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

20-Story Special RCMF Design Summary: Ie = 1.25

	Columns depth x width [tie spacing] (ρ_{total} , ρ_{sh})		**Beams** depth x width [hoop spacing] (ρ_{top} , ρ_{bot} , ρ_{sh})	
Level	**Exterior**	**Interior**	**Exterior**	**Interior**
20	36x30 [2.5] (0.0102, 0.0105)	36x30 [2.5] (0.0116, 0.0105)	36x30 [4.5] (0.0061, 0.0036, 0.0029)	36x30 [4.5] (0.0061, 0.0036, 0.0029)
19	36x30 [2.5] (0.0102, 0.0105)	36x30 [2.5] (0.0116, 0.0105)	36x30 [4] (0.0061, 0.0036, 0.0033)	36x30 [4] (0.0061, 0.0036, 0.0033)
18	36x30 [2.5] (0.0102, 0.0105)	36x30 [2.5] (0.0116, 0.0105)	36x30 [4] (0.0061, 0.0036, 0.0033)	36x30 [4] (0.0061, 0.0036, 0.0033)
17	36x30 [2.5] (0.0102, 0.0105)	36x30 [2.5] (0.0116, 0.0105)	36x30 [3.5] (0.0061, 0.0048, 0.0037)	36x30 [3.5] (0.0061, 0.0048, 0.0037)
16	36x30 [2.5] (0.0102, 0.0105)	36x30 [2.5] (0.0145, 0.0105)	36x30 [3.5] (0.0067, 0.0054, 0.0037)	36x30 [3.5] (0.0067, 0.0054, 0.0037)
15	36x30 [2.5] (0.0102, 0.0105)	36x30 [2.5] (0.0175, 0.0105)	36x30 [3] (0.0077, 0.0063, 0.0044)	36x30 [3] (0.0077, 0.0063, 0.0044)
14	42x30 [2.5] (0.0112, 0.0105)	42x30 [2.5] (0.0150, 0.0105)	36x30 [2.5] (0.0077, 0.0070, 0.0052)	36x30 [2.5] (0.0077, 0.0070, 0.0052)
13	42x30 [2.5] (0.0112, 0.0105)	42x30 [2.5] (0.0150, 0.0105)	36x30 [2.5] (0.0077, 0.0070, 0.0052)	36x30 [2.5] (0.0077, 0.0070, 0.0052)
12	42x30 [2.5] (0.0112, 0.0105)	42x30 [2.5] (0.0150, 0.0105)	42x30 [2.5] (0.0072, 0.0066, 0.0052)	42x30 [2.5] (0.0072, 0.0066, 0.0052)
11	42x30 [2.5] (0.0112, 0.0105)	42x30 [2.5] (0.0150, 0.0105)	42x30 [2.5] (0.0072, 0.0066, 0.0052)	42x30 [2.5] (0.0072, 0.0066, 0.0052)
10	42x30 [2.5] (0.0125, 0.0105)	42x30 [2.5] (0.0150, 0.0105)	42x30 [2.5] (0.0072, 0.0066, 0.0052)	42x30 [2.5] (0.0072, 0.0066, 0.0052)
9	42x30 [2.5] (0.0125, 0.0105)	42x30 [2.5] (0.0150, 0.0105)	42x30 [2.5] (0.0072, 0.0066, 0.0052)	42x30 [2.5] (0.0072, 0.0066, 0.0052)
8	42x36 [2] (0.0125, 0.0109)	42x36 [2] (0.0135, 0.0109)	42x30 [2] (0.0079, 0.0073, 0.0065)	42x30 [2] (0.0079, 0.0073, 0.0065)
7	42x36 [2] (0.0125, 0.0109)	42x36 [2] (0.0135, 0.0109)	42x30 [2] (0.0079, 0.0073, 0.0065)	42x30 [2] (0.0079, 0.0073, 0.0065)
6	42x36 [2] (0.0145, 0.0109)	42x36 [2] (0.0135, 0.0109)	42x30 [2] (0.0079, 0.0073, 0.0065)	42x30 [2] (0.0079, 0.0073, 0.0065)
5	42x36 [2] (0.0145, 0.0109)	42x36 [2] (0.0135, 0.0109)	42x30 [2] (0.0079, 0.0073, 0.0065)	42x30 [2] (0.0079, 0.0073, 0.0065)
4	42x36 [2] (0.0145, 0.0109)	42x36 [2] (0.0135, 0.0109)	42x30 [2] (0.0079, 0.0073, 0.0065)	42x30 [2] (0.0079, 0.0073, 0.0065)
3	42x36 [2] (0.0156, 0.0109)	42x36 [2] (0.0135, 0.0109)	42x30 [2.5] (0.0079, 0.0066, 0.0052)	42x30 [2.5] (0.0079, 0.0066, 0.0052)
2	42x42 [2] (0.0142, 0.0117)	42x42 [2] (0.0116, 0.0117)	42x36 [2.5] (0.0066, 0.0055, 0.0044)	42x36 [2.5] (0.0066, 0.0055, 0.0044)
1	42x42 [2] (0.0223, 0.0117)	42x42 [2] (0.0125, 0.0117)	42x36 [3] (0.0055, 0.0044, 0.0036)	42x36 [3] (0.0055, 0.0044, 0.0036)

20-Story Special RCMF Design Summary: Ie = 1.5

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

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

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

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

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

20-Story Special RCMF Design Summary: Risk Category IV

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