JANUARY 2025

ABOUT THIS PROJECT

PROJECT NAME: The Effect of Nighttime Lighting Systems on Workers' Visibility and Safety

PROJECT NUMBER: TPF-5(438)

PROJECT FUNDING PROGRAM:
Smart Work Zone Deployment Initiative, a nine-state collaborative research effort

PROJECTED END DATE: December 2025

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RESEARCH IN PROGRESS

Identifying effective lighting arrangements for nighttime work zones

Adequate and effective lighting is necessary in work zones to both protect construction workers and provide them with sufficient light to complete their tasks. Improper lighting arrangements or excessive lighting at night can create dangerous conditions such as glare for workers or drivers. A thorough understanding of strategies for lighting positioning and orientation is needed to provide adequate light and avoid creating hazardous conditions.

The primary objective of this project is to develop updated lighting strategies that create effective lighting for construction activities while also promoting worker and driver safety. This project is investigating the effects of glare, luminance, and visibility on construction workers' ability to complete their work; the impact of lighting positioning and orientation on workers' and drivers' visual perceptions; and lighting mistakes that cause hazardous conditions.

Researchers will analyze a number of lighting arrangements to determine the impact on workers and drivers, and identify the safest and most effective arrangements. The four variables in these arrangements are lighting sources (including balloon lights, portable light towers, and headlights); orientation of lighting sources; height of lighting sources; and headlight glare.

"The results of this project will provide us with important guidance to properly adjust lighting locations and orientation when illuminating work zones at night. Improper lighting can inhibit work and create dangerous glare that endangers drivers and construction workers," explained Dan Sprengeler, work zone traffic control engineer, Iowa DOT Traffic and Safety Bureau.

The research is expected to conclude in December 2025.

To learn more about this project and subscribe to updates, visit Idea #3497.

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