

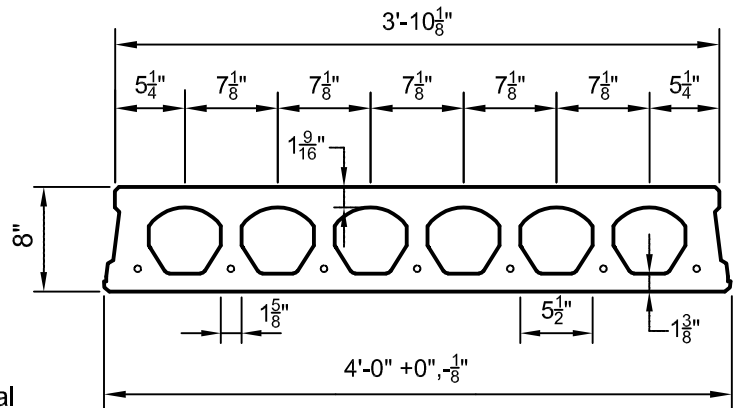
# Prestressed Concrete 8"x4'-0" NiCore Plank

2 Hour Fire Resistance Rating (Untopped)

PHYSICAL PROPERTIES Precast	
A = 235 in. <sup>2</sup>	b <sub>w</sub> = 13.13 in.
I = 1838 in. <sup>4</sup>	S <sub>b</sub> = 459 in. <sup>3</sup>
Y <sub>b</sub> = 4.00 in.	S <sub>t</sub> = 459 in. <sup>3</sup>
Y <sub>t</sub> = 4.00 in.	Wt. = 245 PLF
e = 2.25 in.	Wt. = 61.25 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)..  
 7-3/8"Ø, 270K = 70.6 k-ft at 60% jacking force  
 6-1/2"Ø, 270K = 104.7 k-ft at 60% jacking force  
 7-1/2"Ø, 270K = 119.8 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.
- Load values to the left of the solid line are controlled by ultimate shear strength.
- Load values to the right are controlled by ultimate flexural strength or allowable service stresses.
- 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		SAFE SUPERIMPOSED SERVICE LOADS																		
		SPAN (FEET)																		
		17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
6 - 1/2"Ø	LOAD (PSF)	287	267	250	235	207	183	162	144	128	114	101	89	79	70	62	54	47	41	35
7 - 1/2"Ø	LOAD (PSF)	288	269	252	236	222	210	196	176	157	141	126	113	101	90	81	72	64	57	50