



# Project Summary

Texas Department of Transportation

## 0-4702: Design and Operation of Inland Ports as Nodes of the Trans-Texas Corridor

### *Background*

In 2002, Governor Rick Perry announced his vision for a new transportation system for Texas, the Trans Texas Corridors (TTC). He proposed that Texas be connected by a 4,000-mile network of corridors up to 1,200 feet wide with separate lanes for passenger vehicles and trucks. The initial corridor concept includes separated rail tracks (freight, commuter, and high-speed) and space for the provision of utilities, in addition to the highways.

The TTC is seen as a transportation network that will enable the Texas economy to continue competing in both regional and global marketplaces in future years. The focus in many industries has already shifted to international operations and, as a consequence, long transportation supply chains. This shift requires planners to evaluate the importance and location of both transportation corridors and distribution centers. While traditional nodes on supply chains include ports at land, sea, and coastal borders where international trade is processed, it is now recognized that a growing amount of trade is being processed at inland sites. Since the TTC would be characterized by limited access to metropolitan areas, it is highly likely that inland ports will be built to transfer goods – through large distribution centers – from larger to smaller trucks.

The purpose of research project 0-4702 was to evaluate data, models, and guidelines to be used as resources by TxDOT for addressing issues of location, design, and impacts of inland ports serving as freight nodes on the TTC.

### *What the Researchers Did*

The purpose of Project 0-4702 was to study the planning impacts of any inland port designed to enhance freight efficiencies at the junctions of arterials and the TTC. During the first year the research team developed a multiple attribute decision-making tool utilizing state-of-the art software (TransCAD and DYNASMART-P) to rank inland port site locations on the TTC. This is known as the Inland Port Study (IPS) add-in model.

Because location is a critical element in determining whether the value added by an inland port justifies the cost of its construction and operation, location selection within the model was based on seven relevant criteria: accessibility to the TTC, land area availability, existing modal capacity, economic impacts, environmental impacts, construction costs, and traffic impacts. Each of these criteria can be ranked subjectively or quantitatively, or simply given a score based on the software user's experience.

Throughout the second year of the project, the research team conducted specific case studies utilizing the model for sites in El Paso, San Antonio, and Austin. Location and internal traffic movement, as well as traffic impacts on linkages to nearby urban center infrastructure, were simulated.

### *Research Performed by:*

Center for Transportation Research  
The University of Texas at Austin

Texas Transportation Institute  
Texas A&M University

The University of Texas at El Paso

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### **Project Completed:**

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Finally, the researchers predicted the changing face of Texas over the next thirty years for trade, demographics, and economic development. In addition, they reviewed the methodologies that are commonly used to assess economic benefits to act as a complementary module to the location model if and when further development occurs.

## What They Found

This computer software program and methodology will allow TxDOT and other transportation decision makers to assess various possible locations for inland port sites within a given city. Researchers also make these recommendations:

- Comparisons should be made between site alternatives not only for average speeds, but also for peaks in the speeds and volumes of each link, using DYNASMART-P simulations to create a more accurate depiction of traffic behavior on the network.
- The IPS add-in model should be tested further by conducting work to consider as many of the seven criteria as possible. This would involve additional work, including a study of varying construction costs, finding the environmental effects of each alternative due to traffic (to find possible variances), and studying each individual area to find economic impacts attendant on future growth.
- If truck traffic studies are desired for the future, either for the state or for private developers, more truck-specific data should be collected regularly.
- Aside from the truck-specific volumes and origin-destination data that could be collected, it may also be useful to determine the two different traffic impacts separately.
  1. For widespread traffic impacts, such as the lowering of congestion and travel times in the network, TransCAD would be the preferred package for analysis.
  2. For more localized impacts on the area near a planned inland port, a simulation model such as DYNASMART-P would be more appropriate.

## What This Means

Over the next 25 years, Texas is expected to undergo rapid changes in its demographic make-up, economic health, and trade growth. In the face of such changes, the TTC is seen as a next step in maintaining mobility, promoting trade, and ensuring a healthy and vibrant economy for Texans during the new millennia. The development of inland ports and linkage to existing inland ports within Texas is considered to be a crucial factor in ensuring the economic viability of the TTC.

The products developed in this research study should permit planners—particularly those at an MPO or at a TxDOT District—to make general recommendations for inland port locations, as well as provide guidelines for traffic flow improvements and a general view of economic impacts of the chosen location.

### *For More Information:*

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