

International Bridge Trade Corridor Investment Grade Traffic and Revenue Study

## TIC8M

April 2011

## Who is C\&M?

- U.S. Corporation founded by local investors and Cal y Mayor y Asociados, S.C.
- Offices and operations in 13 countries.
- C\&M is a regional leader in the areas of transportation planning and traffic engineering.
- More than $\$ 11$ Billion in bonds \& loans supported to finance toll facilities
- Representative Clients

| Texas Turnpike Authority | Cintra |
| :--- | :--- |
| Maryland Transportation Authority | CCR |
| Cameron Co. Regional Mobility Authority | Macquarie |
| Hidalgo Co. Regional Mobility Authority | OHL |
| Central Texas Regional Mobility Authority | Skanska ID |
| Texas Department of Transportation | Globalvia |
| Georgia Department of Transportation | Itinere |
| Virginia Department of Transportation | MBIA |
| Washington State Dep. of Transportation | BBVA |
| P3 Development Company | Banco Santander |
| Citi Infrastructure Investments | Deutsche Bank |
| The Bank of New York | HSBC |
| ACS Infrastructure | 3i |



Rafael Cal y Mayor

## C\&M Border Experience



- Ingeniero independiente en 9 tramos de autopistas en Chihuahua, incluye: Caseta Sueco - Villa ahumada, Delicias Conchos, Conchos - Camargo, Camargo - Jiménez, Chihuahua - Sacramento, Ojo Laguna - Flores Magón, Santa isabel Cuauhtemoc, Jiménez - Savalza, Flores Magón - Galeana)
- Estimación del tránsito e ingreso del periférico de Monterrey
- Estudio de mercado para 2 estacionamientos en la zona centro del municipio de Chihuahua calle niños héroes 9,11 y 13
- Estudio de Tráfico de la autopista Estación Don - Nogales
- Estudio de Prefactibilidad de la Concesión de la Carretera Santa Clara - San Luis Río Colorado, en el Estado de Sonora (Incluye Estudio de Demanda, Pavimentos y Diseño Geométrico)
- Plan Sectorial de Movilidad Urbana Sustentable de la Ciudad de Chihuahua
- Estudio de estimación de transito de ingreso, evaluación socioeconómica, modelo de negocio y prefactibilidad técnica del Libramiento Quinta Martha-Lomas del Real en Altamira, Tamaulipas
- Estudio de tránsito para evaluar la construcción de cinco pasos a desnivel en la vía férrea de Ciudad Juárez, Chihuahua
- "Análisis de disponibilidad al pago y de frecuencia de viajes en la caseta de cobro Cuauhtémoc sobre la carretera Chihuahua-Cuauhtémoc"
- Aforos e ingresos Libramiento Chihuahua
- Hidalgo County IBTC Investment Grade Traffic and Revenue Study
- South Padre Island Intermediate Level Traffic and Revenue Study
- El Paso Commuter International Bridge Traffic and Revenue Feasibility Study
- Brownsville West Loop Traffic and Revenue Study
- Eagle Pass SL-480 Traffic and Revenue Study2010 FARAC III Northeast Public Private Partnership
- 2009 El Paso Commuter Port of Entry Feasibility Study - 2009 SH550 and US281 Connector Intermediate Traffic and Revenue Study
- 2007 South Padre Island Second Causeway Traffic and revenue Study
- 2005 NAFTA Study update for the Texas Department of Transportation
- 2005 SL 480 (Eagle Pass Outer Loop) toll feasibility study, Eagle Pass, Texas
- 2005 West Loop Project toll feasibility study, Brownsville, Texas
- Estudio de demanda de la autopista Reynosa -

Matamoros y Puente Pharr, en el Estado de Tamaulipas

- Monterrey -Nuevo Laredo, Monterrey - Reynosa,

Reynosa Matamoros Toll Road P3 Concession Process Manager

- Traffic and Revenue Study Update for the CadereytaReynosa, Monterrey-Nuevo Laredo, Reynosa-
Matamoros, Allende-Villa Juárez, Libramiento Sur de Reynosa and Pharr and Los Tomates International Bridges.
- Traffic and Revenue Study for Brownsville-Matamoros "B y M", International bridge.
- Anzalduas and Donna International Bridges Traffic and Revenue Study
- Estudio de tránsito, ingresos y evaluación social de la prefactibilidad del Libramiento de Reynosa, Tamaulipas
- 2009 Traffic Management System in the Baja California Border Region
- 2008 Intelligent Transportation System (ITS) Border Corridor Study
- 2003 Investment Grade Traffic and Revenue Study for the Tecate-Tijuana toll road
- Strategic Planning System for Freight Transportation in Mexico Phases I, II \& III
- 2004 Traffic and Revenue Study for the Laredo IV Bridge "World Trade Bridge"


Hidalgo County Growth


## Reynosa-Rio Bravo Growth



## The International Bridge Trade Corridor



- Hidalgo County RMA is planning to develop the International Bridge Trade Corridor and the Trade Corridor Connector
- C\&M performed an Investment Grade T\&R study for the project in 2010

T\&R Methodology- Simplified


## Project Scenarios

- IBTC Only: IBTC opens in 2013
- 16-mile new toll road connecting Pharr and Alliance bridges with US83
- Two lane road in opening year (one lane per direction)
- Expanded to four lanes with frontage road as ultimate design
- IBTC \& TCC: IBTC opens in 2013 and TCC opens in 2015
- 13-mile TCC will connect Conway Avenue on the west to IBTC in 2015
- TCC will be a two lane road in opening year (one lane per direction)
- Expanded to four lanes road as ultimate design


## Review of Traffic Characteristics



- Passenger cars and Commercial vehicles
- Special attention on major corridors
- International bridges
- Mexican traffic network south of the border
- Seasonal variation in traffic
- Existing ITS, Trusted Traveler Programs and ETC
- Existing Maquiladoras and Industrial Parks


## Data Collection


-2008-09 extensive Valley wide data collection

- Additional data collection March 2010
- Validation of travel patterns
-Traffic composition
- Origindestination.

Travel Time Study


- GPS based study on nine important routes


## Stakeholder and Maquiladora Interviews

- Major concern is crossing times and efficiency at the border
- Dedicated lanes are critical for on-time performance
- Previous study showed maquiladoras' traffic manager makes route decision.
- Interviewed major maquiladoras and exporters
- Routes optimized continuously by traffic managers
- $30 \%$ have weekend deliveries
- FAST trucks average travel time
- 2 hours at the border
- 20 minutes inside U. S.
- They are part of the solution to regional planning


## SP Survey Field Intercept



- Nine locations
- Bilingual Survey
- 14\% Spanish


## Commercial Vehicle SP and OD Survev

Legend
$\star$ Major Cities $\bigcirc$ Survey Locations — Highways — International Bridge Trade Corridor ..... Bridge Approach Roads ATR count Locations - Major Roads Urban Areas
$\qquad$
-Conducted in October 2009

- Route choice
by maquiladoras
-Truck OD survey on Phar Int'l Bridge's Mexican side.


## Origin-Destination (Pharr Bridge Truck Survey)



- 70\% stay south of US 83 near McAllen/Pharr (15\% go to the Foreign Trade Zone)
- $15 \%$ North of US 83 , inside Hidalgo County
- $10 \%$ have other
destinations inside Hidalgo
County
- $5 \%$ have destinations outside Hidalgo County


## Origins and Destinations for Passenger Cars



IBTC Market


## IBTC Market Translates to the Transaction Forecast



## IBTCAuto Destinations



## Socioeconomic Evaluation

TXP Inc. produced socioeconomic projections for C\&M

- Project specific census tract level population and employment forecasts up to 2040
- Three scenario to incorporate uncertainty
- Optimistic
- Most Likely
- Conservative
- Growth redistribution contributes to $6 \%$ of revenues
- Forecast of economic indicators - GDP, CPI
- Study of special trip generators
- Hospitals, schools, airports and major retail outlets


## Natural Population Growth



## Population Redistributed Growth



Natural Employment Growth


Redistributed Employment Growth


## Travel Demand Model Synthesis



## Model Volumes vs. Traffic Counts






Roadway Improvements in Model Network


## Proposed Truck Network



## Traffic and Revenue

- Scenarios by project
- IBTC Only
- IBTC \& TCC
- IBTC Only scenarios by socioeconomic forecast
- Base
- Optimistic
- Conservative
- IBTC Only scenarios by truck restrictions
- With truck restrictions (Base)
- Without truck restrictions (Alternate Base)
- Toll diversion modeling
- Auto toll diversion from project specific SP survey
- Truck toll diversion from commercial vehicle SP survey


## Toll Collection

- All tolls would be collected by means of
- Electronic Toll Collection (ETC) - Registered Transponders with pre paid accounts.
- Video recognition systems - License plates recognition for non ETC equipped vehicles including Mexican commuters and tourists.



## Toll Treatment - IBTC Only



- 4 Mainlane gantries
- 3 On ramp gantries
- 3 Off ramp gantries

Toll Rate Comparison


## Travel Time Savings - IBTC Only (Base)



|  | Time Savings in minutes |
| :--- | :---: |
| 2013 | 7 |
| 2030 | 13 |



## Travel Time Savings - IBTC Only (Base) Contd.

| Trip | Origin | Destination | Free Path | Length (miles) |  | Time (minutes) |  | Time <br> Saving (minutes) | Toll (nominal dollars) |  | Average Speed(mph) |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | $\begin{aligned} & \text { Toll } \\ & \text { Path } \end{aligned}$ | Free <br> Path | $\begin{aligned} & \hline \text { Toll } \\ & \text { Path } \end{aligned}$ | Free Path |  | Auto | Truck | Toll Path | Free <br> Path |
| Year 2013 |  |  |  |  |  |  |  |  |  |  |  |  |
| A | Pharr Int'l Bridge | City of Donna | Military Hwy. and FM493 | 16.8 | 16.2 | 20 | 27 | 7 | \$2.13 | \$6.25 | 53 | 39 |
| B | Alliance Int'I Bridge | $\begin{aligned} & \text { FM } 3072 \text { \& } \\ & \text { US281 } \end{aligned}$ | Military Hwy. and US281 | 11.2 | 11.0 | 14 | 19 | 5 | \$1.41 | \$4.12 | 41 | 33 |
| Year 2030 |  |  |  |  |  |  |  |  |  |  |  |  |
| A | Pharr Int'l Bridge | City of Donna | Military Hwy. and FM493 | 16.8 | 16.2 | 18 | 31 | 13 | \$4.63 | \$13.61 | 56 | 31 |
| B | Alliance Int'I Bridge | $\begin{aligned} & \text { FM } 3072 \text { \& } \\ & \text { US281 } \end{aligned}$ | Military Hwy. and US281 | 11.2 | 11.0 | 16 | 25 | 8 | \$3.05 | \$8.96 | 41 | 27 |

## IBTC Market Translates to the Transaction Forecast



## Transaction Growth



## Reduction Factors

## Combined Reduction Factors



| Year | Ramp Up |  |  |  | ETC Penetration |  |  |  | Video Violation Rate |  |  |  | \% Mexican* |  | IBTC Total Reduction Factors |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | US |  | Mexican |  | US |  | Mexica |  |  |  | Mexican |  | Auto | Truck |  |  |
|  | Auto | Truck | Auto | Truck | Auto | Truck | Auto | Truck | Auto | Truck | Auto | Truck |  |  | Auto | Truck |
| 2013 | 50\% | 50\% | 50\% | 50\% | 50\% | 60\% | 10\% | 20\% | 33\% | 33\% | 80\% | 60\% | 15\% | 20\% | 38\% | 40\% |
| 2014 | 60\% | 60\% | 60\% | 60\% | 55\% | 65\% | 15\% | 25\% | 33\% | 33\% | 80\% | 60\% | 15\% | 20\% | 46\% | 49\% |
| 2015 | 70\% | 70\% | 65\% | 70\% | 60\% | 70\% | 20\% | 30\% | 33\% | 33\% | 80\% | 60\% | 15\% | 20\% | 55\% | 59\% |
| 2016 | 80\% | 80\% | 70\% | 80\% | 65\% | 75\% | 25\% | 35\% | 33\% | 33\% | 80\% | 60\% | 15\% | 20\% | 64\% | 68\% |
| 2017 | 85\% | 90\% | 75\% | 90\% | 70\% | 80\% | 30\% | 40\% | 33\% | 33\% | 80\% | 60\% | 15\% | 20\% | 70\% | 79\% |
| 2018 | 90\% | 100\% | 80\% | 100\% | 75\% | 83\% | 35\% | 45\% | 33\% | 33\% | 80\% | 60\% | 15\% | 20\% | 76\% | 89\% |
| 2019 | 95\% | 100\% | 85\% | 100\% | 80\% | 85\% | 40\% | 50\% | 33\% | 33\% | 80\% | 60\% | 15\% | 20\% | 82\% | 90\% |
| 2020 | 100\% | 100\% | 90\% | 100\% | 85\% | 88\% | 45\% | 55\% | 33\% | 33\% | 80\% | 60\% | 15\% | 20\% | 88\% | 91\% |
| 2021 | 100\% | 100\% | 95\% | 100\% | 90\% | 90\% | 50\% | 60\% | 33\% | 33\% | 80\% | 60\% | 15\% | 20\% | 91\% | 93\% |
| 2022 | 100\% | 100\% | 100\% | 100\% | 90\% | 90\% | 50\% | 60\% | 33\% | 33\% | 80\% | 60\% | 15\% | 20\% | 91\% | 93\% |

* The percentage of Mexican vehicles is shown for illustration purposes actual percentage per year varies according to model



## 2030 Projected Congestion



## Base Traffic and Revenue Summary

| Year | IBTC Only |  | IBTC \& TCC |  |  |
| ---: | ---: | ---: | ---: | ---: | :---: |
|  | Annual Transactions | Annual Revenue <br> (Million Nominal <br> Dollars) | Annual Revenue <br> Annual Transactions | Million Nominal <br> Dollars) |  |
| 2013 | 2.0 | $\$ 1.4$ | 2.0 | $\$ 1.4$ |  |
| 2015 | 3.0 | $\$ 2.6$ | 4.8 | $\$ 5.9$ |  |
| 2020 | 5.3 | $\$ 6.8$ | 9.6 | $\$ 17.3$ |  |
| 2030 | 10.2 | $\$ 19.7$ | 21.6 | $\$ 57.6$ |  |
| 2040 | 12.6 | $\$ 34.7$ | 28.0 | $\$ 107.8$ |  |
| 2052 | 15.3 | $\$ 62.0$ | 35.7 | $\$ 204.9$ |  |

## Annual Transactions Forecast - IBTC Only (Base)



## Annual Revenue Forecast - IBTC Only (Base)



Revenue Growth Disaggregated


## IBTC NPV Comparison

| Scenario | Truck Restrictions | Socioeconomic <br> Scenario | NPV (Million <br> 2010 Dollars) | \% Difference <br> from Base |
| :--- | :--- | :--- | :--- | :--- |
| Scenario 1 (Base) | With Truck Restrictions | Most likely | $\$ 482$ |  |
| Scenario 2 | With Truck Restrictions | Conservative | $\$ 387$ | $-20 \%$ |
| Scenario 3 | With Truck Restrictions | Optimistic | $\$ 681$ | $41 \%$ |
| Scenario 4 | Without Truck Restrictions | Most likely | $\$ 328$ | $-32 \%$ |
| IBTC in IBTC \& TCC | With Truck Restrictions | Most likely | $\$ 586$ | $22 \%$ |

## Risks

- In addition to the inherent risks of forecasting population and economic growth the following risks exist
- Truck restrictions are not enforced
- Truck restrictions contribute with about $33 \%$ additional revenue
- Lack of interchange fly over ramps at IBTC junction with US 83
- Revenue is estimated to be reduced by $16 \%$ without the interchange
- Mexico violence levels continue or increase
- Some correlation has been observe between violence levels with traffic decrease on Mexican facilities
- Reynosa's population growth has slowed down from 5.6\% in 2000 to 3.6\% in 2010
- Violence could impact maquila industry growth in Northern Mexico
- Gas prices rise
- Gasoline availability and prices were assumed to remain at levels that would not significantly affect traffic
- Federal and state fuel taxes would not change to a degree that would affect travel behaviour
- U.S. immigration and/or border security policies have material changes
- Local economy is highly dependent on Mexican nationals
- U.S. trade policy has material changes
- Local economy is intertwined with the maquila/manufacturing industry in Reynosa


## Thank You

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