



International Code Council

ICC IS-3DACT Committee Meeting Minutes – Meeting #16

March 21, 2025 – 10:00 AM PDT

1. Welcome and opening remarks

ICC Staff Member, Quinton Owens called the meeting to order at 10:00 am PDT and welcomed all committee members, invited parties, and ICC staff. Mr. Owens noted the committee must adhere to the ICC Code of Ethics, which states that those participating in ICC activity must adhere to the highest ethical conduct, with the purpose of the protection of the health, safety and welfare of the public by creating safe buildings and communities. In addition, Section 5.1.10 in Council Policy #7 is in effect and any committee member with a conflict of interest must withdraw from participating in discussion or vote on the matter in which they have an undisclosed interest. Lastly, Council Policy #50 outlines ICC Antitrust guidelines, which indicates the committee meetings are not intended for discussion of pricing and marketing topics.

2. Quorum and Attendance

Chair Mr. Bora Gencturk called the roll of the IS-3DACT with the following members registering attendance. Mr. Gencturk noted there was enough for a quorum.

NAME	2025 IS-3DACT COMMITTEE MEETING					
	#12 9/13/24	#13 10/11/24	#14 2/14/25	#15 3/7/25	#16 3/21/25	#17 TBD
Gabriel Carrera [D]	X	X	X	X	X	
Bora Gencturk [C]	X	X	X	X	X	
Rory Hamaoka [H]	-	X	X	X	-	
Werner Hellmer[H]	-	X	X	X	X	
Maryam Hojati [D]	-	X	X	X	X	
Berok Khoshnevis [D]	X	-	X	X	-	
Doug Mayer [H]	X	X	X	X	-	
Paul Messplay [H]	X	X	X	-	X	
Adil Tamimi [D]	X	X	X	-	-	
Bing Tian [A]	-	X	X	X	-	
David Langefeld [B]	X	X	X	X	X	
Eric Kreiger	X	X	X	X	X	
TOTAL	8/13	11/12	12/12	10/12	7/12	

Interested parties in attendance included Karim Fahfouhi (FEUP Portugal), Larry Stevig (State Farm), Khadija El Cheikh (Buildwise), Matt Friedell (RoboConTech), Kane DuPont (Print3D), Babak Zareiyan (Beyond Engineering), Stephan Mansour (ACI), Mahmut Ekenel (ACI), Mohsen Khanverdi (Windsor University), Greg Black (SEAC NOCO), Casey Roberts, Hussain Ashoor (Ab'aad 3D Innovation), Amanda Styers (A2LA), Jordan Russeff (OPCMIA528), Ammar Abdulla

3. Approval of Agenda Motion

Mr. Gencturk asked for a motion of approval for the agenda. Mr. Paul Messplay motioned, and Mr. Werner Hellmer seconded. The agenda was unanimously approved.

4. Approval of Previous Meeting Minutes

Mr. Gencturk asked for a motion of approval for the previous meeting minutes. Mr. Hellmer motioned, and Mr. Eric Kreiger seconded. The previous meeting minutes were unanimously approved.

5. Continuation of Public Comments Round 1 Discussion

Mr. Gencturk started the discussion on the public comments with asking Mr. David Langefeld to summarize the Structural Working Group meeting that occurred a week before on Comment #8 on Section 105.1. Mr. Langefeld presented the document regarding Special Inspections to the committee. The committee discussed the document. A motion was brought forward to approve Comment #8 on Section 105.1 by Mr. Messplay and seconded by Mr. Kreiger. The motion was approved unanimously.

Next, Mr. Gencturk continued the discussion on the remaining public comments. Below are the comments that were addressed during the discussion.

#	Comment Proponent	Section, Comment and Proposed Resolution	Committee Response	Committee Vote
8	Mr. Mahmut Ekenel	<p>Section 105.1 Special Inspection.</p> <p>This section is narrow in content, and I do not think it satisfies the intent of IBC Chapter 17. Because there is no 3D printing in the IBC, especially in Section 1705.3, Section 105.1 needs to be more specific. Suggest the following:</p> <p>105.1 Special Inspection. Special inspection shall be provided in accordance with Sections 1705.1.1 <u>and applicable parts of Section 1705.3</u> of the IBC during the mixing, printing, and placing of the <i>3D printing material</i> shells and <i>core fill grout</i>. The inspection shall include verification that the concrete compressive strength is in compliance with the minimum compressive strength specified in the construction documents. <u>Applicable requirements of Sections 501 and 502 determined by registered design professional in responsible charge may also apply.</u></p>	<p><i>Approved – Major Edits. Chair will work with ICC Staff and Structures Working Group to implement the changes.</i></p>	<p><i>Mr. Messplay motioned</i></p> <p><i>Mr. Kreiger seconded</i></p> <p><i>Vote – Approved unanimously</i></p>
35	Mr. Langefeld	<p>Section 303.3 Shrinkage ASTM C157 does not consider the benefits of shrinkage-compensating admixtures. Suggest the committee add a means for testing the shrinkage that allows for the benefits of shrinkage-compensating admixtures to be realized.</p> <p>Add a reference to ASTM C878 in addition to C157.</p>	<p><i>Disapproved</i></p>	<p><i>Mr. Hellmer motioned</i></p> <p><i>Ms. Maryam Hojati seconded</i></p> <p><i>Vote – Disapproved unanimously</i></p>

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44	Mr. Langefeld	<p>Table 403.7.1 Minimum Concrete Cover for Reinforcement</p> <p>If not exposed to weather or in contact with the ground, stainless/HDG is not necessary. Delete ** for cross ties and horizontal reinforcement. Suggest the committee revisit table.</p> <p>Strike corrosion requirements from horizontal reinforcement not exposed to weather.</p>	Approved – Minor Edits	<p>Mr. Hellmer motioned</p> <p>Ms. Maryam Hojati seconded</p> <p>Vote – Approved unanimously</p>
45	Mr. Langefeld	<p>Section 403.11 Structural Integrity</p> <p>This requirement overrides the minimum vertical reinforcement requirement in 403.2. Suggest the committee review this. Change 8 ft. to 10 ft.</p>	Editorial – Chair approved.	No vote. Chair determined this to be editorial and approved the change.
46	Mr. Langefeld	<p>Table 404.11 Strength Reduction Factors for 3D-ACT Wall Systems</p> <p>IBC referenced ACI Code 318 refers to anchor testing as specified in ACI 355.2 and ACI 355.4. Suggest committee also add references to ACI codes:</p> <p><u>The capacity of anchors in 3D printing materials may be determined in accordance with ACI 355.2, ACI 355.4, AC01, AC58...</u></p>	Approved for minor editorial edits.	<p>Mr. Messplay motioned</p> <p>Ms. Hojati seconded</p> <p>Vote – Approved unanimously</p>
47	Mr. Ekenel	<p>Section 406.4 Anchor Testing</p> <p>IBC referenced ACI Code 318 refers to anchor testing as specified in ACI 355.2 and ACI 355.4. Suggest committee also add references to ACI codes:</p> <p><u>The capacity of anchors in 3D printing materials may be determined in accordance with ACI 355.2, ACI 355.4, AC01, AC58...</u></p>	Approved for minor editorial edits.	<p>Mr. Hellmer motioned</p> <p>Ms. Hojati seconded</p> <p>Vote – Approved unanimously</p>

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48	Mr. Ekenel	<p>Section 406.2 Alternative Design</p> <p>Suggest the following revisions below. This is crucial because “complying with” does not mean they need to be operating under ISO 17025. They must be accredited. Also add “for the scope of tests” to make sure lab has the test in their scope.</p> <p>“.....shall be performed by a qualified testing agency complying with accredited in accordance with ISO/IEC Standard 17025 for the scope of tests by any accreditation body that is a signatory to the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA).”</p> <p>FYI: ILAC and IAF are merging to form GLOBAC late 2025.</p>	Approved for minor editorial edits.	<p>Mr. Langefeld</p> <p>Mr. Kreiger seconded</p> <p>Vote – Approved unanimously</p>
49	Mr. Langefeld	<p>Chapter 5</p> <p>Change title to be more aligned with Chapter 3 and contents of Chapter 5. There are no performance requirements given in Chapter 5. See comment 58 about moving final acceptance criteria to Section 105.</p> <p>Change title to “3D Printing Material Field Prequalification – Testing Methods”</p>	Comments are clarification and will be addressed outside of the committee discussion.	Chair decision
50	Mr. Langefeld	<p>Chapter 5</p> <p>The results of the field prequalification would be useful for the structural design in Chapter 4. Suggest the committee consider moving Chapter 5 ahead of Chapter 4.</p> <p>Reorder what is currently Chapter 5 to be before what is currently Chapter 4.</p>	Comment withdrawn.	<p>Mr. Hellmer motioned</p> <p>Mr. Langefeld seconded</p> <p>Vote – Disapproved unanimously</p>
51	Mr. Langefeld	<p>Section 501.1 General</p> <p>Section refers to the 3D printing system. Suggest the committee define this term in Chapter 2.</p> <p>In Chapter 2, add definition for <u>“3D printing system-consists of the entirety of the equipment needed for 3D-ACT, namely, the material batching and delivery system, the 3D printer, and the 3D printing software.”</u></p>	Comments are clarification and will be addressed outside of the committee discussion.	Chair decision

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52	Mr. Langefeld	<p>Section 501.1 General</p> <p>Suggest the committee reword the last sentence of the first paragraph to be more in line with the contents of Chapter 3.</p> <p>Replace “The 3D printing material and 3D printing material mix design shall meet the requirements of Chapter 3 of this standard prior to performing the field prequalification testing.” with “<u>The 3D printing material and mix design shall have been prequalified in accordance with Chapter 3 of this standard prior to performing the field prequalification testing.</u>”</p>	<p><i>Comments are clarification and will be addressed outside of the committee discussion.</i></p>	<p><i>Chair decision</i></p>
53	Mr. Langefeld	<p>Section 501.2 Material Source and Storage Requirements</p> <p>The phrase “unaccounted for moisture” is awkward. Suggest the committee revise.</p> <p>Replace “such as the introduction of unaccounted for moisture prior to mixing and batching” with “<u>such as addition moisture not accounted for prior to mixing and batching</u>”</p>	<p><i>Comments are clarification and will be addressed outside of the committee discussion.</i></p>	<p><i>Chair decision</i></p>
54	Mr. Langefeld	<p>Section 501.3 Prequalification Elements.</p> <p>The phrase “If 3D printing concrete is used for construction” is incorrect since this chapter is about field prequalification. Suggest the committee revise.</p> <p>Replace “If 3D printing concrete is used for construction” with “<u>If prequalifying 3D printing concrete</u>”</p>	<p><i>Comments are clarification and will be addressed outside of the committee discussion.</i></p>	<p><i>Chair decision</i></p>
57	Mr. Langefeld	<p>Section 501.6.1 Fresh Properties</p> <p>It is confusing whether the three samples are being collected from each element or just one element. Suggest the committee add clarifying language.</p> <p>In Section 501.6.1.4, replace “each prequalification element” with “<u>each of the three samples specified in 501.6.1</u>”</p>	<p><i>Comment withdrawn.</i></p>	<p><i>Mr. Hellmer motioned</i></p> <p><i>Mr. Langefeld seconded</i></p> <p><i>Vote – Disapproved unanimously</i></p>

#	Comment Proponent	Section, Comment and Proposed Resolution	Committee Response	Committee Vote
58	Mr. Langefeld	<p>Clarifying language is needed regarding the curing of the molded (cast) samples and the prequalification elements. Suggest the committee add more language.</p> <p>Replace first paragraph of 501.6.2.1 with the following: <u>“Cast specimens shall be subjected to standard curing according to ASTM C31/C31M. Cast specimens consisting of 3D printing mortar shall be tested in accordance with ASTM C109/C109M for cubes and ASTM C39/C39M for cylinders. Cast specimens consisting of 3D printed concrete cylinders shall be tested according to ASTM C39/C39M.”</u></p> <p>In the start of the second paragraph, replace <u>“In addition, a minimum of 24 specimens”</u> with <u>“In addition to cast specimens, a minimum of 24 printed specimens”</u></p>	<p><i>Comments are clarification and will be addressed outside of the committee discussion.</i></p>	<p><i>Chair decision</i></p>
63	Mr. Langefeld	<p>Section 502 FINAL ACCEPTANCE TESTING</p> <p>Move Section 502 to the Special Inspections Section in Chapter 1.</p> <p>Move Section 502 to Section 105.</p>	<p><i>Comment withdrawn.</i></p>	<p><i>Mr. Hellmer motioned</i></p> <p><i>Mr. Langefeld seconded</i></p> <p><i>Vote – Disapproved unanimously</i></p>
65	Mr. Langefeld	<p>Section 502.4 Compressive Strength</p> <p>The molding, handling, and curing of compressive strength specimens should be aligned to a standard. Suggest the committee reference ASTM C31.</p> <p>Replace <u>“followed by demolding at 24 hours and subsequently wet curing in laboratory conditions until testing ages (7 days and 28 days)-”</u> with <u>“with the molding, handling, and curing following ASTM C31. Specimens shall be tested at 7 and 28 days.”</u></p>	<p><i>Comments are clarification and will be addressed outside of the committee discussion.</i></p>	<p><i>Chair decision</i></p>

There remain 6 to 7 comments to be addressed in the next meeting.

6. New Business

To comment on the phi-factors during the second public commenting period.

7. Next Meeting

The next meeting will be April 11, 2025, at 10am PDT.

8. Action Items & Summary

The action items from the meeting were summarized as follows:

<i>To work on the phi-factors for the next round of public comments.</i>	<i>Mr. Kreiger</i>
<i>To work Comment #8 into the document.</i>	<i>Mr. Gencturk and Mr. Langefeld.</i>

With no other questions or comments before the committee Mr. Gencturk moved to adjourn the meeting. Mr. Messplay motioned for adjourning and Mr. Hellmer seconded. The meeting adjourned at 12:00pm Pacific Daylight Time.