December 2019 ABC-UTC Webinar Featured Presentation: Connecticut DOT's Atlantic Street Railroad Bridge Project		
#	**Questions**	**Responses**
	Design	
1	What were rail-traffic daily volumes?	Over 300 trains per day. 21% of all New Haven Line ridership to Grand Central uses the Stamford Station.
2	What were the types of rail traffic, e.g., Class 1, Class 2, Class 3, commuter rail, Amtrak, etc.?	Class 1 railway with Amtrak and Freight Service.
3	Who owns the rail line (from whom were permissions required)?	The State of Connecticut owns the railway. Metro North is the operator. Work is coordinated through a master maintenance agreement.
4	Could you introduce the deck drainage and deck joint details?	Deck drainage - drain pan connected to underdrains behind each abutment. Deck Joints - abutment 2-inch open joint; at pier open joint sealed with geotextile and steel plate. See plan sheets (Reference Q4).
5	Was there an OCS (Overhead Contact System) on this bridge and, if so, how was it handled?	There were no catenary structures on the bridge itself. There was one catenary truss foundation that had to be relocated during Phase 1, as it was in conflict with one of the jump spans. Otherwise, the overhead power lines were de-energized while working and the contractor used low clearance equipment. It is one of the reasons the contractor chose to use micropiles for the jump span foundations instead of drilled shafts. He felt he could get better production by drilling smaller diameter piles.
6	Who designed the temporary jump spans, the Engineer of Record or the Contractor?	The Engineer of Record (AECOM) designed the jump spans.
7	What are the design issues of curved railroad bridges?	Since this bridge is on a tangent, there were no concerns.
	Construction	
8	Did you use the integrated project delivery method for this project?	Project was design-bid-build.

9	What was the contract duration?	Construction started April 1, 2018 and has a completion date of Nov. 30, 2020. There were 2 projects included in this contract: the railroad bridge and roadway work (Project 135-301), and the track level work east of the bridge (Project 301-163). The bridge and roadway work was completed in 2019. The track level work will be continued through November 30, 2020.
10	What, if any, were penalties/liquidated damages for exceeding the closure window(s)?	See attached special provision "Milestone Incentives and Milestone Liquidated Damages Provisions." Milestone 1 (9-day roll-in): $1,000,000 incentive, $1,250/HR LD - Milestone 2 (60-day roadway lowering): $400,000 Incentive, $7,500/day LD.
11	Was there incentive compensation for early completion?	See attached special provision " Milestone Incentives and Milestone Liquidated Damages Provisions." See Q-10.
12	What were the closure times of the street below the rail line for erection of precast spans?	Atlantic Street was closed February 17, 2019 to September 7, 2019; this allowed construction of the center pier. The superstructure was rolled in June 28 - July 7, 2019.
13	What was the project delivery method (DBB or DB)?	Project was design-bid-build.
14	Where were the precast spans constructed, and how far away from the bridge site?	There were 2 assembly areas - one just south of the bridge, the other 0.72 miles north east of the bridge.
15	Was the construction/erection method used in the bid plans, or was it a contractor decision?	The schedule, the use of the self-propelled modular transporters (SPMTs), and assembly area were included in the contract. The contractor modified the details for the Jump Span foundations and reconfigured the assembly area layouts, but otherwise the bridge was built per plan.
16	Were the existing rails cut and spliced, or were full-length rail segments over the bridge replaced?	The existing continuous welded rail was cut at the project limits and spliced with new rail. Averaged approximately 280 feet for each of the 5 tracks. This covered the new bridge and the limits of the temporary spans.

17	Once the bridge spans were in place, who placed the ballast, ties and rails? Contractor forces, railroad forces, or a combination?	The contractor installed the ballast, ties, and rails. The railroad performed all signal/communication and power work.
	Cost	
18	What is the estimated cost impact of roll-in versus a conventional erection?	The cost impact of roll-in versus a conventional erection provided overall construction cost savings. The cost of temporary construction associated with ABC methodology included preparation of the superstructure assembly areas, temporary support of superstructures, SPMT transport and placement of pre-constructed spans, and railroad jump span fabrication and installation, and totaled approximately $5 million. The Department estimates a conventional railroad bridge project constructing one track at a time would have required at least a 5-year construction duration with a net cost increase over ABC construction alternative of approximately $10 million for extended construction inspection overhead costs and much greater increased railroad force account costs required to address additional track flagging, track outages and catenary de-energizing, not including the additional highway and rail user impacts traffic associated with a much longer duration.
19	Please address the cost using ABC, compared to conventional design-bid-build techniques.	See above.
20	Who were the funding parties, and what were their share percentages?	The project was 100% State Bond Funded.
	Other	
21	What were the most important "lessons learned" from the project?	The most important take away for me is that it is absolutely necessary to have a full commitment to the schedule from all parties involved. We were fortunate to have that. At any point, competing agendas from the Contractor, the Owner, the Railroad, or the Engineers could have caused us to miss. There will be moments when you may think the outcome in doubt, and many on the outside did, but the project team as a whole was confident in the plan and had discussed the various contingencies prior to the outage start.

	Questions during Webinar	
22	What supported the jump spans, and what was the code covering their design/construction?	Jump spans were supported on micropiles with timber lagging designed in accordance with AREMA, Cooper E60 live load.
23	What was used to connect the tracks to the jump span?	Ties were directly connected to the jump spans.
24	Which SPMT subcontractor was used?	Berard from New Iberia, Louisiana.
25	Was HPS 70 steel used to help reduce the depth?	No, steel was AASHTO M270, Grade 50. The design was controlled by deflection.
26	Why steel pier columns versus precast portland cement concrete?	Erection of the pier was included in the 9-day outage. By using steel columns, we avoided the need for cure time for grout. The steel columns were also lighter and easier to handle.
27	Was weathering steel considered for any elements? Was galvanizing or a high-performance coating used on any of the exposed steel?	The bridge was metalized with a urethane sealer coat. Only the bottom flange is exposed.
28	Were the SPMTs available locally?	Yes, but Berard from Iberia, LA was the SPMT subcontractor engaged by the prime contractor for the project.
29	Why did you make the overall length of the bridge longer compared to the original bridge?	While the bridge was structurally deficient, the primary purpose of the project was to improve access to the southend of Stamford. The increased span of new bridge allowed us to add turning lanes to match the roadway section north and south of the bridge.
30	What type of bearings were used at the piers?	Disc bearings (fixed at the pier).
31	Is the weather always that great? Not a drop of rain or even a cloud in the sky.	Weather is always good for the photos. There was a major downpour a few hours prior to the first span move and several thunderstorms on the second to last day. These did delay work but not for very long. The July heat was probably a larger concern for the work crews.

32	What is the cost of this project?	Cost of the entire project was $75 million. This included the bridge and roadway work (Project 135-301) and all the track level work east of the bridge (Project 301-163). The cost of the bridge and roadway items (Project 135-301) was $46 million; the track work east of the bridge (Project 301-163) was $29 million.
33	If anything (e.g., due to fire, or accidents, etc.) happens to one of the spans which is located between two adjacent spans, how can we replace the damaged span?	Since each 2-track span is independent, it could be removed and reconstructed in place.
34	Was the total cost $75 million? Do you think this could be utilized for an elevated roundabout made from precast elements? The City of Lincoln, NE just passed on conventional roundabout because the bids came in too high. Perhaps this technique could be used to reduce the cost and build an elevated roundabout faster?	Yes, the total cost was $75 million. While this technique would reduce the construction time to construct the roundabout, it may not reduce the cost. For this project, the cost savings were a result of reducing the time impacting the railroad.
35	Did the contractor offer alternate designs for the temp works?	The plans detailed steel H-piles for the jump spans. The contractor requested a change to micropiles due to low headroom and soil conditions; the request was evaluated and accepted during construction.
36	I can't see handrails and clearance sign on this photo! What happens if the train has an emergency stop on the bridge, and the passengers want to evacuate the train?	Passengers would have to exit the train from one end or wait for emergency services. In the final condition, there is a maintenance walkway on the south side. A platform for the new track 7 will be on the north side.
37	What were the storm water design issues?	Since the roadway was lowered 3.5 ft, all drainage in the area was redesigned.
38	Who paid for the incentive bonuses? Federal funds?	The project was 100% State funded for construction.
39	Were the steel columns considered fracture critical?	No, the columns were later encased in concrete to act as one unit.