

2017 National ABC Conference – Pre-Conference Workshops

W-02: Lightweight Concrete – A Tool for Accelerated Bridge Construction

Wednesday, December 6, 2017 – 8:00 a.m. to 12:00 p.m.

Introduction:

This workshop presents information needed for the practical implementation of lightweight concrete (LWC) for ABC projects, including an introduction to recent changes related to lightweight concrete in the *AASHTO LRFD Bridge Design Specifications* that simplify design and significantly improve the economy of lightweight concrete for some elements. Attendees will learn how using lightweight concrete in ABC applications can improve bridge durability and service life. The concepts of internal curing of conventional concrete mixtures by replacing a portion of the sand in a mixture with prewetted lightweight aggregate and the use of lightweight aggregate for geotechnical fill will be discussed.

Workshop Presenter:

Reid Castrodale, Ph.D., P.E., Castrodale Engineering Consultants, PC

Program:

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| 8:00 a.m. | Welcome and Introduction to Workshop |
| 8:05 a.m. | 1 Lightweight Aggregate and Concrete for Transportation Applications |
| 8:45 a.m. | 2 Durability of LWC Bridges |
| 9:15 a.m. | 3 Structural Properties of LWC |
| 9:45 a.m. | <i>Break</i> |
| 10:00 a.m. | 4 Design of Bridges Using LWC |
| 10:45 a.m. | 5 Specifying and Constructing LWC Bridges |
| 11:15 a.m. | 6 Other Applications of LWC and LWA for Transportation Projects |
| 11:50 a.m. | Wrap Up and Final Questions |
| 12:00 p.m. | <i>Adjourn</i> |

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Speaker Bio:

Reid W. Castrodale, Ph.D., P.E., reid.castrodale@castrodaleengineering.com **(Organizer & Moderator)**

Reid is President of Castrodale Engineering Consultants, PC, in Concord, NC. He is a bridge designer, researcher and instructor with over 35 years of experience in prestressed concrete bridge design. He has also been promoting the use of lightweight concrete in bridges for the last 13 years. As a consultant, he serves as the Director of Engineering for the Expanded Shale, Clay and Slate Institute (ESCSI), the national trade association of producers of rotary kiln expanded lightweight aggregate. In this capacity, he represented the lightweight aggregate industry at the FHWA EDC Regional Peer to Peer Exchanges on PBES and on the National Concrete Bridge Council. He also serves as the Managing Technical Editor for *ASPIRE*SM, the concrete bridge magazine, and the Bridge Consultant for the Georgia/Carolinas PCI, and performs other consulting activities.