Welcome to the Fall 2023 Technical Chair Breakfast

Concrete Innovation Council,

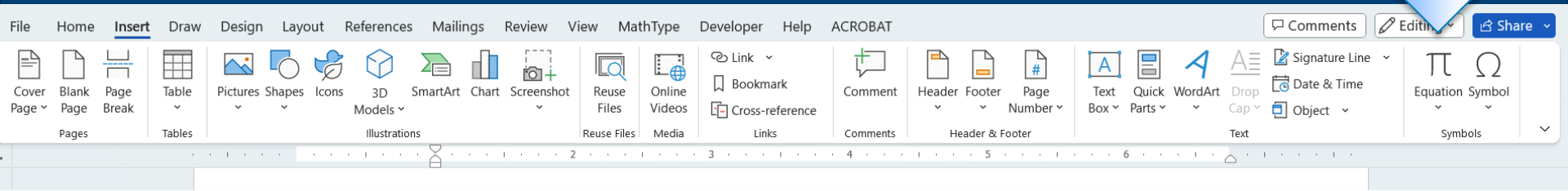
Introduction, Formatting, Specifications

Carl Larosche, *TAC Chair*

Formatting Documents

Less is More

- Leave layout for publishing
  *Staff removes all formatting before it is laid out.
- Do not use autonumbering
  *It will be stripped out when preparing for publication
- Use MathType (preferred) or Insert Equation in Word for extensive equations.



Formatting Documents

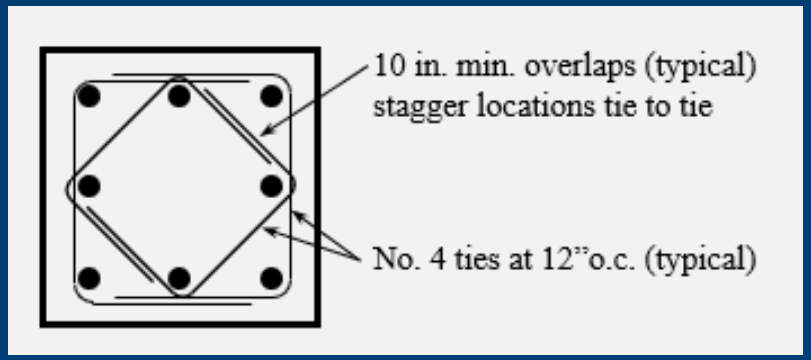
Tables and Graphics

- Tables should be in Word and editable
  *Do not insert pictures of tables
- Do not create drawings or figures in Word or PowerPoint
  *If you need graphics created, contact staff

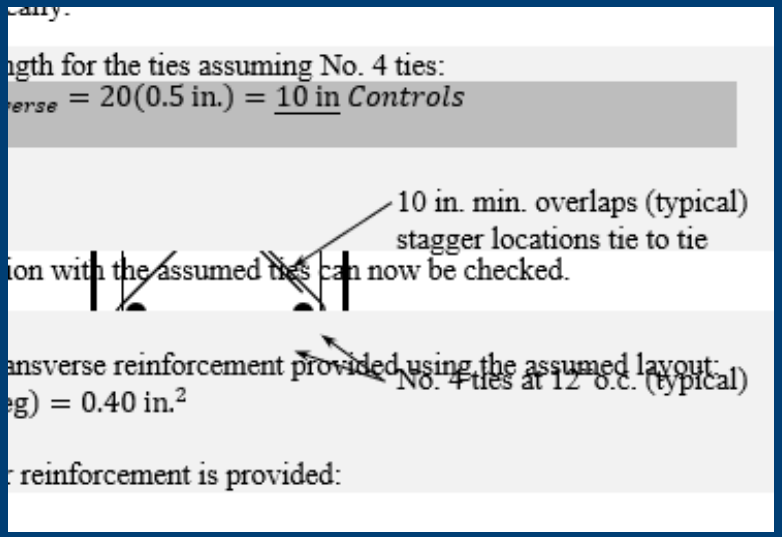
Formatting Documents

Graphics

Before returns or text wrapping



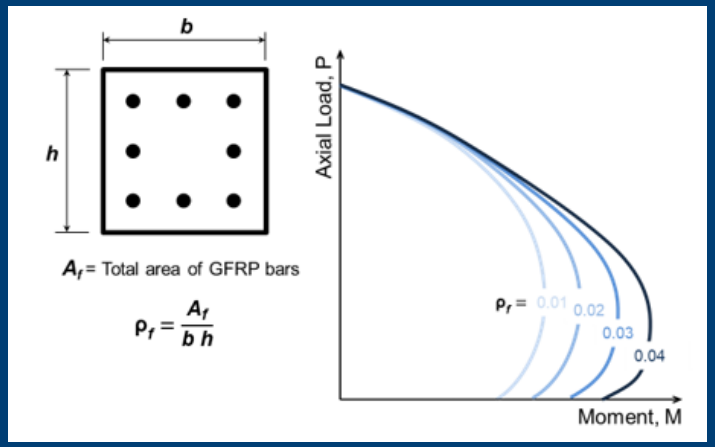
After returns and text wrapping



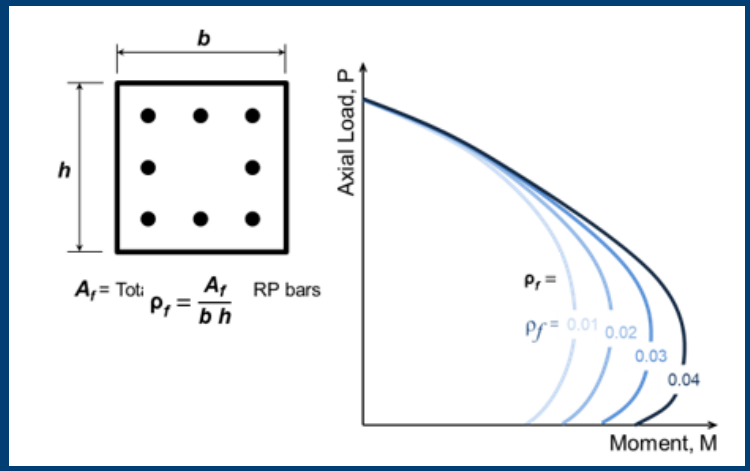
Formatting Documents

Graphics

Equation within the figure is a separate text box. If you move it elsewhere in the document…



The equation sneaks into the text



Formatting Documents

Document Development Page

- Each document has a devoted webpage on the Committee page. This is where all correspondence, drafts, minutes, TAC comments, are stored

  If you'd like to learn more about using this page, contact Shannon Banchero

Specifications – Format

TCM Chapter 6

- Single- and multi-item spec outlines
- Preferred wording for 1.1 and 1.2
- Definitions 6.2.6.3
- Notes to specifiers and Foreword to checklists
- Mandatory checklists 6.2.9.2
- Optional checklists 6.2.9.3
- Referral phrases 6.2.9.5

Specifications – TCM Chapter 6

Trigger Language

- *Unless otherwise specified*: if this is used in a sentence, there should be a corresponding item in the Optional Checklist. If possible, ensure this phrase is at the beginning of the sentence.

- *If specified* or *as indicated in Contract Document*: if these are used in a sentence, there should be a corresponding item in the Mandatory Checklist.

- Items in the checklists should have the trigger language in the body of the document.

Specifications – TCM Chapter 6

Definitions

- The definitions listed in 6.2.6.3 that are unique to specifications should match exactly as what is shown in the TCM, Chapter 6.

Specifications – TCM Chapter 6

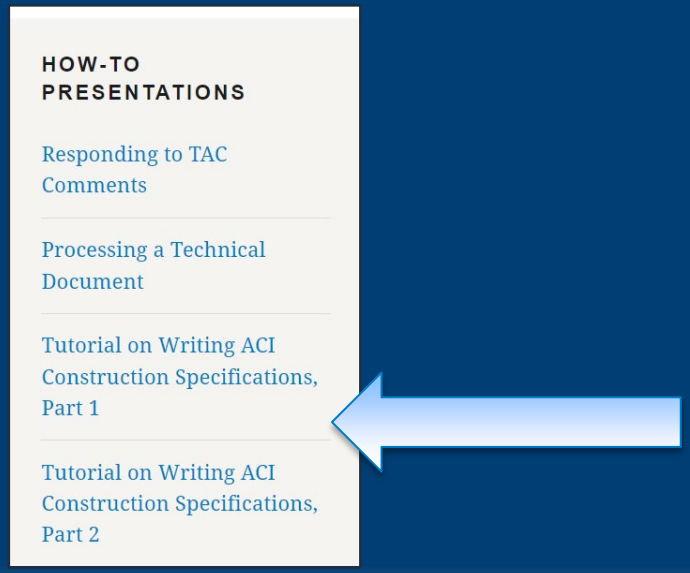
Submittals

- Where the word “submit or submittal” is used in the body of the document, ensure that the sentence/content is also in the submittal section (1.5)

Specifications – Tutorials

Specification Guidance

- Tutorials – How-to write a specification
  www.concrete.org/committees/documentdevelopmentguidance.aspx



Introduction

Fred Grubbe, MBA, CAE

Executive Vice President

ACI Foundation

Michael Paul, *Incoming President*

Welcoming ACI Foundation Scholarship & Fellowship Students

- Anne Werner 124
  Marina Garcia Lopez-Arias
- Shawn Monkman 130
  Johnathan Broyles
  Tijani Mohammed
  Meraj Rubayat Kamal
  Nithya Nair
- Stephanie Paal 135
  Mohammed Jobaer Uddin
- Rachel Detwiler 214
  William Snitzer
- Jan Prusinski 230
  Micah Stark
- Ivan Diaz-Loya 232
  Kate Weiksnar
- Farshad Rajabipour 236
  Avery Londo
- Peter Taylor 325
  Bo Rider
- Gregory Halsted 327
  Anabel N Merejildo
- Rudolph Frizzi 336
  Katie Hogarth
- Nestor Rubiano 342
  Jenna Hays
- Samuel Keske 345
  Sherryen Mutoka
- Benoit Bissonnette 364
  Timothy Mueller

Welcoming ACI Foundation Scholarship & Fellowship Students

- Ganesh Thiagarajan 370
  Sandy Chen
- Garrett Hagen 374
  Sergio Godinez
- Ying Tian 377
  Noah Struck
  Carlos Franco Mayorga Gallegos
- Jefferey Volz 423
  Jeremy Dodd
- David Shook 435
  Timothy Kohany
- Maria Lopez de Murphy 440
  Sam Valmassoi
  Paul Acuna
- Thomas Schumacher 444
  Bayezid Baten
- Mi-Geum Chorzepa 447
  Colin Boyle
- Amir Bonakdar 544
  Saida Rezaee
  Moustafa Mansour
- Andrew McPherson 551
  Cameron Hicks
- Chuck Larosche 562
  Dana Tawil
- Scott Jones 564
  Habibelrahman Hassan

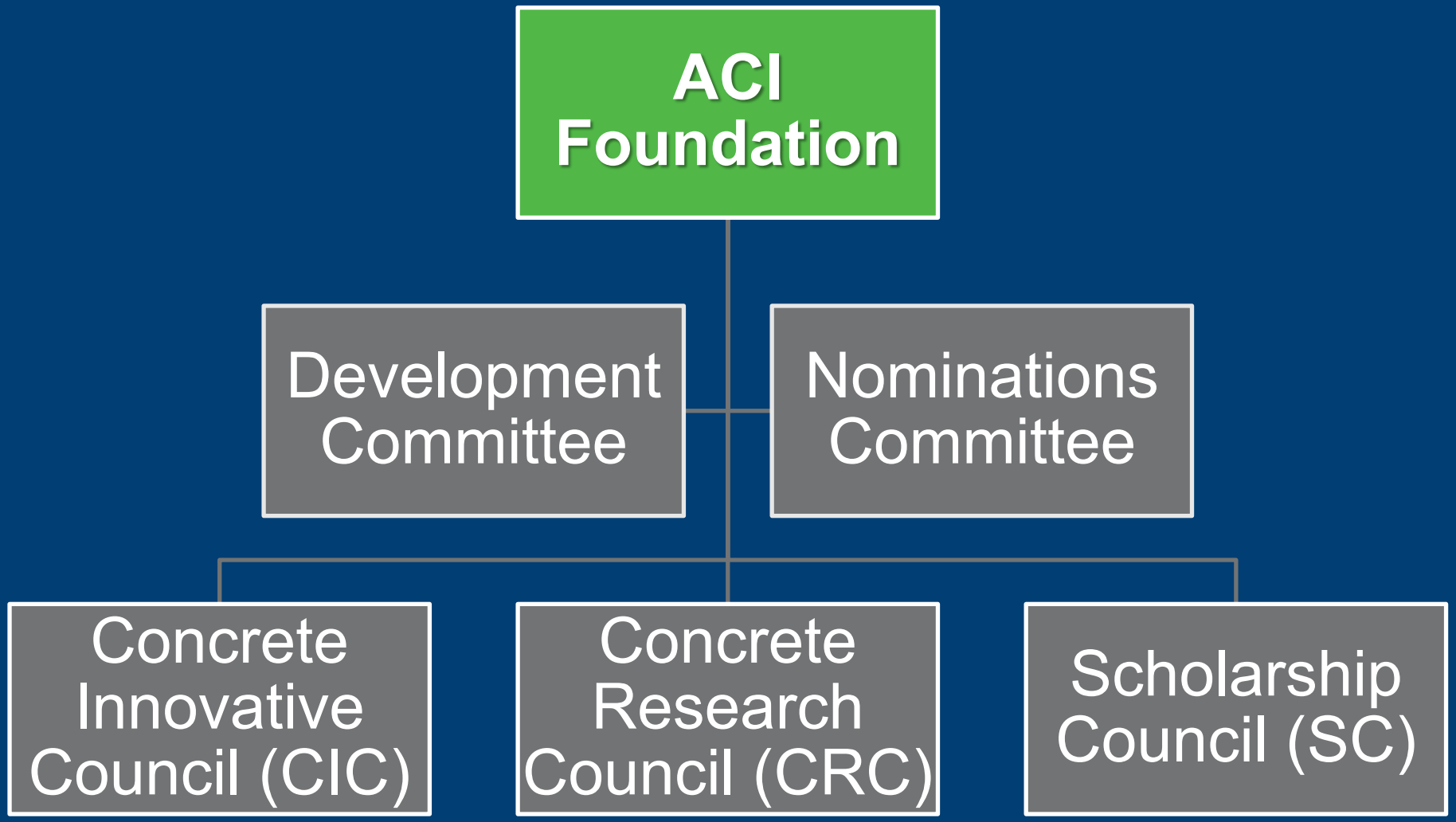
The ACI Foundation's 2023-2024 Fellowship and Scholarship Recipients

We Need YOUR Input

Tricia G. Ladely
ACI Foundation - Assistant Director

aci Foundation

Building the Future



Concrete Innovation Council

aci Foundation
Building the Future

OBJECTIVE: To identify technologies and innovations that provide needed solutions for the concrete industry and help implement their use when appropriate.

Research in Progress:

- Foundation Mats with High-Strength Reinforcement
- Performance & Repair of Ordinary Structural Walls Subjected to Wind and Seismic Loading Protocols
- Development of Earthquake-Resistant Reinforced Concrete Structural Walls with Simplified Reinforcement Detailing for Rapid Construction

CIC Innovation Contest

aci Foundation
Building the Future

Is there a better way to measure the rheology (workability) of concrete in the field?

Phase I - Competition
- Global Literature Search
- Proto-type Designs

Phase II- Competition
- Proto-type Development
- Testing Criteria
- Qualification

Phase III - Award
- Data & Statistics
- Standard Development

Concrete Research Council

ACI Foundation
Building the Future

OBJECTIVE: is to seek concrete research projects that further the knowledge and sustainability of concrete materials, construction, and structures in coordination with ACI Technical Committees.

- 27 Research Projects
- 20 ACI Technical Committee Endorsements

Unsolicited vs. Solicited

Tell us YOUR research needs

- **Research** – update documents; validate equations; code change proposals
- **Technical Writers** – editing / new publications
- Other?

CONTACT US:

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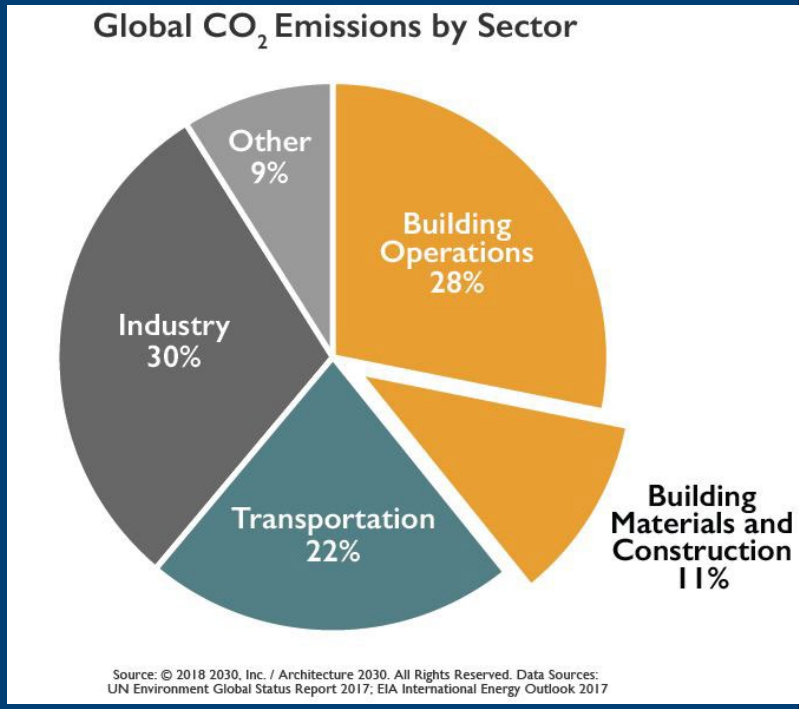
Ann M. Masek
Executive Director
248-848-3144
Ann.Masek@acifoundation.org

Low Carbon Concrete – Technologies and Policy

Matthew P. Adams, *Ph.D. – Associate Professor*
New Jersey Institute of Technology

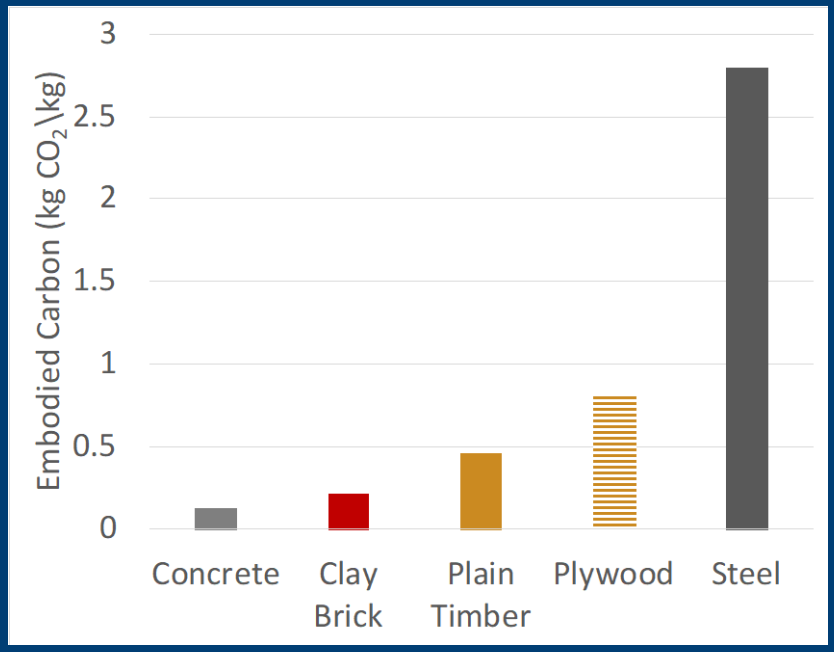
Why do we need low carbon concrete?

- Building materials and construction account for 11% of global CO_2 emissions
- Concrete is responsible for ~8% of global CO_2 emissions – results in climate change
- Majority of emissions come from cement production and scale of use
- Must reduce anthropogenic carbon production to limit the continued impacts of climate change



Source of Embodied Carbon

- Reinforced concrete has a low embodied carbon per unit volume
- Scale of production of concrete is the main cause of the high level of carbon emissions associated with concrete
- Over 400,000,000 yd^3 produced in U.S. each year, or ~ 615 Hoover Dams



Data from: Scrivener et al. 2014 and Hammond and Jones 2008

What is “Low Carbon Concrete”

Is there one concrete mixture to rule them all?

No current industry standard definition.

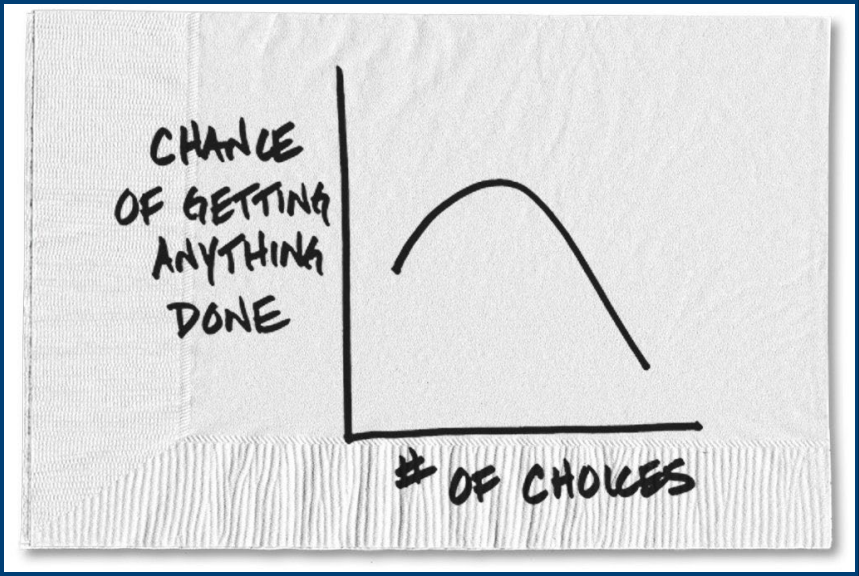
What is “Low Carbon Concrete”?

- Low carbon concrete is a design goal
- Create concrete that has a lower amount of embodied carbon than the average concrete mixture
- Constantly changing target

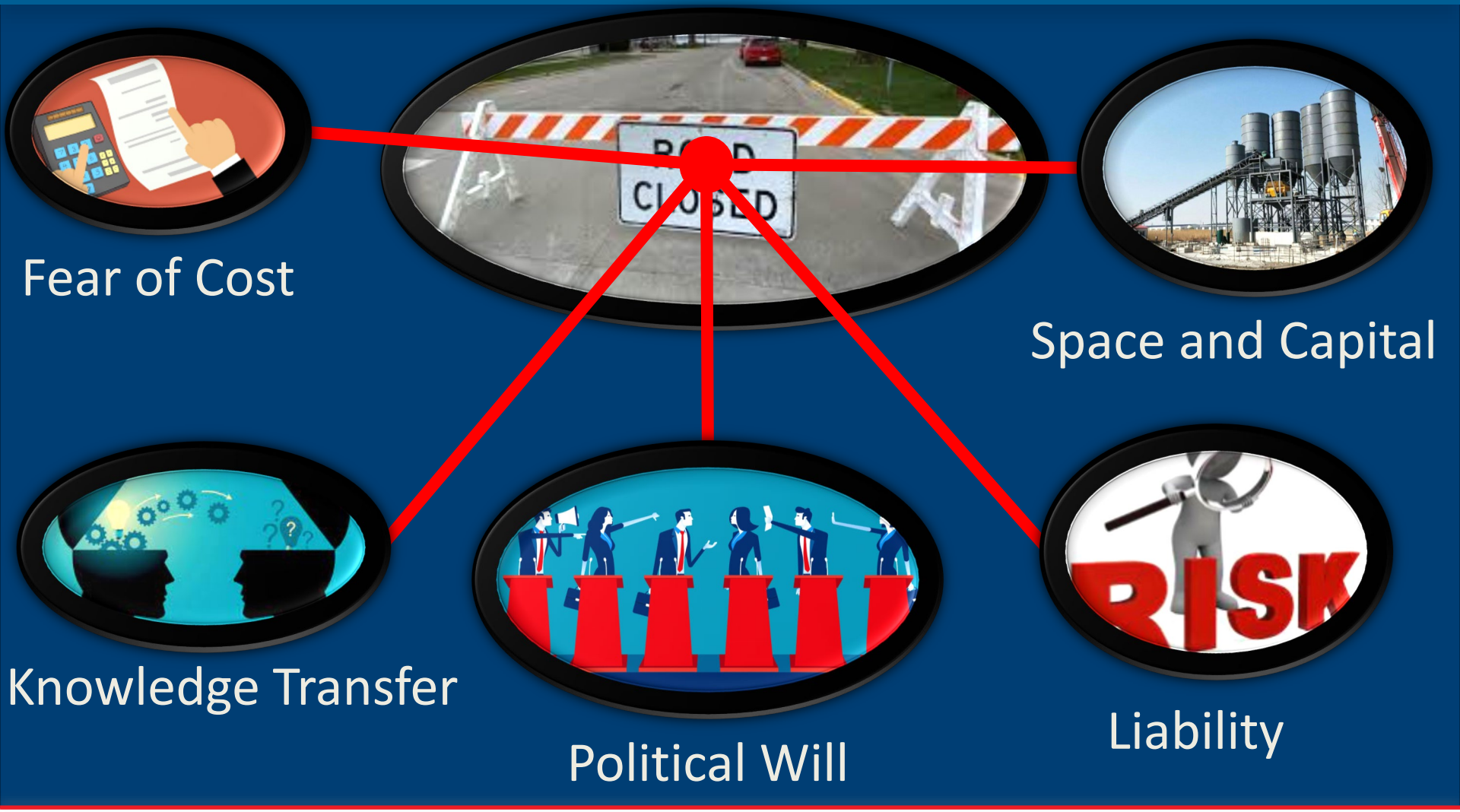
- Embodied carbon - expressed as **global warming potential (GWP)** – Quantifiable measurement of greenhouse gas emission’s impact on warming.

Solving “Low Carbon Concrete”

- Many levers and knobs we can simultaneously use to reduce embodied carbon
- Solutions are often subject to local availability and cost
- Require knowledgeable engineers, contractors, and labor
- Many solutions are already widely used



What's Stopping Us?



Overcoming Barriers

- Support legislation that promote sensible sustainable construction
- Develop tools to assess whether concrete mixtures meet ”low carbon standards”
- Create a quantitative measure of ”low carbon concrete”

What has succeeded? (policy not code)

Success factors:

- Technology agnostic requirements
- Stakeholder input and agreement
- Investment in knowledge transfer to key stakeholders (engineers & contractors)
- Insurance against risk of failure

Adoption of Low Carbon Guidelines

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

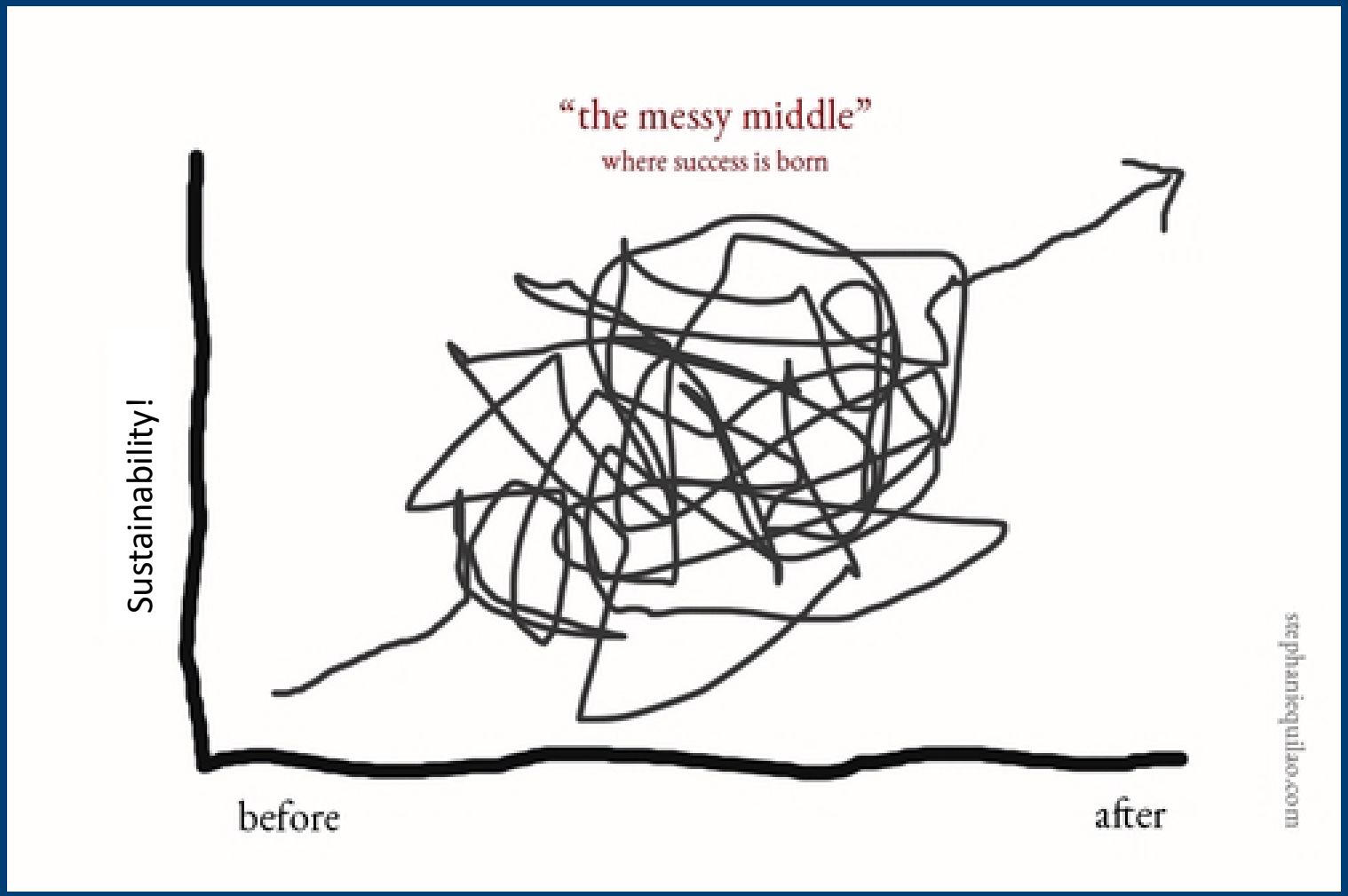
- Limits on total cement content and/or global warming potential (GWP) based on concrete strength

- Limits based on internally defined GWP

Adoption of Low Carbon Guidelines

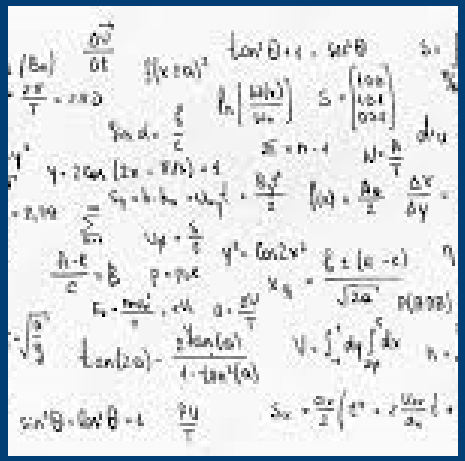
- Limits on total GWP based on concrete strength
- Limit based on the Regional GWP averages developed by NRMCA

Progress Is Messy and Confusing



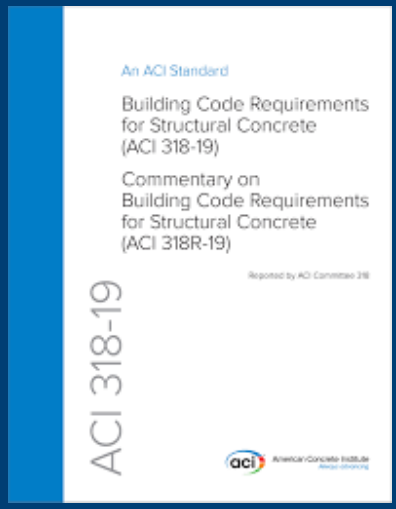
What is needed?

- How to determine the GWP?



- What limits to set?

- How do GWP limits interact with life-safety codes?



ACI Code Committee 323

- Here we come to save the day (sometime in 2024)!

- Andrea Schokker (staff secretary)
- Chris Ferraro (Vice Chair)
- Tom Van Dam (TAC Contact)
- Oscar Antommattei
- Hessam Azari Jafari
- Anthony Bentivegna
- Julie Buffenbarger
- Nathan Forrest
- Eric Giannini
- J. Scott Keim
- Shana Kelley
- Emily Lorenz
- Sabbie Miller
- Tien Peng
- Shamim Rashi-Sumar
- Colin Reed

Open Table Talk