



Structural Engineer (Additive Construction)

Program Description:

ERDC-CERL has had an active research and development program in the area of additive construction (additive manufacturing or 3D printing for construction) since 2015. The ERDC Additive Construction (AC) program focuses on modernization of construction through the development of AC technology for military applications. To address military needs, this has and continues to include interdisciplinary development of AC technology, materials, methodologies, and testing. This program actively works with deployable large-scale 3D printers to produce infrastructure components on-demand in-the field using locally available materials for innovation and to retain subject matter expertise within the government as this technology develops. CERL has done extensive work in developing 3D printers, printable materials (including cement based), and has demonstrated a unique capability to source local materials for these mixes. The CERL Additive Construction team is a multi-disciplinary agile team of engineers and scientists that are dedicated to modernize construction practices and develop materials by design to improve mechanical, thermal, and structural performance. Applications for this technology include bridges, buildings, and other infrastructure (e.g., barriers, culverts).

Duties:

Serves as research structural engineer for ERDC CERL performing experimentation from basic to applied research and demonstration projects. The expectation for the position is to work collaboratively in planning, execution, evaluation, interpretation, and dissemination of research data and results to both the military and scientific communities.

Incumbent will perform and support research including, among other topics, performing structural calculations using structural codes, designing test fixtures for performing structural testing on the structural load floor facility at ERDC-CERL, produce or guide production of structural drawings and construction plans for test specimens or demonstrations, use materials data or obtain materials data through lab testing to inform designs. To execute research incumbent will be trained to apply structural engineering practices to perform structural calculation for 3D printed structures for laboratory structural testing and demonstrations for additive construction (3D printing for construction). Incumbent will also analyze test results, write reports, perform validation of existing design methods, and develop/refine test methods for determining structural performance.

Specific qualifications desired are:

- Education and experience
- Bachelors degree with 2-3 years design experience
- Masters (coursework only) degree with 2-3 years design experience
- Masters (Research) degree with 1-2 years design experience
- PhD with 1-2 years design experience





- High level of familiarity with Codes/Standards:
 - ASCE 7, IBC, ACI 318, TMS 402/602, AISC, NDS, ASTM
- Understanding of mechanics of materials, design of structural components (beams, walls, columns), design of connections, and structural failure modes (fracture, yielding, buckling, fatigue, creep).
- Ability to interpret results from structural testing of columns, walls, beams and structural systems (components with connections).
- Ability to obtain a secret clearance
- Ability to lift 50 lbs.

General duties include, but are not limited to: performing top quality research both independently and as part of a team, functioning as a member of an internal research team in either a leading role or in a supportive role, developing and fostering communications within a scientific network for collaborations, dissemination of research results to the scientific community through platform presentations at scientific conferences and through research articles in high impact peer reviewed scientific journals, and acting as an ambassador to promote ERDC research to internal visitors and the external community. Provide input and support to ERDC research projects as needed.

Level/Salary Range: DB2 or DB4 (Equivalent to GS 5-11 or GS 12-14).

Level placement depends on the candidate's experience, education, and other qualifications.

View General Schedule (GS) ranges [here](#).