

**AASHTO HIGHWAY
SUBCOMMITTEE ON CONSTRUCTION
2008 MEETING
SAN ANTONIO, TEXAS
AUGUST 3 - 7, 2008**

**Gary Ridley, Oklahoma – Chairman
Thomas Bohuslav, Texas – Vice Chairman**

MONDAY, AUGUST 4, 2008

Opening Session

Gary Ridley, ODOT, Subcommittee Chair

Welcome Address, Comments from AASHTO and Subcommittee Chair

Gary Ridley, Executive Director of the Oklahoma DOT and the Chair of the Subcommittee on Construction called the meeting to order at 8:04 am. Mr. Ridley complimented Thomas Bohuslav, TxDOT Director, Construction Division and Subcommittee Vice Chair, for the selection of San Antonio as the meeting location, and observed that many of the delegates and their families enjoyed the beautiful downtown Riverwalk area on Sunday evening. Mr. Ridley thanked Mr. Bohuslav for all of his efforts, and the hard work the entire TxDOT staff gave to organize the meeting. He then introduced the following welcoming speakers:

Amadeo Saenz, Jr., Executive Director, TxDOT, welcomed the delegates to San Antonio. He noted that the weather was 105 degrees, and would drop to 95 when the tropical storm moves through on Tuesday, along with a little rain. Texas has had to deal with several hurricanes and tropical storms over the past several years – but noted that Texas is a wonderful and diverse state with many amenities and opportunities.

Reminding the group that Texas is a large state, the size of many countries, Mr. Saenz showed pictures from the various state regions, and discussed TxDOT and its many functions including highways, rails, ferries, bridges, and more in each of the regions. He explained there are many challenges facing the Department, but the biggest is obtaining enough funding in a period where costs are rising. Transparency in operations and performance standards were also mentioned as current challenges that are being faced by TxDOT.

Mr. Saenz said he expected the Department to gain many benefits from hosting and participating in the SOC annual meeting, and expressed his best wishes to the Subcommittee for a successful meeting.

Pete Rahn, Director of the Missouri DOT and President AASHTO, is a former Director of the New Mexico DOT, and one of few transportation professionals to have led two state DOTs.

Mr. Rahn welcomed the delegates and began by sharing Missouri's recent experiences with difficult weather. Snow, ice, floods and earthquakes have created a number of challenges for MoDOT in the past year.

He thanked the participants for all of their efforts with the Subcommittee, and noted that the AASHTO leadership depends on the work of the individual committees and subcommittees to accomplish AASHTO's mission. He explained how the AASHTO process used for years has been effective in advancing important issues to the federal level.

Mr. Rahn addressed the forthcoming transportation bill. He described reauthorizations as typically trying times, but said the transportation community now faces a completely new authorization – one to be more trying than those in the past. In simple terms, he told how the United States has systematically underinvested in transportation for three decades and now its highway infrastructure is feeling the effects. He mentioned the highway industry now competes in a global economy, one in which the United States has seen a 300 percent increase in asphalt prices over the last 2½ years. Mr. Rahn discussed the need for an entirely new approach to the next transportation bill, with a funding level of at least \$500 billion if the United States is to tackle all of its highway transportation problems. He talked about performance measures as a likely part of the next bill to ensure work is performed at an acceptable level. Common performance measures in specialty areas may well be used to track performance and allow comparisons. Mr. Rahn noted that comparisons already occur, but with performance measures, further comparison would take place. In addition, a new emphasis on transit is expected, a likely reaction to the higher gas prices and public outcry.

Mr. Rahn discussed how AASHTO has developed a two-step strategy to promote the new authorization. First, the American public will be reminded that SAFETEA-LU was about not only a “bridge to nowhere” and 6,400 earmarks, but also the delivery of thousands of projects on time and within budget. Secondly, the highway community must be committed to discuss and promote the need for enhanced funding for transportation. Mr. Rahn said, “We must all be ready to explain what we have done with the resources given, and what we will do with the additional resources that we are requesting.”

Mr. Rahn observed the legacy of a great transportation system our parents and grandparents passed along to us and how this legacy is now endangered.

It was pointed out that the Federal Government needs to provide solutions for the decrease in SAFETEA-LU funding for FY09, or state agencies may face a 35% reduction in projects.

Mr. Bohuslav asked Mr. Rahn what MoDOT was doing to deal with material cost increases in Missouri. It was explained MoDOT now incorporates a concept called “practical design.” MoDOT starts at the lower end of the “green book” design standards and then adds features to ensure that the needs of the project and the public are met. This is a big change from the way most highway departments have historically operated, but hundreds of millions have been saved. The \$400 million in savings because of “practical design” are being reinvested back into the highway system to improve system quality. MoDOT has increased its good pavement condition rating from 44% in 2003 to 79% in 2008.

Ellis Powell, NCDOT asked how \$500 billion for the new authorization could be achieved. Mr. Rahn noted that the gas tax is a political issue, but the National Revenue Study

Commission determined a gas tax is the best method to raise money. To generate funds, it is expected the new bill to include a combination of Build America Bonds, Critical Commerce Corridors funded by USA Teamsters for a Democratic Union freight taxes, tolling, registration fees, and even a vehicle-miles-traveled tax in addition to the gas tax.

Gary Ridley, ODOT and AASHTO Subcommittee Chairman, provided introductory comments. Mr. Ridley equated the issues we face today in highway transportation with the same sort of predicament that faced the country before the Interstate. He discussed the controversy over the issue of taxation when proposed for the original Interstate, but a national vision and priority were achieved for the country's highway system. Today, similar ideas and concepts are needed. Mr. Ridley suggested three ways to fund the system, a general user tax, a user fee or a combination of the two. He mentioned that many local agencies have enhanced their federal and state funds with additional local resources, and now the states and the Federal Government need to step up and provide leadership. Mr. Ridley said, "We all have to take an active role if we are going to keep America moving!" He then invited the delegates to provide self-introductions. 177 persons attended the meeting.

General Session Presentations

Thomas Bohuslav, TxDOT, Subcommittee Vice Chairman

Mr. Bohuslav began the session with a review of the Subcommittee's Operating Guidelines for the benefit of the new attendees. He also reviewed the contents of the meeting packet and the planned activities for the meeting. The following presentation speakers were introduced:

FHWA General Issues – Butch Wlaschin, FHWA Director of the Office of Asset Management, and Secretary to the Subcommittee: Mr. Wlaschin discussed a number of issues of current importance to the FHWA. He first discussed the new "Buy America" requirements, which include posting information to the internet for 15 days and notifications to Congress.

He discussed a number of responsibilities that FHWA has for Stewardship and Oversight in the Federal-aid program, and a variety of specific issues in this area. The various topics in his presentation included Major Projects, which are projects over \$500 million. There are currently 67 major projects in 25 states, and a potential for 180 projects that are currently in the planning stages in 35 states. The Local Public Agency Program was identified as a "high-risk" area for FHWA stewardship. A lack of local knowledge of Title 23 requirements and a \$6 to \$8 billion distribution of funds to local government projects were cited as causes for the high-risk determination. Mr. Wlaschin discussed the Emergency Relief Program Review and the upcoming modifications to the ER Manual. He next informed the delegates of FHWA activity in its National Review Program and summarized the recent reviews on construction change orders, stewardship and oversight agreements, and asset management.

The status of Work Zone and Mobility Rule implementation was discussed. Forty-eight states have fully met initial compliance requirements. More information on best practices and examples from the various DOTs can be found at www.fhwa.dot.gov/workzones.

The FHWA has issued a number of Suspension and Debarment orders in conjunction with its Inspector General's office. For the 2007 calendar year, there were 52 cases.

The FHWA Office of Asset Management is interested in raising the level of construction quality, and Mr. Wlaschin reviewed a number of programs that FHWA is currently performing. These include State and Division Office Reviews, Program Office Evaluations, and the National Review Program.

The National Highway Specification Website has been updated and improved in 2008. Visit www.specs.fhwa.dot.gov for more information. There are a number of new National Highway Institute training course that may also be of interest to the delegates. Visit www.nhi.fhwa.dot.gov for more information.

I-35W Bridge, Minnesota – Tom Everett, Principal Bridge Engineer, FHWA Office of Bridge Technology: The bridge collapse occurred on August 1, 2007, and on August 2, the FHWA and the National Transportation Safety Board (NTSB) were on-site to begin their field investigations. The bridge was 1,900 feet long with a 500-foot center span. Mr. Everett showed a series of pictures of the site both before and after the collapse, which gave insight to the forensic study of the failure and the level of detail that took place in investigation.

He discussed FHWA's immediate issuance of Technical Advisory 5140.27 on August 2, 2007, advising immediate reinspection of all fracture critical deck truss bridges. Of 479 bridges inspected, five were identified with problems that required immediate attention.

Mr. Everett discussed the role of the NTSB as the lead investigator and the FHWA's involvement in the recovery, assessment and evaluation at the collapse site. Further, he explained how a couple of pieces of information greatly aided the investigation. These included an actual video of the bridge collapse from a motion-activated camera, a photograph of the construction and material loads on the structure (estimated to be more than 570,000 lbs) and the resulting gusset plate evaluations, and several pre-collapse photographs of the bridge showing some deformation in certain bridge components.

Several additional Technical Advisories have been issued because of the investigations.

Mr. Everett reviewed NTSB's statements of factors and non-factors at this point in the investigation. The final report is scheduled to be released in December 2008.

Status of the Program in Texas – John Barton, Deputy Executive Director for Engineering Operations, TxDOT: Mr. Barton reviewed TxDOT's organizational structure. There are 15,000 total employees in 4 divisions and 25 districts. It was mentioned TxDOT is currently looking at some regional support and coordination issues in effort to eliminate redundancy in jobs between the districts.

Mr. Barton reviewed the Texas Highway System statistics, which include over 300,000 centerline miles of roads – with 80,000 centerline miles maintained by TxDOT. There are 32,476 bridges maintained by TxDOT, and an additional 16,500 off-system bridges. In

addition, there are two ferry systems and 391 railroad track miles (the South Orient Express) owned by TxDOT.

There are 2,500 construction inspectors employed by TxDOT to assure proper project delivery. 95 percent of the construction is performed in-house. In contrast, approximately 50 percent of the maintenance program is contracted out.

The total program budget is \$8.3 billion. In 2006, project lettings valued \$5.3 billion (peak) and have declined to \$3.7 billion in 2007 and \$3.6 billion in 2008. Currently \$13.7 billion in projects are under contract, excluding Comprehensive Development Agreements, Pass through Tolls and other local government lettings.

Mr. Barton reviewed several major projects in his presentation including the Trans-Texas Corridor (SH130, TTC35, and TTC69) and the I-10 (Katy Freeway in Houston) capacity enhancement project.

Major TxDOT initiatives currently underway include organizational restructuring; cost control and escalation efforts; EPA CAFO and environmental management systems; and design resource management.

State Discussion Topics

Gary Ridley, ODOT, Subcommittee Chairman

The questions discussed in this session were from prepared handouts along with several new questions presented.

Alternate pavement designs between asphalt and concrete

In Missouri, alternate pavement designs have been used for five years and are working well. The pavements are designed using the Mechanistic-Empirical Pavement Design Guide (MEPDG) and bid with a life-cycle-cost adjustment factor.

It was noted 95 percent of Texas' highway system is comprised of hot-mix asphalt (HMA). When bidding alternate pavement types, there are no bid adjustments for life-cycle costs, and Portland cement concrete (PCC) is winning many of the alternate bid projects.

In Louisiana, the DOT&D has been using alternate pavement type bidding with a bid adjustment for life-cycle-costs for five years. PCC is now more competitive.

In Michigan, the legislature required life-cycle-cost analysis approximately 10 years ago for projects with pavement costs of over \$1 million.

Warranties are often included in alternative bids in Kentucky and Michigan,

Mr. Yakowenko, FHWA, mentioned that FHWA's Innovative Contracting Programs, SEP-14, should be used when a state uses alternate pavement type bidding with a bid adjustment.

Minnesota local projects require alternate bidding with equal pavement lives, and approval by MnDOT.

West Virginia recently received bids on an alternate pavement project with 10 inches – PCC and 13 inches – HMA.

Kansas said there was a recent alternate pavement type bid project and neither the HMA nor PCC associations cared for it. KDOT's initial evaluation indicates it is a good process.

With regard to bridges, Washington State takes into account longterm maintenance in the design phase, so WSDOT normally does not bid both steel and concrete structures.

Public-Private Partnerships (PPP) and Innovative Finance

It was reported that Virginia, Florida and Texas are actively using PPP's.

Some delegates believe the Federal Regulations were not written to accommodate PPPs, and there should not be TIFIA documentation requirements for privately funded projects.

Minnesota added this also could be an issue with Federal interpretation of full-oversight bridges.

DBE Issues

Mr. Yakowenko provided a brief update on several DBE related activities. He mentioned the new AASHTO DBE Toolkit will summarize state of practices and will be distributed as a TRB product. In addition, the AGC and ARTBA are reviewing joint checks and payment promptness issues. The AGC pointed out this was an area that needed some work and the Toolkit should provide some additional guidance on the topics. The AGC stated that the USDOT could not endorse the document because it was not developed through a formal rulemaking process, though commented the task force meetings have provided value to the process.

Some suggested basic education and information sharing with the USDOT was needed on business practices involving joint checks, retainage, change orders, and other information.

North Carolina is looking at adding DBE goals to change orders over \$100,000.

It was reported WY, UT, FL, NV, VT do not have race-conscious goals. WSDOT reported it has a goal of 18 percent.

Mr. Bohuslav briefly discussed the SOC program activities for the upcoming week and mentioned that the Research Steering Committee meeting was scheduled for 6:30 am, Tuesday morning. He explained that four Technical Sections under the SOC accomplished

the bulk of the SOC work assignments and that breakout meetings for the sections were planned for the afternoon. Mr. Bohuslav introduced the chairs of each section.

Section Meetings

Monday afternoon was spent in individual Section meetings to discuss 2007-2008 accomplishments, and to begin developing the annual work plan. The meetings were followed by Section Chair's Reports to the assembled group. The information from these sessions is included in the individual Section minutes file.

Section Chairman's Reports

Computers and Technology Section, George Raymond, Oklahoma DOT: Mr. Raymond reviewed the accomplishments of the past year and the preliminary work plan for 2009. The topics discussed included National Highway Specification Website, reorganization of AASHTO SOC website, the on-going development of Trans*Port Software as well as the DBE module, a training module on stakeless construction to be offered as web-based training by NHI, committee representation, traffic monitoring and NCHRP panel participation.

Environmental and Human Resources (E&HR) Section, Roger Driskell, Illinois DOT: Mr. Driskell reviewed the E&HR accomplishments from the 2007/ 2008 work plan. The activities included BMPs for erosion control, a Stormwater issues domestic scan, a Survey of States on Stormwater and Erosion Control personnel, NCHRP Project 25-25, positive protection for mobile work zones, WZ implementation, TCCC participation, a Survey of States on cultural barriers, a Survey on recruitment and retention and NCHRP study panel participation.

Contract Administration Section, Ellis Powell, North Carolina DOT: Mr. Powell reviewed the accomplishments from the past year and the preliminary work plan for next year. The activities included current practices for cost containment, approval authority for contract change orders / time extensions / scope, current practices for fuel and asphalt cement price adjustment clauses, liaison with the FHWA / AAHSTO / Industry DBE Work Group and Development of a program for the 2008 SOC CA Section meeting. Mr. Powell noted that there would be a new vice chair for the Section, Ms. Linea Laird of WSDOT.

Roadway and Structures Section, David Sadler, Florida DOT: Mr. Sadler reviewed each of the six items in the Sections 2007/ 2008 work plan and reported their status. The activities included a survey of construction inspector time usage (ref CA survey), construction workmanship and QA program, a white paper on pavement markings – dropped, cataloging constructability reviews, VE, etc., a survey on the use of specialized inspection – no need for NHI class, girder placement/ bracing, a Team Webinar, and cost workshop topics: a) “Practical Design” b) Recycled materials c) 2 aggregate issues.

Mr. Sadler also reviewed the list of possible topics and speakers that were discussed for next year's meeting, as well as possible research problem statements.

Conclusion of General Session

At the completion of the Section Chair's Reports, Mr. Ridley thanked the delegates for attending the meeting. He acknowledged the construction engineers responsible for managing the \$80 billion of highway work throughout the country working to make a difference. In closing, he said, "the job of the construction engineer is critical for our country, and the folks today are the best-of-the-best."

Ms. Bunny Neible, the TxDOT Conference Coordinator, discussed the hotel conference office available to the participants including the FAX machine and the cyber café. She reviewed the "Rio on Demand" chartered water taxi shuttles to the downtown restaurants.

The meeting was adjourned for the day.

TUESDAY, AUGUST 5, 2008

Contract Administration Section Presentations

Ellis Powell, North Carolina DOT, Section Chairman

Partnering with Utilities – Bob Garza and Associates, AT&T: Bob Garza and several AT&T associates made a presentation on the 10 Keys to Successful Utility Relocations. The following recommendations were made in the presentation:

1. Establish Good Communications. Provide a single point of contact at the state level. Establish a Memorandum of Understanding (MOU) Group, and establish an escalation procedure to resolve issues at the lowest level possible.
2. Schedule District Coordination Meetings. Establish ongoing yearly, monthly, weekly project coordination meetings. Provide a single point of contact at the district level.
3. Apply Rules and Policy Consistently Across the State. Educate individuals at the lowest level to ensure rules are interpreted the same. Apply flexibility and reasonableness at all times.
4. Deliver Project Plans in a Timely Manner. Pre-30% plans are essential with estimated timelines. Timely delivery of 30%, 60%, and accurate 90% plans. The utility needs a clear understanding of when it can start the relocation design.
5. Establish a Pre-approval List of Acceptable Documents for all Projects. Establish legal documents that apply to all types of projects. Documents must be pre-approved by the DOT and the Utility. Documents must not be customized at the local level.
6. Reimbursement Criteria must be Clearly Defined. The issue of who is going to pay for the relocation must be clearly stated and decided at the highest level.

7. Establish a Mechanized Permit Process of Utilities to Use Online. A web-based system allows quicker response with issued design plan review and approval, and provides tracking of the dates of the project's progress.
8. Must Have an Escalation Process in Place. Delays are costly to DOTs and the Utility. An escalation process will help keep the project on schedule. Both parties should provide a list of names to involve in the event that conflicts cannot be resolved locally.
9. Establish a Mechanized Invoicing Process. Since many of the utility relocations are reimbursable to the utility company by the state, both sides must create an acceptable invoicing process, preferably using an electronic process. Prompt payment is essential to project management.
10. Appoint an MOU Team. The MOU establishes a project management process on a statewide level and eliminates many district concerns about statewide issues.

Mr. Garza thanked the delegates for their attention, and encouraged them to work with their local utility companies to create a win-win environment for the public that both agencies are trying to serve.

Dispute Resolution – Craig McDaniel, WSDOT and David Sadler, FDOT: Mr. McDaniel started his presentation by giving a definition of the Disputes Review Board (DRB) that also can be found on the DRB Foundation website at <http://www.drb.org/index.htm>. At WSDOT, DRBs are used on projects over \$10 million dollars. The DRB members are usually former contractors and retired DOT employees. Each party pays for their own member, and they share the cost of the third member. It is generally about \$150 per hour, and the DRB meets on a quarterly basis.

Mr. McDaniel explained that DRBs only determine entitlement on issues related to contract interpretation. Mr. McDaniel presented several WSDOT case studies representing “The Good, the Bad and the Ugly” of DRB decisions. The following case studies were summarized:

1. A water table issue in a flood plain. (“The Good”)
2. A contract time issue for construction of a culvert and the associated wing walls. (“The Bad”)
3. The Lewis and Clark Bridge Painting project that involved a differing site condition claim raising the cost from \$11.8 million to \$26.7 million. The State agreed that the site conditions were more severe than a simple overcoat job. (“The Ugly”)

Mr. McDaniel reviewed several DRB statistics to conclude his presentation.

Mr. Sadler then discussed FDOT's use of DRBs. FDOT began the use of DRBs in 1994 and expanded to the use of Regional Boards in 2002. The use of a Statewide Board was added in 2004. FDOT uses DRBs on, or makes available to, every construction project over \$15

million. The Regional Boards are available for use on projects without a specific DRB, and Statewide DRBs are used to address longterm issues. DRBs have been used on over 600 projects worth \$600 billion dollars

For the project boards, FDOT pays DRB members \$1,100 per day, and members must be trained through the DRB Foundation. The website lists approximately 130 trained persons who are in the DRB pool. The Regional DRBs have one-year terms and have 5 persons designated as members in each region.

FDOT allows issues of both entitlement and quantum to be heard by the DRB. Generally, the DRB recommendations are non-binding with several exceptions mentioned in the Mr. Sadler's presentation. Before a contractor can proceed to binding arbitration, it must appear before a DRB.

Mr. Sadler discussed several "Good, Bad, and Ugly" case studies in Florida. He said that FDOT is committed to the DRBs, and is enhancing the DRB process through a website search-engine tool and a DRB member evaluation process.

The Surety Industry: Changes and Challenges, Howard Cowan, Howard Cowan Bond Agency, Inc.: Mr. Cowan from Lubbock, Texas, is President of the Texas Good Roads Association and represented the National Association of Surety Bond Producers.

Mr. Cowan explain the surety business is a \$5.4 billion industry with most surety companies being divisions of large insurance carriers. Typically, sureties have two segments of business, 30-35% in the commercial arena, and 65-70% involved with contracts, which concerns contractors involved and working with the DOTs.

Mr. Cowan discussed how the surety business changed significantly from the "glory days" of the early 1990s with the first losses in the industry happening in the early 2000s, post 9/11. Because of the industry's losses, premiums for coverage have increased. Mr. Cowan substantiated the industry trend with detailed statistics. His presentation also discussed the consolidation of the surety industry over this period. Mr. Cowan said the country is currently facing a "credit crisis." Current challenges include globalization, price escalations on commodities, and the falling dollar. He stated that reinsurance is an important factor for most surety companies in order to distribute some of the risks of writing certain policies.

Mr. Cowan reviewed the three C's of "Suretyship;" Capital, Capability, and Character. He emphasized that these three elements still matter to the industry and character is the most important factor. Mr. Cowan said, "You had better know with whom you are dealing," and cited Enron as an example of a major failure in the industry.

Mr. Cowan explained in the highway business there are a number of contractor failure risks to consider, including low profit margins, slow collections, insufficient capital, shortages of qualified workers, high materials prices, unreasonable owners, onerous contracts, inadequate management, change in scope of work, subcontractor failures, inclement weather, material

shortages, over-expansion, and new owners such as will happen with toll agencies and Public-Private Partnerships.

The Miller Act requires surety bonds for a project.

Mr. Cowan said that surety adds value to a project and represents good business practice. The prequalification of contractors is one of the major benefits that a surety company provides to an owner. He briefly discussed examples of losses in the industry. From 2001 to 2005, the industry paid over \$5 billion of direct losses. Some of the better known instances were Boston's Big Dig, a Midwest highway contractor and Enron.

Mr. Cowan listed a number of critical issues facing the surety industry today:

1. Capacity on jumbo projects, \$750 million but less the \$1 billion.
2. Time is a critical issue in contracting, the length of project, length of warranty, and the total length of the commitment are important. More than five years is not feasible for the industry.
3. Many states have legal restraints, such as statutory requirements for 100 percent bonds. Some states may not require bonds above certain thresholds due to the industry capacity.
4. Competition. The availability of contractors, surety companies because of the regulation of joint and severable liability and the workforce capacity of both the contracting industry and the DOTs are somewhat problematic.

Several useful suggestions were made on improving contract language and several web addresses were listed for additional information.

In response to a question from Mr. Bohuslav, the following states indicated they have had issues with surety companies taking over projects with change orders, FL, AL, LA, TX and GA. Mr. Cowan said if the DOTs' keep the surety companies informed of change orders, then many problems can be avoided. Bond premiums are driven by contract price and time, and change orders affect the process if there are new items. Mr. Cowan noted that most surety companies do not charge for additional time to complete the original contract scope.

Seven Bridges in 74 Days (or Less) – Ellis Powell, NCDOT: The NCDOT replaced a series of bridges along Route NC 12 on Ocracoke Island on North Carolina's Outer Banks. The original bridges were built in the 1950s and were functionally obsolete due to the 8,000 ADT.

The original construction plan called for reconstructing four bridges in the first year, and three in the second, resulting in 2 years of public impact on an island that is dependent upon the tourist industry. The plan was revised to perform the construction between January 2 and March 15, 2008, a time prone to cold weather and coastal storms. Some political concern led the DOT committing to reconstruct all of the bridges in the timeframe of January 2 to March 15, 74 days of total construction time.

The new bridges were 100 percent precast to accelerate construction, and the DOT performed the pile driving analysis. Three bids were received with a single small contractor with no subcontractors being the low bidder.

The ferry system worked with the contractor to deliver the supplies to the island. Emergency medical services, mail delivery changes, and air support were provided during construction and the adjacent beaches served as a detour for traffic. Mr. Powell's presentation detailed the daily progress of construction for this difficult project. He noted that several techniques used in construction were new to the NCDOT.

The bridges were completed and opened to traffic in 64 days, 10 days earlier than the required completion date. The total project cost was \$9.6 million. Mr. Powell estimated the cost of accelerating the project to be approximately \$600,000, but to the great satisfaction of the traveling and the public.

General Question and Answer Session

Thomas Bohuslav, TxDOT, Subcommittee Vice Chairman

The questions discussed in this session were from prepared handouts along with several new questions presented. The delegates were asked a question to assist Dr. Keith Molenaar's SHRP2 R09 Project.

Does your agency have a set of formal policies or procedures for rapid renewal risk?

Utah was the only state that answered yes.

How many states have had contractors graduate from a DBE to regular contractor status (no longer certified as a DBE)?

TX <5; MI=2; OK <5; AL=2; MO=4; ID=4; WY=2; UT=3; PA=2; IL=3; WA=3-5; WV=1; AK=1-2; KS=1-2; GA=3; VA=1; IN 1-2

Which States Withhold Retainage?

Five states responded. Utah DOT said the prime has to pay the subcontractor 100%. The Florida DOT does not retain unless the contractor is behind schedule. TxDOT indicated there can be a retainage bond of 10% of the contract amount in the event of overpayment.

Do Other States Require Retainage bonds (besides TX)? WSDOT responded yes.

From the Handout on Federal Issues Questions

Q3. How many states, in good faith, are having problems with FHWA participation due to R/W problems?

Indiana said there are situations where it thought there was clear R/W, but utilities do not move out in a timely manner. FHWA does not participate if the DOT fails in due diligence.

Several states indicated that in the event of R/W issues with FHWA, they routinely restart projects as non-participating: TX, WV

Mr. Yakowenko indicated that the FHWA Division office examines these issues on a case-by-case basis. If the state follows a diligent process, the FHWA will likely participate. The FHWA recognizes that utility relocations can be impacted for a variety of reasons including weather, and may slow the process and have an effect on the contractor.

Q4. Have States found their FHWA counterparts wanting to be more involved in non-oversight projects when it comes to claims, change orders and time extensions?

State delegates commented that on oversight projects it is expected the FHWA will be involved, but not on non-oversight project where the FHWA has delegated authority to the state.

Q6. Work Zone Requirement Question

A general comment on the new work zone requirements is the amount of time required to follow the rules is high.

Q7. Design-Build Selection Criteria Question

Minnesota would like the option to restrict provisions to one bridge type in D-B projects.

Utah commented that it defines the bridge types that are acceptable in the contract, normally 200-foot spans or less.

Mr. Yakowenko said the state can choose to specify one bridge type. There is no FHWA policy stating multiple bridge types must be included.

Roadways and Structures Section Presentations

David Sadler, FDOT, Section Chairman

An Update on Superpave – Lee Gallivan, FHWA Office of Pavement Technology: Mr. Gallivan first stated that AASHTO and FHWA have dropped the term “Superpave” and are now using the term Hot-Mix Asphalt (HMA) for everything related to hot mix asphalt. CalTrans has moved to PG binders, so 100 percent of the State DOTs are now using PG binders. Approximately one-half of the country is using volumetric design as a part of its specifications. Mr. Gallivan encouraged every state to adopt the full mix design system.

Mr. Gallivan presented a number of reasons for the current polymer shortage for certain PG binders. Mr. Gallivan encouraged the DOTs not to arbitrarily reduce the binder grades. With regard to mixture issues, he said it is important that the gyratory mix design machines are appropriately calibrated using the internal angle of gyration. He mentioned the Asphalt Mix Performance Tester is a new machine and a pooled fund process will begin for the DOTs to acquire the machine and train technicians. This machine will test mix stiffness.

Mr. Gallivan discussed N-Design issues. He explained the effect of lowering gyrations increases the VMA, but also lowers the strength of the mix. A 20 to 30 gyrations change lowers the VMA by 1% or approximately 0.4% in asphalt content. The N-Design in the current specifications is “in the ballpark” and he recommended that DOTs not to arbitrarily reduce their gyrations.

Mr. Gallivan talked about FHWA’s recycling policy and encouraged the use of recycled materials as long as the engineering and economic considerations for the use of the materials are justified. He mentioned there is an NCHRP Report No. 598 on Recycled Materials and the FHWA has a Recycled Asphalt Pavement (RAP) Technical Working Group. He said the current AASHTO specification limits the use of RAP to 25%, though research is currently underway to look at its use at higher percentages.

Mr. Gallivan discussed a number of issues that affect the construction of HMA pavements including longitudinal segregation, density (nuclear vs. cores), lay down thickness (3-4 times Nominal Maximum Aggregate Size), sampling locations (behind the paver), moisture in mixes and permeability, premature failures because of poor density and joint construction and milling for quality.

He provided an update of FHWA’s Quality Assurance Program Reviews. In summary, the review looks at the state’s acceptance program, dispute resolution, qualified technicians, qualified labs, independent assurance program and contractor QC processes. There have been 22 State Reviews completed to date.

Bridge Deck Joint Replacement Practices – Brian Merrill, TxDOT: Mr. Merrill explained the need for bridge joints – to accommodate thermal expansion and bridge rotation movements. Approximately 90 percent of the bridge problems in Texas are related to joints. Mr. Merrill said, “You can not eliminate the joints completely, but if you can minimize their use then problems will be reduced. Joint ‘failure’ is inevitable in 15 to 20 years.”

He discussed “Fully Continuous Units” and a diagram that illustrated the tension and compression of the beams. Texas uses a “Poor-Boy” Continuous beam construction technique with a controlled joint at the center bent. This reduces pavement issues on the bridge decks.

Mr. Merrill discussed the seven different joint types used in Texas, and his presentation contains details of each type. The presentation shows a number of the failure modes and the associated repair for each of the joint types.

Mr. Merrill concluded his presentation with a look towards the future of bridge joint design, construction and maintenance practices within TxDOT. The Department is continuously looking for ways to improve its joint designs to provide a better ride and lower maintenance.

In response to questions, states with warranties on joints include WSDOT, Florida and Ontario, Canada.

FHWA Pavement Preservation Program Appraisals – Christopher Newman, FHWA Office of Asset Management: Mr. Newman pointed out that pavement preservation involves both construction and maintenance forces of the DOTs and the intent of the appraisal program is to provide program assistance and identify trends. He described the reviews as partnerships between the DOTs and the FHWA Division offices. The National Center of Pavement Preservation (NCP) has been conducting the reviews on behalf of the FHWA.

Mr. Newman discussed the appraisal process that the state undergoes. There are 14 various topic areas that are considered in the appraisal process. Thirty-five states have completed reviews as of date and seven more are currently signed up. The FHWA hopes to complete reviews for all 52 DOTs including DC and Puerto Rico.

An interim summary of observations include:

1. There is a recognized need for pavement preservation
2. Many agencies are still at the early stages of a preservation program
3. There are limited or poor experiences with many treatments
4. There is a limited contractor base
5. A great need for training and certification exists
6. There is a lack of preservation funding
7. There is a need to expand public education and awareness
8. Better tracking and PMS integration is needed
9. A “worst-first” project selection paradigm can still exist

A Preservation Appraisal Database is being developed and will be available in the next couple of weeks. This will allow state DOTs to benchmark their activities in comparison to national and regional trends. Mr. Newman showed several sample graphs and tables that evaluate the data within the database.

Based on the interim observations, FHWA is preparing preservation program implementation guidance, a maintenance manual, Remaining Service Life (RSL) implementation as a model and measure for PMS and updated NHI training courses.

Mr. Newman briefly mentioned the Pavement Preservation Appraisal program is being used as a model for the Construction Program Evaluations program that is currently being planned and developed. Ken Jacoby is the FHWA point of contact and AASHTO SOC members on the concept development team include Tucker Ferguson of PennDOT and John Smythe of the Iowa DOT.

An Update on the Accelerated Construction Technology Transfer (ACTT) Program – Experiences and Lessons Learned – Chris Schneider, FHWA Office of Asset Management: Mr. Schneider defined ACTT as a 3-day workshop that brings together a team of “best in field” national leaders and local DOT counterparts to review project details, targeting innovations and solutions that reduce construction time, improve quality and safety, and possibly save money.

The ACTT process was described in the presentation. An output of the workshop is a list of project recommendations submitted to the DOT for review and consideration. The DOT decides which ideas to pursue and adopt for the project.

Mr. Schneider briefing discussed the origins of ACTT and the experiences and lessons learned from several past projects that used ACTT in the project development process.

It was mentioned that 34 workshops have been completed in the past 5 years. Some findings from ACTT projects include:

1. Significant savings in Oklahoma - \$15.8 Million in savings on a \$360 Million project
2. Reduced construction time for the LaDOTD – 225 days proposed to 125 days actual
3. State practices improvement in Montana
4. Use of prefabricated bridge elements, Smart work zones and mandatory CPM scheduling for projects has aided organizational change within the NHDOT.

A new ACTT Workshop Toolkit CD is available from FHWA to help with the planning, organization and execution of a state's next workshop. Contact Mr. Schneider at Christopher.Schneider@dot.gov to request an ACTT Toolkit.

Status of Recycling – Craig Benson, University of Wisconsin-Madison: Dr. Benson remarked that recycling is on the “move” and gaining momentum in the United States. Today there are many external factors helping with this push. “We shouldn’t do recycling just to do it; we need to do recycling thoughtfully.” The Recycled Materials Resource Center (RMRC) can assist.

Dr. Benson discussed the RMRC, which is a shared effort among the University of New Hampshire, the University of Wisconsin at Madison and the University of Washington. It is funded by the FHWA and the USEPA, and through a state pooled-fund study. The RMRC is dedicated to promote the wise and safe use of recycled materials such as fly ash, slag, and foundry sand. Dr. Benson provided a brief description of several other materials that can be of value to state DOTs.

There is a good clearinghouse of technical information through the RMRC at this address: www.recycledmaterials.org. The RMRC also conducts webinars and face-to-face workshops. There will be a series of webinars on coal ash products, followed by foundry sand products and then RAP and RCA in about a year.

The RMRC has been involved in applied research for a number of years. Dr. Benson discussed several case studies of materials tested in the lab at bench scale, progressed to a prototype scale, and then performed as full-scale demonstrations in the field.

Dr. Benson requested that the delegates consider contacting the RMRC to work on field demonstration projects and monitoring where recycled materials are used.

He reviewed the concept of Life Cycle Analysis including cradle-to-grave analysis of materials for energy and CO₂ production, in addition to costs.

The RMRC has been involved with applied research for a number of products including RAP, RCA, and RAS (shingles.) For more information, please contact Dr. Benson at chbenson@u.washington.edu. For more information of the State Pooled-Fund Study for Recycled Materials, please contact Steve.Mueller@fhwa.dot.gov.

Computers and Technology Section Presentations

George Raymond, ODOT: Section Chairman

Tracking HMA Placement using Radio-frequency Identification (RFID) Technology – Dr. Charles Schwartz, University of Maryland: Dr. Schwartz described RFID technology and how it can allow DOTs to link a pavement construction material database to actual locations of materials placed in the field, and thereby link data to an agencies pavement management system (PMS).

RFID is a well-established technology that is widely used in the private sector today. It is considered an off-the-shelf technology, completely safe and RFID tags are inexpensive. Dr. Schwartz explained that because RFID tags had not been produced to resist the thermal and compaction forces of HMA pavement construction, the tags were initially encapsulated in small PVC tubes. About 67% survived lab testing, but the encapsulation process was improved to reach nearly 100% survival.

Field-testing was completed last fall in a parking lot application at the University of Maryland. Some of the PVC tubes were described as to have “floated” to the surface of the mix. In a full-scale test at the Hampstead Bypass project with the Maryland DOT, about 60% of the RFID devices could be read with a 2”x 2” tag. In a second test at Hempstead in spring 2008, the RFID devices passed through a Material Transfer Vehicle (MTV). The MTV mixing of material led to some location differences between the material placement and the ultimate tag locations within the pavement sections. About 60% of the tags were readable in this field test.

In conclusion, Dr. Schwartz said that this process is useful to track HMA materials placement in the field.

Conclusion of Section Presentations

After Dr. Schwartz’s presentation, the session was adjourned.

WEDNESDAY, AUGUST 6, 2008

Computers and Technology Section Presentations

George Raymond, ODOT: Section Chairman

Accelerated Bridge Construction (ABC) and the Utah Experience – Kris Peterson, UDOT; Mary Lou Ralls, Ralls Newman, LLC: Mr. Peterson briefly discussed the UDOT Bridge Program, and then introduced Ms. Ralls to provide the delegates with a briefing on ABC. Ms. Ralls presentation included a number of details on the design, construction, and materials specifications and processes that comprise ABC. She explained ABC could offer many benefits to a DOT including minimized traffic disruption; improved safety; better materials; and often less expensive construction. It was mentioned the use of prefabricated bridge elements is just one method of ABC.

The Utah DOT is now implementing ABC as standard practice and follows the FHWA Decision Making Framework. Ms. Ralls discussed the details of the transition to ABC within the State, and said Utah is the only state to make the transition so far. UDOT has an entire family of innovative ABC elements and methods that fall under ABC. Thus far, 17 projects have been completed or are under construction using ABC concepts. The current projects are using SPMT Bridge Moves. More information on these projects is available at www.udot.utah.gov/innov80. The presentation lists a number of other experiences and lessons learned. Ms. Ralls also mentioned that the AASHTO Technology Implementation Group website is a good resource for more information on the Self-Propelled Modular Transport (SPMT) equipment.

Ms. Ralls said that history has proven that if standardization occurs, then costs tend to be reduced. UDOT is currently experiencing bridge bid costs between \$60 and \$70 per square foot. A graph in the presentation provides the exact details.

In response to questions, Ms. Ralls said there are approximately six SPMT equipment owners currently in the USA. These devices are capable of rapidly installing bridges over major highways. Mr. Peterson said that the technology is very cost competitive when user-delay costs for the highway are included in the bid cost analysis.

The TIG: Driving Innovation for Transportation – John Polasek, Michigan DOT and Vice Chair of AASHTO TIG: Mr. Polasek said that the mission of the TIG is to promote innovation and the sharing of information. The TIG supports high pay-off, market-ready technologies that are used by the DOTs.

The TIG reports to the AASHTO Standing Committee on Highways and is a two-tiered system with an executive committee, and a number of lead-state teams. There are three to four focus technologies selected annually, as well as several additional selected technologies for which white papers or pamphlets are produced.

Lead state teams include four to seven state DOT subject matter experts, one to two FHWA staff members and one to two industry participants. Mr. Polasek presented four technologies that are currently being promoted by the TIG and benefits of each.

1. Self-Propelled Modular Transports (SPMT)
2. Construction Analysis Software Tools (CAST)
3. Automated Machine Guidance (AMG)
4. Precast Concrete Paving Slabs (PCPS)

Delegates who are interested in participating with the AASHTO TIG should work with their State DOT Research Manager and Chief Engineer, serve on a Lead States Team, and submit your agency's technology to the TIG at www.aashtotig.org.

The effort is supported by voluntary contributions and 38 states are currently participating.

Machine Controlled Grading Using GPS Technology – Randy Hart, GDOT and Douglas Townes, FHWA Resource Center: Mr. Townes discussed the different levels of GPS accuracy available and observed that for highway construction a survey level of accuracy is required. Survey-level is the most accurate form of GPS and the most expensive. It uses a base station to assist with improving the accuracy of the backpack data and measurements. A 2006 TRB synthesis showed that over 30 state DOTs are using the technology.

To foster and improve the use of this technology in the transportation industry, a TIG was formed in 2007 to develop a marketing plan for promotion of educational workshops, trade conventions and the development of a website.

Mr. Hart discussed the June 2008 HEEP II Conference held in Atlanta, Georgia, and the fieldtrip to observe a field demonstration of the technology. GDOT has had 10 demonstration projects showing greater earthwork construction accuracies because of the use of this technology. He noted that many contractors have adopted this technology and discussed the advantages GPS offers.

Mr. Hart presented several ideas for expanding the use of this technology including the production of 3-D electronic files in addition to the 2-D paper files used by many DOTs.

Several questions and comments from the audience were notable:

1. Florida said its design group was reluctant to turn over 3-D electronic files to the contractors, which is a barrier to GPS technology implementation.
2. Iowa has been using this technology and has specifications on its use, including DOT inspection requirements.
3. Michigan provides the 3-D files, but there is also a waiver that must be signed by the contractor to receive the files. They are currently doing a demo project with Bentley.
4. Maine used MX in the past, but has transferred to InRoads. The 3-D models are difficult with driveways.
5. Wisconsin has some specifications that may be useful to the delegates.

Use of Concrete Maturity Meters for Testing and Acceptance – Dennis Kuchler, Indiana DOT and John Smythe, Iowa DOT: Mr. Kuchler gave a summary of a survey completed by the SOC in January 2008. Results indicate 14 states do not use maturity meters; only 17 states use them.

Mr. Smythe began his presentation by saying Iowa has used maturity meters since 1999 for the opening of PCC pavements. He reviewed the maturity meter concept, which is a direct measurement of the pavement concrete using actual pavement temperature. It is a non-destructive test based on ASTM C 1074. In warmer weather, the use of the maturity meter can lead to a rapid opening of new PCC pavements, providing benefits to the contractor, the highway agency and the public.

Mr. Smythe reviewed the maturity procedure, which is a 3-step process in Iowa. The contractor develops a strength-maturity curve for the mix used, takes pavement temperature readings and calculates the Time Temperature Factor (TTF) – the measure used by maturity meters. Mr. Smythe suggested that the maturity requirements use a factor of safety for the determination of the road opening. The use of maturity meters has proven to be a reliable method in Iowa, with no pavement cracking through early openings.

In response to questions, OR, TX and WA use maturity meters on structures.

Research Steering Committee Presentations

Thomas Pelnik, VDOT: Section Chairman

NCHRP Status and Look Ahead – Crawford Jencks, Transportation Research Board (TRB): Mr. Jencks gave an update of the program. He began by reviewing the organizational structure of the National Academies, the Transportation Research Board, and the National Cooperative Highway Research Programs (NCHRP), and the other cooperative research programs in Aviation, Transit, and others.

Mr. Jencks first discussed TRB in general: there are five different program units of this private, non-profit institution including Technical Activities, Studies & Special Programs; Admin and Finance; SHRP 2; and the Cooperative Research Programs (including NCHRP, TCRP, ACRP, NCFRP, and HMCPR.)

The SHRP 2 program is organized around four major themes: safety, renewal, reliability, and capacity.

NCHRP is the only TRB program not mentioned in federal legislation. Funding comes from 5½ percent of the states SP&R funds. Proposed projects for research are approved by AASHTO. NCHRP has an applied research focus and utilizes contracted research to conduct its studies. Mr. Jencks reviewed the problem statement submittal and approval process.

Mr. Jencks reviewed a number of new FY09 NCHRP projects that are of interest to the SOC as well as recently published reports.

Mr. Jencks reviewed Project 20-06, Legal Studies, and recommended Selected Studies in Transportation Law: Volume 1: Construction Contract Law, and recommended contacting him for a copy of the CD (free to state DOTs.)

Quality Assurance in Design-Build Projects – NCHRP Synthesis 38-01 – Douglas Gransberg, University of Oklahoma: Dr. Gransberg recognized the co-author, Dr. Keith Molenaar of the University of Colorado, and the synthesis study panel.

The synthesis study involved a large literature review on the quality assurance (QA) and he noted that very little has been written about QA in the design build context. In the study, the researchers performed content analysis of DOT Design-Build policy documents. Dr. Gransberg provided the findings and statistics of these results.

Dr. Gransberg discussed the need for a new model for QA in DB and suggested the use and inclusion of elements of the Virginia model. He also reviewed 14 various methods used to perform construction QA and recommended that a two-step DB selection process be used to promote quality of the project. There are a number of conclusions in the study that are highlighted in the presentation and the full synthesis study is now available for free download on the NCHRP website.

Mr. Pelnik asked the group if any states have had success in involving the design offices in the DB process. No states reported this had occurred.

Alternative Contracting Approaches to Accelerate Project Completion (NCHRP 20-5) – Ivan Damnjanovic, Texas Transportation Institute: Dr. Damnjanovic, a Professor at Texas A&M, recognized the co-author of this effort, Dr. Stu Anderson.

Dr. Damnjanovic reviewed the study methods and analysis focus in the study. There are organizational issues that impede the implementation of alternative contracting methods (ACM) in many DOTs. The study reviews a large number of ACMs and their frequency of use by the DOTs. He then discussed the factors that are used in selecting ACMs, including project size, type, complexity and the critical completion date.

The study analyzes the respondent's perceived performance factors of schedule, cost, and quality for the ACMs in comparison to their frequency of use. The results show that the DOTs are selecting ACMs that have favorable impacts on the project schedule and cost. Quality is generally perceived as being unaffected.

Several states were identified that have systematic processes or guidelines for selecting ACMs including MN, UT, OH, CA and PA. In general, few states have a formal selection process. The study recommends that a DOT business unit be assigned to develop a systematic process for the selection of ACMs. This will require a decision support tool as well as on-going documentation and analysis of the impacts of ACMs.

Mr. Pelnik briefly reviewed the research steering committee process and the types of projects that are funded through NCHRP. He proposed using mid-year telephone conferences to advance research recommended by the SOC.

Mr. Bohuslav suggested that the SOC members try to better implement pooled-fund studies and that the Research Steering Committee coordinate these efforts. Mr. Bohuslav also recommended that the SOC develop a research plan for the next ten years through a 20-07 study process.

Mr. Bohuslav mentioned that GA, WV, VA and AR would give presentations for the hosting of the 2011 SOC annual meeting.

Conclusion of Section Presentations

After adjourning at midday, the group spent the afternoon participating in the Technical Site Tour, which included a site visit of the San Antonio River Improvement Project.

THURSDAY, AUGUST 7, 2008

Environment and Human Resources Section Presentations

Roger Driskell, Illinois DOT: Section Chairman

Transportation Curriculum Coordination Council (TCCC) Update – Douglas Townes, FHWA Resource Center: Mr. Townes reviewed the history and membership of the TCCC. The TCCC has four main mission components:

1. Coordinate training and certification
2. Establish a national core curriculum
3. Develop training materials
4. Support agency training efforts

There are many challenges facing DOTs workforce development. Because of societal factors, young people tend to stay away from a career in the transportation profession. Mr. Townes' presentation discussed several of these factors.

The TCCC has developed a comprehensive training matrix. There are four levels of skills defined for each of the various disciplines involved in highway construction. There are many partners involved with this effort.

The TCCC will launch the National Transportation Training Resource Database in August 2008. This database will provide complete information on available training courses from around the nation. It will link to discipline competencies by skill level and a search feature will allow the user to locate training topics and courses with ease. There are more than 50 disciplines listed in the database. Users will require a user name and password, as is normal for the National Highway Institute website. Please visit www.nttr.dot.gov.

Mr. Townes briefly discussed a number of web-based training courses currently available on the NHI website, at no cost to the user: Some of the topics include:

1. Ethics
2. Basic Construction and Maintenance Documentation
3. Improving the Daily Diary
4. Basic Materials
5. Hardened Concrete Properties (Durability)
6. GPS Technology
7. Math
8. Plan Reading
9. Stormwater
10. Bolt Connections

Mr. Townes also discussed training currently under development. The list of new topics can be found in his presentation.

The TCCC is financed through a pooled-fund and contributions are now being sought for the next five years. For more information on the TCCC, visit www.nhi.fhwa.dot/tccc.

Building Highways with a Qualified Workforce: Florida's Online Training for Construction Engineering Inspectors – Brian Blanchard, FDOT and Mike Vandall, Red Vector: Mr. Blanchard began the presentation by discussing the levels of congestion on Florida's highways. FDOT's program is currently \$4.3 billion, and this requires a qualified workforce within both the Department and the consultant community. Mr. Blanchard discussed the benefits of computer-based training (CBT). Two notable benefits mentioned were CBT mitigates travel costs and lost work time for the employee.

Mr. Vandall reviewed the training methodology and details of CBT classes offered by Red Vector and FDOT. The training provides measures and metrics for the classes; exam scoring analysis; and instructor performance. The process allows consistent training data to be collected, which helps assure the Department of a well-trained and qualified workforce.

FDOT has partnered with Red Vector (www.RedVector.com) to develop a Construction Training Qualification Program. Ten days of live training classes have been converted to 80 CBT hours. It was reported that CBT has reduced the cost of training from nearly \$11 million to \$4.5 million for 5,500 industry participants. As a result, the training method has created a substantial savings to the Department and industry.

Mr. Blanchard said that while not every training topic is conducive to CBT, many are, and FDOT plans to expand the use of this technology in the future.

Environmental Management Systems and TxDOT's Construction EMS Implementation Plan – Monica Scott, TxDOT and Wayne Kober, AASHTO Center for Environmental Excellence: Ms. Scott discussed TxDOT's Environmental Management System (EMS). An EMS is a formal system to improve environmental compliance through measures and metrics

integrated into a road construction program. TxDOT's EMS is being implemented to meet EPA requirements and must be completely employed by 2013. The Dallas, Waco, and Yoakum Districts are pilot locations.

TxDOT has designated a team and developed a schedule to meet the EPA requirements. A number of report types are required including quarterly reports on the implementation. TxDOT's plan includes a gap analysis summary, an EMS policy statement, a description of the EMS process, a definition of the Environmental Training Program, Stormwater objective projects, and more. Ms. Scott reviewed a number of the details in each of these areas.

The training program includes 14 new iWay training courses for TxDOT. These courses will help to increase EMS awareness and the environmental requirements for roadway construction. Much of the focus will be on Stormwater, due to the needs of the Department to fully comply with the Clean Water Act. The plan includes efforts in the various stages of the project, from planning, PS&E, letting and construction.

In response to questions, Ms. Scott said the budget for the EMS is \$1 million. She also said that TxDOT will do a better job to communicate with the contractor the requirements of the Stormwater plans and in documenting its actions on projects.

Mr. Kober's presentation was titled "The Road to Environmental Stewardship via the Environmental Management System Concepts." He noted that the TxDOT system being developed is a "Cadillac" of EMSs. Mr. Kober mentioned that Caltrans and AASHTO hosted a peer-exchange in June 2008 that contained a great deal of valuable information on this topic. Mr. Kober also said that AASHTO is considering adopting some existing EMS software as AASHTO-ware.

In his presentation, Mr. Kober discussed the Mission, Vision, and Services offered by the AASHTO Center for Environmental Excellence. Its focus is on information sharing, training, and technical assistance. Visit www.environment.transportation.org for more information, and to sign up for the *AASHTO Environmental Alert* newsletter. Also, on September 23, 2008, there is a scheduled webcast on integrating Environment and Planning.

Mr. Kober's presentation defined AASHTO's EMS and key elements. He focused on the basic approach of a "Plan, Do, Check, and Act" model. Departments need to assure that they accomplish what is planned in the environmental area, and document and communicate the work that is performed.

He suggested the SOC consider co-sponsoring the NCHRP 25-25 Research Project to identify best practices and sponsor a handbook for construction personnel doing this work.

Concrete Pavements and Sustainability – Leif Wathne, ACPA: Mr. Wathne began his presentation by quoting the UN General Assembly's 1987 definition of sustainability: "Meeting the needs of the present without compromising the ability of future generations to meet their own needs." ACPA supports the Green Highway Partnership, which is dedicated to sustainable roadway construction.

He said cement is responsible for about 1.5 percent of the CO₂ emissions in the USA, and reminded the group that cement is used for vertical construction as well as highway construction. He mentioned cement manufacturers have reduced their CO₂ emissions by one-third over the past several decades.

Concrete, a combination of cement, aggregate, sand, and water often includes supplementary cementitious materials (SCM) such as fly ash. Ninety-two percent of these components have a low carbon footprint.

A key factor in sustainable concrete pavements is the longevity of the material serving as the roadway. Fifty-year-old concrete pavements are common in the USA, and Mr. Wathne provided a number of examples. Because little or no maintenance has been needed for the pavements, the carbon footprint of the facilities has increased little over the lifetime.

Longevity means less-frequent reconstruction. As a result, there is lower consumption of raw materials, lower energy consumption, reduction in pollutants, and lives saved. The outcome is real economic benefits for both the country and individual agencies. Mr. Wathne said concrete pavements can also utilize quiet, smooth, and cool industrial by products. Smooth pavements lead to reduced fuel consumption, and therefore reductions in CO₂, NO_x and SO_x. Based upon the fuel savings from a Canadian study of rolling resistance, the CO₂ associated with concrete pavement construction is compensated for in the first 9 years of the life of the facility.

Mr. Wathne discussed a number of environmental factors with concrete. Over 15 million tons of fly ash are used in concrete pavements annually, which reduce the effects to our landfills. He said that concrete is 100 percent recyclable and 140 millions tons of concrete are recycled annually. In addition, there are opportunities for noise improvements and cooler pavements with concrete.

For more information on the subject, see www.pavement.com.

Work Zone Safety Regulations and their Effect on Construction – Chung Eng, FHWA Office of Operations: Mr. Eng said that our infrastructure is aging and there is a need for rehabilitation and reconstruction of the existing facilities. This type of work increases worker exposure to traffic-related hazards in construction work zones. There is an average of 3 work zone fatalities and 160 injuries PER DAY in work zones.

Mr. Eng reviewed the Work Zone Safety and Mobility Rule, also known as Subpart J. He said 48 states are currently in full compliance with this regulation. Implementation of Transportation Management Plans (TMPs) must be developed for all Federal-aid projects.

He mentioned Subpart K was published as a Notice of Proposed Rulemaking (NPRM) on November 1, 2006, and the comment period closed on February 16, 2007, with 60 substantive comments received. The final rule was published on December 5, 2007, and must be implemented by December 5, 2008. Mr. Eng's presentation lists a number of items

required for compliance including positive protection devices, exposure control measures, other traffic control measures, uniformed law enforcement, work vehicles and equipment, payment for traffic control features and operations and quality guidelines for the traffic devices used in work zones.

The 3rd rule of interest covered by Mr. Eng was the “Worker Visibility Rule,” which becomes effective November 24, 2008. It requires all workers to wear high-visibility clothing of a specific type and class as defined in the regulation.

Because of these new rules, there will be an increased need for work zone training, public communication, more performance monitoring assessment and ultimately safer work zones.

For more information on these rules, visit: www.ops.fhwa.dot.gov/wz . For the state DOTs, the first point of contact should be your local FHWA Division office. In addition, the National WZ Safety Information Clearinghouse website is a good reference. See website: www.workzonesafety.org

In response to questions, it was stated that PA has an active training program to convey these rules to the local agencies.

Subcommittee Chairman and Vice Chairman Topics

Thomas Bohuslav, TxDOT, Subcommittee Vice Chairman

International Scan, Public Private Partnerships, Lessons Learned – Michael Garvin, Virginia Tech University: Dr. Garvin and a team from AASHTO, FHWA, and NCHRP performed an international scan of PPP projects in June 2008. The scan’s purpose was to examine programs, practice, and policies related to PPPs and to document findings. The team visited Portugal, Spain, England and 3 locations in Australia. The Final Report for the scan will be completed in winter of 2008-09.

The scan team saw a number of similarities among the locations visited. The general themes include network demand exceeds conventional resources, the roles of the national/regional highway network, and institutional learning.

Differences between the countries were noted in the Funding Mechanisms. Portugal uses real tolls and shadow tolls. Spain primarily has shadow tolls. The UK uses direct payments and Australia uses real tolls.

Differences between the countries were noted in Procurement Processes, and Risk Allocation and Management. Dr. Garvin’s presentation discussed these differences in detail.

Dr. Garvin identified several important findings from the scan, including (1) PPP’s are a small but critical percentage of the national roadway networks, (2) significant institutional learning has occurred, (3) highway PPP arrangements are not primarily financial transactions, (4) highway PPP arrangements do not require user fees, (5) PPPs appear to allow the delivery of projects sooner, (6) innovation is involved in PPP projects, (7) PPP

contracts must balance technical, commercial, and legal conditions, (8) there is emphasis in partnerships, and more. Further, Dr. Garvin presented a number of Project Lifecycle Findings.

After lunch, the Subcommittee's Technical Sections convened to develop their final work plans. The information from these sessions is included in the individual Section Reports provided in Attachments B through F of this document.

SOC Members Final Business and Wrap-up Session

Thomas Bohuslav, TxDOT, Subcommittee Vice Chairman

Mr. Bohuslav called the session to order at 3:15 pm with presentations from the Technical Sections of their 2008/ 2009 Work Plans for the coming year.

Following the Section Reports, Mr. Bohuslav thanked the entire SOC leadership team for its efforts throughout the year. He recognized each Technical Section Chair, Vice Chair, and Secretary.

2011 Subcommittee on Construction Annual Meeting Location Presentations

Mr. Bohuslav then recognized Manual Banks, Arkansas State Highway & Transportation Department, to make a presentation promoting Little Rock, Arkansas for the 2011 meeting. After removing his shirt to uncover a bright red ARKANSAS tee shirt, Mr. Banks described the location of the proposed meeting location, and all of the amenities of Little Rock. A short 2½-minute video was also presented.

The Georgia DOT then made a brief video presentation that showed all of the amenities the City of Atlanta can offer. GDOT has previously hosted AASHTO and SASHTO meetings.

Byron Coburn and Thomas Pelnik discussed the advantages of having the SOC annual meeting in Norfolk, Virginia. A short video production inviting the delegates to Virginia was shown. Mr. Coburn said, "Ya'll come to Virginia in 2011."

West Virginia was the final state video presentation, and it is proposed that the 2011 SOC meeting be held in Charleston, West Virginia.

By vote, the Subcommittee selected Norfolk, Virginia as the 2011 meeting location.

Resolutions

Mr. Bohuslav then recognized George Raymond, ODOT, for presenting a resolution that was passed by the AASHTO Subcommittee on Maintenance (No.O8-10) to support the development of University curriculum and training development for infrastructure preservation and management. See Attachment G of this document for 2008 SOC Resolutions. It was moved by Mr. Raymond and seconded by Mr. Sadler, FDOT, to adopt

the resolution after a group discussion and editing by Mr. Bohuslav. The Subcommittee on Construction voted to support the resolution on this subject.

Other Business

Mr. Bohuslav then presented several questions to the SOC delegates for discussion.

1. Prequalification for Asphalt Paving. VT, WY, MI, KS, IN, AR, WV and FL indicated they prequalify.
2. Thermal Segregation Specification. WA, CO and AK indicated they include a spec.
3. Partial Payment for Fabricate Structural Steel. OK, NC, FL, VA, MA, WV, LA, AR, MN, AK, KS, VT and ND indicated they make provisions for payment.
4. On-line Training. TX, FL and CA use on-line computer training for employees.
5. Post-Tensioning for Precast Segmental Box Construction Duct Coupling Specification. No replies from the delegates on the use of this spec.
6. OSHA citing states for contractor violations. VT and MI indicated they have been cited.
7. Issues with asphalt and styrene butadiene styrene (SBS). Except for MS, no issues reported with the SBS copolymer. The discussion indicated that there were supply issues in OK, IN, ID, TX and many other states.

The 2009 SOC summer meeting will be August 2-6, 2009, in Chicago, Illinois, at the downtown Doubletree at 300 E. Ohio Street, 5 to 6 blocks away from the Navy Pier. Roger Driskell, Illinois DOT mentioned the museums and buildings would be of great interest to the SOC meeting attendees.

The SOC annual meeting was adjourned at 5:02 pm.

ATTACHMENTS

Attachment A – AASHTO SOC Officers and Meeting Attendance List

Attachment B – Contract Administration Section Report

Attachment C – Roadway and Structures Section Report

Attachment D – Computers and Technology Section Report

Attachment E – Environment and Human Resources Section Report

Attachment F – Research Steering Committee Report

Attachment G – 2008 SOC Resolutions

Attachment H – FHWA Meeting Minutes

Attachment A

AASHTO SOC Officers and Meeting Attendance List

AASHTO Subcommittee on Construction Officers

Administration	Chair	Vice Chair	Secretary
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Revised: August 7, 2008

**AASHTO Highway Subcommittee on Construction
2008 Annual Meeting, San Antonio, Texas
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Attachment B

Contract Administration Section Report

**Contract Administration Section
Meeting Minutes
AASHTO Subcommittee on Construction
August 4 and August 7, 2008 – San Antonio, Texas**

2008-2009 Section Leadership

*Chairman – Ellis Powell, North Carolina DOT
Vice Chairwoman – Linea Laird, Washington State DOT
Secretary - Jerry Yakowenko, FHWA*

Minutes

Mr. Powell welcomed the Subcommittee members and guests to the 2008 Contract Administration Section meeting. The attendees included 51 representatives from various agencies, associations and companies (including 16 State DOT representatives, 27 FHWA representatives, 3 representatives from other public agencies, and 5 representatives from various associations and companies). An attendance list is attached for reference.

The first order of business was the election of a new vice-chairperson. Linea Laird, Washington State DOT, volunteered for this position. The Section voted to accept her offer. Ellis Powell thanked Jeff Benefield for his assistance over the past three years and welcomed Ms. Laird as the Vice Chair.

2007-2008 Work Plan Accomplishments

Jerry Yakowenko gave a brief overview of the 2007-2008 Section accomplishments.

1. Current Practices for Cost Containment – Section members met by phone conference on December 12, 2007 to discuss cost containment strategies. This group agreed to provide comments and suggestions to Jerry Yakowenko so that FHWA's Highway Cost Increases and Competition Web Page could be updated to provide current information for the state DOTs for cost containment strategies. The following Section members assisted with this task: Linea Laird- WSDOT, Claude Oie – Nebraska DOR, Gene Hoelker- FHWA RC, and Jerry Yakowenko – FHWA-HQ.

Status: Task is complete. The updated web page is posted at:
<http://www.fhwa.dot.gov/programadmin/contracts/price.cfm>

2. Approval Authority for Contract Change Orders / Time Extensions / Scope Section members met by phone conference on November 16, 2007 to discuss the scope of this task and how information could be collected and shared with the other State DOT members. Section members participating in this task included Lewis Harden- FHWA-AL, Craig Actis FHWA-Resource Center, Jeff Benefield – Alabama DOT, Cal Gendreau – North Dakota DOT, Greg Mayo- Georgia DOT and Jerry Yakowenko – FHWA. It was agreed that the Section would solicit information regarding State DOT policies through

and email survey, summarize the responses in a spreadsheet and request AASHTO to post the results on the SOC web site. On November 26, 2007, Jerry Yakowenko sent an email to all SOC member soliciting the necessary information.

Status: The task is complete; the spreadsheet summary and state files are posted on the AASHTO SOC web site:

<http://www.transportation.org/sites/construction/docs/change%20order%20delegation.xls>

3. Current Practices for Fuel and Asphalt Cement Price Adjustment Clauses On November 11, 2007, the following Section members met by phone conf - Ellis Powell - NC DOT, Linea Laird - WSDOT and Jerry Yakowenko - FHWA to discuss the scope of this task. The group decided to update the SOC spreadsheet that summarizes the current use of price adjustment clauses.

Status: The task is complete. The spreadsheet is posted at:

<http://www.fhwa.dot.gov/programadmin/contracts/2007aashto.cfm>.

4. Liaison with the FHWA / AAHSTO / Industry DBE Work Group – Jerry Yakowenko and Ellis Powell volunteered to participate in coordination activities.

Actions: December 4, 2007 - Ellis Powell and Jerry Yakowenko participated in phone conference to discuss NCHRP Project 20-07 - Task 233 – AASHTO DBE Toolkit. The due date for final comments on the DBE Toolkit was July 4, 2008. D. Wilson Consulting Group is now preparing the final report for NCHRP.

5. Developed a program for the 2008 SOC CA Section meeting. The final topics and invited speakers included: Partnering with Utilities – Bob Garza and Associates, AT&T; Dispute Resolution – Craig McDaniel- WSDOT; David Sadler, FDOT; Seven Bridges in 75 days – Ellis Powell, NCDOT; Risk Assessment for Bonds for Highway Contracts - Howard Cowan Bond Agency, Lubbock, TX.

Discussion of recommendations from the Highway Construction Cost Workshop

The Section discussed recommendations from the 2007 Highway Construction Cost Workshop that have been delegated to the Contract Administration Section for action.

The Section members agreed to pursue Cost Workshop Recommendations number 1, 2 and 4 as work plan items for the coming year but not recommendation number 14 (see below):

1. Value Engineering Change Proposals The Section agreed to pursue this item as a work plan item (see workplan item #2 in the 2008-2009 Annual Work Plan).
2. Constructability Reviews The Section agreed to pursue this item as a work plan item (see workplan item #3 in the 2008-2009 Annual Work Plan).
4. Alternate Bidding Procedures The Section agreed to pursue this item as a work plan item (see workplan item #4 in the 2008-2009 Annual Work Plan).

14. Risk Allocation Issues - Contract Requirements The Section discussed the risk allocation/contracting issues but decided that most of these topics were very specific issues that could be reviewed by many state DOTs, but that it would be impractical to address these on a national basis.

Discussion of Potential Topics and Presenters for the 2009 SOC Meeting

The section members discussed potential presentation topics for the 2009 Contract Administration Section portion of the SOC meeting. Potential topics include:

1. recycled asphalt paving / warm mix and associated contract issues
2. alternate pavement type bidding procedures and the use of life-cycle-cost adjustment factors used in the bidding process (Missouri?)
3. tied resurfacing projects
4. use of incentives for recycle material
5. accuracy of indices currently being used in price adjustment clauses
6. alternative pavement type bidding and the ownership of RAP (Kentucky issue)
7. design-build and performance specifications
8. design-build projects and FHWA approvals
9. compliance with the work-zone safety regulation
10. global climate change
11. warm-mix asphalt paving issues on I-65 / I-75 (KY?)
12. use of recycled materials that could be incorporated in paving mixtures
13. claims avoidance and specifications to minimize / mitigate claims
14. eligibility of safety hardware and state policies for replacing safety hardware
15. best practices for minimizing contract cost growth
16. industry perspective on price volatility issues
17. legal issues in claims avoidance / mitigation
18. Capability of machine controlled grading for calculating daily quantities and pay amounts – state perspective? (caterpillar , Mcannich?)
19. Thermal segregation of hot mix (Benefield)
20. Roller compacted concrete (Ohio?)

2008-2009 Work Plan

The Section agreed on the following work plan items for the coming year:

1. Update spreadsheet on State DOT Use of Price Adjustment Clauses At the Associated General Contractor's request, the SOC members edited a hardcopy version of the spreadsheet at the SOC meeting on Tuesday August 5, 2008. Brian Deery with AGC will email the spreadsheet to Jerry Yakowenko who will solicit any remaining edits from the SOC members who were not in attendance and then post the spreadsheet at the following address: <http://www.fhwa.dot.gov/programadmin/contracts/2007aashto.cfm>.
2. Assess current practices and provide good examples of value engineering change proposals This work plan task will provide for the review and assessment of State DOT practices for implementing value engineering change proposals and provide examples of VECPs that might be considered as current examples that would be of interest to other states. The FHWA VE web site will be used as a reference (<http://www.fhwa.dot.gov/ve/>). Representatives coordinating this task include: Eric Burns (for Brenda O'Brien) – Michigan DOT, BSB Murthy FHWA-FL, and Jeff Zaharewicz, FHWA-HQ.
3. Update the AASHTO Subcommittee on Construction's 2000 document titled: "Constructability Review Best Practices Guide" and compile case studies where constructability reviews have resulted in significant cost reductions Representatives working on this task include: Maureen Bluhm, FHWA-TN, and Craig McDaniel-WSDOT and Jerry Yakowenko – FHWA.
4. Current Price/Supply Issues, Alternate Bidding Issues, Practices for Increasing Competition The section will develop a questionnaire to address these issues. (Claude Oie- Nebraska DOR, Ellis Powell – NC DOT, Jeff Benefield AL DOT and Jerry Yakowenko- FHWA)
5. Survey the states to update the Claim Certification Questionnaire last coordinated by Alabama DOT in 2007 Representatives (Jeff Benefield – AL DOT, Linea Laird - WSDOT)
6. Survey of state practices concerning adverse weather impacts (update the 2005 SOC delay survey) (Jennifer Balis – FHWA, Cal Gendreau – ND DOT)
7. Analysis of cost trends associated with contract overruns including managing and providing design feedback (Craig McDaniel WS-DOT, Bill Hanson – FHWA-KY, John Perry FHWA-ID)

Construction Contract Administration Related Research Needs

Linea Laird led a discussion of construction management / contract administration research needs. The section members reviewed the list of research items discussed at last years meeting including:

1. Cost / Benefit analysis for innovative contracting techniques
2. Effectiveness of alternate pavement bidding procedures
3. The effects of time-related incentive/disincentive provisions on quality and long term performance
4. Issues relating to single-bid contracts
5. Legal issues associated with the use of liquidated damages
6. Innovative ways to use road user costs to provide increased contractual incentives
7. Quality of consultant work
8. Bonding/ surety requirements for warranties
9. Comparison of bid prices versus engineers estimates related to the time of the year and State DOT letting cycle
10. Green highways / recyclable products
11. Innovative cost cutting techniques (practical design)
12. Synthesis on the definition of “substantial completion”
13. Synthesis on inefficiency claims
14. Synthesis on pavement markings and applications
15. Synthesis on proprietary issues for materials
16. Cradle to Grave Project management
17. Life Cycle Cost Determination beyond pavements
18. Cost Estimating for DB Project
19. Value Engineering for DB
20. Scope Development for DB
21. Materials Acceptance
22. Mitigating Barriers to Bonding/Insurance of Small Businesses
23. Methodologies for Post Construction/Maintenance Feedback
24. Risk Allocation (underway by ETG)
25. Synthesis of Innovative Cost Cutting Tech
26. Innovative Construction Techniques Regarding Safety
27. Costs Associated w/ Awarding Contracts
28. Weather Delays on Cal Day/Completion Date Projects
29. Reduced construction windows/ traffic best practices
30. Synthesis on how States determine the On-Time Performance of Contractors
31. Synthesis on Contractor QC Management Practices
32. Summary of Legal Precedents involving Contract Time charges

After some discussion, the Section members voted to prioritize five potential topics for Linea to take to the Research Board meeting on Wednesday morning. These prioritized topics included:

1. Synthesis on Contractor QC Management Practices (What methods are States using to require Contractors to follow the best QC management practices? Are written QC

- procedures required? Are construction tolerances shown in specifications followed by DOT QA inspections?) (12 votes)
2. Summary of Legal Precedents involving Contract Time charges. What case history exists for lawsuits involving DOTs being challenged over time charges, LD assessment, I/D assessment, etc? (12 votes)
 3. Cost –benefit of consultant work (12 votes)
 4. Synthesis of errors and omissions policies and practices (10 votes)
 5. Best practices for bonded warranty work (3 votes)

Other Issues

2009 Scan recommendations

One member of the Section suggested a domestic SCAN on “Intelligent Compaction, warm-mix, thermal imaging – segregation/compaction issues.” (For reference, the FHWA program contacts for these topics are Mike Rafalowski 202-366-1571, Matt Corrigan 202-366-1549).

Attachment C

Roadway and Structures Section Report

**Roadway and Structures Section
Meeting Minutes
AASHTO Subcommittee on Construction
August 4 and August 7, 2008 – San Antonio, Texas**

2008-2009 Section Leadership

*Chairman – David Sadler, Florida DOT
Vice Chairman, Roadways – David Ahlvers, Missouri DOT
Vice Chairman, Structures – David Hoyne, Vermont DOT
Secretary – Gus Shanine, FHWA*

August 4, 2008 & Breakout Session

Dave Sadler, Florida DOT, chair of the task force introduced himself, the 2 vice chairs, and asked the people in the room to also perform self-introductions. Mr. Sadler asked that everyone sign-in (See the attached list of attendees). He indicated that he is going to solicit ideas for international scan ideas and research topics to be established for next year. Mr. Sadler then began reviewing the work plan items for the section in 2007/2008.

1. Amount of time inspectors spending time not inspecting –Emphasis of this is to review the amounts of time inspectors are spending doing work other than inspecting to determine if there are areas that can be improved upon by determining if there is value in the non-inspection work being done. Are there opportunities to reduce paperwork or data collection? What parts add value? Inspector Time Use Survey to be complete by December 2007 **Joint effort Dan Liston and Steve Mueller.**

A draft survey was developed by the team in January 2008. A hard copy was provided to Mr. Sadler. The survey still need some work. Mr. Mueller indicated that he will solicit comments from other states before they complete the survey and make it ready for distribution. **Mr. Steve Mueller will continue his efforts in completing this item.**

2. Construction workmanship and QA program. Obtain and summarize current best practices for inspection and measurement of workmanship. Prepare recommendation QA program guide (which includes workmanship) for SOC. DOT additional surveys on QA by end of September, finish paper by December **Greg Doyle**

Mr. Doyle received responses from 20 States to the survey in early spring this year. He resent the survey again to the States and now he has 37 responses. The survey consisted of 6 questions that mainly focused on the quality of finished products. The results of the survey show trends of how to measure quality, workmanship, and how we could improve some of our processes and procedures (room to raise the bar and identify best practices). A draft incomplete guide on QA was developed (See Attachment No. 2 and No. 3 for more details). The guide has the following:

- It defines QA and the 6 core elements of QA.
- What is the QA program and what is expected on projects.

- Recommended practices including having the State's Material and Construction offices communicate and coordinate their QA activities.

The plan is to involve private industries as well as work within FHWA and State representatives to complete this task. Once the guide is complete, it will be provided to our Section and then circulated for comments. Mr. **Greg Doyle will continue his efforts in completing this Item**

3. Pavement markings – Scope of effort entails a white paper describing the best practices being used around the country (75% complete). Will look at removals of existing striping, transition areas, and installations of new stripes. **Joint effort Jason Humphrey with Terry McDuffie**

This item was discussed among our participants. A motion was made, and it was decided to drop it. **Complete**

4. Develop a catalogue of various practices of reviews (constructability, VE, Contractor solicited input, and post construction feedback) to improving the quality and effectiveness of plan sets. Market the result of this effort to the DOTs. Catalog Various Best-Practices: Complete by December 2007. **Julio Alvarado, Assist from Rob Elliott**

Mr. Rob Elliot found documentations developed back in 2001 on successful practices but not much work was accomplished on this task so far. The group talked about Post-construction reviews being used in few States. New Mexico has been conducting these types of reviews for the past 6 month. Minnesota and Montana has done similar type reviews on 5 or 6 projects so far.

Mr. Elliot indicated that he noted that several States are using engineers to work on design during the winter season and construction during the summer. Maine and Colorado States are among those states that use this process.

There was a consensus among our participant to change this task from developing a catalogue to rather surveying the States for new innovative type reviews.

Rob Elliot and David Hoyne will continue the efforts in completing this item.

5. Conduct a survey to determine how DOT's are accomplishing specialty construction inspection (ITS, Bridge Painting). Specifically determine if it is through outsourced means or State resource, the type of certification process used (if any), and the relative cost difference in outsourced services compared to agency staff. Certification findings complete (Dan) – forward to TCCC to decide how to move forward(Rob Elliot)
Dan Liston, Assist from Rob Elliott

This item was discussed among our group and it was decided that training was being offered through other means and this item will be forwarded also to TCCC to be done. **Complete**

6. Girder Bracing. David Sadler will include all comments received in the draft and will coordinate with the structure committee to finalize the report. **David Sadler**

Mr. Sadler indicated that he is in the process of finishing this item and he will provide a copy of the final report soon. **Complete**

7. Mid-year meeting webinar in December **Rob Elliott**

Throughout the year several web conferences and telephone conferences were being held by our group. **Complete**

After a break, Mr. Sadler requested additional ideas for work Plan for next year. We discussed several possibilities. Here's a summary of potential items:

- Asphalt cost escalation
- Steel indexing
- Buy America (Global Competition)
- Alternate pavement bidding and Life Cycle Cost

At the end of our discussion, it was decided that we should proceed with ideas presented at the AASHTO Construction Cost Workshop. These ideas included three general cost reduction initiatives items and one item on state and federal requirements described below:

1. Standardization of Specifications
 - a. Consolidate aggregate and other material specification requirements on a regional or national basis
 - b. Develop uniform specification requirements where regional similarities exist (for example: Structural Committee for Economic Fabrication)

The group wanted to identify where it is beneficial to be used on a regional basis and the need to contact material producers

2. Practical Design
 - a. Refine and promote a “practical design” philosophy (similar to Missouri DOT) of “doing what is required rather than what is desired” **David Hoyne**
3. Recycled Materials
 - a. Promote/encourage greater use of recycled asphalt pavement and recycled concrete at the state level
 - b. Promote/encourage the use of warm-mix asphalt paving **Roy Rissky, Kansas DOT**
4. Aggregate/Material Sources
 - a. Eliminate barriers to asphalt and cement imports
 - b. Support new aggregate sources, plants, and quarries at state agency and political levels

Mr. Sadler will contact Mr. Thomas Bohuslav to collect more information on these 4 ideas and will eventually contact our Section participants to get feedback.

Mr. Sadler then began discussing research problem statements. Here is a summary of topics being considered:

1. Hairline cracking in long prestressed members
2. **Use of recycled materials in superpave mixture, extra tire rubber, and shingles**
3. **Do you achieve enough friction with profile grinding on bridge decks without transverse grooving, skid testing for friction can this be improved.**
4. Cost saving of practical design
5. Compaction of asphalt mixtures on bridge decks without vibratory compactors.
6. Accelerated bridge construction, best practices
7. Use of cement treated RAP as base for pavements.
8. **Reevaluations of FHWA requirements of scour on structures.**

Mr. Sadler then discussed potential topics to be presented next year:

Precast concrete pavements

RAP in hot mix and concrete pavement

Warranties

Laser Video testing of installed pipes – FDOT

Intelligent Compaction – results of what has been done

Pavement Smoothness – ProVal software update – Steve Mueller

IRI versus other approaches

Smoothness measurements and specifications

Thermal Imaging for asphalt pavements – what's that status

Thermal imaging for drilled shaft construction

CSL issues with regard to results

Use of weathering steel on bridges

Two Coat paint system issues – David Hoyne NEPCOAT

Construction Workzones – focus on successes, trends, best practice

Concrete barrier, Guardrail, Cable barriers comparison

Innovations seen through DB – DBIA representative of what is being found

Contracting for Preventive Maintenance

Lighting – LED lighting on 35W bridge for roadway lighting

Quality of pavement markings – what states are doing – Alabama

ADA compliance issues – pedestrian mobility through construction sites

What changes in practice are states doing to improve costs on projects – design changes that are now cost effective because of increasing fuel costs – Alabama

Construction inspection of in-place recycling projects

BCT or MELT retesting to new standard for crashworthiness

3 bulbs vs. 5 bulbs for signalized intersection – Kevin TX division FHWA

Review SHRP2 research projects underway

August 7, 2008

Mr. Sadler opened the Section meeting at 1:30 pm. Mr. Sadler began by announcing the results of the Research Committee Meeting. He indicated that item 2 (**Use of recycled materials in superpave mixture, extra tire rubber, and shingles**) and item 8 (**Reevaluations of FHWA requirements of scour on structures**) that we proposed during the Monday August 4 meeting were being considered and item 3 (**Do you achieve enough friction with profile grinding on bridge decks without transverse grooving, skid testing for friction can this be improved**) is being considered after further review.

Potential Presentation Topics for Next Year:

We revisited with the potential topics from Monday's meeting and the group agreed on the items highlighted below:

Precast concrete pavements

RAP in hot mix and concrete pavement

Warranties

Laser Video testing of installed pipes – FDOT

Intelligent Compaction – results of what has been done, (NCHRP study is being done on this effort)

Pavement Smoothness – ProVal software update – Steve Mueller

IRI versus other approaches

Smoothness measurements and specifications

Thermal Imaging for asphalt pavements – what's that status

Thermal imaging for drilled shaft construction

CSL issues with regard to results (David Sadler)

Use of weathering steel on bridges

Two Coat paint system issues – David Hoyne NEPCOAT

Construction Work Zones – focus on successes, trends, best practice (Smart Work Zone and other innovations) ADA compliance issues – pedestrian mobility through construction sites

Hoover Dam bridge, Maine's Penobscot narrows bridge, and Oakland Bay Bridge projects

Roadway safety ideas being implemented in different States (Safety edge drop off,

Centerline rumble strips, others) Rob Elliott will investigate

Concrete barrier, Guardrail, Cable barriers comparison

Innovations seen through DB – DBIA representative of what is being found

Contracting for Preventive Maintenance

Lighting – LED lighting on 35W bridges for roadway lighting

Quality of pavement markings – what states are doing – Alabama

What changes in practice are states doing to improve costs on projects – design changes that are now cost effective because of increasing fuel costs – Alabama

Construction inspection of in-place recycling projects

BCT or MELT retesting to new standard for crashworthiness

3 bulbs vs. 5 bulbs for signalized intersection – Kevin TX division FHWA

Review SHRP2 research projects underway

The section then revisited the 2008/2009 Work Plan items, and agreed on the following Work Plan:

Roadway and Structures 2008/2009 Work Plan

1. Amount of time inspectors spending time not inspecting –Emphasis of this is to review the amounts of time inspectors are spending doing work other than inspecting to determine if there are areas that can be improved upon by determining if there is value in the non-inspection work being done. Are there opportunities to reduce paperwork or data collection? What parts add value? Inspector Time Use Survey to be complete by December 2008 **Joint effort Dan Liston and Steve Mueller. Follow-up with Steve on which states have already done the survey. Steve will follow-up by November 2008**
2. Construction QA program. Complete draft guidelines for development and implementation of comprehensive QA programs. Complete by March 2009. **Greg Doyle**
3. Develop a survey of various practices of reviews (constructability, VE, Contractor solicited input, and post construction feedback) to improving the quality and effectiveness of contract documents. Market the result of this effort to DOT's. Complete by March 2009. **David Hoyne, Assist from Rob Elliott**
4. Practical Design
Refine and promote a “practical design” philosophy (similar to Missouri DOT) of “doing what is required rather than what is desired” Complete Oct 31, 2008, **David Ahlvers**
5. Recycled Materials
Identify techniques to find greater use of recycled materials that reduces energy consumption and translate into cost reduction.
A methodology statement from SOC will be made.. Complete Oct 31, 2008, **Roy Rissky, Kansas DOT**

Mr. Sadler discussed potential scan ideas and the group agreed on the following:

Ideas for International Scan

- What construction techniques is being used for fast tracking PPP
- Rapid construction of infrastructure facilities (Roads & bridges) such as what's happening in China

Ideas for Domestic Scan

- Pavement Marking removal
- Best practices for emergency contracts

Attachment D

Computers and Technology Section Report

**Computers and Technology Section
Meeting Minutes
AASHTO Subcommittee on Construction
August 4 and August 7, 2008 – San Antonio, Texas**

2008-2009 Section Leadership

*Chairman – George Raymond, Oklahoma DOT
Vice Chairman – Jeff Gower, Oregon DOT
Secretary – David Hawk, FHWA*

2007-2008 Accomplishments

1. Continue to provide information to AASHTO website.
 - Continue to provide updates to national website and the National Highway Specification Website. Establish a roster of responsible individuals in each state to update Specification Website
Continuous effort – roster developed
 - Participate in FHWA effort to enhance National Highway Specification
On going effort that is about complete.
 - Pursue reorganization and update of AASHTO SCOC Website to increase ease of navigation
No progress
2. Continue to provide leadership, extension, and guidance for the enhancements of the AASHTO Trns●Port software and CRLMS.
On going – CRLMS underway (Beta testing January)
3. Support TCCC in the development of one-day training module for stakeless construction. Working with Doyt Bolling, ITAP Utah State to develop a Short one day or half day course. Example specifications are listed on the National Highway Specification website.
A presentation from the FHWA Field Engineers conference was converted into a web based training course. The TCCC participated in the development of the course. The web training course is available through the TCCC and the National Highway Institute (NHI) websites free of charge.

Wisconsin has training course for stakeless construction (1/2 day classroom and 1/2 day field). Purdue University has developed draft report on stakeless excavation. A copy will be provided to the technical section when available.
4. Provide representation to the following committees:
 - a. NICET steering committee

One steering committee meeting was held. Douglas Townes attended steering committee meeting. Oregon DOT participated in subcommittee activities.

- b. Participate in the Electronic Engineering Data Technical Committee. Continuity of Planning, Design, Construction, Maintenance documentation. Sharechive, SiteManager, etc.

The status of the committee is not known. Three nominees have been made by C&T Section. A fourth person individual has been identified and their name will be submitted.

- c. AASHTO TIG

Greg Mayo, GA, represents subcommittee on TIG

5. Survey state of the practice in electronic project documentation, as-built documentation, and archiving (types of native files – scans or editable documents). Brian Blanchard draft questions to share with group.

No progress

6. Participate in promoting traffic modeling (e.g. CA4PRS) efforts to improve work zones in urban corridors at macro level. Identify need for a number of workshops including design and construction engineers to increase awareness of modeling software and technologies to integrate into plans and specifications. Notes from last workshop will be transmitted to committee. Based on notes scope of future workshops can be formulated.

No progress, but there are still plans to complete. No workshops were held last year. A follow up workshop may be held next year. Consideration is being given to remove fee through a pooled fund study. CA4PRS now requires a licensing fee to use.

7. Participate in teleconference (scheduled for October) for NCHRP 20-5 Topic 38-02 “IT Best Practices for Design and Construction”

Complete – Report published.

8. Develop a white paper to identify opportunities and challenges for automation of materials production and placement during construction including production (e.g. bar coding, RFID chips) and testing (e.g. maturity metering): where we are today, what technology and specifications are currently available, and where we would like to go. Start with an outline.

No progress

2008-2009 Work Plan

1. Continue to provide information to AASHTO website.
 - Continue to provide updates to national website and the National Highway Specification Website.
 - Participate in FHWA effort to enhance National Highway Specification Website

- Pursue reorganization and update of AASHTO SCOC Website to increase ease of navigation Categorize assorted downloads, presentations, and reports on website.
- 2. Continue to provide leadership, extension, and guidance for the enhancements of the AASHTO Trns●Port software and CRLMS.
- 3. Provide representation to the following committees:
 - a. Participate in the Electronic Engineering Data Technical Committee. Continuity of Planning, Design, Construction, Maintenance documentation. Sharechive, SiteManager, etc.
 - b. AASHTO TIG
 - c. TRB Technical Committee - GPS in Construction (Design, survey, construction, etc.)
- 4. Survey state of the practice in electronic project documentation, as-built documentation, and archiving (types of native files – scans or editable documents).
- 5. Participate in promoting traffic modeling (e.g. CA4PRS) efforts to improve work zones in urban corridors at macro level. Participate in the development of a workshop including design and construction engineers to increase awareness of modeling software and technologies to integrate into plans and specifications.
- 6. Develop a survey regarding innovative material testing/acceptance procedures in use (e.g. use of nuclear density gauges for acceptance, other NDT for pavement acceptance, maturity meters, asphalt segregation measurement, use of contractor test results, machine controlled grading, thermal cameras, intelligent compaction, NDT to replace coring pavement etc.)
- 7. Survey states regarding programmatic approaches to address cost containment (e.g. MO – Practical Design, PA – bridge alternates, NC - pipe alternates). The survey should request information regarding the influence on price.
- 8. Survey State DOT responsible office on the use of profilers, blanking bands, verification of profile results, use of incentives in specifications and certifying equipment and operators.
- 9. Write a problem statement for an NCHRP 20-7 study to update equipment fuel usage factors for fuel price adjustment clauses. (Reference FHWA TA 5080.3)
- 10. C&T Quarterly Conference Call.

Attachment E

Environment and Human Resources Section Report

**Environment and Human Resources Section
Meeting Minutes
AASHTO Subcommittee on Construction
August 4 and August 7, 2008 – San Antonio, Texas**

2008-2009 Section Leadership

*Chairman – Roger Driskell, Illinois DOT
Vice Chairman – James Tynan, New York State DOT
Secretary – Jeff Lewis, FHWA*

Mr. Driskell welcomed the Subcommittee members and guests to the 2008 Environment and Human Resources Section meeting. The attendees included 19 representatives from various agencies, associations and companies (including 12 State DOT representatives, 6 FHWA representatives, 1 representative from various associations and companies). An attendance list is attached for reference.

Summary of 2007-2008 Work Plan Accomplishments

Environmental Stewardship

1. Selection of appropriate BMP's for specific applications - Auburn University. Partner with Center for Environmental Excellence. Lead: Barry Fagan - CO
Status: Still active. Carry over to 2009.
2. Dust off proposed Domestic Scan for Storm Water and Pollution control (SWPPP & NPDES) and find status of ever completed. Lead: Jeff Lewis - FHWA
Status: Task completed. Not selected by AASHTO.
3. Survey of contractors requirements to have a point environmental representative similar to traffic control supervisors for work zones. Lead: Jeff Lewis - FHWA
Status: Task completed. Power point presentation was given to the section.
4. Participate in NCHRP 25-25 Environmental Stewardship project. Lead – Jim Tynan - NY
Status: Still active. Carry over to 2009.

Work Zone Safety

1. Survey of positive protection used in mobile operations for highly mobile work zones (IE, striping operations, BALSIBEAM). Lead: Bernie Kuta – FHWA
Status: Still active. Carry over to 2009.
2. Feedback of new FHWA work zone implementation regulations. Lead: Bernie Kuta (Jeff Lewis) – FHWA
Status: Task completed. FHWA HQ's gave presentation to SOC conference attendees.
3. Report from Texas Transportation Institute (TTI) on new/innovative work zone items that FHWA will help market. EHR section members to review/comment on the report to

help it address state concerns/buy-in. Byron Coburn – VA, Chuck Correa – AK, Lead: Bernie Kuta – FHWA

Status: Still active. Carry over to 2009.

Human Resources

1. Attend meetings of the Transportation Curriculum Coordination Council (TCCC) and coordinate issues of interest. Douglas Townes/Chris Newman – FHWA

Status: Task completed. Presentation given to SOC conference attendees.

2. Survey the states to see what they are presently doing to overcome cultural/ language/etc. differences in determining how they can be adequately staffed and trained. Lead: Byron Coburn – VA, Jim Tynan – NY

Status: Survey completed. Results presented to section but write-up of results needed.

3. Survey of states on recruiting/retention of employees. Allow incentives (IE, Missouri), recruiting, VE studies % savings, bonuses, performance incentives, coop programs (allow benefits early). Lead: Byron Coburn – VA, Jim Tynan – NY

Status: Task completed. Results presented to section.

4. Participate on a pilot panel for a new National Highway Institute (NHI) class on “Environmental Factors in Construction.” Lead: Jeff Lewis – FHWA

Status: Still active. FHWA just approved funding and are accepting RFPs.

Presentations to SOC conference attendees:

Human Resources

- Transportation Curriculum Coordination Council (TCCC) Update
Douglas Townes – FHWA
- Building Highways with a Qualified Workforce: Florida’s Online Training for Construction Engineering Inspectors
Brian Blanchard, Director, Office of Construction, Florida DOT
Mike Vandall, Vice President of Enterprise Services, Red Vector

Environmental Stewardship

- Environmental Management Systems - The Center for Environmental Excellence by AASHTO Products and Services
Wayne Kober, Center for Environmental Excellence
- TxDOT’s Construction EMS Implementation Plan
Monica Scott, EMS Program Manager, TxDOT
- Concrete Pavements and Sustainability
Leif Wathne – Director of Highways, ACPA/PCA

- WZS - Work Zone Safety Regulations and their effect on Construction
Chung Eng, FHWA

Names of Other Committees Involved or with an Interest in Each Activity:

None

Dates and Locations of Future Committee Meetings:

Quarterly Status Teleconference Meetings are being initiated. The first 08/9 Status Meeting will be held in October.

Activities - Topics to consider for 2009

Roger – Handed out draft of National Highway Construction Cost Workshop in St. Louis.

- General Cost Reduction Initiatives (a, d & e working well for VA)
 - o Contracting Efficiencies
 - a. Encourage the use of web pages for pre-bid questions and answers
 - b. Promote the elimination of performance bonds on small projects
 - c. Promote the elimination of retention or retainage
 - d. Encourage states to provide payment for stockpiled materials
 - e. Provide guidance of bundling/unbundling projects where appropriate
 - f. Promote the use of additive alternate bidding (or deductive alternate bidding) to ensure projects are awarded on budget
- State and Federal Requirements
 - a. Encourage FHWA to re-examine program requirements (commercially useful function, graduation requirements, etc.) – AGC already working on this.
 - b. Provide guidance for setting appropriate project DBE goals.

Chris N. – FHWA - Presented a proposal on “Resolution of University Curriculum and Training Development for Infrastructure Preservation and Management”

Steve Mueller – FHWA – Gave a presentation to the Section on the FHWA FALCON #6 Environmental Stewardship effort. (Focused Area for Leadership and Coordination).

2008-20098 Work Plan, August 7, 2008

Environmental Stewardship

1. Selection of appropriate BMP’s for specific applications - Auburn University. Partner with Center for Environmental Excellence. Lead: Barry Fagan.

Plan/Status – Working on plans to construct a testing facility. The milestone to be reached by the August SOC Annual Meeting is full construction of the testing facility, but may be September before construction is complete. Currently Barry has received building plans for his review and comment. This is a candidate for a presentation for the 2009 Annual Meeting.

Action: Barry will report on the status of the testing facility at the Annual Meeting. Check with Jeff Benefield – anticipate to be done next year. Ask for other states to participate.

2. Resubmit Domestic Scan for Storm Water and Pollution control (SWPPP & NPDES).
Lead: Jeff Lewis – FHWA

Action: Resubmit. Roger - Ask Thomas B. what we can do to improve it and/or what concerns were previously stated by selection committee?

3. Survey of State DOT's for existing processes that were developed to resolve fines, consent decrees, etc. Lead: Frances Hood - ID

Plan/Status: This would tackle the things (e.g. specifications, contract administration procedures and processed, forms) in construction that that have been developed by states in response to the above as assistance for all states.

Action: Create survey with various questions on the above topic.

4. Participate in NCHRP 25-25 Environmental Stewardship project. Lead – Jim Tynan

Action: Carry over with Task #1 for 2009.

Work Zone Safety

1. Survey of positive protection used in mobile operations for highly mobile work zones (IE, striping operations, BALSIBEAM). Lead: Bernie Kuta – FHWA, Mark Leja - CA

Plan/Status: Still in progress as Bernie got units last week. Possible presentation on results to SOC. Look closer at moveable, temp barriers. i.e., zipper barriers? Different positive barriers being used. TMA & Balsi used by CA maintenance staff but not construction. What are others using/requiring? What is state of practice?

Action: Carry over for 2009.

2. Report from Texas Transportation Institute (TTI) on new/innovative work zone items that FHWA will help market. EHR section members to review/comment on the report to help it address state concerns/buy-in. Byron Coburn – VA, Chuck Correa – AK, Lead: Bernie Kuta – FHWA

Action: Carry over for 2009.

Human Resources

1. Attend meetings of the Transportation Curriculum Coordination Council (TCCC) and coordinate issues of interest. Douglas Townes/Chris Newman – FHWA

Action: Provide status at EHR Section mtg.

2. Participate on a pilot panel for a new National Highway Institute (NHI) class on “Environmental Factors in Construction.” Lead: Jeff Lewis – FHWA, Interested: Frances Hood – ID, Monica Scott - TX

Action: Provide status at EHR Section mtg.

Proposed Agenda 2009

- Report out on the above items

Presentations being considered:

Human Resources

- Changing Workforce Demographics – University of Indiana (demographic and generations value)
Tom DeCoster – Professor at University of Indiana

Environmental Stewardship

- Erosion control / storm water Construction evaluation by Caltrans. Practicality, storm water control silt fences, maintaining the items, rating system to how well they are doing, threat to the env with silt fence down? Provides feedback on BMP’s. Mark to provide link. Also, has video of BMP’s. Mark Leja – CA
- Selection of appropriate BMP’s for specific applications - Auburn University. Partner with Center for Environmental Excellence. Barry Fagan – CO

Work Zone

- WZ survey results and SONOBLASTER presentation. Bernie Kuta - FHWA

Attachment F

Research Steering Committee Report

**Research Steering Committee
Meeting Minutes
AASHTO Subcommittee on Construction
August 5, 2008 – San Antonio, Texas**

2008-2009 Section Leadership

*Chairman – Thomas Pelnik, Virginia DOT
Secretary – Katherine Petros, FHWA*

ACTION ITEMS are indicated in **bold**.

The 2008 meeting of the AASHTO Subcommittee on Construction (SOC) Research Steering Committee (RSC) was convened at 6:40am on August 5, 2008 in San Antonio, Texas. The meeting was continued over lunch that same day. The meeting concluded with agreement for proposals to the Research, 20-7, and Synthesis programs.

Those in attendance are listed at the end of the minutes. The Chair, Tom Pelnik (Virginia DOT), welcomed everyone to the meeting, and presented an overview of the meeting. He encouraged the participants to consider 1) persistent problems that they face but have not been able to solve, 2) the biggest problems they face and know how to address but simply lack resources to address, and 3) the biggest problems they foresee but need expert help in addressing.

NCHRP Update

Crawford Jencks (TRB/NCHRP) provided the group some background on NCHRP and how the program works. He also updated the group on TRB and NCHRP activities. There was discussion on the success rate for funding of projects submitted in past years by the SOC.

It was noted that NCHRP 20-7 are funds made available to the AASHTO Standing Committee on Highways (SCOH) and generally SCOH allocates the funds among its various subcommittees. The SOC RSC identified a proposal for a 20-7 project this year.

Jencks also discussed a current SCOR initiative to set aside \$5M to look at future strategic issues (50 years downrange). There will be a workshop in the next few months to discuss future megatrends. One of the things SCOR had in mind as a mega-trend is the effects of climate change. NCHRP may issue a solicitation as a result of the workshop, perhaps with a SHRP-like approach. Jencks encouraged the group to provide input.

Submittal Deadlines:

- Research problem statements are due September 15th
- 20-7 proposals are considered by SCOH twice a year when they meet, so there is an opportunity to submit projects in the Fall and in the Spring.
- Synthesis proposal statements are due January 31, 2009
- **Tom Pelnik will collect proposals from the RSC and make submissions on behalf of the SOC**

Technical Section Research Topics

The technical section vice chairs reported representing the various SOC technical sections to report on the research topics identified in their section meetings.

Contract Administration Section – Linea Laird (Washington DOT),

The Contract Administration Section had five research ideas, and the RSC elected to advance the following proposal:

- Research proposal for Alternative quality systems for applications in highway construction. (Joint Materials/Construction submission) Frame it as a long term issue due to declining workforce. **Marty Flores (FHWA – Western Federal Lands) will prepare this as a research problem statement. Concurrence from the AASHTO Subcommittee on Materials will be sought.**

In addition, the RSC considered a Synthesis project proposal for Contract time charges. Legal precedents, incentives/disincentives, what case studies exist. Jenks mentioned that NCHRP has a legal studies program and they do produce a treatise on case law. The SOC should look into this as a part of their literature reviews. **Jeff Benefield will review last year's submission and past legal studies to determine whether the topic warrants further study.**

Roadways and Structures Section – David Ahlvers (Missouri DOT)

The Roadways and Structures section identified the eight research topics. The following will be considered for research proposals:

- Use of recycled materials in Superpave mixes: tire rubber as a polymer substitute, effective use of shingles. **David Ahlvers will check with Ed Harrigan (NCHRP) to see if this is covered under any early NCHRP project. If not, he will write it up as a research proposal.**
- Revisiting the FHWA scour design criteria. **David Ahlvers will check with Ed Harrigan (NCHRP) to see if this is covered under any early NCHRP project. If not, he will write it up as a research proposal.**
- Accelerated bridge construction; best practices, lessons learned. Utah's experience. NCHRP may have something underway. **David Ahlvers will check. Also check what the AASHTO Technology Implementation Group (TIG) has.**
- Use of cement treated RAP as a base pavements. **Ahlvers to check with Ed Harrigan about whether NCHRP has looked into this before.**

Environment and Human Resources Section – Roger Driskell (Illinois DOT)

This section did not identify any research needs. Roger did participate when the Research Steering Committee meeting continued over lunch to discuss which needs coming from the other sections should move forward.

Computers and Technology Section – Jeff Gower (Oregon DOT)

The Computers and Technology Section identified two research topics. The RSC elected to advance the proposals as follows:

- Synthesis on the use of profilers: what blanking bands, how are they verifying results and certifying equipment and operators. This idea was generated in anticipation of performance measures that may be based on ride and it would good to know what the States are doing. **Jeff Gower will prepare this as a synthesis proposal. Katherine Petros will check what FHWA has available on this.**
- Update the past FHWA report on equipment fuel usage factors for price adjustment clauses. The prior report was prepared in the 1980s. This should be prepared as a 20-7 project. **Jeff Gower will discuss this with Gerry Yakowenko or Butch Wlaschin and then prepare a proposal for the 20-7 program.**

The chair welcomed suggestions from the rest of the group

Stu Anderson spoke about a statement on connectivity/communication on remote job sites. Their TRB Committee on Construction Management (AFH10) will submit this via CalTrans. **Jeff Gower will discuss this with Mark Leja (CalTrans).**

Jim McDonald recommended that the group consult the SOC strategic plan, which was prepared under NCHRP 10-58. It is posted on the TRB website at http://onlinepubs.trb.org/Onlinepubs/nchrp/nchrp_w51.pdf.

Hejl: There are also preservation, asphalt, and concrete roadmaps. We should look at them as a starting point to prioritize research. TRB Committees also post research needs. They can't submit them, and the SOC should look at these.

TRB AFH10 (Construction Management) submitted four statements that did not get funded.

- Cost benefit for alternate contracting
- Decision making process for innovative rapid construction methods
- Rapid NDT test methods
- Bid alternates using life cycle cost determinations

Many of the AFH10 projects appear to be elements of ongoing SHRP 2 efforts under the Renewal Track.

The question was asked whether it's possible to see the review comments for the proposals that were submitted last year. **Tom Pelnik will send out the link to the new projects that come with review comments. Crawford Jencks will send an electronic version of past project comments.**

Keith Molenaar suggested research in the area of decision support systems for: best value selection, design/build procurement. It was also suggested that there be some sort of follow-up on PPP procurement, and that it should be a step above a synthesis. Elements to be included would be: 1) Alternative project delivery methods – following up on work done 2) Risk assessment: look at the major risk areas and different contracting methods to address. FHWA's

Construction Management ETG sponsored three workshops and there is a separate NHI class on risk assessment though it is not detailed enough for projects. 3) Obtain the ETG materials to assess how to apply. Keith is also applying them in a SHRP2 project.

The initial meeting of the Research Steering Committee was adjourned at 8:00am and a smaller group reconvened over lunch the same day. The attendees list denotes those present for the lunch meeting with an asterisk.

Next year, Tom Pelnik will coordinate with the RSC in advance of the 2009 annual meeting. Plans were made to target mid-January 2009 for a conference call. This would provide an opportunity to identify additional 20-7 projects and to adequately prepare for the 2009 annual meeting.

Additional topics presented by the Technical Sections:

Contract Administration Section – Linea Laird (Washington DOT),

The Contract Administration Section offered the following additional research ideas:

- Cost/benefit analysis on the use of consultants. Something related to this was reported out at a WAASHTO meeting, maybe prepared by Louisiana.
- Synthesis: Errors and omissions policies and practices. What's the best way to manage? This may already be ongoing or completes as a synthesis study. **Linea Laird will check into this.**
- Synthesis on best practices on bonding warranty work. What information is available? NCHRP 10-68 has been expanded to incorporate a previously proposed synthesis on warranties. **David Reynaud will check to see whether this particular aspect of warranties is included under 10-68 and will get back to Laird.**

Roadways and Structures Section – David Ahlvers (Missouri DOT)

The Roadways and Structures section identified the following additional research topics:

- Assessing the cost savings from Missouri's practical design program
- Oversight of compaction of hot mix asphalt without vibration on bridge decks
- Hairline cracking in long prestressed members – was also submitted last year. Coordinate with Bridge Subcommittee to get support.

Profile grinding on bridge decks – do you still need to do transverse grooving? Consider a bigger effort on whether there's a better way to do testing for friction.

Attachment G

2008 SOC Resolutions

AASHTO Subcommittee on Construction (SOC)
Resolution in Support of University Curriculum and Training Development for
Infrastructure Preservation and Management
2008 AASHTO SOC Summer Meeting

WHEREAS, The AASHTO SOC met in San Antonio, Texas August 4 thru August 7, 2008; and

WHEREAS, The SOC reviewed the AASHTO Subcommittee on Maintenance Resolution 08-10 "Resolution in Support of University Curriculum and Training Development for Infrastructure Preservation and Management;" and

WHEREAS, the AASHTO SOC supports the aspect of the resolution regarding the need to revise university curriculum and develop professor awareness programs for infrastructure preservation and management; and

WHEREAS, the AASHTO SOC would add a component to the program that the awareness programs for professors be closely tied to a state's program; and

THEREFORE BE IT *RESOLVED*, that the AASHTO SOC supports FHWA in this effort.

BE IT FURTHER *RESOLVED*, that the AASHTO SOC members have established an effective date of this resolution of August 7, 2008 at the SOC summer meeting in San Antonio, Texas.

AASHTO Subcommittee on Construction (SOC)
Recognizing the Texas Department of Transportation
Host of the 2008 AASHTO SOC Summer Meeting in San Antonio, Texas

WHEREAS, The AASHTO SOC met in San Antonio, Texas August 4 though August 7, 2008;
and

WHEREAS, the SOC met and discussed highway construction business and technical issues;
and

WHEREAS, the conference started with state's feelings about FHWA being plainly stated....;
and

WHEREAS, the week started with a bang with George wrestling with accessing the information
on his thumb drive...; and

WHEREAS, SOC members from the states and even FHWA were greeted with Texas
hospitality by Thomas and his extremely competent and friendly staff...; and

WHEREAS, the SOC overcame the outdoor heat through social activities along the Riverwalk,
Market Square, and the Karaoke Bar...; and

WHEREAS, the SOC overcame indoor freezing temperatures during general and technical
section meetings ...; and

WHEREAS, the SOC member spouses were treated to fun and exciting adventures while SOC
members slaved away in meetings ...; and

THEREFORE BE IT *RESOLVED*, that the participants of the 2008 SOC have thoroughly
enjoyed their stay, appreciated the commitment and dedication of the Texas DOT staff, and
offer its thanks for a successful conference...., and

BE IT FURTHER *RESOLVED*, that the AASHTO SOC members have established an effective
date of this resolution of August 4, 2008 at the SOC summer meeting in San Antonio, Texas.

Attachment H

FHWA Meeting Minutes

**AASHTO HIGHWAY
SUBCOMMITTEE ON CONSTRUCTION
2008 MEETING
San Antonio, Texas
Friday, August 8, 2008**

FHWA Meeting Minutes

Opening Remarks & Introductions

Mr. Clutts, Engineering Coordinator for the FHWA Texas Division, called the meeting to order at 8:03 A.M., and welcomed everyone to the FHWA portion of the AASHTO SOC Meeting.

Dan Mott, FHWA's Houston Major Projects Engineer, was introduced to make a presentation on Overview of Texas' Construction Program/ TX Division Office. He reviewed the FHWA Division organization, and the TxDOT organization, program, and highway system. Among other things, his slide presentation showed screen shots from the Division office project tracking system database. There are 22 active environmental impact statements in the Division Office and 33 major projects (13 are active) at an estimated cost of \$221 Billion.

Contract Administration Session

Moderator – Jerry Yakowenko, HQ

Mr. Yakowenko discussed several items of interest to the construction engineers.

- **Recent Changes in the Buy American Policy.** The changes were statutory and should result in a more transparent process. There is a 15-day website posting comment period and a Federal register notification process that may result in a 6-7 week timeline for the complete processing of a Buy America waiver. This needs to be done in the PS&E portion of project development. A waiver during construction could cause significant delays. There have been 11 waivers requested so far this year. Historically there have only been 6 to 7 waiver requests annually in the past. Please contact Edwin Okonkwo for questions on this issue.
- **Patented and Proprietary Products:** Mr. Yakowenko said FHWA policy is viewed by some as a barrier to innovation. There have been several legislative proposals to change the process. Mr. Yakowenko said the focus of the existing policy, which remains in place, is to promote competition in the selection of materials in the highway construction industry.

The Public Interest Finding (PIF) database of 350 products proved valuable in the discussion. Mr. Yakowenko thanked Bernie Kuta and his staff intern from last year for developing the database. It is currently located on the FHWA Stewardship Portal on Staffnet.

- **Update of Design-Build Policy & the Role of the DO.** DB became operational in 2002 with the final rule. It is not experimental anymore, and should be approached the same as Design-Bid-Build. Within the risk analysis by the Division offices, if DB is seen as being higher risk, then the stewardship and project oversight requirement could be bumped up, just as with DBB projects. A number of the DO representatives requested a videoconference or webinar on this topic.

With long-term contracts, Mr. Bohuslav from TxDOT said because the public is very concerned about these projects, the Department is still watching and inspecting these projects no matter the level of financial involvement by the Department. Owners are becoming more prescriptive with the DB contractors.

Mr. Yakowenko said the public interest still needs to be represented by FHWA.

- **July 31, 2008 Asphalt Supply Issues e-mail to the DA's.** Mr. Yakowenko's e-mail was designed to help DO's and keep them informed on the rapidly changing asphalt market conditions. There was discussion of the e-mail and of the concerns for changing the long-term performance of the pavements by blindly changing the grade. The polymer supply issues are impacting asphalt availability and prices. Changing from a polymer modified asphalt to a neat asphalt may impact the performance (for example, reducing the design life from 20 years to 8 years) and may, therefore, also necessitate complete mix design changes.

There are competitive issues with switching pavement types that may necessitate a complete rebid of the project. FHWA engineers should be cognizant of this concern, and the need to protect the public interest through competition.

- **Update of NHI Course 134077** – FHWA Contract Administration Course Core Curriculum. Douglas Townes in the Resource Center will be the coordinator for the course instructors. He stated there is a need for more instructors. Course scheduling is done through NHI.
- **Davis-Bacon Wage Rate Memo.** There are 2 new memos both issued on June 26, 2008, which help to clarify the existing policy.
<http://www.fhwa.dot.gov/construction/080625.cfm>
<http://www.fhwa.dot.gov/construction/contracts/080625.cfm>
- **Construction Program Guide Webpage.** Mr. Yakowenko mentioned this is a valuable source of information involving the current laws and regulations. The webpage can be found at <http://www.fhwa.dot.gov/construction/cqit/>.
- **There is a DB Users Group Webinar on October 6, 2008.**
- **First International Conference on Transportation Construction Management.** The conference is in Orlando, September 9-11. Mr. Yakowenko encouraged as many as possible to attend.

- **Contract Administration Issues Open Forum Discussion.** Mr. Yakowenko said there are a number of revisions to 1273 that are needed, which HQ is working. The last revision was in 1994.

The attendees performed self-introductions at this point in the meeting.

Construction Program Management Session

Moderator – Jeff Lewis, RC-CA

- **Construction Inspections & the Role of the DO.** Mr. Jim Sorenson, FHWA Senior Construction Engineer in the Office of Asset Management, presented this topic. In the past, FHWA employees were required to visit project sites once per month. Over time, competing demands in the Division Offices led to a change in priorities and in some states, significantly fewer inspections were performed. The pendulum is now swinging back to more project involvement. Mr. Sorenson said you can't inspect in quality, but he still encouraged Construction Engineers to be involved in the projects and the construction program.

Mr. Montag (Delmar) noted the demands for administrative duties only allow Area Engineers to be on the various construction projects several hundred hours per year.

Only about 1/3 of the FHWA Construction Engineers said they are on projects 20% of the time or more. About 1/3 said that they had sat down with their State Highway Agency's Chief Construction Engineers to discuss issues in the field.

Mr. Kliethermes (MN) said monitoring and reviewing projects requires a partnership between the State and FHWA engineers.

Mr. Sorenson said times have changed, but our responsibilities have not. FHWA is not a compliance agency, but an agency that facilitates good construction practices.

The Ohio Division office has ramped up their construction inspections. They have updated the inspection guidelines, and are training their new staff. Division emphasis areas always include work zones. Additional items in 2008 include project staffing and embankment construction. Each area engineer is asked to complete at least a dozen inspections per year. Going around the room, PA said they visit Federal Oversight projects every 6 weeks.

Mr. Richter (VT) noted he serves on the pavement committee, the specification committee, and numerous other committees in representing his Division office. He is able to do project inspections only 3-4 times per year.

Mr. Mills (AL) said his Division office still does a lot of inspections. He noted that when there are findings, the FHWA engineers need to do follow-up inspections to assure the issues are resolved.

Ms. Redwing (UT) requested a one-day course for inspectors.

Mr. Sorenson noted participation in this meeting should help encourage our construction engineers to work with their ADA's and DA's to assure they have adequate time to get into the field and complete periodic project inspections to identify trends, and work with the State construction staff to solve issues that will be observed. HQ will be working to conduct construction program evaluations in every state over the next 3-5 years, but the need to be in the field is still immediate for the construction program.

Mr. Sorenson said both the HQ and RC staff will provide assistance when requested. Stay in touch!

- **Mitigation Monitoring Reporting Record at Final Closeout.** Mr. Lewis noted that 23 CFR 771 discusses NEPA environmental commitments. Also, 23 CFR 635 says commitments must be included in the PS&E. The project is not complete until the commitments are complete, and the final vouchers can not be approved until this has happened. Communication and field verification are needed to accomplish this.

Mr. Lewis presented the results from a survey that was sent out last spring to the States regarding Environmental Supervisors on projects. Most states (30-36) said they don't have a person dedicated to this duty – it is often a collateral duty. Please see the presentation for more survey results. Mr. Lewis also said there was a domestic scan on this issue.

- **Report Out of Caltrans' Plain Language Meeting & Dealing with Non-Standard Specifications.** Mr. Lewis gave a short presentation on this Caltrans/FHWA peer-to-peer exchange. Please see the presentation for the details and results of this exchange. Plain Language specifications are becoming more common in the construction industry.

Construction Program Management Session (continued)

Moderators – Rob Elliott, RC-ATL, and Ken Jacoby, HQ

- **Overview of the 2008 Construction Program Management (CPM) Work Plan.** Mr. Elliott began his presentation by reviewing the RC-C&PM TST organization, key performance measures, and major accomplishments.

Mr. Kuta discussed the SonoBlaster Work Zone Intrusion Alarm demonstration program. FHWA has purchased 2500 SonoBlaster units. The alarm isn't quite performing up to the specifications published by the manufacturer, but the demonstrations will determine their overall functionality.

Mr. Elliot discussed the work plan development and contents. It is a multi-year approach to delivering the FHWA Construction Program. It is organized around 5 major stewardship areas:

- 1) Policy and Guidance
- 2) Oversight
- 3) Training
- 4) Technology / Research
- 5) FHWA Management, Coordination, and Workforce Development
 - a) Division Field Services Procedures Manual
 - b) Annual Construction Monitoring Report (DE, OH, MI, TN have some reports)
 - c) Core Competencies
 - d) Construction Program Management & Inspection Guide (CPMIG) Next Steps

Mr. Elliot reviewed the status of these activities. Mr. Sorenson said this is a living, working document. Mr. Montag suggested the CPMIG course be included in the PDP program.

- **Selected CPM Activity Updates.**

- **Activity 2.1 Construction Program Evaluations.** Mr. Jacoby made a presentation on this activity, which was shown as the Construction Stewardship Reviews in the handout document, but the name has changed. He commented that this process is part of a mid-range effort, above the local DO reviews but below the national reviews that are driven from HQ. These evaluations will provide a snapshot of the construction programs in every state, and can be used to help guide the DOTs in improving their own programs. It will be a voluntary evaluation program.

Mr. Jacoby's presentation identified the Steering Committee members and the purposes of the evaluation program. The focus of the reviews will be based on six functional areas: preconstruction, construction quality, construction administration, construction safety, construction staffing, and process improvements and innovations.

Mr. Jacoby mentioned that there are several potential roadblocks to the evaluation program, however HIAM is working to overcome them. The biggest concern is really to assure consistency in the evaluations. He then discussed the review methods that will be utilized in the evaluations, and the Steering Committee has recommended a methodology that will develop the tools (Interview Questionnaire); Overview evaluation pilot in one or a couple State DOTs; and pilot in-depth evaluations in selected states. This will be a 5-year program.

The evaluation team is proposed to consist of 4-6 people: HQ staff, RC staff, State DOT, and the local DO and State DOT representatives. The teams will be formed in spring 2009.

In response to questions, Mr. Perry (ID) suggested that a brief upfront survey of the Division Offices would benefit the process. This could provide HQ with some needed data in a more timely fashion.

- **Activity 5.1 Division Field Procedures Manual.** Mr. Dan Montag (DelMar) discussed this effort to develop a field procedures manual that could assist the area engineers in their work, and help to provide consistency in what FHWA staff is communicating to the State DOTs. The manual will start with the planning stage, and go through the entire preconstruction, ROW, construction, maintenance, preservation, environmental, and all other processes. Mr. Montag reviewed the names of the people currently involved in the process to develop the manual, and solicited the Construction Engineers to submit examples of checklists, inspection reports, and procedure manuals that are used in their individual DOs to Mr. Lewis or to him.

A draft of the document has been circulated for comments, which are due August 29th, but it is anticipated there will be a number of revisions and improvements to the current draft. Version 2 will be circulated in September or October.

- **Activity 5.3 Core Competencies (FLH / Federal-aid cross training.)** Mr. Steve Mills (AL) discussed our efforts to increase cross training within FHWA. These activities are already happening, but are being underutilized. There are three initial focus areas:

- FLH Construction
- FLH Design
- General Federal Aid

In the presentation, Mr. Mills said most assignments would be 3-4 months in duration. He noted that FLH is currently using consultants to perform construction inspection. There are negotiations underway about splitting the costs of salary, travel, and per diem costs. There are more issues in determining cost sharing in a design environment, since there is a longer learning process for the design tools used by FLH. There will be some coordination required to get the FLH construction staff into Federal-aid slots during the winter.

Mr. Mills stated there will be a pilot program during the summer of 2009. His presentation includes a list of contracts in the Divisions of FLH.

- **CPM Closeout Discussion and Next Steps.** Mr. Kevin Spohrer (TX) asked how many States have procedures for final acceptance and final vouchers. Only two states replied they did. Mr. Spohrer suggested construction needs to be actively involved in these processes, and closeout not just be turned over to the accountants. He said our staff needs to be better trained to effectively complete Form 1446B. He also sought volunteers from the Construction Engineers to participate in this project and support it.

Open Forum Discussion and Closeout

Moderator – Paul Clutts, TX Division

Discussion Questions from Division Offices

1. **With regard to Contract Change Orders (CCOs) and claims.**

- a) What should be the role of the Division office for minor and major CCOs?
TxDOT clearly defines major and minor changes. Mr. Clutts will share these upon request.
Mr. David Hawk said the Office of Professional and Corporate Development is also investigating this in their review.
Mr. Lewis said that a major change has a significant impact to the PS&E, such as working outside the project limits, changes in the environmental commitments, and other issues in addition to dollar amount changes.
- b) Issues related to participating and non-participating costs (Montag).
No-cost time additions also increase inspection costs. Mr. Clutts commented this issue really pops up with 3rd Party change orders.
Mr. Kuta said that every change order should address time, cost, and scope.

2. **Concerning Division office procedures manuals (D-memos) for construction related requirements.** Is there a way to create a database with this information, which can be used to assist the Division offices in updating their information, and also give them the background of what other Division offices are looking for and requiring?

Mr. Lewis said this is one of the outcomes of the new manual process, but it will be a while until this material comes on line. Mr. Montag commented that many State D-Memos are developed in conjunction with their DOTs.

3. **With regard to oversight of public-private partnerships and other innovative contracting methods.** There has been a trend for the State's to move away from oversight, in some cases only providing one employee as the project manager (US 183A is an example). There are many issues of concern, including deviation from 23 CFR sampling and testing requirements, etc. Developers tend to want to do their own materials acceptance, etc. We don't have a real grasp agency wide on how we are going to cope with providing oversight on these projects. This is not only happening in construction, but NEPA as well

Mr. Lewis commented that this will be part of the discussion in the webinar that Mr. Yakowenko is setting up. Mr. Bohuslav said that in TxDOT's PPPs there is an independent engineer that works with the PPP, but all change orders are reviewed by the DOT.

Mr. Yakowenko mentioned an August 3, 2004, D.J. Gribbin memo on this topic. See: <http://www.fhwa.dot.gov/programadmin/contracts/080304.cfm>.

- 4. Concerning Local Agency Projects.** We are interested in other Divisions activities with Local Public Agency projects, how other state DOTs are divided (State and Local Assistance), and construction monitoring and inspection on Local Agency projects by the State and the Division. LPA oversight - What is the role of the State and Divisions?

The CA Division recently revised their stewardship agreement, and changed some organization to assist with meeting the regulations. Caltrans and FHWA work with the locals to obtain permits and comply with the regulations, but once a project is awarded to the Local Agency, Caltrans doesn't monitor or control the local program. Documentation is a key problem with LPA

Mr. Clutts noted that TxDOT has a set of documents (modules) that provides directions and procedures for project oversight. Mr. Clutts ranked this an overall "A".

In Florida, the Joint Project Agreements need to have Federal involvement. Locals are not allowed to work on Interstates. Only off-system projects are where the locals are involved, and they often view the federal funds as a "Grant program" which leads to problems.

In MN, five people are doing oversight of LPAs. They are using a minimally compliant financial control system, but need to improve their document controls

In UT, there is a similar issue with documentation on LPAs. UDOT's resident engineers are working to resolve these issues, which needs a fairly continuous effort. The core curriculum training needs to be targeted to the local government audiences and needs to be presented.

Mr. Lewis noted we need to have a Federal-aid ineligibility notice (a "pinkie" Form 1365). Mr. Sorenson said this is something that should be a last resort, and he has never had to issue one. We need to be skilled enough to avoid the use of these. Follow-up comments said that cooperation needs to exist between the State and FHWA engineers.

- 5. Alternate Pavement Designs and Bid Analysis.** Mr. Gary Corino (OK DA) said there should be some consistency in the approaches used across the country. TX and WV are bidding HMA and PCC straight up. OK held pretty tight that life cycle cost analysis (LCCA) should be included in the process, but ODOT didn't want to go there.

In AL, they followed the SEP-14 processes that involved an LCCA off-set. There was difficulty is switching from Ton to SY.

Mr. Sorenson said our traditional approach is to have the State do the design and make the decision on pavement type. With the volatility in the market, there may be some advantage in the use of alternate bids.

MN said they are currently bidding a 14" PCC vs. a 17" HMA head to head on a LPA.

MO is designing two different pavements to allow for alternate bids. This means that one set of plans will be thrown away, and this can't be cost-effective.

Mr. Sorenson said the big thing is to assure pavement performance.

Mr. Bohuslav said TxDOT has done several straight-up alternate bids with 30-year design lives. PCC has won all but one bid straight up.

Mr. Sorenson said that traffic control and user delays have an impact on bid items.

Mr. Clutts thanked everyone for their participation and attendance. The meeting was adjourned at 12:50 pm.

