

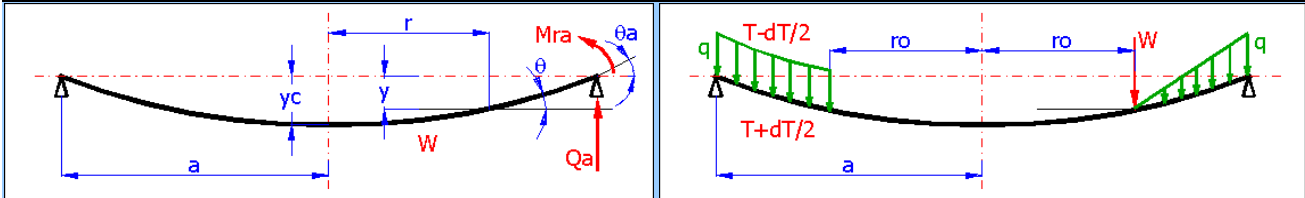
- i Calculation without errors.
- ii Project information

Input section

1.0 Selection of material and units setting

1.1 Calculation units	Imperial (lbf, in, HP...)	
1.2 Material	Structural steel EC 3, EN 10025; Fe 360 / Sy=34100 psi	
1.3 Modulus of elasticity	E	30457770 [psi] <input checked="" type="checkbox"/>
1.4 Modulus of shearing	G	11714527 [psi]
1.5 Poisson's ratio	ν	0.30
1.6 Temperature coefficient of expansion	γ	6.50 [in/in/F*e-6]
1.7 Specific mass	Ro	490.06 [lb/feet^3]
1.8 Yield strength	σ_y	34083.70 [psi]
1.9 Requested safety coefficient	SF	3.00

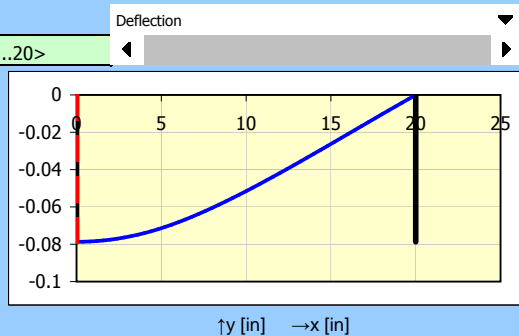
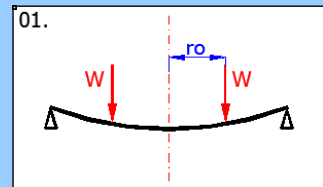
2.0 Circular plates



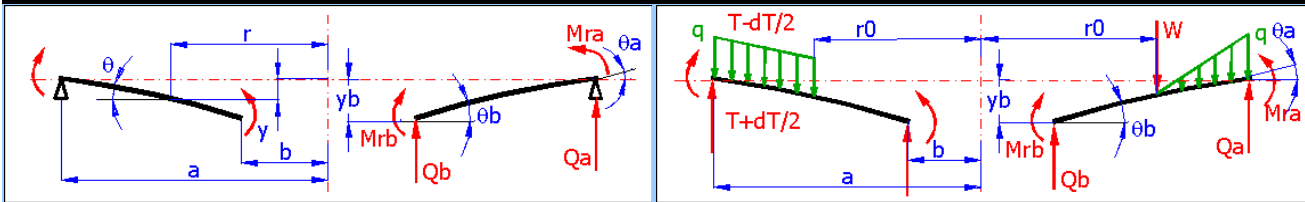
2.1 Loading and mounting type

01. Force load on circle, outer edge simply supported

2.2 Plate thickness	t	0.200	[in]
2.3 Outer radius	a	20.000	[in]
2.4 Radial location of loading	ro	5.000	[in]
2.5 Total applied force	W	100.00	[lbf]
2.6 Load per unit area	Q		[lbf]
2.7 Uniform temperature differential	dT		[°F]
2.8 Plate weight	m	71.28	[lb]
2.9 Run values calculation (graph)			
2.10 Maximum deflection	yc (ymax)	-0.07869	[in]
2.11 Maximum stress	σ_{max}	2542.87	[psi]
2.12 Minimum safety coefficient	SFmin	13.40	
2.13 Values in point			
2.14 Deflection	y	-0.07869	[in]
2.15 Radial slope of plate	θ	0.0000	[deg]
2.16 Radial bending moment	Mr	16.95	[lbf*in/in]
2.17 Tangential bending moment	Mt	16.95	[lbf*in/in]
2.18 Shear force	Q	0.00	[lbf/in]
2.19 Radial bending stress	σ_r	2542.87	[psi]
2.20 Tangential bending stress	σ_t	2542.87	[psi]
2.21 Safety coefficient	SF	13.40	
2.22 Boundary values	ya=0; Mra=0		



3.0 Annular circular plates



3.1 Loading and mounting type

01. Force load on circle, outer edge simply supported, inner edge free

3.2 Plate thickness

t 0.200 [in]

3.3 Outer radius

a 10.000 [in]

3.4 Inner radius for annular plate

b 6.000 [in]

3.5 Radial location of loading

ro 7.000 [in]

3.6 Total applied force

W 100.00 [lbf]

3.7 Load per unit area

Pressure

q [lb/in²]

3.8 Uniform temperature differential

dT [°F]

3.9 Plate weight

m 11.40 [lb]

3.10 Run values calculation (graph)

3.11 Maximum deflection

y_{max} -0.01783 [in]

3.12 Maximum stress

σ_{max} 2395.45 [psi]

3.13 Minimum safety coefficient

SF_{min} 14.23

3.14 Values in point

r [in] 6.000 <6...10>

3.15 Deflection

y -0.01783 [in]

3.16 Radial slope of plate

θ 0.2704 [deg]

3.17 Radial bending moment

Mr 0.00 [lbf*in/in]

3.18 Tangential bending moment

Mt 15.97 [lbf*in/in]

3.19 Shear force

Q 0.00 [lbf/in]

3.20 Radial bending stress

σ_r 0.00 [psi]

3.21 Tangential bending stress

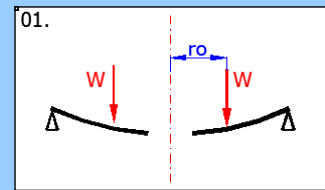
σ_t 2395.45 [psi]

3.22 Safety coefficient

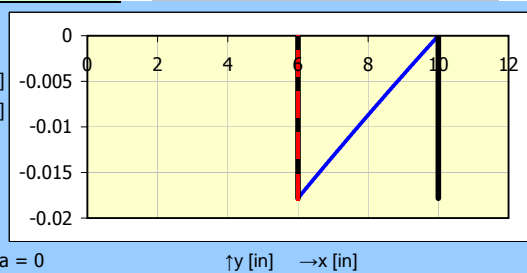
SF 14.23

3.23 Boundary values

Mr_b = 0; Q_b = 0; y_a = 0; Mr_a = 0



Deflection



4.0 Rectangular plates

4.1 Loading and mounting type

01. Uniform pressure q over entire plate, all edges simply supported

4.2 Plate thickness

t 0.200 [in]

4.3 Long edge

a 10.000 [in]

4.4 Short edge

b 10.000 [in]

4.5 Radial location of loading

ro [in]

4.6 Total applied force

W [lbf]

4.7 Load per unit area

Pressure

q 10.00000 [lb/in²]

4.8 Plate weight

m 5.67 [lb]

4.9 Maximum deflection

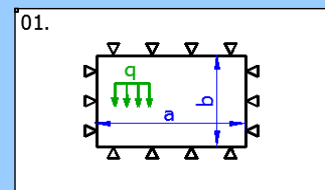
y_{max} -0.01822 [in]

4.10 Maximum stress

σ_{max} 7185.00 [psi]

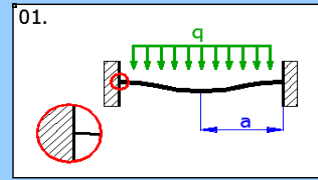
4.11 Safety coefficient

SF 4.74



5.0 Circular plates producing large deflection

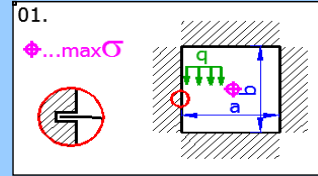
5.1 Loading and mounting type	01. Uniform pressure q over entire plate, fixed and held		
5.2 Plate thickness	t	0.200	[in]
5.3 Outer radius	a	20.000	[in]
5.4 Total applied force	W		[lbf]
5.5 Load per unit area	Pressure	q	1.00000 [lb/in ²]
5.6 Plate weight	m	71.28	[lb]
5.7 Maximum deflection	y _{max}	-0.09934	[in]
5.8 Stress in the plate centre	$\sigma_{(c)}$	5060.40	[psi]
5.9 Stress in the plate boundary	$\sigma_{(r)}$	7014.53	[psi]
5.10 Stress in the plate boundary	$\sigma_{(t)}$	2104.51	[psi]
5.11 Minimum safety coefficient	SF _{min}	4.86	



Move values from paragraph [2.0]

6.0 Rectangular plates producing large deflection

6.1 Mounting and loading type	01. Held, not fixed, at center of plate (a/b = 1), (Uniform pressure q over entire plate)		
6.2 Plate thickness	t	0.200	[in]
6.3 Long edge	a	10.000	[in]
6.4 Short edge	b	10.000	[in]
6.5 Load per unit area	Pressure	q	10.00000 [lb/in ²]
6.6 Plate weight	m	5.67	[lb]
6.7 Maximum deflection	y _{max}	-0.01412	[in]
6.8 Diaphragm stress	σ_d	1400.00	[psi]
6.9 Bending + diaphragm stress (sum)	σ_{sum}	7600.00	[psi]
6.10 Safety coefficient	SF	4.48	



Move values from paragraph [4.0]