



Project Summary

Texas Department of Transportation

0-6404: Accommodating Oversize & Overweight Loads

Background

Adequate management of oversize/overweight (OS/OW) permit loads throughout the state of Texas is critical to maintaining a vibrant state economy. The growth in the number and size of permit loads in recent years is clear evidence that new tools and new techniques are needed to match this growth without causing undue delays, and while ensuring the highway system is not adversely impacted. Problems such as increasing prevalence of reroutes due to maintenance and other district activities, along with potential damage to the highway infrastructure from permit loads led to this research project. A related initiative was development of a new automated routing program—Texas Permit Routing Optimization System (TxPROS). Research objectives were:

- Identify the most common OS/OW dimension and weight groups.
- Identify criteria for assigning these OS/OW groups to existing road networks.
- Identify criteria for assigning current and projected OS/OW groups to the future road network.

What the Researchers Did

The research team acquired information through stakeholder contacts and from 6 years of historical permit data for the period FY2004 through FY2009 provided by the Motor Carrier Division (MCD). The latter was a rich dataset but it required a huge programming effort to make it suitable for use in a GIS environment. This dataset documented 3.1 million permits that included manually entered information such as route origins/destinations, load dimensions, weights, axle configurations, and load descriptions. Stakeholder input was valuable in understanding some of the MCD data.

To enable GIS-based analysis of the loads and their routes, the research team mapped a large number of the permit routes. Based on the mapped routes, they conducted spatial analysis to understand how different groups of OS/OW loads traveled on the state highway network and how permanent restrictions impacted the route choices of such loads. The research project resulted in a statewide map showing a primary/alternate OS/OW route network for the most common origins and destinations based on historical MCD data.

What They Found

Using non-optimal OS/OW routes resulted in an estimated additional 290 million ton-miles of activity on the state highway network due primarily to physical restrictions.

Research Performed by:

Texas Transportation Institute (TTI),
The Texas A&M University System

Research Supervisor:

Dan Middleton, TTI

Researchers:

Jerry Le, TTI
Yingfeng Li, TTI

Project Completed: 2-28-12

During the entire six-year study period and based on a conservative estimate, the accumulated ton-miles totaled more than 1.7 billion. Requiring OS/OW loads to use non-optimal routes increased the cumulative average ton-miles of these loads by 504 million and the median average by 3 billion.

The research team also evaluated the incremental costs incurred by transportation providers and the public due to the additional miles that the OS/OW vehicles traveled. On an annual basis, the additional ton-miles OS/OW vehicles had to travel resulted in about \$42 to \$73 million of additional costs for shippers and the public. These numbers translate to a total of about \$252 to \$438 million loss during the six-year study period.

What This Means

Keeping strategic routes open for OS/OW loads and minimizing the number of reroutes along the way will reduce the inefficiencies and unknowns in this critical segment of the motor carrier industry. Figure 1 shows the statewide map of optimum routes based on historical data.

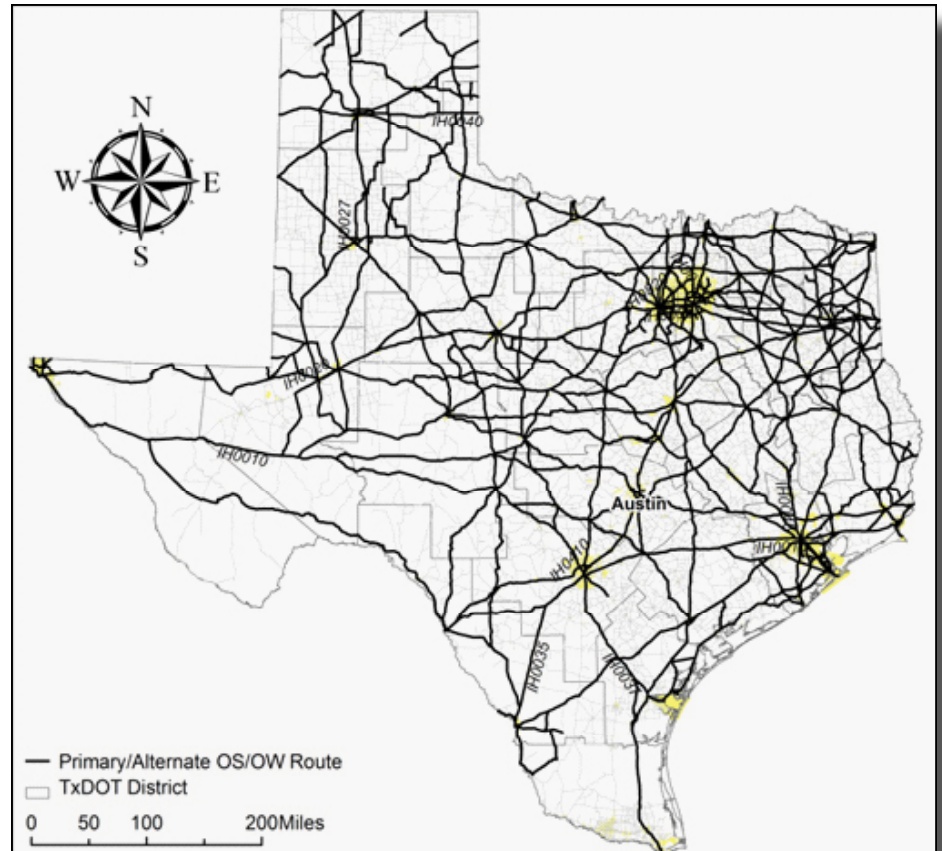


Figure 1. Primary/Alternate Route Network.

For More Information:

Research Engineer - Duncan Stewart, TxDOT, 512-416-4730
Project Director - Connie Flickinger, TxDOT, 979-279-5376
Research Supervisor - Dan Middleton, TTI, 979-845-7196

Technical reports when published are available at:
<http://library.ctr.utexas.edu/index.html>

www.txdot.gov
keyword: research



This research was performed in cooperation with the Texas Department of Transportation and the Federal Highway Administration. The contents of this report reflect the views of the authors, who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of the FHWA or TxDOT. This report does not constitute a standard, specification, or regulation, nor is it intended for construction, bidding, or permit purposes. Trade names were used solely for information and not for product endorsement.