Slide In Bridge Construction from the Owner / Policy Maker Perspective
Q&A
March 24, 2015

Questions	Answers
It may vary from project to project, but what is an appropriate friction coefficient and safety factor for friction to use for the slide surfaces? For example, with greased PTFE on stainless plate? Are there references for this?	Generally, what we use for our friction factor is 4%, but we design up to 10%. We use a safety factor of two and a half on the safety surface.
Did VTrans have to get legislative authority to use CM/GC? If so, how did they approach the legislature and how did the contracting community react?	We did not. Back in 2009, we pursued legislative authority for design/build contracting, because that wasn't allowed. We were able to get really broad- enabling legislation for design/build. It was so broad that, when it was time for us to consider CM/GC, it was broad enough to encompass us using that design method. When we started with design/build, and more recently with CM/GC, we did a lot of outreach with our contractors. The message we got from the legislature was, we're going to let you have this now but we expect that you're going to be partnering with the contracting and consulting engineering communities to make sure you're doing this in a thoughtful way. We've worked hard to gain support and that's not to say that it's 100% endorsed (either method) by the contracting community but I think they understand that we're doing things in a thoughtful way and there is still a good base amount of work in design/bid/build.
Have you used this SIBC method for railroad bridge replacements?	We haven't used it yet, but with railroad bridges there isn't much time so I'm sure that we will be. We're like every other state that has railroad bridges and they don't want to stop the trains for bridge repairs, so I'm sure we'll be using that.
Will a live video camera feed be accessible to view during the actual bridge slides?	We will have a time-lapse video cam feed set up; it may not be live but it will be available. We'll have 2 cameras set up on site during the construction of this project to showcase it later.
I'm concerned about the road closure time and construction time constraints of the approach slabs and approach bents or slabs. How will this construction be expedited?	The approach slabs are precast so all we have is a small closure between 2 large precast slabs. That's how it's expedited.
How are the approach slabs being designed?	The approach slabs are being designed as normal approach slabs - they're not being designed as bridge spans. If we were sliding them, we would have had to design them more as bridge spans because there wouldn't be fill underneath them. But since they're precast, we put a little more thought into picking and transporting these. There is more steel in those.
At what time in the contract delivery was the final cost established?	We had done a preliminary estimate at 60% plans. We were engaging the subcontractors at that time - January 2014. Our final __ and p was submitted in December - from July 2014 through December, we were continually submitting pricing as were learning more about the project and details were being finalized. This is a good time to talk about the Independent Construction Estimator - ICE. We did hire another firm to do an independent construction estimate used for comparison to keep prices in check and go through some constructability processes with us to make sure we had a lean price at the end of our process. We learned a lot from that. It allowed us to review some subcontractors, such as paving since it's on the critical path to opening this project. We worked together and they showed us the two bids they'd gotten from the two suppliers in Vermont. We went with the higher bid because it was apparent that that company had done the extra work to ensure that there was extra equipment available, and that they would open this bridge on time. They wouldn't be responsible for any delay - it allowed us to participate in that process. We had latitude in developing best value. Same with steel - we didn't go with the low bidder on steel. We felt like the middle range bidder had the capability to produce and give us our steel on time.
Were the bridges designed with LRFD or the 17th Edition?	They were designed LRFD. The bridge design is a normal bridge design.
How did the cost of SIBC compare with standard construction?	SIBC is definitely more expensive. Once we decide that an accelerated bridge technique is warranted, we don't do the same level of estimates in terms of what we're paying for premium. We have some idea of what we're paying here and I think that we're in the range of about a 10% premium for a slide project vs. what conventional construction would be. That is offset by costs that haven't been fully vetted per road user cost or other things if we were trying to build this project conventionally. This was a site that was nearly impossible to build something conventional on and have our customers be satisfied. The most cost-effective, accelerated construction technique is what we're shooting for - a lateral slide was the most cost-effective ABC technology.
What entity is responsible for construction quality control and who is responsible for quality assurance?	We're building this as a normal construction project so the contractor has their own quality control. We also have our own resident engineer and inspector on the project site.
Do your construction fabrication tolerances change for slide construction v. other alternative methods of accelerated bridge construction?	The construction tolerances don't change at all. We have to make sure we're capable of putting the bridge into it's final place from it's initial place. We have to check our measurements a few times to make sure that everything is in the right spot.

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There was a reference to Sharp 2 RO4 - Were there some modifications made to customize details that you pulled out of that - can you elaborate?	When the Sharp 2 toolkit came out, we were recovering from Tropical Storm Irene damage and we were faced with 14 bridge replacements in the course of 2 years. We had to get plans out quickly and we started looking for ideas and came across this toolbox. At that time we were identified as beta testers for it. What we found was that the details in the toolbox were good but they didn't fit our geometries. We have fairly tight constraints here - we have narrower roads and utilities and we modified the toolkit to fit our needs. We also, being the engineer of record, felt that we had to do a bit of design to be comfortable with some of the connections. The biggest driver of this tailoring was the UHPC reference at the time; we weren't really allowed to use that. We had to come up with our own joints and higher strength concrete mix.
Regarding the precast approach slabs, what type of overlay and thickness will be placed on the precast units?	3" of Bituminous Concrete Pavement
Were there any incentives/disincentives and/or if not what is the plan if the closure is extended due to construction problems?	Incentive/disincentive was used. Contractor would have paid hourly if the bridge was not opened by 6:00 am Monday
You mentioned that the approach slabs are precast - how do you plan to ensure complete contact between the slab and the paving seat, i.e. how to prevent one corner from being in contact and the other corner free?	Grout bed
It was mentioned that the 128' span length pushed the use of Lateral Move Technology. Is there an approximate range of span length where this type of Accelerated Bridge Construction is most efficient?	I actually said the 128' pushed the limts of modular bridge sections being shipped and lifted into place (one of the options considered). There have been longer bridges pushed into place.
Now that you've completed the construction, what would you do differently?	Yes. We took a bit of time bringing the ICE firm on board mostly because we weren't familiar with this CM/GC contracting method. We brought in the first ICE and realized we needed someone with more experience in this contracting arena so we went out and hired somebody else. That took time. The ICE wasn't in the project until about 2-3 months after PCL was in it and that created a bit of a disconnect. Next time, the ICE will be procured along with the CM/GC and will participate from the beginning.