



I-95 CORRIDOR
COALITION

I-95 Corridor Coalition Coordinated Incident Management Toolkit for Quick Clearance



2007 Edition



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TO: I-95 Corridor Coalition Quick Clearance Program Participants

FR: George Schoener, Executive Director

The I-95 Corridor Coalition is pleased to provide you with this copy of our Quick Clearance Toolkit. Traffic Incident Management (TIM) and Quick Clearance (QC) laws, policies, and procedures are essential to improved incident management and safety--and the successful implementation of a Quick Clearance program is a tremendous benefit to the movement of individuals and freight throughout the nation. The I-95 Corridor Coalition, as a result of an earlier study on Quick Clearance and Move-it Best Practices, has developed this Quick Clearance Toolkit to help you in initiating or improving Quick Clearance programs and activities in your jurisdiction.

The I-95 Corridor Coalition is an alliance of over 60 public agencies in the states from Maine to Florida (and in two Canadian provinces), where members work together to increase transportation safety and security, reduce congestion, and to assure that the entire transportation network supports economic vitality throughout the region. The Coalition pursues a wide range of projects and activities, including coordination of incident response. One such project is our Quick Clearance/Move-It Program. Should you wish to read the full 200+ page Quick Clearance Report or obtain other related information, please visit the Coalition's website at www.i95coalition.org or go directly to the Coalition's Incident Management Clearinghouse at <http://projects.webtrafficmd.com>.

Thank you very much for your interest in the I-95 Corridor Coalition's Quick Clearance Program. Let's all get moving on enacting and encouraging rapid incident clearance to improve safety on our highways!



Coordinated Incident Management
Toolkit for Quick Clearance



Roadmap to Developing a Traffic Incident Management Program

QC Activity	DOT	TMC	Police	Fire	EMS	Investigator	HAZMAT	Road Maint	Towing	Service Patrols	Medical Exam	Media	Toolkit Reference Chapters
Establish your baseline-where is your jurisdiction regarding statutes, policies, and procedures? Where does executive leadership stand?	★	●	●	●	●	●	●	●	●	●	●	●	7-10
Identify QC counterparts in each pertinent state/local discipline and contact them	★	●	★	●	●	●	●	●	●	●	●	●	8.3, 9, 10.6
Hold a QC kick-off team meeting to start establishing relationships	★	●	★	●	●	●	●	●	●	●	●	●	9
Identify champions in each discipline and select/recruit 1-2 to lead the overall effort.	★	●	★	★	●	●	●	●	●	●	●	●	9
Identify roles and responsibilities	★	●	★	●	●	●	●	●	●	●	●	●	Part 3
Create an Open Roads Policy	★	●	★	★	●	●	●	●	●	●	●	●	4, 8
Maintain frequent update communications with the entire team (emails, conference calls, etc.)	★	●	★	★	●	●	●	●	●	●	●	●	9.6
Develop Concept of Operations--NIMs/NUG-compliant, integrated QC operations	★	●	★	★	●	●	●	●	●	●	●	●	Parts 2 and 3
Execute operational MOUs	★	●	★	★	●	●	●	●	●	●	●	●	9.6
Enable inter-agency communications and information exchange, as applicable, regional/corridor-wide	★	●	★	★	●	●	●	●	●	●	●	●	8.3, 8.4
Implement a training and certification program, including NIMS/NUG-compliant interdisciplinary training, for all TIM responders	★	●	●	●	●	●	●	●	●	●	●	●	8.5, 9.4
Educate the traveling public	★	★	●	●	●				●	●		★	8.8, 10.1-10.5, 11
The finish line... Implement multi-disciplinary NIMs/NUG-compliant, accredited Traffic Incident Management Team(s) and associated Field Operational Procedures for QC	★	★	★	★	★	★	★	★	★	★	★	★	Entire Toolkit
Part III Section	14	15	16	17	18	19	20	21	22	23	24	25	

★ Lead discipline, in some cases multiple ● Partner



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PART I CONTENTS: Introduction & Purpose

- Introduction
- Purpose
- Key Stakeholders
- Open Roads Philosophy
- Definition of Key Terms
- Organization of this Toolkit





Introduction and Purpose

This part presents the background, purpose and organization of this I-95 Corridor Coalition Quick-Clearance Toolkit.

2003). These efforts were closely coordinated to minimize duplication. Thus, collectively, these documents contain a broad array of QC/MI policies and best practices, but they are not presented in the optimal form for immediate use by traffic incident management (TIM) professionals.

1. INTRODUCTION

The I-95 Corridor Coalition published a report, “Quick Clearance and ‘Move-It’ Best Practices” in 2003 that reported the best practices from not only the Coalition, but nationally (I-95CC, 2003).¹ In 2004 the Coalition published an Executive Summary of the earlier report. Meanwhile, also in 2003, The National Cooperative Highway Research Program (NCHRP) published Synthesis 318, “Safe and Quick Clearance of Traffic Incidents,” which summarized the results of a national survey on quick clearance/move-it (QC/MI) practices (NCHRP,

Under the leadership of the Federal Highway Administration (FHWA), a number of excellent TIM-related references have been developed. Several of particular note are listed below:²

- “Incident Management Practices, a Cross-Cutting Study” (FHWA, 2000b),
- “Traffic Incident Management Handbook” (FHWA, 2000c), and
- “Regional Traffic Incident Management Programs—Implementation Guide” (FHWA, 2001).

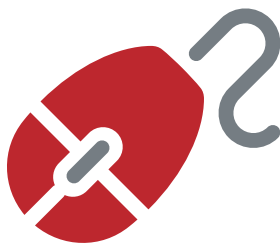
Under the leadership of the Federal Highway Administration (FHWA), a number of excellent TIM-related references have been developed.

¹ References are identified thusly throughout this Toolkit and links to them are included when known. For this report and the NCHRP report mentioned next, see <http://66.167.232.132/pm/ViewProject.asp?pid=128>

² To locate these, see <http://www.its.dot.gov/index.htm>, and search for the document names.



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Web Resources:

National Traffic Incident Management Coalition
<http://timcoalition.org>

Federal Highway Administration
<http://www.ops.fhwa.dot.gov/incidentmgmt>

These are good general references, but they are not overly comprehensive in coverage or detail, even collectively. Thus, there remained a need for a single, comprehensive source of TIM/QC best practices that also had sufficient detail to enable agency executives to understand the need for laws, regulations, and policies promoting traffic incident management, as well as practitioners to have easy access to the tools to implement the best practices.

In this current project the Coalition developed a “Toolkit for Deploying Traffic Incident Management/Quick Clearance (TIM/QC) Best Practices” and a two-part workshop aimed at key agency and legislative staff and TIM leadership. The scope of project addressed all levels of implementation mechanisms from operational best practices and administrative actions that can be undertaken by agencies acting alone and in partnership with others, to regulatory actions that require a more formal process (such as “rule making”), and statutory actions.

2. PURPOSE

There are many excellent sources of information about TIM in general and QC in particular. Two particularly good Web sites are the National Traffic Incident Management Coalition’s (NTIMC) site and the Federal Highway Administration’s (FHWA) TIM site at <http://timcoalition.org/> and <http://www.ops.fhwa.dot.gov/incidentmgmt/>, respectively. The NTIMC site has a series of TIM white papers that

are excellent references and are listed in the references section at the end of this document as (NTIMC, 2006) in addition to other documents. These are discussed further later in this Toolkit.

A good high level overview of a successful TIM program was produced by the NTIMC and is reported by the Institute of Transportation Engineers (ITE, 2005). The brochure covers nine keys to TIM success. The flier is included in the DVD accompanying this Toolkit and (Guide_Keys_NTIMC)³ may also be found on the NTIMC Web site under Coalition Products.

With these and many other resources, there is clearly a considerable amount of information available about TIM/QC, but one has to research and explore to find concise details. For this reason, the I-95 Corridor Coalition decided to develop this TIM/QC Toolkit, which refers to, and in many cases includes, a number of the above and other documents.

The purpose of the QC Toolkit and Workshop is to provide policy makers and practitioners in traffic incident management with handy and ready-to-use tools to assist them in providing more effective TIM practices in general, but with the primary emphasis on quick clearance. This TIM/QC Toolkit includes both up-reach tools for legislative and major policy decisions, as well as outreach tools (or references to other existing tools) to assist members in implementing the best practices and

³ See Chapter 6 for an explanation of the resource naming convention.

processes included. This Toolkit is a “how-to” guide for transportation and public safety agencies to implement the best practices.

The accompanying workshop is aimed at instructing agency staff on the value of TIM/QC best practices and use of the Toolkit and senior management and legislative staff on policy issues.

3. KEY STAKEHOLDERS

Traffic incident management touches a wide and diverse set of agencies, both public and private. It is important

that readers of this Toolkit understand who the stakeholders are and their roles and responsibilities in TIM. The key stakeholders and their roles are summarized in Table 3-1.⁴

Additional details of the stakeholder responsibilities are given in the following discussion.

Federal Agencies

Federal Highway Administration (FHWA)

While the FHWA does not own or operate roads, they are tasked with aiding the intelligent operation of those

Category	Stakeholder											Prime Responsibility
		Funding	TIM Planning	O&M	Law Enforcement	Fire/Rescue	EHS	HAZMAT	Outreach	Training	Other	
Federal Agencies	Federal Highway Administration	★	●						●	★		Aids operation of highways, sets standards, publishes "best practices" and planning guides.
	Federal Emergency Management Administration (FEMA)	●	●					★	●	★		Manage national emergencies and hazards, federal response and recovery efforts, initiates proactive mitigation activities, trains first responders, and manages the National Flood Insurance Program and the U.S. Fire Administration
State Agencies	State DOT											Operates and maintains state highway system, overall planning and implementation of TIM programs, operates traffic management centers (TMCs), and manages service patrols
	Traffic Operations Office/ITS Section	★	★	★					★	★		Operate ITS and TMCs, set standards for traffic devices, in some areas operate Service Patrol
	Planning Office	●	●									Plan transportation improvements
	Maintenance Office	★		★								Maintain infrastructure, in some areas operate Service Patrol
	Safety Office	●	●						●	●		Set safety standards, goals, and practices
	Motor Vehicle Compliance Office	●			★						●	Regulate and enforce commercial motor carriers
	State Patrol (SP)	●	★		★				★	★		Manage the majority of freeway incidents on state highways, involved in all aspects of TIM, dispatch federal and state law enforcement
	Department of Law Enforcement (DLE)	●			●						●	Criminal investigations, including traffic incidents
	Department of Environmental Protection (DEP)							★			★	Lead agency for environmental management; administers regulatory programs and issues permits for air, water, and waste management
	Division of Emergency Management (DEM)											Ensures state is prepared to respond to emergencies, recover from them, and mitigates their impacts
	Joint Telecommunications Task Force			★	★							State law enforcement radio system, also participate in regional law enforcement dispatch centers

★ Primary
● Secondary

⁴ Much of this section was adapted from a report to the Florida Department of Transportation (FDOT, 2006b). (Note this format for referencing. All reference citations are included later in the Toolkit.)

Table 3-1. Key Stakeholder Roles and Responsibilities





Category	Stakeholder											Prime Responsibility
		Funding	TIM Planning	O&M	Law Enforcement	Fire/Rescue	EMS	HAZMAT	Outreach	Training	Other	
Local Agencies	Law enforcement (police and sheriffs)	●			★				★	●		Conduct TIM on arterial and local (and some freeway) systems
	Fire rescue	●	●			★	●	★	●	●		Primary emergency response/incident command agency for fire suppression, hazardous materials spills, rescue, and extrication of trapped crash victims, some EMS
	Emergency medical services (EMS)						★					Primary EMS, if separate from fire rescue, triage, treatment, and transport of crash victims
	Medical Examiner/Coroner										★	Investigate traffic crash deaths
	City and county public works and traffic engineering	●	●	★						●	●	Operate and maintain local highways and streets and utilities
	Transit agencies	●	●	★								★
Authorities	Expressway Authorities	★	★	★					●		●	Operate and maintain toll roads
Private Partners	Towing and recovery operators		●	★								Removal of wrecked or disabled vehicles and debris from incident scenes
	HazMat contractors						★					Clean up and dispose of toxic or hazardous materials
	Motor carriers								●			Inform public of good TIM practices
	Insurance industry								★	●	★	Insure vehicles, promote safe practices
	Traffic media								★			Report incidents, alert motorists, provide alternate route information
Associations	Technical societies (ITS State Chapter, State Section ITE)		●						●	●		Assist agencies, support TIM programs, provide training
	American Automobile Association (AAA)		●						★			Assist agencies, support TIM programs, inform motorists
	Community Traffic Safety Teams (CTSTs)		★						★	●		Assist agencies, support TIM programs, provide safety programs
	Chambers of Commerce								●			Assist agencies, support TIM programs
	Associations of Cities, Counties, Sheriffs, Police, EMS, etc.		●						●			Assist agencies, support TIM programs
Other	Citizens for Better Transportation (state-by-state)								●			Assist agencies, support TIM programs
	Citizens' groups								●			Assist agencies, support TIM programs

Table 3-1. Key Stakeholder Roles and Responsibilities continued

facilities by the agencies that do own and operate them. The FHWA publishes “best practices” and planning documents to demonstrate what is being done around the country, including traffic incident management.

Federal Emergency Management Agency (FEMA)

FEMA leads the effort to prepare the nation for all hazards and effectively manage federal response and recovery efforts following any national incident. FEMA also initiates proactive mitigation



activities, trains first responders, and manages the National Flood Insurance Program and the U.S. Fire Administration.

Regional Organizations

While there are many regional organizations in the Corridor, the one of prime interest is, of course, the I-95 Corridor Coalition itself. Of most immediate concern to this Toolkit is the set of four Highway Operations Groups (HOGs) of the Coalition. These provide information exchange, promote standardization—for example, this Toolkit—and provide training.

A second very significant regional organization in the Coalition is TRANSCOM, which is a multi-state/agency operation that serves as the communications hub for the Corridor. The Corridor is currently working with the Georgia DOT to create a similar hub for the southern states in the Atlanta TMC.

State Agencies

State DOT

The State DOT is responsible for the operations and maintenance of the highway system. They normally conduct overall planning and implementation of traffic incident management programs. In some regions they are also involved in the development, implementation, and operation of the traffic management center (TMC), provide intelligent transportation systems (ITS) in support of TIM/QC, as well as the management of

service patrols. Specific responsibilities—particularly maintenance forces and/or service patrols for on-scene activities—are as follows:

- Clear minor incidents,
- Coordinate and provide for vehicle and spilled cargo removal,
- Mitigate incidental vehicle fluid spills,
- Create interagency agreements and open roads policies,
- Promote quick clearance laws and policies for vehicle/cargo removal,
- Promote public information campaigns on quick clearance,
- Support public-private towing agreements,
- Construct vehicle relocation areas, such as crash investigation sites,
- Set traffic incident clearance performance goals,
- Coordinate incident management and responder training, and
- Assume a leadership role in traffic incident management in general and quick clearance in particular.

State Patrol (SP)

The State Patrol is typically the largest traffic law enforcement agency in each state. They are typically responsible for management of the majority of freeway incidents on state routes. They are involved in all aspects of TIM from incident detection to clearance.

Department of Law Enforcement (DLE)

As indicated in the table, DLE's role in TIM is generally confined to criminal investigations.



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Department of Environmental Protection (DEP)

The state DEP is the lead agency in state government for environmental management. The department administers regulatory programs and issues permits for air, water and waste management.

Division of Emergency Management (DEM)

The state DEM ensures that states are prepared to respond to emergencies, recover from them, and mitigate their impacts.

Joint Telecommunications Groups

Many states have joint communications groups that operate the state law enforcement radio system or some common telecommunications system. In some states, this group participates in the state law enforcement dispatch centers.

Local Agencies

Law Enforcement (Police and Sheriffs)

Generally, limited access roadways are part of the national transportation system and are primarily patrolled and responded to by the State Patrol; however, some limited access routes within the local municipality city limits are the responsibility of the city police. General law enforcement traffic incident management responsibilities are:

- Assist in incident detection;
- Secure the incident scene;
- Clear minor incidents quickly;
- Assist disabled motorists;
- Provide emergency medical assistance until help arrives;



- Direct traffic through/around the incident;
- Conduct crash investigations;
- Serve as incident commander for major incidents;
- Maintain private towing contracts;
- Ensure rapid response of recovery and towing contractors;
- Safeguard personal property; and
- Promote laws, policies, practices, and public awareness campaigns to promote quick clearance.

Fire Rescue

Fire and rescue services are provided by local fire departments, and by surrounding fire departments through mutual aid





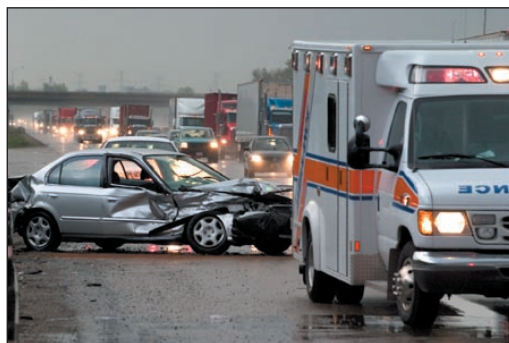
Towing and recovery companies that respond to highway incidents are indispensable components of all traffic incident management programs.

agreements. The fire department is the primary emergency response incident command agency for fire suppression, hazardous materials spills, rescue, and extrication of trapped crash victims. General fire department traffic incident management responsibilities include:

- Protect the incident scene,
- Provide traffic control until police or DOT arrival,
- Provide emergency medical care,
- Provide initial HAZMAT response and containment,
- Fire suppression,
- Rescue crash victims from wrecked vehicles,
- Rescue crash victims from contaminated environments,
- Arrange transportation for the injured,
- Serve as incident commander, and
- Assist in incident clearance.

Emergency Medical Services (EMS)

The primary responsibility of EMS is the triage, treatment, and transport of crash victims. Private companies often provide patient transport under contract. Typical traffic incident management roles and responsibilities assumed by EMS can include:



- Provide emergency medical care;
- Determine destination and transportation requirements for the injured;
- Coordinate victim evacuation with fire, police, and ambulance or airlift;
- Serve as incident commander for medical emergencies;
- Determine approximate cause of injuries for the trauma center; and
- Remove medical waste from incident scene.

Medical Examiner/Coroner

By law, Medical Examiners (or Coroners) are responsible for investigating deaths that result from anything other than natural causes. As such, they play an important role in investigating fatal accidents that occur on roadways. They can cooperate with other responders by enabling those responders to remove deceased persons from the roadway, and from the scene—under mutually agreeable circumstances, of course.



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City and County Public Works and Traffic Engineering

City and county transportation agencies have roles similar to the State DOTs. They are responsible for the highways not included under the state’s highway system.

Private Partners

Towing and Recovery Operators

Towing and recovery service providers are responsible for the safe and efficient removal of wrecked or disabled vehicles, and debris from the incident scene. Their typical responsibilities include:

- Remove vehicles from incident scene,
- Protect victims’ property and vehicles,
- Remove debris from the roadway, and
- Provide transportation for uninjured vehicle occupants.

Towing and recovery companies that respond to highway incidents are indispensable components of all traffic incident management programs. Even programs that include service patrols with relocation capability depend on towing and recovery service providers. Challenges facing the towing and recovery industry are unique.

A recent “state of the practice” scanning tour offers some good ideas for innovative towing and wrecker operations (I-95CC, 2007b).⁵



HAZMAT Contractors

Hazardous materials contractors are hired by emergency or transportation authorities to clean up and dispose of toxic or hazardous materials. Their traffic incident management role and responsibilities include:

- Determine proper/prudent method of hazardous material cleanup and disposal,
- Dispose hazardous materials or provide on-site clean up, and
- Participate in the incident command at HAZMAT scenes.

Motor Carrier Companies

Motor carriers, particularly through their professional and trade associations can improve awareness of good TIM practices to their drivers, such as assisting in quick clearance, which can lead to better incident management overall.

⁵ The final report was not available at this writing, but the report will be available on the I-95 Corridor Coalition Web site when published. The reference list has the pertinent information.

4. OPEN ROADS PHILOSOPHY

The underlying tenet of the Corridor’s Quick Clearance Program is an “Open Roads Philosophy.” This means that for all responders from all agencies, after concern for personal safety and the safety and security of any incident victims—balanced with the need for accurate investigation—*the top priority is to open the roadway by clearing vehicles, victims, and debris from the travel lanes to allow traffic to resume at the maximum possible capacity under the circumstances*, this balanced with the need for accurate investigation. As long as the incident is being processed, there will continue to be capacity constraints, but a minor reduction of, say 20%, is considerably better than entire lanes being closed or blocked.

A number of states actually have a formal “Open Road Policy (ORP)” that sets a goal of minimizing this time period and some, like Georgia, are in the process of formally setting open roads goals. Several (Florida and Washington State) even set a time in which the roadway clearance should be accomplished.

Clearing the traveled lanes will have the greatest return in capacity recovery and only then should serious efforts be devoted to clearing the remainder of the scene completely. More details on the ORP, and specific policies are given in Chapter 7, but this is the key principal that drives the entire QC and larger TIM

practices. It is key to increasing mobility and reducing the probability of secondary incidents.

True quick clearance will not be achieved unless every responder adopts the philosophy—obviously second to responder and motorist safety. To paraphrase a recent action movie, responders should think in regard to travelers, debris, and anything else on the roadway—“Get off my road!” (but assisting them in a more friendly manner than did Harrison Ford).

5. DEFINITION OF KEY TERMS

To fully comprehend the concepts and best practices contained in this Toolkit, all users need to understand the nomenclature used. The terms below are defined as used in this document.⁶

5.1 Definition of Incident

For the purpose of this discussion, we define a traffic incident as *any non-recurrent event, such as a vehicle crash, vehicle breakdown, or other special event, that causes a reduction in highway capacity and/or an increase in demand.*⁷ Further, coordinated traffic incident management is a tool to achieve and maintain public safety, travel efficiency, and air quality standards by reducing the impacts of these incidents.

A secondary incident is one that occurs as a direct or indirect result of a previous incident. If a crash occurs in the queue

⁶ The narrative descriptions and graphic in this section were adapted from (FDOT, 2006b-c), originally adapted from an earlier version of (FDOT 2004).

⁷ Source (FDOT, 2006b-c).





expanding from an initial incident (of any kind)—for example, one car not being able to slow down sufficiently and rams the car in the back of the queue—this is a secondary incident. Most are generally crashes, but can be other incidents, such as a car overheating and stalling because it is sitting idle in the queue rather than moving. These sometimes lead to tertiary incidents, but all are referred to herein as “secondary.”

5.2. Incident Timeline

Figure 5.1 illustrates the timeline of a typical incident that might be a crash affecting one or more travel lanes. All of these steps might not occur in a particular incident, and there may be other interwoven relationships, but this represents the typical sequence for most moderate to serious incidents. The steps are shown in a staggered fashion simply to illustrate that the incident timeline is not uniform; however, the time increments are purely relative. The duration of particular events will be noted as letter pairs in the discussions below. For example, the actual incident duration would be A-M, as shown in Figure 5.1 (a), while the total influence time of the incident is A-N, as shown in Figure 5.1 (b).

The durations of the common phases of an incident would thus be as follows:

- Detection that an incident has occurred: A-B;
- Verification that the incident has occurred, determining its location, and having sufficient information to enable an appropriate response : B-C;

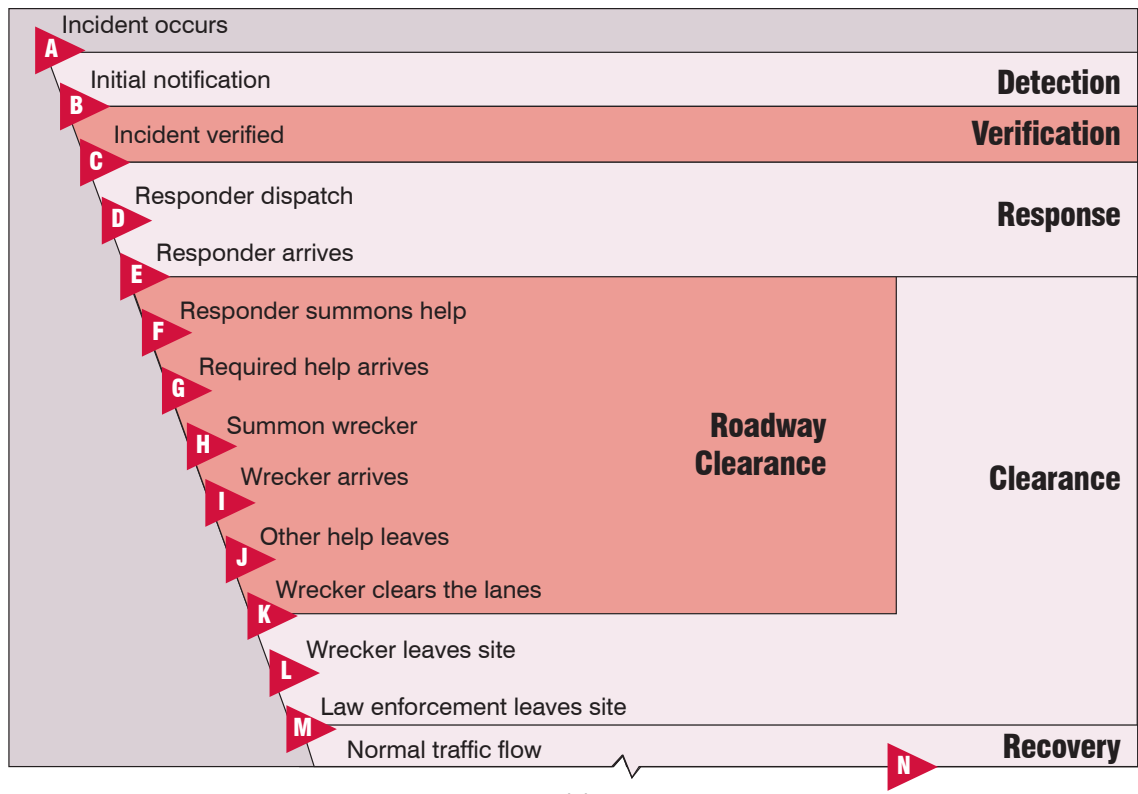
- Response by dispatching appropriate assets to resolve the incident: C-E;
- Clearance, or the removal of the vehicles, damaged property, and victims from the incident scene, and complete reopening of any blocked lanes: E-M (with roadway clearance as a subset, E-K); and
- Recovery to normal traffic flow: M-N.

The actual time of an incident is generally difficult to determine with certainty, so durations are generally started with initial notification, or point B. In terms of actual duration, the recovery time (the difference between the total incident influence time and the actual duration) can be 4-5 times longer than the incident duration itself.

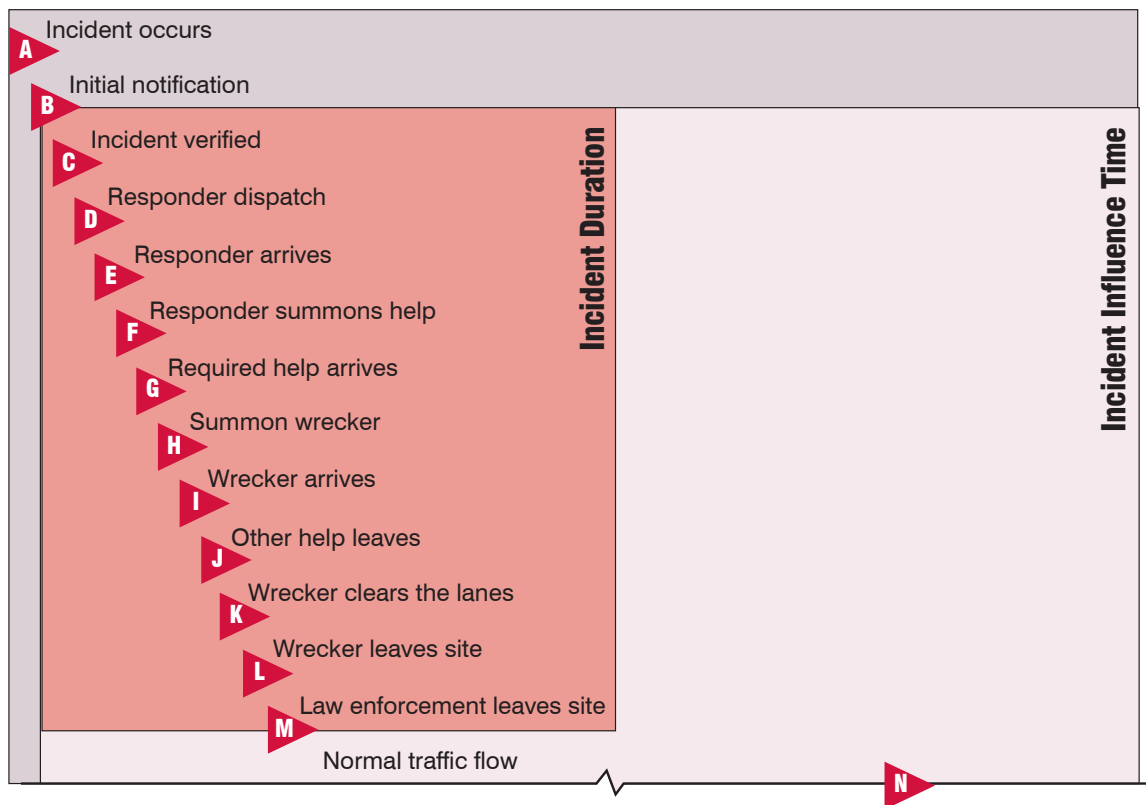
Note that at points D and E, the first responder has not been explicitly identified. While this is often law enforcement, in areas with service patrols, it is often the latter, and law enforcement would be one of the “secondary” responders (in time, not importance).

Further, this graphic presumes a sufficiently serious incident and that a full range of incident management services will be required, almost certainly law enforcement; possibly fire rescue, emergency medical, and hazardous material handling; and wrecker(s). Thus, it likely represents a Level 2 (intermediate) or Level 3 (major) incident. Level 1 (minor) incidents generally do not require most of these responses and services.⁸

⁸ The incident levels are defined by the Manual on Uniform Traffic Control Devices (MUTCD, 2004) as “classes” as follows: 1 (minor)—expected duration under 30 minutes, 2 (intermediate)—expected duration of 30 minutes to 2 hours, and 3 (major)—expected duration of more than 2 hours. “Duration” refers to traffic queue clearance, not just the incident duration itself.



(a)



(b)

Figure 5-1. Incident Timeline





The Open Roads Philosophy referred to in the previous section is addressed initially at the section labeled “roadway clearance” (E-K).

5.3. Definitions of Traffic Incident Management Terms

The following definitions, which are in effect TIM performance indicators, are based on Figure 5.1 and the foregoing discussion.

- Notification/verification time: the time from initial notification until the first responder is contacted, B-C,
- Response time: the time for the first responder to arrive at the scene, C-E,
- Roadway clearance time: the time to clear the traveled lanes, E-K,
- Incident clearance time: the full time to clear the scene, roadway clearance plus site clearance, E-M,
- Recovery time: the time for the resulting queue to dissipate and traffic returns to “normal” (what ever that is at that time of day), M-N, and
- Incident influence time: the total impact time of the incident, B-N.
- Incident duration: the full length of the incident itself, B-M.

Additional measures derive from the forgoing, but must be measured separately. The common measures are as follows:

- Incident-related delay: the cumulative delay caused directly by the incident,
- Queue extension: lane-miles of backup, and
- Secondary crash rate: some measure of the rate of secondary crashes.

6. Organization of the Toolkit

The remainder of this TIM/QC Toolkit is organized into three additional parts, plus some supporting materials as appendices. Part II presents best practices in traffic incident management for quick clearance and has six sections that address the issue “horizontally,” that is from the perspective of multi-agency cooperative efforts. Part III addresses the issues “vertically” from the perspective of each agency type, of which nine are included. Part IV provides a “self-assessment” that will enable agencies to determine areas in which they might improve their QC legal and policy bases and best practices. The appendices cover a list of acronyms, references, fact sheets and the contents of an accompanying data DVD, called “QC DVD” for short.



This Toolkit and the QC DVD use a standardized file naming convention for the sample documents included. The form is as follows:

AA_BB_CC_DD

Where,

AA = a class of document, like Law, Policy, Guide, Practice, etc.

BB = a descriptor that identifies the nature of the item, like Liability, Co-location, Tow, Train, etc.

CC = a locator, usually the 2-digit state code or DOT abbreviation (see the List of Acronyms).

DD = further identifier as needed.

Often in these references “XX” is used as a wildcard in the last identifier to indicate multiple files.

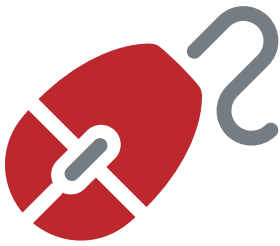
Some of the materials are security-sensitive documents that the owner does not want available to the public.

These are identified in the text of the Toolkit by Italicizing the reference (e.g., *AA_BB_CC_DD*) and these materials are on a separate CD-ROM or DVD that will only be provided by written (e-mail OK) request to the Coalition to the following agencies: public safety agencies (i.e., police, fire rescue, and EMS), state and local emergency management agency, and state homeland security agencies. The “Restricted TIM Toolkit CD-ROM/DVD” can be requested at the address shown for this purpose on the I-95 Corridor Coalition Incident Management Clearinghouse at:

<http://projects.webtrafficmd.com/>.

Any agency interested in TIM/QC can obtain the non-restricted DVD at the same address.

Readers will have already noted the use of icons to identify the key stakeholders in this Toolkit. These are identified in the “roadmap” in the front matter, and the foregoing discussions of stakeholders.



Web Resources:

I-95 Corridor Coalition Incident Management Clearinghouse
<http://projects.webtrafficmd.com>



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PART 2 CONTENTS: Traffic Incident Management for Quick Clearance





Traffic Incident Management for Quick Clearance

This part of the QC Toolkit presents the tools for Coalition members to use in improving their individual state/agency posture with respect to TIM/QC by selecting and implementing new best practices not already in place, as well as launching law-making efforts to aid their legislatures to enact QC legislation. The Toolkit addresses not only agencies but also their various designees acting under the direction of an official of the agency (e.g., the tow truck driver, sanitation vehicle driver, etc.). This part presents the QC tools in the following sections:

- Statutory TIM/QC Actions: guidelines on proposed legislation and suggestions for marshalling support for law-making in an environment of non-lobbying by public agencies. Examples are “Stop and Move-It” laws.
- Regulatory or Policy TIM/QC Actions: “how-to” guidelines of best practices that are better handled through regulatory action. Examples are certification of TIM personnel and “Open Road Policies.”
- Administrative TIM/QC Actions: “how-to” guidelines of best practices that can be handled through administrative action. Examples are regional, interagency TIM Teams and interagency training.
- Operational TIM/QC Actions: “how-to” guidelines of best practices that should be practiced in the field. Examples are good scene management, such as Unified Incident Command, traffic management at the scene, and emergency light discipline. For those Coalition States where TIM/QC legislation has been enacted, but drivers and/or responders



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(including police crash investigators and other responding rescue personnel) are not yet complying with such legislation, recommended methods to improve compliance are included.

- Corridor-wide Traffic Incident and Emergency Management: the individual agency’s roadmap for coordinating events across multiple state/jurisdiction boundaries. Examples are workshops among the regional HOGs; inter-regional traveler information, alerts, and notifications (for example using the Information Systems Network); and, of course, commonality of TIM-related laws and enforcement.

Readers should note that portions of these discussions were adapted or even used directly from other works by the same authors.⁹

7. Statutory TIM/QC Actions

Effective QC programs, or TIM in general, ideally have their foundations in legislation. While policies, interagency agreements, and administrative actions are all important, certain fundamental issues should be matters of public policy, codified in law. In a closely coordinated corridor, such as the I-95 Corridor, it is highly desirable that all states have similar laws so that travelers—both individuals and commercial—have common expectations as to their rights, responsibilities, and protections. The key laws thought to be the most important for consistency and thoroughness are the following:

- “Stop and Return” Laws;
- “Move-it” Laws;
- “Move-over” Laws;
- Liability Laws, including protection of uniformed responders, service patrols, and other responders;
- Abandoned Vehicle Laws;
- Assignment of Responsibility for Highway Operations, including the roles of public safety, operations, maintenance, asset managers¹⁰, etc.;
- Exempt wreckers from over-weight vehicle limits; and
- Laws that enable transportation and/or environmental agencies a means to recover the costs they paid to get the roadway cleared from responsible parties and that these recovered funds be returned to the agency, not the state’s general fund.

These are covered in the subsections below and representative samples of legislation are referred to as available.

7.1. “Stop and Return” Laws

This class of laws require drivers involved in a crash to stop immediately (in a safe location) at the scene, or if they passed too far, to proceed to a safe location to legally turn around and return to the scene. The relevance to QC is that this helps law enforcement perform their investigation so they can clear the scene faster.

An excerpt from the State of Florida is given below and more complete texts of several laws are on the QC Reference DVD at Law_Stop_XX.

⁹ Specifically (I-95CC, 2003), (FDOT, 2006b-e), (GDOT, 2006), and (GRTA, 2006), and these are not explicitly cited in most instances.

¹⁰ In some states, highway maintenance is done by contractors, often called “asset maintenance” or “asset manager” contractors.

The driver of any vehicle involved in a crash resulting [in injury of any person] [death of any person] [only in damage to a vehicle or other property which is driven or attended by any person] shall immediately stop such vehicle at the scene of such crash or as close thereto as possible, and shall forthwith return to, and in every event shall remain at, the scene of the crash until he or she has fulfilled the requirements of s. 316.062.

7.2. “Move-it” Laws

This class of laws is one of the most important to incident responders and managers. The laws require motorists involved in minor crashes with no serious injuries to immediately move their vehicles



from the travel lanes as long as they can do so safely. Unfortunately, many drivers—who often learned their “rules of the road” in earlier times,

are under the impression that anytime they are involved in a crash, particularly when there is property damage, they should not move their vehicles until law enforcement arrives and conducts an investigation to determine “which driver is at fault.” This is often inspired by the reluctance to “jeopardize” their chances of a full insurance recovery. In reality, police generally do not conduct thorough investigations of minor crashes, but the misconception is difficult to overcome.¹¹ Excerpts from Connecticut and Virginia are given below and more can be found at Law_Movelt_XX.

Connecticut Statutes, Section 14-224 (Driver Move Law)

Each person operating a motor vehicle who is knowingly involved in an accident on a limited access highway which causes damage to property only shall immediately move or cause his motor vehicle to be moved from the traveled portion of the highway to an untraveled area (emphasis added) which is adjacent to the accident site if it is possible to move the motor vehicle without risk of further damage to property or injury to any person.

Virginia, 46.2-888 & 46.2-1212.1 (Sample Language—Authority Tow Law)

If the driver of a vehicle involved in a crash or experiencing a mechanical breakdown does not promptly remove the vehicle from the shoulder after notifying a law enforcement officer, such removal may be ordered by a law enforcement officer at the expense of the owner if the vehicle creates a traffic hazard.

In the event of a motor vehicle crash or incident, the state police and/or local law enforcement agency in conjunction with other public safety agencies may, without the consent of the owner or carrier, remove a vehicle, cargo, or other personal property that has been (i) damaged or spilled within the right-of-way or any portion of a roadway in the state highway system and (ii) is blocking the roadway.

¹¹ Portions of this and other sections were paraphrased or even used entirely from (I-95CC, 2003), because the authors and sponsoring agency were the same.





The owner and carrier, if any, of the vehicle, cargo, or personal property removed or disposed of shall reimburse the DOT, state police, local law enforcement agency, and local public safety agencies for all costs incurred in the removal and subsequent disposition of such property.

Local ordinances can be effective as well. The following is a City Ordinance from Broken Arrow, Oklahoma:

**Broken Arrow, OK, City Ordinance 23-129.1
- Clear the Road**

1. *Whenever any police officer finds a vehicle standing upon a roadway in violation of any provision of section 23-129.1, such officer is hereby authorized to move such vehicle, or require the driver or other person in charge of the vehicle to move the same, to a position off the paved or main-traveled part of such roadway.*
2. *Law enforcement officers, using reasonable care, may remove from the roadway to the nearest safe place any disabled or damaged vehicle or cargo as described in Section (d) of section 23-129.*

The main challenges of the move-it practice are thus consistent application and driver education. A good example that one can view in a short video clip is “Steer It, Clear It” (“If you can steer it, move it!”) in Houston, Texas.¹²

The second aspect of these laws is the authority given to responders, mainly

law enforcement, to move the vehicle if the driver cannot, either by pushing or pulling. Many police cars and service patrol vehicles are equipped with push bumpers for this purpose. Unfortunately, many agencies are reluctant to use this authority unless they are explicitly protected from liability in the event of damage occurring during the act of moving. There are cases of service patrol operators who likewise refuse to move vehicles because any damages have to be paid by the operator personally. Agencies need to take administrative actions to avoid this dilemma.

7.3. “Move-Over” Laws

“Move-over” Laws are being promulgated around the nation (38 states as of this writing) for the protection of law enforcement, and in many cases other responders. FBI statistics and the National Law Enforcement Officers Memorial Fund (NLEOMF) 2005 Fallen Heroes Report show that traffic crashes claim the lives of more police officers than any other cause of death in the line of duty, including gunfire. In Florida alone, according to the Florida Highway Patrol, motorists crashed into working law enforcement vehicles that were stopped or parked along Florida roadways 1,793 times between 1996 and 2000, resulting in five deaths and 419 injuries.

A Move-over Law typically requires drivers in the lane adjacent to any area in which there are stopped police cars (and often other emergency vehicles) with flashing lights, such as the shoulder, to

¹² See <http://www.houstontranstar.org/>.

move over one lane when possible. If traffic is too congested to move-over safely, the law requires drivers to slow down, below the posted speed limit and be prepared to stop.

There have been concerns expressed over this class of laws, mainly due to sudden, and perhaps unsafe, lane changes, or a slowing vehicle being run into from behind, and there have been instances when law enforcement set up scenes as traps to issue citations without real incidents. However, the QC impacts of this law are clear if the law is safely followed; namely, the responders and motorists being served are removed from speeding traffic, or at least traffic in the adjacent lane is slower, and presumably more attentive. The devastating results of crashes caused by vehicles hitting responders or vehicles are dramatically demonstrated in a video produced by the International Association of Chiefs of Police (IACP) entitled “Your Vest Won’t Stop this Bullet” (Movie_Move_IACP_Vest). The net result should be a reduction in secondary incidents, particularly deadly crashes.

An excerpt from Georgia’s Move-over Law (Georgia Code, Title 40-6-16) is as follows:

a. The operator of a motor vehicle approaching a stationary authorized emergency vehicle that is displaying flashing yellow, amber, white, red, or blue lights shall approach the authorized emergency vehicle with due caution and

shall, absent any other direction by a peace officer, proceed as follows:

1. Make a lane change into a lane not adjacent to the authorized emergency vehicle if possible in the existing safety and traffic conditions; or
2. If a lane change under paragraph (1) of this subsection would be impossible, prohibited by law, or unsafe, reduce the speed of the motor vehicle to a reasonable and proper speed for the existing road and traffic conditions, which speed shall be less than the posted speed limit, and be prepared to stop.

b. The operator of a motor vehicle approaching a stationary towing or recovery vehicle or a stationary highway maintenance vehicle that is displaying flashing yellow, amber, or red lights shall approach the vehicle with due caution and shall, absent any other direction by a peace officer, proceed as follows:

1. Make a lane change into a lane not adjacent to the towing, recovery, or highway maintenance vehicle if possible in the existing safety and traffic conditions; or
2. If a lane change under paragraph (1) of this subsection would be impossible, prohibited by law, or unsafe, reduce the speed of the motor vehicle to a reasonable and proper speed for the existing road and traffic conditions, which speed shall be less than the posted speed limit, and be prepared to stop.





c. Violation of subsection (a) or (b) of this Code section shall be punished by a fine of not more than \$500.00.

More examples can be found at Law_MoveOver_XX.

7.4. Liability Laws

While the need for liability protection is uniform—namely the absence of liability protection greatly inhibits responders from performing their duties in an ideal manner—the absence of protection impacts responder groups differently, as indicated in the following subsections.

7.4.1. Uniformed Responders

This is the most commonly protected group and it generally includes law enforcement, fire rescue, and emergency medical services (EMS). Some of the specific issues that should be included in the liability relief laws—all exclusive of gross negligence, of course—are summarized as follows:

- Relief for actions taken in the execution of QC practices such as directing quick removal of cargo or vehicles to restore traffic., and
- Protection of law enforcement (or others) who have to take actions to prevent further incidents (such as aggressive removal of a person threatening suicide on a bridge.

7.4.2. Transportation Agencies and Service Patrols

In a number of states, transportation agencies have exemptions from liability for taking action to open roadways. If incident response members are employed by the department, they are covered by these statutes and may remove or direct the removal of blocking vehicles or debris to restore traffic without concern for liability.

Less often protected are service patrols (also known as freeway service patrols, which we use herein as FSPs to avoid conflicting with State Police, or SP). FSPs are often hesitant to engage in QC; rather they confine their duties to purely motorist assistance, such as providing a small amount of fuel, jump-starting dead engines, inflating or changing flat tires. While important to affected motorists, these operators may not assist in actual QC, such as removing vehicles or injured persons from the roadway, treating minor injuries, or being very proactive in traffic management.

FSP operators who lack liability protection can, nonetheless, assist other responders in several ways while minimizing their exposure to suit, including:

- Calling in other responders when they encounter an incident;
- If the state has a Move-it Law, and the FSPs are protected through that law, then they should be proactive at removing vehicles and debris from the roadway;



- Setting up at least temporary maintenance of traffic (MOT);
- Directing traffic around the incident scene, thus freeing uniformed officers to work the incident;
- Protecting the back of the queue.

These operational practices are covered in detail in Chapter 10, but the point here is that FSPs in states without explicit liability protection for them can still be proactive traffic incident managers.

7.4.3. Tow Service Operators

In states where towers are not explicitly protected, they tend to be very deliberate in the execution of their duties. Coupled with the more common basis of payments—by the hour—there is no incentive for QC. If it is not possible to enact explicit liability protection laws, then TIM leadership should attack the administrative solution of changing the method of payment (see Section 8.4).

7.4.4. Other Responders

While it would be difficult to provide carte blanche coverage for all other potential responders, such as maintenance personnel, Medical Examiners, HAZMAT handlers, and the like, they should not be overlooked in the creation of new statutory language. A good general-coverage law comes from Rhode Island, which is excerpted below and more are included as Law_Liability_XX.

Rhode Island Statute Section 24-8-42, entitled “Emergency management—lane clearance”

- Whenever any public safety agency through the legitimate exercise of its police powers determines that an emergency is caused by the immobilization of any vehicle(s) on the interstate system or limited access highway, as defined in [Section] 31-1-23(c), resulting in lane blockage and posing a threat to public safety, public safety agencies and those acting at their direction or request shall have emergency authority to move the immobilized vehicle(s).*
- There shall be no liability incurred by any state or local public safety department or agents directed by them whether those agents are public safety personnel or not for damages incurred to the immobilized vehicle(s), its contents or surrounding area caused by the emergency measures employed through the legitimate exercise of the police powers vested in that agency to move the vehicle(s) for the purpose of clearing the lane(s) to remove any threat to public safety.*

7.4.5. Recording Incidents

Many TMCs do not record images as a matter of policy to avoid being beseeched by lawyers seeking evidence to assign fault in crashes. Ideally, legislation would protect the TMC from “harassment” of this nature, or afford some relief to the TMC management.





Crash and abandoned vehicles in the highway right-of-way pose a number of safety and operational problems.

7.5. Removal and Towing Laws

Crash and abandoned vehicles in the highway right-of-way pose a number of safety and operational problems. First, safety: any obstruction on the shoulder or in the clear zone poses a serious safety hazard, and vehicles are not good crash attenuators. They are too often struck by passing vehicles with serious results. For example, in 2005 North Carolina completed a five-year study of abandoned vehicle crash involvement found that a total of 1,300 abandoned vehicles were struck, resulting in 47 fatality crashes and over 500 injuries.

They also obstruct normal operations, such as mowing and snow removal, thus negatively impacting the transportation agency. Tow companies are reluctant to remove them because it is too often hard or impossible to recover the cost; thus transportation agencies often have to bear the responsibility to respond to, and often dispose of, these vehicles.



Increased emphasis on a corridor-wide consistent policy on removing abandoned vehicles from the right-of-way is recommended by improving current impounding regulations to reduce the time it takes to get vehicles impounded. In addition, policies should

be developed that require owners to pay for the removal and storage of vehicles. Some states have implemented initiatives where owners will not be able to register additional vehicles until they have paid the tow bills on the vehicles they left abandoned on freeways.

These laws deal with the authority for agencies (sometimes called “authorities”) to remove or tow vehicles and cargo from an incident scene.

7.5.1. Authority Removal Laws

According to (NCHRP, 2003), “An authority removal law provides authorization to a pre-designated set of public agencies to remove:

- 1) driver-attended disabled or wrecked vehicles, and
- 2) spilled cargo or other personal property blocking a travel lane(s) or otherwise creating a hazard to the flow of adjacent traffic.

For definition purposes, an “authority” represents a public agency authorized to remove or cause removal of vehicles under an authority removal law. Such agencies generally include state, county, and local law enforcement in addition to State Departments of Transportation.”

An example, also taken from (NCHRP, 2003), is Rhode Island’s Statute Section 24-8-42 (see also Law_Remove_RI), entitled “Emergency management–lane clearance,” which furnishes an authority removal law applicable under all types of traffic incidents:



- (a) *Whenever any public safety agency through the legitimate exercise of its police powers determines that an emergency is caused by the immobilization of any vehicle(s) on the interstate system or limited access highway, as defined in (Section) 31-1-23(c), resulting in lane blockage and posing a threat to public safety, public safety agencies and those acting at their direction or request shall have emergency authority to move the immobilized vehicle(s).*
- (b) *There shall be no liability incurred by any state or local public safety department or agents directed by them whether those agents are public safety personnel or not for damages incurred to the immobilized vehicle(s), its contents or surrounding area caused by the emergency measures employed through the legitimate exercise of the police powers vested in that agency to move the vehicle(s) for the purpose of clearing the lane(s) to remove any threat to public safety.*

Note the protection from liability in this law. This is very important to responders to be held harmless for taking such lawful actions.

Currently, only Georgia and Tennessee, in addition to Rhode Island, are known to have removal laws.

7.5.2. Authority Tow Laws

Again, paraphrasing then quoting (NCHRP, 2003), these laws accomplish the same goal as an authority removal law

in meeting open roads goals; however, an authority tow law emphasizes removal of driver-attended disabled or wrecked vehicles from the highway right-of-way to a legal parking area, a crash investigation site, or other area of safe refuge such as a storage yard. Select states have expanded the law to include the removal of spilled cargo from highway right-of-way. In certain cases, incident responders may apply an authority tow law when drivers or cargo owners cannot provide for the timely removal of an incapacitated vehicle or spilled cargo located on, and perhaps previously moved to, the shoulder. In other instances, states have developed an authority tow law for the specific purpose of protecting those persons involved in or responding to a traffic incident from exposure to adjacent traffic, even if the traffic incident is contained to the shoulder. Note the spatial and temporal criteria outlined in the following excerpt from Oregon, an authority tow law entitled 'Immediate custody and removal of vehicle constituting hazard,' for removing a disabled vehicle obstructing a highway shoulder or bicycle lane:

Oregon Statute Section 819.120

- (1) *An authority described under (Section) 819.140 may immediately take custody of a vehicle that is disabled [emphasis added], abandoned, parked or left standing unattended on a road or highway right-of-way and that is in such a location as to constitute a hazard or obstruction to motor vehicle traffic using the road or highway.*





- (2) *As used in this section, a “hazard or obstruction” includes, but is not necessarily limited to:*
- (a) *Any vehicle that is parked so that any part of the vehicle extends within the paved portion of the travel lane.*
 - (b) *Any vehicle that is parked so that any part of the vehicle extends within the highway shoulder or bicycle lane:*
 - (A) *Of any freeway within the city limits of any city in this state during the hours of 7 a.m. to 9 a.m. and 4 p.m. to 6 p.m.;*
 - (B) *Of any freeway within 1,000 feet of the area where a freeway exit or entrance ramp meets the freeway; or*
 - (C) *Of any highway during or into the period between sunset and sunrise if the vehicle presents a clear danger.*
- (3) *As used in this section, “hazard or obstruction” does not include parking in a designated parking area along any highway or, except as described in subsection (2) of this section (emphasis added), parking temporarily on the shoulder of the highway as indicated by a short passage of time and by the operation of the hazard lights of the vehicle, the raised hood of the vehicle, or advance warning with emergency flares or emergency signs.”*

Currently, only four Coalition states have these tow laws.

7.6. Assignment of Responsibility for Highway Operations

One of the very interesting issues in TIM in general and QC in particular deals with a clear understanding about the roles of public safety, operations, maintenance,

asset managers, etc. If asked “Who is in charge of the highway?” (from a TIM perspective), most professionals and likely the vast majority of general motorists would respond to law enforcement, most often the local police in urban areas and State Patrol in non-urban areas. In law, however, some states create the responsibility differently. For example, in one unnamed Coalition state there was a Supreme Court decision that bears on this. Suit had been brought against the State Patrol for not removing a stalled truck from the roadway timely and it was hit by a car resulting in fatalities.

Though the State Patrol (SP) was initially found to be liable, the Appeals and Supreme Court reversed the finding, ruling that, “a review of the pertinent statutory provisions reveals that the responsibility for the operation and maintenance of the roads in this state falls to the [State] Department of Transportation and local governments for the roads within their respective jurisdictions. See § [citation].” It further ruled that “[SP’s] enabling statute does not afford the agency ownership or control over the state’s roadways; therefore, [SP] cannot be held to the standard of care that accompanies the right of ownership or control. Nor does [SP] have a duty to remove stalled or abandoned vehicles from the state highways. [State] law authorizes, but does not establish a legal duty, nor require, [SP] officers to provide for the removal of stalled or abandoned vehicles.”



Up until this decision, the SP was, in the opinion of most, responsible for removal of vehicles blocking the roadway, but this decision clearly placed the responsibility on the DOT, thus potentially changing the operational regimen of that state significantly. Accordingly, it is not only important that the legal responsibility for operation of the highway system be clear, it is equally important that agencies understand their responsibilities and have policies and practices in place that are in concert with that law.

A good example of a clear guideline is contained in the Joint Operating Agreement from Washington State.

7.7. Exempt Wreckers from Overweight Vehicle Limits

There exists somewhat of a Catch-22 situation involving weights limits and heavy wreckers. When a heavy truck involved in an incident needs to be cleared from the highway, it is often necessarily a heavy wrecker that does it. The combined weights of the truck cab and wrecker rear wheel assembly often

exceed the legal weigh limit. In some states such situation are often ticketed, or the operator has to apply for and receive a waiver before performing the tow. The former is contrary to common sense, since the truck has to be removed and TIM programs are requiring larger and more capable recovery equipment. The latter is contrary to good QC practices. The ideal solution is a law that provides appropriate protection to the wrecker operator while involved in clearance of a highway incident, such as Illinois.

California issues an annual permit for overweight recovery of wrecks. Arizona exempts all weight violations for tow trucks removing wrecked vehicles.

The waiver solution is better than nothing, but when possible under enabling legislation, agencies should grant the waiver on a general basis rather than a case-by-case basis, so there is minimal delay in removing the heavy truck.

7.8. Recovery of Motorist-Caused Damages

In many cases the responsible party in an incident cannot pay the costs to private contractors to recover vehicles and/or cargo, for a variety of reasons. To ensure QC it is in the best interest of the public agency to ensure payment to the service provider to affect quick clearance. Most states either do not have the legal authority to recover such costs and when they do, too often the moneys





have to go into the state’s general fund. These laws, called “Motorist-caused Highway Damage Fund” in Illinois for example, would provide the incentive and process for states to use their resources to compensate service providers so the roads can be quickly cleared, the provider receive appropriate compensation, and the agency itself receive the reimbursement. The final disposition of transactions might take months or even years—plus some will never be recovered—so the laws should provide for both seed funding and enable normally appropriated funds to be explicitly used for this purpose.

7.9. Comprehensive Traffic Incident Management Law

The National Committee on Uniform Traffic Laws and Ordinances (NCUTLO),¹³ which is a private, non-profit membership organization dedicated to providing uniformity of traffic laws and regulations on traffic safety issues, has developed model legislation of a comprehensive nature. The model legislation covers a number of the foregoing laws and some policies and practices discussed later in this Toolkit. The model law is included on the DVD as Law_TIM_NCUTLO.

8. REGULATORY OR POLICY TIM/QC ACTIONS

In Chapter 4 we covered the Open Roads Philosophy. This is the keystone of QC practices—all efforts should be directed at clearing lanes, because studies have showed that this is the single most effective way of reducing

incident duration, and thus exposure to secondary incidents.

8.1. “Open Roads Policies”

This guiding principal is most often implemented in the form of an “Open Roads Policy (ORP).” An ORP states the philosophy of Quick Clearance and establishes as a high priority the removal of all incident vehicles and materials from the roadway. At this time, three states even set a time goal as well. Two examples are from Florida and Washington State:

Florida DOT/Florida Highway Patrol Policy

*Roadways will be cleared as soon as possible. It is the goal of all agencies that **all incidents be cleared from the roadway within 90 minutes of the arrival of the first responding officer** [emphasis is in the policy statement itself]. This goal being made with the understanding those more complex scenarios may require additional time for complete clearance.*

Washington State’s Joint Operations Policy

The WSP [Washington State Patrol] and WSDOT [Washington State DOT] will collaborate to respond to incidents and coordinate all public and private resources in this effort to work toward clearing incidents within 90 minutes. It is the policy of WSP and WSDOT to effectively use resources to expedite responding to incidents, efficiently and effectively conduct needed investigations, and reduce highway lane and state designated ferry route closures to a minimum.

¹³ See <http://www.ncutlo.org/>.



California recently created an Open Roads Policy like Florida's. Connecticut, Maryland, Tennessee, and Wisconsin have Open Roads Policies without explicit time goals. Georgia is planning to create one similar to Florida's. Florida is currently trying to change its policy to be closer to Washington's, namely, 90 minutes from the arrival of the first responder, regardless of who it is. Washington's policy does not give a starting condition, so one would presume it is from the occurrence of the incident itself or, at worse, the initial notification. This is more aggressive.

8.1.1. Statewide Policies

The foregoing are statewide ORPs, co-signed by the State DOT and the State Patrol. As such, they create a strong state-wide policy that sets the tone for all locations; however, as a practical matter, an agreement between the state's main transportation and traffic law enforcement agencies will only have a direct impact on urban highways covered by the SP and non-urban highways, particularly the major arteries and interstates.

It is critical, too, that not only should the ORP be agreed at the highest level of the agencies, but the philosophy, and ORP explicitly, should be taught in State Patrol and Police Academies and should be ingrained in each and every trooper's conscience.

A series of statewide ORPs is included in Policy_ORP_XX, which has five examples, plus Policy_TIM_CT and Policy_JOP_WA, which are Connecticut's and Washington State's, respectively.

8.1.2. Local Policies

As noted above, a state-wide ORP is a good beginning, but ultimately, they need to be created at the local levels. In urban areas it is generally the local law enforcement's responsibility to handle incidents, plus there are a number of other responders that are local: fire rescue, EMS, HAZMAT, etc. These, as well as the governing political jurisdictions need to be "on board" with the Open Roads Philosophy.

In Central Florida, for example, the TIM Manager from the Florida DOT's District 5 negotiated 22 separate Local Open Roads Policies (LORPs) with city, county, and Expressway Authority agencies that included all the responders as well—this in 2004. Since then a number of other regions are doing likewise. In SW Florida the TIM Teams have obtained signatures of 45 agency heads and mayors; in the Gainesville area six LORPs are being executed. The goal is to eventually cover the whole state. In the Atlanta region, GDOT and other stakeholders are striving to do likewise; indeed it is expected that the Governor will sign the statewide ORP during the 2007 legislative session.

These were all based on the state-wide ORP and had the same 90-minute goal as Florida's quoted above. Samples are





included as Policy_LORP_ST_CO, where CO stands for county.

At the local level, however, there is a related but separate issue that can be addressed by a somewhat different LORP. This issue is the timely removal of fatal crash victims. In most states, fatalities have to be investigated by an official Medical Examiner (ME), or Coroner. The problem is that they are generally not readily available to rush to a fatal crash scene to inspect the body and declare death in a timely manner, and meanwhile the negative impact of the crash is compounding. In states where delegation of this authority is not expressly prohibited (and if it is, the laws should be changed) MEs are increasingly willing to agree to allow responders (generally law enforcement and firefighters) to assert death, take appropriate digital photographs for later investigation, and then remove the deceased victim from the roadway. Sometimes they are required to notify the ME to get verbal approval, but even with this requirement, allowing the authority to remove the victim has a huge positive impact on QC and public safety.

Indeed, Texas has a State Law that explicitly requires the quick removal of deceased from runways, railroads, and highways, which reads as follows:

**Code of Criminal Proceedings” Article 49.25
Section 8**

When any death under circumstances set out in section 6 shall have occurred, the

*body shall not be disturbed or removed from the position in which it is found by any person without authorization from the Medical Examiner or authorized deputy, **except for the purpose of preserving such body from loss or destruction or maintaining the flow of traffic on a highway, railroad or airport [emphasis added].***

Several samples are included on the QC DVD as Policy_LORP_ME_ST_CO and cover both the main issue described above and one addresses the transporting of a vehicle with a deceased body enclosed to a safe haven without the ME being present.

8.2. Service Patrols

Service patrols—sometimes called freeway service patrol (FSP) as noted earlier are given names like CHAMP (Connecticut Highway Assistance Motorist Patrol), H.E.L.P. (Hudson Valley, NY, Highway Emergency Local Patrol, HERO (Highway Emergency Response Operator, Atlanta), Highway Helper (Minnesota), Minute Men (Chicago), IMAP (Incident Management Assistance Patrol, North Carolina), and Road Rangers (Florida)—serve a vital role in TIM, and increasingly in QC.

The nature of FSPs in terms of coverage in time and geography and scope of services rendered vary greatly across the nation and within the Corridor. One study found that FSP programs that use full-time support reduce incident duration by 15-30% compared to programs



with part-time staff. An analysis of approximately five years of data (1995-2000) near Eugene, Oregon, concluded that expanded FSP operations reduced incident delay by approximately an average of 39 minutes on Highway 18, and 9 minutes on Interstate 5 (ODOT, 2001).

The main issue with FSPs from the agency perspective—particularly for the higher level of service referred to above—is money to support the programs. In the past they were generally funded entirely by the State DOT, and there are also programs that receive federal funding. Additionally, below are a few examples of public-public and public-private partnerships (PPPs) to share financing:

- On most toll roads the FSP costs are borne by tolls, which are user fees. Most toll authorities are public corporations, but a few are private.
- Florida's Turnpike Enterprise has an arrangement with State Farm Insurance Company that permits the company to advertise their name prominently on the Turnpike's Road Ranger vehicles in

return for an annual contribution to the operation of the service.

- On the East Coast, CVS Drug Stores sponsor FSPs in several states, and is probably the largest such sponsor.

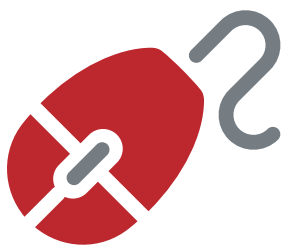
Following are some links to various states' FSP programs.

- California's FSP: <http://www.chp.ca.gov/html/fsp.html>
- Connecticut's CHAMPs: <http://www.ct.gov/dot/cwp/view.asp?a=1390&Q=259404&dotPNavCtr=|>
- Florida's Road Rangers: http://www.dot.state.fl.us/TrafficOperations/Traf_Incident/Traf_Incident.htm
- Georgia's HEROs: <http://www.dot.state.ga.us/dot/operations/trafficops/HERO/index.shtml>
- Hudson Valley's H.E.L.P.: <http://www.hudsonvalleytraveler.com/perl/HELPTricks.pl>

The various levels of assistance are described below.

8.2.1. Motorist Assist Programs

Most FSP programs began to provide these motorist assistance services, and generally include provision of a small amount of gas for fueling stranded vehicles; changing, inflating, or even fixing flat tires; and jump-starting cars with battery problems. Clearly these are important aids to the motorists and give them a great sense of well-being. FSPs are generally universally very popular with the motoring public and assisted drivers often write the State DOT to thank them for the service.



Web Resources:

Following are some links to various states' FSP programs.

California's FSP:

<http://www.chp.ca.gov/html/fsp.html>

Connecticut's CHAMPs:

<http://www.ct.gov/dot/cwp/view.asp?a=1390&Q=259404&dotPNavCtr=|>

Florida's Road Rangers:

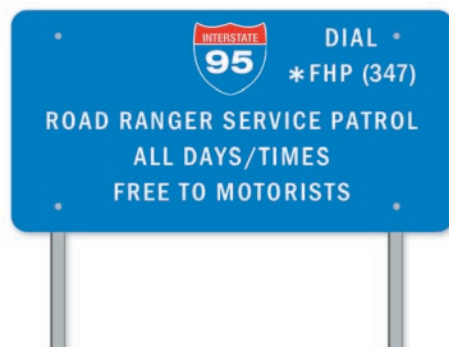
http://www.dot.state.fl.us/TrafficOperations/Traf_Incident/Traf_Incident.htm

Georgia's HEROs:

<http://www.dot.state.ga.us/dot/operations/trafficops/HERO/index.shtml>

Hudson Valley's H.E.L.P.:

<http://www.hudsonvalleytraveler.com/perl/HELPTricks.pl>



Coordinated Incident Management
Toolkit for Quick Clearance





They are important to TIM as well because they help get stalled vehicles going and off the highway where they might pose a hazard, particularly if they are stalled in the traveled lanes.

8.2.2. Incident Management Programs

Several coalition states provide much more proactive TIM and particularly QC services. Notable among these are Georgia DOT's HEROs in Atlanta. While about 80% of their activities are the more common motorist assists, the HERO's main function is QC. They upright, push, or pull stranded and crash vehicles from the roadway; they treat minor injuries;



they clear debris and clean up minor vehicle spills. These are well trained professionals that get 338 hours of classroom training and 200 hours of on-the-job training when starting and annually repeat 48 to re-qualify.

A measure of the HERO program success is the recent doubling of the size

of the program to over 100 operators and the expansion of their coverage area in the Atlanta region.

8.2.3. Dispatching of Service Patrols

A key to effective deployment of FSPs is the manner of dispatching. The ideal solution is to dispatch them from the regional transportation management center (RTMC). In this way, the RTMC is the focal point for traffic incident management. What is noteworthy about this is actually the reverse situation. More often than not, the FSP units come across incidents more often than other responders, even police, so they actually serve as the source of incident reporting (notification) and verification. Thus, they report the incidents to their dispatcher, who alerts other operators and managers. Additionally, in many cases the FSP, if fully trained, can initiate lane clearance or at least remind involved motorists of the Move-It law.

The policy implications in this have to do with the Concept of Operations (ConOps) for the region and the cost. In the ConOps or other standard operating procedure (SOP) the policy decision would need to place the operations of the FSP in the RTMC and the responsible agency (usually DOT or SP) would need to budget the positions. Obviously 24/7 operations if the FSP is desired, as would be the dispatch, but it is generally sufficient to let RTMC operators perform dispatch services during the nighttime and on weekends.

A key to effective deployment of FSPs is the manner of dispatching. The ideal solution is to dispatch them from the regional transportation management center (RTMC).



Similarly, Maryland's CHART (Coordinated Highways Action Response Team) incident management program resulted in an estimated 377 fewer secondary crashes in 2002. The program uses a statewide operations center and three satellite traffic operations centers that use a software package of the same name, advanced technologies, and cooperation among agencies and jurisdictions to improve the flow of people and goods along thousands of miles of interstates and state highways in Maryland (MDSHA, 2003).

8.3. Inter-agency Communications

When traffic incident managers are asked what they need most in terms of resources, one of the top items on nearly everyone's list is a common communication system for responders. Often, different agencies cannot even communicate at the scene other than direct person-to-person, much less away from the scene as assets are being mustered.

Each agency typically has its own internal communications system and most are reluctant to let others have

access. However, the strong need is beginning to break down the institutional barriers and some states and regions are moving toward the provision of a common system, even if it supplements the usual system. Most common among these is use of the 800 MHz band, which has been designated by the FCC (Federal Communications Commission) as the national public safety radio system for law enforcement, fire rescue and emergency medical technicians. It operates at 806-824 MHz/851-869 MHz. Unfortunately, this band is experiencing increasing levels of interference from commercial wireless carriers, such as Nextel and the cellular carriers that operate in the same part of the spectrum or in adjacent spectrum bands. A number of private radio systems also operate in the 800 MHz band. For example, utility companies use the spectrum for internal communications; but it appears these private radio systems are not a significant source of interference to public safety radio systems. The FCC is currently reconfiguring the 800 MHz band.¹⁴

This issue notwithstanding, the 800 MHz band would seem to be a common solution to the issue. The challenges, as usual, are high-level policy decisions by multiple agencies and cost. The radios can run up to \$4,700 each for hand-held units and \$7,600 for dispatch units.

Finally, in this regard, another critical communications link that needs to be provided is between responders on

¹⁴ See <http://www.800mhz.gov/index2.html> for more details. This paragraph was adapted, indeed quoted in some instances, from this site.





the scene and emergency providers, particularly medical evacuation (MedEvac) helicopters (also see Section 8.10.6).

8.3.1. Statewide Telecom Programs

North Carolina's VIPER (Voice Interoperability Plan for Emergency Responders) program is a program to provide a common telecommunications system for public safety and emergency responders throughout their state. Funded by the Department of Homeland Security and appropriation from their State Legislature, the NC State Highway Patrol is leading the effort to make 800 MHz radios available to as many responders in the state as they can—at both the state and local levels. At this writing, deployment was about 40-45% statewide.¹⁵



It is reported (on VIPER's Web site) that Colorado, Pennsylvania, Utah, and West Virginia have 800 MHz systems as well. In Florida, the DOT is trying to purchase 800 MHz radios for DOT personnel and FSPs.

In Georgia, the State-wide Communications System for Law Enforcement

and Public Safety is currently being implemented.¹⁶ The system will initially link law enforcement agencies at the state and local levels, but the vision is to expand to other emergency responders.

8.3.2. Cooperative Telecom Programs

Florida recently completed a pilot study



in which FSP personnel were permitted to use the Florida Highway Patrol (FHP) radio system on a separate work group from the law enforcement channel. The study demonstrated that this improved communications and was significant in reducing incident clearance times, while neither the security nor capacity of law enforcement traffic was compromised. The Florida DOT and FHP have entered into an agreement to deploy this arrangement statewide, but, as usual, the issue is dollars. The Florida DOT is programming for this at this writing.

8.3.3. Co-Location of Assets

- We have already mentioned the desirability of multiple agencies co-locating in RTMCs. At the request of the Florida Transportation Commission

¹⁵ More information can be found at their Web site: <http://www.nccrimecontrol.org/index2.cfm?a=000001.001148>.

¹⁶ For more information: <http://www.gema.state.ga.us/ohsgemaweb.nsf/1b4bb75d66ce841c88525711100558b9d/05dc9a983dc711b185257115005b7c00?OpenDocument>.

¹⁷ Edelstein, B., et al., "Regional Transportation Management Center Co-location White Paper," ITS Florida, July 2005.



(which oversees the Florida DOT), ITS Florida developed a white paper on TMC co-location. The paper¹⁷ can be found at Policy_Co-loc_FL and the major recommendations were that co-location should always be considered, but it may not work in all circumstances. When it is not practical, every effort should at least be made to integrate operations electronically. Other recommendations were as follows:

- Comparing mission statements of each partner to determine consistency and mutual dependencies;
- Establishing the degree of need for face-to-face interaction and cooperation among partners;
- Selecting a TMC Champion to provide multi-agency leadership;
- Developing a Concept of Operations inclusive of funding participation;
- Facilitating people integration at all levels among the TMC partners;
- Defining, measuring and achieving TMC performance measures;
- Providing fiscal savings in terms of construction and recurring operations and maintenance costs;
- Using performance measures to support public recognition of benefits; and
- Providing useful, timely and accurate data to make better and faster decisions.

Examples of highly integrated co-located TMCs are Austin, Texas; Orlando, Florida; and Salt Lake City, Utah. Jacksonville Florida will be building one that will house the Florida DOT, Florida Highway Patrol Regional

Dispatch Center, City of Jacksonville TCC, Jacksonville Transportation Authority transit management center, Jacksonville Sheriff's Office, and others.

8.3.4. ITS in Support of TIM/QC

Clearly, a primary role for ITS is the support of traffic incident management and quick clearance. A good overview of the benefits that ITS (and other programs) bring to TIM/QC may be found in a paper from FHWA; see Report_TIM_ITS_FHWA.

8.4. Wrecker and Towing Policies

In the TIM arena, the one area dominated by the private sector is that of towing and recovery or wrecker services. There are exceptions, such as the Minute Men in Chicago mentioned earlier, but by and large, private companies provide for vehicle recovery and towing, as well as (to a lesser extent) cargo and debris recovery.

Public agencies, usually police agencies, on the other hand, are responsible for regulating and managing these services. A large number of the towing programs are outdated and fail to have high standards to qualify. The normal practices are, unfortunately, not generally consistent with QC best goals and practices.

8.4.1. Rotation Lists

Most regions employ rotation lists whereby the local authority (usually state or local law enforcement) maintains a list





of wrecker and towing companies and as the need for their services arises the dispatcher contacts the next company in the list in rotation. This is designed to ensure that the business is equitably distributed among the qualifying (note that we did not say “qualified”) companies, but there is no assurance that every company has the needed equipment and qualified personnel to handle non-routine incidents. These companies are generally not regulated to the extent that they meet strict standards; generally they need merely meet some minimum business standards.

As a result, many incidents are responded to with inadequate resources and/or skills to resolve the incident clearance and towing needs. Equipment is often too small or not designed or equipped for recovery and/or towing. Operators are too often not adequately trained and are not familiar with safety practices while operating on highways. This results in extended clearance times as replacement resources are called up or other actions taken to resolve the incident.

A better system that still meets the traditional desire for equity would be to use qualified rotation lists based on industry, state, or nationally certified standards for competency and performance. The following process is recommended, which naturally would take a change in local or statewide policies:

1. Require certification of companies to perform various levels of recovery and towing.
2. Use multiple rotation lists based on the class of vehicle requiring recovery/towing resources needed (this is discussed in more detail in Section 10.5).
3. Ideally, when possible, the initial contact with the towing company would be from a dispatch center or TMC, not a responder in the field.
4. When contacting the tow company tell them the nature of the incident so they can best determine what resources to dispatch, rather than the TMC or responder prejudging. (Ideally, video feeds should be available to the towing companies so they can assess more accurately.)
5. Change the payment structure to favor QC (see next).

8.4.2. Payment Methods

The main issue with wrecker and towing services is the manner of payment, more accurately, the basis for payment. Most contracts currently are structured to pay by the hour; thus there is no financial incentive for the company to clear the roadway and scene quickly; indeed this is absolutely contrary to the Open Roads Philosophy, which aims to clear the roadway and scene as quickly as possible. A better approach would be for payment to be performance-based or a flat rate instead of time-based. The simplest method is to use a fee schedule that recognizes the following:



- The class of vehicle needing recovery/towing, generally based on the U.S.DOT vehicle classifications (see next section),
- The gross weight of the vehicle(s), by the pound,
- The number of vehicles involved,
- The number of wreckers needed,
- Consider an incentive for cargo, and
- Provide an incentive to clear quickly (see Section 8.4.4).

It is recognized that this is a sensitive issue, but state-level Towing and Recovery Associations are increasingly supporting this more rational approach for compensation of their members. Indeed, it is too often their non-members who are unqualified but have political support that thwarts these efforts.

8.4.3. Special Equipment Requirements

We have suggested certification of towing companies and their operators. A necessary component of this would be the certification, or at least the standardization of requirements for recovery equipment. On a national basis the Towing and Recovery Association of America (TRAA) has created a guide for on-scene personnel and dispatchers to use when requesting a wrecker. It is based on the U.S.DOT's eight vehicle classes and outlines the types of wreckers.¹⁸ The TRAA Vehicle Identification Guide, which is commonly used to classify vehicles for towing, can be found at Guide_VIG_TRAA.¹⁹

This is generally a good scheme, but it is lacking at the high (i.e., very heavy) end. The Florida Statewide Traffic Incident Management (TIM) Team has developed a new "R-Class" of wrecker that is being considered by the state at this writing. This super-duty type wrecker is a recovery vehicle for clearing major commercial vehicle crashes (see Policy_Tow_R-Class).

8.4.4. Special Incentive Programs for Towing

A special incentive for wrecker companies was suggested above. This might be a challenge for most public transportation agencies, but there is precedent. Florida's Turnpike Enterprise has had a "Rapid Incident Scene Clearance (RISC)" program in effect since 2004. In a nutshell, for major incidents involving heavy vehicles only, a pre-qualified wrecker company has 90 minutes from being given notice to proceed with a RISC recovery to clear the traveled lanes, in which case they get a bonus of \$2,500 (\$3,500 if specialized equipment like loaders is needed). For clearance times over 180 minutes, there are liquidated damages (LDs) of \$10 per minute. In all cases, the usual fees are paid by the towed vehicle owner(s). The bonus is paid by the Turnpike, who also collects the LDs. For more information on the RISC Program, see Policy_Tow_FTE_RISC.

¹⁸ See <http://www.towserver.net/>.

¹⁹ The TRAA Vehicle Identification Guide is copyright, TRAA. Permission to distribute received.???





Clearly there is a major incentive for a toll authority to clear incidents quickly, since customers are particularly irritated by congestion when they are paying tolls to use the highway, but the safety issue alone can justify public agencies adopting similar programs. Indeed, at this writing, Georgia is considering implementing a similar incentive program in the Atlanta area. The incentives would be paid from congestion management funds.

8.4.5. Special Incentive Programs for HAZMAT Removal

We are not aware of any actual case of this idea, but an incentive program similar to the foregoing could help HAZMAT (hazardous materials) handlers responding to non-cargo vehicle fluid spills like diesel fuel to speed up their business. Owing to the nature of their work, however, safeguards would be needed to balance safety concerns with aggressive actions aimed at winning the incentive.

8.5. Certification of Responders

TIM experts believe that it is essential to elevate the qualifications of TIM responders to a higher level through training. This is best achieved in a consistent manner by requiring certification of certain jobs that require the individuals to be properly trained. Foremost among those needing such certification are:

- Towing and recovery operators,
- FSP operators, and
- Hazardous materials contractors.

8.5.1. Agency Certification

In some instances it might be desirable to have agencies themselves certified, or at least as an agency policy require most or all responders, operators and/or managers to be certified.

8.5.2. Incident Management Certification

There is no national certification for traffic incident management, but the National Traffic Incident Management Coalition (NTIMC) is attempting to set a “National Uniform Goal (NUG),” which in draft form as of November 2006 was stated as follows:

- Responder safety,
- Safe, quick clearance, and
- Prompt, reliable, interoperable communications.

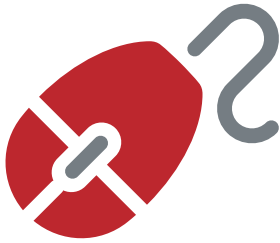
The NTIMC “is discussing whether to adopt a goal of joint development by TIM stakeholders of an interdisciplinary TIM responder curriculum and a voluntary certification program. This would be considered an advanced interdisciplinary training—to be in addition to the basic training and certification programs that each discipline already has in place.”²⁰ A series of white papers covering the following five themes is found on the QC DVD as Guide_NUG_NTIMC (NTIMC, 2006):

- Benefits of traffic incident management,
- Safe responders,
- Prompt, reliable incident communications,
- Safe, quick clearance,

20 Per e-mail to C.E. Wallace from Karen Haas, President, Manifest Inc., 11/3/06.



- Public education for incident prevention, and
- Accountable progress.



Web Resources:

National Traffic Incident Management Coalition:
<http://timcoalition.org>

NIMS On-Line Training:
<http://www.training.fema.gov/EMIWeb/IS/crslist.asp>

The final NUG itself was not available at this writing, but drafts can be found on the NTIMC Web site at: <http://timcoalition.org>.

The I-95 Corridor Coalition promulgates similar goals through its Coordinated Incident Management (CIM) Track and its four regional Highway Operations Groups (HOGs).²¹

The Coalition is developing a software application that will, when completed, be invaluable in such efforts. The so-called “Incident Management 3-D Interactive Tool” was in direct response to the recommendations of an International Scan for Incident Response (FHWA, 2006), and is two generations newer than the training package the participants observed at the Dutch Fire Training Academy. It works off of an “On Line Interactive Virtual Environment” (OLIVE) platform, currently in use by the U.S. Military. Once the transportation IM training environment and associated curriculum is completed, it will allow for all incident response disciplines to train together, from anywhere in the world.²²

8.5.3. NIMS Certification

The National Incident Management System (NIMS)²³ is, on the other hand, very formal. NIMS is mandated by a

Presidential Directive to be used in “incident management,” imposing new requirements on agencies who manage “incidents.” While the primary targeted incident type was the class of events commonly referred to as “Homeland Security” incidents, NIMS is not restricted to these. The NTIMC is pursuing this further—not an explicit study or policy—but as one of the goals under consideration to encourage NIMS and Incident Command System (ICS) training for all personnel who participate in traffic incident response. All responders, either primary or secondary, should complete basic NIMS training. The courses are available on-line at www.training.fema.gov/EMIWeb/IS/crslist.asp, and at a minimum, IS-700, IS-100, and IS-200 should be completed.

8.5.4. Towing and Wrecker Services

By and large, the towing industry is not well regulated, and there have been numerous calls for regulation, training and operator certification in the industry to endure that only qualified tow operators and appropriate equipment respond to traffic incidents. In several states, Florida and Georgia among them, the state towing associations themselves have led moves to get legislation to do this. Historically, the industry as a whole had been against regulation, and in Florida, for example, other parties like a motor club indirectly impacted have lobbied against such laws because they think that training may justify higher rates, so these states have yet to be successful.

²¹ See <http://www.i95coalition.org/CIM.html>.

²² Per e-mail to C.E. Wallace from Henry de Vries, I-95 Corridor Coalition, 11/6/06.

²³ See <http://www.fema.gov/nims/>.



Coordinated Incident Management Toolkit for Quick Clearance



The Coalition encourages members to adopt such legislation. A sample statute recently enacted in Virginia, which requires licensing of all towers, can be found at [Law_TowCert_VA](#).

8.6. Vehicle Spill and Debris Removal Policies

Debris and fluid spills from crashes, or simply falling off vehicles and trailers, pose major problems for QC. Too often questions such as ownership and associated rights, responsible parties, issues of hazardous materials and the like result in considerable delay in clearing what might otherwise be a simple incident.



8.6.1. Vehicle Spill Removal

A common result of vehicle crashes is the spillage of fluids from the vehicle engine and/or fuel tanks onto the roadway. Too often this is considered an environmental issue and valuable time is wasted waiting on a HAZMAT team to respond, which significantly delays incident clearance. In fact, in most cases, minor, non-cargo, fluid spills can and should be contained and/or cleared

up by responders. Florida has a policy called “Guidelines for the Mitigation of Motor Vehicle Fluids (Non-Cargo),” which was adopted by the Florida DOT in June 2004. This guideline encourages responders to clean up these spills (see [Guide_Spill_FL](#)). More details are provided in Section 10.6.2.

8.6.2. Debris Removal

Debris can take many forms, from items being transported by the vehicles, to wreckage from vehicles or trailers themselves. In the first case there is an issue with whether the items are commercial cargo or personally owned property. Laws differ in the responsibilities and authorities in each case. Within the laws available, agencies should adopt clear policies (and associated practices) to minimize the time the objects are allowed to remain on the roadway.

8.7. Abandoned Vehicle Policies

An unattended vehicle within the right-of-way is generally considered abandoned. Laws generally state that if law enforcement deems an abandoned vehicle a hazard, it can be towed, sometimes immediately, or if not deemed a hazard, only after some specified period. When they are left in place, however, they are a safety hazard and are frequently struck by passing vehicles.

A majority of jurisdictions have a law authorizing the removal of a disabled or abandoned vehicle from freeway or major arterial rights-of-way after a specified duration. The length of



allowable duration before authorities would remove an immobilized vehicle stranded on a highway shoulder ranged from 30 minutes in metropolitan areas to 72 hours in rural areas.

An innovative approach to vehicle removal was taken in Houston, Texas, who in 2004 instigated a “Safe Clear Towing Program” that provided for the immediate clearance of stalled or disabled vehicles on Houston freeways. So-called SAFE clear was created by the Mayor’s Office of Mobility, members of the Houston TranStar, law enforcement agencies, and the towing industry. The program covers major freeway segments using a concession based towing program. Towing companies bid to exclusively provide towing services on designated sections of freeway.²⁴ Tow trucks get reimbursed \$50 for a tow (or if the vehicle is blocking a freeway lane it is \$125) and \$30 if they do very minor repair or re-fuel and get the driver on their way. After all, putting a gallon of gas in a car is faster than hooking up to tow, so that is the \$30 assist. There are no motorist fees either way. This is a real incentive to clear the roadway. (It is noted that Texas has a steer-it/clear-it law that is not really well publicized.)²⁵ This type of program ensures that a vehicle is never abandoned for long on Houston’s major highways because the towing service will find them and remove them immediately.

for contacting the registered owner, trying to collect for towing and storage, and safekeeping of vehicle contents. Tow companies often lose money on impounds because they hold the vehicle for weeks or months and then are unable to collect from the owner. New legislation in some states has streamlined the disposal process for abandoned vehicles to assist the tow industry.

8.7.1. Crash Vehicles

Vehicles involved in crashes that are unoccupied are generally removed



quickly, unless there are investigation issues. Perhaps more significant than the vehicles themselves, however, are the debris and spilled fluids. Responders should remove these as quickly as possible. If they are non-cargo and non-hazardous, any responder should be able to remove them. The Move-it Law and a QC policy/guideline regarding fluids are the key tools in this case, as noted earlier (also see Section 10.6.2).

When the police impound abandoned vehicles, tow companies are responsible

If crash vehicles are abandoned within the right of way, then the treatment is similar to that in the next section.

²⁴ Adapted from a slide presentation entitled “Status of ITS at Houston TranStar” by John M. Gaynor, Texas Transportation Institute (TTI), 2006.

²⁵ Source: e-mail from Dr. Tim Lomax, TTI, 11/16/06.





8.7.2. Non-Crash Vehicles

Often vehicles that run out of gas or breakdown are abandoned by their owners or drivers. As noted above, these are hazards to public safety and interfere with routine operations like right-of-way maintenance. Laws and practices vary widely among the states, particularly those without authority tow laws. According to (NCHRP, 2003), “Most states maintain laws to address the mitigation of different highway obstruction types, the most common of which involves the removal of unattended or abandoned vehicles after a specified duration. [A majority of] jurisdictions have a law authorizing the removal of a disabled or abandoned vehicle from freeway or major arterial rights-of-way after a specified duration. The length of allowable duration before authorities would remove an immobilized vehicle stranded on a highway shoulder ranged from 30 minutes in metropolitan areas to 72 hours in urban/rural and bridge/tunnel areas.”



8.7.3. Personal Property

The disposition of personal property differs somewhat from the vehicles, particularly in the case of cargo. While truly personal property in a vehicle might follow the same resolution as the

vehicle itself, cargo generally remains the property of the responsible party (owner or contractee of the carrier), unless forfeited in the recovery process. The challenge to quick clearance is the reluctance of responders to possibly (further) damage cargo to avoid suit. Agencies should clarify the situation within their legal context and make clear to responders what their authority and limits are with regard to removing cargo from the roadway, and from the scene altogether. This can be covered in a QC statute as well.

8.8. Traveler Information and Outreach

Official responders can be only so effective if the motoring public is unaware or uncooperative in compliance with QC issues. Probably the single most flagrant example of this is the ignorance of, or reluctance to abide by, the Move-It Law, as noted previously. Many drivers simply cannot break the notion that anytime they are involved in a crash, particularly when there is even minor injury or damage, they should not move their vehicles until “relieved” by law enforcement.

The only solution to this is outreach and public education. Indeed, a more intolerant approach—in which citations, or at least warnings, are issued—might be needed to get the public’s attention.

The other major area is to get timely and accurate information to the public so that they can avoid incident areas, or at least to be more cautious as they



approach and pass through the area. The discussion below begins with this aspect. A recent extreme example of this situation is given below:

The Valentines Day (2007) story involved a closure of an Interstate in a Coalition state. Snow and ice along a hilly section of the highway led to vehicles being stuck and plows unable to clear the highway. Many people were trapped for over 24-hours. One of the complaints voiced by drivers was the lack of information provided. Many were upset that there were no warnings given about the closed highway before they entered, even though the highway had been blocked for hours before they drove onto it. Once trapped, there was little information available on what was happening and how long they might be stuck.²⁶



8.8.1. Information Feeds to Media and Information Providers

Public agencies have limited access to mass information outlets; certainly the use of DMSs is one of the most effective, but most motorists get most of their travel

information from the media. A customer opinion survey in Atlanta revealed that 57% of sampled motorists preferred radios and 39% TV as their first choice for traveler information. Indeed, only 1% used the outstanding *DOT (soon to be 5-1-1) personalized telephone call-in service offered by Georgia DOT; although those who do know about it use the service, because it averages 20,000 calls per month (GDOT, 2005).

Clearly outlets to the media and other information service providers (ISPs, such as pagers and cell-based services and the like) are critical to this information dissemination effort. The Georgia DOT actually has a media liaison position that is in the Atlanta TMC four hours each morning and afternoon peak periods to liaise with the media, provide information and assist them in their information gathering processes. This is in addition to Georgia DOT's own public information officer.

The types of information provided are as follows:

- Incident reports, available on line,
- Alerts to media when incidents occur,
- Allow access to the media in the TMC so they have first-hand knowledge of situations, and
- Travel time information readily accessible so media can enhance their reporting.

The last point is important—agencies should consider the media and ISPs as partners in the traveler information enterprise.

26 (Adapted from Wagenblast, 2007).





"D-Drivers"

- **Drunk**
- **Drugged**
- **Drowsy**
- **Distracted**
- **Dumb**
- **Developing (Young)**

8.8.2. Video Feeds to Media

Another excellent service that agencies can provide is direct feeds to media of their streaming (or even slow-scan) video. This enables the media and ISPs to better assess situations to enhance their reporting even more, and in the case of television they can even show the videos on their broadcast traffic reports. This brings positive publicity to the agency and demonstrates a strong public service. Agencies should insist, even require, that broadcasts show the agency name or logo on the pictures, so that the proper credit is given. This is more an accountability issue—demonstrating effective use of public funds—than one of agency vanity. It is important that the public understand that their DOT, or other agency, is primarily providing this service, not the TV station.

The providers should be given as flexible access to video as the technology, interfaces, and propriety permit. For example, ideally they should be able to select cameras—but not control them. However, the agency should be able to cut a feed to avoid sensitive scenes being broadcast, such as the gory details of a serious crash.

8.8.3. Public Awareness Campaigns

Agencies are quickly realizing the enormous values of public awareness campaigns. There are several basic types of these campaigns, as listed below.

- Informational outreach and exchanges in project planning and design stages:
 - Advertising campaigns in the public media to spread basic information,

including brochures for multiple audiences and tips cards,

- Information fliers to disseminate more detailed information,
- Public hearings to both inform and get feedback, and
- Focus groups to get even more detailed feedback and opinions about options; and
- Outreach during normal operations:
 - PowerPoint® presentations in multiple versions for different audiences,
 - Tours of the TMC to show visitors traffic management in action,
 - Visits to civic groups and “speakers” bureau to inform about programs and practices,
 - Demonstrations to show, for example, the important of safety-belt use and the dangers in gawking, and
 - Advertising and public service announcements (PSAs) to highlight such issues as the Move-it and Move-over Laws.

Incident management is the most cost-effective tool we have in abating congestion—we need to convince the public that each of them is on the team as well—each and every one of them can make a difference.

8.8.4. “D-Drivers”

The average driver is challenged enough as noted above, but “D” drivers present a considerably larger problem. “D” drivers are **drunk**, **drugged**, **drowsy**, **distracted**, or just plain **dumb**. Young (that is **developing**) drivers fall into this category as well. Until technology reaches the point that it can intervene



with immature, impaired, or distracted drivers, agencies cannot target enough education and outreach toward them.

8.8.5. Anti-Distraction Campaigns

Distracted drivers are “D” drivers, but they warrant special attention, particularly in the context of incident management and ITS. Here we do not refer to distractions like eating, applying makeup, arguing with one’s kids, text messaging, and the like—they are “D” drivers. Here we refer to distractions that bear directly on TIM and ITS; namely the use of cell phones in “legitimate” activities related to TIM and ITS—reporting incidents and/or seeking travel information via 5-1-1. Increasingly, electronic map reading will be a common distraction as well; indeed, Spain is considering a ban on their use while the vehicle is in motion.



Again, until technologies like totally hands free cell phones, heads-up displays (HUD), and the like are ubiquitous, awareness campaigns should always urge the careful and non-distractive use of today’s devices.

8.8.6. Partnerships with Agencies and Companies for Mass Mailings

Another powerful tool for awareness campaigns is partnering with private companies and associations to spread the word. Some examples that have been very successful (also see Section 11.2) are as follows:

- Include transportation-related fliers in phone and utility bill mailings,
- Branded newsletters for distribution through various organizations;
- Branded posters for employer bulletin boards;
- Messages to be printed on rental car maps;
- Public service announcement (PSA) print ads with campaign slogan/theme in various sizes;
- Branded magnetic signs for use on DOT and contractor vehicles;
- Donated billboard and banner space at prime highway locations;
- Exhibit boards and countertop displays;
- Educational materials to be distributed through safety campaigns and schools;
- Media kits, news releases, and fact sheets;
- Bumper stickers and signage for FSPs and other government fleet vehicles;



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- Stickers to the American Automobile Association (AAA) and other partners/ ambassadors; and
- PSAs for TV and promotional/ informational video/CD-ROM/DVD.

Several samples of such partnerships, in this case for Florida's 5-1-1 campaign, are available as Practice_Outreach_XX.XX.²⁷ In all cases, the association or company included the outreach items at no cost to the agency, in this case the Florida DOT.

8.9. Removal of Tolls on Toll Roads

In the event of major incidents and emergencies like evacuations it is important to cease toll collection for several reasons:

- Toll plaza delays add to the mass congestion caused by the incident or evacuation and
- Travelers do not expect to pay for sub-standard service.

Following Hurricane Andrew in South Florida when queues reached upstream for miles on Florida's Turnpike, the Florida DOT quickly recognized the need to suspend tolls and now has a very aggressive decision process in place. As an aside to this, Florida's Turnpike Enterprise also adopted the policy of limiting the number of approach lanes to the toll plaza to the number of thru lanes downstream. This is done with movable barriers and cones. Their experience, supported by simulation modeling, established a significant improvement

in capacity by not creating a bottleneck when multiple lanes exiting a toll plaza feed back into the mainline.

8.9.1. Cash Collection

Cash collection plazas are clearly the most affected since they take more time to process each vehicle. Many drivers still expect to pay the tolls, so signage should be installed to alert them that tolls are suspended and they should not stop, but only slow down. As long as it is safe for toll collectors to remain in place, they should manage traffic by waving motorist through the plaza.

8.9.2. Electronic Toll Collection

Electronic toll collection (ETC) should likewise be suspended in fairness, but the traffic management issue is less profound. These drivers should still be informed by signage that tolls are suspended; otherwise there might be resentment and even erroneous reporting on expense accounts.



²⁷ These four 5-1-1 samples, as well as most of the foregoing list, courtesy of Global-5 Communications, Orlando, FL.



8.10. Consider TIM in Highway Design

One of the key concerns with responders and transportation officials is consideration of the incident response process in highway design. The particulars discussed below are all much more cost-effectively implemented if designed in new or expansion projects from the start and not retrofitted.

8.10.1. Adequate Shoulders

If shoulders are used for enforcement, they should be 12 feet wide to enable the vehicles to be safely out of harm from passing vehicles.

8.10.2. Emergency Access

There is a proliferation of multiple types of highway segments [e.g., high-occupancy vehicle (HOV) and high-occupant toll (HOT) lanes, truck-only lanes (TOL), in addition to general-use lanes]. These generally will be barrier-separated, so emergency responder access to each segment would require additional access points. Emergency access to the general-use lanes would be as it is today, namely using general-use ramps from cross streets. HOV and other special lanes need special treatments.

Such special-use segments are often characterized as a “pipeline” running between the general lanes or to the side, and because of the distance between interchanges, alternate forms of emergency access will have to be

provided, including provisions for ice- and snow-handling assets.

Such multi-use facilities have several alternatives for the location of restricted lanes. The first alternative puts the special lanes to the outside where they must be grade-separated from the entrance and exit ramps at all general-use interchanges. The second alternative would locate them in an interior position between the general-use lanes.²⁸

If the restricted lanes are built to the outside, emergency access can be provided by constructing single-lane “emergency vehicles only” access ramps connecting the general-use ramps to the restricted lanes. The ramps would have electronic and/or manual swing gates with remote access to prevent unauthorized access to the restricted lanes. If the general-use interchanges are located on one- to two-mile spacing, this would be adequate access.

If the restricted lanes are built in the interior position, effective emergency access will be much more difficult. One solution is to include either powered or manually operated barrier gates in the concrete median barrier between the restricted lanes and the adjacent general-use lanes at regular intervals. These are used in California, Northern Virginia, Texas, and Georgia; however, most states have had negative experiences with barrier gate installations, whether

²⁸ This discussion adapted, and parts even quoted, from (FDOT, 2006).





motorized or manually operated. Between uses, the gates have collected trash and debris and then did not open easily when needed. However, some positive reports of using low-tech solutions have been heard from California.

A similar approach, but without the problem of a moving gate, is overlapping, double facing barriers (attenuated on the end facing traffic) through the dividing median. The main problem with these is limiting access to emergency vehicles, which could be accomplished by swinging or vertical gates.

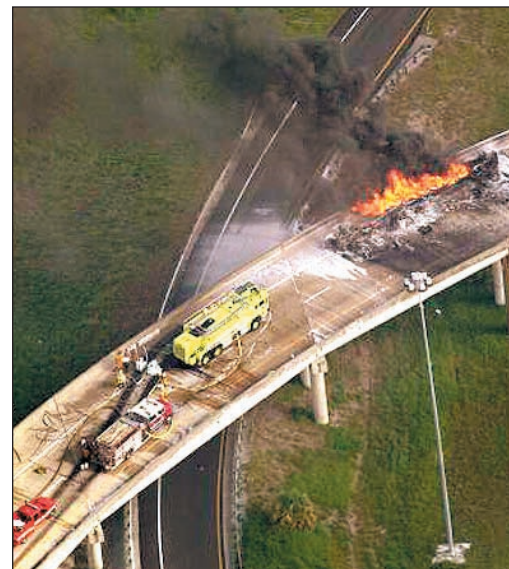
Project designers of such facilities should explore these and other solutions, including either mechanical or manual gates that would not suffer the debris or unauthorized use problems.

A more effective, yet more costly, alternate solution would be to provide “emergency vehicle only” ramps from grade-separated cross streets to the restricted lanes. The ramps would be gated to prevent unauthorized use. Drawbacks would be the cost of the ramps, the cost of additional pavement to “flare out” the general-use lanes, the cost of longer bridges for the cross streets, and possibly additional right-of-way (ROW) costs. The additional ROW costs could be minimized if these ramps were located at existing general-use interchanges where often the State DOT already owns additional right of way. Such ramps are used on

the Shirley Highway reversible lanes entering Washington DC from Northern Virginia (note that these are not flyover ramps; they are simple access-controlled or “drop-down ramps”).

8.10.3. Access to Emergency Service Resources

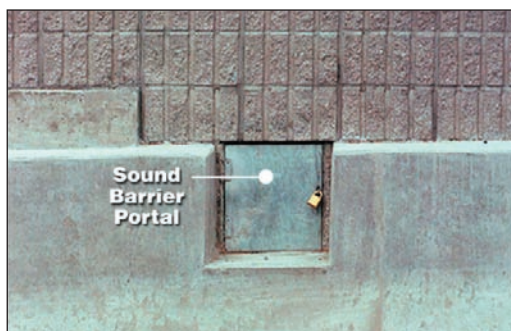
A common oversight in design is the availability of emergency service resources, such as water, to fight fires. The photograph shown below shows a major fire on an elevated ramp in Orlando, Florida . The absence of elevated fire hydrants made suppression of this fire lengthy and difficult. Naturally, it is unrealistic to put hydrants on each and every elevated ramp, but strategic location of elevated hydrants, or at least dry stand pipes, should be considered in the design of such structures.



Another common problem is getting responders and fire hoses through noise barriers walls. Too often these

It will be critical that responders know which of the lane segments—general-use, HOV, etc.—that an incident has occurred, since access points will be limited.

walls are impenetrable barriers to both the responders and their equipment. FHWA has prepared the Highway Noise Barrier Handbook (FHWA, 2000b), which has a number of sample portals for personnel, vehicles and especially fire hose access through the walls as shown in the photograph below.²⁹



8.10.4. Reference Location Signs

Reference location signs (RLSs, sometimes called location reference markers, LRMs) are extremely valuable for most stages of an incident.³⁰ It is often difficult for responders to locate incidents reported by motorists because travelers frequently do not know their exact locations. This causes delays in incident notification and detection, which ultimately results in congested corridors. RLSs are recommended to help the public with accuracy when reporting incidents. The signs should include symbol- or color-coding methods or to correctly identify locations in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) for standard RLSs. The Delaware DOT has a good reference on RLSs (DeIDOT, 2005), see Guide_RLS_DE.

Unfortunately, the MUTCD does not yet have a standard RLS for ramps; however, the I-95 Corridor Coalition has a research project that will hopefully lead to the development of RLSs for ramps. Until a standard is approved, however, several states are identifying the ramps with an “Enhanced Reference Location Sign” by adding a cardinal location and a phrase “To Route XX” to the Enhanced Reference Location Sign, for example “I-65 Mile 29.5 NW Ramp To Route 49” with the “NW Ramp to Route 49” below the standard design for an Enhanced RLS.³¹

Another major issue is the lane-use type in multi-lane-use corridors. It will be critical that responders know which of the lane segments—general-use, HOV, etc.—that an incident has occurred, since access points will be limited.

This entire issue should also be a significant segment of any TIM-related public awareness campaign—namely to inform the public how to properly interpret the RLSs and report locations accurately.

8.10.5. Median Crossovers

On divided highways it is important to provide safe median crossovers with appropriate protection of official vehicles standing therein and adequate U-turn radii for emergency vehicles. American Association of Highway and Transportation Officials (AASHTO, 2004) recommends median crossovers where interchange spacing is more

29 See <http://www.fhwa.dot.gov/environment/noise/manual.htm>.

30 This discussion adapted, and parts even quoted, from (GDOT, 2006).

31 E-mail from Fred Ranck, FHWA, Illinois Resource Center, 10/12/05.





than five miles, particularly though barrier-separated medians and spacing between them should be three to four miles. Otherwise, the responders have to travel far out of the way to reach an incident. Additional crossovers may be placed at the entrance to major interchanges and at the terminals of long bridges and causeways to facilitate snow and ice removal, in addition to serving incident responders. Even when there is a grass median, properly designed and maintained crossovers are essential to enable fire trucks and other heavy equipment to use them without bogging down in mud. Recently the Florida DOT completed a study of emergency cross-overs that includes sections on justification and typical designs (FDOT, 2005), see Plan_Xover_FL_D1.

Too often, however, there are no, or insufficient, crossovers. Additionally, this is somewhat a controversial situation, since there is concern with unofficial use of these by motorists. The needs of responders should be weighed heavily against the improper use, particularly in high incident-prone segments.

They must be appropriately marked for “Official Use Only” and situated so as to discourage improper use. One district in Florida (District 2) also innocuously marks the crossovers with advanced pavement markers for the benefit of responders. Some regions use movable barriers to preclude improper use, but these are more costly and pose additional safety and maintenance problems.

8.10.6. MedEvac Landing Zones

Little thought has been given to pre-selecting, much less designing for, helicopter landing zones for emergency evacuations; however, this is an increasingly popular practice to save lives. Currently helicopters most often land on the roadway in rural areas (which generally requires full closure of at least one direction of travel, thus raising the probability of secondary incidents) or they try to find an empty school or parking lot in urban settings. Pilots do not like landing on the roadway because of debris. However, an alternate landing site is not desired if that site is too far from the crash scene.



It is recommended that in future construction or reconstruction projects, explicit attention be given to pre-selecting likely landing zones and designing accordingly. On existing facilities, surveys should be made to identify adequate landing zones, particularly near high-crash locations and ensuring that the medical facility providing the MedEvac service is fully informed of these locations.

A related problem has been communications between the aircraft and the responders on the ground. They typically use completely different



communications systems, so it is important to provide some reliable communications link between air and ground.



8.10.7. Accident Investigation Sites

A common problem with any incident, particularly crashes, is gawking by passing motorists. The best solution is to remove the incident from the view of passersby. Investigations prolong this situation, increasing the likelihood of additional delay and even secondary crashes. While not many agencies currently use accident investigation sites (AISs), their value should be obvious. The NCHRP synthesis on QC listed these suggestions for AISs (NCHRP, 2003):

- Establish refuge areas or AISs where the right shoulder does not allow refuge.
- Locate the sites adjacent to or near the freeway lanes.
- Include a median to provide a separation distance equal to the required horizontal clearance (clear zone).
- Provide telephone access.
- Provide sufficient overhead lighting and other features to ensure personal safety.

- Provide for acceleration or deceleration if no shoulder is present.
- Include advance signing.
- Make the area large enough to allow easy movement of tow, police, and fire vehicles. A nominal size is 45 feet by 150 feet.
- Provide separate entrances and exits to limit the possibility of wrong-way traffic.

An AIS report prepared by the Florida FDOT, District 1 was submitted and approved by FHWA for the I-75 widening in SW Florida (FDOT, 2006a), see Guide_AIS_FL_D1.

As in the previous section, new and upgraded facilities should include AISs from the beginning of conceptual design. When these are not available, prolonged investigations should be shielded from general view if possible.

8.11. Better Enforcement and Capabilities

It has been demonstrated often enough that improved enforcement is conducive to reducing incidents and their duration. Speeding, excessive lane changing, road rage, and the like are all enforceable behaviors that law enforcement officers can affect. From a policy perspective, however, it is the prerogative of upper management to make the enabling decisions.





8.11.1. Speed in Work Zones and Special-Use Lanes

Speeding, particularly in work zones, is generally the main cause of crashes. Several speeding-related actions that can easily be implemented by policy to reduce speeding are as follows:

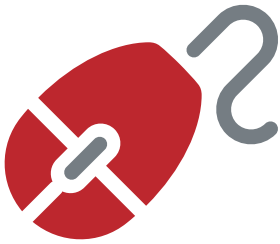
- Adopt as “zero-tolerance” attitude about speeding. California’s “55 Means 55” campaign is noteworthy.
- Employ radar decoys positioned randomly to reduce speeding among those most likely to speed—those who believe that their radar detectors will actually shield them.
- Enable and encourage construction police (usually hired by contractor) to practice enforcement. Too often motorists know that they are present for show and not substance.
- Use speed advisory signs to warn speeders that they are in excess of the limit.
- Appeal to the passions of motorists with signage like Georgia’s with messages like “Slow Down, My Daddy/Mommy Is Working Here” or use humor like “Give Them a Brake!”
- Use variable speed limit signs so the limits can be adjusted to the current traffic conditions. Too often reduced speed limits in work zones are distained by motorists as unnecessarily low in the absence of any actual work.
- Strive to pass camera enforcement of speeding.

Speeding, excessive lane changing, road rage, and the like are all enforceable behaviors that law enforcement officers can affect.



separation would be a highly dangerous situation because of the speed differential between the high-speed HOV and congested general-use lanes. While there are occasional crashes related to this dilemma, it has not emerged as an overwhelming problem. Thus many concurrent-lane facilities continue to operate in the nation. Nonetheless it is always safer if there can be some minimal separation or delimitation between the lane types, ideally barriers; however, this poses additional problems at crossover points. California has excellent design standards for such transition segments.

Regarding special use lanes, there was concern in the early days of HOV lanes that concurrent lanes without



Web Resources:

Work Zones:

<http://ops.fhwa.dot.gov/wz/practices/best/Default.htm>

8.11.2. Securing of Loads

A common cause of incidents is the failure of cargo lashing or covers to secure the load. States should strictly define minimal standards for securing loads and strictly enforce them. This applies not only to commercial vehicles with their cargo, but, perhaps more frequently, to passenger cars and trailers moving personal belongings. A mattress, no matter what its condition, is deadly to a 70 mph trailing vehicle.

8.11.3. Push Bumpers on Police Cars and Service Patrol Units

The proper use of push bumpers in agency vehicles is one of the most powerful tools in QC and essential to effective Move-it compliance. Granted there are issues of liability and even fear by motorists of being pushed across live traffic lanes; however, the positive benefits of using these devices far outweigh the negatives.

In the case of FSP units, the use of tow lines might be preferable if the units are properly designed and conditions permit, but a stalled vehicle in a middle lane is generally more effectively pushed than to bypass it and rig a tow.

8.12. Innovative Policies

Agencies in a number of regions have instituted innovative policies to enhance RIM/QC or, as in the first case, take advantage of the Quick Clearance Philosophy for other worthy purposes.



8.12.1. Coordinate Special Events, Work Zones

There is a great deal of documentation on planning and executing for special events and for work zones. Particularly see (NCHRP, 2003) and (FHWA, 2003) for special events and (FHWA, 2002b) and the following Web site for more on work zones: <http://ops.fhwa.dot.gov/wz/practices/best/Default.htm>.

The challenge facing TIM managers is that these documents were generally developed by specialists in the respective fields and too seldom has TIM been explicitly included in the development of the documents. One notable exception in the planning for a major construction zone in Georgia in which the Georgia DOT and Georgia Regional Transportation Authority expressly brought TIM specialists in during the conceptual design stage of a mega project to consider TIM requirements and even to develop a TIM plan (GDOT, 2006).²⁴



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8.12.2. Share Video Feeds with Law Enforcement and Homeland Security for Their Use

We stated in the beginning that use of transportation surveillance equipment and/or video tapes for law enforcement and/or security purposes is a controversial issue. On the positive side, these are readily available resources that can obviously benefit law enforcements and security personnel if carrying out their duties. In Los Angeles following the 1992 riots, also known as the “Rodney King uprising,” video tapes obtained from the LA DOT’s traffic control system were used in the trial of several perpetrators convicted of attacks on innocent passers by. Without this evidence even identifying the perpetrators, much less convicting them, would have been virtually impossible.

On the negative side, there are issues of privacy—civilians being watched and even video taped without their knowledge. This argument has been successfully rejected in several states based on the fact that persons in a public place have no immunity to “invasion of privacy.” By virtue of being in a public place, their actions and deeds are public. The same finding has favored the infamous “paparazzi” who track celebrities.

Of more concern to agencies, is the nuisance of being hounded for video tape by lawyers seeking evidence in crash cases. This issue alone is probably the most common reason that many agencies will simply not video tape the

camera images. The problem with this is the videos are then not available for post-incident analysis and training.

Agencies should seek legal or regulatory protection of their video tapes or digital images to enable them to use them for such legitimate purposes. If a situation then warranted their use for other purposes, such as the Los Angeles case, then it may be appropriate to do so. Law enforcement agencies across the nation have concluded that the benefits of in-vehicle cameras far outweigh the disbenefits, even though video images have often been used to convict officers in brutality cases.

9. Administrative TIM/QC Actions

Agencies have more flexibility in enacting and enforcing action on themselves through administrative decisions. Certainly some of the actions in the foregoing sections could possibly be implemented through administrative actions instead of formal policies of guidelines, which normally require a more rigorous approval process, and generally involve multiple agencies, but the actions discussed in this section can be implemented by agencies themselves, often alone.

Of course it is always desirable to involve as many agencies as possible in any TIM/QC action. The first item below is a good example.

32 As of this writing, this plan has not been released by the sponsors. Once it is released, it should be available from the Georgia DOT, Office of Preconstruction.

9.1. Executive Oversight of Traffic Incident Management Program

Agencies can be successful to a point through grass-roots actions, but like any significant endeavor, a successful TIM/QC Program demands support at the top level. Policy decisions and financial support from the executive level are essential.

9.1.1. Executive-Level Leadership

Proactive leadership at the executive level can take many forms. Several excellent examples among Coalition members are given below.

- Florida has a Traffic Incident Management Steering Committee that is currently made up of various Florida DOT offices and the Florida Highway Patrol (FHP). Recommendations are made by this committee directly to the Florida DOT's Executive Committee, which is made up of the State and District Secretaries and other senior executives. All major policy decisions are made at this level.
- Florida, as did other states, also recently published its Strategic Highway Safety Plan (FDOT, 2006f) in which a number of agencies agreed in principal to actions that support TIM and QC implicitly, see Plan_Safety_FL.
- In the Metro Atlanta region of Georgia, the Traffic Incident Management Enhancement (TIME) Task Force was originated in 2002 to develop and sustain a region-wide incident management program to facilitate the safest and

fastest roadway clearance, lessening the impact on emergency responders and the motoring public. TIME is made up of concerned incident responders from transportation agencies, fire, rescue, police, towing, emergency medical services, and others to improve the safety of responders and the overall management of traffic incidents. Supported by the Georgia GDOT, Georgia Regional Transportation Authority, (GRTA), FHWA, the Governor's Office of Highway Safety (GOHS), and numerous local agencies, TIME has obtained an annual Incident Management Proclamation signed by the Governor. This group recently adopted a set of recommendations from TIME resulting in a "Metro Atlanta Traffic Incident Management Strategic Vision" (GRTA, 2006), see Admin_TIM_Vision_ATL.

The I-95 Corridor Coalition has developed a tool for estimating the cost and benefits of QC, which can assist agencies in justifying a strong TIM program. It is an Excel® spreadsheet called "Quick Response Benefit/Cost Analysis Tool (QRBCAT)" (I-95CC, 2002), see Plan_QRBCAT_I-95CC (both User Guide and the spreadsheet).

9.1.2. Steering Committee

Proactive leadership at the executive level can be enhanced by standing steering committees. Several excellent examples among Coalition members are given below.





- The Delaware Valley Regional Planning Council (DVRPC) is a multi-agency coalition that very actively plans and programs ITS project in the Philadelphia region, and TIM and emergency management are among their priorities.
- As noted above, Florida’s TIM Steering Committee is currently made up of just Florida DOT offices and the FHP. This group makes the key policy recommendations and administrative decisions that impact the TIM Program, including promotion of the state’s Open Roads Policy. The recently published TIM Strategic Plan (FDOT, 2006b-c) recommended expansion of the TIM Steering Committee to include more high-level stakeholders, such as other state agencies and law enforcement and other public safety associations, such as Police and Fire Chiefs’ Associations.
- Georgia’s TIME Task Force serves this purpose to some extent as well. It is a clearing house for TIM and QC best practices and promulgates every phase of QC actions covered by this Toolkit.³³
- The Niagara International Transportation Technology Coalition (NITTEC) is a regional—indeed international—planning, and to some extent operational, coordination group that not only programs projects, including TIM, it also funds some pilot work in ITS and TIM.³⁴

Clearinghouse³⁵ to serve as a resource for TIM documents. While the QC Toolkit DVD initially has more material, the clearinghouse will be the repository for future storage.

We have already referred to the NTIMC Web site as an excellent source of shared information, including its new TIM Community of Practice.³⁶ The National Transportation Operations Coalition (NTOC) is a national dialog forum for operations in general and TIM is an important component.³⁷

The National Dialog on Transportation Operations is a component of the National Working Group on Intelligent Transportation Systems (NAWGITS).³⁸

FHWA operates an ITS Peer-to-Peer Program³⁹ that supports professionals traveling to sites to observe outstanding operational practices, and funding the cost of experts going to sites needing assistance. TIM experts have often benefited from the Peer-to-Peer Program.

At the local level, information should be shared through the traditional media:

- TIM Team meetings,
- After-action debriefs,
- Web sites, and
- Some regions publish periodic newsletters to keep TIM Team members and other interested parties informed of lessons learned and best practices, see Report_News_FL_D1_CSM for an example.

9.1.3. Information Sharing with Peer Agencies

There are numerous channels for sharing information among agencies. The I-95 Corridor Coalition has recently implemented the Incident Management

33 See <http://www.timtaskforce.com/>.

34 See <http://www.nittec.org/>.

35 See <http://www.projects.webtrafficmd.com/>.

36 See <http://timexchange.org/inc/inc.nsf/home>.

37 See <http://www.ntoctalks.com/talkingops/index.cgi>.

38 See <http://www.nawgits.com/opdialog/index.cgi>.

39 See <http://www.its.dot.gov/peer/>.

9.2. Strategic and Tactical Planning

Responses to incidents, particularly major ones including large-scale emergencies and planned special events, will always be more effective if there has been advanced planning, which can be done at a variety of levels and address a diverse range of specificity. Below are examples of good strategic and/or practical planning documents covering a range of purposes.

- **Strategic Plans:**
 - Florida Traffic Incident Management Program Strategic Plan—a four volume set (FDOT, 2006b-e), see Plan_TIM_FL_XX.
 - Strategic Plan for Highway Incident Management in Tennessee (TDOT, 2003), see Plan_TIM_TN.
- **Concepts of Operations:**
 - Intelligent Transportation Systems and Ft. Myers Regional Transportation Management Center Concept of Operations (FDOT, 2004c, see Plan_ConOps_FL_D1.
- **Special events planning:**
 - Transportation Incident & Event Management Plan (DeIDOT, 2004), see Plan_TIM_DE.
- **Contraflow planning:**
 - Analysis of Florida’s One-Way Operations for Hurricane Evacuation (FDOT, 2002), see Plan_Contra_FL,
 - The I-16 One-Way User’s Guide, Georgia NaviGator Web site (GDOT, Web), see Guide_Contra_GA and
 - North Carolina’s I-40 reversal plans and other evacuation routes.⁴⁰

In the area of emergency management, the Massachusetts Turnpike Authority’s Emergency Management Program can serve as a model for other agencies. The Authority’s Emergency Management Program provides a cyclical, ongoing, consistent and uniform approach for the development of plans, policies, and procedures regarding the use of resources in the preparation for, prevention of, response to and/or recovery from terrorist attacks, major disasters and other emergencies.

There are five elements of the program updated on a regular basis, including vulnerability assessments and mitigation planning, an emergency management plan, standard operating procedures, training, and the conduct of drills and exercises. These elements comply with a variety of federal guidance, including but not limited to the National Incident Management System, the National Infrastructure Protection Program, and the Homeland Security Exercise and Evaluation Program. An overview of the plan is on the restricted QC CD-ROM as *Plan_EM_MTA*.

Additional information may be obtained from the Authority by contacting Mr. Lorenzo Parra at Lorenzo.Parra@maspike.com.

⁴⁰ See <http://www.ncdot.org/traffictravel/emergencyinfo/>.





9.3. Traffic Incident Management Teams

One of the most effective ways to create and disseminate TIM/QC best practices is the use of multi-agency, interdisciplinary teams.

late 1980s. As of this writing, there are 17 local TIM Teams covering most of the state except the Panhandle and several pockets in the central and southwest sections of the state, which should all be forming teams within a year or two.⁴²

9.3.1. Regional/Statewide Oversight Group

Section 9.1 already covered good examples of these state/regional-level groups that generate, and in some cases set, policy, create guidelines and procedures for best practices, and provide high-level support to TIM/QC activities. Good examples of these statewide and large regional groups' accomplishments are the establishment of Open Roads Policies like those reported earlier.

At the encouragement of the TIME Task Force, Georgia has begun forming local teams, starting with Roswell County. The Atlanta TIM Executive Vision (GRTA, 2006) has recommended the formation of at least one team in each of the 13 counties in the Metro Atlanta regions, and in some cases two or three, for a total of 17-20 teams. The Georgia Regional Transportation Authority and Georgia DOT are serving as co-champions in this effort.

Another good example of a statewide approach is Maryland's CHART (Coordinated Highways Action Response Team) program, which is a statewide ITS and TIM program.⁴¹

Montgomery County, Maryland, has long been a leader in ITS and TIM.⁴³ They operate an active regional TIM Team that works in close harmony with both the County's TMC, and also the statewide CHART program.

9.3.2. Regional/Local Interagency Teams

These teams are, however, most important at the working level—serving a specific region or geographical jurisdiction. The teams typically meet monthly to quarterly, and the membership generally included the following agencies: law enforcement, fire rescue, EMS (if separate), traffic and transportation (operations and maintenance).

9.3.3. Community Traffic Safety Teams

Begun in Pennsylvania as the Corridor Traffic Safety Teams (CTSTs), this program was created to bring together all parties in a community interested in highway safety. Typical membership includes the same agencies listed for the TIM Teams above, but in addition, CTSTs stress a full range of factors influencing safety of pedestrians, cyclists, and vehicle operations and passengers, so school interests, anti-impaired driver

Florida began forming (then) Freeway Incident Management (FIM) Teams in the

41 See <http://www.chart.state.md.us/default.asp>.

42 See http://www.dot.state.fl.us/TrafficOperations/Traf_Incident/Traf_Incident.htm.

43 See <http://www.montgomerycountymd.gov/content/dpwt/operations/tmc/getincidentteam.asp>.



groups, auto associations, and others are members as well.

Florida has embraced what it calls “Community Traffic Safety Teams” with a passion. Currently there are 74 CTSTs throughout the state. A CTST Coalition is the statewide coordinating group and the Florida DOT is the champion of the program. A main focus of the Florida CTSTs is promotion of the application of multi-disciplinary groups integrating the efforts of the “4-Es” that work in highway safety: engineering, enforcement, education/public information, and emergency services. Working together with interested citizens and other traffic safety advocates within their communities, the CTSTs help to solve local traffic safety problems related to the driver, the vehicle and the roadway.⁴⁴

In addition to these two states, CTSTs are believed to exist in Kentucky, South Carolina, Virginia, and likely others; although a Web search turned up mostly references to Florida’s CTSTs.

9.4. Inter-Agency Standards, Certification and Training

A number of these types of programs exist around the nation. Below are listed some types of activities that fall into this category, with some samples indicated.

- Published guidelines for TIM/QC and service patrols (e.g., “safe parking” campaigns and vehicle spill clean-up)—many have been noted throughout this Toolkit.

- Inter-agency training programs—stressing the opportunity for each agency to better understand the responsibilities, and challenges, of their partners.
- Train-the-trainer (TTT) programs—an effective way to spread the training with national experts doing the initial training of a cadre of local instructors who then train their colleagues. Several companies have such national experts that are frequently retained to provide TTT training.
- Certification programs—an effective way to ensure the validity of training, because the requirement for certification is a better motivator than training for training’s sake.
- Special training for special geometric conditions (e.g., bridges, tunnels, depressed freeways, etc.)—these have special needs, characteristically limited access, so special techniques are needed.
- Special training for special environmental conditions [e.g., rain (actually the most common problem), snow, ice, etc.]—likewise special conditions mean special needs.
- Safety equipment for responders—this is being stressed more than ever with emphasis on high-visibility attire, for both daylight and nighttime.

Several existing training tools are available on the QC DVD as follows:

- A general overview of TIM and QC from Virginia is on the restricted CD-ROM/DVD, see *Movie_TIM_VA_Hampton* (HRHIMC, 2000), ???

⁴⁴ See <http://www.dot.state.fl.us/safety/CTST/CTST.htm>.



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- Another good overview with a lot of examples from a fire chief in Texas, see Train_TIM_TX, and
- A training course from NITTEC, see Train_TIM_NITTEC.

9.5. Technology and Communications

New technologies or imaginative uses of existing ones can enhance TIM/QC practices. Here are described a few for within the U.S.A. and abroad.

9.5.1. Specialized Vehicles

The most obvious opportunities for the use of specialized vehicles are in the areas of freeway service patrols, recovery and towing. The series of photographs in Figure 9.1 on the next page depicts a variety of FSP vehicles that range from modified pick-up trucks to special incident response vehicles. These are all FSP vehicles as the captions indicate.

The second area involving special vehicles is that of towing and recovery, particularly for recovering heavy trucks and trailers. The photographs above right show a difficult recovery and a preferred recovery vehicle, namely an 80-ton rotary.

Common vehicles can be adapted for unusual purposes. For example, The City of Atlanta is considering using motorcycles in the section of I-75/85 through downtown commonly known as “the Connector.” This segment has many characteristics of a tunnel, so it is felt the cycles can reach incident scenes much faster than police cars. This is of course a



common practice in many locations, but it is not without risk to the officers involved. Self preservation would be an extremely important part of their training.

Less conventionally, in England paramedics have used motorcycles to be able to get quickly through congested traffic to injured victims.⁴⁵ In The Netherlands, motorcycles are even used to tow small vehicles out of tight locations.



45 Source (FHWA 2006)



Georgia DOT HERO Truck



Florida DOT District 5 Road Ranger Truck Partnered with the LYNX Transit Service



Florida DOT District 2 Road Ranger Truck



Florida DOT District 4 Severe Incident Response Vehicle



Florida DOT District 4 Road Ranger Tow Truck



Illinois DOT Emergency Traffic Patrol Vehicle



Illinois DOT Minuteman Vehicle

Figure 9-1. Examples of Freeway Service Patrol Vehicles

9.5.2. Specialized Equipment

Agencies are increasingly using personal digital devices (PDAs) and other electronic tools to make their work more effective. Two DOT districts in Southeast Florida are experimenting with using GPS-equipped PDAs for the FSP (Road Rangers) to log incidents.

A number of Police Departments have gone to accident reporting on PDAs or notebook computers, some of the touch-screen type.

Lighting is often a problem at night, thus hindering treatment of the injured and crash investigations. In Germany a portable “moon dome” is used to illuminate scenes.⁴⁶

9.5.3. Incident Management Software

As with most functions, automation tools can be very useful in TIM/QC. The common software applications in this regard are TMC software having TIM capabilities. But equally important is the

46 See <http://www.powermoon.de/en.php?p=English>.



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role of law enforcement’s computer-aided dispatch (CAD).

TMC Software

Most TMCs now operate with centralized software that performs these functions at a minimum:

- Operates the field ITS devices, including some maintenance functions,
- Operates a video wall that can display video images and perhaps some graphics (like conditions maps),
- Maintains a library of standard messages, and perhaps highway advisory radio (HAR) messages,
- Delivers travel information to a variety of clients,
- Alerts operators of events (e.g., incidents, outages, etc.), and
- Performs some TIM functions.

The latter is naturally the most interesting here. TIM functions that can be automated are described as follows:

- TMC software can automatically, or by operator initiative, create and log incidents.
- Some TMC software can automatically generate a suggested response plan based on the location, direction and severity of the incident. These plans generally include suggested messages that would be displayed on DMSs and voice messages for HAR. Operators have the option to change the messages before implementing them. Some systems even allow responses on a regional basis. For example, Florida’s

SunGuidesm Software uses the 50 mph guideline mentioned above and its center-to-center (C2C) capability permit the transfer of the response to adjacent TMCs, or control of the DMSs in the adjacent areas can be surrendered to the controlling TMC.

- Some TMC software can identify which devices should be activated for the response, for example which DMSs should be selected to display the message, and likewise with HAR. These devices, including cameras that the operator might wish to view, may be highlighted on the system map.
- Some systems allow transfer of “ownership” of an incident to others.
- Some TMC software has an adverse weather function that triggers preset responses for certain weather events, including rain—the most common cause of every-day incidents.

Table 9.1 on the following page summarizes several existing TMC software systems used by the identified states/regions and their applicability to these functions. The functionality items in the table are explained in more detail as follows:

- Manual incident creation—the operator can open an incident and enter all pertinent data at the keyboard—this is the most basic functionality, and in some TMCs, this is a separate software application and might be as simple as a spreadsheet or a basic database.



Function	Florida SunGuide SM	Georgia NaviGator	Maryland CHART	TRANSCOM Reg. Arch.
Manual incident creation	Yes	Yes	Yes	Yes
Automated incident detection	Yes	No	No	Yes, TRANSMIT System
Automated message formatting	Yes	Yes	Yes	Yes
Incident response plan	Yes	Yes	Yes	No
Automated notifications	Yes	Yes	Planned	Yes
Other	Supports adding devices from other centers using Center-to-Center interface	Reflected to public website Reflected to NaviGatorWeb Internet application with additional information for all signups that meet GDOT eligibility - e.g. jurisdictions, public service, media etc.		

Table 9-1. TMC Software Systems

- Automated incident detection—algorithms in the software monitor flows, speeds, and other traffic characteristics and automatically alert operators when it appears to the algorithm that an incident might have occurred, and approximately where. An operator is alerted who must verify the incident and confirm it as an active incident. It should be noted that these algorithms are generally not highly reliable.
- Automated message formatting—to assist in message creation, with approved dictionary and banned word list.
- Incident response plan—based on the nature and location of the incident, a proposed response is automatically generated, including DMS signs and locations, camera views, and notification prompts.
- Automated notifications—the software (generally with operator confirmation) automatically sends out incident alerts using a number of media, such as e-mail (including pagers), fax, and phone (with a recorded message). Some applications only use a subset of these media.





Law Enforcement CAD/TMC Integration

One of the more common lines of communications dealing with TIM is between law enforcement and transportation agencies, particularly TMCs; however, the most valuable electronic linkage—TMC software to law enforcement’s computer-aided dispatch (CAD)—is rarely available. The primary reasons for this are the need to protect non-law enforcement access to sensitive data in the CAD system, which leads to institutional barriers to such integration. Of course funding to implement the integration is another barrier.

We understand that in Utah, the two are fully integrated with data passing back and forth between the Utah DOT and State Patrol.

Florida also has recently overcome this barrier somewhat through close cooperation between the Florida DOT and the Highway Patrol. While CAD data are now available to the Florida DOT in a separate server, there is yet to be full integration of the SunGuidesm Software with the CAD data.

9.6. Inter-Agency Cooperation

Inter-agency cooperation—indeed interagency application of the “4-Cs” (communication, cooperation, coordination, and consensus)—is critical to a successful TIM program. There are many ways to ensure this, some already covered, such as multi-agency steering committees and TIM Teams. Below are

some methods of binding agencies together for such purposes, along with some good examples.

- Alert and notification guides—pre-prepared lists of who to notify under various conditions by location. This is one of the simplest types of inter-agency tools that can be developed and should include all agencies and companies that might be needed to respond to an incident (see Guide_Notify_FL_D1_C-L as an example of a printed list). They may be in the form of a flowchart (see Guide_Notify_FL_FTE). Georgia has an excellent general-use response flier that includes who should respond and who is “in charge” at various stages (see Guide_Notify_GA).
- Memoranda of Understanding (MOU)—for example an Open Road Policy agreement between a DOT, police, and ME (see MOU_LORP_GA_Rosewell and MOU_Coroner_WA) and between a DOT and SP to buy traffic enforcement services (MOU_CoopAgree_FL_D5-FHP). In this latter situation, Florida’s Turnpike Enterprise recently raised tolls on Alligator Alley (I-75) in south Florida in part to help finance additional Florida Highway Patrol troopers to increase speeding enforcement because speeds in excess of 100 mph too often lead to crashes.
- Mutual-aid Agreements—for example between neighboring fire rescue districts, or in the case of this example, between states to speed HAZMAT resources across state lines (MOU_MA_HAZMAT_AL-FL-GA). This is a very common type of inter-jurisdictional partnering.

Creating inter-agency agreements and pacts is difficult enough when the stakeholders are all from the same state. In cases where TIM/QC cross state boundaries, the number of agencies involved in the program increases significantly.

- Joint Operations Agreements—that spell out in more detail how agencies will handle such things as TIM, see Washington State’s comprehensive Joint Operations Policy (Policy_JOP_WS).
- Apply QC to arteries as well as freeways—while traffic on arteries is generally slower than on freeways, the Open Roads Philosophy is valid on surface street networks as well. Considerable unnecessary delays, and sometimes secondary crashes, occur because lanes are left blocked for extended periods of time. The public needs to be informed (where applicable) that Move-It Laws apply to arteries as well as freeways and rural highways.
- Share information on planned projects—this is a simple practice, but not as commonly practiced as it should be. In the Buffalo, New York regions, a whole multi-agency coalition—NITTEC as reported earlier—was created just to do this (at least initially).
- Bring non-traditional partners to the TIM table—too often TIM is considered to be a function limited to transportation, police, and fire rescue agencies. In fact there are many other agencies that have a direct or indirect interest and impact. A partial list is as follows (may be named differently in some states):
 - Department of Environmental Protection (DEP)—primarily concerned with HAZMAT issues, which can cause hugely lengthy incident durations,
 - Department of Law Enforcement (DLE)—the tools of TIM (and ITS) are

increasingly used to spread the word about major alerts—particularly Amber Alerts, which are typically coordinated by these agencies,

- Department/Division of Homeland Security (DHS)—similar to DLE above, the State DHS, or equivalent, coordinates major security events, which are in fact incidents that might directly impact the highways and transportation system,
- Department/Division of Emergency Management (DEM)—generally is responsible to mobilize to manage major weather, natural or manmade disasters, and
- Motor Carrier Compliance Office (MCCO, or whatever it is called locally)—that regulates the motor carrier industry, which is greatly impacted by incidents.

Naturally the local equivalents of these agencies should be included on the TIM Team as well.

Creating inter-agency agreements and pacts is difficult enough when the stakeholders are all from the same state. In cases where TIM/QC cross state boundaries, the number of agencies involved in the program increases significantly. Transportation and public safety agencies from all states and major metropolitan areas near the state line must be involved in responding to incidents. This is especially the case at border bridges. The Woodrow Wilson Bridge in the Washington DC area connects the State of Maryland, the





Commonwealth of Virginia, and the District of Columbia along the Capital Beltway. This posed a particular challenge to coordinate incident management in the area of this bridge, so an inter-state, inter-agency effort was created to address the challenges and propose solutions. The effort has been documented in an I-95 Corridor Coalition report, which is available on the Coalition Web site and on the QC DVD as Report_TIM_WWB. The report (I-95CC, 2007a) includes a number of model MOUs designed to implement various aspects and relationships among the partners.

In some states, contractors—generally called “asset maintenance” or “asset manager” contractors are used for highway and road maintenance. It is critical that these contracts provide fully for the same level of incident management that State and Local DOT forces would be expected to handle. These contractors should participate fully in TIM Teams and other TIM/QC Program activities. If the responsibility is shared between the agency and the contractor, the relative roles and responsibilities should be clearly stated in the contract.

9.7. Incentive and Award Programs

The value of TIM/QC practices is only as good as the people performing the practices. Incident management is, unfortunately, an activity that is often accompanied by high stress, anger, and too often little positive feedback. The perception of too many motorists is that law enforcement is just out to

get them and not to save their lives. Sadly, some law enforcement agencies bring this on themselves through very aggressive enforcement, but by and large, all responders should promote a positive attitude to support the public welfare.



Recognition and awards are common among the traditional public safety agencies, but newcomers to the mix, like Safety Patrols and success in TIM itself, are not commonly recognized. Below is a short list of some actions that can enhance the roles and self esteem of TIM responders:

- Recognition of responders—law enforcement officers and fire fighters are clearly “marked” by their uniforms and their authority is self-evident (if not always appreciated). FSP personnel can be more effective, particularly in QC activities if their authority is made more self-evident. Most FSP have no badges or other symbol of “authority.” The Georgia HERO operators, on the other hand, wear distinctive uniforms and carry badges that look very much like a police badge, thus giving them a visible tool to help them in getting motorist compliance.



- Awards for exemplary performance—all responder agencies should consider awards programs that include outstanding efforts in TIM/QC. A post-incident debrief would be a great venue to recognize these efforts.
- Recognition for superior service—similarly, long-term performance of an outstanding nature should be recognized by bonuses if possible, but at least distinctive pins, such as those given for length of service as these would likely be more cherished.

Regardless of these types of incentives, agencies should launch public awareness campaigns that emphasize the need to comply with all responders to clear the roadway.

9.8. Basis for Payment for Towing and Recovery

Finally, in this array of administrative TIM /QC actions, this could be one of the most productive. Since this was covered in Section 8.4.2, it is only again included here for the case that one or more agencies might elect to implement a more QC-friendly pricing practice administratively.

10. OPERATIONAL TIM/QC ACTIONS

The preceding sections have dealt primarily with the preparations for managing incidents—the legal, regulatory and administrative frameworks for good TIM/QC practices. This section deals with the operational aspects, but even here

there are preliminary operational actions that can be taken before incidents occur to make their resolution more effective. So here we begin with pre-incident actions.

10.1. Prevention

Listed as follows are some of the preventive operational actions that can be taken to help avoid incidents, particularly crashes:

- Pre-warning in traditionally hazardous segments—while very common for curves, steep grades, falling rock zones, and the like, if a segment is particularly incident prone, special warning signs can be posted—either permanently or as needed.
- Optimize signal timing on diversion routes—when freeways of other high-volume facilities close or have sharply reduced capacity, the surge of traffic onto diversion routes can overwhelm them, particularly if signalized. Timing plans that favor the diversion route can be at least somewhat useful in maximizing the throughput of these facilities. This will be at the cost of cross-street and other-way traffic, but it is the best use of the available cycle time under the circumstances. If progression can be maintained, all the better, but the high volume is likely to choke the system. In such cases, traditional parallel green bands will not be as effective as expanding bands downstream or at least a staggered effect with early releases of queue downstream before platoons arrive. The maximum service volume is





at the saturation flow rate, so ideally that is the desired flow rate to preserve—on all approaches.

- Maintenance and debris removal—continual removal of debris and proper and timely maintenance of roadside devices and flora can be effective ways of reducing incidents.
- High-visibility markings to equipment or apparatus—when it is necessary to have equipment in the right or way, such as performing the foregoing tasks, the equipment should be highly visible so drivers can see them and take appropriate actions.



- High-visibility garments—equally important is the visibility of the responders themselves, particularly at night. Another European example is shown to the side, but here the MUTCD has stepped in and encouraged high-visibility garments in this country as well, specifically in Section 6e.02 (FHWA, 2004).

Below we examine variations and additional actions in the context of normal and other levels of operations.

10.1.1. Normal Operations

For the purposes of this Toolkit, “normal” means traffic operating in the absence of an incident or other unusual event of any kind, with or without recurring congestion.

Dynamic Message Sign Displays

DMS displays are one of the most common means of communicating to the traveling public in the actual location and at the time they are traveling. Clearly, it is common to use them to inform of incidents, but in the context of this section, what is their proper use absent an incident? The real issue at hand is whether the signs can be used during normal traffic conditions to display safety or more specifically, TIM-related information.





The majority of urban drivers receive their travel information from traffic reporters, particularly when in route.

While it might be of only marginal interest in this Toolkit, it should be noted that the policies of TMC managers around the country vary widely on this. Some are willing to use the signs to continuously communicate information to the public (e.g., smog alerts, safety messages, and mostly travel time information), while others leave the signs blank unless there is an absolutely compelling reason to display a warning message. The reasoning is “If you see a message on my sign—read it!” Few go as far as displaying “Have a nice day.”

Florida has a statewide policy on this issue that permits the display of travel information if available, but otherwise the signs should be blank unless one of the following occurs (see Policy_DMS_FL):

1. Conditions that require motorists to take action or alter their driving, such as emergency events including evacuations or closures required by Florida DOT, the State Emergency Operations Center, state and local law enforcement, the military, or the Department of Homeland Security.
2. Traffic incidents, hazardous and/or uncommon road conditions, work zone activities, and severe weather conditions.
3. America’s Missing Broadcast Emergency Response (AMBER) Alerts.
4. Traveler information related to special events, emergencies, and incidents impacting mobility and safety.

Additionally, short-term use of the signs for “public information messages that assist the Department in improving

highway safety and reducing congestion” is permitted. If such messaging is permitted, we would also recommend “Fender Bender? Move It | That’s The Law.”

Partnerships with Traffic Reporters

The majority of urban drivers receive their travel information from traffic reporters, particularly when in route. Agencies, particularly TMCs, should form close partnerships with these companies—they are important tools in the toolkit. It is important that the information they communicate is correct, so getting that information from the TMC is often the best mechanism. When they have airborne resources, the TMC can benefit from their surveillance, particularly if they have video that can be fed into the TMC, thus providing the TMC an “eye in the sky.”

As discussed in Section 8.8.2, many TMCs have media facilities in the center, or, some feed live streaming video to the media, who usually have to pay for the communications link from the TMC and may have camera selection privileges, but not control. Again, the black-out feature usually exists to avoid the media having access to grisly crash scenes.

The Georgia DOT funds a fulltime Media Liaison position whose sole job is to work with the media to continually enhance the NaviGator/media relationship. They are also working with one provide to feed video back to the TMC.





Special Markings for Traffic Incident Management

Marking fire hydrants by placing blue raised pavement markers on the street adjacent to the hydrant is a common practice in most cities. The Florida DOT uses special raised pavement markers to give advanced warning to responders that they are approaching a median cross-over, as mentioned earlier. While done primarily for enforcement originally, these help any responders to incidents that have to travel away from the scene to find a cross-over to pass through the median barrier.

10.1.2. Work Zones

Work zones—whether new construction or maintenance—pose particular challenges to TIM/QC. To begin with, the very environment is more hazardous than on a normal roadway segment, often having shifting and narrow lanes, obstructions, barricades, and the like. Incidents are far more likely to happen in a work zone than not.



47 Florida State Senator Ron Klein, quoted in an ITS Florida brochure, "Intelligent Transportation Systems—The Future Has Arrived for Florida," October 2005.

Work Zone Inspection

It is a good practice to inspect work zones to be sure they are safely designed and operated. A good checklist is provided as Guide_WZ_Checklist from a Fire Chief in Texas, and it covers the gamut well.

Temporary ITS Devices

The use of temporary ITS devices, such as DMS, HAR, etc., in work zones can be very beneficial. One study in New Mexico found that the use of both permanent and temporary DMSs, cameras, and wireless communications reduced incident durations by 44% (Dumke and Doyle, 2001).



On a larger scale, the entire 45-mile stretch of I-95 in Palm Beach County, Florida, is equipped with an Interim Traffic Management System (ITMS) that uses temporary devices (SmartZones® and small arterial DMSs) exclusively. The (then) State Senator who conceived the idea has said, "The Palm Beach ITS is saving lives and making commuting through the I-95 work zones less stressful."⁴⁷ While no quantitative before-

after data are available, it is generally agreed that the ITMS makes incident response and recovery time much shorter than would have been the case without the system. Plus, it provides a wealth of information through both the DMSs and the Web site.⁴⁸ What is remarkable is that the entire system was implemented in just 19 months from the day the decision was made to proceed.

Night Lighting

Increasingly, more construction is being done at nighttime to avoid closing lanes during the more heavily-traveled daylight hours. This necessitates the use of lighting to illuminate the work area at night. The issue affecting TIM deals with crash prevention. The lighting should not be so low and strong that the glare is blinding to passing motorists or roadside businesses and residences.

Variable Speed Control

A common problem with work zones is the public disregard for speed limits. For years it seems like the first thing a new contractor would do once he signed the contract was to post reduced speed limit signs, yet there might not be any actual construction activity for weeks or even months. This simply results in the public ignoring the reduced limit, a tendency that often carried over into the actual construction. Agencies are more attentive to the issue now and many states require contractors to only reduce the limit when workers are present. Even this is not often enough to persuade many

drivers to reduce their speed if there is no perception of actual need.

One assumption, however, is that most (never all, unfortunately) motorists will reduce their speed when they perceive a valid reason to do so. One solution is to deploy a variable speed limit sign that can display a limit that is in fact appropriate to the current conditions. A review of variable speed controls has been posted by the International Municipal Signal Association (IMSA) (Wise, 2004). Since this is copyrighted material, it is not included on the QC DVD, but it can be obtained from the Web site below, which also has more information on these devices.⁴⁹

Work Zone Enforcement

Another perception issue deals with the fact that for a long time law enforcement agencies hired by contractors could not or would not enforce traffic laws while working on behalf of contractors. Motorists have become somewhat “immune” to them, thus reducing the effectiveness of their presence in the work zone. In some states, Florida for example, the policy has changed and law enforcement is permitted, indeed

48 See <http://www.palmbeachcotraffic.org/index.jsp>.

49 See <http://www.informationdisplay.com/docs/IMSA.1.04.pdf>.





encouraged, to enforce the law, at least against flagrant violators, particularly speeders.

Emergency Lighting Discipline

One of the safety issues with law enforcement, and other responders as well, is the proper use of their emergency lights. While the need to warn the public of an incident by displaying lights is understandable, the lights may adversely impact motorist's vision and also attract gawking, thus slowing traffic past the incident (often in both directions) leading to secondary incidents. Many states are now encouraging responders to reduce the use of lighting. One such practice is summarized as follows (see MOU_Lighting_FL_D1):

Public Safety and other Traffic Incident responders will:

- Examine their policy and actual practice for the use of emergency-vehicle lighting;
- Set a goal of reducing the number of emergency lights at secured incident scenes; and
- Give special consideration to reducing or extinguishing all forward-facing flashing or wig-wag emergency lights, especially on divided highways.

Pre-Positioning of Emergency Equipment

In major work zones, particularly with limited access by emergency vehicles, it might be advisable to preposition emergency equipment at strategic locations. The TIM Plan for the Northwest Corridor in Atlanta proposed dedicated police, towing, and HERO units with

appropriate guidelines developed, and the pre-positioning of assets near or on the project, including weather mitigation equipment (GDOT, 2006).⁵⁰

10.1.3. Detours and Diversions

Some work zones impact the highway so dramatically, that detours or diversions are needed, either on an occasional basis or for a significant duration. Or, pre-planned diversions are needed because of incidents in a work zone. Some of the issues below might apply to non-work zone situations, but in this instance the discussions relate expressly to work zone situations.



Route Diversion Plans

Route diversion plans should be prepared for any significant work zone. These should be part of the maintenance of traffic plan submitted by the contractor. The plan should include the mobilization process and clearly define agency and contractor roles and responsibilities. The diversion routes should be clearly defined. Signage should be ready to deploy as needed.

Some work zones impact the highway so dramatically, that detours or diversions are needed, either on an occasional basis or for a significant duration.

⁵⁰ As noted earlier, this plan had not been accepted for publication by the Georgia DOT at the time of this writing.

One corridor state has gone as far as mapping diversion routes for the entire interstate system; however, they are only available on the Georgia DOT Intranet.



Diversion routes are often difficult for motorists—particularly visitors to an area—to follow.

These work zone route diversion plans can also be used for diversions from incidents.

Trailblazers

Diversion routes are often difficult for motorists—particularly visitors to an area—to follow. When they will be used with some frequency, such as during a construction project, it is desirable to mark the diversion route from the freeway, along the route, and then returning it to the freeway. This is often done using fixed “trailblazers.”

Variable message trailblazers have been used for longer-term projects where additional information needs to be conveyed, such as advice to use optional alternative routes. The illuminated portion of the sign would give the real-time information.

Both fixed and variable message trailblazers have also been used to make routes for planned special events. For reoccurring events, these might be

permanently mounted and either hinged (if fixed signage) or use variable message trailblazers for other purposes when the event is not in progress.

Temporary Devices

As noted above in the discussion of work zones, ITS devices like DMSs, HAR and even temporary cameras and sensors can be used on diversion routes if the route is frequently used for such purposes.

10.2. Incident Occurrence

All of the foregoing discussions of TIM/QC actions have been focused on the time prior to incidents—the law- and rule/regulation-making, the policies and administrative actions, and the good practices that can help reduce or eliminate incidents. Now the focus shifts to the incident itself—namely what happens once point “A” in Figure 5.1 occurs [with the upper part (a) repeated here as Figure 10.1 for ease of reference].

In any incident there is an “event chain” that can be analyzed and addressed stage by stage and possibly lead to actions that can mitigate, and even prevent, incidents. For example, we have already discussed how early planning and implementation of preventative techniques can reduce speeds, increase driver awareness, and subsequently reduce the number of incidents. Later, post-incident debriefings are a good way to reconstruct and analyze the event chain.





Thus, as an incident unfolds, a virtually infinite number of scenarios can occur, depending on the nature of, and players involved in, the incident. It is tempting to try to diagram an incident based on the various paths it might take, as opposed to the simplistic linear representation in Figure 10.1. Such an all-inclusive representation would be useless because of the number of possible event chain flows and potential decisions. A graphic representation can, however, be built simplistically for typical incidents, one layer at a time, without extensive interaction among the layers, which, of course, are the major stages of the incident, as shown in Figure 10.1 and defined earlier in Chapter 5.

It goes without saying that ***the key goal in each of the steps that follow the occurrence of an incident is to minimize the time associated with each stage of the incident, or each link in the “event chain.” The open roads philosophy should be applied at each stage by whatever safe and reasonable means that are available and possible.***

Figure 10.2 illustrates the first set of events that may typically occur once an incident occurs. It is not overly important whether the incident is a vehicular crash or a less traumatic event, such as a blown tire. The fundamental set of possibilities that might occur immediately following the occurrence are essentially the same—the driver (or other principal in the incident) can either handle it

entirely by him or herself, or not. This decision, generally made by the incident principal, will determine how complex the subsequent event chain becomes.

In immediate response to the incident, the principal (usually a driver, but not necessarily so), makes a decision whether to handle the event him/herself or rely on assistance, thus triggering the subsequent events, as illustrated in Figure 10.2.

10.2.1. Principal Handles Incident Directly

The first of these is the simplest of all types of incidents, where the principal resolves the incident him/herself. As the illustration shows, they might simply continue as if nothing had happened (for example a dropped item that does not impact traffic, or thrown hubcap), and as long as there was no side effect, and the incident is over immediately.

If the event was more serious, but still managed by the principal, it might not affect traffic too adversely. Examples are as follows (with key TIM words in bold):

- A blown tire in which case the drivers **moves** to the shoulder then actually drives (**moves**) off the freeway via a ramp or into a guarded area, such as an accident investigation site;
- A very minor crash, in which the drivers **moves** off the roadway, **stops** to conduct their quick exchange of information, or if necessary **returns** to the scene; or
- Any number of other non-intrusive events.

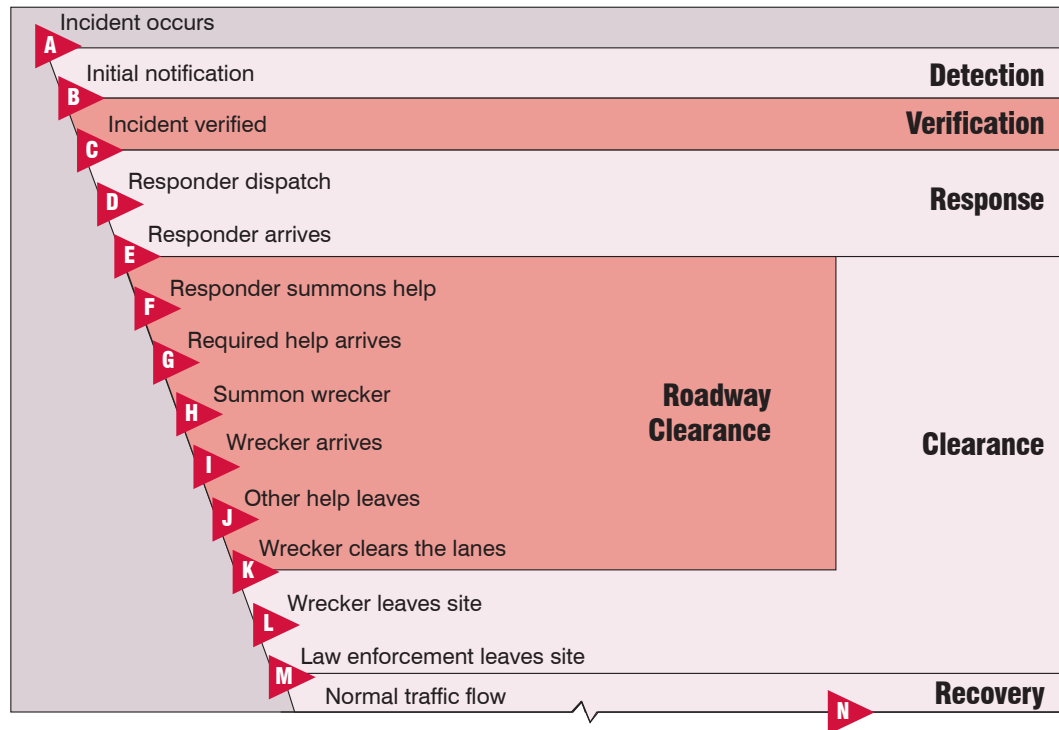


Figure 10-1. Linear Incident Timeline

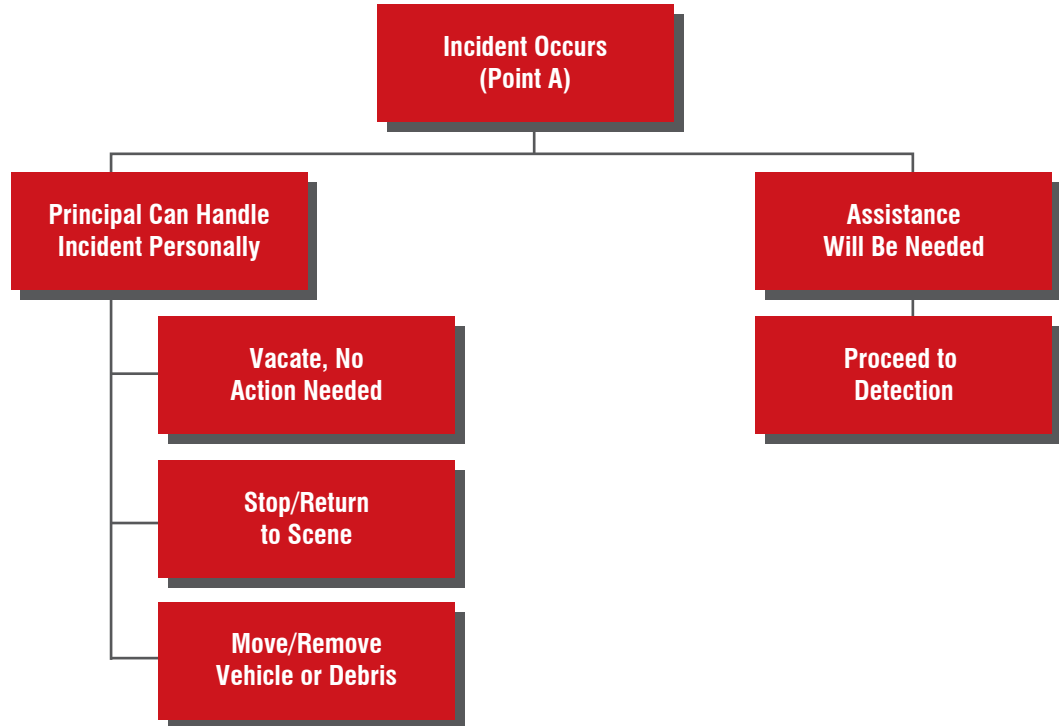


Figure 10-2. Incident Occurrence and Immediate Actions





- Agencies should try to educate travelers to follow this example to the greatest extent possible, subject to not endangering themselves or others, and not violating any law or personal liability.

10.2.2. Assistance Is Needed

This is the usual path to the remaining events in the chain. Certainly the principal(s) might report the incident themselves.

10.3. Incident Detection

An incident can be detected in a number of ways, as illustrated in Figure 10.3. The most common ways that “official incident detection”—that is notification to authorities—occurs are discussed below, along with comments on reliability, which leads to the next event in the chain.

9-1-1- Calls

With the ubiquitously presence of cellular phones these days, 9-1-1 calls to a Public Service Access Point (PSAP) or



9-1-1 Center are the single most common method of incident notification, both in urban and non-urban situations (as long as there is cell coverage in rural areas). The caller may be the incident victim(s) themselves, or passersby. While the veracity of the incident may be high,

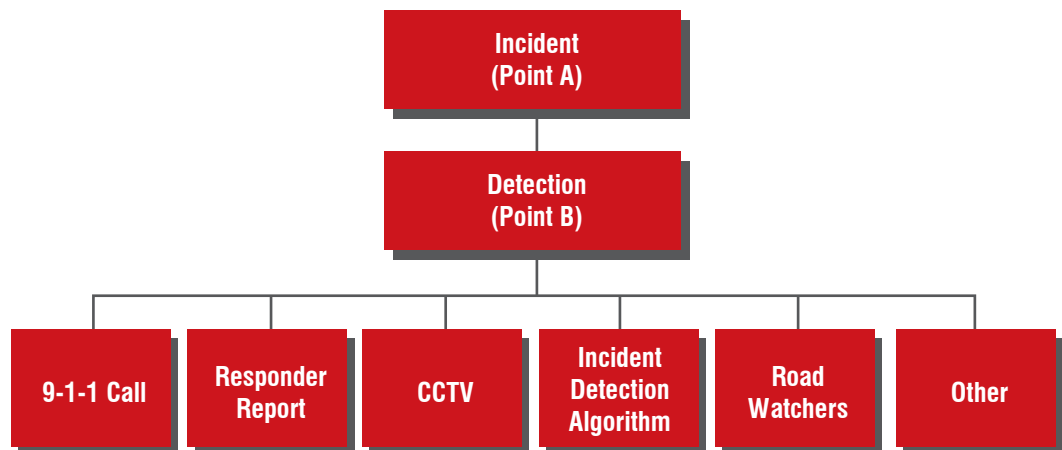


Figure 10-3. Incident Detection



the accuracy of locational information by these callers is generally poor. (Note that RLSs discussed previously would help greatly in this regard.) The spread of Enhanced 9-1-1 phones with GPS geo-location capability will also help tremendously when the resolution of the automated location capability is technologically feasible, but even in this case, a moving vehicle offers no fixed marker to the actual incident site.

Roving Responders

Roving law enforcement, service patrols, etc. are generally the second most common source of detection, at least in urban areas where there coverage is high. The other main advantage of this form of detection is the reliability of the information passed and the notification to a dispatcher or TMC.

CCTV

In areas covered by CCTV, this is also a common and reliable form of detection, and by definition, the notification is instantaneous, once the operator determines that the event unfolding is actually an incident.

Incident Detection Algorithms

Computer-based algorithms have been used in TMCs for years, and while they are a good triggering device for areas not covered continuously by CCTV, their overall track record in identifying actual incidents is generally small.

Road/Highway Watchers

A few regions have “road/highway watcher” programs that employ groups of people who volunteer (or in some cases are given some incentive to participate) to report incidents they encounter. In the early days of ITS in Houston, there was a pilot program to not only report incidents, but travel times as well. Georgia recently passed a law that beginning July 1, 2006, requires that all drivers holding a Commercial Drivers License (CDL) must complete a mandatory Highway Watch® safety and security program, which is a safety awareness and anti-terrorism training program. After completing training, drivers will receive a Highway Watch® Identification Card that they will need to present to Georgia Department of Driver Services when initially applying for, or renewing, their CDL.⁵¹ This law has met with some resistance in the trucking industry because of the time investments required; however, once the trained drivers are in place, this could be a tool for truckers reporting traffic incidents in addition to security issues.⁵²

Other

Certainly there are many other ways that incidents can be detected and notification given to authorities. Ideas that have been used for at least detection in the past include acoustic detectors to sense the sound of a vehicle crash (particularly in tunnels), use of air traffic control radar on long-span bridges without traditional sensors to sense slowdowns, strain gauges on bridges that sense dramatic stresses resulting from a vehicular

51 Adapted from the Georgia Department of Driver Services Web site, which also has links to the Highway Watch® program. See <http://www.dds.ga.gov/news/newsdetail.aspx?id=35>.

52 Readers should be aware that some of these programs and/or their names are protected, as indicated in the statement. Another example is “ROAD WATCH®,” which is Copyright, Caledon East, Ontario, Canada; see <http://www.roadwatch.ca/>, and also <http://www.roadwatchhuron.ca/>. A Web search of “road watch” will reveal a number of such programs ranging from the above to simple roadway condition sites.





(including ships) impacting the bridge superstructure, and no doubt many others.

The final word here is that an incident is not officially detected until some reliable notification has been given to authorities.

10.4. Incident Verification

The mere “detection” and “notification” of the incident, however, is still not sufficient to formally declare an incident as a real occurrence demanding a response. Too often motorists think they see an incident and call 9-1-1 to report it, but there was in fact no actual incident; for example an abandoned vehicle on the side of the road is not in itself worthy of launching a response. Accurately locating the incident is perhaps the biggest challenge even

from reports by uniformed responders. Thus, most agencies require a formal verification process, as illustrated in Figure 10.4.

The minimum key items to verify are as follows:

- An incident requiring management has indeed occurred,
- The nature of the incident has been at least tentatively confirmed (i.e., whether there are injuries or possible deaths, vehicle damage requiring a tow truck, and/or property damage), hopefully in sufficient detail to enable dispatching of the appropriate assets, and
- The location of the incident, both geographically and where on the roadway (particularly whether traveled lanes are being blocked).

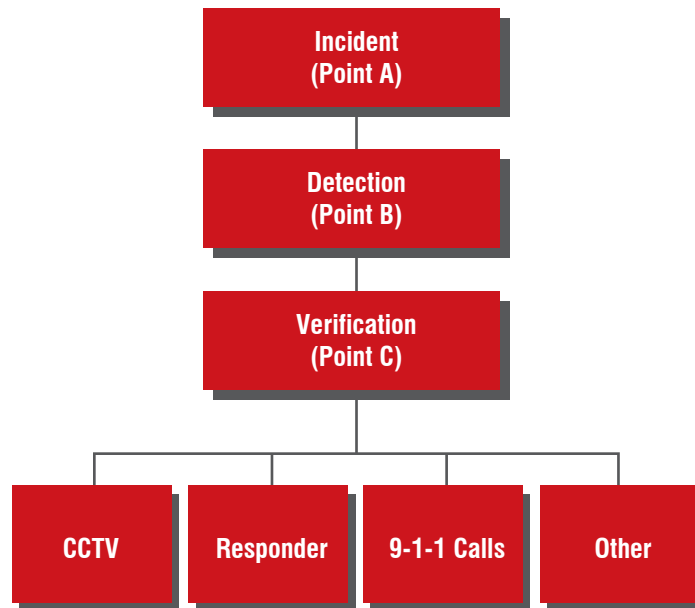


Figure 10-4. Incident Verification



Verification can be achieved by a variety of methods, as discussed below.

CCTV



Where the incident location is covered by cameras, most agencies verify incidents visually. This offers several advantages over other methods:

- The incidents can be viewed continuously if there is any initial doubt and the entire event chain can be scrutinized;
- Pan, tilt, and zoom (PTZ) can be used to get differing views and levels of detail, all safely;
- Multiple specialists can view the scene, even from multiple locations if the video images are shared with others, particularly public safety personnel;
- The response assets can be accurately assessed and dispatched, either from the TMC or another party; and
- Some (but certainly not all) agencies record the images, sometimes at the explicit request of law enforcement, for later analysis and possible training.

This latter point is a major issue as discussed in Section 7.4.5. Many TMCs do not record images due to the high cost of adequate coverage, storing of media, and provided media for court cases. This is certainly a valid point, but each TMC should consider recording, perhaps with a limited retainage period—clearly articulated in policy—but in any case base the ultimate decision on the legal climate in which it operates, not just copying a popular policy.

Roving Responders

As in the case of detection, roving law enforcement, FSPs, roving tow trucks etc. are often quick to arrive at the scene, and of course often are the ones making initial detection and notification. In the latter case, the time to verify the incidents is generally very short, since the responder is on the scene and can quickly assess injuries, damage, and the like, and then verify the incident to their dispatch and/or the TMC.

When these respond as a result of an initial report by another source, such as a 9-1-1 call, this time is generally considered as response time, not verification time, thus verification and initial response are virtually simultaneous.





9-1-1 Calls to PSAPs

When a number of motorists, particularly if one or more is a trained “road watcher” provide consistent information about the nature and location of an incident, the agency receiving the call may decide to declare the incident verified and proceed to dispatch responders, or notify the appropriate authority to initiate response.

Other

There are other methods of verification, such as air-borne traffic reporters, truckers, and the like. Agencies should strive to have as many sources of verification as possible, particularly in non-urban areas. In the latter case, particularly on rural roads, the criteria for verification might have to be relaxed in the interest of safety, since response times are generally much longer, and if there are serious injuries, the “golden half hour” can be consumed in response alone.



Several states (Arizona, Florida, Utah, and Virginia that we are aware of) are interested in the use of unmanned (or to be politically correct, “unpiloted”) aerial vehicles (UAVs), but thus far the Federal Aviation Administration (FAA) has blocked effective use of fixed-wing craft. The Utah Highway Patrol and the State of Queensland, Australia, have been successful in using small helicopters for traffic surveillance and investigation (including photogrammetry in Utah) because they remain under constant control of a “pilot” with a remote controller. California also has a remote-controlled hovercraft that is used for bridge inspection, but to our knowledge has not been used for TIM work. This issue is discussed further in Chapter 13, since it is more of an emerging practice than common today.

10.5. Incident Response

Once the incident has been verified, the formal response is activated, as illustrated in Figure 10.5.

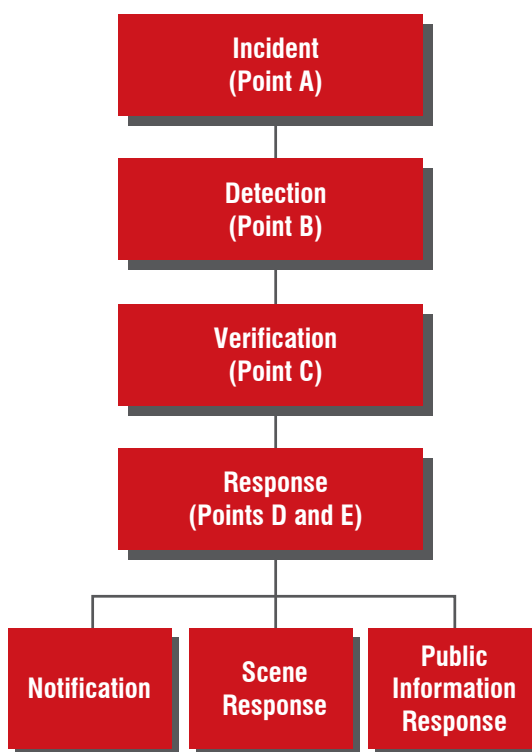


Figure 10-5. Incident Response

10.5.1. Responder Dispatch

The first order of business in actually managing the incident is to notify the appropriate agencies. Every region has its own policies and practices, so there is no standard cookbook way of doing this. Usually, the following need to be notified for the conditions stated (one of these will be the entity making these notifications):

- Law enforcement (State Patrol, city police, and county sheriff, as appropriate)—generally always notified if any reportable crash has occurred, and they generally take command of the incident until another commander assumes charge (see Unified Incident Command below),

- Traffic management center—if present, the TMC should be a focal point for managing the incident, or at least the Concept of Operations should clearly identify the TMC’s role,
- Fire rescue—if there is any danger of fire or fluid spill,
- Emergency medical service—if there is any injury or deaths (may be part of fire rescue),
- Freeway service patrol—to assist in scene management and to actually perform TIM duties if their scope of services includes TIM (beyond simple motorist assistance),
- Towing and recovery service—if there is any damage to vehicles and/or cargo,
- Maintenance—if there is damage to the infrastructure (may be by contract),
- Public Service Access Point (9-1-1 Center)—if they were not already in the loop, to alert them to expect more calls,
- Medical Examiner—if there are fatalities,
- Hazardous material handler—if large spills of any significant materials or any hazardous materials are involved,
- Emergency Operations Center—if a major incident for which they might consider assuming control, and
- Public information providers and media—to pass information about the incident to the public.

A number of tools are available to assist in the notification process, which are discussed in the following subsections.





Notification and Response Guides

These are pre-prepared listings of who should be notified for various classes of incidents, by location. They typically include agencies; names (if they can be easily updated); and phone, fax, and e-mail (including pager) numbers and addresses. Samples were referred to in Section 9.6.

Automated Notification System

As noted in Section 9.5, some TMC software systems have automated TIM functions that can assist in notifications, and automatically generate alerts that go to specified responder agencies. The databases are set up by TMC operations, so they are flexible, once created.

There are also commercial software products available that provide alert and notification services in addition to other TIM/EM functions. These would not, of course, interact with other TMC functions without being integrated somehow. An Internet search for “incident notification software,” “emergency management software,” or variations will locate these.

Wrecker and Tower Policies and Practices

As discussed in Section 8.4, non-traditional towing and wrecker policies and practices, particularly payment policies, can greatly improve the efficiency of response—and clearance—times by this, the primary private-sector, partner in TIM/QC. All towing companies should be fully qualified and have clearly defined safe and effective procedures.

10.5.2. Scene Response

The most critical TIM/QC best practices occur at the incident scene itself, for this is where the incident must be managed optimally to reduce the delays and potential for secondary incidents. This section discusses a variety of QC best practices and provides sample tools as available.

Scene Management Policies

These are overarching policies that directly impact scene management:

- Dispatch from transportation management center—this is the ideal situation for effectively managing incidents, particularly if at least law enforcement dispatch is co-located in the TMC. Unfortunately, fire rescue is rarely co-located with the other functions, but a well-integrated linkage is highly desirable. This focuses most or all management in one physical location, enabling the formation of an “incident response team” (similar to the typical EOC operations) to manage major incidents.
- Accurate and timely information to responders—this is essential so that the right assets are dispatched quickly and efficiently without superfluous equipment being sent to the scene, which only exacerbates an already chaotic and often very crowded scene.
- Responder safety—should be a top concern, right there with concern for the safety of incident victims. Too often, responders themselves perform unsafe acts in the supposed interest of handling



the incident. Examples are approaching incident vehicles from the traffic side, not using appropriate high-visibility garments, and not properly shielding the scene. Examples of good practices are given later in this section. The point here is to always emphasize safety.

- Activate unified command—the age old question of “who is in charge” needs to be put aside. The Unified Incident Command structure should be adopted by all agencies (see Section 10.6 for more details). An excellent video that addresses the issue of who is in charge is the “The Many Hats of Incident Management” (VSP, undated), see [Movie_Hats_VA](#).
- Log incident data—provides a systematic way to both manage and later analyze incidents. Preferably all responder agencies would use the same log, but this is unfortunately rarely done due to differing software systems. Public safety agencies generally use CAD systems, while transportation agencies, including FSPs, use one or a combination of TMC software applications at the high end, spreadsheets or specialty software applications in the middle, to hand-written logs at the low end. An example of the software application is shown in Figure 10.6.⁵³ Whatever form of logging is used, it is better than nothing.

⁵³ The application shown in the figure is a restricted-access Web site, but the Florida DOT District 4’s public incident site can be viewed at <http://www.smartsunguide.com/Map.aspx> (map), and <http://www.smartsunguide.com/CurrentEvents.aspx> (text).

⁵⁴ Note that this situation was brought to the attention of a regional TIM Team, who in turn notified the appropriate authority within the State DOT, and an emergency resurfacing project was quickly launched and the problem was eliminated.

Move-It

If the incident victim does not move a vehicle that is blocking lanes, responders should aggressively do so, if practical. The following at a minimum are desirable:

- Push bumpers—should be mounted on law enforcement and FSP vehicles, and these responders should use them. Some agencies are reluctant to use push bumpers due to the liability of damage; however, the safety and economic consequences of using them far outweigh the minor risk.
- Light towing—similarly, FSPs and specially-equipped law enforcement vehicles should carry tow cables that enable them to tow vehicles off the roadway when pushing is not feasible, such as when the vehicle has spun around, it was necessary to approach the vehicle from upstream, or if a trailer is involved.

The new Washington State Move-It Law requires motorists to actually exit the freeway as soon as possible at the nearest downstream ramp.

Response

This refers to getting the appropriate response to the scene in a timely manner. One Coalition member’s county had the experience that a section of an interstate highway had poor drainage, so when it rained, skid-related crashes often occurred. The Sheriffs Office made the decision to immediately dispatch one or more Deputies to roam this segment whenever it rained in an effort to slow traffic down somewhat, but mainly to be quick to respond to crashes.⁵⁴

Other actions that should be taken in this regard are as follows:





SMART Viewer - Event List - Microsoft Internet Explorer

Address: C:\Documents and Settings\hayess\Local Settings\Temp\Temporary Directory 5 for BCR\TMC SmartViewer.sp\SMART Viewer - Event List.htm

SMART Viewer You are logged in as: visitor Logout

ACTIVE EVENTS WITH A TRAVEL LANE BLOCKAGE							
ID	IN	Ori.	Date/Time	RR	Type	Description	Blocked Lanes
344499	HC	SGB TMC	4/9 10:31 AM	B17, B18, B01	Accident	BC 95 N At Exit 26 DAVIE BLVD	All Lanes (of 4 Lanes) Blocked
332366	JB	PBC TMC	3/1 5:01 AM		Road Work - Scheduled	PBC 95 N Ramp From Exit 63 6TH AVE SOUTH	All Lanes (of 2 Lanes) Blocked
325323	DW	PBC TMC	2/5 7:29 AM		Road Work - Scheduled	PBC 95 N Ramp To Exit 57 BOYNTON BEACH BLVD	Exit Ramp Center Lane Blocked

ACTIVE EVENTS WITH NO TRAVEL LANE BLOCKAGE							
ID	IN	Ori.	Date/Time	RR	Type	Description	Blocked Lanes
344501	LO	PBC TMC	4/9 10:40 AM	P60	Accident	PBC 95 S Ramp To Exit 83 DONALD ROSS RD	Right Shoulder Blocked
344498	HC	SGB TMC	4/9 10:28 AM	B16	Disabled Vehicle	BC 95 S At Exit 33 CYPRESS CREEK RD	Right Shoulder Blocked
344493	HC	SGB TMC	4/9 10:14 AM	B18	Disabled Vehicle	BC 95 N Before Exit 27 BROWARD BLVD	Left Shoulder Blocked
344492	DN	SGB TMC	4/9 10:13 AM	B11	Disabled Vehicle	MDC 95 S Ramp To Exit 16 IVES DAIRY RD	Right Shoulder Blocked

RECENT INACTIVE EVENTS							
ID	IN	Ori.	Date/Time	RR	Type	Description	Current Status
344505	DN	SGB TMC	4/9 10:51 AM		Debris on Roadway	BC 95 N Ramp From Exit 25 SR 84 To Exit 83 - Donald Ross Rd.	Closed
344504	LO	PBC TMC	4/9 10:48 AM		Disabled Vehicle	PBC 95 N At Exit 69 BELVEDERE RD	Closed
344502	HC	SGB TMC	4/9 10:43 AM		Disabled Vehicle	BC 95 N At Exit 38 COPANS RD	Unresolved
344500	DN	SGB TMC	4/9 10:35 AM		Disabled Vehicle	BC 75 S Ramp To Exit 11A SHERIDAN ST E	Unresolved

Last updated: 4/9/2007 10:52:26 AM

SMART Viewer
© MMV FL DOT, All Rights Reserved.
Developed by the SMART SunGuide TMC, FDOT District 4

(a) Summary Table

SMART Viewer - Event Details - Microsoft Internet Explorer

Address: C:\Documents and Settings\hayess\Local Settings\Temp\Temporary Directory 1 for BCR\TMC SmartViewer.sp\SMART Viewer - Event Details.htm

SMART Viewer Go to Event List You are logged in as: visitor Logout

SMART EVENT #344501

Event Number: 344501	Event Location: Palm Beach County on Interstate 95 Southbound, Ramp To Exit 83 - Donald Ross Rd.	Vehicle(s) Dispatched:															
Event Status: Unresolved	Event Congestion:	Vehicle(s) On-Scene:															
Reported Date/Time: 4/9/2007 10:40:18 AM	Lane Blockage(s): Right Shoulder Blocked	Vehicle(s) Departed: P60															
Organization: Palm Beach TOC	Conditions: Pavement is dry; Precipitation is none; Wind is calm; Moderate; Visibility is Clear; Illumination is Daylight/Clear;	Activities Performed: No Assistance															
Notifying Agency: Palm Beach Road Ranger		<table border="1" style="width: 100%;"> <thead> <tr> <th>Notified by TMC</th> <th>Responders</th> <th>Notified</th> <th>On-Scene</th> <th>Departed</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td>Palm Beach Road Ranger</td> <td>4/9 10:40</td> <td>4/9 10:40</td> <td>4/9 10:54</td> </tr> <tr> <td><input type="checkbox"/></td> <td>FHP</td> <td>4/9 10:45</td> <td></td> <td></td> </tr> </tbody> </table>	Notified by TMC	Responders	Notified	On-Scene	Departed	<input type="checkbox"/>	Palm Beach Road Ranger	4/9 10:40	4/9 10:40	4/9 10:54	<input type="checkbox"/>	FHP	4/9 10:45		
Notified by TMC	Responders	Notified	On-Scene	Departed													
<input type="checkbox"/>	Palm Beach Road Ranger	4/9 10:40	4/9 10:40	4/9 10:54													
<input type="checkbox"/>	FHP	4/9 10:45															
Type of Event: Accident																	
Injuries: Unknown																	
Vehicles Involved:																	
Est. Clearance Time: 00:00 - 00:30																	
Alternate Road 1:																	
Alternate Road 2:																	

Date/Time	Category	Details
4/9/2007 10:40:18 AM	STATUS	Active
4/9/2007 10:40:18 AM	NOTIFIED	Palm Beach Road Ranger: P60
4/9/2007 10:40:18 AM	ARRIVED	Palm Beach Road Ranger: P60
4/9/2007 10:40:46 AM	LOCATION	95 S Ramp To Exit 83 - DONALD ROSS RD
4/9/2007 10:45:00 AM	FIRST NOTIFIED	FHP:
4/9/2007 10:52:14 AM	BLOCKAGE	All lanes open
4/9/2007 10:54:43 AM	ACTIVITY	Palm Beach Road Ranger: P60 No Assistance
4/9/2007 10:54:53 AM	DEPARTED	Palm Beach Road Ranger: P60
4/9/2007 10:55:01 AM	STATUS	Unresolved

(b) Detailed View

Figure 10-6. Florida DOT District 4 SMART Incident Viewer



- All responders should have a 24/7 response capability—crashes in the dead of night can be, and often are, as or more serious than those in the daytime.
- Timely delivery of the right assets at the right time—it is critically important that the right assets are dispatched to an incident scene, and only those assets. Inappropriate and unneeded assets waste time and money, and can even lead to worsening the problem.
- Accurate and appropriate information to responders—the key to success of the previous bullet is the accuracy and timeliness of information given to responders. Responders prefer to assess the needs of an incident themselves rather than being told, so dispatchers, including TMC operators, should provide sufficient details that the responder can determine the assets needed—including, and particularly, tow companies.

This latter point poses a challenge in locations using a strict rotation list for towing and wrecking. While the same recommendation is applicable, not all companies are properly equipped to handle all types of incidents, particularly those involving heavy vehicles. This issue was discussed in more details in Section 8.5. Agencies should work out a mechanism to be able to modify the rotation when special needs exist. This clearly means that the dispatching agency needs to make some predetermination as to assets, but it is rather obvious in this case.

Response Positioning

Following up on the previous point, this deals with what actually happens at or near the incident scene. An important point to make is to poise potentially needed assets for access—in the event that there is some uncertainty about the need for a particular asset, it might be desirable to position the potentially needed responder in a location from which he/she can quickly travel to the scene, but are not blocking any lanes or obstructing traffic while waiting. Good alternatives are a near-by accident investigation site, surface street or better a parking lot near an entrance ramp upstream of the incident, an extra lane or shoulder that is not normally used, and even well-designed ramps where the vehicles is not obstructing the ramp traffic, but the latter is the least desirable.

Response Recalling

Another action that can reduce the responder overload is the formal recalling of non-critical/unneeded responders, preferably before they arrive on scene, but in any case minimize the number of responder vehicles at the scene to those absolutely needed. Excess law enforcement and FSPs can move to positions to protect the queue if others are not already doing this.

10.5.3. Public Information Response

Providing information to the public is part of the response stage as well.





Direct Traveler Information to the Public

During an incident—including the recovery stage—it is critical to get as much information to the public as possible. This serves three principal purposes:

1. It alerts drivers who might be impacted that there is an incident, and where, so that they may be prepared to take appropriate action to avoid becoming involved in the incident, or a secondary one.
2. For those in a position to do so, some drivers may choose to divert to an alternate route or postpone departing on the trip, which reduces demand passing the incident.
3. For those stuck in the queue it gives them some peace of mind, knowing the cause of the congestion.

While the last item seems inconsequential, it is important because it makes people less irritated, thus less likely to take chances and cause a secondary incident themselves.

The typical means of transmitting incident-related information to the motorists are as follows:

- In areas served by a TMC, DMSs and HAR are the usual means. DMS messages are obviously limited to this passing by or under the signs, so their impact is highly localized. The real issue is how many signs to energize, or more accurately how far upstream should the information dissemination be. Some regions use a general rule of thumb based on a “50 mph” guideline

that says incidents should be announced to motorists on the affected route(s) 50 miles from the scene for each hour of incident duration. Thus, a 30-minute incident should have alerts extending 25 miles upstream of the scene, and downstream as well if congestion ensues due to gawking. HAR is also localized, plus only a limited number of drivers listen to HAR, particularly outside work zones, but many regions use it nonetheless as another tool.

- More generally the media and other public information providers (ISPs) serve as more generalized sources of information. As noted earlier, transportation and public safety agencies should have strong bonds to media and ISPs so that their information is both timely and accurate. As noted earlier, surveys have shown that the majority of drivers get their information from radio reporters. The satellite radio services now offer traveler information on a regional basis as well.



- Areas with 5-1-1 traveler information services can provide somewhat customized information by posting brief but generally more informative messages about incidents than radio to the automated 5-1-1 call-in service. Most 5-1-1 systems also have an associated Web service that travelers can use prior to making the trip; indeed, there are many traveler information Web sites in areas not yet served by call-in 5-1-1. A few call-in services even feature live customer service representatives (CSRs) who can offer very personalized information to callers. Georgia's "*DOT" service is an excellent example, and will continue even when the automated 5-1-1 service begins in spring or summer 2007, albeit as an option within the automated system.
- An increasing number of cell and PDA services are offering traveler information services, where incident alerts are sent to subscribers' hand-held devices on a regional basis.

Automated Incident Management and Driver Information

In addition to the notification functions mentioned in Section 10.5.1, TMC software provides other important functionality in regards to public information that is a critical component of the response as well. It continues into the clearance stage, but should begin as early as possible, thus it is mentioned again here.

10.6. Clearance

Obviously, this stage is the one of most concern and interest in this QC Toolkit, refer to Figure 10.7. To set the stage for this section, we quote from Ohio's QC Guide, "It is impossible, and not even preferable, to suggest a one-size-fits-all approach to traffic incident response; each incident is unique in its character and hazards. However, there are some preferred practices to protect the scene, to manage traffic, and to clear an incident efficiently. This guide (ODOT, 2003) reviews those best practices so that local agencies can adopt approaches for more rapid incident clearance. To be successful, all agencies must develop a mind-set that includes the restoration of traffic flow in incident management decision making." See this excellent guide at [Guide_QC_OH](#).

Other guides and checklists on the QC DVD are the following:

- Kentucky's pocket-sized "Checklist for Highway Crash Site Management," see [Guide_Clear_KY](#),⁵⁵
- The Niagara International Transportation Technology Coalition (NITTEC) Emergency Responder Checklist, see [Guide_QC_Checklist_NITTEC](#),
- An excellent "Guide for First Responders" from a fire battalion chief and researcher in Calgary, Alberta (Elvey and Morrall, 2005), see [Guide_Clear_AB_CN](#),
- New Jersey's "I-295/I-76/NJ 42 Incident Management Task Force, Policy and Procedures Manual" (NJ, 2004), see [Plan_TIM_NJ](#),

55 Compliments of the Kentucky Transportation Cabinet and the University of Kentucky Transportation Center.



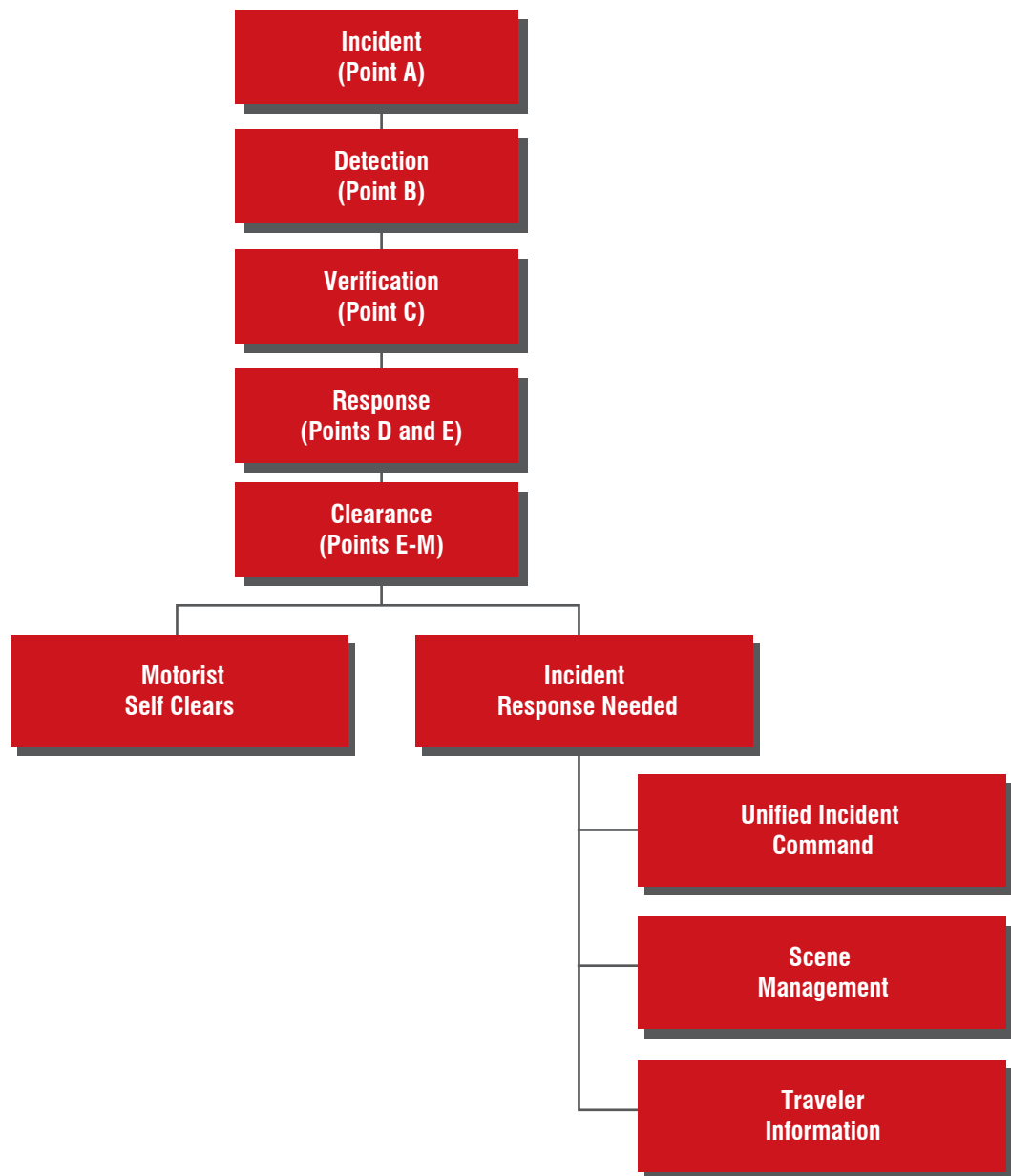


Figure 10-7. Incident Clearance

- New York State’s “Fire Service Guide Series—Fire Department Operations on Limited Access Highways,” see Guide_TIM_Fire_NY,
- Ohio’s TIM checklist, see Guide_Checklist_OH and a slide show on QC, see Guide_Clear_OH,
- An excellent slide show by a private consultant/TIM instructor, Robert Faugh, entitled “Warning Lights, Parking, and Scene Safety” (Faugh, 2005), see Guide_Clear_RF, and
- An information brochure from NTIMC called “Improving Traffic Incident Management Together,” see Flier_TIM_NTIMC.



Also, as other quick clearance best practices become more widespread, additional incidental equipment and materials will be needed, such as more minor spilled fluid clean-up materials and better crash debris removal equipment.

Before getting into the detailed steps of the clearance stage, there are some overarching considerations.

Practice Open Roads Philosophy

The first order of business in promoting quick clearance is for all concerned to endorse the Open Roads Philosophy introduced in Chapter 4. This needs to be done at all levels from top management to line staff, technicians, officers, firefighters, and other responders. Agencies are encouraged to formalize this philosophy by executing state-wide and local Open Roads Policy agreements (see Policy_ORP_XX).

Of course these are all done in advance of the incident. Once an incident occurs, the goal is for all responders to follow the philosophy, as detailed in the remainder of this section.

Unified Incident Command

The question often asked at major incidents, particularly involving multiple agencies, is “who is in charge?” The answer is simple—the most appropriate person, regardless of agency. The video from the Virginia State Patrol mentioned earlier, “The Hats of Incident

Management,” makes this point, see [Movie_Hats_VA](#).

What this issue boils down to is that all responders practice the Unified Incident Command approach to scene leadership. Below is an excerpt from a forthcoming NTIMC paper on QC that discusses the relationships among ICS, NIMS, and traffic incident management⁵⁶:

Unified Incident Command: Conflicts among responder disciplines at traffic incident scenes often stem from disagreements regarding decisions related to road closures or partial closures. When decisions are made unilaterally without consulting all of the responding disciplines, quick clearance and other goals can be compromised. Each case must be considered individually. In some cases, a total roadway shutdown enables emergency responders to clear the road more quickly. At other times, road closures hamper the ability of responders to bring equipment to the scene. Sometimes, placement of equipment across a lane protects responders; in other cases, such equipment may block several lanes unnecessarily, increasing the likelihood of another collision.

Unified Incident Command (UC) is a method for coordinating efficient incident response at larger, more complex traffic incident scenes, where the incident involves several responding agencies with contrasting functional responsibilities and missions, and/or affects multiple political or legal jurisdictions. UC assures

⁵⁶ E-mail from Karen Haas, President, Manifest Inc., 11/3/06.



Coordinated Incident Management
Toolkit for Quick Clearance



that the missions and concerns of all of the responders are taken into account in the incident command function, which is essential to achieving “quick clearance” goals.

UC procedures for sharing command decision-making fall under the overall Incident Command System (ICS) concept, defined as “a systematic tool used for the command, control, and coordination of an emergency response.” ICS and UC concepts and procedures were developed by the fire service, and they are routinely applied with success in managing more complex fire and other emergency incidents. More recently, the federal National Incident Management System (NIMS) was built on an ICS framework to provide a unified nationwide management framework for emergency response operations. As a result of the requirement for training in and use of ICS as part of the Department of Homeland Security’s NIMS requirements, more and more agencies are institutionalizing ICS in their approach to all hazards and emergencies.

The Federal Highway Administration (FHWA) is fostering greater understanding and awareness of ICS among transportation professionals, having sponsored publication of a Simplified Guide to the Incident Command System for Transportation Professionals in 2006, and Model Procedures Guide for Highway Incidents in 2003. Currently under development by the FHWA is an ICS training course (to include NIMS concepts) targeted specifically for transportation professionals.

While many jurisdictions incorporate ICS into everyday traffic incident response and removal activities, and use UC as appropriate, this is not always the case. In 2006, the FHWA asked the nation’s largest urban areas to conduct a Traffic Incident Management (TIM) Self-Assessment. Twenty-four percent of the 70 responding urban areas reported that ICS was not a generally accepted practice in their area.

Even when the ICS is used within a jurisdiction, however, its effectiveness may vary with the size and complexity of the incident. At larger, more complex incidents, Unified Command and NIMS compliance often is carried out by ranking members of the respective responder agencies, who are well versed in Unified Command principals and procedures. At more routine incidents, which account for a significant proportion of non-recurring congestion, scene operations may be managed by entry-level personnel and their first line supervisors, who are generally less familiar, and less comfortable, with the unified command process. The challenge is to push ICS tactics down, across disciplines, through standardized, controlled, readily accessible, credential-oriented training.

Another good reference is GDOT’s “Incident Management—‘Who’s in Charge?’ or ‘Who’s in Charge of What?’” flier introduced earlier under the discussion of notifications (see Guide_Notify_GA).



Use of Safety Equipment by Responders

It is critical that responders protect themselves by wearing appropriate garments or vests, particularly at night. High reflective vests should always be worn, even in daytime so that the responder's torso is very visible to passing motorists. Cones and barricades should be used to provide a visible buffer between the scene that is being managed and the passing traffic.



Emergency Lighting Discipline

This topic was discussed as a policy issue in Section 10.5.2. Now is the time for responders to practice it. If your vehicle is not one of the few key vehicles protecting the scene and the queue, turn the lights off. Responders should remind colleagues of this as well, since it is an old habit hard to break and this might not be a front-burner issue to responders in the heat of managing the scene. Further, if your emergency lights should not be on, question your need to even be at the scene.

Removal of Deceased Victims from the Roadway

Fatal crashes are generally among the most time consuming to clear. Thus, it is absolutely critical to remove the deceased victims from the roadway as quickly as possible. If your region does not have an explicit MOU granting responder the right to remove bodies before the Coroner arrived, appeal to the Coroner by radio or cell phone to authorize this in a case-by-case basis. If this is done, it will bring to the Coroner's attention the need for a formal policy. To protect responders from liability, however this should only be done after serious consideration of such a practice at the agency's management level. All these actions need to be done with the concurrence of the Incident Commanders and, of course, the Coroner.

Removal of Deceased Victims Trapped in the Vehicle

The same comments above apply to this case as well, but in this case it is desirable to remove the entire vehicle. If a responder can do so, without further endangering the condition of the deceased, they should attempt to do so. Otherwise a qualified towing service should be engaged as quickly as possible. Often a car with deceased inside—especially if they were involved in a fire—can be loaded onto a roll-back wrecker and then taken to an agreed off-scene location for further investigation and extrication.



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Traffic Management Past the Scene

Once the scene is secure and some lanes are open, all responders not directly engaged in managing the scene should direct traffic to keep it moving. Use of highly visible garments is particularly important for those engaged in traffic management.

MedEvac Airlifts

When airlift is required, the following guidelines should be followed:

- Establish clear criteria for deployment of airlift assets,
- Triage on the scene, but off the roadway,
- Designate landing zones, or at least an approach to identifying them, and
- Use “hot loads” (that is “rotors turning”) when practical to reduce the ground time of the helicopter. This latter is not only for the immediate benefit of the victim(s), but also to reduce clearance time.



10.6.1. Scene Management

Scene management—the positioning of vehicles and activities of personnel at the scene—is one of the most critical components of the clearance stage. Responders should follow this “safety order of priorities” [adapted from (FHWA, 2006)]:

1. Manage personal safety first—safe response, proper positioning and lighting, reflective garments, working only in designated “safe” zones, etc.
2. Traffic Safety—providing a clear message to approaching traffic to direct flow.
3. Rescue of crash victims or stranded motorists.
4. Salvage cargo or vehicles.

Other important points are as follows:

- Vehicle placement at the scene—this is one of the most critical points of good scene management. The following are some pointers—not prescribed—for consideration:
 - If the incident is not blocking a lane or shoulder, move the victims’ vehicles as far off the shoulder as possible if it/they cannot be immediately removed, and likewise park responder vehicles off the shoulder in a position to shield the scene;
 - If the incident is blocking a shoulder, try to avoid closing the adjacent lane and position the responder vehicle to protect the scene and not likely to be propelled into the scene;
 - If one or more lanes are blocked (for as long as necessary only), position responder vehicles to force on-coming traffic to move to the remaining open lane(s), and reinforce with cones as soon as possible; and
 - If all lanes are blocked (again just for the period absolutely needed), block all lanes using a tapered arrangement of vehicles and or cones to force traffic off at the first upstream exit ramp, or



one further upstream that has a better alternate route. Nearby on ramps should be closed as well to avoid exacerbating the traffic demand.

- Protect the queue—any significant incident will generate a “shock wave” that will travel upstream and cause a slow-moving queue, or even a stopped queue. Drivers approaching the back of the queue endanger those already in the queue due to the speed differential, particularly if sight distance is poor (e.g., vertical or horizontal curves, or nighttime). Secondary responders (generally FSP and/or law enforcement) should position themselves far enough upstream of the incident that they can alert passing motorists. Some agencies will position a responder vehicle on the opposing inside shoulder so they can move away from the incident as the queue grows. Obviously, ITS devices and public information providers should continuously alert travelers in the areas of the incident and its location. Actions that can be taken are as follows:
 - Stay ¼ mile back from the back of the queue,
 - Back up in concurrent direction, but do not use the opposing direction,
 - Use two vehicles and leapfrog,
 - Display “Emergency Scene (note: instead of “Accident”) Ahead” sign, and/or
 - Deploy a cone and “Slow” paddle inserted in it with several flares around it.
- Emergency lighting discipline—this is one of the toughest habits to change—all responders feel that their

emergency lights would be flashing whenever they are at a scene. ***This is not a good practice.*** In fact, the only vehicles that should have their flashers on are those actually blocking traffic and those protecting the ends of the queue. The extra lights are distracting to drivers, and cause more rubbernecking, thus extending the incident duration. Excessive flashing at night can even be dangerous since the lights can be blinding, as noted earlier. A MOU encouraging good light discipline can be found in MOU_Light_FL_D1.

Further regarding vehicle placement, fire rescue departments have been particularly aggressive about safety, often blocking more lanes than are necessary. Certainly the concern for safety of the responders and victims alike is well placed, but the unfortunate problem is that the lower the traffic capacity passing an incident, the longer it will take to clear and recover, this increasing the likelihood of secondary crashes. A somewhat standard policy among fire rescue departments and some EMS agencies is to have at least one buffer lane between traffic and the areas being worked. Agencies are encouraged not to block lanes unnecessarily.

A series of typical scene vehicle positioning guides are illustrated in Figures 10.8-15 starting on the next page, and the situations are included in the figures. Again, these are suggestions only, not endorsed by the Coalition.



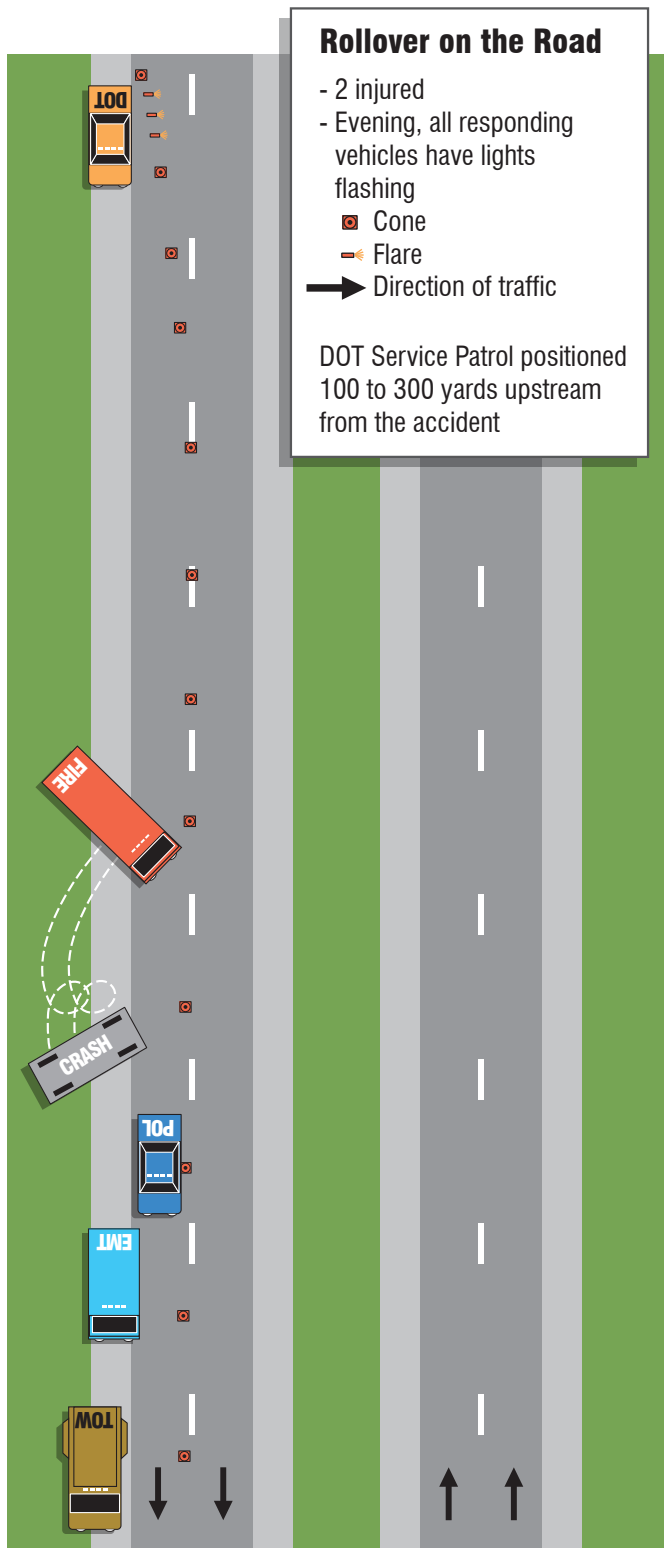


Figure 10-8. Rollover on the Road

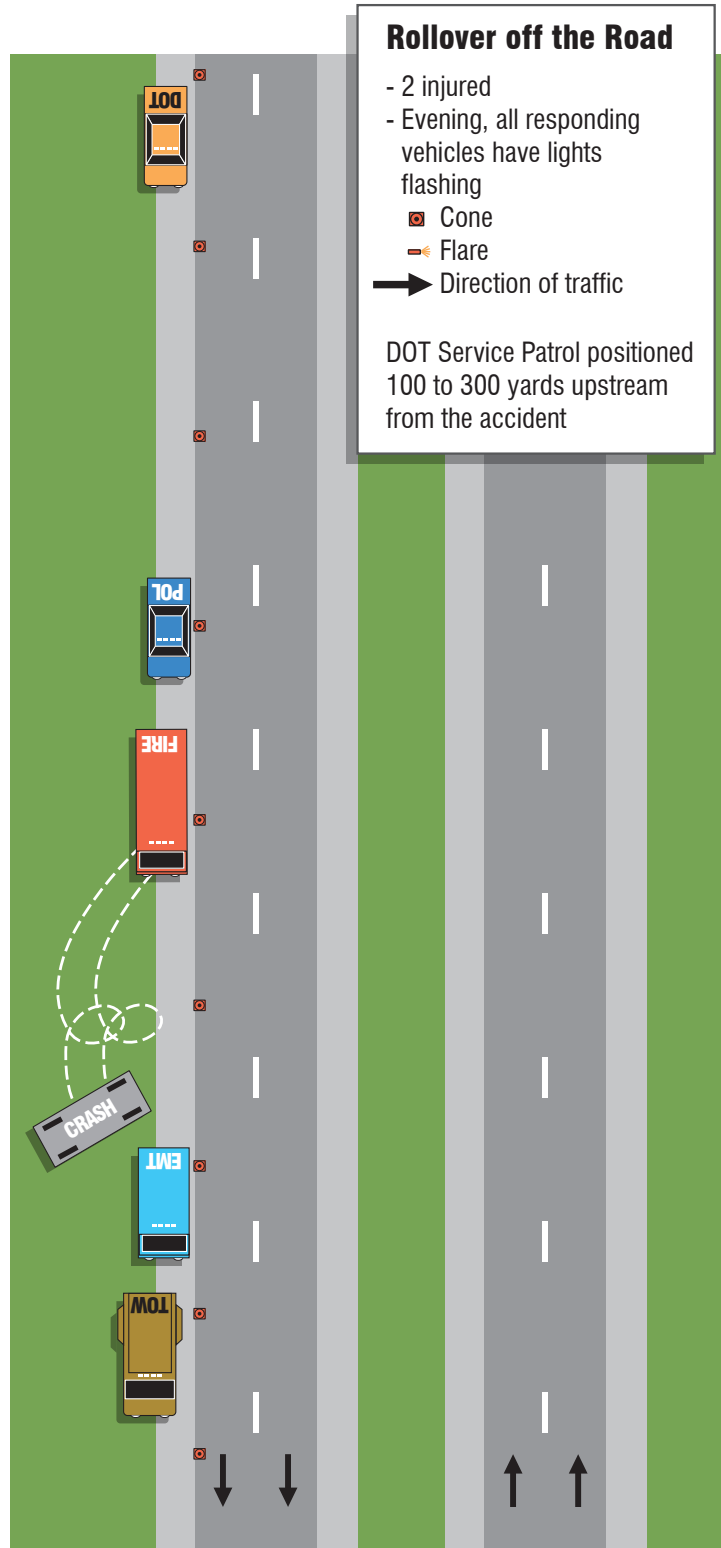


Figure 10-9. Rollover off the Road

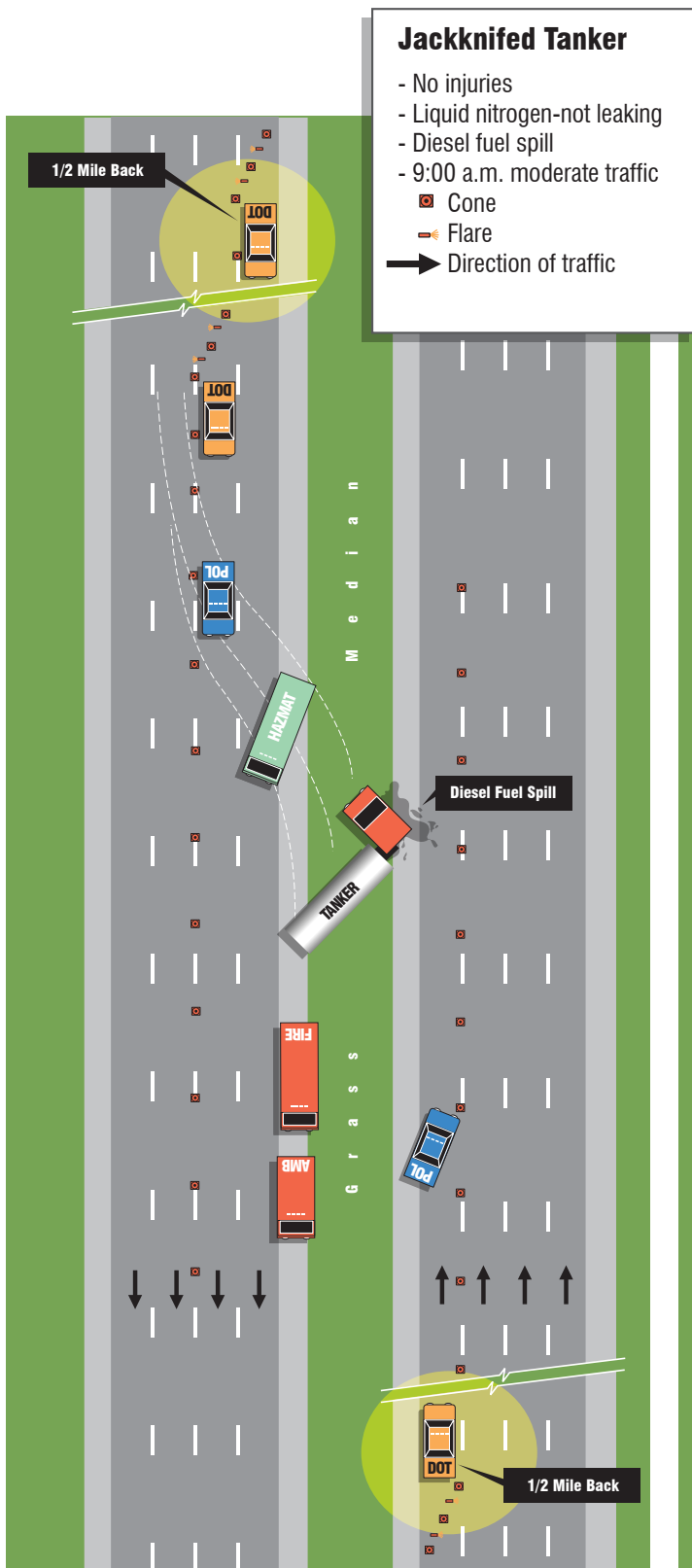


Figure 10-10. Jackknifed Tanker

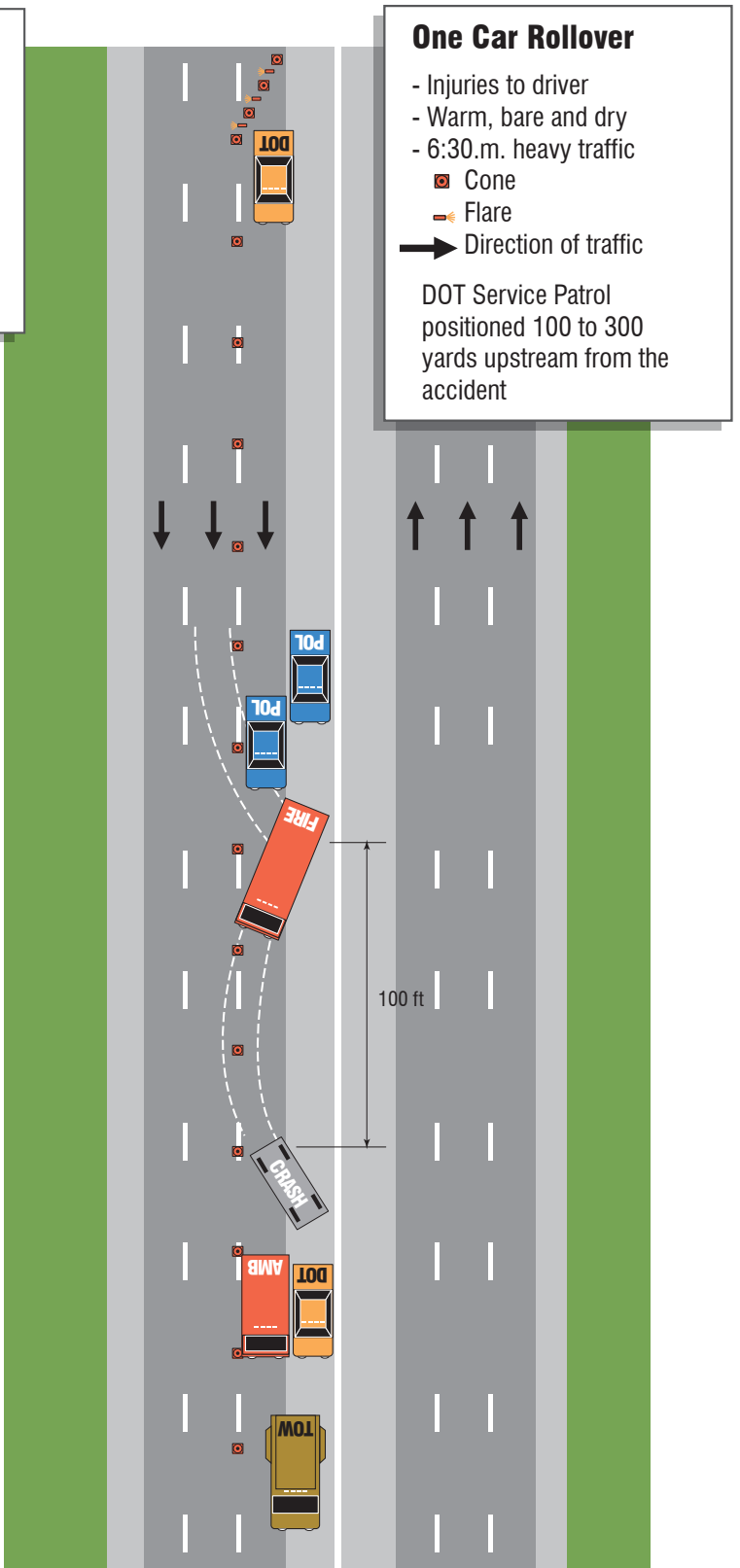


Figure 10-11. One Car Rollover



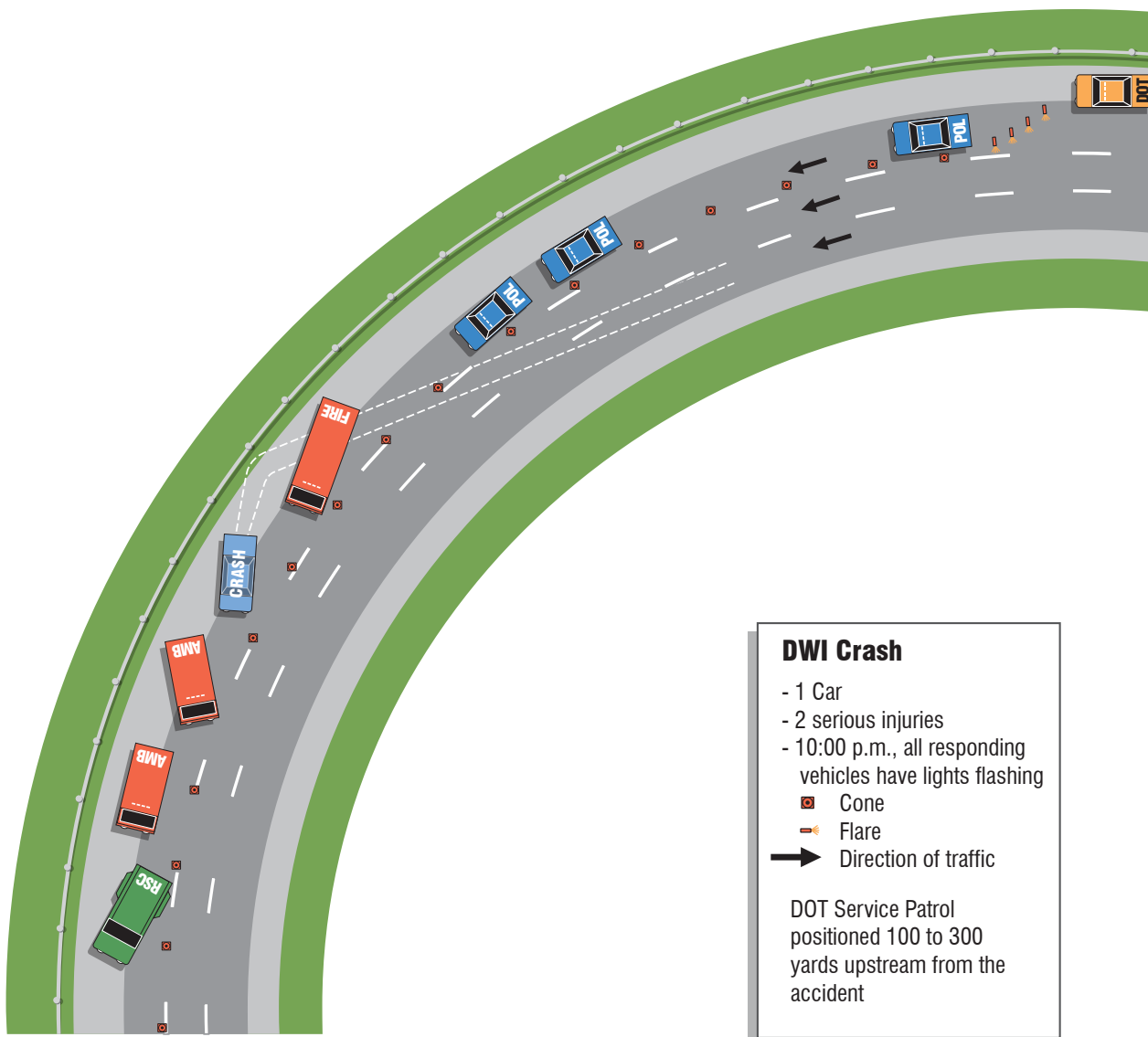


Figure 10-12. DWI Crash

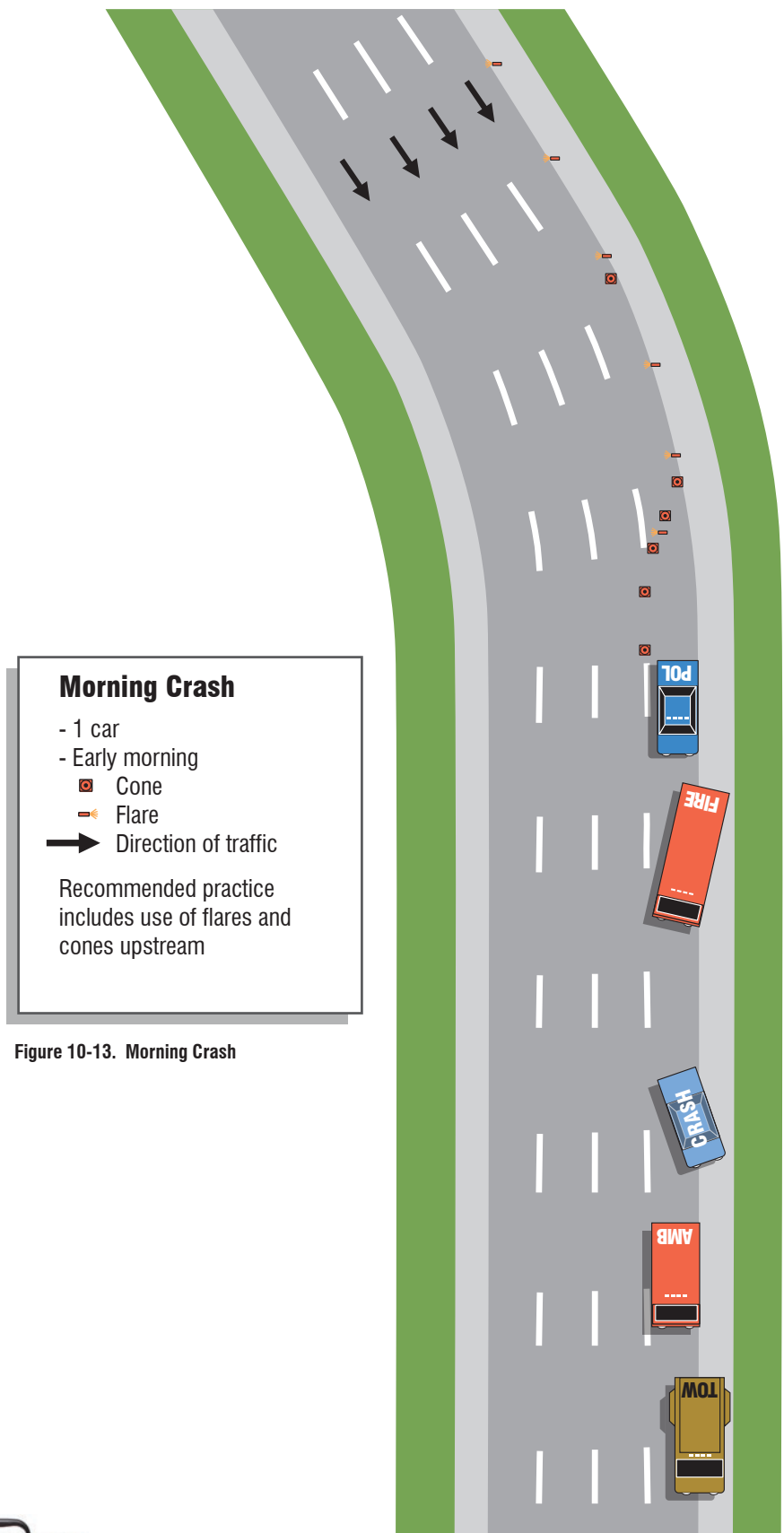


Figure 10-13. Morning Crash



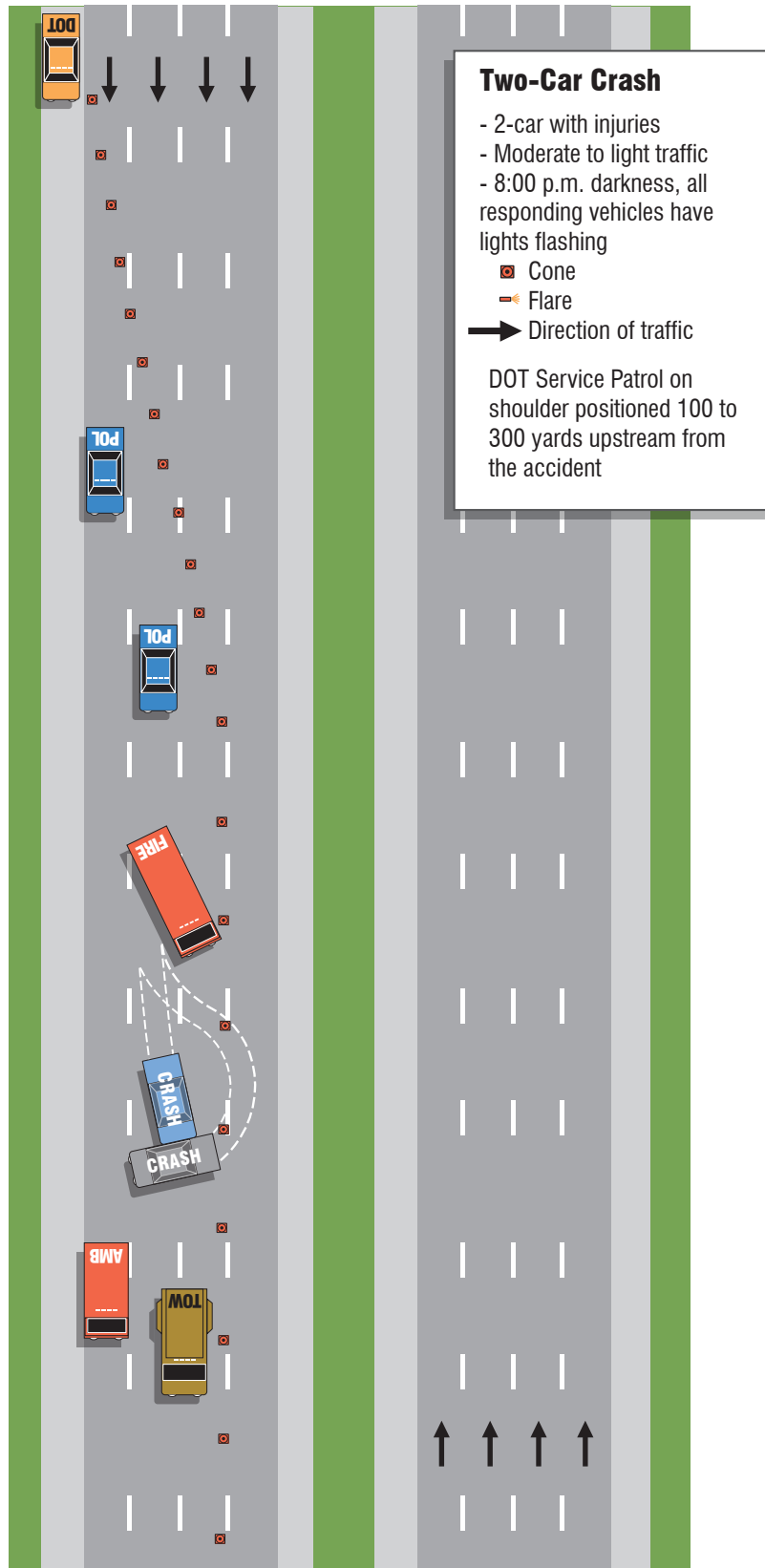


Figure 10-14. Two-Car Crash

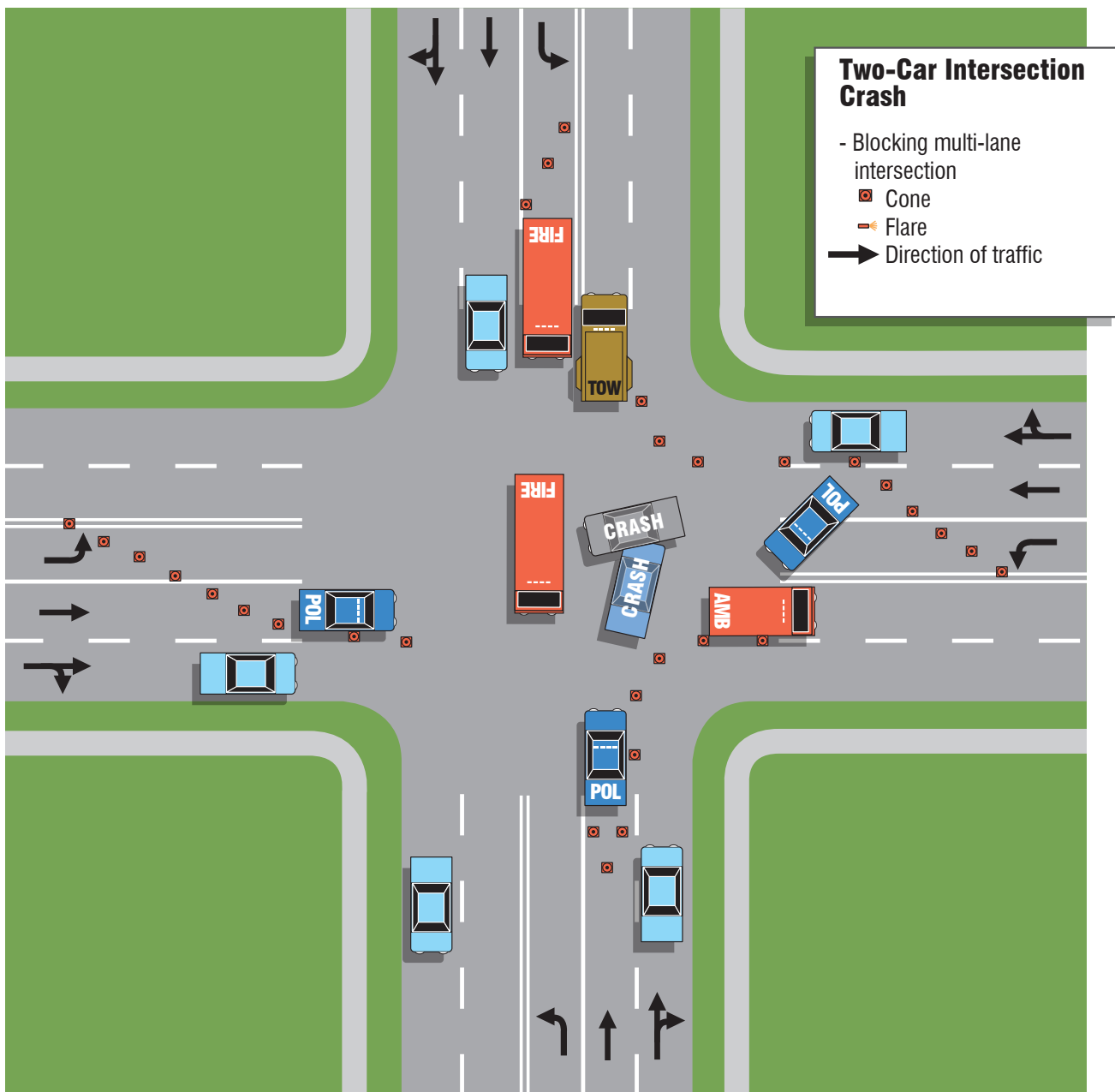


Figure 10-15. Two-Car Intersection Crash





10.6.2. Vehicle Debris

We now get into specific practices for clearing people, vehicles, and property from the roadway, starting with the latter. Any debris on the roadway will inhibit traffic from moving past an incident efficiently because the drivers are concerned about blowouts themselves. All debris should be removed from the roadway as quickly as possible, by whatever means reasonably available. The objective is to clear the lanes and get traffic moving. If multiple lanes are initially closed, clear each lane one at a time, moving the debris into the adjacent lane first, rather than removing some debris all the way across the roadway. Getting each lane reopened one at a time gradually restores capacity safely.

Obviously, calling in equipment to help in this practice is important. A sweeper or even a small plow can clear much faster than a tow truck operator with a broom. The heavy-duty towing and recovery companies in some locations also have specialized equipment like end loaders, skid-steer (or track) bucket loaders (commonly called “bobcats”) with attachment points for sweepers and forks. These can work alongside DOT crews to expedite the clearance process.

10.6.3. Vehicle Fuel Spills (Non-cargo)

In the case of minor non-cargo fluid spills from the vehicle or trailer, responders should clean these up rather than waiting for a hazardous material handler, which would significantly delay

incident clearance. The following steps should be taken by any responder able to do so, in this order:

- Stop leaks—plug the hole or otherwise stop any continuing leak, such as from a saddle tank first so the quantity of the spill is minimized.
- Contain fluids—contain the leak to keep it from spreading by building a dike around it using any material available. Preferably this is off the roadway, but if on the roadway, use judgment about allowing a small amount of fluid to remain in an open lane so as not to lose that lane’s full capacity. Consider using simple strategies like buckets or a plastic “kiddy pool” to keep spilling non-cargo fluids off the pavement or roadside environment.
- Store fluids—as the fluids are recovered, place them in appropriate containers off the roadway and shoulder for later pick-up.

Florida’s “Guidelines for the Mitigation of Motor Vehicle Fluids (Non-Cargo)” offers some good tips for doing the above and defines qualifying spills as follows (see [Guide_Spill_FL](#)):

- Spill means the expulsion of any vehicle fluids upon the roadway itself or the abutting areas that cause an immediate threat to traffic by hindering its normal operation in any way (covering surfaces causing slicks, dripping onto traffic below, etc.).
- Vehicle fluid, or simply fluid(s), are non-cargo liquid materials that are spilled from the vehicle, such as gasoline, diesel fuel; motor oil; coolants; and transmission, brake, and hydraulic fluids.



These may originate from the engine, drive train, fuel tanks, wheel assemblies, compressors, air handlers, or any component of the vehicle, including tractor and trailer, as applicable.

The guideline goes on to describe how these spills can be mitigated in these steps:

- Identify spill as a vehicle fluid,
- Stop leaking material at the source,
- Contain and limit spill from spreading,
- Apply available absorbents,
- Sweep material off travel lanes,
- Do a second application if necessary,
- Gradually restore traffic flow,
- Identify responsible party,
- Mark location of material, and
- Assure proper notification made (State Warning Point).

10.6.4. Vehicle Cargo Spills

When the spill is commercial cargo, a number of legal and practical issues abound: Is it a liquid or a fluid? Is it a hazardous material? What additional response is required? How quickly and safely can the travel lanes be cleared? Will the towing company or even DOT take possession of the load or will the owner of the load be bringing another



truck to reload the material? Etc. States have different laws covering this issue and it is important that responders be fully aware of their laws. In the context of quick clearance, the issues below (at a minimum) should be considered.

Environmental Concerns

If a spill, debris, or the vehicles themselves (as in danger of fire) involve a threat to the environment (hazardous or not) responders should take appropriate actions to minimize the threat, second to the safety, of all persons concerned. Appropriate environmental agencies should be notified as quickly as possible, but do not wait until they arrive on scene to take corrective or containment actions. Working with the Unified Command System process, identify immediate strategies to keep a bad situation from getting worse if allowed to escalate.

Ownership Issues

There is a saying in the towing industry (at least in some states) that “Cargo is Gold,” that is the wrecker operator can benefit financially from whatever cargo they can recover. The good news is that this might speed the clearance process if they move the cargo immediately out of the road. The down side is there may be some on scene that are so protective of the cargo that the travel lanes will be kept closed while the truck is unloaded by hand and less attention is paid to clearing the crash vehicles. Responders should prioritize the clearance operation and remove whatever best results in opening the lanes. Ultimately the responsible



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party will have to pay for the cleanup. If that party is not on scene, it is critical that clearance not be delayed until, for example, the driver or owner contacts his/her insurance company.

Non-HAZMAT Spills

Non-hazardous spills beyond those discussed above, or minor non-cargo vehicle fluid spills should be handled as quickly as possible by the appropriate agency. It is critical that the early responders alert the appropriate agency with detailed information about the type of cargo or material spilled. For example, a spilled load of gravel would require an end loader, while a large steel coil may require a rotator wrecker or crane, and live animals would need a veterinarian present.

HAZMAT Spills

When the spill is a hazardous material, special laws and/or regulations generally come into play. Generally, these spills must be cleaned up by a licensed HAZMAT-handling company (or a few public agencies that are equipped to handle these). In any case, the following steps should be taken in this order or simultaneously to the extent possible—use teamwork:



- Identify the material without taking personal risks,
- Secure bystanders or potential victims from exposure,
- Notify the appropriate HAZMAT unit as quickly as possible to alert them,
- Cordon off the impacted area,
- Notify the TMC or DOT and begin traffic control procedures, and
- Start to implement traffic diversion on alternate routes.

10.6.5. Multiple Vehicle Crashes

Crashes involving multiple vehicles will obviously be more severe and take longer to clear than single-vehicle crashes. There are generally more victims, more personal property and cargo, and more vehicles to remove from the scene. Once such an incident has been confirmed, the appropriate assets should have been dispatched in the response stage. Now, in the clearance stage, the following guidelines should be considered:

- Secure the entire crash scene as quickly as possible.
- Agree upon the unified incident command structure, which in this case might warrant multiple sub-commanders dealing with different areas of the scene, but in any case there should still be one overall commander.
- Allow fire rescue and EMS to provide their services.
- Secure the scene and allow law enforcement to complete their investigation.
- Remove those vehicles and debris that can most quickly open one or more lanes.



- Given the total quantity of crash material, remove as much from the highway scene as soon as possible.
- Once the lanes are clear the wrecked vehicles can be towed from the scene.

10.6.6. Secondary Crashes

The best defense against secondary crashes (or other incidents, such as engine stalls) is avoidance, but this is not always possible. Secondary incidents have some of the characteristics of multiple vehicle crashes, but they are separated along the highway. Indeed, it is well known that secondary crashes are often more severe than the original incident.



One effect that secondary incidents have is to “meter” the traffic approaching the original incident, so the responder teams might consider redeploying some assets from the original incident to work the secondary one. Such a decision, however, requires a thorough grasp of the whole picture, which is generally not

possible from either scene. This suggests that the location to view the totality of events might be at a TMC or central dispatch center. Each scene would still need a Unified Commander.

Many law enforcement agencies operate mobile command centers, which might be a good solution, but ideally the mobile command center would have access to all available data and information, including video feeds.

In any case, the “big picture” vision is that the secondary incident is now the root cause of further increasing congestion and shock waves are now propagating upstream from there, opening the possibility of tertiary crashes.

10.6.7. Catastrophic Incidents

An incident is classified as catastrophic when one of more of the following occurs:

- The incident involves a relatively large number of vehicles with multiple victims, such as the famous fog-related crash in Tennessee,
- Fire and/or hazardous materials are spreading rapidly, as has happened in many cases,



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- Multiple facilities are impacted, such as the Atlanta truck fire under a major crossing overpass that shut down both freeways in both directions,
- Weather conditions such as ice cause multiple crashes on many facilities, and
- Any number of other causes.

The UIC structure for these types of incidents warrant the full implementation of NIMS. This is why it is important that all responders, not just fire rescue, law enforcement and emergency managers, have NIMS training. In specific terms of clearance, the following issues will govern the migration efforts:

- Clearly resources will be stretched thin, so it is critical to have a central command post with multiple agency representation to coordinate the response. In most regions, the Emergency Operations Center would be the likely candidate. All appropriate stakeholders have their roles and responsibilities for EOC operations, so the process should be well known. The challenge is to activate the EOC as early as possible to quickly take charge of the response and clearance process.
- Allocate the limited resources to the most critically needed site, but avoid unnecessarily re-deploying assets that just waste time in transit.

10.7. Investigation

Investigation of incidents, particularly for crashes and HAZMAT spills, is a critical necessity. Its role is clear—cause and effect need to be determined for the

assignment of responsibility, both civilly and sometimes criminally.

10.7.1. Crash Investigation

Most states require law enforcement to investigate all crashes involving injury or death, and any property-damage-only (PDO) crash in which the estimated damage exceeds some threshold (generally \$800-\$1000).



Critical injury, criminal, or fatality crashes may also require an accurate mapping of the scene. The five common methods used today are:

- Manual mapping and tape measuring—this is very time consuming and labor intensive on large scenes.
- Total station surveying systems—allows more efficient capture of on-scene measurements. They can also be operated with fewer lane closures. A single person can operate newer equipment. The data is uploaded to a computer after clearing the incident. Scale drawings can be plotted from using computer-aided drafting software packages.
- Photogrammetry—uses markers to identify points of interest and a measured control link, then a single officer can photograph the entire scene and all mapping and measuring is done later



by software. The photos also serve as visual evidence as well. This is by far the fastest investigation technique.

- Global Positioning System—GPS systems are used for investigations, primarily on facilities that have been previously mapped using GPS, such as major intersections. When it has been mapped, the investigators can mark each point and overlay them onto a previously created map of the intersection.
- Laser technology—laser guns are often used as a speed enforcement device, but can also be used to measure crash scenes. This method is less expensive than total station, usually can be completed by one investigator instead of two, and can be downloaded into a drawing package. Its main disadvantage is accuracy for short measurements.

In Florida, the entire Florida Highway Patrol is transitioning to photogrammetry using cameras, training, and software procured for them by the Florida DOT, which was done precisely to speed up investigations and clear the roads quicker. The software license is available to local agencies at the same discounted cost that the DOT paid. Georgia is considering using photogrammetry as well, at least in the Metro Atlanta area.

Some general hints or best practices, regardless of the techniques used are as follows:

- Seasoned investigators on major route crashes,
- Use tape recorder to make notes “on the go,”

- Take lots of photographs,
- Do most paperwork off scene, and
- Do a graduated investigation based on criminal charges, that is the more serious the potential charges, the more “in-depth” the investigation.

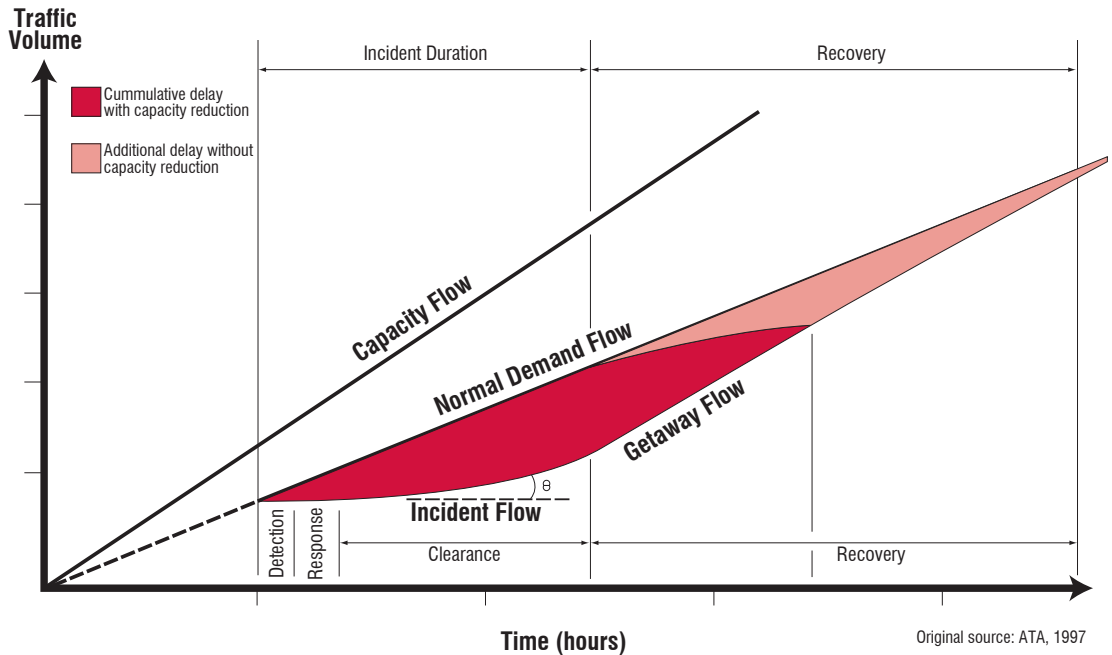
10.8. Recovery

As seen in Figure 10.1, recovery time is the time it takes to restore traffic to the “normal” conditions that would routinely occur at the time recovery ends. Figure 10.16 illustrates the dynamics of an incident (ATA, 1997)⁵⁷. As one can see, the recovery time is indeed longer (not exaggerated here in the interest of space), and the location of the congested queue travels upstream. This explains why travelers often are caught in one of the shockwaves and by the time they pass the original scene there may be no evidence of what happened; thus they wonder why they were delayed.

Although there are no known scientific studies to confirm this, it is a common belief in the TIM community that recovery takes four to five times longer than the sum of the previous stages: detection, response, and clearance. This concept came out of Caltrans sometime in the late 1970s or early 1980s. Caltrans looked at the slow rate of recovery and noted from plots of many incidents that the time of recovery was contributing substantially to the total vehicle hours of delay at any incident. Caltrans then began using this point to sell their incident management program, emphasizing the importance of saving time; namely “for every minute you can save in early detection, quick

⁵⁷ Also see (FHWA, 2001).





Original source: ATA, 1997

Figure 10-16. Incident Due to Delay in Capacity Reduction

response, and rapid removal, you could save four to five minutes of delay for every car caught in the queue.”⁵⁸

A good presentation that illustrates the impact of the growing queue is included on the DVD as *Movie_Recovery_WA*. It shows the highway condition map from Seattle, Washington alongside some video clips of the actual incident. The queue moves 12 miles upstream and there is still congestion long after the incident itself has been cleared. The narration also provides some quick clearance suggestions.⁵⁹

Thus, it is very clear why it is so important to practice quick detection, response, and particularly clearance—the payoff in reduced recovery time can be up to five minutes on average for every minute saved. But, positive action can

continue during the recovery stage to further reduce its duration. These actions are:

- Continue providing traveler information via far upstream DMSs, HAR, 5-1-1, and most importantly the media to “encourage” diversion away from the impacted route.
- Continue managing the back of queue to avoid secondary crashes that would further exacerbate the incident.
- Reduce the number of response vehicles as soon as possible.
- Limit the emergency lighting of any response vehicles left at the scene.

10.9. Performance Measurement

As in all endeavors, it is important to have performance measures to assess the efficiency of the TIM/QC program. They are also vital to getting

58 Source: e-mail from David Roper (retired Caltrans Traffic Operations) to CE Wallace et al., October 10, 2005.

59 Presentation prepared by PB Farradyne, narrated by John O’Laughlin.

management support for the financing of the program.

A report prepared for FHWA entitled “Incident Management Performance Measures” (FHWA, 2002a) covers a wide range of performance measures used around the country. The report’s recommendations read as follows (also see Guide_TIM_PM_FHWA):



First, incident management officials need recognize that having a “one size fits all” approach for incident management performance measures may not be possible. The same set of performance measures that are used to evaluate the more routine types of traffic incidents (such as a two-vehicle collision, or a stalled vehicle) cannot be used to assess the performance of the system during complex, major events (such as a multiple vehicle collision involving multiple fatalities and/or serious injuries with major structural damage). It is recommended, however, that all

agencies reconstruct and review the timeline of response events that occur with such incidents to identify and resolve potential problems with the responses prior to another major event.

For the more “routine” type of incidents, there seems to be a need for two sets of performance measures. The first set would be used to describe the overall effectiveness and responsiveness of the incident management process in a region. Administrators in the various response agencies could use this first set of performance measures to identify mechanisms for improving response and coordination between agencies. This first set would include measures such as the following:⁶⁰

- **Incident Notification Time** – This would represent the time it takes for all the appropriate response agencies to become aware of an incident. It would be computed by taking the time differential between when the first detection/report of an incident to any agency (whether it be fire, police, 9-1-1 dispatch, or TMC) to when the other response agencies also receive notification of the incident. This performance measure would need to be computed separately for each of the official response agencies.
- **First-Responder Response Time** – This would represent what many transportation agencies and emergency service responders are calling “response time.” This performance measure would be the time differential between the first report of an incident to any agency to

⁶⁰ Not that these are similar to, but not exactly the same, as those defined in Section 5.3.





- when the first official responder from any agency arrived on the scene.
- **Incident Assessment Time** – This time would represent the duration it takes the first responder to determine what needs to be done to clear the incident and when capacity of the roadway is first partially restored. This performance measure would be defined as the time differential between when the first responder arrived on the scene and when the first action is taken to fully or partially restore capacity (for example, opening one previous blocked lane of traffic).
 - **Total Blockage Duration** – This time would represent the total amount of time that freeway capacity is reduced. This performance measure would be defined as the time differential between when the first responder arrived on the scene to when the freeway capacity was fully restored (i.e., all lanes opened).
 - **Total Incident Duration** – This time would represent the total amount of time that the incident had an effect on traffic operations. This performance measure would be defined as the time differential between when the event was first reported to any official response agency until when the last official response vehicle left the scene.

Other statistics that agencies may want to collect include the following:

- The frequency (or percentage of total incidents) at which each official response agency was the “first detector.”
- The frequency (or percentage of total incidents) at which each official response agency was the “first responder.”

- The frequency (or percentage of total incidents) where capacity was partially restored.
- The frequency (or percentage of total incidents) at which each official response agency was the last to leave the scene.

Obviously, this evaluation becomes more feasible and practical for locations where record-keeping systems from all the response agencies are integrated and coordinated. Being able to perform this type of analysis requires that the evaluator have the capabilities for constructing a complete timeline across agencies for every incident. Recognizing its complexity, it is recommended that this type of evaluation occur annually in most regions.

The other set of performance measures that agencies may want to consider collecting would be those that are directly related to their own specific mission in the incident management process. An example of this type of performance measure would include the “response time” that most emergency service providers and service patrol operations are currently collecting. These types of performance measures would be generally geared toward helping agencies track the use of resource or to assess an agency’s performance towards a specific objective (i.e., the fire department’s objective is to have a 3-minute response time to all alarms).



In most locations in the United States, the role of the transportation agencies (with the exception of service patrols) is one of support and demand management. For the agency specific performance measures, transportation agencies, and in particular TMCs, need to develop objectives and performance measures that are more directly related to their specific mission in the incident response process. Examples of these types of performance measure might include the following:

- The time lag between when an incident was reported to a TMC and when devices were activated on the roadway;
- The average delay to motorists through an incident site;
- The average queue length associated with different incident types; and
- The average amount of diversion generated by the traffic control devices used in managing an incident.

How to actually measure these performance measures directly in the field and how they relate to the objectives of a region's incident management process is the subject of future research.

Several states have adopted specific performance measures. For example, Florida's TIM Strategic Plan lists them for TIM in general and for FSPs (FDOT, 2006b-c), also see Plan_TIM_FL_RD & SP.

At this time, the Coalition has no explicit guidance for standardizing performance measures throughout the corridor, but will likely endorse any recommendation that comes from the NUG.

Reporting systems for TIM/QC performance measures were covered in Section 10.5.2. Equally careful thought should be put into reporting systems as the performance measures themselves, because the latter are useless if no one reads them. The Georgia DOT has several excellent reports that cover the NaviGator System as a whole (including some TIM data) and its HERO FSP. Samples are on the DVD as Report_ITS_GA and Report_HERO_GA, respectively.

10.10. Post-Incident

Another important element of TIM is the review of how incidents were managed following an event and documentation of same.

10.10.1. Post-Incident Debriefs

Following any serious incident (ideally Level II, but certainly Level III) the affected agencies should conduct a post-incident debriefing or review (also called critical incident review, or CIR). The following guidelines are given:

- Conduct the debriefing as soon as possible following the incident;
- Involve all responders who participated and the TMC if involved;
- Do not discuss or assign blame for things that were not done correctly—the





- goal is to learn how best to manage the next similar incident; and
- Identify training, equipment, and other resource needs that will help in the future.

A technical memorandum describing this process can be found at Guide_CIR_FL_D1.

10.10.2. Critical Incident Reports

Another important tool to document the incident, and management thereof, is a critical incident report (also CIR). This report documents the forgoing debriefs, but they can also be used to document any incident, whether the subject of a post-incident debrief or not. Appendix A of the foregoing guide has an outline that can easily be adapted to a stand-alone critical incident report.

11. Public Awareness and Outreach

11.1. Traveler Information Systems

We have mentioned throughout this Toolkit that keeping the public informed during an incident is a critical step to managing the incident. This serves three primary purposes, as mentioned before:

- It alerts drivers to the incident so they can be alert and avoid being involved in a secondary incident,
- If they have the opportunity, they might be able to divert to an alternate route, or if they have not left their origin yet, they might be able to delay the trip, and

- Even if they have no recourse but to ride out the delay, they have more peace of mind knowing what the root cause is.

The following traveler information systems are commonly used to inform the public about incidents:

- Dynamic message signs—display messages like “ACCIDENT AT XXX/RIGHT LANE BLOCKED/EXPECT DELAYS,”
- Highway advisory radio (HAR)—similar to DMS, but a more lengthy message can be given,
- Diversion guidance—alternate routing can be given on DMS and via HAR if this is permitted by local policy,
- Information service providers—who provide traveler information by a range of media, and are generally more flexible in offering alternative routing,
- Web sites—can alert travelers prior to the trip,
- Media feeds—particularly radio are very effective,
- 5-1-1 services—both voice and Web,
- Roadway condition systems—more comprehensive information systems, generally Web-based, and
- Queue management—is a means of alerting drivers to the incident ahead, by virtue of the presence of the responder.

11.2. Public Information Campaigns

Most agencies engage in explicit campaigns to target public attention on specific safety/TIM/QC issues. A series of campaign examples follows:



Awareness of “Move” Laws

These are aimed at explaining that it is the law to move the vehicle if possible. Some samples are listed as follows:

- A move-it movie from Orlando (Orange County, undated), see [Movies_Move_FL](#),
- A brochure from the same campaign, see [Flier_Move_MetroPLAN](#),
- Another flier from Georgia’s “Steer It and Clear It” campaign, see [Flier_Move_GA](#),
- Another movie on “Steer It/Clear It” from Houston’s TranStar program (TranStar, undated), see [Movie_Move_TX_Houston](#).

Driver Safety in Incident Zones

These would be aimed at alerting drivers to be particularly careful when driving through an incident situation.

Avoid Rubbernecking

Rubbernecking is nearly as serious a cause of congestion as the incident itself, and impact the opposing direction as well. A campaign addressing this would encourage drivers to watch the vehicles ahead and practice defensive driving rather than gawking at the incident scene.



Suppression of Road Rage

Road rage is frequently the cause of incidents these days. Anti-rage campaigns would encourage drivers to suppress their anger and channel their energies toward defensive driving as well.

Partnering with Agencies and Companies

As noted in Section 8.8.6, utilities and other similar service organizations and companies mail out public service materials all the time. While it is usually their own materials, agencies have been successful in getting these organizations to include fliers on safety/TIM/QC like those shown above, or smaller versions thereof in their mailings.

There are a number of other cooperative arrangements that can be used. The Florida DOT was very successful in getting companies and organizations to help with the roll-out of their statewide 5-1-1 service, as follows:⁶¹

- Free ad in national magazine, see [Admin_Aware_511_ARRP](#),
- Logo on rental car maps, see [Admin_Aware_511_NatlCar](#),
- Stickers on national association maps, see [Admin_Aware_511_AAA_Sticker](#), and
- Posters in partner’s public offices, see [Admin_Aware_511_AAA_Poster](#).

Partnering with Media for Public Service Announcements

Similar to the above, broadcast media will air public service announcements (PSAs) without charge; indeed they are

61 All courtesy of Global-5, who designed these.



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required to air so much PSA time to retain their licenses. However, these often do not air at prime viewing times; indeed they often run at late night or midday, so the agency might consider a combination of free and paid PSAs.

In the Florida 5-1-1 campaign, three TV PSAs were developed and aired. One stated the Governor and two features prominent Florida university head football coaches. All of the VI time and the air time were provided without cost.

12. Corridor-wide Traffic Incident and Emergency Management

This Toolkit and the accompanying Workshops provide a number of platforms and threads for creating common policies and practices for TIM/QC across the Corridor. It is not within the purview of the I-95 Corridor Coalition to recommend specific policies and practices to its members, other than by implication through their inclusion in this Toolkit.

It is within the purview of the Coalition to suggest a roadmap for coordinating incident events across multiple state/jurisdiction boundaries.

The first order of business—the beginning point of the roadmap—is to form a group to lead the effort. We recommend a new Task Force on Corridor-wide Traffic Incident and Emergency Management (or CTIEM Task Force) be created for this purpose. Membership should come from all HOGs and the central CIM Track. The Coalition General Consultant can provide technical and administrative support.

In the months following the publication of this Toolkit, a series of workshops will have been presented to the five Highway Operations Groups (HOGs). During these presentations, an agenda item will include the gathering of feedback on what specific strategic and tactical directions the members wish to take to grow more closely together in their TIM/QC policies



and practices. The CTIEM Task Force should collect these and recommend a prioritization of actions that would then be recommended to the Coalition Steering Committee beginning at the 2007 Annual Meeting and annually thereafter.

Some specific actions that could well arise from this effort are as follows:

- Workshops among the regional HOGs to refine details of further actions and to disseminate agreed policies and practices;
- Develop the specific language for recommended laws, policies, and practices, using this Toolbox as a basis;
- Develop interagency training courses to implement specific practices;
- Develop protocols for inter-agency communications to enable multiple agency types to communicate with one another;
- Develop protocols for inter-regional traveler information, alerts, and notifications (for example, using the I-95 corridor Coalition Incident Management Network (based at TRANSCOM in the north and coming to Atlanta in the south), and eventually using the full Information Systems Network, ISN); and
- Develop public awareness materials for distribution and dissemination throughout the Corridor.

13. WHAT IS COMING IN THE FUTURE

13.1. Variable Speed and Lane Control

Variable speed limits are not commonly used in the U.S.A., but a number of agencies are considering them, particularly in work zones; indeed they are used for advisory purposes in a number of locations. They can be effective in incident reduction and management, too. In Europe freeway management systems that detect congestion, initiate speed and lane-use controls, and warn drivers of slow traffic were demonstrated to decrease accident rates by 20-23% (FHWA, 1999).

Lane control (the familiar red “Xs” and green arrows) are commonly used in this country, albeit most often in situations where lane use changes by time of day (such as reversible lanes). They also can be valuable to alert drivers that a lane is closed ahead and are used for this purpose in Detroit, Ft. Worth, Washington, DC, and many other urban areas.

In-vehicle signage in the future will make these applications much more effective.

13.2. Smart Cards for Responders

The State of Maryland has initiated a pilot project to use smart cards to enhance identity management at emergency scenes. The state will issue universal identification cards called the First Responder Authentication





Credential (FRAC) to 5,000 firefighters and police officers to be used at controlled facilities or in responding to significant emergencies. Intended more for emergency management than incident management, there could nonetheless be applications in TIM, particularly for major incidents.

Quoting from the press release announcing the pilot program, “Maryland is committed to doing all we can to enhance interoperability and to provide the safest, most efficient way for our first responders to get an emergency under control,” said State Coordinator Brad Jewitt of the Maryland Department of Transportation. “The lessons of 9/11 and Katrina have taught us that we need to do a better job with both access control and identity management at the incident area. Once fully implemented, first responders who cross jurisdictional boundaries will have a credential that will strongly authenticate who they are and what skills they possess, giving incident commanders better control of the scene and faster access to what assets are available.”⁶²

13.3. Unpiloted Aerial Vehicles

An unpiloted aerial vehicle (UAV) is an aircraft (either fixed wing or rotary) that can fly without any person on board, either under remote control, as in the case of model aircraft, or autonomously. UAVs have gained a certain notoriety from their use in the Iraq war, where the advantages of their safety are obvious. In transportation or other domestic



applications, like fire fighting, flood management, etc., the advantages of unpiloted aircraft are more related to the quick-launch capability, small size, and much lower cost. Several example UAVs are shown in the sidebar.

In theory, UAVs would be very good tools for TIM, since they are relatively inexpensive, can be launched from a truck or the ground, can quickly fly to and around an incident scene, can beam video and other media to ground-based receivers, and some can even be preprogrammed to fly autonomously. The latter point is, however, the main issue. The FAA contends that fixed-wing UAVs are covered by FAA regulations (even if they technically qualify as “model airplanes”) and thus cannot be flown autonomously without a person in constant visual contact, and in some FAA regions must even have pre-filed flight plans. This has basically blocked their common use for transportation purposes. A technical memo produced by the Florida DOT described the pros and cons and explains the regulatory challenges (see [Study_TechMemo_UAV_FL](#)).

As noted in Section 10.4, however, remote-controlled craft are being used

⁶² See http://www.mdot.state.md.us/News/2007/January/Firefighter_smart_card.htm.

successfully in several locations to date. It is hoped that in the future, the FHWA and FAA can work out a practical arrangement that will permit the widespread use of UAV for TIM, particularly longer range craft flying autonomously.

13.4. Vehicle Infrastructure Integration

Vehicle Infrastructure Integration (VII) is a national public-private partnership led by the Federal Government and a coalition of automobile and electronic manufacturers. In essence, VII will provide the ability for vehicles to exchange data with one another, and the highway infrastructure, to provide advanced ITS services such as the following:

- In-vehicle signing and heads-up displays,
- Vehicle-vehicle collision warning,
- Intersection-based collision warning,
- Traffic signal and stop sign violation avoidance,

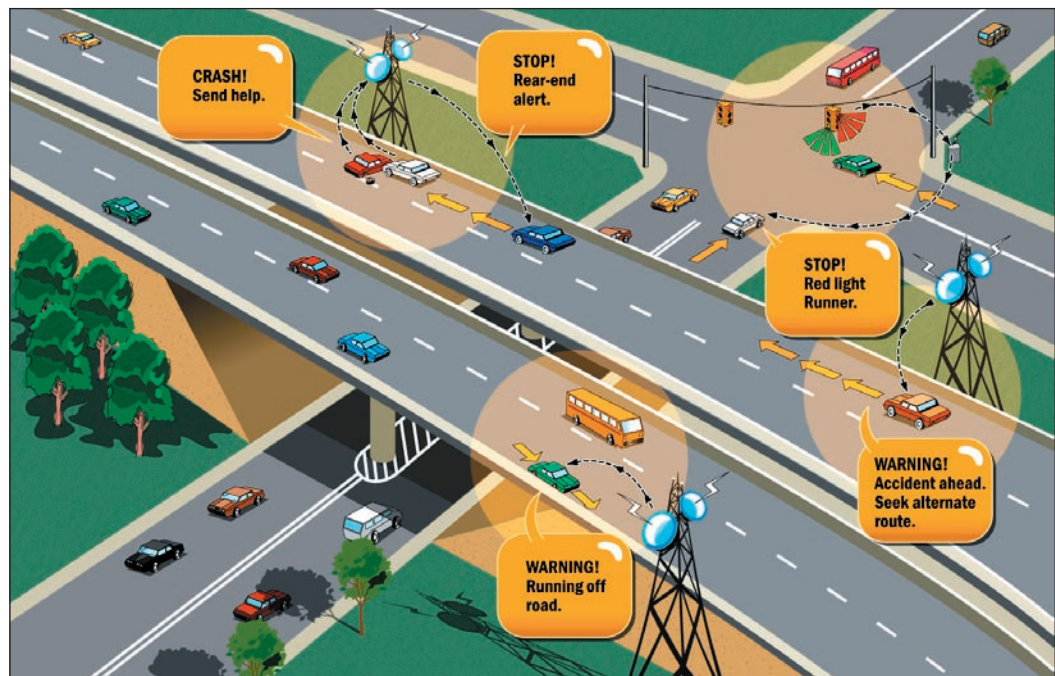
- Signal preemption/priority for both emergency vehicles and transit, and
- Traffic signal adaptive control.

Field operational tests are already demonstrating the extreme value of VII. For example, incident notification time was cut by two-thirds or more in an Automated Collision Notification (ACN) Field Operational Test (NHTSA, 2001). The evaluation study noted, “The average incident notification time for vehicles equipped with automated collision notification (ACN) was less than one minute, and in some cases was as long as two minutes. The average incident notification time for vehicles without ACN was approximately three minutes, and in some cases was as long as 9, 12, 30, and 46 minutes.”

More information can be found on FHWA’s⁶³ and ITS America’s⁶⁴ VII Web sites.

63 See <http://www.its.dot.gov/vii/index.htm>.

64 See <http://www.itsa.org/viitechdemos.html>.



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PART 3 CONTENTS: Agency Responsibility in Traffic Incident Management



Road Maintenance



Towing



Fire Rescue



Planning/Engineering



Service Patrol



TMC



EMS



Medical Examiner



Traffic Homicide



Environmental



Law Enforcement



Media





Road Maintenance



EMS



Towing



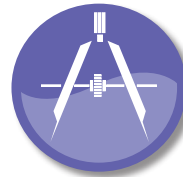
Medical Examiner



Fire Rescue



Traffic Homicide



Planning/Engineering



Environmental



Service Patrol



Law Enforcement



TMC



Media

Agency Responsibilities in Traffic Incident Management

In this part, we present the individual agencies' roadmaps for managing traffic incidents and their roles. First, is a check list for any agency—or better, a group of agencies—starting up a traffic incident management/quick clearance (TIM/QC) program. The basic steps are given below.⁶⁵ This “checklist” also is included on the QC DVD as “Quick Clearance Program Implementation Checklist,” see the first spreadsheet of the file *Guide_QC_Implement_Checklist.xls*.

1. Establish your baseline—where is your jurisdiction regarding statutes, policies, and procedures? Where does executive leadership stand? One way to do this is to complete the TIM Self-assessment in Part IV. Another (and both will complement one another) is to check off the laws, policies,

practices, etc. that are in place in your region (see *Guide_QC_Implement_Checklist.xls*, named sheets).

2. Identify TIM/QC counterparts in each pertinent state/local discipline and contact them. Develop a list of these and build upon it as you progress. The key people in each agency should become a champion for that agency.
3. Hold a TIM/QC kick-off team meeting to start establishing/cementing relationships. Some regions have brought in national experts to present a “TIM Executive Forum” intended to “sell” the TIM/QC philosophy to upper management. The Executive Workshop that is a companion to this Toolkit serves this purpose. Sometimes this is followed by a basic TIM/QC training—such as the Practical Workshop associated with

⁶⁵ A summary version of this roadmap was included in the front matter of the Toolkit as a map to where the relevant material can be found in the Toolkit.





- this Toolkit. Together, these might be considered the founding of a regional TIM Team.
4. Identify champions in each discipline and select/recruit one or two to lead the overall effort. These are essential in keeping the energy and momentum going. While it is important to have individuals as champions, people do move on, so it is critical that agencies be champions as well.
 5. Identify roles and responsibilities of all stakeholders. The best way to do this is through a Concept of Operations, Joint Operations Agreement, or some other form of "Standard Operating Procedure." This can be built over time, but it is important to early agree to develop such a tool.
 6. Create an Open Roads Policy. This should be the basis of all TIM/QC activities. A QC law is best, but a joint agreement among stakeholders is the minimum desired.
 7. Maintain frequent communications with the entire team (e-mails, conference calls, etc.). Some regions also publish periodic newsletters to inform their TIM Team members and other supporters of current activities and lessons learned.
 8. Develop a TIM Concept of Operations that is National Incident Management System (NIMS)/National Unified Goal (NUG)-compliant, has integrated QC operations including preferred practices to protect the scene and its responders, to manage traffic, and to clear an incident efficiently. Determine interagency communications, detection, technology, and data sharing requirements and capabilities. Include statute/law "wish list" for future follow-up, and a similar one for policies and operations, too (the checklists in the spreadsheet can be a starting point).
 9. Execute operational Memoranda of Understanding (MOUs). This might not be necessary if a Joint Operations Agreement is in place, but if any sharing of financing is involved, it might be necessary to have formal MOUs or other "contracts."
 10. Enable inter-agency communications and information exchange, as applicable, regional/corridor-wide. Maximize the electronic integration of agencies and the interoperability of the voice and data communications among agencies.
 11. Implement a training and certification program, including NIMS/NUG-compliant interdisciplinary training, for all TIM responders. All responders should, at a minimum, complete the basic NIMS training as mandated by federal law. A TIM course for all responders will also decrease incident impacts while improving responder safety.
 12. Educate the traveling public. A comprehensive awareness campaign is essential to inform travelers of the pertinent laws and best practices to follow during incidents.
 13. Implement multi-disciplinary NIMS/NUG-compliant, accredited Traffic Incident Management Team(s) and associated Field Operational Procedures for QC. Ensure ongoing team monitoring of the program.

The remainder of this part consists of individual guidelines for the various key responders. These might be considered as checklists for responders and other stakeholders. Some are obviously considerably more detailed than others.

The standard outline for each agency type is as follows:

- Detection
- Verification
- Notification
- Response
- Clearance
 - Roadway Clearance
 - Quick Clean-up of Minor Spills
 - Incident Clearance
- Recovery
- After Action Review

In general, recall, from Section 10.6.1, responders should follow this “safety order of priorities” [adapted from (FHWA, 2006)]:

1. Manage personal safety first—safe response, proper positioning and lighting, reflective garments, working only in designated “safe” zones, etc.
2. Rescue of crash victims or stranded motorists.
3. Traffic safety—providing a clear message to approaching traffic to direct flow.
4. Salvage cargo or vehicles.

The individual stakeholders’ checklists continue on the next page.





14. Transportation

These are transportation engineers, planners, and “managers,” such as TMC managing engineers.

Detection

These professionals rarely have a direct personal role in incident detection per se. Their primary role here is to promote QC policies and encourage QC best practices.

Verification

Likewise, these professionals rarely have a direct role in incident verification, other than they might get involved in major incidents to determine the assets needed for multiple needs.

Notification

For large incidents, they might notify counterparts in other agencies or regions. All are part of the motorist information process.

Response

Generally, these are not responders.

Clearance

In larger incidents transportation personnel, particularly TMC managers, might become

involved in the off-site management of the incident, such as the following:

- Marshalling additional or extraordinary resources, such as heavy-duty cranes,
- Coordinating with other agencies, particularly those not normally involved in everyday incident management;
- Arranging for emergency procurement of equipment, supplies, materials, personnel (such as coordinating response from maintenance resources);
- Assisting in emergency planning, such as evacuation, diversions, etc.; and
- Coordinating the public information program into other impacted regions.

Recovery

The aforementioned activities would continue as long as there are lingering impacts of the incident.

After Action

- Participate as appropriate in post-incident debriefings.
- Update SOPs and the like to incorporate new lessons learned.





15. Transportation Management Centers

This stakeholder group consists of TMC and TCC operators, dispatchers, customer service representatives (CSRs), and non-engineer managers (engineers are included in the previous group). It also includes EOC and PSAP operators and dispatchers to the extent that they are involved in TIM/QC.

The primary role of a TMC is to help in traffic incident management. If this is not the case in any particular TMC, the agency might reconsider the TMC's role in TIM. TCCs often are limited to running the traffic signal system, so those personnel are not as apt to be active in TIM, but if a particular TCC is, they should treat the references to TMC below as applicable to them.

Detection

TMC and PSAP personnel are often very active in incident detection. EOCs and TCC are generally not.

Transportation Management Centers

- TMC operators may detect incidents on CCTV.
- Operators may react to TMC software incident detection module alert.
- Operators and/or CSRs react to calls from PSAP or law enforcement dispatchers, and from agency personnel in the field and even citizens if there is a call-in number available to the TMC. If the call is from the PSAP or reliable agency personnel, the incident can generally be considered as verified. If from citizens, further verification is needed in the next stage.

Public Safety Answering Point

- PSAP operators react to calls from agency personnel in the field, and verification can generally be assumed.
- PSAP operators react to calls from citizens. Generally, further verification will be required.

Verification

Similarly, TMC and PSAP personnel are often very active in incident verification. Recall that verification means not only confirming the occurrence of an incident, but locating it reliably as well.

Transportation Management Centers

- TMC operators verify incidents viewed on CCTV (immediately if seen “live”) or shortly thereafter if sought out based on notification from another source.
- Operators and/or CSRs react to calls from PSAPs, and from agency personnel in the field and citizens. If the call is from the PSAP, law enforcement dispatcher, or reliable agency personnel, the incident can generally be considered as verified, as stated above.
- If calls are from citizens, verification may be based on something like the following:
 - If a single caller is absolutely certain about the details and location—for example, the individual remains in sight of the incident and has irrefutable information about location, such as a mile post of reference location sign, or
 - At least two independent “reliable” calls that relay very similar details about the incident and its location.
- Open the incident in log.
- If integrated with law enforcement CAD, establish the link.





Public Safety Answering Point

- If the call is from agency personnel in the field, verification can generally be assumed.
- If calls are from citizens, verification may be based as above.

Notification

Similarly, TMC and PSAP personnel are often very active in incident notification once the incident is verified. Ideally there will exist an alert and notification guide.

Transportation Management Centers

- Notify law enforcement and/or other dispatcher(s) as per local protocol.

Public Safety Answering Point

- Notify TMC, law enforcement, and/or other dispatcher(s) as per local protocol.

Response

This section refers only to the TMC, since PSAPs are not directly involved in response per se.

- Develop, or review and edit pre-prepared, response plan.
- Activate DMSs, HAR, etc. as per the response plan.
- Initiate public information alerts.
- Notify media and other ISPs.
- Activate diversion route plan if applicable.
- Coordinate with TCCs (or local traffic engineering agency if no TCC) if diversion is warranted.

Clearance

This section refers only to the TMC, since PSAPs are not directly involved in clearance per se. Above all, be very proactive in quick clearance.

- Continue to reassess and refine response plan.
- Continue to update incident log.

- In the event of a serious incident, initiate agency notifications (for example, upper management usually wants to be informed of fatalities).
- Continue to activate or change DMSs, HAR, etc. as per the response plan.
- Continue public information alerts.
- Continue media and other ISPs.
- Notify secondary responders as needed.
- Continue diversion route plan if applicable.
- Continue coordination with TCCs (or local traffic engineering agency if no TCC) if diversion is warranted.
- Activate special response team if incident is very serious.
- Coordinate with other regions and TMCs as needed.

Quick Clean-up of Minor Spills

- In the event of a minor spill and no responder is readily available on scene, dispatch a secondary response, such as a FSP to clean up the spill (if permitted to do so).

Recovery

This section refers only to the TMC, since PSAPs are not directly involved in recovery per se.

- Continue to update incident log.
- Continue to activate or change DMSs, HAR, etc., as per the response plan.
- Continue public information alerts.
- Continue media and other ISPs.
- Continue diversion route plan if applicable.
- Continue coordination with TCCs (or local traffic engineering agency if no TCC) if diversion is warranted.
- Coordinate with other regions and TMCs as needed.

After Action

- Participate in post-incident debriefings.
- Recommend updates to SOPs and the like to incorporate new lessons learned.



16. Law Enforcement

This group includes state and local traffic officers. Some tolling authorities have their own police force as well, which are included here. Motor carrier enforcement officers might apply here in emergency situations. Traffic and homicide investigators are a separate group.

Detection

Law enforcement officers on patrol are often the first to detect incidents. In the event that this is not the case, a law enforcement dispatcher or desk might serve the same role as the PSAP described above; namely, if the call is from the PSAP or reliable agency personnel, the incident can generally be considered as verified. If from citizens, further verification is needed in the next stage.

Verification

Law enforcement on patrol or having been dispatched to a suspected incident, are often the first to arrive at the scene. In the event that this is not the case, a law enforcement dispatcher or desk might serve the same role as the PSAP described above; namely:

- If the call is from agency personnel in the field, verification can generally be assumed.
- If calls are from citizens, verification may be based on the following:
 - If a single caller is absolutely certain about the details and location—for example, the individual remains in sight of the incident and has irrefutable information about location, such as a mile post of reference location sign,
 - At least two independent “reliable” calls that relay very similar details about the incident and its location, or

- Depending on the type of emergency, police are obligated to respond in almost all cases based on one call.

Notification

Law enforcement will generally notify other needed assets, either directly or through law enforcement dispatch, to include the following at a minimum:

- Fire rescue in the event of fire, non-minor/non-cargo fluid spill, suspected hazardous material spill or potential release, or need for extrication;
- Emergency medical service (if different from fire rescue) for injuries and/or fatalities;
- HAZMAT handler for known hazardous material spill or potential release;
- TMC if not already notified;
- FSP to assist as needed;
- Towing and wrecker service;
- Begin planning for diversion if applicable and notify appropriate authorities; and
- Other special assets as needed.

Response

Law enforcement is a key stakeholder in response.

- Reach the scene as quickly and safely as possible.
- Assess situation (if not already done) and solicit needed resources (see notification above).
- Position vehicle to protect the scene.
- Secure the scene to maximize the safety of self, fellow responders, victims, and passing vehicles (see introduction to this part):
 - Assessment should include risks of the incident versus risks of traffic delay and potential for secondary crashes, and
 - Consider temporary channelization versus shut-down.
- Don high-visibility apparel as appropriate.





- Deploy flares, cones, etc. as appropriate.
- Initiate incident command structure and establish Command Post and communications as appropriate.
- Continue or initiate notifications as appropriate to the following:
 - Fire rescue,
 - Emergency medical services,
 - Hazardous material/fuel response/EPA,
 - Towing and recovery,
 - DOT (state and/or local),
 - Utilities if needed, and
 - Initial media notifications if diversions or evacuation.

Clearance

Law enforcement is a key stakeholder in clearance.

Roadway Clearance

The top priority is to open lanes that are blocked by the incident. Some of the following may continue into incident clearance, but they should be started during roadway clearance if possible.

- Encourage drivers to move their vehicles off the roadway, if practical.
- Assist drivers in removing vehicles from roadway using push bumpers or tow lines.
- Coordinate with fire rescue and EMS (if separate) to organize the scene such that the responders and victims' safety is assured, but minimizes the blockage of lanes.
- Direct tow company to recover and/or move the vehicles if approval from the responsible party is not forthcoming.
- Remove debris from roadway if practical.
- Direct traffic around the incident.
- Reposition vehicles at scene as necessary as lanes open to increase traffic flow.
- Plan for secondary crashes as detour is established—position traffic warning devices (utilize DOT resources).
- Remove traffic trapped between incident and detour (check on welfare of trapped motorists). Use both law enforcement and DOT/FSP resources.

- Monitor and respond to developments to ensure delays are minimized.
- Continue to plan for road opening as early as possible.

Quick Clean-up of Minor Spills

- Stop leaks,
- Contain spilt liquids, and
- Clean up minor spillage.

Incident Clearance

Once all incident persons, vehicles, and materials have been removed from the roadway, the next priority is to remove all evidence of the incident from the scene as soon as possible, subject to safety and necessary investigations.

- Relocate to an accident investigation site (if available) or to a location off the highway, preferably out of site of remaining traffic.
- Conduct police investigation as quickly as possible with minimal impact on traveled lanes.
- Continue to direct traffic past the incident site as long as necessary.
- Practice good emergency light discipline.
- Protect the back of the queue (or use FSP).
- Communicate anticipated road opening to media and detour units.
- Communicate change of scene control to responding agencies.
- When appropriate ensure efficient and timely collection of evidence.

Recovery

- Remove all vehicles from the incident scene if practical.
- Provide traffic management services on diversion routes if necessary.

After Action

- Follow up with media information on reasons for delay so the public is informed.
- Participate in post-incident debriefings.
- Recommend updates to SOPs and the like to incorporate new lessons learned.



17. Fire Rescue

Fire rescue will be involved if there is a danger of fire, victims are injured and/or need to be extricated, or if HAZMAT is an issue. The emphasis is on scene safety and discipline. (Note that EMS is treated separately even though in some jurisdiction, fire rescue provides these services.)

Detection

Fire rescue is generally not involved in detection, unless they operate the PSAP.

Verification

Fire rescue is generally not involved in verification, unless they operate the PSAP.

Notification

Fire rescue is generally not deeply involved in notification other than if they have responded to an incident and there is a HAZMAT threat, fire rescue might notify the HAZMAT mitigation organization. They may also initiate the emergency medical service system.

Response

Fire rescue is generally very efficient in terms of response once their presence is requested. In responding the following actions are recommended:

- Minimize lane blocking—use no more than one lane as a “buffer,” preferably a partial lane.
- Minimize the equipment to that actually needed.
- Managing “volunteers” out of uniform is a challenge. If they are not in uniform, they should stay away.

Clearance

In situation where fire rescue is needed at the scene, the incident is usually sufficiently severe that special attention needs to be given to quick clearance.

Roadway Clearance

- Coordinate with law enforcement and EMS (if separate) to organize the scene such that the responders and victims’ safety is assured, but minimizes the blockage of lanes.
- Assist drivers in removing vehicles from roadway, if this is part of their practice, which is not common.
- Remove debris from roadway if practical. The use of absorbent materials (such as kitty litter and peat moss) is encouraged.

Quick Clean-up of Minor Spills

- Stop leaks,
- Contain spilt liquids, and
- Clean up minor spillage.

Incident Clearance

- Relocate to an accident investigation site (if available) or to a location off the highway, preferably out of site of remaining traffic.
- Conduct fire investigation as quickly as possible with minimal impact on traveled lanes.
- Practice good emergency light discipline.
- Have a good recall policy to avoid excess equipment at the scene.





Recovery

Fire rescue is generally not involved in recovery, unless there are potential fire or spill hazards that might occur during recovery.

After Action

- Participate in post-incident debriefings.
- Recommend updates to SOPs and the like to incorporate new lessons learned.



18. Emergency Medical Services

Emergency medical services (EMS) will be involved if there are injuries or deaths. The emphasis is on scene discipline and safety.

Detection

EMS is not generally involved in detection.

Verification

EMS is not generally involved in verification.

Notification

EMS is not generally involved in notification, unless they happen onto an incident.

Response

EMS is generally very efficient in terms of response once their presence is requested. In responding, the following actions are recommended:

- Minimize lane blocking—use no more than one lane as a “buffer,” preferably a partial lane.
- Minimize the equipment to that actually needed.
- Managing “volunteers” out of uniform is a challenge. If they are not in uniform, they should stay away.

Clearance

Like fire rescue, the presence of EMS already suggests a serious situation and thus needs a special focus on safe and quick clearance.

Roadway Clearance

- Coordinate with law enforcement and fire rescue (if separate) to organize the scene such that the responders and victims’ safety is assured, but minimizes the blockage of lanes.
- Remove victims from the roadway as quickly as possible. Treatment is better done in the ambulance than on the roadway.

Incident Clearance

- Remove the ambulance from the scene as quickly as safely possible.
- Avoid causing a secondary crash by taking unsafe maneuvers in-route to a treatment facility.

Recovery

EMS is generally not involved in recovery, other than to avoid the secondary crashes as above.

After Action

- Participate in post-incident debriefings if scene management was an issue.
- Recommend updates to SOPs and the like to incorporate new lessons learned.





19. Crash and Homicide Investigators

Generally, whenever a crash involves injury or death, a police investigation is required. The investigators may be secondary responders and do not arrive until the incident is already being managed.

Response

Once the investigators are notified, response should be as quick as possible.

Clearance

Investigators should use the fastest method available to conduct their investigation. Enough investigators should be involved to share the duties and reduce the clearance time.

Roadway Clearance

- Minimize the time that it is necessary to close lanes for investigation.
- Do immediate paperwork out of the traveled lanes.

Incident Clearance

- Minimize the time that it is necessary to complete the investigation.
- Do remaining paperwork off site, either at an accident investigation site or off the facility altogether.

Recovery

Investigators help recovery the most by minimizing the length of their on-scene investigation.

After Action

- Participate in post-incident debriefings.
- Recommend updates to SOPs and the like to incorporate new lessons learned.





20. Hazardous Material Handlers

If HAZMAT is involved, the mitigation must be as timely as possible, not only to minimize the clean-up time, but to minimize exposure to the material.

Response

In responding the following actions are recommended.

- Minimize lane blocking.
- Minimize the equipment to that actually needed.
- Avoid adding to the problem with mitigation materials.

Clearance

As with fire and EMS, the mere need for HAZMAT suggests lengthy incident duration. Handlers should help clear traveled lanes first, then try to minimize their time on scene to that absolutely necessary for both safety and in keeping with QC principles.

Recovery

For HAZMAT situation, there might be lingering effect that delays recovery. Handlers should try to minimize such effects.

After Action

- Participate in post-incident debriefings if scene management was an issue.
- Recommend updates to SOPs and the like to incorporate new lessons learned.





21. Road Maintenance

The need for roadway maintenance staff may vary from minor clean-up to major reconstruction, such as shoring up a damaged bridge. If highway maintenance is done with contractors in a region, the contractors' responsibilities for incident management must be very clear in the contract.

Detection

Since they are often on the road, maintenance workers might encounter an incident. It is important that they be trained in the proper response.

Verification

They should verify and report the incident to the proper channel.

Notification

Part of their training should be the appropriate notifications.

Response

Once dispatched, maintenance should respond as quickly as possible with the appropriate equipment. A response and notification guide should have the location or source of all specialized equipment.

Clearance

The first order of business for maintenance is clearance.

Roadway Clearance

- Coordinate with other responders to organize the scene and plan removal of debris that minimizes the blockage of lanes.
- Remove vehicles and debris from the roadway as quickly as possible.

Quick Clean-up of Minor Spills

- Stop leaks,
- Contain spilt liquids, and
- Clean up minor spillage.

Incident Clearance

- Depart the scene as quickly as possible.
- If repairs are needed on the infrastructure, assess whether these can better be done later in a non-incident situation.
- Mark damaged areas as needed to alert motorists (for example to damaged guardrail).

Recovery

Maintenance is generally not involved in recovery unless some lengthy repair is needed, in which case, as above, assess whether this can better be done later in a non-incident situation.

After Action

- Participate in post-incident debriefings.
- Recommend updates to SOPs and the like to incorporate new lessons learned.





22. Towing and Recovery

The keys to towing and recovery are timely response and having the right equipment and skill sets.

Detection

Since they are often on the road, tow truck operators might encounter an incident. It is important that they be trained in the proper response.

Verification

Because they are trained professionals, they can generally be counted on to verify incidents.

Notification

Part of their routine should be the appropriate notifications. Tow operators prefer to know the details of the incident so they can determine the appropriate response, instead of being told what equipment is needed.

Response

Once dispatched, the tow operator should respond as quickly as possible with the appropriate equipment.

Clearance

The first order of business for the tow company is clearance.

Roadway Clearance

- The top priority is safety—self, victims, scene—then apply the craft.

- Coordinate with other responders to organize the scene and plan removal of debris and vehicles that minimizes the blockage of lanes.
- Identify the responsible party, but do not unnecessarily delay recovery or towing decisions.
- Follow instructions of public safety responders.
- Remove vehicles and debris from the roadway as quickly as possible.

Quick Clean-up of Minor Spills

Assist in mitigation and clean-up if possible.

Incident Clearance

- Depart the scene as quickly as possible.
- Transport persons from towed vehicles to a location off the facility.
- Handle financial negotiations off site.

Recovery

The tow operator's main role is to have cleared the scene as soon as possible.

After Action

- Participate in post-incident debriefings or have towing association do so to represent multiple companies.
- Recommend updates to industry standard practices to incorporate new lessons learned.





23. Service Patrol Operator

The participation of FSPs will depend on whether their mission includes both motorist-assist and full TIM actions. In the discussion below, we assume first all FSPs, and then elaborate further for TIM-equipped patrols.

Detection

FSPs are often the first to come upon an incident, so they frequently detect the incident.

Verification

FSPs are generally qualified to verify incidents and report to the TMC or other dispatcher.

Notification

FSPs generally do not notify other responders but rather go through their TMC or dispatcher.

Response

FSPs are a key stakeholder in response.

- Reach the scene as quickly as possible.
- Don high-visibility apparel as appropriate.
- Position vehicle to protect the scene.
- Assess situation (if not already done) and notify further information (see notification above).
- Help secure the scene to maximize the safety of self, fellow responders, victims, and passing vehicles.

TIM Service Patrols

- Deploy flares, cones, etc. as appropriate.
- Recognize the incident command structure and participate in the unified incident structure.

Clearance

FSPs are key players in clearance.

Roadway Clearance

- Instruct drivers to move their vehicles off the roadway, if practical.
- Direct traffic around the incident.

TIM Service Patrols

- Assist drivers in removing vehicles from roadway by push, pull, or drag.
- Assist other arriving responders in positioning of assets to assure responder safety, and minimizes lane blockages.
- Remove debris from roadway if practical.

Quick Clean-up of Minor Spills (TIM Service Patrols)

- Stop leaks,
- Contain spilt liquids, and
- Clean up minor spillage.

Incident Clearance

- Continue to direct traffic past the incident site as long as necessary.
- Practice good emergency light discipline.
- Protect the back of the queue.

Recovery

- Continue to protect the back of the queue.

After Action

- Participate in post-incident debriefings, or at least have manager do so.
- Recommend updates to SOPs and the like to incorporate new lessons learned.





24. Medical Examiner

The Medical Examiner (ME) is only involved in the case of a fatality.

Response

If called to a fatality, respond as quickly as possible or arrange with law enforcement to move deceased victims from the roadway.

Clearance

The main goal is to clear the roadway and avoid secondary crashes. Shared investigative duties can also help expedite clearance. MOUs to this effect are also useful.

Roadway Clearance

If it is necessary for law enforcement to move the bodies, explain as succinctly as possible

what the responder needs to do to satisfy ME requirements.

Incident Clearance

Remove, or authorize others to remove the victim from the scene and transport to a mutually agreeable location.

After Action

- Participate in post-incident debriefings that involved fatality(ies).
- Recommend updates to SOPs and the like to incorporate new lessons learned.





25. Media

The media is the primary pipeline to the public. Their role is critically important.

Detection

Traffic reporters often see incidents before others. Have a standing protocol for reporting these to authorities as quickly and succinctly as possible.

Verification

Traffic reporters should be reliable sources of verification if the location information is solid.

Notification

The media's primary role is to notify the public of the incident.

Response

Media should not respond to a crash scene and impede emergency responders.

Clearance and Recovery

Media's role throughout the clearance and recovery stages is to continue informing the public of the status of the incidents, thus encouraging diversion or delaying trips.

After Action

For very serious incidents in which media played a key role, they should participate in post-incident de-briefings.





PART 4 CONTENTS: TIM/QC Self Assessment





TIM/QC Self Assessment

On the following pages is the Federal Highway Administration’s “Traffic Incident Management (TIM) Program Self Assessment” worksheet, which state, regions, TIM Teams, and so forth can use to assess where they stand nationally. The FHWA TIM Self Assessment worksheet is also on the TIM/QC DVD as Practice_TIM_SelfAssess.

Recall that another self-assessment tool enabling you to check off the laws, policies, practices, etc. that are in place in your region, and then plan which areas you would like to improve, is on the TIM/QC DVD at Guide_QC_Implement_Checklist.xls, in the named sheets (tabs).



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Federal Highway Administration's Traffic Incident Management (TIM) Program Self Assessment worksheet

Traffic Incident Management (TIM) Program Self Assessment		Overall TIM Program Score:
Score each question applicable to your TIM program using the categories listed below. Also, the reasons for each question scoring should be documented, if the opportunity exists.		0.0%
0 - No progress in this area. <i>Has never been discussed Has been discussed informally but no action has been taken</i>		
1 - Very little being done in this area. <i>Minimal activity, primarily in one agency Issue has been acknowledged and is being investigated</i>		
2 - Efforts in this area are moderate - some good processes exist, but they may not be well integrated/coordinated - results are mixed. <i>Has been put into practice on a limited or experimental basis. Some multi-agency agreement cooperation</i>		
3 - Efforts in this area are strong and results are promising. However, there is still room for improvement. <i>Has become a generally accepted practice but refinements or changes are being discussed or pursued Good multi-agency cooperation but not yet integrated in operations of all agencies as "standard procedure"</i>		
4 - Efforts in this area are outstanding. There is good integration/coordination with good to excellent results. <i>Excellent coordination and cooperation among agencies Policies and procedures are well integrated in operations of all agencies as "standard procedure"</i>		
Section 1		Section Score
4.1 Program and Institutional Issues - 30%		0.0%
4.1.1 Formal Traffic Incident Management Programs		Enter Ratings for Each Question Below:
<i>Does your TIM program:</i>		Comments
4.1.1.1. Have multi-agency, multi-year strategic plans detailing specific programmatic activities to be accomplished with appropriate budget and personnel needs identified?		
4.1.1.2. Have formal inter-agency agreements on operational and administrative procedures and policies?		
4.1.1.3. Have field-level input into the plans ensuring that the plans will be workable by those responsible for their implementation?		
4.1.2 TIM Administrative Teams		Enter Ratings for Each Question Below:
<i>Does your TIM program:</i>		Comments
4.1.2.1. Have formalized TIM multi-agency administrative teams to meet and discuss administrative policy issues?		
4.1.2.2. Hold regular meetings of the TIM administrative team?		
4.1.2.3. Conduct training through simulation or "in-field" exercises?		
4.1.2.4. Conduct multi-agency post-incident debriefings?		
4.1.2.5. Conduct planning for "special events": <i>(Composite score for 4.1.2.5.a thru 4.1.2.5.d below)</i>		0
4.1.2.5.a. Construction and maintenance?		
4.1.2.5.b. Sporting events/concerts/conventions/etc.?		
4.1.2.5.c. Weather-related events?		
4.1.2.5.d. Catastrophic events?		
4.1.3. Performance Measurement		Enter Ratings for Each Question Below:
<i>Does your TIM program:</i>		Comments
4.1.3.1. Have multi-agency agreements on what measures will be tracked and used to measure program performance?		
4.1.3.2. Have agreed upon methods to collect and analyze/track performance measures?		
4.1.3.3. Have established targets for performance? <i>(Composite score for 4.1.3.3.a and 4.1.3.3.b below)</i>		0
4.1.3.3.a. Response?		
4.1.3.3.b. Clearance?		
4.1.3.4. Conduct periodic review of whether or not progress is being made to achieve targets?		

Continues on next page

Federal Highway Administration’s Traffic Incident Management (TIM) Program Self Assessment worksheet (continued)

Section 2 4.2 Operational Issues - 40%		Section Score: 0.0%	
4.2.1. Procedures for Major Incidents		Enter Ratings for Each Question Below:	
<i>Does your TIM program:</i>			Comments
4.2.1.1. Have established criteria for what is a "major incident" – incident levels or codes?			
4.2.1.2. Identify high ranking agency members available on 24/7 basis to respond to a major incident (Major Incident Response Team)?			
4.2.1.3. Have a pre-identified (approved) contact list of resources (including special equipment) for incident clearance and hazardous materials response?			
4.2.1.4. Have the response equipment pre-staged for timely response?			
4.2.2. Responder and Motorist Safety		Enter Ratings for Each Question Below:	
<i>Does your TIM program:</i>			Comments
4.2.2.1. Train all responders in traffic control procedures?			
4.2.2.2. Utilize on-scene traffic control procedures for various levels of incidents in compliance with MUTCD?			
4.2.2.3. Utilize traffic control procedures for the end of the incident traffic queue?			
4.2.2.4. Have mutually understood equipment staging and emergency lighting procedures on-site to maximize traffic flow past an incident while providing responder safety?			
4.2.3. Response and Clearance Policies and Procedures		Enter Ratings for Each Question Below:	
<i>Does your TIM program:</i>			Comments
4.2.3.1. Utilize the Incident Command System?			
4.2.3.2. Have specific policies and procedures for fatal accident investigation that also address maintenance of traffic flow?			
4.2.3.3. Have specific policies and procedures for hazardous materials response that also address maintenance of traffic flow?			
4.2.3.4. Have quick clearance policies for major and minor incidents?			
4.2.3.5. Have a pre-qualified list of available and contracted towing and recovery operators (to include operators' capabilities)?			
4.2.3.6. Use motorist assist service patrols?			
Section 3 4.3 Communication and Technology Issues - 30%		Section Score: 0.0%	
4.3.1. Integrated Interagency Communications		Enter Ratings for Each Question Below:	
<i>Does your TIM program:</i>			Comments
4.3.1.1. Have a two-way interagency voice communications system allowing for direct on-site communications between incident responders?			
4.3.1.2. Provide data and video information transfer between agencies and applications (TMC-CAD integration)?			
4.3.2. Transportation Management Systems		Enter Ratings for Each Question Below:	
<i>Does your TIM program:</i>			Comments
4.3.2.1. Use Traffic Management Center(s) to coordinate incident notification and response?			
4.3.2.2. Have a developed technical infrastructure for surveillance and rapid detection of traffic incidents?			
4.3.2.3. Have specific policies and procedures for traffic management during incident response (i.e. signal timing changes, opening/closing of HOV lanes/ramp metering)?			
4.3.3. Traveler Information		Enter Ratings for Each Question Below:	
<i>Does your TIM program:</i>			Comments
4.3.3.1. Have the ability to merge/integrate and interpret information from multiple sources?			
4.3.3.2. Have a real-time motorist information system providing incident-specific information?			
4.3.3.3. Provide motorists with travel time estimates for route segments?			





PART 5 CONTENTS:

Back Matter

- List of Acronyms
- References
- Traffic Incident Management Web Sites
- Quick Clearance Fact Sheets



Back Matter

LIST OF ACRONYMS⁶⁵

4-Cs Of TIM: communication, cooperation, coordination, and consensus (in some places, commitment, and also sometimes referred to as only three, omitting the last “C”)

4-Es Of safety: engineering, enforcement, emergency medical services, and education

AAA: American Automobile Association

AASHTO: American Association of Highway and Transportation Officials

ACN: Automated collision notification

ATIS: Advanced traveler information system

CAD: Computer-aided dispatch

CC: Corridor Coalition

C2C: Center-to-center

CDL: Commercial Drivers License

CHAMP: Connecticut Highway Assistance Motorist Patrol

CHART: Coordinated Highways Action Response Team

CIM: Coordinated Incident Management (track, of the I-95 Corridor Coalition)

CIR: Critical incident review or report

ConOps: Concept of Operations

CTIEM: Corridor-wide Traffic Incident and Emergency Management (Task Force)

⁶⁵ I-95 Corridor Coalition members and their acronyms follow the list below.



Coordinated Incident Management
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- CTST: Community/Corridor Traffic Safety Team
- DEM: Department/Division of Emergency Management
- DEP: Department of Environmental Protection
- DHS: Department/Division of Homeland Security
- DLE: Department of Law Enforcement
- DMS: Dynamic message signs (also called “changeable” or “variable” message signs, but in this Toolkit DMS is used exclusively)
- DOT: Department of Transportation
- DVRPC: Delaware Valley Regional Planning Council
- EMS: Emergency medical services
- EOC: Emergency Operation Center
- FAA: Federal Aviation Administration
- FCC: Federal Communications Commission
- FEMA: Federal Emergency Management Agency
- FHP: Florida Highway Patrol
- FIM: Freeway incident management
- FSP: Freeway service patrol
- FTE: Florida’s Turnpike Enterprise
- HAZMAT: Hazardous materials
- H.E.L.P: Highway Emergency Local Patrol (Hudson Valley, NY)
- HERO: Highway Emergency Response Operator (Georgia’s service patrol)
- HOG: (I-95 Corridor Coalition’s) Highway Operations Group
- HP: Highway Patrol
- HUD: Heads-up display
- IACP: International Association of Chiefs of Police
- ICS: Incident Command System
- IM: Incident management
- IMAP: Incident Management Assistance Patrol (North Carolina’s service patrol)
- IMSA: International Municipal Signal Association
- IMT: Incident management team
- ISN: Information Systems Network
- ISP: Information service provider
- ITE: Institute of Transportation Engineers
- ITMS: Interim Traffic Management System
- ITS: Intelligent transportation systems
- JOA: Joint Operations Agreement
- LD: Liquidated damages
- LORP: Local Open Roads Policy

LRM: Location reference marker
MCCO: Motor Carrier Compliance Office
ME: Medical Examiner
MedEvac: Medical evacuation (usually by helicopter)
MI: Move-it
MOT: Maintenance of traffic
Mph: Mile per hour
MPO: Metropolitan Planning Organization
MUTCD: Manual on Uniform Traffic Control Devices
NCUTLO: National Committee on Uniform Traffic Laws and Ordinances
NIMS: National Incident Management System
NITTEC: Niagara International Transportation Technology Coalition
NLEOMF: National Law Enforcement Officers Memorial Fund
NTIMC: National Traffic Incident Management Coalition
NTOC: National Transportation Operations Coalition
NUG: National Uniform Goal (of the NTIMC)
NAWGITS: National Working Group on Intelligent Transportation Systems
ORP: Open roads policy
PDO: Property damage only (crash)
PPP: Public-private partnership
PSA: Public service announcement
PSAP: Public Safety Answering Point
PTZ: Pan, tilt, and zoom (CCTV cameras)
QC: Quick clearance
QC/MI: Quick clearance/move-it
QRBCAT: Quick Response Benefit/Cost Analysis Tool
RISC: Rapid Incident Scene Clearance
RLS: Reference location sign
RR: Road Ranger (Florida's service patrol)
RTMC: Regional transportation management center
SDLE: State Department of Law Enforcement
SDOT: State Department of Transportation
SHA: State Highway Authority
SOP: Standard operating procedure
SP: State Patrol/Police (also service patrols, but herein we use freeway service patrols for these to avoid confusion)
TCC: Traffic control center
TIM: Traffic incident management
TMC: Traffic management center





- TRAA: Towing and Recovery Association of America
- TTI: Texas Transportation Institute
- TTT: Train-the-trainer (typically used in training)
- UAV: Unmanned (or “unpiloted”) aerial vehicle
- UC: Unified (Incident) Command
- UIC: Unified Incident Command
- VII: Vehicle Infrastructure Integration
- VIPER: Voice Interoperability Plan for Emergency Responders

I-95 Corridor Coalition Member Authorities

- DRBA: Delaware River & Bay Authority
- DRPA: Delaware River Port Authority
- DRJTBC: Delaware River Joint Toll Bridge Commission
 - MT: Massachusetts Turnpike
 - MT: Maine Turnpike
- MTA: Maryland Transportation Authority
- MTA: Metropolitan Transportation Authority
- MTABT: MTA Bridges and Tunnels
- MTAMNR: MTA Metro-North Railroad
- NCTA: North Carolina Turnpike Authority
- NHTSA: National Highway Traffic Safety Administration
- NJHA: New Jersey Highway Authority
- NJT: New Jersey Transit
- NJTA: New Jersey Turnpike Authority
- NYSTA: New York State Thruway Authority
- PTC: Pennsylvania Turnpike Commission
- PANYNJ: Port Authority of NY & NJ
- SJTA: South Jersey Transportation Authority

Coalition State/Other Letter Codes and Departments of Transportation

- CT/CTDOT: Connecticut
- DC/DCDOT: District of Columbia
- DE/DeIDOT: Delaware
- FL/FDOT: Florida
- GA/GDOT: Georgia
- MA/MassDOT: Massachusetts
- MD/MDDOT/
 - MDHA: Maryland (MD Highway Administration)
- ME/MeDOT: Maine
- NC/NCDOT: North Carolina

NH/NHDOT: New Hampshire
NJ/NJDOT: New Jersey
NY/NYS DOT: New York (State)
NYC/NYCDOT: New York City
PA/PenDOT: Pennsylvania
RI/RIDOT: Rhode Island
SC/SCDOT: South Carolina
VA/VDOT: Virginia
VT/VAT: Vermont (Agency of Transportation)

Coalition Federal Agency Members

Amtrak

FHWA: Federal Highway Administration

FMA: Federal Maritime Administration

FMCSA: Federal Motor Carrier Safety Administration

FRA: Federal Railroad Administration

FTA: Federal Transit Administration



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(UDOT, 2004) “Advanced Transportation Management System Elemental Cost Benefit Assessment,” Utah DOT and Federal Highway Administration, prepared by the University of Utah, March 2004.

(VSP, undated) “The Many Hats of Incident Management,” Video produced by the Virginia State Police, undated.

(Wagenblast, 2007) Wagenblast, B., “The Importance of Information During Disruptions,” Yahoo Finance, Transport-Communications, February 16, 2007 (Copyright Bernie Wagenblast, 2007, all rights reserved, permission to use granted).

(Wise, 2004) Wise, J., “Radar Speed Displays: Options for Display Format and Power”; Published in IMSA Journal, January 2004.

Traffic Incident Management Web Sites

National Traffic Incident Management Coalition

<http://timcoalition.org>

Federal Highway Administration

<http://www.ops.fhwa.dot.gov/incidentmgmt>

I-95 Corridor Coalition Incident Management Clearinghouse

<http://projects.webtrafficmd.com>

California's FSP

<http://www.chp.ca.gov/html/fsp.html>

Connecticut's CHAMPs

<http://www.ct.gov/dot/cwp/view.asp?a=1390&Q=259404&dotPNavCtr=|>

Florida's Road Rangers

http://www.dot.state.fl.us/TrafficOperations//Traf_Incident/Traf_Incident.htm

Georgia's HEROs

<http://www.dot.state.ga.us/dot/operations/trafficops/HERO/index.shtml>

Hudson Valley's H.E.L.P.

<http://www.hudsonvalleytraveler.com/perl/HELPTrucks.pl>

Work Zones

<http://ops.fhwa.dot.gov/wz/practices/best/Default.htm>



Introduction to Quick Clearance



Every day thousands of hours are wasted on our nation's highways waiting in congestion caused by traffic incidents. These can range from flat tires at one extreme to weather-related problems or serious, multi-vehicle crashes at the other extremes. All too often the congestion that is caused by an incident—even a minor one—leads to additional incidents. These so-called “secondary incidents” can be everything from a car overheating in the queue, to a traffic crash. Often secondary crashes are more severe than the original cause of the incident.

Transportation and public safety officials are increasingly concerned about this situation and have been launching traffic incident management (TIM) programs that bring the various parties—called stakeholders—together to work out solutions to this situation—often referred to as “non-recurring congestion.”

Whenever an incident occurs, a series of events ensue, most of which can be managed...

- The incident occurs—called *occurrence*
- Someone detects the incident and notifies authorities—*detection*
- Someone in authority verifies that the incident has really occurred, and equally important where—*verification*

- The appropriate “first responder” arrives at the scene and begins to manage the incident and additional responders arrive in a coordinated fashion and agree to the practice of a unified incident command system—*response*
- Once clearance has occurred, the responders work to clear the traveled lanes and ultimately the entire scene—*clearance*
- Once the latter has happened, traffic begins to recover to “normal” operations—*recovery*

The problem is this last step often takes longer to happen than the incident duration itself. Also, when there is a queue backing up from an incident scene it continues for some distance—generally proportionate to the severity of the incident and its duration.

Likewise, when the incident begins to clear, it does so from the spot of the incident and the “clearing” traffic also begins to move upstream. These are so-called “shock waves” and the area of congestion—a slow-moving queue—continues moving upstream until all traffic is “back to normal” for that time of day. This is why we often experience the congestion, but never see any apparent reason for it—it’s already gone by the time we pass the original scene.



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With recovery taking longer to happen, it should be self-evident that it is very important to reduce the incident duration to the maximum extent possible. And among the five “stages” of the incident, clearance generally takes the longest. So TIM managers like to focus on “*quick clearance*” policies and practices aimed at, first, clearing the roadway of vehicles, victims, and debris, so some capacity can be restored as early as possible, then clearing the scene altogether.



This is what quick clearance is all about and everyone can help...

- Travelers who encounter incidents can (safely) notify authorities but only if you are certain that the incident is in fact sufficiently serious (a piece of debris falling off a vehicle onto a shoulder, but without further incident, is not serious) and you are very certain where it has occurred.
- Transportation agencies can use technologies like traffic cameras to detect, or more often, confirm incidents and message boards to inform motorists to be alert to the situation.
- Better communications among agencies, and wrecked companies, can lead to more timely and more appropriate responses.

- Public safety officials—usually law enforcement—can be more aggressive in clearing the scene, and not contribute to the problem by having too many people and response vehicles at the scene. They can also help by warning on-coming drivers upstream of the scene that there is an “emergency scene ahead.”
- Everyone at the scene should do their work safely, quickly, and efficiently to “clear the scene.”
- Motorists can help speed recovery by not “rubbernecking” and by maintaining a smooth traffic stream—avoid lane changing and maintain a constant speed to the extent possible.

One of the most important things that individuals involved in an incident can do is get their vehicles off the roadway if they can—even if involved in a crash. It is the law in many states now that if a vehicle is drivable and there are no serious injuries involved, incident (even accident) vehicles **must move off the roadway**. These are referred to as “**move-it**” laws and are known by a number of “catch phrases,” like “**Steer-it/Clear-it**,” “**Steer It and Clear It**,” or simply “**Move-It**.”

Where these and other incident management laws do not exist, everyone suffers far more than is necessary. So it is not only the responsibility of authorities and motorists to solve this non-recurring congestion menace—lawmakers and decision makers have key roles as well.

So do your part—practice safe and quick clearance of traffic incidents!

The Cost of Traffic Incidents

How costly are traffic incidents?

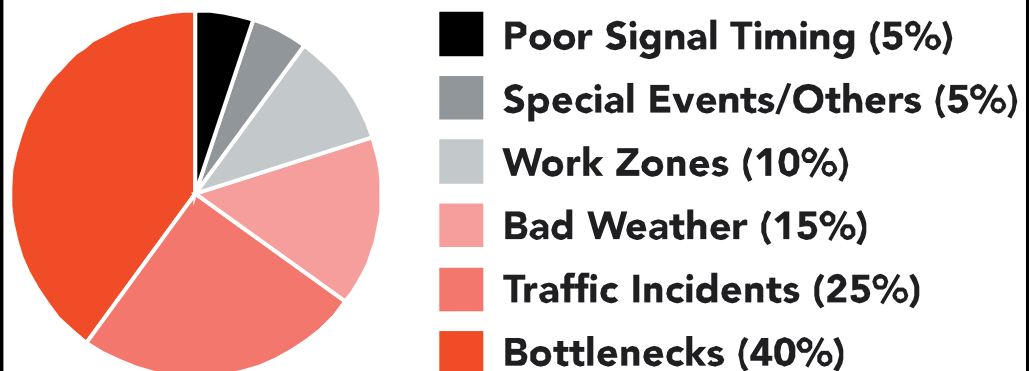
It is clear what a traffic incident causes—traffic snarls, wasted time and energy, anger, and, yes, money. If the incident was a traffic crash, or a crash occurs as a result of an earlier incident, property damage, injury, and even death are all too common the result. To those directly involved in a crash, the impact can be devastating and is obvious. To those trapped in the resulting congestion, the losses are less severe, but are still aggravating.

What about society as a whole? The U.S. Department of Transportation says that at least 25% of all congestion is caused by traffic incidents, as shown in the graph below.

Nation-wide this is a problem of horrendous proportions. The table on the following page tells us why. Every year we lose nearly as many people to traffic death as we lost in the entire war in Vietnam. Millions more are injured, many crippled—often for life. How many times have you seen an attractive, young person in a wheelchair missing a leg and wonder, “Was he in a bad car wreck?” The chances are good that he (or she) was.

That bottom number is staggering—**\$230,600,000,000** is more than the gross state product of 37 individual states of the U.S.A. and the gross domestic product of 157 individual nations of the world.

FHWA Report, “Traffic Congestion and Reliability: Linking Solutions to Problems” July 2004





Crash Type	Crashes	Victims
Fatal	39,189	43,443
Injury	1,816,000	2,699,000
Property Damage Only	4,304,000	-
Total	6,159,000	2,742,443
Cost of Crashes, 2000 (last available data)	\$230.6 Billion	

Going back to the graphic, about 60% of those incidents can be addressed—reduced, if not eliminated—through traffic management of some kind. An active traffic incident management program with quick clearance policies is one way. Getting the roadway cleared of incident victims, vehicles, and debris reduces not only the immediate impact of the

incident, but helps reduce the chances of secondary incidents—which are often more severe than the original one in the case of secondary crashes.

Everyone—incident responders, law and policy makers, and citizens—can help lower these numbers; it just takes good common sense and cooperation!

Definition of Key Terms

Like anything, it is easier and more productive to communicate when we speak and hear in a “common language.” Traffic incident management (TIM), like any other professional endeavor has specific words that, although common words in the English language, have a special meaning to practitioners.

For the purpose of this discussion, we define a traffic incident as *any non-recurrent event, such as a vehicle crash, vehicle breakdown, or other special event, that causes a reduction in highway capacity and/or an increase in demand.* Further, coordinated traffic incident management is a tool to achieve and maintain public safety, travel efficiency, and air quality standards by reducing the impacts of these incidents.

A secondary incident is one that occurs as a direct or indirect result of a previous incident. If a crash occurs in the queue that is expanding from an initial incident (of any kind)—for example, one car not being able to slow down sufficiently and rams the car in the back of the queue—this is a secondary incident. Most are generally crashes, but there can be other incidents, such as a car overheating and stalling because it is sitting idle in the queue rather than

moving. These sometimes lead to tertiary incidents, but all are referred to as “secondary.”

The figure on the following page illustrates the timeline of a typical incident that might be a crash affecting one or more travel lanes.

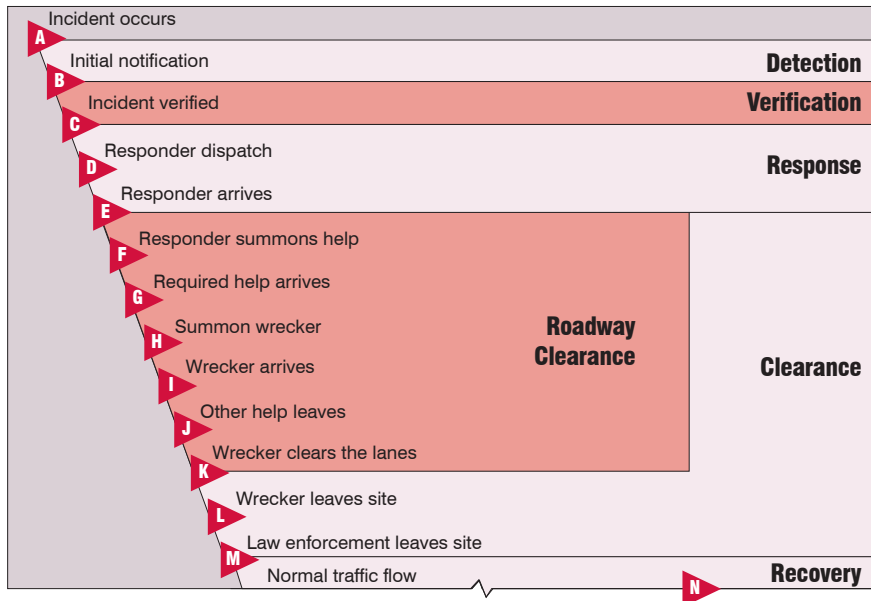
All of these steps might not occur in a particular incident, and there may be other interwoven relationships, but this represents the typical sequence for most moderate to serious incidents. The steps are shown in a staggered fashion to illustrate that the incident timeline is not uniform; however, the time increments are purely relative. The duration of particular events are noted as letter pairs in the discussions below. For example, the actual incident duration would be A-M, as shown in the figure, while the total influence time of the incident is A-N.

The “stages” of the incident, expressed as durations, are thus defined as follows:

- *Detection* that an incident has occurred, or A-B,
- *Notification/verification* time: the time from initial notification until the first responder is contacted, B-C,
- *Response* time: the time for the first responder to arrive at the scene, C-E,
- *Roadway clearance* time: the time to clear the traveled lanes, E-K,



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- *Incident clearance* time: the full time to clear the scene, roadway clearance plus site clearance, E-M,
- *Recovery* time: the time for the resulting queue to dissipate and traffic returns to “normal” (what ever that is at that time of day), M-N,
- *Incident influence* time: the total impact time of the incident, B-N (we refer to point B since point A is usually difficult to pin down exactly), and
- *Incident duration*: the full length of the incident itself, B-M.

The "4Cs" of good incident scene management

- **Communication**
- **Cooperation**
- **Coordination**
- **Consensus**

Additional measures derive from the forgoing, but must be measured separately. Some common measures are as follows:

- *Incident-related delay*: the cumulative delay caused directly by the incident,
- *Queue extension*: lane-miles of backup, and
- *Secondary crash rate*: some measure of the rate of secondary crashes.

Another key term in the TIM jargon is “responder.” Any public safety official (police, fire rescue, emergency services, even the Medical Examiner), transportation worker (e.g., road clean-up worker), towing and wrecker operator, and other specially-skilled people (like hazardous materials handlers) that “responds to the scene of an incident are responders. As a result of recent major disasters, such as 9-11 and hurricane, it has become more important in dealing with incidents of all types to organize the responders efficiently so the incident can be well managed and effectively controlled.

This practice is now referred to as the Unified Command System, where the responders agree on “who is in charge” and that incident commander can be changed to another responder if his/her expertise is most critical at a particular moment. At a traffic crash, the initial incident commander might be a policeman or State Trooper, but if a fire breaks out, the fire fighter takes command until it is appropriate to return command to law enforcement to quickly clear the scene. The National Incident Management System (NIMS) has defined the requirements for the Unified Command System.

Good incident scene management is absolutely dependent on the “4-Cs” (communication, cooperation, coordination, and consensus)!

Open Roads Philosophy

The foundation of a good Quick Clearance Program is the understanding and adherence to an “Open Roads Philosophy.” This means that for all responders from all agencies—after ensuring their own personal safety and the safety and security of any incident victims—*the top priority is to open the roadway by clearing vehicles, victims, and debris from the travel lanes to allow traffic to resume at the maximum possible capacity under the circumstances*, this balanced with the need for accurate investigation. As long as the incident is being processed, there will continue to be capacity constraints, but a minor

reduction of, say 20%, is considerably better than entire lanes being closed or blocked.

Clearing the traveled lanes will have the greatest return in capacity recovery and only then should serious efforts be devoted to clearing the remainder of the scene completely—this is the key principal that drives the entire QC and larger TIM practices. It is key to increasing mobility and reducing the probability of secondary incidents. True quick clearance will not be achieved unless every responder adopts the philosophy—obviously second to responder and motorist safety.





A number of states actually have a formal “Open Road Policy (ORP)” that sets a goal of minimizing this time period and some, like Georgia, are in the process of formally setting open roads goals. Several (Florida and Washington State) even set a time in which the roadway clearance should be accomplished. An ORP states the philosophy of Quick Clearance and establishes as a high priority the removal of all incident vehicles and materials from the roadway. At this time, three states even set a time goal as well. Two examples below are from Florida and Washington State:

Florida DOT/Florida Highway Patrol Policy

Roadways will be cleared as soon as possible. It is the goal of all agencies that **all incidents be cleared from the roadway within 90 minutes of the arrival of the first responding officer** [emphasis is in the policy statement itself]. This goal being made with the understanding those more complex scenarios may require additional time for complete clearance.

Washington State’s Joint Operations Policy

The WSP [Washington State Patrol] and WSDOT [Washington State DOT] will collaborate to respond to incidents and coordinate all public and private

resources in this effort to work toward clearing incidents within 90 minutes. It is the policy of WSP and WSDOT to effectively use resources to expedite responding to incidents, efficiently and effectively conduct needed investigations, and reduce highway lane and state designated ferry route closures to a minimum.

California recently created an Open Roads Policy like Florida’s. Connecticut, Maryland, Tennessee, and Wisconsin have Open Roads Policies without explicit time goals. Georgia is planning to create one similar to Florida’s. Florida is currently trying to change its policy to be closer to Washington’s, namely, 90 minutes from the arrival of the **first responder**, regardless of who it is. Washington’s policy does not give a starting condition, so one would presume it is from the occurrence of the incident itself or, at worse, the initial notification. This is more aggressive.

But, having an Open Roads Policy, signed by leaders of an organization, is only the beginning; it is far from the end solution. It is critical that every law enforcement officer, every fire fighter, every medic, every maintenance worker, every tow truck operator, in short, every responder believes in, and is guided by, the Open Roads Philosophy!

QUICK CLEARANCE FACT SHEET

Roles of Responders in Quick Clearance

A “responder” is any public safety official (police, fire rescue, emergency services, even the Medical Examiner), transportation worker (e.g., road clean-up worker), towing and wrecker operator, and other specially-skilled people (like hazardous materials handlers) who responds to the scene of an incident. From the partial list above, it is clear that there are a number of public- and even some private-sector personnel who typically work traffic incidents particularly vehicle crashes. The key responders and their traditional roles are summarized in the following table.

Jurisdiction	Responder	Prime Responsibility
State Agencies	State DOT	Overall planning and implementation of TIM programs, operates traffic management centers (TMCs), and manages service patrols. Maintenance personnel respond to scene.
	State (Highway) Patrol	Manage the majority of incidents on State Roads.
Local Agencies	Police	Manage the majority of incidents off State Roads.
	Fire rescue	Primary emergency response/incident command agency for fire suppression, hazardous materials spills, rescue, and extrication of trapped crash victims, some EMS.
	Emergency medical services (EMS)	Primary EMS, if separate from fire rescue, triage, treatment, and transport of crash victims.
	Medical Examiner/Coroner	Investigate traffic crash deaths.
	City and county public works and traffic engineering	Operate and maintain local highways and streets and utilities
	Transit agencies	Operate and maintain public transportation systems (may be private, too).





Jurisdiction	Responder	Prime Responsibility
Private Partners	Towing and recovery operators	Removal of wrecked or disabled vehicles and debris from incident scenes.
	HazMat contractors	Clean up and dispose of toxic or hazardous materials.
	Traffic media	Not generally a responder in the true sense, but the media reports incidents, alerts motorists, provides alternate route information.

There are other “stakeholders” who have strong interests in incident management as well, but they are not generally responders per se.

Laws in Support of Quick Clearance

While it is important that all traffic incident responders understand the need to clear incidents quickly to reduce delay and avoid secondary incidents, it is ultimately the law that gives them the necessary power to do so, and protect them from exposure to liability in the process. Ideally, states would adopt broad, sweeping laws covering all aspects of incident management; however this is, in its entirety, too complex an issue to cover equitably. So, most states have created laws that target key parts of the whole that can be clearly articulated and can be equitably enforced.

The most common traffic incident management (TIM) and quick clearance (QC) laws are summarized below.

- “Stop and Return” laws that require drivers involved in crashes to stop and remain at the scene if possible, or if not, to return as soon as safely practical.
- “Move-it” laws that require motorists involved in minor crashes with no serious injuries to immediately move their vehicles from the travel lanes as long as they can do so safely. If they cannot, a second part of many Move-It Laws permits



responders to assist the motorist in moving the vehicle off the roadway by pushing, pulling, or towing.

- “Move-over” laws typically require drivers in the lane adjacent to any area in which there are stopped police cars (and often other emergency vehicles) with flashing lights, such as on the shoulder, to move over one lane when



possible. If traffic is too congested to move-over safely, the law requires drivers to slow below the posted speed limit and be prepared to stop.

- Liability laws, including protection of uniformed responders, service patrols, and other responders because the absence of such liability protection greatly inhibits responders from performing their duties in an ideal manner. Motorists are generally protected from gross negligence as well.
- Abandoned vehicle laws that give agencies the authority to remove abandoned vehicles (or other personal property) from the highway right of way, generally after some specified time period.





- Laws that explicitly establish the roles of transportation agencies and others in public safety, operations, and maintenance so that it is clear who is responsible for various functions in regards to traffic incidents.
- Exempt wreckers from over-weight vehicle limits so they are legally able to remove heavy vehicles expeditiously without having to obtain permits or waivers.

- Laws that enable transportation and/or environmental agencies a means to recover the costs they paid to get the roadway cleared from responsible parties and that these recovered funds be returned to the agency, not the state's general fund.

These laws all rarely exist in any one state, but most states have some of them. The challenge to traffic incident managers is to promote passage of laws that are needed in their states.

Inter-agency Agreements Supporting Quick Clearance

In the absence of laws explicitly covering some aspect of traffic incident management (TIM), inter-agency agreements can be a good way of effectively establishing good TIM and quick clearance (QC) policies and practices. The inter-agency aspect is meaningful because it indicates there is mutual agreement among the agencies to follow the stated policy or practice.



One of the most important of these is the “Open Roads Policy” that binds agencies to quick clearance by setting implied—or better still, explicit—goals for clearing the roadway of traffic incidents. The Open Roads Philosophy and the policies that implement it are

the subject of a separate TIM/QC fact sheet and will not be further explained here, other than to repeat that this philosophy is the foundation of other QC policies and practices.

Other important types of inter-agency agreements are summarized below:

- Mutual-aid agreements are common among public safety agencies of similar types, such as fire department and these agreements commit jurisdictions to go to the assistance of their partner in the agreement in the event of need. For example, if a major fire results from a crash that is too large for the local jurisdiction to handle, the neighboring fire district (which might even be in a different county or state) will come to the aid of the original responsible agency. These agreements are typically on a non-reimbursement basis, on the assumption that the aid will balance out in time. Agencies that are not as accustomed to this approach might consider it in incident and emergency management.
- Some states have Joint Operating Agreements that lay out in some detail the roles and responsibilities of dissimilar agencies, such as the State Department of Transportation and the State Patrol, in handling incidents and emergencies.



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- A Memorandum of Understanding (MOU) is another vehicle for creating shared roles and responsibilities. Examples of useful MOUs are as follows:
 - MOU between various agencies to share data and information,
 - MOU between the Medical Examiner (Coroner), public safety, and transportation agencies that empowers the latter to remove deceased victims from the roadway without waiting for the Medical Examiner to arrive on scene (under clearly stated conditions, of course), and
 - MOU between a State DOT and State Patrol (or similar local jurisdictions) for the transportation agency to purchase traffic enforcement services on given facilities to increase law enforcement presence, and thus improve TIM and QC.

The most significant feature of inter-agency agreements, irregardless of what they are called, is that they represent a mutually beneficial bond between the agencies.

Best Practices in Traffic Incident Management

The numbers and types of traffic incident management (TIM) and quick clearance (QC) policies and practices are too large to fully explain in a fact sheet. Our purpose here is to provide a “checklist” of general TIM best practices. A few of these are described briefly below.

- Executive Oversight of Traffic Incident Management Program: a TIM program can only be fully successful if it has support at the highest level, particularly where policy decisions and financial support from the executive level are essential.
- TIM Steering Committee: proactive leadership at the executive level can be enhanced by standing steering committees. Several excellent examples among Coalition members are the Delaware Valley Regional Planning Council, a multi-agency coalition that very actively plans and programs ITS projects in the Philadelphia region; Florida’s TIM Steering Committee makes the key policy recommendations and administrative decisions that impact the TIM Program; Georgia’s TIME Task Force is a clearing house for TIM and QC best practices and promulgates every phase of QC actions; and The Niagara International Transportation Technology Coalition, a regional—indeed international—planning, and to some extent operational, coordination group that not only programs projects, including TIM, it also funds some pilot work in ITS and TIM.
- Information Sharing with Peer Agencies: there are numerous channels for sharing information among agencies. The I-95 Corridor Coalition has recently implemented the Incident Management Clearinghouse to serve as a resource for TIM documents. While the QC Toolkit DVD initially has more material, the clearinghouse will be the repository for future materials.
- Strategic and Tactical Planning: responses to incidents, particularly major ones including large-scale emergencies and planned special events, will always be more effective if there has been advanced planning, which can be done at a variety of levels and address a diverse range of specificity, such as TIM Strategic Plans, Concepts of Operations, special events plans, and contraflow plans.
- Traffic Incident Management Teams: one of the most effective ways to create and disseminate TIM/QC best practices is the use of multi-agency, interdisciplinary teams. These bring the stakeholders together to create policies and discuss best practices.
- Inter-Agency Standards, Certification, and Training: a number of these types of programs exist around the nation, including published guidelines for TIM/QC and service patrols (e.g.,



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“safe parking” campaigns and vehicle spill clean-up), inter-agency training programs—stressing the opportunity for each agency to better understand the responsibilities, and challenges, of their partners, train-the-trainer programs, certification programs, and safety equipment for responders—this latter is being stressed more than ever with emphasis on high-visibility attire, for both daylight and nighttime.

- Technology and Communications: new technologies or imaginative uses of existing ones can enhance TIM/QC practices, such as the use of specialized vehicles are in the areas of freeway service patrols, recovery, and towing; specialized equipment like personal digital devices (PDAs) and other electronic tools to make their work more effective; TIM software; and law enforcement computer-aided dispatch (CAD) and TMC software integration.
- Inter-Agency Cooperation: this is critical to a successful TIM program. There are many ways to ensure this, some already covered, such as multi-agency steering committees and TIM Teams, alert and notification guides, MOUs,

Mutual-aid Agreements, Joint Operations Agreements, and bring non-traditional partners to the TIM table

- Incentive and Award Programs: the value of TIM/QC practices is only as good as the people performing the practices. Recognition and awards are common among the traditional public safety agencies, but newcomers to the mix, like Safety Patrols, and success in TIM itself, are not commonly recognized. A short list of some actions that can enhance the roles and self esteem of TIM responders are recognition of responders, awards for exemplary performance, and recognition for superior service.



- Basis for Payment for Towing and Recovery: this could be one of the most productive measures. Most areas base payment to towers on the time they take, which is contrary to QC practices. More appropriate bases would be the types of vehicle(s) removed and special equipment needed. Florida has, and Georgia is considering, an incentive program that adds additional compensation for superior QC performance.

Agencies should seriously consider innovative approaches to TIM and QC.

Best Practices in Incident Scene Management

The numbers and types of traffic incident management (TIM) and quick clearance (QC) best practices for incident scene management are too large to fully explain in a fact sheet. Our purpose here is to provide a “checklist” of general scene best practices for the major responders.

All Responders

- Coordinate between law enforcement, fire rescue, EMS (if separate), and others to organize the scene so that the responders and victims’ safety is assured, but minimizes lane blockages;
- Don high-visibility apparel as appropriate;
- Encourage drivers to move their vehicles off the roadway, if practical;
- Assist drivers in removing vehicles from roadway using push bumpers or tow lines;
- Remove debris from roadway if practical;
- Direct traffic around the incident;
- Reposition vehicles at scene as necessary as lanes open to increase traffic flow;
- Practice good emergency light discipline;
- Quickly clean-up minor spills—stop leaks, contain spilt liquids, and clean up minor spillage;
- Plan for secondary crashes as detours are established—position traffic warning devices;
- Remove traffic trapped between the incident and detour (check on welfare of trapped motorists);

- Monitor and respond to developments to ensure delays are minimized;
- Continue to plan for roadway opening as early as possible; and
- Depart the scene as quickly as possible.

Law Enforcement

- Position vehicle to protect the scene;
- Deploy flares, cones, etc., as appropriate;
- Initiate incident command structure and establish a command post and communications as appropriate; and
- Direct tow company to recover and/or move the vehicles if approval from the responsible party is not forthcoming.

Fire Rescue and Emergency

Medical Services

- Minimize lane blocking—use no more than one lane as a “buffer,” preferably a partial lane,
- Relocate to an accident investigation site (if available) or to a location off the highway, preferably out of site of remaining traffic,



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- Minimize the equipment to that actually needed,
- Conduct investigation as quickly as possible with minimal impact on traveled lanes, and
- Manage “volunteers” —if they are not in uniform, they should stay away.



- Follow instructions of public safety responders,
- Remove vehicles and debris from the roadway as quickly as possible,
- Transport persons from towed vehicles to a location off the facility, and
- Handle financial negotiations off site.

Service Patrol Operator

- Assist drivers in removing vehicles from roadway by push, pull, or drag;
- Assist other arriving responders in positioning of assets to assure responder safety, and minimize lane blockages;
- Continue to direct traffic past the incident site as long as necessary;
- Protect the back of the queue.

Crash and Homicide Investigators

- Minimize the time that it is necessary to close lanes for investigation, and
- Do immediate paperwork out of the traveled lanes or off site, either at an accident investigation site or off the facility altogether.



Roadway Maintenance Staff

- Use appropriate equipment,
- If repairs are needed on the infrastructure, assess whether these can better be done later in a non-incident situation, and
- Mark damaged areas as needed to alert motorists (for example to damaged guardrail).

Medical Examiner

- If it is necessary for law enforcement to move the bodies, explain as succinctly as possible what the responder needs to do to satisfy ME requirements, and
- Remove, or authorize others to remove the victim from the scene and transport to a mutually agreeable location.

Towing and Recovery

- Identify the responsible party, but do not unnecessarily delay recovery or towing decisions,



Remember—job one is safety, job two is quick clearance!

The Public's Role in Quick Clearance

The public's primary role in traffic incident management (TIM), and quick clearance (QC) is to avoid compounding the incident. Action such as driving too fast for conditions, inattention, rubbernecking, and (of course) expressing road rage all contribute to worsening the impact of incidents and often lead to secondary crashes. These latter are sometimes worse than the original incident, so it is critical to engage public support of good incident zone driving.



Most agencies engage in explicit campaigns to target public attention on specific safety, TIM, and QC issues. Some examples of campaigns that would encourage TIM/QC-friendly public actions might be the following:



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- Awareness of “Move” laws: these are aimed at explaining that it is the law to move the vehicle off the roadway or move over a lane for emergency vehicles, if possible.
- Good driving habits, such as:
 - Driver safety in incident zones,
 - Defensive driving,
 - Avoid rubbernecking, and
 - Suppression of road rage.
- Partnering with agencies and companies to provide outreach through:
 - Free advertisements in national magazines,
 - Logo on rental car maps,
 - Stickers on national association maps, and
 - Posters in partners’ public offices.
 - Partner with media for airing of public service announcements.

***Incident
management
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**I-95 CORRIDOR
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