Reclaimed Asphalt Pavement in Rubberized Hot Mix Asphalt

June 23rd, CalAPA conference room, Notes:

Some members of the sub task group have concerns on field performance of RAP in RHMA-G, even at a low level of 5-10%. A good performance evaluation study is necessary to go with the pilot projects.

Q: Will the RAP used in RHMA-G mix needs to be fractionated at 5-10%? - Yes (group consensus)

Feedback to ATG for the Concerns on the scoping document:

1. There is not enough time and information between NSSP and SSP development to fully validate if there will be any long term field performance issue with RAP in RHMA-G.
2. The assumption of low level (5-10%) of RAP has little effect on the performance of mix in the original scoping document is questionable, due to the concerns on long term fatigue performance and reflective cracking mitigation.
3. There is also a concern on how it will affect the validity of reduced thickness design of RHMA.

The suggestions:

1. For the pilot projects, develop a long term field evaluation plan of 5-10 years.
2. Companion lab testing plan for pilot projects consists of fatigue testing.
3. Funding needed for lab testing and long term performance evaluation can be provided thru pilot projects.

A draft NSSP has been discussed and developed over today's meeting. Kee will clear it up and share with the group before next meeting.

Next meeting will be on August 4th in Sacramento Translab. Dr. Dave Jones will be presenting at the meeting for the UCPRC findings on the relevant topic.

May 24th, 2016 Conference Call Notes:

Per our conference call, the plan is as follows:

- Identify field projects in which 5% and 10% RAP is used in RHMA (batch plant).
- Identify field projects in which 10% RAP is used in RHMA (drum plant).
- Review UCPRC report (CalRecycle funded research) when available – tentatively July-August 2016.
- Discuss how cost of testing will be addressed at next subtask group meeting.
- Tim Reed of Vulcan to gather southern CA project data (local agencies?) in which RAP was used in RHMA

- Caltrans-Industry Co-chairs (Kee Foo, Pete Spector, Hongbin Xie, Mike Herlax) to solicit input as to date of next meeting.

May 16th Response back from Caltrans:

The STG proposals are presented to CT ATG which provided the following responses:

- No additional resources is available except those already allocated to the RAP in RHMA STG.
- The scoping document is written based on the premise that "Low levels of RAP from 5-10 percent in RHMA should be able to be used without affecting the quality or performance of RHMA."
    - There will be no changes to the RHMA specifications, except
        - STG needs to determine the "low levels of RAP"? (5-10 percent) that the group can comfortable support "be used without affecting the quality or performance of RHMA."
        - STG develop an NSSP to incorporate "low levels of RAP" in RHMA-G
        - Perform lab testing to verify RHMA with RAP comply with quality characteristic for RHMA-G (ie: show that the premise of the scoping document is valid)
- Industry and/or Caltrans need to propose a new RPC scoping document if it wants to do Option 1 or Option 2.

April 26th, 2016 Notes from Meeting in CalAPA conference room.

Option 1:

1. What is the limit of RAP usage in the RHMA-G mix? Trial percentages for lab and pilot project evaluation.
    a. 0% (lab and plant produced)
    b. 10% (lab and plant produced)
    c. 15% (lab and plant produced)
    d. 25% Lab only (lab produced)

2. What methods will be used for evaluation? Who will be doing the lab testing?
    a. Lab beam fatigue test (for Cal-ME simulation)-- UCPRC or Chico State
    b. Field pilot projects (A minimum of 4 projects with different material sources/two different NMAS)—field observations by Chico State
    c. 2015 Standards RHMA-G QC/QA tests—Contractors/District labs

3. For specification (NSSP), will the RHMA-G with RAP has to meet the same mix requirements for the existing RHMA-G without RAP? Additional requirements?

    a. Same requirement as the existing RHMA-G spec for gradation, AC content, volumetrics, Hamburg, TSR etc.
    b. No additional requirement.

4. For this effort, what are considered the acceptable criteria for limiting RAP usage?
    a. Fatigue results- relative comparison
    b. No pre-mature failures in the field (annual condition survey)
    c. Meets the current RHMA-G standard criteria.

5. No WMA be allowed for pilot project.

6. RAP percentage is defined by aggregate replacement, not binder replacement.

Beam Fatigue Tests (a total of 96 beams):

1. Field produced: 4 projects *3 test sections (0%, 10%, 15%)*2 testing conditions (1 temps*2 strain levels)*3 replicates =72 beams,
2. Lab produced mix evaluation: 4 blends* 2 conditions*3 replicates = 24 beams

<u>Option 2:</u>

1. What is the limit of RAP usage in the RHMA-G mix? Trial percentages for lab and pilot project evaluation.
    a. 0% (plant produced)
    b. 10% (plant produced)

2. What methods will be used for evaluation? Who will be doing the lab testing?
    a. Field pilot projects (A minimum of 4 projects with different material sources/two different NMAS)—field observations by Chico State
    b. 2015 Standards RHMA-G QC/QA tests—Contractors/District labs

3. For specification (NSSP), will the RHMA-G with RAP has to meet the same mix requirements for the existing RHMA-G without RAP? Additional requirements?
    a. Same requirement as the existing RHMA-G spec for gradation, volumetrics, Hamburg, TSR etc.
    b. No additional requirement.

4. For this effort, what are considered the acceptable criteria for limiting RAP usage?
    a. No pre-mature failures in the field (annual condition survey)
    b. Meets the current RHMA-G standard criteria.

5. No WMA be allowed for pilot project.

6. RAP percentage is defined by aggregate replacement, not binder replacement.

7. Optional beam fatigue test: using plant produced material and under the contract.