Changing the face of work zone safety

Intelligent Sequential LED Taper Guides

Taper collisions account for a significant percentage of near miss incidents, which not only lead to injuries and fatalities, but can also cause highway congestion, delays and secondary incidents. Better informed drivers and saving lives apart, recognized experts in highway traffic safety have independently endorsed the wireless LED sequential warning technology as worthy of nationwide consideration.

Better driver recognition of the merging taper with SynchroGUIDE will:

- Deliver safer driver approach speeds
- Maximize traffic flow and promote smooth lane merge
- Prevent last second decisions/taper merge maneuvers
- Enhance work zone throughput
- Save Lives in the Work Zone

Every state DOT's aim is to provide safe, reliable journeys and informed drivers. Reducing congestion and improving reliability of the road network inevitably involves road maintenance and improvement projects and the resultant Work Zones present a significant challenge in maintaining a safe and informed highway environment for both road users and construction workers.

The cones and barricades at the beginning of a work zone, referred to as the taper, double up as, the first line of defense for the construction worker and the main guidance tool for the approaching driver. Currently the tapers are frequently struck by vehicles that have failed to see them or have not exited the closed lane in sufficient time resulting in accidents, delays, congestion and fatalities.

Work Zone Facts

- 2012, 609 work zone traffic crash fatalities recorded
- NHTSA estimate $3m cost per fatality, $1.8 Billion/annum
- 85% + of work zone fatalities are drivers or passengers
- Night time fatality rates to crash ratio is 2.6/100, while daytime ratio is 1.8/100
- High % of fatalities occur in taper
- High degree 32% of public dissatisfaction with work zone delays
- Night-time zones to increase from current 40% of all work zones
- Majority of incidents occur during hours of darkness when visibility is reduced
- A growing portion of capital expenditure is being spent on road preservation increasing motorist exposure to work zones

The SynchroGUIDE LED lamp series was designed to be a simply deployable low cost counter measure device, which would not only dynamically enhance the visibility of the work zone merging taper as in the case of Steady Type B high intensity, but at the same time improve driver lane discipline and recognition by providing a directional taper guide.

It combines the latest in LED and lens technology with intelligent wireless communications to enable taper deployment lengths of up to 256 lamps with no master or slave relationships. Rapidly deploy in any order and they will sequence instantly.

Unlike arrow boards and static lights the delineation is not spot based but is continual for the entire taper length, a critically important feature during hours of darkness and poor weather conditions where visibility is reduced. The ITE and NCHRP 350 crash compliant technology fully complies with the 2009 edition of the Federal Highway MUTCD guidelines for better merging taper recognition.

6F.83 08 A series of sequential flashing warning lights may be placed on channelizing devices that form a merging taper in order to increase driver detection and recognition of the merging taper.

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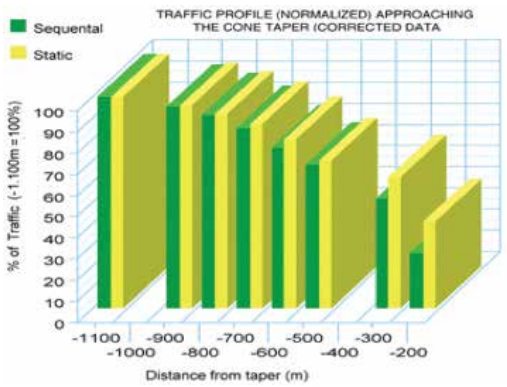
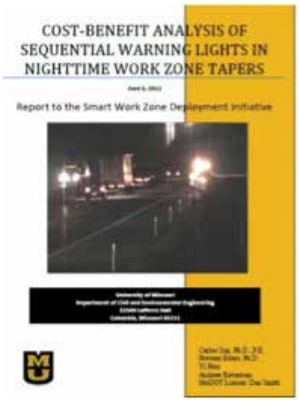
The SynchroGUIDE was originally developed to meet chapter 8 of the UK MUTCD to afford better driver recognition at a change of delineation.

The TRL Transport Research Laboratory conducted field trial comparisons of traffic behavior on approach to work zones with steady burn lamps and sequential lamps and noted a significant improvement in lane discipline when the sequential lamps were deployed (see graph opposite - Improvement in lane discipline starting at 1500 feet and increasing in significance by up to 50% less vehicles in the closed off lane at 500 feet.)

UK highways agency mandated sequential taper guide deployment on high speed work zone tapers in 2006.





May 2011 Missouri State University as part of the Smart Work Zone deployment Initiative (SWZDI) published a cost benefit analysis study on the deployment of sequential warning lights in night-time work zones

The study, authored by industry recognized research expert Dr. Carlos Sun, who was subsequently invited to deliver a paper on the subject during the 91st 2012 Annual TRB meeting, confirmed that sequential warning lights had a net positive effect in reducing the speeds of approaching vehicles, enhancing driver compliance, and reducing late taper merges.

Statistically significant decreases of 2.21 mph mean speed and 1 mph 85% speed resulted with sequential lights and the percentage of vehicles that merged earlier increased from 53.49% to 65.36%.

Proven Safety Benefits

The SWZDI cost benefit analysis study - based on Nilsson's power model and MODOT's work zone crash data., showed that the total annual benefits for the state was estimated to be $3.65 million on annual costs of $705,008 or $341,580 depending on formula for labor. A 5 or 10 to 1 return. Estimates assumed that sequential lights were deployed on all night-time interstates and major highway work zones.

Missouri DOT had *14 work zone fatalities and 1,036 injuries during 2010 and in August 2012 fully implemented the use of sequential lights in their guidelines, with emphasis on nighttime interstate projects.

The AASHTO TIG Technology Implementation Group, which was set up to scan the horizon for outstanding advancements in transportation technology, selected sequential barricade taper warning light systems as one of 3 focus technologies for 2011. Daniel Smith P.E. is heading up the project at MODOT and is chairing the AASHTO TIG 2011 lead states team. AASHTO TIG are committed to supporting Missouri DOT efforts to share their experiences with other DOTS and believe the technology is worthy of nationwide consideration.

Deploying SynchroGUIDE is a highly visible safety action for your work zones with proven safety benefits and results that can be achieved fast.

Only slightly more costly than conventional warning lights, and with a high return on investment It will engender public support, recognition and appreciation for an easy to understand safety improvement.

Industry experts agree that State DOTS recognized as leaders in highway safety cannot afford not to lead on this traffic safety technology advancement.

- Safer driver approach speeds
- Save lives in the Work Zone
- Less last second decisions
- Better work zone throughput
- Less risk of accident in the taper
- Engender public support

The SynchroGUIDE meets 2009 FHWA MUTCD requirements and is normally available ex stock. It can be easily deployed on all category 1 barricade devices in the same manner as normal barricade lights. Speed of implementation can be both quick and effective with minimal product familiarization required.

Contact us now for an evaluation field trial.

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