Slide IT	Updated: 5/12/14

Webinar Q&A Documentation
Slide In Bridge Construction (SIBC) Engineer/Design Perspective - April 3, 2014

No.	Questions Submitted in Q&A or Chat Box During Webinar	Q&A Panel Responses See also the new SIBC Implementation Guide; downloadable at http://www.fhwa.dot.gov/construction/sibc/
1	Was a GRS (Geosynthetically Reinforced Soil) abutment configuration considered here? And if not, why?	GRS abutments were not considered for the two slide-in bridges because they were constructed for the third bridge on the project (which did not use slide in methods). That being said, GRS abutments do not prohibit slide-in construction methods. They are also ideally suited to canal crossings like the ones on this project.
2	For the Lyons structure, did you make the superstructure integral with the abutments or did you obviate the advantages of the integral abutments in order to accomplish the lateral slide?	Yes, we did make the superstructure integral with the abutments. Two elements were used for the connection. 1) Vertical holes were cast in the girders and abutments. Rebars were placed in these holes and then grounted in place. 2) A closure pour was constructed between the backwall on the girders and the backwall attached to the substructure. This closure pour engaged rebar protruding from both of the backwalls, encouraging a substantial connection.
3	How long was the permanent closure for the slide in? Were both bridges done at the same time?	The permanent closure was scheduled for 60 hours (2.5 days) and both bridges were moved into place during this single closure. The time required to actually move the superstructures takes up a relatively small portion of this window. It took approximately 45 minutes to slide the Holbrook superstructure and approximately 1.5 hours to roll the Ft. Lyon superstructure. The remainder of the time is required for all the other activities that must occur - roadway fill, paving, guardrail installation, and so on. Performing both movements during the single closure allowed sharing of equipment and crews, potentially saving resources and money. Also, we had committed to the public to move both structures during one closure, which would occur over a weekend.
4	What program was being utilized for finite element analysis?	We used SAP for the finite element analyses.

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5	If using GRS would that further reduce the construction period?	With our approach to this project (using the superstructures at their temporary locations for a detour), we had the luxury of building the permanent abutments at a reasonable pace. If one wanted to use the trench approach, I believe it would be more challenging to build GRS abutments rather than pile supported abutments. The reason is the amount of earthwork required. The trench opening would need to be 10 - 15 feet wide to accomodate the GRS system. Doing that in phases or in a "trench box" would be challenging.
6	Is slide in system feasible/practical for multi span bridges (say 3 span) made continuous later for LL?	Yes, it is possible to move multi-span bridges into place. You could move all spans at once or move individual spans which are made continuous later. Oklahoma did the latter approach with a four span structure and the San Francisco / Oakland Bay Bridge placed sections of I-80 in a similar fashion. Kentucky and Indiana just moved a multi-span 2400-ft long truss into place all at once.
7	What was the reason for adding the backwall to the integral abutment on the Ft. Lyons Bridge?	The backwalls on the abutments at Ft. Lyon were added to allow the contractor to construct the approach roadways before the slide happened. They are not required for the slide itself.
8	How thick was the concrete topping?	The thickness of the concrete topping varied on the Ft. Lyon Bridge. Near the edge of the exterior girders, the topping thickness was 4.75 inches. At the roadway centerline, the topping was just shy of 10 inches thick. This variation was required to get the 2% cross slope on the highway. The Holbrook bridge used a traditional 8-inch thick structural deck.
9	Can the bridge be immediately (1 hour) opened to traffic after the slide in?	With the right details / configuration, the road can be opened to traffic very shortly after the slide-in. For example, the Ft. Lyon crossing used the abutment backwalls that allowed installation of the approach roadways before the slide. After the slide, the contractor simply had to do the closure pour and minor roadway work (guardrail, striping, etc.). Without the adjacent Holbrook Bridge project, that would have allowed opening within a few hours of the move.
10	Was there a trenching system used to install the heel on the existing abutment for the Holbrook bridge?	The heel was constructed as part of the new abutments on the Holbrook bridge. We were able to construct the abutments before canal flows were too high, which allowed us to use an open excavation for the abutments. There was no special trenching.

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11	For the steel girders, why did you place blocks below each girder, rather than using the deck buildup above the girders, thereby allowing the girders to be flat?	It was simply our preference to use blocks rather than buildup (haunching). To accommodate the geometry with buildups, haunching depth would have approached 5 inches. We felt that was becoming somewhat large for the bridge and opted to use the HSS blocking.
12	What is the longest single span that was moved in?	The Ft. Lyon bridge was approximately 85 feet long and the Holbrook bridge was approximately 45 feet long. There have been major bridge slides in the US that are much longer. Per the SIBC Technical Support Services Center (TSSC), below are some longer single-span bridges to note: Massena, IA: 120' http://www.iowadot.gov/MassenaBridge/index.html West Mesquite, NV: 111'-6" http://www.nevadadot.com/uploadedFiles/NDOT/Projects_and_Programs/Road_Projects/WMIDB_PIM_11-7-2011%202[1].pdf I-91 Vermont: 132' (to be completed summer 2015) http://vtranscontracts.vermont.gov/sites/aot_contract_administration/files/documents/cmgc/VTrans%20CMGC%20Contractor%20Meeting_Hartford%20IM091-2%2879%29%205-22-2013.pdf Below you'll find a link to the Capilano River Bridge project that is unlike those I've listed above. For this project, the existing truss bridge was moved offline and repurposed as a detour bridge. The bridge was actually made up of two non-continuous trusses (250' & 180'), so the slide operation effectively entailed moving two single spans. Capilano River Bridge: http://www.modernsteel.com/Uploads/Issues/February_2012/022012_move.pdf
13	Does a slide in system have any limitation related to skewed alignment of a bridge?	As long as the substructure units are parallel, it seems possible to handle skews. You would probably need to be more cognizant of fit-interference issues and really check your geometry. We were fortunate that these bridges were orthogonal.