

**Concrete Reactive Tension System-Quickchange Moveable Barrier
(CRTS-QMB) MASH TL-3**

Specification

The Concrete Reactive Tension System-Quickchange Moveable Barrier (CRTS-QMB) has been fully tested to the Manual for Assessing Safety Hardware (MASH) for Test Level 3. The barrier is designed to meet the rigid requirements of deployment in moveable barrier applications where positive separation technology is required and where lane widths and lateral space are limited.

Description

Each barrier element of the CRTS-QMB shall be 810 mm (32") high, 460 mm (18") wide and 1000 mm (39") long (Attachment, Figure 1, C050236). The individual elements shall weigh approximately 680 kg (1500 pounds) and rest on four rubber feet to increase the coefficient of friction between the barrier element and the road surface.

The barrier elements are connected in an end-to-end fashion with tensioning hinge mechanisms and steel pins. The minimum length of need (LON) for the CRTS-QMB MASH TL-3 barrier is 170m or 170 barrier segments. The Beginning of Length of Need (BLON) is 85m or 85 barrier segments. The performance characteristics of CRTS-QMB when impacted closer to the upstream and downstream ends of the installation were further evaluated using dynamic finite element analysis and simulation software LS-DYNA to MASH parameters. The performance characteristics for reduced LON conditions may be reviewed in Technical Brief TB 170207 Rev. 0.

Materials

The primary elements of the CRTS-QMB shall be constructed of ASTM A-36 steel and high strength concrete. All external steel shall be stainless steel or hot dipped galvanized in accordance with ASTM, A 123 or ASTM B 695, except miscellaneous hardware which may be painted, stainless steel, brass, or zinc plated. All structural welds shall be continuous.

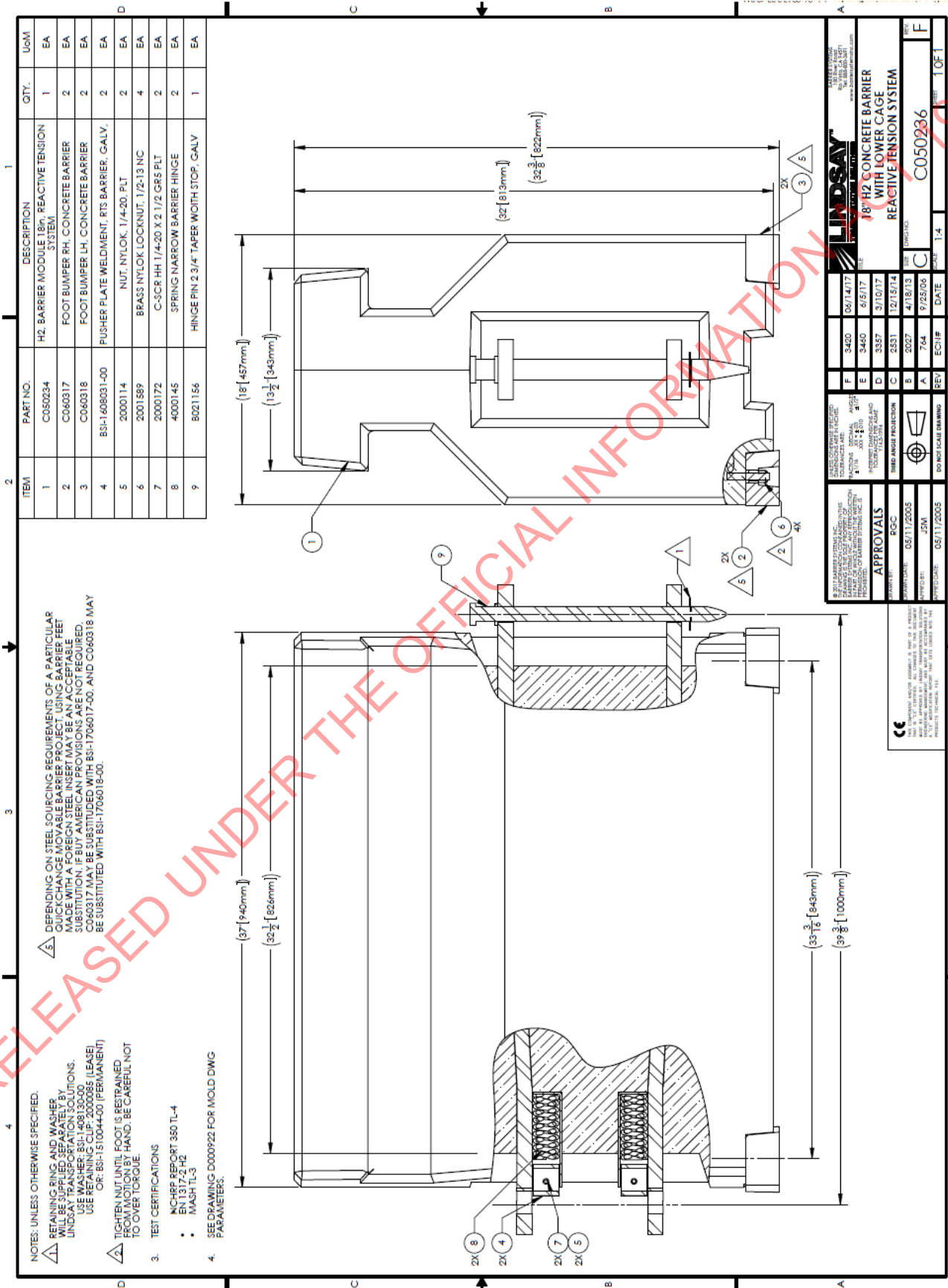
CONSTRUCTION METHODS: Barriers will be manufactured by either the wetcast or drycast methods. Minimum concrete 28-day compressive strength shall be 276 bar (4,000 psi). All surface voids or rock pockets shall be repaired. Surface "bugholes" caused by trapped air bubbles shall be permitted. Air entrainment shall be as specified by the ordering agency, +/- 1.50 %.

System Requirements

The CRTS-QMB system, when installed in accordance with the manufacturer's instructions, shall function as a longitudinal barrier and be able to safely contain and redirect 1100 kg (2420 lb) and 2270 kg (5000 lb) vehicles impacting the barrier at 100 km/hr (62.1 mph) and 25 degrees in accordance with the Manual for Assessing Safety Hardware (MASH) Test Level 3 and EN 1317 H2.

The system shall minimize lateral displacement upon impact. The system shall minimize clearance between barrier hinges, resulting in a nominal metal to metal connection. During impact by an errant vehicle, the tension in the barrier system resists the penetration of the vehicle and limits the lateral displacement of the barrier.

Reactive Tension System Variable Length Barriers (RTS-VLBs) shall be added to the length of the CRTS-QMB installation in order to allow a smooth lateral transfer through the Barrier Transfer Machine. The number and location of VLB units that shall be required will vary depending on specifics of the application, number and degree of curves, changes in elevation, etc.



5. DEPENDING ON STEEL SOURCING REQUIREMENTS OF A PARTICULAR REGION, THE WASHER MAY BE SUPPLIED AS A WELDED STEEL INSERT OR MADE WITH FOREIGN STEEL. THE WELDED STEEL INSERT MAY BE ACCEPTABLE. SUBSTITUTION, IF BUY AMERICAN PROVISIONS ARE NOT REQUIRED, C060317 MAY BE SUBSTITUTED WITH BSI-1706017-00, AND C060318 MAY BE SUBSTITUTED WITH BSI-1706018-00.

- NOTES: UNLESS OTHERWISE SPECIFIED,
 RETAINING RING AND WASHER WILL BE SUPPLIED SEPARATELY BY LINDSAY.
 USE RETAINING RING: BSI-1510044-00 (PERMANENT)
 OR: BSI-1510044-00 (PERMANENT)
 TIGHTEN NUT UNTIL FOOT IS RESTRAINED FROM MOTION BY HAND. BE CAREFUL NOT TO OVER TORQUE.

3. TEST CERTIFICATIONS
 NCHRP REPORT 350 TL-4
 • EN 1317-2 H2
 • MASH TL-3
4. SEEDRAWING: D000922 FOR MOLD DWG PARAMETERS.

ITEM	PART NO.	DESCRIPTION	QTY.	UoM
1	C050234	H2 BARRIER MODULE 18". REACTIVE TENSION SYSTEM	1	EA
2	C060317	FOOT BUMPER RH, CONCRETE BARRIER	2	EA
3	C060318	FOOT BUMPER LH, CONCRETE BARRIER	2	EA
4	B31-1609031-00	PUSHER PLATE WELDMENT, RTS BARRIER, GALV.	2	EA
5	2000114	NUT, NYLON, 1/4-20, PLT	2	EA
6	2001589	BRASS NYLON LOCKNUT, 1/2-13 NC	4	EA
7	2000172	C-3CR HH 1/4-20 X 2 1/2 CR6 PLT	2	EA
8	4000145	SPRING NARROW BARRIER HINGE	2	EA
9	8021156	HINGE PIN 2 3/4" TAPER WIDTH STOP, GALV	1	EA

<p>APPROVALS</p> <p>DESIGNED BY: JSM</p> <p>CHECKED BY: JSM</p> <p>DATE: 05/11/2005</p>		<p>DESIGNED BY: JSM</p> <p>CHECKED BY: JSM</p> <p>DATE: 05/11/2005</p>																						
<p>REVISIONS</p> <table border="1"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>F</td> <td>05/14/17</td> <td></td> </tr> <tr> <td>E</td> <td>05/17/17</td> <td></td> </tr> <tr> <td>D</td> <td>03/02/17</td> <td></td> </tr> <tr> <td>C</td> <td>12/15/14</td> <td></td> </tr> <tr> <td>B</td> <td>04/18/13</td> <td></td> </tr> <tr> <td>A</td> <td>07/25/05</td> <td></td> </tr> </tbody> </table>		REV	DATE	DESCRIPTION	F	05/14/17		E	05/17/17		D	03/02/17		C	12/15/14		B	04/18/13		A	07/25/05		<p>18" H2 CONCRETE BARRIER WITH LOWER CAGE REACTIVE TENSION SYSTEM</p> <p>REV: C050236</p>	
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<p>30 DAY DATA SHEET</p>		<p>DATE: 05/11/2005</p>																						