



September 16, 2010

Dear Research Partner:

The Missouri Highways and Transportation Commission requests proposals from qualified organizations—namely private consultants, universities, and research organizations—to furnish professional services as described in the following request for proposal to be coordinated by the Organizational Results (OR) unit.

Please submit a proposal for project TRyy1101 entitled, “LED Roadway Luminaires.” Your submittal must include a work plan, the proposed project team and its background, and any related projects now active or recently completed by your organization. The project team must be led by a licensed professional engineer in the state of Missouri and the final report must be sealed, in accordance with the provisions of Chapter 327 RSMo.

The selection committee will use Qualification Based Selection. A “not to exceed” budget amount is included in the RFP to assist with the required scope, but budgets are not to be included with the proposal submissions and will not be presented to the selection committee.

Please deliver all proposals to the OR Contract Administrator indicated in the attachment by October 14, 2010. More information about project contracting in general can be found at: www.modot.mo.gov/services/OR/orRFP.htm

Sincerely,

Mara Campbell
Organizational Results Director
Attachment

Request For Proposals (RFP)
Project Specific Requirements:

This document contains information and requirements for only this RFP. A “Standard Requirements” document contains additional needs for all research proposals and contracting. Submitters should review both this document and the Standard Requirements document, available from the OR Contract Administrator (identified at the end of this document) or: www.modot.org/services/OR/orTemplates.htm

TRyy1101
LED Roadway Luminaires

Project budget: Not to exceed \$75,000.

Background:

The advantages of LED luminaires compared with traditional High Pressure Sodium (HPS) luminaires include lower energy consumption and reduced maintenance cost. As part of its commitment to green energy and innovative solutions, MoDOT is evaluating LED luminaries. MoDOT would like investigate how to make LED luminaires work with existing infrastructures as well as determine if LED luminaires provide comparable light to the roadway.

Objectives:

This research will allow MoDOT to evaluate LED lighting on roadways. Research will

- Summarize the current state of technology in LED roadway lighting and identify the best commercially available LED roadway luminaires for MoDOT lighting applications;
- Obtain luminaires for field testing, field verify photometry and calculate results of their performance for typical MoDOT roadways;
- Compare LED performance to existing light sources and provide economic benefits, including maintenance, and environmental justification for the use of LED roadway lighting;
- Determine compatibility of LED luminaires with existing infrastructure;
- Provide guidance on purchasing requirements of LED luminaires and recommended layouts and design criteria (minimum illuminance, average illuminance, uniformity ratios, etc.) of LED fixtures, if different than current layouts and illumination criteria.

Project Requirements and Deliverables:

Project Requirements:

1. The researcher will verify light distribution type of LED roadway luminaires with independent IES files. The light distribution should be comparable to Illuminating Engineering Society of North America (IESNA) Type III, medium distribution.
2. The researcher will calculate and measure, in situ with an appropriate meter for measuring LED, illumination output and determine if comparable or better illumination criteria as outlined in *Engineering Policy Guide (EPG)* article 901 and *IESNA RP-08-00, American National Standard Practice for Roadway Lighting* is provided. The calculations and measurements will be based on the mounting heights and spacings currently used by MoDOT as found in EPG article 901.
3. The researcher will determine if the LED luminaire will be compatible with bracket arms and pole design currently used by MoDOT as shown in *Missouri Standard Specification Book for Highway Construction* Section 1091 and *Missouri Standard Plans for Highway Construction* Section 901.
4. The researcher will consider the following factors of LED luminaires in accordance with IESNA LM-79-08, *Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products* or IESNA LM-80, *Approved Method: Measuring Lumen Maintenance of LED Light Sources*, for those that apply:
 - a. Color Rendering Index (CRI)
 - b. Off-state and On-state Power Consumption
 - c. Thermal management
 - d. Dimensions, including weight and projected area
 - e. Operating Environment (temperature range)
 - f. Housing material
 - g. Maintenance
 - h. Luminaire efficacy
 - i. Color ranges for white LEDs with various correlated color temperatures
 - j. Operational characteristics of power supplies and drivers for solid-state lighting products
 - k. Electrical power, system wattages and drive current
 - l. Efficacy and chromaticity using absolute photometry
 - m. Lumen maintenance (L70, where the lumen output of the LED system will have depreciated to 70% of initial lumens at 50,000 hours)
 - n. Energy Star compliant
 - o. Backlight, Uplight and Glare ratings (BUG rating)
 - p. International Protection or Ingress Protection (IP) ratings
5. MoDOT will work with the researcher to identify experimental locations.
6. LED luminaires from a minimum of eight manufacturers are required to be included in this research. MoDOT may/may not provide the researcher with LED luminaires from these manufacturers. The researcher is required to include LED luminaires from the following manufacturers: Dialight, Holophane, and General Electric.

Project Deliverables (see next section Project Schedule for detailed due dates):

1. Quarterly update reports
2. Mid-project presentation or discussion
3. A final report that includes:
 - (1) A comprehensive literature review of LED roadway luminaires. The review should include, but not be limited to: current research, industrial development, application, and practices of other agencies.
 - (2) Evaluation of applicability of LED roadway luminaires with existing infrastructures, light distribution, light output, etc. on the basis of IESNA specifications.
 - (3) Appropriate suggestions and recommendations for MoDOT regarding purchase, design, installation, and maintenance.
4. End of project presentation or discussion (this is required when the draft final report is submitted; draft final report is due one month before the final report due date)

Project Schedule:

The following is an estimate of the project timeline or information on key dates within the project, presuming the project starts November 15, 2010. Proposals need to include a work plan with a proposed timeline. While alternative timelines will be considered, an extension is unlikely. The project timeline will be finalized during the contracting phase.

Date:	Action:
Last working day of each quarter:	Quarterly updates on work accomplished during the quarter are due on or before the last working day of any March, June, September, and December during the course of the project.
March 1, 2011	Mid-project presentation.
July 1, 2011	A draft final report is required. One or more revisions should be anticipated. (For report templates and a standard form see: www.modot.org/services/OR/orTemplates.htm .)
July 1, 2011	End of project presentation or face-to-face discussion with MoDOT project manager.
July 22, 2011	Review of drafts will be completed. The time between review and next due date is to allow for final changes and formatting.

August 8, 2011	A completed final report is due. Additional time between this due date and the end of the contract is to complete any final corrections. Thus, it is important to complete the final report by this due date instead of by the end of the contract.
September 15, 2011	Final invoice is due.
September 15, 2011	Contract ends.

Special Notes:

Project budget is not to exceed \$75,000. A budget is not to be included in the proposal, but will be required for the contract and must be within this limit.

Reporting templates and standard report forms are available from the OR Contract Administrator or the web site: www.modot.org/services/OR/orTemplates.htm

RFP Requirements:

- Proposals must be no more than 10 pages with a font size no less than 11 points. This length limit does not include forms or resumes attached to the proposal.
- The “Standard Requirements” document provides further details and links to the required forms. It is available from the OR Contract Administrator or at: www.modot.org/services/OR/orTemplates.htm
- Proposals will be evaluated by an agency and stakeholder team with knowledge and backgrounds in relevant areas for this project. Selection of the successful proposer will be based on the proposer’s demonstrated knowledge in the required areas, the merit of the proposed methods and approach in achieving the desired goals, the experience and qualifications of the team, the plan for ensuring implementation of results, and the adequacy and availability of team members to complete the work in a timely manner.

RFP Schedule:

The following timeline must be met for a proposal to be accepted.

Date:	Action:
September 16, 2010	MoDOT posts RFP to the website: www.modot.mo.gov/services/OR/orRFP.htm

September 27, 2010	Written comments or questions must be submitted to OR Contract Administrator.
October 4, 2010	MoDOT will post written responses publicly on the website: www.modot.mo.gov/services/OR/orRFP.htm
October 14, 2010	Written proposals must be submitted to OR Contract Administrator.
October 25, 2010	MoDOT will notify submitters about project selection, or if needed about interviews to finalize selection.

Contracting Requirements:

- The successful team will be required to complete additional documentation and enter into a contract such as a “Standard Research Agreement” or “Task Order.” Applicants should be aware of these additional needs so contracting can proceed in a timely manner.
- Standard contracts, forms, attachment templates and additional information are available from the OR Contract Administrator or the web site:
www.modot.org/services/OR/orTemplates.htm

Contact Information:

Proposals must be either hand delivered by close of business; or faxed, emailed, or mailed by midnight (Central Standard Time) according to time stamp or postmark; on the due date indicated below. Please reference the project title since more than one RFP may be due at one time. Electronic proposals are encouraged. They may be faxed or emailed to the OR Contract Administrator:

Karmen.Stockman@modot.mo.gov

Fax: 573 526-4324

Proposal packages suitable for duplicating may be submitted by mail or hand delivery to:

Organizational Results Contract Administrator

Missouri Department of Transportation

2217 St. Mary’s Boulevard, West

PO Box 270

Jefferson City, MO 65109