

## **ROADWAY EMERGENCY TRAFFIC MANAGEMENT**

### **CHAPTER 7.19**

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**Submitted By:**

**Approved By: Chief of Fire Rescue**

**IT SHALL BE THE POLICY OF ALACHUA COUNTY DEPARTMENT OF PUBLIC SAFETY TO POSITION APPARATUS AT THE SCENE OF EMERGENCIES IN A MANNER THAT BEST PROTECTS THE WORK AREA AND PERSONNEL FROM VEHICLE TRAFFIC AND OTHER HAZARDS.**

#### **Goals**

- Safety of personnel and patients
- Expeditious scene operations
- Rapid termination of incident and reopening of roadway

#### **Purpose**

- Provide a safer work environment when working roadway incidents
- Ensure that emergency operations are performed in the most expeditious manner when working a roadway incident.
- Ensure that the designated safer area is proportionate to the incident.

#### **General**

The National Fire Protection Association (NFPA) 1500 Chapter 8.7 provides guidelines for emergency operations at traffic incidents. The components of a Temporary Traffic Control Zone (TTCZ) include:

- Advance warning area
- Approach area
- Transition area
- Fend-off position
- Shielding Apparatus
- Activity area
- Termination area

The first arriving unit shall ensure that traffic is controlled before addressing the emergency operations (NFPA 8.7.7)

A TTCZ shall be established at all roadway incidents where emergency or non-emergency operations are established.

Staging of the first arriving, emergency response apparatus is critical to the development of an effective TTCZ. Since the primary function of this apparatus is firefighting and rescue this position must also compliment the capabilities of the fire rescue team. The staging position of apparatus should:

- provide a shield to the incident with reference to NFPA 1500 (8.7),
- remain firefighting and rescue functional,
- provide immediate advanced warning to the incident, and
- apparatus staging involves an angled parking procedure or fend-off position, in addition to establishing a buffer space and lateral buffer.

## **FEND-OFF POSITION**

To make the best use of fire department vehicles, the “Fend-off” position was developed as shown in Figure 1. **To establish the fend-off position, the driver should pull as far to the right or left as possible, then turn sharply back, to position the vehicle at 20 to 30 degrees to the roadway.** This recommended method of positioning emergency apparatus provides an initial level of safety to the scene for several reasons:

Apparatus not protecting the scene or rescuers shall be parked immediately down-way of the incident site. Their location should not create a traffic hazard or obstruction, or impede other emergency services.

## **BUFFER SPACE**

It is recommended that a “Buffer Space”, as shown in Figure 1, be maintained between the incident site and shielding apparatus. This creates a clear area or space between the shielding vehicle and the incident site or potentially hazardous area. The suggested distance is 75–100 feet up way from the accident. Reasons for the buffer space include:

Cones can be used to close off the buffer space to vehicle traffic by placing them along the skip line.

The front bumper of the shielding apparatus should be no closer than 0.6m to the lane divider line as shown in Figure 1. A traffic cone shall be placed on the lane divider line directly in front of the corner of the front bumper.

Traffic cones shall be placed on the lane divider approximately every twenty feet along the buffer area to help prevent vehicle reentry into the area.

Click to view → [FIGURE 1 Apparatus Staging](#)

## **ESTABLISHING A TRAFFIC CONTROL ZONE**

Click to view → [FIGURE 2 Temporary and Emergency Traffic Control Zones](#)

## **COMPONENT AREAS OF AN EMERGENCY TRAFFIC CONTROL ZONE**

A well-designed emergency traffic control zone should reflect five distinct component areas. These areas are described below in the order in which drivers would encounter them.

### **Advance Warning Area**

- It should alert the motorist that there is a traffic situation or difficulty ahead, which will require some action on his or her part.

### **Approach Area**

- It should identify the nature of the equipment or vehicle that he or she is about to encounter and allow them to analyze the situation.

### **Transition Area**

- It should provide some indication as to the actions to be taken by the motorist so they can decide a course of action and execute safe driving techniques before entering the activity area.

### **Activity Area**

Recommended components include:

- Fend-Off Position (Fire Apparatus).
- Buffer Space (scene protection area).
- Incident Site (a restricted area for authorized personnel).
- Traffic Space (where traffic is allowed to pass through the activity area, next to the incident).
- Staging Area: Emergency vehicles performing COMMAND functions or not immediately required for shielding or providing direction, that are unable to park in a safe area off of the roadway, may be directed to STAGE in this area, downstream of the Incident Site. Their location should not create a traffic hazard or obstruction, or impede other emergency services.

### **Termination Area**

This area is where traffic returns to its normal path. The termination area extends from the downstream end of the staging area to the point where traffic is able to resume normal driving. Traffic control may be required in this area under emergency conditions when access to off ramps, on ramps and intersections compromises motorist safety.

NOTE: Two or more of the component areas may be combined in emergency situations where traffic, volume, speed, visibility and conditions permit.

**Establishing a secure emergency traffic control zone takes time and should be a**

**progressive activity defined by the officer in charge, and is based on the manpower available and the critical needs of the incident.**

### **EXAMPLES OF VIEW OBSTRUCTIONS - HORIZONTAL CURVE**

The following Figures 3 and 4 are examples of horizontal view obstructions. The term **Horizontal Curve** is used to describe a level section of curved roadway. This type of situation may have trees (as per example) or buildings on the inside of the curve that affects the sight distance of the motorist. Adequate sight distance can be an important factor in these instances, as it allows the driver time to perceive that a hazard is present and react accordingly.

Click to view → [Figure 3 and 4- Examples of View Obstructions -Horizontal Curve](#)

When it is determined that a horizontal view obstruction exists, steps should be taken to move the set-up back to a point that allows the oncoming motorist more perception and reaction time.

NOTE: Substitute vehicle headlight illumination for sight distance and this diagram would provide an example of reduced visibility (darkness). Traffic set-ups at night should consider that the driver's vision might be reduced by a combination of vehicle speed and headlight performance.

### **EXAMPLES OF VIEW OBSTRUCTIONS - VERTICAL CREST**

The following illustration is an example of a vertical view obstruction. The vertical crest of a hill reduces the motorist's visibility of the roadway as shown below. The sight distance in this situation must be adequate for the driver to perceive that a hazard is present and react accordingly.

Click to view → [FIGURE 5 View Obstruction - Vertical Crest](#)

### **SETTING UP TAPER AND TANGENT SECTIONS**

Tapers and tangents will vary in length. A freeway requires longer tapers and tangents than a local street. Emergency personnel must also consider the conditions affecting cone placement to establish a safer and effective traffic control zone. Longer tapers and tangents allow more time and distance for the motorist to react to a lane closure or change.

**If the incident affects more than one lane of traffic each traffic lane should be closed separately.**

Click to view → [Taper and Tangent Sections](#)

Click to view → [TAPERS AND TANGENTS INVOLVING CURVED SECTIONS](#)

## SET-UP AND TAKEDOWN OF THE EMERGENCY TRAFFIC CONTROL ZONE

The greatest risk to firefighting personnel occurs during two phases of Traffic Management, set-up and takedown. During the set-up phase, apparatus staging and the placement of equipment establishes an emergency temporary traffic control zone. Until all warning devices are in position, approaching motorists may not be expecting to find firefighters and their equipment on the roadway.

### TRAFFIC MANAGEMENT SET-UP CONSIDERATIONS

The following example identifies some of the set-up considerations when closing one or more lanes of traffic on a high volume, high speed roadway. This scenario may be considered as one of the more complex or as requiring the most apparatus, equipment and manpower to complete. Each situation encountered will require individual assessment and may require periodic re-evaluation to ensure that apparatus position and warning device placement is adequate.

**The primary response apparatus** is usually the first unit to arrive at an incident, and as Incident Command, should consider the following:

- Establishing a buffer space between the incident site and the apparatus.
  - Positioning the apparatus to protect the immediate scene by parking in the fend-off position. Units with arrow boards may park parallel to traffic lanes.
  - Maintaining a lateral buffer to reduce apparatus lane encroachment.
- Designate a fire fighter for cone placement. The fire fighter dons the traffic jacket and when safe to do so, places cones on the roadway in the following areas:
  1. **Lateral Buffer** – They place a traffic cone on the skip line adjacent to the corner of the apparatus, next to the traffic flow.
  2. **Advance Warning** - Initial cone placement is initiated on the approach to the emergency vehicle. One of the safest methods for distributing traffic cones is from the shoulder or non-traffic area of the roadway. Cones are removed from the apparatus and placed on the, curb, sidewalk, roadway shoulder, etc. While facing oncoming traffic and staying in the non-traffic area, a reasonable number of cones are carried adjacent to the intended position of the first cone. When safe to do so, the fire fighter steps onto the roadway, positions the cone and returns to the shoulder. They continue to distribute the remaining cones in the same manner as above, with consideration to the conditions affecting cone placement (as shown in Section 4.2 Securing the Scene), until all of the cones dedicated for advanced warning are in position.
  3. **Buffer Space** – Delineation devices are placed along the skip line between the lateral buffer and the incident to outline the traffic space and secure the incident site.

## **TRAFFIC MANAGEMENT TAKE-DOWN CONSIDERATIONS**

Taking-down the emergency traffic set-up needs to be well organized and coordinated by the Incident Commander. The removal of apparatus and equipment from the roadway must be a priority of Command in order to provide the required level of safety to each situation. The following recommendations should be considered when preparing to terminate an incident:

- The law enforcement agency “Officer in Charge” and the Fire Department “Officer in Charge” should liaison to develop a joint procedure for take-down and the re-establishment of traffic flow.
- All apparatus stays in place until the Incident Commander gives the order to start take-down operations. This will ensure that all personnel are aware that the incident is terminating and traffic flow will be resuming.
- Each lane should be opened individually, starting with the lane closest to the center of the roadway.
- Takedown should follow the same order as the setup, with the last traffic control device removed from the roadway in the advance warning area.

**NOTE:** Due to the non-emergency status of the takedown operation, the Incident Commander (police and/or fire officer in charge), should arrange to have fire apparatus or police vehicles shield fire fighters when they remove equipment from the roadway.

Vehicles will carry traffic cones as follows:

Engines	4
Rescue ambulances	2
Staff vehicles/District Chiefs	2