

# New Approaches to Lighting and Delineation in Work Zones

The nighttime driving environment, consisting of roadway illumination, signs, vehicle lighting and markers, delineators and flashing lights, can be complex or even confusing for both pedestrians and drivers. The nighttime construction environment is more complex and even chaotic because of the added presence of workers, construction equipment, and bright lights (that are sometimes flashing). Work zones



LRC researchers developed a barrel-mounted lighting system to provide diffuse, low-glare illumination.

at night often involve changing conditions and new traffic patterns that are unfamiliar to drivers. Workers in highway construction areas and drivers navigating through these areas have distinct visual requirements that must be met both through lighting and other forms of visual information provided in the work zone. Conventional methods for illuminating work zones are prone to producing glare for workers and for drivers.

## Sponsors

New York State Department of Transportation  
New York State Energy Research and Development Authority

## In-Kind Support

Clear-Vu  
Performance Indicator



The LRC undertook two projects to identify new possibilities for lighting and delineation in work zones.

New systems for lighting and traffic control, including portable barrel lights, balloon lights, light-emitting diodes (LEDs), highly reflective retroreflective sheeting, and intelligent warning lights were identified that could address many of the concerns associated with nighttime highway construction.

LRC researchers identified requirements for worker and driver visibility and visual information through human factors research. They also demonstrated and evaluated various technologies and new approaches to work zone lighting and traffic control to provide preliminary guidance for when they might be of benefit.



Pavement marking, new sign materials, and channelizing devices were evaluated.

| Project Duration                                |   |  |
|---|---|--|
| <input type="checkbox"/> Temporary (1 night)    | Diffuse ground-level lighting can be moved easily and could be battery operated.                              |  |
| <input type="checkbox"/> Short term (<3 months) | Balloon lights provide low, diffuse source luminance, reducing glare and minimizing shadows in the work area. |  |
| <input type="checkbox"/> Long term (>3 months)  | The use of high-mast semi-permanent lighting will minimize set up time at the start and end of each night.    |  |

The LRC developed a checklist to help work zone planners select appropriate equipment for visual guidance.

In addition, a checklist of planning and design issues, and a method for estimating visual performance under nighttime work zone lighting were developed to help transportation engineers and highway contractors identify promising solutions for work zone lighting.

## Publication

Bullough JD et al. 2014. SPR Research Study No C-08-14, Final Report, Nighttime Highway Construction Illumination. New York State Department of Transportation. Available online at <http://bit.ly/Zxg9l4>.



Lighting  
Research Center