



COURSE NUMBER

FHWA-NHI-132094B

COURSE TITLE

LRFD Seismic Analysis and Design of Structural Foundations and Earth Retaining Structures

This 2-day NHI training course 132094B entitled “LRFD Seismic Analysis and Design of Structural Foundations and Earth Retaining Structures” is a shortened version of the NHI training course 132094 “LRFD Seismic Design of Transportation Geotechnical Features and Structural Foundations” focusing specifically on the seismic design of retaining wall and structural foundations aspects. It is a comprehensive and practical training course that addresses seismic analysis and design of transportation geotechnical features including ground motion characterization using the AASHTO acceleration response spectrum developed based upon the AASHTO or USGS hazard maps adjusted for local site conditions using AASHTO soil site factors to account for local soil conditions or upon a site specific analysis; identification and evaluation of geotechnical seismic hazards; soil-foundation-structure interaction; shallow foundation design; deep foundation design; and design of earth retaining structures, including free standing retaining walls and abutment walls. It is developed generally in consideration of the requirements and recommendations of the seismic provisions in both the AASHTO LRFD Bridge Design Specifications and the AASHTO Guide Specifications for LRFD Seismic Bridge Design, the Final Report from NCHRP Project 12-70 “Seismic Analysis and Design of Retaining Walls, Buried Structures, Slopes, and Embankments”, and 2006 FHWA Seismic Retrofitting Manual for Highway Structures. The 132094B course also focuses on interactions between the geotechnical specialist and the bridge design engineer in the seismic design process.

OUTCOMES

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

- Describe the AASHTO seismic design performance criteria and develop an AASHTO acceleration response spectra for reference site (weak rock) conditions.
- Calculate peak ground velocity and relative displacement from spectral acceleration.
- Identify the potential impacts of geotechnical hazards on foundations and earth retaining structures.
- Describe the two types of SFSI and recognize the importance of the interaction between structural designers and geotechnical engineers in the bridge design process.
- Evaluate the seismic capacity and stiffness of a shallow foundation.
- Evaluate the seismic capacity and stiffness of a deep foundation.
- Evaluate global and internal stability of earth retaining systems.
- Calculate bi-linear force-deformation relationship for seismic design and analysis of bridge abutment-backfill interaction.

TARGET AUDIENCE

This course is intended to engage a target audience of bridge and geotechnical engineers with zero and up to 20 years of experience, through instructor-led presentations, discussions, Q&A, group activities, walkthrough examples, and hands-on student exercises. At the end of design lessons, participants will have the opportunity to undertake a group design exercise to reinforce learning and enhance the transfer of new skills and knowledge to the workplace.

TRAINING LEVEL: Intermediate

FEE: 2016: \$775 Per Person; 2017: \$775 Per Person

LENGTH: 2 DAYS (CEU: 1.3 UNITS)

CLASS SIZE: MINIMUM: 20; MAXIMUM: 30

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