

Current State Analysis

Commercial Vehicle Crossings at the Bridge of the Americas, El Paso, Texas

Battelle/TTI Report

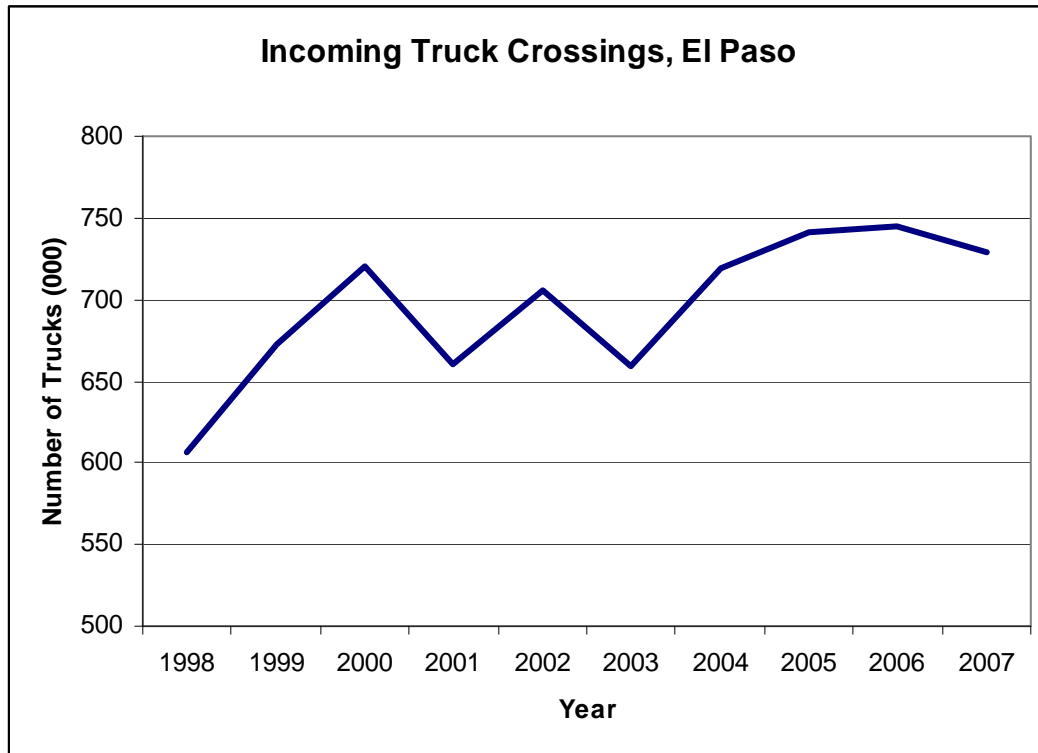
March 20, 2008

Introduction

El Paso, Texas is currently the sixth largest city in the State of Texas and the twenty-first largest city in the United States. Ciudad Juárez, El Paso's sister city across the border, is the largest city in the State of Chihuahua and the fifth largest city in all of Mexico. 2006 census estimates show El Paso's total population is approximately 609,415. The metropolitan area of Ciudad Juárez and El Paso, TX comprises of more than 2.2 million people, making it the largest bi-national metropolitan area in the world. The large population is largely due to the amount of jobs that the local manufacturing industry in the region produces. These manufacturing facilities, often referred to as "maquiladoras," not only produce jobs but also produce goods that are ultimately shipped to and from the United States of America in significant volumes.

Following the implementation of the North American Free Trade Agreement (NAFTA), trade between the United States and Mexico increased substantially. Northbound commercial movements through Ciudad Juárez-El Paso gateways peaked at 745,000 trucks in the year 2006. In 2007, a slowdown in the U.S. economy (particularly in the automotive and housing segments) and international trade reduced the number northbound trucks to 729,000. The overall growth of northbound commercial movements between Ciudad Juárez and El Paso increased by more than 123,000 crossings over the past decade, and is presented in Figure 1.

Figure 1. Incoming Truck Movements through El Paso, TX



Source: U.S. Department of Transportation, Bureau of Transportation Statistics
<http://www.transtats.bts.gov/BorderCrossing.aspx>¹

The majority of freight shipped through the El Paso-Ciudad Juárez port-of-entry (POE) system is maquiladora trade. A maquiladora plant is a manufacturing facility located in Mexico that temporarily imports materials for assembly on a duty-free basis, provided the product is re-exported. This arrangement has evolved into a system of transfer stations, distribution centers and warehouses on the U.S. side of the border, and manufacturing plants in Mexico.

The Northbound Commercial Vehicle Crossing Process

The Northbound commercial freight crossing process is complicated due to the amount of information that needs to be filed with both US and Mexican agencies, and the necessary coordination between the large number of public and private stakeholders who participate in the process. Northbound movements (imports into the United States) in particular create longer waiting times due to security and safety inspections that occur in the process, than the southbound movements into Mexico. In order to combat some of these delay and congestion problems, the U.S. Customs and Border Protection (CBP) implemented the Free and Secure Trade (FAST) program in September of 2003. The

¹ U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Border Crossing/Entry Data; based on data from U.S. Department of Homeland Security, Customs and Border Protection, OMR database.

FAST program expedites the crossing process for certain shipments that meet specific conditions.

Before a shipment makes it to the physical port of entry at the border, the border crossing process typically involves the following steps:

1. The shipper sends information to the Mexican and U.S. customs brokers for preparation of export/import paper documents and electronically filing of the required information with the U.S. and Mexican customs authorities and other public agencies. Included in this information are details about the shipment, conveyance, and driver that appear on two key documents: the Mexican export document (Pedimento) and the U.S. Inward Cargo Manifest.
2. If the shipment originates in the interior of Mexico, the long-haul trucking firm picks up the shipment and transports it to the customs broker or freight forwarder yard on the Mexican side of the border. Then a tractor and driver (drayage) that have the required documentation to cross the border pick up the trailer. Generally, most shipments originating in Mexico's interior cross the border in Laredo instead of El Paso due to the fact that passing through Laredo is a much shorter trip for cargo destined for the Midwest and East Coast of the United States.
3. If the shipment originates at the assembly plant (most likely a maquiladora plant) in the Mexican border region, the drayage truck picks up the loaded trailer and the required documentation to proceed toward the international port. As stated before, a majority of the freight crossing the border in the El Paso region is maquiladora trade.
4. Once the carrier has the freight, it is responsible for submitting the shipment, carrier, and driver information through an E-Manifest system to the U.S. CBP. This information can be submitted in Electronic Data Interchange (EDI) format, or through a secure web-based portal. Carriers are required to submit an E-Manifest to CBP at least one hour before their arrival at the Port of Entry. By using the E-Manifest system, U.S. CBP can pre-screen the shipment before it arrives at the physical border crossing. This way, "high-risk" cargo can be identified and selected for secondary inspection before the truck arrives into the U.S. As of 2007, all trucks are required to use the E-Manifest system for every shipment they bring into the U.S. Through this system, US CBP can avoid duplication of efforts and inefficiencies associated with the transferring of paperwork, which helps to reduce border delay and congestion.

Once the shipment with the authorized driver and truck are at the international port, the process proceeds to three main physical inspection areas:

- The Mexican Export Lot
- The US Federal Compound
- The State Inspection Facility

Mexican Export Lot

Mexican Customs is responsible for inspecting both inbound and outbound commercial traffic; however a very small percentage of outbound freight is examined for audit

purposes. Mexican export shipments are subject to a random inspection selection mechanism, and those that are selected must undergo a physical examination; those that are not proceed to the exit gate, cross the border, and continue on to the U.S. federal compound.

U.S. Federal Compound

At the U.S. primary inspection booth, non-FAST shipments present documentation to the inspector, who makes a decision to refer the truck, driver, or load for a more detailed secondary inspection or releases the movement to the exit gate. Secondary inspections include any examination that the driver, freight, or conveyance undergoes between primary inspection and the exit gate of the U.S. federal compound. These examinations often involve non-intrusive inspection equipment. Cargo may also be physically examined by Customs, the U.S. Department of Agriculture (USDA), the Food and Drug Administration (FDA), the Federal Motor Carrier Safety Administration (FMCSA), or other agencies. The U.S. Department of Transportation (USDOT) also has inspectors stationed inside the federal compound at many border stations to ensure the safety of Mexican trucks in the United States.

State Inspection Facility

Often referred to as Border Safety Inspection Facilities (BSIF), these facilities are typically situated after the U.S. federal compound and enable state Department of Public Safety (DPS) personnel to review driver and conveyance information and determine whether movements are in compliance with U.S. standards and regulations before they are granted access to U.S. roadways. If deficiencies are revealed through a preliminary review of the conveyance or documentation, the truck may be sent for a more detailed examination at an inspection dock.

After leaving the state inspection facility, the driver typically drives to a freight forwarder or customs broker yard to drop off the trailer for later pickup by a long-haul tractor bound for the final destination, because most Mexican domiciled trucks are not permitted to operate beyond a predetermined commercial zone once they are in the US. This commercial zone extends 25 miles (35 miles in Arizona) into the US.

The El Paso – Ciudad Juárez Port-of-Entry System

The El Paso – Ciudad Juárez metropolitan area is served by three international commercial vehicle crossings. The Santa Teresa, New Mexico gateway is a land crossing eleven miles west of El Paso. The other two commercial crossings in the region, Bridge of the Americas (BOTA) and Ysleta–Zaragoza, are international bridges over the Rio Grande River. The location of these three ports is illustrated in Figure 2.

Figure 2: Map of El Paso Commercial Vehicle Crossings



Source: TTI using Microsoft Virtual Earth

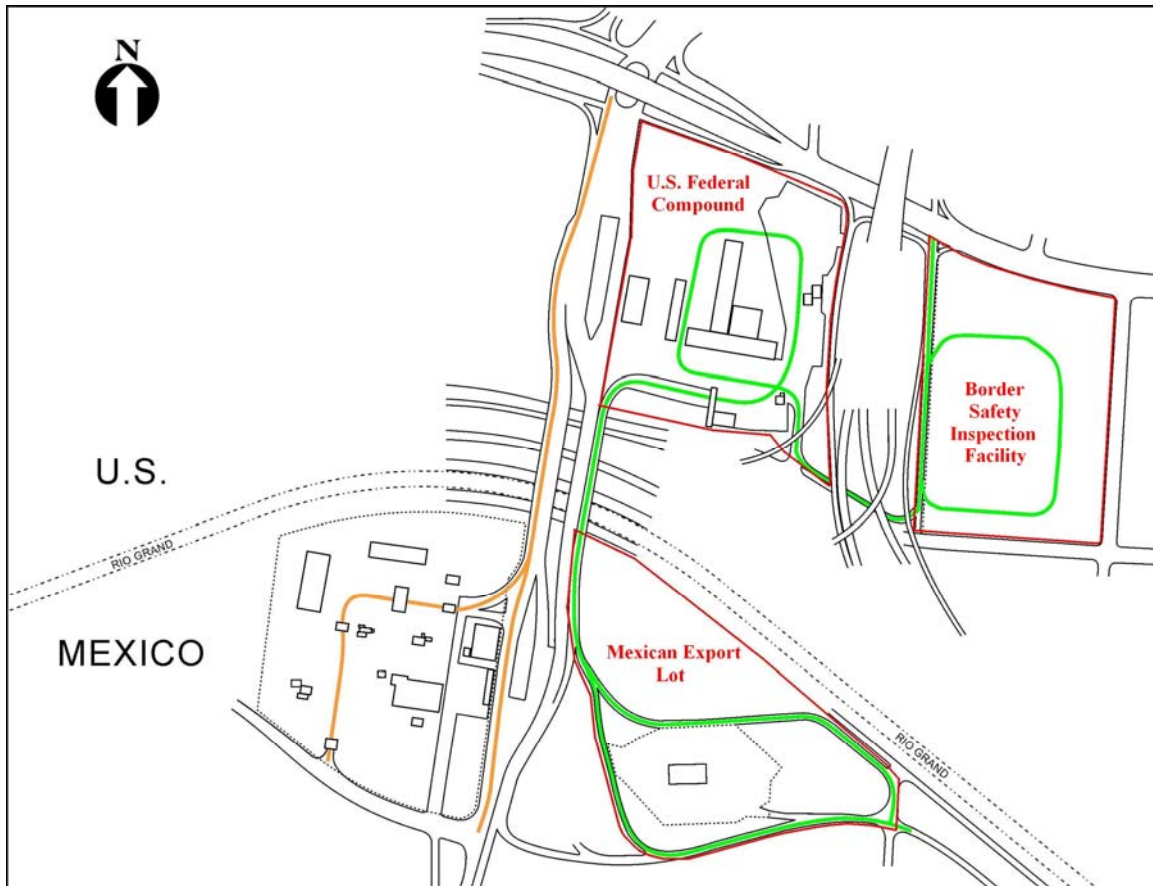
Overall northbound truck traffic at both commercial crossings in El Paso peaks between 10 AM and noon. During the early hours of the day, empty trucks cross northbound through BOTA to pick up loads for maquiladora assembly plants. Even before BOTA closes for operation, some traffic voluntarily diverts to Ysleta, causing a period of high demand at around 5 PM. Around 7 PM, loaded vehicles create another period of high demand at the Ysleta facility. These afternoon peaks result from shipments that leave Mexican maquiladora plants at the end of the second manufacturing production shift.

Although the Ysleta commercial crossing offers longer hours of operation, BOTA processes more trucks per day. This is due to the absence of a toll at BOTA (compared to the \$10 toll at Ysleta) and the higher number of empty trucks, which are processed faster than the laden vehicles.

BOTA Characteristics

The BOTA facility is located in the center of the El Paso–Ciudad Juárez metropolitan area. The bridge is used for truck and passenger vehicle movements and it has two separate structures, one for northbound traffic and one for southbound traffic. Passenger vehicles and commercial trucks access the bridge through Cuatro Siglos (a street on the Mexican side of the border), and are directed to specific lanes by road signs in order to separate the two types of vehicle traffic using the bridge. Once on the physical bridge, trucks and passenger vehicles are separated by a concrete barrier. Truck traffic is handled by two dedicated outside lanes on each bridge structure. Local transportation companies funded the construction of a replacement bridge capable of handling commercial traffic in 1998; and no tolls are collected at this commercial crossing. A diagram of the layout of BOTA can be found in Figure 3 below, with northbound traffic flows represented in green and southbound represented in orange.

Figure 3: BOTA Layout



The BOTA operates from 6 AM to 6 PM Monday through Friday and from 6 AM to 2 PM on Saturdays. Empty truck traffic prefers using this free bridge to avoid paying the toll at the Ysleta-Zaragoza Bridge. Only empty containers are permitted to cross between the hours of 6am and 8am. On October 27, 2003 one of BOTA's two northbound lanes

was converted to a designated FAST lane. Approximately 15* percent of the total northbound truck volume at this crossing is now expedited across the border in this lane.

Entrance to the Federal Inspection Compound is accessed through one of 6 primary inspection booths. At these primary inspection booths, CBP agents determine whether the truck requires any secondary inspections, or instruct the driver to simply proceed to the exit. Final clearance to exit the Federal Inspection Compound is given at one of two booths at the exit of the premises. The Federal and State Inspection Facilities are connected by a one lane access road that passes under US Highway 54. The layout of the BSIF at BOTA is discussed in further detail in the next section of this report. Once the truck has cleared the state inspection, it can exit the facility and enter the US highway system to make its pick up or delivery.

TXDOT's new BSIF at BOTA

One of the newest facilities at BOTA is TXDOT's Border Safety Inspection Facility. This BSIF is the last physical inspection area for northbound freight in the commercial border crossing process, and can be seen in Figure 3 above. Plans and funding for this facility were approved in 2002, and the actual construction began on November 2nd, 2004.

Phase I of construction was completed, and DPS moved in to the facility on December 18th, 2006. Phase II of construction is currently underway, and TXDOT estimates that the project is 97% completed. The remainder of the construction involves the installation of an Intelligent Transportation System (ITS). TXDOT had originally calculated that this BSIF would be fully operational by the fall of 2007, however, several setbacks have occurred which have delayed the final implementation of this ITS system. According to TXDOT, final implementation of all ITS devices will begin on March 4th, 2008, and the ITS System will be fully operational by the fall of 2008.

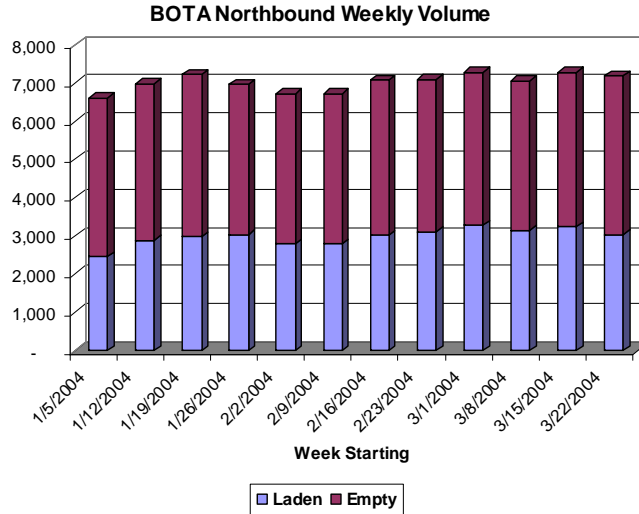
The layout of the BSIF at BOTA has changed over the past 5 years due to the ongoing construction there. As the physical construction has been completed, the layout of the facility has been finalized. After exiting the U.S. Federal Inspection compound, trucks continue on a one lane access road that connects the two facilities. Weight-in-Motion sensors measure the weight of every truck that travels on this access road. After the access road, trucks continue moving towards an inspection shed. Trucks continue moving through the inspection shed and are instructed to either proceed to the exit of the facility (East Paisano Dr.) or are told that they have been selected for secondary inspection by two overhead signs immediately after the inspection shed. If they are selected for secondary inspection, trucks will bear right after the inspection shed and loop back into the middle of the premises for further examination.

* Based off of 2003 Volumes

BOTA Volumes

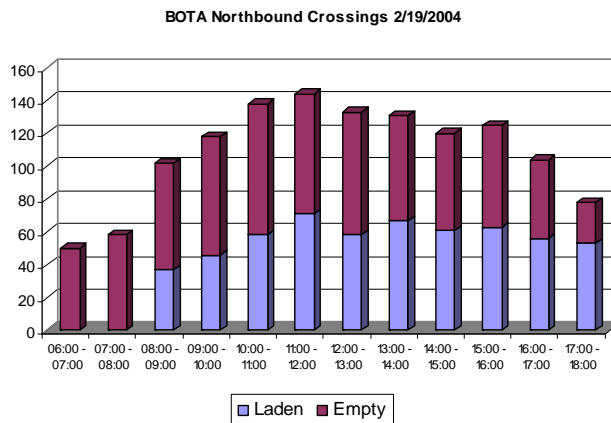
The average weekly northbound volume of commercial traffic at BOTA was 6,976 trucks for the first 3 months of 2004, with empty trucks representing 58 percent of the total (Figure 3).

Figure 3. BOTA Northbound Weekly Commercial Traffic Volume



The average weekday volume of northbound traffic during this period at BOTA was 1,311 trucks, with Thursdays being slightly busier than other days. As mentioned earlier in this report, from 6 AM to 8 AM all northbound commercial crossings are restricted to empty vehicles. After 8 AM, both laden and empty northbound trucks are permitted to cross the border. Northbound commercial crossings peak between 11 AM and noon, and begin to decline rapidly after 4 PM. Figure 4 represents a typical weekday traffic distribution for northbound trucks at the BOTA facility during this same period. Queues begin to form around 11 AM at this border crossing, suggesting that the port has a capacity of approximately 120 trucks per hour.

Figure 4. BOTA Northbound Daily Commercial Crossings



Measuring Border Crossing Times at BOTA

In order to accurately measure the time it takes for commercial traffic to cross the border, the parameters of each measurement must be defined. This project will aim to collect the total time it takes for commercial freight to cross the border. This will be achieved by taking one reading before the queue on the Mexican side, and taking a second reading once the border crossing process is completed at the exit of the State Inspection Facility on the U.S. side. By taking measurements at these two locations, total crossing time can be calculated.

If additional detail is required, other readings can be taken before and after the Federal Inspection Compound in order to separate each segment of the trip. By taking these additional measurements, exactly how long a truck spends in each facility could be determined. However, installing additional equipment may prove to be difficult due to the additional cost of the Radio Frequency Identification (RFID) equipment, and the task of reaching any additional agreements with CBP to install equipment on their property.

Similar Projects

Currently, the FHWA is conducting a similar study at the Otay Mesa border crossing in California. The goal of this project is, “to deploy a technology to gather data that will accurately measure the time required for trucks to pass through the various stages of the crossing, throughout the entire process, and under a variety of conditions.”² This project consists of two phases. Phase I consisted of selecting a technology to deploy, while phase II of this project comprises of implementing the actual system.

During phase I, a stakeholder meeting was conducted in order gain feedback from local public and private agencies. This stakeholder meeting took place on January 9th, 2008 and included Mexican Customs (Aduanas), US Customs and Border Patrol (CBP), GSA, FHWA, SCT, and private transportation service providers. After presenting some background information and facilitating several discussions aimed at selecting a technology for this project, it was concluded that a system using Global Positioning System (GPS) Technology would be best suited to meet this projects objectives.

Phase II is currently underway, and results will be monitored closely as they become available to the project team working in El Paso.

Results from Initial Stakeholder Meeting

Following the format of the Otay Mesa border wait time project, the project team working at BOTA will also conduct their study in two similar phases. In order to select a technology best suited to measure commercial freight crossing times at BOTA (phase I), a stakeholder meeting was held on February 20th, 2008 at the Camino Real Hotel in El Paso, TX. Stakeholders invited to this meeting included representatives from the following organizations:

² Delcan Memorandum – Initial Stakeholder Meeting to FHWA Cross-Border Travel Time Test Study Team

- Mexican Public Stakeholders
 - Customs (Aduanas)
 - Department of Transportation (SCT)
 - General Services Administration (INDABIN/SFP)
 - State Department (SRE)
 - Juarez Metropolitan Planning Organization (IMIP)
 - City of Juarez
- Mexican Private Stakeholders
 - Maquilla Association (AMAC)
 - Local Transportation Service Providers
- U.S. Public Stakeholders
 - Customs and Border Protection (CBP)
 - TX Dept. of Public Safety (DPS)
 - Federal Highway Administration (FHWA)
 - Federal Motor Carrier Safety Administration (FMCSA)
 - TX Dept. of Transportation (TXDOT)
 - New Mexico Dept. of Transportation (NMDOT)
 - Local Metropolitan Planning Organization (MPO)
 - City of El Paso
 - County of El Paso
 - Regional Mobility Authority
 - General Services Administration (GSA)
 - Local University Representatives

A list of the meeting attendees can be found at the end of this report in Appendix A.

There were two main goals of this stakeholder meeting. The first was to identify the technology that will be used to measure border crossing times at BOTA, while the second was to solicit ongoing stakeholder participation for the duration of the project, particularly from those stakeholders more involved in the commercial freight crossing process.

In order to meet the first goal of identifying the technology to be used in order to measure border crossing times at BOTA, the project team presented background information on this project and the results of a previous study where 6 different technologies were analyzed that could support border crossing time measurements. After recommending RFID for this study, the project team facilitated a discussion aimed at addressing any stakeholder questions and/or concerns about RFID technology and the proposed system. There were no objections to the proposed RFID system by the local stakeholders, which validated the project team's initial assessment that RFID was the best suited technology to measure border crossing times at BOTA.

However, some stakeholders did express an interest in collecting more detailed data for each northbound crossing. The original proposed system established two measuring locations (one before the queue on the Mexican side of the border and one after the State Safety Inspection Facility on the U.S. side) where RFID equipment could be installed in

order to calculate the total crossing time for a northbound trip. In order to collect more detailed data, additional measuring locations could be set up between each inspection facility in the northbound border crossing process to measure the time a truck spends in each facility. Installing additional measuring locations will be examined further in Task 1.4 (Prepare Plan for Collecting Baseline Data) of this project.

At the end of the meeting, stakeholders were asked to volunteer for a working committee to aid in this project as it moves forward. The working committee will be available in order to provide feedback to the project teams on decisions made throughout this project. Volunteers for this working committee include representatives from CBP, SCT, DHS, TXDOT, MPO, the City of El Paso, and local transportation providers. These organizations play an integral role in international trade in the El Paso region, and will provide valuable input and assistance for the remainder of the project. A list of the working committee volunteers can be found in Appendix A at the end of this report.

Appendix A

Figure 5: Stakeholder Meeting Attendance List

Name / Nombre	Organization	Possistion / Puesto
Lic. Ricardo Humberto Hernandez	Aduanas	Subadministrador
Bill Tate	Battelle	Project Manager
Said Larbi-Cherif	City of El Paso	International Bridges Director
Fred Keyser	DHS - CBP DPS - Commercial Vehicle Enforcement	A-ADMS
Sergeant Fred Whisenant	FWA	Sergeant
Crystal Jones		Transportation Specialist El Paso / Presidio Field Operations
Ruben Torres	FMCSA	Supervisor
Rosario Holguin	Holguin Group - Secure Origins	Chief Strategist
Lic. Walter Centeno	Maquila Association	Customs Director
George Pinal	MPO	Transportation Manager
Joseph De La Rosa	NMDOT	Planning Programs Manager
Ing. Viviana Jimenez Petatan	SCT DGAF	Dep. Investigacion Tecnologica
Lic. Maria Guadalupe Lopez Rosas	SCT DGAF	Jeta Departamento PD
Hector Mendoza	STIL	Co - Owner
Rafael Andrete-Sanchez	TTI	Research Engineer
Rajat Rajbhandari	TTI	Assistant Research Scientist
Juan Villa	TTI	Research Scientist
Dave Winterich	TTI	Research Associate
Esther Hitzfelder	TXDOT	INTL Relations
Mel Partee	TXDOT	SDI Program Mgr
Prof. Kelvin Cheu	UTEP	Professor
Homero Soto	Transportes Soto e Hijos	Direccion Operaciones
Sergio Maguregeip	Transportes Soto e Hijos	Trafico
Guillermo Quezada	FMCSA	BOTA Inspector Supervisor
Octavio Ramirez	Asoc. Transportistas	Director
Ezequiel Montoya Campos	Transportador Tauros	Gerente General
Carlos Orgono	Transportador Tauros	???
Jose Contreras	CANACO DPS - Commercial Vehicle Enforcement	UP INTL. REL.
Omar Villarreal	Enforcment	Lt.
Ray Mendoza Jr.	City of El Paso	Bridge Mgr
Laura Reynolds	Asociacio de Maquiladora	GTE. Aduanas
Huber Corral Anchondo	SCT DGAF	Subdiretor Transp.
Tony Payan	CRRMA	Sec. / Planning Committee
Edgar Fino	TXDOT - El Paso District	Transportation Operations
Ted Marquez	City of El Paso	Assistant City Engineer
Victor Infante	TRACSO - Transp. de Carga	Compliance Mgr
Luis Sotelo	TRACSO - Transp.de Carga	Director

Figure 6: Working Group Committee Members

Name / Nombre	Organization	Possition / Puesto
Octavio Ramirez	Asoc. Transportistas	Director
Lic. Walter Centeno	Maquila Association	Customs Director
Fred Keyser	DHS - CBP	A-ADMS
Ing. Viviana Jimenez Petatan	SCT DGAF	Dep. Investigacion Tecnologica
George Pinal	MPO	Transportation Manager
Victor de la Garza	TXDoT (El Paso)	Transportation Operations Engineer
Captain Lambert Cantu	DPS	Captain
Ray Mendoza Jr.	City of El Paso	Bridge Mgr

References

1. Measuring Border Delay and Crossing Times at the U.S./Mexico Border. Tasks 1 and 2 Report, by *The Texas Transportation Institute*. April 2007.
2. Texas Department of Transportation. Border Safety Inspection Facility Program: Implementation Updates. February 26th, 2008.
3. Texas Transportation Institute. El Paso Stakeholder Meeting: Border Delay and Crossing Time Measurement at the U.S. / Mexico Border. El Paso, TX. February 20th, 2008.
4. US Census Bureau. Annual Estimates of the Population for Incorporated Places Over 100,000, Ranked by July 1, 2006 Population: April 1, 2000 to July 1, 2006. 2007 < <http://www.census.gov/popest/cities/tables/SUB-EST2006-01.xls>>
5. U.S. Department of Transportation, Bureau of Transportation Statistics. Border Crossing Database. <<http://www.transtats.bts.gov/BorderCrossing.aspx>>.