



Minutes

Technology Transfer - National Concrete Consortium

Savannah, Georgia
April 6-8, 2010

Mix Design & Analysis TAC - Peter Taylor, Tyler Ley, and Gary Fick

Taylor

The meeting began with Taylor's update on the progress of tasks under the CP Road Map's Mix Design and Analysis Track. He described the role of the CP Tech Center as being the facilitator of the CP Road Map, aiding in the coordination and collaboration of the various CP Road Map Tracks. The CP Tech Center does not provide funding for research.

Research work identified under this track is currently underway and includes TPF 5(179) Permeability, 5(117) Ternary Optimizing Cement Content, NRMCA Minimum Cement Content, TPF 5(205) MDA in parallel with FHWA contract on MDA, and others. Audience members were asked to contact the Center if they know of any projects the Center's mobile lab could visit as part of the ternary project.

The TPF 5(205) MDA Pooled Fund Study is being led by Iowa. States involved include Iowa, Kansas, Michigan, Missouri, New York, Oklahoma, Texas, and Wisconsin. A timeline was presented for the study's tasks which focus on evaluation of emerging testing equipment, modeling, specifications, and training. CTL is in the process of obtaining a patent for their acoustic based set time device. Although there has already been a great deal of effort under the pooled fund study to research this acoustical model and evaluate it for implementation, Taylor felt that future research efforts should focus on integral waterproofing instead. Taylor asked the group (audience) for a vote on this matter and the group voted to focus on integral waterproofing.

Taylor then discussed additional MDA work under a parallel FHWA contract that will focus on modeling, specifications, and communications. He presented another timeline of tasks expected to be completed under this contract. This contract is still pending and will include Ezgi Yurdakul (ISU Graduate Student), Gary Fick, Shiraz Tayabji, and Tyler Ley.

This research work will include evaluating portable analysis devices for measuring set time. Some devices already identified include the XRF and LIBS. In addition, we will be evaluating current methods for mix proportioning including the ACI method and Fowler's approach (ICAR). Simply put, Fowler's ICAR approach is to first optimize gradations, then consider paste quantity, and finally consider paste quality.

Discussion:

Q: Will particle shape be considered?

A: Yes, but quantifying it will be another question.

Q: How will you compare laboratory results to actual field performance?

A: Not quite sure yet, but it will have to be built into the specifications that laboratory analysis will be the first step.

Q: What about temperature and admixture dosage?

A: Temperature is an issue that leads into dosage. Dosage will be affected by changes in temperature and moisture.

Q: How is this going to work with water reducers? There are too many variables that cannot be accounted for in a lab.

A: A correlation will have to be established between doses required in the field and those used in the laboratory specimens.

Fick

The pooled fund is intended to meet the need for setting guidelines for optimizing mix designs. Some of the questions needing to be answered when considering an approach for optimizing mixes and developing guidelines include:

- Which of the existing approaches (if any) best meets the industry's current need?
- What does the contractor want vs what does the owner want?
- Who should choose what characteristics are important?

Fick mentioned that it would be a good idea to develop a guide with a commentary similar to the work developed by IPRF for airfield pavements.

Discussion:

Contractors are low bidding to get DOT jobs. They are only focused on getting strength. They do not necessarily consider how to incorporate fly ash or slag in order to mitigate ASR. They are more concerned with lane closures, which are ultimately driven by the DOT.

One of the problems with writing specifications for mix proportioning is identifying how to account for two different groups of contractors: the ones that understand how to design a mix and the ones that do not and rely on prescriptive measures. Missouri has gone to a performance-based type of QC/QA program that has weeded out the contractors that know what they are doing from those that do not. Florida also has performance-based specifications. The catch with performance-based specifications is that they result in a shift of risk onto the contractor that is more likely to be acceptable if there is some type of incentive program in place. PWL will work if there is some kind of carrot.

Some things still need to be considered. For example, will guidance documents include fast-track? How are you going to get more specific?

Ley

This presentation showed that air void systems might be behaving differently because of how they were formed. Ley's research suggests that a hydration shell forms around air bubbles when synthetic AEAs are used. Ultimately, he hypothesizes that this shell dictates the stability of the air void system. He also described a process by which larger air bubbles grow over time while smaller air bubbles become smaller. This may be the reason that air content measured in fresh concrete is different from air content measured in hardened concrete. He suspects the larger bubbles may end up being vibrated out.

Discussion:

Q: Isn't the hydration product (shell) creating a vault, thus preventing the escape of water?

A: Bubbles in saturated concrete are empty unless freezing occurs at which point air voids do become saturated. Water in the system increases as w/cm increases, but overall it decreases with time. This brings up a good point: the material that makes up the hydration shell needs to be of low density.

Q: Is the ultimate goal of this research to rethink current specifications and to develop a method for measuring the spacing of the air void system?

A: Yes. Ideally, we want to use a CT scanner to produce a 3-D view for ASTM C 666, but we need something easy and simple for quick use in the field.

Q: If the larger air bubbles escape, will voids be created that affect durability?

A: No, because the paste will close in around it.

It has been South Dakota's experience that synthetic AEAs do not react well when a mix is retempered. Retempering should be avoided, even more so when synthetics are used. Synthetics just perform differently and will result in more air because of continued mixing.

Dowel Basket Task Force - Maria Masten

Masten's presentation discussed the standardization of dowel bars and baskets and included summarized information on standard practices. A survey was conducted in order to establish an understanding of what other states are doing and to create a baseline from which to develop their own standards. Mark Snyder provided technical support in this matter, and based on his expertise and information collected from the survey, final recommendations for standardization were presented and a discussion followed. Masten requested that attendees go through the tech brief, write comments and give them back to her or to Matt Zeller.

Discussion:

The benefit to increasing the bar diameter was explained. Bearing stresses decrease and pavements perform better. The potential for pumping and faulting decreases. In Indiana, bar diameters are increased to 1.5 inches when pavement thickness is greater than 12 inches. The type of base plays an important role. In 1992, Tennessee switched to a granular base with good results.

There was extensive discussion on the heights of the baskets. Recommendations for a standard (see table in the presentation) listed heights for a range of pavement thicknesses. It was realized that for thicker pavements the baskets would be lower than mid-depth of the slab. The intention for this was to ensure a proper clear cover. It was discussed that pavement thickness is often not uniform and that baskets are not always at exactly T/2. In California, the thinking is that bars at the middle create less elongation due to curling and warping. To support the argument that heights can be lower for thicker pavements, an engineering analysis would be beneficial. To prevent any misunderstanding with regard to DBI, a preamble to the specification needs to be written in order to clarify that this will affect only projects where baskets are used.

The industry is starting to see different types of wires. Missouri is starting to see lighter gage wires. It was noted that tolerances for steel baskets have been traditionally set by the manufacturers.

It was recommended that specifications for epoxy coating on the bar should be mandated based on a minimum value instead of a maximum.

It was noted that U and V leg supports are good, whereas J supports are not as stable.

If a dowel bar/basket standard is adopted, does it need to tie back to AASHTO or ASTM? It is not understood whether AASHTO 254 or 284 should be used. Steve Tritsch discussed that there are no ASTM standards for dowel bar baskets. AASHTO 254 includes pullout tests that need to be updated. Standardization should lower the cost-which is the whole point.

Masten-We hope to have a tech brief ready for the fall meeting so please give us your input.

Joint Deterioration TAC/

Impact of deicing chemicals, construction vehicle loads, and freeze-thaw-cycles on deterioration of joints

Some joints are deteriorating faster than we would expect and we are not sure of the reasons. It is happening most commonly in 5-10-year-old pavements. Possible reasons include new air entraining admixtures, compromised air void systems, sawing (bruising, heating, cracking), early traffic, lack of curing on joint faces, over vibration at joints, increased

use of SCMs, application rates of deicing salts, use of aggressive deicing salts, trapped water, harsher winters, cementitious chemistry, exposed aggregate. Water can be trapped in the joints if soil doesn't drain.

A pooled fund study is just getting started. ISU, Purdue, and Michigan Tech will be the researchers. We want information and participation from you.

Does salting increase or decrease the number of freeze-thaw cycles? Salt does not change the temperature of the system. It does change the freezing point. Some salts are hydrophilic. Some suck water out of the air and make a puddle. The amount of time that the system is retaining water is extended. Data is based on air temperature and it is likely that pavement temperature is higher—possibly as much as 20 degrees higher.

Discussion:

Van Dam believes that salt does change the temperature of concrete and reasoned that, as a response to dissolution of salts, the concrete temperature would be lowered.

The osmotic behavior of the system is going to be critical.

Repeated applications put us through mini-cycles.

It was noted that additional work needs to focus on the consistency of salt applied to the surface, and to identify what the concentration is at the joints.

Taylor would like to measure temperature changes via thermocouples at various depths within the pavement. Rupnow mentioned work in Louisiana that may be similar.

They identified an increased risk for damage due to MgCl deicers in Winnipeg vs Iowa.

Dan DeGraaf discussed a project in Michigan that is intended to evaluate the effectiveness of sealants at the joints. The joints of one lane of traffic (about 200 joints in all) were treated with a silane or siloxane sealant while the joints of the parallel lane were not treated. High-resolution photos were taken immediately after application. The project has only seen one winter. The plan is to return to the site in the spring and take more photos for comparison. Photos will be taken again next year, as well.

DeGraaf also discussed a project in Michigan where air content varied depending on the depth within the concrete. Air measured at the bottom was reported to be 5-6%, in the middle it was around 3%, and even less at the top. DeGraaf mentioned there is brown staining occurring and the pavement is showing signs of distress.

Taylor encouraged the group to help him identify other projects, any information, and pictures if possible.

Task Force Report on ASTM C1157 and C595 Cements - John Melander

It was decided to form a task force at the last meeting. Task force members are Peter Taylor (CP Tech Center), Tommy Nantung (IN DOT), John Melander (PCA), John Staton (MI DOT), Al Innis (Holcim), Tyson Rupnow (LA DOT), Nick Popoff (St Mary's Cement), and Mehdi Parvini (Caltrans). The task force was created to develop an electronic forum for documenting and exchanging information about the performance characteristics of these cements.

Key issues driving change are economic and social impacts, climate change L/R, and sustainability (Road Map Track 13). There may be a CO2 tax in our future. Regulations are expected from the EPA.

A web site will be set up by the CP Tech Center communications staff for the purpose of sharing testing information, dates, and experiences. Please forward your information to Peter Taylor for posting.

We will all be asked to lower our carbon footprint so we need to be ready. This is a proactive move. We need to maintain durability or we're not doing what we need to do.

Discussion:

It was noted that it is going to be helpful to have alternatives but more education is needed.

In Colorado, to meet the community needs for sustainability, 40th Avenue was built using a green cement. It is important to identify the driver for needing alternative cements.

The need to be more sustainable and have greener alternatives is coming. It was realized by the entire group that the industry needs to stay ahead of the game in that regard.

It is time to put a tool kit together that recognizes durability, constructability and any other concerns associated with the use of alternative cements.

National Training

The following three presentations were given on National Training initiatives.

- **TCCC/NHI National Training Program** – Christie Anderson

This pooled fund (TPF 5-(046)) was established in 2002 to financially support the development of the core curriculum matrices: materials, construction maintenance, safety/work zones, and employee development. The Transportation Curriculum Coordination Council addresses challenges in construction and maintenance workforce and quality. Christie represents the Midwestern states on this committee.

The TCCC is a federal/state/industry partnership that supports the training of highway construction personnel. Its goals are to develop and maintain a national curriculum for various transportation disciplines, identify training and certification requirements, and coordinate/facilitate training efforts.

Why do we need it? When our budgets go, training money goes so we are trying to combine efforts. State-specific spec's can be added where necessary.

We've accomplished a lot: a core curriculum, national training database, ILT and WBT. Web based training is very popular.

TCCC and NHI have joined efforts to provide good interactive courses. TCCC needs money to live. TCCC courses have been used in all 50 states and internationally but only seven states are a part of the pooled fund. We are up to 50-60 courses now. It is money saving and less time consuming. TCCC trainings are all available for free. We provide published trainings for internal state LMSs, state intranets, and other state training needs. The money goes completely for course development. You can help out by volunteering for technical panels for course development.

The entire IMCP Manual is available in modules and the Pavement Preservation series is available via the NHI site on the web as well. NHI has revamped their site so that it is easier to use. Instructions were provided in the meeting packet.

In the one to two years in business about 15,000 people have used these materials: 65% are state DOTs and 12% are industry.

Please go back and ask your state to join: www.nhi.fhwa.dot/tccc. Christopher Newman is the contact.

We are always being asked to provide statistics on outreach. If anyone is aware of usage of our materials, please let us know so that we can track this.

Rupnow gives out about 46 CDs of the IMCP Manuals per semester.

- **Michigan Construction Quality Partnership for Transportation** – Dan DeGraaf

We need to teach people how to think. We have new materials and procedures. We can't live with, "That's the way we've always done it." Warranties are getting more and more expensive and they don't always protect you. We've been asking for a five-year warranty on a pavement we want to last for 30+ years.

Michigan came up with MCQPT- looking at three audiences: people in the field who need a different level of training, engineers on project sites, and top management. We are setting up testing programs for all three levels and starting it as a training program with "majors." Eventually this will roll out into a certification program and individuals will have to take this training in order to work in Michigan.

Decisions on materials seem to happen at bid time in corporate offices late at night before the 9 am letting.

As the DOT has gotten out of the construction business and we have a new population of DOT folks out there, we need to get things we learn today back into the design input. We're very pleased to have the IMCP Manual online. It is great material for us to use.

- **FHWA Construction Inspection for Engineers** – Tony Nieves Torres

FHWA and ACI have a five-year cooperative agreement for concrete training seminars. Three are in the system now: Cementitious Materials, Concrete Admixtures, and Self-Consolidating Concrete. Presentations have been conducted in 10 states and 550 professionals have been trained. The seminars are free; the SHA provides the location, training room and AV equipment. They are looking for feedback.

Discussion:

Is there overlap between NHI and FHWA/ACI?

A: Not sure; he hasn't seen the NHI training.

Anderson: Probably some overlap.

Ahlstrom: The difference between NHI and TCCC is that the latter is online. ACI is different than NHI too in that it is more technical.

Sometimes the answer is needed quickly. Is there a search feature or FAQ section for these training materials?

Anderson: There is no search engine, but this is a good point. There are structured Q&A's that might be considered a type of FAQ. There is always a person they can turn to with questions. This might be a good addition.

Nieves: FHWA does have a Knowledge Based System that you can log in and ask questions... like a bulletin board.

Anderson: This was done on the IMCP and the Pavement Preservation – broken down into modules.

For TCCC, can you download it?

Anderson: There is a pdf that you can download. It is possible that you can search this PDF. The NHI system is evolving too, and these capabilities are likely coming.

DeGraaf: The IMCP manual had training. We covered the country and had "train the trainer," and now it is web based. The value is having this in multiple locations and multiple availabilities.

Can you elaborate on the pooled fund for TCCC?

Anderson: This is the second pooled fund. The first was several years ago and lasted five years. It is open (no minimum commitment). Some do one time contributions... others do a fixed amount per year for the duration. There are seven states now. You can spend \$50k to \$500k for development of a single course. We can do multiple courses a lot more efficiently.

The pooled fund is nice in that there's no state match. If done in-house, funding is more difficult.

Cackler: We need a lot more tools. Tools like this are very important. These presentations today are captured under the umbrella of what the CP Tech Center is trying to promote. We should take advantage by supporting the initiatives that are already underway. We just need to be aware that they are available.

DeGraaf: One difficulty sometimes is reaching unanimity in the content of a course. You can take a national level course for the basics, and then supplement it with state practice.

States involved in TCCC are: MI, IA, MO, MN, OK, TX, SC

Things that are state specific could possibly be hyperlinked to the site (TCCC).

Anderson and Cackler: That is the advantage of putting the TCCC on your own learning management system. A PowerPoint can then be developed to link this all together for the state system. You can also use the source materials to develop your own training in state.

Nieves: State practices can be hyperlinked to a central location as states commonly want to know what other states are doing.

DeGraaf: We really need to tap into the expertise, a lot of which is represented on NCC.

Is the FHWA/ACI material distributed?

Yes. There are handouts.

Should the FHWA pursue development of a new inspection course under the FHWA/ACI agreement? If so, what length and level, and who's the audience?

Should we consider a course that is partly face-to-face, and partly web based. One day each?

Overnights are difficult for states. Need to make the courses as convenient as possible. One day would be effective.

Possibly a web conference – so that folks can ask questions? Yes, but after about 2-3 hours of a web conference, it is difficult to hold people's attention. Web-based training is better because it is self-paced. You can take the training when there is bad weather and field work isn't possible, etc.

Levels – beginning level for the engineers and advanced course for the technicians. The technicians should be experienced... it will be important not to cover too many of the fundamentals.

Nieves: One 2 or 2-1/2 day course for the advanced technician, along with another course for the engineer?

What about a staged training – with extra time for those that want advanced training?

Some of the states are using the universities to adapt the national level training to local settings.

Cackler: Do you have the resources to train now?

We need more resources. They don't come fast enough. McMullen didn't have time to wait for it, but developed a training course for Wisconsin in house. There is a brain drain/experience drain happening. Training is really needed by the consultants in particular.

There isn't enough training now – are we prepared if the industry takes off? Especially for the first few projects? They aren't getting this training at the universities. Sometimes the community college can help with more routine testing and training.

The idea of this proposed course is to take the available material from the FHWA/ACI cooperative agreement and bring it together to address a current need – whatever that need is. This session is what is needed to help define that.

The DOT training is often centered on how, but not why.

Anderson: There is no one answer about the best way to do training. There is a need for all different types of courses.

DeGraaf: It is great to field questions that are posed as “dumb” because it reveals that people are thinking. Over time, they learn more, and are able to make educated decisions in the field.

Anderson: If FHWA pursues this, they should talk to MI and to TCCC and others with experience in this.

Jim Grove and Gary Crawford are putting together a QC/QA program. Grove says that the intent is to interpret the results from testing.

Cackler asked for volunteers to represent NCC and talk further with FHWA. Tom Cackler, Jim Grove, Tony Nieves, and Chris Anderson will discuss the concept of a state based learning center and bring a concept to the fall meeting.

Concrete Overlays (updates, design guide, field application program, traffic control, new technical guide on grade/yield)
– Dale Harrington, Gary Fick

The objective of the Concrete Overlay Field Application Program is to increase awareness and knowledge and to strengthen confidence in the use of overlays. Through the program, staff will assist states that are interested in doing an overlay by:

- Conduct an initial field site review
- Walk through the evaluation process
- Walk through the design phase
- Attend pre-pour, pre-bid, or pre-construction conference
- Attend during construction and use mobile lab to perform comprehensive tests and offer technical support to the state DOT if requested by state.
- Prepare a report of findings

Our goal is to develop a Guide for Existing Concrete Overlay Design Methodology in the next year. We are not developing new design procedures but showing people how to use existing procedures.

Overlay Costs Tech Brief- A tech brief has been developed to address common questions we have received during our implementation efforts. Cost data was derived from representative bid tabulations from 33 projects in six states that have mature overlays (Minnesota, Michigan, Iowa, Illinois, Missouri, and Oklahoma). Cost is about \$3/yd²/in. Concrete price is relatively flat compared to asphalt. Saw joints are critical on overlays with variances. A copy of the tech brief was provided in the meeting packet.

ASR Mitigation in Existing Structures – Gina Ahlstrom

This is an FHWA program on prevention and mitigation of ASR. The legislature has told us that we must do this (SAFETEA-LU). Today we are talking about testing and evaluation protocols. AASHTO formed a group and looked at existing documents. States need to get a handle on ASR levels of their aggregates.

Overview of recommended practice:

- Reduce risk by implementing routing testing with petrography and lab expansion tests
- Encourage use of ASTM C 1293 concrete prism test if the owner doesn't have a good idea of the ASR susceptibility of their aggregate supply
- ASTM 1567 AMBT can be used once aggregate history is defined through AASHTO T 303 and ASTM C 1293.

A commentary for the recommended practice will be presented at the AASHTO SOM 2010 meeting in August.

Comments:

Jarden Zinc has seen a couple of cases of ASR at less than 3.5. Wonders if other states have noticed similar behaviors.

If you don't have a good handle on your aggregates, start the concrete prism test.

CP Road Map Update Strategic Research Plan

Overview - Sabrina Garber

The paving industry and agencies need to collect information about research going on.

There are 13 tracks to the CP Road Map, and currently there are 7 priority tracks:

- Performance-Based Concrete Pavement Mix Design System
- Performance-Based Design Guide for New and Rehabilitated Concrete Pavements
- High-Speed Nondestructive Testing and Intelligent Construction Systems
- Optimized Surface Characteristics for Safe, Quiet, and Smooth Concrete Pavements
- High-Speed Concrete Pavement Rehabilitation and Construction
- Concrete Pavement Business Systems and Economics
- Concrete Pavement Sustainability

An e-newsletter will soon be initiated to inform you of important research going on in the states, but we need you to tell us of research that should be included in this database. We're really interested in hearing from states where there is good research that is already in practice.

Is there a mechanism for getting past research listed into the CP Road Map database?

Track 13 Update - Sustainability – Tom VanDam

We are seeking to balance economic, environmental, and social factors. This is a social issue.

Progress: a briefing document was delivered in August 2009, the writing of a best practices manual was initiated in January 2010, and a sustainability conference will be held in Sacramento on September 15-17, 2010 (in conjunction with TTCC/NC2). A total of 39 potential projects have been identified. Problem statements need to be developed.

Most of the carbon footprint is in the material. Aggregate factor and clinker factor. About 90-95% is in the clinker coming out of the kiln.

FHWA has benchmarks coming out soon. They are likely to be adopted within the year. Google “green roads.” There will be a life cycle assessment workshop held in Davis, CA in early May. Various transportation agencies are embracing sustainable technologies. There are multiple conferences in the next year.

Innovative heat island effects. Miami has requirements—reflective or pervious. Black doesn’t reflect light!

Cement Driven Initiatives - Cement companies are acutely aware of their CO2 footprint. ASTM C 595 blended cements, ASTM C 1157 performance cements, high-volume fly ash mixes, inorganic polymers, carbon sequestering cements.

Two-lift paving is an innovative way of reducing our carbon footprint.

We need to take a big role in order to sort out the true issues from the false stuff. We need resources to refer to.

How much CO2 can you recapture? About 60 percent is from driving off CO2. We can crush the concrete at the end of its life and re-use it. Need to expose the surface area.

Berkeley did a study about rolling resistance. The key to sustainability is life cycle in every definition. Instead we focus too much on what it means today. If dowel bars are placed lower they can be diamond ground several times. Vehicles get 3%-8% better fuel efficiency on concrete. The people that are ignoring such issues don’t understand. Does this matter to DOT folks? If you tell the public you’ll get better efficiency on concrete, will it sell? FHWA could make big impacts. You have to focus on these things rather than being forced to. You’ll see more about the operational phase in the discussion.

EPA is on top of this thing. We need to be on top of it too. They don’t have the concrete-specific knowledge that we have.

Surface Characteristics – Rob Rasmussen

This pooled fund came out of the CP Road Map. Quieter pavements require texture—small and negative, high porosity, and low stiffness. We have evaluated 1200 unique textures over the last 4 years. There is variability from project to project.

Georgia has one of the quietest pavements. They use transverse tining, but we can’t generalize.

We’ll be contacting you to find out what you are doing in your state to refine our current documents. We need to get behind the paver and educate the operators about what they are doing. We have to monitor and feed it back to the operators with some sort of visual readout.

Long-Life Pavements – Mark Snyder

Long life pavements are 40+ year surface life and no premature failures, etc.

Less pollutants, fewer construction zones, happier public.

Identify all of the failure mechanisms and design against them.

Who is building? MN, WI, MN, CA, WA. Why not more?

NCC, AASHTO, NCPT, etc.

This does include CRCP. How do we guide departments towards criteria that point to high performance concrete for certain projects? Balance out costs with benefits. People have to start projecting their income. You have to use

nominal rates not discounted rates. What parameters give you the most bang for your buck? Which pavements do we want to stay out of and can't afford to get in often?

Roller Compacted Concrete

Dale Harrington and Wayne Adaska presented information on roller compacted concrete and the soon-to-be-published Roller Compacted Concrete Guide. The presentation is available here:

<http://www.cptechcenter.org/t2/documents/IntrotoNewRCCGuide-HarringtonandAdaska.pdf>.

Discussion

Free downloads are available from PCA and CP Tech Center sites. There will be a nominal charge for hard copies if PCA distributes the copies. That decision has not been made.

When is the new RCC Manual expected to be available? Very soon.

Why does RCC work in Canada? Less permeable, less air, more fine aggregates, proper matrix of the compactor structure – resists chemical attack and freeze-thaw issues. RCC eliminates rutting because of the consolidation of the fine and coarse aggregates.

The use of fine aggregate greatly improves the mix.

There are several RCC projects in Georgia. Curing compound needs to be applied immediately or you will have problems.

The grout layer is problematic between lifts and should not be used. Grout works on dams because larger aggregates are used.

Tom Van Dam suggested a revision to the draft on fine aggregates in Section 3. He recommended pointing out the benefits of being able to use more rounded aggregates than HMA since HMA gets its strength from locking aggregates together since binder is not the strong glue. RCC however depends on good compaction and uses cement binder as one of its strengths.

Business Meeting - Trautman

Election of Executive Committee Members - Up for election this spring were representatives from AASHTO Regions 2 and 4, a representative from academia, and an at-large representative. Tyson Rupnow (LaDOT) was elected for Region 2, Darin Hodges (SD DOT) was elected for Region 4, Tyler Ley (Oklahoma State University) was elected as the academic representative, and Tom Van Dan (Applied Pavement Technology) was elected as the at-large representative. Current committee members now include:

- AASHTO Region 1 – Mike Brinkman, NYDOT (term expires 2011)
- AASHTO Region 2 – Tyson Rupnow, LaDOT (term expires 2012)
- AASHTO Region 3 – Jim Parry, WisDOT (term expires 2011)
- AASHTO Region 4 – Darin Hodges, SD DOT (term expires 2012)
- Chair – Brett Trautman, MO DOT (term expires 2011)
- Contractor – Matt Ross, Penhall (term expires 2011)
- Supplier – Steve Tritsch, CMC Americas (term expires 2011)
- Academia – Tyler Ley, Oklahoma State University (term expires 2012)
- At-Large – Tom Van Dam, Applied Pavement Technology (term expires 2012)
- FHWA ex-officio – Gina Ahstrom, FHWA-DC

Financial Update - A financial update was provided in the packets. Expenses exceeded income for the last meeting but the account had a positive balance prior to the meeting and the account currently carries a positive balance. Expenses and income vary from meeting to meeting so the amount of the registration fee charged is reconsidered prior to each meeting.

Listserv - Positive comments and feedback were provided by those who have used the listserv. Some state representatives who haven't been able to attend recent meetings have provided feedback to questions asked via the listserv and can stay connected to the group this way. We can accept inquiries from everyone – not just the state rep's.

The group prefers to limit the listserv address list to include only the state rep's and CP Tech staff. No objections were stated. Alabama needs to be added to the listserv. The address for the listserv is NC2@iastate.edu.

Web Site – The group was asked if the web site is providing the information needed by the group. It was generally agreed that the needed information is there. It was also agreed that the meeting roster will be added to the minutes of the meetings.

Fall Meeting Update – Cackler explained that an issue had arisen with regard to the ability of the pooled fund to pay for hotel and meal expenses for the sustainability portion of the fall meeting. An unofficial poll was taken of the state rep's still present at the meeting as to the likelihood that they would still be able to attend the sustainability portion of the fall TTCC/NCC meeting if their travel costs for the entire time period are not covered. 0 yes, 7 no, 1 maybe – were the responses.

Discussion

Is there is a way that the meetings could be legitimately overlapped?

Eisenhour offered that Guntert and Zimmerman may be able to host a tour of their facility and dinner during the conference.

How is it valuable to have the sustainability conference without state DOTs present? The success of the sustainability conference will be compromised if the state DOT representatives can't attend.

Is there potential to reach non-participating states if the TTCC/NC2 state reports overlap the sustainability conference?

Can we use Sustainability Track 13 activity as the technical program title? This conference came out of the framing document for Track 13.

SPR fund use for tech transfer activities is now up to the FHWA COTR of this pooled fund. This person has to agree with this interpretation of the use of the fund.

Another conference call with Shiraz Tayabji, Suneel Vanikar, and Max Grogg was requested to talk through possibilities.

The suggestion for the fall meeting state reports is, "How do you use recycled concrete aggregate?"

Cackler asked if attendees wanted to continue to receive PDH certificates. It was agreed that they should be included for upcoming meetings.

Are there volunteers for TCCC? We will send out a call via the listserv.

California is the host for fall 2010. Please be considering if your state could host the spring 2011 meeting. Philadelphia and Pittsburgh were suggested as possible locations. Mark Snyder will follow up with them.

Meeting was adjourned.

Attachment: Roster

Spring 2010 TTCC-National Concrete Consortium Attendees - April 6-8, 2010 - Savannah, GA

First	Last	Organization	City	State	E-mail	Phone
Wayne	Adaska	Portland Cement Association	Skokie	IL	wadaska@cement.org	847 972 5056
Gina	Ahlstrom	FHWA	Washington	DC	gina.ahlstrom@dot.gov	202 366 4612
Christie	Anderson	Iowa DOT	Ames	IA	christie.anderson@dot.iowa.gov	515 239 1819
Myron	Banks	Georgia DOT	Forest Park	GA	mbanks@dot.ga.gov	404 363 7561
Ryan	Barborak	Texas DOT	Austin	TX	RBARBOR@dot.state.tx.us	512 506 5863
Dobber	Bingamon	Holcim US	Ada	OK	dobber.bingamon@holcim.com	580 421 2581
Mike	Brinkman	New York DOT	Albany	NY	mbrinkman@dot.state.ny.us	518 457 9765
Adam	Browne	Mississippi DOT	Jackson	MS	abrowne@mdot.state.ms.us	601 359 1761
Mike	Byers	Indiana Chapter, ACPA	Indianapolis	IN	mbyers@pavement.com	317 634 8989
Tom	Cackler	National CP Tech Center/ISU	Ames	IA	tcackler@iastate.edu	515 294 3230
Allan	Childers	Georgia Concrete Paving Association	Tucker	GA	achilders@pavementse.com	770 491 6251
Eddie	Deaver	Holcim US	Blythewood	SC	edward.deaver@holcim.com	803 730 3903
Dan	DeGraaf	Michigan Concrete Paving Association	Okemos	MI	ddegraaf@miconcrete.net	517 347 7720
Doug	Dirks	Illinois DOT	Springfield	IL	DirksDA@dot.il.gov	217 782 7208
Bill	DuBose	Concrete Paving Association of SC	Leesville	SC	bdubose@pavementse.com	803 532 2142
Glenn	Durrence	Georgia DOT-District 5	Jesup	GA	glenn.durrence@dot.ga.gov	912 427 5711
John	Eisenhour	Guntert & Zimmerman	Ripon	CA	Jeisenhour@guntert.com	209 599 6131
Larry	Engbrecht	SD Chapter, ACPA	Pierre	SD	larrye.acpa@mncomm.com	605 945 0572
Gary	Fick	Trinity Construction Management	Edmond	OK	gfix@trinity-cms.com	405 823 2313
Sabrina	Garber	The Transtec Group	Austin	TX	sgarber@thetranstecgroup.com	512 451 6233
Alan	Gee	Lehigh Cement/HTC	Doraville	GA	agee@htcnam.com	770 840 9855
Shannon	Golden	Alabama DOT	Austin	TX	goldens@dot.state.al.us	334 206 2410
Jim	Grove	Global Consulting - FHWA	Ames	IA	jim.grove@dot.gov	515 294 5988
Wouter	Gulden	ACPA-SE Chapter	Dacula	GA	wgulden@pavementse.com	404 431 5552
Dale	Harrington	National CP Tech Center/Snyder & Assoc.	Ankeny	IA	dharrington@snyder-associates.com	515 290 4014
Darin	Hodges	South Dakota DOT	Pierre	SD	darin.hodges@state.sd.us	605 773 7193
Dave	Howard	Koss Construction	Topeka	KS	dmh@kossconstruction.com	785 228 2928
Alan	Isaacs	The Scruggs Company	Valdosta	GA	meason@scruggscompany.com	229 242 2388
Andrew	Johnson	South Carolina DOT	Columbia	SC	johnsonam@scdot.org	803 737 6683
Wei	Johnson	South Carolina DOT	Columbia	SC	johnsonwh@scdot.org	803 737 2031
Robert	Kennedy	Koss Construction	Topeka	KS	rlk@kossconstruction.com	785 228 2928
Gary	Knight	Lehigh Cement/HTC	Doraville	GA	gknight@htcnam.com	770 840 9855
Todd	LaTorella	MO/KS Chapter, ACPA	Overland Park	KS	ToddL@moksacpa.com	913 381 2251
Tyler	Ley	Oklahoma State University	Stillwater	OK	m.tyler.ley@gmail.com	405 744 5257
Maria	Masten	Minnesota DOT	Maplewood	MN	maria.masten@dot.state.mn.us	651 366 5572

Heather	McLeod	Kansas DOT	Topeka	KS	heather.mcleod@ksdot.org	785 291 3844
Kevin	McMullen	Wisconsin Concrete Pavement Assoc.	Madison	WI	kmcmullen@wisconcrete.org	608 240 1020
John	Melander	Portland Cement Association	Skokie	IL	jmelander@cement.org	847 972 9054
Kevin	Merryman	Iowa DOT	Ames	IA	kevin.merryman@dot.iowa.gov	515 239 1662
Matt	Munsick	Morgan Corp	Spartanburg	SC	mmunsick@morgan-corp.com	864 433 8800
Tommy	Nantung	Indiana DOT	West Lafayette	IN	tnantung@indot.in.gov	765 463 1521
Matthew	Nicholas	Dayton Superior	Birmingham	AL	matthewnicholas@daytonsuperior.com	205 229 2462
Tom	Nicholson	Dayton Superior	Dayton	OH	tomnicholson@daytonsuperior.com	937 428 6350
Bob	Nickelson	PCA-SE Region	Sharpsburg	GA	bnickelson@cement.org	678 621 3692
Antonio	Nieves Torres	FHWA	Washington	DC	anieves@dot.gov	202 366 4597
Jay	Page	Georgia DOT	Forest Park	GA	james.page@dot.ga.gov	404 363 7513
David	Painter	FHWA-Georgia Division	Atlanta	GA	David.Painter@dot.gov	404 562 3658
Nigel	Parkes	PNA Construction Technologies, Inc.	Atlanta	GA	nigel@pna-inc.com	404 386 8168
James	Parry	Wisconsin DOT	Madison	WI	james.parry@dot.state.wi.us	608 246 7939
Mehdi	Parvini	California DOT	Sacramento	CA	mehdi_parvini@dot.ca.gov	916 274 6077
Rob	Rasmussen	The Transtec Group	Austin	TX	robotto@thetranstecgroup.com	512 451 6233
Jeff	Reid	Hilti	Tulsa	OK	jeff.reid@hilti.com	801 673 9601
Bob	Risser	CRSI	Schaumburg	IL	brisser@crsi.org	847 517 1200
Matt	Ross	Penhall Company	Overland Park	KS	mross@penhall.com	816 803 9331
Tyson	Rupnow	Louisiana DOT	Baton Rouge	LA	Tyson.Rupnow@la.gov	225 767 9148
Barry	Sanders	Kentucky Concrete Paving Association	Frankfort	KY	barry.sanders@kycpave.org	502 695 3538
Chris	Schenk	Jarden Zinc Products	Glen Ellyn	IL	cps@schenkindustrial.com	630 240 7587
Paul	Schubert	Jarden Zinc Products	Greeneville	TN	pschubert@jardenzinc.com	423 329 1502
Clayton	Schumaker	North Dakota DOT	Bismarck	ND	cschumaker@nd.gov	701 328 6906
Bruce	Sekaly	Phillips & Jordan, Inc.	Greensboro	NC	BruceS@PandJ.com	336 478 0265
David	Sethre	North Dakota Chapter ACPA	Fargo	ND	dsethre@ndconcrete.com	701 371 4497
Kenny	Seward	Oklahoma DOT	Oklahoma City	OK	kseward@odot.org	405 522 4999
Joe	Sheffield	Georgia DOT-District 4	Tifton	GA	joseph.sheffield@dot.ga.gov	229 386 3280
Gordon	Smith	Iowa Concrete Paving Association	Ankeny	IA	gsmith@iowaconcretepaving.org	515 963 0606
Jason	Smith	South Dakota DOT	Pierre	SD	jason.smith@state.sd.us	605 773 2730
Mark	Snyder	Engineering Consultant	Bridgeville	PA	mbsnyder2@yahoo.com	412 221 8450
Tim	Stallard	Michigan DOT	Lansing	MI	stallardt@michigan.gov	517 322 6448
John	Staton	Michigan DOT	Lansing	MI	statonj@michigan.gov	517 322 5701
Bob	Steffes	National CP Tech Center/ISU	Ames	IA	steffesr@iastate.edu	515 294 7323
Dave	Suchorski	Ash Grove Cement	Overland Park	KS	dave.suchorski@ashgrove.com	913 319 6112
Peter	Taylor	National CP Tech Center/ISU	Ames	IA	ptaylor@iastate.edu	515 294 9333
Lori	Tiefenthaler	PCA-SE Region	Lawrenceville	GA	lori@cement.org	770 962 3360
Brett	Trautman	Missouri DOT	Jefferson City	MO	brett.trautman@modot.mo.gov	573 526 4353
Tom	VanDam	Applied Pavement Technology	Hancock	MI	TVanDam@appliedpavement.com	906 487 7454

Suneel	Vanikar	FHWA	Washington	DC	suneel.vanikar@dot.gov	202 366 0120
Denise	Wagner	National CP Tech Center/ISU	Ames	IA	dfwagner@iastate.edu	515 294 5798
Jason	Waters	Georgia DOT	Forest Park	GA	jason.waters@dot.ga.gov	404 363 7613
Leif	Wathne	ACPA	Washington	DC	lwathne@acpa.org	202 638 2272
Brent	Weber	W R Meadows	Hampshire	IL	bweber@wrmeadows.com	847 214 2273
Thomas	Winkelman	Continental Cement	Chesterfield	MO	twinkelman@continentalcement.com	217 801 8501
Wesley	Woytowich	Lafarge-North America	Calgary, AB	CAN	wes.woytowich@lafarge-na.com	403 225 5421
Anthony	Zander	Indiana DOT	West Lafayette	IN	azander@indot.in.gov	765 463 1521
Matt	Zeller	Concrete Paving Assoc. of MN	White Bear Twp	MN	mjzeller@cpamn.com	651 762 0402