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Sustainability Seminar Series, 2020

Oct 26th, 3:45 PM - 5:00 PM

Improved Sustainability of Bridges through Better Diagnostics and Deeper Understanding of Deterioration Processes

Nenad Gucunski
Rutgers University

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The Doctoral Program in Environmental Science & Management
and MSU Sustainability Seminar Series Present:

Improved Sustainability of Bridges through Better Diagnostics and Deeper Understanding of Deterioration Processes

WHEN: October 26, 3:45-5:00 pm via Zoom

Nenad Gucunski

Rutgers University – Civil and Environmental Engineering



Dr. Gucunski is professor and chairman of Civil and Environmental Engineering, and Director of the Infrastructure Condition Monitoring Program at Rutgers' Center for Advanced Infrastructure and Transportation (CAIT). His primary expertise is in the assessment of transportation infrastructure by NDE and geophysical methods. He is an active member of several technical committees and the past chair of the ASCE's Geophysical Engineering Committee. Dr. Gucunski and his team are the recipient of the 2014 ASCE Charles Pankow Award for Innovation for the development of RABIT robotic system for bridge decks.

Effective and economic management of bridges depends on an accurate assessment of their current condition, and, in turn, prediction of their future performance. Deterioration processes in reinforced concrete, since they are a result of multiple inputs and actions, are inherently complex. To fully and accurately characterize various types of deterioration and gauge its severity, it requires using multiple nondestructive evaluation (NDE) tools in concert with other technologies. Among all the components, reinforced concrete decks deteriorate fastest, primarily due to their direct exposure to traffic and environmental loading, and maintenance actions. Therefore, the most significant advancements in NDE technologies' efficacy for detecting and characterizing deterioration, including the automation of data collection, were achieved for bridge decks. The presentation will provide an overview of the advances in NDE technologies, especially those employing rapid and automated data collection and analysis, and benefits for bridge management stemming from periodical multi-NDE technology surveys. The presentation will also explore how to gain additional knowledge about bridge performance through the complementary use of NDE and other technologies in accelerated structural testing.

For more information contact Dr. Yang Deng at dengy@montclair.edu