



To:  <b>SUPERSEDED</b> <sup>BY</sup> EB 99-066 EFFECTIVE 11/4/99		New York State Department of Transportation <b>ENGINEERING          INSTRUCTION</b>	<b>EI</b>  <b>99-007</b>
<b>Title: MOBILE CONSTRUCTION ZONE IMPACT ATTENUATORS</b>			
<b>Distribution:</b> <input type="checkbox"/> Manufacturers (18) <input type="checkbox"/> Surveyors (33) <input checked="" type="checkbox"/> Main Office (30) <input checked="" type="checkbox"/> Consultants (34) <input type="checkbox"/> Local Govt. (31) <input type="checkbox"/> Contractors (39) <input checked="" type="checkbox"/> Regions/Agencies (32) <input type="checkbox"/> _____ ( )		<b>Approved:</b>   <hr/> P.J. Clark, Deputy Chief Engineer, Design Division	

**Administrative information.** This instruction takes effect with the letting of April 8, 1999. It transmits a note that will be inserted into all proposals, initially by amendment, starting with the effective letting. The note modifies the requirements of §712-06 Mobile Construction Zone Impact Attenuators. Mobile Construction Zone Impact Attenuators are commonly called "Truck Mounted Attenuators" or "TMAs," and will be called so throughout this instruction. The proposal insert notes will be incorporated into future editions of the *Standard Specifications*.

**Purposes.** The purposes of this instruction are to: 1) transmit certain proposal insert notes; 2) modify the 1990 & 1995 *Standard Specifications* with respect to the selection and requirements of TMAs; and, 3) reflect recent federal requirements that safety articles that pass *National Cooperative Highway Research Report 350* crash testing be used under certain circumstances.

**Transmitted materials.** Proposal insert notes for the 1990 and 1995 *Standard Specifications*, entitled "Truck Mounted Attenuators."

**Background.** Both the 1990 and the 1995 *Standard Specifications* include requirements for protecting certain operations using shadow vehicles equipped with truck mounted attenuators. See §619-1.02N of either edition. In both editions, the detailed requirements for the TMA are given in "§712-06 Mobile Construction Zone Impact Attenuators." Nationally, because of the length and overall unwieldiness of TMAs crashworthy at 100 km/h, the standard of performance for TMAs has been 45 mph or 70 km/h. TMAs that were successfully tested under either *NCHRP 230* or *350* and some earlier testing protocols have been acceptable.

In the 1995 *Standard Specifications*, however, only 100 km/h, *NCHRP 350*, Test Level 3 tested devices were indicated, regardless of the speed of the facility. In the 1990 *Standard Specifications*, *NCHRP 350* was not mentioned, and there was no reference to test levels.

The attachments bring consistency between the two editions. They establish that *NCHRP 350 TL 3* TMAs are required at certain identified locations on highways posted at 65 mph. For lesser speeds, they indicate *NCHRP 350 TL 3* or *TL 2* TMAs or *NCHRP 230* TMAs are acceptable. They also indicate that units purchased new after 10-1-98 must be *NCHRP 350* qualified. This is a recent federal requirement. If *NCHRP 350 TL 3* devices are desired by the designer on roads with lower posted limits, it will be necessary that they be required in the plans or proposal. Designers should consider adding this requirement where traffic approach speeds are expected to be close to 65 mph, even when the actual posted speed limit is lower.

**Implementation.** Design Quality Assurance Bureau will insert the metric note into all metric proposals. The Regions must insert the note modifying the 1990 *Standard Specifications* into US Customary units proposals. The April 1, 1999 *Approved List* will include what testing the various TMAs have successfully undergone.

**Contact person.** Larry Brown of Design Quality Assurance Bureau at (518) 457-4093.

## TRUCK MOUNTED ATTENUATORS

Make the following changes to the Standard Specifications of January 2, 1995:

Page 6-76, *add*, the following sentences to the end of §619-1.02N, Shadow Vehicle: "On roads with posted speed limits of 65 mph within 335 meters upstream of the shadow vehicle, or whenever indicated on the plans or in the proposal, the Mobile Construction Zone Impact Attenuator shall be listed as a National Cooperative Highway Research Report 350 Test Level 3 device on the *Approved List*." On other roads the attenuator shall meet the requirements of NCHRP 350 Test Level 3 or Test Level 2, NCHRP 230, or other testing protocol as stated in §712-06.

Page 7-126, *replace* §712-06 Mobile Construction Zone Impact Attenuators with the following:

### "712-06 MOBILE CONSTRUCTION ZONE IMPACT ATTENUATORS

**SCOPE.** This specification covers the material and testing requirements for crash cushions or impact attenuators mounted on the rear of designated work vehicles. These devices are commonly called truck mounted attenuators or TMAs.

**MATERIALS REQUIREMENTS.** Truck Mounted Attenuators having initial purchase dates on or before October 1, 1998 shall have been satisfactorily tested in accordance with the *National Cooperative Highway Research Program (NCHRP) Report 350* or *230* or other testing protocol acceptable to the State. Those purchased new after that date shall be only those that have been satisfactorily tested in accordance with *NCHRP Report 350*. Testing shall consist of full scale crash testing conducted by recognized testing agencies. TMAs meeting the requirements of NCHRP 350 Test Level 2 or, for devices originally purchased on or before October 1, 1998, NCHRP 230 are the standard TMA, and shall be acceptable for all circumstances except as stated in this specification or in the Contract Documents. NCHRP 350 Test Level 3 TMAs shall be required, however, whenever indicated in the Contract Documents or whenever the posted speed limit within 335 meters upstream of the TMA is sixty five miles per hour (65 mph.)

An NCHRP 350 Test Level 3 TMA may be substituted for a NCHRP 350 Test Level 2 TMA or NCHRP 230 TMA, but a NCHRP 350 Test Level 2 TMA or NCHRP 230 TMA may not be substituted when a NCHRP 350 Test Level 3 TMA is required.

**BASIS OF ACCEPTANCE.** The Director of the New York State Department of Transportation's Materials Bureau maintains an *Approved List*, which lists TMAs which have successfully passed the above requirements. Acceptance of NCHRP 350 Test Level 2 or 3 Mobile Construction Zone Impact Attenuators shall be at the contract site based on compliance with these specifications and either the product's appearance on the *Approved List* or a letter from the Department to the vendor indicating the TMA is approved.

Acceptance of NCHRP 230 qualified devices shall be on the basis of compliance with these specifications, appearance of the TMA on the *Approved List*, or letter from the Department indicating approval of the TMA, plus the provision of certification satisfactory to the EIC. This certification shall indicate that the NCHRP 230 qualified TMA was sold new to a user on or prior to October 1, 1998. The current owner and the original purchaser need not be the same.

Manufacturers or Vendors wishing to have products considered for inclusion on the *Approved List* shall provide copies of drawings, specifications, test reports, and Federal Acceptance Letters to the Director of the Materials Bureau. The review process requires thirty (30) days minimum."

## TRUCK MOUNTED ATTENUATORS

Make the following changes to the Standard Specifications of January 2, 1990:

Page 6-54, *add*, the following sentences to the end of §619-1.02N, Shadow Vehicle: "On roads with posted speed limits of 65 mph within 1100 feet upstream of the shadow vehicle, or whenever indicated on the plans or in the proposal, the Mobile Construction Zone Impact Attenuator shall be listed as a National Cooperative Highway Research Report 350 Test Level 3 device on the *Approved List*." On other roads the attenuator shall meet the requirements of NCHRP 350 Test Level 3 or Test Level 2, NCHRP 230, or other testing protocol as stated in §712-06.

Page 7-98, *replace* §712-06 Mobile Construction Zone Impact Attenuators with the following:

### "712-06 MOBILE CONSTRUCTION ZONE IMPACT ATTENUATORS

SCOPE. This specification covers the material and testing requirements for crash cushions or impact attenuators mounted on the rear of designated work vehicles. These devices are commonly called truck mounted attenuators or TMAs.

MATERIALS REQUIREMENTS. Truck Mounted Attenuators having initial purchase dates on or before October 1, 1998 shall have been satisfactorily tested in accordance with the *National Cooperative Highway Research Program (NCHRP) Report 350* or *230* or other testing protocol acceptable to the State. Those purchased new after that date shall be only those that have been satisfactorily tested in accordance with *NCHRP Report 350*. Testing shall consist of full scale crash testing conducted by recognized testing agencies. TMAs meeting the requirements of NCHRP 350 Test Level 2 or, for devices originally purchased on or before October 1, 1998, NCHRP 230 are the standard TMA, and shall be acceptable for all circumstances except as stated in this specification or in the Contract Documents. NCHRP 350 Test Level 3 TMAs shall be required, however, whenever indicated in the Contract Documents or whenever the posted speed limit within 1100 feet upstream of the TMA is sixty five miles per hour (65 mph.)

An NCHRP 350 Test Level 3 TMA may be substituted for a NCHRP 350 Test Level 2 TMA or NCHRP 230 TMA, but a NCHRP 350 Test Level 2 TMA or NCHRP 230 TMA may not be substituted when a NCHRP 350 Test Level 3 TMA is required.

BASIS OF ACCEPTANCE. The Director of the New York State Department of Transportation's Materials Bureau maintains an *Approved List*, which lists TMAs which have successfully passed the above requirements. Acceptance of NCHRP 350 Test Level 2 or 3 Mobile Construction Zone Impact Attenuators shall be at the contract site based on compliance with these specifications and either the product's appearance on the *Approved List* or a letter from the Department to the vendor indicating the TMA is approved.

Acceptance of NCHRP 230 qualified devices shall be on the basis of compliance with these specifications, appearance of the TMA on the *Approved List*, or letter from the Department indicating approval of the TMA, plus the provision of certification satisfactory to the EIC. This certification shall indicate that the NCHRP 230 qualified TMA was sold new to a user on or prior to October 1, 1998. The current owner and the original purchaser need not be the same.

Manufacturers or Vendors wishing to have products considered for inclusion on the *Approved List* shall provide copies of drawings, specifications, test reports, and Federal Acceptance Letters to the Director of the Materials Bureau. The review process requires thirty (30) days minimum."