U.S.Department of Transportation
Federal Highway Administration

EXECUTIVE SUMMARY: Traffic Incident Management Resource Management

The necessity of a multi-disciplinary approach—involving law enforcement, fire and rescue, transportation, towing and recovery, and others—has been well-recognized and integrated into traffic incident management (TIM) operations to encourage safe and quick clearance of highway incidents. This same multi-disciplinary approach has not been as widely extended to the area of resource management. Under a multi-disciplinary approach, efficient and effective TIM resource management relies on the utilization of appropriate:

1. Personnel who are best qualified (i.e., capable, but not over-qualified) for the various tasks;
2. Equipment by function (i.e., use of the least costly equipment to perform the function); and
3. Technology capable of supporting various on-site resource tasks as well as reducing the overall resources required through reduced redundancy across disciplines.

To demonstrate the potential for enhanced TIM resource management efficiency and effectiveness, this Primer considered hypothetical examples for select TIM functions, including motorist assistance, dispatch/response, scene protection, temporary traffic control, detour management, firefighting, minor spill mitigation/cleanup, crash investigation, victim relocation, and vehicle/debris removal. Results from an *Incident Scenario Survey* were used to confirm potential improvements in practice and estimate order of magnitude cost savings and indicated:

- Motorist assistance services (e.g., fixing a flat tire, providing gasoline, etc.) are most often provided by law enforcement or transportation agencies through routine or specially established roving patrols. Transportation personnel, whose nature and extent of training most closely aligns with motorist assistance functions, may provide these services most efficiently. In addition, the cost of a fully-equipped transportation maintenance vehicle is typically less than that of a law enforcement cruiser.
- Appropriate resources sent to the scene and the expediency with which those resources arrive can be improved using various technologies such as closed-circuit television systems, automatic vehicle location and geographic information system technologies, and traffic signal priority systems.
- Fire/rescue and law enforcement vehicles are commonly used to protect the incident scene, but a higher level of efficiency and equal or higher effectiveness may be achieved by using a less costly transportation vehicle equipped with an arrow board. Portable intrusion alarm systems provide a cost-effective technology-based alternative to the use of response vehicles for scene protection.
- Responders are all trained to provide temporary traffic control, regardless of discipline; however, transportation personnel provide a distinct advantage because they typically receive more extensive training, operate appropriately equipped vehicles, and can access additional traffic control devices not carried on the vehicle. The effectiveness and efficiency of temporary traffic control is highly dependent on the ability to quickly mobilize transportation personnel and equipment.
- Law enforcement agencies may provide positive traffic control to maintain traffic flow along designated detour routes, using officers staged at key locations and/or modifying fixed signal timing plans for isolated signalized intersections along the parallel route to allow increased “green time.” Use of properly deployed traffic control devices (e.g., static and dynamic message signing) and responsive traffic signal control

systems can free law enforcement personnel to perform other duties for which they are uniquely trained as well as improving overall traffic flow on the roadway network.

- Fire / rescue personnel are most highly trained in firefighting capabilities; however, both law enforcement and transportation personnel are commonly equipped with fire extinguishers to manage small-scale fires. If a fire can be fully mitigated by transportation or law enforcement personnel—whoever is first to arrive on-scene—the cost of mobilizing fire / rescue personnel and equipment can be saved.
- Fire / rescue and transportation personnel are each trained for small spill mitigation and cleanup (i.e., lubricants, fuels). If fire and rescue personnel are not otherwise required to be on the scene, transportation personnel may be more efficiently mobilized for such a cleanup. If both are required to be on the scene, using transportation personnel for spill mitigation and cleanup would release fire and rescue personnel to focus on other tasks for which they are uniquely trained (e.g., extrication).
- Law enforcement agencies are responsible for crash investigation and documenting all pertinent physical evidence and details at the incident scene. Traditional methods for capturing this information include the triangulation and coordinate or base tape method. Various types of technology, including total station surveying equipment and photogrammetry have been demonstrated to dramatically reduce incident duration while increasing the quality and quantity of measurements captured.
- Relocation of a fatal crash victim out of the roadway following or prior to the on-scene arrival of the medical examiner to prevent further harm to the victim or survivors of the incident, incident responders, and/or the motoring public, is allowed and encouraged through legislation in several states. The use of transportation personnel for on-site victim relocation (acting only under express mutual consent from law enforcement and medical examiner agencies) affords law enforcement personnel the opportunity to initiate the crash investigation process, for which they are uniquely trained.
- Vehicle and debris removal is most often the responsibility of law enforcement or transportation personnel, either using their own personnel and equipment or through dispatch of private towing and recovery personnel. Use of transportation personnel for vehicle and debris removal would release law enforcement personnel to focus on other tasks. In addition, law enforcement vehicles equipped with push bumpers may be more likely than transportation vehicles to incur damage when removing involved vehicles from the roadway. Transportation agencies are uniquely equipped with front end loaders, dump trucks, sweepers, etc., to efficiently and effectively clear large scale debris.

Results from the *Incident Scenario Survey* indicate a cost savings of between $215.81 and $364.59 per incident through the use of appropriate personnel and a reduction in the monetary value of equipment exposed to potential damage of up to $2.02 million per incident through the use of more appropriate equipment and/or technology. Reduced redundancy in resources is estimated to save $793.97 per incident in personnel costs and decrease the monetary value of equipment exposed to potential damage of up to $1.45 million per incident.

This Primer is available from FHWA's Web site at http://ops.fhwa.dot.gov/incidentmgmt/publications.htm.