



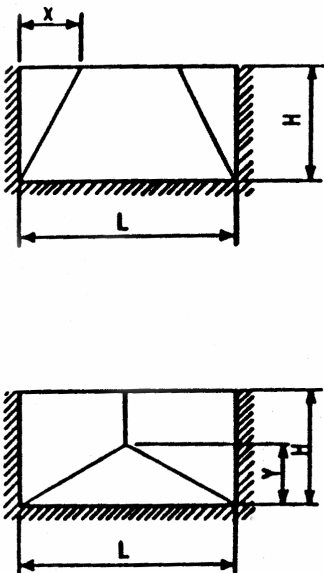
INDIANA AND MICHIGAN POWER
D. C. COOK NUCLEAR PLANT
UPDATED FINAL SAFETY ANALYSIS REPORT

Revision: 16.4

Table: 14.4.8-1

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ULTIMATE SHEAR STRESS AT DISTANCE d_e FROM THE SUPPORTS FOR TWO-WAY ELEMENTS

I. THREE EDGES FIXED AND ONE EDGE FREE	LIMITS	ULTIMATE HORIZONTAL SHEAR STRESS $(V_\mu)H$	LIMITS	ULTIMATE VERTICAL SHEAR STRESS $(V_\mu)r$
	$\frac{L}{2}$	$\frac{3r_\mu \left(1 - \frac{d_e}{x}\right)^2}{\frac{d_e}{x} \left(5 - \frac{4d_e}{x}\right)}$	$0 \leq d_e/H \leq \frac{1}{2}$	$\frac{3r_\mu \left(1 - \frac{d_e}{H}\right) \left(1 - \frac{x}{L} - d_e \frac{x}{HL}\right)}{d_e \left(3 - \frac{x}{L} - 4d_e \frac{x}{HL}\right)}$
	1	$\frac{r_\mu \left(1 - \frac{d_e}{x}\right)}{2 \left(\frac{d_e}{x}\right)}$	$\frac{1}{2} \leq d_e/H \leq 1$	$\frac{r_\mu \left(1 - \frac{d_e}{H}\right) \left(1 - \frac{x}{L} - d_e \frac{x}{HL}\right)}{d_e \left(1 - 2d_e \frac{x}{HL}\right)}$
	$\frac{L}{4}$	$\frac{3r_\mu \left(1 - \frac{2d_e}{L}\right) \left(2 - \frac{y}{H} - 2d_e \frac{y}{LH}\right)}{2d_e \left(6 - \frac{y}{H} - 8d_e \frac{y}{LH}\right)}$	$0 \leq d_e/y \leq 1$	$\frac{3r_\mu \left(1 - \frac{d_e}{y}\right)^2}{d_e \left(5 - 4 \frac{d_e}{y}\right)}$
	$\frac{1}{2}$	$\frac{r_\mu \left(1 - \frac{2d_e}{L}\right) \left(2 - \frac{y}{H} - 2d_e \frac{y}{LH}\right)}{4d_e \left(1 - 2d_e \frac{y}{LH}\right)}$	$\frac{1}{2} \leq d_e/y \leq 1$	$\frac{r_\mu \left(1 - \frac{d_e}{y}\right)}{\frac{2d_e}{y}}$

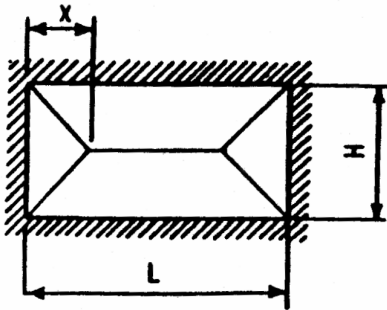


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II. FOUR EDGES FIXED	NOTE: L MAY EITHER BE LONGER OR SHORTER THAN H		
	$\frac{3r_{\mu}\left(1 - \frac{d_e}{x}\right)^2}{d_e x \left(5 - 4\frac{d_e}{x}\right)}$	$0 \leq d_e / H \leq \frac{1}{4}$	$\frac{3r_{\mu}\left(\frac{1}{2} - \frac{d_e}{H}\right)\left(1 - \frac{x}{L} - 2d_e \frac{x}{HL}\right)}{\frac{d_e}{H\left(3 - \frac{x}{L} - 8d_e \frac{x}{HL}\right)}}$
	$\frac{r_{\mu}\left(1 - \frac{d_e}{x}\right)}{2\left(\frac{d_e}{x}\right)}$	$\frac{1}{4} \leq d_e / H \leq \frac{1}{2}$	$\frac{r_{\mu}\left(\frac{1}{2} - \frac{d_e}{H}\right)\left(1 - \frac{x}{L} - 2d_e \frac{x}{HL}\right)}{\frac{d_e}{H\left(1 - 4d_e \frac{x}{HL}\right)}}$

r_{μ} = ULTIMATE PRESSURE LOAD ON ELEMENT d_e = EFFECTIVE DEPTH OF ELEMENT

NOTE: EXPRESSIONS IN THIS TABLE ARE TAKEN FROM REF. 2