

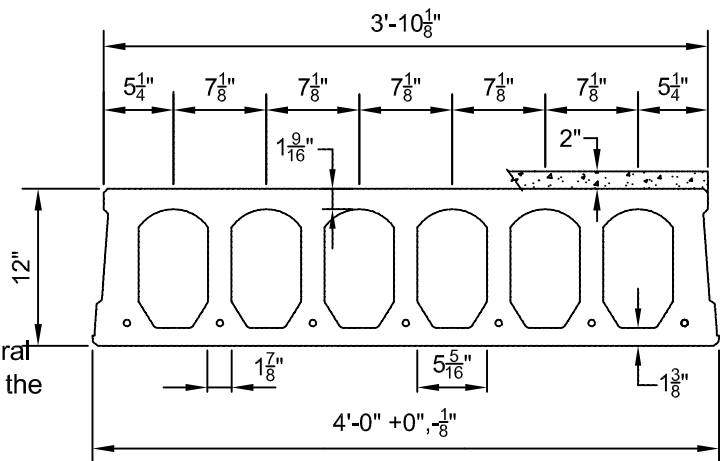
# Prestressed Concrete 12"x4'-0" NiCore Plank

3 Hour Fire Resistance Rating With 2" Topping

PHYSICAL PROPERTIES Composite Section	
$A_c = 361 \text{ in.}^2$	Precast $b_w = 14.25 \text{ in.}$
$I_c = 7840 \text{ in.}^4$	Precast $S_{bcp} = 1081 \text{ in.}^3$
$Y_{bcp} = 7.26 \text{ in.}$	Topping $S_{tct} = 1644 \text{ in.}^3$
$Y_{tcp} = 4.74 \text{ in.}$	Precast $S_{tcp} = 1653 \text{ in.}^3$
$Y_{tct} = 6.74 \text{ in.}$	Precast Wt. = 308 PLF
	Precast Wt. = 77.00 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 = 205.4 k-ft at 60% jacking force  
7-1/2"Ø, 270K = 235.4 k-ft at 60% jacking force
7. Maximum bottom tensile stress is  $10\sqrt{f'_c} = 775 \text{ PSI}$
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. Topping Strength @ 28 days = 3000 PSI. Topping Weight = 25 PSF.
13. These tables are based upon the topping having a uniform 2" thickness over the entire span. A lesser thickness might occur if camber is taken into account during design, thus reducing the load capacity.
14. All load values are controlled by ultimate flexural strength or fire endurance limits.
15. 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.
16. At 3 hours the calculated strand temperature is 925 degrees Fahrenheit @ 32% of yield strength

Strand Pattern		SPAN (FEET)																							
		28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46					
7 - 1/2"Ø	LOAD (PSF)	127	112	98	85	73	63	53	44	36	29	22	16	X											
7 - 0.6"Ø	LOAD (PSF)	217	195	176	158	142	127	114	102	91	80	71	62	54	46	39	33	27	21	16					



This load table is for general information only for preliminary design. It is not intended for final design without competent professional examination and verification of its accuracy, suitability, and applicability by a licensed professional engineer, designer, or architect. It is for simple spans and uniform loads. Design data for any of these span-load conditions is available on request. Individual designs may be furnished to satisfy unusual conditions of heavy loads, concentrated loads, cantilevers, flange or stem openings and narrow widths.