



ANN ARBOR FIRE DEPARTMENT

Standard Operating Procedures – 2.8 Traffic Safety



TRAFFIC SAFETY

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 Replaces: 706 Roadway Safety
 715 Pittsfield Fire Department Highway Dual Response
 Approved: Fire Chief Mike Kennedy

I. PURPOSE

The purpose of this document is to provide uniform operational procedures to ensure safe operations by personnel dispatched to incidents on roadways. These operational procedures were formulated based on nationally recognized practices and procedures. This procedure shall be used by personnel as a baseline for decision making. The decisions can be modified as necessary to address existing onsite conditions. These procedures identify vehicle safe positioning, common general safety and onsite practices. Additionally, it provides maximum protection and safety for personnel operating at roadway incidents. These procedures also identify the need to provide mobility for the motoring public. All personnel shall understand and appreciate the special hazards and high risk that personnel are exposed to when operating at a roadway related incident especially on a limited access highway with motor vehicle traffic, high vehicle speeds, adverse weather conditions, heavy trucks, and exposure to motorists with varying degrees of ability, with possible vision, alcohol, and drug impairment. All emergency responders shall understand that the objective is to get onto the roadway, perform their duties, and get off the roadway as quickly and efficiently as possible. This will reduce their high-risk exposure and help to get traffic patterns back to normal. Personnel shall always operate within a protected environment at any type of incident on or near a roadway, and when exposed to motor vehicle traffic.

This SOP is not intended to be a textbook, nor a substitute for training, technical knowledge, experience, or effective judgment.

II. DEFINITIONS

- A. Activity Area - Physical area of the roadway where emergency personnel perform their fire, EMS and rescue tasks at a roadway incident.
- B. Advance Warning – 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.
- C. Blocker - Initial on-scene emergency vehicle, preferably a fire apparatus, positioned on an angle to the lanes of traffic creating a physical barrier between upstream traffic and the work area. This includes using the vehicle to “block to the left” or “block to the right”.
- D. Buffer Zone - Empty, unoccupied space or distance between emergency responders and vehicles in the incident space and moving traffic.
- E. Downstream - Direction the traffic is moving as it travels away from the incident scene.



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- F. Incident Zone - Area of a roadway where temporary traffic controls are imposed in response to a traffic incident. It extends from the first warning device, e.g., sign, light, cone, to the last temporary traffic control device, or to a point where road users return to the original lane alignment and are clear of the incident.
- G. Intermediate Traffic Incident - Incident with an expected duration of thirty (30) minutes to two (2) hours. 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, the IC should request appropriate traffic incident management personnel and resources.
- H. Left / Right - Terms given to the sides of a roadway referenced in relation to the normal flow of traffic.
- I. Lane Designation - Lanes in roadways with only one lane moving in a given direction should be referred to by the direction of travel, e.g., northbound, southbound, eastbound, and westbound. Lanes in roadways with two lanes moving in the same direction, shall be identified as the “left lane” and “right lane” as referenced when facing in the direction of the normal flow of traffic. Lanes in roadways with three (3) lanes moving in the same direction shall be identified as the “right lane,” the “center lane,” and the “left lane” as referenced when facing in the direction of the normal flow of traffic. Center turn lanes are designated as “center turn lanes.”
- J. Major Traffic Incident - Incident with an expected duration of more than two (2) hours. 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, MDOT department arrow board trucks, road detours, changeable message sign notifications, media contacts, etc.
- K. Minor Traffic Incident - An incident with an expected duration under thirty (30) minutes. Minor traffic incidents are typically disabled vehicles and minor crashes or fires that result in lane closures of less than thirty (30) minutes. Diversion of traffic into other lanes is often not needed or is needed only briefly. Traffic control is the responsibility of on-scene providers, since it is not usually practical to set-up a lane closure with traffic-control devices. If possible, these incidents should be removed from the roadway. An example would be a vehicle collision where there are no injuries and the vehicles are in a drivable condition. All information can be exchanged in a safe location rather than being exposed to oncoming traffic.
- L. MUTCD – The Manual on Uniform Traffic Control Devices, published by the Federal Highway Administration (FHWA) under 23 Code of Federal Regulations (CFR), Part 655, Subpart F. The most current edition on the MUTCD can be found at <http://mutcd.fhwa.dot.gov/>.
- M. Shadow Vehicle - the second due fire apparatus or other emergency responder vehicle, which positions upstream of the blocker vehicle at an angle, to create the beginning of the buffer zone.



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- N. Taper - Action of merging several lanes of traffic into fewer lanes, utilizing temporary traffic control devices. This action begins upstream of the shadow vehicle.
- O. Temporary Traffic Control Device – Items that are used to warn and alert drivers of potential hazards and to guide or direct motorists safely past the hazard(s). May include cones, flares, and signal lights. Advance warning arrow panels (arrow boards) are intended to supplement other traffic-control devices. All traffic cones used by AAFD shall be a minimum of 28 inches in height with reflective stripes. The cones must be retro-reflectorized by a 6-inch wide white band located 3 to 4 inches from the top of the cone and an additional 4 inch wide white band located approximately 2 inches below the 6-inch band
- P. Termination Area - Area where road users are returned to their normal driving path.
- Q. Traffic Incident Management Area - Area of a highway where temporary traffic controls are installed, as authorized by a public authority or the official having jurisdiction of the roadway, in response to a road user incident, natural disaster, hazardous material spill, or other unplanned incident. It is a type of temporary traffic control (TTC) zone and extends from the first warning device, such as a sign, light, or cone, to the last TTC device or to a point where vehicles return to the original lane alignment and are clear of the incident.
- R. Transition Zone - Section where road users are redirected out of their normal driving path.
- S. Upstream – The area prior to the incident in the direction of normal traffic flow as the vehicles approach the temporary incident control zone.

III. ARRIVING ON SCENE

- A. Standard practice will be to position emergency response vehicles in such a manner that best protects the incident space and passing motorists.
- B. Consideration should be given to traffic flow and to providing an avenue for additional resources to access the incident space.
- C. When possible, crew members should enter/exit their units on the side opposite the traffic flow. Emergency responders should always check for approaching traffic before exiting their vehicle.
- D. The magnitude of the incident should be estimated within the first fifteen (15) minutes of arrival using the criteria set below.
 - i. Minor - 30 minutes or less
 - ii. Intermediate - 30 minutes to 2 hours
 - iii. Major - more than 2 hours



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For intermediate or major incidents, fire administration shall be notified following SOP 1.3 - Administrative Notification. This shall be requested by a company officer or the battalion chief.

All incidents should be updated every 15-30 minutes.

- E. Personnel should always be aware of their visibility to oncoming traffic and take measures to move the traffic incident as far off the traveled roadway as possible or to provide for appropriate warning. Emergency vehicles should be safe-positioned in such a manner as to optimize traffic flow through the incident scene. All subsequent arriving emergency vehicles should be positioned as to not interfere with the established temporary traffic flow.
- F. EMS units should routinely be positioned downstream of the incident within the incident space.
- G. If a second fire apparatus responds to the scene as a shadow vehicle, it should safe position at least fifty (50) feet upstream of the blocker vehicle to help ensure an adequate buffer zone. The shadow vehicle assumes a fend-off position to deflect any high speed impact that would otherwise crash into the incident space.
- H. Driver / operators shall cancel any warning lights which impair the vision of approaching traffic, e.g., headlights, spotlights, clear warning lights.
- I. Position emergency vehicles on the same side of the roadway as the incident.

IV. TRAFFIC CONTROL

Personnel shall control oncoming traffic prior to turning their attention to the incident. Personnel are urged to constantly keep in mind the “three guiding principles” when operating in or near moving traffic. Recognizing these principles will increase the margin of safety. The three guiding principles are:

Provide Advance Warning - Use traffic control devices such as signs, other emergency vehicles, or any other appropriate device that will warn or direct motorists away from an approaching incident.

Protect the Scene - Position vehicles and traffic control devices in such a way that allows for adequate space between the point where the traffic is diverted and the actual incident space. Fire apparatus should position in a manner that best protects the incident space. Such positioning affords protection to responders from the hazards of working in or near motor vehicle traffic.

Be Visible - All responders operating at the incident on a highway with moving traffic shall wear highly visible, highly reflective garments to increase the ability of motorists to see the emergency responders during day and night operations.

Personnel shall don personal protective equipment (PPE) that meets or exceeds ANSI Class II criteria prior to exiting the emergency vehicle.



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This requirement is in addition to the personal protective equipment that may be required. Class II PPE shall not be worn during fire suppression activities.

- A. It is the responsibility of the initial apparatus to establish a safe incident space. Temporary traffic control devices and/or emergency vehicles may be used for this purpose until appropriate equipment becomes available.
- B. Scene conditions may necessitate the closure of the lane next to the affected lane, commonly referred to as a “buffer lane,” to provide an additional margin of safety for emergency workers, motorists, or any other unforeseen circumstances which would expose emergency workers to increased risk from passing traffic.
- C. Placement of temporary traffic control devices should be utilized with consideration given to drivers’ reaction time and visual obstructions. The advance warning may need to be extended upstream when factors such as topography, time of day, and weather are present and therefore increase the potential for secondary crashes.
- D. Personnel should face traffic at all times when placing and retrieving traffic control devices.
- E. During intermediate and major traffic incidents, traffic control devices shall be deployed along the activity area. Traffic cones in the activity area may be spaced in feet apart on a roadway equivalent to the posted speed limit, not to exceed a spacing distance of fifty (50) feet.
 - i. Posted speed limit of 35 mph, traffic cones may be spaced 35 feet apart.
 - ii. Posted speed limit of 70 mph, traffic cones may be spaced no greater than 50 feet apart.
- F. During intermediate and major traffic incidents, temporary traffic control devices should be used to establish a taper when it is safe to do so. The taper on a roadway with only one (1) lane moving in the direction being affected should be fifty (50) to one-hundred (100) feet long. These cones may be placed up to twenty (20) feet apart. The taper on a roadway with multiple lanes moving in the same direction should be a minimum of two-hundred (200) feet long, with cones placed forty (40) to fifty (50) feet apart.
- G. Traffic should not be allowed to pass the incident space on both sides of emergency responders unless approved by the IC. Traffic should be diverted to the left or the right of the scene.
- H. If personnel do not feel adequate safety measures are in place, they should fallback to a safe area until the situation is resolved with the IC and law enforcement. Anytime there is dispute between AAFD and a law enforcement agency on traffic incident management, fire administration shall be notified following SOP 1.3 - Administrative Notification.



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- I. When communicating with other personnel responding to an incident, it is important to note the exact location of the incident and the most efficient route to access the incident.

V. LIMITED ACCESS HIGHWAYS

Listed below are benchmarks for operating on a limited access highway.

- A. Personnel may determine that any or all lanes, shoulders and entry/exit ramps be completely shut down. The objective will be to maintain any closure for the shortest time period possible.
 - i. Whenever there is a partial or full closure of I-94 or US-23, Central Fire Dispatch will be advised of the closure.
 - ii. Whenever there is a full closure, fire administration shall be notified following SOP 1.3 - Administrative Notification.
- B. The battalion chief shall be responsible for ensuring incident management and scene safety.
- C. The first apparatus to arrive at the location of the incident will establish a block seventy (70) feet upstream of the incident from the apparatus front bumper. They will update all other responding units on the nature, location and requirements of the incident. This update must include specific direction to the second arriving unit regarding lane position, need for advance warning, and / or additional traffic control.
- D. The second arriving apparatus shall provide a shadow for the first arriving vehicle.
- E. The third arriving apparatus shall provide advance warning at least one-quarter mile (1,300 feet) upstream of the incident, assuring that they are clearly visible to motorists approaching the temporary traffic control zone.
 - i. The position of this apparatus shall take into consideration all factors that limit sight distance of the approaching traffic including ambient lighting conditions, weather-related conditions, road conditions, design curves, bridges, hills and over-or underpasses.
 - ii. The apparatus shall position in a blocking position occupying one less lane than the activity area occupies.
 - iii. Notify the IC of any approaching traffic that is not responding to the speed changes, transition, tapering and merging directions.
 - iv. The driver/operator shall sound a series of long blasts on the apparatus air horn to warn all personnel if the actions of an approaching motorist pose a life threatening hazard.
- F. Law enforcement vehicles may be used to provide additional blocking of additional traffic lanes or advanced warning as needed.
- G. If a responding apparatus is on the opposite side of a divider from an incident, and the highway is not secured in both directions, the apparatus shall pass the incident and return on the same side of the divider as the incident.



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No personnel shall cross or move equipment over a highway divider unless traffic is controlled on both sides of the divider, including securing both inside shoulder lanes, and both inside lanes of the roadway.

- H. When an incident is in the median and there is no concrete divider wall, fire department vehicles will establish a block on the left shoulders, protecting the incident from both directions. Additional units will provide advanced warning and lane control from both directions.
- I. On limited access highways, Tower 1-1 and Ladder 1-5 shall not serve as blocker, shadow or advanced warning vehicles. If Tower 1-1 or Ladder 1-5 happen arrive first, they may serve as the initial blocker vehicle. Tower 1-1 and Ladder 1-5 shall position downstream of the incident whenever feasible.

VI. DUAL RESPONSE WITH PITTSFIELD TOWNSHIP

- A. AAFD is the authority having jurisdiction on I-94. For National Fire Incident Reporting System (NFIRS), AAFD will complete the NFIRS report with Pittsfield Township indicating mutual aid.
- B. Pittsfield Township is the authority having jurisdiction on US-23. For the National Fire Incident Reporting System (NFIRS), Pittsfield Township will complete the NFIRS report with Ann Arbor indicating mutual aid.
- C. First arriving apparatus will assume incident command (IC) and will operate in the function of the IC no matter the location or jurisdiction. IC may be transferred to the AHJ if needed.
- D. While responding to reported incidents, the authority having jurisdiction will adjust unit responses as needed. Apparatus will adjust function according to arrival order.
- E. All requests for upgrades to response will be made by the authority having jurisdiction. No system will be in place to automatically send next available units.

VII. EASTBOUND I-94 RESPONSE PACKAGES

- A. Eastbound I-94 between Wagner and Ann Arbor-Saline
 - i. Battalion chief will respond to the incident location.
 - ii. Engine 1-3 will as the blocker.
 - iii. Engine 1-6 will serve as the shadow for Engine 1-3.
 - iv. Tower 1-1 will block the eastbound I-94 entrance ramp at Jackson Rd. Tower 1-1 shall maintain this assignment until eastbound I-94 is shut down and / or relieved. In coordination with the battalion chief, Tower 1-1 may respond to the incident location. Tower 1-1 will park downstream of the incident location.
 - v. Engine 16-1 will initially stage on the shoulder of I-94 west of M-14.
 - 1. Upon confirmation from an AAFD unit, Engine 16-1 will divert eastbound I-94 traffic to northbound M-14.



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- B. Eastbound I-94 between Ann Arbor-Saline and US-23
 - i. Battalion chief will respond to the incident location.
 - ii. Engine 1-6 will as the blocker.
 - iii. Engine 10-3 will serve as the shadow for Engine 1-6.
 - iv. Engine 10-1 will provide advance warning.

VIII. WESTBOUND I-94 RESPONSE PACKAGES

- A. Westbound I-94 between US-23 and State Street
 - i. Battalion chief will respond to the incident location.
 - ii. Engine 1-4 will serve as the blocker.
 - iii. Engine 10-2 will serve as the shadow for Engine 1-4.
 - iv. Engine 10-1 will provide advance warning.
- B. Westbound I-94 between State Street and Jackson Road
 - i. Battalion chief will respond to the incident location.
 - ii. Engine 1-6 will serve as the blocker.
 - iii. Engine 10-3 will serve as the shadow for Engine 1-6.
 - iv. Engine 10-1 will provide advance warning.
- C. Westbound I-94 between Jackson Road and Wagner Road
 - i. Battalion chief will respond to the incident location.
 - ii. Engine 1-3 will serve as the blocker.
 - iii. Engine 1-6 will divert westbound I-94 traffic to Jackson Road.
 - iv. Tower 1-1 will block the westbound I-94 entrance ramp at Jackson Rd.
 - 1. Dedicated this position until eastbound I-94 is shut down and the Jackson Rd. entrance ramp is secure.
 - 2. Once those two objectives have been confirmed, Tower 1-1 may respond to the incident location.
 - 3. Tower 1-1 will park downstream of the incident location.

IX. NORTHBOUND AND SOUTHBOUND US-23 RESPONSE PACKAGES

- A. Northbound and southbound US-23 from the power lines that cross US-23 just north of Washtenaw Avenue south to Ellsworth Road.
 - i. Engine 1-4 will serve as the blocker.
 - ii. Engine 10-2 will serve as the shadow for Engine 1-4.
 - iii. Engine 10-1 will provide advance warning.

X. MDOT STATEWIDE TRAFFIC OPERATIONS CENTER

The MDOT Statewide Transportation Operations Center (STOC) focuses on MDOT's goals of incident management, crash reduction, traveler information, and congestion reduction. STOC provides motorists with real-time travel information and partners with emergency responders to provide response services to traffic crashes, saving lives, time, and money. The battalion chief, assistant chief(s), or fire chief are authorized to directly communicate with the STOC.



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- A. STOC Notification Criteria
 - i. Anyway freeway closure (same criteria for when administrative notification)
 - ii. Any hazardous materials incident
 - iii. Any damage to signs and signals on the freeway
 - iv. Anytime we need a MDOT representative to come out
 - v. Coordinate courtesy patrol vans

XI. DEMOBILIZATION

- A. On limited access highways, if the Michigan State Police (MSP) is on the scene, and AAFD personnel are no longer doing fire / EMS / rescue / hazardous materials, the IC shall confer with MSP to clear the scene of AAFD resources as soon as possible. If AAFD is asked to remain on scene by MSP, then AAFD dictates position of apparatus. If MSP is not agreeable to what the AAFD incident commander determines is safe, then AAFD shall clear the scene and fire administration shall be notified shall be notified following SOP 1.3 - Administrative Notification.
- B. If AAFD arrives prior to MSP and there are no patients and the vehicle(s) is not blocking, it is permissible for AAFD to provide the occupants to a ride to get them off of the freeway. The Tim Hortons on South State Street and Ann Arbor-Saline Road are both open 24-hours and make good drop-off locations. Engines can be used for this, but Rescue 1-1 and the battalion chief vehicle can also be called to assist. The transport of occupants needs to be communicated to Central Fire Dispatch with the number of occupants being transported, location being transported to, and along with confirming their safe transport via radio.
- C. Demobilization of the incident must be managed with the same aggressiveness as initial actions. Apparatus and equipment should be removed from the highway promptly to reduce exposure to moving traffic and minimize traffic congestion.
- D. Demobilization begins at the downstream termination area and ends at the furthest most upstream advance warning device. All responders and apparatus should clear the highway before the last device is picked up and secured.
- E. Vehicles which must merge into traffic traveling at highway speeds and shall use the shoulder as an acceleration lane and emergency warning lights should be cancelled only after the vehicle has completely merged into traffic.