High-Tension Cable Barrier
Guidance for First Responders in Nebraska

The Nebraska Department of Transportation (NDOT) is currently installing High-Tension Cable Barrier (HTCB) throughout the state's I-80 corridor. HTCB has been proven in Nebraska and throughout the nation to reduce cross-over crashes of vehicles up to and including tractor trailers. This document provides guidance to First Responders working with motor vehicles that have come in contact with or entangled in HTCB.

Barrier System Design

NDOT has approved use of three different HTCB systems. To date, the CASS®S3 system by Valtir has been utilized for all HTCB installations in the state. The CASS®S3 system consists of four galvanized steel cables supported by sacrificial steel posts. Each cable is 3/4" in diameter and under constant tension of up to 10,000 lbs. The upper two cables rest in slots in the post while the lower two are connected by "J" bolts. Posts are spaced approximately 10' apart and rest in a steel socket mounted flush with the ground surface. Turnbuckles are located every 1,000' feet and individual sections of HTCB vary from several hundred feet up to two miles in length.

Following a vehicular impact, the undamaged portion of the HTCB system will typically continue to function and prevent crossovers beyond the damaged area. Damaged posts are later removed and replaced with new posts to support the intact cables. Emergency vehicle access through the HTCB and depressed median is limited to interchanges and maintenance turn-arounds at intervals of 1-3 miles.

Mitigation of HTCB Interference for Patient Extrication

When a vehicle is in contact with HTCB, the first instinct of First Responders may be to cut the cable to gain easier patient access. Given the tremendous tension present, cutting cables can be extremely dangerous and should only be considered as a last resort! ***When possible, patient extrication should be performed without manipulation of the HTCB*** by accessing doors opposite of cable, removing the roof, etc. However, First Responders may encounter vehicles entangled in HTCB which will require careful manipulation of the cable. While the prompt extrication of an injured patient may take priority over further damage to the HTCB, there are methods for eliminating cable interference without removing miles of life-saving HTCB from service.

OPTIONS TO RELEASE TENSION
(IN ORDER OF PREFERENCE)

Option 1: *(Preferred)*

Lift the upper two cables and spacer out of the slots for approximately 225' upstream and downstream of the vehicle to free upper cables from posts. Pry "J" hooks away from posts with a Halligan bar or cut "J" hooks with a bolt cutter to free lower cables. A span of approximately 450' of unsupported cable will allow the cables to lie on the ground. Posts can remain in place or be removed from sockets. **This is the preferred option when dealing with an entangled vehicle as it is quick, easy and does not compromise the remaining HTCB.**

Option 2:

Utilize emergency vehicle to push over applicable anchor(s) at one end of HTCB segment, shearing bolts and relieving tension. HTCB segments are up to two miles in length with anchorages at each end. A police cruiser with push bumper, fire department brush truck with cattle guard or similar equipment is sufficient to shear anchor bolt. ***See WARNING***

Option 3:

Cut through the middle of applicable turnbuckle(s) using hydraulic shears or "K" saw. Turnbuckles are located every 1,000'. There must be a minimum of six undamaged posts on either side of turnbuckle to dampen snap back. ***See WARNING***

Option 4: *(Last Resort)*

Cutting a cable(s) should be done as a last resort when a life-threatening situation exists, time is critical and the above options are not feasible. The cable should be wrapped in duct tape on either side of the cut to reduce fraying and cut using hydraulic shears or "K" saw. The cut shall be a minimum of 300' from the incident and centered between undamaged posts to dampen snap back of the cable. ***See WARNING***

WARNING - Options 2, 3 & 4

Shearing anchor bolts and cutting turnbuckles or cable will result in the cable snapping back a short distance with the potential to damage property or injure persons in the immediate area. The snap back is likely to be violent and unpredictable. The Firefighter cutting a turnbuckle or cable shall ensure no other person is in the immediate area, he/she shall be oriented at a 90° angle with the cable and in full bunker gear with face shield for protection. Options 2, 3 & 4 will remove up to two miles of life-saving HTCB from service for up to 45 days at significant cost.

Vehicle Recovery Considerations

A wrecker may be used to pull a vehicle out of HTCB in the opposite direction that it entered. Careful cutting of the vehicle may be required to eliminate snags. If tension must be released, only **Option 1** shall be used.

Maintenance Considerations

The manufacturer recommends removing a few undamaged posts upstream and/or downstream of incident and installing in incident area to support cables and restore some degree of protection until permanent repairs can be accomplished. Orange cones may be placed to mark damaged area.