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CONSTRUCTION TRAFFIC ANALYSIS: TO BE OR NOT TO BE: A CASE STUDY FOR NC-107
WIDENING, SYLVA NC

Taruna Tayal, VHB and Donald Bryson, PE, VHB
(Corresponding Author: Taruna Tayal)
4000 West Chase Blvd.; Suite 530, Raleigh, NC 27607
919-741-5525
ttayal@vhb.com, dbryson@vhb.com

NC 107 is an important arterial serving Jackson County in western North Carolina. The northern portion of the corridor is also the region's major commercial corridor, resulting in AADTs as high as 30,000 vehicles/day on a predominantly 5-lane cross-section (4 lanes with TWLTL). In June 2013, NCDOT began focusing its efforts on improving existing NC-107 from south of NC 116 (Fairview Road) to US 23 Business (Asheville Highway) in Sylva, as opposed to constructing a controversial NC-107 bypass.

However, concerns arose that with no viable detour route, businesses along NC-107 would suffer significant adverse economic impacts due to traffic congestion and access restrictions throughout a long construction process. In part to address these concerns, a traffic management study was conducted to analyze construction and final design traffic conditions to help assess (and minimize) potential economic impacts resulting from travel delays and access constraints.

To effectively assess traffic impacts of construction activities, TransModeler software developed by Caliper Corporation was used to simulate and evaluate traffic patterns and operations for a range of construction scenarios and design year alternatives. Quantitative analyses considered and compared travel times, average travel speeds, levels of service (LOS), queue lengths, and average vehicle delays at intersections. Peak hour summary statistics were developed for each scenario analyzed. Benefit cost analysis was also performed to compare the construction scenario and final build design. The net impact of construction-related congestion delays on the project's anticipated travel-time savings benefits was also estimated.

Readers will be able to learning about how to improve construction management planning, realizing opportunities to revise interim or final designs based on construction analysis, recognizing and effectively exploiting linkages between regional travel demand models and micro-simulation models, applying benefit cost analyses to construction phasing and traffic maintenance, and identifying the advantages and disadvantages of performing construction traffic analysis.