# International Code Council

# ICC IS-3DACT Committee Meeting Minutes – Meeting #19

August 29, 2025 – 10:00 AM PDT

1. Welcome and opening remarks

*Co-Secretariat, Aileen Vandenberg called the meeting to order at 10:35 am PDT and welcomed all committee members, invited parties, and ICC staff. Ms. Vandenberg 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

*Ms. Vandenberg roll called the IS-3DACT committee with the following members registering attendance. Ms. Vandenberg noted there was enough for a quorum.*

| 2025 IS-3DACT COMMITTEE MEETING | | | | | | |
|---|---|---|---|---|---|---|
| **NAME** | **#15 3/7/25** | **#16 3/21/25** | **#17 4/11/25** | **#18 8/15/25** | **#19 8/29/25** | **#20 9/5/25** |
| Gabriel Carrera [D] | x | x | x | X | - | |
| Bora Gencturk [C] | x | x | x | X | x | |
| Rory Hamaoka [H] | x | - | - | - | - | |
| Werner Hellmer[H] | x | x | x | X | - | |
| Maryam Hojati [D] | x | x | - | X | x | |
| Berok Khoshnevis [D] | x | - | - | - | - | |
| Doug Mayer [H] | x | - | x | X | x | |
| Paul Messplay [H] | - | x | x | - | x | |
| Adil Tamimi [D] | - | - | x | X | - | |
| Bing Tian [A] | x | - | x | X | x | |
| David Langefeld [B] | x | x | x | X | x | |
| Eric Kreiger | x | x | x | X | x | |
| **TOTAL** | 10/12 | 7/12 | 9/12 | 9/12 | 7/12 | |

*Interested parties in attendance included Larry Stevig (State Farm), Babak Zareiyan (Beyond Engineering), Trevor Ragno (Apis Cor), Jesse Hanson (Self), Hussain Ashoor (Ab'aad 3D Innovation), Abdul Peerzada (Qiukrete), Mahmut Ekenel (ACI), Daniel Galvez (ICON), Mohsen Khanverdi (University of Windsor), Marco Hernandez Ruiz (Self), Bo Crockett (Self)*

3. Approval of Agenda Motion

*Chair Mr. Gencturk asked for a motion of approval for the agenda. Mr. Doug Mayer motioned, and Mr. Bing Tian 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. Ms. Maryam Hojati motioned, and Mr. Tian seconded. The previous meeting minutes were unanimously approved.*

5. Public Comments Round 2 Discussion

*Mr. Gencturk continued the discussion on the public comments for Round 2. The comments that were addressed during the discussion are as follows:*

| # | Comment Proponent | Section | Comment | Reason | Committee Response | Committee Vote |
|---|---|---|---|---|---|---|
| 8. | Hussain Ashoor | 303.2 | The compressive strength for 3D printing mortar shall be conducted on 2 in. (50 mm) cube molded specimens in accordance with ASTM C109/C109M or on cylinder specimens in accordance with ASTM C39/C39M. | There should be a clear mention whether the specimens is saw cut from 3DCP shell sample or it is molded. | Disapprove | Mr. Tian motioned<br>Mr. Doug Mayer seconded<br>Approved Unanimously |
| 9. | Abdul Peerzada | 304.2 | Consider adding MCPT (AASHTO T380) which is a more reliable test. | Alternate method available. | Approve with minor edits | Mr. Tian motioned<br>Ms. Hojati seconded<br>Approve Unanimously |
| 10. | Larry Stevig | 304.4 | **304.4**<br>**Permeability.** In all climates, air, water and vapor permeability of 3d printing material shall be compatible with cavity insulation and coatings on interior and exterior wall surfaces to ensure wall will dry and resist concealed condensation. | In addition to the 3 durability items in section 304 already and considering the use of 3D printed construction in warm-weather climates to date, it seems that permeability of this wall system is especially important. The proposal in 304.4 is admittedly lacking any referenced standards, but is submitted for the purpose of asking if the committee has discussed how air, water, and vapor is handled by a wall system that is commonly not built with cladding, air or water resistive barriers, and may or may not be coated with sealants/paint that acts as a vapor barrier. Can the committee identify any appropriate standards that would help establish minimum permeance standards for various climates that will verify materials used will ensure long-term durability and adequate performance of the building's walls? | Approve with minor modifications | Ms. Hojati motioned<br>Mr. Tian seconded.<br>Approve Unanimously |

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| 11. | Larry Stevig | 401.3.3.2 | Shells without integral cores shall be considered a veneer, where out-of-plane load is transferred to structural shell(s) through a means of connection as described in Section 403.5. Shells without integral cores shall ~~have no axial load-carrying capacity~~ not support any axial load.<br><br>Shells with integral *cores* shall be assumed to act as horizontal one-way flexural elements designed to transmit out-of-plane loads to *cores*. *Cores* shall be designed to transmit out-of-plane loads to the foundation and to a roof or floor diaphragm. The cross section consisting of *shells* and integral *cores* shall be assumed to act as axial elements designed to transmit gravity loads to the foundation. | Clarification. | Approve | Mr. Mayer motioned<br>Mr. Langefeld seconded<br>Approve Unanimously |
| 12. | Larry Stevig | Table 403.7 | [b] Reinforcement shall be fully embedded in *3D printing materials* and shall be protected from corrosion by using stainless steel or a hot-dipped galvanized coating or epoxy coating. If the above corrosion protection requirements are not met, minimum concrete cover 3/4 in. ~~shall be the same as for other reinforcement~~. Reinforcement material specifications shall comply with Section 404.2.3. | In Table 403.7, for minimum cover for cross ties and horizontal reinforcement exposed to weather or in contact with ground when not galvanized or stainless steel needs better clarification than footnote provides as written. Proposal suggests giving prescriptive requirement of 3/4" as required for WWF in ACI 318. | Needs committee vote (minor modifications) | No vote b/c quorum was no longer available. |
| 13. | Larry Stevig | 403.11 | **403.11 Structural Integrity.** For multi-story 3D-ACT wall systems, ~~the size of~~ provide vertical integrity ties which shall be at least the equivalent of one #4 bar spaced... | Vertical integrity ties are not defined - this revision provides clarifying language. | Needs committee vote (reinforcement spacing need to be checked, minor modification language) | No vote b/c quorum was no longer available. |
| 14. | Hussain Ashoor | 404.3.2.1 | In the absence of published effective ~~structural contact widths~~ Effective side face contact based on measurements, effective side face contact shall be assumed if the ratio of the single-bead and double-bead effective structural contact widths is greater than or equal to the following: | This section is talking about the Effective side face contact not the structural contact widths. | Needs committee vote (minor modifications) | No vote b/c quorum was no longer available. |

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| 15 | Trevor Ragnor | 404.3.2.2 | [Add text] Effective side face contact may be verified through either destructive cross-sectioning or through non-destructive quality assurance methods, including photographic documentation, layer height monitoring, bead overlap tracking, or digital print logs. All QA records shall demonstrate that at least 85 percent of the nominal bead height is in contact. Where destructive methods are used, a minimum of 15 measurements shall be performed and the reported contact height shall be 2.33 standard deviations below the mean, as measured per ASME B89.1.14. | This revision allows 3D printing operators to use non-destructive, automated QA methods in place of labor-intensive cross-cutting and measuring. It maintains structural performance verification while cutting costs, delays, and labor — all essential for scalable 3D printing workflows like those used by Apis Cor and others. | Disapprove (concerns about accuracy + limited effort as a part of prequalification testing | No vote b/c quorum was no longer available. |
| 16 | Abdul Peerzada | 501.1 | Prequalification testing shall be performed on specimens printed using the *3D printing materials*, with the *3D printing material mix* ~~*design*~~, and *3D printing system* proposed for construction. Each *3D printing material mix* ~~*design*~~ and *3D printing system* model combination including the mixing, delivery, and extrusion equipment intended to be used in the construction project requires prequalification testing in accordance with this section to evaluate compatibility and execution. | Technical/editorial. | Needs committee vote (minor corrections) | No vote b/c quorum was no longer available. |
| 17 | Trevor Ragnor | 501.1 | Each Field prequalification testing shall only be required for a *3D printing material mix design* and *3D printing system* model combination including the mixing, delivery, and extrusion equipment intended to be used in the construction project requires prequalification testing in accordance with this section to evaluate compatibility and execution when the combination has not been previously prequalified under substantially similar environmental and operational conditions.<br><br>Prequalified systems used without substantive modification from their original configuration may be accepted by the code official without additional field testing.<br><br>Variation in environmental conditions shall be taken into consideration while the prequalification tests.... | Reason: This revision provides flexibility for manufacturers using prequalified, previously tested materials and systems under similar environmental conditions, aligning more closely with common practices in CMU, concrete, and other structural systems. It avoids redundant field testing for standardized and repeatable 3D printing deployments—critical for scalability, affordability, and speed-to-market, especially in production-scale housing. | Needs committee vote (minor changes to Sections 501.1 and 501.8) | No vote b/c quorum was no longer available. |

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| 18 | Hussain Ashoor | 501.3 | ~~If prequalifying 3D printing concrete is used for construction,~~ If prequalifying 3D printing concrete is used, the bead size shall be such that it will allow extraction of sawn samples for compression tests mentioned in Section 501.6.2.1 with a minimum dimension of four times the maximum aggregate size. | The original text was incomplete and required the addition of "used" to make the sentence grammatically correct. | Needs committee vote (minor corrections) | No vote b/c quorum was no longer available. |

6. New Business

*There was no new business.*

7. Next Meeting

*The next meeting will be September 5, 2025 at 10:00 am Pacific Daylight Time.*

8. Action Items & Summary

*Mr. Gencturk moved to adjourn the meeting. Ms. Hojati motioned for adjourning and Mr. Mayer seconded. The meeting adjourned at 12:00pm Pacific Daylight Time.*