GENERAL MEETING OF THE BOARD OF DIRECTORS
OF THE
CENTRAL TEXAS REGIONAL MOBILITY AUTHORITY

RESOLUTION NO. 20-060

APPROVING A CONTRACT WITH C&M ASSOCIATES, INC. FOR TRAFFIC AND REVENUE ENGINEERING SERVICES

WHEREAS, the Central Texas Regional Mobility Authority (Mobility Authority) has an ongoing need for traffic and revenue engineering services on its existing toll projects and to develop new toll projects; and

WHEREAS, by Resolution No. 20-051, dated August 29, 2020, the Board of Directors awarded a contract to C&M Associates, Inc. for traffic and revenue engineering services and authorized the Executive Director to negotiate a contract with C&M Associates, Inc.; and

WHEREAS, the Executive Director and C&M Associates, Inc. have negotiated a proposed contract for traffic and revenue engineering services in an amount not to exceed $2,500,000 which is attached hereto as Exhibit A and sets forth the scope of services, compensation and other terms; and

WHEREAS, the Executive Director recommends that the Board approve the contract with C&M Associates, Inc. for traffic and revenue engineering services in the form or substantially the same form attached hereto as Exhibit A.

NOW THEREFORE, BE IT RESOLVED that the Board of Directors hereby approves the contract with C&M Associates, Inc. for traffic and revenue engineering services; and

BE IT FURTHER RESOLVED that the Executive Director is hereby authorized to finalize and execute the contract with C&M Associates, Inc. on behalf of the Mobility Authority in the form or substantially the same form attached hereto as Exhibit A.

Adopted by the Board of Directors of the Central Texas Regional Mobility Authority on the 30th day of September 2020.

Submitted and reviewed by:

Geoffrey Petrov, General Counsel

Approved:

Robert W. Jenkins, Jr.
Chairman, Board of Directors

Exhibit A

CENTRAL TEXAS REGIONAL MOBILITY AUTHORITY

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This Professional Services Agreement (the "Agreement") is made and entered into by and between the Central Texas Regional Mobility Authority (the "Authority" or "CTRMA"), a regional mobility authority and a political subdivision of the State of Texas, and C&M Associated, Inc (the "Consultant") to be effective as of the 1st day of October, 2020 (the "Effective Date") with respect to traffic and revenue engineering services to be performed by the Consultant, as an independent contractor, for the CTRMA.

WITNESSETH:

WHEREAS, pursuant to that certain Request for Qualifications dated July 22, 2020 (the "RFQ"), the CTRMA sought to identify and obtain the services of qualified engineering firm(s) to provide traffic and revenue engineering services for the CTRMA; and WHEREAS, three (3) firms submitted responses setting forth their respective qualifications for the work; and

WHEREAS, on August 26, 2020 the CTMRA Board authorized the Executive Director to negotiate separate contracts for Traffic and Revenue engineering services with each of the three (3) qualified providers; and

WHEREAS, this Agreement has been negotiated and finalized between those parties whereby the services shall be provided by the Consultant to the Authority at a fair and reasonable price;

NOW, THEREFORE, in consideration of payments hereinafter stipulated to be made to the Consultant by the Authority, the parties do hereby agree as follows:

ARTICLE 1
THE SERVICES

The Authority agrees to and hereby retains the Consultant, as an independent contractor, and the Consultant agrees to provide services to the Authority upon the terms and conditions provided in this Agreement. The Authority is the sole and exclusive client of the Consultant for the purposes of this Agreement, and this Agreement is exclusively between the Authority and the Consultant. The scope of services (the "Services"), which is described in detail in Appendix A attached hereto and incorporated herein, shall include, but not be limited to, rate/revenue analysis, traffic modeling, technical assistance, problem resolution assistance, project management duties, and duties imposed on the Traffic Consultant by Authority trust agreements. As directed by the Authority by separate Work Authorization, the Consultant shall perform such Services in relation to all CTRMA turnpike projects and potential projects, which may include, but are not limited to (1) the 183-A Turnpike; (2) 290 East Toll; (3) SH 71 Toll; (4) SH 45 Southwest Toll (5) 183 South Toll; and (6) 183 North Toll; (7) MoPac Express; and (8) MoPac South Toll.

The Consultant, as part of the Services, also shall assist the Authority in achieving the goals established in the CTRMA's Strategic Plan, as adopted pursuant to Texas Transportation Code § 370.261 and as it may be amended from time to time by the CTRMA Board of Directors. For specific aspects of the Services, to the extent required by any trust agreement, the Consultant shall be expected to operate

independently from the Authority and without extensive oversight and direction. The Consultant shall commit the personnel and resources reasonably required to respond promptly and fully to the responsibilities and tasks assigned by the CTRMA throughout the term of the Consultant's performance of the Services described in this Agreement.

By written notice or order, Authority may, from time to time, order work suspension and/or make changes in the general scope of this Agreement, including, but not limited to, the services furnished to Authority by Consultant as described in the Scope of Work contained in the Work Authorization. If any such work suspension or change causes an increase or decrease in the price of said Work Authorization, or in the time required for its performance, Consultant shall promptly notify Authority thereof and assert its claim for adjustment within ten (10) calendar days after the change or work suspension is ordered, and an equitable adjustment shall be negotiated.

ARTICLE 2
"TRAFFIC CONSULTANTS" UNDER TRUST AGREEMENTS

Without limiting the provision of Article 1 above, and subject to a Work Authorization and the Work Authorization requirements found in subsection 3.b. herein, the Consultant shall perform the obligations of the "Traffic Consultants" under the Authority's current Master Trust Indenture, as amended, and, as agreed by the Parties, all supplemental, superceding, or additional trust agreements (collectively the "Trust Agreements"). The Authority has covenanted in Section 714 of the current Trust Agreement that, until the bonds issued in accordance with that Trust Agreement and the interest thereon shall have been paid or provision for such payment shall have been made, it will employ the Traffic Consultants for the purpose of performing and carrying out the duties imposed on it by the Trust Agreement. Those duties are summarized in the Scope of Services and provide a general, but not comprehensive, listing of the types of obligations the Consultant will be requested to perform under the Trust Agreements.

ARTICLE 3
COMPENSATION

Authorization for Consultant to perform the Services, compensation for Consultant's work, and other aspects of the mutual obligations concerning Consultant's work and payment therefore are as follows:

a) Notwithstanding any provisions of this Agreement to the contrary, AUTHORITY and CONSULTANT mutually agree that AUTHORITY's maximum cumulative payment obligation (including obligation for CONSULTANT's profit) shall be Two Million, five hundred thousand and No/100 Dollars ($2,500,000.00) which shall include all amounts payable to CONSULTANT for its subcontracts, leases, materials and costs arising from, or due to termination of this Agreement.

b) BASIS FOR COMPENSATION. Subject to the terms of a Work Authorization issued pursuant to subsection 3.c. below, the Authority agrees to pay, and the Consultant agrees to accept as full and sufficient compensation and reimbursement for the performance of all Services as set forth in this Agreement, hourly rates for the staff working on the assignment computed as follows:

Direct Labor Cost x (1.0 + FAR) x 1.10

where Direct Labor Cost equals salary divided by 2080; FAR equals Consultant's most recent audited overhead rate under 48 C.F.R. Part 31, Federal Acquisition Regulations (FAR 31); and 1.10 reflects a 10 percent (10%) profit. Representative rates computed through this methodology as of the Effective Date of this Agreement are reflected in Appendix B. Rates will be revised annually to reflect adjustments to the Direct Labor Costs and audited FAR rates; no adjustment shall be made to the specified profit percentage. The first adjustment shall be considered in January 2021. All adjustments shall be agreed to by the parties prior to implementation, and the Authority shall have the right to review and/or audit Consultant's Direct Labor Costs and FAR rates upon written request and as provided in subsection (f) hereto. During the term of this Agreement Consultant shall provide to the Authority, prior to requesting any adjustment to rates, a copy of the report establishing a new FAR rate for Consultant.

The payment of the hourly rates and allowed costs shall constitute full payment for all Services, liaisons, products, materials, and equipment required to deliver the Services.

c) COMPENSATION FOR WORK AUTHORIZATIONS. The Services to be performed by the Consultant pursuant to this Agreement shall be assigned by the Executive Director or designee and documented in a manner appropriate for the size and complexity of the specific tasks. Each activity, task, or project shall be performed pursuant to a separate Work Authorization, signed by the Executive Director or designee and the Consultant. Work shall be in accordance with the scope, schedule, and budget set forth in said Work Authorization. The standard form of Work Authorization is attached hereto and incorporated herein as Appendix C, which standard form may be modified during the term of this Agreement upon the reasonable request of the Executive Director or designee and agreement of the Consultant. Upon written directive from the Executive Director or designee (which may occur via electronic mail), the Consultant shall prepare the Work Authorization for the specific task, to be submitted for the Executive Director or designee's approval. No work shall begin on the activity until the Work Authorization is approved and fully executed. The basis for payment on each Work Authorization will be either (i) lump sum or (ii) hourly rate as computed pursuant to subsection 3.b. above, as stipulated in the Work Authorization. In neither case will the maximum be exceeded without prior written approval from the Authority. The costs associated with work performed on any Work Authorization will be tracked and reported to the Authority separately from other work performed by the Consultant. The monthly invoice to the Authority will include a progress summary of the work performed the previous month on each ongoing Work Authorization.

d) EXPENSES. As indicated above, the compensation computed in accordance with subsections 3.b. and 3.c. is anticipated by the Authority and the Consultant to be full and sufficient compensation and reimbursement for the Services. Notwithstanding the foregoing, the Consultant shall be entitled to reimbursement for reasonable out-of-pocket expenses actually incurred by the Consultant that are necessary for the performance of its duties under this Agreement, said expenses being limited to travel costs incurred in conformance with the Authority's travel policy, printing costs, automobile expenses being reimbursed at the federal mileage rates for travel originating from the office of the applicable Consultant employee or subconsultant, application fees, delivery charges, and

other expenses directly approved, in advance, by the Authority. Except for automobile expenses paid at the federal mileage rate and travel paid at state approved rates (if available), all such reimbursement shall be at one-hundred percent (100%) of the actual cost thereof paid by the Consultant to unaffiliated entities; provided, however, that all non-travel related amounts in excess of $2,000 for which the Consultant intends to seek reimbursement pursuant to this subsection 3.d. must be approved in advance and in writing by the Authority, except when such advance approval is impractical due to a bona fide emergency situation. The Authority shall not reimburse the Consultant for travel, lodging, and similar expenses incurred by the Consultant to bring additional staff to its local office or to otherwise reassign personnel to provide basic engineering and technical support of the Consultant's performance of the Services. The Consultant shall take all reasonable steps to acquire all goods and services subject to reimbursement by the Authority under this Agreement on a tax-free basis pursuant to the Authority's tax-exempt status described in subsection 3.i.

e) NON-COMPENSABLE TIME. Time spent by the Consultant's employees or subconsultants to perform Services or functions capable of being carried out by other, subordinate personnel with a lower hourly rate shall be billed at a rate equivalent to that of the applicable qualified subordinate personnel. Time spent by the Consultant's personnel or subconsultants in an administrative or supervisory capacity not related to the performance of the Services shall not be compensable. Time spent on work that is in excess of what would reasonably be considered appropriate for the performance of such Services shall not be compensable. No compensation shall be made for revisions to the Consultant's or subconsultants' Services or deliverables required due in any way to the error, omission, or fault of the Consultant, its employees, agents, subconsultants, or contractors.

f) INVOICES AND RECORDS. The Consultant shall submit two (2) copies of its monthly invoices certifying the fees charged and expenses incurred in providing the Services under this Agreement during the previous month, and shall also present a reconciliation of monthly invoices and the Work Authorization (and related estimates) to which the work relates. Each invoice shall be in such detail as is required by the Authority and, if the work is eligible for payment through a financial assistance agreement with the Texas Department of Transportation ("TxDOT"), in such detail as required by TxDOT, including a breakdown of Services provided on a project-by-project basis and/or pursuant to specified Work Authorizations, together with other Services requested by the Authority. Upon request of the Authority, the Consultant shall also submit certified time and expense records and copies of invoices that support the invoiced fees and expense figures. All invoices must be consistent with the rates represented in Appendix B, and direct labor costs for employees performing work for the Authority but not shown on Appendix B must be provided with any invoice reflecting such work. Unless waived in writing by the Executive Director or his designee, no invoice may contain, and the Authority will not be required to pay, any charge which is more than three (3) months old at the time of invoicing. All books and records relating to the Consultant's or subconsultants' time, out-of-pocket expenses, materials, or other services or deliverables invoiced to the Authority under this Agreement shall be made available during the Consultant's normal business hours to the Authority and its representatives for review, copying, and auditing throughout the term of this Agreement

and, after completion of the work, for three (3) years, or such period as is required by Texas or Federal law, whichever is longer.

g) EFFECT OF PAYMENTS. No payment by the Authority shall relieve the Consultant of its obligation to deliver timely the Services required under this Agreement. If after approving or paying for any Service, product or other deliverable, the Authority determines that said Service, product or deliverable does not satisfy the requirements of this Agreement, the Authority may reject same and, if the Consultant fails to correct or cure same within a reasonable period of time and at no additional cost to the Authority, the Consultant shall return any compensation received therefore. In addition to all other rights provided in this Agreement, the Authority shall have the right to set off any amounts owed by the Consultant pursuant to the terms of this Agreement upon providing the Consultant prior written notice thereof.

h) PLACE OF PAYMENT. Payments owing under this Agreement will be made by the Authority within thirty (30) days after receipt of the monthly invoice therefore, together with suitable supporting information, provided that if the payment is one eligible for reimbursement to the Authority from TxDOT, payment will be made within fifteen (15) business days of receipt by the Authority of the TxDOT payment. In the event the Authority disputes payment, the Authority will pay the undisputed portion when due. Payment shall be forwarded to the address shown for the Consultant:

Information for Payments by Wire transfer is as follows :

Beneficiary: C&M Associates Inc

JPMorgan Chase Bank, N.A

ABA# 111000614 Acct. # 742262413

i) TAXES. All payments to be made by the Authority to the Consultant pursuant to this Agreement are inclusive of federal, state, or other taxes, if any, however designated, levied, or based. The Authority acknowledges and represents that it is a tax-exempt entity under Sections 151.309, et seq., of the Texas Tax Code. Title to any consumable items purchased by the Consultant in performing this Agreement shall be deemed to have passed to the Authority at the time the Consultant takes possession or earlier, and such consumable items shall immediately be marked, labeled, or physically identified as the property of the Authority, to the extent practicable.

j) AS-NEEDED BASIS. As provided for above, the Authority shall request that the Consultant perform specific Services on an as-needed basis and through the issuance of Work Authorizations. No representation or assurance has been made on behalf of the Authority to the Consultant as to the total compensation to be paid to the Consultant under this Agreement.

k) COMPENSATION OF SUBCONSULTANTS. As noted in the Consultant's response to the RFQ, the Consultant will employ subconsultants providing Services under this Agreement. All subconsultants providing Services under this Agreement shall be subject to, and compensated or reimbursed in accordance with, all requirements of this Article 3, provided that each subconsultant shall utilize its own actual hourly rates (computed using its own multiplier based on actual audited FAR rates or audited overhead rates if FAR rates are not available) provided that no such rates shall exceed the corresponding rates paid by the Consultant for its personnel of comparable grade, category and experience, and further provided that no Subconsultant's FAR rate or audited overhead rate may exceed that of the Consultant without the prior written consent of the Authority. The Consultant agrees to pay its subconsultants for satisfactory performance of their contracts no later than thirty (30) days from its receipt of payment from the CTRMA. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the CTRMA. This clause applies to payments to all subconsultants. Consultant is authorized to use those subconsultants identified in Appendix D attached hereto and incorporated herein, being those subconsultants identified in the response of Consultant to the RFQ. Additional subconsultants may only be utilized with the prior written consent of the Executive Director of the Authority.

l) MOST FAVORED CUSTOMER. The Consultant shall voluntarily and promptly disclose to the Authority, and immediately provide the Authority with, the benefits of any discounted hourly fees and rates offered by the Consultant to any public entity customer in the State of Texas for comparable traffic and revenue studies. The Consultant hereby represents to the Authority, as of the effective date of this Agreement and throughout the term thereof, that except as previously disclosed in writing it has and will have no contract or arrangement with any public entity customer in the State of Texas for comparable traffic and revenue studies that provides such customer with fees, or rates that are more favorable than those afforded the Authority under this Agreement. The Consultant shall make available to the Authority for review, copying, and auditing throughout the term of this Agreement and for three (3) years or such period as is required by Texas or Federal law, whichever is longer, after the expiration thereof all such books and records as shall be necessary for the Authority or its representatives to determine compliance with this provision.

ARTICLE 4
TIME OF PERFORMANCE

It is understood and agreed that the term of this Agreement shall be a maximum of five (5) years, commencing October 1, 2020, and concluding October 1, 2025, (the "Expiration Date") subject to the earlier termination of this Agreement pursuant to Articles 5 or 6 below or further extension upon agreement of both parties. The initial period of performance is three (3) years commencing on the Effective Date, and there shall be two (2) successive one (1) year renewal terms following the expiration of the initial three (3) year period. In addition to any termination rights set forth in this Agreement, either party may elect not to extend the term of one or both of the renewal years by providing sixty (60) days written notice to the other prior to the end of the initial term of the first renewal term. Absent such notice or termination pursuant to other provisions of this Agreement, the renewal terms will automatically take effect. If at any time during

the contract term the Consultant cannot provide the requested Services within the time required by the CTRMA or for any other reason, the Authority reserves the unilateral right to procure the Services from any other source it deems capable of providing those Services.

ARTICLE 5
TERMINATION FOR DEFAULT

Time is of the essence with respect to the performance and completion of all the Services to be furnished by the Consultant pursuant to Work Authorizations issued and which specify an agreed-upon completion or delivery date. Without limiting the foregoing, the Consultant shall furnish all Services in such a manner and at such times as the development schedules of the Projects require so that no delay in the progression of the evaluation, funding, design, or construction of the Projects will be caused by or be in any way attributable to the Consultant. Should the Consultant at any time, in the reasonable opinion of the Authority, not carry out its obligations under this Agreement or not be progressing toward completion of the Services to be rendered hereunder in an expeditious manner, or if the Consultant shall fail in any manner to discharge any other of its obligations under this Agreement, the Authority may, upon providing the Consultant with thirty (30) days prior written notice pursuant to Article 5 hereof and opportunity to cure, terminate this Agreement effective on the date following said 30-day notice and cure period (the "Termination Date"). Such termination shall not constitute a waiver or release by the Authority of any claims for damages, claims for additional costs incurred by the Authority to complete and/or correct the work described in this Agreement, or any other claims or actions arising under this Agreement or available at law or equity which it may have against the Consultant for its failure to perform satisfactorily any obligation hereunder, nor shall such termination pursuant to this Article 5 or Article 6 below abrogate or in any way affect the indemnification obligations of the Consultant set forth in Article 17 hereof.

If the Authority shall terminate this Agreement as, provided either in this Article 5 or Article 6, no fees of any type, other than fees due and payable pursuant to Article 3 hereof for work performed and acceptable to the Authority, as of the Termination Date or Optional Termination Date, as applicable, shall thereafter be paid to the Consultant, and the Authority shall have a right to set off or otherwise recover any damages incurred by reason of the Consultant's breach hereof, together with the right to set off amounts owed to the Consultant pursuant to the indemnity provisions. In determining the amount of any payments owed to the Consultant, the value of the work performed by the Consultant prior to termination shall be no greater than the value that would result by compensating the Consultant in accordance with Article 3 hereof for all Services performed and expenses reimbursable in accordance with this Agreement.

ARTICLE 6
OPTIONAL TERMINATION

In addition to the process for termination described above, this Agreement may also be terminated as follows:

a. GENERALLY. The Authority has the right to terminate this Agreement at its sole option, at any time with or without cause, by providing thirty (30) days written notice of such intention to terminate pursuant to this subsection 6.a. hereof and by stating in said notice the "Optional Termination Date". Upon such termination, the Authority shall enter into a settlement with the Consultant upon an equitable basis as determined by the Authority, which shall fix the value of the work performed by the Consultant prior to the Optional Termination Date. In

determining the value of the work performed, the Authority in all events shall compensate the Consultant for any reasonable costs or expenses attributable to the exercise of the Authority's optional termination, including reasonable costs related to developing a transition plan and providing data as provided for in Article 7, provided, however, that no consideration will be given to anticipated profit which the Consultant might possibly have made on the uncompleted portion of the Services.

b. NO FURTHER RIGHTS, ETC. Termination of this Agreement and payment of an amount in settlement as described in this Article 6 shall extinguish all rights, duties, obligations, and liabilities of the Authority and the Consultant under this Agreement, and this Agreement shall be of no further force and effect, provided, however, such termination shall not act to release the Consultant from liability for any previous default either under this Agreement or under any standard of conduct set by common law or statute. Requirements that survive termination are outlined in Article 35.

c. NO FURTHER COMPENSATION. If the Authority shall terminate this Agreement as provided in this Article 6, no fees of any type, other than fees due and payable as of the Optional Termination Date, shall thereafter be paid to the Consultant, provided that the Authority shall not waive any right to damages incurred by reason of the Consultant's breach thereof. The Consultant shall not receive any compensation for Services performed or expenses incurred by the Consultant after the Optional Termination Date, and any such Services performed or expenses incurred shall be at the sole risk and expense of the Consultant.

ARTICLE 7
TERMINATION, GENERALLY

The Authority's rights and options to terminate this Agreement, as provided in any provision of this Agreement, shall be in addition to, and not in lieu of, any and all rights, actions, options, and privileges otherwise available under law or equity to the Authority by virtue of this Agreement or otherwise. Failure of the Authority to exercise any of its said rights, actions, options, and privileges to terminate this Agreement as provided in any provision of this Agreement or otherwise shall not be deemed a waiver of any of said rights, actions, options, or privileges or of any rights, actions, options, or privileges otherwise available under law or equity with respect to any continuing or subsequent breaches of this Agreement or of any other standard of conduct set by common law or statute.

Upon request by the Executive Director of the Authority, and subject to Article 13 hereto, The Consultant shall develop a transition plan to be implemented upon termination of this Agreement with the Consultant for any reason or upon the release of any subconsultant so as to ensure a smooth, efficient, and uninterrupted transition to any successor Consultant or subconsultant. The plan shall anticipate the steps necessary to transfer documents, computerized data, plans, work tasks, etc. in possession of or to be provided by the Consultant or its subconsultant(s), as the case may be, and include a schedule of events necessary to complete the transition. The plan should include, but not be limited to, a list of original documents/data being held on behalf of the Authority by the Consultant or its subconsultants; the manner and form in which information is being held; accessibility to the information; the Consultant's records retention policy and/or plan; and strategy to minimize disruption of Services in the event of the release of a subconsultant. A copy of the plan shall be given to the Executive Director for review and approval within

thirty (30) days of receipt of the Executive Director's request and shall be updated as necessary to reflect any changes in Consultant activity.

ARTICLE 8
SUSPENSION OR MODIFICATION OF SERVICES; DELAYS AND DAMAGES

In addition to the foregoing rights and options to terminate this Agreement, the Authority may elect to suspend any portion of the Services of the Consultant hereunder, but not terminate this Agreement, by providing the Consultant with prior written notice to that effect. Thereafter, the suspended Services may be reinstated and resumed in full force and effect upon receipt from the Authority of thirty (30) days prior written notice requesting same. Similarly, the Authority may expand, limit, or cancel any portion of the Services previously assigned to the Consultant in accordance with this Agreement. The Consultant shall not be entitled to any damages or other compensation of any form in the event that the Authority exercises its rights to suspend or modify the Services pursuant to this Article 8, provided, however, that any time limits established by the parties in any Work Authorization or otherwise for the completion of specific portions of the Services suspended pursuant to this Article 8 shall be extended to allow for said suspension or modifications thereof. Without limiting the foregoing, the Consultant agrees that no claims for damages or other compensation shall be made by the Consultant for any delays or hindrances occurring during the progress of any portion of the Services specified in this Agreement as a result of any suspension or modification of the Services or otherwise. Such delays or hindrances, if any, shall be provided for by an extension of time for such reasonable periods as the Authority may decide. It is acknowledged, however, that permitting the Consultant to proceed to complete any Services or any part of them after the originally specified date for completion, or after the date to which the time for completion may have been extended, shall in no way operate as a waiver on the part of the Authority or any of its rights herein.

ARTICLE 9
PERSONNEL, EQUIPMENT AND MATERIAL, GENERALLY

Consultant shall provide personnel and equipment as follows:

a. ADEQUATE PERSONNEL, ETC. The Consultant shall furnish and maintain, at its own expense, adequate and sufficient personnel (drawn from its own employees or from approved subconsultants) and equipment, in the reasonable opinion of the Authority, to perform the Services with due and reasonable diligence customary of an engineering firm enjoying a favorable national reputation, and in all events without delays attributable to the Consultant which have a reasonable likelihood of adversely affecting the progress of others involved with one or more of the Projects or the progress of the feasibility evaluation, design or construction of any such Project. All persons, whether employees of the Consultant or of an approved subconsultant, providing the Services shall be fully licensed to the extent required by their professional discipline associations' codes or otherwise by law.

b. REMOVAL OF PERSONNEL. All persons providing the Services, whether employees of the Consultant or of an approved subconsultant, shall have such knowledge and experience as will enable them, in the Consultant's reasonable belief, to perform the duties assigned to them. Any such person who, in the opinion of the Authority, is incompetent or by his/her conduct becomes detrimental to the provision of the Services shall, upon request of the Authority, immediately be removed from the Services. The Consultant shall furnish the

Authority with a fully qualified candidate for the removed person within ten (10) days thereafter, provided, however, said candidate shall not begin work under this Agreement unless and until approved by the Authority.

c. CONSULTANT FURNISHES EQUIPMENT, ETC. Except as otherwise specified or agreed to by the CTRMA, the Consultant shall furnish all equipment, transportation, supplies, and materials required for its Services under this Agreement.

ARTICLE 10
KEY PERSONNEL

The Consultant acknowledges and agrees that the individual(s) identified on Appendix E attached hereto and incorporated herein are key and integral to the satisfactory performance of the Consultant under this Agreement. Throughout the term of this agreement, the Consultant agrees that the identified individual(s), whether employee(s) of the Consultant or of an approved subconsultant, will remain in charge of the performance of the Services and shall devote substantial and sufficient time and attention thereto. The death or disability of any such individual, his/her disassociation from the Consultant or the approved subconsultant, or his/her failure or inability to devote sufficient time and attention to the Services shall require the Consultant promptly to replace said individual with a person suitably qualified and otherwise acceptable to the Authority. In no event shall the Consultant remove, transfer, or reassign any individual identified on Appendix E except as instructed by, or with the prior written consent of, the Authority, which consent shall not be reasonably withheld. The Consultant shall use its best efforts to enhance continuity in the key personnel, subconsultants, and other employees regularly performing the Services. Individuals may be added to Appendix E with the mutual consent of the Consultant and the Authority.

ARTICLE 11
BUSINESS OPPORTUNITY PROGRAM AND POLICY COMPLIANCE

It is the policy of the Authority's Board of Directors that disadvantaged and small business have the maximum practicable opportunity to participate in the awarding of Authority contracts and related subcontracts. To do so the Authority has developed a Business Opportunity Program and Policy ("BOPP"), which is incorporated herein by reference for all purposes. The Authority requires contractors to comply with the BOPP. The Consultant acknowledges that certain Services to be performed under this Agreement are subcontractable and will be subcontracted in accordance with the BOPP and as represented in Consultant's proposal in response to the RFQ. Consultant agrees to submit monthly subcontracting reports as part of its monthly invoices.

ARTICLE 12
PLANNING AND PERFORMANCE REVIEWS; INSPECTIONS

As directed by the Authority, key personnel shall meet with the Authority's Executive Director and/or his designee(s) upon request (a) to assess the Consultant's progress under this Agreement and performance of the Services; and (b) to plan staffing levels to be provided by the Consultant to the Authority for the upcoming calendar year. The Consultant shall permit inspections of its Services and work by the Authority or others, when requested by the Authority. Nothing contained in this Agreement shall prevent the Authority from scheduling such other planning and performance reviews with the Consultant or inspections as the Authority determines necessary.

ARTICLE 13
OWNERSHIP OF REPORTS

Ownership of reports and related materials prepared by Consultant (or any subconsultant) at the direction of the Authority shall be as follows:

a. GENERALLY. All of the documents, reports, plans, surveys, estimates, computer records, discs and tapes, proposals, sketches, diagrams, charts, calculations, correspondence, memoranda, survey notes, opinions, maps, photographs, drawings, data, analyses and other data and materials, and any part thereof, created, compiled or to be compiled by or on behalf of the Consultant solely under this Agreement ("work product"), including all information prepared for or posted on the Authority's website and together with all materials and data furnished to it by the Authority, shall at all times be and remain the property of the Authority and, for a period of three (3) years from completion of the Services or such period as is required by law, whichever is longer, if at any time demand be made by the Authority for any of the above materials, records, and documents, whether after termination of this Agreement or otherwise, such shall be turned over to the Authority without delay. The Authority hereby grants the Consultant a revocable license to retain and utilize the foregoing materials, said license to terminate and expire upon the earlier to occur of (a) the completion of Services described in this Agreement or (b) the termination of this Agreement, at which time the Consultant shall deliver to the Authority all such materials and documents. If the Consultant or a subconsultant desires later to use any of the data generated or obtained by it in connection with the Projects or any other portion of the work product resulting from the Services, it shall secure the prior written approval of the Authority. Notwithstanding anything contained herein to the contrary, the Consultant shall have the right to retain a copy of the above materials, records, and documents for its archives.

b. SEPARATE ASSIGNMENT. If for any reason the agreement of the Authority and the Consultant set forth in subsection 13.a. above regarding the ownership of work product and other materials is determined to be unenforceable, either in whole or in part, the Consultant hereby assigns and agrees to assign to the Authority all right, title, and interest that Consultant may have or at any time acquire in said work product and other materials which are prepared solely for this Agreement, without royalty, fee or other consideration of any sort, and without regard to whether this Agreement has terminated or remains in force. The Authority hereby acknowledges, however, that all documents and other work product provided by the Consultant to the Authority and resulting from the Services performed under this Agreement are intended by the Consultant solely for the use for which they were originally prepared. Notwithstanding anything contained herein to the contrary, the Consultant shall have no liability for the use by the Authority of any work product generated by the Consultant under this Agreement on any project other than for the specific purpose and Project for which the work product was prepared. Any other reuse of such work product without the prior written consent of the Consultant shall be at the sole risk of the Authority.

c. USE OF CONSULTANT WORK PRODUCT. Except for final versions of reports which are prepared in connection with project financings, the Authority will provide Consultant written advance notice prior to releasing Consultant's work product to any third party. Upon

receipt of notice, Consultant will have a reasonable amount of time to review such disclosure and provide the Authority written notice of the completion of review prior to release.

The Authority acknowledges that the Consultant's work product will be developed using data that is available at the time of the execution of a given work order, and will not constitute any guarantee or other assurance of future events. The Consultant will prepare work product using practices that are standard procedures in the industry.

ARTICLE 14
SUBLETTING

The Consultant shall not sublet, assign, or transfer any part of the work or obligations included in this Agreement without the prior written approval of the Authority, which approval shall not be reasonably withheld. Responsibility for sublet, assigned or transferred work shall remain with the Consultant.

ARTICLE 15
APPEARANCE AS WITNESS AND ATTENDANCE AT MEETINGS

Consultant shall cooperate with the Authority and requests for attendance at meetings and in various types of proceedings as follows:

a. WITNESS. If requested by the Authority or on its behalf, the Consultant shall prepare such traffic engineering, feasibility, or other exhibits as may be requested for all hearings and trials related to any of the Projects, the Services, or the Authority's activities generally and, further, it shall prepare for and appear at conferences at the offices of legal counsel and shall furnish competent expert engineering witnesses to provide such oral testimony and to introduce such demonstrative evidence as may be needed throughout all trials and hearings with reference to any litigation relating to the Projects, the Services, or the Authority's activities.

b. MEETINGS. At the request of the Authority, the Consultant shall provide appropriate personnel for conferences at its offices, or attend meetings and conferences at (a) the various offices of the Authority, (b) at the district headquarters or offices of TxDOT, (c) the offices of the Authority's legal counsel, bond counsel, and/or financial advisors, (d) at the site of any Project, or (e) any reasonably convenient location. Without limiting the foregoing, the Consultant shall provide personnel for periodic meetings with underwriters, rating agencies, and other parties when requested by the Authority.

c. WORK AUTHORIZATION. In the event that services under this section are not covered by an existing Work Authorization, the Authority will issue a Work Authorization, pursuant to Article 3 hereto, to cover such services.

ARTICLE 16
COMPLIANCE WITH LAWS AND AUTHORITY POLICIES

The Consultant shall comply with all applicable federal, state, and local laws, statutes, ordinances, rules, regulations, codes and with the orders and decrees of any courts or administrative bodies or tribunals

in any matter affecting the performance under this Agreement, including, without limitation, workers' compensation laws, antidiscrimination laws, environmental laws, minimum and maximum salary and wage statutes and regulations, health and safety codes, licensing laws and regulations, the Authority's enabling legislation (Chapter 370 of the Texas Transportation Code), and all amendments and modifications to any of the foregoing, if any. The Consultant shall also comply with the Authority's policies and procedures related to operational and administrative matters, such as, but not limited to, security of and access to CTRMA information and facilities. When requested the Consultant shall furnish the Authority with satisfactory proof of compliance with said laws, statutes, ordinances, rules, regulations, codes, orders, and decrees above specified.

ARTICLE 17
AUTHORITY INDEMNIFIED

THE CONSULTANT SHALL INDEMNIFY AND SAVE HARMLESS THE AUTHORITY AND ITS OFFICERS, DIRECTORS, EMPLOYEES, AND AGENTS (WHICH, FOR PURPOSES OF THIS AGREEMENT, SHALL INCLUDE THE AUTHORITY'S GENERAL COUNSEL, BOND COUNSEL, AND FINANCIAL ADVISOR (S)), FROM ANY CLAIMS, COSTS OR LIABILITIES OF ANY TYPE OR NATURE AND BY OR TO ANY PERSONS WHOMSOEVER, ARISING FROM THE CONSULTANT'S NEGLIGENT ACTS, ERRORS OR OMISSIONS WITH RESPECT TO THE CONSULTANT'S PERFORMANCE OF THE WORK TO BE ACCOMPLISHED UNDER THIS AGREEMENT, WHETHER SUCH CLAIM OR LIABILITY IS BASED IN CONTRACT, TORT OR STRICT LIABILITY. IN SUCH EVENT, THE CONSULTANT SHALL ALSO INDEMNIFY AND SAVE HARMLESS THE AUTHORITY, ITS OFFICERS, DIRECTORS, EMPLOYEES, AND AGENTS (WHICH, FOR PURPOSES OF THIS AGREEMENT, SHALL INCLUDE THE AUTHORITY'S GENERAL COUNSEL, BOND COUNSEL, AND FINANCIAL ADVISOR (S)) FROM ANY AND ALL EXPENSES, INCLUDING REASONABLE ATTORNEYS' FEES, INCURRED BY THE INDEMNIFIED ENTITY (S) IN LITIGATING OR OTHERWISE RESISTING SAID CLAIMS, COSTS OR LIABILITIES. IN THE EVENT THE AUTHORITY, ITS OFFICERS, DIRECTORS, EMPLOYEES, AND AGENTS (WHICH, FOR PURPOSES OF THIS AGREEMENT, SHALL INCLUDE THE AUTHORITY'S GENERAL COUNSEL, BOND COUNSEL, AND FINANCIAL ADVISOR (S)) IS/ARE FOUND TO BE PARTIALLY AT FAULT, THE CONSULTANT SHALL, NEVERTHELESS, INDEMNIFY THE INDEMNIFIED ENTITY (S) FROM AND AGAINST THE PERCENTAGE OF NEGLIGENCE ATTRIBUTABLE TO THE CONSULTANT, ITS OFFICERS, DIRECTORS, EMPLOYEES, AGENTS, SUBCONSULTANTS, AND CONTRACTORS OR TO THEIR CONDUCT.

NOTWITHSTANDING THE FOREGOING, THE CONSULTANT SHALL NOT BE RESPONSIBLE FOR (A) CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, OR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE PROJECT UNLESS DEVELOPMENT OR OVERSIGHT OF SUCH MATTERS IS SPECIFICALLY ASSIGNED TO THE CONSULTANT; (B) THE FAILURE OF ANY CONTRACTOR, SUBCONTRACTOR, VENDOR, OR OTHER PROJECT PARTICIPANT, NOT UNDER CONTRACT TO THE CONSULTANT, TO FULFILL CONTRACTUAL RESPONSIBILITIES TO THE AUTHORITY OR TO COMPLY WITH FEDERAL, STATE OR LOCAL LAWS, REGULATIONS AND CODES; OR (C) PROCURING PERMITS, CERTIFICATES AND LICENSES REQUIRED FOR ANY CONSTRUCTION UNLESS SUCH PROCUREMENT RESPONSIBILITIES ARE SPECIFICALLY ASSIGNED TO THE CONSULTANT IN ACCORDANCE WITH THIS AGREEMENT.

ARTICLE 18
CONFLICTS OF INTEREST

The Consultant represents and warrants to the Authority, as of the effective date of this Agreement and throughout the term hereof, that it, its employees and subconsultants (a) have no financial or other beneficial interest in any contractor, engineer, product or service evaluated or recommended by the Consultant, except as expressly disclosed in writing to the Authority, (b) shall discharge their consulting engineering responsibilities under this Agreement professionally, impartially and independently, and after considering all relevant information related thereto, and (c) are under no contractual or other restriction or obligation, the compliance with which is inconsistent with the execution of this Agreement or the performance of their respective obligations hereunder. In the event that a firm (individually or as a member of a consortium) submits a proposal to work for the Authority, Consultant shall comply with the Authority's conflict of interest policies and shall make disclosures as if it were one of the key personnel designated under such policies.

ARTICLE 19
INSURANCE

Prior to beginning the Services designated in this Agreement, the Consultant shall obtain and furnish certificates to the Authority for the following minimum amounts of insurance:

a. WORKERS' COMPENSATION INSURANCE. In accordance with the laws of the State of Texas, and employer's liability coverage with a limit of not less than $500,000. A "Waiver of Subrogation" in favor of the Authority shall be provided.

b. COMMERCIAL GENERAL LIABILITY INSURANCE. With limits not less than $1,000,000 for bodily injury, including those resulting in death, and property damage on account of any one occurrence, with an aggregate limit of $1,000,000. A "Waiver of Subrogation" in favor of the Authority shall be provided.

c. BUSINESS AUTOMOBILE LIABILITY INSURANCE. Applying to owned, non-owned, and hired automobiles in an amount not less than $1,000,000 for bodily injury, including death, to any one person, and for property damage on account of any one occurrence. This policy shall not contain any limitation with respect to a radius of operation for any vehicle covered and shall not exclude from the coverage of the policy any vehicle to be used in connection with the performance of the Consultant's obligations under this Agreement. A "Waiver of Subrogation" in favor of the Authority shall be provided.

d. ARCHITECTS AND/OR ENGINEERS PROFESSIONAL LIABILITY INSURANCE. In the amounts normally carried for its own protection in the practice of providing general consulting services, but in no event less than $3,000,000 per claim and aggregate. Coverage must be continuously maintained for a period of three (3) years beyond the Consultant's completion of the Services.

e. EXCESS UMBRELLA LIABILITY. With minimum limits of $1,000,000 per claim and in the aggregate, annually, as applicable excess of the underlying policies required at a.–d.

above. The Umbrella Policy shall contain the provision that it will continue in force as an underlying insurance in the event of exhaustion of underlying aggregate policy limits.

f. GENERAL FOR ALL INSURANCE. The Consultant shall promptly, upon execution of this Agreement, furnish certificates of insurance to the Authority indicating compliance with the above requirements. Certificates shall indicate the name of the insured, the name of the insurance company, the name of the agency/agent, the policy number, the term of coverage, and the limits of coverage.

All policies are to be written through companies (a) registered to do business in the State of Texas; (b) rated: (i), with respect to the companies providing the insurance under subsections 19.a. through d., above, by A. M. Best Company as "A-X" or better (or the equivalent rating by another nationally recognized rating service) and (ii) with respect to the company providing the insurance under subsections 19.d. and e., a rating by A. M. Best Company or similar rating service satisfactory to the Authority and/or its insurance consultant; and (c) otherwise acceptable to the Authority.

All policies are to be written through companies registered to do business in the State of Texas. Such insurance shall be maintained in full force and effect during the life of this Agreement or for a longer term as may be otherwise provided for hereunder. Insurance furnished under subsections 19.b., and c., above, shall name the Authority additional insureds and shall protect the Authority, the Consultant, their officers, employees, directors, agents, and representatives from claims for damages for bodily injury and death and for damages to property arising in any manner from the negligent or willful wrongful acts or failures to act by the Consultant, its officers, employees, directors, agents, and representatives in the performance of the Services rendered under this Agreement. Applicable Certificates shall also indicate that the contractual liability assumed in Article 17, above, is included.

The insurance carrier shall include in each of the insurance policies required under subsections 19.a., b., c., d., and e., the following statement: "This policy will not be canceled or non-renewed during the period of coverage without at least thirty (30) days prior written notice addressed to the Central Texas Regional Mobility Authority, 301 Congress, Suite 650, Austin, TX 78701, Attention: Executive Director."

ARTICLE 20
COORDINATION OF CONTRACT DOCUMENTS

The Statement of Qualifications for Traffic and Revenue Engineering Services and Appendices thereto, dated August 17, 2020, submitted by C&M Associates, Inc to the Authority ("Statement of Qualification") is attached hereto and incorporated herein as Appendix F for all purposes, provided, however, that in the event of any conflict between said Statement of Qualifications and any other provision of, appendices or exhibits to this Agreement, the Statement of Qualifications shall be subordinate and the provision, appendices, or exhibits of this Agreement shall control.

ARTICLE 21
RELATIONSHIP BETWEEN THE PARTIES

Notwithstanding the anticipated collaboration between the parties hereto, or any other circumstances, the relationship between the Authority and the Consultant shall be one of an independent contractor. The Consultant acknowledges and agrees that neither it nor any of its employees, subconsultants, or subcontractors shall be considered an employee of the Authority for any purpose. The Consultant shall have no authority to enter into any contract binding upon the Authority, or to create any obligation on behalf of the Authority. As an independent contractor, neither the Consultant nor its employees shall be entitled to any insurance, pension, or other benefits customarily afforded to employees of the Authority. Under no circumstances shall the Consultant, or its employees, subconsultants, or subcontractors, represent to suppliers, contractors or any other parties that it is employed by the Authority or serves the Authority in any capacity other than as an independent contractor. The Consultant shall clearly inform all suppliers, contractors and others that it has no authority to bind the Authority. Nothing contained in this Agreement shall be deemed or construed to create a partnership or joint venture, to create the relationship of employee-employer or principal-agent, or to otherwise create any liability for the Authority whatsoever with respect to the liabilities, obligations or acts of the Consultant, its employees, subconsultants, or subcontractors, or any other person.

ARTICLE 22
DELIVERY OF NOTICES, ETC.

In each instance under this Agreement in which one party is required or permitted to give notice to the other, such notice shall be deemed given either (a) when delivered by hand; (b) one (1) business day after being deposited with a reputable overnight air courier service; or (c) three (3) business days after being mailed by United States mail, registered or certified mail, return receipt requested, and postage prepaid. Any notices provided under this Agreement must be sent or delivered to:

In the case of the **Consultant**:

C&M Associates, Inc.
15770 Dallas Parkway, Suite 870
Dallas, Texas 75248
Attn: Sam Bohluli, Vice President

In the case of the **CTRMA**:

Central Texas Regional Mobility Authority
3300 N. IH 35
Suite 300
Austin, TX 78705

Attn: Mike Heiligenstein, Executive Director

Either party hereto may from time to time change its address for notification purposes by giving the other party prior written notice of the new address and the date upon which it will become effective.

ARTICLE 23
REPORTS OF ACCIDENTS, ETC.

Within twenty-four (24) hours after occurrence of any accident or other event which results in, or might result in, injury to the person or property of any third person (including an employee or subconsultant or employee of a subconsultant of the Consultant) which results from or involves any action or failure to act of the Consultant or any employee, subconsultant, employee of a subconsultant, or agent of the Consultant or which arises in any manner from the performance of this Agreement, the Consultant shall send a written report of such accident or other event to the Authority, setting forth a full and concise statement of the facts pertaining thereto. The Consultant also shall immediately send the Authority a copy of any summons, subpoena, notice, or other documents served upon the Consultant, its agents, employees, subconsultants, or representatives, or received by it or them, in connection with any matter before any court arising in any manner from the Consultant's performance of the Services under this Agreement.

ARTICLE 24
AUTHORITY'S ACTS

Anything to be done under this Agreement by the Authority may be done by such persons, corporations, firms, or other entities as the Authority may designate.

ARTICLE 25
LIMITATIONS

Notwithstanding anything herein to the contrary, all covenants and obligations of the Authority under this Agreement shall be deemed to be valid covenants and obligations only to the extent authorized by Chapter 370 of the Texas Transportation Code and permitted by the laws and the Constitution of the State of Texas, and no officer, director, or employee of the Authority shall have any personal obligations or liability thereunder.

The Consultant is obligated to comply with applicable standards of professional care in the performance of the Services. The Consultant makes no other representation or warranty, whether express or implied, and no warranty or guarantee is included or intended in this Agreement or in any "work product" or otherwise.

The Consultant shall be entitled to rely, without requirement of further investigation, on all information supplied to the Consultant by the Authority, together with any other materials, such as prior reports or analyses prepared by or on behalf of or for the benefit of Authority.

Neither Authority nor the Consultant shall in any event be liable for any consequential, incidental, indirect, punitive, exemplary or special damages including, without limitation; loss of profits, business or goodwill of any kind from any causes of action (whether arising in contract, tort or otherwise) unless caused by their willful misconduct, negligent act or omission, or other wrongful conduct. Each party to this Agreement is obligated to take commercially reasonable steps to mitigate any damages that it may incur. Nothing herein shall constitute a waiver of any other defenses that either party may have at law or in equity.

ARTICLE 26
CAPTIONS NOT A PART HEREOF

The captions or subtitles of the several articles, subsections, and divisions of this Agreement are inserted only as a matter of convenience and for reference, and in no way define, limit or describe the scope of this Agreement or the scope or content of any of its articles, subsections, divisions, or other provisions.

ARTICLE 27
CONTROLLING LAW, VENUE

This Agreement shall be governed and construed in accordance with the laws of the State of Texas. The parties hereto acknowledge that venue is proper in Travis County, Texas, for all disputes arising hereunder and waive the right to sue and be sued elsewhere.

ARTICLE 28
COMPLETE AGREEMENT

This Agreement sets forth the complete agreement between the parties with respect to the Services and, except as provided for in Article 20 above, expressly supersedes all other agreements (oral or written) with respect thereto. Any changes in the character, agreement, terms and/or responsibilities of the parties hereto must be enacted through a written amendment. No amendment to this Agreement shall be of any effect unless in writing and executed by the Authority and the Consultant. This Agreement may not be orally canceled, changed, modified or amended, and no cancellation, change, modification or amendment shall be effective or binding, unless in writing and signed by the parties to this Agreement. This provision cannot be waived orally by either party.

ARTICLE 29
TIME OF ESSENCE

As set forth in Article 5, with respect to any specific delivery or performance date or other deadline provided hereunder, time is of the essence in the performance of the provisions of this Agreement. The Consultant acknowledges the importance to the Authority of the project schedule and will perform its obligations under this Agreement with all due and reasonable care and in compliance with that schedule.

ARTICLE 30
SEVERABILITY

If any provision of this Agreement, or the application thereof to any person or circumstance, is rendered or declared illegal for any reason and shall be invalid or unenforceable, the remainder of this Agreement and the application of such provision to other persons or circumstances shall not be affected thereby but shall be enforced to the greatest extent permitted by applicable law.

ARTICLE 31
AUTHORIZATION

Each party to this Agreement represents to the other that it is fully authorized to enter into this Agreement and to perform its obligations hereunder, and that no waiver, consent, approval, or authorization

from any third party is required to be obtained or made in connection with the execution, delivery, or performance of this Agreement.

ARTICLE 32
SUCCESSORS

This Agreement shall be binding upon and inure to the benefit of the Authority, the Consultant, and their respective heirs, executors, administrators, successors, and permitted assigns.

ARTICLE 33
INTERPRETATION

No provision of this Agreement shall be construed against or interpreted to the disadvantage of any party by any court, other governmental or judicial authority, or arbiter by reason of such party having or being deemed to have drafted, prepared, structured, or dictated such provision.

ARTICLE 34
BENEFITS INURED

This Agreement is solely for the benefit of the parties hereto and their permitted successors and assigns. Nothing contained in this Agreement is intended to, nor shall be deemed or construed to, create or confer any rights, remedies, or causes of action in or to any other persons or entities, including the public in general.

ARTICLE 35
SURVIVAL

The parties hereby agree that each of the provisions in the Agreement are important and material and significantly affect the successful conduct of the business of the Authority, as well as its reputation and goodwill. Any breach of the terms of this Agreement, including but not limited to the provisions of Articles 13 and 18, is a material breach of this Agreement, from which the Consultant may be enjoined and for which the Consultant also shall pay to the Authority all damages which arise from said breach. The Consultant understands and acknowledges that the Consultant's responsibilities under Articles 13, 17, 18, and all other obligations of this Agreement related to maintaining records outlined in Article 3 shall continue in full force and effect after the Consultant's contractual relationship with the Authority ends for any reason.

ARTICLE 36
FORCE MAJEURE

Either party shall be excused from performing its obligations under this Agreement during the time and to the extent that it is prevented from performing by an unforeseeable cause beyond its control, including but not limited to: any incidence of fire, flood; acts of God;commandeering of material, products, plants or facilities by the federal, state or local government; national fuel shortage; or a material act or omission by the other party; when satisfactory evidence of such cause is presented to the other party, and provided further that such nonperformance is unforeseeable, beyond the control and is not due to the fault or negligence of the party not performing.

IN WITNESS WHEREOF, the parties have executed this Agreement effective on the date and year first written above.

CENTRAL TEXAS REGIONAL MOBILITY AUTHORITY	C&M Associates, Inc
By: _____	By: _____
Name: Mike Heiligenstein	Name: Carlos M. Contreras
Title: Executive Director	Title: President
Date: _____	Date: _____

APPENDIX A

SCOPE OF SERVICES

I. Purpose

The Consultant shall be expected to support the Authority in its communications and interactions with the Authority's accountants, rating agencies, bond insurers and underwriters, governmental entities, and the public in accordance with the highest professional standards.

The Consultant shall provide qualified technical and professional personnel to perform the duties and responsibilities assigned under the terms of this Agreement. The Authority, at its option, may elect to expand, reduce, or delete the extent of each work element described in this Scope of Services document, provided such action does not alter the intent of this Agreement.

The Authority shall request Services on an as-needed basis. There is no guarantee that any or all of the Services described in this Agreement will be assigned during the term of this Agreement. Further, the Consultant is providing these Services on a nonexclusive basis. The Authority, at its option, may elect to have any of the Services set forth herein performed by other consultants or by the Authority's staff.

II. Services

The Consultant shall be responsible for conducting complex traffic modeling and forecasting, including forecasting of revenues for bond-financed toll projects, and rendering opinions and other analyses concerning traffic and revenue projections as required under the trust agreements governing CTRMA's revenue bond financing for current and future projects.

The Scope of Services to be provided by the Consultant may include, but not be limited to, the following:

A. Perform all duties imposed on the Traffic Consultant by the Authority's current Trust Agreement, as amended, and all supplemental, superseding, or additional trust agreements, including providing certificates and opinions related to annual reviews, proposed changes in toll rate schedules or toll classifications, and periodic bond issuances.

B. Develop traffic and revenue projections for the existing CTRMA projects annually and for proposed new projects as requested.

C. Monitor traffic and toll revenue performance of all facilities open to traffic and respond to questions and inquiries from the Authority; develop pro forma models which would enable the estimation of traffic and toll revenue levels on these facilities on a plaza-by-plaza or gantry-by-gantry basis.

D. Prepare evaluations, studies, and opinions as necessary to determine recommended toll rates and periodic toll rate adjustments for the Authority's turnpike projects.

E. Provide and maintain traffic modeling tools pertinent to the CTRMA's projects and potential projects, working closely with the Capital Metropolitan Planning Organization ("CAMPO"), the Texas Department of Transportation ("TxDOT"), and other local planning organizations as necessary, to update economic, demographic, and land use data.

F. Perform special studies or reports as requested, including peer review analyses, regarding traffic, toll revenues, mobility, toll collection methods, and strategies and related technology and industry trends.

G. Monitor major economic and other activities which would have an effect of the Authority's traffic and toll revenue estimates; major resources that are consulted on a daily basis include local news, Internet websites, rating agency reports, and economic reports.

H. Present reports and findings to the CTRMA Board of Directors, rating agencies and investors, local interested parties, or otherwise upon request.

I. Work at the direction and supervision of the authority's Executive Director, Deputy Executive Director, Chief Financial Officer, and Director of Engineering. The Consultant will also be required to work cooperatively and collaboratively with other firms serving the Authority, including but not limited to the authority's General Engineering Consultant), General Counsel, financial advisors, and Bond Counsel.

III. Subcontracting

Services assigned to subconsultants must be approved in advance by the Authority. Notwithstanding said approval, all responsibility for subcontracted work shall remain strictly with the Consultant. The subconsultants must be qualified by the Authority to perform all work assigned to them.

In the event services of a subconsultant are authorized, the Consultant shall obtain a schedule of rate, and the Authority shall review and must approve, in its discretion, any rates, including overhead, to be paid to the subconsultant.

The Consultant shall be responsible for submitting monthly reports regarding its subcontracting activity including required BOPP reporting.

APPENDIX B

RATE SCHEDULE

Title	Employee Name	Base Hourly Wage Rate (A)	Overhead, G & A (B) 157.20%	Profit (C) 10%	Fully Burdened Hourly Labor Rate (Columns A+B+C)
Principal in Charge	Carlos Contreras, M.B.A.	$ 114.53	$ 180.05	$ 29.46	$ 324.04
Contract Director	Sam Bohluli, Ph.D., P.E.	$ 101.06	$ 158.87	$ 25.99	$ 285.92
Senior Advisor	Ali Soroush, Ph.D.	$ 89.75	$ 141.08	$ 23.08	$ 253.91
Senior Project Manager	Behruz Paschai, Ph.D, P.E.	$ 74.86	$ 117.68	$ 19.25	$ 211.79
Project Manager II	Chao Huang, Ph.D., P.E.	$ 55.29	$ 86.92	$ 14.22	$ 156.43
Project Manager I	Axel Herrmann, M.S.	$ 47.26	$ 74.29	$ 12.16	$ 133.71
Traffic and Revenue Modeler II	Arezoo Memarian, Ph.D., P.E.	$ 44.13	$ 69.37	$ 11.35	$ 124.85
Traffic and Revenue Modeler I	Sabrina Li, M.Eng, P.E.	$ 40.00	$ 62.88	$ 10.29	$ 113.17
Senior Modeler	Ricardo Pezo, M.S.	$ 39.75	$ 62.49	$ 10.22	$ 112.47
Data Collection Analyst	Luis Fernando Escobar B.S.	$ 34.62	$ 54.42	$ 8.90	$ 97.93
GIS Analyst	Rui Zhang, MPL	$ 33.65	$ 52.90	$ 8.65	$ 95.20
Documentation Manager	James Liddle, M.A.	$ 32.05	$ 50.39	$ 8.24	$ 90.68
Operations Simulation Analyst	Juan Pablo Zimbron, M.S.	$ 29.81	$ 46.86	$ 7.67	$ 84.33

Gram Rates

Title	Employee Name	Base Hourly Wage Rate (A)	Overhead, G & A (B) 140.00%	Profit (C) 10%	Fully Burdened Hourly Labor Rate (Columns A+B+C)
Project Manager I	Ben Flores	$ 28.70	$ 40.18	$ 6.89	$ 75.77
Quality Manager	Stacie Bittner	$ 29.05	$ 40.67	$ 6.97	$ 76.69
Admin/Clerical	Cindy Hubbard	$ 23.50	$ 32.90	$ 5.64	$ 62.04
Traffic Technician	Anthony Renteria	$ 16.80	$ 23.52	$ 4.03	$ 44.35

RSG Rates

Title	Employee Name	Base Hourly Wage Rate (A)	Overhead, G & A (B)	Profit (C)	Fully Burdened Hourly Labor Rate (Columns A+B+C)
			180.71%	10%	
Senior Advisor	Adler, Thomas J	$ 137.41	$ 248.31	$ 38.57	$ 424.30
Senior Director	Freedman, Joel	$ 97.63	$ 176.43	$ 27.41	$ 301.47
Director	Fowler, Mark D	$ 76.87	$ 138.91	$ 21.58	$ 237.35
Senior Consultant	Fessel, Florian	$ 50.08	$ 90.51	$ 14.06	$ 154.65
Consultant	Lee, Aaron P	$ 41.08	$ 74.24	$ 11.53	$ 126.85
Senior Analyst	Kelly, Megan	$ 35.94	$ 64.94	$ 10.09	$ 110.97
Analyst	Goldhammer, Claire	$ 28.32	$ 51.18	$ 7.95	$ 87.45

EPS Rates

Title	Employee Name	Base Hourly Wage Rate (A)	Overhead, G & A (B)	Profit (C)	Fully Burdened Hourly Labor Rate (Columns A+B+C)
			197.00%	10%	
Principal	David Schwartz	$ 73.37	$ 144.54	$ 21.79	$ 239.70
Managing Principal	Andrew Knudtsen	$ 96.30	$ 189.71	$ 28.60	$ 314.61
Principal	Daniel Guimond	$ 92.54	$ 182.30	$ 27.48	$ 302.33
Exec Vice President	Brian Duffany	$ 55.29	$ 108.92	$ 16.42	$ 180.63
Vice President	Matt Prosser	$ 45.74	$ 90.11	$ 13.58	$ 149.43
Vice President	Tim Morzel	$ 44.23	$ 87.13	$ 13.14	$ 144.50
Senior Associate	Rachel Shindman	$ 38.46	$ 75.77	$ 11.42	$ 125.65
Associate	Sarah Dunmire	$ 30.29	$ 59.67	$ 9.00	$ 98.96
Research Analyst 2	Adam Illig	$ 25.48	$ 50.20	$ 7.57	$ 83.24
Research Analyst 2	Carson Bryant	$ 25.48	$ 50.20	$ 7.57	$ 83.24
Support Staff	Lisa Marie Eytcheson	$ 39.83	$ 78.47	$ 11.83	$ 130.12
Support Staff	Helena Soister	$ 31.01	$ 61.09	$ 9.21	$ 101.31

CJ H rates

Turning Movement Counts		
2-hour Turning Movement Count, Major Intersection, Weekday	per intersection	405
2-hour Turning Movement Count, Major Intersection, Weekend	per intersection	425
2-hour Turning Movement Count, Minor Intersection, Weekday	per intersection	230
2-hour Turning Movement Count, Minor Intersection, Weekend	per intersection	250
13-hour Turning Movement Count Major Intersection	per intersection	1300
13-hour Turning Movement Count Minor Intersection	per intersection	750
24-Hour Video System Classification Counts - Major Intersection	per intersection	1500
24-Hour Video System Classification Counts - Minor Intersection	per intersection	1000
Intersection Turning Movement Counts - Minor (additional turning movement count hours)	per hour	200
Intersection Turning Movement Counts - Major (additional turning movement count hours)	per hour	110
Intersection Video	per day	250
24-Hour Counts		
24-Hour Automated Tube Counts - Volume	per direction/per counter/day	180
24-Hour Automated Tube Counts - Speed or Class	per direction/per counter/day	275
24-Hour Volume Mainlane Video/Radar Count	per lane/day	175
24-Hour 3 Vehicle Classification Main Lane Count	per lane/day	250
24-Hour 13 Vehicle Classification Main Lane Count	per lane/day	360
Additional Traffic Control (no lane closures/detour)	day	1500
Additional Traffic Control (lane closures/detour)	day	2500
Speed Surveys		
Curve Speed Survey	per curve	500
Spot Speed Survey	per location	210
Travel Times		
Travel Time Runs in DMI-Equipped Vehicle (Includes labor and mileage on site; processing labor not included)	hour	210
Travel Time- MAC Address Capture	per hour/unit	90
Origin Destination		
72-Hour Bluetooth O/D Main Lane	per unit	1100
72-Hour Bluetooth O/D Arterial	per unit	550

APPENDIX C

WORK AUTHORIZATION
(WORK AUTHORIZATION NO. _____)

This Work Authorization is made as of this _____ day of _____, _____, under the terms and conditions established in the AGREEMENT FOR TRAFFIC AND REVENUE ENGINEERING SERVICES, dated as of _____ ____, _____ (the "Agreement"), between the Central Texas Regional Mobility Authority ("Authority"), represented by the Executive Director or designee, and _____ ("Consultants"). This Work Authorization is made for the following purpose, consistent with the services defined in the Agreement:

[*Brief description of the Project elements to which this Work Authorization applies*]

Section A. – Scope of Services

A.1. Consultant shall perform the following Services:

Refer to attached scope letter.

A.2. The following Services are not included in this Work Authorization, but shall be provided as Additional Services if authorized or confirmed in writing by the Executive Director or designee.

A.3. In conjunction with the performance of the foregoing Services, Consultant shall provide the following submittals/deliverables (Documents) to the Executive Director or designee: To be determined.

Section B. – Schedule

Consultant shall perform the Services and deliver the related Documents (if any) according to the following schedule: To be determined.

Section C. – Compensation

C.1. In return for the performance of the foregoing obligations, the Authority shall pay to Consultant the amount not to exceed $_____, based on the attached fee estimate. Compensation shall be in accordance with the Agreement.

C.2. Compensation for Additional Services (if any) shall be paid by the Authority to Consultant according to the terms of a future Contract Amendment.

Section D. – Authority's Responsibilities

The Authority shall perform and/or provide the following in a timely manner so as not to delay the Services of the Consultant. Unless otherwise provided in this Work Authorization, the Authority shall bear all costs incident to compliance with the following:

Section E. – Other Provisions

The parties agree to the following provisions with respect to this specific Work Authorization:

Except to the extent expressly modified herein, all terms and conditions of the Agreement shall continue in full force and effect.

AUTHORITY:	CONSULTANT:
CENTRAL TEXAS REGIONAL MOBILITY AUTHORITY	C&M Associates, Inc.
By: _____	By: _____
Name: _____	Name: _____
Title: _____	Title: _____
Date: _____	Date: _____

APPENDIX D

SUBCONSULTANTS

Economic and Planning Systems, Inc.
730 17th St., Suite 630
Denver, Colorado 80202
David Schwartz M.C.R.P.
dschwartz@epsdenver.com
(303) 929-0931

Resource Systems Group, Inc.
180 Battery St., Suite 350
Burlington, Vermont 05401
Mark Fowler B.S.
mark.fowler@rsginc.com
(802) 345-5750

C J Hensch & Associates, Inc.
5215 Sycamore Avenue
Pasadena, TX 77503
Roger Allen, B.S.
rogerallen@cjhensch.com
(713) 376-1453

GRAM Traffic Counting, Inc.
3751 FM 1105, Building A
Georgetown, TX 78626
Ben Flores, B.A.
(512) 659-0438

APPENDIX E

KEY PERSONNEL

Title	Employee Name
Principal in Charge	Carlos Contreras, M.B.A.
Contract Director	Sam Bohluli, Ph.D., P.E.
Senior Advisor	Ali Soroush, Ph.D.
Project Manager I	Axel Herrmann, M.S.
Traffic and Revenue Modeler II	Arezoo Memarian, Ph.D., P.E.
Traffic and Revenue Modeler I	Sabrina Li, M.Eng, P.E.
Senior Modeler	Ricardo Pezo, M.S.
Data Collection Analyst	Luis Fernando Escobar B.S.
Documentation Manager	James Liddle, M.A.

APPENDIX F

CONSULTANT STATEMENT OF QUALIFICATION

Traffic and Revenue Engineering Services

Statement of Qualifications

Submitted by:

C&M Associates, Inc.

Submitted to:

CENTRAL TEXAS
Regional Mobility Authority

August 17, 2020

This proposal has been formatted for double-sided printing.

Cover page images were obtained from the following sources:

Jay Janner, Austin American-Statesman: https://www.statesman.com/news/20190426/after-long-winding-road-texas-45-southwest-set-to-open

Laura Skelding, Austin American-Statesman (via Stephenville Empire-Tribune): https://www.yourstephenvilletx.com/news/20191029/ctrma-to-consider-adding-bastrop-hays-counties-to-regional-transportation-board

C&M Associates, Inc.
15770 North Dallas Parkway, Suite 870
Dallas, TX 75248
Tel: 214-245-5300
www.candm-associates.com

Cover Letter

Date: August 17, 2020

To: William Chapman
Central Texas Regional Mobility Authority
3300 N IH 35 Suite 300
Austin, TX 78705

Subject: **Central Texas Regional Mobility Authority – Traffic and Revenue Engineering Services**
Statement of Qualifications

Dear Mr. Chapman,

C&M Associates, Inc. (C&M) is pleased to submit this response to the Central Texas Regional Mobility Authority's (CTRMA) Request for Qualifications to provide Traffic and Revenue (T&R) Engineering Services.

C&M is a Texas-based corporation founded by local investors and Cal y Mayor y Asociados, S.C., a premier Latin-American engineering firm with offices and operations in 13 countries. C&M specializes in T&R studies of toll facilities and has completed over 100 T&R studies since 2004, including over 30 Investment Grade T&R studies that have supported $18 billion in debt plus equity in U.S. and international financial markets.

We have carefully reviewed the RFQ issued on July 20, 2020 and have responded with the assurance that our experience and qualifications fully meet the CTRMA's needs. We have provided a Proposal Criteria Checklist on the next page for the CTRMA's convenience that summarizes how C&M's response meets the criteria outlined in the RFQ.

We greatly appreciate the opportunity to submit this response. Please feel free to contact me with any questions you may have.

Respectfully,

Carlos M. Contreras, M.B.A.
President
(916) 760-7418 x405
cmcontreras@candm-associates.com

Table 1. Response Criteria Checklist

Criteria	Summary
Demonstrated Competence	As presented in B. Forecasting Experience (p. 2), working for toll authorities in Texas, C&M has provided T&R consulting services to the **CTRMA**, the Texas Department of Transportation (**TxDOT**), the North Texas Tollway Authority (**NTTA**), the Cameron County Regional Mobility Authority (**CCRMA**), and the Hidalgo County Regional Mobility Authority (**HCRMA**). Our proposed Project Manager, **Axel Herrmann**, has recently led investment grade studies for the proposed 365 TOLL road on behalf of the HCRMA, the Donna International Bridge in Donna, TX and the Laredo 4-5 International Bridge in Laredo, TX. Throughout its experience performing T&R Consulting Services, the C&M staff has demonstrated its capability to perform every aspect of the T&R Engineering process—from data collection and survey design to traffic modeling, economic forecasting and the creation, delivery presentation and support of its T&R projections at high level of reliability and quality. C&M has a proven history of providing reliable traffic forecasts for Greenfield and Brownfield projects, for individual toll facilities, and for toll systems working closely with different agents involved in the successful placement of bonds or loan syndications.
Experience	C&M has 16 years of experience conducting T&R studies in Texas and throughout the U.S. and Latin America, comprising over 100 T&R studies (summarized in Figure 1) and over 30 investment grade studies that have supported $18 billion in debt plus equity in U.S. and international financial markets. C&M's T&R experience is presented in more detail in sections B. Forecasting Experience, C. Traffic and Revenue Engineering Experience under Trust Indentures, D. Modeling Experience, and Section III – Experience (pp. 12–14)
Knowledge	As described in E. Evaluations, Opinions, and Other Toll-Related Studies, C&M has developed a state-of-the-practice forecast analysis technique to evaluate and assess the expected probability of a project achieving its forecasted T&R. Additionally, C&M has the unique experience of both helping clients obtain financing and helping USDOT assess the risk of providing such financing through the Infrastructure Finance and Innovation Act (TIFIA). These has given C&M outside and inside perspectives of TIFIA-related requirements, sensitivity testing, and risk analysis. C&M has also developed a framework to analyze the effects of the COVID-19 pandemic on T&R forecasts. The framework includes close monitoring of observed traffic trends around the country and its relationship to epidemiological/health developments and economic stimulus responses. Working for clients around the country, C&M has developed estimates regarding the depth of T&R reductions, their duration, and expected recoveries under various scenarios. As part of this work, C&M has developed an understanding of how tolled facilities—even within the same regional network—have uniquely reacted to the pandemic.
Firm Resources	C&M has the largest team of T&R professionals based in Texas. The experienced personnel available for this contract are presented in the Organizational Chart (p. 10) and the Summary of Personnel Committed for Availability to the CTRMA (p. 11), with professional resumes of key personnel provided in Appendix A.
HUB/DBE Participation	As summarized in Section IV (p. 15), C&M is a certified DBE in Texas; Additionally, the C&M Team proposed for this contract includes firms C J Hensch & Associates, Inc., and GRAM Traffic Counting, Inc., which are both woman-owned Texas-certified DBEs and HUBs.

TABLE OF CONTENTS

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SECTION I: C&M ASSOCIATES, INC.

C&M Associates, Inc. (C&M) was founded in 2004 by Carlos M. Contreras and Cal y Mayor y Asociados, S.C., a major provider of international Traffic and Revenue (T&R) services. Headquartered in Dallas, TX, C&M's primary area of expertise is in T&R studies for tolled facilities, having completed **over 100 T&R forecasting studies**, including **over 30 investment grade T&R studies** that have supported **$18 billion** in debt plus equity in U.S. and international financial markets. C&M's expertise includes the following:

Excellent Forecasted vs. Actual Traffic Record

*C&M has a proven history of providing **reliable traffic forecasts** for Greenfield and Brownfield projects, for individual toll facilities, and for toll systems.*

Financial Community Experience

*C&M works closely with different agents involved in the successful placement of bonds or loan syndications. These agents include **underwriting institutions**, **rating agencies**, and **credit enhancers**, among others.*

Electronic Toll Collection Expertise

*C&M has produced roughly 70 T&R studies that have **electronic toll collection** as the primary toll collection mechanism, the majority of which are for **all-electronic tolling**.*

Toll Facility Microsimulation

*C&M has experience in the complex **microscopic simulation** of transportation projects for studying the efficiency of operations and for presentation purposes.*

Managed Lanes Experience

*C&M has ample experience with **managed lane projects** in Texas, Virginia, Florida, Colorado, and Georgia, for both private and public entities. Recent managed lane projects include I-66 HOT lanes in VA, I-77 managed lanes in NC, and SH 288 managed lanes in TX.*

T&R Risk Analysis

*C&M has developed a **state-of-the-practice forecast analysis technique** to assess the expected probability of a project achieving its forecasted T&R. This methodology incorporates feedback from underwriters, credit enhancers, commercial banks, and rating agencies in the United States, Latin America, and Europe.*

Public-Private Project Experience

*C&M has analyzed the feasibility of toll road projects involving **financing from public, private, and hybrid sources** for turnpike authorities, private developers, and concessionaires at all levels.*

Using the Latest Technology

*Just as technology affects NTTA's business, so too has it affected T&R forecasting. In recent years, C&M has successfully implemented **machine learning** techniques involving **neural networks** to forecast toll road traffic on the Chisholm Trail Parkway. Combined with traditional T&R techniques, machine learning can **improve the reliability of short-term forecasts** in the budgeting process.*

Prepared for the Future

*As a young and dynamic firm, C&M is energized by the innovations and changes coming to the toll industry. The advent of **autonomous and connected vehicles** will change the behavior of CTRMA toll road users. C&M's proposed Principal in Charge, Carlos Contreras, has engaged with rating agencies on the effect these changes will have on toll road capacity, travel demand, and toll road users' value of time. C&M's proposed Project Director, Sam Bohluli, has considered these changes in previous T&R forecasts and can answer rating agency questions on these impacts.*

A. Capabilities of Principal Assigned Office

The principal office responsible for performing CTRMA work is C&M's headquarters in Dallas, TX. This office has 16 full-time personnel dedicated exclusively to T&R consulting services. The personnel proposed for the CTRMA contract include: **Carlos Contreras, MBA** (President/Principal-in-Charge), **Shahram Bohluli, PE, PhD** (Project Director), and **Axel Herrmann, Dipl.-Eng.** (Project Manager). Axel will be supported by the seasoned staff presented in Table 2.

Table 2. Principal Office Personnel Assigned to CTRMA Work

Name, Title	Role	Year of Experience
Carlos M. Contreras, MBA – President	Principal in Charge	25
Sam Bohluli, PhD, PE – Vice President	Contract Director	20
Axel Herrmann, MS – Principal Transportation Planner	Project Manager	15
Ricardo Pezo, MS – Senior Transportation System Modeler	Senior Modeler	19
Arezoo Memarian, PhD, PE – Senior Transportation System Modeler	Traffic and Revenue Modeler	12
Sabrina Li, MEng, PE – Transportation System Modeler	Traffic and Revenue Modeler	8
Juan Pablo Zimbron, MS – Transportation Engineer	Operations Simulation	7
Luis Fernando Escobar, B.A. – Transportation Engineer	Data Collection Analysis	16
Rui Zhang, MPL – Analyst	GIS Analyst	2
James Liddle, MA – Technical Writer/Document Control	Documentation Manager	5

B. Forecasting Experience

C&M has successfully completed **over 100 T&R studies**, (see Figure 1), with a combined total of $18 billion in bonds and loans backed by C&M's 30+ Investment Grade T&R studies in the U.S. and Latin America.

Working for toll authorities in Texas, C&M has provided T&R consulting services to the **CTRMA**, the Texas Department of Transportation (**TxDOT**), the North Texas Tollway Authority (**NTTA**), the Cameron County Regional Mobility Authority (**CCRMA**), and the Hidalgo County Regional Mobility Authority (**HCRMA**). Our proposed Project Manager has recently led investment grade studies for the proposed **365 TOLL** road on behalf of the HCRMA, the **Donna International Bridge** in Donna, TX and the **Laredo 4-5 International Bridge** in Laredo, TX.

C&M's reputation and forecast reliability has made it one of the few firms in the U.S. and Latin America recognized by the transportation and financial communities as an investment grade T&R consultant.

C&M has provided T&R analyses to numerous public and private entities and has supported the successful financing of many infrastructure projects. C&M's extensive experience includes: executing tasks as delineated by Trust agreements, preparing T&R projections at various levels, studying proposed plans (e.g., toll plans, changes in operational procedures), developing and maintaining travel demand models, interacting with and peer-reviewing other involved agents, and preparing and presenting official reports financiers and governing bodies.

OREGON
OR State Treasury: Columbia River Crossing

COLORADO
FRMG: I-70 East Traffic Projections
HPTE: I-70/Floyd Hill
HPTE: I-25 South Corridor Express Lanes
HPTE: I-25 South Corridor Gap Segment
HPTE: I-25 North Segment 2 Express Lanes
HPTE: I-70 West Managed Lanes
HPTE: Mountain Corridor RFP Development
ROADIS: Northwest Parkway
TIFIA: C-470 Managed Lanes

CALIFORNIA
Alameda CTC: I-580 & I-680 Express Lanes
PFM: I-105 Express Lanes
SANDAG: SR 11 & Otay Mesa East POE

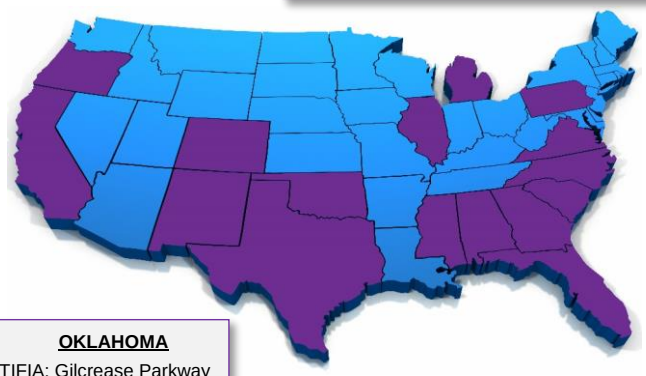
TEXAS
CCRMA: Flor de Mayo International Bridge
CCRMA: SH 550/US 281
CCRMA: Del Rio - Acuña II POE
CRRMA: Tierra Este Ext. Traffic Projections
CCRMA: Cameron County Traffic Projections
CCRMA: Old Alice Rd Traffic Projections
CCRMA: Morrison Rd Traffic Projections
City of Donna: Donna-Rio Bravo Int'l Bridge
City of El Paso: El Paso Commuter Int'l Bridge
City of Laredo: Laredo Int'l. Bridge Master Plan
CTRMA: 183 North Mobility Project
Ferrovial: SH 249 Extension
Globalvia: Donna-Rio Bravo Int'l Bridge
HCRMA: 365 TOLL (SH 365)
HCRMA: International Bridge Trade Corridor
HCRMA: Hidalgo County Regional Toll Analysis
HCRMA: US 83 La Joya Bypass
HCRMA: Hidalgo County Loop
ISE: FM 1472 Traffic Projections
Itinere: North Tarrant Express (NTE)
LGE: Mile 10 Road Traffic Projections
LGE: Mile 6 and Mission Rd. Traffic Projections
LGE: Madero Traffic Projections
NTTA: Special Projects System
NTTA: Chisholm Trail Parkway
NTTA: President George Bush Turnpike
OCACSA: World Trade International Bridge
OHL: SH 288 Managed Lanes
PINFRA-GEMCO: Laredo 4/5 POE

ILLINOIS
CPP: Houbolt Toll Bridge
IDOT: I-55 Managed Lanes

MICHIGAN
Detroit Int'l Bridge Co: Ambassador Bridge
Globalvia: Bay City Bridges
Oaktree: American Roads Assets

PENNSYLVANIA
ACS: Pennsylvania Turnpike

VIRGINIA
VDOT: I-66 HOT Lanes ITB
VDOT: I-66 Express Lanes OTB
VDOT: I-81Tolling/ Express Lanes
VDOT: MT / DT / MLK Extension
VDOT: I-495 NEXT
VDOT: I-95 Express Lanes
VDOT: I-495 HOT Lanes
VDOT: I-395 HOT Lanes
VDOT: I-64 HOT Lanes
VDOT: Dulles Toll Road
VDOT: Regional Modeling
VDOT: Project Charles
VDOT: Project Stewie
VDOT: Route 460
VDOT I-95 ISRRPP



OKLAHOMA
TIFIA: Gilcrease Parkway

NEW MEXICO
City of Sunland Park: POE

MISSISSIPPI
Globalvia: E Jackson Pkwy

NORTH CAROLINA
Cintra: I-77 Managed Lanes

SOUTH CAROLINA
SCDOT: I-73

TEXAS (cont'd)
PTP: Montgomery County Parkway
SBI: Donna-Rio Bravo & Anzalduas Int'l Bridges
Skanska ID/3i/Deutsche Bank: SH 121 (Sam Rayburn Tollway)
TIFIA: Grand Pkwy Segments D–I
TxDOT: I-345 Feasibility Study
TxDOT: I-35 Managed Lanes
TxDOT: I-27 Operational Improvements
TxDOT: Loop 375 (Americas Ave)
TxDOT: Montana Avenue
TxDOT: SH 161
TxDOT: South Padre Island
TxDOT: Zaragoza Rd./Gateway Blvd. Diamond Interchange
TxDOT: El Paso Commuter Int'l Bridge
TxDOT: Fort Bliss Prioritization Program
TxDOT: SL 480 (Eagle Pass Outer Loop)
TxDOT: Brownsville PHR211 West Loop
TxDOT: SH 68
TxDOT: San Antonio Traffic Projections
TxDOT: I-10 and Mesa Park Drive
TxDOT: SH 46 Travel Demand Modeling and Traffic Projections
TxDOT: Socorro Arterial 1 Blvd 1682 Traffic Projections
TxDOT: US 77 Traffic Projections
TxDOT: SH 32 Traffic Projections
TxDOT: Hi Line Rd and Anaya Rd Traffic Projections
TxDOT: Cesar Chavez Rd Traffic Projections

ALABAMA
Cintra: I-10 Mobile River Bridge
Oaktree: American Roads Assets

GEORGIA
GDOT: HOV to HOT Network Conversion
GDOT: I-20 East Managed Lanes

FLORIDA
AVCON/FDOT: Wellness Way Parkway
Cintra: Poinciana Parkway
FDOT : SR 528 Beachline Expressway ML
FDOT: I-4 "Beyond the Ultimate" TDM
FDOT: West Bay Parkway
FTE: District 2 I-95 Express Lanes
Itinere: I-75 Managed Lanes
Orchard Pond Greenway LLC: Orchard Pond Rd
Stutler Strategies: Walton Beach Bypass

PUERTO RICO
Citi Infrastructure: PR-22, PR-5 Managed Lanes
OHL: PR-52

Figure 1. C&M's U.S. T&R Experience

Throughout its experience performing T&R Consulting Services, the C&M staff has demonstrated its capability to perform every aspect of the Traffic and Revenue Engineering process—from data collection and survey design to traffic modeling, economic forecasting and the creation, delivery presentation and support of its T&R projections at high level of reliability and quality. C&M has a proven history of providing reliable traffic forecasts for Greenfield and Brownfield projects, for individual toll facilities, and for toll systems working closely with different agents involved in the successful placement of bonds or loan syndications.

C&M's demonstrated success in T&R forecasting includes the following:

- In February 2016, the Virginia Department of Transportation (VDOT) obtained an indicative private rating from Fitch for senior private activity bonds and subordinate TIFIA loan in the hundreds of millions of dollars using C&M's T&R forecasts.
- The Official Statement of the $100 million in PABS that was published in September 20, 2015, for the **I-77 HOT lanes project** in North Carolina can be accessed here. The offering has been made by the North Carolina Department of Transportation (NCDOT), pledging revenue from the managed lanes. In addition, the financial close included a $189 million TIFIA loan. The offering was rated BBB- by Fitch and BBB by DBRS.
- The December 2012 Official Statement of $231 million in Current Interest Bonds and $62 million in Capital Appreciation Bonds issued by the **Route 460** Funding Corporation of Virginia, Authorized by the Commonwealth Transportation Board of the Commonwealth of Virginia, can be accessed here. The issuance was assigned a Baa3 rating by Moody's Investor Service and a BBB- rating by Standard & Poor's Rating Services.

C. Traffic and Revenue Engineering Experience under Trust Indentures

C&M is well-versed in performing duties imposed on transportation engineers under requirements of Trust Indentures for bond financing, including providing opinions related to annual reviews and bond issuances. Specifically, C&M has served as Traffic and Revenue Engineer for the **NTTA's Special Projects System** (SPS), comprising the Chisholm Trail Parkway (CTP) and the President George Bush Turnpike-Western Extension (PGBT-WE). As **Prime T&R Consultant for the SPS** from 2012 to 2017, C&M conducted the following tasks for the NTTA:

- Periodic Update of SPS Gantry Toll Rates
- Quarterly TIGER Discretionary Grant Performance Report for the PGBT-WE
- SPS Annual Budget Estimates
- Quarterly/Monthly/Weekly SPS Performance Reports
- Level 2 T&R Update for the PGBT-WE (2013)
- Level 2 T&R study for the CTP (2013)
- Traffic Impact Study of I-20 and SH 161 on the T&R of the PGBT-WE (2013)
- Investment Grade T&R Study for the CTP (2014)
- NCTCOG 2040 Demographic Forecast Review (2014)
- CTP T&R Alternative Scenario Analysis (2015)
- CTP Toll Discount Analysis (2015)
- Investment Grade T&R Study for the SPS (2016)
- Periodic presentations to the Board and staff
- Opinions and analysis regarding toll policies and operations

During the performance of these tasks for the SPS, C&M also monitored the performance of the **NTTA System** to ensure consistency with the SPS and understanding of its operations and trends.

D. Modeling Experience

C&M's Dallas-based modeling staff of highly qualified individuals, led by Sam Bohluli, P.E., PhD., has been responsible for the modeling component of C&M's T&R studies and has adopted, calibrated, and validated dozens of travel demand models (TDM) in Texas, Georgia, Virginia, Colorado, Mississippi, South Carolina, North Carolina, Pennsylvania, Maryland, Illinois, and Florida. With over 20 and 13 years of experience, respectively, **Sam Bohluli** and **Axel Herrmann** have been responsible for the modeling component of a variety of tolling studies, ranging from preliminary feasibility to investment grade level. Recently, Axel led his team in developing a four-step TDM for a T&R study on behalf of the HCRMA in southern Texas.

*C&M's staff has expertise in multiple modeling platforms, including **Cube**, **EMME** and **TransCAD**, the Capital Area Metropolitan Planning Organization (CAMPO) platform of choice.*

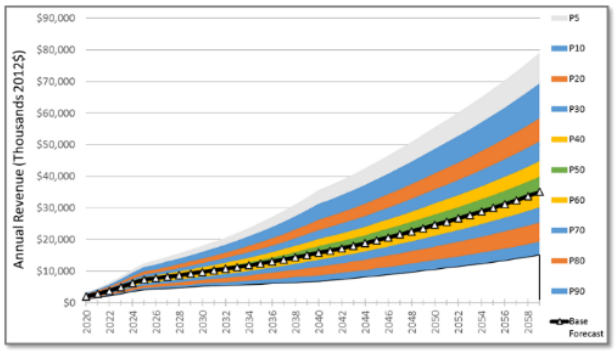
C&M assists clients in adopting more sophisticated toll demand forecast approaches in their travel demand modeling framework, providing decision makers with better tools. In this regard, C&M has experience in complex mesoscopic and microscopic simulations of transportation projects, which is useful for studying operational efficiency, analyzing traffic impacts, and providing support for stakeholder presentations. C&M has performed several studies involving dynamic tolling and developed a mesoscopic modeling methodology that dynamically assigns traffic to the tolled facilities to provide a particular Level of Service (LOS), taking into consideration the varying traffic flows and producing more realistic estimates of speeds, queue lengths, delays, and congestion. Micro-simulation can then be used to verify that the facility operates within a certain LOS at specific locations.

C&M is familiar with the **CAMPO TDM**, a sequential four-step, trip-based model. The CAMPO TDM uses daily generation and distribution of person trips prior to mode choice. However, for the assignment step, the daily trip tables are separated into four time periods—a welcome feature for estimating managed lane T&R. An iterative feedback technique is used to resolve travel times within the sequential trip-based model. The TDM covers six counties—Bastrop, Burnet, Caldwell, Hays, Travis, and Williamson—with 2,102 internal traffic analysis zones (TAZ) and 59 external stations.

One specific example of the C&M staff's modeling capabilities (among the dozens of models they have developed or updated) is a **regional TDM developed for the Washington, D.C. area** including all the tolled facilities in Norther Virginia and Maryland and their interaction as a regional system. The model is currently being used to produce **investment grade T&R studies** for five express lane corridors, including I-66 Inside the Beltway, 495 Express, 495 NEXT, and I-395 as well as the Dulles and Greenway Toll Roads.

The C&M staff's modeling record is impressive, with models developed for regions ranging from large cities like Washington, D.C. and Dallas/Fort Worth to smaller metropolitan areas like Laredo–Nuevo Laredo and others similar in size to Austin.

E. Evaluations, Opinions, and Other Toll-Related Studies



C&M has developed a state-of-the-practice forecast analysis technique to evaluate and assess the expected probability of a project achieving its forecasted T&R. This methodology has incorporated feedback from underwriters, credit enhancers, commercial banks, and rating agencies in the United States, Latin America, and Europe. The methodology has been utilized by C&M to conduct **risk analysis** of C&M's own forecasts and those of others C&M has peer reviewed.

C&M has the unique experience of both helping clients obtain financing and helping USDOT assess the risk of providing such financing through the Infrastructure Finance and Innovation Act (TIFIA). These has given C&M outside and inside perspectives of TIFIA-related requirements, sensitivity testing, and risk analysis.

Outside Perspective:	I-66 express lanes 2016 indicative private rating from Fitch for senior Private Activity Bonds and subordinate TIFIA loan in the hundreds of millions of dollars obtained by VDOT using C&M's T&R forecasts, as well as the I-77 HOT lanes referenced earlier.
Inside Perspective:	C-470 express lanes 2016 T&R review and risk analysis, Grand Parkway 2017 T&R review and risk analysis, and Gilcrease Expressway 2018 T&R review and risk analysis conducted on behalf of TIFIA.

COVID-19 Pandemic Analysis

C&M has developed a framework to analyze the effects of the COVID-19 pandemic on T&R forecasts. The framework includes close monitoring of observed traffic trends around the country and its relationship to epidemiological/health developments and economic stimulus responses. Working for clients around the country, C&M has developed estimates regarding the depth of T&R reductions, their duration, and expected recoveries under various scenarios. As part of this work, C&M has developed an understanding of how tolled facilities—even within the same regional network—have uniquely reacted to the pandemic depending on the socioeconomic and market characteristics of their user base as well as their vehicle class composition. Nevertheless, C&M recognizes that its understanding of the T&R response will continue to evolve due to the fluid nature of the pandemic and national/regional policy responses.

C&M is currently preparing Pandemic T&R scenarios for several investment grade studies in Virginia and Texas.

F. Fee Calculation Method

C&M will charge monthly following this formula:

$$Invoice = (Direct\ Labor + Overhead) * (1 + Profit\ Rate) + Direct\ Expenses$$

Direct Labor: Will be charged based on the established hourly rates for each staff member and subcontractor. Rates are based on dividing annual salaries by 2,080 hours. C&M does not add surcharges to subcontractor fees.

Overhead: C&M's accounting system identifies time and materials expended on a per-project basis. The system tracks expenses not attributable to projects and categorizes them in expense accounts separated into overhead allowable and non-allowable accounts under FAR regulations. An external auditor reviews and certifies accounting practices and overhead cost calculations.

Profit Rate: C&M will negotiate with the CTRMA regarding the profit rate that will apply to this assignment.

Direct Expenses: C&M will charge the actual cost of direct expenses, such as travel and field data collection expenses.

C&M prepares the budgets for the tasks based on time estimated to complete them and the approved rates for the professionals involved in the project. Submitted to the CTRMA monthly, invoices will document actual time spent on the project by personnel, direct expenses associated with the project, and a progress report of the task. Individual rates for each professional and the number of hours dedicated to each task will be those approved in advance by the CTRMA. Over-head rates and profit rates will also be those disclosed and agreed upon during the procurement and negotiation process and will follow Federal Acquisition Regulations (FAR).

G. Disclosures

C&M Associates, Inc. currently has two T&R contracts with TxDOT: One with the Toll Operations Division (TOD) and one with the Project Finance, Debt and Strategic Contracts Division (PFD) to perform T&R Engineering Services statewide, including the geographic area encompassed by the CTRMA. In addition, C&M has been selected as part of the GEC team that will advise TxDOT's Austin District on the Mobility 35 program. Otherwise, C&M has no additional contractual or informal business arrangements/agreements, including fee arrangements, consulting agreements, or any other kind of legal representation, with (i) the CTRMA staff and/or any of its Board members., or with (ii) any governmental entity or political subdivision (with the exception of the TxDOT as described above) within the geographic area encompassed by the CTRMA.

Additionally, subconsultant Resource Systems Group, Inc. is currently reviewing CTRMA's T&R forecast conducted by Stantec as part of a TIFIA loan application for the 183A and 183N projects. RSG is contracted with FHWA to perform this work.

A. Organization of the C&M Team

C&M's principal office for CTRMA work will be its Dallas, TX headquarters, with Project Manager Axel Herrmann directly responsible for potential CTRMA projects. Figure 2 presents the C&M Team's organizational chart, indicating the roles of proposed lead personnel and support staff available for this contract.

C&M has assembled a team that ensures expert participation in each phase of the T&R process, with in-depth understanding of transportation issues in Texas, T&R analysis practices, and financial community interaction. The C&M Team includes the following subconsultants, with which C&M has a successful track record working together on T&R engagements:

Resource Systems Group, Inc. (RSG) is an internationally prominent transportation consulting firm specializing in stated preference surveys, travel demand modeling, data analysis, and market research for toll facilities. RSG has a long history of supporting T&R work through their extensive experience in stated preference survey design, behavioral modeling, and travel forecasting. RSG has developed traveler choice models to support new road pricing projects and pricing/operations changes for existing facilities throughout the U.S., Canada, South America, Asia, and Europe. This work has included extensive qualitative research, the design and administration of stated and revealed preference surveys, and the use of those data in the development of multinomial and nested logit route, lane, time-of-day, and payment method choice models. RSG has participated in several pioneering pricing projects such as California's SR-91 Express Lanes, Singapore's Area Pricing program, and Toronto's Hwy 407 all-electronic/video tolling, as well as more recent projects such as express lanes projects for US 36 and I-25 in Colorado, the I-395 and I-495 Express Lanes in northern Virginia, the I-4 Beyond the Ultimate express lanes in Orlando, Miami's 95 Express, and a regional system of express lanes in Dallas, TX.

RSG has worked extensively with TxDOT, tollway authorities, and regional mobility authorities in Texas on T&R forecasting across the state over the past 20 years, including the design and implementation of 30 stated preference surveys in Austin, Dallas/Fort Worth, Houston, San Antonio, Tyler, McAllen, and South Padre Island.

Economic & Planning Systems (EPS) has extensive experience providing socioeconomic data analysis and recalibration of demographic and economic forecast data in the context of investment grade studies, managed lane studies, corridor growth assessments, transportation plans, and economic impact analyses. Since 1983, EPS has provided consulting services to hundreds of public- and private-sector clients in Colorado and throughout the United States.

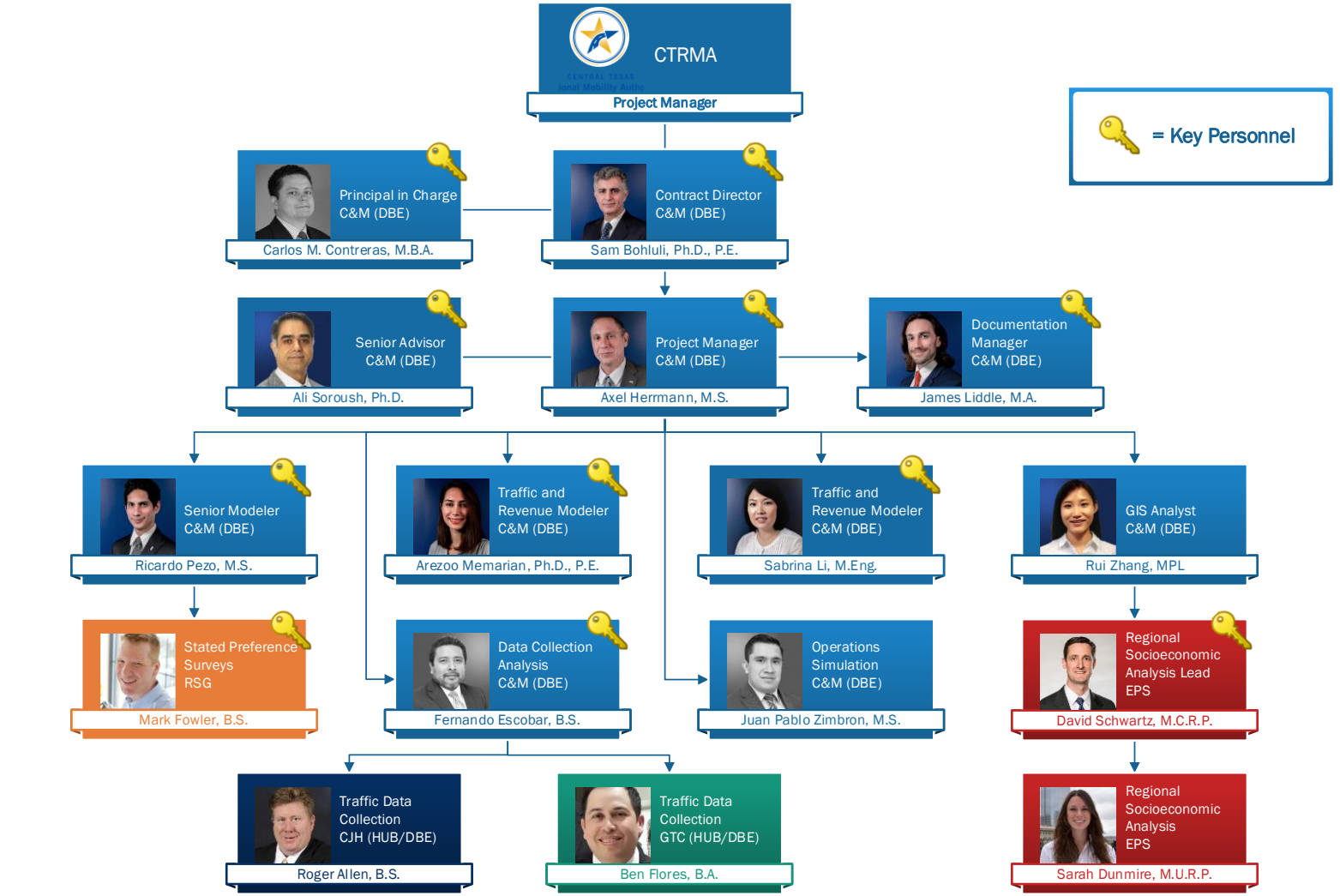
EPS has been providing third-party Traffic Analysis Zone (TAZ) projections of socioeconomic variables in the context of Investment Grade T&R forecasts for toll authorities and regional transportation and planning organizations throughout the U.S. for more than 30 years. We have presented our methodologies, analysis, and findings to public planning agencies, Boards and ratings agencies. We understand the importance that providing robust independent socioeconomic projections has on building credibility for the travel demand modeling and its revenue projection outputs.

EPS's socioeconomic projection models include both econometric and geospatial components, generating outputs on the basis of relationships that are calibrated to actual local and regional economic and demographic trends, as well as land use information such as geographic or land use constraints.

C J Hensch & Associates, Inc. (CJH) is a Texas-based DBE and HUB founded in 1995 that has been providing data collection for T&R studies for public and private clients over the past 25 years. CJH has experience collecting traffic data for regional planning and engineering studies, the technical knowledge required to complete the work, and an experienced staff capable of completing several studies simultaneously.

During the past year, CJH has conducted over 700 intersection turning movement counts in connection with signal warrant studies and signal timing and phasing in the Houston District and approximately 250 in the Dallas/Fort Worth Districts. Also, approximately 6,000 classification counts have been performed statewide for the TxDOT Technical Services Group as well as over 1,000 volume and classification counts last year throughout the state of Texas.

GRAM Traffic Counting, Inc. (GTC) is a Texas-based DBE and HUB founded in 1998 that specializes in planning and executing projects ranging from small intersections to large-scale, statewide data collection programs, including automated traffic record counts (ATR), pedestrian counts, turning movement counts (TMC), origin-destination surveys, and video license plate capture.



Modeling & Support Personnel Available for the Contract

Behruz Paschai, P.E., Ph.D., Transportation Operations Director - C&M (DBE)
Mitra Ghadimi, M.B.A., P.M.P., Administrative Manager - C&M (DBE)
Chao Huang, Ph.D., P.E., Senior Transportation Engineer - C&M (DBE)
Liang Chen, M.P.L., Transportation Planner - C&M (DBE)
Thomas Adler, Ph.D., President - RSG
Tristan Cherry, M.S., Consultant - RSG
Andrew Knudtsen, C.C.I.M., Managing Principal -EPS
Sarah Dunmire, M.U.R.P., Project Analyst - EPS
Adam Illig, B.A., Researcher - EPS
William E. Hensch, B.S. P.E., Principal Traffic Engineer - CJH
Dennis Cox, A.A., Operations Manager - CJH
Stacie Bittner, A,A, COO - GTC

Figure 2. Organizational Chart

B. Assigned Personnel

Table 3 summarizes the personnel committed for availability to the CTRMA (totaling 19 professionals), including their role, geographic location, woman/minority status, expertise relevant to T&R engineering services, and percent commitment for the duration of the contract, understanding that services may extend for a term of 5 years plus two options for 2-year extensions. Professional resumes detailing the qualifications and T&R experience of key personnel are provided in Appendix A.

Table 3. Summary of Personnel Committed for Availability to the CTRMA

Name, Credentials (🔑 = Key Personnel)	Firm	Role	Office Location	Woman (W) or Minority (M)	Years of Experience	Traffic and Revenue Areas of Expertise								% Commitment for Contract Duration
						Managed Lanes	Complex Traffic Modeling	Toll Rate Optimization	Microsimulation	Stated Preference Surveys	Socioeconomic Analysis	Data Collection & Analysis	Project Financing	
 Carlos Contreras, M.B.A.	C&M	Principal in Charge	Dallas, TX	M	25	✓		✓		✓	✓	✓	✓	35%
 Sam Bohluli, Ph.D., P.E.	C&M	Contract Director	Dallas, TX	M	20	✓	✓	✓	✓	✓	✓	✓	✓	25%
 Axel Herrmann, M.S.	C&M	Project Manager	Dallas, TX		15	✓	✓	✓	✓	✓	✓	✓	✓	70%
 Ali Soroush, Ph.D.	C&M	Senior Advisor	Arlington, VA	M	17	✓	✓	✓	✓	✓	✓	✓	✓	10%
 Ricardo Pezo, M.S.	C&M	Senior Modeler	Dallas, TX	M	19	✓	✓	✓	✓	✓	✓	✓	✓	75%
 Juan Pablo Zimbron, M.S.	C&M	Operations Simulation	Dallas, TX	M	7		✓	✓	✓			✓		75%
 Arezoo Memarian, Ph.D., P.E.	C&M	Traffic and Revenue Modeler	Dallas, TX	W, M	12		✓	✓	✓		✓	✓		50%
 Sabrina Li, M.Eng, P.E.	C&M	Traffic and Revenue Modeler	Dallas, TX	W, M	8	✓	✓	✓	✓		✓	✓		50%
 Luis Fernando Escobar B.S.	C&M	Data Collection Analysis	Dallas, TX	M	16	✓	✓	✓			✓	✓		75%
 Rui Zhang, MPL	C&M	GIS Analyst	Dallas, TX	W, M	2		✓				✓	✓		50%
 James Liddle, M.A.	C&M	Documentation Manager	Dallas, TX		5							✓		25%
 Mark Fowler, B.S.	RSG	Stated Preference Survey	Burlington, VT		16					✓		✓	✓	25%
 Tristan Cherry, M.S.	RSG	Stated Preference Survey	Burlington, VT		8					✓		✓	✓	35%
 David Schwartz, M.C.R.P.	EPS	Socioeconomic Analysis	Denver, CO		15						✓	✓	✓	25%
 Sarah Dunmire, M.U.R.P.	EPS	Socioeconomic Analysis	Denver, CO	W	4						✓	✓	✓	25%
 William E Hensch, P.E.	CJH	Traffic Data Collection	Pasadena, CA		50							✓		76%
 Roger Allen, B.S.	CJH	Traffic Data Collection	Pasadena, CA		17							✓		30%
 Ben Flores, B.A.	GTC	Traffic Data Collection	Georgetown, TX	M	6							✓		75%
 Stacie Bittner, A.A.	GTC	Traffic Data Collection	Georgetown, TX	W	4							✓		75%

Table 4 presents a summary of projects for which C&M has provided T&R engineering services since January 1, 2017. The remainder of this section presents a sampling of these projects in more detail.

Table 4. C&M T&R Engineering Services, 2017–2020

Year	Project Name, Location	T&R Level	Client
Ongoing	I-70 Mountain Corridor Floyd Hill T&R Study, CO	2	CDOT HPTE
Ongoing	365 TOLL Investment Grade T&R Study, TX	3	HCRMA
Ongoing	Dulles Regional Modeling and Investment Grade T&R Study, VA	3	VDOT
Ongoing	I-495 Investment Grade T&R Study, VA	3	VDOT
Ongoing	Project Charles Investment Grade T&R Study, VA	3	VDOT
2020	Donna-Rio Bravo International Bridge Investment Grade T&R Study, TX	3	City of Donna
2020	I-25 North Segment 2 Level 2 T&R Study, CO	2	CDOT HPTE
2020	I-66 Inside the Beltway Level 2 T&R Study, VA	3	VDOT
2020	I-580 Express Lanes Level 2 T&R Study, CA	2	Alameda CTC
2020	I-680 Express Lanes Level 2 T&R Study, CA	2	Alameda CTC
2019	Midtown Tunnel/Downtown Tunnel/MLK Extension T&R Study, VA	3	VDOT
2019	I-10 Mobile River Bridge and Bayway Traffic and Revenue Peer Review, AL	PR	Cintra
2019	I-105 Express Lane Traffic & Revenue Peer Review, CA	PR	CTC
2019	I-55 T&R Peer Review, IL	PR	IDOT
2019	Camino Real de Tierra Adentro POE Presidential Permit Support Study, NM	2	City of Sunland Park
2019	I-66 Inside the Beltway Level 2 T&R Update Study, VA	2	VDOT
2019	Bay City Bridges T&R Analysis, MI	1	Globalvia
2019	495 NEXT Level 2 T&R Study, VA	2	VDOT
2019	PR-52 T&R Study, Puerto Rico	1	OHL Concesiones
2019	Flor de Mayo POE Sketch-Level T&R Feasibility Study	1	CCRMA
2019	183 North Mobility Project T&R Peer Review	PR	CTRMA
2019	Gilcrease Expressway-West Segment T&R Peer Review and Risk Assessment	PR	USDOT TIFIA
2018	I-95 Jacksonville Express Lanes T&R Study, FL	2	FDOT
2018	I-495 Express Lanes T&R Study, VA	2	VDOT
2018	I-81 Pass-Through Trip Tolling T&R Study, VA	2	VDOT
2018	I-25 South Corridor Level 2 T&R Study, CO	2	CDOT HPTE
2018	Sunland Park International Bridge Intermediate T&R Study, NM	2	City of Sunland Park
2018	Riyadh Tolling Roadways Intermediate T&R Study, Saudi Arabia	2	ADA
2018	Walton Beach Bypass Sketch Level T&R Study, FL	1	Confidential
2018	American Roads Assets T&R Study, MI & AL	3	Confidential
2017	Midtown Tunnel/Downtown Tunnel T&R Update, VA	2	VDOT
2017	I-35 Managed Lanes T&R Study, TX	2	TxDOT
2017	VA Truck Corridor Sketch Level T&R Study, VA	1	VDOT
2017	Donna-Rio Bravo and Anzalduas POEs T&R Study, TX	2	City if Donna
2017	SR 528/Beachline East Sketch-Level T&R Peer Review, FL	PR	FDOT
2017	Laredo 4-5 POE T&R Study, TX	3	PINFRA-GEMCO
2017	Grand Parkway Segments D-I T&R Peer Review and Risk Assessment, TX	PR	USDOT TIFIA
2017	I-66 HOT Lanes Inside the Beltway Investment Grade T&R Study, VA	3	VDOT

365 TOLL Investment Grade Traffic and Revenue Study (Ongoing)

- **Location**: Hidalgo County, TX
- **Contact**: Pilar Rodriguez, HCRMA – 203 W Newcombe Ave, Pharr, TX 78577; (956) 402-4762
- **Official Statement Date:** N/A
- **Forecasted Opening Year Revenue:** Under Development
- **Observed Opening Year Revenue:** N/A
- **Regulatory/Legal Proceedings**: None

The Hidalgo County Regional Mobility Authority (HCRMA) has engaged C&M to prepare an Investment Grade T&R study for the proposed 365 TOLL facility (the Project). The aim of the study is to develop an update to C&M's 2016 Investment Grade T&R forecast for the Project, with results expressed in annual toll transactions and toll revenue over a 40-year period beginning in 2025, the first year in which the facility will be tolled. The T&R forecast methods and practices utilized for this study meet common standards and are accepted within the T&R industry.

I-580 and I-680 Express Lanes Level 2 Traffic and Revenue Analysis (2020)

- **Location**: Alameda County, CA
- **Contact**: Liz Rutman, Alameda CTC - 1111 Broadway, Suite 800, Oakland, CA 94607; (510) 208-7483
- **Official Statement Date:** N/A
- **Forecasted First Year Revenue:**
  I-580: $15,421,000
  I-680: $7,542,000
- **Observed Opening Year Revenue:** N/A
- **Regulatory/Legal Proceedings:** None

On behalf of the Alameda County Transportation Commission (Alameda CTC), C&M conducted a Level 2 T&R study regarding express lanes on I-580 and I-680, providing 20-year T&R forecasts to support Alameda CTC's expenditure plans. In addition to adopting the latest version of the Alameda Countywide TDM and calibrating a subarea model, C&M developed a microscopic simulation model for the I-580 and I-680 corridors in the VISSIM platform to evaluate potential operational issues with the forecasted trip tables from the TDM. Additionally, C&M developed a machine learning model to validate the short-term traffic demand forecasts for the project corridors.

183 North Mobility Project Traffic and Revenue Peer Review (2019)

- **Location**: Austin, TX
- **Contact**: Bill Chapman, CTRMA – 3300 N IH-35 Suite 300, Austin, TX 78705; (512) 450-6284
- **Official Statement Date:** N/A
- **Forecasted Opening Year Revenue:** N/A
- **Observed Opening Year Revenue:** N/A
- **Regulatory/Legal Proceedings**: None

Traffic congestion along US 183 between SH 45 North and the MoPac Expressway is a major issue, especially during peak rush hour periods. CTRMA has proposed development along this segment of US 183 (i.e., the 183 North Mobility Project) to add two express lanes from SH 45 to the MoPac Expressway ramp, as well as a non-tolled lane to expand US 183 from three to four lanes. C&M reviewed the project's forecasted T&R as presented in a study by Stantec to determine whether it follows industry-accepted methodologies, incorporates reasonable assumptions, is consistent with the project's design and objectives, and is supported by the existing and forecasted socioeconomic and traffic conditions within the study area.

Laredo 4/5 International Bridge Investment Grade Traffic and Revenue Study (2018)

C&M conducted a T&R study of the proposed Laredo 4/5 international bridge in Webb County, TX to produce T&R forecasts of sufficient quality to assess the project's feasibility, conduct financial planning, and meet the requirements for advancing the project's Presidential Permit application. The results of this study were also intended to support plans to accommodate the forecasted commercial and passenger vehicle demand, such as determining the project's number of lanes, inspection booths, and other border facility features.

- **Location**: Texas
- **Contact**: Glafiro E. Montemayor Quintanilla, GEMCO – 5610 Mann Cir, Laredo, TX 78041; (956) 206-3633
- **Forecasted Opening Year Revenue:** $13,936,800
- **Observed Opening Year Revenue:** N/A
- **Regulatory/Legal Proceedings:** None

C&M developed a four-step TDM for the city of Nuevo Laredo to use in combination with an existing TDM for the Laredo MPO area to develop the Binational Assignment Model in the TransCAD 7.0 Build 12390 platform. C&M evaluated all four TDM steps based on current transportation data, observed traffic patterns within the study area, and expected future road network improvements. The final Binational Assignment Model was calibrated to existing traffic conditions within the study area and used to develop traffic forecasts for 2025 and 2045.

I-66 Inside the Capital Beltway Investment Grade Traffic and Revenue Study (2017)

C&M conducted an investment grade T&R study to aid the Virginia Department of Transportation's (VDOT) scope definition and financing of a project to convert a 9.1-mile segment of I-66 Inside the Capital Beltway into HOT lanes. C&M assisted in public and multi-agency outreach, participated in VDOT management meetings, and presented preliminary findings to cities along the corridor whose political support was critical to advancing the project. C&M also crafted responses to state legislator concerns and press inquiries, making complex technical concepts accessible to larger audiences.

- **Location**: Virginia
- **Contact**: Jacqueline Cromwell, 1401 E. Broad Street, Suite 1306, Richmond, VA 23219; (804) 786-7209
- **Forecasted Opening Year Revenue:** $24,483,000
- **Observed Opening Year Revenue:** $25,293,677
- **Regulatory/Legal Proceedings:** None

Utilizing MWCOG's regional travel demand model, C&M performed the modeling in two phases: regional modeling and sub-area modeling. C&M extracted and further calibrated a sub-area model based on the project's area of influence. C&M performed a traffic operations analysis along the project corridor in future years via a DTA mesoscopic traffic simulation approach.

The project was successfully built and opened to tolled traffic in December 2017. Observed toll rates and traffic have been in line with C&M's forecast.

A. C&M's HUB/DBE Participation

Based on self-performance and subcontracting, C&M's HUB/DBE participation is intended to be in excess of 80% of the work performed for the CTRMA. **C&M is a certified DBE** by the North Central Texas Regional Certification Agency with Certification Number HMDB57382N1019. C&M intends to make its best effort to subcontract DBE firms as part of the CTRMA contract.

B. Women/Minority Employees (C&M)

As per the Woman/Minority column in Table 3, 82% of C&M's staff committed to the CTRMA are minorities, and 26% of the staff are women. Their proposed roles and level of involvement are outlined in Table 3 and the organizational chart (see Figure 2).

C. Subcontractor HUB/DBE Participation

C&M intends to subcontract a significant portion of the work under this contract to Texas-certified W/DBE firms **GRAM Traffic Counting, Inc.** (Principal: Audrey Bielss) and **C J Hensch & Associates, Inc.** (Principal: Roger Allen). Both firms have been subcontractors for C&M-led teams in the past.

D. Women/Minority Employees within other Subcontracting Firms

C&M includes within its standard subcontracting agreements language requiring subcontracting firms to comply with Title VI of the Civil Right Act of 1964, The Age Discrimination Act of 1975 and Titles II and III of the American with Disabilities Act. Subconsultant EPS has included a woman as a key task leader for socioeconomic analysis, and both GRAM Traffic Counting, Inc. and C J Hensch & Associates, Inc. are woman-owned businesses.

E. Affirmative Action Plan

C&M Associates, Inc has fewer than 50 employees and is thus not required by Federal regulations to have a documented Affirmative Action Plan (AAP). However, the firm has set standards for the recruiting, hiring, and promotion of women and minorities without detriment to the hiring and promotion of others. These standards include sustained efforts to attain diversity in our workforce by widely publicizing open positions, provide equal opportunity in our employee selection processes, and promoting employee training. Our current employee makeup is 92% minority with a broad diversity of backgrounds; we believe this reflects, at least in part, the success of our policies.

F. CTRMA Business Opportunity Program and Policy: Compliance

C&M has reviewed the CTRMA's Business Opportunity Program and Policy and the HUB Policy Statement available at the agency's website (www.mobilityauthority.com), and we confirm that C&M will conform with the requirements of CTRMA's policy on participation of HUB firms in CTRMA professional services and contracting opportunities.

APPENDIX A: RESUMES

This appendix includes the professional resumes of the key personnel identified in Table 3 and the organizational chart (see Figure 2).

Carlos M. Contreras, M.B.A.

President

C&M Associates, Inc.

Tel: 214-245-5300, Ext. 405
cmcontreras@candm-associates.com

Mr. Contreras has been involved in the transportation industry in the United States and Latin America since 1994. As President of C&M Associates, Inc. since 2004, he is responsible for strategic advice and project quality. Since the founding of the firm, Mr. Contreras has overseen contracts with toll authorities such as the North Texas Tollway Authority, Florida's Turnpike Enterprise, the Hidalgo County Regional Mobility Authority, and the Departments of Transportation of Colorado, Texas, Virginia, Georgia, South Carolina, Maryland, and Washington State, as well as leading Toll Road Concessionaires, for the development of Travel Demand Feasibility and Traffic and Revenue studies. Internationally, he has promoted transportation infrastructure projects in Mexico and Peru, and he has led a consortium of international players in the pursuit of transportation projects. Mr. Contreras has also overseen the development of corridor and cordon pricing studies in Riyadh, Saudi Arabia.

Professional Career

- President, C&M Associates, Inc. (2004–Present)
- President, Contreras International, LLC (2003–2004)
- Vice President, International Markets Blackboard, Inc. (1999–2003)
- Business Development Director, CICSA, SA de CV (1994–1999)
- Finance and Project Evaluation Professor, ITAM and UP Universities (1994–1996)

Education

- M.B.A., Harvard University (1994)
- B.S., Industrial Engineering, Universidad Panamericana, Mexico (1991)

Continuing Education

- Public-Private Partnership Financial Modeling and Legal Analysis, Vair Training LLC, Toronto, Canada (2009)
- Model Validation and Reasonableness Checking, FHWA, Washington, D.C. (2004)
- Activity- and Tour-Based Modeling, FHWA, Washington, D.C. (2004)

Areas of Expertise

- Traffic and Revenue Forecasting
- Public-Private Partnerships
- Project Evaluation
- Financial Community Interaction
- Business Strategy
- Market Analysis

Professional Experience

I-70 Mountain Corridor Floyd Hill Traffic and Revenue Analysis, CO (Ongoing) – Principal in Charge of T&R feasibility analysis and subsequent Level 2 T&R analysis considering the improvement alternatives addressed in the I-70 Mountain Corridor Record of Decision, including providing three-lane capacity for westbound I-70 from Floyd Hill to the Veterans Memorial Tunnels; a multimodal trail and frontage road between US 6 and Idaho Springs; and physical and/or operational improvements to four interchanges. The T&R analysis aims to assist the HPTE in evaluating tolling schemes (short of all tolled lane scenarios) that could fill in the current funding gap for implementing the required improvements to the corridor.

365 TOLL Investment Grade Traffic and Revenue Study, TX (Ongoing) – Principal in Charge for developing a Level 3 T&R study of the proposed 365 TOLL facility to support the HCRMA in their effort to finance the project by providing an investment grade T&R forecast.

I-580 and I-680 Express Lanes Level 2 Traffic and Revenue Studies, CA (2020) – Principal in Charge of intermediate (Level 2) T&R studies prepared on behalf of the Alameda CTC regarding express lanes along I-580 and I-680. Developed 20-year T&R forecasts complemented by machine learning based short-term T&R forecasts to support Alameda CTC's expenditure plans.

I-25 North Segment 2 Level 2 Traffic and Revenue Study, CO (2020) – Principal in Charge for conducting a T&R analysis considering the construction of one additional general purpose lane on I-25 North Segment 2 (between US 36 and 120th Ave.) in each direction and evaluating the effect of this expansion on the forecasted revenue of Segment 2 express lanes.

Donna-Rio Bravo International Bridge Investment Grade Traffic and Revenue Study, TX (2020) – Principal in Charge of developing a Level 3 T&R study of proposed extensions to accommodate northbound commercial vehicles on the Donna–Rio Bravo International Bridge. This study aimed to support the city of Donna in their effort to finance the project by providing a 40-year investment grade T&R forecast.

Professional Experience, cont'd.

I-25 South Managed Lanes Intermediate Traffic and Revenue Study, CO (2019) – Principal in Charge for developing T&R forecasts on behalf of the Colorado DOT's High-Performance Transportation Enterprise (HPTE) for the possible implementation of managed lanes and other transportation improvements on the I-25 South corridor.

I-81 Pass-Through Trip Tolling Level 2 Traffic and Revenue Study, VA (2019) – Principal in Charge for conducting a level 2 T&R study on behalf of VDOT to evaluate a tolling scenario on I-81 in Virginia.

Gilcrease Expressway–West Segment Traffic and Revenue Peer Review and Risk Assessment, OK (2019) – Principal in Charge for the analysis. The review consisted of identifying key inputs, comparing data with other projects, evaluating the methodology, assessing consistency with industry practices and the reasonableness of the forecast, and conducting a risk analysis to determine the probability of various revenue scenarios. Based on its review, C&M developed a TIFIA Base Case that included adjustments to demographic forecasts and other inputs.

I-495 Extension Level 2 Traffic and Revenue Study, VA (2018) – Principal in Charge for conducting a level 2 T&R study to assist VDOT in its project development efforts. The project is a 1.7-mile extension to the existing I-495 express lanes, adding two HOT lanes per direction to the corridor.

Riyadh Tolling Roadways Intermediate Traffic and Revenue Study, Riyadh, Saudi Arabia (2018) – Principal in Charge for developing a T&R forecast for two existing primary freeway corridors in Riyadh being converted to toll roads.

Sunland Park Port of Entry Intermediate Traffic and Revenue Study, NM (2018) – Principal in Charge for developing a T&R forecast of a new land port of entry along the U.S./Mexico border to support the project's financing and Presidential Permit application process.

D2 95 Express Planning-Level Traffic and Revenue Study, FL (2018) – Principal in Charge for a Level 2 T&R study of four segments of I-95 near Jacksonville, FL.

Southwebb Port of Entry / Laredo Bridge 4/5 Traffic and Revenue Study, TX (2018) – Principal in Charge for developing a T&R forecast of a new land port of entry along the U.S. Mexico border to support the project's financing and Presidential Permit application process.

Grand Parkway Segments D through I T&R Peer Review and Risk Assessment and Update, TX (2017, 2018) – Principal in Charge for the analysis. The review consisted of identifying key inputs, comparing data with other projects, evaluating the methodology, assessing consistency with industry practices and the reasonableness of the forecast, and conducting a risk analysis to determine the probability of various revenue scenarios. Based on its review, C&M developed a TIFIA Base Case that included adjustments to leakage rates and other inputs.

I-35 Managed Lanes Study, TX (2017) – Principal in Charge for the analysis. C&M conducted a T&R analysis for five scenarios related to I-35 managed lanes in San Antonio, TX. Using an existing model, C&M adopted and replicated the results, performed a toll sensitivity analysis, and estimated the number of transactions and revenue for each scenario.

Donna-Rio Bravo and Anzalduas International Bridges Traffic Assessment Study, TX (2017) – Principal in Charge for the development of a traffic assessment to forecast commercial vehicle traffic demand and capacity of Hidalgo County land ports of entry and to update regional truck traffic projections for the forecast period. This study aimed to support plans to accommodate the forecasted truck demand, including the addition of lanes, inspection booths, and other facilities, as well as provide an estimate of the number of users willing to use the new commercial land ports of entry.

I-66 HOT Lanes Inside the Capital Beltway Intermediate and Investment Grade Traffic and Revenue Studies, VA (2015, 2017) – Principal in Charge for the analysis of converting all lanes on I-66 during peak periods to HOT lanes in Northern Virginia.

I-70 East Traffic Projections Study, CO (2017) – Principal in Charge for developing traffic projections and estimating equivalent single axel load (ESAL) forecasts to assist in the client's bid for the project's pavement design.

NTTA Special Projects System Comprehensive Traffic and Revenue Update, TX (2016) – Principal in Charge for performing an investment grade T&R study for the SPS over a 50-year period, which served as an update to studies performed by C&M in 2014. C&M worked closely with NTTA to reliably forecast Toll Tag penetration, leakage, and Pay-By-Plate parameters.

Houbolt Toll Bridge Investment Grade Traffic and Revenue Study, IL (2016) – Principal in Charge for the analysis. C&M assisted CenterPoint Properties with T&R advisory services for a proposed toll bridge across the Des Plaines River. The bridge will provide the CenterPoint Intermodal Center (CIC) in Joliet/Elwood, Will County with improved access to I-80 and I-55. C&M utilized a sub-area network extracted from the CMAP regional model.

Shahram "Sam" Bohluli, Ph.D., P.E.

Vice President

C&M Associates, Inc.

Tel: 214-245-5300, Ext. 404
sbohluli@candm-associates.com

Dr. Bohluli has over 20 years of toll facility modeling, transportation planning, and engineering experience within private consulting and public planning organizations. His experience includes developing sophisticated models for the production of Investment Grade Traffic and Revenue studies and various toll feasibility projects throughout the United States. In his current position, he manages staff—from junior level to project managers—regarding their technical and administrative activities. He is an expert in the use of Cube and TransCAD (GIS and transportation macroscopic modeling software) in combination with meso- and microscopic simulation models, @Risk for risk analysis, and SPSS, ALOGIT and Biogeme for discrete choice modeling.

Professional Career

- Vice President, C&M Associates, Inc., Dallas, TX (2006–Present)
- Senior Transportation Engineer, Wilbur Smith Associates, Dallas, TX (2004–2006)
- Senior Transportation Planner, North Central Texas Council of Governments, Arlington, TX (2001–2004)
- Transportation Planner II, North Central Texas Council of Governments, Arlington, TX (1999–2001)

Qualifications

- Ph.D., Civil Engineering – Specialization in Transportation Engineering, The University of Texas at Arlington (2003)
- Registered Professional Engineer (P.E.) in the states of Arizona, Colorado, Florida, Kentucky, Maryland, Massachusetts, North Carolina, Pennsylvania, Texas, Virginia, and Washington

Areas of Expertise

- Traffic and Revenue Studies
  - Toll Roads
  - Toll Bridges
  - Managed Lanes
  - HOT Lanes
- Risk Analysis
- Discrete Choice Modeling
- Travel Demand Modeling
- Traffic Forecasting
- Congestion Management

Professional Experience

I-70 Mountain Corridor Floyd Hill Traffic and Revenue Analysis, CO (Ongoing) – Project Manager of T&R feasibility analysis and subsequent Level 2 T&R analysis considering the improvement alternatives addressed in the I-70 Mountain Corridor Record of Decision, including providing three-lane capacity for westbound I-70 from Floyd Hill to the Veterans Memorial Tunnels; a multimodal trail and frontage road between US 6 and Idaho Springs; and physical and/or operational improvements to four interchanges. The T&R analysis aims to assist the HPTE in evaluating tolling schemes (short of all tolled lane scenarios) that could fill in the current funding gap for implementing the required improvements to the corridor.

365 TOLL Investment Grade Traffic and Revenue Study, TX (Ongoing) – QA/QC Manager for developing a Level 3 T&R study of the proposed 365 TOLL facility to support the HCRMA in their effort to finance the project by providing an investment grade T&R forecast.

I-580 and I-680 Express Lanes Level 2 Traffic and Revenue Studies, CA (2020) – Project Manager of intermediate (Level 2) T&R studies prepared on behalf of the Alameda CTC regarding express lanes along I-580 and I-680. Responsible for developing 20-year T&R forecasts complemented by machine learning based short-term T&R forecasts to support Alameda CTC's expenditure plans.

I-25 North Segment 2 Level 2 Traffic and Revenue Study, CO (2020) – Project Manager for conducting a T&R analysis considering the construction of one additional general purpose lane on I-25 North Segment 2 (between US 36 and 120th Ave.) in each direction and evaluating the effect of this expansion on the forecasted revenue of Segment 2 express lanes

183 North Mobility Project Traffic and Revenue Peer Review, TX (2019) – Project Manager for the analysis. The review consists of identifying key inputs, comparing data with other projects, evaluating the methodology, and assessing consistency with industry practices and the reasonableness of the forecast.

Professional Experience, cont'd.

I-25 South Managed Lanes Intermediate Traffic and Revenue Study, CO (2019) – Project Manager responsible for developing T&R forecasts on behalf of the Colorado DOT's High-Performance Transportation Enterprise (HPTE) for the possible implementation of managed lanes and other transportation improvements on the I-25 South corridor. Responsibilities included reviewing work performed regarding the project, developing a traffic count and data collection plan to update the available traffic database, developing a microscopic traffic simulation model to address current and future operational issues and determine solutions, and developing a 40-year T&R forecast.

Gilcrease Expressway–West Segment Traffic and Revenue Peer Review and Risk Assessment, OK (2019) – Project Manager for the analysis. The review consisted of identifying key inputs, comparing data with other projects, evaluating the methodology, assessing consistency with industry practices and the reasonableness of the forecast, and conducting a risk analysis to determine the probability of various revenue scenarios. Based on its review, C&M developed a TIFIA Base Case that adjusted demographic forecasts and other inputs.

I-81 Pass-Through Trip Tolling Level 2 Traffic and Revenue Study, VA (2019) – QA/QC Manager for conducting a level 2 T&R study on behalf of VDOT to evaluate a tolling scenario on I-81 in Virginia.

Riyadh Tolling Roadways Intermediate Traffic and Revenue Study, Riyadh, Saudi Arabia (2018) – Project Manager for the development of a traffic and revenue forecast for two existing primary freeway corridors in Riyadh being converted to toll roads.

D2 95 Express Planning-Level Traffic and Revenue Study, FL (2018) – QA/QC Manager for a Level 2 T&R study of four segments of I-95 near Jacksonville, FL.

I-495 Extension Level 2 Traffic and Revenue Study, VA (2018) – QA/QC Manager for a level 2 T&R study to assist VDOT in its project development efforts. The project is a 2.3-mile extension to the existing I-495 express lanes, adding two HOT lanes per direction.

Sunland Park Port of Entry Intermediate Traffic and Revenue Study, NM (2018) – QA/QC Manager for developing the traffic and revenue forecast of a new land port of entry along the U.S./Mexico border to assist in the Presidential Permit process.

Southwebb Port of Entry / Laredo Bridge 4/5 Traffic and Revenue Study, TX (2018) – QA/QC Manager supervising the development of a traffic and revenue forecast for a new port of entry along the U.S./ Mexican border to assist in the presidential permit process.

Grand Parkway Segments D through I T&R Peer Review and Risk Assessment and Update, TX (2017, 2018) – Project Manager responsible for the analysis. The review consisted of identifying key inputs, comparing data with other projects, evaluating the methodology, assessing consistency with industry practices and the reasonableness of the forecast, and conducting a risk analysis to determine the probability of various revenue scenarios. Based on its review, C&M developed a TIFIA Base Case that included adjustments to leakage rates and other inputs.

I-66 HOT Lanes Inside the Capital Beltway Investment Grade Traffic and Revenue Study, VA (2017) – QA/QC Manager in charge of reviewing travel demand modeling and T&R forecasts. The project involved evaluating the conversion of existing HOV lanes to HOT lanes during peak periods. Reviewed model validation results, report production, and responses to client and involved stakeholders.

I-35 Managed Lanes Traffic and Revenue Analysis, TX (2017) – Project Manager for a T&R analysis of five scenarios related to I-35 managed lanes in San Antonio, TX. Using an existing model, C&M adopted and replicated the results, performed a toll sensitivity analysis, and estimated transactions and revenue for each scenario.

Donna-Rio Bravo and Anzalduas International Bridges Traffic Assessment Study, TX (2017) – QA/QC Manager responsible for reviewing the development of a traffic assessment to forecast commercial vehicle traffic demand and capacity of Hidalgo County land ports of entry and to update regional truck traffic projections for the forecast period. This study aimed to support plans to accommodate the forecasted truck demand, including the addition of lanes, inspection booths, and other facilities, as well as provide an estimate of the number of users willing to use the new commercial land ports of entry.

Houbolt Toll Bridge Investment Grade Traffic and Revenue Study, IL (2016) – QA/QC Manager supervising the development of investment grade T&R forecasts. C&M assisted CenterPoint Properties with T&R advisory services for a proposed toll bridge across the Des Plaines River. The bridge will provide the CenterPoint Intermodal Center (CIC) in Joliet/Elwood, Will County with improved access to I-80 and I-55. C&M utilized a sub-area network extracted from the CMAP regional model.

Axel Herrmann, M.S. (Dipl.-Ing.)

Principal Transportation Planner

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Mr. Herrmann has 15 years of public and private consulting engineering experience in the fields of travel demand modeling, traffic and revenue analysis of toll roads, traffic and revenue forecast development, and transportation planning for projects in the United States, Europe, and Latin America. He obtained his Master of Civil Engineering (Dipl.-Ing.) in Braunschweig, Germany. His role at C&M as project manager includes the supervision of modeling activities, ranging from the development and analysis of travel demand models to estimating final project traffic and revenue. He is an expert in the use of several travel demand modeling software packages, the design and implementation of traffic data collection programs, traffic forecasting, and statistical data analysis.

Professional Career

- Principal Transportation Planner, C&M Associates, Inc., Dallas, TX (2019–Present)
- Senior Transportation System Modeler, C&M Associates, Inc., Dallas, TX (2007–Present)
- Project Manager, Ayesa Infrastructure, Seville, Spain (2006–2007)
- Research Assistant, Technische Universität Braunschweig, Germany (2005–2006)

Education

- Master of Civil Engineering, Diplom-Ingenieur, Technische Universität Braunschweig, Germany (2005)

Areas of Expertise

- Traffic and Revenue Studies
  - Toll Roads
  - Toll Bridges
  - Managed/HOT Lanes
  - Border Ports of Entry
- Travel Demand Modeling
- Traffic Forecasting
- Traffic Engineering Studies
- Expert in modeling software
  - CUBE (Citilabs)
  - TransCAD (Caliper)
  - VISSIM (PTV)
- Advanced user in modeling software
  - EMME (Inro)
  - TransModeler (Caliper)

Professional Experience

365 TOLL Investment Grade Traffic and Revenue Study, TX (Ongoing) – Project Manager responsible for developing a Level 3 T&R study of the proposed 365 TOLL facility to support the HCRMA in their effort to finance the project by providing an investment grade T&R forecast.

Donna-Rio Bravo International Bridge Investment Grade Traffic and Revenue Study, TX (2020) – Project Manager responsible for developing an Investment Garde traffic and revenue forecast for the commercial expansion of the Rio-Bravo Bravo International Bridge at the U.S./ Mexican border to support the city of Donna in their effort to finance the Project. Supervised the development of a binational travel demand model. Designed and administered several surveys at the border, including origin and destination and company stated preference surveys to estimate the VOT for commercial vehicles. Together with city staff, led several public outreaches and stakeholder interviews.

I-25 South Managed Lanes Intermediate Traffic and Revenue Study, CO (2019) – Task Leader responsible for data collection and socioeconomic analysis on behalf of the Colorado DOT's High-Performance Transportation Enterprise (HPTE) for the possible implementation of managed lanes and other transportation improvements on the I-25 South corridor.

Camino Real de Tierra Adentro POE Presidential Permit Support Study, NM (2019) – Project Manager for developing an update to C&M's Level 2 T&R study of the proposed POE in support of the project's Presidential Permit application.

Gilcrease Expressway–West Segment Traffic and Revenue Peer Review and Risk Assessment, OK (2019) – Technical lead for the analysis. The review consisted of identifying key inputs, comparing data with other projects, evaluating the methodology, assessing consistency with industry practices and the reasonableness of the forecast, and conducting a risk analysis to determine the probability of various revenue scenarios. Based on its review, C&M developed a TIFIA Base Case that adjusted demographic forecasts and other inputs.

Professional Experience, cont'd.

Flor de Mayo International Bridge Sketch-Level Traffic and Revenue Feasibility Study, TX (2019) – Project Manager responsible to conduct a traffic and revenue feasibility study of the proposed Flor de Mayo International Bridge/Port of Entry in the city of Brownsville, Cameron County, Texas. The results of this study were intended to support plans by the Cameron County Regional Mobility Authority (CCRMA) to accommodate the forecasted southbound passenger vehicle demand, such as determining the specific location of the Project, the number of lanes, the number of inspection booths, and other Project specifications.

Riyadh Tolling Roadways Intermediate Traffic and Revenue Study, Riyadh, Saudi Arabia (2018) – Deputy Project Manager supervising the development of a traffic and revenue forecast for two existing primary freeway corridors in Riyadh being converted to toll roads. Analyzing the effect on future congestion by tolling these two corridors as an incentive for travelers to use the new Riyadh Metro system.

Sunland Park Port of Entry Intermediate Traffic and Revenue Study, NM (2018) – Project Manager responsible for developing the traffic and revenue forecast of a new land port of entry along the U.S./Mexico border to assist in the Presidential Permit process. Supervised the development of a binational travel demand model, including the development of a multinomial discrete choice model in the software Biogeme and the use of Big-Data (cell phone GPS trajectories) for border crossing the origin and destination survey.

Southwebb Port of Entry and International Bridge (Laredo Bridge 4/5) Traffic and Revenue Study, TX (2018) – Project Manager responsible for developing the traffic and revenue forecast of a new port of entry along the U.S./ Mexican border to assist in the presidential permit process. Supervised the development of a binational travel demand model, designed and administered several surveys at the border, including origin and destination and stated preference surveys for passenger and commercial vehicles.

I-25 South Gap Segment Intermediate Traffic and Revenue Study, CO (2018) – Task Leader responsible for data collection and socioeconomic analysis on behalf of the Colorado DOT's High-Performance Transportation Enterprise (HPTE) for the possible implementation of managed lanes and other transportation improvements on the 18-mile Gap segment of the I-25 South corridor.

American Roads Assets Traffic and Revenue Analysis, AL, MI (2018) – Project Manager responsible for developing traffic and revenue forecasts for several toll bridges, including one land port of entry at the U.S./Canadian border. Supervised the development of the travel demand and econometric models to support the traffic and revenue forecasting.

North Texas Tollway Authority (NTTA) Special Project System (SPS) Annual Budget Forecast, TX (2012–2017) – Responsible for the annual monthly budget forecast, including monthly traffic and revenue estimates for each fiscal year by traffic type. Monitoring transaction and revenue trends of the SPS on a weekly basis. Supervising the C&M NTTA dashboard system and machine learning processes to estimate the short-term annual budget forecast.

SH 365 Investment Grade Traffic and Revenue Analysis, TX (2016) – Managed all technical aspects of this project, including the design and execution of the Bluetooth origin-destination survey and the border stated preference survey, calibrating the four-step binational travel demand model, and forecasting future traffic and revenue. Assisted with answers to the financial community and managed the peer review process.

I-66 Express Lanes Outside the Capital Beltway Investment Grade Traffic and Revenue Study, VA (2016) – Responsible for quality assurance and quality control of the travel demand model inputs, including the socioeconomic data forecast and the development of the toll diversion multinomial logit model.

I-73 Intermediate Traffic and Revenue Study, SC (2016) – Leader of modeling group. Utilized the SCDOT state-wide travel demand model and developed an I-73 corridor model to account for the regional tourist peak season. Served as field data collection manager. Assisted in designing and administering an auto and truck origin-destination survey and a stated preference survey.

I-4 "Beyond the Ultimate" Travel Demand Model Calibration, FL (2015) – Leader of modeling group. Responsible for developing future model years for the I-4 corridor, documentation, and traffic forecasting. Managed the implementation of future road projects, public transport routes, special generators, and I-4 corridor configurations.

Chisholm Trail Parkway Investment Grade Traffic and Revenue Study, TX (2014) – Leader of modeling group. Supervised the implementation of the North Central Texas Council of Governments (NCTCOG) travel demand model to be used within the traffic and revenue forecasting process. Responsible for data collection, travel demand model calibration at the corridor level, documentation, and traffic and revenue forecasting.

Alireza Soroush, Ph.D.

Director

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Dr. Soroush has 17 years of experience in transportation planning and travel demand modeling for traffic and revenue studies of tolled facilities. Through his Ph.D., he researched stochastic and pseudo-probabilistic volume assignment methods and their applications within static and dynamic transportation network assignments. Presently, he is the manager of C&M's Virginia office, supervising all aspects of travel demand modeling. In his most recent task as project manager, he took on a very challenging timetable to develop traffic and revenue projections to support the financing of an investment grade P3 project. He is a professional user of Cube Voyager, Avenue, and Cargo as well as TransCAD, TransModeler, and ArcGIS. He is experienced in designing stated preference surveys and developing toll choice functions to be used within travel demand modeling procedures. He is also experienced in Mesoscopic traffic simulation for projects involving dynamic traffic assignment, congestion pricing, and variable tolling concepts.

Professional Career

- Director, C&M Associates, Inc. (2019–Present)
- Transportation Modeling Manager, C&M Associates, Inc. (2007–Present)
- Graduate Research Assistant, University of Texas at Arlington (2003–2007)
- GIS Analyst, National Cartographic Center, Tehran, Iran (1994–1999)

Qualifications

- Ph.D., Civil Engineering – Specialization in Transportation Engineering, The University of Texas at Arlington (2010)
- M.S., Civil Engineering – Specialization in Transportation Engineering, The University of Texas at Arlington (2005)
- B.S., Civil Engineering, Azad University, Tehran, Iran (1999)
- Technical Degree in Land Surveying, National Cartographic Center, Tehran, Iran (1993)

Areas of Expertise

- Traffic and Revenue Forecasting
- Toll Diversion Function Development
- Managed Lanes
- Travel Demand Modeling
  - Dynamic Traffic Assignment
  - Congestion Pricing
  - Cargo Modeling
- Discrete Choice Modeling
- Stated Preference Survey Design

Professional Experience

Dulles Regional Modeling and Investment Grade T&R Study, VA (Ongoing) – Project Manager responsible for developing a regional model that includes the integrated tolled facilities within the region and conducting a tolling strategy scenario analysis and a Level 3 T&R study of the Dulles Toll Road, Dulles Airport Access Highway, and Dulles Greenway (collectively, the Dulles Roadways) and segments of I-95, I-395, and I-495 on behalf of VDOT.

I-495 Investment Grade Traffic and Revenue Study, MD (Ongoing) – Project Manager responsible for developing a Level 3 T&R study on behalf of VDOT that considers a 2.3-mile extension to the I-495 Express Lanes in Montgomery County, MD.

I-66 Inside the Capital Beltway Level 2 Traffic and Revenue Study, VA (2020) – Project Manager of a Level 2 T&R study to assist VDOT in its development of the project.

Midtown Tunnel/Downtown Tunnel/MLK Extension Investment Grade Traffic and Revenue Study, VA (2019) – Project Manager of a level 3 T&R study on behalf of VDOT to evaluate travel behavior, T&R projections, and potential tolling strategies on Elizabeth River crossings in Hampton Roads.

I-495 North Extension Level 2 Traffic and Revenue Study Update, VA (2019) – Project Manager of a level 2 T&R study to assist VDOT in its assessment of the effects of the Maryland Traffic Relief Plan—including I-495 and I-270 Express Lanes—on the I-495 North Extension project. The project is a 1.7-mile extension to the existing I-495 express lanes, adding two HOT lanes per direction to the corridor under an existing dynamic pricing policy.

I-25 South Managed Lanes Intermediate Traffic and Revenue Study, CO (2019) – Task Leader of a T&R study conducted on behalf of the Colorado DOT's High-Performance Transportation Enterprise (HPTE) for the possible implementation of dynamically priced managed lanes and other transportation improvements on the I-25 South corridor. Responsibilities included reviewing work performed to date regarding the project and overseeing the development, distribution, and analysis of a stated preference survey.

Professional Experience, cont'd.

I-81 Pass-Through Trip Tolling Level 2 Traffic and Revenue Study, VA (2019) – Project Manager of a level 2 T&R study on behalf of VDOT to evaluate a tolling scenario on I-81 in Virginia.

D2 95 Express Planning-Level Traffic and Revenue Study, FL (2018) – Project Manager for an intermediate T&R study assessing the implementation of managed lanes along the I-95 Corridor in St. Johns and Duval Counties, FL.

I-495 Extension Level 2 Traffic and Revenue Study, VA (2018) – Project Manager of a level 2 T&R study to assist VDOT in its project development efforts. The project is a 1.7-mile extension to the existing I-495 express lanes, adding two HOT lanes per direction to the corridor under a dynamic tolling policy.

I-66 HOT Lanes Inside the Capital Beltway Intermediate and Investment Grade Traffic and Revenue Studies, VA (2015, 2017) – Project Manager responsible for travel demand modeling and traffic and revenue forecasts. The project involved evaluating the conversion of existing HOV lanes to HOT lanes with dynamic tolling during peak periods. Conducted a stated preference survey, vehicle occupancy survey, socioeconomic analysis, time-of-day model disaggregation, project corridor calibration, and a VISSIM microscopic simulation to determine future flow rates after roadway improvements. Responsible for meetings and communication, supervising the data collection plan and travel demand modeling, communication with sub-consultants—including close collaboration for stated preference survey design and development of the choice models—designing a project-specific choice model structure, developing traffic and revenue forecasts, report production, preparing responses to client and involved stakeholders, and progress reports.

I-66 Express Lanes Outside the Capital Beltway Intermediate and Investment Grade Traffic and Revenue Studies, VA (2015, 2016) – Project Manager and travel demand modeling supervisor responsible for developing traffic and revenue forecasts to support a P3 project development. The project included the conversion/construction of a 25-mile dynamically tolled managed lane system within the I-66 corridor in Northern Virginia. Responsible for meetings and communication, supervising the data collection plan and travel demand modeling, communication with sub-consultants regarding surveys and data analysis—including close collaboration for stated preference survey design and development of the choice models—optimizing the project's configuration, and developing the traffic and revenue forecasts.

I-77 HOT Lanes Investment Grade Traffic and Revenue Study, NC (2015) – Task Manager and travel demand modeling supervisor responsible for developing traffic and revenue forecasts to support a bid by Cintra to the North Carolina DOT. The project included converting HOV lanes to dynamically tolled HOT lanes and constructing additional HOT lanes along a 26-mile corridor. Responsible for developing and implementing the modeling methodology, including traffic assignment and value of time estimation for different market segments. Also in charge of task management, traffic and revenue estimations, and preparing responses to rating agencies and financial groups.

West Bay Parkway Planning-Level Traffic and Revenue Study, FL (2015) – Tolling specialist and project advisor responsible for quality control and review of travel demand modeling and traffic and revenue forecasts. Project involved evaluating a proposed tolled connector offering travel time savings to access downtown and other tourist attraction areas in Panama City. Project also offered time savings for traveling to/from the local airport. Responsibilities included direct involvement in developing the stated preference survey to estimate travelers' value of time and willingness to pay, as well as reviewing project data, the toll diversion methodology, special trip generators, external-internal trips, airport trips, tourist activities and travel demand, and the traffic and revenue projections.

Wellness Way Parkway Planning-Level Traffic and Revenue Study, FL (2014) – Project Manager responsible for travel demand modeling and traffic and revenue forecasts. Project involved evaluating a tolled facility serving as a land bridge to connect two major roadways with high traffic volume passing through an area with very low population density. Responsible for meetings and communication, supervising the data collection plan and travel demand modeling, estimating value-of-time, customizing the toll diversion functions to the project area, and estimating the traffic and revenue forecasts. The study included various alternative scenario analyses to evaluate different levels of land development within the project area, as well as various scenarios considering the construction of an alternative roadway competing with the project.

Orchard Pond Road Level 2 Traffic and Revenue Study, FL (2012) – Modeling Manager for a comprehensive traffic and revenue forecast study to support financing by Florida's State Infrastructure Bank for the proposed construction of a five-mile roadway.

Ricardo Pezo, M.S.

Senior Transportation System Modeler

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Mr. Pezo is an experienced international consultant in transportation engineering with a Master of Science in Systems Engineering and a specialization in Land Transportation. He has over 19 years of experience in transport and mobility planning, travel demand modeling, and data collection and analysis. He has worked extensively on urban and regional transportation projects involving toll roads, traffic and revenue forecasts, international border crossings, and various transportation systems such as transit, mass rapid transit (Heavy Rail Transit, Light Rail Transit, Bus Rapid Transit), non-motorized transport, and sustainable transport in the United States and Latin America. Mr. Pezo has extensive experience collecting data for different surveys and for transportation planning analysis. He also has expertise in utilizing specialized software for GIS and transportation network modeling and simulation. He is an advanced user of EMME, and he has given training courses in different countries as a PTV Certified Trainer.

Professional Career

- Senior Transportation System Modeler, C&M Associates, Inc. (2015–Present)
- Modeling Area Coordinator / Senior Transportation Modeler / Planning Management, Cal y Mayor y Asociados S.C., Mexico (2006–2015)
- Specialist in Demand Modeling / Development Management, Electric Train Autonomous Authority, Ministry of Transport, Peru (2002–2006)

Qualifications

- Post Graduate Specialization in Land Transport, Universidad Politecnica de Madrid, Spain (2007)
- M.S., System Engineering, Universidad Nacional de Ingenieria, Peru (2004)
- B.S., Transportation Engineering, Universidad Nacional Federico Villarreal, Peru (1999)

Areas of Expertise

- Traffic and Revenue Studies
  - Toll Roads/Bridges/Ports of Entry
  - Managed/HOT Lanes
- Transportation Planning
- Travel Demand Modeling
- Traffic Forecasting
- Traffic Engineering Studies
- Transit Modeling (LRT, HVT, BRT, etc.)
- Advanced user in CUBE, TransCAD, EMME, VISUM, Promodel, VISSIM, TransModeler
  - PTV Certified Trainer 111

Professional Experience

Tolling Strategy Scenario Analysis and Traffic and Revenue Studies for Toll Roads in Virginia, VA (Ongoing) – As Senior Transportation System Modeler, participating in the development of a four-step regional transportation model merging three different regions in one unified regional model that includes all tolled facilities within the region as an integrated and combined toll system with patterns and features adapted from the original MPO models. Developing a toll diversion model and T&R forecasts for Dulles Toll Road L3 Study, I-495 Next L3 Study, I-395 / I-95 Study, Stewie L3 Study, DTR TDM Study, Charles L3 Study, and I-66 HOT Lanes inside Capital Beltway L2 Study in Virginia. The model estimates the traffic shares expected to use the proposed full corridors and the integration with each one, considering the different types of demand segments.

Donna-Rio Bravo International Bridge L3 T&R Study, TX (2020) – As Senior Transportation System Modeler, developed a four-step binational travel demand model that includes a multinomial logit model with parameters calibrated in Biogeme. Developed a T&R forecasts for the proposed Donna - Rio Bravo International Bridge and Port of Entry (POE) on the Texas/Mexico border. The project involved developing a model on both sides of the border. The model estimated the shares of traffic expected to use the proposed crossing. Considering the delays experienced at the existing crossings, C&M estimated the traffic diversion from existing border crossings in the area. A binational econometric model was also developed to match and predict total outbound border crossings in the area for passenger vehicles and commercial vehicles.

Camino Real de Tierra Adentro Port of Entry – Presidential Permit Support, NM (2019) – As Senior Transportation System Modeler, developing a traffic and revenue (T&R) forecast model of a new land port of entry along the U.S./Mexico border to assist in the Presidential Permit process. Developed a binational travel demand model with updated information that includes a multinomial logit model with parameters calibrated in Biogeme and the use of Big Data (cell phone GPS trajectories) for vehicles crossing the border from an origin to a destination.

Professional Experience, cont'd.

I-25 South Managed Lanes Intermediate Traffic and Revenue Study, CO (2019) – As Senior Transportation System Modeler, developed a toll diversion model and T&R forecasts for the proposed I-25 South Managed Lane in Colorado. The model estimated the share of traffic expected to use the proposed full corridor, considering the different types of demand segments, Single Occupancy Vehicle (SOV/DA), High Occupancy Vehicle with 2 passengers (HOV2/SR2), High Occupancy Vehicle with 3 or more passengers (HOV3+/SR3+). Estimated new trip tables based on iterative proportional fitting (IPF) methods based on EPS' proposed demographics.

Sunland Park Port of Entry Intermediate Traffic and Revenue Study, NM (2018) – As Senior Transportation System Modeler, traffic and revenue forecast model of a new land port of entry along the U.S./Mexico border to assist in the Presidential Permit process. Developed a binational travel demand model that includes a multinomial logit model in Biogeme and the use of Big-Data (cell phone GPS trajectories) for vehicles crossing the border from an origin to a destination.

I-81 Pass-Through Trip Tolling Level 2 Traffic and Revenue Study, VA (2018) – As Senior Transportation System Modeler, served the project team for travel demand modeling for a level 2 T&R study on behalf of VDOT to evaluate a tolling scenario on I-81 in Virginia. Responsible for data analysis and developed a post-processing model for the different scenarios evaluated in the study.

Riyadh Tolling Roadways Intermediate Traffic and Revenue Study, Riyadh, Saudi Arabia (2018) – As Senior Transportation System Modeler, developed a toll diversion model and T&R forecasts for two existing primary freeway corridors being converted to toll roads in Riyadh, Saudi Arabia by using TransCAD. Analyzed the effect on future congestion by tolling the two corridors as an incentive for travelers to use the new Riyadh Metro System by utilizing the Riyadh Metropolitan Area Transportation Model in EMME.

Southwebb Proposed Port of Entry and International Bridge, TX (2018) – As Senior Transportation System Modeler, developed a four-step binational travel demand model and T&R forecasts for the proposed Laredo 4/5 International Bridge and Port of Entry (POE) on the Texas/Mexico border. The project involved developing a model for the border cities of Laredo, TX and Nuevo Laredo in Mexico. The model estimated the share of traffic expected to use the proposed crossing. Considering the delays experienced at the existing crossings, C&M estimated the traffic diversion from existing border crossings in the area. A binational econometric model was also developed to match and predict total outbound border crossings in the area for passenger vehicles and commercial vehicles.

365 TOLL Optimization Scenario Analysis, TX (2017) – As Senior Transportation System Modeler, developed the travel demand model to analyze the toll optimization scenario of the project including socioeconomic forecasts, external station traffic data, origin-destination survey data, to develop internal and external travel demand inputs for the travel demand modeling process, and estimated the resulting Equivalent Single Axle Loads (ESAL). C&M considered a review of existing data, forecasted traffic. volumes, the scenario-related 365 TOLL T&R forecast, and the resulting ESAL for the pavement design.

Midtown Tunnel/Downtown Tunnel Truck Tolling Analysis, VA (2017) – As Senior Transportation System Modeler, developed T&R Assumptions for the travel demand model and T&R forecasts for the proposed Project, building upon the "Midtown Tunnel / Downtown Tunnel / MLK Extension PPTA Project. C&M utilized updated demographic data as well as a limited amount of existing transaction and toll data for the tunnels.

I-35 Traffic & Revenue Study: Scenario Analysis Data Request, TX (2017) – As Senior Transportation System Modeler, developed a toll diversion model and T&R forecasts for the proposed I-35 Managed Lane in San Antonio, TX. based on the travel demand model developed in June 2015 by Stantec Consulting Services, Inc. The model estimated the share of traffic expected to use the proposed corridor. C&M estimated the traffic diversion from existing highway.

Donna & Anzalduas Land Ports of Entry T&R Study, TX (2017) – As Senior Transportation System Modeler, developed truck traffic forecasts at sketch level. The objective of C&M's study was to estimate the Alliance International Bridge's potential to capture a portion of truck traffic crossing between Mexico and Hidalgo County. The analysis considered the potential increase in demand that may arise from the completion of the Mazatlan-Matamoros corridor in Mexico.

Investment Grade Traffic and Revenue Analysis for SH 365 and the IBTC, TX (2016) – Developed the four-step binational travel demand model to analyze the different scenarios of the project, including socioeconomic forecasts, external station traffic data, and origin-destination survey data, and to develop internal and external travel demand inputs for the four-step travel demand modeling process.

Arezoo Memarian, Ph.D., P.E.

Senior Transportation System Modeler

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Mrs. Memarian has 12 years of experience in transportation planning, network modeling, travel demand modeling/forecasting, simulation modeling, traffic impact studies, and highway design. She has worked as a Transportation Planner/Modeler for both public organizations and private consulting companies. She is well-versed in manuals such as AASHTO, HCM, and MUTCD, and she is an expert user of traffic/transportation software such as Synchro, VISSIM, and TransCAD. She is also familiar with TransModeler, CORSIM, and ArcGIS. She is capable of developing applications in programming platforms such as Java and VBA, and she is experienced in automating the computation process by writing required scripts in excel macros and other programming languages.

Professional Career

- Senior Transportation System Modeler, C&M Associates, Inc., Dallas, TX (2017–Present)
- Graduate Teaching Assistant and Lecturer, University of Texas at Arlington, Arlington, TX (2011–2016)
- Transportation System Modeler, C&M Associates, Inc. Dallas, TX (2013–2014)
- Transportation Planner, Department of Planning, Road Maintenance & Transportation Organization (RMTO), Tehran, Iran (2008–2011)
- Graduate Research Assistance, Institute of Transportation Studies Research (ITSR), Sharif University of Technology, Tehran, Iran (2007–2008)

Qualifications

- Professional Engineer (P.E.), Texas
- Ph.D., Civil Engineering, Transportation Engineering, University of Texas at Arlington, Arlington, TX (2016)
- M.S., Civil Engineering, Transportation Engineering & Planning, Sharif University of Technology, Tehran, Iran (2008)

Professional Activities

- President, Institute of Transportation Engineers (ITE) student chapter, University of Texas at Arlington (2013)
- Secretary/Treasurer, ITE student chapter, University of Texas at Arlington (2012)

Professional Experience

I-580 and I-680 Express Lanes Level 2 Traffic and Revenue Studies, CA (2020) – Developing the toll diversion microscopic simulation model in VISSIM for I-580 and I-680 corridor to provide toll revenue forecast to support current and future toll revenue expenditure plans.

I-345 Feasibility Study, TX (2018-2020) – Performing data collection plan, evaluating collected data, data cleaning, and developing and maintaining the corridor database. Reviewing and modifying the NCTCOG regional travel demand model network. Developing a calibrated model for the project area base on the traffic counts and travel time data, developing future trip tables, and evaluating the feasibility of several alternatives for the I-345 corridor.

Camino Real de Tierra Adentro POE Presidential Permit Support Study, NM (2019) – Traffic projection and Level of Service (LOS) analysis of the project's surrounding road network. Developed traffic projections based on the available counts and the model results and conducted LOS analysis of the project's surrounding road network via Synchro.

I-27 Operational Improvements Study, TX (2019) – Developed traffic projections for No-Build and Build scenarios for years 2018, 2021, and 2041. Developed the microscopic simulation model in VISSIM for No-Build and Build scenarios. Extracted roadway densities and intersection delay from the VISSIM outputs. Provided LOS based on HCM criteria to evaluate the operational improvements along the I-27 corridor in Amarillo, TX.

Sunland Park Port of Entry Intermediate Traffic and Revenue Study, NM (2018) – Responsible for Border-Crossing Demand Forecasting. Tested several forecasting methods to estimate passenger and commercial vehicle traffic demand for existing POEs within the study area and choose Multiple Linear Regression. Developed, validated, and implemented an econometric multiple linear regression model to forecast passenger and commercial vehicle traffic demand.

Arezoo Memarian, Ph.D., P.E.

Senior Transportation System Modeler

C&M Associates, Inc.

Professional Experience (Cont'd.)

International Bridge Trade Corridor (IBTC) Traffic Analysis for Highway Design Tabulations, TX (2018) – Responsible for preparing the traffic analysis for highway design (TAHD) tabulations with Equivalent 18k Single Axle Load (ESAL) estimates and average daily traffic projections to be used in the air and noise analysis.

Loop 375 Traffic Analysis Report Update, TX (2018) – Developed traffic projections for No-Build and Build scenarios. Performed traffic operations model in HCS and Synchro, and traffic analysis for No-Build and Build scenarios.

Boerne Relief Route Feasibility Study- SH 46 Travel Demand Modeling, TX (2017) – Performed travel demand modeling to forecast traffic volume on the roadway network in and around the project area for a No-Build scenario, and the three provided alignments. Evaluating and comparing the alternatives via several measure of effectiveness (MOE).

Montana Avenue Traffic Analysis Report Update, TX (2017) – Responsible for developing peak-hour traffic projections for Montana Avenue between Global Reach Drive and Zaragoza for No-Build and Build scenarios for years 2020 and 2040. Performed travel demand modeling using the MPO model (Horizon Model). Developing the microscopic simulation model in VISSIM for No-Build and Build scenarios. Extracted roadway densities and intersection delay from the VISSIM outputs and provided LOS based on HCM criteria.

Developing a Decision Support System for Traffic Diversion around Construction Closures (2013–2016) – Studied the impact of work zones on traffic network congestion. Developed an optimization-based algorithm to provide alternative routes for travelers while maximizing network performance. The developed model was integrated with an application-based Decision Support System (DSS) to assist traffic network managers in diverting traffic around the work zone. The traffic diversion model was applied to the Tarrant County network in north Texas to determine the effectiveness of the system.

Traffic and Revenue Studies for the Chisholm Trail Parkway (CTP) and the President George Bush Turnpike-Western Extension (PGBT-WE), TX (2014) – Responsible for developing travel demand models, geographically representing the results from travel demand model using ArcGIS, performing a preliminary socioeconomic evaluation, analyzing historical traffic data, and model calibration/validation efforts. Also involved in periodic traffic data analysis for the traffic and revenue forecast studies.

Evaluation and Analysis of the Rural Road Network of Iran (2008-2010) – Responsible for developing an assessment system to identify critical road segments in the rural traffic network based on their safety and operational issues. This system was used to record traffic road attributes such as speed and traffic volume, as well as the number of crashes and road geometric design characteristics. The data were aggregated to present level of service and road safety status in homogeneous traffic zoning. The project aimed to direct future planning decisions to remove bottlenecks and improve safety along the roads.

Graduate Research Assistance, ITSR, Sharif University of Technology, Tehran, Iran (2007–2008) – Conducted intersection design and safety studies for the City of Shiraz.

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Ying "Sabrina" Li, M.Eng., P.E.

Transportation System Modeler

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Ms. Li has a diverse background in transportation engineering, planning, and policy. She has 8 years of experience in traffic and revenue analysis, having served as a Traffic & Revenue Analyst and a Traffic & Revenue Manager while employed at Cintra US. During her tenure with Cintra US concession companies at Dallas, TX and Charlotte, NC, Ms. Li gained extensive working experience and knowledge of P3 bidding and operations interacting with different teams to improve traffic and revenue forecast development. After joining C&M, Ms. Li applied and expanded her expertise gained from industry to the consultancy work.

Professional Career

- Transportation System Modeler, C&M Associates, Inc., Dallas, TX (2018–Present)
- Traffic & Revenue Manager, CINTRA US, NC (2017–2018)
- Traffic & Revenue Analyst, CINTRA US, TX (2012–2017)
- Assistant Civil Engineer, Pepe Engineering, TX (2011–2012)
- Graduate Engineer Intern, City of Houston, TX (2010)

Qualifications

- Registered Professional Engineer (P.E.) in Texas – License #136991
- Master of Engineering (M.Eng.), Transportation Engineering, Texas A&M University, College Station, TX (2011)
- B.A., International Business, Dalian University of Technology, Dalian, China (2006)

Areas of Expertise

- Traffic and Revenue Studies
- Transportation Engineering
- Transportation Planning
- Sketch Modeling
- Demand Forecasting
- Toll Pricing
- GIS (ArcGIS, QGIS)
- SAS, SPSS, JMP, Stata, R, Tableau
- TransCAD, AutoCAD, HCS, CORSIM, Synchro

Professional Experience

I-495 NEXT Level 3 Traffic and Revenue Study Update, VA (2020 Ongoing) – Task lead developing a post-processing model to analyze the Cube model outputs and produce the T&R streams for the forecast years and for different tolling scenarios.

I-66 Inside the Capital Beltway Level 2 Traffic and Revenue Study, VA (2020) – Task lead conducting analyses to estimate the toll policy curves. Developed a post-processing model to analyze the Cube model outputs and produce the T&R streams for the forecast years and for Base, High, Low, Recession, Both Direction Tolling and Throughput Maximization scenarios.

IBTC Traffic Project, TX (2020) – Task lead developing traffic projections for the project following TxDOT/TP&P guidelines. Produced equivalent single axle load (ESAL) calculation for Phase I and Phase II, respectively.

I-25 North Segment 2 Level 2 Traffic and Revenue Study, CO (2020) – Task Lead analyzing socioeconomic (SE) data for the study area and validating if the regional model has the correct SE inputs. Analyzed real traffic data collected by the ITS devices to calibrate the toll diversion model.

I-495 NEXT Level 2 Traffic and Revenue Study Update, VA (2019) – Task lead analyzing socioeconomic data for the study area and updated the travel demand model's (TDM) zone files using the new SE forecasts for all scenarios. Reviewed the base year network coding. Estimated Value of Time using the most recent income data.

International Bridge Trade Corridor (IBTC) Traffic Projections and Traffic Analysis for Highway Design Tabulations, TX (2019) – Task lead preparing versions of the Traffic Analysis for Highway Design (TAHD) tabulations for the IBTC with Equivalent 18k Single Axle Load (ESAL) estimates and average daily traffic projections included.

Professional Experience, cont'd.

Gilcrease Expressway – West Segment Traffic and Revenue Review, OK (2019) – Task lead evaluating travel demand modeling methodology, including traffic growth, tolling policy, VOT assumptions, and T&R forecasting assumptions. Developed Base Case and T&R forecasts for the associated concession period of operation. Performed a Monte Carlo simulation for risk analysis to quantify the uncertainties of the forecast.

Morrison Road Traffic Projections, TX (2019) – Task lead developing traffic projections based on Texas Department of Transportation (TxDOT) Transportation Planning and Programming Division (TPP) methodology for tabulations of Equivalent 18k Single Axle Load (ESAL) value.

Old Alice Road and Naranjo Road Traffic Projections, TX (2019) – Task lead developing traffic projections based on Texas Department of Transportation (TxDOT) Transportation Planning and Programming Division (TPP) methodology for tabulations of Equivalent 18k Single Axle Load (ESAL) value.

I-25 South Managed Lanes Intermediate Traffic and Revenue Study, CO (2019) – Task lead analyzing StreetLight Data's location-based services (LBS) dataset to obtain meaningful origin-destination trip tables to support the travel demand modeling process.

I-27 Operational Improvements Study, TX (2019) –Task lead analyzing and summarizing the historical accident/crash data to assist with an Interstate Access Justification Report in support of evaluating the operational improvements along the I-27 corridor in Amarillo, TX.

Flor de Mayo International Bridge Traffic and Revenue Feasibility Study, TX (2019) – Task lead summarizing existing traffic and revenue information of the international toll bridges in Brownsville, TX. Developed a binational econometric model to forecast future border crossings of passenger and commercial vehicles for 33 years. Developed a route choice model to obtain the origin-destination trip tables across the U.S./Mexico border.

I-81 Pass-Through Trip Tolling Level 2 Traffic and Revenue Study, VA (2019) – Task lead analyzing existing traffic patterns along the corridor and summarizing the socioeconomic information around the project area.

Southwebb Port of Entry / Laredo Bridge 4/5 Traffic and Revenue Study, TX (2018) – Task lead calibrating a binational travel demand model and assisting with a binational econometric model to forecast future border crossings of passenger and commercial vehicles for a traffic and revenue forecast of a new port of entry along the U.S./Mexico border.

D2 95 Express Planning-Level Traffic and Revenue Study, FL (2018) – Task member involved in various tasks including summarizing existing traffic, analyzing historical and forecasted socioeconomic data, and assisting with the post-modeling process of the toll diversion model and the traffic and revenue forecasts.

I-77 Mobility Partners, NC (2017–2018) – As Traffic & Revenue Manager, responsibilities included the following:

- Proactively understood project traffic performance, operational requirements, customer expectations, and revenue needs.
- Calibrated and operated Toll Setting Model software to establish toll rates in accordance with Business Rules.
- Conveyed complex information to stakeholders about project performance in terms of traffic and revenue (T&R).
- Coordinated with the CEO, COO, Public Relations, Marketing, Toll Operations, and other internal teams to develop novel and effective ways to improve T&R through design, signage, and communication changes.
- Oversaw development of T&R forecasts for the project, including for annual budgets and for quarterly revisions.
- Prepared quarterly reports and presentations summarizing the project's traffic, revenue, and economic conditions.
- Coordinated the T&R Department workload to ensure accountability, reliability, and accuracy by delegating necessary tasks and responsibilities to ensure department goals were met.

NTE Mobility Partners, TX (2012–2017) – As Traffic & Revenue Analyst, responsibilities included the following:

- Analyzed T&R data of the concession companies and their area of influence; identified traffic patterns and areas of improvement.
- Operated Business Intelligence tools, created reports and dashboards, and ran queries to extract data from databases.
- Developed and operated spreadsheet-based models and network (micro or macro simulation) models to estimate traffic impacts and future T&R.
- Operated the company's Toll Setting Module software to establish toll rates in accordance with Business Rules.

Luis Fernando Escobar, B.S.

Transportation Engineer

C&M Associates, Inc.

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Mr. Escobar has over 13 years of experience working in traffic and transit projects for private and public sectors clients. His experience covers the areas of travel demand modeling and data collection and analysis. he has worked on traffic and revenue studies for roadway projects at national and international levels, as well as survey design and data collection for transportation planning studies.

Professional Career

- Transportation Engineer, C&M Associates, Inc. (2020 – Present)
- Transportation Specialist, Cal y Mayor y Asociados, S.C. (2007-2019)

Qualifications

- B.S., Industrial Mechanics Engineer, Instituto Politecnico Nacional. (2005)

Areas of Expertise

- Travel demand Modeling
  - Visum
- Simulation
  - Promodel
  - Parkcad
- Geographical Information System
  - ArcMap

Professional Experience

Responsibilities include serving as analyst and travel demand modeler, particularly for traffic and revenue (T&R) studies of tolled facilities. Relevant projects include the following:

Traffic and Revenue Study Update for Otay Mesa II international Bridge Project, Tijuana, Mexico (2019) – Responsibilities included updating the information in the travel demand model such as fare and traffic counts, calibration of the simulation model, estimation of environmental impact, and estimation of the demand forecast.

Traffic and Revenue Study for On-Ramp "D1" and Off-Ramp to Assembly Plans Volkswagen Project for Bypass of Puebla City, Puebla, Mexico (2019) – Responsibilities included localization of station field, calibration of the travel demand model, and estimation of the demand forecast.

Bus Rapid Transit Project for the Naucalpan Ecatepec Highway, Mexico (2019) – Developed the travel demand model, analyzed future scenarios, and estimated the demand forecast.

Traffic and Revenue Study for an Unsolicited Proposal of the Nichupte Bridge Project (2019) – Developed the travel demand model, analyzed future scenarios, and estimated the demand forecast.

Update of the traffic and revenue study of the infrastructure assets of network highway of the Occident. (2019) – Updated the information in the travel demand model such as fare and traffic counts, recalibrated the simulation model, estimated environmental impact, and estimated the demand forecast.

Traffic and Revenue Study Update for the Puente de Vigas-Lomas Verdes- Chamapa Highway Project, Mexico City (2019) – Updated the information in the travel demand model such as fare and traffic counts, calibrated the travel demand model, environmental analysis, and estimated the demand forecast.

Professional Experience, cont'd.

Traffic and Revenue Study for the Tepic – Compostela Highway Project, Nayarit, Mexico (2018) – Reviewed secondary information, field work formats, developed supply and demand models, calibrated the travel demand model, and estimated the demand forecast.

Traffic and Transport Study for the Freight and Goods and Passengers Train between the Provinces of Panamá and Chiriquí, Panama (2018) – Reviewed secondary information, field work formats, business interviews, developed a supply model, developed and calibrated the travel demand model for estimating the impact of the new train, number of passengers and goods for the project, and the demand forecast for future years.

Technical, Economic, and Financial Feasibility Study of the Cable Car System in Municipal Naucalpan, Mexico (2018) – Reviewed secondary information, developed a supply model and reviewed the inputs used in the travel demand model.

Traffic and Revenue Study Update for Bypass Puebla, Puebla, Mexico (2018) – Analyzed primary information to be used in updating the base year estimation.

Optimization of LOS of the Toll booth "La Hortaliza", Toluca-Zitácuaro Highway, Mexico (2017) – Reviewed the inputs used in the simulation of operations of the toll booth, developed the simulation model, evaluated alternative solutions, and prepared the technical report.

Mobility Study for CETRAM Observatorio at Mexico City, Mexico City (2017) – Developed a supply model, developed the travel demand model to estimate the impact of new infrastructure in the principal station of the subway and its demand forecast.

Traffic and Revenue Study Update of Bypass Puebla, Puebla (2017) – Calibrated the travel demand model, estimated the base year for the asset and its demand forecast.

Update of traffic and revenue study of Peñón-Texcoco, Ecatepec-Pirámides, Peñón-Piramides highways and the viaduct 602 project, Mexico City (2017) – Analysis of primary information to be used in updating the estimation of the base year for the asset.

Traffic and Revenue Study Update of San M. Texmelucan – Tlaxcala highway, Puebla Mexico (2017) – Analysis of primary information to be used in updating the estimation of the base year for the asset.

Traffic and Revenue Study for 4/5 International Bridge, Nuevo Laredo, Mexico (2017) – Conducted a traffic and revenue study for 4/5 international bridge project.

Impact on the vehicle traffic of the northwest bypass of Saltillo, Saltillo – Monterrey highway and viaduct Santa Catarina, Monterrey Mexico (2016) – Developed travel demand model, analyzed price elasticity of demand for the asset, LOS analysis, and estimated environmental impact.

Traffic and revenue study and Cost-Benefit study for Acapulco – Zihuatanejo highway, Mexico (2016) – Developed the travel demand model, generated inputs to socioeconomic evaluation, analyzed junctions, analyzed price elasticity of demand and its demand forecast.

Updated Traffic Study and Economic Feasibility of the Bypass East of Acapulco and Traffic Study of Chichicalco junction, Mexico (year) – Developed travel demand model, generated inputs to socioeconomic evaluation, and conducted LOS analysis.

Sustainable Urban Mobility Plan of Metropolitan Zone of Panamá – PIMUS Stage II, Panama (2015) – Developed freight transport model.

Traffic and Revenue Study of highways of Cuernavaca, Morelos Mexico (2016) – Developed travel demand model, analyzed proposals, estimated base year of Atlixcáyotl and Atlixco – Jantetelco motorway and its revenue.

Traffic and revenue study of Elevated Viaduct of Puebla City project, Puebla Mexico (2015) – Developed supply, demand, and transport model, designed field formats, estimated environmental impact, LOS analysis, and forecasted travel demand and revenue.

Traffic and revenue study of Hueyetlaco tunnel project, Mexico City (2015) – Developed supply, demand, and transport model, estimated environmental impact, and forecasted travel demand and revenue.

Traffic and revenue study and analysis of capacity for segments and toll booth of Guadalajara – Colima highway and Analysis of alternative solutions for reducing the pay toll evasion, Mexico (2014) – Developed supply, demand, and transport model, estimated environmental impact, analyzed price elasticity of demand, and forecasted travel demand and revenue.

James Liddle, M.A.

Technical Writer / Document Control

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Mr. Liddle has 6 years of experience in document control coordination for C&M and is responsible for organizing, tracking, and archiving project-related documents. He has 12 years of professional writing experience and is responsible for preparing and/or reviewing all reports, memoranda, and proposals produced by C&M, including document template design, website design, and other graphic design elements. Prior to working for C&M, he published 13 manuscripts in a variety of peer-reviewed journals, such as Behavioral and Brain Sciences, Review of General Psychology, and Wiley Interdisciplinary Reviews: Cognitive Science. He has also written several chapters for academic handbooks from highly regarded publishers, and he is the Senior Editor of a volume soon to be published by Oxford University Press. He has 7 years of experience copy editing manuscripts for the online academic journal Evolutionary Psychology, for which he served as Production Manager for 2 years.

Professional Career

- Technical Writer / Document Control, C&M Associates, Inc., Dallas, TX (2014–Present)
- Production Manager, *Evolutionary Psychology, ISSN 1474-7049* (2014–2015)
- Copy Editor, Cactus Communications Center of Excellence for Psychology and Psychosocial Healthcare (2014)
- Senior Editorial Assistant, *Evolutionary Psychology, ISSN 1474-7049* (2013–2014)
- Assistant to the Managing Editor, *Evolutionary Psychology, ISSN 1474-7049* (2009–2013)

Education

- M.A., Experimental Psychology, Florida Atlantic University (2014)
- B.A., Psychology, State University of New York at Oswego (2006)

Areas of Expertise

- Writing/Editing
  - Technical Writing
  - Academic Writing
  - Copy Editing/Proofreading
- Report Production
- Proposal Production
- Graphic Design
  - Adobe Creative Cloud
- Web Design
- Data Analysis & Statistics
  - SPSS

Professional Experience

Mr. Liddle has coordinated documentation—and prepared draft and final reports—for the following projects:

- I-25 North Segment 2 Level 2 Traffic and Revenue Study, CO (2020)
- I-580 Express Lanes Level 2 Traffic and Revenue Study, CA (2020)
- I-680 Express Lanes Level 2 Traffic and Revenue Study, CA (2020)
- Donna-Rio Bravo International Bridge Investment Grade Traffic and Revenue Study, TX (2020)
- I-25 South Managed Lanes Level 2 Traffic and Revenue Study, CO (2019)
- I-81 Pass-Through Trip Tolling Level 2 Traffic and Revenue Study, VA (2019)
- Southwebb Port of Entry and International Bridge Traffic and Revenue Study, TX (2019)
- I-495 Level 2 Traffic and Revenue Study, VA (2018)
- D2 95 Express Planning-Level Traffic and Revenue Study, FL (2018)
- King Fahd and King Abdullah Toll Roads Traffic and Revenue Study, Saudi Arabia (2018)
- Sunland Park International Bridge Intermediate Traffic and Revenue Study, NM (2018)
- Grand Parkway Segments D through I T&R Peer Review and Risk Assessment Update, TX (2018)
- Mile 6 Road Traffic Projections, TX (2018)
- I-25 South Corridor Gap Segment Level 2 Traffic and Revenue Study, CO (2018)

James Liddle, M.A.

Technical Writer/Document Control

C&M Associates, Inc.

Professional Experience, cont'd.

- American Roads Assets Traffic and Revenue Study, MI, AL (2018)
- Cesar Chavez Road Traffic Projections Study, TX (2018)
- SH 32 Traffic Projections Study, TX (2017)
- I-35 Managed Lanes Traffic and Revenue Study, TX (2017)
- Midtown Tunnel/Downtown Tunnel T&R Update, VA (2017)
- Grand Parkway Segments D through I T&R Peer Review and Risk Assessment, TX (2017)
- Walton Beach Bypass Sketch-Level Traffic and Revenue Study, FL (2017)
- I-81 Sketch-Level Traffic and Revenue Study, VA (2017)
- Donna-Rio Bravo and Anzalduas International Bridges Traffic Assessment Study, TX (2017)
- SR 528/Beachline East Sketch-Level Traffic and Revenue Peer Review, FL (2017)
- SH 249 Extension Due Diligence Study, TX (2017)
- Montana Avenue Traffic Analysis Report, TX (2017)
- I-70 East Traffic Projections Study, CO (2017)
- I-66 HOT Lanes Inside the Capital Beltway Intermediate and Investment Grade Traffic and Revenue Studies, VA (2015, 2017)
- Northwest Parkway Traffic and Revenue Study, CO (2016)
- Houbolt Toll Bridge Investment Grade Traffic and Revenue Study, IL (2016)
- C-470 Managed Lanes Traffic and Revenue Review, CO (2016)
- El Paso Loop 375 Managed Lanes Traffic Evaluation, TX (2016)
- Del Rio-Acuña II International Port of Entry Level 2 Traffic and Revenue Study, TX (2016)
- SH 365 Investment Grade Traffic and Revenue Study, TX (2016)
- I-66 Express Lanes Outside the Beltway Intermediate and Investment Grade Traffic and Revenue Studies, VA (2015, 2016)
- NTTA Special Projects System Comprehensive Traffic and Revenue Update, TX (2016)
- I-73 Intermediate Traffic and Revenue Study, SC (2015)
- SH 288 Managed Lanes Investment Grade Traffic and Revenue Study, TX (2015)
- I-4 "Beyond the Ultimate" Planning-Level Traffic and Revenue Study, FL (2015)
- West Bay Parkway Planning-Level Traffic and Revenue Study, FL (2015)
- I-77 Managed Lanes Investment Grade Traffic and Revenue Study, NC (2015)
- Montana Avenue Corridor Management Study, TX (2015)
- Fort Bliss Program Traffic Projections and Analysis, TX (2015)
- Traffic and Revenue Study for the Alliance International Bridge, TX (2015)
- Investment Grade Traffic and Revenue Analysis for SH 365 and the IBTC, TX (2014)
- Comprehensive Traffic and Revenue Study for the Chisholm Trail Parkway, TX (2014)
- Intermediate Level Traffic and Revenue Update for the President George Bush Turnpike-Western Extension, TX (2014)
- Wellness Way Parkway Planning-Level Traffic and Revenue Study, FL (2014)

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MARK FOWLER

Director

EXPERIENCE | 16 Years

EDUCATION | BS, Physics, Bates College

BIO

Mark Fowler helps clients understand how travelers will respond to the pricing of transportation infrastructure. Mark has managed dozens of research projects focused on the behavioral response of travelers to road pricing and congestion management techniques, including toll roads and bridges, managed/HOT lanes, area/cordon pricing, congestion pricing, VMT fees, and parking fees. The results of these studies are used to support investment-grade traffic and revenue forecasts for transportation infrastructure projects across the United States and Canada. His focus includes the design and implementation of survey questionnaires as well as data collection and statistical analysis.

PROJECT EXPERIENCE

Road Pricing Studies

Virginia DOT, Elizabeth River Tunnels. Directed a stated preference survey to estimate willingness to pay for travel time savings and willingness to pay for travel time reliability of users who travel between Portsmouth and Norfolk, VA using the Downtown and/or Midtown Tunnels. The stated preference survey results supported an investment-grade traffic and revenue forecast for the facilities. (2019)

Florida's Turnpike Enterprise, Colonial Parkway, Orlando, FL. Directed a stated preference survey to understand how travelers would respond to the proposed Colonial Parkway project, a seven-mile facility along SR-50 with two toll lanes and three local travel lanes in each direction. The survey estimated travelers' value of time and propensity to use the proposed new toll lanes under various conditions. The results of the survey were used to support estimates of traffic and revenue for the corridor. (2018)

Texas Department of Transportation, Houston Grand Parkway Segments H&I, Houston, TX. Directed a stated preference survey to evaluate proposed segments H&I of the Grand Parkway, a new circumferential highway around the city of Houston, TX. The results of the survey were incorporated into the regional travel forecasting model to support estimates of traffic and revenue in the corridor. (2015)

Texas Department of Transportation, Houston SH 249, Houston, TX. Directed a stated preference survey to evaluate the proposed tolled extension of State Highway 249 Northwest of Houston, TX. The proposed facility would link Montgomery and Grimes Counties to Northwest Harris County, TX. The results of the survey were incorporated into the regional travel forecasting model to support estimates of traffic and revenue in the corridor. (2015)

Northeast Texas RMA, Tyler Toll 49, Tyler, TX. Directed a stated preference survey to evaluate the traffic and revenue potential of Toll 49, a partially completed circumferential highway around the city of Tyler, TX. The results of the survey were incorporated into the regional travel forecasting model to support estimates of traffic and revenue in the corridor. (2015)

Florida's Turnpike Enterprise, Wellness Way Parkway, Orlando, FL. Directed a stated preference survey to evaluate the traffic and revenue potential of the Wellness Way Parkway, a proposed toll facility southwest of Orlando in Lake County, Florida. The proposed toll facility is unique in that it will be a four-lane, rural, arterial with a 55 mile per hour design speed limit and several traffic lights at intersections with roads used to access the proposed development along the corridor. The survey was used to estimate the willingness to pay for travel time savings and the willingness to pay to access proposed residential, commercial, and retail development along the corridor. Estimates of travelers' willingness to pay for travel time savings or willingness to pay to access the proposed development will be used by Florida's Turnpike Enterprise to forecast traffic and revenue in the corridor. (2014)

Florida's Turnpike Enterprise, Orlando I-4 Beyond the Ultimate, Orlando, FL. Directed a stated preference survey to evaluate proposed express lanes in the I-4 corridor between Kirkman Road and US 27 in Polk County and between SR 434 and SR 472 in Volusia County. RSG conducted a stated preference survey in the I-4 corridor to estimate travelers' willingness to pay for travel-time savings and their propensity to use the proposed express lanes under different travel conditions. The results of the survey were used to support estimates of traffic and revenue for the proposed express lanes. (2014)

Texas Department of Transportation, Dallas/Fort Worth Regional Managed Lanes, Dallas/Fort Worth, TX. Directed a stated preference survey for a proposed system of express lanes in the Dallas/Fort Worth region, including SH 183, SH 114, Loop 12, I-820, and I-35W. Separate values of time were estimated for each corridor by trip purpose and time of day. Estimates of values of time were used to support investment-grade traffic and revenue estimates for the proposed lanes. (2014)

North Texas Tollway Authority, Chisholm Trail Parkway, Fort Worth, TX. Managed a stated preference survey to estimate the value of time of travelers in the Chisholm Trail Parkway corridor in the Fort Worth, TX region. The survey collected data from travelers who currently use the Chisholm Trail Parkway as well as travelers who use competing toll free routes. Estimates of values of time were used to update traffic and revenue forecasts for the newly-opened toll facility. (2014)

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Florida's Turnpike Enterprise and the Florida Department of Transportation, Turnpike Integrated Congestion Pricing Plan, Florida. Conducted a stated preference survey for travelers in the Southwest, Central, and South Florida regions to evaluate proposed congestion pricing alternatives on Turnpike facilities. Developed and implemented a stated preference survey and estimated discrete choice models to provide estimates of values of time. Supported implementation of the survey results into the traffic and revenue forecasting model. (2013)

Florida's Turnpike Enterprise and the Florida Department of Transportation, 95 Express Phase 3 and 4, Palm Beach and Broward Counties, Florida. Conducted a stated preference survey for travelers in Palm Beach and Broward Counties to understand travel behavior related to proposed express lanes on a 70-mile section of I-95 between Ives Dairy Road and West Indiantown Road. Developed and implemented a stated preference survey, estimated discrete choice models, and supported implementation of the survey results into the traffic and revenue forecasting model. (2013)

Florida Department of Transportation, Florida's Future Corridors – Tampa to Jacksonville, Florida. Conducted a stated preference survey for travelers making long-distance trips in the region between Tampa, FL and Jacksonville, FL to understand travel behavior related to proposed new toll corridor between these cities. Developed and implemented a stated preference survey, synthesized the data with data from several other value-of-time studies that had been recently been conducted in Tampa, Orlando, and Jacksonville, estimated discrete choice models, and supported implementation of the survey results into the traffic and revenue forecasting model. (2013)

West Baton Rouge Parish, Louisiana Route 1 / I-10 Connector. Conducted a stated preference survey to forecast the behavioral response of passenger and commercial vehicle travelers to a potential new 1.5-mile bypass between Louisiana Route 1 and Interstate 10 in West Baton Rouge Parish, LA. The survey data were used to estimate the value of time of travelers making trips within the corridor. The estimates of value of time were incorporated into the travel forecasting model to forecast traffic and toll revenue. (2012)

Louisiana Department of Transportation and Development, Louisiana Route 1, Port Fourchon, Louisiana. Managed a survey effort to forecast the behavioral response of passenger and commercial vehicle travelers to potential changes to the toll structure on Louisiana Route 1 (LA1) between Golden Meadow and Port Fourchon. The survey data were used to estimate the suppression of vehicle trips on LA1 by vehicle type and trip purpose for three different toll rate increases. The estimates of trip suppression were incorporated into the travel forecasting model to forecast changes in traffic and toll revenue. (2012)

Harris County Toll Road Authority, SH 288 Managed Lanes, Houston, Texas. Managed a stated preference survey of travelers on SH 288 south of Houston, TX to support a traffic and revenue forecast for proposed managed lanes in the corridor. (2012)

Florida's Turnpike Enterprise and the Florida Department of Transportation, South Florida Managed Lanes System, Miami-Dade and Broward Counties, Florida. Conducted a joint stated and revealed preference survey for travelers in South Florida to understand existing travel behavior on the I-95 Express Lanes as well as potential travel behavior related to proposed express lanes on I-75 and the Palmetto Expressway. Developed and implemented a joint stated and revealed preference survey, estimated discrete choice models, collected origin-destination data using Bluetooth scanners, and validated and calibrating the choice models using the Bluetooth origin-destination data and I-95 Express volume and toll information provided by FDOT. (2012)

Georgia Department of Transportation, Georgia Statewide Pricing Study, Georgia. Conducted a statewide stated preference survey for automobile and commercial vehicle drivers in Georgia to evaluate behavioral response to potential future pricing projects, including the addition of express lanes to existing facilities as well as the construction of new toll roads between major population centers. RSG developed and implemented survey questionnaires for automobile and freight traffic and estimated discrete choice models to support feasibility analysis for the potential pricing projects. (2011)

North Texas Tollway Authority, System-wide Update, Dallas, Texas. Senior technical advisor for a stated preference survey effort to support updates to the North Texas Tollway Authority's (NTTA) travel forecasting model. Recent evidence in the Dallas area suggests that actual values of time of travelers using the North NTTA system may be higher than the values that are currently used in the model. In order to verify the actual value of time, RSG conducted a computer-based origin-destination, revealed preference, and stated preference travel survey, the results of which will be used to update the system-wide travel demand model for the toll road system to forecast traffic and revenue. The survey also sought to identify factors other than travel time and toll cost that influence travelers choice of route and mode. (2011)

Harris County Toll Road Authority, Fort Bend Grand Parkway Toll Road Authority, Grand Parkway, Houston, Texas. Managed a stated preference survey to support estimates of traffic and revenue for State Highway 99 (Grand Parkway), a proposed circumferential highway traversing seven counties and encircling the Greater Houston region over a distance of approximately 180 miles. Conducted a stated preference survey for passenger vehicles to estimate the value of travel time savings (VTTS) of travelers who are candidates for using segments D through G of the Grand Parkway. Estimates of travelers' time and cost sensitivities were used to support estimates of highway traffic and toll revenue. (2011)

Texas Department of Transportation, SH 183 Managed Lanes, Dallas, Texas. Conducted a stated preference survey for passenger vehicle drivers to estimate values of time for the proposed addition of managed lanes along a 10 mile section of SH 183 in Dallas, TX. (2009)

Texas Department of Transportation, Tyler Loop 49, Tyler, Texas. Supported a stated preference survey for passenger and commercial vehicle travelers to estimate values of time for a proposed 22 mile bypass that will be built South and West of Tyler, TX. (2009)

Texas Turnpike Authority, SH 161, Dallas and Tarrant Counties, Texas. A stated preference survey of potential users of the planned extension of SH 161 south through Western Dallas County. Designed and programmed interactive geocoding section of stated preference survey for computer-based administration. Estimated discrete choice models to obtain values of time for the corridor. (2006)

David Schwartz

Principal

Education

MCRP, The Ohio State University, 2006

B.M., University of Cincinnati, 1999

Also attended: B.A., Miami University, 1994-1997

Employment

2019-present
Principal, EPS

2017-2019
Executive V.P., EPS

2014-2017
Vice President, EPS

2009-2014
Senior Associate, EPS

2006-2009
Associate, EPS

2004-2006
Planner, Dublin, Ohio

2002-2004
Technical Assistant, Citizens for Civic Renewal, Cincinnati, Ohio

Affiliations

American Planning Association

Denver Association of Business Economists, member since 2007; board (2007-13)

ULI Housing Taskforce

Colorado Symphony Sustainability Committee, 2011

Publications

"The Importance of Affordable Housing to Economic Competitiveness" Economic Development Journal: Vol. 15, No. 1, Winter 2016

ABOUT

David specializes in the impact analysis, cost-benefit analysis, forecasting, and economic analysis. His background in mathematics, statistics, urban economics, and familiarity with the implications of land use controls guide his approaches. He has completed economic impact studies for airports, public highways, toll authorities, commuter rail and light rail investments, as well as industries, energy-related activities, affordable housing investment, the nonprofit sector, public/private land use developments, and environmental efforts. David has also managed numerous studies to produce socioeconomic projections in support of investment grade transportation infrastructure financing, local public financing options, long-range transportation plans, and impact statements in support of federal financing applications.

SELECTED PROJECT EXPERIENCE

E-470 Investment Grade T&R Socioeconomic Projections, Denver Metro, CO
Market demand and development potential analysis of office, residential, and retail uses for 10 communities along the 47-mile toll-way. Evaluated and recalibrated DRCOG TAZ level population, household, and employment forecasts accordingly. Findings were used to evaluate demand and toll revenues relative to capital improvement expenditures.

365 Toll Road Investment Grade T&R Socioeconomic Projections, Hidalgo County, TX
In the process of evaluating land use demand and development growth potentials for construction and operation of a new toll road crossing the US-Mexico border.

On-Call T&R Socioeconomic Projections Services, Alameda County, CA
On-call services to evaluate land use demand and development growth potentials and recalibration of socioeconomic projections for the Alameda CTC.

On-Call T&R Socioeconomic Projections Services, TXDOT
On-call services to evaluate land use demand and development growth potentials and recalibration of socioeconomic projections, provide third-party peer review, etc.

US-36 Investment Grade T&R Socioeconomic Projections, Denver Metro, CO
Evaluated land use demand and development potentials for the existing and proposed HOV corridor. Calibrated geospecific level population, household, and employment forecasts for the nine-county metro area. Produced upside and downside forecasts and presented to ratings agency for TIFIA loan approval.

South I-25 Managed Lanes Investment Grade T&R Socioeconomic Projections, Denver Metro, CO
Evaluated land use demand and development growth potentials for construction and operation of managed lanes between southern point of Denver MSA to northern point of Colorado Springs.

Economic Impacts of the North Texas Tollway Authority, Dallas/Ft. Worth, TX
Quantified economic contributions between 2007 and 2017 in travel time savings, value of time, regional productivity enhancement, land use and regional GRP dependence, property valuation and tax revenue, and the economic costs of traffic accident avoidance for NTTA's Public Affairs Division.

Recalibration of TAZ-Level Socioeconomic Data, Brazos-College Station, TX
Recalibrated current and projected geospatial socioeconomic data for the MPO.

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I-70 Corridor T&R Socioeconomic Projections, Denver Metro, CO
Evaluated land use demand and development growth potentials for construction and operation of managed lanes on the heavily-traveled I-70 inter-mountain corridor.

San Antonio International Airport Economic Impacts, San Antonio, TX
(Currently underway) Quantify, through primary and secondary data analysis, the direct, indirect, and induced impacts of the airport's operations, pass-through and destination traffic, cargo, and FBO activities.

Northwest Parkway Investment Grade T&R Socioeconomic Projections, Denver Metro, CO
Evaluated land use demand and development potentials for the metro area. Calibrated geospecific level population, household, and employment forecasts for the metro area. Produced probability-based sensitivity forecasts.

General Aviation Airport Economic Impact, Truckee-Tahoe, CA
Determining the economic impact of the KTRK to the overall region. Using a range of different impacts, including employment and wage, spending, lodging, retail, and real estate impacts. Calculating impacts based on a traditional input-output modeling framework, but supplementing and augmenting this standard modeling using on-ground data collected from the airport and through surveys.

Economic Contributions of the E-470 Toll Authority, Denver MSA, CO
Modeled household and job travel dependency (with traffic modeling), estimated property values, taxes, jobs, households, total spending, gross regional product, as well as travel time savings and the economic benefits of traffic accident avoidance.

Economic & Fiscal Impacts of Transit Investment, Colorado Springs, CO
Quantified the economic and fiscal benefits that would accrue to the City with higher levels of transit investment to offset the looming fiscal crisis of annual funding needed just to maintain existing and future roadway networks.

North I-25 Managed Lanes T&R Socioeconomic Projections, Denver Metro, CO
Evaluated land use demand and development growth potentials for construction and operation of managed lanes between the northern edge of Denver and the Weld County line.

Sales Tax Infrastructure Financing Options, Durango, CO
Assessed available public finance tools under Colorado state law, assessed the regional retail market and leakage, and estimated revenue sources using net new incremental sales tax revenues to fund construction of the road.

SW2NE Corridor Impact & TOD Market Potentials, Ft. Worth, TX
Extensive analysis of market conditions, trends, projections, and impacts of the proposed alignment alternatives and stations in fulfillment of NEPA requirements.

MRCOG Rail Runner TOD Market Potentials, Albuquerque, NM
Market demand forecasts for station areas along the Rail Runner commuter rail line.

Socioeconomic Impacts and Forecasts, Montrose County, CO
Regional economic driver analysis, estimation of socio-economic impacts from new uranium mining, manufacturing, other industrial activity, and proposed new transportation corridor. Estimated dispersion of economic and fiscal impacts within County and employment and population forecasts.

RTD North Metro EIS and TOD, Denver Metro, CO
Extensive economic impact analysis of conditions, trends, and projections of the proposed alignment alternatives and stations in fulfillment of NEPA requirements. Additional work included a TOD analysis assessing commercial and residential market conditions, development patterns, and opportunity sites and scales for TOD.

RTD US-36 Corridor FasTracks PE/DEIS, Denver-Boulder, CO
Determined land use and economic impacts of commuter rail, bus rapid transit (BRT), HOV, and toll lanes alternatives between downtown Denver and downtown Boulder for RTD Denver. Also identified TOD opportunities within the corridor.

Economic Impact and TOD Market Potentials for "The T", Fort Worth, TX
Extensive analysis of market conditions, trends, projections, and impacts of the proposed alignment alternatives and stations in fulfillment of NEPA requirements.