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> JOHN WEIGHT EXECUTIVE OFFICER

Mason Industries, Inc. 2101 W. Crescent Ave. Suite D Anaheim, CA 92801 RESEARCH REPORT: RR 24589 (CSI # 13080)

Expires:August 1, 2024Issued Date:June 1, 2022Code:2020 LABC

GENERAL APPROVAL – Renewal - Ceiling Vibration Isolation Hangers: WHD, WHR, 30 N and HD; Floor Mount Vibration Isolators: FSN, FS, ND, NPS, EAFM, Super W, BR, RBA, SFFS, 21225-2000 and SLF-133; Sway Braces: WIC, DNSB, SCB; Seismic Brackets: SHB, SSBS, SCB, and SCBH; Seismic Spring Isolators: SLR(EBP)-A, SLR(EBP)-B/B2, SSLFH-X, SSLFH-B/B2/C/C2, SLRSO(EBP)-B/B2/1/C2; Seismic Rod Clap: UCC, SLRSO EBP), Z1225, ISC Roof Curb, RSC Roof Curb.

DETAILS

Luke Do

(714) 535-2727

1. WHD

Mason WHD hangers consist of a steel frame containing a neoprene isolation element molded with a rod isolation bushing that passes through the hanger frame. Hangers include eyebolts for bolting or attaching to a suspended ceiling with flat steel straps, wires, rods, steel bolts or steel screws. Maximum allowable dead load on each hanger is as follows:

Туре	Dead Loads for Tensions, $S.F. = 4$
WHD - A	145 lbs.
WHD - B	570 lbs.

2. FSN

Mason FSN mounts include a bell shaped casting with integral lugs to locate reinforcing, and a 2" thick Du Pont Neoprene isolator molded to AASHTO bridge bearing specifications. All castings are tapped to accept 3/4" - 10 jack screws. Maximum allowable dead load on each mount is as follows:

Type Dead Loads for Compression, S.F. = 4

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Re: Vibration Isolation Hangers, Floor Vibration Isolators, Sway Braces and Seismic Brackets

FSN - 1336	2200 lbs.
FSN - 1337	3582 lbs.

3. FS

Mason FS mounts include a threaded outer-casting with integral lugs to locate reinforcing and an inner threaded casting to compress the spring isolator. Mounts also include removable cover plates. Maximum allowable dead load on each mount is as follows:

Туре	Dead Loads for Compression, $S.F. = 4$
FS - B	4461 lbs.
FS - C	3200 lbs.

4. ND

Mason ND mounts consist of a molded cylindrical neoprene mount and mounting plate. All metal surfaces are neoprene covered. Anchor bolt holes are provided in the base plate and a tapped hole is provided at the top. Maximum allowable dead load on the ND-C-Red is 400 lbs. with a safety factor of 4.

5. NPS

Mason NPS Neoprene Partition Supports consist of a molded neoprene isolation bushing with a molded neoprene insert and steel bushing. Maximum dead load on the NPS is 2,375 lbs. with a safety factor of 4.

6. WIC

Mason WIC sway braces or interlocking bent steel members separated by a layer of molded neoprene pad. Maximum live load on the WIC-2 is 182 lbs. with a safety factor of 2.

7. WHR

Mason-WHR neoprene ceiling hangers consist of a molded neoprene element with projecting neoprene bushings, steel loading cups and interlocking wire elements. Maximum dead load on and hanger is 170 lbs. with a safety factor of 4.

8. BR

Mason BR captive neoprene mountings consist of a ductile iron casting containing two separated and opposing molded neoprene elements. The elements prevent the central threaded sleeve and attachment bolt from contracting the housing during normal operation. Maximum dead loads and live loads are listed below.

Dead Loads, $S.F. = 4$			Seismic Loads, $S.F. = 2$			
Compression	Tension	Shear	Compression	Tension	Shear	
340 lbs	802 lbs	228 lbs	680 lbs	1605 lbs	455 lbs	
1475 lbs	1425 lbs	420 lbs	2950 lbs	2850 lbs	840 lbs	
8700 lbs	1955 lbs	248 lbs	17400 lbs	3910 lbs	495 lbs	
10650 lbs	2950 lbs	938 lbs	21300 lbs	5900 lbs	1875 lbs	
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9. DNSB

Mason DNSB sway braces consist of a bent steel bracket and interlocking neoprene bushing attached with a through bolt or hook. Maximum allowable live load in tension is as follows:

Туре	Seismic Loads, $S.F. = 2$
DNSB - A	1417 lbs.
DNSB - B	2520 lbs.

10. 30N

Mason 30N hangers consist of a steel hanger box, molded neoprene upper element, lower molded cup, steel spring and spring steel cup. The maximum allowable dead load in tension on each hanger is as follows:

Туре	Dead Loads for Tension, $S.F. = 4$
30 N-X	554 lbs
30N-A	560 lbs
30N-B	625 lbs
30N-C	1,800 lbs
30N-D	1,815 lbs
30N-F	2,751 lbs

11. SCB

Mason SCB Cable Braces consist of a swivel bracket with locking cable bolts. The SCB-1 has a maximum allowable live load in tension of 810 lbs. with a safety factor of 2 using 1/8 cable with the cable bolts torqued between 25-29 ft. lbs. The SCB-2 has a maximum allowable live load in tension of 1,160 lbs. using 3/16" cable with the cable bolts torqued between 45-52 ft lbs.

12. EAFM

Mason EAFM Mounts are cylindrical neoprene mounts molded to Du Pont neoprene AASHTO bridge-bearing standards. The maximum dead loan on an EAF 8823 Red Mount is 365 lbs with a safety factor of 4.

13. SUPER W

Mason Super W Pads are molded 3/4" thick neoprene pads consisting of 2" squares separated by a thin web of neoprene. Maximum allowable dead load on each Super W 2 x 2 50 duro pad is 225 lbs with a safety factor of 4.

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14. HD

Mason HD hangers consist of a steel frame containing a neoprene isolation element molded with a rod isolation bushing that passes through the hanger frame. Maximum allowable dead load on each hanger is as follows:

Туре	Dead Loads for Tension, $S.F. = 4$
HD	132 lbs.
HD-A	164 lbs.
HD-B	706 lbs.
HD-BS	1,217 lbs.
HD-CS	3,925 lbs.
HD-DS	5,955 lbs.

15. RBA

Mason RBA captive neoprene mounting consists of a steel housing containing a captive threaded steel insert and cap screw in a molded neoprene element. The element prevents the captive threaded steel insert from contacting the steel housing. Maximum dead loads and seismic loads are listed below:

Dead Loads, S.F. $= 4$			Seismic Loads, S.F. $= 2$			
Type	Compression	Tension	Shear	Compression	Tension	Shear
RBA	1,450 lbs	800 lbs	217 lbs	2,900 lbs	1,600 lbs	435 lbs

16. SFFS

Mason SFFS snubbers consist of a threaded outer casting with Integral lugs to locate reinforcing and an inner threaded casting to contain an anchor bolt isolated from the casting by a neoprene bushing. Snubbers also include removable cover plates. Maximum allowable live load in tension on each snubber is 4,500 lbs with a safety factor of 2.

17. Z-1225-2000

Mason Z-1225-2000 snubbers consist of a steel angle and an equipment base anchor bolt that passes through a hole in the snubber that is lined with a $\frac{1}{4}$ " thick neoprene bushing and has space to allow $\frac{1}{4}$ " operating clearance. Anchor bolt holes are provided in the base plate. Maximum allowable live load on the snubber is 5,000 lbs with a safety factor of 2.

18. SLF-133 w/ Super W Pad

Mason SLF-133 spring mountings with Super W pad consist of a steel spring with upper and lower cast cups. The upper casting has a threaded hole with a height adjustment bolt and the lower casting rests on a neoprene pad with an additional $\frac{3}{4}$ " thick neoprene Super W pad underneath it. Spring deflection at the rated load of 1770 lbs is 3.25" $\pm 1/8$ ".

Re: Vibration Isolation Hangers, Floor Vibration Isolators, Sway Braces and Seismic Brackets

19. SHB

Mason SHB Seismic Brackets consist of a swivel bracket. Maximum allowable seismic load is as follows:

Туре	Maximum Seismie	c Load Per FM-1950
	30-44°	44-59°
SHB-1/2	855 lbs	640 lbs
SHB-5/8	760 lbs	550 lbs

20. SSBS

Mason SSBS Seismic Brackets consist of a swivel bracket. Maximum allowable seismic load is as follows:

Maximum Seismic Load Per FM-195		
Bolt Size	30-44°	44-59°
3/8"	330 lbs	485 lbs
1/2"	330 lbs	485 lbs
5/8"	330 lbs	485 lbs
3/4"	330 lbs	485 lbs
7/8"	330 lbs	485 lbs
7/8"	330 lbs	485 lbs
	Bolt Size 3/8" 1/2" 5/8" 3/4" 7/8" 7/8"	Maximum SeismiBolt Size30-44°3/8"330 lbs1/2"330 lbs5/8"330 lbs5/8"330 lbs3/4"330 lbs7/8"330 lbs7/8"330 lbs

21. SCB

Mason SSBS Seismic Brackets consist of a swivel bracket. Maximum allowable seismic load is as follows:

Maximum Seismic Load Per FM-1950		
30-44°	44-59°	
250 lbs	150 lbs	
435 lbs	310 lbs	
930 lbs	640 lbs	
	Maximum Seismi 30-44° 250 lbs 435 lbs 930 lbs	

22. SCBH

Mason SSBH Seismic Brackets consist of a swivel bracket. Maximum allowable seismic load is as follows:

Туре	Maximum Seismic Load Per FM-1950		
	30-44°	44-59°	
SCBH - 0	245 lbs	170 lbs	
SCBH - 1	420 lbs	235 lbs	
SCBH - 2	515 lbs	240 lbs	

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23. SLR(EBP)-A

Mason 1-inch deflection A-series seismic spring isolator. Maximum allowable loads are as follow:

Vertical Seismic Load (SF=3.0)	1,100 lbs
Horizontal Seismic Load (SF=3.0)	533 lbs
Vertical Dead Load (SF=4.0)	825 lbs

24. SLR(EBP)-B/B2

Mason 2-inch deflection B/B2-series seismic spring isolator. Maximum allowable loads are as follow:

Vertical Seismic Load (SF=3.0)	890 lbs
Horizontal Seismic Load (SF=3.0)	1,230 lbs
Vertical Dead Load (SF=4.0)	665 lbs

25. SSLFH-X

Mason 1-inch deflection X-series seismic spring isolator. Maximum allowable loads are as follow:

Vertical Seismic Load (SF=3.0)	800 lbs
Horizontal Seismic Load (SF=3.0)	240 lbs
Vertical Dead Load (SF=4.0)	600 lbs

26. SSLFH-B/B2/C/C2

Mason 1-inch and 2-inch deflection B/B2/C/C2-series seismic spring isolators. Maximum allowable loads are as follow:

B/B2 series:	
Vertical Seismic Load (SF=3.0)	3,830 lbs
Horizontal Seismic Load (SF=3.0)	2,067 lbs
Vertical Dead Load (SF=4.0)	2,875 lbs
C/C2 series:	
Vertical Seismic Load (SF=3.0)	6,700 lbs
Horizontal Seismic Load (SF=3.0)	2,533 lbs
Vertical Dead Load (SF=4.0)	5,025 lbs

27. SLRSO(EBP)-B/B2/1/C2

Mason 1-inch and 2-inch deflection B/B2/1/C2-series seismic spring isolators. Maximum allowable loads are as follow:

3,822 lbs
2,134 lbs
2,866 lbs

Re: Vibration Isolation Hangers, Floor Vibration Isolators, Sway Braces and Seismic Brackets

1/C2 series:	
Vertical Seismic Load (SF=3.0)	6,986 lbs
Horizontal Seismic Load (SF=3.0)	4,941 lbs
Vertical Dead Load (SF=4.0)	5,240 lbs

28. UCC

Mason seismic rod clamps for strut channels. Maximum allowable loads are as follow based on calculations:

3/8-inch all-thread rod with UCC at 28-inch on center	440 lbs	compression
1/2-inch all-thread rod with UCC at 38-inch on center	735 lbs	compression
5/8-inch all-tread rod with UCC at 48-inch on center	1,155 lbs	compression
3/4-inch all-thread rod with UCC at 57-inch on center	1,700 lbs	compression
3/4-inch all-thread rod with UCC at 42-inch on center	3,130 lbs	compression

29. SLRSO(EBP)-2/4

Mason 1" deflection multiple-spring seismic isolator. Maximum allowable loads are as follow:

2-series: Vertical Seismic Load (SF = 2.0) Horizontal Seismic Load (SF = 2.0) Vertical Dead Load (SF = 4.0)	7600 lbs 6000 lbs 4770 lbs
4-Series Vertical Seismic Load (SF = 2.0) Horizontal Seismic Load (SF = 2.0) Vertical Dead Load (SF = 4.0)	14635 lbs 11750 lbs 11740 lbs

30. SLRSO(EBP)-2C2/4C2

Mason 2" deflection multiple-spring seismic isolator. Maximum allowable loads are as follow:

2C2 series:	
Vertical Seismic Load ($SF = 2.0$)	7600 lbs
Horizontal Seismic Load ($SF = 2.0$)	6000 lbs
Vertical Dead Load (SF = 4.0)	3740 lbs
4C2 Series	
Vertical Seismic Load ($SF = 2.0$)	14635 lbs
Horizontal Seismic Load ($SF = 2.0$)	11750 lbs
Vertical Dead Load (SF = 4.0)	11740 lbs

Re: Vibration Isolation Hangers, Floor Vibration Isolators, Sway Braces and Seismic Brackets

31. Z1225

Mason all-direction seismic snubber. Maximum allowable seismic loads are as follow:

Size 250:	
Vertical Seismic Load ($SF = 2.0$)	2750 lbs
Horizontal Seismic Load ($SF = 2.0$)	1300 lbs
Si== 500.	
Size 500:	
Vertical Seismic Load ($SF = 2.0$)	3575 lbs
Horizontal Seismic Load ($SF = 2.0$)	3100 lbs
Size 1000:	
Vertical Seismic Load ($SF = 2.0$)	5250 lbs
Horizontal Seismic Load ($SF = 2.0$)	5000 lbs

32. ISC Roof Curb

Mason 1" and 2" deflection complete isolated spring curb. Maximum allowable loads per each spring window are as follow:

Vertical Seismic Load ($SF = 2.0$)	1715 lbs
Horizontal Seismic Load ($SF = 2.0$)	1050 lbs
Vertical Dead Load ($SF = 4.0$)	950 lbs

33. RSC Roof Curb

Mason 3" and 4" deflection complete isolated spring curb. Maximum allowable loads per each spring window are as follow:

Vertical Seismic Load (SF = 2.0)	6100 lbs
Horizontal Seismic Load (SF = 2.0)	1800 lbs
Vertical Dead Load (SF = 4.0)	3000 lbs

The approval is subject to the following conditions:

- 1. Allowable capacities of Hangers, Isolators, Braces and Brackets are listed on the attached sketches P1 P35.
- 2. Existing ceilings, floors that support the hangers, isolators, braces and brackets and new concrete floors space between isolators shall be evaluated by an architect, civil engineer or structural engineer licensed in the State of California. The plans and calculations shall be submitted to structural plan check for review and approval.
- 3. The tabulated allowable loads shall not be increased for duration of loading.

Re: Vibration Isolation Hangers, Floor Vibration Isolators, Sway Braces and Seismic Brackets

- 4. The values listed on attached sketches P19 to P22 are for the bracket components only. Calculations demonstrating that the applied loads are less than the allowable loads for each individual component within the assembly shall be submitted for plan check at the time of permit application.
- 5. Periodic Special Inspection required during installation and anchorage of piping and ductwork designed to carry hazardous material in structures in accordance with LABC 1705.12.6.

DISCUSSION

The report is in compliance with the 2020 City of Los Angeles Building Code.

The approval is based on load tests.

This general approval of an equivalent alternate to the Code is only valid where an engineer and/or inspector of this Department has determined that all conditions of this approval have been met in the project in which it is to be used.

Addressee to whom this Research Report is issued is responsible for providing copies of it, <u>complete with any attachments indicated</u>, to architects, engineers and builders using items approved herein in design or construction which must be approved by Department of Building and Safety Engineers and Inspectors.

EUGENE BARBEAU, Chief Engineering Research Section 201 N. Figueroa St., Room 880 Los Angeles, CA 90012 Phone- 213-202-9812 Fax- 213-202-9943

EB RR 24589 TLB2200078 R05/23/2022 104.2.6/ASCE 13.6

Attachments: Product Sketches (35 pages)