

Transportation Pooled Fund Program

Project Title:

Updating "A Guide to Standardized Highway Lighting Pole Hardware"

Project Manager and Phone Number:

Michael J. Pritch
307-777-4182

Project No:

TPF-5(002)

Project is:

PLANNING
X R&D

Reporting Period:

September 2008 to December 2008

Multi Year Project

Yes

Description of Work Performed and Progress:

Task 1: Determination of Standardized Lighting Poles and Hardware

In August one of the research team members (Silvestri) visited the facilities of HAPCO poles in Virginia to learn about the range of products available and how they might be organized. The meeting was very helpful and some very useful conversations were conducted with the HAPCO staff. HAPCO has an extensive catalog of products so the research team feels that if we can represent the HAPCO product line adequately we should be able to extend that to the other manufacturers of luminaire products. One very nice feature that HAPCO has developed is an on-line design center (i.e., see <http://www.hapco.com/Config.aspx>). A highway designer or engineer is able to go to the website, specify the basic conditions they are interested in and then get a listing of the components (i.e., pole, mast arms, base, etc.) that satisfy their criteria. We hope to replicate a similar system on an industry wide basis in this project so seeing how one manufacturer accomplished this task was very useful.

Two members of the research team (Ray and Silvestri) attended the AASHTO-ARBA-AGC Task Force 13 meeting in Savannah, Georgia in September in order to meet with the Breakaway Support Subcommittee, the group that will ultimately maintain the updated on-line luminaire guide. The research team showed the group the web-page mock-up (to be discussed in the next task write-up) and discussed how to organize the guide and what should be included. Some important issues that came out of the meeting were as follows:

- Scope of the Guide: Traditional, Task Force 13 Guides usually are limited to hardware that has been crash tested and accepted for use on the NHS by FHWA. This is the policy for the Hardware Guide, the Sign Guide and the Bridge Rail/Transition Guides. Many members of the subcommittee, however, felt that the luminaire guide should also include non-crashworthy items like high-mast poles, ornamental poles, etc. While the group agreed that things like FHWA acceptance letters and information on testing should be included for those devices that are breakaway devices, the guide should also include others.

- AASHTO Standard for Structural Supports: An important issue related to updating the guide was how to address the AASHTO "Standard Specification for Structural Supports for Highway Signs, Luminaires and Traffic Signals." The AASHTO Standard has detailed procedures for assessing the service loads of luminaire based on the dead loadings, wind loadings, service loads, fatigue, fracture and other aspects of structural

2

design. The team has been carefully reviewing the AASHTO Standard with respect to luminaires and believes that it would be difficult or impossible for the research team to incorporate an internal code-check to determine if a particular luminaire configuration conforms to the Standard. The primary reason is that generally all the information will not be available to the research team to fully specify the structural design. On the other hand, manufacturers must certify to States that design do meet the Standard. The research team is recommending that the manufacturers provide copies of their certification statements to be included in the Guide. The AASHTO Structural Standard would then be handled much like the FHWA acceptance letters. The material will be available and cataloged on the on-line guide but the responsibility for doing the certification would still be the manufacturer.

- Organization: The group also discussed how they want the on-line guide to function. The group liked the idea of a designer indicating the design parameters (i.e., the designers specifies things like the pole height, fixture weight, number and type of arms, design wind speed, etc.) and then having the system search for all combinations of poles from all manufacturers that satisfy the criteria. In essence, this would be an expanded version of something like the HAPCO on-line design center.

Task 2: Prototype Guide Development

The research team developed a mock-up of the on-line luminaire guide primarily based on the on-line sign guide. The website for the luminaire guide is <http://civil-ws2.wpi.edu/Documents/Roadsafe/Guides/luminaireGuide/index.php> but it is also connected to the overall Task Force 13 on-line guides website at <http://civil-ws2.wpi.edu/Documents/Roadsafe/Guides>. The current guide is a mock-up in the sense that there is no real content at this time, only some place-holder drawings. The page will have the following capabilities:

- A search facility where the designer can specify input parameters like base type, pole height, wind speed, EPA, etc and the system will return a list of all designs (i.e., a design in this sense is a specific base, pole, type of arm and number of arms that satisfy the design constraints).

- A browse facility where all luminaire types in the guide can be viewed.

- A contact facility listing all the manufacturers with materials in the guide and contact information for those

Task 2: Prototype Guide Development

The research team developed a mock-up of the on-line luminaire guide primarily based on the on-line sign guide. The website for the luminaire guide is <http://civil-ws2.wpi.edu/Documents/Roadsafe/Guides/luminaireGuide/index.php> but it is also connected to the overall Task Force 13 on-line guides website at <http://civil-ws2.wpi.edu/Documents/Roadsafe/Guides>. The current guide is a mock-up in the sense that there is no real content at this time, only some place-holder drawings. The page will have the following capabilities:

- A search facility where the designer can specify input parameters like base type, pole height, wind speed, EPA, etc and the system will return a list of all designs (i.e., a design in this sense is a specific base, pole, type of arm and number of arms that satisfy the design constraints).
- A browse facility where all luminaire types in the guide can be viewed.
- A contact facility listing all the manufacturers with materials in the guide and contact information for those manufacturers.
- Detailed design pages that show the detailed list of components (i.e., base, pole and arm) for a particular design and include links to the component drawings.

The team showed the mock-up webpage to the Task Force 13 Breakaway Support Subcommittee in September and they agreed with the basic structure and functionality of the guide. Now that the research team has determined how the Subcommittee would like the material to be organized, it will work on adding full functionality to the page. Primarily, this concerns designing the software implementation for representing a very large database of luminaire combinations. The system will search this database in response to the designer's search criteria and use the database to identify luminaire designs that meet the criteria. This will be the primary focus of work for the next quarter.

Task 3: Final Guide Development This task has not been initiated as yet. **Task 4: Final Report** This task has not been initiated as yet.

Malcolm H. Ray, P.E., Ph.D.

STATUS AND COMPLETION DATE

Percentage of work completed to date for total project

Project is %

X on schedule behind schedule, explain:

Expected Completion Date: April 30, 2010