



Steel Bridge Design Workshop:

Design of Straight and Curved Girder Steel Bridges

Using Latest Edition of AASHTO LRFD Bridge Design Specifications

Date: December 7, 2022

Time: 8:00 a.m. to Noon Eastern

Continuing Education Credit: Attendees will receive a certificate stating that they have attended four hours of continuing educational classes.

Workshop Objectives and Who Should Attend

The objective of this workshop is to familiarize the attendees with background and design provisions related to design of straight and curved steel bridges, provide best fabrication practices and provide them with available resources that can assist them with economical design of steel bridges, especially when it comes to using ABC.

The workshop will be taught, jointly with academia and industry, to deliver the material in the most practical and yet informative manner. The workshop material is developed for bridge design engineers who would like to have a deeper understanding of design provisions that are included in the latest version of the AASHTO LRFD Bridge Design Specifications related to steel bridges. Further, the workshop is aimed at providing the attendees with the latest advances in design and construction of steel bridges, especially when ABC is used. The workshop will elaborate on using steel in ABC projects.

Workshop Organizer: Atorod Azizinamini

Workshop Instructors: Atorod Azizinamini, Ronnie Medlock, Michael Barker, Vin Bartucca

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Following are tentative topics to be included in the workshop. Complete copies of the materials to be presented at the workshop will be provided to the attendees.

1- Analysis (Atorod Azizinamini, Ph.D., P.E.)

This portion of the workshop will provide a brief summary of AASHTO LRFD Bridge Design Specifications related to:

- a. Loads and load combinations
- b. Distributions factors
- c. Analysis tools and approaches to obtain shear and moment envelope moment diagrams.

2- Design (Atorod Azizinamini, Ph.D., P.E.)

The following topics related to steel bridges and included in the AASHTO LRFD Bridge Design Specifications will be covered, by briefly explaining their background, intention and use. Their use will be demonstrated using short examples. These short examples will be part of a complete design of a multi-span steel bridge, a copy of which will be provided to attendees.

- a. Constructability limit state
- b. Service limit state
- c. Strength limit state
 - i. Positive section design considerations
 - ii. Negative section design considerations
- d. Estimating fl term
- e. Role of cross frames in steel bridges
- f. Brief overview of bridge deck design using empirical approach as stated in Chapter 9 of AASHTO LRFD Bridge Design Specifications
- g. Design for shear
- h. Fatigue and fracture considerations
- i. Stability during construction
- j. Introduction to steel connection design with emphasis on steel gusset plate rating in existing steel truss bridges

(Analysis and Design will be 3 hours long)

3- Best Practices in Fabrication (30 minutes) - Ronnie Medlock P.E., High Steel - This portion of the workshop will provide the attendees with recommendations for achieving the best fabrication schedule while optimizing fabrication cost.

4- Available free analysis, design, and other resources (30 minutes) - Michael Barker, SSSBA; Vin Bartucca, NSBA - This portion of the workshop will provide the attendees with a list of major tools and resources, such as educational courses through SSSBA and NSBA, available publications, software and other help, that are available for design and construction of economical steel bridges, with emphasis on the use of ABC. These materials will be provided, free, as part of attending the workshop.