

## Nighttime Illumination of Work Zone Flaggers

One of the most dangerous jobs in highway construction and maintenance is the work zone traffic control flagger. These flaggers are well-known to drivers, especially with their reflector vests and stop/slow paddle signs out at the edge of the traffic lane. Their exposed position makes it vitally important that they be seen by motorists traveling through a work zone.



As daytime traffic demands increase, nighttime construction and maintenance work is becoming more prevalent. The effective and efficient illumination of flaggers in these work zones is a significant concern.

Insufficient light levels, disabling glare, poor quality personnel protective equipment, and a lack of mobility can increase the risk to flaggers, motorists, and workers within or near a work zone.

- What amount of light should be used, where should the light source be located, and how should the light be directed, to effectively and efficiently illuminate the flagger?
- What light level and quality are necessary and economically practical, while avoiding blinding glare for approaching motorists?

- How mobile is the lighting equipment, and can it be moved without creating additional risk exposure to the flagger?

This study developed guidelines for the optimal illumination of flaggers during nighttime



Conventional light tower

maintenance and construction operations on highway projects. The guidelines address minimum and optimum lighting levels, optimal methods of delivering the light, and maneuverability of the lighting equipment.

The study performed laboratory and field testing of a variety of lighting solutions ranging from conventional 4000 watt light towers to 200 watt backpack-mounted 'balloon lights' and 70 watt portable spotlights. Where applicable, lighting was evaluated at various elevations and angles relative to the flagger. Tests evaluated the amount of illumination provided, the area illuminated, the glare to motorists, and the glare experienced by the flagger. The equipment was also evaluated for ease of set-up, mobility, and practicality of use in the field.



The study provides very specific guidance for common flagging situations, including construction, incident response, and conditions requiring high-mobility. These recommendations are summarized in a simple checklist and a flowchart for ease of use in the field.

These guidelines for optimal illumination of flaggers during nighttime operations are also addressed in a recently produced 10-minute DVD – “Flagging in the Work Zone” – that covers flagging practices and techniques that help make work zones safer for flaggers, workers and roadway users. The DVD was produced by the Oregon Department of Transportation's Technology Transfer (T2) Center and Photo/Video Section, with funding provided by the Western Federal Lands Division of the Federal Highway Administration.



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To request a copy of the study, “Optimum Illumination for Nighttime Flagger Operations” contact the ODOT Research Unit by phone 503-986-2700 or request a copy from the online form located at the Research Unit web page listed below.

Copies of the “Flagging in the Work Zone” DVD may be obtained from the ODOT T2 Center by calling 503-986-2855.



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