

### Robert E. Cole | Senior Associate



#### EDUCATION

- Virginia Tech
  - Bachelor of Science, Civil Engineering, 2016
  - Master of Science, Civil Engineering, 2018

#### PRACTICE AREAS

- Concrete Structures
- Structural Analysis
- Repair and Rehabilitation
- Nondestructive Evaluation
- Instrumentation/Monitoring/Load Testing

#### REGISTRATIONS

- Professional Engineer in VA

#### PROFESSIONAL AFFILIATIONS

- Structural Engineers Association - Metropolitan Washington

#### CONTACT

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#### EXPERIENCE

Robert Cole joined WJE in 2018 and has gained experience projects related to nondestructive evaluation, condition assessments, repair and rehabilitation design, and structural analysis of steel, prestressed and post-tensioned concrete buildings and bridges.

Mr. Cole has performed structural investigations, condition assessments, repair design, and construction observation services on new and existing buildings and structures. His project experience focuses on the evaluation of steel and concrete structures, structural analysis, and nondestructive evaluation of transportation structures. While completing his graduate and undergraduate degrees, Mr. Cole performed research involving service life modeling of concrete structures and laboratory testing of light-gauge, cold-formed steel connections for monotonic and cyclic loading conditions.

#### REPRESENTATIVE PROJECTS

##### Concrete Structures

- Precast Concrete Parking Garages - Multiple Locations, U.S.: Visual assessment, analysis, and repair design of precast concrete parking structures to address damaged concrete double-tee beams
- Data Center Slab Cracking - Northern VA: Visual assessment, analysis, and repair design to address widespread slab cracking at in-service data center structures
- SOCO II - Austin, TX: Structural peer review of precast concrete parking garage foundations and soil retaining elements including original design and required retrofits
- Airport Roadway Tunnels - Buffalo, NY: Condition assessment and materials testing of tunnels located beneath airport runway

##### Structural Analysis

- Surf Club - Surfside, FL: Evaluation, analysis, and repair of aluminum trellis connections; finite element modeling of beam elements and connections to address fatigue and vortex shedding induced behavior
- Box Store Roof Repairs - Silver Spring, MD: Evaluation, analysis, and repair of steel beam-over-column girder system to address obsolete column framing connections

##### Repair and Rehabilitation

- Precast Concrete Parking Garage - Atlanta, GA: Assessment, structural analysis, and design of repairs to replace damaged double-tee beam
- Warehouse Roof Repairs - Baltimore, MD: Visual inspection, evaluation, and repair design of open web steel roof joists, joist girders, and connections

##### Nondestructive Evaluation

- Steel Elevated Rail Structures - Washington D.C. Area: Magnetic particle testing and visual weld inspection of fracture critical steel box girder welds; ultrasonic testing of steel anchor rods
- Concrete Elevated Rail Structures - Washington, D.C. Area: Ultrasonic pulse velocity testing to evaluate concrete consolidation and honeycombing at retrofit concrete pier caps; visual inspection, materials testing, corrosion testing, and instrumentation of bridge with apparent stray current-related distress
- Steel Tunnel Assessment - Washington, D.C. Area: Ultrasonic testing of steel tunnel liner to quantify corrosion and section loss
- Washington National Airport - Arlington, VA: Ground penetrating radar survey of runways to identify locations and depths of embedded electrical conduits prior to pavement removal

##### Instrumentation/Monitoring/Load Testing

- Precast Parking Garages - Multiple Locations, U.S.: Load testing of precast concrete double-tee flange connections; assessment and repair of failed connections
- Concrete Specimen Instrumentation - Winchester, VA: Installation and monitoring of vibrating wire strain gauges to evaluate strain and cracking behavior of various precast concrete mix designs
- Facade Access Anchorage Testing - Multiple Locations, U.S.: Proof load testing of new OSHA-compliant facade access anchorages in multiple directions using in-house reaction frame