

CHAPTER 6I. CONTROL OF TRAFFIC THROUGH TRAFFIC INCIDENT MANAGEMENT AREAS

Section 6I.01 General

Support:

- 01 The National Incident Management System (NIMS) has been adopted nationally and is being implemented in Virginia as the federally required incident management system by which communities, states and the federal government will ensure full integration of activities in response to threatened and actual emergencies and disasters of all kinds. The NIMS has been mandated nationally for integrated local, state, tribal, territorial and federal prevention, response and recovery activities in accordance with criteria set forth in Homeland Security Presidential Directive 5 (HSPD 5). When implemented in consonance with the National Response Plan, and other federal, state and local emergency plans, NIMS, with its compliant Incident Command System, provides the established framework to effectively integrate operations at all levels, including but not limited to the implementation of a standardized Incident Command System for any size or scope of event. The National Response Plan (NRP), using NIMS, is an all hazards plan that provides the structure and mechanisms for national-level policy and operational coordination for domestic incident management.
- 02 In accordance with HSPD 5, the Secretary of Homeland Security is the Principal Federal Official responsible for domestic incident management through NIMS. The Governor is the Principal State Official responsible for incident management in the Commonwealth and will do so through the adoption of NIMS.

Standard:

- 03 **The Governor shall accomplish these responsibilities in accordance with existing statutory authorities and through established organizations and structures set forth for these purposes. This designation in no way alters or impedes the authority of local officials, state agencies, private relief and business organizations, or federal agencies to perform responsibilities set forth by law.**

Support:

- 04 The National Incident Management System has four core components:
1. Preparedness
 2. Communications and Information Management
 3. Resource Management
 4. Command and Management
- 05 Within NIMS, the Incident Command System (ICS) operates with a modular organizational structure. Responsibility for the establishment and expansion of the structure lies with the Incident Commander (IC), who bases the expansion on the requirements of the incident.
- 06 An Incident is an occurrence or event, natural or man-made that requires a response to protect life or property. As the incident size and complexity grow, the organization expands from the top down. In addition, as the number of incident management positions increases at a scene, functional responsibilities are delegated.
- 07 Unified Command (UC) allows all agencies with jurisdictional authority or functional responsibility for the incident to jointly provide management direction to an incident through a common set of incident objectives and strategies and a single Incident Action Plan (IAP). Unified Command may be appropriate at a multi-jurisdictional incident, such as a collision that crosses city and county lines, or a multi-departmental incident, such as a collision on an interstate that brings responders from fire, EMS, law enforcement, VDOT, and other agencies. Under UC, all agencies with jurisdictional authority or functional responsibility for any or all aspects of an incident participate in the UC structure, contribute to overall incident management, and develop incident priorities.

Standard:

- 08 **In the Unified Command ICS structure, all operations shall be directed by one person, the Operations Section Chief, who controls tactical resources.**

Section 6I.02 Traffic Incident Management Basics

Support:

- 01 Traffic Incident Management (TIM) is the systematic, planned, and coordinated use of human, institutional, mechanical, and technical resources to reduce the duration and impact of incidents, and improve the safety of motorists, crash victims, and incident responders.

- 02 A traffic incident is any non-recurrent event, such as a vehicle crash, vehicle breakdown, or other special man-made or natural event that causes a reduction in highway capacity and/or an increase in demand.
- 03 A secondary incident is one that occurs as a direct or indirect result of a previous incident. For example, if a crash occurs in the traffic back-up caused by an initial incident, this crash is considered a secondary incident. Secondary incident research reveals a direct correlation with primary incident scene duration. Causes of secondary incidents include driver inattention, changing traffic conditions, and rubbernecking effects. Secondary incidents typically occur within the incident scene or within the traffic queue created by an incident in one or both directions.
- 04 Virginia’s Incident Clearance Law (also known as the “Move It” Law) requires motorists involved in crashes where the vehicles can be driven and no one is injured to move the vehicles to a location where they will obstruct traffic as little as possible. Expediting the removal of damaged or disabled vehicles from the travel lanes enhances the overall level of safety on the roadway and reduces associated congestion and delay.
- 05 The Code of Virginia’s “Slow Down, Move Over” Law requires motorists to change lanes away from any stopped emergency vehicle that is displaying a flashing, blinking, or alternating blue, red, or amber lights. If changing lanes would be unreasonable or unsafe, motorists must slow down and pass with caution.

Section 6I.03 Traffic Incident Classification

Support:

- 01 Not all traffic incidents are the same. Depending on its nature and location, one incident may impact travel more significantly than another. To assist responders, VDOT has adopted a three-level system to describe incidents on Virginia roadways.

Guidance:

- 02 *When reporting information about an incident, responders should refer to the traffic incident level. This will help the TOC and/or local E911 Communications Center staffs make proper agency notifications and issue appropriate motorist information alerts.*

Table 6I - 1, VDOT Traffic Incident Levels

Traffic Incident Levels (Based on Traffic Impact)		
Level 1	Minor	Impact to the traveled roadway is estimated to be less than 30 minutes with no lane blockage or with minor lane blockage
Level 2	Intermediate	Impact to the traveled roadway is estimated to be between 30 minutes and 2 hours with lane blockages, but not full closure of the roadway
Level 3	Major	Impact to the traveled roadway is estimated to be more than 2 hours, OR the roadway is closed in any single direction; significant area-wide congestion is expected

Section 6I.04 Responder Personal Safety

Standard:

- 01 **Until July 1, 2012, all emergency responders, within the right-of-way who are exposed either to traffic (vehicles using the highway for purposes of travel) or to emergency vehicles and equipment within the Incident TTC zone shall wear high-visibility safety apparel that meets the Performance Class 2 or 3 requirements of the ANSI/ISEA 107–2004 publication entitled “American National Standard for High-Visibility Safety Apparel and Headwear” (see Section 1A.11 of the Virginia Supplement to the 2009 MUTCD), or equivalent revisions, and labeled as meeting the ANSI 107-2004 standard performance for Class 2 or 3 risk exposure, except as provided in Paragraph 3.**
- 02 **Beginning July 1, 2012, all emergency responders, within the right-of-way who are either exposed to traffic or to emergency vehicles and equipment within the Incident TTC zone shall wear high-visibility safety apparel that meets Performance Class 3 requirements of the ANSI/ISEA 107–2010 publication entitled “American National Standard for High-Visibility Safety Apparel and Headwear” (see Section 1A.11 of the Virginia Supplement to the 2009 MUTCD), or equivalent revisions, and labeled as meeting the ANSI 107-2010 standard performance for Class 3 risk exposure, except as provided in Paragraph 3.**

Option:

- 03 Emergency and incident responders and law enforcement personnel within the Incident TTC zone may wear high-visibility safety apparel that meets the performance requirements of the ANSI/ISEA 207-2006 publication entitled “American National Standard for High-Visibility Public Safety Vests” (see Section 1A.11 of the Virginia Supplement to the 2009 MUTCD), or equivalent revisions, and labeled as ANSI 207-2006, in lieu of ANSI/ISEA 107-2004 apparel.

Standard:

- 04 **When uniformed law enforcement personnel are used to direct traffic, to investigate crashes, or to handle lane closures, obstructed roadways, and disasters, high-visibility safety apparel as described in this Section shall be worn by the law enforcement personnel. Refer to Section 6E.02, Paragraph 3, for additional guidance.**
- 05 **Except as provided in Paragraph 6, firefighters or other emergency responders working within the right-of-way shall wear high-visibility safety apparel as described in this Section.**
- 06 **Firefighters or other emergency responders working within the right-of-way and engaged in emergency operations that directly expose them to flame, fire, heat, and/or hazardous materials shall wear retroreflective turn-out gear that is specified and regulated by other organizations, such as the National Fire Protection Association. Once the incident is mitigated, first responders shall don approved high-visibility apparel in lieu of turnout gear.**

Guidance:

- 07 *All incident responders should be trained on how to work next to motor vehicle traffic in a way that minimizes their vulnerability. Workers having specific TTC responsibilities should be trained in TTC techniques, device usage, placement, and TTC review. Training should be conducted on a continual basis.*

Section 6I.05 Situational Awareness*Guidance:*

- 01 *Situational awareness is the continuous responsibility of all emergency responders. Responders should be aware of the status of all the incident factors that impact safe, quick clearance. Any changes that could potentially negatively impact life safety, incident stabilization, and property/environmental conservation should be brought to the attention of the Incident Commander through the chain-of-command. Unsafe conditions should be mitigated as soon as possible and communicated to all those potentially impacted.*
- 02 *To avoid the errant or distracted driver, responders should never turn their backs to traffic. They should face traffic and remain alert at all times. It often helps to designate another person as a lookout or spotter to watch for dangers and provide warnings. Responders should always have an escape plan to get out of the way of errant drivers.*

Section 6I.06 Initial Scene Response*Guidance:*

- 01 *During the initial scene response, several factors should be considered as part of the overall scene response:*
- *Approach and Vehicle Positioning*
 - *Scene Size-Up*
 - *Equipment and Personnel Needs*
 - *Traffic Safety and Flow*
 - *Risk Assessment*
 - *Establish Command*
 - *Develop and Communicate a Incident Action Plan (IAP)*
- 04 *As soon as practical, this information should be provided to a dispatch center. This information can also be relayed to VDOT’s TOC or the state EOC as needed. This will help VDOT’s TOC make proper agency notifications and issue information alerts to motorists.*

Section 6I.07 Role of VDOT Transportation Operations Center (TOC)**Support:**

- 01 While not physically on the scene, Transportation Operations Center (TOC) personnel are involved in every TIM phase. Operators at the TOC are able to view conditions on the interstate system via closed-circuit traffic

cameras (CCTV), and can pan-tilt-zoom the cameras to get various views. During an incident, operators can adjust state-operated traffic signals to help manage overflow traffic on arterial roads.

- 02 TOC personnel also work to make sure all travelers are aware of the incident and any traffic flow changes. Having access to accurate and timely information, allows travelers to make informed en-route decisions, such as when to take an alternate route, and reduces congestion throughout an incident scene.
- 03 The TOC manages numerous intelligent transportation system (ITS) technologies and tools used for traffic and road condition monitoring. There are several ITS methods by which the TOC informs motorists of a change in traffic conditions, including:
- 511 Virginia,
 - Changeable message signs (CMS), and
 - Highway advisory radio (HAR).
- 04 It is important to continue information dissemination until traffic conditions return to normal; depending on the incident size, this can take several hours.

Section 6I.08 Initial Traffic Incident Management Temporary Traffic Control

Support:

- 01 A traffic incident management area is an area of a highway where temporary traffic controls are installed, as authorized by a public authority or the official having jurisdiction of the roadway, in response to a road user incident, natural disaster, hazardous material spill, or other unplanned incident. It is a type of TTC zone and extends from the first warning device (such as a sign, light, or cone) to the last TTC device or to a point where vehicles return to the original lane alignment and are clear of the incident.
- 02 The primary functions of TTC at a traffic incident management area are to inform road users of the incident and to provide guidance information on the path to follow through the incident area. Alerting road users and establishing a well defined path to guide road users through the incident area will serve to protect the incident responders and those involved in working at the incident scene and will aid in moving road users expeditiously past or around the traffic incident, will reduce the likelihood of secondary traffic crashes, and will preclude unnecessary use of the surrounding local road system. Examples include a stalled vehicle blocking a lane, a traffic crash blocking the traveled way, a hazardous material spill along a highway, and natural disasters such as floods and severe storm damage.

Guidance:

- 03 *In order to reduce response time for traffic incidents, highway agencies, appropriate public safety agencies (law enforcement, fire and rescue, emergency communications, emergency medical, and other emergency management), and private sector responders (towing and recovery and hazardous materials contractors) should mutually plan for occurrences of traffic incidents along the major and heavily traveled highway and street system.*
- 04 *On-scene responder organizations should train their personnel in TTC practices for accomplishing their tasks in and near traffic and in the requirements for traffic incident management contained in this Manual. On-scene responders should take measures to move the incident off the traveled roadway or to provide for appropriate warning. All on-scene responders and news media personnel should constantly be aware of their visibility to oncoming traffic and wear high-visibility apparel (see Section 6I.04).*
- 05 *Emergency vehicles should be safe-positioned (see definition in Section 1A.13 of the Virginia Supplement to the 2009 MUTCD) such that traffic flow through the incident scene is optimized. All emergency vehicles that subsequently arrive should be positioned in a manner that does not interfere with the established temporary traffic flow.*
- 06 *Responders arriving at a traffic incident should estimate the magnitude of the traffic incident, the expected time duration of the traffic incident, and the expected vehicle queue length, and then should set up the appropriate temporary traffic controls for these estimates.*

Standard:

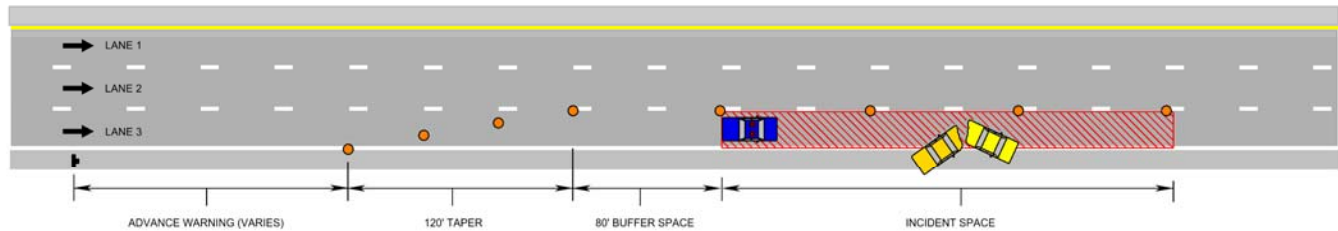
- 07 **Traffic incidents shall be reported to the appropriate Transportation Operations Center as soon as practical once the on-scene evaluation has been performed.**
- 08 **To assist with identifying the location of incidents on the roadway with emergency personnel in a clear manner, lanes shall be identified in the following manner (the example shown is for a three lane, one direction roadway:**

- a. Inside travel lane – Lane 1
- b. Middle travel lanes – Lane 2
- c. Outside travel lane – Lane 3

Support

09 Figure 6I-1 is an example of initial scene setup and identifying an incident by lane numbering.

Figure 6I-1, Desired Initial Incident Scene Setup and Identification by Travel Lane Numbering



Option:

- 10 For traffic incidents, particularly those of an emergency nature, TTC devices on hand may be used for the initial response as long as they do not themselves create unnecessary additional hazards. (See Paragraph 12 for the desired initial setup.)
- 11 If flaggers are used to provide traffic control for an incident management situation, the flaggers may use appropriate traffic control devices that are readily available or that can be brought to the traffic incident scene on short notice.

Guidance:

- 12 *The following definitions should be applied to Figure 6I-1 for the desired initial incident scene setup:*
 - *Advanced Warning – Area where signs are placed to warn of an incident situation. The initial sign should be an EMERGENCY SCENE AHEAD (W20-V25) sign. For incidents lasting longer than two hours, additional advance warning signs as shown in the TIMC figures in Section 6I.13 should be used based on the type of incident.*
 - *Taper – an area where devices such as traffic cones, road flares, or light sticks are placed to form a taper from the shoulder to the full width of the travel lane involving the incident. A minimum of four devices should be placed at 40-foot spacing as shown. The taper should be kept clear of vehicles, equipment and personnel.*
 - *Buffer Space – an area from the end of the taper to the beginning of the incident space which should be kept clear of vehicles, equipment, and personnel. The purpose of the buffer is to allow an errant vehicle to gain control and stop before reaching the incident space. For initial setup, the buffer should be 80 feet in length. For incidents lasting longer than two hours, the buffer space should be increased as shown in the TIMC figures as shown in 6I.13.*
 - *Incident Space – the area which contains the emergency situation as well as all incident responder vehicles, including law enforcement, fire and rescue, towing, and media. Initially, there should be a 200 foot clear area from the first device in the taper to the beginning of the incident space. Safe positioning of emergency vehicles will occur in the incident space. If a Truck-Mounted Attenuator (TMA) vehicle arrives on the scene, it should be placed as the first vehicle the traveling public would encounter in the incident closure. Otherwise, law enforcement would usually be the first vehicle seen by motorist in an incident management closure.*

Option:

- 13 Additional TTC devices may be installed than are shown in Figure 6I-1 for the initial scene setup if available.
- 14 Incidents involving hazardous materials may require adjustments to the initial scene setup based on the type of HAZMAT material involved.

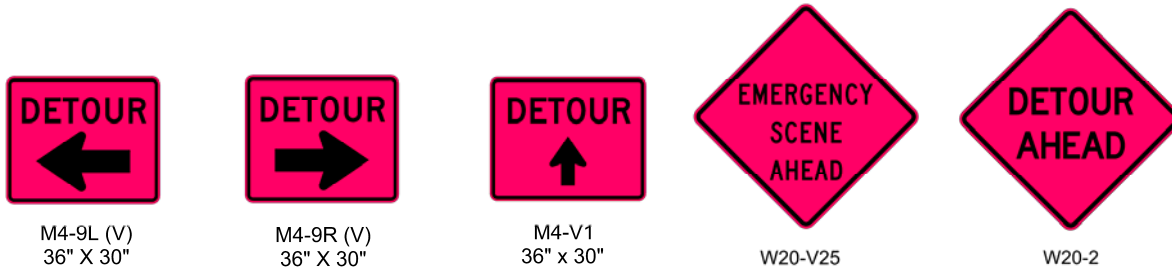
Support:

- 15 While some traffic incidents might be anticipated and planned for, emergencies and disasters might pose more severe and unpredictable problems. The ability to quickly install proper temporary traffic controls might greatly

reduce the effects of an incident, such as secondary crashes or excessive traffic delays. An essential part of fire, rescue, spill clean-up, highway agency, and enforcement activities is the proper control of road users through the traffic incident management area in order to protect responders, victims, and other personnel at the site. These operations might need corroborating legislative authority for the implementation and enforcement of appropriate road user regulations, parking controls, and speed zoning. It is desirable for these statutes to provide sufficient flexibility in the authority for, and implementation of, TTC to respond to the needs of changing conditions found in traffic incident management areas.

- 16 Warning and guide signs used for TTC traffic incident management situations may have a black legend and border on a fluorescent pink background (see Figure 6I-2).

Figure 6I-2, Examples of Traffic Incident Management Area Signs



Section 6I.09 Major Traffic Incidents (Level 3)

Support:

- 01 Major traffic incidents are typically traffic incidents involving hazardous materials, fatal traffic crashes involving numerous vehicles, and other natural or man-made disasters. These traffic incidents typically involve closing all or part of a roadway facility for a period exceeding 2 hours.

Guidance:

- 02 *If the traffic incident is anticipated to last more than 24 hours, applicable procedures and devices set forth in other Chapters of this Manual should be used.*

Support:

- 03 A road closure can be caused by a traffic incident such as a road user crash that blocks the traveled way. Road users are usually diverted through lane shifts or detoured around the traffic incident and back to the original roadway. A combination of traffic engineering and enforcement preparations is needed to determine the detour route, and to install, maintain or operate, and then to remove the necessary traffic control devices when the detour is terminated. Large trucks are a significant concern in such a detour, especially when detouring them from a controlled-access roadway onto local or arterial streets.

- 04 During traffic incidents, large trucks might need to follow a route separate from that of automobiles because of bridge, weight, clearance, or geometric restrictions. Also, vehicles carrying hazardous material might need to follow a different route from other vehicles.

- 05 Some traffic incidents such as hazardous material spills might require closure of an entire highway. Through road users must have adequate guidance around the traffic incident. Maintaining good public relations is desirable. The cooperation of the news media in publicizing the existence of, and reasons for, traffic incident management areas and their TTC can be of great assistance in keeping road users and the general public well informed.

- 06 The establishment, maintenance, and prompt removal of lane diversions can be effectively managed by interagency planning that includes representatives of highway and public safety agencies.

Guidance:

- 07 *All traffic control devices needed to set up the TTC at a traffic incident should be available so that they can be readily deployed for all major traffic incidents. The TTC should include the proper traffic diversions, tapered lane closures, and upstream warning devices to alert traffic approaching the queue and to encourage early diversion to an appropriate alternative route.*

- 08 *Attention should be paid to the upstream end of the traffic queue such that warning is given to road users approaching the back of the queue.*

09 *If manual traffic control is needed, it should be provided by certified flaggers (see Section 6E.01) or uniformed law enforcement officers.*

10 *When light sticks or road flares are used to establish the initial traffic control at incident scenes, channelizing devices (see Section 6F.71) should be installed as soon thereafter as practical.*

Support:

11 Approved colors for light sticks are yellow or lime green. Approved color for road flares is red or orange-red.

Option:

12 The light sticks or road flares may remain in place if they are being used to supplement the channelizing devices.

Guidance:

13 *The light sticks, road flares, and channelizing devices should be removed after the incident is terminated.*

Section 6I.10 Intermediate Traffic Incidents (Level 2)

Support:

01 Intermediate traffic incidents typically affect travel lanes for a time period of 30 minutes to 2 hours, and usually require traffic control on the scene to divert road users past the blockage. Full roadway closures might be needed for short periods during traffic incident clearance to allow traffic incident responders to accomplish their tasks.

02 The establishment, maintenance, and prompt removal of lane diversions can be effectively managed by interagency planning that includes representatives of highway and public safety agencies.

Guidance:

03 *All traffic control devices needed to set up the TTC at a traffic incident should be available so that they can be readily deployed for intermediate traffic incidents. The TTC should include the proper traffic diversions, tapered lane closures, and upstream warning devices to alert traffic approaching the queue and to encourage early diversion to an appropriate alternative route.*

04 *Attention should be paid to the upstream end of the traffic queue such that warning is given to road users approaching the back of the queue.*

05 *If manual traffic control is needed, it should be provided by certified flaggers (see Section 6E.01) or uniformed law enforcement officers.*

Option:

06 If flaggers are used to provide traffic control for an incident management situation, the flaggers may use appropriate traffic control devices that are readily available or that can be brought to the traffic incident scene on short notice.

Guidance:

07 *When light sticks or road flares (see Section 6I.09, Paragraph 11 for approved colors) are used to establish the initial traffic control at incident scenes, channelizing devices (see Section 6F.71) should be installed as soon thereafter as practical.*

Option:

08 The light sticks or road flares may remain in place if they are being used to supplement the channelizing devices.

Guidance:

09 *The light sticks, road flares, and channelizing devices should be removed after the incident is terminated.*

Section 6I.11 Minor Traffic Incidents (Level 1)

Support:

01 Minor traffic incidents are typically disabled vehicles and minor crashes that result in lane closures of less than 30 minutes. On-scene responders are typically law enforcement and towing companies, and occasionally highway agency service patrol vehicles.

02 Diversion of traffic into other lanes is often not needed or is needed only briefly. It is not generally possible or practical to set up a lane closure with traffic control devices for a minor traffic incident. Traffic control is the responsibility of on-scene responders.

03 *When a minor traffic incident blocks a travel lane, it should be removed from that lane to the shoulder as quickly as possible.*

Option:

04 If flaggers are used to provide traffic control for an incident management situation, the flaggers may use appropriate traffic control devices that are readily available or that can be brought to the traffic incident scene on short notice.

Section 6I.12 Use of Emergency-Vehicle Lighting

Support:

01 The use of emergency-vehicle lighting (such as high-intensity rotating, flashing, oscillating, or strobe lights) is essential, especially in the initial stages of a traffic incident, for the safety of emergency responders and persons involved in the traffic incident, as well as road users approaching the traffic incident. Emergency-vehicle lighting, however, provides warning only and provides no effective traffic control. The use of too many lights at an incident scene can be distracting and can create confusion for approaching road users, especially at night. Road users approaching the traffic incident from the opposite direction on a divided facility are often distracted by emergency-vehicle lighting and slow their vehicles to look at the traffic incident posing a hazard to themselves and others traveling in their direction.

02 The use of emergency-vehicle lighting can be reduced if good traffic control has been established at a traffic incident scene. This is especially true for major traffic incidents that might involve a number of emergency vehicles. If good traffic control is established through placement of advanced warning signs and traffic control devices to divert or detour traffic, then public safety agencies can perform their tasks on scene with minimal emergency-vehicle lighting.

Guidance:

03 *Public safety agencies should examine their policies on the use of emergency-vehicle lighting, especially after a traffic incident scene is secured, with the intent of reducing the use of this lighting as much as possible while not endangering those at the scene. Special consideration should be given to reducing or extinguishing forward facing emergency-vehicle lighting, especially on divided roadways, to reduce distractions to oncoming road users.*

04 *Because the glare from floodlights or vehicle headlights can impair the nighttime vision of approaching road users, any floodlights or vehicle headlights that are not needed for illumination, or to provide notice to other road users of an incident response vehicle being in an unexpected location, should be turned off at night.*

05 *If glare from standard types of floodlight equipment cannot be eliminated, then consideration should be made for the use of non-glare lighting devices such as non-glare air-filled lighting devices.*

Section 6I.13 Traffic Incident Management Control Typical Applications

Support

01 This section presents typical applications for a variety of incidental situations commonly encountered. While not every situation is addressed, the information illustrated can generally be adapted to a broad range of conditions. In many instances, an appropriate TIMC plan is achieved by combining features from various typical applications. For example, response at an intersection incident might present near-side TIMC for one street and a far-side TIMC for the other street. These treatments are found in two different typical applications, while a third typical application shows how to handle pedestrian crosswalk closures.

02 Procedures for establishing TIMC zones vary with such conditions as road configuration, location of the incident, type of incident and recovery activity, duration of the incident, road user volumes, road vehicle mix (buses, trucks, cars, motorcycles, and bicycles), and road user speeds. Examples are presented in this section showing how to apply principles and standards. Applying these guidelines to actual situations and adjusting to field conditions requires judgment. In general, the procedures illustrated represent minimum solutions for the situations depicted.

Option:

03 Other devices may be added to supplement the devices and device spacing may be adjusted to provide additional reaction time or delineation. Fewer devices may be used based on field conditions.









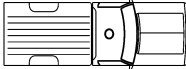


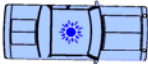
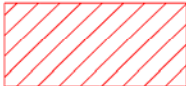

Support

- 04 Most of the TIMC typical applications show TTC devices for only one direction.
- 05 Table 6I-2 is an index of the Traffic Incident Management Control (TTC) figures. TIMC figures are shown on the right page with notes on the facing page to the left. The legend for the symbols used in the TIMC figures is provided in Figure 6I-3 below. In many of the typical applications, sign spacing and other dimensions are indicated in the notes to the left of the figure.

Table 6I-2, Index to Traffic Incident Management Control Figures and Notes

Type of Incident	Figure Number	Page Numbers
Incident on Shoulder with Minor Encroachment	TIMC-1.1	6I-9, 6I-10
Incident in Outside Lane on Four-Lane Roadway	TIMC-2.1	6I-11, 6I-12
Incident in Inside Lane on Four-Lane Roadway	TIMC-3.1	6I-13, 6I-14
Incident in Multiple Lanes on a Multi-Lane Highway	TIMC-4.1	6I-15, 6I-16
Incident Blocking a Lane on a Two-Lane Roadway	TIMC-5.1	6I-17, 6I-18
Incident Partially Blocking a Ramp	TIMC-6.0	6I-19, 6I-20
Incident Closing a Highway	TIMC-7.1	6I-21, 6I-22
Highway Closure Incident with a Temporary Detour	TIMC-8.1	6I-23, 6I-24

Figure 6I-3, Symbols Used in Traffic Incident Management Control Figure Applications

	ARROW BOARD		CHANGEABLE MESSAGE SIGN SUPPORT OR TRAILER
	ARROW BOARD ON TRAILER		ARROW BOARD ON VEHICLE
	CHANNELIZING DEVICE		TYPE 3 BARRICADE
	FLAGGER		SIGN
	SHADOW VEHICLE		DIRECTION OF TRAFFIC
	TRUCK MOUNTED ATTENUATOR		LAW ENFORCEMENT VEHICLE
	INCIDENT SPACE		WARNING LIGHT

Traffic Incident Management Control
Incident on Shoulder with Minor Encroachment
(Figure TIMC-1.1)

NOTES

Option:

1. The following illustrates traffic control for incidents lasting longer than two hours. For initial setup by the first responder on the scene, Figure 6I-1 may be used as a guide until the appropriate traffic control illustrated in TIMC-1 can be installed.

Guidance:

2. *Sign spacing should be 1300'-1500' for Limited Access Highways. For all other roadways, the sign spacing should be 500'-800' where the posted speed limit is greater than 45 mph, and 350'-500' where the posted speed limit is 45 mph or less.*

Standard:

3. **On roadways having a median wider than 8', left and right sign assemblies shall be required.**
4. **Taper length and channelizing device spacing shall be at the following:**

Taper Length (L)				
Speed Limit (mph)	Lane Width (Feet)			
	9	10	11	12
25	95	105	115	125
30	135	150	165	180
35	185	205	225	245
40	240	270	295	320
45	405	450	495	540
50	450	500	550	600
55	495	550	605	660
60	540	600	660	720
65	585	650	715	780
70	630	700	770	840
Minimum taper lengths for Limited Access Highways shall be 1000 feet.				
Shoulder Taper = 1/3 L Minimum				

Channelizing Device Spacing		
Location	Speed Limit (mph)	
	0 - 35	36 +
Transition Spacing	20'	40'
Travelway Spacing	40'	80'

On roadways with paved shoulders having a width of 8 feet or more, channelizing devices shall be used to close the shoulder in advance of the merging taper to direct vehicular traffic to remain within the traveled way.

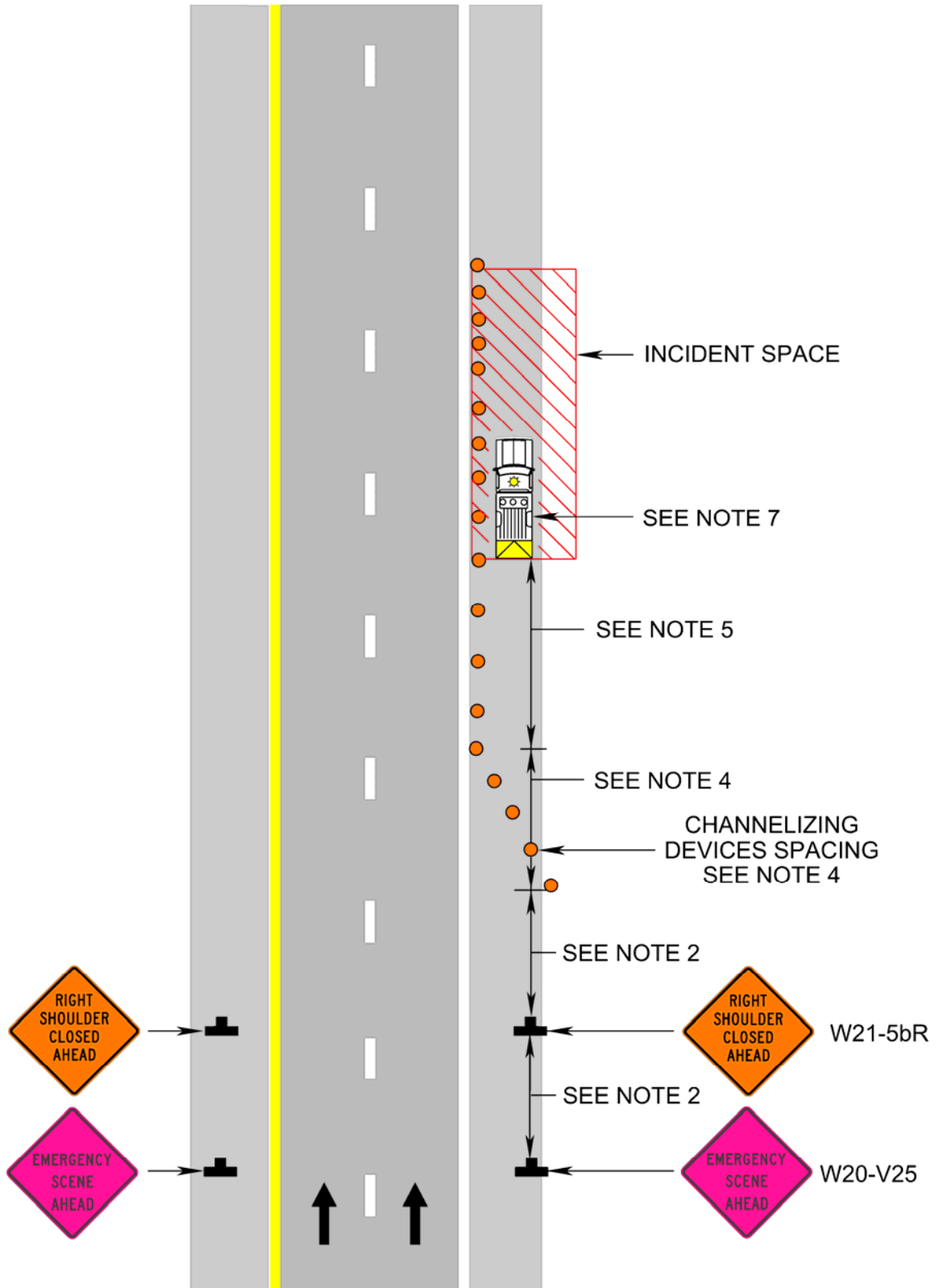
5. **The buffer space length shall be at the following:**

Posted Speed Limit (mph)	Distance (Feet)
≤ 20	115 - 120
25	155 - 165 ¹
30	200 - 210
35	250 - 260
40	305 - 325 ¹
45	360 - 380
50	425 - 445
55	500 - 530 ¹
60	570 - 600 ¹
65	645 - 675
70	730 - 760
Vehicles and equipment shall not park in the buffer space.	

6. **When a side road intersects the highway within the traffic incident management zone, additional traffic control devices shall be placed as needed.**
7. **A truck-mounted attenuator (TMA) shall be used on Limited Access Highways and multi-lane roadways with posted speed limit equal to or greater than 45 mph.**

1: Revision 1 – 4/1/2015

Incident on Shoulder with Minor Encroachment (Figure TIMC-1.1)



**Traffic Incident Management Control
Incident in Outside Lane on Four-Lane Roadway
(Figure TIMC-2.1)**

NOTES

Option:

1. The following illustrates traffic control for incidents lasting longer than two hours. For initial setup by the first responder on the scene, Figure 6I-1 may be used as a guide until the appropriate traffic control illustrated in TIMC-2 can be installed.

Guidance:

2. Sign spacing should be 1300'-1500' for Limited Access Highways. For all other roadways, the sign spacing should be 500'-800' where the posted speed limit is greater than 45 mph, and 350'-500' where the posted speed limit is 45 mph or less.

Standard:

3. On roadways having a median wider than 8', left and right sign assemblies shall be required.
4. Taper length and channelizing device spacing shall be at the following:

Taper Length (L)				
Speed Limit (mph)	Lane Width (Feet)			
	9	10	11	12
25	95	105	115	125
30	135	150	165	180
35	185	205	225	245
40	240	270	295	320
45	405	450	495	540
50	450	500	550	600
55	495	550	605	660
60	540	600	660	720
65	585	650	715	780
70	630	700	770	840
Minimum taper lengths for Limited Access Highways shall be 1000 feet.				
Shoulder Taper = 1/3 L Minimum				

Channelizing Device Spacing		
Location	Speed Limit (mph)	
	0 - 35	36 +
Transition Spacing	20'	40'
Travelway Spacing	40'	80'

On roadways with paved shoulders having a width of 8 feet or more, channelizing devices shall be used to close the shoulder in advance of the merging taper to direct vehicular traffic to remain within the traveled way.

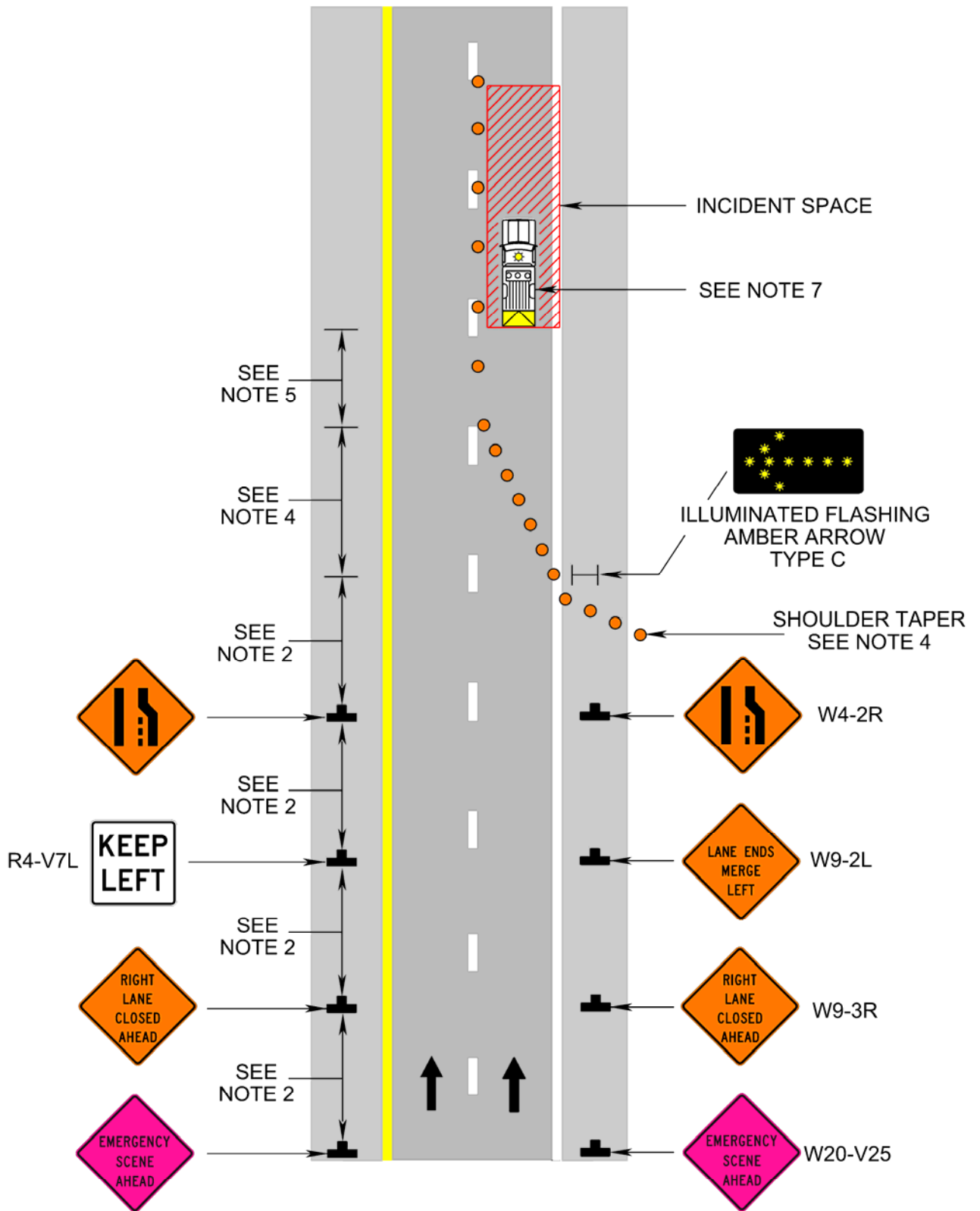
5. The buffer space length shall be at the following:

Posted Speed Limit (mph)	Distance (Feet)
≤ 20	115 - 120
25	155 - 165 ¹
30	200 - 210
35	250 - 260
40	305 - 325 ¹
45	360 - 380
50	425 - 445
55	500 - 530 ¹
60	570 - 600 ¹
65	645 - 675
70	730 - 760
Vehicles and equipment shall not park in the buffer space.	

6. When a side road intersects the highway within the traffic incident management zone, additional traffic control devices shall be placed as needed.
7. A truck-mounted attenuator (TMA) shall be used on Limited Access Highways and multi-lane roadways with posted speed limit equal to or greater than 45 mph.

Incident in Outside Lane on Four-Lane Roadway

(Figure TIMC-2.1)



**Traffic Incident Management Control
Incident in Inside Lane on Four-Lane Roadway
(Figure TIMC-3.1)**

NOTES

Option:

1. The following illustrates traffic control for incidents lasting longer than two hours minutes. For initial setup by the first responder on the scene, Figure 6I-1 may be used as a guide until the appropriate traffic control illustrated in TIMC-3 can be installed.

Guidance:

2. *Sign spacing should be 1300'-1500' for Limited Access Highways. For all other roadways, the sign spacing should be 500'-800' where the posted speed limit is greater than 45 mph, and 350'-500' where the posted speed limit is 45 mph or less.*

Standard:

3. **On roadways having a median wider than 8', left and right sign assemblies shall be required.**
4. **Taper length and channelizing device spacing shall be at the following:**

Taper Length (L)				
Speed Limit (mph)	Lane Width (Feet)			
	9	10	11	12
25	95	105	115	125
30	135	150	165	180
35	185	205	225	245
40	240	270	295	320
45	405	450	495	540
50	450	500	550	600
55	495	550	605	660
60	540	600	660	720
65	585	650	715	780
70	630	700	770	840
Minimum taper lengths for Limited Access Highways shall be 1000 feet.				
Shoulder Taper = 1/3 L Minimum				

Channelizing Device Spacing		
Location	Speed Limit (mph)	
	0 - 35	36 +
Transition Spacing	20'	40'
Travelway Spacing	40'	80'

On roadways with paved shoulders having a width of 8 feet or more, channelizing devices shall be used to close the shoulder in advance of the merging taper to direct vehicular traffic to remain within the traveled way.

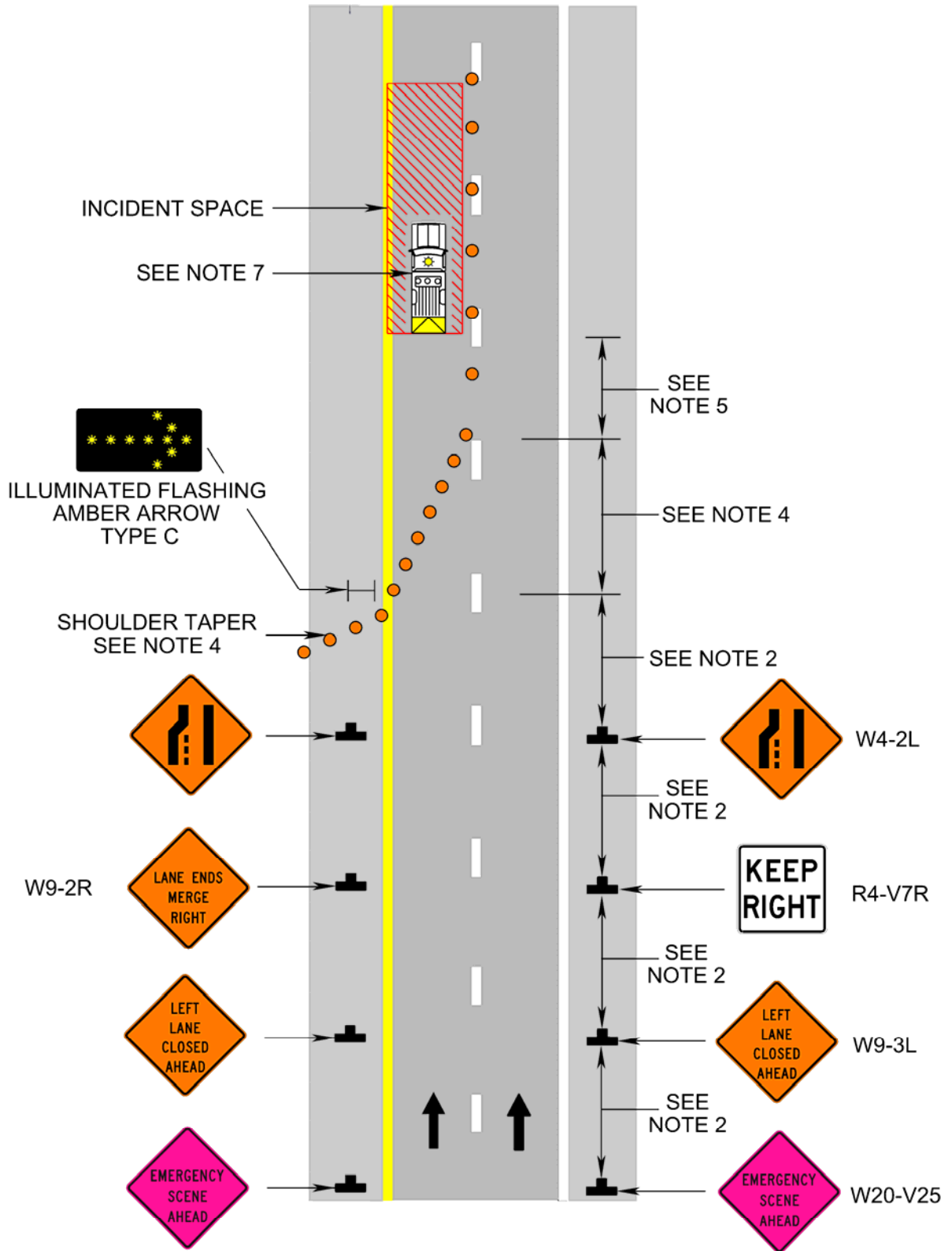
5. **The buffer space length shall be at the following:**

Posted Speed Limit (mph)	Distance (Feet)
≤ 20	115 - 120
25	155 - 165 ¹
30	200 - 210
35	250 - 260
40	305 - 325 ¹
45	360 - 380
50	425 - 445
55	500 - 530 ¹
60	570 - 600 ¹
65	645 - 675
70	730 - 760
Vehicles and equipment shall not park in the buffer space.	

6. **When a side road intersects the highway within the traffic incident management zone, additional traffic control devices shall be placed as needed.**
7. **A truck-mounted attenuator (TMA) shall be used on Limited Access Highways and multi-lane roadways with posted speed limit equal to or greater than 45 mph.**

1: Revision 1 – 4/1/2015

Incident in Inside Lane on Four-Lane Roadway (Figure TIMC-3.1)



Traffic Incident Management Control
Incident in Multiple Lanes on a Multi-Lane Highway
(Figure TIMC-4.1)

NOTES

Option:

- The following illustrates traffic control for incidents lasting longer than two hours. For initial setup by the first responder on the scene, Figure 6I-1 may be used as a guide until the appropriate traffic control illustrated in TIMC-4 can be installed.

Standard:

- On divided highways having a median wider than 8', right and left sign assemblies shall be required.

Guidance:

- Sign spacing should be 1300'-1500' for Limited Access Highways. For all other roadways, the sign spacing should be 500'-800' where the posted speed limit is greater than 45 mph, and 350'-500' where the posted speed limit is 45 mph or less.

Standard:

- Taper length and channelizing device spacing shall be at the following:

Taper Length (L)				
Speed Limit (mph)	Lane Width (Feet)			
	9	10	11	12
25	95	105	115	125
30	135	150	165	180
35	185	205	225	245
40	240	270	295	320
45	405	450	495	540
50	450	500	550	600
55	495	550	605	660
60	540	600	660	720
65	585	650	715	780
70	630	700	770	840
Minimum taper lengths for Limited Access Highways shall be 1000 feet.				
Shoulder Taper = 1/3 L Minimum				

Channelizing Device Spacing		
Location	Speed Limit (mph)	
	0 - 35	36 +
Transition Spacing	20'	40'
Travelway Spacing	40'	80'

On roadways with paved shoulders having a width of 8 feet or more, channelizing devices shall be used to close the shoulder in advance of the merging taper to direct vehicular traffic to remain within the traveled way.

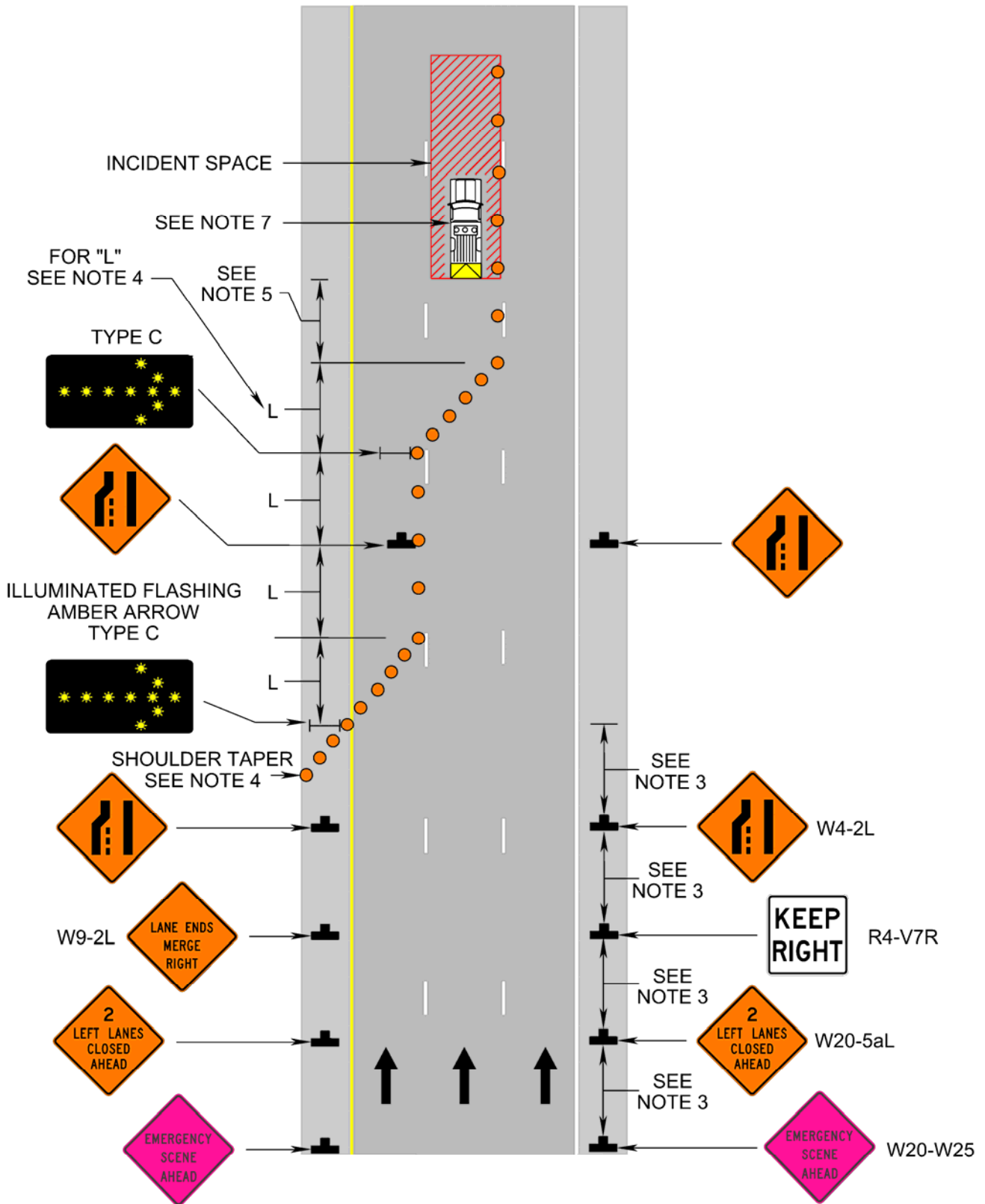
- The buffer space length shall be at the following:

Posted Speed Limit (mph)	Distance (Feet)
≤ 20	115 - 120
25	155 - 165 ¹
30	200 - 210
35	250 - 260
40	305 - 325 ¹
45	360 - 380
50	425 - 445
55	500 - 530 ¹
60	570 - 600 ¹
65	645 - 675
70	730 - 760
Vehicles and equipment shall not park in the buffer space.	

- When a side road or ramp intersects the highway within the traffic incident management zone, additional traffic control devices shall be placed as needed.
- A truck-mounted attenuator (TMA) shall be used on Limited Access Highways and multi-lane roadways with posted speed limit equal to or greater than 45 mph.

1: Revision 1 – 4/1/2015

Incident in Multiple Lanes on a Multi-Lane Highway (Figure TIMC-4.1)



Traffic Incident Management Control
Incident Blocking a Lane on a Two-Lane Roadway
(Figure TIMC-5.1)

NOTES

Option:

1. The following illustrates traffic control for incidents lasting longer than two hours. For initial setup by the first responder on the scene, Figure 6I-1 may be used as a guide until the appropriate traffic control illustrated in TIMC-5 can be installed.

Guidance:

2. *Sign spacing distance should be 350'-500' where the posted speed limit is 45 mph or less, and 500'-800' where the posted speed limit is greater than 45 mph.*

Standard:

3. **Flagging stations shall be located far enough in advance of the work space to permit approaching traffic to reduce speed and/or stop before passing the work space and allow sufficient distance for departing traffic in the left lane to return to the right lane before reaching opposing traffic (see Table 6H-3, Page 6H-5).**
4. **All flaggers shall be state certified and have their certification card in their possession when performing flagging duties. (See Section 6E.01, Qualifications for Flaggers).**
5. **Cone spacing shall be at the following:**

Location	Posted Speed Limit (mph)	
	0 - 35	36 +
Transition Spacing	20'	40'
Travelway Spacing	40'	80'

Option:

6. A supplemental flagger may be required in this area to give advance warning of the operation ahead by slowing approaching traffic prior to reaching the flagger station or queued traffic.

Guidance:

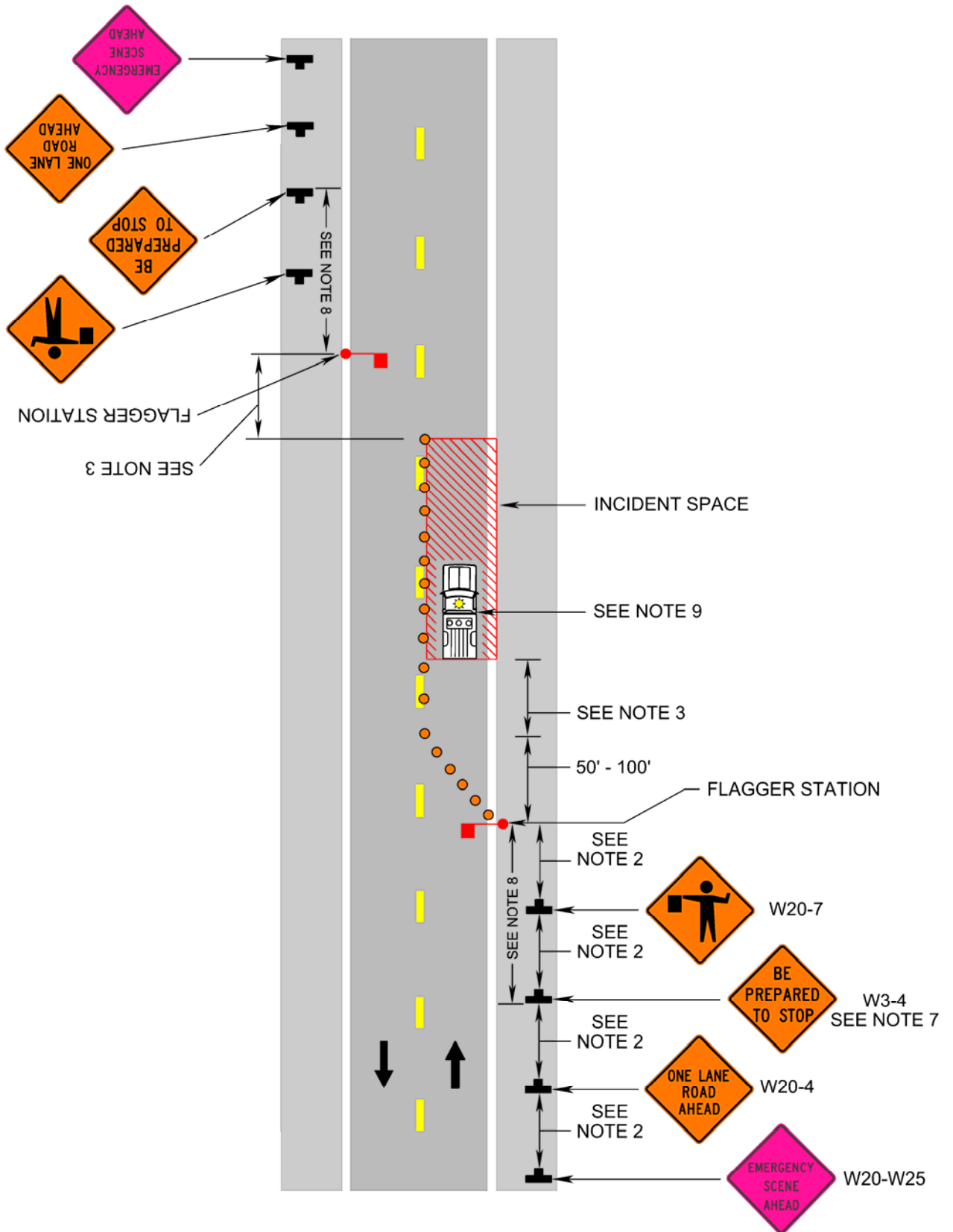
7. *If the queue of traffic reaches the BE PREPARED TO STOP (W3-4) sign, then the signs should be readjusted at greater distances.*
8. *When a highway-rail crossing exists within or upstream of the transition area and it is anticipated that queues resulting from the lane closure might extend through the highway-rail grade crossing, the temporary traffic control zone should be extended so that the transition area precedes the highway-rail crossing (See Figure TTC-56 for additional information on highway-rail crossings).*

Standard:

9. **A shadow vehicle with at least one high intensity amber rotating, oscillating, or flashing¹ light shall be parked 80'-120' in advance of the first incident scene vehicle or road hazard.**

Incident Blocking a Lane on a Two-Lane Roadway

(Figure TIMC-5.1)



Traffic Incident Management Control
Incident Partially Blocking a Ramp
(Figure TIMC-6.0)

NOTES

Option:

1. The following illustrates traffic control for incidents lasting longer than two hours. For initial setup by the first responder on the scene, Figure 6I-1 may be used as a guide until the appropriate traffic control illustrated in TIMC-6 can be installed.

Guidance:

2. *Sign spacing distance should be 1300'-1500' for Limited Access Highway, and on all other roadways 500'-800' where the posted speed limit is greater than 45 mph, and 350'-500' where the posted speed limit is 45 mph or less.*

Standard:

3. **To prevent accidental intrusion into the work area, channelizing device spacing shall not exceed 20' on centers.**
4. **Cone Taper Length (L) is equal to the Posted Speed Limit (S) times the Width of actual ramp closure (W). (Example: 55 mph x 6' = 330').**

Guidance:

5. *A minimum 200' buffer space should be provided, when possible.*
6. *Truck off-tracking shall be considered when determining whether the 10 foot minimum lane width is adequate.*

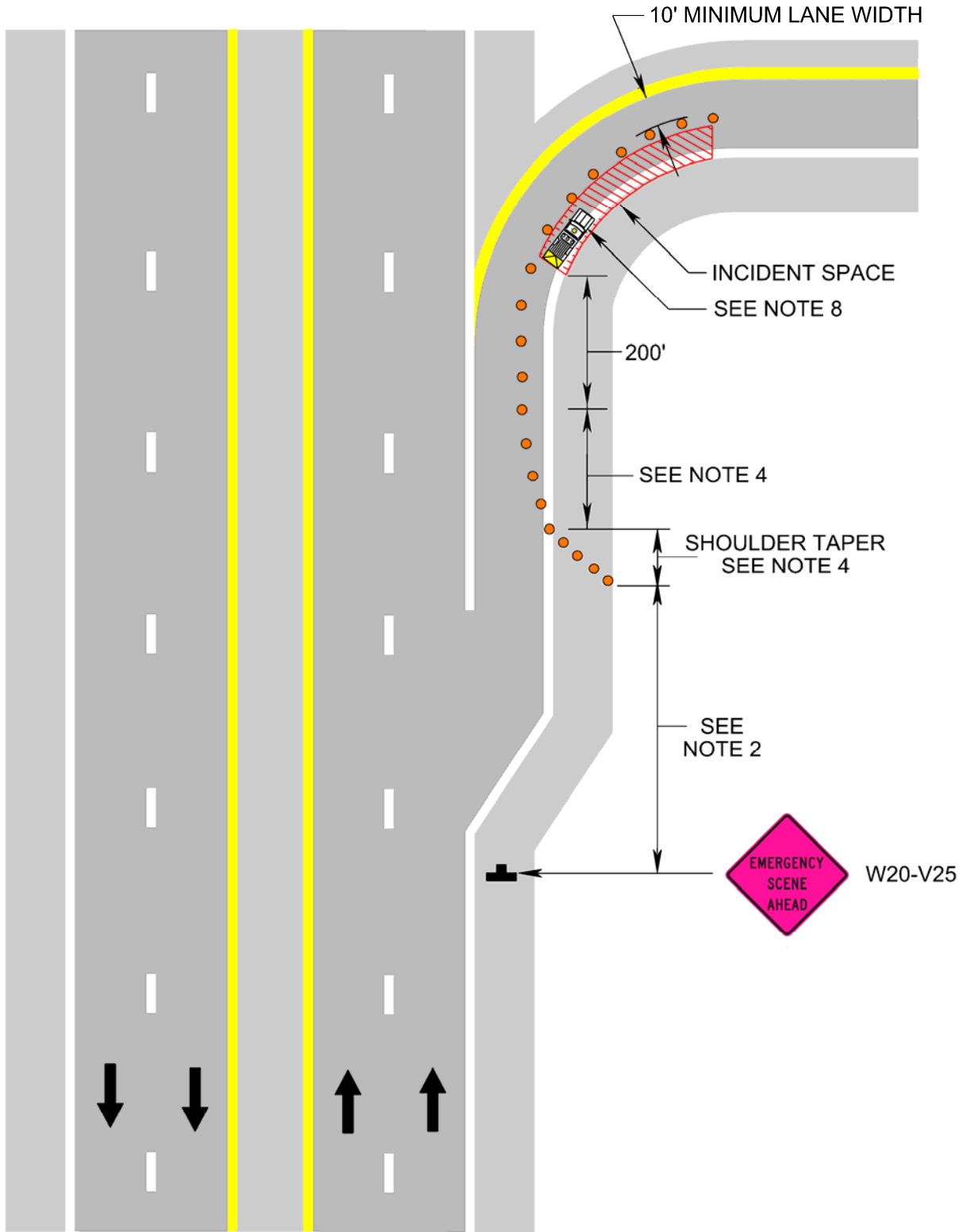
Option:

7. Traffic may be directed onto the shoulder to maintain a minimum 10 foot wide travel lane around the incident.

Standard:

8. **A truck-mounted attenuator (TMA) shall be used on Limited Access Highways and multi-lane roadways with posted speed limit equal to or greater than 45 mph.**

Incident Partially Blocking a Ramp (Figure TIMC-6.0)



Traffic Incident Management Control

Incident Closing a Highway

(Figure TIMC-7.1)

NOTES

Support:

1. The following illustrates traffic control for incidents lasting longer than two hours. For initial setup by the first responder on the scene, Figure 6I-1 may be used as a guide until the appropriate traffic control illustrated in TIMC-7 can be installed.

Guidance:

2. A Portable Changeable Message Sign (PCMS) should be placed a minimum of one mile in advance of the exit proceeding the incident or queued traffic advising of the road closure ahead. An additional PCMS should be placed one mile in advance of the stationary signing advising "ACCIDENT AHEAD", "ALL LANES EXIT RIGHT (or LEFT)".
3. Sign spacing distance should be 1300'-1500' for Limited Access Highway, and on all other roadways 500'-800' where the posted speed limit is greater than 45 mph, and 350'-500' where the posted speed limit is 45 mph or less.

Standard:

4. On divided highways having a median wider than 8', right and left sign assemblies shall be required.
5. Taper length and channelizing device spacing shall be at the following:

Taper Length (L)				
Speed Limit (mph)	Lane Width (Feet)			
	9	10	11	12
25	95	105	115	125
30	135	150	165	180
35	185	205	225	245
40	240	270	295	320
45	405	450	495	540
50	450	500	550	600
55	495	550	605	660
60	540	600	660	720
65	585	650	715	780
70	630	700	770	840
Minimum taper lengths for Limited Access Highways shall be 1000 feet.				
Shoulder Taper = 1/3 L Minimum				

Channelizing Device Spacing		
Location	Speed Limit (mph)	
	0 - 35	36 +
Transition Spacing	20'	40'
Travelway Spacing	40'	80'

On roadways with paved shoulders having a width of 8 feet or more, channelizing devices shall be used to close the shoulder in advance of the merging taper to direct vehicular traffic to remain within the traveled way.

Guidance:

6. When detour signing has been installed along the detour route (see Figures TTC-46 or TTC-47), a **DETOUR sign with directional arrow or Detour with a Route Assembly sign¹** should be placed halfway up the ramp or loop. Additionally, a third message should be added to the one mile Portable Changeable Message Sign advising "DETOUR AHEAD".

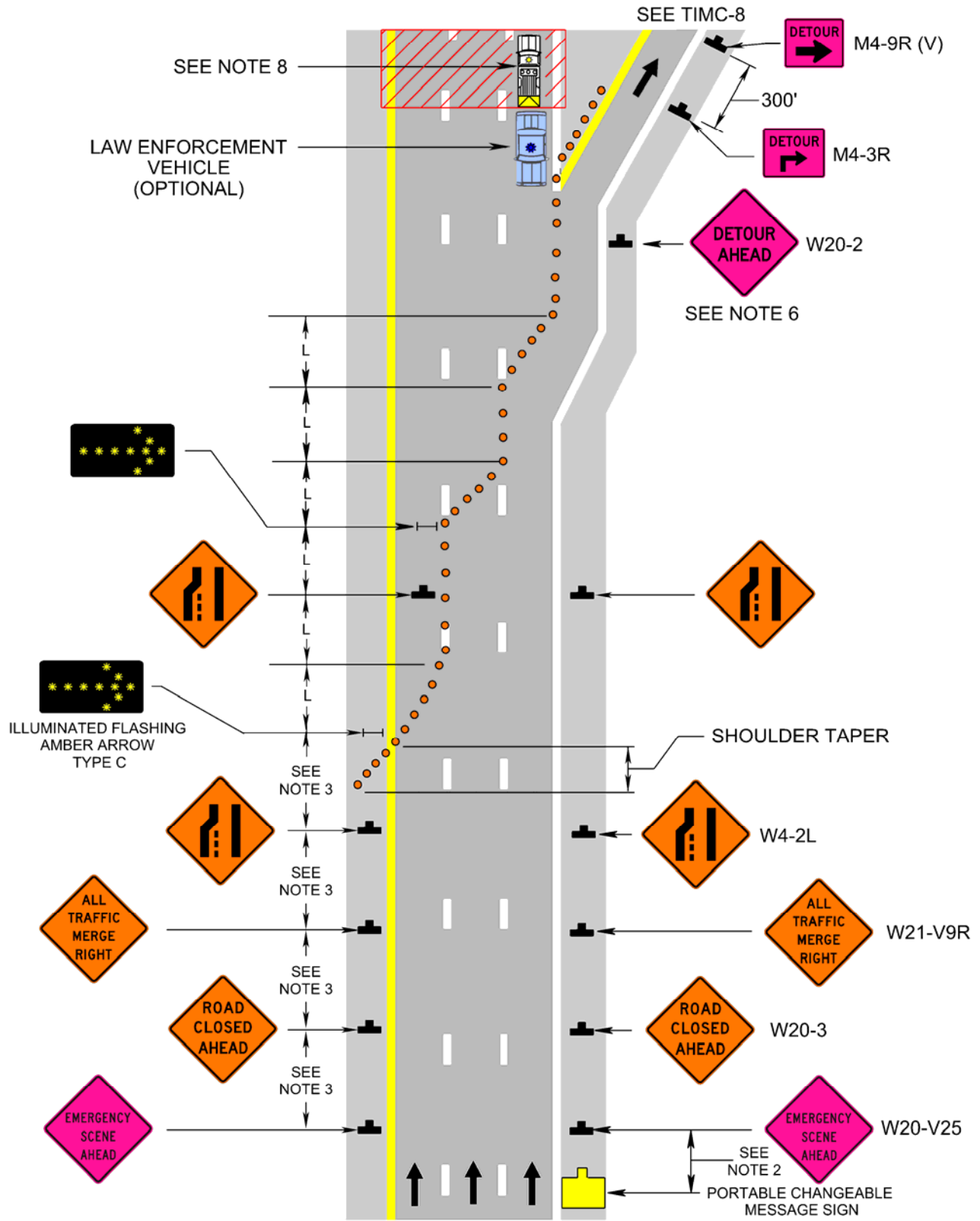
Standard:

7. A minimum of four (4) Group 2 channelizing devices shall be placed on the shoulder in advance of the PCMS in a taper for delineation (see Figure 6F-6).
8. A truck-mounted attenuator (TMA) shall be used on Limited Access Highways and multi-lane roadways with posted speed limit equal to or greater than 45 mph.

1: Revision 1 – 1/1/2015

Incident Closing a Highway

(Figure TIMC-7.1)



Traffic Incident Management Control
Highway Closure Incident with a Temporary Detour
(Figure TIMC-8.1)

NOTES

Guidance:

1. *Regulatory traffic control devices should be modified as needed for the duration of the detour.*
2. *Figure TIMC-8 illustrates a general layout of detour signs. Additional detour signs should be erected at all connecting roadways.*
3. *Sign spacing distance should be 300' minimum in advance of the intersection. The directional sign should be placed at the intersection.*
4. *When closing a ramp, the channelizing device spacing should be a maximum of 10' between devices.*

Option:

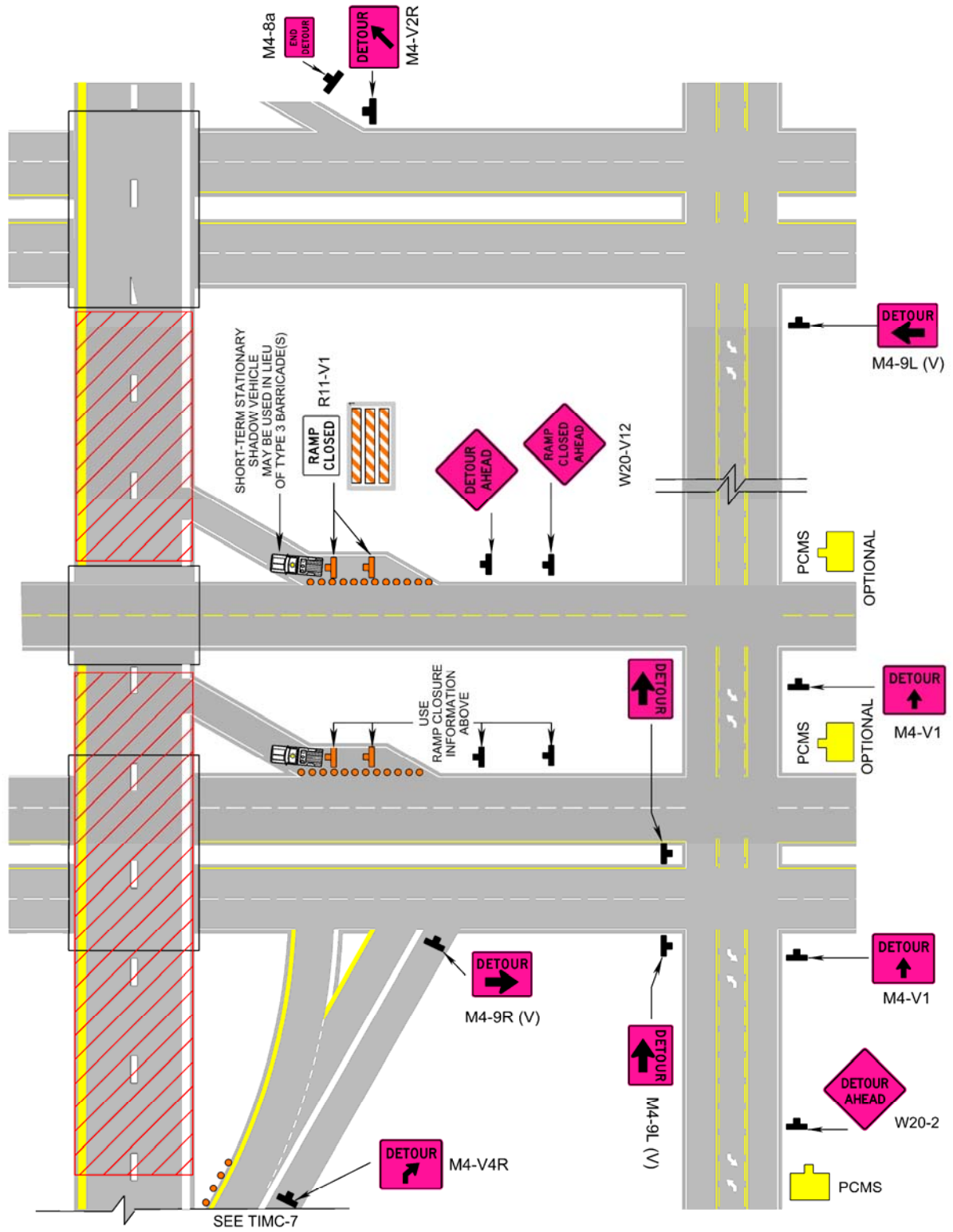
5. Other sign layouts may be substituted as directed by the Regional Traffic Engineer.
6. A Route Sign Directional assembly may be placed on the far left corner of the intersection to augment or replace the one shown on the near right corner.
7. Flashing warning lights and/or flags may be used to call attention to the advance warning signs.
8. Cardinal direction plaques may be used with route signs.

Standard:

9. **On divided highways having a median wider than 8', right and left sign assemblies shall be required.**
10. **A minimum of four (4) Group 2 channelizing devices shall be placed on the shoulder in advance of the PCMS in a taper for delineation (see Figure 6F-6).**

Highway Closure Incident with a Temporary Detour

(Figure TIMC-8.1)



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