Research Project Statement

Fiscal Year: 2005  Project Statement Date: 02/13/04 (REVISED)

Project Number: 0-5090

Title: Analysis of Edge Line Treatments

RMC Number: 4

Developed By: TAP

<table>
<thead>
<tr>
<th>TxDOT Project Personnel</th>
<th>Name</th>
<th>Office</th>
<th>Area Code/Phone Number</th>
<th>Email</th>
<th>Fax Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Coordinator (PC)</td>
<td>Terry Sams</td>
<td>DAL</td>
<td>214-320-6231</td>
<td><a href="mailto:tmsams@dot.state.tx.us">tmsams@dot.state.tx.us</a></td>
<td>214-320-6615</td>
</tr>
<tr>
<td>Project Director (PD)</td>
<td>Juanita Daniels-West</td>
<td>TYL</td>
<td>903-510-9106</td>
<td><a href="mailto:jdanie2@dot.state.tx.us">jdanie2@dot.state.tx.us</a></td>
<td>903-510-9188</td>
</tr>
<tr>
<td>Project Advisors (PAs) – Optional</td>
<td>Michael Chacon</td>
<td>TRF</td>
<td>512-416-3182</td>
<td><a href="mailto:mchacon@dot.state.tx.us">mchacon@dot.state.tx.us</a></td>
<td>512-416-3299</td>
</tr>
<tr>
<td></td>
<td>Carlos Ibara</td>
<td>ATL</td>
<td>903-799-1480</td>
<td><a href="mailto:cibarra@dot.state.tx.us">cibarra@dot.state.tx.us</a></td>
<td>903-799-1488</td>
</tr>
<tr>
<td></td>
<td>Eugene May</td>
<td>CST</td>
<td>512-506-5886</td>
<td><a href="mailto:emay@dot.state.tx.us">emay@dot.state.tx.us</a></td>
<td>512-506-5896</td>
</tr>
<tr>
<td></td>
<td>Paul Montgomery</td>
<td>LFK</td>
<td>936-633-4310</td>
<td><a href="mailto:pmontgo@dot.state.tx.us">pmontgo@dot.state.tx.us</a></td>
<td>936-633-4379</td>
</tr>
<tr>
<td></td>
<td>Matt Smith</td>
<td>WFS</td>
<td>940-720-7714</td>
<td><a href="mailto:msmith9@dot.state.tx.us">msmith9@dot.state.tx.us</a></td>
<td>940-720-7848</td>
</tr>
<tr>
<td></td>
<td>Roy Wright</td>
<td>ABL</td>
<td>325-676-6805</td>
<td><a href="mailto:wrwright@dot.state.tx.us">wrwright@dot.state.tx.us</a></td>
<td>325-676-6958</td>
</tr>
</tbody>
</table>

Duration (# of years): __________  Total Budget: $

<table>
<thead>
<tr>
<th></th>
<th>First Year</th>
<th>Second Year</th>
<th>Additional FYs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FY</td>
<td>FY</td>
<td>FY</td>
</tr>
</tbody>
</table>

Project Description:

Edge lines are an important element of roadway delineation. Most highways have edge lines and drivers rely heavily on them for nighttime guidance and when facing oncoming traffic. Because edge lines are located down and to the right of the vehicle, a driver can look at an edge line without experiencing the higher level of glare that would be associated with looking at a lane line. Despite the fact that edge lines have been in use for many years, there are still several aspects of them that should be evaluated.

A key issue is the use of edge lines on narrow roadways. There is concern that the use of edge lines on narrow roadways encourages drivers to position their vehicles close to, or even over, the centerline, which may create a potential hazard. The most effective width for edge lines is also an issue. Wider edge lines may help to improve a driver’s ability to position the vehicle in high demand situations. Finally, the use of retroreflective raised pavement markers (RRPMs) as a supplement or replacement for edge lines presents an opportunity to improve roadway safety. The concern over the use of RRPMs is that they may be interpreted by drivers as lane lines. However, the use of RRPMs presents a chance to increase the nighttime visibility of edge lines, particularly in wet weather conditions. Several agencies, including TxDOT, have effectively used RRPMs to supplement applied edge lines.

The objective of this project is to evaluate several aspects of edge lines. The first effort will evaluate the impact of edge lines on narrow roadways of 24 feet or less. This effort will evaluate what influence the placement of the edge line has on driver behavior and crash history for narrow roadways of different widths. The research will also address safety, operational and maintenance aspects of using edge lines on narrow roadways. Recommendations would be made as to what pavement widths are too narrow for the placement of edge lines that preserve pavement edges while safely accommodating traffic. Second, the impact of wider edge lines (4 inches, 6 inches or wider) on driver behavior will be assessed through field evaluations at multiple study sites. Finally, the research will evaluate the safety benefits of using RRPMs as a supplement or replacement for traditional edge lines. This part of the research should consider the driver interpretation of RRPM edge line applications and the impact of these edge line treatments on driver behavior and safety. While the initial application of RRPMs for edge lines should be on two-lane highways, the research should also address their use on multilane highways. Research is needed to demonstrate that RRPMs installed along the right edge line do not result in driver misinterpretation causing them to attempt to
drive to the right of the edge line.

**Deliverable Products And Reports:**

- **P1** A database of roadway criteria and locations indicating which roadways can accommodate edge lines and which roadways need to be widened prior to the placement of edge lines.
- **P2** Revisions to the Traffic Operations Manual: Signs and Pavement Marking Handbook indicating appropriate roadway conditions for installing edge lines.
- **R1** Research report that completely summarizes the findings and recommendations associated with the three primary focus areas of the research.
- **PSR** Project Summary Report.

**Implementation:**
The results of this research will help TxDOT staff identify the following:
1.) When it is appropriate to use edge lines on narrow roadways;
2.) If wider edge lines should be used and, if so, where it is beneficial to use them; and
3.) Where it is appropriate to use RRPMs as a supplement or replacement for edge lines. The research results can be implemented through changes in the Texas MUTCD, Traffic Engineering Standard Sheets, and/or the Traffic Operations Manual: Signs and Pavement Marking Handbook.

**Pre-proposal Meeting:**

☑ Yes ☐ No February 18, 2004, 1:00pm, at the Tyler District Office.

**Sole Source Justification, if applicable:**

**Additional Information:**

- Proposals are required to be submitted in both hard copy (4 copies) and PDF format (1 PDF file per proposal). Both formats are used within TxDOT for evaluating the proposals and must contain identical information.
- The “Background and Significance” portion of the proposal should be limited to 10 pages.
- All proposals from researchers should be sent directly to your university’s Research Liaison for submission to RTI. The Research Liaison is TxDOT’s official contact with the university.

**Deadlines (for RTI use only):**

1. All individuals interested in proposing are encouraged to contact the PC or PD by February 17, 2004.
2. Proposals are due to RTI by 4:00 p.m. CST on March 24, 2004.