NCHRP 20-68A – US Domestic Scan Program

Scan 11-02: Best Practices Regarding Performance of Accelerated Bridge Construction (ABC) Connections in Bridges Subjected To Multi-Hazard and Extreme Events

DOMESTIC SCAN 11-02 CLOSE OUT REPORT

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Why do this Scan

- AASHTO saw need to get more information on this topic
  - One of 2011 priorities
  - Funded by NCHRP
- Scan Team were the scouts sent out to get this information and report to SCOBS
  - Scan Team visited several States, spoke to DOT staff, practitioners and academia

Scan Team's Report

- Final report was submitted to NCHRP in February 2013
  - Can be downloaded from: http://domesticscan.org/11-02-performance-of-abc-connections
- Scan Team was also charged with implementing findings
  - Identify champions in AASHTO Technical Committees to continue work

Scan Team's Main Findings

- ABC Construction is sweeping the nation
  - Tremendous interest in building bridges faster
  - Great public support
  - Research into ABC connections going on at multiple universities
  - Some DOTs have made it normal way of doing business

Scan Team's Main Findings

- Extreme event and multi-hazard design present new challenges
  - Seismic is the major one
  - Storm surges, hurricanes, tsunamis, ship impacts, blast protection are others
- As new natural disaster strikes, public wants to be safe
  - SCOBS needs to be involved in research and code development
    - Otherwise, others will set agenda for us to follow

Scan Team's Main Findings

- Seismic design is still central challenge for adopting ABC nationally
  - States in high seismic areas cannot adopt ABC because of prohibitions by code
    - Some states are going it alone, which can result in a fragmented ABC application
- Addressing seismic will help open the door to ABC for other extreme events
  - Seismic is currently the best understood and most researched extreme event

Implementation of Findings

- Scan Team recommended support for a national center on ABC construction for Multi Hazard loading
  - Would be a central resource for collecting on-going research, detailing, construction and data on ABC performance
- The ABC University Transportation Center has been established with a consortium that includes Florida International University, the University of Nevada – Reno, and Iowa State University.

Implementation of Findings

- Develop code provisions for applying ABC construction in high seismic areas
  - Will standardize seismic design of ABC connections
  - Will allow states in high seismic areas to adopt ABC construction
  - Will open door for ABC construction to other multi-hazard and extreme events
- NCHRP Project 12-105 funded and panel is being set up this year

Implementation of Findings

- Continue research into ABC connections, including non-emulative, and develop code provisions that will allow use of these connections
- T-4 has taken on the task of being the ABC construction champion within SCOBS

Implementation of Findings

- Continue research into multi-hazard and extreme event loadings and design provisions
  - AASHTO and SCOBS need to be involved to ensure that reasonable and practical design requirements are developed
- T-1 has taken on the task of being the champion of multi hazard and extreme event design
  - Need input from T-3 for seismic

Scan Team's Work Finished

- At this time the Scan Team considers that it has fulfilled the task that it was charged with
- Key findings are being implemented
  - ABC center established
  - Key research is being undertaken
  - Champions among SCOBS Technical Committees have been identified

What Lies Ahead

- Technical Committee champions need to monitor needs of ABC construction and connections and propose research as needed
- Other Technical Committees need to work collaboratively with champions to develop code provisions
  - Champions will need assistance from other Technical Committees in writing and adopting these code provisions

What Lies Ahead

- The Scan Team encourages SCOBS and its members to be involved in national efforts in multi-hazard and extreme event research

Questions?