

**May 2021 ABC-UTC Monthly Webinar:  
How Contractors Can Help Owners Deliver Better ABC Projects**

#	Questions	Responses
	<b>Contracting</b>	
1	Are ABC construction specifications included in contracts in the U.S. and Canada? How prevalent is this?	In states where Design-Build, Construction Manager/General Contractor (CM/GC), or Construction Manager at Risk (CMAR) are not allowed, specifications would need to be included. In states where aspects of ABC are generally accepted as options, it is common to see ABC options and specifications in regular Design-Bid-Build procurements.
2	Do you have any additional comments on what leads to agreement to use ABC when considering several options?	<p>The planners for the Departments of Transportation (DOTs) need to look at the specific project and see if it is the right fit for ABC. Some considerations are: long detours, highly utilized roadway which cannot maintain phased construction, and the urgency of the repair (one cannot wait 2-4 years for a conventional repair).</p> <p>Agreement comes from getting to a point where all stakeholders fully embrace why ABC is the best solution, and then developing appropriate contract documents and specifications for the project.</p>
3	Can you comment on precast costing versus cast-in-place (CIP) concrete costing? (Generally, contractors give better prices on CIP to use their labor more, use less equipment, and avoid subcontracts.)	Cast-in-place concrete can be less expensive when contractors have the labor and resources to build at the bridge site, but we have also been asked to allow precast elements (e.g., box culverts) because of labor/carpenter shortages, and to shorten lane closures and traffic detours.
4	Can you comment on the cost of ABC versus the regular Design-Bid-Build approach? How can environmental permitting in ABC projects be improved?	<p>On a straight-up basis, ABC is typically more expensive than conventional methods if one does not quantify end user inconvenience and, by nature of the shorter construction window, a safer project.</p> <p>ABC can actually help environmental permitting, especially for short windows of opportunity (e.g., some sort of migration, tidal zones, rainy seasons, snow seasons, permafrost zones).</p>

5	How do contractors recover the costs of the increased overhead and management that these projects require?	Quite simply, contractors build it into the cost of the project.
6	How do you involve Contractors pre-bid without impropriety?	<p>In Massachusetts, a contractor association has access to retirees from the contracting side. It is a nice way to bring back their knowledge.</p> <p>Owner-supported or industry-supported open plan rooms work. It is important to get plans to industry early. In the pre-planning stage, an open house can draw interest where the owner supports an industry day.</p> <p>Nebraska starts by involving contractors and fabricators in research projects months and years before an actual construction project may begin. We also have quarterly meetings with our local Associated General Contractors (AGC) where we discuss potential accelerated techniques we may want to implement. For specific projects we conduct pre-bid meetings and advertise and invite all interested contractors to attend.</p>
7	How can owners get input from contractors during design without prejudicing construction bids/awards?	See response to Question #6 above.
8	How soon should the designer/owner bring in the construction and/or precast industry? During pre-design? During pre-construction?	Definitely during pre-design. Earlier is always better.
9	Is there a forum for material suppliers to introduce new/innovative products to the contractors?	Industry events are usually a good forum.
10	Can you discuss the pros and cons of using Construction Manager/General Contractor (CM/GC) contracts (or progressive Design-Build contracts) with ABC specifications?	<p>CM/GC contracts are not allowed in many states. Many owners and general contractors have limited exposure to these contract methods.</p> <p>Nebraska has not used CM/GC or Design-Build with ABC projects.</p>
11	What do contractors think about the CM/GC procurement method?	In states where it is allowed by legislative efforts, it is generally well received.

	<b>Construction</b>	
12	Can you discuss the benefit / cost (B/C) of using ABC on single-span bridges? What are the factors that go into the benefit side, and how do you quantify them?	The benefit / cost of using ABC can be hard to quantify. Safety and end-user costs are the simplest items to use. Shorter duration means less traffic congestion. Also, from a budgeting perspective, ABC is a faster way to deliver projects.
13	Do you have any additional comments on contractor-preferred ABC strategies and details?	For a successful project, the ABC materials and methods should be kept simple, clean, forgiving, and readily available.
14	Can you discuss how Change of Plans and Change Orders are processed for ABC projects?	<p>There is no significant difference. The sense of urgency is more due to the fast track nature of the project.</p> <p>The owner's support system needs to be able to operate at the same speed as the project. All facets of delivery, including decision making and the life cycle of Change Orders (from first becoming aware of the potential need for a change order, to getting them figured out, under contract, and paid) should all be sped up during ABC. This takes multiple levels of owner management to be immediately available to support the work. Many states have change order language that infers the general contractor (GC) should not do work until directed and agreed to by change order. This standard language can either hamper the progress of ABC or cause the GC to finance changes while work progresses, neither of which is ideal.</p>
15	What is the maximum lifting capacity of a moving gantry or SPMT that is currently available in the market?	<p>We have used a gantry that has 100,000 lbs/axle with six axles, for a total capacity of 300 tons. However, the number of axles can be expanded to provide a larger capacity.</p> <p>The heavy lift industry has really embraced ABC. These technologies were initially adapted to the oil / gas / refining / shipbuilding / power generation / mining industries. They are very resourceful in providing cost-efficient solutions for construction projects.</p>

	Questions during Webinar	
16	In Colorado, when we first tried Ultra High Performance Concrete (UHPC) for an ABC bridge with full-depth deck panels, we (CDOT) hosted a workshop with a manufacturer for contractors, prior to the bid letting, to help them understand the important aspects that lead to successful and good quality UHPC.	This is a great idea. It would be good if the workshop could be shared with the ABC-UTC for posting, for other owners and industry groups to share from Colorado's experiences.
17	Early contractor involvement can be a challenge for the contractor in that they are providing hard earned experience - ultimately their competitive advantage to an owner free of charge. Prequalification and/or alternative delivery methods like CM/GC can provide an incentive for a more collaborative approach / investing in a future project. Do you have any opinion on this?	These approaches are not widely adopted yet by public owners, and would likely need legislative efforts to be fully implemented. Collaboration on cost / design / schedule are benefits of CM/GC and CMAR. These opportunities still exist in Design-Build and conventional delivery as well through Value Engineering or Alternative Technical Concepts.
18	One barrier seems to be the additional cost of ABC techniques. What justifications can be used to counter the initial cost increase besides user costs?	Safety is a great justification, for sure. Also, ABC can help with the budgeting process if the projects need to be completed in certain fiscal years.
19	ABC is the only viable option for on-line railroad bridge reconstruction.	Good point, thank you for sharing. Part of this is the economic impact of shutdowns for railroads. Railroads can face conditions where detours do not exist, or be transporting livestock or perishable goods, all of which bring increased scrutiny to closure durations. They are better prepared to determine their soft costs, and can quickly overcome cost implications of ABC.
20	Jack makes a good point on contingency costs (standby cranes, SPMTs) which can quickly make ABC projects look more costly than they ultimately are from a probability / risk standpoint. This is something to consider when DOTs determine Liquidated Damages (LDs) on these types of projects. Do you have any comment on this?	Risk mitigation strategies are hard costs. Different types of work present different risk profiles, and then different mitigation strategies. Liquidated damages are one way owners create the urgency and magnitude of risk that need to be mitigated, in this case through having redundant equipment available and on standby.

21	Are there efforts underway to research or develop processes for movement of prefabricated elements - storage, shipping, installing (lifting operations) and the stresses applied particularly for components shipped over long distances? This would be helpful to improve quality and contractor guidance.	<p>At this time, the presenters do not know of any research on this topic.</p> <p><u>Response from Mike Culmo, P.E., CHA Consulting, Inc.:</u></p> <p>The <i>PCI Design Handbook</i> contains recommended approaches for checking precast elements during shipping and erection. The <i>AASHTO LRFD Guide Specifications for ABC</i> also contain provisions for checking elements for shipping and handling, based on the <i>PCI Design Handbook</i>. The <i>PCI Design Handbook</i> has been around for many years, and it has served the precast industry well (precast has been around longer than ABC). The working stress approach limits tensile stress to the modulus of rupture divided by 1.5. The <i>AASHTO LRFD Guide Specifications for ABC</i> also contains dead load factors to account for dynamics from handling and shipping, including hauling over the road. One can conclude that proven design provisions are available for shipping and handling of precast, and that the current provisions are working well. In addition, the <i>AASHTO LRFD Guide Specifications for ABC</i> are clear that the contractor (or fabricator) is responsible for checking the elements, not the design engineer. The design engineer has little control over how the elements are handled; this is a “contractor means and methods” item.</p>
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