

AGREEMENT

THIS AGREEMENT is made between the **CITY AND COUNTY OF DENVER**, a municipal corporation of the State of Colorado (the “City”) and **AECOM TECHNICAL SERVICES, INC.**, a California corporation, registered to do business in Colorado, and doing business at 717 17th Street, Suite 2600, Denver, Colorado 80202 (the “Consultant”), collectively “the parties”.

RECITALS

A. The City wishes to procure a study from the Consultant of the validity and appropriateness of a new type of regional trip-based model through the East Colfax corridor.

B. The Consultant is ready, willing, and able to provide these services as set forth below.

The parties agree as follows:

1. COORDINATION AND LIAISON: The Consultant shall fully coordinate all services under the Agreement with the Manager of Public Works (“Manager”), or, if directed, with a designated supervisory person (“Project Manager”). The Consultant shall submit work orders, correspondence, pay requests, and other submissions to the Project Manager.

2. SERVICES TO BE PERFORMED:

a. As the Manager directs, the Consultant shall diligently undertake, perform, and complete all of the services and produce all the deliverables set forth on **Exhibit A, the Scope of Work**, to the City’s satisfaction.

b. The Consultant shall faithfully perform the services in accordance with the standards of care, skill, training, diligence, and judgment provided by competent individuals performing services of a similar nature to those described in the Agreement and in accordance with the terms of the Agreement.

3. TERM: The Agreement will commence on January 1, 2012, and will expire on June 14, 2014 (the “Term”). Subject to the Manager’s prior written authorization, the Consultant shall complete any work in progress as of the expiration date and the Term of the Agreement will extend until the work is completed or earlier terminated by the Manager.

4. COMPENSATION AND PAYMENT:

a. Fee: The City shall pay and the Consultant shall accept as the sole compensation for services rendered and costs incurred under the Agreement \$676,555.00. Amounts billed may not exceed the rates set forth in **Exhibit B**.

b. Reimbursable Expenses: The only reimbursable expenses allowed under this Agreement are those identified on the attached Exhibit B. All other expenses are contained in the rates set forth in Exhibit B.

c. Invoicing: Consultant shall provide the City with a monthly invoice in a format and with a level of detail acceptable to the City including all supporting documentation required by the City. The City's Prompt Payment Ordinance, §§ 20-107 to 20-118, D.R.M.C., applies to invoicing and payment under this Agreement.

d. Maximum Contract Amount:

(1) Notwithstanding any other provision of the Agreement, the City's maximum payment obligation will not exceed **SEVEN HUNDRED THOUSAND AND NO/100 DOLLARS (\$700,000.00)** (the "Maximum Contract Amount"). The City is not obligated to execute an Agreement or any amendments for any further services, including any services performed by Consultant beyond that specifically described in **Exhibit A**. Any services performed beyond those in Exhibit A are performed at Consultant's risk and without authorization under the Agreement.

(2) The City's payment obligation, whether direct or contingent, extends only to funds appropriated annually by the Denver City Council, paid into the Treasury of the City, and encumbered for the purpose of the Agreement. The City does not by the Agreement irrevocably pledge present cash reserves for payment or performance in future fiscal years. The Agreement does not and is not intended to create a multiple-fiscal year direct or indirect debt or financial obligation of the City.

5. COMPLIANCE WITH DBE AND EQUAL OPPORTUNITY REQUIREMENTS: The Consultant agrees to comply with all requirements of the City's Equal Employment Opportunity program and the Federal Disadvantaged Business Enterprise Participation program as set out in Article III, Division 2, Chapter 28 of the Denver Revised

Municipal Code, 49 C.F.R. Part 26, and any rules, regulations, and guidelines set forth thereunder for such programs. This compliance shall include the obligation to maintain throughout the term of the contract that level of DBE participation upon which the Agreement was initially awarded, unless otherwise authorized by the law or any rules, regulations, or guidelines. The Consultant identified in its Proposal DBE firms with which it intends to subcontract under this Agreement, with a total participation level by such firms of 0%. The project goal for DBE participation established for this Agreement by the Division of Small Business Opportunity (DSBO) is 0%.

6. STATUS OF CONSULTANT: The Consultant is an independent contractor retained to perform professional or technical services for limited periods of time. Neither the Consultant nor any of its employees are employees or officers of the City under Chapter 18 of the Denver Revised Municipal Code, or for any purpose whatsoever.

7. TERMINATION:

a. The City has the right to terminate the Agreement with cause upon written notice effective immediately, and without cause upon twenty (20) days prior written notice to the Consultant. However, nothing gives the Consultant the right to perform services under the Agreement beyond the time when its services become unsatisfactory to the Manager.

b. Notwithstanding the preceding paragraph, the City may terminate the Agreement if the Consultant or any of its officers or employees are convicted, plead *nolo contendere*, enter into a formal agreement in which they admit guilt, enter a plea of guilty or otherwise admit culpability to criminal offenses of bribery, kick backs, collusive bidding, bid-rigging, antitrust, fraud, undue influence, theft, racketeering, extortion or any offense of a similar nature in connection with Consultant's business. Termination for the reasons stated in this paragraph is effective upon receipt of notice.

c. Upon termination of the Agreement, with or without cause, the Consultant shall have no claim against the City by reason of, or arising out of, incidental or relating to termination, except for compensation for work duly requested and satisfactorily performed as described in the Agreement.

d. If the Agreement is terminated, the City is entitled to and will take possession of all materials, equipment, tools and facilities it owns that are in the Consultant's possession, custody, or control by whatever method the City deems expedient. The Consultant shall deliver

all documents in any form that were prepared under the Agreement and all other items, materials and documents that have been paid for by the City to the City. These documents and materials are the property of the City. The Consultant shall mark all copies of work product that are incomplete at the time of termination “DRAFT-INCOMPLETE”.

8. EXAMINATION OF RECORDS: Any authorized agent of the City, including the City Auditor or his or her representative, has the right to access and the right to examine any pertinent books, documents, papers and records of the Consultant, involving transactions related to the Agreement until the latter of three (3) years after the final payment under the Agreement or expiration of the applicable statute of limitations.

9. WHEN RIGHTS AND REMEDIES NOT WAIVED: In no event will any payment or other action by the City constitute or be construed to be a waiver by the City of any breach of covenant or default that may then exist on the part of the Consultant. No payment, other action, or inaction by the City when any breach or default exists will impair or prejudice any right or remedy available to it with respect to any breach or default. No assent, expressed or implied, to any breach of any term of the Agreement constitutes a waiver of any other breach.

10. INSURANCE:

a. General Conditions: Consultant agrees to secure, at or before the time of execution of this Agreement, the following insurance covering all operations, goods or services provided pursuant to this Agreement. Consultant shall keep the required insurance coverage in force at all times during the term of the Agreement, or any extension thereof, during any warranty period, and for three (3) years after termination of the Agreement. The required insurance shall be underwritten by an insurer licensed or authorized to do business in Colorado and rated by A.M. Best Company as “A-”VIII or better. Each policy shall contain a valid provision or endorsement stating “Should any of the above-described policies be canceled or non-renewed before the expiration date thereof, the issuing company shall send written notice to Denver Risk Management, 201 West Colfax Avenue, Dept. 1105, Denver, Colorado 80202. Such written notice shall be sent thirty (30) days prior to such cancellation or non-renewal unless due to non-payment of premiums for which notice shall be sent ten (10) days prior.” Additionally, Consultant shall provide written notice of cancellation, non-renewal and any reduction in coverage to the address above by certified mail, return receipt requested. If any policy is in excess of a deductible or self-insured retention, the City must be notified by the

Consultant. Consultant shall be responsible for the payment of any deductible or self-insured retention. The insurance coverages specified in this Agreement are the minimum requirements, and these requirements do not lessen or limit the liability of the Consultant. The Consultant shall maintain, at its own expense, any additional kinds or amounts of insurance that it may deem necessary to cover its obligations and liabilities under this Agreement.

b. **Proof of Insurance:** Consultant shall provide a copy of this Agreement to its insurance agent or broker. Consultant may not commence services or work relating to the Agreement prior to placement of coverage. Consultant certifies that the certificate of insurance attached as **Exhibit C**, preferably an ACORD certificate, complies with all insurance requirements of this Agreement. The City requests that the City's contract number be referenced on the Certificate. The City's acceptance of a certificate of insurance or other proof of insurance that does not comply with all insurance requirements set forth in this Agreement shall not act as a waiver of Consultant's breach of this Agreement or of any of the City's rights or remedies under this Agreement. The City's Risk Management Office may require additional proof of insurance, including but not limited to policies and endorsements.

c. **Additional Insureds:** For Commercial General Liability, Auto Liability and Professional Liability, Consultant and subcontractor's insurer(s) shall name the City and County of Denver, its elected and appointed officials, employees and volunteers as additional insured.

d. **Waiver of Subrogation:** For all coverages, Consultant's insurer shall waive subrogation rights against the City.

e. **Subcontractors and Subconsultants:** All subcontractors and subconsultants (including independent contractors, suppliers or other entities providing goods or services required by this Agreement) shall be subject to all of the requirements herein and shall procure and maintain the same coverages required of the Consultant. Consultant shall include all such subcontractors as additional insured under its policies (with the exception of Workers' Compensation) or shall ensure that all such subcontractors and subconsultants maintain the required coverages. Consultant agrees to provide proof of insurance for all such subcontractors and subconsultants upon request by the City.

f. **Workers' Compensation/Employer's Liability Insurance:** Consultant shall maintain the coverage as required by statute for each work location and shall maintain Employer's Liability insurance with limits of \$100,000 per occurrence for each bodily injury

claim, \$100,000 per occurrence for each bodily injury caused by disease claim, and \$500,000 aggregate for all bodily injuries caused by disease claims. Consultant expressly represents to the City, as a material representation upon which the City is relying in entering into this Agreement, that none of the Consultant's officers or employees who may be eligible under any statute or law to reject Workers' Compensation Insurance shall effect such rejection during any part of the term of this Agreement, and that any such rejections previously effected, have been revoked as of the date Consultant executes this Agreement.

g. Commercial General Liability: Consultant shall maintain a Commercial General Liability insurance policy with limits of \$1,000,000 for each occurrence, \$1,000,000 for each personal and advertising injury claim, \$2,000,000 products and completed operations aggregate, and \$2,000,000 policy aggregate.

h. Business Automobile Liability: Consultant shall maintain Business Automobile Liability with limits of \$1,000,000 combined single limit applicable to all owned, hired and non-owned vehicles used in performing services under this Agreement.

i. Professional Liability: Consultant shall maintain professional liability limits of \$1,000,000.00 per claim and \$1,000,000.00 aggregate policy limit.

j. Additional Provisions:

(a) For Commercial General Liability and Excess Liability, the policies must provide the following:

- (i) That this Agreement is an Insured Contract under the policy;
- (ii) Defense costs in excess of policy limits;
- (ii) A severability of interests, separation of insureds or cross liability provision; and
- (iii) A provision that coverage is primary and non-contributory with other coverage or self-insurance maintained by the City.

(b) For claims-made coverage:

- (i) The retroactive date must be on or before the contract date or the first date when any goods or services were provided to the City, whichever is earlier

(c) Consultant shall advise the City in the event any general aggregate or other aggregate limits are reduced below the required per occurrence limits. At their own

expense, and where such general aggregate or other aggregate limits have been reduced below the required per occurrence limit, the Consultant will procure such per occurrence limits and furnish a new certificate of insurance showing such coverage is in force.

11. . DEFENSE AND INDEMNIFICATION:

a. To the fullest extent permitted by law, the Consultant agrees to defend, indemnify, reimburse and hold harmless City, its appointed and elected officials, agents and employees against all liabilities, claims, judgments, suits or demands for damages to persons or property arising out of, or relating to the work performed under this Agreement that are due to the negligence or fault of the Consultant or the Consultant's agents ("Claims"). This indemnity shall be interpreted in the broadest possible manner to indemnify the City.

b. Consultant's duty to defend and indemnify City shall arise at the time written notice of the Claim is first provided to City regardless of whether suit has been filed and even if Consultant is not named as Defendant.

c. Consultant will defend any and all Claims which may be brought or threatened against City and will pay on behalf of City any expenses incurred by reason of such Claims including, but not limited to, court costs and attorney fees incurred in defending and investigating such Claims or seeking to enforce this indemnity obligation. Such payments on behalf of City shall be in addition to any other legal remedies available to City and shall not be considered City's exclusive remedy.

d. Insurance coverage requirements specified in this Agreement shall in no way lessen or limit the liability of the Consultant under the terms of this indemnification obligation. The Consultant shall obtain, at its own expense, any additional insurance that it deems necessary for the City's protection.

e. This defense and indemnification obligation shall survive the expiration or termination of this Agreement.

12. TAXES, CHARGES AND PENALTIES: The City is not liable for the payment of taxes, late charges or penalties of any nature, except for any additional amounts that the City may be required to pay under the City's prompt payment ordinance D.R.M.C. § 20-107, *et seq.* The Consultant shall promptly pay when due, all taxes, bills, debts and obligations it incurs performing the services under the Agreement and shall not allow any lien, mortgage, judgment or execution to be filed against City property

13. ASSIGNMENT; SUBCONTRACTING: The Consultant shall not voluntarily or involuntarily assign any of its rights or obligations, or subcontract performance obligations, under this Agreement without obtaining the Manager's prior written consent. Any assignment or subcontracting without such consent will be ineffective and void, and shall be cause for termination of this Agreement by the City. The Manager has sole and absolute discretion whether to consent to any assignment or subcontracting, or to terminate the Agreement because of unauthorized assignment or subcontracting. In the event of any subcontracting or unauthorized assignment: (i) the Consultant shall remain responsible to the City; and (ii) no contractual relationship shall be created between the City and any sub-consultant, subcontractor or assign.

14. INUREMENT: The rights and obligations of the parties to the Agreement inure to the benefit of and shall be binding upon the parties and their respective successors and assigns, provided assignments are consented to in accordance with the terms of the Agreement.

15. NO THIRD PARTY BENEFICIARY: Enforcement of the terms of the Agreement and all rights of action relating to enforcement are strictly reserved to the parties. Nothing contained in the Agreement gives or allows any claim or right of action to any third person or entity. Any person or entity other than the City or the Consultant receiving services or benefits pursuant to the Agreement is an incidental beneficiary only.

16. NO AUTHORITY TO BIND CITY TO CONTRACTS: The Consultant lacks any authority to bind the City on any contractual matters. Final approval of all contractual matters that purport to obligate the City must be executed by the City in accordance with the City's Charter and the Denver Revised Municipal Code.

17. SEVERABILITY: Except for the provisions of the Agreement requiring appropriation of funds and limiting the total amount payable by the City, if a court of competent jurisdiction finds any provision of the Agreement or any portion of it to be invalid, illegal, or unenforceable, the validity of the remaining portions or provisions will not be affected, if the intent of the parties can be fulfilled.

18. CONFLICT OF INTEREST:

a. No employee of the City shall have any personal or beneficial interest in the services or property described in the Agreement. The Consultant shall not hire, or contract for services with, any employee or officer of the City that would be in violation of the City's Code of Ethics, D.R.M.C. §2-51, et seq. or the Charter §§ 1.2.8, 1.2.9, and 1.2.12.

b. The Consultant shall not engage in any transaction, activity or conduct that would result in a conflict of interest under the Agreement. The Consultant represents that it has disclosed any and all current or potential conflicts of interest. A conflict of interest shall include transactions, activities or conduct that would affect the judgment, actions or work of the Consultant by placing the Consultant's own interests, or the interests of any party with whom the Consultant has a contractual arrangement, in conflict with those of the City. The City, in its sole discretion, will determine the existence of a conflict of interest and may terminate the Agreement in the event it determines a conflict exists, after it has given the Consultant written notice describing the conflict.

19. NOTICES: All notices required by the terms of the Agreement must be hand delivered, sent by overnight courier service, mailed by certified mail, return receipt requested, or mailed via United States mail, postage prepaid, if to Consultant at the address first above written, and if to the City at:

Manager of Public Works
201 West Colfax Avenue, Dept. 610
Denver, Colorado 80202

With a copy of any such notice to:

Denver City Attorney's Office
1437 Bannock St., Room 353
Denver, Colorado 80202

Notices hand delivered or sent by overnight courier are effective upon delivery. Notices sent by certified mail are effective upon receipt. Notices sent by mail are effective upon deposit with the U.S. Postal Service. The parties may designate substitute addresses where or persons to whom notices are to be mailed or delivered. However, these substitutions will not become effective until actual receipt of written notification.

20. NO EMPLOYMENT OF ILLEGAL ALIENS TO PERFORM WORK UNDER THE AGREEMENT:

a. This Agreement is subject to Division 5 of Article IV of Chapter 20 of the Denver Revised Municipal Code, and any amendments (the "Certification Ordinance").

b. The Consultant certifies that:

- (1) At the time of its execution of this Agreement, it does not knowingly employ or contract with an illegal alien who will perform work under this Agreement.
- (2) It will participate in the E-Verify Program, as defined in § 8-17.5-101(3.7), C.R.S., to confirm the employment eligibility of all employees who are newly hired for employment to perform work under this Agreement.

c. The Consultant also agrees and represents that:

- (1) It shall not knowingly employ or contract with an illegal alien to perform work under the Agreement.
- (2) It shall not enter into a contract with a subconsultant or subcontractor that fails to certify to the Consultant that it shall not knowingly employ or contract with an illegal alien to perform work under the Agreement.
- (3) It has confirmed the employment eligibility of all employees who are newly hired for employment to perform work under this Agreement, through participation in either the E-Verify Program.
- (4) It is prohibited from using the E-Verify Program procedures to undertake pre-employment screening of job applicants while performing its obligations under the Agreement, and that otherwise requires the Consultant to comply with any and all federal requirements related to use of the E-Verify Program including, by way of example, all program requirements related to employee notification and preservation of employee rights.
- (5) If it obtains actual knowledge that a subconsultant or subcontractor performing work under the Agreement knowingly employs or contracts with an illegal alien, it will notify such subconsultant or subcontractor and the City within three (3) days. The Consultant will also then terminate such subconsultant or subcontractor if within three (3) days after such notice the subconsultant or subcontractor does not stop

employing or contracting with the illegal alien, unless during such three-day period the subconsultant or subcontractor provides information to establish that the subconsultant or subcontractor has not knowingly employed or contracted with an illegal alien.

- (6) It will comply with any reasonable request made in the course of an investigation by the Colorado Department of Labor and Employment under authority of § 8-17.5-102(5), C.R.S., or the City Auditor, under authority of D.R.M.C. 20-90.3.

d. The Consultant is liable for any violations as provided in the Certification Ordinance. If Consultant violates any provision of this section or the Certification Ordinance, the City may terminate this Agreement for a breach of the Agreement. If the Agreement is so terminated, the Consultant shall be liable for actual and consequential damages to the City. Any such termination of a contract due to a violation of this section or the Certification Ordinance may also, at the discretion of the City, constitute grounds for disqualifying Consultant from submitting bids or proposals for future contracts with the City.

21. DISPUTES: All disputes between the City and Consultant arising out of or regarding the Agreement will be resolved by administrative hearing pursuant to the procedure established by D.R.M.C. § 56-106(b)-(f). For the purposes of that administrative procedure, the City official rendering a final determination shall be the Manager as defined in this Agreement.

22. GOVERNING LAW; VENUE: The Agreement will be construed and enforced in accordance with applicable federal law, the laws of the State of Colorado, and the Charter, Revised Municipal Code, ordinances, regulations and Executive Orders of the City and County of Denver, which are expressly incorporated into the Agreement. Unless otherwise specified, any reference to statutes, laws, regulations, charter or code provisions, ordinances, executive orders, or related memoranda, includes amendments or supplements to same. Venue for any legal action relating to the Agreement will be in the District Court of the State of Colorado, Second Judicial District.

23. NO DISCRIMINATION IN EMPLOYMENT: In connection with the performance of work under the Agreement, the Consultant may not refuse to hire, discharge, promote or demote, or discriminate in matters of compensation against any person otherwise qualified,

solely because of race, color, religion, national origin, gender, age, military status, sexual orientation, gender variance, marital status, or physical or mental disability. The Consultant shall insert the foregoing provision in all subcontracts.

24. COMPLIANCE WITH ALL LAWS: Consultant shall perform, or cause to be performed, all services in full compliance with all applicable laws, rules, regulations and codes of the United States, the State of Colorado; and with the Charter, ordinances, rules, regulations and Executive Orders of the City and County of Denver.

25. LEGAL AUTHORITY: Consultant represents and warrants that it possesses the legal authority, pursuant to any proper, appropriate and official motion, resolution or action passed or taken, to enter into the Agreement. Each person signing and executing the Agreement on behalf of Consultant represents and warrants that he has been fully authorized by Consultant to execute the Agreement on behalf of Consultant and to validly and legally bind Consultant to all the terms, performances and provisions of the Agreement. The City shall have the right, in its sole discretion, to either temporarily suspend or permanently terminate the Agreement if there is a dispute as to the legal authority of either Consultant or the person signing the Agreement to enter into the Agreement.

26. NO CONSTRUCTION AGAINST DRAFTING PARTY: The parties and their respective counsel have had the opportunity to review the Agreement, and the Agreement will not be construed against any party merely because any provisions of the Agreement were prepared by a particular party.

27. ORDER OF PRECEDENCE: In the event of any conflicts between the language of the Agreement and the exhibits, the language of the Agreement controls.

28. INTELLECTUAL PROPERTY RIGHTS: The City and Consultant intend that all property rights to any and all materials, text, logos, documents, booklets, manuals, references, guides, brochures, advertisements, music, sketches, plans, drawings, prints, photographs, specifications, software, data, products, ideas, inventions, and any other work or recorded information created by the Consultant and paid for by the City pursuant to this Agreement, in preliminary or final form and on any media whatsoever (collectively, "Materials"), shall belong to the City. The Consultant shall disclose all such items to the City. To the extent permitted by the U.S. Copyright Act, 17 USC § 101, *et seq.*, the Materials are a "work made for hire" and all

ownership of copyright in the Materials shall vest in the City at the time the Materials are created. To the extent that the Materials are not a “work made for hire,” the Consultant (by this Agreement) sells, assigns and transfers all right, title and interest in and to the Materials to the City, including the right to secure copyright, patent, trademark, and other intellectual property rights throughout the world and to have and to hold such rights in perpetuity.

29. SURVIVAL OF CERTAIN PROVISIONS: The terms of the Agreement and any exhibits and attachments that by reasonable implication contemplate continued performance, rights, or compliance beyond expiration or termination of the Agreement survive the Agreement and will continue to be enforceable. Without limiting the generality of this provision, the Consultant’s obligations to provide insurance and to indemnify the City will survive for a period equal to any and all relevant statutes of limitation, plus the time necessary to fully resolve any claims, matters, or actions begun within that period.

30. ADVERTISING AND PUBLIC DISCLOSURE: The Consultant shall not include any reference to the Agreement or to services performed pursuant to the Agreement in any of the Consultant’s advertising or public relations materials without first obtaining the written approval of the Manager. Any oral presentation or written materials related to services performed under the Agreement will be limited to services that have been accepted by the City. The Consultant shall notify the Manager in advance of the date and time of any presentation. Nothing in this provision precludes the transmittal of any information to City officials.

31. CITY EXECUTION OF AGREEMENT: The Agreement will not be effective or binding on the City until it has been fully executed by all required signatories of the City and County of Denver, and if required by Charter, approved by the City Council.

32. AGREEMENT AS COMPLETE INTEGRATION-AMENDMENTS: The Agreement is the complete integration of all understandings between the parties as to the subject matter of the Agreement. No prior, contemporaneous or subsequent addition, deletion, or other modification has any force or effect, unless embodied in the Agreement in writing. No oral representation by any officer or employee of the City at variance with the terms of the Agreement or any written amendment to the Agreement will have any force or effect or bind the City.

33. USE, POSSESSION OR SALE OF ALCOHOL OR DRUGS: The Consultant shall cooperate and comply with the provisions of Executive Order 94 and its Attachment A concerning the use, possession or sale of alcohol or drugs. Violation of these provisions or refusal to cooperate with implementation of the policy can result in contract personnel being barred from City facilities and from participating in City operations.

34. COUNTERPARTS OF THE AGREEMENT: The Agreement may be executed in counterparts, each of which is an original and constitutes the same instrument.

35. ELECTRONIC SIGNATURES AND ELECTRONIC RECORDS: Consultant consents to the use of electronic signatures by the City. The Agreement, and any other documents requiring a signature hereunder, may be signed electronically by the City in the manner specified by the City. The Parties agree not to deny the legal effect or enforceability of the Agreement solely because it is in electronic form or because an electronic record was used in its formation. The Parties agree not to object to the admissibility of the Agreement in the form of an electronic record, or a paper copy of an electronic document, or a paper copy of a document bearing an electronic signature, on the ground that it is an electronic record or electronic signature or that it is not in its original form or is not an original.

[SIGNATURE PAGE FOLLOWS]

Contract Control Number:

IN WITNESS WHEREOF, the parties have set their hands and affixed their seals at Denver, Colorado as of

SEAL

CITY AND COUNTY OF DENVER

ATTEST:

By _____

APPROVED AS TO FORM:

REGISTERED AND COUNTERSIGNED:

By _____

By _____

By _____



Contract Control Number: PWADM-201205425-00

Contractor Name: AE COM USA INC

By: 

Name: TR.A. Plummer
(please print)

Title: Vice President
(please print)

ATTEST: [if required]

By: _____

Name: _____
(please print)

Title: _____
(please print)



Exhibit A
Scope of Work

Proposed Approach

Our approach to this project focuses on the three primary activities of this consultant contract:

1. Assist DRCOG implement refinements to the FOCUS model that improve its usefulness for the East Colfax Alternatives Analysis (AA/EA) and satisfy FTA New Starts requirements.
2. Facilitate discussions and negotiations with the FTA modeling staff to gain understanding and acceptance of the FOCUS model for the AA/EA and for New Starts analysis.
3. Apply the approved modeling tool to the build alternatives proposed by the AA/EA consultant and support the public involvement and decision-making process in the East Colfax corridor.

Task 1: Model Adjustment to Calibrate Highway and Transit Travel Times

Objective: Determine and implement any adjustments necessary for modeling highway and transit speeds and travel times that effectively match observed data.

This task will develop and calibrate model relationships that replicate observed speeds and travel times for highway and transit trips. This is the culmination of existing RTD and DRCOG efforts to process observed travel time data from the Front Range Travel Counts survey (FRTC), CDOT speed run and permanent traffic recorder data, and RTD run time information.

In addition to obtaining a reasonable match for overall link specific roadway speeds by time of day, the method to achieve the match and the standards for the match must be determined. Questions include:

- Can volume-delay functions used in a standard static equilibrium traffic assignment procedure be successfully adjusted so that assigned traffic volumes and assigned speeds satisfy validation guidelines or will it be necessary to develop a traffic assignment speed post-processor?
- Is there a need to consider distributed values of time in order to match the assigned traffic volumes and speeds by facility type or toll rate to observed data?
- Are the validation guidelines documented in the recent *Travel Model Validation and Reasonableness Checking Manual – Second Edition*¹ appropriate for the Denver region?
- Are there options for better representing link specific free flow speeds and capacities that would more accurately capture the variation in those parameters and improve the assignment?
- Should DRCOG consider the use of TransCAD's path-based equilibrium traffic assignment procedures to achieve better equilibrium closure?
- After adjustment for revised roadway speeds, does the bus transit speed estimation procedure developed by RTD still accurately represent transit speeds?
- Do validated roadway and transit speeds on facilities produce valid interchange travel times?

The AECOM Team is currently addressing these issues in Denver and other regions. Correctly modeling roadway and transit speeds will be crucial to the success of modeling of transportation options in the East Colfax Corridor. The transportation options considered may include non-capital intensive methods for increasing traffic or transit speeds that will make facilities or transit routes in the corridor operate differently than the "average" for the region. Our efforts for this task will focus on addressing the above questions to produce modeling procedures that produce credible results for the right reasons.

¹Travel Model Improvement Program (TMIP), Travel Model Validation and Reasonableness Checking Manual – Second Edition, Cambridge Systematics, Inc, Federal Highway Administration, September 24, 2010.

Responsibilities: The AECOM Team will perform all analysis, make adjustments to the modeling procedures, and conduct travel model runs as required within the TransCAD and FOCUS components of the model. DRCOG and RTD will provide guidance and assist with the adjustments to the FOCUS choice models.

Deliverables: The AECOM Team will produce draft and final technical memoranda describing procedures to produce acceptable highway and transit travel times. The procedures will be implemented in the TransCAD GISDK and C# code within the FOCUS model.

Task 2: Work with DRCOG to Review Trip Tables for Reasonableness, and Adjust to Satisfy FTA Comments

Objective: Ensure that the FOCUS model generates trip tables that closely replicate observed travel patterns to the satisfaction of the agency team and FTA.

FOCUS is a tour-based modeling process that ultimately generates trip tables by mode and time-of-day that are assigned to highway and transit networks. This task will review the trip tables generated by the FOCUS model to determine how closely they match the observed travel patterns included in the Front Range Travel Counts (FRTC) and the American Community Survey (ACS). The model results and observed data will be cross-referenced by demographic attributes such as household income, geographic district and screenline, and trip purpose and travel mode. In addition, transit trips will be compared to results from the RTD on-board survey by mode of access (walk and drive) and submode such as local bus, express bus, and rail. Trips to Denver International Airport will require special attention for both airport employees and air passengers.

Under AECOM's current support contract with RTD and DRCOG, a number of concerns of particular interest to this study were identified. In general, the current FOCUS model over-estimates transit trips to downtown and within the East Colfax corridor. This problem was partially addressed during the COMPASS 4 model calibration using a more recent and more complete transit on-board surveys. Preliminary comparisons to the FRTC survey suggest additional improvements can be made.

If this task identifies a systematic bias, one or more adjustments to the destination choice model will be suggested and tested. Some of these suggestions may consider including additional explanatory variables to the choice models and/or adding a feedback process that improves the balance between work trip attractions and zonal employment levels. If these strategies fail to adequately improve the results, interchange-, district-, or screenline-related correction factors or bias constants may be introduced. Factors such as these should be used sparingly to avoid potential concerns from FTA and minimize constraints that might affect the model's ability to predict changes in future travel patterns.

At this point, several issues have been identified with the destination choice models that warrant further attention. Trip ends in Boulder and Southeast are of particular concern. The model also appears to underestimate short trips and the work trip lengths to key employment areas such as the CBD. Our initial review of the transit trip tables by district and time period suggest significant refinements will be needed to satisfy FTA. Some of this was addressed in the COMPASS 4 model and needs to be ported to FOCUS.

Methods for improving the computational performance of the destination choice models have also been suggested. One approach is to select a sample of destinations to consider rather than a full enumeration of all destinations. A variety of optimization procedures could also be pursued. These could include enhanced database access, additional parallel processing, and streamlined skim data.

Responsibilities: The AECOM Team will perform and document a review of the person, roadway, and transit trip tables generated by the FOCUS model. We will recommend and test possible solutions and assist DRCOG in the implementation and calibration of refined destination choice models. We will coordinate discussions with FTA

about the trip tables and distribution methodologies. DRCOG and RTD will provide guidance, lead the refinements to the FOCUS choice models, and participate in FTA reviews.

Deliverables: A draft technical memorandum documenting the trip table analysis and suggestions expressed by FTA and a summary of the resulting model adjustments will be provided to the agency team for review and comment. Comments will be addressed in the final task memo.

Task 3: Adjust Transit Path-Building Parameters

Objective: Demonstrate a set of transit path building procedures that replicate observed behavior and satisfy the desire of FTA for consistency throughout the modeling process.

Transit path-building is complicated by the fact that transit service is offered on specific routes with varying service frequencies at different times of day. In addition, travelers tend to value the time spent walking, waiting, and riding in a local bus, express bus or train differently. Costs related to parking and fares and the inconvenience and reliability risks of transfers also affect how people select a transit path.

Identifying the relative weights travelers place on each component of a transit trip is the primary focus of this task. The AECOM Team will use the 2008 RTD Transit On-Board Survey and the 2010 Front Range Travel Counts to develop observed transit trip tables. These tables will be assigned to the TransCAD transit networks to evaluate the performance of the existing FOCUS model and to enhance and calibrate the path building parameters. In cases where the observed and modeled paths do not match, further analysis will be performed to ensure that the reported path in the survey is logical and determine what changes would be necessary to the path building parameters to replicate the observed behavior. We will also ensure that the relative magnitude of each parameter falls within FTA guidelines.

The calibrated parameters are then used to generate a set of transit paths between zones by time of day. The path attributes are used to locate activities and select the travel modes for individual trips and tours. The resulting trips are then assigned to the transit network for evaluating ridership by route and time of day. For Alternatives Analysis and New Starts applications, FTA desires consistency in the path-related attributes at each stage of the modeling process. In other words, the path attributes used for destination choice, mode choice, and assignment should be virtually the same.

Since FOCUS is a tour-based model, consistency throughout the modeling process is more difficult to achieve than it is within a traditional trip-based model. Decisions about destinations and modes for the tour should consider the time of day and travel attributes of both the outbound and return legs of the tour. Decisions about intermediate stops need to consider the trip attributes to the stop and from the stop to the next activity. If travelers leave their car at a park-n-ride lot on their way to work, they should return to that same lot to pick the car up on the way home. In the end, the trip should be assigned in the same time period provided to the choice models. All of these complications affect the way paths are built and used within the modeling process.

The AECOM Team is currently working with DRCOG and RTD to enhance the path-related information provided to the mode choice models. One of the most significant improvements is to include the travel characteristics for the return trip of a park-n-ride tour. The return trip should return to the same parking lot identified by the outbound path and consider the transit options and roadway conditions at the time of day when the return trip takes place. This is critical for loading transit routes in origin-destination format and developing feasible transit tours. For completeness, this same concept should be used for walk-to-transit tours as well.

In addition, FTA has suggested research to determine if attribute-based transit paths could be implemented. In this approach, the attractiveness of a transit stop, vehicle, or leg would consider the attributes that are important to transit users rather than defining a general mode-related bias. For example, stations may be more attractive

than stops, premium vehicle amenities may be attractive, and service legs on exclusive guideways may provide increased reliability that travelers find important.

FTA also expressed interest in reviewing production-attraction assignments as well as origin-destination assignments; considering kiss-n-ride paths; and developing improved methods of modeling routes with limited service. Most traditional models use route headways or frequency to estimate how long a traveler needs to wait to board the route. For routes that make only a few runs during a given time period, procedures that make the route headway extremely long or unreasonably short cause significant problems for initial wait and transfer wait modeling.

Methods of considering park-n-ride choice and capacity constraints may also be an area of research. Issues related to overnight parking and pricing related to the residential district have been raised. Methods for including and adjusting shadow prices at parking lots to constrain demand have also been discussed. To be truly realistic, the lot selection algorithm for park-n-ride tours should consider the travel conditions for both directions of the trip in choosing the parking lot.

A number of concerns have also been raised related to roadway assignments. Realistic speeds and volume-delay functions may address some of these concerns, but not all. The volumes on toll roads and collector roadways need to be improved. Including multiple values of time in the path building algorithm is one approach that is likely to help distribute trips to facilities more evenly and provide the mode and destination choice models with additional fidelity.

Responsibilities: The AECOM Team will perform and document a review of transit path and assignment outcomes generated by the FOCUS model. We will research attribute-based methods, recommend and develop implementation procedures, and calibrate the model parameters using survey data. We will coordinate discussions with FTA about the path building and assignment methods. DRCOG and RTD will provide guidance and assist with the adjustments to the modeling procedures and participate in FTA reviews.

Deliverables: A draft technical memo documenting the transit path-building concerns and suggestions expressed by FTA and a summary of the resulting model adjustments will be provided to the agency team for review and comment. Comments will be addressed in the final memo.

Task 4: Develop Model Operational Approaches to Hold Trip Tables Constant

Objective: Demonstrate a method for holding trip tables constant within the FOCUS modeling system that satisfies the requirements of FTA for New Starts analysis.

In FTA New Starts analysis, the user benefits of a proposed transportation system change are based on aggregated changes in the composite utilities of mode choice alternatives for all trips within the same origin-destination pair and market segment. The trip table inputs to these calculations are required to remain unchanged between base-line and build scenarios, a stipulation with important implications for the way in which a tour-based model such as FOCUS is specified and applied.

A tour-based model portrays the alternatives available to travelers more realistically than a trip-based model. FOCUS follows a hierarchical approach in which the primary destination and mode for a tour are chosen at an upper level, and these tour-level choices condition the destinations and mode alternatives available for individual stops on the same tour. Choices in FOCUS are modeled using Monte Carlo simulations for each traveler and choice, thus producing more realistic forecasts of “whole” trips for each traveler, rather than proportions of trips for groups of travelers. However, this approach also adds random variation to the process. For New Starts analysis, FOCUS must adhere to four modeling requirements:

1. *Primary and intermediate stop destinations should be fixed between baseline and build scenarios.*

This may be achieved by running FOCUS for the baseline scenario and saving all disaggregate outputs. One proposed method is to copy the outputs from the baseline scenario to the build scenario, replace baseline alternative transit skims with those of the build alternative, and run only the tour and trip mode choice models for the build scenario. Highway skims would be fixed as required by SUMMIT; therefore, any time of day choices made during the baseline run would likewise need to be fixed for the build scenario. Any intermediate stops that are added in between tour mode choice and trip mode choice in the baseline scenario would be fixed and re-used in the build scenario.

- 2. There may be no double-counting of user benefits at both tour and trip levels.*

Tabulating user benefits at the trip level has the advantage of representing travel at a finer level of detail because all of the trips on a tour are considered and any transit sub-mode options and attributes are incorporated into the user benefit calculation. In a tour-based modeling framework, however, this could produce counter-intuitive user benefits if the trip level options are restricted by the tour mode choice. Since user benefits are based on differences between scenarios in the composite utility of all of the alternatives in a choice set, a tour model that limits the trip-level choices can reduce the composite utility of the build alternative. One solution might be to count user benefits at the tour level if the build scenario results in a change in predicted tour mode and to count user benefits at the trip level if there is no change in tour mode.

- 3. Mode choice model segmentation should be consistent between tour- and trip-level models.*

Consistency of market segmentation between tour- and trip-mode choice models implies that market segments represented through either exogenous or endogenous segmentation of mode choice models be available for aggregation at both tour and trip levels as inputs to SUMMIT. The disaggregate structure of FOCUS provides for great flexibility in how market segments are defined for reporting and for use in SUMMIT. In other words, both tour- and trip-mode choice models should maintain compatible segmentation by activity purpose, auto ownership level, income level, and other attributes.

- 4. Changes between scenarios to simulated mode choices should be based solely on changes in utilities and not be confounded by the random variation introduced by the simulation.*

It is critical that tour and trip mode choices in the build scenario use the same random number inputs as the baseline scenario. This typically means that each traveler is assigned a random number sequence.

Based on our preliminary discussions with FTA, the preferred approach is to implement the SUMMIT take-off after the tour mode choice model. This has a number of important implications that need to be investigated in detail. These include the overall reliability of the tour schedules and path attributes provided to the tour mode choice model. The tour mode choice model must also generate trips that can be assigned to the transit network in production-attraction and origin-destination formats. It also implies that the time scheduling and intermediate stop processing that is performed after tour mode choice has relatively little impact on the final transit assignment results. This should be confirmed by comparing a tour-based transit assignment to an assignment after trip mode choice.

Responsibilities: The AECOM Team will test the impact of freezing the household activity patterns before tour-mode choice and coordinate discussions with FTA about the appropriate place in the modeling process for the SUMMIT interface. DRCOG and RTD will provide guidance and assist with the adjustments to the modeling procedures and participate in FTA reviews.

Deliverables: A technical memorandum summarizing the interactions with FTA regarding the methods used to hold trip tables constant within the Alternatives Analysis modeling process.

Task 5: Re-estimate Mode Choice Models

Objective: Re-estimate or re-calibrate mode choice models to incorporate changes implemented in other tasks or address concerns expressed by the FTA modeling staff.

The current FOCUS model includes five tour mode choice models and five trip mode choice models. The mode selected for the tour limits or constrains the options available for each trip within the tour. This makes intuitive sense, but it complicates user benefit calculations required by the FTA New Starts process. If user benefits are calculated using trip mode choice logsums, limiting mode options for the trip can have an illogical negative impact on user benefits. If the user benefits are calculated using tour mode choice logsums, intermediate stops and trip-related time-of-day details are not included.

This task will be driven by the adequacy of the existing model to reproduce observed traveler behavior given the modeling changes resulting from Tasks 1-4 coupled with any concerns that FTA might raise regarding the existing model structure or model validation. New data collected as part of the 2010 Front Range Travel Counts household survey and the 2008 RTD Transit On-Board Survey, as well as recent adjustments made to transit network coding and processing in the COMPASS model could lead to the desire or need to re-estimate the mode choice models.

Members of the AECOM Team worked with DRCOG to estimate the current FOCUS mode choice models and understand the data preparation and software tools needed for model estimation. We will identify the required data, prepare the data for use by the estimation software, and re-estimate up to four mode choice models. In addition, the Team's knowledge of the interactions among the model components will be crucial in identifying the places where new mode choice logsums will necessitate calibration adjustments. We will assist DRCOG with the re-calibration efforts as directed.

Recent discussions with DRCOG, RTD, and FTA have suggested a number of places where changes to the tour and trip mode choice models are desirable. Some of these changes may warrant re-estimation while other could be implemented through a re-calibration and validation efforts. Assuming the SUMMIT interface is after tour mode choice, it will be increasingly important to provide the tour mode choice mode with the best inputs possible. The model should also avoid any possibility of biasing the outcomes by using variables that might detract from transit improvements. There are also some inconsistencies in the coefficients and variable values that should be addressed.

Responsibilities: The AECOM Team will work with DRCOG and RTD to determine if the tour and trip mode choice models need to be re-estimated or re-calibrated. The AECOM Team will lead the estimation or calibration effort for as many as four mode choice models and coordinate discussions with FTA about the model structure, variables and coefficients. DRCOG and RTD will provide guidance, assist with the model calibration, and participate in FTA reviews.

Deliverables: Model estimation data sets will be prepared and up to four mode choice models will be estimated. Draft and final technical memoranda as described in the RFP will be prepared. Comments will be addressed in the final task memoranda.

Task 6: Final Evaluation of FOCUS Adjustments and Model Selection for the Corridor Evaluation

Objective: Review FOCUS model adjustments with FTA and make the final model selection for the corridor evaluation.

The AECOM Team will update the model documentation and prepare a calibration and validation report for the work performed in Tasks 1 through 5. This material will be used to review the FOCUS model with FTA to confirm its usefulness in supporting the evaluation of corridor alternatives. This work, when combined with the

RTD/DRCOG FOCUS model enhancement project conducted in the fall of 2011, is designed to address the key issues that typically raise forecasting-related concerns at FTA. In particular, these tasks are intended to develop forecasting procedures that generate reliable estimates of transit and highway travel times, replicate existing trip-making patterns, estimate transit market share in a manner that is consistent with FTA guidance, and generate the necessary FTA evaluation measures.

Likely FTA will concur that the region is making progress towards the goal of developing an advanced practice model that will support a broad spectrum of transportation analysis activities in the Denver region. As part of this task, we will present results to obtain FTA guidance on whether the model is ready for application in the East Colfax Corridor. This task will involve two elements:

1. Working with DRCOG and RTD, the AECOM Team will prepare a presentation that provides a detailed assessment of the model. Items to be covered include:
 - a. Overview of model structure, coefficients, and a narrative version of what story the model tells about travel patterns in the Denver region.
 - b. Validation of the model's ability to represent corridor travel supply and demand at the level of precision expected by FTA.
 - c. Results of a "dry run" New Starts test that demonstrates the model's ability to translate specified transit running time improvements into logical, explainable estimates of Transportation Systems User Benefits.
 - d. Brief review of the current Denver trip-based model (COMPASS) and its ability to represent the same travel markets.
 - e. Survey resources available to conduct a "data-driven" demand assessment.
2. The AECOM team will meet with staff from FTA, Denver, RTD and DRCOG and present the validation material discussed above and come to a consensus on whether FOCUS, COMPASS, or a data-driven approach is most appropriate for application to this corridor.

If the group concludes that a survey-based, data-driven approach is most appropriate, then the data analysis will be conducted in this task and a spreadsheet based model will be developed.

Responsibilities: The AECOM Team will arrange the meetings with FTA, prepare the read-ahead and presentation slides, present materials and facilitate the discussions. DRCOG and RTD will review the materials, assist with the presentations, and actively participate in the discussions.

Deliverables: Updated model documentation and calibration/validation report. Support materials and meetings with FTA to present the FOCUS model design, parameters, and calibration and validation results to gain acceptance of the model for corridor and New Starts analyses.

Task 7: Operate Model for Corridor Scenario Evaluation

Objective: Support the Alternatives Analysis and Environmental Assessment process by applying the selected modeling tool to proposed transportation improvements in the East Colfax corridor.

Every effort will be made in tasks 1 through 6 to prepare the new FOCUS model for use in FTA compliant Alternatives Analysis and New or Small Starts analysis. At the end of this process and in consultation with FTA and the agency partners a decision will be made to use the improved FOCUS model or fall back to the COMPASS model or FTA's survey-based, data-driven approach. The team has extensive experience with each of these tools and is confident they can be applied effectively to evaluate alternative transportation improvements within the East Colfax corridor.

The AECOM Team also has experience working in a collaborative relationship with agency partners such as CCD, DRCOG, and RTD as well as planning and environmental contractors to conduct Alternatives Analysis and support Environmental Assessments. We understand our role in the overall effort to be the analytical extension to the AA/EA consultant. AECOM will review the available survey data and no-action model results to establish the existing and future transit travel markets in the East Colfax corridor. This analysis will help the AA/EA consultant identify specific transportation problems and opportunities for addressing those problems. We will assist in defining FTA compliant baseline and build alternatives, develop operating plans, code the highway and transit network changes, apply the modeling process, evaluate and analyze the model results, and generate the specified performance measures. We will also prepare materials and participate in public meetings and decision-making discussions as appropriate.

To support the modeling effort, AECOM will purchase a computer system comparable to the system used by DRCOG for FOCUS model applications. This is a high end Windows server with 8 quad-core processors, 64 gigabytes of memory and 3 terabytes of disk space. The SQL Server and TransCAD software is included. Since this system has usefulness beyond the needs of the East Colfax study, AECOM will charge this contract a monthly use fee for the computer system designed to amortize the costs over a three year period.

Responsibilities: The AECOM Team will be responsible for acquiring the computer resources and software tools necessary to perform all model runs required by the AA/EA process. We will define, code, and run the model for the No Action and up to five build alternatives. We will also support the Purpose and Need analysis, equilibrate the operating plan, apply operations and maintenance cost data provided by RTD, and prepare presentation materials for public meetings. DRCOG and RTD will review model inputs and outputs and provide advice and technical support as needed.

Deliverables: Analysis of model results and performance measures for existing conditions, a baseline alternative, and up to five build alternatives will be prepared. A Detailed Definition of Alternatives Report, a Final Definition of Alternatives Report, presentation materials for public meetings, and corridor transit operations plans will be generated. Attendance and participation at up to six public meetings is anticipated. We will participate in monthly coordination meetings with the AA/EA project team.

Schedule

The schedule for the East Colfax Transit Alternatives Analysis and Environmental Assessment (AA/EA) contract indicates that a notice to proceed is anticipated in early January 2012 with release of final documents to the public in spring 2013. The notice to proceed for the East Colfax Model Assessment is expected on February 1, 2012. Based on these dates, we estimate that the alternatives for the East Colfax corridor will be identified and ready for modeling between August and September of 2012. This leaves approximately six months to implement model improvements and discuss the proposed model with FTA. Given our initial discussions with FTA, a six month development effort is ambitious and must be closely managed. The schedule shown below is based on these assumptions.

Tasks	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Task 1: Network Travel Times	■						■						
Task 2: Review/Adjust Trip Tables	■						■						
Task 3: Path-Building Parameters	■						■						
Task 4: Hold Trip Tables Constant		■					■						
Task 5: Re-Estimate Mode Choice		■					■						
Task 6: FTA Discussions													
Testing and Documentation		■		■				■					
FTA Meeting			■			■							
Task 7: Support AA/EA													
Purpose and Need		■											
Define Alternatives					■								
Model Application and Analysis							■						
Operations Analysis							■				■		
Public Involvement			■				■					■	
Monthly Meetings	■	■	■	■	■	■	■	■	■	■	■	■	■

FTA has suggested giving additional attention to the path building and assignment methods. Assuming the SUMMIT process is implemented after tour mode choice, Task 4 will be slightly less complicated. It does appear, however, that re-estimating or at least re-calibrating the mode choice models will be important. This schedule also explicitly identifies testing and documentation efforts that support the FTA reviews, but also serve the on-going needs of DRCOG and RTD. These include documenting the model methods and coefficients, updated calibration and validation reports, and “dry-run” testing of the SUMMIT New Starts application. We have included a relatively early meeting with FTA to discuss our response to the December 8, 2011 meeting and preliminary findings. A follow-up meeting is planned after the development, validation, and testing work is completed. Additional model refinements based on the FTA review may be warranted prior to the East Colfax application. Monthly meetings with the East Colfax AA/EA team were added.

EXHIBIT B
RATES AND KEY PERSONNEL

AECOM	Title	Rate	Hours	Cost
RA Plummer	Officer in Charge	\$ 234.38	20	\$ 4,688
David Roden	Project Manager	\$ 265.50	454	\$ 120,536
David Schmitt	Project Advisor	\$ 195.35	34	\$ 6,642
Alan Eckman	Manager/Engineer	\$ 157.33	32	\$ 5,034
Manish Jain	Manager	\$ 125.88	250	\$ 31,470
Sashank Singuluri	Manager	\$ 122.01	772	\$ 94,195
Krishna Patnam	Senior Consultant	\$ 104.94	344	\$ 36,098
Amir Shahpar	Lead Consultant	\$ 87.73	1092	\$ 95,802
AECOM Total			2998	\$ 394,464

Cambridge Systematics

Tom Rossi	Principal	\$ 251.78	82	\$ 20,646
David Kurth	Principal	\$ 228.19	152	\$ 34,684
Scott Meeks	Senior Associate/Software	\$ 204.56	60	\$ 12,274
Smith Myung	Senior Associate	\$ 173.94	188	\$ 32,701
Ramesh Thammiraju	Associate	\$ 133.68	120	\$ 16,041
Jerry Vaio	Associate/Programmer	\$ 119.69	392	\$ 46,919
CS Total			994	\$ 163,266

Resource Systems Group

William Woodford	Principal (Sr. FTA Modeling Advisor)	\$ 266.29	158	\$ 42,073
John Gliebe	Sr. Assoc. (Model Developer)	\$ 141.18	108	\$ 15,247
RSG Total			266	\$ 57,320

Total Labor Cost 4258 \$ 615,050

Direct Costs

		Units	
Local Travel	\$ 0.55	700	\$ 385
Air Travel	\$ 650	10	\$ 6,500
Hotel	\$ 200	22	\$ 4,400
Per Diem	\$ 75	24	\$ 1,800
Rental Car	\$ 60	8	\$ 480
Printing	\$ 0.25	1500	\$ 375
Communications	\$ 25	11	\$ 275
Miscellaneous	\$ 100	1	\$ 100
Computing Services	\$ 830	11	\$ 9,130
Total			\$ 23,445

Fee
Total

10%

\$ 61,505

\$ 700,000

Project Management	Task 1 Travel Times	Task 2 Trip Tables	Task 3 Path Building	Task 4 New Starts	Task 5 Mode Choice	Task 6 FTA Meetings
20	0	0	0	0	0	0
48	14	52	56	28	60	72
0	2	6	4	4	1	14
0	0	0	0	0	0	0
0	28	52	30	28	20	48
40	40	136	152	60	124	104
0	0	80	52	0	20	72
0	32	176	220	40	116	124
108	116	502	514	160	341	434
\$ 22,312	\$ 15,320	\$ 61,953	\$ 62,729	\$ 22,570	\$ 46,048	\$ 59,016
	0	8	6	18	34	16
16	16	8	32	12	12	28
	0	20	8	10	18	4
	40	20	24	0	16	16
	60	0	20	0	20	20
	0	200	44	48	80	20
16	116	256	134	88	180	104
\$ 3,651	\$ 18,629	\$ 35,348	\$ 22,564	\$ 15,061	\$ 30,013	\$ 19,086
8	2	14	26	26	36	46
	0	0	12	24	56	16
8	2	14	38	50	92	62
\$ 2,130	\$ 533	\$ 3,728	\$ 8,618	\$ 10,312	\$ 17,492	\$ 14,508
132	234	772	686	298	613	600
3%	5%	18%	16%	7%	14%	14%
\$ 28,093	\$ 34,482	\$ 101,029	\$ 93,910	\$ 47,943	\$ 93,553	\$ 92,611
5%	6%	16%	15%	8%	15%	15%

Task 7

Support AA/EA Total

0	20		
124	454		
3	34		
32	32		
44	250		
116	772		
120	344		
384	1092		
<hr/>			
823	2998	70%	
\$ 104,515	\$ 394,464	64%	

0	82		
28	152		
0	60		
72	188		
0	120		
0	392		
<hr/>			
100	994	23%	
\$ 18,913	\$ 163,266	27%	

0	158		
0	108		
<hr/>			
0	266	6%	
\$ -	\$ 57,320	9%	

923	4258	100%	
22%	100%		
\$ 123,429	\$ 615,050	100%	
20%	100%		



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February 8, 2012

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Key Personnel for East Colfax Model Assessment – PWC2011-3003

AECOM	Project Role
RA Plummer	Officer in Charge
David Roden	Project Manager
David Schmitt	FTA Modeling Advisor
Alan Eckman	EA/AA Coordination/Support
Manish Jain	Senior Modeler
Sashank Singuluri	Senior Modeler
Krishna Patnam	Lead Modeler
Amir Shahpar	Modeler
Cambridge Systematics	
Tom Rossi	Senior Activity Model Advisor
David Kurth	Task Manager
Scott Meeks	Senior Software Developer
Smith Myung	EA/AA Coordination/Support
Ramesh Thammiraju	Modeler/Analyst
Jerry Vaio	Programmer
Resource Systems Group	
William Woodford	Senior FTA Modeling Advisor
John Gliebe	Model Developer



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February 8, 2012

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City and County of Denver
201 West Colfax, Suite 614
Denver, Colorado 80202

Loaded Labor Rates for East Colfax Model Assessment – PWC2011-3003

	Rate Range
	Salary + Overhead
AECOM	
Officer in Charge / Vice President	\$230 to \$300
Project Manager / Senior Consulting Manager	\$260 to \$275
Senior Consulting Manager	\$190 to \$240
Senior Engineer / Manager	\$155 to \$165
Manager	\$120 to \$135
Senior Consultant / Consultant III	\$105 to \$120
Lead Consultant / Consultant II	\$85 to \$100
Analyst / Consultant / Consultant I	\$80 to \$90
Cambridge Systematics	
Principal	\$225 to \$265
Senior Associate	\$170 to \$210
Associate/Programmer	\$115 to \$145
Resource Systems Group	
Principal	\$265 to \$275
Senior Associate	\$140 to \$180
Associate	\$80 to \$130

EXHIBIT C



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
03/29/2012

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Marsh Risk & Insurance Services CA License #0437153 777 South Figueroa Street Los Angeles, CA 90017 Attn: Lori Bryson (213)-346-5464 06510 -AECOM-CAS-12/13 DENVE CO Adwoa 1time	CONTACT NAME: PHONE (A/C, No. Ext):		FAX (A/C, No):
	E-MAIL ADDRESS:		
INSURED AECOM TECHNICAL SERVICES, INC. 717 17TH STREET, SUITE 2600 DENVER, CO 80202	INSURER(S) AFFORDING COVERAGE		NAIC #
	INSURER A: Zurich American Insurance Company		16535
	INSURER B:		
	INSURER C: Illinois Union Insurance Co		27960
	INSURER D: N/A		N/A
INSURER E:			
INSURER F:			

COVERAGES **CERTIFICATE NUMBER:** LOS-001484571-07 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC			GLO 5965891 04	04/01/2012	04/01/2013	EACH OCCURRENCE	\$ 1,000,000
							DAMAGE TO RENTED PREMISES (Ea occurrence)	\$ 1,000,000
							MED EXP (Any one person)	\$ 5,000
							PERSONAL & ADV INJURY	\$ 2,000,000
							GENERAL AGGREGATE	\$ 2,000,000
							PRODUCTS - COMP/OP AGG	\$ 4,000,000
								\$
A	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS			BAP 5965893 04	04/01/2012	04/01/2013	COMBINED SINGLE LIMIT (Ea accident)	\$ 2,000,000
							BODILY INJURY (Per person)	\$
							BODILY INJURY (Per accident)	\$
							PROPERTY DAMAGE (Per accident)	\$
								\$
	UMBRELLA LIAB <input type="checkbox"/> OCCUR EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED RETENTION \$						EACH OCCURRENCE	\$
							AGGREGATE	\$
								\$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) <input type="checkbox"/> Y/N If yes, describe under DESCRIPTION OF OPERATIONS below						WC STATUTORY LIMITS	OTHER
							E.L. EACH ACCIDENT	\$
							E.L. DISEASE - EA EMPLOYEE	\$
							E.L. DISEASE - POLICY LIMIT	\$
C	ARCHITECTS & ENG. PROFESSIONAL LIAB.			EON G21654693 ""CLAIMS MADE""	10/08/2011	04/01/2013	Per Claim/Agg	\$1,000,000
							Defense Included	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

THE CITY AND COUNTY OF DENVER, ITS ELECTED AND APPOINTED OFFICIALS, EMPLOYEES AND VOLUNTEERS ARE NAMED AS ADDITIONAL INSURED WITH REGARDS TO THE COMMERCIAL GENERAL LIABILITY POLICY AND THE BUSINESS AUTO LIABILITY POLICY.

CERTIFICATE HOLDER

CANCELLATION

CITY AND COUNTY OF DENVER DEPARTMENT OF PUBLIC WORKS 201 WEST COLFAX DEPT. 614 DENVER, CO 80202	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE of Marsh Risk & Insurance Services David Denihan
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CERTIFICATE OF LIABILITY INSURANCE

4/1/2012

DATE (MM/DD/YYYY)
2/15/2012

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Lockton Insurance Brokers, LLC 19800 MacArthur Blvd., Suite 1250 CA License #0F15767 Irvine 92612 949-252-4400	CONTACT NAME: PHONE (A/C, No, Ext): _____ FAX (A/C, No): _____ E-MAIL ADDRESS: _____	
	INSURER(S) AFFORDING COVERAGE NAIC #	
INSURED 1075642 AECOM Technology Corporation AECOM Technical Services, Inc 717 17th St., Suite 2600 Denver CO 80202-0202	INSURER A: Travelers Property Casualty Co of America 25674	
	INSURER B:	
	INSURER C:	
	INSURER D:	
	INSURER E:	
	INSURER F:	

COVERAGES ABCTE01 **OE** **CERTIFICATE NUMBER:** 11604665 **REVISION NUMBER:** XXXXXXXX

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
	GENERAL LIABILITY <input type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC			NOT APPLICABLE			EACH OCCURRENCE \$ XXXXXXXX DAMAGE TO RENTED PREMISES (Ea occurrence) \$ XXXXXXXX MED EXP (Any one person) \$ XXXXXXXX PERSONAL & ADV INJURY \$ XXXXXXXX GENERAL AGGREGATE \$ XXXXXXXX PRODUCTS - COM/PO/AGG \$ XXXXXXXX \$
	AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> NON-OWNED AUTOS			NOT APPLICABLE			COMBINED SINGLE LIMIT (Ea accident) \$ XXXXXXXX BODILY INJURY (Per person) \$ XXXXXXXX BODILY INJURY (Per accident) \$ XXXXXXXX PROPERTY DAMAGE (Per accident) \$ XXXXXXXX \$ XXXXXXXX
	UMBRELLA LIAB <input type="checkbox"/> OCCUR EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED RETENTION \$			NOT APPLICABLE			EACH OCCURRENCE \$ XXXXXXXX AGGREGATE \$ XXXXXXXX \$ XXXXXXXX
A A A A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N N	N/A	TRJUB-4245B231-11 (AZ, MA, OR, WI) TC2JUB-4245B22A-11 (All Other States)	4/1/2011 4/1/2011	4/1/2012 4/1/2012	<input checked="" type="checkbox"/> WC STATUTORY LIMITS <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)
THIS CERTIFICATE SUPERSEDES ALL PREVIOUSLY ISSUED CERTIFICATES FOR THIS HOLDER, APPLICABLE TO THE CARRIERS LISTED AND THE POLICY TERM(S) REFERENCED.

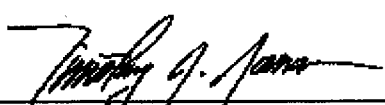
CERTIFICATE HOLDER

CANCELLATION See Attachments

11604665
 City and County of Denver
 Department of Public Works
 201 W. Colfax Ave., Dept. 614
 Denver CO 80202

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE



TRAVELERS

WORKERS COMPENSATION AND EMPLOYERS LIABILITY POLICY ENDORSEMENT WC 99 06 11 (A)

POLICY NUMBER: TRJUB-4245B231-11
TC2JUB-4245B22A-11

NOTICE OF CANCELLATION

Except for non-payment of premium by you, we agree that no cancellation or limitation of this policy shall become effective until the number of days written notice specified in item 2 of the Schedule has been mailed to you and to the person or organization designated in item 1 of the Schedule at the address indicated.

SCHEDULE

1. **Name:** Any person or organization to whom you have agreed in a written contract that notice of cancellation or material limitations of this policy will be given but only if:

1. You send us a written request to provide such notice, including the name and address of such person or organization, after the first Named Insured receives notice from us of the cancellation or material limitation of this policy; and

2. We receive such written request at least 14 days before the beginning of the applicable number of days shown in this Schedule.

Address: The address for that person or organization included in such written request from you to us

2. **Number of Days Written Notice:** 30 Additional Days

City and County of Denver Department of Public Works
201 W. Colfax Ave., Dept. 614
Denver, CO 80202

This endorsement changes the policy to which it is attached and is effective on the date issued unless otherwise stated.

(The information below is required only when this endorsement is issued subsequent to preparation of the policy.)

Endorsement Effective: 4/1/2011 Policy No. TRJUB-4245B231-11 Endorsement No.
TC2JUB-4245B22A-11

Insured AECOM Technology Corporation AECOM Technical Premium \$
Services, Inc
Insurance Company Travelers Property Casualty Co of America

TRAVELERS

WORKERS COMPENSATION AND
EMPLOYERS LIABILITY POLICY

ENDORSEMENT WC 00 03 13 (00)

POLICY NUMBER: TC2JUB-4245B22A-11

WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. (This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.)

This agreement shall not operate directly or indirectly to benefit anyone not named in the Schedule.

SCHEDULE

DESIGNATED PERSON:

DESIGNATED ORGANIZATION:

ANY PERSON OR ORGANIZATION FOR WHOM THE NAMED INSURED HAS
AGREED BY WRITTEN CONTRACT EXECUTED PRIOR TO LOSS TO FURNISH
THIS WAIVER