

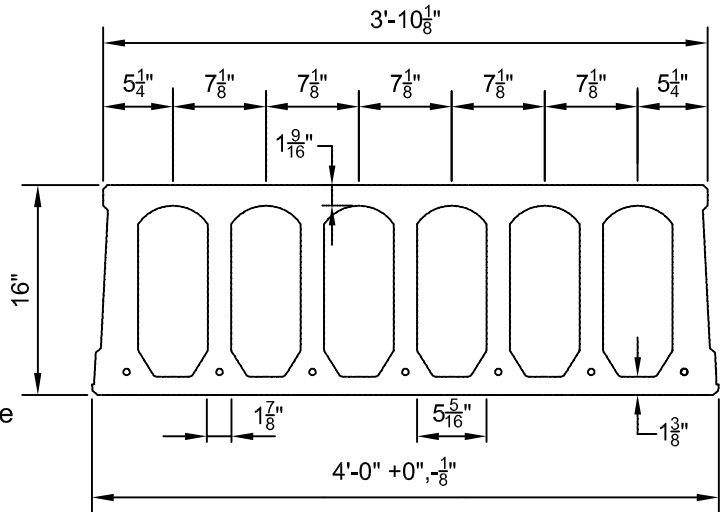
# Prestressed Concrete 16"x4'-0" NiCore Plank

2 Hour Fire Resistance Rating (Untopped)

PHYSICAL PROPERTIES Precast	
A = 352 in. <sup>2</sup>	b <sub>w</sub> = 14.25 in.
I = 10,985 in. <sup>4</sup>	S <sub>b</sub> = 1,379 in. <sup>3</sup>
Y <sub>b</sub> = 7.97 in.	S <sub>t</sub> = 1,367 in. <sup>3</sup>
Y <sub>t</sub> = 8.03 in.	Wt. = 367 PLF
e = 6.19 in.	Wt. = 91.75 PSF

## DESIGN DATA

- Precast Strength @ 28 days = 6000 PSI
- Precast Strength @ release = 3800 PSI
- Precast Density = 150 PCF
- Strand = 1/2"Ø 270K Lo-Relaxation.
- Strand Height = 1.75 in.
- Ultimate moment capacity (when fully developed)..  
7-1/2"Ø, 270K = 295.8 k-ft at 60% jacking force  
7-0.6"Ø, 270K = 406.8 k-ft at 60% jacking force
- Maximum bottom tensile stress is  $10\sqrt{f'_c} = 775$  PSI
- All superimposed load is treated as live load in the flexural strength analysis. To determine the allowable live load if the amount of superimposed dead load is known use the following conversion method...



$$\text{Allowable Live Load} = \frac{(1.6)(\text{Load Table Value}) - (1.2)(\text{Superimposed Dead Load})}{1.6}$$

- If the above conversion is used then allowable stress limits must be checked so they are not exceeded.
- Flexural strength capacity is based on stress/strain strand relationships.
- Deflection limits were not considered when determining allowable loads in this table.
- Span/strand combinations to the left of and below the solid line require 3/8"Ø top strands.
- Load values are controlled by ultimate flexural strength, structural fire endurance, or ultimate web shear.
- Some load values are controlled by ultimate web shear strength per ACI Equation 11-1 and Section 11.4.6.1(b). Shear capacity can be increased by partially filling cores in order to achieve flexural capacity.
- Camber is inherent in all prestressed hollow core slabs and is a function of the amount of eccentric prestressing force needed to carry the superimposed design loads along with a number of other variables. Because prediction of camber is based on empirical formulas it is at best an estimate, with the actual camber usually higher than calculated values.
- At 2 hours the calculated strand temperature is 790 degrees Fahrenheit @ 49% of yield strength.

Strand Pattern		SPAN (FEET)																		
		24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60
7 - 1/2"Ø	LOAD (PSF)	251	225	203	196	179	163	150	133	111	92	76	62	49	38	28	19	X		
7 - 0.6"Ø	LOAD (PSF)	254	227	205	186	169	154	141	130	119	121	112	104	96	90	76	64	53	43	34