PERSONNEL QUALIFICATIONS

Brian J. Welsh | Associate III

EDUCATION

- Texas A&M University
  - Bachelor of Science, Civil Engineering, 2019
- University of Illinois at Urbana-Champaign
  - Master of Science, Civil Engineering, 2022

PRACTICE AREAS

- Bridges and Civil Infrastructure
- Testing and Instrumentation
- Structural Analysis
- Computer Modeling
- Litigation Consulting/ Failure Analysis
- Structural Design

PROFESSIONAL AFFILIATIONS

- American Concrete Institute

TECHNICAL COMMITTEES

- ACI 440-0H - FRP Reinforced Concrete

CONTACT

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EXPERIENCE

Brian Welsh conducts investigations related to new and existing structures. His project experience includes the design, analysis, assessment, and rehabilitation of concrete and steel structures.

Before joining WJE, Mr. Welsh was a graduate research assistant at the University of Illinois at Urbana-Champaign (UIUC), where he was engaged in projects involving structural health monitoring and evaluation of existing structures. His research focused on leveraging computer vision in conjunction with drones to evaluate the behavior and deterioration of existing infrastructure and buildings. His graduate studies included instrumentation, data analysis, and computational modeling, including machine learning. Mr. Welsh also has expertise working for a structural design firm, contributing to building design.

REPRESENTATIVE PROJECTS

Bridges and Civil Infrastructure

- Port of Houston - TX: Element-level condition assessment and data analysis for multiple assets of different assembly and construction
- Port Stockton - CA: Development and implementation of element-level condition assessment program for maritime structures
- Eagle Mountain Lake Service Spillway - Fort Worth, TX: Cover depth, carbonation depth, and chloride depth survey for service life assessment of concrete spillway elements

Testing and Instrumentation

- Manufacturing Plant Building - TX: Installation and monitoring of strain gauges and thermocouples to investigate distress in large precast concrete structure during construction
- Woodlawn Mansion - Austin, TX: Installation of tiltmeters to monitor deflections of masonry walls during underpinning of historic building
- Dyess Air Force Base - Abilene, TX: Load testing of existing roof truss system to evaluate adequacy for rehabilitation
- Sound Transit - Seattle, WA: Laboratory and field tension load testing of post-installed adhesive glass fiber reinforced polymer dowels

Structural Analysis

- Texas State Capitol - Austin: Evaluation of existing, historic, wrought-iron roof framing to accommodate new skylight system
- University of Texas at Austin, Belmont Hall: Structural analysis of historic concrete floor system to determine adequacy for increased loading
- Tuscany Apartments - Austin, TX: Analysis of steel members with corrosion section loss

Computer Modeling

- Davis-Besse Nuclear Power Station - Oak Harbor, OH: Three-dimensional point cloud analysis to evaluate settlement-induced deformation of cooling tower
- The Dalles Miter Gate - The Dalles, OR: Development of Matlab/Python-based program to determine gate deflections *
- Bahl Smart Bridge - Champaign, IL: Creation of computer program and interface to display real-time acceleration and deflections of instrumented pedestrian bridge *

Litigation Consulting/Failure Analysis

- University of Texas at Austin, Darrell K Royal Memorial Stadium: Investigation of failed PMMA coating system and associated water intrusion damage
- Raw Water Intake Pipeline - Cedar Park, TX: Investigation of failed 36-inch diameter ductile iron pipe on lakebed
- Middle School - TX: Investigation of alleged defects related to metal roof system fasteners, concrete masonry unit wall reinforcement, and lateral bracing system

Structural Design

- Texas A&M University, Central Utility Plant - College Station: Rehabilitation of deteriorated concrete structure built in 1919
- Steel Warehouses - Dallas, TX: Design of warehouses with steel framing and joist design **
- Theater Risers - Dallas, TX: Designed movie theater seating riser structure consisting of timber framing and connections **

** Indicates projects with UIUC*
*** Indicates projects with previous employer*