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16. Abstract The quantity of truck transportation handled in Texas increased dramatically in the 1990s especially after the full implementation of the North American Free Trade Agreement (NAFTA). Accurate information on truck volumes and truck characteristics is critical to the transportation planning and transportation operation activities performed by the Texas Department of Transportation (TxDOT) and other agencies responsible for the freeway and roadway system in the state of Texas. Information for freight transportation planning, in particular truck-related data, is expensive and difficult to collect, but various agencies located at the Texas-Mexico border already gather information that is used for operation or statistical purposes. This report covering first-year activities identifies planning information needs, determines data that are being collected by various federal, state, and local agencies, and proposes an integrated truck-related information system that could be used for planning purposes. Second-year activities will involve collecting and analyzing loading characteristics of heavy vehicles associated with cross border trade required for determining infrastructure impacts.					
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TRANSPORTATION DATA FOR PLANNING APPLICATIONS AND  
CHARACTERIZATION OF NAFTA TRUCK LOADS FOR AIDING IN  
TRANSPORTATION INFRASTRUCTURE MANAGEMENT:  
FIRST YEAR**

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## **DISCLAIMER**

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 Federal Highway Administration (FHWA) or the Texas Department of Transportation (TxDOT). This report does not constitute a standard, specification, or regulation.

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## DATA DICTIONARY

Number of Crossings/Trucks	Number of trucks crossing the U.S.-Mexico border (total and for each Texas port of entry)
Truck Registrations	Number of motor carriers that operate intrastate and interstate (including Mexico) registered in Texas.
Truck Trip Rates	Number of truck trips generated by a specific economic activity or land use (e.g., a warehouse).
Truck Weight (GWV)	The total estimated weight of the truck that is loaded to capacity, including the weight of the vehicle, fuel, cargo and any other miscellaneous items such as aftermarket parts.
Truck Size Axle Weights	The length, width, and height of a truck. The amount of weight carried by a single axle and the amount of weight transmitted to the highway by one axle.
Axle Spacings	The longitudinal distance between the centers of the foremost and rearmost axles of an axle group measured from center to center of the defined axles.
Commodity	Typically the major commodity carried.
Commodity Value	The value of the cargo that is carried.
Driver Information	“Who is driving” the truck.
Insurance	Whether truck is insured and what type of insurance is held by the trucking company that moves NAFTA trade.
Safety Record (driver and company)	Number of incidents/violations involving the truck driver and trucking company.
Inspections Passed	Number of DPS inspections passed (number of times truck was inspected and no violations were recorded).
Emissions	Emissions characteristics of trucks transporting NAFTA trade and the overall emissions attributable to these trucks.

## DATA DICTIONARY (Continued)

Truck Origin	Address/city/state/province where truck trip originated. Districts are interested in the address detail.
Cargo Origin	Address/city/state/province where cargo originated.
Truck Destination	Address/city/state/province of the truck trip destination. Districts are interested in the address detail.
Cargo Destination	Address/city/state/province for which cargo is destined.
Truck Routes	Actual highway routes used in Texas.
Vehicle Classification	Truck type.
Vehicle Miles Traveled	The total number of vehicle miles traveled by trucks moving NAFTA trade within Texas over a given period of time.
Time of Day	Time of day distribution of truck trips (e.g., Average Annual Daily Truck Traffic [AADTT] by time of day).
Truck Peak Hour Travel Percentages	Percentage of trucks operating during peak hours.

## **CHAPTER 1: INTRODUCTION**

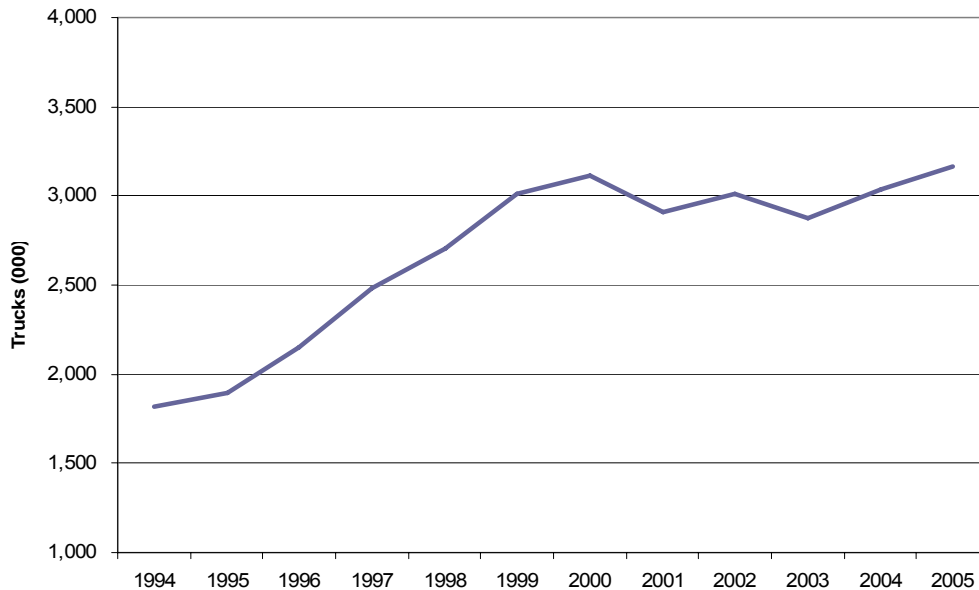
This report summarizes research and findings from the initial phase of Project 0-5339 “Integration and Consolidation of Border Freight Transportation Data for Planning Applications and Characterization of NAFTA Truck Loads for Aiding in Transportation Infrastructure Management.” This report presents Product 0-5339-P1, a truck information integration system structure that accurately captures information collected by the various agencies at the Texas-Mexico border.

### **BACKGROUND**

The quantity of truck transportation handled in Texas increased dramatically in the 1990s, following nearly a decade of strong economic and trade growth. The advent of the North American Free Trade Agreement (NAFTA) on January 1, 1994, resulted in Texas becoming the focus of international trade between the U.S. and Mexico.

Texas has the highest level of trade with Mexico of any state with over \$143 billion total truck-borne trade in 2005. Truck imports to the U.S. have grown at an annual compounded rate of 14.5 percent since December of 1994, while exports have grown at a rate of 10.3 percent. Overall, the value of truck freight between the two countries has grown at an annual compounded rate of 12.5 percent (1). In Texas, truck flows are thus starting to exacerbate congestion on certain key links of the highway network.

Truck is the dominant mode of transportation for U.S. trade with Mexico, accounting for 87 percent of surface trade (truck and rail) in 2005. Between 1994 and 2005, the number of northbound trucks crossing the Texas-Mexico border increased from 1.8 million to 3.2 million annually (2), resulting in increased pressures on the transportation highway corridors and crossings within Texas (Figure 1).



*Source: Texas Center for Border Economic and Enterprise Development*

**Figure 1. Incoming Truck Crossings, Texas-Mexico.**

The need for truck data and information for planning and operation has become more relevant with the increase of truck flows throughout the state and in urban areas. TxDOT would benefit from more detailed truck-related information to:

- provide a clear picture of truck movements on the state’s transportation system;
- determine the impact of truck flows on the state’s road infrastructure—bridges and pavements—and the implications in terms of funding;
- forecast system performance;
- guide efforts to mitigate impacts of truck traffic on general mobility;
- determine the impacts on air quality;
- ensure effective land use planning;
- evaluate economic development impacts; and
- improve the safety and security performance of the road network.

On the other hand, in order to carry out their operations, federal and state agencies collect truck-related information on a constant basis. This is particularly significant at the Texas-Mexico border where several U.S. and Mexican state and federal agencies participate in the international commercial border crossing process.

## **PROJECT PURPOSE**

Truck-related information needs could be satisfied in a more efficient way and more cost effectively by making use of all the related information that is being collected by federal and state agencies. The Texas-Mexico border serves as a key point in the supply chain where truck-related information is already being collected for trade, security, and safety concerns. The objective of this research project is to identify freight planning information needs; determine data that are being collected by various federal, state, and local agencies; and to propose an integrated truck-related information system that could be used for planning purposes.





## **CHAPTER 2: EXISTING INFORMATION**

The research team performed an extensive review of both past and current efforts related to border trade and truck data. Because the primary focus for this research project was to identify available truck-related data collected on a regular basis at the border, this chapter only briefly identifies the past efforts and more extensively describes recent and ongoing studies. More detailed descriptions of past efforts are provided in [Appendix A](#).

### **PAST TxDOT EFFORTS**

Past TxDOT efforts involve the development of a statewide freight movement model and a model to estimate urban truck movements, and several projects that involved border freight movement analysis. A few of these efforts are listed below, while more efforts with more extensive descriptions are located in [Appendix A](#).

- *Statewide Analysis Model (SAM)* – The object of the SAM is to provide a regional model for the state of Texas that focuses on intercounty travel patterns. Specifically, the freight component aims to:
  - provide a clear picture of freight movements on Texas’ transportation system,
  - determine the impact of freight on Texas’ road infrastructure (e.g., bridges and pavements) and the implications in terms of funding,
  - evaluate strategies for improving freight mobility,
  - forecast system performance, and
  - improve the safety and security performance of the road network.
- *Comprehensive Urban Commodity/Freight Movement Model for Texas* – The objective of this model is to utilize data from the SAM to improve modeling of freight and commodity within the urban area travel demand modeling framework.
- *Effect of the North American Free Trade Agreement on the Texas Highway System* – This Texas Legislature mandated study examined the impacts of NAFTA truck traffic on the Texas highways.

- *Truck Trade Corridors between the U.S. and Mexico* – This report identified U.S.-Mexico trade corridors and determined the truck traffic characteristics along the identified corridors.

## **CURRENT TxDOT EFFORTS**

TxDOT is currently updating a major effort to understand NAFTA truck volumes and truck movement patterns. Several additional efforts around the state consider border freight movements.

### **TxDOT NAFTA Study Update**

The objective of the Cambridge Systematics, Inc. (CSI) study is to update and improve the earlier NAFTA study entitled “Effect of the North American Free Trade Agreement (NAFTA) on the Texas Highway System” that was conducted in 1998. The Texas NAFTA study update has four objectives:

- “Analyze highway and rail condition related to NAFTA
- Project future impacts to both highway and rail
- Analyze trade impacts due to September 11, 2001
- Provide input to TxDOT planning and policy development” (3).

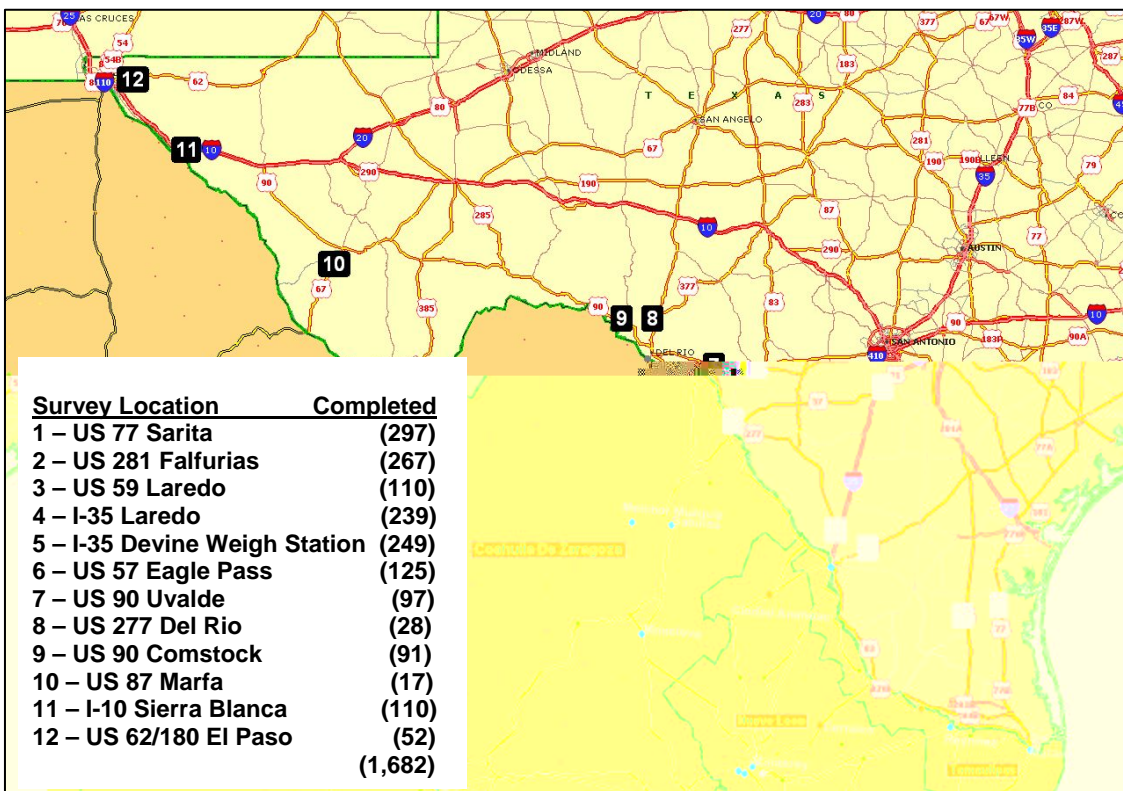
#### *Highway and Rail Condition Related to NAFTA*

In describing the current highway condition related to NAFTA, the CSI study team consulted the following data sources (3):

- TRANSEARCH (2003, 2015, and 2030);
- U.S. Department of Transportation data, including the Freight Analysis Framework (FAF2), the Bureau of Transportation Statistics (BTS) Transborder Surface Freight dataset, the Surface Transportation Board’s Carload Waybill Sample, and the U.S. Army Corps of Engineers Port Data;
- TxDOT traffic and vehicle classification counts;
- Mexican Federal data; and

- related trade and corridor studies, including the Latin American Trade and Transportation Study (LATTS), the I-10 Corridor Study, the current I-69 and I-35 corridor studies, the International Trade Corridor Plan (ITCP), and the Statewide Analysis Model.

In addition to these existing data sources, a NAFTA Commercial Vehicle Intercept Survey was conducted near the border and along key NAFTA corridors (see Figure 2), and key industry interviews were conducted with shippers, brokers, carriers (truck and rail), and representatives at inland ports and waterborne ports.



Source: Ludlow, 2006

**Figure 2. NAFTA Commercial Vehicle Intercept Survey Locations.**

In analyzing the rail condition relating to NAFTA, CSI is building on the available rail information from Mexico included in the ITCP. This information will be supplemented with the latest available Rail Waybill data and interviews conducted with rail companies. In addition, the CSI team will assess the potential impacts of Mexican port and rail developments in terms of new or modified NAFTA rail corridor flows (4).

### *Trade Impacts Due to September 11, 2001*

Prior to the events of September 11, 2001, El Paso and Laredo had among the highest delays, as well as uncertainty surrounding delays, among seven border locations measured by the FHWA in 2001. The events of September 11, 2001, resulted in concerns that added security requirements would exacerbate the delays already experienced (4). A significant drop in demand—demand has only recently exceeded pre-9/11 levels—together with increased cooperation and the introduction of technology and advance clearance procedures have resulted in both improved efficiency and security at the border. The United States/Mexico Border Security Accord, for example, has fostered a good working relationship and more cooperative bi-national planning for the U.S.-Mexico border. The introduction of FAST (Free and Secure Trade) lanes in 2004 in El Paso has also aided in expediting trade across the border. In El Paso, approximately 17–18 percent of the trade utilizes the FAST lanes. Although FAST lanes have been implemented in Laredo and the Valley, much less trade has been using the lanes compared to El Paso (3). In determining the future impacts of 9/11, the CSI team will conduct interviews with the U.S. DOT and U.S. and Mexican Customs. The emphasis will be on the new generation trade processing system (i.e., Automated Commercial Environment [ACE]), U.S. and Mexican border infrastructure and inspection processes, and the level of cooperation among between various agencies (3).

### *Future Impacts to the Highway and Rail Systems*

The CSI team will forecast NAFTA rail and highway movements on the system for 2015 and 2030 based on the latest trade forecasts from Global Insight or a comparable product (4). In addition, future trends that could impact the existing NAFTA corridors will be explored, including the:

- opening of the U.S. border to allow Mexican carriers to move beyond the current commercial zones into the U.S.,
- emerging China trade and the shifts in maquiladora manufacturing trade with Mexico to China,
- role of regulation and technology in securing cross border movements, and
- implications of increased trade through Mexican ports and more generally all gateways. Regarding the latter, specific emphasis will be placed on the

implications of the Central American Free Trade Agreement (CAFTA) and the emerging Free Trade of the Americas agreements (3).

### **International Trade Corridor Plan Update**

The Texas International Trade Corridor Plan Update was required by the state legislature to provide recommendations to help improve trade movement between the United States and Mexico in the state of Texas. The Texas Transportation Institute (TTI) is performing the 2006 update of the Plan. The update required a close examination of the state's transportation infrastructure for international trade as well as the demand for international freight movements. According to the Plan, more international trade in terms of value is moved through Texas via trucks than by any other mode. The Texas International Trade Corridor Plan Update found the following concerning international trade in Texas by trucks:

- In 2005, \$143 billion dollars of total trade was shipped through Texas ports-of-entry.
- In 2005, trucks carried over 21 million tons of trade through Texas ports-of-entry.
- Laredo has the most international trade in value, \$67 billion, and weight, 12 million tons by truck, in 2005.
- El Paso is second in international trade by truck with \$40 billion and 3 million tons in 2005.
- The Texas corridors that carried the most international trade weight by truck were, in order, I-35 from Laredo to Oklahoma, I-10 from El Paso to Louisiana, and I-45 from Houston to Dallas.
- International trade flows in Texas are expected to grow on average 67 percent from 2002 to 2020.



## **CHAPTER 3: INFORMATION COLLECTED ON A REGULAR BASIS**

In general, federal and state agencies collect truck-related information for purposes other than transportation planning and operations. Customs and Border Protection (CBP) collects information on truck, driver, and cargo crossing from Mexico into the U.S.

### **INFORMATION COLLECTED AT THE FEDERAL LEVEL**

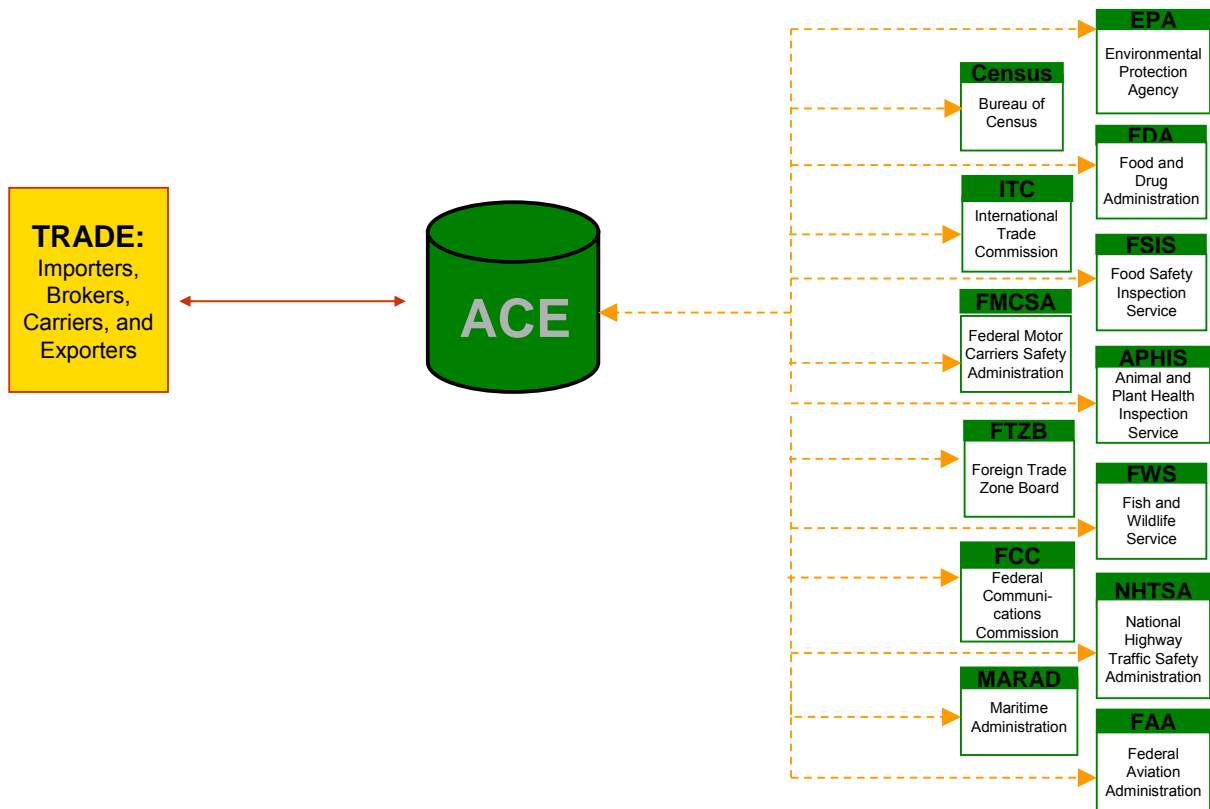
#### **Automated Commercial Environment (ACE)**

Commercial vehicles entering the United States go through CBP's inspection and processing. ACE is the new U.S. trade processing system designed to consolidate and automate border processing to significantly enhance border security and foster the nation's economic security through lawful international trade and travel (5). The key characteristics of the ACE system are that it:

- allows trade participants to better manage their trade information;
- facilitates efficient collection, processing, and analysis of commercial import and export data;
- expedites legitimate trade by providing CBP with tools to efficiently process imports/exports and move goods quickly across the border;
- improves communication, collaboration, and compliance efforts between CBP and the trade community;
- provides an information-sharing platform for trade data throughout the government via the International Trade Data System (ITDS); and
- increases visibility into the supply chain.

ACE begins to integrate Participating Government Agencies (PGAs) to allow a single window to the government for the trade community. Through the International Trade Data System, more than 80 targeted government agencies will be integrated throughout the full rollout of ACE (Figure 3).

ACE, through staged development and implementation, will replace the current Automated Commercial System (ACS) as the sole processing system of record for CBP.



Source: U.S. Customs and Border Protection, ACE Toolkit

**Figure 3. ACE-ITDS Diagram.**

### **Electronic Truck Manifest**

In compliance with the Trade Act of 2002, the ACE e-Manifest trucks capability enables carriers to submit electronic truck manifests to U.S. Customs and Border Protection prior to a truck's arrival at a United States land border crossing.

The filing of manifests electronically offers the trade community increased efficiency by saving valuable time at the border, reducing processing time, and offering online tracking status of trips. In addition, CBP officers are provided with consolidated information that will help them expedite legitimate trade while keeping America's borders secure (5).

The e-Manifest is being deployed at the U.S.-Mexico border, and after successfully transmitting an e-manifest, carriers or their agents should prepare and provide the driver



either a copy of the Inward Cargo Manifest or a cover sheet printed on plain paper. The information that is required includes (6):

- “ACE Electronic Manifest” printed on the document,
- “Trip number:” and Standard Carrier Alpha Code (SCAC) plus unique identification number for trip,
- Driver’s Name, and
- Truck (Tractor) License Plate (must be the one that is transmitted to CBP).

Additional national level databases include both publicly and privately developed databases:

- *Transborder Surface Freight Database* – Bureau of Transportation Statistics

The Bureau of Transportation Statistics Transborder Surface Freight Database is a monthly database containing freight flow data by commodity type and by surface mode of transportation for U.S. exports to and imports from Canada and Mexico (7). The purpose of the Transborder Surface Freight Database is to monitor changes in freight flows since the signing of NAFTA in 1993. According to the BTS, the Transborder Freight Dataset is a “special tabulation of U.S. official international trade statistics that are collected by the U.S. Bureau of Customs and Border Protection and processed and validated by the U.S. Census Bureau, Foreign Trade Division (7).” In addition to the commodity designation of the shipment, additional information includes value, shipment weight, and containerized designation. Limitations of the data source include:

- The given ports of exit and entry reported for U.S. trade shipments with Canada and Mexico may not always represent the true port of exit for U.S. export shipments or the true port of entry (POE) for U.S. import shipments.
- For U.S. imports from Mexico, the database does not provide information on the Mexican state of origin of the shipments because of current filing procedures.
- For trade shipments on intermodal surface transportation systems (e.g., rail and truck), the database cannot accurately report the mode of transport of entry or exit into the U.S. owing to incorrect filings by the shippers.

- *TRANSEARCH* – Global Insight

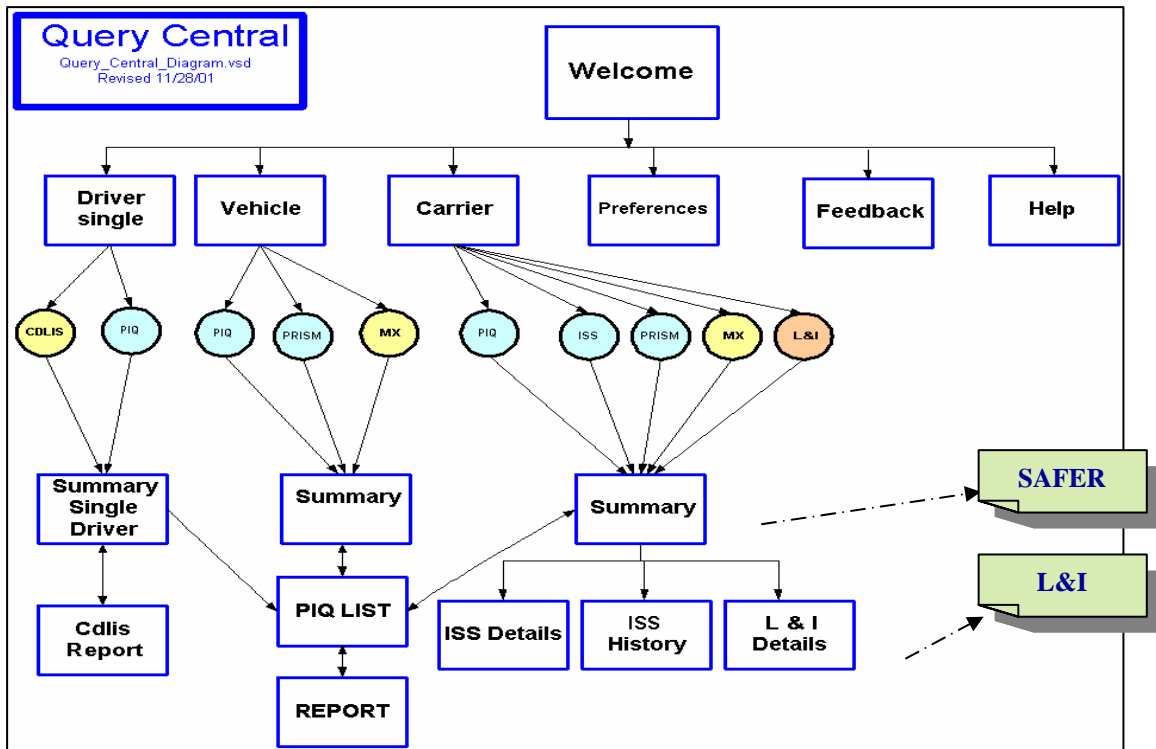
This widely used, commercial freight database involves “the fusion of various freight traffic data sources into a common framework for planning and analysis. The database provides detailed U.S. and cross border origin-destination freight shipment data at the state, Business Economic Area, county, metropolitan area, and zip-code level detail by commodity type and major modes of transportation (8).” Shipment characteristics include detailed commodity code, detailed origin-destination, routing, shipment weight or value or number of loads, and modes of transportation.

### **INFORMATION COLLECTED AT THE STATE LEVEL**

Department of Public Safety (DPS) personnel work alongside federal Department of Transportation (DOT) agents conducting commercial driver and vehicle safety inspections. They have the ability to access Federal Motor Carrier Safety Administration (FMCSA) Query Central Information System. This system is the most comprehensive source of commercial driver and vehicle safety information currently available. Initially designed as a data querying tool to complement U.S. roadside truck inspections, Query Central has evolved into a complex multi-tiered data clearinghouse. The system electronically links several U.S. and Mexican driver, vehicle, and carrier databases to a single Internet-based interface accessible to all authorized U.S. inspection and enforcement personnel (9).

Query Central is comprised of various data storage and exchange elements, including Mexico’s commercial driver’s license system (LIFIS) and the Mexican motor carrier information system. [Figure 4](#) illustrates the structure of Query Central.

FMCSA and CBP are partnering to improve truck and bus safety at our nation’s land borders. With full implementation of the ACE-ITDS system in conjunction with Query Central, federal inspectors will have the ability to identify unsafe commercial motor vehicles and drivers before they reach our nation’s roads.



Source: Federal Motor Carrier Safety Administration, 2001.

**Figure 4. Simplified Functional Diagram of Query Central System.**

## CVISN in Texas

Much has been accomplished to position the state of Texas for receiving federal funding through the Commercial Vehicle Information Systems and Networks (CVISN) program. However, there has been little in the way of implementation of CVISN to date. Two major milestones are helpful in this discussion; one was a research project by TTI entitled, “Development of a Texas Strategic Plan for Commercial Vehicle Operations,” which was completed in 1998. In that report, the researchers recommended that the state of Texas become part of the U.S. National Mainstreaming Program. This first required the submission of a Business Plan, which would place Texas in a position to receive federal funding for Commercial Vehicle Operations. In conjunction with the Business Plan, the state should develop a strategy to address the following 12 projects.

PROJECT 1. Statewide Information Database System (SIDS) Deployment: This project involves purchasing additional laptop computers and installing SIDS and other software for enforcement in all regions. This is the first step toward automation of the

inspection process in the state. Immediately following inspection of a commercial vehicle, troopers will enter the information about that particular vehicle directly into the laptop computer, rather than on a conventional paper report form.

PROJECT 2. Motor Carrier Identification System: This project involves developing and implementing a system for DPS to identify all Texas-based motor carriers that operate in the state. Currently there are many unknown motor carriers operating in the state. This results in an undesirable advantage for motor carriers that are not known by DPS since they are not subject to facility audits, carrier ratings, and compliance reviews.

PROJECT 3. Automation of Roadside Safety Inspections: This project will automate roadside safety inspections by providing enforcement personnel with real-time access to vehicle, driver, and motor carrier facility records. This includes information about previous roadside safety inspections and out-of-service defects, motor carrier credentials, permits, and safety ratings.

PROJECT 4. Upgrading of Designated Weighing Areas: This project will upgrade designated weighing areas to ensure safe Level I inspections. Almost one-half of these designated weighing areas (44 percent) are not suitable for Level I inspections. The upgrade will consist of infrastructure improvements at each weighing area and the installation of weigh-in-motion (WIM) devices in advance of the scale for both directions of traffic.

PROJECT 5. Use of WIM and Automatic Vehicle Classification (AVC) Devices for Enforcement: This project will evaluate the use of the existing TxDOT network of WIM and AVC systems for improved DPS enforcement of weight and safety regulations. It will make use of telephone lines or wireless communication technology to link these data collection sites with a central DPS location (or dispatch office).

PROJECT 6. Statewide Incident Management System: This project will use global positioning systems (GPS) in a uniform and coordinated manner to provide real-time information about incidents involving hazardous materials. It will also involve the development of a system in which motor carriers involved in crashes are automatically linked to emergency response. In cases where hazardous materials are involved in the crash, the incident management system enables emergency responders to have real-time access to hazardous material information on the scene.

PROJECT 7. Implementation of a One-stop Shop: This project will develop a plan to implement either a single physical location or point of contact where motor carriers will obtain all permits and credentials needed to operate in the state.

PROJECT 8. Technology User Training Program: This project involves developing and implementing a training program for users of the new technology introduced by the different agencies involved in commercial vehicle operations.

PROJECT 9. Implementation of Information Systems: This project will investigate and develop a plan to use multi-media methods to provide timely information about traffic conditions, incidents, and other travel-related issues. Information systems could be implemented at the roadside in the form of dynamic message signs, or at truck stops and rest areas.

PROJECT 10. Share-the-Road Campaign: This project would develop and launch a campaign to educate all drivers on how to share the road with vehicles having different operating characteristics from their own. The campaign would educate car drivers on how to share the road with large commercial vehicles, and it would also help truck drivers in sharing the road with smaller vehicles and other trucks.

PROJECT 11. Creation of a Special Task Force: This project will create a special task force to address institutional issues that affect motor carriers and agencies involved with commercial vehicle operations.

PROJECT 12. Electronic Clearance at the Texas-Mexico Border: This project will deploy electronic clearance at the Texas-Mexico border. Texas is currently participating in the Texas Regional International Border Electronic Crossing (TRIBEX) project, which is a public-private partnership created to demonstrate commercial vehicle intelligent transportation systems technology at international bridges.

The second major milestone was in the development of the Business Plan, which was one of the major recommendations of the TTI research and was required for Texas to receive federal funding in the CVISN program. During the period from 1998 to 2000, Texas was developing Phase I of the Commercial Vehicle Information System and Networks program, a State Intelligent Transportation Systems for Commercial Vehicle Operations (ITS/CVO) Business Plan (10). This was one of the requirements for Texas to request federal CVISN funds. TxDOT then received federal funding through a FY 2000 ITS Integration Program

earmark for the Commercial Vehicle ITS Infrastructure Component of the ITS Deployment Program in Texas. In conjunction with the development of the State of Texas ITS/CVO Business Plan, TxDOT planned to make motor carrier registration and insurance filings and apportioned International Registration Plan applications and renewals available over the Internet. This action was part of a larger strategy to develop a “Texas One-Stop Shop” for obtaining Texas motor carrier credentials over the Internet (11).

Even with some milestones already accomplished, CVISN has not been fully implemented in Texas at this point. However, DPS would like to have the various processes pertaining to the International Fuel Tax Agreement (IFTA), vehicle registration, International Registration Plan (IRP), and so forth required to be streamlined and interconnected. CVISN is now handled through the Federal Motor Carrier Safety Administration rather than through the Federal Highway Administration as it previously was, so getting Texas involved in CVISN should be easier now. Two other programs in which DPS is very interested are Performance and Registration Information System Management (PRISM) and Inspection Selection System (ISS). Through PRISM, the state can invoke sanctions pertaining to vehicle registration that can have a powerful effect on motor carrier safety efforts. The ISS is an automated system that can operate on a PC onsite and assist enforcement personnel in making the best choice of which vehicles to choose for safety inspections. It enables rapid screening of vehicles based on DOT number, carrier name, or other identifier (12).

### **Texas Department of Public Safety**

DPS is a source of valuable information related to commercial vehicle operations along the U.S.-Mexico border and beyond. To appreciate the use of DPS data, it is important to understand its organizational structure, methods used for commercial vehicle enforcement, and resources at its disposal. In 2001, TTI and the Center of Transportation Research (CTR) teamed up to conduct a long-term needs assessment for the Commercial Vehicle Enforcement Service of the Highway Patrol Division of Texas DPS using information from 1997 (partial), 1998, 1999, and 2000 (11 months) (13).

An inventory of the 208 DPS designated weighing areas in the state indicated that many sites consisted of nothing more than a paved area adjacent to the highway and had no scales, or permanent or portable buildings. In fact, only 47 of the 208 had fixed in-ground

scales. Additionally, besides the 47 sites having permanent scales, 84 others have paved areas large enough to allow deployment of semi-portable trailer-moved axle load scales. Therefore, 77 of the 208 sites have no permanent scales and lack provisions for use of the trailer-moved axle load scales, meaning that all weighing must be done using portable wheel load weighers. Effort and time required for weighing with portable wheel load scales is greater than that required by the other two weighing device types.

Prior to 1999, safety inspections at DPS inspection facilities, called fixed-site inspections, represented less than 10 percent of the total. By year 2000, this proportion had changed to roughly 50 percent. The data clearly indicate a trend toward more inspections at fixed sites and fewer roadside inspections, called variable sites. Significantly, prior to 1995, all fixed sites were configured only for weighing and generally lacked capabilities for inspection activities. As fixed sites have been configured to enable inspections, the observed shift toward more fixed-site inspections has become pronounced.

#### *Border Safety Inspection Facilities*

A major initiative along the Texas-Mexico border involving DPS in particular was the establishment of eight Border Safety Inspection Facilities (BSIFs). These facilities would allow increased commercial vehicle safety inspections at ports-of-entry and in the border commercial zones. In conjunction with safety, DPS also monitors weigh-in-motion systems provided by TxDOT at these eight largest ports-of-entry. Another element of this process involved DPS working with the Federal Motor Carrier Safety Administration to obtain federal funding for staffing the Border Safety Inspection Facilities. The total amount requested for the eight Texas BSIFs from the Border Infrastructure Discretionary Grant Program in FY 2002 was \$40,823,650. The eight facilities are located at the following international bridges:

- Free Trade Bridge in Los Indios,
- Veterans International Bridge near Brownsville,
- Pharr-Reynosa International Bridge,
- World Free Trade Bridge in Laredo,
- Columbia/Solidarity Bridge near Laredo,
- Camino Real International Bridge in Eagle Pass,

- Zaragoza-Ysleta Bridge in El Paso, and
- Bridge of the Americas (BOTA) in El Paso (14).

Two major recommendations of the State Comptroller's *Special Report* dealing with state functions at international border crossings are as follows:

- TxDOT and DPS should survey customs brokers, freight forwarders, and U.S. and Mexican motor carriers to get input regarding implementation of ITS/CVO technology.
- TxDOT and DPS should begin coordinating with U.S., Texas, Canadian, and Mexican commercial motor carriers to develop interoperability standards for the use of ITS/CVO technology (15).

The report went on to recommend that standardization of electronic equipment for roadside screening and clearance systems, data systems, and other aspects of ITS/CVO should be resolved before the technology is deployed. The cost of deploying ITS/CVO would increase if the equipment (transponders, computer hardware and software) must change to accommodate different standards.

One resulting action, which may have happened as a result of the Comptroller's report, was the purchase of transponders by DPS to be disseminated to motor carriers from Mexico who want to participate in the program. DPS plans to deploy transponders along the border to expedite movements of Mexican trucks through the border clearance process. DPS purchased 15,000 TransCore transponders to be given to Mexican carriers at no charge to the carrier, with the first ones to be handed out in El Paso. In determining which tags to use and to accomplish the interoperability objective, DPS coordinated with U.S. Customs, which was using TransCore tags. TxDOT has assisted DPS in deploying WIM at sites along the border with Mexico to assist in identifying trucks that are overweight and at sites beyond the border (16).

### *DPS Safety Inspections*

Texas DPS conducts safety inspections and weighs trucks both at the border and throughout the state. As safety inspections are underway, DPS uses the CVE-3 form to record information gathered during an inspection. [Appendix B](#) shows a blank CVE-3 form. DPS stores this information in Austin, but is not staffed to respond to a large number of requests



for the data. Researchers asked DPS to clarify interpretations of what is included on the CVE-3 form. [Chapter 6](#) summarizes this information in a concise format along with information from other sources. Each inspector completes the CVE-3 form and submits information for each day to a supervisor for checking and verification. The supervisor then submits two other forms called “L&W-10” and “CDE-10.”

The following discussion of the form generally starts at the top of the form and works downward. At the top upper right of the form, troopers at border stations check the “Fixed” box indicating a fixed site and below that they enter “PE” for Port of Entry. Each site has a specific and unique designation; for BOTA, the site designation is 4B201.

For insurance information, a Mexican carrier is categorized as a “foreign” carrier and is required to have proof of Single State insurance. A carrier from New Mexico, for example, would also be considered a foreign carrier in a general sense and would also need to possess evidence of insurance. The insurance certificate is filed in the carrier’s home state but Mexico is not a member of the compact of states (U.S. states) so it truly represents a foreign entity. Most of the Mexico trucks crossing at the Bridge of the Americas where the officer being interviewed was assigned are from the state of Chihuahua.

The form shows an Interstate Commerce Commission/Motor Carrier (ICC/MC) number even though the Interstate Commerce Commission has not existed for several years. The tractor model/year is not recorded but this information would be helpful to inspection personnel because some of the older tractors can legally have the steer axle brakes removed whereas newer model tractors cannot. Push-rod stroke is recorded for all required axles.

Most Mexican carriers are not members of IFTA. Only if they travel away from the commercial zone along the border would they need IFTA certification. DPS does not record that information.

The box in the upper third of the form has cells for recording the following: unit (number 1, 2, 3, etc.); type (1 = power unit, TT for truck-tractor, trailer, etc.; 2 = trlr or ST); make; CO# (company/carrier number); and plate. The plate and state will be for the corresponding unit listed in that row of the table, so the plate number for “1” would be for the power unit. The one for the trailer would be unit 2, etc. For trailer, it could be semitrailer or full trailer.

DPS does not record the fuel type as they did a few years ago. They do not currently record transponder information but this will be different for Mexican carriers compared to U.S. carriers. In the United States, a driver typically works for the same carrier for a relatively long period of time, so one transponder would be associated with one truck (and possibly a driver). However, in Mexico, drivers do not work directly for the carrier as in the United States. Apparently, drivers work through an agency that supplies drivers for carriers on a day-to-day basis. Mexican drivers may have to have a driver transponder to complement the one on the vehicle.

DPS does not normally record trailer length although, when a vehicle is weighed, the officer might measure distances between axle groups. To determine compliance with the Bridge Formula, they measure from the center of wheel hubs on one axle group to the center of the wheel hub for the next group, but they measure the distance from the outer axle. For example, a five-axle tractor-semi trailer would have the steer axle as AX 1, the drive tandem would consist of AX 2 and AX 3, and the trailer tandem would consist of AX 4 and AX 5. The Bridge Formula measurement for the two tandems would be from the center of AX 2 to the center of AX 5. DPS uses a look-up table to get the allowable weight based on this measurement. Shorter distances reduce the allowable load. DPS personnel do not record the shipment weight per se, but they know the approximate weight of the truck. They subtract this truck weight from the gross weight to get the shipment weight.

The driver information captured by DPS is currently based on visual appearance, and they only record male/female and nationality. DPS records trucks carrying hazardous materials in which case the driver must possess an endorsement for transporting hazmat. For some hazmats such as flammable liquid, there must be an L306 or L406 for the conveyance indicating that it meets federal standards.

DPS at the border (at least at BOTTA) does not record containerized shipment information primarily because they inspect the truck after U.S. Customs has done so. If DPS finds broken or removed seals or if they suspect foul play, they would definitely inspect it. When DPS inspects these same vehicles beyond the border they would be more likely to open a sealed container. There is a place on the form about halfway down where DPS would indicate removed seals. They would record the number of the seal used to re-seal the container.

### *Use of Transponders at BSIFs*

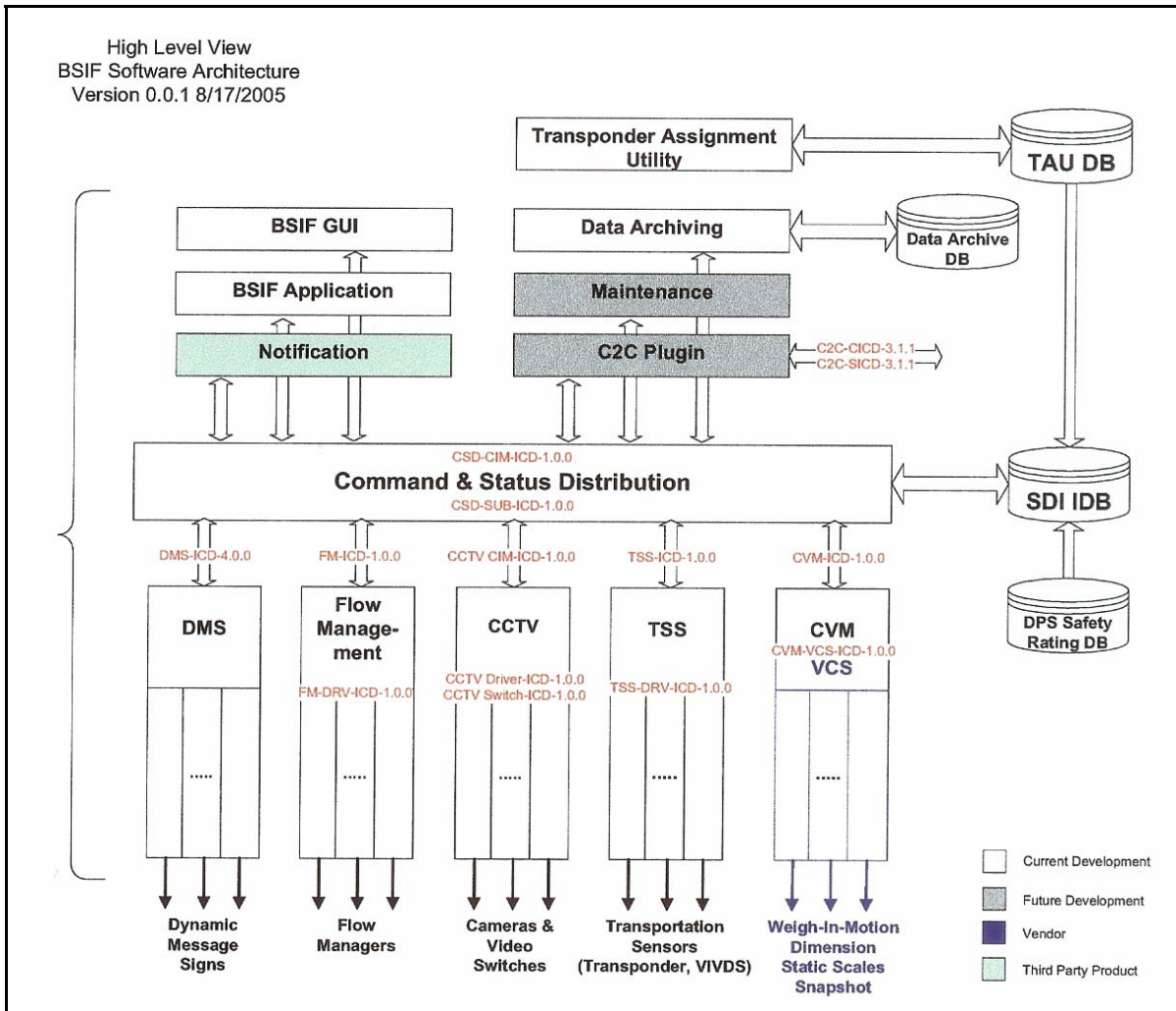
The issuance of transponders to Mexican motor carriers will offer other possible data pertaining to the processing times required to cross the border as well as the potential for real-time information on crossing times. Real-time information will be useful to motor carriers in cases where multiple border crossing opportunities exist or in cases where crossing the border might be delayed until wait times have been reduced.

Figure 5 shows the BSIF architectural overview of the plan being designed by the Southwest Research Institute (SwRI) for the transponder assignment utility (TAU) for the TxDOT BSIF. The TAU will provide users with the ability to enter, modify, and delete motor carriers and vehicles in a centralized database. The TAU will also allow the scanning and association of Radio Frequency Identification (RFID) transponders with the data collected for motor carriers and vehicles. The SwRI plan requires the TAU to interface with a local cache of the TAU database server. Figure 6 is a BSIF TAU Entity Relationship Diagram, which shows some of the information that could be useful in future border crossing studies. The information includes:

- carrier identification,
- TxDOT number,
- U.S. DOT number, and
- license plate number (17).

### *Vehicle Weights*

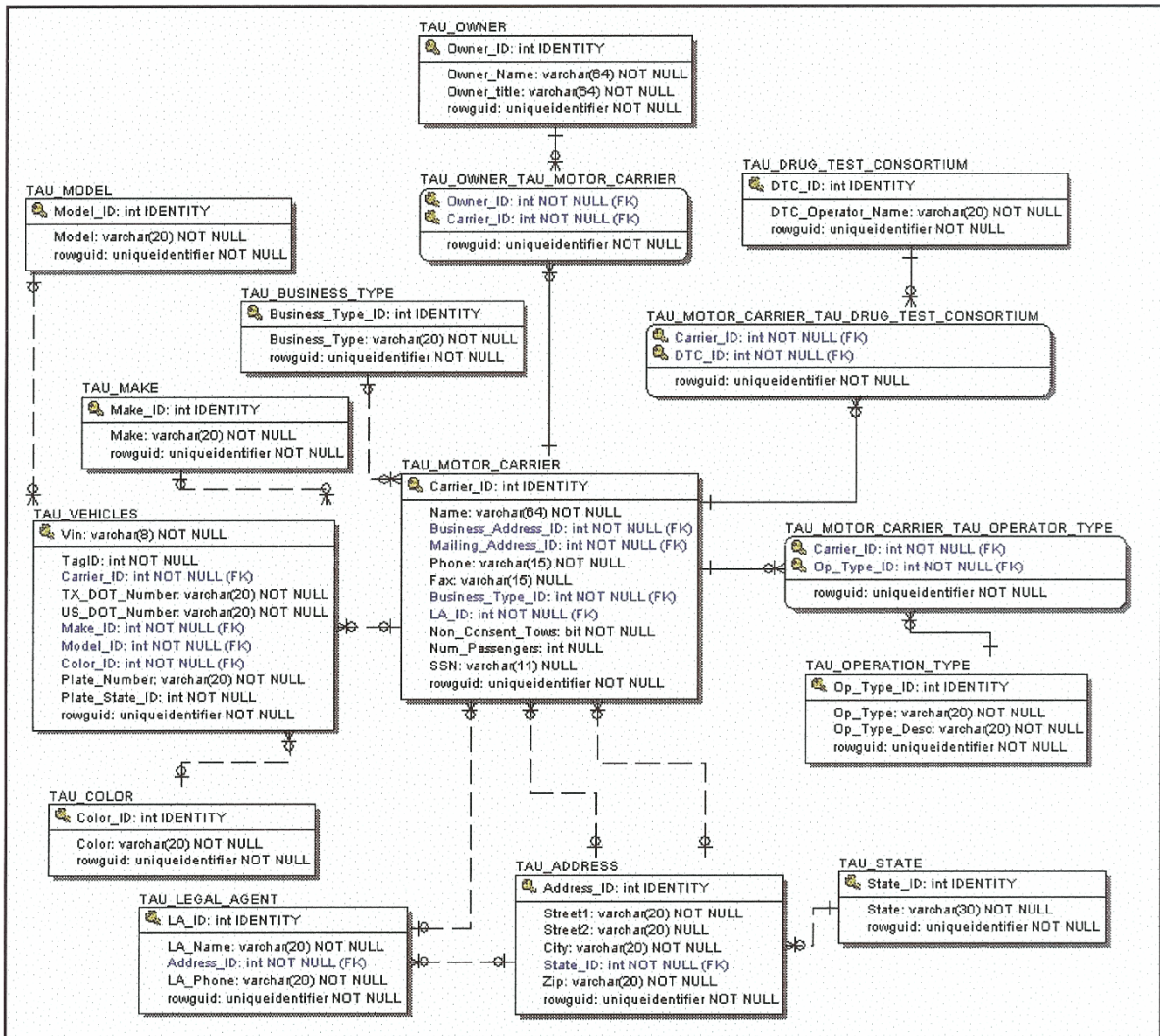
The other major category of data besides safety data collected by DPS at BSIF is weight data. If equipment is working properly, the general plan is to have all trucks cross a weigh-in-motion system before entering the inspection area. Based on the WIM output, DPS makes a decision regarding static weighing (if static scales are available). WIM systems are not sufficiently accurate for issuing weight citations based solely on WIM and thus the need for static weighing. The WIM serves as a screening tool to limit the number of vehicles that need to be weighed statically. In other words, if the WIM results indicate that the truck is probably overweight, DPS would likely decide to weigh it statically.



Source: Border Safety Inspection Facility Transponder Assignment Utility Database Design Document

**Figure 5. BSIF Architectural Overview.**

DPS has the ability to store the static weights and WIM output and make them available to others; however, the DPS has limited resources with which to respond to such requests. The WIM system collects the following data: timestamp, date, axle weight, gross vehicle weight, vehicle classification, axle spacing, Bridge Formula violations, axle group weight violations, and vehicle speed. The static weighing provides similar information on vehicle weights but it is up to enforcement personnel to physically measure the distance between axles to determine Bridge Formula violations (based on the spacing between axles). The requirement for manual measurement is one reason DPS does not weigh all trucks statically. Even though the static weight is accurate for each axle, axle group, and gross vehicle weight, it does not provide the weight of the load. Someone would have to approximate this weight by subtracting an average vehicle (tare) weight.



Source: Border Safety Inspection Facility Transponder Assignment Utility Database Design Document  
**Figure 6. BSIF Transponder Assignment Utility Entity Relationship Diagram.**

## TxDOT Surveys

The Texas Transportation Institute is under contract to TxDOT to develop survey questionnaires to gather information along the U.S.-Mexico border as well as elsewhere across the state. [Appendix C](#) contains sample survey forms. These forms and the actual questions asked in the survey are subject to change due to specific needs in each district or other factors.

In 2001, TTI did a statewide border crossing survey for use in the Statewide Analysis Model. The surveys were conducted at border patrol locations, so they did not include drayage vehicles. In 2002, TTI did a survey in Laredo, which involved all inbound

commercial and non-commercial vehicles. In 2003, TTI developed and carried out an El Paso origin and destination survey. Surveyors asked what the cargo was on the truck and its next destination (not necessarily final destination). There were no weight data acquired in that survey (weight would have been the cargo weight). TTI also did the immediate Laredo area external survey. In 2004, TTI surveyed the lower Rio Grande Valley—Cameron and Hidalgo counties—including commercial and non-commercial vehicles and, in this case, determined cargo weight by asking the driver. For trip purpose, Laredo and El Paso surveys included gross vehicle weight. In addition to what TTI was planning to collect, Cambridge Systematics, Inc. was surveying 12 border stations to update TxDOT’s NAFTA report; their surveys included questions about origin-destination and weights. TxDOT hires TTI and others to collect similar data and information on an ongoing basis.

TTI was redoing the border survey in 2006 and was including weight as one of the survey questions. Before conducting the survey, TTI developed a Request for Proposal (RFP) to hire a sub-contractor. Research Project 0-5339 could benefit from this effort by the data that will become available. The survey, which included over 50 sites (daylight only) including state POEs, was scheduled to finish in the summer of 2006. The TTI Research Supervisor noted that, if needed, items could be added to the list of questions. For example, if Project 0-5339 needs tire pressure collected, project personnel would have to provide the people and equipment to do it within the available time constraints. The survey that TTI conducts takes about 4 to 6 minutes per vehicle, so other data collection would need to occur within that timeframe. Using the tire pressure example, there might not be time to check tire pressure on all tires, so the research would collect only a sample of tires on each vehicle.

In summary, the surveys conducted by TTI and selected sub-contractors cover both border areas and interior sites across Texas. They are not conducted along the international border every year but they would be useful sources of data related to motor carrier activity and origin and destination type data. The survey interval for the border might be two to five years, but results could be supplemented by other sources to help fill in intervening year data.

### **Other Data Collection Sites (Saturation Counts)**

TxDOT’s Transportation Planning and Programming Division (TPP) is responsible for collecting count, classification, and weight data from around the state and along the U.S.-Mexico border. TxDOT collects about 82,000 traffic counts each year to support state,

regional, and local transportation planning activities (18). TPP also prepares and makes available to the public annual district traffic maps, which show annual average daily traffic counts on TxDOT system roadways. These maps allow for trucks and seasonal variations. In addition, TPP is responsible for urban saturation counts and maps resulting from those counts. These maps show annual daily traffic counts on the TxDOT system, on county roads, and on city streets on a five-year cycle. These volumes are not adjusted for trucks or seasonal variations.

These TPP data could be useful to other agencies or for other purposes within TxDOT such as monitoring commercial vehicle activity at each POE along the border to determine year to year growth patterns. The data might reflect a need for changes in POE hours of operation or adjustments in the programs operated by others such as FAST. Even though the data would not be useful for tracking these vehicles to establish origin-destination trends, for example, it could be helpful in establishing the magnitude of commercial vehicle activity in the border region and comparative trends from one POE to another.

## **INFORMATION COLLECTED AT THE LOCAL LEVEL**

The Texas-Mexico border is currently served by 14 international commercial vehicle crossings. All of these bridges, except for the Bridge of the Americas in El Paso, are tolled. The northbound toll is collected on the Mexican side of the border, and most of the collection is performed by CAPUFE (Caminos y Puentes Federales de Ingresos y Servicios Conexos). CAPUFE keeps record of the number of vehicles that cross from Mexico. The information is classified as passenger operated vehicles and commercial vehicles. Southbound tolls are collected in the U.S. by the bridge operators with the same type of vehicle classification.

## **INFORMATION COLLECTED IN MEXICO**

### **Statistic Field Study of Domestic Road Transportation**

The Mexican Ministry of Communications and Transport (SCT) performs annual commercial vehicle surveys along the Mexican road network. The 2004 report (19), which is the latest available, presents data that were captured in six survey stations. A statistical analysis of the data collected is performed analyzing the following characteristics:

- vehicle information (classification, model, year, gross vehicle weight);
- freight characteristics (type and weight); and
- trip characteristics (origin and destination).

The 2004 report includes a comparative analysis of the information obtained in each of the previous years (1991–2003). The number of stations has been increasing since this field work started, from 3 in 1992 to 27 in 1994. In 2003, six survey stations were located on roads in Mexico’s central region.

### **Concluding Remarks: Opening of the Border**

Under NAFTA, the United States agreed to phase-out restrictions on cross border passenger and cargo services beginning in 1994, with the lifting of restrictions on charter and tour bus operations. The United States delayed the opening of the border states for cross border trucking in 1995, and subsequently postponed the implementation of provisions allowing Mexican carriers to operate regular route cross border bus services and cross border truck services throughout the country. In February 2001 a NAFTA dispute settlement panel ruled that the blanket exclusion of Mexican trucking companies from the United States violated U.S. NAFTA obligations.

Following efforts by the Bush Administration to bring the U.S. into compliance with the dispute panel’s ruling, Congress, through the DOT Appropriations Act for fiscal year 2002, set conditions for Mexican motor carrier operations in the United States. In March 2002, the U.S. Department of Transportation published a series of rules that fulfilled the congressionally imposed conditions.

Although restrictions on Mexican motor carriers pursuant to NAFTA were lifted, litigation delayed full implementation of the land transportation access liberalization provisions. On June 7, 2004, the U.S. Supreme Court in *DOT v. Public Citizen* reversed a decision of the U.S. Court of Appeals for the Ninth Circuit that had set aside on environmental grounds FMCSA’s application and safety monitoring regulations for Mexican motor carriers seeking to operate throughout the United States.

The action by the U.S. Supreme Court cleared the way for the United States to implement its NAFTA obligations. Since then the DOT has aggressively attempted to engage Mexico on a timetable for implementation and to ascertain requirements for interested U.S. companies to make application for Mexican operating authority.



Over 700 Mexico-domiciled motor carriers have applied for authority to operate beyond the U.S. border commercial zones. By contrast, due both to a lack of information concerning application procedures and a lack of interest, the DOT is not aware of any U.S. trucking or bus companies that have applied to conduct operations in Mexico. The preferred course of U.S. trucking companies appears to be to simply buy existing Mexican carriers to do their Mexican operations rather than engaging U.S. equipment and drivers in point-to-point cross border services.

Despite this interest from one part of the commercial sector in Mexico, by far the larger component of the Mexican trucking industry, represented by the Camara Nacional de Autotransporte de Carga (CANACAR), has lobbied the government on behalf of its members to maintain the status quo, fearing that, if allowed into Mexico, U.S. companies will be much more competitive and force large-scale loss of market share by the Mexican companies.

A meeting took place on March 24, 2006, between U.S. and Mexican officials, where Mexico expressed concerns about procedures for the conduct of inspections in Mexico and has been looking for clarity on the scope of operations that its companies may perform both under NAFTA's cross border access and investment provisions. These discussions are ongoing and no specific timeframe has been established for implementation.

Since few formal investigations into the characteristics of Mexican long-haul trucking equipment have been undertaken, it is time to prepare for the potential infrastructure impacts of Mexican trucks operating throughout Texas. This need requires the collection of the following types of vehicle data:

- axle configuration,
- wheel configuration,
- gross vehicle mass,
- axle and wheel loads,
- tire types,
- tire inflation pressures, and
- suspension types.



## **CHAPTER 4: DATA NEEDS**

Between January and June of 2006, the CTR research team interviewed 14 individuals from seven TxDOT divisions and four districts to identify the NAFTA truck-related data and information required by TxDOT for transportation planning and infrastructure management. For the purpose of this study, a NAFTA truck was defined as a commercial vehicle coming from or going to Mexico. This section of the report discusses the survey methodology and major findings.

### **SURVEY METHODOLOGY**

As mentioned, the objective of the survey was to identify the NAFTA truck data and information used and needed by TxDOT for transportation planning and infrastructure management. The Project Monitoring Committee (PMC) provided the research team with a list of key personnel in TxDOT that could provide insight into the uses and needs for NAFTA truck data. The research team subsequently conducted telephone interviews with individuals from the following divisions and districts:

- Motor Carrier Division,
- Traffic Operations Division,
- Government and Business Enterprises Division,
- Bridge Division,
- Travel Division,
- Design Division,
- Maintenance Division,
- Pharr District,
- San Antonio District,
- Laredo District, and
- El Paso District.

At the direction of the PMC the research team did not interview staff from the Transportation Planning and Programming Division and major Metropolitan Planning Organizations (MPOs) as most of the key personnel interested and involved with truck travel

data were interviewed in 2003 as part of TxDOT research project 0-4713. For TPP and the MPOs this report thus presents the information gathered during the interviews in 2003. Telephone interviews were conducted to minimize respondent burden and to ensure that an appropriate representative of each division and district was interviewed. Figure 7 is a text box containing the questionnaire used to survey the key TxDOT personnel listed by the PMC.

**Integration and Consolidation of Border Freight Transportation Data for Planning Applications and Characterization of NAFTA Truck Loads for Aiding in Transportation Infrastructure Management**

1. Do you use NAFTA truck information?
  - a. If yes, how do you use NAFTA truck information?
  - b. What specific NAFTA truck data do you use?
  - c. How often do you need these data?
  - d. Where do you get the NAFTA truck data that you use?
  - e. Do you collect any NAFTA truck data?
  - f. In your opinion, what are the strengths and weaknesses of the current NAFTA truck information available to you?
  - g. Do you need any other NAFTA truck data variables? If yes, what other information do you need?
2. Do you have a need for NAFTA truck data?
  - a. If yes, what NAFTA truck data variables do you need?
  - b. How often will you need these data?
3. Within TxDOT, who are the typical users of NAFTA truck data? [Functional Titles such as Traffic Forecasters, Information Officers, Financial Analysts, Transportation Planners, District Engineers]
4. Can you name some of the individuals in your office (district) who use NAFTA truck data? [List name(s)]

**Figure 7. Questionnaire for Key TxDOT Personnel.**

## INTERVIEW FINDINGS

### Use of NAFTA Truck Information

Table 1 and Table 2 summarize the interview information based on questions about whether interviewees use NAFTA truck information and what specific NAFTA truck data they use. Table 1 shows that most of the TxDOT divisions interviewed do not use NAFTA truck data. The only time that the Maintenance Division used NAFTA truck data was in the design of the border inspection facilities when they used the number of trucks crossing the U.S.-Mexico border. The Motor Carrier Division does not use NAFTA truck data, but can access the safety and inspection records (of DPS) and licensing and insurance information via the Safety and Fitness Electronic Records System (SAFER) database. Having said that, registration data of Mexican carriers that can operate in the commercial zones are captured by the Motor Carrier Division and have been used on occasion to project revenues and staffing requirements, as well as made available to the public due to an open records request. The Design Division does not use NAFTA truck data for design purposes, but if it is found that Mexican truck characteristics (e.g., axle loads) are different, Division personnel may be re-visiting the design criteria<sup>1</sup> used.

Table 1 also includes the interview findings with the Transportation Planning and Programming Division and several of the large MPOs in Texas (e.g., El Paso MPO, Houston-Galveston Area Council, North Central Texas Council of Governments) that were conducted during TxDOT research project 0-4713. The information does not apply to NAFTA truck data specifically. During project 0-4713 researchers asked interviewees about their needs for truck data in general—not NAFTA truck data specifically.

Table 1 shows that TPP used the following truck data:

- number of trucks (including vehicle classifications),
- truck origins and destinations,
- commodity, and
- axle weight.

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<sup>1</sup> One of the design criteria used for highway design purposes is the percentage truck traffic in the traffic stream.

Similarly, MPOs used the following truck data:

- number of trucks (including, truck trip rates and vehicle classification counts),
- truck origins and destinations, and
- commodity data.

**Table 1. NAFTA Truck Data Used by TxDOT Divisions Interviewed.**

Respondent	NAFTA Data Use		NAFTA Truck Data Variables				
	No	Yes	Number Crossings per Truck	Truck Registrations	Truck Origins and Destinations	Commodity	Axle Weight
Government and Business Enterprises	✓						
Traffic Operations	✓						
Maintenance		✓	✓ *				
Bridge	✓						
Design****	✓						
Motor Carrier	✓			✓ **			
Transportation Programming and Planning***			✓ (Also, vehicle classification counts)		✓	✓	✓
Metropolitan Planning Organizations***			✓ (Also, truck trip rates, vehicle classification counts)		✓	✓	
<p>* One-time use for design of border inspection facilities.</p> <p>** Can access safety and inspection records (DPS), licensing, and insurance information via SAFER database. Database captures information about Mexican carriers registered to operate in the commercial zones in Texas.</p> <p>*** Not necessarily NAFTA data.</p> <p>**** The Design Division is not currently using NAFTA truck data for design purposes. One of the design criteria used is, however, percentage truck traffic. If the characteristics (i.e., axle loads) of Mexican trucks are found to differ, the results of Phase 2 of this project will be of interest to the Design Division as it may result in the need to re-visit the design criteria currently used.</p>							

Two of the TxDOT districts interviewed indicated that they use NAFTA truck data, specifically the number of trucks crossing the border (Table 2). The Laredo District uses NAFTA data when conducting rail-truck studies and new location (i.e., opening of an intermodal facility or new border port of entry) studies. However, for general planning purposes a truck is considered a truck. In El Paso, data on the number of NAFTA truck crossings have been used to design the Border Safety Inspection Facilities (e.g., the number of lanes or number of inspection bays required) and to calculate a number of performance measures, such as the number of crossings per minute and queue length. Since El Paso is in non-attainment this information has been useful to inform environmental concerns relating to idling emissions and the associated impacts on air quality. Also, the number of truck crossings is obtained monthly from the Bureau of Transportation Statistics and CBP. El Paso evaluates the information on a monthly basis to (a) determine the trend (i.e., increasing or decreasing) in the number of truck crossings, (b) determine which bridges are used most often, and (c) compare the truck crossing numbers in El Paso with the same numbers for Laredo. A major strength of the data collected is that it is available on a monthly basis and disaggregated by port of entry. However, a major weakness is that the data are limited and that additional variables need to be captured for planning purposes.

**Table 2. NAFTA Truck Data Used by TxDOT Districts Interviewed.**

Respondent	NAFTA Data Use		NAFTA Truck Data Variables				
	No	Yes	Number of Crossings/ Truck	Truck Registrations	Truck Origins and Destinations	Commodity	Axle Weight
Laredo		✓	✓				
El Paso		✓	✓				
Pharr	✓						

**Need for NAFTA Truck Information**

Table 3 and Table 4 summarize the information gleaned from those interviewed when asked whether they have a need for NAFTA truck data and if so what NAFTA truck data variables they need or would want to have access to. From Table 3 it is evident that the Government and Business Enterprises (GBE) Division and the MPOs have indicated the

largest need for NAFTA truck data and truck data (in general), respectively. However, it should also be pointed out that the required level of data detail varies substantially between GBE and the MPOs. GBE is interested in the data variables listed in [Table 3](#) in order to:

- explore inspection standards, weight, and permitting issues surrounding Mexican trucks operating into Texas once the border opens;
- explore congestion, air quality, and safety and security concerns at major border crossings;
- provide Commissioners or the Executive Director with NAFTA information to be used in, for example, testimonies;
- pursue national funding (e.g., for the BSIFs) for infrastructure since Texas is an important facilitator of NAFTA trade. GBE indicated that ideally the NAFTA variables need to be updated at least annually to be considered for appropriations and every six years for pursuing federal funding during re-authorization.

GBE would also be interested in gaining insight into how Texas' transportation infrastructure could be impacted once the border opens to Mexican trucks operating beyond the current commercial zones. In addition, GBE is interested in obtaining information on NAFTA trade movements, including origins and destinations, by all modes and for each border crossing in Texas. Currently available data on NAFTA movements have not been collected with the transportation community in mind. For example, the U.S. only captures information on incoming trucks (i.e., not outgoing trucks). There are also concerns about inconsistencies between the data collected by Mexico/Canada and the data collected by the U.S. GBE also requires more current data.

The MPOs interviewed used truck data—not necessarily specifically NAFTA truck data—for air quality modeling, to determine the impacts of truck traffic on intersections, intermodal site analysis, to determine the impacts of large truck traffic generators (e.g., the Port of Houston, Alliance), to determine the need for truck express lanes, for grade separation projects, for the design of major corridors (e.g., NAFTA trade corridors), and for capacity enhancement projects. However, the MPOs need disaggregate truck data at the traffic analysis zone (TAZ) level. Also, as can be seen from [Table 3](#), these variables are not necessarily the same as those needed by GBE.



The Traffic Operations Division indicated that they are interested in the mix of trucks in the traffic stream, but that there is no need to distinguish whether the truck is a NAFTA truck. However, the Traffic Operations Division will be concerned if it is found that NAFTA traffic presents a safety risk. The Motor Carrier Division is interested in the number of NAFTA trucks that will operate into Texas to determine how the division’s resources will be impacted.

Finally, the Bridge Division indicated that they need the following NAFTA truck information annually: number of trucks, truck weight, axle weight, and axle spacings. These data variables are needed for load rating bridges (to determine if NAFTA trucks can cross Texas bridges safely), bridge design, and to monitor stresses on certain bridges.

**Table 3. NAFTA Truck Data Needed by TxDOT Divisions Interviewed.**

NAFTA Truck Data Variables	Respondent						
	GBE	TO*	Design	Bridge	MC	TPP**	MPO**
Number of Crossings/Trucks	✓			✓	✓		✓
Commodity	✓						✓
Truck Weight (GWV)	✓			✓			
Axle Weights				✓			
Axle Spacings				✓			
Commodity Value	✓						
Driver Information	✓						
Insurance	✓						
Safety Record (Driver and Company)	✓						
Inspections Passed	✓						
Emissions	✓						✓
Truck Origin	✓						✓
Truck Destination	✓						✓
Truck Routes	✓						✓
Vehicle Classification (Truck Type)							✓
Vehicle Miles Traveled							✓
Time of Day							✓
Truck Peak Hour Travel Percentages							✓

\* Interested in mix of trucks in traffic stream, but do not need to distinguish NAFTA trucks specifically.

\*\* Not necessarily NAFTA data. Also, MPOs need data at a very disaggregate level (i.e., TAZ).

The TxDOT interviewee representing Laredo indicated a need for the NAFTA truck traffic growth rate in an effort to better estimate overall truck traffic growth (Table 4). Also, it was mentioned that if the axle loads of the Mexican trucks operating into Texas once the

border opens differ from U.S. trucks, it would be necessary to distinguish U.S. and Mexican trucks for design purposes. The El Paso interviewee indicated that El Paso has a need for commodity origin, commodity destination, and time of day data. Specifically, truck movement data by time of day (e.g., hour) are required to develop a freight model to explore, for example, diverting truck tonnage to rail. Finally, the Pharr District indicated the need for the number of trucks crossing the border, local truck origin and destinations, truck routes used, and truck weight and size. The respondent from Pharr mentioned specifically that the district does not need commodity origin and destination information. Rather the district is interested in obtaining truck origin and destination information. The district respondent also mentioned that these NAFTA truck data variables are needed on a regular basis to establish trends and are important when designing toll facilities to alleviate bottlenecks.

**Table 4. NAFTA Truck Data Needed by TxDOT Districts Interviewed.**

NAFTA Truck Data Variables	Respondent		
	Laredo	El Paso	Pharr
Number of Crossings/Trucks			✓
NAFTA Truck Traffic Growth	✓		
Axle Weights	✓		
Truck Origin			✓
Truck Destination			✓
Truck Routes			✓
Truck Weight (GWV)			✓
Truck Size			✓
Time of Day		✓	
Commodity Origin		✓	
Commodity Destination		✓	

## TYPICAL USERS OF NAFTA TRUCK DATA

Table 5 summarizes who were indicated as the typical users of NAFTA truck data and how many times the particular user was mentioned. As is evident from Table 6, Transportation Planning and Programming, Traffic Operations, and the Bridge Division were

perceived to be the users of NAFTA truck data. It is thus recommended that a follow-up survey be conducted during Phase 2 of this study with selected individuals from TPP to obtain their input on the use and need of NAFTA truck data specifically.

**Table 5. Typical Users of NAFTA Truck Data.**

<b>Typical Users</b>	<b>Number of Times Mentioned</b>
Texas Transportation Commission	1
Executive Director/TxDOT Administration	1
District Engineers	2
Aviation	1
Bridge	4
Construction	2
Design	1
Environmental Affairs	2
Government Business and Enterprises	3
International Relations Office	2
Maintenance	2
Motor Carrier	3
Public Information Office	2
Traffic Operations*	5
Transportation Planning and Programming*	6
Vehicle Title and Registration	2

\* Includes transportation planners and traffic engineers at the districts.

## **CONCLUDING REMARKS**

Some of the respondents (e.g., GBE, Bridge Division) indicated a definite need for comprehensive, current, and accurate NAFTA data, while others mentioned that there is a limited understanding of what NAFTA information is available and how to access and use what is available. At the moment, truck traffic crossing the border is in a sense metered, but a number of respondents felt that a better understanding of NAFTA truck movements will be required when the border opens and Mexican trucks are allowed to operate beyond the current commercial zones.



## **CHAPTER 5: GAP ANALYSIS**

### **INTRODUCTION**

The Gap Analysis compared the needs information gathered from the survey of TxDOT divisions and districts with the data and information available from the various sources. [Chapters 2 and 3](#) contain discussions of information sources, while [Chapter 4](#) summarizes data needs. Gaps are lapses in the data availability that could be either complete lack of a data source or data that are inaccessible either through security concerns or lack of resources to serve the various needs.

### **DATA SOURCES VERSUS DATA NEEDS**

[Table 6](#) summarizes the data sources and data needs. The table has the following major categories (indicated by shading in the table):

- carrier information,
- conveyance,
- driver information, and
- trip characteristics.

The first column on the left of the table lists the available information, followed by the source information in the second and third columns from the left. Under the major Source heading are two subheadings entitled Accessible and Not Accessible. To the right of the source columns are matched items that are required based on the needs list. Blank cells indicate data that are apparently not needed; however, persons interviewed may not have known that some of this information existed. Therefore, there are many blank cells indicating information that is available (although maybe not accessible) but not indicated as needed.

The Accessible Source column contains many cells with DPS as a source, but as indicated elsewhere, DPS is not staffed to be able to handle numerous requests even though the agency has an abundance of useful data. In the case of CBP, the data are shown as Not Accessible, but, again indicating the CBP could be a rich source of data if the data were accessible. The last two columns are Needs that are either Matched or Not Matched. Items in the Matched column indicate that the need is matched by a source. The Not Matched items

are gaps, indicating data needed but no (accessible) source. Because the list of available information contains more detail than the information requirements, it may appear that there is a substantial amount of information that is available but not required. This is not the case, as the requests for information were not made on a detailed level.

**Table 6. Data Sources versus Data Needs.**

<b>Available List</b>	<b>Source</b>		<b>Required (from Needs List)</b>	
<b>Carrier Information</b>	<b>Accessible</b>	<b>Not Accessible</b>	<b>Matched</b>	<b>Not Matched (Gaps)</b>
Carrier Name	FMCSA, DPS	CBP	--	--
SCAC #		CBP	--	--
USDOT #	FMCSA, DPS	CBP	--	--
TxDOT #	DPS	CBP	--	--
Insurance Info.	FMCSA	--	Insurance	Safety Record (driver & carrier)
Nationality of Owner	FMCSA	CBP	--	Inspections Passed
<b>Available List</b>	<b>Source</b>		<b>Required (from Needs List)</b>	
	<b>Accessible</b>	<b>Not Accessible</b>		
<b>Conveyance</b>			<b>Matched</b>	<b>Not Matched (Gaps)</b>
Truck (Tractor) License Plate #	FMCSA, DPS	CBP	--	--
Issuing State	FMCSA, DPS	CBP	--	--
Tractor VIN	FMCSA	CBP	--	--
Tractor Make	FMCSA, DPS	CBP	--	--
Tractor Model/Year	FMCSA	CBP	--	--
Tractor Registration	FMCSA, DPS	--	--	--
Tractor Fuel Tax	FMCSA	--	--	--
Trailer License Pl #	DPS	CBP	--	--
Issuing State	DPS	CBP	--	--
Trailer Identification	FMCSA	CBP	--	--
Trailer Registration	DPS	CBP	--	--
Gross Weight	DPS, TxDOT	--	Truck Weight (GVW)	--
Group Weight	DPS	--	Axle Weights	Axle Spacings
Truck Types	DPS, TxDOT	--	Vehicle Class	--
Fuel Type	TxDOT	--	--	Emissions
Transponder	--	CBP	--	--
Hazardous Materials Indicator	DPS	CBP	--	--
Conveyance Empty Indicator	DPS	CBP	--	--
Equipment (Trailer) Length	--	CBP	--	--

**Table 6. Data Sources versus Data Needs (continued).**

Available List	Source		Required (from Needs List)	
	Accessible	Not Accessible	Matched	Not Matched (Gaps)
<b>Driver Information</b>			<b>Matched</b>	<b>Not Matched (Gaps)</b>
Name	FMCSA	CBP	Driver Information	--
Date of Birth	FMCSA, DPS	CBP	--	--
Contact Information	FMCSA, DPS	CBP	--	--
CDL #	FMCSA, DPS	--	--	--
CDL Country of Issuance	FMCSA	CBP	--	--
CDL State of Issuance	FMCSA, DPS	CBP	--	--
Citizenship	FMCSA, DPS	CBP	--	--
Employment/Criminal History	FMCSA	CBP	--	--
HazMat Authorization	DPS	CBP	--	--
<b>Available List</b>	<b>Source</b>		<b>Required (from Needs List)</b>	
<b>Trip Characteristics</b>	<b>Accessible</b>	<b>Not Accessible</b>	<b>Matched</b>	<b>Not Matched (Gaps)</b>
Trip Purpose	--	--	--	Vehicle Miles Traveled
Truck Crossing Volume	TAMIU	--	Number of Crossings/ Trucks	Time of Day
Commodity	BTS, DPS, Reebee	CBP	Commodity	Truck Peak Hour Travel %
Origin	BTS, DPS, Reebee	CBP	Truck Origin	
Destination	BTS, DPS, Reebee, TxDOT	CBP	Truck Destination	NAFTA Truck Traffic Growth
U.S. Port of Entry	DPS	CBP	--	--
Routing	BTS, TxDOT, Reebee	--	Truck Routes	--
Shipment Weight	BTS, DPS, Reebee	CBP	--	--
Shipment Value	BTS, Reebee	--	Commodity Value	--
Containerized Shipment	BTS	--	--	--
Mode of Transport	BTS, DPS, Reebee	CBP	--	--
Hazardous Materials Code	DPS	CBP	--	--

In the carrier Information category, the first “gap” is “Safety Record (driver and carrier).” The Texas DPS monitors the safety record of drivers and the carrier overall through Compliance Reviews. The FMCSA keeps track of the safety record on carriers but not on individual vehicles. The best source for this information might be insurance companies if they are willing/able to divulge the information since they have to know the safety record on

drivers to provide coverage. Larger carriers are often self-insured so a public agency like DPS or FMCSA would probably be the only source. The number of “Inspections Passed” is the next gap. Both DPS and FMCSA record inspections failed but neither agency records those in which no out-of-service violations occurred.

In the Conveyance category, DPS measures truck axle spacing to determine Bridge Formula violations during static weighing but does not record the measurements. Not all trucks are weighed statically, so DPS would not measure axle spacing on all trucks. Another potential source of this measure is weigh-in-motion equipment, which is installed near each major border crossing. However, storing these data would require a change by DPS to make it available.

Vehicle emissions is neither measured nor stored on a regular basis at border crossings. This is a topic of growing interest, especially in or near non-attainment areas and may be measured in the future.

Driver Information is required by GBE, and CBP collects this information for every incoming trip from Mexico. DPS and FMCSA have the information available on a database but do not keep records on the drivers that cross into the United States unless the shipment is selected for secondary inspection for safety concerns.

The Trip Characteristics category has the most variables that are not matched. Based on this research, vehicle miles traveled (VMT) for trucks is not currently measured directly along the border. Perhaps the best estimate would involve using vehicle classification data collected along the border to determine the number of trucks (versus non-trucks) at key locations. Applying the appropriate values of speed to these counts would result in an estimate of the truck VMT.

The final gaps are closely related; they are time of day, truck peak-hour travel, and NAFTA truck traffic growth. Texas A&M International University (TAMIU) maintains a database of annual truck crossing activity based on CBP data, but it is not maintained on a time of day basis. Annual truck growth can be easily calculated based on annual values available from TAMIU; however, there is only limited uncorroborated information on peak-period demand at each border crossing.

It is important to note that even though information is accessible, especially from FMCSA and DPS, data are not collected on a regular basis for every single trip and the



information is stored in databases that are not prepared to produce the summary reports suitable for transportation purposes.

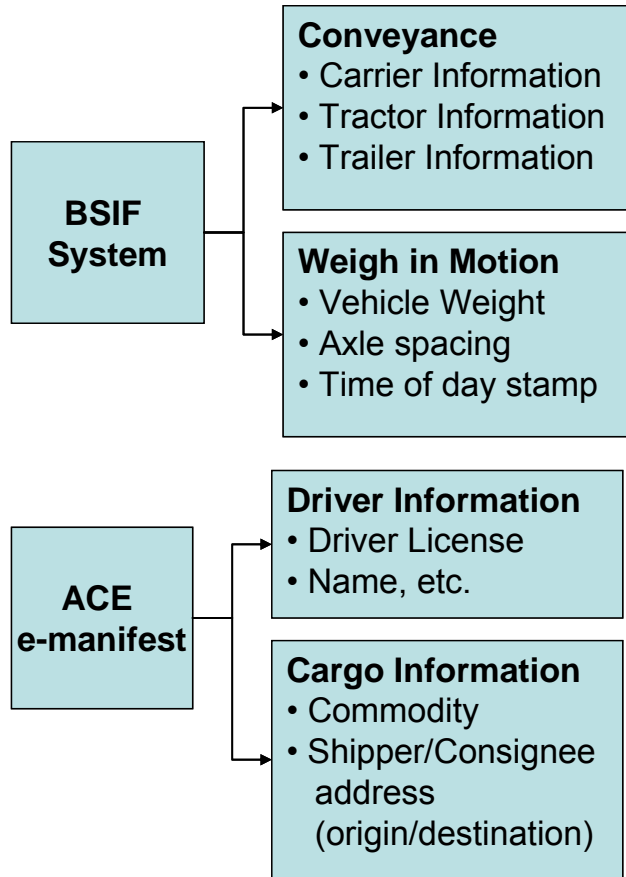


## **CHAPTER 6: PROPOSED TRUCK TRANSPORTATION DATA COLLECTION SYSTEM**

Based on the results of the Gap Analysis, it is clear that there is substantial information that is “potentially available” that could be used by TxDOT. However, this information is not accessible to use on a constant basis. An ideal system would be one that assembles the information already collected by various agencies and organizes it in a way that is useful for transportation planning purposes.

In the overall international truck movement process, the border crossing provides a very good opportunity to collect the information as it is a point in the supply chain where information on carrier, conveyance, driver, and cargo is captured for safety and security reasons. The proposed system, therefore, should be based on information captured at this point.

The proposed structure of the integration system follows the same concept of the ACE/ITDS system in which the required transportation information could be obtained from already existing databases. The two sources of data at the border crossing are the ACE e-manifest that is managed by U.S. Customs and Border Protection, and the Border Safety Inspection Facility data collection system that is being developed and implemented by the Texas Department of Public Safety. Conveyance information could be obtained from the BSIF system. This is recommended as it would be easier to reach an agreement with DPS to share information with TxDOT. Cargo- and driver-related information would need to come from the ACE e-manifest through an agreement with CBP. The proposed information integration system is presented in [Figure 8](#).



**Figure 8. Proposed Truck Information Integration System.**

The proposed system assumes that the BSIF data collection system is in operation with every single truck that crosses the border having a transponder with the vehicle information and that the weigh-in-motion equipment is installed at the BSIF, with every vehicle weighed as it enters the inspection station. The WIM will capture and store the information of the truck and the time stamp so that the weight could be associated with a specific tractor, as the transponder number information will also be stored as the vehicle enters the inspection station.

The ACE e-manifest system is being implemented, and the plan is to share information with federal agencies. The Federal Motor Carrier Safety Administration is one of the agencies that would be receiving information from e-manifest. An agreement could be reached to share information with DPS and TxDOT for trucks entering the United States. Commodity information is declared by the importer. The origin-destination information of

the cargo is difficult to obtain, but a proxy could be derived as using the zip code information from shipper and consignee.

## **IMPLEMENTATION RECOMMENDATIONS**

As mentioned earlier, most of the information that is needed is already being collected by various agencies, mainly U.S. Customs and Border Protection, and DPS will start collecting information soon through the BSIF system. The development and implementation of the ACE/ITS system presents a good opportunity for TxDOT to negotiate access to the information that will be disseminated to all federal agencies.

TxDOT would need to develop specific software to be able to produce reports and periodic information that could be used by all the key stakeholders that expressed a need for NAFTA truck information. Once the proposed system is in operation, it could be enhanced by adding other data collection points within the state. This will complement the data collected at the border with more inland data points that could be used to develop a more accurate picture of truck flows in the state that originate or terminate at the border. The system could also be expanded and modified to be implemented at other large truck generators like ports and distribution centers.



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## **APPENDIX A: PAST TXDOT BORDER TRADE AND TRUCK EFFORTS**

### **Statewide Analysis Model**

The Texas Department of Transportation has funded the development of a Statewide Analysis Model to assess the flows of passengers and freight on the state-maintained roadways. The objective of the SAM is to provide a regional model for the state of Texas that focuses on intercounty travel patterns. Specifically, the freight component aims to:

- provide a clear picture of freight movements on Texas' transportation system,
- determine the impact of freight on Texas' road infrastructure (e.g., bridges and pavements) and the implications in terms of funding,
- evaluate strategies for improving freight mobility,
- forecast system performance, and
- improve the safety and security performance of the road network.

### *Statewide Analysis Model's Data Requirements and Structure*

The freight component of the model uses county-to-county commodity data (tonnage and number of loads) captured in the Reebie (now Global Insight) TRANSEARCH database. Approximately 4600 internal Traffic Analysis Zones are included in the SAM, as well as 142 external TAZs. The county-to-county truck tonnage is disaggregated to the TAZs using employment data. SAM can display the statewide truck traffic flows for 11 commodity categories (see [Table A-1](#)) for a base and forecasted year. An embedded TransCAD function assigns the truck tonnage data to the network.

The SAM thus requires commodity truck tonnage (i.e., weight), flow (e.g., number of loads), and value for 11 aggregated commodity groups and empty trucks for the following origins and destinations:

- Texas counties-to-states (internal–external),
- Texas county exports-to-Mexican/Canadian provinces (internal–external),
- States-to-Texas counties (external–internal),
- Texas county imports-from-Mexican/Canadian provinces (external–internal),
- Texas county-to-county flows (internal–internal), and

- Texas through flows (external–external).

**Table A-1. Aggregated Commodity Categories Included in SAM.**

Commodity Group	Commodity Categories
Agriculture	Live animals and live fish; cereal grains; other agricultural products; animal feed and products of animal origin, n.e.c.
Food	Meat, fish, seafood, and their preparations; milled grain products and preparations, and bakery products; other prepared foodstuffs and fats and oils; alcoholic beverages; tobacco products
Building Materials	Monumental or building stone; nonmetallic mineral products; base metal in primary or semifinished forms and in finished basic shapes; articles of base metal
Raw Material	Natural sands; gravel and crushed stone; nonmetallic minerals, n.e.c.; metallic ores and concentrates; coal
Chemicals/Petroleum	Gasoline and aviation turbine fuel; fuel oils; coal and petroleum products, n.e.c.; basic chemicals; pharmaceutical products; fertilizers; chemical products and preparations, n.e.c.
Wood	Logs and other wood in the rough; wood products; pulp, newsprint, paper, and paperboard; paper or paperboard articles; printed products; furniture, mattresses and mattress supports, lamps, lighting fittings
Textiles	Plastics and rubber; textiles, leather, and articles of textiles or leather
Machinery	Machinery; electronic and other electrical equipment, components and office equipment; motorized and other vehicles (including parts); transportation equipment, n.e.c.; precision instruments and apparatus; miscellaneous manufactured products
Miscellaneous	Waste and scrap; mixed freight
Secondary	Warehouse and distribution; truck intermodal drayage; truck air drayage
Hazardous	Waste hazardous materials; hazardous materials and substances

TxDOT Project 0-4713 *Development of Truck Travel Database in Texas: Identifying Sources and Methodology* recommended a robust methodology to TxDOT planners for collecting and maintaining intercounty and interstate truck travel data in a format that can be used in the SAM. As part of this research study, the CTR research team:

- Surveyed state departments of transportation to identify the freight data sources used and to determine how they conduct statewide freight modeling. In addition, the CTR research team reviewed more than 50 private and public freight data sources as part of an extensive literature review to determine which of the relevant variables are captured by publicly available data sources.

- Interviewed TxDOT and MPO transportation planners<sup>2</sup> to discuss the freight data used and needed in travel demand forecasting models in Texas. In addition, various shipper associations, trade associations, trucking interest groups, and other stakeholders were interviewed to understand any objections toward sharing (possibly proprietary) truck travel information with TxDOT.
- Developed a truck travel database structure that facilitates the storage and analysis of truck travel data for the SAM.
- Reviewed the robust regression and gravity models that other U.S. states have used to estimate county-level truck flows from available commodity flow and socioeconomic data. The research team subsequently proposed a multinomial logit (MNL) approach to estimate county-level truck travel data from the publicly available commodity flow survey (CFS) and IMPLAN data.
- Reviewed available primary freight data collection methods and discussed two data collection approaches—i.e., truck intercept surveys and truck carrier participation—that showed the most promise of providing TxDOT with the data needed for the SAM over the medium term. In addition, the research team listed a number of national initiatives for collecting freight data that might result in more robust truck data becoming available to state departments of transportation over the intermediate long term (i.e., five to ten years).
- Provided an overview of the various freight-forecasting techniques available, ranging from simple growth factors for short-term forecasts to more complex models for long-term freight forecasts. Finally, the research team highlighted two approaches for forecasting truck data for the SAM.

It is necessary to emphasize that the CTR research team used the CFS data to calibrate MNL models to estimate Texas county-to-county truck flows, Texas county-to-state

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<sup>2</sup> Researchers conducted a series of telephone and in-person interviews during November and December of 2004 to acquire this input. Among other things, this survey asked what truck data are collected or are available from existing sources for Texas. Three urban area MPOs in Texas do their own travel demand modeling, one of which—El Paso—is located in the border region. An El Paso MPO spokesperson stated that truck movements are the weakest component of the model because it is the least disaggregate and it oversimplifies truck movements in the region. To address the deficiency, the MPO funded a commodity flow survey in 2004 in the El Paso/Juarez area.

truck flows, and state-to-Texas county truck flows for the SAM. The research team did not attempt to estimate truck flows to and from Mexico.

### **Development of a Comprehensive Urban Commodity/Freight Movement Model for Texas**

TxDOT Project 0-4430 *Development of a Comprehensive Urban Commodity/Freight Movement Model for Texas* developed a “disaggregation model for integrating the Statewide Analysis Model (SAM) commodity estimates into the urban framework and a ‘bottom-up’ model for estimating the commodity movements internal to the urban area that occur in addition to statewide movements (20).” In creating these models, urban area planning can improve modeling of freight and commodities within the urban area travel demand modeling framework.

The project developed a post-processing model that utilizes SAM commodity type freight movement data. The urban commodity/freight generation model was “developed using data from the commercial vehicle and work place surveys conducted in urban areas as part of the state travel survey program (20).”

### **El Paso MPO Study**

The *Camino Real Corridor Border Improvement Plan* (BIP study) is an example of periodic studies conducted with useful information pertaining to Project 0-5339, but it is basically a snapshot rather than a source of ongoing data and information. This study began in 2004 and had generated a draft report by 2006 (21). It focused on the El Paso region with major emphasis on border crossing issues. It used a series of stakeholder meetings and surveys, combined with an in-depth analysis of available secondary data sources and studies to develop recommendations related to the movement of people and freight in the ensuing 20-year period.

The BIP study objectives were:

- Provide an overview of the existing conditions at the El Paso area POEs such as traffic volume and vehicle classification counts, and commodity flow patterns.
- Create a freight flow model and border crossing choice model that could facilitate examination of various scenarios such as POE volume increases, POE efficiency initiatives, infrastructure upgrades, and new POE development. These

models allow testing the feasibility and effectiveness of potential strategies and policies designed to increase POE efficiency.

- Develop strategies to increase trans-border mobility and efficiency. Recommendations will be based on stakeholder interviews along with data and survey information gathered as part of the BIP study and the results of the freight and border modeling efforts.
- Develop recommendations pertaining to land use in the immediate vicinity of the POEs that will address identified issues and accommodate recommended strategies. This effort will result in land use planning guidelines promoting more efficient utilization of POEs.

The BIP study had two distinct elements of POE traffic—commercial traffic (freight) and non-commercial traffic (passenger vehicles and pedestrians). The study examined and modeled freight movement in greater detail throughout the El Paso MPO region and beyond. The El Paso economy is driven, in large part, by the need for efficient freight mobility at the POEs and beyond. The study’s focus on freight included a comprehensive Freight Model Overlay, which was driven by POE commercial traffic surveys detailing transborder freight movements northbound and southbound. Primary information identified in the freight survey included origin and destination locations, vehicle type, and commodity type.

### **Trans-Texas Corridor**

The Trans-Texas Corridor is an adopted concept of wide multimodal corridors for moving people and goods across the state of Texas. These corridors would move people and freight faster and safer than the existing congested routes. With Texas playing a major role in the movement of international shipments, both north-south U.S.-Mexico movements and east-west transcontinental movements, the Trans-Texas Corridor is perceived to relieve existing congested roadway networks of the major trade movements passing through Texas.

The original concept identified four priority corridor segments, which mostly parallel existing interstate highways:

- I-35, I-37, and I-69 (proposed) from Denison to the Rio Grande Valley;
- I-69 (proposed) from Texarkana to Houston to Laredo;
- I-45 from Dallas-Fort Worth to Houston; and

- I-10 from El Paso to Orange (22).

Construction of any of these corridors depends on private sector involvement to plan, finance, construct, and likely operate and maintain proposed segments. The exact route of any segment will result only after significant public input and the completion of environmental impact studies.

Since the Trans-Texas Corridor concept was released in 2002, two corridors have moved beyond concept. The first closely parallels the I-35 corridor from the Texas-Oklahoma border to Laredo, with a possible connection to Brownsville. The second corridor involves the proposed Interstate 69 corridor from Texarkana through Houston to Texas-Mexican border locations at Laredo and Brownsville.

#### *Trans-Texas Corridor-35 (TTC-35)*

The Trans-Texas Corridor-35 route extends from the Texas-Oklahoma state line to the Texas-Mexico border, basically paralleling Interstate 35. In March 2005, the Texas Transportation Commission signed a Comprehensive Development Agreement (CDA) with Cintra-Zachry to authorize a master development and financial plan for the corridor. Cintra-Zachry will design, construct, and operate the TTC-35 network, which may be built in segments and components over the 50-year concession. The final alignment will be determined by public input and detailed environmental impact analysis, the draft of which was completed in April 2006.

The Tier One Draft Environmental Impact Statement (EIS) selects a preferred alternative that stretches the entire corridor length for further evaluation under the Tier Two EIS process. The Draft EIS used five transportation criteria to measure the performance of each corridor alternative, including average total vehicle flow on Interstate 35, average total truck flow on Interstate 35, total vehicle hours of travel on Interstate 35, average maximum volume/capacity ratio on Interstate 35, and combined travel time between urban regions in the study area (23). The analysis used the Texas Statewide Analysis Model to estimate future vehicular and truck traffic analysis along the corridor.

The No Action Alternative estimates 21,600 average daily truck volumes on Interstate 35, while every tolled and non-tolled analysis of the alternatives produced



improvements along Interstate 35. The evaluation only modeled total trucks and did not provide a breakdown by truck classification.

Previously, the Interstate 35 corridor was evaluated for improvement strategies in the *I-35 Trade Corridor Study – Recommended Corridor Investment Strategies*, released in September 1999. During that study, truck levels (1996 base year) were evaluated along the entire Interstate 35 corridor in Texas and presented between major city pairs along the route. The base year truck data provided a breakdown between international and other trucks, but did not provide a truck classification breakdown. Models were developed to forecast truck levels out to 2025 (24).

#### *I-69/Trans-Texas Corridor (I-69/TTC)*

Interstate 69 traverses eight states, with the Texas portion being developed as one of the Trans-Texas Corridor segments. The preliminary route travels broadly from Texarkana to Mexico, Laredo, and/or the Rio Grande Valley. The initial environmental impact study, which narrows the corridor within a four-mile wide route, began in 2004. Additionally, the Texas Department of Transportation announced a request for qualifications on April 10, 2006, to begin the process to identify the private entity for a comprehensive development agreement (25). No recent data or documentation have been released describing I-69/TTC truck traffic. Previously, the *Corridor 18 Special Issues Study*, released May 1997, provided truck functional classification data based on 1994 travel demand models (26).

#### **Additional Reports Focused on Border Freight**

Additional projects reviewed to examine past efforts examining border truck and NAFTA truck movements between Texas and Mexico traveling over the Texas road network include the following:

- *Methodology for the Development of Binational Driver and Vehicle Databases*, 2003

The Texas Transportation Institute conducted a research project funded by the Southwest University Transportation Center (SWUTC) analyzing U.S. and Mexican commercial vehicle and driver databases (27). This research analyzed information collected by various U.S. and Mexican federal agencies, including the Mexican Ministry of Communications and Transport, the U.S. Customs and Border Protection,

the Federal Motor Carrier Safety Administration, and at the state level, the Texas Department of Public Safety.

The persistence of information gaps and stakeholder disconnects called attention to the need for a comprehensive review of existing information, and an assessment of outstanding data collection and integration needs. The TTI study concluded that limited Mexican tractor information is available through SCT and FMCSA databases; however, the trailer information is not maintained by either U.S. or Mexican agencies.

- *Effect of the North American Free Trade Agreement on the Texas Highway System*, December 1998

The Texas Legislature mandated the examination of impacts of NAFTA truck traffic on Texas highways. This report fulfills that requirement. It “identifies those highway corridors that carry most NAFTA truck traffic and estimates the impact of that traffic on Texas citizens. It also estimates the cost of highway improvement to address those impacts (28).” The report presents truck vehicle miles traveled by TxDOT district, and it estimates average NAFTA truck volume by corridor. Most notable is the execution of a border area origin-destination survey. The surveys were done via roadside intercept. The survey instrument and the surveyors were bilingual. All truck types were considered except pickups. Volume counts and classification counts were used to expand the survey sample. Questions within the survey pertain to the following list:

- number of axles;
- trailer type (container, double trailer, dump truck, flatbed, tanker, or utility);
- load (full, partial, or empty);
- commodity (18 groups—e.g., apparel, chemicals, farm products, etc.);
- pickup location (construction site, dump, factory/plant, farm, port, private house, retail, truck terminal, warehouse, or yard);
- delivery location (same choices as pickup location); and
- trailer width (28).

The survey occurred at 12 locations; 10 were U.S. Border Patrol checkpoints, one was a weigh station, and one was located near a TxDOT maintenance warehouse. Eleven locations only surveyed northbound truck traffic, and the other one collected both northbound and southbound truck traffic. The report indicates the survey sites were “located on major NAFTA corridors at a distance sufficiently removed from the border to eliminate drayage movements from being included in the surveys (28).”

- *Truck Trade Corridors between the U.S. and Mexico, 2001*

The purpose of this report was “to identify U.S.-Mexico trade corridors and determine the characteristics of truck traffic in these corridors (29).” Publicly available data sources were analyzed and compared in a table. The border procedures are described in-depth. Truck size and weight limit for both the U.S. and Mexican trucks is presented. This project collaborated with TxDOT’s Transportation Planning and Programming Division (TPP) to collect data at a variety of weigh-in-motion stations. These data were collected during 1995 from the following nine WIM stations:

- Station LW504 – I-20 in Nolan County,
- Station LW507 – I-45 in Walker County,
- Station LW509 – I-30 in Hunt County,
- Station LW510 – I-10 in El Paso County,
- Station LW512 – I-37 in Live Oak County,
- Station LW513 – I-35 in Bell County,
- Station LW515 – US 281 in Hidalgo County,
- Station LW516 – I-35 in Bexar County, and
- Station LW517 – US 83 in Hidalgo County.

Stations LW510, LW516, and LW517 are located close to the border and are “therefore likely to capture the influence of NAFTA truck traffic (29).” The WIM data were then used to develop vehicle classifications. The four truck types represented significantly in the WIM data are single-unit truck with two axles, single-unit truck with three axles, three-axle tractor plus two-axle semitrailer, and two-axle

tractor plus one axle semitrailer plus two-axle full trailer. The report, which was provided by TxDOT TPP, also presents truck classifications at several border crossings in Texas.

- *Latin America Trade & Transportation Study – Texas, March 2001*

The purpose of the Latin America Trade and Transportation Study was to “identify trade opportunities with Latin America, evaluate infrastructure investments needed to support growth in international trade, and develop strategies to guide infrastructure investments (30).” This specific study focused in on Texas, with Section E detailing Texas highways. The LATTs highways to the Texas-Mexico border include I-35 (Laredo), I-10 (El Paso), US 59 (Laredo), US 77 (Brownsville), and US 281 (McAllen). For this study, LATTs Trade Corridors were also developed “using logical origin and destination pairs and assigning each highway to only one corridor (30).” Texas LATTs trade corridors include:

- Corridor 10 (I-35/I-37): South Texas to Plains,
- Corridor 13 (I-20/US 76): El Paso to Wilmington,
- Corridor 14 (I-10): West Texas to Jacksonville, and
- Corridor 18 (US 59/US 51): Indianapolis to Laredo.

Truck flows were developed from trade flows. The LATTs truck traffic is reported in terms of annual VMT.

- *US 83 Texas Corridor Initiative, July 2003*

The project objectives were to “promote and accommodate commercial development along a major highway with “Super Two” characteristics (31).” The US 83 corridor travels from Laredo in Webb County north through Dimmit and Zavala Counties. The transportation improvement concepts utilized average daily traffic (ADT) counts, without specifics to truck traffic.

- *Corridor 18 Special Issues Study, May 1997*

Corridor 18 basically connects Interstate 69 in Indianapolis, Indiana, with Corridor 20 to Laredo. Previous reports analyzing this corridor include *Corridor 18, Final Report* (1995), *Corridor 20 Final Report* (1996), and *Traffic and Economical Feasibility Report, Corridor 20* (1996). This study recalculated the Travel Demand Models using 1994 data. Truck counts included percent truck vehicle distance by state and functional classification and percent trucks by truck type (single-unit two-axle, six-tire or more and combination trucks). These data are projected to 2020 (32).

- *I-10 National Freight Corridor*, 2003

This study analyzed the entire length of I-10 from California to Florida. Documents per task provide corridor descriptions, modal evaluations, and alternatives for corridor improvements. This study aggregated every data item by state and functional classification. Truck volumes were presented in terms of VMT. Border gateway details provided include city, bridge, owner, operating hours, number of lanes, booths, secondary inspection docks, empty truck lanes, and truck scale availability. Top Texas truck commodities were included in the Task 4 report (33).

- *Ports to Plains Feasibility Study*, 2001

The purpose of this study “is to determine the impacts and feasibility of a four-lane highway between the Texas-Mexico border and Denver, Colorado, via the existing I-27 corridor between Amarillo and Lubbock (34).” The Ports to Plains corridor is designated as Corridor 38 in the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21). Daily truck volumes are provided by highway link (rural/urban). Border crossing data are provided by Texas A&M International University.

- *I-35 Trade Corridor Study – Recommended Corridor Investment Strategies*, September 1999

The purpose of this study was to “assess the need for improved local, intrastate, interstate, and international service on I-35 from Laredo to Duluth, Minnesota, and to clearly define a general feasible improvement plan to address those needs (35).” Vehicle and truck traffic was demonstrated at various “cut lines”

throughout the corridor, including one between Laredo and San Antonio. National truck trips were developed from truck tonnages to and from Bureau of Economic Analysis (BEA) zones. International truck trips were estimated using cross border truck volumes and Bureau of Transportation Statistics data.







## APPENDIX C: SAMPLE SURVEY FORM

### State to State Survey FORM A - NON-COMMERCIAL VEHICLE SURVEY

Station # \_\_\_\_\_

Survey Date \_\_\_\_\_

Station Name/Location \_\_\_\_\_

Interviewer \_\_\_\_\_

For each vehicle you collect	Vehicle 1	Vehicle 2	Vehicle 3
Interview Begin Time	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.
Interview End Time	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.
Number of people in vehicle			
Vehicle Type			

**Vehicle Type Options:** 1) Passenger (car/truck/van) 2) Bus 3) Taxi/Paid Limo 4) School Bus  
5) Vehicle with trailer 6) Motorcycle 7) Recreational Vehicle 8) Other (specify in block)

**QUESTIONS:**

1. What year is this vehicle?	_____ Year	_____ Year	_____ Year
1a. Type of fuel used?	Unleaded <input type="checkbox"/> Hybrid <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____	Unleaded <input type="checkbox"/> Hybrid <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____	Unleaded <input type="checkbox"/> Hybrid <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____
2. What is the mileage on your odometer?			
3. Where was the last place you got into your vehicle? (place/address or nearest intersection/city)			
4. If location in 3 is outside Texas, ask: What street or highway were you on when you entered Texas?			
5. What was your purpose for being at that location? (Choose from trip purpose options)			
6. What time did you leave that location?	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.
7. What is your next destination? (place/address or nearest intersection/city)			
8. What is your purpose for traveling to your next destination? (Choose from trip purpose options)			

**Trip Purpose Options:** 1) Home/Return Home 2) Go/Return to work 3) Work-related 4) School  
5) Vacation 6) Visit Family/Friends 7) Eat out 8) Shop  
9) Buy gas 10) Personal business 11) Pick-up/Drop off Passenger  
12) Change Travel Mode 13) Delivery 14) Recreation 15) Overnight stay/sleep  
16) Other (specify) 99) Unknown/Refused

9. What city and state do you live in?	_____ City	_____ City	_____ City
	_____ State (If not in Texas, go to 10)	_____ State (If not in Texas, go to 10)	_____ State (If not in Texas, go to 10)
10. Did you stay in Texas overnight?	<input type="checkbox"/> Yes <input type="checkbox"/> No (If YES do 10a)	<input type="checkbox"/> Yes <input type="checkbox"/> No (If YES do 10a)	<input type="checkbox"/> Yes <input type="checkbox"/> No (If YES do 10a)
10a. How many nights have you stayed in Texas?			

# State to State Survey

## FORM B - COMMERCIAL VEHICLE SURVEY

Station # \_\_\_\_\_

Survey Date \_\_\_\_\_

Station Name/Location \_\_\_\_\_

Interviewer \_\_\_\_\_

For each vehicle you collect:	Vehicle 1	Vehicle 2	Vehicle 3
1. Interview BEGIN Time	____ a.m. ____ p.m.	____ a.m. ____ p.m.	____ a.m. ____ p.m.
2. Interview END Time	____ a.m. ____ p.m.	____ a.m. ____ p.m.	____ a.m. ____ p.m.
3. Number of people in vehicle			
4. Vehicle Classification (Use Codes shown below)			
5. Vehicle Type	<input type="checkbox"/> Cargo Transport <input type="checkbox"/> Service (Go to 16)	<input type="checkbox"/> Cargo Transport <input type="checkbox"/> Service (Go to 16)	<input type="checkbox"/> Cargo Transport <input type="checkbox"/> Service (Go to 16)
6. What is the cargo ? (choose from vehicle cargo codes)	<input type="checkbox"/> Empty (no cargo)	<input type="checkbox"/> Empty (no cargo)	<input type="checkbox"/> Empty (no cargo)
6a. If empty, what was the last cargo you delivered?			
6b. What is the weight of your cargo? <i>determine 6c and 6d by observation *</i>	(lbs)	(lbs)	(lbs)
6c. Is cargo being hauled using a multimodal container/trailer or TEU? <i>If Yes</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 6e)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 6e)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 6e)
6d. Is the container a Reefer or Dry Box?	<input type="checkbox"/> Reefer <input type="checkbox"/> Dry Box	<input type="checkbox"/> Reefer <input type="checkbox"/> Dry Box	<input type="checkbox"/> Reefer <input type="checkbox"/> Dry Box
6e. Record the hazardous material placard (if applicable)			
7. What city, state, and country was the point of origin for your cargo?			
8. Did your cargo come from or is it going to Mexico?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown
9. Where did you pick up your load? (place/address or nearest intersection and city)			
If in Mexico ask			
9a. What international bridge was used to enter Texas?			
If not in Texas ask			
9b. What road or highway were you on when you entered Texas?			
10. Was that location an inter-modal transfer or custom brokerage site?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown
11. How was your load transferred at that site (choose from transfer options)?			
12. Where will you drop your cargo off? (place/address or nearest intersection and city)			
13. Is that location an inter-modal transfer or custom brokerage site?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown

- Vehicle Classification Options:**
- |                                   |  |                                   |
|-----------------------------------|--|-----------------------------------|
| 1) Passenger Car                  | 2) Pickup Truck                              | 3) Van (passenger or mini)        |
| 4) Sport Utility Vehicle (SUV)    | 5) Single Unit 2-axle (6 wheels)             | 6) Single Unit 3-axle (10 wheels) |
| 7) Single Unit 4-axle (14 wheels) | 8) ) Semi (all tractor-trailer combinations) | 9) Other (specify)                |
| 99) Refused / Unknown             |  |                                   |

- Cargo Transfer Options:**
- |                        |                       |                       |                           |
|------------------------|-----------------------|-----------------------|---------------------------|
| 1) Truck-to/from-Truck | 2) Rail-to/from-Truck | 3) Ship-to/from-Truck | 4) Airplane-to/from-Truck |
| 99) Unknown / Refused  |                       |                       |                           |

**NOTE:** All cargo transfer options are both ways (i.e., Truck-to-Warehouse should be coded same as Warehouse-to-Truck).

**Form B Commercial Vehicle Survey, continued**  
**QUESTIONS:**

14. How will the cargo be transferred at that site (choose from transfer codes)?			
15. What city, state, and country is the final destination for your cargo?			
16. What is the year and gross weight rating of this vehicle?	_____ Year Gross Weight	_____ Year Gross Weight	_____ Year Gross Weight
16.a. Type of fuel used?	Unleaded <input type="checkbox"/> Hybrid <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____	Unleaded <input type="checkbox"/> Hybrid <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____	Unleaded <input type="checkbox"/> Hybrid <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____
17. What is the mileage on your odometer?			
18. Where are you coming from? (city / state in US or Mexico)			
18a. Is that location in Texas?	<input type="checkbox"/> Yes (go to 18d) <input type="checkbox"/> No	<input type="checkbox"/> Yes (go to 18d) <input type="checkbox"/> No	<input type="checkbox"/> Yes (go to 18d) <input type="checkbox"/> No
18b. (If not in Texas) Did you enter Texas today?	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 18d)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 18d)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 18d)
18c. What road or highway did you use to enter Texas?			
18d. Did you stay overnight as part of your travel?	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 19)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 19)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 19)
18e. If yes, where did you stay? (city/county/state)			
18f. How many nights have you stayed?			
19. Where was the last place you got into your vehicle? (place/address or nearest intersection/city)			
19a. What time did you leave that place?	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.
19b. What was your purpose for being at your last location? (Choose from trip purpose options.)			
20. Where is your next destination? (place/address or nearest intersection/city)			
20a. What is your purpose for traveling to this destination? (Choose from trip purpose options.)			

**Trip Purpose Options:**  
4) Delivery and Pick-up  
8) Buy fuel

1) Base location/return to base location  
5) Maintenance  
9) Other (specify)

2) Delivery  
6) Driver needs (lunch, etc.)  
99) Refused/Unknown

3) Pick-up  
7) To Home

**Form B Commercial Vehicle Survey, continued**

**Vehicle Cargo Codes:**

- |  |   |
|--|---|
| 1 – Farm Products                        | Livestock, fertilizer, dirt, landscaping, etc.              |
| 2 – Forest Products                      | Trees, sod, etc.  |
| 3 – Marine Products                      | Fresh fish, seafood, etc.                                   |
| 4 – Metals and Minerals                  | Crude petroleum, natural gas, propane, metals, gypsum, etc. |
| 5 – Food, Health, Beauty Products        | Assorted food products, cosmetics, etc.                     |
| 6 – Tobacco Products                     | Cigarettes, cigars, and chewing tobacco                     |
| 7 – Textiles                             | Clothing, lines, etc.                                       |
| 8 – Wood Products                        | Lumber, paper, cardboard, wood pulp, etc.                   |
| 9 – Printed Matter                       | Newspapers, magazines, books, etc.                          |
| 10 – Chemical Products                   | Soaps, paints, household or industrial chemicals, etc.      |
| 11 – Refined Petroleum or Coal Products  | Gasoline, etc.  |
| 12 – Rubber, Plastic, Styrofoam Products | Finished products of rubber, plastic, or Styrofoam          |
| 13 – Clay, Concrete, Glass, or Stone     | Finished products of clay, concrete, glass, or stone        |
| 14 – Manufactured Goods/Equipment        | Miscellaneous products such as machinery, appliances, etc.  |
| 15 – Wastes                              | Waste products, including scrap and recyclable materials    |
| 16 – Miscellaneous Shipments             | U.S. Mail, U.P.S., Federal Express, and other mixed cargo   |
| 17 – Hazardous Materials                 | Hazardous chemicals and substances                          |
| 18 – Transportation                      | Automobiles, Heavy Equipment, etc.                          |
| 19 – Unclassified Cargo (specify)        | Cargo not falling within one of the above categories        |
| 20 – Driver Refused to Answer            | Driver refused to answer                                    |
| 21 – Unknown to Driver                   | Unknown to driver   |
| 22 – Empty                               | Empty   |

## Border Patrol Highway Checkpoint Survey

### FORM C - NON-COMMERCIAL VEHICLE SURVEY

Station # \_\_\_\_\_ Survey Date \_\_\_\_\_  
 Station Name/Location \_\_\_\_\_ Interviewer \_\_\_\_\_

Interview BEGIN Time	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.
Interview END Time	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.
Number of people in vehicle			
Vehicle Type			

**Vehicle Type options:**    1) Passenger (car/truck/van)    2) Bus    3) Taxi/Paid Limo    4) School Bus  
    5) Vehicle with trailer    6) Motorcycle    7) Recreational Vehicle    8) Other (specify in block)

**QUESTIONS:**

1. What year is this vehicle?	_____ Year	_____ Year	_____ Year
1a. Type of fuel used?	Unleaded <input type="checkbox"/> Hybrid <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____	Unleaded <input type="checkbox"/> Hybrid <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____	Unleaded <input type="checkbox"/> Hybrid <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____
2. What is the mileage on your odometer?			
3. Where was the last place you got into your vehicle? (place/address or nearest intersection/city)			
4. Was that location in Mexico?	<input type="checkbox"/> Yes <input type="checkbox"/> No (Yes go to 5; no go to 6)	<input type="checkbox"/> Yes <input type="checkbox"/> No (Yes go to 5; no go to 6)	<input type="checkbox"/> Yes <input type="checkbox"/> No (Yes go to 5; no go to 6)
5. What road/bridge did you use to enter Texas?			
6. What time did you leave that location?	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.
7. What was your purpose for being at that location? (Choose from trip purpose options.)			
8. What is your next destination? (place/address or nearest intersection/city)			
9. What is your purpose for traveling to your next destination? (Choose from trip purpose options.)			

**Trip Purpose Options:**    1) Home/Return Home    2) Go/Return to work    3) Work-related    4) School  
    5) Vacation    6) Visit Family/Friends    7) Eat out    8) Shop  
    9) Buy gas    10) Personal business    11) Pick-up/Drop off Passenger  
    12) Change Travel Mode    13) Delivery    14) Recreation    15) Overnight stay/sleep  
    16) Other (specify)    99) Unknown/Refused

10. What city and state do you live in?	_____ City	_____ City	_____ City
	_____ State (If not in Texas, go to 11)	_____ State (If not in Texas, go to 11)	_____ State (If not in Texas, go to 11)
11. Did you stay in Texas overnight?	<input type="checkbox"/> Yes <input type="checkbox"/> No (If YES do 12)	<input type="checkbox"/> Yes <input type="checkbox"/> No (If YES do 12)	<input type="checkbox"/> Yes <input type="checkbox"/> No (If YES do 12)
12. How many nights have you stayed in Texas?			

# Border Patrol Highway Checkpoint Survey

## FORM D - COMMERCIAL VEHICLE SURVEY

Station # \_\_\_\_\_

Survey Date \_\_\_\_\_

Station Name/Location \_\_\_\_\_

Interviewer \_\_\_\_\_

**For each vehicle you collect:**

	Vehicle 1	Vehicle 2	Vehicle 3
1. Interview BEGIN Time	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.
2. Interview END Time	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.
3. Number of people in vehicle			
4. Vehicle Classification (Use Codes shown below)			
5. Vehicle Type	<input type="checkbox"/> Cargo Transport <input type="checkbox"/> Service (Go to 17)	<input type="checkbox"/> Cargo Transport <input type="checkbox"/> Service (Go to 17)	<input type="checkbox"/> Cargo Transport <input type="checkbox"/> Service (Go to 17)
6. What is the cargo? (choose from vehicle cargo codes)	_____	_____	_____
6a. If empty, what was the last cargo you delivered?	<input type="checkbox"/> Empty (no cargo)	<input type="checkbox"/> Empty (no cargo)	<input type="checkbox"/> Empty (no cargo)
6b. What is the weight of your cargo?			
<b>Determine 6c and 6d by observation *</b>	(lbs)	(lbs)	(lbs)
6c. Is cargo being hauled using a multimodal container/trailer or TEU?	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 6e)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 6e)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 6e)
<b>If Yes</b>			
6d. Is the container a Reefer or Dry Box?	<input type="checkbox"/> Reefer <input type="checkbox"/> Dry Box	<input type="checkbox"/> Reefer <input type="checkbox"/> Dry Box	<input type="checkbox"/> Reefer <input type="checkbox"/> Dry Box
6e. Record the hazardous material placard (if applicable)			
7. What city, state, and country was the point of origin for your cargo?			
8. Did your cargo originate in Mexico?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown
9. Where did you pick up your load? (place/address or nearest intersection and city)			
10. Was that location in Mexico	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown
If yes ask 10a. What bridge was used to enter Texas?			
11. Was that location an inter-modal transfer or custom brokerage site?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown
12. How was your load transferred at that site (choose from transfer codes)?			
13. Where will you drop your cargo off? (place/address or nearest intersection and city)			
If not in Texas, ask 13a. What road or highway will you be on when you leave Texas?			

- |  |   |   |
|--|---|---|
| <b>Vehicle Classification</b><br><b>Options:</b><br>1) Passenger Car<br>4) Sport Utility Vehicle (SUV)<br>7) Single Unit 4-axle (14 wheels)<br>99) Refused / Unknown | 2) Pickup Truck<br>5) Single Unit 2-axle (6 wheels)<br>8) ) Semi (all tractor-trailer combinations) | 3) Van (passenger or mini)<br>6) Single Unit 3-axle (10 wheels)<br>9) Other (specify) |
| <b>Cargo Transfer Options:</b><br>1) Truck-to/from-Truck<br>5) Warehouse-to/from-Truck   | 2) Rail-to/from-Truck<br>6) Pipeline-to/from-Truck  | 3) Ship-to/from-Truck<br>99) Unknown / Refused  |
|  |   | 4) Airplane-to/from-Truck   |

**NOTE:** All cargo transfer options are both ways (i.e., Truck-to-Warehouse should be coded same as Warehouse-to-Truck).

**Form D Commercial Vehicle Survey, continued**

**QUESTIONS:**

14. Is that location an inter-modal transfer or custom brokerage site?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown
15. How will the cargo be transferred at that site (choose from transfer codes)?			
16. What city, state, and country is the final destination for your cargo?			
17. What is the year and gross weight rating of this vehicle?  17a. Type of fuel used ?	_____ Year  _____ Gross Weight Unleaded <input type="checkbox"/> Hybrid <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____	_____ Year  _____ Gross Weight Unleaded <input type="checkbox"/> Hybrid <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____	_____ Year  _____ Gross Weight Unleaded <input type="checkbox"/> Hybrid <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____
18. What is the mileage on your odometer?			
99) Where was the last place you got into your vehicle? (place/address or nearest intersection/city)			
19a. What time did you leave that place?	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.
19b. What was your purpose for being at your last location? (Choose from trip purpose options)			
20. Where is your next destination? (place/address or nearest intersection/city)			
20a. What is your purpose for traveling to this destination? (Choose from trip purpose options.)			

**Trip Purpose Options:**

- 4) Delivery and Pick-up
- 8) Buy fuel

- 1) Base location/return to base location
- 5) Maintenance
- 9) Other (specify)

- 2) Delivery
- 6) Driver needs (lunch, etc.)
- 99) Refused/Unknown

- 3) Pick-up
- 7) To Home

**Vehicle Cargo Codes:**

- 1 – Farm Products
- 2 – Forest Products
- 3 – Marine Products
- 4 – Metals and Minerals
- 5 – Food, Health, Beauty Products
- 6 – Tobacco Products
- 7 – Textiles
- 8 – Wood Products
- 9 – Printed Matter
- 10 – Chemical Products
- 11 – Refined Petroleum or Coal Products
- 12 – Rubber, Plastic, Styrofoam Products
- 13 – Clay, Concrete, Glass, or Stone
- 14 – Manufactured Goods/Equipment
- 15 – Wastes
- 16 – Miscellaneous Shipments
- 17 – Hazardous Materials
- 18 – Transportation
- 19 – Unclassified Cargo (specify)
- 20 – Driver Refused to Answer
- 21 – Unknown to Driver
- 22 – Empty

- Livestock, fertilizer, dirt, landscaping, etc.
- Trees, sod, etc.
- Fresh fish, seafood, etc.
- Crude petroleum, natural gas, propane, metals, gypsum, etc.
- Assorted food products, cosmetics, etc.
- Cigarettes, cigars, and chewing tobacco
- Clothing, lines, etc.
- Lumber, paper, cardboard, wood pulp, etc.
- Newspapers, magazines, books, etc.
- Soaps, paints, household or industrial chemicals, etc.
- Gasoline, etc.
- Finished products of rubber, plastic, or Styrofoam
- Finished products of clay, concrete, glass, or stone
- Miscellaneous products such as machinery, appliances, etc.
- Waste products, including scrap and recyclable materials
- U.S. Mail, U.P.S., Federal Express, and other mixed cargo
- Hazardous chemicals and substances
- Automobiles, heavy equipment, etc.
- Cargo not falling within one of the above categories
- Driver refused to answer
- Unknown to driver
- Empty

# International Bridge Crossing Survey

## FORM E - NON-COMMERCIAL VEHICLE SURVEY

Station # \_\_\_\_\_ Survey Date \_\_\_\_\_

Station Name/Location \_\_\_\_\_ Interviewer \_\_\_\_\_

Interview BEGIN Time	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.
Interview END Time	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.
Number of people in vehicle			
Vehicle Type			

**Vehicle Type Options:**      1) Passenger (car/truck/van)      2) Bus      3) Taxi/Paid Limo      4) School Bus  
    5) Vehicle with Trailer      6) Motorcycle      7) Recreational Vehicle      8) Other (specify in block)

Questions	Vehicle 1	Vehicle 2	Vehicle 3
1. What year is this vehicle?	_____ Year	_____ Year	_____ Year
1a. Type of fuel used?	Unleaded <input type="checkbox"/> Hybrid <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____	Unleaded <input type="checkbox"/> Hybrid <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____	Unleaded <input type="checkbox"/> Hybrid <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____
2. What is the mileage on your odometer?			
3. Where was the last place you got into your vehicle? (place/address or nearest intersection/city)			
4. What time did you leave that location?	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.
5. What was your purpose for being at that location? (Choose from trip purpose options)			
6. What is your next destination? (place/address or nearest intersection/city)			
If not in Texas, ask 6a. What road or highway will you be on when you leave Texas?			
7. What is your purpose for traveling to your next destination? (Choose from trip purpose options.)			

**Trip Purpose Options:**      1) Home/Return Home      2) Go/Return to work      3) Work-related      4) School  
    5) Vacation      6) Visit Family/Friends      7) Eat out      8) Shop  
    9) Buy gas      10) Personal business      11) Pick-up/Drop off Passenger  
    12) Change Travel Mode      13) Delivery      14) Recreation      15) Overnight stay/sleep  
    16) Other (specify)      99) Unknown/Refused

8. What city and state do you live in?	_____ City	_____ City	_____ City
	_____ State (If not in Texas, go to 9)	_____ State (If not in Texas, go to 9)	_____ State (If not in Texas, go to 9)
9. Did you stay in Texas overnight?	<input type="checkbox"/> Yes <input type="checkbox"/> No (If YES do 10)	<input type="checkbox"/> Yes <input type="checkbox"/> No (If YES do 10)	<input type="checkbox"/> Yes <input type="checkbox"/> No (If YES do 10)
10. How many nights have you stayed in Texas?			



# International Bridge Crossing Survey

## FORM F - COMMERCIAL VEHICLE SURVEY

Station # \_\_\_\_\_ Survey Date \_\_\_\_\_

Station Name/Location \_\_\_\_\_ Interviewer \_\_\_\_\_

**For each vehicle you collect:**

	Vehicle 1	Vehicle 2	Vehicle 3
1. Interview BEGIN Time	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.
2. Interview END Time	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.
3. Number of people in vehicle			
4. Vehicle Classification (Use Options shown below)			
5. Vehicle Type	<input type="checkbox"/> Cargo Transport <input type="checkbox"/> Service (Go to 16)	<input type="checkbox"/> Cargo Transport <input type="checkbox"/> Service (Go to 16)	<input type="checkbox"/> Cargo Transport <input type="checkbox"/> Service (Go to 16)
6. What is the cargo? (choose from vehicle cargo codes)	_____ <input type="checkbox"/> Empty (no cargo)	_____ <input type="checkbox"/> Empty (no cargo)	_____ <input type="checkbox"/> Empty (no cargo)
6a. If empty, what was the last cargo you delivered?	(lbs)	(lbs)	(lbs)
6b. What is the weight of your cargo? <i>Determine 6c and 6d by observation *</i>			
6c. Is cargo being hauled using a multimodal container/trailer or TEU? <i>If Yes</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 6e)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 6e)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 6e)
6d. Is the container a Reefer or Dry Box?	<input type="checkbox"/> Reefer <input type="checkbox"/> Dry Box	<input type="checkbox"/> Reefer <input type="checkbox"/> Dry Box	<input type="checkbox"/> Reefer <input type="checkbox"/> Dry Box
6e. Record the hazardous material placard (if applicable).			
7. What city, state, and country was the point of origin for your cargo?			
8. Did your cargo originate in Mexico?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown
9. Where did you pick up your load? (place/address or nearest intersection and city)			
10. Was that location an inter-modal transfer or custom brokerage site?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown
11. How was your load transferred at that site (choose from transfer codes)?			
12. Where will you drop your cargo off? (place/address or nearest intersection and city)			
If not in Texas, ask 12a. What road or highway will you be on when you leave Texas?			
13. Is that location an inter-modal transfer or custom brokerage site?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown
14. How will the cargo be transferred at that site (choose from transfer codes)?			

- Vehicle Classification Options:**
- |                                   |  |                                   |
|-----------------------------------|--|-----------------------------------|
| 1) Passenger Car                  | 2) Pickup Truck                              | 3) Van (passenger or mini)        |
| 4) Sport Utility Vehicle (SUV)    | 5) Single Unit 2-axle (6 wheels)             | 6) Single Unit 3-axle (10 wheels) |
| 7) Single Unit 4-axle (14 wheels) | 8) ) Semi (all tractor-trailer combinations) | 9) Other (specify)                |
| 99) Refused / Unknown             |  |                                   |

- Cargo Transfer Options:**
- |                            |                           |                       |                           |
|----------------------------|---------------------------|-----------------------|---------------------------|
| 1) Truck-to/from-Truck     | 2) Rail-to/from-Truck     | 3) Ship-to/from-Truck | 4) Airplane-to/from-Truck |
| 5) Warehouse-to/from-Truck | 6) Pipeline-to/from-Truck | 99) Unknown / Refused |                           |

**NOTE:** All cargo transfer options are both ways (i.e., Truck-to-Warehouse should be coded same as Warehouse-to-Truck).

**Form F Commercial Vehicle Survey, continued**

**QUESTIONS:**

15. What city, state, and country is the final destination for your cargo?			
16. What is the year and gross weight rating of this vehicle?	_____ Year	_____ Year	_____ Year
16a. Type of fuel used?	_____ Gross Weight	_____ Gross Weight	_____ Gross Weight
	Unleaded <input type="checkbox"/> Hybrid <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____	Unleaded <input type="checkbox"/> Hybrid <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____	Unleaded <input type="checkbox"/> Hybrid <input type="checkbox"/> Diesel <input type="checkbox"/> Propane <input type="checkbox"/> Other <input type="checkbox"/> _____
17. What is the mileage on your odometer?			
18. Where was the last place you got into your vehicle? (place/address or nearest intersection/city)			
18a. What time did you leave that place?	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.
18b. What was your purpose for being at your last location? (Choose from trip purpose options)			
19. Where is your next destination? (place/address or nearest intersection/city)			
19a. What is your purpose for traveling to this destination? (Choose from trip purpose options.)			

**Trip Purpose Options:**

- 4) Delivery and Pick-up
- 8) Buy fuel

1) Base location/return to base location

- 5) Maintenance
- 9) Other (specify)

2) Delivery

- 6) Driver needs (lunch, etc.)
- 99) Refused/Unknown

3) Pick-up

- 7) To Home

**Vehicle Cargo Codes:**

- 1 – Farm Products
- 2 – Forest Products
- 3 – Marine Products
- 4 – Metals and Minerals
- 5 – Food, Health, Beauty Products
- 6 – Tobacco Products
- 7 – Textiles
- 8 – Wood Products
- 9 – Printed Matter
- 10 – Chemical Products
- 11 – Refined Petroleum or Coal Products
- 12 – Rubber, Plastic, Styrofoam Products
- 13 – Clay, Concrete, Glass, or Stone
- 14 – Manufactured Goods/Equipment
- 15 – Wastes
- 16 – Miscellaneous Shipments
- 17 – Hazardous Materials
- 18 – Transportation
- 19 – Unclassified Cargo (specify)
- 20 – Driver Refused to Answer
- 21 – Unknown to Driver
- 22 – Empty

- Livestock, fertilizer, dirt, landscaping, etc.
- Trees, sod, etc.
- Fresh fish, seafood, etc.
- Crude petroleum, natural gas, propane, metals, gypsum, etc.
- Assorted food products, cosmetics, etc.
- Cigarettes, cigars, and chewing tobacco
- Clothing, lines, etc.
- Lumber, paper, cardboard, wood pulp, etc.
- Newspapers, magazines, books, etc.
- Soaps, paints, household or industrial chemicals, etc.
- Gasoline, etc.
- Finished products of rubber, plastic, or Styrofoam
- Finished products of clay, concrete, glass, or stone
- Miscellaneous products such as machinery, appliances, etc.
- Waste products, including scrap and recyclable materials
- U.S. Mail, U.P.S., Federal Express, and other mixed cargo
- Hazardous chemicals and substances
- Automobiles, heavy equipment, etc.
- Cargo not falling within one of the above categories
- Driver refused to answer
- Unknown to driver
- Empty

## High Volume Non-Commercial Survey

### MAILOUT LETTER

**TxDOT Logo / Letterhead Needed Here**

\_\_\_\_\_, 2006

Dear Fellow Texan,

Traffic into and out of the state of Texas is dramatically changing. There is increased traffic from regional and statewide growth, more visitors to our great state for business and leisure, and more large trucks on our highways to move freight and deliver goods.

To study these changes and help plan for transportation in the future, the Texas Department of Transportation (TxDOT) is conducting travel surveys on the growing travel movements into and out of the state of Texas. Information from this important study will be used to help transportation planners and engineers plan and prioritize future transportation improvements and make the most cost-effective use of limited funds.

A vehicle registered to your address was recently included in an automated video survey of traffic crossing the state border. It was randomly selected from thousands of other vehicles to take part in this important voluntary survey.

Enclosed with this letter is a brief questionnaire to be completed by the person driving the vehicle. The location, date, and time of the trip to which the questions apply is are located on the top of the form. Since your address is not on the form, all surveys are anonymous and your answers will be completely confidential.

Information gathered from the survey will be used in aggregate form only to study patterns and characteristics of traffic crossing our state borders. Please help us plan for a better Texas and return your completed questionnaire in the enclosed postage-paid envelop. We appreciate your time and participation in the study and value your input.

If you have any questions or comments about the survey, please do not hesitate to contact us at 1-800\_\_\_\_\_.

Sincerely,

Name  
Appropriate TxDOT Official

# High Volume Survey

## FORM G - HV NON-COMMERCIAL MAILOUT SURVEY



### DRIVER QUESTIONNAIRE

**Please complete the following questions regarding the trip you were making on (date)\_\_\_\_\_ into / out of Texas on (highway)\_\_\_\_\_.** The information you provide will help us plan for future travel needs. Thank you for your help with this important survey. We value your input!

1. Please check the item which best describes the activity you were engaged in related to this trip:

At the Beginning of the trip (Origin)

- At my home
- Working at my place of work
- Other work-related activity
- Attending school
- Vacation
- Visiting friends/family
- Eating out
- Shopping
- Buying gas
- Personal business
- Pick up or drop off passenger
- Change to another mode of travel
- Make or pick up a delivery
- Other, please describe \_\_\_\_\_

At the end of the trip (Destination)

- At my home
- Working at my place of work
- Other work-related activity
- Attending school
- Vacation
- Visiting friends/family
- Eating out
- Shopping
- Buying gas
- Personal business
- Pick up or drop off passenger
- Change to another mode of travel
- Make or pick up a delivery
- Other, please describe \_\_\_\_\_

2. What was the address or nearest two intersecting streets for these locations?

Beginning of trip (Origin)

Address \_\_\_\_\_  
or Nearest Intersecting Streets

a. \_\_\_\_\_

b. \_\_\_\_\_

End of trip (Destination)

Address \_\_\_\_\_  
or Nearest Intersecting Streets

a. \_\_\_\_\_

b. \_\_\_\_\_

3. How many people (including yourself) were in the vehicle? \_\_\_\_\_

4. How many stops had you made on this day prior to this trip? \_\_\_\_\_

5. How often do you make this trip? Please check the most appropriate answer.

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Every week day      | <input type="checkbox"/> 1 to 10 times a month      | <input type="checkbox"/> More than 10 times a year |
| <input type="checkbox"/> 3 to 4 times a week | <input type="checkbox"/> More than 10 times a month | <input type="checkbox"/> Other (please describe)   |
| <input type="checkbox"/> 1 to 2 times a week | <input type="checkbox"/> 1 to 10 times a year       | _____  |

We welcome any comments regarding your travel on this facility! \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

# High Volume State to State Survey

## FORM H - HV COMMERCIAL VEHICLE SURVEY (Rest Areas, Truck Stops, etc.)

Station # \_\_\_\_\_ Survey Date \_\_\_\_\_  
 Station Name/Location \_\_\_\_\_ Interviewer \_\_\_\_\_

For each vehicle you collect:	Vehicle 1	Vehicle 2	Vehicle 3
1. Interview BEGIN Time	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.
2. Interview END Time	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.	_____ a.m. _____ p.m.
3. What direction are you headed?			
4. Number of people in vehicle			
5. Vehicle Classification (Use Codes shown below)			
6. Vehicle Type	<input type="checkbox"/> Cargo Transport <input type="checkbox"/> Service (Go to 17)	<input type="checkbox"/> Cargo Transport <input type="checkbox"/> Service (Go to 17)	<input type="checkbox"/> Cargo Transport <input type="checkbox"/> Service (Go to 17)
7. What is the cargo? (choose from vehicle cargo codes)	<input type="checkbox"/> Empty (no cargo)	<input type="checkbox"/> Empty (no cargo)	<input type="checkbox"/> Empty (no cargo)
7a. If empty, what was the last cargo you delivered?			
7b. What is the weight of your cargo? <b>Determine 7c and 7d by observation *</b>	(lbs)	(lbs)	(lbs)
7c. Is cargo being hauled using a multimodal container/trailer or TEU? <b>If Yes</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 7e)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 7e)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 7e)
7d. Is the container a Reefer or Dry Box?	<input type="checkbox"/> Reefer <input type="checkbox"/> Dry Box	<input type="checkbox"/> Reefer <input type="checkbox"/> Dry Box	<input type="checkbox"/> Reefer <input type="checkbox"/> Dry Box
7e. Record the hazardous material placard (if applicable)			
8. What city, state, and country was the point of origin for your cargo?			
9. Did your cargo come from or is it going to Mexico?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown
10. Where did you pick up your load? (place/address or nearest intersection and city)			
If in Mexico ask			
10a. What international bridge was used to enter Texas?			
If not in Texas ask			
10b. What road or highway were you on when you entered Texas?			
11. Was that location an inter-modal transfer or custom brokerage site?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown
12. How was your load transferred at that site (choose from transfer codes)?			
13. Where will you drop your cargo off? (place/address or nearest intersection and city)			
14. Is that location an inter-modal transfer or custom brokerage site?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Refused / Unknown

- Vehicle Classification Options:**
- |                                   |  |                                   |
|-----------------------------------|--|-----------------------------------|
| 1) Passenger Car                  | 2) Pickup Truck                              | 3) Van (passenger or mini)        |
| 4) Sport Utility Vehicle (SUV)    | 5) Single Unit 2-axle (6 wheels)             | 6) Single Unit 3-axle (10 wheels) |
| 7) Single Unit 4-axle (14 wheels) | 8) ) Semi (all tractor-trailer combinations) | 9) Other (specify)                |
| 99) Refused / Unknown             |  |                                   |

**Cargo Transfer Options:** 1) Truck-to/from-Truck    2) Rail-to/from-Truck    3) Ship-to/from-Truck    4) Airplane-to/from-Truck  
 5) Warehouse-to/from-Truck    6) Pipeline-to/from-Truck    99) Unknown / Refused

**NOTE:** All cargo transfer options are both ways (i.e., Truck-to-Warehouse should be coded same as Warehouse-to-Truck).

**Form H HV Commercial Vehicle Survey, continued**  
**QUESTIONS:**

15. How will the cargo be transferred at that site (choose from transfer codes)?			
16. What city, state, and country is the final destination for your cargo?			
17. What is the year and gross weight rating of this vehicle ?  Unleaded gas, diesel, propane, hybrid or other fuel?	<p>_____</p> <p>Year</p> <p>_____</p> <p>Gross Weight</p> <p><input type="checkbox"/> Unleaded <input type="checkbox"/> Diesel  <input type="checkbox"/> Propane <input type="checkbox"/> Hybrid  <input type="checkbox"/> Other</p> <p>_____</p>	<p>_____</p> <p>Year</p> <p>_____</p> <p>Gross Weight</p> <p><input type="checkbox"/> Unleaded <input type="checkbox"/> Diesel  <input type="checkbox"/> Propane <input type="checkbox"/> Hybrid  <input type="checkbox"/> Other</p> <p>_____</p>	<p>_____</p> <p>Year</p> <p>_____</p> <p>Gross Weight</p> <p><input type="checkbox"/> Unleaded <input type="checkbox"/> Diesel  <input type="checkbox"/> Propane <input type="checkbox"/> Hybrid  <input type="checkbox"/> Other</p> <p>_____</p>
18. What is the mileage on your odometer?			
19. Where are you coming from? (city / state in US or Mexico)			
19a. Is that location in Texas?	<input type="checkbox"/> Yes (go to 19d) <input type="checkbox"/> No	<input type="checkbox"/> Yes (go to 19d) <input type="checkbox"/> No	<input type="checkbox"/> Yes ( go to 19d) <input type="checkbox"/> No
19b. (If not in Texas) Did you enter Texas today?	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 19d)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 19d)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 19d)
19c. What road or highway did you use to enter Texas?			
19d. Did you stay overnight as part of your travel?	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 20)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 20)	<input type="checkbox"/> Yes <input type="checkbox"/> No (go to 20)
19e. If yes, where did you stay? (city/county/state)			
19f. How many nights have you stayed?			
20. Where was the last place you got into your vehicle? (place/address or nearest intersection/city)			
20a. What time did you leave that place?	____ a.m. ____ p.m.	____ a.m. ____ p.m.	____ a.m. ____ p.m.
20b. What was your purpose for being at your last location? (Choose from trip purpose options.)			
21. Where is your next destination? (place/address or nearest intersection/city)			
21a. What is your purpose for traveling to this destination? (Choose from trip purpose options.)			

**Trip Purpose Options:**  
4) Delivery and Pick-up  
8) Buy fuel

1) Base location/return to base location  
5) Maintenance  
9) Other (specify)

2) Delivery  
6) Driver needs (lunch, etc.)  
99) Refused/Unknown

3) Pick-up  
7) To Home

## Form H HV Commercial Vehicle Survey, continued

### Vehicle Cargo Codes:

1 – Farm Products	Livestock, fertilizer, dirt, landscaping, etc.
2 – Forest Products	Trees, sod, etc.
3 – Marine Products	Fresh fish, seafood, etc.
4 – Metals and Minerals	Crude petroleum, natural gas, propane, metals, gypsum, etc.
5 – Food, Health, Beauty Products	Assorted food products, cosmetics, etc.
6 – Tobacco Products	Cigarettes, cigars, and chewing tobacco
7 – Textiles	Clothing, lines, etc.
8 – Wood Products	Lumber, paper, cardboard, wood pulp, etc.
9 – Printed Matter	Newspapers, magazines, books, etc.
10 – Chemical Products	Soaps, paints, household or industrial chemicals, etc.
11 – Refined Petroleum or Coal Products	Gasoline, etc.
12 – Rubber, Plastic, Styrofoam Products	Finished products of rubber, plastic, or Styrofoam
13 – Clay, Concrete, Glass, or Stone	Finished products of clay, concrete, glass, or stone
14 – Manufactured Goods/Equipment	Miscellaneous products such as machinery, appliances, etc.
15 – Wastes	Waste products, including scrap and recyclable materials
16 – Miscellaneous Shipments	U.S. Mail, U.P.S., Federal Express, and other mixed cargo
17 – Hazardous Materials	Hazardous chemicals and substances
18 – Transportation	Automobiles, heavy equipment, etc.
19 – Unclassified Cargo (specify)	Cargo not falling within one of the above categories
20 – Driver Refused to Answer	Driver refused to answer
21 – Unknown to Driver	Unknown to driver
22 – Empty	Empty

