

Maintenance Advisory

MA 2009-09

November 16, 2009

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High-Tension Cable Barrier Systems

High-tension cable barrier systems (HTCB) are usually installed to restrain and redirect vehicles from potential cross-median crashes. The Department is in a three-year process of installing 300 miles of HTCB and Region and County maintenance forces are responsible for the inspection, maintenance and repair of these systems.

There are currently five different manufacturers that are approved to supply HTCB systems, so it is very important to have a current inventory identifying the specific system type. Spare parts availability, such as posts and hardware is critical to the maintenance of the system,



HTCB is new to MDOT, so there are still several questions to be answered concerning inspection, maintenance and repair of the system. This advisory provides some guidance for the inspection and maintenance of these systems. This is not intended to provide instruction as to how the repairs are to be performed. That information is provided in training material on the repair of each of the system types.

Drive-by inspections for the purpose of discovering damage of HTCB should be performed while doing your routine road patrol. Look for damage such as slack or down cables, and damaged posts.



After an impact, the system will require some repair. Under most impacts, the HTCB will still maintain its original cable height and may be able to withstand additional hits. Even with this capability, it is recommended that the system be repaired as soon as possible. Because of the ease of repair, repairs can usually be done in a short period of time.

The height of the cable above the ground is very important to the proper function of these systems. It needs to be monitored, particularly after a crash. Although cable height even after a hit appears to have been maintained, rutting due to a collision or erosion may alter the relative cable height. Restoration of the grade to its original condition may be required.



During the road patrol, pay particular attention to the end terminal post and the connection between the cable(s) and the cable terminal foundation. It is imperative that each cable be properly attached to the cable terminal foundation. Disconnected cables, improperly connected cables, and damaged end terminal may seriously compromise the functional ability of the system. These types of repairs may take additional time and may require re-tensioning of the entire run of cable.



If a vehicle becomes entangled with the cables and cannot be removed from the system, **as a last resort**, the cable may be cut to untangle the vehicle. However, as an alternative to cutting the cables, it is possible to release tension in the cables by undoing the turnbuckles or cutting through the turnbuckles. Review the appropriate HTCB repair manual for specific instructions on cutting cables and undoing turnbuckles. Please note, if splicing cables is necessary, a maximum of two cable splices (e.g., Torpedo cable splice) per cable per individual run should be used. Therefore, prior to splicing cables, maintenance personnel should check and see if the existing cables in the damaged run already have Torpedo cable splices. If the damaged run has two Torpedo cable splices, additional splices should not be installed.

Due to the importance of the HTCB performing when needed, it is necessary to respond to repairs in a timely manner. This will often require frequent field inspections to identify damage and, as soon as possible, respond and repair. In order to expedite repairs, it is recommended to maintain an adequate inventory of appropriate spare parts for each cable system.



Concrete line post foundations, which are typically 12" to 14" in diameter and 48" deep, are intended to be reusable after a typical impact. Nevertheless, it is possible for line post foundations to crack. Therefore, maintenance personnel should inspect concrete foundations, especially line post foundations, for cracks after an impact. In most cases, cracked line post foundations can be repaired with epoxy or other concrete patching/repair material. As a general rule, line post foundations are repairable if the foundation is structurally intact and if the steel socket embedded in the foundation has not been damaged. Otherwise, it may be necessary to remove the damaged line post foundation and replace it with a new one. Keep in mind that foundation cracking will vary from one foundation to the other, so each damaged foundation must be evaluated to determine if it is repairable. Therefore, a certain degree of judgment must be exercised during this process. Maintenance staff should contact MDOT's Crash Barrier Engineer for assistance in the evaluation of damaged line post foundations.

Winter conditions can result in the formation of ice inside line post sockets. When attempting to remove a line post that cannot be freed due to ice inside the socket, the first step should be to hit the line post with a hammer, taking care not to damage any reusable components. In some cases, this may be sufficient to break the ice without damaging any components. However, if this does not work, it may be necessary to use a heat source, such as a propane torch or a steam gun, in order to melt the ice inside the socket and free the line post.

As a general rule, the tension in each cable should be checked annually. Furthermore, it would be beneficial to check the tension in the cables after a severe impact. Cable tension is based on cable temperature, not ambient temperature. Therefore, the temperature of each cable should be checked with an infrared thermometer prior to conducting a tension check. For determining the recommended tension in each cable, maintenance staff should follow the tension chart or table furnished by the manufacturer of the cable barrier system being maintained. Also, the tension in each cable should fall within the manufacturer's recommended tolerances.