

**Work zones** are a necessary part of the infrastructure maintenance and construction process but can cause safety and congestion challenges throughout the Alabama transportation system. With active management of work zones, ALDOT is able to mitigate and minimize these challenges.

Nationally, between 2016 and 2017 work zone crashes increased and specifically in fatalities. Alabama has experienced a similar increase in work zone crashes from 2016 to 2017 with the number of work zone related crashes increasing from 2,962 to 3,158, resulting in 19 and 31 fatalities, respectively (ALDOT, Work Zone Crashes Up in Alabama).

**Managing work zones using a consistent, smart approach can help minimize delays, increase safety for motorists and workers, complete construction in an efficient manner, and maintain access to residential and business developments.**



## Smarter Work Zones

Technology applications can be used to minimize work zone related crashes, fatalities, and delay. Step one of this process is direct and consistent coordination between the DOT and construction managers and companies. Having clear schedule and plan for work zone shifts and changes will help ALDOT and partner agencies apply appropriate technology to best address the needs in the field. Current technology applications to support work zone management include:

### Real-Time Traveler Information

Using portable changeable message signs or connected vehicle applications, travel time information can be provided to the motorists. Although this does not reduce the travel time, it will reduce driver frustration and may encourage others to find an alternative route.

### Variable Speed Limit

Variable speed limits function by monitoring the downstream flow speed limit and adjusting the upstream flow to match. This method reduces the speed as traffic enters the work zones, which typically coincides with a lane reduction.

### Automated Speed Enforcement

Using portable speed enforcement devices and notifying the motorists of their use will help persuade drivers to follow the posted speed limit, thereby reducing speed variation if a crash occurs.

### Dynamic Lane Merge

Dynamic lane merges work by alerting drivers of down stream congestion and having them merge early (high speed) or zipper merge (low speed). This helps keep traffic flowing as efficiently as possible.

### Queue Warning System

Using portable changeable message signs and radar systems, a queue warning system alerts motorists to stopped traffic prior to them arriving. Reducing rear end crashes and speeds in the work zone.

### Performance Measures

Using Bluetooth data (RITIS, iPeMS) and traffic modeling software can help determine when congestion is naturally low and contractors have the ability to close lanes while minimizing the impact of the closure.

## Construction Strategy Consideration

Work zone management extends beyond the actual implementation of the work zone and into the construction procedures. The following strategies have been used to save time, money, and provide a better driving experience.

### Road Closures

Although undesirable, road closures limit the exposure that motorists have to a work zone and can speed up the construction process considerably.

### Night Work/Off-Peak Work

Limiting construction activities to periods of low volumes will limit the congestion and delay caused by the project.

### Accelerated Construction

Using new techniques and technologies, the actual construction process is speed up reducing the time frame that a work zone is needed.

### Coordinating Construction Projects

Coordination of projects between agencies can reduce the amount of time that work zones are active and reduce costs overall.

### Design-Build

Design-build projects can speed project delivery by leveraging new technologies and innovation. If work zone performance measures are included in the project consideration, then safety and mobility can be increased.

## Service Layer Support

Work zone management relies upon multiple service layers for data, information, communication, and dissemination. Work zone management can be enhanced by other service layers as explained below.

