

SANTA CLARA COUNTY LOCAL FIRE SERVICE AND RESCUE MUTUAL AID PLAN

APPENDIX 14-D – Highway / Roadway Safety

Revised Date: January 2019
Next Revision Date: January 2021

Introduction

The first priority for the fire department must be to ensure that its personnel arrive safely at an emergency scene and operate safely at that scene. Operating at roadway incidents is particularly risky due to the hazards posed by moving vehicles. Fire personnel must create a safe area to protect themselves and the people they are assisting while taking into account the dangers inherent in working in or near traffic.

The fire department's primary role at a roadway incident is to safely provide the service needed to stabilize any victims and mitigate the situation without allowing operations to cause additional hazards for passing motorists. For other roadway emergencies such as vehicle fires, the fire must be safely controlled while providing for responder safety. Fire personnel should assume that motorists would be inattentive and/or distracted and gear their operations to account for problems that may arise.

The intent shall be to 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 and the work area. Such positioning shall afford protection to fire department personnel, law enforcement officers, tow service operators, ambulance personnel, and the public from the hazards of working in or near moving traffic.

A dedicated safety support vehicle shall be dedicated at every multi-agency (Mutual Aid or Automatic Aid) response/incident occurring on a highway in Santa Clara County. A safety support vehicle is a dedicated vehicle utilized to establish an upstream block from the first arriving apparatus to provide a safe work area.

Safety Benchmarks

Specific procedures should be taken to protect all crewmembers and emergency service personnel while operating in or near moving vehicle traffic.

All personnel shall wear department issued ANSI 107 rated vests over their regular personal protective equipment. The vests help increase the level of visibility of emergency response personnel at the scene of an emergency incident on or near highways and freeways with motor vehicle traffic.

Personnel directly engaged in or mitigation of a hazardous materials incident is exempt from wearing high-visibility garments. Any members assigned to respond to an emergency situation (i.e. RIC/RIT members) should be considered in the same environment as those engaged in active fire attack and should be staged OFF of the roadway and in the protected safe zone where they would not require hi-visibility gear until after the scene is under control at which time they could don a vest. Any personnel on scene could easily remove (tear-away) a high-visibility vest to react to unusual circumstances if necessary and don an air-pack to render assistance with direct firefighting actions.

Unified Command

- Fire personnel should establish communications with the CHP IC or local police agency as soon as practical to jointly coordinate the safe Operational Area and to effectively mitigate the event.
- Fire and law both have common priority objectives of (1) life safety, (2) protecting property, (3) protecting the environment, (4) resolving the incident, and (5) establishing normal traffic flows. Additional priorities of CHP are possible re-routing of traffic, evidence collection, and acquiring statements.
- California Highway Patrol (CHP) has jurisdictional responsibility for Incident Command at all emergency incidents on freeways and state highways and is ultimately responsible to coordinate the operation. CHP commonly refers to the “IC as the “OIC” (Officer in Charge in the absence of a responding Sergeant).
- Responses to an incident on a controlled access freeway present unique dangers to both first responders and the general public. Guidelines within this plan will frequently need to be modified based upon the specifics of the incident. Any delay to coordinate with the IC (CHP) can result in unnecessary lanes being blocked. This blockage, while perhaps beneficial to securing the scene, will frequently result in additional traffic collisions occurring thus defeating our common goal of safety and service to the public.

Terminology

The following terms shall be used during incident operations, post incident analysis, and training activities related to working in or near moving traffic.

- Advance Warning Area – is the section of highway / roadway where drivers are informed of the upcoming incident area and motorists can transition from normal driving status to that required by the temporary emergency traffic control measures ahead of them.
- Buffer Zone – the distance or space between personnel and vehicles in the protected work zone and nearby moving traffic (approximately 100 feet or equivalent to the length of two fire engines recommended) based on visibility and terrain.
- Downstream – the direction that traffic is moving as it travels away from the incident scene.
- Flagger – The fire department member assigned to monitor upstream traffic and activate an emergency signal if a motorist does not conform to traffic-control measures and thus presents a hazard to emergency operations.
- Incident Site – a restricted area for authorized personnel

- Lane + 1 – positioning a fire apparatus with full lane blockage in the lane containing the incident as well as the lane or area where responders are working, at an angle to the lanes of traffic creating a physical barrier between upstream traffic and the Operational Area (count shoulder and median as a lane when applicable).
- Operational Area – the physical area of a roadway within which emergency personnel perform their fire, EMS and rescue tasks at a vehicle-related incident. Includes the buffer zone, incident site and staging area.
- Safety Support Vehicle (Fire Apparatus) – dedicated vehicle utilized to establish an upstream block from the first arriving apparatus to provide a safe work area.
- Shadow – The protected work area of a roadway incident shielded by the block from fire apparatus and other emergency vehicles.
- Transition Area – is that section where road users are redirected out of their normal path. This usually involves creation of tapers using channelizing devices such as cones, directional arrows, flares, and triangular reflective markers.
- Upstream – the direction that traffic is traveling from as the vehicles approach the incident scene.

Arrival

The first emergency responder arriving to the scene of any highway incident will assume the role of IC. The individual assuming that role is subject to change as additional responders arrive at the scene. Standard practice will be to position response vehicles in such a manner as to ensure a safe work area. (See illustration 1)

Parking of Response Vehicles

Providing a safe incident scene for emergency responders is a priority at every emergency incident. However, consideration must be given to keeping as many traffic lanes open as possible. Except for those vehicles needed in the operations and those used as a shield for the incident scene, other response vehicles should be parked together (staging area). As a matter of routine, the parking of response vehicles should be on one side of the roadway. Parking should be on either the shoulder or median area, if one exists, but not both. Parking response vehicles completely out of available lanes greatly assists in the movement of traffic. If not needed to illuminate the scene, drivers should remember to turn vehicle headlights off when parked at incidents.

Onscene Actions

The proper spotting and placement of emergency apparatus is the joint responsibility of the driver and IC. The proper positioning of emergency-response vehicles at the scene of an incident assures other responding resources of easy access and a safe working area and helps to contribute to an effective overall operation. The safety of everyone on the scene is foremost while they are operating, both in emergency and nonemergency situations.

An incident safety zone shall be established, allowing fire and rescue units to position in close proximity of the incident. The responding fire apparatus should be placed back some distance from the incident, making use of it as a safety shield blocking only those travel lanes necessary. In the event that a motorist enters the incident safety zone, the fire apparatus will act as a barrier; and, in the unlikely event that the fire apparatus is moved upon impact, it will travel away from the incident safety zone. (See illustration 2 and 3)

As soon as possible, the initial-responding unit or safety support vehicle should position traffic-control devices to channel traffic away from an incident. Traffic-control devices shall be used whenever responding vehicles are parked on or near any road surface. Placement of traffic-control devices shall begin closest to the incident, working toward oncoming traffic. Taking into consideration the possibility of hazardous materials, traffic-control devices shall be placed diagonally across the roadway and around the incident. This assists in establishing an incident safety zone. When placing traffic-control devices, care should be exercised to avoid being struck by oncoming traffic. When channeling traffic devices around an incident, traffic-control devices shall also be used in front of the incident if those devices and the personnel are available.

It is possible to channel traffic around a curve, hill, or ramp, provided the first device is placed such that the oncoming driver is made aware of imminent danger.

NFPA 1500 Recommended Distances

| Traffic Speed (Mph) | Advance Warning Area | Transitional Area | Operational Area | | |
|---------------------|----------------------|-------------------|------------------|------------------------|--------------|
| | | | Buffer | Incident Site* | Cone Spacing |
| 25 | 600 | 125 | 155 | *Dictated by Emergency | 25 |
| 35 | 1050 | 245 | 250 | | 35 |
| 45 | 1500 | 540 | 360 | | 45 |
| 55 | 5140 | 660 | 495 | | 55 |
| 65 | 5140 | 780 | 645 | | 65 |

NFPA 1500 (2018); ANNEX A – Table A.9.4.5

All measurements listed in feet unless otherwise stated.

Clearing Traffic Lanes

When outside a vehicle on a major roadway, both civilian and emergency responders are in an extremely dangerous environment. Therefore, it is imperative to take every precaution to protect all responders and those involved at incident scenes. Although positioning emergency-

response vehicles to serve as a shield for work areas is a prudent practice, we must remember that reducing and/or shutting down traffic lanes creates other problems and safety concerns. Therefore, it is critical when operational phases are completed that emergency-response vehicles clear the incident or be repositioned to allow traffic to flow on as many open lanes as possible. Remember that unnecessarily closing or keeping traffic lanes closed greatly increases the risk of a secondary incident occurring in the resulting traffic backup.

Personal Protective Actions:

- Consider all traffic on roadways a threat to your safety.
- Personnel must respond to roadway incidents wearing all personal protective equipment required by their agency including the ANSI 107 approved vests.
- When blocking an intended lane with an apparatus, make sure it is not unintentionally impeding into another lane as this may cause a potential hazard by confusing motorists and would be considered a lane closure by CHP.
- All personnel shall utilize the **LCES** acronym;

L–LOOKOUTS, all personnel are required to maintain a visual awareness; the Incident Commander will ensure that a “Lookout” is established until the incident is terminated. At least one firefighter shall always face and be aware of oncoming traffic.

C-COMMUNICATIONS, verbal and/or radio communications are to be maintained before, during, and after the incident among all personnel on scene.

E-ESCAPE ROUTES, all personnel should have a “safe” place to escape if oncoming traffic poses an impending danger to personnel safety. Ensure that you have a plan for protecting your patients. Three long blasts of the air horn and or a verbal warning shall be the predetermined warning signal for impending danger.

S-SAFETY ZONES, a pre-planned area of sufficient size, in a suitable location, that will provide for the safety of all on-scene personnel.

Scene Safety:

- Firefighters shall exit apparatus on the shadow side, away from moving traffic. If that is not possible, they shall watch carefully and use caution in exiting apparatus. They shall not walk around fire apparatus without taking caution and ensuring that they will be safe in doing so.
- The headlights on stopped vehicles can temporarily blind motorists that are approaching an incident scene. Drivers of oncoming vehicles will experience the problem of glare recovery. This essentially means individuals are driving past the emergency scene blindly.

The wearing of protective clothing and /traffic vests will not help this “blinded” motorist see emergency responders standing in the roadway. Studies show that at two-and-a-half car lengths away from a vehicle with its headlights on, the opposing driver is completely blinded. Floodlights or vehicle lights that are not needed for operational illumination should be turned off. Amber warning lights are best for all ambient-lighting conditions.

- As soon as a traffic control area is established with sufficient warning devices, emergency warning lights on apparatus should be reduced – unless the apparatus is being used upstream of the Operational Area as a traffic control device. Responding units, working in or ahead of the Operational Area, should turn off forward-facing emergency lights in order to reduce distraction and confusion to on-coming motorists.
- A flagger shall be assigned to monitor approaching traffic and activate a prearranged emergency signal if a motorist presents danger to firefighters operating in the temporary work zone. This may be a crew member from the Safety Support Vehicle.
- At all intersections, or where the incident may be near the middle lane of the roadway, two or more sides of the incident will need to be protected. Block all exposed sides.
- Caltrans can provide resources (cones, signs, arrow boards, safety equipment) on extended incidents. Caltrans response should be coordinated through the Law enforcement officer in charge (OIC).
- **The termination of the incident must be managed with the same aggressiveness as initial actions. Crews, apparatus, and equipment must be removed from the highway promptly, to reduce exposure to moving traffic and minimize traffic congestion.**

References

National Fire Protection Association. *NFPA 1500: Standard on Fire Department Occupational Safety, Health and Wellness Program* (2018 Ed.). Ch. 9 - Traffic Incident Management.

U.S. Fire Administration, *Traffic Incident Management Systems* (FA-330/Mar. 2012).

U.S. Department of Transportation, Federal Highway Administration, *Best Practices in Traffic Incident Management* (Sept. 2010).

American National Standards Institute/International Safety Equipment Association, *American National Standard for High Visibility Safety Apparel and Accessories* (107-2015) and *High Visibility Public Safety Vests* (207-2011).

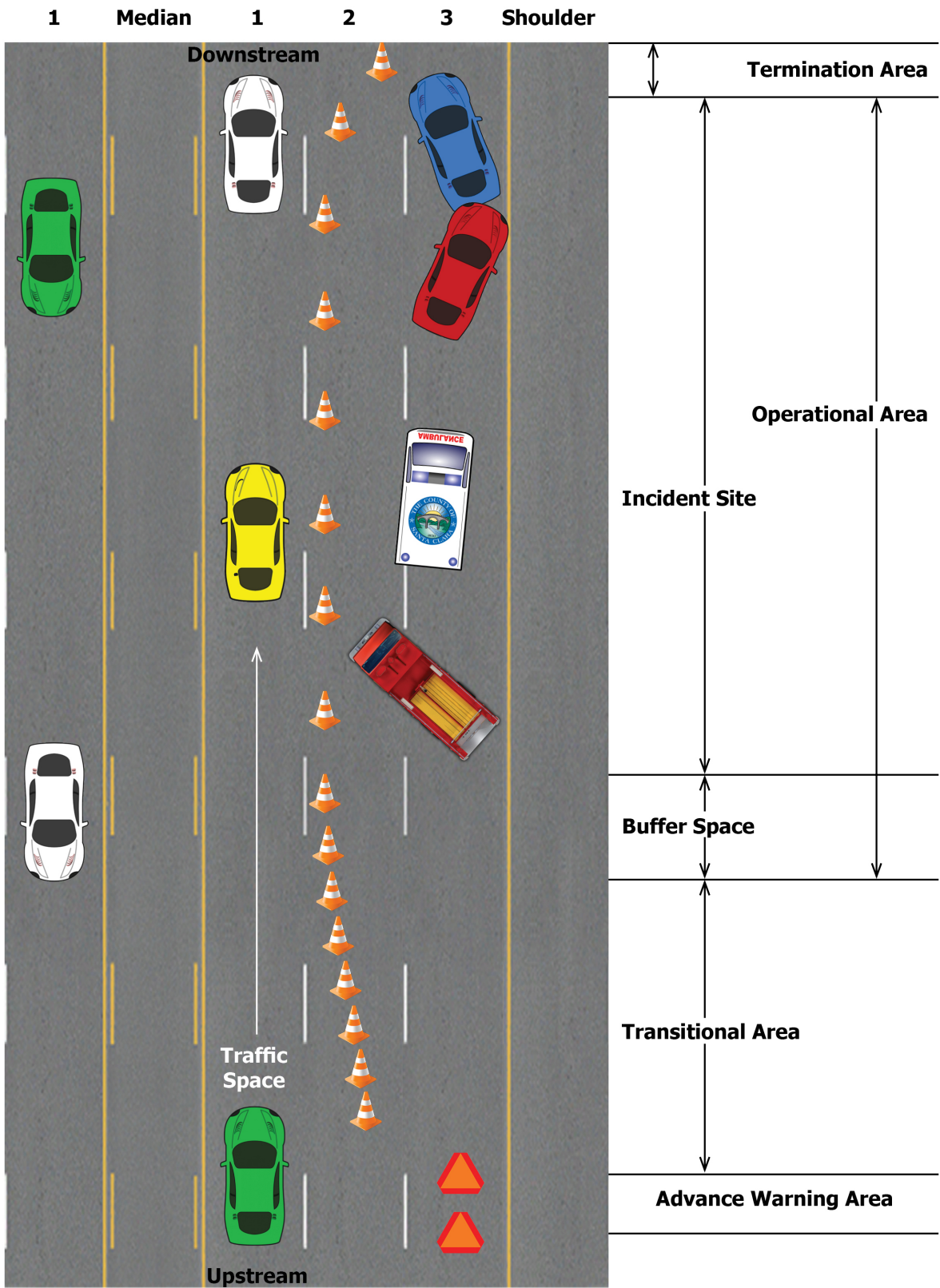


Illustration 1

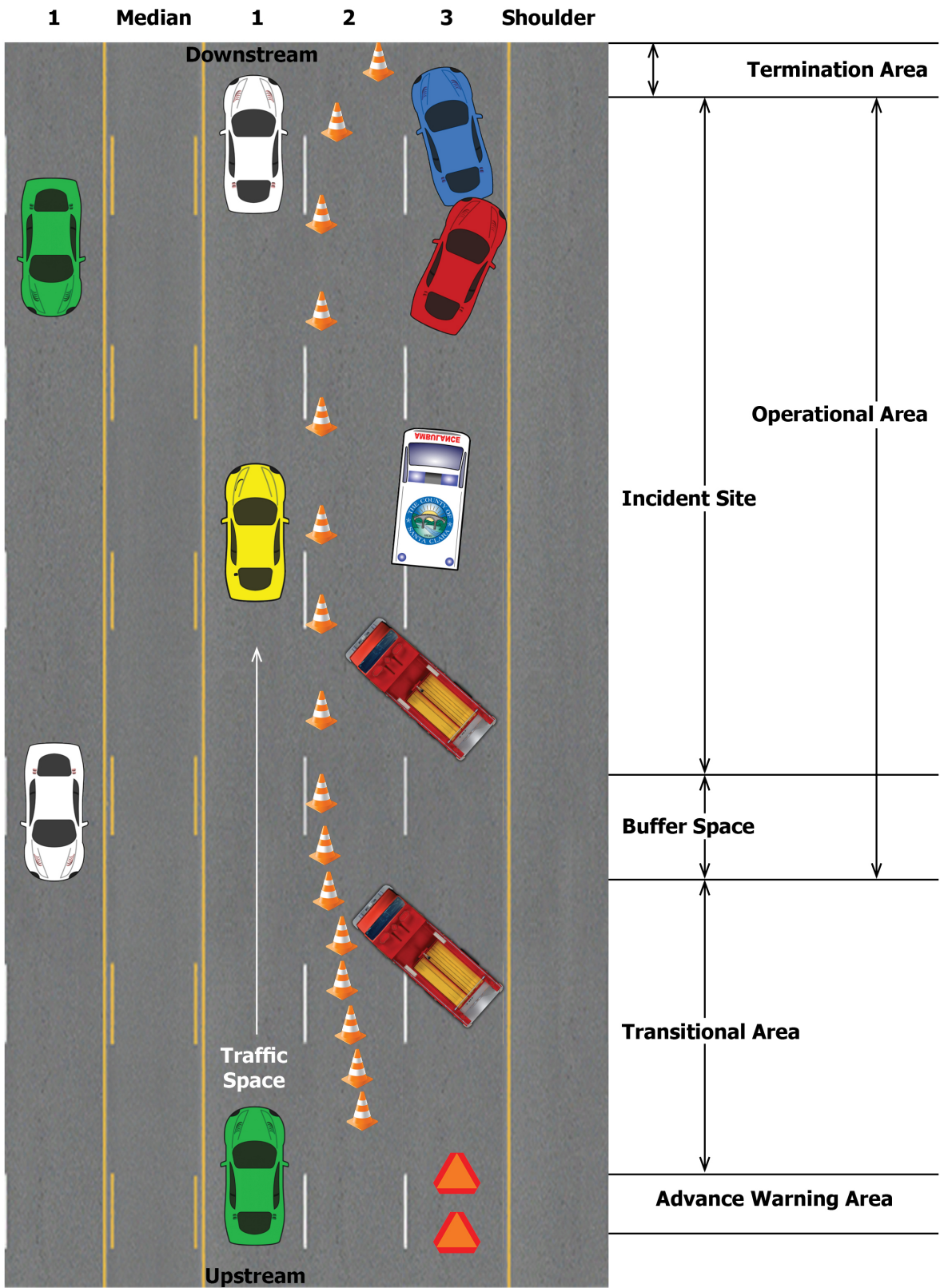


Illustration 2

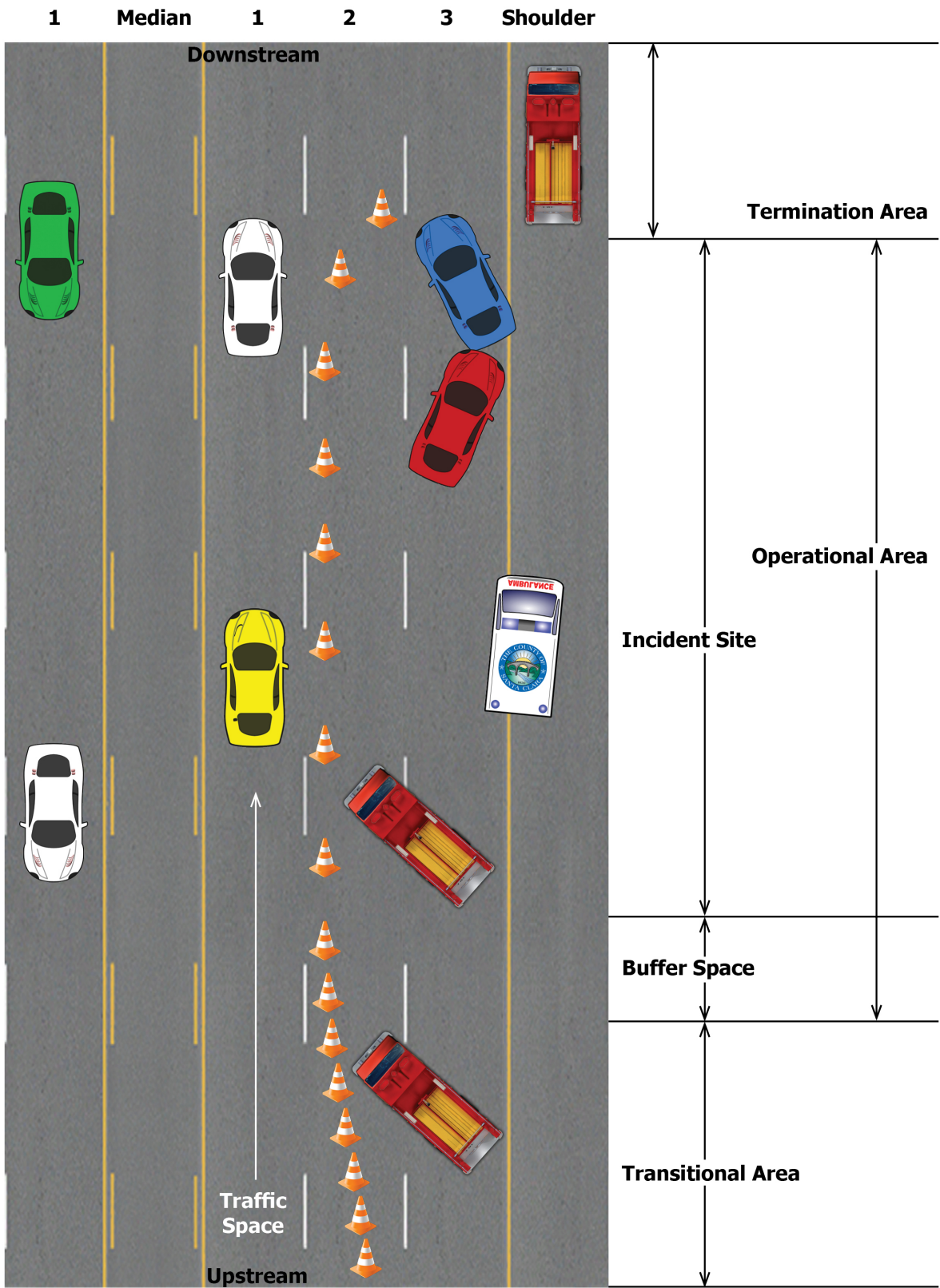


Illustration 3