

NCHRP 20-68A – “US Domestic Scan Program”

Scan 11-02 Best Practices Regarding Performance of ABC Connections in Bridges Subjected To Multi-Hazard and Extreme Events

Accelerated bridge construction (ABC) practices are increasingly being used by transportation agencies to reduce the time and sometimes costs of producing, repairing, and replacing structures. ABC practices often involve use of prefabricated components (fabricated on- or off-site) that must be effectively connected together on site to function effectively. The purpose of this scan is to identify domestically-used ABC connection details that perform well under extreme event loading such as those experienced by bridges subjected to waves and tidal or storm-surges, seismic events, and other large lateral forces. The scan will augment information previously identified in the 2004 FHWA/AASHTO/NCHRP International Scan on Prefabricated Bridge Elements and Systems.

Topics to be considered by the scan include:

- Design, construction, and maintenance details for durable prefabricated bridge elements and systems (PBES) and other ABC connections that have a history of good performance under seismic and other extreme event loading;
- Seismic and other testing of ABC connection details;
- Specialized technology and standards used in monitoring, inspecting, and repair of PBES or other ABC connection details to ensure safety and serviceability with optimal connection performance and to minimize downtime during bridge construction and rehabilitation; and
- Relative costs for design, construction, maintenance, and inspection of various PBES or other ABC connection details.

The scan findings will inform efforts AASHTO and others to develop guidance for design, construction, maintenance, and inspection of PBES connections that perform well under seismic and other extreme event loading. Scan findings will help reduce uncertainty related to long-term performance of PBES connections and thereby address a major obstacle to the implementation of ABC nationwide. The findings could also contribute to the development of a strategic plan for accelerated bridge construction to support renewal of the nation’s aging bridge population. The scan team implementation plan will indicate how information learned from the scan tour may be presented in national bridge conferences, bridge forums, and documents of FHWA, AASHTO, TRB, and NCHRP.

Original Scan Proposal Title: Performance of ABC Connections in Bridges Subjected to Multi Hazard and Extreme Events

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Execution Schedule

Milestone	Anticipated Date
Chairs and Team Members Identified	July, 2011
Desk Scan Completed	November, 2011
Prescan Meeting Held	November, 2011
Scan Conducted	March-April, 2012
Draft PowerPoint submitted by SME	June, 2012
Draft Report Delivered to NCHRP and Panel	October, 2012
Final Report Delivered to NCHRP	July, 2013

Estimated Scan Cost and Funding

Estimated duration: two weeks

Last Reviewed/Revised July 31, 2013