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**SYNTHESIS OF PORT RELATED FREIGHT IMPROVEMENT STUDIES:  
TECHNICAL REPORT**

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## **DISCLAIMER**

This research was performed in cooperation with the Texas Department of Transportation (TxDOT) and the Federal Highway Administration (FHWA). The contents of this report reflect the views of the authors, who are responsible for the facts and the 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.

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## CHAPTER 1 – EXECUTIVE SUMMARY

Completion of the \$5.25 billion Panama Canal expansion is anticipated in early 2015. The Panama Canal expansion, which will accommodate larger Panamax vessels and reduce congestion for all ships using the canal, is anticipated to influence global shipping patterns. These changes may impact Texas deepwater ports, as well as landside intermodal, rail, roadway, and other infrastructure needs.

Texas ports are an important economic engine for the state. Texas ports rank second nationally in waterborne commerce, handling approximately 500 million tons of foreign and domestic cargo annually. Texas ports account for approximately 19 percent of U.S. port tonnage, and four ports—Houston, Corpus Christi, Beaumont, and Texas City—are in the top 10 ports in the country. Agricultural products, petrochemicals, and other commodities are exported through Texas ports, while all types of consumer goods and electronic products, automobiles, and other commodities are imported through the ports and distributed throughout the state and region.

The Texas ports create nearly 1 million jobs and generate over \$48 billion in personal income. The maritime industry provides over \$135 billion in economic value to the state. These ports act as gateways serving global supply chains and comprise three distinct elements: deepwater channels, which limit vessel size; terminals, which need to service vessels and their cargos differently; and landside modal access to import and export corridors. The ports, working with the Army Corps of Engineers, are responsible for the channels. In cooperation and coordination with industries, shippers, and carriers, the ports are also responsible for terminal facilities. The Texas Department of Transportation (TxDOT), cities, counties, railroads, and other public and private groups are typically responsible for the landside access to ports.

The exact changes in trade and shipping patterns resulting from the Panama Canal expansion are not known. Global trade patterns are based on many factors, and it is not possible to predict the exact changes that will occur. However, it is possible to examine the most probable scenarios. It is also possible to identify approaches to maximize the benefits to Texas ports, including imports and exports, and to address landside needs, and thus increase benefits to the state as a whole.

Studies and plans over the past 10 years have examined different aspects of the freight system in the state, including ports, railroads, highways, and intermodal facilities. TxDOT sponsored Research Project 0-6801, *Synthesis of Port Related Freight Improvement Studies*, to summarize the key elements addressed in these previous studies, especially those related to landside access to ports. The results of this review were summarized and a searchable Excel spreadsheet was developed containing information on the identified landside access projects. The spreadsheet includes information on the project type, the issues addressed, estimated cost, funding sources, and other related characteristics.



## CHAPTER 2 – REVIEW OF PREVIOUS STUDIES

TTI researchers used a number of methods to obtain relevant freight-related studies and plans completed over the past 10 years. First, TTI reports were reviewed as TTI researchers have participated in these studies. Second, the TTI Librarian conducted an online search using various databases. Third, TTI researchers reviewed websites of ports, TxDOT, metropolitan planning organizations (MPOs), and other agencies to obtain recent plans and documents. The results of the review are presented in this section. Studies related to the Panama Canal are summarized first, followed by those related to waterborne freight, rail, and general freight.

### SUMMARY OF AVAILABLE REPORTS

Approximately 50 previous studies and plans were reviewed as part of this research project. These included studies sponsored by TxDOT, as well as those completed by ports, MPOs, cities and counties, federal agencies, and other groups. A total of 28 of these studies and plans specifically focused on Texas and included the identification of needed waterborne freight, rail, roadway, and intermodal projects. The focus of the studies and plans were summarized and the identified projects were entered into an Excel spreadsheet.

#### **Panama Canal**

Cambridge Systematics, Inc. *Potential Effects of the Panama Canal Expansion on the Texas Transportation System*. October 2011.

The purpose of this report was to help TxDOT summarize and envision the possible impacts and issues of the Panama Canal expansion on Texas transportation. The document also discusses what methods can be used to address the infrastructure, operational, and policy issues involved in the expansion.

Texas Transportation Institute. *Panama Canal Dry–Bulk Market Segment Peer Review*. July 2003.

The document is a peer review of a project examining the Panama Canal’s potential market, vessel transit and fleet size, economic value, marketing strategy, and forecasts canal transits, cargo, and toll revenue.

Center for Transportation Research and Texas A&M Transportation Institute. *Selected 2012-2014 Trade Flows and Texas Gulf Ports: Panama Canal and South American Markets*. TxDOT Project 0-6690 – in progress.

This project is examining trade between the United States, South America, and Asia as a growing opportunity for Texas ports, which may be in a position to capture a larger share of Asian and South American imports, expand Texas export markets, and serve as global hubs. The ability of Texas ports to succeed and increase their significance in statewide transportation planning requires an understanding of how and why trade is conducted between these regions.

The first year of this study examines a range of trade and marine transportation factors required to provide this understanding. U.S. trade with South American and Asian markets is being researched in a Policy Research Project (PRP) project and documented in a first-year report. Concurrently, two specific technical areas—port channels and vessel operating costs—are being examined. The PRP and technical work integrates to form the basis for a second-year work plan addressing strategic issues related to future South American and Asian trade volumes handled at Texas deepwater ports, the role played by the expansion of the Panama Canal, and the impact of increased trade on the Texas transportation system.

## **Waterborne Freight**

Cambridge Systematics, Inc. *TxDOT Waterborne Freight Corridor Study*. July 2010.

This study identifies and addresses certain deficiencies in the landside and waterside portions of the Texas freight system. It was undertaken to help provide a base for TxDOT to develop system-level solutions for the freight needs and issues noted throughout areas that manage Texas' multiple ports. The document is intended to help TxDOT employees work directly with Texas' policy makers, port and waterway operators, and the freight industry. Particular issues and chokepoints can be addressed with all of these groups working in unison.

Cambridge Systematics, Inc. *TxDOT Waterborne Freight Corridor Study, Task 1: Evaluation Criteria and Solution Packages*. November 2011.

The goal of this report is to provide TxDOT and the public with a vision of changes to improve the waterborne freight system in Texas. It also provides an implementation plan for TxDOT and its partners. The document lists the infrastructure, operational, and policy solutions developed to alleviate critical bottlenecks and other problem areas throughout Texas' freight system. These include the state's marine terminals, navigable waterways, inland highways, and rail systems. The document presents a "solution package," and describes the five-step process that is needed to examine potential projects and solutions.

Cambridge Systematics, Inc. *TxDOT Waterborne Freight Corridor Study, Task 3: Waterborne Freight Performance Measures*. November 2011.

This report seeks to guide TxDOT's planning, investments, and decision making through 2017. This portion of the report provides background on the various types of waterborne performance metrics that were suggested in other reports and used by federal and state agencies. A recommendations-and-next-steps section offer preliminary measures for the Texas waterborne freight system. The report also identifies additional analysis needed to incorporate other items into the TxDOT planning process.

Cambridge Systematics, Inc. *TxDOT Waterborne Freight Corridor Study, Task 5: Port and Waterway Funding and Financing Options*. November 2011.

The purpose of this document is to help identify funding and financing options for projects and strategies listed throughout the other portions of the report. This section lists current or future areas that may be viable to fund the previously listed projects. It includes a framework, which presents the structure of seaports in Texas and the role of the federal government in funding. It

also contains sections on the proposed solution packages. These sections include a discussion of port and waterway funding today and describe programs offered at the federal and state level to fund and finance various projects.

Cambridge Systematics, Inc. *TxDOT Waterborne Freight Corridor Study, Phase II*. November 2011.

This report was written to discuss the infrastructure and operational solutions for bottlenecks and other needs at or near Texas' ports. It also discusses the estimated costs and benefits of various solutions. Finally, the report develops a phased implementation strategy for consideration by TxDOT and various stakeholders. According to the goals of the document, it will accomplish the following tasks:

- Provide a better understanding of the port system.
- Quantify the benefits of the state's key industries.
- Recommend specific infrastructure, operational, and policy projects and strategies.
- Define goals for TxDOT's participation in the waterborne freight system.
- Develop a long-term strategy and framework.
- Identify ongoing and future actions.

All projected projects are presented with the problem area, issue, solution, cost, and current status of the project in a table format.

The Texas Department of Transportation. *Texas Ports 2011–2012 Capital Program*.

This report presents the various funding requests for port transportation and economic development projects submitted by each of the eligible ports. The report was provided to the Governor, Lieutenant Governor, Speaker of the House of Representatives, and the Texas Transportation Commission. It identifies available projects that can receive funding for a total of \$672,648,205. The listed projects do not represent a comprehensive listing of all capital needs at Texas ports.

Texas Transportation Institute. *Analysis and Recommendations on Protecting Waterways from Encroachment*. August 2010.

The purpose of this project was to investigate and determine hazards to navigation (encroachments) in the Texas portion of the Gulf Intracoastal Waterway (GIWW) that originate from shore, and to make recommendations for mitigating these hazards in the future. This study resulted in a guidebook for permittees and a guidebook for developers on the types and quantity of structures that should be permitted along the GIWW. The guidebooks should help develop "smart" development with regard to navigation through better cooperation between governmental agencies on permitting development and a focus on the agglomeration, clustering, and density of development on the waterway, and increased cooperation between developers, governmental agencies, and the barge industry in maintaining the GIWW for its primary use of moving goods effectively and efficiently to promote and support Texas and U.S. commerce.

Texas Transportation Institute. *Short Sea Shipping Initiatives and the Impacts on the Texas Transportation System: Technical Report*. December 2007.

This report examines the potential effects of short sea shipping (SSS) development on the Texas Transportation system. The report identifies several triggers, which—if they were to occur—could abruptly change the level of SSS activities in the region. Even with a doubling of current SSS volumes, the effects on the Texas highway and rail systems will most likely be insignificant, with the possible exceptions of the ports of Freeport and Brownsville.

Texas Transportation Institute. *Analysis of Start-Up Cross-Gulf Short Sea Shipping Activities with Mexico Since 1990: Problems and Opportunities*. August 2004.

This report examines activities since 1990 in one subset of short sea shipping—U.S.–Mexico cross-Gulf services. The objective of the report is to determine what services have been attempted, what obstacles were encountered, and what policies might be implemented to encourage the success of future ventures.

Texas Transportation Institute. *Development and Application of a Methodology to Identify Mexico-U.S. Cross Border Trade with Potential for Diversion to Short Sea Shipping Operations*. November 2006.

There is a growing concern among stakeholders that freight movements of land-based transportation networks are rapidly approaching, and sometimes exceeding, the capacities they were designed to accommodate. A possible solution to these problems might be the diversion of a portion of the trade that is currently being moved by land between Mexico and the United States into a short sea shipping operation. Further research is needed to identify specific supply chains that have characteristics and volumes that make them candidates to divert from land cross border to short sea shipping between Mexico and the United States.

Kruse and Texas Transportation Institute. *America's Locks & Dams: "A Ticking Time Bomb for Agriculture?"* December 2011.

This report discusses the surface transportation system in the United States and its effect on agriculture's ability to compete in domestic and world markets. It examines the rapidly deteriorating condition of the nation's lock and dam infrastructure, and how that affects the waterborne transportation system that enables U.S. agricultural producers to continue to compete. It explores the effects of a catastrophic failure of lock and dam infrastructure and the economic effect it would have. The research examined six locks (Ohio, Illinois, and Upper Mississippi River) in more detail, based on economic importance and physical condition.

Kruse and Bierling. *The Effect of the New Security Paradigm on Port Infrastructure Development and Finances*. October 2005.

This report provides an overview of the financial aspects of port infrastructure development, the implementation of new security measures, and the relationship between them at nine Texas ports. The history of the Port Security Grant Program through August 2005 is summarized to provide an understanding of the context in which ports are making financial decisions. This report also describes the financial performance of the ports during the study period (FY 1994–FY 2004). It

examines the funding approaches used to finance asset acquisition and construction, and analyzes both the profitability of Texas ports in general terms and the potential effect of new security-related expenses on port finances. The use of security fees to recoup some of the security costs is explored, as are other potential “financing” mechanisms. Finally, several conclusions and policy concerns that surfaced during the conduct of this research are presented. The information presented in this report was obtained through examination of public financial data, interviews with key executives at the port authorities, investigation of government sources, and through media reports.

Kruse and Harrison. *NCFRP Report 5: North American Marine Highways*. July 2010.

This report discusses the North American Marine Highways (NAMH) Initiative. It examines several aspects of this initiative, including its ventures since 1990, shipper requirements and vessel considerations, legislation to encourage NAMH, Europe and the NAMH, future development obstacles, and other important considerations, including financing of the NAMH.

Siegesmund et al. *An Analysis of the Value of Texas Seaports in an Environment of Increasing Global Trade*. February 2008.

This report discusses an economic impact exercise for all Texas ports, updating a similar study conducted a decade earlier. It also provides TxDOT with information for incorporating the most recent marine port impacts into the state transportation planning process. Most of the larger Texas ports had undertaken economic impact studies. The project provided both a forecast of container growth at Texas terminals and an estimate of the economic impact of Texas ports on the U.S. economy.

Kruse et al. *A Modal Comparison of Domestic Freight Transportation Effects on the Public*. December 2007.

This report discusses several aspects of the Inland Waterway System (IWWS). It discusses several emissions, congestion, and safety issues, as well as other concerns. Additionally, it examines the significance of the IWWS and the impact it has on rail and highway transportation.

Kruse et al. *Potential Policies and Incentives to Encourage Movement of Containerized Freight on Texas Inland Waterways*. October 2008.

This report examines the need for increased utilization of marine freight options and the challenges involved in accomplishing this goal. It also describes the potential benefits from increasing the utilization of marine freight options. It includes a summary of relevant programs in Europe and in other states. The capacity and efficiency of the GIWW and examples of activities taken by Texas ports to encourage more domestic waterborne freight shipments are presented. The report recommends several steps TxDOT could pursue in the short term to encourage more waterborne shipments along the coast.

## General Freight Studies

Amadeo Saenz, Jr. *Trade Transportation Activities Report*. January 2009.

This report summarizes freight activities in various regions in Texas. It includes the Pharr District Regional Freight Study, which discusses possible or planned changes to the rail system in the area.

Jacobs and the Texas Department of Transportation. *A Regional Freight Study of the Corpus Christi and Yoakum Districts, Phase I Report*. May 2010.

This is the first of two documents prepared for the Corpus Christi and Yoakum Districts. It presents the findings from studies completed by TxDOT examining freight movement into, out of, or through the two districts. The overall purpose of this Phase I document is to help inventory the existing rail network, model the freight movements, and identify various issues (bottleneck and safety) within the two districts.

Jacobs and the Texas Department of Transportation. *A Regional Freight Study of the Corpus Christi and Yoakum Districts, Phase II Report*. May 2010.

This is the second of two documents prepared for the Corpus Christi and Yoakum Districts. The Phase II report identifies potential rail and roadway projects for the districts. The projects focus on improving freight movement the regions and improving the efficiency of the regions.

Cambridge Systematics, Inc. *H-GAC Regional Goods Movement Study*. December 2011.

The purpose of this document is to help the region and its citizens meet the following public policy and community issues:

- Economic competitiveness.
- Regional mobility.
- Air quality.
- Safety.
- Community impacts.

This study identified improvements and strategies for increasing person and freight mobility, while mitigating the negative impacts on the community (e.g., congestion, safety). Overall, the objectives of the study were to document existing and emerging freight, industry, and logistics movements that impact the demand; locate problem areas and bottlenecks; and create strategies to improve mobility, reliability, and safety for the region's freight transportation.

Harrison, et al. *Emerging Trade Corridors and Texas Transportation Planning*. September 2009.

This report describes the major trends in intermodal shipping influencing Texas intermodal trade corridors. Key supply and demand forces that underpin intermodal service and routing options are provided. Intermodal development from a technological and shipping industry perspective is described, including the impacts of the global economic recession beginning in late 2007. An overview of Texas trade patterns is also presented. This analysis focuses on various trading partners, with particular attention paid to those relationships that are in a state of flux. A review



of current and future corridors used for handling international intermodal trade illustrates the comparative strengths and weaknesses of different routing options for intermodal cargo shipping. Finally, suggested infrastructure and economic milestones driving changes in trading patterns are presented as they relate to the Texas economy and its transportation system.

Texas Transportation Institute. *The Future of Texas Freight: Roles, Forces, and Policies*. TxDOT Strategic Research Program – Research Brief. June 2011.

This white paper examines the roles, forces, and policies affecting transportation in Texas. It identifies potential strategic issues for consideration by TxDOT in formulating goals related to goods movement.

## **Rail Studies**

The Texas Department of Transportation. *Houston Region Freight Rail Study*.

This report examines deficiencies in the Houston freight rail network. It discusses the issues with the current system and presents methods to accommodate and capitalize on future freight movements in the region. It identifies improvements that may provide relief to residents and the traveling public affected by delays, interruptions, and noise attributed to the movement of freight in the region. It also identifies alternatives that may improve regional freight rail capacity by enhancing efficiency and operations of the railroads. The report identifies \$3.4 billion in transportation improvements throughout the region. It explores existing and projected truck and freight rail transportation operations, bottlenecks, and constraints with the goal of establishing a slate of potential infrastructure improvements geared toward providing solutions that may resolve the problems associated with rising congestion levels and the expected growth of commodity movements in Houston.

The Texas Department of Transportation. *Texas Rail Plan*. November 2010.

This report presents policies, directions, and a vision for the state rail system. It is intended to assist in meeting federal and state regulations. The plan is coordinated with other statewide planning documents. The development of the rail plan was guided by TxDOT's strategic plan and coordinated with the Statewide Long-Range Transportation Plan. Key components include an inventory of the freight and passenger rail infrastructure, and an examination of state rail system needs. The final component prioritizes the various programs and financing strategies to achieve the goals of Texas' rail system.

Houston-Galveston Area Council. *2013–2016 Transportation Improvement Program (TIP) for the Houston-Galveston Transportation Management Area*. May 2012.

This report presents the projects programmed for funding in 2013–2016.

## **LIST OF IN-PROGRESS AND GENERAL REPORTS**

1. Container on Barge Market Analysis – Task 1 (Research funded by private industry, 2006)
2. Environmental Impacts of Modal Transportation Study-Phase I, (Research funded by Maritime Administration, 2006)

3. An Analysis of Harbor Master Positions in Cargo Ports (Research funded by Port of Houston Authority, 2008)
4. Lock And Dam Non-Navigation Beneficiary Study (Research funded by National Waterways Foundation, 2008)
5. Transportation Rate Analysis For The Gulf Intracoastal Waterway–West (Research funded by the U.S. Army Corps of Engineers, 2010)
6. Modal Comparison of Greenhouse Gas Emissions (Research funded by the National Waterways Foundation, 2009)
7. Metropolitan Planning Organization (MPO) Maritime Information Needs Study (Research funded by Marine Highways Cooperative Program, 2010)
8. Analysis of the Effects of Lack of Channel Maintenance Dredging (Research funded by Port of Houston Authority, 2010)
9. Update to “A Modal Comparison of Domestic Freight Transportation Effects on the General Public” (Research funded by National Waterways Foundation, 2011)
10. Transportation Rates and Closure Response Research–Calcasieu Lock (Research funded by the U.S. Army Corps of Engineers, 2011)
11. Marine Highway Transport of Toxic Inhalation Hazard (TIH) Materials (Research funded by National Cooperative Freight Research Program, Transportation Research Board—Research in progress)
12. Direct Economic Effects of Lack of Maintenance Dredging on Port Corpus Christi Customers Utilizing the Corpus Christi Ship Channel (Research funded by the Port of Corpus Christi Authority, 2011)
13. Transportation Rate Analysis For The Gulf Intracoastal Waterway – East, Red River, and Arkansas River (Research funded by the U.S. Army Corps of Engineers—Research in progress)
14. Potential Economic Implications of Channel Restrictions Due To Lack of Maintenance Dredging (Research funded by Port of Houston Authority, 2011)
15. Study to Analyze the Feasibility of Short Sea Shipping To and From Mexico, Central America, South America, and North America (Research funded by Secretaria de Comunicaciones y Transportes via subcontract to IDOM Consulting—Research in Progress)
16. Selected 2012–2014 Trade Flows and Texas Gulf Ports: Panama Canal and South American Markets (Research funded by Texas Department of Transportation—Research in progress)
17. New Approaches for U.S. Lock and Dam Maintenance and Funding (Research funded by Soybean Export Council, 2012)

18. Integrating MTS Commerce Data with Multimodal Freight Transportation Performance Measures to Support MTS Maintenance Investment Decision Making (Research funded by National Cooperative Freight Research Program—Research in progress)
19. Selected 2012–2014 Trade Flows and Texas Gulf Ports: Panama Canal and South American Markets (Research in progress)



## **CHAPTER 3 – EXCEL SPREADSHEET WITH TEXAS FREIGHT-RELATED PROJECTS**

Specific landside access projects included in the studies and plans reviewed in [Chapter 2](#) were entered into a searchable Excel spreadsheet database (see [Appendix](#)). The spreadsheet was developed to include a number of fields with key information requested by TxDOT. The searchable nature of the spreadsheet allows TxDOT to use the Excel file for future analysis.

The studies and plans with specific projects are presented next, followed by a description of the Excel spreadsheet fields. The 10 projects with the highest estimated cost in the three coastal regions—northern, central, and southern—are presented as one example of the use of the Excel spreadsheet. The following documents reviewed previously included specific improvement projects, which were entered into the Excel spreadsheet.

### **STUDIES AND PLANS INCLUDING SPECIFIC PROJECTS**

- Cambridge Systematics, Inc. Potential Effects of the Panama Canal Expansion on the Texas Transportation System. October 2011.
- Cambridge Systematics, Inc. TxDOT Waterborne Freight Corridor Study. July 2010.
- Cambridge Systematics, Inc. TxDOT Waterborne Freight Corridor Study, Task 1: Evaluation Criteria and Solution Packages. November 2011.
- Cambridge Systematics, Inc. TxDOT Waterborne Freight Corridor Study, Task 3: Waterborne Freight Performance Measures. November 2011.
- Cambridge Systematics, Inc. TxDOT Waterborne Freight Corridor Study, Task 5: Port and Waterway Funding and Financing Options. November 2011.
- Cambridge Systematics, Inc. TxDOT Waterborne Freight Corridor Study, Phase II. November 2011.
- Amadeo Saenz, Jr. Trade Transportation Activities Report. January 2009.
- Jacobs and the Texas Department of Transportation. A Regional Freight Study of the Corpus Christi and Yoakum Districts, Phase I Report. May 2010.
- Jacobs and the Texas Department of Transportation. A Regional Freight Study of the Corpus Christi and Yoakum Districts, Phase II Report. May 2010.
- The Texas Department of Transportation. Houston Region Freight Rail Study.
- Cambridge Systematics, Inc. H-GAC Regional Goods Movement Study. December 2011.
- The Texas Department of Transportation. Texas Ports 2011- 2012 Capital Program.
- The Texas Department of Transportation. Texas Rail Plan. November 2010.
- Houston–Galveston Area Council. 2013–2016 Transportation Improvement Program (TIP) for the Houston-Galveston Transportation Management Area. May 2012.

- Texas Transportation Institute. Analysis and Recommendations on Protecting Waterways From Encroachment. August 2010.
- Texas Transportation Institute. Short Sea Shipping Initiatives and the Impacts on the Texas Transportation System: Technical Report. December 2007.
- Texas Transportation Institute. Panama Canal Dry–Bulk Market Segment Peer Review. July 2003.
- Texas Transportation Institute. Analysis of Start-Up Cross-Gulf Short Sea Shipping Activities with Mexico Since 1990: Problems and Opportunities. August 2004.
- Texas Transportation Institute. Development and Application of a Methodology to Identify Mexico–U.S. Cross Border Trade with Potential for Diversion to Short Sea Shipping Operations. November 2006.
- Kruse and Texas Transportation Institute. America’s Locks & Dams: “A Ticking Time Bomb for Agriculture?” December 2011.
- Kruse and Bierling. The Effect of the New Security Paradigm on Port Infrastructure Development and Finances. October 2005.
- Harrison et al. Emerging Trade Corridors and Texas Transportation Planning. September 2009.
- Kruse and Harrison. NCFRP Report 5: North American Marine Highways. July 2010.
- Siegesmund et al. An Analysis of the Value of Texas Seaports in an Environment of Increasing Global Trade. February 2008.
- Kruse et al. A Modal Comparison of Domestic Freight Transportation Effects on the Public. December 2007.
- Kruse et al. Potential Policies and Incentives to Encourage Movement of Containerized Freight on Texas Inland Waterways. October 2008.

## **EXCEL SPREADSHEET FIELDS**

The Excel spreadsheet was developed to include information of interest to TxDOT. It was also developed to allow TxDOT personnel to search by different characters in the different fields. A copy of the Excel file is provided as the [Appendix](#) to this report.

A total of 169 projects were identified in the studies and plans and entered into the searchable Excel spreadsheet. Approximately 45 percent of the identified projects were road projects. Rail facilities accounted for 30 percent of the projects, followed by road/rail projects at 20 percent, and intermodal projects at 5 percent. The projects vary greatly in scope—from relatively small scale access roads to the new I-69. The status of projects also varies. A few have been completed, while others are under construction or in different phases of design. Many are still in the conceptual phase or are under study.

The fields in the Excel spreadsheet are summarized below.

- Port/Area – The port or geographic area the project serves.
- Chokepoint Critical Issues – Explains the reason the project is being considered, by listing the chokepoint, situation, or problem that the project will address.
- Issue – Provides more detail on the issue and potential benefit.
- Project Type – Classifies each project as a roadway improvement, rail improvement, or intermodal improvement.
- Cost – The cost identified in the plan or study is listed in millions of dollars.
- Time to Construct – The identified length of time to construct the project is listed. This field is blank for most projects, as the construction time was not provided in most studies and plans.
- Status – This field identifies the project’s status at the time it was included in the plan or study, including conceptual, in design, environmental, or engineering phases, under construction, or already complete.
- Priority – Lists a priority if provided in the plan or study. This field is blank as no priorities were identified in the review of the studies.
- Level of Support (and by whom) – If supplied, lists funding sources and the amount funded by each agency.
- Description – Briefly describes what the project is and what it will accomplish.
- Plan and Page – Cites the plan and the page number of the identified project.

As noted, each project was entered into an Excel spreadsheet and formatted so that the table can be filtered and sorted by any of the listed headings. Reference information for each project has also been listed to allow users to easily find mention of the project in the source documents or reports. The table accompanying this memorandum lists the results of this analysis.

## **EXAMPLES OF SORTING BY PROJECT COST AND MODE**

Tables 1–3 provide an example of sorting the Excel spreadsheet by the projects with the highest estimated cost for the northern, central, and southern coastal regions, respectively. The tables are presented as examples of how the spreadsheet can be used.

**Table 1. Most Expensive Project: Northern Coastal Region.**

<b>Port</b>	<b>Where</b>	<b>Project Description</b>	<b>Cost (Millions)</b>
Houston	Fort Bend Bypass	Construct new rail line to bypass road traffic	\$932.6
Houston	SH 146	Improve roadway capacity by providing pavement maintenance, capacity enhancement, and grade crossing upgrades included in H-GAC TIP	\$595.4
Freeport	Valesco Terminal	Construct multipurpose terminal with increased handling capacity and elevated intersection at FM 1495 and SH 36	\$380.0
Houston	East Houston Bypass	Alleviate congestion by constructing new rail bypass	\$283.4
Freeport	SH 366	Widen the road to increase capacity	\$167.5
Freeport	SH 288 UPRR swing bridge	Construct a new bridge	\$124.0
Freeport	SH 288	Construct grade separations to increase capacity	\$124.0
Houston	Westheimer Terminal	Construct grade separations to increase capacity	\$66.8
Texas City	Loop 197	Improve mobility and access by constructing direct connectors to the Port of Texas City	\$55.0
Freeport	FM 523	Implement smart street designs, widen the route, and implement pavement rehabilitation to improve capacity	\$53.4



**Table 2. Most Expensive Project: Central Coastal Region.**

<b>Port</b>	<b>Where</b>	<b>Project Description</b>	<b>Cost (Millions)</b>
Corpus Christi	Truck Roads	Improve truck mobility by constructing a new truck-only tollway between Port of Laredo and Port of Corpus Christi	\$709 to \$1,600
Corpus Christi	Corpus Christi Harbor Bridge	Redesign bridge to allow taller ships to pass under the structure	\$600.0
Corpus Christi	SH 44	Add capacity and upgrade between Corpus Christi and US 59	\$350.0
Corpus Christi	US 77	Add capacity and upgrade US 77 to I-69	\$180.0
Corpus Christi	Joe Fulton International Trade Corridor	Construct new rail (7 mi.) and road (11.5 mi.) facilities to improve operations	\$56.0
Corpus Christi	La Quinta Terminal Access Road	Enhance the capacity or construct a new route to the La Quinta Terminal	\$25.0
Corpus Christi	SH 381	Construct bypass of Kiewit	\$23.0
Corpus Christi	Nueces River Rail Yard	Construct a new rail yard to replace the current CCTR setup	\$21.5

**Table 3. Most Expensive Project: Southern Coastal Region.**

<b>Port</b>	<b>Where</b>	<b>Project Description</b>	<b>Cost (Millions)</b>
Brownsville	US 77	Solve mobility and safety concerns with two-way frontage road conversions and overpasses	\$420.0
Brownsville	Entire Port	Constructing intermodal ramp in Brownsville area to reduce draying before loaded on trains	\$175.0
Brownsville	US 281	Improve connectivity by constructing new connection of US 281 to US 77	\$140.0
Brownsville	SH 550	Phase II of project	\$57.0
Brownsville	SH 32–New Connection	Improve connectivity by constructing new connection from US 77/83 to US 4	\$38.8
Brownsville	SH 550 Direct Connectors	Construct new tolled direct connection to US 77/83	\$36.4
Brownsville	SH 550	Phase I of project	\$35.0
Harlingen	W. Colorado Ave. Lift Span Bridge Over Arroyo Colorado	Solve issues with lift bridge by replacing the current bridge with a new lift bridge or higher non-moveable bridge	\$20.0
Brownsville	Harlingen Yard	Relocate RVSC switching operations to new yard outside of Harlingen	\$17.0
Brownsville	Kosmos to Brownsville Subdivisions	Improve rail system by constructing new connections	\$8.3

Projects can also be sorted by mode—roadway, rail, road/rail, and intermodal—by a specific port or area, and by other characteristics. For example, two Union Pacific Railroad (UP) capacity improvement projects in the Brownsville and Angleton areas were identified in previous studies. The UP line in Brownsville is currently operating at capacity. This project, estimating to cost \$102.3 million, was analyzed in the TxDOT Lower Rio Grande Valley and Laredo Region Freight Study. In both Brownsville and Angleton, certain UP bridges cannot handle loads needed to improve capacity. The study also analyzed upgrading these bridges, at an estimated cost of \$35.7 million.

## **CHAPTER 4 – CONCLUSIONS**

This research project reviewed 50 previous studies and plans related to the widening of the Panama Canal and waterborne freight, rail, roadway, and intermodal needs in Texas. A total of 26 of these studies and plans included specific infrastructure improvement projects. A total of 169 projects were entered into an Excel spreadsheet from these studies. The searchable spreadsheet includes 11 fields. Examples of these fields include the port/area, the chokepoint or critical issue, the project type, the estimated cost, and the project status.

The landside improvement projects identified through the review of previous studies and plans provide a starting point for a comprehensive assessment of potential investments to ensure Texas is prepared to maximize the benefits from the expansion of the Panama Canal, as well as other opportunities, and to increase exports and imports through Texas ports. The searchable Excel spreadsheet can be used by TxDOT and other groups to develop the most appropriate mix of projects to meet current and future needs. Working together, TxDOT and its public and private sector partners can address current and future landside freight transportation infrastructure needs to enhance the state's economy and position Texas as a key exporter and importer of raw materials, agricultural commodities, petrochemicals, and processed goods.



## **APPENDIX: LANDSIDE ACCESS PROJECTS AND CHARACTERISTICS**



Port/Area	Chokepoint/Critical Issues	Issue	Project Type	Cost (Million)	Time to Construct	Status	Priority	Level of Support	Description	Plan	Page
All	UPRR Angleton and Brownsville subcapacity– load capability of bridges	Structures not rated for 286k loading	Rail	\$35.70		Analyzed, modeled in RTC in TxDOT Lower Rio Grande Valley and Laredo Region Freight Study, not yet published			Upgrade or replace bridges to allow for 286k loading	TxDOT Waterborne Freight Corridor Study, Task 1	A-5
All	UPRR Brownsville capacity	Currently operating at capacity	Rail	\$102.30		Analyzed, modeled in RTC in TxDOT Lower Rio Grande Valley and Laredo Region Freight Study, not yet published			Sidings and signal improvements to accommodate projected growth	TxDOT Waterborne Freight Corridor Study, Task 1	A-4
All	I-69 capacity	Interstate highway connectivity to the ports	Road	\$4,600–\$10,200		Under analysis as part of the I-69 Corridor Program			Upgrading US 59, US 77, and US 281 to become Interstate 69	TxDOT Waterborne Freight Corridor Study, Task 1	A-5
All	Dallas Logistics Hub (DLH)/BNSF Intermodal Terminal, Wilma, TX	Increase terminal capacity and economic attractiveness for intermodal freight.	Intermodal		3 to 5 Years	BNSF elected to delay construction of the facility until economic growth resumes.		100% Private funding	In May 2008, BNSF purchased 198 acres within the DLH for the construction of a new intermodal terminal. This terminal will increase the capacity of the hub and make Texas a more attractive logistics platform.	Emerging Trade Corridors and Texas Transportation Planning	13-Feb
Beaumont	OC terminal connectivity	Better connectivity and overall rail infrastructure is needed	Rail	\$14.00					Establish rail connectivity and rail infrastructure at port's OC terminal	Texas Ports 2011	A-4
Beaumont	KCS bridge across Port of Beaumont Ship Channel	Low speeds and single track	Rail	\$16.00		In design			Add capacity along the corridor	TxDOT Waterborne Freight Corridor Study, Task 1	A-5
Beaumont	All rail lines	Insufficient access	Rail					\$8.5M supplied by Beaumont MPO	Adding sidelines, more capacity to the mainlines, and new mainlines	Texas Rail Plan	3-62
Beaumont	Truck staging facility	Need improved areas to load and prepare trucks	Road	\$1.00					Hard surfacing and fencing to develop truck staging area	Texas Ports 2011	A-4
Brownsville	Lack of intermodal ramp in the port	The nearest intermodal ramp to the Port of Brownsville is in San Antonio, adding 250 highway miles that containers must be drayed before being put on trains. This greatly reduces the competitiveness of container freight in Brownsville and southern Texas.	Intermodal	\$175.00		Requested by stakeholder in Phase 1 surveys. Has not been studied to determine feasibility or if the project is economically or operationally justified.			Construct a new intermodal ramp in Brownsville area	TxDOT Waterborne Freight Corridor Study, Task 1	A-5
Brownsville	Rail access at docks	Improve access	Rail	\$1.50					Construct rail improvements at Docks 15 & 16	Texas Ports 2011	A-6
Brownsville	Rail Bridge Crossings at Angelton and Placedo		Rail	\$3.24		Under Study		Applied to TIGER Grant— Did not receive	Rail bridge crossings at Angelton and Placedo	TxDOT Waterborne Freight Corridor Study, Task 1	A-6
Brownsville	UPRR Brownsville subcapacity	Insufficient capacity	Rail	\$6.70		Conceptual			Construct new siding at MP 171	TxDOT Waterborne Freight Corridor Study, Task 1	A-6
Brownsville	Delays for rail freight accessing UPRR main line at Brownsville	Delay accessing UPRR main line	Rail	\$6.74		Conceptual			Brownsville Port Line Capacity Upgrades	TxDOT Waterborne Freight Corridor Study, Task 1	A-5
Brownsville	Kosmos to Brownsville subdivisions	In sufficient connection between rail lines	Rail	\$8.30		Full funded and under way—will be completed in June 2012		100% federal	Construct rail connections	TxDOT Waterborne Freight Corridor Study, Task 1	A-6
Brownsville	Rail lines	Needs upgrade	Rail						Construct bridge over 1,000-foot strip of port lane, build a link that allows UP to have direct access to the port, and eliminating 60 to 70 grade crossings. There is also a planned upgrade for the rail network.	Texas Rail Plan	3-63 to 3-64
Brownsville	Commerce Street congestion in Harlingen	Vehicle impedance and safety concerns associated with train operations in Harlingen	Rail/Road	\$5.50		Preliminary design done by UPRR. Cameron County anticipated to fund this project in near term.			Commerce Street connection will eliminate crossings	TxDOT Waterborne Freight Corridor Study, Task 1	A-6
Brownsville	Harlingen Yard	Vehicle safety and impedance at at-grade roadway/rail crossing in Harlingen	Rail/Road	\$17.00		Conceptual. UPRR operations relocated to Olmito Yard as first step		100% City and County Sources	Relocate RVSC switching operations to new yard outside of Harlingen	TxDOT Waterborne Freight Corridor Study, Task 1	A-5
Brownsville	Lack of interstate connectivity at the port	Lack of access	Road	\$2.60		Constructed in 2011			The access road project provides a connection from the port to SH 550, which connects to US 77. Requires upgrades to US 77 to interstate standards.	TxDOT Waterborne Freight Corridor Study, Task 1	A-5
Brownsville	Veterans International Bridge Expansion	Insufficient capacity	Road	\$5.80		Currently under construction		Cameron County/TxDOT	New 4-lane twin bridge	TxDOT Waterborne Freight Corridor Study, Task 1	A-6
Brownsville	SH 550 Direct Connectors		Road	\$36.40		Letting scheduled for January 2012		Cameron County/TxDOT	This would provide a new tolled direct connection to US 77/83. It would include a new tolled main lane extending to the east of Old Alice Roads, with an overpass at Old Alice Road.	TxDOT Waterborne Freight Corridor Study, Task 1	A-6
Brownsville	SH 32 - New connection	Connectivity	Road	\$38.80		Letting scheduled for April 2013		CCRMA/TxDOT	New connection from US 77/83 to US 4 –provides a direct connection to the Port of Brownsville.	TxDOT Waterborne Freight Corridor Study, Task 1	A-6
Brownsville	US 77	Capacity, safety, and mobility concerns	Road	\$420.00		Recently funded, under design and/or construction		Cameron County/TxDOT	Several different portions are recently funded (as of November 2011). These include the section from SH 44 to FM 892 to 0.8 miles South of CR 28, the Overpasses at Caesar Avenue and Sarita, and the conversion of 2-way frontage roads.	TxDOT Waterborne Freight Corridor Study, Task 1	A-6
Brownsville	SH 550 - Phase I			\$35.00		Under construction—fully funded				TxDOT Waterborne Freight Corridor Study, Task 1	A-6
Brownsville	SH 550 - Phase II			\$57.00		Currently under construction				TxDOT Waterborne Freight Corridor Study, Task 1	A-6
Brownsville	US 281	Connectivity	Road	\$140.00		Conceptual			New connection of US 281 near FM 1577 to US 77 near SH 100	TxDOT Waterborne Freight Corridor Study, Task 1	A-6
Corpus Christi	Storage facilities	Improvements to the current storage facility	Intermodal	\$7.00					Build improvements to the storage yard and the track	Texas Ports 2011	A-9
Corpus Christi	Intermodal container facility	Need for transfer point	Intermodal						1,100 acre development for transfer of containers from ships to trucks or trains	Corpus Christi–Yoakum Regional Freight Mobility Study Phase I Report	4-3
Corpus Christi	ROW conflicts at Port of CC	Removal of Tule Lake Lift Bridge requires KCS to operate over UPRR tracks (and past UPRR Viola Yard) between Fulton Wye and CCTR Savage lane line.	Rail	\$8.20		Conceptual			Sidings/mainline capacity	TxDOT Waterborne Freight Corridor Study, Phase II	A-10
Corpus Christi	ROW conflicts at Port of CC	Removal of Tule Lake Lift Bridge requires KCS to operate over UPRR tracks (and past UPRR Viola Yard) between Fulton Wye and CCTR Savage lane line.	Rail	\$8.20		Conceptual			Construct additional KCS track between Fulton Wye and CCTR facilities	TxDOT Waterborne Freight Corridor Study, Task 1	A-8
Corpus Christi	KCS Laredo subdivision capacity	Insufficient capacity for projected growth	Rail	\$16.30		Analyzed, modeled in RTC in TxDOT Lower Rio Grande Valley and Laredo Region freight study			Signal improvements (controlled switches) at all sidings	TxDOT Waterborne Freight Corridor Study, Task 1	A-7
Corpus Christi	Garcitas Creek and Colorado Bridges un UPRR	Currently load restricted to 268K lbs, want to get to 282K lbs, shared BNSF and KCS line but mostly used by BNSF	Rail	\$16.50		Unfunded. Did not receive TIGER Grant. Would be mixture of Federal, state, and local?			Capacity upgrades at the Angleton subdivision. Construction of two large rail bridges and improvements to 31 smaller timber structure so that each one in 286,000 rail car compliant	TxDOT Waterborne Freight Corridor Study, Task 1	A-8
Corpus Christi	Nueces River Rail Yard	New switching and storage capacity for railroad	Rail	\$21.50		Under design—study (new capacity)		26% POCCA, 28% BNSF, KCS, UP, CCTR. Applied for TIGER grant for remainder	Construct new rail yard to replace existing CCTR yard	TxDOT Waterborne Freight Corridor Study, Task 1	A-7

Corpus Christi	Former RR lift bridge over CC shipping channel	Bumpouts in the channel for bridge supports prevent 2-way ship traffic	Rail	\$7–\$8	Bridge Removed; abutments and fenders remain	100% Others	Remove or reconfigure bridge	TxDOT Waterborne Freight Corridor Study, Phase II	A-11
Corpus Christi	South Texas Rail Lines	Insufficient capacity to service bulk terminals	Rail				Need more capacity (better signals and more sidings) to provide better service in the area	Texas Rail Plan	2-5
Corpus Christi	All rail lines	Inadequate number of connection	Rail				Provide more connections to/from the port area	Texas Rail Plan	2-11
Corpus Christi	Northside Rail Yard	Insufficient capacity/storage	Rail				Expand Northside Rail Yard to the necessary area	Corpus Christi–Yoakum Regional Freight Mobility Study Phase I Report	4-5
Corpus Christi	Sinton St–Brownsville	Vehicular safety and impedece	Rail/Road	\$5.60	Analyzed in Corpus Christi Region Freight Study, TxDOT, included in rail plan		Grade separation	TxDOT Waterborne Freight Corridor Study, Phase II & Task 1	A-10, A-8
Corpus Christi	Park Ave (Odem)–Brownsville	Vehicular safety and impedece	Rail/Road	\$6.70	Analyzed in Corpus Christi Region Freight Study, TxDOT, included in rail plan		Grade separation	TxDOT Waterborne Freight Corridor Study, Phase II & Task 1	A-10, A-8
Corpus Christi	NW Ingleside Dr–Brownsville	Vehicular safety and impedece	Rail/Road	\$8.00	Analyzed in Corpus Christi Region Freight Study, TxDOT, included in rail plan		Grade separation	TxDOT Waterborne Freight Corridor Study, Phase II & Task 1	A-10, A-7
Corpus Christi	Joe Fulton International Trade Corridor	New facilities	Rail/Road	\$56.00			11.5 miles of road and 7 miles of rail	Texas Rail Plan	3-65
Corpus Christi	Ingleside Industrial Corridor	Highway/bypass of Kiewet and others off of TX-381	Road	\$23.00	Design	County and TxDOT		TxDOT Waterborne Freight Corridor Study, Task 1	A-8
Corpus Christi	Insufficient connectivity between La Quinta Terminal and US 181	Port of CC La Quinta terminal access road does not provide sufficient connectivity to US 181	Road	\$25.00	Completed in 2011		Enhance capacity or construct alternate access route because the La Quinta Terminal access does not provide adequate connectivity to US 181	TxDOT Waterborne Freight Corridor Study, Phase II & Task 1	A-9, A-7
Corpus Christi	US 77 state	Insufficient capacity	Road	\$180.00			Add capacity and upgrade to interstate standards	TxDOT Waterborne Freight Corridor Study, Phase II	A-10
Corpus Christi	US 77	Insufficient capacity	Road	\$180.00			Upgrade US 77 to I-69	TxDOT Waterborne Freight Corridor Study, Task 1	A-8
Corpus Christi	SH 44	Insufficient capacity	Road	\$350.00	Conceptual		Add capacity and upgrade between CC and US 59	TxDOT Waterborne Freight Corridor Study, Phase II	A-10
Corpus Christi	SH 44	Insufficient capacity	Road	\$350.00	Conceptual		Upgrade SH 44 between Corpus Christi and US 59	TxDOT Waterborne Freight Corridor Study, Task 1	A-8
Corpus Christi	Air draft Limitations at CC Harbor Bridge	Air draft limitations limit access by tall ships	Road	\$600.00	EIS completed in 2013, ROD in 2014	100% TxDOT	Structural design and bridge placement	TxDOT Waterborne Freight Corridor Study, Phase II	A-11
Corpus Christi	Truck Roads	Possible need for truck tollway	Road	\$709–\$1,600			Constructing a truck-only tollway between Port of Laredo and Port of CC Trade Transportation Activities Report		12
Freeport	Lack of capacity in marine terminals–Velasco Terminal Construction		Intermodal	\$380.00		TxDOT, County, State split	Phase I, 800 feet berth complete, 22 acres stabilized, 90 acres total; multipurpose terminal capable of handling 780,000 TEUs and an elevated intersection at FM 1495 and SH 36, which is why TxDOT is partnering with the county and state on the design and funding.	TxDOT Waterborne Freight Corridor Study, Phase II	A-12
Freeport	Additional rail facilities	Need more capacity	Rail	\$3.00			Engineering for rail facility	Texas Ports 2011	A-11
Freeport	Capacity at DOW chemical plant	Insufficient capacity	Rail	\$9.50	Conceptual		New dedicated siding track at DOW chemical plant	TxDOT Waterborne Freight Corridor Study, Task 1	A-9
Freeport	Available capacity between Angleton and UP Hoskins Yard	Insufficient capacity at these points	Rail	\$12.61	Conceptual		New 10,000 foot siding between Angleton and UP Hoskins Yard	TxDOT Waterborne Freight Corridor Study, Phase II and Task 1	A-12, A-9
Freeport	New Freeport access	Indirect access to future intermodal yards in Rosenberg, and capacity constraints on existing mainline due to eventual build-out of new Freeport terminals	Rail	\$32.99	Conceptual		Extend and add new mainline to existing Freeport corridor	TxDOT Waterborne Freight Corridor Study, Phase II and Task 1	A-12, A-9
Freeport	SH 288 UPRR Swing Bridge over the Old Brazos River Channel near the Port of Freeport	Poor condition. Bridge occasionally becomes stuck.	Rail	\$124.00	Replacement bridge under construction. Recycled lift bridge from Houma, LA - Completed 2011.	100% railroad/non-TxDOT	Construct new bridge	TxDOT Waterborne Freight Corridor Study, Phase II and Task 1	A-11, A-9
Freeport	Rail storage facility	Limited storage and capacity	Rail	N/A	Conceptual		5 tracks with the capacity to build unit trains	TxDOT Waterborne Freight Corridor Study, Phase II	A-13
Freeport	Truck queuing facility	Need an area for queued trucks	Road	\$0.23			Engineering/construction of a truck queuing facility	Texas Ports 2011	A-11
Freeport	Pavement is insufficient	Pavement is too weak to support queued trucks	Road	\$0.72	EAS		Truck queuing area– Widen with 10" reinforced concrete pavement to provide a left turn lane at the entrance to the port of Freeport. Construct additional queuing space to alleviate truck congestion.	H-GAC TIP	Appendix D-3
Freeport	5th St. from Terminal St. to Port Rd	Reconstruct entrance road	Road	\$1.20	EAS		Entrance road with two 16' lanes with 8' paved shoulders, reconstruction of intersection of East 5th St. and Terminal St., and reconstruction of a portion of Port Rd. at the intersection.	H-GAC TIP	Appendix D-2
Freeport	West Port Road from E 5th St to Terminal St	Reconstruction/design needed	Road	\$1.20	EAS		Entrance road with two 16' lanes with 8' paved shoulders, reconstruction of intersection of East 5th St. and Terminal St., and reconstruction of a portion of Port Rd. at the intersection.	H-GAC TIP	Appendix D-5
Freeport	FM 1495 and SH 36	Vehicular impedece and safety	Road	\$2.00			Construction of an elevated intersection	Texas Ports 2011	A-11
Freeport	FM 1495	Insufficient capacity at this location	Road	\$35.50	Conceptual		Widen roadway from FM 523 to SH 288	TxDOT Waterborne Freight Corridor Study, Phase II and Task 1	A-12, A-9
Freeport	FM 523	Poor pavement and limited capacity for trucks	Road	\$53.40	Conceptual		Improve capacity by implementing smart street projects from SH 36 to SH 332, pavement rehab from SH 32 to Dow Wastewater Canal, widening project from FM 2004 to SH 332 and from SH 332 to FM 1495.	TxDOT Waterborne Freight Corridor Study, Phase II and Task 1	A-11, A-8
Freeport	SH 288	Low capacity, lack of access control on some segments	Road	\$124.00	Conceptual		Construct grade separations to increase capacity	TxDOT Waterborne Freight Corridor Study, Phase II	A-12
Freeport	SH 36	Lack of capacity and access controls on many segments	Road	\$167.50	Conceptual		Widen from US 59 to the Port of Freeport	TxDOT Waterborne Freight Corridor Study, Phase II and Task 1	A-11, A-9
Freeport	Marine terminal– Valesco terminal	Lack of capacity	Road	\$380.00			Phase I, 800 ft berth complete, 22 acres stabilized, 90 acres total; multipurpose terminal capable of handling 780,000 TEUs and an elevated intersection at FM 1495 and SH 36m which we are partnering with the County and State on design and funding.	TxDOT Waterborne Freight Corridor Study, Task 1	A-9
Freeport	Port	Lack of interstate access at the Port	Road					TxDOT Waterborne Freight Corridor Study, Phase II	A-12
Freeport	Nolan Ryan Expressway-288 South	Insufficient signage and community impacts	Road				Add wayfinding signs	H-GAC Regional Goods Movement Study	A-32



Galveston	Causeway Bridge	Bridge needed	Rail	Paid	Under construction		Build Galveston Island Causeway Bridge	Texas Rail Plan	3-68
Galveston	Rail Access to Isle	Upgrade needed	Rail	Part of \$22.372	EAS		Upgrade port RR track	H-GAC TIP	Appendix D-16
Galveston	Pelican Isle Bulk Oil Export	Rail and Highway improvements	Rail/Road	Part of \$8.948	EAS		Development of site upland, rail improvements, highway access	H-GAC TIP	Appendix D-18
							Constuct Four lane access entrance from Harborside Drive directly to the new security gate enabling the closing of 37th St. north from Harborside.		
Galveston	41st St. at Harborside Dr.	New Access	Road	\$1.08			Secure easements and construct entrance from Harborside Drive/SH 275 to Old Port Industrial at 41st St.	Texas Ports 2011	A-13
Galveston	41st St. Harborside Entrance	Need direct access	Road	\$1.50			Construct roads and rehabilitate railroad crossings to ensure safety and to improve internal traffic circulation	Texas Ports 2011	A-13
Galveston	Internal traffic circulation	Current setup is inadequate	Road	\$5.00			Port of Galveston 51st St. flyover to Harborside Dr.	H-GAC TIP	Appendix D-18
Galveston	51st St. to Harborside Dr.	Flyover needed	Road	\$17.00	EAS		Repave roads	Texas Ports 2011	A-15
Harlingen	Road maintenance	Poor road surface conditions	Road	\$0.53					
		Bridge is lifted about once a day, needs regular inspection and maintenance, and has been out of operation for multiple days on several occasions.	Road	\$20.00		100% TxDOT	Replace with a new liftspan bridge or a higher nonmovable bridge	TxDOT Waterborne Freight Corridor Study, Phase II	A-13
Harlingen	W. Colorado Ave. Lift span bridge over Arroyo Colorado (~22 miles inland of GIWW).								
H-GAC	Railroad-Highway grade crossing at FM 1960 east of SH 249	Identified as a auto-train collision hotspot	Rail/Road	\$11.70	Conceptual		Grade Separation to improve grade crossing safety	TxDOT Waterborne Freight Corridor Study, Phase II	A-14
H-GAC	Railroad-Highway grade crossing at Park Terrace near Galveston Road	Identified as a auto-train collision hotspot	Rail/Road	\$12.00	Conceptual		Grade Separation to improve grade crossing safety	TxDOT Waterborne Freight Corridor Study, Phase II	A-15
H-GAC	Railroad-Highway grade crossing at Hillcroft St. near Main St. (U.S. 90A)	Identified as a auto-train collision hotspot	Rail/Road	\$18.00	Conceptual		Grade Separation to improve grade crossing safety	TxDOT Waterborne Freight Corridor Study, Phase II	A-14
H-GAC Area	Galveston RR bridge widening	Galveston RR bridge presents a major hazard and chokepoint for barges on the GIWW because of its 105 feet width between its supports.	Rail	\$80.00		100% Others	Reconstruct the bridge with 300-ft wide opening	TxDOT Waterborne Freight Corridor Study, Phase II	A-21
H-GAC area	Railroad-Highway grade crossing at FM 1960 east of SH 249	Identified as a auto-train collision hotspot	Rail/Road	\$11.70	Conceptual		Improve grade crossing safety	TxDOT Waterborne Freight Corridor Study, Task 1	A-11
H-GAC Area	Railroad-highway grade crossing at Park Terrace near Galveston Road	Identified as a auto-train collision hotspot	Rail/Road	\$12.00	Conceptual		Improve grade crossing safety	TxDOT Waterborne Freight Corridor Study, Task 1	A-11
H-GAC Area	Railroad-Highway grade crossing at Hillcroft St. near Main St. (U.S. 90A)	Identified as a auto-train collision hotspot	Rail/Road	\$18.00	Conceptual		Improve grade crossing safety	TxDOT Waterborne Freight Corridor Study, Task 1	A-11
H-GAC Area	Pelican Island Bridge for roadway access	Vehicle access was damaged in Hurricane Ike	Road	\$117.00	Unfunded			TxDOT Waterborne Freight Corridor Study, Phase II	A-20
H-GAC Area	Extend heavy haul permits for FM 1405 to Cedar Bayou (policy issue)						This is a policy issue	TxDOT Waterborne Freight Corridor Study, Phase II	A-20
Houston	Spencer Highway	Intermodal Traffic Management	Intermodal	\$12.52	Conceptual	Federal with local share	Construct grade separation over double rail	TxDOT Waterborne Freight Corridor Study, Phase II	A-16
Houston	Bayport	Insufficient storage and capacity	Intermodal	\$44.40	EAS		Construct intermodal rail yard including 6 storage tracks, 3 working tracks, 2 container tracks, and 1 runaround track	H-GAC TIP	Appendix D - 36
Houston	Bayport	Insufficient storage and capacity	Intermodal	\$49.17	EAS		Construct intermodal rail yard including 6 storage tracks, 3 working tracks, and 1 container track	H-GAC TIP	Appendix D - 36
Houston	Connectivity at Tower 76	Connectivity between the HB&T East Belt with the UP Lufkin Subdivision	Rail	\$3.00		Analyzed, modeled in RTC in TxDOT Houston Region Freight Study, 2007	Wye connection in NE quadrant	TxDOT Waterborne Freight Corridor Study, Phase II	A-19
Houston	Capacity and allowable speeds on Galveston Subdivision from Tower 30 to GH&H Junction	Insufficient capacity	Rail	\$5.30		HRFS	Upgrade track and signals from Tower 30 to GH&H Junction on UPRR Galveston Subdivision	TxDOT Waterborne Freight Corridor Study, Phase II	A-19
Houston	Bell Main	Upgrade condition of track	Rail	\$6.60		Modeled in RTC in GCRD/TxDOT study. Shown to have relatively small benefits.	Track and signal improvements, upgrades to restore line to service	TxDOT Waterborne Freight Corridor Study, Phase II	A-19
Houston	Settegast Yard	Through movements through yard are blocked	Rail	\$6.70		Analyzed, modeled in RTC in TxDOT Houston Region Freight Study, 2007	Construct 9,000-ft. siding track	TxDOT Waterborne Freight Corridor Study, Phase II	A-19
Houston	Rail Bridge 16-East Belt	Insufficient capacity—single track bottleneck on double-track corridor	Rail	\$10.00		Analyzed, modeled in RTC in TxDOT Houston Region Freight Study, 2007 and GCRD Study, 2009	Double track rail bridge	TxDOT Waterborne Freight Corridor Study, Phase II	A-16
Houston	Rail Bridge 5A-PTRA	Insufficient capacity—single-track bottleneck on double-track corridor	Rail	\$10.00		Analyzed, modeled in RTC in TxDOT Houston Region Freight Study, 2007 and GCRD Study, 2009	Build a double-track rail bridge	TxDOT Waterborne Freight Corridor Study, Phase II	A-15
Houston	Belt Jct.	Insufficient capacity	Rail	\$11.00		Analyzed, modeled in RTC in TxDOT Houston Region Freight Study, 2007 and GCRD Study, 2009	Construct double-track with sidings to increase mainline capacity	TxDOT Waterborne Freight Corridor Study, Phase II	A-15
Houston	PTRA Mainline	Insufficient capacity	Rail	\$12.72	EAS		Construct double track rail lines and runaround track from mainline to the Bayport terminal intermodal yard	H-GAC TIP	Appendix D-36
Houston	PTRA North Shore	Single-track constraints to primarily double-track line	Rail	\$13.23	Conceptual		Double-track sections and construct bridges	TxDOT Waterborne Freight Corridor Study, Phase II	A-20
Houston	Pierce Yard	Yard movements occupying mainline tracks on East Belt Subdivision	Rail	\$15.90	HRFS		Lengthen yard tracks	TxDOT Waterborne Freight Corridor Study, Phase II	A-19
Houston	West Belt	Insufficient capacity	Rail	\$19.10		Analyzed, modeled in RTC in TxDOT Houston Region Freight Study, 2007	Additional mainline from Tower 81 to double rrack junction on the West Belt Subdivision	TxDOT Waterborne Freight Corridor Study, Phase II	A-19
Houston	Galena Jct. to Manchester Jct.	PTRA required to use trackage rights on UPRR line	Rail	\$42.00		Analyzed, modeled in RTC in TxDOT Houston Region Freight Study, 2007 and GCRD Study, 2009	Construct double-track with sidings to increase mainline capacity	TxDOT Waterborne Freight Corridor Study, Phase II	A-15
Houston	Englewood Yard to Sheldon	Insufficient capacity at these points	Rail	\$50.00		Analyzed, modeled in RTC in TxDOT Houston Region Freight Study, 2007 and GCRD Study, 2009	Additional mainline track from Englewood Yard to Sheldon	TxDOT Waterborne Freight Corridor Study, Phase II	A-16
Houston	Strang Yard PTRA Track	Insufficient capacity	Rail	\$52.28	EAS		Construct 2nd rail track	H-GAC TIP	Appendix D-36
Houston	West Belt Improvement project	Vehicle safety and impedance at at-grade roadway/rail crossings on the West Belt Subdivision	Rail	\$53.40		Feasibility analysis/conceptual design under contract by GCRD	Grade separation or closure of the at-grade intersections	TxDOT Waterborne Freight Corridor Study, Phase II	A-16

Houston	East Houston Bypass	Constraints and congestion between Belt Junction and Basin Yard on the East Belt Subdivision	Rail	\$283.40	Analyzed, modeled in RTC in TxDOT Houston Region Freight Study, 2007 Currently being studied by Fort Bend County. Modeled in RTC in TxDOT study—has public benefit, but no private benefit (increased maintenance and operational costs).	32-mile bypass from Baytown Subdivision at Dayton to Cleveland with a connection to Lufkin Subdivision	TxDOT Waterborne Freight Corridor Study, Phase II	A-19	
Houston	Fort Bend Bypass	Vehicular safety and impedance associated with rail traffic on Glidden Subdivision	Rail	\$932.60		34-mi. bypass through Fort Bend County from Rosenberg to Arcola (new rail line)	TxDOT Waterborne Freight Corridor Study, Phase II	A-19	
Houston	New container terminal facility	Needs additional container capacity	Rail					A-16	
Houston	Market–Strang	Vehicular safety and impedance	Rail/Road	\$4.90	Conceptual	Improve capacity through grade separation	TxDOT Waterborne Freight Corridor Study, Phase II	A-18	
Houston	Lyons–Strang	Vehicular safety and impedance	Rail/Road	\$5.30	Conceptual	Improve capacity through grade separation	TxDOT Waterborne Freight Corridor Study, Phase II	A-18	
Houston	Lyons–West Belt	Vehicular safety and impedance	Rail/Road	\$6.40	Feasibility analysis/conceptual design under contract by GCRD	Improve capacity through grade separation	TxDOT Waterborne Freight Corridor Study, Phase II	A-17	
Houston	Hirsch-East Belt	Vehicular safety and impedance	Rail/Road	\$6.50	Conceptual	Improve capacity through grade separation	TxDOT Waterborne Freight Corridor Study, Phase II	A-18	
Houston	Federal–PTRA	Vehicular safety and impedance	Rail/Road	\$7.40	Conceptual	Improve capacity through grade separation	TxDOT Waterborne Freight Corridor Study, Phase II	A-18	
Houston	Leeland–West Belt	Vehicular safety and impedance	Rail/Road	\$7.40	Feasibility analysis/conceptual design under contract by GCRD	Improve capacity through grade separation	TxDOT Waterborne Freight Corridor Study, Phase II	A-17	
Houston	Wallisville–East Belt	Vehicular safety and impedance	Rail/Road	\$8.70	Conceptual	Improve capacity through grade separation	TxDOT Waterborne Freight Corridor Study, Phase II	A-18	
Houston	TC Jester–Terminal	Vehicular safety and impedance	Rail/Road	\$8.90	Conceptual	Improve capacity through grade separation	TxDOT Waterborne Freight Corridor Study, Phase II	A-18	
Houston	Wallisville–Strang	Vehicular safety and impedance	Rail/Road	\$9.00	Conceptual	Improve capacity through grade separation	TxDOT Waterborne Freight Corridor Study, Phase II	A-18	
Houston	Canal–East Belt	Vehicular safety and impedance	Rail/Road	\$11.70	Conceptual	Improve capacity through grade separation	TxDOT Waterborne Freight Corridor Study, Phase II	A-18	
Houston	Scott/York–West Belt	Vehicular safety and impedance	Rail/Road	\$11.70	Feasibility analysis/conceptual design under contract by GCRD	Improve capacity through grade separation	TxDOT Waterborne Freight Corridor Study, Phase II	A-17	
Houston	Spencer Hwy at mainline double-rail track	Identified as a auto-train collision hotspot	Rail/Road	\$13.02	EAS	Construct grade separation over mainline double-rail track	H-GAC TIP	Appendix D-39	
Houston	Houston–Terminal	Vehicular safety and impedance	Rail/Road	\$13.80	Conceptual	Improve capacity through grade separation	TxDOT Waterborne Freight Corridor Study, Phase II	A-17	
Houston	Harrisburg–East Belt	Vehicular safety and impedance	Rail/Road	\$14.80	Conceptual	Improve capacity through grade separation	TxDOT Waterborne Freight Corridor Study, Phase II	A-18	
Houston	Bellaire–Terminal	Vehicular safety and impedance	Rail/Road	\$17.00	Conceptual	Improve capacity through grade separation	TxDOT Waterborne Freight Corridor Study, Phase II	A-18	
Houston	Navigation/Commerce–West Belt	Vehicular safety and impedance	Rail/Road	\$26.50	Feasibility analysis/conceptual design under contract by GCRD	Improve capacity through grade separation	TxDOT Waterborne Freight Corridor Study, Phase II	A-17	
Houston	Richmond–Terminal	Vehicular safety and impedance	Rail/Road	\$29.70	Conceptual	Improve capacity through grade separation	TxDOT Waterborne Freight Corridor Study, Phase II	A-18	
Houston	Shephard/Durham–Terminal	Vehicular safety and impedance	Rail/Road	\$30.70	Conceptual	Improve capacity through grade separation	TxDOT Waterborne Freight Corridor Study, Phase II	A-17	
Houston	San Felipe–Terminal	Vehicular safety and impedance	Rail/Road	\$32.90	Conceptual	Improve capacity through grade separation	TxDOT Waterborne Freight Corridor Study, Phase II	A-18	
Houston	Westheimer–Terminal	Vehicular safety and impedance	Rail/Road	\$66.80	Conceptual	Improve capacity through grade separation	TxDOT Waterborne Freight Corridor Study, Phase II	A-18	
Houston	Broadway St. from Barbours Cut Blvd. to L St.	Road too narrow	Road	\$2.63	EAS	Widen road to 4-lane road	H-GAC TIP	Appendix D-21	
Houston	Broadway Steet	Traffic flow on Broadway needs to accommodate increased volumes	Road	\$2.63	Conceptual	Widen Broadway (from Barbours Cut Blvd. to North L St.), increase to four lanes	TxDOT Waterborne Freight Corridor Study, Phase II	A-17	
Houston	SH 146	Access management from Port Road to SH 146	Road	\$2.94	In construction	TxDOT with local share	Construct connector Eastbound from Port Road to SH 146	TxDOT Waterborne Freight Corridor Study, Phase II	A-16
Houston	Old SH 146	Provide improved road to connect to warehouse developments	Road	\$3.33	Conceptual		Improve Old SH 146 (Port Road to Red Bluff)	TxDOT Waterborne Freight Corridor Study, Phase II	A-17
Houston	Southern Access Road from Old SH 146 to Bayport Cruise terminal	Insufficient capacity	Road	\$5.72	EAS		Widen to 4-lane divided with a raised median	H-GAC TIP	Appendix D - 39
Houston	Clinton Drive	Poor roadway condition for road w/ heavy truck traffic	Road	\$8.72	Will go to procurement in 2012	TxDOT-COH share	Improve capacity by widening, adding new lanes, improving lighting, and improving drainage	TxDOT Waterborne Freight Corridor Study, Phase II	A-16
Houston	Jacintoport Blvd.	Limited capacity, lack of median, and shoulders	Road	\$9.60	Conceptual		Improve roadway capacity by widening BW 8 to Peninsula	TxDOT Waterborne Freight Corridor Study, Phase II	A-11
Houston	Port Rd. from SH 146 to Todville Rd.	Road too narrow	Road	\$13.36			Widen to 6-lane divided	H-GAC TIP	3-25
Houston	Port Rd. from SH 146 to Todville Rd.	Accommodate increased traffic for Bayport terminal	Road	\$13.36	Conceptual	Federal with local share	Widen Port Rd. to divided 6-lane (SH 146 to Todville Rd.)	TxDOT Waterborne Freight Corridor Study, Phase II	A-16
Houston	SH 146 (New connector)	Facility needed for terminal access to SH 146	Road	\$13.38	Conceptual		Construct direct connector from SB lanes of SH 416 to Bayport Southern Access	TxDOT Waterborne Freight Corridor Study, Phase II	A-16
Houston	Southern Access Road	Facility road needed for terminal access to SH 146	Road	\$13.54	Conceptual		Construct two new lanes with raised median on Southern Access Road from Old SH 146 to terminal	TxDOT Waterborne Freight Corridor Study, Phase II	A-16
Houston	SH 146 from Fairmont Parkway to Red Bluff Rd.	Lack of access	Road	\$13.92	EAS		Construct direct connector from SB lanes of SH 146	H-GAC TIP	Appendix D-37
Houston	Clinton Drive From Gate 8 to IH 610	Reconstruction needed	Road	\$14.10			Reconstruct Clinton Drive	H-GAC TIP	3-53
Houston	610 Bridge	IH 610 truck off-ramp to Port frequently backs up	Road	\$20.00	Conceptual		New truck entrance from 610 loop for all traffic crossing the 610 bridge	TxDOT Waterborne Freight Corridor Study, Phase II	A-17
Houston	Penn City Rd.	Roadway existing conditions are fair to poor and have heavy truck traffic	Road	\$23.32	Conceptual		Widen Penn City Rd. from two to four lanes (from I-10); make drainage, lighting, and other improvements.	TxDOT Waterborne Freight Corridor Study, Phase II	A-17
Houston	SH 225	Poor connectivity to I-610 and BW 8, and safety issues	Road	\$30.00	Conceptual		Direct connect to BW 8	TxDOT Waterborne Freight Corridor Study, Phase II	A-15
Houston	Jacintoport Rd.	Roadway existing conditions are fair to poor and have heavy truck traffic	Road	\$33.97	Conceptual		Widen Jacintoport Rd. to four lanes, improve rail crossings from BW 8 to Houston Ship Channel.	TxDOT Waterborne Freight Corridor Study, Phase II	A-17

Houston	Spencer Hwy. and Redbluff Rd.	Poor pavement, low bridge clearances, lack of access controls, poor turning radii	Road	\$35.15		Improve roadway capacity by constructing grade separation at Spencer Highway and widening Redbluff to 6 lanes.	TxDOT Waterborne Freight Corridor Study, Phase II	A-15
Houston	SH 146	Poor pavement condition, congestion, and grade crossing issues	Road	\$595.43		Improve roadway capacity by providing pavement maintenance, capacity enhancement, and grade crossing upgrades included in H-GAC TIP	TxDOT Waterborne Freight Corridor Study, Phase II and Task 1	A-15, A-11
Houston	Overweight Truck facilities	84,000-lb. limit on highways	Road	---	Conceptual	Authorization of permits for overweight trucks on roadways near the port of Houston. Increased trucking fees would be required to compensate for the increased maintenance and shortened service life of the roadways.	TxDOT Waterborne Freight Corridor Study, Phase II	A-16
Houston	75th St.	There is poor alignment with grade crossings. There is also an issue with the surrounding community as the air quality and noise quality will degrade with an increase in trucks.	Road			Add truck striping, change road geometrics, provide alternate access to reduce driveway density.	H-GAC Regional Goods Movement Study	A-1
Houston	Barbours Cut Blvd.	Insufficient signage and community impacts	Road			Add wayfinding signs	H-GAC Regional Goods Movement Study	A-28
Houston	Battleground Road/Independence Parkway	Insufficient capacity and insufficient signage and community impacts	Road			Adding wayfinding signs and truck lane striping; widen road	H-GAC Regional Goods Movement Study	A-34
Houston	Center Street	Mobility limited due to width of roadway and other community issues	Road			Add wayfinding signage on SH 225	H-GAC Regional Goods Movement Study	A-2
Houston	Clinton Drive	Insufficient capacity and insufficient signage and community impacts	Road			Add wayfinding signs; widen road	H-GAC Regional Goods Movement Study	A-33
Houston	Ferry Rd.	Community impacts caused by increased truck traffic	Road			Add wayfinding signs on SH 87; add truck lane striping	H-GAC Regional Goods Movement Study	A-3
Houston	Industrial Blvd.	Tight geometry for trucks, community impacts	Road			Add wayfinding signage; add truck lane striping; widen roadway to five lanes.	H-GAC Regional Goods Movement Study	A-4
Houston	Jacintoport Blvd.	Insufficient capacity and lack of access to IH 10	Road			Add wayfinding signs; widen road	H-GAC Regional Goods Movement Study	A-5
Houston	Jefferson Rd.	Insufficient capacity	Road			Add wayfinding signage; add street lighting; widen road	H-GAC Regional Goods Movement Study	A-6
Houston	Loop 610 bridge	Low clearance	Road			Raise bridge to provide adequate clearance	TxDOT Waterborne Freight Corridor Study, Phase II	A-15
Houston	Manchester St.	Insufficient capacity and wayfinding	Road			Add wayfinding signage; signalize IH 610 intersection; widen road	H-GAC Regional Goods Movement Study	A-10
Houston	Navigation Blvd.	Insufficient capacity	Road			Add wayfinding signs and truck lane striping	H-GAC Regional Goods Movement Study	A-12
Houston	Old Port Industrial Blvd.	Community impacts caused by increased truck traffic	Road			Add wayfinding signs and street lighting	H-GAC Regional Goods Movement Study	A-13
Houston	Pine St. (FM 1495 to SH 288)	Insufficient capacity for projected volumes	Road			Add wayfinding signs; grade separated intersection at FM 1495/ SH 36; widen road	H-GAC Regional Goods Movement Study	A-15
Houston	Port Road and Port Drive	Insufficient signage and community impacts	Road			Add wayfinding roads and truck lane striping; signalize SH 146 intersection	H-GAC Regional Goods Movement Study	A-16
Houston	Sheldon Rd.	Insufficient capacity	Road			Add paved shoulders and truck lane striping; widen road	H-GAC Regional Goods Movement Study	A-18
Orange	Alabama Street Rail	Needs improved connectivity and renovations	Rail	\$1.20		Renovation of existing rail to improve connectivity and rail infrastructure at port's main terminal	Texas Ports 2011	A-22
Palacios	General road infrastructure	Repairs needed	Road	\$0.20		Road and drainage repairs	Texas Ports 2011	A-24
Port Arthur	UPRR Sabine Industrial lead	Lack of onnection between UPRR Sabine industrial lead and the Port	Rail		This is a policy issue	Construct the rail connection	TxDOT Waterborne Freight Corridor Study, Phase II	A-23
Port Arthur	Lakeshore connection	Between holding yard and other port lands	Road	\$11.50		Port road to connect 75-acre land acquisition and 15-acre land stabilization with rail holding yard	Texas Ports 2011	A-26
Texas City	Loop 197	Limited capacity, lack of access control, poor geometrics for truck traffic	Road	\$55.00		Direct connectors to Port of Texas City	TxDOT Waterborne Freight Corridor Study, Phase II	A-22
Victoria	Rail extension to dock	Rail needs to be extended to better reach the dock	Rail	\$2.50		Extend rail line to dock	Texas Ports 2011	A-29
Victoria	Rail staging area	Insufficient area	Rail	\$3.00		Enlarge rail staging area	Texas Ports 2011	A-29
Victoria	Road between rail and roadways	Poor surface conditions	Road	\$1.00		Improve road surface between rail and roadways	Texas Ports 2011	A-29



## Top Projects: Southern Coastal Region

<b>Port</b>	<b>Where</b>	<b>Project Description</b>	<b>Cost (Millions)</b>
Brownsville	US 77	Solve mobility and safety concerns with two-way frontage road conversions and overpasses	\$420.0
Brownsville	Entire Port	Constructing intermodal ramp in Brownsville area to reduce draying before loaded on trains	\$175.0
Brownsville	US 281	Improve connectivity by constructing new connection of US 281 to US 77	\$140.0
Brownsville	SH 550	Phase II of project	\$57.0
Brownsville	SH 32 - New Connection	Improve connectivity by constructing new connection from US 77/83 to US 4	\$38.8
Brownsville	SH 550 Direct Connectors	Construct new tolled direct connection to US 77/83	\$36.4
Brownsville	SH 550	Phase I of project	\$35.0
Harlingen	W. Colorado Ave. Lift Span Bridge Over Arroyo Colorado	Solve issues with lift bridge by replacing the current bridge with a new lift bridge or higher non-moveable bridge	\$20.0
Brownsville	Harlingen Yard	Relocate RVSC switching operations to new yard outside of Harlingen	\$17.0
Brownsville	Kosmos to Brownsville Subdivisions	Improve rail system by constructing new connections	\$8.3

## Top Projects: Central Coastal Region

<b>Port</b>	<b>Where</b>	<b>Project Description</b>	<b>Cost (Millions)</b>
Corpus Christi	Truck Roads	Improve truck mobility by constructing a new truck-only tollway between Port of Laredo and Port of Corpus Christi	\$709 to \$1,600
Corpus Christi	Corpus Christi Harbor Bridge	Redesign bridge to allow taller ships to pass under the structure	\$600.0
Corpus Christi	SH 44	Add capacity and upgrade between CC and U.S. 59	\$350.0
Corpus Christi	SH 44	Upgrade SH 44 between Corpus Christi and U.S. 59	\$350.0
Corpus Christi	U.S. 77	Add capacity and upgrade to interstate standards	\$180.0
Corpus Christi	U.S. 77	Add capacity and upgrade U.S. 77 to I-69	\$180.0
Corpus Christi	Joe Fulton International Trade Corridor	Construct new rail (7 mi.) and road (11.5 mi.) facilities to improve operations	\$56.0
Corpus Christi	La Quinta Terminal Access Road	Enhance the capacity or construct a new route to the La Quinta Terminal	\$25.0
Corpus Christi	SH 381	Construct bypass of Kiewit	\$23.0
Corpus Christi	Nueces River Rail Yard	Construct a new rail yard to replace the current CCTR setup	\$21.5

## Top Projects: Northern Coastal Region

<b>Port</b>	<b>Where</b>	<b>Project Description</b>	<b>Cost (Millions)</b>
Houston	Fort Bend Bypass	Construct new rail line to bypass road traffic	\$932.6
Houston	SH 146	Improve roadway capacity by providing pavement maintenance, capacity enhancement, and grade crossing upgrades included in H-GAC TIP	\$595.4
Freeport	Valesco Terminal	Construct multipurpose terminal with increased handling capacity and elevated intersection at FM 1495 and SH 36	\$380.0
Houston	East Houston Bypass	Alleviate congestion by constructing new rail bypass	\$283.4
Freeport	SH 366	Widen the road to increase capacity	\$167.5
Freeport	SH 288 UPRR swing bridge	Construct a new bridge	\$124.0
Freeport	SH 288	Construct grade separations to increase capacity	\$124.0
Houston	Westheimer-Terminal	Construct grade separations to increase capacity	\$66.8
Texas City	Loop 197	Improve mobility and access by constructing direct connectors to the Port of Texas City	\$55.0
Freeport	FM 523	Implement smart street designs, widen the route, and implement pavement rehabilitation to improve capacity	\$53.4

