

AGENDA

PTI TAB Technical Advisory Board (Closed Meeting)

October 22, 2020, 2:00 PM – 6:00 PM EDT

Virtual Convention

Voting Members Present (0 of 12, Quorum for meeting vote = 5)

Don Kline, Chair	Kline Engineering & Consulting
Miroslav Vejvoda, Secretary, NV	PTI Staff, NV
Hamid Ahmady	Suncoast Post-Tension Ltd
Rashid Ahmed	Walker Parking Consultants
Asit Baxi	Baxi Engineering, Inc.
Martin Cuadra	Uzum+Case, LLC
Carol Hayek	CCL USA
Don Illingworth	Don Illingworth & Assoc., Inc.
Bill Klorman	Klorman Construction
Doug Schlegel	Consultant
Andrea Schokker	University of Minnesota Duluth
Mike Schwager	Schwager Davis, Inc.
Edgar Zuniga	Dywidag Systems International USA
Tim Christle	PTI Staff, NV
Amy Dowell	PTI Staff, NV
Tony Johnson	PTI Staff, NV

Visitors

SUMMARY OF ACTION ITEMS FROM LAST / THIS MEETING

Item #	Subject	Action	Responsible	Deadline / Completed
D.1	TAB Code TG	Set up TG web meeting	Staff and Code TG	July 2020
2.2	CJ Couplers	Response to GTI testing	TG: Don K, Asit, Andrea, Rashid	Before fall 2020 meeting
2.2	CJ Couplers	Check availability of WJE testing for GTI	Staff	Fall meeting
2.2	CJ Couplers	TN with caution to designers for beams	TG	Fall meeting
2.4.1	0.7 fpu at Transfer	Draft FAQ that evolves into code change proposal	Asit	Fall meeting
2.4.2	Restrained vs. Unrestrained	DC-20 to move forward TN	Carol	Within 6 months
5.1.1	DC-10 Responses to TAB comments	Organize web meeting to review responses	Amy and Martin C, Carol, Don K	In 2 weeks

Item #	Expected Outcome / Actions Taken
<p>A – General</p> <p>A.1 Call to order</p> <p>A.2 Introduction / Announcements</p> <p>A.3 TAB Roster / Membership Rotation</p> <p>TAB Member Rotation:</p> <ul style="list-style-type: none"> • 2020: Ahmed, Schlegel (2003, 2008) • 2021: Kline, Zuniga (2008, 2012) • 2022: Hayek (2012), Baxi (2003) • 2023: Klorman, Illingworth (2014, 2015) • Member rotation per TCM <p>The list of potential TAB candidates (no particular order):</p> <ul style="list-style-type: none"> • Bob Sward (Chair M-50) • Jack Graves (Officer) • Drew Micklus • Frank Malits • Greg Hunsicker (Chair CRT-40, CRT-70; EC secretary) • Martin Maingot • Jim Donnelly (Chair CRT-60) <p>A.4 PTI Antitrust Policy (Exhibit A.4)</p> <p>A.5 Committee Annual Reports</p>	<p>A.1 Meeting was called to order at 2:00 PM.</p> <p>A.2</p> <p>A.3 The official TAB roster is on the PTI website. Hamid Ahmady is a new member of TAB – Welcome! Jonathan Hirsch and John Crigler are considered for now members at the Board meeting at this virtual convention. The two members leaving TAB after this meeting are Rashid Ahmed and Doug Schlegel – Thank you for your contributions!</p> <p>The new process of getting new members on TAB:</p> <ul style="list-style-type: none"> • TAB to nominate 2 new TAB members • The new Nominating Committee will review the nominations and make recommendations to the Board. • The Board will review the recommendations and vote on the new member appointments. <p>Don Kline contacted the candidates nominated by TAB to establish their availability to serve.</p> <ul style="list-style-type: none"> • Greg Hunsicker withdrew due to his already heavy participation. • Johnathan Hirsch accepted. • Bob Sward withdrew in favor of nominating John Crigler • John and Jonathan have been invited to attend the meeting although their official board approval is expected on Friday after this meeting. <p>A.4 All present are reminded of the PTI Antitrust Policy and are asked to adhere to it.</p> <p>A.5 The Annual Reports will be attached to the fall committee meeting agenda of all committees and sent to TAB by the end of October.</p>
<p>B. Agenda & Minutes</p> <p>B.1 <u>Approval of Agenda</u></p> <p>B.2 <u>Approval of Meeting Minutes</u> (Meeting ballot required)</p>	<p>B.1 Any changes to the agenda?</p>

Item #	Expected Outcome / Actions Taken
B.2.1 Approval of Meeting Minutes from 6/9/20 (web meeting) (Exhibit B.2.1)	B.2.1 Motion / Second to approve Meeting Minutes from 6/9/20: Name / Name, 0-0-0 (Y-N-A)
<p>C. Actions Taken Between Meetings</p> <p>C.1 <u>Letter Ballots</u></p> <p>C.1.1 Ballot-TAB-1902-Addenda M10.2 & M10.6</p> <p>C.1.2 Ballot-TAB-1904-PT Manual Chapter 19-Durability</p> <p>C.1.3 Ballot-TAB-1905-M-55 Chair Selection</p> <p>C.1.4 Ballot-TAB-1906-PT Manual Chapter 8-Seismic Design & Chapter 23-BIM</p> <p>C.1.5 Ballot-TAB-19xx-PTI DC-45 Chair Succession</p> <p>C.1.6 Ballot TAB-1907-DC20-TN-Dual Banded PT</p> <p>C.1.7 Ballot-TAB-1908- PT Manual Chapter 11-PT Slabs-on-Ground & Chapter 25-Sustainability</p> <p>C.1.8 Ballot-TAB-1909- PT Manual Chapter 7-Design Examples</p> <p>C.1.9 Ballot-TAB-2001- PT Manual 7th Edition-Chapters 5, 9, 17, 23</p> <p>C.1.10 Ballot-TAB-2002- Design, Construction, & Maintenance of Post-Tensioned Concrete Courts</p> <p>C.1.11 Ballot-TAB-2003- PT Manual 7th Edition-Chapters 14, 15</p> <p>C.1.12 Ballot-TAB-2004-DC-10-PT Foundation and Flatwork TN</p> <p>C.1.13 Ballot-TAB-2006-DC20.2-XX Restraint Cracks and Their Mitigation in Unbonded PT Building Structures</p>	C.1

Item #	Expected Outcome / Actions Taken
<p>C.2 <u>Web Meetings</u> C.2.1 Web Meeting on 4/16/20</p>	
<p>D. TAB Standing Agenda Items:</p> <p>D.1 <u>TAB PT Code TG:</u> Don Kline (Lead), Martin Cuadra, Carol Hayek, Rashid Ahmed, Andrea Schokker, Asit Baxi, Frank Malits, Jonathan Hirsch, Miroslav Vejvoda, Tim Christle (Secretary).</p> <p>D.1.1 TG Meetings</p>	<p>D.1 Summary of items being addressed:</p> <p>D.1.1 First TG meeting took place on 10/5/20 Recurring web meetings; next meeting on November 5, 2020, 1:00 to 3:00 PM</p>
<p>1. Technical Committee Personnel</p> <p>1.1 <u>Technical Committee Chairs and Missions</u></p> <p>1.2 <u>Technical Committee Members</u></p>	<p>1.1 Current Chairs: PTI website lists all committees with the official rosters, Chairs, and missions.</p> <p>1.2 Ongoing approval process by Committee Chair and TAB Chair, with staff verification of conflict and/or balance of interest.</p>
<p>2. TAB Initiatives</p> <p>2.1 <u>Dual banded tendons in two-way slabs</u></p> <p>2.1.1 Initiative to permit dual banded PT arrangement in NY</p> <p>2.2 <u>Construction Joint Couplers</u> (Rashid Ahmed)</p>	<p>2.1 Status report – Tim Christle:</p> <p>2.1.1 Status of the initiative – Tim Christle:</p> <p>2.2 TG evaluation of CJ couplers Status report – Rashid Ahmed Action Items from WM on 4/16/20 and 6/9/20:</p> <ul style="list-style-type: none"> • Don/Asit/Andrea will prepare a draft response to GTI with feedback after their presentation to TAB in Santa Fe. The response will provide feedback and additional questions related to the coupler. The draft response will be sent to the coupler TG for comment before sending to GTI. • The testing for GTI was done by WJE; the test report and Ted's presentation to TAB would be helpful, if available; staff will check. • The task group will develop a Tech Note for the intermediate coupler use in slabs and beams. <p>The action items were confirmed.</p> <p>At this point, however, intermediate anchorages are again</p>

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	available.
2.3 <u>Post-Tensioned Parking Structures</u>	2.3 DC-25 Parking Structures Committee, Chair Rashid Ahmed Report: See item 5.1.3
2.4 <u>PTI Positions on important issues</u>	
2.4.1 0.7 f_{pu} limit at transfer	2.4.1 Asit Baxi volunteered to draft and FAQ which could be also used for a code change proposal, most likely to ACI/PTI 320. Asit Baxi report:
2.4.2 Restrained vs. unrestrained conditions in 2-way slabs	2.4.2 See last meeting minutes for discussion. Outcome: <ul style="list-style-type: none"> • Organize others to work on issue jointly and to find funding for possible testing: • Carol Hayek will contact NIST, NFCA, John Hopkins University • Tony Johnson will contact ACI Foundation • Andrea Schokker could participate if needed
2.4.3 Accelerated Construction <ul style="list-style-type: none"> • Bridges: ABC; precast • Buildings: Peikko; modular; CLT (Cross-Laminated Timber) 	2.4.3 As many types of accelerated construction are getting attention, is there anything PTI can do to highlight PT advantage in faster construction?
2.4.4 Environmental Product Declaration (EPD)	2.4.4
2.5 <u>DC-80.3 Guide for Evaluation and Repair of PT Structures</u>	2.5 DC 80.3 repair document is ready for update. PTI has established contact with ICRI to work jointly on this effort. See also item 5.1.7.
2.6 <u>PTI M-10 & ACI 423.7 Watertightness testing of encapsulated tendons</u>	2.6 This item was covered in the web meeting on 4/16/20. There was another ballot on the ACI 423 subcommittee that passed with general consensus and will be sent to the main 423. PTI can now adjust M10.2 to match this new testing protocol.
2.7 <u>M-10 & CRT-80 PT components requirements and certification</u>	2.7 This item was covered in the web meeting on 4/16/20. Some comments from TAB were forwarded to the M-10 TG. The proposals were balloted by M-10; this item can be removed from the TAB agenda.
2.8 <u>Barrier Cable test for short spans</u> Barrier Cable test for short spans. Asit proposed conducting simple testing of short BC run in order to establish/verify design criteria. There is disagreement on how to interpret IBC Code language and other industry guidance (PTI manual) for	2.8 Report by Asit Baxi

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<p>purposes of designing BC.</p> <p>2.9 <u>Other Initiatives?</u></p>	<p>2.9</p>
<p>3. Relations with other Organizations</p> <p>3.1 <u>ACI</u></p> <p>3.1.1 ACI 301, Specification for Structural Concrete</p> <p>3.1.2 ACI 318, Structural Concrete Building Code</p> <p>3.1.3 ACI 350, Environ. Eng. Conc. Structures</p> <p>3.1.4 ACI 362, Parking Structures</p> <p>3.1.5 ACI 423, Prestressed Concrete</p> <p>3.2 <u>ICRI</u></p> <p>3.3 <u>IBC</u></p> <p>3.4 <u>AISC</u></p> <p>3.5 <u>ASCE</u></p> <p>3.6 <u>ASBI</u></p> <p>3.7 <u>TRB</u></p> <p>3.8 <u>FIB</u></p> <p>3.9 <u>CSA</u></p> <p>3.10 <u>ACCS</u></p> <p>3.11 <u>Contacts to Spec Writing Agencies</u></p>	<p>3.1.1 ACI 301: Neel Khosa is the new PT subcommittee Chair.</p> <p>3.1.2 See item D.1</p> <p>3.1.3 ACI 350: New cycle starting</p> <p>3.1.4 ACI 362:</p> <p>3.1.5 ACI 423: 423.7 specification is being finalized.</p> <p>3.2 A joint effort is underway to produce a new revision of the DC80.3-12 document. See also item 5.1.7</p> <p>3.3 DC10.5-19: Standard Requirements for Design and Analysis of Shallow Post-Tensioned Concrete Foundations on Expansive and Stable Soils DC10.Barrier Cable</p> <p>3.4</p> <p>3.5</p> <p>3.6 Closer cooperation between PTI, ASBI, PCI is evolving as part of the National Concrete Bridge Council (NCBC) in an effort to provide industry information to AASHTO with FHWA support.</p> <p>3.7</p> <p>3.8</p> <p>3.9</p> <p>3.10</p> <p>3.11</p>

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<p>4. Technical Committee Procedures</p> <p>4.1 <u>Technical Committee Manual</u></p> <p>4.2 <u>Post-Tensioning Terminology (PTT)</u></p> <p>4.3 <u>Membership Appointment Procedures</u></p>	<p>4.1 With some changes of the By-Laws, the TCM should now be updated. It was proposed to combine TCM and CCM to avoid unnecessary duplication or inconsistent approach.</p> <p>4.2</p> <p>4.3 TCM regulates appointments of membership; Section 1.5. Are there any proposed changes to this process?</p>
<p>5. Technical Committee Reports</p> <p>5.1 <u>PTI Technical Committees</u></p> <p>5.1.1 DC-10</p> <p>5.1.2 DC-20</p> <p>5.1.3 DC-25</p> <p>5.1.4 DC-35</p>	<p>5.1 Reports from committee Chairs / TAB Contacts</p> <p>5.1.1 DC-10, Slab-on-Ground Committee; Chair Tony Childress (Don Illingworth – TAB Contact)</p> <ul style="list-style-type: none"> • Post-Tensioned Concrete Courts: Published • Flatwork Tech Note: Published shortly • SOG Design Guide – being finalized <p>5.1.2 DC-20, Building Design Committee; Chair Carol Hayek</p> <ul style="list-style-type: none"> • Restraint Cracking Document: Finalizing; balloted by TAB • Dual Banded PT Tech Note (since T3 tested): balloted • Restrained vs. Unrestrained FAQ: To TAB soon • Temperature Tendons FAQ: To TAB soon <p>DC-20A, BIM Subcommittee; Chair Frank Malits</p> <ul style="list-style-type: none"> • Final IFC exchange document: To ACI 131 in August 2020 • PTI and ACI review to run concurrently in September 2020 <p>5.1.3 DC-25, Parking Structures Committee; Chair Rashid Ahmed</p> <ul style="list-style-type: none"> • Established in 2019 • Updating PTI/CRSI/NRMCA “CIP Concrete Parking Structures” from 1992; target publication in 2021 • TG: Standard efficient designs with pricing for various design classes; target publication in 2021 • TG: Tech Note, Recommendations for CIP PT Structure Durability Advantages; target publication late 2020 • Planning on updating of DC20.7-01, Design, Construction and Maintenance of CIP PT Concrete Parking Structures; target publication in 2021 <p>5.1.4 DC-35, Prestressed Rock and Soil Anchor Committee (Asit Baxi – TAB Contact)</p>

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5.1.5 DC-40	<ul style="list-style-type: none"> • PTI DC35.1-14, Recommendations for Prestressed Rock & Soil Anchors • Committee meets at the virtual convention. <p>5.1.5 DC-40, Bridge Design Committee; Chair Brian Merrill (Mike Schwager – TAB Contact)</p> <ul style="list-style-type: none"> • FHWA document being updated to new AASHTO Specifications • Slow process
5.1.6 DC-45	<p>5.1.6 DC-45, Cable Stayed Bridge Committee, Chair Gregory Hasbrouck (Mike Schwager – TAB Contact)</p> <ul style="list-style-type: none"> • New cycle after publication of DC45.1-18, Recommendations for Stay Cable Design, Testing, and Installation • Several new initiatives • Task groups meeting end of June / beginning of July on: <ul style="list-style-type: none"> • Bending fatigue • Filler test • HDPE pipe requirements • Performance monitoring
5.1.7 DC-80	<p>5.1.7 DC-80, Repair, Rehab. & Strengthening Committee; Chair Tracy Naso (Don Kline – TAB Contact)</p> <ul style="list-style-type: none"> • Working to issue ballot on Repair Webinar this fall • Starting review of needed updates to DC80.3-12, Guide for Evaluation & Repair of Unbonded PT Concrete Structures; new edition will be coordinated with ICRI • TN drafted and ready for committee review/ballot
5.1.8 M-10	<p>5.1.8 M-10, Unbonded Tendon Committee; Chair Michael Williams (Rashid Ahmed – TAB Contact)</p> <ul style="list-style-type: none"> • M10.2-17, Specification for Unbonded Single Strand Tendons with Addendum #1 published in November 2019 • Working on new requirements for PT system components • Balloting of proposals – resolving negatives at this meeting • This revision will provide requirements for CRT-80 Unbonded PT Systems Certification <p>Barrier Cable documents' updates nearing completion</p> <ul style="list-style-type: none"> • TG completed Tech Note 14 revision: M-10 Ballot in July 2020
5.1.9 M-50	<p>5.1.9 M-50, Bonded Tendon Committee; Chair Bob Sward (Edgar Zuniga – TAB Contact)</p> <ul style="list-style-type: none"> • New cycle after publication of M50.3-19 Specification for Multistrand & Grouted PT • Electrically Isolated Tendons (EIT) • Replaceable Tendons

Item #	Expected Outcome / Actions Taken
<p>5.1.10 M-55</p> <p>5.2 <u>Committees' Annual Reports</u></p> <p>5.3 <u>TAB Contact Assignments</u></p> <p>DC-10: Don Illingworth DC-20: Carol Hayek DC-25: Rashid Ahmed DC-35: Asit Baxi DC-40: Mike Schwager DC-45: Mike Schwager DC-80: Don Kline M-10: Rashid Ahmed M-50 Edgar Zuniga M-55: Andrea Schokker</p>	<ul style="list-style-type: none"> • New business items from last cycle <p>5.1.10 M-55, Grouting Committee; Chair Brian Merrill (Andrea Schokker – TAB Contact)</p> <ul style="list-style-type: none"> • New cycle after publication of M55.1-19 Specification for Grouting of PT Structures • New business items from last cycle <p>5.2 Committee are asked to submit the Annual Reports by the end of October.</p> <p>5.3 There is no need for TAB contact for subcommittees or TGs, although there might be occasionally a need for TAB representation on a subcommittee or TG. When TAB members retire, and new ones join, the TAB contact assignments will be reviewed and revised accordingly.</p>
<p>6. Technical Committee Documents (Open Meeting)</p> <p>6.1 <u>Existing PTI Technical Documents</u></p> <p>6.2 <u>New / Proposed PTI Technical Documents</u></p> <p>6.2.1 TAB.1 PT Manual (a) The process for TAB review of chapters:</p> <ul style="list-style-type: none"> • Ballots 30 days; two chapters at a time • Schedule regular web meetings • Ballot reminders; 2W, 1W, 3D (web balloting) • For each chapter, there are 2 TAB Primary Reviewers • Outside reviewers can be added if needed. Some committees such as DC-20 and DC-80 may have volunteers to review respective chapters. 	<p>6.1 Existing documents</p> <p>6.2 Proposed documents</p> <p>6.2.1 PT Manual PT Manual Revision</p> <ul style="list-style-type: none"> • Major effort with updating the PTI Flagship document from 2006 • Existing 21 chapters with 4 new ones (Repair, Rehab. & Strengthening; BIM; Anchorage Zone Design; Sustainability) <ul style="list-style-type: none"> • 8 chapters in writing phase • 2 chapters submitted for processing • 2 chapters in TAB review • 7 chapters in post-TAB review editing, preparing for ballot • 2 chapters, TAB ballot just closed • 2 chapters in post-TAB ballot editing; preparing for publishing • 2 chapters being published

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(b) Status Report: Tim Christle	<p>(b) Chapter Status is in (Exhibit 6.2.1.(b)) Chapter publishing completed by March 2021 Tim Christle discussed the chapter progress table with some chapters still needing authors.</p> <ul style="list-style-type: none"> • Mike Schwager volunteered as TAB primary reviewer for Chapter 12 – Bridges • Andrea Schokker asked for the existing Chapter 12 to see if she could review it for revisions • Amy will contact DC-45 Chair Greg Hasbrouck to possibly have some DC-45 members update Chapter 13 – Stay Cables
<p>7. Other Publications (Open Meeting)</p> <p>7.1 New PTI Technical Notes?</p> <p>7.2 New PTI FAQs?</p> <p>7.3 PTI <i>JOURNAL</i></p>	<p>7.1 Technical Notes nearing completion:</p> <ul style="list-style-type: none"> • Temperature Tendons: • Restraint to Shortening: <p>7.2</p> <p>7.3 A paper was submitted to PTI with a negative view of unbonded PT installation: Pantoli et. Al. “Is Tendon Tail Cutting Compromising the Watertightness of Encapsulated PT Tendons” TAB and some EC members have reviewed it. Modifications would be necessary before possible publication. The general issue is how to deal with negative reporting on PT:</p> <ul style="list-style-type: none"> • Simply not publish – may get published elsewhere without PTI control • Try to modify to remain factual – not hiding issues but ensuring they are in the right context
<p>8. Conventions and Other Meetings (Open Meeting)</p> <p>8.1 2020 / 2021 Technical Sessions</p> <p>8.2 2021 Committee Chair Luncheon</p> <p>8.3 2021 PTI & TAB Awards</p>	<p>8.1</p> <p>8.2</p> <p>8.3</p>
<p>9. Educational Items</p> <p>9.1 <u>Excerpt from the Strategic Plan:</u></p> <ul style="list-style-type: none"> • Revise and update documents older than 6 years • Revise and update FAQs and TNs older than 4 years 	<p>9.1 Coordination with the Education Committee; Professor's Seminar – TAB recommendations:</p>

Item #	Expected Outcome / Actions Taken
<ul style="list-style-type: none"> • Develop library of selected FAQs with focus on PTI position on all PT applications • Identify research needs for PT • Solicit support from stakeholders for financing, per project • Develop a course for PTI Building Design and compile required webinar modules and course materials • Develop a course for PT SOG Design and compile required webinar modules and course materials <p>9.2 <u>Design Seminars</u> PTI offers half- and full-day in-person seminars per special request. Demand raising for online delivery</p>	<p>9.2 PTI should respond to the raising demand for online PT design seminars. Development of new material takes a long time, and an interim solution should be offered, some options:</p> <ul style="list-style-type: none"> • Use existing PPs for a live delivery (available immediately) • Record such webinars for wider and on-demand delivery (a couple of months the most to make this available) • Update some of those presentations and delivers similar to the items above • Restructure materials for a true interactive online learning (probably at least 6 months away)
<p>D. New Business (Open Meeting)</p> <p>D.1 Any New Business?</p>	<p>D.1</p>
<p>E. Next Meeting</p> <p>E.1 2021 PTI Convention, Indianapolis IN, April 18-21, 2021</p> <p>E.2 Web Meetings</p>	<p>E.1 Westin Indianapolis: exact day and time will be announced when known.</p> <p>E.2 As needed</p>
<p>F. Adjourn</p>	<p>F. Meeting adjourned at 0:00 PM.</p>

AGENDA / MINUTES EXHIBITS

Exhibit #	Subject
A.4	PTI Antitrust Policy

B.2.1	Meeting Minutes from 6/9/20

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.

MINUTES

PTI TAB Technical Advisory Board

June 9, 2020, 1:00 PM – 3:00 PM EDT

Virtual Meeting

Voting Members Present (10 of 11, Quorum for meeting vote = 5)

<u>Don Kline</u> , Chair	Kline Engineering & Consulting
<u>Miroslav Vejvoda</u> , Secretary, NV	PTI Staff, NV
<u>Rashid Ahmed</u>	Walker Parking Consultants
<u>Asit Baxi</u>	Baxi Engineering, Inc.
<u>Martin Cuadra</u>	Uzum+Case, LLC
<u>Carol Hayek</u>	CCL USA
<u>Don Illingworth</u>	Don Illingworth & Assoc., Inc.
Bill Klorman	Klorman Construction
<u>Doug Schlegel</u>	Consultant
<u>Andrea Schokker</u>	University of Minnesota Duluth
<u>Mike Schwager</u>	Schwager Davis, Inc.
<u>Edgar Zuniga</u>	Dywidag Systems International USA
<u>Tim Christle</u>	PTI Staff, NV
<u>Amy Dowell</u>	PTI Staff, NV
<u>Tony Johnson</u>	PTI Staff, NV

Visitors

SUMMARY OF ACTION ITEMS FROM LAST / THIS MEETING

Item #	Subject	Action	Responsible	Deadline / Completed
D.1	TAB Code TG	Set up TG web meeting	Staff and Code TG	July 2020
2.2	CJ Couplers	Response to GTI testing	TG: Don K, Asit, Andrea, Rashid	Before fall 2020 meeting
2.2	CJ Couplers	Check availability of WJE testing for GTI	Staff	Fall meeting
2.2	CJ Couplers	TN with caution to designers for beams	TG	Fall meeting
2.4.1	0.7 fpu at Transfer	Draft FAQ that evolves into code change proposal	Asit	Fall meeting
2.4.2	Restrained vs. Unrestrained	DC-20 to move forward TN	Carol	Within 6 months
5.1.1	DC-10 Responses to TAB comments	Organize web meeting to review responses	Amy and Martin C, Carol, Don K	In 2 weeks
6.2.1	PT Manual	Continue balloting / resolving chapters	All	Ongoing

Item #	Expected Outcome / Actions Taken
<p>A – General</p> <p>A.1 Call to order</p> <p>A.2 Introduction / Announcements</p> <p>A.3 TAB Roster / Membership Rotation</p> <p>TAB Member Rotation:</p> <ul style="list-style-type: none"> • 2020: Ahmed, Schlegel (2003, 2008) • 2021: Kline, Zuniga (2008, 2012) • 2022: Hayek (2012), Baxi (2003) • 2023: Klorman, Illingworth (2014, 2015) • Member rotation per TCM <p>The list of potential TAB candidates (no particular order):</p> <ul style="list-style-type: none"> • Bob Sward (Chair M-50) • Jack Graves (Officer) • Drew Micklus • Frank Malits • Jonathan Hirsch • Greg Hunsicker (Chair CRT-40, CRT-70) • Martin Maingot • Jim Donnelly (Chair CRT-60) <p>A.4 PTI Antitrust Policy (Exhibit A.4)</p> <p>A.5 Committee Annual Reports</p>	<p>A.1 The meeting was called to order at 1:15 PM.</p> <p>A.2 All present knew each other, and no introductions were necessary.</p> <p>A.3 The official TAB roster is on the PTI website. In Santa Fe, TAB agreed on adding Hamid Ahmady to TAB. This will be added to the Board agenda on June 10, 2020 for their approval before the appointment becomes official.</p> <p>TAB Member rotation: After the 2020 fall meeting, Rashid Ahmed and Doug Schlegel will end their terms on TAB.</p> <p>The new process of getting new members on TAB:</p> <ul style="list-style-type: none"> • TAB to nominate 2 new TAB members • The new Nominating Committee will review the nominations and make recommendations to the Board. • The Board will review the recommendations and vote on the new member appointments. This is not possible for the meeting on 6/10/20. <p>TAB nominations from the existing list of candidates: After a debate, TAB selected 3 candidates and voted on the order of preference:</p> <ul style="list-style-type: none"> • Greg Hunsicker (1) • Jonathan Hirsch (1) • Bob Sward (2) <p>Don Kline will contact the candidates to establish their availability to serve.</p> <p>If timing allows, the incoming TAB members would be invited to attend the fall 2020 TAB meeting.</p> <p>A.4 All present were reminded of the PTI Antitrust Policy that was attached to the agenda and is on the PTI website.</p> <p>A.5 The Annual Reports will be attached to the fall committee meeting agenda of all committees and sent to TAB by the end of October.</p>
<p>B. Agenda & Minutes (Closed Meeting)</p> <p>B.1 <u>Approval of Agenda</u></p>	<p>B.1 No changes to the agenda were approved.</p>

Item #	Expected Outcome / Actions Taken
<p>B.2 <u>Approval of Meeting Minutes</u> (Meeting ballot required)</p> <p>B.2.1 Approval of Meeting Minutes from 9/27/18 in Colorado Springs; On the website; (Exhibit B.2.1)</p> <p>B.2.2 Approval of Meeting Minutes from 5-6-19 in Seattle; (Exhibit B.2.2)</p> <p>B.2.3 Approval of Meeting Minutes from 10/3/19 in Santa Fe; (Exhibit B.2.3)</p> <p>B.2.4 Approval of Meeting Minutes from 4/16/20, Web Meeting; (Exhibit B.2.4)</p>	<p>B.2.1 Motion / Second to approve Meeting Minutes from 9/27/18: Illingworth / Baxi, 9-0-0 (Y-N-A)</p> <p>B.2.2 Motion / Second to approve Meeting Minutes from 5/6/19: Illingworth / Schlegel, 8-0-1 (Y-N-A)</p> <p>B.2.3 Motion / Second to approve Meeting Minutes from 10/3/19: Illingworth / Zuniga, 9-0-0 (Y-N-A)</p> <p>B.2.4 Motion / Second to approve Web Meeting Minutes from 4/16/20: Baxi / Ahmed, 8-0-1 (Y-N-A)</p>
<p>C. Actions Taken Between Meetings (Closed Meeting)</p> <p>C.1 <u>Letter Ballots</u></p> <p>C.1.1 Ballot-TAB-1902-Addenda M10.2 & M10.6</p> <p>C.1.2 Ballot-TAB-1904-PT Manual Chapter 19-Durability</p> <p>C.1.3 Ballot-TAB-1905-M-55 Chair Selection</p> <p>C.1.4 Ballot-TAB-1906-PT Manual Chapter 8-Seismic Design & Chapter 23-BIM</p> <p>C.1.5 Ballot-TAB-19xx-PTI DC-45 Chair Succession</p> <p>C.1.6 Ballot TAB-1907-DC20-TN-Dual Banded PT</p> <p>C.1.7 Ballot-TAB-1908- PT Manual Chapter 11-PT Slabs-on-Ground & Chapter 25-Sustainability</p> <p>C.1.8 Ballot-TAB-1909- PT Manual Chapter 7-Design Examples</p> <p>C.1.9 Ballot-TAB-2001- PT Manual 7th Edition-Chapters 5, 9, 17, 23</p>	<p>C.1 For information only; ballots were not reviewed at this meeting as they are on the website.</p>

Item #	Expected Outcome / Actions Taken
<p>C.1.10 Ballot-TAB-2002- Design, Construction, & Maintenance of Post-Tensioned Concrete Courts</p> <p>C.1.11 Ballot-TAB-2003- PT Manual 7th Edition-Chapters 14, 15</p> <p>C.2 <u>Web Meetings</u> C.2.1 Web Meeting on 4/16/20</p>	<p>C.2.1 Web meeting minutes are in (Exhibit B.2.4)</p>
<p>D. TAB Standing Agenda Items:</p> <p>D.1 ACI 318 and related committees' organization and PTI Approach:</p> <p><u>TAB TG: Don Kline (Lead)</u>, Martin Cuadra, Carol Hayek, Rashid Ahmed, Andrea Schokker, Asit Baxi, Frank Malits, Jonathan Hirsch, Miroslav Vejvoda, Tim Christle (Secretary).</p>	<p>D.1 ACI 318 Prestressed concrete subcommittee split into precast-prestressed ACI 318-P (Chair: Carin Roberts-Wollmann) and post-tensioned ACI 318-T (Chair: Andrea Schokker) ACI 319 created for precast-prestressed (Chair: Andrea Schokker) and ACI 320 created for post-tensioned concrete related items (Chair: Carol Hayek)</p> <ul style="list-style-type: none"> • PTI will have greater opportunity to get PT-related items considered by the ACI 318 Code Committee • PTI will have the opportunity to propose new items and / or changes into the ACI 320, a Dependent Code <p>Note from 318T Chair Andrea Schokker:</p> <ul style="list-style-type: none"> • We're coming up on the window where we'd need to ballot any change items, we'd like to get in the next round of 318 voting. Please take a look at the change proposal list and see if you will have any items ready fairly soon. If I can assist, let me know. List of items is in (Exhibit D.1). • New items should be drafted rather soon to ensure they can be balloted and moved to 318 main committee. <p>320 Chair Carol Hayek:</p> <ul style="list-style-type: none"> • ACI TAC has approve the joint committee status of ACI/PTI 320 • Tony Johnson reported that PTI EC has approved the joint status while EC TG is reviewing the proposed MOU between ACI and PTI. It should be finalized in the next 2 to 3 weeks. <p>TAB TG to develop Code Change Proposals for ACI 318-T and ACI 320. Don Kline suggested to schedule a TG meeting as soon as possible in June 2020. A survey will be sent to TG members to identify a day/time.</p>
<p>1. Technical Committee Personnel (Closed Meeting)</p> <p>1.1 <u>Technical Committee Chairs and Missions</u></p>	<p>1.1 Current Chairs: PTI website lists all committees with the official rosters, Chairs, and missions.</p>

Item #	Expected Outcome / Actions Taken
<p>2.4.2 Restrained vs. unrestrained conditions in 2-way slabs</p>	<ul style="list-style-type: none"> • PTI Tech Note and / or Code Change Proposal <p>Discussion:</p> <ul style="list-style-type: none"> • An on-going signification issue for PT companies. • It likely came from old stress-relived strand with high relaxation losses and from the precast requirements. Bruce Russell might know the origin of the requirement. • Predominantly an issue for single strand unbonded tendons. • Multistrand tendons are often stressed to different jacking forces and this limit is typically enforced. • Asit Baxi volunteered to draft and FAQ which could be also used for a code change proposal, most likely to ACI/PTI 320. <p>2.4.2 The engineering community is split on how to interpret codes on this issue. Precast elements are often considered restrained while C-I-P PT concrete end span is not. There is a need for a PTI position on this issue.</p> <p>Restrained vs. unrestrained condition:</p> <ul style="list-style-type: none"> • Code requirements not specific allowing interpretation • Some engineers consider end spans in slab restrained (East) and others unrestrained (West USA) • PTI TN being drafted by DC-20 TG (Siva Munuswamy, Martin Cuadra); Siva left Thornton Tomasetti and he left no contact information. • TN will need additional work and other CRT-20 members. <p>Discussion:</p> <ul style="list-style-type: none"> • No clear path to consensus: <ul style="list-style-type: none"> • CRSI has a TN for CIP as being restrained • PCI promotes precast with 2 in. of CIP topping as restrained • PCI has this issue on the list for ACI 319 • Fire specialists say it all should be unrestrained • PTI to take position with others to say that CIP PT concrete is restrained • ACI 216 going in direction of restrained • IBC says unrestrained but is not very clear • Original research in 1970s went into ACI 316; the testing was either-or while the reality should have some more gradual approach • Research showed that PT fails at 800 F while rebar at 1200 F • A PTI TN would be a good start <ul style="list-style-type: none"> • Listing all even contradictory approaches • Stating PTI preference based on those approaches • Collect information on fires on existing structures • Organize others to work on issue jointly and to find funding for possible testing: • Carol Hayek will contact NIST, NFCA, John Hopkins University • Tony Johnson will contact ACI Foundation • Andrea Schokker could participate if needed

Item #	Expected Outcome / Actions Taken
<p>2.5 Accelerated Construction</p> <ul style="list-style-type: none"> • Bridges: ABC; precast • Buildings: Peikko; modular; CLT (Cross-Laminated Timber) <p>2.6 DC-80.3 Guide for Evaluation and Repair of PT Structures</p> <p>2.7 Environmental Product Declaration (EPD)</p> <p>2.8 PTI M-10 & ACI 423.7 Watertightness testing of encapsulated tendons</p> <p>2.9 M-10 & CRT-80 PT components requirements and certification</p> <p>2.10 Other Initiatives?</p>	<p>2.5 As many types of accelerated construction are getting attention, is there anything PTI can do to highlight PT advantage in faster construction? There was no time for this item.</p> <p>2.6 DC 80.3 repair document is ready for update. PTI has established contact with ICRI to work jointly on this effort. See also item 5.1.7.</p> <p>2.7 There was not time to cover this item.</p> <p>2.8 This item was covered in the web meeting on 4/16/20. There was another ballot on the ACI 423 subcommittee that passed with general consensus and will be sent to the main 423. PTI can now adjust M10.2 to match this new testing protocol.</p> <p>2.9 This item was covered in the web meeting on 4/16/20. Some comments from TAB were forwarded to the M-10 TG. The proposals will be balloted by M-10 soon.</p> <p>2.10 There was no time to cover this item.</p>
<p>3. Relations with other Organizations (Closed Meeting)</p> <p>3.1 <u>ACI</u></p> <p>3.1.1 ACI 301, Specification for Structural Concrete</p> <p>3.1.2 ACI 318, Structural Concrete Building Code</p> <p>3.1.3 ACI 350, Environ. Eng. Conc. Structures</p> <p>3.1.4 ACI 362, Parking Structures</p> <p>3.1.5 ACI 423, Prestressed Concrete</p> <p>3.2 <u>ICRI</u></p> <p>3.3 <u>IBC</u></p>	<p>3.1.1 ACI 301:</p> <p>3.1.2 ACI 318: This item will be removed as it is now covered under D, Standing Agenda Items.</p> <p>3.1.3 ACI 350:</p> <p>3.1.4 ACI 362:</p> <p>3.1.5 ACI 423:</p> <p>3.2 A joint effort will be started to produce a new revision of the DC80.3-12 document. See also item 5.1.7</p> <p>3.3 There was no time to cover this item. DC10.5-19: Standard Requirements for Design and Analysis of Shallow Post-Tensioned Concrete Foundations on Expansive and Stable Soils DC10.Barrier Cable</p>

Item #	Expected Outcome / Actions Taken
3.4 <u>AISC</u> 3.5 <u>ASCE</u> 3.6 <u>ASBI</u> 3.7 <u>TRB</u> 3.8 <u>FIB</u> 3.9 <u>CSA</u> 3.10 <u>ACCS</u> 3.11 <u>Contacts to Spec Writing Agencies</u>	3.4 3.5 3.6 3.7 3.8 3.9 3.10 3.11
4. Technical Committee Procedures (Closed Meeting) 4.1 Technical Committee Manual 4.2 Post-Tensioning Terminology (PTT) 4.3 Membership Appointment Procedures	4.1 Not covered 4.2 4.3
5. Technical Committee Reports (Open Meeting) 5.1 PTI Technical Committees 5.1.1 DC-10 5.1.2 DC-20	5.1 Reports from committee Chairs / TAB Contacts 5.1.1 DC-10, Slab-on-Ground Committee; Chair Tony Childress <ul style="list-style-type: none"> • Post-Tensioned Concrete Courts: Resolving TAB comments <ul style="list-style-type: none"> • Amy reported on the DC-10 responses to TAB comments that might need some closer look. The 3 main TAB reviewers (Martin Cuadra, Carol Hayek, Don Kline) agreed to have a web meeting to review the responses. A WM will be organized within 2 weeks • Flatwork Tech Note: In TAB ballot; end date 6/13/20 • SOG Design Guide – editorial comments on structural and geotechnical sections 5.1.2 DC-20, Building Design Committee; Chair Carol Hayek <ul style="list-style-type: none"> • Restraint Cracking Document: Finalizing; ready for TAB mid-June • Dual Banded PT Tech Note (since T3 tested): To TAB in July 2020 • Restrained vs. Unrestrained FAQ: DC-20 ballot in July 2020

Item #	Expected Outcome / Actions Taken
5.1.3 DC-25	<ul style="list-style-type: none"> • Temperature Tendons FAQ: To TAB in July 2020 <p>DC-20A, BIM Subcommittee; Chair Frank Malits</p> <ul style="list-style-type: none"> • Final IFC exchange document: To ACI 131 in August 2020 • PTI and ACI review to run concurrently in September 2020 <p>5.1.3 DC-25, Parking Structures Committee; Chair Rashid Ahmed</p> <ul style="list-style-type: none"> • Established in 2019 • Updating PTI/CRSI/NRMCA “CIP Concrete Parking Structures” from 1992; target publication in 2021 • TG: Standard efficient designs with pricing for various design classes; target publication in 2021 • TG: Tech Note, Recommendations for CIP PT Structure Durability Advantages; target publication late 2020 • Planning on updating of DC20.7-01, Design, Construction and Maintenance of CIP PT Concrete Parking Structures; target publication in 2021
5.1.4 DC-35	<p>5.1.4 DC-35, Prestressed Rock and Soil Anchor Committee</p> <ul style="list-style-type: none"> • PTI DC35.1-14, Recommendations for Prestressed Rock & Soil Anchors • Committee will be revitalized in 2020
5.1.5 DC-40	<p>5.1.5 DC-40, Bridge Design Committee; Chair Brian Merrill</p> <ul style="list-style-type: none"> • FHWA document being updated to new AASHTO Specifications • Slow process
5.1.6 DC-45	<p>5.1.6 DC-45, Cable Stayed Bridge Committee, Chair Gregory Hasbrouck</p> <ul style="list-style-type: none"> • New cycle after publication of DC45.1-18, Recommendations for Stay Cable Design, Testing, and Installation • Several new initiatives • Task groups meeting end of June / beginning of July on: <ul style="list-style-type: none"> • Bending fatigue • Filler test • HDPE pipe requirements • Performance monitoring
5.1.7 DC-80	<p>5.1.7 DC-80, Repair, Rehab. & Strengthening Committee; Chair Tracy Naso</p> <ul style="list-style-type: none"> • Working to issue ballot on Repair Webinar this fall • Starting review of needed updates to DC80.3-12, Guide for Evaluation & Repair of Unbonded PT Concrete Structures; new edition will be coordinated with ICRI • TN drafted and ready for committee review/ballot
5.1.8 M-10	<p>5.1.8 M-10, Unbonded Tendon Committee; Chair Michael</p>

Item #	Expected Outcome / Actions Taken
<p>5.1.9 M-50</p> <p>5.1.10 M-55</p> <p>5.2 Committees' Annual Reports</p> <p>5.3 TAB Contact Assignments DC-10: Don Illingworth DC-20: Carol Hayek DC-25: Rashid Ahmed DC-35: Asit Baxi DC-40: Mike Schwager DC-45: Mike Schwager DC-80: Don Kline M-10: Rashid Ahmed M-50 Edgar Zuniga M-55: Andrea Schokker</p>	<p>Williams</p> <ul style="list-style-type: none"> • M10.2-17, Specification for Unbonded Single Strand Tendons with Addendum #1 published in November 2019 • Working on new requirements for PT system components • Balloting of proposals in June-July 2020 • This revision will provide requirements for CRT-80 Unbonded PT Systems Certification <p>Barrier Cable documents' updates nearing completion</p> <ul style="list-style-type: none"> • TG completed Tech Note 14 revision: M-10 Ballot in July 2020 <p>5.1.9 M-50, Bonded Tendon Committee; Chair Bob Sward</p> <ul style="list-style-type: none"> • New cycle after publication of M50.3-19 Specification for Multistrand & Grouted PT • Electrically Isolated Tendons (EIT) • Replaceable Tendons • New business items from last cycle <p>5.1.10 M-55, Grouting Committee; Chair Brian Merrill</p> <ul style="list-style-type: none"> • New cycle after publication of M55.1-19 Specification for Grouting of PT Structures • New business items from last cycle <p>5.2 Committee are asked to submit the Annual Reports by the end of October.</p> <p>5.3 There is no need for TAB contact for subcommittees or TGs, although there might be occasionally a need for TAB representation on a subcommittee or TG. When TAB members retire, and new ones join, the TAB contact assignments will be reviewed and revised accordingly.</p>
<p>6. Technical Committee Documents (Open Meeting)</p> <p>6.1 <u>Existing PTI Technical Documents</u></p> <p>6.2 <u>New / Proposed PTI Technical Documents</u></p> <p>6.2.1 TAB.1 PT Manual (a) The process for TAB review of</p>	<p>6.1 Existing documents list is in (Exhibit 6.1)</p> <p>6.2 Proposed documents list is in (Exhibit 6.2)</p> <p>6.2.1 PT Manual PT Manual Revision</p>

Item #	Expected Outcome / Actions Taken
<p>chapters:</p> <ul style="list-style-type: none"> • Ballots 30 days; two chapters at a time • Schedule regular web meetings • Ballot reminders; 2W, 1W, 3D (web balloting) • For each chapter, there are 2 TAB Primary Reviewers • Outside reviewers can be added if needed. Some committees such as DC-20 and DC-80 may have volunteers to review respective chapters. <p>(b) Status Report: Tim Christle</p>	<ul style="list-style-type: none"> • Major effort with updating the PTI Flagship document from 2006 • Existing 21 chapters with 4 new ones (Repair, Rehab. & Strengthening; BIM; Anchorage Zone Design; Sustainability) <ul style="list-style-type: none"> • 8 chapters in writing phase • 2 chapters submitted for processing • 2 chapters in TAB review • 7 chapters in post-TAB review editing, preparing for ballot • 2 chapters, TAB ballot just closed • 2 chapters in post-TAB ballot editing; preparing for publishing • 2 chapters being published <p>(b) Chapter Status is in (Exhibit 6.2.1.(b)) Chapter publishing completed by March 2021 Tim Christle discussed the chapter progress table with some chapters still needing authors.</p> <ul style="list-style-type: none"> • Mike Schwager volunteered as TAB primary reviewer for Chapter 12 – Bridges • Andrea Schokker asked for the existing Chapter 12 to see if she could review it for revisions • Amy will contact DC-45 Chair Greg Hasbrouck to possibly have some DC-45 members update Chapter 13 – Stay Cables
<p>7. Other Publications (Open Meeting)</p> <p>7.1 New PTI Technical Notes?</p> <p>7.2 New PTI FAQs?</p> <p>7.3 Sustainability</p>	<p>7.1 Technical Notes nearing completion:</p> <ul style="list-style-type: none"> • Temperature Tendons: • Restraint to Shortening: <p>7.2</p> <p>7.3</p>
<p>8. Conventions and Other Meetings (Open Meeting)</p> <p>8.1 2020 / 2021 Technical Sessions</p> <p>8.2 2021 Committee Chair Luncheon</p> <p>8.3 2021 PTI & TAB Awards</p>	<p>8.1</p> <p>8.2</p> <p>8.3</p>
<p>9. Educational Items</p> <p>9.1 Excerpt from the Strategic Plan:</p>	<p>9.1 Coordination with the Education Committee; Professor's</p>

A.4	PTI Antitrust Policy
B.2.1	Meeting Minutes from 9/27/18
B.2.2	Meeting Minutes from 5/6/19
B.2.3	Meeting Minutes from 10/3/19
B.2.4	Web Meeting Minutes from 4/16/20
D.1	List of Items for ACI 318T
2.4.1	Issue with Code limit of 0.7 fpu at transfer
6.2.1 (b)	PT Manual Chapter Status

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.

Minutes

PTI TAB Technical Advisory Board

Thursday, September 27, 2018, 8:00 AM – 12:00 PM

The Antlers Wyndham Hotel, Colorado Springs, CO – Room Heritage Ballroom A

Voting Members Present (6 of 12)

<u>Don Kline</u> , Chair	Kline Engineering & Consulting
<u>James Cagley</u> , Vice Chair	Cagley & Associates
<u>Miroslav Vejvoda</u> , Secretary	PTI Staff, NV
Rashid Ahmed	Walker Parking Consultants
<u>Asit Baxi</u>	Baxi Engineering, Inc.
John Crigler	VSL
<u>Carol Hayek</u>	CCL USA
Don Illingworth	Don Illingworth & Assoc., Inc.
Bill Klorman	Klorman Construction
Cary Kopczynski	Cary Kopczynski & Co.
<u>Doug Schlegel</u>	Consultant
Andrea Schokker	University of Minnesota Duluth
<u>Edgar Zuniga</u>	Dywidag Systems International USA

Visitors

SUMMARY OF ACTION ITEMS FROM LAST / THIS MEETING

Item #	Subject	Action	Responsible	Deadline / Completed
1.1	DC-20 BIM Subcommittee	Contact Frank Malits for interest in chairing	Staff	Done
1.3.1	DC-20 BIM Subcommittee	Prepare a PP presentation on BIM	Bill Klorman	September 15, 2018
3.1.2	Splitting of ACI 318-G	Compile list of reasons for splitting 318-G to be sent to Jack Moehle before 318 meeting in Las Vegas; members to send suggestions to Bill	Bill Klorman; All	September 30, 2018
4.1	TCM Updates	Review draft changes; propose additional changes	All	September 15, 2018
5.3	TAB Contacts	Contact your committee Chair for discussion of committee activities	TAB Contact Members	Ongoing
6.2.1	PT Manual	Ballot chapters; start with 2 chapters	Staff	July 27, 2018
8.4	New PTI Website	Prepare presentation to introduce the website features with focus on the committee user	Staff	Before PTI Committee Days
9.1	Educational Items	Review and prepare for a discussion on this topic from the Strategic Plan	All	Before PTI Committee

				Days
D.1	PTI Position on Important Subjects	Review and prepare for a discussion on this topic	All	Before PTI Committee Days
D.2	Accelerated Construction	Review and prepare for a discussion on this topic	All	Before PTI Committee Days

Item #	Expected Outcome / Actions Taken
<p>A – General</p> <p>A.1 Call to order</p> <p>A.2 Introduction / Announcements</p> <p>A.3 TAB Roster / Membership Rotation</p> <p>Membership Rotation:</p> <ul style="list-style-type: none"> • 2018: Rotate 2 members: Crigler, Cagley (2003, 2003) • 2019: Baxi, Kopczynski (2003, 2003) • 2020: Ahmed, Schlegel (2003, 2008) • 2021: Kline, Zuniga (2008, 2012) • 2022: Hayek (2012) • 2023: Klorman, Illingworth (2014, 2015) <p>The list of potential TAB candidates (no particular order):</p> <ul style="list-style-type: none"> • Martin Cuadra - Joining • Mike Schwager - Joining • Hamid Ahmady • Bob Sward (Chair M-50) • Jack Graves (Officer) • Drew Micklus • Frank Malits • Jonathan Hirsch • Greg Hunsicker • Martin Maingot • Jim Donnelly <p>Newly appointed TAB members should attend the fall meeting as observers; outgoing TAB members should rotate off TAB after the fall meeting.</p> <p>A.4 PTI Antitrust Policy</p>	<p>A.1 The meeting was called to order at 8:30 am.</p> <p>A.2</p> <p>A.3 The official TAB roster is on the PTI website.</p> <p>TAB Member rotation: After the 2018 fall meeting, Jim Cagley and John Crigler will end their term on TAB. TAB recognizes their long-term contributions to the committee.</p> <p>New TAB Members:</p> <ul style="list-style-type: none"> • Martin Cuadra and Mike Schwager have accepted invitation to join TAB after the 2018 fall meeting. • TAB will be notified when EC confirms the appointments. <p>Other potential candidates: Additional potential candidates added to the list: Greg Hunsicker, Martin Maingot, Jim Donnelly.</p> <p>Martin Cuadra and Mike Schwager have been invited to join TAB at the Colorado Springs meeting this fall. Mike is unable to make it due to a 70th birthday celebration of his father and PTI Legend Guido Schwager.</p>

Item #	Expected Outcome / Actions Taken
<p>(Exhibit A.4)</p> <p>A.5 Committee Annual Reports</p>	<p>A.4 All present are reminded of the PTI Antitrust Policy.</p> <p>A.5 The Annual Reports will be attached to the fall committee meeting agenda of all committees and sent to TAB by the end of October.</p>
<p>B. Agenda & Minutes (Closed Meeting)</p> <p>B.1 <u>Approval of Agenda</u></p> <p>B.2 <u>Approval of Meeting Minutes</u> (Meeting ballot required)</p> <p>B.2.1 Approval of Summer Web Meeting Minutes from 7-26-18, distributed on 7-27-18.</p>	<p>B.1 Changes to the agenda: none</p> <p>B.2.1 Motion / Second to approve Meeting Minutes from 7-27-18: Schlegel / Ahmad, 6-0-1 (Y-N-A)</p>
<p>C. Actions Taken Between Meetings (Closed Meeting)</p> <p>C.1 <u>Letter Ballots</u></p> <p>C.1.1 Ballot-TAB-1802: PT Manual Chapters 5&9, Ballot End 8-27-18</p> <p>C.1.2 Ballot-TAB-1803: M55.1 Grouting Spec, Ballot End 9-20-18</p> <p>C.1.3 Ballot-TAB-1804: M50.3 Multistrand PT Spec, End 9-20-18</p> <p>C.1.4 Ballot-TAB-1805: PT Manual Chapters 14&15, Ballot End 9-30-18</p> <p>C.1.5 Ballot-TAB-1806: DC10.5 Standard, Ballot End 10-15-18</p> <p>C.2 <u>Web Meetings</u></p> <p>C.2.1 Summer WM on 7-26-18</p>	<p>C.1.2 Ballot will be extended.</p> <p>C.1.3 Ballot will be extended.</p> <p>C.1.4 The PT Manual reviews should continue as agreed:</p> <ul style="list-style-type: none"> • 2 TAB primary reviewers • Outside reviewers as needed • Subject committee representatives as outside reviewers as needed • Tab WM (all) review results of ballots; the chapter author(s) to be invited to this web meeting <p>C.1.5 Industrial floors: TAB TG: Asit, Carol, MV, Don, someone from DC-10 (Jack), possibly Ken Bondy to review existing old document and make recommendations for items to address Sports courts: Jack Graves will propose how this document will be updated</p>

Item #	Expected Outcome / Actions Taken
<p>1. Technical Committee Personnel (Closed Meeting)</p> <p>1.1 <u>Technical Committee Chairs</u></p> <p>1.2 <u>Technical Committee Members</u></p> <p>1.3 <u>Technical Committee Missions</u></p> <p>1.3.1 DC-20A BIM Subcommittee</p>	<p>1.1 Current Chairs (Exhibit 5.1 - Attached to the meeting minutes from Minneapolis) BIM Subcommittee of DC-20: Frank Malits appointed</p> <p>1.2</p> <p>1.3 Current technical committees' missions (Exhibit 1.3 - Attached to the meeting minutes from Minneapolis)</p> <p>1.3.1 The efforts of DC-20A with the new Chair focus on two items:</p> <ul style="list-style-type: none"> • Finalize the new BIM chapter of the PT Manual • Create the PT related Industry Foundation Classes (IFC) and work with ACI 131 (BIM of Concrete Structures) to incorporate it in that document. PTI EC endorsement of this approach will be requested. • General • Annual report and review of membership
<p>2. New TAB Initiatives (Closed Meeting)</p> <p>2.1 Tendons banded in both directions</p> <p>2.2 Other Initiatives?</p>	<p>2.1 Status report – Tim Christle Agreement Bekaert-PTI – Sub-license agreement was drafted by Bekaert. It was reviewed, and proposed changes sent to Bekaert. Their response was just received. The EC including the legal counsel will review the contract before PTI is authorized to sign it.</p> <p>2.4</p>
<p>3. Relations with other Organizations (Closed Meeting)</p> <p>3.1 <u>ACI</u></p> <p>3.1.1 ACI 301, Specification for Structural Concrete</p> <p>3.1.2 ACI 318, Structural Concrete Building Code</p> <p>3.1.3 ACI 350, Environ. Eng. Conc. Structures</p>	<p>3.1 Ted Neff is a 301 PT subcommittee Chair and a 423 TG lead on performance-based specification. PTI will notify the main committee Chairs that Ted no longer represents PTI; but he can continue his roles, of course, if he so desires.</p> <p>3.1.2 Splitting of 318-G? What action is necessary? Bill to draft list of reasons and send it to ACI 318 Chair, Jack Moehle, a few days before the convention. All to contribute by sending possible reasons to Bill by the end of September.</p> <p>3.1.3 TAB members reported that unbonded tendons are used for repair of wire wrapped tanks. This should be documented in</p>

Item #	Expected Outcome / Actions Taken
<p>3.1.4 ACI 362, Parking Structures</p> <p>3.1.5 ACI 423, Prestressed Concrete</p>	<p>Job Reports to be able to show existing deficiencies of wire wrapped tanks and the suitability of unbonded tendons as circumferential PT.</p> <p>Another suggestion was to try to split the 350-E Precast-Prestress subcommittee.</p> <p>3.1.4</p> <p>3.1.5 Strand relaxation testing is required to be performed or observed and certified by an independent testing agency, per ACI 423.7-14 and PTI M10.2-17. Questions were raised about this requirement as most strand suppliers are currently doing it in house, without independent observation by others. This puts the PT suppliers potentially at risk.</p> <p>This came up as a negative vote on the Plant Certification Manual updates. M-10 has started a TG to investigate how this requirement got into the specs (it was not in the previous versions of the ACI and PTI specifications).</p> <p>The TG proposed removing the independent observation and confirmation of the strand relaxation testing from M10.2. This was balloted by M-10 and the ballot passed, with comments resolved at this M-10 meeting. The PTI legal counsel was present and pointed out that since the current specification requires the independent lab to be accredited by ASTM C1077, which no is not applicable, the requirement is unenforceable. This makes it less critical for now.</p> <p>The TG discussed the best approach in getting new PTI M10.2 modified requirement to ACI 423.7. It was decided to bring it in only after the PTI spec is published (after TAB and public review) and when there is a chance for it to be accepted at 423 (currently the new edition is likely closed for new business).</p>
<p>3.2 <u>ICRI</u></p>	
<p>3.3 <u>IBC</u></p>	<p>3.3 Barrier Cable</p>
<p>3.4 <u>AISC</u></p>	
<p>3.5 <u>ASCE</u></p>	
<p>3.6 <u>ASBI</u></p>	<p>3.6 Randy Cox will retire and Gregg A. Freeby from TXDOT will replace him. This should not affect the PTI-ASBI relationship or the course of ASBI. The EC debated the M-50 joint TG without an MOU with ASBI. Since all the document sales are on the PTI side, without any participation payment to ASBI, it may be better to keep the setup as is. This may have to be reconsidered if the</p>

Item #	Expected Outcome / Actions Taken
<p>3.7 <u>TRB</u></p> <p>3.8 <u>FIB</u></p> <p>3.9 <u>CSA</u></p> <p>3.10 <u>ACCS</u></p> <p>3.11 <u>Contacts to Spec Writing Agencies</u></p>	<p>new ASBI Manager takes a different approach.</p> <p>3.8 Ted Neff is the Commission 5 – Reinforcement Chair. The next meeting takes place in Australia in the beginning of October. PTI notified <i>fib</i> that Ted no longer represents PTI; but he can continue his roles, of course, if he so desires. The EC wants PTI's <i>fib</i> participation, ACI, PCI, etc. participation be removed from the future Executive Director's tasks.</p> <p>3.10 Framework, the first wood high-rise building in the US (Portland, OR) has been placed on hold for the foreseeable future. The stated reasons were: Changing market conditions over the past two years including inflation, escalating construction costs, and fluctuations in the tax credit market, all affecting the project's bottom line.</p> <p>Another article showed some technical issues, ENR Northwest, September 5, 2018: 'Regluing' Oregon State's Showcase for Mass Timber.</p>
<p>4. Technical Committee Procedures (Closed Meeting)</p> <p>4.1 Technical Committee Manual</p> <p>4.2 Post-Tensioning Terminology (PTT)</p>	<p>4.1 A draft with changes reflecting the new committee and TG arrangement was prepared by staff. (Exhibit 4.1)</p> <p>Amy Dowel presented the main proposed changes:</p> <ul style="list-style-type: none"> • Committee organization with new focus on TGs • Committee membership <ul style="list-style-type: none"> ○ possibly limiting number of committees ○ restricted committee membership for selected committees ○ committee membership participation and terminations ○ committee roster credit in documents • Committee meetings including requests necessary from TGs and subcommittees <p>TAB members are asked to review the draft changes and make overall suggestions regarding:</p> <ul style="list-style-type: none"> • The proposed changes • Any other possible changes <p>Any suggestions obtained will be discussed at the Colorado Springs meeting and the TCM will be balloted after the meeting.</p>

Item #	Expected Outcome / Actions Taken
4.3 Membership Appointment Procedures	
<p>5. Technical Committee Affairs (Open Meeting)</p> <p>5.1 Changes to Committees</p> <p>5.2 Committees' Annual Reports</p> <p>5.3 TAB Contact Assignments M-10: Rashid Ahmed M-50 Edgar Zuniga M-55: Andrea Schokker DC-10: Don Illingworth DC-20: Hayek DC-35: Asit Baxi DC-40: Mike Schwager DC-45: Mike Schwager DC-80: Don Kline</p>	<p>5.1 Current committees are in (Exhibit 5.1 - Attached to the meeting minutes from Minneapolis)</p> <p>5.2 Committee are asked to submit the Annual Reports by the end of October.</p> <p>5.3 Updated TAB Contact Members are reflected on the left. There is no need for TAB contact for TGs. When TAB members retire, and new ones join, the TAB contact assignments will be reviewed and revised accordingly.</p>
<p>6. Technical Committee Documents (Open Meeting)</p> <p>6.1 <u>Existing PTI Technical Documents</u></p> <p>6.2 <u>New / Proposed PTI Technical Documents</u></p> <p>6.2.1 TAB.1 PT Manual</p> <ul style="list-style-type: none"> • Review progress • Make/confirm assignments with deadlines • Balloting plan with dates • Chapter Primary Reviewers <p>It is becoming critical to publish the 7th edition of the PT Manual in the near future. A plan to publication should be prepared, possibly considering omitting some of the (new) chapters. Continuing the balloting plan, the new target for completion is summer 2020.</p> <p>6.3 TAB Document Review</p>	<p>6.1 Existing documents list is in (Exhibit 6.1 - Attached to the meeting minutes from Minneapolis)</p> <p>6.2 Proposed documents list is in (Exhibit 6.2 - Attached to the meeting minutes from Minneapolis)</p> <p>6.2.1 PT Manual</p> <p>The process for TAB review of chapters:</p> <ul style="list-style-type: none"> • Ballots 30 days; two chapters at a time • Schedule regular web meetings • Ballot reminders; 2W, 1W, 3D • For each chapter, there are 2 TAB Primary Reviewers • Outside reviewers can be added if needed. Some committees such as DC-20 and DC-80 may have volunteers to review respective chapters. <p>Balloted chapters:</p> <ul style="list-style-type: none"> • 5 (Analysis and Design) & 9 (Floor Framing Systems) • 14 (Storage Structures) & 15 (Rock and Soil Anchors) <p>Next chapters:</p> <ul style="list-style-type: none"> • <p>6.3 Some other documents are coming to TAB for review:</p>

Item #	Expected Outcome / Actions Taken
	<ul style="list-style-type: none"> • Technical Note: Dual Banded PT Tendon Layout; DC-20 ballot ended 9-26-18; next step is TAB review. • Technical content of webinars (DC-20, EDU-130, DC-80)
<p>7. Other Publications (Open Meeting)</p> <p>7.1 New PTI Technical Notes?</p> <p>7.2 New PTI FAQs?</p> <p>7.3 Sustainability</p>	<p>7.1 Technical Notes nearing completion:</p> <ul style="list-style-type: none"> • Temperature Tendons: Completed; will go to DC-20 ballot first (2 reviews – committee and TAB) • Restraint to Shortening: Christle: After the Colorado meeting, a final draft will be assembled and issued for ballot to DC-20. The overall goal is to publish the full, updated DC20.2-19 in the 1st quarter of 2019. <p>7.3 Carol Hayek: A draft document for ACI 423 was for precast and PT; later separated PT from precast, as the precast side withdrew. There are the same issues as on 318-G, with competing industries blocking progress. Examples were taken out, benefits of systems, ETDs, etc. The strand data is still missing. This will be a ACI 423 document. On the PTI side, only the new Sustainability Chapter is being drafted for the PT Manual.</p>
<p>8. Conventions and Other Meetings (Open Meeting)</p> <p>8.1 2018 Technical Sessions More requests were obtained than available time slots; however, too many relatively late, preventing a selection process to select the best.</p> <p>8.2 2019 Committee Chair Luncheon</p> <p>8.3 PTI & TAB Awards</p> <p>8.4. New PTI Website</p>	<p>8.4 A presentation will be organized at the 2018 PTI Committee Days in Colorado Springs to introduce the website and the committee features from the users' perspective.</p>
<p>9. Educational Items</p> <p>9.1 Excerpt from the Strategic Plan:</p> <ul style="list-style-type: none"> • Revise and update documents older than 6 years • Revise and update FAQs and TNs older than 4 years • Develop library of selected FAQs with focus on PTI position on all PT applications 	<p>9.1 Coordination with the Education Committee; Professor's Seminar – TAB recommendations:</p> <p>This item will be discussed in detail during the TAB meeting in Colorado Springs. Members are asked to review this topic and be prepared for a discussion. In general, TAB supports PTI participation in the Professor's Seminar.</p>

Item #	Expected Outcome / Actions Taken
<ul style="list-style-type: none"> • Identify research needs for PT • Solicit support from stakeholders for financing, per project • Develop a course for PTI Building Design and compile required webinar modules and course materials • Develop a course for PT SOG Design and compile required webinar modules and course materials 	
<p>D. New Business (Open Meeting)</p> <p>D.1 PTI Positions on important subjects</p> <ul style="list-style-type: none"> • ACI 318: Unified PTI position on 318-G and 318 ballots • Restrained vs. unrestrained conditions in 2-way slabs • Other important items? <p>D.2 Accelerated Construction</p> <ul style="list-style-type: none"> • Bridges: ABC • Buildings: Peikko <p>D.3 Barrier Cable</p> <p>D.4 New PTI Website</p>	<p>D.1 This item will be discussed in detail during the TAB meeting in Colorado Springs. Members are asked to review this topic and be prepared for a discussion. There was no time to discuss this item.</p> <p>D.2 A short discussion evolved in Minneapolis with some members considering it important and others not very important. This item will be discussed in detail during the TAB meeting in Colorado Springs. Members are asked to review this topic and be prepared for a discussion. There was no time to further discuss this item.</p> <p>D.3 Barrier Cable: Survey of professional members and others ended with weak return. The results are nonconclusive regarding which method people use and with minimum lengths people use. Only 57 of 351 people returned responses. Will be on the TAB agenda for Colorado Springs. Tim Christle: The TGs are continuing work on the barrier cable documents, although it is moving slowly.</p> <p>D.4 The new website has been launched.</p>
<p>E. Next Meeting</p> <p>E.1 TAB Winter WM?</p> <p>E.2 PTI Convention in Seattle, May 5-8, 2019</p> <p>E.3 Web Meetings</p>	<p>E.2 The exact day and time will be announced when available.</p> <p>E.3 Web Meetings will be scheduled as needed.</p>

Item #	Expected Outcome / Actions Taken
F. Adjourn	F. The meeting was adjourned at 12:00 pm.

AGENDA / MINUTES EXHIBITS

Exhibit #	Subject
A.4	PTI Antitrust Policy / Sign-in Sheet

MINUTES

PTI TAB Technical Advisory Board

Monday, May 6, 2019, 1:30 PM – 5:30 PM

Hyatt Regency Seattle, Seattle WA – Room 605 Snohomish

Voting Members Present (10 of 12)

<u>Don Kline</u> , Chair	Kline Engineering & Consulting
<u>Miroslav Vejvoda</u> , Secretary	PTI Staff, NV
<u>Rashid Ahmed</u>	Walker Parking Consultants
<u>Asit Baxi</u>	Baxi Engineering, Inc.
<u>Martin Cuadra</u>	Uzun+Case, LLC
<u>Carol Hayek</u>	CCL USA
<u>Don Illingworth</u>	Don Illingworth & Assoc., Inc.
<u>Bill Klorman</u>	Klorman Construction
<u>Cary Kopczynski</u>	Cary Kopczynski & Co.
<u>Doug Schlegel</u>	Consultant
<u>Andrea Schokker</u>	University of Minnesota Duluth
<u>Mike Schwager</u>	Schwager Davis, Inc.
<u>Edgar Zuniga</u>	Dywidag Systems International USA

Visitors

None

SUMMARY OF ACTION ITEMS FROM LAST / THIS MEETING

Item #	Subject	Action	Responsible	Deadline / Completed
1	Splitting of ACI 318-G	Provide reasons / justification for split and nominate a Chair for the PT subcommittee	All	March 18, 2019
2	ACI Technical Session 2020 Chicago	Propose speakers (yourself, others) and presentation subjects / titles	All	March 18, 2019
3	Ballot: Paper Award	Propose paper(s) for paper award	All	March 24, 2019
4	Ballot: M10.2 & M10.6 Addendum	Review/approve Addendum	All	March 24, 2019
5	TCM Update	Prepare proposed changes	Staff	Ballot start April 1, 2019
6	PT Manual	Continue balloting / resolving one chapter per month	All	Ongoing

Item #	Expected Outcome / Actions Taken
<p>A – General</p> <p>A.1 Call to order</p> <p>A.2 Introduction / Announcements</p> <p>A.3 TAB Roster / Membership Rotation</p> <p>TAB Member Rotation:</p> <ul style="list-style-type: none"> • 2019: Baxi, Kopczynski (2003, 2003) • 2020: Ahmed, Schlegel (2003, 2008) • 2021: Kline, Zuniga (2008, 2012) • 2022: Hayek (2012) • 2023: Klorman, Illingworth (2014, 2015) • Member rotation per TCM <p>The list of potential TAB candidates (no particular order):</p> <ul style="list-style-type: none"> • Hamid Ahmady • Bob Sward (Chair M-50) • Jack Graves (Officer) • Drew Micklus • Frank Malits • Jonathan Hirsch • Greg Hunsicker • Martin Maingot • Jim Donnelly • Zuming Xia <p>A.4 Attendance Sheet / PTI Antitrust Policy (Exhibit A.4)</p> <p>A.5 Committee Annual Reports</p>	<p>A.1 Meeting was called to order at 1:45 pm.</p> <p>A.2 All present were asked to introduce themselves and sign the Attendance Sheet.</p> <p>A.3 The official TAB roster is on the PTI website.</p> <p>TAB Member rotation: After the 2019 fall meeting, Cary Kopczynski will end his term on TAB. Asit Baxi will stay on TAB until the PT Manual is published in 2020.</p> <p>TAB Members: Ongoing list of potential TAB candidates</p> <ul style="list-style-type: none"> • TAB member suggestions; Zuming Xia was added to the list • TAB Chair selects candidates • EC reviews nominations and appoints new TAB members • Newly appointed TAB members are invited to the fall TAB meeting as observers • Appointment becomes effective after the fall meeting <p>A.4 All present were reminded of the PTI Antitrust Policy and asked to initial the right-hand side column of the Attendance Sheet to confirm their knowledge of and compliance with the policy.</p> <p>A.5 The Annual Reports will be attached to the fall committee meeting agenda of all committees and sent to TAB by the end of October.</p>
<p>B. Agenda & Minutes (Closed Meeting)</p> <p>B.1 <u>Approval of Agenda</u></p> <p>B.2 <u>Approval of Meeting Minutes</u> (Meeting ballot required)</p> <p>B.2.2 Approval of Meeting Minutes from 9-27-18, distributed on 5-2-19.</p>	<p>B.1 Changes to the agenda: A few editorial errors were pointed out and adjusted.</p> <p>B.2.1 Motion / Second to approve Meeting Minutes from 9-27-18: Name / Name, 0-0-0 (Y-N-A) The meeting minutes were not ready for review.</p>

Item #	Expected Outcome / Actions Taken
B.2.2 Approval of Winter Web Meeting Notes from 3-14-19	B.2.2 Motion / Second to approve Meeting Notes from 3-14-19: Name / Name, 0-0-0 (Y-N-A) The meeting minutes were not ready for review.
<p>C. Actions Taken Between Meetings (Closed Meeting)</p> <p>C.1 <u>Letter Ballots</u> C.1.1 Ballot-TAB-1901: Addenda M10.2 & M10.6, Ballot End 2-4-19</p> <p>C.1.2 Ballot-TAB-1902: Addenda M10.2 & M10.6, Ballot End 3-24-19</p> <p>C.1.3 Ballot-TAB-1903: 2019 Paper Awards, End 3-24-19</p> <p>C.1.4 Ballot-TAB-1804: PT Manual Chapter 19-Durability, Ballot End 5-4-19</p> <p>C.1.5 Ballot-TAB-1805: M-55 Chair Selection, Ballot End 4-25-19</p> <p>C.2 <u>Web Meetings</u> C.2.1 Winter WM on 3-14-19</p>	<p>C.1.1 <u>Ballot-TAB-1901: Addenda M10.2 & M10.6</u> Insufficient number of ballots received; reballoted TAB-1902</p> <p>C.1.2 <u>Ballot-TAB-1902: Addenda M10.2 & M10.6</u> 6-1-0-5 (Y-N-A-Not returned); 1 negative resolved editorially with 8-0-0-4; Final wording (Exhibit C.1.2)</p> <p>C.1.3 <u>Ballot-TAB-1903: 2019 Paper Awards</u> 8-0-0-4 (Y-N-A-Not returned) participation. Papers and votes received are in (Exhibit C.1.3)</p> <p>C.1.4 <u>Ballot-TAB-1804: PT Manual Chapter 19-Durability</u></p> <p>C.1.5 <u>Ballot-TAB-1805: M-55 Chair Selection</u> 0-0-0-0 (Y-N-A-Not returned). Results are in (Exhibit C.1.5)</p> <p>C.2 Web meeting notes are Item B.2.2</p>
<p>1. Technical Committee Personnel (Closed Meeting)</p> <p>1.1 <u>Technical Committee Chairs</u></p> <p>1.2 <u>Technical Committee Members</u></p> <p>1.3 <u>Technical Committee Missions</u></p>	<p>1.1 Current Chairs (Exhibit 1.1)</p> <p>1.2</p> <p>1.3 Current technical committees' missions (Exhibit 1.3)</p>
<p>2. New TAB Initiatives (Closed Meeting)</p> <p>2.1 Tendons banded in both directions</p>	<p>2.1 Agreement Bekaert-PTI – Sub-license agreement; final go ahead from EC received; final preparations for agreement execution. Status report – Tim Christle</p> <ul style="list-style-type: none"> • CCL is part of the Bekaert testing. New sequence: T2, T1, T3, T4. • PTI TG does not have any info on T2 details. T1 tested now, each following 3 months; T3 in September 2020

Item #	Expected Outcome / Actions Taken
<p>2.2 Intermediate Couplers at the construction joint (Rashid Ahmed)</p>	<p>2.2 Since there is only one supplier for PT components, the only option that designer has at construction joint is to use the couplers. Is there any issue with this option?</p> <ul style="list-style-type: none"> • Is the steel inside the coupler enough to account for the concrete loss? • Do we have pre-compression across the joint? Should additional reinforcement be provided at the construction joint as shear friction reinforcement? • Are there any alternatives such as tendon overlap? (Staff) <p>Discussion:</p> <ul style="list-style-type: none"> • Rashid: Project with RFI with couplers much more costly (10 times more) • Tendon used to continue; now disconnected at the joint; is there continuity? Should be through the coupler • Inside coupler is a big void; 15% of concrete loss and void with Styrofoam • The precompression over a lesser concrete area • Commercial issues are not for TAB to discuss • Technical adequacy? Void, shear with less concrete, etc. <p>TG list of items:</p> <ul style="list-style-type: none"> • Shear concrete reduced area • Void effect on durability • Thread of couplers is fine; if cement paste gets on it, it might be difficult to thread it on • If strand broken in pour one, potential for blow out? • For beams difficult to thread couplers on • Last minute construction joint location changes <p>TG: Rashid, Asit, Edgar, Don</p> <ul style="list-style-type: none"> • Purely technical task; constructability; and overlap of tendons or other alternatives • Some users are looking for work arounds, demand quality system • PTI Tech Note by summer WM
<p>2.3 Post-Tensioned Parking Structures (Rashid Ahmed)</p>	<p>2.3 PT seems to be losing market share in the parking industry. What should we do?</p> <p>Rashid recommended forming a PTI Parking Structures Committee for the following reasons:</p> <ul style="list-style-type: none"> • Parking are unique structures and have higher durability and maintenance requirements • ACI and PCI have dedicated committees on Parking Structures and publish documents on design and maintenance. • At the last ACI convention, ACI TAC have approved that the ACI 362 committee can write 'Standards' instead of 'Guidelines.' This will make the document a requirement rather than the recommendation. PTI Parking Committee can

Item #	Expected Outcome / Actions Taken
<p>2.4 ACI 318 (Don Kline)</p>	<p>provide input to the ACI 362 committee.</p> <ul style="list-style-type: none"> • Neel Khosa suggested to market PT parking garages as an industry. <p>Other discussion:</p> <ul style="list-style-type: none"> • PG special structure between building and bridge • Precast is saving money or cutting cost; gap is now \$8 to 10 per sq. ft., which is 15 to 20%; 60 to 80 \$/sq. ft.; before the gap used to be \$2 to 3; much wider gap now; cost and schedule are the main reasons. • On a typical PG, the savings might be 3M for schedule and 3M in construction savings • The market share is now 25% PT; it used to be 60-40 • Theoretically, even life cycle cost for 50 years was cheaper precast • There are many maintenance issues with precast after 10 years; PT typically no issues in 10 years • CIP forming system the major cost factor <p>TAB technical points:</p> <ul style="list-style-type: none"> • Spandrels precast violating code: 8 in. wide, very long, with no closed stirrups • 2021 IBC: 4800 sq. ft. mandatory sprinkler; 1hr credit <p>PTI Parking Structures Committee:</p> <ul style="list-style-type: none"> • Reverse engineering; start with forming system • Carol: update old document on PG, BoD to create the committee • PTI possibly market jointly with CRSI and NRMCA <p>2.4 ACI 318 Items:</p> <ul style="list-style-type: none"> • Does ACI 318 Section 8.6.2.3 on minimum bonded deformed reinforcement in prestressed slabs (.00075Acf) apply to drop caps? Some engineers interpret Acf to include the area of drops. FAQ 10 by Ken Bondy does not include the area of drop caps in Acf and he feels strongly that it should not be included. Should ACI 318 be clarified? • When designing a 2-way PT slab with continuous wide shallow drops in one direction, does Acf include the area of the drop when calculating minimum bonded rebar in the distributed PT direction? A strict interpretation of the code would say that the area of the drop should be included. What is standard practice by designers? Should this provision be revisited? • When designing a 2-way PT slab with continuous wide shallow drops in one direction, is the area of the drop included in the calculation of minimum P/A=125psi? A strict interpretation of the code would include the area of the drop. This penalizes 2-way slabs with continuous wide shallow drops. What is standard practice by designers? Should this provision be revisited?

Item #	Expected Outcome / Actions Taken
<p>2.5 PTI Positions on important subjects:</p> <ul style="list-style-type: none"> • ACI 318: Unified PTI position on 318-G and 318 ballots • Restrained vs. unrestrained conditions in 2-way slabs • Other important items? <p>2.6 Accelerated Construction</p> <ul style="list-style-type: none"> • Bridges: ABC; precast • Buildings: Peikko; modular; CLT (Cross-Laminated Timber) <p>2.7 Other Initiatives?</p>	<p>2.5 There was no time to cover these items</p> <p>2.6 There was no time to cover these items</p> <p>2.7</p>
<p>3. Relations with other Organizations (Closed Meeting)</p> <p>3.1 <u>ACI</u></p> <p>3.1.1 ACI 301, Specification for Structural Concrete</p> <p>3.1.2 ACI 318, Structural Concrete Building Code</p> <p>3.1.3 ACI 350, Environ. Eng. Conc. Structures</p> <p>3.1.4 ACI 362, Parking Structures</p> <p>3.1.5 ACI 423, Prestressed Concrete</p> <p>3.2 <u>ICRI</u></p> <p>3.3 <u>IBC</u></p> <p>3.4 <u>AISC</u></p> <p>3.5 <u>ASCE</u></p> <p>3.6 <u>ASBI</u></p> <p>3.7 <u>TRB</u></p> <p>3.8 <u>FIB</u></p>	<p>3.1.1 ACI 301:</p> <p>3.1.2 ACI 318:</p> <ul style="list-style-type: none"> • Potential splitting of 318-G into precast-prestressed and post-tensioned concrete. • Potential specialty dependent codes; PCI, PTI, etc. <p>3.1.3 ACI 350:</p> <p>3.1.4 ACI 362:</p> <p>3.1.5 ACI 423:</p> <p>3.2</p> <p>3.3 Barrier Cable</p> <p>3.4</p> <p>3.5</p> <p>3.6</p> <p>3.7</p> <p>3.8</p>

Item #	Expected Outcome / Actions Taken
3.9 <u>CSA</u> 3.10 <u>ACCS</u> 3.11 <u>Contacts to Spec Writing Agencies</u>	3.9 3.10 3.11
4. Technical Committee Procedures (Closed Meeting) 4.1 Technical Committee Manual 4.2 Post-Tensioning Terminology (PTT) 4.3 Membership Appointment Procedures	4.1 4.2 4.3
5. Technical Committee Affairs (Open Meeting) 5.1 Changes to Committees 5.2 Committees' Annual Reports 5.3 TAB Contact Assignments M-10: Rashid Ahmed M-50 Edgar Zuniga M-55: Andrea Schokker DC-10: Don Illingworth DC-20: Carol Hayek DC-35: Asit Baxi DC-40: Mike Schwager DC-45: Mike Schwager DC-80: Don Kline	5.1 Current committees are in (Exhibit 5.1) 5.2 Committee are asked to submit the Annual Reports by the end of October. 5.3 There is no need for TAB contact for subcommittees or TGs. When TAB members retire, and new ones join, the TAB contact assignments will be reviewed and revised accordingly.
6. Technical Committee Documents (Open Meeting) 6.1 <u>Existing PTI Technical Documents</u> 6.2 <u>New / Proposed PTI Technical Documents</u> 6.2.1 TAB.1 PT Manual <ul style="list-style-type: none"> • Review progress • Make/confirm assignments with deadlines • Balloting plan with dates • Chapter Primary Reviewers 	6.1 Existing documents list is in (Exhibit 6.1) 6.2 Proposed documents list is in (Exhibit 6.2) 6.2.1 PT Manual The process for TAB review of chapters: <ul style="list-style-type: none"> • Ballots 30 days; two chapters at a time • Schedule regular web meetings • Ballot reminders; 2W, 1W, 3D (web balloting) • For each chapter, there are 2 TAB Primary Reviewers • Outside reviewers can be added if needed. Some

Item #	Expected Outcome / Actions Taken
<p>It is becoming critical to publish the 7th edition of the PT Manual in the near future. A plan to publication should be prepared, possibly considering omitting some of the (new) chapters. Continuing the balloting plan, the new target for completion is summer 2020.</p> <p>6.3 TAB Document Review</p>	<p>committees such as DC-20 and DC-80 may have volunteers to review respective chapters.</p> <p>Balloted chapters:</p> <ul style="list-style-type: none"> • <p>Next chapters:</p> <ul style="list-style-type: none"> • <p>6.3 Other documents are coming to TAB for review:</p> <ul style="list-style-type: none"> • • Technical content of webinars (DC-20, EDU-130, DC-80)
<p>7. Other Publications (Open Meeting)</p> <p>7.1 New PTI Technical Notes?</p> <p>7.2 New PTI FAQs?</p> <p>7.3 Sustainability</p>	<p>7.1 Technical Notes nearing completion:</p> <ul style="list-style-type: none"> • Temperature Tendons: • Restraint to Shortening: <p>7.2</p> <p>7.3</p>
<p>8. Conventions and Other Meetings (Open Meeting)</p> <p>8.1 2019 Technical Sessions</p> <p>8.2 2019 Committee Chair Luncheon</p> <p>8.3 PTI & TAB Awards</p> <p>8.4. New PTI Website</p>	<p>8.1</p> <p>8.2</p> <p>8.3</p> <p>8.4</p>
<p>9. Educational Items</p> <p>9.1 Excerpt from the Strategic Plan:</p> <ul style="list-style-type: none"> • Revise and update documents older than 6 years • Revise and update FAQs and TNs older than 4 years • Develop library of selected FAQs with focus on PTI position on all PT applications • Identify research needs for PT • Solicit support from stakeholders for financing, per project • Develop a course for PTI Building Design and compile required 	<p>9.1 Coordination with the Education Committee; Professor's Seminar – TAB recommendations:</p>

Item #	Expected Outcome / Actions Taken
webinar modules and course materials • Develop a course for PT SOG Design and compile required webinar modules and course materials	
D. New Business (Open Meeting) D.1 Any New Business?	D.1
E. Next Meeting E.1 TAB Summer WM? E.2 PTI Committee Days, Santa Fe, NM, October 1-4, 2019 E.3 Web Meetings	E.2 E.3
F. Adjourn	F. Meeting adjourned at 5:00 PM.

AGENDA / MINUTES EXHIBITS

Exhibit #	Subject
A.4	PTI Antitrust Policy / Sign-in Sheet

MINUTES

PTI TAB Technical Advisory Board

Thursday, October 3, 2019, 8:00 AM – 12:00 PM

Hilton Santa Fe Historic Plaza, Santa Fe, NM

Voting Members Present (9 of 12, Quorum = 5)

<u>Don Kline</u> , Chair	Kline Engineering & Consulting
<u>Miroslav Vejvoda</u> , Secretary	PTI Staff, NV
<u>Rashid Ahmed</u>	Walker Parking Consultants
<u>Asit Baxi</u>	Baxi Engineering, Inc.
<u>Martin Cuadra</u>	Uzum+Case, LLC
<u>Carol Hayek</u>	CCL USA
<u>Don Illingworth</u>	Don Illingworth & Assoc., Inc.
Bill Klorman	Klorman Construction
Cary Kopczynski	Cary Kopczynski & Co.
<u>Doug Schlegel</u>	Consultant
<u>Andrea Schokker</u>	University of Minnesota Duluth
Mike Schwager	Schwager Davis, Inc.
<u>Edgar Zuniga</u>	Dywidag Systems International USA

Visitors

SUMMARY OF ACTION ITEMS FROM LAST / THIS MEETING

Item #	Subject	Action	Responsible	Deadline / Completed
	PT Manual	Continue balloting / resolving one chapter per month	All	Ongoing

Item #	Expected Outcome / Actions Taken
A – General	
A.1 Call to order	A.1 Meeting was called to order at 8:15 am.
A.2 Introduction / Announcements	A.2 All present know each other and no introductions were necessary.

Item #	Expected Outcome / Actions Taken
<p>A.3 TAB Roster / Membership Rotation</p> <p>TAB Member Rotation:</p> <ul style="list-style-type: none"> • 2019: Baxi, Kopczynski (2003, 2003) • 2020: Ahmed, Schlegel (2003, 2008) • 2021: Kline, Zuniga (2008, 2012) • 2022: Hayek (2012), Baxi (2003) • 2023: Klorman, Illingworth (2014, 2015) • Member rotation per TCM <p>The list of potential TAB candidates (no particular order):</p> <ul style="list-style-type: none"> • Hamid Ahmady • Bob Sward (Chair M-50) • Jack Graves (Officer) • Drew Micklus • Frank Malits • Jonathan Hirsch • Greg Hunsicker • Martin Maingot • Jim Donnelly <p>A.4 Attendance Sheet / PTI Antitrust Policy (Exhibit A.4)</p> <p>A.5 Committee Annual Reports</p>	<p>A.3 The official TAB roster is on the PTI website.</p> <p>TAB Member rotation: After the 2019 fall meeting, Cary Kopczynski will end his term on TAB. Asit Baxi will remain until 2022.</p> <p>TAB Members: Ongoing list of potential TAB candidates</p> <ul style="list-style-type: none"> • TAB member suggestions • TAB Chair selects candidates • EC reviews nominations and appoints new TAB members • Newly appointed TAB members are invited to the fall TAB meeting as observers • Appointment becomes effective after the fall meeting • Hamid Ahmady was selected as a new TAB member. <p>A.4 All present were reminded of the PTI Antitrust Policy and asked to sign the Attendance Sheet to attest knowledge of and compliance with the policy.</p> <p>A.5 The Annual Reports will be attached to the fall committee meeting agenda of all committees and sent to TAB by the end of October.</p>
<p>B. Agenda & Minutes (Closed Meeting)</p> <p>B.1 <u>Approval of Agenda</u></p> <p>B.2 <u>Approval of Meeting Minutes</u> (Meeting ballot required)</p> <p>B.2.1 Approval of Meeting Minutes from 5-6-19.</p>	<p>B.1 Changes to the agenda: SLC Airport Parking Structure; added to new business.</p> <p>B.2.1 Motion / Second to approve Meeting Minutes from 5/6/19: Name / Name, 0-0-0 (Y-N-A)</p> <p>The minutes were not yet presented; will be approved at the next meeting.</p>
<p>C. Actions Taken Between Meetings (Closed Meeting)</p>	

Item #	Expected Outcome / Actions Taken
<p>C.1 <u>Letter Ballots</u></p> <p>C.1.1 Ballot TAB-1904 PT Manual Chapter 19-Durability</p> <p>C.1.2 Ballot TAB-1906 PT Manual Chapter 8-Seismic Design & Chapter 23-BIM</p> <p>C.1.3 PTI DC-45 Chair Succession</p> <p>C.1.4 Ballot TAB-1907-DC20-TN-Dual Banded PT</p> <p>C.2 <u>Web Meetings</u></p>	<p>C.1.1</p> <p>C.1.2</p> <p>C.1.3</p> <p>C.1.4</p>
<p>1. Technical Committee Personnel (Closed Meeting)</p> <p>1.1 <u>Technical Committee Chairs</u></p> <p>1.2 <u>Technical Committee Members</u></p> <p>1.3 <u>Technical Committee Missions</u></p>	<p>1.1 Current Chairs (Exhibit 1.1)</p> <p>1.2</p> <p>1.3 Current technical committees' missions (Exhibit 1.3)</p>
<p>2. New TAB Initiatives (Closed Meeting)</p> <p>2.1 Tendons banded in both directions</p> <p>2.2 Intermediate Couplers at the construction joint (Rashid Ahmed)</p> <p>2.3 Post-Tensioned Parking Structures</p> <p>2.4 ACI 318 and related committees' organization</p>	<p>2.1 Bekaert-PTI – Testing at VT Status report – Tim Christle Design of T3 needs to be finalized. The Dual Banded TG will complete this.</p> <p>2.2 TG evaluation of CJ couplers Status report – Rashid Ahmed Ted Neff provided a report on GTI's testing of the intermediate coupler. The test was designed to compare shear capacity of a beam with couplers to a beam with the traditional continuous intermediate anchor. Generally, the tests confirmed that the beam with couplers provided shear resistance equal to the beam with intermediate anchors. Ted said GTI would provide information from the testing to TAB if requested for incorporation into a Tech Note.</p> <p>2.3 New DC-25 established, Chair Rashid Ahmed Report: Roster, DC-25 meeting, goals, etc.</p> <p>2.4 ACI 318 Items: ACI has created 318-0T for post-tensioned concrete, and 318-0P for precast and prestressed concrete. Andrea Schokker is chairing 318-0T and Carin Roberts Wolmann is chairing 318-0P.</p>

Item #	Expected Outcome / Actions Taken
<p>2.5 PTI Positions on important subjects:</p> <ul style="list-style-type: none"> • ACI 318: Unified PTI position on 318 ballots • Restrained vs. unrestrained conditions in 2-way slabs • Other important items? <p>2.6 Accelerated Construction</p> <ul style="list-style-type: none"> • Bridges: ABC; precast • Buildings: Peikko; modular; CLT (Cross-Laminated Timber) <p>2.7 DC-80.3 Guide for Evaluation and Repair of PT Structures</p> <p>2.8 Other Initiatives?</p>	<p>ACI is also creating new code committees. ACI 319 will be for precast prestressed (chaired by Andrea Schokker) and ACI 320 will be for post-tensioned concrete (chair TBD). This presents a good opportunity to effect needed change to the code for PT. Members of 318-OT who are on TAB were asked to put together a list of proposed code changes and send to Andrea prior to ACI Cincinnati.</p> <p>2.5 Not covered at this meeting.</p> <p>2.6 Not covered at this meeting.</p> <p>2.7 DC 80.3 repair document update with ICRI (this may need to go to EC). This should be discussed at the next meeting.</p> <p>2.8</p>
<p>3. Relations with other Organizations (Closed Meeting)</p> <p>3.1 <u>ACI</u></p> <p>3.1.1 ACI 301, Specification for Structural Concrete</p> <p>3.1.2 ACI 318, Structural Concrete Building Code</p> <p>3.1.3 ACI 350, Environ. Eng. Conc. Structures</p> <p>3.1.4 ACI 362, Parking Structures</p> <p>3.1.5 ACI 423, Prestressed Concrete</p> <p>3.2 <u>ICRI</u></p> <p>3.3 <u>IBC</u></p>	<p>3.1.1 ACI 301:</p> <p>3.1.2 ACI 318:</p> <p>3.1.3 ACI 350:</p> <p>3.1.4 ACI 362:</p> <p>3.1.5 ACI 423:</p> <p>3.2</p> <p>3.3 DC10.5-19: Standard Requirements for Design and Analysis of Shallow Post-Tensioned Concrete Foundations on Expansive and Stable Soils DC10.Barrier Cable</p>

Item #	Expected Outcome / Actions Taken
3.4 <u>AISC</u> 3.5 <u>ASCE</u> 3.6 <u>ASBI</u> 3.7 <u>TRB</u> 3.8 <u>FIB</u> 3.9 <u>CSA</u> 3.10 <u>ACCS</u> 3.11 <u>Contacts to Spec Writing Agencies</u>	3.4 3.5 3.6 3.7 3.8 3.9 3.10 3.11
4. Technical Committee Procedures (Closed Meeting) 4.1 Technical Committee Manual 4.2 Post-Tensioning Terminology (PTT) 4.3 Membership Appointment Procedures	4.1 4.2 4.3
5. Technical Committee Affairs (Open Meeting) 5.1 Changes to Committees 5.2 Committees' Annual Reports 5.3 TAB Contact Assignments M-10: Rashid Ahmed M-50 Edgar Zuniga M-55: Andrea Schokker DC-10: Don Illingworth DC-20: Carol Hayek DC-35: Asit Baxi DC-40: Mike Schwager DC-45: Mike Schwager DC-80: Don Kline	5.1 Current committees are in (Exhibit 5.1) 5.2 Committee are asked to submit the Annual Reports by the end of October. 5.3 There is no need for TAB contact for subcommittees or TGs. When TAB members retire, and new ones join, the TAB contact assignments will be reviewed and revised accordingly.
6. Technical Committee Documents (Open Meeting) 6.1 <u>Existing PTI Technical</u>	

Item #	Expected Outcome / Actions Taken
<p><u>Documents</u></p> <p>6.2 <u>New / Proposed PTI Technical Documents</u></p> <p>6.2.1 TAB.1 PT Manual</p> <ul style="list-style-type: none"> • Review progress • Make/confirm assignments with deadlines • Balloting plan with dates • Chapter Primary Reviewers <p>It is becoming critical to publish the 7th edition of the PT Manual in the near future. A plan to publication should be prepared, possibly considering omitting some of the (new) chapters. Continuing the balloting plan, the new target for completion is summer 2020.</p> <p>6.3 TAB Document Review</p>	<p>6.1 Existing documents list is in (Exhibit 6.1)</p> <p>6.2 Proposed documents list is in (Exhibit 6.2)</p> <p>6.2.1 PT Manual</p> <p>The process for TAB review of chapters:</p> <ul style="list-style-type: none"> • Ballots 30 days; two chapters at a time • Schedule regular web meetings • Ballot reminders; 2W, 1W, 3D (web balloting) • For each chapter, there are 2 TAB Primary Reviewers • Outside reviewers can be added if needed. Some committees such as DC-20 and DC-80 may have volunteers to review respective chapters. <p>Balloted chapters:</p> <ul style="list-style-type: none"> • <p>Next chapters:</p> <ul style="list-style-type: none"> • <p>6.3 Other documents are coming to TAB for review:</p> <ul style="list-style-type: none"> • Technical content of webinars (DC-20, EDU-130, DC-80)
<p>7. Other Publications (Open Meeting)</p> <p>7.1 New PTI Technical Notes?</p> <p>7.2 New PTI FAQs?</p> <p>7.3 Sustainability</p>	<p>7.1 Technical Notes nearing completion:</p> <ul style="list-style-type: none"> • Temperature Tendons: • Restraint to Shortening: <p>7.2</p> <p>7.3</p>
<p>8. Conventions and Other Meetings (Open Meeting)</p> <p>8.1 2019 Technical Sessions</p> <p>8.2 2019 Committee Chair Luncheon</p> <p>8.3 PTI & TAB Awards</p> <p>8.4. New PTI Website</p>	<p>8.1</p> <p>8.2</p> <p>8.3</p> <p>8.4</p>
<p>9. Educational Items</p> <p>9.1 Excerpt from the Strategic Plan:</p>	<p>9.1 Coordination with the Education Committee; Professor's</p>

Item #	Expected Outcome / Actions Taken
<ul style="list-style-type: none"> • Revise and update documents older than 6 years • Revise and update FAQs and TNs older than 4 years • Develop library of selected FAQs with focus on PTI position on all PT applications • Identify research needs for PT • Solicit support from stakeholders for financing, per project • Develop a course for PTI Building Design and compile required webinar modules and course materials • Develop a course for PT SOG Design and compile required webinar modules and course materials 	Seminar – TAB recommendations:
<p>D. New Business (Open Meeting)</p> <p>D.1 Any New Business?</p>	<p>D.1 SLC Airport Parking Structure. Because of the extension of the airport, an existing PS must be demolished. As this is PT structure in a good condition, this could provide important evidence of PT PS durability. This will be discussed at the next meeting.</p>
<p>E. Next Meeting</p> <p>E.1 2020 PTI Convention, Hilton Miami Downtown, Miami FL, May 3-6, 2020</p> <p>E.2 Web Meetings</p>	<p>E.1</p> <p>E.2</p>
<p>F. Adjourn</p>	<p>F. Meeting adjourned at 11:55 am.</p>

AGENDA / MINUTES EXHIBITS

Exhibit #	Subject
A.4	PTI Antitrust Policy / Sign-in Sheet
	All Exhibits will be distributed before the meeting

Web Meeting Notes

PTI TAB – Technical Advisory Board

April 16, 2020 – 11:00 AM to 1:15 PM EDT

Voting Members Present (7 of 11)

<u>Don Kline</u> , Chair	Kline Engineering & Consulting
<u>Miroslav Vejvoda</u> , Secretary	PTI Staff, NV
<u>Rashid Ahmed</u>	Walker Parking Consultants
Asit Baxi	Baxi Engineering, Inc.
<u>Martin Cuadra</u>	Uzum and Case, LLC
<u>Carol Hayek</u>	CCL USA
Don Illingworth	Don Illingworth & Assoc., Inc.
Bill Klorman	Klorman Construction
Doug Schlegel	Consultant
<u>Andrea Schokker</u>	University of Minnesota Duluth
<u>Mike Schwager</u>	Schwager Davis, Inc
<u>Edgar Zuniga</u>	Dywidag Systems International USA
<u>Tim Christle</u>	PTI Staff, NV
<u>Amy Dowell</u>	PTI Staff, NV
<u>Tony Johnson</u>	PTI Staff, NV

Web meeting agenda items:

1. Environmental Product Declaration (EPD)

Carol Hayek brought this issue to TAB's consideration. Carol lead the discussion and Tony provided CRSI's document that summarized the rebar industry's approach; rebar is only one material making it simpler. Items discussed:

- Some projects have the requirement for the EPDs as part of the LEED points.
- The strand suppliers are not using EPDs and most don't even know about it.
- It is company specific or industry average. The company specific has a weight of 1, the industry average 0.5, and if both are available, the overall credit would be 150%.
- The cost to develop the system for rebar was up to \$35,000 and it took about 18 months.
- Third party consultants typically develop the system and follow ISO and set protocols.
- There are audits and it is valid for 5 years; it must be renewed also when there are changes in the manufacturing process.
- PCI's approach would be interesting as they only use bare strand; they apparently have EDPs for precast concrete units that include everything in it.
- PT industry has the coated and sheathed strand and anchorage components.

Action items:

- Tony will reach out to his contact within PCI to see if they can share any work they have done on EPD for restressing steel.

2. TAB TG on Evaluation of construction joint couplers

In Minneapolis, TAB created a TG to address concerns with the couplers for construction joints. At that point, the couplers were the only solution available to the industry.

It is desirable to finalize the work of this TG. TAB should discuss where we are with this and if there are specific concerns and proposed solutions that could be voted on.

TG members: Asit Baxi (Lead), Rashid Ahmed, Don Kline, Andrea Schokker, Tim Christle.

The TG members had a WM on 6/6/2019 and have done some investigation; GTI did some testing and Ted Neff summarized the results at the TAB meeting in Santa Fe. Items discussed:

- The GTI test investigated the shear at the CJ which does not seem to be an issue.
- The TG should just mention what the GTI testing provided, without endorsement.
- Rashid is using additional rebar for shear friction when using CJ couplers.
- Since the intermediate stressing anchorages are available on the market again, the urgency of the coupler investigation is somewhat reduced.

Action items:

- Don/Asit/Andrea will prepare a draft response to GTI with feedback after their presentation to TAB in Santa Fe. The response will provide feedback and additional questions related to the coupler. The draft response will be sent to the coupler TG for comment before sending to GTI.
- The testing for GTI was done by WJE; the test report and Ted's presentation to TAB would be helpful, if available; staff will check.
- The task group will develop a Tech Note for the intermediate coupler use in slabs and beams.

3. PTI M-10 & ACI 423.7 Watertightness testing of encapsulated tendons

PTI M10.2 and ACI 423.7 have been parallel specifications for single strand unbonded tendons with some contradicting requirements. It is desirable to have proposals go through PTI first before making its way into ACI, to reduce if not eliminate the discrepancies. This does not always work, and some proposals are being brought to ACI first. There are efforts on the PTI side to get to the point of having just one specification on the subject.

One proposal brought to ACI first is the update of the watertightness testing of the encapsulated tendons. The latest email with the revised GTI Hydrostatic Test Method will be forwarded in a separate email.

It is desirable to bring this to M-10 and TAB input would help M-10 accomplish this. Items discussed:

- The UV light method proposed by WJE would seem simpler and would remove the need for some of the setup details that generated negatives on the 423-G subcommittee.

- Watertightness testing is also done for stay cables; it is more complicated but could possibly be simplified for unbonded tendons.

Action Items:

- M10 should develop a proposal for this language in the specification.
- Miroslav to contact Zuming and Bob Sward to explore the possibility of running the UV test. If the UV test is viable and acceptable to M10, this could help resolve some of the other negatives brought up at ACI 423 subcommittee.

4. M-10 & CRT-80 PT components requirements and certification

CAB created a TG in Seattle to address PT component certification. This TG came back in Santa Fe with a significant revision to the PTI Plant Certification Program. This is a somewhat controversial issue and the BoD established a certification committee CRT-80 in Santa Fe to address the certification requirements for the PT components for unbonded tendons.

However, certification programs are based on technical requirements that come from technical committees and their specifications; in this case, it should come from M-10.

In order to address the technical requirements for the PT components for unbonded tendons thoroughly and objectively, it might be helpful if TAB helps M-10 with this task. In two separate emails, proposals for M-10 are attached for review and discussion. M-10 is establishing a TG to address these issues and TAB input might be helpful.

Items discussed:

- In general, similar requirements to those for multistrand tendons should be specified for unbonded tendons.
- It is important to ensure that specification is open enough for manufacturers producing components their own way, meeting some basic requirements, but having freedom with their own design. The QA program then ensures that the stated system requirements are adhered to in production. Sampling and documentation requirements should be specified.

Action items:

- TAB to review proposals by Larry and Greg by 4/30/20.
- Provide feedback to Miroslav who will in turn send guidance to M10 TG for their consideration.
- Edgar will represent TAB on the M10 TG.

5. New TAB member to replace Cary Kopczynski

The BoD appoints TAB members. In Santa Fe, TAB agreed on adding Hamid Ahmady to TAB. This will be added to the EC agenda for their approval, before the appointment becomes official. TAB will then have full 12 members at the next in-person meeting at the postponed 2020 PTI convention on September 27, 2020. TAB should consider the continuing member

rotation and select new members to replace outgoing members in 2020, from the list already prepared (latest revision in Santa Fe):

TAB Member Rotation:

- 2019: Kopczynski (2003)
- 2020: Ahmed, Schlegel (2003, 2008)
- 2021: Kline, Zuniga (2008, 2012)
- 2022: Hayek (2012), Baxi (2003)
- 2023: Klorman, Illingworth (2014, 2015)
- Member rotation per TCM after that

The list of potential TAB candidates (no particular order):

- Bob Sward (Chair M-50)
- Jack Graves (Officer)
- Drew Micklus
- Frank Malits
- Jonathan Hirsch
- Greg Hunsicker
- Martin Maingot
- Jim Donnelly

Items discussed:

- There is desire to have BoD instead of just EC approve appointments of new TAB members. Hamid Ahmady's nomination will be on the BoD agenda for their June meeting.
- The rotation plan for TAB members should be reviewed considering:
 - Allowing members to stay on TAB for the full 2 terms of 12 years total.
 - Attendance records; TAB is a critical committee for PTI, and full attendance is expected.

Action items:

- Don and Miroslav will rework the TAB rotation list and send to TAB.

6. Coordination of ACI 318-T & ACI/PTI 320

The split subcommittee of 318 for precast/prestressed and post-tensioned, and a new code committee of post-tensioned (320) became reality. ACI/PTI 320 is to become a joint ACI-PTI committee. Only a year ago, we were still lobbying to only get the split subcommittee. With this new situation, there is a significant new opportunity for the PT industry to affect the code requirements. In order to maximize the benefits, TAB should discuss effective ways on how to vet and coordinate proposals before they go to these new committees.

Items discussed:

- Andrea gave a summary of the new developments at ACI:
 - ACI 318-P Precast and Prestressed; Chair: Carin Roberts-Wollmann

- ACI 318-T Post-Tensioned; Chair: Andrea Schokker
- ACI 319 Precast Structural Concrete Code (Joint ACI-PCI)
- ACI 320 320 - Post-Tensioned Structural Concrete Code (will be joint ACI-PTI)
- Coordination of these four committees will be very important.
- PCI parking structure provision will be in ACI 319.
- It is desirable to get PT parking structure provisions in ACI 320; input from the new PTI DC-25 Parking Structures Committee is important.
- It is essential for PTI to take the opportunity to coordinate all PT-related initiatives through TAB.

Action items:

- TAB created a new TG to develop code proposals for 318T and 320.
- TG Members: Don (Lead), Miroslav, Martin C., Carol, Rashid, Andrea, Tim, Asit, Frank Malits, and Jonathan H.; Tim Christle (Secretary).
- The TG will develop proposals for new code language. The proposals will go to TAB for their approval before sending to ACI 318T and 320.
- There will be a standing agenda item at TAB meetings.

Other business: There was no other new business.

IBC conflict

INITIAL FORCE AT TRANSFER:

Question: Many years ago at an unbonded meeting, I brought up the issue of the ACI 318 Code restriction of 0.7fpu maximum transfer force at wedge seating that those of us in the unbonded PT business are continuously faced with by engineers that know nothing better than the strict interpretation of the Code. As I recall, there was a delegation of active participants in PTI who also had influence at ACI, including Ken Bondy, Jim Cagley, Ted Neff and maybe you, that were assigned the task of getting this before ACI (423G?) and charting a path to get this removed from the Code. Again as I recall, the removal of this unnecessary and useless provision was met with resistance from academics that have no concept of the difficulties that this provision presents for PT companies and pretensioners that only want to protect their interest (or more accurately to keep a useless provision that is against post-tensioners). Since this was reported back to PTI, nothing (that I recall) has been done. What if anything has or is being done to address this?

It is time that PTI does something to address this issue and provide documentation that the PT company members can use when engineers raise the issue. The industry cannot wait for ACI to publish a new code. We all know that this will take years. This is a PT issue that should be addressed now by PTI through either a FAQ or Technical Note explaining why this provision does not apply to unbonded PT, provided that there is consideration of a minimum of ¼-inch wedge seating loss in the anchorage at transfer. The tendon is stressed to a maximum of 0.8fpu, there is a loss of prestress due to wedge seating and there are long-term losses. The resulting force is the final effective tendon force – there should be no other limitations or restrictions.

Let me know what can be done by PTI to address this situation, now.

**PTI TAB.1-20 PT Manual - 7th Edition Update
Publishing Schedule Status
June 9, 2020**

Chapter Number	Chapter Title	7th Edition Author(s)	TAB Primary Reviewers	Outside Reviewers	Chapter Update Started	Final Draft Submitted for Review	TAB Review Phase	TAB Review Comments Summary	TAB Review Web Meeting	Post-Review Chapter Revision	TAB Ballot Phase	TAB Ballot Summary	TAB Ballot Resolution Meeting	Post-Ballot Final Chapter Revision	Chapter Publishing Phase	Chapter Publishing Complete
1	Introduction	Johnson			Jan. 2020	Jun. 2020	Jul. 2020	Aug. 2020	Aug. 2020	Sep. 2020	Oct. 2020	Nov. 2020	Nov. 2020	Dec. 2020	Jan. 2021	Feb. 2021
2	Applications	Johnson			Jan. 2020	Jun. 2020	Jul. 2020	Aug. 2020	Aug. 2020	Sep. 2020	Oct. 2020	Nov. 2020	Nov. 2020	Dec. 2020	Jan. 2021	Feb. 2021
3	Post-Tensioning Systems	Dowell			Jan. 2020	Feb. 2020	Jul. 2020	Aug. 2020	Aug. 2020	Sep. 2020	Oct. 2020	Nov. 2020	Nov. 2020	Dec. 2020	Jan. 2021	Feb. 2021
4	Specifying Post-Tensioning	Christle			Jan. 2020	Jun. 2020	Jul. 2020	Aug. 2020	Aug. 2020	Sep. 2020	Oct. 2020	Nov. 2020	Nov. 2020	Dec. 2020	Jan. 2021	Feb. 2021
5	Analysis and Design Fundamentals	Bondy, Hirsch	Kline, Baxi	Allred, Ahmady, Munuswamy	Jul. 2017	Jul. 2018	Aug. 2018	Aug. 2019	Nov. 2019	Jan. 2020	Feb. 2020	Mar. 2020	Mar. 2020	Apr. 2020	Jun. 2020	Jul. 2020
6	Detailing and Construction Procedures for Buildings	Baxi, Kline, Hayek			Jul. 2017	Jun. 2020	Jun. 2020	Jul. 2020	Jul. 2020	Aug. 2020	Sep. 2020	Oct. 2020	Oct. 2020	Nov. 2020	Dec. 2020	Jan. 2021
7	Design Examples	Bondy, PTI Staff	Cuadra, Baxi	Ober, Munuswamy, Chittur, Konger	Sep. 2019	Dec. 2019	Jun. 2020	Jul. 2020	Jul. 2020	Aug. 2020	Sep. 2020	Oct. 2020	Oct. 2020	Nov. 2020	Dec. 2020	Jan. 2021
8	Seismic Design of PT Concrete Structures	Kopczynski	Ahmed	Maingot, Boyd, Allred	Jul. 2017	Apr. 2019	Jul. 2019	Oct. 2019	Jan. 2020	Feb. 2020	Jul. 2020	Aug. 2020	Aug. 2020	Sep. 2020	Oct. 2020	Nov. 2020
9	PT Concrete Floors	Bondy, Hirsch	Kline, Hayek	Cuadra, Ahmady, Leys	Jul. 2017	Jul. 2018	Aug. 2018	Aug. 2019	Nov. 2019	Jan. 2020	Feb. 2020	Mar. 2020	Mar. 2020	Apr. 2020	May. 2020	Jun. 2020
10	PT Parking Structures	Ahmed, Schneeman	Illingworth, Cagley	Schwarz, Cuadra, Allred, Ober	Jul. 2018	Nov. 2018	Feb. 2019	Oct. 2019	Nov. 2019	Jan. 2020	Jun. 2020	Jul. 2020	Jul. 2020	Aug. 2020	Sep. 2020	Oct. 2020
11	PT Slabs-on-Ground	Childress	Illingworth	Parker, Read, Overton	Jun. 2019	Aug. 2019	Oct. 2019	Nov. 2019	Dec. 2019	Jan. 2020	Jun. 2020	Jul. 2020	Jul. 2020	Aug. 2020	Sep. 2020	Oct. 2020
12	Bridges	TBD			Mar. 2020	Jul. 2020	Aug. 2020	Sep. 2020	Sep. 2020	Oct. 2020	Nov. 2020	Dec. 2020	Dec. 2020	Jan. 2021	Feb. 2021	Mar. 2021
13	Stay Cables	TBD			Feb. 2020	Jul. 2020	Aug. 2020	Sep. 2020	Sep. 2020	Oct. 2020	Nov. 2020	Dec. 2020	Dec. 2020	Jan. 2021	Feb. 2021	Mar. 2021
14	Storage Structures	Close	Illingworth, Zuniga	Galterio, Bates	Jul. 2017	Jul. 2018	Sep. 2018	Sep. 2019	Nov. 2019	Jan. 2020	Apr. 2020	Jun. 2020	Jun. 2020	Jul. 2020	Aug. 2020	Sep. 2020
15	Rock and Soil Anchors	Niermann	Crigler, Zuniga	Niermann	Jul. 2017	Jul. 2018	Sep. 2018	Sep. 2019	Nov. 2019	Jan. 2020	Apr. 2020	Jun. 2020	Jun. 2020	Jul. 2020	Aug. 2020	Sep. 2020
16	Design of Prestressed Barrier Cable Systems	Baxi			Jul. 2017	Jul. 2020	Aug. 2020	Sep. 2020	Sep. 2020	Oct. 2020	Nov. 2020	Dec. 2020	Dec. 2020	Jan. 2021	Feb. 2021	Mar. 2021
17	Prestressed Concrete Under Dynamic Loads and Fatigue	Kang	Schokker, Hayek	Musselman, Hirsch	Jan. 2018	Sep. 2018	Nov. 2018	Oct. 2019	Nov. 2019	Jan. 2020	Feb. 2020	Mar. 2020	Mar. 2020	Apr. 2020	Jun. 2020	Jul. 2020
18	Fire Resistance	Kodur	Baxi, Cuadra	Pessiki	Jun. 2018	Sep. 2018	Nov. 2018	Oct. 2019	Jan. 2020	Feb. 2020	Jul. 2020	Aug. 2020	Aug. 2020	Sep. 2020	Oct. 2020	Nov. 2020
19	Durability	Schokker, Schneeman	Schwager, Zuniga	Maingot, Boyd, Leistikow, Hunsicker, Freeby	Sep. 2018	Feb. 2019	Apr. 2019	Oct. 2019	Nov. 2019	Jan. 2020	Jun. 2020	Jul. 2020	Jul. 2020	Aug. 2020	Sep. 2020	Oct. 2020
20	Inspection	Vejvoda			Jan. 2020	Jun. 2020	Jul. 2020	Aug. 2020	Aug. 2020	Sep. 2020	Oct. 2020	Nov. 2020	Nov. 2020	Dec. 2020	Jan. 2021	Feb. 2021
21	PTI Certification Programs	Vejvoda			Jan. 2020	Jan. 2020	Jul. 2020	Aug. 2020	Aug. 2020	Sep. 2020	Oct. 2020	Nov. 2020	Nov. 2020	Dec. 2020	Jan. 2021	Feb. 2021
22	Repair, Rehabilitation and Strengthening of Structures	Kline, Moser	Kopczynski, Ahmed	Greenhaus, Ahmady, Donnelly	May. 2018	Nov. 2018	Feb. 2019	Oct. 2019	Nov. 2019	Jan. 2020	Jul. 2020	Aug. 2020	Aug. 2020	Sep. 2020	Oct. 2020	Nov. 2020
23	Building Information Modeling	DC-20A	Klorman, Cuadra	Leys, Neelamegam, Suarez	Jul. 2017	Apr. 2019	Jul. 2019	Nov. 2019	Dec. 2019	Jan. 2020	Feb. 2020	Mar. 2020	Mar. 2020	Apr. 2020	May. 2020	Jun. 2020
24	Anchorage Zone Design - Strut and Tie Modeling	Roberts Wollmann			Jul. 2018	Jul. 2020	Aug. 2020	Sep. 2020	Sep. 2020	Oct. 2020	Nov. 2020	Dec. 2020	Dec. 2020	Jan. 2021	Feb. 2021	Mar. 2021
25	Sustainability	Hayek, Schokker	Cuadra, Baxi	Maingot, Neelamegam, Buffenbarger	Feb. 2019	Aug. 2019	Oct. 2019	Nov. 2019	Dec. 2019	Jan. 2020	Jun. 2020	Jul. 2020	Jul. 2020	Aug. 2020	Sep. 2020	Oct. 2020