Background and Need

— Unique QA Concerns

— FHWA research on QA in Non-Structural Precast Elements

— Objective: determine the effectiveness of State Highway Agencies (SHA) QA practices utilized on ABC projects

— Scope: Five Case Studies and Two Guide Documents
Work Plan – Kickoff October 4, 2016

DELIVERABLES

— 5 Case Studies on QA on ABC Projects within State DOTs

— Quick Reference Guide – Field Reference for Defects

— Overall Guide Document for QA in ABC
Research Team

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Phase I – Literature Review and State of the Practice
Literature Review

— Review of available documents from FHWA, PCI, ASBI, NCHRP…

Overview of Quality Assurance

— QA for accelerated bridge construction projects involves two major components: (i) fabrication of precast bridge elements in a plant or near job-site, and (ii) assembly of precast elements in the field.

— Areas of Importance for ABC Quality

  • Use of prequalified products
  • Materials specifications and acceptance
  • NDE and visual inspection in the field
  • Contractor transport and erection plan acceptance
  • Plant certifications
  • On-site fabrication certification
  • Fit up tolerances
  • Connections in the field including grouting
  • Field repair
  • Field survey and layout
  • Field erection and monitoring of stresses related to moving PBES components
  • Scheduling and time constraints
  • Project Delivery and Contracting Decisions
  • Training/Qualifications for Construction Inspection
Information From Bridge Owners

— 20 states responded to survey / interview (administered through AASHTO)
— Only 4 of the states providing information had developed guidance on ABC
— 3 of those states had developed specific quality assurance documents or sections of documents specific to ABC.
Phase II – Case Studies
Case Study Selection Criteria

Projects selected will ideally have lessons learned or unique quality assurance plans and practices in the following areas:
1. Design aspects
2. Procurement aspects
3. Construction aspects
4. Long term performance of critical members/connections

Case Studies Selected by:
1. Agency ABC Program Maturity
2. Types of Precast Elements and Connections
3. Individual Project Characteristics
   1. Year built, project size, delivery method, innovative design (3d modeling, etc.)
4. Participation in other ABC innovation programs (Highways for Life, SHRP2, Every Day Counts)
5. Technical Innovation (SPMT, UHPC, etc.)
Case Study States and Projects

Utah

New York

Vermont

Iowa

Massachusetts

U.S. Department of Transportation
Federal Highway Administration
Next Steps - Deliverables
Guide for Quality Assurance in ABC

- QA program guidance for ABC based on the case studies and analysis.

- Applicable nationwide and for various project types/sizes.

- Reinforce good practice for standard bridge construction and specifically address areas of risk that are unique to ABC.

- Ready to Incorporate into State Bridge Manuals
Quick Reference Field Guide – Defects In the Field

- Stand-alone visual ABC Inspection Identification Manual for field QA inspection for rapid assembly and installation of structural precast concrete elements

- Photos and descriptions as a reference for field inspectors that compare and contrast proper techniques with improper techniques

- Similar to the current Long Term Pavement Program Distress Identification Manual
Questions?

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