

WACA/WSDOT Meeting

Minutes

For Wednesday, Sept. 7, 2016

Day/Time: Wednesday, September 7, 2016, from 9:30 AM – Noon

Location: WSDOT HQ Mat Lab, Crimson Conference Room

In Attendance:

David Jones, WSDOT

Rob Molohon, WSDOT

John Bartheld, Holroyd Co. Inc.

Elijah Mayer, Ellensburg Cement Prods.

Tom Weist, Oldcastle

Keith Muhich, Miles S&G

Kevin Wolf, CalPortland

Peter Balick, Cadman

Mark Gaines, WSDOT,

Chuck Estes, Holroyd Co. Inc.

Robert Raynes, Cemex

Scott DiLoretto, EdenCrete

Craig Matteson, CPM Oldcastle

Louie Bayless, CalPortland

David Burg, Ash Grove Cement

Bruce Chattin, WACA

Next WACA Meeting Date:

Wednesday, December 7, 2016 at WACA's Office in Des Moines, 9:30 am – Noon.

Future WACA Meetings Dates:

Wednesday, March 1, 2017 at WSDOT HQ Mat Lab, Crimson Conference Room, 9:30 AM – Noon.

Wednesday June 7, 2017 at WACA's Office in Des Moines, 9:30 am – Noon.

Wednesday, September 6, 2017 at WSDOT HQ Mat Lab, Crimson Conference Room, 9:30 AM – Noon.

Meeting Minutes are available at:

<http://www.wsdot.wa.gov/Business/MaterialsLab/WACAMinutes.htm>

New Business:

Issue: 4000D mix designs- how current is current and what information is needed?

Sub-Issue: ASTM/AASHTO Test Report Information – Mark Gaines

9/7/16 – Mark Gaines asked WACA what is their definition of “current” test data is. Members of WACA stated that 2 to 5 years is current, depending on if there have been changes made to the mix design. Mark explained that specification requirements for concrete class 4000D requires that actual test reports be provided with the mix design submittal, not just the results. Mark asked the group if it was unreasonable to require actual test reports per the requirements of the ASTM methodology? WACA collectively stated “no”. Kevin Wolf of CalPortland explained that ASTM methods have specific reporting criteria and not submitting all that is required in the report section would not be compliant with the test method.

Sub-Issue: Shrinkage – Robert Raynes

9/7/16 – Robert Raynes of Cemex explained some observations he had made while conducting AASHTO T 160/ASTM C 157, “Length Change of Hardened Hydraulic Cement Mortar and Concrete”. He evaluated mixtures with targeted water content, below target, above target, and also used HRWRA admixture and noticed that there was no change in the results. The other concern Robert had with this method is the requirement of a slump of 3.5 ± 0.50 inch. He indicated that this is not the concrete mix you will get in the field. Section 6-02.3(4)C of the WSDOT Standard Specifications states that a 3 ½ inch slump is required for vibrated concrete placed in all bridge decks and bridge approach slabs.

Sub-Issue: What is considered current testing? - David Jones

9/7/16 – David Jones asked WACA members if 2-year-old test reports are considered current. David Burg of Ash Grove Cement agreed that 2 years is reasonable.

Sub-Issue: Scaling – Robert Raynes

9/7/16 – Robert Raynes stated that ASTM C 672 ‘Standard Test Method for Scaling Resistances of Concrete Surfaces’ is subjective. David Burg stated that this test does not address mix design issues, but workability (the finish of the concrete specimen). Robert Raynes explained that a solution to address failing test results is to increase the air content. Robert also reported that the finish on the test specimen affects the results, and his concern is that this method is not reflective of what will occur on the project site. Mark Gaines stated “we don’t want to do tests that aren’t reflective of field performance”. Robert explained that we know how to fix shrinkage, but we don’t know how to address scaling.

Issue: Admixtures – Mark Gaines

9/7/16 – Mark explained that WSDOT has a policy that requires testing when a retarder is proposed for Class 4000D and Class SCC. Scott DiLoreto explained that although retarders do not impact compressive strength, proper field curing is still required. Mark Gaines stated that we don’t know what range of dosage is used during the mix design process. Rob Molohon stated that he has seen mix design submittals that indicate dosage rates from 0 to the maximum amount permitted. Kevin Wolf stated that with WRA (Water Reducing Admixture) and HRWRA (High Range Water Reducing Admixture) the mix should indicate the presence of the admixture and not be allowed to be zero to XX dosage. The dosage should be allowed to be shown as a range inside the manufacturers range. Scott DiLoreto stated that it is appropriate to require mix designs to be evaluated with WRA and HRWRA, but not with accelerators and retarders. Accelerators and retarders are part of the contractor tool kit to address environmental concerns.

Old Business:**Specifying 5000 psi 28 day Compressive Strength for 4000P – Mark Gaines**

9/7/16 – Mark Gaines stated that he has seen compressive strength data for Class 4000P from WSDOT projects and that this data supports raising the strength requirement to 5000 psi. WACA collectively stated that this doable.

6/1/16 – Mark Gaines of the WSDOT asked the WACA members “can we get 5,000 psi with Class 4000P? Mark then explained that a 5,000 compressive strength concrete may allow smaller diameter shafts to be designed. Craig Matteson of CPM Oldcastle indicated that his facility can produce 6,200 compressive strength concrete. Mark then stated that WSDOT needs to know if all producers could supply 5,000 compressive strength concrete for Class 4000P applications. He then concluded this session by asking the WACA members to provide feedback within the next two weeks.

Non-Chloride Accelerators – Scott DiLoreto

9/7/16 – Mark asked WACA if the WSDOT should allow the use of non-chloride accelerators in structural concrete. WACA responded that they support the use of accelerators in structural concrete. Rob Molohon reported that he has seen mix design submittals from pre-casters and pre-stressors proposing to use corrosion resistant accelerators. Mark stated that he would look into this topic further.

6/1/16 – Scott DiLoreto asked why WSDOT is reluctant to use non-chloride accelerators in non-pavement concrete. Rob Molohon explained that he has seen mix designs submitted with accelerators and the compressive strength data look good. Mark Gaines of WSDOT asked how we can ensure we get the same 28-day compressive strengths on the projects as we do in the laboratory setting. Dave Burg of Ash Grove Cement stated that only WSDOT does not allow the use of accelerators. Mark indicated that WSDOT will research this topic.

Integral Concrete Color – Scott DiLoreto

9/7/16 – David Jones reported that he has not seen any GSP (General Special Provision) specifying the Federal Color Standards for colored concrete. He did find proprietary specifications that specify certain coloring products for concrete. David concluded this session by asking WACA if they do find a WSDOT specification requiring color concrete to meet a Federal Color Standard. to provide that information to him.

6/1/16 – Scott DiLoreto recommended that WSDOT not use the Federal Color standards for integral concrete color in the special provisions. The Federal system is for paint and does not work well for color concrete. Mark asked Scott to provide a copy of this special provision and he will look into their concern. Craig Matteson of CPM OldCastle stated color as power additive decreases entrained air.

Standards for Sand Equivalent and Degradation as they relate to recycled concrete aggregate.

9/7/16 – David Jones informed the group that he has been notified by a concrete recycler that they are producing CSTC and CSBC that meets all of WSDOT’s specification requirements (SE, WSDOT Degradation test, and LA Wear). David stated that he would like to see a process that will allow recyclers to be listed on the ASA database. He reminded the group that recycled materials from WSDOT projects do require source property and toxicity characteristic testing. Craig Matteson asked about returned plastic concrete from a WSDOT approved aggregate source. Rob Molohon stated that this type of material should not have to

be re-evaluated if the aggregate component is from a WSDOT approved aggregate source. A process would need to be developed to allow this material to be used without going through aggregate source evaluation.

6/1/16 – David Jones indicated that LA and Degradation will not be required for recycled concrete removed from WSDOT right of way. We are still considering what to do about SE. Craig Matteson stressed that recycled concrete has a hard time meeting the SE requirement.

3/2/16 – David Jones of WSDOT asked the group their thoughts on Sand Equivalent (S.E.) test (WSDOT T 176) and WSDOT Degradation test (WSDOT T 113) requirements on recycled concrete aggregate. Craig Matteson of Oldcastle stated he had some recycled concrete aggregate evaluated for S.E. and Degradation and the testing indicated the material did not meet the requirements of crushed surfacing base course. David stated will look into if we need these requirements on recycled concrete aggregate that is from a WSDOT approved sources. Rob Molohon of the WSDOT stated that the concern with recycled concrete aggregate is when it is stockpiled and mixed with other recycled materials such as; HMA, brick, re-used aggregates, and other materials. Rob stated he has seen this stockpile practice with recyclers and he identifies these stockpiles as GOK (God Only Knows) stockpiles. This type of stockpiling practice contributes to quality concerns. Rob then asked the WACA group if they segregated their recycled concrete aggregate. The WACA group stated they do segregate concrete aggregate stockpiles, but they also have GOK stockpiles. Rob explained that he agrees with David that requiring SE and Degradation on recycled concrete aggregates that can be tied to an approved WSDOT source may not be required, but how do you address recycled concrete aggregates that cannot be tied to or associated with an approved WSDOT source. The WACA group agreed this is a valid concern. David concluded this session by asking the group for input and stated that he will be reviewing what is occurring nationally with recycled concrete aggregate.

Type IL(X) Cement and ASTM C 1012

9/7/16 – David Jones stated that we are still waiting to hear the out-come from the ASTM committee. David Burg indicated that this issue will affect his company.

6/1/16 – David Jones stated that we will wait to see what the ASTM committee decides to do and then we will consider any changes that might be needed.

3/2/16 – David Jones stated that he was still waiting to hear the outcome of the research pertaining to ASTM C 1012.

12/2/15 – Allan Kramer handed the group a report on ASTM C 1012 by the Cement and Concrete Research. ASTM C 1012 is specified by WSDOT for Type IT(PX)(LY), Type IT(SX)(LY), and Type IL(X) cements. WSDOT has modified Section 9.3 of this method to have a storage temperature of $5.0^{\circ} \pm 2.0^{\circ}\text{C}$. Per the research this temperature range maybe too severe. David Jones stated that WSDOT looked forward to hearing more about what comes

out of the National ASTM meeting from WACA on this subject.

Quality Control Plans – David Jones

WSDOT is moving towards requiring QC Plans from material suppliers. Discuss how this will affect WACA members.

9/7/16 – David Jones reported that he has not received any input from WACA on this topic. Rob Molohon explained the direction WSDOT is going and that QC plans for aggregate sources and recyclers is very important. The reason WSDOT is asking WACA for input on this topic is because they are the experts. Rob asked WACA if they really want WSDOT to determine the requirements for QC plans for aggregate sources and recyclers without their input? Representatives from Holroyd Co. questioned Rob regarding what the State is looking for. He explained that our first goal should be recyclers so this way this material can be used more often. Louie Bayless asked what tests does WSDOT want to see in these QC plans. Rob stated that he has an idea, but he needs to work within WSDOT to determine what tests should be required. Rob stated that he will bring this information to the next meeting.

6/1/16 – David Jones updated the group on the status of WSDOT's implementation of the WAQTC program.

3/2/16 – David explained the status of the WSDOT's implementation of the WAQTC program and reported the following:

- All of WSDOT's Independent Assurance Inspectors (IAIs) have been qualified in HMA, Aggregates and Density test methods.*
- The IAIs will qualify all WSDOT testers by 2018.*
- ACI certification will be required for concrete.*
- In the future, the Contractor may perform QA and WSDOT will perform QV.*

12/2/15 – David Jones explained that once WSDOT fully adopts the WAQTC program, concrete producers will be required to have QC plans.

Class N pozzolans for Concrete – Rob Shogren

9/7/16 – David Jones informed the group that the test report from Lafarge indicated that pumice did not meet specification requirements for Class N per AASHTO M 295 and WSDOT specification of 1.5% or less for LOI. The information that would be useful to evaluate any type N would be AASHTO M 295, all four tables and ASTM C 441 results. He stated that currently WSDOT does allow the use of Metakaolin. David informed the group that Class N requirements will be very specific to material type. He also stated that ASR mitigation is desirable.

6/1/16 – David Jones reported that WSDOT is still discussing this topic. The concern WSDOT has is that Class N pozzolans are very open. Per AASHTO M 295 the following materials can be used for Class N; diatomaceous earths; opaline cherts and shales; tuffs and volcanic ashes or pumicites, calcined or uncalcined; and various materials requiring calcination to induce satisfactory properties, such as some clays and shales. Tom McGraw of Lafarge stated that pumice is the material they would like to make Class N pozzolans from.

3/2/16 Rob asked David Jones if WSDOT was entertaining the idea to allow the use of ASTM C 618 Class N pozzolans due to the current Class F fly ash shortage and potential future shortages. David indicated that WSDOT will look into the use of Class N pozzolans.

Side Issue: ASR testing frequency – Louie Bayless

9/7/16 – Louie Bayless reported that WSDOT requires evaluation of aggregate sources twice per a 5-year period;

- 1st evaluation is for source properties (WSDOT Degradation, LA Wear, and Gravity) and this evaluation is good for 5 years.
- 2nd evaluation is for ASTM C 1293 “Standard Test Method for Determination of Length Change of Concrete Due to Alkali-Silica Reaction” which take one year to perform. This evaluation is also good for five years.

Since C 1293 takes one year to perform there will always be an overlap, therefore WSDOT evaluates concrete aggregate sources twice every five years. Louie asked if these tests can coincide with each other? David Jones stated that FHWA has recommended that ASTM C 1293 testing be performed on a two-year cycle. David stated that we will learn more this fall.

Side Issue: Revisions to the Standard Specifications – Bruce Chattin

9/7/16 – Bruce asked WSDOT if WACA can review revisions prior to their incorporation into the Standard Specifications. Mark Gaines stated that he would provide the drafted amendments for WACA to review.