



# Journal of Architectural Engineering

## Guest Editors:

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## Call for Papers

Special Collection on Construction  
3D Printing: Advancements,  
Challenges, and Future Prospects



### Aims & Scope

Digital transformation in the construction industry will become a reality only after the adoption of digital construction technologies on a massive scale. Higher degrees of construction automation can reduce the need for physical labor and improve productivity during the construction phase. Construction-scale 3D Printing (C3DP) is currently at the forefront of construction automation efforts, and significant advancements in this field have been achieved during the past few years. Various structures, such as bridges, buildings, and towers, have been successfully 3D printed to showcase the possibilities with C3DP. However, technical and regulatory challenges need to be resolved before mass implementation of this technology is possible. New paradigms in design, reinforcement, quality control, and other aspects are needed to complement the C3DP process and enable higher levels of productivity and automation in construction.

This special collection intends to include papers that address these challenges and share innovative case studies and design, construction, and testing solutions for 3D printed structures in order to advance this robotic construction technology further. The special collection also welcomes comprehensive critical reviews identifying the state-of-the-art and future research directions in the field of C3DP and robotic construction in the Architectural Engineering (AE) domain.

While the editors of JAE are interested in a wide range of topics related to advancement and innovative solutions in the field of Construction 3D Printing, some specific sub-topics related are of particular interest, including (but not limited to) the following:

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## Topics

- C3DP applications and case studies
- Topology optimization for 3D printed structures
- Real-time and automated quality control and monitoring techniques for C3DP
- Early-age and long-term performance of 3D printed structures
- Extraterrestrial construction using C3DP and in-situ resources
- Building code compliance of 3D printed structures
- Material testing and acceptance criteria for C3DP
- C3DP of sustainable and low-carbon intensity materials
- C3DP of soil-based (earthen) and bio-based (plant) materials
- Functionally graded 3D printed materials and multi-material C3DP
- Automated and integrated reinforcement techniques for C3DP
- Innovative and high-performance printing materials for 3D printed infrastructure
- Building Information Modeling (BIM) for 3D-printed structures
- Toolpath optimization for C3DP
- Prefabrication of 3D printed elements
- Structural analysis and monitoring of 3D-printed structures
- Integration of Machine Learning (ML) algorithms in C3DP
- Design of buildings and non-building structures for C3DP

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### Submission Guidelines

1. Please submit your manuscript via the ASCE *Journal of Architectural Engineering* website:  
<https://www.editorialmanager.com/jrnaeeng>
2. Once on the Editorial Manager website, please indicate that your paper is for the special collection “Special Collection on Construction 3D Printing: Advancements, Challenges, and Future Prospects” edited by Jose Duarte, Maryam Hojati and Ali Kazemian.
3. Detailed information on the submission process is provided in the document “Publishing in ASCE Journals: A Guide for Authors” available at <https://doi.org/10.1061/9780784479018>

Please note that all accepted papers submitted in response to this Call for Papers will be published in regular issues of the *Journal of Architectural Engineering* and assembled online on a page dedicated to this Special Collection. See <https://ascelibrary.org/page/jaeied/specialcollections> for the list of Special Collections already published.