University Transportation Research Center
RFP Cover Sheet

Title: **Culvert Information Management Implementation Analysis**
Proposal Number: 2010-01
Sponsor: NJDOT
Date Issued: August 04, 2009
Pre-Proposal Meeting: Contact NJDOT by August 17, 2009
RFP Due at NJDOT: by September 14, 2009
RFP Closing Date: **September 14, 2009**

If you plan to apply:
1. Please contact Camille Crichton-Sumners (camille.crichton-sumners@dot.state.nj.us) or Stephanie Nock (609-530-5637 or STEPHANIE.NOCK@dot.state.nj.us) to request a pre-proposal meeting, and so that you will receive information about this meeting if it is held. *This meeting will be your only opportunity to ask questions about this proposal.*

2. If you plan to submit a proposal through UTRC, please notify us by email at peickemeyer@utrc2.org and ckamga@utrc2.org. Please indicate whether you are open to teaming up with faculty at other universities on this project.

Proposal submission guidelines:
Please contact Camille Kamga (ckamga@utrc2.org, 212-650-8087) to discuss submission logistics. After UTRC confirms that the proposals' budgets meet UTRC and NJDOT guidelines, please use the UTRC cover sheet available at http://www.utrc2.org/research/resourcesforpis.php for submission of printed proposals to NJDOT.

Proposals must be prepared in accordance with NJDOT's Information and Instructions for Preparing Proposals. Please visit: http://www.state.nj.us/transportation/refdata/research/pdf/techpropresproj.pdf

For questions about budget preparation, contact: Camille Kamga, ckamga@utrc2.org
NJDOT has not specified a budget or timeline for this project. Please note that matching funds up to $35,000 are available from UTRC for this RFP.

New Jersey Department of Transportation
Bureau of Research

Date of RFP 08-04-09	**RESEARCH PROJECT** **Request for Proposals** **2010 Program**	Closing Date 09-14-09

Culvert Information Management Implementation Analysis
Project 2010-01

(Proposals must be prepared in accordance with NJDOT's *Information and Instructions for Preparing Proposals.* Please visit: *http://www.state.nj.us/transportation/refdata/research/pdf/techpropresproj.pdf Revised Proposal Evaluation Forms are available for your information on the website.*)
Proposals will be based on the merit of the information contained in the proposal. Budgets will be evaluated separately. Please place three (3) copies of the budget for this project in a separate sealed envelope.

1. RESEARCH PROBLEM STATEMENT, BACKGROUND AND OBJECTIVES

Culvert Pipes play an integral part in transportation infrastructure since they facilitate safe drainage. The cost of maintenance and replacement to avoid risk of failure, highway closure and property damage due to flooding and litigations has become significant. Also to comply with the NJDEP storm-water regulations, the NJDOT is required to report all discharges from culverts, including their water flow rate, sediment quality and water quality, which will potentially enter into NJ rivers and streams. Hence, in this research NJDOT is requesting the development of an integrated monitoring system that could continuously report the culvert condition state as well as water/sediment discharge rate and water quality. The system should be capable of feeding the data to the NJDOT Culvert Information Management System to automatically generate necessary reports to NJDOT and NJDEP (GASB-34 Federal Storm Water Regulations and NJDEP Storm Water Management Regulations).

For the last several years, the NJDOT has been actively engaged in identifying and cataloging culvert and pipe locations, inspection and condition information. Currently, this information is being fed into a database and also for use in the Straight-Line Diagram (SLD). Since the start of this endeavor, we have come to realize that the benefits of a greater and enhanced scope of work, more entailed data collection and a broader dissemination of information and applications would be highly valuable, not only interdepartmentally, but to DEP and the Federal Highway Administration (FHWA) and Federal Environmental Protection Agency (EPA).

In addition to the host Bureau (Maintenance Engineering & Operations), benefited partners include the Bureau of Pavement & Drainage Management and Technology; Bureau of Environmental Program Resources; the Division of Capital Investment Strategies-Asset Management Steering Committee; Information Technology- Information Management and Technology Planning, FHWA and EPA.

This Drainage Maintenance Information Management System (DMIMS), in the proposed time frame of three years, will help ensure the complete identification of the NJ's state drainage infrastructure, for the first time, throughout NJ; will offer accurate GIS and SLD mapping; will provide a more comprehensive detail of specific culvert and pipe inspection and condition information. Additionally, this project will also establish a new "NJ First" for the DOT and our State.

2. Tasks

[Provide a listing of appropriate general tasks divided into phases based on types of work (e.g., laboratory, field) or by year (e.g., year 1, year 2) or other appropriate milestones]

The NJDOT is seeking the insight of proposal responders on how best to achieve the research objectives. Proposers are expected to describe a research effort that can realistically be accomplished as expeditiously as possible. Proposals must present the proposers' current thinking in sufficient detail to demonstrate their understanding of the problem and the soundness of their approach for conducting the required research.

The Scope of Work should include, but not be limited to, the following tasks:

- The migration of current Culvert Information Management System (CIMS) data from Access to Oracle.
- Continued collection of inspection and evaluation data of drainage infrastructure conditions.
- Systemic identification of all pipe, culverts, inlets, etc. situated on NJ DOT right-of-way.
- Identifying environmental outfall particulates and water quality
- Measuring, evaluating and calculating the effects of sediment accumulation within pipe.
- Use data program information to continue to populate the SLD and for GIS applications.
- Run condition reports to assist in making informed decisions regarding drainage infrastructure maintenance, rehabilitation and replacement activities
- Use advanced technologies in prescribed areas for more advanced data compilation

PHASE I – Literature Search

Conduct a literature search of the current state of the practice.
After the award of the project, a more comprehensive literature search should be conducted. At the completion of this literature search, the PI will make a presentation to the Research Project Selection and Implementation Panel to discuss their findings and to discuss the appropriate research approach.

PHASE II – Research Approach and Anticipated Results

Clear description of how you will solve the problem and implement anticipated findings. Work may be divided into phases (e.g., Laboratory, Field or Year 1, Year 2) as necessary to clarify tasks. *Exit Criteria* must be developed during this phase.

3. Implementation and Training Plan

The PI must meet with the Research Project Selection and Implementation Panel (RPSIP) and other NJDOT units to present the findings and as appropriate train these personnel in the use the project results.
The PI will develop an implementation plan as per the guidelines provided by NJDOT Research Bureau.

4. Deliverables: [List of minimum deliverables necessary to complete the project]

- Presentation of Summary of Literature Search Results
- Discussion to Support and Refine the Project Tasks
- Project work plan.
- Technical Memorandum on the survey results
- Technical memorandum on the measures that are working or not working
- Technical memorandum on actions taken
- Interim Status reports suitable for Senior Leadership if required
- Quarterly Reports, and

- Final report with appropriate tables, graphs and charts in hard copy version, PDF file format, Word, and on CD ROM. Two copies plus one per RSIP member of each presentation, technical memorandum, draft final report and Final Report (plus 10 copies). The Final Report and Tech Brief are due three (3) months before the end date of the project to allow time for review by the Research Project Selection and Implementation Panel. Final Acceptance will be granted upon receipt of ten copies of the approved final report.

5. Contract Time:

The customer has indicated that a 3-year duration for this project is expected.

The PI must provide the anticipated research study duration based on the proposed tasks. Consideration should be given to potential impediments so that adjustments are incorporated into the schedule minimizing the need for time extensions.

6. Contacts:

A meeting may be scheduled with interested parties upon request after the RFP's are distributed to refine the objectives and deliverables and to promote a better understanding of the research needs. Questions on this topic **shall not** be directed to any Research Project Manager, Research Customer, or any other NJDOT person. All questions and answers would be addressed **during this meeting**. Contact Camille Crichton-Sumners (Camille.CrichtonSumners@dot.state.nj.us) on or before August 17, 2009 to confirm your interest in participating in such a meeting.

7. DEADLINE

Proposals (10 single-bound copies) are due at the NJDOT Bureau of Research no later than 4:00 p.m. September 14, 2009

Authorization to Begin Work: January 1, 2010--estimated or as negotiated

8. Delivery Instructions:

For private, paid messenger services such as Federal Express, DHL, UPS, etc., or for hand-carried deliveries:

2010 PROPOSAL-NJDOT
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Bureau of Research
1035 Parkway Avenue
Trenton, New Jersey 08625-0600

For U.S. Postal Service mail:

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