

SUBCOMMITTEE ON MATERIALS
2018 Annual Meeting – Westin Cincinnati, Ohio
Thursday, August 9, 2018
10:15 – 12:30 PM EST

TECHNICAL SECTION 3b
Fresh Concrete
Minutes

TS 3b 2018 Annual Meeting Summary		
Meeting Date:	8/9/2018	
Items approved by the TS for Committee and or Technical Subcommittee Ballot:		
Standard Designation	Page Numbers/Section Titles for Proposed Changes in Minutes	Technical Subcommittee and/or Committee?
M 295	Item A, 3 in minutes. Table 1 has been edited to include a Calcium Oxide requirement and to remove Class C from Note 3. In addition, the total oxides limit for F has been changed from 70 to 50. This harmonizes this standard with the ASTM standard.	Concurrent
M 302	Changes to harmonize with ASTM. See Item B in Minutes.	Concurrent
R 29	Revise in accordance with recommendations from WAQTC. See Item C in minutes.	Concurrent
T 121	Revise in accordance with recommendations from WAQTC. See Item C in minutes.	Concurrent
T 152	Revise in accordance with recommendations from WAQTC. See Item C in minutes.	Concurrent
New Task Forces Formed:		
Task Force Name	Summary of Task	Names of TF Members
TF 18-01	Review M 157 for harmonization with ASTM C94.	New York, Ohio, Texas, Nebraska, Oklahoma
Other Action Items:		
Maria Knake will talk to Steering Committee about the possibility of electronic approval of minutes.		

I. Call to Order and Opening Remarks

The chair thanked members and guests for their attendance. We are hoping for a lively discussion on fly ash today.

II. Roll Call

Individual Name	Agency Name	Attendance
Syslo, Mick	Nebraska Department of Transportation	X
Ingram, Steven	Alabama Department of Transportation	X
Burch, Paul	Arizona Department of Transportation	X
Lauzon, Robert G	Connecticut Department of Transportation	
Khan, Wasi U	District of Columbia Department of Transportation	X
DeFord, Harvey Dale	Florida Department of Transportation	X
Wu, Peter	Georgia Department of Transportation	
Ikehara, Brian	Hawaii Department of Transportation	
Santi, Mike J	Idaho Transportation Department	X
Tobias, Daniel H	Illinois Department of Transportation	
Barezinsky, Richard A	Kansas Department of Transportation	X
Myers, Allen H	Kentucky Transportation Cabinet	
Barot, Sejal	Maryland Department of Transportation	X
Staton, John F.	Michigan Department of Transportation	X
Turgeon, Curt	Minnesota Department of Transportation	X
Trautman, Brett Steven	Missouri Department of Transportation	
Tedford, Darin P	Nevada Department of Transportation	X
Boisvert, Denis M.	New Hampshire Department of Transportation	
Streeter, Donald	New York State Department of Transportation	X
Miller, Daniel Ian	Ohio Department of Transportation	X
Seward, Kenny R.	Oklahoma Department of Transportation	X
Lane, Becca	Ontario Ministry Of Transportation	X
Feller, Joe J.	South Dakota Department of Transportation	
Lane, Danny L.	Tennessee Department of Transportation	X
Andrus, Scott S	Utah Department of Transportation	X
Babish, Charles A.	Virginia Department of Transportation	X
Williams, Kurt R	Washington State Department of Transportation	X

III. Approval of Technical Section Minutes

A motion was made by Oklahoma and a second by New York. The minutes were approved without correction.

IV. Old Business

A. Review of Ballots

- M 302 - Standard Specification for Slag Cement for Use in Concrete and Mortars – Passed with no negatives
- T 119 – Standard Method of Test for Slump of Hydraulic Cement Concrete – 1 Negative Addressed
There was a negative on Note 6. The ballot has passed and the negative will not be addressed at the discretion of the TS chair.

V. New Business

A. Task Force – Mick Syslo

- NCHRP 10-104
<https://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=4565>
This task group formed after a survey of agencies regarding their concerns with fly ash. 80% of those states that responded indicated that they had concerns regarding their fly ash supply. Members include Oklahoma, Nebraska,

Michigan, Ohio, and Texas. The task force is working to harmonize with ASTM standards. Andy Naranjo is representing AASHTO on this effort and Larry Sutter from ASTM (co-chairs).

2. Harmonization Committee – Andy Naranjo (AASHTO)/Larry Sutter (ASTM)

Andy Naranjo gave a brief presentation (attached to minutes)

- The group has had three conference calls (May, June, and July)
- A report was given at ASTM in June by Larry Sutter
- A draft ballot has been developed for TS 3b
- Differences between the two standards have been identified.
- ASR Mitigation: M295 requires the use of C441 (this should probably be changed), and C618 refers to C1778.
- M295 does not refer to R80 for ASR mitigation
- Decisions still need to be made on how ASR will be handed in the specs.
- Andy briefly discussed the draft ballot. ASTM recently passed a ballot where the requirement for classifying fly ashes has been added.
- An administrative negative is in place in ASTM to hold the item until AASHTO has a chance to review.

Larry Sutter gave a brief effort on the work being done at ASTM on this issue:

- Mr. Sutter covered some recent changes that have taken place in ASTM
- Eliminated the Effectiveness in Controlling ASR requirement and replaced with direction to ASTM C1778, while retaining the test method in ASTM C311.
- The classification criteria has changed- based on calcium oxide content. Calcium oxide content determines the properties of the fly ash. Performance of fly ash correlates with calcium oxide content. This has a minimal impact on the classification of current sources.
- There is pending action (ballot currently open) on ASTM C618, which includes a water requirement report only. High water demand in a concrete problem, not solely a reason to reject a material- this prevent rejection of potentially good materials.
- Future discussions are going to take place on the tolerances for CaO and raising the minimum on the sum of the oxides.
- Changes are being considered to ASTM C1697 to allow for blending off-spec materials in order to meet the specification.
- Changes are being considered to ASTM C311 to add an appendix describing the method for calculating SCM efficiency. In addition, language regarding equivalent for total alkali will be clarified.
- Distant horizon for ASTM consideration: soundness, increase in drying shrinkage, certification of chemical analysis for C311, other changes to harmonize with AASHTO.

3. M 295 Andy/Larry

- Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete

A document regarding proposed changes to M 295 were shared with the subcommittee through email prior to the meeting and were briefly reviewed. Table 1 has been edited to include a Calcium Oxide requirement and to remove Class C from Note 3. In addition, the total oxides limit for F has been changed from 70 to 50. This harmonizes this standard with the ASTM standard. There was some discussion that states will have to change their state specifications. This is the way that the industry is moving, and this change is a move towards a performance-based specification.

A motion was made by Texas and a second by Oklahoma to send changes to concurrent ballot. The motion passed unopposed.

4. Ground Bottom Ash Milling – Ivan Diaz (NEW)

A brief presentation (attached) was given by Mr. Diaz on Ground Bottom Ash for Use in Concrete as Pozzolon.

- Ground bottom ash is a coal burning by product, material collected from the bottom of the furnace, fly ash particles that have been fused together.
- It is a granular material, microscopically is has glassy angular particles.
- We are producing millions of tons of bottom ash every year, but we are only using about 20% of it efficiently.
- The material that is used is typically used as feed for clinker, fill/embankments, concrete products, and other applications.
- The material is milled to reduce the size of the fused particles to unlock pozzolonic activity.
- In terms of chemical composition, they are similar to fly ash. Iron content is a little higher in bottom ash, and alkali content is a little higher as well (by a few percentage points)
- In terms of mineralogy, there is less amorphous content. There is 60 to 90% of what would be seen in a companion fly ash.
- A great deal of testing on the viability of bottom ash, including strength, Ca(OH)_2 content, calorimetry, ASR mitigation.
- The advantages of using bottom ash is increasing Pozzolonic ash output and increasing consistency.
- It was proposed that this material be included in M295/C618 (fourth category- Class B). The title of the standard would need to be revised, as well as the scope. A new description for the material and the specification requirements would need to be modified in the tables.

Discussion:

- Some states have reviewed bottom ashes previously. There is more iron oxide and heavy metals that are potentially hazardous included. This is dependent upon what else is burned with the coal. Is this still an issue and if so how will it be mitigated? Environmental regulations, especially those involved with water transport don't even allow fly ash because of concerns over leaching.
- Is there a correlation between the quality of the fly ash and the quality of the bottom ash? What has been seen is that on the same particle size distribution, your top of the line fly ash, we have seen high calcium bottom ash do better than the fly ash- possible because of the greater surface area of the particles.

B. Discussion on M 302 – John Melander

- Standard Specification for Slag Cement for Use in Concrete and Mortars
Mr. Melander gave a brief presentation on a summary of changes to ASTM C989 (attached)
 - The changes are for consideration as changes to M 302 as well.
 - Slag cement is a non-metallic product, granular material, from an iron blast furnace, that is ground in a way similar to a Portland cement. It is a cementitious material.
 - Slag cement is a constituent of a blended cement (AASHTO M 240), or as an SCM in concrete (AASHTO M 302).
 - Recent changes to C989 include revisions to Sections 10 and 12 to clarify testing and reporting requirements, revise Appendix X4 (Mill Test Report) to be consistent with other sections of the standard, editorial changes to update ACI 233R reference, as well as other minor improvements and clarifications.
 - It is proposed that similar changes be made in M 302
 - i. Section 10: including minor revisions to embedded SAI method reporting, including test for calcium sulfate expansion of mortar by ASTM C1038, determination of aluminum oxide content of slag cement by T 105
 - ii. Section 12: Clarify and simplify text, require manufacture furnish test report when requested, new Note that references Appendix X4
 - iii. New Appendix X4: Provide info on the example test report similar to what is in M 85
 - A ballot has been circulated to the subcommittee. It has been updated slightly to add a Note 11, as described above.

A motion was made by New York and a second by Maryland to move this item forward for concurrent ballot. The item passed unopposed.

C. New Standard Proposed Changes – Scott Andrus

WAQTC has recommended changes to the following standards:

1. R 039 - Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory
2. T 121 M/T 121 - Standard Method of Test for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
3. T 152 - Standard Method of Test for Air Content of Freshly Mixed Concrete by the Pressure Method

The changes proposed were briefly reviewed during the meeting. There was some brief discussion regarding the language in R 39 Note 1, which prefers to programs outside of AASHTO and ASTM. This language is in a note and can be modified editorially. A motion was made by Utah to send the proposed changes to R 39, T 121, and T 152 to concurrent ballot with editorial changes to Note 1 in R 29 and a second by Oklahoma. The motion passed unopposed.

D. AASHTO Resource - Observations from Assessments?

Jan Prowell from CCRL is present this week and is available to answer questions about their Inspection and Proficiency Sample Programs.

E. Standards Requiring Reconfirmation (AASHTO Resource)

Designation	Title	ASTM Equivalent
M 205M/M 205-11	Molds for Forming Concrete Test Cylinders Vertically	C470/C470M-09
M 295-11 (2015)	Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete	C618-12a
T 158-11 (2015)	Bleeding of Concrete	C232/C232M-09
T 196M/T 196-11 (2015)	Air Content of Freshly Mixed Concrete by the Volumetric Method	C173/C173M-10
T 197M/T 197-11 (2015)	Time of Setting of Concrete Mixtures by Penetration Resistance	C403/C403M-08
T 309-15	Temperature of Freshly Mixed Portland Cement Concrete	
T 318-15	Water Content of Freshly Mixed Concrete Using Microwave Oven Drying	

F. Research Proposals

- Full NCHRP RPS

G. NCHRP Topics

VI. Open Discussion

Colin Lobo from NRMCA gave a brief update on ASTM C94. He briefly discussed harmonization with M157. A new Task Force, TF 18-01, was formed to review M 157 and compare to ASTM C94. A conference call will be set up shortly for the task force to discuss. Task Force Members include: New York, Ohio, Texas, Nebraska, Oklahoma.

Approval of Minutes: Can the meeting minutes be approved online or through email before the next meeting? Maria will check with the Steering Committee to see if this is in accordance with COMP bylaws or if a change to the bylaws can be made.

VII. Adjourn

A motion was made by New York and a second by Texas to adjourn the meeting. The meeting adjourned at approximately 11:45 AM.



SUBCOMMITTEE ON MATERIALS 2017 MINUTES

2017 Annual Meeting – Phoenix, AZ

Monday August 7, 2017

10:15 – 11:15 AM EST

TECHNICAL SECTION 3b
Fresh Concrete

Chair Mick Syslo (NE)
Vice Chair Wally Heyen (NE)

VIII. Call to Order and Opening Remarks

A. Brief summary of activities

IX. Roll Call

Mick	Syslo	Nebraska Department of Roads	NE	
Becca	Lane	Ontario Ministry Of Transportation	ON	
Brett	Trautman	Missouri Department of Transportation	MO	
Daniel	Tobias	Illinois Department of Transportation	IL	
Daniel	Miller	Ohio Department of Transportation	OH	
Denis	Boisvert	New Hampshire Department of Transportation	NH	
Kenny	Seward	Oklahoma Department of Transportation	OK	
Richard	Barezinsky	Kansas Department of Transportation	KS	
Robert	Lauzon	Connecticut Department of Transportation	CT	
Steven	Ingram	Alabama Department of Transportation	AL	
Sejal	Barot	Maryland Department of Transportation	MD	
Darin	Tedford	Nevada Department of Transportation	NV	
Charles	Babish	Virginia Department of Transportation	VA	
Danny	Lane	Tennessee Department of Transportation	TN	
Donald	Streeter	New York State Department of Transportation	NY	
Joe	Feller	South Dakota Department of Transportation	SD	
Mark	Felag	Rhode Island Department of Transportation	RI	
Michael	Santi	Idaho Transportation Department	ID	
Peter	Wu	Georgia Department of Transportation	GA	
Wasi	Khan	District of Columbia Department of Transportation	DC	
Kurt	Williams	Washington State Department of Transportation	WA	
Greg	Stellmach	Oregon Department of Transportation	OR	
Paul	Burch	Arizona Department of Transportation	AZ	
Brian	Ikehara	Hawaii Department of Transportation	HI	
Michael	Bergin	Florida Department of Transportation	FL	
Allen	Myers	Kentucky Transportation Cabinet	KY	
John	Staton	Michigan Department of Transportation	MI	
Curt	Turgeon	Minnesota Department of Transportation	MIN	
Scott	Andrus	Utah Department of Transportation	UT	
Darren	Hazlett	Texas Department of Transportation	TX	

Members present:

SD, RI, GA, AZ, HI, KY, MI, UT, TX, IN, IL, OK, KS, AL, NV, VA, TN

X. Approval of Technical Section Minutes (Mid-year meeting minutes found below)

A. Motion to approve NY; Second, RI. Minutes pass

XI. Old Business

A. SOM Ballot Items

- M 302 : Standard Specification for Slag Cement for Use in Concrete and Mortars (see comments below)

2. Affirmative – 24

3. No Vote – 3

4. Additional change to M 302 – John Melander.

5. Editorial changes will be made moving forward on M 302.

- Mr. Melander addressed suggested changes. A note will provide guidance consistent with T 153 and be consistent with industry practice. Motion to update M302 with Note 8.

- Felag (RI) reminded the group that notes are non-mandatory. Suggested balloting now. RI made motion to ballot concurrently. NY seconds motion. Motion passes.

B. Fly Ash Task Force – Mick Syslo

1. Short Presentations given by Dr. Ley, Dr. Sutter & Dr. Juenger

- Dr. Ley presented about fly ash quality and availability.
 - Used scanning electron microscope to measure size, chemistry, and shape of fly ash.
 - Found 9 fundamental particles common to the 35 different types tested. Introduced “particle model”.
 - Certain particles hurt your strength while others are great for strength.
 - Strength is great, but durability is even more important.
 - Measured compressive strength vs days of hydration. When using the particle model the variability in compressive strength reduced dramatically.
 - Particle model does a better job of predicting performance than Class C or F.
 - Can we take this information in modeling to make better test methods? Hopefully.
 - Steps going forward: address needs and get resources. Please contact Dr. Ley if you’re interested in the research or helping.
 - Dr. Sutter presented on C09.24 update
 - Dr. Sutter updated the group on ASTM standards and where they are going.
 - Trend in switching from CaO rather than sum of oxides
 - How to measure Pozzolanic activity.
 - New standard for alternative supplementary cementitious materials.
 - What to do with natural Pozzolans?
 - Concerns about harmonizing with AASHTO. We should move together in lock step to figure out what to do about Pozzolans.
 - Dr. Sutter updated the committee on changes to the following ASTM Standards: C 618, 295, C 311 and C 1697.
 - Developing a Standard for Ground Glass Pozzolans and Colloidal Silica.
 - Dr. Juenger was not available, but TX covered the material.
 - Texas is looking at different alternatives for SCM’s. Flyash is dwindling.
 - Looking at the classification of fly ash. What should we be looking at?
- C. Mick (NE) asked that these topics be broken into 3 task forces to break apart the work and tackle these issues. 3 task forces including OK, MI, NE to be leading these TFs. States agreed to take the lead on the task forces with researchers.
1. Dr. Sutter would like to see new Standards written. Felag (RI) suggests just one TF rather than 3 to help coordinate getting all the information needed to make a specification.
 2. Concluded that only one TF will be made with new members from OK & MI.

XII. New Business

- A. Moving T 23 from 3c to 3b
1. T 23 – Making and Curing Concrete Test Specimens in the Field
 - Chairs agree that T 23 be moved to 3b. R 39 was mentioned too.
 - RI makes motion, OK seconds. Motion passes. T 23 and R 39 are moved to TS 3b.
- B. T 119 : Slump of Hydraulic Cement Concrete – Scott Andrus (UT)
1. Clarity provided in this method with largely editorial changes. Motion to take to concurrent ballot Andrus (UT); second by Sandoval (AZ). Motion passes.
- C. AASHTO Re:source/CCRL - Observations from Assessments?
1. None

D. NCHRP Issues

1. Fly ash proposal update (RI) – Task force is looking at this topic as well. Should this topic be put on hold for NCHRP? This problem statement will be put on hold for NCHRP.
2. Resistivity problem statement update (Amir Hanna) – Motion to support this problem statement to TS 3c (RI); second by (OK). Motion passes.

E. Research Proposals

- 20-7 RPS
- Full NCHRP RPS
- October 16 is the deadline.

F. Standards Requiring Reconfirmation

1. AASHTO Re:source/CCRL will submit a Fall Ballot for Reconfirmation of required ballots.

G. SOM Ballot Items (including any ASTM changes/equivalencies)

XIII. Open Discussion

XIV. Adjourn 11:27

Action Items

- M 302 will be balloted concurrently
- T 119 will be balloted concurrently