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Quality Accomplishments Report

National Quality Initiative Demonstration Project 89

National Quality Initiative

NQI

Steering Committee

SEPTEMBER 1997

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16. Abstract

With impetus from the National Quality Initiative (NQI) and Demonstration Project 89 (DP-89)—Quality Management, members of the highway community have undertaken a concerted effort to improve the design, construction, and maintenance of the nation's highway system. This report reviews significant national-level activities since 1992, when NQI began, that mark milestones in the quality journey. The majority of the publication showcases State-level quality initiatives, activities, and accomplishments. Examples include management initiatives to streamline processes and procedures, and operations initiatives that improve and coordinate design, construction, and maintenance activities. Creative internal and external partnering efforts have opened channels of communication and cooperation to enhance contracting and financing practices and to improve technician training and certification programs. Partnerships involve Federal, State, and local departments of transportation, private industry, consultants, and academia. The report demonstrates how cooperative public/private partnerships, national emphasis, and local initiatives are improving the quality of the nation's highways and benefitting the highway user.

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ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
AC	Asphalt Concete
ACEC	American Consulting Engineers Council
ACI	American Concrete Institute
ACPA	American Concrete Pavement Association
AGC	Associated General Contractors of America
AI	Asphalt Institute
APWA	American Public Works Association
ARTBA	American Road and Transportation Builders Association
ASR	Alkali-Silica Reactivity
AWWA	American Water Works Association
CEC	Consulting Engineers Council
DEF	Delayed Ettringite Formation
DOT	Department of Transportation
EIC	Engineer in Charge
ESAL	Equivalent Standard Axle Load
FRP	Fiber-Reinforced Plastic
HMA	Hot Mix Asphalt
HPC	High-Performance Concrete
HPS	High-Performance Steel
HTBB	High Type Bituminous Base
HTBC	High Type Binder Course
HTSC	High Type Surface Course
ISTEA	Intermodal Surface Transportation Efficiency Act
ITS	Intelligent Transportation System
MOU	Memorandum of Understanding
MPO	Metropolitan Planning Organization

NCHRP	National Cooperative Highway Research Program
NEPA	National Environmental Policy Act
NEXTEA	National Economic Crossroads Transportation Efficiency Act
NHI	National Highway Institute
NHS	National Highway System
NQI	National Quality Initiative
NRC	Nuclear Regulatory Commission
NRMCA	National Ready Mixed Concrete Association
PCC	Portland Cement Concrete
PR/PE	Program Review/Product Evaluation
PS&E	Plans, Specifications, and Estimates
QC/QA	Quality Control/Quality Assurance
RPO	Regional Planning Organization
SASHTO	Southeastern Association of State Highway and Transportation Officials
SHRP	Strategic Highway Research Program
STP	Surface Transportation Program
STIP	Statewide Transportation Improvement Program
TQM	Total Quality Management
VE	Value Engineering Program
VMA	Void in the Mineral Aggregate
W/C	Water/Cement Ratio

INTRODUCTION

I. The Quality Journey

The quality journey is long and continuous, and, because the quest for quality is a process, it becomes a journey without a definite end. But with the increasing emphasis placed on the quality of our nation's highways, the transportation community—public and private sectors together—has dedicated itself to completing the quality journey, with the goal of improving the design, construction, and maintenance of our highway system.

This report celebrates quality initiatives that directly or indirectly result from the National Quality Initiative (NQI) and Demonstration Project 89 (DP-89)-Quality Management. It provides excellent examples of how cooperative public/private partnerships, national emphasis, and local initiatives are already improving the quality of our highways and benefiting our primary customer—the highway user.

II. Background

In 1990, the FHWA initiated DP-89 as a response to its commitment to improve highway construction and quality control/quality assurance. DP-89 provided the umbrella under which the FHWA has funded many quality-related efforts across the country, including numerous NQI activities.

In 1992, the joint steering committee was formed with the mandate to focus national attention and to guide future efforts to improve the construction quality in the highway industry.

In December 1990, the FHWA, under DP-89, sponsored a Quality Management (QM) Workshop. Attended by approximately 30 leaders in the QM field, including representatives from State departments of transportation (DOTs), academia, industry, and consultants, the group recommended development of a national initiative on quality. A result of this meeting was a national statement of policy developed jointly by the attendees.

In June 1991, the AASHTO Standing Committee on Highways voted to endorse a national quality initiative and appointed a task force to serve on a joint FHWA/AASHTO/industry steering committee to guide the effort. In 1992, the joint steering committee was formed with the mandate to focus national attention and to guide future efforts to improve the construction quality in the highway industry. The steering committee currently includes 11 organizations:

- Federal Highway Administration
- American Association of State Highway and Transportation Officials
- American Concrete Pavement Association
- American Consulting Engineers Council

- American Public Works Association
- American Road and Transportation Builders of America
- Asphalt Institute
- Associated General Contractors of America
- National Asphalt Pavement Association
- National Ready Mixed Concrete Association
- National Stone Association

The purpose of the National Quality Initiative is to implement the 1991 FHWA Quality Management Workshop recommendations. The NQI is a unique partnership between the public and private sectors in the highway industry that participate in highway funding, design, and construction. The NQI initiative is also the first time that such a diverse group within the highway community has pledged its common interest toward the issue of quality.

Since it began, the NQI has broadened its original focus on construction and materials to include all aspects of highway planning, pre-design and design, maintenance, and operation. In addition to QC/QA, the initiative also encompasses such diverse issues as continuous quality improvement, partnering, state-of-the-art technology and techniques, contracting techniques for improved quality, and investment levels and strategies.

NQI has broadened its original focus on construction and materials to include all aspects of highway planning, pre-design and design, maintenance, and operation.

In December 1992, the first National NQI Conference, "Partnerships for Quality," kicked off the grass roots movement in highway quality. Held in Dallas, Texas, the purpose of the conference was to ensure that top management from all agencies and companies agreed on the overall concept of the quality movement and to affirm commitment and support from those leaders for future efforts to promote quality. The seminar was funded under NCHRP 20-7, Task 55, "Support for National Quality Initiatives."

At the CEO seminar at the Dallas conference, the "National Policy on the Quality of Highways" was signed by all NQI member organizations. Developed jointly by government and industry, this national policy pledges each participant to uphold the partnership commitment to quality products and services, ensuring that the United States advances its role as a world leader through its continued commitment to a quality highway transportation system.

In June 1994, the NQI Steering Committee published a Long-Range Plan (LRP) to guide future quality efforts. The goal of the LRP is to implement the National Policy on the Quality of Highways through joint efforts and to achieve seven major objectives:

1. Promote and disseminate information on quality enhancement practices throughout the highway community.
2. Increase public awareness of quality improvement accomplishments and activities.
3. Promote and support technologies that enhance highway quality.
4. Widely recognize exemplary quality efforts.
5. Ensure continued national emphasis on quality improvement in the design, construction, and maintenance of highway facilities.
6. Promote customer focus and measurement of quality in the highway industry.
7. Promote and support joint education and training.

The LRP was widely distributed to State-level steering committees, sponsoring organizations, and Congressional representatives.

III. Review of NQI and DP-89 Activities

Over the past 5 years, numerous activities mark significant milestones as the transportation community continues its quality journey. Many of these activities were included as part of the major objectives in the NQI's LRP.

- The initial purpose of the NQI was to imbue the concept and intent of the national policy throughout the highway community. In spring 1993, following the first NQI Conference, more than 1300 middle- to senior-level mangers from the public and private sectors attended four Regional Quality Seminars, which were funded as part of DP-89. These seminars provided a general overview of quality concepts and promoted further commitment and support for future workshops and training.
- Beginning in fall 1993, 50 States (including the District of Columbia) held State-level workshops and seminars on quality issues within each State and disseminated information on the NQI throughout the highway community. Many States held follow-up workshops to address numerous areas of interest within their own transportation communities. An estimated audience of 20,000 attended these seminars and heard the quality message.
- The NQI distributed a videotape and "quality toolbox" to each State-level steering committee in 1993. The videotape provides background and highlights of the NQI. The toolbox contains resource materials to help organizations on their own continuous quality journey. Both videotape and toolbox have been updated and were redistributed in 1997.

- A cooperative effort between the National Highway Institute and DP-89 in 1993 resulted in QA training for the transportation industry. The 5-year contract was modified to include 50 5-day NHI training courses (Course 13442) and 56 2-day workshops (DP-89). The intensive NHI course provides training in topics such as statistical concepts, QA program elements, and QA specifications. In turn, the DP-89 workshop was developed as an overview of the QC/QA concepts for managers from Federal, State, and local governments, and for private industry. The two products resulting from the contract, and used in the training course and workshop, are *Construction Quality for Managers* (FHWA-SA-94-044) and *Overview for Construction Quality Management for Managers* (FHWA-SA-94-043). The NHI course and the workshop have attracted more than 3,000 participants. Although this contract expired in September 1997, a modular (or menu-driven) QA training program is scheduled to be developed in FY98.

The intensive NHI course provides training in . . . QA program elements, and QA specifications . . . The DP-89 workshop [is] an overview of the QC/QA concepts for managers from Federal, State, and local governments, and for private industry . . . the course and the workshop have attracted more than 3,000 participants.

- The *Quality Improvement Resource Guide* (FHWA-SA-94-002), developed in 1993 as part of the NQI and sponsored in part by DP-89, reviews the concept and the quality tools available, provides a synopsis of the rising emphasis on quality in the highway industry, and contains a reference of various organizations and documents about quality management.

- A quality improvement workshop held in Hot Springs, Arkansas, in December 1993, resulted in a task force of private industry, State DOTs, consultants, and FHWA representatives that produced the *National Quality Improvement Task Force Report on Quality Assurance Procedures for Highway Construction* (FHWA-SA-94-039). This report discusses a number of innovative approaches to QC/QA programs and was incorporated into the AASHTO Highway Subcommittee on Construction Report, *Quality Assurance Guide Specification* and *Implementation Manual for Quality Assurance*.

- DP-89 further supported development of the AASHTO Quality Assurance Guide Specification and Implementation Manual by holding a facilitated workshop in Washington, DC, in October 1994, to discuss numerous comments from industry groups concerning the draft documents.

- DP-89 sponsored numerous conferences, workshops, and technology sharing documents on QA and technician certification.

- In June 1994, the NQI Steering Committee developed the *Long-Range Plan* (FHWA-SA-94-038), which charted the course for future NQI activities. A revised LRP was published in 1997.

- More than 350 senior managers from the highway community convened for the second National NQI Conference held in Alexandria, Virginia, in November 1995. The theme was "Partnerships for Quality: Initiatives in Action." Attendees heard presentations by Virginia Senator John Warner and Pennsylvania Representative Bud Shuster. The signing of the "National Policy on the Quality of Highways" included the newest members of the NQI Steering committee and reaffirmed the organization's pledge to improve the quality in the highway industry.

The NQI Acheivement Award focuses on projects that exemplify quality and partnerships by recognizing a project team that clearly demonstrates its dedication to teamwork, innovation, and creative cost and schedule management that results in a top-quality U.S. highway project.

- A highlight of the November Conference was presentation of the inaugural NQI Achievement Award to the North Carolina Department of Transportation and C.C. Mangum, Incorporated for the Raleigh Beltline Rehabilitation Project (Phase I). Four award finalists were Florida, Kansas, Indiana, and Michigan.

The NQI Acheivement Award focuses on projects that exemplify quality and partnerships by recognizing a project team that clearly demonstrates its dedication to teamwork, innovation, and creative cost and schedule management that results in a top-quality U.S. highway project. Projects do not have to be State DOT or Federal-aid projects. Nominees are selected by State-level steering committees that recommend one exemplary highway project that exhibits quality achievement through ride, appearance, material uniformity, and demonstration of performance. Each winning State project is eligible for the national award and is considered the "State winner"; it receives national recognition as such.

- In May 1996, the *Quality Assurance Software for the Personal Computer* manual (FHWA-SA-96-026) was distributed nationwide under DP-89. The software package contains several interactive and user-friendly programs with which users can develop, analyze, and use statistically based specifications. It also provides highway engineers with the necessary tools to learn why some statistical procedures are inherently superior to others, and how to incorporate this knowledge into fair and effective construction specifications.

. . . [The 1995] National Highway User Survey [identified] the top three priorities as safety, pavement conditions, and traffic flow.

- To focus on customer satisfaction, the NQI Steering Committee conducted a National Highway User Survey in 1995 to determine the general public's satisfaction with the nation's highway system. The 2205 respondents rated the three top priorities as safety, pavement conditions, and traffic flow. The survey information, published in May 1996, also provides the FHWA, the State DOTs, and industry with a valuable baseline against which to measure improvement and a direction for targeting improvement initiatives.

- In June 1996, all NQI member organizations signed the "Resolution of Commemoration and Commitment Toward the Interstate Highway System National Quality Initiative" to commemorate the 40th

anniversary of the Interstate Highway System. Signed at the Eisenhower Presidential Library in Abilene, Kansas, the document honors the significant benefits resulting from construction of the Interstate Highway System.

- Participants at an NQI-sponsored workshop on Technician Training and Certification in Arlington, Virginia, in November 1996, represented 11 State DOTs, NQI organizations, industry, and academia. The workshop is directly supported by NQI LRP objectives that "Promote quality improvement workshops" and "Promote and support joint education and training." Participants met their objective, which was to develop a long-range strategy and activities addressing how training and certification contribute to improving our nation's highways. The product developed includes general administrative guidance to help State DOTs establish or revise current training and certifications. It was published in September 1997.
- An NQI-sponsored workshop on Performance-Related Specifications (PRS) convened in September 1997 in Arlington, Virginia. The workshop was a joint effort involving industry, State DOTs, the FHWA, and academic representatives. Their focus was to develop a strategic PRS plan that addresses education, future research, and marketing.
- The third NQI National Conference was held in Salt Lake City, Utah, in November 1997, as an opening event to the annual AASHTO meeting. The Indiana DOT and the joint venture of Berns Construction Company and Weddle Brothers Construction Company received the 1997 NQI Achievement Award for the reconstruction of Interstate-65 in downtown Indianapolis. The six finalists were Delaware, Florida, Georgia, Maryland, Minnesota, and North Carolina.
- The NQI web site on the Internet—http://www.nqi.org—contains useful quality-related information as well as links to other NQI steering committee organizations' web sites.

Throughout the journey, many States have become champions in the quality arena, and this report showcases those State initiatives.

IV. Conclusion

This Introduction provides a synopsis of national-level activities that are mileposts on the quality journey to improve the nation's highways. Throughout that journey, many States have become champions in the quality arena, and the purpose of this report is to showcase those State initiatives. Information for this publication was provided by the States or was compiled from material in the FHWA Highway Operations Division. It is presented with the expectation that it will stimulate discussion, generate ideas, and encourage all States to become more proactive in their pursuit of quality.

In addition to presenting a sample of State initiatives, activities, and accomplishments, this document also illustrates the tremendous progress made by a transportation community that has dedicated itself to improving the quality of the nation's highway system and enhancing the safety of the highway user.

ALABAMA

PARTNERS

Alabama Department of Transportation (ALDOT)

Alabama Asphalt Pavement Association

Bridge Construction Association of Alabama

National Center for Asphalt Technology, Auburn University

Ready Mixed Concrete Manufacturers

Federal Highway Administration-Alabama Division

CURRENT QUALITY EFFORTS

Asphalt Mix Design and Construction

The National Center for Asphalt Technology, the Auburn University Research Center, and the Alabama Asphalt Pavement Association provide technical advice and support for an ongoing effort by the ALDOT and the FHWA to improve the quality of asphalt mix design and construction. Alabama is implementing Superpave and the FHWA demonstration trailer has been in Alabama on a Superpave project.

HMA Construction Smoothness Review

Data collected and analyzed on HMA pavement construction smoothness from all 1992 through 1995 projects included requirements based on a California-type profilograph using a 5 mm blanking band for trace reduction. This analysis, and input from the industry, resulted in a recommendation to develop a new specification using the null blanking band and automated trace reduction. ALDOT contracted with Auburn University to develop the specification and the implementation target is 1998.

HMA Production Review

ALDOT initiated an HMA quality management program in 1995. Production and placement data from several projects were also collected and analyzed. Field reviews evaluating construction practices have documented improved HMA production uniformity since implementing the specification.

Certified PCC Production

The FHWA Division reviewed eight concrete plants operating under producer certification and found that producers were not performing quality control tests and were not following proper procedures. This review was very valuable to ALDOT because several projects had concrete with compressive strengths lower than specified limits. Findings and recommendations were presented at the Annual Materials and Construction Conference and to producers of PCC. Subsequent actions have improved overall quality, including production and testing.

Specification Development for Quality Construction

The FHWA Division participated with the State and industry to develop QC/QA specifications for PCC. The first trial project is under construction in Opelika.

PLANNED QUALITY EFFORTS

Future efforts will continue in asphalt pavement mix design and construction and QC/QA specifications for PCC construction.

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ALASKA

PARTNERS

Alaska Department of Transportation and Public Facilities (AKDOT/PF)

AFL-CIO

City and Borough of Juneau

Alaska Aviation Safety Foundation

Alaska Trucking Association

Alaska Citizens Transportation Coalition

Alaska Public Employees Association

Alaska State Employees Association

Alyeska Corporation

Associated General Contractors

City of Bethel

City of Petersburg

Fairbanks North Star Borough

Federal Aviation Administration

GCI Communications

Kodiak Island Borough

Petro Marine Services

Federal Highway Administration-Alaska Division

CURRENT QUALITY EFFORTS

Management Initiatives

Statewide NQI workshops held in 1995 and 1996 resulted in a very successful annual program for quality initiative review that the FHWA Division and the AKDOT/PF staffs jointly developed and completed.

In 1997, this initiative was expanded to a Department-wide Effectiveness Review of the AKDOT/PF. The review evaluates the Department's organization, processes, and responsibilities. The goal is to help the Department become more responsive to the customer while reducing administrative costs in accordance with reduced funding levels.

Results of the study were announced in August 1997.

PLANNED QUALITY EFFORTS

Additional initiatives to implement the results will continue until all changes are complete. The FHWA Division continues its involvement in all initiatives related to Federal-aid program activities.

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ARIZONA

PARTNERS

Arizona Department of Transportation

Arizona Consulting Engineers Association

Associated General Contractors

Arizona Rock Products Association

American Public Works Association

City of Phoenix

City of Tucson

Maricopa County (including Phoenix)

Pima County (including Tucson)

Federal Highway Administration-Arizona Division

CURRENT QUALITY EFFORTS

Management Initiatives

Arizona recently completed a survey of Arizona highway users. Similar to the NQI national survey, the Arizona effort is designed to:

- Ascertain Arizona highway users' opinions on highway services and costs.
- Compare and contrast these opinions with data from the NQI national survey.
- Publish a report to help guide highway investment decisions.

NQI Workshops

A statewide quality conference held in February 1996 focused on developing innovative quality initiatives through workshops involving public and private sector transportation industry partners. The conference centered around three breakout sessions—planning and finance, design/build, and innovation—and participants developed action plans for various resourceful quality initiatives. A major result of the conference was greater exposure by the contracting community to the design/build concept. Arizona has since passed a law allowing the State to experiment with design/build projects.

PLANNED QUALITY EFFORTS

The transportation community expects to use the outcome of the highway users survey to help drive decisions and to develop strategies for making future transportation investments.

Another statewide quality conference is scheduled for July 1997.

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ARKANSAS

PARTNERS

Arkansas Highway and Transportation Department (AHTD)

Associated General Contractors of Arkansas

Federal Highway Administration-Arkansas Division

CURRENT QUALITY EFFORTS

Management Initiatives

The Governor of Arkansas formed a Quality Management Advisory Council to plan TQM implementation in 13 State agencies. The initiative is overseen by a steering committee of business and community leaders and an internal project team. This statewide quality effort resulted in the AHTD's Quality Initiative Program (QIP), which is designed to improve AHTD processes by implementing TQM principles and practices. The three QIP management levels include a steering committee, a council, and numerous ad hoc teams, which often involve private industry partners such as highway contractors and local businesses. The council ultimately selects projects of mutual interest to the FHWA and the AHTD that may be developed and implemented.

In 1995, Arkansas submitted a nomination for the NQI Achievement Award.

In 1996, the AHTD and the AGC of Arkansas enacted a partnering agreement.

In 1996, AHTD formed six task forces to conduct a comprehensive update of its construction specifications. Each task force included at least one highway contractor who was also on the AGC Specifications Standing Committee.

PLANNED QUALITY EFFORTS

The FHWA Division is currently working with AHTD top management to develop an AHTD/FHWA partnering agreement that will more closely mesh the strategic planning activities and implementation of the two agencies.

CONTACTS AND PHONE NUMBERS

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CALIFORNIA

PARTNERS

California Department of Transportation (Caltrans)

Federal Highway Administration-California Division

CURRENT QUALITY EFFORTS

NQI Workshops

In the past few years, Caltrans has conducted several quality-related workshops and conferences. Most notably, sessions of the California Quality Initiative (CQI) "Partnerships in Quality Workshop" were held in 1993 for both northern and southern regions of the State. The workshops involved joint participation of Federal, State, and local governments, and private industry representatives. Granite Rock Company President and CEO, Bruce Woolpert, presented the keynote address on "Principles of Quality Improvement." The company won a 1992 Malcolm Baldridge National Quality Award for small business. The conference breakout sessions focused on quality leadership strategic planning, human resources/empowerment, teamwork and partnering, and customer satisfaction/national competitiveness. Three technical breakout sessions addressed pre-design/design, construction, and maintenance/operations.

There have been follow-up meetings to the workshops. CQI Workshop #4, held in November 1995, addressed progress on issues associated with developing a newsletter, resource center, training, and new meetings and workshops. Granite Rock Company's Bruce Woolpert gave the keynote address on the secrets of building a loyal customer base and how his company has changed "business-as-usual." Caltrans District 12 Director, Brent Felker, and City of Santa Anna Public Works Director, Jim Ross, presented the Partnership Success Story describing the logistics of the El Toro "Y" interchange project and the partnering between contractors and owner agencies.

Management Initiatives

In August 1993, Director James W. van Loben Sels' Policy Memorandum emphasized the importance and the need for continuous quality improvement actions by all Caltrans employees to meet customer needs and expectations. The memorandum designated the chief deputy director as responsible for instituting cultural change in the Department and providing the leadership to ensure that Caltrans maintains a permanent quality commitment.

Caltrans has published a *Quality Management Steering Committee Reference Guide* that provides background on the quality initiative, the steering committee mission and roster, and the mission and goals of the quality program. The *Guide* also lists Caltrans quality

coordinators and other resource information. There is also a comprehensive Internet web site available at http://www.dot.ca.gov/

Most recently, Caltrans internal departments have developed business plans and performance measures. As an example of partnership efforts, members of the Caltrans Construction Section and the FHWA Division formed a team to review and analyze data on traffic and industrial accidents in construction work zones, costs associated with construction change orders (COOs), delays caused by COOs and other issues, and customer survey data associated with performance and communications. With this background, the team developed performance indicators associated with delivering construction projects "better, cheaper, faster, and safer." The team's efforts were presented to the Caltrans executive director and will soon be implemented as bench marks and future quality improvements.

CONTACTS AND PHONE NUMBERS

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COLORADO

PARTNERS

Colorado Department of Transportation (CDOT)

Colorado Asphalt Pavement Association

Federal Highway Administration-Colorado Division

CURRENT QUALITY EFFORTS

Rocky Mountain Regional Asphalt Education Center

The Rocky Mountain Regional Asphalt Education Center is a partnership effort to create a center that offers regular, year-round education and certification programs in asphalt technology. Education programs address various aspects of asphalt paving technology including HMA construction, QC/QA, and mixture design. An Asphalt Construction Technician Certification program is offered to technicians working in the asphalt paving industry.

PLANNED QUALITY EFFORTS

Participants are committed to continuing education and certification efforts to improve the quality of asphalt pavements.

CONTACTS AND PHONE NUMBERS

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PARTNERS

Colorado Department of Transportation (CDOT)

Associated General Contractors

Colorado Contractor's Association (CCA)

Federal Highway Administration-Colorado Division

CURRENT QUALITY EFFORTS

Management Initiatives

CDOT, FHWA, and CCA executive managers meet periodically to identify and discuss issues such as policy, concerns, and program size.

The CCA holds an annual regional meeting to celebrate past performance. A project-level partnering award is presented for each region. CDOT and FHWA managers and construction personnel discuss issues of concern and joint CCA, CDOT, and FHWA working committees are formed to resolve these issues. For example, in response to contractor concerns, a group recently convened to revise the specification for construction VE proposals. Topics for 1997 include utility relocation, industry image, work zone safety, and quality.

Regular meetings between CDOT Region 5 and 6 construction personnel and contractors address issues other than project-specific concerns.

PLANNED QUALITY EFFORTS

Efforts continue to focus on ways to increase the participation of construction industry representatives in the CDOT/FHWA quality improvement or process reviews. Partners are also examining the use of additional regular regional meetings between contractors and regional construction personnel.

CONTACTS AND PHONE NUMBERS

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PARTNERS

Colorado Department of Transportation (CDOT)

Colorado Contractors Association (CCA)

Federal Highway Administration-Colorado Division

CURRENT QUALITY EFFORTS

Work Zone Safety

Work zone reviews provide excellent opportunities to identify safety measures, effective work zone traffic control plans, and operational features, to promote and evaluate new technology, and to reinforce practices to reduce accidents in work zones.

PLANNED QUALITY EFFORTS

The team plans to establish 1997 performance measures for a statewide quality program. A kickoff meeting was held in February 1997.

CONTACTS AND PHONE NUMBERS

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CONNECTICUT

PARTNERS

Connecticut Department of Transportation (ConnDOT) Divisions of Construction, Design, Environmental Planning, Environmental Compliance, and Traffic

CURRENT QUALITY EFFORTS

Design Practices Committee

ConnDOT recently created a Design Practices Committee to alleviate common, easily correctable design errors that too often cause hours of confusion and thousands of dollars in the construction phase of a project. Examples of such costly errors include sheet piling requirements for drainage structures, backfilling behind curbs, using heavy-duty catch-basin frames in staged construction, and environmental concerns. The committee's goal is to create a communication forum where designers and constructors can discuss technical or procedural problems and identify possible solutions. Construction personnel are now asked to list issues they encounter on a regular basis and to rank their importance. Personnel also provide project numbers where these problems occur, which allows the design representatives to examine specific cases.

A result of the committee's efforts is that discussions on procedural issues have improved communication among the various offices involved in the design, environment, and construction phases of a project. For example, design personnel have been alerted to be more attentive in calculating borrow quantities during staged construction and be more aware of the possibility of non-superelevated shoulders being used in staged construction. Through the Design Practices Committee meetings, the Facilities Design Unit has begun to discuss with Construction how to resolve issues on jobs that lack coordination between lump sum and unit prices. Open lines of communication enable participants to address design practices that in theory should work, but in reality, often do not.

CONTACTS AND PHONE NUMBERS

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PARTNERS

Connecticut Department of Transportation (ConnDOT)

Connecticut Advanced Pavement Laboratory

Federal Highway Administration-Connecticut Division

CURRENT QUALITY EFFORTS

Task Force for HMA Pavement Improvement

In fall 1994, a Task Force for HMA Pavement Improvement was formed to increase the quality of HMA pavements constructed in Connecticut. Committee members represent State, Federal, private sector producers, and industry personnel. Six subcommittees focus on segregation, specifications, rideability, training, longitudinal joint construction, and quality measures.

Task force members have developed eight specifications to improve HMA placement operations including:

- ConnDOT has been implementing specifications into projects for field verification on a trial basis. The first specification addresses paving in cold weather and sets both ambient and base temperature limits for paving. The second addresses longitudinal joint density with pertinent pay factors. The third is a rideability specification that employs tests for smoothness using the International Ride Index (IRI) as a measure.
- Four other draft specifications focus on defining and delineating corrective measures for segregation; defining work zone illuminations for nighttime construction; applying methodology to saw-cut HMA overlays over existing transverse joints in PCC pavements; and defining and standardizing length and depth of milling for permanent and temporary transition, and milling for rehabilitation, truing, and leveling.

Other task force activities involve sponsoring training for both State and industry personnel, including an NHI short course on Hot Mix Asphalt Construction and several training courses targeting segregation. More than 500 ConnDOT and industry personnel have participated in segregation training.

In 1995, ConnDOT developed an HMA Pavement Award program to recognize the pavement contractor, inspection personnel, plant personnel, and State personnel associated with a paving project. Two types of awards—for limited and unlimited access roadways—recognize a previous year's projects.

HOT MIX ASPHALT PAVING DO'S AND DONT'S OF PRODUCING A QUALITY HMA PAVEMENT is a wallet-size card developed by ConnDOT for distribution to State and industry personnel involved in HMA.

PLANNED QUALITY EFFORTS

Task force members continue to develop new and improved specifications for HMA paving. Implementation of the Best Paving Practices is being stressed and HMA training continues. A workshop on segregation is scheduled for March 1997, and ConnDOT staff are conducting additional training in HMA pavement construction.

CONTACT AND PHONE NUMBER

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HMA Initiative Strategic Plan

In May 1995, the HMA Quality Initiative Strategic Plan identified the need to form a specialized group to address pavement quality issues. In July, the 8-member Pavement Advisory Team (PAT) was formed to provide assistance and feedback on paving problems and practices to both the ConnDOT and contractor field staff. The PAT has developed baseline criteria for evaluating pavement quality and has established a uniform approach for reviewing and evaluating pavement quality throughout the State. Team members function primarily as field representatives and attend all preparation meetings; and they review and observe all aspects of a paving operation from material production at the plant, to placement and compaction at the job site. They also conduct follow-up reviews to monitor durability of a finished surface. Team members conduct annual training classes for ConnDOT field staff and they have been instrumental in modifying and developing specifications ranging from changes to temperature and seasonal limitations of bituminous concrete placement to the new rideability specification.

CONTACT AND PHONE NUMBER

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Partnership Initiatives

ConnDOT is an avid partner in the Connecticut Quality Council (CQC), a private nonprofit coalition of business, government, education, and labor that promotes the philosophy and principles of Total Quality and Continuous Improvement as a sound business operation strategy for all organizations. The CQC grew out of the Community Quality Council and has extended its membership and services well beyond the State's borders. More than 11,000 individuals have attended various CQC quality training programs and the organization has proved an outstanding resource for professional networking and sharing information with fellow practitioners.

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DELAWARE

PARTNERS

Delaware Department of Transportation (DelDOT)

Consulting Engineers Council

University of Delaware

Federal Highway Administration-Delaware Division

CURRENT QUALITY EFFORTS

Statewide Planning

DelDOT created and contracted with a diversified consultant team of experts to develop a multimodal/intermodal transportation plan within the context of a long-term vision for transportation growth and development in Delaware.

MPO Strengthening

DelDOT has initiated several programs to improve interaction with its mix of customers and to improve the image of the Department and its products. To ensure local involvement and support for transportation improvements, an MPO was created for Kent County, and the leadership was strengthened for the existing Wilmington area MPO.

Research

Creating the Delaware Transportation Institute at the University of Delaware implements a "fully cooperative entity" for identifying research and technology needs to better use Delaware resources for improving transportation service.

DelDOT Reorganization

Department reorganization has combined planning for all modes within the Planning Division. For example, long-range transit planning is now conducted in conjunction with planning for other modes and will use a business planning methodology to produce 5-year service development plans to tailor services to meet customer needs.

Public Outreach

A concerted effort to improve the public's opportunity to participate in the project development process has resulted in greater acceptance of projects.

Training

DelDOT has initiated a work force diversity program to strengthen the Department and to ensure full use of all employees' talents and skills. Training programs are being reviewed to ensure that the work force is prepared to meet the challenges of the work place.

Highway Operations

Partnering efforts that promote resolving differences at the lowest level, in an atmosphere of mutual trust, have significantly reduced the number and dollar amounts of claims.

By developing a life cycle, least cost approach to maintenance/systems preservation activities, DelDOT is able to ensure quality facilities at a cost-effective investment level.

DelDOT has also developed and implemented a quality specification for bituminous pavements for ride smoothness. A specification on alternative dispute resolution has been developed and implemented on one project.

Preconstruction Issues

In recent years, as DelDOT has relied heavily on consultant services to expedite project development, the Division of Preconstruction is more closely managing consultant designs and established a partnering agreement with the local CEC.

A unit created within the Division of Preconstruction has responsibility for quality control. VE for the larger, more complex projects is one of its principle responsibilities. VE has identified multimillion dollar savings and continues to be an integral part of DelDOT's project development process.

CONTACTS AND PHONE NUMBERS

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DISTRICT OF COLUMBIA

PARTNERS

District of Columbia Department of Public Works

Resurfacing Contractors/Subcontractors

Asphalt Concrete Producers

Federal Highway Administration-District of Columbia Division

CURRENT QUALITY EFFORTS

The DC Department of Public Works is developing a partnership in an effort to correct difficulties encountered in achieving a quality 3R surfacing/reconstruction product in the field. The effort provides a forum for exchanging ideas among all parties.

PLANNED QUALITY EFFORTS

Current efforts involve exploring the use of a self-directed Quality Team to pursue a mission of quality improvement. The team would work with project development in such a way as to implement workable solutions on the project level to resolve issues that all too often hinder a project's design and construction. Team efforts may involve developing a standardized pavement catalog with predetermined thicknesses and compositions of pavement layers depending on conditions. This practice has its roots in common engineering practices in many European countries.

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FLORIDA

PARTNERS

Florida Department of Transportation (FDOT)

American Society of Civil Engineers (Florida section)

Institute of Transportation Engineers (Florida section)

Florida Engineering Society/Florida Institute of Consulting Engineers

University of Florida's Transportation Research Center

Asphalt Contractors Association of Florida

Florida Concrete and Products Association

Florida Limerock and Aggregate Institute

Florida Transportation Builders Association (FTBA)

Federal Highway Administration-Florida Division

CURRENT QUALITY EFFORTS

Partnering Charter

In April 1996, 25 FHWA Division senior staff members and FDOT top managers held the first partnering session. All participants signed the Partnering Charter developed at the meeting. Partners also identified a list of common team objectives and potential obstacles.

At a follow-up meeting in January to review the status of the action items, members reported increased coordination and cooperation resulting from merging/combining of FDOT's Quality Assurance Reviews and the FHWA Division Process Reviews/Product Evaluations. This action helped to eliminate parallel or duplicate reviews.

The FHWA Division's 1997 Stewardship Plan illustrates greater use of cross-functional, multiagency teams. Reviews and quality initiatives are mutually selected to add value and improve quality when possible.

Florida Quality Initiatives Conference

More than 175 participants representing FDOT, construction industry, suppliers, academia, and the FHWA Division attended a 2-day "Florida Quality Initiatives" Conference in Gainesville in February/March 1997. The program included representatives from the FHWA

Headquarters and Region 4 Offices who made presentations on SHRP, Superpave, materials sampling and testing, and timely completion of quality work.

The conference is a biennial event to focus on quality. Discussions are under way on methods to increase contractor participation in the forum, and planners are considering combining the event with an annual FDOT/industry construction conference.

Construction Awards

The FTBA asked the FDOT District Offices to nominate construction projects completed or those nearing completion for the annual FTBA award. Nominations in eight award categories honor major bridge, minor bridge, urban, rural, special enhancement project (unique or innovative), special building, rural resurfacing, and partnering (successful partnering projects). A team representing the FHWA and FDOT reviews and evaluates candidate projects in the field based on factors such as appearance, pavement/bridge smoothness, and lack of claims. Only one project is selected in each category. The FDOT Secretary and the FHWA Division (or Assistant Division) Administrator present the plaque for each quality award category to the contractor, the residency, and the project engineer. Award winners are featured in the FTBA's magazine, which is circulated to its membership.

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PARTNERS

Florida Department of Transportation (FDOT)

Florida Department of Environmental Protection (FDEP)

Advisory Council on Historic Preservation (ACHP)

State Historic Preservation Officer (SHPO)

Federal Highway Administration-Florida Division

CURRENTLY QUALITY EFFORTS

MOU for Rails-to-Trails Projects

The FDEP and FDOT, with concurrence by the FHWA Division, initiated a MOU outlining a cooperative planning and joint development process concerning the interface between trails and transportation projects. The MOU establishes a process for short- and long-term joint planning efforts between the FDOT and FDEP to mutually develop Rails-to-Trails projects and transportation improvements to benefit both parties while satisfying Section 4(f) construction-use requirements.

A recent survey of FDOT Districts reveals that implementation of the MOU is progressing smoothly; however, some district offices remain concerned about the promptness of FDEP's responses and the fact that the MOU does not address the Section 4(f) issue. A follow-up meeting, scheduled for early 1997, will involve the FDOT, FDEP, and FHWA Division representatives. The purpose will be to improve and streamline the coordination process between the two agencies during implementation of the MOU.

Section 106 Review

A Programmatic Agreement executed between the FHWA, FDOT, the SHPO, and the ACHP to expedite and streamline the Section 106 consultation process to encourage the benefits of ISTEA, and to increase the flexibility associated with the Transportation Enhancement Program, has reduced the Section 106 review time by the signatory agencies. The process is being monitored to ensure that the agreement produces the desired results.

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PARTNERS

Florida Department of Transportation (FDOT)

Contractors

Federal Highway Administration Headquarters, Region, and Florida Division Offices

Pavement/Materials Initiatives

In 1996, in an effort to implement the new Superpave technology, FDOT decided to use Supplemental Agreements to accelerate incorporating Superpave into active paving projects. This was especially true in north Florida because of significant rutting failures, particularly on Interstate projects. This process enabled the contracting industry to gain experience with Superpave and thereby reduce the risk in bidding future Superpave contracts.

Early in 1997, the partners changed the specifications to address excessive pavement permeability, including increasing the lift thickness and limiting production at start-up followed by extensive testing. Work completed to date indicates that changing the specifications is reducing permeability. The FHWA Headquarters Office provided the demonstration trailer on an early Superpave project and contributed technical assistance on implementation issues such as the permeability problem.

PLANNED QUALITY EFFORTS

In 1996, there were eight jobs designed and built in the three northern Florida Districts by five different contractors that involved placing more than 294,775 megagrams of mix. In the first 6 months of 1997, more than 770,950 megagrams of mix was let to contract in the same three districts, plus the Turnpike. By the end of 1997, eleven contractors will have experience with Superpave mixes, as will seven of the eight FDOT Districts.

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PARTNERS

Florida Department of Transportation (FDOT)

Metropolitan Planning Organizations

Transit Agencies

Emergency Response Agencies

Law Enforcement

Local Media

Project Consultant

Federal Highway Administration-Florida Division

CURRENT QUALITY EFFORTS

ITS Partnership

In an effort to build relationships among the multiple jurisdictions and agencies involved in ITS, the FHWA Division has promoted discussion among incident management agencies and encouraged establishing a Southeast Florida Incident Management Team. On-site presentations conducted for local decision makers have focused on identifying the benefits and costs of ITS strategies and recognizing opportunities within specific communities. In planning the transportation management system for the next century, the FHWA Division has identified issues that must be addressed throughout the State, and FDOT is exploring a common computer platform on which future systems will operate.

PLANNED QUALITY INITIATIVES

The FHWA is working with the ITS Partnership to identify consumer needs. This will be achieved by developing a Statewide ITS Strategic Plan that coordinates with regional studies.

The FHWA Division has initiated a consensus-building effort among the multiple agencies to establish a traveler information system for southeast Florida. A workshop will be conducted to identify the next step required to provide this community service.

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GEORGIA

PARTNERS

Georgia Department of Transportation (GDOT)

Georgia Highway Contractors Association

Consulting Engineers Council

American Concrete Pavement Association

Georgia Motor Trucking Association

Association of County Commissioners

Associated General Contractors

Georgia Utilities Coordinating Committee

Georgia Municipal Association

American Automobile Association

Georgia Crushed Stone Association

Georgia Concrete and Products Association

Federal Highway Administration-Georgia Division

CURRENT QUALITY EFFORTS

Quality Workshop

In December 1996, members of the Georgia Quality Initiative (GQI) hosted the Second Annual Georgia Quality Workshop. The event's 487 participants represented 107 State agencies and companies, including the FHWA, GDOT managers, and representatives of several highway design, construction, and utility industries. The meeting began with remarks by FHWA Division Administrator, Larry Driehaup, and GDOT Commissioner, Wayne Shakleford. Professor Thomas A. DeCoster, Indiana School of Public and Environmental Affairs, who also directs the Highway and Transportation Management Institute, was the featured speaker. There were a variety of transportation-related breakout sessions and presentations on the GQI's past year's accomplishments.

Georgia Quality Initiative Teams

The GQI effort has resulted in six teams formed for the purpose of enhancing quality though development of realistic and implementable solutions to identified areas needing improvement. The GQI Teams and their proposed work items are:

- Contractor Relations—Specification Review Process and Informal Partnering.
- Consultant Relations—Retainage on consultant contracts, Annual GQI Design Award and Consultant Audit Guide.
- Product Quality—Georgia Road User Survey and Incentive/Disincentive Issues.
- Plan Development—Plan Presentation Guide Development.
- Training and New Technology—Develop joint training opportunities and activities that promote new technology.
- Program Development—Develop agenda for the Annual GQI Workshop.

Joint Process Reviews

The FHWA Division and GDOT have been conducting joint process reviews since 1994. Agencies jointly select process review topics, conduct the reviews, develop recommendations for improvement, and write reports. FHWA and GDOT managers hold process review kick-off and close-out meetings. To date, fourteen joint reviews are complete and seven are under way. The teams have also included members from Federal resource agencies and utility companies.

PLANNED QUALITY EFFORTS

The GQI Workshop will continue to be an annual meeting and attendance increases each year. The GQI Teams, the cornerstone of Georgia's effort, will continue and two new teams have been added. The joint process reviews will also continue with an anticipated seven to ten reviews annually.

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HAWAII

PARTNERS

Hawaii Department of Transportation

Federal Highway Administration-Hawaii Division

CURRENT QUALITY INITIATIVES

"Quality in Action" Seminar

The "Quality in Action" Seminar, held in November 1996, brought together employees from Federal, State, and local governments, consultants, industry representatives, and academicians. The purpose of the seminar was to implement quality improvements in the transportation program. In remarks during the opening session, the State DOT Director, the Hawaii Division Administrator, and Region 9 Administrator, Julie Cirillo, expressed management's commitment to quality improvement. Regional Administrator Cirillo distributed "Go for It" cards, which encourage and empower employees at all levels to act and make decisions as long as they are consistent with organization's mission, legal and ethical, good for partners and customers, are an efficient use of resources, and of a type for which the employee is willing to accept responsibility.

Enhancing the quality message, Arizona Department of Transportation Director, Larry Bonine, discussed the role of mid-level managers in the quality journey. Charlie Nemmers, FHWA Research and Development, spoke about the importance of technology and innovation in improving quality. Larry Smith, FHWA Federal Lands Division, outlined Federal Lands' own quality improvements, particularly in the area of project management.

Three breakout sessions the second day of the conference focused on planning and government, design, and construction. Recommendations from these sessions were recorded, the results discussed, and before the seminar adjourned, attendees identified recommendations for follow-up action.

Specific quality improvements undertaken since the seminar include developing a "master agreement" for utilities, instituting a process for expediting Corps of Engineer permits, establishing guidelines for a "Documented Categorical Exclusion," revising the PS&E Checklist, developing new specifications for high-quality pavement, and establishing ongoing teams for the STIP, the PS&E, and the quality improvement processes.

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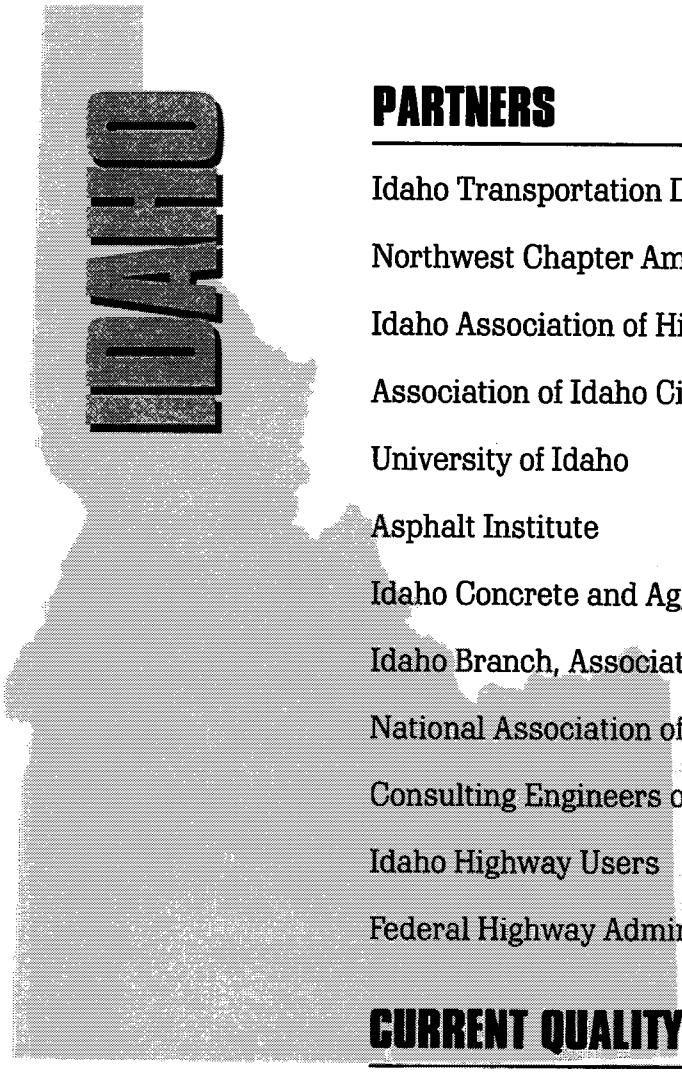

PARTNERS

Idaho Transportation Department (IDT)

Northwest Chapter American Concrete Pavement Association

Idaho Association of Highway Districts

Association of Idaho Cities

University of Idaho

Asphalt Institute

Idaho Concrete and Aggregate Producers Association

Idaho Branch, Associated General Contractors

National Association of Women in Construction

Consulting Engineers of Idaho

Idaho Highway Users

Federal Highway Administration-Idaho Division

CURRENT QUALITY EFFORTS

Partnership Initiatives

Virtually all IDT construction projects of appreciable duration and size contain an invitation within the contract for voluntary partnering. The response from construction contractors has been excellent and they in turn have requested partnering on other projects that did not contain the invitation. Communication has generally improved among participants and has reduced conflicts. As a result of this initiative, weekly meetings for public input are commonly held throughout the life of the contract. There is also a noticeable improvement in rapport with business owners and residents directly affected by the construction activity because their requests and suggestions are accommodated whenever possible. Many of comments have facilitated traffic movements and otherwise enhanced efficient completion of the work.

Contracting Initiatives

Use of the concept of A+B bidding on selected projects has lead to incentives for early competition. The amount of incentives earned ranges from zero to the maximum allowed. In none of these instances has the contract overrun time necessitated imposition of liquidated damages, and, by all appearances, the process has reduced inconvenience to the traveling public.

Construction contract incentive programs have been applied to surface smoothness of the completed roadway or have affected quantity management of construction materials such as the volume of concrete involved in PCC pavements.

One district has employed QC/QA procedures for 2 years, and the remaining five districts now have at least one QC/QA project under construction.

To increase availability of contracting information, the ITD web site—http://www.State. ID.US/ITD/ITDhmpg.htm—lists projects expected to be advertised for bid during the next 90 days.

Construction Financing Initiatives

ITD has been reexamining innovative financing for several years. A major example of this is a public/private partnership that involved financing from the major traffic generator in the area, the FHWA, the local highway district, and ITD, which resulted in a full interchange to the Interstate highway at the eastern edge of Boise. The cooperative effort and financing of this badly needed interchange enabled construction to begin years sooner than normal project funding ability and development procedures would have allowed.

Similarly, an existing interchange structure over the Interstate will be widened because of the activities of a major traffic generator. Private funds will pay for design and construction of the bridge widening proper. State funds will be used to design and construct the ramp terminal areas and traffic signals.

Management Initiatives

The largest internal quality effort has involved establishing a series of teams to improve internal efficiencies in the areas of cash balance, inventory, pavement condition, budgeting, strategic planning, and information systems. Some of these teams were able to initiate improved procedures relatively quickly. Others were involved in more complicated considerations and continue working toward their goals.

PLANNED QUALITY EFFORTS

ITD's future quality efforts will continue to reflect its mission, vision, and operating philosophy. The primary focus areas for 1997 are to increase the number of good surface miles and to reduce the number of deficient and weight-restricted bridges, further growth in the percent of congested lane miles, and the number of deaths and serious injuries.

CONTACTS AND PHONE NUMBERS

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ILLINOIS

PARTNERS

Illinois Department of Transportation (IDOT)

Illinois Association of Aggregate Producers (IAAP)

Illinois Asphalt Pavement Association (IAPA)

Illinois Chapter of the American Concrete Pavement Association

Illinois Road Builders (IRB) (Chicago area)

Associated General Contractors of Illinois (AGCI) (downstate)

Federal Highway Administration-Illinois Division

CURRENT QUALITY EFFORTS

The goal of each of the three QC/QA programs described below is to transfer the responsibility of quality control from the Department to the supplier/contractor.

Aggregate Gradation Control System QC/QA

In its sixth year of implementation, approximately 45 to 50 percent of the aggregate producers within the State provide material under the Aggregate Gradation Control System. Three suppliers produce all their products under the system; other suppliers produce products under the system on an as-needed basis required for projects under the HMA and PCC QC/QA programs. Proof of the initiative's effectiveness is that gradations of the aggregates furnished to QC/QA projects are less variable than before the system was implemented.

HMA QC/QA

Implemented for the past 6 years, the HMA QC/QA is fully implemented on State projects except those in the Chicago metropolitan area, where the program was begun on a trial basis beginning in 1996. A significant portion of the projects in the Chicago area this year include the QC/QA provisions. Full implementation will begin this construction season and the desired results of more consistent mixes and industry involvement have been achieved.

PCC QC/QA

In its fifth year of implementation, PCC QC/QA is not yet fully implemented statewide.

Partnering Initiatives

Eleven formal and fifty-one informal partnerships have been created, and many more are anticipated this construction season. IDOT and contractors have built more productive relationships through trust, mutual respect, and integrity. An initial "Partnering" forum was held last year in Chicago with the IRB and the AGCI. To expand partnering throughout the State, the IDOT held a second meeting in December 1996 with the IRB in the Chicago area. A second session with the AGCI for downstate contractors is planned for this year.

TQM Activities

A team has worked almost a year to implement recommendations to address 26 opportunities to improve the existing certification of materials process. The team's objective is to improve the process to reduce variability, simplify the process, eliminate no value-added functions, ensure evidence of inspection at the time of arrival of materials, and to certify that all materials placed meet specifications.

In January, a team drafted recommendations to identify and promote procedures to reduce the impact of utility relocation on construction projects. As part of the implementation, the team is completing a questionnaire that will be sent to utility companies and contractors.

A draft report has been prepared that recommends ways to improve the change order process and to address the issue of avoidable change orders. Final recommendations are currently under development and will be available soon.

Construction Inspection Documentation

A TQM activity is under way to review existing construction documentation and to identify opportunities to eliminate, simplify, and reduce the amount of information gathered. This activity began in 1997.

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INDIANA

PARTNERS

Indiana Department of Transportation (INDOT)

Asphalt Pavement Association of Indiana

Indiana Constructors Inc.

Indiana Ready Mixed Concrete Association

American Concrete Pavement Association, Indiana Chapter

Consulting Engineers of Indiana

Indiana Mineral Aggregates Association, Inc.

Purdue University

Highway Extension and Research Project for Indiana Counties and Cities

Federal Highway Administration-Indiana Division

CURRENT QUALITY EFFORTS

Partnership Initiatives

In March 1994, the INDOT and its partners signed the "Indiana Policy on the Quality of Highways." The policy is testimony to the partners continuing commitment to:

- Proper design, construction specifications related to performance, adherence to specifications, and use of sufficient maintenance.
- Constant improvement of highway engineering technology by increasing emphasis on cooperative research, implementation, and technology sharing.
- Adequate assurances of quality achievement in planning, design, and construction by owner agencies.
- Incentives that reward achievement and innovations in providing a demonstrated level of value-added quality.
- Cooperative development of Quality Management Systems and specifications between Federal, State, and local agencies, academia, and industry.

Quality Initiatives

In April 1994, INDOT held an all-day conference for the highway industry—contractors, design consultants, and INDOT—to improve the working relationship among the three key partners. The main focus of this conference was to discuss issues between contractors and consulting engineers and the effect of these issues on INDOT and its customers. As a result, a steering committee selected three areas for examination by Quality Improvement Teams with the objectives of recommending ways to address the various concerns expressed by each group and improving the quality of highway products and process. Team members reviewed communications, quality and consistency in plans and specifications, and user/public impact. The team members identified 75 items, of which INDOT implemented 70 to 80 percent.

In 1996, the steering committee selected three projects for Quality Improvement. These projects encompass developing a constructability process, streamlining the partnering process, and improving the utility coordination process during design and construction. A draft report for streamlining the partnering process and utility coordination process has been prepared by team members and is under review by the steering committee for possible implementation by INDOT. Additionally, INDOT is working with the Consulting Engineers of Indiana on plan development/process review and QC/QA.

In 1995, the I-465/U.S. 31 Interchange project was a finalist for the NQI Achievement Award. Criteria for the award included community/customer satisfaction, public/private partnership, safety, teamwork, cost, schedule, innovation, quality process, and standards.

Proposal Initiatives

In 1995, a joint task force including representatives from INDOT, the FHWA, Asphalt Pavement Association, several asphalt contractors, and private research groups developed Indiana's A+B+C Contract Proposal Package. The proposal included the method for selecting the lowest and best bid A+B. The A concept considers the direct cost of a project and the B concept considers the indirect costs to the public. The C factor, Quality, introduces minimum performance requirements by using the concept of a warranty. The warranty, enforced for 5 years, is based on the evaluation of the pavement's performance indicators for ride, rutting, frictional resistance, and longitudinal cracking. INDOT has let three contracts with A+B+C concepts and seven contracts with A+B concepts, some of which are complete.

INDOT is working with consultants, the FHWA, and contractors to develop a design-build process to be applied to a project during the 1997/98 construction time period.

Superpave Implementation

Indiana was selected to participate as a lead State for Superpave implementation and is one of five States to develop a Superpave Center in conjunction with Purdue University

and the FHWA. Since 1994, INDOT has incorporated Superpave Mix Design into 20 contracts; during 1997 construction season, INDOT will award more than 30 Superpave Mix Design contracts.

Materials Initiatives

The change from labs at producers' plants to production labs should raise efficiency, reduce equipment and slack time of employees, minimize equipment/technician error, improve training, make better use of seasonal employees and vehicle assignment, and increase the average number of tests to be processed per person. Response to producers may be enhanced somewhat by using fax communication.

The Indiana Certified Aggregate Producer Program (CAPP) is a initiative whereby a qualified mineral aggregate producer wanting to supply material to INDOT assumes all plant site controls and a portion of the testing responsibility, which the Department previously performed. The program involves a site-specific Quality Control Plan that indicates how the producer proposes to verify materials at the plant. Benefits to the producer include improved customer service, more plant control, and better documentation of test results and events at the plant. For INDOT, the obvious benefit is that the producer provides material that has a consistent gradation.

In the Indiana Certified HMA Producer Program, the producer assumes responsibility for all aspects of producing quality HMA according to contract requirements. INDOT monitors the producers' production, sampling, and testing procedures. This program is included with all contracts using Superpave Mix Design.

There is also a contractor's acceptance testing for HMA program, which is used to eliminate duplicate testing by INDOT and make contractors responsible for all testing required for HMA. INDOT selected a pilot project on SR 36. This project is nearing completion, and there are plans to let three more contracts with this concept in 1997.

Specifications Initiatives

The "ENR Formula," used to determine bearing values in IDOT's precision pile driving specifications, often resulted in piles being either underdriven or overdriven. The Geotechnical Section of INDOT's Division of Materials and Tests managed six pilot projects and developed a recommendation to replace the ENR Formula with the more reliable and consistent dynamic "Gates Formula." The results of this study were incorporated in the new pile driving specifications, which include the use of wave equation analysis method, dynamic pile load test, static load test, or other alternate methods. It also provides an adequate description of equipment and methodology used in pile driving, which has resulted in more economical deep foundation design.

PLANNED QUALITY EFFORTS

The INDOT will continue to work with its partners for continuous quality improvement of design, construction, and operation of Indiana's transportation system. INDOT's role is to concentrate on ways to best satisfy customer expectations, to promote partnership, and to improve communications and teamwork among stakeholders to resolve quality issues of mutual concern in the transportation industry.

CONTACT AND PHONE NUMBER

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IOWA

PARTNERS

Iowa Department of Transportation (Iowa DOT)

Coots Materials Company

Martin Marietta

Rex Hight Schildberg Construction Company

Moline Consumers Company

Hallett Materials

Reilly Construction

Federal Highway Administration-Iowa Division

CURRENT QUALITY EFFORTS

Materials Initiatives

Formed 2 years ago, the partners have met every 2 to 3 months to review and make recommendations for the Iowa DOT Aggregate Review Team for Aggregate Producer's Quality Control Program and Approved Producer List. Members also finalized rip-rap specifications for improved quality and production.

PLANNED QUALITY EFFORTS

The team plans to develop a white paper that addresses concerns for the use of recycled versus virgin materials, including specification requirements for quality. The group will also review task force recommendations for this issue. Additional activities will be to establish a Specification Task Force to focus on improving the quality of specifications.

CONTACTS AND PHONE NUMBERS

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PARTNERS

Iowa Department of Transportation (Iowa DOT)

Asphalt Pavement Association of Iowa (APAI)

Jebro, Inc.

Heartland Asphalt, Inc.

Aspro, Inc.

Western Engineering Company

Wendling Quarries

Rohlin Construction Company

Carroll County Iowa

Federal Highway Administration-Iowa Division

CURRENT QUALITY EFFORTS

The QMA Steering Committee met five times during 1996. It appointed two new task groups to consider performance of full-depth ACC and to identify issues/answers and concerns about implementing Superpave in Iowa.

The October 1996 letting specified SHRP Performance Grade binders. Most of Iowa DOT work will be PG 58-28, and PG 64-22. PG binder grades were presented at the annual County Engineer's Conference and the APAI Midyear Meeting.

In summer 1996, Superpave criteria was added by extra work order to US 63, Howard County; Douglas Avenue, Des Moines; and US 71, Sac County.

PLANNED QUALITY EFFORTS

Six Superpave projects are identified for the 1997 construction. In 1998, 25 percent of the primary and Interstate (P&I) asphalt projects will be Superpave projects; in 1999, 50 percent, and in 2000, 100 percent of the P&I projects will be Superpave projects. City and county implementation is scheduled for 2002.

The annual QMA Steering Committee field trip is scheduled for July 1997. Plans are to visit projects on I-80, I-29, and I-35.

The Certification Training Program will focus on reciprocity between the various States, with the ultimate goal of having a nationwide reciprocity for field and laboratory technicians.

CONTACT AND PHONE NUMBER

Don Jordison, Executive Vice President, APAI, 515-222-0015

PARTNERS

Iowa Department of Transportation (Iowa DOT)

Iowa Prestress Concrete

United Contractors, Inc.

Iowa Bridge & Culvert

Iowa Ready Mixed Concrete Association

Associated General Contractors of Iowa

A.M. Cohran & Sons, Inc.

Page County Iowa

Federal Highway Administration-Iowa Division

CURRENT QUALITY EFFORTS

Construction Initiatives

The partners sponsored a workshop for Department and industry personnel on structure design and construction items. Members also developed and established a structures award program and presented annual awards in seven categories for projects completed in 1996.

The partners initiated an investigation into deck cracking that lead to a $180,000 research contract to evaluate the effect of cracking on deck durability. Members also functioned as the Iowa HPC focus group as part of regional effort in support of HPC. Other activities included assisting in the development of the SHRP HPC Showcase and presenting Iowa's efforts in HPC at the Showcase.

Structures Initiatives

Partners investigated expanding the use of partial-depth precast deck panels and designed an improved panel tie to curtail the deck cracking that has occurred with this product.

They also studied design and construction practices in an effort to improve the appearance of concrete barrier rails. Members also studied adopting the Nebraska Department of

Roads inverted tee beams that eliminate the need for false work in constructing short span concrete bridges.

CONTACTS AND PHONE NUMBERS

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Gary Sandquist, United Contractors Inc., 515-276-6162

PARTNERS

Iowa Department of Transportation (Iowa DOT)

Fred Carlson Co., Inc.

Cedar Valley Corporation

Irving F. Jensen Co., Inc.

Manatt's, Inc.

Iowa Concrete Pavement Association

Federal Highway Administration-Iowa Division

CURRENT QUALITY EFFORTS

Materials Initiatives

A Materials Advisory Committee identifies quality issues to appoint active task forces, reviews task force findings, and develops recommendations for consideration by the Department and industry.

Current activities include studying the many issues of material compatibility that can influence long-term durability of concrete pavements. The Task Force on Materials Quality has participated in several studies of early pavement deterioration focused on expansive failure from ASR, DEF, or other chemical reasons. Based on recommendations from this group of industry experts, Iowa DOT has modified specifications for cement and combinations of cement materials.

Pavement Smoothness

To ensure that current technology provides the best construction and measurement of smooth pavement, the Task Force on Pavement Smoothness has studied the factors affecting pavement construction and has made recommendations to the Iowa DOT on padline width and staking requirements. The reliability of the California Profilograph with a 5 mm blanking band has been reviewed as it relates to the public's perception of smooth pavement. Members are also evaluating the effects of testing in the wheel path and at quarter point.

Power Operations

The Task Force on Paver Operations is reviewing operational characteristics of slipform pavers and will offer guidelines to those who are directly responsible for building a quality pavement. The task force has considered issues of edge slump, tie bar placement, and proper consolidation. Members developed a check list for operations and inspectors that has been distributed to field personnel. Changes in specifications on vibrator frequency and spacing have also resulted from the group's work. Research on proper consolidation continues.

Concrete Mix Design

Work is under way by the Task Force on Concrete Mix Design to develop specifications that will result in implementation of a performance-based specification for concrete pavement. The task force has completed a specification that will be used on one project in 1997. After review and modification, the Department anticipates implementation on several more projects in 1998.

Urban Pavement Constructability

Members of the Task Force on Urban Pavement Constructability are reviewing designs and specifications for urban pavements in order to modify them for better constructability and economy without jeopardizing intended service. Several recommendations for change in road design standards include treatments at manholes, intake construction, and guidelines for pavement width.

Nondestructive Testing

Efforts are also under way to review and, where appropriate, implement use of new technology in nondestructive testing of concrete pavements. Through the guidance of the Task Force on Nondestructive Testing, a procedure has been developed and implemented to use maturity to predict the time for opening of pavements. After several trial projects, contractors are now given the option to use maturity in lieu of the standard cure period for opening of pavement to traffic.

PLANNED QUALITY EFFORTS

Future efforts will focus on characterizing material compatibility for concrete workability and durability. The task force also anticipates developing a tiered smoothness specification to reflect the geometric diversity of pavements on the various road systems in Iowa. To enhance the continuing study of vibration, vibrator monitoring devices and "on project" testing is being used to determine air content of concrete after placement.

Task force members also anticipate that further implementation of a performance-based specification will require contractors to develop and practice process control. Study also continues on concrete mixing time and its relationship to workability and durability.

There are also plans to encourage the development of nondestructive process control monitoring devices for smoothness, thickness, concrete workability, and air content of in-place concrete.

CONTACTS AND PHONE NUMBERS

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Gordon L. Smith, ICPA, 515-278-0606

PARTNERS

Iowa Department of Transportation (Iowa DOT)

Peterson Contractors, Inc.

Weidemann, Inc.

McAninch Corp

Associated General Contractors of Iowa

Federal Highway Administration-Iowa Division

CURRENT QUALITY EFFORTS

Erosion Control

An initial area requiring improvement is temporary erosion control on grading projects. Partners are currently identifying the problem, including reviewing temporary erosion control specifications and practices in Iowa and other States.

PLANNED QUALITY EFFORTS

Future improvement efforts will include reviewing current earthwork compaction practices and, if needed, recommending changes in specifications and/or design.

CONTACTS AND PHONE NUMBERS

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Tom Jacobson, Office of Construction, Iowa DOT, 515-239-1453

PARTNERS

Iowa Department of Transportation (Iowa DOT)

Sta-Bilt Construction Co.

Iowa Limestone Producers

Illowa

Fort Dodge Asphalt

Concrete Textures

Iowa Ready Mixed Concrete Association

Lyon County Iowa

City of Ames

Federal Highway Administration-Iowa Division

CURRENT QUALITY EFFORTS

Maintenance Expo

A Spring Maintenance Expo being developed for 1998 will include topics on the full range of maintenance activities performed by State, county, and local personnel. The expo will include displays and presentations by material and equipment suppliers, public agency personnel, and recognized experts in various fields. The event is being planned to attract policy makers, equipment and material suppliers, contractors, and equipment operators.

PLANNED QUALITY EFFORTS

The task force intends to propose development of warranty specifications for contract maintenance projects (crack sealing, patching, and thin maintenance surfaces). Initiatives should include developing training and certification programs for various maintenance activities for both public and private personnel.

CONTACTS AND PHONE NUMBERS

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Richard Burchett, Sta-Bilt Construction Company, 712-755-5153

KANSAS

PARTNERS

Kansas Department of Transportation (KDOT)

Kansas Asphalt Pavement Association

Western Resources, Inc.

Kansas Contractors Association (KCA)

Kansas Consulting Engineers (KCE)

MO/KS Chapter, American Concrete Pavement Association

Southwestern Bell

Federal Highway Administration-Kansas Division

CURRENT QUALITY EFFORTS

KDOT quality initiatives fall into three categories—partnering, the Kansas Quality Initiative (KQI), and Kansas Quality Managment (KQM) Improvement Teams. Each of these initiatives operates under the Continuous Quality Improvement (CQI) philosophy.

Partnership Initiatives

In 1990, KDOT began a partnering program with contractors to promote open communications, improve customer/supplier relationships, and foster a team approach to building highway projects. In 1994, partnering was expanded to the design arena when KDOT entered into a partnering agreement with the KCE. Nine improvement projects are currently assigned to joint KDOT/KCE teams. Annual conferences involve both the KCA and the KCE.

KDOT's most recent partnering effort is in the utilities area. In January 1996, KDOT entered into a partnering agreement with Western Resources, Inc., a major gas and electric utility company, with the goal of reducing costs, completing projects within budget, attaining a high degree of customer satisfaction, completing high-quality projects, striving for employee satisfaction and understanding, completing projects on time, and constructing all projects in a safe manner. This agreement was recently expanded to include Southwestern Bell.

In 1992, KDOT was selected as one of five pilot State agencies to launch the Kansas Quality Management (KQM) program. Approximately 93 percent of KDOT's 3200 employees statewide have attended quality awareness sessions. Since 1993, 99 continuous improvement teams have been trained. As a leader among Kansas agencies implementing KQM in terms of number of employee teams and number of ideas

generated, KDOT teams have completed 134 projects and have 75 projects in progress. Among the teams' successes is a 17 percent reduction in the time required to complete year-end financial reporting, reduced backlog of traffic studies with turnaround time cut from 12 months to less than 2-1/2 months, increased public satisfaction and employee safety in maintenance work zones as the result of a District team public awareness initiative, and improved communications and quality of designs as a result of developing a post-design construction review process.

Kansas Quality Initiative

NQI activities are carried out in Kansas as the KQI. A Kansas Quality Initiative Seminar was held in 1994, and KDOT hosted a Regions 5/7 Quality Conference in 1996. Both of these meetings were developed through planning committees with representatives from KDOT, the FHWA, consultants, contractors, suppliers, and industry organizations. The conferences focused on promoting continuous quality improvement concepts and encouraging discussions among the owners, designers, suppliers, and contractors.

Kansas Quality Management Teams

One of the more active KQI activities has been development of QC/QA specifications for asphalt pavement, concrete pavement, and structural concrete. Teams with representatives from the KDOT, FHWA, KCA, and industry organizations were formed for each of the three areas to develop the new specifications. As a result, draft specifications have been developed in all three areas and pilot projects have been built for asphalt pavement and concrete pavement. Several QC/QA asphalt and concrete paving projects will be awarded during summer 1997, and the structural concrete specification will be tested though a change order agreement on an existing project. This team approach has contributed significantly to the acceptance of QC/QA by all parties.

In addition, KDOT maintains close relations with both the Missouri and Kansas Chapters of the ACPA and the NAPA through annual asphalt pavement and concrete pavement road tours, implementation of new jointly developed specifications, and new technologies as well as inclusion in State research planning efforts.

PLANNED QUALITY EFFORTS

KQM and KQI partnering efforts will continue and expand. KDOT will conduct an External Customer Satisfaction Survey and an Internal Customer Satisfaction Survey as part of the strategic planning process in 1998.

CONTACTS AND PHONE NUMBERS

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Rodney N. Barry, Programs Engineer, FHWA-Kansas Division, 913-267-7286

KENTUCKY

PARTNERS

Kentucky Transportation Cabinet (KYTC)

Kentucky Transportation Center

Consulting Engineers Council of Kentucky

Kentucky Association of Highway Contractors

Kentucky Crushed Stone Association

Plantmix Asphalt Industry of Kentucky

Kentucky Ready Mixed Concrete Association

Federal Highway Administration-Kentucky Division

CURRENT QUALITY EFFORTS

Quality Workshop

The Kentucky Quality Initiative Committee hosted the Fourth Annual NQI Workshop in December 1996. The theme of the workshop was "On the Road to Quality." Paul Toussaint, FHWA-Kentucky Division Administrator, served as moderator for the workshop. Other featured speakers were Charlie Nemmers, FHWA Office of Engineering Research and Development, and Darrell Goodson, Granite Construction Company. Dr. Donn E. Hancher, University of Kentucky, led a special session on constructibility. Awards were presented for Excellence in Design and Construction. The quality workshops have been well-attended by both the design and construction industries.

Joint Process Reviews

The FHWA Division Office and the KYTC have been conducting joint process reviews since 1993. Both agencies have been involved in selecting process reviews, conducting the reviews, and developing recommendations for improvements in the process.

PLANNED QUALITY EFFORTS

Kentucky's NQI Committee will continue to host the annual quality workshop. The workshop has received outstanding support from the design and construction partners in Kentucky. Several companies have initiated quality efforts within their organizations.

A formal partnership agreement between the KYTC and the FHWA Division will be developed to ensure continuation of the joint process reviews.

CONTACTS AND PHONE NUMBERS

Bill Seymour, Central Office, Kentucky TC, 502-564-4890

Dennis Luhrs, FHWA-Kentucky Division, 502-223-6723

PARTNERS

Kentucky Transportation Cabinet (KYTC)

Kentucky Transportation Center

Kentucky Association of Highway Contractors

Federal Highway Administration-Kentucky Division

CURRENT QUALITY EFFORTS

Paris Pike Reconstruction Project

The KYTC, with the support of the FHWA, has entered into an innovative contract with five highway contractors to perform services on the Paris-Lexington Road Project (Paris Pike). This is a highly visible reconstruction project to widen approximately 19 kilometers of roadway through a historic area of Kentucky to four lanes. The project involves delicate landscaping, sensitive traffic control, and relocating historic stone walls and structures. The work will be divided into four to six projects to be awarded over a 3-year period.

Because of the uniqueness of the Paris Pike reconstruction projects, the KYTC used a two-step process combining rigorous prequalification and normal competitive bidding to prequalify contractors. Special emphasis was placed on obtaining contractor input during the design process (constructibility review). Using an exacting quality-based process, five contractors were evaluated and prequalified to bid on the Paris Pike projects. The prequalified contractors are serving as members of the team providing input on constructibility during design development. The contractors awarded contracts on Paris Pike will also join in partnering agreements with the KYTC and the FHWA.

PLANNED QUALITY EFFORTS

The innovative contracting methods on Paris Pike have been included under Special Experimental Project No. 14. The University of Kentucky Department of Civil Engineering will evaluate the innovative methods on Paris Pike Reconstruction Project.

CONTACTS AND PHONE NUMBERS

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LOUISIANA

PARTNERS

Louisiana Department of Transportation and Development (LDOTD)

Federal Highway Administration-Louisiana Division

CURRENT QUALITY EFFORTS

Quality Workshops

The LDOTD and FHWA Louisiana Quality Initiative (LQI) Steering Committee conducted three industry quality workshops around the State during November 1996. Participants included more than 300 representatives of the FHWA, LDOTD, contractors, consultants, suppliers, and industry. The workshops met the objective of establishing communication with transportation partners in a continuing process to identify and prioritize areas of potential improvements in design and construction processes, and to produce a quality, cost-efficient, low-maintenance product for the traveling public. The workshops identified a large number of areas for potential improvement. Participants assisted in developing a prioritized list that the steering committee could use to initiate quality activities. After reviewing the full list, the steering committee recently selected several items on which to focus and advance the quality effort. In addition, the committee identified a number of "low-hanging fruit" items that can be acted upon to effect quality improvements with limited effort and within a relatively short time frame.

PLANNED QUALITY EFFORTS

Efforts will address the identified low-hanging fruit items. Also, the committee will proceed with several selected priority items that will be addressed by teams to be designated in the next few months.

CONTACT AND PHONE NUMBER

Walter J. Kudzia, Assistant Division Administrator, FHWA-Louisiana Division, 504-389-0245

PARTNERS

Louisiana Department of Transportation and Development (LDOTD)

Federal Highway Administration-Louisiana Division

CURRENT QUALITY EFFORTS

Management Initiatives

As part of the LDOTD's Quality Enhancement Steering Team (QUEST) efforts, in early 1996 the LDOTD and the FHWA Division Office established 12 teams to address quality improvements in several areas such as of plan errors, NEPA considerations, file management, traffic control, research implementation, ROW acquisition, outdoor advertising, and contract maintenance evaluation. Team members include LDOTD and FHWA Division employees; teams have been meeting since spring to develop process and procedure recommendations to improve and increase efficiency in theses areas.

PLANNED QUALITY EFFORTS

The teams will continue their efforts for several more months, although each team will eventually complete its work at different times. The LDOTD and the FHWA Division remain committed to this extensive TQM program.

CONTACT AND PHONE NUMBER

Walter J. Kudzia, Assistant Division Administrator, FHWA-Louisiana Division, 504-389-0245

PARTNERS

Louisiana Department of Transportation and Development (LDOTD)

Highway Contractors

Private Industry

Federal Highway Administration-Louisiana Division

CURRENT QUALITY EFFORTS

During November 1993, 1-day partnering workshops were given in Alexandria, Baton Rouge, and Shreveport. The three workshops were sponsored by the LQI and were designed to introduce LDOTD personnel and their transportation partners to the concept of partnering, as well as to provide hands-on experience in setting goals and objectives, building partnering teams, and identifying and resolving problems as members of a partnering team. More than 370 participants from government and private industry attended the workshops. As a result of these efforts, the LDOTD has partnered approximately 15 major construction projects and the Department has found that its use of partnering has been instrumental in providing a framework for better project coordination and communication. Benefits derived from these efforts included faster decision making, time and cost savings, improved quality, and reduced claims.

PLANNED QUALITY EFFORTS

The LDOTD has established a policy to partner all construction projects greater than $5 million.

CONTACT AND PHONE NUMBER

William C. Farr, Program Operations Manager, FHWA-Louisiana Division, 504-389-0465

PARTNERS

Louisiana Department of Transportation and Development (LDOTD)

Contracting industry

Federal Highway Administration-Louisiana Division

CURRENT QUALITY EFFORTS

Contracting Initiatives

Existing highway construction contract procedures too often resulted in project delays and additional costs because of the extended processing time required for plan changes. A team of representatives from the FHWA, LDOTD, and Louisiana contractors was formed to evaluate/implement potential improvements to the process. The principles of TQM provided a step-by-step approach to solve the problem. By documenting and analyzing the existing process for changing contract plans and specifications, the team identified several significant problems and made recommendations to revise and streamline processes. Their efforts have resulted in significant time savings and reduced approvals required. A team then traveled statewide to teach the revised procedures to all affected LDOTD personnel to ensure the successful implementation of proposed changes. For its efforts, the team was recognized in 1996 with the AASHTO Trailblazer Award and the FHWA Strive for Excellence Award.

PLANNED QUALITY EFFORTS

The TQM concept is fully supported by LDOTD and the FHWA Division. Multidisciplinary teams will continue to form, analyze, and redesign obsolete or inefficient processes.

CONTACT AND PHONE NUMBER

Pamela S. Bowman, Financial Manager, FHWA-Louisiana Division, 504-389-0246

MAINE

PARTNERS

Maine Department of Transportation (MDOT)

Associated Constructors of Maine (formerly AGC, now ACM)

Consulting Engineers of Maine

Maine Chapter, Association of Public Works Officials

Maine Bureau of Human Resources

Maine Better Transportation Association

Federal Highway Administration-Maine Division

CURRENT QUALITY EFFORTS

Maine Quality Initiative (MQI) Steering Committee

The MQI Steering Committee planned and conducted State Quality Seminars in 1994, 1995, and 1997. The committee also planned and conducted a survey of Maine drivers to determine levels of satisfaction with Maine's highways and to identify issues of greatest importance to the drivers. The survey was completed and results were presented at the March 1997 MQI Seminar.

The committee also organized the first MQI Award to honor a transportation project that best exemplifies quality, successful public/private partnerships, and teamwork. This award was also presented at the 1997 MQI Seminar.

Contractor QC/QA Initiatives

The contracting community and the FHWA have been involved in QC/QA process by means of a joint MDOT/ACM/FHWA committee that writes and modifies the QC/QA specifications and examines project-by-project results. MDOT and the contracting community jointly sponsored a former NHI course to explain the intricacies of QC/QA and the statistical analysis necessary to successfully implement this type of measuring. During FY96, there were roughly a half dozen concrete and a half dozen asphalt projects. Concrete had full bonus/penalty provisions while asphalt used only the bonus provisions. Results to date have been very good. FY97 will bring approximately a dozen each of PCC and HMA projects with full bonus/penalty provisions on all jobs. QC/QA provisions will be applied to all PCC and HMA projects in FY98.

Partnering Initiatives

Maine DOT was one of the forerunners in the country to embrace the concept of partnering. In 1992, partnering was offered as an option to contractors on a few large projects, and partnering training was provided to MDOT employees and to ACM members. Initially partnering was viewed by many long-time State resident engineers as a program that would benefit contractors at the expense of quality construction. Over the years this attitude has changed; quality has not been compromised and the working relationships between the State and contractors has evolved into a more trusting and open one. One of the principal and noticeable results is the expedited decision-making and approval process. This was the result of a parallel quality initiative by MDOT, which included delegating much more decision-making responsibility to its project resident engineers. Today, partnering is offered on all MDOT projects.

Contracting Initiatives

In the spring and summer 1995, MDOT completed a project using a combination of innovative contracting practices. The project was on Interstate 295 in Portland. The innovative features used included A+B bidding, lane rental, ramp rental, partnering, use of a public relations firm, and specific traffic control measures (including a heavy traffic control emphasis, variable message signs, State and local police presence, incident management, and reduced regulatory speed limits). This project was very successful and enjoyed very favorable public reaction.

Process Unit Reviews

During 1995 and 1996, at the request of MDOT, members of the FHWA-Maine Division served on Process Action Teams and on Unit Review Teams to evaluate various processes and organizational units within MDOT. These reviews resulted in implementation of significant improvements to the way the Department developed projects, and they were also instrumental to major organizational changes with in the MDOT.

PLANNED QUALITY EFFORTS

Superpave Initiatives

MDOT is fully committed to switch from the traditional Hveem asphalt pavement design to Superpave. Full implementation of Superpave is coincident with QC/QA; that is, by FY98, all pavement projects will use the Superpave design method along with QC/QA (the implementation of the binder specification will be determined over time and as experience is gained). The implementation is being coordinated by a joint MDOT/ACM/FHWA committee. During FY96 two projects placed Superpave pavement; these were by contract change order.

Design-Build

Maine will use the design-build process to replace the aging Carlton Bridge between Bath and Woolwich. Award of the design-build contract will be made in early fall 1997. The most prominent benefit of this type of innovative contracting is expected to be considerable savings in time to complete the construction of this project, which may cost up to $50 million.

CONTACT AND PHONE NUMBER

A. Graham Bailey, Assistant Division Administrator, FHWA-Maine Division, 207-622-8486, ext. 20

MARYLAND

PARTNERS

Maryland State Highway Administration (SHA)

Consulting Engineers Council of Maryland

Maryland Highway Contractors Association

Maryland Asphalt Pavement Association

Northeast Chapter of the American Concrete Pavement Association

Federal Highway Administration-Maryland Division

CURRENT QUALITY INITIATIVES

Quality Initiatives Conference

Maryland held its fourth National Highway Quality Initiatives Conference in January 1997.

SHA Administrator, Parker Williams, and FHWA Division Administrator, Susan Binder, kicked off the conference by describing National and State highway programs as being in an era of change. SHA Administrator Williams discussed in glowing terms the importance of the Federal/State partnership to Maryland. Division Administrator Binder emphasized that the current environment mandates maximizing limited resources by reaching out to new partners and by using best practices.

Four breakout groups focused on ITS technology, engineering the new system, system preservation, and innovative construction and engineering. A variety of formats were used in the groups including technical presentations, discussions of funding prospects and ISTEA reauthorization, and consensus groups for implementing innovative contracting procedures.

While the event has been described as being the best of Maryland's NQI conferences, participants recognize the need to sustain the momentum. Groups representing State and Federal governments and industry are forming to put the results of the conference into practice.

CONTACT AND PHONE NUMBER

George Frick, Assistant Division Administrator, FHWA-Maryland Division, 410-962-4342

MASSACHUSETTS

CURRENT QUALITY EFFORTS

Massachusetts Quality Initiative

Approximately 1200 representatives from the construction industry, consultant community, academia, and State, local, and Federal agencies attended the first annual Massachusetts Quality Initiative (MQI) "Transportation Partnership" Dinner in April 1996, in Boston. Keynote Speaker, Governor William Weld, applauded the successes of the MQI and addressed the policies and direction of transportation in Massachusetts. Lieutenant Governor, Paul Celluci, and Secretary of Transportation, James Kerasiotes, also spoke. MassHighway Commissioner, Laurinda Bedingfield, reviewed the accomplishments and status of the six MQI Initiatives:

- Massachusetts Pavement Quality Partnership (MassPQP).
- QC/QA.
- Construction Partnering.
- Design Partnering.
- Massachusetts Bridge Quality Partnership (MassBQP).
- VE.

FHWA Division Administrator, Pete Markle, and MassHighway Chief Engineer, Tom Broderick, assisted Commissioner Bedingfield in presenting awards to several organizations and individuals in recognition of their active participation in specific projects or programs that have realized tangible benefits through the approaches supported by MQI. Federal recipients included the National Park Service (Nancy Nelson, Superintendent, Minuteman National Park) and the FHWA Office of Motor Carriers (State Director, Myra Bulis, as a member of the Massachusetts Traffic Management Team). In addition, the Commissioner presented Governor Weld and Secretary Kerasiotes with MQI Certificates of Appreciation for their continued support of this quality effort.

CONTACT AND PHONE NUMBER

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MICHIGAN

PARTNERS

Michigan Department of Transportation (MDOT)

Associated Underground Contractors

Concrete Pipe Association of Michigan

Consulting Engineers Council of Michigan

Michigan Aggregate Association

Michigan Asphalt Pavement Association (MAPA)

Michigan Concrete Pavement Association (MCPA)

Michigan Municipal League

Michigan Road Builders Association

Michigan Society of Professional Engineers

Michigan Universities/Colleges

Federal Highway Administration-Michigan Division

CURRENT QUALITY EFFORTS

Michigan Quality Initiative (MQI) Steering Committee

The MQI Steering Committee has worked to identify its "next steps." The group continues to meet and remains committed to the concepts of quality; however, it has struggled as to how it, as a body representing a unique collection of the diverse highway interests, could constructively contribute. The MQI Steering Committee concluded that to solidify its identity and clarify its function, it needed to develop a consensus mission statement that all partners could support and then formulate a charter to describe how the MQI Steering Committee would function. The committee approved the following mission statement:

The Michigan Quality Initiative Steering Committee sponsors initiatives, endorses proposals, and celebrates those quality improvements that enhance the durability, safety, aesthetics, environmental compatibility, efficiency, and/or economic vitality of the highway system.

The Michigan Quality Initiative Steering Committee provides for a regular forum in which the diverse components of the highway industry, including public owners, private service and material providers, and highway users, can exchange information on issues, problems and successes impacting highway quality.

PLANNED QUALITY EFFORTS

The MQI Steering Committee is sponsoring the MQI Achievement Award to select Michigan's candidate for the 1997 NQI Achievement Award. In the process, the committee hopes to promote greater awareness and a better understanding of quality and to celebrate the quality successes achieved within the Michigan highway industry.

CONTACT AND PHONE NUMBER

Norman Stoner, FHWA-Michigan Division, 517-377-1844

PARTNERS

Michigan Department of Transportation (MDOT)

MDOT Multidisciplined Team

Federal Highway Administration-Michigan Division

CURRENT QUALITY EFFORTS

Management Initiatives

In pursuit of its own quality effort, the MDOT has chartered a team to develop a *Measurement Guide* to help the Department more effectively and uniformly assess change from its many process improvement team initiatives. After more than 24 4-hour meetings, and considerable individual effort, the team delivered the *Guide* to MDOT's Strategic Leadership Team.

Reaction to the *Guide* is that it is very readable and is a useful resource because it addresses the need to measure an organization's progress along its Quality Journey.

PLANNED QUALITY EFFORTS

As an immediate application of the *Measurement Guide*, MDOT has formed a team to institute mechanisms to measure the effectiveness of its new concept of Transportation Services Centers. This is an initiative intended to improve customer service by decentralizing a variety of functions to more than 30 service centers.

CONTACT AND PHONE NUMBER

Don Bullock, FHWA-Michigan Division, 517-377-1880, ext. 58

PARTNERS

Michigan Department of Transportation (MDOT)

County Road Association of Michigan (CRAM)

Michigan Asphalt Pavement Association (MAPA)

Federal Highway Administration-Michigan Division

CURRENT QUALITY EFFORTS

MAPA/MDOT Industry Committee

The MAPA/MDOT Industry Committee is composed of an at-large group, a steering committee, and numerous task forces. The task forces are currently working on topics related to the quality of hot mix pavements:

- The Ride Quality Task Force continually reviews and revises, as appropriate, the ride quality specification to better reflect industry standards, techniques, and procedures.
- The Quality Control & Quality Assurance Task Force reviews, evaluates, and recommends improvements to MDOT's QC/QA specification.
- The Segregation Task Force investigates the extent and reasons for segregation and ultimately recommends changes to the specifications or procedures to reduce the instances of segregation.
- The Mixtures Task Force analyzes needed changes to the mix parameters to address the demands of today's traffic and increased customer expectations.
- The Bituminous Mixture Design Task Force reviews, evaluates, and recommends improvements to the mix design procedures and process.
- The Preventive Maintenance Task Force is examining methods to extend the life of hot mix pavements through preventive maintenance techniques.
- The Training Task Force is developing a certification training program for hot mix asphalt technicians.

PLANNED QUALITY EFFORTS

Future task force efforts will address implementing the Superpave mix design system.

CONTACTS AND PHONE NUMBERS

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John Bescey, MAPA, 517-382-6555

PARTNERS

Michigan Department of Transportation (MDOT)

County Road Association of Michigan (CRAM)

Michigan Concrete Pavement Association (MCPA)

Federal Highway Administration-Michigan Division

CURRENT QUALITY EFFORTS

MCPA/MDOT Industry Committee

The MCPA/MDOT Industry Committee is composed of an at-large group and various ad hoc teams, as needed. The committee is currently working on several topics related to the quality of concrete pavements, including open-graded drainage base, pavement typical sections, white topping, concrete pavement restoration, and training.

PLANNED QUALITY EFFORTS

The MCPA/MDOT Industry Committee will soon review the life cycle cost analysis procedures used to select pavement type.

CONTACTS AND PHONE NUMBERS

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MINNESOTA

PARTNERS

Minnesota Department of Transportation (MnDOT)

Associated General Contractors of Minnesota

Concrete Pavement Association of Minnesota

Consulting Engineers Council of Minnesota

Aggregate Ready Mix of Minnesota

Minnesota County Engineers Association

Minnesota Asphalt Pavement Association (MAPA)

Minnesota Public Works Association

City Engineers Association of Minnesota

Federal Highway Administration-Minnesota Division

CURRENT QUALITY EFFORTS

A formal Minnesota Policy on the Quality of Transportation Systems was signed in March 1994 by the Quality Initiative Steering Committee. It has been the foundation for Minnesota's continuing process to improve the quality of the product information and services that support the State's transportation systems.

Design-Build Initiatives

MnDOT let its first design-build contract in 1996, and construction should be completed in 1997.

Partnering Initiatives

Since Minnesota began formal partnering in 1992, at least 38 formal partnering sessions have been held. During that time every major highway contractor in Minnesota has been involved in at least one formal partnering session. Partnering is now conducted in less formal half-day in-house sessions between the contractor/subcontractors and MnDOT. These informal sessions accomplish the same goals as the more formal 2-day sessions.

Joint NQI/Industry Workshops

The third NQI/MAPA Workshop was held in 1997. It is a joint effort by the asphalt industry, government, and academia to bring the principles of the NQI to the project-level workers in industry and government. More than 300 attendees have participated at each of the past two workshops.

QC/QA Initiatives

QC/QA testing for HMA has been under way in Minnesota since 1986. The MnDOT, MAPA, counties, and the FHWA have worked together to develop this highly successful program and cooperate in the continual revision and refinement of the specifications to improve the quality of HMA pavements. Special provisions now include Incentive/Disincentive (I/D) payments for pavement smoothness, density, and uniformity of test results. The existing HMA specifications were substantially revised in 1996 to include VMA and moisture susceptibility testing on pilot projects. Those changes were adopted as the standard in 1997. Further modifications including higher density requirements are being piloted in 1997.

QC/QA for ready mixed concrete has been required since 1991. In concrete paving, QC/QA began in 1995 and is now required for all major paving projects. Acceptance is based on a minimum 0.40 W/C ratio with incentive payments for lower W/C ratios. Incentives are also often paid for higher quality coarse aggregates. Mortar bar testing is conducted for all fine sand sources for concrete. Canadian Prism testing is also being completed on questionable concrete aggregate sources.

Superpave Binder Initiative

Minnesota was a leader in forming the Superpave Binder Technical Working Group within the North Central Asphalt User Producer Group. It was initiated in 1995 among the States of Minnesota, Wisconsin, and Iowa and the asphalt producers to develop common specifications and binder producer certification programs and to share Superpave technology. In 1997, MnDOT converted to the use of Superpave PG-graded binders for all HMA.

Superpave Mix Design Initiatives

Two QC/QA Superpave mix design with gyratory field control projects were constructed in 1996. Five more will be constructed in 1997.

Materials Certifications

In 1996, an MnDOT task force implemented the requirement for certification of project level materials sampling and testing by the project engineer. Prior to that, the Central Office laboratory completed the certification. The requirement was accomplished to place the responsibility for materials certification in the hands of those responsible for

implementing materials sampling and testing requirements. Follow-up reviews by the Central Office materials specialty offices were also established.

PLANNED QUALITY EFFORTS

The joint NQI/MAPA workshop has become an annual event that continues to foster improved quality in the asphalt industry.

Plans also include expanding the concept of joint NQI/industry workshops to include the concrete industry.

A Concrete Performance Steering Committee has been formed to improve concrete pavement performance through cooperation in the development of better specifications. The steering committee includes industry, Department, University of Minnesota, and FHWA representatives.

MnDOT has a goal of implementing Superpave mix design with gyratory field control on all HMA projects more than 3 million ESALS in 1998.

MnDOT continues to work with the industry through the Asphalt Pavement Performance Steering Committee to review, revise, and refine hot mix asphalt pavement specifications. The steering committee involves industry, Department, academic, and FHWA representatives.

CONTACTS AND PHONE NUMBERS

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MISSISSIPPI

PARTNERS

Mississippi Department of Transportation (MDOT)

Mississippi Asphalt Pavement Association

Mississippi Concrete Industries Association (MCIA)

Federal Highway Administration-Mississippi Division

CURRENT QUALITY EFFORTS

Pavement Initiatives

MDOT began quality initiatives the area of asphalt pavements in 1987 with the adoption of Volumetric HMA Specifications. That action positioned the State to move quickly to the Superpave initiative. Meetings with the Mississippi Asphalt Paving Association, along with the full cooperation and support of the FHWA, enables Mississippi to enjoy a smooth transition as Superpave becomes a reality in this State. Side-by-side training of industry and MDOT personnel has developed trust and confidence between the major players in this endeavor.

Superpave Implementation

The two primary areas of Superpave are binder and HMA designs. Superpave binder uses SHRP performance-grade asphalt specifications. Projects calling for polymerized asphalt have required PG 76-22 for the last half of 1996. MDOT has required use of SHRP binder specifications since January 1997, which coincides with the time frame for most SASHTO States. The MDOT Materials Division is currently testing with new SHRP binder equipment PG 76-22 asphalts from suppliers who will be furnishing materials to projects for inclusion on the "Approved List of Suppliers of Polymer Modified Asphalt Cement."

MDOT is also working to implement Superpave Level 1 mix designs of HMA by August 1997, which is ahead of the national implementation goal of January 2000. The Superpave mix design procedure involves volumetric design procedures used with the SHRP gyratory compactor. MDOT has been using these procedures with the Marshall compactor since fall 1987.

In 1996, MDOT completed two projects using the SHRP gyratory compactor for surface course design and field control. A supplemental agreement on a third project has been made to design and field control the HMA. The MDOT Materials Division encourages the Districts to get supplemental agreements on all projects whenever the contractor being awarded the low bid has a gyratory compactor.

Mississippi has participated fully in both the FHWA Pooled Fund and the training program developed to ensure that Department and industry personnel are proficient in the proper use and application of SHRP asphalt products. Mississippi was one of eight States chosen to participate in NCHRP Project 9-7, "Field Procedures and Equipment to Implement SHRP Asphalt Specifications." The first full project carried out was in Mississippi in cooperation with the MDOT on US 61 in Bolivar County. The project was successful in validating Superpave asphalt mixture design procedures and evaluating the Superpave gyratory compactor as a means of monitoring the changes in mixture proportions. Also, Mississippi is presently involved in two ongoing projects (SPS-9A project in Panola County and a research project in Copiah County) to validate Superpave binder selection and specifications.

In 1993, the MDOT Materials Division developed and implemented "High Type" mixtures specifications (HTBB, HTBC, and HTSC) to strengthen asphalt pavements to support ever-increasing loads. This was accomplished by requiring a coarser blend of materials throughout, increasing the amount and size of coarse aggregate to obtain more rock-to-rock contact, and using highly crushed fine and coarse aggregate used in the mixtures. Other changes or adjustments include limiting the use of natural sand to 10 percent maximum; eliminating fly ash; and requiring 1 percent hydrated lime in all mixes. Several High Type requirements such as gradation, aggregate properties, and crushing meet the Superpave criteria. Many of MDOT's current High Type mixtures meet Superpave with little or no adjustment. MDOT's use of these mixtures, and refining and improving throughout the process, gives the State a head start in implementing Superpave.

Training Partnership to Certify Concrete Technicians

Throughout the 1990s, QC/QA efforts are increasing quality by spreading the responsibility for quality more equally among all members of the design and construction team. To be successful, however, all partners need assurances that each team member is adequately trained and similarly proficient.

To meet this challenge, MDOT entered into a unique and ongoing partnership with the MCIA, the statewide trade association of the concrete products industries in Mississippi, whose members include companies that provide ready mixed concrete and related products and services. Through this ambitious joint venture, positive quality influences are already evident in both the concrete industry and within MDOT, and the change to QC/QA specifications is being achieved with remarkable efficiency.

With the many successes since concrete technician training began in 1993, MCIA and MDOT have developed a very strong working relationship as well as increased credibility with each other. Currently, MCIA performs all the operational and administrative activities of the certification program, which is presented twice a year for the ACI Grade 1 (MDOT Class 1) and MDOT Class 2 program, and once a year for the MDOT Class 3 program. The increasing demand for these certification classes has

resulted in greater concrete industry interaction with MDOT and many important new duties for MCIA staff. Member companies of the MCIA have responded by committing to fund a second professional staff position.

Current MDOT/MCIA Certification Programs involve 11 instructors in the ACI Grade 1 - MDOT Class 2 program, and 7 in the MDOT Class 3 program. A major challenge of ACI Grade 1 certification is hands-on field testing exams. A model of cooperation, the MDOT and industry joined forces one afternoon to administer the performance exam to more than 100 personnel in each of the last four sessions. The organizations provided qualified proctors for the field testing performance exam, which requires at least 30 qualified volunteers. All volunteers are required to have and maintain current certifications as ACI Field Testing Technicians, Grade 1. MDOT and MCIA member companies provided the substantial amount of concrete field testing equipment necessary, and MCIA companies provided the necessary ready mixed concrete.

Of note, the entire program execution was accomplished using MDOT and MCIA staff members and volunteers from the employ of MCIA member companies. Because these individuals volunteer their time, it is possible for the program to operate very economically. The fees charged participants/certification candidates are extremely reasonable and represent a exceptional training value. The perceived value of the program to both the MDOT and the concrete industry fuels this level of enthusiastic commitment.

CONTACT AND PHONE NUMBER

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MISSOURI

PARTNERS

Missouri Department of Transportation (MoDOT)

Fred Weber, Inc.

Millstone Bangert, Inc.

Federal Highway Administration-Missouri Division

CURRENT QUALITY EFFORTS

For the past 8 years, MoDOT has worked to improve the quality of its organization, meet customers' needs, and partner with stakeholders. Efforts have included extensive training of all MoDOT and FHWA Division employees in several phases of Quality Improvement Principles and Management.

On-the-Job-Training (OJT) Program

Identified as an area needing improvement, the OJT program was originally developed to improve access to the heavy highway construction crafts. The program required MoDOT and the contractor fulfilling the contractual training requirement to administer extensive reporting and employee hours.

The MoDOT, several contractors, and the FHWA joined together to review the OJT program, administration, and performance measures. This team examined the overall objective, the processes currently required, reporting requirements, and general construction project processes. The team found that the program did not operate in a manner consistent with the construction industry. In addition, although the documentation required was overly burdensome, it could not be totally eliminated.

The team developed a process, restructured the current program, and established a pool system. The Contractor Approved Training (CAT) Program requires the contractor to submit a list of trainees to be used on any project, with training requirements, for approval by MoDOT. The contractor is then able to move these individuals to any of its projects and receive reimbursement. The contractor can move employees to various projects based on the job category, skill level of the trainee, and project status without designating a specific trainee for that project. The previous documentation was eliminated, and the only documentation required is submission of a monthly summary of hours. The CAT pilot program was tested in the St. Louis area and resulted in significantly increased hours worked by each trainee and reduced paperwork for all partners.

The team received approval for statewide implementation in March 1997. The team has expanded to develop a training and implementation plan. The goal is to achieve statewide implementation in fall 1997. In addition, the team received approval to increase the reimbursement for trainee hours in order to more accurately reflect the administrative costs for any OJT program.

The team will be responsible for statewide implementation and tracking performance measures. In addition, the team has requested expansion of the project directory database to include trainees working on projects. This will enable any MoDOT project personnel to verify trainee status and track the progress of the individual trainees.

CONTACTS AND PHONE NUMBERS

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CURRENT QUALITY EFFORTS

Transportation Planning Initiatives

For the past several years, MoDOT has worked with each of the State's RPOs on transportation planning activities. MoDOT and the RPOs have found this activity to be beneficial to the Missouri traveling public. Realizing these benefits, MoDOT entered into long-term contractual agreements with each of the 17 RPOs for transportation planning activities. A team composed of RPO staff members, the Missouri Office of Intergovernmental Relations, and the Missouri Association of Councils of Governments identified the guidelines, activities, and level of reimbursement for all activities performed by the RPOs for MoDOT.

The process includes identifying all transportation planning activities to be performed by each RPO. These activities involve identifying regional values, determining transportation needs, and prioritizing transportation projects. Each RPO is required to develop an annual work program that identifies the activities it will use to meet the goals of the agreement. The work programs are developed through the cooperative efforts of the RPO with input from MoDOT staff.

The key element in the process is establishing a Transportation Advisory Committee (TAC) to develop local input on transportation issues. Each regional planning commission is required to appoint a TAC, which is composed of local officials, private citizens, RPO staff members, and MoDOT District personnel. The TAC is established as an advisory committee to the board of directors of the RPO. The membership of MoDOT staff on the TAC has provided a valuable relationship between the Department and the region because it allows the MoDOT to have direct, instant feedback from the region. It

is also valuable to the citizens of the regions as they see MoDOT at the table and vitally interested in their issues. This process also allows the local areas to become players in the transportation decision-making process.

MoDOT will reimburse each RPO for expenses, up to a mutually determined limit, from Federal planning funds. The RPOs will be involved with MoDOT's statewide long-range planning process over the next several months as these efforts move forward, and the evaluation of the impact of the reauthorization of ISTEA will be an integral part of this process.

CONTACT AND PHONE NUMBER

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PLANNED QUALITY EFFORTS

The Missouri DOT plans to continue to emphasize the importance of customer service, to identify and implement improvements in its processes and procedures, and to keep open lines of communication with customers and partners.

CONTACTS AND PHONE NUMBERS

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MONTANA

PARTNERS

Montana Department of Transportation (MDT)

Montana State University-Billings (MSU-B)

Federal Highway Administration-Montana Division

CURRENT QUALITY EFFORTS

Research Initiative

The MDT Maintenance Division suggested the need to conduct research relating to adult perceptions about the maintenance of Interstate and other State highways in Montana. MSU-B conducted a telephone survey in late summer 1996. Questions about maintenance were divided into eight categories addressing winter maintenance, maintaining a smooth highway surface, maintenance of roadsides, maintenance of signs, debris removal, rest stop maintenance, striping maintenance, and winter road condition reports.

Summary of results (1-low, 4-high) indicated the highest rated activity was signage (3.04) and the lowest was surface smoothness (2.40). In terms of importance of activity, winter maintenance rated highest (3.04), and surface smoothness rated lowest (2.40). Respondents identified winter maintenance (3.56) as the highest resource allocation priority, and the lowest is roadside maintenance (2.51).

The Composite Rating identified and prioritized activities that MDT should pay attention to and provide resources to maintenance activities of winter maintenance, surface smoothness and highway striping, debris removal, winter roadway information and highway signage, rest stop maintenance, and roadside maintenance.

PLANNED QUALITY EFFORTS

The MDT intends to work on these issues, and a follow-up survey will likely be repeated in about 2 years to see if the initial perceived reactions have been fulfilled. One result of the survey was that there was a concerted effort through several public relations/media opportunities, such as news articles, radio talk show discussions, MDT-produced videos, and face-to-face discussions with public groups during the 1996-97 winter maintenance season to explain how MDT winter maintenance operations were carried out. This has been very successful, and MDT is considering expanding this to other maintenance activities throughout the year.

CONTACT AND PHONE NUMBER

John Blacker, Maintenance Engineer, Montana DT, 406-444-6158

PARTNERS

Montana Department of Transportation (MDT)

Montana Contractor's Association (MCA)

Asphalt Institute

Montana Consultanting Engineers Council (MCEC)

Federal Highway Administration-Montana Division

CURRENT QUALITY EFFORTS

Montana Quality Initiative

The Montana Quality Initiative includes joint monthly meetings of the MDT, FHWA, and MCA, and regular joint meetings with the MCEC. Current efforts promote implementation of the latest generation of QC/QA specifications in Montana, use of quality-level analysis, and developing strategies to improve the quality of Montana pavements and construction practices by refining specifications and testing programs. For example, Superpave training workshops have been held this past year for MDT Materials and Construction staffs, Montana asphalt suppliers, and for paving contractors.

PLANNED QUALITY EFFORTS

MDT and the FHWA are working to develop a mini-regional QA workshop custom-tailored for Montana, but also involving surrounding States, to help Montana identify the steps needed to get the State where it would like to be with QC/QA specifications. The workshop will probably include a 2-day course on QC/QA principles with an additional day to develop an implementation work plan that identifies specific actions and recommendations such as certification requirements for testing inspectors and labs and how best to update the MDT's current QA/QC specifications. In addition, this year the State will expand the Superpave training workshops to include local governments. Further training sessions include paving seminars cosponsored by MDT, the FHWA, AI, and Montana State University, and annual presentations at MDT Construction and Materials seminars.

CONTACTS AND PHONE NUMBERS

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Allen Radliff, Operations Engineer, FHWA-Montana Division, 406-441-1232, ext. 231

PARTNERS

Montana Department of Transportation (MDT)

U.S. Corps of Engineers

U.S. Fish and Wildlife Service (USFWS)

Montana Fish, Wildlife and Parks (MFWP)

U.S. Natural Resource Conservation Service (USNRCS)

Montana Department of Environmental Quality (MDEQ)

U.S. Environmental Protection Agency (EPA)

Federal Highway Administration-Montana Division

CURRENT QUALITY EFFORTS

Environmental Initiatives

In 1996, the "Interagency Operating Procedure for the Conservation of Wetland Resources Associated With Transportation Construction Projects in The State of Montana" was signed by all of the partners. Bimonthly meetings, prescribed by the procedures, provide for continuing coordination and facilitation of wetland mitigation projects. The interagency meetings provide a forum for project-level problem solving. Issues beyond the purview of the group are brought to the attention of appropriate agency personnel. For example, current water quality discussions under way are associated with in-stream temperature increases resulting from wetland construction.

PLANNED QUALITY EFFORTS

This will be an ongoing activity. As different problem issues arise, subgroups will be formed to address them.

CONTACT AND PHONE NUMBER

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PARTNERS

Montana Department of Transportation (MDT)

Nevada Department of Transportation (NDOT)

Western Region Superpave Center (WRSC)

Nichols Consultants (NC)

Federal Highway Administration-Montana Division

CURRENT QUALITY EFFORTS

The FHWA Division arranged and conducted a comprehensive and concentrated MDT tour of Westrack, the WRSC, the NDOT, and NC. MDT Construction and Materials Bureau personnel shared information with DOT counterparts and experts in the pavement field. Using a prepared agenda/itinerary with specific objectives and questions geared to improving Quality, both the FHWA Division and MDT support ongoing efforts.

PLANNED QUALITY EFFORTS

Based on enthusiastically favorable reports, upper level MDT management has committed to a Management Scanning Tour in the Reno/Carson City area in September 1997. Content and contacts will be patterned after the highly successful preceding agenda.

CONTACT AND PHONE NUMBER

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PARTNERS

Montana Department of Transportation (MDT)

Federal Highway Administration-Montana Division

CURRENT QUALITY EFFORTS

Management Initiatives

MDT management requested a study of the financial process and systems to determine if more accurate and timely information could be accessed on demand. The study is to be conducted in-house by a process review team selected by management and involving personnel from Finance, Information Services, Engineering and Planning Divisions, and the FHWA. The process review team will interview the owners and customers of the various project financial processes in order to understand and document information gathered. This information will be used to identify areas needing change to improve current processes. The Administrative Steering Committee, whose members are senior managers, will make the final decisions based on process review team recommendations.

The study is currently under way and a presentation on the process will be made to management in October 1997.

PLANNED QUALITY EFFORTS

The plan is to have a customer-oriented Financial Project System that will provide accurate timely information to managers upon request. The information should provide management with data that makes for sound decisions in such areas as cash management, project selection, and project funding.

CONTACT AND PHONE NUMBER

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NEBRASKA

PARTNERS

Nebraska Department of Roads (NDOR)

University of Nebraska at Lincoln

U.S. Geological Survey

Federal Highway Administration-Nebraska Division

Depending on the quality effort being pursued, partners will also involve highway industry representatives including contractors, material suppliers, consultant engineers, numerous Federal and State resource agencies, cities, counties, and academia. The NDOR also has a separate quality effort exclusive to its organization.

CURRENT QUALITY EFFORTS

Materials QC/QA Initiatives

Hot Mix Asphalt

Current efforts involving government and industry to monitor the Superpave process have been in place for more than 3 years. The process has worked well to enable participants to came together and address situations before they became problems. The success of the effort is demonstrated by the fact that the group has been asked to oversee the implementation of Superpave in Nebraska.

Concrete and Aggregates

The QC/QA committee for concrete is defining and developing a training program for plant and inspector certification. In addition, the group is working to fulfill the requirement of the new QA regulation.

High-Performance Concrete

This initiative lead to the construction of the Sarpy County Nebraska HPC bridge. HPC Focus Teams were formed in each Region 7 State. Nebraska was selected as one of the HPC Lead States.

High-Performance Steel

This project will include fabricating a single-span bridge using HPS-70W steel, laboratory testing to address restrictive sections of the AASHTO Specifications for Highway Bridges, and then improving bridge design for 70 ksi HPS. This project will influence the economics of steel bridge design nationwide.

Fiber-Reinforced Plastics

The Division Structural Engineer is currently working to coordinate establishment of Region 7 FRP Focus Teams; facilitate preparation of mission, goals, and strategies for each focus area; and follow-up with FRP Focus Teams to determine progress and identify how the FHWA can continue support. The NDOR is receptive to using feasible and economic FRP applications.

Classification of Streams in Nebraska

This effort was formed to classify streams in 23 southeastern counties with respect to stage of development. The NDOR continues to facilitate cooperation between the partners and promote implementation of the study results. In the future, study results will be used to determine location and orientation of bridges, as well as any channel stabilization structure installation.

NDOR Quality Council

The Quality Council is a comprehensive, internal quality effort at the NDOR. Improvement teams formed include industry representatives, as warranted.

PLANNED QUALITY EFFORTS

All of the above are ongoing quality efforts in Nebraska.

CONTACTS AND PHONE NUMBERS

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Gary Thayer (PCC and Aggregates QC/QA), Nebraska DOR, 308-535-8033

Mike Beacham (HPS, FRS, Classification of Streams), Nebraska DOR, 402-479-8929

Milo Cress (HPC), FHWA-Nebraska Division, 402-437-5977

Pamela Cooksey (HMA, PCC, and Aggregates QC/QA), FHWA-Nebraska Division, 402-437-5971

Pete Picard, Assistant Division Administrator, FHWA-Nebraska Division, 402-437-5962

NEVADA

PARTNERS

Nevada Department of Transportation (NDOT)

Associated General Contractors, Nevada Chapter

American Consulting Engineers Council of Nevada

Utility Companies in Clark County

Construction Contractors

Federal Highway Administration-Nevada Division

CURRENT QUALITY EFFORTS

The Nevada DOT does not have a formal NQI Steering Committee, but the NDOT is involved in several quality initiatives with its transportation partners.

The 1994 Annual Nevada Street and Highway Conference was devoted to NQI.

Partnership Initiatives

The NDOT holds quarterly meetings with the AGC, including representatives from contracting companies and consulting firms dealing with the construction phase of a project. Items discussed are quantities, testing methods, inspection guidelines, and exploring ways to create a project beneficial to both owner and contractor.

Quarterly meetings with consulting engineers address a variety of topics, including consultant selection, overhead rates and auditing practices, certification requirements, and training methods. These meetings are open to all consultants through ACEC, and to NDOT personnel from all divisions.

Monthly meetings with local utility companies and local entities in the Clark County area (Las Vegas) enable participants to address upcoming project needs and identify better ways to improve future projects when dealing with utility relocations. This provides opportunity for the NDOT to better coordinate efforts with Clark County and to prevent project delays and costly mitigation.

Monthly meetings are held with a group of contractors to identify problems and areas of concern and to find solutions to recent problems between NDOT and contractor staffs concerning construction projects. Attendees include management personnel from the different contractors, the NDOT Assistant Director for Operations, district engineers, and the construction and materials engineers.

PLANNED QUALITY EFFORTS

NDOT will continue periodic meetings with its partners. The Department is also considering a State-level NQI effort and will be consulting with surrounding States on the benefits.

CONTACTS AND PHONE NUMBERS

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John T. Price, Division Administrator, FHWA-Nevada Division, 702-687-1205

NEW HAMPSHIRE

PARTNERS

New Hampshire Department of Transportation (NHDOT) Bureau of Construction and Bureau of Materials and Research

Associated General Contractors, New Hampshire Chapter

Federal Highway Administration-New Hampshire Division

CURRENT QUALITY EFFORTS

Materials QC/QA

The FHWA Division has strongly promoted the development and use of QC/QA specifications for nearly a decade. This effort culminated in the NHDOT developing QC/QA specifications for asphalt paving, concrete, and crushed stone base course. Work began in 1992 with a trial specification for concrete bridge decks. The deck was placed just before the 1993 NQI meeting in Manchester, and the two events were the start of a partnering effort between the State, the contractors, and the FHWA to improve the quality of New Hampshire roads and bridges.

After successful use of a trial QC/QA specification for bridge decks that was negotiated into three contracts, the decision was made to advertise projects with a QC/QA specification that was modified so that the contractors would not be subject to penalties. This specification was used in 1993 and 1994. In 1995, all provisions of the QC/QA specification were invoked and it was used on most projects. At the end of the construction season, the NHDOT and the FHWA, with general agreement from the contractors, decided to use it on all projects. In winter 1996, NHDOT began developing a specification that covers all classes of concrete. Most issues have been resolved and the QC/QA specification will be implemented on projects advertised this fall.

Using a similar process of NHDOT, FHWA, and industry cooperation, a paving specification was developed during winter 1993-94. An FHWA assistant area engineer and an NHDOT project engineer detailed to work in the Division Office accomplished the work over the winter. It was first used in the 1994 season by negotiating it into one or two projects, and it was negotiated into three more projects in 1995. It was bid on two projects in 1996 and six projects this year. This is the first year that penalties will be invoked; they have been set at 25 percent of the required penalty, if there is one. Work each winter has involved joint NHDOT, FHWA, and industry meetings to improve the specification and resolve differences. This process is continuing and issues being considered include the proper place to take samples, ride quality measurements, density of thin lifts, laboratory location, and training.

The benefits realized in concrete and paving are improved quality and increased interest in quality by the suppliers and contractors. In concrete, permeabilities have been reduced by a factor of about 4, air content maintained near the midpoint of the specified range, and W/C ratio meets requirements almost all the time. Through the end of last year, the average pay factor for permeability was 1.07, 1.03 for W/C ratio, and 1.01 for air content. The maximum pay factors are 1.10, 1.05, and 1.05, respectively. Increased contractor attention is also evidenced by their own rejection of marginal material.

In paving, there has been more emphasis on production controls, materials handling, lay down procedures, ride, and specification limits. Some contractors have held internal reviews at the close of a project to determine where they need to make adjustments, and they now recognize the importance of such things as sequence of paving on ride.

PLANNED QUALITY EFFORTS

The specification for crushed stone base course was written by the NHDOT and FHWA Division and has been discussed with the local AGC organization; however, it has not yet been used. The NHDOT and the contracting industry want to devote current efforts to refining the concrete and asphalt paving specification before implementing a new specification. This will be a future quality effort along with improvements in the current QC/QA Specifications.

CONTACTS AND PHONE NUMBERS

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PARTNERS

New Hampshire Department of Transportation (NHDOT)

Associated General Contractors, New Hampshire Chapter

Federal Highway Administration-New Hampshire Division

CURRENT QUALITY EFFORTS

Specifications Initiatives

The NHDOT/AGC/FHWA Specifications Committee has convened a (generally) monthly meeting for a number of years. It is basically a meeting with the three partner agencies and is an opportunity for the AGC to have input on the development of the specifications. Essentially a form of partnering with the contractors to get the best specifications possible, the AGC can review the newly developed (or revised) specification and can take it back to other contractors for their review and comment. This process gives contractors insight into the rationale behind the specification and increases contractor commitment. This results in less conflict in the field during construction and probably less cost. The FHWA is represented by the Assistant Division Administrator; the NHDOT by high-level officials from the Construction, Bridge Design, and Materials and Research Bureaus, plus the Assistant Director of Project Development; the AGC is represented by its director and a committee of volunteers, whose membership rotates annually.

PLANNED QUALITY EFFORTS

Committee partners were directly involved in planning and presenting the previous New Hampshire NQI Seminar in Manchester in 1993. The group will continue to work in the upcoming months to develop and hold another statewide Quality meeting.

CONTACTS AND PHONE NUMBERS

Gil Rogers, New Hampshire DOT, 603-271-1486

Tom Myers, FHWA-New Hampshire Division, 603-225-1606

Gary Abbott, AGC, 603-225-2701

PARTNERS

New Hampshire Department of Transportation (NHDOT)

Federal Highway Administration-New Hampshire Division

CURRENT QUALITY EFFORTS

Quality Initiatives

In 1994, the FHWA Division and NHDOT formed a Quality Improvement Team (QIT) to review those areas where the two offices interacted in order to determine where quality could be improved or value added in the work product or in the work process. At the time, the effort was considered to have independent utility and value from the work of the State Quality Council and other NHDOT initiatives because it focused entirely on the relationship between the NHDOT and the FHWA.

The QIT met monthly during 1995 and through August 1996. In that time, it initiated reviews of 11 quality improvement projects ranging in scope from improving emergency programs communications (accomplished in a 1-day meeting of all appropriate emergency officials from Federal, State, and local agencies) to updating electronic data sharing capacity (accomplished over a substantial period of time and involving numerous stages of review).

After almost 2 years of work, the QIT decided that there was a growing redundancy with its work and that of the NHDOT Quality Council, which had evolved during the same period. It was decided that the best solution was to name an FHWA representative to sit on the NHDOT Quality Council to monitor State quality initiatives and to offer FHWA insights, where warranted. The NHDOT Quality Council agreed to this. As a result, the FHWA/NHDOT QIT was disbanded. All unfinished work from the QIT was assumed by the NHDOT Quality Council.

PLANNED QUALITY EFFORTS

Rotation of FHWA membership on the NHDOT Quality Council will continue to ensure employee enrichment and bring different perspectives to the group.

CONTACTS AND PHONE NUMBERS

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PARTNERS

New Hampshire Department of Transportation (NHDOT)

Federal Highway Administration-New Hampshire Division

CURRENT QUALITY EFFORTS

Pre- and Post-Construction Meetings

For years, the NHDOT struggled internally with repetitive design oversights, ambiguities, and mistakes. Design problems kept getting incorporated into projects because of inadequacies in the feedback loop between design, construction, and maintenance. This was identified by the New Hampshire NQI Steering Committee as an item with high payoff and ready solutions. Periodically, the FHWA Assistant Division Administrator, the NHDOT Director of Project Development, and the Bureau Administrators of Design and Construction meet with NHDOT project personnel and key contractor and consultant design personnel (if applicable) to discuss issues at pre- or post-construction meetings. These meetings have been extremely beneficial to top managers at NHDOT because they are often unaware of systemic design/construction/maintenance issues, but they are in a position to effect immediate corrective action, thereby bypassing internal institutional barriers. These reviews are difficult to schedule because of the type and number of participants, but they have been remarkably effective.

PLANNED QUALITY EFFORTS

Same types of reviews with different contractor, project-type mixes.

CONTACTS AND PHONE NUMBERS

Bob Greer, New Hampshire DOT, 603-271-1486

Tom Myers, FHWA-New Hampshire Division, 603-225-1606

NEW JERSEY

PARTNERS

New Jersey Department of Transportation (NJDOT)

Construction Industry Advancement Program of NJ

Associated General Contractors of NJ

NJ Asphalt Pavement Association

Utility Contractors Association

Consulting Engineers Council of NJ

NJ Concrete and Aggregate Association

NJ Transit

Port Authority of NY/NJ

Representatives of the three toll authorities

Academia

Quality New Jersey

Federal Highway Administration-New Jersey Division

CURRENT QUALITY EFFORTS

The purpose of the New Jersey Quality Initiative (NJQI) is to promote implementation of quality principles and practices throughout New Jersey's transportation industry through proactive leadership, communication, partnering, quality programs, and initiatives.

The NJQI began in 1994 with the first NQI Quality Seminar. It was followed by a 2-day seminar in February 1996 designed to present not only the theory of quality but also actual examples of how quality has helped industry and government. The agenda was an aggressive attempt to share real-life quality experiences. Seizing on this enthusiasm, the NJQI Steering Committee met in April 1996, adopted a mission statement, and began to explore ways to implement the four principles behind this statement. Four subcommittees were formed to address each of the quality principle points:

Proactive Leadership

The focus of this committee has been to implement and promote the NJQI/NQI Quality Achievement Award. The subcommittee has expanded this award to include five Quality Merit Awards that recognize special efforts in selected areas of quality such as partnering, innovation, and value.

Communication

The subcommittee is charged with establishing communication lines with as many members as possible. The subcommittee began with the *Banyan Exchange* newsletter, which is mailed to more than 1200 people within the NJ transportation community.

Partnering

This subcommittee prepares and gives presentations on partnering to groups as diverse as the NJ CEC and the Project Management group of the NJDOT. The immediate results include increased formal partnering sessions and heightened awareness of the benefits of partnering in both construction and design.

Technologies

This subcommittee considers the best methods of quickly implementing the many new technologies that constantly arise, and it has become a clearinghouse for new technologies in the State. With the help of this subcommittee, the NJDOT has formed several task forces to examine issues such as Superpave, performance-related specifications, and bridge deck patching.

Reorganization of Quality Initiative

In May 1997, the Quality Council approved four new subcommittees to address specific problems with existing policies, procedures, or products, and also to consider rapid deployment strategies for new technologies. Under the new approved subcommittee structure:

- Communication is responsible for all outreach activities.
- Training identifies all recommendations that have a training component.
- Quality Improvement Teams are the technical clearinghouses for all quality improvement team activities. All members will receive basic training in quality principles before serving.
- Technology Deployment will formulate a "technology future" for New Jersey and identify ways to rapidly deploy new technology and make New Jersey a leader in innovation.

The first two quality improvement teams were authorized in May 1997 and they address the state-of-the-practice in design and construction in New Jersey. The other subcommittee chairs are adding to their membership to reflect organizations new to the quality initiative. At the May 1997 meeting, the Quality Council selected New Jersey's choice for the National Quality Initiative Award program and also named the five recipients of the New Jersey

Quality Merit Awards. These awards correspond to the five categories in the national competition. All awards were presented in September at the AASHTO Value Engineering Conference in Atlantic City.

PLANNED QUALITY EFFORTS

The new Quality Council effort is to expand its scope while emphasizing tangible results. To this end, the steering committee is contemplating these future efforts:

- Establish a Quality Speakers Bureau.
- Conduct seminars on specific quality topics—Superpave, Design/Build, CADD, etc.
- Cosponsor the 1997 AASHTO Value Engineering Conference in Atlantic City, NJ.
- Produce a statewide NJQI Conference in 1998.
- Conduct leadership retreats.
- Improve technology transfer.
- Enhance Interagency/Interstate coordination.
- Continue established NJQI efforts.

CONTACTS AND PHONE NUMBERS

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Dennis Merida, Division Administrator, FHWA-New Jersey Division, 609-637-4200

NEW MEXICO

PARTNERS

New Mexico State Highway and Transportation Department (NMSHTD)

Associated Contractors of New Mexico

Consulting Engineers Council

Federal Highway Administration-New Mexico Division

CURRENT QUALITY EFFORTS

The NQI is the main driving force behind the quality journey in New Mexico. The New Mexico NQI Steering Committee was established in 1993, and includes three representatives of the contracting industry, six from the NMSHTD, one from the FHWA, and two consultants.

New Mexico approached NQI efforts by identifying the barriers and solutions to quality design and construction of New Mexico highways. Throughout the process, the focus has been on the customer, input and involvement of all partners, and demonstrated results.

The first workshop, which emphasized design and construction, was held in March 1994. To augment participation, the attendees worked small discussion groups involving an equal mix of the participating organizations' representatives. There was a trained facilitator at each table The participants were asked to identify what prevents them from delivering a quality product to their customer; what works, and what doesn't work; and what needs to be improved.

Following each workshop, the facilitators and committee members review lessons learned and make modifications for the next workshop. This has increased participation from all partners and levels of the organizations and helped to develop solutions and action plans for the priority recommendations. Also, the committee realized that it could not be responsible for implementing all the recommendations, and it is now identifying champions from the participants. This action also increases ownership of the effort by all parties.

The second statewide NQI workshop was held in April 1995. Following a third statewide workshop in March 1996, it was decided that to involve more front line employees of all the partners, and to increase commitment and ownership, workshops would be held in each of the NMSHTD six districts and include local governments, contractors, and consultants working in that district. Workshops have been conducted in four districts.

The steering committee recognizes that NQI and quality efforts should not be restricted to design and construction, but should encompass all segments of the transportation program. Two planning workshops, in January 1996 and January 1997, focused on the STIP and the

Long-Range Plan. A workshop involving maintenance personnel was conducted in October 1996.

The New Mexico quality effort must be result oriented if it is to be successful. A sample of the implementation of the recommendations from the 1996 and 1997 workshops includes:

- Completely reorganized NMSHTD Engineering Division to deliver customer service.
- Revised change order procedures.
- Revised VE procedures.
- Increased partnering on design and construction projects.
- Increased use of innovative contracting procedures such as A+B bidding, lane rental, and incentive/disincentive provisions.
- Joint asphalt pavement construction training courses.
- New rideability specification.
- Joint QC/QA training/certification facility with contractor association.
- Retained consultants through construction for technical assistance.
- Increased public awareness at design and construction stages.
- Conducted mini-training sessions in each district on planning process.

To demonstrate and publicize its commitment to excellence, the steering committee initiated a formal award process in 1995 to recognize outstanding achievements in highway construction in New Mexico. Awards are given to project teams that have clearly demonstrated dedication to teamwork, innovation, and creative cost and schedule management that resulted in a quality highway project. In 1995, awards were presented in State highway rural, State highway urban, and local government categories. A fourth category for bridges was added in 1996.

Both the NMSHTD and the FHWA were recipients of the 1996 "Pinon" Award under a quality program award conducted annually to honor New Mexico organizations. Quality New Mexico, which sponsors this annual event, is a nonprofit organization whose mission is to promote and develop a statewide focus on quality practices in business, education, government, and health care. The Pinon Award is the first of three levels of commitment and practice of quality in an organization. The program uses the Baldrige National Quality Award criteria as the standard against which agencies are measured.

PLANNED QUALITY EFFORTS

Following completion of the two remaining district workshops, a statewide workshop will be convened to address key issues identified by the districts and in other workshops.

Workshops are also planned to focus on environment and NMSHTD administrative activities. A third planning workshop will be held in January 1998, which will emphasize implementing action plans from previous workshops. The Highway Quality Award will continue with a new category for environmental projects. Both the NMSHTD and FHWA will be more active in Quality New Mexico and will pursue the next level of award, the Roadrunner, on their Baldrige National Quality Award journey.

CONTACTS AND PHONE NUMBERS

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NEW YORK

PARTNERS

New York State Department of Transportation (NYSDOT)

Association of General Contractors

Federal Highway Administration-New York Division

CURRENT QUALITY EFFORTS

Partnering with Construction Industry

NYSDOT, after discussions with the AGC, expanded communications at the executive level. During routine meetings, discussions address potential improvements to the Department's contracts, specifications, policies, and procedures and initiate staff activities to implement such improvements. For example, bid bonds are replacing virtually all cash deposits, which is saving millions of dollars in interest costs. Partnering Seminars were also jointly developed with the AGC and delivered to all of the Department's 400 EICs and many contractors as well. A specific clause in contracts of more than $5 million indicates the Department's interest in partnering with the contractor.

Simplifying the Project Process

The steps and requirements leading the NYSDOT to produce quality plans, specifications, and estimates are complex, perhaps more complex than necessary. To ensure this was not the case, a "Simplifying the Project Process" (SPP) initiative was undertaken. Several teams were created with specific missions. In addition, a "Free Thinkers" Team was given free rein to make recommendations. This team included representatives from the construction industry, the consulting community, and retired NYSDOT executives, as well as key personnel currently working for NYSDOT. The Free Thinkers Team identified more than 130 possible actions to simplify the capital project production process. More than 50 were immediately endorsed. The other recommendations require additional data and evaluation, which is ongoing.

Public Participation in Developing 20-Year Master Plan

NYSDOT recognizes the value of hearing all points of view as it develops a master plan for transportation. First draft issue papers were sent to outside experts for comment. Subsequent outreach solicited information from those affected (localities, MPOs, etc.). Thousands of brochures were distributed to invite hundreds of stakeholders to any of 20 sessions held on different topics across the State. The meetings were sponsored by universities and moderated by outside facilitators to ensure that discussions focused on

future needs (thus avoiding turf battles while still permitting an open forum for debate and disagreement). Though positions vary, the final document addresses the issues raised and the outreach process is convincing people that NYSDOT is listening. This process seems to generate a great deal of credibility for DOT Master Plan recommendations, which will carry the Department into the next millennium.

Incentive/Disincentive Contracting

NYSDOT, in partnership with the AGC, has developed some innovative and cost-saving approaches to contracting highway and bridge projects. Financial incentives for finishing ahead of schedule have inspired contractors to pursue nighttime construction. Disincentives (such as lane rentals when a contractor closes a lane to do work) have added the concept of "time" to the formula in project letting. By placing a value on the inconvenience to the traveling public, the NYSDOT has altered what had been the "low bid" approach to contract award in a truly meaningful way.

Strategic Highway Research Program

NYSDOT has established a process to review more than 130 products resulting from the SHRP research activities. All SHRP implementation activities are coordinated by a select committee whose members have considerable technical skills, who are well-regarded by their peers, and who are receptive to new technologies. Each committee member represents a functional area—those who will use the SHRP products—which allows the functional area to assume ownership of both the product and the evaluation. This ownership also ensures that technology transfer, evaluation, and marketing occur in a seamless fashion. Seventeen months into the evaluation process, NYSDOT has evaluated fourteen products and implemented eleven. Several others are near completion.

CONTACT AND PHONE NUMBER

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NORTH CAROLINA

PARTNERS

North Carolina Department of Transportation (NCDOT)

Institute for Transportation Research & Education, NCSU

Carolina Asphalt Pavement Association Inc.

Carolinas Ready Mixed Concrete Association

Consulting Engineers Council of North Carolina

North Carolina Aggregates Association

American Concrete Pavement Association, Southeast Chapter

Carolinas AGC Inc.

Federal Highway Administration-North Carolina Division

CURRENT QUALITY EFFORTS

In 1996, two partners, who comprise the North Carolina Quality Initiative Steering Committee, selected the statewide winner to represent the State of North Carolina in the first NQI Achievement Award. Members of the steering committee prepared the submission for the national award, which was honored as the first national winner.

The North Carolina Quality Initiative Steering Committee planned and organized a luncheon, which included an address by the Governor of North Carolina, for those who worked on the construction and design of the winning project. The steering committee felt that it should honor all of those who contributed to the quality of this award winning project.

PLANNED QUALITY EFFORTS

Recently, the North Carolina Quality Initiative Steering Committee selected a project to represent the State of North Carolina in the second NQI Achievement Award. Members of the committee are working closely with the prime contractor on that project to develop the submittal for the national award.

Materials QC/QA Initiatives

Many members of the Quality Initiative Steering Committee are also part of other groups that have worked to implement new specifications to improve the quality of roadways in North Carolina. The NCDOT is ready to begin its second season of statewide implementation of a QC/QA specification for hot mixed asphalt, which includes using contractor QC test results for acceptance of the material. This specification was developed by a task group that includes members from NCDOT, the asphalt paving industry, and the FHWA. This task group has remained in place to address changes to the program that have been necessary for the first 2 years of implementation. Also, this will be the first year for a voluntary QC/QA program for aggregate materials. This program was developed by a task group with members from NCDOT, the aggregate industry, and the FHWA. Both of these programs are examples of how partnerships for quality can result in programs that will improve North Carolina roadways.

CONTACTS AND PHONE NUMBERS

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James Travis, Pavement/Materials Engineer, FHWA-North Carolina Division, 919-856-4330

PARTNERS

North Carolina Department of Transportation (NCDOT)

Federal Highway Administration-North Carolina Division

CURRENT QUALITY EFFORTS

Customer Survey

In May 1997, the FHWA conducted the first customer satisfaction survey with the NCDOT. The survey targeted 62 top managers of the NCDOT who work with FHWA Division staff. The purpose was not to evaluate project or program decisions (based on agreement or disagreement) but rather to evaluate how well the FHWA Division serves the NCDOT's needs. Questions were designed to elicit information on "performance" and importance of a wide variety of topics. The responses were overwhelmingly positive. There was widespread acknowledgment the FHWA Division provides services desired by the NCDOT. Some narrative comments outlined more clearly the expectations of the NCDOT management. For example, there was the clear message that the NCDOT wants to continue working closely with the FHWA as a team to ensure the outstanding relationship is sustained. Survey results also indicated that the NCDOT wants the FHWA to be more involved with its internal teams that develop new processes and implement new technologies. NCDOT also would like to see more categorical funding for safety and safety mandates. Finally, State managers want less turnover of FHWA personnel.

PLANNED QUALITY EFFORTS

The results of the customer satisfaction survey will be one of the topics for discussion at a NCDOT/FHWA Management Retreat scheduled for mid-July. The objective of the retreat will be to establish a greater understanding of each agency's mission, vision, and goals, and to work closer together to meet each other's expectations to fulfill those goals. Other discussion topics will include NEXTEA, improving the project development process, and how NCDOT intends to implement its Intrastate Highway Program over the next 5 to 10 years.

CONTACT AND PHONE NUMBER

Don Voelker, FHWA-North Carolina Division, 919-856-4347

PARTNERS

North Carolina Department of Transportation (NCDOT)

NCDOT Construction, Design, and Maintenance Units

CURRENT QUALITY EFFORTS

Construction Performance Measure Indexes

The NCDOT is currently implementing a new program, "Performance Measurements for Contract Construction Projects." The program has been developed to help quantify the level of quality achieved on contract construction projects. Five indexes will be combined to determine an overall Project Quality Index. The five indexes are Construction Engineering Cost Index (CECI); Construction Cost Index (CCI); Construction Time Index (CTI); Design Quality Index (DQI); and Construction Quality Index (CQI). The information is intended to be used to provide:

- Statistical information that can be used to set realistic goals for individuals, units, resident engineers offices, and contractors.
- A method of measuring the success of obtaining those goals.
- A consistent, viable method of providing feedback to designers and constructors (both Department and industry) for one group to another.
- A method to involve Department maintenance personnel in the feedback process to ensure that both construction and design personnel can react to their concerns.
- A database to assist in determining trends in construction engineering costs, overall contract costs, and construction time, as well as design, construction and maintenance issues.

CONTACT AND PHONE NUMBER

Roy Shelton, FHWA-North Carolina Division, 919-856-4350

NORTH DAKOTA

PARTNERS

North Dakota Department of Transportation (NDDOT)

North Dakota Water Commission (NDWC) 1997

Northern Improvement Company

Mandan City Engineering Department

Federal Highway Administration-North Dakota Division

CURRENT QUALITY EFFORTS

As part of North Dakota's Quality Initiative Program, NDDOT has established an Annual Highway Design and Construction Project Award Program. This annual recognition of quality design and quality construction projects in the State was initiated at the second NQI Seminar in Bismarck.

In 1997, an extensive Construction/Partnering project completed on Main Street in Mandan, won the quality construction award.

The winning design project involved the re-design of Old U.S. 10 in the western historic city of Medora, in the North Dakota Badlands.

PLANNED QUALITY EFFORTS

The Annual Award Program will continue and will be a feature of each NQI Seminar in the State.

CONTACTS AND PHONE NUMBERS

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Francis Ziegler, Western Region Engineer, North Dakota DOT, 701-328-6974

Wayne McCollam, Assistant Division Administrator, FHWA-North Dakota Division, 701-250-4347

PARTNERS

North Dakota Department of Transportation (NDDOT)

Highway Contractors

Cities

Federal Highway Administration-North Dakota Division

CURRENT QUALITY EFFORTS

Construction/Partnering presentations during the First Annual North Dakota NQI Seminar played an influential role in North Dakota becoming interested in trying partnering in the State.

Partnering in construction projects is now become a common practice. Presentations by both contractors and NDDOT representatives of North Dakota project partnership experiences are highlights of NQI and other quality-related seminars.

PLANNED QUALITY EFFORTS

Based on North Dakota's experience to date, the NDDOT anticipates continued, frequent use of partnering on major construction projects.

CONTACTS AND PHONE NUMBERS

Laurie Martin, Administrative Secretary, North Dakota DOT, 701-328-2584

Francis Ziegler, Western Region Engineer, North Dakota DOT, 701-328-6974

Wayne McCollam, Assistant Division Administrator, FHWA-North Dakota Division, 701-250-4347

PARTNERS

Ohio Department of Transportation (ODOT)

Flexible Pavements

American Concrete Pavement Association

Ohio Aggregate Association

Ohio Association of Consultants

Ohio Contractors Association

Ohio Ready Mix

Federal Highway Administration-Ohio Division

CURRENT QUALITY EFFORTS

Ohio Highway Quality Council

In September 1994, a survey of both private citizens and commercial users of the State highway system was conducted to establish a baseline of customer satisfaction with Ohio highways. In October 1994, a statewide NQI meeting was held to discuss the results of the survey and to develop a means of continuing an NQI program in the State. Representatives at the meeting recommended forming an Ohio Highway Quality Council to guide the effort to continuously improve Ohio's highways. Since that time, the FHWA Division has had several meetings with ODOT and industry representatives concerning the council. ODOT feels that its own Quality program is adequate to guide the State in the search for excellence, and ODOT has established an Office of Quality and instituted a Quality Assurance Review (QAR) Program. By agreement, the Industry Coordinating Committee (ICC)—consisting of ODOT, the FHWA Division, and highway industry representatives—is addressing NQI initiatives. The ICC will evaluate Ohio's nomination for the 1997 NQI Achievement Award.

Electronic Signature Module

The FHWA and ODOT have implemented a paperless process, the Electronic Signature Module of the Financial Management Information System (FMIS) to obligate and pay Federal-aid funds to the State. This was carried out by a joint FHWA/ODOT team and has been recognized with an AASHTO Trailblazer Award and a Public Service Excellence Award. The FHWA is supporting ODOT membership on the National Steering Committee for

the Electronic Signature Module, and the FHWA Division has a member on the National FMIS Steering Committee that is updating the FMIS.

Joint FHWA/ODOT Quality Improvement Teams

Two joint FHWA/ODOT teams work on quality improvement efforts. The first team, four FHWA and three ODOT employees, is looking at the FHWA Division processing of environmental documents. The team will use TQM tools to study and improve Division processes. The second team is using ODOT's QSTP (Quality Services Through Partnership) process for quality improvement to address closing out Federal-aid projects. Both the ODOT and FHWA recognize that a large number of older projects have not been closed out for a variety of reasons. The team will look at closing out these projects and implement a process to reduce the number of these projects in the future.

PLANNED QUALITY EFFORTS

Partnering

The FHWA Division and ODOT management will develop a partnering agreement this fall that will outline communications efforts and establish a common vision for both agencies. An outside facilitator will be used for the Partnering Session.

Joint ODOT/FHWA Reviews

ODOT has established a Quality Assurance Review (QAR) Program with the goal of improving the quality of its processes. The reviews have concentrated on compliance, but the Office of Quality is providing training and addressing the need to look at processes and products. The FHWA's participation to date has been limited to accompanying the ODOT teams on the reviews. The FHWA is working with ODOT to integrate the annual PR/PE program with the QAR effort. Both agencies will be equal partners in this effort. The goal is to establish a combined review program that will look at quality improvement and meet the needs of both agencies.

CONTACTS AND PHONE NUMBERS

James Heilman, Chief Quality Engineer, Ohio DOT, 614-466-8993

Andy Blalock, TQM Coordinator, FHWA-Ohio Division, 614-469-7443

C. Clark Street, Executive Director, Industry Coordinating Committee, 614-488-0724

OKLAHOMA

PARTNERS

Oklahoma Department of Transportation (ODOT)

Consulting Engineers Council

Oklahoma Ready Mixed Concrete Association

Oklahoma Asphalt Pavement Association

Oklahoma State University

University of Oklahoma

Association of County Commissioners of Oklahoma

Association of Oklahoma General Contractors

Associated General Contractors of America

Federal Highway Administration-Oklahoma Division

CURRENT QUALITY EFFORTS

Oklahoma Quality Initiative (OQI) Issues and Recommendations

To move from talking quality to practicing quality, the OQI Steering Committee initiated an effort to identify existing quality problems and solutions to those problems. In spring 1996, quality workshops were held in each of the ODOT's eight Field Divisions. For each workshop, individuals from State, Federal, and local governments, construction contractors, suppliers, design consultants, and utilities were invited to participate in 8-member, multidisciplinary teams. Each workshop had teams focusing on specific elements of highway construction and maintenance, such as AC pavement, and bridges.

The workshops' 64 teams produced nearly 2,000 issues and recommendations for improving the quality of highways in Oklahoma. These issues and recommendations were tabulated and consolidated. During summer 1996, representatives of the teams were asked to prioritize the combined issues and recommendations for their element of highway construction or maintenance. In August 1996, a statewide workshop was held with the team representatives. At this workshop, members identified the issues and recommendations that would lead to the greatest improvement in highway quality.

The ODOT, FHWA Division, and OQI Steering Committee are reviewing the recommendations and working with the teams to implement their recommendations.

One of the teams working on these recommendations is ODOT's Re-invention Team, which is looking into how ODOT will function in the future. Some of the recommendations were implemented by the ODOT shortly after the August workshop.

PLANNED QUALITY EFFORTS

Following the OQI's current work with the teams, the recommendations will be implemented as appropriate. A statewide meeting is planned for late 1997 to discuss the results of the workshops, identify opportunities for improving the process, and plan future activities.

CONTACTS AND PHONE NUMBERS

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Lubin M. Quinones, Assistant Division Administrator, FHWA-Oklahoma Division, 405-945-6174

OREGON

PARTNERS

The following partners have signed the Oregon Transportation Quality Initiative (OTQI) Statement:

Oregon Department of Transportation (ODOT)
Association of Oregon Counties
League of Oregon Cities
Associated General Contractors
Asphalt Pavement Association of Oregon
Oregon-Columbia Chapter
American Concrete Pavement Association, NW Chapter
American Road and Transportation Builders Association
Women Construction Owners & Executives, Oregon Chapter
U.S. Forest Service
Bureau of Land Management
AAA Automobile Club of Oregon
Mid-Willamette Valley Council of Governments
Consulting Engineers Council of Oregon
Oregon Department of Environmental Quality
METRO
Office of Minority & Women's Business
Association of Engineering Employees
Oregon State Police
Oregon Department of Energy
Oregonians for Responsible Planning
Association of Oregon Rail and Transit Advocates
Lane Council of Governments
Oregon Association of County Engineers & Surveyors
Bicycle Transportation Alliance
Oregonians for Cost-Effective Transportation
Oregon Department of Energy
Oregon State Public Utilities Commission

Willamette Pedestrian Coalition
Oregon People's Utility District Association
Citizens for Better Transit
Oregon Bicycle Advisory Committee
Bicycle Federation of Oregon
Federal Highway Administration-Oregon Division

1994-1995 OTQI Advisory Committee members:

Oregon Department of Transportation (ODOT)
Associated General Contractors
Asphalt Pavement Association
Association of Engineering Employees
Oregon Concrete & Aggregate Producers
Association of Oregon Counties
Oregon Department of Environmental Quality
League of Oregon Cities
Federal Highway Administration-Oregon Division

1996-1997 OTQI Advisory Committee members:

Oregon Department of Transportation (ODOT)
Women Construction Owners & Executives, OR Chapter
Asphalt Pavement Association
Association of Engineering Employees
Oregon Concrete & Aggregate Producers
Association of Oregon Counties
Oregon Division of State Lands
Marion County Public Works Department
Federal Highway Administration-Oregon Division

CURRENT QUALITY EFFORTS

Quality Initiative Conference

Cynthia Ford of the Oregon Transportation Commission opened the Statewide Oregon Transportation Quality Initiative (OTQI) Kick Off Meeting in January 1994. Bob Clour, FHWA Division Administrator, and Don Forbes, Director of ODOT, presented the Vision, Purpose,

and Goals of the Quality Initiative. Larry Bonine, Director of Arizona DOT, and Bill Ballester, partnering consultant and former gymnastics coach, presented training and team-building concepts. An outline for future activities and a commitment to the OTQI Statement was widely supported by the nearly 100 attendees. The priority issues given to the Statewide Advisory Committee to address were Communication about Quality Issues and Recognition of Outstanding Achievements in Partnering.

The first issue of the quarterly OTQI Newsletter, published in March 1994, highlighted results of the Statewide Conference and contained offers to assist in developing new partnerships, especially in interagency issues.

The follow-up Statewide Quality Conference in April 1994 included training by Norm Anderson, a professional facilitator. All participants learned and committed to using the Interagency Partnering Process to resolve major barriers to increasing transportation quality in Oregon. Breakout groups identified 17 specific areas as needing improvement. The forum also served to develop concepts for Regional Quality Conferences.

Partnership Initiatives

As part of the 1994 initiative, ODOT began to hold annual partnering meetings with bridge contractors, concrete suppliers, and asphalt concrete suppliers and producers to identify ways to improve the quality of construction and design.

Regional conferences were held around the State in 1994 and 1995. Breakout groups continued to use the concepts of Interagency Partnering to identify local issues needing improvement. The conferences were a valuable resource in identifying a major statewide issue for resolution—the need to streamline the project development process for Federal-aid Local Agency Bridge projects.

The First Annual OTQI Achievement Award was instituted in May 1995. The first winners were F.E.Ward and the ODOT Newport Crew for the first formal Oregon construction partnering effort to rehabilitate the Yaquina Bay Bridge.

In May 1996, the OTQI Achievement Award was expanded to include categories for Construction Partnering and Interagency Partnering. The 1996 winners in the Construction Category were Hamilton Construction and the ODOT Klamath Falls Crew for the Greensprings-Midlands Junction Project. Ch2M Hill and Jackson County won for the first Design Partnering effort in the Interagency Category.

Between June 1995 and February 1996, five groups of six representatives of all agencies were involved in developing Local Agency Bridge Project work to streamline and improve the quality of the processes and projects. The result of that effort is a new publication, the *Local Agency Project Manual.* To illustrate the success of the groups' effort, the time for processing these projects has been cut by at least 30 percent. Additionally, the concepts of improved scoping, early involvement of review agencies, and direct communication by all parties have proved successful and are now being used on local projects, in addition of bridge projects.

The 1995 OTQI newsletter carried stories on four new partnering efforts between agencies that have never "partnered" before.

By 1996, OTQI emphasis on partnering has become central to the normal business practice in many areas of transportation planning, development, and operations, particularly with the ODOT. Virtually every significant effort undertaken that used the partnering process has yielded significant improvements in quality and efficiency. As an outgrowth of the successful implementation of the Quality Initiative in Oregon, ODOT began a very significant Department-wide program. The ODOT developed six major Strategic Goals to guide future transportation development throughout the State, one of which included an objective that all ODOT Regional Divisions initiate at least two new interagency partnering efforts each year as part of their business plan response to the Strategic Goals. The first year report shows an average of 10 new partnering efforts in each region. Examples of how partnering has become integrated into the everyday operations of the key transportation agencies in Oregon include agreements to share equipment and equipment maintenance facilities with local agencies, and trading sections of local- and State-owned roads for winter snow removal where equipment and work force availability show it is more efficient to maintain each other's roads.

In 1996, ODOT Region 1 began using contractor QC specifications on all projects. By the end of the year, all ODOT Regions had learned from that Region's success and began employing QC/QA specifications on their projects.

In 1996, the OTQI Advisory Committee also funded and provided organizational support for three more initial partnering efforts by local agencies and ODOT subdivisions. The OTQI Newsletters highlighted the results.

PLANNED QUALITY EFFORTS

The 1997 OTQI Achievement Award will include categories for Construction Partnering and Interagency Partnering.

The quarterly OTQI Newsletter will continue to publish highlights of new and effective partnering efforts and increased quality in transportation.

The OTQI Advisory Committee will fund new initial uses of partnering including a Pilot FHWA-ODOT Partnering Session in Region 4, Wasco County Winter Maintenance Partnering in District 9, and a Region 1 QC/QA Partnering Session with contractors and suppliers

In early 1998, the OTQI Advisory Committee will use the occasion of the Oregon Transportation Conference to present a summary of OTQI achievements and offers for further assistance and funding for new partnering efforts.

The OTQI will begin a new effort to assist local agencies to begin both construction and interagency partnering efforts. Assistance will focus on organizing and funding a construction partnering session in Washington County in April 1997; an interagency

partnering session with Jefferson County and ODOT Region 4 to arrange co-location of maintenance forces and sharing of equipment; and a partnering session with Jackson County and ODOT District 8 to develop a roadside vegetation management and maintenance program for the Upper Rogue River Valley in southern Oregon.

The OTQI will also focus on partnering and quality efforts at the statewide level with AGC and concrete and asphalt associations and suppliers, and will continue to promote regional partnering when possible.

CONTACTS AND PHONE NUMBERS

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Bruce Johnson, Bridge Engineer, FHWA-Oregon Division, 503-399-5749

Advisory Committee Co-Chairs:

Tom Lulay, Technical Services Managing Engineer, Oregon DOT, 503-986-3302

Hank Honeywell, Division Administrator, FHWA-Oregon Division, 503-399-5749

PENNSYLVANIA

PARTNERS

Charter members of the Pennsylvania Quality Initiative (PQI):

Pennsylvania Department of Transportation (PennDOT)

American Concrete Pavement Association

American Public Works Association

Associated Pennsylvania Constructors (APC)

Consulting Engineers Council of Pennsylvania

Pennsylvania Aggregate and Concrete Association (PACA)

Pennsylvania Asphalt Pavement Association (PAPA)

Pennsylvania Turnpike Administration (PTA)

Federal Highway Administration-Pennsylvania Division

Members include:

Pennsylvania Association of Asphalt Materials Applicators (PAAMA)

Pennsylvania Chapter of the American Traffic Safety Services Association (PATSSA)

Members may include other transportation-related associations and organizations that meet the criteria for membership.

CURRENT QUALITY EFFORTS

The Pennsylvania Quality Initiative (PQI) Charter contains the following goals and objectives:

Customer Service

- Identify customer expectations, determine present level of service, and develop a plan for reaching desired levels.

- Market Research will be used to understand the public/citizen concerns about ride quality, etc.

New Technologies/Technology Transfer

- Identify and prioritize quality issues of mutual concern to the transportation industry and address through appropriate committees.
- Develop Product Evaluation Review Board
- Maximize the transportation infrastructure investment through better system and individual product performance and better use of encouraging technology and innovation.
- Re-Engineering of new product process which reduces average cycle time for the evaluation and increases level communication and awareness between the Department and its customers.

Communications

- Provide the network for continued communications among stakeholders so mutual concerns and best practices are identified and addressed to meet customers' expectations and provide quality measures of performance.
- Develop and promote a continuing communication tool to keep all stakeholders apprised of activities pertaining to PQI and exchange information.
- Develop closer working relationships between PQI and academia to facilitate technology transfer, training, and sharing of information.
- Increase public awareness of PQI's quest for quality and then deliver it. Use a variety of media including press releases, a PQI web site, and Quality showcasing (through banners, stickers, buttons, etc.) to increase public awareness.

Training

- Perform a training needs analysis of industry stakeholders.
- Coordination with the Research Division is proceeding. A Problem Statement has been developed and submitted.
- Conduct training on new technologies, materials, and procedures of value to the transportation industry.

Bench Marking

- Investigate how other industry approaches to quality can be applied to PennDOT.
- Internal and External Bench Marking Processes will compare PQI to itself and to the status of other States' Quality programs.

Specifications

- Compare current PennDOT and contractor QA procedures with the AASHTO *QC/QA Specification and Implementation Guide*. Determine if current procedures and practices should be changed to promote quality and advance a cooperative relationship between the public and private sectors of the transportation industry.
- A need has been identified to rewrite the PennDOT *Specification Manual* in a more user-friendly format.
- Implementation time for new and revised specifications is being studied.

Reward/Recognition

- Develop programs to seek out, recognize, and reward quality innovations.
- The PQI Awards Program recognizes six areas of quality in PA transportation.

PLANNED QUALITY EFFORTS

The PQI will continue to focus on the goals and objectives listed above. It will also focus on Research and Implementation on the administrative side of business to improve external relationships, communication, and business practices with our partners. Research and Training will continue to be important in future quality efforts. Finally, PQI will focus on becoming a Virtual Organization, which will be able to go to the industry and ask them to improve equipment, for example, for better overall ride quality, safety, etc.

CONTACTS AND PHONE NUMBERS

Rich Harris, Customer Service Subcommittee, 717-783-1068

Gene Olinger, New Technologies/Technology Transfer Subcommittee, 717-782-3801

Hank Heck, Communications Subcommittee and Award/Recognition Subcommittee, 717-238-2513

Bob Peda, Training Subcommittee, 717-787-7894

Sumathi Ravindra Raj, Bench Marking Subcommittee, 717-783-9668

Geoff Clarke, Specifications Subcommittee, 814-766-2211

PUERTO RICO

PARTNERS

Puerto Rico Highway and Transportation Authority (PRHTA)

Grainer Caribe, Inc.

Jusor Construction Corp.

Redondo Construction

Rexach Construction

Carro Construction

Federal Highway Administration-Puerto Rico Division

CURRENT QUALITY EFFORTS

Erosion Control Initiative

Although new highway construction projects in Puerto typically cross mountainous, rocky terrain, the public, Federal, and local regulatory agencies have not historically perceived erosion as a fundamental problem on these construction projects.

Two years ago, the PRHTA began construction on a 25-kilometer section of PR-10 between the municipalities of Adjuntas and Ponce. Construction on this section is parallel to and very close to the Portugues River. Also, the Corp of Engineers is constructing a dam very close to the southernmost part of project. The soil on this area is generally very fine graded, which has high potential for erosion.

Soon after the construction began, there was significant erosion of soils, sedimentation of the river, and possible risks to residents downstream. This prompted the FHWA Division to request that PRHTA address this situation.

The PRHTA contracted with Grainer Caribe, who immediately visited the projects and developed detailed erosion-control plans. The contractors were made aware of the need to improve their erosion-control practices and new items, when not included in the original contracts, were created for the erosion-control devices recommended by Grainer Caribe.

PLANNED QUALITY EFFORTS

As a result of this experience, PRHTA is taking a stronger position to guarantee that plans and contracts for new construction provide adequate erosion-control measures, specifications, and pay items. As evidence, two subsequent projects involve very good erosion control throughout.

CONTACT AND PHONE NUMBER

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RHODE ISLAND

PARTNERS

Rhode Island Department of Transportation (RIDOT)

Rhode Island Department of Administration—Office of Purchases

Construction Industries of Rhode Island

Rhode Island Consultant Engineers Council

Federal Highway Administration-Rhode Island Division

CURRENT QUALITY EFFORTS

The Rhode Island Director of Transportation formulated a team to address issues that may have contributed to excessive and unexpected construction contract cost increases.

Change order documents and instructions were modified to improve the content of the documents and the approval process, and to exercise better control of discretionary contract changes.

The need for major and repetitive changes in construction contracts will now be analyzed with appropriate feedback to designers. Feedback would relate to major contract quantity changes, changed conditions, unbuildable designs, and plan errors or omissions.

VE Initiatives

VE was endorsed for design but deferred for construction. VE for design will continue to be performed by RIDOT independent staff except on major projects where external VE team services will be engaged.

Contractor prequalification was revisited but will only be implemented on major projects requiring specialized experience, equipment, and personnel.

PLANNED QUALITY EFFORTS

- The team will reevaluate implementation of VE on construction contracts.
- Additional study will be undertaken to formalize procedures for processing what are determined to be design errors.
- Procedures will be reviewed to shorten the time frame for completing, approving, and processing change orders.

- Quantity estimating procedures will be reviewed to determine whether consultants should guarantee a level of accuracy that will minimize changed conditions claims.

CONTACTS AND PHONE NUMBERS

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SOUTH CAROLINA

PARTNERS

South Carolina Department of Transportation (SCDOT)

South Carolina Asphalt Paving Association

Clemson University

Federal Highway Administration-South Carolina Division

CURRENT QUALITY EFFORTS

Asphalt Pavement QC/QA Initiatives

The objective of this quality improvement effort is to develop a comprehensive QA program to improve the quality of asphalt mixes placed in South Carolina. It is recognized that to be successful, this effort must have the full support and cooperation of the asphalt paving industry. To achieve this, a 13-member task force was appointed. Task force members include six representatives from private industry, six from SCDOT, and one from the FHWA. A Clemson University faculty member moderates the task force.

The mission of the task force is to develop QC/QA detailed specifications that include sampling plans and test procedures for all three phases of quality assurance—quality control by the contractor, quality acceptance by the State, and independent assurance testing. This effort is being closely coordinated with an ongoing effort to train and certify contractor personnel in the areas of asphalt mix design and testing. This training and certification program resulted from a cooperative effort between contractors and SCDOT.

PLANNED QUALITY EFFORTS

As the potential benefits from this effort have become more apparent, the SCDOT has formed two additional joint committees. Each committee involves FHWA, SCDOT, and private industry representatives who are initiating efforts to develop QC/QA specifications for concrete and aggregates. The success of each of these efforts depends upon the full support and cooperation of private industry.

CONTACT AND PHONE NUMBER

David Law, Technology/Systems Engineer, FHWA-South Carolina Division, 803-253-3886

PARTNERS

South Carolina Department of Transportation (SCDOT)

South Carolina Asphalt Paving Association

Federal Highway Administration-South Carolina Division

CURRENT QUALITY EFFORTS

In an effort to provide better performing pavements, SCDOT has adopted the use of Superpave for all Interstate paving projects. To date, seven paving projects (totaling more than 244,890 megagrams) have been let that specify Superpave, and three additional projects have been authorized but are not yet awarded. Prior to switching to Superpave, several meetings were held with the asphalt paving contractors to discuss the basic principles of Superpave, as well as the reasons for switching from Marshall mixes to Superpave.

The SCDOT has purchased and equipped two mobile trailers with gyratory compactors. These trailers will be used to monitor field verification of Superpave mix properties. The value of these trailers was demonstrated when the FHWA's asphalt trailer spent approximately 6 weeks at the contractor's asphalt plant during one of South Carolina's major Superpave paving projects. SCDOT's trailers, while scaled down from the FHWA trailer, will be used for the same purpose.

PLANNED QUALITY EFFORTS

The FHWA, SCDOT, and industry will closely monitor the performance of Superpave, as well as continue to work together to improve its constructability. In response to expressed concerns by the contractors, a series of short test sections will be constructed this spring on Interstate-95 to evaluate a number of construction and mix design variables that may improve the compactability of Superpave mixes. The design of these test sections was a collaborative effort between the FHWA, SCDOT, and the contractor. A report summarizing the results of these test sections will be prepared by the FHWA and SCDOT and made available to all asphalt paving contractors. Current plans are to specify Superpave on all NHS paving projects beginning in 1998.

CONTACT AND PHONE NUMBER

David Law, Technology/Systems Engineer, FHWA-South Carolina Division, 803-253-3886

PARTNERS

South Carolina Department of Transportation (SCDOT)

Private Industry (prime contractor and numerous subcontractors)

Utility Companies

Federal Highway Administration-South Carolina Division

CURRENT QUALITY EFFORTS

Partnership Initiatives

A partnering agreement was developed for a major contract to reconstruct the Interstate-26/ Piney Grove interchange in Columbia. The objective of this quality improvement effort was to construct a quality project safely, on time, and within budget. A partnership charter was developed and signed by all participating parties. The charter calls for:

- Resolving issues at the lowest possible level.
- Eliminating utility delays.
- Maintaining effective communication.
- Encouraging cost savings through VE.
- No claims.
- Keeping the public informed and reducing inconvenience to motorists and businesses.

In large part, because of this successful partnering agreement, the project was completed on time with no claims. VE proposals were approved that saved more than $120,000. The prime contractor won a national award for the construction of this project as well, further tribute to the success of this process. Finally, numerous compliments were received from the public regarding the timeliness of the work and the appearance of the completed project.

PLANNED QUALITY EFFORTS

Because of the success of the partnership agreement for this project, a number of partnering agreements have been developed, or are in the planning stages, for other construction projects where appropriate. The success of this process has generated a receptive attitude within the highway community.

CONTACT AND PHONE NUMBER

Derrell Turner, Operations Engineer, FHWA-South Carolina Division, 803-253-3883

SOUTH DAKOTA

PARTNERS

South Dakota Department of Transportation (SDDOT)

Asphalt and Aggregate Suppliers

Asphalt Paving Contractors

Associated General Contractors of South Dakota

National Asphalt Pavement Association

Federal Highway Administration-South Dakota Division

CURRENT QUALITY EFFORTS

Asphalt QC/QA

The partners listed above have formed an HMA QC/QA specification and the framework for a technician certification program. Executive Quality Assurance Seminars sponsored by the Minnesota Asphalt Pavement Association (MAPA) and the FHWA were presented at four South Dakota locations. Speakers represented the MAPA, the SDDOT, NAPA, the FHWA, the AGC, and the Dakota Asphalt Pavement Association. Each speaker emphasized support and the importance of the quality initiative being implemented nationally and in South Dakota. The QC/QA specification is being used on seven projects that encompass approximately 25 percent of the asphalt being placed under the SDDOT.

PLANNED QUALITY EFFORTS

The SDDOT entered into an agreement with the MAPA and the AGC of South Dakota to provide technician certification training. When the training is completed this winter, more than 210 technicians will be certified in at least one of the four levels contained in the SDDOT's QC/QA Certification Program. The goal is to include the QC/QA specification in 50 percent of the 1998 construction projects and in nearly all of the projects constructed in 1999 with more than 9,070 megagrams of asphalt.

CONTACT AND PHONE NUMBER

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PARTNERS

South Dakota Department of Transportation (SDDOT)

General Contractors and Subcontractors

Utility Companies

Local Governments

Federal Highway Administration-South Dakota Division

CURRENT QUALITY EFFORTS

Partnership Initiatives

SDDOT has developed a special provision to use informal partnering on many smaller projects that do not warrant the time and resources of formal partnering. The objective of this special provision is to encourage the foundation of a cohesive informal partnership between the SDDOT, the contractor, and its principal subcontractors. The partnership is intended to be structured to draw on the strengths of each organization to identify and achieve reciprocal goals. The objectives are effective and efficient contract performance, on schedule, and according to the plans and specifications. The partnership is bilateral in makeup, and participation will be voluntary. It is intended that the informal partnership be achieved through weekly meetings with all personnel involved in the project. Utility companies and local government representatives are encouraged to attend and participate. The meeting forum is intended to improve communications, help all parties stay abreast of crucial issues, and to effect a mutually respectful and professional working relationship with all affected parties. Because the informal partnering sessions are not intended to require full-facilitation meetings to get things started, there are no direct costs associated. The partnering process is intended to begin at the preconstruction meeting and continue through the course of the project to completion.

PLANNED QUALITY EFFORTS

The SDDOT will continue use and application of informal partnering wherever possible.

CONTACT AND PHONE NUMBER

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PARTNERS

South Dakota Department of Transportation (SDDOT)

General Contractors and Subcontractors

Federal Highway Administration-South Dakota Division

CURRENT QUALITY EFFORTS

Post-Construction Review

SDDOT has initiated a post-construction review program where SDDOT representatives and the contractor meet to reexamine the designs, plan preparation, field activities, and construction procedures to determine what procedures work best and what could be improved. These reviews include all SDDOT members from roadway and bridge design involved in the project, as well as all field inspection and project management personnel. The contractor and any main subcontractors are encouraged to include all key field personnel involved in the project. Any other agencies or companies that had an interest or a responsible part in the completion of this project are also invited to attend these reviews. This may include local government and utility companies. By revising these design and construction procedures, it is anticipated that future projects will be built with the contractor having a better understanding of SDDOT expectations and the Department better understanding the contractor's intent of completing a project.

PLANNED QUALITY EFFORTS

SDDOT plans continued and increased use of these reviews on future projects .

CONTACT AND PHONE NUMBER

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TENNESSEE

PARTNERS

Tennessee Department of Transportation (TDOT)

Metropolitan Planning Organizations

Regional Transit Authority

Tennessee Road Builders Association (TRBA)

Tennessee Ready Mixed Concrete Association (TRMCA)

Tennessee Trucking Association

Southeast Chapter of the American Concrete Pavement Association

American Automobile Association

Federal Highway Administration-Tennessee Division

CURRENT QUALITY EFFORTS

Quality Workshop

In February, the FHWA Division hosted the 1997 Quality Workshop, which was attended by the entire Division and TDOT senior managers, as well as representatives of several MPOs and the highway design and construction industries. This workshop was dedicated to improving the quality of transportation products and services. The session began with remarks by the FHWA Regional Administrator, Leon Larson; TDOT Commissioner, Bruce Saltsman; and Tennessee Division Administrator, Jim Scapellato. The featured speaker was Director of the Arizona Department of Transportation, Larry Bonine. Mr. Bonine is recognized nationally for his vision, leadership abilities, and dedication to improving quality through innovative techniques. The program also featured a variety of transportation officials and a panel discussion with questions and answers. The final activity was a series of breakout sessions based on the results of the NQI National Highway User Survey. Each breakout group was given the assignment of identifying the three most important tasks in one of five key performance areas that the FHWA and TDOT should undertake in the coming year. Following this meeting, FHWA staff evaluated the results from these sessions and developed goals and initiatives for the coming year.

Joint Process Reviews

The FHWA Division and TDOT took a historic step when Commissioner Saltsman and then Division Administrator, Dennis Cook, signed a joint agreement that formally committed both agencies to a partnership for conducting process reviews. This partnership is the first formal one between the two agencies, and at the time it was signed, it was believed to be the only such partnership in the nation. Under the terms of the agreement, both agencies will jointly select process review topics, conduct the reviews, plan remedial actions, and write the reports. The agreement was met with enthusiastic support by both the TDOT and FHWA employees. The six projects selected for this year include contract bridge repair construction inspection; review of projects funded with STP Optional Safety money; project documentation; concrete ramps; time charges and extensions; and verification and acceptance of bituminous mixes.

Superpave Implementation

In June 1997, TDOT opened bids for five additional Superpave projects. Currently, TDOT has three projects under contract, awaits award of these five additional projects, and plans to construct twenty-five Superpave projects during the 1998 construction season. The eight current projects are geographically distributed so that there are two projects in each of TDOT's four regional offices, which provides a majority of the contractors and TDOT staff with experience in handling Superpave mixes throughout the State.

Superpave Evaluation and Implementation Team

TDOT has formed a Superpave Evaluation and Implementation Team to facilitate communication on current and future Superpave projects. This team will evaluate the process and data currently available at TDOT, resolve key issues regarding implementation, determine additional information or data needs, and consider other State highway agencies' and industry experience as members make recommendations for a Superpave implementation plan for Tennessee. The team includes representatives from the FHWA, TRBA and TDOT.

HMA Construction Training

FHWA Division staff have been instrumental in teaching a portion of the 3-day HMA Construction Course. The main goal of this program is to provide the participants with a working knowledge of the HMA construction process and to help them understand the effects of construction on the final product. This course will become even more essential in the near future as TDOT will require a certified individual on each project beginning in January 1998.

Right-of-Way Issues Workshop

In March, 1997, Right-of-Way staff planned and facilitated a workshop to discuss several right-of-way issues, including level of staffing, use of acquisition consultants, training, appraisal waivers, underground storage tanks, and utility relocation. Of particular interest was a suggestion for initiating regular meetings with utility companies. To date, this effort has been successful in reducing delays to projects caused by utility relocations.

Design Issues Workshop

In July 1997, the FHWA and TDOT hosted a workshop to discuss problem areas related to design and to find solutions to these problems. Seven topics identified for discussion were design concepts; PS&E submissions; quality of plans; right-of-way widths; plan development; safety features and safety hardware; and exempt and certification acceptance projects. One of the most beneficial results of the workshop was that FHWA staff were able to facilitate the discussions among different TDOT divisions and assist them in resolving some internal communication problems.

Concrete Open House

The Southeast Chapter of the ACPA hosted an Open House in Jackson in June 1997. The topic, "A look at Unbonded Overlays as part of PCC Resurfacing Strategies," was sponsored by TDOT, ACPA, FHWA, TRMCA and TRBA. Opening comments were made by TDOT Bureau of Planning and Development Director, Bill Moore; FHWA Regional Administrator, Leon Larson; and ACPA President/CEO, Marlin Knutson. Presentations included such topics as PCC resurfacing, Ultra-thin whitetopping, unbonded overlays, and HPC pavements. In addition, participants made a field trip to an active PCC unbonded overlay project on Interstate-40 in Madison County.

PLANNED QUALITY EFFORTS

Demonstration Project 90

Demonstration Project 90, "Superpave Asphalt Mix Design and Field Management," was designed to demonstrate the concept of volumetric properties for field quality control and other innovations. One of the fully equipped mobile asphalt laboratories was in Memphis during August 1997. The laboratory was set up in conjunction with an active project constructed by APAC, Inc. The trailer was used as a showcase and hands-on learning tool for State and industry representatives from Tennessee, Arkansas, and Mississippi.

Development of Quality Goals

In September 1997, as a part of Region 4's initiative, the entire FHWA staff will participate in a half-day session to develop measurable goals for the Division. This session follows the

original quality workshops held in 1996. It is anticipated that the FHWA Division will be responsible for setting its own goals and objectives and must account to Congress, the public, and Headquarters about the progress in meeting these goals. This session should provide the framework for the development of these goals.

CONTACTS AND PHONE NUMBERS

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TEXAS

PARTNERS

Texas Department of Transportation (TxDOT)

Associated General Contractors of America

Texas Hot Mix Asphalt Pavement Association (THMAPA)

Texas Aggregates and Concrete Association (TACA)

Texas Chapter-American Concrete Pavement Association (TACPA)

Texas Public Works Association (TPWA)

Texas Transportation Institute (TTI)

Center for Transportation Research (CTR)

Consulting Engineers Council of Texas

Federal Highway Administration-Texas Division

CURRENT QUALITY EFFORTS

Quality Conferences

Since 1995, the partners in the Texas Quality Initiative (TQI) have held annual conferences to focus on teamwork, quality, and innovation. To meet the needs of the partners, the last two annual conference formats have been modified to include breakout sessions. Each session focuses on an issue or topic. The members of the breakout sessions form teams that develop action plans to address the issue or topic and then report their results to the next year's conference.

In February 1997, the conference took place in Corpus Christi and participants represented State and Federal agencies and private industry. Teams from the 1996 conference reported on their progress, including specification changes for QC/QA, efforts to better identify and use VE in construction and design, and revising the use of State standard plan sheets. Some of the team issues for the 1997 conference included the feasibility of electronic bidding, application of QC/QA to concrete, and use of recycled materials. Proceedings from this year's conference are available from TxDOT.

Achievement Awards

As part of the annual conference, and to demonstrate and publicize its commitment to excellence, the TQI Steering Committee inaugurated The Texas Quality Initiative

Achievement Awards, a formal process that recognizes outstanding achievements in the construction transportation community. Awards were given to projects, products, or processes in three TQI award categories for Teamwork, Quality, and Innovation. A fourth award was presented to the team from last year's TQI conference that best represented teamwork.

The evaluation criterion for Innovation was "the use of new approaches to highway-related work, which can include material, technological management, human resources, and other initiatives, and how such approach contributed to the quality of the project, product, or process." The award in this category went to the team that developed Asphalt Release Agents category, including testing procedures. The Fort Worth District was recognized for the work to develop this category of materials and testing parameters that is now used by all Districts to approve materials used in asphalt construction activities. Asphalt Release Agents is a category of materials replacing diesel and solvents used in hot mix asphalt concrete applications that aid in removing mix from plant equipment, truck beds, and all equipment used in the laydown operations. Before developments by the Fort Worth District, there are no TxDOT or national test procedures for release agents. As a result of their work, the team developed a test procedure, and members are working with suppliers and manufacturers to develop products that will meet TxDOT requirements. Their effort has promoted partnering with the private business, the construction industry, and helped provide a quality product to the traveling public.

PLANNED QUALITY EFFORTS

As mentioned, the steering committee is already planning the 1998 conference, and its structure will be similar to the ones in the last 2 years. A breakout session in this year's conference, "Making TQI More Successful—Communication, Marketing, etc.," involved the breakout group looking at ways to increase private industry participation in the TQI by developing topics that specifically interest them. Possible recommendations may affect the structure of the TQI conferences or how it attracts the participants. As noted from this year's and last year's conferences, TxDOT's participation exceeds that of private industry and subjects related to nonconstruction are limited.

TxDOT provides information and status reports from the TQI teams on its web page available at http://www.dot.state.tx.us/tdotnews/tdotnews.htm

Information regarding the 1998 conference will also be on the TxDOT web site.

CONTACTS AND PHONE NUMBERS

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UTAH

PARTNERS

Utah Department of Transportation (UDOT)

Materials Testing Firms

Portland Cement Concrete Ready Mix Industries

Portland Cement Manufacturer

Federal Highway Administration-Utah Division

CURRENT QUALITY EFFORTS

Utah Quality Initiative in Transportation—Materials Team

The UDOT also has a permanent Quality Initiative Steering Committee composed of representatives from UDOT and private industry. Numerous Quality Initiative Teams (QIT), most notably in the construction area, have been created to solve specific problems. Initiatives developed in a previous QIT on Pre-Design/Design resulted in several quality improvements. In addition, the UDOT maintains a close working relationship with its local AGC office.

The Materials Team, which has formed a number of task groups to deal with specific issues, is the most active UDOT Quality Initiative Team. Current members include the UDOT materials, pavement, and concrete engineers, the Construction Division, and representatives from PCC ready mixed industries and a portland cement manufacturer.

Most recently, the Materials Team initiated a Materials Assurance Program (MAP) to develop a comprehensive, coordinated materials program with industry. The MAP will identify and update sampling and testing requirements, accreditation procedures for qualifying personnel and equipment, and other areas.

The UDOT and FHWA Division jointly developed a FY97 Stewardship Plan and will use the document to monitor quality improvements in various areas. The focus of the plan is the success of the $1.59 billion Interstate-15 design-build reconstruction project. Several quality innovations are incorporated into the project, including performance specifications, contractor QC/QA responsibilities, and award fees.

Other Initiatives

In 1994, UDOT held a quality initiative conference. Since that time, the Department has developed and implemented a new QC/QA specification for asphalt concrete pavements, updated the PCC pavement specification (not QC/QA), made additional and more current

information available to contractors, consultants, and the public through the UDOT's and the FHWA Division's Internet web sites. It also recently held a seminar on the corrosion of reinforcing steel in concrete.

The UDOT routinely uses a formal partner program on major construction projects.

In 1996, the Utah Division received the Quality Commitment Award for its efforts on the quality journey.

PLANNED QUALITY EFFORTS

UDOT plans to develop a QC/QA specification for PCC paving and a certification program for private sector materials sampling and testing personnel, and also to develop and implement upgraded management systems for the acceptance of manufactured products.

UDOT is the host of the National Quality Initiative Conference in Salt Lake City in November 1997.

CONTACT AND PHONE NUMBER

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VERMONT

PARTNERS

Vermont Agency of Transportation (VAOT)

Vermont Department of Personnel

Associated General Contractors of Vermont

Boswell Engineering

Clough, Harbour & Associates

DuBois & King

Greenman-Pederson, Inc.

Vanassee Hangen Brustlin

Webster-Martin, Inc.

Gannett-Fleming, Inc.

URS Grenier, Inc.

Peters Construction Consultants, Inc.

Federal Highway Administration-Vermont Division

CURRENT QUALITY EFFORTS

The Vermont AOT and its partners in the FHWA, AGC, ACEC, other State agencies, and industry, has organized two State Quality Initiatives. The evaluations from both programs were extremely positive and the participants felt this initiative should be repeated.

In 1994, more than 200 people participated in the Quality program, which provided an overview of ongoing quality initiatives including partnering, TQM, and team building. The 1995 "Partnering for Quality" session focused on partnering training and application. Participants applied the concepts learned by working through real project issues in the major areas of environment, maintenance, design and construction.

In February1997, the VAOT, FHWA, and industry sponsored a quality round-table session to partner with industry and ensure a quality product by developing cooperative working relationships. The two objectives for the session were to develop an action plan that identifies the best way to use VAOT and consultant personnel, and to identify issues and

tools needed to implement the plan. The session included a panel discussion, brainstorming, and breakout groups. Participants developed solutions and defined the action steps that will assist in finalizing the agenda for the upcoming training session for industry and ensure a successful 1997 construction season and quality products.

PLANNED QUALITY EFFORTS

One of the issues addressed at the recent quality round table was the type of training necessary for both VAOT personnel and consultants to work effectively on implementing the year's construction program. This is essential as the VAOT changes the way it does business and relies more on industry to help deliver the program. The VAOT plans to bring 60 to 80 representatives from VAOT, the FHWA, and industry for a 2-day session to ensure everyone has the necessary tools to produce a quality project. The training session is scheduled for April 1997.

A Quality Partnering Session is planned for fall 1997. The purpose of this major quality conference will be to tie together the previous two quality sessions and build upon earlier quality initiatives. This 2-day conference will highlight quality initiatives in transportation, accomplishments, and future challenges. The VAOT will incorporate the feedback from its Round Table and Training Session as one major component of the conference. The highlight of the conference will feature national and regional speakers who can share results of others in the quality journey as well as their own quality vision and experience. The Vermont AOT plans to invite 200 to 300 partners from the transportation industry, including municipalities, the FHWA, consultants, contractors, and suppliers. This conference will be an opportunity to strengthen existing relationships and establish goals and objectives for our quality journey.

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VIRGINIA

PARTNERS

Virginia Department of Transportation (VDOT)

Virginia Road and Transportation Builders Association (VRTBA)

Federal Highway Administration-Virginia Division

CURRENT QUALITY EFFORTS

VDOT has a long history of direct VDOT/industry cooperation. Central to this effort is the Highway Cooperative Committee, which consists of senior managers from VDOT, the FHWA, and VRTBA. The committee addresses policy and program-level issues related to the VDOT construction program.

Technical cooperative committees between VDOT, the FHWA, and industry address technical issues related to material specifications, technician certification, design, construction, and other program level issues in the areas ready mixed concrete, aggregate, pre-cast concrete, HMA, and concrete pavement.

The annual spring workshop between VDOT and VRTBA attracts 300 to 500 attendees.

PLANNED QUALITY EFFORTS

The recently formed VRTBA/VDOT NQI Committee includes representatives from VDOT, VRTBA, the FHWA, the concrete pavement association, asphalt pavement association, ready mixed concrete association, precast concrete association, and aggregate association. VDOT anticipates that this committee will be the umbrella for NQI-related activities.

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WASHINGTON

PARTNERS

Washington State Department of Transportation (WSDOT)

American Public Works Association

Asphalt Pavement Association of Washington

Associated General Contractors of America

Consulting Engineers Council of Washington

Northwest Chapter, American Concrete Pavement Association

Washington State Transit Association

Washington State Transportation Center

Federal Highway Administration-Washington Division

CURRENT QUALITY EFFORTS

Washington Quality Initiative (WQI)

The WQI remains an active element of the National Quality Initiative, and the FHWA Division is an active participant in its efforts. Historically, the transportation industry partners in the State of Washington routinely participate with each other to coordinate, develop, and implement a program that would best deliver the results of their combined efforts to the traveling public. Because of their widespread activities and the considerable successes of these programs, it was initially very difficult to evolve a WQI program that would demonstrate continued improvements. Rather than try to care for the activities and programs already contained into the system, the WQI steering committee has continued to search for new ways to improve the program and demonstrate quality initiatives. Specifically, the steering committee has sought to add value to an already enviable program.

Results of the WQI efforts for the past year include presentation of the first annual Washington Quality Initiative Achievement Award, in May at the AWWA/APWA Conference in Bellevue. The 1996 award recognized the Atkinson Construction and WSDOT for their efforts in constructing the Interstate-405 Renton S-Curves HOV project.

The WQI Newsletter has proved a vital communication link with the many WQI partners around the State (and beyond). Published quarterly, this newsletter keeps the recipients current with WQI directions, activities, and accomplishments.

WQI has been added to the WSDOT web site. Included with other WSDOT news, and linked with quality information, the http://www.wsdot.wa.gov/ address provides a widespread electronic connection.

Four of the original six regional teams remain active and continue to pursue process improvements opportunities. To date, the teams have dealt with standardizing construction procedures, improving specification language, and developing tourism signing standards.

Completion of the WQI Survey provided valuable feedback to the steering committee, and it is providing direction in the continuing efforts.

Steering committee subgroups have undertaken tasks to address metrication and a statewide transportation conference have.

WQI: A Continuing Plan provides an overall snapshot of the WQI efforts. It is a statement of WQI's mission and overall purpose and outlines completed and ongoing activities.

PLANNED QUALITY EFFORTS

The quality initiative is a continuing, ongoing effort. The WQI will continue to pursue its ideas and in the future will concentrate more heavily on supporting the efforts of the regional teams and more effectively marketing and publicizing the effort.

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WEST VIRGINIA

PARTNERS

West Virginia Department of Highways (DOH)

American Association of State and Highway and Transportation Officials

American Road and Transportation Builders Association

Asphalt Institute

Consulting Engineer Council

Associated General Contractors of America

American Public Works Association

National Asphalt Pavement Association

National Ready Mixed Concrete Association

American Concrete Pavement Association

Builders Suppliers Association of West Virginia

Contractors Association of West Virginia

Flexible Pavements Council

Aggregate Suppliers of West Virginia

Federal Highway Administration-West Virginia Division

CURRENT QUALITY EFFORTS

A History of Quality Initiatives

West Virginia quality initiatives that focus on developing transportation partnerships with private industry predate the NQI by almost 30 years. For example, in 1964, West Virginia wrote specifications that required, or permitted, highway contractors and producers to control their own processes. Before implementing what are currently called QA Specifications, highway officials met continuously with industry representatives to discuss the implications of such a specification.

This public/private partnership continues. For example, because West Virginia asphalt specifications have undergone major changes, the FHWA Division and the industry agreed to sponsor a statewide pre-construction seminar where contractors and West Virginia DOH involved in the FHWA Division's resurfacing program could meet and discuss implementation and problems perceived in these changes. This seminar has been used at the start of each of the last two construction seasons.

Quality Management Systems

West Virginia has been a national leader in using statistically based specifications, which it began implementing in the 1960s and 1970s. For example, quality management systems for aggregate use a database of quality inspection and test data from production sites. Acceptance sampling and testing frequencies are based on statistical parameters, which provide data on the variation of the measurements made on the materials produced. These databases contain several years of testing data and are used to perform risk analysis. The databases can support reducing acceptance testing needs from weekly to annually on those parameters that demonstrate the quality of the materials, not the size produced.

PCC Management Systems

Quality management systems for PCC use a database of quality inspection and test data from production sites, project sites, contractor and/or producer laboratories, and the West Virginia DOH's laboratories to drive several different subsystems that are part of the risk management of PCC use. The system documents every load of concrete delivered to a DOH I project and whether the load is accepted or rejected. Every test conducted on this concrete, whether by contractor, producer, or West Virginia DOH, is documented and cross-referenced to the production data. The statistics from this database, which contains thousands of current records and 25 years of historical data, are used to rate the production process. This rating is accomplished according to published guidelines and recognizes the control exercised by a producer. This control is demonstrated by measurements of the total solids, slump, air content and compressive strength, as well as physical parameters of the production facility itself. The data produced by all participants, based on the risk analysis, is used to judge the amount of inspection and testing necessary to minimize risks. Producers exercising "good" control require less attention.

QA Specifications

QA specifications allow the producer to select material compositions and to develop mix proportions, provided that those proportions produce parameters that comply with job requirements. The statistics that govern the "overdesign" criteria are developed from the database discussed above. This system is similar to the system subsequently adopted by ACI.

During production this database is used to constantly monitor the strength level achieved in the field. If the data indicate that the risk of nonspecification strength is becoming greater than the specification allows, the system notifies field and production personnel to increase the cement requirements to reduce the risks of substandard strength test indicators. These

same concepts are applied to systems that fuel asphalt concrete specifications, embankment specifications, and almost all of manufactured product specifications.

A QA review process was recently established where representatives of the Materials Control, Soils and Testing Division conduct hands-on reviews of the QA processes being implemented on current work in the field. This system provides another overview of the systems implementation to ensure that acceptance processes are implemented as required by procedures and specifications.

Materials and Construction Management Systems

More recent developments include an online Materials Management System that assists contractor and DOH field personnel to keep materials control current and to provide all documentation required to properly complete materials certification of a construction or maintenance project. This system is on the cutting edge of the technology of materials control.

A Construction Management System recently developed in-house is being evaluated on several major projects statewide. This production is mainframe-driven and connects projects to the Construction Management System manager and to the Materials Management System.

Joint Steering Committee

Meetings that began with industry representatives in the 1960s continue today and have evolved to include representatives of all phases of the construction industry—producers, materials suppliers, contractors, subcontractors, and equipment suppliers, as well as appropriate State and Federal representatives. A joint committee representing the partners meets quarterly to address any needs raised.

Several subcommittees work to keep specifications and procedures current and workable. All new specifications and procedures are discussed, and sometimes debated, in these meetings prior to adoption. The asphalt, concrete, utility, and construction subcommittees are particularly active. These subcommittees and the joint committee used to meet monthly; however, through a cooperation developed from years of working together, these meetings are now quarterly, with provisions to meet "as needed." West Virginia DOH and industry representatives co-chair these meetings.

Quality Steering Committee

In response to the guidance of the NQI Steering Committee, West Virginia established a State-level Steering Committee to act as an intermediary with the national efforts. This Steering Committee membership mirrors that of the National NQI Steering Committee—AASHTO, FHWA, NRMCA, ARTBA, CEC, AGC, APWA, NAPA, and ACPA. Three seminars were conducted to introduce NQI to West Virginia; initiatives since those initial meetings are a continuation of the historical cooperative undertakings and development of new cooperative efforts. Examples of these initiatives are the various training and certification programs developed by West Virginia.

Training and Certification Initiatives

In 1964, as part of a joint industry/highway effort responding to planned specifications that required contractor process control, the State became a national forerunner in developing and conducting programs to train and certify the required technicians and inspectors. These programs include:

- The PCC Technician Training and Certification programs were developed to ensure that all testing is conducted by individuals whose efforts were directed by a certified technician.
- In response to this same specification initiative, PCC Inspector Training and Certification programs were established. It was initially for DOH use because, at the time, the Department conducted most field tests. As the QA program was fully implemented, this program became less of a DOH-only program. The inspector training and certification program will be essential to qualify testing technicians, as required by 23 CFR regulations effective in 2000.
- Similar training and certification programs were initiated for asphalt concrete technicians and inspectors. There is also a training program for aggregate technicians.
- The Compaction Technician Training and Certification programs began in the 1970s because specifications required that testing conducted as a part of that quality effort be by a certified compaction technician. During the ensuing years, the NRC accepted this course as fulfilling its requirements for safety training for those using density gauges with radioactive sources. Recent specification improvements relative to asphalt concrete require a compaction technician to be present at the pavement placement during compaction of the pavement mat.

Initiatives to develop and qualify technologists and technicians remains a joint effort with private industry.

In addition to technician and inspector training, other cooperative joint training programs are conducted on many subjects ranging from safety, to how to achieve a smooth pavement, to understanding statistics.

PLANNED QUALITY EFFORTS

Quality initiatives in West Virginia will continue to build on 30 years of commitment to ensure that highway construction projects provide the best, most affordable transportation system to its citizens.

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WISCONSIN

PARTNERS

Wisconsin Department of Transportation (WisDOT)

Wisconsin Concrete Pavement Association

Wisconsin Asphalt Pavement Association

Wisconsin Earth Movers Association

Consultant Firms and Contractors

Federal Highway Administration-Wisconsin Division

CURRENT QUALITY EFFORTS

Internal Partnerships

We are a Team committed to continuously improve our working relationships in an atmosphere of trust and open, effective communication to provide timely service and quality products that meet our customer's transportation needs.

The above quotation—one of many partnership mission statements—captures a theme that is prevalent throughout the WisDOT as employees work to strengthen both internal and external partnerships. The Wisconsin NQI Steering Committee meets quarterly and includes members from WisDOT District 1, WisDOT Bureau of Highway Development, WisDOT Bureau of Highway Construction, WisDOT Bureau of Program Management, the FHWA, Wisconsin Concrete Pavement Association, Wisconsin Asphalt Pavement Association, Wisconsin Earth Movers Association, consultant firms and contractors. Wisconsin hosted a Region 5 NQI Conference in November 1996.

In 1992, an organizational assessment of the Division of Highways identified a need for division leadership and employees to take specific steps to build partnerships among all of the important internal players in the division. As a result of that finding, partnering facilitators were selected and trained to guide the development of partnership charters between highway districts and the central office. The next step was the formation of 12 district-central office teams charged with developing and implementing these partnership charters. These teams identified goals for achieving communication, relationship objectives, performance objectives, and developed conflict resolution systems. The efforts of these teams resulted in improved cooperation between the districts and the central office—partners sharing the same goal to meet their customer's transportation needs.

External Partnerships

It was a natural progression to move from internal partnerships to strengthening the Department's external relationships. The 1997 construction season will involve 26 formal partnerships between WisDOT, industry contractors, and State and local agencies. These partners will work cooperatively to provide safe, quality projects—effectively and efficiently—with minimal negative impacts to project stakeholders and the traveling public. The 26 projects amount to approximately 25 percent of the highway program, a major increase over previous years when only 6 to 8 projects a year involved formal partnering. These partnering efforts have resulted in fewer project delays and, to date, there have been no claims on a partnered project. The Hudson Bridge project over Interstate-90 resulted in appreciable savings. It involved representatives from the Minnesota Department of Natural Resources, State Patrol, Fish and Wildlife, as well as their Wisconsin counterparts, and two municipal governments. The cooperation among the parties streamlined the process for removing Zebra Mussels from river barges, which saved the taxpayers $100,000.

Highway construction is only one of several areas where the WisDOT has partnered with external customers. A formal partnering charter was developed between the WisDOT and the Wisconsin Association of Consulting Engineers. This charter is committed to the timely, cost-effective delivery of quality transportation projects. The partnership between the Department and the Wisconsin County Highways Association is dedicated to the delivery of a safe, well-maintained, quality highway system.

Strategic Planning Initiative

Partnering is just one method that evolved from the Division of Highway's 1991 strategic planning effort, which focused on the concept of continuous improvement to meet the changing expectations of the Department's customers. The PRIME task force was the first step toward process improvement. This team was charged with evaluating the division's existing processes to identify ways to expedite process activities or eliminate those that add little value to the final product. The PRIME effort resulted in more than 90 recommendations. In 1993, the Division of Highways developed an action plan that identified key areas for improvement, which included job satisfaction, focusing on customers, making good decisions, managing production and performance, managing resources, and operating as teams. As a response, the division initiated Quality-Based Leadership. By the end of 1994, all employees had received training in the concepts and tools of Quality-Based Leadership. In addition, the division identified corporate performance measures and employees received training in the use of problem-solving and process improvement tools.

Identifying ways to streamline processes is ongoing. The most notable process change is the introduction of warranty projects. This concept moves from method to performance specifications and the contractor, not the Department, designs the asphalt mix—guaranteeing product performance for 5 years. The contractor must submit a quality control plan for Department approval and provide a bond to guarantee funds will be available to fix

any failures that may occur. This not only reduces engineering costs in the area of inspection but also encourages industry innovation in asphalt mix design. A draft PCC pavement warranty specification has been developed and is being discussed with industry for possible pilot testing in 1998. A design-build warranty structure is also planned for 1998 construction.

QC/QA Specifications

QC/QA specifications have been incorporated as normal practice for a number of years in WisDOT's Quality Management Program (QMP) specifications in HMA, concrete pavement placement, aggregate production, subgrade construction, and structures. The result is greater contractor control and emphasis on quality in construction operations. Wisconsin is now progressing to the next step in rewriting the QMP specifications. The PCC paving specifications have been updated and are in pilot testing on five projects to incorporate project specific quality control plans by the contractor, contractor mix design and process control, full acceptance testing by the contractor using performance-related criteria, new State verification testing and independent assurance testing procedures, and documented dispute resolution procedures. The move to full adoption of the new quality assurance regulations has been aided by the State's in-place technician certification program (for all State and contractor personnel) administered jointly with the University of Wisconsin—Platteville. With industry cooperation, the QMP specifications for subgrades, strength specifications for structures, and asphalt paving are also being rewritten.

PLANNED QUALITY EFFORTS

The Department is piloting the use of self-directed work teams, which will involve employee cross training, and should reduce the number of management positions. Customer surveys are also continuing as an integral tool for determining customer expectations.

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WYOMING

PARTNERS

Wyoming Department of Transportation (WYDOT)

Wyoming Contractors Association

Wyoming Association of Consulting Engineers and Surveyors

Association of County Commissioners

Wyoming Association of Municipalities

Technology Transfer Center at the University of Wyoming

Federal Highway Administration-Wyoming Division

CURRENT QUALITY EFFORTS

Partnership Initiatives

As part of the National Quality Initiative, the Transportation Quality in Wyoming (TQW) Program is a public-private partnership to make continuing commitments to a quality transportation system through quality and productivity, customer orientation, teamwork, communication, integrity, pride, and continual improvement.

A TQW Policy Statement and formation of a TQW Steering Committee were recognized in a ceremony conducted by the Governor of Wyoming in 1993. To implement the Statement, a long-range plan was developed, which provides direction, focus, and continuous emphasis on actions to be taken by each organization to ensure that the quality of highways remains a focal point. Special emphasis is on implementing six long-range plan activities:

Promote TQW through State Seminars

State Seminars supporting the TQW Policy Statement and organization partnerships have been held in 1994, 1995, and 1996. These seminars have successfully attracted attendees throughout the transportation industry and promoted quality transportation initiatives.

External Customer Survey

Customer surveys were completed in 1995 and 1996 to gauge if the quality of the highway system is changing in the opinion of the user. The data compiled by the surveys have been analyzed by the TQW Steering Committee, WYDOT, and individual local governments to determine if program priorities are properly directed.

Value Engineering

The VE program has been in place for many years, with the VECP recently added to provide monetary incentive to contractors who accomplish project contract elements at less cost or improve the quality of project contract elements at acceptable increases in cost.

Quality through Quality Control/Quality Acceptance

QA specifications have also been in place for many years with current efforts directed to outline a future QA program for materials and testing of soils and aggregates, asphalt concrete pavements, concrete pavements, and earthwork.

Partnering

The partnering program, while relatively new, has produced positive results in further promoting respect and good faith between the owner and the contractor. This contains project costs by minimizing claims, avoiding overruns, and improving the overall working environment on the construction project. Partnering is now used on the majority of large projects in the State, and was successfully used during the design/plan development of a large, complex project in Telephone Canyon.

Post-Construction Reviews

One year of post-construction reviews has been completed. This activity is structured to evaluate the adequacy of project design elements relative to construction and maintenance considerations. The results of this first year activity are currently being evaluated to identify needed improvements or refinements.

PLANNED QUALITY EFFORTS

Future quality efforts will be guided by the long-range plan as refined by the TQW Steering Committee. Other identified activities include development of Quality Measure Systems, preventive maintenance strategies for pavements, new maintenance technologies, orientation of new personnel, promoting internal quality, and promoting TQW in Wyoming.

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