

**AMERICAN SOCIETY OF HEATING, REFRIGERATING AND
AIR-CONDITIONING ENGINEERS, INC.
1791 Tullie Circle, NE, Atlanta, GA
404-636-8400**

**Technical Committee 4.4
Building Materials and Building Envelope Performance**

These DRAFT minutes have not been approved and are not the official, approved record until approved by this committee.

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TC/TG/TRG MINUTES COVER SHEET

(Minutes of all TC/TG/TRG Meetings are to be distributed to the individuals listed below within 60 days following the meeting.)

TC/TG/SSPC: TC 4.4

TC Title: Building Materials and Building Envelope Performance

Date of Meeting: Monday, June 26, 2017. Meeting convened at 2:15 pm.

Location: Seaside 4B, Long Beach Convention Center, Long Beach, CA

DISTRIBUTION

All members of TC 4.4 plus the following:

TAC Chair

Committee Liaisons

ADDITIONAL DISTRIBUTION

Manager of Standards

Manager of Research and Technical Services

ASHRAE TC 4.4 MINUTES

Building Materials and Building Envelope Performance

1. Introductions/Roll Call/Attendance

The Chair, Peter Adams, called the meeting to order at 2:20pm. Roll call and introductions. A total of 45 committee members, corresponding members and guests were present. A quorum was present with 14 of voting members. Attendance is shown below:

Voting Members and Officers Present:

<u>Name</u>	<u>Affiliation</u>	<u>Role</u>	<u>VM</u>
Peter Adams	Morrison Hershfield	Chair	Voting Member
Richard E Peters	TBS Engineering	Vice Chair	Voting Member
Samuel Glass	USDA Forest Products Laboratory	Research Chair	Voting Member
Alejandra Nieto	Roxul		Voting Member
Achilles Karagiozis	Owens Corning		Voting Member
Manfred Kehrer	WJE		Voting Member
Jan Kosny	Fraunhofer/USA		Voting Member
Patrick Noonan	Knauf insulation		Voting Member
Fitsum Tariku	British Columbia Institute of Technology		Voting Member
Hua Ge	Concordia University		Voting Member
Paulo Tabares	Colorado School of Mines	Program Chair	Voting Member
Stanley D. Gatland, II	Certainteed		Voting Member
Wahid Maref	Ecole de Technologie Superieure		Voting Member
Laverne Dagleish	ABAA	Handbook Chair	Voting Member

Number of voting members present: 14 (0 non-quorum)

Voting Members and Officers Absent

<u>Name</u>	<u>Affiliation</u>	<u>Role</u>	<u>Notes</u>
Theresa A Weston	Dupont	Standards Chair, 90.2	Voting Member
Andreas H Holm	Fraunhofer IBP		VM Non quorum
Carsten Rode	Technical University of Denmark		VM Non quorum

Corresponding/Provisional Members Present (9)

<u>Name</u>	<u>Affiliation</u>
Fiona Aldous (Secretary)	WJE
Marcus V Bianchi	Owens Corning
Huojun Yang	NDSU
Andre Desjarlais	ORNL
Paul H Shipp	USG Corporation
Diana Fisler	Johns Manville
Sam J. Taylor	
Charles Cottrell	NAIMA
Stanley D Gatland, II (160 SubC Chair)	Certainteed Corp

Simon Pallin	ORNL
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Visitors Present (22)

<u>Name</u>	<u>Affiliation</u>
Chris Schumacher	RDH
Deborah Callaway	PABCO Gypsum
Allison Bailes	Energy Vanguard
Jacky Ly	P2S Engineering
Charlie Petty	Lamtec
John G Davis	University of Wisconsin
Michael Huhtala	SGH
Chris Schumacher	RDH
Don Snell	Liberty Building Forensic Group
Ellen Thorp	EPDM Roofing
Julia Park	WJE
Jay Crandell	ARES Consulting
Anthony Fontanini	Fraunhofer CSE
Neal Holcroft	NRC
David Yarborough	R&D Services
Michael Salonvaara	Owens Corning
Kristen Cetin	Iowa State University
Gary Nelson	Energy Conservatory
Charlie Haack	NAIMA
Eric Werling	DOE

2. Review of Agenda/Approval of St. Louis June 25, 2016 Minutes

Peter Adams a motion seconded by Laverne Dagleish to switch point 4. And 6. From the agenda, as Paulo Tabares needs to leave early.

VOTE: For 13, Against 0, Abstaining 1; MOTION CARRIED

The draft minutes from the January 31, 2016 meeting in St. Las Vegas, NV were posted ASHRAE Website for review. Sam Glass made a move, seconded by Peter Adams to approve the Las Vegas meeting minutes.

VOTE: For 13, Against 0, Abstaining 1; MOTION CARRIED

3. Report From the Chair/Membership/Roll-on, Roll-off

Peter announced that he will roll-off as chair and Rick Peter will roll on as chair, Diana Fisler will be vice chair and Manfred Kehrler will be secretary starting by July 1st.

Peter Adams informed the committee that according to the section head meeting many program proposals have been rejected as there are too few spots. It has also been mentioned for the first time that the quality of the proposals have been an issue. Rick Peters mentioned that there are name tags available at the registration desk even for non-registered members. Furthermore the committee agreed to use basecamp as the TC exchange portal. The change will be done by Alejandra Nieto after the upcoming winter meeting.

4. Program Subcommittee

Subcommittee chair Paulo Tabares mentioned that the seminar “Net Zero Energy Buildings: Passive and Net Zero: An Envelope Perspective”, sponsored by TC 4.4 has been accomplished with high attendance. He furthermore mentioned deadlines for papers Houston program is August 28th and for paper for the Chicago program is August 1st.

The committee voted to submit seminars on the following topics for the Chicago conference:

1. “High Performance Envelopes: from Cold to Net Zero”, CHAIR: Marcus Bianchi, Potential speaker Joe Lstiburek, Simon Pallin, Eric Werling. Motion to vote has been moved by Wahid Maref and seconded by Diana Fisler.

VOTE: For 14, Against 0, Abstaining 0; MOTION CARRIED

2. “Modeling Durable Buildings and their Impact to HVAC Systems”, Chair: Paulo Tabares, Potential speaker Simon Pallin, Florian Antretter, Jason Woods, Peter Adams. Motion to vote has been moved by Wahid Maref and seconded by Sam Glass.

VOTE: For 14, Against 0, Abstaining 0; MOTION CARRIED

3. “Air Barriers and HVAC Systems: a Better Marriage”, Chair: Chris Schumacher. Potential speakers Laverne Dalglish, Lorne Ricketts. Motion to vote has been moved by Laverne Dalglish, seconded by Diana Fisler.

VOTE: For 14, Against 0, Abstaining 0; MOTION CARRIED

4. “Why ASHRAE Standard 160 is Critical to Designing High-performance Buildings”, Chair: Diana Fisler, Potential speakers Sam Glass, Stan Gatland, Manfred, Achilles Karagiozis. Motion to vote has been moved by Diana Fisler seconded by Laverne Dalglish.

VOTE: For 14, Against 0, Abstaining 0; MOTION CARRIED

Paulo agreed to will provide templates for the designated speakers.

5. Research Subcommittee

ASHRAE TC 4.4 Research Subcommittee Notes

Sam Glass, Research Subcommittee Chair (svglass@fs.fed.us)

Abbreviations

MORTS = Manager of Research and Technical Services

PES = Proposal Evaluation Subcommittee

PMS = Project Monitoring Subcommittee

RAC = Research Administration Committee

RFP = Request for Proposals

RL = Research Liaison

RP = Research Project

RTAR = Research Topic Acceptance Request

TRP = Tentative Research Project

URP = Unsolicited Research Proposal
WS = Work Statement

News

Current Section 4 RL is Xudong Yang from Tsinghua University; he will be completing his term after the Long Beach meeting. The new Section 4 RL will be Michael Pouchak from Honeywell.

Information conveyed at Research Subcommittee Chairs' breakfast:

- New RTAR and WS forms will soon be posted on the ASHRAE website. They will be Word documents rather than PDFs but will still have limits on the number of words in each section.
- Current meeting: RAC evaluated 7 RTARs (1 accepted, 3 accepted with comments, 3 rejected) and 11 WSs (1 accepted, 7 conditionally accepted, 3 returned); RAC approved one Innovative Research Grants proposal.
- New procedure is established for URPs (guidance on ASHRAE website).
- New procedure for Grants In Aid (10-25 grants awarded each year to full-time graduate students)
- New research projects now require milestones (project tasks tied to percentage of funding) and PMS will be required to report on status of milestones.
- ASHRAE seeking suggestions on improving technology transfer and dissemination of ASHRAE research to membership, local chapters, and industry in "plain English".

Potential future research topics compiled at a previous brainstorming session were prioritized in Las Vegas. The top 10 highest ranking topics were identified and the list of topics was sent to TC members with request for volunteers to develop RTARs.

Project Status Updates

1696-RP

Thermal, Moisture and Air Transport Property Values for New Building and Insulating Materials (WS authors: Alex McGowan, Steve Cornick).

- PMS: Alex McGowan (chair), Sam Glass, Achilles Karagiozis, Theresa Weston
- Three-year project (Sep. 1, 2015 – Aug. 31, 2018)
- Contractor: RDH Building Science Labs, Waterloo, ON, Canada; PI: Chris Schumacher

Properties to be measured include thermal conductivity, heat capacity, density, air permeance, water vapor permeance, liquid diffusivity, moisture storage function, saturation moisture content, solar absorptance, and thermal emittance.

PMS met June 25, 2017. Agreed to meet via teleconference every second Thursday for continual review and discussion of results.

Contractor presented interim results on liquid water uptake and moisture storage function for gypsum with glass-fiber facers and for fiberboard. Discussed the need to confirm that the experimental set points that were defined earlier in the project are appropriate. Discussed the need to provide appropriate descriptions for the specimen categories without using trade names.

Heat capacity, solar absorption and thermal emissivity have not been done yet – will be done by the University of Waterloo around December. Heat capacity measurements require specimens of a meaningful size, which depends on the type of material being tested. Discussed use of heat flow meter instrument to determine thermal diffusivity (and thus heat capacity) from step change experiment.

Roofing specimens will be assembled by professional roofing contractors using standard industry practice, and will be described as such.

For stucco specimens: Contractor proposed one applicator installing three different stucco mixes, (as opposed to three applicators installing one mix).

Contractor presented a Gantt chart showing the project schedule. Wood-based materials took a long time. Cladding and stucco will take the project to the end of the schedule, even using a recommended asymptote approach. May require a no-cost extension, but the Contractor is not requesting one now.

Requests from the Contractor include verification of the analysis methods for calculating liquid diffusivity from liquid water uptake measurements at different initial moisture contents.

1759-TRP

Impact of Air-Flow on Thermal Performance of Airspaces behind Cladding (Phase 1 of 2) (WS authors: Jay Crandell, David Yarbrough, Jonathan Humble). TC voted to accept WS at 2016 annual meeting in St. Louis; submitted to MORTS 2016-8-15. Notification letter from MORTS 2016-10-26: RAC voted to conditionally accept it for bid provided that RAC approval conditions were addressed to the satisfaction of RL. Authors made slight revisions and responded to RAC comments. RL approved 2017-1-19. Revised WS submitted to MORTS 2017-1-20. PES members: Jan Kosny (chair), Jay Crandell, Marcus Bianchi, Hua Ge.

RFP was posted on the ASHRAE website March 15, 2017, with notification sent to potential bidders. Proposals were due May 15, 2017. Expected project duration of 16 months. PES met June 25, 2017, to evaluate proposals.

During executive session at the main TC 4.4 meeting, Sam Glass moved to accept the PES recommendation; Stan Gatland seconded. Vote: 11 for, 0 against, 0 abstaining, 3 absent, CNV.

1718-WS

Development of a Method to Determine the Moisture Transport Properties of a Roof Shingle System under Real Conditions (WS author: Manfred Kehrer; cosponsored by TC 1.12 and SSPC 160). TC voted to accept WS by letter ballot 2015-8-14. Notification letter from MORTS 2015-11-20: RAC voted to return WS with comments. WS should be resubmitted to RAC by 2018-7-1 or will be dropped permanently. Main issues and concerns to be addressed include 1) identify potential co-funding; 2) supply list of bidders; 3) WS should cover ASTM E96 and how it relates to this project; 4) barely a majority of the TC in favor; 5) provide more guidance on test method for task 2. If co-funding cannot be secured, efforts should be documented in response to RAC comments when WS is resubmitted. Letters of support from interested parties encouraged by RAC. Revised WS needs to be approved by TC vote prior to re-submission to RAC. Kehrer to revise WS and draft cover letter responding to RAC comments by Dec. 15, 2017, for TC review prior to winter meeting.

1730-WS

Mass Flow Rate Correlations for Standard Venting Strategies and Components in Attic Spaces with Sloped Roofs (Authors: Anthony Fontanini, Dave Roodvoets; cosponsored by TCs 4.3 and 4.7). TC voted to accept RTAR by letter ballot 2014-5-14. Notification letter from MORTS 2014-7-23: RAC voted to conditionally accept RTAR. WS should be submitted to RAC by 2018-7-1 or will be dropped permanently. Comments were received after discussion in Las Vegas. Revised draft WS distributed 2017-6-21 and discussed at research subcommittee 2017-6-25. Further comments requested by Oct 15, 2017. Authors to revise WS to include milestones and cofunding commitments and draft cover letter responding to RAC comments for TC review prior to winter meeting. Research Subcommittee Chair to discuss change in scope between RTAR and WS with RL.

Draft RTAR

Develop Performance Metric, and a Process for the Measurement, Evaluation and Prediction of Speech Privacy in High Performance Buildings (Author: Kenneth Roy, TC 2.6). TC 4.4 discussed at the 2016 annual meeting in St. Louis and voted to co-sponsor. Paul Shipp reported that Ken Roy will be retiring and Erik Miller-Klein will be taking the lead on this RTAR for TC 2.6. TC 2.6 is expected to vote on this RTAR in Long Beach. Deborah Callaway will be TC 4.4 liaison.

Draft RTAR

Indoor Moisture Loads in Residential Buildings (Authors: Simon Pallin and Fitsum Tariku, TC 1.12). Seeking cosponsorship from TC 4.4. Will be distributed for comments following Long Beach meeting.

Draft RTAR

Hygrothermal Properties of Aged Construction Materials (Author: Steve Cornick). Topic discussed at research subcommittee 2017-1-29. Noted that this topic was identified in the brainstorming session. Will await outcome of prioritization.

Draft RTAR

Moisture Transfer in Building Materials at High Temperatures (Author: Sam Glass). Topic discussed at research subcommittee 2017-1-29. Overlaps somewhat with 1718-WS on moisture transfer in roof shingle systems. Suggested that this RTAR be held while 1718 moves forward.

6. Handbook Subcommittee

Laverne Dalgleish announced that the handbook needs to be reviewed at authoring.ashrae.org. An Internet Explorer version 11 is required to do this review. Laverne asked the committee members to do a review to corresponding chapters within the next six months. Members can login using their regular ASHRAE account. The TC needs to establish reviewers and revisers for this activity. Handbook Subcommittee Chair not in attendance. There are printed and electronic version of the handbook. Laverne mentioned that in case there is a dispute, the printed version is the official version.

7. Standards Subcommittee

Updates were presented by Peter Adams, and Liaisons to the subcommittees on the behalf of the Standards Subcommittee Chair, Theresa Weston.

Std. 90.1: (Jonathan Humble Liaison absent.) Charles Cottrell mentioned that this committee is working on the incorporation of air infiltration and thermal bridging

Std. 90.2: (Theresa Weston Liaison absent) No update

Std. 160: (Stan Gatland Liaison) Stan Gatland mentioned that 2016 version of the standard is now in place. Stan will roll of as chair and Achilles Karagiozis will roll on as chair. Sam Glass will become vice chair.

Std. 169: (Steve Cornick Liaison). No update

Std. 189.1: (Diana Fisler Liaison) Diana mentioned that 23 addenda have been recently approved by the committee, e.g. how to take moisture management of vegetated roofs into account.

GPC34P "Energy Guideline for Historical Buildings and Structures": (Bill Rose) No update.

TC 1.12 (Ed Light): The committee started a guideline on moisture management in construction.

8. Old Business

No old business

9. New Business

Sam Taylor:

PNNL started a Beta version of the Building Science Education Solution Center.

10. Adjournment

Peter Adams moved a motion to adjourn the meeting at 4:10

Manfred Kehrer – Secretary, TC 4.4. Next meeting Chicago January 22, 2018