RTI
Research Project Statement

RMC:	1	**OPR: (for RTI use)**	CST	**Project #: (for RTI use)**	0-6681
Date:		June 8, 2011		**Research Program Year:**	**2012**
Project Title:		Optimizing Concrete Pavement Type Selection Based on Aggregate Availability			
Project Constraints:		Proposals with project durations exceeding 1 year will not be accepted. The budget for this project should not exceed $ 170,000.			

Project Description:

What is the problem?
Two of the most prevalent distress types affecting the performance of concrete pavements in Texas have been spalling and horizontal cracking. Over the past two decades, TxDOT has sponsored many research studies to prevent or mitigate spalling problems in CRCP, with no good solutions discovered. Since some districts cannot afford to implement costly restrictions on the use of their local aggregate sources for concrete paving, there is a need to optimize the selection of concrete pavement type (CPCD vs. CRCP) with concrete mixture combinations for limiting spalling and horizontal cracking. Reducing the problems associated with spalling and horizontal cracking will save repair and maintenance costs and improve the overall life-cycle performance of all concrete pavements.

Overall, the performance of CRCP in Texas has been quite satisfactory. However, with certain aggregate types, severe spalling has been a serious performance issue. Horizontal cracking has also been found to impact pavement performance with certain materials.

As there have been few-to-no cases of reported spalling or mid-slab cracking when these materials are used in jointed concrete pavements, an opportunity exists to provide a designer with tools to balance the cost/benefit of importing materials more suitable for use with CRCP with using local materials in jointed pavement systems.

Who is impacted by the problem?
Districts recently having a need for concrete pavements but without a local supply of quality limestone aggregates include: Atlanta, Houston, Yoakum, Amarillo, Paris and Wichita Falls.

What is the significance / scope of the problem?
Maintenance costs for spalled CRCP sections are very high. While not a structural deficiency, the functional issues caused by spalling can be very severe and require expensive maintenance and repair. The use of imported aggregates to construct CRC pavements have made them too expensive. There is the need to develop guidelines for CPCD that will have comparable performance to CRC pavements.

What are the technical objectives of this project?
Indentify the locally available coarse aggregate sources for Atlanta, Houston, Amarillo, Paris, and Wichita Falls districts. Provide a cost analysis of coarse aggregate sources for each district including transportation costs.

Investigate the local coarse aggregate characteristics. Evaluate the performance of existing CPCD and CRCP sections incorporating these local coarse aggregates into the concrete mixture. This should be done using only NDT with minimal core sampling.

Develop guidelines for the selection of the optimum rigid pavement type based on traffic level/functional classification, base supports and locally available materials, etc.

Provide specific requirements for design and construction when using these local coarse aggregates in CRCP and/or CPCD. It may include concrete mix designs and material

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		requirements, adequate base supports, improved tie bars and dowel bars design, and required joint saw cut timing and depth/width. Review and update current specifications for CPCD including issues such as dowel bar alignment tolerances and others pertaining issues. **What benefits would this project deliver, and how would the results be used within TxDOT?** The guidelines to be developed in this study will be used to select the best rigid pavement type with locally available materials, while reducing or eliminating premature failure due to delamination and spalling.			
Minimum Deliverables:		**Stand-alone Products:** - Products as deemed appropriate by the researchers. **Reports:** - Complete documentation of work performed, methods used, and results achieved. The report should include Pavement Type Selection Guidelines. - Project Summary Report			
Proposals Requirements:		1. Proposals will be considered non-responsive and will not be accepted for technical evaluation if they are not received by the deadline or do not meet the requirements stated in Chapters 3 and 4 of RTI's *University Handbook*. 2. Proposals should be submitted in PDF format, 1 PDF file per proposal. File name should include project number and university abbreviation. 3. All proposals should be submitted through the university's Research Liaison to RTI, as instructed in the RFP announcement.			
Pre-proposal Meeting:		Wednesday, June 29, 2011, 10:00am – 11:00am Austin Riverside Campus 118 E. Riverside Dr RTI Conference Room, 1st Floor Austin, Texas 78704 Attendance through Teleconference or WebEx is available.			
Notifying RTI of Intent to Propose:		Individuals interested in proposing are encouraged to contact **Frank Espinosa, Jr., (512) 416-4741** or frank.espinosa@txdot.gov by **June 24, 2011** so you can be notified if additional project information is distributed by TxDOT, or make arrangements for teleconferencing a pre-proposal meeting.			
Proposal Deadline:		Proposals are due to RTI by **4:00 p.m. Central Time**, **July 26, 2011**. Email submissions should be sent to rtimain@txdot.gov.			