

Boyle Consulting Engineers Develops Technique for Bridge Deck Condition Assessment

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Charlotte, North Carolina – In an industry where Google Earth ® has become a household name, Boyle Consulting Engineers (BOYLE) has elevated the bar to a new level using advanced Geographic Information Systems (GIS) software technology provided by the Environmental Systems Research Institute (ESRI, Redlands, Ca). As a Project Partner in a USDOT Project at the University of North Carolina, BOYLE has assisted in developing small-format digital camera mapping technologies.

Combining the strengths of small-format digital aerial photography with GIS analytical functionality, bridge decks can be efficiently mapped, their conditions assessed, and a deck condition rating assigned quickly, with no survey ground control, nor traffic control required. As a new application of existing technologies, the technique holds promise of significantly altering the way transportation agencies nationwide “see” and manage their bridge assets by employing more objective, safe, and efficient ways of maintaining bridge decks and, more importantly, prioritizing their repairs within restricted budgets.

According to a recent study produced by the American Society of Civil Engineers, “If the nation doesn't adequately fund maintenance and expansion of its deteriorating surface transportation infrastructure, the American economy will lose more than 870,000 jobs by 2020, and Gross Domestic Product growth will shrink by \$3.1 trillion”, according to a new report being released to Congress and the public by ASCE.

ASCE goes on to say in the 2009 Report Card for America's Infrastructure, “Usually built to last 50 years, the average bridge in our country is now 43 years old. According to the U.S. Department of Transportation, of the 600,905 bridges across the country as of December 2008, 72,868 (12.1%) were categorized as structurally deficient and 89,024 (14.8%) were categorized as functionally obsolete. From 2005–2008, the number of deficient (structurally deficient plus functionally obsolete) bridges in rural areas declined by 8,596. However, in urban areas during the same time frame, there was an increase of 2,817 deficient bridges. Put another way, in 2008 approximately one in four rural bridges were deficient, while one in three urban bridges were deficient. The urban impact is quite significant given the higher level of passenger and freight traffic.

Simply maintaining the current overall level of bridge conditions—that is, not allowing the backlog of deficient bridges to grow—would require a combined investment from the public and private sectors of \$650 billion over 50 years, according to AASHTO, for an average annual investment level of \$13 billion. The cost of eliminating all existing bridge deficiencies as they arise over the next 50 years is estimated at \$850 billion in 2006 dollars, equating to an average annual investment of \$17 billion.”

Established in 1995, Boyle Consulting Engineers strives to be the first and best choice by air or on land for comprehensive geotechnical, geo-environmental, and geospatial services / site monitoring services in the Carolinas. BOYLE's mission is to bring real-world, bottom-line value to each project it touches through uncovering unearthly mistakes or oversights that can cost time, money and profits. # # #