Automated Speed Enforcement in Work Zones

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Excessive speeding and speed variability are primary factors contributing to work zone crashes. The use of traffic law enforcement is recognized as one of the most effective means of increasing speed limit compliance and decreasing speed variability. Law enforcement personnel

may also be deployed to provide presence near the work area to protect workers and to slow down vehicles in locations with back of queue issues. However, active enforcement by police officers is not feasible in work zones where geometry is restricted since there are limited areas to perform traffic stops.

Automated speed enforcement (ASE) systems are one tool in the wide range of speed management techniques that are effective in reducing speeds in work zones, thereby improving traffic and worker safety. ASE systems also increase the efficiency and safety of police officers. Presently, the Illinois Department of Transportation (DOT), the Washington State DOT, and the Maryland State Highway Administration (SHA) utilize automated speed enforcement technology to electronically identify vehicles traveling at a speed above a predefined threshold. A camera then captures an image of the vehicle and in some cases the driver. The images are embedded with the date, time, location, and speed information. The registered owner of the vehicle is then identified via the license plate number and receives a citation in the mail. ASE demonstration projects have also been conducted by the Arizona and Oregon DOTs.

Implementation

The **Illinois DOT** implemented the nation's first automated work zone enforcement program in 2006 and is continuing to use automated enforcement to improve safety in work zones. Illinois uses an ASE system that is self-contained within a van. The vans are staffed by Illinois State Police officers trained to use the ASE equipment. Illinois law requires that workers be present when the ASE unit is used and that special signs be posted to inform road users that the van is present. Two radar systems (upstream and directly across the lane from the van) monitor the speeds of approaching vehicles. The speed obtained at the upstream location is shown on a display on top of the van, providing drivers one last chance to reduce their speeds prior to reaching the across-the-lane radar at the van, which is used to determine whether the vehicle is exceeding a predefined speed threshold value. For the first violation, the fine is $375. For the second violation, the fine is $1000 and a 90-day suspension of the license. A court appearance is mandatory for each violation.[1,2]

Studies in Illinois showed that ASE is effective in reducing the average speed and increasing compliance with work

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zone speed limits. The average speed of free-flowing vehicles decreased between 3 to 8 mph with ASE. In addition, the percentage of vehicles exceeding the speed limit decreased between 5 and 54 percent with ASE.[1,2]

The **Washington State DOT** launched its initial ASE pilot project in September 2008. The ASE system is located within a sport-utility vehicle and is comprised of radar and a camera unit that measures and records vehicles speeding through work zones. Operators monitor the ASE system and forward violator information to the Washington State Police to determine whether a citation should be issued. As in Illinois, workers must be present when the ASE unit is used and special signs are posted to inform road users. The fine for speeding is $137 and does not go on the violator's permanent driving record.[3] The Washington State pilot effort evaluated the use of ASE in two work zones on Interstate 5 with 60 mph speed limits. In general, the ASE speeds were lower, the number of vehicles exceeding 70 mph decreased, and there were no traffic incidents.

The **Maryland SHA** began using ASE systems deployed in sport-utility vehicles in October 2009. The Maryland ASE systems use lidar instead of radar to measure speeds. Lidar emits a very narrow laser light beam that can be aimed at specific vehicles, which ensures that the speed measurement is of a particular vehicle, especially in higher volume locations. This allows multiple vehicles in multiple lanes to be quickly identified as violators. Operators monitor the ASE system, but procession staff and law enforcement officers review violations. The ASE units can be located within the limits of any work zone on expressways and controlled access roadways where the speed limit is 45 mph or greater. As in Illinois and Washington State, signage informing road users about the ASE system must be installed. Speed trailers that display the speed limit and real-time vehicle speeds are also installed. Citations may be issued regardless of the presence of workers in the work zone. The fine for speeding is $40 and is considered a civil infraction (i.e., license points are not assessed.)[4] In Maryland, the use of ASE systems contributed to a 54 percent reduction in the number of motorists exceeding the work zone speed limit by 10 mph at one location. The ASE systems also reduced the speed disparity between motorists, resulting in more uniform flow through the work zone.

Considerations

Specific legislation is required to allow the use of ASE technology. Typically, the legislation includes provisions for the types of facilities where ASE can be deployed, the minimum speed limit for which it can be used, the requirements for advance signage and other notification devices, the use of revenues, and the fines assessed.

ASE locations should be selected based on work zone safety considerations. Coordination with law enforcement and the court system is needed prior to implementation to ensure success. ASE technology should be considered at locations where there is no congestion and speeds are typically high. ASE should be located near the work area, but not interfere with work activities. The work zone characteristics should be considered when determining the location of the ASE to ensure the safety of the police officer, workers, and the motoring public. When used, ASE should be included in a comprehensive public outreach program aimed at changing driver behavior in work zones.

Additional considerations include:

- development of a process for implementing the system,
- ongoing administration and evaluation of the program,
- determination of whether a violation will be treated as an administrative/civil infraction or a moving violation, and
- communication and coordination with key stakeholders (e.g., law enforcement, transportation agency staff, the public, legislators, local courts, and public safety staff).

REFERENCES

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