

# **WACA/WSDOT Meeting Minutes For Wednesday, June 3, 2015**

*Day/Time: Wednesday, June 3, 2015 at 9:30 AM – Noon  
Location: at WACA's Office in Des Moines*

## **In attendance:**

David Jones, WSDOT	Mark Gaines, WSDOT
Rob Molohon, WSDOT	Mike Poldna, WSDOT
Greg M <sup>c</sup> Kinnon, Stoneway	Craig Matteson, Old Castle CPM
Kevin Wolf, CalPortland	Tamson Orps, CalPortland
Dave Burg, Ash Grove Cement	Bruce Chattin, WACA
Tom Weist, Oldcastle	Tony Bowman, Corliss Resources, Inc.
Dave Germer, CalPortland	Monica Jones, Lafarge
Scott Diloreto, BASF	Jeff Huff, BASF
Allan Kramer, Lehigh NW Cement Co.	Sebastian Sajoux, Arqlite Lite Const. Agg.

## **Next WACA Meeting Date:**

*Wednesday, September 2, 2015 at WSDOT HQ Mats Lab, Crimson Conference Room,  
9:30 AM – Noon*

## **Future WACA Meetings Dates:**

*Wednesday, December 2, 2015 at WACA's Office in Des Moines, 9:30 AM – Noon*

*Wednesday, March 2, 2016 at WSDOT HQ Mat Lab, Crimson Conference Room,  
9:30 AM – Noon*

*Wednesday June 1, 2016 at WACA's Office in Des Moines, 9:30 AM – Noon*

## **Meeting Minutes are available at:**

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

## **New Business:**

### **Recycled Plastic Aggregates – Sebastian Sajoux**

*6/3/15 – Sebastian Sajoux of Arqlite Lite Construction Aggregate presented information on artificial aggregate /rock made from mixture of recycled plastic materials intended for use in concrete and subgrade applications. This plastic aggregate is 60% lighter than normal aggregate with gravity of 1.05 to 1.25. This material can be locally produced. There will be plant started in Seattle. This plastic aggregate comes in ½” to 1 ½” sizes. This material can be ground into smaller sizes. Mark Gaines of WSDOT asked if these aggregates would float in*

*a concrete mixture. Sebastian indicated floating was not noticed during the evaluation of these materials. A WACA member asked if these aggregates been tested for resistances to alkalis and sulfates. Sebastian indicated that more research was needed in this area. Mark Gaines asked about the compressive strength of this material. Sebastian indicated that 20% substitution of virgin aggregate has demonstrated a reduction of 45% of compressive strength.*

### **Bridge Deck Cracking Study – Mark Gaines**

*6/3/15 – Mark Gaines of the WSDOT Construction Office gave a presentation on the status of the comparison study conducted by the WSDOT Bridge Office of Performance Class 4000D and Prescriptive Class 4000D. At this time 5 bridges with Performance Class 4000D and 3 bridge decks with Prescriptive Class 4000D were evaluated. The Prescriptive Class 4000D had cracks about every 2 feet, while the Performance Class 4000D showed either no cracks or very few cracks. At this time this study is only 30% complete. Bruce Chattin of WACA asked Mark if age of the concrete deck was taken into consideration. Mark stated “No”, cracking occurs early during shrinkage. Another WACA member asked if all bridges have same quantity of de-icers used on them. Mark responded, I am not sure if de-icers contribute to bridge deck cracking.*

### **Discussion of AASHTO T 160 results for performance of deck concrete – Mark Gaines**

*6/3/15 – Mark explained results of AASHTO T 160 Length Change of Harden Hydraulic Cement Mortar and Concrete on deck concrete. He indicated that during the measurement of beams that swelling was observed during the wet cure process and asked if anyone could explain this. WACA indicated this shrinkage test is not very repeatable. Mark asked the group if there was another method. Greg M<sup>c</sup>Kinnon of Stoneway stated that the laboratory is unable to replicate what occurs in the field. Curing is really the answer. The use of SRA (shrinkage reducing admixture) is a way to minimize shrinkage. Mark indicated that delaying shrinkage is good. Mark asked the group if we see decks that don't perform well, how do we address it? WACA indicated that weather and environmental conditions will impact shrinkage. The WACA members prefer to use AASHTO T 160, as they know how to use it to adjust their mixes to meet the Class 4000D performance requirements.*

### **Availability and potential for using Type K Cement – Mark Gaines**

*Mark asked the group if they had any experience with Type K cement. Tamson Orps of CalPortland stated it works, but you will have to isolate a silo for it, adding additional costs. Kevin Wolf of CalPortland indicated that Type K cement expands, compensating for the shrinkage that occurs later. Dave Burg of Ash Grove Cement stated that reinforcement will minimize shrinkage.*

### **Update on Self-Consolidating Concrete (SCC) – Mark Gaines**

*Mark informed the WACA members that SCC will be part of the 2016 Standard Specifications. He then explained that cast-in-place will require the same testing as pre-cast. Forms will need to be stronger. The specifications will require mock-ups. Placing sequence will be the same as the mock-up. Greg M<sup>c</sup>Kinnon of Stoneway asked how will you simulate mock-ups with reinforcement? Mark stated that mock-ups will need to have reinforcement. Allen Kramer of Lehigh NW Cement Company asked about vertical pours. Mark indicated that small mock-ups*

*will be required. For pre-stressed concrete ASTM C 1712 Standard Test Method for Rapid Assessment of Static Segregation Resistance of Self-Consolidating Concrete Using Penetration Test is important. Mark then asked the group to send their comments to him.*

### **Old Business:**

#### **Recycled concrete aggregate Specification – David Jones**

*6/3/15 – David Jones of the WSDOT introduced the topic. Mark Gaines presented the bill which was recently passed require the use of recycled concrete. Bruce Chattin of WACA stated bill will be effective January 1, 2016. Bruce brought the following items up;*

- What does WSDOT need to do this work?*
- Where the DOT goes, the Local Agencies will follow.*
- Do we need to look at the tables in Section 9-03.21 of the Standard Specifications?*
- I don't think that many folks (WSDOT, Local Agencies, and Commercial) are using these tables.*

*Mark Gaines asked the group for input on these tables and indicated there good applications to use recycle concrete. Greg M<sup>C</sup>Kinnon of Stoneway stated there is concern with the term "Concrete Rubble" that used in the tables of Section 9-03.21. Mark Gaines suggested that the term "Recycled Concrete" should be used. Greg M<sup>C</sup>Kinnon stated that WSDOT should allow 100% use in Fine and Coarse concrete aggregates. Mark Gaines stated that AGC is concerned about its use. Greg M<sup>C</sup>Kinnon indicated there are two uses; Crush it for concrete aggregate and mineral aggregate or wash the paste out concrete and reuse the aggregates. Bruce Chattin stated that pH is the concern, measuring the rubble or pavement on site is misleading. How do we manage on-site use? David Jones stated we have 25% usage goal and he stated that WSDOT may set goals higher or lower on WSDOT projects in specific areas based on availability. Bruce indicated there is a high availability of recycled concrete in the Puget Sound area and NE Washington in the Colville area. Greg M<sup>C</sup>Kinnon stated that ideally re-using plastic concrete (returned) is easier to manage pH and water usage. Between 5 to 7% is shipped back to the supplier and 98% of that is cured concrete. Mark Gaines stated that goals would be set depending on the location of the project. Mark recommended that Class 3000 and control density fill (CDF) would be good products to use recycled concrete. Greg M<sup>C</sup>Kinnon stated there is not enough volume for Class 3000, due to the AASHTO No. 57 grading. PCCP is the best place to use this material. David Jones explained that we will be working with American Concrete Pavement Association and WSDOT Pavement Team to discuss the use of recycled concrete. Greg M<sup>C</sup>Kinnon explained that paving concrete uses AASHTO gradings No.467, No.4, and No.57 and the big markets are WSDOT, City of Seattle, King County, Snohomish County, and Pierce County. Mark Gaines asked if there was a cost savings using recycled concrete. Greg M<sup>C</sup>Kinnon stated "yes". Bruce Chattin stated that using recycled concrete is a necessity. Greg M<sup>C</sup>Kinnon asked WSDOT what is the risk using recycled concrete in structural applications such as Noise Walls. Mark Gaines stated he could see recycled aggregates used in footings. Greg M<sup>C</sup>Kinnon asked WSDOT what is risk of using recycle concrete in structures. Mark Gaines stated the following;*

- I don't know, we don't have data for these applications.*
- We have models of elasticity, but we don't have any historical data.*
- We need a bigger discussion on this topic.*

*Tom Weist of Oldcastle asked Mark if we should use the same process as we did with Self-Consolidating Concrete. Mark said this might be a good route to go. Bruce Chattin ended this*

*discussion with the following statement; CDF and commercial concrete will not help WSDOT achieve its recycling goals.*

*3/4/2015 – David Jones of the WSDOT State Materials Laboratory explained that commercial concrete is a good application to use recycled concrete. He also explained there has been research using recycled concrete aggregates in pavement. Bruce Chattin explained that the concept of recycling is getting a better view. David Jones suggested that small groups be formed to address the different uses of recycle concrete and reclaimed aggregate. WACA explained that other entities (Local Agencies, Industry, and Commercial) don't understand commercial concrete and they think it is class 3000. Bruce Chattin asked about using recycled in other mixes. David Jones explained that structural concrete would not be a good fit. WACA indicated that most of their work is structural concrete. WACA also stated that pavement would be good application for recycle concrete and reclaimed aggregate. David Jones asked if some of their members could review the specification that WSDOT has drafted. WACA asked if these new specification would be revised to address reclaimed aggregates. David Jones answered "yes". WACA also stated that City of Seattle will allow 10% recycle. Concrete suppliers have tried guarantees for using recycled materials in pavement in the City of Seattle but this has not gone very far. WACA stated that City of Seattle is the largest paving market in Washington and recommends that WSDOT make contact with them. David Jones asked WACA to provide contacts from Seattle.*

### **Concrete Mix Designs on Qualified Products List – David Jones**

*6/3/15 – David Jones of the WSDOT handed out the drafted specifications for Section 5-05.3(1) and 6-02.3(2)A and QC XX Standard Practice for Concrete Mix Designs to the WACA group and he asked for input from the group. David explained there will be two processes for approval of concrete mix designs; 1) Review thru the Project Engineer. 2) Or thru the QPL. Tamson Orps of CalPortland stated that we have a hard time getting strength data from the Project Engineer Offices. David Jones explained that strength data can be acquired through the SAM program for statistically accepted concrete mixes, such as Design Build and Portland Cement Concrete Pavement projects. He also mentioned that MATS has the ability to create an email list for test reports. Contact your local project office through the Contractor and ask to be added to the list. WACA indicated they want the actual test report. David Jones explained this information is in MATS and at this time Contractor do not have the ability to access MATS. David Jones stated the he would look into allowing Contractor the ability retrieve test reports from MATS. Tamson Orps stated that WSDOT does not address yield adjustments. Bruce Chattin stated we need latitude for change. Allan Kramer of Lehigh NW Cement Co. stated that a producer should be able to explain change and have time for change. David Jones ended session by reminding the group to review the revisions and QC XX and their input is important.*

*3/4/15 – David Jones explained the process of listing concrete mix designs on the QPL. Mix designs that are listed on the QPL will be approved for five years if there are no changes to the mix design. WACA asked if the WSDOT laboratory will verify the mix designs. David Jones stated "no" the process will be the same except the review of the mix designs will be performed by the WSDOT's QPL Engineer. Bob Raynes of Cemex stated that ODOT verifies mix designs*

which can be used on multiple projects. David Jones indicated we are in the process of drafting these requirements.

### **Issue: Pumping – Bruce Chattin**

6/3/15 – Bruce Chattin updated the group about the second meeting with AGC. Bruce indicated that pre-construction meetings are very important and seemed to reduce the problems. Bruce brought up the following points of concern;

- Pre-construction meetings
- The Supplier, Pumper, and Contractor need to work together.
- There are no specification requirements on pumping. The guidance there is pertains to safety and maintenance only.
- The concern with pumping is air.

Mark Gaines stated there are things we can do. We would allow the air to go down to 3% if the mix design satisfies freeze/thaw requirements. Tamson Orps of CalPortland indicated it was not uncommon for the first truck to get rejected because WSDOT is testing pump truck slurry. Bruce Chattin stressed that the Contractor needs to be part of the process. Mark Gaines stated that we have the requirements for pre-pour meetings, does this need to occur before every pour. Bruce Chattin indicated there are changes every day. Mark Gaines asked WACA to look at the specification requirements and provide input. Bruce stated we need clarity in the specifications. Mark Gaines indicated that we need feedback. Greg M<sup>C</sup>Kinnon of Stoneway explained the challenges they had on a project that changed pump trucks which caused the concrete to go out of specification compliance. Mark Gaines indicated this is something we can address.

3/4/15 – Bruce Chattin indicated that some headway has been made in this area. The American Concrete Pumping Association (ACPA) is also concerned about quality. Bruce explained that the ACPA certification addresses maintenance and safety but not quality. The pumpers will be at the AGC meeting this April.

12/3/14 – David Jones indicated that he did not want to discuss this topic since Mark Gaines from the WSDOT Construction office was not in attendance. Mark had been working with WACA on this topic. Bruce Chattin informed the group about ACPA (American Concrete Pumping Association) program certification. Bruce briefly explained the requirements of this certification. He recommended that WSDOT require this certification for concrete pumping. Pump operators have to learn about sampling and testing concrete. Bruce Chattin stressed that the following points need to be required; Safety, Sampling, Certification, Pre-Construction meetings, and Shared responsibility.

### **Issue: Quality Control Plans – David Jones**

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

6/3/15 – David Jones asked WACA for input on Quality Control Plans for concrete mix and aggregates.

3/4/2015 – David Jones explained the status of WSDOT's adoption of the WAQTC system. David explained that WSDOT IAIs (Independent Assurance Inspectors) will be WAQTC qualified by this fall. The IAIs will qualify WSDOT testers in WAQTC test methods and the goal is have this completed by 2018. David Jones also explained that ACI certification will be accepted for concrete testing. David Jones stated that we anticipate that we will need a partner from the AGC to assist in qualifying Contractor personnel. David Jones explained by 2017 most of WSDOT will be WAQTC qualified and then WSDOT will have an interest in quality control plans from concrete suppliers.

12/3/14 – David Jones explained that requiring QCPs from industry will be sometime after 2018. WSDOT's goal is get all of the department's testers WAQTC qualified by 2018. WACA asked if ACI qualifications would be recognized by WAQTC. David Jones stated yes for concrete testing. WACA indicated that ACI also addresses aggregate testing. David Jones explained what states are participating in WAQTC and what the WSDOT systems would look like. Bruce Chattin stated that WACA would like to participate in these meetings and we have very talented people within our organization and we could help. David Jones explained that currently WSDOT has two programs; Design Build and Design Bid Build and WSDOT needs them to do the same thing. Bruce indicated that WACA would like to assist in the ACI portion of this program. He also asked David to send him list of WSDOT personnel who would be interested ACI certification. David Jones indicated that would be WSDOT's Regional Materials Engineers. David Jones reminded the group that WSDOT is just looking at adopting WAQTC test methods for field testing only.

**Issue: Type IL Cement**

6/3/15 – David Jones informed WACA the specification for Type IL cement will be in the August amendments.

***This issue has been resolved.***

3/4/2015 – David Jones handed the group a drafted specification for Section 9-01.2(4) that incorporated Type IT(PX)(LY), Type IT(SX)(LY), and Type IL(X), see attached. David indicated he wanted WACA's input. WACA asked if they could comment. David responded with "yes" but you have till June. Rob Shogren of Lafarge stated the revised specification looks good to him, but reminded the group there could be some ASTM revisions.

12/3/14 – Mike Polodna presented the revisions to Section 9-01.2(4) Blended Hydraulic Cement of the Standard Specifications. This section has been expanded to include; Type IP(X)(MS), Type IS(X)(MS), Type IT(PX)(LY), Type IT(SX)(LY), and Type IL(X). Mike Polodna explained the reason for these revisions. Monica Jones of Lafarge Cement indicated some concerns with these revisions. She explained that they were unable to get this material to pass the requirements indicated in the revision. Monica also explained there has been some additional research performed in this area. Mike Polodna asked if she could send this information to him. Monica reported having received a text from Rob Shogren of Lafarge in which he stated that Lafarge was Ok with the proposal.

**Issue: 4 X 4 Concrete Mixes – Peter Balick**

*Peter stated that when using 4 X 4 concrete mixes on panel replacements the mix sets up so quickly that there is no time to have both the contractor and WSDOT do much testing. It was suggested that a test panel could be required and that these issues could be addressed in a special provision.*

*6/3/15 – David Jones state that it was the opinion of the ACPA that these mixes should require air and therefore we would be dropping this item form the agenda.*

***This issue has been resolved.***

*3/4/2015 – WACA member stated that we have been using 4x4 mixes for many years, primarily for emergency work. David Jones asked the group if 4x4 mixes can fit under Section 9-20 of the Standard Specifications. Bob Raynes commented that 9-20 requires 3000 psi in 3 hours and that requirement is pretty tough for a concrete to meet. Maybe the upper limit for air should not be restricted if you are making strength.*

*12/3/14 – David Jones asked the group is this a proprietary concrete mixture? If so should this material be listed under Section 9-20 Concrete Patching Material, Grout, and Mortar of the Standard Specifications? WACA stated there is no consistency in measuring the air. David Jones asked if this material could handle the freeze thaw durability in accordance with ASTM C 666. (Note: 4 x 4 Concrete Mixes have little or no air.) David Jones asked the group has this material been evaluated under Section 9-20 of the Standard Specifications. The difference of materials specified in Section 5-01 Cement Concrete Pavement Rehabilitation and Section 9-20 is material under Section 5-01 require testing and materials listed under 9-20 that are listed on the Qualified Products List are accepted in accordance with Section 1-06.3 Manufacturer’s Certificate of Compliance.*

*WACA explained since we are not doing any concrete pavement at this time we are not willing to submit this material through the QPL process to see if it would meet the requirements of Section 9-20.*