

JOINT TRANSPORTATION RESEARCH PROGRAM

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Multimedia Techniques for Construction Education and Training

Introduction

The current profession of civil engineering often focuses education and training on code compliance rather than constructability and construction techniques. Also, it is well accepted that it takes a decade or more for engineers to develop a high-level understanding of project construction, and many state departments of transportation rely on in-field training for entry-level inspectors, with very little or no education provisions for contractors. This research investigated the use of time-lapse photography to develop training and education material that will improve the understanding of project construction and crucial quality control specifications of an entry-level engineer, contractor, or inspector.

Findings

The project team has developed educational training modules for construction inspectors on projects with infrastructure such as mechanically stabilized earth retaining walls, roadway underdrains, and ADA ramps, which the Indiana Department of Transportation has implemented. The qualitative feedback from participants has been very strong, and INDOT intends to create and utilize more training modules for inspector winter highway technician school.

To obtain a quantitative assessment of the potential impact of this training material, the project team implemented the use of time-lapse images in a Purdue class lecture and performed a before and after study to assess its

effectiveness in a classroom setting. Statistical comparison of before and after quizzes demonstrated that time-lapse photography did indeed improve student understanding.

Implementation

Overall, the project team has deployed time-lapse cameras at approximately 160 locations on 25 construction sites, and educational material has been prepared from projects such as US 31 in Carmel/Westfield, construction of mechanically stabilized earth walls, roundabout construction, and bridge demolition in West Lafayette and Cedar Grove.

Additionally, INDOT may choose to utilize time-lapse photography for virtual inspection. Although this technology will not replace inspectors, it can be used to significantly leverage an inspector's time. Thus, its implementation on high-risk and medium-risk projects could prove invaluable to the agency.

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