

TRUCK MOUNTED TRAFFIC CONTROL DEVICES

Advance Warning Arrow Panels -

Use truck mounted advance warning arrow panels to provide additional advance warning and directional information to assist motorists through a work zone during but not limited to lane closures, shoulder closures and mobile operations. All truck mounted advance warning arrow panels shall comply with department specifications.

All truck mounted advance warning arrow panels shall be either a Type A, B or C. All advance warning arrow panels shall comply with the requirements for minimum size, legibility distance and minimum number of elements. See *Table 6, Advance Warning Arrow Panels (Truck Mounted)*.

Table 6 Advance Warning Arrow Panels (Truck Mounted)

Arrow Panel Type	Minimum Size	Minimum Legibility Distance	Minimum Number Of Elements
A	48" x 24"	½ Mile	12
B	60" x 30"	¾ Mile	13
C	96" x 48"	1 Mile	15

A truck mounted advance warning arrow panel shall have a minimum mounting height of 7 feet from the bottom of the sign panel to the surface on which the truck is operating when the arrow panel is in its operating position.

Only advance warning arrow panels designed and manufactured specifically for attachment to vehicles are approved as truck mounted advance warning arrow panels when a truck mounted device is required. Towing an operating trailer mounted advance warning arrow panel in place of utilizing a truck mounted advance warning arrow panel is PROHIBITED. Do not place, attach or mount a trailer mounted advance warning arrow panel on or to the bed, body, etc. of a truck to act as a truck mounted device.

Do not use a truck mounted advance warning arrow panel operating in a Flashing Arrow Mode or a Sequential Chevron Mode as a part of a flagging operation to direct vehicles into lanes used by opposing traffic. A truck mounted advance warning arrow panel shall operate in the "4 Corners" caution mode ONLY when utilized in conjunction with a flagging operation.

Use the Flashing Arrow Modes, the Sequential Chevron Modes or the Caution Mode. Do not display Sequential Stem Arrow Modes due to staged and slow development of the intended message by these message modes.

The Caution Mode requires a pattern of 4 lamps with 1 lamp in each corner flashing simultaneously (referred to as the "4 Corners" pattern). Ensure the "4 Corners" pattern does not indicate direction or resemble any other mode. Do not use truck mounted advance warning arrow panels incapable of producing the "4 Corners" pattern. Do not display a "bar," an "alternating diamond(s)" or any other symbol other than the required "4 Corners" pattern during the Caution Mode.

Utilize the Caution Mode to alert motorists they are approaching an area impacted by work activities. Utilize the Caution Mode at locations and during operations that do not mandate relocation of traffic to an adjacent travel lane.

Changeable Message Signs -

Use truck mounted changeable message signs to provide additional advance warning and directional information to assist motorists through a work zone. Consider utilizing these warning devices for advance information to assist motorists on high volume high speed roadways or on any job site that advance information may be beneficial to motorists. All truck mounted changeable message signs shall comply with department specifications.

The truck mounted changeable message sign shall have a minimum mounting height of 7 feet from the bottom of the sign panel to the surface on which the truck is operating when the changeable message sign is in its operating position.

Only changeable message signs designed and manufactured specifically for attachment to vehicles are approved as truck mounted changeable message signs when a truck mounted device is required. Towing an operating trailer mounted changeable message sign in place of utilizing a truck mounted changeable message sign is PROHIBITED. Do not place, attach or mount a trailer mounted changeable message sign on or to the bed, body, etc. of a truck to act as a truck mounted device.

The display panel shall have full matrix capability and provide two message lines with the capability to display 7 characters per line with a character height of 18 inches. **Display all messages with a minimum character height of 18 inches.**

When traffic queues develop during lane closures on multilane roadways, a truck mounted changeable message sign may be utilized to provide advance notice to motorists that the motorists are approaching a traffic queue and should be prepared to stop. When used in association with a traffic queue, place the truck mounted changeable message sign on the shoulder of the roadway. On high speed roadways, maintain the truck mounted changeable message sign no less than 2000 feet in advance of the traffic queue at all times. Do not place a truck mounted changeable message sign on the shoulder of a roadway without an operator. The truck mounted changeable message sign shall have the capability to display the message, "PREPARE TO STOP", with a minimum character height of 18 inches.

During mobile operations on multilane roadways, a truck mounted changeable message sign may be used to provide advance notice to motorists that the motorists are approaching a work operation operating in the travel lane. When used in association with a mobile operation, the truck mounted changeable message sign should flash alternately to read "RIGHT LANE", "CLOSED AHEAD" during operations in the right travel lane or "LEFT LANE", "CLOSED AHEAD" during operations in the left travel lane. Place and operate the truck mounted changeable message sign on the roadway shoulder unless the shoulders are too narrow to accommodate vehicles, the shoulders are structurally inadequate or curb and gutter is present. When site conditions require the truck mounted changeable message sign to operate within the travel lane, the changeable message sign shall display a flashing arrow. The flashing arrow display on a truck mounted changeable message sign is permissible only when the changeable message sign must operate in a travel lane. Do not display the flashing arrow on a truck mounted changeable message sign when the changeable message sign operates on the shoulder.

Use pre-programmed messages in accordance with the typical standard drawings in this manual when the truck mounted changeable message signs are used as part of the traffic control setup. Display only those messages pertinent to the traffic control situation and traffic conditions. Do not use a message on a truck mounted changeable message sign that duplicates the legends on the advance warning signs.

Truck Mounted Attenuators -

Truck mounted attenuators approved for use by the SCDOT includes the conventional type truck mounted attenuators mounted directly to a truck and the trailer type truck mounted attenuators towed behind a truck.

Use truck mounted attenuators to provide separation between approaching vehicular traffic and a work zone. These devices are especially effective in areas where pedestrian workers are conducting work activities within the limits of a travel lane. Utilize these devices in lane closures, shoulder closures, mobile operations and similar scenarios. These devices may be mounted directly to a truck or on a trailer. All truck mounted attenuators shall comply with department specifications.

All approved truck mounted attenuators are classified as *NCHRP Report 350* Test Level 2 or Test Level 3. Determine if a Test Level 2 or Test Level 3 truck mounted attenuator is suitable to a specific roadway based upon the legal posted regulatory speed limit of the specified roadway prior to the presence of a work zone or a temporary speed limit within a work zone.

Test level 2 truck mounted attenuators are approved for roadways with legal posted regulatory speed limits of 45 mph or less. Do not utilize test level 2 truck mounted attenuators on Interstate highways or roadways with posted regulatory speed limits of 50 mph or greater.

Test level 3 truck mounted attenuators are approved for roadways with legal posted regulatory speed limits of 50 mph or greater. Test level 3 truck mounted attenuators are acceptable for use on all roadways.

Always provide a clear zone in front of a truck mounted attenuator for potential roll ahead during an impact from an errant vehicle. Always provide a clear zone of approximately 100 feet to the front of the vehicle unless otherwise prescribed by this manual. Also, do not position pedestrian workers or equipment in the immediate area in front of the vehicle due to the potential for the unit to roll forward during an impact. Do not place the truck mounted attenuator in advance of a stationary hazard such as a temporary concrete barrier wall that may restrict the roll ahead and impede the unit's capacity to function properly.

A direct truck mounted truck mounted attenuator is mounted and attached to brackets or similar devices connected to the frame of a truck. Attach each direct truck mounted truck mounted attenuator to the rear of a truck with a minimum gross vehicular weight (GVW) of 15,000 pounds (actual weight). If the addition of supplemental weight to the vehicle as ballast is necessary, contain the material within a structure constructed of steel. Construct this steel structure to have a minimum of four sides and a bottom to contain the ballast material in its entirety. A top is optional. Bolt this structure to the frame of the truck. Utilize a sufficient number of fasteners for attachment of the steel structure to the frame of the truck to ensure the structure will not part from the frame of the truck during an impact upon the attached truck mounted attenuator. Utilize either dry loose sand or steel reinforced concrete for ballast material within the steel structure to achieve the necessary weight. The ballast material shall remain contained within the confines of the steel structure and shall not protrude from the steel structure in any manner.

A trailer towed truck mounted attenuator is a trailer type attenuator towed from behind and attached to the frame of a truck via a standard pintle hook / hitch. Attach each trailer towed truck mounted attenuator to the rear of a truck with a minimum gross vehicular weight (GVW) of 10,000 pounds (actual weight). If the addition of supplemental weight to the vehicle as ballast is necessary, contain the material within a structure constructed of steel. Construct this steel structure to have a minimum of four sides and a bottom to contain the ballast material in its entirety. A top is optional. Bolt this structure to the frame of the truck. Utilize a sufficient number of fasteners for attachment of the steel structure to the frame of the truck to ensure the structure will not part from the frame of the truck during an impact upon the towed truck mounted attenuator. Utilize either dry loose sand or steel reinforced concrete for ballast material within the steel structure to achieve the necessary weight. The ballast material shall remain contained within the confines of the steel structure and shall not protrude from the steel structure in any manner.