

## Suspension Bridge Main Cable Investigation 101

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12:30– 1:30 pm, Thursday, Nov. 16, 2023

Civil Engineering Department, Room 105, Steinman Hall

<https://ccny.zoom.us/j/85839128635?pwd=YXQ4TW9VY1RncVF1UjN4R1g0MkhFQT09>

**Abstract** The presentation on Suspension Bridge Main Cable Investigation will focus on the main cables through a discussion on how suspension bridges are built, different types of main cables, how main cable are maintained, how the interior of cables are inspected, how cable wires are tested, and how the cables are modeled and analyzed.

With an emphasis on real world experience from dozens of projects, this presentation will take you out of the theoretical classroom and focus on the actual performance of the work in the field, i.e., reality. Rarely seen photographs of the interior of the cables will bring to life the variability of the conditions inside the giant main cables. This presentation will also cover how broken wires inside the cables are repaired and how in-tact wires are cut for sampling and spliced. Wire grading/classification, wire testing, and how the results of testing are used to analyze the cables will be discussed in relation to determining the cables factor of safety.

A brief discussion of suspender rope deterioration, replacement, and testing will be presented as well as main cable dehumidification as a means of preventing corrosion and preserving the cables.

**Biography:** Stuart Rankin attended Lehigh University and graduated in 1991 with his Bachelor of Science in Civil Engineering. Stuart obtained his Master of Science from Rutgers University in 1997. Stuart is a Professional Engineer in 9 states and has 32 years of experience in the design and construction of bridges and roadways. His experience includes office and field work, primarily focusing on the preparation of conceptual and final design documents for new and rehabilitated long span bridges, specifically suspension bridges. He is an expert on suspension bridge cable analysis and rehabilitation. Stuart also has extensive experience in developing painting specifications and steel repair details for major capital painting and rehabilitation programs. Early on in his career, Stuart performed construction inspection as well as biennial bridge inspection.

