

Project Title:	Exploration into Variations in Guardrail Approach Transitions to Rigid Barrier
Project Synopsis:	In the field, some approach transitions have deficiencies that should be addressed. The difficulties is that there are many different transition designs and many different deficiencies in field installation. This makes it difficult to determine how to address deficiencies. This research project will use computer modeling to analyze and prioritize installation deficiencies in approach transitions.
Project Goal(s):	The intent of this research is to use computer modeling to identify, when certain field variations in beam guard approaching transitions to rigid barrier, may be problematic.
Project Background:	<p>Historically approach transitions are more difficult to pass crash testing that normal beam guard. This is because approach transition have to reduced movement as they approach the rigid barrier.</p> <p>There has been limited research into retrofitting approach transitions. This research looked into missing posts, post installed in loose asphalt millings, and reduction in grading. This had limited bogie testing and computer modeling. There are other modifications that have not been review. Some possible examples could be:</p> <ul style="list-style-type: none"> • Influence of different curb types • Reduced post embedments • Missing bolts in connection to rigid barrier • Modifications in post spacing <p>More research is needed to better understand how approach transitions work and how modification influence performance. Because of the large variations computer model is needed to explore modifications to determine what modifications are problematic.</p>
Proposed Work Plan:	<p>Tasks:</p> <ol style="list-style-type: none"> 1. Survey pooled fund states for the following <ol style="list-style-type: none"> a. What approach transition from w-beam to rigid barrier does the DOT use. b. What are common problems states have with approach transitions. c. Prioritize common problems with approach transitions. d. Indicated if there is a preference to research on median or roadside transitions. 2. Conduct a literature review of existing research 3. Perform computer simulation <ol style="list-style-type: none"> a. Develop or use existing approach transition computer models b. Use computer modeling to study high prioritized problems, to indicated when there is a problem. c. The number of problems to be investigated will be limited to the total budget. 4. Reporting and guideline

<p>Deliverables:</p>	<p>A report providing an evaluation of most common guardrail approach transition methods as well as engineering opinion for less critical designs from various states which were not evaluated by computer simulation.</p>
<p>Urgency and Expected Benefit:</p>	<p>With the large variation in approach transitions and deficiencies in installation make it difficult to test all these variations. There is a need to provide basic research on how approach transition work and how certain modifications influence performance.</p> <p>This research will then help prioritize what improvement need to be made to existing approach transitions.</p>
<p>Problem Funding and Research Period:</p>	<p>Total Estimated Cost: \$85,000</p> <p>Work Schedule: (Project Duration = 12 months from initiation of the project)</p> <ul style="list-style-type: none"> • Task 1 = 2 months • Task 2 = 3 months • Task 3 = 6 months • Task 4 = 1 months
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