December 2018 ABC-UTC Webinar Featured Presentation: Connecticut DOT's ABC Decision Process Methodology		
#	Questions	Responses
	Design	
1	What drove the need for developing the decision process and methodology?	A more systematic and objective evaluation method was needed to assess the viability of ABC methodology for any given bridge replacement and major rehabilitation projects.
2	Is the decision-making tree self-generated or adapted from other sources?	The CTDOT decision matrix used the framework of the Utah DOT ABC decision matrix as a starting point in development.
3	Is CTDOT's ABC Decision Methodology based on a prior methodology or developed by them? What's the background of their approach?	The CTDOT decision matrix was refined using experience, knowledge, and judgment gained from previous CTDOT ABC projects. All bridge engineers were urged in 2011 through official Department communication to consider use of ABC methodology in bridge design projects. Additional guidance was needed to help engineers assess more objectively the benefit of ABC methodology on a given bridge design project.
4	Is your methodology backed up by statistics or a research project? If not, how did you come up with the Excel template?	The methodology was developed through engineering judgment including review of the Utah DOT ABC decision matrix and review of previous CTDOT ABC projects. Also needed in the decision matrix was a methodology for comparing ABC to conventional construction costs including overbuild, ABC premiums, and construction inspection monthly costs. The weighted rating table was developed as a tool for the integration of all ABC rating measures. The ABC decision matrix measures and rating table measure weights will be reassessed on a regular basis as a history of ABC projects is generated.
5	In general, do you use the decision matrix for temporary bridges? Also, how do you quantify safety benefits?	While the ABC decision matrix considers the cost of temporary bridges in conjunction with conventional bridge construction alternative comparisons, it is not used for other considerations on the viability of temporary bridges. The decision matrix does not include construction safety as an ABC determining measure.

6	Can you provide an overview of the Connecticut DOT organizational structure?	CTDOT is organized with central administration office that includes all engineering design disciplines. There are four Construction and Maintenance districts throughout the State that are responsible for the management and inspection of all construction projects. ABC is integrated into the design process as warranted for bridge engineers. There is not a separate ABC engineer specialty group within the Department.
	Construction	
7	How receptive are the contractors to the ABC approach?	CTDOT contractors are generally receptive to the ABC construction. Very infrequently contractors request approval to change some element of an ABC project to conventional construction.
8	Could you discuss issues with flexible contracts, allowing for ABC and conventional techniques to be chosen by the contractor?	CTDOT construction contracts do not generally provide both ABC and conventional method alternatives. Contractors are free, however, to submit value engineering or construction change requests for consideration by the Department.
9	What are typical claims resulting from ABC, and how are they evaluated and addressed?	CTDOT has had no construction claims on its projects related to ABC methodology.
	Cost	
10	What method did you use for ABC cost?	ABC cost differentials are project specific and must be estimated by project bridge design engineer.
11	How do you determine the cost of road user impacts?	CTDOT does not determine an estimated cost conversion for road user impacts. Rather, road user impacts in a specific project are assessed in units of person-days for both ABC and conventional methods in a project and are then compared as a ratio and carried in the matrix as an ABC user impact reduction.

12	Could extending the duration of closure result in an overall lower construction cost compared to conventional construction?	The cost comparison of shorter duration ABC construction methodology and longer duration conventional construction is addressed on sheet 2 of the ABC decision matrix. Longer duration conventional construction may sometimes be less expensive than ABC construction. For a specific project, it will depend on the cost premiums for ABC compared to conventional with overbuild, maintenance and protection of traffic, and the longer CE&I administration and inspection durations.
13	How did material choices impact the overall cost per sq ft of the bridge? Which material choice is preferred?	There has been no discernable relationship between material type and overall project cost.
14	Is the cost a big concern in making the ABC decision?	Construction cost and user impact reduction are the most heavily and even weighted factors in the ABC rating table.
15	Please address the economics of ABC versus conventional construction.	Sheet 2 of the ABC decision matrix addresses the comparative economics of ABC and conventional construction.
16	Discuss ways to make the technology more affordable and what we as state agencies can do.	Consider adapting the CTDOT decision matrix for your use, perhaps reweighting some of the ABC measures if needed. For projects that are designed with ABC methods, make sure project contract durations and road closure durations are short enough to ensure ABC compliance. Be prepared to negotiate acceptance of some conventional portions if they can be done within contract duration. This approach will build contractor experience and confidence in ABC methodology.
	Questions during webinar	

17	Who built this spreadsheet and who uses it for each project (ex., Bridge Engrs, IT dept, Planning Egnrs)?	The spreadsheet was developed by Mike Culmo of CME Associates in concert with a small team of CTDOT bridge and construction engineers experienced in the Department's ABC projects. Also very important was the input from the Department's Traffic engineering group in the development of the traffic user impact reduction factor assessment method encapsulated in the spreadsheet. The matrix is used by bridge engineers in the preparation of bridge rehabilitation study reports and structure studies completed during the preliminary design phase for all bridge projects involving replacement of bridge decks, superstructures, or entire bridges.
18	Safety is typically recognized as a benefit of ABC. How is the reduction in construction exposure and risk quantified to compare to conventional construction in terms of safety? Perhaps safety should be in the scoring system?	Safety is not currently included in the ABC decision matrix as an ABC decision measure in the rating table. Consideration will be given to including safety as a rating measure when the matrix is reassessed by the CTDOT.
19	Long-term aspects do not appear to be included in the rating system. How does Connecticut look at potential long-term maintenance considerations at this comparison stage in using conventional, known methods, vs. new methods in ABC?	CTDOT has not found any construction quality differences between ABC and conventional construction. While a specific investigation to that purpose has not been undertaken by the Department, the general experience with substandard construction issues has been unrelated to ABC construction methodology.
20	Should the VPD column consider truck counts to account for commercial use loss?	The units of measure used in the table for estimating the impact for traffic delay is person-days. As such, it would not matter whether the drivers are auto or truck drivers. The spreadsheet does not try to assess and compare financial costs associated in user delay for ABC and conventional construction methodology.
21	Please elaborate on user impact cost and how it was accounted for in your calculations.	User impact costs are not assessed by the ABC decision matrix. User impacts are assessed in units of person-days and are calculated with aid of the 3 supplementary delay time spreadsheets.

22	If Railroad, Water and ? are zeroed out in the scoring, why collect and enter the data?	Railroad impact, Environmental/ Water handling and Waterway limitations are only zeroed out in the ABC rating table if the input values for these measures are "0". If the input value is "1" or greater for each and any of these 3 items, the maximum score column value for the respective measure immediately defaults to "5" by formula built into the spreadsheet.
23	How do you estimate the ABC construction time and cost before knowing the ABC method (SPMT, longitudinal skidding, …) and kind of bridge components?	The ABC decision matrix should be run separately for each ABC methodology under consideration.
24	Have you considered season (rain, snow, special holidays.....)?	Weather, holidays, special events and other traffic conditions specific would be factored into the overall durations of ABC and conventional construction.
25	What does the weight factor reflect? It seems to not add up to 100 percentage.	The weight factor relates the relative importance of each ABC rating measure to the sum of all factors. The weight factor totals range from 93 to 108 depending on the inclusion or not of "Railroad Impacts", "Environmental /Water Handling", and "Waterway limitations" in the ABC rating table. See answer to question 22 above for more information on this.
26	How do you justify the impact value 0, 1, 2, 3, 4, 5? How do you deal with a different engineer who may have a total different outcome?	The ABC User guide available on CTDOT's website provides more background and assumption behind the ABC measure rating values of 0 to 5. There is some engineering judgment involved in selection of the appropriate value. The project specific ABC matrix is reviewed by a team of highly experienced engineers from multiple disciplines during presentation of the bridge rehabilitation study or structure study where discussion on the selection of rating values can be held.
27	The matrix method sounds Quantitated, but it is not as the weight factors, impact values ... and based on the person's judgments or choices.	There is some subjectivity involved in the selection of ABC rating measures that requires engineering judgment. See response to question 26 above. However, the most heavily weighted measures in the ABC rating table, "User Impact Reduction" and "Cost Analysis Factor", are more exacting in value.

28	Have you re-evaluated a project after construction to see if results of the matrix change based on actual data?	We will be re-evaluating the decision matrix in about a year to reassess ABC measure and ABC rating table weight factors. Several more years will be required to obtain project specific construction feedback and cost data that can be compared to the ABC recommendations derived from the decision matrix (2017) used during the project preliminary design phase.