

Construction Industry/NDOT Advisory Committee

Materials Subcommittee

Meeting Minutes, August 11, 2008

Attendees:

Rudy Malfabon, NDOT Dir. Office
Gary Selmi, NDOT Construction Div.
Reid Kaiser, NDOT Materials Div.
Darin Tedford, NDOT Materials Div.
John Elkins, Granite Const.
Kevin Stoehr, Frehner Const. Co., Inc.

Steve Hale, NDOT Const. Div.
David Titzel, NDOT District 2
Larry Sharp, Las Vegas Paving Corp.
Glen Fichardt, Road & Hwy. Builders
Mike Douglas, Q&D

I. Approval of Meeting Minutes

The meeting minutes for June 30, 2008 were approved as previously supplied by e-mail.

Rudy Malfabon congratulated Reid Kaiser on his new appointment as NDOT Chief Materials Engineer. Reid will become the co-chair of the Materials Subcommittee.

II. Asphalt Availability

Due to SEM Materials bankruptcy and refinery improvements that allow refining more fuels from crude oil instead of asphalt, the asphalt cement is in short supply. One option is change ordering a Caltrans spec product PG 64-22 PM, which would allow renegotiation of the unit bid price. Another option is to consider using AC-grade asphalt cement on low volume roads, such as one project in Ely (cold recycle with overlay).

Bids on a recent project in Fallon were rejected due to being outside of the reasonable range (over 7%).

NDOT paving projects will be advertised by October 1, 2008. The delay should allow for a stabilization of asphalt availability.

NDOT designers have been directed to adjust plantmix unit bid prices accordingly.

Contractors were asked what their plans are on current projects.

- Frehner intends to obtain spec PG-grade material from Ergon. The questions was asked if Ergon is changing their asphalt type.
- Las Vegas Paving has to switch from SEM asphalt. Because their commercial mix designs are expiring, about 6 or 7 new mix designs have to be run. When new mix designs are requested, contractors should inform the HQ Materials Division which mix designs the contractor wants to prioritize. LVP will check with Ergon to see if there is enough capacity to supply LVP and Frehner.
- Granite intends to use Paramount as a supplier although there is a concern with the amount of polymer available. They are also considering Valero as a supplier for the Caltrans PG-grade asphalt.

III. Top 3 Issues: Mix Design Asphalt Content, Open-Grade & Dense-Grade

Darin Tedford provided a recap of mix design considerations through the years, which explained how NDOT selects the target asphalt content. NDOT prefers Hveem mix design method over Superpave. Refer to attached document titled NDOT Mix Design Procedures 08/11/08.

OPEN-GRADED MIXES

On open-graded mix designs, a drain-down test is performed on a glass plate. The predominant asphalt is PG 64-28 NV in the north and PG 76-22 NV in the south. The older AC-20P material had about 1-½ to 2 ½ % polymer, while PG 76-22 NV has 2-½ to 3 % polymer. This made the PG asphalt stiffer and thicker. For open-graded, there was less drain-down, less oxidation and less raveling. The lab could consider backing off a little bit on the open-graded percentage.

DENSE-GRADED MIXES

On dense-graded mix designs, NDOT bumped up the asphalt content to address fatigue, thermal, and reflective cracking. The Lab observed a drop in asphalt contents last year. Supplier variability of base stock and polymer can result in $\pm 1/2$ % variability with the same aggregate. There tends to be less supplier and aggregate variability in Las Vegas. Representative samples are absolutely necessary in order to obtain an accurate mix design.

Kevin Stoehr requested that NDOT determine the job-mix formula asphalt content by running a test strip. There have been test strips run from 4.3% to 4.7% and good results were achieved at the lower asphalt content.

Larry Sharp recalled that when NDOT changed to PG 76-22 NV, there was a change to the DSR (direct shear rheometer) test which has since been loosened. Where suppliers were using 4 - 6 % polymer, now they are using 2-½ to 3 % polymer.

Lab mix designs typically use lab-batched refinery-blended asphalt cement versus actual production run asphalt cement. A test strip can be more representative in determining asphalt content because it uses production run asphalt cement.

RECOMMENDATION:

NDOT should consider reducing the number of target values for test-strips of 250 to 350 tons. Alternatives are doing one test strip at the target asphalt content or doing two test strips, one at the target asphalt content and another at 0.2 to 0.3% below target.

GENERAL DISCUSSION OF IGNITION OVEN

Sometimes the ignition oven results are as much as 1% higher the hot plant setting. Contractors mentioned the ignition oven result is affected by the amount of polymer and certain aggregates result in higher asphalt contents in the ignition oven. Typically the ignition oven indicates higher asphalt content.

Field samples are typically used to determine ignition oven correction factors.

Consultant R.E.s tend to shut down production if the ignition oven is +0.45% over target, even if air voids are acceptable. Gary Selmi said HQ Construction directs all R.E.s to consider the whole picture, not just one test.

If one test section will be used to determine target asphalt content, it's necessary to peg the asphalt content to tank stickings and cross-check the hot plant meter with the ignition oven.

GENERAL DISCUSSION OF HOT DROPS

The issue of hot drops after 100 tons production was discussed for commercial jobs. A hot drop is a sample taken at the hot plant from a pile of mix dropped from a conveyance system.

Las Vegas Paving is a proponent of test strips at two asphalt contents: design and 0.2 % or 0.3 % less. LVP felt that hot drops are not as good an indicator of gradation and oil content, they are expensive and could lead you in the wrong direction. Larger trial batches in the range of 250 to 350 tons are more desirable to several of the contractors present.

It was mentioned that on desert jobs, there are often new contractors and new plants and hot drops can help dial in the plants.

IV. Top 3 Issue: Job-Mix Formula (JMF)

Steve Hale provided the JMF guidelines sent to all R.E.s (NDOT & consultant) (reference attached document titled Job-Mix Formula Process. This information is provided at the R.E. Academy and to new NDOT R.E.s and consultant R.E.s.

John Elkins mentioned an R.E.s JMF requiring 20° F. hotter at the plant when the contractor felt that the mix would be too tender to compact. Dave Titzel said the contractor sets the temperature as long as it is within the allowable range.

A general discussion on notification of mix design results led to the following:

RECOMMENDATION:

NDOT Materials Division should consider faxing or e-mailing the asphalt mix design to the contractor as soon as it is complete. A pdf is preferable since a fax can be difficult to read.

GENERAL DISCUSSION OF NDOT TESTING MANUAL

John Elkins asked if NDOT's Testing Manual could be placed on the NDOT website. The test methods have been retyped into Word and will eventually be formatted to pdf. Reviews of test methods are done by District Testers (Independent Assurance), the HQ Lab and Construction Division QA Section. The Testing Manual is updated twice a year. A means of placing multiple revisions of test methods will be necessary because each contract specifies the use of test methods in effect at the time contract bids are opened.

RECOMMENDATION:

Place a pdf version of NDOT Testing Manual on NDOT website..

V. NEXT ORDER OF BUSINESS FOR MATERIALS SUBCOMMITTEE

The subcommittee agreed to take the next items on the list of ranked issues. These are

- Alternative to MC Prime Coat
- Shuttle Buggy
- Use of RAP

VI. Future Meeting Date

September 29, 2008 at 1:00 p.m. Rudy will check on the NDOT Las Vegas Building A Conference Room for video-conferencing.