

# REQUEST FOR PROPOSALS

## CORROSION MAP FOR METAL PIPES IN COASTAL LOUISIANA LTRC No. 16-5GT, SIO No. DOTLT1000094

### PROBLEM STATEMENT

Transportation agencies often allow metal pipes as an option for cross drains under/along roads and highways. Metal culverts can corrode over time at various rates based on their environmental conditions (corrosive nature of coastal soils, high water table, saltwater intrusion, subsidence, tidal flows and frequent hurricane surge issues). These salinity issues increase rates of corrosion, and has led to a policy of disallowing the use of metal pipes for new drainage installations in District 02 (the New Orleans area) that is mostly coastal. Other districts (07, 03, 61, and 62) also have some coastal edges, but extend far enough north where environmental issues are less corrosive.

There is a balance among maintenance, repair costs, and material competition. For example, in less corrosive areas, allowing metal pipe fosters competition and cost savings to the department. Therefore, delineating zones where corrosion rates are tolerable/intolerable would continue to promote competition in the north, and provide/ensure only durable material for our coastal areas. Predelineated zones would also reduce the testing required for pipe material determinations.

### OBJECTIVE

Create a guidance document with maps that delineate a zone where metal pipes should not be utilized along the coast based on high corrosion rates from increased salinity. The project results will support the guidance document, map, and provide rational logic to support DOTD with the decision to implement.

### RESEARCH APPROACH

The Louisiana Transportation Research Center (LTRC) is seeking the insight of proposers on how best to achieve the research objectives. Proposers shall describe research plans that can be realistically accomplished within the constraints of available funds and contract time as allowed in this RFP.

Proposals must present the candidate's current thinking in sufficient detail to demonstrate their understanding of the problem and the soundness of their approach. Task descriptions are intended to provide a framework for conducting the research. The proposal shall address at a minimum, the following tasks:

#### **Task 1. Literature Review and Records Research**

Review the current state of practice. Conduct a literature review of previous and on-going nationwide research projects and case studies on the subject. A search on the TRIS/TRID database is a minimum.

- a. Determine how other coastal states and agencies handle the corrosion and maintenance issues. Identify any pipe selection criteria, test methods, etc.
- b. Clarify and define the terminology, reaction mechanisms, corrosion rates, and resulting performance (life) of metal pipes in various environmental situations.

The Project Review Committee (PRC) will contain a member from each coastal District. The researcher will work/meet with the PRC to review of departmental records (metal pipes usage, laboratory results, etc.), gain staff insight, and locate possible test/sample locations.

## **Task 2. Independent Research and Recommendations**

Based on Task 1 and the researcher's independent research and experience, the researcher will develop recommendations on how to proceed in delineating the zones with proper supporting data. For example:

- Conduct within DOTD, a survey of field installations of pipes in coastal parishes, and compare to regional and District pH and resistivity records,
- Conduct limited sampling and testing to validate survey results,
- Quantify results and make a determination/delineation of where to allow metal pipe along the Louisiana coast

## **Task 3. Interim Report**

Based on the results of Task 1 and Task 2:

- Develop a detailed work plan outlining tasks and recommended approach to accomplish objectives.
- Prepare an interim report outlining the action plan.
- Present the results to the Project Review Committee.

## **Task 4. Provide a Pipe Zone Map and supporting documentation.**

Provide a final draft of the Pipe Zone Map and supporting documentation. This must be complete and submitted for review, and submitted with the Final Report (Task ), three (3) months prior to the project completion date for review and approval. The remaining months will be utilized for Project Review Committee review edits and revisions prior to the end of the project.

## **Task 5. Provide a Life Cycle Cost Analysis of Alternate Solutions in Each of the Pipe Zone Maps.**

Provide a LCCA of alternate solutions each of the pipe zone mapped regions. The intent is that the designer or district can select alternatives based on corrosion or the life cycle cost. This must be complete and submitted for review, and submitted with the Final Report (Task ), three (3) months prior to the project completion date for review and approval. The remaining months will be utilized for Project Review Committee review edits and revisions prior to the end of the project.

## **Task 6. Provide a Final Report and Technical Summary**

The researcher shall provide a final report that documents the entire research effort for internal future reference and the benefit of others. A Final Draft Report, Technical Summary document (two pages), and summary presentation to the Project Review Committee (PRC) are due three (3) months prior to the project completion date for review and approval. The final report shall direct and recommend future steps toward the incorporation/implementation of the research into department policy, and include recommendations on other areas that could be further expanded in subsequent research projects.

## **DELIVERABLES**

The proposal shall include project deliverables for appropriate tasks. Deliverables shall be due as defined in the proposal. The proposal shall include at a minimum the following deliverables:

- Task 1: Literature Review and Records Search
- Task 2: Independent Research and Recommendations
- Task 2/3: Work Plan, Interim Report and Presentation to the PRC
- Task 4: Pipe Zone Map and Supporting Documentation
- Task 5: LCCA of Alternate Solutions
- Task 6: Final Report, Technical Summary, and summary presentation

## **SPECIAL NOTES**

- A. LTRC research projects will be conducted in accordance with the LTRC Manual of Research Procedures, 2003 edition. ([http://www.ltrc.lsu.edu/pdf/research\\_man03.pdf](http://www.ltrc.lsu.edu/pdf/research_man03.pdf))
- B. Any work that is anticipated to be required from LTRC or DOTD forces shall be specifically

detailed in the proposal.

- C. LTRC projects are intended to produce results that will be applied in practice. It is expected that the implementation of the results of this research into practice will evolve as a concerted effort during this project. The final report must contain an implementation plan to include, as a minimum, the following:
  - a. The “product” expected from the research;
  - b. A realistic assessment of impediments to successful implementation;
  - c. The activities necessary for successful implementation; and
  - d. The criteria for judging the progress and consequences of implementation.
- D. To assist in the implementation process, the investigators of this research shall present the final results to LA DOTD officials in an oral presentation to be held in Baton Rouge, Louisiana at LA DOTD Headquarters after acceptance of the final report.
- E. The proposal should include travel to meet with the Project Review Committee for a “kick off” meeting, presentation of interim report, and presentation of the final report at a minimum. Funds budgeted for travel shall be limited to what is necessary for the conduct of the research. Funds shall not be budgeted for conference travel. Funding for technology transfer of research results are available upon request subject to LTRC approval and available funds.
- F. LTRC’s mission includes the support of higher education in Louisiana. Consultant and out-of-state institutions submitting proposals are encouraged to cooperate and collaborate with Louisiana universities for the purpose of sharing of knowledge and increasing transportation expertise in the academic community.
- G. Graduate assistance stipends are allowed. Tuition reimbursement or tuition remission rates applied to stipends are not allowed.
- H. To equitably answer any questions regarding this Request for Proposals, the Louisiana Department of Transportation and Development (DOTD) website will be updated with questions and answers and related documents regarding the project.  
<http://webmail.dotd.louisiana.gov/agreestat.nsf/WebAdvertisements?OpenPage>  
LA DOTD makes these documents available for informational purposes only to aid in the efficient dissemination of information to interested parties. LA DOTD does not warrant the documents against deficiencies of any kind. The data contained within this web site will be periodically updated. Interested parties are responsible to be aware of any updates. Questions regarding this RFP should be submitted in writing to the LTRC contact person. Questions must be received by close of business seven calendar days prior to deadline date.
- I. Consultants and business entities shall be registered with the Secretary of State in order to be able to work in Louisiana prior to award of contract. <http://www.sos.la.gov/tabid/1011/Default.aspx>
- J. If Sub-Consultants/Entities are used, the Prime Consultant/Entity must perform a minimum of 51% of the work for the overall project.
- K. LTRC reserves the right to withhold invoice payments for delinquent deliverables as defined in the proposal.

**ESTIMATED COST**

\$50,000.00

**ESTIMATED COMPLETION TIME**

15 Months (*includes 3 months for review and approval of final report - i.e. draft final report due in 12 months*)

**LTRC PRIMARY CONTACT**

Gavin P. Gautreau, P.E.  
LTRC, Senior Geotechnical Research Engineer  
[Gavin.Gautreau@LA.GOV](mailto:Gavin.Gautreau@LA.GOV) 225-767-9110

**AUTHORIZATION TO BEGIN WORK:**

November 2015 (estimated)

**PROPOSAL FORMAT**

All proposals are required to be formatted according to the LTRC Manual of Research Procedures. Chapter 2 provides guidance on proposal development. A copy of the Manual may be downloaded from our website (<http://www.ltrc.lsu.edu/publications.html>).

**PROPOSAL SELECTION**

The Project Review Committee selected for this project will review, evaluate, and rank all proposals received using the criteria established on the attached proposal review form.

**DEADLINE FOR RECEIPT OF PROPOSALS**

Ten copies of the proposal must be received by LTRC by the close of business **October 16, 2015**.

**Proposals should be submitted to:**

Harold R. Paul, Director  
Louisiana Transportation Research Center  
4101 Gourrier Avenue  
Baton Rouge, LA 70808