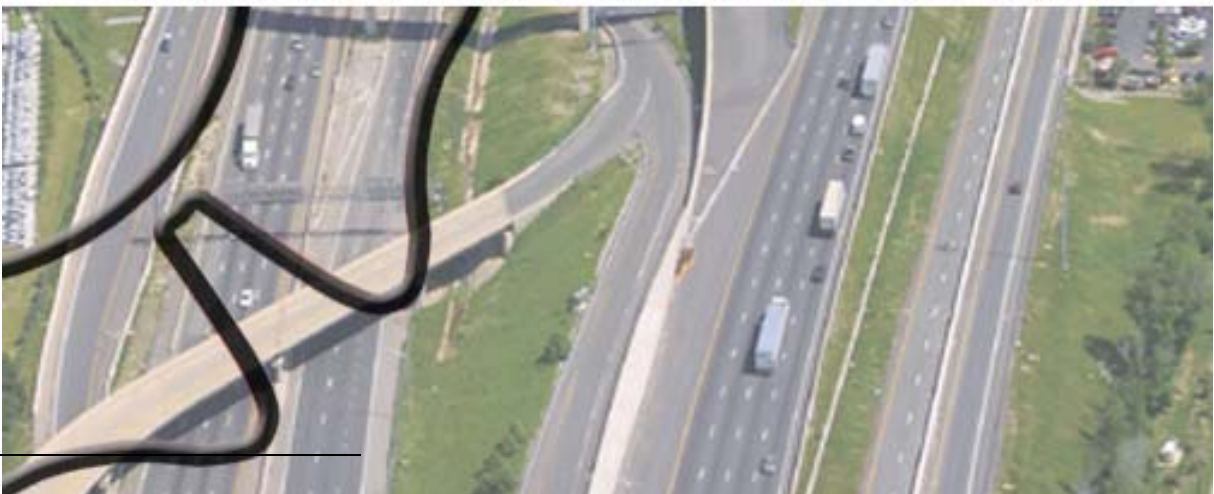


*Emergency Operations Manual
Volume III - Utility, Highway and
Other Emergencies*

**Book 1: Operating
Procedures for
Highway Incidents**
Second Edition

Fire and Rescue Departments of Northern Virginia



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PREFACE

The purpose of this manual is to provide the incident officers and members with a uniform guide for safe operations at incidents occurring on the highway system. It is intended to serve as a guideline for decision-making and can be modified by the incident officers as necessary to address existing incident conditions.

The most common emergency response, and the one that possibly has the greatest potential for an unfavorable outcome to department members, are operations at the scene of a vehicle accident.

Each year many significant incidents occur on roadways within the Washington-Metropolitan area. Whether it is on the interstate highway or on a secondary road, the potential for injury or death to members is overwhelming.

The key changes in the Second Edition of *Operating Procedures for Highway Incidents* are as follows:

- The vulnerability of EMS units on the roadway has lead to the standardization of the positioning on EMS incidents. EMS units shall have priority position to the front of the address with access to the driveway. The suppression piece shall then position to protect emergency responders operating in and around the EMS vehicles.

OVERVIEW

Managing a highway incident is a team effort. Each responding agency has a role to play in an effective incident operation. The police, Virginia Department of Transportation and the fire and rescue departments 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?"

Care of the injured, protection of the public, safety of the emergency responders, protection of the environment and clearance of the traffic lanes should all be priority concerns of the incident manager operating at the scene of a highway accident.

It is extremely important that all activities blocking traffic lanes be concluded as quickly as possible, and the flow of traffic be allowed to resume promptly.

Establishing a water supply officer is an early and critical consideration at incidents requiring firefighting operations. Foam units, tankers and units with large diameter hose are likely to be needed for incidents that require more water than typically carried on engine companies.

Sources of water vary greatly, ranging from hydrants located on or near the highway to static water sources that may be quite remote from the scene. Preplanning the location of available water sources must be a regular part of district familiarization. Each section of highway should have a pre-incident plan (for limited access highways), or street map showing available water sources.

Restoring the roadway to normal, or to as near normal as possible, creates a safer environment for the motorist and emergency responders. Additionally, it improves the public's perception of the agencies involved and reduces the time and dollar loss resulting from the incident.

The primary objectives for any operation at the scene of a highway 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.
- Protect the environment.
- Restore normal traffic flow.
- Keep as many traffic lanes open as possible.
- Preserve evidence for investigators.
- Use the ICS/Unified Command System to manage resources.

RESPONSE

Emergency response to incidents on limited access highways should include at least one unit traveling in each direction on the highway. Many times, callers are excited and may incorrectly report their direction of travel. A unit responding from each direction eliminates any delay that may be caused by this situation.

As soon as a unit arrives on the scene, the officer shall advise the communications center of the proper location, using terms such as north, east, south or westbound direction and prior to or after a landmark, such as an exit. Additionally, a quick determination of the need for the units responding in the opposite direction of travel must be made. The officer is to make a radio transmission to have them respond into the scene or to go in-service.

When units respond together in the same direction, they should remain in single file. This reduces confusion to the motorists on the highway as to how to appropriately yield the right-of-way to emergency apparatus.

When the shoulder must be used for response, apparatus operators must use extreme caution and be aware of:

- road signs;
- debris;
- guard rails;
- oversized vehicles and stopped vehicles; and
- standing water.

Vehicle operators must reduce apparatus speed when using the shoulder of the road with due regard for the safety of those who may inadvertently pull into the path of their vehicle.

Designated median strip crossovers marked "Authorized Vehicles Only" shall only be used when apparatus can complete the turn without obstructing the flow of traffic in either travel direction, or when all traffic movement has stopped.

Response to access/egress ramps should be in the normal direction of travel unless the officer can confirm that the oncoming traffic has been stopped and that no civilian vehicles will be encountered on the ramp.

The use of U-turn access points in "Jersey" barriers is extremely hazardous and should be used only when the situation is necessary for immediate lifesaving measures.

Unless a roadway is completely shut down, fire and EMS crews should avoid crossing over lanes of traffic on foot, especially lanes with traffic moving in the opposite direction from where their apparatus is parked. Any action that allows members to operate in a non-shielded environment (as described in the following section) shall be avoided whenever possible.

SAFETY CONSIDERATIONS

Management of incidents on the interstate system and local roadways requires the expertise and resources of the local fire and rescue departments, local police departments, Virginia State Police, and the Virginia Department of Transportation, working in concert.

While the safety of emergency services members is the paramount concern for the law enforcement officer in charge, the flow of traffic must be kept in consideration at all times. Keeping the safety of all members in mind and coordinating the needs with the other emergency services, the officer in charge should begin to open closed lanes and place units in service as soon as practical.

APPARATUS POSITIONING

The proper spotting and placement of apparatus is the joint responsibility of the driver and officer.

The proper positioning of apparatus at the scene of an incident assures other responding resources of easy access, a safe working area, and helps to contribute to an effective overall operation.

Roadway Accidents

On roadway incidents, standard practice shall be to position apparatus in such a manner as to provide a physical barrier of at least one lane wider than the width of the incident. Figure 1 provides an illustration of simple apparatus positioning at an accident with no other hazards. Should a hazardous materials condition exist, or something as simple as a fuel leak is present, apparatus positioning must take the additional hazards into account.

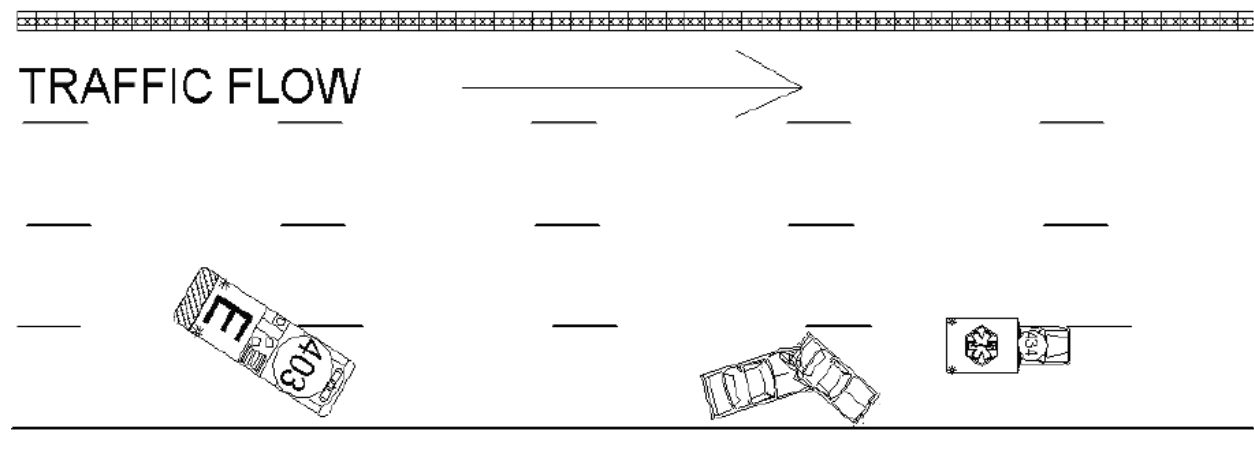


Figure 1 – Roadway apparatus positioning with no hazards.

A work zone shall be established allowing EMS units and the rescue company, or other company responsible for extrication, to position in close proximity of the incident in a safe manner.

The first arriving engine should position prior to the incident scene; the engine must be close enough to provide a hose line for protection but far enough to allow room for other units to operate. This engine shall provide a shielding effect for members operating on the incident scene.

The engine company shall be placed at an angle to the lanes, with the pump panel toward the work zone to protect the pump operator and front wheels rotated away from the incident. In the event that a motorist strikes the engine, the engine will act as a barrier and in the unlikely event the engine is moved upon impact, it will travel away from the work zone.

Based on the size of the incident scene, the work zone may require more than one engine company for adequate protection. Additional engine companies or the rescue company, if not needed for extrication, may be used for additional shielding.

The rescue or extrication company shall position in front of the first arriving engine in the most advantageous tactical position for extrication functions. It is important that the rescue company position within the area shielded by the first engine company.

EMS units shall position past the incident scene in a manner that allows for rescue company functions, patient loading and rapid egress from the scene. It is important that EMS units position within the area shielded by the first engine company.

Command and staff vehicles shall position past the incident scene in a manner that facilitates command functions and allows for rescue company functions and patient loading into EMS vehicles. It is important that command and staff vehicles position within the area shielded by the first engine company.

If units arrive prior to the first-due engine company, the positioning plan must be altered with scene safety as the basis for deviation. The first arriving unit, regardless of type, shall take a position to best shield the scene for members initially operating at the incident as well as patients and witnesses. When the first engine arrives, it shall take the primary shielding position.

Positioning on EMS Incidents

The vulnerability of EMS units on the roadway has lead to the standardization of the positioning on EMS Incidents.

EMS units shall have priority position to the front of the address with access to the driveway. If an EMS unit is going to operate on scene without a suppression unit, then they shall either position off the roadway in a driveway, or place cones to facilitate the flow of traffic, Figure 2.

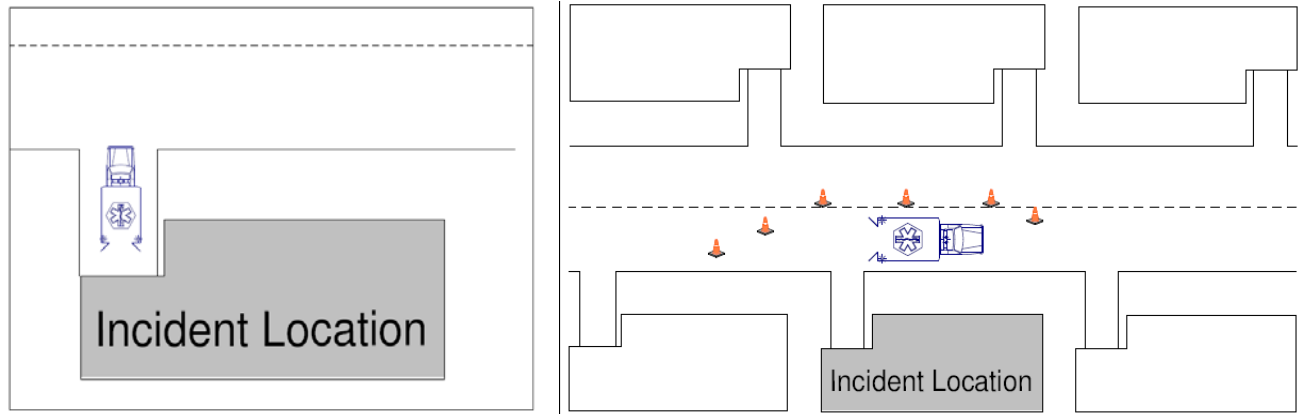


Figure 2 – Two options for EMS unit positioning without suppression units.

Suppression units shall position as to provide a shield for the back of the EMS unit. If the suppression unit arrives prior to the EMS unit, it shall position so the EMS unit can park in the front of the address when it arrives. This may require the suppression unit to stop short of the address or pull past the address if traveling from the opposite direction. The suppression unit driver should take the time to place cones and facilitate the flow of traffic if necessary, Figure 3.

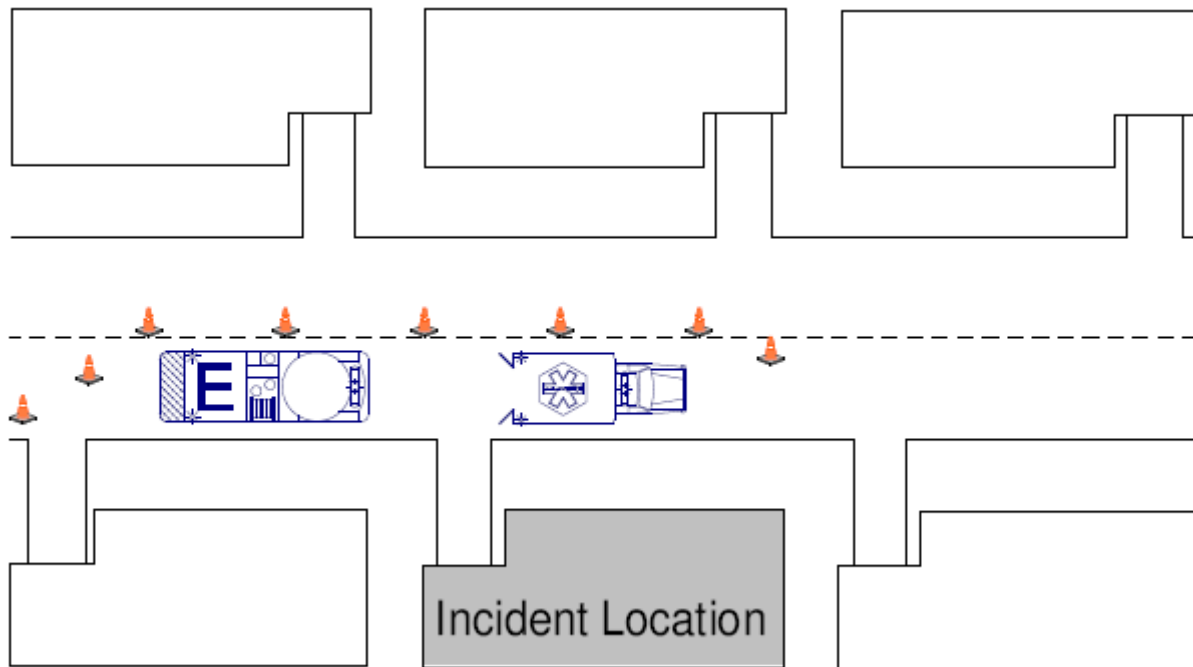


Figure 3 – EMS unit positioning with suppression unit.

Suppression pieces should remain on scene in position until the EMS unit has left to transport the patient.

Work Zone Safety

Prior to exiting apparatus, members shall:

- Check to ensure that traffic has stopped to avoid the possibility of being struck by a passing vehicle
- Communicate with all members that traffic has come to a stop and it is safe to exit
- Look down to ensure that debris on the roadway will not become an obstacle that could result in personal injury

All members shall be in full protective clothing or traffic vests, as the situation dictates.

As soon as possible, the engine operator should place flares or traffic cones as appropriate. Flares or traffic cones assist in channeling traffic away from the incident, Figure 4.

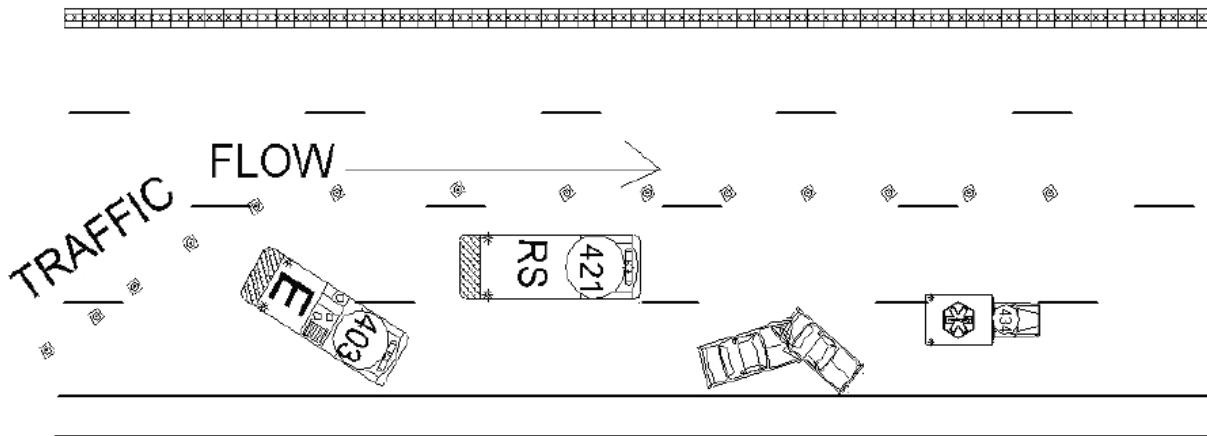


Figure 4 – Sample placement of flares or traffic cones.

Cones and/or flares shall be placed diagonally across the roadway and around the incident. Taper length should be 50' for most highways.

Four-lane highways facilitating speeds of 55 mph or greater should have a taper length of 100'. This assists in establishing a safe work zone.

If the person placing cones or flares cannot be directly observed, they should be accounted for after a reasonable time to ensure they have not been struck or injured.

Directional arrows mounted on apparatus shall be used whenever feasible.

If it is necessary to channel traffic around a curve, hill or ramp, the first cone or flare shall be placed prior to the hill or curve. The intent is to warn oncoming traffic of a hazard ahead. The rest of the cones shall be placed diagonally across the lanes around the work zone, Figure 5.

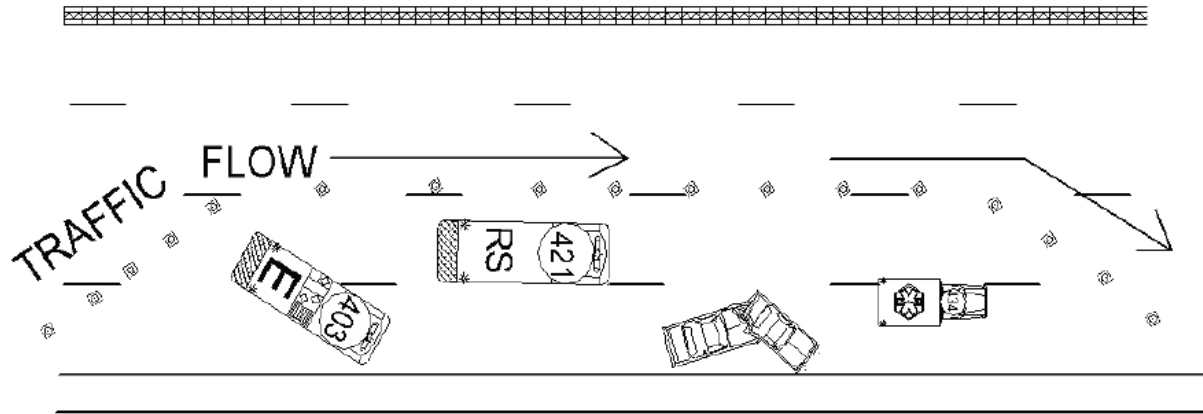


Figure 5 – Sample placement of flares or traffic cones to channel traffic flow around work zone.

Parking of Other Response Vehicles

Except for those vehicles needed in the operation and those used as a physical barrier for the work area, other response vehicles should be parked together in a designated area.

Parking other response vehicles completely out of available travel lanes greatly assists in the movement of traffic.

VISIBILITY AT NIGHT

As the human eye becomes adapted to the dark, the first color to leave the spectrum is red. This is important due to the fact that our warning lights are red. The color red tends to blend in to the nighttime surroundings.

Glare vision and recovery is the amount of time required to recover from the effects of glare once a light source passes through the eye. From light to dark vision recovery takes at least six seconds. From dark to light, vision recovery takes three seconds. At 50 miles per hour, the distance traveled during a second is approximately 75 feet. In six seconds a vehicle has traveled 450 feet before the driver has fully regained night vision.

The headlights on the apparatus can temporarily blind vehicles that are approaching fire and rescue apparatus. If not needed to illuminate the scene, drivers shall turn off vehicle headlights when parked at incidents. This is extremely important when operating on roadways at night. Studies conducted show that at 2½ car lengths away from a vehicle with its headlights on, the opposing driver is completely blinded.

Drivers of oncoming vehicles will experience the problem of glare recovery. This essentially means individuals are driving by the incident scene blind. The wearing of protective clothing and or traffic vests will not help the blinded driver see members standing in the roadway.

The best combination of lights to provide maximum visibility is as follows:

- Red warning lights - on
- Headlights - off
- Fog lights - off
- Pump panel lights - on
- Spot lights on rear and front - on, and directed on to a traffic cone
- Traffic directional boards operating

When an incident occurs during daylight hours, with all involved vehicles and emergency vehicles sufficiently off the highway lanes on the shoulder, and traffic is congested and passing slowly, flashing lights may be turned off. However, if the emergency warning lights are turned off, the emergency flashers must be activated.

CLEARING TRAFFIC LANES

A unit shall remain on scene to block traffic for EMS units, unless the EMS unit(s) can be moved to a safe area out of traffic.

When possible, EMS units should move from the roadway as soon as practical. There may be cases where an EMS unit might be able to load patients and move to a nearby parking lot to carry out patient care prior to moving on to a hospital. This reduces the exposure to the ambulance, as well as the crew and patient, and may help facilitate re-opening of the roadway.

Reducing and/or shutting down traffic lanes can create other problems and safety concerns. It is critical when operational phases (extrication's, medical care, and suppression) are completed, that apparatus be repositioned to allow traffic to flow on as many lanes as possible.

Unnecessarily closing, or keeping traffic lanes closed, greatly increases the risk of a secondary incident occurring in resulting traffic backup. One minute of stopped traffic causes an additional four-minute delay in travel.

During property damage-only accidents, parties shall be notified to move their vehicles out of the travel lanes until the police arrive. Keeping the safety of all members in mind and coordinating the needs with the other emergency services, the officer in charge should begin to open closed lanes and place units in service as soon as practical.

MAJOR HIGHWAY INCIDENTS

Officers should consider the magnitude of highway incidents. The incident commander should consider declaring a "Major Highway Incident" in those cases where the operation will seriously impact the traffic movement in the area of the incident. Officers should be familiar with the Virginia Department of Transportation Northern Virginia Highway Incident Management Manual that describes the functions of various agencies at major incidents.