

Typical Column Design

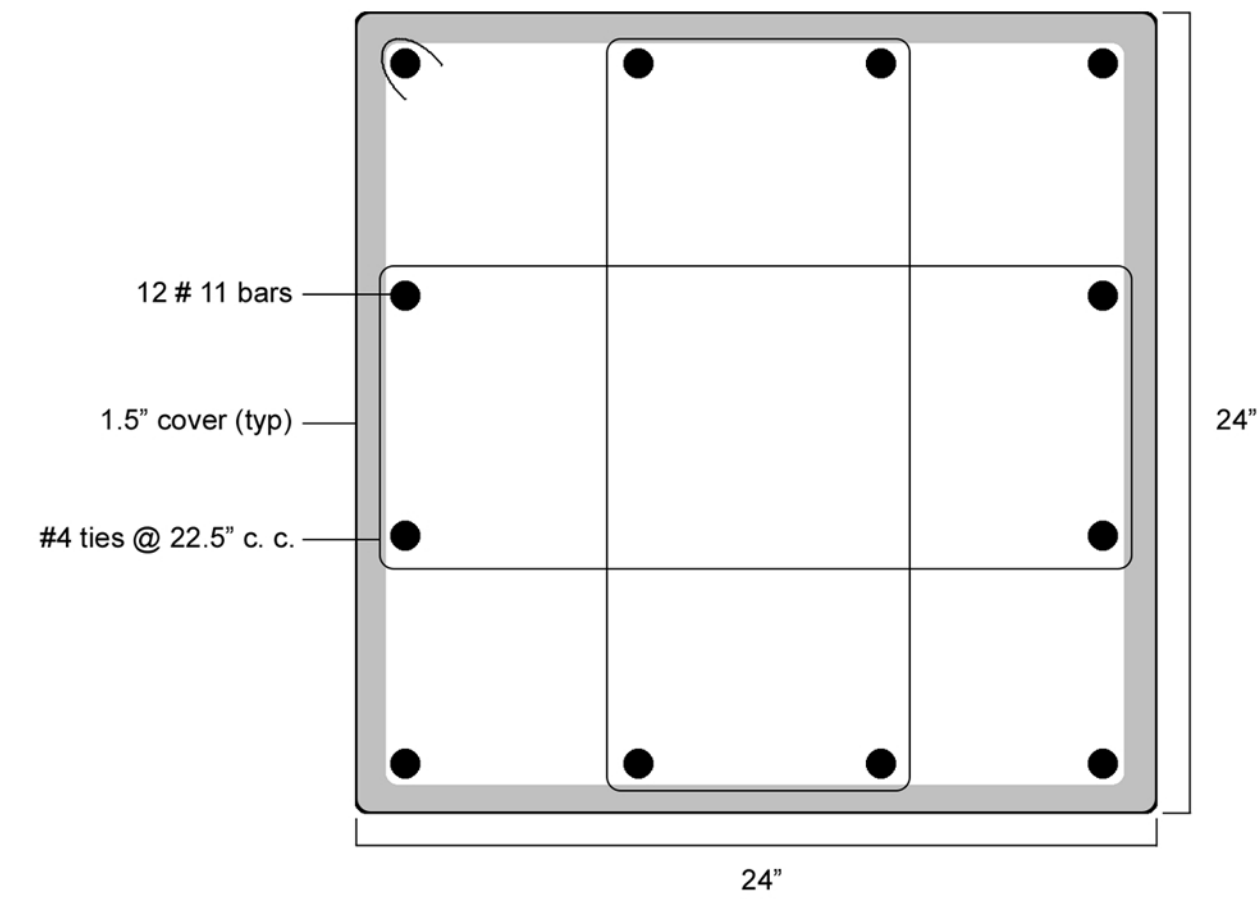
slab depth	4.5 in	beam length	25.42 ft
beam height	18 in	# beams in bay	7
beam width	9 in		

Axial Column Loads - interior column

Bay width	27.33 ft	LL reduction factor:	
Bay length	41.00 ft		
LL	0.083 ksf	new LL	0.035
DL	0.083 ksf		
Wu	0.156 ksf	tied sq col	

Level	Roof	height	% slab	Pu	col w	Ag	Ast	φPn	
	9.000	9.00	124.33	1.00	175.17	24.00	576.00	25.00	1754.17
		8.00	110.00	1.00	358.94	24.00	576.00	25.00	1754.17
		7.00	95.67	1.00	542.71	24.00	576.00	25.00	1754.17
		6.00	81.33	1.00	726.49	24.00	576.00	25.00	1754.17
		5.00	67.00	1.00	910.26	24.00	576.00	25.00	1754.17
		4.00	52.67	1.00	1094.04	24.00	576.00	25.00	1754.17
		3.00	38.33	1.00	1277.81	24.00	576.00	25.00	1754.17
		2.00	24.00	1.00	1461.58	24.00	576.00	25.00	1754.17
		1.00	0.00	1.00	1651.16	24.00	576.00	25.00	1754.17

Typical column designed to accommodate girders with width of 24"



Simplified Pile Design:

square concrete pile with prestressing, multiple rows, tension allowed in pile

Total load on grade beam	1651.16 kips								
# of piles	8								
P	kips	206.395	f'c	ksi	6				
L	ft	0 unbraced length - height of pile above soil							
Mx	k-ft	0							
My	k-ft	0							
Pile width	in.	10	12	14	16	18	20	22	24
fpc	ksi	0.772	0.723	0.817	0.829	0.75	0.809	0.765	0.803
r	in.	2.887	3.464	4.042	4.619	5.2	5.774	6.351	6.929
A	in ²	100	144	196	256	324	400	484	576
I	in ⁴	833	1728	3201	5461	8748	13333	19521	27648
Pa	k	6177.156	8897.01	12104.84	15809.58	20015.91	24704.63	29898.35	35575.6
kL/r		0	0	0	0	0	0	0	0
M	k-ft	0	0	0	0	0	0	0	0
Ma	k-ft	51747.74	89441.76	142058.4	212069.5	301892.2	414186.5	551208.6	715718.4
P/Pa+M/Ma		0.033413	0.023198	0.017051	0.013055	0.010312	0.008355	0.006903	0.005802
fpc+P/A±M/S		2.83595	2.156299	1.870036	1.63523	1.387022	1.324988	1.191436	1.161325
		2.83595	2.156299	1.870036	1.63523	1.387022	1.324988	1.191436	1.161325
		0	0	0	0	0	0	0	0
		1	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0
		1	0	0	0	0	0	0	0
		no good	OK	OK	OK	OK	OK	OK	OK

Note: 12" piles are OK in this configuration.

Consultants

Structural Engineer
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Mechanical Engineer
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Electrical Engineer
Jim Stadelman

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Contract Information

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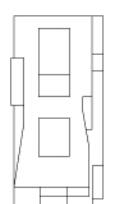
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Client



Key Plan



Date: 4/10/2011
Drwn by: Travis Clarke
Chkd by: Harker
Sheet Title:
Calculations