

## MEETING MINUTES

### PTI DC-20 Building Design Committee

Tuesday, May 2, 2017

1:00 PM - 5:30 PM

Hyatt Regency Atlanta

#### **Voting Members Present (10 of 13)**

<u>Carol Hayek, Chair</u>	CCL USA, Inc.
<u>Martin Maingot, Secretary</u>	SCA Consulting Engineers
<u>Hamid Ahmady</u>	Suncoast Post Tension, Ltd.
<u>Rashid Ahmed</u>	Walker Parking Consultants
Bryan Allred	Seneca Structural Engineering, Inc.
<u>Asit Baxi</u>	Baxi Engineering Inc.
<u>Martin Cuadra</u>	Uzun & Case Engineers
<u>Jonathan Hirsch</u>	Bentley Systems
Thomas Kang	Seoul National University
<u>Don Kline</u>	Kline Engineering & Consulting, LLC
Bill Klorman	Klorman Construction
<u>Eric Ober</u>	Simpson, Gumpertz & Heger
<u>Zuming Xia</u>	Structural Technologies
<u>Miroslav Vejvoda, NV</u>	PTI Staff
<u>Amy Dowell, NV</u>	PTI Staff

#### **Associate Members Present**

Joseph Ales	Walter P Moore & Associates, Inc.
Mohammed Bilbeisi	Freyssinet Middle East
<u>Ryan Bonniwell</u>	Ericksen Roed & Associates
Spencer Lee	ADAPT Corporation
<u>Rafael Machado</u>	Ellinwood + Machado
<u>Carine Magalhaes</u>	ADAPT Corporation
<u>Sivakumar Munuswamy</u>	Thornton Tomasetti, Inc.
Xu Shudong	Beijing Yintaijian Prestressing Engineering Co., Ltd.
Otto Schwarz	Ryan Biggs   Clark Davis Engineering and Surveying, P.C
<u>Srini Neelamegam</u>	CCL USA, Inc.
<u>Todd Whisenhunt</u>	Thornton Tomasetti
<u>Mark Yerges</u>	CVM Engineers

#### **Visitors**

Ralf Liestikow	Wiss, Janney, Elstner Associates
Brian Lobmeyer	Anchor Engineering
Gillian Love	Simpson, Gumpertz & Heger
Dan Moser	Walker Restoration
Tracy Naso	Wiss, Janney, Elstner Associates
Lance Osborne	Structural Technologies, Inc.
David Peralta	Unintech
Carl Schneeman	Walker
Adam Shaughnessy	Anchor Engineering

## ACTION ITEMS FROM LAST / THIS MEETING

Item #	Subject	Action	Responsible	Deadline / Completed
1	Slides for Guide for Design of PT Buildings	Continue discussion to resolve remaining negatives via Go-To Meeting(s)	All	First Go-To Meeting scheduled for May 26, 2017 with follow-up meeting(s) as needed until all negatives are resolved
2	PTI DC20.2-88: Restraint cracks and their mitigation	Updated DC20.2 draft document to be reworked. Specific TG's to tackle most significant areas in need of improvement, however input from all committee members required.	All / TG	Mid to end of September 2017 for all TG review/feedback for discussion in Cancun
3	DC20.7-01, Design, Construction, and Maintenance of CIP PT Concrete Parking Structures	<b>On Hold</b> pending completion of item 2 above		<b>On hold</b>
4	ACI 318 Update	ACI cross-reference document as FAQ 'cheat sheet' to help navigate ACI 318-14 post-tension provisions. Committee to ballot proposed comparison table once released June 12, 2017	All	Comparison document to be ready for review June 12, 2017 and balloted within approximately 30 days thereafter
5	PT Manual 7 <sup>th</sup> Edition	DC-20 to review and comment on chapters once available, however not balloted by DC-20. Five chapters to be stage released within next 6 months for review/comment by specific volunteers.	Baxi / All	By Chapter release date
6	Two-Way Banded	TG to start working on Tech Note draft.	Jonathan/TG	Jonathan H will coordinate a web meeting with TG after June 16, 2017

Agenda Item	Expected Outcome / Actions Taken
<b>A. General</b>	
A.1 Call to Order	A.1 Call to order at 1:05pm
A.2 Introductions	A.2 All those present introduced themselves
A.3 Committee Roster /	A.3 Srini Neelamegam, Ryan Bonniwell and Todd Whisenhunt added

Agenda Item	Expected Outcome / Actions Taken
<p>Changes</p> <p>A.4 PTI Antitrust Policy</p>	<p>as Associate Members; Cary Kopczynski stepped down as a member of DC-20 TAB contact TBD.</p> <p>A.4 On sign-in sheet</p>
<p><b>B. Agenda &amp; Minutes</b></p> <p>B.1 Approval of Agenda</p> <p>B.2 Approval of Minutes from 10/5/16 (Meeting ballot required)</p>	<p>B.1 Hamid motion to approve agenda, Martin C Second</p> <p>B.2 Vote on Minutes approval from 10/5/16 Motion / Second: Martin M / Martin C <b>Result: 8-0-0 (Y-N-A)</b></p>
<p><b>C. Actions Taken Between Meetings</b></p> <p>C.1 Letter Ballots (1601)</p> <p>C.2 Web Meetings</p>	<p>C.1 Design Seminars ballot closed on March 27, 2017</p> <p>C.2 Two-way banded TG meeting on December 14, 2016.</p>
<p><b>1. Action Item 1: (Design Webinar Modules)</b></p> <p>1.1 Discuss modules and ballot</p> <p>1.2 Module Production</p>	<p>Discussion notes specific to items below:</p> <ol style="list-style-type: none"> <li>1) Module 2, slide 27; replace slide with similar image/description given in DC-20.2 document</li> <li>2) Module 2, slide 36; modify calculation to use more realistic ultimate shrinkage; suggested to remove factor of 2 on LT shrinkage potential; Asit suggested to include statement (written or spoken) to address differences between shrinkage of elements vs. shrinkage of frames as they are quite different.</li> <li>3) Module 4, slide 23; add slide to provide written suggestions for selecting banded direction based on building geometry</li> <li>4) Module 4, general; Jonathan H to suggest alternate chapter flow based on commentary relative to order of topics discussed.</li> <li>5) Module 5, general; remove and replace computer input/output with hand calculation example from PT Manual; include slide (or notes) at end providing examples of commercially available PT software</li> <li>6) Contributor slide to be placed at end of each module to recognize efforts and participation of DC-20 members</li> </ol> <p>Action Item: Web meeting in two (2) weeks to resolve all negatives; May 18 or 19 proposed by Carol and Amy. Amy to send Go-To meeting invite next week.</p>
<p><b>2. Action Item 2: (318-11 vs. 318-14 Comparison)</b></p> <p>2.1 Review Progress</p>	<p>2.1 Carol presented comparison table in MS Excel format for discussion to be further reviewed individually and balloted within the next few months.</p> <p>Miroslav: ACI has given DC20 permission to list ACI 318 provisions for comparison purposes and recommended to list PT related ACI 318-14 provisions to indicate where they were located in ACI 318-11 in lieu of starting with ACI 318-11 Chapter 18.</p>

Agenda Item	Expected Outcome / Actions Taken
	Publish ACI 318 PT provisions comparison on PTI website to facilitate navigating ACI 318-14 with associated commentary. Expected release date to DC-20 committee for review: June 12, 2017.
<p><b><u>3. Action Item 3: (PT Manual)</u></b> 3.1 Review progress</p> <p>3.2 Plan for review process</p>	<p>3.1 Asit – Chapters 5 and 9 currently being balloted by TAB likely without further review/comment from DC-20. Balance of chapters expected by August 2017 with some submitted sooner than others.</p> <p>3.2 Update on list of volunteers for each chapter:</p> <ol style="list-style-type: none"> <li>1) Chapter 5 - <u>Analysis and Design Fundamentals</u> ; Completed.</li> <li>2) Chapter 6 - <u>Detailing and Construction Procedures for Buildings</u>; Zuming, Mark, Rashid; release date to DC-20: July 31, 2017</li> <li>3) Chapter 7 - <u>Design examples</u> – TBD</li> <li>4) Chapter 8 - <u>Seismic Design of PT Concrete Structures</u>; Martin M, Bryan; expected release date to DC-20: May 15, 2017</li> <li>5) Chapter 9 - <u>PT Concrete Floors</u>; Completed.</li> <li>6) Chapter 10 <u>PT Parking Structures</u> ; Otto, Martin C, Bryan, and Eric; expected release date to DC-20: June 1, 2017</li> <li>7) Chapter 18 <u>Fire resistance</u> – No release date given</li> <li>8) Chapter 19 <u>Durability</u> (buildings and bridges) – expected release to DC-20: June 1, 2017.</li> <li>9) Chapter XX – <u>Sustainability</u>; expected release date to DC-20: September 22, 2017</li> <li>10) Chapter XY – <u>Anchorage Zone Design</u>; expected release date to DC-20: September 22, 2017</li> </ol>
<p><b><u>4. Action Item 4: (Parking Structures Manual)</u></b> 4.1 Volunteers for TG</p> <p>4.2 Action items</p>	<p>4.1 Confirm volunteer commitments for TG and identify document champion. TG Members: Ahmed, Cuadra, Gillard, Ober</p> <p>4.2 Set action items and expected completion dates. <b>On hold.</b></p>
<p><b><u>5. Action Item 5: (2-way Banded PT Technical Note)</u></b> 5.1 Review progress</p>	<p>5.1 Jonathan H updated the committee regarding his FEM analysis and development of preliminary design equations to determine reinforcing requirements based on a number of parametric studies with varying slab thickness, span and loading. Equation includes ACI 318 T&amp;S minimum reinforcing, adds effect of precompression bleeding into unreinforced section and multiplied by a factor taken from a best fit line of data points generated in the study. Equation is intended to best represent minimum steel required within bottom tensile zone of ‘unreinforced’ panels while allowing slabs to be analyzed by more traditional methods as if in a banded-uniform configuration. Slab spans considered varied between 22’-6” to 30’-0” with corresponding slab thicknesses from 6” to 12” and live loads between 20psf and 150psf.</p> <p>On a separate note, Martin Cuadra described his contacts with Bekaert</p>

Agenda Item	Expected Outcome / Actions Taken
5.2 Action items	<p>and their desire to incorporate steel fiber into two-way slab design to supplement/replace traditional rebar to resist both flexure and shear. Bakaert very interested in contributing funding for banded-banded slab testing at Virginia Tech to best substantiate steel fiber use in two-way slab design.</p> <p>In addition, Miroslav commented that it makes sense to progress on the Tech Note to get something published. The discussion on possible testing should not slow down the Tech Note effort. The discussion on the testing should concentrate on the technical feasibility and benefit and not on the financial aspects. The two proposals from before were simply totally out of reach and something would have to change dramatically to make it go. It is not clear how the tests would accommodate both, the steel fiber testing and the PT testing. Use of steel fiber cannot be a prerequisite for using dual banded PT.</p> <p>5.2 Jonathan's study merits a paper and/or Tech Note to show results and proposed design equations. Due date/timeline for draft outline set for June 16 to be followed by a web meeting soon thereafter. Martin C to meet with Bekaert in July 2017 at Virginia Tech to discuss further.</p>
<b>3:00 p.m. break</b>	
<p><b><u>6. Action Item 6: (Crack Mitigation Document)</u></b></p> <p>6.1 TGs update</p> <p>6.2 Tech Note</p>	<p>6.1 Updates:</p> <p>1) Causes of cracking chapter: TG Martin C and Eric; mostly completed pending minor edits. Estimated completion date: May 26, 2017.</p> <p>2) Shortening Equations, Examples and References: TG - Asit, Rashid, Carol. Web meeting scheduled with Bijan Alami to discuss origin of equations given in PTI Tech Note. Asit recommends use of PCI Design Handbook tables to estimate volume change. Rashid commented on the large number of methods available to calculate volume change and recommended the use of ACI 209 for this purpose. Concrete composition, curing factor (short term), relative humidity and volume/surface ratio all have an effect on overall volume change. To that end, Rashid recommends use of relative humidity, volume/surface ratio and holding mix shrinkage strain to 0.04% at 28 days. Consensus is to use ACI 209 simplified method or some very close variation of it. TBD.</p> <p>3) Validate or give recommendation as to specific numbers used in document i.e. 1/4" movement. TG - Asit, Eric; Eric mentioned need to establish purpose of shortening calculation relative to design intent and possible effects on restraining elements (columns/walls) with specific threshold numbers used by engineers as 'rules of thumb'</p> <p>4) <u>Connection details</u> – all committee members to contribute details on how best to handle restraint or restraint release. TG Asit, Bryan</p> <p>7) New ideas - shrinkage compensating concrete, concrete mix,</p>

Agenda Item	Expected Outcome / Actions Taken
	<p>curing procedures, lockable dowels, aggregate grading, etc. TG – Otto, Martin M</p> <p>8) Carol proposes FEM analysis for restraint calculations</p> <p>OK for anyone from DC-20 to contact Bijan Alami directly for questions regarding his restraint crack document</p>
<p><b>D. <u>New Business</u></b>  D.1 ACI 318 Temperature Tendon provisions</p> <p>D.2 Restrained vs. Unrestrained conditions</p>	<p>D.1 Asit discussed potential issue with ACI 318 provisions for temperature tendons using FEM analysis; current ACI 318 min precompression requirement of 100psi beyond effective flange width for one-way beam and slab systems with a maximum spacing of 4'-6" oc</p> <p>D.2 Not discussed</p>
<p><b>E. <u>Next Meeting</u></b></p>	<p>E. PTI Committee Days in Cancun, MX October 4-6, 2017</p>
<p><b>F. <u>Adjourn</u></b></p>	<p>F. Adjourned at 5:25pm</p>

**AGENDA / MEETING EXHIBITS**

Exhibit #	Subject
A.4	Sign-in/Anti-Trust

Committee: DC-20 BUILDING DESIGN Date: MAY 2, 2017

Meeting Location: EMBASSY 'C' HYATT REGENCY, ATLANTA, GA

\* I have read, understand, and agree to comply with PTI Anti-Trust Policy (attached).

Note to Committee members and visitors: All Committee meetings of the Post-Tensioning Institute should be conducted in a manner encouraging free and open discussion and debate of agenda items and matter properly before that Committee. Committee members and visitors are cautioned that such discussion and debate is solely for the purposes of the Charter of the Committee and PTI business. To that end, Committee discussions and debates are not considered public in nature, and, as such are to be held in confidence and do not become the official policy of PTI until properly reported, balloted, and published pursuant to procedures established by or by the adoption by the PTI Board of Directors. Committee members and visitors shall not quote, publish, use, or make use of, any oral or written drafts, drawings, calculations, or other materials, which are uttered or transcribed during the course of such meetings.

#	Name	Company	Voting/ Associate/ Guest	E-Mail	Policy*
1	MARTIN MAINGOT	SCA	V	MAINGOTM@SCAENGINEERS.COM	✓
2	Jonathan Hirsch	Bentley Systems, Inc.	V	jonathan.hirsch@bentley.com	✓
3	Carol Haych	CCL	✓	chayek@cclint.com	✓
4	MARTIN CLADRA	UFC	V	MCLADRA@UFCWORLDWIDE.COM	✓
5	SRINI NEELAMEGAM	CCL	A	sneelamegam@cclint.com	✓
6	RYAN BONNIWELL	ERICKSEN POED & ASSOC	A	RBONNIWELL@ERAEKLY.COM	✓
7	HAAMID AHMADY	Suncoast-PT	✓	HA@Suncoast-PT	✓
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9	ERIC OBER	SGH	✓	erobur@sgp.com	✓
10	ASIT. BAXI	BAXI ENG	✓	asit@baxi-ny.com	✓
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12	SIVA MUNUSWAMY	Thornton Tomasetti	A	Smunuswamy@thorntontomasetti.com	✓
13	Todd Whisenhunt	Thornton Tomasetti	A	twhisenhunt@thorntontomasetti.com	✓
14	Lance Osborne	Structural Technologies USL	G	losborne@structuraltec.com	✓
15	Don Kline	KEC	V		✓

Committee: DC-20 Date: 5/2/17

Meeting Location: Atlanta

\* I have read, understand, and agree to comply with PTI Anti-Trust Policy (attached).

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#	Name	Company	Voting/ Associate/ Guest	E-Mail	Policy*
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2	Amy Dowell	PTI	S		AMD
3	Gillian Love	SGH	G	gclove@sqh.com	✓
4	Adam Shaughnessy	Ambar Engineering	G		✓
5	Brian Larson	Avector	G		✓
6	DAN MASER	WALKER PARKING	G	dan.masere@walkerrestorations.com	✓
7	David Peralta	dperalta@unitech	G	dperalta@unitech.com	✓
8	Ralf Leistikow	WJE	G	rleistikow@wje.com	✓
9	Tracy Naso	WJE	G	tnaso@wje.com	✓
10	Rafael Machado	ELSTED OVERALL	A	RAF@ELSTEDOVERALL.COM	✓
11	Zuming Xia	VSL	V		✓
12	CARINE MAGALHAES	ADAPT	A	CARINE@ADAPTSOFT.COM	✓
13					
14					
15					



At a meeting on October 8, 1980, the Board of Directors first discussed the Institute's status and policies regarding compliance with antitrust laws. After review of both the internal and external compliance procedures, the following resolution was approved:

*"The staff, officers, directors and members of the Post-Tensioning Institute are reminded that they are required to comply with the spirit and specific requirements of the antitrust laws on all activities within the scope of, and related to, the official functions of PTI. Further, this restated position, along with appropriate explanatory material, should be placed in all meeting folders/books periodically, beginning with the 8th of October meeting of PTI."*

On July 24, 2012 and again on October 7, 2015, the Executive Committee authorized Legal Counsel to review and update this Policy Statement in the perspective of the Department of Justice Business Review Letter of July 30, 1997 and current case law. As a continuing guide for your participation in PTI's meetings, please review and continue to adhere to the following "Legal Limitation on Discussions at PTI Meetings."

### LEGAL LIMITATION ON DISCUSSIONS AT PTI MEETINGS AND EVENTS

A free exchange of ideas on matters of mutual interest to the members is necessary for the success of all meetings. Indeed, such an exchange of views is essential to the successful operation of every trade association and the law specifically allows legitimate exchange of views pertaining to, e.g., quality control, safety, building design and construction integrity, etc.

It is not the purpose of this memorandum to discourage the exploration in depth of any matters of legitimate concern to meeting participants. Nevertheless, to ignore certain antitrust ground rules, either through ignorance or otherwise, is to create a civil and criminal hazard businessmen simply cannot afford.

It is for these reasons that PTI provides you with a reminder that certain areas of formal and informal communication between competitors or between manufacturers and their suppliers and customers must be avoided, as posing potential antitrust problems.

The Sherman Antitrust Act, the Clayton Act, the Federal Trade Commission Act, and the Robinson-Patman Act comprise the basic federal antitrust laws, which set forth the broad areas of conduct considered illegal as restraints of trade. In general, agreements or understandings between competitors that operate as an impediment to free and open competition are forbidden. Federal antitrust prohibitions forbid any "agreement or understanding...to substantially lessen competition or tend to create a monopoly in any line of commerce." An important point to keep in mind is that communications and discussions between competitors or between sellers and customers, about matters which may be considered anti-competitive, often comprise the evidence from which courts infer antitrust violations. ***It is the policy of the Post-Tensioning Institute that such agreements, understandings or communications shall not be tolerated at any formal or informal meetings or social events of the Institute.***

The general prohibitions contained in the federal antitrust laws, have been particularized in the form of a series of consent decrees, originally entered against a number of member companies of various trade associations and the associations themselves. It is important to note that these laws not only apply to PTI members, but also to PTI itself. Often trade associations have been and are presently co-defendants in cases brought by the Justice Department and the Federal Trade Commission ("FTC"). Recently, the FTC has stated: "*Because trade associations are by their nature collaborations among competitors, the Commission and courts have long been concerned with anti-competitive restraints imposed by such organizations under the guise of codes of conduct. Competing for customers, cutting prices, and recruiting employees are hallmarks of vigorous competition. Agreements among competitors not to engage in these activities injure consumers by increasing prices and reducing quality and choice.*" Similar "codes" or policies and requirements that encourage directly or indirectly members' unlawful activity are strictly forbidden by PTI in the course of its business with its members.

## **SPECIFIC EXAMPLES OF ACTIVITIES AND PRACTICES PROHIBITED**

### **AT ALL PTI MEETINGS AND EVENTS:**

Included in activities and practices which are forbidden, and are contrary to the policy of the Institute, both under the general antitrust laws and the consent decrees, subject to the said Business Review Letter, are the following:

- Agreeing to allocate markets, customers or suppliers among competitors, classify certain customers or suppliers being entitled to preferential treatment by manufacturers, and establish geographic trading areas.
- Participating in any plan designed to induce any manufacturer or distributor to sell or refrain from selling, or discriminate in favor of, or against any particular customer or class of customers.
- Agreeing in any manner to fix or otherwise establish bids, prices (including price increases, decreases, standardization or stabilization), profits, costs, contract terms affecting price (such as discounts and credit terms), etc. because, e.g. prices were too low, with the exception of certain resale pricing agreements between manufacturers and retailers or distributors.
- Agreeing in any manner to limit or restrict the quality of products to be produced (e.g., restrictions on selling coated strand to certain customers).
- Participating in any plan which has the effect of discriminating against, or excluding competitors, suppliers or customers.

These examples are provided to guide you in your discussions during formal and informal PTI meetings and social events. If the occasion arises, more specific advice will be provided by legal counsel, who is required by Article IV, Section 7 of the PTI By-Laws to be present at all meetings of the Board of Directors and the Executive Committee.