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| **Roadside Safety Pooled Fund Program** **Research Problem Statement** | State:  WA-79 |
| Title:  Transition design for free-standing NJ shape concrete barrier to keyed-in single-slope barrier | |
| Problem Statement:  WSDOT currently uses free-standing precast NJ shape concrete barrier with pin-and-loop connections. In many situations, this barrier needs to be placed adjacent to a single-slope barrier that is keyed into 3-inch asphalt layer on either side of the barrier. WSDOT has a design detail for transitioning the shape of the NJ barrier to the single-slope barrier. However, the current transition design does not account for the sudden change in lateral stiffness in transitioning from the free-standing barrier to the keyed-in single slope barrier.  A transition design is needed that will allow transitioning the shape and lateral stiffness. | |
| Objectives of the Study:  Develop a transition design for free-standing NJ shape temporary concrete barrier to a keyed-in single slope barrier. If possible, the transition design is to be accomplished without using thrie-beam covers in the transition region. The design should meet MASH test level 3 testing criteria. | |
| Expected Benefits:  Successful design will allow connecting free-standing NJ barrier to keyed-in single slope barrier. | |
| Description of the Proposed Feature to be Tested: *(Be as detailed as possible. Include drawings and/or plans, if available.)*  A concept of the transition is attached.   * It is expected that two crash tests will be needed for successful evaluation of the transition as per MASH. One crash test would be needed to evaluate performance of the system in transitioning from free-standing to the restrained transition barrier segments. Second test will be needed to evaluate performance of the system in transitioning from the restrained transition barrier segments to the keyed-in single slope barrier. * Finite element analyses will be needed to evaluate the design and select critical impact points for testing * TTI will have to construct the transition segments. * WSDOT will provide free-standing NJ barrier segments for testing. TTI should budget for shipping cost. | |
| Estimated Cost *(of the feature per linear foot installed):* | Total Estimated Cost of Crash Test:  Total = 130,000  2 crash test = 80,000  Construction and shipping = 25,000  FEA = 25,000 |
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