Murad Abu-Farsakh, J Material Sci Eng 2016, 5:1(Suppl)
http://dx.doi.org/10.4172/2169-0022.C1.034

OMICS International
conferenceseries.com

2nd International Conference on
Smart Materials & Structures
February 29-March 02, 2016 Philadelphia, Pennsylvania, USA

Mitigating the bridge end bump problem: A case study of a new approach slab system with geo-synthetic reinforced soil foundation

Murad Abu-Farsakh
Louisiana State University, USA

The Louisiana Department of Transportation and Development (LA DOTD) has initiated a major effort to minimize the bridge end bump problem associated with the differential settlement. As a result, a new design for the approach slab was proposed, which requires increasing the slab flexural rigidity (EI) and using reinforced soil foundation (RSF) to support the slab and traffic loads at the roadway pavement/approach slab joint (R/S joint). The Bayou Courtableau Bridge was selected as a demonstration project to monitor, evaluate, validate, and verify the new bridge approach slab design method. The west approach slab was designed using the proposed design method with slab thickness of 406 mm (16 in), while the east approach slab was designed using the traditional design method with slab thickness of 305 mm (12 in). The pavement end side of the west approach slab was supported by a 1.2-m (4.0-ft.) wide strip footing with the soil underneath it was reinforced by six geo-grid layers placed at a vertical spacing of 305 mm (12 in). Two static load tests were conducted on both the west and east approach slabs at two different times after construction. The test results indicated that the west approach slab (with new design) lost most of its supports from the soil; while the east approach slab (with traditional design) began losing its contacts from the soil, starting from the bridge side towards the pavement side, after about a year and half. The roughness profiles demonstrated better performance of the new approach slab system with much lower International Roughness Index (IRI) values. The field monitoring program at Bayou Courtableau Bridge demonstrated much better performance of the new approach slab design system (west approach slab) compared to the traditional design (east approach slab).

Biography

Murad Abu-Farsakh is Research Professor, Louisiana Transportation Research Center, Louisiana State University. He received his PhD in Geotechnical Engineering, Louisiana State University, Baton Rouge, Louisiana, 1997. He published more than 150 peer review articles. Some of his research interests include Evaluation of pile setup for piles driven in clayey soils, Accelerated load testing of geo-synthetic reinforced base layer in pavement sections, Calibration of resistance factors for use in the LRFD design of driven piles and Drilled shafts numerical modeling and finite element analysis of geotechnical, pavement and sol-structure interaction engineering problems, instrumentation and many more.

cefars@lsu.edu

Notes: