TRIENNIAL STRATEGIC PLAN (TSP)

Evaluation Period: February 1, 2017 to January 31, 2020

Please note that rows and boxes below expand as you enter the information

PART 1: Committee Name and Scope

This is an opportunity to review the officially approved name and scope that are posted on the TRB website and consider any necessary changes. If changes are needed, include the proposed scope statement and/or name and justification for the changes.

NOTE: A proposed committee name and/or scope change must have the approval of 2/3 of the official members of the committee. The balloting done at a committee meeting that has less than 2/3 of the members in attendance must be augmented with e-mail balloting of the members not in attendance.

Committee Code *	AFH40/AKC40 as of April 2020
Committee Name *	Standing Committee on Construction of Bridges and Structures
- Date(s) reviewed	
- Change, if proposed***	Changing the committee name has not been proposed.
- No. of official members approving change/total number of members **	
Committee Scope *	This committee is concerned with all aspects of the construction of structures for transportation systems excluding tunnels.
- Date(s) reviewed	Considered at the annual committee meeting. No motion to change the committee scope has been made.
- Change, if proposed ***	
- No. of official members approving change/total number of members **	

* Show current, as it currently appears in the TRB Online Directory

** Includes Chair, Standing Committee Members, Emeritus Members, and Young Members

*** Show proposed, or Not Applicable

PART 2: Committee Accomplishments

NOTE: We have provided much of the information you need for boxes 2.2, 2.4, and 2.7 below and in attachments A, B, and C. We ask that you provide the remaining information.

2.1

Year	2017	2018	2019	2020
Number of Members in Attendance at Annual Meeting		18	17	18
Number of Visitors in Attendance at Annual Meeting		19	17	20
Number of Papers Reviewed		9	5	2
Total Number in Attendance at Mid-Year Meeting	NA	37	34	38

2.2

Sessions and workshops sponsored/cosponsored at the Mid-Year meeting, including name of co-sponsoring committee(s) if applicable (by year):

NOTE: Sessions and workshops sponsored/cosponsored at the Annual Meeting are listed in attachment A. **List** below all sessions and workshops sponsored/cosponsored at Mid-Year meeting, including name of co-sponsoring committee(s) if applicable (by year).

Prior to 2019, AFH40 had not held a midyear meeting in known memory. A mid-year conference call was held on 17APR19 to discuss past and future Research Needs Statements. The call had 28 participants discussing RNS and planning for further TRB activities.
A midyear meeting is planning for June of 2020 with similar purposes.

2.3

Provide title(s) and presenter(s) for informal presentations made at Annual Meeting and Mid-Year Committee meetings (by year):
2018 Annual Meeting:

- NCHRP 49-02 -Emerging Technologies for Construction Delivery
  - Dr. Christofer Harper – Louisiana State University
- NCHRP 20-68 US Domestic Scan Progam
  - Romeo Garcia – FHWA
- Reliable Fit-up of Steel Girders - Section 6 of LRFD 8th Edition
  - Alan Fisher - Cianbro
- Sarah Mildred Long Vertical Lift Bridge Tower Foundation Construction
  - Alan Fisher – Cianbro
- Emergency Repairs to Fire-Damaged Liberty Bridge
  - Roger Eaton – HDR

2019 Annual Meeting:

- Innovative Bridge Designs for Rapid Replacement Using ABC/PBES
  Finn Hubbard (Fickett Structural Solutions, Middleton, WI)
- Emerging Technologies for Construction Delivery – Christofer Harper (Colorado State University)
- Maryland MD 355 Crossing BRAC project
  Tim Cupples (Montgomery County Department of Transportation, Montgomery County, MD)
  Philip Sheridan, PE, DBIA, Clark Construction Group, LLC

2020 Annual Meeting:

- Imad Aleithawe – "Ridgeland, MS Rapid Bridge and Culvert Replacement" (title to be revised)
- Alan Fisher – Discussion of NTSB report "Pedestrian Bridge Collapse of SW 8th St Miami, Florida, March 15, 2018"

2.4

Provide titles of new research need statements (RNS) posted in TRB's RNS database (by year):

NOTE: Attachment B shows all statements currently posted in TRB's RNS database.

Bill Oliva was instrumental in developing the following RNS. Bill is serving as the committee research coordinator and is working with other committees and organizations to build interest in the noted topics.

Development of UHPC Connection of Precast Bridge Elements (PBES) for Accelerate Bridge Construction Projects.
Committee: AFH40, Construction of Bridges and Structures
Date Posted: 1/6/2019
Date Modified: 2/28/2019

Development of Guidance for Establishing Effective and Efficient Timelines and Incentives/Disincentives for Accelerated Bridge Construction Projects.
Committee: AFH40, Construction of Bridges and Structures
Date Posted: 1/6/2019
Date Modified: 3/12/2019

2.5

Provide title(s) of RNS submitted for funding consideration:

NOTE: If funded, include research project title/number and name of funding organization(s).

Unfortunately, the proposed research needs statements have not been funded.

2.6

Provide titles of synthesis topics submitted (by year):

NOTE: **List** any synthesis topic(s) funded in a research program.

2018 Annual Meeting Synthesis Statement summary:

- "Emerging Technologies in Bridge Construction" originally developed as RNS by Justin Doornink in 2016
  - Funded by NCHRP in Fall 2017

2019 Synthesis Statement Submission:
AFH40 submitted one Synthesis topic in 2019, *"Transportation Construction Claims: Sources, Trends, and Mitigation"*. Unfortunately, this synthesis statement was not accepted for funding.

2020 Synthesis Statement Submission:

Lessons learned from the review of the submitted 2019 synthesis where incorporated and a revised synthesis has been submitted for consideration: *"Current and Emerging Mitigations for Transportation Construction Claims."*

2.7

Membership Make-up: Please see Attachment C provided by TRB for summary details.

Count of Committee Members

U.S. Members	21
Non-US Members	4
Minority	7
Female	4

Membership Make-up

Region

Northwest	Southwest	Central	Northeast	Southeast	International
2	5	6	4	4	4

Slots

International	Emeritus	Young	Main	DOT
3	1	2	17	2

Employer

Federal	State	Academia	Industry	Consultant	Local	Other
1	1	7	1	14	1	0

AFH40 holds a unique position spanning between the theoretical research aspects paired with the practical implementation of the design through construction. The membership is tilted towards consultants and we no longer have a contractor on the committee. Contractor membership and interest is a continual conundrum for the committee, in particular, and TRB in general. Active measures are being made to reduce imbalance of consultants and add additional owner agency members.

Make up of the committee has become somewhat more diverse but remains limited in part from the interested pool of potential members. The committee has made conscientious efforts to invite and include a younger, more diverse make up within the membership. Continuing to increase diverse voices on the committee is a goal for the 2021 member rotation.

2.8

Provide any of the following:

- Any special publications, such as TR circular, and conference proceedings
- Sponsored or co-sponsored specialty conferences, symposia, workshops, webinars or other joint efforts with other TRB committees, other TRB entities, or other organizations (i.e. AASHTO, FHWA, State DOTs, ASTM, ASCE, and/or other modes of transportation)

AHF40 does not have anything to report for this topic.
As part of the continued centennial celebration, the committee is planning a podium session on history and advancements of bridge construction over the past 100 years.

Committee Efforts:

2018 Annual Meeting

AFH40 – Construction of Bridges and Structures

Committee Code	Session type	Title of Session
AFH40	Published Meeting - Committee	Construction of Bridges and Structures Committee
AFH40	Lectern Session	Recent Innovations in Bridge Construction: Part 1 (Part 2, Session 868)
AFH40	Lectern Session	Recent Innovations in Bridge Construction: Part 2 (Part 1, Session 846)

2019 Annual Meeting

AFH40 – Construction of Bridges and Structures

Committee Code	Session type	Title of Session
AFH40	Published Meeting - Committee	Construction of Bridges and Structures Committee
AFH40	Workshop	Accelerated Bridge Construction SHRP 2 R04 Toolkit
AFH40	Lectern Session	Special Topics in Bridge and Structures Construction Research

2020 Annual Meeting

AFH40 – Construction of Bridges and Structures

Committee Code	Session type	Title of Session
AFH40	Lectern Session	Enhancing Productivity in Bridge Fabrication and Construction
AFH40	Published Meeting - Committee	Construction of Bridges and Structures Committee
AFH40	Workshop	Automating Bridge Construction Through Robotics and 3D Printing
AFH40	Poster Session	Advancements in Bridge Construction

PART 3: Committee Future Outlook Statement and Committee Three-Year Plan (Limit 1,500 words total)

Committee Future Outlook Statement

The committee future outlook statement should include a discussion of the primary factors and influences that will shape the transportation community and topic(s) within the committee's scope over the short- (one to three years) and long-term (four to seven years). This statement should include:

- *identification of emerging, critical, and cross-cutting issues **within the committee scope** (these issues could have been identified by the committee, Section, Group, Technical Activities Council, TRB Executive Committee, or other transportation committees and organizations);*
- *identification of emerging, critical, and cross-cutting issues **outside the committee scope** that provide opportunities for liaison and collaborative efforts (these issues could also come from a wide range of sources).*

AKC40/AFH40 is planning to focus efforts on identifying and promoting research of emerging technologies and methods that are/will be changing the current state of practice in bridge construction. To be successful in understanding current short comings, opportunities for improvement and influencing the advancement of the industry, collaboration with the bridge and structures design committees (AKB00) and construction section (AKC00) committees will be necessary.

The committee's scope will be reviewed and most likely revised to address emerging technologies that are impacting bridge construction. The committee's most prevalent topics revolve around the integration of new technologies in how contractual information is delivered to the contractor and the automation of construction equipment. With the loss of AFH30 Emerging Technologies, AKC40 is preparing to include emerging technologies within the committee scope. Working to embrace this change has the added benefit of attracting younger new members who are prepared to embrace data driven bridge construction.

Below are some emerging, critical, and cross-cutting issues within the committee scope:

- Development of Bridge Construction Staffing:
  A changing workforce and lifestyle expectations has created difficulties in attracting and retaining construction personnel including management, tradespersons and inspection staff.
  Points of investigation include:
  Identifying obstacles to employment
  Developing training tools – including guidance for developing inspection staff
  Contractor/Owner Agency collaboration to identify obstacles to employment and develop strategies to attract the next generation of workers.

Collaboration with the other construction committees will be necessary to make progress on this issue.

- Development of Guidance for Establishing Effective and Efficient Timelines and Incentives/Disincentives for Accelerated Bridge Construction Project

- Continued Development of Accelerated Bridge Construction including:

Development of UHPC Connection of Precast Bridge Elements (PBES) for Accelerate Bridge Construction Projects

Quantifying the impacts of ABC techniques to construction personnel safety.

Below are some emerging, critical, and cross-cutting issues outside the committee scope:
Note: aspects of this items are both within and outside the committee scope and will require collaboration with multiple committees across different sections of TRB as these new technologies will impact and influence bridge infrastructure from conception through long term asset management.

- BIM for Bridges and Structures – Requesting a workshop for the 2021 meeting, see details below.
- Additive Manufacturing (3D printing) – Ensure AKC40 has member representation at the 2nd International Conference being sponsored by TRB.
- Automated and Unmanned Construction Equipment, including UAS for inspection
- Constructing Safe Access with No Traffic Disruption for Major Structures - Best Practices for providing Workers Safe Access with No/Limited Traffic Disruption during Construction
- Hot Topic for discussion and exploration – impact of pandemic conditions on bridge construction. Plan includes providing experiences via survey of committee members to aid researchers in understanding the impacts of the current COVID-19 pandemic on bridge construction projects.

Congruent with the committee's focus for the next three years, AKC40 will grow support and improve communication and collaboration between the design and construction sections to keep both informed of the actions and intensions of the others. This lofty intention will be supported by the expanded liaison efforts between committee members and adjacent committees in both design and construction. Research Needs efforts focused on identified opportunities will include stakeholder (e.g. DOTs) involvement to provide a multi organization front to improve the likelihood of funding.

The diverse committee memberships and friends will be leveraged to achieve a greater level of integration and collaboration between researchers and practitioners.

Committee Three-Year Plan

The committee plan is a short, focused statement of where the committee wants to go and how to get there. The committee plan may include, but is not limited to:

- ***projects, activities and products*** *that the committee will undertake during the next three years to address the emerging, critical, and cross-cutting issues identified above;*

- *how the current or proposed changed membership composition will respond to issues identified above;*
- *strategies to encourage significant involvement by the committee's Young Members, state DOT members, and other key constituents, both during committee meetings and at other times;*
- *committee's communication activities, and efforts to provide assistance and technology transfer to the transportation community;*
- *research – for the TRB committees, "research" is a very broad concept that can begin with providing the user perspective on research needs, writing research needs statements, tracking research, understanding the funding available for research in their topic area, developing case studies, lessons learned, disseminating research, technology transfer, and other activities that will advance the state of the practice. Potential research activities are:*
    - *research directions, results, and needs or gaps;*
    - *plan for maintaining and augmenting the Research Need Statements (RNS) database;*
    - *efforts to address research implementation and user needs, and ways to identify research use and implementation.*

The committee's plans to address the issues above include:

Projects, Activities and Products:

Updating committee scope to reflect the effects of new technologies on bridge construction.

Workshops and Sessions: Continue organizing workshops, podium and poster sessions during the TRB annual meeting on developments in constructing bridges and structures, serving as an information exchange to a variety of stakeholders including owner agencies, researchers and academia.

The following is a list of proposed topics for the upcoming 2021 TRB annual meeting.

- Workshop session on "BIM for Bridges and Structures – From virtual design models to construction" co-sponsored with AKB10, AKB20, and AKB30.
- Podium Session exploring the historical developments in bridge construction in honor of TRB's continued 100th Anniversary.
- Podium Session addressing state of practice in bridge construction.
- Call for papers focused on the integration of BIM between design and construction of bridges and structures.

Committee will continue to provide informed and thorough paper reviews as part of the committee activities.

Develop one webinar in the next triennium.

Committee Membership Composition:
The committee will conduct membership rotation in 2021 and aims to improve the distribution of members. A concerted effort will be made to identify and recruit a more diverse membership including younger members and improve the gender balance on the committee. The committee will develop and implement a plan to attract at least one contractor as a member and increase the presence of owner agencies as well. The new members will be selected to provide assistance in developing RNS and a

willingness to actively participate in the committee. With the sunsetting of AFH 30 – Emerging Technologies, AKC40 is extending a hand of welcome to those members interested in assisting with the construction of bridges and structures.

- ***Strategies to Encourage Members Involvements:***

Member involvement has continued to improve. The committee must continue to focus on providing meaningful and fulfilling opportunities for members to grow themselves while advancing the knowledge surrounding the construction of bridges and structure. In return for such opportunities, members will be expected to positively contribute to make the following come to fruition. Efforts to involve members will include:

- paper reviews, workshops, RNS development, podium and poster sessions, etc.
- Assign younger members to serve as the session officer at annual meeting events.
- Dispersing the workload to plan and execute the annual meeting activities including presentation preparation and committee reports.
- Develop RNS teams led by a topic champion.
- Dedicate time for one or two presentations at the annual committee meeting by younger members or graduate students conducting research within the committee's scope.
- Committee members will be expected to serve as a liaison to another committee with overlapping interests to improve visibility and collaboration.

- ***Committee's Communication Activities:***

AKC40 has opportunity for growth in improving communication both internally and externally. The following efforts are being undertaken to both improve and increase communication across the committee:

- Adding an active Communications Coordinator for the committee to aid in disseminating information and establishing a repository of committee activities and correspondence. The CCC is planned to be in place by the 2021 Annual Meeting

- Workshops are planned to be a key tool in exchanging information to a wider audience.

E-circulars are proposed to share the findings of the workshops, multiplying the impact of the annual meeting efforts.

- Investigate the development of a forum or email group by which state DOT members can reach out to the committee to gain perspective on specific issues/problems encountered whether it is dealing with project-level or forming policy level decisions

- Establish direct contact through designated committee members with aligned AASHTO COBs committees.

Research:

AKC40 has an active Research Coordinator who will continue to lead the effort to develop meaningful and well thought out Research Needs Statements.

AKC40 is working to advance the current Research Needs Statements that have been identified and presented. The following course of action is proposed to pursue endorsement and funding.

1. Obtain support of other TRB Committees/Subcommittees (AFF30 Standing Committee on Concrete Bridges, Standing Committee on Foundations of Bridges and Other Structures, ABC subcommittee)
2. Obtain the support of several DOT's (Wisconsin, Iowa, others)
3. Engage with AASHTO COBS committees (T-4 Construction, T-10 Concrete Design and/or T-15 Substructures and Retaining Walls) to prioritize in annual research needs.

4. Identify and engage with an individual state to submit to NCHRP as proposed research with all of the above endorsements.

The committee is developing a plan to engage with COBS Committee T-4 Construction leadership to align efforts for research involving technological advancements in bridge construction.

Efforts are currently underway to explore research needs in Bridge Construction work force development specifically for inspection and construction administration/quality assurance.

Research needs are being further developed through collaboration surrounding workshops where interdisciplinary topics are presented and opportunities for the advancement of industry knowledge are discussed. Potential RNS will be developed by committee members working with the Committee Research Coordinator to gather the needed background information and collaboration with adjacent committees.

AKC40 will continue to hold a midyear conference call to encourage the development of RNS and encourage collaboration among members from other committees.