PROJECT PROFILE

EFS Inspection on the George Washington Bridge

Location:
George Washington Bridge
Fort Lee, NJ

MFS Project PM:
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Port Authority of New York and New Jersey

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Situation

An inspection was performed on the George Washington Bridge (GWB) in Fort Lee, New Jersey using Metal Fatigue Solution's (MFS) Electrochemical Fatigue Sensor (EFS) System as part of Stantec Consulting Services' Inc. (Stantec) on-going contract with the Port Authority of New York and New Jersey (PANYNJ). The EFS system was used to inspect existing cracks, and fatigue susceptible locations where cracks had not been previously documented where drill stops had been used to arrest the cracks in the secondary floorbeams and were documented during biennial inspections. The inspected connection details consisted of two secondary floor beams joined by a splice plate, where the fatigue cracks initiated at the end of the beams in the webs between the splice plate and bottom the flanges. All of the eighteen locations that were inspected were the same type of detail. The locations inspected included fourteen locations with known cracks or drill stops and four locations of the same detail where no known cracks existed.

Tests at inspection locations determined:

- Previously implemented repairs appear to not be effective at halting crack growth.
- All inspected locations exhibited either actively growing cracks or the precursors to crack initiation and propagation.

Results

Under the conditions inspected, the data indicated that the drill stops are not functioning as crack arrestors. Three of the drill stop locations had actively growing fatigue cracks and three of the locations had either plastic (permanent) deformation occurring or a small crack already initiated and propagating. The data also indicate that all of the existing cracks that were inspected are still actively growing.

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