

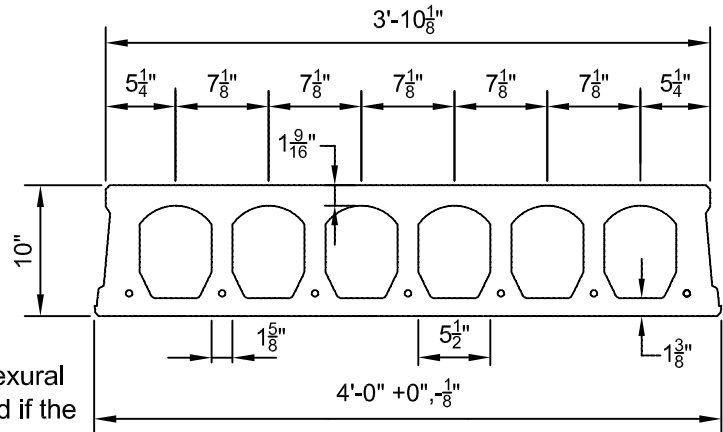
# Prestressed Concrete 10"x4'-0" NiCore Plank

2 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 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 to the left of the solid line are controlled by ultimate shear strength.
13. Load values to the right are controlled by ultimate flexural strength or allowable service stresses.
14. 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.
15. At 2 hours the calculated strand temperature is 790 degrees Fahrenheit @ 49% 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
6 - 1/2"Ø	LOAD (PSF)	167	150	134	121	108	97	87	77	69	61	54	48	42	37	31	26	X		
7 - 1/2"Ø	LOAD (PSF)	204	184	166	150	136	123	111	100	91	82	73	66	59	52	46	41	36	X	