SuperPave - Industry Concerns Working List
San Diego Meeting version
As of November 14, 2013

Highlight in Yellow = **Items Being Worked on by Sub Task Group**

Highlight in Blue = **Issue Resolved**

Printed in Red = **Current Comments**

Action Items are Indicated in Bold with Underline

Unresolved Issues

Issue 1. New mix design when RAP Specific Gravity changes by > ± 0.06

(3/6/2013) This is being addressed by focus group.

(3/12/2013) CT is looking for data – they don't know what else is changed. CT wants industry bidders to try to make the value. Caltrans will provide language on this, asking for contractors to take action, modify their JMF. CT is trying to make sure contractors manage their stockpiles. (see upshot # 12)

(4/1/13) Industry would like data from Caltrans – make request at next Superpave STG meeting on

(4/11/2013) CT has no data to show – They will show it when it becomes available.

(5/15/2013) Waiting for more data.

(6/18/2013) This will take a while – until we have data from contractors, we cannot proceed. Until we can see the difference in stockpiles we can work on this issue. CT is comfortable with the values until there are data to show otherwise. For 15% and below, do what you are doing right now. Intent is to force everyone to manage their stockpiles. Caltrans has one project right now where they will be able to see what the differences are, and will report the data to the STG**. Industry will track data from stockpile to stockpile and mix design to mix design, based on changes.**

(7/25/2013) Caltrans: When we have data we can look at this. Still looking for data.

(9-27-2013): CT Still waiting for data. "Fractionation" is now called "Stockpile fractionation." CT wants 97-100% passing. This was added at inustry request. **CT will verify the alternate solvents under ASTM 2172 method B.**

(10-17-2013): No data received yetr from industrey.

(11-14-2013): CT still waiting for data. Industry says it will take a while to see what the effect on mix design might be. CT says if you have control of your stockpile this should not be an issue.

Issue 2. VMA for ¾ and ½ inch mixes (13.5/14.5)

(3/6/2013) Industry is providing information based on the last meeting.

(3/12/2013) CT not seeing a problem with this. Problem is when Hveem mix design is put into a Superpave mix design. Data are limited. Industry is providing information and their position on this. The VMA requirements during JMF verification/production is -1+3.

(4/1/13) Delete VMA requirement for 1" HMA Type C in Mix Design Table

(4/11/2013) ~~**CT: "Delete VFA requirement for 1" HMA Type C in Mix Design Table."**~~ This will be resolved in the spec to match what is in the existing Type C SSP.

(4/1/13) Need field data from pilot projects.

(4/11/2013) When data are sent out from CT the data are sanitized. CT will put data out within a week of receipt. This is updated weekly.

(4/11/2013) ~~**Joe will add two columns to the Caltrans Data Sheet. (RAP specific grav, and Binder Content). Joe will re-send out the data sheet from the pilot projects.**~~

(6/18/2013) At this point CT has not seen any problems yet.

(7-25-2013) Still in wait and see mode. Caltrans is not seeing a problem with 13.5 VMA. Somewhere between documents – word, PDF and web, something has shifted. The spec posted on the CT METS Superpave website shows a shift of columns, making it look like it reads the wrong value for VMA. This is (or should be) being corrected.

(8-21-2013) CT: Average for VMA on ONE (only one) 3513 approved project was 13.1 on a hot drop. Most labs are running only on the hot drop. No one seems to be having a problem.

(8-28-2013) In regards to successful mixes there is some uncertainty as to how many attempts were made prior to hot drop.

(9-27-2013): CT: We are getting 11-12 in a hot drop. Repeated iterations may be due to trying to make a Vheem mix design fit a Superpave mix design. Industry: We see this as ongoing, still need more data.

(10-17-2013): CT not seeing a problem. We will continue to gather data and share with CT.

(11-14-2013): CT needs to get this off the list. 13.5 at mix, design, 12.5 at production, or go with just a flat 13 with no allowance in production per existing section 39. Industry response: Why not go to 13 +/- .5%? Can you allow for variation that can occur? CT: Most states don't have a variance. CT is not comfortable with this. Industry: **Industry would like to stick with 13.5 at mix design, 12.5 at production. This is for the ¾ inch HMA that we have**

here. CT will provide the values for the other HMA's in a table. CT will continue to gather data, and if there appears to be a problem it will be revisited.

Issue 6. Minimum binder content of 7.5 (TWM)/8.1 (DWA) may be a problem. Does Caltrans have data to support this change?

(3/6/2013) CT says they don't think this is an issue. Industry needs to provide data. Industry is working on this.

(3/12/2013) Industry in the process of collecting data to bring back to Caltrans

(4/1/2013) See Industry document on data collection

(4/1/2013) Caltrans needs to provide data to support changes. Industry ACT Co-chairs will address this with their Caltrans Task Group on April 9 2013.

(4/11/2013) Resolution pending receipt of data from UCPRC

(5/15/2013) Data from Superpave job is available. There will be a meeting between CT and UCPRC and Joe will report back.

(6/18/2013) UCPRC report is out. CT has data on a rubber job (close to 7.5 BTW). These same values are in Section 39. Data for a second project are on the way. CT reports both jobs have turned out beautifully. Problem is the wide variance even with PG 64-16 grading. Going to 70-10 is a harder binder than CT says it needs. Industry comment is dry strength being required for rubber that maybe the numbers are wrong, and there are no data showing failures. Industry will provide data to CT, and we can follow up at the next meeting. CT is looking at going away from ratios. CT advises that contractors need to look at the test data on the 64-16 before they commit. If the 64-16 is on the soft side, you are looking at potential failure. CT understands this is an issue and will continue to look at it. In the short term, contractors need to look at binders – not one size fits all….

(7-25-2013) Industry will send information to Joe Peterson on a project where they could not meet this. Any industry partners with data should send the data to Joe Peterson. Tony will verify successful mix. Caltrans says they may end up going to a regional-based spec.

(8/21/2013) CT is still waiting for data (11, 12 and 13).

(8/28/2013) George Reed met requirement on 2 of 3 mixes. DeSilva Gates project should have data within the next couple of weeks, ie, mid-September. Granite has Superpave project in production. ½-inch mixes seem not to be problematic. ¾-inch mixes may be problematic, i.e. George Reed mix.

(9-12-2013) More data reported by Caltrans. See Superpave STG Data Document.

(9-27-2013): CT added more columns to the spread sheet to collect air void and binder content. ¾ rubber mix design in some situations will not take binder content of 7.5. CT wants this much binder in the mix. CT would like

to have more data. Industry would like to be able to open up the band a little more. CT will be considering this. **Industry will send data on ¾ rubberized Superpave mix design to Joe.**

(10-17-2013): CT has data from Hveem and Superpave. Indications are that ½ inch is not a problem. CT did make a change in the grading in the new version of the spec, giving a 1% variance either way. Air voids are now 4% in the Superpave spec. Superpave has moved away from 5%. There will be some situations where 4% will not work. For a 4% design, the OBC would be 7.5%. The design would be to 4% air void, but when the air void vs. binder content is plotted, take the OBC at 5%. CT reports they have not worked the bugs out of this yet. Industry is concerned that there is no data to justify this change. Justifications for wanting to go to 4% where 5% is specified would be taken case by case and will have to go through the district and the RFI process.

(11-14-2013): Caltrans continuing to gather data. Caltrans will open up the lower end of the grading band 1% with an increase in the range if needed, based on problems meeting the 5% air void requirement. Industry will try to do the mix design at 5%. CT will provide a design information bulletin on appropriate use of air voids in rubber mixes with a map showing what air voids should be used. More data needed.

Issue 12. Requirement for T283 dry strength may be problematic for RHMA-G mixes or mix containing soft binders

(3/06/2013) Caltrans data does not show the 120 PSI strength as problematic. Industry is collecting data on this Issue.

(3/12/2013) Caltrans waiting for test results from industry. Goal is to get as many quality mixes through this as possible.

(4/8/2013) Industry/Caltrans needs to run dry strength on successful RHMA-G (see issue No. 6)

(4/11/2013) There is no discussion at this time within CT to do away with T283. UC PRC research for the last year, and other multi-year research suggests T283 be a very unreliable indication of moisture sensitivity for HMA, so why would this be more accurate for RHMA-G? T283 and other states' versions of this test are currently in use. **Caltrans and industry will collect data on this on an ongoing basis.**

(5/15/2013) Industry will continue to provide additional information. CT should dump T283 .

(6/18/2013) This is similar to one aspect of issue # 6.

(7-25-2013) Industry has an aggregate source that could not meet this dry strength of 120. CT says for lime slurry treated aggregate, they might drop to "100 psi on dry, and 70 psi as a minimum for wet." **Industry will survey their colleagues and see if this is acceptable.** 120 psi is still a concern for industry. There is no data to show this is a valid number. CT knows binders are different. CT is moving toward a true grade not just minimum value. Grading of binders has known issues and is beyond the scope of this sub task group.

(8/21/2013) Last revision now requires for samples to be compacted by the gyratory compactor. Whatever the contractor does, CT will do with regard to sample size. CT does not want to adjust values for the lowest common denominator. **Industry still needs to survey per assignment from 7-25-2013 note above**.

(8/28/2013) Intermediate binder stiffness seems to affect dry strength, ie, indirect tensile strength. Per Joe Peterson, there may be a need to adjust (reduce!) the current minimum dry strength requirement of 120 lb/in^2. If Hamburg mix testing yields passing results mix does not meet minimum dry strength, what's the plan??? See additional comments in Issue 67.

(9-27-2013): Dry strength has been dropped to 110, wet remains at 84. CT has not seen a problem with the Tensile strength. You may need to treat your aggregate. If you cannot meet the TS, CT will ask you what treatment you used with your aggregate. What are you changing in your mix design to achieve the tensile strength.

(10-17-2013): Industry concern is that this will still be an issue when you go to a softer binder. CT does not want to design to the lowest common denominator. CT says that industry needs to know the value of their binders. CT has data to justify dropping to 110. **CT is waiting for Tony to send results from the Stockton plant, comparing that with what is coming out of Lockwood.** If results are about the same, then CT will have to make more adjustments.

(11-14-2013): CT will continue to gather data. Not seeing any problems.

Issue 13. Temperature for HWT 140 F.

(3/6/2013) AASHTO says temp for Hamburg wheel tracker is between is 50-70 C. Temperature was chosen because it is the temperature typically used. This is not a change.

(3/12/2013) Joe sent information from other states back to the co-chairs. CT says see what the data show. CT does not see any problems early on in this. Expectation is that you will have less than about 12 mm of rutting. More data are needed on Superpave across the board. CT will be double setting at 50 and 60 degrees C. Industry is encouraged to do this as well.

(4/11/2013) CT is looking at data from other states. **When they get more information on this they will bring it back to the group.**

(5/15/2013) CT is still looking. They run samples at both 50 and 60 to see what the difference is. CT and industry are still looking at this and adding data.

(6/18/2013) Industry will forward new data to CT including binder data, or will send a sample of the binder for CT to test. CT says known poor performers still pass Hamburg wheeltracker test at 50 degrees. CT looked at good performing mixes and they are borderline at 60 degrees. At 55 degrees poor performers are between 11 and 14 mm of rutting.

(7/25/2013) Caltrans would like more data. Caltrans runs samples at 50 and 55 degrees. Industry will re-run the mix out of Vernalis and lower the liquid anti-strip to see what the resultant HWT number is. May also run the HWT with one PG grade lower.

(8/21/2013) CT sees rubber perform better, with PG 64-16. If you have to treat your aggregate to meet the spec, include that in your bid price. Industry is in the process of re-running the mix out of Vernalis, and will have information between now and the next meeting. **Industry needs to send data to CT on HWT problem.**

(8/28/2013) Granite Construction re-testing Vernalis mix at several temps and with lower high-temp binder grade.

Granite Rock testing indicates failing results at 55°C and only marginally passing results at 50°C … this despite the use of 4 different LAS. Data were sent to Joe Peterson.

"Shopping around" for binders presents logistical problems for producers, specifically in terms of the number of binder storage tanks at the plant. With "live projects" how do contractors recover the cost of this "experimentation?

" Other states which use RAP and lower PG (to accommodate the RAP) do not seem to have issues with Hamburg testing. Perhaps rubber mixes and dense-graded mixes should be considered separately.

Solutions proposed: reduce minimum dry strength requirement and adjust Hamburg criterion as a function of test temp. Caltrans – please show us the data of these poor performing mixes, ie, those that pass at 50C, but not at higher test temps. Caltrans arbitrary test criteria may, in fact, be a "restraint of trade" with huge economic impact as they may eliminate previously "acceptable" materials, ie, aggregate and binders that provided adequate performance. You got milk/lime? Long history of well-performing materials – Type A HMA as well as rubber modified mixes – seems to contradict the failing lab test results. Brandon Milar to send Utah DOT report on Hamburg testing to Tony & Pascal. This report provides data which shows good correlation of testing at 50C (PG 64-XX) with field performance.

(9-27-2013): CT is following the Colorado model. Temperatures for the HWT (45, 50 and 55) have been changed to follow national practice. CT says this is done.

Issue 37. Section 39-1.01C(2)(b) On the chart for Hamburg Wheel Track, note c: "Test plant produced HMA" Since this chart is for mix design this requires the supplier to do a full mix design and run it through the plant prior to verification just to get test results for the Hamburg test. If there is fear of there being a difference between lab compacted and plant produced this should be tested at the verification, not on plant produced material during the mix design phase.

(3/12/2013) CT encourages contactors to do this in the design phase. Include the cost of the verification in your unit price.

(3/22/2013) Requiring HWT (with plant-produced material) as part of JMF "verification" is onerous…expensive and time consuming. Why not use lab-produced material…like we do for all other tests…as part of the JMF submittal? If contractors consistently fail HWT during production, Industry is willing to revisit this proposal.

(4/11/2013): Caltrans will provide guidance on splitting samples and running the JMF this way. Joe will coordinate with Al for presentation at the May meeting.

(5/15/2013) ~~**Joe will send out draft lab instruction language that reinforces what CT thinks is a good process.**~~ The time of 20 days will not change. CT will do what the spec says on plant-produced material. This is part of the verification process. Split samples would be too convoluted and too difficult to enforce. CT will encourage the districts to communicate with industry partners when the lab portion is all done. You would call the RE and coordinate splitting a hot drop sample – if you are happy with the results, you call the RE and say, "Yes, proceed with the verification." CT will not consider the mix design complete until they have the hot drop sample. The lab instruction will recommend to the districts that they do accept the 3511 and 3512 with the mix design submittal, less the hot drop verification. The acceptance/verification time does not start until the contractor notifies the RE to proceed with testing on the hot drop.

(6/18/2013) CT reports that intent is to put out a non-binding lab instruction. Industry comment is that this needs to be in the specification. It needs to be fixed. Industry needs consistency and would like to propose language for CTG to consider. This needs to be consistent. CT says that writing this into the spec language is more difficult than it looks. This is standard spec language in Section 39 and at this time, the spec language will not be changed**. Industry will prepare language for CT to consider.**

(7/25/2013) Caltrans can run very low risk tests in the short term before the HWT and TSR results are in, to speed up the process. **Industry will re-write and resubmit their comments incorporating this discussion today into the spec and send it back to Joe.** Caltrans agrees with the statement in comment #2 below, that if contractor notifies Caltrans that HWT results has failed, the attempt should not counted as a failed JMF. re: comment #3 below, Caltrans says contractor would submit 3511 and 3512 without HWT and TSR results, and resubmit amended 3512 single page with the additional testing. There would not be two 3512's floating around.

(8/21/2013) CT is awaiting feedback from industry on Al and Rita's proposal. CT will not re-write spec to "not test plant produced materials."

(7/13/2013) All - At the previous Rock Products Superpave STG meeting there was a lively discussion on JMF verification and the requirement that the Hamburg WT data provided in the contractor's submittal be based on plant produced material. At the time it appeared that D-11 may have a more flexible approach that addresses the contractors concerns with cost of producing 50-100 tons of HMA for a single test. To try to ensure statewide consistency, Al Ochoa and Rita Leahy were asked to draft some language that might be incorporated in the SP specifications. Please find the proposed language addressing this issue attached.

Please share your questions/comments with Pascal Mascarenhas and me and be prepared to discuss them at our upcoming Superpave STG meeting in Fontana.

Thank you,

Tony

D-11 approach for mix verification

- Caltrans has received everything (Materials & JMF from contractor (3511 & 3512) EXCEPT the HWT data.
- Caltrans does the following
  - Aggregate testing
  - Gradations
  - Calibration blanks for ignition oven
  - Testing hot drop for oil content
  - Compacting in gyratory to verify volumetric properties
- Caltrans does NOT "start clock" for mix verification until it receives passing HWT data from contractor
- A failure at any point in the process is treated as a JMF failure and would be processed accordingly.

Industry comments:
Comment 1:
I would add the following (in red).
D-11 approach for mix verification

- Caltrans has received everything (Materials & JMF from contractor (3511 & 3512) EXCEPT the HWT data.
- Upon receiving satisfactory HWT results from the contractor Caltrans does the following
  - Aggregate testing
  - Gradations
  - Calibration blanks for ignition oven
  - Testing hot drop for oil content
  - Compacting in gyratory to verify volumetric properties
- Caltrans does NOT "start clock" for mix verification until it receives passing HWT data from contractor
- A failure at any point in the process is treated as a JMF failure and would be processed accordingly.

Comment 2:
I would like to suggest one more minor addition to clarify the situation, that if contractor notify Caltrans that HWT results has failed, the attempt should not counted as a failed JMF.
Comment 3:
I'm curious about what this looks like on paper. Are the HWT results submitted via phone or email or would there be another official form for it? If you have to resubmit the JMF with the HWT results after the contractor has tested them I'm sure that having two JMFs floating around (1 with the HWT results and 1 without) will cause issues. Also, I would revise the wording Tony suggested as follows (in red)

Comment 4:
The Superpave Specification on the project currently out for bid near Colusa also requires AASHTO T 283 test results from plant produced material in the mix design requirements.

(8/28/2013) Industry proposal based on discussions with District 11:

- **Caltrans has received everything (Materials & JMF from contractor (3511 & 3512)) EXCEPT the HWT and TSR data.**

- **Upon receiving satisfactory HWT and TSR results from the contractor Caltrans does the following: Aggregate testing; Gradations; Calibration blanks for ignition oven; Testing hot drop for oil content; and Compacting in gyratory to verify volumetric properties.**

- **Caltrans does NOT "start clock" for mix verification until it receives passing HWT and TSR data from contractor. A failure at any point in the process, once satisfactory HWT and TSR results are received, is treated as a JMF failure and would be processed accordingly. If the contractor does not pass HWT and TSR, Caltrans will dispose of the materials submitted and the trial will not be considered a failure.**

Need some clarification of forms for submittal. Joe Peterson agreed to provide necessary forms.
(9-27-2013): CT will modify the forms and send them out.

(10-17-2013): CT intends to have only one hot drop. If the sample passes the HJWT, then you could go ahead. The 3512 needs to be modified to include a check box indicating that HWT and T283 are pending. The second submittal would be to have the values for the test results shown and the date of the test.

(11-14-2013): Industry concern is that this is on a district by district, RE by RE basis. CT says they cannot change this. The 2010 specs are all written to the contractor. Caltrans will have a meeting of DME's before next construction season to try to reiterate this. **Caltrans will footnote the spec saying that if the contractor can show from history that they have treated their materials, they do not need to provide data for untreated.**

Issue 67. Variability of the Hamburg Test

(6/18/2013) CT will be sending out mix later this year – will also include the air voids and the amount of material compacted, so you will be able to do a couple of test pucks, so we can narrow the variability down. CT will provide step-by –step procedures to maximize uniformity and consistency in methods. Components of Variability include everything from the material to the condition of the equipment

(7/25/2013) On hold – awaiting data.

(8/21/2013) Caltrans is not seeing variability in results right now. CT requires the HWT to stop at 25,000. CT requires reading every 100. CT requires you report the deepest rut, at the required number of passes. **After industry comes back with a recommendation on one vs. three, CT will analyze their HWT data for differences in results for various materials and different binders and report back at the next meeting.**

(8/28/2013) **Vishal Jakkaraju to send Tony & Pascal info on air void content required for Hamburg testing of dense v gap-graded mixes**. How does Caltrans HWT testing approach differ from the AASHTO test method? Average of 3 sensors? Average of 5 sensors? Should data not be recorded in accordance with AASHTO test method or manufacturer's recommendation?

(9-27-2013): Superpave Stakeholders:

Per the Superpave STG action item of 7/25/13 for Issue 13 (Temperature for HWT 140F) we have ran an additional HWT using a 58-22 binder. Please see data and notes below.

Notes:

We ran HWT testing for the ¾" HMA-SP PG64-10 mix at two temperatures (50 and 55 degrees Celsius) and at three liquid anti-strip dosages (None, 0.5%, and 0.75%). Please note that we ran the TSR testing for the ¾" HMA-SP PG64-10 mix as specified by AASHTO T283 with a freeze-thaw cycle at three liquid anti-strip dosages (None, 0.5%, and 0.75).

It looks like as the dosage rate increases the HWT rut resistance improves regardless of test temperature and the TSR moisture resistance also improves to a point. The TSR ratio starts decreasing after a certain peak dosage level. We have seen this with other mixes and other binder suppliers as well.

We additionally ran TSR and HWT testing on the ¾" HMA-SP mix with PG58-22 and 0.5% XL9000 from the same supplier for comparison. The Hamburg was run at 50 degrees Celsius to be consistent with the current specification.

The PG58-22 mix with 0.5% XL9000 has lower tensile strengths (both wet and dry), lower TSR ratio, higher rut depths and fewer passes to failure than the PG64-10 mix with 0.5% XL9000 at the same testing temperatures. The PG58-22 mix with 0.5% XL9000 has lower rut depths and more passes to failure than the PG64-10 mix with 0.5% XL9000 at an increased HWT test temperature of 55 degrees Celsius.

We sent a link to the FHWA report to everyone on the HWT air void requirements. I have attached a copy. The report indicates that a different air voids should be used with different aggregate skeletons.

The other questions was open for discussion. There was a concern that the CT requirements might be in conflict with the HWT manufactures requirements. Industry wanted to define the differences and discuss the appropriateness of the current requirement to report the sensor with the deepest rut depth reading. I think Industry/Caltrans should identity the manufactures recommendations for each HWT device for a start. If they are different than Caltrans requirement we should check with the manufacture to get their input on the appropriateness of using a single sensor to report rut depth. What did the FHWA use in their report? We should find out.

(9-27-2013): CT is not willing to go to an average. CT would look at this if Industry wants, but this change would reduce the passing threshold below 12.5mm at deepest rut. CT is not sure what the data would dictate. Currently CT measures the deepest rut. Contractors need to make sure their pucks are straight cuts. Averaging three readings would simply set a situation up that would never fail. CT has not seen any situation where a rock popping out has caused a failure. CT will look for data from industry where this has been a problem. CT has not seen this to

be a problem yet. **Industry will discuss this and decide on whether they want to have CT change to an average of three readings. Report back at next meeting.**

(10-17-2013): The maximum rut depth, rather than an average of three readings will be used. Temperature charat has been changed to match national standards.

Issue 73. In Section 39.1.01C Submittals (page 2 of document): "Submit proportions for LAS as part of the JMF submittal. If you change the brand or type of LAS, submit a new JMF". NO!! Shouldn't be. **Since JMF is created without the LAS, a new JMF should not be necessary. Should only need to submit new AASHTO T283 & Hamburg test results using the new LAS.**

(6/18/2013) **Caltrans will look into this issue and report back at the July meeting.**

(7/25/2013) CT is still uncomfortable with this if you change the LAS. CT needs language for a single point verification at OBC. "Single point verification at the OBC." ~~**CT will add language for the single point verification in the Superpave spec for LAS.**~~

(8/21/2013) Amended JMF verification (Formerly single point verification). Based on a hot drop**. Industry will provide comments back to Caltrans by next meeting.**

(8/28/2013) Industry provided comments on CT single point verification for changes to LAS and binder.

(9-27-2013): CT has made the change in LAS and change in binder as low risk as possible. CT wants to make sure that each year, the JMF is verified or renewed.

(10-17-2013): CT says a new section was put into the spec for JMF modification**. Industry needs to review this and get back to CT at the next meeting.**

(11-14-2013): **Industry will provide comments on the spec that Jim StMartin will send to the STG co chairs. CT wants comments back no later than 12/2/2013. Discuss in December.**

Issue 76. References to the SE test in Sections 39-1.01D(10)(h) Aggregate Lime Treat table & 39-1.01D(1)(i) QC Testing-Minimum QC table shown as AASHTO T166, should be T176. Check elsewhere.

(6/18/2013) Resolution: Spec language changed to reflect T 176 (92)

Whole different question about the LA Rattler. Lower LA Abrasion loss requirement - GOOD. Will there be aggregate sources excluded?

(6/13/2013) CT is holding this spec. The number right now is 40 at 500, in line with many other states. Some aggregate suppliers will have a challenge meeting the requirements.

(4/3/2013) This has been changed in section 39-1.01D(10)(h) and in the QC testing table…but was not highlighted in the QC table. CT to check this.

(7/5/2013) Industry will review this and get comments for the next meeting.

(8/21/2013) On hold until after industry meeting next week.

(8/28/2013) Industry still needs to review the QC table.

(10-17-2013): Survey of western states shows that 40 is a reasonable number. There probably are some pits that will not be able to make this. CT will not be lowering the value below 40 at this point. To date CT is only aware of one source that can't make this.

Issue 78. Tighter Va tolerance of ±1.5%?

(6/18/2013) Va has been changed to ± 1.5. Data to date show that this is very reasonable but CT will be looking at this. CT has data on this making a better road.

(7/25/2013) CT still gathering data. STG will continue to evaluate.

(8/21/2013) STG still gathering data.

(8/28/2013) STG Still gathering data. In Joe's Superpave database there were air void contents that exceeded this tolerance.

(10-17-2013): Still gathering data. CT reports that most fall into 1.5; Hveem jobs are around 2. 1.5 does not appear to be an issue. We are still looking for data to determine if this is a problem. CT will continue to evaluate.

(11-14-2013): Industry still gathering data. Based on AMRL data, industry continues to be concerned. Industry will follow up with Caltrans comments. Caltrans will stay with 1.5 until there is a data-based case to indicate otherwise.

Issue 83. Both the contractor & the Eng'r "prepare 3 briquettes for air voids & VMA determination". Are new Gsb performed? If not, which should be used to calculate VMA? And If so, we need to be mindful of the lack of precision in the determination of Gsb, especially for the fine portion of the test.

(6/18/2013) CT: No, new Gsb not required. Contractors will use 3512 SP, CT will use 3513 SP. Caltrans will proceed the same way that industry does at the plant. If contractors wash the fines, CT will also wash the fines. Regarding fines: **Industry will bring a proposal back to CT.**

(7/25/2013) Regarding Gsb: Industry will survey colleagues and bring a proposal back to CT. Ask "What frequency do the Contractors want themselves and Caltrans to run Gsb?" Need to have this done prior to the next meeting

(8/21/2013) Still waiting for feedback.

(8/21/2013) Joe needs to look at the STG data sheet and indicate what the parameters were on the data. You have control over the VMA. You GET This to what you need, so when your air voids vary, you are within range of "acceptable." When VFA changes in production we need to complete the VFA calculation. ~~**Joe will look at replacing VFA requirement with upper limits on VMA.**~~

(8/28/2013) Let sleeping dogs lie. Recommend no new requirements.

(9-27-2013): CT has made the change on replacing VFA requirement with upper limits on VMA.

Issue 86. VFA Tolerances

~~**Section 39-1.02M(4)(d) JMF Verification: The VFA of Design value +/- 1%,** NO WAY**. It should be sufficient for the VFA to be within the design range of 65-75%! We only need to consider a very simple example: assume mix design VMA of 14%, Va of 4.0% with resulting VFA of 71.4%. Now assume that during production VMA drops by a mere 0.5% to 13.5% & Va to 3.5%. The corresponding VFA would be 74.1%. An increase of** 2.7% **and out of the +/-1% tolerance. A second example: assume VMA increases slightly to 14.5% with Va staying right at 4% during production (perhaps an ideal mix). VFA would increase to 72.4% and be on the verge of being out of the +/-1% tolerance!**~~

(3/22/2013) Frank Rancadore, Hongbin Xie & Rita Leahy will try to concisely articulate the issue. **Will send to Tony Limas and Pascal Mascarenhas to share with Joe Peterson.**

Revised issue shown below:

VFA still appears everywhere in the spec as 65-75% for all mix types. As we've discussed on a couple of occasions, if VFA is going to be a requirement, i.e. NOT report only, the 65-75% limits are not appropriate for all mix types, especially the finer mix types. Since VMA, Va, & VFA are interrelated, if the required VMA & Va are achieved, VFA "is what it is".

As we know, VFA=100x(VMA-Va)/VMA, so for an HMA mix designed at the MINIMUM VMA allowed for each mix type & at 4% voids, the corresponding VFA for 3/4", 1/2", 3/8", & 1/4" mixes would be 70.4, 72.4, **75.0**, & **77.8**% respectively. Since HMA mixes will most likely be designed with a higher-than-the-minimum VMA, e.g. 1% above the minimum (or whatever), VFA will be higher yet. For example, if a 3/4" HMA is designed at 14.5% (13.5+1) VMA, a 1/2" at 15.5% (14.5+1), a 3/8" at 17% (16+1), & a 1/4" at 19% (18+1), VFA would then be 72.4, **74.4**, **76.5**, & **78.9** respectively. Though 3/8" & 1/4" mixes are not often used, on the occasions when they are, it would be impossible to meet the 65-75 VFA requirement. Since the lowest VMA for any mix will be 13.5% (@ design) for 3/4" HMA, the lowest VFA we'll see is ~70%. Production will be more complicated.

I believe Caltrans has said that this range comes right out of SP-2, but SP-2 gives ranges for VFA based on anticipated traffic levels (ESALs) and not mix types. At the higher traffic levels (>3 million ESALs), the 65-75% limits allowed agencies to select mixes with nominal maximum aggregate sizes up to 25mm (1") & 37.5mm (1 1/2") with minimum VMA requirements of 12 & 11 respectively, which at 4% voids yield VFAs on the lower side of the range (near 65%). And at the lower trafic levels, where finer mixes will most likely be selected, SP-2 allows VFA up to 78 (65-78) and 80 (70-80). All of these with VMA of 13, 14, & 15 for 3/4", 1/2", & 3/8" mixes.

(6/18/2013) CT is looking into this. At this time CT does not see a problem, but there are very limited data. Caltrans and industry will continue to collect volumetric data and see if there is a problem. Industry would like to investigate this, and consider the VFA criterion – do we want a range or an upper limit?

(7/25/2013) **Industry will do calculations and report back in August at the next meeting.** (Caltrans has set the VFA range to limit upper limit of VMA. They are limiting the upper end of the VMA via the VFA.)

(8-21-2013)

From: Peterson, Joe F@DOT [mailto:joe.peterson@dot.ca.gov]
Sent: Monday, July 08, 2013 6:15 PM
To: Foo, Kee Y@DOT; Limas, Tony; Pascal Mascarenhas; Jim St. Martin; Rita Leahy; Russell Snyder
Cc: Vacura, Peter J@DOT; Suszko, Charles D@DOT; Michael Halverson
Subject: Superpave Specification update.

Greetings all:

Attached is the latest version of the Superpave specification. Please review and we can go over comments at the next Superpave subtask group meeting.

Changes include the following:

VMA 1/4" 16.5 at JMF, 15.5 in production
VFA 1/4" 69-79 at JMF, 68-80 in production

VMA 3/8" 15.5 at JMF, 14.5 in production
VFA 3/8" 67-77 at JMF, 66-78 in production.

Add a new row to the mix design acceptance table clarifying testing for VMA on lab produced HMA vs plant produced HMA

Voids in mineral aggregate, Laboratory produced HMA[d] (% min.) 1/4" grading 3/8" grading 1/2" grading 3/4" grading 1" grading with NMAS=1" with NMAS=3/4"	SP-2 Asphalt Mixtures Volumetrics[c]	16.5 15.5 14.5 13.5	-- -- 18.0–23.0 18.0–23.0		13.5 14.5

[d]The Engineer determines the laboratory prepared HMA value for mix design verification only

July 11, 2013 (Industry)

Looks like a bit of an improvement for VFA requirements, especially for the 3/8" & 1/4" HMA, but I don't think it is enough. As we've discussed in the past, the minimum VFA criteria is meaningless since it is directly related to the minimum required VMA & target voids (4% or 5%). Since the maximum limit for VFA effectively limits how much VMA we can have in the mix, it is more relevant. Asphalt Institute SP-2 has always specified the wider ranges based on traffic levels to allow for various mix types. At design, an ~5% spread is all that is really necessary (if any at all) for a VFA spec range (the minimum is dictated by the minimum VMA, and the max to limit the amount of VMA in the HMA).

For 3/4" HMA the 75% max VFA is probably ok. At 4% Va, this would cap VMA at ~16% (2.5% above the minimum). I doubt many would want to design HMA with much more VMA than that for 3/4".

For 1/2" HMA, I believe the upper VFA limit should be a bit higher. Perhaps 77%? This would cap VMA at 17.4% (2.9% above the minimum).

I believe the upper VFA limit for 3/8" & 1/4" HMA should also be a bit higher. Propose 79% & 80% respectively, capping VMA at ~19% & 20% (~3.5% above the minimum for each).

For 5.0% Va HMA, I believe the 60-70% range should be ok for mix design.

Production is LESS straight-forward. I believe the values given for production are too restrictive. Both VMA & Va are not constant during production, but they tend to trend in the same direction. As we discussed previously, the ranges given will effectively narrow the +/-1.5% allowable production air void range.

If we believe we have an acceptable mix at the specified production minimum VMA and at design air voids +/-1.5%, then (as at mix design) the VFA is "what it is". For example, in production, for a 3/4" HMA-Type A, results for VMA are 13.0% (14.0% at design) & 2.7% voids. The resulting VFA would be ~79%, nowhere near the max 75 as currently written. This is also clearly seen in the SuperPave data previously distributed by Joe P. I've re-attached Joe's spreadsheet with Va, VMA, & VFA data in the SP-1 tab highlighted. Note that all air voids are within the +/-1.5% & VMA are above the 12.5% minimum. Also note VFA results. Pretty high.

I believe VFA during production should be REPORT ONLY. If Caltrans insists, I don't know what specification values we could propose, and if they would even be meaningful. - Frank Rancadore

(8/28/2013): Industry proposes an upper limit of VMA + 3% (¾-inch); +4% (½-inch)

(9/12.2013) VFA requirement eliminated

(9-27-2013): CT will not go to +4 on ½ inch. We are at VMA +3 upper limit for all sizes.

Issue 88. CT 304 Temperatures

(7/25/2013) **Caltrans will highlight the changes in the CT 304 with all the changes noted and send it to Tony L who will send to the industry members.**

Greeting:

Attached please find a revised draft copy of CT 304. It addresses problems with temperatures. It is not addressing the issue, that is yet to be discussed in the STG. Would you please put out for review and comment, and have all comments to Al Vasquez no later than 1600 7/25/13.

Thank You

Joseph F. Peterson
Office of Roadway Materials
Materials Engineering and Testing Services
California Department of Transportation

(8/21/2013) **CT will review and incorporate industry comments. CT will put out a revised 304 before the next meeting with a comment resolution table.**

(8/28/2013) CT reviewing industry comments highlighted in CT 304. See stand-alone CT 304 document handout.

(9-27-2013): may turn blue in October meeting.

(10-17-2013): CT will be putting a draft of CT304 out soon. May be blue in November. Industry is interested in greater clarity in the prep of samples for the lab mix design vs. production. Industry is interested in focusing on 304, and says there may be a need for a separate group to deal; with this.

(11-14-2013): On hold at CT due to FIA request.

Issue 89: Aggregate Degradation during AC plant Production

Fines generated by aggregate degradation during AC plant production can significantly affect the volumetric of production HMA. Production HMA (with post production aggregate gradation) may have problem verifying against submitted Job Mix Formula (JMF) which is based on pre-production aggregate gradation.

(7/5/2013) Caltrans would consider an upper limit for pixie dust of 1%. **Industry will discuss the proposed scoping document for CT 304 and get back to this group by the next meeting.**

(8/21/2013) If acceptable, pixie dust will be applied to AASHTO 312.

(8/28/2013) Industry agrees in concept, but wants to re-visit the need for an upper limit. Clarification needed as to what the 1% represents. Is it 1% by total weight of aggregate?

No decision to explore CT proposal for post-plant gradation. Industry will report back by next meeting in November 2013.

(10-17-2013): CT and industry are in agreement that CT304 will contain language to put a max of 1.5% of P200 (AKA pixie dust) as the final step in the sample preparation. Mix must still meet all specs. 1.5% will be defined as DWA. CT is not comfortable with 2% at this time.

(11-14-2013): Industry agrees to the 1.5 %

Issue 90: 3rd Party Lab for Mix Verification

Industry recommends we use a 3rd party laboratory to help resolve differences in test results during the mix verification process.
(8/28/2013) Industry will discuss at next SP meeting.

(9-27-2013): This dispute resolution language is clear. 3rd party lab agreed to by both parties will test and determine outcome of dispute. This is already in the spec – same language that is in Section 39. **Industry needs to have Don look at this And Clarify any issues for the group.**

(10-17-2013): Still waiting for industry comments. CT says the spec is very clear on this. Dispute resolution can be invoked if you do not agree with the test results. Dispute resolution covers mix design. CT believes the spec is adequate as it is for dispute resolution and third parting verification.

Issue 91: Sample Size and Sample Reduction Procedures

Required sample sizes are getting to be very large to cover all the required tests. We need to address sampling and splitting procedures.

(8/28/2013) Need to discuss sample size and sample reduction procedures for Superpave specs.

(9-27-2013): CT has not got a way to reduce the sample sizes. As we move on, we will look for ways to cut down on the quantity of the materials required for testing.

(10-17-2013): CT does not have a way to reduce sample sizes and will continue to look for ways to reduce this. At this point in time, there is no way to reduce sample size. For now we are stuck with the four way split. An independent sample is needed that can be used in the event of a dispute resolution. Caltrans must consider the "what it" in the event of test failures. Industry concern is that the language is a little confusing. **CT will go back and look at the poundage and see if there are any adjustments they can make, reporting back at the next meeting.**

(11-14-2013): Caltrans reviewed the sample requirements. Caltrans is doing an internal check to see who should be taking samples. Districts will decide where the samples are taken.

Industry comment:

Considering that Caltrans is in a position to implement the new Super Pave specifications at the start of 2014, it would be in industries best interest to provide them with some additional data regarding sampling Hot Mix and Cold feed during the production and placement of the HMA.

HMA

Here are the estimated sample sizes for the hot mix samples:

3 gyro pucks	*14,100 grams*
6 TSR pucks	*21,600 grams*
4 Hamburg pucks	*9200 grams*
2 rice samples	*3000 grams*
2 oil content samples	*3000 grams*
1 moisture content	*500 grams*
Total sample	*51400 grams or 113.32 lbs.*

On a 4 split verification the amount of mix required would be 453.3 lbs. However, this does not leave any room to re-run any of the tests if necessary. One of the district labs asked for 100,000 grams per split. That equates to 882 lbs. of HMA to be split into 4 parts.

If Caltrans elects to pull samples in the field and the Contractor requests a split, a minimum of 104,000 grams (226 lbs.) would have to be split just for the minimum testing.

To be put into perspective, let's say that a mix has a TMD of 152 lbs./ cu. ft. At 88% behind the screed, the mix would weigh 133.8 lbs./cu. ft. The minimum amount of mix that would have to be taken with 0% left over for additional testing would be 1.68 cu. ft.

That equates to a sample of 2" pavement that is 1 foot wide by 10 feet long and must be split on the grade.

Now let's say this is a ½" rubber mix with a TMD of 149.8 lbs./ cu. ft. At 88% behind the screed, the mix would weigh 131.8 lbs./ cu. ft. The minimum amount of mix that would have to be taken with 0% let over for additional testing would be 1.71 cu. ft.

Now apply a safety factor and you can see the dilemma.

Even if Caltrans only sampled for the gyro pucks, binder content, TMD and moisture, the minimum is 40,000 grams to split with no safety factor (80 lbs.).

Aggregates:

Per the current specifications, 120 lbs. of each coarse aggregate, 80 lbs. of each fine aggregate and 10 lbs. of Supplemental fines (#30 minus from bag house collectors) are required to be taken from the Cold feed or Hot bins.

(Supplemental fines cannot be collected from the cold feed on a drum plant and ***most*** *bag house collection systems (Drum or Batch) do not have a sampling area or discharge chute to retrieve a sample.)*

Let's assume JMF #1 has the inclusion of the following crushed coarse aggregates: 3/4", 1/2" and 3/8"

Let's also assume that the fine aggregate consists of 1/4" x #10 chip, 1/4" x dust, manufactured sand and natural sand.

The amount of material that would have to be sampled would be:

360 lbs. of coarse aggregate

320 lbs. of fine aggregate

10 lbs. of Bag house dust

Total weight: 690 lbs. x 4 splits = 2760 lbs.

As you can see, this is going to be a problem.

Recommendations:

1. Hot mix samples to be a direct split in two samples with no third party dispute resolution.
2. If dispute resolution samples will be required, have direct splits for individual tests and label as such. i.e. Gyratory, Hamburg, TSR etc.
3. Hot mix to be sampled at Plant only with an automatic sampling device or "true" (4 quadrant) truck sampling for QC and QA tests. Grade samples will not be an option for either QC or QA.
4. Cold feed and Hot bins to be a direct split with no third party dispute resolution.
5. If third party dispute is required, Cold feed and Hot bins to be 120 pounds total per each split (480 lbs. total) (That is still a tremendous amount of material)
6. Figure out how to retrieve samples and test procedure for splitting supplemental fines.
7. Move testing to post plant; eliminates cold feed testing, rap testing and bag house testing.

There are many other items to discuss, but this is a good start.

(11-14-2013): **Industry will revisit what is actually required . It is a misconception to think that you take all these samples every time you take a sample…. Revisit in December.**

Issue 92: Requirement for Binder Set Point at OBC for Mix Verification

Contractors are struggling to verify mixes due to plant binder content bias

(9-27-2013): CT: Contractors will be able to make adjustments. Lock in at OBC. CT is not going to do away with this requirement at this time. With no data, this will not change. **Industry will report back at next meeting.**

(10-17-2013): Hold till next meeting. Tony not here to report. CT not seeing a problem statewide on verification on the pilots. CT wants to ensure that what you produce in the lab is what is produced at the plant.

(11-14-2013): Industry says this is a fatal flaw both in superpave and in Section 39. **Caltrans says they are willing to go +/- .2 on the set point.**

Industry working paper:

As I mentioned over the phone, we did pass our JMF verification for the Superpave mix for the 06-430704 Route 216 project. Please find below the test data for the ¾" HMA-SP PG64-10R25 LAS mix produced out of the GCCO Coalinga plant for use on the 06-430704 Route 216 project:

Material Property	Granite				Caltrans	JMF Dated 6/26/13	Granite
	Lab Batched	Plant Mix	Plant Mix	Plant Mix	Plant Mix		Plant Mix
	Mix Design	5/21/2013 Production	8/7/2013 Production	8/19/2013 JMF Drop	8/19/2013 JMF Drop	JMF Requirement	9/19/2013 JMF Drop
Plant Setting							
Total % AC, TWM	4.6	4.6	4.6	4.6	4.6	4.6	4.4
Fine RAP %AC, TWM	5.67	5.67	5.67	6.17	6.17		6.17
Coarse RAP %AC, TWM	2.51	2.51	2.51	2.31	2.31		2.31
3/4" CR	16	14	16	16	16		16
1/2" CR	13	15	10	8	8		8
3/8" CR	15	15	17	19	19		19
Washed Dust	22	24	25	26	26		26
1/4" x Dust	8	6	6	5	5		5
Fine RAP	19.9	19.9	19.9	19.9	19.9	Total RAP = 24.0-26.0%	19.9
Coarse RAP	6.1	6.1	6.1	6.1	6.1		6.1
Test Results							
% AC, TWM	4.6	5.17	5.03	4.96		4.3-5.1	4.71
% AV	4.0	2.8	**2.1**	2.8	**2.4**	2.5-5.5	3.0
% VMA	13.5	13.1	**12.2**	12.6		12.5-16.5	12.5
% VFA	70.6	**78.6**	**83**	**77.6**		64.0-76.0	75.9
DP	1.1	1.1	1.1	1.1		0.6-1.7	1.2

As you can see from the data above, the plant has an asphalt content offset of about 0.4% high from the asphalt content setting in the hot plant computer.

Hopefully, the above information suits your needs. Please feel free to contact me should you have any questions.

Respectfully,

(11-14-2013):

Issue 93: SP specifications require two RAP fractions in mix designs. This needs to be clarified.

RE's are requiring both coarse and fine RAP fractions in mix design containing >15% RAP.

(9/26/2013) Possible language to clarify requirements:

"The maximum percentages of fractionated RAP may be comprised of coarse, fine, or the combination of both. Use a separate cold feed bin for each stockpile of fractionated RAP introduced into the mix".
(**9-27-2013): CT will look at the spec language and report back in October** .

(10-17-2013): CT says the language in the spec has changed. Modifications to the language have been made. Issue for industry is that apparently the RAP has to be in two sizes. CT says If you have a pilot project and the RE says you need both sizes, please call Joe P right away. Call him direct and give the job and the RE's name. If there are multiple occurrences of this happening, then CT will revisit the language. Industry will continue this discussion with CT. **Industry will report back at the next meeting with suggested language.**

Issue 94: Specifications are silent on two mix designs per plant

The specifications allow two JMF for each mix type and size at no cost to the contractor. The specifications are silent as to whether this applies to each plant. Industry feels the specifications should allow two mixes per mix type, and size per plant.

(9-27-2013): CT: Caltrans does not agree. Caltrans cannot change this at this time. You get two verifications for each aggregate size and binder type per contract. Failures and Resubmittals are counted as verifications and count against the limit of two.

Resolved Issues

Issue 3. Dust Proportion for 3/8" mix (0.9 -2.0)

(3/12/2013) Industry will establish a focus group for this item. CT wants data and recommended tolerance.

Comment – (4/1/13) Want more information from Caltrans concerning the need for this requirement.

(4/11/2013) CT picked the range based on what other people are doing. CT says this is the best they could come up with. Please feel free to come back to CT with a better number. **Industry will survey its members and report at the May meeting, with a recommendation. Industry will send dust proportion data to Rita by 25 Apr 2013. Contact Audrie .Spears@dot.ca.gov and send her the data.**

(5/15/2013) e mail was sent out to get data – Industry is still waiting for data from contractors. CT is waiting for the data. CT is looking for any data on the 3/8" only mix. Superpave or otherwise. The more data industry provides, the better CT will be able to make the decision. CT says this 3/8 requirement is at the request of industry and a by-product of the 3:1. Industry says that issue here is that they are being told how to obtain the performance. **Contact Audrie .Spears@dot.ca.gov and send her the data**.

(6/18/2013) CT has not received any data yet. **Contact Audrie .Spears@dot.ca.gov and send her the data**. CT is looking for information on 3/8". CT will make a change when data show the need for a change. CT cannot answer the question about DPE until data are available. Superpave will mirror Section 39. **CT will change the Superpave spec dust proportion to ".6 to 1.2"** An electronic data base is not in the cards for METS at this time due to a lack of staff to do this. Meanwhile, the spread sheets will be sent out, and worksheets will be posted on the Superpave web page. **CT will send out the latest version of the Superpave spec.**

(7-25-2013): Caltrans reports this has been changed on the 0708 version. **Caltrans changed the Superpave spec dust proportion to ".6 to 1.3"**

Issue 4. QA Test Turn-around time should be same as QC test turnaround time

(3/6/2013) This is not within the scope for Rock Products.

Issue 5. To resolve dispute both QC and QA data should be reviewed. Initially by Engineer and Contractor and then ITP, if needed.

(3/6/2013) This is done. May be complete – will discuss in the larger group. Data sharing is already in the spec.

(3/12/2013) This is required already.

Issue 7. It is very difficult to screen RAP on a ¼" screen. Why is this required? Nearly all state fractionate on the ½" or 5/8" screen.

(3/12/2013) This is moved to RAP RAS group.

Issue 8. Section 39-1.01C(1): "Submit quality control test results within 2 days of request" This is a very tight time frame since AASHTO T283 takes longer than this to perform…If the test result is requested on the day of production this is impossible to meet. Also is this business days or regular days?

(3/12/13) Joe agrees with this and will make the adjustments to the specification. (see upshot # 13)

Resolution: Section 39-1.10(C)1 has been modified to "Submit all completed quality control test results within 2 days of a request. Submit all quality control tests within 7 days of a request."

(3/22/2013) need clarification. Want 7 business days for T283 & T324. Per plain language…is it "business days" or just "days?" Is this the same as issue # 31 (72 hours to 3 business days). Consider challenge if contractor must rely on 3rd party testing lab.

(4/11/2013) CT says this is 7 calendar days. Under plain language, "days" is calendar days.

Issue 9. Where is the data? Several projects have been put out on a 'pilot' basis. There are rumors that not all the criteria have been met and 'concessions' have been made. Information gathered on these projects need to be shared with industry and other Caltrans Districts.

(3/12/2013) CT and industry will both collect data.

Issue 10. Section 39-1.02M(4)(d) JMF Verification: Dust Proportion (DP) (design value +/-0.5%). Not a good idea. Are we saying that if we have a DP design value of 1.1, then we will be allowed 0.6 to 1.6 during production? I'm not sure that's a good idea. Same thing on the low side of the range. EXAMPLE: Let's assume a mix design Pbe of 4.2%, a P200 of 4.7% and a corresponding DP of 1.1 So if the P200 were to increase to, say 6.0%, using the Pbe of 4.2%, DP would be 1.43. So a P200 delta of 1.3 would change the DP by 0.33. And a DP tolerance of +/- 0.5 would be a P200 range of ~2%. Though allowed in the

gradation tolerance, it would be terrible for volumetrics. A more severe example would be a DP design value of 1.4 with an allowable tolerance of 0.9-1.9? I don't think so! Not many producers will want their P200 to be changing by 1.3% or more from mix design to production. Though we've seen the generation of large amounts of fines during production, we all know this is not a good practice. In addition, it will likely cause VMA to drop more than the allowable 1%. It should be sufficient for the DP to be within the design range of 0.7-1.4.

~~Tony will edit this down, we will bring forward at next meeting. (see upshot #--14)~~ CT response: Unless otherwise specified, CT tolerances are based on the range.

Issue 11. Why are we adding Freeze Thaw requirement AASHTO T 283?

Comment: (3/6/2013) Industry and Caltrans were told this is a pilot. CT does not plan to remove this requirement for freeze-thaw.

Issue 14. What is significance of the Asphalt Binder Set Point calculation? Is this different than mix design OBC? This calculation is unnecessary.

Comment : (3/6/2013) Industry: there is a bug in there that gives you 2/10 less oil than you are looking for. Industry will provide more information on this. Caltrans will look at this as well. This may not be needed.

(3/12/2013) Caltrans will take this out of the specification.

Issue 15. Is there a 5 day review and 20 day waiting period for an adjusted JMF after a failed verification?

Comment : (3/6/2013) CT: This is standard Spec language and the answer is "YES."

(3/12/2013) CT: Yes. This is intended to be identical to Section 39.

Issue 16. Fracture faces criteria (what is impact on available materials)

Comment : (3/6/2013) Industry will have to do a physical analysis to see if they meet the crush count to meet Superpave. If not, they will have to make an economic decision to make the capital investment to buy the equipment to meet this.

Issue17. Removing the word "consecutive" for QC quality characteristics test for 1 days production is counter to the FHWA peer review teams recommendations

Comment: (3/12/2013) CT: This is not a correct statement, problem is that CT can't find the words to properly express the intent. CT looking for collaboration with industry to fix this. Industry and CT will meet to discuss between meetings.(see upshot 15)

(4/11/2013) Joe will work with Rita to resolve this and report back at the May meeting.

Resolution The word consecutive has been added back in. Caltrans is only comfortable with this if the next paragraph in the specification remains .

(5/15/2013 Only the word "any" will be delete, otherwise the spec stays as follows:

For any quality characteristic except smoothness, if ~~any~~ 2 consecutive quality control test results for 1 day's production do not comply with the specifications:

1. Notify the Engineer
2. Take corrective action
3. Show how you will comply with the specifications before resuming production and placement on the State highway

For any quality characteristic except smoothness, if any 3 quality control test results for 1 day's production do not comply with the specifications:

1. Stop production
2. Notify the Engineer
3. Take corrective action
4. Show how you will comply with the specifications before resuming production and placement on the State highway

Issue 18. New language regarding 3 consecutive quality characteristics may be problematic

Comment : (3/6/2013) CT will work with co-chairs to re-work the language. Co-chairs will come up with the draft language.

Industry and CT will meet to discuss between meetings.(see upshot 15)

(4/11/2013) Joe will work with Rita to resolve this and report back at the May meeting.

Comment (JFP) See issue 17

Issue 19. Language regarding 2 consecutive quality tests, as it is written, production has been stopped and this is not the case. Bullet #3 should be removed or at least the wording "before resuming production and placement on the State highway"

Comment : (3/6/2013) This is related to Issue 10. See Issue 10.

Industry and CT will meet to discuss between meetings.(see upshot 15)

(4/11/2013) Joe will work with Rita to resolve this and report back at the May meeting.

Comment (JFP) See issue 17

Issue 20. In the table for Miscellaneous Minimum Quality Control, Do we really need to test Asphalt rubber binder viscosity for all OGFC? The table in 39-1.01D does not specify

Comment: (3/6/2013) Pending determination by larger group.

(3/12/2013) No one has a problem with this.`

Issue 21. Reference to AASHTO Certified Laboratory, are technicians required to be certified for viscosity test?

Comment : (3/6/2013) CT says yes, technicians will be performing an AASHTO test, so they must be tested and witnessed by CT IA. They will need to be attached to a lab or something. CT is working on the written test for a letter of proficiency for an AASHTO test.

(3/12/2013) For any portion of the superpave mix design, testers are required to be certified in that test, and the labs must be CT certified, AMRL accredited, and all techs need to be certified under the CT program, per CT IAP. For HMA, certification is not required for QC testers, but is strongly encouraged by CT. If viscosity test is a part of the contractor's QC the tester does not have to be certified.

Issue 22. Are satellite laboratories considered AASHTO accredited? Need guidance somewhere; QC/QA Manual?

Comment: (3/6/2013) Caltrans is not requiring small construction labs to be AMRL accredited. Industry concern: satellite labs at plants in the field cannot be accredited because there is not a full-time engineer in the trailer. CT will provide the guidance. Industry will discuss and review.

(3/12/2013) AMRL accreditation is required for labs doing mix design work. Satellite labs need to be CT certified, and meet the requirements of the CT IAP. CT will provide guidance defining what is a satellite lab.

Issue 23. Note 2 regarding RAP moisture not clear

Comment : (3/6/2013) More information needed from industry to clarify this question.

Comment : (3/6/2013) Caltrans is OK with this and is awaiting data from industry to show what the difficulty is, and what the majority of the other states are doing.

(3/12/2013) CT will reword this statement. 39-1.01D(7) number 2 at the bottom. (This change should be in 39-1.-01D(8) as well.)

22Mar13 – See comment in margin!

Resolution: Spec language changed to "Determine the aggregate moisture content in continuous mixing plants at least twice a day during production"

(4/11/2013) Caltrans will make the change by May mtg.

Resolution: Change made

Issue 24. Will Engineer be responsible for mixes containing too much binder when request to lower binder content is denied?

Comment : (3/6/2013) Industry will seek clarification from larger group. What is the intent of this question?

(3/12/2013) This has gone away in the Superpave spec.

Issue 25. Is cryogenically crumb rubber allowed?

Comment : (3/6/2013) CT: uh, never mind. ~~This is not allowed in the specification.~~

(3/12/2013) It has to be ambient ground

Issue 26. Can ether size fraction be used without the other? Can ether size fraction be used without the other?

Comment : (3/6/2013) With the pilot, both fractions must be used. The Superpave spec non-pilot percentages of fractionated RAP will be at the contractor's option.

(3/12/2013) For non-pilot, when RAP is greater than 15%, you must fractionate. There is no requirement to use both sizes, except with the pilot.

Issue 27. There needs to be a statement that both fractions shall be used at the percentages determined by the contractor equal to 25.0 ± 1.0 percent.

Comment : (3/6/2013) The language is clear in pilot projects. - contractor must use these percentages.

Issue 28. How is RAS being addressed for use in Superpave? Will RAS be allowed in Superpave?

Comment : (3/6/2013) This is not addressed in the Superpave currently, but it will be in the final spec. This is pending work by RAP/RAS sub task group.

Issue 29. Can batch weights be accumulative for RAP (and RAS when allowed) at batch Plants

Comment : (3/12/2013) Currently this is beyond the scope of this group. This is part of the MPQP.

Issue 30. Section 39-1.01B: "Final riding surface exclusive of OGFC" This would be clearer if the term OGFC matched what is written for the surface course definition above. Possibly change to "exclusive of HMA-O or RHMA-O" to match the surface course definition?

Comment : (3/12/2013) CT will clarify this language.

Resolution: Spec language changed to "**top layer:** Final riding surface exclusive of HMA-O or RHMA-O."

22Mar13

Comment – This is OK.

Issue 31. Section 39-1.01C(1): "For tests performed under AASHTO T324 (Modified) as specified in section 39-1.01D(1), submit test data and 1 tested sample set within 72 hours of sampling." Is this business hours or regular hours?

Comment : (3/12/2013) It is 72 regular hours. Caltrans will change this to "Three business days."

Resolution: Spec language changed to "For tests performed under AASHTO T324 (Modified) as specified in section 39-1.01D(1), submit test data and 1 tested sample set within 3 business days of sampling."

22Mar13 Resolution – see comment #8.

Issue 32. Section 39-1.01C(2)(b) On the chart for Air Voids Content: The test method is shown as AASHTO T 269 but on the CEM-3512SP it is shown as SP-2. These should match.

Comment : (3/12/2013) CT will investigate this and remedy it.

Resolution: CEM 3512SP has been changed from SP-2 to AASHTO T269

22Mar13

Comment – change has been made on CEM #3512SP. Verify that it has been posted on web site!!!

(4/11/2013) CT will update the web site. Check in in May meeting.

(5/15/2013 CT will update the web site, as soon as the new staff person is on board. Check in in the June meeting.

(6/18/2013) CT says web site will be up to date by the end of this month.

(7-25-2013): Caltrans reports that this has been posted.

Issue 33. Section 39-1.01C(2)(b) On the chart for Air Voids Content: Why are there values for $N_{initial}$ and N_{max}? This format is extremely confusing. The number of gyrations don't seem to apply to this section.

Comment : (3/12/2013) Industry will look at this again to validate that there is an issue. It may make sense as is. CT we will wait for the comment back from industry.

22Mar13 **Comment – Joe Peterson will insert the "@" symbol to eliminate confusion.**

4/11/2013 Joe will make the change and confirm in May mtg.

(5/15/2013) CT Comment: Upon further review if the @ sign is used it would signify that the air voids have to be at that value i.e. Ninitial@ 8.0 means at 8.0, The spec requires greater than 8.0 at Ninitial. CT does not want to put the @ sign in.

Issue 34. Section 39-1.01C(2)(b) On the chart for Gyration Compaction: "N_{max}=130" According to the N_{max} calculation in SP2, for the N_{des} of 85 the N_{max} should be 133 (with one decimal it is 132.5).

Comment : (3/12/2013) CT is using hard limits on gyrations, rounded.

Issue 35. Section 39-1.01C(2)(b) On the chart for Gyration Compaction: "N_{ini}=8" According to the N_{max} calculation in SP2, for the N_{des} of 85 the N_{ini} should be 7 (with one decimal it is 7.4).

Comment : (3/12/2013) CT is using hard limits on gyrations, rounded.

Issue 36. Section 39-1.01C(2)(b) On the chart for VMA: All of our other volumetrics are matched up with the typical Superpave specs (i.e. VFA, air voids, dust proportion, etc.) If our VMA is required to be higher we will not necessarily have the same success in results as the rest of the country that is using Superpave. Superpave specifies 13.0 for ¾", 14.0 for ½", and 15.0 for 3/8". Why are we not matching our VMA requirements with SP2?

Comment : (3/12/2013) CT not seeing a problem with this. Problem is when Hveem mix design is put into a Superpave mix design. Data are limited. Industry is providing information and their position on this. The VMA requirements during JMF verification/production is -1+3.

4/11/2013 This is ongoing. CT will lock at 13 if industry wants. **Joe will send clarification to the DME's on VMA requirement. May meeting report back.**

(5/15/2013) Comment (JFP) The VMA requirement of 13.5 is during mix design only. In verification and production the specified value is 12.5. This has been clarified to the DME's.

Issue 38. Section 39-1.01C(2)(b) On the chart for Hamburg Wheel Track (inflection point minimum number of passes): it indicates that there is a footnote "f" however there is no footnote f below the table.

Comment :

Resolution: Spec Language changed, "f" deleted

22Mar13 – This has been done.

Issue 39. Section 39-1.01C(2)(c): "For each job site delivery of LAS" Is this supposed to mean delivery to the plant?

Comment : (4/11/2013) Yes, this means delivery to the plant.

Issue 40. Section 39-1.01C(2)(c) 1.5 under Batch Mixing: "of the dry aggregate weight" Everything else in the new specification is TWM, why is this TWA?

Comment :

Resolution: Spec Language changed to "1.5. Asphalt binder content as a percentage of the total weight of mix"
22Mar13 – This has been done.

Issue 41. Section 39-1.01C(2)(c) 2.8 under Continuous Mixing: "of the dry aggregate weight" same (as #6

Comment :

Resolution: Spec Language changed to: Asphalt binder content as percentage of the total weight of mix calculated from:
22Mar13 – This has been done.

Issue 42. Section 39-1.01D(1): "the engineer re-verifies the JMF if HMA production has stopped for longer than 30 days and the verified JMF is older than 12 months". The way this reads, as long as we are producing off of the verified JMF once every 30 days we do not have to re-verify, even if the JMF is older than 12 months.

Comment :

Resolution: Spec Language changed to "The Engineer reverifies the JMF if HMA production has stopped for longer than 30 days and the verified JMF is less than 12 months old." 22Mar13 – This has been done.

Issue 43. Section 39-1.01D(3): "3. HMA Plant Manager" Is it really necessary to have the plant manager present? In most cases it would be just as useful if not more useful to have the plant's QC manager, superintendent, foreman, or operator there. Maybe re-word to say plant operations representative?

Comment : (4/11/2013) CT says if this becomes a problem please bring it to Joe's attention. Whomever the RE is OK with would be OK with Joe. Industry would like it to say "Plant Representative."

Issue 44. Section 39-1.01D(4): the minimum sampling and testing frequency for agg moisture is 2 per day… if the day only consists of 200 tons this is extreme overkill. Revise to have specific tonnage as another option. This issue is also present in section 39-1.01D(6).

Resolution: Spec Language changed to "1 per 1500 tons and any remaining part"

(3/22/2013)There is a conflict between the narrative in 39-1.01D(7) and (8) and the table shown in 39-1.01D(5) – Min QC Testing. In the table amend to "first 1500 tons."

(4/11/2013) Joe needs to amend the other section. Report in May.

Resolution: Language changed in 39-1.10D(7)

Issue 45. Section 39-1.02E: "Aggregate shaking time must not exceed 10 minutes for both course and fine aggregate portions" Determining how long to shake aggregate for in your mechanical shaker is part of the calibration process and AASHTO T27 requires you to continue sieving past 10minutes if the appropriate mass is not passing a sieve in a given time period in order to achieve adequate sieving. This requirement should be removed from section 39.

Comment : (4/11/2013) stopping in ten minutes falls in line with CTM202. CT moving to AASHTO and ASTM to the extent possible. CT expectation is that the IA people know this limitation.

Issue 46. Section 39-1.02J(1): "must have 25 ± 3 percent RAP", section 39-1.02F specifies that you must have 25 ±1 percent RAP. These should match.

Comment : This is only for the pilot projects.

Issue 47. Section 39-1.02J(4): "LAS must be from 0.5 to 1.0%" The last line of Section 39-1.01C(2)(b) specifies that you must use 0.5% LAS on RHMA-SP-G. Can we change one or the other to match each other?

Comment : Joe will make this change and report in May. Will change it to ".5 to 1%".

Resolution: Changed

Issue 48. If a contractor is lime treating aggregates they are required to perform AASHTO T 335, T 96, T 304 and ASTM D4791 will these tests be waived under 39-1.01D(4) Quality Control Testing during HMA production? Seems very redundant.

Comment : (5/15/2013) Lime-treatment will not change things – you always check your materials prior to lime treatment. This is covered in 39-1.02J(10.)

Issue 49. For the gauge bias it will be as per 375, 10 locations, 20 cores? I know that some testing firms only doing 5 to 10 cores. Will the density paperwork need to be submitted to Caltrans (CEM-3502 or equivalent)

Comment : (JFP) This is a QC test. Paperwork will only be submitted on CEM-3502 if requested by the engineer

Issue 50. Majority of producers/labs that have been polled that are looking at purchasing Superpave equipment that Caltrans has purchased to eliminate any future testing issues. This will lead us to the same position that we are in now – a single manufacturer that does not have the ability to upgrade and supply equipment.

Comment : (JFP)We do not specify equipment. CT has three types of wheel trackers, for example. Gyratory falls into a national standard. CT will only buy off-the-shelf equipment with all standard parts, etc.

Issue 51 round robin would help us understand both equipment and testing issues.

Comment : (5/15/2013) This is a good thing to do. This year's program is already established. CT is planning a round robin for 324 and 316 next year. In 2014 look for the Caltrans RSP to send materials out. Caltrans will work on this next year.

Issue 52. Superpave designed mixes end up with different asphalt contents. Does this mean that the millions of tons produced with the Hveem method were no designed properly. Are we really getting a better product.

Comment : (5/15/2013) We really hope so.

Issue 53. For RHMA the minimum AC% has been increased by 1%. Do we really want RHMA mixes with so much binder that there may be a stability, bleeding and rutting issue?

Comment : (5/15/2013) CT is collecting data to verify the mixes. High binder jobs have not shown this to be a problem. The data are limited.

Issue 54. Can one Caltrans person really drive the Superpave program and come up with the best program for the State?

Comment : Joe is the focal point, and it is a collective effort between Caltrans and Industry.

Issue 55. My primary concern is still with increasing the VMA from AI SP-2 requirements by half a percent and then requiring this to be met during production with a -1% +3 % requirement. We have difficulty meeting the VMA requirement today, when it is increased and then incorporated into production requirements, this will be a problem. The VFA for Caltrans Super Pave is identical to AI SP-2, why not follow the VMA guidelines, these two volumetric properties are very much related.

Comment : (5/15/2013) VMA is resolved. See the last comment for the VFA.

Issue 56. During the JMF verification the HMA Plant binder set point should not have to be at the OBC target. The Binder target during verification can remain the JMF OBC but allow the supplier to set the Plant as he sees fit to achieve the Binder target.

Comment : (5/15/2013) For Superpave this is done.

Issue 57. RHMA-SP-G: When the minimum target is raised from 7% of DWA to the new minimum of 7.5% of TWM this is a net increase of .9% binder. What positive goal is

achieved by increasing the cost of the mix this dramatically? Volumetrics could be difficult to achieve at the higher binder content for ¾" mixes.

Comment : (5/15/2013) CT is aware of the increased cost associated with higher binder. Benefits and performance are expected to outweigh the cost.

Issue 58. Caltrans believes that the Hamburg inflection point and the TSR are not redundant tests. But he is wrong and the TSR should be eliminated with the adoption of the Hamburg inflection point testing.

Comment : (5/15/2013) CT considers each one of the tests unique and gives a measurement of different qualities. Industry comment: TSR results lack validity.

Issue 59. 4.9 *Authorized lime ratio for each aggregate size being treated.* Why have we changed to "Authorized" from Approved? It's still the contractor that is determining the exact lime proportions correct? Authorized makes it sound like we are being directed by Caltrans on what proportions to use

Comment : (5/15/2013) **CT will look at this – Spec 101 C(2)D should be the same language as in Section 39. This may be a plain language issue (2010 spec) and report back.**

(6/18/2013) CT confirms this is the same as the 2010 spec.

Issue 60. Under Hamburg Wheel-Track testing what is the benefit of measuring for impression every 100 passes as opposed to the 400 passes as per AASHTO T324? +

(6/18/2013) Electronic data gathering – this is a pilot and will probably eventually drop back to 400.

Issue 61. Why is there a requirement to notify the Engineer at least 2 business days in advance of sampling materials for QC testing?

(6/18/2013) This is the same language as in Section 39, and provides for necessary flexibility due to staffing.

Issue 62. I know this has nothing to do with Superpave but this was my Christmas wish out of the Sears Christmas catalog this year…Caltrans needs to start specifying WMA in RHMA for some of their Districts, not contractor's option. As most of the RHMA in District 4 is placed at night it would be in everyone's best interest to use a WMA technology in this cool, moist environment.

(6/18/2013) Comment noted by CT.

Issue 63. STOP SPECIFYING 1/2-INCH AGGREGATE WHEN PAVING 0.10 FT THICKNESS!!!!

(6/18/2013) This is already in the spec.

Issue 64. Is the Thickness Range table an Industry proposal? If not I guess Caltrans is in agreement that 1/2" should not be placed at a 0.10'.

(6/18/2013) This is already in the spec.

Issue 65. Why is the premix of asphalt binder and modifier now needed to be mixed for 20 minutes?

(6/18/2013) This is not new. This is existing language.

Issue 66. The tack coat on the vertical surface of a construction joint should be allowed to be omitted if new HMA is placed during the same shift (as allowed between HMA layers, bullet #2). If 2.1 and 2.2 are met.

(6/18/2013) This is an existing Section 39 requirement that carries over to Superpave.

Issue 68. Gyratory Compaction Temp – PM binders and Higher RAP mixes.

(6/18/2013) CT says binder supplier should provide viscosity/temperature curve. Go with the binder supplier's recommendation. **CT will look at language – using "supplier" rather than "producer." CT will look at AASHTO R26.** Industry wants to know what temperature to use for higher RAP mixes. What should it be? Additional work will be required for higher RAP/RAS mixes. **This will be referred to the RAP/RAS sub task group.**

Issue 69. The draft Superpave spec shows a gradation for 1" mixes but there are no design requirements listed for this mix.

22Mar13

Comment – Is the min VMA requirement (13.5%) for 1-inch Type A mix a typo? Should the min VMA requirement for a 1-inch Type C be dependent upon the NMAS - ¾-inch or 1-inch…13.5% or 14.5%?

Resolution: Spec Language changed, Type C mix has design requirements.

Issue 70. I thought we were going to be looking at a SuperPave specification, but it appears as though we are just changing from kneading compactor to gyratory. Using

only one gyration level (125) and not looking at traffic levels to determine # of gyrations. We're also not evaluating volumetrics of 3 different blends and selecting the blend with the most favorable properties. I'm glad they've included Ninit & Nmax. As you all know, lower gyration levels on less heavily traveled roadways would produce higher VMA & correspondingly higher OBCs, and therefore a more durable pavement. With lower traffic & lighter loads, permanent deformation is less of a concern. Perhaps this specification (with some revisions) will be easier to implement and IS a place to start.

Issue 71. It will be interesting to see how VMA @ 125 gyrations compares to that at 150 kneading compaction tamps. Are the shear stresses exerted on HMA in the gyratory >, <, or = to the kneading compactor? Will VMA be more difficult to achieve?

(6/18/2013) The spec has been modified to lower the gyrations to 85.

Issue 72. Mandatory 25 +/- 1%? Perhaps ok for the few pilot projects, but I believe it should be contractor option and allow "up to" 25%, with guidelines on how to deal with the asphalt binder at the different RAP contents.

(6/18/2013) This has been changed to “up to 25%.”

Issue 74. AASHTO T283 every 10,000 tons during production. GOOD

(6/18/2013) Accepted without discussion.

Issue 75. AASHTO T324, Hamburg results within 48 hours of sampling, is not realistic, and perhaps not necessary.

(6/18/2013) This has been changed to seven days.

Issue 77. Semantics: Should be Theoretical Max Density, and not Maximum Theoretical Density. Is that too picky?

(6/18/2013) Yes, too picky.

Issue 79. VMA requirement @ mix design, 0.5% higher, and during production 0.5% lower than previous. Are we saying that we will be allowed a 1% drop in VMA from mix design to production?

(6/18/2013) Yes – this is correct.

Issue 80. % of Theoretical Max Density shown as 92%-97% for QC, and 91%-97% for acceptance. Why? Either way, pay factor is determined based on Eng'r's cores. Shouldn't they be the same anyway?

(6/18/2013) Industry has a concern on this. CT says that some jobs are over-compacted, and that they rarely see above 92-93% in the field. If the mix is over-compacted it will/may bleed out on you. CT is not willing to drop the upper limit for compaction. This will be revisited when there is a QC/QA Spec. Everything now should read 92-97%. Industry says this is not a construction issue, it is a mix issue. If you don't compact the mix in construction, the traffic will compact it for you.

Issue 81. Is the minimum dry Indirect Tensile Strength requirement of 125psi for AASHTO T283 appropriate? I've seen numerous HMA mixes perform well at lower dry strengths, as long as the ratio is achieved. I believe a minimum strength is appropriate, but is 125psi the right value? Perhaps 100psi?

(6/18/2013) Dealt with in issue 12. This is on-going

Issue 82. Section 39-1.01D(2)(a) Engineer Acceptance - General: Does the Eng'r sample at the same location as the contractor (truck, behind paver)? Should they? i.e. if contractor takes his random QC samples from a truck at the plant, and the Eng'r behind the paver, is that acceptable? It appears to read that sampling from different locations could be done.

(6/18/2013) 125 allows many sampling points. CT is limited to the plant or behind the paver. This is the RE's call. CT would like to have everyone be limited to the plant or behind the paver. For now CT will leave this alone. Sampling locations should be worked out with the contractor. Caltrans is still discussing this internally. Caltrans must first ensure that everyone is sampling correctly. Then they need to specify the sampling location. Industry reports a logistics problem in that a splitter is required to split the samples.

Issue 84. Must HMA comply with BOTH AASHTO T283 AND Hamburg?

(6/18/2013) CT says yes.

Issue 85. Section 39-1.02M(4)(d) JMF Verification: The air voids tolerance of +/-1.5% is perhaps ok, but needs to be discussed.

(6/18/201`3) See Issue 78.

Issue 87. Why are we using a 0.8 factor when considering binder replacement for RAP?

(6/18/20123) Resolved.