

AFF20 – Steel Bridges

Research Development Approach

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AFF20 – Steel Bridges

Committee Focus

- Design of Steel Bridges
- Primarily Highway Bridges

The committee was designated a “Blue Ribbon” committee in 2018

- Category: Advancing Research
“Effective coordination with industry and AASHTO facilitates generating focused RNSs, shepherding them into needed, practical, high-value research projects, and promoting immediate implementation and wide dissemination of their results.”



Bridge Research Funding

Sources of Research Funding (follow the \$\$)

- AASHTO Sub-Committee on Bridges and Structures (SCOBS)
 - Primary source of Bridge Research Funding
- NCHRP
- Individual Departments of Transportation
- Industry



Obtaining Support for Research

Tailor Research Needs Statements to the needs of the funding decision makers

- Communicate with them on a regular basis
- Determine their goals and needs
- Obtain buy-in for proposed research



AFF20 Plan for Development of RNSs

Goal 1:

Address the AASHTO Subcommittee on Bridges and Structures (SCOBS) document entitled “A Strategic Plan for Bridges and Structures (2014)”

1. Extend Bridge Service Life,
2. Assess Bridge Condition,
3. Maintain and Enhance a Knowledgeable Workforce,
4. Maintain and Enhance the AASHTO Specifications,
5. Accelerate Bridge Delivery and Construction,
6. Optimize Structural Systems,
7. Model and Manage Information Intelligently, and
8. Contribute to National Policy.



AFF20 Plan for Development of RNSs

Goal 2:

Align with the Research Priorities of the AASHTO SCOBS
Technical Committee T-14, Structural Steel Design

1. This committee has a published list of approximately 20 potential research needs
2. AFF20 Officers meet with T-14 on a regular basis
3. AFF20 also meets with Industry Experts



AFF20 Plan for Development of RNSs

Goal 3:

Write Effective Research Needs Statement

1. TRB provides valuable advice about how to write an effective Research Needs Statement.
2. Experience has shown that well-written RNSs which follow these guidelines are more likely to be advanced through the system and eventually funded.
3. TRB's guidelines can be found online:

<http://www.trb.org/ResearchFunding/AppendixAWritingaResearchStatement.aspx>



AFF20 Plan for Development of RNSs

Goal 4:

Obtain Endorsement of each RNS from the a current member of the AASHTO SCOBS

1. AFF20 Committee members are encouraged to discuss potential RNSs with active members of the AASHTO SCOBS, especially members of Technical Committee T-14, Structural Steel Design.
2. The goal is to obtain at least one endorsement of each RNS from the committee members. The names of the endorsers are added to the RNS.
3. Committee members should also request that the AASHTO committee member champion the RNS with committee members of the AASHTO Technical Committee T-11, Research



AFF20 Plan for Development of RNSs

Goal 5:

Measure the effectiveness of proposed RNSs with respect to certain metrics that ensure successful research

1. The committee has established metrics for measuring the effectiveness of the research.
2. Weight factors have been assigned to each metric based on the relative importance to the metric to the overall committee goals.
3. The committee reviews the scoring metrics and weight factors each year and makes appropriate adjustments based on industry needs
4. Each RNS is reviewed by each committee member and scored on a scale of 0 to 10 on the following metrics:



AFF20 Plan for Development of RNSs

RNS Evaluation Metrics

1. How well does it fill a need for the bridge community?
 - a. 0 = This is limited use to the bridge community
 - b. 10 = This addresses an critical need
 - c. Weight Factor = 15%
2. How unique is the project?
 - a. 0 = This has been studied many times before
 - b. 10 = This has never been studied
 - c. Weight Factor = 15%
3. Is it applicable to our committee?
 - a. 0 = This is covered by another TRB Committee
 - b. 10 = This is very applicable to our committee
 - c. Weight Factor = 10%
4. Is it applicable to a broad range of owner agencies and engineers?
 - a. 0 = This is appropriate for only one or a few agencies
 - b. 10 = This is appropriate for all agencies
 - c. Weight Factor = 15%
5. Is it a well thought out and defined problem?
 - a. 0 = The goals of the project are not clear
 - b. 10 = The statement is clear concise and well defined
 - c. Weight Factor = 10%
6. How well does it address the 2014 AASHTO Strategic Plan?
 - a. 0 = The proposal does not address any of the objectives
 - b. 10 = The proposal addresses many of the objectives
 - c. Weight Factor = 35%



RNS Evaluation Process

Every year, each proposed research needs statement is scored via a vote by all committee members

1. Each member scores each metric for each RNS
2. The scores are multiplied by the weight factor
3. The from each member are averaged
4. The RNSs are then ranked and forwarded through the TRB Section Chair and ultimately the AASHTO SCOBs Research Technical Committee

This process has resulted in a significant increase in our funding success rate



Scoring Spreadsheet



Committee Member: John Doe	Weight Factors	2012-01	2012-02	2014-03	2016-03	
		Steel Bridge Analysis Validation Guidelines and Benchmark Problems	Validated 3D Finite Element Modeling Techniques for Complex Fatigue Details	Effects of Tapered and Dapped Beams for Steel Bridge Girders	Flowcharts and Checklists for Routine AASHTO LRFD Steel I-Girder Bridge Design	
How well does it fill a need for the bridge community? 0 = This is limited use to the bridge community 10 = This addresses an critical need	15	7	5	2	8	
How unique is the project? 0 = This has been studied many times before 10 = This has never been studied	15	4	8	8	7	
Is it applicable to our committee? 0 = This is covered by another TRB Committee 10 = This is very applicable to our committee	10	10	10	10	10	
Is it applicable to a broad range of owner agencies and engineers? 0 = This is appropriate for only one or a few agencies 10 = This is appropriate for all agencies	15	9	5	4	9	
Is it a well thought out and defined problem? 0 = The goals of the project are not clear 10 = The statement is clear concise and well defined	10	9	8	8	9	
How well does it address the 2014 AASHTO Strategic Plan? 0 = The proposal does not address any of the objectives 10 = The proposal addresses many of the objectives	35	8	8	6	10	
		100	770	730	600	900

Note: This only shows several RNSs. All are scored using this process



Scoring Spreadsheet

Example of Annual Results

2017 Ballot Results

Committee Rank	Statement No.	Scores	Statement Description
1	2017-03	740.8	Bottom Flange b/t Limits for Steel Box Girders
2	2017-06	727.1	Corrosion Rates of Uncoated Weathering Steel Bridges
3	2012-01	708.5	Steel Bridge Analysis Validation Guidelines and Benchmark Problems
4	2016-03	702.8	Flowcharts and Checklists for Routine AASHTO LRFD Steel I-Girder Bridge Design
5	2017-02	673.0	Use of Electroslag Welding (ESW) with High Performance Steel (HPS) and Fracture Critical Materials (FCMs)
6	2017-01	667.0	Flexural Capacity of Steel I-Girders over Interior Piers
7	2012-02	622.5	Validated 3D Finite Element Modeling Techniques for Complex Fatigue Details
8	2017-05	606.8	Cracking in Decks of Deep Plate and Tub Girders
9	2014-03	601.3	Effects of Tapered and Dapped Beams for Steel Bridge Girders
10	2017-04	551.5	Develop a BIM-based Integration Platform for Design and Construction of Steel Bridges

Recommended Follow Through Activities

After a research project is selected for funding:

- Nominate a member(s) of your committee for the Panel that oversees the Research Team
- Follow up on the progress of the project

After a research project is completed:

- Encourage the PI to submit a paper for presentation at the TRB Annual Meeting and publication in the TRR
- Encourage the PI to share the research finding and recommendations via conferences, papers, TRB webinars, industry guidelines, etc.

