Model Procedures Guide for Highway Incidents

First Edition

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Prepared by the National Fire Service Incident Management System Consortium Model Procedures Committee

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Statement of Purpose

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Many agencies, departments, organizations, and individuals respond to many types of incidents on the highway, both emergency and non-emergency, but all are urgent. The motives, missions, and methods of the members of this regional response force vary. Yet, these responders can find themselves thrown together with little notice and compelled by circumstance to jointly and immediately deal with highly stressful and dangerous problems in one of the most hazardous working environments imaginable – the highway. This guide is designed to assist responders to better organize their collective efforts by implementing an Incident Management System within which they can best use their marshaled resources. Additionally, the organizational structure provides for safety for personnel responding to and working at the incident scene as well as reduction in risks to motorists and pedestrians. While the origins of the Incident Management System (IMS) lie within the fire service, the paradigm is well-suited for joint use by law enforcement, fire and rescue, emergency medical services, hazardous materials, traffic management, repair and maintenance, utility, towing and recovery, public works, motorist assistance, and the many other types of organizations working on the highway.

This guide applies the organizational principles of IMS to generic highway incidents. It concentrates on how to integrate all highway incident participants into a coordinated and unified effort that produces the best outcome for all. This guide covers the special circumstances of the highway incident and tends to be rather superficial regarding other types of incidents such as structure fires or collapses, EMS incidents, wildland fires, and hazardous materials.

This guide, however, does not get into specialized levels of detail covered elsewhere in the emergency services literature. This guide does not instruct readers on the finer details related to highway clearance, traffic management (traffic control is covered in some detail), extrication, suppression, patient care, criminal investigation, or accident reconstruction.

This model encourages the use of the IMS for all highway incidents. IMS can be used for emergency incidents, nonemergency incidents, routine activities on the highway, highway maintenance activities, landslides, snowstorms, and other disasters; as well as planned parades or
other events. It provides for the effective management of personnel and resources for the safety and welfare of everyone on the highway. IMS serves as the initial design document from which organizations in your region may build joint-operating procedures. Once adopted by all, and with appropriate training of personnel, IMS provides an easily understood organizational structure and procedures with which to manage a wide variety of events.

The model procedures contained in this guide are designed to apply to both emergency and nonemergency events. The nonemergency events include those that do not involve emergency response organizations or that use emergency services in a routine manner.

The authors of this guide encourage the use of IMS for small, routine incidents and large, complicated, and unexpected disasters. IMS provides the means for expanding the organization in order to meet the spiraling management needs of escalating events.

This guide covers the Incident Commander’s responsibility to reduce risks to motorists trapped in the traffic queue caused by the incident. Because they are essentially trapped in their vehicles due to the highway incident, their welfare becomes the responsibility of those managing the incident. If they are not provided deliberate preventative care, many may require emergency care. Motorists trapped in the traffic queue should not be taken lightly, as thousands of vehicles can be stopped in a few minutes by an otherwise minor highway incident. Attending to their needs is actually sympathetic to the goals of on-scene activities and can usually be accomplished through traffic management, balancing the following considerations:

• Expediently providing emergency services and removing the traffic blockage
• Protecting incident responders (and those in their care) from moving vehicles
• Protecting motorists (and passengers and cargo) from the hazards of the incident
• Facilitating emergency vehicle (and other response vehicle) movement
• Facilitating traffic flow past the incident (and in the region)

Please read this document often. The daily application of its concepts and procedures will encourage regional standardization. This will enhance the likelihood of the entire community of emergency providers becoming better organized, more adaptive, and more expedient in the delivery of critical services.

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Further, the purpose of the model is to provide procedures for fire departments and other agencies to use in the design and adoption of IMS and related standard operating procedures. Users are encouraged to use all or part of the document for this purpose.

When this document is photocopied in total or in part, the copies should be accompanied by the following courtesy line:

NOTICE ON GENDER USE

In order to keep sentences uncluttered and easy to read, this text has been written using the masculine gender pronouns. Years ago, it was traditional to use the masculine pronouns to refer to both sexes in a neutral manner. Society evolves faster than language, and the male pronouns still predominate our speech. This usage is applied to this manual for the purpose of brevity and is not intended to address only one gender. Passive voice has also been used as a means to reduce gender-specific semantics, wherever it did not significantly detract from clarity.
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Foreword

In the early 1970s, a system was developed in California to address the resource management needs associated with large-scale wildland fires. The value of applying this system to any emergency or nonemergency situation requiring the management of people and resources soon became apparent. The system became known as the California FIRESCOPE Incident Command System (ICS). During the same period, the Phoenix Fire Department developed another incident management system, Fire Ground Command (FGC). This system also lent itself very well to managing the different events to which most fire departments respond.

As a result of the differences in focus and development of the two incident management systems, there were inconsistencies in terminology and application. A single incident management system that integrates the efforts of resources and agencies is critical to effective command and control of all incidents. It is particularly important on major incidents where a single department will interface with other resource agencies in its local area, as well as resource agencies from the state and federal government.

In 1989, at the International Association of Fire Chiefs annual conference in Indianapolis, a panel discussion was convened to discuss the possibility of merging the two incident management systems.

In July 1990, at a meeting in Phoenix, Arizona, representatives from the Phoenix Fire Department, FIRESCOPE, and the National Fire Academy in Emmitsburg, Maryland, sat down to begin the process of developing the combined system. Subsequent ad hoc meetings were held in September 1990, January 1991, and August 1991. As these meetings continued, other fire service organizations became involved in the process.

At the August 1991 meeting in Chesterfield, Virginia, the ad hoc committee structure evolved into a formal organization – the National Fire Service Incident Management System Consortium (hereon simply referred to as the Consortium). Chairs were selected for the Consortium and its three standing committees. In February 1993, at a meeting in Houston, Texas, the Consortium adopted a Constitution and Bylaws. In 1999, the Consortium became a legally incorporated not-for-profit corporation.

The charter members of the Consortium are the following:

- California Department of Forestry and Fire Protection (CDF)
- Channel Industries Mutual Aid (CIMA) Organization, Houston, Texas
- Emergency Management Institute (EMI)
- Fire Ground Command (FGC)
- FIRESCOPE

The Consortium has also published the following documents:

- *Model Procedures Guide for Structural Firefighting*
- *Model Procedures Guide for Wildland Firefighting*
- *Model Procedures Guide for High-Rise Firefighting*
- *Model Procedures Guide for Emergency Medical Incidents*
As the nation’s traffic congestion increased, it soon became clear that the traditional answer of constructing additional roadways was not going to solve the problem. Taking a lesson from the success in managing the nation’s airways, the federal and state Departments of Transportation (DOT) began to change their emphasis from construction and maintenance to also include operating and managing traffic on the highways. Because the majority of congestion is due to incidents, it became clear that traffic management implied incident management. Even though the DOT had begun to address traffic management on a regional basis, such activities were usually disjointed from public safety efforts related to emergency incidents. After-the-fact analysis of many major incidents showed that such interagency cooperation was needed for successful management of incidents with minimal risk to responders and the public.

Closer cooperation was needed with public safety to best address the needs of all. In July 2000, the U.S. Department of Transportation approached the Consortium and solicited its assistance in extending the successful application of IMS into the world of highway incident management. This model procedures guide is the result of that collaboration.

The Incident Management System includes the strength of the Incident Command System for large-scale incidents and the simplicity of Fire Ground Command for routine applications. There is a strong integration of strategy and tactics in the model procedures. The new system permits early implementation of Command and a smooth escalation of the organization to meet the demands of a major incident or disaster.

**The key elements of the system are:**

- The systematic development of a complete, functional organization with the major functions being Command, Operations, Planning, Logistics, and Finance/Administration.

- Designed to allow for multiagency adoption in federal, state, and local fire and emergency agencies, as well as for incorporating nonemergency responders, such as transportation, into the IMS organization. Organizational terminology used in IMS is designed to be acceptable to all levels of government.

- Designed to be the basic operating system for all highway incidents within each jurisdiction. The transition to large and/or multiagency operations requires minimal adjustment for any of the agencies involved.

- The organization builds from the ground up, with the management of all major functions initially being the responsibility of one or just a few persons. Functional units are designed to handle the most important incident activities. As the incident grows in size and/or complexity, functional unit management is assigned to additional individuals in order to maintain a reasonable span of control and efficiency.
• Designed on the premise that the jurisdictional authority of the involved agencies will not be compromised. Each agency having legal responsibility within its jurisdiction is assumed to have full command authority within its jurisdiction at all times. Assisting agencies will normally function under the direction of the Incident Commander appointed by the jurisdiction within which the incident occurs.

• Multijurisdictional incidents will normally be managed under a unified command structure involving a single incident command post and a single Incident Action Plan – applicable to all agencies involved in the incident.

• The system is intended to be staffed and operated by qualified personnel from any agency. A typical incident could involve the use of personnel from a variety of agencies working in many different parts of the organization.

• The system expands and contracts organizationally based upon the needs of the incident. Span-of-control recommendations are followed closely; therefore, the organizational structure is never larger than required.

On highway incidents, experience has proven the critical necessity of integrating response agencies into one operational organization, managed and supported by one command structure. For this reason, the Consortium supports an integrated, multidisciplined organization over separate incident management systems for each organization. Separate response disciplines (transportation, law enforcement, public works) are encouraged to address their specific tactical needs, while retaining the overall IMS structure. Responders are encouraged to include towing and recovery companies in their area and to explore ways in which they can be incorporated into the incident management organization. They often can offer useful resources and advice based upon a great deal of practical experience. The Towing and Recovery Association of America (TRAA), in partnership with the U.S. DOT, has published a Traffic Incident Management Towing Operators Workplan (TIMTOW) which contains additional specialized information on towing, recovery, and traffic incidents.

The National Fire Service Incident Management System Consortium believes that any Incident Management System should be guideline-driven for the following reasons:

• Reflects either strict department policy or allows flexibility in the management of incidents.
• Provides a standardized approach to managing any incident.
• Provides a predictable approach to incident management.
• May be applied routinely.
• Provides a training tool for responders’ reference.
• Provides a baseline for critiques and review of incidents.
• Makes the Incident Commander’s operations more effective.
This model reflects a procedural approach to the overall organizational structure of the Incident Management System suitable for use in the highway environment. The Consortium addresses various models of other “all risk” types of urban emergencies in other Consortium documents.

**DISCLAIMER**

With the usual involvement of many different response agencies in responses to highway incidents, issues can surface regarding the selection of which responder from which agency should staff particular positions in the IMS organization. This selection can become controversial when designating the Incident Commander or members of the Unified Command. In many other types of incidents, such as structure fires, crimes, or highway maintenance, one particular agency has a clear and exclusive statutory mandate for assuming the command and control of the incident. In these relatively straightforward organizational situations, questions of authority and jurisdiction have largely been resolved to the satisfaction of the participants. They have also usually been institutionalized through the use of ranks, certifications, mutual aid agreements, and formal memoranda of agreement. Rights of assumption of leadership roles can be much less clear with highway incidents, especially when they involve several agencies within the same profession (e.g., federal, state, county, and local law enforcement), or several agencies with overlapping jurisdiction (e.g., law enforcement and transportation), or mixtures of both.

The authors of this model procedures guide have intentionally avoided leadership issues, as they largely depend upon the particulars of local governance, traditions, organizational capabilities, and even personalities. Regardless of the situation, the question of leadership must be settled at the local level to the satisfaction of all participants, in order that highway incidents can be quickly, effectively, and safely handled. Even more important, questions of leadership must be settled in advance, as dissent and disorganization are dangerous at the highway scene. Examples in this guide that show IMS positions being filled by responders from a particular agency or profession are illustrative only and are not intended to establish any requirement to conform to any such choices in staff selection. To the contrary, an ideal response community posture would encourage the most suitable responder present at the scene to take charge of the incident, even temporarily, and to transfer command to later-arriving and better-qualified responders.
There are only three on-scene leadership principles that must be followed:

- **Command must be granted the authority to direct the incident.** Command must be empowered to represent the authorities having jurisdiction. Temporarily, the Incident Commander may not be a member of one of the agencies having jurisdictional authority.

- **Responders must follow Command direction.** Otherwise, they should withdraw from involvement in the incident. Independent and uncoordinated action must be avoided. Disputes should be resolved after the incident is closed.

- **Command must be capable of implementing operations.** Those in command of an incident must be physically present at the scene of the incident. They must also have the means to communicate with responders and to monitor their actions. They should not be impaired or distracted by duties other than command functions.
Chapter 1
Command Procedures

This model procedure guide identifies standard operating guidelines (SOGs) that can be employed in organizing all response resources into an effective, efficient, and coordinated workforce operating under a single command authority.

**NOTE:** Throughout this guide, several generic titles (or ranks), such as chief, company officer, and member, serve to collectively refer to responders according to their authority and responsibility. Using generic titles has been done as a matter of conversational convenience only. Readers should be aware that even though the fire service and other public safety professions have become accustomed to using these titles, partially due to their paramilitary command and control organizational traditions, other participants in highway incident management use other titles more prevalent in business and government. Nothing should be implied or inferred regarding similarities or differences between particular titles used by different organizations.

The term *member* refers to a responder having no supervisory responsibilities. Members may be firefighters, emergency medical technicians, law enforcement officers, or other agency employees.

A *company* represents a response unit, such as an engine, ambulance, DOT vehicle, or patrol car, and the personnel assigned to it (the *crew*). However, the more generic term *resource* will be used as much as possible in this guide.

The term *officer* is used to simply describe a member in charge of other members. A *company officer* is in charge of the crew of a company. Supervisors, crew bosses, foremen, and lead construction workers are all officers. In this guide, the more generic title of *resource officer* is used when appropriate.

The term *chief officer* is used as an all-inclusive title that describes an officer who is in charge of other officers. Chief officers hold positions of authority and responsibility in their organizations that are roughly equivalent to a law enforcement or EMS supervisor, a fire service battalion chief, or perhaps a general foreman or director in other agencies.

**Command procedures are designed to:**

- Fix the responsibility for Command on a specific individual through a standard identification system, depending on the arrival sequence of members, companies, supervisors, and chief officers.
- Ensure that a strong, direct, and visible Command will be established from the onset of the incident.
- Provide a system for the orderly transfer of Command.
- Establish an effective incident organization, defining the activities and responsibilities assigned to the Incident Commander (IC) and to other individuals operating within IMS.
- Provide a system to process information to support incident management, planning, and decision-making.

**RESPONSIBILITIES OF COMMAND**

The IC is responsible for establishing the tactical priorities. The tactical priorities are:

1. Stabilize the incident and provide for life safety.
2. Where possible, remove immediately endangered injured and noninjured persons.
3. Triage the injured.
4. Provide appropriate field treatment and transportation of the injured.
5. Provide for the safety, accountability, and welfare of personnel. This priority is ongoing throughout the incident.
6. Preserve evidence.
7. Facilitate the safe flow of traffic past the incident.
8. Restore the roadway to normal operations.

Readers are encouraged to apply this guide to both emergency and nonemergency highway incidents. This guide was specifically written for application to fire, medical, or law enforcement incidents having traffic control aspects, as well as to incidents that are solely traffic blockages and that have no emergent characteristics.

IMS is used to facilitate the completion of the tactical priorities. The IC is the person who drives IMS toward that end. The IC is responsible for building a Command structure that matches the organizational needs of the incident to achieve the completion of the tactical priorities for the incident.

**FUNCTIONS OF COMMAND**

The functions of Command define standard activities that are performed by the IC to achieve the tactical priorities. The functions of Command include:

1. Assume and announce Command and establish an effective operating position for the Incident Command Post (ICP).
2. Rapidly evaluate the situation (size-up).
3. Initiate, maintain, and control the communications process.
4. Identify the overall strategy, develop an Incident Action Plan (IAP), and assign companies and personnel consistent with the Incident Action Plan and SOGs.
5. Develop an effective incident management organization.
6. Provide tactical objectives.
7. Integrate local and regional traffic management operations.
8. Initiate and maintain a tactical work sheet.
9. Review, evaluate, and revise (as needed) the Incident Action Plan.
10. Provide for the continuity, transfer, and termination of Command.

The IC is responsible for all of these functions. As Command is transferred, so is the responsibility for these functions. The first five (5) functions must be addressed immediately from the initial assumption of Command.

**ESTABLISHING COMMAND**

The first responder (law enforcement, fire service, EMS, transportation) to arrive at the scene shall assume Command of the incident. The initial IC shall remain in Command until Command is transferred or the incident is stabilized and terminated.

The first-arriving responder on the scene must initiate whatever parts of IMS are needed to effectively manage the incident scene. The exact actions undertaken will vary depending on the type or scope of the incident:

1. A single-resource incident (single-patient medical incident, traffic collision with minor injuries, disabled vehicle, property damage collision, etc.) may only require that the initial Incident Commander provide a size-up report and acknowledge its arrival on the scene.

2. For incidents that require the commitment of multiple companies, the first responder or member on the scene must establish and announce “Command” and initiate an incident management structure appropriate for the incident.

The first-arriving responder activates the command process by giving an initial size-up report. This size-up report should include:

- Designation of the resource arriving on the scene
- A brief description of the incident situation (e.g., haz mat release, multivehicle accident, guardrail damage, etc.)
- Obvious conditions (haz mat spill, multiple patients, working fire, bridge collapse, etc.)
- Brief description of action taken (e.g., “Crew 42 is setting up a temporary traffic diversion.”)
- Declaration of the strategy or standardized operation (e.g., traffic stop, vehicle tow, tire change) to be used
- Any obvious safety concerns
- Assumption, identification, and location of Command
- Request or release resources as required
Examples of size-up by the first on-scene responder:

For an ordinary traffic stop:
“1-ADAM-14 on a traffic stop, northbound Main Street at 4th Ave. Reckless driving. Black, late-model sedan with California plates.”

For an ordinary, nonblocking vehicle with mechanical trouble:
“SERVICE-PATROL-4 with a disabled pickup truck on the right shoulder, westbound I-64 at mile marker 232. Apparent overheated engine.”

For vehicle accident with unexpected severity:
“RESCUE-AMBULANCE-21 on the scene of a multivehicle accident with a rollover. Correct location as dispatched. Apparent multiple patients. Dispatch a heavy rescue unit, two suppression units, two additional rescue-ambulances with an EMS supervisor, traffic control, and one air ambulance. RESCUE-AMBULANCE-21 is beginning triage.”

Radio Designation

The radio designation “Command” will be used along with the geographical location of the incident (e.g., “Abbott [Street] Command,” “I-5 Command”). This designation will not change throughout the duration of the incident. The designation of “Command” will remain with the officer currently in command of the incident throughout the event.

Radio Communications Format

Many national organizations have adopted the military protocol format for effective radio communications. In this protocol, the sender states the intended receiver’s radio designation first and then follows with the sender’s designation. For example, suppose that the IC needs to call the Traffic Control Group during the course of an incident. The proper radio transmission would be the following:

“Traffic Control Group from Command” or “Traffic Control. Command”

Saying the receiver’s designator first is an attention-getting action. By getting the receiver’s attention at the beginning of the message, the receiver is less likely to reply, “Unit calling Traffic Control Group, repeat.” The amount of radio traffic during responses is generally high, and each responder listens for his own radio designation before “tuning in” to the radio traffic.

Similarly, a radio user pays particular attention to the beginning of a reply message, and key words such as “COPY” (usually indicating that the previous message was received and understood), and “NEGATIVE” (usually meaning the opposite of COPY) that convey important information should be the first used when replying.

For clarity of purpose during radio communications, the phonetic designations of “Alpha,” “Bravo,” “Charlie,” and “Delta” are suggested. A usage may be, “Delta Division from Command.”

There are several versions of the phonetic alphabet that may be used. The traditional phonetic alphabet is: ALPHA, BRAVO, CHARLIE,
DELTA, ECHO, FOXTROT, GOLF, HOTEL, INDIA, JULIET, KILO, LIMA, MIKE, NOVEMBER, OSCAR, PAPA, QUEBEC, ROMEO, SIERRA, TANGO, UNIFORM, VICTOR, WHISKEY, X-RAY, YANKEE, ZULU.

There are other phonetic alphabets in common use in law enforcement, such as: ADAM, BAKER, CHARLIE, DAVID, EDWARD, FRANK, GEORGE, HENRY, IDA, JOHN, KING, LINCOLN, MARY, NORA, OCEAN, PAUL, QUEEN, ROBERT, SAM, TOM, UNION, VICTOR, WILLIAM, X-RAY, YELLOW, ZEBRA

Communications Order Model

In order for the IC (or any message sender) to obtain confirmation that a radio message/order was received, understood, and the recipient is taking correct action, the radio message must be repeated. This repetition does not need to be word-for-word, but it should be a brief and concise summary of the intent of the message or order from the sender. The format of the repetition should assure the IC (or other sender) that the message was received by the intended recipient and correctly understood, and the recipient is taking correct action.

The benefit of the communications order model is best illustrated when the recipient misunderstood the message and is taking incorrect action. This inappropriate action could be life-threatening. During the repetition, the IC has an opportunity to detect the error and make corrections before inappropriate actions are taken. For example, the following illustrates the communications order:

“DOT 7 from Command. Divert eastbound traffic from I-66 onto Route 50 at Exit 60, and you are assigned as West Division Supervisor.”

“Command, DOT 7. Copy. I will divert westbound traffic from I-66 onto Route 50, as West Division.”

“DOT 7, Command. Negative! Divert EASTBOUND traffic from I-66 onto Route 50, and you will be West Division Supervisor.”

“Command, DOT 7. I will divert eastbound traffic from I-66 onto Route 50 and be the West Division Supervisor.”

COMMAND OPTIONS

When arriving at the incident, the first-arriving responder may have several Command options from which to choose depending upon the type of incident, situation, and departmental policy. If a unit without tactical capabilities initiates Command, the establishment of an Incident Command Post should be a top priority. The following command options define the initial Incident Commander’s direct involvement in tactical activities and the modes of Command that may be used.

Investigation Mode

Upon arrival, an incident may not have visible indicators of a significant event. These situations generally require investigation by the first-arriving responder. The other responding resources should stage in an identified Staging Area until deployed. The officer of the first-in resource should assume Command and investigate (initial assessment), using a portable radio to command the incident.
**Intervention Mode**

Some situations demand immediate action and require the first-arriving officer’s direct involvement to take an immediate action that stabilizes the incident. In these situations, the officer goes with the crew to provide the appropriate level of assistance and supervision. The following are examples of situations that demand immediate action:

- Incident out of sight from the right-of-way (e.g., vehicle down an embankment or inside a tunnel, immersed) or other scenes that are difficult to evaluate
- Critical life-safety situations (e.g., childbirth, rescue, cardiac arrest, patient in burning car) where immediate action should be taken
- Any incident where the safety and welfare of responders, patients, good Samaritans, bystanders, or approaching traffic are a major concern
- Multiple locations of patients

Where fast intervention is critical, utilization of the portable radio permits officer’s involvement in the initial activity without neglecting initial Command responsibilities. The Intervention Mode should not last more than a few minutes and will end with one of the following:

1. The situation is stabilized and/or adequate resources arrive on the scene.
2. The situation is not stabilized, and the officer must withdraw from initial activities and establish an ICP. The resource’s crew remains to continue its original assignments and other support activities.
3. Command is transferred to a later arriving officer. When Command is transferred, the relieving officer may opt to return the initial Incident Commander to his crew, or assign this officer to a subordinate support position.

**Command Mode**

Certain incidents, by virtue of their size, complexity, or potential for rapid expansion, require immediate strong, direct, overall Command. In such cases, the resource officer will initially assume a safe and effective Command position and maintain that position until relieved by a higher-ranking officer. A tactical work sheet shall be initiated and used to assist in managing this type of incident.

If the initial arriving officer or member selects the Command Mode, the following options are available regarding the assignment of the remaining crew members:

- The officer may place the resource into action with the remaining members. One of the crew members will serve as the acting resource officer and should be provided with a portable radio. The collective and individual capabilities and experience of the crew will regulate this action. Crews operating in confined spaces or unbreathable atmospheres must consist of a minimum of two persons and follow applicable standards to provide for responder safety.
The officer may assign the crew members to work under the supervision of another officer. In such cases, the officer assuming Command must communicate with the officer of the other resource and indicate the assignment of those personnel.

The officer may elect to assign the crew members to perform staff functions to assist Command.

An officer assuming Command has a choice of modes and degrees of personal involvement in the tactical activities, but he continues to be fully responsible for the Command functions. The initiative and judgment of the officer are of great importance. The modes identified are guidelines to assist the officer in planning appropriate actions. The actions initiated should conform to one of the above-mentioned modes of operation.

**TRANSFER OF COMMAND**

Command is transferred to improve the quality of the Command organization. The following guidelines outline the transfer of the Command process. The transfer of Command procedures through various ranking officers must be predetermined in SOGs by each local highway incident response community.

Within the chain of command, the actual transfer of Command will be regulated by the following procedure:

1. The officer assuming Command will communicate by radio or face-to-face with the person being relieved. Face-to-face is the preferred method to transfer Command.

2. The person being relieved will brief the officer assuming Command, indicating at least the following:
   - Incident conditions — number of patients, incident location and extent, haz mat spill or release, etc.
   - Tactical work sheet/Incident Action Plan for the incident
   - Progress toward completion of the tactical objectives
   - Safety considerations
   - Deployment and assignment of operating companies and personnel
   - Appraisal of need for additional resources

Whenever practical, the person being relieved of Command should review the tactical work sheet with the officer assuming Command. This sheet provides the most effective framework for Command transfer because it outlines the location and status of personnel and resources in a standard form that should be well known to all members. Often, the first transfer of Command takes place via radio. The first chief officer or senior supervisor to arrive on scene initiates the transfer from the first-arriving responder. At this first transfer, only a few resources may be committed and a radio transfer is effective.
Later-arriving, higher-ranking chief officers or supervisors assuming Command must conduct the transfer face-to-face at the ICP. All supervisors and officers must be prepared to transfer the position responsibilities to the person relieving them when required. The new IC, based on the needs of the incident, will reassign the person being relieved of Command.

The practice of “Passing Command” is not a recommended practice. Passing Command to an officer not on the scene can create a gap in the Command process and compromise incident management and responder safety. The application of “Passing Command” has historically been applied to critical fast-attack situations between the first- and second-due resources. In this situation, the first-due resource would assume initial Command, take action, and pass Command to the second-due resource by radio upon its arrival on the scene. The use of “Passing Command” should rarely be applied as the more formalized transfer of command process described above is preferred. **Command cannot be passed/transferred to an officer not on scene.**

In some critical situations, it may be appropriate to advise an inbound resource or chief officer of the intent to transfer Command to the resource/chief officer upon his arrival at the scene. When a chief officer arrives at the scene at the same time as the initial-arriving resource, the chief officer should assume Command of the incident. Assumption of Command is discretionary for senior level officers or supervisors.

Should a situation occur where a later-arriving chief officer cannot locate or communicate with Command (after several radio attempts), he will assume and announce his assumption of Command and initiate whatever actions are necessary to confirm the safety of the missing crew that could not be reached by radio.

When time and circumstances allow, the officer who will be assuming Command may do his own size-up before assuming Command. The size-up provides an opportunity to see where companies are operating and an idea of their effectiveness.

It also gives the officer a chance to get his own perspective and understanding of the scope and magnitude of the incident. By doing this before assuming Command, the officer can gain some understanding of the current Incident Action Plan and ease the transition from one IC to another. The senior officer should announce his on-scene arrival to the IC and advise that he will be doing the size-up. Until the officer completes the size-up and the formal transfer of Command process has taken place, the current IC maintains Command of the incident. In extreme and life-threatening situations that affect personnel safety, anyone can effect change by initiating corrective action and notifying Command.

**GENERAL CONSIDERATIONS**

The response and arrival of additional ranking officers on the incident scene strengthens the overall Command function. As the incident esca-
lates, the IC should use these additional officers as needed. However, the arrival of a ranking officer or supervisor on the incident scene does not automatically mean that Command has been transferred to that officer or supervisor. Command is only transferred when the outlined transfer of command process has been completed. Chief officers and staff personnel should report directly to a designated location for assignment by the IC.

Tactical level communications procedures should include standard communications necessary to gather and analyze information to plan, issue orders, and supervise operations. For example:

- Assignment completed
- Additional resources required
- Unable to complete
- Special information

**Progress Reports**

The IC and response resources generally arrive at an incident with limited knowledge about the incident, conditions, or circumstances. It is essential that the IC quickly obtain a “picture” of what is happening. Progress reports provide initial and ongoing information that is critical to effective and safe decision-making.

Progress reports should be provided by the first resources assigned to Divisions (geographic areas) or Groups (functional assignments). This early updating begins the picture-building process for the IC. As the incident continues, Division/Group (D/G) supervisors should obtain critical information and forward progress reports to the IC on a regular basis. Progress reports should be communicated to the IC as progress is made and just as important, reports should be communicated when progress toward objectives cannot be achieved. Progress reports allow the IC to prioritize resource commitments to areas of most need. Reports are typically required more frequently in the early stages of the incident and less frequently as the incident is stabilized. Radio discipline will be required when making progress reports. Non-essential communication should be avoided. Progress reports should be brief and concise in nature.

The IC has the overall responsibility for managing an incident. Simply stated, the IC has complete authority and responsibility for the incident. If a higher-ranking officer wants to effect a change in the management of an incident, he must first be on the scene of the incident and then use the transfer of command procedure.

**Incident Action Plan**

Incident Action Plans are critical to the rapid, effective control of emergency operations. An Incident Action Plan is a well-thought-out, organized course of events developed to address all phases of incident control within a specified time. The Incident Action Plan must be completed in a time frame that allows the least amount of negative action to continue.
Written Incident Action Plans may not be necessary for short-term, routine operations. Large scale or complex incidents, however, require the creation and maintenance of a written plan for each operational period.

Action planning starts with identifying the strategy to achieve a solution to the confronted problems. Strategy is broad in nature and defines “what” has to be done. Once the strategy has been defined, the IC or the Operations Section Chief (reporting to a Unified Command) needs to select the tactics (the “how, where, and when” of the Incident Action Plan) to achieve the strategy. Tactics are measurable in both time and performance. An Incident Action Plan also provides for necessary support resources, e.g., traffic control, transportation vehicles, extrication tools, law enforcement, critical incident debriefing teams, etc.

Once a plan is established and resources are committed, it is necessary to assess its effectiveness. Information must be gathered and analyzed so that necessary modifications may be made to improve the plan, if necessary. This step is part of a continuous size-up process.

Planning refers to the process of developing the Incident Action Plan, which is highly specific to a particular series of actions to be taken at a particular incident. Pre-incident planning, on the other hand, is the process of completing much of the planning activity well in advance of the occurrence of any particular incident. Pre-incident plans could be developed for a complex highway location, such as an interchange, a work zone, or special event. For highway incidents, pre-incident planning could establish best avenues of approach for incidents occurring on each particular stretch of highway.

**Tactical Worksheets**

As an incident escalates from a few resources or crews to a major operation, it will be impossible for the IC to mentally track where all of the resources are committed on the emergency scene. It is essential that the IC document the resources committed on the scene, their current location, which D/G they are assigned to, other resources that are currently available, and a sketch of the scene. The tactical worksheet should be started very early in the incident.

Tactical worksheets are printed forms that are designed to allow the IC (and D/G supervisors) to document the commitment of resources in a standardized format. As a result, information can be found in the same location on the worksheet. This standardization allows for a more effective transfer of command when the need arises.

An example of tactical worksheets can be found in Appendix A. Agencies are encouraged to adopt and modify these examples or develop their own worksheet. Blank worksheets should be carried on all response vehicles and command vehicles. They must be used on a routine basis. The information contained in these forms has proven extremely useful in cost recovery and post-incident analysis.
Chapter 2
Organizational Structure — Command

Courtesy of Rich Mahaney
Jackson, Michigan,
Fire Department
Chapter 2
Organizational Structure — Command

The Incident Commander (IC) is responsible for developing an organizational structure using standard operating guidelines (SOGs) as soon as possible after arrival and for implementing initial tactical control measures. Obviously, the size and complexity of the organizational structure is determined by the scope of the emergency and availability of resources.

ORGANIZATIONAL HIERARCHY

The Incident Management System (IMS) organizational structure develops in a modular form based upon the nature, complexity, and size of an incident. The organization’s staff builds from the top down, with responsibility and performance placed initially with the IC. As a situation dictates, four separate Sections can be employed with each Section potentially having the need to establish several Divisions, Groups, or Units. The specific organizational structure for any given incident will be based upon its management needs. If one individual can simultaneously manage all major functional areas, a larger command organization is not required. When a function requires dedicated management, a manager is assigned that responsibility.

IMS should be considered the basic system to be used on any size or kind of incident. The only change in using IMS on a very large incident rather than a small incident is the method of growth of the basic emergency management organization to meet the increased needs. Thus, the full establishment of IMS should be viewed as an extension of the existing incident organization. The determination to expand the organization will be that of the IC and is done when the determination is made that the initial attack or reinforced attack will be insufficient.

The terms and titles used in the Incident Management System organizational hierarchy are defined below for ease of reference and understanding. The roles are more fully described later in the text.

**Incident Commander (IC):** The individual responsible for the management of all incident operations.

**Officer:** A member of the Command Staff (e.g., Information Officer, Safety Officer, or Liaison Officer). Command Staff report directly to the IC.

**Section Chief:** A member of the General Staff (e.g., Operations Section Chief, Planning Section Chief, Logistics Section Chief, or Finance/Administration Section Chief).

**Director:** An individual responsible for command of a Branch (e.g., Suppression Branch Director, Medical Branch Director, Traffic Management Branch Director, Law Enforcement, or Haz Mat Branch Director).
**Supervisor:** An individual responsible for command of a Division or Group (D/G) (e.g., Division A Supervisor, Extrication Group Supervisor, Traffic Control Group Supervisor).

**Manager:** An individual responsible for managing a particular activity within the incident organization (e.g., Staging Area Manager or Rehab Unit Manager).

**Unit Leader:** An individual responsible for managing a particular activity in the Operations, Planning, Logistics, or Finance/Administration Sections (e.g., Traffic Control Unit Leader, or Supply Unit Leader).

**Single Resource:** An individual, a piece of equipment and its personnel, or a crew or team of individuals with an identified supervisor that can be used on an incident (e.g., Patrol Car 13, Engine 1, Rescue-Ambulance-4, Service-Patrol-5, Traffic Control 17).

**IMS ORGANIZATIONAL DEVELOPMENT**

The two basic components of IMS organizational development are the initial response and the reinforced response. Each of these is highlighted as follows.

**Initial Response**

In most jurisdictions, the initial response consists of anywhere from one to five single resources that are dispatched to a reported highway incident. This is also commonly referred to in the fire service as a *first-alarm assignment* and in law enforcement as an initial response. The first-arriving resource will assume Command until arrival of a higher-ranking officer and transfer of command procedures are followed.

![Figure 2.1](image-url)

Figure 2.1 illustrates a typical initial dispatch of resources to the scene of a reported motor vehicle accident with minor injuries on an interstate or arterial highway. The city law enforcement unit, arriving first on the scene, assumes command. The engine company and ambulance report directly to Adam 14 upon arrival and are assigned to suppression and EMS tasks according to standard operating procedures. The service patrol unit arrives, checks in with the IC by radio, and assumes traffic control duties. All units report directly to the IC.
**Reinforced Response**

A reinforced response is initiated when the IC determines that the initial response resources are insufficient to deal with the size or complexity of the incident. In this case the IC will request appropriate additional or special resources from within the agency or through mutual aid.

![Diagram showing the Command organization]

**Figure 2.2**

Figure 2.2 shows the change to the organization of resources on the scene after it was determined that the injured driver of one of the crash vehicles was trapped. Initial response was reinforced with additional resources. All units still report directly to the IC.

**COMMAND ORGANIZATION**

The Command organization must develop at a pace that stays ahead of the tactical deployment of personnel and resources. In order for the IC to manage the incident, he must first be able to direct, control, and track the positions and functions of all operating companies. Building a Command organization is the best support mechanism the IC can use to achieve the harmonious balance between managing personnel and incident needs. Simply put, this means:

- **Small scale and “simple” incidents** = Small Command organization
- **Large scale and complex incidents** = Large Command organization

The basic configuration of Command includes three levels:

1. **Strategic Level** – This entails the overall direction and goals of the incident.
2. **Tactical Level** – Objectives that must be achieved to meet the strategic goals. The tactical level supervisor/officer is responsible for completing assigned objectives.
3. **Task Level** – Specific tasks assigned to companies that lead toward meeting tactical level requirements.
Strategies

The strategic level involves the overall Command of the incident. The IC is responsible for the strategic level of the Command structure. The Incident Action Plan (IAP) should cover all strategic responsibilities, tactical objectives, and support activities needed during the entire operational period. The IAP defines where and when resources will be assigned to the incident to control the situation. The IAP is the basis for developing a Command organization, assigning all resources, and establishing tactical objectives.

Strategic level responsibilities include:

- Planning
- Determining the appropriate strategy
- Establishing overall incident objectives
- Setting priorities
- Developing an Incident Action Plan
- Obtaining and assigning resources
- Predicting outcomes
- Assigning specific objectives to tactical level units
- Integrating local and regional traffic management operations

Tactics

Tactical-level supervisors direct operational activities toward specific objectives. Tactical-level supervisors supervise grouped resources and are responsible for specific geographic areas or functions. A tactical-level assignment comes with the authority to make decisions and assignments within the boundaries of the overall plan and safety conditions. The accumulated achievements of tactical objectives should accomplish the strategy as outlined in the Incident Action Plan.

Tasks

The task level refers to those activities normally accomplished by individual companies or specific personnel. The task level is where the
work is actually done. Task-level supervisors routinely supervise task-level activities. The accumulated achievements of task-level activities should accomplish tactical objectives.

**COMMAND STRUCTURE — BASIC ORGANIZATION**

The most basic organization combines all three levels of the Command structure. For example, an officer on a single-unit response to a single vehicle traffic accident determines the strategy and tactics and supervises the crew doing the task.

The basic structure for a “routine” incident involving a small number of resources requires only two levels of the Command structure. In this situation, the IC directly handles strategic and tactical levels. Resources report directly to the IC and operate at the task level.

**COMMAND STRUCTURE (DIVISION OR GROUP)**

Divisions and Groups (“D/Gs”) are tactical-level components of the IMS organization that assemble resources under a single Supervisor for a common purpose. Divisions represent geographic area assignments, and Groups represent functional assignments. Divisions and Groups are at the same organizational level within IMS; however, Groups may operate within more than one Division. When this occurs, Group Supervisors should communicate and coordinate their activities with the applicable Division Supervisors.

The following examples illustrate the use of Division and Group designations. As an incident escalates, the IC should organize resources into manageable components. In order for management to effectively use terminology at the tactical level, the entire highway incident response community must have a designated method of dividing an incident scene into Division and/or Groups.
Figure 2.6 shows how the IC can reduce the number of units that are directly reporting to him from ten to two. For example, in a situation where a highway incident requires separate operations on both the westbound and eastbound lanes, the IC appoints two of the engine officers in charge (OICs) to head two divisions to direct operations in two different areas and assigns resources to each.

**Geographic Division Designation**

In situations where a highway incident is geographically dispersed, Divisions may be set up based on logical or practical criteria. For example, a completely blocked intersection could be divided up into the four approaches as follows.

In Figure 2.7, a large incident at a highway intersection has been divided into four Division areas, with each responsible for a side of the incident and the approaching roadway to that side.

For clarity of purpose during radio communications, the phonetic designations of "Alpha," "Bravo," "Charlie," and "Delta" are suggested. For example, "Command from Division Delta."
In Figure 2.8, the IC has established three groups assigned to the functions of traffic control, extrication, and medical activities. At the same time, he organized two Divisions to handle operations in the two major operating areas at this incident. As can be seen in this example, the individual resources do not report directly to the IC.

**Establishing Divisions or Groups — Basic Operational Approach**

A major incident initially has more tasks that need doing than the available resources can accomplish. There is a tendency to start performing these tasks immediately upon arrival, thereby postponing the establishment of IMS. *This is a major error.* The lack of direction results in confusion and lack of coordination. This increases the risks to emergency personnel and decreases the likelihood of a successful operation.

Complex emergency situations often exceed the capability of one officer to effectively manage the entire operation. Therefore, it is important to reduce the span of control by creating organizational
subcomponents to direct operations in specific geographic areas or to
manage incident-related functions. This is accomplished by establish-
ing Divisions or Groups.

The use of Division/Groups (D/Gs) reduces the span of control to
more manageable, smaller-sized units. D/Gs allow the IC to communi-
cate principally with these organizational levels, rather than multiple
individual resource officers, which provides an effective Command
structure and incident scene organization.

Generally, D/G responsibilities should be assigned early in the in-
cident, typically to the officer of the first resource assigned to a geo-
graphic area or function. This early establishment of D/Gs provides
an effective organizational framework on which the operation can be
built and expanded.

The number of resources that can be effectively managed by the
IC varies. Normal span of control is three to seven. In fast-moving,
complex operations, a span of control of no more than five D/Gs is
recommended. In slower-moving, less-complex operations, the IC may
effectively manage more D/Gs. When the span of control is exceeded, the IC
should establish Branches or an Operations Section.

The D/G procedures provide an array of major functions that may
be selectively implemented according to the needs of a particular situ-
ation. This places responsibility for the details and execution of each
particular function on the D/G.

When effective D/Gs have been established, the IC can concentrate
on overall strategy and resource assignments, allowing the D/G Super-
visor to manage his assigned resources. The IC determines strategy
and assigns tactical objectives and resources to each D/G. Each D/G
Supervisor is responsible for the tactical deployment of the resources
at his disposal in order to complete the tactical objectives assigned by
the IC. D/G Supervisors are also responsible for communicating their
needs and progress to Command.

The use of D/Gs reduces the overall amount of radio communica-
tions. Most routine communications within a D/G should be conducted
face-to-face between resource officers and the D/G Supervisor. This
process reduces unnecessary radio traffic and increases the ability to
transmit critical radio communications.

The safety of response personnel represents a major reason for es-	tablishing D/Gs. Each D/G Supervisor must maintain communication
with assigned resources to control both their position and function.
The D/G Supervisor must constantly monitor all hazardous situations
and risks to personnel and take appropriate action to ensure that re-
sources are operating in a safe and effective manner.

The IC should begin to assign D/Gs based on the following factors:

- Situations that involve a number of companies or functions
  beyond Command’s span of control. Command should initially
  assign responsibility for D/G operations to the first resource officer
assigned to a geographic area or functional position. As additional chief officers become available, they may be assigned to relieve the resource officer of responsibility for the area or function:

- When resources are involved in complex operations (large geographic area, complex highway incidents, hazardous materials operations, mass casualty incidents, technical rescues, etc.).

- When resources are operating from tactical positions that Command has little or no direct control over (i.e., they are out of Command’s sight).

- When the situation presents special hazards and close control is required over operating companies (e.g., significant traffic congestion, unstable structural conditions, fire threatening rescue areas, threats of violence, etc.).

When establishing D/Gs, the IC will assign/advise each unit:

- Tactical objectives.
- A radio designation (Division or Group).
- The identity of resources assigned to that D/G.

**D/G Guidelines**

D/Gs will be regulated by the following guidelines:

- Command assigns D/Gs as required for effective operations.

- The incident scene should be subdivided in a manner that makes sense. Assign geographic locations to Divisions (e.g., Division Alpha) and/or assign functional responsibilities to Groups (e.g., Eastbound Traffic Control Group) when multiple Groups are established because traffic control is needed at more than one location. The radio call sign for the Eastbound Traffic Control Group could be abbreviated to “Eastbound Group.”

- Command shall advise each D/G of specific tactical objectives (e.g., Traffic Control Group would be advised the right two lanes are to be blocked). The overall strategy should be provided if time permits so that the D/G Supervisors have some idea of what is going on and how their assignment fits into the overall plan (e.g., Traffic Control would know that heavy rescue is conducting an extrication in the blocked lanes).

- The number of resources assigned to a D/G depends on conditions within that area of responsibility. Command will maintain an awareness of the number of resources operating within a D/G and the capability of that specific D/G to effectively direct operations. If a D/G Supervisor cannot adequately control the resources within his D/G, he should notify the IC so that responsibilities can be split or other action taken. In most cases, three to seven resources or grouped resources (e.g., strike teams or task forces) represent the maximum span of control for a D/G Supervisor.
• D/G Supervisors must use the appropriate, specific D/G designation in radio communications (e.g., “Main Street Command from Division A” or “Main Street Command from Northbound Group”).

• As previously stated, D/Gs are supervised by chief officers, resource officers, or any other member designated by Command. Regular transfer of command procedures should be followed in transferring D/G responsibility when necessary. In some cases, a D/G Supervisor may be assigned to an area/function initially to evaluate and report conditions and advise Command of needed tasks and resources. This D/G Supervisor will then assume responsibility for directing resources and operations within his assigned area of responsibility.

• The D/G Supervisor must be in a position to directly supervise and monitor operations. This requires the D/G Supervisor to be equipped with the appropriate protective clothing and equipment for his area of responsibility. If a D/G Supervisor is operating within an atmosphere that is “immediately dangerous to life and health,” then a partner must accompany him at all times. Refer to NFPA 1500, Standard for Fire Department Occupational Safety and Health Program, for guidance on the specifics of what should be considered immediately dangerous to life and health situations.

In general, the D/G Supervisor must do the following:

• Complete objectives assigned by Command.
• Account for all assigned personnel.
• Ensure that operations are conducted safely.
• Monitor work progress.
• Redirect activities as necessary.
• Coordinate actions with related activities and adjacent D/Gs.
• Monitor welfare of assigned personnel.
• Request additional resources as needed.
• Provide Command with essential and frequent progress reports.
• Reallocate or release resources within the D/G.

NOTE: The D/G Supervisor should be readily identifiable and maintain a visible position in his area of responsibility as much as possible.

The primary function of resource officers working within a D/G is to direct the operations of their individual crews in performing assigned tasks. Resource officers will advise their D/G Supervisor of work progress, preferably face-to-face. All requests for additional resources or assistance within a D/G must be directed to the D/G Supervisor. These Supervisors will communicate with the next higher level of supervision. Command is responsible for obtaining resources and prioritizing their commitment.
Each D/G Supervisor will keep Command informed of conditions and progress in his D/G through regular progress reports. The Supervisors must limit progress reports to essential information only. Command must be advised immediately of significant changes, particularly those involving the ability or inability to complete an objective, the existence of hazardous conditions, accidents, imminent structural collapse, etc.

The D/G Supervisor should avoid becoming involved in physical task activities because doing so compromises his ability to manage effectively. However, when few resources are on scene in the early stages of an incident, the Supervisor may be required to participate in physical activities. As additional units arrive, the Supervisor must resume the hands-off supervisory role.

When a resource is assigned from Staging to an operating D/G, the resource will be told what D/G they will be reporting to and the name of the D/G Supervisor. The D/G Supervisor will be informed of which resources have been assigned to him by the IC. It is then the responsibility of the Supervisor to contact the assigned resource to transmit any instructions relative to the specific action requested.

D/G Supervisors monitor the conditions of the crews operating in their areas of responsibility. Relief crews will be requested in a manner that ensures the safety of personnel and maintains progress toward the D/G’s objectives. Supervisors will ensure an orderly and thorough reassignment of crews to rehabilitation (in the Responder Rehab Unit, see the Logistics Section in Chapter 4 of this manual). Crews must report to the incident rehab intact to facilitate accountability.
Chapter 3
Command Structure — Expanding the Organization by Establishing Branches
Chapter 3

Command Structure — Expanding the Organization by Establishing Branches

As a small incident escalates into a major incident, the span of control may become stretched as more D/Gs are implemented. In addition, the Incident Commander (IC) can become quickly overwhelmed and overloaded with managing information, assigning companies, filling out and updating the tactical work sheets, planning, forecasting, requesting additional resources, talking on the radio, and fulfilling the other functions of Command. The immediate need of the IC is support. As additional chief officers arrive on the scene, the Command organization may be expanded through implementation of Branches and Sections and the involvement of officers, supervisors, and staff personnel to fill Command and General Staff positions. Section-level positions can be implemented at any time, based on the needs of the incident.

D/Gs identify tactical-level management assignments in the Command structure. As an event places more demands on the IC, Branches may be added to facilitate more effective incident management. The person in charge of the Branch is called the Branch Director. The following factors may cause an IC to consider the creation of a Branch or Branches:

- The span of control for the number of D/Gs in place begins to become unwieldy or unmanageable.
- The incident becomes more complex (e.g., rush hour traffic jam, multijurisdictional, worsening weather conditions).
- The incident has two or more distinctly different operations (e.g., road/infrastructure repair, fire, medical, hazardous materials, law enforcement).

While Branches may be established at an incident to serve several purposes, they are not always essential to the organization of the Operations Section. When the number of D/Gs exceeds the recommended span of control, however, the IC or Operations Section Chief should establish a multi-Branch structure and allocate the D/Gs within those Branches.

In the following example, the IC has one Group and four Divisions reporting to the Operations Section Chief, with two additional Divisions and one Group in the process of being added. At this point, a two-Branch organization should be created.

Situations such as shown in Figure 3.1 are unworkable. (Subordinate resources have been omitted for clarity.) Here, the Operations Section Chief has just formed two new Groups and a new Division. With nine individuals reporting directly to him, he quickly realizes that he cannot cope with all of their competing demands for attention. The solution he chooses is to implement Branches, which places an intermediate level
of command between the Incident Commander/Operations Section Chief and specific Divisions and Groups. After modifying the organization, his portion of the IMS structure appears as follows:

![Diagram of IMS structure](image)

**Figure 3.1**

![Diagram of IMS structure with branches](image)

**Figure 3.2**
Now, the Branches have solved the Operations Chief's span-of-control problem. Branches should operate in their areas of responsibility on a separate tactical channel and a command channel to communicate between the Incident Commander/Operations Section Chief and the Branch Director. The radio designation of functional Branches should reflect the objective of the Branch (i.e., Haz Mat Branch, Medical Branch, Law Enforcement Branch, etc.) Branches may also be designated numerically (e.g., Branch I, Branch II, Branch III and so forth).

When the IC or Operations Section Chief assigns Branch Directors, the D/G Supervisors must be notified of their new immediate superior in the command structure. This information should include the following:

- The name of the Branch to which the D/G is now assigned
- The radio channel their Branch is using

Radio communications should be directed from the D/G Supervisor to the Branch Director — not directly to Command or Operations. D/G Supervisors will relay information on Branch formation to the companies operating in their D/G.

Branch Directors may be located at the ICP or at operational locations. When located at the ICP, Branch Directors can communicate on a face-to-face basis with the IC or Operations Section Chief.

When an incident encompasses a large geographic area, it may be more effective to have Branches in tactical positions. When so deployed, Branch Directors immediately implement command and control procedures with their Branch. In these situations, Operations must assign personnel to monitor a Branch radio command channel.

An IC may establish Branches before assigning Divisions or Groups. Branches are not limited to the Operations Section; any Section Chief may establish Branches within his section.

**Organization expands from this ...**

![Diagram](image)
Figures 3.3 and 3.4 show another example of how to reorganize many direct-reporting units into a more effective branch structure.

**FUNCTIONAL BRANCH STRUCTURE**

When the nature of the incident, such as a major aircraft crash within a jurisdiction, calls for a functional Branch structure, each department within the jurisdiction (transportation, law enforcement, fire, EMS, etc.) may have its own functional Branch operating under the direction of a single Operations Section Chief. In the following example, the Incident Commander is from law enforcement, the Operations Section Chief is from the fire department, with the Deputy Operations Section Chief drawn from the traffic management and medical departments. Other alignments could be made, depending upon the jurisdictional plan and the type of emergency. Note that the Incident Command in this situation could be either Single or Unified Command, depending upon the jurisdiction. Unified Command is addressed in Chapter 5 of this Guide.
Transportation incidents often involve loss of life, which can present a challenge to the Incident Commander. Many jurisdictions require that the scene remain undisturbed as much as possible until representatives from the coroner’s office or medical examiner personally respond and investigate the circumstances surrounding fatalities. Leaving the scene undisturbed introduces further complications in incident management concerning scene security, forensics, health, and emotional problems. Further incident operations (such as restoring units to service and clearing the traffic lanes) may need to be modified or postponed. Mass-casualty incidents with many fatalities require a concerted effort devoted to fatality management or possibly morgue management. This is a high-interest, high-visibility activity that consumes a significant amount of specially trained resources and is appropriate for management as an entire Branch.

**MULTIJURISDICTIONAL INCIDENTS**

When the incident is multijurisdictional, resources are best managed under the agencies that have normal control over those resources.

Branches should be used at incidents where the span of control with D/Gs is maximized or at incidents involving two or more distinctly different management components (e.g., a lengthy blockage of a major highway during rush hour due to a haz mat spill). The IC may elect to assign Branches to forward positions to manage and coordinate activities, as illustrated in Figure 3.6.

![Figure 3.6: Command Structure — Expanding the Organization by Establishing Branches](image-url)
When the incident requires the use of aircraft, such as for the transportation of patients, responders, or for aerial reconnaissance, the Operations Section Chief should establish the Air Operations organization. Its size, organization, and use depend primarily upon the nature of the incident and the availability of aircraft. While the use of an Air Operations organizational element may be rare, the variety and number of aircraft that may become involved in a highway incident must be considered. It is common to find medical air evacuation, law enforcement, news media, traffic reporting services, and even sightseers flying in the vicinity of a major highway incident, especially if the event is newsworthy and has lasted for some time. Any and all of these may be available, willing, and able to be pressed into service. Close liaison with FAA flight control may be necessary, especially if the incident happens to be in the vicinity of an airport. Conflicts between commercial airplanes and incident-related air traffic should be avoided at all costs.
Chapter 4
Expanding the Organizational Structure by Establishing Sections
Chapter 4
Expanding the Organizational Structure by Establishing Sections

During the early stages of large-scale or complex incidents, the immediate need of the Incident Commander (IC) is Command support. As additional ranking officers arrive on scene, the Command organization may be expanded by the assignment of resource officers and staff personnel to fill Command and General Staff positions.

The transition from the initial response to a major incident organization will be evolutionary. Section and Unit level positions within IMS will be staffed only when the corresponding functions are required by the incident. Until such time as a Section or Unit is specifically staffed, all functions associated with that Section or Unit remain the responsibility of the IC.

The majority of positions within IMS will not be activated until the initial response is determined to be insufficient to handle the situation. When this occurs, additional qualified personnel are requested through normal dispatching procedures. If it is later determined that a specific position is not needed, the request can be canceled. Some agencies have elected to use a modular form of dispatching, such as dispatching entire organizational elements together.

During the initial phases of an incident, the IC is normally responsible for the four Section roles. These positions are called the General Staff positions and include:

- Operations
- Planning
- Logistics
- Finance/Administration

We will examine each of these sections in this chapter.
The Operations Section is responsible for the direct management of all incident tactical activities, the tactical priorities, and the safety and welfare of the personnel working in the Operations Section. The Operations Section Chief designates an appropriate command channel to communicate strategic and specific objectives to the Branches and/or tactical level management units.

The Operations Section is often implemented (staffed) as a span-of-control mechanism. When the number of Branches or D/Gs exceeds the capability of the IC to effectively manage, the IC may staff the Operations Section to reduce the span of control, and thus transfer direct management of all tactical activities to the Operations Section Chief. The IC is then able to focus his attention on management of the entire incident rather than concentrating on tactical activities.

We have already seen the various organizational elements that may be implemented within the Operations Section. If expanded to the fullest extent, theoretically, the Operations Section could manage a very large number of resources, as shown in Figure 4.3. Such an expansion would be highly unlikely in a highway incident, due to the practical considerations of co-locating so many units on the highway.

**Operations Section Chief**

The Operations Section Chief is responsible for the direct management of all incident tactical activities and should have direct involvement in the preparation of the Incident Action Plan for the period of responsibility. The responsibilities of the Operations Section Chief can be summarized as follows:

- Manage incident tactical activities.
- Coordinate activities with the IC.
- Participate in development of the Incident Action Plan.
- Implement the Operations portion of the Incident Action Plan.
- Assign resources to tactical level areas based on tactical objectives and priorities.
- Build an effective organizational structure through the use of Branches and D/Gs.
• Provide tactical objectives for the D/Gs.
• Control Staging and Air Operations.
• Provide for life safety.
• Determine needs and request additional resources.
• Consult with and inform the other members of the General and Command Staff as needed.

It is important to emphasize that the implementation of an Operations Section Chief is not an automatic event based upon the arrival of the second or third chief officer on the scene. It may be more appropriate to assign later-arriving chief officers to developing D/G or Branch positions first. Chief officers in these positions enhance the command organization and improve the decision-making process.

In some situations, it is more prudent to implement one of the other Section Chiefs before the Operations Section is implemented.
For example, a prolonged incident may require the early implementation of a Planning Section before the span-of-control criteria requires an Operations Section Chief.

The Operations Section Chief is typically located at the Incident Command Post. This permits close coordination with other Command and General Staff, as well as face-to-face communication with the IC. The benefits of a command vehicle, as outlined elsewhere in this manual, enable the Operations Section Chief to better communicate and track resources.

**Staging Area(s)**

The incident scene can quickly become congested with emergency equipment if newly arriving equipment is not managed effectively. Staging areas are designated locations near the incident area that are used to temporarily locate resources that are immediately available for assignment. For major or complex operations, the IC should establish a Staging Area early and place a Manager in charge of Staging. If the Operations Section has been implemented, the Staging Area Manager reports to the Operations Section Chief. If the Operations Section has not been implemented, he reports directly to the IC. A radio designation of “Staging” should be used. Multicasualty incidents generally include a separate Ambulance Staging Area that is managed under the Transportation supervisor, and this movement of response vehicles should be closely coordinated with the Traffic Control Group.

Multiple staging areas can be established as the needs of the incident require, as shown in Figure 4.4. The configuration or condition of the road network might require that responders approach the scene from different directions. Rerouting everyone to a common staging area might cause unacceptable delay and lengthy detours through unfamiliar routes. When more than one staging area is established, each must be assigned a unique radio designation. Use easily recognizable landmarks as part of the name, such as eastbound at “Exit 112 Staging” and westbound at “Exit 113 Staging.”

In this expanded organizational structure, the Staging Area Manager reports to the Operations Section Chief. The Operations Section Chief may establish, move, and discontinue the use of Staging Areas. All resources within the designated Staging Areas are under the direct control of the Operations Section Chief and should be immediately available. Staging will request logistical support (i.e., food, fuel, sanitation, etc.) from the Logistics Section as needed.

**Incident Command Post (ICP)**

As an incident escalates to major operations, it becomes more important that an ICP at a fixed location be established. This typically would be a chief officer’s vehicle or a specially designed command vehicle. A stationary ICP vehicle benefits incident management in a number of ways, including climate control, reduced noise, improved communication systems, better lighting, desk space, computers, tactical plans, etc. A stationary ICP also improves multiagency operations. Agency representatives need to report to an easily identified location, whether
Figure 4.4

it is the ICP or a designated liaison area. Selection of the ICP location is critical; its location should be chosen to avoid having to relocate it later in the incident. The location of the ICP should provide the following:

- Protection from a hazardous materials incident (locate upwind or upslope)
- Shelter from the elements at the scene
- Area out of the incident hazard zone
- Access to all necessary means of communications
- Comfortable room to operate for all personnel operating in the post
- Ability to establish rehabilitation operations close by
- Security from unwanted intruders

THE INCIDENT COMMANDER'S ROLE AFTER THE OPERATIONS SECTION HAS BEEN IMPLEMENTED

Once the Operations Section is in place and functioning, the IC’s focus should be on the strategic issues, overall strategic planning, and other components of the incident. This focus is to look at the big picture and the impact of the incident from a broad perspective. The IC should provide direction, advice, and guidance to the Command and General Staff in directing the tactical aspects of the incident.

On a highway incident, the responsibilities of the IC after activation of an Operations Section Chief may be summarized as follows:

- Review and evaluate the plan, and initiate any needed changes.
- Provide ongoing review of the overall incident (The Big Picture).
- Participate in the further development of the Incident Action Plan.
- Select priorities.
- Staff Command and General Staff functions as necessary.
- Provide direction to Command and General Staff.
- Review the organizational structure, and initiate change or expansion to meet incident needs.
- Establish liaison with outside agencies, property owners and/or tenants, and other internal agencies not directly involved in incident operations.

**Command Staff**

Command Staff positions are established to assume responsibility for key activities that are not a part of the line organization. Command Staff may have assistants based on the size and complexity of the incident or requirements established by Incident Command. Assistants can be very useful in highway incidents, as transportation representatives can be used in a direct support role as members of the Command Staff. Three specific staff positions are identified within IMS and shown in Figure 4.5:

- Information Officer
- Safety Officer
- Liaison Officer

**Figure 4.5**
**Information Officer**

The Information Officer’s (IO) function is to relay accurate and complete information regarding incident cause, size, current situation, resources committed, and other matters of general interest. The Information Officer will normally be the point of contact for the media and other governmental agencies that desire information directly from the incident. In either a Single or Unified Command structure, only one Information Officer would be designated.

**Assistant Information Officers**

Assistant to the IO, called Assistant Information Officers, may be assigned from other agencies or departments that are involved in an incident. Additional staff will also be needed when there is significant media attention drawn to an incident and more efficient means of disseminating information (such as press conferences) are needed. For example, a particular Assistant Information Officer could be designated to deal with traffic reporters from local radio and television media who may constantly inquire as to the duration of any traffic blockage for their audiences, especially during high demand rush hours. Helicopters or light planes operated by these same organizations may also provide information that could be used by the Traffic Control Group; therefore, the flow of information could be bi-directional.

The primary on-scene demand for information from the media is from traffic-reporting organizations that earn their livelihood by detecting and reporting on traffic problems. This demand can be voracious and requires considerable diplomacy by the Assistant Information Officer. Surrounding communities, transportation authorities, and other response organizations will become more and more interested as congestion affects them, even though they may be located far from
the scene. Their information departments will also need information to pass to their constituency and management. Centralized traffic management centers (TMCs) interface with most of the entities affected by a highway incident and would probably be willing to have a direct information interface with the Information Officer or Assistant Information Officer. Some TMCs have the means of alerting approaching traffic with message signs, and some are implementing traffic information services that connect directly to the motorist. In order to do so, TMCs would require direct and current information from the scene, both to pass on to the media, and for their own use in regional traffic management.

It may be appropriate for the Information Officer to concentrate on traffic information or to assign this specialized area of responsibility to an Assistant Information Officer for Transportation. Updates to previous reports may be considered even more important than the initial report. The most requested information items are as follows in decreasing order of interest:

- Descriptions of the incident location and extent
- Extent of traffic blockage
- Predicted time of reopening the highway to traffic
- Special instructions to motorists approaching the incident
- Color commentary concerning the cause of the incident, injuries and deaths, number and types of vehicles involved, responding agencies, and current situation

There is a high degree of automation in use in the traffic management community, and effective interaction with TMCs and other elements may be best undertaken using specialized computer and communications technology. Considering the high demand from traffic managers for highway incident information, there may be opportunity to have them equip highway incident response organizations with the technological means to interface with traffic management systems.

**Safety Officer**

The Safety Officer’s function at the incident is to assess hazardous and unsafe situations and develop measures for assuring personnel safety. The Safety Officer has emergency authority to alter, suspend, or terminate unsafe acts. A single Safety Officer is designated in a Unified Command structure. For more information on the Safety Officer’s role, see Chapter 6.

The Incident Commander fulfills his responsibility for ensuring the safety of everyone in the vicinity of the highway incident through the Safety Officer. At highway incidents, many others can be placed at risk besides responders, and the Safety Officer should be mindful of the hazard that moving vehicles present to anyone at the scene.

Injury and death statistics have shown for many years that the primary hazard to highway incident responders is from moving vehicles. The source of this hazard is external to the incident and can come from
Figure 4.7

any direction. This hazard is fundamentally different from the many other risk areas normally monitored by the Safety Officer. A highway incident’s scope is much broader than the immediate work area at the scene and is typically larger than can be monitored by a single individual. The traffic risk to responders can change rapidly with changes in the weather or visibility, rush hour, sporting event schedules, the stability of the incident, and the number of responders. In summary, the traffic hazard is complex, dynamic, and extensive.

Assistant Safety Officers may be assigned to support the safety function as needed. They may be assigned from any agency or departments making up the Command organization. For example, a particular Assistant Safety Officer could be designated to assess and monitor the hazards to responders and passing motorists. Under his direction, either traffic control or responder activity could be modified to ensure safe operations. Assistant Safety Officers could also be assigned out to traffic control areas in order to obtain first-hand information regarding traffic hazards. Assistant Safety Officers could also be assigned to Divisions or Groups.

Safety Officers should continuously monitor the effectiveness of traffic control measures, using as many assistants as may be demanded by the particular highway-incident situation. Operating with delegated authority from the Incident Commander through the Safety Officer, these assistants can take action to stop or correct unsafe traffic movement.

Assistant Safety Officers, like the Safety Officer, have the authority to alter, suspend, or terminate any activity that is an unacceptable safety risk. Their areas of concern are different from the usual hazards of structural fire fighting, EMS incidents, or the other more traditional incident activities. Responders should have some control of traffic hazards through the use of traffic control. When Assistants exercise their authority to modify operational assignments, they must first inform the Safety Officer who will then inform the IC.
Assistant Safety Officers should observe traffic control operations from secure, detached perspectives while maintaining communications with both the traffic controls units and Safety Officer. At open-road situations, the Safety Officer remains at the scene proper to monitor the traffic and responder activity, and an Assistant would be responsible for each approaching direction of travel. For intersections, interchanges, and complicated situations, he should assign staff to monitor each avenue of approach to the scene.

**Liaison Officer**

The Liaison Officer’s function is to be a point of contact for representatives from cooperating or assisting agencies either in a face-to-face mode or through radio, cell phone, or other telecommunications. The Liaison Officer is not directly involved in the incident operations and concentrates on coordinating with organizations and agencies that are supporting the incident or that are affected by it. The point of contact for external organizations can be different, depending if the incident is organized as a Single Command or as a Unified Command. In a Single Command structure, the Liaison Officer is always the point of contact. Under a Unified Command structure, members of the Unified Command handle coordination with their parent agencies directly. In either case, Agency Representatives should have decision-making authority for their agency.

The Liaison Officer reports directly to the Incident Commander as a member of the Command Staff of the IC’s IMS organization. Agency Representatives who are on the scene of an incident report back through their own chain of command to their home agencies. They are not part of the incident’s IMS organization and interact with the IC only through the Liaison Officer. As described further in Figure 4.8, Agency Representatives are not part of Unified Command. Those members of Unified Command (when it is established) represent their agencies, and their agencies do not use separate Agency Representatives.

Figure 4.8

EXPANDING THE ORGANIZATIONAL STRUCTURE BY ESTABLISHING SECTIONS
For example, in a Single Command organization, an arriving representative from the Traffic Management Center would seek out the Liaison Officer rather than the Incident Commander. However, in a Unified Command situation where a senior representative from the Traffic Management Center serves as a member of Unified Command, an arriving representative from that TMC would probably directly contact his Unified Command member rather than the Liaison Officer.

Establishing and maintaining liaison with the many companies, organizations, agencies, and communities that are either affected by traffic problems caused by a highway incident or that may contribute resources to assist the Incident Commander can become a daunting task. As other organizations become aware of the problem, they will want to take action to relieve congestion and reduce the stress to the transportation network. These actions, even though taken in good faith, may in turn affect on-scene operations. A fairly straightforward example might relate to establishing detours around an incident for the traveling public that has the unanticipated effect of congesting or even blocking emergency response routes to the scene. Successful, coordinated activity depends upon the exchange of timely, accurate information. Some of the most useful information is the most basic of facts, including accurate descriptions of the incident location, the extent of the scene where emergency activity is occurring, and the anticipated duration of the traffic blockage.

One person may quickly become overwhelmed by such demands and need Assistants to handle the workload. Therefore, it may be appropriate to appoint an Assistant Liaison Officer for Transportation. If a Traffic Management Center covers the incident area, it can offload much of the liaison workload as it already interfaces with and has operational arrangements in place with most of the transportation community. It might even be possible for the highway incident response community to establish a way for liaison personnel from traffic management to respond to highway incidents, making a liaison resource directly available to the Incident Commander.

PLANNING SECTION

Figure 4.9

EXPANDING THE ORGANIZATIONAL STRUCTURE BY ESTABLISHING SECTIONS
The Planning Section is responsible for gathering, assimilating, analyzing, and processing information needed for effective decision-making. Information management is a full-time task at large and complex incidents. The automation of traffic management in recent years has greatly increased the amount and quality of information available to traffic managers, enabling them to adjust traffic signals and other controls in reaction to a highway incident. These new traffic management capabilities depend upon receiving information concerning the current situation and also the forecasted duration and extent of incident scene operations. The Planning Section will handle much of this demand for information, working closely in coordination with the Information and Liaison Officers on the Command Staff.

This critical information should be immediately forwarded to Command (or whoever needs it). Information should also be used to make long-range plans. The Planning Section Chief’s goal is to plan ahead of current events and identify the need for resources before they are needed. The strategic concerns of the Incident Commander need to extend forward with sufficient foresight to cover all of his IMS organization’s activities.

The responsibilities of the Planning Section Chief may be summarized as follows:

- Evaluate current strategy and plan with the IC.
- Maintain resource status and personnel accountability.
- Refine and recommend any needed changes to plan with Operations Section input.
- Evaluate incident organization and span of control.
- Participate in the development of the Incident Action Plan.
- Forecast possible situation(s).
- Evaluate future resource requirements.
- Utilize technical assistance as needed.
- Evaluate tactical priorities, specific critical factors, and safety.
- Gather, update, improve, and manage situation status with a standard systematic approach.
- Coordinate planning needs with any available outside agencies.
- Plan for incident demobilization.
- Maintain incident records.

Certain incidents or events may require the use of Technical Specialists who have specialized knowledge and expertise. Technical Specialists may function within the Planning Section or be assigned wherever their services are required. The organizations and systems that manage transportation have a great deal of specialized knowledge that can be helpful in planning a course of action to deal with a highway incident. This is especially true when the incident involves more than one “mode” of transportation, such as at rail crossings and transit facilities and
those involving pipelines. There can be serious different modal traffic consequences in these other systems from an intermodal incident. For example, transportation incidents on highways may affect other modes of transportation such as maritime, air, pipeline, transit, or rail. Some of these modes of transportation are run by organizations known as “authorities.” These include port, bridge and tunnel, airport, and toll road authorities. These authorities often have specialized resources and personnel with special skills who can provide engineering, architectural, communications, operational, scientific, and institutional advice to the Incident Commander. Figure 4.11 shows many of the possible sources and specialties of technical specialists as they relate to the various transportation modes that might be affected or involved with highway incidents.

**Figure 4.11**

**LOGISTICS SECTION**

**Figure 4.12**

EXPANDING THE ORGANIZATIONAL STRUCTURE BY ESTABLISHING SECTIONS
The Logistics Section is the support mechanism for the organization. The Logistics Section provides services and support systems—which may be separated into Branches—to all the organizational components involved in the incident including facilities, transportation, supplies, equipment maintenance, fueling, feeding, communications, and responder medical services and rehabilitation. Its organizational breakout is shown in Figure 4.13.

Figure 4.13

The responsibilities of the Logistics Section Chief may be summarized as follows:

- Provide for medical aid for incident personnel, and manage responder rehabilitation.
- Coordinate immediate critical incident stress debriefing function.
- Provide and manage any needed supplies or equipment.
- Participate in the development of the Incident Action Plan.
- Forecast and obtain future resource needs (coordinate with the Planning Section).
- Provide for communications plan and any needed communications equipment.
- Provide fuel and needed repairs for equipment.
- Obtain specialized equipment or expertise per Command.
- Provide food and associated supplies.
- Secure any needed fixed or portable facilities.
- Provide any other logistical needs as requested by Command.
- Supervise assigned personnel.
FINANCE/ADMINISTRATION SECTION

The Finance/Administration Section is established on incidents when agencies involved have a specific need for financial services. Its usual organization is shown in Figure 4.15. Not all agencies will require the establishment of a separate Finance/Administration Section. In some cases where only one specific function is required, such as cost analysis, that position could be established as a Technical Specialist in the Planning Section.

The responsibilities of the Finance/Administration Section Chief may be summarized as follows:

- Procure services and/or supplies from sources within and outside of the fire department or city as requested by Command (coordinate with Logistics).
- Document all financial costs of the incident.
- Participate in the development of the Incident Action Plan.
- Document for possible cost recovery of services and/or supplies.
- Analyze and advise the IC on legal risk for incidents (e.g., hazardous materials cleanup).
- Document for compensation and claims of injury.
- Obtain any and all needed incident documentation for potential cost recovery efforts.

Cost reimbursement issues will arise in conjunction with any effort that involves several agencies. These can be difficult to resolve between organizations that are institutionally separated, such as the transportation and public safety communities. Most of what is provided by transportation to public safety comes in the form of supplies, equipment, information, and services. Most is actually furnished by vendors and contractors, which invoke contractual charge-back mechanisms. Due to long experience with highway construction and repair, transportation organizations usually have well-developed procurement systems that can respond to the needs of a highway incident. The administrative and financial interaction pivots upon authorization by designated members of the IMS organization at an incident. These individuals are normally assigned to the Finance/Administration Section. They must utilize careful accounting practices during the incident in order to document incurred costs and to justify reimbursement for them.
Chapter 5
Unified Command
Chapter 5
Unified Command

Command is responsible for overall management of the incident and can be provided within the IMS in two general ways: single or unified command. The principle of Unity of Command, which states that every individual in an organization should only have one immediate supervisor, is preserved in either method with a single individual vested with the authority of providing immediate direction to resources that are being utilized on the incident. In both Single Command and Unified Command, the Section Chiefs, who are members of the General Staff, oversee the Operations, Planning, Logistics, and Finance/Administration Sections. The General Staff always reports to Incident Command. In Single Command, a single individual staffs the Incident Commander position. On the other hand, in Unified Command a group provides the Command function. Using Unified Command provides the opportunity for all agencies that have statutory authority for an incident to jointly participate in the development of the overall strategy of the incident.

Highway incidents are the most common situations where multiple jurisdictions, multiple agencies, and varying disciplines find they must work together harmoniously in highly stressful, hazardous environments. Unified Command provides the best way to organize these joint efforts.

SINGLE COMMAND — INCIDENT COMMANDER

Within the jurisdiction in which an incident occurs and when there is no overlap of jurisdictional boundaries involved, a single Incident Commander (IC) will be designated by the jurisdictional agency to have overall management responsibility for the incident. The IC will prepare incident objectives that, in turn, will be the foundation upon which subsequent action planning will be based. The IC will approve the final Incident Action Plan and all requests for ordering and releasing of primary resources. An example of a single command structure is shown below.

Figure 5.1

UNIFIED COMMAND
Deputy Incident Commander

The IC may have a Deputy Incident Commander (not to be confused with Deputy Sheriff, which is a common law enforcement title). The Deputy IC should have the same qualifications as the IC and may work directly with the IC, be a relief IC, or perform certain specific assigned tasks. In an incident within a single jurisdiction where the nature of the incident is primarily a responsibility of one agency (for example, fire), the Deputy IC may be from the same agency as the IC. In a multijurisdictional incident or one that threatens to be multijurisdictional, an individual designated by the adjacent agency may fill the Deputy IC role. In some cases, even more than one Deputy IC could be appointed. Another way of organizing to meet multijurisdictional situations is described under Unified Command. Deputy IC positions should also be considered for multidisciplinary operations to accommodate communications and coordination between agencies.

An example of how such an organization might be staffed at a highway incident is shown in Figure 5.2. In this example, several organizations from the same jurisdiction are operating at the same incident.
UNIFIED COMMAND

A Unified Command structure may be appropriate under two common conditions: (1) multijurisdictional incidents and (2) multidepartmental incidents.

An incident may be multijurisdictional for geographic reasons, such as a major flood or a major medical incident crossing boundaries and involving resources from both jurisdictions. It may be multijurisdictional because many agencies have a statutory role to play in the response, investigation, or mitigation, for example, a major transportation accident, hazardous materials spill, or suspicious explosion. An example of a multijurisdictional Unified Command structure is shown below in Figure 5.3. In an instance where a highway crash happened at the city limits, both County and City units have statutory jurisdiction.

In the incident illustrated by Figure 5.3, the State DOT representative provides liaison between the incident and the regional traffic management agencies that are attempting to route traffic around the blockage. In this instance, the State DOT has geographical jurisdiction over the highway location of the incident; however, it lacked subject-matter jurisdiction over medical trauma incidents. In this case the State DOT is a “Cooperating” or “Assisting” Agency, which may have a substantial presence at an incident, but does not have statutory authority to direct operations. The other responders in Figure 5.3 deal with concerns regarding life safety, fire, and traffic law enforcement first. After those needs are met and after the damaged vehicles are removed from the scene, congestion and traffic control may remain a problem at the scene. Because DOT has subject-matter jurisdiction over that problem area, its representative joins Unified Command of the incident. Following the departure of the other responders, the DOT representative assumes command in a Single Command structure.

**Figure 5.3**
The incident may be totally contained within a single jurisdiction, but more than one department or agency shares authority due to the nature of the incident or the kinds of resources required (for example, a long-duration, multivehicle crash within a single city). Fire, medical, (especially when EMS is a service separate from fire or law), traffic management, and law enforcement can all have simultaneous but diverse objectives. An example of this kind of Unified Command structure that might be found on a highway incident involving a road washout that caused a crash with injury is depicted in Figure 5.4. At this particular instance in time, the fire agency is the lead agency because the priority concern is extricating and treating the occupants of the crash vehicles.

As priorities change, such as when all patients have been extricated, treated, and transported, and after public works completes any investigation, law enforcement would most likely take over as lead agency. This transfer should be matched with corresponding changes in staffing in the Operations Section. For instance, in the same example incident, the IMS structure might appear as follows, when dealing primarily with traffic problems:

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**Figure 5.4**

**Figure 5.5**
Operational units may be accustomed to a close relationship with their senior management, but they are separated when assigned to an incident that is utilizing Unified Command. They cannot interact directly according to their normal operational custom while so assigned because that would bypass the chain of command. Operational units must report through the Operations Chief, and Unified Command members must coordinate through the Operations Chief.

**SINGLE/UNIFIED COMMAND DIFFERENCES**

There are several primary differences between Single and Unified Command structures. First, in a Single Command structure, a single IC is solely responsible, within the confines of his authority, to establish objectives and overall management strategy associated with the incident. The IC is directly responsible for follow-through to ensure that all functional area actions are directed toward accomplishment of the strategy. The actions required to effect operational control will be the responsibility of a single individual (Operations Section Chief) who will report directly to the IC.

By comparison, under a Unified Command structure, individuals designated by their jurisdictions or by different agencies within the same jurisdiction must jointly determine objectives, strategy, and priorities. Commonly under Unified Command, one of the members will be designated as primary, usually representing the major organization. As an incident progresses, the primary member will change as the emphasis of the incident changes. As investigation, scene control, and body recovery become the major concerns, Law Enforcement could take over command. And finally, as attention turns to vehicle and debris clearance and repair of the roadway, public works could assume the primary position.

As in a Single Command structure, the Operations Section Chief will have responsibility for implementation of the Incident Action Plan. The determination of which agency or department the Operations Section Chief represents must be made and supported by all of the agency representatives serving in Unified Command. It may be done on the basis of greatest jurisdictional involvement, first-arriving command officer, by existing statutory authority, or by mutual knowledge of an agency commander’s qualifications, certifications, experience, or availability.
Chapter 6

Safety

The information in this section is not inclusive of all aspects of responder and incident safety. The intent is to apprise response agencies across the country of the need to address this very important area and to provide additional safety for personnel working in one of the most dangerous occupations in one of the most dangerous environments:

The Public Highway

An Incident Commander (IC) has no greater responsibility at any highway incident scene than seeing to the safety and well-being of responders, passing motorists, bystanders, and pedestrians. Elements critical to personnel safety are the appointment of a Safety Officer and the implementation of an incident scene accountability system. Other critical elements include establishing procedures for broadcasting emergency radio messages, deploying dedicated Rapid Intervention Crews, and establishing Responder Rehabilitation operations. The Incident Action Plan for a highway incident must always strongly emphasize the importance of traffic hazard protection for all personnel.

Ensuring the safety of civilian and responder vehicles in the vicinity of a highway incident can often be a relatively simple task. In some cases it can be quickly and easily accomplished by assigning it to one of the initial response companies. On some occasions ensuring a safe work zone can be an extremely complicated operation.

All agency representatives serving in Unified Command must determine and support which agency or department the Operations Section Chief represents. The more complex and extensive measures must often be implemented in conjunction with long duration highway incidents on congested highways. Generally, the hazard to responders increases as the speed of vehicles passing the incident scene increases and as the separation between moving traffic and responders decreases. Warning motorists approaching a queue of vehicles that have been slowed or stopped due to a highway incident lessens the likelihood of secondary collisions and additional emergency incidents.

Safety at highway incidents, perhaps more than at any other type of incident, can depend upon weather conditions. Responders and patients can be directly affected by exposure to the elements. Visibility and road conditions can also increase the likelihood of secondary crashes. The Incident Commander must attempt to reduce the added additional hazard from inclement weather to both responders and passing motorists. Effective ways to increase safety at highway incidents are to decrease the speed of vehicles passing the scene, increase the distance between moving traffic and the responder’s work zone, and increase the warning distance for approaching motorists. Weather conditions may require providing shelter for Rehab and additional protective
clothing. Advance preparation, coordinated standard procedures, and accurate weather forecasting can better secure responders, patients, and passers-by from these dangers.

NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, sets a minimum requirement for a fire-service related occupational safety and health program. The IMS Consortium recommends that employees of agencies that respond to highway incidents read this information, as well as the other occupational safety and health publications that apply to their own agencies and become familiar with their requirements and recommendations.

All agencies involved in highway incidents have many obligations to provide safety equipment and develop operational procedures for their individual members to follow. But it is incumbent on individual responders to use the personal protective equipment issued and follow agency operational procedures to ensure the safety of all personnel operating on the highway. As described in agency regulations, members who are provided safety clothing shall use the protective ensemble that is appropriate for the type of incident and the hazards to which they are exposed. These include: highway incidents, structural fire fighting, wildland fire fighting, emergency medical incidents, proximity fire fighting, and hazardous materials incidents.

Responders must wear the appropriate respiratory protection when exposed to Immediately Dangerous to Life and Health (IDLH) atmospheres, and a Personal Alert Safety System (PASS) shall be activated prior to entry. Eye, face, and hearing protection needs to be worn when appropriate for protection. Retroreflective clothing must be worn whenever working on the highway. Responders operating at highway incidents shall, whenever practicable, operate in crews of two or more.

The following are some of the ways identified in NFPA 1500 to reduce the overall risks to members operating at the scene of emergency incidents:

- Adopt rules of engagement.
- Appoint an Incident Safety Officer.
- Implement a personnel accountability system.
- Provide for emergency traffic communications.
- Control access to the scene.

RULES OF ENGAGEMENT

The Incident Management System starts with the arrival of the first responder. Risk management shall be integrated into the routine functions of incident command. As referenced in NFPA 1500, objective 8.2.2, the concept of risk management shall be utilized on the basis of the following principles:

- Activities that present a significant risk to safety of members shall be limited to situations where there is a potential to save endangered lives.
- Activities that are routinely employed to protect property shall be recognized as inherent risks to the safety of members. Actions shall be taken to reduce or avoid hazards and unnecessary risks.
• No risk to the safety of members shall be acceptable when there is no possibility to save lives or property.

All agencies participating in highway incident management would greatly benefit by collectively adopting similar strategic principles that serve to guide responders in appropriately managing risk when engaged in highway operations. It is productive for all to adopt a philosophy of balancing the risks of taking any action with its likelihood of success and the value of success. While the Incident Commander retains responsibility for health and welfare at the incident, the Safety Officer can serve as an effective on-scene independent monitor who ensures continued compliance with these principles.

The following Model Rules of Engagement can serve as a template for common use by agencies that respond together to highway incidents. The Rules of Engagement are meant to apply to all professions and all hazards encountered in conjunction with highway incident management. Regional response communities are strongly encouraged to adopt similar common rules of engagement for highway incident management. Such an approach will greatly help incident commanders maintain their proper perspective when considering alternative courses of action and when balancing competing priorities.

![Highway Incident Model Rules of Engagement](image)

<table>
<thead>
<tr>
<th>Engagement Needs Assessment</th>
<th>Engagement Risk Assessment</th>
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<tr>
<td>We will consider the likelihood of success of our actions.</td>
<td>We will assess the risks of our planned actions.</td>
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<tr>
<td>We will consider the benefit we could provide if we succeed.</td>
<td>We will assess the benefits of our planned actions.</td>
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**Hazard**
- Fire and explosion hazards
- Environmental hazards

**Incident Factors**
- Condition of crash vehicles
- Scene access and egress
- Environmental conditions
- Evidence
- Risk to vehicle occupants
- Known or probable occupants
- Occupant survival assessment

**Responder Capabilities**
- Available resources
- Operational Capabilities
- Operational limitations
- Training
- Experience
- Rest and rehabilitation

Figure 6.1
See Appendix A for definitions of the terms used in the Model Rules of Engagement.

**RISK ANALYSIS**

Risk assessment is a continuous process lasting the entire duration of each incident. The Incident Commander should continually reevaluate conditions to determine if the level of risk has changed and a change in strategy or tactics is necessary. The Incident Commander should monitor and evaluate traffic conditions in support of risk analysis.

At a minimum, the risk analysis for a highway incident should consider:

*Scene Characteristics*
- Traffic hazards
- Fire and explosion hazards
- Environmental hazards
- Hazardous material hazards
- Criminal and terrorist threats

*Incident Factors*
- Condition of crash vehicles
- Scene access and egress
- Environmental conditions
- Evidence
- Risk to vehicle occupants
- Known or probable occupants
- Occupant survival assessment

*Responder Capabilities*
- Available resources
- Operational capabilities
- Operational limitations
- Training
- Experience
- Rest and rehabilitation

**INCIDENT SAFETY OFFICER (ISO)**

Safety always remains the responsibility of the Incident Commander. Whenever the size or complexity of the incident prevents the IC from personally monitoring safety and health conditions at the incident, the IC should appoint an ISO as a member of the Command Staff and delegate his authority to perform these functions. Assistant Safety Officers may be required at complex incidents, incidents that cover a large geographic area, or those with operations occurring at multiple locations. The following items should be considered regarding the appointment of an ISO:
The ISO must be assigned as early in the incident as possible.

The ISO shall reconnoiter and monitor the scene for unsafe conditions, hazards, and risks. As a result of these ongoing surveys, the ISO recommends to the IC any changes to the Incident Action Plan.

The ISO shall have the authority to alter, suspend, or terminate any activity he determines to be unsafe or to involve an imminent danger, informing the IC and other involved operational personnel immediately of any such action.

Where an ISO identifies unsafe conditions, operations, or hazards that do not present an imminent danger, the ISO shall recommend appropriate action to the IC to mitigate or eliminate the unsafe conditions, operations, or hazards.

The ISO addresses health and safety issues associated with all responders and support personnel, including those operating away from the immediate incident scene (for example, at Staging, at traffic control points, or the rehabilitation area). Adequate Assistant Safety Officers must be used to provide incident safety oversight. For example, separate Assistant Safety Officers could be designated to monitor widely separated Traffic Control Areas.

The ISO is responsible for the health and safety of his assistants as well as his own. All must use required personal protective equipment and retroreflective clothing.

The ISO must have radio communication equipment and not operate alone in hazardous environments. He must monitor the use of the accountability system, any emergency radio traffic, the Responder Rehabilitation Unit, and the deployment of Rapid Intervention Companies/Crews.

Different types of incidents present different types of hazards, and agencies respond to many types of highway incidents. Regulatory requirements, statutory authority, national standards, and standard operating procedures concerning occupational health and welfare apply differently to different professions in different situations. Therefore, the ISO may require specialized knowledge concerning hazards and operations in order to adequately protect those at the scene.

A single incident can involve very diverse activities, which may necessitate functional health and safety specialists being assigned as assistants to the ISO. The Health and Safety specialty should be institutionalized within each highway incident response agency to establish resource pools available for dispatch to highway incidents. Health and Safety personnel resources should be organized with on-call rosters in order that they can quickly respond when needed. Suggested specialty pools should include, at a minimum, the following:

- Fire suppression
- Law enforcement
- Hazardous materials
• Emergency medical services
• Traffic control

It is important to capture lessons learned from unfortunate occurrences and to integrate them into ongoing health and safety procedures. The ISO should continuously document pertinent information about the incident, including the Incident Safety Plan, observed operational activities, and significant health and safety events. It is important to include successful or positive actions as well as those actions that require training or procedural changes to improve incident safety and health for all members. The ISO, accompanying the IC, should participate in all after-action critiques and analyses, particularly those that involve the injury or death of a responder or the damage or loss of property belonging to a response agency.

INCIDENT SCENE ACCOUNTABILITY

Agencies responding to highway incidents shall adopt and routinely use a standard personnel identification system to maintain accountability for each of their members assigned to each incident. Written guidelines shall be established and used that provide Incident Commanders with the capability to account for all responders assigned to their incident. Even though the Incident Commander is responsible for overall personnel accountability, he may utilize additional accountability officers based on the size, complexity, or needs of an incident. Each IMS position is accountable for all subordinate responders through the chain of command to the IC.

Several accountability systems have been developed and, while they vary in design, there are common elements that agencies should adopt for use at emergency incidents to fully account for their personnel. Several such systems are identified in the *IMS Model Procedures Guide for Structural Firefighting* Whatever the design, the accountability system must be able to (locate) account for every responder at a highway incident periodically during the incident. In addition, the system shall be:

• Capable of incorporating accountability for responders who actually respond to the scene and removing members from accountability who actually depart from the scene.
• Capable of documenting the entry of responders into and exit from specifically identified hazard zones (e.g., confined space, IDLH atmospheres, hazardous materials hot zones, unstable crime scenes)
• Capable of conducting a roll call at the beginning of the incident and at nominal 15-minute intervals throughout the operation. Dispatch shall remind the IC of the need to conduct a roll call when needed.
• Capable of signaling when a responder is missing or late returning from an assignment and the need to mount an immediate rescue effort, such as by the RIC (See below).

It is critical for each resource (responder, apparatus, company, unit,
etc.) to be uniquely identified, or the IC will likely lose track. Different agencies are likely to employ different identification systems and methods due to their specialized individual needs. These independently developed methods and systems are unlikely to be compatible with each other and can contain duplicates of resource identifiers used in other agencies. (For example, there is an “Engine 1” in many fire departments.) It is unlikely that all agencies could justify the expense of converting to a common identification system. However, it may be possible for agencies to internally convert their resource designations in a coordinated manner with each other so that no duplicates remain. Nevertheless, Incident Commanders must still be able to identify and locate responders assigned to their incidents by roll call, regardless of their home agency. Adopting the convention of using the combination of each responder’s identification number and agency’s name should ensure that unique identifiers always appear on each incident’s rolls. “Riverdale Engine 1” would then be clearly distinguishable from “Valley Town Engine 1” and from “Hillsburg Engine 1.”

For highway incident operations, the common elements of an accountability system are the following:

- Full integration into the IMS.
- Mandatory use by all personnel on the scene.
- An on-scene responder is assigned the task of accounting for all on-scene personnel, starting with the arrival of the first responder.
- Identified benchmarks for required roll calls (Personnel Accountability Reports) throughout an incident. (Possible Benchmarks: Change in status from offensive to defensive operations, secondary crash, hazardous materials event, significant environmental event, structural collapse, reported lost responder, or based on set periods of elapsed time.)

The Personnel Accountability Report (PAR) is the utilization of the accountability system to conduct and record a roll call of all personnel at an incident. The IC shall conduct a PAR for the Operations Section (and may conduct a PAR for the entire IMS organization) whenever a change in conditions could increase the hazard to ongoing operations. A PAR should be conducted whenever an evacuation order has been given to provide a systematic method of confirming the health and welfare of all personnel operating at the incident. The IC may request a PAR anytime during an incident to provide this accountability.

**EMERGENCY TRAFFIC COMMUNICATIONS**

Emergency services agencies communication systems should provide a standard method to give priority over routine radio communication to the transmission of emergency messages and notification of imminent hazards to all levels of the incident command structure. NFPA 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, provides additional information regarding the requirements for this capability.
To ensure safety, clear text speech should be used in emergency communications at an incident. Agencies should have a standard operating guideline that uses the radio term “Emergency Traffic” as a designation to clear radio traffic. An IC, D/G Supervisor, or any member who is in trouble or subject to an emergency condition can declare Emergency Traffic. Departments may also use various radio tones to draw attention to this “Emergency Traffic” message.

Examples of emergency conditions that could warrant emergency radio traffic include:

- A responder down
- A responder missing
- A responder trapped
- An imminent crash
- The need to immediately evacuate the work zone
- An adverse wind shift causing a smoke or hazardous materials threat to responders
- Discovery of new danger such as a hazardous material, secondary device, or unseen hazard

When a member has declared an emergency traffic message, he should use terms identified in the department’s standard operating guideline, such as “responder down.” At the conclusion of the emergency condition, an “All Clear” must be transmitted to allow a return to normal radio and incident operations.

In addition to an emergency traffic radio message, Incident Commanders could use an additional signal, such as an apparatus air horn, to signal an ordered “evacuation” of personnel. Some departments have incorporated a series of three 10-second short blasts on an air horn with a 10-second silence between each series of blasts of an air horn. For ICs using this system, it is very important for them to select apparatus away from the Command Post to reduce the possibility of missing radio messages while the air horns are sounding.

RAPID INTERVENTION CREWS (RICS)

A RIC should be designated to stand by in a state of readiness should the need arise to initiate a rescue effort for downed or missing responders. RICs are not typically assigned on highway incidents and their use (where work is not being accomplished in a confined space or an unbreathable atmosphere) is not required by any established standard of practice. Their use is not, however, prohibited! Also, it is important to remember that a highway incident that is secondary to a fire, explosion, building collapse, hazardous materials release, confined space, or other event will require implementation of RIC procedures as appropriate.

A RIC is comprised of a minimum of two responders who are attired and equipped to perform the actions necessary to effect the rescue of other responders. The best practice is to utilize a complete resource and keep it intact. The RIC should have awareness of where resources
are committed on the incident, and the RIC should not be assigned to other duties that would in any way delay or impede their rescue effort. More than one RIC may be required for large-area, large-scale, or complex operations.

The RIC should be capable of quickly deploying a minimally effective heavy-rescue, EMS, and traffic-control response anywhere along the avenues of approach to the scene, particularly to where responders are conducting traffic control. Depending upon the capabilities of responding units, the topography of the highway, and the traffic flow, this may require organizing the RIC as a Task Force, with suppression, EMS, law enforcement, and traffic control resources assigned to it. Also, since maneuvering room can be quite limited in the vicinity of highway incidents, a single RIC may not be able to respond in all directions of travel, and multiple RIC Task Forces might even be required.

The utilization of RICs on highway incidents should be directly related to the severity of the secondary crash hazard and the likelihood of its occurrence. Roads empty of traffic or completely filled with blocked traffic in the vicinity of the original incident would present a low secondary crash hazard. Poor visibility, slippery road surface conditions, high incidence of impaired drivers, or other factors can markedly increase the secondary crash hazard. Effective traffic control will serve to lower the hazard of secondary crashes. Also, at some determined distance away from the original incident, separate alarm responses to crashes will be more responsive and effective than a RIC response from the original scene. Indeed, if the IC has deployed resources to such a distance, it may be argued that those resources should be transferred to separate incidents. Even though far distant crashes may technically be secondary to the original incident, their distance from the Command Post may place them outside of the IC’s geographical span of control.

**RESPONDER REHABILITATION (REHAB)**

In a full implementation of the IMS, Rehab is located within the Logistics Section. Of course, if the Logistics Section or Service Branch has not been implemented, Rehab may be moved upwards in the organization.
Command has the responsibility to ensure that the physical and mental condition of emergency responders operating at the scene of a highway incident does not deteriorate to a point where it affects the safety of each member or it jeopardizes the safety and integrity of the operation. The purpose of Rehab is to evaluate and assist personnel who may be suffering from the effects of sustained physical exertion or exposure to high stress conditions during highway incident operations. Rehab provides a specific area where personnel will assemble to receive the following:

- Medical assessment
- Revitalization rest, refreshments, etc.
- Treatment for injuries
- Monitoring of physical condition
- Patient (responder) transportation
- Initial critical incident stress debriefing

Command officers should consider the need for Rehab during the initial planning stages of an emergency response. Climatic or environmental conditions (e.g., high or low temperatures) should not be the sole justification for establishing Rehab. Any activity or incident that is large in size, long in duration, and/or labor intensive will rapidly deplete the energy and strength of personnel and therefore merits the establishment of Rehab.

All supervisors should maintain an awareness of the condition of each member operating within their immediate span of control and ensure that adequate steps are taken to provide for each member’s safety and health. The command structure should be used to request relief and the reassignment of fatigued crews.

Critical components of all Rehab operations include:

- Nourishment
- Rest
- Recovery
- Medical evaluation and treatment
- Accountability

Highway incidents can present additional concerns regarding the location of the Rehab Unit. Because crews are often operating while fully exposed to traffic hazards and the weather elements, the Rehab Unit should offer shelter and security to units assigned to it. This can present a challenge to the Rehab Unit Manager when establishing rehab operations at highway incidents located away from accessible buildings. Each of these elements must be included when developing standard operating procedures for carrying out crew rehabilitation.
CRITICAL INCIDENT STRESS MANAGEMENT

Highway incidents have the potential of creating significant emotional and physical stress in responding personnel. This is especially true in incidents involving children, violent crime, or many deaths or injuries. All agencies involved in highway incident response should have a programmed method of identifying incidents that may negatively affect the well-being of responders and providing appropriate stress management response. Certain incidents, including mass casualty, those involving serious injury or death of a responder, or those involving close community relationship to the victims, warrant an automatic critical incident stress management (CISM) response. CISM is generally considered a scaled response based on the type of incident, numbers involved, and the needs.

The manner in which CISM response is delivered depends upon the organization and the jurisdiction. There are numerous local, state, and national organizations that can provide CISM resources. Plans and resource contacts should be in place in Standard Operating Procedures ahead of any incident.

The Incident Commander should consider the need for CISM early into an incident and mobilize the response as appropriate. Often CISM activities begin at the scene. Because most major highway incidents are multiagency or multijurisdictional, the primary jurisdiction should include the needs of all responders in CISM plans or response.
Chapter 7
Basic Organizational Approach for Highway Incidents

Courtesy of Chris Mickal
New Orleans Fire Department
Chapter 7

Basic Organizational Approach for Highway Incidents

The Incident Management System (IMS) must be initiated by the first-arriving resource. IMS allows the Incident Commander to escalate and expand the Command organization as needed. It begins simply at street level with the first-arriving resource establishing Command and expands as other units arrive and as the situation requires. Only the positions needed should be implemented, based on the number of tasks to be performed or availability of additional resources.

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The incident management organization expands and contracts as the demands of the incident dictate.
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PRINCIPLES OF HIGHWAY INCIDENT MANAGEMENT

The responsibilities of the first-arriving responder include the functions of Command. The first-arriving responder will be faced with decisions that must be made quickly, including some tasks that must be completed at the onset of most highway incidents. To organize his approach, the initial Incident Commander should develop an action plan that accounts for the unique aspects of highway incidents that addresses responder safety, the needs of the incident, and the movement of traffic past the incident. One of the goals is to maximize traffic flow. The Incident Commander can facilitate this by forming a Traffic Control Group. On the highway, the Incident Commander should provide for the following:

- **SURVEY** the scene to obtain an overall understanding of the situation. Observe the speed and density of traffic approaching from all directions.
- **SAFETY** hazard assessment (existing or potential) must be performed. Highway traffic is always a hazard, threatening responders, patients, and motorists alike. Weather and road conditions merit special consideration. Observe motorists’ behavior in the vicinity.
- **SIZE-UP** the situation and inform dispatch. Match the needs of the incident with the dispatched resources. Request additional resources or release unneeded resources as needed. Consider your incident’s impact on regional traffic.
- **SEPARATE** scene operations from moving traffic. The nearer that moving vehicles are to scene operations, the slower they should be allowed to pass.
- **SET UP** the scene for emergency services and establish Command. Accommodate road users safely.
• **START** operations, expanding or contracting as dictated by the incident. Coordinate with all involved organizations.

• **SEE** what else needs to be done. Look at least an hour into the future. Resurvey the scene, reassess the hazards, revise the size-up reported to dispatch, review the setup, and restart operations as needed. Adjust the Incident Action Plan to match.

• **SORT** out competing priorities, limited resources, and other conflicts.

• **SEND** units away from the scene as soon as released. Release units as soon as practical and reduce the distraction of the response force’s presence on the highway as quickly as practicable and safe. Open the roadway and relieve congestion.

Large highway incidents usually have one thing in common: they will demand more from the initial arriving responders than they can provide. It is very difficult not to immediately address these problems. It is very difficult for resource officers to step back out of the action and take command. The common tendency is for the initial-arriving units to become immediately immersed in the highest priority problems, committing all of their resources to these tasks and none to Command. Often, the initial-arriving units will wait until well into the incident operations to implement an Incident Management System. **This is a major error**, resulting in confusion and the loss of a coordinated, directed, efficient effort. The Incident Management System must be implemented with the first-arriving resources on the scene.

The Incident Action Plan should include an ongoing revaluation of the overall needs of the incident and available units to satisfy those needs. In highway incidents, the traditional fire service resources will be assigned to emergency medical services, extrications, hazardous materials, and fire fighting. There are usually other problems that also need to be addressed as well, and resources outside of the fire service will handle them. Traffic flow and control should always be considered a priority, which may require the involvement of many other agencies, especially when traffic is rerouted. Resource demands shift as the incident progresses, and vehicle and cargo recovery, accident investigation, roadway repair, and other activities may also place heavy demands on resources. The character of the incident will change as it evolves and eventually no longer concern the original responders. Organizational responsibilities also shift to match the changing character of the incident, eventually passing from the initial IC to others and probably from the fire service to other organizations. Throughout, the Incident Management System must be maintained, and the IC should remain diligent regarding scene safety and responder safety. This is always a concern due to traffic flow, and traffic control should also be assigned to specific resources.

**WHAT IS A HIGHWAY INCIDENT?**

The core of the difficulty in attempting to define the bounds or contents of highway incidents is related to the broad range of events that cause highway incidents and to the variety of organizations that respond to
them. Highway incidents are those issues that could affect the normal
flow of traffic. They can include everything from mowing and landscap-
ing operations to weather disasters, from traffic stops to wildland fires,
and from disabled vehicles to terrorist activity.

If an organization responds to an occurrence on the highway, then
it is involved in highway incident management. Most highway incidents
involve multiple agencies. All agencies must operate in the Incident
Management System, regardless of the order in which they arrive on
the scene. It is imperative that those working together on highway
incident management understand everyone’s functional capabilities
and that they resolve jurisdictional and institutional issues. The suc-
cess of any sort of joint operation rests upon the ability of people to
work together. This Guide will not presume to instruct the user in
achieving operational harmony, but shall insist it be done. Incident
Commanders must be empowered to accomplish their jobs. When
they are empowered, they can accomplish all of our missions; to save
and protect lives, property, the environment, and to maintain traffic
flow on our nation’s highways. IMS offers a convenient, effective, and
a proven way for them to do this.

Responsibility for achieving a successful resolution of the incident
cannot be delegated — the IC always remains responsible. The neces-
sary authority to act, however, is delegated downward through the IMS
organizational structure, along with each assigned functional objec-
tive and task. As each responder accepts an assignment, he incurs an
obligation to the IC to complete each job. In this manner, the entire
effort progresses in a cohesive manner in accordance with the Incident
Action Plan toward a favorable outcome.

TRANSPORTATION ROLES IN THE HIGH-
WAY INCIDENT IMS ORGANIZATION

Emergency services have become well accustomed to using IMS for
all types of incidents. Other agencies are becoming more comfort-
able with using it, especially as joint operations are becoming more
commonplace. IMS is also evolving in its application to joint service
incidents, and Incident Commanders are becoming familiar with inte-
grating representatives from other services into their IMS organization.
Transportation is one of the newer participants in highway incident
management, and transportation units are appearing more and more
frequently on IMS organization charts. According to the needs of the
incident, transportation units should be assigned to whatever appropriate
position is suitable, ranging from single resources up through Division
and Group levels and even to and including Incident Command.

The following sections briefly describe IMS positions that have been
assigned a transportation role, rather than the more familiar emer-
gency services functions. With no loss of integrity, the IMS can easily
be used to address the functional requirements for traffic control and
other supporting transportation services within the same command
and control structure already familiar to most of the highway incident
community.
Traffic Control Strike Teams

Assembling traffic control resources into strike teams, each with units of the same type (dump trucks, sign trucks, barricade units, repair crews, etc.), may provide an efficient way to manage these resources. Aside from providing accountability efficiency, strike teams can help the IC deploy grouped resources. Strike teams are made up of five of the same kind and type of resources with a leader. Individual resources could all be drawn from the same agencies as well as from different ones. Traffic management can be an intensive consumer of traffic control manpower and equipment, especially while being established and dispersed. For example, a strike team might be used by an Incident Commander in situations that require a large amount of resources in a particular area (such as in a Division) or for a particular function (such as in a Group). He might use a Barricade Strike Team to block off a large perimeter that required several barricade trucks. If an incident involved a winter storm, the Incident Commander might find it convenient to manage snowplows as strike teams to clear the roadways in the vicinity of the scene for motorists and emergency vehicles.

Traffic Control Task Forces
Using Traffic Control Task Forces, which is a group of any type or kind of resources with common communications and a leader, is a convenient way to organize all of the different resources needed to set up and operate a roadblock, checkpoint, merge, or taper. Traffic Control Task Forces may contain an indeterminate number of individual resources, constrained only by the command and control guidelines concerning span of control.

Specialized transportation resources are usually warehoused together at depots, yards, or centers; dispatched in convoy; and then reallocated according to need at the scene. Arriving piecemeal at staging areas, Task Forces may be assembled by the Staging Officer in response to requests from the IC.

Task Forces organize different types of resources for a particular purpose, as compared to Strike Teams that enable the Incident Commander to employ a significant number of like resources. Assigning both public safety and transportation resources together as Task Forces could provide a convenient way to: 1) Set up Jersey barriers using a crane, flatbed truck with barriers, and flaggers to control traffic; 2) Use dump trucks with sand and street sweepers to clean up a diesel spill.

Incident Commanders should seriously consider assigning a law enforcement unit with each Task Force or Strike Team with Traffic Control tasking. Traffic Control Strike Teams and Task Forces may require special attention during their response and deployment, due to their size, weight, and limited maneuverability. Transportation resources generally do not enjoy the special right-of-way privileges of emergency vehicles, which further encumber their movement. Law enforcement escort may be required in order for them to make their way through heavy traffic congestion, which might be successfully accomplished only with the assistance of law enforcement units.

**Traffic Control Groups**

Traffic Control Groups may be formed when it is convenient to consolidate traffic control functions under a single functional organizational element within the IMS. Traffic control groups provide specialized traffic services and use particular traffic control resources. Such a form of functional (rather than geographical) organization may be useful in a dynamic or unstable situation where resources need to be flexibly relocated between different divisions quickly to react to changing highway conditions. Or, when other emergent aspects of a highway incident demand the full attention of Operational Command Officers and traffic control is not complicated, a group organization may be appropriate.

**Traffic Management Divisions**

The Traffic Management Division manages a well-defined geographical portion of a highway incident. Activation of the Traffic Management Division may occur when the IC wishes to manage traffic movement from separate directions, separate routes, access points, or intersections. Examples where such an organization might be appropriate would include incidents at complicated interstate interchanges, highway intersections, or coastal hurricane evacuation routes.
Traffic Management Branches

In extremely complex situations, such as highway incidents affecting an entire freeway interchange or in disaster situations, the Incident Commander (or Operations Section Chief) may elect to consolidate traffic control operations under a completely separate Branch. This may be dictated by the need to coordinate several Divisions or Groups or when a separate agency with unique jurisdictional responsibilities responds to an incident. A branch organization might also be the best way to coordinate traffic management involving separate transportation modes, such as a railroad bridge incident over an inland waterway or a subway station at an airport.

Operations Section

Some highway incidents are purely traffic problems, and there may be little or no need for emergency services. Indeed, it often happens that fire and rescue units are dispatched to highway incidents only to find upon their arrival that their services are not required. In such cases, it is appropriate to transfer Command to law enforcement units who are more suited to manage the incident. If incident operations are concentrated on traffic management, it is completely appropriate to appoint a transportation or law enforcement responder to the position of Operations Section Chief. Such a course of action might be appropriate even if there remains a small emergency services activity at the scene, such as with a trooper completing a report.

Command of Traffic Incidents

At highway incidents, transportation organization representatives can opt to either assume Command, participate in Unified Command, or to serve under the command of other responding agencies. The determination of which option to exercise depends upon the situation at the incident and local operational agreements. The first resource to arrive on the scene should always quickly and clearly establish Command. That first resource could easily be a transportation or other unit that is not part of the emergency services. While it would be rare for such a responder to be qualified to command emergency units, they should nevertheless establish Command. Should the situation demand further response as might be more appropriate to the specific incident, adjustments can be made as subsequent responders arrive and the IMS organization is expanded to meet the circumstances.

When Command is transferred to later-arriving units, it should be done in the same professional manner as required for transfers of Command within the emergency services. Likewise, at the conclusion of the emergency services’ involvement in the incident, Command should be formally transferred to units remaining on the scene. This incident activity may only involve traffic control.

THE TRAFFIC CONTROL FUNCTION

Traffic control is the direction of traffic in the vicinity of a highway incident. Information on the control of traffic can be found in The Manual on Uniform Traffic Control Devices (MUTCD). The MUTCD de-
defines the standards used by road managers nationwide to install and maintain traffic control devices on all streets and highways, as well as how to set up work areas and mark incident scenes. The MUTCD is published by the Federal Highway Administration (FHWA) under 23 Code of Federal Regulations (CFR), Part 655, Subpart F. It is available in loose-leaf printed form from FHWA, on CD-ROM, and on the Internet at http://mutcd.fhwa.dot.gov/.

The MUTCD concentrates on traffic control devices used in conjunction with highway construction work zones; however, new material has been added that applies to emergency highway incidents. The new highway incident subject matter (Section 6I) has largely been copied from the more mature work zone sections and is greatly in need of review by the emergency services community. As an example of this need for review, the design and use of temporary traffic control devices are not covered extensively. The types of traffic channeling devices used in work zones are designed for visibility, durability, and unattended use, while those favored for use by the emergency services are designed for quick and easy short-term use. Instructions for providing feedback to improve the publication can be obtained from the website and are contained in the publication itself.

According to the MUTCD:

*The primary function of temporary traffic control is to provide for the safe and efficient movement of vehicles, bicyclists, and pedestrians through or around temporary traffic control zones while reasonably protecting workers and equipment.*

This function addresses one of the primary motivations of the emergency services, which is to guard and protect those at the incident from being injured or killed. It also addresses one of the central concerns of the transportation community, which is the safe movement of traffic along the highway. Operational requirements for the combined and integrated highway incident management team include safe emergency operations at the scene and safe passage of traffic by the scene.

Depending on the hazard and complexity of the situation, traffic control may be a single resource or a large and widely deployed organization. For simple traffic situations, traffic control might be implemented with very few resources, such as with a secondary assignment to an apparatus driver using the supplies already carried by his vehicle. This might be appropriate for a deserted country road with good visibility of all approaches. For long-lasting incidents, or with heavy or fast traffic, as might be encountered on a freeway or in a metropolitan area, hazards are significantly more serious, and the impact to the traveling public is much greater.

Significant additional resources should be provided to address a significantly different mission. As the size and complexity of the traffic control task grows, so should the traffic control organization. IMS provides the Incident Commander with the tools to flexibly expand the traffic control function and to place it at appropriate positions within his IMS structure.
Transportation Resources

In the preceding examples, both transportation resources and emergency services were used for traffic control. Users may already be familiar with the emergency resources of fire and rescue, emergency medical services, and law enforcement, as well as their use in auxiliary traffic control functions. Other resources are becoming more generally available from the transportation community. Resources such as street sweepers, construction crews, barricade teams, and tow trucks have the potential to provide the same services to both the Incident Commander and the traveling public as they provide during the normal course of routine daily operations. These resources can augment or replace law enforcement, firefighters, and medics directing traffic. By using these resources, traffic problems can be addressed in a more comprehensive manner.

In general, the organizations and agencies providing these resources are not emergency response organizations. Therefore, their vehicles are not emergency vehicles and can appear to respond less rapidly when compared to fire, EMS, and law enforcement vehicles or apparatus. Most of these resources are not round-the-clock operations, and they must often call in personnel to mount a response after business hours. They are not organized in the familiar paramilitary command and control structure as is found in the emergency services and will use supervisors, foremen, managers, and directors rather than resource officers, law enforcement supervisors, and chief officers.

These broad and varied resources can provide many services and functions to aid in the management of highway incidents. These services can range from providing emergency roadway repair, mass patient transport, and traffic control to bulk damming, diking, and absorption material as well as construction and demolition equipment and operators. However, crew training, experience, and capabilities; apparatus types and kinds; supplies; operational procedures; and even terminology and nomenclature are not standardized across the nation. These differences elevate the importance of pre-incident planning and practice if all the resources are to be used to maximum benefit.

Traffic Control Devices

The specification for all devices used for traffic control is contained in the MUTCD (Millennium Edition, December 2000; Incorporating: Proposed Revision No. 2, Revision No. 1 dated December 28, 2001, and Errata No. 1 dated June 14, 2001). This manual covers such devices, regardless of whether they are carried in a highway construction contractor’s vehicle, a state or local DOT vehicle, or in an emergency vehicle. Incident Commanders and their organizations are cautioned to ensure that such devices carried on their apparatus or used at a highway incident meet the specifications contained in the MUTCD. This includes traffic cones, flares, signs, and flags. Traffic control device appearance has been standardized throughout the United States in order that motorists are confronted with the same types of traffic control wherever they may travel.
Using unapproved traffic control devices can expose responders’ organizations to significant liability.

**Traffic Control Resources**

Traffic Control Resources — the most common and useful resource used at highway incidents — is used to protect responders and the traveling public from each other by separating moving vehicles from vulnerable workers at the scene. Traffic Control Resources organize and channel traffic around blockages caused by highway incidents, which helps to prevent trip delays for travelers. At the one end of the spectrum are “Flaggers,” who are drawn from the ranks of emergency responders and take the form of a law enforcement officer by directing traffic through an intersection using a whistle, flashlight, and flares. A flagger can also be an engine driver who uses the apparatus, traffic cones, and flares to divert traffic up stream of an incident. At construction zones (which may turn into emergency incidents), flaggers are usually subcontract employees of the firm performing the work. At the other end of the spectrum, central controllers can synchronize an entire region’s traffic control signals to better route traffic in reaction to an incident. Traffic Management Centers can coordinate road closings and detours to best handle a blockage, even to alerting neighboring regions to implement even broader control measures if needed.

**The Flagger**

Temporary traffic control devices and the presence of flaggers directing traffic designate the Temporary Traffic Control Zone (TTCZ), which is the operational domain of traffic control around a highway incident.

*A flagger shall be a person who provides temporary traffic control.*

Flagger training is available in the form of short courses and taught in local communities. These courses are certified by the American Traffic Safety Services Association, the National Safety Council, and the International Municipal Signal Association. Transportation departments provide flagger training to their personnel and most provide it to other agencies as well.
Authorized responders are made recognizable as flaggers to motorists in accordance with applicable state and local statute, and they are generally drawn from the ranks of fire, law enforcement, and transportation responders. Motorists are usually required to obey direction from highway incident responders, but their authority to direct traffic remains unclear in some jurisdictions. Flaggers, on the other hand, are usually accorded a more clearly stated statutory status, partly due to the long history of their use on highway construction projects. Usually, regardless of their fire fighting, medical, law enforcement, or other status, responders who are directing traffic should be trained as “flaggers.” By doing so, their legal status will usually be clarified with respect to the MUTCD, and they are usually specifically recognized in state and local statutes. Using improperly trained flaggers can expose responders’ organizations to significant liability.

Flaggers comprise the basic traffic control personnel resource, equivalent to the basic emergency services personnel resources that include firefighters, emergency medical technicians, and law enforcement officers.

ORGANIZING THE HIGHWAY INCIDENT

This Guide will work its way from the simple to the complex highway incident as it progresses through the following examples. This incident “complexity” will be measured more in terms of the impact the incident has upon the roadway and the surrounding community than the size and the variety of response to it. Even though technical rescues, hazardous materials events, mass casualties, terrorist attacks, and lost cargo loads (to name a few of the more complicated types of incidents) all have their internal technical issues, the IC will delegate their handling to the specialists and experts that will be coordinated within an IMS organization. The complexity addressed by this Guide concerns the organization and employment of resources to handle these problems while operating in one of the most dangerous environments in the world — a public highway.

The Highway Incident Without Response

Perhaps the most common highway incident involves motor vehicle accidents with minor damage and without injuries, which may be resolved with the drivers exchanging insurance information and departing the scene. Since the situation is resolved before any response reaches the scene, it might be said that this is not an “incident!” However, these situations can cause significant traffic problems and many 9-1-1 calls with conflicting information concerning the type of incident, its severity, and its location. As a result, several alarm assignments can be dispatched to several reported incident locations.

The first-arriving responder to each dispatched location should still assume command upon arrival. The Incident Commander’s initial size-up report to Dispatch indicating that nothing was found and that responding units are being released is nearly as important as finding the reported accident. Slowing the unneeded emergency response down is an important safety consideration, as well as easing the impact on
traffic flow. The Incident Management System (again consisting of the sole position of IC) ends soon after it begins with the “nothing found” report, and the incident terminates. The IC’s period of responsibility is measured in seconds and would only be made explicit in the radio traffic under unusual circumstances.

**The Highway Incident Prior to the Arrival of Response Units**

Moving to more complex incidents, we now consider highway incidents where a call for assistance has been made.

One of the most dangerous time periods in a highway incident is between the occurrence of an event and the arrival of responding units. Other than the injuries, damages, or spills directly caused by the incident, the traffic pattern has been unexpectedly changed due to blockages or distractions. Distraught, distressed, and distracted pedestrians can enter the travel lanes as the occupants of involved vehicles extricate themselves, Good Samaritans attempt to render aid, and curiosity seekers converge on the scene. There is a great risk of secondary crashes, further injuries or deaths, and additional property damage.

Initial reports of the incident typically are made by callers on cellular phones dialing 9-1-1. These calls are received at a Public Safety Answering Point (PSAP). The PSAP is the communications center to where 9-1-1 calls are automatically routed and where call takers determine the nature and location of the emergency. A serious highway incident can result in many calls, sometimes approaching a hundred separate calls received at several PSAPs. Callers usually report differing observations and locations, and sorting out so many calls can prove to be a significant challenge. As a result, several phantom highway incidents may be initially handled as actual, separate incidents, each with separate dispatched responses to ensure that units reach the real location.

Command cannot be established prior to any responder arriving at the scene; therefore, no IMS organization has yet been established. If some of the 9-1-1 cellular callers to the PSAP are located at the scene, they provide an opportunity to possibly reduce these hazards. The only contact with the scene is through call takers, and the only contact with responding units is through dispatchers. Additional relevant information concerning the situation can greatly help responding units prepare for managing the incident, however, and it should be provided to them.

Changes to the reported situation may dictate changes in the response, during the response. Modifying the response assignment or issuing direction to responding units, such as designating staging areas, initial tactics, or task assignments, should be accomplished under the usual authority structures of the responding organizations. The ranking responding member of the organization having responsibility for the particular type of incident should probably take charge during this phase; however, such a determination can only be made at the local level.

It is also beneficial to give on-scene callers pre-arrival instructions similar to those given by Emergency Medical Dispatchers on EMS.
incidents. If call takers could pass on fundamental safety directions, such as having pedestrians vacate the roadway, lives could be saved. Simple instruction on safely and properly placing flares could ease a rapidly building traffic problem. Weather and exposure situations may also be helped with rudimentary verbal assistance, for example, get back in your vehicle if it’s lightning, don’t try to go into flood water, etc.

The Single-Unit Response to Highway Incidents

Progressing to a more complicated highway incident, we next consider incidents handled by a single-response unit.

The simplest level of highway incidents that involve responders includes traffic stops by law enforcement for infraction of traffic laws, disabled vehicles being assisted by wreckers or motorist assistance units, or small highway maintenance jobs. These simple highway incidents usually involve a single-person unit. Since there is little to do in the way of coordination, resource allocation to tasks, or directing operations, all of the incident management functions are rolled up into a single position. The Incident Management System should still be implemented with the position of Incident Commander always filled.

![Diagram of Incident Commander Single Person Unit (All IMS functions)](image)

Even though none of the usual issues of span of control, unity of command, or division of responsibility appear, this single-person unit can quickly and easily become overloaded should the incident escalate in severity or extent. Dispatchers should be aware of the possibility of the IC needing additional resources and prepared to send them quickly if needed.

The Small Response to Highway Incidents

Next up on the scale of complexity for highway incidents would be those with several units responding, such as accidents reported with major damage, injuries, or minor leakage of vehicle fluids.

For example, the Incident Commander might commonly encounter a two-vehicle accident in the traffic lanes. This accident may involve possible injuries to the vehicle occupants (possibly trapped in their vehicles) as well as the vehicle leaking various fluids onto the roadway. The IC should assign companies as they arrive to provide medical care, handle extrications, and perform fire fighting and spill control tasks, accident investigation, and traffic control. In this manner, the IC
ensures that all of the needed tasks are assigned to responding units, IMS functions are being staffed, and all responsibilities are met for the incident. The IC decides, based upon limited resources, which are the highest priority tasks and assigns units to them as they arrive.

The IC assigns specific tasks to designated units and sets up a simple Incident Management System to organize the effort. It might unfold as follows:

*PD Unit 7, Battalion 1, Engine 4 (crew of 3), and Ambulance 41 (crew of 2) are dispatched to a reported vehicle fire. They arrive together, with Battalion 1 assuming command and providing Dispatch with an initial size-up report of a single vehicle on the shoulder with large amounts of smoke being released from the engine compartment. He reports that all occupants appear to be out of the vehicle. Suspecting an overheated engine, the IC assigns Engine 4 to check out the vehicle and Ambulance 41 to assess the occupants. PD Unit 7 proceeds to set up traffic control and to interview the driver.*

Battalion 1 established a simple IMS organization to direct the operation, with all units reporting directly to him. The initial IMS structure and task assignments appeared as follows:

![Image of IMS organization](Figure 7.5)

*Upon learning from Engine 4 that what first appeared as smoke was in fact steam from leaking coolant, from Ambulance 41 that there were no injuries, and from PD Unit 7 that the driver had already called AAA and was waiting for a tow truck, the IC released all fire department units and placed them back in service. He then transferred command to PD Unit 7 and also left. Fred’s Towing arrives and departs with the disabled car and its occupants. Then PD Unit 7 returned to service, Command was terminated, and the incident ended.*

When the car sat on the shoulder emitting a cloud of steam, it attracted the attention of passing motorists. These curious onlookers slowed down to get a good look and eventually created traffic backups in both directions from the incident. Cellular 9-1-1 calls complaining about the delay were still being received more than an hour after the initial car fire reports. Only through good coordination between the 9-1-1 Center and the Traffic Management Center were further accidents prevented from happening in the backup. Since some of the callers were insistent that something be done, city law enforcement units continued to monitor the traffic situation during the course of their usual patrols. Traffic controllers continued to observe the traffic flow using the closed-circuit television cameras along the route.
Expanded Incident

The IMS organization may be adjusted as shown below to deal with the additional resources used on an expanded incident:

PD Units 7 and 8, Battalion 1, Engines 4 and 5 (crews of 4), Ambulance 40 (crew of 2), and Ambulance 41 (crew of 2) are dispatched to a reported two-vehicle accident with injuries. Several more units than usual were dispatched due to several excited callers reporting many injuries, fire, and many people at the scene. Engine 4 arrives first on the scene, followed closely by the EMS and law enforcement units. The Battalion Chief is delayed indefinitely in traffic. The Captain assumes Command, provides Dispatch with a size-up report, and requests one additional truck company after hearing that the occupants of one vehicle are trapped. He assigns the Engine 5 Officer as the Extrication Group Supervisor and then assigns Engine 4 and Engine 5 as his resources. He assigns Ambulance 40 as Medical Group Supervisor and assigns Ambulance 40 and Ambulance 41 as his resources. He then assigns PD Unit 7 Law Enforcement Group Supervisor and assigns PD Unit 8 as his resource.

The organization and activities of the initial assignment at this point are as follows:

- **Medical Group**
  - Medic 40
  - EMS Lt
  - Triage/Treatment
  - Enroute: Battalion 1 Truck 3

- **Extrication Group**
  - Engine 5
  - FD Lt
  - Suppression/Vehicle Stabilization

- **Law Enforcement Group**
  - PD Unit 7
  - City PD Cpl
  - Traffic Control/Investigation

**Figure 7.6**

This basic structure addresses the need for unity of command with a well-defined chain of command and keeps the span of control manageable. Eight units operating independently would have been dangerous and unproductive, and it would have been difficult for one individual to control all eight units directly. By using the Incident Management System, the Incident Commander provides the strategic direction to the officers working at the tactical levels. The former officers assigned as Group Supervisors report directly to the Incident Commander and supervise their assigned units.

The IMS puts resources into common management components to maximize the organizational effectiveness. Attempting to command too many units will dilute the IC’s ability to effectively command any one of them. It is generally safe to limit one’s span of control to between three and seven subordinates, with an optimum of five. This is only a guideline, since many factors determine the “command overload” limit. Extremely talented and experienced Command Officers with highly developed multitasking skills might be able to handle more, especially if subordinate units are also highly effective. Considering that the IC is often working with units from other organizations with unknown skill
levels or other issues that demand attention, span of control is very important. ICs should understand and use IMS to maintain effective span of control.

**The Reinforced Response to Highway Incidents**

Still farther up the complexity scale are those unusual highway incidents where additional resources are needed to deal with further complications such as might be illustrated with the following scenario:

As the incident progresses, and units progress toward completing their initial assigned tasks, Battalion 1, Truck 3, and the Safety Officer arrive on the scene, as well as a City PD Supervisor (PD Unit 4). The IC assigns Truck 3 to the Extrication Group and the Safety Officer as part of his Command Staff. After briefing the Battalion Chief on the situation, Engine 4’s Captain transfers Command to Battalion 1. The new IC then reassigns him as the Liaison Officer to interface with the Traffic Management Center, who has been in contact with Dispatch, concerned about the increasing traffic congestion due to the accident. The City PD Sgt is assigned as Law Enforcement Group Supervisor and immediately requests two wreckers to remove the vehicles.

After these changes, the IMS structure appears as follows:

![IMS Structure Diagram]

**Figure 7.7**

While doing his initial safety assessment of the scene, the Safety Officer determined that the traffic passing the scene was the primary hazard to the responders. The Assistant Safety Officer advised him that the guardrail had suffered significant damage. The scene was protected; however, he could see other problems building in the backup as drivers became frustrated while attempting to negotiate the blockage. Even though the PD units were handling the traffic, the building traffic congestion was beginning to stretch their capabilities. The PD units alerted the Law Enforcement Group Supervisor that they needed additional units so that they could begin their investigation and prepare reports. He requested additional resources from the IC.
Upon checking with the Traffic Management Center (TMC), the Liaison Officer learned that the incident was beginning to cause major traffic problems along the arterial, with congestion now extending more than a mile in both directions. After checking with the IC, the Liaison Officer requested further assistance from the TMC. The TMC was advised by the County DOT that they were sending a maintenance truck and a sign truck, along with a supervisor.

The Extrication Group was able to remove the trapped occupants. The reported injuries to the vehicle occupants were minor cuts, scrapes, and bruises, and all patients refused transport after being treated on the scene. Only a small amount of coolant and brake fluid leaked from the vehicles, and the Truck 3 crew covered the small pools with absorbent. At this point, the IC released the fire department resources. The IC (Battalion 1) then transferred Command to PD Unit 4.

After the wreckers and DOT vehicles arrived on the scene, the IMS organization was as follows:

![Diagram](image)

**Figure 7.8**

After waiting until Fred’s Towing finished loading the second vehicle, the scene was turned over to the DOT supervisor as the law enforcement units left the scene, resulting in the final implementation of IMS, which looked as follows:

![Diagram](image)

**Figure 7.9**

The remaining units performed the repairs and dealt with the traffic congestion for two additional hours. When repairs were completed and traffic returned to near normal flow, the incident was terminated, and all remaining units were released.

**Larger and Longer Highway Incidents**

Finally, there are those extraordinary highway incidents that are so significant that they require extraordinary IMS organizations. The following scenario demonstrates the application of IMS principles to larger and more complicated highway incidents.
A “Be on the Lookout” (BOLO) statewide broadcast identified two vehicles whose occupants were wanted for an armed robbery of a downtown jewelry store. They were further identified as members of a street gang known for their hatred of law enforcement. Several hostages were taken. Units from the Metro Major Crimes Task Force made a felony traffic stop of two suspected vehicles on the Interstate in response to the BOLO.

During the felony vehicle stop, gunfire was exchanged between Task Force units and the suspects, and there were several crashes. Two officers, one suspect, and several motorists are reported injured. All suspects have been taken into custody, and all hostages have been accounted for. One person is trapped in a passing vehicle involved in one of the crashes. Law enforcement has secured the scene.

There are many law enforcement units on the scene and en route. PD Unit 401 has assumed Command and established an ICP at the scene. IC requested fire and EMS resources and established Staging at the Sears parking lot. IC also directs on-scene units to re-position vehicles to establish an ingress for emergency services for scene access.

The following units are dispatched on this incident:

- Battalion Chief
- Engines 10, 11
- Heavy Rescue 14
- Trucks 15
- EMS Supervisor
- Medics 4 & 5
- Ambulances 6, 7, 8
- Safety Officer
- Information Officer

Proceeding to the scene with his aide, Battalion 2 begins to assess the situation and reports to the ICP. The IC assigns Battalion 2 as the Fire and EMS Branch Director.

The IMS organization now appears as follows:

Figure 7.10
Note that the incident is still primarily a law enforcement incident and that fire and rescue are providing support. This highway incident is being organized utilizing IMS. The framework for Battalion 2’s organization is being prepared for the rest of the fire and EMS resources.

*Engine 12 establishes fire and EMS radio communications in Staging.* The Branch Director directs the EMS Officer and the next available ALS Unit to respond. He assigns the EMS Officer as the EMS Group Supervisor. The IC detailed five law enforcement officers to the Fire Branch to serve as escorts. Acknowledging reports of massive traffic problems, the IC also requested an Interstate Traffic Control Task Force from Dispatch.

As units arrive, they report to Staging. The Fire and EMS Branch assigned a Medical Group to facilitate the treatment and transport of the patients, with Heavy Rescue 14 assigned to the extrication.

The IC began releasing unneeded units to clear the area. A perimeter was established, and access control was instituted.

At this point, the IC has begun to expand the IMS organization, which has now evolved into the following:

![Diagram of IMS organization]

**Figure 7.11**

Injured motorists and responders were treated and transported. The perpetrators were taken into custody, treated, and transported to jail. All activities were completed related to extricating, treating, and transporting the patients and were managed under IMS. Guidance
on how EMS incidents should be managed may be found in the *Model Procedures Guide for EMS Incidents.*

The crime scene investigation teams from area law enforcement departments were now occupied with the most time-consuming activity remaining to be completed at the incident. Since there was still some fire danger from leaking gasoline and oil from the crash vehicles, as well as risk of injury from sharp metal, some fire and rescue and EMS remained to monitor these hazards and provide treatment if needed. The roadway remained completely shut down, and traffic in the entire region was beginning to be seriously affected. Traffic management had become a large problem, and traffic control measures were instituted over a wide area around the incident. Most of the area radio, television, and print media had learned of the incident, and a large crowd of reporters had converged on the scene. As the story spread, more and more spectators gathered at vantage points to see the action first-hand. At this point, the IMS organization looked like the following (the single resources have been omitted for clarity):

![Figure 7.12](image-url)
As the incident settles down to a more deliberate pace, roles and responsibilities shift to meet the changing needs of the incident. Senior management representatives from the several organizations involved in this high profile incident begin to arrive on the scene. Since all of their interests in the incident need to be addressed, they jointly established a Unified Command. Because law enforcement had the most immediate mission, they are retaining the lead role. The former incident commander assumed the role of Operations Section Chief, and the three senior organizational representatives commenced Unified Command.

The Operations Chief chose to divide his law enforcement work into two pieces, assigning responsibility for scene security to a division and dedicating a group to the investigation (Other complications would bring in responders from other investigating agencies. For instance, if it involved bank robbery or kidnapping, the FBI would join the IMS organization. If explosives were involved, the ATF would become involved. ). Fire and EMS were consolidated into a smaller group. Since traffic management function had grown to a sizable effort, it was elevated to Branch level.

The primary activity claiming the attention of the Operations Section concerns the investigations being conducted by various PD units; however, the traffic situation is becoming a major concern of the Operations Section Chief.

Now, more than 45 minutes after the incident, serious traffic congestion has spread through a large region. Intense pressure is being brought to bear on Incident Management as City and County Government officials and the 9-1-1 call center are deluged with complaint calls from travelers. A two-prong traffic management goal was added to the Incident Action Plan after consultation with the DOT, Public Works, Safety Officer, and Traffic Management Branch.

- Detour as much traffic around the incident and through city arterial streets as possible; and
- Open a single lane on the interstate past the scene.

The Traffic Management Branch was organized as follows:
BASIC ORGANIZATIONAL APPROACH FOR HIGHWAY INCIDENTS

Figure 7.13
Chapter 8

Highway IMS Applications

Courtesy of Chris Mickal
New Orleans Fire Department
Chapter 8

Highway IMS Applications

The following scenarios were adapted from material found in the Incident Command System National Training Curriculum, Scenario and Incident Action Plan Catalog, October 1994, available through the National Wildfire Coordinating Group, National Interagency Fire Center, Publications Management System, Boise, ID. They are also available on the Internet through http://www.nwcg.gov/.

The correspondence between each of the following scenarios and the NWCG publication is indicated following each of the applicable scenario titles. Titles without an indicating reference were written by the authoring group.

THREE-CAR MOTOR VEHICLE ACCIDENT

Situation

A three-car accident occurs in the outside lane (right shoulder) of a six-lane divided highway, 100 yards past an off-ramp. Only the outside lane is blocked by the vehicles. The time of day is 10:00 a.m. The driver in one of the cars is trapped and injured. Another of the involved vehicles has a minor gasoline leak.

Figure 8.1
Conditions
The weather is sunny with mild wind, 72 degrees F. Traffic is light and moving past the incident at approximately 10 mph. A backup is slowly building behind the blockage.

Problems
- Scene safety
- Fuel leak control
- Extrication
- Medical treatment
- Traffic incident investigation
- Facilitating the safe flow of traffic past the accident
- Removing damaged vehicles and debris from the roadway
- Restoring the roadway to normal operation

Solutions
- Notify law enforcement, fire, EMS for primary response.
- Establish IMS.
- Notify traffic management for traffic control and motorist information.
- Notify towing and recovery for vehicle removal.

Actions
(Not necessarily in order of priority — activities may be conducted simultaneously.)
- Deploy a protection line.
- Establish temporary traffic control.
- Mitigate fuel leak.
- Perform extrication.
- Treat and transport patients.
- Conduct investigation.
- Remove vehicles.
- Attempt to maintain traffic flow around the incident.

Traffic-Related Considerations
- Restoring the roadway as soon as practical
- Congestion on local roadways
- Rerouting of traffic via off/on ramps
- Reducing risk of secondary crashes
- Public information
Responding Resources

- Battalion 1
- Engine 57
- Truck 4
- Ambulance 23
- Adam 14
- Scout 12
- Service Patrol 42

Natural Disasters, Winter Storm (A.5.)

Situation

It is 11:30 Monday, January 10. Your City and a large part of the surrounding County are 24 hours into a major winter storm. Current snow depth in the City is slightly over a foot of snow on the level. High winds are causing drifting throughout the City and areas of the County to the east. The drifting snow is blocking roads everywhere, including City and County major arterials and collector streets within the City. Areas of the County west of the City are experiencing mixed snow and rain, with winds not causing any major problems. Higher elevations 25 miles to the west (still within the County) are experiencing snow fall at the rate of 1/2 inch every three hours, with a current accumulation of approximately 10 inches.

Snow accumulations have restricted transit service by the County Transit District to snow and ice routes within the City. The City’s law enforcement and fire departments are having trouble responding to calls due to snow and slick roads.
Neither the City nor the County has been able to keep up with snow removal. The County has had to close three major arterials in the northern part of the City due to severe drifting.

As required by your City and County Emergency Operations Plans, the City Manager and the County Executive Officer have established a Unified Command organization operating out of the City Emergency Operations Center. They have appointed you as Day Operations Section Chief, with the County Public Works Director as your Deputy and Night Operations Section Chief.

**Strategic Goals**

- Provide for safety of responders.
- Maintain heavy traffic routes and access to emergency service facilities, including law enforcement, fire, and contract ambulance stations.
- Maintain access to the hospital, nursing homes, Red Cross shelters, and other sensitive facilities.
- Maintain the Transit District snow and ice routes and access to the bus stops.
HUMAN CAUSED DISASTERS, BRIDGE ACCIDENT (B.6.)

Situation
A rush-hour collision occurs on the eastbound side of the Hillsdale Bridge over Old River Road between a commuter bus and a delivery truck carrying paint. The force of the impact sends the truck into a nearby bridge support, killing the driver. Due to the accident, all traffic comes to a complete standstill in both directions.

Figure 8.4

Conditions
The weather is cold and rainy with heavy, thick fog. Local temperature is approximately 45 degrees F. The wind is from the west at 15-20 mph. The bridge, which connects Largeville with Hugeburg, is one mile long and has four lanes (two in each direction).

Problem
The bus contains 25 commuters of which those seated in the first six rows (eight people) are all seriously injured. The remaining passengers are slightly injured. The bus driver will require extrication from the bus as will several of the forward-seated passengers. Throughout the incident, paint spills from the damaged delivery truck flowing onto the opposing lanes of traffic causing a severe slippage problem. Law enforcement and fire departments from both towns as well as bridge law enforcement are responding but are having difficulty getting through the gridlock.
Potential Hazards

- Possible structural integrity problems with bridge
- Toxic fumes from paint
- Explosion
- Additional accidents due to road conditions

Resources

Law enforcement

- Local PD – Three marked units
- State PD – Two marked units

Fire

- Local fire engine companies
- One hazmat company
- One rescue company

EMS

- Seven BLS units
- One ALS transport unit
- Three ALS nontransport units
- One EMS supervisor
- Eight off-duty BLS personnel

Miscellaneous

- Bridge engineering team
- Highway maintenance crew
- Al’s Towing

Depending upon circumstances, this IMS organization could be assembled as a Single Command or Unified Command:

Problems

- Scene safety
- Hazmat spill
- Extrication
- Medical treatment
- Fatality
- Traffic incident investigation
- Facilitating the safe flow of traffic past the accident
- Removing damaged vehicles and debris from the roadway
- Restoring the roadway to normal operation
Figure 8.5

**Solutions**

- Notify law enforcement, fire, EMS for primary response.
- Establish IMS.
- Notify traffic management for traffic control and motorist information.
- Notify towing and recovery for vehicle removal.

**Actions**

(Not necessarily in order of priority — activities may be conducted simultaneously.)

- Deploy a protection line.
- Establish temporary traffic control.
- Mitigate paint spill.
- Perform extrication.
- Treat and transport patients.
- Conduct investigation.
- Remove vehicles.
- Provide engineering evaluation of bridge structure.
- Restore roadway.
Traffic-Related Considerations

- Opening the roadway as soon as practical
- Congestion on local roadways
- Rerouting traffic
- Reducing risk of secondary crashes
- Public information

PLANNED EVENT, PARADE AND CEREMONY (D.2.)

Your town/community hosts a parade and ceremony to honor the veterans of Operation Desert Storm with an expected attendance of over 40,000 people. Planning for this event will start in the mayor’s office. Meetings will be conducted by department heads and organizations in the community. Other organizations and agencies and the utilization of mutual aid agreements will be used for this event, which will receive national publicity.

An estimated 40,000 people will be attending the parade and ceremony at the high school football stadium. All principal players and coordinators were briefed. Radio frequencies and assignments were given out. The Emergency Operations Center (EOC) was activated to coordinate the event. The attendees include local war veterans, Governor of New Jersey, U.S Senators, U.S. House of Representatives, and U.S. State Senators and Representatives.

The following concerns and needs must be addressed when developing an IMS organization flowchart:

- Emergency management/liaison and EOC
- Intelligence/planning
- Video/photo and public information
- Food and cafeteria
- Radio communications
- Parade route
- Traffic
- Parking
- Staging
- Shuttles
- Towing
- Site security
- Crowd security
- High school security
- High school parking
- Foot patrol
- Mounted patrol
- Security for dignitaries
- Dignitary protection
- Secure area
- Escorts
- Protesters

The following agencies will be involved in this event and will contribute resources:
- Local law enforcement agencies
- County sheriff’s department
- State police
- Area EMS (ALS and BLS)
- Area fire departments
- American Red Cross
- Public works local and county
- State, county, city DOTs

Figure 8.6 shows one possible way to organize this planned event, shown as a snapshot view of the upper echelons just prior to the start of the parade. The City EOC was set up as an Area Command, organized along IMS Unified Command guidelines. The EOC Operations Chief established a pool of emergency services reserve resources under a Staging Manager to provide on-call reinforcement support to incident commanders in the field. Two special field incidents were established, each using Unified Command, one for the parade and one for the stadium event. The Parade Incident Command’s Operational Section Chief might have chosen to organize its operational activities using separate branches, one for Crowd Control, one for Traffic Management, and one for the conduct of the parade itself.

Note that the character and makeup of these organizations would probably change significantly as the events unfolded during the day. With the parade ending and the stadium activities beginning, a significant amount of resources could be shifted to the stadium and the parade incident terminated. Again, at the conclusion of the stadium events, perhaps a new IMS organization could be formed using elements of the Traffic Management Branch of the parade IMS organization to manage the mass exodus. Finally, as things return to normal, the EOC would be deactivated, and only a few Traffic Management remnants would deactivate the traffic controls and restore the traffic network to normal operations.
POSSIBLE TERRORIST ACT ON AN INTERSTATE HIGHWAY

Situation

Saturday, 1400 hrs, at the intersection of the I-10 Freeway and the State Highway 138 overpass, a rental truck parked just before the Hwy 138 overpass in a turnout on the shoulder of the northbound I-10 exploded, causing numerous vehicles in the northbound lanes to collide. The northbound lanes are completely blocked, and the southbound lanes are barely moving.

As responding units start to arrive on scene, reports of suspicious circumstances related to this incident are received by the county sheriff’s department. Several passing motorists reported that shortly before the truck exploded, men were seen parking the rental truck and running to a waiting dark sedan, which sped away.

By the time 9-1-1 calls start to come in there are approximately 10 cars involved in collisions in the northbound lanes with 20 victims with injuries ranging from minor to major. Three victims in two cars will need to be extricated. There are no known fatalities at this time. The explosion has started a small brush fire next to the turnout on county property. The fire has the potential of spreading to nearby state and national forest land.

Conditions

The weather is sunny, hot, and clear. Local temperature is 85 degrees F. The wind is from the NE at 10-15 mph although it could pick up in the late afternoon. Sunset is at 19:45 hrs.

Problems

The incident area needs to be treated as a crime scene. There are numerous injured victims, with some entrapped. A small but growing brush fire will soon impact other jurisdictions. Law enforcement, fire, EMS, and other resources are responding but are having difficulty because of the gridlock.

Potential Hazards

• Additional possible terrorist incidents
• Possible attacks on responders
• Unknown chemical, biological, or nuclear hazards
• Emergency response through blocked highways
• Secondary crashes and other incidents involving blocked traffic
• Possible wildfire
• Communication overload and failure (voice and data, radio, and cellular telephone)

Resources

When the county sheriff’s office supervisor arrived on scene and joined
the Unified Command as the lead agency representative, considerable resources had responded and been organized by the highway patrol lieutenant who had served as the initial Incident Commander:

**Figure 8.7**

**Law Enforcement**

Highway Patrol (Original jurisdiction on the highway)
- Lieutenant
- Two sergeants
- Six patrol officers
- Information officer

County sheriff’s department (Terrorist investigation jurisdiction, in support of the FBI)
- Lieutenant
- Sergeant
- Four detectives
- Bomb squad (crew of four)
- Eight 1-patrol deputies
- Two scientific investigators
- Information officer

US Forest Service Law Enforcement
- Two officers
FBI
- Two special agents

Fish and Game
- One officer

Fire
County Fire Department
- Two battalion chiefs
- Six engines
- Two trucks
- One heavy rescue
- Information officer

State Department of Forestry
- One brush patrol

U.S. Forest Service
- One brush patrol

EMS
County EMS
- Two EMS supervisors
- Five ALS ambulances

Commercial (County Contract) Ambulance Service
- Ten BLS ambulances

Volunteer Ambulance Service
- Ten BLS ambulances

State DOT
- Two supervisors
- Two service patrol units
- Construction equipment from nearby large highway project
- Four traffic control crews
- Five highway repair crews

HAZARDOUS MATERIALS INCIDENTS,
TRACTOR AMMONIA SPILL (E.5.)

Situation
An accident involving a tractor transport carrying gasoline in an aluminum tank trailer occurs on a city surface street (Ventura Boulevard; four-lane asphalt undivided city street with storm drains that lead directly to the oceanfront), and ammonia is leaking at approximately 5 gallons
per minute. The event will cause a nearby freeway (State Highway 34) to be shut down in both directions. Multiple city, county, state, and federal agencies will converge on the scene.

**Situation Description**

An eastbound gravel truck strikes a tractor-trailer carrying ammonia traveling west on Ventura Boulevard, one block west of State Highway 34. The ammonia tanker overturns and begins to leak, venting fumes into the air. Several persons are injured in attempting to rescue the driver, who is trapped and screaming for help.

As a result of this accident, both east and westbound traffic on Ventura Boulevard is immediately blocked. Also North and South traffic on State Highway 34 is heavily congested. The students at Pleasant Valley Elementary School, located a short distance west/southwest of the incident, were at recess, and the teachers are holding them in classrooms after hearing of the accident, awaiting instructions from authorities.

As traffic in both directions on the boulevard halts, drivers of lead vehicles attempt to offer aid. Other callers to 9-1-1 report that the driver of the gravel truck is not responsive. Others then run back in both the east and west directions warning other drivers and business owners along the boulevard of the ammonia spill. Drivers within the first few hundred feet leave their vehicles and proceed to a safe distance to observe.

**Environmental Factors**

**Day/Time**

Wednesday at 1:05 p.m.

**Weather**

A low-pressure system has been moving on shore during the morning with light rain showers expected by sundown. The sky is overcast, temperature 66 degrees F, humidity 83 percent and winds from the North at 3-5 miles per hour. It was not raining at the time of the accident.

**Traffic**

Moderate traffic on Ventura Boulevard in both directions.

**Response Unit Locations**

- State trooper – Unit eastbound 1 mile from scene
- City police – At police headquarters, 1/2 mile west
- Fire – At Station 54, 1/4 mile west

There are multiple calls on 9-1-1 within 1-2 minutes of the accident. Fire and City law enforcement arrive on scene within 3-5 minutes. The State Trooper arrives within 7 minutes and County Environmental Health and County Highway units within 20 minutes.

**Problems**

- Possible evacuation and scene safety
- Hazardous materials spill issues (e.g., environmental protection, off-loading, mitigation, perimeter control)
• Extrication
• Medical treatment
• Traffic incident investigation
• Redirecting traffic around the incident
• Removing damaged vehicles and debris from the roadway
• Restoring the roadway to normal operation

Solutions
• Establish IMS.
• Notify law enforcement, fire, EMS for primary response.
• Notify EPA, Coast Guard, Fish and Wildlife.
• Contact commercial hazardous materials mitigation services.
• Notify traffic management for traffic control and motorist information.
• Notify towing and recovery for truck removal.

Actions
(Not necessarily in order of priority — activities may be conducted simultaneously.)
• Deploy protection lines.
• Establish temporary traffic control.
• Mitigate ammonia spill.
• Perform air monitoring.
• Perform extrication.
• Treat and transport patients.
• Conduct investigation.
• Remove the trucks.
• Restore roadway.

Traffic-Related Considerations
• Opening the roadway as soon as practical and safe
• Congestion on local roadways
• Rerouting of traffic
• Reducing risk of secondary crashes
• Public information
Unified Command

City FD
Assistant Chief
Lead Agency

City PD
Lt

City DOT
TMC Deputy

Operations Section
Battalion 2
City

Planning Section
Captain
City

Staging

Safety

Information

HAZMAT Group
HAZMAT 2 Officer

Site Access Control Unit
City Cpl Scout 4

Entry & Backup Unit

Decontamination

Medical Group
EMS Supervisor

Technical Specialist

Triage Unit

Treatment Unit

Transport Unit

Communications Ambulances

Division A
Captain - Truck 4
City

Engine 57
(Protection Line)

Truck 4
(Extrication)

Truck 6
(Extrication)

Engine 58
(Protection Line)

School Division
Battalion 4
City

Law Enforcement
Lieutenant
City

Engine 57
(Protection Line)

Engine 58
(Protection Line)

Engine 57
(Extrication)

Engine 58
(Extrication)

Engine 58

Traffic Control Group
City Police Sgt
SAM - 1

Highway Maintenance Crew
Ventura Blvd Task Force
St Hwy 34 Task Force

Evacuation Group
City Sgt
SAM - 3

Unified Command

City FD
Assistant Chief
Lead Agency

City PD
Lt

City DOT
TMC Deputy

Liaison

Traffic Management Rep
Traffic Company Rep
Mitigation Company Rep
Coast Guard
City Public Works Department

Safety

Information

Operations Section
Battalion 2
City

Planning Section
Captain
City

Staging

HAZMAT Group
HAZMAT 2 Officer

Site Access Control Unit
City Cpl Scout 4

Entry & Backup Unit

Decontamination

Medical Group
EMS Supervisor

Technical Specialist

Triage Unit

Treatment Unit

Transport Unit

Communications Ambulances

Division A
Captain - Truck 4
City

Engine 57
(Protection Line)

Truck 4
(Extrication)

Truck 6
(Extrication)

Engine 58
(Protection Line)

School Division
Battalion 4
City

Law Enforcement
Lieutenant
City

Engine 57
(Protection Line)

Engine 58
(Protection Line)

Engine 57
(Extrication)

Engine 58
(Extrication)

Engine 58

Traffic Control Group
City Police Sgt
SAM - 1

Highway Maintenance Crew
Ventura Blvd Task Force
St Hwy 34 Task Force

Evacuation Group
City Sgt
SAM - 3

Figure 8.8
Appendices
The following terms are used in this Guide with the meanings shown below. These are generic terms, and the authors of this document have made no attempt to resolve the similarities and differences between the many definitions appearing in state and local statutes and ordinances. Readers are cautioned to verify the applicability of material in this Guide to their local situation.

**Agency Representative.** Individual assigned to an incident from an assisting or cooperating agency that has been delegated full authority to make decisions on all matters affecting that agency’s participation at the incident. Agency Representatives report to the Incident Liaison Officer.

**Allocated Resources.** Resources dispatched to an incident that have not yet checked in with the Incident Commander.

**Ambulance.** Ground vehicle that provides patient transport capability, specified equipment capability, and personnel (basic life support ambulance or advanced life support ambulance, etc.).

**Assigned Resources.** Resources checked in and assigned work tasks on an incident.

**Assistant.** Title for subordinates of the Command Staff positions. The title indicates a level of technical capability, qualifications, and responsibility subordinate to the primary positions. Assistants may also be used to supervise unit activities at camps.

**Assisting Agency.** An agency directly contributing suppression, rescue, support, or service resources to another agency.

**Authority Having Jurisdiction.** The organization, office, or individual responsible for approving equipment, an installation, or a procedure.

**Available Resources.** Resources assigned to an incident and available for an assignment.

**Base.** Location at which the primary logistics functions are coordinated and administered. (Incident name or other designator will be added to the term “Base.”) The incident command post may be co-located with the base. There is only one base per incident.

**Branch.** Organizational level having functional/geographic responsibility for major segments of incident operations. The Branch level is organizationally between Section and Division/or Group.

**Chief.** IMS title for individuals responsible for command of the functional sections: Operations, Planning, Logistics, and Finance/Administration.

**Clear Text.** Use of plain English in radio communications transmissions. No ten codes or agency specific codes are used when using Clear Text.
**Command.** The act of directing, ordering, and/or controlling resources by virtue of explicit legal, agency, or delegated authority.

**Command Post (CP).** Location at which primary Command functions are executed; usually co-located with the incident base.

**Command Staff.** Consists of the Information Officer, Safety Officer, and Liaison Officer who report directly to the Incident Commander.

**Communications Unit.** Functional unit within the Service Branch of the Logistics Section. This unit is responsible for the incident communications plan, the installation and repair of communications equipment, and operation of the incident communications center. Also may refer to a vehicle (trailer or mobile van) used to provide the major part of an incident communications center.

**Company.** Ground vehicle providing specified equipment capability and personnel (engine company, truck company, rescue company, etc.).

**Company Officer.** Individual responsible for command of a company. This designation is not specific to any particular fire department rank (may be a firefighter, lieutenant, captain, or chief officer, if responsible for command of a single company).

**Compensation/Claims Unit.** Functional unit within the Finance/Administrative Section. Responsible for financial concerns resulting from injuries or fatalities at an incident.

**Cooperating Agency.** An agency supplying assistance other than direct suppression, rescue, support, or service functions to the incident control effort (Red Cross, law enforcement agency, telephone company, etc.).

**Cost Unit.** Functional unit within the Finance/Administration Section. Responsible for tracking costs, analyzing cost data, making cost estimates, and recommending cost-saving measures.

**Crew.** A specific number of personnel assembled for an assignment such as search, ventilation, or hoseline deployment and operations. The number of personnel in a crew should not exceed recommended span-of-control guidelines (3-7). A Crew operates under the direct supervision of a Crew Leader.

**Demobilization Unit.** Functional unit within the Planning Section. Responsible for ensuring orderly, safe, efficient demobilization of resources committed to the incident.

**Deputy.** A fully qualified individual who, in the absence of a superior, could be delegated the authority to manage a functional operation or perform a specific task. In some cases, a Deputy could act as relief for a superior and therefore must be fully qualified in the position. Deputies can be assigned to the Incident Commander, General Staff, and Branch Directors.

**D/G.** Abbreviation for a Division/Group.

**Director.** IMS title for individual responsible for command of a Branch.

**Dispatch Center.** A facility from which resources are directly assigned to an incident.
**Division.** Organization level having responsibility for operations within a defined geographic area. The Division level is organizational between Single Resources, Task Force, or the Strike Team and the Branch.

**Documentation Unit.** Functional unit within the Planning Section. Responsible for recording/protecting all documents relevant to incident.

**Emergency Traffic.** A radio transmission using special protocols to notify other members on the incident scene of an existing or imminently hazardous situation.

**Emergency Vehicle.** An emergency vehicle is defined by the Authority Having Jurisdiction and usually codified in statutes and ordinances. Commonly, fire and rescue apparatus, law enforcement vehicles, and ambulances are regarded as emergency vehicles.

**“Endeavor to consider.”** Implies a good faith attempt to contemplate mounting a particular effort, after other matters of higher importance have been addressed.

**Engine Company.** A ground vehicle providing specified levels of pumping, water, hose capacity, and personnel.

**Facilities Unit.** Functional unit within the Support Branch of the Logistics Section. Provides fixed facilities for incident. These facilities may include the incident base, feeding areas, sleeping areas, sanitary facilities, and a formal command post.

**Finance/Administration Section.** Responsible for all costs and financial actions of the incident. Includes the Time Unit, Procurement Unit, Compensation/Claims Unit, and the Cost Unit.

**Food Unit.** Functional unit within the Service Branch of the Logistics Section. Responsible for providing meals for personnel involved with the incident.

**General Staff.** The group of incident management personnel comprised of the Operations Section Chief, Planning Section Chief, Logistics Section Chief, and Finance/Administration Section Chief.

**Ground Support Unit.** Functional unit within the Support Branch of the Logistics Section. Responsible for fueling/maintaining/repairing vehicles and the transportation of personnel and supplies.

**Group.** Organizational level having responsibility for a specified functional assignment at an incident (ventilation, salvage, water supply, etc.).

**Incident Action Plan.** The strategic goals, tactical objectives, and support requirements for the incident. All incidents require an incident action plan. For simple incidents, the incident action plan is not usually in written form. Large or complex incidents will require that the incident action plan be documented in writing.

**Incident Command System (ICS).** An Incident Management System with a common organizational structure with responsibility for the management of assigned resources to effectively accomplish stated objectives pertaining to an incident.
**Incident Commander (IC).** Individual responsible for the management of all incident operations.

**Information Officer.** Responsible for interface with the media or other appropriate agencies requiring information direct from the incident scene. Member of the Command Staff.

**Initial Attack.** Resources initially committed to an incident.

**Jurisdiction.** The jurisdiction of a response organization is defined by the boundaries of its operating area and by the function of the organization. The authority and jurisdiction of an organization are defined under law and are usually formally expressed in a charter or contract that is legally enforceable. Response organizations operate “under color of law.”

**Ladder Company.** See Truck Company.

**Leader.** Individual responsible for command of a Task Force, Strike Team, or Functional Unit.

**Liaison Officer.** Point of contact for assisting or coordinating agencies. Member of the Command Staff.

**Lives.** In the context of this document these are human lives, not animals or pets.

**Logistics Section.** Responsible for providing facilities, services, and materials for the incident. Includes the Communications Unit, Medical Unit, and Food Unit within the Service Branch; and the Supply Unit, Facilities Unit, and Ground Support Unit within the Support Branch.

**May.** Implies that an optional action would meet standards of operational practice. It is intended to guide, but not to compel, the consideration of a particular course of action by the Incident Commander.

**“Needs of others in the vicinity.”** Encompasses residents, motorists, and others engaged in unrelated activities that may be affected by incident operations.

**“Not risk lives at all.”** Implies refusing to act in a particular manner, due to an unacceptable risk of injury or death.

**Officer.** Command staff positions of Safety, Liaison, and Information.

**Operational Period.** Period of time scheduled for execution of a given set of operation actions as specified in the incident action plan.

**Operations Section.** Responsible for all tactical operations at the incident. Includes up to 5 Branches, 25 Divisions/Groups or Sectors, and 125 Single Resources, Task Forces, or Strike Teams.

**Out-of-Service Resources.** Resources assigned to an incident but unable to respond for mechanical, rest, or personnel reasons.

**Planning Meeting.** A meeting, held as needed throughout the duration of an incident, to select specific strategies and tactics for incident control operations and for service and support planning.

**Planning Section.** Responsible for the collection, evaluation, dissemination, and use of information about the development of the incident
and the status of resources. Includes the Situation Status, Resource Status, Documentation, and Demobilization Units as well as Technical Specialists.

**Preventable.** Considers the likelihood of occurrence of the risk and the likelihood of the effectiveness of preventative actions, in the judgment of the Incident Commander.

**Procurement Unit.** A functional unit within the Finance/Administration Section. Responsible for financial matters involving vendors.

**Property.** Includes animals, inanimate objects, and evidence.

**Rapid Intervention Crew (RIC).** Two or more appropriately equipped firefighters assembled into a crew for the purpose of locating and removing missing or injured responders on an emergency scene.

**Rehab.** See Responder Rehabilitation.

**Reporting Locations.** Any one of six facilities/locations where incident-assigned resources may check in. The locations are: Incident Command Post, Resource Unit, Base, Camp, Staging Area, Helibase, or Division Supervisor for direct line assignments. (Check in at one location only.)

**Rescue Company.** A ground vehicle providing specified rescue equipment, capability, and personnel.

**Resource Unit.** Functional unit within the Planning Section. Responsible for recording the status and accounting for resources committed to incident and evaluation of: resources currently committed to incident, the impact that additional responding resources will have on incident, and anticipated resource needs.

**Resources.** All personnel and major items of equipment available, or potentially available, for assignment to incident tasks on which status is maintained.

**Responder.** An individual, together with the resources under his immediate control, who responds to a call for service on the highway. A responder, in order to be distinguished from members of the general public, must be qualified and authorized to provide requested services and capable of providing those services at the incident.

**Responder Rehabilitation.** The function and location which shall include medical evaluation and treatment, food and fluid replenishment, and relief from extreme climatic conditions for emergency responders, according to the circumstances of the incident. Also called *Rehab."

**RIC.** See Rapid Intervention Crew.

“**Risking lives a lot.**” Implies mounting an extraordinary effort with extreme urgency and with a likelihood of injury or death.

“**Risking lives only a little.**” Implies mounting a best effort with a deliberate, considered approach with a low likelihood of injury and little likelihood of death.

**Safety Officer.** Responsible for monitoring and assessing safety hazards,
unsafe situations, and developing measures for ensuring personnel safety. Member of the Command Staff.

**Salvageable.** Considers the likelihood of recovery of property in a usable condition, in the judgment of the Incident Commander.

**Savable.** Considers the likelihood of rescue and survival of a patient, in the judgment of the Incident Commander.

**Section.** Organization level having functional responsibility for primary segments of incident operations, such as: Operations, Planning, Logistics, Finance/Administration. The Section level is organizationally between Branch and Incident Commander.

**Section Chief.** Title that refers to a member of the general staff (Planning Section Chief, Operations Section Chief, Finance/Administration Section Chief, Logistics Section Chief).

**Service Branch.** A Branch within the Logistics Section. Responsible for service activities at an incident. Components include the Communications Unit, Responder Rehab Unit, and Food Unit.

**Shadow Vehicle.** Commonly used to trail moving highway maintenance and repair work. Shadow vehicles warn oncoming motorists of upcoming work zone activity. They are usually large vehicles, such as dump trucks equipped with crash attenuators, warning lights and rotating beacons, and signs. They are positioned upstream of the work zone, interposed between oncoming traffic and the work zone.

**Single Resource.** An individual, a piece of equipment and its personnel, or a crew or team of individuals with an identified supervisor that can be used on an incident.

**Situation Unit.** Functional unit within the Planning Section. Responsible for analysis of situation as it progresses. Reports to Planning Section Chief.

**Staging Area.** Location where incident personnel and equipment are assigned on an immediately available status.

**Strategic Goals.** Overall plan that will be used to control the incident. Strategic goals are broad in nature and are achieved by the completion of tactical objectives.

**Strike Team.** Five (5) of the same kind and type of resources, with common communications and a leader.

**Supervisor.** Individual responsible for command of a Division or Group.

**Supply Unit.** Functional unit within the Support Branch of the Logistics Section. Responsible for ordering equipment/supplies required for incident operations.

**Support Branch.** Branch within the Logistics Section. Responsible for providing the personnel, equipment, and supplies to support incident operations. Components include the Supply Unit, Facilities Unit, and Ground Support Unit.
**Tactical Objectives.** Specific operations that must be accomplished to achieve strategic goals. Tactical objectives must be both specific and measurable. Tactical level officers are Division or Group Supervisors.

**Task Force.** Group of any type and kind of resources, with common communications and a leader, temporarily assembled for a specific mission (not to exceed five resources).

**Technical Specialists.** Personnel with special skills who are activated only when needed. Technical Specialists may be needed in the areas of fire behavior, water resources, environmental concerns, resource use, and training. Technical Specialists report initially to the Planning Section but may be assigned anywhere within the IMS organizational structure as needed.

**Time Unit.** Functional unit within the Finance/Administration Section. Responsible for record keeping of time for personnel working an incident.

**Truck Company.** A ground vehicle providing an aerial ladder or other aerial device, specified portable ladders, equipment capability, and personnel.

**Unit.** Organization element having functional responsibility for a specific incident’s Planning, Logistics, or Finance/Administration activity.

**Water Tender.** Any ground vehicle capable of transporting specified quantities of water.

**Will.** Implies a willingness to act. Guidance to the Incident Commander regarding accepted standards of operational practice. Does not imply compulsory direction to the Incident Commander.

**Will Not.** Implies a reluctance to act. Guidance to the Incident Commander regarding accepted standards of operational practice. Does not imply compulsory direction to the Incident Commander.
Appendix B

Highway Incident Work Sheets

While there have been many specialized work sheets and forms developed for other emergency services applications, such as for structural fire fighting, crime scene investigation, and patient care, the authors of this Guide are not aware of any multidisciplinary highway incident work sheets in wide use. Should highway response communities choose to develop standardized work sheets for use at highway incidents, please forward copies to the publisher of this Guide for possible inclusion in future editions.

When developing such work sheets, it is suggested that the following guidelines be used:

• Standardize their use throughout the highway incident response community.
• Design them to be usable by all agencies and professions responding to incidents on the highway.
• Synchronize work sheet content with existing information systems that provide source information, such as those that manage calls for service.
• Synchronize work sheet content with existing information systems that manage after-the-fact reporting of incident activities, such as for traffic information systems, EMS information systems, National Fire Information Reporting System (NFIRS), Uniform Crime Reporting (UCR), and National Incident-Based Reporting System (NIBRS).
• Avoid situations that require translating information from one format to another or from one encoding to another.
• Avoid duplication of effort and situations that require re-entry of identical information in multiple locations. If possible, use automation to fill in the blanks with known information.
• Accommodate users who need to update or correct previously entered information.
• Create an audit trail that can be used to trace the process of changing work sheet information.
• Pay close and careful attention to work sheet utility. Ease of use under adverse conditions is extremely important to responders.
• Where practicable, combine the process of manually entering data onto work sheets with input of the same data into automated information systems. Where this is impracticable, allocate sufficient resources to accomplish timely data entry.

There are many possible forms of incident work sheets. The examples shown in this Appendix are the more generic forms used in FIRESCOPE and are meant to show typical work sheet organization, layout, and content.
## 5. RESOURCES SUMMARY

<table>
<thead>
<tr>
<th>RESOURCES ORDERED</th>
<th>RESOURCE IDENTIFICATION</th>
<th>ETA</th>
<th>ON SCENE</th>
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<td>5-94</td>
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**Figure B.1A**
6. CURRENT ORGANIZATION

INCIDENT COMMANDER

PLANNING

OPERATIONS

LOGISTICS

STAGING

DIV/GRP

DIV/GRP

DIV/GRP

AIR

AIR OPERATIONS

AIR SUPPORT

AIR TACTICAL

AIR TANKER

FIXED WING COORD

HELICOPTER COORD

Figure B.1C
### 7. SUMMARY OF CURRENT OBJECTIVES AND ACTIONS

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<table>
<thead>
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<th>CURRENT ACTIONS:</th>
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</tbody>
</table>

ICS 201  
5-94  

PAGE 2

Figure B.1D
**OBJECTIVES ICS 202**

1. INCIDENT NAME

2. DATE PREPARED

3. TIME PREPARED

4. OPERATIONAL PERIOD (Date/Time)

5. OVERALL INCIDENT OBJECTIVE:

6. OBJECTIVES FOR THIS OPERATIONAL PERIOD:

7. WEATHER FORECAST FOR OPERATIONAL PERIOD:

8. GENERAL/SAFETY MESSAGE

9. ATTACHMENTS (✔ IF ATTACHED)

- ORGANIZATION LIST (ICS 203)
- MEDICAL PLAN (ICS 206)
- ASSIGNMENT LISTS (ICS 204)
- INCIDENT MAP
- COMMUNICATIONS PLAN (ICS 205)
- TRAFFIC PLAN

ICS 201 5-94

10. PREPARED BY (Planning Section Chief)

11. APPROVED BY (Incident Commander)

**Figure B.2**
**ORGANIZATION ASSIGNMENT LIST**

<table>
<thead>
<tr>
<th>POSITION</th>
<th>NAME</th>
<th>1. INCIDENT NAME</th>
<th>2. DATE PREPARED</th>
<th>3. TIME PREPARED</th>
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<td>5. INCIDENT COMMANDER AND STAFF</td>
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**Figure B.3**

ICS 203 5/94  PREPARED BY (RESOURCE UNIT)

**APPENDIX B - HIGHWAY INCIDENT WORK SHEETS**
### 1. BRANCH

### 2. DIVISION/GROUP

### ASSIGNMENT LIST

**ICS 204 (5-94)**

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### 7. CONTROL ASSIGNMENT (S)

### 8. SPECIAL INSTRUCTIONS/SAFETY MESSAGE

### 9. DIVISION/GROUP COMMUNICATION SUMMARY

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**Figure B.4**

**APPENDIX B - HIGHWAY INCIDENT WORK SHEETS**
# INCIDENT RADIO COMMUNICATIONS PLAN

1. INCIDENT NAME

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Figure B.5
Appendix C
MUTCD Application Notes

Highway incident responders should obtain competent legal opinion regarding the consequences of not following a recognized standard of recommended practice. There may be significant liability attached to nonconforming practice that results in injury, death, or property damage.

It is reasonable to ask, “How does this manual apply to highway incidents, and how does it affect incident operations that are conducted by law enforcement, the fire service, and emergency medical services?” There has never been any requirement to use particular devices or conduct traffic control in any particular manner at highway incidents before. Moreover, many members of the emergency services would dispute the authority of the US DOT to dictate how operational incident procedures are standardized.

Let us tackle these questions in reverse order, beginning with the legal authority expressed in the manual. The Federal Highway Administration (FHWA), in partnership with the American Association of State Highway and Transportation Officials (AASHTO), has jointly administered the MUTCD since 1971 under the National Committee on Uniform Traffic Control Devices. The following describes the legal basis for the MUTCD:

The responsibility for the design, placement, operation, maintenance, and uniformity of traffic control devices shall rest with the public agency or the official having jurisdiction. 23 CFR 655.603 adopts the Manual on Uniform Traffic Control Devices as the national standard for all traffic control devices installed on any street, highway, or bikeway open to public travel. When a State or other Federal agency manual or supplement is required, they shall be in substantial conformance with the national Manual on Uniform Traffic Control Devices.

23 CFR 655.603 also states that traffic control devices on all streets and highways open to public travel in each State shall be in substantial conformance with standards issued or endorsed by the Federal Highway Administrator.¹

Traffic control devices … within the highway right-of-way shall be placed only as authorized by a public authority or the official having jurisdiction, for the purpose of regulating, warning, or guiding traffic.²
The procedures and specifications contained in the MUTCD are intended to establish basic uniformity of traffic control devices throughout the nation. This makes common, practical sense and is the reason why there are not 50 different stop signs across the nation, all with different shapes, colors, and meaning. Imagine the chaos that would be faced by the private and commercial traveling public if it weren’t so. Where better to concentrate on standardizing traffic control than in those situations where normal traffic flow has been changed? What more dangerous change in traffic flow is there than those resulting from the unexpected incident, especially those causing injury, death, property damage, hazardous materials spills, or violations of the law? For that reason, no special exclusion exists for emergency incidents in the Code of Federal Regulations, the US Code, or the MUTCD.

The (perhaps common) perception that the MUTCD never before applied to highway incidents is partially born out by direct observation. The key to understanding the scope of previous applicability of the MUTCD lies in the definition of “incident.” Traditionally in the transportation world, incidents primarily were construction and repair projects on the highway or maintenance activities such as landscaping or painting. As DOTs across the country become more and more involved in highway operation, the definition of incident broadened to include any activity that affected traffic flow. Still, the entire category of incidents that were handled by the emergency services, while not excluded, was certainly not emphasized.

There has been a long-standing tacit acceptance by the emergency services of the MUTCD, though it was probably an unknowing adherence to an unread standard. This occurred gradually, as highway incidents occupied the emergency services more and more over the years. The expansion of the mission scope of the fire service to encompass emergency medical services has not been without controversy. The parallel and related mission extension into the realm of highway incidents met with less argument and wider acceptance. Just as with emergency medical service, success in meeting this new challenge depended upon fire departments developing new skills, using new tools, and carrying new equipment. Engines began carrying flares, traffic cones, flags, and the like, and their members began using them on the highway. Their use by fire and rescue mimicked their use by the highway construction crews, who were trained to operate in accordance with the MUTCD. Also, the sources of supply used by the fire service to procure their new traffic control devices were actually those already used by DOT agencies and construction contractors. Since those organizations were already bound to comply with the MUTCD, they specified products that conformed to it when procuring traffic control devices from those same suppliers. When the fire (and the other emergency services) came shopping at the same vendors, they were sold items from the same stock.

Now, for what is probably the first question asked by the reader about this Model Procedures Guide, namely, “How does this obscure government manual affect me?” Let’s look at the “who, what, where, when, and why” aspects of this question as might be faced by a fire and rescue, EMS, or law enforcement department.
**Why?**

- Because managing highway incidents in the best interests of everyone on the highway is the right thing to do!
- Because the entire community has come together and decided that it should be done this way.

**When?**

A new Chapter 6I, “Control Of Traffic Through Traffic Incident Management Areas,” is being added to the MUTCD. This change is going through the required federal rule-making process as of the published date of this Model Procedures Guide. The proposed text, figures, and change list are also online with the entire manual, accessible through the Internet at [http://mutcd.fhwa.dot.gov/](http://mutcd.fhwa.dot.gov/). After review of the public commentary, the change to the MUTCD will be finalized and published. After that happens, the new requirements flow down through the states to the local level as described in the MUTCD. It is important to note that the final content of Chapter 6I may differ from what was proposed. Readers are cautioned to verify applicable content before acting upon it:

> In accordance with 23 CFR 655.603(b)(1), States or other Federal agencies shall adopt changes to the MUTCD within 2 years of issuance. For new devices or replacement of damaged devices, compliance shall be required effective immediately upon adoption by the State or other Federal agency.³

In other words, highway operations and traffic control devices used in highway operations must follow the MUTCD within two years after the final rule. Old, nonconformant traffic devices can be used for up to two years, but new or replacement items must conform.

**Must We?**

The direction contained within the MUTCD is phrased in three different ways, each with different degrees of compulsion:

1. **Standard** – a statement of required, mandatory, or specifically prohibitive practice regarding a traffic control device. All standards are labeled, and the text appears in bold large type. The verb shall is typically used. Standards are sometimes modified by Options.

2. **Guidance** – a statement of recommended, but not mandatory, practice in typical situations, with deviations allowed if engineering judgment or engineering study indicates the deviation to be appropriate. All Guidance statements are labeled,
and the text appears in large type. Guidance text is the same size as Standard text, but it is not bold. The verb should is typically used. Guidance statements are sometimes modified by Options.

3. Option – a statement of practice that is a permissive condition and carries no requirement or recommendation. Options may contain allowable modifications to a Standard or Guidance. All Option statements are labeled, and the text appears in small type. The verb may is typically used.

There are no “shall” requirements, yet, in the new Chapter 6I that apply directly to highway incidents. All of the requirements directly applicable to the highway incident response community are “should” requirements. They establish a national standard of recommended practice and do allow departments to deviate somewhat from the letter of the law. Only limited latitude is permitted, however, since a permissible deviation is one that is supported by engineering judgment or study that indicates that such a practice is appropriate. Casual disregard would not be recommended. Also, even though a device or procedure may be only recommended, however, if it is adopted, there may only be certain allowed implementations.

Clarification is available.

Requests for any interpretation, permission to experiment, interim approval, or change shall be sent to the Federal Highway Administration (FHWA), Office of Transportation Operations, 400 Seventh Street SW, HOTO, Washington, DC 20590.

Where?

The new definition contained in Chapter 6I spells out the new applicability of the MUTCD:

A traffic incident is an emergency road user occurrence, a natural disaster, or a special event that affects or impedes the normal flow of traffic.

A traffic incident management area is an area of a highway where temporary traffic controls are imposed by authorized officials in response to a road user incident, natural disaster, or special event. It extends from the first warning sign or emergency warning lights on a vehicle to the last temporary traffic control device or to a point where vehicles return to the original lane alignment and are clear of the traffic incident.

The MUTCD clearly now covers emergency calls for service on the highway, as well as other types of happenings. The only criterion is that
the “road user incident” affects traffic. It should be noted that all activity by emergency services affect traffic, as long as it is conducted within view of road users. This is the “rubbernecking” phenomenon. Some emergency activities have more direct effect through traffic control being exercised in the vicinity of the incident scene.

**What (Should be Done)?**

In short, responders should conduct temporary traffic control.

> The primary functions of temporary traffic control at a traffic incident management area are to move road users safely and expeditiously past or around the traffic incident, and to reduce the likelihood of secondary crashes.⁸

> An essential part of fire, rescue, spill clean-up, and enforcement activities is the proper control of road users through the traffic incident management area in order to protect responders while providing safe traffic flow.⁹

There are two competing goals for traffic controllers at a highway incident, (1) moving traffic and (2) preventing further crashes. Controlled traffic movement past an incident must be done in consideration of the safety of both the responders and the road users. Proper traffic control should lower and not increase the likelihood of further crashes. A few conclusions can be drawn from this:

1. Do not begin on-scene operations until they can be done safely.
2. Take action to prevent secondary crashes.
3. Keep traffic flowing if possible.
4. If traffic is stopped, move traffic as soon as it can be done safely.

**What (Should be Used)?**

The whole point of the MUTCD is to specify the approved types of traffic control devices and the manner in which they should be used. The MUTCD defines traffic control devices as follows:

> Traffic control devices shall be defined as all signs, signals, markings, and other devices used to regulate, warn, or guide traffic, placed on, over, or adjacent to a street, highway, pedestrian facility, or bikeway by authority of a public agency having jurisdiction.¹⁰

This covers everything used to direct traffic. Just about any device imaginable is included in the 1100 pages. If signs are used, they may conform to the new colors that have been adopted for incident management:

> Warning and guide signs used for temporary traffic control traffic incident management situations may
have a black legend and border on a fluorescent coral background...\textsuperscript{11}

For unexpected traffic incidents, particularly those of an emergency nature, temporary traffic control devices on hand may be used for the initial response as long as they do not themselves create unnecessary additional hazards.\textsuperscript{12}

Note that the initial response assignment is allowed to use whatever might be on hand, including flares, which are "temporary traffic control devices." The key consideration is that the use of such devices cannot create “unnecessary additional hazards.” This might be a tricky judgment to defend, but hopefully due deference will be given to the Incident Commander’s on-scene perspective.

---

**Figure C.1, Standardized Black-on-Coral Incident Management Signage\textsuperscript{13}**

The MUTCD treats traffic incidents and their handling differently, based upon their expected duration. Responders are to estimate the expected duration of traffic blockage within 15 minutes of arrival, and set up traffic controls based upon that estimate. Major incidents have an expected duration of traffic blockage greater than 2 hours, intermediate incidents between 30 minutes and 2 hours, and minor incidents less than 30 minutes.\textsuperscript{14} This is an unfamiliar method of classifying highway incidents for the emergency services and excludes other incident metrics that are more familiar to the fire and other emergency services, such as number of vehicles, injuries, entrapment, fire, or spill.

For major and intermediate incidents:

*Traffic control should be provided by qualified flaggers using appropriate traffic control devices*…

*Attention should be paid to the end of the traffic queue such that warning is given to road users approaching the end of the queue.*
The channelizing devices discussed in Section 6F.55 should be used whenever possible if a roadway is expected to be closed for more than 3 days.

When flares are used to initiate temporary traffic control at traffic incidents or for short-term temporary traffic control, more permanent traffic control devices should replace them as soon as practical.\(^{15}\)

In other words, for incidents that are expected to block traffic for more than 30 minutes, qualified flaggers should be used. They should set up traffic control not only in the vicinity of the on-scene operations, but also at the back end of the traffic queue forming as a result of the blockage from the incident. Flares can be used temporarily, but should be replaced with the more permanent devices described in the MUTCD. If highway incident operations and traffic blockages last beyond three days, then “channelizing devices” should be used. These include the familiar drums, cones, tubular devices, and barricades used around highway construction projects.\(^{16}\)

And, for minor incidents:

On-scene responders should be trained in safe practices for accomplishing their tasks in and near traffic. Responders should always be aware of their visibility to oncoming traffic and take measures to move the traffic incident as far off the traveled roadway as possible or to provide for appropriate warning.

When a minor traffic incident blocks a travel lane, it should be removed from that lane to the shoulder as quickly as possible.\(^{17}\)

This is a cautionary warning to responders to consider if oncoming traffic can see them while in the roadway. The “incident,” meaning the traffic blockage, should be moved out of traffic to the shoulder and as far out of the travel lanes as possible.

**Who (of my personnel is affected)?**

As can be seen from the above, if a responder is directing traffic at a traffic incident that is expected to last more than 30 minutes, that responder should be a trained flagger. Any responder who could be assigned such duty needs to be trained, equipped, and provided with proper retroreflective clothing. The MUTCD specifies how they must be trained and what they must wear:

Because flaggers are responsible for public safety and make the greatest number of contacts with the public of all highway workers, they should be trained in safe traffic control practices and public contact techniques. Flaggers should be able to satisfactorily demonstrate the following skills and abilities:
A. Skill in communicating specific instructions clearly, firmly, and courteously;

B. Ability to move and maneuver quickly in order to avoid danger from errant vehicles;

C. Ability to control signaling devices (such as paddles and flags) in order to provide clear and positive guidance to drivers approaching a temporary traffic control zone in frequently changing situations;

D. Ability to understand and apply safe traffic control practices, sometimes in stressful or emergency situations; and

E. Ability to recognize dangerous traffic situations and warn workers in sufficient time to avoid injury.\[18\]

As was described in Chapter 7, several national organizations offer training leading to certification as flaggers, which meet these requirements.

Flaggers shall wear safety apparel meeting the requirements of ISEA “American National Standard for High-Visibility Apparel” (see Section 1A.11) and labeled as meeting the ANSI 107-1999 standard performance for Class 3 risk exposure. The apparel background (outer) material shall be either fluorescent orange-red or fluorescent yellow-green as defined in the standard. The retroreflective material shall be either orange, yellow, white, silver, yellow-green, or a fluorescent version of these colors, and shall be visible at a minimum distance of 300 m (1,000 ft). The retroreflective clothing shall be designed to clearly identify the wearer as a worker.\[19\]

This is the same standard now being applied to turnout gear in the fire service, as well as uniforms of the other members of the highway incident response community. This indeed may be the reason for such application.

**How Can We Prepare For This?**

By pre-planning highway incidents in the same manner as is commonly done for major challenges in structural fire fighting, hazardous materials sites, large social events, and disaster planning, the highway incident response community can sort out roles and responsibilities before they respond to emergency calls for service to the highway.

*In order to reduce response time for traffic incidents, highway agencies, appropriate public safety agencies (law enforcement, fire and rescue,*
emergency communications, emergency medical, and other emergency management), and private sector responders (towing and recovery and hazardous materials contractors) should mutually plan for occurrences of traffic incidents along the major and heavily traveled highway and street system. Special events should be planned for and coordinated in advance.20

**What Else?**
The MUTCD also requires that public safety responders to highway incidents reduce the use of emergency warning lighting on emergency vehicles as much as possible. This recognizes that emergency vehicle lighting serves a warning purpose, which is much less applicable while parked on the scene of highway incidents. Temporary traffic control is now charged with warning traffic, using approved traffic control devices, and the presence of other flashing and stroboscopic lighting will distract and confuse approaching motorists.

*Public safety agencies should examine their policies on the use of emergency-vehicle lighting, especially after a traffic incident scene is secured, with the aim of reducing the use of this lighting as much as possible while not endangering those at the scene. Special consideration should be given to reducing or extinguishing forward facing emergency-vehicle lighting, especially on divided roadways, to reduce distractions to oncoming road users.*21

**End Notes**
1. Section 1A.07, p 1A-4
2. Section 1A.08, p 1A-5
3. Introduction, p I-4
5. Section 1A.10, p 1A-6
6. Section 6I.01, p 6I-1.
7. Section 6I.01, p 6I-1.
8. Section 6I.01, p 6I-1.
10. Introduction, p I-1.
11. Section 6I.01, p 6I-3.
12. Section 6I.01, p 6I-3.
13. Section 6I.01, Figure 6I-1, p 6I-2.
14. Section 6I.01, p 6I-1.
15. Section 6I.02, p 6I-4; Section 6I.03, p 6I-5.
17. Section 6I.04, p 6I-5.
18. Section 6E.01, p 6E-1.
19. Section 6E.02, p 6E-1.
20. Section 6I.01, p 6I-1.
Appendix D
The Uniform Vehicle Code

The National Committee on Uniform Traffic Laws and Ordinances (NCUTLO) is a private, nonprofit membership organization dedicated to providing uniformity of traffic laws and regulations through the timely dissemination of information and model legislation on traffic safety issues. Additional information on NCUTLO may be obtained directly from them at the following address or on the Internet at http://www.ncutlo.org/.

NCUTLO
107 S. West Street, #110
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Recently, in response to national concern regarding the high numbers of injuries and deaths of emergency responders at highway incidents, NCUTLO, in partnership with the Federal Highway Administration, drafted a model statute to address the problem.

Readers may be interested to learn of some of the dynamics that entered into the discussions that lead up to the compromise wording in the model statute. There was of course the natural tension between committee members from the fire and rescue community and those from the law enforcement community. The former wanted to secure as large a safety zone around their work area as possible, while the latter wanted to reopen the highway as quickly as possible to alleviate traffic congestion.

There were also differences of opinion regarding the assignment of the responsibility for preserving scene safety — to the approaching motorists or to those managing the incident scene. If the approach were taken as in several early state laws to require the motorists to change lanes away from the incident and to reduce speed, such actions might in themselves increase the likelihood of secondary crashes. If the responsibility were assigned to incident responders, the enforcement task would drain personnel from other critical emergency duties.

The draft consensus wording that was finally adopted has been reproduced below, with permission from NCUTLO. The explanatory notes are part of the model statute.

Incident Responders Safety Model Law¹
(draft-11/15/01)

The purpose of section 1(a) is to establish the somewhat conflicting aims of incident management: protection of people and property at the scene and maintenance of traffic flow. (Note: if traffic flow is not maintained, traffic queues quickly occur, which often lead to secondary and tertiary...
Subsection (b) mandates incident management planning and suggests agencies to be involved in such planning.¹

Incident Management Traffic Control

Purposes and Planning

Section 1.

(a) The primary purposes of temporary traffic control at a incident area are maintenance of incident area safety and security, including:
- Protection of responders to the incident;
- Protection of roadway users and others at incident site;
- Movement of road users safely past, around or away from the incident;
- Reduction of the likelihood of secondary crashes;
- Expeditious clearance of the roadway;
- Protection of vehicles and cargo at the incident.

(b) In order to reduce incident management response time, highway, public safety and other involved agencies should plan for effective management of temporary traffic control in incident areas. Effective incident management is the planned and coordinated multiagency program to detect and remove incidents and to restore traffic capacity as quickly and safely as possible. The major partners in an incident management program are transportation agencies (state and local), law enforcement agencies (state and local), firefighting departments, emergency medical services, and the towing and recovery industry. Other groups such as environmental and public health agencies also may be involved, depending on the nature of the incident. Current and accurate traveler information is another important element of an incident management program.

The purpose of Section 2 is to provide ultimate authority and responsibility to the incident commander identified pursuant to statute, regulation, or local established practice, and to require the incident commander to use a unified command system.

Section 2. Incident Commander

Incident management shall be the responsibility and authority of the incident commander. Identification of the incident commander shall be done according to statute, regulation or local practice. In exercising his or her authority, the incident commander shall use a unified command system.

Section 3 authorizes but does not require the establishment of an ongoing incident Management Committee to recommend additional operational rules and guidelines for handling emergency incidents. Jurisdictions that do not wish to establish such a committee should delete this section.
Section 3. Incident Management Committee

(a) An Incident Management Committee may be established by the (Note?) to maintain and enhance the effectiveness of managed resources involved in responses to incidents and as needed to recommend operational rules or guidelines for mitigating the impacts of such incidents.

(b) The Committee shall consist of but is not limited to one or more representatives of the following:
- The state police, highway patrol or a local law enforcement agency.
- The state and county departments of transportation (or Highways);
- A firefighting agency;
- An emergency medical services agency;
- The state and county departments of environmental control;
- The towing and recovery industry;

Section 4 defines incident management authority established by this model and defines when it begins and terminates.

Section 4. Incident Management Authority

Incident management involves the rapid application of traffic control measures in areas affected by an incident. Incident management authority authorized by this Act commences whenever a responder arrives at the incident. It terminates whenever the Incident Commander declares the incident terminated.

Section 5 provides liability protection to responding agencies and their personnel when incident clearance functions authorized by section 5 are exercised with reasonable care at the direction of the incident commander.

Section 5. Liability Protection for Authorized Incident Clearance Functions

(a) Governmental agencies responding to incidents, including but not limited to law enforcement, firefighting, emergency medical services, hazardous materials, transportation agencies and other emergency governmental responders are authorized to exercise the incident clearance functions enumerated in this section. If such functions are exercised with reasonable care and at the direction of the incident commander, those governmental agencies and their personnel and other designated representatives are insulated from liability resulting from such actions taken pursuant to incident clearance, including:
- Incident detection and verification;
- Incident area security and protection;
- Rescue of persons from vehicles and hazardous environments;
- Emergency medical transportation and care;
- Hazardous materials response and containment;
- Fire suppression and elimination;
- Transportation of vehicle occupants;
Traffic direction and management, and establishment and operation of alternate routes, including but not limited to traffic detours and/or diversion; Crash investigation; Dissemination of traveler information; Incident clearance, including removal of debris, coordination of clearance and repair resources, and temporary roadway repair and facilities restoration; Removal of vehicles and cargo; Any other actions reasonably necessary.

(b) When directed by the incident commander, towing and recovery service providers are authorized to perform the following enumerated functions, and any other actions reasonably necessary to perform those enumerated functions:
- Removal of vehicles from the incident area;
- Protection of property and vehicles;
- Removal of debris from the roadway;
- Transportation of persons or cargo.

Section 6 provides that the owner (or owners) of vehicles removed from an incident site at the direction of the incident commander (or the owner or owners of vehicles whose cargo was removed from the incident site at the direction of the incident commander), shall be liable for such removal costs.

Section 6. Compensation for Incident Removal Costs

(a) Notwithstanding any other law or regulation, any agency, person or organization incurring the cost of removing vehicles and/or cargo at an incident, if such removal is authorized by the traffic incident commander, shall have the unqualified right to compensation for the cost of such removal from the owner (or owners) of:
- The vehicles removed; and/or
- The vehicles whose cargo was removed in whole or in part.

Section 7 established the duties of the driver when approaching an incident (which is an emergency road user occurrence, a natural disaster, or a special event.) Subsection (a) requires drivers approaching an incident to maintain a speed no greater than reasonable or prudent under the conditions, including actual and potential hazards then existing. Subsection (b) requires every driver approaching an incident area (which is an area of highway where authorized officials impose a temporary traffic control zone in response to a road user incident, natural disaster or special event) to obey the directions of any authorized official directing traffic and all applicable traffic control devices. Subsection (c) requires drivers approaching an incident area to slow down and vacate any lane wholly or partially blocked. Subsection (d) provides for a mandatory license suspension for a violation of section 7.

Section 7. Road User Duties Approaching Incidents

(a) When in or approaching an incident, every driver shall maintain a speed no greater than is reasonable and prudent under the conditions, including actual and potential hazards then existing.
(b) When in or approaching an incident area, every driver shall obey the directions of any authorized official directing traffic and all applicable traffic control devices.

(c) Except for emergency vehicles, when in or approaching an incident area, every driver shall reduce speed and vacate any lane wholly or partially blocked.

(d) If a violation of this section results in a serious injury or death to another person, in addition to any other penalty imposed by law, the violator’s driver’s license shall be suspended for a period of at least (180) days and not more than (2) years.\

Section 8 contains provisions intended to avoid dangerous situations that could create incident-causing crashes or intensify traffic problems resulting from already-existing incidents. Subsection (a) prohibits dangerous stops; subsection (b) requires the emergency flashing lights to be activated when crashes or mechanical breakdowns occur; subsection (c) requires immediate removal of vehicles from the roadway, if possible; subsection (d) provides responders with authority to move or order the removal of a vehicle from the roadway; and subsection (e) provides authority to a law-enforcement officer or the incident commander to remove vehicles from the highway at the owner’s expense.

Section 8. Avoidance of Lane Blockage – Expedited Removal of Vehicles

(a) No person shall stop or park a vehicle in such manner as to impede or render dangerous the use of the roadway by others, except to avoid collision, at the direction of an authorized official, or in the case of a crash or mechanical breakdown.

(b) In the event of a crash or mechanical breakdown, the emergency flashing lights of such vehicle shall be activated if the vehicle is equipped with such lights and such lights are in working order.

(c) If a vehicle stopped in the roadway is movable and its driver is capable of moving it, the driver shall immediately move the vehicle to the shoulder or to a designated area off the highway.

(d) A responder to an incident may move a vehicle remaining on the roadway, or require the driver or other person in charge of the vehicle to move it to the shoulder or a designated area off the highway.

(e) A law enforcement officer or the incident commander may order the removal of any vehicle remaining on the highway at the owner’s expense. The vehicle’s location shall be reported to the nearest law-enforcement agency as soon as practicable.

Section 9 provides additional clearance guidelines covering incidents, including: subsection (a) – guidance and control of road users through the incident area; subsection (b) – where possible, the use of traffic control devices to redirect the normal path of the road users; subsection (c) – where possible, avoidance of queuing at highway-rail grade crossings; subsection (d) – removal
of temporary traffic control devices when the incident is over; and subsection (e) – possible special rules for big trucks and hazardous carriers when traffic diversions or detours are required.

Section 9. Additional Incident Clearance Guidelines

(a) An essential part of the management of incidents is the proper guidance and control of road users through the incident area.

(b) When redirection of the road users’ normal path is required, whenever practical traffic control devices shall be used to direct vehicles from the normal path to a new path.

(c) When highway-rail grade crossings exist either within or in the vicinity of the incident, lane restrictions or other measures taken should avoid conditions where vehicles may be forced to stop on the railroad tracks. If the queuing of vehicles across the tracks cannot be avoided, a law enforcement officer or other authorized official shall be provided at the crossing to prevent vehicles from stopping on the tracks, even if automatic warning devices are in place.

(d) All temporary traffic control devices should be removed as soon as practical when the incident has been resolved.

(e) If an incident requires establishment of a traffic diversion or detour, large trucks and vehicles carrying hazardous cargo may be required to follow a different route from other vehicles; or they may be required to park at a designated area off the highway until the roadway is open, until an escort can be provided, or until the incident commander otherwise directs.

Section 10 defines technical terms used in the model law.

Section 10. Definitions Section

“Authorized official” means any person authorized to direct traffic by a statute, a police officer or an incident commander.

“Designated area off the highway” means a crossroad, parking lot, or other area designated to park in until arrival of an investigating law enforcement officer.

“Detour” means a temporary rerouting of road users onto an existing highway in order to avoid a temporary traffic control zone.

“Diversion” means a temporary rerouting of road users onto a temporary highway or alignment placed around an incident area.

“Driver’s license” means any license to operate a motor vehicle issued under the laws of this state.

“Emergency vehicle” means any ambulance, fire, rescue or law enforcement vehicle or any other vehicle authorized by law, governmental regulation or local practice to respond to an emergency road user occurrence.

“Governmental incident responder” means any governmental agency or its designated representatives with authority to provide services at a
incident, including but not limited to law enforcement, fire department, emergency medical services, hazardous materials and transportation agency personnel.

“Gross weight rating” means the combined weight of a vehicle and its maximum legal load.

“Highway” means the entire width between the boundary lines of every way publicly maintained when any part thereof is open to the use of the public for purposes of vehicular travel.

“Incident” means an emergency road user occurrence, a natural disaster, or a special event.

“Incident area” means an area of a highway where authorized officials impose a temporary traffic control zone in response to a road user incident, natural disaster or special event.

“Incident clearance” means the process of highway crash clearance and the removing of wreckage, debris, or any other matter that disrupts the normal flow of traffic, and restoring the roadway capacity to its pre-incident condition. This process also may include temporary repair to the infrastructure.

“Incident commander” means an incident commander or the incident commander’s designated representative.

“Large trucks” means any truck with a gross weight rating in excess of 26,000 pounds.

“Responder” means any law enforcement, fire department, emergency medical services, hazardous materials, highway or transportation department, towing and recovery or any other organization authorized by law, governmental regulation, or local practice to respond to a traffic incident.

“Response personnel” means law enforcement, fire department, emergency medical services, towing and recovery, and any other personnel authorized by law or local practice to respond to an incident.

“Roadway” means that portion of a highway improved, designed or ordinarily used for vehicle travel, exclusive of the sidewalk, berm, or shoulder even though such sidewalk, berm or shoulder is used by persons riding bicycles or other human-powered vehicles. In the event that a highway includes two or more separate roadways, the term “roadway” means any such roadway separately but not to all such roadways collectively.

“Security” means the protection of people and property in the incident area.

“Temporary traffic control zone” means an area of a highway where road user conditions are changed because of a work zone or an emergency incident through the use of temporary traffic control devices, police, or other authorized officials.

“Traffic” means pedestrians, ridden or herded animals, vehicles, streetcars and other conveyances either singly or together while using any highway for purposes of travel.
“Vehicle” means every device in, upon, or by which any person or property can be transported or drawn upon a highway, except trains and light rail transit operating in exclusive or semi-exclusive alignments. Light rail transit operating in a mixed-use alignment, to which other traffic is not required to yield the right-of-way by law, is a vehicle.

End Notes

1. Penalties generally are not included in this legislation. However, any moving motor vehicle violation would automatically be covered by the general penalty provision applying to all moving violations, which exists in practically every jurisdiction; and of course enacting jurisdictions may enact additional penalties deemed appropriate. One exception to the lack of express penalties is the inclusion of subsection 7(d), which provides for mandatory suspension of the license for violations of section (7) that result in a serious injury or death. Jurisdictions enacting this provision should define the term “serious injury” if it is not already defined in their vehicle code.

2. Note: italicized annotated inserts are not part of the model law; rather they are intended merely to help explain the purposes of the various sections.

3. Note: insert the name of the agency charged with establishing the traffic incident committee.

4. Note: this provision is not intended to limit such owners’ rights of action against other parties.

5. Jurisdictions enacting subsection (d) may wish to modify its penalties to include possible incarceration. Jurisdictions with motor vehicles codes that do not define the term “serious injury” should add such a term to the definitions section (section 10). Jurisdictions may also wish to add a specific penalty for violations of section 7 that do not result in serious injury or death to another person.
Appendix E
Highway Incident Operations

Traffic Control is a function to be performed at a highway incident, in the same category as extrication, patient treatment, or accident investigation. The Traffic Control Supervisor (TCS), or Leader, or Director, or Responder, as explained is that single individual who establishes and enforces special traffic rules that limit or restrict traffic movement through the Temporary Traffic Control Zone around a highway incident. The TCS has the inherent authority that is necessary to accomplish his job, delegated to him by the Incident Commander upon his assignment to the position. The TCS is empowered to direct the movement of vehicles and take other direct actions as may be necessary to:

- Protect responders and those in their care from the hazards of moving traffic
- Facilitate emergency response through traffic in the vicinity of an incident
- Prevent further incidents involving vehicles in the vicinity of an incident
- Facilitate traffic flow past the incident

This Appendix provides guidance on several important aspects of traffic control in and around a highway incident. A brief description of the Temporary Traffic Control Zone is followed by a discussion of emergency vehicle positioning at the scene of a highway incident. Suggested ways to use traffic control devices to warn and guide traffic in the vicinity of a highway incident are covered next. The last two sections in this appendix both cover specific traffic challenges that are commonly faced by responders to highway incidents.

The Temporary Traffic Control Zone (TTCZ)

The TTCZ is that highway area where special traffic rules apply, limiting or restricting traffic. Traffic movement in the TTCZ is directed by personnel reporting to the Traffic Control Supervisor (TCS), using the authority delegated to him by the Incident Commander in accordance with the applicable state and local statutes.

Traffic control devices are comprehensively described in the MUTCD, although the manual may be further adapted for use somewhat differently in different regions. The temporary traffic control devices that are most commonly employed traffic control device in the TTCZ at highway incidents consist of emergency vehicle lights, flares, and traffic cones; as well as flashlights, flags, and hand signals.
All traffic control devices used on street and highway construction, maintenance, utility, or incident management operations shall conform to the applicable provisions of this Manual.

Note that this is a mandatory requirement!

The TTCZ is often subdivided into components as an aid in conversation and planning. The MUTCD divides the TTCZ in the following manner:
Proceeding from the upstream (bottom of illustration) end, these components are:

- The Advance Warning Area is an important consideration, as motorists are warned of upcoming traffic problems. These warnings are the primary means of preventing secondary crashes where oncoming traffic collides with queued traffic. To be effective, oncoming traffic must be given ample opportunity to slow and/or stop.
- In the Transition Area, traffic is shifted or merged into a new traffic pattern around the incident. Consideration should be given
to position a flagger at each significant change to normal traffic flow.

- The Activity Area is the primary focus of the highway incident response. This area encompasses the crash vehicles (or other primary focus of a highway incident), as well as the working area around them. There may be several response vehicles within the Activity Area as well.

- The Termination Area provides for the gradual and orderly return of traffic into the normal traffic pattern and flow. Response vehicles including EMS vehicles transporting patients, towing and recovery vehicles that are towing inoperative vehicles, units returning to service, and passing traffic depart the scene through the termination area.

- Lateral and Longitudinal Buffer Spaces provide the separation between responders working at the scene and moving traffic.

A great deal of additional guidance regarding temporary traffic control in the Temporary Traffic Control Zone can be found in Section 6 of the MUTCD.

**Highway Incident Geography**

Emergency vehicle positioning is a critical factor in both effectively using response resources and in scene safety. Due to their bulk, warning lighting, and on-board supplies and equipment, fire apparatus make useful traffic barriers. They can also make for troublesome traffic obstacles, and their emergency lighting can be a hazardous distraction to passing motorists. The first consideration for the Incident Commander is to deploy the response assets where they can be best utilized for emergent incident operations. The next immediate considerations should be, however, for scene safety and facilitating traffic flow. Ideally, Resource Officers should position their apparatus to enable them to both meet their primary assignment and to provide protection to their crews from oncoming traffic. This is especially important during the initial scene setup, where the apparatus and the part-time attention of the apparatus driver may provide the only protection available until full traffic control can be established.

The following general guidelines are designed to balance the utilization of the capabilities of response resources, scene safety, and traffic flow:

- Position the ICP vehicle on the shoulder at a detached vantage point where the Incident Commander can view the entire scene, as well as approaching traffic. The ideal location is immediately upstream of the scene, on the shoulder.

- Position EMS vehicles close downstream of the scene, with a clear egress route. This should be done as a matter of standard operating procedure, requiring no special coordination. They will be handling the most vulnerable personnel on the scene — the patients. Avoid EMS vehicle congestion by staging later arriving units. Ferry additional medical personnel to the scene as required.
• Position fire and rescue apparatus upstream of the scene, angled across traffic lanes with the driver capable of directly observing the scene from his primary operating position at the apparatus. This should also be done as part of normal and standard operating procedures, without additional on-scene coordination. Place apparatus with the shortest reach closest to the scene, regardless of their order of arrival. Stagger apparatus on alternate lanes with sufficient spacing to allow later passage between them by other emergency vehicles, if needed.

• Assign a Staging Manager as soon as possible and assign him as appropriate within the IMS organization. His initial task should be to establish a Staging Area at a position that is protected from oncoming traffic, ideally out of the right-of-way or along the shoulder, upstream of the scene. He should immediately determine the best ingress route from staging to the scene. As traffic congestion worsens, he should standardize ingress routes through the queued traffic to the Staging Area.

• As early as practical, appoint a Traffic Control Supervisor (TCS) and assign him as appropriate within the IMS organization. Assign the TCS with the initial task of clearing uninvolved vehicles from the scene vicinity, then (working with the Operations Section Chief, the Safety Officer, and the Staging Manager) of implementing a Temporary Traffic Control Plan for the duration of the incident.

• Where practical, utilize law enforcement chase vehicles to stop and cite vehicle operators who behave hazardously within the TTCZ.

**Warning Approaching Traffic**

Secondary collisions between oncoming traffic approaching a blocking highway incident and the queued vehicles stopped or slowed due to the incident is an all too common occurrence, and one where courts have found that the Incident Commander’s agency may be liable. Stabilizing and containing the overall traffic situation should be regarded as an integral part of stabilizing and containing the incident itself. Indeed, traffic managers would view the extended traffic effects as part of the incident.

The MUTCD covers the design and use of traffic warning devices, including their placement and spacing upstream of work zones. The warning distances are dependent upon approaching traffic speed, and their placement is well established and supported by both field experience
and scientific research. The guidance does presume a static traffic flow situation and fixes their distances from the work zone. This is not applicable to highway incidents, since traffic responds differently to them than to construction work zones. Incidental congestion is characterized by rapidly growing and slowly shrinking queues of blocked vehicles. Table E.1, adapted from the MUTCD, shows the recommended placement of three warning signs for highway incidents under various traffic situations. For freeway traffic flows, even without any traffic backup at the scene of the incident, the Advance Warning Zone can extend a full mile upstream of the incident!
At some point, progressing further and further upstream into the regional highway transportation system, responsibility should pass (in a coordinated manner, of course) from the Incident Commander to regional resources better equipped to deal with the problem. Detour management, for example, would usually fall under a Traffic Management Center, as would signal system adjustments and other means of regulating traffic flow over a broad area. The determination of both the separation and the interaction between incident and regional traffic control is one of the tasks of the Liaison Officer.

### Table E.1

**Taper and Merge Layout**

The following guidelines were adapted from the MUTCD and information contained in Table E.2 concerning the length of tapers set up for traffic control around highway incident activities that are blocking traffic. Note that the original table was based upon highway work zone criteria, which sought to maximize traffic flow around a relatively long duration blockage. This is much different than the environment around a shorter duration highway incident, where the safety of responders, patients, and other personnel in and around the scene assumes paramount importance, followed by considerations for the safety of passing motorists with traffic flow and motorist convenience ranked far down the list of priorities being considered by the Incident Commander.

These factors have led the authors of this Guide to adapt the original table into the following form, with traffic passing speeds lowered to the 25-35 mph range. Note that traffic passing speed greatly affects the

<table>
<thead>
<tr>
<th>Road Type</th>
<th>Distance Between Signs (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rear of queue &amp; Last warning sign</td>
</tr>
<tr>
<td>Urban (low speed)</td>
<td>100</td>
</tr>
<tr>
<td>Urban (high speed)</td>
<td>350</td>
</tr>
<tr>
<td>Rural</td>
<td>500</td>
</tr>
<tr>
<td>Expressway/Freeway</td>
<td>1,000</td>
</tr>
</tbody>
</table>

**Table E.2**

<table>
<thead>
<tr>
<th>MUTCD Table 6C-2 Taper Length Criteria for Temporary Traffic Control Zones</th>
<th>Length of Taper (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed of Approaching Traffic</td>
<td>25 mph</td>
</tr>
<tr>
<td>Merging (per lane)</td>
<td>125</td>
</tr>
<tr>
<td>Shifting (per lane)</td>
<td>63</td>
</tr>
<tr>
<td>Shoulder</td>
<td>42</td>
</tr>
<tr>
<td>One-Lane, Two Way (max)</td>
<td>100</td>
</tr>
<tr>
<td>Downstream (per lane)</td>
<td>100</td>
</tr>
</tbody>
</table>
required traffic control taper lengths, since only a 10 mph increase in approaching traffic speed roughly doubles their recommended length.

In addition, the MUTCD specifies that the spacing between individual channelizing devices should be no more than the distance in feet equal to the speed limit in mph. The authors of this Guide recommend spacing flares, cones, or other channelizing devices much closer together. A spacing of approximately a car length between devices provides clear directional guidance to passing motorists. However, where emergency vehicles must cross the channelizing barrier, spacing should be double the width of the largest apparatus. Avoid forcing vehicles to drive over lighted flares.

In a typical highway incident situation on a four-lane highway, where the Incident Commander has directed that passing traffic through

![Figure E.4](image-url)
the TTCZ be limited to 25 mph and where traffic is queued (slowing or stopping vehicles prior to entering the TTCZ) on either approach, the TTCZ might be set up as shown Figure E.4. As a guide, with the objective of protecting against the highest hazards first, the TCS should accomplish the following tasks in the specified order.

Stop traffic only as necessary to ensure the safety of responders and vehicle occupants while constructing a Temporary Traffic Control Zone (TTCZ) around the incident scene.

Traffic must not be released past the scene after it has been halted for any reason without the direct approval of the TCS, who should request further permission from the Operations Section Chief and the Safety Officer. A general announcement of the pending traffic release should be broadcast to all responders prior to its actual release.

1. **Set up the TTCZ.** The Activity Area is the highest priority, followed by the Advance Warning Area, then the Transition Area, and finally the Termination Zone. This is a high-risk activity, with responders, motorists, and pedestrians exposed to the serious hazards of an unstable traffic situation. Stop traffic as necessary to prevent further incidents.

2. **Determine the need for expanding the TTCZ** to the opposite travel lanes or other nearby highways by repeating Steps 1 and 2. Rubbernecking may cause additional traffic congestion in lanes that are not directly affected by on-scene activities but that are still needed for responders’ ingress to the scene or egress from the scene.

3. **Adjust and modify the TTCZ** as the work space needs of the incident dictate, as determined by the Operations Section. Protect both road users in the TTCZ and responders working in the Activity Area by maintaining a safe separation between moving traffic and response activities. Be alert for unexpected intrusions of response activities into traffic and for passing vehicles that unexpectedly intrude into the Activity Area.

4. **Remove the TTCZ** when no longer needed. Dismantle the Termination Area, then the Activity Area, then the Transition Area, then the Advance Warning Area. Maintain the Advance Warning Area as long as the traffic queue remains, which could be four to six times as long as the duration of the original traffic blockage.

**Clearance of Stranded Vehicles**

One of the most difficult traffic control challenges at a highway incident is clearing the immediate scene of uninvolved vehicles to allow responders to deal with the emergent aspects of the incident. These vehicles are often trapped by the blocking incident ahead of them and the backed-up traffic behind them. The task is complicated by several factors, including the fact that responding emergency vehicles are ar-
Arriving at the scene at the same time as the clearance is needed. Since the scene is either uncontrolled or in the early stages of the formation of the IMS organization, motorists are often faced with a bewildering and confusing onslaught of loud sounds, bright lights, and distraught passengers. If responders are not careful, these drivers can be given conflicting direction. The result is too often chaotic and dangerous maneuvering of civilian and emergency vehicles, resulting in secondary crashes and further deterioration of the situation.

The previous two illustrations show ways that may be used by the TCS to better organize the simultaneous clearance of trapped uninvolved vehicles and arrival of emergency response vehicles. Figure E.5 is meant to illustrate a two-way highway, and Figure E.6 a one-way traffic situation (such as one side of a freeway). They are intended to highlight the following principles:

1. Direct emergency response vehicles onto emergency ingress and egress routes that are separate from normal or clearing traffic.
2. Avoid establishing emergency vehicle routes that run against normal traffic (counterflow).
3. Provide at least two lanes’ width for U-turning motorists.
Traffic control in these early stages can demand considerable manpower. The TCS should be alert to the possible need to evacuate vehicle occupants as hazard conditions change. Evacuees will require evacuation transportation, temporary shelter during the incident, and transport back to their vehicles, which can require considerable resources to accomplish. If immovable vehicle occupants are to be sheltered in place, additional resources will be needed to monitor and protect them. These can present considerable obstacles to the beginning emergent operations and should be quickly reported to the Incident Commander.

If vehicles cannot maneuver to clear the scene, they may have to be temporarily abandoned in place. If vehicles are abandoned, their drivers should leave them unlocked with keys in the ignition, which imposes an obligation on the Incident Commander to ensure their security, possibly necessitating additional law enforcement resources. If these abandoned vehicles must be removed, especially under hazardous conditions, other qualified drivers must be used. If these vehicles cannot be removed under their own power, an additional towing and recovery operation must be launched.

In situations where volunteer or other individual responders make their way directly to the scene, abandon their vehicles, and then report on foot to the ICP or work area, they should not worsen the traffic control problem around the incident. The best procedure is for volunteers to park their vehicles in the staging area. The Staging Manager may need to move them and should be given custody of the vehicle keys. A less desirable procedure would be for individual responders to park their vehicles out of traffic, downstream of the incident. Anything that results in abandoned and locked responders’ vehicles blocking incident operations or traffic flow past the incident should be avoided. If they need to be moved later, they may need to be towed.

**Highway Incident Complications**

**Secondary Incidents**

Should a secondary crash occur, it could become an incident in its own right and should be dealt with according to its seriousness. These are “secondary” only because they are related in some way to the primary incident. They may be located far from the primary, and the Incident Commander of the primary incident may be completely unaware of their occurrence. They may take on any character, emergency (crashes with injury, fires, spills) or nonemergency (traffic congestion, mechanical breakdown). They all require attention and may be more serious than the primary incident. For extreme situations, the activation of an Emergency Operations Center or heightened involvement of a Traffic Management Center may be necessary.

The Incident Commander already has control of the nearest response resources; however, they are most likely already fully engaged in the primary incident. They are the best available to respond to the secondary incident, at least to perform the initial size-up.
There can be no presumption of the relative importance of the primary and secondary incidents, and there can be no preemption of the Incident Commander’s judgment of how best to initially handle the new incident.

The Incident Commander of a highway incident where a secondary crash has occurred should: (1) handle the secondary crash as part of the original incident by assigning additional Divisions, Groups, or Branch; or (2) request a separate dispatch assignment for a completely new incident.

**Frustrations**
The delay caused by highway incidents can place motorists under a great deal of stress, and some may strongly disagree with the manner in which traffic controllers impede their freedom of movement. Some may challenge or circumvent traffic direction in unexpected and dangerous ways. Commercial carriers faced with late delivery penalties, motorists late for important appointments, and frustrated commuters may consider their needs to be paramount and have little regard for other considerations. Confrontations can quickly spiral out of control and turn violent. Law enforcement may be the only response resource equipped to deal with violence, but all responders should practice civility and patience when dealing with the frustrated motorist.

**Exposure**
Risks to motorists must also be reduced from both the causes and the consequences of the highway incident (including vehicular traffic, weather, road conditions, fire, hazardous materials spill, etc). For example, weather factors, such as snowstorms, fog, or heavy rain, that are commonly associated with highway incidents can rapidly exacerbate a benign traffic queue behind a simple motor vehicle accident into a mass-casualty incident. Secondary crashes caused by these factors are all too common at highway incidents. This sort of situation can escalate into a major evacuation and shelter operation that far exceeds the parameters of the original incident(s).

**Pedestrians**
Occupants of vehicles that are stopped for extended periods at highway incidents are prone to engage in unusual and dangerous actions outside of their vehicles. Personnel responsible for traffic control should be alert for occupants leaving their vehicles at unexpected times. They may be retrieving items from the trunks of their vehicles, relieving themselves, or simply stretching their legs. Curiosity can draw them to the scene for a closer look, abandoning their vehicles. Crowd control can quickly turn into a major problem as the broadcast media publicize the incident, and a significant law enforcement effort may be required to maintain scene security. Sightseeing traffic (or fleeing motorists) can also transform a minor congestion problem into regional gridlock, which would call for extraordinary regional traffic management measures.
Inattention

Motorists may become inattentive to traffic control measures after extended waits in traffic queues at highway incidents. Truck drivers may take advantage of being stopped and nap in their sleeper cabs. Other motorists may simply fall asleep at the wheel, daydream, or become immersed in cellular phone conversations. Unresponsiveness may even be the result of carbon monoxide poisoning caused by exhaust leakage from idling engines into the passenger compartment. Traffic flow can therefore be difficult to smoothly restart after protracted stoppages.

End Notes

1. MUTCD, Sect. 6F.01, p 6F-1.
2. MUTCD, Section 6C, Figure 6C-1, p 6C-4.
3. Engines generally have the longest reach, since they can lay hoses to the scene. Heavy rescue apparatus have a medium reach, due to their need to connect tools to electrical, pneumatic, and hydraulic power units on the vehicle.
4. MUTCD, Sect. 6C.08.
Appendix F

Credits

The National Fire Service Incident Management System Consortium wishes to thank the following people for their dedicated work in producing this Model Procedures Guide. Their dedication to this work has produced an excellent primer that will provide a better understanding of the requirements and needs that are experienced by fire and rescue, emergency medical services, law enforcement, transportation, and other responders to highway incidents. This Guide is a living document, and your comments and criticisms are welcomed and will be considered for inclusion in the next edition.

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