INDOT Research

TECHNICAL *Summary*

Technology Transfer and Project Implementation Information

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INDOT Highway Needs Analysis – Impacts of Physical Features Horizontal and Vertical Curvature)

Introduction

The INDOT Long-Range Planning Section has developed a set of planning tools that will support the system-level analysis of the state transportation system. These tools are employed to monitor transportation system performance, identify highway needs, and provide a quantitative analysis of the impacts of transportation improvement projects. The tools have the ability to forecast travel demand and estimate the economic impact of transportation investments. One such tool is HERS/IN (Highway Economic Requirements System for Indiana). HERS is a computer model designed to perform highway needs analysis by using the current conditions of the highway system and estimating the investments required for potential improvements to the system. The HERS/IN model uses information about existing highways to identify future highway improvements required. The model identifies deficiencies in pavement, capacity, and alignment by referring to the HPMS data of the roadway sections.

Findings

The HERS/IN model gives secondary priority to alignment improvement projects. A highway section is initially analyzed only for capacity and pavement deficiencies. If the section has a capacity or a pavement deficiency, only then is the section analyzed for alignment deficiency. As a result, sections that do not meet the required alignment characteristics but meet the required capacity and pavement characteristics will not be analyzed. From a survey of state DOTs, we learned that most states employ an approach for identifying curve correction projects that is based on the section's crash history. Most curve correction projects are programmed as stand-alone projects and are not incorporated within the planning or maintenance process. Curve correction projects that are incorporated within the planning and maintenance process have the potential to be more cost beneficial than if they are treated separately.

Implementation

Deficient horizontal curves and vertical grades in Indiana have been identified using HERS/ST. A GIS layer showing the deficient horizontal curves and vertical grades in Indiana has been created in TransCAD 4.0. The draft also describes an efficient methodology to identify and program curve correction projects by incorporating them within the planning and maintenance process.

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