



## SERVICE PROFILE

# Heavy Movable Structures



- Design for new construction
- Repair and rehabilitation
- Preparation of PS&E
- Mechanical, electrical, and hydraulic services
- Balance testing and analysis
- Strain gage installation and monitoring
- Frictional troubleshooting
- Inspection of field machinery installation and operation
- Construction engineering inspection and construction support
- Acceptance testing
- Wire rope inspection
- Emergency response
- Movable Bridge Project Coordinator services
- Rail systems engineering
- Electrical testing/monitoring
- Commissioning services

Not all structures are built to remain stationary. Some are designed to adapt to the dynamic demands of the built environment. WJE is an industry leader in design, inspection, and repair of heavy movable structures—including bascule, swing, and vertical lift bridges as well as dam gates, locks, ferry slips, and cranes. For more than three decades, our engineers have worked with owners, contractors, fabricators, and installers to deliver technically sound and cost-efficient solutions for movable structures.

WJE is committed to finding practical yet innovative solutions to the structural, mechanical, hydraulic, and electrical problems experienced by all types of heavy movable structures. Our engineers are experts in the design of new systems, rehabilitation of existing systems, shop inspection, field inspection, preparation of procedures for machinery installation, strain gage testing for bridge balancing, electrical testing, and construction support services. Our engineers are knowledgeable in the governing AASHTO, AREMA, and CHBDC standards for highway and rail bridges and routinely troubleshoot problematic conditions on both scheduled and emergency bases.

Supported by extensive in-house testing and research capabilities in WJE's Janney Technical Center, our engineers perform a wide range of field and laboratory testing services. From full-scale load testing to elemental material analysis, WJE provides clients the answers they need to maintain the integrity and safety of their movable structures and equipment.



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### REPRESENTATIVE PROJECTS

- 2018 Hurricane Florence Response - New Bern, NC: Emergency recovery support for two swing span railroad bridges following severe storm
- 92nd Street Bascule Bridge - Chicago, IL: Balance calculations and recommendations for interim pinion replacement
- Battery Maritime Building and Soissons Dock Ferry Slip - Manhattan, NY: Replacement of all mechanical and electrical equipment for four historic ferry slips
- Babson College Globe - Babson Park, MA: Mechanical inspection of support and operating machinery of 25-ton, rotating globe structure
- BNSF Bridge 253.89 - Davenport, IA: Complete replacement of end lift machinery following failure of original system
- Caughdenoy Dam over Oneida River - Oswego and Onondaga Counties, NY: Mechanical and electrical inspection and evaluation services for seven mechanically operated tainter gates
- Sir Ambrose Shea Lift Bridge - Placentia, NL, Canada: Mechanical and electrical engineering services for new tower drive vertical lift bridge
- U.S. Route 1 Memorial Bridge - Portsmouth, NH: Design-build services for replacement of vertical lift bridge
- Woodrow Wilson Memorial Bridge - Alexandria, VA, and Oxon Hill, MD: Balance calculations, balance testing, and construction support services for construction of quadruple-double leaf trunnion bascule bridge

