

Circular Stem Design - For Use in Spread Footings with Circular Stem

f _c =	3.00	ksi	
F _y =	60	ksi	
C _c =	2.00	in	Clear cover is uniform around the cross section
h =	36.00	in	Outside Diameter of Column (Approx. 70" max)
Bar Size =	5		As = 0.44 in ²
Hoop Bar size =	4		As = 0.2 in ²
Spacing =	5.00	in	Approximate desired spacing of main reinforcing (assumes as max)
Φ =	1		

Determine if section is adequate for loads applied			
Mu =	167.26	ft-kips	Mu = Resultant moment = sqrt(Mstrong ² +Mweak ²)
Pu =	4.36	kips	IS SECTION OK? YES

Calculate location of steel reinforcing around perimeter of column:			
Dia. of inner ring of reinf. =	30.25	in	
perimeter =	95.03	in	
# of bars =	20	number of (even) bars that will fit in perimeter	Program allows 42 bars maximum OK
Number of bar rows =	11		
spacing =	3.03	(in) actual vertical spacing of bars	

Note: Program orients bars so that one layer is on the centroid of column (conservative)

Calculate location of bars with respect to the extreme compression fiber:			
Is rebar	Is steel used for	# bars in	
level in	Tension or Comp.?	each level	
d1	2.88 in Comp	1	0.44
d2	5.90 in Comp	2	0.88
d3	8.93 in Comp	2	0.88
d4	11.95 in Comp	2	0.88
d5	14.98 in Comp	2	0.88
d6	18.00 in Steel Not Used	2	
d7	21.03 in Tension	2	0.88
d8	24.05 in Tension	2	0.88
d9	27.08 in Tension	2	0.88
d10	30.10 in Tension	2	0.88
d11	33.13 in Tension	1	0.44
d12	NA		
d13	NA		
d14	NA		
d15	NA		
d16	NA		
d17	NA		
As tens =			3.96
As comp =			3.96
Centroid of Tension and Compression Steel from extreme compression fiber:			
d(tension) =	26.40	in	
d(comp) =	9.60	in	