Flexible Pavement Committee Minutes

December 19, 2002 -- Orlando, Florida

1) Discussion of the hydrated lime pretreatment process.

At a previous FPC meeting, the issue of pretreating the FC-5 aggregate with hydrated lime prior to stockpiling was discussed and an agreement was made to try the pretreatment process on an I-275 project in the Tampa area. The process generally seemed to work well, although at this time the impact on performance is unknown. A literature search by the State Materials Office indicated that previous studies have shown that the pretreatment process is more effective than the currently specified method of lime introduction in dry form. A draft specification has been developed which stipulates the basic requirements for the pretreatment process (mixing, certification, shelf-life, etc.) The SMO will initiate a specification change allowing the pretreatment process, and will also try to identify a few additional projects to sort out the shelf-life (30 days versus 45 days).

2) Discussion of the coarse versus fine gradation issue. What are the pro's and con's?

Current FDOT specification criteria requires a coarse graded mix for Traffic Levels D & E. A general discussion on this subject indicated that the positive aspects of allowing fine graded mixes for higher traffic levels include less compactive effort, less vibratory compaction problems (settlement, complaints, etc), thinner lifts, greater density uniformity, a smoother ride, and less in-place permeability. Work performed at WesTrac indicated that fine graded mixes out-performed coarse graded mixes, while at the NCAT test Track the performance was about equal. The negative side of fine mixes for higher traffic levels include the potential for the use of lower quality aggregates that have historically had performance problems, and mixes that are graded “very fine” in order to meet the VMA requirements. One option discussed was to only allow the use of fine graded mixes on higher traffic levels when a PG 76-22 binder is specified. The SMO will develop a draft spec change for discussion.

3) Do we need to build an SMA project?

SMA mixes generally require aggregates with lower LA abrasion numbers than what is typically found with Florida aggregates. However the Georgia DOT has raised LA abrasion requirements for its SMA specs. SMA mixes are also more difficult to construct than coarse-graded mixtures, and they require a polymer-modified asphalt. The preliminary results from the NCAT test track show that coarse-graded mixes with polymer-modified asphalts (PG 76-22) are performing as well as SMA mixes. The committee agreed to continue monitoring the two

types of mixes at the NCAT test track and hold off on constructing any SMA mixes at this time.

4) QC 2000 data collection...What is the best way to capture the test data in order to re-evaluate the specification's tolerances and limits?

FDOT has made a commitment to the FHWA to re-evaluate the CQC asphalt specifications after one year. Two possible methods of capturing this test data for this analysis include: 1) have the contractor summarize the data and submit it to the SMO electronically or 2) have the FDOT verification technician at the plant summarize the data and submit it to the SMO electronically. Probably the best course of action would be to have the State Construction Office send out a Construction Memorandum requiring the verification technician to collect this data and forward it to the SMO electronically. The SMO will work with the SCO on the development of the memorandum.

5) What's the early feedback on the QC 2000 projects? How are they going so far?

So far, the Contractor Quality Control (aka QC 2000) projects are going very smoothly, with no significant problems encountered to date. Most of the problems relate to reporting, documentation, and basically whom do the reports get turned into. There have been very few problems with the specification itself. As a follow up to this item, it was suggested that a flow chart be developed outlining the reporting and administration aspects of this new system. The State Construction Office and State Materials Office will work on this effort jointly.

6) Update on the CGAP specification.

Based on an agreement between FDOT and Industry, a 3-year Contractor Guaranteed Asphalt Pavement (CGAP) specification will be included on all asphalt projects as a method to cover “materials and workmanship” problems for three-years from the time of final acceptance. The Warranty Task Team will establish threshold values (based on historical data) to identify premature failures before they fail. The 3-year CGAP specification criteria will apply to the CQC projects. The 5-year CGAP specification will only apply to Design-Build projects at this time. The target date for implementation of the 3 year CGAP specification is the January ’04 letting.

7) The Greg Sholar research update.....

Greg Sholar presented a brief summary of some of the current FDOT research. Topics included:

NCAT Test Track: Round 1 trafficking has concluded. Rutting results for FDOT’s coarse and fine test sections were similar. FDOT will leave these two sections in-place for Round #2 and construct two new sections in a curve. The

two mixtures to be placed in the curve will match those mixtures previously evaluated at the FDOT's HVS test site in Gainesville.

HVS Test Track: Round 2 construction will begin in January 2003. Round 2 will compare coarse and fine gradations using the same aggregate components. Both modified and unmodified mixtures will be compared.

Moisture sensitivity testing continues for I-75 in southern Columbia County. This was the first major Superpave project constructed in Florida. It was constructed with unanticipated high in-place air voids and the mixture contains a large proportion of Georgia Granite. Stripping is evident.

Research reports related to hot-in-place recycling and shear testing to evaluate bituminous tack coat bond strength are now available on the State Materials Office website. A report on the CoreLok test device will follow in early 2003.

Novachip test sections on US-27 in Highlands County will be constructed by APAC in 2003. The test sections include variations of FC-5 with granite and limestone, with conventional tack coat and with Novabond polymer modified tack coat and will also include a standard Novachip Type "C" mix.

A VMA study has begun at the SMO bituminous research lab. It will examine changes in gradation on the nominal maximum aggregate size and how this affects rutting in the APA, cracking parameters determined by the Superpave IDT and the effect on volumetric properties, especially VMA.

The UF cracking model, which uses the Superpave IDT as the test method for determining parameters used in the model, is being setup at the SMO bituminous research lab. The test equipment is very complicated and numerous problems have been encountered.

Two field test sections have been constructed to evaluate the effects of varying percentages of granite, limestone and sand on the observed friction properties. The first test section is on Waldo Road in Gainesville and has a FC-5 friction course. The second test section is on SR-121 in Gainesville and is constructed with FC-6 friction course. Results to date indicate that increasing the percentage of granite increases the frictional properties of the pavement. A third test section is currently being constructed on SR-16 in Starke. It will be constructed with FC-6.

8) What issues does the Department need to be addressing to improve the quality of asphalt pavements in Florida?

Due to time constraints, this item was not discussed. Should anyone have any comments or suggestions, please forward them to Jim Musselman (jim.musselman@dot.state.fl.us).

9) How long does the old 331 specification need to stick around? Can we delete it from the next printed spec book?

The consensus from the Industry representatives present was that in order not to impact cities and counties too much, that FDOT keep Section 331 in the 2004 specification book, but delete the non-essential sections such as 310, 311, 312, 332, 333 & 335. Another option discussed was to have the State Specifications Office establish an archived specifications section on their web site. These recommendations will be forwarded to the State Specifications Office for their consideration.

10) Are cities and counties using Superpave yet?

A few of them are, but not many. In some cases they seem to be a little confused (one city specified an S-III Traffic Level C). Also the use of vibratory rollers in urban areas is a problem, however this is a density issue and not a Superpave issue. The University of Florida is working on developing a one-day course for cities and counties that will hopefully lessen some of the confusion.

11) Antistrip is being ordered (in some cases) by the QPL number rather than the trade name. Is this a new DOT requirement and/or specification?

This is not a specification requirement. Both the QPL number and the manufacturer's trade name are being placed on the mix design to avoid confusion for all users of this information including the FDOT inspector as well as the delivery truck driver. Binder suppliers agreed that this was a good idea to continue this practice and will place both QPL and manufacturer trade name on the delivery ticket. SMO will issue guidance to binder suppliers.

12) Liquid Binder has been ordered as follows; "PG 67-22 meeting RA 3000 requirements." Is this a new DOT requirement and/or specification? In both cases the contractor was very specific on how the ticket was to be labeled.

This is not a requirement of FDOT specs, but sounds like a contractor customer is being very specific in what he wants for a mix that contains RAP. This may be a bit of an overkill, but FDOT encourages communication between contractors and materials suppliers. FDOT requires the binder supplier to certify that the material meets FDOT specs for the specified material.

13) Proposed specification change on alignment of pavement edges.

A proposed specification change is in the review process regarding the alignment of pavement edges. A new portion will be added to specification D3300911 that will provide a tolerance for the alignment of pavement edges. The tolerance will be +/- 1.5 inches from a stringline located along the edge of the pavement.

14) Certification of materials

The binder supplier is required to certify the materials delivered are in accordance with FDOT specifications. If they also want to certify that it meets other specifications that is optional and not required by specification.

15) Inclusion of tack/prime in associated bid item - No more bituminous adjustment for tack and prime?

That is correct, there will be no bituminous adjustment for tack, just as there is no adjustment for prime. Discussion noted that the quantities for both tack and prime were not significant to warrant the administrative cost in processing this adjustment.

16) Status of mix design grading system

Meeting of Task Group coming up in January. It looks like the goal of having 10-20% of mix designs paper verified can be achieved. Contractor still will have to send in materials with ALL mix designs, however.

17) Annual award for smoothness

The Georgia DOT annually ranks Contractors in terms of their ride quality on GDOT projects. These rankings are then posted. The question has been raised as to whether or not FDOT should do likewise. As an intermediate step, the SMO will compile a summarized list of the top 10 smoothest projects constructed last year and will share this information with Industry. A decision will then be made regarding what to do with it.

18) 4.75mm mix

At the February 2002 District Bituminous Engineers meeting, there was a consensus that FDOT did not have a present need for a 4.75 mm mix and the development of this mix was tabled. AASHTO is in the process of balloting a change to MP-2 which includes a new 4.75 mm mix, so a specification would be available if a city or county needed one.

19) Small quantities of mixes on projects - How to deal with?

The logistics of small CQC projects was discussed. Based on some potential problems expressed by both Industry and FDOT, the SMO will initiate a change to Section 334 so that when the total quantity of any mix type on a project is less than 500 tons, acceptance will be based on visual inspection and certification by the Contractor only.

20) Use of shingles in asphalt (G.A.F.)

Mike Evans of G.A.F. and Al Grinnel of Tampa Electric Corp. discussed the potential supply of manufactured waste shingles as an additive to asphalt mixtures. G.A.F. produces approximately 14,000 tons of waste shingles per

year. The shingles contain no asbestos and are manufactured with fiberglass fibers, not cellulose fibers. Gale Page discussed FDOT's previous use of shingles with APAC in the late 1980's. The experience was positive but the asphalt with shingles cost more than conventional asphalt. Page has drafted a specification allowing the use of up to 5% shingles as a portion of RAP that can be implemented if there is a demand for the product. There is a concern that due to the highly viscous nature of the asphalt cement contained in the shingles, that when the shingles are mixed with RAP, the recovered viscosity or PG grade of the mixture would be higher than allowed by specifications. Currently, 15% RAP can be added to a mixture without the need to lower the PG grade or use a recycling agent. This may not hold true when using shingles at a 5 by weight proportion. Another FDOT concern is the characterization/testing of the shingles and where the responsibility would fall. G.A.F., E.A. Mariani, and APAC said they would work together to see if this application for shingles would be feasible.

21) Smoothness problems with placement of FC-6 Friction Courses on previously paved surfaces. Although many of the projects meet the requirements for surface irregularities, these projects ride rough and include numerous areas of segregation, particularly at truck exchanges. We use granite mixes, which are stiff and hard to place. Some recommended ideas include requiring the contractor to use a Material Transfer Device or equipping the paver with "remixing screws".

After a general discussion, it appears that this problem may be somewhat isolated and may not be indicative of problems encountered statewide. Consequently, there probably isn't a need to add an additional method specification to all projects. It was noted that the new smoothness acceptance requirements using the high-speed laser profiler might help to better quantify the rough areas. It was also noted that if the contractor in question used better construction practices, the problem might take care of itself.

22) We are encountering constructability problems stemming from placing only one layer of asphalt (1.5 inches of FC-6) on paved 5' shoulders with limerock base. The shoulder base is damaged from final dressing operations and grassing as well as traffic placed on the shoulder while the adjacent lane is paved. This results in the contractor having to rework the base or overrun the FC-6. In addition, this provides only 1.5 inches of asphalt, which limits your options for milling when the roadway is resurfaced in the future. If the base had an additional 1.25 to 1.5 inches of structure, it would probably alleviate the problem.

There are occasionally some constructability problems with one layer of asphalt on shoulders with limerock base. However, this typically only occurs with new shoulders and is in some instances a design issue. In some cases, the placement of two layers of asphalt on the shoulder would help. The new FC-9.5 could possibly help this situation by giving the designer the option of two layers on the shoulder since the FC-9.5 can be placed one inch thick.

23) We have noticed numerous FC-5 projects recently completed (in the last 6 months) with bleeding. Has this occurred on projects in other areas of the state and what could be the cause?

District 3 has had a few problems with granite FC-5 mixes bleeding, however, this does not appear to be a statewide problem. Some possible causes of the bleeding include:

- Settlement of the GTR at the asphalt plant.
- Incorrect GTR content in the ARB material – not meeting the minimum percent by weight.
- Low mineral fiber content in the mix.
- Long haul from plant to project site or trucks waiting in line at paving site for extended time periods – resulting in asphalt drain down in the trucks.
- Intermitted production (Start/Stop) of FC-5 mixes at drum mix plant – fines/AC built up in drum.
- Tack build up on truck tires at paving site.
- Improper binder content on the mix design
- Excessive mix temperature
- Improper application of tack – spread rate too high.

24) Re: D3300911 - Placing Mixture-Alignment of Edges – Comments

See item 13.

25) Other issues