

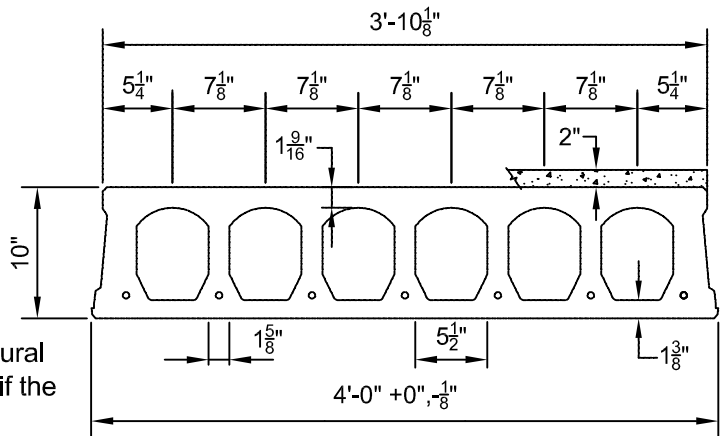
Prestressed Concrete 10"x4'-0" NiCore Plank

3 Hour Fire Resistance Rating With 2" Topping

PHYSICAL PROPERTIES Composite Section	
$A_c = 327 \text{ in.}^2$	Precast $b_w = 13.13 \text{ in.}$
$I_c = 5102 \text{ in.}^4$	Precast $S_{bcp} = 824 \text{ in.}^3$
$Y_{bcp} = 6.19 \text{ in.}$	Topping $S_{tct} = 1242 \text{ in.}^3$
$Y_{tcp} = 3.81 \text{ in.}$	Precast $S_{tcp} = 1340 \text{ in.}^3$
$Y_{tcp} = 5.81 \text{ in.}$	Precast Wt. = 272 PLF
	Precast Wt. = 68.00 PSF

DESIGN DATA

- Precast Strength @ 28 days = 6000 PSI
- Precast Strength @ release = 3800 PSI
- Precast Density = 150 PCF
- Strand = 1/2"Ø and 0.6"Ø 270K Lo-Relaxation.
- Strand Height = 1.75 in.
- Ultimate moment capacity (when fully developed)..
6-1/2"Ø, 270K = 168.1 k-ft at 60% jacking force
7-1/2"Ø, 270K = 191.7 k-ft at 60% jacking force
- Maximum bottom tensile stress is $10\sqrt{f'_c} = 775 \text{ PSI}$
- 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.
- Topping Strength @ 28 days = 3000 PSI. Topping Weight = 25 PSF.
- 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.
- All load values are controlled by ultimate flexural strength or fire endurance limits.
- 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 3 hours the calculated strand temperature is 925 degrees Fahrenheit @ 32% of yield strength

Strand Pattern		SPAN (FEET)																		
		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)	127	111	97	84	72	62	52	44	36	28	22	16	10	X					
7 - 0.6"Ø	LOAD (PSF)	212	190	170	152	136	121	108	96	85	75	66	57	50	42	36	29	24	18	13