WACA/WSDOT Meeting
Minutes for Tuesday, December 8, 2009

Attendees:
Dave Burg, Ashgrove
Scott DiLoreto, BASF
Steve Ford, Miles Sand & Gravel
Kurt Williams, WSDOT
Dave Heizenrader, WSDOT
Mohammad Sheikhzadeh, WSDOT
Mike Tomlinson, American Rock Products
Louie Bayless, CalPortland
Jim Burnett, Renton Concrete Recycling, Iron Mtn Quarry
Dick Boss - Cadman
Anthony Sarhan, FHWA
Neil Guptill, CalPortland
Jimmy Blais, Stoneway
Craig Matteson, Central Pre-Mix
Mike Polodna, WSDOT
Jeff Huff - Corliss

Location:  WACA’s office, 22223 7th Ave. South, Des Moines, WA, 98198

Next WACA Meeting Date:
Thursday, March 4, 2010 at WSDOT HQ Mats Lab, Main Conf Room, 9:30 am to noon

Future WACA Meetings Dates:
Tuesday, June 22, 2010, at WACA’s Office in Des Moines, 9:30 AM – 12:00 Noon
Wednesday, September 22, 2010, at WSDOT HQ Mats Lab, Main Conf Room, 9:30 AM – 12:00 Noon
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 S.
Develop performance specification parameters for concrete that can be developed into specifications.

12/8/09 – Mo reported that it will take 2 – 3 months to resolve internal WSDOT issues and mentioned it would help if WACA stated an opinion on the performance concrete specification.

Action Plan: Further discussion at March 2010 WACA meeting– Mo S.

Issue: Degradation for concrete Aggregate/Base Course – Kurt W.
A research study is on-going to test the effect of using aggregate with low degradation values in concrete mixes.
12/08/09 – Kurt reported that the study will be continued. A second round of testing is being done with a 50 degradation aggregate will be sampled and sent to WSU. Support for continuing the study was expressed by Craig Matteson and Louie Bayless.

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

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

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.

12/8/09 – Kurt reported that the changes will be in the 2010 Standard Specifications. There was discussion that a 4000D mix still requires a minimum of 660 pounds of portland cement in addition to fly ash or slag used to mitigate for Alkali Silica Reactivity. The group discussed and Kurt and Mo agreed that the specifications needs to be updated to allow fly ash and slag to replace portland cement and will draft an amendment and distribute at the next WACA meeting.

**Action Plan:** Kurt and Mo will draft an amendment and distribute at the next WACA meeting.

**Issue:** Select Borrow – Craig Matteson

9-03.14(2) Select Borrow

Material for select borrow shall consist of granular material, either naturally occurring or processed, and shall meet the following requirements for grading and quality:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot; square</td>
<td>100</td>
</tr>
<tr>
<td>3&quot; square</td>
<td>75-100</td>
</tr>
<tr>
<td>U.S. No. 40</td>
<td>50 max.</td>
</tr>
<tr>
<td>U.S. No. 200</td>
<td>10.0 max.</td>
</tr>
<tr>
<td>Sand Equivalent</td>
<td>30 min.</td>
</tr>
</tbody>
</table>

All percentages are by weight.

1For geosynthetic reinforced walls or slopes, 100 percent passing 1¼-inch square sieve and 90 to 100 percent passing 1-inch square sieve.

2100 percent shall pass 4-inch square sieve and 75 to 100 percent shall pass 2-inch square sieve when select borrow is used in the top 2-feet of embankments or where Method C compaction is required.

12/8/09 – Kurt noted he had discussed the issue with Jim Spaid, WSDOT State Construction Engineer, Roadway, and Jim Spaid deemed that the practice is contractually allowed as there is a benefit to the state with cheaper materials prices.

**Action Plan:** Issue resolved.

**New Issue:** Section 9-01.2(1) Portland Cement Processing Additions – Kurt

Currently the 2009 versions of AASHTO M 85 and ASTM C 150 Standard Specification both allow up to 5% inorganic processing additions and 1% organic processing additions. Propose
updating current WSDOT Specification for Portland Cement by removing limitations on processing additions and just refer to AASHTO M 85 and ASTM C 150.

Understand from NCHRP REPORT 607 Specifications and Protocols for Acceptance Tests on Processing Additions in Cement Manufacturing materials most likely to be used as inorganic processing additions are limestone, fly ash, bottom ash, slag, cement kiln feed, cement kiln dust, and calcined byproducts (Dhir, 1994, Rosani, 2003); of these, limestone, raw meal, and cement kiln dust are most frequently used.


5.1.4 Inorganic Processing Additions—The amount shall not be more than 5.0 percent by mass of cement. Not more than one inorganic processing addition shall be used at a time. For amounts greater than 1 percent, they shall have been shown to meet the requirements of Specification C 465 for inorganic processing additions in the amount used or greater. If an inorganic processing addition is used, the manufacturer shall report the amount (or range) used, expressed as a percentage of cement mass, along with the oxide composition of the processing addition.

5.1.5 Organic Processing Additions—They shall have been shown to meet the requirements of Specification C 465 in the amounts used or greater and the total amount of organic processing additions used shall not exceed one percent of the weight of portland cement clinker.

The current 2010 Standard Specifications section 9-01.2(1)Portland Cement states the following and places limits on processing additions beyond AASHTO and ASTM.  (Note the bold and highlighted wording is already in the specifications and will be deleted with this change.)

Section 9-01.2(1)Portland Cement

Portland cement shall meet the requirements of AASHTO M 85 or ASTM C 150 Types I, II, or III portland cement, except that the cement shall not contain more than 0.75 percent alkalis by weight calculated as Na20 plus 0.658 K20 and the content of Tricalcium aluminate (C3A) shall not exceed 8 percent by weight calculated as 2.650A1203 minus 1.692Fe203.  Processing additions shall meet the requirements of ASTM C 465 and the total amount of processing additions used shall not exceed 1% of the weight of portland cement clinker.  Cement kiln dust may be used as a process addition above 1% but not exceed 4% of the weight of portland cement clinker.  When process additions greater than 1% are used the type and amount of processing additions used shall be shown on mill test reports.  The time of setting shall be determined by the Vicat Test method per AASHTO T 131.

12/8/09:  Kurt reviewed the information in the notes above and noted that AASHTO M 85 and ASTM C 150 Standard Specifications for Portland Cement are the same and allow the same amount of processing additions.  Kurt asked if there were any concerns with deleting the processing additions limitations (bold underline text above) from the WSDOT Standard Specification for Portland Cement and have the specification just refer to AASHTO M 85 and ASTM C 150.  The group discussed briefly and agreed with the proposal.  Dave Burg stated that inorganic additions (fly ash, slag, etc) would be reported on the mill cert.  (Kevin Wolf, not present at the meeting, requested via email that the C3A calculation be deleted as it is redundant.
and covered in the AASHTO and ASTM standards. This proposal was incorporated into the
draft change.)

The updated draft specification for Section 9-01.2(1) is shown below:

9-01.2(1) Portland Cement

Portland cement shall meet the requirements of AASHTO M 85 or ASTM C 150 Types I, II, or III Portland cement, except
that the cement shall not contain more than 0.75-percent alkalies by weight calculated as Na₂O plus 0.658 K₂O and the content of
Tricalcium aluminate (C₃A) shall not exceed 8-percent by weight calculated as 2.650Al₂O₃ minus 1.692Fe₂O₃. Processing,
additions shall meet the requirements of ASTM C 465 and the total amount of processing additions used shall not exceed 1­
percent of the weight of Portland cement clinker. Cement kiln dust may be used as a process addition above 1-percent but not
exceed 4-percent of the weight of Portland cement clinker. When process additions greater than 1-percent are used, the type and
amount of processing additions used shall be shown on mill test reports.

The time of setting shall be determined by the Vicat Test method per AASHTO T 131 or ASTM C 191.

Action Plan: Kurt will proceed with the changes, issue complete.

New Issue: Recycled Material used in Aggregates - Jim Burnett

Jim Burnett with Iron Mountain Quarry has asked about forming a group to look at updating
Section 9-03.21 Recycled Materials in the WSDOT Std Specs. Jim gave a presentation on the
subject. He is looking for guidance on how to proceed with getting the material approved for use
on transportation projects. Kurt noted that his is proposing a subcommittee to review the
recycled material specification and wanted to know if there are members in WACA that would be
interested in being on the subcommittee. Craig Matteson and Dick Boss volunteered to be on a
committee to review the matter. Kurt said he would send out an email with the meeting notes
requesting volunteers from WACA for this subcommittee and asked that people interested
respond to that email.

Action Plan: Kurt will send an email requesting volunteers for the sub-committee.

Discussion Item: 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.

Discussion Item: Standard Specification 9-03.4(2) Grading and Quality – Louie Bayless

Louie stated that the can only make crushed screenings effectively in 3/8 - #10. Other sizes are
difficult to make. Kurt will refer the matter to Jeff Uhlmeyer who is on the BST Committee and
will let Louie know when the next committee meeting is.

(Note: The gradations for the BST specification were updated in the 2010 Standard
Specifications and Kurt sent an email to Louie Bayless on 12/22/09 requesting he review the
updated specification to see if that addresses the issue or creates other problems.)

Action Plan: Kurt will update WACA send an email requesting volunteers for the sub-
committee.
Discussion Item: Blending Aggregate from Different Pits – Dick Boss
Dick stated that concrete mixes are being rejected because they are blending aggregate from different pits. Kurt asked Dick to send the mix designs to Mike so that he can investigate.