



Appendix D
Structural Analysis

Comparison of actual design to RAM Steel outputs for model of second floor roof joists.

Second Floor Roof Structural Design (Joists)

Joist No.	Actual Size	RAM Design (Original Roof)	RAM Design (Green Roof)	OK?
8	W 24 x 68	W 16 x 31	W 16 x 36	✓
9	W 24 x 68	W 12 x 26	W 18 x 35	✓
10	W 24 x 68	W 16 x 31	W 6 x 36	✓
11	W 24 x 68	W 14 x 22	W 16 x 31	✓
12	W 24 x 68	W 14 x 22	W 16 x 31	✓
13	W 24 x 68	W 14 x 22	W 16 x 31	✓
14	W 24 x 68	W 16 x 26	W 18 x 35	✓
15	W 24 x 68	W 12 x 19	W 16 x 26	✓
16	W 24 x 68	W 12 x 19	W 16 x 26	✓
17	W 24 x 68	W 12 x 19	W 16 x 26	✓
18	W 24 x 68	W 14 x 22	W 16 x 31	✓
19	W 24 x 55	W 14 x 22	W 12 x 26	✓
20	W 16 x 51	W 8 x 10	W 8 x 10	✓
21	W 16 x 31	W 10 x 12	W 12 x 14	✓
22	W 22 x 84	W 12 x 14	W 12 x 19	✓
23	W 21 x 44	W 10 x 12	W 12 x 14	✓
24	W 21 x 44	W 10 x 12	W 12 x 14	✓
25	W 21 x 44	W 8 x 10	W 12 x 14	✓
26	W 21 x 44	W 8 x 10	W 8 x 10	✓
27	W 16 x 31	W 10 x 12	W 12 x 14	✓
28	W 16 x 51	W 8 x 10	W 8 x 10	✓
29	W 18 x 46	W 8 x 10	W 8 x 10	✓
30	W 12 x 16	W 8 x 10	W 8 x 10	✓
31	W 12 x 14	W 8 x 10	W 8 x 10	✓
32	W 12 x 14	W 8 x 10	W 8 x 10	✓
33	W 12 x 14	W 8 x 10	W 8 x 10	✓
34	W 12 x 14	W 8 x 10	W 8 x 10	✓
35	W 14 x 22	W 8 x 10	W 8 x 10	✓
36	W 12 x 14	W 8 x 10	W 8 x 10	✓
37	W 12 x 14	W 8 x 10	W 8 x 10	✓
38	W 12 x 14	W 8 x 10	W 8 x 10	✓
39	W 12 x 14	W 8 x 10	W 8 x 10	✓
40	W 12 x 14	W 8 x 10	W 8 x 10	✓
41	W 12 x 14	W 8 x 10	W 8 x 10	✓
42	W 12 x 14	W 8 x 10	W 8 x 10	✓
43	W 12 x 14	W 8 x 10	W 8 x 10	✓
44	W 18 x 15	W 8 x 10	W 8 x 10	✓
45	W 24 x 55	W 14 x 22	W 12 x 26	✓
46	W 24 x 55	W 8 x 10	W 8 x 10	✓

Second Floor Roof Structural Design (Joists)

Joist No.	Actual Size	RAM Design (Original Roof)	RAM Design (Green Roof)	OK?
47	W 21 x 50	W 12 x 14	W 12 x 19	✓
48	W 18 x 35	W 14 x 22	W 12 x 26	✓
49	W 18 x 35	W 12 x 19	W 14 x 26	✓
50	W 18 x 35	W 12 x 19	W 16 x 26	✓
51	W 18 x 35	W 12 x 16	W 14 x 22	✓
52	W 18 x 35	W 12 x 16	W 14 x 22	✓
53	W 18 x 35	W 12 x 14	W 14 x 22	✓
54	W 18 x 35	W 12 x 16	W 14 x 22	✓
55	W 24 x 55	W 10 x 12	W 12 x 19	✓
56	W 24 x 55	W 10 x 12	W 12 x 19	✓
57	W 24 x 55	W 10 x 12	W 12 x 16	✓
58	W 24 x 55	W 10 x 12	W 12 x 14	✓
59	W 24 x 55	W 8 x 10	W 12 x 14	✓
60	W 24 x 55	W 8 x 10	W 12 x 14	✓
61	W 24 x 55	W 10 x 12	W 12 x 16	✓
62	20 K 4	14 K 1	16 K 2	✓
63	20 K 4	12 K 1	16 K 2	✓
64	20 K 4	12 K 1	16 K 2	✓
65	20 K 4	12 K 1	16 K 2	✓
66	16 K 3	12 K 1	16 K 2	✓
67	16 K 3	12 K 1	14 K 1	✓
68	16 K 3	10 K 1	14 K 1	✓
69	16 K 3	10 K 1	14 K 1	✓
70	14 K 1	10 K 1	12 K 1	✓
71	14 K 1	10 K 1	12 K 1	✓
72	14 K 1	10 K 1	12 K 1	✓
73	14 K 1	10 K 1	12 K 1	✓
74	12 K 1	10 K 1	10 K 1	✓
75	12 K 1	10 K 1	10 K 1	✓
76	12 K 1	10 K 1	10 K 1	✓
77	12 K 1	10 K 1	10 K 1	✓
78	10 K 1	10 K 1	10 K 1	✓
79	10 K 1	10 K 1	10 K 1	✓
80	10 K 1	10 K 1	10 K 1	✓
81	10 K 1	10 K 1	10 K 1	✓
82	10 K 1	10 K 1	10 K 1	✓
83	10 K 1	10 K 1	10 K 1	✓
84	10 K 1	10 K 1	10 K 1	✓
85	10 K 1	10 K 1	10 K 1	✓

Second Floor Roof Structural Design (Joists)

Joist No.	Actual Size	RAM Design (Original Roof)	RAM Design (Green Roof)	OK?
86	14 K 1	10 K 1	12 K 1	✓
87	14 K 1	10 K 1	12 K 1	✓
88	14 K 1	10 K 1	12 K 1	✓
89	14 K 1	10 K 1	12 K 1	✓
90	12 K 1	10 K 1	12 K 1	✓
91	12 K 1	10 K 1	12 K 1	✓
92	12 K 1	10 K 1	12 K 1	✓
93	12 K 1	10 K 1	10 K 1	✓
94	12 K 1	10 K 1	10 K 1	✓
95	12 K 1	10 K 1	10 K 1	✓
96	12 K 1	10 K 1	10 K 1	✓
97	12 K 1	10 K 1	10 K 1	✓
98	12 K 1	10 K 1	10 K 1	✓
99	12 K 1	10 K 1	10 K 1	✓
100	12 K 1	10 K 1	10 K 1	✓
101	12 K 1	10 K 1	10 K 1	✓
102	10 K 1	10 K 1	10 K 1	✓
103	10 K 1	10 K 1	10 K 1	✓
104	10 K 1	10 K 1	10 K 1	✓
105	10 K 1	10 K 1	10 K 1	✓
106	10 K 1	10 K 1	10 K 1	✓
107	10 K 1	10 K 1	10 K 1	✓
108	10 K 1	10 K 1	10 K 1	✓
109	10 K 1	10 K 1	10 K 1	✓
110	10 K 1	20 K 3	22 K 5	✓
111	10 K 1	20 K 3	22 K 5	✓
112	10 K 1	20 K 3	22 K 5	✓
113	10 K 1	20 K 3	22 K 5	✓
114	10 K 1	20 K 3	22 K 5	✓
115	10 K 1	20 K 3	22 K 5	✓
116	10 K 1	20 K 3	22 K 5	✓
117	10 K 1	20 K 3	22 K 5	✓
118	10 K 1	20 K 3	22 K 5	✓
119	10 K 1	20 K 3	22 K 5	✓
120	10 K 1	20 K 3	22 K 5	✓
121	10 K 1	20 K 3	22 K 5	✓
122	10 K 1	18 K 3	22 K 4	✓
123	10 K 1	18 K 3	22 K 4	✓
124	10 K 1	18 K 3	22 K 4	✓

Second Floor Roof Structural Design (Joists)

Joist No.	Actual Size	RAM Design (Original Roof)	RAM Design (Green Roof)	OK?
125	10 K 1	18 K 3	22 K 4	✓
126	10 K 1	18 K 3	22 K 4	✓
127	10 K 1	18 K 3	22 K 4	✓
128	10 K 1	18 K 3	22 K 4	✓
129	10 K 1	10 K 1	10 K 1	✓
130	10 K 1	10 K 1	10 K 1	✓
131	10 K 1	10 K 1	10 K 1	✓
132	10 K 1	10 K 1	10 K 1	✓
133	10 K 1	10 K 1	10 K 1	✓
134	10 K 1	10 K 1	10 K 1	✓
135	10 K 1	10 K 1	10 K 1	✓
136	10 K 1	10 K 1	10 K 1	✓
137	10 K 1	10 K 1	10 K 1	✓
138	10 K 1	10 K 1	10 K 1	✓
139	10 K 1	10 K 1	10 K 1	✓
140	10 K 1	10 K 1	10 K 1	✓
141	10 K 1	10 K 1	10 K 1	✓
142	10 K 1	10 K 1	10 K 1	✓
143	W 16 x 31	W 10 x 12	W 12 x 14	✓
144	W 16 x 31	W 10 x 12	W 12 x 14	✓
145	W 16 x 31	W 10 x 12	W 12 x 14	✓
146	W 16 x 31	W 10 x 12	W 12 x 14	✓
147	W 16 x 31	W 10 x 12	W 12 x 14	✓
148	W 16 x 31	W 10 x 12	W 12 x 14	✓
149	W 16 x 31	W 10 x 12	W 12 x 14	✓
150	W 16 x 31	W 10 x 12	W 12 x 14	✓
155	W 16 x 31	W 10 x 12	W 12 x 14	✓
156	W 16 x 31	W 10 x 12	W 12 x 14	✓
157	W 16 x 31	W 12 x 16	W 14 x 22	✓
158	W 16 x 31	W 12 x 16	W 14 x 22	✓

Comparison of actual design to RAM Steel outputs for model of thrid floor roof joists.

Third Floor Roof Structural Design (Joists)

Joist No.	Actual Size	RAM Design (Original Roof)	RAM Design (Green Roof)	OK?
1	W 18 x 35	W 12 x 14	W 12 x 19	✓
2	W 18 x 35	W 12 x 14	W 12 x 19	✓
3	W 18 x 35	W 12 x 14	W 12 x 19	✓
4	W 18 x 35	W 12 x 14	W 12 x 19	✓
5	W 14 x 22	W 8 x 10	W 10 x 12	✓
6	W 18 x 35	W 12 x 14	W 12 x 19	✓
7	W 14 x 22	W 8 x 10	W 8 x 10	✓
9	W 18 x 35	W 12 x 14	W 14 x 22	✓
10	W 18 x 35	W 12 x 14	W 14 x 22	✓
11	W 18 x 35	W 12 x 14	W 14 x 22	✓
12	W 18 x 35	W 12 x 14	W 14 x 22	✓
13	W 14 x 22	W 8 x 10	W 8 x 10	✓
14	W 24 x 22	W 8 x 10	W 8 x 10	✓
15	W 21 x 50	W 8 x 10	W 8 x 10	✓
16	W 16 x 26	W 14 x 22	W 16 x 31	✓
17	W 18 x 40	W 14 x 22	W 16 x 31	✓
18	W 27 x 94	W 16 x 31	W 16 x 36	✓
19	W 24 x 55	W 14 x 22	W 16 x 26	✓
20	W 24 x 55	W 14 x 22	W 16 x 26	✓
23	W 18 x 35	W 14 x 22	W 16 x 26	✓
24	W 18 x 35	W 14 x 22	W 16 x 26	✓
25	W 18 x 35	W 12 x 14	W 12 x 19	✓
26	W 18 x 35	W 12 x 14	W 12 x 19	✓
27	W 14 x 22	W 8 x 10	W 8 x 10	✓
28	W 18 x 35	W 14 x 22	W 16 x 31	✓
29	W 18 x 35	W 14 x 22	W 16 x 31	✓
30	W 24 x 84	W 16 x 26	W 18 x 35	✓
31	W 18 x 35	W 16 x 26	W 18 x 35	✓
32	W 18 x 35	W 16 x 26	W 18 x 35	✓
35	W 21 x 50	W 12 x 26	W 18 x 35	✓
36	W 18 x 40	W 12 x 26	W 18 x 35	✓
37	W 18 x 40	W 14 x 22	W 16 x 31	✓
38	W 18 x 40	W 14 x 22	W 16 x 31	✓
39	W 14 x 22	W 8 x 10	W 12 x 14	✓
40	W 16 x 26	W 12 x 19	W 16 x 26	✓
41	W 18 x 35	W 12 x 19	W 16 x 26	✓
42	W 24 x 76	W 12 x 14	W 12 x 16	✓
43	W 16 x 26	W 16 x 31	W 18 x 35	✓
44	W 16 x 26	W 10 x 12	W 12 x 14	✓

Third Floor Roof Structural Design (Joists)

Joist No.	Actual Size	RAM Design (Original Roof)	RAM Design (Green Roof)	OK?
45	W 16 x 26	W 10 x 12	W 12 x 14	✓
46	W 21 x 44	W 12 x 16	W 14 x 22	✓
47	W 24 x 62	W 8 x 10	W 12 x 14	✓
48	W 24 x 76	W 12 x 16	W 12 x 19	✓
49	W 12 x 40	W 8 x 10	W 10 x 12	✓
50	W 21 x 44	W 8 x 10	W 8 x 10	✓
51	W 21 x 44	W 8 x 10	W 12 x 14	✓
52	W 21 x 44	W 12 x 14	W 12 x 16	✓
53	W 16 x 31	W 8 x 10	W 8 x 10	✓
54	W 21 x 44	W 8 x 10	W 12 x 14	✓
55	W 21 x 44	W 8 x 10	W 12 x 14	✓
56	W 21 x 44	W 8 x 10	W 12 x 14	✓
57	W 14 x 22	W 8 x 10	W 8 x 10	✓
58	W 21 x 50	W 8 x 10	W 8 x 10	✓
59	W 21 x 50	W 8 x 10	W 8 x 10	✓
60	W 21 x 50	W 8 x 10	W 8 x 10	✓
61	W 16 x 26	W 8 x 10	W 8 x 10	✓
62	W 21 x 44	W 8 x 10	W 12 x 14	✓
63	W 24 x 68	W 12 x 16	W 12 x 19	✓
64	W 21 x 44	W 8 x 10	W 12 x 14	✓
65	W 24 x 68	W 12 x 16	W 12 x 19	✓
68	W 24 x 55	W 10 x 12	W 12 x 19	✓
69	W 21 x 44	W 12 x 16	W 12 x 19	✓
70	W 24 x 55	W 10 x 12	W 12 x 19	✓
71	W 21 x 44	W 12 x 16	W 12 x 19	✓
72	W 24 x 55	W 10 x 12	W 12 x 19	✓
73	W 21 x 44	W 12 x 14	W 12 x 16	✓
74	W 24 x 55	W 10 x 12	W 12 x 19	✓
75	W 21 x 44	W 8 x 10	W 12 x 14	✓
76	W 24 x 55	W 10 x 12	W 12 x 16	✓
77	W 21 x 44	W 8 x 10	W 12 x 14	✓
78	24 K 6	18 K 3	24 K 4	✓
79	24 K 6	18 K 3	24 K 4	✓
80	24 K 6	18 K 3	24 K 4	✓
81	24 K 6	18 K 3	24 K 4	✓
82	24 K 6	18 K 3	24 K 4	✓
83	24 K 6	18 K 3	24 K 4	✓
84	24 K 6	18 K 3	24 K 4	✓
85	24 K 6	18 K 3	24 K 4	✓

Third Floor Roof Structural Design (Joists)

Joist No.	Actual Size	RAM Design (Original Roof)	RAM Design (Green Roof)	OK?
86	24 K 6	18 K 3	24 K 4	✓
87	24 K 6	18 K 3	24 K 4	✓
88	24 K 6	18 K 3	24 K 4	✓
89	24 K 6	18 K 3	24 K 4	✓
90	24 K 6	18 K 3	24 K 4	✓
91	24 K 6	18 K 3	24 K 4	✓
92	24 K 6	18 K 3	24 K 4	✓
93	W 24 x 55	W 14 x 22	W 16 x 26	✓
95	W 24 x 68	W 12 x 16	W 12 x 19	✓
96	W 18 x 46	W 16 x 26	W 18 x 35	✓
97	W 18 x 46	W 12 x 26	W 18 x 35	✓
98	W 24 x 55	W 10 x 12	W 12 x 19	✓
99	W 14 x 22	W 8 x 10	W 8 x 10	✓
100	W 14 x 22	W 12 x 14	W 14 x 22	✓
101	28 K 7	22 K 4	24 K 7	✓
102	28 K 7	22 K 4	24 K 7	✓
103	28 K 7	22 K 4	24 K 7	✓
104	28 K 7	22 K 4	24 K 7	✓
105	28 K 7	22 K 4	24 K 7	✓
106	28 K 7	22 K 4	24 K 7	✓
107	28 K 7	22 K 4	24 K 7	✓
108	28 K 7	22 K 4	24 K 7	✓
109	28 K 7	22 K 4	24 K 7	✓
110	28 K 7	22 K 4	24 K 7	✓
111	28 K 7	22 K 4	24 K 7	✓
112	28 K 7	22 K 4	24 K 7	✓
113	28 K 7	22 K 4	24 K 7	✓
114	28 K 7	22 K 4	24 K 7	✓
115	28 K 7	22 K 4	24 K 7	✓
116	24 K 6	18 K 3	24 K 4	✓
117	24 K 6	18 K 3	24 K 4	✓
118	24 K 6	18 K 3	24 K 4	✓
119	24 K 6	18 K 3	24 K 4	✓
120	24 K 6	18 K 3	24 K 4	✓
121	24 K 6	18 K 3	24 K 4	✓
134	24 K 6	18 K 3	24 K 4	✓
135	24 K 6	18 K 3	24 K 4	✓
136	24 K 6	22 K 4	24 K 6	✓
146	24 K 6	18 K 3	24 K 4	✓

Third Floor Roof Structural Design (Joists)

Joist No.	Actual Size	RAM Design (Original Roof)	RAM Design (Green Roof)	OK?
147	24 K 6	18 K 3	4 K 4	✓
148	24 K 6	18 K 3	24 K 4	✓
149	24 K 6	18 K 3	24 K 4	✓
150	24 K 6	18 K 3	24 K 4	✓
151	24 K 6	18 K 3	24 K 4	✓
152	24 K 6	18 K 3	24 K 4	✓
153	24 K 6	18 K 3	24 K 4	✓
154	24 K 6	18 K 3	24 K 4	✓
155	24 K 6	18 K 3	24 K 4	✓
156	24 K 6	18 K 3	24 K 4	✓
157	24 K 6	18 K 3	24 K 4	✓
164	18 K 4	12 K 1	16 K 2	✓
165	18 K 4	12 K 1	16 K 2	✓
166	18 K 4	12 K 1	16 K 2	✓
167	18 K 4	12 K 1	16 K 2	✓
168	18 K 4	12 K 1	16 K 2	✓
169	18 K 4	12 K 1	16 K 2	✓
170	24 K 6	16 K 3	20 K 4	✓
171	24 K 6	16 K 3	20 K 4	✓
172	28 K 7	20 K 3	22 K 6	✓
173	28 K 7	20 K 3	22 K 6	✓
174	W 16 x 31	W 8 x 10	W 10 x 12	✓
175	W 16 x 31	W 8 x 10	W 10 x 12	✓
176	W 18 x 35	W 8 x 10	W 10 x 12	✓
177	W 21 x 44	W 12 x 16	W 12 x 19	✓
178	W 21 x 44	W 12 x 16	W 12 x 19	✓
179	W 21 x 44	W 12 x 16	W 12 x 19	✓
180	W 21 x 44	W 12 x 16	W 12 x 19	✓
181	W 21 x 44	W 12 x 16	W 12 x 19	✓
182	W 21 x 44	W 12 x 16	W 12 x 19	✓
183	W 21 x 44	W 12 x 16	W 12 x 19	✓
184	W 21 x 44	W 12 x 16	W 12 x 19	✓
185	W 21 x 44	W 12 x 16	W 12 x 19	✓
186	W 21 x 44	W 12 x 16	W 12 x 19	✓
187	W 21 x 44	W 12 x 16	W 12 x 19	✓
188	W 21 x 44	W 12 x 16	W 12 x 19	✓
189	W 16 x 26	W 12 x 16	W 12 x 19	✓
190	W 16 x 26	W 12 x 16	W 12 x 19	✓
191	W 16 x 26	W 12 x 16	W 12 x 19	✓

Third Floor Roof Structural Design (Joists)

Joist No.	Actual Size	RAM Design (Original Roof)	RAM Design (Green Roof)	OK?
192	W 16 x 26	W 12 x 16	W 12 x 19	✓
193	W 16 x 26	W 12 x 16	W 12 x 19	✓
194	W 16 x 26	W 12 x 16	W 12 x 19	✓
195	W 16 x 26	W 12 x 16	W 12 x 19	✓
196	W 16 x 26	W 12 x 16	W 12 x 19	✓
197	W 16 x 26	W 12 x 16	W 12 x 19	✓
198	W 21 x 44	W 12 x 16	W 12 x 19	✓
199	W 21 x 44	W 12 x 16	W 12 x 19	✓
200	W 21 x 44	W 12 x 16	W 12 x 19	✓

Comparison of actual design to RAM Steel outputs for model of second floor roof columns.

Second Floor Roof Structural Design (Columns)

Column No.	Actual Size	RAM Design (Original Roof)	RAM Design (Green Roof)	OK?
J 7.5	HSS 12 x 12 x 5/8	HSS 6 x 6 x 3/16	HSS 6 x 6 x 3/16	✓
J 24	W 10 x 60	W 10 x 33	W 10 x 33	✓
J 25	W 10 x 60	W 10 x 33	W 10 x 33	✓
J 26	W 10 x 60	W 10 x 33	W 10 x 33	✓
J 27	W 10 x 60	W 10 x 33	W 10 x 33	✓
J 29	W 10 x 60	W 10 x 33	W 10 x 33	✓
K 21	HSS 10 x 10 x 5/8	HSS 6 x 6 x 3/16	HSS 6 x 6 x 3/16	✓
K 22	HSS 10 x 10 x 5/8	HSS 6 x 6 x 3/16	HSS 6 x 6 x 3/16	✓
K 23	HSS 12 x 12 x 5/8	HSS 6 x 6 x 3/16	HSS 6 x 6 x 3/16	✓
K 24	HSS 12 x 12 x 5/8	HSS 6 x 6 x 3/16	HSS 6 x 6 x 3/16	✓
M 21	W 12 x 65	W 10 x 33	W 10 x 33	✓
M 22	W 12 x 65	W 10 x 33	W 10 x 33	✓
M 23	W 12 x 65	W 10 x 33	W 10 x 33	✓
M 24	W 12 x 65	W 10 x 33	W 10 x 33	✓
M 25	W 12 x 65	W 10 x 33	W 10 x 33	✓
M 26	W 12 x 65	W 10 x 33	W 10 x 33	✓
M 27	W 12 x 65	W 10 x 33	W 10 x 33	✓
M 29	W 12 x 65	W 10 x 33	W 10 x 33	✓
N 21	W 12 x 65	W 10 x 33	W 10 x 33	✓
N 22	HSS 8 x 8 x 1/2	HSS 6 x 6 x 3/16	HSS 6 x 6 x 3/16	✓
N 23	HSS 8 x 8 x 3/8	HSS 6 x 6 x 3/16	HSS 6 x 6 x 3/16	✓
N 24	HSS 8 x 8 x 3/8	HSS 6 x 6 x 3/16	HSS 6 x 6 x 3/16	✓
N 25	HSS 8 x 8 x 3/8	HSS 6 x 6 x 3/16	HSS 6 x 6 x 3/16	✓
N 26	HSS 8 x 8 x 5/16	HSS 6 x 6 x 3/16	HSS 6 x 6 x 3/16	✓
N 27	HSS 8 x 8 x 5/16	HSS 6 x 6 x 3/16	HSS 6 x 6 x 3/16	✓
N 29	HSS 8 x 8 x 5/16	HSS 6 x 6 x 3/16	HSS 6 x 6 x 3/16	✓
O 21	W 10 x 39	W 10 x 33	W 10 x 33	✓
O 22	W 10 x 54	W 10 x 33	W 10 x 33	✓
O 23	W 10 x 54	W 10 x 33	W 10 x 33	✓
O 24	W 10 x 54	W 10 x 33	W 10 x 33	✓
O 25	W 10 x 54	W 10 x 33	W 10 x 33	✓
O 26	W 10 x 54	W 10 x 33	W 10 x 33	✓
O 27	W 10 x 39	W 10 x 33	W 10 x 33	✓
O 29	W 10 x 39	W 10 x 33	W 10 x 33	✓

Comparison of actual design to RAM Steel outputs for model of thrid floor roof columns.

Third Floor Roof Structural Design (Columns)

Column No.	Actual Size	RAM Design (Original Roof)	RAM Design (Green Roof)	OK?
A 5	W 10 x 54	W 10 x 33	W 10 x 33	✓
A 6	W 10 x 60	W 10 x 33	W 10 x 33	✓
A 7	W 10 x 60	W 10 x 33	W 10 x 33	✓
A 8	W 12 x 65	W 10 x 33	W 10 x 33	✓
A 9	W 12 x 65	W 10 x 33	W 10 x 33	✓
A 10	W 12 x 65	W 10 x 33	W 10 x 33	✓
A 11	W 12 x 65	W 10 x 33	W 10 x 33	✓
A 12	W 12 x 54	W 10 x 33	W 10 x 33	✓
B 1	W 10 x 54	W 10 x 33	W 10 x 33	✓
B 2	W 10 x 60	W 10 x 33	W 10 x 33	✓
B 3	W 10 x 60	W 10 x 33	W 10 x 33	✓
B 3.6	W 10 x 54	W 10 x 33	W 10 x 33	✓
B 4	W 10 x 54	W 10 x 33	W 10 x 33	✓
B 4.6	W 10 x 54	W 10 x 33	W 10 x 33	✓
B 5	W 10 x 39	W 10 x 33	W 10 x 33	✓
C 1	W 10 x 54	W 10 x 33	W 10 x 33	✓
C 2	W 12 x 65	W 10 x 33	W 10 x 33	✓
C 3	W 12 x 65	W 10 x 33	W 10 x 33	✓
C 3.6	W 12 x 65	W 10 x 33	W 10 x 33	✓
C 4	W 12 x 65	W 10 x 33	W 10 x 33	✓
C 4.6	W 10 x 60	W 10 x 33	W 10 x 33	✓
C 6	W 12 x 65	W 10 x 33	W 10 x 33	✓
C 7	W 10 x 77	W 10 x 33	W 10 x 33	✓
C 8	W 12 x 87	W 10 x 33	W 10 x 33	✓
C 9	W 12 x 87	W 10 x 33	W 10 x 33	✓
C 10	W 12 x 87	W 10 x 33	W 10 x 33	✓
C 11	W 12 x 87	W 10 x 33	W 10 x 33	✓
C 12	W 12 x 87	W 10 x 33	W 10 x 33	✓
E 1	W 10 x 54	W 10 x 33	W 10 x 33	✓
E 2	W 10 x 54	W 10 x 33	W 10 x 33	✓
E 3	W 12 x 65	W 10 x 33	W 10 x 33	✓
E 3.6	W 12 x 65	W 10 x 33	W 10 x 33	✓
E 4	W 10 x 60	W 10 x 33	W 10 x 33	✓
E 4.6	W 10 x 60	W 10 x 33	W 10 x 33	✓
E 6	W 12 x 65	W 10 x 33	W 10 x 33	✓
E 7	W 12 x 65	W 10 x 33	W 10 x 33	✓
E 8	W 12 x 65	W 10 x 33	W 10 x 33	✓
E 9	W 12 x 65	W 10 x 33	W 10 x 33	✓
E 10	W 12 x 65	W 10 x 33	W 10 x 33	✓
E 11	W 12 x 65	W 10 x 33	W 10 x 33	✓
E 12	W 10 x 54	W 10 x 33	W 10 x 33	✓
H 1	W 10 x 54	W 10 x 33	W 10 x 33	✓
H 2	W 12 x 65	W 10 x 33	W 10 x 33	✓
H 3	W 12 x 87	W 10 x 33	W 10 x 33	✓
H 3.6	W 12 x 87	W 10 x 33	W 10 x 33	✓
I 1	W 10 x 54	W 10 x 33	W 10 x 33	✓
I 2	W 10 x 54	W 10 x 33	W 10 x 33	✓
I 3	W 10 x 54	W 10 x 33	W 10 x 33	✓
I 3.6	W 10 x 54	W 10 x 33	W 10 x 33	✓