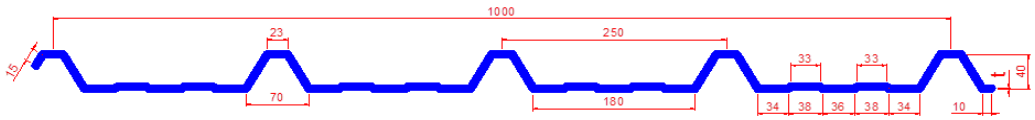
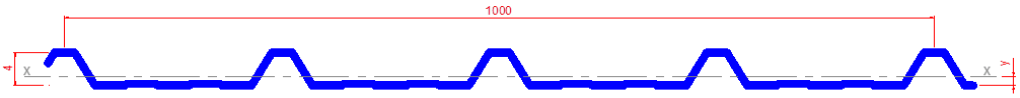
Properties of 4 Ribs - Roof Panels



Properties of Section



Thickness 0.5 mm

Area of section	A =	5.799	cm^2
Centroid	y =	1.11387	cm
Moment of Inertia	I_X =	12.2455	cm^4 / m

Thickness 0.7 mm

Area of section	A =	8.119	cm^2
Centroid	y =	1.12387	cm
Moment of Inertia	I_X =	17.1459	cm^4 / m

Thickness 0.8 mm

Area of section	A =	9.279	cm^2
Centroid	y =	1.12888	cm
Moment of Inertia	I_X =	19.5970	cm^4 / m

Thickness 0.9 mm

Area of section	A =	10.439	cm^2
Centroid	y =	1.13388	cm
Moment of Inertia	I_X =	22.0486	cm^4 / m

Thickness 1 mm

Area of section	A =	11.599	cm^2
Centroid	y =	1.13887	cm
Moment of Inertia	I_X =	24.5010	cm^4 / m

For Upper Position

$$Z_u = I_x / (4-y) \qquad cm^3$$

For Lower Position

$$Z_L = I_x / y \qquad cm^3$$

Structure Design

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

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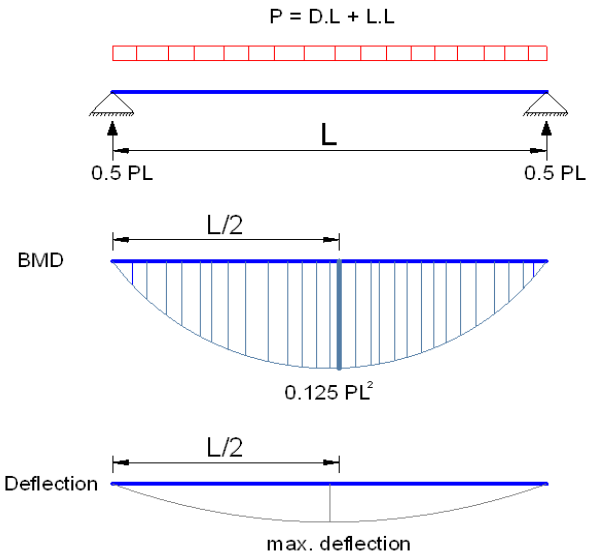
Simple Beam



Allowable Stress

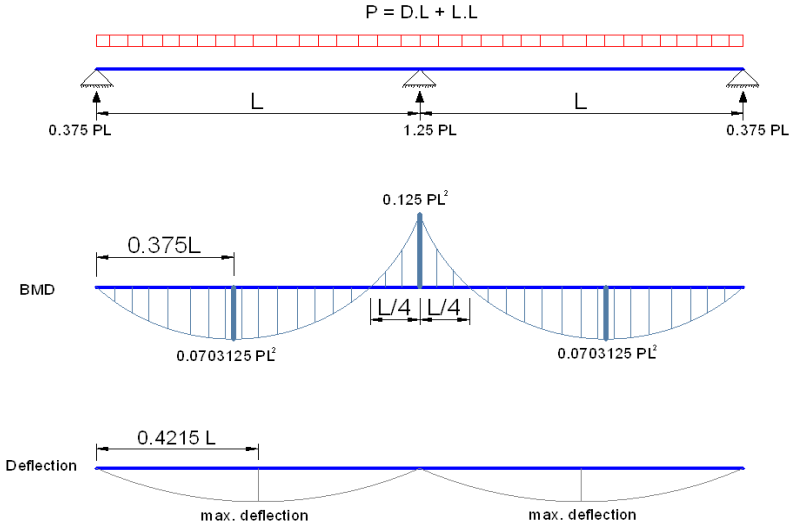
P = $F_b * Z_{U\ or\ L} / 0.125\ L^2$

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

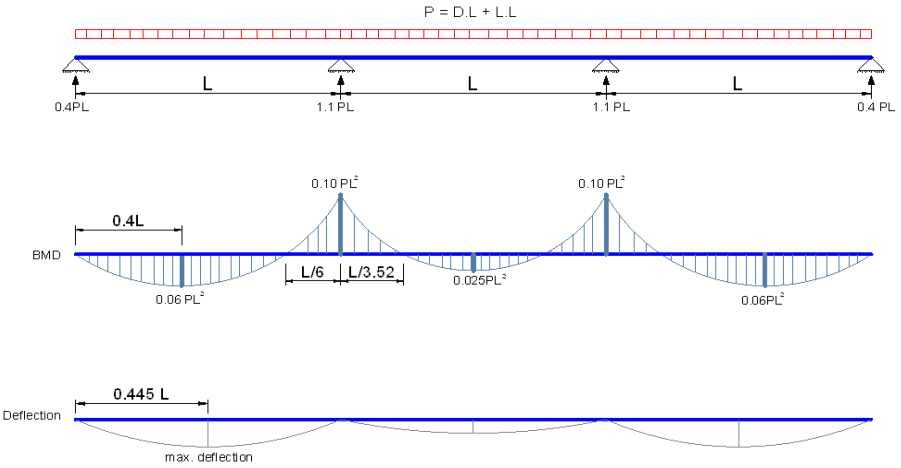
P = $F_b * Z_{U\ or\ L} / 0.125\ L^2$

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

Maximum deflection

$y_{max} <= L / 200$ **P =** $145.27*EI / 200\ L^3$

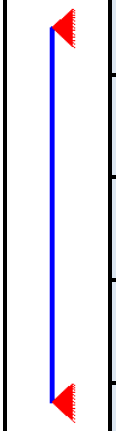
$y_{max} <= L / 300$ **P =** $145.27*EI / 300\ L^3$

Table of Maximum Load

Data :

Steel Grade st.37

F_b (t/cm^2) = 1.4 E_S (t/cm^2) = 2100



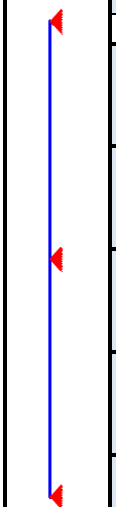
Span m		1.5	2	2.5	3	3.5	4	4.5	5
t	max. load	kN/m^2	kN/m^2	kN/m^2	kN/m^2	kN/m^2	kN/m^2	kN/m^2	kN/m^2
0.5	stress	2.112	1.188	0.760	0.528	0.388	0.297	0.235	0.190
	L/ 200	2.926	1.234	0.632	0.366	0.230	0.154	0.108	0.079
	L/ 300	1.951	0.823	0.421	0.244	0.154	0.103	0.072	0.053
0.7	stress	2.967	1.669	1.068	0.742	0.545	0.417	0.330	0.267
	L/ 200	4.097	1.728	0.885	0.512	0.322	0.216	0.152	0.111
	L/ 300	2.731	1.152	0.590	0.341	0.215	0.144	0.101	0.074
0.8	stress	3.398	1.911	1.223	0.849	0.624	0.478	0.378	0.306
	L/ 200	4.682	1.975	1.011	0.585	0.369	0.247	0.173	0.126
	L/ 300	3.122	1.317	0.674	0.390	0.246	0.165	0.116	0.084
0.9	stress	3.829	2.154	1.379	0.957	0.703	0.538	0.425	0.345
	L/ 200	5.268	2.222	1.138	0.659	0.415	0.278	0.195	0.142
	L/ 300	3.512	1.482	0.759	0.439	0.276	0.185	0.130	0.095
1	stress	4.263	2.398	1.535	1.066	0.783	0.599	0.474	0.384
	L/ 200	5.854	2.470	1.264	0.732	0.461	0.309	0.217	0.158
	L/ 300	3.903	1.646	0.843	0.488	0.307	0.206	0.145	0.105

Table of Maximum Load

Data :

Steel Grade st.37

F_b (t/cm^2) = 1.4 E_S (t/cm^2) = 2100



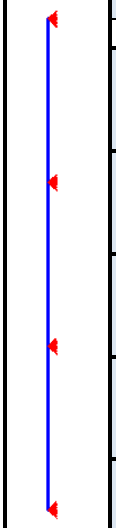
Span m		1.5	2	2.5	3	3.5	4	4.5	5
t	max. load	kN/m^2	kN/m^2	kN/m^2	kN/m^2	kN/m^2	kN/m^2	kN/m^2	kN/m^2
0.5	stress	2.112	1.188	0.760	0.528	0.388	0.297	0.235	0.190
	L/ 200	7.048	2.973	1.522	0.881	0.555	0.372	0.261	0.190
	L/ 300	4.699	1.982	1.015	0.587	0.370	0.248	0.174	0.127
0.7	stress	2.967	1.669	1.068	0.742	0.545	0.417	0.330	0.267
	L/ 200	9.868	4.163	2.132	1.234	0.777	0.520	0.365	0.266
	L/ 300	6.579	2.775	1.421	0.822	0.518	0.347	0.244	0.178
0.8	stress	3.398	1.911	1.223	0.849	0.624	0.478	0.378	0.306
	L/ 200	11.279	4.758	2.436	1.410	0.888	0.595	0.418	0.305
	L/ 300	7.519	3.172	1.624	0.940	0.592	0.397	0.278	0.203
0.9	stress	3.829	2.154	1.379	0.957	0.703	0.538	0.425	0.345
	L/ 200	12.690	5.354	2.741	1.586	0.999	0.669	0.470	0.343
	L/ 300	8.460	3.569	1.827	1.058	0.666	0.446	0.313	0.228
1	stress	4.263	2.398	1.535	1.066	0.783	0.599	0.474	0.384
	L/ 200	14.102	5.949	3.046	1.763	1.110	0.744	0.522	0.381
	L/ 300	9.401	3.966	2.031	1.175	0.740	0.496	0.348	0.254

Table of Maximum Load

Data :

Steel Grade st.37

F_b (t/cm^2) = 1.4 E_S (t/cm^2) = 2100



Span m		1.5	2	2.5	3	3.5	4	4.5	5
t	P	kN/m^2	kN/m^2	kN/m^2	kN/m^2	kN/m^2	kN/m^2	kN/m^2	kN/m^2
0.5	stress	2.64	1.49	0.95	0.66	0.48	0.37	0.29	0.24
	L/ 200	5.534	2.335	1.195	0.692	0.436	0.292	0.205	0.149
	L/ 300	3.690	1.557	0.797	0.461	0.290	0.195	0.137	0.100
0.7	stress	3.71	2.09	1.34	0.93	0.68	0.52	0.41	0.33
	L/ 200	7.749	3.269	1.674	0.969	0.610	0.409	0.287	0.209
	L/ 300	5.166	2.179	1.116	0.646	0.407	0.272	0.191	0.139
0.8	stress	4.25	2.39	1.53	1.06	0.78	0.60	0.47	0.38
	L/ 200	8.857	3.736	1.913	1.107	0.697	0.467	0.328	0.239
	L/ 300	5.905	2.491	1.275	0.738	0.465	0.311	0.219	0.159
0.9	stress	4.79	2.69	1.72	1.20	0.88	0.67	0.53	0.43
	L/ 200	9.965	4.204	2.152	1.246	0.784	0.525	0.369	0.269
	L/ 300	6.643	2.803	1.435	0.830	0.523	0.350	0.246	0.179
1	stress	5.33	3.00	1.92	1.33	0.98	0.75	0.59	0.48
	L/ 200	11.073	4.672	2.392	1.384	0.872	0.584	0.410	0.299
	L/ 300	7.382	3.114	1.595	0.923	0.581	0.389	0.273	0.199