**EXECUTIVE SUMMARY**

Domestic Scan 19-01, *Leading Practices for Detailing Bridge Ends and Approach Pavements to Limit Distress and Deterioration,* conducted November 18-22, 2019, consisted of representatives from twelve state agencies whom shared details and lessons learned in bridge end design. While the original scan statement focused on details related to deterioration at bridge ends in jointless bridges, the majority of bridge end issues, such as the “bump at the end of the bridge”, exist in bridges with or without deck joints.

**INITIAL FINDINGS**

**Due to the variety of geological, geotechnical and climate conditions each state is faced with, there is no “one size fits all” solution to resolving the “bump at the end of the bridge.” The initial findings are broken into the following categories: abutments, joints, approach slab parameters, embankment treatment and drainage.**

***Abutments*** Many state design manuals have a design selection hierarchy organized per parameters such as span length and skew. Nomenclature varied slightly by state but the main abutment types used in jointless bridges are integral and semi-integral. Abutmentless bridges are also being used, though not as widespread. Pile treatment (preventive measures for pile, jacket, sacrificial loss) was also discussed.

***Joints*** Most states agreed that the preference was to eliminate joints from the bridge deck. Moving joints away from piers and past abutments obviously means movement and drainage is accommodated elsewhere. If the approach slab is detailed as integral with the abutment, the joint exists at the approach slab to pavement transition. If the joint is just past the abutment, drainage and movement is accommodated at the abutment backwall.

***Approach Slab*** In some states, approach slab details are located in the contract plans with the backfill and grading plans while in other states they are located with the bridge details. Consequently, the approach design is the responsibility of the road designer in some states and the bridge office in other states. Other variabilities in approach slab parameters are: slab depth (at grade or buried), movement, slab length, thickness, reinforcing, use of sleeper slab, embankment separation, skew, barrier rail placement and movement end.

***Embankment Treatments*** Many states have spent considerable time investigating and trying alternative embankment parameters. Some of these include the boundaries specified for compaction, the compaction requirements and type of backfill. Recommendations included increase importance of design for backfill compaction and backfill material. Clarification is needed of what states define as free draining material.

***Drainage*** Controlling and designing for effective drainage management is the key to structure longevity. Drainage on and off the deck was a topic of discussion. Water causes damage when allowed to drain to the wrong place and states presented method to route water where it won’t cause damage such as slope erosion, undercutting corrosion.

**FORTHCOMING MILESTONES**

A summary report has been submitted to the team. A first draft of the formal report is due to the team February 2020 with the final formal report due in late April 2020.

**PLANNED IMPLEMENTATION ACTIVITIES**

The team compiled a preliminary list of state and national conferences which to present the scan findings. Presentations are planned at state conferences such as Pacific Northwest Bridge Maintenance Conference, Tennessee Engineering Conference, Michigan Annual Bridge Conference, Maine Transportation Conference and Louisiana Transportation Conference. Presentations are also planned at national conferences such as TRB Annual Conference, AASHTO Bridge Preservation Committee and National Association County Engineers (NACE). Additionally, the team will investigate avenues for presenting workshops and webinars, and submitting articles to journals.