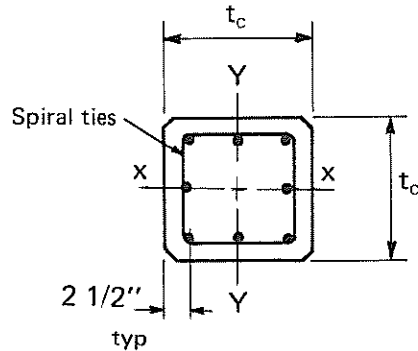


# COLUMNS

**Table 3.4.3 Ultimate capacity of prestressed concrete columns**

$f'_c = 6000$  psi

- $P_u$  = design (ultimate) axial load, kips
- $P_{uo}$  = design concentric axial load ( $M_u = 0$ ), kips
- $M_u$  = design (ultimate) moment about x or y axis, ft-kips
- $e$  =  $M_u/P_u$
- $\phi$  = 0.70 when  $M_u = 0$  to max. value of  $M_u$   
0.90 when  $P_u = 0$   
other values interpolated between 0.70 and 0.90
- $f'_c = 6000$  psi
- $f_{pu} = 270,000$  psi (1/2" dia. strand)  
250,000 psi (7/16" dia. strand)



Strand located 2 1/2" from face to facilitate spiral placement

### Allowable $M_u$ beyond 50 diameters from end

10" x 10" Column																		
Strand	$P_{uo}$	$e = 0.1 t_c$		$P_u$														
		$P_u$	$M_u$	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
4 - 7/16	342	282	23	19	22	25	28	31	34	36	38	41	43	45	47	48	49	49
4 - 1/2	335	275	23	26	29	31	34	36	39	41	43	45	46	48	49	50	50	50
8 - 1/2	338	268	22	36	38	40	42	44	46	47	48	50	51	51	52	51	50	50
Strand				$P_u$														
				150	160	170	180	190	200	210	220	230	240	250	260	270	280	290
4 - 7/16				50	49	48	47	46	45	44	41	38	36	33	31	28	24	20*
4 - 1/2				49	48	47	46	45	44	41	39	36	34	31	28	25	21*	17*
8 - 1/2				49	48	47	46	43	41	38	36	33	31	28	25	22*	19*	15*
12" x 12" Column																		
Strand	$P_{uo}$	$e = 0.1 t_c$		$P_u$														
		$P_u$	$M_u$	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
4 - 7/16	497	412	41	26	29	33	37	40	44	48	51	55	59	61	64	67	69	72
4 - 1/2	488	405	40	35	38	42	45	48	52	55	58	62	65	67	70	72	75	77
8 - 1/2	480	389	39	54	57	60	63	65	68	71	73	75	77	79	82	84	85	86
Strand				$P_u$														
				150	160	180	200	220	240	260	280	300	320	340	360	380	400	420
4 - 7/16				74	77	80	83	85	84	82	80	78	73	67	61	55	47	37*
4 - 1/2				80	82	84	86	86	84	82	79	77	70	64	58	51	42	33*
8 - 1/2				87	88	89	87	85	83	80	76	70	64	57	51	43	34*	25*
14" x 14" Column																		
Strand	$P_{uo}$	$e = 0.1 t_c$		$P_u$														
		$P_u$	$M_u$	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280
4 - 7/16	681	570	66	30	40	48	58	68	78	86	94	100	106	114	120	124	128	130
4 - 1/2	671	557	65	44	52	60	68	78	86	94	100	108	114	120	126	128	132	134
8 - 1/2	656	539	63	72	80	86	94	102	108	114	120	124	130	134	136	138	140	138
Strand				$P_u$														
				300	320	340	360	380	400	420	440	460	480	500	520	540	560	580
4 - 7/16				134	136	132	130	128	124	122	118	110	104	96	90	82	72	60*
4 - 1/2				136	134	132	130	128	124	122	114	106	100	92	84	74	64*	52*
8 - 1/2				136	132	130	128	126	120	112	104	98	90	82	72	62*	56*	40*

\* $e < 0.1 t_c$