

Title:	Investigating Prime versus Curing: Where, When and Why
The Problem:	Questions concerning what materials are needed in a pavement structure that are not part of the structural design continue to occur. Materials typically considered non-structural but integral to the pavement are prime coats, curing materials, seal coats, and tack coat. Some materials can be used for multiple purposes; however, the rates may change. Reviewing TxDOT Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges, Item 300, "Asphalts, Oils, and Emulsions," Table 18 Typical Material Use, shows there are four primes, five curing membranes, and four tack coats typically used; however, the TxDOT Material Producer List (MPL) has significantly more options than those listed in Item 300. Included in the MPL are nine Tracking Resistant Asphalt Interlayer (TRAIL) products and three Prime Coat Binder products. As part of the flexible pavement design process, layers are assumed to be bonded. What is the best material and what are acceptable materials to use to develop the bond between layers of flexible base, stabilized base, and hot mix? The subbase layers of a rigid pavement structure should also be bonded to each other. Item 276, "Cement Treatment (Plant-Mixed)," states, "Asphalt used solely for curing will not be paid for directly but will be subsidiary to this Item. Asphalt placed for curing and priming will be paid for under Item 310, "Prime Coat." What is the purpose of a prime material versus a strictly curing material, and while they may sometimes be the same material, they may not perform the same depending on the rates and time applied?
Technical Objectives:	This research shall evaluate bonding materials and determine the benefit and best practices of their use; work to be performed shall include: 1. Investigate the typical use of these materials and document the best practices for their use. 2. Develop a laboratory study to evaluate the bond characteristics of pavement material layers with and without bonding materials. 3. Evaluate non-structural pavement materials and develop recommendations for the following: a. When to specify non-structural pavement materials, their use and location within the pavement structure. b. Modifications to existing specifications or develop new specifications. c. Modifications to existing test procedures or develop new test procedures. 4. Document the benefits and best practices of the use of these materials. The expectation of the project end product(s) shall attain a Technology Readiness Level of 6.
Anticipated Deliverables:	1. Technical memorandum for each task completed. 2. Monthly progress reports. 3. Value of Research (VoR) that includes both qualitative and economic benefits, to be included in the final research report; <u>not a stand-alone deliverable</u>. 4. Research report documenting the findings of the research, including evaluations of non-structural materials and recommendations for specifications and test procedures. 5. Project Summary Report
Proposal Requirements:	1. Utilize the "Proj/Agre" and "PA_Form" templates located at the TxDOT RTI website. 2. 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 RTI's University Handbook, which is also located at the RTI website. 3. Proposals should be submitted in PDF format, 1 PDF file per proposal. File name should include project name and university abbreviation. 4. This project will be tracked during the life of the project using a Technology Readiness Level (TRL) scale. For more information about the use of a TRL, click.