## **Reinforced Concrete Moment Frame Archetype Overview**

- Perimeter Frame Layout (LFRS around entire perimeter of building, gravity system elsewhere)
- 20ft bay spacing, 6 bays x 6 bays, 120' x 120' in plan (only three bays of the structural frame are modeled)
- 15ft first story height, 13ft elsewhere
- 8" flat gravity slab

# **20-Story Special RCMF Design Summary: Baseline**

	Columns		Beams		
	depth x width [tie spacing]		depth x width [hoop spacing]		
	(ρ <sub>total</sub> , ρ <sub>sh</sub> )		(ρ <sub>top</sub> , ρ <sub>bot</sub> , ρ <sub>sh</sub> )		
	Fatanian				
Level	Exterior	Interior	Exterior	Interior	
20	36x30 [2.5]	36x30 [2.5]	36x30 [4.5]	36x30 [4.5]	
	(0.0102, 0.0105)	(0.0116, 0.0105)	(0.0061, 0.0036, 0.0029)	(0.0061, 0.0036, 0.0029)	
19	36x30 [2.5]	36x30 [2.5]	36x30 [4]	36x30 [4]	
	(0.0102, 0.0105)	(0.0116, 0.0105)	(0.0061, 0.0036, 0.0033)	(0.0061, 0.0036, 0.0033)	
18	36x30 [2.5]	36x30 [2.5]	36x30 [4]	36x30 [4]	
	(0.0102, 0.0105)	(0.0116, 0.0105)	(0.0061, 0.0036, 0.0033)	(0.0061, 0.0036, 0.0033)	
17	36x30 [2.5]	36x30 [2.5]	36x30 [4]	36x30 [4]	
	(0.0102, 0.0105)	(0.0116, 0.0105)	(0.0061, 0.0036, 0.0033)	(0.0061, 0.0036, 0.0033)	
16	36x30 [2.5]	36x30 [2.5]	36x30 [3.5]	36x30 [3.5]	
	(0.0102, 0.0105)	(0.0116, 0.0105)	(0.0061, 0.0048, 0.0037)	(0.0061, 0.0048, 0.0037)	
15	36x30 [2.5]	36x30 [2.5]	36x30 [3.5]	36x30 [3.5]	
	(0.0102, 0.0105)	(0.0131, 0.0105)	(0.0061, 0.0054, 0.0037)	(0.0061, 0.0054, 0.0037)	
14	36x30 [2.5]	36x30 [2.5]	36x30 [3.5]	36x30 [3.5]	
	(0.0102, 0.0105)	(0.0131, 0.0105)	(0.0067, 0.0054, 0.0037)	(0.0067, 0.0054, 0.0037)	
13	36x30 [2.5]	36x30 [2.5]	36x30 [3]	36x30 [3]	
	(0.0102, 0.0105)	(0.0131, 0.0105)	(0.0067, 0.0060, 0.0044)	(0.0067, 0.0060, 0.0044)	
12	42x30 [2.5]	42x30 [2.5]	42x30 [3]	42x30 [3]	
	(0.0112, 0.0105)	(0.0125, 0.0105)	(0.0056, 0.0051, 0.0044)	(0.0056, 0.0051, 0.0044)	
11	42x30 [2.5]	42x30 [2.5]	42x30 [3]	42x30 [3]	
	(0.0112, 0.0105)	(0.0125, 0.0105)	(0.0056, 0.0051, 0.0044)	(0.0056, 0.0051, 0.0044)	
10	42x30 [2.5]	42x30 [2.5]	42x30 [3]	42x30 [3]	
	(0.0112, 0.0105)	(0.0125, 0.0105)	(0.0062, 0.0056, 0.0044)	(0.0062, 0.0056, 0.0044)	
9	42x30 [2.5]	42x30 [2.5]	42x30 [3]	42x30 [3]	
	(0.0112, 0.0105)	(0.0125, 0.0105)	(0.0062, 0.0056, 0.0044)	(0.0062, 0.0056, 0.0044)	
8	42x30 [2.5]	42x30 [2.5]	42x30 [3]	42x30 [3]	
	(0.0112, 0.0105)	(0.0125, 0.0105)	(0.0062, 0.0056, 0.0044)	(0.0062, 0.0056, 0.0044)	
7	42x30 [2.5]	42x30 [2.5]	42x30 [3]	42x30 [3]	
	(0.0112, 0.0105)	(0.0125, 0.0105)	(0.0062, 0.0056, 0.0044)	(0.0062, 0.0056, 0.0044)	
6	42x30 [2.5]	42x30 [2.5]	42x30 [3]	42x30 [3]	
	(0.0125, 0.0105)	(0.0125, 0.0105)	(0.0067, 0.0056, 0.0044)	(0.0067, 0.0056, 0.0044)	
5	42x30 [2.5]	42x30 [2.5]	42x30 [3]	42x30 [3]	
	(0.0125, 0.0105)	(0.0125, 0.0105)	(0.0067, 0.0056, 0.0044)	(0.0067, 0.0056, 0.0044)	
4	42x30 [2.5]	42x30 [2.5]	42x30 [3]	42x30 [3]	
	(0.0137, 0.0105)	(0.0125, 0.0105)	(0.0067, 0.0056, 0.0044)	(0.0067, 0.0056, 0.0044)	
3	42x30 [2.5]	42x30 [2.5]	42x30 [3]	42x30 [3]	
	(0.0137, 0.0105)	(0.0125, 0.0105)	(0.0067, 0.0056, 0.0044)	(0.0067, 0.0056, 0.0044)	
2	42x30 [2.5]	42x30 [2.5]	42x30 [3]	42x30 [3]	
	(0.0167, 0.0105)	(0.0125, 0.0105)	(0.0062, 0.0051, 0.0044)	(0.0062, 0.0051, 0.0044)	
1	42x30 [2]	42x30 [2.5]	42x30 [3.5]	42x30 [3.5]	
	(0.0230, 0.0131)	(0.0125, 0.0105)	(0.0056, 0.0046, 0.0037)	(0.0056, 0.0046, 0.0037)	

# 20-Story Special RCMF Design Summary: le = 1.25

	36x30 [4] (0.0061, 0.0036, 0.0033) 36x30 [4]
Level         Exterior         Interior         Exterior           20         36x30 [2.5]         36x30 [2.5]         36x30 [4.5]           (0.0102, 0.0105)         (0.0116, 0.0105)         (0.0061, 0.0036, 0.002           19         36x30 [2.5]         36x30 [2.5]         36x30 [4]	Interior  36x30 [4.5]  (9) (0.0061, 0.0036, 0.0029)  36x30 [4]  (3) (0.0061, 0.0036, 0.0033)  36x30 [4]
20     36x30 [2.5]     36x30 [2.5]     36x30 [4.5]       (0.0102, 0.0105)     (0.0116, 0.0105)     (0.0061, 0.0036, 0.002       19     36x30 [2.5]     36x30 [2.5]     36x30 [4]	36x30 [4.5] (9) (0.0061, 0.0036, 0.0029) 36x30 [4] (3) (0.0061, 0.0036, 0.0033) 36x30 [4]
20     36x30 [2.5]     36x30 [2.5]     36x30 [4.5]       (0.0102, 0.0105)     (0.0116, 0.0105)     (0.0061, 0.0036, 0.002       19     36x30 [2.5]     36x30 [2.5]     36x30 [4]	36x30 [4.5] (9) (0.0061, 0.0036, 0.0029) 36x30 [4] (3) (0.0061, 0.0036, 0.0033) 36x30 [4]
(0.0102, 0.0105) (0.0116, 0.0105) (0.0061, 0.0036, 0.002 19 36x30 [2.5] 36x30 [2.5] 36x30 [4]	(9) (0.0061, 0.0036, 0.0029) 36x30 [4] (3) (0.0061, 0.0036, 0.0033) 36x30 [4]
(0.0102, 0.0105) (0.0116, 0.0105) (0.0061, 0.0036, 0.002 19 36x30 [2.5] 36x30 [2.5] 36x30 [4]	(9) (0.0061, 0.0036, 0.0029) 36x30 [4] (3) (0.0061, 0.0036, 0.0033) 36x30 [4]
19 36x30 [2.5] 36x30 [2.5] 36x30 [4]	36x30 [4] (0.0061, 0.0036, 0.0033) 36x30 [4]
(0.0102.0.0105)	36x30 [4]
(0.0102, 0.0103) (0.0110, 0.0103) (0.0001, 0.0030, 0.003	
18 36x30 [2.5] 36x30 [2.5] 36x30 [4]	(0.0061, 0.0036, 0.0033)
(0.0102, 0.0105) (0.0116, 0.0105) (0.0061, 0.0036, 0.003	
17 36x30 [2.5] 36x30 [2.5] 36x30 [3.5]	36x30 [3.5]
(0.0102, 0.0105) (0.0116, 0.0105) (0.0061, 0.0048, 0.003	(0.0061, 0.0048, 0.0037)
16 36x30 [2.5] 36x30 [2.5] 36x30 [3.5]	36x30 [3.5]
(0.0102, 0.0105) (0.0145, 0.0105) (0.0067, 0.0054, 0.003	(0.0067, 0.0054, 0.0037)
15 36x30 [2.5] 36x30 [2.5] 36x30 [3]	36x30 [3]
(0.0102, 0.0105) (0.0175, 0.0105) (0.0077, 0.0063, 0.004	
14 42x30 [2.5] 42x30 [2.5] 36x30 [2.5]	36x30 [2.5]
(0.0112, 0.0105) (0.0150, 0.0105) (0.0077, 0.0070, 0.005	(0.0077, 0.0070, 0.0052)
13 42x30 [2.5] 42x30 [2.5] 36x30 [2.5]	36x30 [2.5]
(0.0112, 0.0105) (0.0150, 0.0105) (0.0077, 0.0070, 0.005	
12 42x30 [2.5] 42x30 [2.5] 42x30 [2.5]	42x30 [2.5]
(0.0112, 0.0105) (0.0150, 0.0105) (0.0072, 0.0066, 0.005	
11 42x30 [2.5] 42x30 [2.5] 42x30 [2.5]	42x30 [2.5]
(0.0112, 0.0105) (0.0150, 0.0105) (0.0072, 0.0066, 0.005	
10 42x30 [2.5] 42x30 [2.5] 42x30 [2.5]	42x30 [2.5]
(0.0125, 0.0105) (0.0150, 0.0105) (0.0072, 0.0066, 0.005	
9 42x30 [2.5] 42x30 [2.5] 42x30 [2.5]	42x30 [2.5]
(0.0125, 0.0105) (0.0150, 0.0105) (0.0072, 0.0066, 0.005	
8 42x36 [2] 42x36 [2] 42x30 [2]	42x30 [2]
(0.0125, 0.0109) (0.0135, 0.0109) (0.0079, 0.0073, 0.006	
7 42x36 [2] 42x36 [2] 42x30 [2] (0.0125 0.0100) (0.0125 0.0100)	42x30 [2]
(0.0125, 0.0109) (0.0135, 0.0109) (0.0079, 0.0073, 0.006	
6 42x36 [2] 42x36 [2] 42x30 [2] (0.0145 0.0100) (0.0135 0.0100)	42x30 [2]
(0.0145, 0.0109) (0.0135, 0.0109) (0.0079, 0.0073, 0.006) 5 42x36 [2] 42x36 [2] 42x30 [2]	
5 42x36 [2] 42x36 [2] 42x30 [2] (0.0145, 0.0109) (0.0135, 0.0109) (0.0079, 0.0073, 0.006	42x30 [2] (5) (0.0079, 0.0073, 0.0065)
4 42x36 [2] 42x36 [2] 42x30 [2]	42x30 [2]
(0.0145, 0.0109) (0.0135, 0.0109) (0.0079, 0.0073, 0.006	• •
3 42x36 [2] 42x36 [2] 42x30 [2.5]	42x30 [2.5]
(0.0156, 0.0109) (0.0135, 0.0109) (0.0079, 0.0066, 0.005	
2 42x42 [2] 42x42 [2] 42x36 [2.5]	42x36 [2.5]
(0.0142, 0.0117) (0.0116, 0.0117) (0.0066, 0.0055, 0.004	
1 42x42 [2] 42x42 [2] 42x36 [3]	42x36 [3]
(0.0223, 0.0117) (0.0125, 0.0117) (0.0055, 0.0044, 0.003	

# 20-Story Special RCMF Design Summary: le = 1.5

	Columns		Beams	
	depth x width [tie spacing]		depth x width [hoop spacing]	
	$( ho_{ ext{total}}, ho_{ ext{sh}})$		$(\rho_{top}, \rho_{bot}, \rho_{sh})$	
Level	Exterior	Interior	Exterior	Interior
20	36x36 [2]	36x36 [2]	36x30 [4.5]	36x30 [4.5]
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0061, 0.0036, 0.0029)	(0.0061, 0.0036, 0.0029)
19	36x36 [2]	36x36 [2]	36x30 [4]	36x30 [4]
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0061, 0.0036, 0.0033)	(0.0061, 0.0036, 0.0033)
18	36x36 [2]	36x36 [2]	36x30 [4]	36x30 [4]
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0061, 0.0042, 0.0033)	(0.0061, 0.0042, 0.0033)
17	36x36 [2]	36x36 [2]	36x30 [3.5]	36x30 [3.5]
	(0.0109, 0.0109)	(0.0145, 0.0109)	(0.0061, 0.0054, 0.0037)	(0.0061, 0.0054, 0.0037)
16	36x36 [2]	36x36 [2]	36x30 [2.5]	36x30 [2.5]
	(0.0109, 0.0109)	(0.0145, 0.0109)	(0.0077, 0.0070, 0.0052)	(0.0077, 0.0070, 0.0052)
15	36x36 [2]	36x36 [2]	36x30 [2.5]	36x30 [2.5]
	(0.0109, 0.0109)	(0.0145, 0.0109)	(0.0085, 0.0078, 0.0052)	(0.0085, 0.0078, 0.0052)
14	42x36 [2]	42x36 [2]	36x30 [2.5]	36x30 [2.5]
	(0.0104, 0.0109)	(0.0125, 0.0109)	(0.0085, 0.0086, 0.0052)	(0.0085, 0.0086, 0.0052)
13	42x36 [2]	42x36 [2]	36x30 [2]	36x30 [2]
42	(0.0104, 0.0109)	(0.0125, 0.0109)	(0.0093, 0.0086, 0.0065)	(0.0093, 0.0086, 0.0065)
12	42x36 [2]	42x36 [2]	42x30 [2]	42x30 [2]
11	(0.0104, 0.0109)	(0.0171, 0.0109)	(0.0085, 0.0080, 0.0065)	(0.0085, 0.0080, 0.0065)
11	42x36 [2] (0.0125, 0.0109)	42x36 [2] (0.0171, 0.0109)	42x30 [2] (0.0085, 0.0080, 0.0065)	42x30 [2] (0.0085, 0.0080, 0.0065)
10	42x36 [2]	42x36 [2]	42x30 [2.5]	42x30 [2.5]
10	(0.0125, 0.0109)	(0.0171, 0.0109)	(0.0085, 0.0080, 0.0065)	(0.0085, 0.0080, 0.0065)
9	42x36 [2]	42x36 [2]	42x30 [2]	42x30 [2]
	(0.0156, 0.0109)	(0.0171, 0.0109)	(0.0085, 0.0080, 0.0065)	(0.0085, 0.0080, 0.0065)
8	42x36 [2]	42x36 [2]	48x30 [2]	48x30 [2]
	(0.0156, 0.0109)	(0.0171, 0.0109)	(0.0074, 0.0069, 0.0065)	(0.0074, 0.0069, 0.0065)
7	42x36 [2]	42x36 [2]	48x30 [2]	48x30 [2]
	(0.0156, 0.0109)	(0.0171, 0.0109)	(0.0068, 0.0069, 0.0065)	(0.0068, 0.0069, 0.0065)
6	42x36 [2]	42x36 [2]	48x30 [2.5]	48x30 [2.5]
	(0.0156, 0.0109)	(0.0171, 0.0109)	(0.0068, 0.0063, 0.0052)	(0.0068, 0.0063, 0.0052)
5	48x48 [2]	48x48 [2]	48x36 [2]	48x36 [2]
	(0.0138, 0.0102)	(0.0112, 0.0102)	(0.0057, 0.0053, 0.0055)	(0.0057, 0.0053, 0.0055)
4	48x48 [2]	48x48 [2]	48x36 [2]	48x36 [2]
	(0.0138, 0.0102)	(0.0112, 0.0102)	(0.0062, 0.0053, 0.0055)	(0.0062, 0.0053, 0.0055)
3	48x48 [2]	48x48 [2]	48x36 [2]	48x36 [2]
	(0.0138, 0.0102)	(0.0112, 0.0102)	(0.0062, 0.0053, 0.0055)	(0.0062, 0.0053, 0.0055)
2	48x48 [2]	48x48 [2]	48x36 [2.5]	48x36 [2.5]
	(0.0138, 0.0102)	(0.0112, 0.0102)	(0.0057, 0.0048, 0.0044)	(0.0057, 0.0048, 0.0044)
1	48x48 [2]	48x48 [2]	48x36 [2.5]	48x36 [2.5]
	(0.0206, 0.0123)	(0.0112, 0.0102)	(0.0052, 0.0043, 0.0044)	(0.0052, 0.0043, 0.0044)

# 20-Story Special RCMF Design Summary: 1.5% Drift Limit

	Columns depth x width [tie spacing] $(\rho_{total}, \rho_{sh})$		<b>Beams</b> depth x width [hoop spacing] (ρ <sub>top</sub> , ρ <sub>bot</sub> , ρ <sub>sh</sub> )	
Level	Exterior	Interior	Exterior	Interior
20	36x30 [2.5]	36x30 [2.5]	36x30 [4.5]	36x30 [4.5]
	(0.0102, 0.0105)	(0.0116, 0.0105)	(0.0061, 0.0036, 0.0029)	(0.0061, 0.0036, 0.0029)
19	36x30 [2.5]	36x30 [2.5]	36x30 [4]	36x30 [4]
	(0.0102, 0.0105)	(0.0116, 0.0105)	(0.0061, 0.0036, 0.0033)	(0.0061, 0.0036, 0.0033)
18	36x30 [2.5]	36x30 [2.5]	36x30 [4]	36x30 [4]
	(0.0102, 0.0105)	(0.0116, 0.0105)	(0.0061, 0.0036, 0.0033)	(0.0061, 0.0036, 0.0033)
17	36x30 [2.5]	36x30 [2.5]	36x30 [4]	36x30 [4]
	(0.0102, 0.0105)	(0.0116, 0.0105)	(0.0061, 0.0036, 0.0033)	(0.0061, 0.0036, 0.0033)
16	42x30 [2.5]	42x30 [2.5]	42x30 [3.5]	42x30 [3.5]
	(0.0112, 0.0105)	(0.0112, 0.0105)	(0.0056, 0.0035, 0.0037)	(0.0056, 0.0035, 0.0037)
15	42x30 [2.5]	42x30 [2.5]	42x30 [3.5]	42x30 [3.5]
	(0.0112, 0.0105)	(0.0112, 0.0105)	(0.0056, 0.0041, 0.0037)	(0.0056, 0.0041, 0.0037)
14	42x30 [2.5]	42x30 [2.5]	42x30 [3.5]	42x30 [3.5]
	(0.0112, 0.0105)	(0.0112, 0.0105)	(0.0056, 0.0041, 0.0037)	(0.0056, 0.0041, 0.0037)
13	42x30 [2.5]	42x30 [2.5]	42x30 [3.5]	42x30 [3.5]
	(0.0112, 0.0105)	(0.0137, 0.0105)	(0.0056, 0.0041, 0.0037)	(0.0056, 0.0041, 0.0037)
12	42x30 [2.5]	42x30 [2.5]	48x30 [3]	48x30 [3]
	(0.0112, 0.0105)	(0.0137, 0.0105)	(0.0057, 0.0040, 0.0044)	(0.0057, 0.0040, 0.0044)
11	42x30 [2.5]	42x30 [2.5]	48x30 [3]	48x30 [3]
	(0.0112, 0.0105)	(0.0137, 0.0105)	(0.0057, 0.0040, 0.0044)	(0.0057, 0.0040, 0.0044)
10	42x30 [2.5]	42x30 [2.5]	48x30 [3]	48x30 [3]
	(0.0112, 0.0105)	(0.0137, 0.0105)	(0.0057, 0.0040, 0.0044)	(0.0057, 0.0040, 0.0044)
9	42x30 [2.5]	42x30 [2.5]	48x30 [3]	48x30 [3]
	(0.0112, 0.0105)	(0.0137, 0.0105)	(0.0057, 0.0040, 0.0044)	(0.0057, 0.0040, 0.0044)
8	42x30 [2.5]	42x30 [2.5]	48x30 [3]	48x30 [3]
_	(0.0125, 0.0105)	(0.0150, 0.0105)	(0.0057, 0.0046, 0.0044)	(0.0057, 0.0046, 0.0044)
7	42x30 [2.5]	42x30 [2.5]	48x30 [3]	48x30 [3]
	(0.0125, 0.0105)	(0.0150, 0.0105)	(0.0057, 0.0046, 0.0044)	(0.0057, 0.0046, 0.0044)
6	42x30 [2.5]	42x30 [2.5]	48x30 [3]	48x30 [3]
-	(0.0137, 0.0105)	(0.0150, 0.0105)	(0.0057, 0.0046, 0.0044)	(0.0057, 0.0046, 0.0044)
5	42x30 [2.5]	42x30 [2.5]	48x30 [3]	48x30 [3]
4	(0.0137, 0.0105)	(0.0150, 0.0105)	(0.0057, 0.0046, 0.0044)	(0.0057, 0.0046, 0.0044)
4	42x36 [2]	42x36 [2]	48x30 [3]	48x30 [3]
3	(0.0125, 0.0109) 42x36 [2]	(0.0125, 0.0109) 42x36 [2]	(0.0057, 0.0040, 0.0044) 48x30 [3]	(0.0057, 0.0040, 0.0044) 48x30 [3]
3	(0.0125, 0.0109)	(0.0125, 0.0109)	(0.0057, 0.0040, 0.0044)	(0.0057, 0.0040, 0.0044)
2	42x36 [2]	42x36 [2]	48x30 [3]	48x30 [3]
۷	(0.0152, 0.0109)	(0.0125, 0.0109)	(0.0057, 0.0040, 0.0044)	(0.0057, 0.0040, 0.0044)
1	42x36 [2]	42x36 [2]	48x30 [3]	48x30 [3]
1	(0.0179, 0.0109)	(0.0125, 0.0109)	(0.0057, 0.0040, 0.0044)	(0.0057, 0.0040, 0.0044)
	(0.0173, 0.0103)	(0.0123, 0.0103)	(0.0037, 0.0040, 0.0044)	(0.0037, 0.0040, 0.0044)

# 20-Story Special RCMF Design Summary: 1% Drift Limit

	Columns		Beams	
	depth x width [tie spacing]		depth x width [hoop spacing]	
	(ρtotal , ρsh)		(ρ <sub>top</sub> , ρ <sub>bot</sub> , ρ <sub>sh</sub> )	
Level	Exterior	Interior	Exterior	Interior
20	48x36 [2]	48x36 [2]	42x30 [3.5]	42x30 [3.5]
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0056, 0.0035, 0.0037)	(0.0056, 0.0035, 0.0037)
19	48x36 [2]	48x36 [2]	42x30 [3.5]	42x30 [3.5]
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0056, 0.0035, 0.0037)	(0.0056, 0.0035, 0.0037)
18	48x36 [2]	48x36 [2]	42x30 [3.5]	42x30 [3.5]
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0056, 0.0035, 0.0037)	(0.0056, 0.0035, 0.0037)
17	48x36 [2]	48x36 [2]	42x30 [3.5]	42x30 [3.5]
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0056, 0.0035, 0.0037)	(0.0056, 0.0035, 0.0037)
16	48x36 [2]	48x36 [2]	48x30 [3]	48x30 [3]
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0057, 0.0040, 0.0044)	(0.0057, 0.0040, 0.0044)
15	48x36 [2]	48x36 [2]	48x30 [3]	48x30 [3]
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0057, 0.0040, 0.0044)	(0.0057, 0.0040, 0.0044)
14	48x36 [2]	48x36 [2]	48x30 [3]	48x30 [3]
10	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0057, 0.0040, 0.0044)	(0.0057, 0.0040, 0.0044)
13	48x36 [2]	48x36 [2]	48x30 [3]	48x30 [3]
12	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0057, 0.0040, 0.0044)	(0.0057, 0.0040, 0.0044)
12	48x36 [2]	48x36 [2]	54x30 [3]	54x30 [3]
11	(0.0109, 0.0109) 48x36 [2]	(0.0109, 0.0109) 48x36 [2]	(0.0055, 0.0036, 0.0044) 54x30 [3]	(0.0055, 0.0036, 0.0044) 54x30 [3]
11	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0055, 0.0036, 0.0044)	(0.0055, 0.0036, 0.0044)
10	48x36 [2]	48x36 [2]	54x30 [3]	54x30 [3]
10	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0055, 0.0036, 0.0044)	(0.0055, 0.0036, 0.0044)
9	48x36 [2]	48x36 [2]	54x30 [3]	54x30 [3]
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0055, 0.0036, 0.0044)	(0.0055, 0.0036, 0.0044)
8	48x36 [2]	48x36 [2]	54x30 [3]	54x30 [3]
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0055, 0.0036, 0.0044)	(0.0055, 0.0036, 0.0044)
7	48x36 [2]	48x36 [2]	54x30 [3]	54x30 [3]
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0055, 0.0036, 0.0044)	(0.0055, 0.0036, 0.0044)
6	48x36 [2]	48x36 [2]	54x30 [3]	54x30 [3]
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0055, 0.0036, 0.0044)	(0.0055, 0.0036, 0.0044)
5	48x36 [2]	48x36 [2]	54x30 [3]	54x30 [3]
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0055, 0.0036, 0.0044)	(0.0055, 0.0036, 0.0044)
4	48x36 [2]	48x36 [2]	54x30 [3]	54x30 [3]
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0055, 0.0036, 0.0044)	(0.0055, 0.0036, 0.0044)
3	48x36 [2]	48x36 [2]	54x30 [3]	54x30 [3]
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0055, 0.0036, 0.0044)	(0.0055, 0.0036, 0.0044)
2	48x36 [2]	48x36 [2]	54x30 [3]	54x30 [3]
	(0.0131, 0.0109)	(0.0109, 0.0109)	(0.0055, 0.0036, 0.0044)	(0.0055, 0.0036, 0.0044)
1	48x36 [2]	48x36 [2]	54x30 [3]	54x30 [3]
	(0.0154, 0.0109)	(0.0109, 0.0109)	(0.0055, 0.0036, 0.0044)	(0.0055, 0.0036, 0.0044)

# 20-Story Special RCMF Design Summary: Risk Category IV

	Columns depth x width [tie spacing]		Beams depth x width [hoop spacing]		
	(p <sub>tota</sub>	ι <b>,</b> ρsh)	(ρ <sub>top</sub> , ρ	(ρ <sub>top</sub> , ρ <sub>bot</sub> , ρ <sub>sh</sub> )	
Level	Exterior	Interior	Exterior	Interior	
20	48x36 [2]	48x36 [2]	42x30 [3.5]	42x30 [3.5]	
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0056, 0.0035, 0.0037)	(0.0056, 0.0035, 0.0037)	
19	48x36 [2]	48x36 [2]	42x30 [3.5]	42x30 [3.5]	
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0056, 0.0035, 0.0037)	(0.0056, 0.0035, 0.0037)	
18	48x36 [2]	48x36 [2]	42x30 [3.5]	42x30 [3.5]	
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0056, 0.0035, 0.0037)	(0.0056, 0.0035, 0.0037)	
17	48x36 [2]	48x36 [2]	42x30 [3.5]	42x30 [3.5]	
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0056, 0.0035, 0.0037)	(0.0056, 0.0035, 0.0037)	
16	48x36 [2]	48x36 [2]	48x30 [3]	48x30 [3]	
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0057, 0.0040, 0.0044)	(0.0057, 0.0040, 0.0044)	
15	48x36 [2]	48x36 [2]	48x30 [3]	48x30 [3]	
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0057, 0.0040, 0.0044)	(0.0057, 0.0040, 0.0044)	
14	48x36 [2]	48x36 [2]	48x30 [3]	48x30 [3]	
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0057, 0.0046, 0.0044)	(0.0057, 0.0046, 0.0044)	
13	48x36 [2]	48x36 [2]	48x30 [3]	48x30 [3]	
	(0.0109, 0.0109)	(0.0109, 0.0109)	(0.0057, 0.0046, 0.0044)	(0.0057, 0.0046, 0.0044)	
12	48x36 [2]	48x36 [2]	54x30 [2.5]	54x30 [2.5]	
4.4	(0.0109, 0.0109)	(0.0131, 0.0109)	(0.0055, 0.0046, 0.0052)	(0.0055, 0.0046, 0.0052)	
11	48x36 [2]	48x36 [2]	54x30 [2.5]	54x30 [2.5]	
10	(0.0109, 0.0109)	(0.0131, 0.0109)	(0.0055, 0.0046, 0.0052)	(0.0055, 0.0046, 0.0052)	
10	48x36 [2]	48x36 [2]	54x30 [2.5]	54x30 [2.5]	
9	(0.0109, 0.0109)	(0.0131, 0.0109)	(0.0055, 0.0046, 0.0052)	(0.0055, 0.0046, 0.0052)	
9	48x36 [2]	48x36 [2]	54x30 [2.5]	54x30 [2.5] (0.0055, 0.0046, 0.0052)	
8	(0.0109, 0.0109) 48x36 [2]	(0.0131, 0.0109) 48x36 [2]	(0.0055, 0.0046, 0.0052) 54x30 [2.5]	54x30 [2.5]	
8	(0.0118, 0.0109)	(0.0131, 0.0109)	(0.0055, 0.0046, 0.0052)	(0.0055, 0.0046, 0.0052)	
7	48x36 [2]	48x36 [2]	54x30 [2.5]	54x30 [2.5]	
,	(0.0118, 0.0109)	(0.0131, 0.0109)	(0.0055, 0.0051, 0.0052)	(0.0055, 0.0051, 0.0052)	
6	48x36 [2]	48x36 [2]	54x30 [2.5]	54x30 [2.5]	
	(0.0150, 0.0109)	(0.0131, 0.0109)	(0.0055, 0.0051, 0.0052)	(0.0055, 0.0051, 0.0052)	
5	48x36 [2]	48x36 [2]	54x30 [2.5]	54x30 [2.5]	
-	(0.0150, 0.0109)	(0.0131, 0.0109)	(0.0055, 0.0051, 0.0052)	(0.0055, 0.0051, 0.0052)	
4	48x36 [2]	48x36 [2]	54x30 [2.5]	54x30 [2.5]	
	(0.0150, 0.0136)	(0.0131, 0.0109)	(0.0055, 0.0051, 0.0052)	(0.0055, 0.0051, 0.0052)	
3	48x36 [2]	48x36 [2]	54x30 [2.5]	54x30 [2.5]	
	(0.0150, 0.0136)	(0.0131, 0.0109)	(0.0055, 0.0046, 0.0052)	(0.0055, 0.0046, 0.0052)	
2	48x48 [2]	48x48 [2]	54x36 [2.5]	54x36 [2.5]	
	(0.0142, 0.0102)	(0.0107, 0.0102)	(0.0054, 0.0038, 0.0044)	(0.0054, 0.0038, 0.0044)	
1	48x48 [2]	48x48 [2]	54x36 [2.5]	54x36 [2.5]	
	(0.0180, 0.0102)	(0.0107, 0.0102)	(0.0054, 0.0038, 0.0044)	(0.0054, 0.0038, 0.0044)	