

# LINE OF DUTY DEATH REPORT

REPORT F2020-09 • May 2024

1000 FREDERICK LANE, MORGANTOWN, WV 26508 • 304.285.5916

## ***Lieutenant and Police Officer Struck and Killed at an Interstate Crash Scene, Firefighter Injured and Dies 34 Months Later –Texas***

### **Executive Summary**

On January 11, 2020, a 39-year-old lieutenant and a city police officer were struck and killed while on-scene at a motor vehicle crash in the northbound lane of an interstate near a bridge crossing over a city street. A firefighter/paramedic was also struck and severely injured at this incident. The firefighter/paramedic died on November 27, 2023. Battalion 810, Engine 2, and Engine 4 were dispatched at 0822 hours. Truck 4 was dispatched at 0825 hours. The police



**The incident scene on the interstate where the firefighters and police officer were struck by a vehicle.**

*(Photo courtesy of the fire rescue department)*

department dispatched two officers - 31B1 and 31C1 at 0824 hours. Engine 2 arrived on scene at 0834 hours and advised Dispatch, “Engine 2 is on scene of a two-vehicle crash. We do have one vehicle on its side (a pickup truck). Engine 2 officer will have Command and continue the assignment.” At 0835 hours, the lieutenant from Engine 2 advised Dispatch there was no entrapment and Engine 2 could manage the incident. At 0836 hours, Battalion 810 advised Dispatch that Battalion 810 and Truck 4 would be clearing the scene. Police officer 31B1 arrived at 0836 hours and Police officer 31C1 arrived at 0838 hours. Engine 4 stayed on scene to block for Engine 2. Both Engine 2 and Engine 4 were located in the left lane (passing lane or Lane 1) northbound on the interstate near a bridge. Police officer 31B1 was with the overturned pickup truck at this time. At approximately 0848 hours, members of Engine 2 witnessed a vehicle traveling northbound on the interstate strike the bridge and then another vehicle. This crash happened approximately 200 feet north of Engine 2 and Engine 4 on the downside of the bridge. Engine 2 advised Dispatch there was a secondary crash on the overpass and Engine 2 was checking for injuries. At 0848 hours, as members of

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Engine 2 were walking towards the second crash, a pickup truck traveling southbound lost control and crossed through the center median. The pickup struck police officer 31B1. The pickup truck became airborne and rolled. It hit the ground throwing debris and crossed the northbound lanes striking the Engine 2 lieutenant and firefighter/paramedic. The impact caused the lieutenant to slide across the roadway. The pickup truck continued down an embankment, across an interstate access road, and landed in a cotton field. At 0849 hours, the officer of Engine 4 advised Dispatch that two firefighters and a police officer had been struck by a vehicle on the interstate. Engine 4A (a lieutenant) requested a full structure response and three ambulances to this incident. At 0851 hours, Engine 5, Engine 1, Engine 10, Truck 4, Battalion 810, and Battalion 820 were dispatched to the interstate. Engine 6 and Engine 13, who were enroute to the fire training center, were added to this incident. Engine 4A requested the Texas Department of Transportation respond to close down the southbound lanes of the interstate. Engine 4 was positioned across both northbound lanes to close the highway. Engine 4A assigned resources to patient care for the injured firefighters and police officer. E4A and E4B (equipment operator) started patient care on police officer 31B1. E4D (jumpseat) and E2D (jumpseat) started patient care on the E2 firefighter/paramedic. Engine 4C (jumpseat) and E2B (equipment operator) started patient care on the lieutenant from E2. Ambulances arrived on-scene to assist with patient care. A paramedic confirmed with E4A, who was also a paramedic, that police officer 31B1 was deceased. Truck 4 arrived on scene at 0900 hours and parked on the interstate access road. The captain from Truck 4 and a firefighter assisted with patient care of E2A. The two other members of Truck 4 provided patient care to the driver of the pickup truck located in the cotton field. The firefighter/paramedic from E2 and then the lieutenant from E2 were transported by ambulance to the local trauma center. The lieutenant of E2 was declared deceased at 0929 hours at the trauma center.

### **Contributing Factors**

- *Weather conditions*
- *Actions of the pickup driver*
- *Lack of continuous scene size-up and risk assessment*
- *Lack of forecasting*
- *Insufficient traffic incident management (TIM) procedures*
- *Lack of safety officer*
- *Lack of a digital alerting system for motorists*
- *Lack of median barriers*

### **Key Recommendations**

- *Fire departments should develop pre-incident plans regarding deployment for highway/roadway incidents. These pre-incident plans should include establishing a temporary traffic control zone, maintaining scene safety, and proper traffic control for highway/roadway emergency work zones*
- *Fire departments should ensure that a continuous scene size-up and risk assessment is conducted and are continuously assessed and managed throughout a highway/roadway emergency incident. This creates and ensures a functional incident action plan.*

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- *Fire departments should ensure incident commanders forecast the direction of the incident early on, in order to build an incident action plan (IAP). Forecasting should be a continuous process until all resources have cleared the incident scene*
- *Fire departments should ensure that incident commanders utilize traffic incident management (TIM) procedures. Fire departments should participate in local, regional, and state TIM response protocols with law enforcement, public works departments, and state department of transportation*
- *Fire departments should ensure that all members receive annual training for conducting emergency operations at highway/roadway emergency incidents. Training should include identifying the lack of median barriers and the potential for crossovers.*
- *Fire departments should ensure that incident commanders appoint a safety officer when operating at a highway/roadway emergency incident*
- *Fire departments should utilize a digital alerting system to notify civilian drivers by vehicle navigation applications that they are approaching both enroute and on-scene emergency vehicles.*
- *Governing municipalities (federal, state, regional, and local) should consider installing median barriers that separate opposing traffic on a divided highway that are prone to crossovers or frequent crashes. Fire departments should support this process based upon their deployment and response to divided highways incidents.*

**For report slides that summarize this incident and recommendations: [F2020-09RS](#)**

The National Institute for Occupational Safety and Health (NIOSH) initiated the Fire Fighter Fatality Investigation and Prevention Program to examine deaths of fire fighters in the line of duty so that fire departments, fire fighters, fire service organizations, safety experts and researchers could learn from these incidents. The primary goal of these investigations is for NIOSH to make recommendations to prevent similar occurrences. These NIOSH investigations are intended to reduce or prevent future fire fighter deaths and are completely separate from the rulemaking, enforcement and inspection activities of any other federal or state agency. Under its program, NIOSH investigators interview persons with knowledge of the incident and review available records to develop a description of the conditions and circumstances leading to the deaths in order to provide a context for the agency's recommendations. The NIOSH summary of these conditions and circumstances in its reports is not intended as a legal statement of facts. This summary, as well as the conclusions and recommendations made by NIOSH, should not be used for the purpose of litigation or the adjudication of any claim.

For further information, visit the program [website](#) at [www.cdc.gov/niosh/fire](http://www.cdc.gov/niosh/fire) or call toll free 1-800-CDC-INFO (1-800-232-4636).



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### **Introduction**

On January 11, 2020, a 39-year-old male career lieutenant and a 27-year-old police officer were struck and killed while operating at an accident with injuries on an interstate. A 30-year-old firefighter/paramedic was struck and severely injured. On January 15, 2020, the U.S. Fire Administration notified the National Institute for Occupational Safety and Health (NIOSH) Fire Fighter Fatality Investigation Program (FFFIPP) of this incident. A FFFIPP investigator contacted the fire rescue department's Deputy Chief of Operations who agreed to having an investigation conducted.

Due to the COVID-19 pandemic, this investigation was conducted virtually. An opening meeting was conducted virtually on March 5, 2020, with both the fire rescue department and the police department. During this investigation, the NIOSH FFFIPP investigator worked with the fire rescue department's Deputy Chief of Operations to provide information and materials needed to complete this investigation report since this was a completely virtual investigation. This information provided included a copy of the fireground audio, incident timeline, fire department's incident report, the police department's incident report, dash-camera video of the incident scene, fire department training records, and fire department standard operating procedures (SOPs). During this investigation, the FFFIPP investigator virtually interviewed members and officers of Engine 2, Engine 4, and Truck 4. The NIOSH investigators also met virtually with a representative of the IAFF local and the State Fire Marshal's Office - Texas Department of Insurance.

### **Fire Department**

The career fire rescue department provides fire protection and life safety services to an area encompassing 136 square miles and a population of 266,041. The fire rescue department is a Class 1 department. Per the Insurance Services Office (ISO) ten level rating system, Class 1 represents exemplary fire protection, and Class 10 indicates that the area's fire-suppression program does not meet ISO's minimum criteria.

The fire department provides basic life support (BLS) and advanced life support (ALS) from engine and truck companies. Patient transport is provided by a local hospital-based EMS agency.

The fire rescue department operates 18 engine companies, 5 truck companies, 1 heavy rescue company, and aircraft rescue firefighting (ARFF) from 19 stations within 3 battalions. The 3 battalions are staffed with a battalion chief and a command assistant, which is a captain. Each shift is

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commanded by a division chief. There are 3 shifts which work a 24/48 (56-hour) schedule, and each shift works from 1800 hours to 1800 hours. There are 406 sworn members and 33 civilians in this fire rescue department.

The fire department has written policies and procedures, which are available to all department members within their stations. These policies and procedures have been implemented and are enforced and include driver safety training, out-of-service criteria for apparatus, safe placement of apparatus, and vehicle maintenance and repair reporting.

The members assigned to a piece of apparatus are identified as follows:

- Alpha or “A” is the officer,
- Bravo or “B” is the equipment operator
- Charlie or “C” and Delta or “D” are jumpseat firefighters positioned or assigned by seniority.

The rank structure is firefighter, equipment operator (chauffeur), lieutenant, captain, battalion chief, division chief, deputy chief, and fire chief. The fire rescue department operates 3 divisions:

- Operations – training, medical, and suppression (which includes ARFF)
- Support Services – vehicle maintenance shop, mask service unit, and communications
- Fire Prevention – inspections, investigations, and plans review

In the calendar year of 2020, the fire rescue department responded to 24,663 total alarms.

- Fire: 1,159
- EMS: 16,627
- Other\*: 6,877

*\*Examples of Other incidents can include hazardous materials incidents, technical rescue incidents, fire alarm activations, false alarms, good intent calls, lock outs, water leaks, hazardous conditions (no fire), etc.*

The fire rescue department has written standard operating procedures (SOPs), which are available to all department members within their stations. These SOPs have been implemented and are enforced.

### **Education, Training and Professional Development**

The state of Texas requires individuals seeking to become a firefighter to complete a commission approved basic structure fire suppression training program consisting of 468 hours of basic fire protection training meeting the requirements of the [Texas Commission on Fire Protection Basic Fire Suppression Curriculum](#). Each fire department and jurisdiction can require additional training.

For an individual to become a firefighter with the fire rescue department, the process consists of passing a written civil service examination and successfully completing a candidate physical ability test (CPAT). Upon successful completion of these two components, the next step in the hiring process is a comprehensive background check. Once the candidate successfully passes the background check, the candidate participates in a panel interview and an interview with the fire chief. If an individual fulfills all these requirements, the individual is extended a job offer.

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Once a person is hired, the individual attends a 6-week recruit school. The fire rescue department currently requires an individual to be certified as a basic structural firefighter (NFPA 1001, *Standard for Fire Fighter Professional Qualifications*, Fire Fighter I, Fire Fighter II, Hazardous Materials Awareness, and Hazardous Materials Operations) and have EMT-Basic certification as a minimum to apply. The individual must be least 19 years old but cannot have reached their 36th birthday at the time of employment.

The lieutenant of Engine 2 started his fire service career with another career fire department in Texas in 2006 as a structural firefighter. He received the following certifications during his employment with this fire department: NFPA 1001, *Standard for Fire Fighter Professional Qualifications*, Fire Fighter I, Fire Fighter II, Hazardous Materials Awareness, and Hazardous Materials Operations. These certifications were accredited through the International Fire Service Accreditation Congress (IFSAC) in July 2006. Also, the American Heart Association – BLS Provider (AED and CPR). Additional certifications included: Texas Governor’s Department of Emergency Management (DEM) Hazardous Materials Technician training (2007); DEM Confined Space Rescue training (2007); and TEEEX Swift Water Rescue Technician (2007).

In 2009, he was hired by the fire rescue department as a structural firefighter. The lieutenant obtained the following certifications: American Heart Association – BLS Provider (AED and CPR) ICS 100 – *Introduction to ICS* (2009); ICS 200 – *Basic ICS* (2009); IS 700a – *National Incident Management System*; IS -800.b – *National Response Framework, An Introduction* (2012); NFPA 1002, *Standard for Fire Apparatus Driver/Operator Professional Qualifications*, Driver Operator – Pumper (2011); NFPA 1041, *Standard for Fire and Emergency Services Instructor Professional Qualifications*, Instructor I (2012); Blue Card, Blue Card Incident Commander Program (2017); and National Highway Institute, National Traffic Incident Management Responder Training – Web-based (2018). The lieutenant also had numerous certifications involving technical rescue and wildland firefighting.

### **Timeline**

The following timeline is a summary of events that occurred as the incident evolved January 11, 2020. Not all incident events are included in this timeline. The times are approximate and were obtained by researching the dispatch records, audio recordings, witness statements, and other available information.

<b>Dispatch Communications &amp; Fire Department Response</b>	<b>Time</b>	<b>Fireground Communications &amp; Fireground Operations</b>
Police Dispatch (9-1-1 Call Center) calls Fire Dispatch advising them of an accident with injuries northbound on the interstate with the cross street (a city street) at (Exit 11).	<b>08:22:23 Hours</b>	

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<b>Dispatch Communications &amp; Fire Department Response</b>	<b>Time</b>	<b>Fireground Communications &amp; Fireground Operations</b>
Dispatch alerts Battalion 810, Engine 2, and Engine 4 for an accident with injuries involving a rollover on the interstate at a cross street (a city street).	<b>08:24:16 Hours</b>	
The police department dispatches patrol officers 31B1 and 31C1.	<b>08:24:20 Hours</b>	
Truck 4 Dispatch, “Truck 4 is responding as well.”  “Dispatch is clear.”	<b>08:25:13 Hours</b>	
“Dispatch, Engine 2 is in the area. Do you have any further information on where this might be?”	<b>08:31:13 Hours</b>	
Dispatch, Engine 2. “The closest intersection that we have is the interstate and the city cross street (Exit 11) but that is all the information that we have.”	<b>08:31:23 Hours</b>	
Dispatch, “Engine 2 is on scene of a two-vehicle crash. We do have one vehicle on its side. Engine 2 will have Command. Keep everybody coming.”  B810 to Dispatch. “Battalion 810 and Engine 4 on scene. B810 will assume command.”	<b>08:34:16 Hours</b>	
	<b>08:35:30 Hours</b>	“Engine 2 Command. B810, go ahead Engine 2. There is nobody trapped in this car. I think you can let Engine 4 go. Engine 2 can handle this.”

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<b>Dispatch Communications &amp; Fire Department Response</b>	<b>Time</b>	<b>Fireground Communications &amp; Fireground Operations</b>
B810, Dispatch. “Truck 4 and B810 are going to be available. Engine 4 is going to remain on scene to block for Engine 2. Dispatch is clear.”	<b>08:35:56 Hours</b>	
Police Unit 31B1 on scene.	<b>08:36:53 Hours</b>	
Police Unit 31C1 on scene	<b>08:38:50 Hours</b>	
Dispatch, Engine 2. “We are going to take our traffic back to Channel 1. Dispatch is clear.”	<b>08:39:11 Hours</b>	
Dispatch, Engine 2. “We just had a secondary wreck up here on top of the overpass and we are going to go down here and check it out.”	<b>08:49:18 Hours</b>	
Dispatch, Engine 4. “We have somebody that just got hit by a car. Get us EMS and a structural response out here.”	<b>08:49:38 Hours</b>	
Fire Dispatch called EMS Dispatch by telephone. “We need y’all to head back out to the interstate northbound at Exit 12. We just had a fireman that was hit by a car.”	<b>08:49:59 Hours</b>	
Engine 4, Dispatch. “We just had another major wreck. We have a fireman that has been hit by a car. We need help right now. Send us two to three ambulances.”	<b>08:50:08 Hours</b>	



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<b>Dispatch Communications &amp; Fire Department Response</b>	<b>Time</b>	<b>Fireground Communications &amp; Fireground Operations</b>
Engine 13, Dispatch. “We are in the area and responding to the interstate northbound at Exit 12.”	<b>08:50:25 Hours</b>	
“Battalion 810, Dispatch. I am responding to the interstate northbound at Exit 12.”	<b>08:50:38 Hours</b>	
Engine 6, Dispatch. “We are in the area as well and responding to the interstate northbound at Exit 12.”  “Truck 4, Dispatch. Truck 4 is responding on Tac Channel 2.”	<b>08:50:43 Hours</b>	
Engine 4, Dispatch. “We have two firemen down with CPR in progress. We also have one PD unit down.”	<b>08:51:54 Hours</b>	
Truck 4, Dispatch and B810. “Chief do we need an air ambulance out there?”  Engine 4, B810. “10-4. We have CPR in progress on one PD unit and one firefighter. We have one other firefighter that I think we can life flight right now.”  Dispatch, B810. “10-4. Car 803 and Car 800 have been notified. We will get the air ambulance enroute.”	<b>08:52:43 Hours</b>	

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<b>Dispatch Communications &amp; Fire Department Response</b>	<b>Time</b>	<b>Fireground Communications &amp; Fireground Operations</b>
<p>Dispatch, Car 805. “Car 805 is enroute what is the address?”</p> <p>Dispatch, “Northbound on the interstate at Exit 11.”</p> <p>B810, Car 805. “The interstate northbound at Exit 12 by the chemical plant.”</p>	<b>08:54:51 Hours</b>	
<p>Engine 4, Dispatch. “Can you get a hold of the county Sheriff’s Office and the next municipality’s police department. Have them shut down the South bound lanes of the interstate we have other vehicles that aren’t slowing down and coming into our scene.”</p>	<b>08:56:33 Hours</b>	
<p>B810, Dispatch. “It looks like the sheriff’s office has the roadway shut off now, at least from northbound”</p>	<b>08:57:10 Hours</b>	
<p>B810, Dispatch. “B810 is on scene.”</p> <p>Dispatch also confirmed with Engine 6 they were still enroute.</p> <p>Engine 5 was enroute.</p>	<b>08:57:40 Hours</b>	

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<b>Dispatch Communications &amp; Fire Department Response</b>	<b>Time</b>	<b>Fireground Communications &amp; Fireground Operations</b>
	<b>08:58:30 Hours</b>	<p>B810, Engine 4. “Command what do you need?”</p> <p>Command, B810. “Chief we need to get one unit to check on the pickup to the east. It rolled, went across the interstate, across the access road, and is in a cotton field. We need to check on the driver. I just need more units to help with these two firefighters”</p> <p>B810, Truck 4. “Truck 4 when y’all get here, get somebody to check on the rolled pickup to the east of this in the cotton field.” Truck 4 copied.</p>
Engine 13, Dispatch. “E13 is on scene.”	<b>09:00:04 Hours</b>	
Car 805, Dispatch. “Car 805 on scene.”	<b>09:01:33 Hours</b>	
Engine 6, Dispatch. “Engine 6 on scene.”		
Car 805, Dispatch. “I need some Department of Public Safety (DPS) units on scene. Someone to stop southbound traffic on the west side of the interstate. This is where this crash came from. The car spun out of control and crossed lanes. I need everything shut down, everything heading South coming into town.”	<b>09:03:06 Hours</b>	
	<b>09:07:27 Hours</b>	Truck 4B, Command. “We need another ambulance down here on the east side in the cotton field. We have victim that is about to go into shock.”

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<b>Dispatch Communications &amp; Fire Department Response</b>	<b>Time</b>	<b>Fireground Communications &amp; Fireground Operations</b>
Engine 5 on scene.	<b>09:08:51 Hours</b>	Engine 5, Command. “Engine 5 is approaching the scene. Where do you need us?”  Command, Engine 5. “I guess out on the access road to help Truck 4 with the pickup in the cotton field.”
Car 805, Dispatch. “You can cancel the air ambulance.”	<b>09:09:14 Hours</b>	
Engine 5 is clear.	<b>09:23:06 Hours</b>	
Truck 4, Dispatch. “We are clear of the interstate incident and enroute to the trauma center to pick up firefighters. We will be out of service.”	<b>09:37:41</b>	
Engine 4, Dispatch. “Engine 4 will be clear of this scene and will be out of service until further notice.”	<b>09:39:24 Hours</b>	
Engine 6, Dispatch. “Engine 6 is going to be clear of this scene. We will be out of service at Fire Station 4.”	<b>09:41:13 Hours</b>	
Engine 13, Dispatch. “Engine 13 and Engine 2 are clear of the scene and will be out of service at Fire Station 4.”	<b>10:03:49 Hours</b>	
B810, Dispatch. “B810 is out of service enroute to Fire Station 4. Also, I am going back to Channel 1.”	<b>10:10:31 Hours</b>	

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<b>Dispatch Communications &amp; Fire Department Response</b>	<b>Time</b>	<b>Fireground Communications &amp; Fireground Operations</b>
Car 805, Dispatch. “I am clear of the interstate and Command is dissolved. I am going back to Channel 1.”	<b>11:03:24 Hours</b>	

### **Equipment and Personnel**

The lieutenant and firefighter/paramedic were wearing a turnout coat, turnout pants, boots, helmet, protective hood, and gloves at the time of the incident. Due to the investigation being conducted virtually, the personal protective equipment worn by the lieutenant and the firefighter/paramedic was not evaluated. The personal protective equipment was not considered a contributing factor in the fatality or injury.

Based on ongoing research conducted by fire rescue members and Texas Tech University, the fire rescue department now issues a dedicated and task specific rescue helmet that is required to be used while operating at highway/roadway incidents instead of structural helmets. These helmets feature a three-point chin strap to prevent separation from the firefighter in the event of impact. This occurred to E2A and E2C at this incident. Additionally, the helmet is enhanced and more complete impact protection for the entire head. As a result of this research, the findings indicates the helmet now used by members while operating at highway/roadway incidents provides far more protection than a structural helmet.

The [Emergency Responder Safety Institute \(ERSI\)](#), a committee of the Cumberland Valley Volunteer Firemen's Association (CVVFA), has advocated for the development of a purpose-designed helmet for roadway incident response. Currently, there is no helmet standard which meets the operational needs and requirements of pedestrian roadway workers, and there are no helmets specifically designed for that purpose. Therefore, many roadway workers are either currently wearing a helmet not designed to protect against roadway hazards (e.g., hard hat, structural fire helmet) or wearing no helmet at all. Developing a standard for helmets designed specifically for the hazards pedestrian roadway workers face is a critical step in ensuring that manufacturers produce helmets that protect against these hazards effectively [ERSI 2022]. This incident has generated additional research and development of an ASTM standard for pedestrian roadway worker, which covers:

- ASTM International’s E54 Committee on Homeland Security Applications is has begun to develop a helmet standard for the pedestrian roadway worker. Pedestrian roadway workers are personnel who work on the nation’s roadways and perform activities to keep traffic flowing smoothly and safely. Pedestrian roadway workers includes public safety personnel (i.e., fire service, emergency medical services, law enforcement)  
Road and highway construction and maintenance workers
- Towing and recovery personnel
- State departments of transportation workers

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- Safety service patrols

Despite safety measures and training, working in and around moving traffic continues to pose a significant risk of injury or death to roadway personnel from vehicle crashes, pedestrian struck-by-vehicle incidents, and flying debris. Sixty-five first responders were killed in stuck-by-vehicle incidents in 2021. In 2022, 51 first responders (law enforcement, fire/EMS, two operators, road service technicians, and safety service patrol)[[respondersafety.com](https://www.respondersafety.com)] were struck and killed operating on U.S. roadways.

Fire and law enforcement members requested that a roadway safety helmet standard be developed. ASTM International's E54 Committee has agreed to lead this effort. The Emergency Responder Safety Institute thanks and commends the ASTM E54 Committee and the National Institute of Standards and Technology Standards Coordination Office for their commitment to developing this standard. More information on the progress of the standard will be posted on this page as it becomes available. Information can be found at: <https://www.respondersafety.com/training/helmets-and-head-protection/>

### **Weather and Road Conditions**

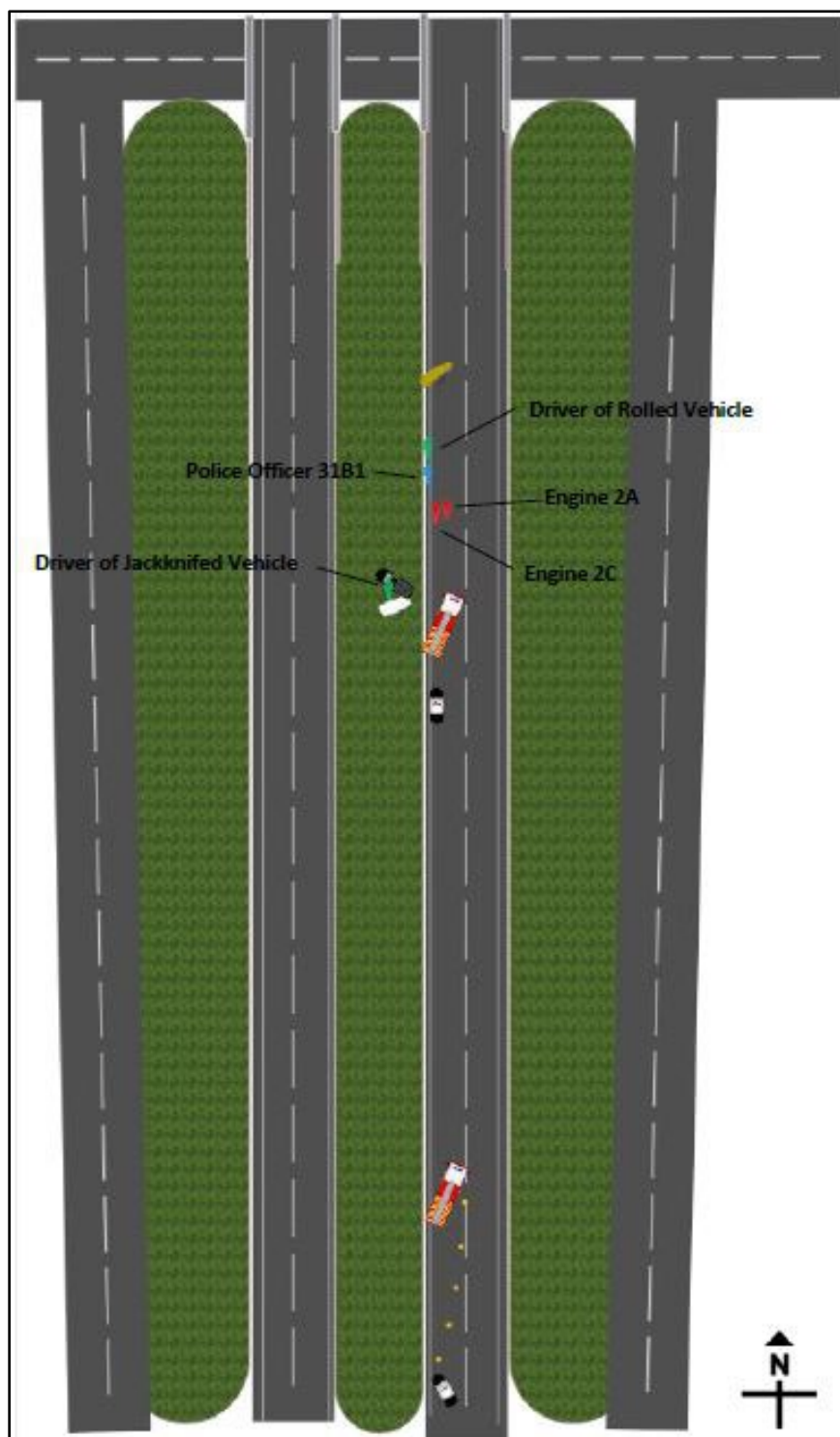
At 0753 hours on January 11, 2020, the temperature was 20 degrees Fahrenheit (20° F), the dew point was 16 degrees Fahrenheit (16° F), the relative humidity was 85%, and the winds were out of the WNW at 9 miles per hour. The barometric pressure was 26.72 inches, and the conditions were fair. Light snow had been falling since 2400 hours until 0430 hours with precipitation of 0.04 inches of snow. The temperatures hovered around 32 degrees Fahrenheit (32° F) until 0500 hours, when temperatures dropped well below freezing, 20 degrees Fahrenheit (20° F) at 0753 hours. This caused the hazardous highway/road conditions [Weather Underground 2020].

### **Investigation**

On January 11, 2020, a career fire rescue department and police department responded to a motor vehicle accident with injuries northbound on an interstate near a bridge crossing over a city street. Battalion 810, Engine 2, and Engine 4 were dispatched at 0822 hours. Truck 4 was not initially dispatched as Engine 2 is equipped with a hydraulic rescue tool for entrapments. Truck 4 was dispatched and responded at 0825 hours. The police department dispatched units 31B1 and 31C1 at 0824 hours. The equipment operators of Engine 2, Engine 4, and Truck 4 stated during their interviews that the further north they went on city streets and the interstate, the roadway became more slippery due to an ice storm. At 08:31:13 hours, the lieutenant of Engine 2 called Dispatch. "Engine 2 is in the area. Do you have any further information on where this might be?" Engine 2 was northbound on the interstate near Exit 11 and was unable to locate the accident with injuries. At 08:31:23 hours, the dispatcher called Engine 2 and advised the crash was northbound on the interstate near Exit 12.

Engine 2 arrived on scene at 0834 hours and advised Dispatch that Engine 2 was on-scene of a two-vehicle crash. There was one vehicle on its side. Engine 2 officer assumed Command and requested the full assignment continue. The crash involved a sedan and a pickup truck pulling a trailer (**See Diagram 1**). At 0835 hours, the lieutenant from Engine 2 advised Dispatch there was no entrapment and Engine 2 could handle the scene. At 0836 hours, Battalion 810 advised Dispatch that Battalion 810 and Truck

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**Diagram 1: The initial crash scene northbound on the interstate. Both vehicles were located in the median upon the arrival of Engine 2. There were no injuries. Diagram courtesy of fire rescue department.**

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4 would be clearing the scene. Per Battalion 810, Engine 4 was going to stay on scene to block for Engine 2. The second crash occurred approximately 200 feet north of Engine 2 and Engine 4 on the downside of the bridge. The Engine 2 officer called Dispatch and advised that another crash just occurred on top of the bridge. Engine 2 was going to check for injuries. (See **Diagram 2**).

At 0848 hours, while the members of Engine 2 were walking towards the second crash, a pickup truck traveling southbound lost control and crossed through the center median. The pickup struck police officer 31B1. The pickup truck became airborne and rolled. It then hit the ground throwing dirt and debris, and crossed the northbound lanes striking the lieutenant from Engine 2 and the firefighter/paramedic. The impact caused the lieutenant to slide across the roadway. The pickup truck continued down an embankment, across the interstate access road, and landed in a cotton field (See **Diagram 3**).

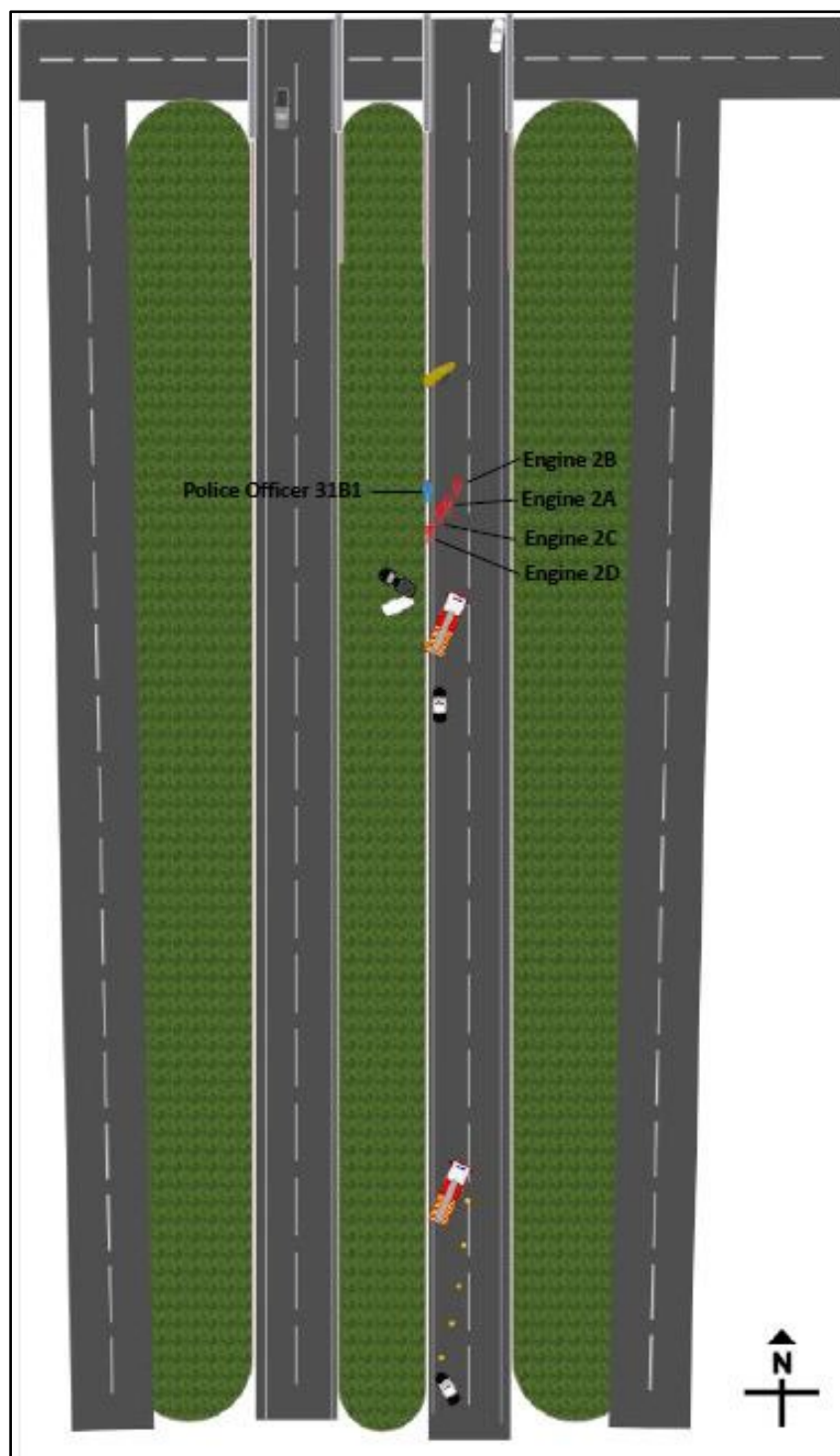
At 0849 hours, the officer of Engine 4 (E4A) had emergency traffic for the dispatch center. He advised that two firefighters and a police officer had been struck by a vehicle on the interstate. Also, E4A requested a full structural response and 3 ambulances be dispatched to this incident. At 0851 hours, Engine 5, Engine 1, Engine 10, Truck 4, Battalion 810, and Battalion 820 were dispatched and assigned Tac Channel 2 for this incident. Engine 6 and Engine 13 were enroute to the department's fire training center and were added to the alarm assignment.

At 0851 hours, Engine 4A requested the Texas Department of Transportation respond to shutdown down the southbound lanes of the interstate. Engine 4 was pulled across both lanes to close the northbound lanes of the highway south of the bridge. At 0852 hours, Battalion 810 asked Dispatch to confirm that three ambulances were responding to the interstate. At 08:52:43 hours, Battalion 810 called E4A to ask if an air ambulance was needed at their location. E4A advised Battalion 810 that CPR was progress on one police officer and one firefighter, and the other firefighter could be transported by air ambulance.

At 0849 hours, the officer of Engine 4 (E4A) had emergency traffic for the dispatch center. He advised that two firefighters and a police officer had been struck by a vehicle on the interstate. Also, E4A requested a full structural response and 3 ambulances be dispatched to this incident. At 0851 hours, Engine 5, Engine 1, Engine 10, Truck 4, Battalion 810, and Battalion 820 were dispatched and assigned Tac Channel 2 for this incident. Engine 6 and Engine 13 were enroute to the department's fire training center and were added to the alarm assignment.

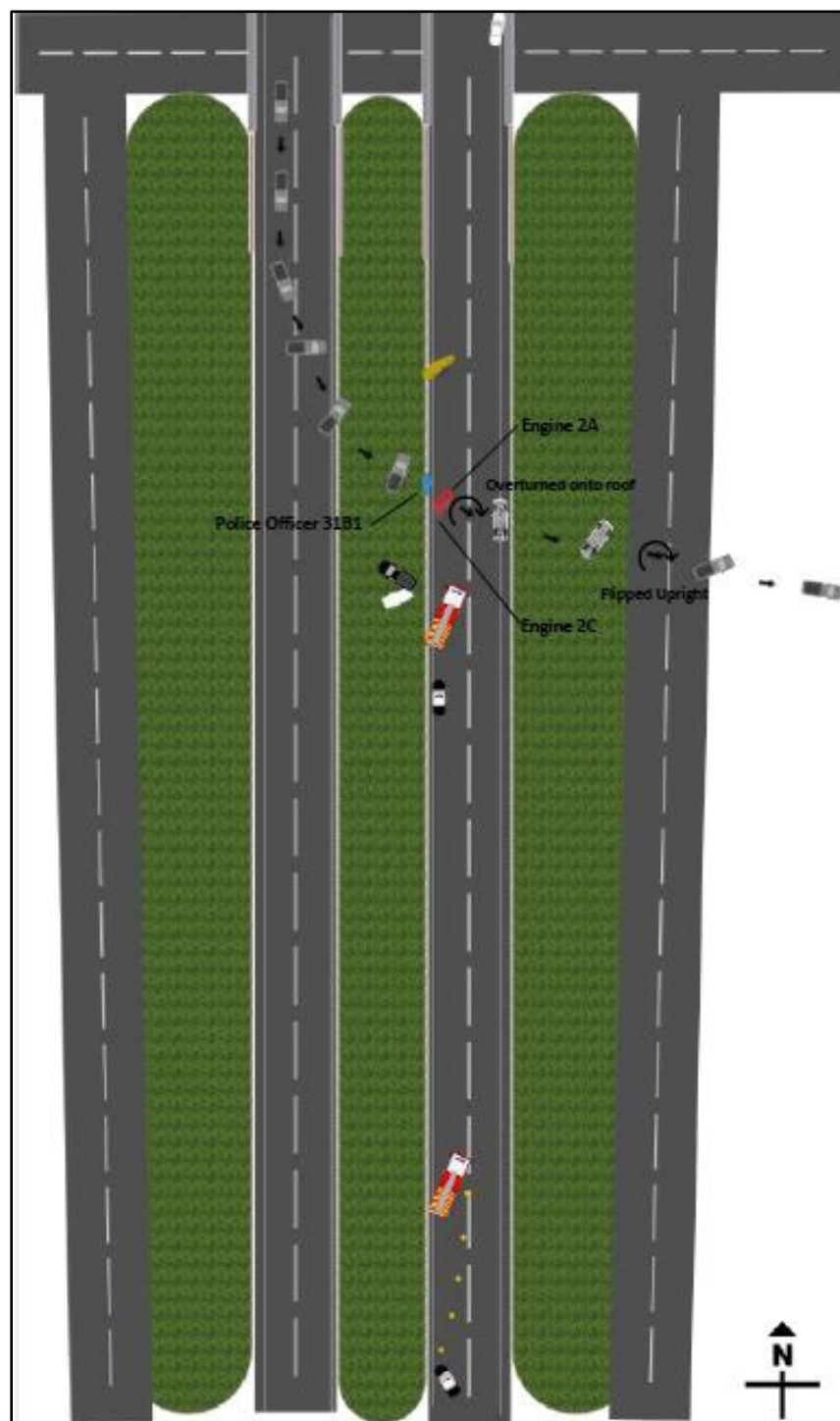


## ***Lieutenant and Police Officer Struck and Killed at an Interstate Crash Scene, Firefighter Injured and Dies 34 Months Later–Texas***



**Diagram 2: The location of the lieutenant and firefighters from Engine 2 and the police officer when the second crash occurred in the northbound lanes at 0848 hours. Diagram courtesy of the fire rescue department.**

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**Diagram 3: The path of travel of the southbound pickup truck and how the pickup truck struck the police officer and firefighters. When the pickup truck struck the firefighters, it was traveling upside down.  
(Diagram courtesy of the fire rescue department)**

## ***Lieutenant and Police Officer Struck and Killed at an Interstate Crash Scene, Firefighter Injured and Dies 34 Months Later–Texas***

At 0851 hours, Engine 4A requested the Texas Department of Transportation respond to shutdown down the southbound lanes of the interstate. Engine 4 was pulled across both lanes to close the northbound lanes of the highway south of the bridge. At 0852 hours, Battalion 810 asked Dispatch to confirm that three ambulances were responding to the interstate. At 08:52:43 hours, Battalion 810 called E4A to ask if an air ambulance was needed at their location. E4A advised Battalion 810 that CPR was progress on one police officer and one firefighter, and the other firefighter could be transported by air ambulance.

At 0853 hours, the officer of Engine 4 had assigned the following resources to patient care for the injured firefighters and police officer. E4A and E4B (equipment operator) started patient care on police officer 31B1. E4D (jumpseat) and E2D (jumpseat) started patient care on the E2 firefighter/paramedic (Engine 2C). Engine 4C (jumpseat) and E2B (equipment operator) started patient care on the lieutenant from E2. Engine 4A advised Battalion 810, that they had CPR in progress on one PD officer and one firefighter. E4A also advised Battalion 810 that they needed an air ambulance to transport the injured firefighter.

At 0856 hours, Engine 4A called Dispatch and asked that the county sheriff's office and a neighboring municipal police department shut down the southbound lanes of the interstate north of the interstate bridge. Engine 4A advised that southbound traffic wasn't slowing down and coming into the crash scene. At 08:58:30 hours, Engine 4A called Battalion 810 and asked for a fire department resource be assigned to check on the driver of the pickup truck, which was located in a cotton field east of the interstate. Battalion 810 assigned Truck 4 to respond to the pickup truck in the cotton field. Engine 4A also requested additional help with patient care of the two firefighters and police officer.

At 0900 hours, Truck 4 arrived on scene. The captain from Truck 4 and a firefighter assisted with patient care of E2A. The other two members of Truck 4 were assigned to the pickup truck in the cotton field. The firefighters had to use extrication tools to gain access to the driver due to extensive damage to the pickup truck.

Once they had access to the driver, they started patient assessment and care on the driver of the pickup truck. At 0901 hours, Car 805 and Engine 6 arrived on scene. At 0903 hours Car 805 asked Dispatch about the status of the units from the Department of Public Safety (DPS). Car 805 advised that DPS needed to stop southbound traffic. At 0907 hours, Truck 4B called Command and asked for an ambulance to assist with patient care of the pickup truck driver. At 0909 hours, Engine 5 was arriving on-scene and asked for an assignment. Battalion 810 advised Engine 5 to assist Truck 4 with patient care of the pickup truck driver. Car 805 canceled the response of the air ambulance at this time.

Ambulances arrived on scene, and a paramedic from the private ambulance confirmed with E4A, who was also a paramedic, that police officer 31B1 was deceased. Between 0915 hours and 0920 hours, the firefighter/paramedic from Engine 2 and then the lieutenant from Engine 2 were transported by ambulance to the local trauma center. The lieutenant of Engine 2 was declared deceased at 0929 hours at the trauma center.

At 1103 hours, Car 805 dissolved Command and all resources were clear of this incident.

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### **Contributing Factors**

Occupational injuries and fatalities are often the result of one or more contributing factors or key events in a larger sequence of events that ultimately result in the injury or fatality. NIOSH investigators identified the following items as key contributing factors in this incident that ultimately led to the fatalities:

- *Weather conditions*
- *Actions of the pickup driver*
- *Lack of continuous scene size-up and risk assessment*
- *Lack of forecasting*
- *Lack of traffic incident management (TIM) procedures*
- *Lack of safety officer*
- *Lack of a digital alerting system for motorists*
- *Lack of median barriers*

### **Cause of Death**

According to the death certificate, the medical examiner listed the lieutenant's cause of death as due to multiple injuries.

### **Recommendations**

***Recommendation #1: Fire departments should develop pre-incident plans regarding deployment for highway/roadway incidents.***

Discussion: At this incident, the emergency scene quickly changed due to multiple vehicle crashes with injuries to fire and law enforcement members. This created operational response issues due to the resources being demobilized and becoming available.

Highway/roadway incidents are high risk events. When responding to an incident on any type of highway/roadway, firefighters and other first responders must ensure for their personal safety as well as others, including the individuals they are trying to assist. Complacency, redundancy, and lack of maintaining an awareness of the environment and operations must be avoided when dealing with highway/roadway incidents. Safety of the emergency responders, care of the injured, protection of the public, protection of the environment, and clearance of the traffic lanes should all be the priority concerns of the incident commander operating at the scene of a highway/roadway incident [DCFEMS 2009; NVERS 2021].

There are various types of highways/roadways that a fire department responds to in their response area. Examples can be a city street (2 or 4 lanes), county road (2 or 4 lanes), a divided highway (4 lanes+), an expressway, freeway, turnpike, or interstate which are commonly known as limited access highways. The fire department has to plan how and what resources to deploy to these various types of highways/roadways.

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From a pre-incident planning process, a fire department has to consider the type of responses that may occur on these various highways/roadways such as motor vehicle crashes, vehicle fires, brush fires, hazardous materials incidents, and any other conceivable type of incident. The intent is to plan what resources will respond in order to mitigate the problem and how to safely protect firefighters and the other first responders [USFA 2012]. The pre-incident planning process should include the following components:

- Standard operating procedures/standard operating guidelines (SOGs)
- Training
- Response
- Apparatus Positioning
- Traffic incident levels
- Incident Management/Unified Command
- Safety considerations
- Visibility considerations while operating on highways/roadways
- Clearing traffic lanes
- Demobilization of resources [NVERS 2021].

In order to develop a successful outcome when responding to traffic incidents, state and local transportation organizations, appropriate public safety agencies (law enforcement, fire and rescue, emergency communications, and emergency medical services) and private sector responders (contracted towing and recovery companies and hazardous materials contractors) should plan for the occurrence of traffic incidents.

The safe resolution of highway incidents requires completion of many activities, each of which is the priority of a specific agency or response crew. Interagency coordination and collaboration are therefore critical, such that responders cultivate a working trust with one another, transfer command and control when necessary, and ensure sufficient on-scene resources exist at all times. To achieve this, responders must collectively follow an approach that is based on local, regional, and/or state coordination and cooperation.

Pre-incident planning 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 a special event. For highway incidents, pre-incident planning could establish best avenues of approach for incidents occurring on each particular stretch of highway or roadway in more rural communities. It is recommended that cooperative, coordinated pre-incident plans be developed for known high crash locations. Representatives from all responder groups should participate in the preplanning effort [MUTCD 2023].

Part of the incident pre-planning process should include highway/roadway incident response priorities, which include:

- Priority 1: *Life Safety* - Initial efforts are to preserve lives, including those of incident victims, responders, and passing motorists. Safety is the highest priority throughout the incident.

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- Priority 2: *Incident Stabilization* - Using best practices, stabilize the incident scene to prevent fire, eliminate ignition sources, contain hazardous materials and stabilize vehicles involved in the incident.
  - Prevention of Secondary Incidents: Responders should use available traffic control devices and, if possible, position apparatus to divert traffic around the crash scene. Special attention should be paid to the end of the traffic queue, using permanent and portable Changeable Message Signs (CMS) to warn motorists of slow or stopped traffic as they approach the end of the queue.
  - Protection of Evidence: All incident sites are potential crime scenes and must be treated accordingly. Responders must make every effort to minimize the impact of their presence on the crash scene.
  - Safe, Quick Clearance – It should be the goal of all responders to clear the scene as soon as practical and to restore traffic flow to limit the diversion of traffic to less desirable and/or more hazardous routes.
- Priority 3: Property Conservation – Responders should attempt to protect and preserve the highway/roadway infrastructure. This includes the necessary actions to stabilize and remove victims trapped in the vehicles. Property salvage operations should be conducted as soon as safely possible. For hazardous materials release and/or potential hazardous materials scenes, responders with the proper personal protective equipment to contain the spilled product while minimizing exposure.

The primary objectives for any operation at the scene of a highway/road incident are to:

- establish a safe operating area to prevent injuries to emergency workers
- provide emergency care and transportation of the sick or injured
- establish water supply, as needed
- protect the environment
- restore normal traffic flow, as soon as possible
- keep as many traffic lanes open as possible if it is safe for the emergency responders, those involved in the incident, and those traveling through the incident
- preserve evidence for investigators
- use an incident management system to manage the incident [NVERS 2021].

These objectives also are included in the National Unified Goal (NUG) for Traffic Incident Management which was developed by the National Traffic Incident Management Coalition [ERSI 2010].

The following is a list of specific concepts that should be applied to pre-incident planning for roadway incident operations in order for the pre-incident planning to be effective and for the plans that are developed to be useful.

- Ensure that all agencies or sectors who may respond to roadway incidents are fully involved in the development of the plan.
- Different agencies or disciplines tend to use different procedures or formats/styles for developing pre-incident plans. Make sure that all of the involved parties agree on a process and format before beginning the planning.

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- Make sure that the final plan that is developed is easily understood and implemented.
- Distribute the final plan to all of the involved agencies.
- Each agency involved in the plan should ensure that all of their personnel are trained on their part of the plan and understand their roles.
- Each agency or discipline should make sure that their personnel are at least minimally briefed on the roles and procedures of the others included in the plan. For example, law enforcement personnel should be trained on fire department procedures for positioning apparatus at roadway scenes. This eliminates conflict on the scenes of actual incidents.
- All agencies involved in the plan should participate in training exercises on a regular basis. This ensures that new personnel learn the plan and experienced personnel are refreshed on the plan.
- All of the agencies should meet to review the plan on at least an annual basis. Problems that have been noted since the last review or new situations that need to be addressed can be discussed and the plan modified accordingly. If the plan is modified, all personnel in the affected agencies should be notified of the changes [ERSI 2022].

For additional information, see **Appendix One** – *Traffic Incident Management Checklist and Worksheet*, **Appendix Two** – *Sample Traffic Control Scenario* and **Appendix Three** - *Sample Highway Roadway SOP/SOG* (<https://www.respondersafety.com/Download.aspx?id=2c3b900d-bf89-4142-acee-063397f372aa>).

***Recommendation #2: Fire departments should ensure that a continuous scene size-up and risk assessment is conducted and are continuously assessed and managed throughout a highway/roadway emergency incident. This creates and ensures a functional incident action plan.***

Discussion: At this incident, on-scene resources were quickly overwhelmed due to the dynamic situation of multiple crashes and injuries to fire and law enforcement members. Also, responding fire department resources had been placed back in service prior to the secondary crashes occurring.

When arriving at a highway/roadway incident, the first arriving officer or resource is the person that has to match (and manage) the work that must take place at the incident scene to the people and equipment that will be doing the work. Matching these two constants (tasks and workers) requires that the initial officer or resource should have a good grasp of the available area personnel, equipment, apparatus and the systems used to activate and manage those resources. The fire officer on the first-due company or first arriving resource should give a size-up report that confirms the type of incident, the actual location, any obvious hazards such as:

- curves or hills that may block view for approaching traffic,
- downed wires,
- hazardous materials are involved,
- adverse weather conditions such as fog or icy road surface, etc.

The officer should indicate which lanes are affected by the incident or by the initial scene block. If the conditions observed on arrival indicate the need for additional agencies or resources to respond (law enforcement, safety service patrols, EMS, or heavy rescue units etc.). This request should be

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confirmed by the dispatcher of their response. Also, dispatchers should relay appropriate information to regional traffic operation centers and other responding agencies.

The IC will need to connect the profile of the incident to the profile of the local deployment process by quickly answering a set of closely connected questions that create a basic response profile for the incident:

- What resources are on the scene?
- When will the responding resources arrive on the scene?
- How much work can the responders on the initial assignment do and for how long?
- How much work is there beyond the capability of the initial assignment?
- Forecasting the need of additional resources to stay ahead of the incident?
- What is the profile of the additional resources that will be required?
- What type of command support do I need to manage the dispatched resources [IAFC 2020]?

The initial scene size-up and risk assessment are necessary components for developing the incident action plan (IAP). As the continuous size-up and risk assessment changes so does the IAP. Incident action plans describe our operational plan for completing the tactical priorities. IAPs communicated on the initial radio report should be short and to the point describing what actions the first arriving company intends take to mitigate the critical factors.

NFPA 1561 defines an IAP as a verbal plan, tactical worksheet, written plan, or combinations thereof that reflects the overall incident strategy, tactics, risk management, and member safety that are developed by an incident commander. NFPA 1561, *Standard on Emergency Services Incident Management System and Command Safety* [NFPA 1561 2020] requires the following regarding an IAP:

- 5.3.16.1. The incident commander shall be responsible for developing and/or approving an incident action plan.
- 5.3.16.2\*. This IAP shall be communicated to all staged and assigned members at an incident.
- 5.3.16.3 For Type IV and Type V incidents, the incident commander shall communicate the IAP verbally to all on-scene resources.
- 5.3.24. The incident commander shall be responsible for reviewing, evaluating, and revising the IAP and overall strategy of the incident (**See Diagram 4**).

The initial IAP should include the following:

- The tasks of the initial arriving unit
- The location of the tasks
- The objectives of the tasks

Being alert to what is going on around a roadway emergency incident is extremely critical because roadway incidents are always high-risk events. Complacency, redundancy, and lack of situational awareness are issues that all responders must avoid. When responding to a highway/roadway emergency incident, firefighters and other first responders must ensure their personal safety, as well as the safety of individuals they are trying to assist. Emergency personnel need to develop a heightened sense of awareness to detect impending dangerous situations and recognize warning signals such as screeching tires, horns, smoke or dust, and the sound of a crash or impact. Another important issue is



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for the incident commander to appoint a “spotter” at every roadway incident where members are working and not continuously watching traffic. A spotter is responsible for watching traffic at all times and will warn members prior to an incident happening. This is an extra safety function for a highway/roadway incident. The spotter should be equipped with an air horn bottle to warn members [IAFF 2010].

### DEVELOPING an INCIDENT ACTION PLAN

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

After the size-up is completed, the officer begins the process of developing an Incident Action Plan. The Incident Action Plan (IAP) will assist the Incident Commander in completing two significant incident management tasks – identifying the incident strategy and the assignment of tasks that accomplish the strategy.

For highway/roadway incidents, fire departments should develop pre-incident plans regarding deployment for highway/roadway incidents. These pre-incident plans should include establishing a temporary traffic control zone, maintaining scene safety, ensuring situational awareness, and proper traffic control for highway/roadway emergency work zones.

#### INCIDENT ACTION PLAN COMPONENTS

- Scene Size-up
- Scene Size-up communicated to all responding companies
- Incident Priorities
- Staffing
- Risk Management Plan
- Fire Fighter Safety
- Principles of Traffic Incident Management
- Utilize *ICS Form 202 – Incident Objectives* as a guide.

**Tactical Worksheet**

#### TACTICAL WORKSHEET COMPONENTS

- Strategy
- Tactical Objectives and Benchmarks Met
- Time Benchmarks
- Committed Resources
- Available Resources - Staging
- Personnel Accountability System
- Scene Diagram
- Tactical Level Management
- Safety Considerations
- Continuous review of the Tactical Worksheet*

**LIFE SAFETY  
PRIORITY ONE**

**INCIDENT STABILIZATION  
PRIORITY TWO**

**PROPERTY CONSERVATION  
PRIORITY THREE**

**Diagram 4: A guide for developing an incident action plan at Type V and Type IV incidents involving highway/roadway incidents. For these types of incidents, the incident action plan is most often communicated verbally.**

As an incident is deescalating and resources are being demobilized, the incident action plan needs to reflect this phase of the incident. Size-up and risks assessment is as important at this point as at the beginning of the incident. At the completion of any incident, the incident commander must ensure for the safety of the responders who remain on scene. When an incident scene has been fully cleared and all on-scene response is complete, the incident commander should notify the appropriate agencies

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(including communications/dispatch centers) that the roadway is open [WDOT 2014].

***For additional information, see Appendix One – Traffic Incident Management Checklist and Worksheet, Appendix Two – Sample Traffic Control Scenario and Appendix Three - Sample Highway Roadway SOP/SOG <https://www.respondersafety.com/Download.aspx?id=2c3b900d-bf89-4142-acee-063397f372aa>.***

***Recommendation #3: Fire departments should ensure incident commanders forecast the direction of an incident early on, in order to build an effective incident organization. Forecasting should be a continuous process until all resources are clear the incident scene.***

Discussion: At this incident, when the first arriving resources arrived on-scene, they conducted a size-up of the incident. The officer of Engine 2 determined there were no injuries. Companies were starting to be placed back in-service when another crash occurred in the northbound lane of the interstate. Forecasting must be utilized until all resources are clear and available from the incident.

Forecasting for a highway/roadway incident is essential and important to ensure the safe outcome of situation as is forecasting for a structure fire. The key is to get the incident stabilized as quickly and safely as possible, which reduces the risk to fire, EMS, and law enforcement personnel plus motorists impacted by this incident. Forecasting allows the incident commander to start reducing resources on-scene through a proper demobilization plan. Also, forecasting helps the incident commander address continuous changes and base decisions on current information. An effective IC does not stick with the initial plan of action after tactical objectives are completed or not met. Successful incident operations require the IC to revise the IAP as needed by constantly reconsidering the incident's tactical objectives based upon conditions, actions, and needs (CAN) reports [SKCFTC 2023].

Also, forecasting will help the IC to deal continuously with changes and base decisions on current information. An effective IC does not stick with the initial plan of action after tactical objectives are completed or not met. Successful incident operations require the IC to revise the IAP as needed by constantly reconsidering the incident's tactical objectives based upon conditions, actions, and needs (CAN) reports. If Command is not receiving CAN reports, the IC must request CAN reports from each division/group supervisor or company officer. This is why it is important to assign a chief officer as a division/group supervisor. This assures the best appraisal of interior conditions so the IC can update the IAP and continue to forecast [FIREScope 2015; SKCFTC 2023].

Another key point of the forecasting process is to identify traffic incidents as being major, intermediate, or minor.

- ***Major traffic incident:*** Traffic incidents that involve closing all or part of a roadway facility for a period exceeding 2 hours. Road users are usually diverted through lane shifts or detoured around the traffic incident and back to the original roadway. The MUTCD states... “All traffic control devices needed to set up the TTC (temporary traffic control) for a traffic incident should be available so that they can be readily deployed for all major traffic accidents.” Major traffic incidents are typically traffic incidents involving hazardous materials, fatal traffic

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

- **Intermediate traffic incident:** Traffic incidents that affect travel lanes from a time period of 30 minutes to 2 hours. They usually require traffic control on the scene to divert road users past blockage. Full roadway closures might be needed for short periods during traffic incident clearance to all traffic incident responders to accomplish their tasks. The MUTCD states...“All traffic control devices needed to set up the temporary traffic control at a traffic incident should be available so they can be readily deployed for intermediate traffic incidents.
- **Minor traffic incidents:** Traffic incidents are disabled vehicles or minor crashes that result in lane closures of less than 30 minutes. On-scene responders are typically law enforcement and towing companies, and occasionally highway agency service patrol vehicles. Diversion of traffic into other lanes is often not needed or is needed only briefly. It is not generally possible or practical to set up a lane closure with traffic control devices for a minor traffic incident. The MUTCD states...“Traffic control is the responsibility of on-scene responders.” Also, when a minor traffic incident blocks a travel lane, it should be removed from that lane to the shoulder as quickly as possible [MUTCD 2023].

Another important time for forecasting is when the incident has been stabilized, injured parties have been packaged and transported by EMS, damaged vehicles are being removed and resources are starting to go back in service. Demobilization time is very dangerous and must be managed appropriately to prevent secondary incidents. Any TTC devices need to be removed in an organized manner. Advance warning should be the last to leave, especially if visibility is reduced due to topography or weather. Blocking units should remain in place to protect tow truck or recovery vehicle operators, law enforcement, and any other resources who might be the last to complete their assignments. Fire department resources should notify the incident commander when they are ready to leave. Make sure all members are accounted for before resources leave the scene. Notify the dispatcher when the scene is demobilized is completed and all resources are clear the scene [WDOT 2014].

***Recommendation #4: Fire departments should ensure that incident commanders utilize traffic incident management (TIM) procedures. Fire departments should participate in local, regional, and state TIM response protocols with law enforcement, public works departments, and state department of transportation.***

Discussion: Managing a highway incident is a team effort. Each responding agency has a role to play in an effective incident operation. Fire departments, Law enforcement organizations, the public works departments, state departments of transportation, and emergency medical services all play important roles in the management of highway incidents. It is not a question of, “Who is in charge?” but, “Who is in charge of what?” Responders must work together efficiently to accomplish the many tasks necessary to clear incidents quickly and safely, reduce traffic congestion, and safeguard responders and motorists. Each discipline has a distinct mission and role on the scene, which can make coordination challenging.

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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 local street systems [MUTCD 2023]. To ensure the safety of responders and the best possible outcome for both victims and motorists involved in a highway incident, those working together at the incident must understand each agency's capabilities and work together. Jurisdictional and agency/institutional issues must be resolved before the agencies come together at an incident. This can be accomplished by effective information-sharing and pre-incident planning.

It is important for all emergency responders to remember they must work together to make the scene safe for emergency responders, those involved in the incident, and those driving through the incident scene. There are multiple things that can go wrong while emergency responders are on-scene mitigating an incident on a highway/roadway. Emergency responders from all the different response entities should develop a traffic incident management group. This group would be responsible for discussing traffic incident management, coordinated training, define resource availability, and concerns/responsibilities for responding to roadway incidents. This will allow emergency responders to work out issues prior to having a roadway incident plus discuss any issues with past highway/roadway incidents [MUTCD 2023].

As with any highway/roadway incident, the goal is to clear the incident as quickly as possible. This process must be carefully balanced to ensure that traffic is moving as quickly as possible, but not create an unsafe scene. The safety of fire, law enforcement, EMS, traffic management personnel, and other others operating at the incident is paramount. Although public safety responders support the concept of quick clearance, the goal is to ensure first responders are not impeded in their abilities to carry out their missions safely and efficiently. This can include treating patients, controlling fire hazards, enforcing traffic laws, and investigating crash scenes.

In 2004, the National Cooperative Highway Research Program (NCHRP) published Report 520, *"Sharing Information Between Public Safety and Transportation Agencies for Traffic Incident Management"*. The objective of this study was to assess methods, issues, benefits, and costs associated with sharing information between public safety and transportation agencies in support of TIM [USFA 2012].

Many factors influence multiagency TIM information-sharing. NCHRP identified the broad factors as institutional, technical, and operational. Leaders and organizations must be willing to work within cooperative partnerships and should have frameworks based on formal agreements or regional plans in place to guide day-to-day activities and working relationships at many organizational levels.

Building an effective information-sharing network or maintaining an existing network requires steps to minimize conflict and establish the basis of effective information coordination. Some suggested steps are as follows:

- Establish a working-level rapport with responders from every agency working on incidents
- Ensure that working-level relationships are supported by standardized operational procedures

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- Create interagency agreements and system interconnections with key involved agencies
- Institutionalize senior-level relationships among key agencies through policy agreements, interagency organizations, coordinated budget planning, and other processes to ensure operational partnerships will survive changes in political or management leadership [USFA 2012].

By working together at an incident scene, all emergency responders will operate more efficiently and safer.

Free FHWA online training for TIM is available at: [https://www.nhi.fhwa.dot.gov/course-search?course\\_no=133126A](https://www.nhi.fhwa.dot.gov/course-search?course_no=133126A). Each state is now responsible for TIM training which usually through the state DOT, state police/highway patrol, or state fire academies. FHWA can supply a state-specific contact for TIM information and training if requested.

***Recommendation #5: Fire departments should ensure that all members receive annual training for conducting emergency operations at highway/roadway emergency incidents. Training should include identifying the lack of median barriers and the potential for crossovers.***

Discussion: A majority of the department had undergone TIM training in the previous 12-month period prior to this incident. Also, the department had begun to put in practice many of the elements within the training during actual incidents. The department had not yet codified this training into departmental policy/procedure, though many of the best practices that were part of that training were already underway. Additional other responding agencies were not using TIM best practices. The Texas Administrative Code (TAC) 37 Part 113 RULE §435.29, states “All fire protection personnel will be required to complete the Federal Highway Administration Traffic Incident Management program training or an equivalent course”.

With the development and implementation of any new policy, standard operating procedure, or regulation, one of the essential elements is to ensure that comprehensive training occurs for all members. This ensures the members understand the policy, standard operating procedure, or regulation and will alleviate any confusion, misinterpretation, or misunderstanding.

NFPA 1500, Standard for Fire Department Occupational Safety, Health, and Wellness Program [NFPA 1500 2021] has the following requirement for highway/roadway incidents in the following chapters: Chapter 5 - *Training, Education, and Professional Development*

- 5.1 *General Requirements.*
  - 5.1.1\*  
The fire department shall establish and maintain a training, education, and professional development program with a goal of preventing occupational deaths, injuries, and illnesses.
  - \*A.5.1.1  
The primary goal of all training, education, and professional development programs is the reduction of occupational injuries, illnesses, and fatalities. As members progress through various job duties and responsibilities, the department should ensure the introduction of the

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necessary knowledge, skills, and abilities to members who are new in their job titles, as well as ongoing development of existing skills.

These programs should include information to ensure that members are trained prior to performing individual duties, as well as ongoing professional development to ensure competency.

Training programs should include but not be limited to the following:

- Community risk reduction (fire prevention, public education, investigation, etc.)
- Health and safety
- Fire suppression
- Emergency medical
- Human resources (leadership, supervision, interpersonal dynamics, equal employment opportunity, etc.)
- Incident management system
- Hazardous materials
- Technical rescue
- Information systems and computer technology
- Position-specific development (fire fighter, company officer, chief officer, telecommunicator, investigator, inspector, driver/operator, etc.)
- 5.1.2  
The fire department shall provide training, education, and professional development for all department members commensurate with the duties and functions that they are expected to perform.
- 5.1.3  
The fire department shall establish training and education programs that provide new members initial training, proficiency opportunities, and a method of skill and knowledge evaluation for duties assigned to the member prior to engaging in emergency operations [NFPA 1500 2021].

### Chapter 9 – *Traffic Incident Management.*

- 9.2 *Emergency Operations at Traffic Incidents.*  
Each department shall establish, implement, and enforce standard operating procedures (SOPs) regarding emergency operations involving traffic.
  - 9.2.1  
Each department shall provide training on roadway hazards and safety for all personnel.
  - 9.2.2  
Each department shall communicate, collaborate, and coordinate with other response agencies when developing SOPs, planning, and training for incident response [NFPA 1500 2021].
  - 9.4.10\*  
Personnel assigned to traffic control shall receive training that is commensurate with their duties and in accordance with NFPA 1091.
  - \*A.9.4.10

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Proper training in traffic control can be obtained from local or state highway departments, law enforcement, and other agencies involved with controlling the roadway traffic. The AHJ should participate in local or regional traffic incident management committees. The fire department should also be familiar with the National Traffic Incident Management Coalition’s National Unified Goal [NFPA 1500 2021].

Through a special agreement with the Federal Highway Administration, the Responder Safety Learning Network (RSLN) offers a National TIM Training Certificate for registered users who complete ten specific RSLN online self-paced programs. To earn credit for each program, a student must view the program in its entirety and pass the skills challenge test. Once a student has earned credit for all ten programs, student will be able to download a special certificate that is the equivalent of completing the *National Traffic Incident Management Responder Training Program*.

The modules include:

- Advanced Warning
- Blocking Procedures at Roadway Incidents
- High Visibility Innovations
- Manual on Uniformed Traffic Control Devices (MUTCD)
- Move It or Work It
- See and Be Seen: Emergency Lighting Awareness
- Special Circumstances: Safe Operations for Vehicle Fires
- Special Hazards
- Termination
- Traffic Incident Management: Incident Command and Management [ERSI 2023]

Proper training in traffic control can be obtained from local or state highway departments, law enforcement, and other agencies involved with controlling the roadway traffic. This training should comply with NFPA 1091, *Standard for Traffic Control Incident Management Professional Qualifications*, for personnel who operate on or about roadways mitigating an incident [NFPA 1901 2019]. The training process will allow for members to determine the correct course of action at an incident scene including the proper staffing, appropriate agencies needed to respond, and deployment of resources to effectively control traffic until the situation has been mitigated.

The importance of understanding SOPs and the pre-incident planning process for highway/roadway emergency operations is essential for the safety of all first responders. All firefighters have to understand the risks involved when conducting emergency operations on any highway/roadway. The intent is to identify and reduce the hazards encountered by firefighters and first responders at highway/roadway incidents. The training process will allow for members to determine the correct course of action at an incident scene including the proper staffing, appropriate agencies needed to respond, and deployment of resources to effectively control traffic until the situation has been mitigated. The approximate duration of an incident, the severity, and risks of the incident, the amount of resources needed to mitigate the incident, and the ability to provide detours should be considered if the highway/roadway must be completely closed and allowing the hazard to be mitigated.

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For additional information, see **Appendix One** – *Traffic Incident Management Checklist and Worksheet*, **Appendix Two** – *Sample Traffic Control Scenario* and **Appendix Three** - *Sample Highway Roadway SOP/SOG* (<https://www.respondersafety.com/Download.aspx?id=2c3b900d-bf89-4142-acee-063397f372aa>).

***Recommendation #6: Fire departments should ensure that incident commanders appoint a safety officer when operating at a highway/roadway emergency incident.***

Discussion: At this incident, a safety officer was not appointed due to the fact that the incident deescalated once fire department arrived on-scene. No injuries occurred during the initial crash and fire department resources were placed back in-service.

The importance of appointing a safety officer at a highway/roadway incident is to ensure for the safety of all responders. The safety officer should have the ability to view the entire incident scene, unlike the incident commander who is located inside a vehicle. The safety officer can operate on the incident scene in areas that the incident commander cannot see or observe. When the safety officer is appointed or assigned by the incident commander, the incident commander should communicate any immediate priority safety concerns or issues. This will ensure these safety concerns or issues are addressed. In addition to the incident commander's priorities, the safety officer should have an understanding of traffic incident management and safety practices associated with highway/roadway incidents [NFPA 1561 2020].

A safety officer should be assigned to monitor scene safety measures, coordinate with other agencies on temporary traffic controls, the proper positioning of other arriving units, and monitoring traffic movement. Depending on the incident size, Command may need to assign assistant safety officers to ensure scene safety is properly maintained [NFPA 1561 2020].

The member that is assigned to function as the safety officer of a highway/roadway incident should be an officer with the appropriate training and education. The safety officer will interact with the incident commander, agencies such as law enforcement, highway/roadway safety patrols, and EMS personnel. In addition to the established safety officer, every member is responsible for safe work behaviors and operating within SOPs/SOGS at all times. Company officers carry an additional responsibility of ensuring that all members of their crew are operating in a safe manner. Division/group supervisors must also ensure that operations are conducted safely [NFPA 1561 2020].

The safety officer should be in the appropriate personnel protective equipment as defined by the fire department. The personnel accountability of the safety officer is as important as all other members operating at the incident [NFPA 1561 2020].

The incident commander should involve the safety officer in forecasting the direction of the incident. This reduces the likelihood that something will be missed and create a situation that changes the direction of incident in a negative way. Highway/roadway incidents can be as dynamic and fast-paced



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as a structure fire. A traffic control safety checklist provides guidance to the incident commander and the safety officer to ensure that key components of the traffic incident management IAP are met.

Fire departments should have a process in place for appointing or assigning a safety officer and assistant safety officers at a highway/roadway incident. The Phoenix Fire Department utilizes an *incident safety officer system* to respond to a variety of emergency incidents. This system approach describes how a safety officer and assistant safety officers are integrated into the departments incident management system automatically, every time the department responds to an incident [PFD 2011]. The language and safety system structure used in this procedure are intended to conform to NFPA 1561, *Standard on an Emergency Services Incident Management System and Command Safety*; the National Incident Management System (NIMS), and to embody the intent of NFPA 1521, *Standard for Fire Department Safety Officer Professional Qualifications* [NFPA 1561 2020].

The safety officer function begins with the first arriving unit, typically the company officer/IC as part of the initial size up and continues until the incident is terminated. Safety is integrated in the strategic decision-making process of looking at critical fireground factors present at the incident and applying the risk management profile to choose an appropriate strategy and develop an IAP.

This process implements the incident safety system and identifies the initial IC as responsible for the safety function. This IC is the initial safety officer and maintains this responsibility until Command is transferred, a safety officer is appointed, or the incident is terminated [NFPA 1561 2020].

Intervention at scene operations involves three approaches. The first is for life threatening situations, the second is for non-life-threatening situations; the third approach occurs in the on-going incident planning process. The use of a safety officer at a highway/roadway incident is paramount and ensures the safety of all responders operating at these incidents.

Respondersafety.com provides [resources](#) to help safety officers implement and enforce recommended safety practices in traffic incident management and responder safety during highway/roadway incident responses. Earning the National TIM Certificate is an important first step to ensure the safety officer understands the fundamental safety practices at roadway incident responses [ERSI 2022].

***Recommendation #7: Fire departments should utilize a digital alerting system to notify civilian drivers by vehicle navigation applications that they are approaching both enroute and on-scene emergency vehicles.***

Discussion: The fire and rescue department now utilizes a digital alerting system for emergency response and on-scene operations.

First responder vehicles are frequently involved in motor vehicle collisions, and these collisions are increasing at an alarming rate. The use of emergency lights and sirens tends not be as effective as it once was in getting the attention of other motorists in today's automotive landscape. This tragically results in substantial injuries among responders, loss of life, and property damage. These collisions also result in the responding units becoming unavailable to render aid at an incident. The members,

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apparatus or vehicles, and specialized equipment they carry may not be available for subsequent service for some time afterwards.

To address this issue, the United States Department of Homeland Security (DHS) Science and Technology Directorate (S&T) created a program to develop an emergency vehicle warning system that could be used in car systems or phone applications to notify civilian drivers as they approach both enroute and on-scene emergency vehicles. The developed system was also intended to provide notifications for multiple emergency vehicles operating in proximity of one another traveling routes that may intersect [DHS 2021].

The digital alerting system is a hardware and software solution that uses real time data from emergency vehicles to provide alerts to civilian drivers and other responding emergency vehicles, in order to give drivers more time to avoid potential collisions than conventional lights and sirens. The responder-to-responder functionality makes use of the digital alert system to analyze incoming vehicle data and broadcasting alerts when indicated. For the responder-to-civilian case, the digital alert system provides alerts through navigation apps such as Waze, and its developers are working with automotive manufacturers to enable the analysis software to run directly on the automobile company's own cloud. The digital alerting system generates messaging for the Federal Emergency Management Agency's (FEMA's) wireless emergency alert system so that the public can be informed of large-scale emergency response incidents. The digital alert system web portal dashboard enables administrators to see the location and status of equipped emergency vehicles on a map, manage a variety of configuration settings, and obtain information and reports on responses in real time [DHS 2021].

The digital alerting system Responder-to-Vehicle (R2V) function streams real-time digital alerts and safety messages to civilians driving connected cars that may be in the path of first responder vehicles stopped at an emergency scene or traveling in emergency response mode (running lights and/or sirens). This technology is designed to alert civilian motorists faster than traditional means and provide them with enough time to comply with "Move Over" laws and avoid collisions. The Responder-to-Responder (R2R) function identifies vehicle routes between transponder-equipped emergency vehicles with a goal of greatly reducing the possibility of responder-to-responder collisions. The digital alerting system functionality also provides an array of additional features to emergency service departments such as real-time dashboards and customized data reporting [DHS 2021].

Motorist alert systems work to inform drivers of first responder activity on roadways where they travel. The underlying premise is that alerting motorists to downstream traffic incidents sooner may increase compliance with State move over laws, allowing for more time to safely change lanes and/or slow down. Timely awareness of incident activity ahead can increase driver attentiveness and responsiveness, making safer conditions for responders and other road users.

Motorist alert systems, also referred to as digital alert systems or responder-to-vehicle alerts, rely on global positioning system (GPS) technology that knows the responder's location. This can be accomplished with a small transponder specifically for this purpose, separate vehicle location systems,

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or by connecting with vehicle manufacturer systems. Roadway maintenance vehicles, responder vehicles, and temporary traffic control devices are geolocated and shared with drivers.

A digital alerting system can be set up to activate anytime an equipped traffic control device is deployed, or when a response or maintenance vehicle's emergency lights are activated. Passive activation helps ensure response personnel are not burdened with additional actions. Conversely, vehicles can also be set up to selectively not participate in an alert, which is sometimes necessary for covert law enforcement activities.

Motorists receive alerts through traveler information systems, navigation providers, smartphone apps, or a connected vehicle on-board unit. When an activation occurs, work zone and traffic incident data are pushed to third-party navigation providers like Waze®, Google®, TomTom®, and Apple®. Transportation agencies and the digital alert industry are also working with automakers to deliver these alerts directly to cars as part of vehicle-to-vehicle communications.

Additional information can be found at:

- National Urban Security Technology Laboratory (NUSTL) publicly released operational field assessment (OFA) and technology demonstration reports are available at [ST-Operational Field Assessment Fact Sheet | Homeland Security \(dhs.gov\)](#). OFA reports deemed sensitive are available on a case-by-case basis and can be requested by contacting [NUSTL@hq.dhs.gov](mailto:NUSTL@hq.dhs.gov).
- Visit the DHS Science and Technology website, [Science and Technology Directorate | Homeland Security \(dhs.gov\)](#) for information on other projects relevant to first responders.
- Visit the NUSTL website, [First Responder Technologies | Homeland Security \(dhs.gov\)](#) for more information on NUSTL programs and projects.

***Recommendation #8: Governing agencies (federal, state, and regional) should consider installing median barriers that separate opposing traffic on a divided highway. Fire departments should support this process based upon their deployment and response to divided highways incidents.***

Discussion: At the time of this incident, there were no median barriers on this section of interstate. After this incident, median barriers were installed.

Median barriers are longitudinal barriers that separate opposing traffic on a divided highway and are designed to redirect vehicles striking either side of the barrier. Median barriers significantly reduce the number of cross-median crashes, which are attributed to the relatively high speeds that are typical on divided highways. American Association of Highway and Transportation Officials *Roadside Design Guide* (RDG) recommends guidelines for the use of median barriers on high-speed, fully controlled-access roadways for locations where the median is 30 ft in width or less and the average daily traffic (ADT) is greater than 20,000 vehicles per day (VPD). For locations with median widths greater than 50 feet and where the ADT is less than 20,000 VPD, a median barrier is optional. For locations where the median is between 30 and 50 feet, the RDG suggests an analysis to determine the cost effectiveness of median barrier installation D [FHWA 2021].

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Median barriers can be cable, metal-beam, or concrete.

- Cable barriers are flexible barriers, made from steel cables mounted on weak steel posts, resulting in less occupant impact force as it absorbs energy from the crash, capturing or redirecting the vehicle. Due to larger deflection, median width is an important consideration. These barriers are more adaptable to slopes typically found in medians. Cable barriers tend to require more frequent maintenance and repair than other barrier types.
- Metal-beam guardrails are considered semi-rigid barriers, where the W-beam or box-beam is mounted to steel or timber posts. When impacted, they are designed to deform and deflect, absorbing some of the crash energy and redirecting the vehicle. Metal-beam guardrails often do not require maintenance after minor impacts. They deflect less than cable barriers, so they can be located closer to objects where space is limited.
- Concrete barriers are usually rigid and result in little to no deflection. They redirect rather than absorb energy from the impact. Rigid concrete barriers seldom require repair or maintenance. Some agencies have used portable concrete barriers as median barriers. These barriers require repositioning after an impact but are typically less maintenance than a post mounted barrier [FHWA 2021].

To reduce cross-median crashes, transportation agencies should review their head-on crash history on divided highways to identify hot spots. Agencies should also consider implementing a systemic approach to median barrier placement based on cross-median crash risk factors. Potential risk factors include:

- Traffic volumes
- Vehicle classifications
- Median crossover history
- Crash incidents
- Vertical and horizontal alignment
- Median terrain configurations [FHWA 2021].

For more information please visit: [Median Barriers | FHWA \(dot.gov\)](#).

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### **Investigator Information**

This incident was investigated by Murrey Loflin, a Safety and Occupational Health Specialist, with the Fire Fighter Fatality Investigation and Prevention Program, Surveillance and Field Investigations Branch, Division of Safety Research, NIOSH located in Morgantown, WV. An expert technical review was provided by Jack Sullivan, CSP, CFPS, Director of Training, Emergency Responder Safety Institute (EVSI). A technical review was also provided by the National Fire Protection Association, Public Fire Protection Division.

### **Additional Information**


- [Emergency Responder Safety Institute](#)
- [Manual on Uniform Traffic Control Devices \(MUTCD\)](#)
- National Fire Service Incident Management System, *Model Procedures Guide for Highway Incidents*, available from IFSTA/Fire Protection Publications at (800) 654-4055.
- [National Traffic Incident Management Coalition](#)
- [United States Department of Transportation, Federal Highway Administration](#)
- United States Fire Administration, *Traffic Incident Management System, FA-330, March 2012*,

### **Disclaimer**

The information in this report is based upon dispatch records, audio recordings, witness statements, and other information that was made available to the National Institute for Occupational Safety and Health (NIOSH). Information gathered from witnesses may be affected by recall bias. The facts, contributing factors, and recommendations contained in this report are based on the totality of the information gathered during the investigation process. This report was prepared after the event occurred, includes information from appropriate subject matter experts, and is not intended to place blame on those involved in the incident. Mention of any company or product does not constitute endorsement by NIOSH, Centers for Disease Control and Prevention (CDC). In addition, citations to websites external to NIOSH do not constitute NIOSH endorsement of the sponsoring organizations or their programs or products. Furthermore, NIOSH is not responsible for the content of these websites. All web addresses referenced in this document were accessible as of the publication date.

# Lieutenant and Police Officer Struck and Killed at an Interstate Crash Scene, Firefighter Injured and Dies 34 Months Later–Texas

## Appendix One Traffic Incident Management Checklist and Worksheet



### Traffic Control Safety Checklist/Worksheet

Location: \_\_\_\_\_ Date: \_\_\_\_\_ Incident #: \_\_\_\_\_

Incident Commander: \_\_\_\_\_ Safety Officer: \_\_\_\_\_

Vehicles on Scene: \_\_\_\_\_

Type of Incident: \_\_\_\_\_

Estimated Time On Scene:  Less than 20 minutes  20 – 60 minutes  More than 60 Minutes

Time of Day: \_\_\_\_\_ Type of Roadway: \_\_\_\_\_ Posted Speed Limit: \_\_\_\_\_

Weather Conditions: \_\_\_\_\_ Light Conditions: \_\_\_\_\_

Traffic Conditions:  Low  Moderate  Heavy

**Initial Traffic Control (Less than 60 minutes)** √ Completed

Work area evaluated for hazards	<input type="checkbox"/>
Emergency vehicle positioned properly	<input type="checkbox"/>
Safety vests WORN	<input type="checkbox"/>
Advanced warning sign (1) placed (100' – 1000')	<input type="checkbox"/>
Traffic cones placed for taper (max of 20' intervals) (100' length)	<input type="checkbox"/>
Traffic cones placed along work area (max of 40' intervals)	<input type="checkbox"/>
Emergency warning lights reduced	<input type="checkbox"/>
Law enforcement notified	<input type="checkbox"/>
Staging area established	<input type="checkbox"/>
Incident terminated - cones/signs removed	<input type="checkbox"/>

**Set-Up (Initial) Equipment Needed:** Traffic cones (12), Emergency scene sign (1), Class 2 safety vest (2), Road flares (10)

Advanced Warning Area:	Distance _____	# of Signs _____
Transition Area (taper):	Distance _____	# of Cones _____
Work Area:	Distance _____	# of Cones _____

**Temporary Traffic Control (More than 60 minutes)** √ Completed

Work area evaluated for hazards	<input type="checkbox"/>
Emergency vehicle positioned properly	<input type="checkbox"/>
Safety vests WORN	<input type="checkbox"/>
Advanced warning signs (2) placed (100' - 1500')	<input type="checkbox"/>
Transition area (taper) established (Cones – max of 20' intervals) (max 100' length)	<input type="checkbox"/>
Buffer space established	<input type="checkbox"/>
Work area established	<input type="checkbox"/>
Termination area established (Downstream taper) (max of 100' per lane)	<input type="checkbox"/>
Flaggers with equipment positioned properly	<input type="checkbox"/>
Emergency air siren cans issued	<input type="checkbox"/>
Portable radios issued	<input type="checkbox"/>
Emergency warning lights reduced	<input type="checkbox"/>
Law enforcement traffic control points established	<input type="checkbox"/>
Local department of transportation on scene with advanced warning signs in place	<input type="checkbox"/>
Staging area established	<input type="checkbox"/>
Incident terminated - cones/signs removed	<input type="checkbox"/>

**Set-Up (Temp.) Equipment Needed:** Traffic cones (25-50), Emergency scene sign (2), Flagger signs (2), Stop/slow paddles (2), Emergency air siren cans (3), Portable radios (3), Class 2 safety vest (4), Road flares (1 case)

Advanced Warning Area:	Distance _____	# of Signs _____	# of Flaggers _____
Transition Area (taper):	Distance _____	# of Cones _____	
Buffer Area:	Distance _____	# of Cones _____	
Work Area:	Distance _____	# of Cones _____	
Termination Area:	Distance _____	# of Cones _____	

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Drawing

Miscellaneous Information

1. One advanced warning sign – Urban (Low speed) – 100', Urban (High speed) – 350', Rural – 500', Expressways/Freeways – 1000'
2. Second advanced warning sign – Urban (Low speed) – 100', Urban (High speed) – 350', Rural – 500', Expressways/Freeways – 1500'
3. Buffer area – 30 MPH – 625', 40 MPH – 825', 50 MPH – 1000', 60 MPH – 1300', 70 MPH – 1450'
4. One lane taper – 100' max. – cone placement 10' – 20'
5. Downstream taper – 100' per lane – cone placement – 10' – 20'
6. The equipment listed is the minimum required. Additional safety vests may be required based on the number of personnel on the scene

For additional information check with your State Department of Transportation and the Federal Highway Administration's *Manual on Uniform Traffic Control Devices, Millennium Edition*, <http://mutcd.fhwa.dot.gov>.

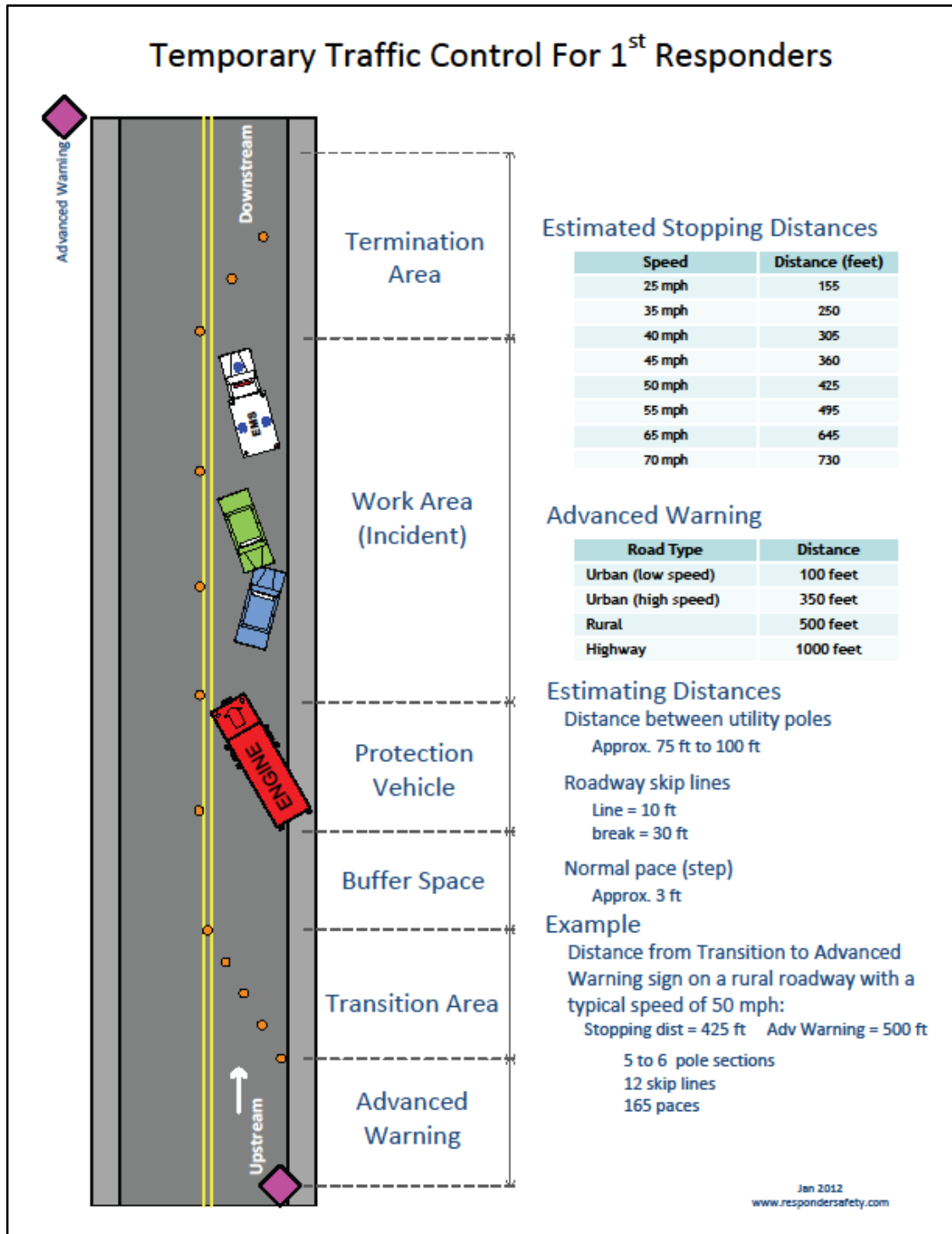
C10:213 (Rev. 4/03)

The checklist and worksheet are courtesy of Volunteer Firemen's Insurance Services



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## Appendix Two Sample Traffic Control Scenario



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## Appendix Three Sample Highway/ Roadway SOP/SOG

<p>Fire Department</p> <p>Operations Division Issued 00-00-00 Revised 00-00-00</p>	<p>000.0</p> <p>Page 1 of 7</p>
<h3>SAFE POSITIONING WHILE OPERATING IN OR NEAR MOVING TRAFFIC</h3>	
<h4>I. Overview</h4>	
<p>This guideline identifies vehicle positioning practices for Fire Department apparatus and emergency vehicles that provides maximum protection and safety for personnel operating in or near moving vehicle traffic. In addition, these procedures emphasize efforts to maintain lanes of moving traffic around the incident scene to minimize the traffic queue and the inherent probability of secondary collisions. Efforts to complete safe and efficient clearance of the incident scene in as short a timeframe as possible are recommended.</p>	
<p>It shall be the policy of the Fire Department to initially position apparatus and other emergency vehicles at an incident on any street, road, highway or expressway in a manner that best protects the incident scene while at the same time providing for traffic movement past the incident scene as much as reasonably possible. Such positioning shall afford protection to fire department personnel, law enforcement officers, tow service operators, other emergency personnel while working in or near moving traffic.</p>	
<p>All personnel should understand and appreciate the high risk that personnel are exposed to when operating in or near moving vehicle traffic. Responders should always operate within a protected environment at any roadway incident.</p>	
<p>Always consider moving vehicles as a threat to your safety. At every roadway emergency scene, personnel are exposed to passing motorists of varying driving abilities. Responders must accept that motorists approaching the incident scene on the roadway may be a 'D' driver; drunk, drugged, drowsy, distracted, or just plain dumb. It is the 'D' driver that may be completely oblivious to your presence due to distractions or impairments. Distracted motorists will often be looking at the scene and not the roadway in front of them where you might be operating. Assume that all approaching traffic is a 'D' driver and is out to get you until proven otherwise.</p>	
<p>Nighttime incidents and inclement weather conditions are particularly hazardous. Visibility is reduced and driver reaction time to hazards in the roadway is slowed. Adjust operations accordingly.</p>	
<h4>II. Terminology</h4>	
<ol style="list-style-type: none"> <li>1. <b>Advance Warning</b>- notification procedures that advise approaching motorists to transition from normal driving status to that required by the temporary emergency traffic control measures ahead of them.</li> <li>2. <b>Block</b>- positioning a fire department apparatus on an angle to the lanes of traffic creating a physical barrier between upstream traffic and the work area. Includes 'block to the right' or 'block to the left'.</li> <li>3. <b>Buffer Zone</b>- the distance or space between personnel and vehicles in the protected work zone and nearby moving traffic.</li> <li>4. <b>Downstream</b>- the direction that traffic is moving as it travels away from the incident scene.</li> <li>5. <b>Flagger</b>- a fire department member assigned to monitor or direct approaching traffic and activate an emergency signal if the actions of a motorist do not conform to established traffic control measures in place at the highway scene.</li> <li>6. <b>Linear</b>- positioning a fire department apparatus parallel to or within a travel lane or shoulder of a roadway. Linear positioning only creates a physical barrier within that lane or shoulder of the roadway.</li> <li>7. <b>Taper</b>- the action of merging lanes of moving traffic into fewer moving lanes.</li> <li>8. <b>Temporary Traffic Control Zone</b>- the physical area of a roadway within which emergency personnel perform their fire, EMS and rescue tasks at a vehicle-related incident.</li> <li>9. <b>Transition Zone</b>- the lanes of a roadway within which approaching motorists change</li> </ol>	
<p>University of Extrication "Safe Positioning" Guideline</p>	<p>9/6/23</p>

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Fire Department

000.0

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### SAFE POSITIONING WHILE OPERATING IN OR NEAR MOVING TRAFFIC

their speed and position to comply with the traffic control measures established at an incident scene.

10. **Upstream**- the direction that traffic is traveling from as the vehicles approach the incident scene.

#### III. 'Move It' Incidents

All emergency personnel are at great risk of injury or death while operating in or near moving traffic. There are several specific **tactical procedures** that should be taken to protect all responders and emergency service personnel at the incident scene including:

1. Consider that all approaching drivers are 'D' drivers
2. Establish an initial "block" with the first arriving emergency vehicle or fire apparatus while the initial size-up survey is completed
3. Always wear high visibility, florescent and reflective garments (vest or jacket) during roadway operations. When full protective NFPA compliant clothing is required by department SOG, high-visibility vests must be worn over structural turnout gear except for members combatting a fire situation or dealing directly with hazardous materials.
4. All fire department members must wear structural firefighting helmet with chinstrap donned properly.
5. Operators of emergency vehicles at the scene should complete 'light shedding'; turning off all lights such as vehicle headlights, forward-facing warning lights, or spotlights that might create vision impairment to approaching motorists at nighttime incidents.
6. Employ the 'Move It' or 'Work It' strategy. Determine if vehicles involved can be moved out of the travel lanes to an off-roadway location. Moving to an off-

roadway location improves responder safety, minimizes congestion, and assists with safe, quick clearance; the "Move It" strategy

7. If vehicles can be moved out of the travel lanes of the roadway, attempt to clear the travel lanes in less than 30 minutes; Minor duration incident.

#### IV. 'Work It' Incidents

The following are benchmarks for Safe Positioning of apparatus and emergency

vehicles when the crash-damaged vehicle cannot be moved out of the travel lanes of the roadway and crews must work the incident at the location found upon arrival. If incident is a 'Work It' situation, establish Command according to ICS protocols, employ upstream advance warning and temporary traffic control transition measures to warn approaching motorists, and attempt to reduce their vehicle speed. Incident duration is anticipated to exceed 30 minutes.

1. Position first-arriving apparatus to protect the scene, patients, and emergency personnel.
  - a. Initial apparatus placement should create an initial incident area protected from traffic approaching in at least one direction. Intersections or where the incident may be near the middle lanes of a multi-lane roadway require two or more sides of the incident to be protected.
  - b. Angle apparatus on the roadway with a "block to the left" or a "block to the right" to create a physical barrier between the crash scene and approaching traffic. Block at least one additional traffic lane more than that already obstructed by the crashed vehicle(s); obstructed Lane + 1 strategy. Shoulder of the highway can be counted as a lane.

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- c. The front wheels of blocking vehicles should be turned away from the downstream work area
  - d. For first arriving fire department units where a charged hoseline may be needed, block so that the pump panel is downstream, on the opposite side of on-coming traffic. This will protect the pump operator.
2. Ambulances should be positioned within the protected work area and have their rear patient loading area angled away from the nearest lanes of moving traffic
  3. Additional responder vehicles and personnel working the incident should either support advanced warning efforts or be positioned within the protected area created by the blocking apparatus.
  4. Command shall stage unneeded emergency vehicles off the roadway, place them in a Staging area on the downstream side of the incident, or return these units to service.
  5. Lanes of traffic shall be identified numerically as "Lane 1", "Lane 2", etc., beginning from the left to the right when considered from the motorist's point of view driving in those lanes.
  6. Traffic cones or cones with flares alongside should be deployed upstream to increase the advance warning for approaching motorists. Cones and flares identify but only suggest the transition and tapering actions that are requested of the approaching motorist.
  7. Personnel shall place cones and flares as well as shall retrieve cones while facing oncoming traffic. A Buddy system is recommended for deployment and retrieval.
  8. Adequate advance warning to approaching motorists should be put in place using flares or traffic cones deployed at intervals of no greater than 40' apart upstream of the blocking apparatus. The furthest traffic cone that begins the taper and closing of a travel lane should be positioned upstream along the edge or shoulder of the roadway.
9. Additional personnel may extend the advanced warning area by placing additional emergency vehicles, traffic cones, flares, deployable signs, and arrow boards to build upon initial traffic control measures as the incident duration exceeds 30 minutes. Placing flares, where safe to do so, adjacent to and in combination with traffic cones for nighttime operations greatly enhances motorist warning and scene safety.
  10. Progressively open lanes of traffic as safely and efficiently as practical as the incident is dealt with. Once cleared of vehicles, patients and debris, opening of a traffic lane will reduce the queue and minimize the chances of secondary collisions.

#### V. Incident Command Benchmarks

The **initial-arriving company officer** and/or the **Incident Commander** must complete critical benchmarks to assure that a safe and protected work environment for emergency scene personnel is established and maintained including:

1. Assure that the first-arriving apparatus establishes an initial block to create an initial safe work area
2. Determine if incident is a 'Move It' situation where vehicles can be relocated out of the normal travel lanes thereby reducing responder exposure to moving traffic and improving incident clearance time.
3. Determine if the incident is a 'Work It' situation in which the vehicles involved must remain in their present location as fire, rescue, and medical activities take place.
4. Assure that all ambulances on-scene are placed within the downstream, protected work area of the larger apparatus.

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- a. Assure that all patient loading into ambulances is done from within a protected work area.
5. The initial company officer and/or Incident Commander must operate as the Scene Safety Officer until this assignment is delegated.
6. Command shall assure that 'light-shedding' protocols including Opticom strobe systems and high-beam headlights are turned OFF and that other emergency lighting remains ON as necessary.

#### VI. Emergency Crew Personnel Benchmarks

Listed below are benchmarks for safe actions of **individual personnel** when operating in or near moving vehicle traffic.

1. Always maintain an acute awareness of the high risk of working in or near moving traffic. They are out to get you!
2. Never trust the 'D' driver in the moving traffic that is approaching you.
3. Always look before you move!
4. Avoid turning your back to moving traffic.
5. Personnel arriving in crew cabs of fire apparatus should exit and enter the apparatus from the protected, downstream side, away from moving traffic.
6. Officers, apparatus operators, crew members in apparatus with individual jump seat configurations and all ambulance personnel must exit and enter their units with extreme caution remaining alert to moving traffic at all times.
7. Protective clothing, high-visibility safety garment, and helmet with chin strap in position should be donned prior to exiting the emergency vehicle.
  - a. During normal daylight conditions, don helmet and high visibility garment or NFPA compliant turnout

PPE and high-visibility vest when operating in or near moving traffic.

- b. During dusk to dawn operations or when ambient lighting is reduced due to inclement weather conditions, don helmet, full NFPA compliant protective clothing and high-visibility vest.
- c. All staff personnel and any other personnel arriving on an apparatus or emergency vehicle should don assigned helmet and high-visibility garment prior to exiting their vehicle.
8. Always look before opening doors and stepping out of apparatus or emergency vehicle into any moving traffic areas. When walking around fire apparatus or emergency vehicle, be alert to your proximity to moving traffic.
  - a. Stop at the corner of a blocking position unit, check for moving traffic, and then proceed along the unit remaining as close to the emergency vehicle as possible.
  - b. Maintain a 'reduced profile' when moving through any area where a minimum 'buffer zone' condition exists.

#### VII High-Volume, Limited Access Highway Operations

High-volume, limited access divided highways include expressways, turnpikes, freeways, tollways, and other multi-lane roadways within the response area. A desire to keep the traffic moving on these high-volume thoroughfares is inherent in all operations. When in the judgement of Command (or Unified Command), it becomes essential for the safety of operating personnel and the patients involved, any or all lanes, shoulders, and entry/exit ramps of these limited access highways can be completely shut down. This, however, should rarely

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occur and should be for as short a period of time as practical.

Unique Safe Positioning procedures at locations such as expressway, freeway, and limited-access, high-volume multi-lane roadway incidents include;

1. Travel lanes are typically 12 feet in width. First-arriving engine company apparatus should establish an initial Lane +1 block position.
2. A large and heavy second fire apparatus such as a ladder truck shall be automatically dispatched to all incidents on all limited-access, high-volume expressways, tollways, freeways, and highways.
3. The primary assignment of this second unit shall be to;
  - a. Establish an upstream block occupying a minimum of two 12' lanes plus the paved shoulder of the highway or blockage of three 12' driving lanes of traffic upstream of the initial block provided by the first-due apparatus.
  - b. The position of this apparatus shall take into consideration all conditions that might limit sight distance of the approaching traffic including ambient lighting conditions, weather-related conditions, road conditions, curves, bridges, hills and over- or underpasses.
  - c. Traffic cones and/or cones illuminated by flares and the NFPA-compliant retro-reflective pink Emergency Scene Ahead deployable sign should be placed upstream of the second vehicle by its crew at the direction of the company officer.
4. Vehicles from law enforcement and transportation departments can be used to provide additional blocking of additional traffic lanes as needed as incident duration
  - d. Traffic cones on limited-access, high-volume roadways can be placed at 40' intervals with the furthest cone and or flare approximately 200 feet "upstream", to allow adequate warning to drivers. When incident duration exceeds two hours, advance warning efforts should be as compliant with the Manual of Uniform Traffic Control Devices (MUTCD) requirements as possible.
  - e. A flagger/spotter person should be positioned if available to monitor the response of approaching motorists as they are directed to transition to a slower speed and taper into merged lanes of traffic.
  - f. Command should be notified by this flagger/spotter on the incident operating channel of any approaching traffic that is not responding to the speed changes, transition, tapering and merging directions.
  - g. Flagger/spotter should have the capability of activating a pre-determined audible warning to operating personnel of a non-compliant motorist approaching.

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<p>exceeds 30 minutes; MUTCD minor duration.</p> <p>5. When an incident duration exceeds 30 minutes, it becomes an Intermediate duration incident as defined by the MUTCD. During this period of time, efforts should evolve around clearing the scene as expeditiously as possible. For extended duration incidents such as hazardous materials situations, Command should request appropriate traffic incident management personnel and resources. When the lane or road closure exceeds two hours in duration, MUTCD-compliant traffic control measures should be in place. This can include traffic control center protocols, transportation department arrow board trucks, road detours, changeable message sign notifications, media contacts, etc, as appropriate.</p> <p>6. Fire Department Command officer should establish a liaison with the Police Department supervising officer as soon as possible. This Unified Command team will jointly coordinate activities and determine how to most efficiently resolve the extended duration incident and clear the obstructed travel lanes in as safe and efficient manner as practical.</p> <p>7. Termination of the incident should be managed with the same aggressiveness as initial actions. Crews, apparatus, and equipment must be removed from the highway in a coordinated process to reduce exposure to moving traffic and minimize traffic congestion.</p>	<p style="text-align: center;"><b><u>Officer's Safe Parking "Cue Card"</u></b></p> <p><b>"Block"</b> with first-arriving apparatus to protect the scene, patients, and emergency personnel.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Block at least one additional lane</li> <li><input type="checkbox"/> Block so pump panel is "down stream"</li> <li><input type="checkbox"/> Block <u>most critical</u> or <u>highest traffic volume</u> direction first</li> <li><input type="checkbox"/> Consider requesting additional PD assistance</li> </ul> <p><b>Crews wear proper PPE w/Helmet</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> High-visibility garments at all times</li> <li><input type="checkbox"/> Helmet at all times</li> <li><input type="checkbox"/> Full PPE plus high-visibility vest between dusk and dawn or inclement weather</li> <li><input type="checkbox"/> NFPA Compliant turnout gear is appropriate PPE whenever the crew is directly exposed to fire, heat, flame and/or hazardous materials.</li> </ul> <p><b>Establish more than adequate advance warning</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Traffic cones at up to 40' intervals</li> <li><input type="checkbox"/> Deploy minimum 5 cones upstream</li> <li><input type="checkbox"/> Cones only "Suggest" they don't Block!</li> <li><input type="checkbox"/> Expand initial safe work zone as temporary traffic control devices are available</li> </ul> <p><b>Direct placement of ambulances</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Assure ambulances park within shadow of blocking apparatus as directed</li> <li><input type="checkbox"/> Lane 1 is furthest left lane, next is Lane 2, then Lane 3, etc. from approaching motorist's point of view</li> <li><input type="checkbox"/> Direct ambulance to "block to the right" or "block to the left" to protect loading doors             <ul style="list-style-type: none"> <li>➤ Place ambulance patient loading area facing away from closest lane of moving traffic</li> </ul> </li> </ul>
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- All patient loading into ambulances is done from within a protected work zone
- Terminate incident aggressively with safe, quick clearance strategies.

**You are the Scene Safety Officer**

- Consider assigning FF as upstream "Spotter" as necessary for approaching traffic

**Night or Reduced Light Conditions**

- Turn OFF vehicle headlights
- Turn OFF Opticom
- Provide overall scene lighting
- All personnel in appropriate PPE w/helmets
- Illuminate cones with flares
- Consider additional Truck company for additional upstream "Block"

**Limited access, high-volume highway incidents**

- Establish initial block: minimum two lanes
- Ladder truck establishes upstream block
  - two lanes plus paved shoulder or
  - three driving lanes
- Place cones and/or cones illuminated by flares upstream of larger upstream blocking vehicle with the furthest cone approximately 200 feet "upstream" of apparatus
- Establish Flagger position
  - monitor approaching traffic
  - sound emergency signal as necessary
- Use police department and/or transportation department vehicles for additional blocking, advance warning, and traffic incident management.
- Stage additional companies off highway
- Establish liaison with Police Department to form Unified Command at scene.

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