

Table for the calculation of bending moments in uniformly-loaded rectangular panels supported on four sides with provision against torsion at corners.

Values in the table were calculated using the plastic **Yield Line Theory**.

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Span l_y is ALWAYS the longer span (i.e. $l_x \leq l_y$ must be satisfied).

Bending moments can be calculated using the following equations:

$$m_{xe} = \beta_{xe} m_0,$$

$$m_{xm} = \beta_{xm} m_0,$$

$$m_{ye} = \beta_{ye} m_0,$$

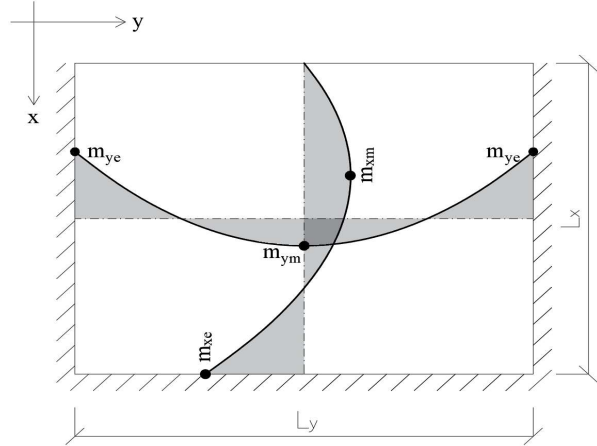
$$m_{ym} = \beta_{ym} m_0,$$

where β is a coefficient from the table below.

$$m_0 = f_d l_x^2,$$

where f_d is the total area load of the slab.

l_x is the shorter span.



| Supports | l_y/l_x | | | | | | | | | | | |
|----------|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | |
| | β_{xe} | -0.032 | -0.038 | -0.043 | -0.047 | -0.051 | -0.053 | -0.057 | -0.058 | -0.060 | -0.062 | -0.064 |
| | β_{xm} | 0.024 | 0.028 | 0.032 | 0.035 | 0.038 | 0.040 | 0.042 | 0.044 | 0.045 | 0.047 | 0.048 |
| | β_{ye} | -0.032 | | | | | | | | | | |
| | β_{ym} | 0.024 | | | | | | | | | | |
| | β_{xe} | -0.038 | -0.044 | -0.048 | -0.052 | -0.055 | -0.058 | -0.060 | -0.062 | -0.064 | -0.066 | -0.067 |
| | β_{xm} | 0.029 | 0.033 | 0.036 | 0.039 | 0.041 | 0.043 | 0.045 | 0.047 | 0.048 | 0.049 | 0.051 |
| | β_{ye} | -0.038 | | | | | | | | | | |
| | β_{ym} | 0.029 | | | | | | | | | | |
| | β_{xe} | -0.038 | -0.048 | -0.056 | -0.062 | -0.068 | -0.072 | -0.077 | -0.080 | -0.083 | -0.087 | -0.090 |
| | β_{xm} | 0.029 | 0.036 | 0.042 | 0.046 | 0.051 | 0.054 | 0.058 | 0.060 | 0.063 | 0.065 | 0.067 |
| | β_{ye} | -0.038 | | | | | | | | | | |
| | β_{ym} | 0.029 | | | | | | | | | | |
| | β_{xe} | -0.047 | -0.055 | -0.063 | -0.069 | -0.074 | -0.078 | -0.083 | -0.085 | -0.088 | -0.091 | -0.094 |
| | β_{xm} | 0.035 | 0.042 | 0.047 | 0.051 | 0.056 | 0.058 | 0.062 | 0.064 | 0.066 | 0.068 | 0.070 |
| | β_{ye} | -0.047 | | | | | | | | | | |
| | β_{ym} | 0.035 | | | | | | | | | | |
| | β_{xe} | -0.046 | -0.051 | -0.055 | -0.058 | -0.061 | -0.063 | -0.065 | -0.067 | -0.068 | -0.070 | -0.071 |
| | β_{xm} | 0.035 | 0.038 | 0.041 | 0.043 | 0.045 | 0.047 | 0.049 | 0.050 | 0.051 | 0.052 | 0.053 |
| | β_{ye} | 0 | | | | | | | | | | |
| | β_{ym} | 0.035 | | | | | | | | | | |
| | β_{xe} | 0 | | | | | | | | | | |
| | β_{xm} | 0.035 | 0.046 | 0.057 | 0.065 | 0.073 | 0.079 | 0.085 | 0.089 | 0.093 | 0.097 | 0.101 |
| | β_{ye} | -0.046 | | | | | | | | | | |
| | β_{ym} | 0.035 | | | | | | | | | | |
| | β_{xe} | -0.058 | -0.066 | -0.072 | -0.077 | -0.082 | -0.085 | -0.090 | -0.092 | -0.095 | -0.097 | -0.100 |
| | β_{xm} | 0.044 | 0.049 | 0.054 | 0.058 | 0.062 | 0.064 | 0.067 | 0.069 | 0.071 | 0.073 | 0.075 |
| | β_{ye} | 0 | | | | | | | | | | |
| | β_{ym} | 0.044 | | | | | | | | | | |
| | β_{xe} | 0 | | | | | | | | | | |
| | β_{xm} | 0.044 | 0.055 | 0.065 | 0.072 | 0.080 | 0.085 | 0.091 | 0.095 | 0.099 | 0.102 | 0.106 |
| | β_{ye} | -0.058 | | | | | | | | | | |
| | β_{ym} | 0.044 | | | | | | | | | | |
| | β_{xe} | 0 | | | | | | | | | | |
| | β_{xm} | 0.056 | 0.066 | 0.075 | 0.082 | 0.089 | 0.093 | 0.099 | 0.102 | 0.106 | 0.109 | 0.113 |
| | β_{ye} | 0 | | | | | | | | | | |
| | β_{ym} | 0.056 | | | | | | | | | | |