Prestressed Concrete Bridge Design Workshop:

Design of Prestressed Concrete Bridges

Using Latest Edition of AASHTO LRFD Bridge Design Specifications

Date: December 7, 2022
Time: 1:00 to 5:00 pm.

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

Workshop Organizer: Bijan Khaleghi

Workshop Instructors: Bijan Khaleghi, Gregg Freeby, William Nickas

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 prestressed concrete bridges, spliced-girder bridges, and segmental concrete bridges, and provide best fabrication practices and available resources that can assist them with economical design of prestressed concrete bridges, when it comes to using accelerated bridge construction (ABC) technology.

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 prestressed concrete bridges. Further, the workshop is aimed at providing the attendees with the latest advances in design and construction of prestressed concrete bridges. The workshop will elaborate of using prestressed concrete in ABC projects.

The 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 and Design (Bijan Khaleghi, Ph.D., P.E. S.E. - 2 hours)**
This portion of the workshop will provide a brief summary of AASHTO LRFD Bridge Design Specifications related to prestressed concrete bridge design.
   - Basic philosophy of prestressed concrete
   - Prestress concrete materials and properties
   - Time-dependent properties and prestress losses
   - Transfer and development length of prestressing strands
   - Camber and deflection of prestressed concrete members

(Break 1 – 10 min.)

   - Flexural design of prestressed concrete members
   - Shear design of prestressed concrete members
   - Post-tensioning anchorage and disturbed zones
   - Seismic design of precast concrete members and connections
   - Design of spliced girder bridge
   - Complete prestressed concrete bridge design example

(Break 2 – 10 min.)

2- **Fabrication of Prestressed Concrete Bridges (William Nickas, PE -** *30 minutes)* - This portion of the workshop will provide the attendees with recommendations for achieving the best fabrication schedule while optimizing fabrication cost, and ABC considerations.

3- **Segmental Bridge Design and Construction (Gregg Freeby, PE -** *30 minutes)* - This portion of the workshop will provide the attendees with recommendations for segmental bridge design, fabrication, and construction while optimizing project cost, and ABC considerations.

(Break 3 – 10 min.)

4- **Available bridge analysis, design, and other resources (***20 minutes)* **-** This portion of the workshop will provide the attendees with a list of major tools and resources, such as educational courses, available publications, software, etc., that are available for design and construction of economical prestressed concrete and segmental bridges.

5- **Q/A and open discussions (***10 min.)*