



**Hidalgo County Loop  
Intermediate T&R Forecast Update  
And  
Comprehensive T&R Forecast**

Proposal to the



September 9, 2009

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## 1 PRESENTATION

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C&M Associates, Inc. (C&M) is pleased to present this proposal to First Southwest Corporation (FSW) and the Hidalgo County Regional Mobility Authority (HCRMA) to provide a Traffic and Revenue Services for the proposed Hidalgo County Loop Project (the project). We have carefully reviewed your requirements expressed in our communications of August 19 and August 25, 2009 and have prepared this proposal outline with the assurance that our experience and qualifications meet the needs of FSW's work for the HCRMA fully.

C&M's experience includes the preparation of many toll feasibility and investment grade studies for the issuance of \$11B USD in bonds and loans, for hundreds of projects in the U.S. and Latin America. In the U.S., the C&M staff experience includes projects in the states of Texas, Georgia, Virginia, Florida, New York, New Jersey, West Virginia and Colorado. In collaboration with state agencies, our staff has participated in formulating project financing plans including GARVEE bonds, TIFIA loans, and has experience working with innovative financing mechanisms such as State Infrastructure Banks, and Revolving Trust Funds.

### 1.1 C&M Associates, Inc.

C&M Associates, Inc. is a Texas-based corporation founded by Carlos Contreras and by Cal y Mayor y Asociados, S.C., the premier Mexican engineering firm with offices and operations in 13 Latin American countries. The combined experience of C&M Associates, Inc. and Cal y Mayor y Asociados, S.C., jointly referred to as C&M, is based on more than 20 years of international traffic and revenue analysis



Rafael Cal y Mayor

Cal y Mayor y Asociados was founded in Mexico City in 1976 by Rafael Cal y Mayor, the recipient of an International Road Federation fellowship to attend the Bureau of Highway Traffic at Yale University in New Haven, CT. During his tenure at the Bureau of Highway Traffic, Mr. Cal y Mayor had the opportunity to work with worldwide leaders in the discipline of traffic engineering. This included an opportunity to join the then Institute of Traffic Engineers (ITE) and become associated with pioneers in the profession, to include Wilbur Smith, Burton W. Marsh, Bob Swain, Bob Holmes, Ted Matson and others. Upon his return to Mexico, Mr. Cal y Mayor became a pioneer as traffic engineer in Mexico City, an early manager of Mexico's Toll road system and a prolific writer and lecturer. For his significant contributions to the traffic engineering field, in Latin America and the United States, Mr. Cal y Mayor was posthumously honored in 2003 as an ITE Honorary Member, a selective award given by the Institute of Transportation Engineers to only 73 individuals since 1933. See ITE's website at:

<http://www.ite.org/aboutite/honorarymembers/CalYMayorR.asp>

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## 2 TRAFFIC AND REVENUE FORECASTING EXPERIENCE

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### 2.1 General T&R Experience

The C&M Staff has demonstrated unequivocal success in hundreds of T&R studies with a combined total of more than \$11 billion in bonds and loans backed by C&M staff investment grade traffic and revenue studies in the U.S. and Latin America.

In Texas, C&M has been part of the pool of recognized T&R firms under contract with the Texas Turnpike Authority Division (TTA) of TxDOT. C&M has also provided T&R consulting services to Montgomery County and to the Cameron County Regional Mobility Authority (CCRMA). C&M has recently performed an intermediate level Traffic and Revenue Study for the Hidalgo County Loop on behalf of Pate Transportation Partners (PTP) and the HCRMA. Shahram Bohluli, P.E., Ph.D., our proposed project manager, lead the development this study in 2008 which included the development and maintenance of a project specific travel demand model for Hidalgo and Cameron Counties. C&M's investment grade T&R experience in Texas includes the SH 121 T&R study developed to support the bid of Skanska Infrastructure Development and the North Tarrant Express T&R study developed to support Itinere North America efforts in conjunction with their bid for the concession of the project.

Outside of Texas, C&M has been a consultant to the Virginia Department of Transportation, the Georgia Department of Transportation and, has recently been selected by the South Carolina, Washington State and Maryland Departments of Transportation to advise them in the toll related projects.

Working for Private Developers, C&M has provided T&R consulting services to Cintra, Skanska ID, Obrascon Huarte Lain (OHL), ACS Infrastructure (Iridium), Citi Infrastructure Investments, Global Via (Formerly Fomento de Construcciones y Contratas or FCC), Acciona, Ingenieros Civiles Asociados, (ICA) and Isolux Corsain among others in the private sector.

Outside of the United States, C&M has advised the national governments of Mexico and Colombia in the development of their toll programs and has served as traffic consultant tasked with the fulfillment of traffic and revenue responsibilities of trust indentures for numerous projects.

Some recent projects that C&M has worked on include:

- Traffic and Revenue forecast for SH550 and US281 projects in Cameron County, Texas on behalf of Cameron County (2009)
- Traffic and Revenue forecast for the Midtown Tunnel, Downtown Tunnel and MLK Extension projects in Hampton Roads, Virginia on behalf of the Virginia DOT (2009)
- Traffic and revenue forecast for the proposed South Padre Island Second Causeway on behalf of TxDOT and Cameron County (2007)
- Traffic and revenue forecast for the proposed Hidalgo Loop Project on behalf of PTP and HCRMA (2008-9)
- Investment grade traffic and revenue study for the Jackson Airport Parkway on behalf of Globalvia USA Corp (2008-9).
- Advisor to the Virginia Department of Transportation (VDOT) on the proposed US 460 toll project private concession (2008-9)
- Traffic and revenue study for the Georgia Department of Transportation (GDOT)'s I-20 Managed Lanes in Atlanta (2008)

- Traffic and revenue forecast for the conversion of the High Occupancy Vehicle (HOV) lane network to High Occupancy Toll (HOT) lanes in Atlanta, Georgia on behalf of GDOT (2008)
- Investment grade study to support the concession of the North Tarrant Express project for Itinere North America, LLC (2008)
- Traffic and revenue forecast for an unsolicited proposal by a major developer for a HOT lanes project in Florida (2008)
- Investment grade traffic and revenue study to support the bid of ACS Infrastructure, Citi Infrastructure Investments and Isolux Corsán for the Pennsylvania Turnpike lease (2007-8)
- Investment grade study to Skanska ID for the SH121 CDA project in Texas (2006)
- Peer review of the investment grade traffic and revenue study of the I-495 HOT lanes project around Washington D.C on behalf of the Virginia DOT (2006).

C&M's staff experience in the US provides an ample spectrum of toll road and managed lanes and complements the vast experience that the firm has internationally. Table 1 lists C&M's staff experience in 59 projects throughout the United States and Table 2 lists the investment grade experience of the C&M staff in the support of more than \$11 billion of debt.

**Table 1 C&M Staff Traffic and Revenue Experience in the United States**

Project	State	Project	State
SH 550 and US 281 connector T&R Study	TX	Florida Turnpike Traffic Study	FL
Midtown Tunnel and MLK Extension T&R Study	VA	Mass Turnpike Metropolitan Highway System T&R	MA
Jackson Airport Parkway T&R Study	MS	Las Vegas Monorail Bond Issue T&R	NV
Pennsylvania Turnpike T&R Study	PA	Goethals Bridge Modernization Plan T&R	NY, NJ
North Tarrant Express T&R Study	TX	Chicago Skyway Toll Road Concession	IL
Montgomery County Sketch T&R Study	TX	NY Metropolitan Traffic Network Modeling,	NY, NJ
Hidalgo County Loop T&R Study	TX	I 65 and I 10 Proposed Hwy for Florida Turnpike	FL
I-75 Managed Lanes T&R Study	FL	Orlando Traffic Demand and Forecast Model	FL
I-64 T&R Study	VA	New York City Traffic Network Modeling	NY, NJ
US 460 T&R Study	VA	New Jersey Turnpike EZ Pass Deployment study	NJ
I-20 Managed lanes T&R Study	GA	New Jersey Turnpike EZ Pass Traffic Impact Study	NJ
HOV to HOT Atlanta Conversion Study	GA	NJ Turnpike, Newark Bay, Extension Study	NJ
SH 121 T&R Study	TX	SR 836 Managed Lanes Feasibility Analysis	FL
SH 161 T&R Review	TX	SR 836 Extension Toll Feasibility Analysis	FL
Poinciana Parkway T&R Review	FL	SR 924 Extension to I 95 Toll Feasibility Analysis	FL
I-495 HOT Lanes Peer Review	VA	SR 924 Extension Toll Feasibility Analysis	FL
South Padre Island T&R Study	TX	SR 874 Extension Toll Feasibility Study	FL
Brownsville West Loop T&R Study	TX	Central Parkway Toll Feasibility Analysis	FL
Eagle Pass SL-480 T&R Study	TX	U.S. 1 Tollway feasibility analysis	FL
Lake Lewisville Toll Bridge T&R Study	TX	C-470 Value Express Lanes Toll Feasibility Analysis	CO
Pres. George Bush Turnpike T&R Study	TX	E-470 Toll Revenue Study, Denver	CO
SH 121 Tarrant County T&R Study	TX	West Virginia Toll Road and Bridge Feasibility Studies	WV
SL 1604/281 T&R Study	TX	Garden State Parkway Toll Traffic Study	NJ

**TRAFFIC AND REVENUE STUDY FOR THE  
PROPOSED HIDALGO COUNTY LOOP**

**Table 2. C&M Staff Investment Grade Traffic and Revenue Experience**

C&M Staff Investment Grade Traffic and Revenue Studies						
Project	Client	Type	Official Statement Date	Rating Agency	Rating	Amount (million USD)
Jackson Airport Parkway	Globalvia Infraestructuras USA Corp.	Stand Alone Road	NA	TBD	TBD	TBD
North Tarrant Express	Itinere North America LLC	Stand Alone Road	NA	NA	NA	NA
Pennsylvania Turnpike	Citi Infrastructure, ACS Infraestructuras	Road System	NA	NA	NA	NA
Texas SH 121	Skanska ID	Stand Alone Road	NA	Moody's S&P	Private	Private
FARAC I Concession Package	SCT-Mexico	Road System	NA	NA	NA	\$4,019
FARAC Northeast Concession Package	SCT-Mexico	Road System	NA	NA	NA	NA
System of nine highways in the State of Chihuahua	Chihuahua State Government	Road System	NA	S&P, Fitch	MXAA, AAA(mex)	250
Fresnillo and La Calera Loop's	Interacciones Banca Múltiple	Road System	3/15/2003	S&P, Fitch	MXAA, AA(mex)	42
Mexico-Queretaro	Banco Santander	Stand Alone Road	NA	Loan by Banco Nacional de Obras Públicas (Banobras)		2500
Mexico-Puebla	Banco Santander	Stand Alone Road	NA			
Queretaro-Irapuato	Banco Santander	Stand Alone Road	NA			
San Luis Potosí Eastern Loop	META	Stand Alone Road	8/11/1999	S&P	MXAA+	13
Tijuana-Tecate	ATM	Stand Alone Road	10/30/2000	S&P, Fitch	MXAA	60
Chamapa-La Venta y Ramal Interlomas	Grupo Tribasa	Stand Alone Road	8/27/2002	Fitch	AA(mex)	120
Ecatepec-Pirámides	Grupo Tribasa	Stand Alone Road	5/30/2003	S&P, Fitch, MBIA Insurance	AAA, AAA(mex); AAA, AAA(mex)	200
Armería-Manzanillo	Grupo Tribasa	Stand Alone Road	5/30/2003	S&P, Fitch, MBIA Insurance	AAA, AAA(mex); AAA, AAA(mex)	
México-Toluca	Grupo Tribasa	Stand Alone Road	9/25/2003	Fitch, MBIA Insurance	AAA (mex)	360
Kantunil-Cancún	Multivalores	Stand Alone Road	2/7/2002	Fitch, Moody's	Serie "A" AA(mex) Serie "B" A(mex) Serie "S" B(mex)	25
Cardel- Veracruz	BBVA-Bancomer	Stand Alone Road	2/4/2003	S&P, Fitch	AA+(mex)	70
Acapulco Tunnel	Tuneles Concesionados de Acapulco S.A. de C.V. (TUCA)	Stand Alone Road	3/9/2001	S&P, Fitch	MXAA, AA(mex)	18
Monterrey-Cadereyta	Autopistas de Nuevo León	Stand Alone Road	12/16/2004	S&P, Fitch, Moody's, MBIA Insurance	mxAAA, AAA, Aaa.mx	220
Peñon-Texcoco	Grupo Tribasa	Stand Alone Road	12/23/2004	Fitch	AA(mex)	168
Libramiento Plan del Rio	CPM	Stand Alone Road	5/4/2005	NA	NA	45
Puebla- Atlixco	Carreteras de Cuota Puebla	Stand Alone Road	8/23/2004	S&P, Fitch	mxAAA, AAA	50
Sistema Carretero del Oriente, Mexico City	Consecionaria Mexiquense-OHL	Stand Alone Road	8/12/1999	Syndicated loan led by BBVA		200

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## 2.2 Relevant Planning Experience at the U.S. – Mexico Border

C&M possesses strong expertise in transportation planning, multimodal transportation and freight movement. The firm possesses staff fluent in English and Spanish at all levels within the organization that include specialists with expert knowledge in the areas of transportation planning; policy analysis; border crossing; transportation performance measures; rail freight forecasting; trucking; border crossing; public and stakeholder outreach; alternatives analysis and program implementation. C&M's transportation planning experience includes important studies for the Mexican Communication and Transportation Ministry as well as for Mexico's National Railroad System. Through this experience, C&M has become thoroughly knowledgeable about current freight flows and major truck and rail corridors in Mexico. No other firm can match C&M's transportation planning and analysis experiences in Mexico.

- *Integration of traffic flows between Mexico and the United States.* Analysis of North American Free Trade Agreement (NAFTA) and non-NAFTA traffic flows (i.e. Asian imports) and their integration to the United States east-west flows.
- *Analysis of Mexican port alternatives for Asian commerce flows.* Congestion at United States' west coast ports has fueled interest in the development of alternatives along the Pacific from Vancouver, Canada to Lazaro Cardenas, Mexico. C&M's talent pool includes consultants that have been at the forefront of Mexico's port planning efforts.
- *Projection of NAFTA and CAFTA traffic flows.* Commerce along the United States – Mexico border has resulted in economic, legal and development opportunities and challenges for both countries. With its presence in the United States, Mexico and Central America and its experience in travel demand forecasting in the region positions C&M well to address regional forecasting needs.
- *Understanding of Maquiladora traffic.* The development of corridors between the United States and Mexico are both a response to and a motor for the dynamic maquiladora landscape along the border and in the Mexican heartland. C&M's experience in the analysis of how traffic flows are influenced by economic factors, including maquiladoras, can be an important asset to any border planning efforts.
- *Evaluation of Public Private Partnership (PPP) projects.* C&M's experience with Mexican PPP projects on behalf of the Secretaria de Comunicaciones y Transportes (SCT) or private developers includes the definition of tender documents and the overall PPP technical, financial and legal framework, assistance in the development or evaluation of bids and the development of traffic and revenue forecast to serve as a basis for financing.

## 2.3 Recent Traffic and Revenue (T&R) Experience at the U.S. - Mexico Border

- *Hidalgo Loop (2008).*- Pate Transportation Partners (PTP) and HCRMA. C&M recently prepared an intermediate level Traffic and Revenue Study for PTP, the private developer of the proposed Hidalgo County Loop. The study includes the review of travel patterns and willingness to pay toll fees by passenger and commercial vehicles in the border region of Hidalgo County, Texas and Reynosa, Tamaulipas.
- *Reynosa-Anzalduas International Bridge (2006).*- Grupo Marhnos. C&M prepared the T&R study to support the bid of this private Mexican developer for the concession of this future bridge. The study included the review of the preliminary traffic projections performed earlier, analysis of existing information in the states of Texas and Tamaulipas

as well as travel pattern surveys on the existing McAllen – Hidalgo and Pharr – Reynosa international bridges.

- *Reynosa Loop (2006)- SCT.* C&M prepared a T&R study to support the procurement process by the Mexican federal government for the design, construction, maintenance, finance and operation of the Reynosa bypass concession. The study included the study of travel patterns between Reynosa and Monterrey and the roads area of influence as well as international trade flows and border crossings.
- *Logistics Infrastructure Study for the Northeastern States of Mexico (on-going)- FIDENORESTE.* The trust fund for the development of Mexico's northeastern region (FIDENORESTE) has commissioned C&M to elaborate a plan for the strategic development of the logistics infrastructure in the region. The main purpose of this study is to build a profile of future road, rail, air and maritime transportation projects, as well as intermodal transportation facilities and border crossing projects in the region. Some of the issues the study considers are:
  - a) security requirements on cross border flow due to the events of September 11<sup>th</sup> 2001;
  - b) NAFTA trends;
  - c) the Trans Texas Corridor planning and programming; and
  - d) Asian market expansion on global economy.
- *South Padre Island 2nd causeway-* C&M has recently prepared an intermediate level T&R study for the TxDOT for this bridge in Cameron County, Texas. The study will serve the Pharr District, the Texas Turnpike Authority and the Cameron County RMA in their planning, alternative selection and financing decisions.
- *NAFTA Study Update (2007)-* C&M was an important part of the team updating the NAFTA study flows study for Transportation Planning and Programming division of the TxDOT. The study provided an update on the current and future trade flows crossing the Texas – Mexico border.
- *La Entrada Al Pacifico feasibility study (on-going)-* C&M is currently part of the team studying the feasibility of this corridor between Midland-Odessa and the Presidio-Ojinaga border crossing and ultimately reaching the city of Chihuahua and the Port of Topolobampo in Mexico.

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### 3 FIRM ORGANIZATION AND PROPOSED STAFF

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Under Mr. Carlos Contreras, a capable project, C&M has assembled a team that ensures expert participation in each phase of the T&R consulting process. For individual resumes, see section 8 of this proposal. The following is the individual staff proposed to serve the HCRMA:

**Shahram Bohluli, P.E. Ph.D.**, the proposed project manager, has over 13 years of toll facility modeling, transportation planning and engineering experience. He recently lead the modeling aspects of the Hidalgo Loop traffic and revenue study on behalf of the HCRMA and the Jackson Airport Parkway investment grade traffic and revenue study on behalf of Global Via. Recently, Dr. Bohluli oversaw the modeling aspects of the Pennsylvania Turnpike traffic and revenue study, the North Tarrant Express investment grade traffic and revenue study, the I-75 HOT lanes Traffic and revenue study and the I-20 managed lanes traffic and revenue study. Previously, Dr Bohluli oversaw the modeling of the preliminary feasibility study for the South Padre Island second causeway and was task leader in charge of the modeling component of the SH121 CDA project in Collin and Denton counties, TX. His experience as task leader also includes the following toll feasibility projects in Texas: US 280 / Loop 1604, San Antonio, TX.; IH 30 Managed Lane Corridor, TxDOT - Fort Worth, TX; SH 121 South-west Parkway, Tarrant and Johnson County, TX; US 31 Bypass, Corsicana, TX; IH 30/US 80, Dallas, TX; SH 190 Extension, Dallas County, TX; US 190 Express Lane Concept, Copperas Cove, TX and; Loop 49, Tyler, TX; US 281 Falfurrias Relief Route, Falfurrias, TX.. Dr. Bohluli has also assisted in the development of Mexico's National Strategic Highway Plan Study where he advised on the integration of Texas and Mexico traffic flows for the Secretaria de Comunicaciones y Transportes (SCT).

**Carlos M. Contreras, M.B.A.** Principal in Charge, has more than 15 years of experience. He is responsible for overall client satisfaction, allocation of resources and quality of the projects He has promoted transportation infrastructure projects in the United States, Mexico and Peru, leading consortia of international players in the pursuit of transportation projects. Mr. Contreras served recently as project manager of the Midtown Tunnel, Downtown Tunnel and MLK Extension projects Traffic and Revenue Study on behalf of the Virginia's Department of Transportation Public Private Partnership program. Mr. Contreras has lead presentations of traffic and revenue results with rating agencies, bank lenders and project sponsors for the SH 121 Comprehensive traffic and revenue study, the SH 161 traffic and revenue review, the North Tarrant Express Comprehensive traffic and revenue study, the Pennsylvania Turnpike traffic and revenue study for the turnpike's lease, the US 460 traffic and revenue study and the Jackson Airport Parkway traffic and revenue study. He has served as project manager of the North Tarrant Express Comprehensive traffic and revenue study and the US 460 traffic and revenue study. As principal in charge, Mr. Contreras is responsible for overall project execution quality and the interactions with the financial community. Mr. Contreras has been responsible for the client relationship with the departments of transportation of the states of Texas, Georgia, Virginia, South Carolina, Maryland and Washington State as well as the private investors/concessionaires including Cintra, Itinere, OHL, Macquarie, ACS Infrastructures, Global Via and Citi Infrastructure Investments.

**Marcos Nogueroń, M.S.** the QA/QC officer for, brings over 17 years of experience to the team serving as planner, project manager, task leader and financial community liaison on numerous toll studies ranging from conceptual level to investment grade studies. He has lead studies for the issuance of \$11 billion in loans and bonds to finance toll road and toll tunnel projects in the U.S. and Latin American markets. He has lead C&M's relationship with underwriting institutions,

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rating agencies, credit enhancers, and institutional and individual investors and presented C&M's investment grade T&R studies at bond placement road shows. As an experienced practitioner of T&R studies, Mr. Nogueron is able to anticipate potential questions from clients and the financial community and to evaluate in an efficient manner the quality and reasonableness of C&M's results.

**Travis D. James, M.B.A, TXP**, will lead the Socioeconomic Analysis for the project. Mr. James has over ten years of experience in general economic analysis, socioeconomic analysis for toll projects, strategic planning, and policy development. Mr. James has conducted nearly 200 economic and tax revenue impact studies. Mr. James is currently assisting the I-69/TTC Mobility Partners consortium conducting economic analyses as part of the I-69 Corridor Study. Mr. James has also served as socioeconomic analysis task leader within a C&M lead team performing the SH 550 and US 281 Intermediate T&R on behalf of the Cameron County RMA. He produced the socioeconomic analysis for the development of the Intermediate T&R analysis of the Hidalgo County Loop for Hidalgo County Roadbuilders on behalf of the Hidalgo County RMA. For the Camino Real Regional Mobility Authority in El Paso, Texas, Mr. Travis has served as task leader for the "investment grade socioeconomic analysis" related to the recently created Transportation Reinvestment Zone (TRZ). The Mobility Authority's financial advisor will use the results to secure funding to build future roads. In Harris County, Mr. Travis has participated in the Economic Development Plan for the Spectrum Site along Beltway 8 and State Highway 288. The Economic Development Strategic Plan for the City of La Porte, Texas (2008), the Estimated Economic & Tax Revenue Impact Related to TDCJ Central Prison Unit Redevelopment (2008) in the City of Sugar Land, Texas and the Market Feasibility and Development Analysis (2009 – present) in the City of Jersey Village, Texas

**Carlos Miranda, E.I.T.**, will lead data collection tasks. He brings extensive experience in transportation planning and traffic engineering projects, including T&R studies, technological applications for toll road operations; EIS report production, traffic simulations, capacity analyses, traffic surveys and data collection. His experience encompasses traffic simulation for the evaluation of alternatives, level-of-service/capacity analyses, and alternatives for construction phases, and future traffic operations. His responsibilities have included the design of static toll revenue models, traffic projection and reduction, toll facility feasibility studies and implementation strategies on several Intelligent Transportation Systems projects.

**Support staff** is located in our Dallas office to perform traffic and revenue studies exclusively. C&M puts high value in the academic and practical training of its staff and supports their continued development. In addition to academic training, staff receive periodic formal training in aspects specifically relevant to our traffic and revenue specialty including modeling with Cube Voyager, TransCAD, EMME, Vissim and other platforms as well as logit choice modeling and risk analysis.

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## 4 PROJECT UNDERSTANDING

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### Our understanding

In 2005, the HCRMA was created to address the growing transportation needs of the Hidalgo County region. Its mandate is to expand and improve the county's roadway network to address congestion before it negatively impacts the NAFTA related economic development that is vital to the county. The RMA has chosen the Southern Loop Project as its initial project. In 2008, C&M conducted an intermediate level traffic and revenue study for the project. The project is evolving as a result of the state of the financial markets and the HCRMA strategy. First Southwest Company (FSW), the HCRMA's financial advisor, is analyzing the financing of the project and advising on the projects direction and strategy. C&M has been asked to assist on the short term decision making process by providing updated preliminary traffic and revenue projections and ultimate comprehensive projections to assist FSW with the project's financing.

**Project** - The new project will have a modified geometry and phasing. This project will be composed of three distinctive phases:

Phase 1 - The new Section A and Section B of the Hidalgo County Loop will be built by 2015. Section A is reconfigured to start at its original location in the east side at its junction with Section B, but to end at Conway Ave./FM1016 on the west side. The sections will have one lane in each direction.

Phase 2 – The rest of Section A west of the Anzalduas access road will be built when financially feasible. Full cloverleaf interchanges in the end of the section at the junction with US83. The section will have one lane in each direction.

Phase 3 – Both section A and B will be upgraded to have two lanes per direction as financial feasibility and toll rate policies dictate.

**Transportation Improvement Plan** – an updated Base TIP will be provided to C&M by the HCRMA. It is expected that the TIP will take into consideration the proposed Segments A and B, and the schedule presented above. This Base scenario will incorporate the most likely transportation improvements that will be built by the end of each phase.

**Anzalduas International Bridge** – The bridge is expected to open to traffic within the next couple of months. Although traffic patterns will take some time to stabilize, early observations on the usage of the bridge will be important for a comprehensive study. The location of the interchanges and geometry will be confirmed in the field.

**Donna International Bridge** – The bridge is currently under construction, and the latest project schedule and configuration will be considered in this analysis.

**Socioeconomic data** – It is essential to obtain a socioeconomic study specifically designed for a comprehensive level traffic analysis that incorporates the new project phasing described above.

**Traffic operations at Ports of Entry and approaches** – The attractiveness of the time savings provided by the Loop can be affected by time delays experienced by users at the International Bridges. In the case of trucks, the Customs and Border Protection's (CBP) FAST program can reduce crossing times depending on the approach and lane configuration. C&M will need to confirm the plans for FAST and other programs at the Pharr, Hidalgo, Donna and Anzalduas Points of Entry (POE)

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## 5 SCOPE OF WORK

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C&M intends to update to Intermediate level projections to reflect the new scope of the project and assist in the short term decision making process. In parallel, C&M intends to develop comprehensive traffic and revenue projections to assist in the project's financing. The following tasks are expected to be performed in the course of this study:

### ***PART 1. TRAFFIC AND REVENUE FORECAST UPDATE***

#### **Task 1.1: Project Management/Mobilization**

Upon receiving Notice to Proceed, the Project Manager will schedule a project kick-off meeting with key stakeholders with the objective to confirm the project's schedule, the overall project methodology and data requirements. Based on this meeting, the Project Manager will develop a Project Control Plan, outlining the identified project stakeholders, specific project procedures, project methodology, data collection needs, schedule, and project contact information. The Project Manager will issue a notice to stakeholders regarding project commencement and may request assistance in gathering existing data, traffic reports for the area, details and specifics for the project and/or other planned projects in the area of influence, when applicable.

The Project Manager will provide FSW with progress reports on a periodic basis and will provide minutes of meetings held with project stakeholders.

#### **Task 1.2: Existing Information**

*Task 1.2.1—Review of existing information:* C&M will update the information obtained in early 2008 with any new information released. The update of information from U.S. and Mexican sources will include traffic reports, recent traffic volumes, socioeconomic data (including population, employment, and income), as well as macroeconomic variables. Data will be compiled from the appropriate government information repositories and other available sources such as TxDOT, the Hidalgo County Metropolitan Planning Organization (HCMPO), International bridge operators, Truck Companies, Secretaria de Comunicaciones y Transportes (SCT), Instituto Nacional de Estadística, Geografía e Informática (INEGI) and others.

#### **Task 1.3: Field Work and Surveys**

*Task 1.3.1—Highway Network Characteristics, review and validation of supply inventory:* Update of the inventory of existing highway network characteristics paying particular attention to new developments such as the Anzalduas International Bridge. Confirmation of the selected "area of influence," ascertaining "decision making points," where competition and the general users' trade-offs occur. Update of the "network supply" for potential user markets, including planned improvements to highways, bridges (Donna International Bridge) and others within the project area of influence and the region. Particular attention will be placed on the current layout and operational characteristics of FAST lanes at the Pharr International Bridge and planned FAST lane additions/improvements at the Pharr, Donna and Anzalduas International Bridges.

*Task 1.3.2—Stated Preference Survey for Truck Traffic:* This will be conducted as field interviews to determine travel characteristics specific to the truck traffic in the study area. Interview teams

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will be organized and interviews will be conducted in order to obtain a representative sample of the area. Interview forms will be designed to include a number of questions, which will be utilized to investigate truck travel patterns. These questions will include, truck ownership (owner, operating for a company, operating for someone else), willingness and decision to pay toll, truck registration by nationality (US versus Mexican), origin-destination, cargo information and other aspects that would help in incorporating the information within the travel demand model. Emphasis will be placed on current usage of FAST lanes in the area. No specific stated preference survey for passenger car users will be conducted in Part 1 of the study. Instead, available data used in the 2008 will be used for that purpose.

The results of such survey will be the basis to develop a toll diversion model based on the probability of trucks using the proposed toll facility as a function of their trade-offs in time savings, cargo, toll expenditures and other possible travel costs. As a by-product, a user's Value of Time (VOT), by subcategory, is developed from the SP survey.

*Task 1.3.3—Traffic counts:* a limited traffic count program will be conducted to expand the SP survey results.

#### **Task 1.4: Socioeconomics**

*Task 1.4.1—Socioeconomic analysis:* For the 2008 T&R study, C&M utilized socioeconomic projections developed by Texas Perspectives, Inc. (TXP). This projections assumed segments C and D of the Hidalgo Loop would be developed and need to be modified for this update. C&M will request TXP to provide a preliminary revision of its projections in order to utilize them for the Part 1 update. A more detailed review suitable for financing purposes will also be requested for Part 2 of this scope.

#### **Task 1.5: Travel Demand Model Update**

*Task 1.5.1—Travel Demand Model Update:* C&M developed a project specific travel demand model for the Hidalgo County Loop study in 2008. As part of this task, C&M will update the transportation network as per the data collection described above and will estimate the impact of the planned interchanges at the project's termini. The toll treatment and gantry configuration will be redesigned to reflect the reduced project scope. Finally, the insight obtained from the truck stated preference survey will be reflected in C&M's toll diversion procedure.

#### **Task 1.6: Opening Year Traffic**

*Task 1.6.1—Traffic trends:* Analysis of historic traffic trends for the corridor/area, including other modes of transportation, if applicable.

*Task 1.6.2—Toll diversion model:* Willingness to pay and general cost differentials between the proposed toll facility and its free alternative will be the basis to establish diverted traffic to the proposed project.

*Task 1.6.3 —Opening Year Trip Tables:* Preparation of opening -year trip tables that include diverted traffic (toll diversion model), induced traffic (trips not present at the time), and traffic generated from special generators (as applicable). .

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*Task 1.6.4 — AADT Traffic Estimates:* Traffic seasonal variation factors will be determined based on information obtained under the “Field data collection” task. These factors will be used to adjust the model’s daily traffic into AADT values for each vehicle class.

### **Task 1.7: Future Year Forecast**

C&M will use travel demand and toll diversion models to develop traffic forecast for the opening year and two more horizon years to reflect transportation network changes and socioeconomic information. Based on that, C&M will report forecasted traffic in every year through the projection period.

*Task 1.7.1: Future Year Trip Tables:* The socioeconomic analysis conducted in Task 1.4 above will serve as the basis for the development of the future year forecast. Using trip generation and distribution as part of the travel demand model development, new set of trip tables for future years will be developed.

*Task 1.7.2—Ramp-Up Period:* The opening year estimated traffic will be adjusted to account for project ramp-up based on toll operation characteristics such as electronic toll collection market penetration and other factors characteristic of start-up projects and/or characteristic to the area.

*Task 1.7.3—Future years forecast:* Based on the opening year and future networks and trip tables, the traffic will be forecasted for two future years after opening year estimated by the updated travel demand model.

### **Task 1.8: Sensitivity Analysis**

Conduct toll sensitivity analysis, by varying proposed toll rates and determining the potential toll traffic associated with it. As a result, a set of toll sensitivity curves will be established. These curves show the potential diverted traffic in relation to toll rates, and the potential revenue in relation to toll rates. A preferred toll rate will be determined from this analysis with a specific criterion that is compatible with the goals and policy that the HCRMA has for the project.

### **Task 1.9: Traffic and Revenue Forecast**

Develop annual traffic estimates for the opening year and anticipated future years of the projection period. The traffic projection will be adjusted to reflect variation within the week (weekday vs. weekend), monthly variations, and taking into consideration other possible variation found as a result of traffic pattern investigation. Based on that, annual revenues will be calculated for the opening year and future years.

### **Task 1.10: Documentation**

C&M will report its findings for the Intermediate Traffic and Revenue Study Update in a technical memorandum describing the nature of the modifications performed to the 2008 study and the impact of the reduced scope.

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## **PART 2. COMPREHENSIVE TRAFFIC AND REVENUE FORECAST**

### **Task 2.1: Project Management/Mobilization**

The project management organization will be carried forward from the study update part of this scope. The PCP described earlier will include the schedule, milestones and project organization pertaining to the comprehensive analysis and will be discussed with FSW as part of the study's kick-off meeting.

The Project Manager will provide FSW with progress reports on a periodic basis and will provide minutes of meetings held with project stakeholders.

### **Task 2.2: Existing Information**

C&M intends to collect all existing information for the comprehensive agreement as part of the study update in Part 1 of this scope.

### **Task 2.3: Field Work and Surveys**

C&M expects that the Anzalduas International Bridge will open within the next few weeks for passenger vehicle traffic (truck traffic will not be allowed until 2015) contributing greatly to increased mobility between Mexico and the United States in this region. C&M recommends conducting field data collection for the comprehensive study after the opening of the Anzalduas International Bridge.

*Task 2.3.1—Travel Times:* Travel times will be assessed by time of day periods (AM, MD and PM). Average speeds on relevant highway stretches will also be determined.

*Task 2.3.2—Stated Preference Survey for Passenger Car Traffic:* Similar to the stated preference survey conducted for trucks in part 1 of this scope, C&M intends to conduct a survey of drivers of passenger vehicles to assess their willingness to pay a toll in order to obtain travel time savings. This will be conducted as field interviews to determine travel characteristics specific to the traffic in the study area. A questionnaire will be specifically tailored for the project and will be conducted through a series of instruments including face to face, internet and or telephone interviews.

As in the truck survey, the results of the survey will be the basis to develop a toll diversion model based on the probability of travelers' use of the proposed toll facility as a function of their trade-offs in time savings, toll expenditures and other possible travel costs. As a by-product, a user's Value of Time (VOT), by subcategory, is developed from the SP survey.

*Task 2.3.3—Traffic count programs:* A detailed traffic count program will be conducted in order to create a traffic profile in the project's area of influence. This is particularly important as a result of the opening of the Anzalduas International Bridge to passenger car traffic. The plan will include a classification traffic count program to cover a sufficient number of screenlines for the purpose of re-calibrating and validating the travel demand model to the new circumstances. The screenline identification will be based on targeting major highways, arterials and main roadways that would cover the project area of influence.

*Task 2.3.4 Origin-destination surveys:* In order to complement the truck origin destination information that will be obtained from the surveys conducted in part 1 of this scope, C&M

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intends to conduct an origin destination survey of passenger car vehicles. As in the case of the traffic count program, this survey will be conducted after the opening of the Anzalduas International Bridge and will serve in the re-calibration of the Hidalgo County Loop travel demand model.

### **Task 2.4: Socioeconomics**

*Task 2.4.1—Socioeconomic analysis:* In accordance with the comprehensive nature of this analysis, C&M will obtain from TXP a detailed socioeconomic projection for the project's area of influence. This analysis will be based on the current scope of the Hidalgo County Loop. Working with available socioeconomic data from the TexasSAM model, and Hidalgo County, this data will be supplemented with information extracted from the US Census data and Mexico Census data, Bureau of Labor Statistics and state employment statistics, as well as other sources. The other sources will include interviews with business and government agencies and personnel, as well as consulting economic variable projection entities, such as Woods and Poole and Moody.

Socioeconomic variables will be used to update the information fed into the travel demand model in order to estimate its trip generation and distribution, ultimately developing trip tables between traffic analysis zones (TAZ). The socioeconomic study will determine the following:

1. Trip generation characteristics of land uses in the project area
2. Major planned developments in the project area.
3. Development of estimated socioeconomic data for opening year and for a forecast horizon year (i.e. 2035) after opening year

*Task 2.4.2—External station:* In the case of external trips coming into the area and truck traffic projections, C&M will update regional and national economic indicators. These indicators include: GDP, Manufactured goods, NAFTA trends, Customs entry data, Bridge passenger car and truck crossing data and McAllen Foreign Trade Zone activity data.

### **Task 2.5: Travel Demand Model Development**

*Task 2.5.1- Review of existing information:*

*Task 2.5.1.1—Highway network characteristics, its review and validation of supply inventory:* inventory of existing highway-network characteristics. Decide the coverage of the "Area of Influence," and "decision making points" (where competition and the general trade-off of the user occur the most). Identify "network supply" for potential users—current and future committed highway improvements.

*Task 2.5.1.2 – Review of existing model.* As discussed in part 1 of this scope, C&M developed a project specific travel demand model for the Hidalgo County Loop study in 2008. This model is an excellent starting point for the study however, beyond the obvious updates from 2008 to 2009 and the reduced scope of the project, it is necessary to increase the level of detail in the model in order to support a comprehensive analysis. This task will review the areas where improvements are necessary such as a detailed calibration based on origin-destination data in the area. C&M will also check the status of the development by TxDOT and the Texas Transportation Institute (TTI) of the unified valley model for Hidalgo and Cameron counties. This model was not available for the 2008 study but may be available now. If this is the case, C&M will review the new model and weight the benefits of adopting the new model and combining it with the C&M developed model or replacing the models.

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### **Task 2.5.2- Travel Demand Model Coding**

*Task 2.5.2.1—Highway-network and Traffic Analysis Zones (TAZs):* A detailed highway network, representing the existing roadways in the Area of Influence will be coded, based on existing network information, maps, road diagrams, and field data collected. Traffic analysis zones will be defined considering: (i) land-use patterns, (ii) highway network characteristics, and (iii) the nature of the socioeconomic information at hand (collected in early tasks).

*Task 2.5.2.2—Development of trip tables:* Based on an expanded OD survey (with or without being informed by existing trip tables or any other kind of existing OD matrices) this sub-task will lead to the preparation of base-year trip tables.

*Task 2.5.2.3—Development of an assignment model:* A user-equilibrium assignment model will be developed to allocate trips to given highway segments (network links), including the proposed causeway.

*Task 2.5.2.4—Trip origin and destination surveys:* OD information will be related to a TAZ system (geo-coding) and segmented in accordance to different types of users (by vehicle type, travel mode, time period, trip purpose, and other available in data, if relevant). The OD tables will be expanded to an AADT value utilizing the data from permanent count stations to account for seasonality and utilizing the field data collected during the study.

*Task 2.5.2.5-Model calibration:* Traffic assignments from the model (as it represents existing conditions) will be compared to existing counts along the Area of Influence. Using speed values measured under the field data collection task, model parameters may be adjusted to reproduce control benchmarks, in accordance to accepted tolerances for calibration.

### **Task 2.6: Opening Year Traffic**

*Task 2.6.1—Traffic trends:* Analysis of historic traffic trends for the corridor/area, including other modes of transportation, if applicable.

*Task 2.6.2—Toll diversion model:* Willingness to pay and general cost differentials between the proposed toll facility and its free alternative will be the basis to establish diverted traffic to the proposed project.

*Task 2.6.3 —Opening Year Trip Tables:* Preparation of opening -year trip tables that include diverted traffic (toll diversion model), induced traffic (trips not present at the time), and traffic generated from special generators (as applicable).

*Task 2.6.4 — AADT Traffic Estimates:* Traffic seasonal variation factors will be determined based on information obtained under the “Field data collection” task. These factors will be used to adjust the model’s daily traffic into AADT values for each vehicle class.

### **Task 2.7: Future Year Forecast**

C&M will use travel demand and toll diversion models to develop traffic forecast for the opening year and two more horizon years as per the availability of networks, and socioeconomic forecast structures. Based on that, C&M will report forecasted traffic in every year through the projection period.

*Task 2.7.1: Future Year Trip Tables:* The socioeconomic analysis conducted in Task 2.4 above will serve as the basis for the development of the future year forecast. Using trip generation and

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distribution as part of the travel demand model development, new set of trip tables for future years will be developed.

*Task 2.7.2—Competing Transportation Improvements:* Investigate plans pertaining to possible competitors in the area of influence, such as other roads improvements, and/or competitive modes (e.g., bus, rail, others).

*Task 2.7.3—Ramp-Up Period:* The opening year estimated traffic will be adjusted to account for project ramp-up based on toll operation characteristics such as electronic toll collection market penetration and other factors characteristic of start-up projects and/or characteristic to the area.

*Task 2.7.4—Future years forecast:* Based on the opening year and future networks and trip tables, the traffic will be forecasted for two future years after opening year estimated by the developed travel demand model.

### **Task 2.8: Sensitivity Analysis**

Conduct toll sensitivity analysis, by varying proposed toll rates and determining the potential toll traffic associated with it. As a result, a set of toll sensitivity curves will be established. These curves show the potential diverted traffic in relation to toll rates, and the potential revenue in relation to toll rates. A preferred toll rate will be determined from this analysis with a specific criterion that is compatible with the goals and policy that the HCRMA has for the project, such as maximizing traffic, maximizing revenue, striking a balance between the two, or earning sufficient revenue while maintaining a certain traffic operational level of service.

### **Task 2.9: Traffic and Revenue Forecast**

Develop annual traffic estimates for the opening year and anticipated future years of the projection period. The traffic projection will be adjusted to reflect variation within the week (weekday vs. weekend), monthly variations, and taking into consideration other possible variation found as a result of traffic pattern investigation, such as holidays. Based on that, annual revenues will be calculated for the opening year and future years.

### **Task 2.10: Documentation**

C&M will report its findings for the comprehensive Traffic and Revenue Study in accordance with the following:

*Task 2.9.1—Preparation of Draft Report for the Traffic and Revenue Study:* A Draft Report will be prepared to document assumptions, inputs, findings, and results. A proposed report layout would include: (i) a description of the proposed toll facility; (ii) a summary of existing travel conditions and data collection; (iii) summary of the socioeconomic evaluation and findings; (iv) details of the development of travel demand model; (v) toll sensitivity analysis and (vi) the traffic and revenue forecast.

*Task 2.9.2—Draft Report review by FSW and the HCRMA:* Copies of the Draft Report will be delivered to FSW and the HCRMA for review and comments.

*Task 2.9.3—Final Report:* C&M will evaluate and respond to comments received during the review period. Accordingly, C&M will revise the draft report to address the comments received during this period.

## 6 SCHEDULE AND FEES

C&M is ready to start work on the project once a Notice to Proceed (NTP) is issued. The following is a summary of the milestones and deliverables anticipated for the project following the receipt of requested information pertaining to the project from FSW:

1. Project Control Plan: within three weeks from NTP
2. Technical Memorandum with the update to the HC Loop Intermediate Traffic and Revenue Study: within 10 weeks from NTP
3. Draft Report: for the Comprehensive Traffic and Revenue Study within seven months from NTP
4. Final Report for the Comprehensive T&R: two weeks following the receipt of comments on the draft report

The estimated fee to perform Part 1, update to the Intermediate T&R study, is \$158,200 for. For Part 2, the development of a comprehensive T&R study is \$495,952. Please note that direct costs are estimates and will be passed through at actual cost.

### Hidalgo County Southern Loop

#### Part 1. Intermediate Traffic and Revenue Study Update

LABOR		
Task 1.1	Project Management	\$9,302
Task 1.2	Existing Information	\$16,552
Task 1.3	Field Work and Survey	\$13,180
Task 1.4	Socioeconomics	\$16,602
Task 1.5	Travel Demand Modeling	\$8,888
Task 1.6	Opening Year Traffic	\$4,170
Task 1.7	Future Year Forecast	\$4,570
Task 1.8	Sensitivity Analysis	\$4,170
Task 1.9	Traffic and Revenue Forecast	\$5,030
Task 1.10	Documentation	\$10,736
Total Labor		<b>\$93,200</b>
DIRECT EXPENSES *		
C&M Associates		
Travel	\$6,000	
<b>Total C&amp;M</b>	<b>\$6,000</b>	<b>\$6,000</b>
Sub consultants		
Economist		
Burdened Labor	\$30,000	
Travel	\$3,000	
<b>Total Economist</b>		<b>\$33,000</b>
Filed Work and Surveys		
Traffic Counts/Travel Time Surveys	\$9,000	
Mexican Truck SP Survey	\$17,000	
<b>Total Field Work</b>		<b>\$26,000</b>
<b>Total Expenses (includes sub consultants)</b>		<b>\$65,000</b>
<b>Total Cost for Project</b>		<b>\$158,200</b>

\*Direct expenses are estimates. Client will be billed at actual cost.

### Hidalgo County Southern Loop

#### Part 2. Comprehensive Traffic and Revenue Study

LABOR		
Task 2.1	Project Management	\$23,124
Task 2.2	Existing Information	\$0
Task 2.3	Field Work and Survey	\$35,392
Task 2.4	Socioeconomics	\$35,736
Task 2.5	Travel Demand Modeling	\$50,032
Task 2.6	Opening Year Traffic	\$14,524
Task 2.7	Future Year Forecast	\$15,268
Task 2.8	Sensitivity Analysis	\$16,668
Task 2.9	Traffic and Revenue Forecast	\$15,324
Task 2.10	Documentation	\$25,884
Total Labor		<b>\$231,952</b>
DIRECT EXPENSES *		
C&M Associates		
Travel	\$8,000	
<b>Total C&amp;M</b>	<b>\$8,000</b>	<b>\$8,000</b>
Sub consultants		
Economist		
Burdened Labor	\$65,000	
Travel	\$6,000	
<b>Total Economist</b>		<b>\$71,000</b>
Filed Work and Surveys		
Traffic Counts/Travel Time Surveys	\$35,000	
Car SP and OD Survey	\$150,000	
<b>Total Field Work</b>		<b>\$185,000</b>
<b>Total Expenses (includes sub consultants)</b>		<b>\$264,000</b>
<b>Total Cost for Project</b>		<b>\$495,952</b>

\*Direct expenses are estimates. Client will be billed at actual cost.

## 7 REFERENCES

<p><b>Georgia Department of Transportation</b> Earl Mahfuz Treasurer 600 W Peach St. Atlanta, GA 30308 (404) 631-1003 <a href="mailto:earl.mahfuz@dot.state.ga.us">earl.mahfuz@dot.state.ga.us</a></p> <p><b>Virginia Department of Transportation</b> Deborah Brown Director Innovative Finance and Revenue Operations 1100 Bank Street, 12th floor Richmond, Virginia 23219 (804) 786-9847 <a href="mailto:deborah.brown@VDOT.Virginia.gov">deborah.brown@VDOT.Virginia.gov</a></p> <p><b>Texas Turnpike Authority</b> Doug Woodall, P.E Director of Turnpike Planning and Development 125 East 11th Street Austin, TX 78701-2483 (512) 463-8585 <a href="mailto:fwoodall@dot.state.tx.us">fwoodall@dot.state.tx.us</a></p> <p><b>Hidalgo County Regional Mobility Authority</b> Dennis Burluson Chairman 510 S. Pleasantview Drive Weslaco, Texas 78596 Phone: 956.969.5822 <a href="mailto:dennis.burluson@agedwards.com">dennis.burluson@agedwards.com</a></p> <p><b>Skanska ID</b> David Boss 14900 Landmark Blvd Suite 250 Dallas, TX 75254 (972) 386-1100 <a href="mailto:david.boss@skanska.se">david.boss@skanska.se</a></p>	<p><b>KPMG</b> Tim Wilschetz (212) 954-7422 <a href="mailto:twilschetz@KPMG.com">twilschetz@KPMG.com</a></p> <p><b>ING</b> Willem Sutherland MD Head Infrastructure Finance 1325 Avenue of the Americas New York, NY 10019 (646) 424-6184 <a href="mailto:willem.sutherland@americas.ing.com">willem.sutherland@americas.ing.com</a></p> <p><b>Goldman Sachs</b> Greg Carey 85 Broad Street New York, NY 10004 +1 (212) 902-4316 <a href="mailto:gregory.carey@gs.com">gregory.carey@gs.com</a></p> <p><b>Bear Stearns</b> David H. Klinges Jr. Managing Director 383 Madison Avenue New York, New York 10179 +1 (212) 272-3639 <a href="mailto:dklinges@bear.com">dklinges@bear.com</a></p> <p><b>BBVA</b> Jorge Burgalet López de Aro Director Structured Finance Madrid, Spain +34 91 374 33 08 <a href="mailto:jorge.burgalet@grupobbva.com">jorge.burgalet@grupobbva.com</a></p> <p><b>Banco Santander</b> Javier Martín Robles Director Project Finance Madrid, Spain +34 91 289 11 06 <a href="mailto:javmartin@gruposantander.com">javmartin@gruposantander.com</a></p> <p><b>OHL Concesiones</b> Carlos García-Faure +34 (91) 348 42 78 <a href="mailto:cgfaure@ohlconcesiones.com">cgfaure@ohlconcesiones.com</a></p>	<p><b>Moody's Investors Service</b> Thomas G. Paolicelli Vice President / Senior Analyst Public Finance Group, Infrastructure Finance Team 99 Church Street New York, New York 10007 (212) 553-0334 <a href="mailto:thomas.paolicelli@moodys.com">thomas.paolicelli@moodys.com</a></p> <p><b>Fitch Ratings</b> Bill Streeter MD International Public Finance Japan &amp; Asia Pacific Tokyo, Japan +81 3 3288 2634 <a href="mailto:william.streeter@fitchratings.com">william.streeter@fitchratings.com</a></p> <p><b>MBIA</b> Franklin Minerva Managing Director, Emerging Markets, 383 Madison Avenue New York, New York 10179 +1(914) 765-3475 <a href="mailto:franklin.minerva@mbia.com">franklin.minerva@mbia.com</a></p> <p><b>Citigroup</b> Ron Marino Director Public Finance, 390 Greenwich Street 2<sup>nd</sup> Floor New York, NY 10013 +1 (212) 723-5643 <a href="mailto:ronald.j.marino@citigroup.com">ronald.j.marino@citigroup.com</a></p> <p><b>OHL Concesiones</b> Carlos García-Faure +34 (91) 348 42 78 <a href="mailto:cgfaure@ohlconcesiones.com">cgfaure@ohlconcesiones.com</a></p> <p><b>Acciona</b> Borja Gari Munsuri International General Subdirector +34 91 66 30 678 <a href="mailto:bgarimun@acciona.es">bgarimun@acciona.es</a></p>
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## 8 RESUMES

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## **Carlos M. Contreras, MBA**

### **Education**

- **Master in Business Administration, Harvard University, Boston, MA, 1994**
- **Bachelor of Science, Industrial Engineering, Universidad Panamericana, Mexico, 1991**

### **Continuing Education**

- **Public Private Partnership Financial Modeling and Legal Analysis, Vair Training LLC, Toronto Canada, 2009**
- **Activity and Tour Based Modeling, Federal Highway Administration, Washington DC, 2004**
- **Model Validation and Reasonableness Checking, Federal Highway Administration, Washington DC, 2004**

### **Overview**

Mr. Contreras has been involved with the transportation industry in the United States and Latin America since 1994. He has promoted transportation infrastructure projects in the United States, Mexico and Peru. He has lead consortia of international players in the pursuit of transportation projects. Since 1999 Mr. Contreras has resided in the USA where he has led Professional Services and Software firms in the US and International Markets with extraordinary service results. As President of C&M Associates, Inc., Mr. Contreras is currently responsible for overall business strategy, execution and project quality. Since the founding of the firm, Mr. Contreras has overseen contracts with the Departments of Transportation of Texas, Virginia, Georgia, South Carolina, Maryland and Washington State as well as leading European and Australian Toll Road Concessionaires for the development of Travel Demand Feasibility and Traffic and Revenue Studies in the U.S. Market.

### **Professional Experience**

#### **Traffic and Revenue Studies for Toll Facilities**

- *Midtown Tunnel / Downtown Tunnel / MLK Freeway Extension (2009)*. Project Manager for the development of intermediate level traffic and revenue Study to support the Public-Private Transportation Act competitive negotiations on behalf of the Virginia Department of Transportation.
- *Jackson Airport Parkway Comprehensive Traffic and Revenue Study (2009)*. Principal in charge for the development of traffic and revenue estimates supporting the bid of a major consortium of toll road operators and investors.
- *SH 550 / US 281 Intermediate Traffic and Revenue Study (2009)*. Principal in charge for the development of forecasts on behalf of the Cameron County Regional Mobility Authority.
- *Hidalgo County Loop Traffic and Revenue Study (2008)*. Principal in Charge for the development of forecasts to support the development of the Hidalgo County Loop around the cities of McAllen, Mission, Pharr and others in the Texas-Mexico border.
- *Traffic and Revenue Study for the Pennsylvania Turnpike Lease (2008)*. Principal in charge for the development of traffic and revenue estimates supporting the bid of a major consortium of toll road operators and investors.
- *North Tarrant Express Managed Lanes Traffic and Revenue Study (2008)*. Principal in charge for the development of forecasts to support the concession bid of a major European concessionaire.
- *US-460 Sketch Traffic and Revenue Study for the Virginia Department of Transportation (2007-2008)*. Principal in charge in the development of traffic and revenue estimates used in the Public-Private Initiatives process. The study served as the basis of the assessment of the financial feasibility of the project.
- *I-64 Sketch Traffic and Revenue Study for the Virginia Department of Transportation.(2007-2008)* Principal in charge for the study of the potential conversion of portions of I-64 in Virginia to toll facilities including congestion pricing.

- *I-20 Managed Lanes Traffic and Revenue Study, Atlanta, Georgia (2007)*—Principal in charge in the development of sketch level traffic and revenue projections to assess the feasibility of adding Managed Lanes to this corridor.
- *I-75 HOT Lanes Feasibility Study, Florida (2008)*- Mr. Contreras acted as Principal in Charge for the development of a feasibility study to support an unsolicited proposal of a major European concessionaire.
- *South Padre Island Second Causeway Intermediate traffic and Revenue Study, South padre Island, Texas. (2007)*- Mr. Contreras acted as principal in charge for this intermediate level traffic and revenue study on behalf of the Texas Turnpike Authority Division of TxDOT. The study will serve to assess the preliminary financial feasibility of the project and to screen different alignment alternatives.
- *SH 121 Traffic and Revenue Study, Denton and Collin Counties, Texas(2006-2007)* – This Greenfield project is located in the Dallas- Fort Worth metropolitan area. Mr. Contreras acted as principal in charge in the development of the forecasts that served as the basis of Skanska’s ID bid receiving a preliminary investment grade rating from Moody’s. Based on C&M’s work Skanska ID received loan commitments from RBS and ING and presented a bid for the project to the Texas Department of Transportation.
- *SH161 Traffic and Revenue Review, Dallas, Texas (2006)*- Mr. Contreras acted as principal in charge and conducted QA/QC in the review of the T&R projections developed for TxDOT and provided to the bidders of this concession project during the prequalification phase. C&M developed new T&R projections that served as the basis for the successful prequalification of our client.
- *SL 480 Sketch Traffic and Revenue Study* - Principal in charge in the development of sketch level traffic forecasts and revenue estimates for this road in light of influences from Mexico and traffic crossing the Eagle Pass–Piedras Negras International Bridge.
- *West Loop Project for the TxDOT Pharr District, Brownsville, Texas* – Principal in charge for the development of sketch toll feasibility study. The objective of the study is to refine and evaluate the most promising strategies, tolling concepts and toll collection methods for the West Loop project considering production, financial and revenue constraints and to evaluate the economic value of the project and its bonding capacity.
- *Poinciana Parkway Traffic and revenue Review*. Mr. Contreras served as principal in charge and provided QA/QC for the review and adjustment of the traffic and revenue projections provided by the project owners to firms bidding for the purchase of the Poinciana Parkway in the community of Poinciana, Florida on behalf of Cintra Infrastructure Developments L.L.C.
- *I-495 HOT lanes Traffic and Revenue Peer Review*. Principal in Charge for the review of the Traffic and Revenue Projections provided by the private developer for the managed lanes project in the Virginia portion of the Washington D.C. beltway. Client Virginia Department of Transportation.

### Professional Memberships

- *Affiliate of the Transportation Research Board Managed Lanes Committee*
- *Affiliate of the Transportation Research Board Congestion Pricing Committee.*

### Academic Experience

- **INSTITUTO TECNOLÓGICO AUTÓNOMO DE MÉXICO (ITAM), MEXICO CITY, MEXICO**  
Professor of Finance at the Graduate School of Business (1997-1999).
- **UNIVERSIDAD PANAMERICANA, MEXICO CITY, MEXICO**  
Professor of Project Evaluation and Finance at the School of Engineering (1995-1997).

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## Herbert E. Vargas

### Education

Bachelor of Science; B.S. Civil Engineering – California State Polytechnic University, 1981

### Professional Registrations

State of Florida – Professional Engineer, 1994

State of Texas – Professional Engineer, 2005

State of California – Professional Civil Engineer, 1986

### Overview

Mr. Herbert E. Vargas has over 23 years of public sector and private consulting engineering practice in the fields of project management, traffic and revenue, transportation planning, project financing, toll systems, ITS, traffic engineering, highway engineering, construction management, transit, drainage, environmental studies, planned communities, land development and growth management.

### Professional Experience

#### Traffic and Revenue and Project Financing

- *North Tarrant Express Managed Lanes Traffic and Revenue Study (2008). Review of the operations of the managed lanes for the development of forecasts to support the concession bid of a major European concessionaire.*
- *I-75 HOT Lanes Feasibility Study, Florida (2008)- Project Manager for the development of a feasibility study to support an unsolicited proposal of a major European concessionaire.*
- *Poinciana Parkway Traffic and Revenue Study, Florida. Project Manager for the review of existing Traffic and Revenue projections and elaboration of an alternative forecast to support a major international developer in its bid for the project.*
- *I-495 HOT Lanes Traffic and Revenue Peer Review (2006)- Project Manager for the review on behalf of the Virginia Department of Transportation. Revision of private developer's traffic projections to assist in the negotiations of this Public Private Partnership.*
- *SL 480 (Eagle Pass Outer Loop) in the Laredo District, Eagle Pass, Texas (2005) - As Chief Specialty Engineer, Mr. Vargas used conceptual fatal flaw analysis models or techniques for the toll feasibility analysis. The objective of the study is to review the traffic forecasts and revenue estimates in light of influences from Mexico and traffic crossing the Eagle Pass-Piedras Negras International Bridge.*
- *West Loop Project for the TxDOT Pharr District, Brownsville, Texas (2005)- As Chief Specialty Engineer, Mr. Vargas used conceptual fatal flaw analysis models or techniques for the toll feasibility analysis. The objective of the study is to refine and evaluate the most promising strategies for the West Loop project.*
- *Miami-Dade Expressway Authority Investment Grade Study (2003). Assisting in field data collection, review of socio-economic data, highway and transit network for the preparation of an investment grade study to forecast revenues for the Miami-Dade Expressway Authority System.*
- *Miami-Dade Expressway Authority Project Financing Plans. (1998 -2004). Assisting the Authority in the amendment of the FY 2004 – FY 2008 Work Program and the development of the FY 2005- FY 2009 Work Program in preparation for presentations to the financial markets. Mr. Vargas coordinated the legal, financial, general engineering and traffic and revenue consultant teams through the process under the direction of the Executive Director. In addition, Mr. Vargas assisted and supported MDX Chief Financial Officer and financial advisors in the establishment of the financing plans, funds drawdown*

forecasts and determination of expenditures and project costs. Coordinated, assisted and supported Traffic and Revenue Consultants in the forecast of toll revenues. Assisted in the development of grant applications from the ITS federal program, the Toll Revolving Trust Fund and the State Infrastructure Bank. Assisted in the development of general budgets for maintenance and operations of the Authority's facilities. Assisted and supported MDX legal counsel in the preparation of construction contracts, transfer agreements, joint powers agreements, agency negotiations and issuance of bond revenues. Assisted MDX Board and staff in development of its business plan, including development of conceptual layouts and cost for potential MDX projects and assisting in the forecast of potential revenues. Managed and coordinated the development of the initial MDX Work Program and Long Range Plan. Developed the initial Renewal/ Replacement Program for MDX's highways, and updates.

- *Presentations to Bond Rating Agencies – MDX (2000)*. Coordinated the preparation of the Consulting Engineers Report for bond issuance by the Authority. In addition, assisted in the review of financing documents and participated in presentation meetings with bond rating agencies.
- *San Joaquin Hills Transportation Corridor (1986)*. Development of fee programs for the financing of a portion of the San Joaquin Hills Transportation Corridor based on estimated traffic contributions from future developments and estimated project expenditures. Project was financed by development fees and toll revenue bonds by the Transportation Corridor Agencies.

### **Toll Facilities and Systems**

- *Implementation of Electronic Toll Collection – MDX System. (2000)*. As Deputy Program Director for Dade Transportation Consultants, provided oversight in the planning, design and implementation of electronic toll collection at the MDX mainline toll plazas.
- *Electronic Toll Collection – Florida's Turnpike System (1999)*. Project manager for the preparation of operation manual to close electronic toll collection lanes for maintenance operations.

### **Project Management**

- *Miami-Dade Expressway Authority (1997-2001)*. Provided oversight of the planning, design, right-of-way acquisition, toll operations and construction programs during the initial stages of the MDX program. During this time, supervised, assisted, directed and reviewed work completed by DTC project managers and task managers. Provided oversight during the preliminary design of the SR 836 toll plaza improvements. Participated in the selection process of the design engineers, and coordinated the transition from the preliminary engineering to the final design of the project. Assisted in the coordination of the electronic toll collection and toll plaza design.
- *East-West Multimodal Corridor Study. (1994-1998)*. As consultant to Florida Department of Transportation, managed traffic operational analysis utilizing CORSIM, traffic data collection, construction cost estimates, and preparation of conceptual plans for highway improvements.
- *City of Buena Park – City Traffic Engineer and Manager of Traffic and Transportation Services*. Supervised the preparation of the circulation element for the City's Comprehensive Plan. Developed a Transportation Improvements Fee Program and seven-year capital improvement program as components of the City's Growth Management Plan. Reviewed and coordinated CalTrans plans for improvements to the I-5 and SR-91 corridors. Supervised the development of a travel forecast model for the City. Managed and reviewed the preparation of traffic signal, signing and striping plans. Provided construction oversight for traffic signal improvements.

### **Professional Memberships**

- Institute of Transportation Engineers.
- American Society of Civil Engineers.
- South Broward Board of Realtors.

#### Committees and Civic Involvement

- Member of the Pembroke Pines Economic Development Board.
- Member of the Government Affairs Committee for the Miramar-Pembroke Pines Chamber of Commerce.
- Member of the Kiwanis Club – Greater Pembroke Pines Chapter.
- Former alternate to the Miami-Dade County ITS Committee.
- Former alternate to the Miami Intermodal Center Technical Working Committee.
- Former alternate to the Miami-Dade MPO Technical Working Committee for LRTP and TIP.
- Former Secretary of the Airport West Chamber of Commerce.
- Former Chairman of the Southern California City Traffic Engineers Association.
- Former member of the Orange County Transportation Agency Technical Advisory Committee.
- Former member of the Orange County Congestion Management Program T.A.C.
- Former member of the Orange County Intelligent Vehicle Highway Systems T.A.C.

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**Shahram “Sam” Bohluli, Ph.D., P.E.**

**Education**

- **Ph.D.**, Transportation Engineering, University of Texas.
- **Master of Science**, Transportation Engineering, University of Texas
- **Bachelor of Science**, Civil Engineering, Tehran Polytechnics University.

**Professional Registrations**

State of Texas – Registered Professional Engineer

**Overview**

Mr. Bohluli has over 14 years of public and private consulting engineering practice in the fields of Traffic and Revenue Analysis for Toll Roads, Transportation Systems Modeling, Transportation Planning and Geometric Design of Transportation Facilities.

**Professional Experience**

**Traffic and Toll Revenue**

- Hidalgo County Loop Traffic and Revenue Study (2008). Chief Modeler for the development of forecasts to support the development of the Hidalgo County Loop around the cities of McAllen, Mission, Pharr and others in the Texas-Mexico border.
- North Tarrant Express Managed Lanes Traffic and Revenue Study (2008). Chief Modeler for the development of forecasts to support the concession bid of a major European concessionaire.
- Toll Feasibility Study for the Pennsylvania Turnpike Lease. Chief Modeler for the development of traffic and revenue estimates supporting the bid of a major consortium of toll road operators and investors.
- US-460 Sketch Traffic and Revenue Study for the Virginia Department of Transportation. Chief modeler in the development of traffic and revenue estimates used in the Public-Private Initiatives process. The study served as the basis of the assessment of the financial feasibility of the project.
- I-64 Sketch Traffic and Revenue Study for the Virginia Department of Transportation. Chief modeler for the study of the potential conversion of portions of I-64 in Virginia to toll facilities including congestion pricing.
- South Padre Island Toll Feasibility study for the Texas Department of Transportation. Chief modeler for the development of intermediate level traffic and revenue projections for the Texas Department of Transportation. The study will serve to assess the preliminary financial feasibility of the project and screen alignment alternatives. The study involved the development of a project specific model extracted from the Statewide Analysis Model (SAM) and the Local MPO models.
- Toll feasibility study for I-20 Managed Lanes in Atlanta, Georgia. Oversight of the modeling aspects of the project utilizing the Voyager/TP+ platform. Projections will be utilized to assess the potential of the project to become a Public-Private Partnership project.
- Investment grade Traffic and Revenue study for SH121- concession Denton and Collin counties, Texas (2007). Chief Modeler for the development of Traffic and Revenue

projections to support the financial bid of a major proposer.

- Investment grade study of Lake Lewisville Toll Bridge. Project manager for this study and left the company at the end of calibration process. The tasks that was completed up to then consist of Data collection, SP Survey, traffic and delay runs and model development and data preparation of the NCTCOG model to be transferred to TranPLAN platform. The data preparation included rezoning and validating and calibrating the current model.
- North Texas Toll Authority Partnership, Feasibility study of different alternatives for future projects of NTTA system in Dallas Forth Worth area.
- Preliminary study for SH 121 South-west parkway, including comprehensive traffic and revenue estimation. The purpose of this study was to develop traffic and toll revenue forecasts for the proposed SH 121 Southwest Parkway project extending from IH 30 in Fort Worth to US 67 in Cleburne.
- Traffic and Revenue Estimation for the Proposed Eastern Extension of the President George Bush Turnpike EIS, Dallas, Texas. The scope of the work was to develop traffic volumes and revenue estimates for the proposed PGBT Extension. Traffic and revenues were estimated for the 2007 opening-year (toll free and tolled) conditions as well as for the 2025 future year (toll free and tolled) conditions.
- North West Corridor EIS, Denver Regional Council of Governments (DRCOG), Denver, Colorado. I coordinated to convert the new coded project from TranPLAN to the TransCAD highway network, modifying transit network to match the new project and running the four step model to develop new trip tables.
- Sketch level toll feasibility study in:
  - US 280 / Loop 1604, San Antonio, Texas.
  - IH 30 Managed Lane Corridor, TxDOT - Fort Worth, Texas.
  - SH 121 South-west Parkway, Tarrant and Johnson County, Texas.
  - US 31 Bypass, Corsicana, Texas.
  - IH 30/US 80, Dallas, Texas.
  - SH 190 Extension, Dallas County, Texas.
  - US 190 Express Lane Concept, Copperas Cove, Texas. Loop 49, Tyler, Texas
  - US 281 Falfurrias Relief Route, Falfurrias, Texas.

### **Transportation Planning and Engineering**

- Development of the Mexican Federal Strategic Highway Model in TransCAD (PEC). Commissioned by the Mexican Federal Government, this study had as an objective the integration of the PEC with the Texas Statewide Analysis Model (SAM) to facilitate the study of cross border traffic and its influence nationwide.
- Developing and implementing a new Travel Demand model for Dallas/Fort Worth area in TransCAD platform; including database management, writing more than 100 GISDK applications incorporated in the new model.
- Developing MOBIL6 input generator from TransCAD model's outputs for North Central Texas Council of Governments.
- Developing SUMMIT program in GISDK platform to compare different transit alternative projects.
- Developing a special trip distribution procedure for external stations and air port trips.
- Developing a procedure of needs based mobility plan and presenting various workshops

about the new model in NCTCOG and the University of Texas at Arlington

- Analyzing the 1996 Household travel survey to develop trip attraction and production models in TransCAD environment using GISDK programming language.
- Responsible for updating and running mainframe and TRANPLAN travel demand models for Thoroughfare Planning projects and Major Investment Studies in Dallas, Collin, Tarrant and Denton County in Dallas/Fort Worth area.
- Analyzing the model outputs in different alternatives for comparison and submission of the best plans.
- Preparing GIS maps, demographic information tables and job setups for technical assistance requests
- The research for Personalized Public Transit Operational Test, A federal funded project with in corporation with The Dallas Area Rapid Transit (DART).
- The research for Traffic Impact Analysis for City of Carrollton, Texas in corporation with the UT Austin
- Comprehensive Transportation Plan for the City of Mashhad (Second largest city in Iran with more than 1,000,000 population). Tasks included:
  - Projection of Population and Employment.
  - Improving performance of the roadway network by optimizing intersection geometry.
  - Developing systematic approach to determine roadway directions (two-way, one way).
  - Development of Trip Generation, Distribution, Mode Split and Assignment Models.
  - Development of special purpose software and databases using FoxPro and Access, customized for use by management.
  - Development of Volume Delay Functions for traffic assignment model.
- Origin-Destination survey: Coordinating the team of data collection for the OD survey and direct travel counts.
- Database development: Developing the base database and customizing the data to be used in the modeling procedure.
- Analytical modeling: Development of the four step travel demand model including Trip Generation, Trip Distribution, Mode Choice and Trip Assignment in EMME2 platform.
- Traffic assignment for both private and transit systems: Coordinating the project of evaluating different transit alternative for the city.
- Data analysis with report writing: Analyzing the outputs of the model and writing the comprehensive reports.
- Participating in technical management meetings for the goal-setting and methodology
- Development and presenting the results to the city managers and government officials.

### **Professional Memberships**

- *Member of the Institute of Transportation Engineers;*
- *Member of the American Society of Civil Engineers*

### **Publication and Presentation**

- Bohluli, Shahram; *Developing a volume delay function for DFW area*; The North American Regional Science Council, Philadelphia, Pennsylvania; November 2003.
- Bohluli, Shahram, B. Pashaei and S. Ardekani, *Arlington Rapid Transit, Demand Estimation*, TexITE, Summer Meeting, Corpus Christi, Texas, 1999.
- Bohluli, Shahram and N. Tabatabaee, *Study of laboratory Characteristics of CRM*, The Fourth International Civil Eng. Conference, Tehran, Iran, 1997.

## **Kawkeb Said**

### **Education**

**Ph.D.**, Transportation Engineering, University of Illinois.

**Master of Science**, Traffic and Highway Engineering, University of Strathclyde, U.K.

**Bachelor of Science**, Civil Engineering, University of Baghdad.

### **Professional Registrations**

State of Connecticut – Professional Engineer

State of Utah – Professional Engineer, Pending

Dr. Kawkeb Said has over 20 years of academic and private consulting engineering practice in the fields of Traffic and Revenue Analysis for Toll Roads and other complex projects, such as Managed Lanes; Project Management; Transportation Systems Modeling; Traffic Simulation; Transportation Engineering and Planning; Geometric Design of Transportation Facilities, and Traffic Engineering.

### **Professional Experience**

#### **Toll Facility Traffic and Revenue and Operations**

- *I-20 Express Managed Lanes (ML) Intermediate traffic and revenue study, Atlanta, Georgia (2007)- Dr. Said is currently the project manager for this study in support of the Georgia Department of Transportation Public-Private Initiatives program. The project entails variable pricing for the various time of the day, depending on level of congestion, selecting best toll rate values, while maintaining good Level of Service in the ML. The project involves the development of a complex ML methodology and implements it in the travel demand model. Micro-simulation is utilized to insure good traffic operations in ML.*
- *South Padre Island Second Causeway Intermediate traffic and revenue study, South padre Island, Texas. (2007)- Dr. Said was the project manager for study on behalf of the Texas Turnpike Authority Division of TxDOT. This project involved unconventional tourist area of study, employing innovative modeling approach and implementation.*
- *SH161 Traffic and Revenue Review, Dallas, Texas (2006)- Dr. Said served as project manager in the review of the T&R projections developed for TxDOT and provided to the bidders of this concession project during the prequalification phase. Dr. Said developed new T&R projections that served as the basis for the successful prequalification of our client.*
- *Traffic and Revenue On the East-West Expressway (SR 836), Miami-Dade Expressway Authority – This project involves Variable Pricing Lanes (VPL) analysis along SR 836 using a developed model, which takes into consideration the level of congestion on the general purpose lanes and the pricing on the VPL in order to determine the share of the VPL traffic.*
- *Operational and Traffic Benefits of E-ZPass Deployment to the New Jersey Turnpike–This study identified benefits related to traffic operations, delay reduction, savings in terms of drivers time, direct and indirect cost, as well as air quality improvements as a result of E-ZPass deployment on the New Jersey Turnpike.*
- *E-ZPass Impact On Local Roadway Study, New Jersey Turnpike Authority – The objectives of the study are to assess the degree of the impact of the deployment of E-ZPass on the local roadway system and to recommend mitigation measures to ease that impact.. Traffic simulation model was used for traffic operation analyses beyond the toll plaza exits and at intersections with local roadways.*
- *Evaluation of Toll Plaza Capacity for Various E-ZPass Penetration Scenarios – New Jersey Turnpike. This project investigates the capacity and operation conditions at toll plazas of the NJTP under various E-ZPass penetration scenarios. The study identifies potential operation problems at E-ZPass lanes*

- and/or manual lanes of the toll plazas involved.*
- *Newark Bay Hudson County Extension Capacity Study, New Jersey Turnpike Authority – The study involves evaluating the existing capacity of the Turnpike for future growth in the area and the need to widen the Hudson County Extension. Simulation model was developed for evaluating the existing condition. Alternative improvements to the extension are to be developed for various growth scenarios.*
  - *Interchange 12/Truck Only 12A Feasibility Study, New Jersey Turnpike Authority – The objective of this study was evaluate proposed 12A interchange from operational, environmental and economic standpoints. A traffic simulation model VISSIM was developed for evaluating the existing condition and operations related to the proposed Interchange 12A.*
  - *Minimum Toll Collector Staffing Plan, New Jersey Turnpike Authority.*

### **Transportation Planning and Engineering**

- *Environmental Impact Assessment (Nashua, NH);*
- *Transportation Planning and Modeling: Travel forecasting and evaluation of network performance as part of transportation improvement projects (TelecomCity, Rt. 6 Cape Cod, Rt. 3 north of Boston, MA);*
- *Designed and conducted a study to assess motorists' attitudes toward safe-driving practices.*
- *Design and Coordination of Signals within Closed Loop Communication Systems (Rt. 10 , Southington, CT)*
- *Geometric Design of Highways and Intersections (Rt.10, Southington, CT);*
- *Traffic Simulation for the Evaluation of Traffic Network Operation Performance (Central Artery, Boston, MA);*
- *Highway Signage Evaluation and Upgrade to the Metric System (I-291 Chicopee-Holyoke, MA);*
- *Light rail system simulation to evaluate service for downtown Chicago Monitored an environmental impact study of noise abatement devices in the Chicago subway system. Transportation Engineering Division, Department of public works, Chicago, Illinois.*

### **Professional Memberships**

- *Chairman of the Membership Committee 1999-2000 and a member of the Board of Directors, Intelligent Transportation Society (ITS) – Connecticut Chapter.*
- *Member of the Institute of Transportation Engineers; President of University of Illinois at Chicago student chapter, 1990.*
- *Member of the Urban Area Bicycle Advisory Board, Alachua County, Florida, 1985.*
- *Affiliate of Transportation Research Board, U.S.A.*

### **Honors and Awards**

- *Winner of the Milton Pikarsky/Charlie Wootan Award for the best Ph.D. dissertation; by the Council of University Transportation Centers.*
- *Winner of the Helen Overly Scholarship for distinguished achievements at the national as well as the state of Illinois; by Women's Transportation Seminar Society.*
- *Scholarship to participate in the Supercomputer workshop, by IBM Corporation.*
- *Referee for the Transportation Science*
- *Award form the Overseas Student Fund, University of Strathclyde.*

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## Carlos L. Miranda

### Education

**Bachelor of Science, Civil Engineering, Manhattan College, Riverdale, NY, 1997**

### Continuing Education

- Synchro Advanced Course, NYC Training Center, 2002 – Trafficware

### Overview

Mr. Miranda has extensive experience in the field of traffic and revenue studies, major investment studies, and technological applications to toll road operations. His responsibilities have included the design of static toll revenue models, traffic projection and reduction, toll facility feasibility studies and bridge's viability, field system testing, system evaluation, and implementation strategies on several Intelligent Transportation System projects.

Mr. Miranda also has extensive experience in many types of analyses for transportation planning and traffic engineering projects, including EIS report production, traffic microsimulations, capacity analyses, traffic surveys and data collection. Mr. Miranda experience on traffic simulation includes the evaluation of alternatives, level-of-service/capacity analyses, and alternatives for construction phases, and future traffic operations.

### Professional Experience

#### Toll Facility Feasibility Studies

- **Toll feasibility study for I-20 Managed Lanes in Atlanta, Georgia.** Project manager for the development of T&R projections utilized to assess the potential of the project to become a Public-Private Partnership project
  - **South Padre Island Second Causeway Intermediate traffic and Revenue Study, South padre Island, Texas. (2007)**- Technical Lead for the static model and the development of revenue estimates of this Level 2 study on behalf of the Texas Turnpike Authority Division of TxDOT.
  - **SH 121 Traffic and Revenue Study, Denton and Collin Counties, Texas (2006)** – Technical Lead for the static model and the development of revenue forecasts for the Traffic and Revenue Study for this project on behalf of a private developer pursuing the SH121 Comprehensive Development Agreement led by TxDOT.
  - **SL 480 (Eagle Pass Outer Loop) in the Laredo District, Eagle Pass, Texas (2006)** – Technical Lead for the toll feasibility analysis, including review of cost estimates, tolling plans, refined toll traffic analysis, toll operations strategies and associated support services. The objective of the study is to review the traffic forecasts and revenue estimates in light of influences from Mexico and traffic crossing the Eagle Pass–Piedras Negras International Bridge.
  - **West Loop Project for the TxDOT Pharr District, Brownsville, Texas (2005)**–Technical Lead for the toll feasibility analysis, including a Level 1 (Sketch Planning /Toll Feasibility) and Traffic and Revenue Study. The objective of the study is to refine and evaluate the most promising strategies, tolling concepts and toll collection methods for the West Loop project considering production, financial and revenue constraints and to evaluate the economic value of the project and its bonding capacity.
- **E-470 Toll Revenue Study, Denver, Colorado (2003)** – Technical Lead

for sensitivity analyses during which it was tested the limits of certain parameters to produce “worst-case scenario” revenue forecasts, such as airport trips, inflation rate, regional growth and improvements to parallel roadways. These analyses led to the successful placement of bonds needed to raise funds for the construction of Segment IV.

- **West Virginia Toll Road and Bridge Feasibility Studies, West Virginia (2003)** – Technical Lead for preparation of traffic and revenue studies to determine the viability of constructing toll facilities. These studies work included developing refined studies of traffic and revenues; estimating operating and maintenance expenses; estimating annual debt service costs with various types of bonding mechanisms; developing alternative construction phasing programs (\$1.5 billion total cost)
- **New Jersey Highway Authority Studies, NJ (2002-2004)** – Supervisor and Technical Lead of several projects involving the Garden State Parkway. Over the years assignments performed were numerous traffic and revenue studies, all aspects of toll rate review, toll plaza operations studies, and traffic engineering designs.
- **Mexico-Cuernavaca and Associated Toll Roads Study, Mexico (2002)** – Technical Lead of study traffic patterns on the country’s 150-kilometer Cuernavaca Toll Road System, the oldest toll facility in Mexico operated by the government agency CAPUFE. Mr. Miranda supervised the gathering of historical information from various sources, analyzed the effects on the traffic patterns of Mexico City’s population growth, the GDP and toll increases. On the basis of the analyses and the facility’s past revenue record, Standard & Poor’s gave the toll road’s \$265 million debt offering an “A” rating, the first of its kind for an international financing. The technical analyses included verification of historical traffic patterns of passenger and commercial vehicles on each tollway section, future growth potential, certification of the physical state of the roadway and development of a maintenance program for each tollway.

#### ***Electronic Toll Collection Experience***

- **New Jersey Electronic Toll Collection Installation Program, NJ (2001)** – Assistant Project Manager responsible for managing field testing of ETC installation for the New Jersey Turnpike and the Garden State Parkway. Managed day-to-day testing of ETC equipment and reported and analyzed test results including identification of equipment failures and anomalies. Assisted in evaluation of statistical data and production of final report.
- **West Virginia Turnpike, WV (2002)** - Toll System Upgrade, Assistant Project Manager responsible for evaluation of existing Turnpike toll collection system and infrastructure. Evaluated existing system’s adaptability to implementation of an Electronic Toll Collection system.

#### **Professional Memberships**

- ITE
- ASCE
- Tau Beta Pi
- Chi Epsilon

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## Marcos Nogueroń

### Education

- Master of Science in Civil Engineering (Transportation), University of California at Berkeley, 1991.
- BS in Civil Engineering, Universidad Iberoamericana, México, 1990.

### Overview

Mr. Nogueroń has more than 16 years of Transportation Planning and Engineering experience. He has led dozens of toll road feasibility studies in four different countries including numerous investment grade studies for projects financed in US and Latin American markets. Mr. Nogueroń has advised state and national governments on the structuring of toll road concessions and Public-Private partnerships. He has served as a financial liaison with underwriters, rating agencies and credit enhancers assisting in the successful financing of \$7B in bonds and loans supported by C&M's studies. Mr. Nogueroń has worked with the US and Spanish financial entities to develop a statistical methodology to assess the probability of a project meeting its obligations to bondholders.

### Professional Experience

#### Traffic and Revenue Studies

- *Hidalgo County Loop Traffic and Revenue Study (2008). QA/QC for the travel demand model development and forecast methodology of the traffic and revenue study of the Hidalgo County Loop around the cities of McAllen, Mission, Pharr and others in the Texas-Mexico border.*
- *Traffic and Revenue Study for the Pennsylvania Turnpike Lease (2008). QA/QC for the development of traffic and revenue estimates supporting the bid of a major consortium of toll road operators and investors.*
- *North Tarrant Express Managed Lanes Traffic and Revenue Study (2008). QA/QC for the development of forecasts to support the concession bid of a major European concessionaire.*
- *US-460 Sketch Traffic and Revenue Study for the Virginia Department of Transportation (2007-2008). QA/QC in the development of traffic and revenue estimates used in the Public-Private Initiatives process. The study served as the basis of the assessment of the financial feasibility of the project.*
- *I-64 Sketch Traffic and Revenue Study for the Virginia Department of Transportation. (2007-2008) QA/QC for the study of the potential conversion of portions of I-64 in Virginia to toll facilities including congestion pricing.*
- *I-20 Managed Lanes Traffic and Revenue Study, Atlanta, Georgia (2007)—QA/QC in the development of sketch level traffic and revenue projections to assess the feasibility of adding Managed Lanes to this corridor.*
- *I-75 HOT Lanes Feasibility Study, Florida (2008)- Mr. Nogueroń acted as QA/QC for the development of a feasibility study to support an unsolicited proposal of a major European concessionaire.*
- *SL 480 Sketch Traffic and Revenue Study - QA/QC in the development of sketch level traffic forecasts and revenue estimates for this road in light of influences from Mexico and traffic crossing the Eagle Pass–Piedras Negras International Bridge.*
- *West Loop Project for the TxDOT Pharr District, Brownsville, Texas – QA/QC for the development of sketch toll feasibility study. The objective of the study is to refine and evaluate the most promising strategies, tolling concepts and toll collection methods for the West Loop project considering production, financial and revenue constraints and to evaluate the economic value of the project and its bonding capacity.*
- *SH121 CDA concession- Skanska ID- This Greenfield project is located in the Dallas- Fort Worth metropolitan area. Mr. Nogueroń was responsible for the QA/QC of the traffic and revenue forecasts that served as the basis of Skanska's ID bid, receiving a preliminary investment grade rating from Moody's. Based on C&M's work Skanska received loan commitments from RBS and ING.*

- *South Padre Island Second Causeway Intermediate traffic and Revenue Study, South padre Island, Texas. (2007)*- Mr. Nogueroń is currently performing the QA/QC for this intermediate level traffic and revenue study on behalf of the Texas Turnpike Authority Division of TxDOT.
- *I-495 HOT lanes Traffic and Revenue Review.* Mr. Nogueroń performed the QA/Qc for the review of the Traffic and Revenue Projections provided by the private developer for the managed lanes project in the Virginia portion of the Washington D.C. beltway. Client Virginia Department of Transportation
- *In Latin America, Mr. Nogueroń has lead the following investment grade Traffic and Revenue Studies for toll roads and tunnels:*
  - *FARAC North East Package of existing toll roads and greenfiled projects connecting the Northeastern Mexican States with Texas.*
  - *Package of 4 toll roads leased by FARAC (Maravatio- Guadalajara, Guadalajara Aguascalientes, etc.), Mexico, study on behalf of Nafinsa to serve as the basis for the lease of this \$2 Billion package*
  - *Circuito Exterior Mexiquense, OHL, study served as the basis for the successful bid in this \$800 M project financed by Santander*
  - *System of nine highways in the State of Chihuahua, Chihuahua State Government, Road System, S&P, Fitch, MXAA, AAA(mex), \$250M USD*
  - *Fresnillo y la Calera Loop's, Interacciones Banca Múltiple , Road System, S&P, Fitch, MXAA, AA(mex), \$42M USD*
  - *Mexico-Queretaro, Banco Santander, Stand Alone Road, Loan by Banco Nacional de Obras Públicas (Banobras), \$2,500M USD*
  - *Mexico-Puebla, Banco Santander, Stand Alone Road, ,*
  - *Queretaro-Irapuato, Banco Santander, Stand Alone Road, ,*
  - *San Luis Potosi Eastern Loop, META , Stand Alone Road, S&P, MXAA+, \$13M USD*
  - *Tijuana-Tecate, ATM, Stand Alone Road, S&P, Fitch, MXAA, \$60M USD*
  - *Chamapa - La Venta y Ramal Interlomas, Grupo Tribasa, Stand Alone Road, , ,*
  - *Chamapa- Lecheria, Grupo Tribasa, Stand Alone Road, Fitch, AA(mex), \$120M USD*
  - *Ecatepec - Pirámides, Grupo Tribasa, Stand Alone Road, S&P, Fitch, MBIA insurance, AAA, AAA(mex); AAA, AAA(mex), \$200M USD*
  - *Armería - Manzanillo, Grupo Tribasa, Stand Alone Road, S&P, Fitch, MBIA insurance, AAA, AAA(mex); AAA, AAA(mex),*
  - *México-Toluca. , Grupo Tribasa, Stand Alone Road, Fitch, MBIA Insurance, AAA (mex), \$360M USD*
  - *Kantunil - Cancún, Multivalores, Stand Alone Road, Fitch, Moodys, Serie "A" AA(mex) Serie "B" A(mex) Serie "S" B(mex), \$25M USD*
  - *Cardel- Veracruz, BBVA-Bancomer, Stand Alone Road, S&P, Fitch, AA+(mex), \$70M USD*
  - *Acapulco Tunnel, Tuneles Concesionados de Acapulco S.A. de C.V. (TUCA), Stand Alone Road, S&P, Fitch, MXAA, AA(mex), \$18M USD*
  - *Palín-Escuintla, in the Republic of Guatemala , Grupo Marhnos, Stand Alone Road, Pending*
  - *Monterrey-Cadereyta, Autopistas de Nuevo León, Stand Alone Road, S&P, Fitch, Moody's, MBIA Insurance, mxAAA, AAA, Aaa.mx, \$220M USD*
  - *Puebla- Atlixco, Carreteras de Cuota Puebla, Stand Alone Road, S&P, Fitch, mxAAA, AAA, \$50M USD*
  - *Sistema Carretero del Oriente, Mexico City, Consecionaria Mexiquense-OHL, Stand Alone Road, Syndicated loan led by BBVA, \$200M USD*

Mr. Nogueroń has lead the following toll road and tunnel feasibility studies:

- *Zacatecas North-eastern Loop , Interacciones Banca Múltiple , Road System*
- *San Luis Potosí, , Road System*
- *Tenango-Ixtapan de la sal, Grupo Tribasa, Stand Alone Road*
- *Pátzcuaro-Uruapan,, Ministry of Public Works of the State of Michoacan, Stand Alone Road*
- *Ecuandureo-Abasolo., La Nacional Compañía Constructora, S.A. de C.V. , Stand Alone Road*

- *San Luis Potosí- Saltillo, La Nacional Compañía Constructora, S.A. de C.V. , Stand Alone Road*
- *Peñón - Texcoco, Grupo Tribasa, Stand Alone Road*
- *Beltway and viaduct in Acapulco, Grupo Mexicano de Desarrollo, Stand Alone Road*
- *Chamapa-Lecheria-La Venta, Grupo Tribasa, Stand Alone Road*
- *México - Guadalajara, section Toluca - Morelia, Grupo Mexicano de Desarrollo, Stand Alone Road*
- *San Martín Texmelucan - Tlaxcala - El Molinito, Autopista Concesionadas del Altiplano, S.A. de C.V., Stand Alone Road*
- *Celaya-San Miguel de Allende-San Luis de la Paz, Huartym, S.A. de C.V., Stand Alone Road*
- *Monclova - Paredón - El Tanque, Government of the State of Coahuila, Stand Alone Road*
- *Venta de Carpio-Textcoco-Chalco-Amecameca-Nepantla., Desarrollo de Infraestructura, S.A. de C.V. (DINFRA), Stand Alone Road*
- *Roadway Panamá-Colón and the corridor North of the city of Panama. , PYCSA Panamá, S.A. , Stand Alone Road*
- *Irapuato - León., Concesiones de carreteras S.A de C.V., Stand Alone Road*
- *Corridor South of Panama., PYCSA Panamá, S.A. , Stand Alone Road*
- *Mozimba-Pie de la Cuesta, Acapulco, Gro., Grupo mexicano de Desarrollo, Stand Alone Road*
- *Cuernavaca-Acapulco, Grupo Autopista del Sol, S.A. de C.V., Stand Alone Road*
- *Work certification of the corridor North of Panama(Parsons), IBD - De Leuw Cather International, Stand Alone Road*
- *San Luis Potosí Western Loop , Mexicana de Técnicos en Autopistas, Stand Alone Road*
- *Atizapán - Venta de Carpio., Concesionaria Mexicana de Vías Terrestres, S.A. de C.V. (CONCEMEX), Stand Alone Road*
- *Atlixco- Cuautla, Grupo Tribasa, Stand Alone Road*
- *Río Verde - Cerritos - intersection - federal highway No. 57 San Luis Potosí, Consultoria y Construcciones Internacionales S.A de C.V., Stand Alone Road*
- *Matamoros – Puerto Browsville., Prospectiva Económica y Social, S.C., Stand Alone Road*
- *San Luis Potosí – Villa de Arriaga., Council of state roads of the State of San Luis, Stand Alone Road*
- *Esperanza - Ciudad Mendoza, Bancomer/PYASA, Stand Alone Road*
- *Road access to San Pedro Sula city in Honduras., PYASA, Stand Alone Road*
- *Benito Juárez and San Miguel bridge, Ministry of the Treasury, Sate of Guanajuato, Stand Alone Road*
- *La Venta-La Marquesa, Grupo Tribasa, Stand Alone Road*
- *Atizapan - Atlacomulco, Banca Serfin S.A. Institución de Banca Multiple, Stand Alone Road*
- *Colegio Militar - La Venta., Grupo Tribasa, Stand Alone Road*
- *Mexico City North loop, Federal Ministry of Transport and Commuicaqtions (SCT), Stand Alone Road*
- *Matehuala loop, Junta Estatal de Caminos de SLP., Stand Alone Road*
- *Tlaxco-Huachinango, Puebla, Sistema Estatal Operador de Carreteras de Cuota, Stand Alone Road*
- *Puebla-Valsequillo, Puebla, Sistema Estatal Operador de Carreteras de Cuota, Stand Alone Road*
- *Tunne and bridge in Coatzacoalcos Ver., Grupo BM, Stand Alone Road*
- *Plan del Río loop Phase 1, OHL, Stand Alone Road*
- *Cd. Valle-Tampico section Ebano-Tamuín, Council of state roads of the State of San Luis, Stand Alone Road*
- *Punta Diamante Viaduct in Acapulco, Guerrero, Interacciones, Stand Alone Road*