	137.8	101.2	77.5	61.2	49.6
	L/ 200	427.2	180.2	92.3	53.4	33.6	22.5	15.8	11.5
	L/ 300	284.8	120.1	61.5	35.6	22.4	15.0	10.5	7.7
2	stress	640.1	360.1	230.4	160.0	117.6	90.0	71.1	57.6
	L/ 200	503.7	212.5	108.8	63.0	39.6	26.6	18.7	13.6
	L/ 300	335.8	141.7	72.5	42.0	26.4	17.7	12.4	9.1
2.5	stress	784.1	441.1	282.3	196.0	144.0	110.3	87.1	70.6
	L/ 200	632.3	266.8	136.6	79.0	49.8	33.3	23.4	17.1
	L/ 300	421.6	177.8	91.1	52.7	33.2	22.2	15.6	11.4
3	stress	923.6	519.5	332.5	230.9	169.6	129.9	102.6	83.1
	L/ 200	762.9	321.8	164.8	95.4	60.0	40.2	28.3	20.6
	L/ 300	508.6	214.6	109.9	63.6	40.0	26.8	18.8	13.7
3.5	stress	1059.2	595.8	381.3	264.8	194.5	148.9	117.7	95.3
	L/ 200	895.6	377.8	193.4	111.9	70.5	47.2	33.2	24.2
	L/ 300	597.1	251.9	129.0	74.6	47.0	31.5	22.1	16.1