

**COURSE NUMBER**

FHWA-NHI-130081B

COURSE TITLE**LRFD for Highway Bridge Superstructures - Concrete (2.5-Day)**

This new course expands the suite of FHWA services to assist State and local governments in a successful implementation of load and resistance factor design (LRFD). The course promotes the philosophy of the LRFD design platform and establishes the motivation for LRFD as the reassurance that safe design practices are being applied where needed. For structural applications, the curriculum follows the AASHTO "LRFD Bridge Design Specifications," 3rd Edition, 2004 (AASHTO LRFD), including the approved 2005 and 2006 Interims.

This course is a combination of instructor-led discussions and workshop exercises. It includes LRFD theory applied to design examples and illustrates step-by-step LRFD design procedures. The training includes the extensive use of student exercises and example problems to demonstrate overall design, detailing, and construction principles addressed in the reference materials, and provides hands-on experience in the AASHTO LRFD design and detailing of concrete superstructures. Exercise and example problems are based on components of overall comprehensive bridge design examples using AASHTO LRFD and provide comparisons between ASD, LFD, and LRFD design methods where meaningful.

The curriculum materials are comprised of a comprehensive design manual, FHWA Publication No. FHWA NHI 06-001, lecture and workshop exercises intended to promote or enhance a working knowledge of the AASHTO LRFD specification, and a participant workbook for lecture notes and exercises.

The curriculum material contains the following major topics:

1. General superstructure design considerations
2. Preliminary design concepts for prestressed concrete superstructures
3. Pretensioned concrete I-girder design
4. Continuous pretensioned concrete I-girder design
5. Staged construction of prestressed concrete girder bridges
6. Bearing design

OUTCOMES

Upon completion of the course, participants will be able to:

- Describe the concrete bridge superstructure design and construction process in accordance with the AASHTO LRFD specifications
- Identify the application of appropriate AASHTO LRFD specification articles dealing with selection of bridge type, size, and location; bridge economics; evolution of bridge design codes; bridge loads and load combinations; structural analysis; deck design; concrete bridge superstructure design; and bearings selection and design
- Demonstrate the use of the AASHTO LRFD specification requirements for concrete superstructure design through the completion of step-by-step procedures, student exercises, and design examples
- Successfully complete applicable learning outcome assessments with a combined score of 70 percent or higher

TARGET AUDIENCE

This course has been developed for the needs of practicing public and private sector structural and bridge engineers with 1-10 years of experience. The primary audience is agency and consultant structural designers. Pre-training Competencies: Individuals attending this course should have a minimum BSCE degree, and have a working knowledge of the AASHTO LRFD or the "AASHTO Standard Specifications for Highway Bridges," and have relevant design experience using either of these specifications on at least one bridge superstructure.

TRAINING LEVEL: Intermediate

FEE: 2013: \$695 Per Person; 2014: N/A

LENGTH: 2.5 DAYS (CEU: 1.5 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 40

NHI Customer Service: (877) 558-6873 • nhicustomerservice@dot.gov