

WACA/WSDOT Meeting Minutes for Tuesday, June 22, 2010

Attendees:

Dave Burg, Ashgrove	Tamson Omps, CalPortland	Neil Guptill, CalPortland
Bob Raynes, Cemex	Tom Weist, Oldcastle Precast	Dave Germer, CalPortland
Eric Clark, Corliss Resources	Rob Shogren, Lafarge	Craig Matteson, Central Pre-Mix
Kurt Williams, WSDOT	Richard Boss - Cadman	Mike Polodna, WSDOT
Carlos Marquez IV, Corliss	Kevin Wolf, CalPortland	Mohammad Sheikhezadeh, WSDOT
Scott DiLorete, BASF	Bruce Chattin, WACA	

Location: WACA Office, Des Moines, WA

Next WACA Meeting Date:

Wednesday, September 22, 2010, at WSDOT HQ Mats Lab, Main Conf Room, 9:30 AM – 12:00 Noon

Future WACA Meetings Dates:

Wednesday, December 8, 2009, at WACA's Office in Des Moines, 9:30 AM – 12:00 Noon

Meeting Minutes are available at: <http://www.wsdot.wa.gov/biz/mats/>

Issue: Performance Specifications for Concrete Mix Designs - Mo Sheikhezadeh

Develop performance specification parameters for concrete that can be developed into specifications.

6/22/10 Mo had nothing new to report on the advancement of the performance specifications. We had a discussion on SCC concrete that included experiences with the SCC in the Wandermere bridge columns and mock up placement. Issues included timing of trucks, form pressures, and proper location of the tremie. WSDOT structural designers have concerns with modulus of elasticity and creep. Testing in the WSDOT materials lab has shown that MOE results are similar after 30 days. Tom Weist will make 1 set of 3 cylinders to be picked up by WSDOT weekly to test the MOE on their SCC mixes. Dick Boss stated that CADMAN produces Placement Energy Consolidated Concrete (PECC) and not SCC because consolidation must be part of the placement plan because the concrete cannot do it all by itself. Dick does not want a spec called SCC. Mo discussed that the term "Flowable Concrete" may require vibration for compaction. Any specification could include a requirement for a placement and consolidation plan submittal to be reviewed before placement. Tom Weist reported that their thin-walled vaults require short

(10second) bursts of external vibration, and that thicker walls do not. Craig Matteson reported that rain will have harmful effects on SCC mixes because of moisture content in the stockpiles and the sensitivity of the mix to w/c ratio. Dick stated that designing SCC with a flow of 29 or 30" gives better control of the mix. Tamson Omps stated that they leave the tip of the tremie in the concrete when placing SCC, and that they use 24" as their lower design limit and that it is easier to get the fresh concrete to flow at 26", but the hardened properties may suffer. Craig stated that they averaged 26" on the Wandermere placement. Tom uses 26 or 27 inches. Tamson likes the column static test. Dick said that the WSDOT 10% settlement limit is manageable. The equipment for the new ASTM settlement test is not yet available. The ACME project used a spread of 22-23" with external vibration up to 7 minutes. Entrapped air was high at 23" and not so high at 29". Craig stated that entrained air is hard to keep at high flows.

Action Plan: Further discussion at September 2010 WACA meeting– Mo Sheikhzadeh

Issue: Degradation for concrete Aggregate/Base Course – Kurt Williams

A research study is on-going to test the effect of using aggregate with low degradation values in concrete mixes.

6/22/10 Mike Polodna reported that the testing is on-going. No results are presently available.

Action Plan: Continue to give updates to WACA at Monthly Meetings – Kurt

Issue: Proposed Specification Change to Section 6-02.3(2) Proportioning Materials – Mo Sheikhzadeh

WSDOT 4000D mix still requires a minimum of 660 pounds of portland cement plus 100 pounds of fly ash and addition fly ash can be added to Alkali Silica Reactivity mitigation which can raise the total cementitious above 800 pounds.

6/22/10 – Kurt passed out proposed changes and asked for feedback via email in the next 4 – 6 weeks. It was discussed that high replacement can retard set time and would not be used in cold weather. Fly ash and slag costs are currently 60% - 100% of cement cost depending on the source. Savings can be lost in additional storage and handling costs.

Action Plan: Further discussion at September 2010 WACA meeting– Kurt Williams

Issue: Standard Specification 9-03.1(4)C – Louie Bayless

Louie questioned how they can meet the spec if a small portion is larger than the top size allowed. The spec allows a maximum of 4% over the limit provided that the average of 3 tests is within the limit. Strictly enforced, one rock over the maximum size would be cause for rejection of the aggregate. Kurt stated that Statistical Acceptance of Material (SAM) allows a small percentage over the limit. He asked Louie to email him specific information and he will investigate.

6/22/10 – Kurt reported that the specification has been in the WSDOT spec book since 1935 and that testers have the discretion to throw off stray rocks. This is a tester education issue.

Action Plan: Issue complete.

New Item: Proposed Change to Standard Specification 9-01.2(4) Blended Hydraulic Cement – Rob Shogren

Rob reported that ASTM C-595 now allows ternary blends which can include portland cement, fly ash and slag. Rob proposed to add ASTM C-595 Type IT(X) as long as each individual SCM is listed on the QPL. Rob also reported that ASTM C-1697 now allows pre-blended SCMs. Rob would like to add ASTM C-1697 as a way to pre-blend SCMs at the cement/SCM suppliers' plants as long as each individual SCM is listed on the QPL.

Draft Specification:

9-23.13 Blended Supplementary Cementitious Material

Blended Supplementary Cementitious Material (SCM) shall meet the requirements of ASTM C1697. Blended SCMs shall be limited to binary or tertiary blends of fly ash, ground granulated blast furnace slag, microsilica fume, and metakaolin. Fly ash shall meet the requirements of section 9-23.9. Ground granulated blast furnace slag shall meet the requirements of section 9-23.10. Microsilica fume shall meet the requirements of section 9-23.11. Metakaolin shall meet the requirements of section 9-23.12. The individual SCMs composing the blended SCM shall be individually listed on the WSDOT QPL.

Proposal to Add Metakaolin to Standard Specifications Draft Specifications:

9-23.12 Metakaolin

Metakaolin shall conform to the requirements of AASHTO M 295 Class N including optional chemical requirements as set forth in Table 2 and with a further limitation that the loss on ignition shall be a maximum of 1.5 percent.

6/22/10 – Rob stated that he likes how the spec has been written. Kurt solicited feedback from others via email in the next 4 -6 weeks. Metakaolin has been added. Producers state that they likely will not use because of a lack of silos and cost-effective availability. It would be a good substitute for silica fume when permeability is an issue. Mo suggested that we add metakaolin and silica fume to the replacement table. Bob Raynes suggested they be added as contractor proposed item and not to the Table.

Action Plan: Add metakaolin and silica fume to the replacement table. Further discussion at September 2010 WACA meeting - Kurt and Mike

Discussion Item: Water for Concrete - Bob Raynes

Bob reported that WSDOT Standard Specification 9-25.1 Water for Concrete requires that in order to use recycled water the lab that tests their water must meet R-18. The consensus was that no one is currently using recycled water because of the R-18 requirement. Bob inquired if they could use ASTM C1602 with in-house testing instead of the R-18 requirement.

6/22/10 – Kurt reported that the recycled water language was added in 2000 and that he can't find any standard that it was based on. Dick Boss stated that the R-18 lab requirement is the issue because they can't find any that test water. He asked if any A2LA lab would do. Kurt asked the industry to provide an NRMCA standard on which to base the WSDOT specification. Kevin Wolf will forward information to Kurt regarding test lab accreditation.

Action Plan: Further discussion at September 2010 WACA meeting

New Item: J-ring for SCC – Craig Matteson

Craig asked if the J-ring test is a prequalification test only, or if it is an acceptance test.

6/22/10 - Craig thinks this test should be used for pre-qualification only and is not needed for acceptance testing. Tom Weist has seen no changes to mixes since the specification has changed. His mixes always meet spec in their controlled environment. The group proposed a 3 cubic yard mix to pre-qualify. Mock up tests for inexperienced contractors and new mixes. When you meet the J-ring test X number of times then it is not required for further batches.

Action Plan: Further discussion at September 2010 WACA meeting

New Issue: Modulus of Elasticity Testing:

Does industry have information on Modulus of Elasticity on Class 4000 Concrete Mixes?

Kurt asked for any available MOE data.

Action Plan: Issue complete.

New Issue: Natural aggregate available in 1 in to 2 inch size?

Is there aggregate available in 1 inch and 2 inch sizes?

It can be made if needed in large enough quantities. There would probably be problems pumping 2” aggregate. Currently there is difficulty pumping 1-1/2” aggregate. Tamson said that it would require separate bins for larger aggregates and would require a special rock run. Producers are currently using both round and crushed rock and expect to use more crushed in the future because mining permits are hard to come by. More crushed rock is being used in Oregon than in Washington.

Action Plan: Issue complete.

New Discussion Item: Mass Concrete

Neil Guptill asked about a Mass Concrete specification. Mo stated that the Manette Bridge has cooling pipes at 2’ spacing and is using a high volume of SCMs to keep the concrete cool. The specification is based on recommendations from CTL.

New Discussion Item: LA Wear on Fine Aggregate

Craig Matteson asked if any other pits have problems with the LA Wear tests. No other pits reported problems.

New Discussion Item: Shotcrete Cores

Craig Matteson reported that 2” cores were taken on contract 7610 in the Eastern Region.