

**SUMMARY OF TRAFFIC CONTROL GUIDELINES  
FOR MAJOR INCIDENT RESPONSE  
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**FROM**

**Guidelines for Utilization of Police Officers  
In Traffic Control and Enforcement on Urban Freeways**

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**SUMMARY OF TRAFFIC CONTROL GUIDELINES  
FOR MAJOR INCIDENT RESPONSE**

by

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An incident on a freeway is defined as an accident, mechanical breakdown, cargo spillage, or other unexpected traffic event on a freeway that results in traffic congestion. An incident may involve injuries or constitute a potential hazard necessitating emergency response by medical and/or fire department personnel. An incident creates operational problems resulting in traffic congestion. Freeway incidents may be classified as either "minor" or "major" in terms of their impacts on traffic safety and operations. In this study, freeway incidents are classified in terms of the traffic control manpower (including police officers) required to effectively manage the incident. A minor incident is one that can be managed by the primary respondent, usually a single patrolman or patrol vehicle. Minor incidents would typically be handled by the patrolman using the enforcement agency's "standard operating procedures". These types of incidents would be cleared quickly from the freeway with a minimum of traffic operational impacts. No emergency response would be required for minor incidents.

The guidelines for utilization of police officers in traffic control discussed in this summary are restricted to major incidents on urban freeways. These are incidents of sufficient consequence and impact to require involvement of more than a single patrol vehicle and/or operating agency to handle effectively.

## OBJECTIVES

The patrol officer is usually the initial agency authority at a major incident site on a freeway. His first objective is generally to secure and protect the incident location while assessing the need for medical or other emergency support. The officer also provides information on the type of emergency equipment that might be necessary to clear the scene.

From an incident traffic management standpoint, the initial contact officer determines and conveys information relative to type and extent of the freeway incident. This will allow decisions to follow regarding impacts on freeway operations in advance of the scene and implementation of necessary traffic control to minimize these impacts. The primary objective of incident traffic management is to restore freeway operations as quickly and safely as possible. The utilization of police officers for traffic control in this regard is critical. Police personnel provide the authority necessary to effect immediate, real-time direction of traffic adjacent to or in complete bypass of a major freeway incident. Officers provide the manual traffic control support necessary, in absence of pre-designated traffic control devices, to facilitate lane closure transitions, merge maneuvers, or diversion re-routing of freeway traffic. If necessary, and with time to mobilize, traffic control by police can be supplemented by portable devices (such as signs, cones, flares, etc.) or flagmen. Also, an incident response plan (if available) may provide assistance in assessing police traffic control needs.

## GENERAL GUIDELINES

The management of traffic flow during a major freeway incident requires one or both of two general techniques. These are: 1) Techniques for increasing capacity past the incident site; and 2) Techniques for reducing (or managing) demand on freeway segments affected by the incident. Each of these techniques are discussed with respect to implementation and requirements for utilization of police officers.

## Increasing Capacity

In those situations where traffic volumes are relatively low and adequate freeway capacity exists, traffic flow may be maintained through the incident scene by: 1) use of the freeway shoulders; 2) merging techniques; 3) re-timing frontage road signals or manually controlling traffic through frontage road intersections; or, in special situations, 4) contraflow operations.

The freeway shoulder can be used as an interim measure to increase capacity until the incident is removed from the freeway. The decision to use the freeways shoulders should be based on the following considerations:

1. The shoulder is paved and there is at least 10 feet of clearance from the far edge of the shoulder to the edge of the incident.
2. Use of the shoulder for traffic will not interfere with emergency vehicle requirements.
3. There are no unusual geometrics on the roadway, such as an on-ramp that would conflict with traffic on the shoulder.

Manually-controlled merging should be limited to those lanes that absolutely require it to get traffic past the incident. Merging lanes should be regulated according to the number of vehicles queued in each lane. Also, manually-controlled merging requires that special attention be given to ramp movements to avoid problems on adjacent roads.

Contraflow diversion involves use of a lane on the opposite side of the freeway and may be applicable when one direction of the freeway has been completely closed by an incident.

General manpower requirements for utilization of uniformed police officers for each of these basic techniques are outlined below.

1. Use of Shoulders. Use of the freeway shoulders to increase capacity should be implemented by uniformed patrolmen to insure motorist compliance. The patrolmen should be positioned at the upstream end of the taper.

Normally, two patrolmen would be required. In addition to the uniformed patrolmen, one to two transportation agency personnel may be used to position traffic control devices (flares, cones, etc.).

2. Manually-Controlled Merging. Manually-controlled merging should generally be directed by uniformed police officers. The patrolmen should be positioned at the upstream end of the taper. As a general rule-of-thumb, the number of police officers needed may be assumed to equal two more than the number of lanes closed. Highway department personnel may be used to position and remove cones and flares.

3. Contraflow Diversion. Contraflow operation will, in most cases, be the responsibility of the local transportation agency. Manpower requirements for contraflow operations will vary, but typically a minimum of six transportation agency personnel (including one traffic engineer) and three uniformed patrolmen will be required.

### **Demand Management**

Techniques for managing demand on freeway segments affected by a major incident are intended to advise motorists of the incident so that they may reduce speed, avoid secondary incidents, or consider leaving the freeway and taking an alternate route. These techniques require pre-planning and are generally more labor-intensive than most of the techniques discussed earlier. Pre-designed incident response plans on maps of the freeway and arterial street systems should be developed with alternate routes designated for all possible incident locations. Requirements for personnel and control devices can be shown on the routes.

The manpower requirements will include personnel to place signs and cones, personnel for traffic control at exit ramps and intersections (if off-freeway diversion is used), and personnel at the incident site. Generally, a minimum of 5 and possibly as many as 10 individuals would be needed, depending on the severity and duration of the incident. The majority of the personnel required would typically be available from the local highway department office. The primary responsibility of uniformed police personnel would be at the incident site and at the freeway entry and exit points in the immediate vicinity of the incident.

Since the primary objective of incident management is to restore freeway traffic services as quickly and as safely as possible, the effectiveness of incident management techniques utilizing police officers should be measured in terms of: 1) How quickly the incident can be cleared and normal traffic services restored; and 2) How effective the techniques are in preventing or minimizing secondary incidents. These measures provide a means of calculating the delay experienced by motorists as a result of the major freeway incident and can be used to assess the overall effectiveness of various incident management techniques utilizing patrolmen to assist with traffic control.

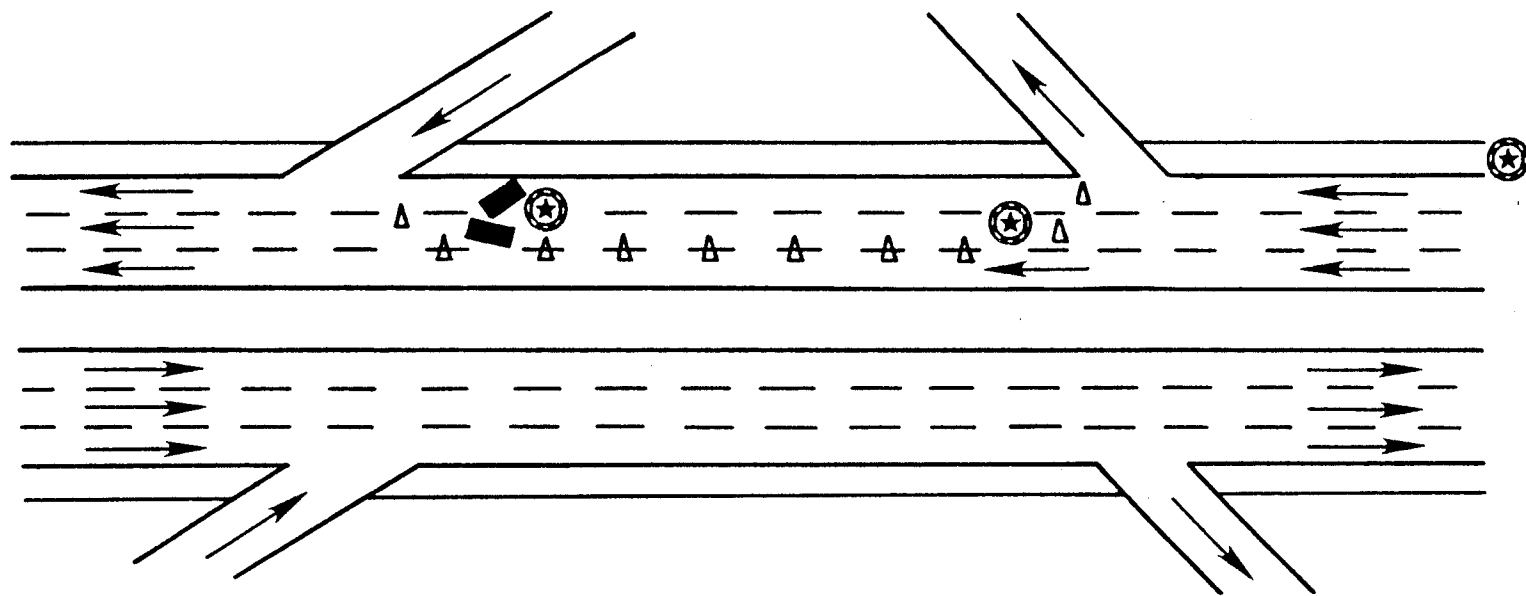
### EXAMPLES OF TYPICAL SET-UPS

Figures 1-4 illustrate typical applications of freeway incident management techniques utilizing police officers. Figure 1 depicts an incident requiring patrolmen to implement a manual merging of traffic into the remaining open freeway lane. One patrolman should always be positioned to protect the incident site while other officers are responsible for traffic control associated with the merge transition, or diversion if necessary. Transportation agency personnel, as available, should provide assistance with placement of traffic control devices and flagging support.

Figures 2 and 3 provide two examples of freeway incident management to utilize available capacity. Figure 2 presents a freeway incident blocking the inside lanes. Police officers are utilized to transition traffic into the remaining open lane and along the shoulder for an additional lane. Figure 3 indicates a major incident closing the freeway. Patrolmen and/or flagmen are located to transition traffic to take advantage of capacity in the opposite direction. Obviously, this scenario would only be possible where there was no median obstruction.

In either case of shoulder usage (Figure 2) or contraflow diversion (Figure 3) extensive signing and flagging support is needed in addition to uniformed officers. The exact requirements for both police and other support is dependent upon the duration of blockage, location of the incident, and time of day (peak, off-peak).

Figure 4 illustrates a major incident necessitating complete freeway closure. Officers arriving at the location protect the site and request other emergency support. Where continuous frontage roads exist, traffic may be diverted onto the nearest connecting exit ramp and routed around the incident. Officers may be needed at other positions, which are site specific, to safely and efficiently implement the diversion to minimize delay.



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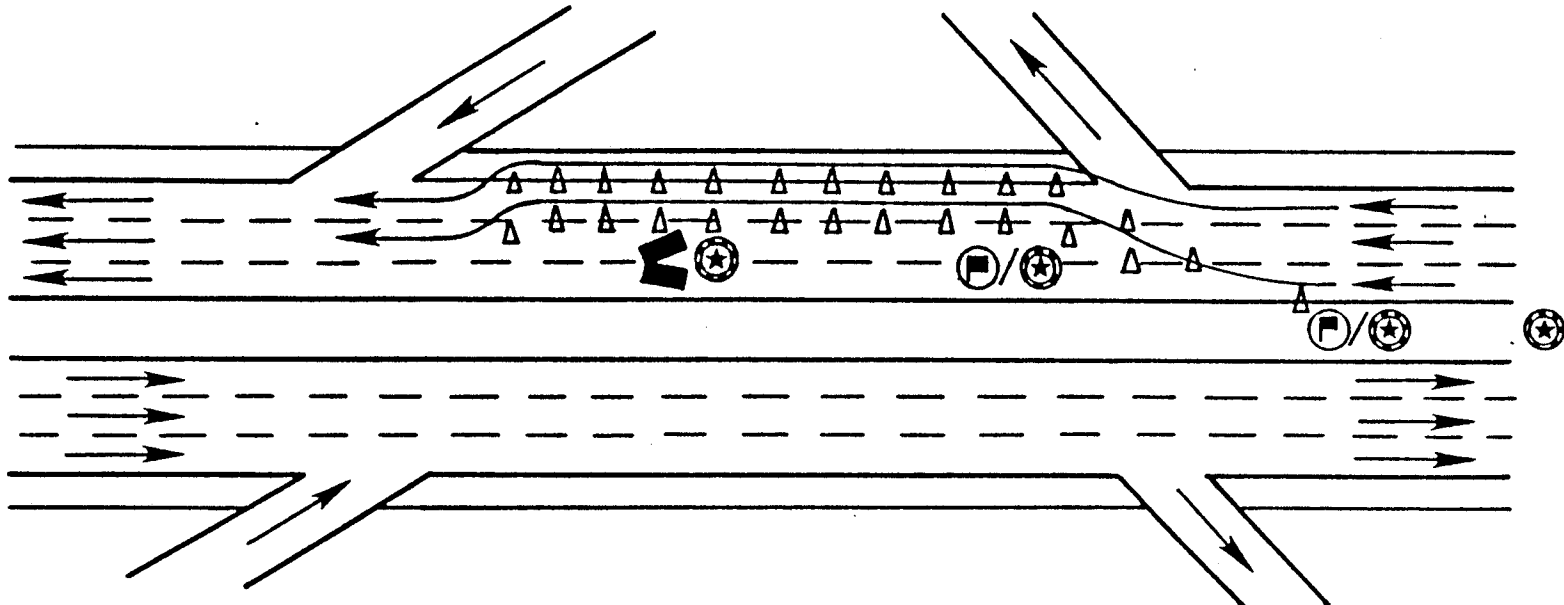
△	CONES/FLARES
⊙	OFFICER
◻	FLAGMAN
■	VEHICLES

Not to Scale

Note: Traffic control plan depicted is for illustration purposes only under emergency conditions.

Figure 1. Example Set-Up for a Freeway Incident: Manual Merge





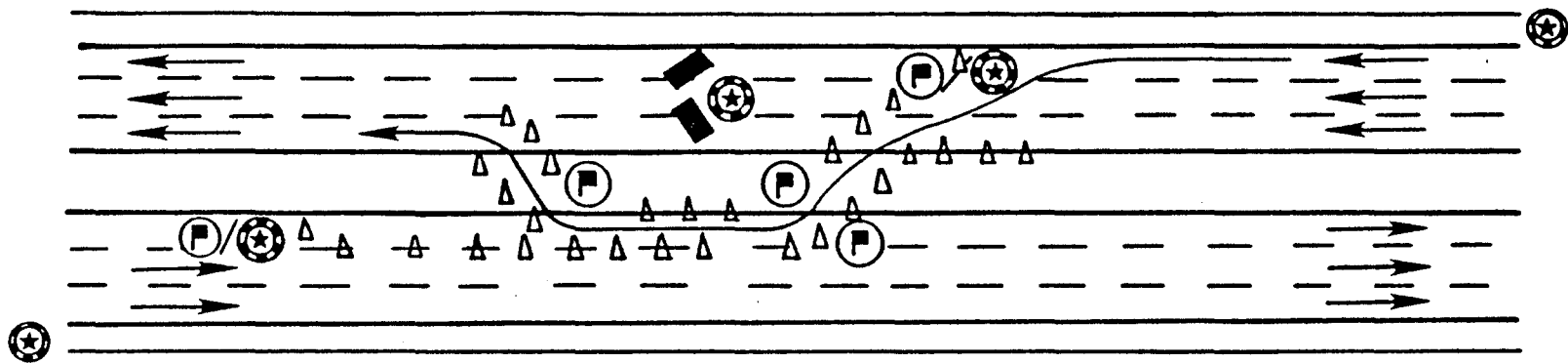
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- ⊙ OFFICER
- ◻ FLAGMAN
- VEHICLES

Not to Scale

Note: Traffic control plan depicted is for illustration purposes only under emergency conditions.

Figure 2. Example Set-Up for a Freeway Incident: Shoulder Usage



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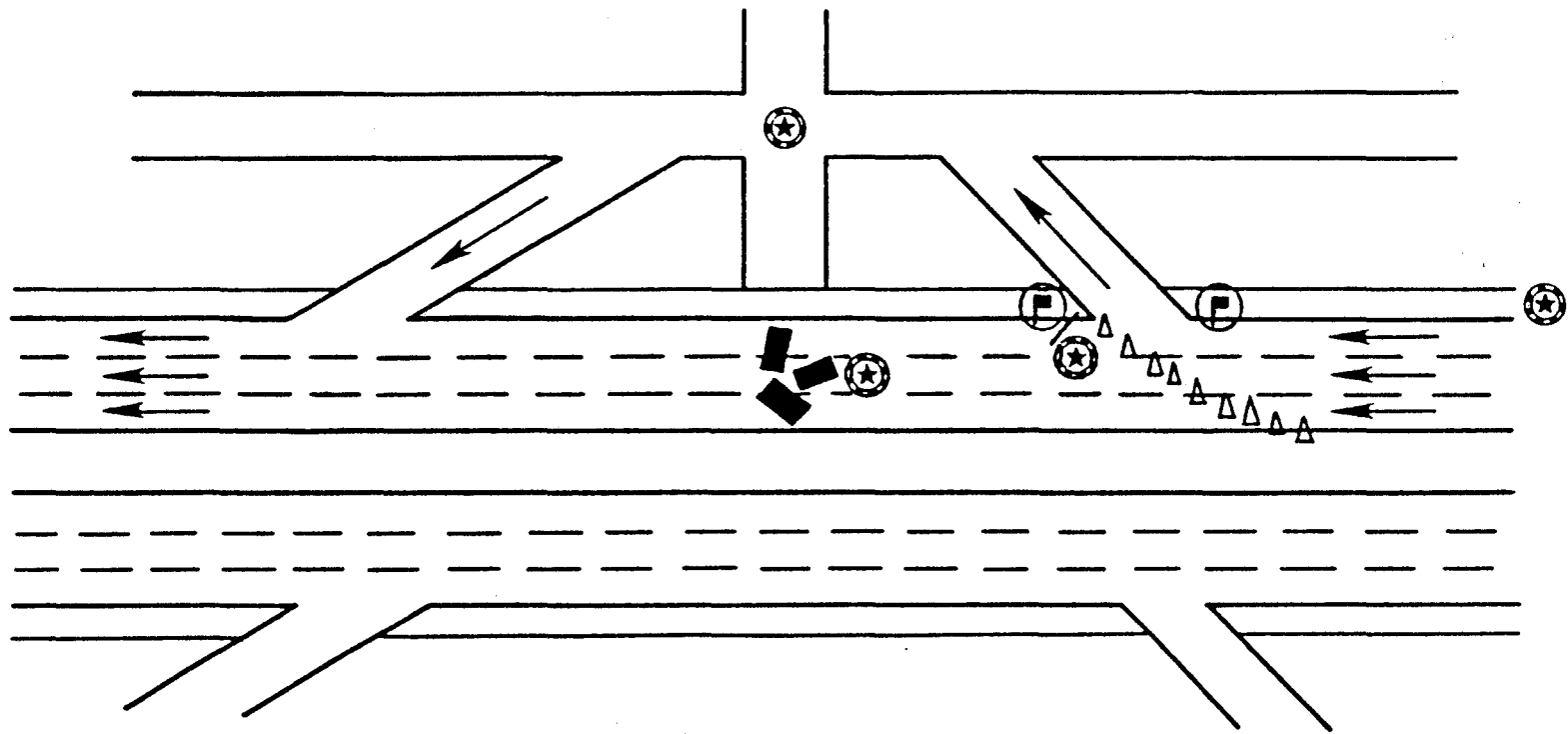
**LEGEND**

△	CONES/FLARES
⊙★	OFFICER
⊙□	FLAGMAN
■	VEHICLES

Not to Scale

Note: Traffic control plan depicted is for illustration purposes only under emergency conditions.

Figure 3. Example Set-Up for a Major Freeway Incident: Contraflow Diversion



**LEGEND**

△	CONES/FLARES
⊛	OFFICER
⊠	FLAGMAN
■	VEHICLES

Not to Scale

Note: Traffic control plan depicted is for illustration purposes only under emergency conditions.

Figure 4. Example Set-Up for a Major Freeway Incident: Ramp Diversion