



Location:
Mobile, AL

MFS Project PM:
Marybeth Miceli

Client Contacts:
George Connors
Alabama Department of
Transportation

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Metal Fatigue Solutions, Inc.
7251 West Lake Mead Boulevard
Suite 300
Las Vegas, NV 89128

Phone: (702) 800 5542

www.metal-fatigue-solutions.com

PROJECT PROFILE

EFS Inspection of the Mobile River Delta Bridge

Situation

Alabama Department of Transportation (ALDOT) used Metal Fatigue Solution's (MFS) Electrochemical Fatigue Sensor (EFS) to inspect the I-65 Mobile River Delta Bridge, BIN 12321 & 12322. On May 28th and May 29th of 2008, multiple fatigue cracks, fatigue susceptible locations, and connections where various repairs had been performed were inspected using the **EFS** system. The EFS system was installed at areas where documented fatigue cracks were previously identified and at locations that had fatigue-sensitive details similar to those that had previously documented fatigue cracks (both repaired and not repaired). The EFS data and analysis software were used to determine whether existing cracks were actively growing, whether the retrofits were successful at arresting fatigue crack propagation, and whether similar fatigue susceptible details exhibited behavior indicative of current or future crack growth activity.

Tests at various locations indicated:

- Cracks excluded from prior retrofits were actively progressing.
- Locations with no visually detected cracks were actively growing.
- Retrofits were found to be ineffective.

Results

The EFS system was used to inspect a total of ten locations across the two bridges. Of these ten locations inspected, and under the traffic conditions present during inspection, seven of the ten locations were found to have actively growing cracks. Specifically, four of the five



visible cracks were found to be actively growing cracks that hadn't been previously repaired. At three of the five locations without visually detectable cracks, it was determined that growing cracks did, in fact, exist. Further, 66% of the locations that had been repaired had cracks that continued to grow despite the repair.

Type of locations tested:

- Documented fatigue cracks
- Fatigue sensitive details
- Retrofitted details