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A Geospatial Road Vulnerability Index for Motor Carrier Enforcement Operations

Presenter

Jeremy Scott
Research Associate
ITRE
jscott@ncsu.edu

Co-Presenter

Greg Ferrara
Program Manager
ITRE
gpferrar@ncsu.edu

The primary goal of the North Carolina State Highway Patrol's (NCSHP) Size and Weight program is road infrastructure preservation. As such, it is important to identify those facilities and roadway segments that are most susceptible to damage from overweight vehicles. To this end, a quantitative GIS-based Road Vulnerability Index (RVI) was developed. Road segments were assigned weighted vulnerability values expressed as a function of truck volume, pavement condition, and bridge condition. The resulting RVI layer was then deployed to the Patrol's web-based interactive mapping environment. This provides a visual aid for operational Motor Carrier Enforcement (MCE) personnel to view discrepancies between areas of enforcement effort and areas requiring enforcement emphasis.