

**NCHRP 20-68A – US Domestic Scan Program**  
Scan 09-01 Best Practices in QC/QA of Design Plans

**Topic Description**

A scan of Quality Control/Quality Assurance (QC/QA) practices and procedures was proposed to identify methods, techniques, and approaches to improving and maintaining a high quality of designs being prepared by consulting engineering firms. Although many QC/QA programs exist within the U.S., there is significant interest in exploring the most effective of these to identify successful quality control/quality assurance practices that can be readily incorporated by other agencies to assure the highest quality that can be achieved in design of the nations highway and bridge projects.

Improved design quality will result in shorter project delivery time frames and a reduction in design errors that could lead to serious cost and safety implications. Examples of work items of concern include preliminary highway design, final highway design, environmental clearance/compliance, bridge details, design calculations and final bridge plans. Furthermore, in order to deliver a larger capital programs, some states are using innovative project delivery methods (such as peer reviews, limited reviews, owner’s perspective reviews, design build, etc.). The implications of these methods on design quality are uncertain and should be examined.

This scan will examine the policies and procedures used by various states to ensure high quality highway and bridge designs. The scan will investigate Quality Assurance (QA) and Quality Control (QC) processes used to develop highway and bridge designs. A full range of project types will be examined, from major capacity adding highway projects and signature bridge designs to simple betterment projects or bridge rehabilitation projects, to determine the appropriate method and intensity of review across the spectrum.

The scanning team will visit both DOT’s that use consultants to develop highway and bridge designs, other DOT’s that perform the designs in-house. The scan should identify best practices for QA, QC, Standard Operating Procedures to insure Quality, and Performance Measures used to monitor effectiveness of quality plans. Of specific interest is determining the key components of quality control plans agencies have in place.

All engineering professionals involved with highway and bridge design will benefit from this scan, whether they are the bridge owner or a consultant preparing bridge designs. Good QC/QA of highway and bridge projects provide for Improved Service Life, Improved Safety and Reduction in Construction and Maintenance Costs and the best possible product for the public.

**Original Scan Proposal Title**

1. Quality of Consultant Designs
2. Quality of Bridge Designs

*Last Reviewed/Revised October 26, 2010*

## Scan Team Membership

Hossein Ghara, P.E. – *AASHTO Chair*  
Bridge Design Administrator,  
Louisiana Department of Transportation  
P.O. Box 94245  
Baton Rouge, LA 70804-9245  
T: (225) 379-1302  
F: (225) 379-1786  
E-mail: Hossein.Ghara@la.gov

Nancy Boyd  
Deputy State Design Engineer  
Washington State Department of  
Transportation  
P.O. Box 47329  
Olympia, WA 98504-7329  
T: (360) 705-7233  
F: (360) 705-6818  
E-mail: boydn@wsdot.wa.gov

Tim Swanson  
Design Support Engineer  
Office of Technical Support  
Minnesota Department of Transportation  
395 John Ireland Blvd.  
St. Paul, MN 55155  
MS 692  
T: (651) 366-4689  
F: (651) 366-4680  
E-mail: tim.swanson@state.mn.us

Carmen Swanwick  
Chief Structures Engineer  
Utah Department of Transportation  
4501 South 2700 W  
P.O. Box 148470  
Salt Lake City, UT 84119  
T: (801) 965-4981  
F: (801) 965-4187  
E-mail: Cswanwick@utah.gov

Robert J. Healy  
Deputy Director, Office of Structures  
Maryland Department of Transportation  
State Highway Administration  
707 N. Calvert Street, MS C-203  
Baltimore, MD 21202-3601  
T: (410) 545-8063  
F: (410) 209-5002  
E-mail: rhealy@sha.state.md.us

Robert S. Watral, PE  
Sr. Bridge Engineer  
Pennsylvania Department of Transportation  
Bureau of Design  
Bridge Quality Assurance Division  
400 North Street, 7th Floor  
Harrisburg, PA 17120-0094  
Phone: 717.346.5974  
Email: rwatral@state.pa.us

Richard W. Dunne  
Structural Engineering and Deputy State  
Transportation Engineer  
New Jersey DOT  
P.O. Box 600  
Trenton, NJ 08625-0600  
T: 609-530-2557  
F: 609-530-5777  
E-mail: Richard.Dunne@dot.state.nj.us

Kelley C. Rehm, PE – SME  
602 Idlewood Dr  
Mount Juliet, TN 37122  
T: (859) 433-9623  
Email: krehm6@hotmail.com

## Execution Schedule

<b>Milestone</b>	<b>Anticipated Date</b>
Chairs and Team Members Identified	June, 2010
Desk Scan Completed	August, 2010
Prescan Meeting Held	August, 2010
Scan Conducted	October-December, 2010
Draft PowerPoint submitted by SME	January, 2011
Draft Report Delivered to NCHRP and Panel	March, 2011
Final Report Delivered to NCHRP	December, 2011

## Estimated Scan Cost and Funding

Actual duration: \$175,000; 2 week

*Last Reviewed/Revised April 10, 2012*