

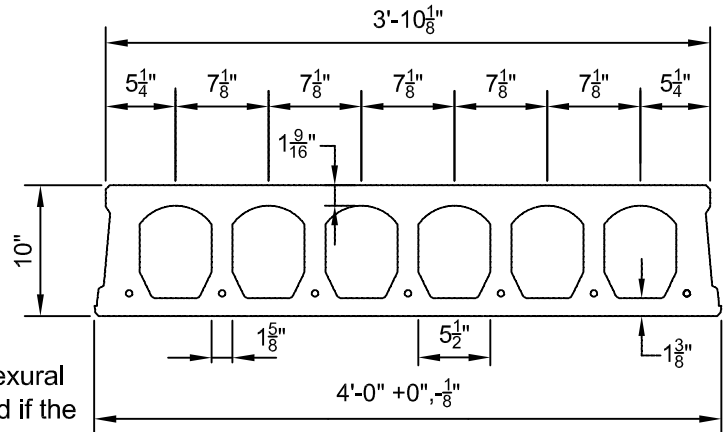
# Prestressed Concrete 10"x4'-0" NiCore Plank

3 Hour Fire Resistance Rating (Untopped)

PHYSICAL PROPERTIES Precast	
A = 262 in. <sup>2</sup>	b <sub>w</sub> = 13.13 in.
I = 3196 in. <sup>4</sup>	S <sub>b</sub> = 640 in. <sup>3</sup>
Y <sub>b</sub> = 4.99 in.	S <sub>t</sub> = 638 in. <sup>3</sup>
Y <sub>t</sub> = 5.01 in.	Wt. = 272 PLF
e = 3.24 in.	Wt. = 68.00 PSF

## DESIGN DATA

1. Precast Strength @ 28 days = 6000 PSI
2. Precast Strength @ release = 3800 PSI
3. Precast Density = 150 PCF
4. Strand = 1/2"Ø and 0.6"Ø 270K Lo-Relaxation.
5. Strand Height = 1.75 in.
6. Ultimate moment capacity (when fully developed)..  
6-1/2"Ø, 270K = 142.3 k-ft at 60% jacking force  
7-1/2"Ø, 270K = 163.4 k-ft at 60% jacking force
7. Maximum bottom tensile stress is  $10\sqrt{f'_c} = 775$  PSI
8. 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...



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

9. If the above conversion is used then allowable stress limits must be checked so they are not exceeded.
10. Flexural strength capacity is based on stress/strain strand relationships.
11. Deflection limits were not considered when determining allowable loads in this table.
12. Load values are controlled by ultimate flexural strength or structural fire endurance.
13. 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.
14. At 3 hours the calculated strand temperature is 925 degrees Fahrenheit @ 32% of yield strength

SAFE SUPERIMPOSED SERVICE LOADS		SPAN (FEET)																		
Strand Pattern		26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
7 - 1/2"Ø	LOAD (PSF)	113	100	88	77	68	59	51	44	38	32	26	21	16	X					
7 - 0.6"Ø	LOAD (PSF)	185	166	150	135	122	110	99	89	80	71	64	56	50	44	38	33	29	24	20