

I. 423-F Sustainable Prestressed Concrete

Spring 2015 ACI Convention, Kansas City, MO

4/12/15 1pm-3pm

Notes prepared by Brandon Ross

II. Attendees

See attached attendance list

III. Status prior to meeting

A draft document has been completed. The draft has four chapters: 1) Introduction and Scope, 2) Sustainability Benefits of Prestressed Concrete, 3) Material Efficiency, and 4) Life Cycle Assessment. Carol Hayek emailed the draft to the TG in January 2015 for review and comment. Reviews of the draft were provided by committee members.

IV. Overview of TG meeting

1. Welcome and Introductions
2. Discussion of review comments – details below
3. Discussion of possible paths for moving forward – see attached slides

V. Discussion of review comments

There is concern that the document presents sustainability in a narrow sense, focusing heavily on material efficiency. As written the document can be viewed as breaking some of the “7 deadly sins of green-washing.” It was suggested that the document should:

- Treat sustainability more holistically and avoid one-size-fits all generalizations;
- Give examples with full consideration of the circumstances and results;
- Be grounded in published literature;
- Avoid comparisons with cast-in-place concrete;
- Consider all sustainability metrics – not just CO2 and embodied energy.

Material efficiency will become increasingly important as building energy codes require greater levels of thermal efficiency. I.e. embodied costs impacts will grow relative to use phase impacts. This is the case in France.

Structural engineers are the audience for the document and they wish for quantitative comparisons that help them work with clients.

Even without quantification, it is intuitive that material quantities should correlate with impact in the construction phase.

Discuss thermal bridging details for prestressed construction as important for the document.

Writing the document is challenging because sustainability is often discussed in terms of comparisons; comparisons require us to consider materials other than prestressed concrete. How can we present useful information without including other materials as a baseline?

The material comparison example was selected to demonstrate the material efficiency of concrete; however, it is insufficient as a sustainability example without additional analysis. It can't be used in isolation to make broad statements about the sustainability of prestressed concrete.

The issue of quantitative comparison was not resolved in the 423-F meeting. While quantitative comparisons are desirable, there is risk of greenwashing if not approached comprehensively. And yet, comprehensive treatment is very involved and requires skill sets and effort beyond those in the 423-F. Alternate paths forward were discussed (see attached slides presented at 423 meeting)

VI. Discussion of possible paths forward

See attached slides

VII. Response from 423 committee

Members from 423 were updated on the discussions and concerns of 423-F. In general 423 members were supportive of the document and encouraged 423-F to move forward. For details see the minutes of the 423 meeting.

423-F Sustainable Prestressed Concrete

Update for 423
April 13, 2015

- Provide an overview of the 423-F document
- Update document status
- Review TG discussion from yesterday
- Present possible paths forward
- Questions/comments/discussion from 423

Overview of 423-F document

Sustainability Guide for Prestressed Concrete

The recommendations made in this Guide are intended to provide an overview of the sustainability benefits and limitations of prestressed concrete. While local and overall sustainability benefits of prestressed concrete structures are reviewed, additional focus on materials and the less understood indirect benefits of prestressed concrete are documented. In addition, a resilience measure of prestressed concrete is provided through the Life Cycle Analysis (LCA) summary.

Overview of 423-F document

Sustainability Guide for Prestressed Concrete

Chapter 1: Introduction and Scope
Chapter 2: Sustainability Benefits of Prestressed Concrete
Chapter 3: Material Efficiency
Chapter 4: Life-Cycle Assessment

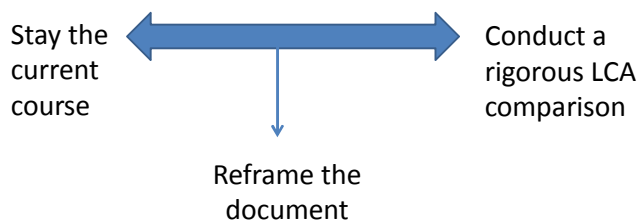
Status of 423-F document

- Scope and outline presented to TAC in 2012(?)
- Work has accelerated in the past year
- Draft distributed to TG members in January 2015.
 - all four chapters
 - 36 pages total
 - primarily qualitative
 - includes one quantitative example on material use
- Review of draft provided by TG members
 - Editorial comments
 - Technical comments

Review of TG discussion

| Positive comments | Concerns |
|---|--|
| <ul style="list-style-type: none"> • Good introduction to the terminology and concepts of life-cycle assessment • Doesn't require waiting on 130 • Highlights material efficiency benefits of prestressed concrete • Will be beneficial for explaining sustainability to clients • TAC has already reviewed the current scope and approach | <ul style="list-style-type: none"> • Comparison with RC is counter productive • Possible redundancy/conflict with 130 documents • Focuses on material efficiency, but neglects construction impacts • Focuses on embodied energy, but neglects other sustainability metrics • Meets the "greenwashing" definition |

Possible paths forward



Possible paths forward

Possible Reframed Document

- Discuss material efficiency as one of many aspects of sustainability and provide citations/information on other aspects as well. (don't cherry pick)
- Provide more detailed information and provide circumstances and limitations associated with the information. (avoid generalizations)
- Provide information for using prestressed concrete sustainably. (Teach, don't promote)

| Name and Address (Please Print): | | Comm. Member? | Visitor? ** |
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