



U.S. Department
of Transportation
**Federal Highway
Administration**

400 Seventh St., S.W.
Washington, D.C. 20590

December 21, 2004

In Reply Refer To: HSA-10/CC-64E

Mr. Albert W. Unrath Sr.
ALBERT W. UNRATH, INC.
P.O. Box 317
Line Lexington, Pennsylvania 18932-0317

Dear Mr. Unrath, Sr.:

In your November 29 letter, sent to Mr. Richard Powers' attention, you requested the Federal Highway Administration's (FHWA) acceptance of a modified design of your previously accepted 229-cm (90-inch) long test level 2 (TL-2) U-MAD 70K truck mounted attenuator (TMA). Specifically, you requested acceptance of a shorter unit (198-cm or 78-inches long) at the same test level.

To support your request, you stated that your earlier 70-km/h test with an 820-kg car (into the longer U-MAD 100K unit) resulted in a TMA penetration of approximately 150 cm (60 inches) and concluded that a 183-cm (72-inch) long unit with the same density in the crushed area would meet TL-2 evaluation criteria with the small car. You then ran the TL-2 pickup truck test 2-51 into a 183-cm (72-inch) long unit. The results of this test were contained in the Transportation Research Center's December 2003 - January 2004 report entitled "NCHRP Report 350 Test 2-51 of the U-MAD 70K Truck Mounted Attenuator". The truck impacted the TMA at 67.4 km/h. Occupant impact velocity was reported to be 9.4 m/sec and the ridedown acceleration was 16.5 g's. The 8595.6 kg support vehicle rolled ahead 3.9 meters. However, the test report noted that the "total crush of the TMA was not recorded due to the impacting vehicle's ... crushing the TMA and ultimately bending and breaking the cushion's lift plate".

Although meeting Report 350 evaluation criteria, testing revealed that a 183-cm (72-inch) long U-MAD 70K TMA had essentially no reserve capacity and its mounting hardware was damaged in the crash. Consequently, you requested the FHWA acceptance of a 198-cm (78-inch) long unit at TL-2. I agree that the 198-cm (78-inch) long U-MAD shown in the enclosure to this letter may be assumed to meet Report 350 evaluation criteria for a TL-2 TMA and may be used on the National Highway System (NHS) when such use is deemed appropriate by the contracting authority.

Please note also the following standard provisions that apply to FHWA letters of acceptance:

- Our acceptance is limited to the crashworthiness characteristics of this TMA and does not cover its structural features, durability, or ease of repair.



- Any changes that may adversely influence the crashworthiness of the device will require a new acceptance letter.
- Should the FHWA discover that in-service performance reveals unacceptable safety problems, or that the device being marketed is significantly different from the version that was accepted for use on the NHS, we reserve the right to modify or revoke this acceptance.
- You will be expected to supply potential users with sufficient information on design and installation requirements to ensure proper performance.
- You will be expected to certify to potential users that the hardware furnished has essentially the same chemistry, mechanical properties, and geometry as that submitted for acceptance.
- To prevent misunderstanding by others, this letter of acceptance, designated as number CC-64E shall not be reproduced except in full. This letter, and the documentation upon which this letter is based, is public information. All such letters and documentation may be reviewed at our office upon request.
- The modified U-MAD 70K includes patented components and is considered to be a proprietary device. The use of proprietary work zone traffic control devices in Federal-aid projects is generally of a temporary nature. They are selected by the contractor for use as needed and removed upon completion of the project. Under such conditions they can be presumed to meet requirement "a" given below for the use of proprietary products on Federal-aid projects. On the other hand, if proprietary devices are specified for use on Federal-aid projects, except exempt, non-NHS projects, they: (a) must be supplied through competitive bidding with equally suitable non-patented items; (b) the highway agency must certify that they are essential for synchronization with existing highway facilities or that no equally suitable alternative exists or; (c) they must be used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411, a copy of which has been previously provided for your ready reference.

Sincerely yours,

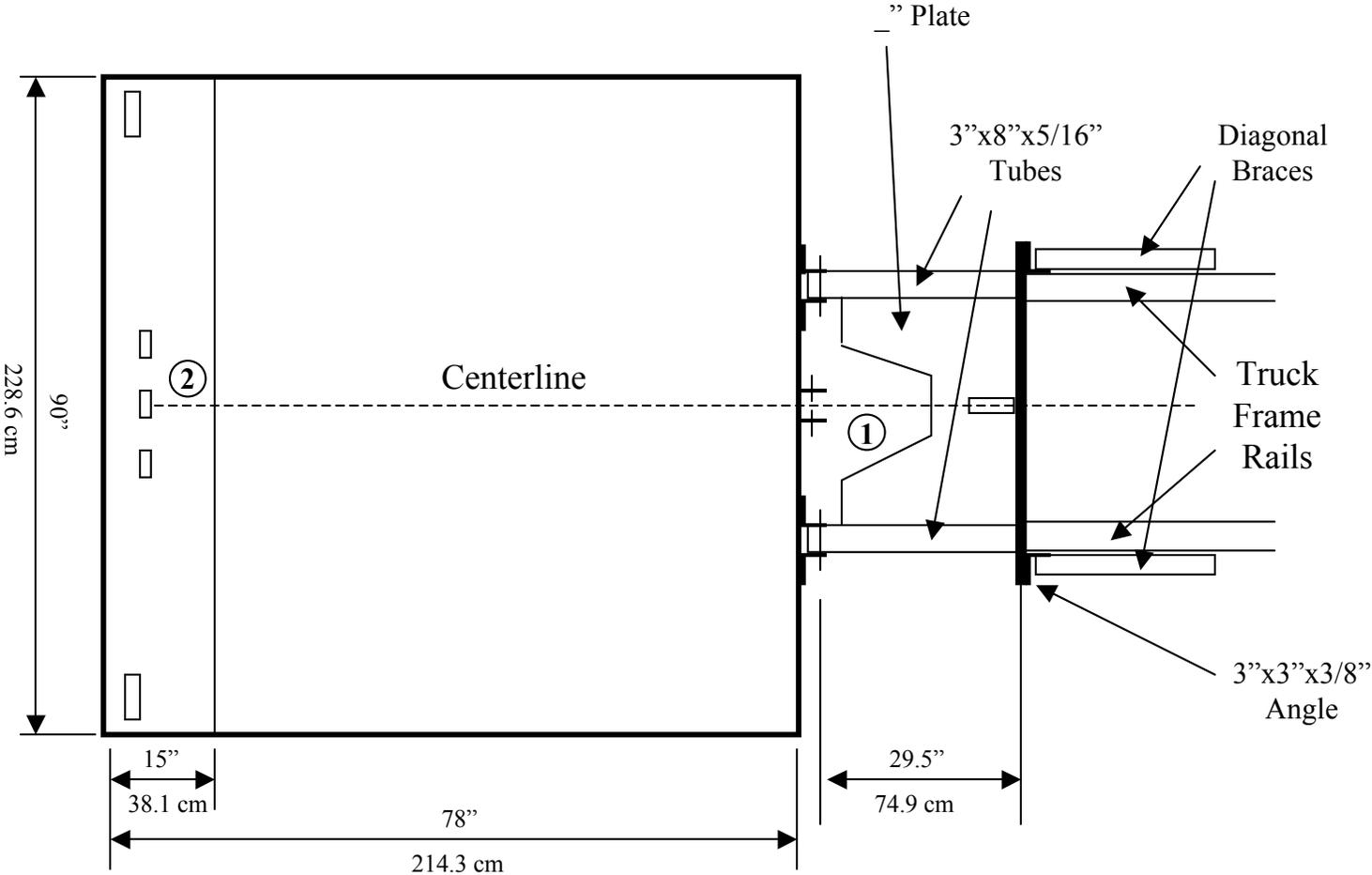
/Original Signed by/

John R. Baxter, P.E.
Director, Office of Safety Design
Office of Safety

Enclosure

U-MAD 70k tested at 70k
 Proposed 78" Cushion
 Copyright U-MAD 70k

Top View

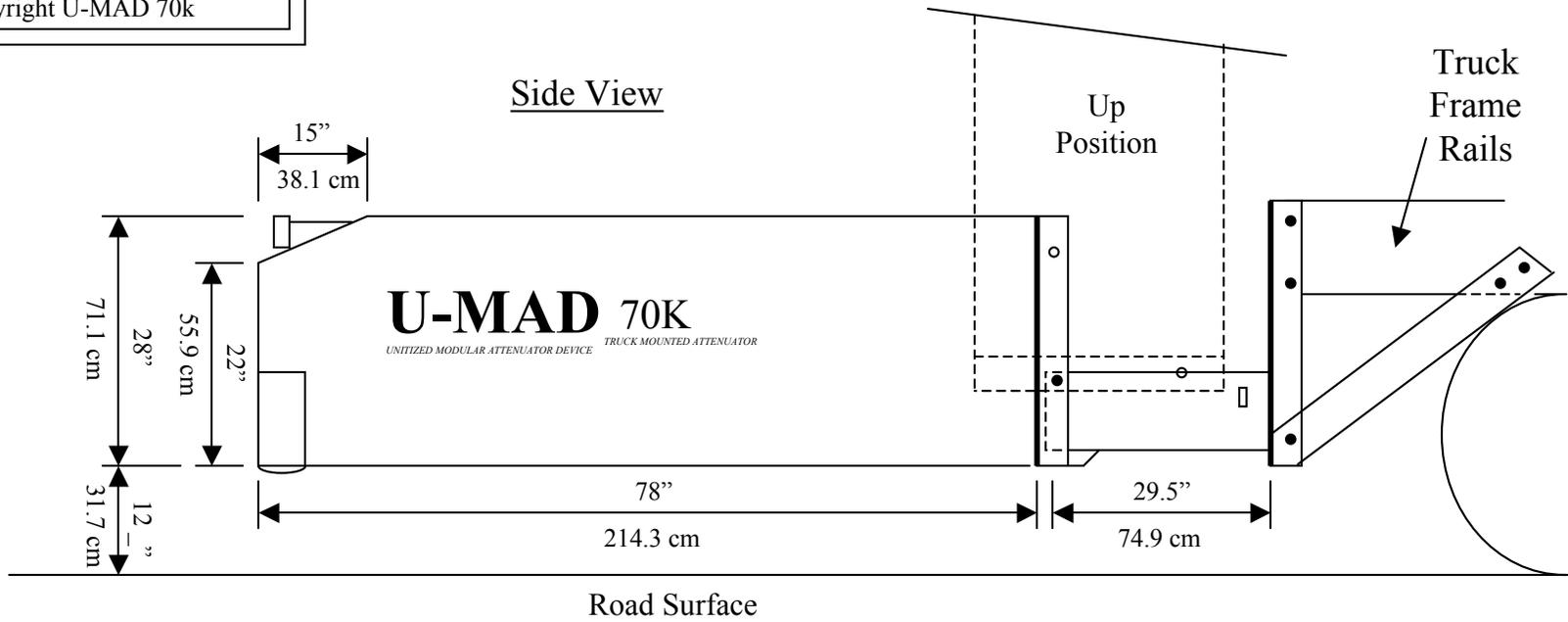


- Notes:
1. Cylinder & Pump on Lift is removed to show plate layout.
 2. ICC Lights at rear of Cushion.

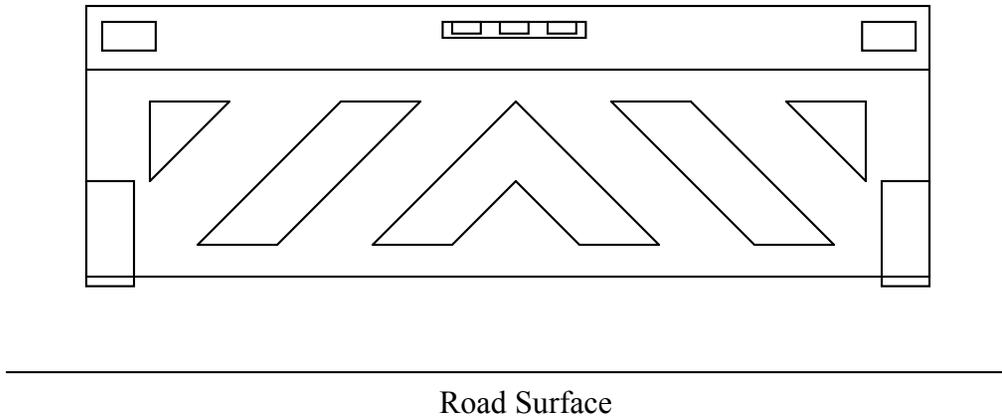
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 Construction Consultants & Transportation
 Safety Equipment Designers

U-MAD 70k tested at 70k
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Side View



Rear View



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