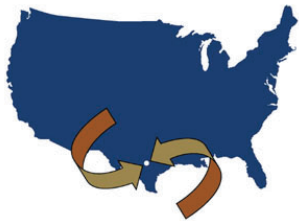


## Impacts of Inland Ports on Trade Flows and Transportation in Texas: A Summary

### What We Did...

The Texas Department of Transportation commissioned a research project in 2000, summarized here, to define inland ports and review their impact on trade flows and transportation in Texas. The research team was the first to define the term “inland port.”



*An inland port is a site located away from traditional land, air, and coastal borders with the vision to facilitate and process international trade through strategic investments in multi-modal transportation assets and by promoting value-added services as goods move through the supply chain.*

The first year of the study yielded a classification methodology to promote a better understanding of inland port

operations and aid transportation planners asked to support inland port operations. As the private sector becomes more focused on globalization and efficient global supply chains, inland ports are starting to emerge in the transportation community. Transportation planners need to recognize that inland ports may also enhance multi-modal trade corridors. The classification methodology developed builds on the management product life cycle concept to create an inland port development life cycle. The stages of the development life cycle can assist planners in developing strategies to facilitate inland port developments and actions to best promote positive transportation impacts.

Ultimately, it is believed that inland ports have the capability to create local employment, enhance corridor efficiencies and thus trade competitiveness, and reduce both public and private costs. The first-year study recognized the importance of inland ports as in-

ternational trade processing locations. In addition to this function, inland ports relieve congested traditional ports of entry, facilitate value-added services, and enhance local and regional development. The second-year report qualifies the role and benefits of inland ports, provides a brief overview of the TxDOT highway planning and programming process, highlights the critical investments required and the level of TxDOT support that can be expected as the inland port develops, considers the impacts of trade and trade truck flows on the locations of inland port developments, and finally, proposes an evaluation framework that allows TxDOT planners to review potential inland port investment requests from a transportation planning perspective. Given the multi-modal components of inland port developments, it is foreseen that the findings of this study can also be used to inform transportation planners considering the location of multi-modal terminals on

the proposed Trans Texas Corridors.

The final and most important product developed from this study is a guidebook designed to help planners understand how inland ports develop and how to accommodate inland ports into state transportation planning. Developers of inland ports who use the guidebook will better understand TxDOT's project development process and data requirements when working with the department. By specifying the support that can be expected from TxDOT planners, the guide is valuable to both TxDOT planners evaluating inland port projects and inland port developers preparing investments requests.

### *What We Found...*

The researchers noted the difficulty in classifying the wide variety of inland ports identified throughout the world. It was found that the many sites that claimed inland port status varied substantially in physical design and philosophy, as well as institutional and organizational strategies and ownership. However, it was quite evident that these inland port sites changed as they grew and that these changes profoundly affected the needs for transportation links. In some cases, inland port proposals were merely conceptual and, though perhaps having a sound intellectual basis, had not developed to a stage at which they could be regarded as valid multi-modal facilities. At the other extreme,

some ports were variations of long-established modal sites such as those on rivers and land borders. The challenge to the researchers was categorizing these sites for inclusion in the transportation planning process. Researchers finally decided on a modified "product life cycle" which is used frequently in business and marketing analyses. The idea is that over the lifetime of a site, there is a result (like traffic demand), which grows somewhat slowly at first and then, if the site is successful, grows vigorously into a more stable phase. The resulting relationship is asymptotic in nature and can be described using the following five phases:

- I. Preparation
- II. Establishment
- III. Expansion
- IV. Stabilization
- V. Decline/Innovation

The life cycle approach, from TxDOT's perspective, is relevant in terms of the impact that the inland port site activities will have on the highway network. If the result is truck trips generated from the site, traffic levels will be relatively low when a site is newly opened. As the site develops, traffic will grow to a point in time when there is a thriving transportation system (usually multi-modal), generating a variety of trips that will impact both local and regional highway networks. The development life cycle can be viewed both as a planning tool for inland port proponents and an evaluation tool for transportation planners. The

research details the five phases of inland port development and the key elements/activities that are expected from the proponents or supporters of the facility, together with potential responses from the transportation planners at TxDOT district and central headquarters.

The research also demonstrated the benefits of inland ports to society, private interests, and public agencies. Society can benefit in the form of increased employment, economic development, and tax revenues. Private sector benefits are mostly accrued from the fact that inland ports offer a potential solution to two seemingly opposing goals of supply chain management: a reduction in inventory and reduced transportation costs. Additional private sector benefits include reduced uncertainty related to customs and border delays. Benefits to state transportation agencies include an opportunity to leverage private funds for investments/enhancements.

### *The Researchers Recommend...*

The research shows those responsible for promoting inland ports how best to interact with TxDOT planning staff. It is recommended that TxDOT planners meeting with supporters of inland port projects read the evaluation chapter of report 4083-2 to develop relevant questions to guide the discussions and aid the planning process. The research focused on the road needs associated with an



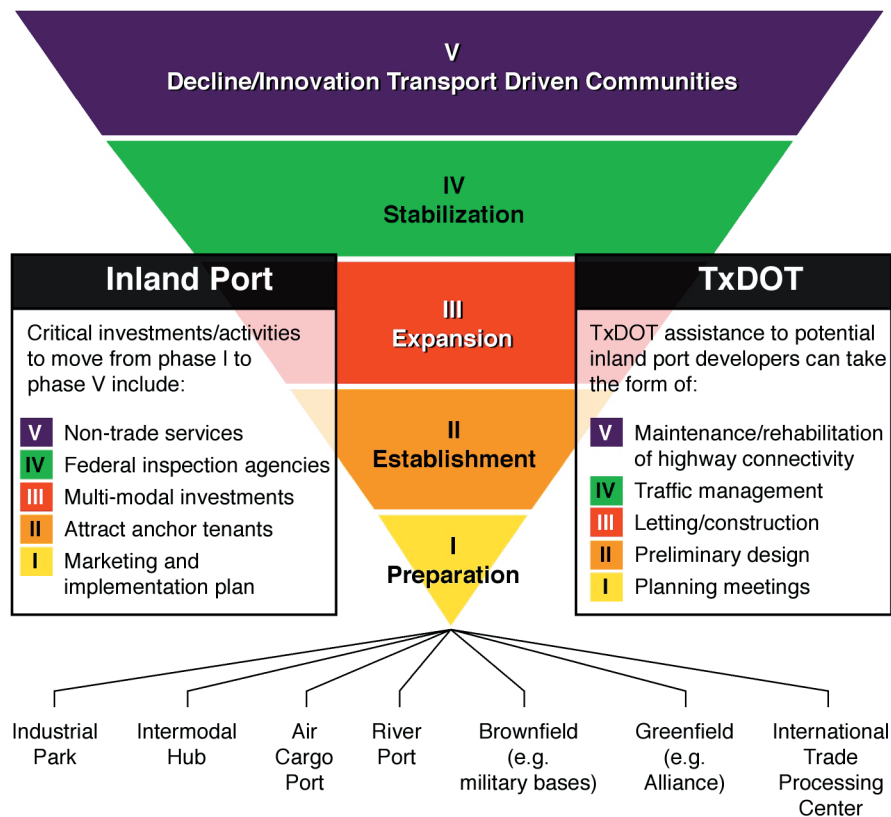


Figure 1: Development Life Cycle of Inland Ports

inland port and how such needs impact the local and regional highway systems. It must be remembered that although TxDOT works closely with other modal providers (like railroads), it is not responsible for infrastructure investments in these modes and is essentially focused on the provision and maintenance of highways. Those expecting planning assistance from TxDOT must therefore constrain their interests to highways. Since traffic needs in Texas far outweigh the investment funds at the state's disposal, all planning problems involve choice. Proponents who present the best case have a better likelihood of success and may even be able to accelerate the planning process. Inland port proponents

who demonstrate an understanding of the planning process, who provide trade information and associated traffic forecasts, or who donate right-of-way or funding for construction, will increase the probability of their project being constructed in a timely fashion (see 4083-2 and guide). The guidebook for inland ports will be a valuable tool to:

- Stimulate development of inland ports, like Alliance (Fort Worth) and Kelly USA (San Antonio), which provide transportation services and contribute to economic growth on transportation corridors.
- Assist in designing and operating true multi-modal hubs with effective links to regional modal networks.

- Evaluate inland dry ports from a highway planning perspective, and thereby strengthen the Texas Statewide Transportation Plan.
- Assist potential developers of inland ports to better understand TxDOT's procedures and data requirements when seeking department assistance.
- Gauge the inland port's impact on the department's highway network.
- Encourage private participation and assistance in expediting the TxDOT planning process by providing resources, such as land and finances. The latter could reach levels in the hundreds of thousands of dollars for larger sites.



## For More Details...

Research Supervisor: Rob Harrison, (512) 232-3113  
email: harrison@mail.utexas.edu  
TxDOT Project Director: Judy Freisenhahn, P.E., (210) 615-5814  
email: jfrieese@dot.state.tx.us

The research is documented in the following documents:

4083-1 *The Identification and Classification of Inland Ports*, August 2001  
4083-2 *Inland Ports: Planning Successful Developments*, October 2002

To obtain copies of a report: CTR Library, Center for Transportation Research,  
(512) 232-3138, email: ctrlib@uts.cc.utexas.edu

## TxDOT Implementation Status July 2003

The CTR researchers have developed an "Inland Port Transportation Evaluation Guide." The guide provides TxDOT planners with a planning and evaluation tool that can be used when local officials and developers approach TxDOT districts for assistance in the possible development of an inland port. The guide also will be given to these potential developers and local officials so that they can better understand TxDOT's procedures and data requirements. In order to increase the guide's usage and effectiveness, a follow-on implementation project has been approved for FY 04. The scope of the implementation project includes training to district and metropolitan planning organization (MPO) personnel on: (1) the functions of inland ports; and (2) procedures on how to use the guide as an evaluation tool. In addition, a second component of the implementation project is an assessment of the guide's effectiveness by using the West Texas (Odessa District) as an actual case study. The implementation project will begin in September 2003, and is scheduled for completion in August 2004.

For more information, contact: Andrew Griffith, P.E., RTI Research Engineer, (512) 465-7908,  
agriffi@dot.state.tx.us.

**Your Involvement Is Welcome!**

## Disclaimer

This research was performed in cooperation with the Texas Department of Transportation and the U. S. Department of Transportation, 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. The engineer in charge was Rob Harrison.



The University of Texas at Austin  
Center for Transportation Research  
3208 Red River, Suite #200  
Austin, TX 78705-2650