

A. Design Details of BRBFs

The frame identifiers are assigned in a manner such that '16S3B-RS-6.10' indicates a frame featuring '16 Storeys and 3 Bays analysed using the Response Spectrum method with a bay span of 6.10 m'.

Table A.1. 4-storey BRBF component details

Storey/ Level	4S3B-RS-6.10			4S3B-RS-9.14			4S3B-RS-12.00		
	A_{c-BRB} (mm ²)	Columns	Beams	A_{c-BRB} (mm ²)	Columns	Beams	A_{c-BRB} (mm ²)	Columns	Beams
4	1290	W14x68	W14X48	1290	W14X82	W14X53	1290	W14x132	W14X132
3	1290	W14x68	W14X48	1613	W14X82	W14X53	2258	W14x132	W14X132
2	1290	W14x132	W14X48	1935	W14X132	W14X53	2903	W14x211	W14X132
1	1613	W14x132	W14X48	2581	W14X132	W14X53	3871	W14x211	W14X132

Table A.2. 8-storey BRBF component details

Storey/ Level	8S3B-RS-6.10			8S3B-RS-9.14			8S3B-RS-12.00		
	A_{c-BRB} (mm ²)	Columns	Beams	A_{c-BRB} (mm ²)	Columns	Beams	A_{c-BRB} (mm ²)	Columns	Beams
8	1290	W14x68	W14X48	1290	W14X82	W14x48	1290	W14x132	W14X74
7	1290	W14x68	W14X48	1290	W14X82	W14x48	1935	W14x132	W14X74
6	1290	W14x74	W14X48	1613	W14x132	W14x48	2581	W14x176	W14X74
5	1290	W14x74	W14X48	1935	W14x132	W14x48	2903	W14x176	W14X74
4	1290	W14x132	W14X48	2581	W14x176	W14X68	3548	W14x233	W14X132
3	1613	W14x132	W14X48	2903	W14x176	W14X68	4194	W14x233	W14X132
2	1613	W14x145	W14X48	3226	W14x233	W14X68	4516	W14X370	W14X132
1	2258	W14x145	W14X48	3871	W14x233	W14X68	5484	W14X370	W14X132

Table A.3. 12-storey BRBF component details.

Storey/ Level	12S3B-RS-6.10			12S3B-RS-9.14			12S3B-RS-12.00		
	A _{c-BRB} (mm ²)	Columns	Beams	A _{c-BRB} (mm ²)	Columns	Beams	A _{c-BRB} (mm ²)	Columns	Beams
12	1290	W14x68	W14X48	1290	W14x68	W14x48	1290	W14x132	W14X74
11	1290	W14x68	W14X48	1290	W14x68	W14x48	1613	W14x132	W14X74
10	1290	W14x74	W14X48	1613	W14x132	W14x48	2258	W14x176	W14X74
9	1290	W14x74	W14X48	1935	W14x132	W14x48	2581	W14x176	W14X74
8	1290	W14x132	W14X48	2258	W14x176	W14X68	3226	W14x233	W14X132
7	1290	W14x132	W14X48	2581	W14x176	W14X68	3548	W14x233	W14X132
6	1613	W14x132	W14X48	2903	W14x211	W14X68	4194	W14X311	W14X132
5	1935	W14x132	W14X48	3226	W14x211	W14X68	4839	W14X311	W14X132
4	1935	W14x176	W14X48	3548	W14x257	W14X82	5161	W14x370	W14X132
3	2258	W14x176	W14X48	3871	W14x257	W14X82	5484	W14x370	W14X132
2	2258	W14x257	W14X48	3871	W14x370	W14X82	5806	W14x550	W14X132
1	2903	W14x257	W14X48	4839	W14x370	W14X82	6774	W14x550	W14X132

Table A.4. 16-storey BRBF component details.

Storey/ Level	16S3B-RS-6.10			16S3B-RS-9.14			16S3B-RS-12.00		
	A _{c-BRB} (mm ²)	Columns	Beams	A _{c-BRB} (mm ²)	Columns	Beams	A _{c-BRB} (mm ²)	Columns	Beams
16	1290	W14x68	W14X48	1290	W14x68	W14x48	1290	W14x132	W14X82
15	1290	W14x68	W14X48	1290	W14x68	W14x48	1935	W14x132	W14X82
14	1290	W14x82	W14X48	1613	W14x132	W14x48	2581	W14x176	W14X82
13	1290	W14x82	W14X48	1935	W14x132	W14x48	2903	W14x176	W14X82
12	1290	W14x132	W14X48	2258	W14x176	W14X68	3548	W14x233	W14X132
11	1290	W14x132	W14X48	2581	W14x176	W14X68	3871	W14x233	W14X132
10	1613	W14x132	W14X48	2903	W14x211	W14X68	4516	W14x311	W14X132
9	1935	W14x132	W14X48	3226	W14x211	W14X68	4839	W14x311	W14X132
8	1935	W14x176	W14X48	3548	W14x257	W14X82	5484	W14x398	W14X132
7	2258	W14x176	W14X48	3871	W14x257	W14X82	5806	W14x398	W14X132
6	2258	W14x211	W14X48	4194	W14x342	W14X82	6452	W14x500	W14X132
5	2581	W14x211	W14X48	4516	W14x342	W14X82	6774	W14x500	W14X132
4	2581	W14x283	W14X48	4839	W14x398	W14X132	7097	W14x605	W14x159
3	2903	W14x283	W14X48	4839	W14x398	W14X132	7419	W14x605	W14x159
2	2903	W14x370	W14X48	5161	W14x550	W14X132	7742	W14x730	W14x159
1	3871	W14x370	W14X48	6129	W14x550	W14X132	8710	W14x730	W14x159