I. Introduction (10 Minutes)

NOTE: Pp #1 – Introduction

NOTE: Self Introduction

A. Opening Statement

Traditionally, the agencies charged for the motor vehicle crash clearance are police, fire, and rescue services, and either public or private wrecker companies. If structural damage is done the local or state Department of Transportation (DOT) is called to respond, generally after the other agencies have cleared the scene.

And, the tasks to clear a crash site were done sequentially: The police would secure the area around the incident, rescue personnel would work at rendering aid and removing victims, the police would investigate the crash and finally, wreckers would be called to tow the disabled vehicles. After the incident was cleared, DOT officials would be notified of downed signs or missing guard rails.

At each stage of the incident, responding emergency vehicles would arrive and park wherever the operator could find an open space resulting in a mixture of emergency vehicles often blocking each other for long periods of time, even when some vehicles were no longer needed.

This causes long delays in traffic frustrating not only the emergency responders but the public as well. However, acting together, responders can reduce the total time to resolve and remove incidents by more than 50 percent.

Today, the public has the expectation of traveling when they want to, where they want to, without undue delays, especially delays that are not anticipated. All of us as responders have committed ourselves, by accepting our jobs or positions, to serving the public. It therefore follows that effectively managing highway incidents is an extension of our individual and collective commitment to public service.

The manner in which we are handling highway incidents has room for much improvement. The problem will only get worse, unless we devote proper attention and resources. The problem is not isolated to a single incident location; rather, it spreads to the area creating traffic problems and gridlock affecting many more than just the first incident participants. The concepts learned in the Incident Management Course **must** be used. Every discipline has something to give; know and use it.

B. Performance Objectives

NOTE: Pp #2 – Terminal Objective

1. Terminal Objective

Make emergency services personnel who respond to traffic incidents aware of the need to increase safety and reduce incident clearance rates through multi-agency teamwork. To reduce the time it takes to clear traffic incidents from the roadway, which will decrease congestion and time wasted sitting in traffic backlogs while keeping the responding personnel and the traveling public safe.

NOTE: Pp #3 – Enabling Objective

2. Enabling Objective

a. Effects of Traffic Congestion
b. Types of Traffic Congestion
c. Effective Incident Response
d. Effective Scene Management Strategies
e. National Interagency Incident Response
f. Traffic Control Zones - Setting the Scene

NOTE: Ask if there are any questions concerning the Performance Objectives.

C. Reasons

Police, fire, emergency and public service agencies have an important role in assuring that our highways are safe and efficient. Studies have shown that most traffic backlogs are caused by highway incidents—not by overcrowded roads. However, 50% of congestion is due to non-reoccurring incidents. During peak periods of traffic, on heavily traveled interstates, a 20-minute backlog is created after a road is blocked for only five minutes. Worse yet is the real possibility that traffic problems from an initial incident will lead to a second, perhaps more serious, incident. We must learn how to work together to quickly and safely clear vehicles, debris, and emergency response personnel and equipment from the roadway.

These guidelines contain selected information that can increase emergency responder knowledge and awareness concerning the need for rapid and coordinated multi-agency response to traffic-related incidents.

The focus is on combining the knowledge, abilities, and resources of all emergency response agencies, and making full use of all available technology.

II. Body

NOTE: Show video *"Governor's Welcome"* at this point.

NOTE: Explain to students that "War Stories" discussion is an important part of this course. In order to foster a 'lessons learned' approach to our experiences, let's keep them to the point, don't point fingers; *solve problems!*

NOTE: Practical Exercise 1: "Laying our cards on the table", 2-3 minutes per student. The goal of this activity is threefold:

1. **Introduce the students to each other and the instructors**
2. **Lay out student expectations of the course**
3. **Identify highway incident related problems, issues, and concerns so that the instructors may tailor the material to emphasize the points identified in this exercise, and to serve as a springboard for discussion.**

The instructor acting as facilitator must diplomatically but firmly keep students 'on track' in their introductions in order to stay on schedule. The other instructor should record answers on a flip chart. These can then be discussed and/or crossed off as they are discussed through out the lesson.

A. Effects of Traffic Congestion

NOTE: Pp #4 – Effects of Traffic Congestion

Problems with traffic congestion are increasing, and we, the responders to highway incidents, must rethink our perspectives on how we treat these serious, but common, incidents. Highway Incidents have a negative impact on safety, the economy, the environment, and quality of life. Everyone has a vested interest on how we, the responders, manage highway incidents.

"It's quicker to go from failure to success than excesses to success"

Limited-access highways, including the interstate system, were conceived and designed to allow for the free-flow, high-speed movement of traffic with few distractions. Today limited-access systems nationwide are experiencing demands that often times exceed capacity, thus causing problems for those who travel on and respond to traffic incidents.

However, we cannot only concern ourselves with limited-access highways, as other highways and streets are seeing a similar increase in traffic usage and problems associated with traffic congestion caused by traffic related incidents.

1. Impact on Safety

NOTE: Pp #5 – Impact on Safety

Safety of the citizens and the responder is of top priority. Performing duties at the scene of highway incidents is one of the leading 'work activity' causes of deaths and injuries to responders from *all* disciplines. The foundations of these secondary incidents were found to be caused by two problems:

a. lack of consistency, agreement, and understanding of the minimum competencies necessary for all emergency services personnel operating in or near moving traffic;
b. lack of public understanding of the role of emergency service personnel engaged in traffic control.

The impact of highway incidents on motorists due to reduced travel speed, stop and go traffic, delays, increase potential for vehicle crashes and frustration, aggressive driving, and the potential for incidents of "Road Rage" jeopardizes the publics safety.

-A report by the AAA Foundation for Traffic Safety, quoted in the January 12, 1998 edition of Time magazine, indicated that incidents of "road rage" were up 51% in the first half of the decade.
-A national survey found that 80% of drivers are angry most or all of the time while driving.
-22% of respondents indicated that they get mad *simply because the multi-lane highway narrowed*.

2. Impact on Economy

NOTE: Pp #6 – Impact on Economy

A study of Northern Virginia traffic congestion determined that a 15-minute blockage of a major roadway has an economic price tag exceeding $50,000. For businesses, a delivery truck delayed in traffic can cost an employer an estimated $25 an hour. Consider also that one quart of fuel per person per day is wasted sitting in traffic. Yet another study by the Federal Highway Administration (FHWA) found there is a cost of $4.00 per hour for each vehicle hour of delay.

3. Impact on Environment

NOTE: Pp #7 – Impact on Environment

As traffic slows or in many incidents stops the result is more pollution.

4. Impact on Quality of Life

NOTE: Pp #8 – Impact on Quality of Life

Traffic re-routes or "short-cuts" found by drivers spill onto the secondary roads and through neighborhoods. Increasing the possibility of incidents requiring additional resources.

Also, motorists are accustomed to normal delays. However, traffic incidents break that routine and have a negative impact on the motorist. (Missed meetings, missed family events, etc.)

NOTE: Ask if there are any questions or input on the effects of traffic congestion.

B. Types of Congestion

NOTE: Pp #9 – Types of Congestion

Congestion occurs when the amount of traffic wishing to use a facility (demand) exceeds the traffic carrying capabilities of the facility (capacity). The capacity on a limited access highway is estimated at 2000 vehicles per hour per lane that means a single lane blockage reduces overall roadway flow by 50%. Should you reference what type of limited access roadway - multiple lanes in the same travel direction.
While operating at capacity, a 20-minute lane blockage can result in a two and one-half mile back up or a 5 minute lane block equals a 20 minute back log. Or, for every minute a traffic lane is blocked it takes 4 to restore the traffic to normal flow. During peak hours this can increase to 7 minutes.
There are two types of roadway system congestion: recurring and nonrecurring.

1. Recurring

Recurring congestion is that which occurs regularly at points of excessive demand and DEFICENT capacity. Motorists can anticipate recurrent congestion and allow extra time for the usual delays faced during morning, noon, and evening peak periods. As responders we can't solve this problem but we can be conscious of what we do here ie amount of equipment responding, how we respond, traffic enforcement (does it really need to be done right now?) ….

2**. Nonrecurring**

Nonrecurring congestion are random incidents, such as crashes, spilled loads, disabled vehicles, and other unpredictable events. Nonrecurring congestion makes up approximately 50% to 60% of the total congestion. This congestion is unexpected by motorists which can be a considerable safety hazard, and cause excessive delays to the motoring public. Because motorists cannot usually plan in advance to avoid these blockages stress levels and dangerous driving tactics increase. It's the nonrecurring congestion that is concern to emergency responders.

Incident effects on Roadway Capacity

INCIDENT TYPE	CAPACITY REDUCTION
NORMAL FLOW (Three lanes)	N/A
CRASH ON SHOULDER	26%
STALL (one lane blocked)	48%
NON-INJURY CRASH (one lane blocked)	50%
CRASH (two lanes blocked)	79%

NOTE: Ask if there are any questions on the types of congestion.

C. Effective Incident Response

NOTE: Pp #10 – Effective Incident Response

Each agency responding to a highway incident has mandates, authorities, and responsibilities under law. Examples:

1. Law enforcement: The Traffic Code, The Criminal Code
2. Fire services and emergency Medical Services: National Fire Protection Agency (NFPA) or International Fire Service Training Administration (IFSTA)
3. Emergency Management:
4. Transportation: Manual on Uniform Traffic Control Devices (MUTCD) specifically Chapter 6 and 6i and Georgia Code.

To effectively manage highway incidents, fulfill responsibilities under law, and accomplish necessary actions without exceeding their statutory authority, it is absolutely necessary for all response agencies to coordinate and cooperate closely in mitigating such incidents.

Incident impact to the motoring public can be minimized by reducing incident detection, improving response time, using effective scene management strategies, keeping traffic moving to the maximum extent safely possible, clearing the roadway of debris, disabled vehicles, and responders quickly (improve clearance times) and restoring normal traffic patterns as quickly as possible.

1. Reducing Incident Detection and Verification

NOTE: Pp #11 – Incident Detection/Verification

Detection is the determination that an incident had occurred this includes the relay of information to the appropriate response agencies. Rapid detection is necessary to reduce the duration of reduced capacity.

Verification is the determination of the precise location and nature of the incident. Verification includes the display, recording, and communication of this information to the appropriate agencies.

For example the DOT is looking into roadway directional information markers to be placed on major interchanges such as the Cobb Cloverleaf and Spaghetti Junction.

NOTE: Ask if there are any questions or suggestions on how detection or verification can be improved.

2. Improving Response Time

NOTE: Pp #12 – Improving Response Time

Response is the activation, coordination, and management of all appropriate personnel, and equipment. A direct correlation exists between effective interagency communications and reduced response time. A communications link with all response agencies and the public is an important aspect of appropriate response to traffic incidents. Providing reliable information on roadway problems reduces capacity demand at the incident site.

The Georgia Transportation Traffic Management Center (TMC) is notified of incidents by the public, 911 emergency centers and the DOT cameras. The Changeable Message Signs (CMS) may then be changed or media contacted by the TMC media liaisons to notify the motoring public of incidents.

By notifying the media which in turn notify the public many motorists are sufficiently familiar with their routes of travel that, when provided with forewarning of an impediment, they will voluntarily choose a by-pass around the incident. This eases the problems of managing the flow of traffic around the incident itself. Variable-message signboards when available and local radio stations can notify the public.

NOTE: Ask if there are any questions or suggestions on how to improve response time.

2. Clearance

NOTE: Pp #13 - Clearance

Clearance is the restoration of the highway to pre-incident conditions. It consists of:

*Resolution of conditions threatening responder, victim, or public safety (emergency medical care, extrication, and transport of injured, mitigation of fire and haz-mat hazards).
*Removal of disabled vehicles, spilled cargo, and other debris from the roadway.
*Removal of responders and their vehicles and equipment from the roadway.
*Reestablishment of normal traffic patterns.

NOTE: Ask if there are any questions or suggestions on how to improve clearance time.

D. Effective Scene Management Strategies

NOTE: Pp #14 – Scene Management Strategies

Highway incident management is normally required for incidents of any consequence. Unfortunately, most highway incidents are perceived as minor by traditional emergency management standards. Many texts and studies define major incidents as those blocking one or more lanes for more than 30-minute duration.

To be effective, management of highway incidents must be a collaborative effort of all involved agencies.

1. Fire Department

NOTE: Pp #15 – Fire Department

Fire, rescue and EMS agency personnel routinely respond to all types of roadway emergencies, often quickly bringing several units to the scene of an incident. Fire and rescue units are trained and equipped with many special tools designed for cutting, prying, forcing, and bracing. They also have equipment to handle haz-mat emergencies as a result of traffic accidents.

Fire departments respond to highway incidents in order to fulfill municipalities' responsibility to protect the safety of citizens (including travelers) within their jurisdictions. They provide rescue (extrication) services, emergency medical services (EMS) and ambulance transport of victims to a medical facility.

Fire departments have traditionally been hesitant to apply the same 'risks taken vs. benefits gained' approach to highway incidents as they do to other emergencies such as structure fires and high angle rescues. This has resulted in a widespread belief that the only acceptable course of action is to shut down multiple lanes. This belief is common because training in how to establish safe work areas and work in proximity to moving traffic with an acceptable level of risk has not been historically provided. They also need to consider the 'big picture' when making these decisions.

To increase the 'comfort zone' of fire personnel training in traffic flow management, risk assessment, establishment of safe "work zones", and methods of working safely in proximity to moving traffic, needs to be accomplished.

Complicating factors is the fact that rescue service training today emphasizes a systematic, planned approach to vehicle collision rescue that stresses life safety, incident stabilization and property conservation:

1. scene assessment
2. hazard mitigation
3. comprehensive on-site pre-hospital medical treatment
4. careful and methodical extrication
5. thorough patient packaging prior to ambulance or helicopter transport
6. The importance of these factors to patient overrides the cost of additional time on-scene.

NOTE: Ask if there are any other duties or specialties of the fire department.

2. Police Department

NOTE: Pp #16 – Police Department

The Police Department has the responsibility of control and management of traffic including conditions in the backlog; incident stabilization (keep a bad situation from becoming worse); and of course it's the Police Departments responsibility of investigation and preservation of evidence.

Police respond to fulfill the legal mandates of the Traffic and Criminal Codes. They perform the functions of traffic control, clearance of disabled vehicles, investigation of accidents and related criminal activity, preserving evidence relative to those accidents or crimes, and maintaining security. Police officers receive training in traffic control. Because of this, law enforcement officers are well acquainted with working in proximity to moving traffic and view doing so as a necessary and acceptable risk at highway incidents. They are also sensitive to the problems created in traffic backlogs and detour routes; and view highway incident investigations as serious matters requiring thorough investigation.

NOTE: Ask if there are any other duties or specialties of the police department.

3. Department of Transportation

NOTE: Pp #17 – Department of Transportation

The Department of Transportation has a responsibility of rapid clearance of lanes consistent with responder and public safety and removal of responders and their equipment as quickly as conditions will allow.

Transportation departments plan for construction and maintain roads and highways and fulfill responsibility for State highways. These agencies possess the overall legal responsibility for the safety operation, maintenance and efficiency of the roadways. The most visible (to the public) work performed is the day-to-day maintenance chores needed to provide safe and efficient highways. Traditionally, transportation departments have not been viewed (at least outside of their own organizations) as 'highway incident first responder' agencies. We now however, are very familiar with HERO, Highway Emergency Response Operator.

Concerning Traffic Incident Management there are two divisions of DOT, Maintenance and HERO. Maintenance responds to long term incidents and HERO is an emergency or short term response.

a. HERO

Transportation departments are now taking on the role of *operating* the roadway systems. Georgia transportation departments now employ HERO units who are specially trained in making an incident scene safe for all emergency responders using methods proven to work in their own maintenance work zones. They are trained in the same incident management system used by emergency services.

b. DOT Maintenance

Except for some limited exceptions, Department of Transportation maintenance departments are not staffed as "24 x 7 x 365" operations. This results in response time lags of an hour or more. As a result, the 'traditional' emergency response agencies (Police, Fire, Rescue, and EMS) have largely overlooked the valuable assistance transportation department maintenance forces can provide such as:

1. Heavy equipment and manpower to clear the incident.
2. Signs and equipment to set up long-term traffic control plans for detours.

Transportation functions at highway incidents: Establishment of detours when required; Long-term staffing of Traffic Control Points (TCPs); Staffing of Traffic Operating Centers (TOCs); Operation of Intelligent Transportation System (ITS) technology such as remote weather and road condition monitors, remote video cameras, traffic counters, etc.; Repair of damaged infrastructure

The Intelligent Transportation System (ITS) for Georgia is called the NaviGator System. The Georgia DOT Transportation Management Center (TMC) is the hub of the NaviGator system. When the public or emergency agencies call into the TMC, those calls go into the Navigator system based on severity of call. Navigator has many tools one of which is the HERO operation. Other tools include cameras, signs and the works. The system benefits public safety in the areas of detection and verification. Part of Navigator's role is early detection. The sooner we know about it the sooner we can respond. A second role is verification, what is actually going on. It assists in determining who and what needs to respond.

Transportation agencies tend to be sensitive to the "big picture" impact of unplanned road closures and traffic restrictions and view the issue of working near moving traffic as an ordinary and acceptable risk inherent to highway operations that can be controlled by using proper equipment and procedures.

DOT has final and actual say when and where road closures will take place however; they will work with the PD. DOT is familiar with dangerous areas such as those with low bridges or bridges with weight limits. They will assist with re-routes for vehicles such as tandem trucks, weight restrictions, height limits.

Departments of Transportation Maintenance must re-deploy or call out staff in order to generate large numbers of personnel for incident response. If you discover that you may need them call them early to reduce response time, i.e sand, spill, front end loader….. They possess equipment designed for moving and lifting large loads. Transportation has a large supply of road signs and other equipment necessary to control traffic for extended periods often contained in fully equipped Incident Trailers. Their personnel are trained and experienced at flagging and traffic diversion.

NOTE: Ask if there are any other duties or specialties of the department of transportation.

4. Adding to our response family

NOTE: Pp #18 – Adding to our Response Family

As we expand our view toward rapid incident clearance and the value of notifying the public of non-recurring traffic congestion arising from incidents, we need to consider involving two other groups – towing & recovery operators and the media. Towing and recovery operators upright, recover, and tow vehicles involved in an incident as well as clean up crash related debris. They can bring intimate knowledge of vehicle construction, and familiarity with their equipment's unique capabilities to the table. Reporters give information on incidents and alternate routes to the public.

a. The media

NOTE: Pp #19 – The Media

The media allows us to communicate information on non-recurring congestion, detour routes, and anticipated delays. This will usually ease congestion, as most motorists, given timely and accurate information, will generally avoid the area. As such, it is a valuable incident management resource. People expect us to inform them; it not only reduces congestion, but reduces frustration levels. In major incidents a department Public Information Officer (PIO) should be notified to handle the media.

Provide them with timely and accurate information to distribute to the public.

NOTE: Ask how often responders "allow" the media to "assist."

b. Towing and Recovery Services

NOTE: Pp #20 – Towing and Recovery

Arrangements between public agencies and private tow operators take many forms. It is important to remember that towing vehicles, utility vehicles and other recovery services (i.e., clean-up, transportation) may be detained by heavy traffic when they are called to the scene of an incident. Calling them as soon as possible and considering alternate approach methods can minimize this problem. Communicating to them alternate routes or escorts may be necessary. The TCP designee should handle this.

Private wrecker companies are not created equal. Various companies have different types and sizes of wreckers, winches, hook-ups, and rigging equipment. It is important to know the limitations of the towing company coming to the site of a traffic incident. Remember to communicate basic information about the type and size of the vehicle(s) involved when requesting a tow and recovery response. On more than one occasion, a light-duty tow truck has been dispatched to move a 50,000 pound tractor.

c. Communications

NOTE: Pp #21 - Communications

The communications processes between different agencies, and between agencies and the general public are vital. Information must be timely, accurate, and reliable. An agency's reaction to a traffic incident is based largely on the information it receives from other agencies. The public's reaction is also based on the information it receives. Good communications facilitates the interagency incident management process by:

- Keeping everyone 'on the same page'
- Making sure overlooked issues or concerns are addressed.
- Making sure that other agencies' needs are addressed

Often, direct communication is not possible due to incompatible radio channels. In such cases, procedural efforts must be made to ensure the relay of information (look for the white shirt or red helmet/sergeant stripes). Establishing a priority for the relay of traffic information helps ensure that it does not get forgotten.

d. Other Disciplines

NOTE: Ask what some other disciplines may be and how they can assist in the response. Record the answers on a flip chart or white board.

Other disciplines may be incorporated into the incident dependant upon its nature and complexity such as Haz-Mat, Environmental Protection Agency (EPA), Communications, Department of Natural Resources (DNR) and others.

There are many organizations and officials who have a personal stake in traffic incident management, such as:

- Elected officials
- Transportation agencies
- Highway departments
- Environmental protection
- Transit operators
- Local jurisdictions
- Trucking associations
- Independent authorities
- Traffic reporters
- Print and TV media
- Emergency management

Keep in mind though each discipline has a responsibility or a primary function, no function can be completed without the assistance of one or more of the other disciplines.

5. Acceptance

NOTE: Pp #22 – Acceptance

Traditionally agencies have worked independently within the scope of their duties. However, effective traffic incident management requires the cooperative, coordinated efforts of all involved agencies or a team approach.

For this team approach to work effectively, it is incumbent upon all responding agencies to understand and appreciate or accept the priorities, needs, limitations and expertise of all other involved agencies.

Each agency must accept and acknowledge the expertise of the others within their respective disciplines. For example, police agencies must acknowledge and appreciate the concerns of the fire, rescue and emergency medical services for equipment access, space in which to safely work, personnel safety and patient/victim outcomes.

Fire, rescue and EMS organizations, on the other hand, must acknowledge and appreciate the needs of law enforcement to conduct investigations and preserve evidence, as well as law enforcement's expertise in managing traffic flow and congestion issues.

Both must acknowledge and appreciate the highway or transportation agency's concern that traffic obstruction be held to the minimum needed to safely deal with and rapidly clear the incident. This understanding can only be achieved by careful pre-planning, ongoing post-incident analysis and evaluation, and establishment of a mutually supportive, open, and cooperative environment.

This planning is accomplished through the Georgia TIME Task Force. Through quarterly meetings and joint training an environment has been created to support and understand each discipline. The TIME Task Force Committee group AIR (After Incident Review Committee) completes the post-incident analysis and evaluation.

NOTE: These reports are NOT available for review by other departments until they are reviewed by DOT legal.

NOTE: Ask if there are any questions regarding scene management.

E . National Interagency Incident Management System (NIIMS)

NOTE: Pp #23 - NIIMS

NOTE: Ask students if they have completed NIIMS 100.

An effective traffic incident management team is essential to developing a successful traffic incident management program. The team must meld the competing demands of multiple agencies into actual effective practice by using a Interagency Incident Management System as the preferred structure for highway incidents.

Effective management of highway incidents requires a multidisciplinary approach. Traditional agency perceptions, roles, and attitudes must be reexamined in light of this fact. Agencies must facilitate, through training, equipment acquisition, and procedure modification, the ability of management personnel to conduct comprehensive 'risks versus benefits' analysis of highway incidents and implement alternative strategies to full highway closure wherever practicable.

Incident dynamics drive the appropriate lead agency at any given point in the incident chronology. Establishing and maintaining a workable highway incident Interagency Incident Management policy requires careful pre planning, cooperation, coordination, consensus, and compromise; it is always a 'work in progress'.

However, conflicts will arise. These conflicts are frequently caused by the difference in perspectives between agencies regarding the 'acceptable level of risk' of working near moving traffic, the importance of maintaining or quickly restoring traffic flow backlog and detour problems, the corresponding tendency of fire, rescue, and EMS services to focus on the immediate incident scene and the need to preserve evidence and conduct timely investigations.

1. Conflict resolution

NOTE: Pp #24 – Conflict Resolution

The nature of highway incidents, the differing perceptions, priorities, and legislative mandates of the various response agencies can occasionally cause conflict. In this environment, a certain amount of conflict is normal. However conflict can be minimized with joint training experiences (such as the one you are attending now), including 'table-top' and full-scale exercises, good pre-planning, and post-incident debriefing.

Understanding basic NIIMS concepts and applying the functional organization principle to emergency incident management can also reduce conflict. Because of its adaptability and flexibility and its logical progression which can also be demobilized rapidly. Concerns and priorities are addressed in a planned systematic manner. Participating agencies will agree on and adopt specific procedures for responding to and clearing incidents.

2. The Four Cs

NOTE: Pp #25 – The Four Cs

For the team approach to occur Four C's of highway incident management should be utilized by all involved agencies in each response:

1. Command (or, more appropriately, Management)
2. Communication
3. Coordination
4. Cooperation

Many highway incidents are small in scope and can be handled easily with limited resources and a simple, rather informal, management structure.

However, with larger incidents the complexity of coordinating the activities of multiple agencies from multiple jurisdictions and different levels of government makes managing the scene a critical element.

3. Scene Management Structure

NOTE: Pp #26 – Scene Management Structure

Scene Management is the process through which all activities are directed, coordinated and controlled to accomplish TIME's goals. The management function within NIIMS may be conducted in two general ways: single or interagency incident management.

a. Singular Incident Management

Singular Incident Management is usually applied when there is no overlap of jurisdictional boundaries or when a single incident manager is designated by the agency with overall responsibility for the incident. Examples of incidents where single incident management would be most appropriate are structure fires and crime scenes such as robberies or homicides.

b. Interagency Incident Management

Under a interagency incident management structure, all involved agencies contribute to the management process by sharing responsibility. This structure is the preferred method when responding to emergencies of a multi-agency or multi-jurisdictional nature. When Interagency Incident Management is established, representatives of each agency will operate as a true interdisciplinary management and command team. In other words, interagency management is shared responsibility for overall incident management during a multi-jurisdictional or multi-agency incident. In an incident with a interagency management structure, decision-making becomes a much more 'collective' activity, with all involved or interested agencies participating on a more-or-less co-equal basis.

Some people worry that Interagency Incident Management is 'command by committee'; that no one will be "in charge" or, worse yet, *everyone* will be 'in charge'. This fear is unfounded. Yes, all agencies get direct input and share power within the 'inner circle of command'. However, even with an interagency management structure, one person will still be in overall charge of each **phase**.

4. How do agencies participate in Unified Incident Management?

NOTE: Pp #27 – Unified Incident Management

Agencies participate in Interagency Incident Management by:

Cooperating in determining overall goals and objectives;
Conducting joint planning for operational activities;
Conducting integrated operations;
Providing for integrated communications between all agencies and with the Command Post;
Maximizing use of all available resources;
Recognizing the value of the services of every involved agency; and
Insuring that individual or organizational egos do not enter the equation.

Because highway incidents require the coordinated efforts of multiple agencies with totally different responsibilities, and often impact on or involve several geographic jurisdictions, they will most likely require a interagency management element for effective management.

The primary concerns or goals at an incident may change as an incident evolves. Under interagency management, any (or all) of these evolutionary events may result in a transfer of responsibility from a representative of one agency to another. Nonetheless, under interagency incident management, all involved agencies participate actively in the decision-making process during the entire incident. Procedures should be in place for the transfer of incident management from individual to individual and agency to agency while preserving the continuity of command.

5. Determining the Management Function

NOTE: Pp #28 – Determining the Management Function

Under a Interagency Incident Management structure, the question isn't so much "**Who's in charge?"** but **"Who's in charge of *what?"*** Someone must nonetheless still exercise overall coordination of incident management. The agency from which this person comes (the **lead agency**) is determined by the incident's requirements.

Some incidents are rather clear. Take the example of a barricaded gunman. There may be injured people, a fire involved, and highways in the perpetrator's field of fire. EMS, Fire, and transportation all bring abilities to the incident that are needed. But law enforcement and law enforcement alone has the knowledge, skill, and abilities to accurately assess the threat to responder and public safety. Even after the perpetrator has been neutralized or apprehended, threats from booby traps or explosives might require evaluation, and important evidence issues are at stake.

Serious highway incidents are different. No one agency has all of the knowledge, capabilities, training, and experience to assess and deal with the many hazards and needs of a highway incident.

Highway incidents evolve based on incident dynamics. In the initial phase, hazard (Traffic, fire, haz-mat, etc.) control, extrication, and emergency medical care are first priority. In the second phase, investigation and clearance are the primary issues. The third phase is follow-up, where investigations are completed, infrastructure repairs made, and normal conditions fully restored.

In highway incidents, interagency incident management principles call for the responsibilities to transfer between agencies based on the incident's evolution.

Example: A motor vehicle collision takes place. It results in no injuries, no fire, no spilled fluids, but the road is partially blocked and the vehicles must be towed.

NOTE: Ask Question. What agency has responsibility for and is best equipped and trained to perform traffic control and incident investigation?
Answer: It's law enforcement, of course. A police officer would be the logical incident commander.

Example: Another motor vehicle collision on a State Highway results in injuries, victims trapped in vehicles, fire, and motor fuel spilled on the roadway.

NOTE: Ask Question. What agency has responsibility for and is best equipped and trained initially for this incident?

Answer: Fire Department; the emergency medical care, extrication, fire suppression, and control of hazardous materials are the most pressing priorities at this time. Fire, rescue, EMS and,

perhaps, a hazardous materials response team are the agencies best equipped and trained to deal with these immediate issues.

On an incident of this nature following Interagency Management logic, fire and rescue would assume the initial responsibilities. The police officer arriving on the scene provides traffic control and works with the Incident Manager to insure that strategic goals are decided upon that take into account both agencies' needs and concerns.

Once the fire is extinguished, the fuel spill neutralized, the patients extricated and on their way to a trauma center, the incident, from a fire and rescue standpoint, is stabilized. Responsibilities now change and the incident investigation and highway clearance issues are now the priorities.

The management function now passes to the agency best trained and equipped to handle these issues – the police. Fire and rescue provide support with such things as lighting or other things as requested by law enforcement.

NOTE: Ask if there are any questions concerning NIIMS and how it applies to highway incident management.

F. Traffic Control Zones (Setting the Scene)

NOTE: Pre-draw interstate lanes of traffic with a lane or two lane blockages.

The placement of vehicles around the scene has considerable impact on the flow of traffic around the incident. Initial arriving emergency response vehicles should be positioned to both protect the scene and leave room for operations. Other vehicles should be parked downstream in lanes already blocked or staged in a safe area well off of the roadway. Unassigned units should report to staging until their duties are assigned. Equipment in staging must be ready for *immediate* deployment. Contrary to popular belief, taking up more of the roadway and blocking traffic is not necessarily safer. Motorists will try to get through if they believe there is an opening or may take out their hostility on emergency workers, particularly as the frustration level rises. Controlling the flow of traffic past an incident is a safer action. Vehicles should be positioned on the same side as the incident, to present the smallest profile (target) to upstream traffic, yet still protect the scene and personnel. Otherwise, if vehicles are on both sides, a gauntlet that confuses motorists is formed.

Traffic Control Zones should be set in guidance with the MUTCD section 6, 6i.

NOTE: Relate personnel experience with traffic control or have the class relate a few of their own.

There are four traffic control zones; advanced warning area, transition area, activity area and termination area.

1. Advanced Warning Area

NOTE: On pre-drawn incident, designate advanced warning area.

The advanced warning area in the most critical component of the Incident area from an overall safety perspective. Ideally, the information provided to drivers will be sufficient to allow them to identify what they are approaching and what course of action they must follow. The use of signs, flaggers or other traffic control devices may be used. For a short term incident the use of a single sign, vehicle lighting or a flare may be used.

When setting up an advanced warning area keep in mind that stopping distance is a combination of perception distance, reaction distance, and braking distance. Initial warnings ("**Emergency Ahead"** and/or **"Be Prepared to Stop"** signs, cones, or flares) should be set out on the shoulder(s) at a minimum of 10 times the speed limit. Increase this distance when accounting for hillcrests, curves or inclement weather.

NOTE: Emphasize the fact that provision of advanced warning is an area where we in the emergency services need to review our procedures/equipment and try to improve our performance. Typically, the first sign a motorist has of a traffic restriction at an emergency incident is when he or she comes within sight of the incident itself.

2. Transition Area

NOTE: On pre-drawn incident, designate Transition Area.

The transition area is the first portion of the traffic control zone that approaching driver encounter after they pass through the advance warning zone. It is the portion of the traffic control zone in which approaching vehicles are directed around the incident that has blocked or closed lanes of the highway. It is used to channelize traffic from its normal path to a new path or into an adjacent lane. It is the area where the taper is located.

Rather than forcing vehicles to come to panic stops, it is better to direct them to merge into neighboring lanes. A smooth transition allows for a safer operation while keeping the traffic flowing as effectively and efficiently as possible. To accomplish this safely, flares or cones should be tapered across a closed lane. Initial tapers for emergency situations should be ½ times the lane width, times the speed limit. Once the incident scene is stabilized transition taper lengths should be as follows; Posted Speeds less than 40mph: taper length = lane width times the posted speed squared, divided by 60. Posted Speeds 45mph and greater: taper length = lane width times posted speed. HERO's are equipped and trained for these type tapers.

a. Cones (or flares) used in the taper should be the speed limit, in feet, apart.

b. When traffic slows to "stop & go", the personal direction of a "zipper" (equipped flagger who alternates lanes in merging) at the merge point will reduce delays significantly.

3 Activity Area

NOTE: On pre-drawn incident, designate Activity Area.

The activity area consists of two distinct parts, the buffer space and the incident space. This work area should separate emergency workers and their vehicles from the motoring public.

a. Buffer Space

The buffer space is in front of the incident space that is used to provide protection for the emergency responders and accident victims. It also provides recovery space for an errant vehicle. The buffer space begins at the end of the line of emergency vehicles that may park behind the incident, and extends to the end of the Transition Area. When a shadow vehicle is used it is positioned in the buffer space.

NOTE: On pre-drawn incident, designate Buffer Space.

b. Incident Space

The incident space is absolutely closed from traffic and should be protected. It is the portion of the highway that contains the incident itself, the emergency response vehicles, and the emergency responders who are attending to the accident victims. It includes any equipment brought to the area that will be worked from.

NOTE: On pre-drawn incident, designate Incident Space.

4. Termination Area

The termination area is the last component of a traffic control zone. Its purpose is to guide vehicles back to their normal traffic path. Although it is not used at every incident, it is required at all incident in which a lane closure forces alternating traffic to use a single lane.

NOTE: On pre-drawn incident, designate Termination Area.

5. Vehicle Placement

The decision on how to direct and control traffic depends heavily on the information provided by the first emergency units to arrive on the scene. Questions to be asked include:

a. Whether the roadway is already blocked, and the estimated duration of blockage.

b. if the responding agencies' vehicles will cause blocking, and

c. Whether it is safe to pass by the scene, taking into account hazardous such as downed electrical lines, materials spills, etc.

d. Is there a useable detour route? Can it handle all anticipated traffic? Are there multiple suitable detours?

e. What traffic control resources are available? How long will it take to mobilize them?

f. What safety (responders, motorists, others) issues are involved

The specific configuration of the roadway and the surrounding area is also important to consider.

a. Use of a 'Shadow Vehicle' as protection

As noted, the proper placement of vehicles will lend protection to workers. By keeping vehicles on the same side (left or right) as the incident (instead of randomly littering a scene), a work area is automatically formed.

A large (30,000 GVWR or larger) vehicle may be used as a 'last ditch' barricade vehicle (known in highway maintenance jargon as a "shadow vehicle") to protect people working in a closed lane from a vehicle that runs through the 'taper' of cones or flares (the "errant vehicle"). The concept is that the shadow vehicle will be sacrificed in the collision in order to stop the "errant vehicle" before the "errant vehicle" enters the critical area where people are working.

Key points regarding shadow vehicles:

i. The shadow vehicle should be equipped with a rear-mount amber arrow board or other directional arrow display device. Use of other colors of warning lights (red, white) should be minimized or eliminated.

ii. Positioning: Shadow vehicle should be positioned in the center of the closed lane far enough from the work area that the vehicle will not be driven into the work by the force of the collision, but close enough that the errant vehicle will not pass it and turn back into the closed lane.

iii. MUTCD states that this distance should be not less than 100 feet or more than 250 feet, the higher the speed, the farther the distance.

iv. It should be parked front-end pointed in the direction of travel, with all parking brakes and other parking devices applied.

v. The front wheels should be turned fully in a direction that will take the shadow vehicle off the road out of the direction of the work zone and traffic if struck by an errant vehicle (right toward the shoulder in the slow lane, left toward the median in the fast lane on a divided highway, wheels front in a middle lane or where no median exists – increase the distance between the shadow vehicle and work zone somewhat in this case).

vi. No person should be permitted to remain in, on, or around the shadow vehicle, nor should the shadow vehicle be used to perform work at the emergency other than protecting the operation. ***Instructor Note: EMPHASIZE this point!***

NOTE: Draw, preferably with a different color marker, placement of a shadow vehicle.

b. Vehicle emergency lights.

Vehicle emergency lights are extremely confusing and distracting to passing motorists. Emergency lights should be turned off when apparatus is positioned safely out of travel lanes, or when traffic is already congested and moving slowly. If emergency lights are needed on vehicles being utilized on or near the roadway, amber rotating or flashing lights are preferable over red, red/white, or red/blue. Strobes should be avoided.

Apparatus in downstream positions should turn off their warning lights, provided they are not directly exposed to oncoming traffic. Headlamps and other illuminating lights may also pose a danger to the motoring public if left on high beam and/or directed towards oncoming traffic. Turn them off (using parking lights) and/or reposition the vehicle to minimize the distraction to motorists. If lights are not needed turn them off to avoid the "moth to the flame" effect. HERO trucks have red and amber lights and arrow boards. They are also equipped with halogen lights.

c. Use of traffic directional systems and devices

Yellow directional arrows (lights) mounted on the top of vehicles, or on trailers, are a preferred method of directing traffic. They are visible from further away than more conventional methods (cones and flares). Motorists respond more readily to familiar direction signals. Vehicle emergency lights simply indicate the presence of apparatus. They do not direct an action. Motorists can react with confusion when faced with a sudden directional-change decision.

6. Overseeing Traffic Control

NOTE: Pp #30 – Traffic Control

The control of traffic is one of the most important safety actions to be taken at the scene of a highway incident. Proper traffic control simultaneously protects the safety of responders, persons involved in the incident, and the motoring public. Staffing of Traffic Control Points (TCPs): One or more individuals should be assigned to initiate traffic control immediately around the incident site. Transportation personnel should relieve police personnel as soon as possible if a long-duration incident greater than one hour is anticipated. Setting up a proper work zone by contacting DOT maintenance, which has more resources than HERO. This places the emergency services units in service faster and has the added benefit of permitting the more "attention-grabbing" vehicles to leave the scene.

The Incident Managers must assign someone to oversee the traffic control function. They must ensure that all sites are properly staffed, that they are functioning well and modified when necessary, that breaks and relief is arranged, and proper breakdown must be supervised. Personnel must be assigned to monitor the backlog on a recurring basis for secondary collisions and the safety (particularly in extreme weather conditions) and comfort of motorists (be alert for any medical conditions).

Review of traffic control should be an integral part to the post-incident debriefing to identify strategies that work well, opportunities for improvement, and training needs.

Permanent CMS Boards are located along the freeways and are operated by the State DOT Traffic Management Center (TMC). These signs are used to provide motorist with vital information concerning traffic incidents. Information such as possible delays and alternate routes can be displayed.

HERO's carry protective gear and traffic control devices needed for one-way traffic. They carry no gear for two-way traffic such as STOP/SLOW paddles or portable signs. However, they are trained in flagging and traffic control techniques.

7. Personnel Visibility

NOTE: Pp #31 – Personnel Visibility

Personnel must wear reflective clothing meeting the minimum OSHA and DOT requirements for flagger safety. High visibility colors, such as orange/red orange and florescent colors, with straight line yellow-green striping.

Fire Fighter protective clothing, even that meeting current NFPA standards for reflective trim, **does not** meet current DOT standards for high-visibility flagger attire. However, each truck is equipped with at least one traffic vest.

Personnel performing the traffic control task must be equipped with: lighted wands and/or flares, STOP/SLOW paddles or flags, lighting to illuminate the TCP flagger is also very helpful at night – ensure it does not blind drivers.

II. Conclusion

A. Summary

NOTE: Pp #32 - Summary

1. Terminal Objective

Make emergency services personnel who respond to traffic incidents aware of the need to increase safety and reduce incident clearance rates through multi-agency teamwork. To reduce the time it takes to clear traffic incidents from the roadway, which will decrease congestion and time wasted sitting in traffic backlogs while keeping the responding personnel and the traveling public safe.

2. Enabling Objective

a. Effects of Traffic Congestion
b. Types of Traffic Congestion
c. Effective Incident Response
d. Effective Scene Management Strategies
e. National Interagency Incident Response
f. Traffic Control Zones - Setting the Scene

B. Questions

NOTE: Pp #30 - Questions

NOTE: Ask if there are any final questions.

C. Closing Statement

NOTE: Pp #31 - Closing

The impact of a highway incident can quickly spread to the entire geographic region in a "domino effect". Blockages and over-demand on any one jurisdictional roadway rapidly affects traffic on other jurisdictions' roadways. An incident on one road segment can quickly lead to traffic problems on feeder roads. This occurs whether the incident occurs within an urban or a rural area, and justifies thinking in a more global perspective. ***Again, not just the incident site, but the surrounding area is affected!***

Highway clearance is a time-sensitive operation. All response activities should be coordinated so that work is performed as quickly and as safely as possible. Investigations should be conducted as quickly as possible, with consideration given to traffic congestion.

As technology advances we are always looking at better ways to complete the task.

The essential players managing the problems caused by traffic incidents are government agencies with legally established responsibilities. Long established practices become engrained and can be difficult to change. For incidents to be handled successfully, personnel from each response agency must understand and appreciate the priorities, needs, and limitations of other involved agencies and accept and acknowledge the expertise of the other responding agencies for what they do.