



**REGION 2
UNIVERSITY TRANSPORTATION RESEARCH CENTER
RFP COVER SHEET**

Title: Determining Remaining Fatigue Life of In-Situ Mast-Arm Traffic Signal Supports

RFP Number: C-10-07

Sponsor: NYSDOT

Date Issued: July 22, 2010

Final Proposal Due at UTRC: **September 30, 2010** (submit through the UTRC Online Submission System at www.utrc2.org)

RFP Closing Date: September 30, 2010 at 5:00 PM

If you plan to apply:

Please contact Penny Eickemeyer at peickemeyer@utrc2.org (cc: ckamga@utrc2.org) to let us know you are assembling a proposal. We will make sure you receive any additional information that becomes available about this RFP.

Proposal submission guidelines:

Please submit your proposal electronically to UTRC at www.utrc2.org. All proposals must include the UTRC cover page (<http://www.utrc2.org/research/assets/Technical-CoverSheet.doc>)

We will confirm that the proposals make comparable budget assumptions and will deliver the electronic proposals to the sponsoring agency by the closing date.

Funding available:

Up to \$200,000 is available from NYSDOT. Facilities and Administrative Costs (or Indirect Costs) charged by academic institutions are included in the above amount.

Budget forms can be downloaded at <http://www.utrc2.org/research/assets/budget-Template.xls>

For questions about this RFP, please contact:

Deborah L. Mooney, Director
Research & Policy Studies Section, 6th Floor
New York State Department of Transportation
50 Wolf Road
Albany, NY 12232

For questions about budget preparation, please contact: Camille Kamga, ckamga@utrc2.org

New York State Department of Transportation
Request for Proposals
SPR # C-10-07: Determining Remaining Fatigue Life of In-Situ Mast-Arm Traffic Signal Supports
July, 22, 2010

RESEARCH PROBLEM STATEMENT

Recently designed and installed mast-arm traffic signal supports longer than 45 ft. (14 m) do not meet the fatigue provisions of the updated AASHTO code. There is concern that the relatively new structures will not provide long-term reliable and safe service. A thorough investigation of the response of a given, long-span structure to the actual ambient wind conditions should indicate a projected 'safe life' of this in-situ structure. Further, development of a mathematical analysis procedure that could be applied to similar structures would be beneficial for future analysis.

OBJECTIVES

Develop a procedure for determining the remaining expected service life of in-place mast-arm traffic signal supports of the type shown in the attached Details A and B, and in Photograph A.

PROPOSED RESEARCH TASKS

Task descriptions are intended to provide a framework for conducting the research. NYSDOT is seeking the insights of proposers on how best to achieve the research objectives. Proposers are expected to describe research plans that can realistically be accomplished within the constraints of available funds and research period. Proposals must present the proposer's current thinking in sufficient detail to demonstrate their understanding of the issues and the soundness of their approach to meeting the research objectives.

Possible Tasks:

1. Determine the remaining fatigue life of an in-place long span mast-arm traffic signal at a given structure location in Saratoga County, NY.
 - Procure, assemble, and install the required equipment to measure and record the ambient wind condition over time.
 - Procure, assemble, and install the required equipment to measure the response of the in-place structure to ambient wind.
 - Determine the remaining service life of the structure based on the information gathered, structural details, and structure age.
2. Develop a generalized procedure for determining the remaining expected service life of any similar in-place mast-arm traffic signal support given information about the materials, structural details, temperature ranges, and the ambient wind conditions at the specific site.
3. Prepare a final report summarizing the research findings and recommendations.

RESEARCH PRODUCTS

- Final report summarizing all tasks performed and including recommendations and implementation strategy. Successful research will allow for educated, reasonable decisions on whether an existing, long, mast-arm traffic signal support may be left in service or require replacement.
- Generalized procedure, based upon research findings, for determining the remaining expected service life of any similar in-place mast-arm traffic signal support, given information about the structural details and the ambient wind conditions at the specific structure location, to determine if the structure may stay in service or needs to be replaced.

URGENCY / EXPECTED BENEFITS

NYSDOT has several of these long mast-arm structures in service. Obtaining timely information about the expected lifespan is necessary to make cost-effective decisions regarding retention or replacement of these structures.

RESEARCH PERIOD

24 months

FUNDING

\$ 200,000 has been budgeted for this project, exclusive of administrative fees. New York State believes this is a reasonable estimate for the total cost of the work being requested.

The net cost to New York State is one of the selection criteria. When compared to competing proposals, a proposal that requires fewer New York State dollars will receive a higher score on the cost component of the selection criteria. The value of New York State funds required could be reduced through efficiencies (fewer hours per task and / or lower cost per hour) or through cost-sharing where other funds substitute for New York State funds.

Proposals with a New York State cost over the budgeted amount will also be considered, provided the New York State cost, exclusive of administrative fees, does not exceed the budget estimate by more than 10%. (Note: Cost-sharing funds may increase the total project cost further.)

If a sufficient number of potential Principal Investigators indicate in writing that they believe the research cannot be reasonably conducted within these funding constraints and there are only a limited number of proposals submitted within the funding constraints, New York State reserves the option of not proceeding with the work or revising the budget estimate and issuing a new Request for Proposals. Potential Principal Investigators who believe the budget estimate is unreasonable should write to:

Deborah L. Mooney, Director
Research & Policy Studies Section, 6th Floor
New York State Department of Transportation
50 Wolf Road
Albany, NY 12232

SPECIAL NOTES

- **Proposals are due by close of business, Thursday, September 30, 2010.** This Request for Proposals is being offered to the University Transportation Research Center (UTRC) members only. Members should submit proposals through the Administrator of this research consortium. The receipt of an electronic PDF copy of the proposal by NYSDOT on or before the above due date is satisfactory, providing hard copies follow within a week.
- **Six (6) hard copies** of the proposal should be provided.
- Proposals should indicate direct and indirect costs, hourly rates and hours by task, travel costs, and material costs to assist NYSDOT in understanding how the total cost for the work was estimated. The winning proposal will result in a fixed cost contract based on the details provided in a supporting detailed budget.
- Please provide a Budget Chart which shows for each task the deliverable and cost. Task headings in the Budget Chart are to match the scope task headings.
- Please include a Gantt Chart, showing the duration (start to finish) for each task in terms of months (i.e. Month 1, Month 2, etc) since the actual start date is an estimate. This can be combined on one page with the Budget Chart.
- If the proposal involves a joint venture or sub-consultants, it must be clear as to how tasks will be distributed or shared in the scope of work.
- Maintenance and Protection of Traffic (M&PT) is the sole responsibility of the Principal Investigator and shall be in conformance with the Manual on Uniform Traffic Control Devices (MUTCD). No lane closures will be allowed during peak traffic hours. The NYSDOT Region 1 Traffic Engineer or his designee shall approve the plan and provide acceptable hours for lane closures prior to any work being performed on the roadway.
- 110 volt AC electrical power will be provided by the NYSDOT at the site.
- The Principal Investigator is required to submit all project task deliverables, first, in draft formats for review and comment by the NYSDOT Project Manager and Technical Working Group (TWG). The Principal Investigator is required to revise draft task deliverables, based upon comments, as needed, and re-submit to the NYSDOT Project Manager. Upon acceptance by the NYSDOT Project Manager, the Principal Investigator is required to submit draft task deliverables to the NYSDOT Project Manager in final formats, as specified in the Task Assignment.
- The Principal Investigator is required to submit quarterly project status reports to the NYSDOT Project Manager, as specified in the Task Assignment.
- The final report on the results of the research is to contain, at a minimum, the information described in Attachment A, *Requirements for the Final Report*.
- Principal Investigators should be familiar with and follow the requirements of New York State with regard to the *Compliance Procurement Lobbying Law* and consultant contract procurement. Information can be found on the NYSDOT website under Business Center / Doing Business with NYSDOT / Consultants / Non-Architectural Engineering Information / Active Solicitations: <https://www.nysdot.gov/main/business-center/consultants>

- **The designated contact for this solicitation is Deborah L. Mooney.** Questions seeking clarification on the RFP will be accepted up to three (3) weeks prior to the due date for proposals and should be e-mailed to: dmooney@dot.state.ny.us

CRITERIA FOR SELECTION

- **Expertise / Understanding / Approach (Weight 65 %)**

Expertise: What is the extent of the relevant expertise of the Principal Investigator? What is the extent of the relevant expertise of others who will be involved in the research?

Understanding of the Problem: Does the proposal reflect an understanding of the problem and its relevance to New York State? Does the proposal reflect an understanding of existing data and the current state of knowledge in New York State?

Approach: Is the proposed approach clear, especially in how it will build upon and enhance the state of knowledge in New York State? Will it yield the deliverables called for in the RFP? Does the approach show insight that will lead to results that will sufficiently assist New York State in addressing the problem? Is the proposed approach practical given the schedule and total budget? Will the proposed research draw upon all critical sources of pertinent information?

- **Investigator's Previous Experience with Similar Projects (Weight 15 %)**

Successful completion of previous projects by the Investigator(s) will be considered. These projects should be in the area of expertise required for successful completion of this project, such as structural dynamics, vibration analysis, and structural engineering.

- **Cost to New York State (Weight 20%)**

The lower the New York State cost, the greater consideration a proposal will receive.

Requirements for the Final Report

Copies of Final Report – **Fifteen (15)** hard copies of a bound, final report is required at the conclusion of the research study. An electronic PDF copy of the final report is required, as well. In addition to the final report, a one page document, summarizing the project and project findings, shall be provided for technical transfer purposes. This is required in PDF format only.

Required Organization for the Final Report

Title Page (front cover) - that contains:

- The research number (C#) assigned by the Research & Policy Studies Section of the Policy & Planning Division;
- The name of the research study as stated in the Task Assignment (contract);
- The words “Final Report;”
- The date (month & year) the final report is completed;
- The name(s) of the Consultant(s) / Principal Investigator(s), along with the name(s) of the organization(s) they represent and their address(es); and,
- If the final report has a security classification, it shall be noted on the title page.

Disclaimer (inside cover) - as follows:

DISCLAIMER

This report was funded in part through grant(s) from the Federal Highway Administration, United States Department of Transportation, under the State Planning and Research Program, Section 505 of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the United States Department of Transportation, the Federal Highway Administration or the New York State Department of Transportation. This report does not constitute a standard, specification, regulation, product endorsement, or an endorsement of manufacturers.

Form DOT F 1700.7 – complete the standard form used throughout the country to summarize federally funded transportation research

Table of Contents

Executive Summary - a non-technical summary of the research and its findings

Introduction – a discussion of the problem, its background, and a concise history of research previously completed on the topic, and a discussion of what NYSDOT policies, procedures, and practices are currently in place related to the research topic.

Research Method – a description of the methods used in conducting the research

Findings and Conclusions – a discussion on the analysis of the data (findings) and the conclusions reached based on the findings. Suggestions for additional research, if appropriate, would appear in this section.

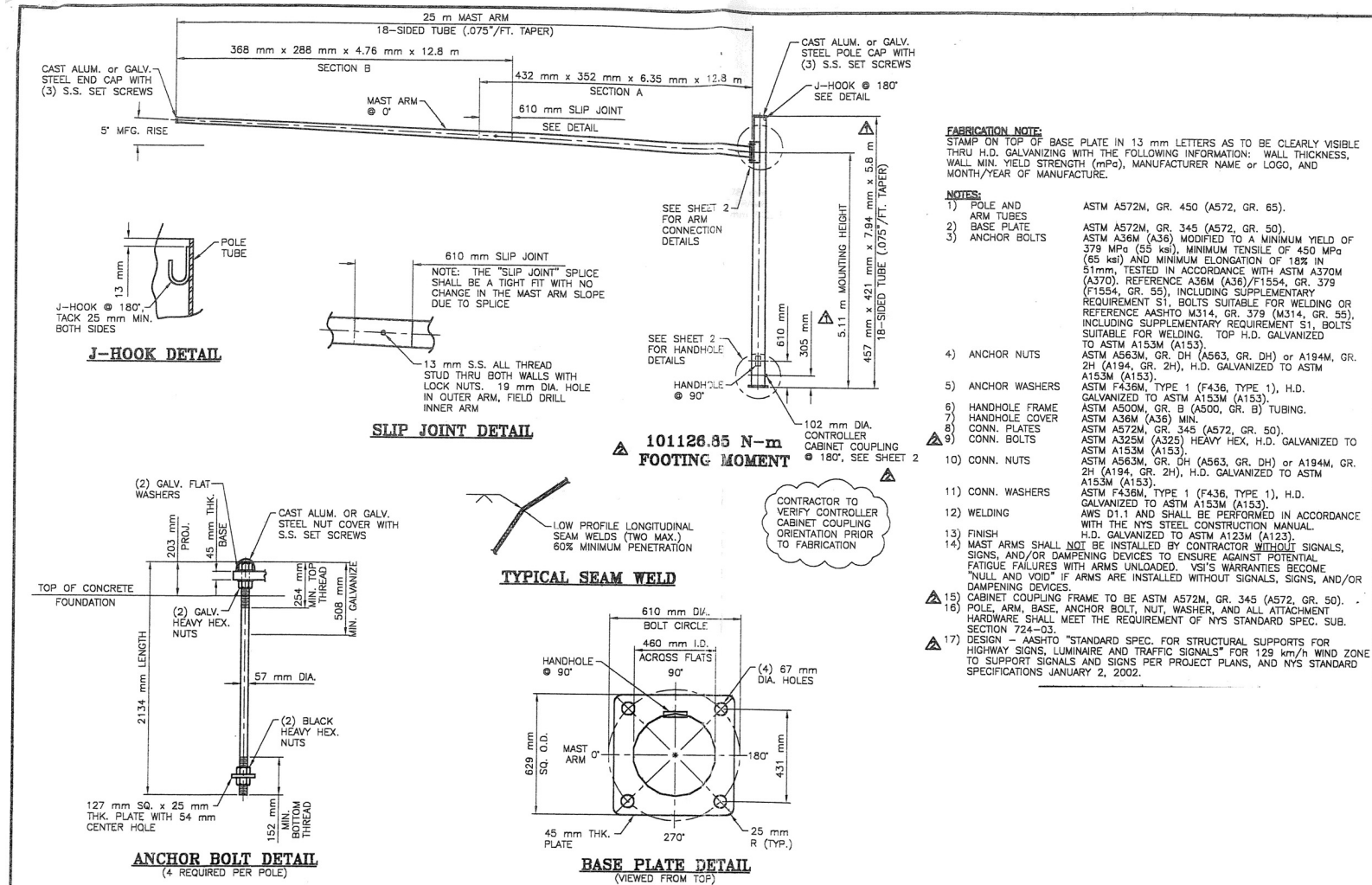
Statement on Implementation – a brief discussion on what would need to occur to introduce the results into practice, and a discussion on possible technology transfer activities

Appendices – as appropriate

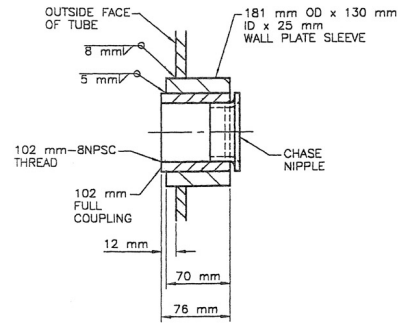
Photo A



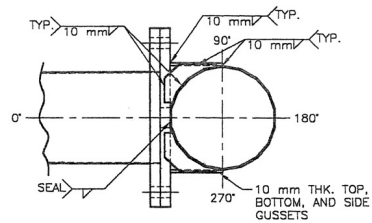
Detail A



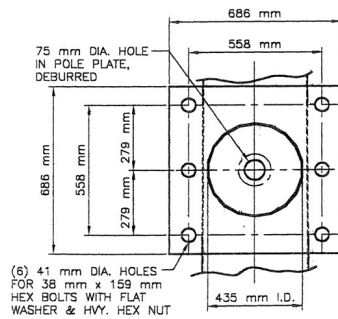
Detail B



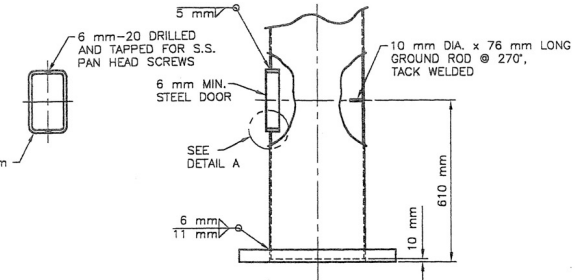
△ 102 mm CONTROL CABINET COUPLING DETAIL



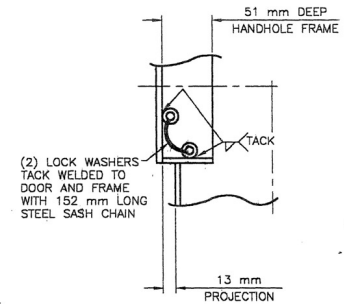
VIEW FROM ABOVE



△ MAST ARM CONNECTION DETAIL



HANDHOLE DETAIL



DETAIL A

THIS DRAWING WAS DEVELOPED FROM A STANDARD DRAWING. DO NOT SCALE THIS DRAWING. FOLLOW T