



0-6820: A Process for Designating and Managing Overweight Truck Routes in Coastal Port Regions

Background

The project developed a process to evaluate potential oversized/overweight (OS/OW) freight corridors that will serve Texas coastal port regions and border ports of entry (POEs); such evaluations provide valuable input during legislative inquiries and discussions with managing agencies. To address the need for a rational but fast method to determine costs and a proposed permit fee, the research team the Detailed Analysis Tool, which incorporates additional functionality and library information to enhance the user’s ability to perform safety and financial impact analyses of existing or proposed OW truck corridors serving coastal ports or POEs.

What the Researchers Did

The research team conducted interviews with representatives from port authorities, regional mobility authorities, and cities; conducted site visits; obtained permit data from existing OW corridors to define truck configurations and weights; developed and refined the Stage 2 Detailed Analysis Framework; and performed analyses of pavement/bridge consumption, safety issues, and traffic operations. This work was used to develop the Stage 2 Detailed Analysis Tool, perform case studies, and provide workshop to present analysis results.

What They Found

Field visits:

1. OW corridors are seen as a marketing tool for local agencies that promote economic development in their areas; these agencies are working to expand their OW corridors.
2. Companies operating with OW permits experience increased productivity and efficiency, because permits eliminate the need to redistribute loads to meet legal weight limits.
3. The number of OW corridors authorized by state legislation increased during the project to include

OW corridors/networks in Corpus Christi and Laredo. Discussions are ongoing concerning the establishment of other OW corridors.

OS/OW corridors:

1. Both import and export cargo types carried by permitted trucks vary significantly among ports and border POEs and are associated with variations in truck configurations.
2. Currently, permits do not provide a description of each route link traveled during a permitted trip. Listing all traveled links on the permit would significantly improve pavement and bridge consumption analysis and safety improvements.
3. The administration fee, which accrues to the operating agency, is set at 15% of the permit fee. This results in variations in the administration fee from a low of \$4.50 to \$12.50 on operational corridors and up to \$30 on future corridors.

Pavement and bridge analysis:

1. Pavements respond to axle loads and are insensitive to spacing between axle groups.

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Bridges respond to both axle loads and spacing. Bridge consumption rates also vary based on rural or urban county in terms of bridge density (bridges per mile).

2. Truck configurations vary among OW corridors, which can particularly affect bridge consumption rates based on truck outer bridge lengths.
3. Twelve truck configurations were analyzed for pavements and bridges to determine consumption rates and are stored in the Tool Library. As new corridors begin issuing permits, additional truck configurations may be needed.
4. Heavier six-axle trucks can have lower pavement consumption rates than five-axle trucks, depending on how the axles are configured.
5. Questions about the relationship of truck configuration and axle load distributions provided on some permits could be answered by evaluating field data collection and the Load Xpert software.

What This Means

Use of permit information from current OS/OW corridors:

1. As new corridors are implemented, issuing single-trip permits that include the OS/OW truck configurations, weights and cargo types, and corridor links will be crucial for understanding pavement and bridge consumption rates.
2. Permit data can provide key inputs to study consumption trends on a given corridor based on changes in configurations and weights due to local, regional, national, and international economic trends.

3. The permit databases can serve as data sources to estimate truck configurations on future corridors with similar cargo types.
4. National and state truck size and weight legislation that affects ports and border POE operations should be closely monitored to plan for future changes in pavement and bridge consumption.

Available data and results of pavement and bridge consumption analysis:

1. The equivalent consumption factors determined for different axle loads and groups (single, tandem, tridem, and quad) in relation to an 18,000-lb single-axle were used to develop pavement consumption rates (in terms of dollars per vehicle mile traveled) for each truck configuration.
2. The methodology developed to calculate bridge consumption per mile (in terms of dollars per vehicle mile traveled) was used for each truck configuration, using county mileage per functional class and bridge fatigue concepts.
3. The summary tables provide bridge consumption rates by county, functional class, and urban or rural setting. The percentages of bridges that may exceed their operating ratings are also summarized.
4. Corridor libraries for selected existing OW corridors are provided for the Stage 2 Tool as of 2014. These archived corridors and links to the library information from existing corridors can be used as the basis of 'what if' scenarios for a given corridor or default information for new corridors.

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