Updated: 2/14/14

Webinar Q&A Documentation
Slide In Bridge Construction (SIBC) from Engineer/Designer Perspective - January 28, 2014

No.	Questions Submitted in Q&A or Chat Box During Webinar	Q&A Panel Responses
1	Were the wingwalls precast, and if so how were they connected?	The wingwalls were precast. They were not connected to the bridge and were founded on 2 H piles.
2	How difficult was it to level the precast abutment pile cap? How critical were the tolerances?	Contractor elected to use cast in place abutment pile cap instead of precast. If precast had been used the end of drive pile tolerance was 3 inches in any direction.
3	Would you consider possibility of putting steel plate at top of abutment to promote smoother rolling?	Yes.
4	How was the channel attached to the permanent abutment?	The channel was attached to the permanent abutment temporarily with two anchor bolts at the south end.
5	Could the abutments have been built under traffic to expedite the slide?	The new bridge was longer than the existing bridge. During the design phase there was discussion regarding allowing intermittent lane closures to drive piling through the existing pavement and then reopen the roadway. In the end this was not deemed to meet our objectives with the project.
6	Were approach slabs used along with the semi-integral abutments?	Yes; there was a 20' double reinforced approach slab.
7	How well did the approach profile match the bridge profile after the span was put in place?	The profile match was nearly perfect with about 1/8 inch difference at the abutment locations.
8	Were the approach slabs precast or cast-in-place? Which way would the contractor normally prefer?	The approach slabs were cast in place. We have specified precast approach slabs for ABC projects in the past and the contractors have communicated to us they prefer cast in place and don't think there is a considerable time savings with precast approach panels due to the difficulty leveling the panels.

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9	Did the rollers they used have horizontal guide wheels?	We had horizontal guide on the four corner rollers.
10	What was done to ensure that each end of the bridge was being slid at the same rate to avoid racking of the superstructure?	We secured a 50‘ tape measure to each abutment to monitor the distance each end of the bridge traveled as the bridge was rolled into position. The hydraulic jacks we used had a maximum stroke of 20”. We tried to stay within a couple of inches between the two abutments and would square up at the end of each 20” stroke.
11	Any issues with racking, i.e., travel along one abutment moving faster than the other? Did you do anything to monitor/control for this? Thanks.	See response to Question 10. Basically same question.
12	Was the cap considered as deep beam for check of shear and eccentricity of loads of the jacks?	Yes; the design engineer considered the diaphragm a deep beam, the pile cap was not.
13	What was the total weight of the move and how much jacking/pulling force was required at each end?	The total weight of the move was about 1.5 million pounds. Design was for 10% of the normal force. In practice the load varied.
14	It was mentioned that there was lateral load in the bearing pads that were on top of the rollers. Other than the normal rolling force was there problems with the rollers that caused excessive lateral loads?	Occasionally the unguided rollers would bind against the side of the channel and shear would begin to develop in the neoprene bearing until the rollers would release. I don’t know that the loads were excessive but the shear was a concern because if the laminated neoprene bearings were damaged there wasn't a spare bearing so the point was to eliminate the potential for a problem and not to allow reuse.
15	In regards to the required jacking or push force, was there any delta between the slide method (Teflon on stainless) and the rolling method used?	Lab testing indicates around 6% for the coefficient of friction for a Teflon and stainless steel plate that is lubricated with dish soap. The experience in the field shows the rollers can be lower than 2.5% but due to various issues (racking, binding, smoothness) the pull could result in an "effective coefficient of friction" of around 10%. Teflon and stainless steel may be susceptible to some of those issues as well.

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16	How do you keep the bridge from rolling too much since the rods were used in tension (if the bridge isn't completely level). The friction from the rollers were enough?	The friction is enough to stop the bridge immediately when the jacking loads are not applied. This could be a concern if there was a significant grade on the pile cap. The pile cap was virtually level although there may have been some very minor imperfections in smoothness.
17	What was the force required to start the roll? What was your max force required to move the bridge? How did that compare to your theoretical value?	It's easier to talk in terms of a "coefficient of friction" which is a percent of the normal force. To start the resistance was less than 2.5%. There were instances where it went up to 10%. Roller friction was less than what we expected when the rollers are completely free to roll .
18	How was the structure transferred from the rollers to the permanent footing if the rollers were in the jacking pockets?	Rollers were placed on centerline of bearing, this allowed for approximately 18“ in front of the roller for our jacks to be placed. We then jacked the bridge up approximately ½” and removed the bearing pads from the top of the rollers and placed them under the beams. The guide channel was then removed by pulling it back to the falsework. The bridge was then lowered onto the bearings. Once in final position the jacks were removed then the roller.
19	What kind of grant is the HfL? Is that for the design funding? If so, how far in advance did you have to apply for it?	HfL grants were part of SAFETEA-LU federal funding cycle and are no longer available in MAP-21. The grants were federal grants that were to improve safety and customer satisfaction among other goals. The FHWA solicits grantee applications. The time issue is a common problem with grantors and they typically want quick results but projects take time to plan and execute. FHWA may have new grant programs in MAP-21 to promote innovation.
20	Could the project have been completed quicker? i.e., a weekend vs. a week - or is that too quick?	Because the structure was lengthened, a quicker project was likely not possible. Usually weekend projects require construction of the future substructure under the existing structure.

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21	I think I noticed that there was only a few days between the CIP footing construction and the loading. I heard that the maturity method was used to verify the concrete strength. Can you elaborate a little on the criteria that was utilized to proceed.	The maturity is a testing method used to predict early-age concrete strength based on the heat of hydration. Testing by the ready mix concrete supplier prior to the project is needed to develop a maturity curve to correlate the concrete strength with the temperature. The compressive strength required on the footing prior to the roll was 4000 psi.