



SUBCOMMITTEE ON MATERIALS

Mid-Year Web Meeting

Wednesday, February 11, 2015

1:00 pm - 2:30 pm EST

TECHNICAL SECTION 5b

ENVIRONMENTAL QUALITY MEASURES

I. Call to Order and Opening Remarks

II. Roll Call

Members and friends in attendance were as follows:

Name	Representing	Email	Membership
Jack Cowsert	NC	jcowsert@ncdot.gov	Chair
Amir Hanna	TRB	ahanna@nas.edu	Liaison
Bob Burnett	NY	Bob.Burnett@dot.ny.gov	Voting
Charlie Pan	NV	cpan@dot.state.nv.us	Friend
David Kaulfers	VA	David.Kaulfers@vdot.virginia.gov	Friend
Georgene Geary	Consultant	ggeary@ggfga.com	Honored Guest
Ian Rish	GA	irish@dot.ga.gov	Friend
Joubert Harris	LA	Joubert.Harris@la.gov	Friend
JT Rabun	GA	JRabun@dot.ga.gov	Voting - Proxy
Mark Felag	RI	mark.felag@hotmail.com	Friend
Matt Mueller	IL	matthew.mueller@illinois.gov	Friend
Michael San Angelo	AK	michael.sanangelo@alaska.gov	Friend
Mick Syslo	NE	mick.syslo@nebraska.gov	Friend
Shovini Dasgupta	ON	Shovini.Dasgupta@ontario.ca	Friend
Steven Kahl	MI	kahls@michigan.gov	Friend
Tracy Barnhart	AMRL	tbarnhart@amrl.net	AMRL Non-Voting

- A. New Vice Chair – There is currently a candidate considering becoming the new Vice Chair, but if there is a negotiation breakdown, anyone else having an interest may contact the Chair (Jack Cowsert)
- B. Requests for Membership Anyone would like to join may contact the Chair.

III. Approval of Technical Section Minutes

Bob Burnett – moved to approve the 2014 meeting minutes

Jack Cowsert – second

Approved unanimously as written.

IV. Old Business

A. SOM Ballot Item

- i. R16 This standard is list of chemicals used in various standards. It became very outdated and was balloted for removal.
 1. Negative from Michigan (Attachment 1) Steven Kale from Michigan spoke; MIOSHA regulations reference this type of information; Bob Burnett suggested finding out if other organizations reference the standard before removing it; would need reconfirmation since it has an '09 date; need someone to look at the current standard and also determine if it's being used – is there any value in keeping it? Steven volunteered to help out and Jack Cowser will also participate – are there any chemists in the states that might be interested? Suggestion made to form a Task Group – “Bob” volunteered to help, Ontario Ministry of Transportation rep will investigate with their organization and will get back to; motion made and seconded to find negative persuasive, which passed unanimously.
 2. Standards referencing R16:
T: 21, 42, 44, 65, 71, 88, 103, 104, 111, 113, 164, 194, 201, 202, 210, 211, 213, 217, 218, 219, 232, 233, 240, 303.
M: 252,278,294,304,330.
R: 59

B. TS letter ballots

- i. Reconfirmation of R8, R21 and R22. The ballot for reconfirmation of these standards closed after the meeting date, but the results are as follows:

C. Task Force Reports None

V. New Business

A. Research Proposals Georgene gave a brief overview of recent research about use of Fly Ash in embankment. Jack was named chair of the ASOM Recycling Task Force since Jim Pappas resigned due to a change in his responsibilities. The Task Force has not been very active recently, so Jack asked for anyone having an interest in supporting it to contact him. Recommendation was made by Matt and Georgene to contact the RMRC which is funded through a Pooled Fund.

- i. Recommendations from Membership Jack is the research liaison for TS 5b, and asked anyone that has ideas for research to contact him
- ii. NCHRP Problem Statement 2016-D-11 (Attachment 2) This Problem Statement is sponsored by TS5b, and Jack asked for support from the States.

B. AMRL/CCRL Issues None.

C. NCHRP Issues Amir Hannah spoke in general terms about research projects and mentioned that the statement which is sponsored by TS 5b is ranked third out of five. Typically 120 statements are received and 40 to 50 are funded.

D. Correspondence, calls, meetings None.

E. Proposed New Standards None.

F. Proposed New Task Forces Previously discussed.

G. Standards Requiring Reconfirmation R16 is the only standard requiring reconfirmation, and the Task Group will handle that.

H. SOM Ballot Items None

VI. Open Discussion

Crickets chirping...no comments.

VII. Adjourn Mark Felag reminded everyone to register early for SOM meeting and to make hotel reservations; meeting adjourned at 1:41 p.m. but some people stayed on the line for Q&A session.

AASHTO Electronic Balloting System
Ballot Summary Report for TS 5b

Ballot Detail

Ballot Number: SOM-14-02

Technical Section 5b

Attachment(s): [TS 5b Final.pdf](#)

Item Number:	106
Description:	SOM ballot item to discontinue R16: Regulatory Information for Chemicals. See page of the 4 of the minutes.
Decisions:	Affirmative: 45 of 53 Negative: 1 of 53 No Vote: 7 of 53

Agency (Individual Name)	Decision
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Michigan Department of Transportation (John F Staton) (statonj@michigan.gov)

R16:29CFR 1910.1200 is an integral part of the Michigan OSHA (MIOSHA) requirements. Regardless of whether or not the information is available on the web, the MIOSHA states that Hazard Communication must be (at least) in conformance with federal regulations. If these requirements are removed, there will be an empty reference in the MIOSHA regulations. Through recent dialogue, it is deemed certain that the MIOSHA will not take it upon itself to modify their regulation simply to accommodate this proposed change. By discontinuing this part of the federal regulations 29CFR, it leaves the Michigan DOT in noncompliance with the MIOSHA. Michigan DOT feels strongly against discontinuation of this CFR requirement.

Negative

I. PROBLEM NUMBER

2016-D-11

II. PROBLEM TITLE (HSOM Rank 3)

Utilizing Technology to Productively Use Marginal Materials

III. STATEMENT OF THE RESEARCH PROBLEM

Over 200M tons of construction debris are landfilled every year worldwide. An additional 50+M tons of coal combustion by-products are disposed in the US, often because they do not meet existing standards (i.e., they are “marginal”). Both examples represent unrealized opportunities for productive reutilization, with potential savings in costs and more efficient allocation of resources.

Advances in nanoscience and nanotechnology can be used to expand upon the productive utilization of marginal and recycled materials in new construction. That is, nanomanufacturing, and nanotechnology-derived processing or processing methods which rely upon nanoscale characterization can be used to transform otherwise waste or marginal materials into components beneficial in transportation infrastructure applications. While such materials may not meet existing prescriptive-based requirements prior to the application of nano-science or nano-technology derived technology, when transformed and/or utilized appropriately, desired performance may be achieved. Such utilization strategies, however, must meet short and long-term performance requirements, be economically viable and contribute to sustainable development.

With hundreds of millions of tons of construction debris and marginal material disposed every year, development of new opportunities for productive reuse in the transportation sector will provide benefits such as:

- Reduction in amounts of material landfilled and stored
- Reduction in mining of virgin materials, leading to a lower resource demand
- Contributions to sustainability by the substitution of virgin materials with lower embodied energy and lower embodied pollution recycled or marginal materials
- Development of new types of materials, which utilize recycled or marginal materials and which find high utilization rates in transportation infrastructure
- Development of new technologies, derived from the growing nanoscience and nanotechnology knowledge base
- Reductions in cost, without sacrificing performance or even enhancing performance.

Given the tremendous amounts of concrete (~25Bt), asphalt (~0.8Bt) and steel (~1Bt) consumed annually, the potential for impact –through even small improvements in cost and environmental footprint – is enormous.

IV. LITERATURE SEARCH SUMMARY

NCHRP Synthesis 435 – Recycled Materials and Byproducts in Highway Applications recently documented in high detail the status of recycling in State DOT applications and even looked at possible modifications to transform marginal materials into suitable materials; but looked mainly at typical methods, such as special stockpiling or cement stabilization. Rather than to incrementally contribute to any of the existing practices, the goal of this research is to spur the identification of new opportunities for use of recycled and marginal materials and to identify new processes for incorporation of recycled and marginal materials which overcome existing barriers to their utilization in transportation infrastructure. Proposed research should be highly innovative, not incremental. In particular, research approaches must take advantage of recent advances in nanotechnology, nanomaterials, and nanomanufacturing to be viewed as innovative.

TRR 2142 identified several potential areas of improvement including nanoporous thin film technology to coat marginal materials and nanomodifiers to improve concrete mixture properties. A review of the Research in Progress (RIP) database identified one project by the Southwest region UTC looking at self-heating and self-healing pavements with nanotechnology, but no projects looking at marginal or recycled materials.

V. RESEARCH OBJECTIVE

The overall objective is to identify and develop new commercially-viable pathways, which apply nanoscience and/or nanotechnology, for increased utilization of marginal and recycled materials. Applications must support needs in transportation infrastructure, in an economical manner and contribute or potentially contribute to sustainable development.

Of interest are recycling of infrastructure materials, including asphalt concrete, portland cement concrete, and structural steel by novel processes or to create new materials. Also of interest, is the productive utilization of marginal materials; these may include industrial by-products which do not meet current prescriptive specifications for reuse, and, materials whose properties or anticipated performance are uncertain and/or variable. The developed materials could be used as a substitute or as an additive to currently used materials used in transportation infrastructure construction. The result will be a documentation of the method and materials identified, including an AASHTO Standard specification for the process.

VI. ESTIMATE OF PROBLEM FUNDING AND RESEARCH PERIOD

\$500,000 and 24 months

VII. PERSONS DEVELOPING THE PROBLEM

TRB AFN15T Task Force on Nanotechnology in Concrete (TF Chair- Georgene Geary, Georgia DOT)

VIII. PROBLEM MONITOR

To be recommended by NCHRP or AASHTO SOM

IX. DATE AND SUBMITTED BY

AASHTO Subcommittee on Materials Technical Section 3c & 5b

Mr. Steven Krebs, Chair Tech Section 3c

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