

ADVANCED WARNING

Advanced warning is the practice of creating a safe Traffic Incident Management (TIM) area by indicating to road users that an incident requires extra attention up ahead. Advanced warning should not only be provided upstream of the incident but also upstream of the expected queue to prepare drivers to slow down or stop. It is a dynamic process that should be continuously assessed throughout the duration of the incident to appropriately communicate to drivers as scene circumstances change.

Goals of Advanced Warning:

- Alert the traveling public that there is an incident ahead.
- Prevent struck-by incidents.
- Prevent secondary crashes.

METHODS



Fluorescent pink warning signs provide clear advanced warning and distinguish emergency scenes from work zones



Cones and flares channelize lanes directly after the advanced warning if lanes are closed



Emergency vehicles with high-visibility markings parked at safe distances can provide warning if not in active use



Next-Gen emergency lighting provides advanced warning while not blinding or distracting motorists



Dynamic message signs (DMS) act as a filter to divert some traffic, such as commercial vehicles



Strategic vehicle placement of responder vehicles or truck-mounted attenuators upstream of an incident provides warning and direction

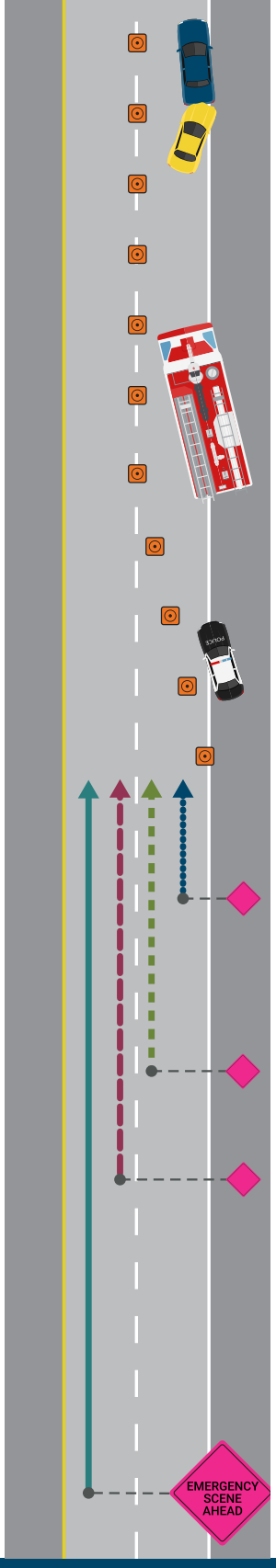
EMERGING TECHNOLOGY: REAL-TIME DIGITAL ALERTS

Digital systems in emergency response vehicles alert traffic of upcoming incidents through:

- Map services
- Car alerts
- Emergency vehicle systems
- Hazard detection systems

HAAS Alert Safety Cloud is one of many digital alerting products and can provide a system for an annual subscription fee per vehicle. Compared with using only emergency vehicle lighting, HAAS Alert users in Illinois saw:

- 3x Earlier Speed Reduction
- +80% Lane Change, No Lights
- 2x Early Lane Changes
- 0 Hard Braking Spikes



BEST PRACTICES

Incident Duration

Different advanced warning measures are necessary for different crash types.



Minor crashes take 30 minutes or less to clear and require a flashing light on a vehicle.



Intermediate crashes take 30 minutes to 2 hours to clear and require signs and cones for tapering.



Major crashes take over 2 hours to clear and require a full work zone setup.

Placement

Determining the best location to deploy advanced warning depends on the roadway type, speed limit, crash type, and road conditions.

The Manual on Uniform Traffic Control Devices (MUTCD) identifies the following distances:

- Expressways/Freeways → 1,000 feet or ~1/4 mile
- Rural Roadways → 500 feet or ~1/10 mile
- High-Speed Urban → 350 feet or ~1/15 mile
- Low-Speed Urban → 100 feet or ~6 car lengths

These distances can change due to sight distance and road conditions.

Back of Queue Management

Back of queue management is critical to prevent severe injury and fatal secondary crashes.

- Treat the end of the queue like a secondary incident zone when dedicating resources.
- **Don't become complacent.** Managing the back of the queue may mean constantly adjusting to conditions and drivers.

Nebraska TIM: Safer, Together

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