

## International Bridge Trade Corridor Investment Grade Traffic and Revenue Study



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



Rafael Cal y Mayor





**C&M Border Experience** 

- 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 Cadereyta-Reynosa, 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"



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 9,11y 13 • Estudio de Tráfico de la autopista Estación Don – Nogales
- Estudio de Tranco 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 Growth** 



Population Growth Employment 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







#### **Project Scenarios**

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







- 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.









#### **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**

-\_Conducted in October 2009

- Route choice by maquiladoras

-Truck OD survey on Phar Int'l Bridge's Mexican side<u>.</u>



## **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













#### **IBTC Market Translates to the Transaction Forecast**



# Forecasted trips willing to pay for IBTC time savings and reliability

		2013		2030			
Roadway	NB	Toll Free	Tolled	NB	Toll Free	Tolled	
	(A)	(B)	(C)	D	E	(F)	
US 83	64%	48%	58%	59%	40%	52%	
BU83	22%	21%	21%	20%	16%	18%	
FM3072	3%	2%	3%	9%	3%	7%	
Military Hwy	11%	3%	11%	13%	2%	12%	
IBTC	0%	25%	6%	0%	36%	11%	
Screenline Total	100%	100%	100%	100%	100%	100%	

# <u>2013</u> 2.7k Autos 1k Trucks

		2013		2030				
Roadway	NB	Toll Free	Tolled	NB	Toll Free	Tolled		
	(A)	(B)	(C)	D	E	(F)		
US 83	33%	22%	29%	30%	18%	25%		
BU83	42%	35%	39%	39%	26%	33%		
FM3072	3%	2%	3%	8%	3%	6%		
Military Hwy	22%	6%	21%	23%	4%	20%		
IBTC	0%	35%	9%	0%	49%	16%		
Screenline Total	100%	100%	100%	100%	100%	100%		

## <u>2030</u> 6.5k Autos 2.5k Trucks





**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**









#### **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



International Bridge Trade Corridor and Trade Corridor Connector Traffic and Revenue



**Toll Rate Comparison** 



#### **Travel Time Savings – IBTC Only (Base)**



	Time Savings in minutes	
2013	7	
2030	13	

	Time Savings in minutes
2013	5
2030	8



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

Trip	Origin	Destination	Free Path	Length (miles)		Time (minutes)		Time	Toll (nominal dollars)		Average Speed(mph)	
				Toll Path	Free Path	Toll Path	Free Path	(minutes)	Auto	Truck	Toll Path	Free Path
Year 2	013											
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
В	Alliance Int'l Bridge	FM 3072 & US281	Military Hwy. and US281	11.2	11.2 11.0 14 19		5	\$1.41	\$4.12	41	33	
Year 2	030							-				
А	Pharr Int'l Bridge	City of Donna	Military Hwy. and FM493	16.8	16.2	18	31	13	\$4.63	\$13.61	56	31
В	Alliance Int'l Bridge	FM 3072 & US281	Military Hwy. and US281	11.2	11.0	16	25	8	\$3.05	\$8.96	41	27



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## <u>2030</u> 6.5k Autos 2.5k Trucks



**Transaction Growth Auto Transactions Population** 14,000 2,000 Thousands Thousands 1,800 12,000 1,600 10,000 1,400 1,200 8,000 1,000 6,000 800 600 4,000 400 2,000 200 0 2013 2014 2023 2024 2025 2049 2050 2051 2052 2015 2016 2018 2020 2026 2019 2022 2017 2021 TC from IBTC\_Only-Mixed\_withReductions TC from IBTC Only - With Truck Network 1 lane then 2 lanes (Mixed) TC from IBTC\_Only - With Truck Network - 2 lane only TXP Most Likely Population Forecast ZGă

#### **Reduction Factors**

#### **Combined Reduction Factors**



		Ram	p Up		E	TC Pen	etratio	on	Vide	eo Vio	lation	Rate	% Me	kican*	IBTC <sup>·</sup>	Total
Year	U	JS	Mex	kican	ι	JS	Me>	kican	L	IS	Me>	kican			Reductio	n Factors
	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**

	IBTC	Only	IBTC & TCC				
Year	Annual Transactions	Annual Revenue (Million Nominal Dollars)	Annual Transactions	Annual Revenue (Million Nominal 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)





#### **IBTC NPV Comparison**

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