TRB Superpave Mixture and Aggregate Expert Task Group  
Phoenix, Arizona

The meeting was convened on April 3, 2001 by Chairman Jim Musselman of the Florida Department of Transportation. Those members attending were:

James A. Musselman, Florida DOT (Chair)  
John R. Bukowski, FHWA (Secretary)  
Ronald A. Sines, New York DOT (Vice-Chair)

Tim Aschenbrener, Colorado DOT  
Jimmy Brumfield, Mississippi DOT  
John Cheever, Aggregate Industries  
Frank Fee, Citgo  
Ervin L. Dukatz, Mathy Construction Co  
Kevin Hall, University of Arkansas  
Ron Heckel, Lafarge Construction Materials

Gerry Huber, Heritage Research  
Lon S. Ingram, Kansas DOT  
Richard Kim, North Carolina State University  
Larry Michael, Maryland DOT  
Julie Nodes, Arizona DOT  
Randy West, APAC Inc

John D’Angelo, FHWA (liaison Binder ETG)  
F. M. Harvey  Wyoming DOT (liaison AASHTO Subcommittee on Materials)  
Charles Marek, Vulcan Materials Co. (liaison National Stone Association)  
Dave Newcomb, NAPA (liaison)  
Haleem Tahir, AASHTO (liaison)  
Ted Ferragut, TDC Partners (Support Staff)  
Tom Harman, FHWA (Support Staff)  
Edward Harrigan, TRB (Support Staff)  
Neil F. Hawks, TRB (Support Staff)

Those “friends of the ETG” attending were:

Gaylon Baumgardner, Ergon Inc.  
Mike Bienvenu, Troxler Laboratories  
Tom Brovold, Test Quip  
Ken Brown, Troxler Laboratories  
Joe Button, TTI/Texas A&M  
Allen Cooley, NCAT  
Frank Dalton, Pine Instrument Co.  
Lee Gallivan, FHWA Indiana Division  
Joe Gunderson, Indiana DOT  
Michael Harnsberger, Western Research Inst.  
Joe Hiddeman, Chevron Asphalt  
Shin-Che Huang, Western Research Institute  
Gary Irvine, Asphalt Institute  
David Jahn, Martin Marietta  
Brian Killingsworth, Fugro-BRE Inc.  
George Merritt, Indiana DOT  
Gale Page, Florida DOT  
Manfred Partl, EMPA Swiss Federal Labs

Charles Paugh, FHWA-SaLUT  
Bob Peterson, Asphalt Institute  
Katherine Petros, FHWA, WRC  
Bill Pine, Heritage Research  
Mike Mamlouk, Arizona State University  
Dean Maurer, Pennsylvania DOT  
Murari Pradham, Utah DOT  
Roger Pyle, Pine Instruments  
Ali Regimand, Instrotec Inc  
Ray Robertson, Western Research Institute  
Dick Root, Consultant  
Geoff Rowe, ABATECH  
Scott Shuler, Lafarge Construction Materials  
Michael Smith, FHWA SRC  
Pamela Turner, Asphalt Institute  
Matthew Witzczak, Arizona State University  
Mark Zitka, FHWA  
Mike Zupanick, Technologic Resources
Call To Order Musselman
Chairman Musselman welcomed the group. The Chairman reviewed the agenda (Attachment A) emphasized the essential functions of the ETG, and reviewed previous meeting Action Items. Chairman Musselman asked the attendees for self-introductions.

Team Reports
In 2000 the ETG formed teams to provide technical monitoring of the FHWA Superpave mixture and aggregate related activities and to provide the TRB Superpave Committee a continuing assessment of the AASHTO/TRB funded activities being conducted by the FHWA. Each team acts in a similar manner to an NCHRP Project Panel by commenting on the scope of work, providing technical input for FHWA consideration, coordinating presentation of deliverables to the ETG for deliberation, and recommending necessary action to the ETG.

Team 1: Status of Projects 90-01, 90-03 and 90-05 Ascenbrener/D’Angelo
Role of the team is to review of projects 90-01, 90-03, and 90-05, members include Tim Aschenbrener (team lead), Ron Sines, John Cheever, Kevin Hall, and John D’Angelo (FHWA lead). A summary of the projects and their objectives is as follows:

- **90-01 “Demonstration Project 90: Advanced Asphalt Mix Design and Field Quality Control”**
  This project is a continuation of the FHWA’s mobile testing laboratory which provides data for equipment validation and field control. This effort has produced considerable data for the ETG’s consideration/recommendations. One current study has been to evaluate use of the AVK (angle validation kit). This device, dynamically, under load measures the internal angle of the Superpave Gyratory Compactor. Current work includes evaluation of the intrusiveness of the AVK in various compactors as well as determination of an appropriate internal angle. This work is in support of a larger FHWA study that is being conducted in cooperation with the ETG and will be discussed later in the meeting.
  
  This summer the mobile laboratory will start a field project in support of NCHRP 9-22 “Beta Testing and Validation of HMA PRS”. Other current activities include evaluation of the Corelock device for more repeatable and possibly precise measurements of bulk specific gravity of pavement cores. This is especially relevant to coarse graded mixes with higher air void levels. Indications are that for some of these mixes, measurements made using the device may indicate even higher levels of air voids in cores than were previously envisioned.

- **90-03 “Superpave Mix Tenderness”** This project is investigating mixture tenderness during compaction, especially as might be caused by moisture in the mix. Heritage Research and the Asphalt Institute are working with FHWA on this study. One aspect of this research has been to develop a methodology to measure moisture in mixtures during production and laydown. This summer, researchers will search for tenderness field projects, and conduct tests to relate this behavior to moisture in the mixture. This project is to be completed by end of 2001.

- **90-05 “Fine Aggregate Specific Gravity Test”** This project has developed a simple, repeatable fine aggregate specific gravity test based on a prototype device, developed by NCAT. The device determines the aggregate’s saturated surface dry weight. Error in determining the saturated surface dry condition of fine aggregate is thought to be a major source of error in the current fine aggregate specific gravity test procedure. Development of an improved test procedure is of
particular importance because the fine aggregate specific gravity is used in the determination of the uncompacted void content of fine aggregate angularity and mixture volumetric properties. The device also has the potential to improve testing speed. Some tests could be reduced from days to few hours. Also more automated tests improve reliability. Several commercial production versions have been developed. Plans are to compare use of new devices and old procedures. A further step will be equipment ruggedness, then ETG recommendation to AASHTO.

A copy of this presentation is contained in Attachment B.

Team 2: Status of Projects 90-07 and 90-09 Michael/Harman
Role of the team is to review projects 90-07 and 90-09. Members include Larry Michael (team lead), Rebecca McDaniel, Mike Anderson, Lon Ingram, Richard Stuart, and Tom Harman (FHWA lead).

- **90-07 “Understanding the Performance of Modified Binders”** This project is an extension of the FHWA’s polymer asphalt program (mix and binder specification development) examining the binder specification as it relates to various methods of modification. This effort will validate some of the aspects of NCHRP 9-10 project findings for modified binders. Premise is that neat asphalt works well in the specification. A further, more comprehensive study is planned. Study will include ten new asphalt modifiers, which represent a very good sampling of currently used materials. Will conduct a full suite of binder tests; high temperature, intermediate temperature, and low temperature as well as moisture sensitivity. The FHWA’s accelerated load facility is being used as part of this project. Have seen a good correlation with ALF and actual field performance. Other testing included in the study are the SST, French PRT, TSRST, and Hamburg Moisture Sensitivity. Results will be reported to ETG. Funding of complete study remains a challenge, and will likely be conducted as a pooled fund study.

- **90-09 “Relating Mastic Test to Binder Performance”** This research will investigate the relation of mastic components of asphalt mixtures to predict binder behavior in the mixture. Specifically the binder properties in combination with P200 material will be studied. Binder tests give a good prediction of the performance of neat binders, but work poorly for modified binders. Testing of mastics in this situation may provide a better correlation.

A copy of this presentation is contained in Attachment C.

Report of Binder ETG Activities/Issues D’Angelo
The Binder ETG Secretary, John D’Angelo provided a briefing on the activities of the Binder ETG.

- Examining feasibility of controlling operational temperature of the rotational viscometer to greater tolerances. It is hoped that the rotational viscometer will aid in determination of mixture and compaction temperatures for modified binders. However, no near future changes are foreseen regarding the ability to determine mix and compaction temperature for modified binders.

- Examining the repeatability of the equipment used to grade binder in the PG system. The variability of the DSR and the BBR has been much reduced. The procedure for the DT is also being further refined. The new DT equipment has been finalized. The Binder ETG also working to improve procedure and repeatability of new device. New method is to heat specimen (in sand) helping improve repeatability.
• Examining NCHRP 9-10 results for modified binders to verify the high temperature performance. The low temperature performance is being addressed by the new specification using the DT equipment. The proposed MP1(a) specification incorporates a critical low temperature cracking evaluation, with the BBR and DT. Using BBR results at two temperatures to create a master curve and then use DT to calculate the binder cracking temperature. Working with the FHWA’s ALF to validate work performed under 90-07. The ETG reported good correlation between G*sinδ for neat binders but not for modified binders.

• Where are binder specifications headed? Neat asphalt is well addressed. Modified systems have issues that need to be resolved. This issue is important, since polymers are being used more frequently. The equipment to evaluate binders is well accepted, so we don’t want to change equipment in order to evaluate modified binder.

• The RTFO evaluated for use with modified asphalts. System using steel rods in conditioning bottles was examined, but couldn’t duplicate 9-10 results.

• LAST device from the 9-10 project is being evaluated for binder stability. Prototype device of a potential commercial version is being evaluated.

• Testing neat asphalts at one low temperature appears sufficient. But for modified asphalt need to run at two lower temperatures. Using DT device, need to generate a low temperature curve to show how thermal stresses develop in binder with changes in temperature. Then use the BBR to look at strength of material and relate to thermal stress development as measured (DT).

• Fatigue testing 9-10 looked at time/loading sweep. Looked at dissipated energy ratio. How much energy is dissipated at each cycle - loss of ability to dissipate energy will result in cracking. Looking at performing this test at a variety of temperatures.

• Effort to keep extra testing time to a minimum. Hoping to reduce PAV from 2 days to 6-10 hours.

A copy of this presentation is contained in Attachment D.

**Update of Selected NCHRP Projects**

Harrigan

Brief on status of current and planned NCHRP projects.

• 9-9(1) Verification of gyrations level in the N design table – verify through field project evaluation that the gyrations level in TP4 are appropriate. To be completed in 2003.

• 9-14 Restricted Zone examination, with purpose of eliminating the restricted zone. Work completed, report will soon be released.

• 9-19 Developing material characterization models under Superpave as well as identifying a simple performance test.

• 9-20 WesTrak study to be published by end of summer. Consists of a compilation of 45 reports on CD.
• 9-22 Performance Related Specifications, beta testing and validation of HMA, field trials, and training course.

• 9-23 Evaluate and develop environmental effects on pavements. Validate with LTPP Seasonal Monitoring Program. Will be of use for 2002 Design Guide.

• 9-25 Evaluate VMA requirements for Superpave mixtures, recommend criteria for voids.

• 9-26 Being conducted by AMRL, will produce precision statement for TP4, Superpave gyratory compactor.

• 9-27 Examining relationship among HMA in-place air voids, lift thickness and permeability.

• 9-29 Development of a simple performance test for Superpave mix design – design, procure and evaluate testers for use in Superpave mix design and in HMA materials characterization and for pavement structural design. FHWA will participate in ruggedness portion of this study.

• 9-30 Development of an experimental plan for performance models validation.

• 9-31 Will examine and verify the 4% air void level for Superpave mix design.

Planned FY 2002 Projects:

• 9-33 “Superpave Mix Analysis Method, Software, and Manual” would develop a working version of a mix analysis method based on performance testing, the material tests and performance models in the 2002 Pavement Design Guide.

• 9-34 “Improved Test Procedure for Determining the Moisture Damage Susceptibility of Bituminous Pavements” would develop an improved method for HMA moisture susceptibility testing based on the environmental condition system (ECS) and simple performance tester.

• Conduct a “Synthesis of Aggregate Research and Effect on Superpave”

• 4-30 “Improve Testing Methods for Determination of Critical Shape and Texture Factors for HMA Aggregates”

Long-range plan is to use the performance models contained in the 2002 Design Guide and apply them also to mix analysis. Goal for 2005 is to complete validation of these models as applied to mixture performance analysis and prediction. It is hoped that these models could also be used in performance related specifications. This would result in the same model platform for mix design, structural design and specification control.

A copy of this presentation is contained in Attachment E.

**Attachment F** contains the schedule of ETG recommendations for specific NCHRP projects for years 2000 to 2002. Being developed is a detailed table of the various standards that the ETG has monitored as well as the currently planned research efforts whose results will impact these standards. As needed, John Bukowski will maintain this table and provide updates and revisions of activities and deliverables. This information, as warranted, will be brought to the ETG attention for action and possible recommendations to AASHTO.
Update on Subcommittee on Materials

Brief on status of current changes to specification being balloted by SOM, status of ETG recommendations, and publication of 2001 Provisional Standards.

Provisional standards were distributed in April 2001. These included balloted changes to standards, MP2, TP2 and PP28 (reflecting RAP project 9-12 changes), a new alternate binder specification MP-1(a) (including a low temperature specification), changes to the SST procedure in TP7, and transfer of TP4 to a full standard (T312). The provisional standards released in 2001 will not be the full compilation of standards as in 2000, but rather will be an interim version containing only those standards that are new or that have been recently modified.

Issues still need to be addressed concerning laboratory mixture and compaction temperatures (Binder ETG activity), continuation of a fixed 4% air void target in mix design procedures (NCHRP 9-31), and establishment of possible separate VMA criteria for coarse and fine graded mixes (NCHRP 9-25).

Additional proposed procedural specifications are being examined for use of infrared cameras to detect potential segregation and measurement of surface texture using the ROSEAN.

A new working group is looking at making the recommendations from NCHRP 9-7 (Superpave QC/QA) into more useable specifications.

Rick Harvey commented on the direction of provisional standards. Provisional standards from the SHRP program are nearing their eight-year limit. After an eight-year period the entire subcommittee must vote to accept or drop.

In 2002 most Superpave standards are at the eight-year limit. Need to act to move them to full standard. The procedures to change full standards are more complex than what is required to change provisional standards. For provisional standards, changes were made via a separate, quicker ballot process. With full standard, need to produce recommendations by April meeting to go to SOM to get changes for following year’s book.

The issue was discussed as to which specifications should be moved to full standard and which should be archived. TP7 and TP9 are being looked at by SOM group among standards to archive (drop). The ETG needs to provide SOM input on these and other provisional standards. The ETG reviewed the list of provisional standards, and made recommendations which should become full standards (keep) or archive (drop).

Results of ETG recommendations are shown in Attachment G.

Rick Harvey will produce a flow chart on timing of recommendations and actions by SOM to conduct ballot/make changes. Also, he will make a presentation for next meeting on review process of SOM/technical sections.

SGC Comparisons and Calibration Task Force

Brief on status of Task Force and FHWA activities to develop an appropriate plan to address current concerns over dissimilar mixture specimens produced by different gyratory compactors, utilization of an internal angle measuring device and recommendations for future actions.

An ETG task force led by Gerry Huber met prior to the ETG meeting (April 2, 2001) to discuss issues related to the gyratory compactor and angle verification. The objective of the task force is to look at 1)
what do we do in the short term with different manufactured compactors yielding different results; and
2) look for a long term solution to ensure similar results from various gyratory compactors.

The Task Force focused on an offset procedure for use with the TP4 procedure of Superpave gyratory
compaction that provides for adjustment of bulk gravity results of compacted specimens. This was
considered the “short term” solution. A “long term” solution is seen in the angle verification kit (AVK).
The AVK has been under development for over a year, and is now commercially available for
approximately $8900 by TestQuip. The kit also contains a NIST traceable device for angle and
alignment.

The kit allows for a highly accurate measurement of internal angle on the mixture in the gyratory
compactor during operation. The FHWA is working with the Task Force on the development of a
procedure for using the AVK. Ultimately a revised TP4 procedure will be recommended to AASHTO.

A summary of the Task Force activities with the FHWA and information on the angle verification kit
(AVK) are contained in Attachment H.

Tom Harman reviewed the development of the Superpave gyratory compactor. This included the Texas
DOT historical use, 1987 SHRP research, angle development, FHWA pooled-fund procurement,
equipment criteria, first article devices and multiple manufacturers. Angle, pressure and speed of
gyration were established as the important compactor criteria and the specification (PP35) was
developed to analyze subsequent manufactured compactors. In particular, setting and maintaining the
angle applied to the specimen during the compaction process is critical. Due to technology limitations
and practicality, the current procedure only requires an external measurement of the angle. Subsequent
usage and experience has shown a need for measuring the actual internal angle on the specimen during
the compaction process. The AVK allows for this measurement. Attachment I is an FHWA document
on the Superpave Gyratory Issues.

It is critical to ensure proper equipment procedures are followed before using correction factors or the
AVK. Attachment J, Evaluation of Different Superpave Gyratory Compactors (SGC’s) Used in the
Design and the Field Management of Superpave Mixtures, as the title implies contains the procedure for
comparing multiple compactors. This has been forwarded to AASHTO for adoption.

For short term an approach could center on a calculated correction (or offset) factor. Two compactors
would prepare specimens and the bulk specific gravities would be measured, and differences examined.
A determination would be made that the mixture was sampled and split appropriately and that the
equipment was operated properly and procedures were correctly performed. Then, if differences between
specimens are greater than 0.015, a correction factor would be added /subtracted to make the results the
same for a particular compactor. This is an approach taken by the Texas DOT in using the Texas
gyratory compactor. At least one DOT is investigating, this summer, the use of this procedure. The
“pros” of this approach are that no new equipment is needed, SGC operation continues to follow TP4, it
is applicable to all existing Superpave gyratory compactors, and adjustments are not needed to
compactors. The “cons” include: a correction factor is required for every compactor (and possibly every
mix), it is complex (from an administrative standpoint), subject to abuse and there is no incentive to
develop a long-term equipment fix.

Some States would rather start using the AVK this summer, even though the appropriate internal angle
and procedure have not yet been developed. The “pros” of this approach include: a common standard,
no “fudge factor” correction, and it may not be needed for adjustment on every mix. The “cons”: AVK
equipment is required, standard still under development/research, each State may possibly choose a
different internal angle.
There was some concern expressed that the AVK is intrusive to the compaction process and should not yet be used. The basic concern is that when the AVK is used, the measured angle is not the same angle that the mix experiences without the AVK. However, the device does have potential. Overall, there is a concern that the AVK procedure is not quite ready and the ETG consequently should not recommend its use as a short-term approach at this time.

For the next meeting we hope to have answers to some of the AVK issues. There needs to be a specification for the AVK which at this time is only developed in draft. Need to address specimen height, as some molds are not tall enough for a full height evaluation when AVK is used. Also need to address the commercial availability of the AVK. The issue of the intrusiveness of the device needs to be reviewed as well. Experiments are being conducted concerning the proper procedure to use the AVK with various manufactured compactors and most importantly, determination of the appropriate value for an internal angle. The Task Force will draft a statement as to the applicability of using correction factors or the AVK.

The ETG at this time cannot recommend a short-term procedure using either correction factors or the AVK.

**AASHTO Standards Options**

At the previous meeting a Task Force on Standards Review was asked to review T209 and write a simplified version based on current ASTM changes and simplifications.

Kevin Hall was charged to look at test methods related to bulk and rice gravity calculations.

(1) AASHTO T209 was compared to the new ASTM D2041-00 (not published yet). The ETG reviewed handout on comparisons between procedures. Differences were identified in methods, which will potentially result in different results, but don’t know magnitudes.

Potential changes to T209: do nothing, or replace completely with ASTM 2041, or make some changes only to T209. ETG discussed possible T209 changes. Rick Harvey commented that AASHTO is aware of the procedure that is being modified in ASTM. Focus should be on accuracy and not necessarily simplification. Need to narrow choices within either procedure to make procedure less variable. Areas of concern include: mechanical devices are not the same, need to say what type shaker, need to describe equipment better, vacuum level needs to be in millimeters of Hg but the level needs to be such not to use vacuum bleeder. Some States go beyond standard and make more refinements. Need to improve on repeatability - T209 differences now are 0.019 between labs, and 0.011 within labs.

Colorado gets good repeatability but goes beyond T209 and spells out equipment and limits the options. Each State using their own procedural options generally reduces the variability on a “local” level, but this affects the pooled national values for test precision, making them greater. Those States that have “tightened” their procedure will be asked to provide a copy of their approach to the ETG for guidance.

(2) AASHTO T166: add other temperature correction factor +/- 3 degrees from 25 degrees C. This could be an adjustment to T166.

Kevin Hall will present additional recommendations at the next ETG meeting. ETG will collect these issues and offer some specific changes to AASHTO for procedure to determine maximum specific gravity.
Aggregate Gradation Optimization

As a follow-up from last meeting’s discussion of the Bailey Method, participant’s experience using the method was reviewed.

Gerry Huber briefly explained the procedure using an recent AAPT presentation that outlines the method. For about 15 years the procedure was used mainly in Illinois, but prior there has not been much research or written evaluation of this method of aggregate optimization.

These kinds of procedures are needed as we move to eliminate the restricted zone. Something is needed to assist in controlling gradations and evaluate how aggregate gradations go together, and help in defining/quantifying a design aggregate structure. What is relation between structure and changes to volumetrics?

Aggregate packing is affected by compactive effort, particle shape, surface texture and size distribution or gradation. The Bailey method addresses the gradation aspect by determining how much aggregate can be packed into a given volume.

The Bailey Method uses blending by volume and a rodded volume of aggregate in a bucket of specific size. It then compares loose aggregate and rodded aggregate conditions in known volume (bucket). Summary of ratios for coarse aggregate (CA) and fine aggregate (FA). These will help to estimate how volumetrics might vary with changes in gradation.

Members investigating the Bailey Method last meeting were asked to provide their results to Huber for analysis prior to the meeting. Effort evaluated 25 mixtures in various States. Generally speaking, it was predictive. APAC, AZ DOT, FHWA, Lafarge and PJ Keating used methodology. Ultimately the ETG will issue recommendations or develop a procedure for using the Bailey Method.

During the 2001 construction season more mix ETG members are encouraged to study this method, review existing blends and reviews in the lab and field. The ETG will gather additional information as members use the method. Result would be a recommended procedure that can be useful as a tool to help evaluate and select aggregate gradations for use in Superpave.

At next meeting it is hoped to bring this to closure – either a recommend AASHTO practice/guideline or drop it from ETG consideration.

4.75 mm “Superpave” Mixture

At the last meeting Larry Michael was asked to prepare for ETG discussion a recommendation for changes to MP2 to incorporate a 4.75 mm nominal size mixture.

Maryland DOT has used this 4.75 mm nominal maximum size mixture, placed 19.0 mm thick. Georgia DOT has also used a similar mix. Both states used these mixtures in conjunction with MP2, but with some modifications for air voids and compaction gyrations. Mixture has been used with good results. Several of the DOTs would like to see it developed. ETG reviewed handout of recommended changes.

Michael was asked to prepare a recommendation in AASHTO format for next meeting.
Field Mixture Verification
D’Angelo

At the last meeting John D’Angelo was asked to prepare for ETG discussion a recommended practice for field mixture verification.

D’Angelo reviewed elements of a mix verification process. A copy of this presentation is contained in Attachment L. The procedure is contained as Attachment M.

D’Angelo provided a handout on mix verification, which can be used as part of a field management system as part of a QC/QA process. It is principally aimed at the Contractor, with methodology to control the HMA production process. ETG members were asked to provide comments to the procedure presented. At next meeting, the ETG will investigate potential action on this issue along with current work being done by NCHRP to modify the 9-7 report.

New Equipment - Pooled Funds/Cooperative Agreements
Harman/Bukowski

Presentation of some of the new and refined equipment being developed under pooled fund and cooperative agreements to improve Superpave design and construction.

PQI Device - Being investigated for use in determination of in place pavement density. Approximately 75 field projects are being analyzed. Good correlation, but may be insensitive to large changes in density. Work as yet inconclusive. Another similar device, a prototype “Pave Tracker” is also being evaluated, results look promising.

E* Pooled Fund - Evaluating methodology to determine dynamic modulus. Three labs involved in effort – using split samples. Will work closely with 9-19 effort as well as 2002 Design Guide. Will investigate use at a variety of temperatures, and utilize currently available draft protocol.

CoreLok Pool Fund – Consists of plastic vacuumed bags placed on cores and compacted specimens to improve calculation of bulk specific gravity. Over 22 States/companies are participating. Round robin will be conducted on a variety of mixes. NCAT has prepared laboratory specimens for participants examination. Each participant will receive compacted specimens to test using their CoreLok device. Preliminary results should be ready for the next meeting. Work is leading to possibly establishing this as a standard. Need to ensure that AMRL is involved in the process.

Results of NCHRP 9-14 – Superpave Restricted Zone
Cooley

Cooley presented information on the soon to be completed NCHRP 9-14, “Investigation of Restricted Zone in the Superpave Aggregate Gradation Specification”. This work evaluated over 120 mixes. Findings will recommend that the restricted zone is redundant if both FAA and volumetric properties are met. The report will recommend that the restricted zone be removed from the standard. There is still a concern that if the restricted zone is removed, how will fine and coarse aggregate gradations be defined.

It is anticipated that the final report will be sent to the NCHRP project panel in August 2001.

T304-96 (FAA) Precision Round Robin Study By SE User Producers Group
Bukowski

Reviewed results of Southeast Asphalt User Producer Group (SEAUPG) round robin to establish precision for AASHTO TP33. At this time is it is probably the only body of information on this subject. A copy of the final report had been distributed to the ETG. An overview of the results was discussed as they related to the various test methods for FAA.
It was noted that in this work each lab calculated their own Gsb for each of their test specimens. Some current effort to improve the Gsb procedure, including the use of the Corelock device may improve the precision of these results. It was also noted that these results represent a limited set of materials when viewed from a national perspective.

A copy of this presentation is contained in Attachment N.

**Superpave 2005 – Long Range Plan**

Ted Ferragut gave an update of the current long-range plan developed as a requirement of AASHTO resolution AR-5-98 and future research topics.

A copy of this presentation is contained in Attachment O.

Ferragut reviewed the Superpave related projects to be conducted over the next few years, 2003, 2004 and 2005 and those related to long-range 2005 plan goals. Technical issues include: (1) simple performance tester developed to augment volumetrics, (2) 2002 Design Guide issues, (3) advanced modeling direction and support, and (4) Software needs for 2002 Design Guide, mix design and PRS.

Support is still needed for sustaining momentum, training workers, and integrating mix and structural design.

Under F-SHRP, the only area that could be related to Superpave may be under Renewal of Highway Network under the area of accelerated construction and long-lived pavements.

**Executive Session – ETG Members Attached action items**

**ETG meeting adjourned.**

Next meeting will be held in Washington DC and start at 8:00 am on August 28 and conclude at noon on August 29, 2001.
Action Items

1. All presenters should forward an electronic copy of their presentation to ETG Secretary.

2. Update the matrix of research activities and the potential impact on specifications being reviewed by ETG and schedule for input to AASHTO SOM, include specific dates, funds and deliverables for each project - Bukowski/Ferragut

3. Schedule future ETG meetings to support AASHTO requirements/2002 schedule. (Recommendations to AASHTO for annual SOM needed by March/April). Decided to meet in February for changes etc., and then August can advance new project proposals. - All

4. Produce flow chart on timing of recommendations and actions by SOM to conduct ballot/make changes, present at next meeting an overview of the SOM process as it relates to the technical sections etc. – Harvey

5. Include Randy West’s comments on dust to binder in Chair report - Musselman

6. Group to go through list of standards, recommend which to keep or delete (archive). - All

7. Draft statement by April 19 for use with SGC with recommended short-term guidelines that directs users to ensure that proper equipment and procedures are being followed and only then determine if additional action is needed to achieve similar results from the SGC. – Huber (Task Force)

8. SGC angle calibration Task Force needs to coordinate and develop (In conjunction with FHWA) a long-range experimental plan and report at next meeting – Huber (Task Force).

9. Compile recommendations for changes to T209, provide to Harrigan for use on 9-26. Request that AMRL examine and make recommendations for maximum specific gravity. (Bukowski)

10. On the Bailey Method, at next meeting bring to closure and possibly recommend as procedure or guideline tool. Prior to next meeting develop in standard format the Bailey Method procedures. – Huber

11. Standard Procedure For Field Verification, comments to D’Angelo by April 18, any revisions to be referred by Chair to AASHTO Group. Examine at next meeting for referral to AASHTO as information for current 9-7 project at next meeting. - D’Angelo

12. Determine current TP4 specification on heating molds.  Harvey

13. Restricted Zone, copies of report 9-14 sent to ETG and will be addressed at next meeting. – Harrigan (ETG to include possible guidance in specification at next meeting, circulate Fee memo to ETG prior to next meeting)

14. Within next week Larry Michael to prepare in standard AASHTO format for inclusion of a
4.75 mm mix into MP2. Send to ETG for comments and refer to AASHTO or discussion at next meeting.

15. Long Range Plan, Goal 1 Mix Design and other proposals for research needed. Summarize and send to ETG members all approved projects and identify potential areas that could need further work. - Ferragut