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Effective metallizing coating solution for steel bridge elements and its slip resistance

Metallizing is evolving as a versatile coating solution for steel bridge elements and has seen increased recognition by multiple transportation agencies, including the U.S. Federal Highway Administration (FHWA) and the Canadian Ministère des Transports du Québec. Metalizing is a term commonly used to describe the practice of thermally spraying molten zinc, aluminium or zinc/aluminium alloy on surfaces of exposed steel elements to provide both physical barrier and effective sacrificial protection through galvanic action. In order to derive the maximum benefits of metallizing, bridge designers need to know the slip resistance of metallized faying surfaces required to develop slip-critical connections in the bridge structure. This helps to eliminate the current labor-intensive and time-consuming practice of masking off all connection faying surfaces to preserve their conditions prepared in accordance to prevailing design standards. Therefore, the ability to design for and supply coated faying surfaces is an important option, and achieving a reliable slip resistance is an essential variable in this option. This presentation will discuss results of both short and long-term studies performed to characterize the slip resistance of metallized faying surfaces used with high-strength bolted slip-critical connections in bridges.

Biography

Charles-Darwin Annan is an Associate Professor of Civil Engineering at Laval University in Canada. He is affiliated as a researcher with the strategic inter-university Research Centre for Structures under Extreme Loading (CEISCE) and the Research Center on Aluminium (REGAL), where he is conducting a number of different researches on sustainable civil infrastructure, and the development of resilient structural systems meeting multiple performance objectives. He was nominated for the 2014 Mitacs Award of Exceptional Leadership, which recognizes excellence in collaboration and highlights superior research achievements. He is currently serving in a number of technical committees, including the ASCE Infrastructure Resilience Division Technical Committee. He currently chairs the Steel Structures subcommittee of the CSCE, and has been serving as an Editorial Board Member of Structural Engineering International of the IABSE.

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