

**MINUTES**  
**ACI Committee 130 – Sustainability of Concrete**

**ACI Spring 2011 Convention, Tampa, Florida**  
**Part 1: Monday, April 4, 2-5pm, W-Ballroom 1**  
**Part 2: Tuesday, April 5, 2011, 11-1pm, M-Grand F**

**Monday Agenda**

1. Welcome and Introductions—Chair Schokker welcomed everyone and led introductions.

Voting members in attendance:

Andrea Schokker, Chair

Julie Buffenbarger, Vice chair

Emily Lorenz, Secretary

Kelly Dudley, staff

James Aldred

Khalid Awad

Larry Church

Kelsey Edwardsen

Dean Frank

Per Fidjestol

Doug Hooton

Tony Johnson

Lionel Lemay

Kevin MacDonald

Charles Nmai

Larry Novak

Aimee Pergalsky

Julie Rapoport

John Ries

John Roberts

Larry Rowland

Koji Sakai

Arezki Tagnit-Hamou

Tom Van Dam

Jeff Volz

Peter Yen

Absent voting members:

Tom Adams

Florian Barth

Mark Chrzanowski

Dave Darwin

Moetaz El-Hawary

David Fowler

William Gaspar

Arturo Gaytan Covarrubias

Liv Haselbach

Per Jahren

Tracy Marcotte

Christian Meyer

Ted Neff

Matt Offenburg

Larry Sutter

Peter Taylor

Jeff West

Vicky Zajakowski

Others:

Wayne Adoska

Tom Bagsarian

Keith Bargaheiser

Muhammed Basheer

Eckard Buhler

Cesar Chan

Nick Deniroli

Om Dixit

Jim Ernzen

Frances Griffith

Steven Hawkins

Jacob Henschen

Terry Holland

David Hoyt

Jiong Hu

Daniel Jansen

Kamal Khayat

Katie Kuder

Nick Lang

Federico Lopez-Flores

Mohamed Mahgaub

Homero Jesus Montano Roman

Julio Pecho

Farshad Rajabipour

Robert Samul  
Ed Sauter  
Andrew Scanlon  
Kelsea Schumacher  
Ricardo Serpell  
Edith Smith  
Jeff Smith

Nicholas Thomas  
Robin Tuchscherer  
Jim Van Acker  
Kejin Wang  
Christopher Worthington  
Fouad Yazbeck

2. Approval of Fall 2010 minutes—Larry Novak moved to approve the minutes, Aimee Pergalsky seconded. All approved.
3. Sustainability Sessions—Larry Rowland gave an overview of the sessions at this and future conventions. Anyone who is interested in co-moderating the education session with Farshad, please contact Larry.
  - 3.1. Sessions at this conference (Rowland)
    - 3.1.1.ACI & the Concrete Industry’s Approach to Green Building  
Wednesday, 9am-12pm, M-Meeting Room 4 (moderator: Larry Rowland)
    - 3.1.2.Performance-Based Requirements for Concrete and Sustainability, Part 1  
Monday, 2-5pm, M-Meeting Room 1 (moderator: Ken Rear)
    - 3.1.3.Performance-Based Requirements for Concrete and Sustainability, Part 2  
Tuesday, 9am-12pm, M-Meeting Room 1 (moderator: Mark Chrzanowski)
    - 3.1.4.Contractor’s Day Lunch, Engineering the World’s Tallest Structure  
Tuesday, 12-2pm, M-Salon 6 (speaker: Larry Novak)
  - 3.2. Upcoming Sessions (Rowland)
    - 3.2.1.Green Codes (Cincinnati)
    - 3.2.2.Prestressed Concrete and Sustainability (Cincinnati)
    - 3.2.3.The Art of Concrete (Dallas)
    - 3.2.4.Applications and Modeling Thermal Mass for Sustainable Buildings (Dallas)
  - 3.3. Topics for future conventions
    - 3.3.1.Curing and Lightweight committees are looking at a session for Toronto
    - 3.3.2.Fall 2012, Toronto, Ontario (Forming our Future—Teaching to students)
  - 3.4. Fall Sustainability Forum (Buffenbarger, Sakai)—Koji Sakai noted that they have not yet finalized the topics for the fourth sustainability forum.
4. Roster update—Chair Schokker noted that five voting members moved to associate, and five associates moved up to voting. We want to keep the committee at a manageable level, the best way to move up to voting status is to contribute on the subcommittees.
5. Special Publication from Pittsburgh session – update (Volz)—a lot of papers have come in, and they are being reviewed. Hoping to have the SP available at Cincinnati.
6. CAM Sustainability Publications and corresponding e-learning courses—first book has been out a year, second book just came out. Industries and members of JSI contributed materials to the applications book, and Schokker compiled. First book has been translated into Spanish. All text for both books is available for use in the committee document, Julie Buffenbarger will be posting on the website, and all the pictures can be used. Rowland asked how to handle permissions. Schokker is going to check with ACI about what sourcing and credits need to happen. Starting with materials from this committee to create the e-learning course. If any committee members have an idea for e-learning, contact Larry Rowland.
  - 6.1. *The Sustainable Concrete Guide – Strategies and Examples*
  - 6.2. *The Sustainable Concrete Guide – Applications*

7. Outreach to ACI committees—Chair Schokker noted that there is a standard presentation available that everyone can use it if they want to present. Committee 555 (recycled concrete) was worried that ACI 130 might encroach on their mission. Chair Schokker will contact the chair of ACI 555.
8. JCI International Conference on Concrete Sustainability, May 2013 (Sakai)—Sakai noted that ACI has already agreed to support this conference. He asked this committee to support the conference. They are working on a schedule now for the call for papers.
9. First ACI Concrete Sustainability Award (update on nominations)—Will be awarded at the next convention. There was a large turn-out, and Chair Schokker thanked everyone for nominating individuals.
10. ACI Staff update
  - 10.1. New ACI Director of Sustainability, Kevin Mlutkowski—Kevin will be
11. Update on committee document, “Guide to Sustainable Concrete” (details during Tuesday meeting, see Exhibit A)
  - 11.1. Resolution of negatives, Chapters 4 & 5 (Kevin MacDonald & Matt Offenberg)
    - 11.1.1. Lionel Lemay motioned to find non-persuasive, John Ries seconded. Lionel Lemay withdrew his motion, and John Ries withdrew his second. Tracy Marcotte withdrew her negative, editorial.
    - 11.1.2. It will be fixed, Emily Lorenz withdrew her negative.
    - 11.1.3. Larry Novak withdrew his negative.
    - 11.1.4. Larry Novak motioned to find it persuasive, Larry Rowland seconded. Friendly amendment: Lionel agreed to provide a reference. 21 affirmative, 0 negatives,
    - 11.1.5. Lionel Lemay withdrew his negative, changed to editorial.
    - 11.1.6. Larry Rowland motioned to find it persuasive, Larry Novak seconded. 21 affirmative, 0 negatives
    - 11.1.7. Kevin MacDonald motioned to add reference note to ACI 555R to comment 8, Larry Novak seconded. 23 affirmative, 0 negatives
    - 11.1.8. Larry Novak motioned to find it persuasive, Julie Buffenbarger seconded. Friendly amendment: Delete “concrete producers can” 23 affirmative, 0 negatives
    - 11.1.9. Kevin MacDonald motioned to change sentence to “...ordinary portland cement is much more energy intensive than blended cement.”, Larry Novak seconded. 22 affirmative, 0 negatives, 1 abstention.
    - 11.1.10. Table until tomorrow
    - 11.1.11. Larry Novak withdrew negative.
    - 11.1.12. Lionel Lemay moved to find the negative persuasive, Tom VanDam seconded. 22 affirmative, 0 negatives.
    - 11.1.13. Kevin MacDonald motioned to find the negative persuasive, and add the reference to other ACI documents. Aimee Pergalsky seconded. 22 affirmative, 0 negatives.
    - 11.1.14. Kelsey Edwards motioned to find it non-persuasive, Tom Van Dam seconded. 22 affirmative, 0 negatives.
    - 11.1.15. Kevin MacDonald motioned to accept change with the swapping of “where practical” for “when possible.” John Roberts seconded. 18 affirmative, 3 negatives, 1 abstention.
    - 11.1.16. Lionel Lemay motioned to find it persuasive, and to write a paragraph to satisfy the negative. Julie Buffenbarger seconded. 18 affirmative, 0 negative.
    - 11.1.17. Kevin MacDonald motioned to find it non-persuasive, Aimee Pergalsky seconded. 22 affirmative, 0 negatives
    - 11.1.18. Tony Johnson withdrew and found editorial
    - 11.1.19. Tabled
    - 11.1.20. Tony Johnson withdrew and found editorial
    - 11.1.21. Tabled
    - 11.1.22. Tabled
    - 11.1.23. Larry Rowland motioned to find it persuasive and adding a sentence that references NRMCA program. Julie Buffenbarger seconded. 18 affirmative, 0 negative.

- 11.1.24. Kevin MacDonald motioned to find it non-persuasive and editorial, Emily Lorenz seconded. 19 affirmative, 0 negatives
- 11.1.25. Lionel Lemay withdrew his negative, editorial.
- 11.1.26. Kevin MacDonald motioned to find it persuasive, Tom Van Dam seconded. They both withdrew and tabled discussion to come up with better wording
- 11.1.27. Tony Johnson withdrew, negative.
- 11.1.28. Kevin MacDonald motioned to find it persuasive, Julie Rappaport seconded. 19 affirmative, 0 negatives. 19 affirmative, 0 negative, 1 abstention.
- 11.1.29. Lionel Lemay motioned to find the negative non-persuasive, John Roberts seconded. 18 affirmatives, 0 negatives, 1 abstention. Charles Nmai motioned to amend sentence to add “chemically stabilizing in the drum, and batching new material. This must be done consistent with performance requirements and ...” Kevin MacDonald seconded. 20 affirmative, 0 negatives
- 11.1.30. Lionel Lemay withdrew, editorial.
- 11.1.31. Charles Nmai motioned to find the negative persuasive and delete the first sentence, Kevin MacDonald seconded. 18 affirmatives, 2 negatives.
- 11.1.32. Kevin MacDonald motioned non-persuasive because dealt with already in 31. Larry Rowland seconded. 18 affirmative.
- 11.1.33. Kevin MacDonald motioned non-persuasive because dealt with already in 31. Larry Rowland seconded. 18 affirmative.
- 11.1.34. Kevin MacDonald motioned non-persuasive because dealt with already in 31. Larry Rowland seconded. 18 affirmative.
- 11.1.35. Tony Johnson withdrew his negative.
- 11.1.36. Larry Rowland motioned to find it persuasive with change from “can be” to “is,” Peter Yen seconded. 16 affirmative, 0 negatives, 2 abstentions. FAILED Larry Rowland motioned to find persuasive as written, Peter Yen seconded. 19 affirmative, 0 negatives.
- 11.1.37. Julie Rappaport moves to find it persuasive with deletion of parens, Larry Rowland seconded. 18 affirmative, 0 negatives.
- 11.1.38. Tom Van Dam motioned to find the negative non-persuasive, Julie Rappaport seconded. 18 affirmative, 0 negatives. Change “emissions” to “these”—editorial
- 11.1.39. Charles Nmai motioned to find the negative persuasive, Julie Buffenbarger seconded. Withdrawn and tabled for tomorrow. Jeff West motioned to accept the wording proposed by Andrea Schokker, Lionel Lemay seconded. 20 affirmative, 0 negative
- 11.1.40. Ted Neff withdrew his negative, editorial
- 11.1.41. Lionel Lemay withdrew his negative, editorial.
- 11.1.42. Lionel Lemay withdrew his negative.
- 11.1.43. Lionel Lemay withdrew his negative, editorial.
- 11.1.44. Julie Buffenbarger motioned to find non-persuasive because unrelated, Larry Rowland seconded. 21 affirmative, 0 negative.
- 11.1.45. Julie Buffenbarger motioned to find non-persuasive because unrelated, Larry Rowland seconded. 21 affirmative, 0 negative.
- 11.1.46. Tabled
- 11.1.47. Kevin MacDonald motioned to find non-persuasive because editorial, Julie Buffenbarger seconded. 20 affirmative.
- 11.1.48. Kevin MacDonald motioned to find non-persuasive because editorial, Julie Buffenbarger seconded. 20 affirmative.
- 11.1.49. Kevin MacDonald motioned to find non-persuasive because editorial, Julie Buffenbarger seconded. 20 affirmative.
- 11.1.50. Kevin MacDonald motioned to find persuasive and to add references, Dean Frank seconded. 20 affirmative, 0 negatives.
- 11.1.51. Kevin MacDonald motioned to find non-persuasive because unrelated, Tony Johnson seconded. 20 affirmative, 0 negatives.
- 11.1.52. Tabled

- 11.1.53. Kevin MacDonald motioned to find persuasive and make editorial changes, Julie Buffenbarger seconded. 20 affirmative, 0 negatives.
- 11.1.54. Kevin MacDonald motioned to find persuasive and make editorial changes, Julie Buffenbarger seconded. 20 affirmative, 0 negatives.
- 11.1.55. John Roberts withdrew his negative because it will be covered later.
- 11.1.56. John Roberts withdrew his negative because it will be covered later.
- 11.1.57. Kevin MacDonald motioned to find non-persuasive, Larry Rowland seconded. 20 affirmative, 0 negative.
- 11.1.58. Kevin MacDonald motioned to find non-persuasive, Larry Rowland seconded. 20 affirmative, 0 negative.
- 11.1.59. Kevin MacDonald motioned to find non-persuasive, Larry Rowland seconded. 20 affirmative, 0 negative.

12. Adjournment of Monday meeting

**Tuesday Agenda**

1. Welcome and Introductions—Chair Schokker welcomed everyone and led introductions.

Voting members in attendance:

Andrea Schokker, Chair  
 Julie Buffenbarger, Vice chair  
 Emily Lorenz, Secretary  
 Kelly Dudley, staff  
 Tom Adams  
 James Aldred  
 Larry Church  
 Kelsey Edwardsen  
 Dean Frank  
 Doug Hooton  
 Tony Johnson  
 Lionel Lemay  
 Kevin MacDonald

Tracy Marcotte  
 Charles Nmai  
 Larry Novak  
 Matt Offenburg  
 Aimee Pergalsky  
 Julie Rapoport  
 John Ries  
 John Roberts  
 Larry Rowland  
 Koji Sakai  
 Arezki Tagnit-Hamou  
 Tom Van Dam  
 Jeff Volz

Absent voting members:

Khalid Awad  
 Florian Barth  
 Mark Chrzanowski  
 Dave Darwin  
 Moetaz El-Hawary  
 Per Fidjestol  
 David Fowler  
 William Gaspar  
 Arturo Gaytan Covarrubias

Liv Haselbach  
 Per Jahren  
 Christian Meyer  
 Ted Neff  
 Larry Sutter  
 Peter Taylor  
 Jeff West  
 Peter Yen  
 Vicky Zajakowski

Others:

Rashid Ahmed  
 Michael Davy

Barry Descheneaux  
 Josh Edwards  
 Alfred Gardiner

Jacob Henschen  
Jim Hicks  
Terry Holland  
David Hoyt  
John Kevern  
Maungo Lopez  
Bradley Maguire  
Brandon Ross

Alma Reyes  
Seemant Saxena  
Kelsea Schumacher  
Thomas Schumadis  
Ephraim Senbetta  
Edith Smith  
Jeff Smith

- 1) Brief review of Monday meeting (Schokker)
- 2) Subcommittee Updates (focused on “Guide to Sustainable Concrete” progress and needs)—Chair Schokker noted that we don’t have to meet quorum on subcommittee ballots (only full committee), but it looks bad. If you haven’t been active on the subcommittees, you can move to associate member. Also, it was asked if we should ballot subcommittee sections at the main committee, or wait? It was decided that all subcommittee chairs should send an updated outline, which Chair Schokker will compile and include with each ballot of subcommittee sections. We will ballot smaller sections rather than wait. If subcommittee chairs have written a section they think should go somewhere else, they should send those sections to the applicable subcommittee chair with a copy to Julie Buffenbarger and Andrea Schokker.
  - a) 130A: Materials (Chairs: Doug Hooton & Tom VanDam)—Hooton reported that this chapter subcommittee has had 7 ballots since the last convention.
  - b) 130B: Production/Transportation/Construction (Chairs: Kevin MacDonald & Matt Offenber) —have balloted 3 chapters. Chapters 4&5 have passed the letter ballot, resolving negatives.
  - c) 130C: Structures in Service (Chair: Tracy Marcotte)—Met this morning, initiated the ballot this morning.
  - d) 130D: Rating Systems/Sustainability Tools (Chairs: Jeff Volz, & Arezki Tagnit-Hamou)—They need a lot of help, if you have materials and can send to Jeff, or want to get involved, see him.
  - e) 130E: Design/Specifications/Codes/Regulations (Chairs: Mark Chrzanowski & Larry Church)—They need help, some sections are under-developed.
  - f) 130F: Social Issues (Chair: David Darwin, Vice Chair: Kelsey Edwardsen)—Chapter 13 should be ready for main committee ballot in the next couple weeks.
  - g) 130G: Education/Certification (Chairs: Larry Rowland & Khaled Awad)—Trying to develop on a certification program to green concrete certification (will liaison with CPC).
- 3) Presentation by Carol Bowers, Sustainable Infrastructure Systems Development, ASCE—Vice President for Sustainable Infrastructure Systems, developing a rating system. Institute for Sustainable Infrastructure, called Vision. Comprehensive, trip bottom line, but similar to LEED, less prescriptive more performance based. Will not be considering buildings.

**Goals:** provide a benchmark for sustainable infrastructure performance, Promote transformational approaches to sustainability, scalable and broadly applicable, accommodate sector-specific rating systems.  
Broad but not deep.

**Benefits:** increased sustainability due to life-cycle approach, transformation approaches, objective third-party project rating and verification, adaptable to varying knowledge and project types, promotes collaboration.

**Implementation:** Institute for Sustainable Infrastructure, Dec. 2010, 501c3, collaboration between ASCE, APWA, and ACEC. Core products: rating system, education and training, professional (individual) certification, project awards.

**Rating System Elements:** varying levels of participation, dual approach to sustainability:  
Pathway contribution (doing the right things)  
Performance contribution (doing things right)

Four rating system levels. First two levels will be out for **public review in July**.

**Ten primary criteria:** Pathway, project strategy and management, community: long and short term effects, land use and restoration, landscapes, ecology and Biodiversity; water resources and environment, energy and carbon,

Struggling with identifying the baseline.

A lot of this was based on CEEQUAL, but they've "gone beyond."

Will be presented to the ISI board in April: Guidance manual, matrix of criteria, resource reference guide, calculating spreadsheet.

August-December 2011: public comment period

January 2012: Commercial version available

Website: [www.sustainableinfrastructure.org](http://www.sustainableinfrastructure.org)

Website contains the rating system for download and comment.

- 4) Completion of any remaining business from the Monday meeting
- 5) New Business
  - a) Discussion of how to move toward "Sustainability Now"
- 6) Adjournment

# **GUIDE TO SUSTAINABLE CONCRETE**

Reported by ACI Committee 130

*This report gives general information about concrete sustainability.....*

**Keywords:** sustainability; green; environmental; ...

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- 1.2—Background
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- 1.6—Sustainable attributes for concrete

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- 2.3—Aggregates and fillers
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- 2.5—Water
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