

# **TRB ABC Joint Subcommittee [AFF00(2)]**

## **2017 Annual Meeting Minutes**

**January 11, 2017**

**10:15 a.m. – 12:00 p.m., Marriott Marquis, Silver Linden (Mezzanine)**

### **Members in attendance:**

Chair Ben Beerman, Vice-Chair Mary Lou Ralls, Ahmad Abu-Hawash, Behrooz Far, Dennis Golabek, Murray Johnson, Bijan Khaleghi, Sandra Larson, Bill Oliva

### **Liaisons in attendance:**

Atorod Azizinamini, Tim Cupples, Waseem Dekelbab, Ben Graybeal, Finn Hubbard, Danielle Kleinhans, William Nickas, Hormoz Seradj

### **Friends and guests in attendance:**

Upul Attanayake, Eric Carleton, Nancy Daubenberger, Yaohua Deng, Gregg Freeby, David Garber, Aaron Guyette, Zach Haber, Joel Hahm, Kay Jimison, David Johnson, Paul Johns, Ahcene Larbi, Ping Lu, Rolando Moreau, Will Potter, Quentin Rissler, Firas Shalabi, Hisham Sunna, Jeff Thomure, Rob Turton, Wagdy Wassef

See attached sign-in sheet.

### **Welcome/Introductions**

Ben Beerman, Subcommittee Chair, welcomed all to the meeting and asked participants to sign-in electronically or on sign-in sheet. Ben showed the table of friends who have signed up since the last TRB Annual Meeting and asked them to stand and be recognized. He said both members and friends get updates on Subcommittee activities.

Ben linked to the Subcommittee website ([www.TRBAFF103.com](http://www.TRBAFF103.com)) and showed the 2017 information that was posted. He thanked presenters for the Sunday ABC workshops. He then accessed the “Members” tab and said the Subcommittee now has over a hundred members, liaisons, officers, and friends. He asked for any updates and received several updates. He said to send him an email on any additional updates needed.

### **2016 Meeting Minutes**

Ben said the 2016 Subcommittee meeting minutes from the last TRB Annual Meeting and October 2016 continuation meeting were sent out last week for review. The minutes are also available on the website. The minutes were approved with no changes.

### **TRB Committee Liaisons ABC Updates**

Subcommittee liaisons for TRB Committees provided brief reports on their ABC activities as described below.

AFF20, Steel Bridges. Liaison Hormoz Seradj said Canada is building a bridge with pre-decked tub girders using A1010 and integral abutments. The tub girders are under fabrication. He said many fabricators do not know how to use A1010 and, therefore, it is more expensive. The corrosion advisory group is developing a guide specification for A1010 use that should be available in April 2017.

AFF30, Concrete Bridges. Liaison Mike Culmo provided AFF30 updates to Ben. AFF30 has three RNSs that are applicable to ABC:

- 1) Use of UHPC for connections between units of adjacent member bridges; the consensus of the committee was that this would not be a priority.
- 2) Cross section optimization of precast prestressed decked beams; this may be covered under NCHRP 18-18.
- 3) Non-contact lap splices for precast bridge deck element connections; Mike noted that there is a need for investigating lapped hooked bars and that there are no provisions for these connections. Mike said they would further assess these three RNSs and vote on them in the next few weeks.

Ben showed a YouTube video (<http://www.youtube.com/watch?v=ubSXdDinnOE>) that Mike provided on the Southbound Route 8/25 bridge construction in summer 2016 in Bridgeport, Connecticut, in which two bridges were replaced in less than two weeks. Ben asked if any other ABC videos are available. Bill Oliva mentioned the Dodge County video on GRS (<http://www.youtube.com/watch?v=oqSrYzrNkh8&feature=youtu.be>). Florida has video on GRS-IBS and the Florida slab beam, modified from the Minnesota slab beam.

AFF50, Seismic Design and Performance of Bridges. Liaison Elmer Marx was not at the Subcommittee meeting due to his concurrent Committee meeting. He provided Ben with his report. AFF50 sponsored a Sunday workshop entitled “Seismic Design and ABC.” Also, AFF50 is active on two NCHRP projects:

- 1) NCHRP 12-105 (“Proposed AASHTO Seismic Specifications for ABC Column Connections”) – This project is addressing displacement-based seismic design when using mechanical couplers and pocket/sockets in the plastic hinge region. Design equations have been developed that address the effects of couplers on plastic deformation capacity. The project is advancing as planned. Waseem Dekelbab is the program manager, Mike Keever is the panel chair, and Dr. Saiidi is the Principal Investigator.
- 2) NCHRP 12-101 (“Seismic Design of Bridge Columns with Improved Energy Dissipating Mechanisms”) – This project is addressing novel/innovative column systems which are often ABC friendly and is also advancing as planned. Waseem Dekelbab is the program manager, Elmer Marx is the panel chair, and Dr. Saiidi is the Principal Investigator. Sandra said as background on shape-memory alloy (SMA), the TRB IDEA Program funded some of the early SMA work. It can be accessed on the IDEA website (<http://www.trb.org/IDEAProgram/IDEAProgram.aspx>).

Ben said any interested committee members or friends should contact Elmer if they have any questions or suggestions for future research.

AFF80, Structural Fiber Reinforced Polymers. Ben said Dr. Wael Zatar, AFF80 Chair, reported that his Committee discussed an RNS on rapid construction of prefabricated substructure systems for durable and sustainable bridges.

AFH40, Construction of Bridges and Structures. Liaison Tim Cupples said AFH40 had a fair amount of ABC-related discussions in its meeting. Bill Oliva proposed a Research Need Statement (RNS) on “Development of Guidance for Establishing Effective and Efficient Timelines and Incentives/Disincentives for ABC Projects.” AFH40 seemed interested for the benefit it would provide to the DOTs. In response to Ben’s question on whether AFH40 would like to lead that effort, Tim said AFH40 is OK with either leading it or letting it come from the ABC Joint Subcommittee. Bill said it would be good if this Subcommittee took the lead. Ben said the Subcommittee will do an industry poll similar to last year and will include this topic on the poll. The poll should go out mid- to late January. The RNS will need to be developed by the end of February; Bill said it is 95 percent ready to go now. Ahmad Abu-Hawash said this RNS has been added to the SCOBS T-4 research tracking sheet and was discussed at the T-4 2016 mid-year meeting concerning whether it belonged in T-4. Ahmad said the RNS will be discussed further in the T-4 Annual Meeting in June 2017. Bill Oliva said he believes the RNS is most strongly rooted in ABC concepts.

Tim said AFH40 also discussed the need for a synthesis on non-seismic connections of substructures. Bill Oliva will lead development of the synthesis statement. Ben said he would add this topic idea in the poll.

Tim said a third item was a proposed synthesis on demolition of conventional structures. AFH40 had a discussion on near misses during demolition. David Garber gave an update on the preliminary research on demolition done by the ABC-UTC at FIU. He said the ABC-UTC took the SCOBS T-4 proposal and sent out a poll to the state DOTs to find current practices. A report was then developed on practices of the 28 states that responded; the report is on the ABC-UTC website (<http://abc-utc.fiu.edu/research-projects/demolition-requirements-bridge-construction-projects-best-practices-guideline/>). David said several states do not get into means and methods due to liability issues. The ABC-UTC is taking no further action on demolition at this point. Tim said AFH40 members feel that engineers need to be more involved in demolition means and methods. He said he would take back to AFH40 the current status for steps to move forward. Ahmad Abu-Hawash said demolition was discussed at the SCOBS T-4 mid-year meeting in November 2016. The T-4 action item is for Ben Beerman and Cory Rogers to check on demolition with the TRB Construction Section Chair and AFH40 Chair for input. Carmen Swanwick, the T-4 Chair, will then submit a proposed demolition NCHRP 20-05 in February 2017.

Tim said there were a number of interesting presentations during the AFH40 committee meeting, one of which was a SHRP2 R04 update. He said Western Michigan gave a presentation on lateral slide instrumentation, finding perpendicular movement. Another study focused on economic impacts to closing a bridge in Michigan, to include business and societal impacts, and converting environmental impacts into total costs. It supports why a decision to use ABC is made. Sandra Larson said there are several ongoing activities (e.g., TSMO - Transportation Systems Management and Operations) that are

helping to understand the impacts. Ben asked for updates as available for the Subcommittee's research tracker. Upul Attanayake said he would provide updates to Ben on Michigan's research.

Murray Johnson mentioned a topic idea on inspection of temporary structures. Tim said the initial discussion was to look at falsework requirements. He said AFH40 did not take a vote so is not advancing. The crossover for ABC is temporary structures required for lateral slides. Bill Oliva said part of the discussion was whether a different standard is needed for temporary structures.

AHD30, Structures Maintenance. Ben said AHD30 liaison Dave Juntunen was not able to attend the meeting. Ben said Dave's Committee has a research topic idea on modular decked beam elements and the strategies of how they get administered – designed, fabricated, constructed; also performance. Ben said the Subcommittee will work with Dave to get an RNS developed. Also, William mentioned performance of deck panels, suggesting a durability synthesis on in-service precast deck panels including a parallel comparison with cast-in-place decks built in the same era, location, ADT/ADTT, with the same superstructure, etc.

AHD35, Bridge Management. No report.

#### **AASHTO SCOBS T-4 Update**

Ahmad Abu-Hawash reported that T-4 held its mid-year meeting in November 2016 as a joint meeting with the NCHRP 12-102 panel and research team. T-4 and 12-102 met to finalize the proposed AASHTO ABC guide specification that will be balloted in June. The proposed guide will include reference to NCHRP 12-98 on tolerances and dynamic effects of bridge moves. Ahmad said they are moving forward on the 12-102 balloting prior to the PI's completion of the final research report.

Also, last year T-4 started a research tracking spreadsheet for research projects that are likely to result in construction specifications for which T-4 takes the lead in balloting. Pooled-fund projects and ABC-related projects in the Subcommittee's tracking spreadsheet are included, e.g., the previously discussed I/D RNS.

Ahmad said to let him know if the Subcommittee has any items for him to take back to T-4 for consideration in its 2017 annual meeting. He said he would discuss the I/D and temporary structures inspection discussions.

#### **TRB NCHRP ABC Update**

Waseem Dekelbab reported on the status of NCHRP 12-95, 12-96, 12-98, 12-102, 12-105 and 12-106. He said that T-4 will submit the 12-102 proposed ABC guide specification for balloting in June. He said T-4 is also looking at NCHRP 12-98 on tolerances and dynamic effects. He said NCHRP 12-105 on seismic columns will be completed in December 2018, and NCHRP 18-18 on UHPC connections ("Design and Construction of Deck Bulb Tee Girder Bridges with UHPC") is at the Request-for-Proposals stage. NCHRP 20-07/Task 388, "Guidelines for Design and Construction of Temporary Bridges," was funded at

\$100,000; Wagdy Wassef with AECOM is the Principal Investigator and the expected completion date is the end of March 2017.

#### **FHWA Turner-Fairbank Update**

Ben Graybeal reported that FHWA has an active ABC program, particularly with connections. He discussed five ongoing projects.

- 1) The dimensional stability of grouts project is on best practices and things to do to mitigate; a report and technical note are available.
- 2) The interface bond of grouts project focuses on bond of field cast grout materials to precast concrete elements; a technical note is available.
- 3) The adjacent box connections project focuses on innovative connections and best practices; a report will be available in spring 2017.
- 4) The UHPC material characterization project looks at the mechanical, durability, creep, and shrinkage characteristics of five different UHPCs; a report will be available in spring 2017.
- 5) The shear performance of UHPC connections project includes physical testing with the goal of using mechanical capacity to simplify design and construction; the report will be available in summer 2017.

#### **ABC University Transportation Center (ABC-UTC) Update**

Atorod Azizinamini reported that in December 2016 the ABC-UTC was among 32 UTCs to be awarded funding for 2016-2021. A total of 25 of the 32 UTCs are new. The ABC-UTC is pleased to be one of seven continuing UTCs. This year, in addition to Iowa State University and the University of Nevada-Reno, the ABC-UTC added the University of Washington-Seattle for increased seismic research and the University of Oklahoma for increased substructure research. Atorod said FIU recently received a letter from the Secretary of Transportation, designating it as a USDOT Innovation Center for Transportation Infrastructure; the designation started with a dialog on the USDOT report entitled *Beyond Traffic 2045: Trends and Choices*. Atorod said in the research area, the ABC-UTC will collaborate more with industry; he asked for ideas to be shared. He said a research survey will be coming out, and that the ABC-UTC Research Advisory Board will be in the loop on selections. He said the ABC-UTC will be taking a more active role in getting new research products implemented. Atorod also said the 2017 National ABC Conference abstracts deadline has been extended to February 24. He also mentioned the January monthly webinar.

Bill Oliva said one thought is to figure a way to expand beyond the bridge community to improve implementation, e.g., with planning and programming. He said the Wisconsin DOT invited non-bridge staff for its SHRP2 training. Ahmad Abu-Hawash said for his ABC project meetings he has a distribution list from planning and other groups, typically with 20 in the room for discussions. Nancy Daubenberger said Bruce Johnson discussed having topics on ABC in the large AASHTO meeting in the fall.

#### **TRB SHRP2 R04 Update**

Finn Hubbard reported they are currently doing training in Wisconsin and Iowa, and that 15 more training sessions are planned. The training is geared for front-line people. Training topics include the

tool kit, lateral slides, lessons learned, costs, contractors, etc. They show various projects around the country. Finn said the training has been well received, with over 500 participants to date.

### **Industry Organization Updates**

Industry liaisons provided brief updates as described below.

National Steel Bridge Alliance (NSBA). Matt Shergalis said a hot topic is resilience as related to reparability of steel girders, getting them back in service with the same performance. Another topic is donating highway bridges to counties for reuse; then repurpose; otherwise recycling. He said steel prices are stable if not declining, so it is a good time to buy a steel bridge. NSBA is collecting pricing information; every steel bridge is different depending on the design. Metallizing and galvanizing are hot topics; prices are coming down but are still more than painting. Another hot topic is research on replacements to x-ray for inspection. The Collaboration just released guidelines on the website, jointly developed with AASHTO/T-14. Upcoming events include a webinar on specification changes that will be held in late summer. NASCC is March 22-24 in San Antonio; he has free registrations. NASCC will have a bridge track. NSBA has a change in leadership, with Bill McEleney retiring after 30 years with AISC and 20 years with NSBA. Taking his place is Danielle Kleinhans, as the next Managing Director.

Ben mentioned Kay Jimison's presentation on Sandwich Plate System (SPS) decks. Kay said SPS has updates to its materials. She said an Ohio county bridge is currently under construction with an SPS deck on folded steel plate girders. The project has a 30-day road closure with new cast-in-place concrete abutments and the SPS installed in the last 4-5 days of the closure; details will be posted on the ABC-UTC website.

National Concrete Bridge Council (NCBC). William Nickas reported that NCBC continues to push forward ideas to facilitate longer-lasting structures. He said the concern with ABC is over the joints and the connections. William said the position of NCBC is that post-tensioning offers a resilient pre-compressed joint with good durability and a longer life than non-compressed. He mentioned the Winter 2017 ASPIRE editorial on responsibility, authority, and accountability (RAA), and said there needs to be better accountability of performance. He also mentioned three other articles in the same ASPIRE, on details for post-tensioning system durability, ensuring performance and reliability of post-tensioning installation and grouting, and implementation of flexible filler for post-tensioning corrosion protection in Florida. He said restraint cracking can occur as elements get larger, and that the industry needs to understand that concrete shrinks. He said the industry has an activity looking into UHPC to thin up heavy elements, the Malaysian work, and that it is time to use 2013 UHPC Symposium work. They are writing papers on the Malaysian work for publication but need to go through the review process.

American Composites Manufacturers Association (ACMA). Ben gave the report for John Busel, who was not able to attend the meeting. John reported that Session No. 571 ("FRP Composites Innovations and Applications") has four presentations:

- 1) State of Practice for the Design of Bridge Fender Systems with Polymeric Materials (17-01014)
- 2) Development of FRP Design Guidelines for the Wisconsin Department of Transportation (17-01727)

- 3) Performance Evaluation of a Reinforced Concrete Slab Bridge Retrofitted with CFRP Laminate System (17-03563)
- 4) Tensile Behavior of Pultruded FRP Laminates with Bonded-and-Bolted Splice Joints (17-03148)

### **State DOT Focus – Washington State**

Bijan Khaleghi, P.E., WSDOT State Bridge Design Engineer

### **2018 TRB Annual Meeting Events to Request – for discussion:**

#### ***Paper Session:***

- General Call for Papers

#### ***Workshop:***

- NCHRP final deliverables

#### ***Poster Session***

- National ABC Project Exchange/ABC Project dBase

### **Collaboration Opportunities**

TRB re-organization. Ben discussed the elevation of the ABC Subcommittee under the General Structures Committee (AFF10) to the ABC Joint Subcommittee under the Structures Section (AFF00) and Construction Section (AFH00). He showed flowcharts to clarify where the Subcommittee fits into the TRB committee/subcommittee structure.

ABC-UTC Research Database. Ben asked participants to go to the ABC-UTC research database and let him know how they want to search it and what they want to see. He asked participants to look at the database in conjunction with the Subcommittee's research tracking tool.

Remaining Agenda Items. Ben said the Subcommittee will pick up remaining agenda items via webinars during 2017.