

ASSIGNMENT, ASSUMPTION AND AMENDMENT AGREEMENT
CONTRACT NO. 17-1001636
BY AND BETWEEN
THE SAN BERNARDINO COUNTY TRANSPORTATION AUTHORITY
AND
OMNITRANS
AND
PARSONS TRANSPORTATION GROUP, INC.
FOR THE WEST VALLEY CONNECTOR PROJECT

This Assignment, Assumption and Amendment Agreement Contract No. 17-1001636 (AGREEMENT) is by and between the San Bernardino County Transportation Authority (hereinafter called SBCTA), Omnitrans (OMNITRANS), and Parsons Transportation Group, Inc. (PARSONS). SBCTA, OMNITRANS and PARSONS are each a Party, and collectively Parties to this AGREEMENT.

RECITALS:

- A. OMNITRANS and PARSONS have entered into an Agreement for Architectural, Engineering and Final Design Services for the West Valley Connector Corridor (PROJECT), effective as of November 17, 2015 (Omnitrans Ref No. MKP15-37);
- B. OMNITRANS and PARSONS have entered into five (5) amendments to the above referenced agreement to increase the scope of services as necessary for the PROJECT, and to increase the total compensation to be provided to PARSONS under said agreement (the original agreement, as previously amended, is referred to herein as the “SERVICES AGREEMENT”);
- C. The term “Services” as used in this AGREEMENT shall have the meaning as set forth in the SERVICES AGREEMENT.
- D. OMNITRANS and SBCTA are entering into a separate Cooperative Agreement designating SBCTA as the lead agency for Environmental Clearance, Design, Right-of-Way Acquisition and Construction of the West Valley Connector. under which SBCTA will provide PROJECT management for the environmental, design and right of way phases for this PROJECT;
- E. It is the intent of the Parties that OMNITRANS shall retain responsibility for the Services related to the Active Transportation Program (ATP), outlined in the revised scope of work shown in Exhibit B. The Services related to the ATP shall be referred to herein as the “ATP-related Services”. The breakdown of Services (ATP-related Services and non ATP-related Services) is shown in Exhibit A, attached hereto and incorporated herein by reference.

- F. In order to receive full benefit of the Services already performed by PARSONS, and to have PARSONS continue performing Services under the SERVICES AGREEMENT, it is the intent of the Parties that OMNITRANS assign and SBCTA assume OMNITRANS' rights, duties and liabilities under the SERVICES AGREEMENT, and that PARSONS consent to the assignment and assumption of the SERVICES AGREEMENT, except as to the ATP-related Services for which Omnitrans shall retain responsibility, all in accordance with this AGREEMENT.

NOW THEREFORE, THE PARTIES HEREBY AGREE:

1. The Recitals set forth above are true and correct and are incorporated into and made a part of this AGREEMENT as if fully set forth herein.
2. The SERVICES AGREEMENT is on file at the offices of the Parties and is incorporated herein by reference.
3. As of the Effective Date, as defined in Section 10 below, OMNITRANS hereby assigns to SBCTA all of its rights, duties and obligations under the SERVICES AGREEMENT as relates to all Services thereunder, except for the ATP-related Services.
4. As of the Effective Date, SBCTA hereby accepts the assignment of the SERVICES AGREEMENT, and assumes all of OMNITRANS' rights, duties and obligations under the SERVICES AGREEMENT as relates all Services for the PROJECT, except the ATP-related Services.
5. OMNITRANS shall retain all rights, duties and obligations under the SERVICES AGREEMENT for the ATP-related Services, and OMNITRANS and PARSONS agree that the terms of the SERVICES AGREEMENT shall remain unchanged as relates to the ATP-related Services, except as expressly set forth herein. OMNITRANS' maximum payment obligation to PARSONS under the SERVICES AGREEMENT shall be the amount set forth in the attached Exhibit A under the column titled "ATP-related Tasks (being retained by OMNITRANS)".
6. PARSONS agrees to and accepts the assignment and assumption of the SERVICES AGREEMENT as set forth in this AGREEMENT, and the Parties agree that, as of the Effective Date, Omnitrans shall be released of and from any duties or obligations under the SERVICES AGREEMENT, except as relates to the ATP-related services.
7. Except as relates to the ATP-related Services, the SERVICES AGREEMENT is amended, as of the Effective Date, as follows:

- a. The parties to the SERVICES AGREEMENT shall be SBCTA and PARSONS. All references to “Omnitrans”, except as relates to the revised insurance and indemnification provisions herein, shall be interpreted to refer to “SBCTA”.
- b. All references to “Omnitrans' General Manager” are deleted and replaced with “SBCTA’s Executive Director.”
- c. In Section 4.A., the addresses to which CONSULTANT shall send invoices are deleted and replaced with: ap@gosbcta.com
- d. In Section 6, the Omnitrans address to which notices should be sent is deleted and replaced with: SBCTA, 1170 W. 3rd Street, Second Floor, San Bernardino, CA 92410. Attn: Carrie Schindler, CC. Procurement Manager.
- e. In Section 7.A., the provision identifying the Project Manager is deleted and replaced with: Project Manager: Andres Ramirez, Program Manager.
- f. The provisions of Section 14 Insurance is deleted in its entirety and replaced with the following:

“14.1 Prior to commencing the Work, at all times during the performance of the Work and for such additional periods as required herein, CONSULTANT shall, at CONSULTANT’s sole expense, procure and maintain insurance coverage with the following minimum requirements, and shall require all subcontractors of every tier performing any of the Work to procure and maintain such insurance specified below:

14.1.1 Professional Liability – The policies must include the following:

- \$3,000,000 per claim limits
- \$3,000,000 in the aggregate for all claims.
- If Coverage is on a claims made basis:
 - Policy shall contain a retroactive date for coverage of prior acts, this date will be prior to the date the CONSULTANT begins to perform Work under this Contract.
 - CONSULTANT shall either renew policy annually for three years following Contract completion or if cancelled secure and maintain “tail” coverage for a minimum of (3) years after Contract completion.
 - Policy shall be project-specific with limits dedicated to the project

14.1.2 Worker’s Compensation/Employer’s Liability Insurance – The policies must include the following:

- Coverage A. Statutory Benefits

- Coverage B. Employer’s Liability
- Bodily Injury by accident - \$1,000,000 per accident
- Bodily Injury by disease - \$1,000,000 policy limit/\$1,000,000 each employee
- There shall be no deductible or self-insured retention.

Such policies shall contain a waiver of subrogation in favor of the parties names as Additional Insureds below. Such insurance shall be in strict accordance with the applicable workers’ compensation laws in effect during performance of the Work by CONSULTANT or any subconsultant of any tier. All subconsultants of any tier performing any portion of the Work for CONSULTANT shall also obtain and maintain the same insurance coverage as specified in this subparagraph, with a waiver of subrogation in favor of CONSULTANT and all parties named as Additional Insureds below. SBCTA and CONSULTANT must be certificate holders and must be provided at least 30 days advance notice of cancellation, unless the cancellation is for non-payment, then at least 10 days advance notice of cancellation shall be provided. Where coverage is provided through the California State Compensation Insurance Fund, the requirement for a minimum A.M. Best rating does not apply.

14.1.3 Commercial General Liability Insurance – The policy must include the following:

- \$2,000,000 per occurrence limit/\$5,000,000 in the aggregate for property damage or bodily injury
- \$1,000,000 per occurrence limit/\$2,000,000 in the aggregate for personal injury and advertising injury
- \$2,000,000 per occurrence limit for products/completed operations coverage. CONSULTANT shall maintain products and completed operations coverage for 10 years following the acceptance of Work or until all applicable statutes of limitations expire, whichever length of time is longer. Coverage is to be on an “occurrence” form. “Claims made” and “modified occurrence” forms are not acceptable.
- An endorsement stating that any aggregate limits apply on a “per project” and on a “per location” basis.
- The project name must be indicated under “Description of Operations/Locations.”
- The policy shall be endorsed to provided: “This insurance will be primary and noncontributory with any other insurance of the additional insureds.”

All commercial general liability insurance policies shall also include premises-operations (including explosion, collapse and underground coverage) and products-completed operations coverage; severability of interests (full separation of insureds); contractual liability coverage (including coverage to the maximum extent possible for the indemnifications contained in this Contract); broad form property damage coverage (including completed operations); and a duty to defend in addition to (without reducing) the limits of the policy(ies). All subconsultants of any tier performing any portion of the Work for CONSULTANT shall also obtain and maintain the commercial general liability insurance coverage with limits not less than:

- Each occurrence limit: \$1,000,000
- General aggregate limit: \$2,000,000
- Personal injury and advertising limit \$1,000,000
- Products-completed operations aggregate limit \$2,000,000

14.1.4 Umbrella/Excess CGL Insurance – The policy must include the following:

- \$5,000,000 umbrella or excess liability for any project with a Contract value of \$25,000,000 or less.
- Combined total for Commercial General Liability and Excess Liability limits of \$25,000,000 will be required for projects with a Contract value in excess of \$25,000,000.
- The umbrella or excess policy shall follow form over the CONSULTANT's primary general liability coverage.
- The umbrella or excess policy shall not contain any restrictions or exclusions beyond what is contained in the primary policy.
- The umbrella or excess policy shall contain a clause stating that it takes effect (drops down) in the event the primary limits are impaired or exhausted.

14.1.5 Commercial Auto Insurance The policy must include the following:

- Auto Liability limits of not less than \$5,000,000 each accident
- Combined Bodily Injury and Property Damage Liability insurance
- Coverage must include owned autos, hired or non-owned autos
- Limits required may be made up by any combination of primary and excess policies

The commercial automobile liability insurance shall be written on the most recent edition of ISO form CA 00 01 or equivalent acceptable to SBCTA and shall include, without limitation, contractual liability coverage and additional insured

status for the Additional Insureds named below. CONSULTANT waives all rights of subrogation against the Additional Insureds named below, for recovery of loss, injury and/or damages to the extent such loss, injury and/or damages are covered by the commercial automobile liability insurance required herein. All subconsultants of any tier performing any portion of the Work for CONSULTANT shall also obtain and maintain the same insurance coverage as specified in this subparagraph, with the same waiver of subrogation in favor of all parties named as Additional Insureds below, and CONSULTANT.

14.1.6 Pollution Liability The policy must include the following:

- \$2,000,000 per claim or occurrence limits/\$4,000,000 in the aggregate
- There shall be no deductible
- If the services involve mold identification / remediation, the policy shall not contain a mold exclusion and the definition of “Pollution” shall include microbial matter including mold.
- If the services involve lead-based paint or asbestos identification/remediation, the policy shall not contain lead-based paint or asbestos exclusions.
- If required by contract the reasonable costs of such insurance will be a reimbursable expense.

14.1.7 Railroad Protective Liability The policy must include the following:

- Should the CONSULTANT need to perform activities in a railroad right-of-way, SBCTA’s Risk Manager and/or a railroad operator may require CONSULTANT to provide Railroad Protective Liability.
- In such a case, the policy shall be in amounts and coverages and from issuers, acceptable to SBCTA’s Risk Manager in his/her sole discretion.
- Depending on facts and circumstances, and the terms and conditions of the policy involved, SBCTA’s Risk Manager may choose to find that the CONSULTANT satisfactorily meets this requirement by obtaining one of the following: a) an acceptable Railroad Protective Liability specific policy; b) a waiver of any railroad liability exclusion from the CONSULTANT’s existing general liability policy; or c) acceptable general liability insurance without a railroad exclusion.

14.2 General Provisions

14.2.1 Qualifications of Insurance Carriers. All policies written by insurance carriers shall be authorized and admitted to do business in the state of California with a current A.M. Best rating of A-VIII or better. Professional Liability and Contractor's Pollution Liability policies may be from non-admitted carriers provided they are authorized and licensed in the state of California and meet the current A.M. Best rating of A: VIII or better.

14.2.2 Additional Insurance Coverage. All policies, except those for Workers' Compensation and Professional Liability insurance, shall name San Bernardino County Transportation Authority, Omnitrans, the City of Pomona, City of Montclair, City of Ontario, City of Rancho Cucamonga, City of Fontana, Union Pacific Railroad, Metrolink (SCRRA), and their officers, directors, members, employees, agents and volunteers, as additional insureds ("Additional Insureds"). With respect to general liability arising out of or connected with work or operations performed by or on behalf of the CONSULTANT under this Contract, coverage for such Additional Insureds shall not extend to liability to the extent prohibited by section 11580.04 of the Insurance Code. The additional insured endorsements shall not limit the scope of coverage for SBCTA to vicarious liability but shall allow coverage for SBCTA to the full extent provided by the policy.

14.2.3 Proof of Coverage. Evidence of insurance in a form acceptable to SBCTA's Risk Manager, including certificates of insurance and the required additional insured endorsements, shall be provided to SBCTA's Procurement Analyst prior to issuance of the NTP or prior to commencing any Work, as SBCTA specifies. Certificate(s) of insurance, as evidence of the required insurance shall: be executed by a duly authorized representative of each insurer; show compliance with the insurance requirements set forth in this Article; set forth deductible amounts applicable to each policy; list all exclusions which are added by endorsement to each policy; and also include the Contract Number and the SBCTA Project Manager's name on the face of the certificate. If requested in writing by SBCTA, CONSULTANT shall submit complete copies of all required insurance policies within ten (10) business days of a written request by SBCTA, except for CONSULTANT's Commercial Auto, Excess Auto and Workers Compensation (the "Corporate Policies") which shall be provided pursuant to subsection 14.2.3.1.

14.2.3.1 CONSULTANT shall provide SBCTA redacted copies of a Corporate Policies not later than ten (10) business days after SBCTA gives CONSULTANT written notice of the occurrence of any of the following: (i) the insurance carrier issuing the Corporate Policy failed to, unconditionally and without reservation of rights, accept SBCTA's tender of a claim or defend a claim, against SBCTA or an

additional insured, within 15 calendar days of SBCTA's notice to the Corporate Policy insurance carrier of such claim; (ii) CONSULTANT fails to provide SBCTA throughout the term of the Contract the required evidence of insurance under a Corporate Policy; (iii) CONSULTANT fails to cure a material breach under Article 14 relating to a Corporate Policy; or (iv) a subpoena or court order requires production of such copy.

14.2.4 Deductibles. Regardless of the allowance of exclusions or deductibles by SBCTA, CONSULTANT shall be responsible for any deductible amount and shall warrant that the coverage provided to SBCTA is consistent with the requirements of this Article. CONSULTANT will pay, and shall require its subconsultants to pay, all deductibles, , co-pay obligations, premiums and any other sums due under the insurance required in this Article. All deductibles will be in amounts acceptable to SBCTA's Risk Manager. CONSULTANT will advise SBCTA in writing as to the amounts of any deductible, or as to any increase in any insurance deductible under any insurance required above. There will be no deductibles in excess of \$250,000 per occurrence, loss or claim under the insurance required of CONSULTANT or any subconsultants. There will be no self-insured retentions. SBCTA will have the right, but not the obligation, to pay any deductible due under any insurance policy. If SBCTA pays any sums due under any insurance required above, SBCTA may withhold said sums from any amounts due CONSULTANT. The policies shall not provide that any deductible, or other payment required under the policy can be paid only by the named insured, and not by an additional insured.

14.2.5 CONSULTANT's and Subconsultants' Insurance will be Primary. All policies required to be maintained by the CONSULTANT or any subconsultant with the exception of Professional Liability and Worker's Compensation shall be endorsed to be primary coverage, and any coverage carried by any of the Additional Insureds named herein shall be excess and non-contributory. Further, none of CONSULTANT's or subconsultants' pollution, automobile, general liability or other liability policies (primary or excess) will contain any cross-liability exclusion barring coverage for claims by an additional insured against a named insured.

14.2.6 Waiver of Subrogation Rights. To the fullest extent permitted by law, CONSULTANT hereby waives all rights of recovery under subrogation against the Additional Insureds named herein, and any other consultant, subconsultant or sub-subconsultant performing work or rendering services on behalf of SBCTA, in connection with the planning, development and construction of the Project. To the fullest extent permitted by law, CONSULTANT shall require similar written express waivers and insurance clauses from each of its subconsultants of every

tier. CONSULTANT shall require all of the policies and coverages required in this Article to waive all rights of subrogation against the Additional Insureds. Such insurance and coverages provided shall not prohibit CONSULTANT from waiving the right of subrogation prior to a loss or claim.

14.2.7 Cancellation. If any insurance company elects to cancel or non-renew coverage for any reason, CONSULTANT will provide SBCTA thirty (30) days prior written notice of such cancellation or nonrenewal. If the policy is cancelled for nonpayment of premium, CONSULTANT will provide SBCTA ten (10) days prior written notice. In any event, CONSULTANT will provide SBCTA with a copy of any notice of termination or notice of any other change to any insurance coverage required herein which CONSULTANT receives within one business day after CONSULTANT receives it by submitting it to SBCTA at procurement@gosbctacom to the attention of SBCTA's Procurement Analyst, and by depositing a copy of the notice in the U.S. Mail in accordance with the notice provisions of this Contract.

14.2.8 Enforcement. SBCTA may take any steps as are necessary to assure CONSULTANT's compliance with its insurance obligations as identified within this Article. Failure to continuously maintain insurance coverage as provided herein is a material breach of contract. In the event the CONSULTANT fails to obtain or maintain any insurance coverage required, SBCTA may, but is not required to, maintain this coverage and charge the expense to the CONSULTANT or withhold such expense from amounts owed CONSULTANT, or terminate this Contract. The insurance required or provided shall in no way limit or relieve CONSULTANT of its duties and responsibility under the Contract, including but not limited to obligation to indemnify, defend and hold harmless the Indemnitees named below. Insurance coverage in the minimum amounts set forth herein shall not be construed to relieve CONSULTANT for liability in excess of such coverage, nor shall it preclude SBCTA from taking other actions as available to it under any other provision of the Contract or law. Nothing contained herein shall relieve CONSULTANT, or any subconsultant of any tier of their obligations to exercise due care in the performance of their duties in connection with the Work, and to complete the Work in strict compliance with the Contract.

14.2.9 No Waiver. Failure of SBCTA to enforce in a timely manner any of the provisions of this Article shall not act as a waiver to enforcement of any of these provisions at a later date.

14.2.10 Subconsultant Insurance. Insurance required of the CONSULTANT shall be also provided by subconsultants or by CONSULTANT on behalf of all subconsultants to cover their services performed under this Contract.

CONSULTANT may reduce the amounts and types of insurance limits provided by sub-consultants to be proportionate to the amount of the sub-consultant's contract and the level of liability exposure for the specific type of work performed by the sub-consultant. CONSULTANT shall be held responsible for all modifications, deviations, or omissions in these insurance requirements as they apply to subconsultant.

14.2.11 Higher limits. If CONSULTANT maintains higher limits than the minimums shown above, SBCTA shall be entitled to coverage for the higher limits maintained by CONSULTANT. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to SBCTA.

14.2.12 Special Risks or Circumstances. SBCTA reserves the right to modify any or all of the above insurance requirements, including limits, based on the nature of the risk, prior experience, insurer, coverage, or other special circumstances. The additional cost associated with any such change in requirements shall be a reimbursable expense. ”

g. The text of Section 15. Indemnity is deleted in its entirety and replaced with the following:

A. To the extent, but only to the extent, that CONSULTANT's Work falls within the scope of Civil Code Section 2782.8, the following indemnification is applicable: CONSULTANT shall indemnify and defend (with legal counsel reasonably approved by SBCTA) Omnitrans and SBCTA and their authorized officers, employees, agents and volunteers (“Indemnitees”), from any and all losses, damages, liability, actions, and/or costs for claims that arise out of, pertain to, or are related to the negligence, recklessness, or willful misconduct of the design professional.

B. For all other Work, CONSULTANT agrees to indemnify, defend (with legal counsel reasonably approved by SBCTA) and hold harmless Indemnitees, from any and all claims, actions, losses, damages and/or liability (Claims) arising out of or related to any act or omission of CONSULTANT or any of its officers, employees, agents, subconsultants or volunteers and for any costs or expenses incurred by Omnitrans and SBCTA on account of any such Claims except where such indemnification is prohibited by law. This indemnification provision shall apply regardless of the existence or degree of fault of Indemnitees. CONSULTANT's indemnification obligation applies to the “passive” negligence of any of the Indemnitees, but does not apply to the “sole” or “active” negligence or “willful misconduct” of any of the Indemnitees within the meaning of Civil Code section 2782.

8. SBCTA's maximum payment obligation to PARSONS under the SERVICES AGREEMENT shall be the amount set forth in the attached Exhibit A under the column titled "West Valley Connector Tasks (being assumed by SBCTA)", excluding any amounts for such tasks already paid to PARSONS by OMNITRANS prior to the Effective Date.
9. Notwithstanding the assignment and assumption of the SERVICES AGREEMENT as set forth herein, OMNITRANS is responsible for payments and funding for all Services performed under the SERVICES AGREEMENT prior to execution of this AGREEMENT. SBCTA is responsible for Services performed under the SERVICES AGREEMENT, except for ATP-related Services, after execution of this agreement. OMNITRANS shall remain responsible for the execution, obligations, payments and funding for all ATP-related Services.
10. This AGREEMENT shall be made effective upon full execution by Parties ("Effective Date").
11. This AGREEMENT shall be governed and construed in accordance with the laws of the State of California. Venue shall be in San Bernardino County.
12. This AGREEMENT may be executed in one or more counterparts, each of which shall constitute an original, and all of which together shall constitute one and the same agreement.
13. This AGREEMENT constitutes the entire agreement between the parties with respect to the matters discussed in this AGREEMENT, and supersedes all prior agreements and understandings between the Parties with respect thereto.
14. Except as set forth herein, all provisions of the SERVICES AGREEMENT shall remain in full force and effect.
15. This AGREEMENT is not intended to amend, supersede or modify in any way the funding and respective obligations of OMNITRANS and SBCTA as shall be set forth in the Cooperative Agreement No. 17-1001638 to be entered into between OMNITRANS and SBCTA.

-----SIGNATURES ON THE FOLLOWING PAGE-----

**SIGNATURE PAGE TO
ASSIGNMENT, ASSUMPTION AND AMENDMENT
AGREEMENT NO. 17-1001636
BETWEEN
SAN BERNARDINO COUNTY TRANSPORTATION AUTHORITY
AND
OMNITRANS
AND
PARSONS TRANSPORTATION GROUP, INC.**

**SAN BERNARDINO COUNTY
TRANSPORTATION AUTHORITY**

OMNITRANS

By: _____
Robert Lovingood
President, Board of Directors

By: _____
P. Scott Graham
CEO/General Manager

Date: _____

Date: _____

APPROVED AS TO FORM:

APPROVED AS TO FORM:

By: _____
Eileen Monaghan Teichert
General Counsel

By: _____
Omnitrans Legal Counsel

By: _____
Jeffery Hill
Procurement Manager

[Signatures continued on following page]

**SIGNATURE PAGE TO
ASSIGNMENT, ASSUMPTION AND AMENDMENT
AGREEMENT NO. 17-1001636
BETWEEN
SAN BERNARDINO COUNTY TRANSPORTATION AUTHORITY
AND
OMNITRANS
AND
PARSONS TRANSPORTATION GROUP, INC.**

[continued]

PARSONS TRANSPORTATION GROUP, INC.

By: _____

Name: _____

Title: _____

ATTEST:

By: _____

Its: _____

EXHIBIT A

REVISED TASK BREAKDOWN

Task in SERVICES AGREEMENT	Original Total Contract Amount, as amended	West Valley Connector Tasks (being assumed by SBCTA)	ATP-related Tasks (being retained by OMNITRANS)	Unspent Amount (as of 6/15/2017)	Unspent Amount Assumed by SBCTA (as of 6/15/2017)
Task 1.0 Project Management	\$372,302.00	\$372,302.00	\$0.00	\$1,300.00	\$1,300.00
Task 2.0 Public Relations	\$322,925.00	\$322,925.00	\$0.00	\$65,205.93	\$65,205.93
Task 3.0 Refinement of Routing & Station Locations	\$126,338.00	\$126,338.00	\$0.00	\$0.00	\$0.00
Task 4.0 Pedestrian & Bicycle Connections	\$303,887.00	\$0.00	\$303,887.00	\$5,568.25	\$0.00
Task 5.0 Phasing & Financing Plan	\$199,985.00	\$199,985.00	\$0.00	\$58,817.50	\$58,817.50
Task 6.0 Small Starts Process	\$208,263.00	\$208,263.00	\$0.00	\$108,805.00	\$108,805.00
Task 7.0 Environmental Clearance	\$810,275.00	\$810,275.00	\$0.00	\$98,249.50	\$98,249.50
Task 8.0 Preliminary Engineering	\$1,299,934.00	\$1,299,934.00	\$0.00	\$202,379.96	\$202,379.96
Task 9.0 Final Design of Phase 1	\$1,093,860.00	\$1,093,860.00	\$0.00	\$1,093,860.00	\$1,093,860.00
Task 10.0 Final Design of Phase 2	\$2,111,857.00	\$2,111,857.00	\$0.00	\$2,111,857.00	\$2,111,857.00
Task 11.0 Bid Period Services	\$46,031.00	\$46,031.00	\$0.00	\$46,031.00	\$46,031.00
Task 12.0 Design Services During Construction	\$968,123.00	\$848,123.00	\$120,000.00	\$968,123.00	\$848,123.00
Task 13.0 Transit Planning Support	\$136,220.00	\$136,220.00	\$0.00	\$36,016.25	\$36,016.25

Task 14.0 Optional Services					
A. Subsurface Utility Scanning/Potholing	\$288,000.00	\$288,000.00	\$0.00	\$288,000.00	\$288,000.00
B1. Surveyed Right of Way Base Mapping	\$133,319.00	\$133,319.00	\$0.00	\$133,319.00	\$133,319.00
B2. Legal Descriptions for Acquisitions & TCEs	\$260,023.00	\$260,023.00	\$0.00	\$260,023.00	\$260,023.00
C. Additional TSP Signals (30 Intersections)	\$299,650.00	\$299,650.00	\$0.00	\$299,650.00	\$299,650.00
D. Flood Channel Impact Requirements	\$57,273.00	\$57,273.00	\$0.00	\$4,773.00	\$4,773.00
E. Major Sewer/Water Utility relocation	\$240,215.21	\$240,215.21	\$0.00	\$240,215.00	\$240,215.00
F. Additional Presentation Boards and Renderings	\$28,835.00	\$28,835.00	\$0.00	\$0.00	\$0.00
G. Ped and Bike Counts	\$27,889.00	\$0.00	\$27,889.00	\$27,889.00	\$0.00
H. Active Transportation Grant Environmental Document	\$49,951.00	\$0.00	\$49,951.00	\$0.00	\$0.00
I. Survey/Engineering Support of R/W Acquisition	\$639,471.90	\$639,471.90	\$0.00	\$639,472.00	\$639,472.00
Amendment 2. Environmental for Haven Branch Alignment	\$199,900.00	\$199,900.00	\$0.00	\$6,254.35	\$6,254.35
Amendment 3. Additional Environmental Tasks for Sidewalk Improvements	\$54,900.00	\$0.00	\$54,900.00	\$14,850.00	\$0.00
Amendment 4. Property Owner Outreach	\$15,180.00	\$15,180.00	\$0.00	\$0.00	\$0.00
Amendment 5. Additional Routing Options Analysis	\$99,532.00	\$99,532.00	\$0.00	\$7,794.00	\$7,794.00
Total	\$10,394,139.11	\$9,837,512.11	\$556,627.00	\$6,718,452.74	\$6,550,145.49

EXHIBIT B

SCOPE OF WORK TO BE RETAINED IN OMNITRANS' SERVICES AGREEMENT WITH PARSONS

**SCOPE OF WORK
ATTACHMENT A
MKP15-37
ARCHITECTURAL, ENGINEERING AND FINAL DESIGN SERVICES
FOR THE WEST VALLEY CONNECTOR CORRIDOR**

Table of Contents

1.101 — PROJECT BACKGROUND 2

2.101 — PROJECT MANAGEMENT (TASK 1)..... 5

3.101 — PUBLIC RELATIONS (TASK 2)..... 25

4.101 — .. REFINEMENT OF ROUTING ALIGNMENT AND STATION
LOCATIONS (TASK 3)..... 29

5.101 — PEDESTRIAN AND BICYCLE CONNECTIONS TO-
STATIONS(ACTIVE TRANSPORTATION GRANT)
(TASK 4) 32

6.101 — PHASING PLAN AND FINANCING PLAN (TASK 5)..... 33

7.101 — SMALL STARTS PROCESS (TASK 6)..... 35

8.101 — ENVIRONMENTAL CLEARANCE (TASK 7)..... 37

9.101 — PRELIMINARY ENGINEERING (TASK 8) 53

10.101 — FINAL DESIGN OF PHASE I (TASK 9)..... 100

11.101 — FINAL DESIGN OF PHASE 2 (TASK 10) 114

12.101 — BID PERIOD SERVICES (TASK 11) 115

13.101 — DESIGN SERVICES DURING CONSTRUCTION
(TASK 12) 115

14.101 — TRANSIT PLANNING SUPPORT (TASK 13)..... 116

15.101 — MISECELLANEOUS-
SERVICES..... 119

LIST OF ACRONYMS i

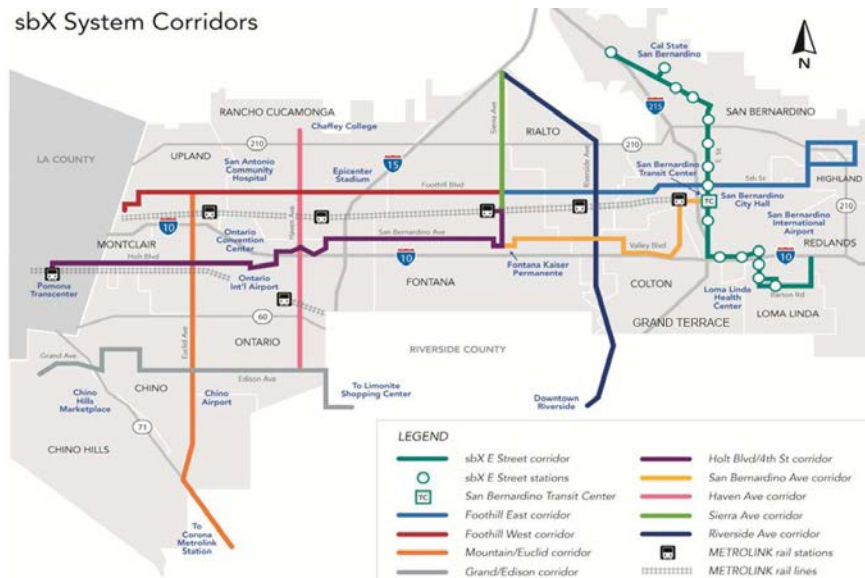
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1.101 PROJECT BACKGROUND

- A) ~~The West Valley Connector Corridor is a Bus Rapid Transit line located primarily on Holt Boulevard/Avenue and Foothill Boulevard in the cities of Fontana, Montclair, Ontario, Pomona, and Rancho Cucamonga. The purpose of the Project is to improve the speed and quality of public transit service along these major arterials.~~
- B) ~~The West Valley Connector Corridor is the second of ten corridors planned in Omnitrans' sbX (San Bernardino Valley Express) bus rapid transit system. The first corridor, the "E Street" sbX Green Line, began operating in the cities of San Bernardino and Loma Linda in April 2014.~~
- C) ~~The corridor system map is shown below. (The system wide corridors plan will be redrawn under Task 13, and the line color designations are subject to change).~~

sbX System Corridors



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~~D) The West Valley Connector Corridor alignment (shown below) combines portions of the "Foothill West" corridor and the "Holt / 4th St" corridor identified in Omnitrans' System-wide Transit Corridors Plan for the San Bernardino Valley, produced in 2004 and updated in 2010. This corridor is currently covered by portions of Omnitrans' existing Routes 61 and 66, two of the highest ridership routes in Omnitrans' system. More detail is provided in the attached West Valley Connector Corridor Alternatives Analysis Report.~~



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~~E) The Alternatives Analysis Summary Report (attached) completed by Parsons Transportation Group in September 2014 outlined the feasible alternatives studied for the corridor. The recommended alternative includes the 25-mile long alignment and station locations shown in the exhibit above, as well as the project components discussed below.~~

- ~~i) Pedestrian improvements for access to stations, including concrete boarding area (60' x 12' typical) at each of the 48 stations (+/- 3 stations); bicycle parking racks at each station; and sidewalk repairs, sidewalk replacement/reconstruction, curb ramp replacement, and crosswalk improvements where needed within 1/2 mile radius of each station including cross streets and side streets;~~
- ~~ii) 48 stations at 27 locations/major intersections (note that during the design process the number of stations may change by +/- 3), consisting of the following station components, as described in the Alternatives Analysis Report:~~

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ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

- ~~(a) SbX branded pylon with logo pole and signature light, one per station;~~
 - ~~(b) Shelter/canopy with wind screen, similar to Omnitrans sbX canopy design, one per station;~~
 - ~~(c) Six foot bench, one per station;~~
 - ~~(d) Stand alone map/schedule/advertising illuminated display case (two-sided), one per station;~~
 - ~~(e) Pedestrian wayfinding signage;~~
 - ~~(f) Trash receptacle, one per station;~~
 - ~~(g) Variable message sign (e sign) to display real time bus arrival information, one per station, and all related communication infrastructure;~~
 - ~~(h) Lighting (such as LED up lighting integrated with each shelter/canopy);~~
 - ~~(i) Public art at select stations;~~
 - ~~(j) Minimal landscaping at stations, drought tolerant and consistent with landscaping guidelines or requirements of each jurisdictional agency;~~
 - ~~(k) Reinforced concrete bus pads in outside lane pavement (typically 12' x 60');~~
 - ~~(l) Surveillance cameras and other security systems as needed as decided by Omnitrans, such as emergency telephones and passenger telephones, and public address system;~~
- ~~iii) Center running dedicated lanes along 3.5 miles of Holt Boulevard in the City of Ontario, including right of way acquisition, widening, and utilities, and construction of six 6 center median stations. If this component is constructed in a future phase, a concept will be needed for how these features will be retrofitted in after the remainder of the project is constructed and how the stations will be modified.~~
- ~~(a) Transit signal priority (TSP) system;~~
 - ~~(b) Any utility work necessary for all components of the Project;~~
 - ~~(c) Concepts for bicycle and pedestrian facilities that may be integrated into the Project or that could be built in the future that could connect or feed into the West Valley Connector line; and;~~

~~(d) Branding, including color line name designation, as well as adaptation of station graphic and fleet graphic branded design for 40' and 60' vehicles (based on Omnitrans sbX system branding concept).~~

~~iv) In the design of the above project components, Consultant should work with Omnitrans' staff to specify equipment that is compatible with Omnitrans' existing systems, and meets the needs of Omnitrans' departments, customers, and each of the five cities. Everything specified in the project design must be compliant with applicable laws and consistent with the below listed guidance and regulations~~

~~(a) Omnitrans Transit Design Guidelines (2013) —
—<http://www.omnitrans.org/about/reports/>~~

~~(b) Crime Prevention Through Environmental Design — Crime
Prevention Through Environmental Design (CPTED) for Transit
Facilities, APTA SS-SIS-RP-007-10, Approved June 24, 2010;
[APTA Transit Infrastructure, Security Work Group](#)~~

~~(c) Americans with Disabilities Act — current design standards per FTA
and State of California~~

~~(d) Current FTA Circular 4220.1F, including, Buy America 49 CFR Part
661, NEPA, and Section 5309 Capital Investment Grants (Small
Starts) guidance~~

~~(e) Current State of California guidance including Caltrans Highway
Design Manual, Manual on Uniform Traffic Control Devices, CEQA
guidance, and any relevant State legislation~~

~~F) The above listed project scope should be flexible within reason and within the discretion of Omnitrans' Project Manager. Many project stakeholders were involved in the Alternatives Analysis process for the project but will still need to be integrally involved in the project design process, and the design should fit their needs — in particular, the five cities and two counties in which the project is located and the various departments within Omnitrans.~~

~~G) Each listed chapter will be issued as a separate task order.~~

~~2.101 PROJECT MANAGEMENT (TASK 1)~~

~~A) PROJECT MANAGEMENT ROLE~~

~~i) The role of Project Management is to ensure the timely and effective delivery of the contract scope. This involves day to day management of an adopted~~

~~schedule and budget, using processes agreed to and understood by all parties. Key elements include directing and managing the team's activities, ensuring quality control, participating in meetings, providing proper project documentation and communication protocol, and preparing monthly progress reports and invoices.~~

~~B) PROJECT MANAGER AND PROJECT STAFF~~

- ~~i) Provide a Project Manager and such other Project dedicated technical and administrative personnel as are warranted, given the scope and status of the Project, and the general level of effort required to meet the performance commitments. The Consultant's Project Manager shall work directly with Omnitrans' Project Manager on a day to day basis. The Project Manager's responsibilities include managing deliverables, cost, and schedule, including the following:~~
- ~~ii) Prepare a Project Implementation Plan (PIP) for the Project (see following section);~~
 - ~~(a) Develop a milestone timeline for the Project;~~
 - ~~(b) Assist Omnitrans with establishing design criteria and assess and address project risks;~~
 - ~~(c) Perform technical studies, develop engineering criteria, and risk assessment;~~
 - ~~(d) Estimate capital cost and construction schedule and update capital cost estimates and construction schedule throughout the design process (at each major Project milestone as well as each time a major Project change occurs);~~
 - ~~(e) Monitor and control the cost and progress of design against the baseline budget and schedule to ensure that no work to be billed is accomplished without proper Omnitrans authorization;~~
 - ~~(f) Prepare final design drawings and specifications and coordinate design submissions and reviews;~~
 - ~~(g) Develop and apply internal Quality Assurance and Quality Control criteria for review of deliverables;~~
 - ~~(h) Assist Omnitrans with a Project Delivery Method;~~
 - ~~(i) Manage Project design, technical specifications and plans for contract~~

~~documents, procurement planning assistance services, bid period services and if authorized, and services after award of construction contract(s);~~

~~(j) Assist Omnitrans with outside agency liaison, as outlined in below sections;~~

~~(k) Maintain design control registers;~~

~~(l) Develop technical work scopes, budget and schedules for work orders and for subcontracts;~~

~~(m) Update Omnitrans Project Manager regularly on Project progress; and~~

~~(n) Verify that regular and detailed progress updates / work reviews are performed for the Project.~~

~~iii) Where design work has been subcontracted, direct and monitor the Sub-consultant's work activities with regard to conformance with established contract criteria and design directives and design/control quality program requirements; ensure adherence to established budget; monitor progress and costs and prepare monthly progress reports on these matters; and conduct progress and coordination meetings weekly, or as may be requested by Omnitrans.~~

~~C) PROJECT IMPLEMENTATION PLAN (PIP)~~

~~i) If authorized, submit the PIP to Omnitrans within 14 calendar days of Notice To Proceed for review and acceptance. The Project will comprise Preliminary Engineering and Final Design, bid services, and design support during construction. The Consultant shall prepare a detailed Project Implementation Plan (PIP), including the following elements:~~

~~(a) Organization & Staffing (by position);~~

~~(b) Project Management responsibilities by position relative to managing cost and project completion dates;~~

~~(c) Project Work Breakdown Structure (WBS);~~

~~(d) Description of the computer systems to be utilized;~~

~~(e) Proposed reports and other outputs to be produced;~~

~~(f) Frequency or cycle of reporting;~~

- ~~(g) Methods of data accumulation and all other pertinent information;~~
 - ~~(h) Scope of services;~~
 - ~~(i) Schedule;~~
 - ~~(j) Document Control Log;~~
 - ~~(k) Closeout of documentation; and~~
 - ~~(l) Plan for ensuring compliance with Buy America, ADA, CEQA, NEPA, and other applicable regulations.~~
- ii) ~~The PIP shall set forth a Scope of Work reflecting a fully detailed baseline design effort to be performed, including the number of drawings per major work package, the design hours associated with each drawing and major work package, the design budgets for Sub-consultants, and any other quantification of the Project baseline scope that will control design cost escalation. A schedule for review of all work products will be prepared and included in the Project Implementation Plan. This schedule will include dates for completion of each scope/task, internal review, and sign-off by Project Manager prior to submittal to Omnitrans.~~
- iii) ~~The PIP will be a working document that is used to manage and communicate contract requirements. It is also a dynamic document that needs to be maintained throughout the execution period of the contract and updated when there is a major change in scope or when lessons learned from experience dictate.~~
- iv) ~~Deliverable:~~
- ~~(a) Project Implementation Plan that includes consideration of the below-listed elements~~

~~D) PROJECT ADMINISTRATION~~

- i) ~~The Consultant shall provide the management and staff needed to plan, organize, direct, supervise, control and coordinate the administrative aspects of the Project including contract and Subcontract administration, accounting, purchasing, office services, personnel administration, EEO assurance and reporting, DBE utilization and reporting, publications support, document and drawing control administration, budget, and scheduling.~~

~~E) CONTRACT ADMINISTRATION~~

- ~~i) During the life of each subcontract, administrative service should be provided including, issuance of new or amended work orders and their negotiation, obtaining of periodic reports on costs expended and progress made, development of amendments, receipt and certification of invoices, payment of invoices, adjustment of provisional rates of indirect costs, compliance with all contract terms and conditions, receipt and routing of contract deliverables, overview of DBE participation and subcontract close out. Establish and implement an administrative and financial audit and reporting process to assure sub-consultant compliance with Contract terms. Provide Omnitrans copies of all subcontracts upon execution and all subsequent amendments or change orders.~~
- ~~ii) Review and assign actions for Contractor Change Notices (CCNs) and Design Change Notices (DCNs). Coordinate completion of actions with the appropriate team members.~~
- ~~iii) — Deliverables:
(a) Contract, Subcontracts, Design Change Notices.~~

~~F) ACCOUNTING/INVOICING~~

- ~~i) Applying the terms of the Contract and appropriate Omnitrans procedures, establish and maintain a system of cost accounts pertaining to Consultant's costs under the contract. Assure that the cost accounting and related invoicing conform to the Project's Work Breakdown Structures (WBS) and provide detailed billing of hours worked and references to the Monthly Status Report for tasks accomplished. Process sub-consultant and vendor invoices and assemble these for monthly billing to Omnitrans (to be sent to Omnitrans by the 15th of each month and paid in the first full week of the next month). Provide reports with the level of detail and summary that are adequate for proactive management control and project management by Omnitrans and Consultant. Acquire Omnitrans' written acceptance of the accounting report format and content. Provide inputs to the project control systems pertaining to Consultant's costs. Accommodate audits by Omnitrans or other authorized agencies. Prepare quarterly financial reports of activities under the Contract.~~
- ~~ii) — Deliverables:
(a) Monthly invoices and quarterly reports~~

~~G) PURCHASING~~

- ~~i) All purchasing procedures shall be in accordance with FTA Best Practices Procurement Manual and FTA Circular C 4220.1F r latest revision.~~

~~H) CADD SERVICES~~

- ~~i) Establish, maintain, and upgrade an integrated computer-aided system for architecture, engineering, design, and drafting (CAE/CADD) capability based on the most current, relevant, and universally compatible software technology.~~
- ~~ii) Develop design information, database, and library cells into a common database system so that all Project participants can share and exchange data to complement and extend their benefits. Through the integration process, provide the opportunity to optimize the design by sharing or providing electronic data, design information, and configurations; and to allow for immediate adjustments of the design.~~
- ~~iii) Provide 3-D CADD capabilities for all drawings. Provide clash detection studies/reports.~~
- ~~iv) Define the performance specifications, technical specifications, and formats for the design work, in progress submittals, final submittals, signed and sealed contract drawings and electronic data delivery. Unless specifically exempted, require that all such drawings be produced electronically using the approved CAE/CADD system and standards. Develop and transmit CADD record files to Omnitrans for archival on Omnitrans accepted media for the Contract documents.~~
- ~~v) The electronic CADD files to be delivered under the Contract contain information to be used for the construction as built plans and documents for the Project. The official Contract documents of record are those documents produced by the Consultant that bear the company seal and signatures.~~

~~I) PUBLICATIONS SUPPORT~~

- ~~i) Provide staff, materials and equipment to support publication of the Project reports and documents, including technical writing, editing, graphics art, desktop publishing and printing. As needed, evaluate "make or buy" alternatives for producing finished work.~~

~~J) PROJECT PROCEDURES~~

- ~~i) The Consultant shall develop a list of current standard procedures and review with Omnitrans to refine the list, to establish priorities for enhancement of~~

~~existing procedures. The Consultant shall submit to Omnitrans for acceptance a list of all procedures required by the work scope. Issue each procedure as it becomes accepted and maintain it over the period of the Contract. The plans and procedures shall be consistent with Omnitrans' policies and procedures and allow the Consultant to effectively execute the work scope.~~

~~K) CONFIGURATION MANAGEMENT~~

~~i) Submit within 14 calendar days of Notice to Proceed, for review and acceptance, a Configuration Management Plan that defines the Consultant's responsibilities, interfaces, and processes for performing Document Control, Change Control, and Document Close-out. Propose the levels of review within the Consultant's organization for requests to Omnitrans to approve changes, exemptions, deviations or waivers from adopted design criteria and standards, and revisions in such criteria and standards.~~

~~ii) Coordinate the Configuration Management Plan development with Omnitrans and reflect the document and change control support scope described below.~~

~~iii) Deliverable:~~

~~(a) Configuration Management Plan (part of Project Implementation Plan)~~

~~L) SCHEDULE~~

~~i) The CMP network schedule shall reflect the major tasks, interrelationships, third party constraints, reviews, and other items required in performance of the work. Provide a framework that allows the schedule to be presented by criticality, by performing discipline, by near term milestones, or other pertinent layouts that expedite schedule analysis at the Contract activity or task level.~~

~~ii) The Project Development schedule shall be accompanied by a complete schedule basis and assumptions document that will describe the general approach used to develop logic and duration, assumptions regarding the action of parties that cannot be controlled by the Consultant, and assumptions regarding the basis of scope execution when adequate details are not available to render a definitive path forward for a deliverable. Submit this schedule for Omnitrans review and acceptance within 14 calendar days following the Notice to Proceed. This schedule shall comply with all contractually required deliverable dates.~~

~~iii) The schedule shall be maintained and updated monthly with progress and forecast completion dates. The monthly updated schedule (current schedule)~~

~~shall be measured against the approved baseline schedule. The monthly updated schedule shall be submitted to Omnitrans no later than seven calendar days following the close of the month, as well as at each Project milestone.~~

~~iv) — Deliverables:~~

~~(a) Schedule~~

~~M) REVISIONS OF THE SCHEDULE~~

~~i) The schedule shall be updated on a monthly basis. Updated schedules once approved by Omnitrans will be considered "Current Schedules." They will be compared to the accepted baseline schedule. No changes are permitted to this baseline schedule unless prior acceptance is received from Omnitrans. The Consultant shall maintain the original accepted baseline schedule as a basis of comparison and progress measurement. Proposed revisions to the baseline schedule shall include a narrative description of the changes proposed, together with the justification for the proposed change and an update of the schedule basis and assumptions.~~

~~ii) — Deliverables:~~

~~(a) Monthly schedule updates~~

~~N) DESIGN/CONSTRUCTION DRAWING/DOCUMENT CONTROL~~

~~i) Maintain complete files of all records and documents pertaining to Consultant's contract, Project design drawings/documents, baseline changes, and related documents, electronic data (CADD), and correspondence organized according to Omnitrans procedures. Print and distribute design documents and revisions thereto throughout the Project Development phase. Support audits, claims and litigation requirements with document retrieval. Provide reproduction of retrieved documents.~~

~~O) PROJECT DATA DISSEMINATION~~

~~i) The Consultant is required to utilize an Internet Collaboration System, which will be used to assist in the communication and management of the Project and to make available key project data and reports to all authorized project participants via the Internet from any location. Upon starting work on the Project, the Consultant shall present Omnitrans Project Manager with three options for Internet Collaboration System software and obtain Omnitrans staff's input on which to use.~~

~~ii) The Consultant shall submit all printed correspondence and other contractually required documentation (including data Submittals and Requests for Information (RFI) or Change Notices (CN)) in electronic format to Omnitrans in addition to normal hard copy distribution.~~

~~iii) Project data to be submitted electronically in the following formats:~~

~~(a) Drawing files in editable format (such as AutoCAD) and in PDF (in 11" x 17" page format).~~

~~(b) E-mail, Letters, Spreadsheets, and Charts in Microsoft Office format (Outlook, Word, Excel, Power Point)~~

~~(c) Other Documents, Pictures, Graphs, etc. in PDF format (TIFF or JPEG as an alternative)~~

~~iv) Deliverable:~~

~~(a) Internet Collaboration System~~

~~P) BASELINE DRAWING/DOCUMENT CONTROL~~

~~i) Control and protect original baseline documents including Contract drawings, Contract technical and performance specifications, and design criteria and standards throughout Project Development phase.~~

~~ii) Maintain historical files of baseline documents during the design phase until turnover of files to Omnitrans.~~

~~iii) Deliverable:~~

~~(a) Baseline documents~~

~~Q) RECORD STORAGE AND RETENTION~~

~~i) Process records for Omnitrans record storage and retention in accordance with industry accepted procedures and retention schedules. Provide for routine turnover of records, design review packages, solicitation packages, and specifications and remaining Project documents to Omnitrans for long term for archiving and retention as requested by Omnitrans.~~

~~ii) Deliverable:~~

~~(a) Record management system~~

~~R) CHANGE CONTROL~~

- ~~i) Coordination and management of changes to the design baseline, including change document preparation and processing using computer system tools throughout the project. Establish a system for effective coordination and ensure that baseline design changes are consistently applied to every affected contract.~~

~~S) CONSULTANT CONTRACT CHANGES~~

- ~~i) Include in the Configuration Management Plan the internal processes necessary to ensure timely written notice to Omnitrans of any requirement, directed by Omnitrans or initiated by the Consultant that is believed by the Consultant to be out of the scope of the contract or may otherwise require revision to the Consultant's Contract. Include notice of scope changes associated with incorporating design changes, preparation and submittal of Requests for Change, preparation of cost proposals in response to Omnitrans notices or requests, and methods for identifying and tracking work costs associated with authorized Consultant's contract changes.~~

~~ii) Deliverable:~~

- ~~(a) Design change notices~~

~~T) DESIGN CHANGES~~

- ~~i) Include in the Configuration Management Plan, the internal processes necessary to ensure timely identification, documentation, approval processing, revision incorporation, and release of changes to all design baseline documents, including but not limited to:~~

- ~~(a) System wide Baseline Documents including Design Criteria, Standards, baseline contracts and any other document or record identified by Omnitrans as requiring system wide baseline control.~~

~~U) QUALITY ASSURANCE~~

- ~~i) Develop and submit for Omnitrans' acceptance a Quality Assurance Program covering all of Consultant's activities for: general tasks; system integration; intra discipline and inter discipline review; design workshops; preliminary engineering design; Omnitrans design review process; procurement and Services for systems contracts. The Quality Assurance Program must describe the controls to be implemented by the Consultant to verify compliance with the project procedural requirements. The Quality Assurance Program must satisfy the Omnitrans Quality Policy and meet the applicable requirements.~~

~~ii) The Consultant shall establish and maintain procedures to control and verify the design of the transit systems in order to ensure that the design criteria, owner specified requirements, and requirements of the relevant regulatory agencies are met. Design control includes ensuring that design requirements are identified and met, planning of design interfaces are complete including design verification activities, and design changes are controlled through Project completion. The requirements of the Consultant's QA Program and supporting procedures shall apply to other Sub-consultants.~~

~~iii) Deliverable:~~

~~(a) Quality Assurance Program (part of Project Implementation Plan)~~

~~V) REVIEWS OF DESIGN WORK~~

~~i) As a part of the Consultant's QA Program implement a specific set of review procedures for design work; procedures applicable to both Consultant's own efforts and to the work of Sub-consultants. Design should be reviewed by key stakeholders within Omnitrans, jurisdictional agencies, PDT members, and other key stakeholders at each major milestone in the Project. Their input and responses to their questions/comments should be recorded and disseminated to the Omnitrans Project Manager and PDT members.~~

~~ii) The Consultant will perform four formal QA/QC reviews & back checks at milestones (Phase 1 & 2 PE 30%, Phase 1 & 2 Final Design 65%, Phase 1 & 2 Final Design 90%, and Phase 1 & 2 Final Design 100%). Work in this section is for the formal, third party QC check and back check. This assumes that Phase 1 and Phase 2 work will be completed on concurrent schedules in a combined package. Work by the team to pick up and respond to comments, as well as the other QA design reviews by the team are included in the tasks below.~~

~~iii) Design control procedures shall be documented in an appropriate Design Procedures Manual and shall include, but not be limited to, provisions for:~~

~~(a) Reviewing, identifying and documenting design inputs (e.g., design bases, technical requirements, codes, and standards);~~

~~(b) Establishing the selection of design methods for ensuring that these design inputs are correctly selected and translated into design documents (e.g., drawings, procedures, specifications, and calculations);~~

~~(c) Establishing the selection and review for suitability of application of materials, parts, equipment and processes that are essential to the function of the system;~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

- ~~(d) Verifying that design inputs, applicable city, county, state, and Caltrans codes and standards and other quality and technical requirements are correctly translated into design work products with detail necessary for making decisions, accomplishing design verification measures, and evaluating design changes;~~
- ~~(e) Requirements that drawings, sketches, specifications, data sheets, and design calculations are reviewed, checked, and approved in accordance with Consultant's Design Control Procedures prior to release for Omnitrans and third party review, procurement or construction;~~
- ~~(f) Design interfaces with Omnitrans Project Team Project Manager, other Omnitrans departments, third party agencies and utilities, and sub-consultants are identified and controlled;~~
- ~~(g) Design changes are governed by control measures commensurate with those applied to the original design, including identification of reasons for, and impacts of, the change.~~
- ~~(h) Design documents are reviewed by the Consultant's QA to ensure that appropriate quality standards have been identified and documented.~~
- ~~(i) Design analyses are performed in a planned, controlled, and documented manner and design analysis documents are legible and in a form suitable for reproduction, filing, and retrieval, and are sufficiently detailed as to purpose, method, assumptions, design input, references, and units such that a person technically qualified in the subject can review and understand the analyses and verify the adequacy of the results without recourse to the originator of the analysis.~~
- ~~(j) Design control measures are applied to verify the adequacy of design, such as by one or more of the following: the performance of design verification reviews, the use of alternate calculations, or the performance of design qualification tests.~~
- ~~(k) Calculations are identifiable by subject (including structure, utility, system, or component to which the calculation applies), originator, reviewer, and date; or by other data such that the calculations are retrievable. Engineering Calculations are to be signed and stamped by an Engineer Registered in the State of California of the involved discipline. Have calculations, required by specifications Sections, prepared on 8 1/2 inches by 11 inches sheets. When calculations accompany drawings in a submittal, the body of the calculations must contain cross referencing to the individual drawing to which the page of the calculations pertain.~~

- ~~(l) Computer programs used for design calculations are verified to show that the program produces valid solutions for the encoded mathematical model within defined limits for each parameter employed; and the encoded mathematical model has been shown to produce a valid solution to the physical problem associated with the particular application. Evidence of verification shall be maintained.~~
- ~~(m) Computer programs are controlled to assure that changes are documented and approved by authorized personnel when required. Where changes to previously verified computer programs are made, verification is required for the changes, including evaluation of the effects of these changes on (l) above.~~
- ~~(n) Clash detection studies must be provided to ensure that design is internally consistent.~~
- ~~(o) Review must be done to ensure that all components of project design are available from Buy America compliant manufacturers so that the design can be constructed in compliance with Buy America and all other applicable regulations.~~
- ~~(p) Review must be done to ensure compliance with ADA as well as any other applicable regulations.~~
- ~~(q) Consultant is responsible for budget reconciliation at each major milestone in the Project or when any change, such as design change, is made that affects the Project budget.~~
- ~~iv) The review procedures will establish the responsibilities and techniques for administrative, quality assurance, and technical reviews, for each milestone point in the design process, to ensure the accuracy and completeness of design before the submittals are processed to Omnitrans for review. Reflect in such procedures formal submittals and reviews at critical milestones in the design process, to include:
 - ~~(a) Design Development Submittal~~
 - ~~(b) Engineering Design Submittal~~
 - ~~(c) Construction Contract Documents Submittal~~
 - ~~(d) Contractor Support during the Construction contract procurement and execution.~~~~
- ~~v) These milestone reviews pertain to both facility design/specification work and systems design/specification. These milestones apply to the respective levels~~

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

~~of contract document preparation. The percentages given are for overall completion of each Contract Unit. The appropriate level of completion for each review point varies by the type of contract drawing and will be identified in the drawings listed in the Design Control Document Log of each Contract Unit.~~

~~vi) Deliverable~~

~~(a) Register of comments and responses at each milestone~~

~~vii) Other Governmental Units and Agencies Support Omnitrans in establishment and maintenance of positive collaborative relationships with other government agencies or departments, special districts, or agencies implementing projects that intersect or relate to this project. Assist Omnitrans in making presentations to affected agencies and facilitating resolutions of potential conflicts.~~

W) MAINTENANCE AND OPERATING AGREEMENTS

~~i) The Consultant team shall provide support to Omnitrans staff regarding any inter-jurisdictional agreements needed for the project. This includes drafting the agreements and advising Omnitrans on agreements that may be needed for the project and the language that should be addressed in the agreements. Omnitrans staff will channel the agreements through the approval process including legal counsel and Board of Directors review. The agreements should be based heavily on the previous agreements used for Omnitrans' E Street sbX project. As in the E Street sbX project, it is anticipated that the five cities will delegate utility franchise agreements to Omnitrans for relocations.~~

~~(a) Early in the design process, the Consultant should provide draft project agreements for Omnitrans to implement with each of the five cities (Fontana, Montclair, Ontario, Pomona, and Rancho Cucamonga) and the County of San Bernardino if needed, which address the jurisdictional agencies' contributions throughout the design process for the Project, including the potential of waiving plan check and permitting fees for the Project.~~

~~(b) Also early in the design process, the Consultant should provide draft operational and maintenance agreements for Omnitrans to implement with each of the five cities, Ontario Mills, and Ontario Airport (Los Angeles World Airports), and the County of San Bernardino if needed, which address ongoing maintenance responsibilities for all components being built as part of the project, including transit signal priority infrastructure, sidewalk/curb/gutter, landscaping, passenger shelters and amenities, signage, electronic communication systems, security systems, etc.~~

- ~~(e) The Consultant should also provide draft encroachment permits and/or easements with the local agencies, Caltrans, railroads, flood control districts, Ontario Mills, Ontario Airport controlling authority, or any other entities with jurisdictional authority as needed.~~

~~ii) Deliverables:~~

- ~~(a) Draft agreements~~

~~iii) MASTER AGREEMENTS AND PERMITS~~

- ~~iv) Consultant shall provide technical assistance to Omnitrans in the development and implementation of master cooperative agreements between Omnitrans and other public or private entities, including utilities, jurisdictional agencies, and other stakeholder agencies impacted by the project. As work progresses, identify what conflicts potentially exist by owner, requiring either a new master cooperative agreement or a revision of a standing agreement. In addition, support Omnitrans by identifying what permits, licenses and special or specific agreements are required to implement the Project (other than routine construction permits). Where such need is identified, define the purpose, regulation, timing and issuing agency and what application procedures pertain. Prepare graphic exhibits to support the agreement documents and permits. Prepare and submit a preliminary report for the Project during the first ninety (90) days of the preliminary engineering design phase outlining what master cooperative agreements, specific agreements, permits, licenses and other institutional clearances are required and the circumstances of each.~~

- ~~v) All project agreements, where applicable, must include a flow-down of federal requirements or other funding requirements on the project that partner agencies must comply with.~~

~~vi) Deliverable:~~

- ~~(a) Master agreements list~~

~~X) JURISDICTIONAL REVIEW AND APPROVAL PROCESS~~

- ~~i) The Consultant team will be responsible for coordinating the plan review/plan check and permitting process with each of the five (5) cities, San Bernardino County (part of the project falls within unincorporated area of the County), Ontario Mills (property owner), Ontario Airport (Los Angeles World Airports – property owner), and any other applicable permitting agencies. This includes the following tasks:~~

- ~~(a) Determine the plan checking process and submittal requirements for~~

~~each agency that will be approving the final plans:~~

- ~~(b) Presenting the project at preliminary development review meetings or other required meetings with jurisdictional agencies in order to inform them of the project and gain preliminary approval;~~
- ~~(c) Providing each jurisdictional agency with any requested materials to describe the proposed project design;~~
- ~~(d) Following up on comments and questions from the jurisdictional agencies and, if agreed upon by Omnitrans' Project Manager, incorporating them into the project plans;~~
- ~~(e) Providing presentations on the project to Planning Commissions, Public Works Commissions, City Councils, workshops, or in other forums as requested by the jurisdictional agency (assume a maximum of 15 total presentations);~~
- ~~(f) Providing final plans for each jurisdictional agency's signature and any other deliverables required by the jurisdictional agency's for project approval.~~

~~ii) Deliverables:~~

- ~~(a) Maximum fifteen (15) presentations~~
- ~~(b) Hard copy plan sets as required for submittal to nine (9) jurisdictional agencies~~

~~Y) QUANTITIES~~

- ~~i) For each submittal, provide four (4) hard copies to Omnitrans Project Manager of drawings, specifications and technical reports, and other submittals. In addition, provide electronic files for each submittal as follows:~~
 - ~~(a) Drawings: editable file (such as AutoCAD), including narrative description of the file organization and a drawing list including file name, drawing number, sheet number;~~
 - ~~(b) Schedules: Using Microsoft Project, Primavera P6, or comparable software (with prior approval from Omnitrans staff of which software package it will be prepared in);~~
 - ~~(c) Document Images: PDF, TIFF or JPEG (as required by Omnitrans or affected agency).~~

~~Z) OTHER SPECIFIC TASKS~~

- ~~i) — Other specific tasks include, but are not limited to:
 - ~~(a) Perform planned and periodic internal QA audits and surveillance to verify implementation and effectiveness of Project procedures, including work performed by sub-consultants under control of the Consultant.~~
 - ~~(b) Review of sub-consultant's quality~~
 - ~~(c) Maintenance of quality records~~
 - ~~(d) Develop and implement appropriate configuration management and document control procedures~~
 - ~~(e) Review and sign off on Nonconformance Reports during construction phase~~~~
- ~~ii) — Deliverable:
 - ~~(a) Nonconformance Reports and QA audits~~~~

~~AA) — QUALITY DATA~~

- ~~i) Gather and track Quality Assurance audit/surveillance and discrepancy data for use in the analysis of deficiency trends and evaluation of corrective action effectiveness. Accomplish this activity by utilizing computer software and electronic transmission.~~
- ~~ii) Data collection and transmission to Omnitrans shall not relieve the Consultant from the requirement to perform independent surveillance/management of the sub-consultant.~~

~~BB) — REGISTER OF DELIVERABLES AND QUANTITY OF SUBMITTALS~~

- ~~i) Within 14 calendar days of Notice to Proceed, prepare a register of all deliverables required by the Scope of Work that shows the schedule, approval process and status of each item. The register shall include the Document Control Log (DCL), Submittal Log, Warranty Log, Training Log, Operating and Maintenance Log, monthly status reports, design schedule, and bid documents for construction contracts. Submit the deliverable register for Omnitrans' review and acceptance. Maintain deliverable register for the duration of the Scope of Work and submit a monthly update, within seven days of the month closing, to Omnitrans.~~
- ~~ii) — Deliverables: Register of deliverables, including the following:~~

- ~~(a) Document Control Log;~~

- ~~(b) Submittal Log;~~
- ~~(c) Warranty Log;~~
- ~~(d) Training Log;~~
- ~~(e) Operating and Maintenance Log;~~
- ~~(f) Monthly status reports;~~
- ~~(g) Design schedule;~~

~~CC) BUDGET~~

- ~~i) Develop budgets for each deliverable identified in the register and including the Document Control Log (DCL). Budgets shall be established at the detailed level including all drawings and deliverables, calculations, pertinent submittals per each design discipline.~~
- ~~ii) Maintain the approved overall Project budget by application of Omnitrans procedures that require specific written approval of Omnitrans for each Project Budget Change Request (PBCR). Maintain complete documentation of Project budget including PBCRs, and forecast changes (trends).~~
- ~~iii) Deliverables:~~

- ~~(a) Budget and Project Budget Change Requests~~

~~DD) PROJECT CONTROL~~

- ~~i) The Consultant shall establish and operate systems and provide project control services for the control of the Project with respect to cost and schedule. The overall control system to be established shall provide a standard framework for defining work, assigning work responsibility, establishing budgets, controlling and forecasting costs and summarizing the monthly Project status.~~

~~EE) SOFTWARE~~

- ~~i) During Design Services, utilize Microsoft Project, Primavera P6, or comparable software (with prior approval from Omnitrans staff of which software package it will be prepared in) for production of schedule. Use Microsoft Office Products and or related Integration Software for reporting and administration.~~

~~FF) WORK BREAKDOWN STRUCTURE~~

- ~~i) The Work Breakdown Structure (WBS) shall conform to industry standards~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~and shall identify, generically, major end products that are to result from the authorized Work. Upon commencement of the Work, prepare a detailed WBS for use during the Project. The WBS shall clearly identify and correlate to the tasks and subtasks established by the Scope of Work and in the PIP, and shall be the basis for all Project Control and related reporting activities. Within seven (7) calendar days of Notice to Proceed, submit the proposed WBS, to Omnitrans for review and acceptance. Subdivide work tasks into refined components and sub-components until the lowest elements represent manageable work packages assignable for control to a single operating unit for the Consultant. Coverage by WBS shall include packages of work to be performed by the Consultant, Omnitrans staff, other Contractors of Omnitrans and all third parties who may become involved in any Project as directed by Omnitrans.~~

- ~~ii) The Work Breakdown Structure is to be defined and described in a Project-level "WBS Dictionary" to be prepared by the Consultant and submitted to Omnitrans. Include hierarchical diagrams as well as narrative scope descriptions for each component level of the WBS and also a WBS organizational matrix. At a minimum, the WBS shall include the Project Work Packages, Discipline Level, original Scope and out of scope work.~~

~~iii) Deliverable:~~

~~(a) Work Breakdown Structure~~

~~GG) PROGRESS STATUS REPORTING~~

- ~~i) The Consultant will be responsible for progress status reporting through the Design and Bid phases. Track and report the cost of all Consultant charges related to the authorized work and determine the physical progress of such work for each monthly status report. Each month, provide status and analysis of the contractual and cost control baseline and project milestone dates for progress achieved to ensure the work can be completed within the authorized budget and Project completion dates, and indicate trends of any variance from the budget and schedule. Provide a reconciliation of Project budget and notify Omnitrans where there is a potential for exceeding the authorized budget dollar value and Project completion dates.~~
- ~~ii) Monthly progress reports shall describe progress of the work, forecast task completion dates, problems and proposed corrective action and work status. All Project reporting including cost and progress and analysis to support such reporting shall be based on the current approved Project completion dates and cost. Report variances and comparisons against accepted Project cost/schedule baseline as defined in the accepted PIP. Monthly Progress Reports are due to Omnitrans prior to the 15th day of each month, along with the monthly invoice, and should be provided electronically and via mail to the Omnitrans Project Manager.~~

~~iii) The Monthly Progress Reports are to clearly identify areas of concern, the Consultant's best estimate of the true and full cost picture for the Project; summarized information to assess the risk differences that exist within the contract; exception and variances to the approved budget and accepted schedule; and identify trends to anticipate problems and to develop information to assist in decision making.~~

~~iv) Once potential problems have been identified, an action plan shall be developed by the Consultant, in coordination with Omnitrans staff that proposes solution options and assigns action steps and timetable requirements to specific individuals. The reporting shall provide a means for monitoring the performance of the action steps and their effectiveness.~~

~~v) Deliverables:~~

~~(a) Monthly progress reports and budget reconciliations.~~

~~HH) COST/PROJECT COMPLETION FORECASTS~~

~~i) Prepare cost estimates and forecasts of the cost expenditures required to complete the authorized work. Prepare Project updates incorporating current progress, resources, and constraints in order to forecast completion of tasks and milestones. Provide support in the review of the Contract status with respect to matters of cost control, performance, and Project completion date adherence and assist in the analyses of available information toward development and evaluation of alternative courses of remedial action. Provide a recovery plan identifying measures to complete tasks within the authorized budget and/or completion date. Implement industry accepted Trending and Cost Forecasting to provide early warning of potential cost deviations in time to allow remedial actions to eliminate or minimize any adverse cost impacts and/or Project completion dates. The Consultant is informed that it takes two (2) to three (3) months for approval of Project/Contract changes in excess of \$25,000.~~

~~ii) Provide certified Cost Estimate at each Design Milestone. Update the cost estimate and provide the updated certified cost estimates with the submittal of the construction documents for final Omnitrans review and comments. Update the estimate and provide the Engineer's Estimate at bid opening of construction contract(s). Provide estimating services as necessary for development of preliminary design including estimates for feasibility studies.~~

~~iii) Provide estimating services as necessary to support Value Engineering and cost reduction proposals. Conduct reconciliation of Project Cost Estimate each time there is a change to Project design.~~

~~iv) Deliverables:~~

~~(a) Cost estimates at each major milestone and updates as needed~~

~~II) PROJECT STATUS BRIEFINGS~~

~~i) Prepare and present both weekly informal status briefings and monthly formal status updates of the Project to Omnitrans Project Manager, with Consultant preparing agenda and furnishing minutes/notes from meetings within ten (10) days after each meeting, and prior to issuance of the Project Monthly status report, which is to be prepared in a format and content acceptable to Omnitrans. At such status briefings, the Consultant's Project Manager shall present a concise overview of the Project, highlighting problem areas, trends and recommendations for corrective actions, when necessary.~~

~~ii) Deliverables:~~

~~(a) Meeting agendas and minutes/notes~~

~~(b) Monthly DCL updates and performance earnings criteria~~

~~3.101 PUBLIC RELATIONS (TASK 2)~~

~~A) PUBLIC OUTREACH & COMMUNITY PARTICIPATION~~

~~i) It is very important to Omnitrans to include the community in the design process for this Project. The Consultant team will be responsible for leading a multifaceted outreach program to ensure community inclusion in the design process, with the goal of working toward broad consensus on the project design and components, in partnership with Omnitrans staff.~~

~~B) PROJECT DEVELOPMENT TEAM (PDT) MEETINGS~~

~~i) One of the most critical forms of project communication is the regular reporting of progress and discussion of critical issues that occurs within the Project Development Team meetings. PDT meetings were held monthly during the Alternatives Analysis process, and it is expected that the PDT members will continue on throughout the design process. The Consultant shall hold 16 monthly PDT meetings for progressing the Project to construction.~~

~~ii) Deliverables:-~~

- ~~(a) Meeting agendas~~
- ~~(b) Sign in sheets~~
- ~~(c) Meeting minutes~~
- ~~(d) All above deliverables, including minutes/notes of previous meetings and handouts/technical materials as appropriate, Consultant shall distribute electronically prior to each meeting and in paper form at each meeting.~~

~~C) OMNITRANS STAFF MEETINGS~~

- ~~i) The Consultant team will present the preliminary design and final design to Omnitrans staff representing several Omnitrans departments, including three (3) in person meetings with additional follow up discussions via phone or conference call if needed.~~

~~ii) Deliverables:-~~

- ~~(a) Meeting agendas~~
- ~~(b) Sign in sheets~~
- ~~(c) Meeting minutes~~
- ~~(d) All above deliverables, including minutes/notes of previous meetings and handouts/technical materials as appropriate, Consultant shall distribute electronically prior to each meeting and in paper form at each meeting.~~

~~D) PUBLIC OUTREACH~~

- ~~i) Public Involvement for this project should focus on education and feedback to the design team. This activity should result in Omnitrans not only hearing the community preferences, but responding by incorporation into the alignment design and construction if feasible.~~
- ~~ii) The Consultant shall include clear guidelines for public outreach in the Project Implementation Plan (PIP), which will provide the basis for which all outreach efforts are undertaken and completed.~~
- ~~iii) The Consultant team will develop and maintain a list of stakeholders throughout the project. The Consultant will be responsible for development of marketing materials for use in stakeholder meetings and other outreach efforts. The Consultant will also be responsible for developing and utilizing any other public outreach tools necessary to the success of the design process, such as surveys, web based or social media tools, etc.~~

MKP15-37

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~The Consultant will begin the stakeholder compilation with existing lists from the previous project phase. The database will be maintained in Microsoft Access and updated after public meetings and refined throughout the project using information gained from meeting sign in sheets, public inquiries, and webpage feedback and registration requests.~~

- iv) ~~The Consultant team will present the preliminary project design to stakeholders and general public in at least three (3) rounds of five (5) public outreach meetings, for a total of fifteen (15) meetings, one to be held in each of the five cities along the project corridor. The Consultant will develop a master meeting schedule that correlates all public engagement activities.~~

~~The first round of public meetings will be held during the Refinement of Routing and Station locations phase and will also count as the scoping meeting for the environmental phase; another round will be held during the Environmental clearance phase; and a third round will be held during Final Design. Input received at the meetings and other input received throughout the project shall be compiled by the Consultant, and a brief response should be prepared addressing the comments and whether or not the comments have been incorporated into the design.~~

~~The Consultant's services in support of the various meetings will include coordination of meeting times and locations, organization of facility details (including equipment and insurance, if applicable), meeting set up and clean-up, photography, and refreshments. Meeting materials, including notices and meeting notifications, eblasts, handouts, sign-in sheets, comment cards and directional signage will be prepared.~~

- (a) ~~Notification — The Consultant is well versed in notification techniques used to reach a broad base of stakeholders. The tools utilized may include:~~

- ~~1. Hard copy notification materials via direct mail~~
- ~~2. Newspaper Advertisements — Display ads placed in local weekly papers. Ads will also be placed in minority publications if deemed necessary.~~
- ~~3. Public Access Venues — Hard copy notification materials can also be disseminated via City Halls, Chambers of Commerce, local schools, libraries, churches, and businesses.~~
- ~~4. Social media — The project webpage and Facebook Fan page will be utilized to post meeting notification.~~
- ~~5. E-Blasts — Extremely cost effective method to reach the project database.~~

~~During the meetings, the Consultant will record key discussion points using "facilitation graphics" on large wall sized paper. Up to two weeks after each meeting, the Consultant will provide electronic versions of photo reductions~~

~~of the wallgraphics.-~~

~~(a) Deliverables:~~

- ~~1. Facilitate and graphically record 15 public outreach meetings~~
- ~~2. Photo reduced wallgraphics from 15 public outreach meetings-~~

~~At the conclusion of the project, the Consultant will prepare a report documenting the full public involvement and communication process and how it was used to support the project development process. This report will summarize the online engagement tools and results, project database, project meetings, public questions, comments, and conclusions reached at these meetings, samples of collateral material that were employed throughout the process, and feedback received through the project webpage.-~~

- ~~v) The Consultant team should also be available for other public outreach efforts where appropriate, such as speaking about the project at community events, making presentations to community groups, etc. at a maximum of six (6) events throughout the duration of the design process.~~
- ~~vi) Deliverables: For each of the three (3) rounds of public meetings, produce the following:~~
- ~~(a) Ten (10) display boards (available as pdf and as physical foam core mounted boards);~~
 - ~~(b) One (1) take one informational flyer to be posted on board the buses as a pdf (English and Spanish); printing to be handled by Omnitrans;~~
 - ~~(c) One (1) meeting invitation/flyer as a pdf (English and Spanish);~~
 - ~~(d) Other take home informational handouts as needed to distribute at the public meetings, with physical copies as needed for attendees;~~
 - ~~(e) Maintain a stakeholder address list (building off of the previously created Excel spreadsheet) and distribute meeting invitations electronically or in hard copy to the stakeholders.~~
- ~~vii) All informational materials for the public must use language appropriate for a range of audiences, and must be approved by Omnitrans staff before being disseminated. All materials are designed to be used in conjunction with the full scope of community outreach activities, including for marketing, social media and internet project tools using QR codes that link directly to the sites. All collateral materials will be created with a uniformed branding to help create a project identity within the community. A materials distribution plan will be developed to ensure the materials are being utilized effectively and the~~

~~proper quantities are printed.~~

~~viii) Social media and digital engagement tools will supplement the core outreach activities. The following social media strategies and digital engagement tools are recommended:~~

- ~~(a) *Facebook*—The Consultant will coordinate with Omnitrans to utilize the existing Facebook page to post project updates and meeting notices and announcements.~~
- ~~(b) *Website Coordination*—A dynamic project webpage will serve as a public portal to all project information, including but not limited to: background documents, collateral materials, meeting schedules and presentations, maps, social media connections/links, contact information, etc. The Consultant will develop and maintain the content, graphics and materials needed to support the project webpage.~~

~~4.101 REFINEMENT OF ROUTING ALIGNMENT AND STATION LOCATIONS (TASK 3)~~

~~A) REFINE ROUTING ALIGNMENT~~

- ~~i) The first major task of the Consultant will be to refine the West Valley Connector Corridor routing alignment. This will involve analysis of up to 6 routing options, including the following:
 - ~~(a) The current proposed option;~~
 - ~~(b) At least one option that uses Haven Avenue but not Milliken Avenue in Rancho Cucamonga;~~
 - ~~(c) At least one option that uses both Haven Avenue and Milliken Avenue in Rancho Cucamonga; and;~~
 - ~~(d) Other possible options suggested by stakeholders (this phase will include one of the rounds of public outreach meetings mentioned in the above section);~~~~
- ~~ii) The Consultant will prepare up to six (6) options for the Rancho Cucamonga alignment on aerial photographs. Consultant will identify on aerial photographs several options for an alignment using Haven Avenue and several options for an alignment using both Milliken Avenue and Haven Avenue. The team will make a site visit to review options and meet with the City of Rancho Cucamonga's management and City staff to review these and identify other potential options. These options will be refined and presented to the PDT at the first round of public meetings.~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~The Consultant will evaluate these options related to land use plans, proposed TODs, ridership potential, and pedestrian/bicycle accessibility. The team is aware of numerous recent proposals and studies underway in Rancho Cucamonga including the ARRIVE Corridor, the Empire Lakes Specific Plan Update which proposes a mixed use community on the Empire Lakes Golf Course, a city RFQ to potential developers for a mixed use community on the City owned park and ride lots, and a SCAG/City study which will evaluate an additional Metrolink station at Haven Avenue. The team will coordinate with Omnitrans and City staff how to address these plans and studies in preparing the options as some will not be approved or completed until after PE is completed for the West Valley Connector.~~

~~B) REFINE STATION LOCATIONS~~

- ~~i) This phase involves the refinement of station locations, including the existing and proposed station locations, but also including the options of removing or adding stations (including consideration of options proposed by stakeholders). The analysis should identify station spacing, ranging from 1/2 mile to 1 mile apart, depending on the conditions in each specific location.~~
- ~~ii) The Consultant will meet with the city staff of each jurisdiction to discuss feasibility of the station locations proposed in the Alternatives Analysis Report and determine existing and proposed land uses and site information in this report needing updating. For Rancho Cucamonga, potential station locations for each option proposed in Task A above will be identified. An assessment of current and future bus stations will be provided to help the PDT make informed decisions based on projected ridership, projected travel times, and proximity to activity centers.~~

~~At these City meetings, station design concepts outlined in the Alternatives Analysis Report will be reviewed with cities to determine which cities will likely have new stations and shelters and which cities or locations may need to share shelters with local buses. As a part of Task B, once the site surveys are obtained, the station locations/stops will be applied to these base survey drawings to determine if any changes in station locations need to be made due to right of way or other constraints. Initial station locations will be reviewed at a PDT meeting and at the first round of community meetings as described in Task 2.~~

~~C) EVALUATION OF ROUTING OPTIONS AND STATION LOCATIONS~~

- ~~i) The decision of final routing and station locations will be vetted by the PDT at one or more PDT meetings. Information must be presented to help~~

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

~~evaluate the decision based on projected ridership, projected travel times, walking distances, existing or planned activity centers (i.e., job centers, high-density housing, education institutions, etc.). Existing demographic information can be provided to the Consultant; however, the Consultant will be expected to conduct analyses of projected ridership at proposed station locations, and to suggest spacing of stops based on expected walking distance that passengers will be willing to walk.~~

- ~~ii) The Consultant will prepare evaluation matrices of routing options and station locations. One matrix will address the options for routing for Rancho Cucamonga. Another matrix will evaluate station locations in the Alternative Analysis Report and alternative station locations identified through the stakeholder outreach and PDT process discussed in Task 2. The Consultant will assist in evaluating walking distances, existing and planned activity centers, and existing and planned transit supportive development. The Alternatives Analysis Report shows stations west of Ontario Mills and along Sierra Avenue at ½ to 1 mile spacing. Along Foothill Boulevard, spacing is approximately 1 mile apart. The focus of this task will be to provide access within 1/2 mile or less, a 10-minute walking distance, which would be a station spacing of 1 mile or less. This analysis will coordinate with Task 4, which is aimed at removing pedestrian barriers to the stations. The Consultant will review the land use analysis prepared for the Alternatives Analysis Report and update as appropriate in the matrix, using relevant new information obtained from the City in this evaluation.~~

~~iii) Deliverables:~~

- ~~(a) Digital aerial photographs of Rancho Cucamonga routing options~~
- ~~(b) Digital aerial maps with station locations for the above Phase 1 options~~
- ~~(c) Digital aerial maps of 5 alternative station locations for Phase 1 in a format similar to the Alternatives Analysis Report (see Task 8 for alternative station locations applied to survey base map).~~

~~D) PRESENTATION OF ROUTING AND STATION LOCATIONS TO PDT~~

- ~~i) The presentation to the PDT should rank the recommended options for routing and station locations and provide the Consultant's recommendations based on available data and factors of consideration that are important to the PDT.~~

~~E) PRESENTATION TO CITIES~~

- ~~i) This phase will include one (1) special presentation to elected officials from all cities along the corridor (to be coordinated by Omnitrans staff), in order to gain consensus on the routing alignment and station locations~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~recommended by the PDT. The Consultant will help to facilitate a political consensus on routing, based on the expected benefits, pros, and cons, of the routing and station location alternatives.~~

~~F) Deliverables:~~

- ~~i) Ridership projections by stop~~
- ~~ii) Presentation of routing alignment and station locations to PDT and accompanying materials~~
- ~~iii) Presentation of routing alignment and station locations to applicable jurisdictions and accompanying materials~~

**5.101 PEDESTRIAN AND BICYCLE CONNECTIONS TO STATIONS
(ACTIVE TRANSPORTATION GRANT) (TASK 4)**

A) FHWA GRANT

- i) A federal FHWA grant was awarded to Omnitrans through Caltrans' Active Transportation Program for the design and construction of pedestrian improvements within ½ mile of all stations (48 stations at 27 locations) along the West Valley Connector Corridor (including cross streets and side streets), as well as installation of bicycle parking at the stations. The pedestrian improvements include ADA-compliant boarding areas (12' by 60' recommended), as well as repair/reconstruction of sidewalk, curb ramp replacements, and crosswalk improvements within ½ mile of stations. The scope of work at the Ontario Mills location in particular includes removal of fence and landscaping and widening of sidewalk in addition to pouring concrete boarding area / shelter pad.

B) PEDESTRIAN ACCESS IMPROVEMENTS

- i) The design of the pedestrian access improvements is a separate project that will be designed by the Consultant simultaneously with the design of the overall transit Project, because it is dependent on the locations of the stations for the transit Project.

C) PEDESTRIAN AND BICYCLE DESIGN

- i) Scope of work for this phase involves design of the above-listed pedestrian and bicycle improvements based on the station locations decided on during the Refinement of Routing Alignment and Station Locations task, plus the Ontario Mills location. Preliminary conceptual design work will be provided by Omnitrans staff. Preliminary engineering,

MKP15-37

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

final engineering, cost estimate, bid package, bid services, and design services during construction are needed from the Consultant for this phase. This phase of work may be put out to bid for construction earlier than the remainder of the transit project.

D) DESIGN REQUIREMENTS

- i) Assistance will be needed from the Consultant with complying with all permitting requirements, requirements of the FHWA funds/Caltrans process (including obligation deadlines), and categorical exemption/exception under NEPA and CEQA. All of the locations are anticipated to be within existing public street right-of-way, with the exception of the Ontario Mills location and the Ontario Airport location. The Consultant will assist in working with these private property owners to draft any agreements needed, apply for an easement, or any other permitting needed to construct the improvements on private property (with the agreement of the property owner).

E) Deliverables:

- i) Preliminary plans (in compliance with requirements of each of five cities), cost estimate, and specifications
- ii) Final bid package, with approval of each of five cities
- iii) Agreements and any other needed permitting for work on private property
- iv) Bid-period services (answering Requests For Information from bidders)
- v) Design Services During Construction

- F) *Note:* This task may be cancelled if specific grant funding for this task should for any reason be withdrawn.

~~6.101 PHASING PLAN AND FINANCING PLAN (TASK 5)~~

~~A) PHASING~~

- ~~i) Currently the construction of the Project is proposed in phases due to funding constraints. However, based on funding availability and funding strategy, the phases may be able to be developed simultaneously as one project. The Consultant will be needed to assist Omnitrans with developing a comprehensive strategy for the phasing and funding of the Project. This contract will include environmental clearance and engineering (preliminary and final design) for the entire project, including all of the following phases.~~

~~(a) Phase 1~~

- ~~1. Rapid or "BRT Lite" line with enhanced stations and transit~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~signal
priority~~

~~2. 40' buses with sbX branding~~

~~(b) Phase 2~~

~~1. 3.5 Miles of dedicated BRT center lanes in Ontario and related streetscape improvements~~

~~2. Additional right of way and road widening, site work/utilities~~

~~3. Construction of six median stations~~

~~(c) Phase 3~~

~~1. Purchase of 60' articulated vehicles~~

~~B) PHASING AND FUNDING PLAN~~

~~i) The Consultant will be responsible for producing a phasing and funding plan, which will include the following subtasks:~~

~~(a) Create a financing plan for the overall Project, including Phases 1, 2, and 3. Refine cost estimates for the phases based upon available information (including conceptual design of Phase 2), and program potential funding sources in fiscal years when expected to be available (based on meetings and conversations with Omnitrans staff, SANBAG staff, and other potential funding agencies).~~

~~(b) Evaluate funding sources: Starting with funding sources identified in the Alternatives Analysis, the Consultant will evaluate the scale of potential funding sources for each phase of development. Through meetings with Omnitrans staff, SANBAG staff, individual cities and other funding agencies, the Consultant will evaluate the availability of funding sources in terms of availability as well as scale. Federal transportation funding, local, regional and state grants, new funding sources, and value capture opportunities through private development and public private partnership will be evaluated.~~

~~ii) Provide support with compiling available information for use in grant applications when needed.~~

~~iv) Based on funding expected to be available, provide recommendations for how to phase construction of Project, if at all. Create a timeline chart with years for major milestones of Project including all three phases.~~

~~v) Assist with answering concerns from city officials, stakeholders, and others in regards to phasing plan, including but not limited to, the following:~~

Scope of Work

- ~~(a) How can construction impacts to service be minimized while constructing Phase 2?~~
- ~~(b) How can private development potential be encouraged and work hand in hand with this Project? Will phasing the project cause additional delays in private development along the corridor?~~
- ~~(c) How will project costs be affected by phasing the project (due to escalation, or splitting the project into multiple construction contracts)?~~
- ~~(d) How will phasing impact design (such as design of stations for left side boarding or right side boarding depending on vehicles planned to be used, and design of 6 stations in Ontario to be moveable/reusable from Phase 1 to Phase 2 if the project is constructed in phases?)~~

~~C) REVISIONS~~

- ~~i) The Consultant shall revise the financing plan / phasing plan 2-3 times throughout the duration of the project, based on review and discussion by Omnitrans staff and PDT members, and based on newly available information.~~

~~D) Deliverable:~~

- ~~i) Financing plan / phasing strategy document~~

~~7.101 SMALL STARTS PROCESS (TASK 6)~~

~~A) SMALL STARTS FUNDING SUBMISSION~~

~~In the financing plan task above, FTA Section 5309 Capital Investments (Small Starts) grants are likely to be selected as a potential funding source for the Project. The Consultant shall assist Omnitrans in navigating through the Small Starts funding process. This will include putting together a letter requesting entry into Project Development, as well as submitting additional required materials for a Small Starts funding submission. This task will be guided by the most current guidance available from FTA, as well as frequent consultation with FTA staff. According to the current guidance (Major Capital Investments Final Rule, April 2013; and New and Small Starts Evaluation and Rating Process Final Policy Guidance, August 2013), the following information will be needed for a Small Starts funding submission. The Consultant will be responsible for compiling this information.~~

- ~~i) Number of transit trips using the project — The Consultant will prepare ridership forecasts using a pivot point model, based on the forecasting methodology from the Alternatives Analysis (AA). Appendix 3 of the AA covers the travel demand forecasting methodology. Should Omnitrans or FTA~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~prefer that the Consultant use the FTA STOPS model (or another methodology), that can be substituted for the pivot-point model. The consultant will provide information regarding the project's congestion relief benefits for inclusion in submission to FTA.~~

~~ii) Number of Trips by Transit Dependents Using the Project — The Consultant will provide this using the most recent available Census data for household income and household auto ownership.~~

~~iii) Transit supportive plans and policies — The Consultant will update the existing information provided in the *Alternatives Analysis* document (2014) with any new information obtained from staff of the five cities on the corridor.~~

~~(a) The Consultant will update the economic study provided during the Alternatives Analysis phase, to estimate the projected economic impact of the project on surrounding land uses, as well as the estimated VMT attributable to the estimated changes in land use patterns, population, and employment. Land use information will include: station area population densities, total employment served by the project, the proportion of “legally binding affordability restricted” housing within ½ mile of stations areas to the proportion of “legally binding affordability restricted” housing in the counties through which the project travels; pedestrian accessibility; presence of high trip generators; and availability of parking near stations.~~

~~The Consultant will update land use and pedestrian accessibility information in the Alternatives Analysis Report. Information will be refined to address changes in the project description identified in Task 3 and the PE task and include any recently approved City land use or specific plans and proposed development projects identified in city conversations.~~

~~(b) The Consultant will estimate potential land use changes projected on surrounding land uses. The Consultants' analysis will provide advice through conversations with staff of the five cities along the corridor as to how development can be planned that complements the Project.~~

~~iv) Environmental benefits expected to result from the project — The Consultant will calculate environmental benefits, including change in air quality criteria pollutants, change in energy use, change in greenhouse gas emissions, and change in safety, using the methodology and tools provided by the FTA. The Consultant will provide travel model inputs to greenhouse gas, air toxics, noise, and traffic analyses. Informed by development growth analyses, the Consultant will provide advice to staff of the five cities.~~

~~v) Cost effectiveness — The Consultant will calculate cost effectiveness of the~~

~~Project as the annualized capital federal share of the project per trip on the project (using total number of estimated trips), based upon the Consultant's cost estimate for the Project, and excluding the cost of "enrichments."~~

~~vi) Land use—The Consultant will compile needed land use information from sources including the *Alternatives Analysis* report, conversations with staff of the five cities along the corridor and local housing authorities, and other available information sources. The information needed includes: station area population densities, total employment served by the project, the proportion of "legally binding affordability restricted" housing within 1/2 mile of stations areas to the proportion of "legally binding affordability restricted" housing in the counties through which the project travels; pedestrian accessibility; presence of high trip generators; and availability of parking near stations.~~

~~vii) Congestion relief—This may need to be calculated if FTA provides guidance on the methodology by which it should be calculated.~~

~~viii) Local financial commitment—The Consultant will compile requested information based on the financing plan developed in the previous section, as well as information on Omnitrans' operating budget and projected operating funding sources for the Project.~~

~~ix) Deliverables:~~

~~(a) Ridership forecasts, as well as other calculations mentioned above~~

~~(b) Letter requesting entry into project development~~

~~(c) Preliminary and final Small Starts grant submittal package, including all information mentioned above~~

~~x) Note: This task may be cancelled if Omnitrans decides not to pursue Small Starts funds.~~

~~8.101 ENVIRONMENTAL CLEARANCE (TASK 7)~~

~~A) ENVIRONMENTAL IMPACT REPORT~~

~~Because Phase 2 of the Project involves widening Holt Boulevard (including right-of-way acquisition) to construct dedicated lanes and median stations, it is anticipated that this task will involve the completion of an Environmental Impact Report (EIR), pursuant to CEQA, and Finding of No Significant Impact (FONSI), pursuant to NEPA. It is assumed that both CEQA and NEPA impact discussions can be combined and discussed together within each topical section of the environmental document (EA/EIR). The Consultant will conduct the required public scoping and outreach, prepare an EA/EIR and supporting technical studies for the Project as identified in the subsequent discussion below.~~

~~B) ENVIRONMENTAL ANALYSIS NEEDED~~

~~Consultant will prepare all environmental clearance tasks in compliance with applicable regulations and standards, and any changes to environmental rules, regulations, and standards during the EA/EIR process will be adhered to. Applicable standards include the following:~~

- ~~i) The National Environmental Policy Act (NEPA), Regulations for Implementation and Final Amendment to 40 CFR 1500-1508; as of July 1, 1986.~~
- ~~ii) Guidance Manual for Transit Noise and Vibration Impact Assessment, U.S. Department of Transportation, Federal Transit Administration, April 1995.~~
- ~~iii) Clean Air Act Regulations, 40 CFR, Parts 51 and 93, Air Quality: Transportation Plans, Programs, and Projects; Federal or State Implementation Plan Conformity; (with updates to August 15, 1997)~~
- ~~iv) FTA Regulations for Environmental Impact Statements and Related Procedures (23 CFR Part 771-777)~~
- ~~v) Executive Order 11514, Protection and Enhancement of Environmental Quality~~
- ~~vi) 40 CFR 51 & 93 Transportation Conformity Rule Amendments: Flexibility and Streamlining: Final Rule August 15, 1997.~~
- ~~vii) CEQA Guidelines, California Environmental Quality Act (CEQA), as amended.~~

~~C) SCOPING DOCUMENT~~

~~The Consultant will prepare a scoping document. One round of five scoping meetings (one in each community) will be coordinated by the Consultant (as described in the Public Outreach chapter above). Following the scoping meetings, a Draft Scoping Summary Report shall be prepared to summarize all comments received during the environmental scoping period. Upon Omnitrans review and comment, the document will be revised into a Final Scoping Information Document. Individual contacts will be made with appropriate resource agencies, as necessary.~~

- ~~i) Deliverables:-~~
 - ~~(a) Conduct five (5) scoping meetings~~
 - ~~(b) Draft scoping summary report~~

~~(e) Final scoping information document~~

~~E) PROJECT ALTERNATIVES~~

~~The EA/EIR will evaluate a range of alternatives, including but not limited to, the following:~~

- ~~i) No Build alternative;~~
- ~~ii) Transportation Systems Management alternative;~~
- ~~iii) Rapid line with no dedicated lanes;~~
- ~~iv) Full BRT with 3.5 miles of dedicated lanes (including widening Holt Boulevard in Ontario for two mixed flow lanes plus one transit lane in each direction);~~
- ~~v) Full BRT with 3.5 miles of dedicated lanes (assuming converting one traffic lane of Holt Boulevard in Ontario to a transit lane and keeping one mixed flow traffic lane in each direction); and~~
- ~~vi) One or more options that incorporate an on street bicycle lane or cycle track.~~

~~F) ALTERNATIVES ANALYSIS REPORT~~

~~The completed Alternatives Analysis report will serve as a basis for evaluating these alternatives. The alternatives analysis component of the EA/EIR may also include the options for routing alignment and station locations mentioned in the previous section; the Refinement of Routing and Station Locations phase and Environmental phase may be approached simultaneously.~~

~~i) Deliverable:~~

~~(a) Alternatives Analysis Report~~

~~G) EXPECTED YEARS OF COMPLETION~~

~~The EA/EIR should also take into account the proposed phasing of the project and the expected baseline years of (expected years of completion of) each phase when considering the impacts.~~

~~i) Deliverable:~~

~~(a) Include Phasing Analysis in EA/EIR and supporting technical studies~~

~~H) PROJECT DESCRIPTION OF EA/EIR~~

~~The Project Description of the EA/EIR shall be developed to include a thorough description of the physical improvements, operating characteristics and construction details associated with each of the alternatives being examined in the environmental document. Examples of such details would include roadway geometry, structure plan and profile, right of way requirements, aesthetic treatment of the route, station designs and layouts, vehicle composition and fleet size estimates, maintenance requirements and associated facilities, and other such details.~~

~~i) Deliverable:~~

~~(a) Include project description in EA/EIR~~

~~I) CONSTRUCTION TIMELINE~~

~~The Consultant will also develop a construction scenario that lays out the construction sequence and timeline and provides sufficient quantitative information to permit an adequate assessment of impacts likely to be experienced during the construction process.~~

~~i) Deliverable:~~

~~(a) Include construction sequence and timeline in EA/EIR~~

~~J) UPDATE EXISTING CONDITIONS~~

~~The Consultant will update the existing conditions documented during the Alternatives Analysis, including existing and planned land uses along the corridor. The Consultant will update this by researching Census data and other available data, reaching out to staff of the five cities, and conducting field surveys if needed.~~

~~i) Deliverable:~~

~~(a) Provide updated existing conditions in EA/EIR~~

~~K) UPDATE RIGHT OF WAY~~

~~The Consultant will update the right of way acquisition / property impact information that was provided in the City of Ontario's Holt Boulevard Mobility and Streetscape Strategic Plan (2013) and the West Valley Connector Alternatives Analysis (2014).~~

~~i) Deliverable:~~

~~(a) Property Acquisition/Property Impact Report~~

~~L) ENVIRONMENTAL JUSTICE ANALYSIS~~

~~The Consultant must conduct an Environmental Justice analysis, pursuant to FTA guidelines, as a part of the EA/EIR.~~

~~i) Deliverable:~~

- ~~(a) Community Impact Report with Environmental Justice Analysis~~

~~M) ANALYSIS OF IMPACTS~~

~~The EA/EIR will include analysis of the following potential impacts, along with any additional impacts requiring analysis under CEQA and NEPA (per the guidance and statutes listed above):~~

- ~~i) Soils, Geology, and Seismicity — Consultant will review standard references to determine pertinent geotechnical characteristics of the corridor. Using the results of the geotechnical analysis conducted as part of the engineering activities, Consultant will evaluate the potential effects of the project on the environment (e.g., soil settlement) and also the potential effects of environmental conditions on the project (e.g., seismic events).~~

~~(a) Deliverable:~~

- ~~1. Include results of the geotechnical analysis results in the EA/EIR~~
- ~~ii) Ecosystems — The U.S. Fish & Wildlife Service (USFWS) and California Department of Fish & Game shall be queried by Consultant regarding federal and state listed protected species. Consultant will undertake a field reconnaissance to determine conditions conducive to presence of listed species and determine if follow on focused surveys for one or more listed species are warranted. Such focused surveys are not included in this scope of work. In addition to the above reconnaissance, the study area shall be reviewed and described in terms of its ecological communities. The potential effects of the project alternatives shall be assessed against the biological conditions noted in the field and an assessment as to the potential significance of such impacts will be provided. To the extent that avoidance of significant impacts can be obtained by project modifications, such modifications will be recommended. If this is not possible, minimization of the extent and/or severity of the impact will be recommended, followed by mitigation.~~

~~(a) Deliverables:-~~

- ~~1. Complete biological surveys~~
- ~~2. Biological Assessment Report~~

~~3. Include results of the Biological Assessment Report in EA/EIR~~

~~iii) Hydrology and Water Quality — Consultant will inventory existing hydrologic and floodplain conditions within the project corridor. Based upon a preliminary assessment of potential impacts associated with the proposed project, Consultant will recommend the level of documentation appropriate for the project. Such documentation would include, at a minimum, a Technical Memorandum, describing study area conditions, potential impacts, and appropriate mitigation, or, at a maximum, a Floodplain Evaluation Report shall be prepared, as required by Executive Order 11988. Consultant shall coordinate with the five cities on the corridor, County of San Bernardino, the San Bernardino Flood Control District, Caltrans and FEMA, as necessary, to obtain flood limits, hydrology and flow rates for affected “Waters of the U.S.” An assessment of pre and post project hydraulic conditions, where construction within the federal waters may occur, and any proposed flood control improvements needed to mitigate water surface increases, will be provided, as appropriate to the project circumstances.~~

~~— The need for use of hydraulic models will be investigated. If necessary, the models used at this stage shall at a minimum consider a distance of 500 feet upstream and 500 feet downstream of proposed Project. Streams designated as flood hazard zones should be considered.~~

~~(a) Deliverable:~~

~~1. Floodplain Evaluation Report~~

~~iv) A Water Quality Analysis will be prepared describing potential impacts of Project construction and operation to surface and ground water quality. Water quality data will be compiled from existing available documents and handbooks.~~

~~(a) Deliverable:~~

~~1. Water Quality Report~~

~~v) Pollutants of concern shall be identified and impacts shall be evaluated with regard to both groundwater and surface water resources. Potential mitigation measures shall then be identified, including design pollution prevention best management practices (BMPs), treatment BMPs (e.g. detention basins, bioswales, infiltration basins, etc.), construction BMPs, and source control BMPs.~~

~~vi) Noise and Vibration — Consultant will collect and review available project reports, documents, and design drawings. A site visit will be conducted to identify noise sensitive land use and finalize the noise monitoring sites. Three~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~sets of noise measurements will be conducted, which will include short term noise measurements, long term noise measurements, and single bus passby noise measurements. The purpose of the short term and long term noise monitoring is to determine existing ambient noise levels along the proposed project alignment and identify any major noise sources, such as freeway traffic and aircraft flyovers. Background noise levels are required for evaluating noise impacts using FTA procedures.~~

~~Long term noise monitoring, for at least 24 hours, will be conducted at up to 10 selected sites, and short term noise monitoring, for at least 20 minutes, will be conducted at up to 24 additional selected sites. Long term noise measurements will be used to establish the noise profile at a given neighborhood. Short term noise measurements at the sites with similar characteristics will be used to develop the noise profiles for the short term measurement sites. Measured background data will be analyzed and compiled. Graphs will be prepared to show the long term noise measurement results. Short term measured background noise levels will be tabulated. The background noise will be estimated for all of the sensitive areas based on the measured noise data.~~

~~Passby noise measurements will be conducted using Omnitrans' sbX articulated buses similar to the ones that will be used for this project. Even though there are default noise emission levels for different types of transit sources in the FTA noise model, it is recommended by FTA to use a measured data from a similar source when it is possible.~~

~~Noise measurements will be conducted in accordance to the appropriate standards. All noise monitoring instruments will meet ANSI noise standards, and they will be calibrated and operated according to the respective manufacturers' specifications.~~

~~Criteria and procedures specified by FTA, along with the measured background noise levels and operational parameters, will be used to evaluate impacts. Field observations and aerial photos will be used to define the noise propagation characteristics of areas along the project route. A screening procedure will be used to identify segments of the proposed route that need to be considered for the impact analysis. Relocation of traffic lanes closer to the noise sensitive receptors due to the proposed project will also be considered in the analysis.~~

~~Day night average noise levels (Ldn) will be used for the residential areas, and average hourly noise levels (Leq) will be used for nonresidential areas. Tables will be prepared to document the results of the noise assessment. Impact and severe impact noise contours will be developed to graphically illustrate impacted areas. Appropriate and effective mitigation measures will be outlined to eliminate or minimize noise impacts.~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~Construction noise and vibration impacts will be evaluated along the proposed project routes. Special attention will be given to areas along the dedicated bus routes where the existing background noise and vibration levels would be low. Practical and feasible noise and vibration mitigation measures will be recommended to eliminate or minimize noise and vibration impacts.~~

~~A technical report will be prepared to summarize the results of the studies. The report will show the project limits, explain the methodology, discuss the results, summarize the findings, and provide abatement/mitigation measures.~~

~~(a) Deliverable:~~

~~1. Noise Study Report~~

- ~~vii) Air Quality—Consultant will survey the project study area for sensitive receptor locations. Existing conditions pertaining to current local emissions will be obtained from the nearest air quality monitoring station(s) and documented for the last three calendar years, noting the number and severity of National or California Ambient Air Quality Standards violations. The regulatory setting will be described, including the jurisdictional and planning status of air quality planning governing the study area. The pertinent criteria pollutants will be identified and described and the Clean Air Act attainment status of such pollutants.~~

~~The effects of the project will be evaluated in terms of localized carbon monoxide (CO) “hot spots” analysis and daily burden calculations. Predictive modeling will be used to estimate the CO values for existing conditions, future no build and future build scenarios, at each of a representative number of sensitive receptor sites. It is not expected that new or more severe violations of the CO standards will be found, and the conclusion should be reached that daily burden amounts are improved to some degree from a shift to increased transit usage from reduced automobile usage. Clean Air Act conformity will be documented for purposes of the EA. The results shall be documented in an Air Quality Technical Report.~~

~~The air quality analysis will focus on three key issues. First, the air quality analysis will establish the benefits of the project based on the changes in vehicle miles of travel reflected in the Omnitrans transportation model. It is anticipated that the shift from automobile to transit use from the No Build to the BRT Alternative will marginally decrease regional vehicle miles traveled and associated air pollutant emissions. Second, the air quality analysis will address localized pollutant concentrations. The localized analysis will analyze the displacement of street traffic on to parallel routes or adjacent intersections, as well as hot spots that may be created in the vicinity of station areas, including park and ride lots. Third, the air quality analysis will discuss greenhouse gas (GHG) emissions. The carbon dioxide equivalent emissions will be quantified, and consideration will be given to the emissions~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~characteristics of the proposed bus fleet. From a GHG perspective, it is possible that increased bus vehicle miles of travel may offset automobile emissions reductions of GHG because buses emit more GHG than smaller vehicles. This issue will be closely examined to ensure that the GHG benefits of the project are accurately portrayed and presented.~~

~~(a) Deliverable:~~

~~1. Air Quality Report~~

~~viii) Hazardous Waste — Currently available published databases shall be queried using a commercial vendor to determine the presence, location, site characteristics, and potential exposure or impact hazard associated with any known and documented hazardous waste sites identified in the literature. Sites of relevance to the project will be mapped and their characteristics made know to the engineering staff, for design purposes.~~

~~A “windshield survey” will be conducted to identify any obvious hazardous waste sources not listed but displaying evidence in the field (i.e. above ground storage tanks, 55-gallon drums, evidence of remediation activity). The potential for impacts related to the project (e.g., exposure of the public to hazards) will be noted and referred to geotechnical staff for recommended mitigation measures. The results of the above effort will be documented in a technical appendix to the environmental document.~~

~~(a) Deliverable:~~

~~1. Initial Site Assessment and ADL Report~~

~~ix) Historic and Archaeological Resources — Consultant will prepare an Area of Potential Effects (APE) map and seek FTA and SHPO approval. Two subareas will be defined. For archaeological resources, the area subject to ground disturbance will constitute the APE. For historic resources, the area encompassing likely environmental effects (i.e., noise, visual, physical takings) will constitute the APE. The APE map will be used to create the inventory of cultural resources to be documented and analyzed for potential impacts.~~

~~Section 106 of the National Historic Preservation Act requires an affirmative search for properties on, eligible, or potentially eligible for listing on the National Register of Historic Places. Such affirmative search will be conducted within the APE, for both historic and archaeological resources. This will be done by querying the National and California Registers, and also County and local lists of landmarks and locally significant resources. A detailed field investigation will be conducted by qualified personnel to identify potential additional historic and/or archaeological resources (based on criteria provided in 36CFR800) qualifying for listing on the National Register~~

~~(NR):~~

~~Consultant will conduct a query of known or reported studies and sites. The query will yield known or identified resources in the study area. A field "walk-over" will be conducted by a qualified archaeologist from the contractor's sub-consultant to identify any potential NR-eligible resources noted in the field.~~

~~Both the archaeological and historic resources will be documented on California Department of Parks & Recreation (DPR) 523 forms, and housed in a Determination of Eligibility (DOE) Report, which will be reviewed and approved by FTA and subsequently the California State Historic Preservation Officer (SHPO). The resources documented in the DOE Report will constitute the cultural resources environment for purposes of impact analysis.~~

~~The resources identified in the DOE Report will be placed in the context of the proposed project and potential effects analyzed. Such effects may include direct takings from properties (partial or full), or effects contributing to the alteration of historic settings (i.e., noise, visual obstruction, loss of access, etc.). With regard to archaeological resources, the effects are normally associated with disturbance or destruction during the construction period. The effects will be evaluated in the context of 36 CFR 800 and a determination made as to whether an "adverse effect" (in the context of 36 CFR 800) exists. If this is the case, avoidance will first be pursued, followed by mitigation pursuant to a Memorandum of Agreement (MOA) among Omnitrans, FTA, SHPO, Advisory Council on Historic Preservation (invited) and interested parties. The MOA will govern resolution of adverse effects pursuant to Section 106. A Finding of Effects (FOE) Report will be prepared and approved by the FTA and the SHPO as part of the environmental process, as would any MOAs that are required.~~

~~(a) Deliverables:~~

- ~~1. APE Mapping~~
- ~~2. Conduct NRHP Database Search and Site Specific Surveys~~
- ~~3. FOE Report (if required)~~

~~x) Parklands and Recreation—Consultant shall inventory the project study area for the presence of public parks, parklands and recreation facilities. The inventory will be documented in mapping, tabulations, and descriptions of the sites/facilities and their attributes and usage. The Project will be placed in the context of the parkland and recreation facilities and potential impacts analyzed. Such impacts may include direct takings (partial or full), loss or impairment of access, noise intrusion, visual obstruction, etc. Should such adverse effects be found, they are considered a "use" and must be addressed in~~

~~the context of Section 4(f) of the U.S. Department of Transportation Act. The protection offered under Section 4(f) extends to NR-eligible cultural resources and also to wildlife refuges. A Section 4(f) Evaluation will need to be included in the environmental document. Should an unavoidable use of a Section 4(f) protected resource be found as a result of the analysis, FTA could require the NEPA document to be elevated to an EIS, for which additional scope and budget would be required.~~

~~(a) Deliverable:~~

- ~~1. Complete Section 4(f) analysis as part of EA/EIR~~
- ~~xi) Traffic and Transportation—Consultant will conduct a Traffic Impact Assessment (TIA) in conjunction with the travel demand modeling and traffic simulation tasks. Both vehicular transportation and parking will be evaluated. Results of travel demand estimation model runs will be imposed upon the study area street network and both lane volumes and intersection through and turning movements will be analyzed. The analysis, which will be conducted using industry accepted impact analysis methodologies, will consider sbX operations, including "queue jumpers" and other signal priority advantages given to the sbX operation. Resulting volumes and intersection performance will be evaluated using FTA accepted analysis methodologies and such other metrics as may be appropriate to typically required local jurisdiction traffic analyses. Impact analyses will be performed for existing conditions and project opening year (for each phase of project), for each alternative. Level of service and vehicle miles traveled will both have to be forecasted/estimated.~~

~~The TIA, consistent with local traffic study guidelines, in support of the EA/EIR, will determine the level of traffic related impacts associated with implementation of the proposed project. It is expected that the TIA will include the analysis of up to 94 signalized intersections along the route and up to 30 intersections along parallel corridors throughout the study area. Traffic operations would be assessed during the weekday a.m. and p.m. peak hours for existing and project opening year conditions for each project alternative. This scope of work assumes new intersection traffic counts would be collected at each study intersection to establish existing conditions.~~

~~Using the roadway link volumes, the Consultant will "post process" to develop intersection turning movement volumes for traffic operations analysis. It is assumed that all Vehicle Miles Traveled (VMT) or Vehicle Hours Traveled (VHT) calculations will utilize the travel demand model.~~

~~In addition to traffic operations, an assessment of parking impacts as a result of the new bus lanes will be included. Where on street parking would be affected by the project, current on street parking counts would be collected on an hourly~~

~~basis (10 hours) during a typical weekday.~~

~~Transportation mitigation measures will be identified to reduce significant intersection traffic impacts to a level considered less than significant. Improvements necessary to bring the levels of service to within acceptable levels by the construction of this project may include additional lanes, transportation systems management, transportation demand management, and/or changes in roadway functional classifications.~~

~~The Consultant will prepare a "Response to Comments" memorandum, responding to public and/or agency comments received during circulation of the Draft EA/EIR. If additional analyses are required due to these comments and responses, the Consultant will identify these analyses.~~

~~Upon completion of the comment responses, the Consultant will work with the PDT to provide a final TIA for inclusion into the final EA/EIR.~~

~~Mitigation, if necessary, will be recommended, including traffic signal modifications, ITS techniques, and intersection geometric changes, if appropriate and necessary to achieve acceptable levels of service.~~

~~Existing on and off street parking spaces will be inventoried along the corridor. Changes in either inventory associated with the project will be identified and characterized as to significance of the loss. Mitigation, in the form of replacement or other suitable techniques, will be recommended, as necessary.~~

~~(a) Deliverable:~~

~~1. Traffic/Parking Study~~

~~xii) Public Services and Utilities — Project study area shall be inventoried by Consultant for the presence of public services (i.e., schools, parks, libraries, health care facilities, religious institutions, fire, police, etc.). The inventory will be mapped, tabulated and described. The proposed project will be examined in the context of the public facilities and potential impacts (i.e., loss or impairment of access, noise, taking, etc.) identified, if any. To the extent that mitigation can be provided, such will be recommended.~~

~~The project study area shall also be inventoried for major utilities potentially subject to impact. Major utilities include storm drains, large water supply conveyances, waste water conveyances, and significant end-user utilities such as electrical, gas, telephone, fiber optic lines, etc. Potential disturbances to utilities~~

~~(a) Deliverable:~~

~~1. Complete Public Services and Utilities analysis as part of EA/EIR~~

Scope of Work

~~xiii) — Visual and Aesthetics — This task will assess how the proposed project and alternatives would change the visual and aesthetic nature of the adjacent built environment. Although the proposed project would be primarily at-grade on existing streets, there are some aspects and elements of the project that would create contrasting new visual elements, including construction of the stations, construction of parking lots and structures, and introduction of and removal of existing landscaping. The visual impact analysis will address the overall change in visual character, as well as effects on specific views and vistas. Photographs of existing conditions, plus sketches and illustrations analyzing the change in the visual environment, and mitigation measures, such as restoring the affected landscape, will be included.~~

~~The analysis will include discussions of the existing built environment along the project corridor, natural features, existing views, significant visual resources and glare in the project area. Consultant shall identify the prominent views and vistas with unique or special design characteristics in the project area. Photographic tools (before and after imagery) will be used to illustrate visual and aesthetic impacts. The analysis will determine the extent to which an alternative would: (a) obstruct or substantially change a sensitive view, (b) result in the degradation of the streetscape character along a major street such as the loss of a substantial number of trees which cannot be replaced, (c) create new views that would result in a loss of privacy to residents along the corridor, or (d) create major new sources of light and glare that could adversely affect adjacent sensitive uses.~~

~~(a) Deliverable:~~

~~1. Visual and Aesthetics Impact Study~~

~~xiv) — Energy Consumption — Consultant will conduct an inventory of contributors to the current energy environment and make numerical calculations to estimate daily and annual consumption of energy by the range of mobile sources potentially affected by the project. Such sources would include autos, trucks and buses. Estimates of daily and annual energy consumption will be made and tabulated for the existing condition. Projections of energy usage, under a no-build scenario, will be made for the determined future horizon year. Changes in mode share resulting from the proposed project will be reviewed and post-project energy calculations will be done to document the changes. The results will be tabulated and differences discussed.~~

~~(a) Deliverable:~~

~~1. Energy Consumption Study~~

~~xv) Impacts During Construction — Consultant will develop a construction~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~scenario upon which will be based a construction impact analysis. Quantitative impacts (e.g., noise, air quality) will be estimated, where possible; qualitative estimations will be used elsewhere. This task will involve the development of typical construction techniques, equipment and timing, and likely construction staging areas that may be used. Graphics will be used to assist in the description of project construction activities and impacts. Appropriate state and local guidelines will be used to assist in the preparation of these sections, (e.g., significance thresholds for traffic levels of service, South Coast Air Quality Management District guidelines and criteria).~~

~~(a) Deliverable:~~

~~1. Complete Construction Impact Analysis as part of the EA/EIR~~

~~xvi) Subregion Emissions Burden Assessment — To provide an overall assessment of the potential in air quality conditions within the study area, a burden type air quality analysis shall be prepared. This analysis will address all criteria pollutants (ROG, CO, NOX, SOX, PM10). For study area transportation network, it will identify the daily or peak hour emissions under existing conditions as well as future conditions with and without the proposed transit improvement alternatives. The air quality burden assessment will be based on modeled vehicle miles of travel within the study area. Emissions will be based on the currently adopted EMFAC mobile emission factor series. It is anticipated that a geographically specific code can be given to the network street segments within the study to allow output from the Countywide Travel Model to be summarized specifically for the study area. The basic concern of this analysis will be to determine (1) whether the emissions forecast is consistent with emissions forecast in the AQMP, and (2) what level of overall emissions reductions result from the proposed Project alternatives.~~

~~(a) Deliverable:~~

~~1. Complete Subregion Emissions Burden Assessment as part of the EA/EIR~~

~~xvii) Safety and Security Burden Assessment — Consultant shall analyze all proposed railroad grade crossings to ensure safe surface or grade separated sbX operation. Security, defined as unlawful or criminal acts intended to bring harm to another person or loss/damage to property, shall be evaluated using existing Omnitrans experience. Consultant will meet with Omnitrans Security personnel and review literature related to security issues on Omnitrans and other transit systems. Crime statistics, if available, shall be cited to provide an estimate of the degree of security that is offered to the transit patron in relation to general background criminal activity levels. Design mitigations to reduce the likelihood of criminal activity will be identified. Factors such as station layouts and equipment (e.g., lighting, direct line of sight, video cameras, PA~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~systems, etc.) are major contributors to actual and perceived personal security. Consultant will identify the security impact of each alternative based on technology dependent factors and based on other factors such as station conceptual layouts. Mitigation measures, as appropriate, will be recommended, if necessary.~~

~~(a) Deliverable:~~

- ~~1. Complete Safety and Security Burden Assessment as part of the EA/EIR~~

~~N) REVIEW~~

- ~~i) Consultant will draft the EA/EIR document and circulate it to all required parties for review. Omnitrans staff will forward to FTA staff, who will review and then coordinate publishing the Notice of Availability in the Federal Register. The required Notice of Availability will be prepared by Consultant and shall indicate the 45 day comment period dates, the dates and times for public hearing opportunities, and agency contacts. Local notices will be prepared to announce the availability of the document and public hearing dates. Public hearings will be scheduled and attended. Written and spoken comments will be assembled and summarized.~~

~~(a) Deliverables:~~

- ~~1. Draft EA/EIR~~
- ~~2. Circulate Draft EA/EIR~~
- ~~3. Prepare and circulate Notices~~
- ~~4. Schedule and attend up to two (2) public meetings/hearings~~

- ~~ii) Consultant, in consultation with Omnitrans staff and PDT members if needed, shall respond to comments presented during the circulation of the Draft EA/EIR, identify additional analyses that will be required to adequately respond to public comment or resolve issues in the Draft EA/EIR (if any); identify mitigation measures and develop a mitigation monitoring program.~~

~~(a) Deliverable:~~

- ~~1. Respond to public comments~~

- ~~iii) Additional environmental analyses may or may not be required as a result of unresolved issues related to the alignment, service and maintenance facility locations, and station locations adopted and defined for the Draft EA/EIR. These issues, if any, will be identified in a memorandum that will identify~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~these additional analyses and the level of effort required. Should additional analyses be required, an extension of the established schedule will be necessary.~~

~~(a) Deliverable:~~

- ~~1. Develop additional technical analysis to address public comments (if required)~~

~~iv) Mitigation measures for adverse impacts will be finalized and formatted into a CEQA Mitigation Monitoring & Reporting Program (MMRP) that will be continued during the final design and construction stages of the project. These mitigation measures will represent Omnitrans and FTA commitments necessary to respond to the impacts associated with the Project.~~

~~(a) Deliverable:~~

- ~~1. Mitigation Monitoring & Reporting Program (MMRP)~~

~~v) Following the completion of necessary analyses and identification of acceptable mitigation measures, a draft Final EA/EIR will be prepared for review by Omnitrans. Following incorporation of Omnitrans' comments, a revised draft Final EA/EIR will be prepared and forwarded to FTA for review and approval consideration.~~

~~(a) Deliverable:~~

- ~~1. Draft Final EA/EIR~~

~~vi) Consultant shall prepare the Final EA/EIR, incorporating FTA comments provided upon review of the draft Final EA/EIR. The Final EA/EIR document will be prepared, finalizing all text, graphics, tables, and other features. A camera-ready document will be prepared for printing and binding. Consultant shall assist in final EA/EIR printing and binding. Omnitrans will be responsible for the distribution of the Final EA/EIR.~~

~~(a) Deliverable:~~

- ~~1. Final EA/EIR~~

~~vii) After the Final EA/EIR is made available to the public for 30 days, FTA may issue a Finding of No Significant Impact (FONSI). Consultant shall assist Omnitrans to certify the CEQA document as adequate, adopt the project, adopt Findings of Fact and the Mitigation Monitoring & Reporting Program, and file a Notice of Determination to that effect.~~

~~(a) Deliverable:~~

~~1. CEQA/NEPA Approval Documents~~

~~O) LOCALLY PREFERRED ALTERNATIVE~~

- ~~i) Once the environmental clearance process is completed, the Consultant will assist Omnitrans with identifying the Locally Preferred Alternative and help to facilitate adoption by Omnitrans' Board of Directors and adoption by SANBAG's Board of Directors. The Consultant will also help Omnitrans to navigate the process of getting the Locally Preferred Alternative included in SCAG's Regional Transportation Plan as well as any of SCAG's or SANBAG's other regional planning documents, as needed.~~

~~P) Deliverables:~~

- ~~i) Scoping meetings / public hearings (can be combined with public meetings mentioned under Public Involvement task)~~
- ~~ii) EIR public comment hearings if needed (can be combined with public meetings mentioned under Public Involvement task)~~
- ~~iii) Final, approved EA/EIR~~
- ~~iv) Presentation to Omnitrans' Board of Directors~~
- ~~v) Presentation to SANBAG's Board of Directors~~

~~9.101 PRELIMINARY ENGINEERING (TASK 8)~~

~~A) PRELIMINARY ENGINEERING~~

~~Parallel to the completion of the Environmental Clearance task, the Consultant will be responsible for preliminary engineering (30% conceptual design) for the entire project, including Phase 2 (dedicated lanes).~~

~~B) AGENCY COMMENT REVIEW AND QUALITY REVIEW~~

~~The Consultant shall allow sufficient duration for normal agency review, respond to all written comments, and reflect in the final version of the construction contracts technical plans and specifications the resolution of each comment. Prior to the submission of drawings, specifications and other technical documents, the Consultant shall complete a quality review of system integration of all facilities and systems, including inter disciplinary and intra disciplinary reviews in accordance with Omnitrans approved Consultant's quality control program and procedures. The Consultant shall have a qualified individual or individuals, not directly involved in~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~the design or drafting of the plans, verify correctness and accuracy.~~

~~C) COMMENT REVIEW MATRIX~~

~~For re-submittals, the Consultant shall include a comment review matrix and the reviewer shall initial each comment as a verification that each comment has been taken care of. Re-submittals to Omnitrans and appropriate stakeholders shall include the new drawings, specifications and other technical documents, as required, and the comments (either on the plans or summarized in a comment log with responses and actions noted), initialed by the Consultant reviewer.~~

~~D) COMPATIBILITY REVIEW~~

~~The Consultant shall review design for compatibility with the existing systems affected by the project, and from the perspective of minimizing operating and maintenance costs, minimizing impacts to the environment and community, constructability (the consideration of construction methods and being sure that what is proposed can be built using common construction methods, especially considering the need to maintain street/roadway traffic and provide a safe working environment for contractors), compliance with state and local design requirements (for example, the Americans with Disabilities Act (ADA) and Buy America), cost effectiveness, and consistency with design criteria. This task shall result in 30% Geometric Approval Drawings, which are to be approved and signed by all applicable jurisdictions. All plans shall be produced using CADD and Digital Terrain Modeling (DTM), and submitted to Omnitrans during project development in the current version at the time of delivery in AutoCAD or Microstation format in electronic format. Plans shall be prepared and formatted as agreed by Omnitrans.~~

~~i) The review will include the following:~~

- ~~(a) Construction sequence, traffic maintenance, and private property access~~
- ~~(b) Construction equipment and access~~
- ~~(c) Temporary construction easement and right of way requirements~~
- ~~(d) Limits and type of materials to be removed or rehabilitated~~
- ~~(e) Roadway horizontal alignment and vertical profile~~
- ~~(f) Proposed dedicated lane structural section~~
- ~~(g) Depth of existing utilities~~
- ~~(h) Materials, size, and depth of existing utility vaults and manholes~~
- ~~(i) Existing and proposed tree locations~~
- ~~(j) Preliminary traffic signal plans~~
- ~~(k) Structural canopy and traffic signal footing locations~~

~~ii) Deliverables:~~

- ~~(a) The Consultant will provide redline comments on the preliminary plans~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~as well as a comment matrix and will attend (1) constructability review meeting with the design team.~~

~~E) Deliverables:~~

~~Hard copy plans sets to be submitted to Omnitrans (4 copies) as well as each permitting agency, including cities of Fontana, Montclair, Ontario, Pomona, and Rancho Cucamonga, Ontario Mills, Ontario Airport, and County of San Bernardino, as per each agency's requirements.~~

~~F) APPLICABLE STANDARDS~~

~~i) The engineering design for this project will be done in accordance with all local, state, national, and industry standards, rules and regulations as applicable and with the following specific design standards:~~

- ~~(a) A Policy on Geometric Design of Highways and Streets, AASHTO~~
- ~~(b) Highway Design Manual, Caltrans~~
- ~~(c) Highway Capacity Manual, ITE~~
- ~~(d) Manual on Uniform Traffic Control Devices (MUTCD)~~
- ~~(e) Transit Capacity and Quality of Service Manual (TCQSM by TCRP)~~
- ~~(f) Traffic Manual, Caltrans~~
- ~~(g) Public Works Standard Drawings, Cities of Fontana, Montclair, Ontario, Pomona, and Rancho Cucamonga~~
- ~~(h) Standard Specifications and Plans, County of San Bernardino and County of Los Angeles~~
- ~~(i) Greenbook Standard Specifications for Public Works, American Public Works Association~~
- ~~(j) West Valley Connector Corridor/Route 61 Alternatives Analysis Summary Report, 2014~~
- ~~(k) Omnitrans Transit Design Guidelines, 2013~~
- ~~(l) FTA Construction Project Management Handbook~~
- ~~(m) FTA Master Agreement and applicable FTA circulars~~
- ~~(n) Buy America and other relevant legislation~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~(o) Americans with Disabilities Act (ADA)~~

~~(p) Lessons learned from Omnitrans' E-Street sbX Corridor Project (document available from Omnitrans) and any other applicable lessons learned posted by the FTA from other regions.~~

~~ii) The current standards of IEEE, ASHRAE, ASTM, ACI, AISC, NEC, FTA, FHWA, Corps of Engineers, SANBAG, LACMTA, City of Fontana, City of Montclair, City of Ontario, City of Pomona, City of Rancho Cucamonga, San Bernardino County, Los Angeles County, utility companies, and other local entities may be applicable.~~

G) DESIGN VARIANCES

~~i) At the beginning of Preliminary Engineering, the Consultant shall develop a Design Standards document for the Project, which is based on the design standards of the five cities, two counties, Omnitrans' Transit Design Guidelines document (2013), and other applicable standards from the above list of Applicable Standards. The Consultant shall notify Omnitrans' Project Manager if the above standards or guidelines are in conflict and shall work with Omnitrans staff and any relevant parties to resolve the conflicts into one unified standards document.~~

~~ii) The project Preliminary Engineering phase should strive to meet full design standards as much as possible with all the agencies. The Consultant will identify any variances to design standards throughout the design process. The Consultant will document the request for a design variance by providing Omnitrans with information as to which variance cannot be met and why, the proposed alternative, and other alternative that were looked at if any. If the variance requires approvals from other agencies, the Consultant will apply for the variance from that agency through Omnitrans with the required documentation of that agency.~~

~~iii) The PE portion of the total design effort must permit the Project to move rapidly through Final Design with a minimum of design changes, disruptions, or delays. The goal of PE is to complete the design to a point where there is consensus among stakeholders in the scope of the project, so that the scope can be "frozen" and not changed during Final Design.~~

~~iv) The Consultant shall perform system planning and preliminary engineering design to a level and extent necessary to satisfy the following:~~

~~(a) Resolves all substantial design issues; environmental impacts and mitigations; third party impacts and mitigations;~~

~~(b) Defines the Project scope and construction sequences;~~

~~(c) Provides more precise estimates of cost and schedule;~~

~~(d) Defines functional and operating characteristics;~~

~~(e) Responds to public comments received;~~

~~H) BASELINE DOCUMENT~~

~~i) Establish and maintain the baselines for Project scope, budget and schedule. Recognize that design shall be advanced to Final Design level of overall design completion and that by that level all baseline control data shall be based on the planned contract packaging and Contract Unit Descriptions.~~

~~ii) Deliverables:~~

~~(a) Baseline scope, budget, and schedule~~

~~I) DESIGN POLICIES~~

~~i) The Consultant shall develop design policy statements for the project as policy statements are completed and submitted to Omnitrans for review, comment and acceptance. Maintain the Design Policies and Procedures throughout development of the project. Considerations should include, but not be limited to, the following:~~

~~(a) System branding (adaptation of Omnitrans sbX branding);~~

~~(b) Station design—protection from wind, sun, and rain;~~

~~(c) Safety and security—Crime Prevention Through Environmental Design;~~

~~(d) Pedestrian and bicycle connectivity;~~

~~(e) Landscaping, public art, and other unique community components of design;~~

~~(f) Traffic impacts;~~

~~(g) Fleet vehicle options;~~

~~(h) Adaptability of design to accommodate future phases (i.e., which stations should be movable and which should be fixed, dependent upon future phase plans for roadway expansion; can side-running station shelters be adapted to become center-running median stations in the future, etc.?);~~

~~(i) Co-location of West Valley Connector stations with local Route 61 or~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~66 bus stops, as well as consideration of space needs for local bus stops adjacent to stations, including Routes 61 and 66 and other intersecting local routes; and~~

~~(j) ADA compliance.~~

~~(k) Deliverable:~~

~~1. Design policy statement with Basis of Design document~~

~~J) PRELIMINARY PROJECT DEVELOPMENT (SYSTEM) PLANNING~~

~~i) The Consultant shall coordinate with the owners of the public facilities within the Project limits and develop Basis of Design and various Plans, Reports and Procedures, which will facilitate the control of Project scope, provide for quality of the design and documents being produced, and establish the operational and performance requirements for system design. The Basis of Design document should borrow heavily from that prepared for the E-Street sbX Green Line Corridor. Note that the term "system" is used interchangeably with the term "project", and the term "systems" is used to describe various mechanical, electrical and electronic equipment and elements.~~

~~ii) The Consultant shall coordinate facilities engineering, architectural engineering and systems engineering design requirements and interfaces to assure an integrated design.~~

~~iii) Deliverables:~~

~~(a) These interfaces may include: equipment product data sheets, equipment location, arrangement, installation, traffic control requirements for construction and operations; space requirements input into facilities and architect engineering preliminary design plans and drawings; interfaces with mechanical, electrical, communications, emergency identification and response, control, monitoring, passenger, and personnel safety systems interface.~~

~~K) PRELIMINARY BASIS OF DESIGN REPORT (BOD)~~

~~i) Early on during the preliminary engineering phase and, based on the conceptual engineering work completed to date, the Consultant shall advance the Initial Engineering Design Feasibility Report and prepare for Omnitrans' approval a Preliminary Basis of Design (BOD) Report that will establish the general Basis of Design of facilities and systems. The Consultant shall develop a BOD Report for the alternative(s) advancing into PE. Where any design concepts or location issues are still unresolved, provide for the comparative analyses of alternatives. This report shall be the basis for developing alignment geometry, structure selection, station design,~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~operational control systems, and cost estimates. The Preliminary BOD Report shall be used as a starting point for PE and basis for comparison between alternatives and of an alternative's ability to perform to the project objectives and criteria. It is not anticipated that the PE design would meet every BOD assumption or objective. Where the PE design fails to meet an assumption, objective, or design criteria, the specific deviation, cause, and impact shall be identified and discussed in the Preliminary Engineering Report.~~

- ~~ii) The Preliminary BOD Report shall include a section listing operational assumptions including: vehicle type(s); vehicle storage and maintenance requirements; maximum operating speed, average operating speed, and headways; projected patron loads and passenger through put capacity; service and spare vehicle requirements; station parking requirements (if any); vehicle location, communication, and tracking requirements; central control and monitoring provisions, security and information systems, and security access; and other requirements determined by Omnitrans. This list shall be used to ensure that these operational elements are included in the preliminary design plans and cost estimates.~~
- ~~iii) The Preliminary BOD Report shall include a section listing major technical design assumptions including: basic alignment grade and geometry requirements; pavement requirements; what commonality and consistency with other Omnitrans Projects or lines must be reflected; what service standards and quality of facilities and equipment apply; what trade off and life cycle cost studies are needed; what provisions for growth, expansion, extension and interconnection are intended; and other requirements determined by Omnitrans. This list shall be used to guide layout and design of the alternative and the development of cost estimates.~~
- ~~iv) Particular attention shall be given to all impacts and requirements, including interface and modifications to existing systems.~~
- ~~v) The Preliminary BOD Report shall be brief and cover the major operational and technical assumptions and requirements to develop preliminary designs and compare alternatives. The report shall be generally tabular. The Consultant shall develop an acceptable format for approval by Omnitrans.~~
- ~~vi) The following policy decisions shall be considered:
 - ~~(a) Operational service standards, desirable/normal and minimal, including:
 - ~~1. Overall trip times;~~
 - ~~2. Wait times;~~
 - ~~3. Minimum policy headway;~~~~~~

~~4. Vehicle loading densities;~~

~~5. Fare schedule and collection method;~~

~~(b) Patronage estimates, by time of day and by direction;~~

~~(c) General alignment and structural configuration (alignment should consider safe operation of buses, difficulty of turns, etc. as well as travel times and access to key transit ridership generators);~~

~~(d) General station locations and major feeders;~~

~~(e) Bus Operation and Maintenance facility (O&M facility) requirements and location;~~

~~(f) Other precautions pertaining to this Project; and,~~

~~(g) Integration with existing traffic signal systems at crossings.~~

~~vii) Where there are basic design issues to be resolved, the Consultant team should perform trade-off studies under this subtask. Produce a BOD Report within 60 calendar days after authorization of project development phase.~~

~~viii) Deliverable:~~

~~(a) Basis of Design report and trade-off studies~~

~~L) VALUE ENGINEERING (VE) AND COST REDUCTION PROPOSALS~~

~~i) Bring to the attention of Omnitrans potential candidate changes in the bases of design or other constraints which should be considered as design phase value engineering proposals, cost reduction measures, cost effectiveness enhancements or cost elimination or deferrals. Where Omnitrans has engaged a value engineering Contractor, cooperate with such Contractor and participate as requested in specific VE meetings. The Consultant shall provide technical support, including performing technical and cost/benefit analysis. As directed by Omnitrans, the Consultant shall incorporate the recommendations of VE changes.~~

~~M) PRELIMINARY ENGINEERING (PE) REPORT~~

~~i) As the Project passes through the preliminary engineering development phase, update the Preliminary BOD Report and produce a Preliminary Engineering Report which will summarize the work performed beginning with the completed planning work, CADD standards, and preliminary facility and systems design work and ending with the various deliverables to date. The~~

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

~~Report should include the preliminary design drawings, specifications and technical reports by reference and be in a report format suitable to Omnitrans. The report shall complement the Project documents and provide background information, qualifications, and other data as needed to document the design and serve as an aid in the future phases of project development. Provide the analysis of elements or systems that are potential candidates for value engineering, cost reduction or elimination from the Project.~~

- ~~ii) The PE Report shall include recommendations for design assumptions, deficiencies in known information, changes in design criteria, and additional investigations needed to complete final design. The PE Report shall include recommended criteria for final design taking into account the analysis completed in PE including: geotechnical, hazardous or contaminated materials, hydraulics, structural, operational, constructability, operations, systems, safety/security, cost effectiveness, community acceptance, or other pertinent data. Assumptions should include the proposed operational plan for the Omnitrans system after the Project is completed, including regular service and special event service, and through coordination with the proposed operating plans for feeder bus, passenger rail, or other planned transit services. The PE Report shall identify all requirements for the final design, including codes, criteria, and design standards that must be met.~~

~~PRELIMINARY GEOTECHNICAL ENGINEERING~~

- ~~(a) Site Visit and Review of As-Built Information—The Consultant will locate and review As-built Log of Test Borings (LOTB) sheets for the I-10/Archibald Ave and I-15/Foothill Blvd Interchanges, and any other useful bridge crossing near the corridor provided by the team. The Consultant will research and review available literature and any soils reports provided by Omnitrans on regional geology, seismicity, and geotechnical data. Consultant will also perform site reconnaissance visits to inspect existing ground conditions along the entire corridor.~~
- ~~(b) Soil Profile and Strength Parameters—From the available soil data, the Consultant will interpret soil and groundwater conditions along the corridor and develop approximate soil profiles and soil strength parameters for pavement design and foundation analysis.~~
- ~~(c) Seismic Design Criteria—The Consultant will determine causative fault, site distance and estimate the Peak Bedrock Accelerations and ARS design spectra using Caltrans Seismic Design Criteria and California Building Code.~~
- ~~(d) Geotechnical Engineering Analyses—The Consultant will conduct preliminary geotechnical evaluation and engineering analyses for foundation design based on collected data. Analyses include an estimation~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~of soil liquefaction potential, preliminary foundation analysis and provide feasible foundation types and preliminary foundation design data for spread footings or piles if required. For spread footings, we will provide allowable and ultimate soil bearing capacities, frictional coefficients and passive soil resistance. For pile foundations, we will estimate the required pile length based on preliminary axial demands.~~

- ~~(e) Report Preparation—The Consultant will prepare a draft Preliminary Geotechnical Report for the entire project summarizing the site geology, soil conditions, seismic design parameters, and estimated pavement and structure foundation design parameters based on existing reviewed information. The Draft Geotechnical Report will be distributed to reviewing agencies. We understand this report may be reviewed by the cities of Pomona, Montclair, Rancho Cucamonga, Fontana, and Ontario. The project crosses Caltrans right of way and therefore Caltrans review is possible. Comments related to geotechnical issues will be addressed by the Consultant. The Consultant will incorporate responses and comments into a final preliminary Geotechnical Report which will be submitted and distributed.~~

~~iii) Deliverable:~~

- ~~(a) Preliminary Engineering Report
(b) Preliminary Geotechnical Report~~

~~N) SYSTEM RELIABILITY / AVAILABILITY / MAINTAINABILITY /
DEPENDABILITY (RAMD) PLAN~~

- ~~i) Using objectives established by Omnitrans that relate to system reliability, service availability, maintainability of equipment and fixed facilities and system dependability, prepare a System Reliability/Availability/Maintainability/Dependability (RAMD) Plan that establishes the allocation of reliability, availability, maintainability and dependability requirements to the various system elements. Also establish the methodology to be used to confirm at various stages in the design, fabrication and testing of the system that overall system requirements are being met. The System RAMD Plan should borrow heavily from that prepared for the E-Street sbX Green Line Corridor Project.~~

- ~~ii) Perform studies and analyses, to determine the appropriate RAMD requirements.~~

~~iii) Deliverables:~~

- ~~(a) System Reliability/Availability/Maintainability/Dependability
(RAMD) Plan~~

~~O) SYSTEM ASSURANCE PLAN~~

~~i) Develop and implement the System Assurance Plan (borrowing heavily from that prepared for the E-Street sbX Green Line Corridor Project), including review of those analyses required to verify that the system design, as it progresses, will meet the overall system assurance requirements.~~

~~ii) Deliverable:~~

~~(a) System Assurance Plan~~

~~P) OPERATIONS AND MAINTENANCE (O & M) PLAN~~

~~i) Consultant shall develop a System Operations and Maintenance Plan based heavily on (and consistent with) the Operations and Management Plan for the E-Street sbX Green Line, and consistent with FTA guidelines.~~

~~ii) The plan should be based on (1) ridership forecasts (2) service goals, and (3) spares requirements. Refine vehicle fleet size calculations from earlier phases of planning.~~

~~iii) Develop operating schedules indicating service levels throughout the day. Develop dispatch and pull in schedules and schemes for midday operator changes, if necessary. Operations plans should be coordinated with other inter connected systems operations.~~

~~iv) Develop for each end of line station, turnback, and convergence, an operations plan section and identify the functional facilities and equipment requirements.~~

~~v) Reflect the detailed requirements of the Project including the projected operating patterns and schedules; operations and maintenance (O&M) facility; interline connections and how they will be used; non revenue route between end of line station and O&M facility; turn around loops; functional facilities and equipment; station operations; central control ties; fault responses and other operational coverage. Cite operational problems that are foreseen or may occur and related safeguards and mitigation measures for each. Discuss the interaction between operating and maintenance functions and provide a general overview of normal and degraded operations with related rules and procedures.~~

~~vi) Assist Omnitrans in the development of preliminary operating schedules, and dispatch and pull in schedules. Provide support for coordination and negotiation of operations and maintenance issues.~~

~~vii) The O&M Plan should include operating cost estimates for the West Valley~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~Connector Rapid bus service, as well as recommendations on how to alter existing local bus routes to better feed into and complement the new service. These recommendations shall include an analysis of the Environmental Justice and Title VI impacts of the recommendations, based upon the prevailing FTA guidance.~~

~~viii) The O&M Plan should also include the following components:~~

- ~~(a) Spare parts requirements and inventory list for facilities and vehicles necessary for the Project;~~
- ~~(b) Systems and Facilities Integration Coordination and Testing Plan; and~~
- ~~(c) Test Procedures.~~

~~ix) Develop the draft Operations and Maintenance Plan for the Project within 45 calendar days after authorization of preliminary engineering phase. Finalize the O & M Plan and use as input to the design tasks.~~

~~x) Deliverable:~~

- ~~(a) Operations and Maintenance/Management Plan~~

~~Q) OPERATIONS AND MAINTENANCE (O&M) FACILITY NEEDS ASSESSMENT~~

- ~~i) Conduct a needs assessment and cost benefit analysis for O&M needs for operation of the BRT line, including the alternative of using a new O&M facility and the alternative of using the existing East Valley O&M facility. The needs assessment must include consideration of the needs for fuel and washing facility, service and inspection shops, repair shops, storage yard and related operational dispatch, administrative and parking facilities required for the Project. Based on input from Omnitrans staff and initial research, develop a list of needs and criteria for a vehicle O&M facility resultant from the West Valley Connector Corridor project (assuming purchase of all new 60' articulated vehicles). The needs assessment should result in a report detailing the space needs and the criteria that should be taken into consideration when selecting a site and designing the facility.~~
- ~~ii) Based on meetings and interviews (maximum 2 days of in-person meetings and facility tours) with Omnitrans staff, the Needs Assessment Report should take the following factors into consideration:~~
 - ~~(a) Understanding of the facility staffing;~~
 - ~~(b) Understanding of staff office/personnel requirements;~~
 - ~~(c) Understanding operational practices;~~

~~(d) Understanding shop and shop support functions;~~

~~(e) Understanding yard functions; and~~

~~(f) Understanding policies and procedures that may affect building configuration and/or work practices.~~

~~iii) — Deliverable:~~

~~(a) O& M Facility Needs Assessment Report~~

~~R) FAILURE RECOVERY ANALYSIS~~

~~i) Analyze the effect of potential failures of the system or particular system elements on bus operations. Develop alternative failure management strategies and system recovery scenarios. Identify operationally suitable locations and configurations. Provide operational input to emergency preparedness planning effort.~~

~~ii) — Deliverable:~~

~~(a) Failure Recovery Analysis Report (based heavily on that prepared for the E Street sbX Green Line Corridor Project)~~

~~S) OPERATIONS AND MAINTENANCE COST ESTIMATES~~

~~i) Based on the operations and maintenance (O&M) staffing projections, as well as information on design life, reliability and maintainability, develop estimates of annual operating and maintenance costs.~~

~~ii) Address and evaluate the trade-offs between capital investment and lifetime operating and maintenance costs. The O & M cost estimates should be based heavily on those prepared during the Alternatives Analysis phase as well as the E Street sbX Green Line Corridor Project.~~

~~iii) — Deliverable:~~

~~(a) O& M cost estimates~~

~~T) SYSTEM SAFETY PROGRAM PLAN~~

~~i) Develop a System Safety Program Plan for the Project (based heavily on that prepared for the E Street sbX Green Line Corridor Project) including details on roles, responsibilities and activities. These activities shall include: general tasks, design and procurement.~~

~~ii) The System Safety Program Plan shall describe the mechanism to be implemented to assist in attainment of, and compliance with, established System Safety, Fire/Life Safety, Safety Certification, Americans with~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~Disabilities Act (ADA), Elderly and Handicapped and Human Factors Engineering Criteria, Plans and Procedures.~~

~~iii) The System Safety Program Plan shall satisfy Omnitrans' System Safety Policy and be compatible with the applicable guidelines of the CPUC and prevailing industry standards and practices. The System Safety Plan shall address but not be limited to: the management of single point failures; the resolution, identification and timely feed back of solutions to identified hazards such as at grade crossings for pedestrians, patrons, bicycles and vehicles, and fuel system into design and operations procedures; the methods taken to finalize safety certification checklists; controls to be implemented to verify compliance to codes, regulations, ordinances and standards for fire/life safety requirements; the development of emergency response procedures; participation in the test Programs; review of operations and maintenance manuals and procedures which relate to safety and the establishment of proactive methodology and requirements.~~

~~iv) Provide technical assistance and advice to Omnitrans. Perform technical analysis of Intersections Crossing Safety. Develop Project requirements and an implementation plan for identified safety measures and input into the overall design.~~

~~(a) System Safety Program tasks will include, but are not limited to:~~

- ~~1. Provide technical assistance, advice and counsel to Omnitrans;~~
- ~~2. Review all relevant sections of design criteria, standard and directive drawings, design review packages, change requests, and other Project documentation for compliance with safety criteria;~~
- ~~3. Develop safety-related documents;~~
- ~~4. Perform planned and periodic internal audits to verify proper program and procedures;~~
- ~~5. Establish and maintain a safety data management system;~~
- ~~6. Establish and maintain an effective hazard identification and resolution program;~~
- ~~7. Establish and maintain a safety library;~~
- ~~8. Review O&M manuals and procedures that relate to safety and attend training courses;~~
- ~~9. Review test procedures and participate in testing; and~~

- ~~10. Verify that tests results meet specified criteria.~~
- ~~v) Produce draft System Safety Program Plan for the Project within 45 calendar days after authorization of preliminary engineering phase. Finalize the System Safety Program Plan and use as input to the design tasks.~~
 - ~~(a) Provide a Safety and Security Certification Plan and conduct the following related tasks:
 - ~~1. Provide administrative and technical support to the Safety Certification Review Team;~~
 - ~~2. Develop criteria and specification conformance checklists for certifiable contracts;~~
 - ~~3. Verify and complete criteria conformance checklist packages;~~
 - ~~4. Provide support to the certification process of testing activities and other field activities;~~
 - ~~5. Participate in certification status meetings with Omnitrans; and~~
 - ~~6. Provide support to on-going certification efforts in the resolution of safety issues.~~~~
 - ~~vi) The resulting safety certificates and Safety Certification Plan will also be used through the design, construction, testing, and operational readiness phases of the project and shall be designed to reduce all incidents that harm passengers and employees, whether these incidents are the result of unintentional occurrences (safety) or intentional acts (security). Also, the Safety Certification Plan should encompass Crime Prevention Through Environmental Design (CPTED). It must be prepared during PE and updated as needed.~~
 - ~~vii) Deliverable: System Safety Program Plan and the following related documents:
 - ~~(a) Safety and Security Management Plan;~~
 - ~~(b) Safety and Security Certification Plan;~~
 - ~~(c) Certifiable Items List;~~
 - ~~(d) Systems to be Tested List;~~
 - ~~(e) Preliminary Hazard Analysis;~~~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

- ~~(f) Threat and Vulnerability Analysis;~~
- ~~(g) Operation Hazard Analysis; and~~
- ~~(h) Safety and Security Organization Review.~~

~~U) EMERGENCY PREPAREDNESS~~

- ~~i) Finalize the Emergency Preparedness Plan (based heavily on that prepared for the E Street/sbX Green Line Corridor) for Omnitrans' submission to California Public Utilities Commission (CPUC). Develop a list of emergency simulations and prepare preliminary procedures to be used during pre revenue test operations. If requested, coordinate simulations schedules with Omnitrans.~~
- ~~ii) Review test procedures. Develop emergency scenarios and prepare emergency readiness drills to be used during revenue and pre revenue Services. Review current Omnitrans Operations & Maintenance training programs and make recommendations for revising or developing new ones.~~
- ~~iii) Assist Omnitrans in coordinating resolution of operations and maintenance issues with Omnitrans Operations, third party agencies and Contractor disciplines.~~
- ~~iv) Deliverable:~~

- ~~(a) Emergency Preparedness Plan for Project~~

~~V) SYSTEM SECURITY PLAN~~

- ~~i) Review the existing Security Plan for Omnitrans, and update the System Security Plan (based heavily on that prepared for the E Street/sbX Green Line Corridor), including details on roles, responsibilities and activities. These activities shall include study of the Project system designs and operations as defined to date and identification of potentially significant problem areas related to the security of patrons, of transit employees and of the property, equipment and structures of Omnitrans. Describe each security problem area and indicate what measures must be taken in the design specification process or in the operations/maintenance period to avoid or mitigate the indicated security problem.~~
- ~~ii) Review all relevant sections of design criteria, standard and directive drawings, change requests and other Project documentation during the preliminary engineering phase for compliance with System Security Design Criteria. Give particular attention to areas identified as carrying the highest risk for patrons, transit employees or transit equipment. Support Omnitrans in soliciting comments from the Security Committee to overall design activity~~

~~through presentations, meetings and special studies.~~

~~iii) Deliverable:~~

- ~~(a) Produce draft System Security Plan for the Project within 45 calendar days after authorization of preliminary engineering phase. Finalize the System Security Plan and use as input to the design tasks.~~

~~W) SECURITY RISK ANALYSIS~~

- ~~i) Conduct a Security Risk Analysis (based heavily on that prepared for the E Street/sbX Green Line Corridor) to identify potential security problems related to the various elements of the Project. The analysis will present the identified risks, possible causes, the potential effects to the system and potential solutions or mitigation of risks. The analysis will be used as input in completing design.~~

~~ii) Deliverable:~~

- ~~(a) Security Risk Analysis~~

~~X) SECURITY OPERATIONS PLAN~~

- ~~i) Develop a Security Operations Plan (based heavily on that prepared for the E Street/sbX Green Line Corridor) describing proposed security related functions for the operating systems, based on assumed staffing/contract levels used to develop the O&M cost estimates. The Plan will describe security-related functions to be carried out by the planned levels of security personnel, CCTV monitoring personnel, fare inspectors, fare collection equipment service technicians and revenue collection staff or sub-Consultants.~~

- ~~ii) Analyze the Security Operations Plan and assumptions for adequacy, conduct required capital versus operating cost tradeoff studies and recommend solutions to Omnitrans. Provide results as input to continuing O&M cost estimating activity.~~

~~iii) Deliverable:~~

- ~~(a) Security Operations Plan~~

~~Y) SITE INVESTIGATIONS AND DATA GATHERING~~

- ~~i) The Consultant shall assemble and review existing available site investigations data from previous work performed by Omnitrans, cities, county, Caltrans and from adjacent and nearby construction projects and determine the additional site investigations work necessary for completion of preliminary engineering design. Advise Omnitrans in writing within 30~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~calendar days after authorization of preliminary engineering phase, the results of the review. Perform additional site investigations work as required for the Project.~~

~~ii) Deliverable:~~

~~(a) Site Investigation Report~~

~~AA) ASSEMBLY OF REFERENCE DATA~~

- ~~i) Recognizing that physical changes occur and that data collected during the planning phase of the Project may require updating, including the projected changes of developers, update Omnitrans' file material on existing and projected conditions potentially affected by or causing influence on the design or construction of Project facilities. Maintain current knowledge of existing and projected conditions. Add to and maintain reference files as a living document.~~
- ~~ii) The Consultant shall identify projects that may impact the design of the Omnitrans Project. The Consultant must identify the design interfaces between the Omnitrans Project and the projects of agencies and utilities external to Omnitrans. The Consultant must develop an interface plan that identifies the external project, the agency/utility, contact person(s), and the referenced documents that must be considered in conjunction with the design of the Omnitrans Project. The Consultant must coordinate with external agency/utility and reflect the coordinated design in the Omnitrans Project. The Consultant is required to obtain a copy of the documents(s) that will influence the design of the Omnitrans Project and maintain said documents as part of the reference data utilized in the design of the Omnitrans Project.~~

~~iii) Deliverable:~~

~~(a) Reference data file~~

~~BB) HORIZONTAL AND VERTICAL CONTROL SURVEYS~~

- ~~i) Establish horizontal and vertical control nets and a baseline for the extent of the Project adequate to provide the basis for the Project coordinate system of horizontal control and control of elevation for purposes of final engineering design and construction. Place permanent survey markers along the route of the Project at appropriate intervals. GPS stations shall be incorporated into the horizontal traverse to tie the baseline control to the San Bernardino County and Caltrans horizontal control network. Base the vertical control on the nearest appropriate current vertical control benchmarks established by the City, County, or Caltrans. Produce all survey field notes and a baseline control map in CADD format, with details of all control stations shown on the map. Also furnish control station data sheets for each control station showing the position of the monument, reference ties, description of its location, horizontal coordinates and elevation. The project will assume NAD83~~

~~Horizontal and NAVD88 Vertical Datums:~~

- ~~ii) Existing Records: The Consultant will conduct research of relevant land and survey records to locate necessary survey and land ownership records required to complete preliminary Right of Way mapping. This task does not include title report review for all parcels along the corridor.~~
- ~~iii) Control Surveys: Based on the primary control established by others, the Consultant will field locate adequate cadastral monuments in the project area to establish record centerline.~~
- ~~iv) Deliverables:~~
 - ~~(a) Control surveys~~
 - ~~(b) One PDF copy of survey field notes and sketches~~
 - ~~(c) Microstation format file with survey control~~

~~CC) PHOTOGRAMMETRIC MAPPING~~

- ~~i) Define the needs for final design quality map sheets and their layout at a scale of 1" = 40' unless otherwise required by each jurisdictional agency. Make use of the established horizontal and vertical control surveys to control the aerial mapping. Temper this work with the need for topographic surveys and coordinate the two methods such as they are complementary and accurate such that engineering base maps can be prepared and the information can be utilized to develop final engineering design, plans and profiles. As needed, produce sets of contact prints and photo index maps. All additional photogrammetric mapping shall be digitized and geo-coordinated. The Consultant will prepare aerial photogrammetric mapping 400 feet wide, 200 feet each side of centerline alignment along the 25-mile-long project length, in digital terrain mapping (DTM) format and aerial photogrammetric mapping in digital format.~~

~~The Consultant will set aerial control targets along the corridor at predetermined locations. Targets will be tied to the control surveys established and positioned under Task 2. Aerial mapping will meet national map accuracy standards. Mapping swath will be 400 feet centered on the planned corridor alignment. 1" = 40' mapping scale with 1' contours will be prepared to Caltrans CADD standards. A Digital Terrain Model (DTM) will be prepared to Caltrans CADD standards~~

- ~~ii) Deliverable:~~
 - ~~(a) Photogrammetric mapping~~
 - ~~(b) One PDF copy of survey field notes and sketches~~
 - ~~(c) Microstation DGN format file containing Aerial Mapping~~

- ~~(d) InRoads format file containing DTM~~
- ~~(e) Color Ortho-Rectified Imagery~~

~~DD) TOPOGRAPHIC SITE SURVEYS~~

~~Assumptions:-~~

- ~~• Right of way staking of Temporary Construction Easements, Permanent Easement and Fee takes and engineering support is included as Optional Tasks.~~
- ~~• Due to limited capital funds, it is anticipated that the selected alternative will not require multiple right of way fee acquisitions.~~

~~i) To the extent mapping by photogrammetric means is not adequate in terms of detail or other requirements, conduct topographic site surveys of the areas of interest, producing topographic mapping showing terrain features, contours, spot elevations, and the like. This work includes, but is not limited to, determination of details such as location of trees, curb cuts, street lighting, adjacent building and parking, curb joint elevations, back of sidewalk elevations, pavement joint elevations, grading limits, modifications to existing slopes, drainage system, O&M facilities, limits of construction, critical building and other structure offsets, sub-sidewalk structures affected by the Project, and cross sections of existing street, Caltrans, water courses and railroad rights of way.~~

~~ii) Deliverable:~~

- ~~(a) Topographic site surveys 200'x50' (25' intervals) at side stations and cross sections (50' intervals) at centerline dedicated lanes.~~

~~EE) UTILITY SURVEYS, SUPPLEMENTAL DESIGN SURVEYS, AND COMPILATION MAPS~~

~~i) Apply topographic surveying techniques to record the presence of existing utility lines and structures. The Consultant shall collect pertinent record drawings from city, county, and utility owner's maps and records, conduct field surveys to locate and verify existing underground and overhead utilities. Recognize existing utilities that might impact the design of the Project, including storm drainage (pipes and channels), sanitary sewers, gas lines and valve boxes, petroleum product pipelines, water mains and valves, power lines, poles, duct banks and vaults, steam pipelines and communications systems both underground and overhead (telephone, telegraph, alarm systems, cable transmission systems, fiber optics.) Locate such utility facilities by standard field survey methods.~~

~~The Consultant will contact the sanitary sewer providers and water districts to request as built mapping of their facilities that are within the construction limits~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~of the Project. Upon receipt of the As-built data, the Consultant will coordinate to identify the limits of the necessary ground surveys to be performed by others. Upon receipt of survey data, the Consultant will verify the existing sanitary sewer and water lines within the Project area.~~

~~The Consultant will input the existing sanitary sewer and water line information into a CADD file, which can then be referenced into the Utility Compilation Mapping.~~

- ~~ii) Supplemental Design Surveys—Once the final bus stop locations have been determined by the design team, the Consultant will proceed with the field surveys. Supplemental topographic surveys will be used to augment the aerial mapping and for areas needing precise positions and elevations at the 47 planned bus stop locations. Conventional and 3D Laser scan methods will be used at the 47 identified bus stop areas and surrounding curb and pavement. Cross sections, if needed, will be collected at 25' intervals at bus stop locations and at 50' intervals along the centerline dedicated lanes. Drainage and other surface utilities not easily ascertainable from the aerial mapping will be collected during this task. Drainage and utilities will be limited to the planned bus stop areas. Other underground utility locating and mapping will be performed under a different task. Storm and Sewer pipe inverts will be collected along the dedicated bus lanes route and planned bus stop locations.~~

~~Deliverables:-~~

- ~~(a) Microstation DGN topographic map prepared at the same scale as the aerial mapping~~
- ~~(b) Supplemental ground mapping and DTM for those areas as described above~~
- ~~(c) Survey field notes—PDF~~
- ~~(d) Survey Report—PDF~~

~~Assumptions:~~

- ~~(a) The consultant will collect the needed site utility locating data in one mobilization based upon the pre field collection and mapping meeting with the design team. Any further visits to the site will be considered additional time and require additional fees.~~
- ~~(b) It is assumed that supplemental surveys will cover the 47 bus stop locations identified in the PDF file provided by the client. Should additional locations be necessary to survey beyond the 47, the consultant will require additional fees to meet the request.~~
- ~~(c) It is assumed that monument preservation will be conducted by the contractor's surveyor.~~

~~iii) Deliverable:~~

- ~~(a) Utility surveys and compilation maps~~

~~FF) BASE MAP DEVELOPMENT~~

- ~~i) Produce final design quality base maps using an appropriate blending of control surveys, photogrammetric mapping and topographic surveys and plotting. These design base maps shall be at a scale of 1" = 40' unless otherwise required by jurisdictional agency and will evolve using a standard CAE/CADD format. Where details require it, base map insets or site development plans shall be at scales of 1" = 10' or 1" = 20'. Base maps should include existing right-of-way lines. The Right of Way Base map will be developed from relevant land and survey records to locate necessary survey and land ownership records required to complete preliminary Right of Way mapping.~~

~~ii) Deliverables:~~

- ~~(d) Base maps~~

~~GG) ALTERNATIVE DESIGN STUDIES~~

- ~~i) As part of preliminary engineering or as may be specifically directed by Omnitrans, conduct technical studies and comparative evaluations of alternative preliminary design solutions to any facility or system element of the Project. Include, as appropriate, trade off studies, life cycle cost analyses, cost effectiveness comparisons, aesthetic evaluations, environmental impact assessments and other sets of decision factors. For each such study, develop a technical report describing the issues, the alternatives, the comparisons made, the decision matrix, the conclusions and any recommendations.~~

~~HH) FACILITIES/SYSTEMS INTERFACE COORDINATION~~

- ~~i) Coordinate the work of preliminary engineering design of civil/structural facilities and preliminary design, functional definition and specification of various systems elements. During the preliminary engineering phase when the scope of facilities and systems are evolving as design studies are conducted, becoming more detailed and less generic, the need to monitor configuration and interfaces is greatest. Recognize that one objective of such review is to avoid inconsistencies among the various systems and between systems and fixed facilities and to prevent such inconsistencies from being carried into~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~Final Design. As the many design decisions are made, and as inputs from Omnitrans and various third parties are recognized, provide close overview of the evolving design to ensure it proceeds on a compatible basis. Recognize that historically the most demanding care pertains to conduit runs, including size, numbers and embedment space; structural block outs, sleeves and chases for electrical/mechanical systems; sizing of equipment space with proper clearances for access and maintenance of equipment units of unknown manufacturer; functions of and remote read out requirements for alarm systems. The plans and procedures for configuration management, change control and interface control shall prevent any prolonged inconsistent design work.~~

~~H) PRELIMINARY FACILITIES ENGINEERING/URBAN DESIGN~~

- ~~i) Under this task, the Consultant shall advance the level of design from conceptual engineering to completed preliminary engineering design package. It is the objective of Omnitrans to resolve all substantial design issues to develop capital cost estimates by Contract Unit as a part of preliminary design completion. The Consultant shall provide such engineering services required to satisfy the City requirements for all work within the City right of way. The Consultant should draw from previously completed work.~~
- ~~ii) The Consultant should show examples of how the Project will be successfully integrated with the adjacent community. This integration must be applied to all components of the Project (station architecture, hardscape and landscape, art program components, etc.). The Urban Design Integration and Station Architecture are to be coordinated with Omnitrans departments.~~

~~J) STRUCTURE TYPE, SIZE AND LOCATION~~

- ~~i) The Subtasks defined here are intended to produce the most advantageous configuration of the Project or system structure components in terms of cost, aesthetics, environmental impact and constructability, including the evaluation of alternative materials and the selection of a preferred choice for the Project site conditions. This scope statement encompasses any type of station and drainage structures.~~
- ~~ii) In determining the station locations, the Consultant shall give thorough consideration to pedestrian connections (locating stations where high concentrations of pedestrian activity exist) as well safety of the location.~~

~~KK) PRELIMINARY ALIGNMENT DESIGN~~

- ~~i) At the completion of the preliminary engineering design phase, the horizontal and vertical alignment of the Project must be more than "preliminary". It must be near final and fully mathematized, subject to only adjustments engendered by the final design of structures and systems. Given the Project~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~location as concluded through the Alternatives Analysis phase, the Consultant shall refine the Project control lines which have been selected to define alignment by applying the geometric design criteria and recognizing the constraints and controls on location presented by the site.~~

- ~~ii) Consideration shall also be given to constraints on final vertical alignment (profile) including minimum overhead clearances at crossings of streets, highways, water courses, railroads, buildings and overhead utilities, criteria limitations on maximum and minimum profile grades and vertical curve standards. As portions of the Project alignment in graphical form become less variable and essentially final, compute the alignment and tie its control points into the State coordinate system and the Project control baselines and benchmarks.~~

~~LL) — PLAN, CROSS SECTIONS AND PROFILE DRAWINGS~~

- ~~i) Given the conceptual engineering work completed, including drawings, the Consultant shall develop PE drawings, which includes, but are not be limited to, a set of plan, cross sections, and profile drawings based on the final design base mapping at the selected final design scale, screened to accent proposed features. The Consultant shall submit a layout of the proposed plans and profiles for the Project to Omnitrans and coordinate with the PDT before proceeding with the preliminary design drafting.~~
- ~~ii) Prepare plans and cross sections of the existing and proposed construction and existing development (streets, freeways, railroads, buildings, water courses, utilities, significant property boundaries and the like). Plans should show the following:
 - ~~(a) Street roadways, structures, earthwork, grading, paving, drainage system (including culverts, and pipes), bikeways, landscaped areas, erosion controls, security/safety fence, lighting, striping, traffic signaling, vehicle control system, and location of proposed utility connection points for services.~~
 - ~~(b) Planimetrics — existing structures, roads, walls, facilities, vegetation, etc., location of existing utilities and structures from record information (including assumed depths or cover where applicable).~~
 - ~~(c) Existing railroad tracks and structures and proposed relocation or other adjustments.~~
 - ~~(d) Stations locations and design concepts.~~
 - ~~(e) Existing right of way and property lines and easements.~~
 - ~~(f) Street improvements and proposed modifications to existing~~~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~conditions in the corridor, if applicable, such as utility modifications or relocations, street relocations and other street modifications/improvements, grading, modifications to existing retaining walls, grade separation structures, grade crossings and drainage systems.~~

- ~~(g) Connections to the main line, portion of the adjacent storage yard and shops, bus access, circulation and storage, and non-revenue operating segment of the line at sites of proposed maintenance facilities.~~
- ~~(h) The plan and profile drawings shall show a strip of the linear plan view above a vertical profile grid such that the stationing of each corresponds as much as possible.~~
- ~~(i) Existing grade line, major overhead and underground utilities, and significant subsurface geologic conditions.~~
- ~~(j) Mathematized horizontal and vertical geometry, control point coordinates and elevations, bearings, horizontal and vertical curve data, grades in tabular form, major dimensions, critical vertical and horizontal clearance dimensions, major existing finished floor elevations, and other parameters of design on the drawings. Include details and sections for any areas that will be particularly challenging or have non-standard elements or construction challenges along with notes stating the Consultant's assumptions for how it can be handled.~~

iii) Deliverables:

- ~~(a) Produce a set of 30% preliminary design drawings including, plans, profiles, and sections. Also, produce a set of composite plans at 1"=80' scale. These drawings shall be in the standard CAE/CADD format and reproduced in standard Mylar drawing sheets. Geometric approval of these plans should be acquired by all applicable jurisdictions.~~

~~MM) STATION AND STATION SITE DEVELOPMENT~~

- ~~i) The Consultant shall develop standard station plan layouts, canopy, amenities, and equipment and perform modifications to make it site specific for each station. Concurrent with the work of other tasks, coordinate with Omnitrans departments and PDT to obtain input/consensus regarding functional requirements and scope of each station, and develop for each passenger station in the Project under design an individual Program which will assemble on one or two pages the basic functional requirements and scope of each station. The Consultant shall provide to the station design sub-consultant the projected passenger loadings to be accommodated in terms of "off's" and "on's" by peak and base period, the maximum buses by vehicle type, the quantified~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~requirements for parking and map cases, station pylon markers and other informational/way finding structures, and other equipment space and other features to be accommodated in the design.~~

- ii) ~~For each station, advance the design to a level of completion resolving the station configuration, its major dimensions; vertical circulation elements; parking facilities; lighting system; access and circulation roadways; the location of each with respect to a station centerline of Project, and the following:~~
- ~~(a) Auxiliary rooms if needed for stations, including for electrical, mechanical, and systems requirements shall be included.~~
 - ~~(b) Parking if needed for stations based on parking demand projects to be provided by Consultant. Include accessible and van accessible spaces, taxi stands, drop off, pick up, including auto circulation within the site and local street access.~~
 - ~~(c) Bus bays, bus stops, and bus circulation roadways, for transit buses (e.g. bus interface amenities such as bus benches and shelters):~~
 - ~~1. Consideration of the Station Kit of Parts developed as part of the Alternatives Analysis study, Omnitrans' *Transit Design Guidelines* document, Crime Prevention through Environmental Design principles, and consideration of protection from the weather (especially summer heat) when selecting materials for benches, shelters, and other amenities.~~
 - ~~2. Develop three concept options for side-running stations and three concept options for center-running stations, to be presented to jurisdictional agencies and project development team.~~
 - ~~(d) Features to assure compliance with the latest requirements of the Americans with Disabilities Act and state Title 24, such as curb ramps, directional bars, international symbol of accessibility, clear zone for wheelchair lift deployment, accessible signs, etc.~~
 - ~~(e) Artwork locations as approved by Omnitrans.~~
 - ~~(f) Signage (based off of signage standards from Omnitrans' E-Street sbX-Green Line project).~~
 - ~~(g) Consideration for where operator shift changes will happen on route, as well as breaks and bus change-outs.~~
 - ~~(h) Electrical and communications for lighting, public address system,~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~variable message signs, public pay phones, passenger assistance telephones, emergency telephones, maintenance telephones, closed-circuit television (CCTV) for security cameras (with pan, tilt and zoom capacity), maintenance equipment, intrusion detection systems, fire and emergency management systems and related racks, conduits and cable trays; etc.~~

~~(i) Irrigation and planting, including hose bibs for maintenance.~~

~~(j) Architectural features and finishes, including paint specifications and colors.~~

~~(k) Clear lines of sight to all areas for security in accordance with CPTED- (Crime Prevention through Environmental Design) principals.~~

~~iii) Develop economical Project station features, utilizing uniform features where appropriate, and reflecting the unique character of the neighborhood in which it exists and the joint development opportunities of the site. Produce a set of preliminary station and station site development design drawings including plans, sections, elevations, and details, at scales to be agreed with Omnitrans, to support the plan and profile drawings and for approval prior to commencement of final design, and to form bases for preliminary capital cost estimates and construction contract documents.~~

~~iv) Reflect all proposed features which will occupy the station site development, including adjacent transit line sections, parking (if needed), intermodal transfer facilities, plazas, bicycle racks/lockers; bikeways; signage; traffic control devices; lighting; and landscaped areas.~~

~~v) The stations are to be designed in a modular fashion. Standardized elements shall be incorporated to provide unity and minimize costs. Coordinate with PDT and other Consultants involved in the station area community linkage designs to ensure coordination of the station design with any ongoing station area planning.~~

~~vi) Consultant shall analyze the connections to surrounding intermodal transit connections that might include city and municipal bus stops, passenger rail, bike paths, bus benches and shelters, bike racks and lockers.~~

~~vii) The Consultant may be asked to consider "smart growth" joint development opportunities at some or all of the station sites in cooperation with the PDT. Investigating these joint development opportunities would expand the scope of work to include a larger station footprint with residential and/or commercial designs.~~

~~(a) Deliverable:-~~

~~1. Six (6) professional renderings for Phase 1 work.~~

~~NN) CENTER RUNNING BUS LANES AND MEDIAN STATIONS~~

- ~~i) The scope of the Project includes two segments of center running bus lanes on Holt Boulevard in the City of Ontario, which adds up to a total of 3.5 miles of dedicated bus lanes, with six median stations. Depending on the outcome of the phasing/financing plan, the final design of the dedicated bus lanes and median stations (which is part of this contract) will be provided by the Consultant either in the full plan set for the Project, or as a separate plan set for Phase 2 of the Project.~~
- ~~ii) The design of the dedicated bus lanes and stations must include the following considerations:~~
- ~~(a) Street cross section widths, and a plan with right of way lines that shows which properties are impacted. (Right of way acquisition will be handled outside of this contract.)~~
 - ~~(b) All components of design for widening Holt Boulevard along the 3.5 miles planned for dedicated bus lanes, including the following:
 - ~~1. Curb and gutter reconstruction;~~
 - ~~2. Repaving of any needed lanes;~~
 - ~~3. Reinforced concrete bus pads within the pavement where the buses stop;~~
 - ~~4. Intersection work, including relocation or replacement, as needed, of traffic signal equipment, and pedestrian crossings.~~
 - ~~5. All utility relocation needed as a result of Project, as well as utilities needed to stations, such as electrical and fiber lines.~~~~
 - ~~(c) Dedicated bus lanes, including the following:
 - ~~1. Pavement markings;~~
 - ~~2. Barriers for separation from mixed flow lanes (such as concrete curbs);~~
 - ~~3. Safe and efficient transitions where dedicated bus lanes end (using sbX Green Line and other BRT projects from around the country as examples).~~~~
 - ~~(d) Six median stations, including the following:~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

- ~~1. Pedestrian safety barriers at stations;~~
- ~~2. Shelters and all passenger amenities included in Station Kit of Parts;~~
- ~~3. Landscaping;~~
- ~~4. ADA accessible pedestrian pathways from public sidewalk and crosswalk to access station.~~

iii) Deliverable:

- ~~(a) One (1) professional rendering for Phase 2 work-~~

~~OO) STATION DEFINITION REFINE STATION DESIGN AND URBAN DESIGN CONCEPTS~~

- ~~i) Review and evaluate station locations recommended in Alternatives Analysis phase.~~
- ~~ii) Transit stations are places where users interact with the transit system. Not only do transit stations need to be functional, but they also need to brand the system by announcing that a new form of transit is available in the community. Individual site design concepts will be prepared for each station, and the Consultant team will also confirm the sbX name and branding. The station plans should be refined based on new information. They should be heavily based on the sbX station kit of parts, as updated and refined during the West Valley Connector Corridor Alternatives Analysis.~~
- ~~iii) The Consultant team shall review the station locations illustrated in the Alternatives Analysis Summary Report to determine any concerns with the location of stations and to identify other special conditions along the corridor. The branded design and the current kit-of-parts concept, with its capability to adjust to varying sidewalk widths, will be discussed. Using the newly updated base information, design criteria, and field visits by the Team, each station site will be reviewed. This review will consider existing and future sidewalk widths, existing utilities, and linkages to adjoining existing and proposed future developments. The Consultant team will meet with Omnitrans and the City to define station passenger amenities, their locations, and any betterments that the cities may be anticipating.~~
- ~~iv) Updated station plans will be produced by the Consultant using available new aerial photography and digital and hard copy detailed field surveys on base sheets which show right of way, pavement widths, sidewalks, and footprints of adjacent buildings, adjacent parking, existing trees, street lighting, curb cuts, and other major features along the alignment.~~

~~v) Deliverables:~~

- ~~(a) Station plans;~~
- ~~(b) Exhibit type graphical representations and architectural renderings including 3-d renderings of stations in multiple lights and angles;~~
- ~~(c) Material sample boards; and~~
- ~~(d) One (1) finished scale model of a typical station.~~

~~PP) BRANDING DESIGN~~

- ~~i) The Consultant will be responsible for adapting existing sbX graphics (from sbX graphic design standards developed during the E-Street sbX Green Line project) to work for 40' vehicles, 60' vehicles, and to be integrated with station design.~~
- ~~ii) The station branding will also include the line's color line name designation. The Holt/4th line was originally designated as purple, but the final color line name needs to be confirmed with Omnitrans, the PDT members, and Omnitrans' Board of Directors.~~

~~iii) Deliverables:~~

- ~~(a) Bus fleet graphic design (for 40' and 60' vehicles), and station design with integrated system branding using the sbX logo.~~

~~QQ) STATION ART PROGRAM~~

- ~~i) The Consultant will provide an art coordinator who will manage an art program working with members of the community and the sbX PDT. The art coordinator should propose an art program for the Project that involves local youth and/or community members, is community based, low cost, and can be maintained within Omnitrans' ongoing station maintenance budget. The Consultant shall coordinate with Omnitrans Project Manager to incorporate artwork and artist ideas into the overall design. The program should draw lessons learned from the E-Street sbX project public art program.~~
- ~~ii) The art coordinator will be responsible for drafting legal agreements related to implementation of art program, along with coordination with local community organizations, artists, Omnitrans Project Manager, and PDT members.~~

~~iii) Deliverables:~~

- ~~(a) Art program proposal~~
- ~~(b) Meeting agendas and minutes/notes~~

- ~~(c) Draft agreements~~
- ~~(d) Outreach/informational materials related to art program~~
- ~~(e) Project art policy~~
- iv) ~~Art Program Proposal—The Consultant will prepare for and facilitate a meeting with the project design team to:-~~
 - ~~(a) Define a vision for public art for the West Valley Connector Corridor project~~
 - ~~(b) Identify opportunities for public art within system~~
 - ~~(c) Review art process and results from sbx E Street project~~
 - ~~(d) Identify appropriate staff members who oversee public art projects within stakeholder cities-~~
 - ~~(e) Define methods for artist and artwork selection for a range of project opportunities with consideration of local artists~~
 - ~~(f) Discuss and determine method of procurement for artist design and fabrication services~~
 - ~~(g) Establish art program proposal budget-~~
 - ~~(h) Establish contracting requirements for artists to streamline art fabrication, delivery and installation~~
 - ~~(i) Consider special project initiatives that may include temporary art, artists in signage, landscape and functional object designs-~~
 - ~~(j) Deliverables:-~~
 - ~~1. Draft public art program proposal for Omnitrans review and comment.-~~
 - ~~2. Finalize art program proposal-~~
 - ~~3. Present final art program proposal to Omnitrans Board for final acceptance if necessary.-~~
 - ~~4. Provide status reports on art program for Omnitrans as needed~~
- v) ~~Implement Approved Artist Selection Process—The Consultant will provide services to coordinate the review and selection of artists for the project. This shall include:-~~
 - ~~(a) Meet with staff to finalize RFQ for artist application to project~~

- ~~(b) Assist in the development of outreach effort to encourage local artist participation-~~
- ~~(c) Organize station art selection committee-~~
- ~~(d) Coordinate outreach effort with team~~
- ~~(e) Coordinate review of artist qualifications with station artist selection panel members-~~
- ~~(f) Coordinate with design team art options for development of preliminary design concepts~~
- ~~(g) Provide Omnitrans staff with draft agreements for artist services per approved artist selection plan-~~
- ~~(h) Coordinate final review of artist presentations for final artist selection~~
- ~~(i) Inform all artists of final selection process results-~~
- ~~(j) Deliverables:-~~
 - ~~1. Draft boilerplate artist agreements.-~~
 - ~~2. Provide meeting minutes and presentations as needed for outreach or stakeholder meetings.-~~
 - ~~3. Provide status reports on art program for Omnitrans as needed.~~

vi) ~~Integration of Artist Design Concepts—To facilitate the integration of artwork into the construction document, the Consultant shall provide the following services:-~~

- ~~(a) Work with Omnitrans to initiate final design services agreement for project artists~~
- ~~(b) Meet with project architect to discuss artwork integration into construction documents-~~
- ~~(c) Develop and conduct conservation review process for materials and methods of art fabrication-~~
- ~~(d) Check references for proposed fabricators, coordinate inspection and materials testing as needed~~
- ~~(e) Monitor artist deliverables to integrate artwork into construction documents-~~
- ~~(f) Discuss and develop proposed maintenance criteria for artwork-~~
- ~~(g) Provide status reports on art program for Omnitrans as needed~~
- ~~(h) Conduct review of construction schedule and artist fabrication schedule-~~
- ~~(i) Work with project architect to develop specifications for artwork as needed for construction documents-~~

~~(j) Deliverables:-~~

- ~~1. Report to Omnitrans regarding conservation review of materials and methods for fabrication and maintenance of artwork.~~
- ~~2. Artist submittals for integration of artwork into construction documents.~~
- ~~3. Specifications in construction documents for artwork as needed.~~
- ~~4. Provide status reports on art program for Omnitrans as needed~~

~~RR) TRAFFIC ANALYSIS~~

- ~~i) The Consultant shall perform all necessary work to determine the traffic impact of the transit signal priority infrastructure as part of the project.~~
- ~~ii) Develop preliminary plans for improvements to intersections and crossings for bicycle, pedestrian and vehicular traffic through, across or along the Project corridor. The Consultant's team will be responsible for determining urban design concepts for pedestrian access to each station.~~

~~SS) PRELIMINARY TRAFFIC ENGINEERING DESIGN~~

- ~~i) In support of the preliminary design of transit facilities, study and resolve traffic engineering issues resulting from development of Project facilities in coordination with Third Party Representatives, including:
 - ~~(a) Street traffic conflicts with transit operations, requiring street closings, frontage road development, cul de sac development, grade level crossings, grade separations, street widening, parking lane removal, median break closures, mixed traffic operations and other methods of conflict resolution.~~
 - ~~(b) Coordinated bus control and traffic control systems including transit preemption of "green time" and addition of bus segments to the traffic control cycles.~~
 - ~~(c) Other traffic control signals and signing to facilitate traffic movement.~~
 - ~~(d) Patron access to stations and station sites by all modes and traffic control at station site entrances.~~
 - ~~(e) Grade crossing protection.~~
 - ~~(f) Surface treatments to discourage vehicular encroachment.~~
 - ~~(g) Alternative public parking provisions.~~~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~(h) Traffic maintenance during construction of proposed transit facilities.~~

~~(i) Construction truck access to construction sites.~~

~~(j) Secondary analysis including signal coordination and timing sheets.~~

~~ii) Evaluate these issues where they occur and develop preliminary designs of changes to existing streets, facilities and traffic control devices and input the results into the plan and profile drawings and preliminary design drawings. Coordinate all work involving traffic jurisdictions of the State, County and City with the designated representatives of such agencies and Omnitrans' Representative. Produce a detailed report on resolution of traffic conflicts, the "before" and "after" traffic conditions and allocation of responsibilities affecting modifications (design and construction) and maintaining and operating new devices including interface between bus control and traffic control. Coordinate with cities and other affected agencies who will provide guidelines and review and approve the completed design and drawings for traffic signals, signs, striping, and worksite traffic control plans and specifications for work within the City right of way. Perform traffic engineering design to a level that identifies and resolves all issues relating to traffic signal modifications, improvements and new signal requirements to the satisfaction of Omnitrans, Cities, and other affected agencies. Prepare plans and details of traffic signals, signs, striping and worksite traffic control plans for the Project and obtain approval from the applicable jurisdiction authorities.~~

~~— Deliverables:~~

~~(a) Three preliminary schematic traffic signal plans, one each for the Cities of Pomona, Rancho Cucamonga and Fontana.~~

~~(b) Preliminary signs, striping and worksite traffic control plans.~~

~~iii) Field Review and Final Field Element Locations~~

~~(a) Existing information pertaining to the project will be collected and reviewed to assess the accuracy of field conditions and to identify potential utility conflicts. The Consultant will conduct a field review to verify and inspect the existing sanitary sewer and water line facilities. Video inspection is not anticipated. Information may include existing applicable plans, such as highway and roadway improvements, utility plans, traffic signals, signal interconnects, and highway lighting as built. A detailed field review will also be conducted. The following information at all approaches and corners for each location where improvements are recommended will be collected:~~

~~1. Existing cabinets~~

Scope of Work

- ~~2. Cabinet equipment, including controller type and firmware~~
- ~~3. Existing services~~
- ~~4. Traffic signal standards~~
- ~~5. Mast arms~~
- ~~6. Push buttons~~
- ~~7. Size and type of signal heads~~
- ~~8. Existing loops~~
- ~~9. ITS elements, such as closed-circuit television (CCTV) cameras and video detection cameras~~
- ~~10. Existing pull boxes~~
- ~~11. Existing vaults~~
- ~~12. Driveways~~
- ~~13. Storm drains~~
- ~~14. Utility manholes/vaults~~
- ~~15. Existing ADA compliance~~

~~iv) Finalize Queue Jump Locations~~

- ~~(a) Determine whether queue jump locations are feasible within existing right of way and work with local jurisdiction and Omnitrans Project Manager to determine locations and criteria for queue jump locations.~~

~~v) TSP and Queue Jump System Architecture Design~~

- ~~(a) The technology to be used for the provision of signal priority for the vehicles will be key in the development of the final design elements. As part of the activities for this task, the technology and approach for TSP and queue jump will be identified and reviewed with each involved agency.~~

~~vi) Identify Transit Signal Priority Technology~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

- ~~(a) As part of this task, TSP system requirements will need to be developed. In essence, when a vehicle passes an imaginary trip-wire location that is established a user defined distance before the intersection, the vehicle's TSP call is first received at the intersection controller. This is conceptually known as a "Check In" type of detection. Once the check in TSP call has been received, the controller begins to make its own calculations and/or adjustments to signal timing, as needed, to better match that approach's green signal display with the anticipated arrival of the vehicle.~~
- ~~(b) The "Check Out" action also needs to be accomplished by the TSP call system so that the controller knows when the vehicle has reached the intersection and no longer needs the controller to provide priority service for that approach. The combination of check in/check out can be achieved technologically in many different ways, including the following:~~
- ~~1. Optical, continuous active command directed to intersection (such as Opticom)—A strobe beacon that is attached to the front of the bus emits precisely timed light flashes of a relatively uniform intensity. The detector at the intersection continuously "watches" down an approach to the intersection for this optical energy. When the system's "signature" flashing sequence is recognized (meaning that a valid emitter equipped bus is approaching), and the intensity of the energy signal received exceeds a certain user set threshold, then the presence of the bus is active. Since the amount of energy received from a light source is directly proportional to its distance, the user set threshold energy level corresponds to a specific distance from the intersection. Beyond that point, buses may be "seen" by the detector, but they do not create a TSP call. From that point, all the way to the intersection, there is a continuous TSP call produced. A filter is used with the emitter on transit vehicles so that only invisible infrared light is produced.~~
 - ~~2. Radio frequency tag passage detection at a trigger point—A radio frequency (RF) device is mounted on the bus. This device is called an RF tag, and it would be similar in size and capability to a toll tag transponder. An RF tag reader is constructed or installed at a location in advance of the intersection where it has been determined that a TSP call should be initiated. From that location, the TSP call is forwarded (by either wireless or wired means) to the targeted intersection's controller. The data message size capability of an~~
 - ~~3. RF tag to reader system is much larger than that required to~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~produce a TSP call, and some systems use this data capacity to extract status or other information from the bus.~~

- ~~4. Infrared tag passage detection at a trigger point—This setup is virtually identical to the RF tag installation described above. Instead of wireless energy in the radio frequency spectrum, the data are transmitted in the infrared light spectrum.~~
- ~~5. Loop detection at a trigger point—A traditional detector loop is installed in the street at the point where it has been determined that a TSP call should be initiated. A device is mounted on the bus undercarriage that continuously transmits RF energy of a particular “signature.” The loop detector unit is specially tuned to “listen” for this signature and is triggered when it detects the bus over the loop. From its roadside location, the TSP call is forwarded (by either wireless or wired means) to the targeted intersection’s controller.~~
- ~~6. Real time, continuous location tracking by centralized system—Automated Vehicle Location (AVL) tracking devices are becoming more commonplace on many transit systems for active monitoring purposes. Most of the newer implementations utilize the national GPS to triangulate locations from three or more of the geosynchronous satellites in earth’s orbit. Use of the same GPS tracking system to provide reliable and accurate vehicle locations for transit priority purposes may or may not be possible because of the frequency of data sent and the speed/position of the bus. Some transit agencies have had to install more than one GPS tracking system on their buses because the first system installed was not designed to allow for multiple uses of the GPS location information. In some transit districts, where a preponderance of close, tall buildings or other impediments restrict the available sky view, GPS based systems can exhibit problems in determining a correct location. In such cases, the GPS system can be augmented or totally replaced by a the dead reckoning (DR) based system. A DR system counts wheel revolutions and thus knows how far along the route that particular bus has traveled. For use in AVL systems, the bus location information must be transmitted wirelessly to some external TSP component that makes TSP decisions. A limitation of many AVL systems is the time interval between routine AVL transmissions, which may play a significant role in whether AVL alone can be effectively used for TSP purposes. Many transit properties’ AVL systems get location reports from buses only once every minute or two. If the reporting rate were one minute, then the worst case condition would be that the~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~vehicle location report was received 61 seconds prior to the arrival of a bus. Estimating the arrival time of the bus from that great a distance (approximately 0.25 to 0.33 mile in advance) may not be accurate enough for TSP. One solution to overcome this lag problem would be to reduce the time interval for transmitting location, typically to less than 30 seconds, but this may also encounter problems due to limitations on the wireless radio system's bandwidth capacity.~~

- ~~(e) Design a uniform platform that is proven and will be accepted by all agencies involved.~~

vii) ~~Develop TSP and Queue Jump Operation Standards~~

- ~~(a) In a normal cycle for a signalized intersection operating under coordinated control, the cycle length is common for all of the intersections within the same coordination area or zone. This must be true so that the progressive traffic flow that is set up in the timing pattern for a major road is repeatable, cycle after cycle.~~
- ~~(b) Typical signal coordination patterns have been developed to benefit a hypothetical platoon of moving vehicles that do not stop unless required to by a red signal. The typical transit vehicle does not or cannot stay within this hypothetical platoon due to passenger stops. The arrival of a transit bus to an intersection is totally disassociated with how the controller is serving the various movements. Sometimes, the bus may arrive during the green "window" for that approach, but more often than not, the bus will arrive at some time when the signal is red. The concept of TSP is that the signal controller is able to recognize when a bus is arriving in relation to its green window, and make instantaneous adjustments to the signal timing to shift the traffic signal's green window(s) on the approach of the bus to the intersection to better match the arrival of the bus.~~
- ~~(c) Three signal cycle strategies are currently being implemented in TSP systems. In all three, the traffic signal controller modifies its regular timing to provide a priority service to the approaching bus. The shift can be implemented in the following three basic ways:~~
- ~~1. Green is "held" for the approaching bus, but no extension of the normal phase split is required. The phase green is held, but since the bus is arriving during the normal green window for that phase, no extended time is required. While the signal cycle is not changed, the signal is not allowed to shift from green even though it senses no other traffic at the approach. This type of priority action can also be utilized for any approach that is not the arterial green phase in a coordinated system operation;~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~therefore, it could be applied to a side street approach or a left turn phase for the bus. It is also applicable to any phase during those times when the intersection is not under coordination timing control (e.g., late night and/or weekend), where each phase is actuated and responding to the absence of approach vehicles for some gapout time.~~

~~2. Green Extension — The green phase for an approaching bus is held for a few seconds longer than “normal” to allow it through. A time extension of approximately 10 seconds (or in some cases, 10 percent of the cycle length) has been used by many cities as an acceptable extension time. This timing shift would be in response to a bus that is expected to arrive just a short time (usually a few seconds) after the signal would have otherwise turned yellow. Successful implementation of this scenario means that the bus (and the vehicles traveling alongside of the bus) would be spared a long wait at a red signal.~~

~~3. Early Green — In this scheme, the bus is due to arrive some amount of time before the approach phase’s normal green window. To reduce the time spent waiting in the queue, or perhaps eliminate the stop and go action entirely, the preceding phase green times are reduced somewhat so that the green for the bus can commence sooner. Again, many agencies set the threshold at approximately 10 seconds. This priority action results in saving just a few seconds for transit vehicles, far less than that saved by the successful extended green priority mentioned above. Some cities refer to this as “Red Truncation,” because phases preceding the transit movement are cut off early, producing an earlier end of the red light for the bus.~~

~~(d) TSP is a feature that *attempts* to modify normal signal timing in response to a special TSP call. It should not be confused with pre-emption, which is provided only for special vehicles (i.e., trains, emergency vehicles) approaching the intersection where their through passage *must* be provided. Pre-emption functions take precedence over TSP, even if TSP service is in progress. The controller will always service a pre-emption call and begin serving it immediately upon its receipt.~~

~~(e) As part of this analysis, provide the following services:~~

~~1. Technical memorandum describing the state of the practice in TSP. This will include typical operational parameters and settings used, such as TSP services per cycle, amount of time allocated to TSP, use of early green service, and use of extended~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~green service. This will be specific to the needs of each individual agency.~~

~~2. Technical memorandum of the TSP functionalities available with each City's existing traffic controller firmware and system (both currently running 170 controllers with Bi Tran firmware). If a need for upgrades is found, then those will be identified and detailed out. Upgrade alternatives will also be identified along with cost information.~~

~~(f) Based on the TSP objectives and parameters that are identified and the capabilities of each controller firmware/system that will ultimately be in operation, develop a technical memorandum (draft and final version) that will describe the details of the proposed operational parameters of TSP for the targeted intersections. This will include typical operational parameters and settings used, such as TSP services per cycle, amount of time allocated to TSP, use of early green service, and use of extended green service.~~

~~viii) Identification of Upgrade Needs~~

~~ix) The first step prior to developing the PS&E package is to prepare a preliminary design report (PDR) that qualifies and quantifies the project elements. Under this task, the Consultant shall detail the design of the intersection improvements (i.e., signing and striping, pole replacement, detection upgrades, operational enhancements, controller hardware/firmware replacement, and cabinet change outs), signal system upgrade requirements, and communication infrastructure needs to support the signal operations.~~

~~(a) Upon completion of the field surveys and the development of the queue jump and TSP architecture, we will prepare a draft and final PDR, which will serve as a basis for design.~~

~~TT) PRELIMINARY DESIGN OF UTILITY RELOCATIONS~~

~~i) Utilizing the recorded and checked locations of utility lines and facilities in or near the Project, determine under this subtask the methods by which conflicts between such existing utility lines and structures and Omnitrans' proposed construction and facilities may be resolved. The Consultant, working with Omnitrans and utility owners, shall identify the utility segments requiring relocations. At least one field visit shall be scheduled with each affected utility company to review all conflicts and discuss resolution of the conflicts. Where conflicts are proposed to be resolved by reconfiguring utility networks, capacity studies shall be performed. Corrosion control shall be considered for any metallic utility crossings. Relocated utilities shall provide service equal to the existing installations; upgrades shall not be considered without Omnitrans' approval. The Consultant shall evaluate the viable options for each alternative~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~for permanent and temporary relocation, and assist Omnitrans to conclude, with the utility owner, a course of action.~~

- ~~ii) For each utility relocation to be performed prior to the award of the design-bid-build contract, the Consultant shall identify and recommend critical utilities whose locations should be precisely located. Upon approval by Omnitrans and the utility owners, the Consultant shall arrange to have potholing performed. Where feasible, the potholing shall consist of actually digging a hole to expose the subject utility and getting it surveyed. Potholing requirements are contingent upon the preferred alternative selected for design. Costs for potholing will be obtained from Optional Services. Vacuum extraction or other methods can be proposed in areas where exposing the utility would cause too great an impact.~~
- ~~iii) For utility owners who design and construct relocations to their facilities (i.e., natural gas, electric, telephone, fiber optic, and oil pipelines), the Consultant shall identify conflicts and coordinate with the utility owners. The PE plans shall include the utilities in both their existing and relocated configurations. The cost estimate shall include these third-party relocation costs.~~
- ~~iv) The Consultant shall identify all utility services required for the project (e.g., power, communications, etc.). The Consultant shall verify that services are located nearby and shall include proposed service points on the PE plans. If services are not available, the Consultant shall reconsider their design or show the necessary utility connections on the PE Plans and include these costs in the cost estimate. The PE utility plans shall demonstrate how maintenance access to manholes, vaults, cabinets, or other key facilities, new or existing, is maintained. In some instances, it may be necessary for the Consultant to design maintenance roads and/or crossings and include them in the cost estimate.~~
- ~~v) Develop preliminary designs of the agreed relocations or other work and assist Omnitrans with coordination of this effort with the owner. Where Omnitrans and a utility owner have agreed, the owner will design the utility relocation and review such third party design work to verify its conformance with Omnitrans' needs and to identify any betterments which may be included. Prepare preliminary utility drawings, including street lighting, at the base map scale. The drawings shall include composite plans of existing utilities, sections, rearrangement concepts and profiles and details of major utility rearrangements. These will include preliminary sanitary sewer and water line plans for those that are in conflict with the proposed project improvements. Approval of the preliminary design shall be obtained from the utility owners.~~

~~Deliverables:-~~

~~Schematic Relocation Exhibits of proposed utility relocations at each project~~

~~location (27 sites and the 3 mile widening of Holt Blvd).~~

~~Service point exhibits identifying existing electric and phone or fiber infrastructure and determine potential service point locations for the new electric and phone or fiber services to the OmniTrans.~~

~~-~~

~~Preliminary Sanitary Sewer Design Report, which will document the basis of design for the proposed sanitary sewer relocations. The report will also discuss the proposed method for addressing sanitary sewer laterals that might be impacted by the Project improvements.~~

~~UU) PRELIMINARY LANDSCAPE DESIGN~~

- ~~i) For the Project, develop a preliminary landscape master plan based on the concept of minimal landscaping and entirely drought-tolerant landscaping. The landscaping elements selected must be consistent with each City or jurisdictional agency's landscape guidelines and/or requirements.~~
- ~~ii) Preliminary landscape master plan must define where landscaping is needed, the type of landscaping required, and anticipated needs to repair and restore existing planting after completion of facility construction. Review the proposed facility locations, the planned rights of way and the adjacent development, land uses and remainders. Develop a preliminary landscape design for each station site, along the corridor, and at parking and O&M facilities.~~
- ~~iii) Coordinate the landscaping plans with Cities, PDT and Omnitrans. Plans shall include palette of recommended trees, plants and shrubs for each community area. The landscape palette is to utilize drought-tolerant plants, preferable those native to Southern California/Inland Empire or other plant materials approved by each city in their ROW. Consider continuity of design and intent.~~
- ~~iv) Recognize need to control erosion of slopes using vegetation and to create physical and visual barriers within the right-of-way. Produce a landscape master plan to include introductory comments, key sketches and a description of proposed landscape treatment. Produce landscaping drawings and details at the base map scale. Also select the applicable directive drawings or, if appropriate, prepare new drawing sheets detailing the landscape design elements for the Project. Develop budget estimate for the landscaping work defined.~~

~~VV) PRELIMINARY DESIGN OF SIGNAGE, STRIPING, AND GRAPHICS~~

- ~~i) Based heavily off of signage design standards from the E-Street sbX Green Line project, Consultant will support the architectural and systems design~~

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

~~work to establish spatial requirements for signage, striping, and graphics, including station identification, pylons, directional signs, site and system maps and their cases, fire equipment related signage, fire/life and safety signage, traffic control signs, pavement delineation, milepost signs, vehicle clearance markers, and station site directional signage for various intermodal transfer movements. Make sure all signage adheres to ADA requirements and that handicapped accessible routes are clearly marked. Prepare preliminary drawings showing the siting of each sign and graphic element and the standard or special text intended for each, and pavement delineation plan showing striping. Ensure review and approval by Omnitrans Marketing & Planning Department prior to finalization of preliminary design.~~

~~WW) CONSTRUCTABILITY REVIEW SUPPORT~~

- ~~i) Provide engineering support to Omnitrans and its Contractors conducting constructability reviews. This will include responding to questions and providing additional information as necessary. Identify needs for other contractors' worksite and materials storage space and develop preliminary capital costs with advice on schedule impacts on construction due to site access, traffic maintenance options, inclement weather, interface relationships, material and equipment procurement lead times, and availability of utilities connections. This support may include:~~
- ~~(a) Define a noise/vibration monitoring Program for implementation during construction to identify and mitigate potential impacts created by the Project.~~
 - ~~(b) Identification of construction easements.~~
 - ~~(c) Identification and timing of any required permits and easements.~~
 - ~~(d) Potential interface problems with other adjoining Contractors and options for resolution.~~
 - ~~(e) Emergency access for fire, police, and emergency medical services.~~
 - ~~(f) Operational access for building tenants, customers, delivery service and trash removal.~~
 - ~~(g) Mobility through or across corridor.~~
 - ~~(h) Disruption due to noise, vibration, dust and silting.~~
 - ~~(i) Conformance with noise ordinances.~~
 - ~~(j) Truck haulage and railroad operations disruption.~~

- ~~(k) Access to construction work areas and storage areas.~~
 - ~~(l) Reduced street parking.~~
 - ~~(m) Disruption of marquees, sub-sidewalk spaces and signs.~~
 - ~~(n) Visibilities of storefront show windows.~~
 - ~~(o) Bus stop and route disruption.~~
 - ~~(p) Access to parking garages, driveways, and auto service centers.~~
 - ~~(q) Work hours per day, workdays per week, impact on commuter hours, and special holiday considerations for traditional parade routes and the holiday shopping season.~~
 - ~~(r) Traffic disruptions at intersections for grade crossing construction.~~
 - ~~(s) Practicality of traffic maintenance.~~
 - ~~(t) Impacts on traffic on other streets from construction detours and activities.~~
 - ~~(u) Utilities disruption.~~
 - ~~(v) Safety to general public.~~
 - ~~(w) Coordination with other Projects.~~
- ii) ~~For the Project, develop a report on construction period issues as foreseen at the preliminary design level and define construction area control requirements which must be addressed in the drawings and specifications, including the requirements of the local traffic jurisdiction for maintenance of traffic at reduced levels, varying by hours of the day and days of the week, hours of construction operations; spoil disposition; truck routing; noise, dust and erosion control; temporary fencing, lighting, striping, and signing and other constraints of other Contractors.~~
- iii) ~~In addition to matters of constructability that are due to site and institutional constraints, review the facilities design work in progress to determine that there is at least one practical way of constructing the facility under current design. Monitor the evolving details especially of structures, the joining of structures, the drainage of structures, the mounting and attachment of architectural features, the anchorages of equipment, the maintainability of the resulting structures, the sequence of construction and assembly, the difficulty of forming and making field connections and other challenges to reasonably, economic and overall construction capability.~~

- ~~iv) PDF and CADD files depicting the existing sanitary sewer and water line facilities as well as the conceptual relocations of these facilities within the Project limits will be provided. A hard copy and a PDF camera ready file of the Preliminary Sanitary Sewer Design Report will also be provided.~~

~~XX) FIRE/LIFE SAFETY REVIEWS~~

- ~~i) Coordinate with Omnitrans Safety & Security Manager or staff on issues relating to fire/life safety and code compliance. Provide support at selected meetings on issues relating to the Project. Submit appropriate documentation to justify issuance of a Certificate of Occupancy from the Safety & Security Manager for the Project.~~
- ~~ii) Develop the System Safety Plan applicable to the Project and accommodate the reviews by local jurisdictions of design work in progress, including the review of any proposed exceptions to criteria. Recognize the goals of such design review are: (1) to identify fire and life safety issues impacting the design early in the design process so that cost effective alternative solutions can be developed during this phase of the Project, and (2) to verify that the design of the Project is responsive to the fire and life safety design and performance criteria.~~

~~YY) ELECTRICAL DESIGN~~

- ~~i) Develop and identify Electrical design characteristics required as input for civil engineering and systems preliminary engineering efforts including functional description and operating philosophy; incoming electric power service and its characteristics from service providers along the corridor. Using architectural plans as a base, the space requirement shall be verified for all electrical rooms. Enlarged plans of auxiliary power room, if needed, shall be prepared showing all equipment sizing and layout to verify working spaces inside electrical rooms.~~

~~Electrical engineering includes:~~

- ~~a. Establish space requirements for electrical equipment.~~
- ~~b. Establish project scope for the following systems to establish criteria for power and lighting system, approximate sizes and capacities of major components, preliminary equipment layout and space for equipment, and required chases and clearances.~~
 - ~~1. Lighting (station lights and station related street lights)~~
 - ~~2. Power Distribution~~
 - ~~3. Emergency lighting~~
 - ~~4. Electrical engineering for support equipment such as ticket vending machines, ticket validators, variable message signs, maintenance equipment, fire and emergency management systems, etc.~~

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

- ~~e. Prepare Preliminary Engineering (Basis of Design) Report~~
- ~~d. Prepare Preliminary Engineering design drawings and specifications~~
- ~~e. Infrastructure for communications and security equipment will be referred to but not shown within the drawings.~~
- ~~f. Coordination with the local utility to bring power and site utilities to the stations will be provided by others.~~

Plumbing/mechanical engineering is to include:

- ~~a) Establish sizing requirements for drainage of canopy structures~~
 - ~~b) Provide plumbing engineering for station drinking fountains~~
 - ~~c) Provide cooling/ventilation for communication cabinets~~
 - ~~d) Prepare Preliminary Engineering (Basis of Design) Report~~
 - ~~e) Prepare Preliminary Engineering design drawings and specifications~~
- ~~ii) Prepare electrical layout plans, elevations, one line diagrams, details at the base map scale, and calculations. Electrical requirements, including stations and streets, shall be incorporated in the electrical design and plans.~~

~~ZZ) PRELIMINARY DESIGN OF SYSTEMS EQUIPMENT~~

- ~~i) Under this task, the Consultant shall advance the level of Systems Design from concept to completed preliminary designs in preliminary engineering phase documents including performance specifications of various systems elements required for the Project in the construction and or Final Design phase. This task will establish the functional requirements for all the system components. Coordinate Project integration and interface requirements. When this design milestone is completed, all design issues and performance parameters shall have been resolved except where specific options have been earmarked for advancement into the final design/construction phase for resolution or for presentation to bidders as formal options or alternatives. The preliminary level specifications include block functional schematics, interface diagrams and text outlining the significant performance requirements. Completion of this work will find the systems elements defined as to methods of procurement and installation and as to the scope of each Omnitrans contract. Consultant shall develop capital cost estimates. Develop and submit for approval the required deliverables.~~
- ~~ii) For each of the systems listed herein, periodically review the in progress results with Omnitrans and participate with Omnitrans to obtain approval for the evolving design concept. Work closely with Omnitrans on planning the scope and method of procurement. For each of the systems listed, produce the following:~~
- ~~(a) A performance or procurement specification which resolves the~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~interfacing and principal performance requirements;~~

~~(b) Drawings by station of installation layouts;~~

~~(c) A report on trade-off analyses;~~

~~AAA) VEHICLES~~

~~i) The Consultant shall provide support as needed to Omnitrans in procurement of vehicles. Work will include development of guidelines or performance specifications and principal performance requirements for the vehicle procurement.~~

~~BBB) SIGNALING AND VEHICLE CONTROL AND COMMUNICATIONS~~

~~i) Identify and develop Signaling/Vehicle Control and Communications specifications required as input for facilities and systems preliminary engineering efforts. The scope of this subtask includes preliminary engineering of all concepts as required toward development of an adaptable modular concept.~~

~~ii) In establishing the performance parameters of the signaling/vehicle control and communication systems, consider the functional description and operating philosophy; compatibility and interface philosophy with existing signaling/vehicle control and communication systems (Central Control Center, bus, streets, Police Departments, Fire Department, Sheriff Department) and future extensions; the near term operations and any foreseeable changes in the future which might argue for a concept which could be later modified as circumstances dictate; advances in the state of the technology since the previous procurement, changes in the industry and marketplace, lessons learned by other US public transit agencies and new or differing functional requirements of the immediate Project.~~

~~iii) The wayside signaling system must be industry proven for transit operations. Work with City Traffic Departments to develop wayside requirements such as signals, special signaling necessary for at grade areas where street crossings occur for transit vehicles and other vehicles; input power requirements; equipment space and access requirements, and coordination with traffic signaling in the local jurisdictions. Verify the existing vehicle specifications and incorporate these into workable interfacing bus control equipment design.~~

~~iv) Evaluate fiber optic system and provide recommendations and solutions on the best use. Coordinate with Omnitrans IT Department on development and/or improvements of communication, existing and or new as it relates to transit communications integration. Communication systems such as surveillance camera system should be compatible with Omnitrans' existing~~

systems to the extent possible.

- v) ~~Coordinate with Omnitrans and PDT members and perform sufficient design to identify station and wayside requirements such as conduits, cabling, and antennas; develop expansion plan of Central Control including equipment layout and space requirements; develop block diagram of overall system; and identify requirements for the signaling/vehicle control and communication systems, which should be added to the cost estimate, and includes: Closed Circuit Television (CCTV), Variable Message Sign (VMS), Omnitrans network Telephone system along with public telephones, Public Address, transit vehicle on board equipment, cable communication system, electrical clearance (based on operating voltages and NEC, CPUC, and NEMA codes), intrusion detection systems; fire alarms, high water, or other incident warnings tied to the signaling system; Bus location and centralized control at Montclair; providing a fiber optic trunk line; security cameras; and communications compatible with Omnitrans security, and the appropriate police and fire agencies; and other unique related issues. These unique issues include, but are not limited to, specific control systems and line of sight operation sections shall be identified. The Consultant shall submit product information on which the design is based.~~

~~CCC) CENTRAL/SATELLITE CONTROL FACILITY FUNCTIONAL PLAN~~

- i) ~~Evaluate existing Control Center(s) and recommend if the Project can be connected to an existing Control Center. Where a Project includes development of a new central or satellite control facility, define the functional requirements based on the O&M Plan. Where a Project is to be connected to an existing Control Center, define the expanded or added functional requirements to be accommodated at such existing or programmed facility. Develop design guidance in preliminary design of both new and revised control center offices or buildings, as deemed necessary during this PE.~~

~~DDD) OTHER RECOMMENDED EQUIPMENT~~

- i) ~~The Project philosophy is to specify the simplest, most cost effective, safe and reliable equipment that easily interfaces with existing vehicles. Therefore, recommend other equipment that may be required for complete system operation. These systems may or may not include: Signs, Transit Automatic Controls, Fire and Emergency Management System, Fiber Optic and Cable Transmission system, Gas monitoring, or Seismic Detection. Assure that the recommended system interfaces with existing communication systems (Central Control Center, bus, Police Department, Fire Department), future extensions; station/wayside equipment; Central Control and the overall system block diagram.~~

~~EEE) SYSTEM TESTING AND CUT OVER PLAN~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

- ~~i) Develop and identify the System Testing and Cut Over Plan (based heavily on that prepared for the E Street sbX/Green Line Corridor Project). Identify the interface philosophy with existing facilities and systems (Central Control Center, bus, Police Department, Fire Department) and operational lines, stations and wayside. Show the requirements for testing of each subsystem.~~

~~ii) Deliverable:~~

- ~~(a) System Testing and Cut Over Plan~~

~~10.101 FINAL DESIGN OF PHASE I (TASK 9)~~

~~FINAL DESIGN ASSUMPTIONS:~~

~~The Consultant will submit four Plans, Specifications and Estimates (PS&E) packages at 65%, 90%, 100% and Final. The consultant will deliver Phase 1 and 2 work on current schedules, in a combined package.~~

~~A) FINAL DESIGN PURPOSE AND INTENT~~

- ~~iii) Upon written authorization from Omnitrans to proceed, the Consultant shall continue to progress and perform all required work to finalize all design tasks and advance the level of Final Design from completed preliminary engineering design to completed technical portions of the bid documents required to procure construction contracts. This task will encompass the design of the Phase I of the Project, which is the Rapid line on the entire 25-mile corridor, with the exception of the 3.5 miles of dedicated lanes in Ontario, as referenced in Chapter 5 Phasing Plan.~~

- ~~iv) The Consultant shall provide the services necessary to fix and describe the size and character of the entire Project including civil, architectural, structural, landscaping, art, utilities, mechanical, electrical, systems design, equipment, construction sequencing and scheduling, economic analysis of construction and operations, user safety and maintenance requirements. Final Design (FD) provides for each discipline, a description of the economic factors influencing the choice of basic materials, equipment or systems, and an economic analysis considering estimated initial costs and projected costs over the life of the facility. It provides sufficient information to demonstrate that the functional needs and space requirements can be met within the programmed budget and scope of work. FD establishes the design of the basic civil, structural, mechanical, electrical, communication systems, fare collection, vehicles and other system wide interfaces. At the completion of Final Design, the Consultant shall produce contract specifications and plans, and performance requirements at large for the project for the procurement of the facilities and systems construction. In general, the services performed in the Final Design Services are:~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~(a) Architectural Design/Documentation services consisting of continued development and expansion of architectural design documents to establish the final scope, relationships, forms, appearance, and development of outline specifications or material lists to establish special design features, materials, finish and colors, and landscaping of the Project.~~

~~(b) Civil Design/Documentation services consisting of continued development and expansion of civil design documents and development of outline specifications or material lists.~~

~~Assumptions: For Phase 1 & 2, Drainage design consists of pipe extensions to adjusted inlet locations and conveyance of flows contributed by proposed project improvements. Potential impacts to the flood channel along Holt Boulevard are included in Optional Services.~~

~~*Deliverables:-*~~

~~a. Prepare title sheet, keymap, sheet index & general notes, survey control sheets, typical cross sections, layouts, removal plans, construction details, profile sheets, drainage plan & profiles, traffic handling plans, signing & striping plans, traffic signal plans, street lighting plans, communications systems, architectural plan sheets and landscape & irrigation sheets.~~

~~(c) Structural Design/Documentation services consisting of continued development of specific structural systems in sufficient detail to establish basic structural systems and dimensions, preliminary sizing of major structural components, including associated foundations and outline specifications or material lists.~~

~~*Deliverables:-*~~

~~a. Prepare station structural sheets.~~

~~(d) Utilities Design/Documentation consisting of continued development of specific utilities systems in sufficient details to identify any required relocation of existing utilities.~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~Assumptions: For Phase 1, it is assumed that existing sanitary sewer and water line facilities will remain in their existing locations and will not require relocation. It is also assumed that existing laterals will not require replacement or modification as a result of the Project improvements and that work within the Phase 1 limits will only consist of vertical adjustment of manholes and cleanouts or vertical adjustments of valves and meter boxes. The Consultant will prepare the layouts and details for the sanitary sewer facilities that will require modifications. Sanitary Sewer Relocation Layout Plans will only be prepared for areas where Sanitary Sewer modifications are required.~~

~~Deliverables:~~

- ~~a. Prepare utility relocation sheets.~~
- ~~b. Prepare sewer and water relocation sheets.~~

- ~~(e) Mechanical/Electrical Design/Documentation services consisting of continued development and expansion of electrical Preliminary design Documents and development of outline specifications or material lists to establish criteria for power and lighting systems, approximate sizes and capacities of major components, preliminary equipment layout and space for equipment, and required chases and clearances.~~

~~Deliverables:~~

- ~~a. Prepare electrical layout plans, elevations, one line diagrams, details at the base map scale, and calculations.~~
- ~~b. Prepare plumbing/mechanical layout plans, elevations, one line diagrams, details at the base map scale, and calculations.~~

- ~~(f) Systems Design/Documentation services consisting of continued development and expansion of systems design documents and development of outline specifications for various sub-systems or equipment lists to establish criteria, approximate sizes and capacities for major components, equipment layout and space for equipment. Systems design shall be brought to the level necessary for the construction contract.~~

~~Deliverables:~~

- ~~a. Systems Design Documents~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~(g) The Consultant will attend two constructability review meetings of the Phase 1 final engineering design after the 65% and 90% submittals. This review will consider the following:-~~

- ~~1. Biddability of contract documents~~
- ~~2. Construction schedule including restrictions for hours of work, holidays, events, etc.~~
- ~~3. Required construction staking and survey information~~
- ~~4. Construction staging, traffic maintenance, vehicular and pedestrian access for residents and businesses~~
- ~~5. Access for services including bus, fire, mail, etc.~~
- ~~6. Confirm means and methods for construction equipment and access~~
- ~~7. Vertical and aerial clearance for construction equipment such as boom trucks and cranes~~
- ~~8. Confirm temporary construction easement and right of way limits~~
- ~~9. Confirm limits and type of materials to be removed or rehabilitated~~
- ~~10. Precise grading for stations and handicap ramps~~
- ~~11. Private property improvements~~
- ~~12. Construction materials and alternatives~~
- ~~13. Confirm method for relocation/adjustment of existing utilities, vaults, and manholes~~
- ~~14. Requirements for utility shutdowns~~
- ~~15. Confirm existing and proposed tree locations~~
- ~~16. Confirm structural canopy and traffic signal footing locations~~

~~(h) Consultant will respond to redline comments on the 65% and 90% Phase 1 plans as well as a comment matrix and will attend (2) meetings to review the comments with the design team.—~~

~~Deliverables:~~

- ~~a. Responses to redline comments of 65% and 90% Phase 1 plans~~
- ~~b. Comment matrix of redline comments~~

~~B) TECHNICAL AND PERFORMANCE SPECIFICATIONS~~

~~i) Produce Standard Specifications for the Project. Produce technical and performance specifications part of civil construction contracts to furnish and install facilities and equipment related to the Project. Include coverage of civil, utility, structural, architectural, mechanical and electrical work and work related to systems procurements/installations (bus vehicle, fare collection system, traffic signal, and bus control system, communication system, central control system, pumps, fans and dampers, signage and graphics, and the like).~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

- ~~ii) Prepare specifications for the furnishing and installation of structures construction contract(s) for the Project. These specifications shall be based on Caltrans Standard Specifications, using Caltrans Standard Special Provisions (SSPs) where possible, the Greenbook Standard Specifications for Public Works Construction for items of work that are not covered in the Caltrans standard Specifications or as required to meet Local Agency requirements. The specifications shall clearly define work to be included in each bid item, unit of measurement, and unit price. Also, the specifications shall clearly make reference to all appropriate sections of standard specifications to define the performance and quality requirements for the construction contractor's work, including all major material testing and acceptance criteria. The special provisions should identify any restrictions or other special requirements placed on the contractor.~~

- ~~iii) Prior to the submission of any contract specification submittals, the Consultant shall complete a quality assurance verification of the specifications. The Consultant shall have a qualified individual or individuals, not directly involved in the preparation of the specifications verify correctness and accuracy. The reviewer shall verify that measurement and payment provisions are consistent with the description of the work on the plans and the bid list and are consistent with any construction notes or written directions. The reviewer shall verify and initial that previous comments on the specifications have been resolved.~~

- ~~iv) Index facilities specs to the master list of section numbers in the format of CSI divisions 1 through 50.~~

- ~~v) Produce technical and performance specifications for the Systems construction contracts to furnish and install communications, vehicles, signaling, fare collection and other systems elements determined during PE.~~

- ~~vi) Deliverable:
 - ~~(a) Complete specifications for construction contractor~~~~

~~C) CONSTRUCTION AND PROCUREMENT PACKAGING~~

- ~~i) Implementation of the Project may be affected by a series of contracts and other agreements by which the required design services, construction work, equipment procurement and installation and other Services are procured by Omnitrans. There are many alternative methods of procurement within the constraints of applicable codes and regulations and there are many ways of subdividing the procurements into discrete contracts. Omnitrans will select the delivery option that minimizes project risks and provides the greatest likelihood of implementation success while minimizing cost overruns and schedule slippages. The work of this task is to assist Omnitrans in planning the most advantageous methods of contracting and contract scoping for the~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

Project.

- ~~ii) As soon as the project scope is well defined and at least six months prior to the request to enter Construction, a formal Risk Assessment shall be performed on the Project. The Consultant shall be a member of a multi-disciplinary Risk Management Group that will include the PDT and Omnitrans. Risk Assessment includes identification of risks, evaluation/measurement of risks, analysis of risk treatment alternatives (i.e., avoidance, prevention, mitigation, cost control, and insurance), assignment of risk and monitoring/evaluating the performance of measures implemented.~~
- ~~iii) Omnitrans will consider the following project delivery options within the context of project risk analysis and procurement planning: Design Build (D/B), Design Bid Build (D/B/B), and Construction Manager/General Contractor (CM/GC). The Project could be implemented with a combination of contracting approaches.~~
- ~~iv) During the preliminary engineering design, assist Omnitrans in determining how the Project work will be subdivided for final design, for construction by other Omnitrans Contractors, for construction by third parties' Contractors or third party force accounts, for procurement of materials and equipment items and their installation by other Contractors, and procurement of equipment systems.~~
- ~~v) In the planning of Omnitrans procurements of construction and equipment, the Contract documents prepared by the Consultant shall reflect California Public Contracts Code Section 3400, which states, among other stipulations, that the specifications are to be prepared so as to not limit the bidding, directly or indirectly, to any one specific supplier and, further, that the specifications shall not designate a material, product, thing or service by specific brand or trade name unless at least two brands or trade names of comparable quality or utility are cited, followed by the words "or equal".~~
- ~~vi) Assist Omnitrans by evaluating the following:
 - ~~(a) Final Design Packaging:
 - ~~1. Development of final designs and bid documents for a given construction Contract Unit (i.e., final design package interfaces should coincide with construction contract interfaces, although a final design subcontract may cover more than one construction Contract Unit).~~
 - ~~2. If not already governed by the types of construction that make up the Contracts ready for final design, final design packages should contain one dominant type of line and station structure or~~~~~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~building structures so that design A&E firms with that particular experience may focus on competing for selection.~~

~~3. Construction Contract Packaging~~

~~4. Within the statutory and policy constraints that apply to Omnitrans, evaluate on special case bases alternative methods of procurement of and contracting for final design, construction, third party conflict removals and procurement. Among the contracting methods to be considered are:~~

~~(i) Competitive single step, low bid, lump sum contract.
Competitive single step, low bid, unit price contract.~~

~~(ii) Negotiated competitive procurement contract.~~

~~(iii) Competitive two step contracting process with pre-qualification of bidders (technical evaluation followed by low bid).~~

~~5. Evaluate the advantages and risks to Omnitrans of the following scopes of contracts:~~

~~(i) Final design and preparation of bidding contract documents, followed by public advertising and award of a separate construction or procurement contract (Conventional U.S. public works practice).~~

~~(ii) Design build contracting wherein bids are solicited and taken on the basis of preliminary designs and all detailed design and construction are parts of the contractor's scope.~~

~~(iii) Turnkey contracting wherein the scope includes the design bid build aspects but is more comprehensive and includes integrated testing and commissioning of a major segment of a Project.~~

~~(iv) Turnkey of a discrete fixed facility such as a maintenance facility.~~

~~(v) Turnkey of a combination of system wide elements.~~

~~(vi) Turnkey of all elements of a Project such as an extension of an operating line.~~

~~6. Also included in this subtask are evaluations of contract inclusions and options and of terms where choices are viable,~~

including:

- ~~(i) Provision of insurance coverage and limits and related liability terms.~~
- ~~(ii) Use of standard contract specifications versus guideline specifications.~~
- ~~(iii) Accommodation of some level of installation contractor financing.~~
- ~~(iv) Liquidated damages terms and conditions.~~
- ~~(v) Dispute resolution provisions.~~
- ~~(vi) Construction contract interfaces should be defined to minimize control across such interfaces.~~
- ~~vii) Packaging should minimize Project/contract cost and time of completion.~~
- ~~viii) — Packaging must reflect logical and cost effective sequencing and phasing of work and the overall schedule of completion.~~
- ~~v) Size of contracts in terms of dollar value should encourage competition among qualified bidding contractors.~~
- ~~vi) The mix of contracts should include smaller contracts of less complex scope to permit smaller and more local contractors to compete, considering among other factors ability to obtain bid and performance bonds.~~
- ~~vii) Greatly dissimilar work should not be included in one contract.~~
- ~~viii) — Problems with third party clearances and acquisition of right of ways may influence scoping of contracts, allowing "clean site" contracts to be let earlier.~~
- ~~v) Packaging should reflect industry and marketing conditions.~~

~~7. Procurement Contract Packaging~~

- ~~(i) System wide elements of a Project are usually packaged for fabrication, furnishing and installation on a basis of a~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~given system over the Project extent, in order to obtain the same proprietary equipment and workmanship for the entire Project.~~

~~(ii) Procurement contracts are more susceptible to constraints on phasing and sequencing of facilities and systems work and must be scoped with the overall schedule in mind.~~

~~(iii) There may be cost, schedule and interface control advantages to certain logical combinations of different systems into fewer, larger contracts. Among the combinations which may prove cost effective is fiber optics with PA/VMS/CCTV.~~

~~(iv) Lead times for procurements should also be considered in overall project schedule.~~

~~vii) There may be advantages to Omnitrans' direct procurement of equipment items and materials by contract followed by separate contracts for installation. In such cases, Omnitrans may receive and take title to the procured items and then issue them as Omnitrans' furnished material to an installation contractor, or Omnitrans may procure items and require the supplier to furnish them directly to installation contractors.~~

~~D) CONTRACT UNIT DESCRIPTIONS~~

~~i) Once Omnitrans determines the methods of contracting and work, apply the WBS and assign Contract Unit nomenclature to the proposed Contract Units.~~

~~ii) Prepare a set of Contract Unit Descriptions (CUD) which will detail each design, construction and procurement contract and define its type of contract, its limits, its scope, its length, major quantities or size and the estimated duration under normal construction conditions. Add the new CUD to the Project CUD book, or form such book, as appropriate. Over the course of preliminary engineering design, maintain the CUDs as changes in interfaces and scopes are decided.~~

~~iii) Deliverable:~~

~~(a) Contract Unit Descriptions~~

~~E) COST ESTIMATES~~

~~i) Update existing and prepare new capital and operating cost estimates for the Project. The Consultant shall perform and submit a price analysis to support the unit costs developed for the cost estimate and shall provide quantity estimates to support the cost estimates, to be reviewed by Omnitrans staff.~~

~~Since the delivery method has not yet been selected, Omnitrans may request the cost estimate certified and in a format suitable for bidding.~~

- ~~ii) The Consultant shall prepare a detailed Engineer's Cost Estimate at each major design milestone of the Project. Prior to the submittal of any cost estimate, the Consultant shall complete a quality assurance verification of the estimate. The Consultant shall have a qualified individual or individuals, not directly involved in the preparation of the estimate, verify correctness and accuracy. The reviewer shall verify the methods of quantity calculation and spot check quantity calculations; verify that quantity calculations match the information depicted on the plans; verify that quantity and unit cost extensions are correct and accurate; and verify the unit prices were reasonably derived and correctly applied. Omnitrans may have an independent third party review of the cost estimate.~~
- ~~iii) The Consultant shall reconcile any differences greater than ten percent on any item resulting from any cost estimate reviews. The cost estimate should be reconciled with any major change in design of the Project.~~

~~v) Deliverable:~~

- ~~(a) Updated cost estimate at each milestone~~

~~F) CONSTRUCTION SCHEDULE REVIEW~~

- ~~i) The Consultant shall prepare an estimate of the construction schedule, including the number of working days required for each of the construction contracts, along with key milestone dates. This estimate of working days shall be supported by a construction schedule and narrative describing anticipated construction methods, assumptions, and key milestones and interfaces with adjacent contractors.~~

~~G) PREPARATION OF CONSTRUCTION CONTRACT DOCUMENTS~~

- ~~i) The Consultant shall prepare Project Definition Documents for a construction contract(s) not to exceed 8 contracts to completely define the scope of work of, and establishes the budget and schedule for, and advertising of each construction contract. Following design documents shall be included in the Project Definition Documents:
 - ~~(a) Volume I - General Requirements~~
 - ~~(b) Volume II - Statement of Work (including or reference to all applicable specifications)~~
 - ~~(c) Volume IV - Drawings~~~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~(d) Volume V – Technical Reports and Other Mandatory Requirements~~

~~(e) Volume VI – Mandatory Requirements and Non-Mandatory Reference Information~~

- ~~ii) Also, the Consultant shall produce all calculations and other documents that provides basis and supports the Consultant's design work. The Consultant shall submit signed and sealed certification of all Consultant developed mandatory requirements included in the construction contract documents.~~
- ~~iii) Note that Omnitrans will develop the Front-End documents (General Conditions, Special Provisions and other commercial requirements). The Consultant shall review the General Conditions and Special Provisions to identify any duplications and/or conflicting technical requirements, and to ensure that all contract documents developed by the Consultant are consistent, complementary and complete.~~

~~H) FINAL GEOTECHNICAL DESIGN (PHASE 1)~~

- ~~i) Field Investigation: The Consultant will conduct a geotechnical investigation along the roadways with 1 borehole (up to 15' depth) at or near each individual station, bus lot, and/or bus pad. This scope of work (SOW) assumes a total of up to 30 boreholes and 7 drill days. The station borings double for pavement borings. The SOW is based on a minimized number of borings. One (1) boring is to be drilled for a group of 2 or 3 stations that are located 500 ft or closer to each other.~~

~~All boring locations are in traveled right-of-way. Dry auger boreholes using rubber-tired truck-mounted drill rigs are proposed to reduce drilling and lane closure time. Cone Penetration Testing (CPT) can be considered to supplement the soil borings in special situations when borings are not possible. CPT provides stratigraphic and correlated strength information but does not allow for soil sampling for laboratory testing. The Consultant will arrange for underground utility clearance prior to drilling. A professional moving traffic control service will be used where required on travelled roadway using a standard plan for an exterior temporary lane closure.~~

~~Boreholes may be terminated above target depth if refusal is encountered. If chemically impacted soil is observed, it will be noted on the log of test borings. If hazardous materials are encountered, we will terminate the boring and notify the controlling agency. This scope includes a small budget for a hazardous waste hauler contractor to dispose of the materials encountered. Environmental sampling is not included although the geologists and technicians carry handheld monitoring devices to detect volatile gas emissions for worker's safety. Soil cuttings from those borings will be drummed, tested and disposed of by State~~

~~certified waste hauler services.~~

~~(a) Laboratory Testing~~

~~The field boring logs will be analyzed to select bulk and undisturbed samples for laboratory testing. Results of the laboratory tests, together with the field boring data, will be used for engineering analyses. The following laboratory tests are envisioned:~~

- ~~1. In place moisture and density (for earthwork)~~
- ~~2. Plasticity (plasticity of cohesive soils)~~
- ~~3. Grain size distribution (soil classification and earthwork)~~
- ~~4. Direct shear and unconsolidated undrained compression tests (soil strength)~~
- ~~5. Consolidation (settlement)~~
- ~~6. Soil corrosivity (foundations)~~
- ~~7. Maximum density (earthwork)~~
- ~~8. R Value (pavement design)~~

~~All tests will be conducted in general accordance with Caltrans Test Methods or American Standard Test Methods (ASTM).~~

~~ii) Geotechnical Engineering Analyses: Using the findings from the field investigation and laboratory testing program, the Consultant will address the following:~~

~~(a) Fault rupture potential—The corridor crosses a fault. A lineament analysis may need to be conducted to evaluate any geologic features in or crossing the project corridor area that indicate the presence of active earthquake faults capable of producing a ground fault rupture. This evaluation will be conducted using dated stereographic aerial photographs which theoretically allows for observation of natural conditions before modification by urban development and agriculture. However, the project area is within areas already altered by urban development and this type of analysis could be highly interpretive. The reports will include one of the following recommendations: (1) fault rupture is not an issue, or (2) fault rupture appears to be an issue and additional work is required to decide on design criteria. The fee estimate does not include item (2).~~

~~(b) Roadway—The Consultant will analyze flexible on rigid concrete pavement structural sections for the roadway widenings/modifications and bus lanes using the results of the laboratory test results, and Traffic Indexes provided by Parsons, per Caltrans Highway Design Manual procedures pavements meeting local section requirements. We can also provide geogrid reinforced alternatives to improve weak subgrade and/or thin the structural section and save construction cost.~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

- ~~(c) Foundations—The Consultant will perform engineering analyses to develop soil profiles, foundation design parameters and design recommendations for station structure foundations. This includes seismic design criteria (causative fault, site distance, Peak Bedrock Acceleration and ARS design spectra using Caltrans Seismic Design Criteria and California Building Code).~~
- ~~(d) Utilities/Culverts—The Consultant will provide soil corrosivity test results from 10 station borings (i.e., 1 out of every 3 stations) that can be used for utility/culvert design.~~
- iii) ~~Report Preparation—The Consultant will prepare a single Draft Geotechnical Report that will combine the content of a materials report and a foundation report providing the following:~~
- ~~(a) Site geology including fault rupture potential~~
 - ~~(b) Soil and groundwater conditions determined by field investigation~~
 - ~~(c) Log of Test Borings Sheets~~
 - ~~(d) Laboratory testing~~
 - ~~(e) Engineering analyses~~
 - ~~(f) Summary of existing pavement sections~~
 - ~~(g) New pavement structural sections for all new lanes, roadway widenings and modifications~~
 - ~~(h) Design recommendations for structure foundations (seismic design criteria: causative fault, site distance, Peak Bedrock Acceleration and ARS design spectra using Caltrans Seismic Design Criteria)~~
 - ~~(i) Soil corrosivity and recommendations for utility/culvert design~~
 - ~~(j) Recommendations for construction for earthwork, roadway, and foundation construction.~~

~~The Draft Report will be submitted to the same reviewing agencies as the draft Preliminary Foundation Report. Caltrans review is not anticipated. Review comments related to geotechnical issues will be addressed by the Consultant. Upon approval of the responses, the Consultant will incorporate the responses and comments into a Final Geotechnical Report which will be submitted for distribution.~~

~~I) ARTWORK~~

- ~~i) To facilitate the timely fabrication and delivery of artwork for the project, the Consultant shall provide the following services:~~
- ~~(a) Work with Omnitrans and contractor to finalize the fabrication agreement for artwork~~
 - ~~(b) Develop art fabrication schedule in cooperation with project schedule~~
 - ~~(c) Provide assistance to artists in coordination of submittals to general contractor for approval.~~
 - ~~(d) Perform periodic review of art fabrication progress~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

- ~~(e) Monitor schedule, deliverables and payments to project artists-~~
- ~~(f) Assist in coordination of artist sub-contractors as needed-~~
- ~~(g) Meet with contractor to review installation procedures and conservation review recommendations-~~
- ~~(h) Document artwork delivery protocol and protection of artwork if needed~~
- ~~(i) Provide onsite services with contractor during installation-~~
- ~~(j) Review final art installation with contractor~~
- ~~(k) Deliverables:-~~
 - ~~1. Artwork delivery schedules~~
 - ~~2. Documentation of art fabrication progress~~
 - ~~3. Provide Omnitrans with signage guidelines and samples for artwork~~
 - ~~4. Provide status reports on art program for Omnitrans as needed~~

~~ii) Final Project Documentation—To facilitate the long term maintenance of artwork and assist Omnitrans in the promotion of artwork for new projects, the Consultant shall provide the following services:-~~

- ~~(a) Work with Omnitrans staff to develop materials for art project promotion-~~
- ~~(b) Coordinate the delivery of electronic files for art replacement as needed~~
- ~~(c) Monitor schedule, deliverables and payments to project artists-~~
- ~~(d) Deliverables:-~~
 - ~~1. Develop maintenance handbook for Omnitrans maintenance staff~~
 - ~~2. Assist in the development of press and promotional materials relevant to the project art program~~
 - ~~3. Provide status reports on art program for Omnitrans as needed~~

~~11.101 FINAL DESIGN OF PHASE 2 (TASK 10)~~

~~A) This task will include the final design of Phase 2 of the Project, which encompasses the 3.5 miles of dedicated lanes and six median stations on Holt Boulevard in the City of Ontario (as described in Chapter 5—Phasing Plan). The subtasks and deliverables are the same as described in the above chapter. Depending upon the Phasing Plan developed under Task 5, the construction of Phase 1 and Phase 2 may be bid separately. The final design for Phase 2 will be put out to bid when funding is available for construction of Phase 2.~~

~~FINAL GEOTECHNICAL DESIGN (PHASE 2)~~

~~The Phase 2 Alternative includes the same elements as Phase 1 but replaces 6 side stations on exterior lanes on Holt Boulevard in Ontario with approximately 3 median (in-line) stations and adds 3.5 miles of dedicated center lanes. This adds up to 12 exploratory boreholes (generally 5' depth) spaced about 1,200 ft apart on exterior lanes, for roadway modifications and pavement design.~~

MKP15-37

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~The general scope of work is the same as Phase 1 (Task 9), except that the field investigation adds these 12 pavement borings and drill days increase by 2 days.~~

~~B) This task order may be cancelled if funding is not available for this task.~~

~~**12.101 — BID PERIOD SERVICES (TASK 11)**~~

~~A) Prepare addenda to an advertised Contract Unit for issuance by Omnitrans, including such additional design work, drawings, specification writing and contract document revisions as are required.~~

~~B) Develop Engineer's Estimates consistent with the Project Definition Documents and other Invitation for Bid documents issued to bidders.~~

~~C) Provide material for Omnitrans to present at pre-bid conference(s). Attend one (1) pre-bid conference. Respond to bidders questions.~~

~~D) Assist Omnitrans in responding to technical questions posed by plan holders. Participate in pre-bid meetings, issuance of addenda and re-packaging of rejected bids. Assist Omnitrans in the evaluation of bids during any competitive negotiated procurement process and in conforming the contract documents prior to Notice to Proceed.~~

13.101 DESIGN SERVICES DURING CONSTRUCTION (TASK 12)

A) Consultant shall provide a full-time on-site representative at the construction trailer for the majority of the construction phase, or as designated as needed by Omnitrans.

B) The Consultant shall attend Pre-construction Meeting.

C) The Consultant shall attend Partnering Meetings.

D) The Consultant shall attend weekly, monthly and quarterly Project Review Meetings (estimated 50 meetings).

E) Review and evaluate the design drawings and specifications submitted by the construction contractor(s) for conformance with the preliminary engineering and Final Design.

F) Respond to requests for information and other technical issue resolution posed by construction contractor(s).

G) Review and approve submittals, such as product and material submittals, and change notices received from construction contractor(s).

H) Update the contract drawings to reflect revisions to the design during the construction

process.

- I) Review and approve As-Built drawings.
- J) Attend meetings, perform site tours, witness factory acceptance tests and performance, and develop certification plans and procedure for revenue operations.
- K) The Consultant shall provide updates to Safety and Security Management Plan (SSMP) and related documents requested by Omnitrans.
- L) The Consultant shall provide other miscellaneous engineering design and consulting services during construction as requested by Omnitrans.
- M) Other direct costs associated with construction.
- N) Project management and/or administration.
- O) Field visits as requested by Omnitrans.
- P) Provide specialty sub-consultant services as requested by Omnitrans. This will include providing technicians and engineers for foundation construction inspection and soil testing. Inspections and testing may be performed during any of the following stages of construction:
 - i) Grading operations, including excavations and placement of compacted fill
 - ii) Shoring installation
 - iii) Removal or support of buried utilities or structures
 - iv) Excavations for foundations
 - v) Backdrain installation and backfilling of (culvert) walls, if any
 - vi) Removal or installation of support of buried utilities or structures when any unusual subsurface conditions are encountered.

The Consultant can monitor excavations and placement of backfill during construction. A technician can perform field and laboratory soil density testing to verify that backfill is being placed to the minimum required relative compaction. If density testing is performed, a letter report summarizing the soil compaction test results will be prepared by the Consultant upon completion of earthwork activities.

- Q) The Consultant shall provide any additional engineering services during construction, start-up and close-out phase as requested by Omnitrans.
- R) Consultant shall provide final Mylar As-Built/Record Drawings for each local agency.

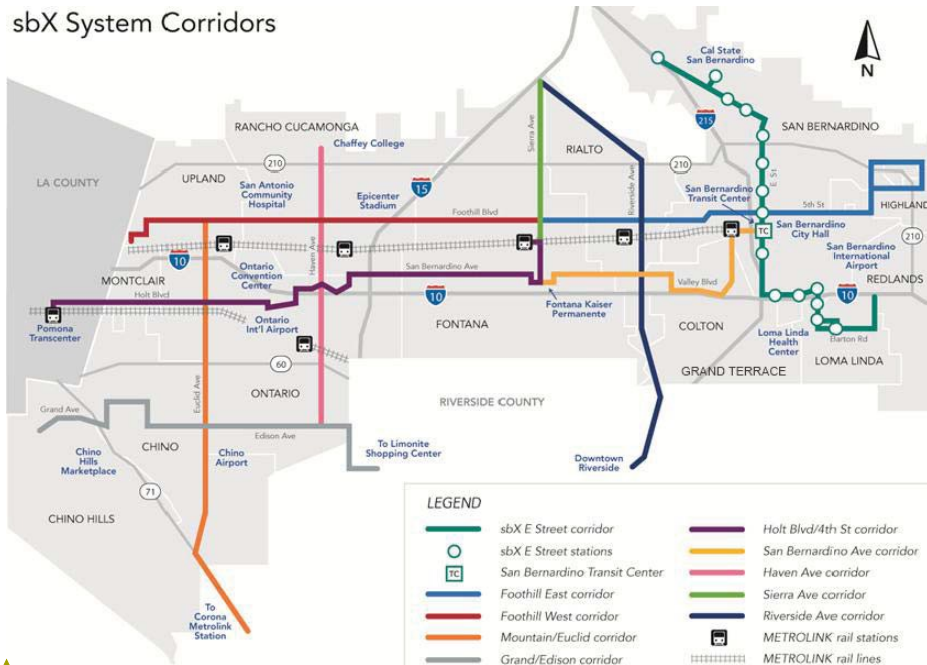
~~14.101—TRANSIT PLANNING SUPPORT (TASK 13)~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
 SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~A) PRODUCE AN UPDATED OMNITRANS SYSTEM WIDE TRANSIT-
 CORRIDORS PLAN~~

~~i) An initial sbX BRT System wide Plan for Omnitrans was prepared at the beginning of the Alternative Analysis Phase (2004) and was adopted by the Omnitrans Board of Directors. The System Wide Plan was updated in 2009 and adopted by the Board of Directors in 2010, and reflects ten (10) potential corridors with proposed alignments and station locations (as shown in the figure below).~~

sbX System Corridors



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~~ii) The Contractor shall provide an update of this plan, which will reflect the change in the Holt/4th and Foothill West corridors due to the West Valley Connector Corridor (which combines the two corridors). The plan update will include a map update that assigns new colors and names to the corridors based on the aforementioned changes.~~

~~iii) The plan update should include recommendations for implementing the remaining corridors, including a prioritized order based on ridership productivity, potential benefits (ridership increase, time savings, congestion reduction, connections to jobs), and ease of implementation (including ability to capture potential funding). The recommendations~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~should include how to capitalize on the E Street and West Valley Connector corridors to create extensions or connections with future corridors, as well as capacity expansions or future phases of improvements that may be needed on the E Street or West Valley Connector corridors. The plan should include a recommended implementation strategy, including timeline, action items/steps to implementation, and potential funding sources for all corridors. The plan may also make suggestions of other planning considerations that could augment or improve the premium transit corridor system (such as how to connect with other planned regional projects, etc.)~~

- ~~iv) The Consultant will provide ridership forecasts for the changes to the Holt/4th and Foothill West corridors due to the West Valley Connector Corridor. The Consultant will develop recommendations using the following criteria: productivity, potential benefits (ridership increase, time savings, congestion reduction, connections to jobs), and ease of implementation (including ability to capture potential funding).~~

~~The Consultant can also provide data (as available) to support analysis of other planning considerations that could augment or improve the premium transit corridor system (such as how to connect with other planned regional projects, etc.).~~

- ~~v) The Consultant will reference recently completed plans along the corridors, such as SANBAG's Foothill/5th Street Transit and Land Use Study (2014), the City of Ontario's Holt Boulevard Mobility & Streetscape Strategic Plan (2013), the City of Fontana's Sierra and Valley Land Use Study (2013), the City of Rancho Cucamonga's Foothill BRT Strategic Plan (2013), and the City of Highland's Baseline VMT to BRT Plan (2012).~~

- ~~vi) All ridership forecasting activities will be consistent with Federal Transit Administration requirements regarding Small/New Starts Criteria.~~

-

~~B) ASSIST WITH REGIONAL PLAN UPDATES~~

- ~~i) The Consultant team shall assist Omnitrans, as needed, with providing information needed to update regional partner agencies' plans to include the West Valley Connector Corridor project. The Consultant shall provide guidance to Omnitrans on which regional plans may need to be updated for consistency with the West Valley Connector project (particularly because it alters the Holt/4th and Foothill West corridors originally reflected in the regional system wide plans). The Consultant team shall provide any plan language and data needed to Omnitrans for the plan updates.~~

~~C) TRAFFIC SIMULATIONS~~

- ~~i) Upon completion of final design on the preferred alternative, the Consultant will prepare traffic simulations at two critical intersections per City (excluding Montclair) along the corridor (total of eight intersections) to demonstrate how the TSP system will function. Simulations would be prepared for a “No Build” condition without TSP and a “Preferred Alternative Build” condition with TSP as determined by the PDT. It is assumed that traffic count data and model data would be utilized from the work effort on the TIA, and any current signal timing data would be obtained from each respective agency.~~

~~Deliverables:~~

~~Simulation of TSP operations at eight (8) intersections~~

~~D)A) PEDESTRIAN AND BICYCLE COUNTS~~

- ~~i) The Consultant team shall conduct bicycle and pedestrian counts at the 27 major intersections along the corridor during the design process. The counts should be conducted on two different days of the week, and the results should include two-hour peak counts and daily average estimates. This data will be used for before-and-after comparisons for future reporting. As an optional task order, the Consultant team shall conduct the “after” counts after the service begins operation (upon the request of the Omnitrans Project Manager).~~

~~15.101 MISCELLANEOUS SERVICES (TASK 14)~~

~~A) SUBSURFACE UTILITY SCANNING/POTHOLING~~

- ~~i) Subsurface and surface utilities will be located along 3.5 miles of Holt Blvd and will cover a 50' swath along the planned centerline and dedicated bus way lanes and stations.~~

~~Subsurface and surface utilities will be located along the planned 27 bus stop locations. Utilities will be located at each planned stop within a 200'x30' swath.~~

~~Utility locating and mapping will be based upon the ASCE guidelines for Subsurface Utility Engineering. Upon completion of the surface and subsurface utility locating, a 3D utility map will be prepared depicting those utilities located. Inverts for Storm and Sewer manholes identified by the client will be surveyed.~~

~~Utility budget included under this task will be used for potholing or a combination of potholing and subsurface scanning.~~

~~ii) Deliverables:~~

- ~~(a) 3D Utility Mapping File based on field scan~~
- ~~(b) Utility potholing data~~

~~B) SURVEYED RIGHT OF WAY MAPPING~~

- ~~i) Surveyed Right of Way mapping will be developed for the impacted parcels identified upon completion of the Preliminary Engineering phase.~~

~~Legal descriptions and exhibits for partial acquisitions, permanent easements, and/or temporary construction easements to support the Appraisal and acquisition process will be provided. Up to 200 legal descriptions are estimated.~~

~~ii) Deliverables:~~

- ~~(a) Optional Surveyed Right of Way Base Mapping~~
- ~~(b) Optional Legal Descriptions & Plat Exhibits~~

~~C) ADDITIONAL TRAFFIC SIGNAL MODIFICATIONS~~

- ~~i) Based on results of the Preliminary Engineering analysis, additional Traffic Signal Modifications plans for up to 30 signalized intersections can be developed.~~

- ~~ii) Deliverables: 65%, 90%, 100% and Final Traffic Signal Plans, specifications and estimates for up to 30 additional signalized intersections.~~

~~D) FLOOD CHANNEL IMPACT REQUIREMENTS~~

~~An existing San Bernardino County flood channel runs north-south under Holt Boulevard and is located between N. Grove Avenue and N. Imperial Avenue. Alternatives will be evaluated to avoid impact to the channel. However, should impacts require modification to the channel the following optional tasks will be required to obtain approval from the necessary stakeholders.~~

~~i) SURVEYING/MAPPING-~~

~~Consultant shall perform additional Survey of existing box culvert within the West Cucamonga Channel.~~

~~ii) GEOTECHNICAL ENGINEERING~~

~~Consultant shall perform one deep boring for the box culvert extension designs.~~

~~iii) PRELIMINARY STRUCTURAL DESIGN~~

~~The structural work on this project consists of the extension of the box culvert on E. Holt Boulevard. The General Plan for the box culvert extension shall meet the requirements of the City of Ontario and the San Bernardino County Flood Control District.~~

~~Structure General Plans~~

~~The General plan for the drainage structure shall be prepared. The General Plan shows the layout, structure type, approach railing, dimensions of existing culvert and widening, water surface elevations, foundation type, slope protection, temporary construction easements, wingwalls, headwalls, retaining walls, channel slopes and roadway slopes, construction staging, and detours. The structure shall be reviewed with the City and the San Bernardino County Flood Control District.~~

~~A complete set of structural plans shall be prepared for all structures. A total of 2 structure plan sheets are anticipated for the proposed project.~~

~~Deliverable:~~

~~(a) Structure General Plans~~

iv) PERMITS

~~Section 404 USACE Permit—The proposed project qualifies for the following Section 404 Army Corps of Engineers Nationwide Permit 14 for Linear Transportation Projects, as the project is anticipated to have less than 0.5 acre of permanent impacts to jurisdictional waters. This permit is required for the construction, expansion, modification, or improvement of linear transportation projects in waters of the United States. To initiate permit process, Consultant shall submit the permit application along with all necessary engineering and environmental support information so that the ACOE may authorize use of the Nationwide 14 Permit. Two Section 404 USACE permits shall be prepared. The first set shall be for construction of project drainage. The second shall encompass the road widening.~~

~~Deliverable:~~

~~(a) Section 404 Permit~~

~~Section 1602 CDFW Permit~~

~~Consultant shall coordinate with the California Department of Fish and Wildlife (CDFW) to obtain a Section 1602 Streambed Alteration Agreement. The culvert extension beneath E. Holt Boulevard, between N. Grove Avenue and N. Imperial Avenue, shall require notification of proposed streambed alterations to the CDFW. Consultant shall delineate boundaries of CDFW jurisdiction, assess project impacts, prepare a Notification of Streambed Alteration, and enter into a~~

~~Streambed Alteration Agreement with CDFW.~~

~~Deliverable:-~~

~~(a) Section 1602 Permit~~

~~San Bernardino County Flood Board Permit~~

~~Consultant shall coordinate with the San Bernardino County Flood Control District (SBCFCD) to obtain a permit for culvert extension into the West Cucamonga Channel. An application package shall be prepared to include design plans and supporting documentation.~~

~~Consultant shall prepare the storm drain extension application package for submittal to the San Bernardino County Flood Control District. Consultant shall coordinate with the Flood Control District prior to submittal of the application to ensure all needed materials are included, and shall conduct any necessary follow up coordination and permit application revisions to make sure the City receives the final permit required for construction. The application package will include all items listed on the SBCFCD's permit application checklist. The hydraulic calculations will be submitted in a memo format to provide the conclusions and results of the analyzed headwater elevations. This will be performed using CulvertMaster software. It is assumed that no Location Hydraulic Study will be required by SBCFCD to issue the permit.~~

~~Deliverable:-~~

~~(a) San Bernardino County Flood Control District Permit~~

~~E) MAJOR SEWER/WATER UTILITY RELOCATIONS~~

~~If it impacts to sewer/water utilities are unavoidable through design measures, the following optional tasks will be performed to design plans for relocation of the facilities:-~~

- ~~i) Video Inspection of Existing Facilities—The Consultant will conduct Closed Circuit Televisions (CCTV) inspections of existing sanitary sewer manholes and pipe. The pipe condition will be assessed and rated according to the National Association of Sanitary Sewer Companies (NASSCO) Pipeline Assessment & Certification Program (PACP). This task allows for up to 7 days of CCTV inspections and assumes that the existing pipes will be sufficiently clean to be able to perform the CCTV inspections. Any cleaning of pipes is assumed to be done by others.~~
- ~~ii) Preliminary Design of Utility Relocations—The Consultant will develop preliminary sanitary sewer and water line plans that will depict the conceptual relocations for facilities that are in conflict with the proposed project improvements. The plans will be prepared at a scale of 1"=40'.~~

~~The Preliminary Sanitary Sewer Design Report prepared by the Consultant will include those sanitary sewer systems that are required to be relocated to clear the project improvements.~~

~~(b) Deliverables:~~

- ~~• CADD files and PDF version of the conceptual relocation plans of the sanitary sewer and water line facilities~~
- ~~• 1 hard copy and 1 PDF camera ready file of the Preliminary Sanitary Sewer Design Report~~

~~iii) Preparation of Construction Contract Documents (Phase 1 and Phase 2)~~

- ~~(b) Sanitary Sewer Plans, Profiles, and Details—The Consultant will prepare the layouts, profiles, and details for the sanitary sewer facilities that will require relocation or modifications. Plans will be prepared at a scale of 1"=40'.~~
- ~~(c) Sanitary Sewer Technical Specifications—The Consultant will provide the necessary technical specifications for the construction of the sanitary sewer relocation work within the project area. The technical specifications will be provided in Microsoft Word format to be incorporated into the Project specifications.~~
- ~~(d) Sanitary Sewer Plans Quantity Estimates—The Consultant will provide the quantity estimates for the sanitary sewer relocation work.~~
- ~~(e) Water Line Plans—The Consultant will prepare the layouts plans for the water line facilities and will be prepared at a scale of 1" = 40'.~~
- ~~(f) Water Line Details—The Consultant will prepare details for the water line facilities that will require relocation.~~
- ~~(g) Water Line Technical Specifications—The Consultant will provide necessary technical specifications for the construction of the water relocation work within the project area. The technical specifications will be provided in Microsoft Word format to be incorporated into the Project specifications.~~
- ~~(h) Water Line Plans Quantity Estimates—The Consultant will provide the quantity estimates for the water line relocation work.~~
- ~~(i) Sanitary Sewer Design Report—The Consultant will prepare a Sanitary Sewer Design Report for Phase 1 and Phase 2 of the project. The reports will document the existing system and design standards used during the~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~development of the plans. The reports will also include the required analysis of the proposed system.~~

~~Assumptions:~~

- ~~• The Final Design of Phase 1 and Phase 2 will each include the 65%, 90%, 100% and Final submittals~~
- ~~• One (1) set of Contract Plans, Specifications, and Estimates will be prepared for the entire Phase 1 limits regardless of the jurisdiction of the improvements.~~
- ~~• One (1) set of Contract Plans, Specifications, and Estimates will be prepared for the entire Phase 2 limits regardless of the jurisdiction of the improvements.~~
- ~~• The Sanitary Sewer Design Report will be submitted with the 100% submittal~~
- ~~• CADD files and PDF version of the sanitary sewer and water line relocation plans, profiles, and details~~
- ~~• MS Word document of the sanitary sewer and water line relocation technical specifications~~
- ~~• MS Excel document of the sanitary sewer and water line relocation quantity estimates~~

~~F) ADDITIONAL PRESENTATION BOARDS AND RENDERINGS~~

- ~~i) Should it be needed, up to five additional display boards will be prepared for presentations.~~

~~Deliverables:~~

~~Five (5) display boards could be provided.~~

~~G) PEDESTRIAN AND BICYCLE COUNTS (AFTER)~~

The Consultant team will conduct bicycle and pedestrian counts at the 27 major intersections along the corridor after construction. The counts will be conducted on two different days of the week, and the results should include two-hour peak counts and daily average estimates. This data will be used for before-and-after comparisons for future reporting.

~~H) ACTIVE TRANSPORTATION GRANT ENVIRONMENTAL DOCUMENT~~

Parsons will prepare a Categorical Exemption/Categorical Exclusion (CE/CE) environmental documentation to provide environmental clearance for the ATP-funded non-motorized project features. It is our understanding that the project has obtained ATP funding from FHWA and approval of the NEPA environmental document (Categorical Exclusion) is delegated to Caltrans' Local Assistance by FHWA. The scope and fee provided in our estimate is based on our assumption that

Scope of Work

the non-motorized project features does not require the preparation of noise and air quality studies, and would not require right-of-way acquisitions.

~~D) SURVEY/ENGINEERING SUPPORT OF RIGHT OF WAY ACQUISITION ACTIVITIES~~

~~Assumptions: It is anticipated that Right of Way Appraisal and Acquisition Activities will be performed by a separate agency. These activities include ordering of Preliminary Title Reports (PTRs), appraisal preparation, appraisal review, property owner negotiations, escrow coordination and title clearance. The following tasks support the Right of Way Acquisition activities.~~

~~i) Survey Staking of Partial Acquisition and/or Easement Parcel Limits~~

~~Field crews will stake the limits of partial acquisitions, permanent and/or temporary construction easements, so that property owners can visualize the fee take and easement line locations affecting their properties. Related office services will be needed to prepare field packages and calculate the acquisition lines. It is assumed that these services will be performed for up to 200 parcels.~~

~~ii) Engineering Support of Right of Way Acquisition~~

~~Engineering staff will provide support to Right of Way Acquisition activities for up to 200 parcels. Support efforts include field reconnaissance prior to survey staking of parcels, coordination with Right of Way and Survey staff, and field meetings with right of way staff, surveyor and owners. Engineering staff will develop individual property owner exhibits to support field meeting activities. The exhibits will illustrate project specific improvements to property owners. Cost to Cure Estimates will be developed for inclusion into the Right of Way Agreements. Property Owners will be monetarily compensated for impacts.~~

LIST OF ACRONYMS

~~AA—Alternatives Analysis~~

~~AASHTO—American Association of State Highway and Transportation Officials~~

~~ACI—American Concrete Institute~~

~~ADA—Americans with Disabilities Act~~

~~A&E—Architectural and Engineering (design)~~

~~AISC—American Institute of Steel Construction~~

~~ANSI—American National Standards Institute~~

~~APE—Area of Potential Effects~~

~~AQMD (or SCAQMD)—South Coast Air Quality Management District~~

~~AQMP—Air Quality Management Plan~~

~~ASHRAE—American Society of Heating, Refrigerating, and Air Conditioning Engineers~~

~~ASTM—American Society for Testing and Materials~~

~~AVL—Automatic Vehicle Location~~

~~BMPs—Best Management Practices~~

~~BOD—Basis of Design (also Board of Directors)~~

~~BRT—Bus Rapid Transit~~

~~CAE/CADD—Computer Aided Engineering / Computer Aided Design and Drafting~~

~~Caltrans—California Department of Transportation~~

~~CN—Change Notice~~

~~CCN—Contractor Change Notice~~

~~CCTV—Closed circuit television (surveillance system)~~

~~CEQA—California Environmental Quality Act~~

~~CFR—Code of Federal Regulations~~

MKP15-37

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~CMP— Configuration Management Plan~~

~~CPTED— Crime Prevention Through Environmental Design~~

~~CPUC— California Public Utilities Commission~~

~~CSI— Construction Specifications Institute~~

~~CUD— Contract Unit Descriptions~~

~~D/B, D/B/B, and CM/GC— Design/Build, Design/Bid/Build, and Construction Manager/General Contractor (construction procurement approaches)~~

~~DBE— Disadvantaged Business Enterprise~~

~~DCL— Document Control Log~~

~~DCN— Design Change Notice~~

~~DOE— Determination of Eligibility Report~~

~~DPR— California Department of Parks and Recreation~~

~~DR— The Dead Reckoning (or Deduced Reckoning) Navigation System~~

~~DTM— Digital Terrain Modeling~~

~~EA— Environmental Analysis (pursuant to NEPA)~~

~~EEO— Equal Employment Opportunity~~

~~EIR— Environmental Impact Report (pursuant to CEQA)~~

~~EMFAC— Emissions Factors model used by California Air Resources Board~~

~~FD— Final Design~~

~~FHWA— Federal Highway Administration~~

~~FOE— Finding of Effects Report~~

~~FONSI— Finding of No Significant Impact (pursuant to NEPA)~~

~~FTA— Federal Transit Administration~~

~~GHG— Greenhouse Gas Emissions~~

~~GPS— Global Positioning System~~

Scope of Work

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~IEEE—Institute of Electrical and Electronics
Engineers ITE—Institute of Transportation Engineers
IT—Information Technology (Omnitrans department)
ITS—Intelligent Transportation Systems
LACMTA—Los Angeles County Metropolitan Transportation Authority (LA-
Metro) Ldn (or DNL)—Day-night average sound level
Leq (or LAeq)—Equivalent sound level
LPA—Locally Preferred Alternative
MMRP—Mitigation Monitoring and Reporting Program
MOA—Memorandum of Agreement
MUTCD—Manual on Uniform Traffic Control Devices
NEC—National Electrical Code
NEPA—National Environmental Protection
Act NR—National Register
O&M—Operations and Maintenance
PA—public address system
PBCR—Project Budget Change
Request PDT—Project Development
Team
PE—Preliminary Engineering phase
PIP—Project Implementation Plan
PS&E—Plans Specifications and Estimates (phase of design)
QA/QC—Quality Assurance and Quality Control
RAMD—System Reliability/Availability/Maintainability/Dependability Plan
RF—Radio Frequency
RFI—Request for Information~~

~~SANBAG—San Bernardino Associated Governments~~

~~sbX—Omnitrans’ planned system of ten bus rapid transit corridors (San Bernardino Valley Express)~~

~~SCAG—Southern California Association of Governments~~

~~SOW—Scope of Work~~

~~Governments SHPO—State Historic Preservation Officer~~

~~SSP—Caltrans Standard Special Provisions~~

~~TCQSM—Transit Capacity and Quality of Service~~

~~Manual TCRP—Transit Cooperative Research Program~~

~~TIGER—Transportation Investment Generating Economic Recovery (US Department of Transportation grant program)~~

~~TSP—Transit Signal Priority~~

~~USFWS—U.S. Fish and Wildlife~~

~~Service VE—Value Engineering~~

~~VMS—Variable Message Sign (real time bus arrival information electronic signage)~~

~~VMT—Vehicle Miles Traveled~~

~~WBS—Work Breakdown Structure~~

~~WVC or WVCC—West Valley Connector Corridor (“Project”)~~

AMENDMENT 2

CONTRACT MKP15-37

BETWEEN

OMNITRANS

AND

PARSONS TRANSPORTATION GROUP, INC.

Architectural, Engineering and Final Design Services for the West Valley Connector Corridor

This CONTRACT AMENDMENT 2, effective _____, 2016 is entered into by and between Omnitrans (hereinafter called "Agency") and Parsons Transportation Group, Inc. (hereinafter called "Consultant").

RECITALS

WHEREAS:

- I. Agency and Consultant entered into Contract MKP15-37 on November 10, 2015; and
- II. Agency and Consultant amended the Contract under Amendment 1 to exercise all Miscellaneous Services, Milestone 20, in a not-to-exceed amount of \$2,024,627, for a total maximum cumulative payment obligation of \$10,024,627; and revised Attachment C; and
- III. Agency and Consultant hereby agree to amend the Contract under Amendment 2 to revise the Attachment A - Scope of Work, to add environmental tasks for the new Haven Branch Alignment, and increase maximum cumulative payment obligation by \$199,900, for a new total contract not-to-exceed amount of \$10,224,527.

NOW THEREFORE, AGENCY and CONSULTANT hereby amend their Contract as follows:

- I. Contract Agreement title page, Contract Amount, delete in its entirety and replace with:

Contract Amount \$10,224,527

- II. Contract Agreement, Page 5, delete Section 3. Compensation in its entirety and replace with the following:

For CONSULTANT's full and complete performance of its obligations under this Agreement, OMNITRANS shall pay CONSULTANT on a LUMP SUM basis as shown in Attachment C, and subject to the maximum cumulative payment obligation.

OMNITRANS' maximum cumulative payment obligation under this Agreement shall not exceed Ten Million, Two Hundred Twenty-Four Thousand, Five Hundred Twenty-Seven Dollars (\$10,224,527), including all amounts payable to CONSULTANT for all costs, including but not limited to direct labor, other direct costs, subcontracts, indirect costs including, but not limited to, leases, materials, taxes, insurance, and profit.

- ~~III. Contract Agreement, Attachment A Scope of Work, Section 8.101, Environmental Clearance (Task 7), add Subsection Q - Additional Tasks - Haven Branch Alignment as follows:~~

- ~~i. Alternative Analysis - Include new alignment in Alternatives Analysis section.~~
- ~~ii. Cultural Studies - Update APE map. Obtain building permits and library research. Literature and records search at the CSU Fullerton CHRIS center. Historical building and archaeological surveys. Preparation of Department of Parks and Recreation (DPR) forms. Assess for additional impacts to cultural resources. Update and finalize Determination of Eligibility Report (Historic Property Survey Report, Historical Resources Evaluation Report, and Archaeological Study Report).~~

- ~~iii. Paleontological Resources Assessment Report — Conduct an assessment for paleontological resources, determine impacts, and prepare and finalize report.~~
- ~~iv. Biological Study Report — Assess for additional impacts to biological resources, including vegetation, plant and wildlife species, and wetlands. Update and finalize Biological Study Report.~~
- ~~v. Water Quality Report — Assess for additional impacts to water resources and water quality. Update and finalize Water Quality Report.~~
- ~~vi. Community Impact Report — Assess for additional impacts to community facilities and services, demographics, and socioeconomics. Update and finalize Community Impact Report.~~
- ~~vii. Initial Site Assessment — Conduct environmental database search, agency records search, interviews, historical records search, and site reconnaissance. Assess for additional hazardous waste/materials impacts. Update and finalize Initial Site Assessment.~~
- ~~viii. Relocation Impact Report — Assess for additional residential and business displacement impacts. Update and finalize Relocation Impact Report.~~
- ~~ix. Visual Impact Assessment — Assess for additional visual and aesthetic impacts pertaining to proposed stations and impacts to trees. Update and finalize Visual Impact Assessment.~~
- ~~x. Air Quality Report — Conduct additional air modeling. Update and finalize Air Quality Report.~~
- ~~xi. Noise Study Report — Conduct three additional short term and three additional long term noise measurements. Conduct additional noise modeling. Update and finalize Noise Study Report.~~
- ~~xii. Public Services and Utilities Analysis — Assess for additional impacts to public services and utilities.~~
- ~~xiii. Project Description — Include new alignment in project description.~~
- ~~xiv. Construction Timeline — Update construction timeline.~~
- ~~xv. Construction Impact Analysis — Assess for additional construction impacts.~~
- ~~xvi. Admin Draft EIR/EA — Assess new alignment in Admin Draft EIR/EA.~~
- ~~xvii. Screencheck Draft EIR/EA — Assess new alignment in Screencheck Draft EIR/EA.~~
- ~~xviii. Finding of Effects Report — Include any additional significant environmental effects into Finding of Effects Report.~~
- ~~xix. Mitigation Monitoring and Reporting Program — Include any additional mitigation measures to MMRP.~~
- ~~xx. Proposed Bus Stops — Haven Avenue and 6th Street (2 bus stops); Haven Avenue and Arrow Route (2 bus stops); Haven Avenue and Foothill Boulevard (2 bus stops); Foothill Boulevard and Spruce Avenue (2 stops); Foothill Boulevard and Rochester Avenue (2 bus stops); Victoria Gardens Lane in the southeast corner of Victoria Gardens (1 bus stop).~~

~~IV. Contract Agreement, Attachment A Scope of Work, Section 9.101, Preliminary Engineering (Task 8), add Subsection FFF — Additional Tasks — Haven Branch Alignment as follows:~~

- ~~i. Supplemental Ground Mapping — Include supplemental Ground mapping for new stations.~~
- ~~ii. 30% Preliminary Design Drawings — Addition of Branch Line Alternative for new stations.~~
- ~~iii. Draft Preliminary Engineering Report — Addition of Branch Line Alternative into Report and engineering support of environmental.~~
- ~~iv. Additional Traffic Analysis — Include Branch Line Alternative Traffic Volumes and Operations.~~

~~V.III. Contract Agreement, Attachment C Milestones and Deliverables, delete in its entirety and replace with revised Attachment C (September 29, 2016).~~

~~VI.IV. Unless changed herein, the remainder of Contract MKP15-37 remains in full force and effect.~~

IN WITNESS WHEREOF, the parties hereto have caused this Amendment 2 to Contract MKP15-37 to be executed on the date first written above.

Omnitrans executes this Amendment 2 effective as of the day and year first therein above written.

OMNITRANS

PARSON TRANSPORTATION
GROUP, INC.

P. SCOTT GRAHAM
CEO/General Manager

CHRIS A. JOHNSON, P.E.
Vice President

Date: _____

Date: _____

DP

AMENDMENT 3

CONTRACT MKP15-37

BETWEEN

OMNITRANS

AND

PARSONS TRANSPORTATION GROUP, INC.

Architectural, Engineering and Final Design Services for the West Valley Connector Corridor

This CONTRACT AMENDMENT 3, effective _____, 2016 is entered into by and between Omnitrans (hereinafter called "Agency") and Parsons Transportation Group, Inc. (hereinafter called "Consultant").

RECITALS

WHEREAS:

- I. Agency and Consultant entered into Contract MKP15-37 on November 10, 2015; and
- II. Agency and Consultant amended the Contract under Amendment 1 to exercise all Miscellaneous Services, Milestone 20, in a not-to-exceed amount of \$2,024,627, for a total maximum cumulative payment obligation of \$10,024,627; and revised Attachment C; and
- III. Agency and Consultant amended the Contract under Amendment 2 to revise the Scope of Work, to add additional environmental tasks for the new Haven Branch Alignment, and increase maximum cumulative payment obligation by \$199,900, for a total maximum cumulative payment obligation of \$10,224,527; and
- IV. Agency and Consultant hereby agree to amend the Contract under Amendment 3 to revise the Scope of Work, to add environmental tasks for the sidewalk improvements along Foothill Boulevard between East Avenue and Sierra Avenue, and increase maximum cumulative payment obligation by \$54,900, for a new total contract not-to-exceed amount of \$10,279,427.

NOW THEREFORE, AGENCY and CONSULTANT hereby amend their Contract as follows:

- I. Contract Agreement title page, Contract Amount, delete in its entirety and replace with:

Contract Amount \$10,279,427

- II. Contract Agreement, Page 5, delete Section 3. Compensation in its entirety and replace with the following:

For CONSULTANT's full and complete performance of its obligations under this Agreement, OMNITRANS shall pay CONSULTANT on a LUMP SUM basis as shown in Attachment C, and subject to the maximum cumulative payment obligation.

OMNITRANS' maximum cumulative payment obligation under this Agreement shall not exceed Ten Million, Two Hundred Seventy-Nine Thousand, Four Hundred Twenty-Seven Dollars (\$10,279,427), including all amounts payable to CONSULTANT for all costs, including but not limited to direct labor, other direct costs, subcontracts, indirect costs including, but not limited to, leases, materials, taxes, insurance, and profit.

- III. Contract Agreement, Attachment A Scope of Work, Section 15.101, Miscellaneous Services (Task 14H), add Subsections i, ii, and iii. – Additional Tasks as follows:

- i) Cultural Studies

- (a) Revise APE Map to include additional areas. This activity includes GIS Mapping (APE, survey areas, project location maps).
 - (b) Obtain building permits and library research.
 - (c) Literature and records search at the SCU Fullerton CHRIST center.
 - (d) Historical buildings and archaeological surveys.
 - (e) Preparation of Department of Parks and Recreation (DPR) forms (evaluation of approximately 100 potential historic buildings).
 - (f) Preparation of Historic Properties Survey Report (includes Historic Resources Evaluation Report and Archaeology Survey Report).
 - ii) CE/CE Re-Validation
 - (a) Preparation of NEPA Revalidation Form
 - iii) Coordination with Caltrans and Local Assistance
- IV. Contract Agreement, Attachment C Milestones and Deliverables, delete in its entirety and replace with revised Attachment C (November 2, 2016).
- V. Unless changed herein, the remainder of Contract MKP15-37 remains in full force and effect.

IN WITNESS WHEREOF, the parties hereto have caused this Amendment 3 to Contract MKP15-37 to be executed on the date first written above.

Omnitrans executes this Amendment 3 effective as of the day and year first therein above written.

OMNITRANS

PARSONS TRANSPORTATION
GROUP, INC.

P. SCOTT GRAHAM
CEO/General Manager

CHRIS A. JOHNSON, P.E.
Vice President

Date: _____

Date: _____

DP

AMENDMENT 4

CONTRACT MKP15-37

BETWEEN

OMNITRANS

AND

PARSONS TRANSPORTATION GROUP, INC.

Architectural, Engineering and Final Design Services for the West Valley Connector Corridor

This CONTRACT AMENDMENT 4, effective _____, 2016 is entered into by and between Omnitrans (hereinafter called "Agency") and Parsons Transportation Group, Inc. (hereinafter called "Consultant").

RECITALS

WHEREAS:

- I. Agency and Consultant entered into Contract MKP15-37 on November 10, 2015; and
- II. Agency and Consultant amended the Contract under Amendment 1 to exercise all Miscellaneous Services, Milestone 20, in a not-to-exceed amount of \$2,024,627, for a total maximum cumulative payment obligation of \$10,024,627; and revised Attachment C; and
- III. Agency and Consultant amended the Contract under Amendment 2 to revise the Scope of Work, to add additional environmental tasks for the new Haven Branch Alignment, and increase maximum cumulative payment obligation by \$199,900, for a total maximum cumulative payment obligation of \$10,224,527; and
- IV. Agency and Consultant amended the Contract under Amendment 3 to revise the Scope of Work, to add additional environmental tasks for the sidewalk improvements along Foothill Boulevard between East Avenue and Sierra Avenue, and increase maximum cumulative payment obligation by \$54,900, for a total maximum cumulative payment obligation of \$10,279,427.
- V. Agency and Consultant hereby agree to amend the Contract under Amendment 4 to revise the Scope of Work, to provide additional property owner outreach along Holt Boulevard, and increase maximum cumulative payment obligation by \$15,180, for a new total contract not-to-exceed amount of \$10,294,607.

NOW THEREFORE, AGENCY and CONSULTANT hereby amend their Contract as follows:

- I. Contract Agreement title page, Contract Amount, delete in its entirety and replace with:

Contract Amount \$10,294,607

- II. Contract Agreement, Page 5, delete Section 3. Compensation in its entirety and replace with the following:

For CONSULTANT's full and complete performance of its obligations under this Agreement, OMNITRANS shall pay CONSULTANT on a LUMP SUM basis as shown in Attachment C, and subject to the maximum cumulative payment obligation.

OMNITRANS' maximum cumulative payment obligation under this Agreement shall not exceed Ten Million, Two Hundred Ninety-Four Thousand, Six Hundred Seven Dollars (\$10,294,607), including all amounts payable to CONSULTANT for all costs, including but not limited to direct labor, other direct costs, subcontracts, indirect costs including, but not limited to, leases, materials, taxes, insurance, and profit.

- ~~III. Contract Agreement, Attachment A Scope of Work, Section 3.101, Public Relations (Task 2), add Subsections ix through xi, Additional Tasks as follows:~~

- ~~ix) Gather and compile a list of property addresses for impacted property owners and tenants on Holt Boulevard, as well as property owners within 1/4 mile of the impacted properties.~~
- ~~x) Prepare exhibits showing potential project impacts to an owner's parcel.~~
- ~~xi) Prepare a letter informing affected property owners and tenants on Holt Boulevard, and a postcard informing affected property owners and tenants within 1/4 mile of the impacted properties about the project.~~

~~IV.III.~~ Contract Agreement, Attachment C Milestones and Deliverables, delete in its entirety and replace with revised Attachment C (December 19, 2016).

~~V.IV.~~ Unless changed herein, the remainder of Contract MKP15-37 remains in full force and effect.

IN WITNESS WHEREOF, the parties hereto have caused this Amendment 4 to Contract MKP15-37 to be executed on the date first written above.

Omnitrans executes this Amendment 4 effective as of the day and year first therein above written.

OMNITRANS

PARSONS TRANSPORTATION
GROUP, INC.

P. SCOTT GRAHAM
CEO/General Manager

CHRIS A. JOHNSON, P.E.
Vice President

Date: _____

Date: _____

DP

AMENDMENT 5

CONTRACT MKP15-37

BETWEEN

OMNITRANS

AND

PARSONS TRANSPORTATION GROUP, INC.

Architectural, Engineering and Final Design Services for the West Valley Connector Corridor

This CONTRACT AMENDMENT 5, effective _____, 2016 is entered into by and between Omnitrans (hereinafter called "Agency") and Parsons Transportation Group, Inc. (hereinafter called "Consultant").

RECITALS

WHEREAS:

- I. Agency and Consultant entered into Contract MKP15-37 on November 10, 2015; and
- II. Agency and Consultant amended the Contract under Amendment 1 to exercise all Miscellaneous Services, Milestone 20, in a not-to-exceed amount of \$2,024,627, for a total maximum cumulative payment obligation of \$10,024,627; and revised Attachment C; and
- III. Agency and Consultant amended the Contract under Amendment 2 to revise the Scope of Work, to add additional environmental tasks for the new Haven Branch Alignment, and increase maximum cumulative payment obligation by \$199,900, for a total maximum cumulative payment obligation of \$10,224,527; and
- IV. Agency and Consultant amended the Contract under Amendment 3 to revise the Scope of Work, to add additional environmental tasks for the sidewalk improvements along Foothill Boulevard between East Avenue and Sierra Avenue, and increase maximum cumulative payment obligation by \$54,900, for a total maximum cumulative payment obligation of \$10,279,427.
- V. Agency and Consultant amended the Contract under Amendment 4 to revise the Scope of Work, to provide additional property owner outreach along Holt Boulevard, and increase maximum cumulative payment obligation by \$15,180, for a total maximum cumulative payment obligation of \$10,294,607.
- VI. Agency and Consultant hereby agree to amend the Contract under Amendment 5 to revise the Scope of Work, to provide additional routing options analysis, and increase maximum cumulative payment obligation by \$99,532, for a new total contract not-to-exceed amount of \$10,394,139.

NOW THEREFORE, AGENCY and CONSULTANT hereby amend their Contract as follows:

- I. Contract Agreement title page, Contract Amount, delete in its entirety and replace with:

Contract Amount \$10,394,139

- II. Contract Agreement, Page 5, delete Section 3. Compensation in its entirety and replace with the following:

For CONSULTANT's full and complete performance of its obligations under this Agreement, OMNITRANS shall pay CONSULTANT on a LUMP SUM basis as shown in Attachment C, and subject to the maximum cumulative payment obligation.

OMNITRANS' maximum cumulative payment obligation under this Agreement shall not exceed Ten Million, Three Hundred Ninety-Four Thousand, One Hundred Thirty-Nine Dollars (\$10,394,139), including

all amounts payable to CONSULTANT for all costs, including but not limited to direct labor, other direct costs, subcontracts, indirect costs including, but not limited to, leases, materials, taxes, insurance, and profit.

~~III. Contract Agreement, Attachment A Scope of Work, Section 4.101, Refinement of Routing Alignment and Station Locations (Task 3), add to Subsection A) iii through vi, Additional Tasks as follows:~~

- ~~iii) Conduct analysis of four additional routing options.~~
- ~~iv) Refine station locations.~~
- ~~v) Presentation materials.~~
- ~~vi) Evaluations and recommendations.~~

~~IV.III.~~ Contract Agreement, Attachment C Milestones and Deliverables, delete in its entirety and replace with revised Attachment C (December 20, 2016).

~~V.IV.~~ Unless changed herein, the remainder of Contract MKP15-37 remains in full force and effect.

IN WITNESS WHEREOF, the parties hereto have caused this Amendment 5 to Contract MKP15-37 to be executed on the date first written above.

Omnitrans executes this Amendment 5 effective as of the day and year first therein above written.

OMNITRANS

PARSONS TRANSPORTATION
GROUP, INC.

P. SCOTT GRAHAM
CEO/General Manager

CHRIS A. JOHNSON, P.E.
Vice President

Date: _____

Date: _____

____ DP

EXHIBIT C

SCOPE OF WORK TO BE ASSUMED IN SERVICES AGREEMENT BY SBCTA

**SCOPE OF WORK
ATTACHMENT A
MKP15-37
ARCHITECTURAL, ENGINEERING AND FINAL DESIGN SERVICES
FOR THE WEST VALLEY CONNECTOR CORRIDOR**

Table of Contents

1.101 PROJECT BACKGROUND 2

2.101 PROJECT MANAGEMENT (TASK 1)..... 5

3.101 PUBLIC RELATIONS (TASK 2) 25

4.101 REFINEMENT OF ROUTING ALIGNMENT AND STATION
LOCATIONS (TASK 3) 29

~~5.101 PEDESTRIAN AND BICYCLE CONNECTIONS TO
STATIONS(ACTIVE TRANSPORTATION GRANT)
(TASK 4) 32~~

~~6.101 PHASING PLAN AND FINANCING PLAN (TASK 5).. 336.101
PHASING PLAN AND FINANCING PLAN (TASK 5)..... 32~~

~~7.101 SMALL STARTS PROCESS (TASK 6)..... 357.101
SMALL STARTS PROCESS (TASK 6)..... 34~~

~~8.101 ENVIRONMENTAL CLEARANCE (TASK 7)..... 378.101
ENVIRONMENTAL CLEARANCE (TASK 7)..... 36~~

~~9.101 PRELIMINARY ENGINEERING (TASK 8)..... 539.101
PRELIMINARY ENGINEERING (TASK 8)..... 52~~

10.101 FINAL DESIGN OF PHASE I (TASK 9)..... 100

~~11.101 FINAL DESIGN OF PHASE 2 (TASK 10)..... 11411.101
FINAL DESIGN OF PHASE 2 (TASK 10)..... 113~~

12.101 BID PERIOD SERVICES (TASK 11) 115114

13.101 DESIGN SERVICES DURING CONSTRUCTION
(TASK 12) 115114

~~14.101 TRANSIT PLANNING SUPPORT (TASK 13)..... 11614.101
TRANSIT PLANNING SUPPORT (TASK 13)..... 115~~

15.101 MISCELLANEOUS
SERVICES..... 119
118

LIST OF ACRONYMS i

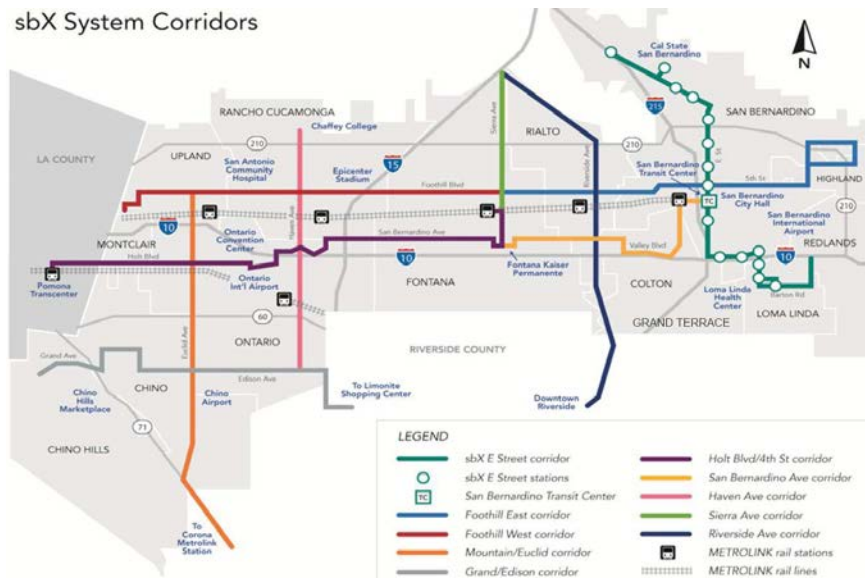
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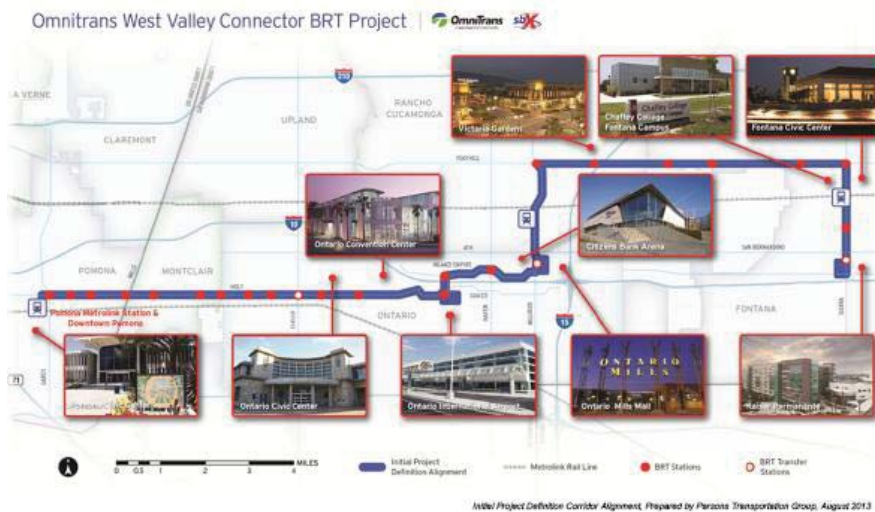
1.101 PROJECT BACKGROUND

- A) The West Valley Connector Corridor is a Bus Rapid Transit line located primarily on Holt Boulevard/Avenue and Foothill Boulevard in the cities of Fontana, Montclair, Ontario, Pomona, and Rancho Cucamonga. The purpose of the Project is to improve the speed and quality of public transit service along these major arterials.
- B) The West Valley Connector Corridor is the second of ten corridors planned in Omnitrans' sbX (San Bernardino Valley Express) bus rapid transit system. The first corridor, the "E Street" sbX Green Line, began operating in the cities of San Bernardino and Loma Linda in April 2014.
- C) The corridor system map is shown below. (The system-wide corridors plan will be redrawn under Task 13, and the line color designations are subject to change).

sbX System Corridors



D) The West Valley Connector Corridor alignment (shown below) combines portions of the “Foothill West” corridor and the “Holt / 4th St” corridor identified in Omnitrans’ System-wide Transit Corridors Plan for the San Bernardino Valley, produced in 2004 and updated in 2010. This corridor is currently covered by portions of Omnitrans’ existing Routes 61 and 66, two of the highest-ridership routes in Omnitrans’ system. More detail is provided in the attached West Valley Connector Corridor Alternatives Analysis Report.



E) The Alternatives Analysis Summary Report (attached) completed by Parsons Transportation Group in September 2014 outlined the feasible alternatives studied for the corridor. The recommended alternative includes the 25-mile-long alignment and station locations shown in the exhibit above, as well as the project components discussed below.

- ~~i) Pedestrian improvements for access to stations, including concrete boarding area (60' x 12' typical) at each of the 48 stations (stations) (+/- 3 stations);~~
- ~~i) bicycle parking racks at each station; and sidewalk repairs, sidewalk replacement/reconstruction, curb ramp replacement, and crosswalk improvements where needed within 1/2 mile radius of each station including cross streets and side streets;~~
- ~~ii) 48 stations at 27 locations/major intersections (note that during the~~

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ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~design process the number of stations may change by +/- 3),~~ consisting of the following station components, as described in the Alternatives Analysis Report:

MKP15-37

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

- (a) ~~SbX~~-sbX branded pylon with logo pole and signature light, one per station;
- (b) Shelter/canopy with wind screen, similar to Omnitrans sbX canopy design, one per station;
- (c) Six-foot bench, one per station;
- (d) Stand-alone map/schedule/advertising illuminated display case (two-sided), one per station;
- (e) Pedestrian wayfinding signage;
- (f) Trash receptacle, one per station;
- (g) Variable message sign (e-sign) to display real-time bus arrival information, one per station, and all related communication infrastructure;
- (h) Lighting (such as LED up-lighting integrated with each shelter/canopy);
- (i) Public art at select stations;
- (j) Minimal landscaping at stations, drought-tolerant and consistent with landscaping guidelines or requirements of each jurisdictional agency;
- (k) Reinforced concrete bus pads in outside lane pavement (typically 12' x 60');
- (l) Surveillance cameras and other security systems as needed as decided by Omnitrans, such as emergency telephones ~~and passenger telephones~~, and public address system;

ii)iv) Center-running dedicated lanes along 3.5 miles of Holt Boulevard in the City of Ontario, including right-of-way acquisition, widening, and utilities, and construction of six 6 center median stations. If this component is constructed in a future phase, a concept will be needed for how these features will be retrofitted in after the remainder of the project is constructed and how the stations will be modified.

- (a) Transit signal priority (TSP) system;
- (b) Any utility work necessary for all components of the Project;
- (c) Concepts for bicycle and pedestrian facilities that may be integrated into the Project or that could be built in the future that could connect or feed into the West Valley Connector line; and,

- (d) Branding, including color line name designation, as well as adaptation of station graphic and fleet graphic branded design for 40' and 60' vehicles (based on Omnitrans sbX system branding concept).

(iv) In the design of the above project components, Consultant should work with Omnitrans' staff to specify equipment that is compatible with Omnitrans' existing systems, and meets the needs of Omnitrans' departments, customers, and each of the five cities. Everything specified in the project design must be compliant with applicable laws and consistent with the below-listed guidance and regulations

- (a) Omnitrans Transit Design Guidelines (2013) - <http://www.omnitrans.org/about/reports/>
- (b) Crime Prevention Through Environmental Design - [Crime Prevention Through Environmental Design \(CPTED\) for Transit Facilities, APTA SS-SIS-RP-007-10, Approved June 24, 2010, APTA Transit Infrastructure, Security Work Group](#)
- (c) Americans with Disabilities Act – current design standards per FTA and State of California
- (d) Current FTA Circular 4220.1F, including, Buy America 49 CFR Part 661, NEPA, and Section 5309 Capital Investment Grants (Small Starts) guidance
- (e) Current State of California guidance including Caltrans Highway Design Manual, Manual on Uniform Traffic Control Devices, CEQA guidance, and any relevant State legislation

F) The above-listed project scope should be flexible within reason and within the discretion of Omnitrans' Project Manager. Many project stakeholders were involved in the Alternatives Analysis process for the project but will still need to be integrally involved in the project design process, and the design should fit their needs – in particular, the five cities and two counties in which the project is located and the various departments within Omnitrans.

G) Each listed chapter will be issued as a separate task order.

2.101 PROJECT MANAGEMENT (TASK 1)

A) PROJECT MANAGEMENT ROLE

- i) The role of Project Management is to ensure the timely and effective delivery of the contract scope. This involves day-to-day management of an adopted

Scope of Work

schedule and budget, using processes agreed to and understood by all parties. Key elements include directing and managing the team's activities, ensuring quality control, participating in meetings, providing proper project documentation and communication protocol, and preparing monthly progress reports and invoices.

B) PROJECT MANAGER AND PROJECT STAFF

- i) Provide a Project Manager and such other Project-dedicated technical and administrative personnel as are warranted, given the scope and status of the Project, and the general level of effort required to meet the performance commitments. The Consultant's Project Manager shall work directly with Omnitrans' Project Manager on a day-to-day basis. The Project Manager's responsibilities include managing deliverables, cost, and schedule, including the following:
 - (a) Develop a milestone timeline for the Project;
 - (b) Assist Omnitrans with establishing design criteria and assess and address project risks;
 - (c) Perform technical studies, develop engineering criteria, and risk assessment;
 - (d) Estimate capital cost and construction schedule and update capital cost estimates and construction schedule throughout the design process (at each major Project milestone as well as each time a major Project change occurs);
 - (e) Monitor and control the cost and progress of design against the baseline budget and schedule to ensure that no work to be billed is accomplished without proper Omnitrans authorization;
 - (f) Prepare final design drawings and specifications and coordinate design submissions and reviews;
 - (g) Develop and apply internal Quality Assurance and Quality Control criteria for review of deliverables;
 - (h) Assist Omnitrans with a Project Delivery Method;
 - (i) Manage Project design, technical specifications and plans for contract
- ii) Prepare a Project Implementation Plan (PIP) for the Project (see following section);

documents, procurement planning assistance services, bid period services and if authorized, and services after award of construction contract(s);

- (j) Assist Omnitrans with outside agency liaison, as outlined in below sections;
 - (k) Maintain design control registers;
 - (l) Develop technical work scopes, budget and schedules for work orders and for subcontracts;
 - (m) Update Omnitrans Project Manager regularly on Project progress; and
 - (n) Verify that regular and detailed progress updates / work reviews are performed for the Project.
- iii) Where design work has been subcontracted, direct and monitor the Sub-consultant's work activities with regard to conformance with established contract criteria and design directives and design/control quality program requirements; ensure adherence to established budget; monitor progress and costs and prepare monthly progress reports on these matters; and conduct progress and coordination meetings weekly, or as may be requested by Omnitrans.

C) PROJECT IMPLEMENTATION PLAN (PIP)

- i) If authorized, submit the PIP to Omnitrans within 14 calendar days of Notice-To-Proceed for review and acceptance. The Project will comprise Preliminary Engineering and Final Design, bid services, and design support during construction. The Consultant shall prepare a detailed Project Implementation Plan (PIP), including the following elements:
 - (a) Organization & Staffing (by position),
 - (b) Project Management responsibilities by position relative to managing cost and project completion dates;
 - (c) Project Work Breakdown Structure (WBS);
 - (d) Description of the computer systems to be utilized;
 - (e) Proposed reports and other outputs to be produced;
 - (f) Frequency or cycle of reporting;

- (g) Methods of data accumulation and all other pertinent information;
 - (h) Scope of services;
 - (i) Schedule;
 - (j) Document Control Log;
 - (k) Closeout of documentation; and
 - (l) Plan for ensuring compliance with Buy America, ADA, CEQA, NEPA, and other applicable regulations.
- ii) The PIP shall set forth a Scope of Work reflecting a fully detailed baseline design effort to be performed, including the number of drawings per major work package, the design hours associated with each drawing and major work package, the design budgets for Sub-consultants, and any other quantification of the Project baseline scope that will control design cost escalation. A schedule for review of all work products will be prepared and included in the Project Implementation Plan. This schedule will include dates for completion of each scope/task, internal review, and sign-off by Project Manager prior to submittal to Omnitrans.
- iii) The PIP will be a working document that is used to manage and communicate contract requirements. It is also a dynamic document that needs to be maintained throughout the execution period of the contract and updated when there is a major change in scope or when lessons learned from experience dictate.
- iv) *Deliverable:*
- (a) Project Implementation Plan that includes consideration of the below-listed elements

D) PROJECT ADMINISTRATION

- i) The Consultant shall provide the management and staff needed to plan, organize, direct, supervise, control and coordinate the administrative aspects of the Project including contract and Subcontract administration, accounting, purchasing, office services, personnel administration, EEO assurance and reporting, DBE utilization and reporting, publications support, document and drawing control administration, budget, and scheduling.

E) CONTRACT ADMINISTRATION

- i) During the life of each subcontract, administrative service should be provided including, issuance of new or amended work orders and their negotiation, obtaining of periodic reports on costs expended and progress made, development of amendments, receipt and certification of invoices, payment of invoices, adjustment of provisional rates of indirect costs, compliance with all contract terms and conditions, receipt and routing of contract deliverables, overview of DBE participation and subcontract close-out. Establish and implement an administrative and financial audit and reporting process to assure sub-consultant compliance with Contract terms. Provide Omnitrans copies of all subcontracts upon execution and all subsequent amendments or change orders.
- ii) Review and assign actions for Contractor Change Notices (CCNs) and Design Change Notices (DCNs). Coordinate completion of actions with the appropriate team members.
- iii) *Deliverables:*
 - (a) Contract, Subcontracts, Design Change Notices.

F) ACCOUNTING/INVOICING

- i) Applying the terms of the Contract and appropriate Omnitrans procedures, establish and maintain a system of cost accounts pertaining to Consultant's costs under the contract. Assure that the cost accounting and related invoicing conform to the Project's Work Breakdown Structures (WBS) and provide detailed billing of hours worked and references to the Monthly Status Report for tasks accomplished. Process sub-consultant and vendor invoices and assemble these for monthly billing to Omnitrans (to be sent to Omnitrans by the 15th of each month and paid in the first full week of the next month). Provide reports with the level of detail and summary that are adequate for proactive management control and project management by Omnitrans and Consultant. Acquire Omnitrans' written acceptance of the accounting report format and content. Provide inputs to the project control systems pertaining to Consultant's costs. Accommodate audits by Omnitrans or other authorized agencies. Prepare quarterly financial reports of activities under the Contract.
- ii) *Deliverables:*
 - (a) Monthly invoices and quarterly reports

G) PURCHASING

- i) All purchasing procedures shall be in accordance with FTA Best Practices Procurement Manual and FTA Circular C 4220.1F r latest revision.

H) CADD SERVICES

- i) Establish, maintain, and upgrade an integrated computer-aided system for architecture, engineering, design, and drafting (CAE/CADD) capability based on the most current, relevant, and universally compatible software technology.
- ii) Develop design information, database, and library cells into a common database system so that all Project participants can share and exchange data to complement and extend their benefits. Through the integration process, provide the opportunity to optimize the design by sharing or providing electronic data, design information, and configurations; and to allow for immediate adjustments of the design.
- iii) Provide 3-D CADD capabilities for all drawings. Provide clash detection studies/reports.
- iv) Define the performance specifications, technical specifications, and formats for the design work, in-progress submittals, final submittals, signed and sealed contract drawings and electronic data delivery. Unless specifically exempted, require that all such drawings be produced electronically using the approved CAE/CADD system and standards. Develop and transmit CADD record files to Omnitrans for archival on Omnitrans accepted media for the Contract documents.
- v) The electronic CADD files to be delivered under the Contract contain information to be used for the construction as-built plans and documents for the Project. The official Contract documents of record are those documents produced by the Consultant that bear the company seal and signatures.

I) PUBLICATIONS SUPPORT

- i) Provide staff, materials and equipment to support publication of the Project reports and documents, including technical writing, editing, graphics art, desktop publishing and printing. As needed, evaluate "make or buy" alternatives for producing finished work.

J) PROJECT PROCEDURES

- i) The Consultant shall develop a list of current standard procedures and review with Omnitrans to refine the list, to establish priorities for enhancement of

existing procedures. The Consultant shall submit to Omnitrans for acceptance a list of all procedures required by the work scope. Issue each procedure as it becomes accepted and maintain it over the period of the Contract. The plans and procedures shall be consistent with Omnitrans' policies and procedures and allow the Consultant to effectively execute the work scope.

K) CONFIGURATION MANAGEMENT

- i) Submit within 14 calendar days of Notice to Proceed, for review and acceptance, a Configuration Management Plan that defines the Consultant's responsibilities, interfaces, and processes for performing Document Control, Change Control, and Document Close-out. Propose the levels of review within the Consultant's organization for requests to Omnitrans to approve changes, exemptions, deviations or waivers from adopted design criteria and standards, and revisions in such criteria and standards.
- ii) Coordinate the Configuration Management Plan development with Omnitrans and reflect the document and change control support scope described below.
- iii) *Deliverable:*
 - (a) Configuration Management Plan (part of Project Implementation Plan)

L) SCHEDULE

- i) The CMP network schedule shall reflect the major tasks, interrelationships, third party constraints, reviews, and other items required in performance of the work. Provide a framework that allows the schedule to be presented by criticality, by performing discipline, by near term milestones, or other pertinent layouts that expedite schedule analysis at the Contract activity or task level.
- ii) The Project Development schedule shall be accompanied by a complete schedule basis and assumptions document that will describe the general approach used to develop logic and duration, assumptions regarding the action of parties that cannot be controlled by the Consultant, and assumptions regarding the basis of scope execution when adequate details are not available to render a definitive path forward for a deliverable. Submit this schedule for Omnitrans review and acceptance within 14 calendar days following the Notice to Proceed. This schedule shall comply with all contractually required deliverable dates.
- iii) The schedule shall be maintained and updated monthly with progress and forecast completion dates. The monthly updated schedule (current schedule)

shall be measured against the approved baseline schedule. The monthly updated schedule shall be submitted to Omnitrans no later than seven calendar days following the close of the month, as well as at each Project milestone.

iv) *Deliverables:*

- (a) Schedule

M) REVISIONS OF THE SCHEDULE

- i) The schedule shall be updated on a monthly basis. Updated schedules once approved by Omnitrans will be considered "Current Schedules." They will be compared to the accepted baseline schedule. No changes are permitted to this baseline schedule unless prior acceptance is received from Omnitrans. The Consultant shall maintain the original accepted baseline schedule as a basis of comparison and progress measurement. Proposed revisions to the baseline schedule shall include a narrative description of the changes proposed, together with the justification for the proposed change and an update of the schedule basis and assumptions.

ii) *Deliverables:*

- (a) Monthly schedule updates

N) DESIGN/CONSTRUCTION DRAWING/DOCUMENT CONTROL

- i) Maintain complete files of all records and documents pertaining to Consultant's contract, Project design drawings/documents, baseline changes, and related documents, electronic data (CADD), and correspondence organized according to Omnitrans procedures. Print and distribute design documents and revisions thereto throughout the Project Development phase. Support audits, claims and litigation requirements with document retrieval. Provide reproduction of retrieved documents.

O) PROJECT DATA DISSEMINATION

- i) The Consultant is required to utilize an Internet Collaboration System, which will be used to assist in the communication and management of the Project and to make available key project data and reports to all authorized project participants via the Internet from any location. Upon starting work on the Project, the Consultant shall present Omnitrans Project Manager with three options for Internet Collaboration System software and obtain Omnitrans staff's input on which to use.

- ii) The Consultant shall submit all printed correspondence and other contractually required documentation (including data Submittals and Requests for Information (RFI) or Change Notices (CN)) in electronic format to Omnitrans in addition to normal hard copy distribution.
- iii) Project data to be submitted electronically in the following formats:
 - (a) Drawing files in editable format (such as AutoCAD) and in PDF (in 11" x 17" page format).
 - (b) E-mail, Letters, Spreadsheets, and Charts in Microsoft Office format (Outlook, Word, Excel, Power Point)
 - (c) Other Documents, Pictures, Graphs, etc. in PDF format (TIFF or JPEG as an alternative)
- iv) *Deliverable:*
 - (a) Internet Collaboration System

P) BASELINE DRAWING/DOCUMENT CONTROL

- i) Control and protect original baseline documents including Contract drawings, Contract technical and performance specifications, and design criteria and standards throughout Project Development phase.
- ii) Maintain historical files of baseline documents during the design phase until turnover of files to Omnitrans.
- iii) *Deliverable:*
 - (a) Baseline documents

Q) RECORD STORAGE AND RETENTION

- i) Process records for Omnitrans record storage and retention in accordance with industry-accepted procedures and retention schedules. Provide for routine turnover of records, design review packages, solicitation packages, and specifications and remaining Project documents to Omnitrans for long-term for archiving and retention as requested by Omnitrans.
- ii) *Deliverable:*
 - (a) Record management system

R) CHANGE CONTROL

- i) Coordination and management of changes to the design baseline, including change document preparation and processing using computer system tools throughout the project. Establish a system for effective coordination and ensure that baseline design changes are consistently applied to every affected contract.

S) CONSULTANT CONTRACT CHANGES

- i) Include in the Configuration Management Plan the internal processes necessary to ensure timely written notice to Omnitrans of any requirement, directed by Omnitrans or initiated by the Consultant that is believed by the Consultant to be out of the scope of the contract or may otherwise require revision to the Consultant's Contract. Include notice of scope changes associated with incorporating design changes, preparation and submittal of Requests-for-Change, preparation of cost proposals in response to Omnitrans notices or requests, and methods for identifying and tracking work costs associated with authorized Consultant's contract changes.

- ii) *Deliverable:*

- (a) Design change notices

T) DESIGN CHANGES

- i) Include in the Configuration Management Plan, the internal processes necessary to ensure timely identification, documentation, approval processing, revision incorporation, and release of changes to all design baseline documents, including but not limited to:

- (a) System wide Baseline Documents including Design Criteria, Standards, baseline contracts and any other document or record identified by Omnitrans as requiring system-wide baseline control.

U) QUALITY ASSURANCE

- i) Develop and submit for Omnitrans' acceptance a Quality Assurance Program covering all of Consultant's activities for: general tasks; system integration; intra-discipline and inter-discipline review; design workshops; preliminary engineering design; Omnitrans design review process; procurement and Services for systems contracts. The Quality Assurance Program must describe the controls to be implemented by the Consultant to verify compliance with the project procedural requirements. The Quality Assurance Program must satisfy the Omnitrans Quality Policy and meet the applicable requirements.

ii) The Consultant shall establish and maintain procedures to control and verify the design of the transit systems in order to ensure that the design criteria, owner specified requirements, and requirements of the relevant regulatory agencies are met. Design control includes ensuring that design requirements are identified and met, planning of design interfaces are complete including design verification activities, and design changes are controlled through Project completion. The requirements of the Consultant's QA Program and supporting procedures shall apply to other Sub-consultants.

iii) *Deliverable:*

(a) Quality Assurance Program (part of Project Implementation Plan)

V) REVIEWS OF DESIGN WORK

i) As a part of the Consultant's QA Program implement a specific set of review procedures for design work; procedures applicable to both Consultant's own efforts and to the work of Sub-consultants. Design should be reviewed by key stakeholders within Omnitrans, jurisdictional agencies, PDT members, and other key stakeholders at each major milestone in the Project. Their input and responses to their questions/comments should be recorded and disseminated to the Omnitrans Project Manager and PDT members.

ii) The Consultant will perform four formal QA/QC reviews & back checks at milestones (Phase 1 & 2 PE 30%, Phase 1 & 2 Final Design 65%, Phase 1 & 2 Final Design 90%, and Phase 1 & 2 Final Design 100%). Work in this section is for the formal, third party QC check and back check. This assumes that Phase 1 and Phase 2 work will be completed on concurrent schedules in a combined package. Work by the team to pick-up and respond to comments, as well as the other QA design reviews by the team are included in the tasks below.

iii) Design control procedures shall be documented in an appropriate Design Procedures Manual and shall include, but not be limited to, provisions for:

(a) Reviewing, identifying and documenting design inputs (e.g., design bases, technical requirements, codes, and standards);

(b) Establishing the selection of design methods for ensuring that these design inputs are correctly selected and translated into design documents (e.g., drawings, procedures, specifications, and calculations);

(c) Establishing the selection and review for suitability of application of materials, parts, equipment and processes that are essential to the function of the system;

- (d) Verifying that design inputs, applicable city, county, state, and Caltrans codes and standards and other quality and technical requirements are correctly translated into design work products with detail necessary for making decisions, accomplishing design verification measures, and evaluating design changes;
- (e) Requirements that drawings, sketches, specifications, data sheets, and design calculations are reviewed, checked, and approved in accordance with Consultant's Design Control Procedures prior to release for Omnitrans and third-party review, procurement or construction;
- (f) Design interfaces with Omnitrans Project Team - Project Manager, other Omnitrans departments, third party agencies and utilities, and sub-consultants are identified and controlled;
- (g) Design changes are governed by control measures commensurate with those applied to the original design, including identification of reasons for, and impacts of, the change.
- (h) Design documents are reviewed by the Consultant's QA to ensure that appropriate quality standards have been identified and documented.
- (i) Design analyses are performed in a planned, controlled, and documented manner and design analysis documents are legible and in a form suitable for reproduction, filing, and retrieval, and are sufficiently detailed as to purpose, method, assumptions, design input, references, and units such that a person technically qualified in the subject can review and understand the analyses and verify the adequacy of the results without recourse to the originator of the analysis.
- (j) Design control measures are applied to verify the adequacy of design, such as by one or more of the following: the performance of design verification reviews, the use of alternate calculations, or the performance of design qualification tests.
- (k) Calculations are identifiable by subject (including structure, utility, system, or component to which the calculation applies), originator, reviewer, and date; or by other data such that the calculations are retrievable. Engineering Calculations are to be signed and stamped by an Engineer Registered in the State of California of the involved discipline. Have calculations, required by specifications Sections, prepared on 8-1/2 inches by 11 inches sheets. When calculations accompany drawings in a submittal, the body of the calculations must contain cross-referencing to the individual drawing to which the page of the calculations pertain.

- (l) Computer programs used for design calculations are verified to show that the program produces valid solutions for the encoded mathematical model within defined limits for each parameter employed; and the encoded mathematical model has been shown to produce a valid solution to the physical problem associated with the particular application. Evidence of verification shall be maintained.
 - (m) Computer programs are controlled to assure that changes are documented and approved by authorized personnel when required. Where changes to previously verified computer programs are made, verification is required for the changes, including evaluation of the effects of these changes on (l) above.
 - (n) Clash detection studies must be provided to ensure that design is internally consistent.
 - (o) Review must be done to ensure that all components of project design are available from Buy America-compliant manufacturers so that the design can be constructed in compliance with Buy America and all other applicable regulations.
 - (p) Review must be done to ensure compliance with ADA as well as any other applicable regulations.
 - (q) Consultant is responsible for budget reconciliation at each major milestone in the Project or when any change, such as design change, is made that affects the Project budget.
- iv) The review procedures will establish the responsibilities and techniques for administrative, quality assurance, and technical reviews, for each milestone point in the design process, to ensure the accuracy and completeness of design before the submittals are processed to Omnitrans for review. Reflect in such procedures formal submittals and reviews at critical milestones in the design process, to include:
- (a) Design Development Submittal
 - (b) Engineering Design Submittal
 - (c) Construction Contract Documents Submittal
 - (d) Contractor Support during the Construction contract procurement and execution.
- v) These milestone reviews pertain to both facility design/specification work and systems design/specification. These milestones apply to the respective levels

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

of contract document preparation. The percentages given are for overall completion of each Contract Unit. The appropriate level of completion for each review point varies by the type of contract drawing and will be identified in the drawings listed in the Design Control Document Log of each Contract Unit.

vi) *Deliverable*

(a) Register of comments and responses at each milestone

vii) Other Governmental Units and Agencies - Support Omnitrans in establishment and maintenance of positive collaborative relationships with other government agencies or departments, special districts, or agencies implementing projects that intersect or relate to this project. Assist Omnitrans in making presentations to affected agencies and facilitating resolutions of potential conflicts.

W) MAINTENANCE AND OPERATING AGREEMENTS

i) The Consultant team shall provide support to Omnitrans staff regarding any inter-jurisdictional agreements needed for the project. This includes drafting the agreements and advising Omnitrans on agreements that may be needed for the project and the language that should be addressed in the agreements. Omnitrans staff will channel the agreements through the approval process including legal counsel and Board of Directors review. The agreements should be based heavily on the previous agreements used for Omnitrans' E Street sbX project. As in the E Street sbX project, it is anticipated that the five cities will delegate utility franchise agreements to Omnitrans for relocations.

(a) Early in the design process, the Consultant should provide draft project agreements for Omnitrans to implement with each of the five cities (Fontana, Montclair, Ontario, Pomona, and Rancho Cucamonga) and the County of San Bernardino if needed, which address the jurisdictional agencies' contributions throughout the design process for the Project, including the potential of waiving plan check and permitting fees for the Project.

(b) Also early in the design process, the Consultant should provide draft operational and maintenance agreements for Omnitrans to implement with each of the five cities, Ontario Mills, and Ontario Airport (Los Angeles World Airports), and the County of San Bernardino if needed, which address ongoing maintenance responsibilities for all components being built as part of the project, including transit signal priority infrastructure, sidewalk/curb/gutter, landscaping, passenger shelters and amenities, signage, electronic communication systems, security systems, etc.

- (c) The Consultant should also provide draft encroachment permits and/or easements with the local agencies, Caltrans, railroads, flood control districts, Ontario Mills, Ontario Airport controlling authority, or any other entities with jurisdictional authority as needed.

ii) *Deliverables:*

- (a) Draft agreements

iii) MASTER AGREEMENTS AND PERMITS

- iv) Consultant shall provide technical assistance to Omnitrans in the development and implementation of master cooperative agreements between Omnitrans and other public or private entities, including utilities, jurisdictional agencies, and other stakeholder agencies impacted by the project. As work progresses, identify what conflicts potentially exist by owner, requiring either a new master cooperative agreement or a revision of a standing agreement. In addition, support Omnitrans by identifying what permits, licenses and special or specific agreements are required to implement the Project (other than routine construction permits). Where such need is identified, define the purpose, regulation, timing and issuing agency and what application procedures pertain. Prepare graphic exhibits to support the agreement documents and permits. Prepare and submit a preliminary report for the Project during the first ninety (90) days of the preliminary engineering design phase outlining what master cooperative agreements, specific agreements, permits, licenses and other institutional clearances are required and the circumstances of each.

- v) All project agreements, where applicable, must include a flow-down of federal requirements or other funding requirements on the project that partner agencies must comply with.

vi) *Deliverable:*

- (a) Master agreements list

X) JURISDICTIONAL REVIEW AND APPROVAL PROCESS

- i) The Consultant team will be responsible for coordinating the plan review/plan check and permitting process with each of the five (5) cities, San Bernardino County (part of the project falls within unincorporated area of the County), Ontario Mills (property owner), Ontario Airport (Los Angeles World Airports – property owner), and any other applicable permitting agencies. This includes the following tasks:

- (a) Determine the plan checking process and submittal requirements for

each agency that will be approving the final plans.

- (b) Presenting the project at preliminary development review meetings or other required meetings with jurisdictional agencies in order to inform them of the project and gain preliminary approval;
- (c) Providing each jurisdictional agency with any requested materials to describe the proposed project design;
- (d) Following up on comments and questions from the jurisdictional agencies and, if agreed upon by Omnitrans' Project Manager, incorporating them into the project plans;
- (e) Providing presentations on the project to Planning Commissions, Public Works Commissions, City Councils, workshops, or in other forums as requested by the jurisdictional agency (assume a maximum of 15 total presentations);
- (f) Providing final plans for each jurisdictional agency's signature and any other deliverables required by the jurisdictional agency's for project approval.

ii) Deliverables:

- (a) Maximum fifteen (15) presentations
- (b) Hard copy plan sets as required for submittal to nine (9) jurisdictional agencies

Y) QUANTITIES

- i) For each submittal, provide four (4) hard copies to Omnitrans Project Manager of drawings, specifications and technical reports, and other submittals. In addition, provide electronic files for each submittal as follows:
 - (a) Drawings: editable file (such as AutoCAD), including narrative description of the file organization and a drawing list including file name, drawing number, sheet number;
 - (b) Schedules: Using Microsoft Project, Primavera P6, or comparable software (with prior approval from Omnitrans staff of which software package it will be prepared in);
 - (c) Document Images: PDF, TIFF or JPEG (as required by Omnitrans or affected agency).

Z) OTHER SPECIFIC TASKS

- i) Other specific tasks include, but are not limited to:
 - (a) Perform planned and periodic internal QA audits and surveillance to verify implementation and effectiveness of Project procedures, including work performed by sub-consultants under control of the Consultant.
 - (b) Review of sub-consultant's quality
 - (c) Maintenance of quality records
 - (d) Develop and implement appropriate configuration management and document control procedures
 - (e) Review and sign off on Nonconformance Reports during construction phase
- ii) *Deliverable:*
 - (a) Nonconformance Reports and QA audits

AA) QUALITY DATA

- i) Gather and track Quality Assurance audit/surveillance and discrepancy data for use in the analysis of deficiency trends and evaluation of corrective action effectiveness. Accomplish this activity by utilizing computer software and electronic transmission.
- ii) Data collection and transmission to Omnitrans shall not relieve the Consultant from the requirement to perform independent surveillance/management of the sub-consultant.

BB) REGISTER OF DELIVERABLES AND QUANTITY OF SUBMITTALS

- i) Within 14 calendar days of Notice to Proceed, prepare a register of all deliverables required by the Scope of Work that shows the schedule, approval process and status of each item. The register shall include the Document Control Log (DCL), Submittal Log, Warranty Log, Training Log, Operating and Maintenance Log, monthly status reports, design schedule, and bid documents for construction contracts. Submit the deliverable register for Omnitrans' review and acceptance. Maintain deliverable register for the duration of the Scope of Work and submit a monthly update, within seven days of the month closing, to Omnitrans.
- ii) *Deliverables:* Register of deliverables, including the following:

- (a) Document Control Log;
Scope of Work

- (b) Submittal Log;
- (c) Warranty Log;
- (d) Training Log;
- (e) Operating and Maintenance Log;
- (f) Monthly status reports;
- (g) Design schedule;

CC) BUDGET

- i) Develop budgets for each deliverable identified in the register and including the Document Control Log (DCL). Budgets shall be established at the detailed level including all drawings and deliverables, calculations, pertinent submittals per each design discipline.
- ii) Maintain the approved overall Project budget by application of Omnitrans procedures that require specific written approval of Omnitrans for each Project Budget Change Request (PBCR). Maintain complete documentation of Project budget including PBCRs, and forecast changes (trends).
- iii) *Deliverables:*
 - (a) Budget and Project Budget Change Requests

DD) PROJECT CONTROL

- i) The Consultant shall establish and operate systems and provide project control services for the control of the Project with respect to cost and schedule. The overall control system to be established shall provide a standard framework for defining work, assigning work responsibility, establishing budgets, controlling and forecasting costs and summarizing the monthly Project status.

EE) SOFTWARE

- i) During Design Services, utilize Microsoft Project, Primavera P6, or comparable software (with prior approval from Omnitrans staff of which software package it will be prepared in) for production of schedule. Use Microsoft Office Products and or related Integration Software for reporting and administration.

FF) WORK BREAKDOWN STRUCTURE

- i) The Work Breakdown Structure (WBS) shall conform to industry standards

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

and shall identify, generically, major end products that are to result from the authorized Work. Upon commencement of the Work, prepare a detailed WBS for use during the Project. The WBS shall clearly identify and correlate to the tasks and subtasks established by the Scope of Work and in the PIP, and shall be the basis for all Project Control and related reporting activities. Within seven (7) calendar days of Notice to Proceed, submit the proposed WBS, to Omnitrans for review and acceptance. Subdivide work tasks into refined components and sub-components until the lowest elements represent manageable work packages assignable for control to a single operating unit for the Consultant. Coverage by WBS shall include packages of work to be performed by the Consultant, Omnitrans staff, other Contractors of Omnitrans and all third parties who may become involved in any Project as directed by Omnitrans.

- ii) The Work Breakdown Structure is to be defined and described in a Project-level “WBS Dictionary” to be prepared by the Consultant and submitted to Omnitrans. Include hierarchical diagrams as well as narrative scope descriptions for each component level of the WBS and also a WBS organizational matrix. At a minimum, the WBS shall include the Project Work Packages, Discipline Level, original Scope and out-of-scope work.

iii) *Deliverable:*

- (a) Work Breakdown Structure

GG) PROGRESS STATUS REPORTING

- i) The Consultant will be responsible for progress status reporting through the Design and Bid phases. Track and report the cost of all Consultant charges related to the authorized work and determine the physical progress of such work for each monthly status report. Each month, provide status and analysis of the contractual and cost control baseline and project milestone dates for progress achieved to ensure the work can be completed within the authorized budget and Project completion dates, and indicate trends of any variance from the budget and schedule. Provide a reconciliation of Project budget and notify Omnitrans where there is a potential for exceeding the authorized budget dollar value and Project completion dates.
- ii) Monthly progress reports shall describe progress of the work, forecast task completion dates, problems and proposed corrective action and work status. All Project reporting including cost and progress and analysis to support such reporting shall be based on the current approved Project completion dates and cost. Report variances and comparisons against accepted Project cost/schedule baseline as defined in the accepted PIP. Monthly Progress Reports are due to Omnitrans prior to the 15th day of each month, along with the monthly invoice, and should be provided electronically and via mail to the Omnitrans Project Manager.

Scope of Work

- iii) The Monthly Progress Reports are to clearly identify areas of concern, the Consultant's best estimate of the true and full cost picture for the Project; summarized information to assess the risk differences that exist within the contract; exception and variances to the approved budget and accepted schedule; and identify trends to anticipate problems and to develop information to assist in decision making.
- iv) Once potential problems have been identified, an action plan shall be developed by the Consultant, in coordination with Omnitrans staff that proposes solution options and assigns action steps and timetable requirements to specific individuals. The reporting shall provide a means for monitoring the performance of the action steps and their effectiveness.
- v) *Deliverables:*
 - (a) Monthly progress reports and budget reconciliations

HH) COST/PROJECT COMPLETION FORECASTS

- i) Prepare cost estimates and forecasts of the cost expenditures required to complete the authorized work. Prepare Project updates incorporating current progress, resources, and constraints in order to forecast completion of tasks and milestones. Provide support in the review of the Contract status with respect to matters of cost control, performance, and Project completion date adherence and assist in the analyses of available information toward development and evaluation of alternative courses of remedial action. Provide a recovery plan identifying measures to complete tasks within the authorized budget and/or completion date. Implement industry accepted Trending and Cost Forecasting to provide early warning of potential cost deviations in time to allow remedial actions to eliminate or minimize any adverse cost impacts and/or Project completion dates. The Consultant is informed that it takes two (2) to three (3) months for approval of Project/Contract changes in excess of \$25,000.
- ii) Provide certified Cost Estimate at each Design Milestone. Update the cost estimate and provide the updated certified cost estimates with the submittal of the construction documents for final Omnitrans review and comments. Update the estimate and provide the Engineer's Estimate at bid opening of construction contract(s). Provide estimating services as necessary for development of preliminary design including estimates for feasibility studies.

iii) Provide estimating services as necessary to support Value Engineering and cost reduction proposals. Conduct reconciliation of Project Cost Estimate each time there is a change to Project design.

iv) *Deliverables:*

(a) Cost estimates at each major milestone and updates as needed

II) PROJECT STATUS BRIEFINGS

i) Prepare and present both weekly informal status briefings and monthly formal status updates of the Project to Omnitrans Project Manager, with Consultant preparing agenda and furnishing minutes/notes from meetings within ten (10) days after each meeting, and prior to issuance of the Project Monthly status report, which is to be prepared in a format and content acceptable to Omnitrans. At such status briefings, the Consultant's Project Manager shall present a concise overview of the Project, highlighting problem areas, trends and recommendations for corrective actions, when necessary.

ii) *Deliverables:*

(a) Meeting agendas and minutes/notes

(b) Monthly DCL updates and performance earnings criteria

3.101 PUBLIC RELATIONS (TASK 2)

A) PUBLIC OUTREACH & COMMUNITY PARTICIPATION

i) It is very important to Omnitrans to include the community in the design process for this Project. The Consultant team will be responsible for leading a multifaceted outreach program to ensure community inclusion in the design process, with the goal of working toward broad consensus on the project design and components, in partnership with Omnitrans staff.

B) PROJECT DEVELOPMENT TEAM (PDT) MEETINGS

i) One of the most critical forms of project communication is the regular reporting of progress and discussion of critical issues that occurs within the Project Development Team meetings. PDT meetings were held monthly during the Alternatives Analysis process, and it is expected that the PDT members will continue on throughout the design process. The Consultant shall hold 16 monthly PDT meetings for progressing the Project to construction.

ii) *Deliverables:*

- (a) Meeting agendas
- (b) Sign-in sheets
- (c) Meeting minutes
- (d) All above deliverables, including minutes/notes of previous meetings and handouts/technical materials as appropriate, Consultant shall distribute electronically prior to each meeting and in paper form at each meeting.

C) OMNITRANS STAFF MEETINGS

- i) The Consultant team will present the preliminary design and final design to Omnitrans staff representing several Omnitrans departments, including three (3) in-person meetings with additional follow-up discussions via phone or conference call if needed.

ii) *Deliverables:*

- (a) Meeting agendas
- (b) Sign-in sheets
- (c) Meeting minutes
- (d) All above deliverables, including minutes/notes of previous meetings and handouts/technical materials as appropriate, Consultant shall distribute electronically prior to each meeting and in paper form at each meeting.

D) PUBLIC OUTREACH

- i) Public Involvement for this project should focus on education and feedback to the design team. This activity should result in Omnitrans not only hearing the community preferences, but responding by incorporation into the alignment design and construction if feasible.
- ii) The Consultant shall include clear guidelines for public outreach in the Project Implementation Plan (PIP), which will provide the basis for which all outreach efforts are undertaken and completed.
- iii) The Consultant team will develop and maintain a list of stakeholders throughout the project. The Consultant will be responsible for development of marketing materials for use in stakeholder meetings and other outreach efforts. The Consultant will also be responsible for developing and utilizing any other public outreach tools necessary to the success of the design process, such as surveys, web-based or social media tools, etc.

The Consultant will begin the stakeholder compilation with existing lists from the previous project phase. The database will be maintained in Microsoft Access and updated after public meetings and refined throughout the project using information gained from meeting sign-in sheets, public inquiries, and webpage feedback and registration requests.

- iv) The Consultant team will present the preliminary project design to stakeholders and general public in at least three (3) rounds of five (5) public outreach meetings, for a total of fifteen (15) meetings, one to be held in each of the five cities along the project corridor. The Consultant will develop a master meeting schedule that correlates all public engagement activities.

The first round of public meetings will be held during the Refinement of Routing and Station locations phase and will also count as the scoping meeting for the environmental phase; another round will be held during the Environmental clearance phase; and a third round will be held during Final Design. Input received at the meetings and other input received throughout the project shall be compiled by the Consultant, and a brief response should be prepared addressing the comments and whether or not the comments have been incorporated into the design.

The Consultant's services in support of the various meetings will include coordination of meeting times and locations, organization of facility details (including equipment and insurance, if applicable), meeting set-up and clean-up, photography, and refreshments. Meeting materials, including notices and meeting notifications, eblasts, handouts, sign-in sheets, comment cards and directional signage will be prepared.

- (a) Notification - The Consultant is well versed in notification techniques used to reach a broad base of stakeholders. The tools utilized may include:
1. Hard copy notification materials via direct mail
 2. Newspaper Advertisements – Display ads placed in local weekly papers. Ads will also be placed in minority publications if deemed necessary.
 3. Public Access Venues – Hard copy notification materials can also be disseminated via City Halls, Chambers of Commerce, local schools, libraries, churches, and businesses.
 4. Social media – The project webpage and Facebook Fan page will be utilized to post meeting notification.
 5. E-Blasts – Extremely cost effective method to reach the project database.

During the meetings, the Consultant will record key discussion points using “facilitation graphics” on large wall-sized paper. Up to two weeks after each meeting, the Consultant will provide electronic versions of photo-reductions

of the wallgraphics.

(a) *Deliverables:*

1. Facilitate and graphically record 15 public outreach meetings
2. Photo-reduced wallgraphics from 15 public outreach meetings

At the conclusion of the project, the Consultant will prepare a report documenting the full public involvement and communication process and how it was used to support the project development process. This report will summarize the online engagement tools and results, project database, project meetings, public questions, comments, and conclusions reached at these meetings, samples of collateral material that were employed throughout the process, and feedback received through the project webpage.

- v) The Consultant team should also be available for other public outreach efforts where appropriate, such as speaking about the project at community events, making presentations to community groups, etc. – at a maximum of six (6) events throughout the duration of the design process.
- vi) *Deliverables:* For each of the three (3) rounds of public meetings, produce the following:
- (a) Ten (10) display boards (available as pdf and as physical foam core-mounted boards);
 - (b) One (1) take-one informational flyer to be posted on-board the buses as a pdf (English and Spanish); printing to be handled by Omnitrans;
 - (c) One (1) meeting invitation/flyer as a pdf (English and Spanish);
 - (d) Other take-home informational handouts as needed to distribute at the public meetings, with physical copies as needed for attendees;
 - (e) Maintain a stakeholder address list (building off of the previously created Excel spreadsheet) and distribute meeting invitations electronically or in hard copy to the stakeholders.
- vii) All informational materials for the public must use language appropriate for a range of audiences, and must be approved by Omnitrans staff before being disseminated. All materials are designed to be used in conjunction with the full scope of community outreach activities, including for marketing, social media and internet project tools using QR codes that link directly to the sites. All collateral materials will be created with a uniformed branding to help create a project identity within the community. A materials distribution plan will be developed to ensure the materials are being utilized effectively and the

proper quantities are printed.

- viii) Social media and digital engagement tools will supplement the core outreach activities. The following social media strategies and digital engagement tools are recommended:
- (a) *Facebook* – The Consultant will coordinate with Omnitrans to utilize the existing Facebook page to post project updates and meeting notices and announcements.
 - (b) *Website Coordination* - A dynamic project webpage will serve as a public portal to all project information, including but not limited to: background documents, collateral materials, meeting schedules and presentations, maps, social media connections/links, contact information, etc. The Consultant will develop and maintain the content, graphics and materials needed to support the project webpage.

4.101 REFINEMENT OF ROUTING ALIGNMENT AND STATION LOCATIONS (TASK 3)

A) REFINE ROUTING ALIGNMENT

- i) The first major task of the Consultant will be to refine the West Valley Connector Corridor routing alignment. This will involve analysis of up to 6 routing options, including the following:
 - (a) The current proposed option;
 - (b) At least one option that uses Haven Avenue but not Milliken Avenue in Rancho Cucamonga;
 - (c) At least one option that uses both Haven Avenue and Milliken Avenue in Rancho Cucamonga; and,
 - (d) Other possible options suggested by stakeholders (this phase will include one of the rounds of public outreach meetings mentioned in the above section).
- ii) The Consultant will prepare up to six (6) options for the Rancho Cucamonga alignment on aerial photographs. Consultant will identify on aerial photographs several options for an alignment using Haven Avenue and several options for an alignment using both Milliken Avenue and Haven Avenue. The team will make a site visit to review options and meet with the City of Rancho Cucamonga's management and City staff to review these and identify other potential options. These options will be refined and presented to the PDT at the first round of public meetings.

The Consultant will evaluate these options related to land use plans, proposed TODs, ridership potential, and pedestrian/bicycle accessibility. The team is aware of numerous recent proposals and studies underway in Rancho Cucamonga including the ARRIVE Corridor, the Empire Lakes Specific Plan Update which proposes a mixed-use community on the Empire Lakes Golf Course, a city RFQ to potential developers for a mixed-use community on the City-owned park-and-ride lots, and a SCAG/City study which will evaluate an additional Metrolink station at Haven Avenue. The team will coordinate with Omnitrans and City staff how to address these plans and studies in preparing the options as some will not be approved or completed until after PE is completed for the West Valley Connector.

B) REFINE STATION LOCATIONS

- i) This phase involves the refinement of station locations, including the existing and proposed station locations, but also including the options of removing or adding stations (including consideration of options proposed by stakeholders). The analysis should identify station spacing, ranging from 1/2-mile to 1 mile apart, depending on the conditions in each specific location.
- ii) The Consultant will meet with the city staff of each jurisdiction to discuss feasibility of the station locations proposed in the Alternatives Analysis Report and determine existing and proposed land uses and site information in this report needing updating. For Rancho Cucamonga, potential station locations for each option proposed in Task A above will be identified. An assessment of current and future bus stations will be provided to help the PDT make informed decisions based on projected ridership, projected travel times, and proximity to activity centers.

At these City meetings, station design concepts outlined in the Alternatives Analysis Report will be reviewed with cities to determine which cities will likely have new stations and shelters and which cities or locations may need to share shelters with local buses. As a part of Task B, once the site surveys are obtained, the station locations/stops will be applied to these base survey drawings to determine if any changes in station locations need to be made due to right-of-way or other constraints. Initial station locations will be reviewed at a PDT meeting and at the first round of community meetings as described in Task 2.

C) EVALUATION OF ROUTING OPTIONS AND STATION LOCATIONS

- i) The decision of final routing and station locations will be vetted by the PDT at one or more PDT meetings. Information must be presented to help

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

evaluate the decision based on projected ridership, projected travel times, walking distances, existing or planned activity centers (i.e., job centers, high-density housing, education institutions, etc.). Existing demographic information can be provided to the Consultant; however, the Consultant will be expected to conduct analyses of projected ridership at proposed station locations, and to suggest spacing of stops based on expected walking distance that passengers will be willing to walk.

- ii) The Consultant will prepare evaluation matrices of routing options and station locations. One matrix will address the options for routing for Rancho Cucamonga. Another matrix will evaluate station locations in the Alternative Analysis Report and alternative station locations identified through the stakeholder outreach and PDT process discussed in Task 2. The Consultant will assist in evaluating walking distances, existing and planned activity centers, and existing and planned transit-supportive development. The Alternatives Analysis Report shows stations west of Ontario Mills and along Sierra Avenue at ½- to 1-mile spacing. Along Foothill Boulevard, spacing is approximately 1-mile apart. The focus of this task will be to provide access within 1/2 mile or less, a 10-minute walking distance, which would be a station spacing of 1 mile or less. This analysis will coordinate with Task 4, which is aimed at removing pedestrian barriers to the stations. The Consultant will review the land use analysis prepared for the Alternatives Analysis Report and update as appropriate in the matrix, using relevant new information obtained from the City in this evaluation.

iii) Deliverables:

- (a) Digital aerial photographs of Rancho Cucamonga routing options
- (b) Digital aerial maps with station locations for the above Phase 1 options
- (c) Digital aerial maps of 5 alternative station locations for Phase 1 in a format similar to the Alternatives Analysis Report (see Task 8 for alternative station locations applied to survey base map).

D) PRESENTATION OF ROUTING AND STATION LOCATIONS TO PDT

- i) The presentation to the PDT should rank the recommended options for routing and station locations and provide the Consultant's recommendations based on available data and factors of consideration that are important to the PDT.

E) PRESENTATION TO CITIES

- i) This phase will include one (1) special presentation to elected officials from all cities along the corridor (to be coordinated by Omnitrans staff), in order to gain consensus on the routing alignment and station locations

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

recommended by the PDT. The Consultant will help to facilitate a political consensus on routing, based on the expected benefits, pros, and cons, of the routing and station location alternatives.

F) Deliverables:

- i) Ridership projections by stop
- ii) Presentation of routing alignment and station locations to PDT and accompanying materials
- iii) Presentation of routing alignment and station locations to applicable jurisdictions and accompanying materials

~~5.101 PEDESTRIAN AND BICYCLE CONNECTIONS TO STATIONS
(ACTIVE TRANSPORTATION GRANT) (TASK 4)~~

~~A) FHWA GRANT~~

- ~~i) A federal FHWA grant was awarded to Omnitrans through Caltrans' Active Transportation Program for the design and construction of pedestrian improvements within ½ mile of all stations (48 stations at 27 locations) along the West Valley Connector Corridor (including cross streets and side streets), as well as installation of bicycle parking at the stations. The pedestrian improvements include ADA-compliant boarding areas (12' by 60' recommended), as well as repair/reconstruction of sidewalk, curb ramp replacements, and crosswalk improvements within ½ mile of stations. The scope of work at the Ontario Mills location in particular includes removal of fence and landscaping and widening of sidewalk in addition to pouring concrete boarding area / shelter pad.~~

~~B) PEDESTRIAN ACCESS IMPROVEMENTS~~

- ~~i) The design of the pedestrian access improvements is a separate project that will be designed by the Consultant simultaneously with the design of the overall transit Project, because it is dependent on the locations of the stations for the transit Project.~~

~~C) PEDESTRIAN AND BICYCLE DESIGN~~

- ~~i) Scope of work for this phase involves design of the above listed pedestrian and bicycle improvements based on the station locations decided on during the Refinement of Routing Alignment and Station Locations task, plus the Ontario Mills location. Preliminary conceptual design work will be provided by Omnitrans staff. Preliminary engineering,~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~final engineering, cost estimate, bid package, bid services, and design services during construction are needed from the Consultant for this phase. This phase of work may be put out to bid for construction earlier than the remainder of the transit project.~~

~~D) DESIGN REQUIREMENTS~~

- ~~i) Assistance will be needed from the Consultant with complying with all permitting requirements, requirements of the FHWA funds/Caltrans process (including obligation deadlines), and categorical exemption/exception under NEPA and CEQA. All of the locations are anticipated to be within existing public street right-of-way, with the exception of the Ontario Mills location and the Ontario Airport location. The Consultant will assist in working with these private property owners to draft any agreements needed, apply for an easement, or any other permitting needed to construct the improvements on private property (with the agreement of the property owner).~~

~~E) Deliverables:~~

- ~~i) Preliminary plans (in compliance with requirements of each of five cities), cost estimate, and specifications~~
- ~~ii) Final bid package, with approval of each of five cities~~
- ~~iii) Agreements and any other needed permitting for work on private property~~
- ~~iv) Bid period services (answering Requests For Information from bidders)~~
- ~~v) Design Services During Construction~~

~~F) **Note:** This task may be cancelled if specific grant funding for this task should for any reason be withdrawn.~~

6.101 PHASING PLAN AND FINANCING PLAN (TASK 5)

A) PHASING

- i) Currently the construction of the Project is proposed in phases due to funding constraints. However, based on funding availability and funding strategy, the phases may be able to be developed simultaneously as one project. The Consultant will be needed to assist Omnitrans with developing a comprehensive strategy for the phasing and funding of the Project. This contract will include environmental clearance and engineering (preliminary and final design) for the entire project, including all of the following phases.

(a) Phase 1

1. Rapid or "BRT Lite" line with enhanced stations and transit

Scope of Work

signal
priority

2. 40' buses with sbX branding

(b) Phase 2

1. 3.5 Miles of dedicated BRT center lanes in Ontario and related streetscape improvements

2. Additional right-of-way and road widening, site work/utilities

3. Construction of six median stations

(c) Phase 3

1. Purchase of 60' articulated vehicles

B) PHASING AND FUNDING PLAN

i) The Consultant will be responsible for producing a phasing and funding plan, which will include the following subtasks:

(a) Create a financing plan for the overall Project, including Phases 1, 2, and 3. Refine cost estimates for the phases based upon available information (including conceptual design of Phase 2), and program potential funding sources in fiscal years when expected to be available (based on meetings and conversations with Omnitrans staff, SANBAG staff, and other potential funding agencies).

(b) Evaluate funding sources: Starting with funding sources identified in the Alternatives Analysis, the Consultant will evaluate the scale of potential funding sources for each phase of development. Through meetings with Omnitrans staff, SANBAG staff, individual cities and other funding agencies, the Consultant will evaluate the availability of funding sources in terms of availability as well as scale. Federal transportation funding, local, regional and state grants, new funding sources, and value capture opportunities through private development and public-private partnership will be evaluated.

ii) Provide support with compiling available information for use in grant applications when needed.

iv) Based on funding expected to be available, provide recommendations for how to phase construction of Project, if at all. Create a timeline chart with years for major milestones of Project including all three phases.

v) Assist with answering concerns from city officials, stakeholders, and others in regards to phasing plan, including but not limited to, the following:

Scope of Work

- (a) How can construction impacts to service be minimized while constructing Phase 2?
- (b) How can private development potential be encouraged and work hand in hand with this Project? Will phasing the project cause additional delays in private development along the corridor?
- (c) How will project costs be affected by phasing the project (due to escalation, or splitting the project into multiple construction contracts)?
- (d) How will phasing impact design (such as design of stations for left-side boarding or right-side boarding depending on vehicles planned to be used, and design of 6 stations in Ontario to be moveable/reusable from Phase 1 to Phase 2 if the project is constructed in phases?)

C) REVISIONS

- i) The Consultant shall revise the financing plan / phasing plan 2-3 times throughout the duration of the project, based on review and discussion by Omnitrans staff and PDT members, and based on newly available information.

D) Deliverable:

- i) Financing plan / phasing strategy document

7.101 SMALL STARTS PROCESS (TASK 6)

A) SMALL STARTS FUNDING SUBMISSION

In the financing plan task above, FTA Section 5309 Capital Investments (Small Starts) grants are likely to be selected as a potential funding source for the Project. The Consultant shall assist Omnitrans in navigating through the Small Starts funding process. This will include putting together a letter requesting entry into Project Development, as well as submitting additional required materials for a Small Starts funding submission. This task will be guided by the most current guidance available from FTA, as well as frequent consultation with FTA staff. According to the current guidance (Major Capital Investments Final Rule, April 2013; and New and Small Starts Evaluation and Rating Process Final Policy Guidance, August 2013), the following information will be needed for a Small Starts funding submission. The Consultant will be responsible for compiling this information.

- i) Number of transit trips using the project – The Consultant will prepare ridership forecasts using a pivot point model, based on the forecasting methodology from the Alternatives Analysis (AA). Appendix 3 of the AA covers the travel demand forecasting methodology. Should Omnitrans or FTA

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

prefer that the Consultant use the FTA STOPS model (or another methodology), that can be substituted for the pivot-point model. The consultant will provide information regarding the project's congestion relief benefits for inclusion in submission to FTA.

- ii) Number of Trips by Transit Dependents Using the Project – The Consultant will provide this using the most recent available Census data for household income and household auto ownership.
- iii) Transit supportive plans and policies – The Consultant will update the existing information provided in the *Alternatives Analysis* document (2014) with any new information obtained from staff of the five cities on the corridor.
 - (a) The Consultant will update the economic study provided during the Alternatives Analysis phase, to estimate the projected economic impact of the project on surrounding land uses, as well as the estimated VMT attributable to the estimated changes in land use patterns, population, and employment. Land use information will include: station area population densities, total employment served by the project, the proportion of “legally binding affordability restricted” housing within ½ mile of stations areas to the proportion of “legally binding affordability restricted” housing in the counties through which the project travels; pedestrian accessibility; presence of high trip generators; and availability of parking near stations.

The Consultant will update land use and pedestrian accessibility information in the Alternatives Analysis Report. Information will be refined to address changes in the project description identified in Task 3 and the PE task and include any recently approved City land use or specific plans and proposed development projects identified in city conversations.
 - (b) The Consultant will estimate potential land use changes projected on surrounding land uses. The Consultants’ analysis will provide advice through conversations with staff of the five cities along the corridor as to how development can be planned that complements the Project.
- iv) Environmental benefits expected to result from the project – The Consultant will calculate environmental benefits, including change in air quality criteria pollutants, change in energy use, change in greenhouse gas emissions, and change in safety, using the methodology and tools provided by the FTA. The Consultant will provide travel model inputs to greenhouse gas, air toxics, noise, and traffic analyses. Informed by development growth analyses, the Consultant will provide advice to staff of the five cities.
- v) Cost-effectiveness – The Consultant will calculate cost-effectiveness of the

MKP15-37

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

Project as the annualized capital federal share of the project per trip on the project (using total number of estimated trips), based upon the Consultant's cost estimate for the Project, and excluding the cost of "enrichments."

- vi) Land use - The Consultant will compile needed land use information from sources including the *Alternatives Analysis* report, conversations with staff of the five cities along the corridor and local housing authorities, and other available information sources. The information needed includes: station area population densities, total employment served by the project, the proportion of "legally binding affordability restricted" housing within ½ mile of stations areas to the proportion of "legally binding affordability restricted" housing in the counties through which the project travels; pedestrian accessibility; presence of high trip generators; and availability of parking near stations.
- vii) Congestion relief – This may need to be calculated if FTA provides guidance on the methodology by which it should be calculated.
- viii) Local financial commitment – The Consultant will compile requested information based on the financing plan developed in the previous section, as well as information on Omnitrans' operating budget and projected operating funding sources for the Project.
- ix) *Deliverables:*
 - (a) Ridership forecasts, as well as other calculations mentioned above
 - (b) Letter requesting entry into project development
 - (c) Preliminary and final Small Starts grant submittal package, including all information mentioned above
- x) *Note:* This task may be cancelled if Omnitrans decides not to pursue Small Starts funds.

8.101 ENVIRONMENTAL CLEARANCE (TASK 7)

A) ENVIRONMENTAL IMPACT REPORT

Because Phase 2 of the Project involves widening Holt Boulevard (including right-of-way acquisition) to construct dedicated lanes and median stations, it is anticipated that this task will involve the completion of an Environmental Impact Report (EIR), pursuant to CEQA, and Finding of No Significant Impact (FONSI), pursuant to NEPA. It is assumed that both CEQA and NEPA impact discussions can be combined and discussed together within each topical section of the environmental document (EA/EIR). The Consultant will conduct the required public scoping and outreach, prepare an EA/EIR and supporting technical studies for the Project as identified in the subsequent discussion below.

B) ENVIRONMENTAL ANALYSIS NEEDED

Consultant will prepare all environmental clearance tasks in compliance with applicable regulations and standards, and any changes to environmental rules, regulations, and standards during the EA/EIR process will be adhered to. Applicable standards include the following:

- i) The National Environmental Policy Act (NEPA), Regulations for Implementation and Final Amendment to 40 CFR 1500-1508; as of July 1, 1986.
- ii) Guidance Manual for Transit Noise and Vibration Impact Assessment, U.S. Department of Transportation, Federal Transit Administration, April 1995.
- iii) Clean Air Act Regulations, 40 CFR, Parts 51 and 93, Air Quality: Transportation Plans, Programs, and Projects; Federal or State Implementation Plan Conformity; (with updates to August 15, 1997)
- iv) FTA Regulations for Environmental Impact Statements and Related Procedures (23 CFR Part 771-777)
- v) Executive Order 11514, Protection and Enhancement of Environmental Quality
- vi) 40 CFR 51 & 93—Transportation Conformity Rule Amendments: Flexibility and Streamlining: Final Rule August 15, 1997.
- vii) CEQA Guidelines, California Environmental Quality Act (CEQA), as amended.

C) SCOPING DOCUMENT

The Consultant will prepare a scoping document. One round of five scoping meetings (one in each community) will be coordinated by the Consultant (as described in the Public Outreach chapter above). Following the scoping meetings, a Draft Scoping Summary Report shall be prepared to summarize all comments received during the environmental scoping period. Upon Omnitrans review and comment, the document will be revised into a Final Scoping Information Document. Individual contacts will be made with appropriate resource agencies, as necessary.

- i) *Deliverables:*
 - (a) Conduct five (5) scoping meetings
 - (b) Draft scoping summary report

(c) Final scoping information document

E) PROJECT ALTERNATIVES

The EA/EIR will evaluate a range of alternatives, including but not limited to, the following:

- i) No Build alternative;
- ii) Transportation Systems Management alternative;
- iii) Rapid line with no dedicated lanes;
- iv) Full BRT with 3.5 miles of dedicated lanes (including widening Holt Boulevard in Ontario for two mixed-flow lanes plus one transit lane in each direction);
- v) Full BRT with 3.5 miles of dedicated lanes (assuming converting one traffic lane of Holt Boulevard in Ontario to a transit lane and keeping one mixed-flow traffic lane in each direction); and
- vi) One or more options that incorporate an on-street bicycle lane or cycle track.

F) ALTERNATIVES ANALYSIS REPORT

The completed Alternatives Analysis report will serve as a basis for evaluating these alternatives. The alternatives analysis component of the EA/EIR may also include the options for routing alignment and station locations mentioned in the previous section; the Refinement of Routing and Station Locations phase and Environmental phase may be approached simultaneously.

i) Deliverable:

- (a) Alternatives Analysis Report

G) EXPECTED YEARS OF COMPLETION

The EA/EIR should also take into account the proposed phasing of the project and the expected baseline years of (expected years of completion of) each phase when considering the impacts.

i) Deliverable:

- (a) Include Phasing Analysis in EA/EIR and supporting technical studies

H) PROJECT DESCRIPTION OF EA/EIR

The Project Description of the EA/EIR shall be developed to include a thorough description of the physical improvements, operating characteristics and construction details associated with each of the alternatives being examined in the environmental document. Examples of such details would include roadway geometry, structure plan and profile, right-of-way requirements, aesthetic treatment of the route, station designs and layouts, vehicle composition and fleet size estimates, maintenance requirements and associated facilities, and other such details.

i) Deliverable:

- (a) Include project description in EA/EIR

I) CONSTRUCTION TIMELINE

The Consultant will also develop a construction scenario that lays out the construction sequence and timeline and provides sufficient quantitative information to permit an adequate assessment of impacts likely to be experienced during the construction process.

i) Deliverable:

- (a) Include construction sequence and timeline in EA/EIR

J) UPDATE EXISTING CONDITIONS

The Consultant will update the existing conditions documented during the Alternatives Analysis, including existing and planned land uses along the corridor. The Consultant will update this by researching Census data and other available data, reaching out to staff of the five cities, and conducting field surveys if needed.

i) Deliverable:

- (a) Provide updated existing conditions in EA/EIR

K) UPDATE RIGHT OF WAY

The Consultant will update the right-of-way acquisition / property impact information that was provided in the City of Ontario's Holt Boulevard Mobility and Streetscape Strategic Plan (2013) and the West Valley Connector Alternatives Analysis (2014).

i) Deliverable:

- (a) Property Acquisition/Property Impact Report

L) ENVIRONMENTAL JUSTICE ANALYSIS

The Consultant must conduct an Environmental Justice analysis, pursuant to FTA guidelines, as a part of the EA/EIR.

i) Deliverable:

- (a) Community Impact Report with Environmental Justice Analysis

M) ANALYSIS OF IMPACTS

The EA/EIR will include analysis of the following potential impacts, along with any additional impacts requiring analysis under CEQA and NEPA (per the guidance and statutes listed above):

- i) Soils, Geology, and Seismicity – Consultant will review standard references to determine pertinent geotechnical characteristics of the corridor. Using the results of the geotechnical analysis conducted as part of the engineering activities, Consultant will evaluate the potential effects of the project on the environment (e.g., soil settlement) and also the potential effects of environmental conditions on the project (e.g., seismic events).

(a) Deliverable:

1. Include results of the geotechnical analysis results in the EA/EIR
- ii) Ecosystems – The U.S. Fish & Wildlife Service (USFWS) and California Department of Fish & Game shall be queried by Consultant regarding federal- and state-listed protected species. Consultant will undertake a field reconnaissance to determine conditions conducive to presence of listed species and determine if follow-on focused surveys for one or more listed species are warranted. Such focused surveys are not included in this scope of work. In addition to the above reconnaissance, the study area shall be reviewed and described in terms of its ecological communities. The potential effects of the project alternatives shall be assessed against the biological conditions noted in the field and an assessment as to the potential significance of such impacts will be provided. To the extent that avoidance of significant impacts can be obtained by project modifications, such modifications will be recommended. If this is not possible, minimization of the extent and/or severity of the impact will be recommended, followed by mitigation.

(a) Deliverables:

1. Complete biological surveys
2. Biological Assessment Report

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

3. Include results of the Biological Assessment Report in EA/EIR

- iii) Hydrology and Water Quality – Consultant will inventory existing hydrologic and floodplain conditions within the project corridor. Based upon a preliminary assessment of potential impacts associated with the proposed project, Consultant will recommend the level of documentation appropriate for the project. Such documentation would include, at a minimum, a Technical Memorandum, describing study area conditions, potential impacts, and appropriate mitigation, or, at a maximum, a Floodplain Evaluation Report shall be prepared, as required by Executive Order 11988. Consultant shall coordinate with the five cities on the corridor, County of San Bernardino, the San Bernardino Flood Control District, Caltrans and FEMA, as necessary, to obtain flood limits, hydrology and flow rates for affected “Waters of the U.S.” An assessment of pre- and post-project hydraulic conditions, where construction within the federal waters may occur, and any proposed flood control improvements needed to mitigate water surface increases, will be provided, as appropriate to the project circumstances.

The need for use of hydraulic models will be investigated. If necessary, the models used at this stage shall at a minimum consider a distance of 500 feet upstream and 500 feet downstream of proposed Project. Streams designated as flood hazard zones should be considered.

(a) Deliverable:

1. Floodplain Evaluation Report

- iv) A Water Quality Analysis will be prepared describing potential impacts of Project construction and operation to surface and ground water quality. Water quality data will be compiled from existing available documents and handbooks.

(a) Deliverable:

1. Water Quality Report

- v) Pollutants of concern shall be identified and impacts shall be evaluated with regard to both groundwater and surface water resources. Potential mitigation measures shall then be identified, including design pollution prevention best management practices (BMPs), treatment BMPs (e.g. detention basins, bioswales, infiltration basins, etc.), construction BMPs, and source control BMPs.
- vi) Noise and Vibration – Consultant will collect and review available project reports, documents, and design drawings. A site visit will be conducted to identify noise-sensitive land use and finalize the noise monitoring sites. Three

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

sets of noise measurements will be conducted, which will include short-term noise measurements, long-term noise measurements, and single bus passby noise measurements. The purpose of the short-term and long-term noise monitoring is to determine existing ambient noise levels along the proposed project alignment and identify any major noise sources, such as freeway traffic and aircraft flyovers. Background noise levels are required for evaluating noise impacts using FTA procedures.

Long-term noise monitoring, for at least 24 hours, will be conducted at up to 10 selected sites, and short-term noise monitoring, for at least 20 minutes, will be conducted at up to 24 additional selected sites. Long-term noise measurements will be used to establish the noise profile at a given neighborhood. Short-term noise measurements at the sites with similar characteristics will be used to develop the noise profiles for the short-term measurement sites. Measured background data will be analyzed and compiled. Graphs will be prepared to show the long-term noise measurement results. Short-term measured background noise levels will be tabulated. The background noise will be estimated for all of the sensitive areas based on the measured noise data.

Passby noise measurements will be conducted using Omnitrans' sbX articulated buses similar to the ones that will be used for this project. Even though there are default noise emission levels for different types of transit sources in the FTA noise model, it is recommended by FTA to use a measured data from a similar source when it is possible.

Noise measurements will be conducted in accordance to the appropriate standards. All noise monitoring instruments will meet ANSI noise standards, and they will be calibrated and operated according to the respective manufacturers' specifications.

Criteria and procedures specified by FTA, along with the measured background noise levels and operational parameters, will be used to evaluate impacts. Field observations and aerial photos will be used to define the noise propagation characteristics of areas along the project route. A screening procedure will be used to identify segments of the proposed route that need to be considered for the impact analysis. Relocation of traffic lanes closer to the noise-sensitive receptors due to the proposed project will also be considered in the analysis.

Day night average noise levels (Ldn) will be used for the residential areas, and average hourly noise levels (Leq) will be used for nonresidential areas. Tables will be prepared to document the results of the noise assessment. Impact and severe impact noise contours will be developed to graphically illustrate impacted areas. Appropriate and effective mitigation measures will be outlined to eliminate or minimize noise impacts.

Construction noise and vibration impacts will be evaluated along the proposed project routes. Special attention will be given to areas along the dedicated bus routes where the existing background noise and vibration levels would be low. Practical and feasible noise and vibration mitigation measures will be recommended to eliminate or minimize noise and vibration impacts.

A technical report will be prepared to summarize the results of the studies. The report will show the project limits, explain the methodology, discuss the results, summarize the findings, and provide abatement/mitigation measures.

(a) Deliverable:

1. Noise Study Report

- vii) Air Quality – Consultant will survey the project study area for sensitive receptor locations. Existing conditions pertaining to current local emissions will be obtained from the nearest air quality monitoring station(s) and documented for the last three calendar years, noting the number and severity of National or California Ambient Air Quality Standards violations. The regulatory setting will be described, including the jurisdictional and planning status of air quality planning governing the study area. The pertinent criteria pollutants will be identified and described and the Clean Air Act attainment status of such pollutants.

The effects of the project will be evaluated in terms of localized carbon monoxide (CO) “hot spots” analysis and daily burden calculations. Predictive modeling will be used to estimate the CO values for existing conditions, future no build and future build scenarios, at each of a representative number of sensitive receptor sites. It is not expected that new or more severe violations of the CO standards will be found, and the conclusion should be reached that daily burden amounts are improved to some degree from a shift to increased transit usage from reduced automobile usage. Clean Air Act conformity will be documented for purposes of the EA. The results shall be documented in an Air Quality Technical Report.

The air quality analysis will focus on three key issues. First, the air quality analysis will establish the benefits of the project based on the changes in vehicle miles of travel reflected in the Omnitrans transportation model. It is anticipated that the shift from automobile to transit use from the No Build to the BRT Alternative will marginally decrease regional vehicle miles traveled and associated air pollutant emissions. Second, the air quality analysis will address localized pollutant concentrations. The localized analysis will analyze the displacement of street traffic on to parallel routes or adjacent intersections, as well as hot spots that may be created in the vicinity of station areas, including park-and-ride lots. Third, the air quality analysis will discuss greenhouse gas (GHG) emissions. The carbon dioxide equivalent emissions will be quantified, and consideration will be given to the emissions

characteristics of the proposed bus fleet. From a GHG perspective, it is possible that increased bus vehicle miles of travel may offset automobile emissions reductions of GHG because buses emit more GHG than smaller vehicles. This issue will be closely examined to ensure that the GHG benefits of the project are accurately portrayed and presented.

(a) Deliverable:

1. Air Quality Report

- viii) Hazardous Waste – Currently available published databases shall be queried using a commercial vendor to determine the presence, location, site characteristics, and potential exposure or impact hazard associated with any known and documented hazardous waste sites identified in the literature. Sites of relevance to the project will be mapped and their characteristics made known to the engineering staff, for design purposes.

A “windshield survey” will be conducted to identify any obvious hazardous waste sources not listed but displaying evidence in the field (i.e. above ground storage tanks; 55-gallon drums; evidence of remediation activity). The potential for impacts related to the project (e.g., exposure of the public to hazards) will be noted and referred to geotechnical staff for recommended mitigation measures. The results of the above effort will be documented in a technical appendix to the environmental document.

(a) Deliverable:

1. Initial Site Assessment and ADL Report

- ix) Historic and Archaeological Resources – Consultant will prepare an Area of Potential Effects (APE) map and seek FTA and SHPO approval. Two subareas will be defined. For archaeological resources, the area subject to ground disturbance will constitute the APE. For historic resources, the area encompassing likely environmental effects (i.e., noise, visual, physical takings) will constitute the APE. The APE map will be used to create the inventory of cultural resources to be documented and analyzed for potential impacts.

Section 106 of the National Historic Preservation Act requires an affirmative search for properties on, eligible, or potentially eligible for listing on the National Register of Historic Places. Such affirmative search will be conducted within the APE, for both historic and archaeological resources. This will be done by querying the National and California Registers, and also County and local lists of landmarks and locally significant resources. A detailed field investigation will be conducted by qualified personnel to identify potential additional historic and/or archaeological resources (based on criteria provided in 36CFR800) qualifying for listing on the National Register

(NR).

Consultant will conduct a query of known or reported studies and sites. The query will yield known or identified resources in the study area. A field “walk over” will be conducted by a qualified archaeologist from the contractor’s sub-consultant to identify any potential NR-eligible resources noted in the field.

Both the archaeological and historic resources will be documented on California Department of Parks & Recreation (DPR) 523 forms, and housed in a Determination of Eligibility (DOE) Report, which will be reviewed and approved by FTA and subsequently the California State Historic Preservation Officer (SHPO). The resources documented in the DOE Report will constitute the cultural resources environment for purposes of impact analysis.

The resources identified in the DOE Report will be placed in the context of the proposed project and potential effects analyzed. Such effects may include direct takings from properties (partial or full), or effects contributing to the alteration of historic settings (i.e., noise, visual obstruction, loss of access, etc.). With regard to archaeological resources, the effects are normally associated with disturbance or destruction during the construction period. The effects will be evaluated in the context of 36 CFR 800 and a determination made as to whether an “adverse effect” (in the context of 36 CFR 800) exists. If this is the case, avoidance will first be pursued, followed by mitigation pursuant to a Memorandum of Agreement (MOA) among Omnitrans, FTA, SHPO, Advisory Council on Historic Preservation (invited) and interested parties. The MOA will govern resolution of adverse effects pursuant to Section 106. A Finding of Effects (FOE) Report will be prepared and approved by the FTA and the SHPO as part of the environmental process, as would any MOAs that are required.

(a) Deliverables:

1. APE Mapping
 2. Conduct NRHP Database Search and Site Specific Surveys
 3. FOE Report (if required)
- x) Parklands and Recreation - Consultant shall inventory the project study area for the presence of public parks, parklands and recreation facilities. The inventory will be documented in mapping, tabulations, and descriptions of the sites/facilities and their attributes and usage. The Project will be placed in the context of the parkland and recreation facilities and potential impacts analyzed. Such impacts may include direct takings (partial or full), loss or impairment of access, noise intrusion, visual obstruction, etc. Should such adverse effects be found, they are considered a “use” and must be addressed in

the context of Section 4(f) of the U.S. Department of Transportation Act. The protection offered under Section 4(f) extends to NR-eligible cultural resources and also to wildlife refuges. A Section 4(f) Evaluation will need to be included in the environmental document. Should an unavoidable use of a Section 4(f)-protected resource be found as a result of the analysis, FTA could require the NEPA document to be elevated to an EIS, for which additional scope and budget would be required.

(a) Deliverable:

1. Complete Section 4(f) analysis as part of EA/EIR
- xi) Traffic and Transportation - Consultant will conduct a Traffic Impact Assessment (TIA) in conjunction with the travel demand modeling and traffic simulation tasks. Both vehicular transportation and parking will be evaluated. Results of travel demand estimation model runs will be imposed upon the study area street network and both lane volumes and intersection through and turning movements will be analyzed. The analysis, which will be conducted using industry-accepted impact analysis methodologies, will consider sbX operations, including "queue jumpers" and other signal priority advantages given to the sbX operation. Resulting volumes and intersection performance will be evaluated using FTA-accepted analysis methodologies and such other metrics as may be appropriate to typically-required local jurisdiction traffic analyses. Impact analyses will be performed for existing conditions and project opening year (for each phase of project), for each alternative. Level of service and vehicle miles traveled will both have to be forecasted/estimated.

The TIA, consistent with local traffic study guidelines, in support of the EA/EIR, will determine the level of traffic-related impacts associated with implementation of the proposed project. It is expected that the TIA will include the analysis of up to 94 signalized intersections along the route and up to 30 intersections along parallel corridors throughout the study area. Traffic operations would be assessed during the weekday a.m. and p.m. peak hours for existing and project opening year conditions for each project alternative. This scope of work assumes new intersection traffic counts would be collected at each study intersection to establish existing conditions.

Using the roadway link volumes, the Consultant will "post-process" to develop intersection turning movement volumes for traffic operations analysis. It is assumed that all Vehicle Miles Traveled (VMT) or Vehicle Hours Traveled (VHT) calculations will utilize the travel-demand model.

In addition to traffic operations, an assessment of parking impacts as a result of the new bus lanes will be included. Where on-street parking would be affected by the project, current on-street parking counts would be collected on an hourly

basis (10 hours) during a typical weekday.

Transportation mitigation measures will be identified to reduce significant intersection traffic impacts to a level considered less than significant. Improvements necessary to bring the levels of service to within acceptable levels by the construction of this project may include additional lanes, transportation systems management, transportation demand management, and/or changes in roadway functional classifications.

The Consultant will prepare a “Response to Comments” memorandum, responding to public and/or agency comments received during circulation of the Draft EA/EIR. If additional analyses are required due to these comments and responses, the Consultant will identify these analyses.

Upon completion of the comment responses, the Consultant will work with the PDT to provide a final TIA for inclusion into the final EA/EIR.

Mitigation, if necessary, will be recommended, including traffic signal modifications, ITS techniques, and intersection geometric changes, if appropriate and necessary to achieve acceptable levels of service.

Existing on- and off-street parking spaces will be inventoried along the corridor. Changes in either inventory associated with the project will be identified and characterized as to significance of the loss. Mitigation, in the form of replacement or other suitable techniques, will be recommended, as necessary.

(a) Deliverable:

1. Traffic/Parking Study

- xii) Public Services and Utilities - Project study area shall be inventoried by Consultant for the presence of public services (i.e., schools, parks, libraries, health care facilities, religious institutions, fire, police, etc.). The inventory will be mapped, tabulated and described. The proposed project will be examined in the context of the public facilities and potential impacts (i.e., loss or impairment of access, noise, taking, etc.) identified, if any. To the extent that mitigation can be provided, such will be recommended.

The project study area shall also be inventoried for major utilities potentially subject to impact. Major utilities include storm drains, large water supply conveyances, waste water conveyances, and significant end-user utilities such as electrical, gas, telephone, fiber optic lines, etc. Potential disturbances to utilities

(a) Deliverable:

1. Complete Public Services and Utilities analysis as part of EA/EIR

Scope of Work

- xiii) Visual and Aesthetics – This task will assess how the proposed project and alternatives would change the visual and aesthetic nature of the adjacent built environment. Although the proposed project would be primarily at-grade on existing streets, there are some aspects and elements of the project that would create contrasting new visual elements, including construction of the stations, construction of parking lots and structures, and introduction of and removal of existing landscaping. The visual impact analysis will address the overall change in visual character, as well as effects on specific views and vistas. Photographs of existing conditions, plus sketches and illustrations analyzing the change in the visual environment, and mitigation measures, such as restoring the affected landscape, will be included.

The analysis will include discussions of the existing built environment along the project corridor, natural features, existing views, significant visual resources and glare in the project area. Consultant shall identify the prominent views and vistas with unique or special design characteristics in the project area. Photographic tools (before-and-after imagery) will be used to illustrate visual and aesthetic impacts. The analysis will determine the extent to which an alternative would: (a) obstruct or substantially change a sensitive view, (b) result in the degradation of the streetscape character along a major street such as the loss of a substantial number of trees which cannot be replaced, (c) create new views that would result in a loss of privacy to residents along the corridor, or (d) create major new sources of light and glare that could adversely affect adjacent sensitive uses.

(a) Deliverable:

1. Visual and Aesthetics Impact Study

- xiv) Energy Consumption – Consultant will conduct an inventory of contributors to the current energy environment and make numerical calculations to estimate daily and annual consumption of energy by the range of mobile sources potentially affected by the project. Such sources would include autos, trucks and buses. Estimates of daily and annual energy consumption will be made and tabulated for the existing condition. Projections of energy usage, under a no build scenario, will be made for the determined future horizon year. Changes in mode share resulting from the proposed project will be reviewed and post-project energy calculations will be done to document the changes. The results will be tabulated and differences discussed.

(a) Deliverable:

1. Energy Consumption Study

- xv) Impacts During Construction – Consultant will develop a construction

scenario upon which will be based a construction impact analysis. Quantitative impacts (e.g., noise, air quality) will be estimated, where possible; qualitative estimations will be used elsewhere. This task will involve the development of typical construction techniques, equipment and timing, and likely construction staging areas that may be used. Graphics will be used to assist in the description of project construction activities and impacts. Appropriate state and local guidelines will be used to assist in the preparation of these sections, (e.g., significance thresholds for traffic levels of service, South Coast Air Quality Management District guidelines and criteria).

(a) Deliverable:

1. Complete Construction Impact Analysis as part of the EA/EIR

- xvi) Subregion Emissions Burden Assessment – To provide an overall assessment of the potential in air quality conditions within the study area, a burden-type air quality analysis shall be prepared. This analysis will address all criteria pollutants (ROG, CO, NOX, SOX, PM10). For study area transportation network, it will identify the daily or peak-hour emissions under existing conditions as well as future conditions with and without the proposed transit improvement alternatives. The air quality burden assessment will be based on modeled vehicle miles of travel within the study area. Emissions will be based on the currently adopted EMFAC mobile emission factor series. It is anticipated that a geographically specific code can be given to the network street segments within the study to allow output from the Countywide Travel Model to be summarized specifically for the study area. The basic concern of this analysis will be to determine (1) whether the emissions forecast is consistent with emissions forecast in the AQMP, and (2) what level of overall emissions reductions result from the proposed Project alternatives.

(a) Deliverable:

1. Complete Subregion Emissions Burden Assessment as part of the EA/EIR

- xvii) Safety and Security Burden Assessment - Consultant shall analyze all proposed railroad grade crossings to ensure safe surface or grade separated sbX operation. Security, defined as unlawful or criminal acts intended to bring harm to another person or loss/damage to property, shall be evaluated using existing Omnitrans experience. Consultant will meet with Omnitrans Security personnel and review literature related to security issues on Omnitrans and other transit systems. Crime statistics, if available, shall be cited to provide an estimate of the degree of security that is offered to the transit patron in relation to general background criminal activity levels. Design mitigations to reduce the likelihood of criminal activity will be identified. Factors such as station layouts and equipment (e.g., lighting, direct line of sight, video cameras, PA

systems, etc.) are major contributors to actual and perceived personal security. Consultant will identify the security impact of each alternative based on technology-dependent factors and based on other factors such as station conceptual layouts. Mitigation measures, as appropriate, will be recommended, if necessary.

(a) Deliverable:

1. Complete Safety and Security Burden Assessment as part of the EA/EIR

N) REVIEW

- i) Consultant will draft the EA/EIR document and circulate it to all required parties for review. Omnitrans staff will forward to FTA staff, who will review and then coordinate publishing the Notice of Availability in the Federal Register. The required Notice of Availability will be prepared by Consultant and shall indicate the 45-day comment period dates, the dates and times for public hearing opportunities, and agency contacts. Local notices will be prepared to announce the availability of the document and public hearing dates. Public hearings will be scheduled and attended. Written and spoken comments will be assembled and summarized.

(a) Deliverables:

1. Draft EA/EIR
 2. Circulate Draft EA/EIR
 3. Prepare and circulate Notices
 4. Schedule and attend up to two (2) public meetings/hearings
- ii) Consultant, in consultation with Omnitrans staff and PDT members if needed, shall respond to comments presented during the circulation of the Draft EA/EIR, identify additional analyses that will be required to adequately respond to public comment or resolve issues in the Draft EA/EIR (if any), identify mitigation measures and develop a mitigation monitoring program.

(a) Deliverable:

1. Respond to public comments
- iii) Additional environmental analyses may or may not be required as a result of unresolved issues related to the alignment, service and maintenance facility locations, and station locations adopted and defined for the Draft EA/EIR. These issues, if any, will be identified in a memorandum that will identify

these additional analyses and the level of effort required. Should additional analyses be required, an extension of the established schedule will be necessary.

(a) Deliverable:

1. Develop additional technical analysis to address public comments (if required)
- iv) Mitigation measures for adverse impacts will be finalized and formatted into a CEQA Mitigation Monitoring & Reporting Program (MMRP) that will be continued during the final design and construction stages of the project. These mitigation measures will represent Omnitrans and FTA commitments necessary to respond to the impacts associated with the Project.

(a) Deliverable:

1. Mitigation Monitoring & Reporting Program (MMRP)
- v) Following the completion of necessary analyses and identification of acceptable mitigation measures, a draft Final EA/EIR will be prepared for review by Omnitrans. Following incorporation of Omnitrans' comments, a revised draft Final EA/EIR will be prepared and forwarded to FTA for review and approval consideration.

(a) Deliverable:

1. Draft Final EA/EIR
- vi) Consultant shall prepare the Final EA/EIR, incorporating FTA comments provided upon review of the draft Final EA/EIR. The Final EA/EIR document will be prepared, finalizing all text, graphics, tables, and other features. A camera-ready document will be prepared for printing and binding. Consultant shall assist in final EA/EIR printing and binding. Omnitrans will be responsible for the distribution of the Final EA/EIR.

(a) Deliverable:

1. Final EA/EIR
- vii) After the Final EA/EIR is made available to the public for 30 days, FTA may issue a Finding of No Significant Impact (FONSI). Consultant shall assist Omnitrans to certify the CEQA document as adequate, adopt the project, adopt Findings of Fact and the Mitigation Monitoring & Reporting Program, and file a Notice of Determination to that effect.

(a) Deliverable:

1. CEQA/NEPA Approval Documents

O) LOCALLY PREFERRED ALTERNATIVE

- i) Once the environmental clearance process is completed, the Consultant will assist Omnitrans with identifying the Locally Preferred Alternative and help to facilitate adoption by Omnitrans' Board of Directors and adoption by SANBAG's Board of Directors. The Consultant will also help Omnitrans to navigate the process of getting the Locally Preferred Alternative included in SCAG's Regional Transportation Plan as well as any of SCAG's or SANBAG's other regional planning documents, as needed.

P) Deliverables:

- i) Scoping meetings / public hearings (can be combined with public meetings mentioned under Public Involvement task)
- ii) EIR public comment hearings if needed (can be combined with public meetings mentioned under Public Involvement task)
- iii) Final, approved EA/EIR
- iv) Presentation to Omnitrans' Board of Directors
- v) Presentation to SANBAG's Board of Directors

9.101 PRELIMINARY ENGINEERING (TASK 8)

A) PRELIMINARY ENGINEERING

Parallel to the completion of the Environmental Clearance task, the Consultant will be responsible for preliminary engineering (30% conceptual design) for the entire project, including Phase 2 (dedicated lanes).

B) AGENCY COMMENT REVIEW AND QUALITY REVIEW

The Consultant shall allow sufficient duration for normal agency review, respond to all written comments, and reflect in the final version of the construction contracts technical plans and specifications the resolution of each comment. Prior to the submission of drawings, specifications and other technical documents, the Consultant shall complete a quality review of system integration of all facilities and systems, including inter-disciplinary and intra-disciplinary reviews in accordance with Omnitrans approved Consultant's quality control program and procedures. The Consultant shall have a qualified individual or individuals, not directly involved in

the design or drafting of the plans, verify correctness and accuracy.

C) COMMENT REVIEW MATRIX

For re-submittals, the Consultant shall include a comment review matrix and the reviewer shall initial each comment as a verification that each comment has been taken care of. Re-submittals to Omnitrans and appropriate stakeholders shall include the new drawings, specifications and other technical documents, as required, and the comments (either on the plans or summarized in a comment log with responses and actions noted), initialed by the Consultant reviewer.

D) COMPATIBILITY REVIEW

The Consultant shall review design for compatibility with the existing systems affected by the project, and from the perspective of minimizing operating and maintenance costs, minimizing impacts to the environment and community, constructability (the consideration of construction methods and being sure that what is proposed can be built using common construction methods, especially considering the need to maintain street/roadway traffic and provide a safe working environment for contractors), compliance with state and local design requirements (for example, the Americans with Disabilities Act (ADA) and Buy America), cost-effectiveness, and consistency with design criteria. This task shall result in 30% Geometric Approval Drawings, which are to be approved and signed by all applicable jurisdictions. All plans shall be produced using CADD and Digital Terrain Modeling (DTM), and submitted to Omnitrans during project development in the current version at the time of delivery in AutoCAD or Microstation format in electronic format. Plans shall be prepared and formatted as agreed by Omnitrans.

i) The review will include the following:

- (a) Construction sequence, traffic maintenance, and private property access
- (b) Construction equipment and access
- (c) Temporary construction easement and right-of-way requirements
- (d) Limits and type of materials to be removed or rehabilitated
- (e) Roadway horizontal alignment and vertical profile
- (f) Proposed dedicated lane structural section
- (g) Depth of existing utilities
- (h) Materials, size, and depth of existing utility vaults and manholes
- (i) Existing and proposed tree locations
- (j) Preliminary traffic signal plans
- (k) Structural canopy and traffic signal footing locations

ii) *Deliverables:*

- (a) The Consultant will provide redline comments on the preliminary plans

as well as a comment matrix and will attend (1) constructability review meeting with the design team.

E) Deliverables:

Hard copy plans sets to be submitted to Omnitrans (4 copies) as well as each permitting agency, including cities of Fontana, Montclair, Ontario, Pomona, and Rancho Cucamonga, Ontario Mills, Ontario Airport, and County of San Bernardino, as per each agency's requirements.

F) APPLICABLE STANDARDS

- i) The engineering design for this project will be done in accordance with all local, state, national, and industry standards, rules and regulations as applicable and with the following specific design standards:
 - (a) *A Policy on Geometric Design of Highways and Streets*, AASHTO
 - (b) *Highway Design Manual*, Caltrans
 - (c) *Highway Capacity Manual*, ITE
 - (d) *Manual on Uniform Traffic Control Devices* (MUTCD)
 - (e) *Transit Capacity and Quality of Service Manual* (TCQSM by TCRP)
 - (f) *Traffic Manual*, Caltrans
 - (g) Public Works – Standard Drawings, Cities of Fontana, Montclair, Ontario, Pomona, and Rancho Cucamonga
 - (h) Standard Specifications and Plans, County of San Bernardino and County of Los Angeles
 - (i) *Greenbook Standard Specifications for Public Works*, American Public Works Association
 - (j) *West Valley Connector Corridor/Route 61 Alternatives Analysis Summary Report*, 2014
 - (k) *Omnitrans Transit Design Guidelines*, 2013
 - (l) *FTA Construction Project Management Handbook*
 - (m) FTA Master Agreement and applicable FTA circulars
 - (n) Buy America and other relevant legislation

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

- (o) Americans with Disabilities Act (ADA)
- (p) Lessons learned from Omnitrans' E Street sbX Corridor Project (document available from Omnitrans) and any other applicable lessons learned posted by the FTA from other regions.
- ii) The current standards of IEEE, ASHRAE, ASTM, ACI, AISC, NEC, FTA, FHWA, Corps of Engineers, SANBAG, LACMTA, City of Fontana, City of Montclair, City of Ontario, City of Pomona, City of Rancho Cucamonga, San Bernardino County, Los Angeles County, utility companies, and other local entities may be applicable.

G) DESIGN VARIANCES

- i) At the beginning of Preliminary Engineering, the Consultant shall develop a Design Standards document for the Project, which is based on the design standards of the five cities, two counties, Omnitrans' Transit Design Guidelines document (2013), and other applicable standards from the above list of Applicable Standards. The Consultant shall notify Omnitrans' Project Manager if the above standards or guidelines are in conflict and shall work with Omnitrans staff and any relevant parties to resolve the conflicts into one unified standards document.
- ii) The project Preliminary Engineering phase should strive to meet full design standards as much as possible with all the agencies. The Consultant will identify any variances to design standards throughout the design process. The Consultant will document the request for a design variance by providing Omnitrans with information as to which variance cannot be met and why, the proposed alternative, and other alternative that were looked at if any. If the variance requires approvals from other agencies, the Consultant will apply for the variance from that agency through Omnitrans with the required documentation of that agency.
- iii) The PE portion of the total design effort must permit the Project to move rapidly through Final Design with a minimum of design changes, disruptions, or delays. The goal of PE is to complete the design to a point where there is consensus among stakeholders in the scope of the project, so that the scope can be "frozen" and not changed during Final Design.
- iv) The Consultant shall perform system planning and preliminary engineering design to a level and extent necessary to satisfy the following:
 - (a) Resolves all substantial design issues; environmental impacts and mitigations; third party impacts and mitigations;
 - (b) Defines the Project scope and construction sequences;

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

- (c) Provides more precise estimates of cost and schedule;
- (d) Defines functional and operating characteristics;
- (e) Responds to public comments received;

H) BASELINE DOCUMENT

- i) Establish and maintain the baselines for Project scope, budget and schedule. Recognize that design shall be advanced to Final Design level of overall design completion and that by that level all baseline control data shall be based on the planned contract packaging and Contract Unit Descriptions.
- ii) Deliverables:
 - (a) Baseline scope, budget, and schedule

I) DESIGN POLICIES

- i) The Consultant shall develop design policy statements for the project as policy statements are completed and submitted to Omnitrans for review, comment and acceptance. Maintain the Design Policies and Procedures throughout development of the project. Considerations should include, but not be limited to, the following:
 - (a) System branding (adaptation of Omnitrans sbX branding);
 - (b) Station design – protection from wind, sun, and rain;
 - (c) Safety and security – Crime Prevention Through Environmental Design;
 - (d) Pedestrian and bicycle connectivity;
 - (e) Landscaping, public art, and other unique community components of design;
 - (f) Traffic impacts;
 - (g) Fleet vehicle options;
 - (h) Adaptability of design to accommodate future phases (i.e., which stations should be movable and which should be fixed, dependent upon future phase plans for roadway expansion; can side-running station shelters be adapted to become center-running median stations in the future, etc.);
 - (i) Co-location of West Valley Connector stations with local Route 61 or

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

66 bus stops, as well as consideration of space needs for local bus stops adjacent to stations, including Routes 61 and 66 and other intersecting local routes; and

(j) ADA compliance.

(k) *Deliverable:*

1. Design policy statement with Basis of Design document

J) PRELIMINARY PROJECT DEVELOPMENT (SYSTEM) PLANNING

i) The Consultant shall coordinate with the owners of the public facilities within the Project limits and develop Basis of Design and various Plans, Reports and Procedures, which will facilitate the control of Project scope, provide for quality of the design and documents being produced, and establish the operational and performance requirements for system design. The Basis of Design document should borrow heavily from that prepared for the E Street sbX Green Line Corridor. Note that the term “system” is used interchangeably with the term “project”, and the term “systems” is used to describe various mechanical, electrical and electronic equipment and elements.

ii) The Consultant shall coordinate facilities engineering, architectural engineering and systems engineering design requirements and interfaces to assure an integrated design.

iii) Deliverables:

(a) These interfaces may include: equipment product data sheets, equipment location, arrangement, installation, traffic control requirements for construction and operations; space requirements input into facilities and architect engineering preliminary design plans and drawings; interfaces with mechanical, electrical, communications, emergency identification and response, control, monitoring, passenger; and personnel safety systems interface.

K) PRELIMINARY BASIS OF DESIGN REPORT (BOD)

i) Early on during the preliminary engineering phase and, based on the conceptual engineering work completed to date, the Consultant shall advance the Initial Engineering Design Feasibility Report and prepare for Omnitrans’ approval a Preliminary Basis of Design (BOD) Report that will establish the general Basis of Design of facilities and systems. The Consultant shall develop a BOD Report for the alternative(s) advancing into PE. Where any design concepts or location issues are still unresolved, provide for the comparative analyses of alternatives. This report shall be the basis for developing alignment geometry, structure selection, station design,

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

operational control systems, and cost estimates. The Preliminary BOD Report shall be used as a starting point for PE and basis for comparison between alternatives and of an alternative's ability to perform to the project objectives and criteria. It is not anticipated that the PE design would meet every BOD assumption or objective. Where the PE design fails to meet an assumption, objective, or design criteria, the specific deviation, cause, and impact shall be identified and discussed in the Preliminary Engineering Report.

- ii) The Preliminary BOD Report shall include a section listing operational assumptions including: vehicle type(s); vehicle storage and maintenance requirements; maximum operating speed, average operating speed, and headways; projected patron loads and passenger through-put capacity; service and spare vehicle requirements; station parking requirements (if any); vehicle location, communication, and tracking requirements; central control and monitoring provisions, security and information systems, and security access; and other requirements determined by Omnitrans. This list shall be used to ensure that these operational elements are included in the preliminary design plans and cost estimates.
- iii) The Preliminary BOD Report shall include a section listing major technical design assumptions including: basic alignment grade and geometry requirements; pavement requirements; what commonality and consistency with other Omnitrans Projects or lines must be reflected; what service standards and quality of facilities and equipment apply; what trade-off and life-cycle cost studies are needed; what provisions for growth, expansion, extension and interconnection are intended; and other requirements determined by Omnitrans. This list shall be used to guide layout and design of the alternative and the development of cost estimates.
- iv) Particular attention shall be given to all impacts and requirements, including interface and modifications to existing systems.
- v) The Preliminary BOD Report shall be brief and cover the major operational and technical assumptions and requirements to develop preliminary designs and compare alternatives. The report shall be generally tabular. The Consultant shall develop an acceptable format for approval by Omnitrans.
- vi) The following policy decisions shall be considered:
 - (a) Operational service standards, desirable/normal and minimal, including:
 1. Overall trip times;
 2. Wait times;
 3. Minimum policy headway;

4. Vehicle loading densities;
 5. Fare schedule and collection method;
- (b) Patronage estimates, by time of day and by direction;
 - (c) General alignment and structural configuration (alignment should consider safe operation of buses, difficulty of turns, etc. as well as travel times and access to key transit ridership generators);
 - (d) General station locations and major feeders;
 - (e) Bus Operation and Maintenance facility (O&M facility) requirements and location;
 - (f) Other precautions pertaining to this Project; and,
 - (g) Integration with existing traffic signal systems at crossings.
- vii) Where there are basic design issues to be resolved, the Consultant team should perform trade-off studies under this subtask. Produce a BOD Report within 60 calendar days after authorization of project development phase.
- viii) *Deliverable:*
- (a) Basis of Design report and trade-off studies

L) VALUE ENGINEERING (VE) AND COST REDUCTION PROPOSALS

- i) Bring to the attention of Omnitrans potential candidate changes in the bases of design or other constraints which should be considered as design-phase value engineering proposals, cost reduction measures, cost-effectiveness enhancements or cost elimination or deferrals. Where Omnitrans has engaged a value engineering Contractor, cooperate with such Contractor and participate as requested in specific VE meetings. The Consultant shall provide technical support, including performing technical and cost/benefit analysis. As directed by Omnitrans, the Consultant shall incorporate the recommendations of VE changes.

M) PRELIMINARY ENGINEERING (PE) REPORT

- i) As the Project passes through the preliminary engineering development phase, update the Preliminary BOD Report and produce a Preliminary Engineering Report which will summarize the work performed beginning with the completed planning work, CADD standards, and preliminary facility and systems design work and ending with the various deliverables to date. The

Scope of Work

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

Report should include the preliminary design drawings, specifications and technical reports by reference and be in a report format suitable to Omnitrans. The report shall complement the Project documents and provide background information, qualifications, and other data as needed to document the design and serve as an aid in the future phases of project development. Provide the analysis of elements or systems that are potential candidates for value engineering, cost reduction or elimination from the Project.

- ii) The PE Report shall include recommendations for design assumptions, deficiencies in known information, changes in design criteria, and additional investigations needed to complete final design. The PE Report shall include recommended criteria for final design taking into account the analysis completed in PE including: geotechnical, hazardous or contaminated materials, hydraulics, structural, operational, constructability, operations, systems, safety/security, cost-effectiveness, community acceptance, or other pertinent data. Assumptions should include the proposed operational plan for the Omnitrans system after the Project is completed, including regular service and special event service, and through coordination with the proposed operating plans for feeder bus, passenger rail, or other planned transit services. The PE Report shall identify all requirements for the final design, including codes, criteria, and design standards that must be met.

PRELIMINARY GEOTECHNICAL ENGINEERING

- (a) Site Visit and Review of As-Built Information - The Consultant will locate and review As-built Log of Test Borings (LOTB) sheets for the I-10/Archibald Ave and I-15/Foothill Blvd Interchanges, and any other useful bridge crossing near the corridor provided by the team. The Consultant will research and review available literature and any soils reports provided by Omnitrans on regional geology, seismicity, and geotechnical data. Consultant will also perform site reconnaissance visits to inspect existing ground conditions along the entire corridor.
- (b) Soil Profile and Strength Parameters - From the available soil data, the Consultant will interpret soil and groundwater conditions along the corridor and develop approximate soil profiles and soil strength parameters for pavement design and foundation analysis.
- (c) Seismic Design Criteria - The Consultant will determine causative fault, site distance and estimate the Peak Bedrock Accelerations and ARS design spectra using Caltrans Seismic Design Criteria and California Building Code.
- (d) Geotechnical Engineering Analyses - The Consultant will conduct preliminary geotechnical evaluation and engineering analyses for foundation design based on collected data. Analyses include an estimation

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

of soil liquefaction potential, preliminary foundation analysis and provide feasible foundation types and preliminary foundation design data for spread footings or piles if required. For spread footings, we will provide allowable and ultimate soil bearing capacities, frictional coefficients and passive soil resistance. For pile foundations, we will estimate the required pile length based on preliminary axial demands.

- (e) Report Preparation - The Consultant will prepare a draft Preliminary Geotechnical Report for the entire project summarizing the site geology, soil conditions, seismic design parameters, and estimated pavement and structure foundation design parameters based on existing reviewed information. The Draft Geotechnical Report will be distributed to reviewing agencies. We understand this report may be reviewed by the cities of Pomona, Montclair, Rancho Cucamonga, Fontana, and Ontario. The project crosses Caltrans right of way and therefore Caltrans review is possible. Comments related to geotechnical issues will be addressed by the Consultant. The Consultant will incorporate responses and comments into a final preliminary Geotechnical Report which will be submitted and distributed.

iii) *Deliverable:*

- (a) Preliminary Engineering Report
- (b) Preliminary Geotechnical Report

**N) SYSTEM RELIABILITY / AVAILABILITY / MAINTAINABILITY /
DEPENDABILITY (RAMD) PLAN**

- i) Using objectives established by Omnitrans that relate to system reliability, service availability, maintainability of equipment and fixed facilities and system dependability, prepare a System Reliability/Availability/Maintainability/Dependability (RAMD) Plan that establishes the allocation of reliability, availability, maintainability and dependability requirements to the various system elements. Also establish the methodology to be used to confirm at various stages in the design, fabrication and testing of the system that overall system requirements are being met. The System RAMD Plan should borrow heavily from that prepared for the E Street sbX Green Line Corridor Project.
- ii) Perform studies and analyses, to determine the appropriate RAMD requirements.
- iii) Deliverables:

- (a) System Reliability/Availability/Maintainability/Dependability (RAMD) Plan

Scope of Work

O) SYSTEM ASSURANCE PLAN

- i) Develop and implement the System Assurance Plan (borrowing heavily from that prepared for the E Street sbX Green Line Corridor Project), including review of those analyses required to verify that the system design, as it progresses, will meet the overall system assurance requirements.
- ii) *Deliverable:*
 - (a) System Assurance Plan

P) OPERATIONS AND MAINTENANCE (O & M) PLAN

- i) Consultant shall develop a System Operations and Maintenance Plan based heavily on (and consistent with) the Operations and Management Plan for the E Street sbX Green Line, and consistent with FTA guidelines.
- ii) The plan should be based on (1) ridership forecasts (2) service goals, and (3) spares requirements. Refine vehicle fleet size calculations from earlier phases of planning.
- iii) Develop operating schedules indicating service levels throughout the day. Develop dispatch and pull-in schedules and schemes for midday operator changes, if necessary. Operations plans should be coordinated with other inter connected systems operations.
- iv) Develop for each end-of-line station, turnback, and convergence, an operations plan section and identify the functional facilities and equipment requirements.
- v) Reflect the detailed requirements of the Project including the projected operating patterns and schedules; operations and maintenance (O&M) facility; interline connections and how they will be used; non-revenue route between end-of-line station and O&M facility; turn-around loops; functional facilities and equipment; station operations; central control ties; fault responses and other operational coverage. Cite operational problems that are foreseen or may occur and related safeguards and mitigation measures for each. Discuss the interaction between operating and maintenance functions and provide a general overview of normal and degraded operations with related rules and procedures.
- vi) Assist Omnitrans in the development of preliminary operating schedules, and dispatch and pull-in schedules. Provide support for coordination and negotiation of operations and maintenance issues.
- vii) The O&M Plan should include operating cost estimates for the West Valley

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

Connector Rapid bus service, as well as recommendations on how to alter existing local bus routes to better feed into and complement the new service. These recommendations shall include an analysis of the Environmental Justice and Title VI impacts of the recommendations, based upon the prevailing FTA guidance.

- viii) The O&M Plan should also include the following components:
- (a) Spare parts requirements and inventory list for facilities and vehicles necessary for the Project;
 - (b) Systems and Facilities Integration Coordination and Testing Plan; and
 - (c) Test Procedures.
- ix) Develop the draft Operations and Maintenance Plan for the Project within 45 calendar days after authorization of preliminary engineering phase. Finalize the O & M Plan and use as input to the design tasks.
- x) *Deliverable:*
- (a) Operations and Maintenance/Management Plan

Q) OPERATIONS AND MAINTENANCE (O&M) FACILITY NEEDS ASSESSMENT

- i) Conduct a needs assessment and cost-benefit analysis for O&M needs for operation of the BRT line, including the alternative of using a new O&M facility and the alternative of using the existing East Valley O&M facility. The needs assessment must include consideration of the needs for fuel and washing facility, service and inspection shops, repair shops, storage yard and related operational dispatch, administrative and parking facilities required for the Project. Based on input from Omnitrans staff and initial research, develop a list of needs and criteria for a vehicle O&M facility resultant from the West Valley Connector Corridor project (assuming purchase of all new 60' articulated vehicles). The needs assessment should result in a report detailing the space needs and the criteria that should be taken into consideration when selecting a site and designing the facility.
- ii) Based on meetings and interviews (maximum 2 days of in-person meetings and facility tours) with Omnitrans staff, the Needs Assessment Report should take the following factors into consideration:
- (a) Understanding of the facility staffing;
 - (b) Understanding of staff office/personnel requirements;
 - (c) Understanding operational practices;

- (d) Understanding shop and shop support functions;
- (e) Understanding yard functions; and
- (f) Understanding policies and procedures that may affect building configuration and/or work practices.

iii) *Deliverable:*

- (a) O& M Facility Needs Assessment Report

R) FAILURE RECOVERY ANALYSIS

- i) Analyze the effect of potential failures of the system or particular system elements on bus operations. Develop alternative failure management strategies and system recovery scenarios. Identify operationally suitable locations and configurations. Provide operational input to emergency preparedness planning effort.

ii) *Deliverable:*

- (a) Failure Recovery Analysis Report (based heavily on that prepared for the E Street sbX Green Line Corridor Project)

S) OPERATIONS AND MAINTENANCE COST ESTIMATES

- i) Based on the operations and maintenance (O&M) staffing projections, as well as information on design life, reliability and maintainability, develop estimates of annual operating and maintenance costs.
- ii) Address and evaluate the trade-offs between capital investment and lifetime operating and maintenance costs. The O & M cost estimates should be based heavily on those prepared during the Alternatives Analysis phase as well as the E Street sbX Green Line Corridor Project.

iii) *Deliverable:*

- (a) O& M cost estimates

T) SYSTEM SAFETY PROGRAM PLAN

- i) Develop a System Safety Program Plan for the Project (based heavily on that prepared for the E Street sbX Green Line Corridor Project) including details on roles, responsibilities and activities. These activities shall include: general tasks, design and procurement.
- ii) The System Safety Program Plan shall describe the mechanism to be implemented to assist in attainment of, and compliance with, established System Safety, Fire/Life Safety, Safety Certification, Americans with

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

Disabilities Act (ADA), Elderly and Handicapped and Human Factors Engineering Criteria, Plans and Procedures.

- iii) The System Safety Program Plan shall satisfy Omnitrans' System Safety Policy and be compatible with the applicable guidelines of the CPUC and prevailing industry standards and practices. The System Safety Plan shall address but not be limited to: the management of single point failures; the resolution, identification and timely feed-back of solutions to identified hazards such as at-grade crossings for pedestrians, patrons, bicycles and vehicles, and fuel system into design and operations procedures; the methods taken to finalize safety certification checklists; controls to be implemented to verify compliance to codes, regulations, ordinances and standards for fire/life safety requirements; the development of emergency response procedures; participation in the test Programs; review of operations and maintenance manuals and procedures which relate to safety and the establishment of proactive methodology and requirements.
- iv) Provide technical assistance and advice to Omnitrans. Perform technical analysis of Intersections Crossing-Safety. Develop Project requirements and an implementation plan for identified safety measures and input into the overall design.
 - (a) System Safety Program tasks will include, but are not limited to:
 - 1. Provide technical assistance, advice and counsel to Omnitrans;
 - 2. Review all relevant sections of design criteria, standard and directive drawings, design review packages, change requests, and other Project documentation for compliance with safety criteria;
 - 3. Develop safety-related documents;
 - 4. Perform planned and periodic internal audits to verify proper program and procedures;
 - 5. Establish and maintain a safety data management system;
 - 6. Establish and maintain an effective hazard identification and resolution program;
 - 7. Establish and maintain a safety library;
 - 8. Review O&M manuals and procedures that relate to safety and attend training courses;
 - 9. Review test procedures and participate in testing; and

10. Verify that tests results meet specified criteria.
- v) Produce draft System Safety Program Plan for the Project within 45 calendar days after authorization of preliminary engineering phase. Finalize the System Safety Program Plan and use as input to the design tasks.
- (a) Provide a Safety and Security Certification Plan and conduct the following related tasks:
 1. Provide administrative and technical support to the Safety Certification Review Team;
 2. Develop criteria and specification conformance checklists for certifiable contracts;
 3. Verify and complete criteria conformance checklist packages;
 4. Provide support to the certification process of testing activities and other field activities;
 5. Participate in certification status meetings with Omnitrans; and
 6. Provide support to on-going certification efforts in the resolution of safety issues.
- vi) The resulting safety certificates and Safety Certification Plan will also be used through the design, construction, testing, and operational-readiness phases of the project and shall be designed to reduce all incidents that harm passengers and employees, whether these incidents are the result of unintentional occurrences (safety) or intentional acts (security). Also, the Safety Certification Plan should encompass Crime Prevention Through Environmental Design (CPTED). It must be prepared during PE and updated as needed.
- vii) *Deliverable:* System Safety Program Plan and the following related documents:
- (a) Safety and Security Management Plan;
 - (b) Safety and Security Certification Plan;
 - (c) Certifiable Items List;
 - (d) Systems to be Tested List;
 - (e) Preliminary Hazard Analysis;

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

- (f) Threat and Vulnerability Analysis;
- (g) Operation Hazard Analysis; and
- (h) Safety and Security Organization Review.

U) EMERGENCY PREPAREDNESS

- i) Finalize the Emergency Preparedness Plan (based heavily on that prepared for the E Street/sbX Green Line Corridor) for Omnitrans' submission to California Public Utilities Commission (CPUC). Develop a list of emergency simulations and prepare preliminary procedures to be used during pre-revenue test operations. If requested, coordinate simulations schedules with Omnitrans.
- ii) Review test procedures. Develop emergency scenarios and prepare emergency readiness drills to be used during revenue and pre-revenue Services. Review current Omnitrans Operations & Maintenance training programs and make recommendations for revising or developing new ones.
- iii) Assist Omnitrans in coordinating resolution of operations and maintenance issues with Omnitrans Operations, third party agencies and Contractor disciplines.
- iv) *Deliverable:*
 - (a) Emergency Preparedness Plan for Project

V) SYSTEM SECURITY PLAN

- i) Review the existing Security Plan for Omnitrans, and update the System Security Plan (based heavily on that prepared for the E Street/sbX Green Line Corridor), including details on roles, responsibilities and activities. These activities shall include study of the Project system designs and operations as defined to date and identification of potentially significant problem areas related to the security of patrons, of transit employees and of the property, equipment and structures of Omnitrans. Describe each security problem area and indicate what measures must be taken in the design-specification process or in the operations/maintenance period to avoid or mitigate the indicated security problem.
- ii) Review all relevant sections of design criteria, standard and directive drawings, change requests and other Project documentation during the preliminary engineering phase for compliance with System Security Design Criteria. Give particular attention to areas identified as carrying the highest risk for patrons, transit employees or transit equipment. Support Omnitrans in soliciting comments from the Security Committee to overall design activity

through presentations, meetings and special studies.

iii) *Deliverable:*

- (a) Produce draft System Security Plan for the Project within 45 calendar days after authorization of preliminary engineering phase. Finalize the System Security Plan and use as input to the design tasks.

W) SECURITY RISK ANALYSIS

- i) Conduct a Security Risk Analysis (based heavily on that prepared for the E Street/sbX Green Line Corridor) to identify potential security problems related to the various elements of the Project. The analysis will present the identified risks, possible causes, the potential effects to the system and potential solutions or mitigation of risks. The analysis will be used as input in completing design.

ii) *Deliverable:*

- (a) Security Risk Analysis

X) SECURITY OPERATIONS PLAN

- i) Develop a Security Operations Plan (based heavily on that prepared for the E Street/sbX Green Line Corridor) describing proposed security-related functions for the operating systems, based on assumed staffing/contract levels used to develop the O&M cost estimates. The Plan will describe security-related functions to be carried out by the planned levels of security personnel, CCTV monitoring personnel, fare inspectors, fare collection equipment service technicians and revenue collection staff or sub-Consultants.
- ii) Analyze the Security Operations Plan and assumptions for adequacy, conduct required capital versus operating cost tradeoff studies and recommend solutions to Omnitrans. Provide results as input to continuing O&M cost estimating activity.

iii) *Deliverable:*

- (a) Security Operations Plan

Y) SITE INVESTIGATIONS AND DATA GATHERING

- i) The Consultant shall assemble and review existing available site investigations data from previous work performed by Omnitrans, cities, county, Caltrans and from adjacent and nearby construction projects and determine the additional site investigations work necessary for completion of preliminary engineering design. Advise Omnitrans in writing within 30

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

calendar days after authorization of preliminary engineering phase, the results of the review. Perform additional site investigations work as required for the Project.

ii) Deliverable:

- (a) Site Investigation Report

AA) ASSEMBLY OF REFERENCE DATA

- i) Recognizing that physical changes occur and that data collected during the planning phase of the Project may require updating, including the projected changes of developers, update Omnitrans' file material on existing and projected conditions potentially affected by or causing influence on the design or construction of Project facilities. Maintain current knowledge of existing and projected conditions. Add to and maintain reference files as a living document.
- ii) The Consultant shall identify projects that may impact the design of the Omnitrans Project. The Consultant must identify the design interfaces between the Omnitrans Project and the projects of agencies and utilities external to Omnitrans. The Consultant must develop an interface plan that identifies the external project, the agency/utility, contact person(s), and the referenced documents that must be considered in conjunction with the design of the Omnitrans Project. The Consultant must coordinate with external agency/utility and reflect the coordinated design in the Omnitrans Project. The Consultant is required to obtain a copy of the documents(s) that will influence the design of the Omnitrans Project and maintain said documents as part of the reference data utilized in the design of the Omnitrans Project.

iii) Deliverable:

- (a) Reference data file

BB) HORIZONTAL AND VERTICAL CONTROL SURVEYS

- i) Establish horizontal and vertical control nets and a baseline for the extent of the Project adequate to provide the basis for the Project coordinate system of horizontal control and control of elevation for purposes of final engineering design and construction. Place permanent survey markers along the route of the Project at appropriate intervals. GPS stations shall be incorporated into the horizontal traverse to tie the baseline control to the San Bernardino County and Caltrans horizontal control network. Base the vertical control on the nearest appropriate current vertical control benchmarks established by the City, County, or Caltrans. Produce all survey field notes and a baseline control map in CADD format, with details of all control stations shown on the map. Also furnish control station data sheets for each control station showing the position of the monument, reference ties, description of its location, horizontal coordinates and elevation. The project will assume NAD83

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

Horizontal and NAVD88 Vertical Datums.

- ii) Existing Records: The Consultant will conduct research of relevant land and survey records to locate necessary survey and land ownership records required to complete preliminary Right-of-Way mapping. This task does not include title report review for all parcels along the corridor.

- iii) Control Surveys: Based on the primary control established by others, the Consultant will field locate adequate cadastral monuments in the project area to establish record centerline.

- iv) *Deliverables:*
 - (a) Control surveys
 - (b) One PDF copy of survey field notes and sketches
 - (c) Microstation format file with survey control

CC) PHOTOGRAMMETRIC MAPPING

- i) Define the needs for final design quality map sheets and their layout at a scale of 1" = 40' unless otherwise required by each jurisdictional agency. Make use of the established horizontal and vertical control surveys to control the aerial mapping. Temper this work with the need for topographic surveys and coordinate the two methods such as they are complementary and accurate such that engineering base maps can be prepared and the information can be utilized to develop final engineering design, plans and profiles. As needed, produce sets of contact prints and photo index maps. All additional photogrammetric mapping shall be digitized and geo-coordinated. The Consultant will prepare aerial photogrammetric mapping 400 feet wide, 200 feet each side of centerline alignment along the 25-mile-long project length, in digital terrain mapping (DTM) format and aerial photogrammetric mapping in digital format.

The Consultant will set aerial control targets along the corridor at predetermined locations. Targets will be tied to the control surveys established and positioned under Task 2. Aerial mapping will meet national map accuracy standards. Mapping swath will be 400 feet centered on the planned corridor alignment. 1"= 40' mapping scale with 1' contours will be prepared to Caltrans CADD standards. A Digital Terrain Model (DTM) will be prepared to Caltrans CADD standards

- ii) *Deliverable:*
 - (a) Photogrammetric mapping
 - (b) One PDF copy of survey field notes and sketches
 - (c) Microstation DGN format file containing Aerial Mapping

Scope of Work

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

- (d) InRoads format file containing DTM
- (e) Color Ortho-Rectified Imagery

DD) TOPOGRAPHIC SITE SURVEYS

Assumptions:

- Right of way staking of Temporary Construction Easements, Permanent Easement and Fee takes and engineering support is included as Optional Tasks.
 - Due to limited capital funds, it is anticipated that the selected alternative will not require multiple right of way fee acquisitions.
- i) To the extent mapping by photogrammetric means is not adequate in terms of detail or other requirements, conduct topographic site surveys of the areas of interest, producing topographic mapping showing terrain features, contours, spot elevations, and the like. This work includes, but is not limited to, determination of details such as location of trees, curb cuts, street lighting, adjacent building and parking, curb joint elevations, back of sidewalk elevations, pavement joint elevations, grading limits, modifications to existing slopes, drainage system, O&M facilities, limits of construction, critical building and other structure offsets; sub-sidewalk structures affected by the Project; and cross sections of existing street, Caltrans, water courses and railroad rights-of-way.
- ii) *Deliverable:*
- (a) Topographic site surveys 200' x 50' (25' intervals) at side stations and cross sections (50' intervals) at centerline dedicated lanes.

EE) UTILITY SURVEYS, SUPPLEMENTAL DESIGN SURVEYS, AND COMPILATION MAPS

- i) Apply topographic surveying techniques to record the presence of existing utility lines and structures. The Consultant shall collect pertinent record drawings from city, county, and utility owner's maps and records, conduct field surveys to locate and verify existing underground and overhead utilities. Recognize existing utilities that might impact the design of the Project, including storm drainage (pipes and channels), sanitary sewers, gas lines and valve boxes, petroleum product pipelines, water mains and valves, power lines, poles, duct banks and vaults, steam pipelines and communications systems both underground and overhead (telephone, telegraph, alarm systems, cable transmission systems, fiber optics.) Locate such utility facilities by standard field survey methods.

The Consultant will contact the sanitary sewer providers and water districts to request as-built mapping of their facilities that are within the construction limits

of the Project. Upon receipt of the As-built data, the Consultant will coordinate to identify the limits of the necessary ground surveys to be performed by others. Upon receipt of survey data, the Consultant will verify the existing sanitary sewer and water lines within the Project area.

The Consultant will input the existing sanitary sewer and water line information into a CADD file, which can then be referenced into the Utility Compilation Mapping.

- ii) Supplemental Design Surveys - Once the final bus stop locations have been determined by the design team, the Consultant will proceed with the field surveys. Supplemental topographic surveys will be used to augment the aerial mapping and for areas needing precise positions and elevations at the 47 planned bus stop locations. Conventional and 3D Laser scan methods will be used at the 47 identified bus stop areas and surrounding curb and pavement.

Cross sections, if needed, will be collected at 25' intervals at bus stop locations and at 50' intervals along the centerline dedicated lanes. Drainage and other surface utilities not easily ascertainable from the aerial mapping will be collected during this task. Drainage and utilities will be limited to the planned bus stop areas. Other underground utility locating and mapping will be performed under a different task. Storm and Sewer pipe inverts will be collected along the dedicated bus lanes route and planned bus stop locations.

Deliverables:

- (a) Microstation DGN topographic map prepared at the same scale as the aerial mapping
- (b) Supplemental ground mapping and DTM for those areas as described above
- (c) Survey field notes - PDF
- (d) Survey Report - PDF

Assumptions:

- (a) The consultant will collect the needed site utility locating data in one mobilization based upon the pre-field collection and mapping meeting with the design team. Any further visits to the site will be considered additional time and require additional fees.
- (b) It is assumed that supplemental surveys will cover the 47 bus stop locations identified in the PDF file provided by the client. Should additional locations be necessary to survey beyond the 47, the consultant will require additional fees to meet the request.
- (c) It is assumed that monument preservation will be conducted by the contractor's surveyor.

iii) Deliverable:

- (a) Utility surveys and compilation maps

FF) BASE MAP DEVELOPMENT

- i) Produce final design quality base maps using an appropriate blending of control surveys, photogrammetric mapping and topographic surveys and plotting. These design base maps shall be at a scale of 1" = 40' unless otherwise required by jurisdictional agency and will evolve using a standard CAE/CADD format. Where details require it, base map insets or site development plans shall be at scales of 1" = 10' or 1" = 20'. Base maps should include existing right-of-way lines. The Right of Way Base map will be developed from relevant land and survey records to locate necessary survey and land ownership records required to complete preliminary Right-of-Way mapping.

ii) Deliverables:

- (d) Base maps

GG) ALTERNATIVE DESIGN STUDIES

- i) As part of preliminary engineering or as may be specifically directed by Omnitrans, conduct technical studies and comparative evaluations of alternative preliminary design solutions to any facility or system element of the Project. Include, as appropriate, trade-off studies, life cycle cost analyses, cost-effectiveness comparisons, aesthetic evaluations, environmental impact assessments and other sets of decision factors. For each such study, develop a technical report describing the issues, the alternatives, the comparisons made, the decision matrix, the conclusions and any recommendations.

HH) FACILITIES/SYSTEMS INTERFACE COORDINATION

- i) Coordinate the work of preliminary engineering design of civil/structural facilities and preliminary design, functional definition and specification of various systems elements. During the preliminary engineering phase when the scope of facilities and systems are evolving as design studies are conducted, becoming more detailed and less generic, the need to monitor configuration and interfaces is greatest. Recognize that one objective of such review is to avoid inconsistencies among the various systems and between systems and fixed facilities and to prevent such inconsistencies from being carried into

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

Final Design. As the many design decisions are made, and as inputs from Omnitrans and various third parties are recognized, provide close overview of the evolving design to ensure it proceeds on a compatible basis. Recognize that historically the most demanding care pertains to conduit runs, including size, numbers and embedment space; structural block-outs, sleeves and chases for electrical/mechanical systems; sizing of equipment space with proper clearances for access and maintenance of equipment units of unknown manufacturer; functions of and remote read-out requirements for alarm systems. The plans and procedures for configuration management, change control and interface control shall prevent any prolonged inconsistent design work.

II) PRELIMINARY FACILITIES ENGINEERING/URBAN DESIGN

- i) Under this task, the Consultant shall advance the level of design from conceptual engineering to completed preliminary engineering design package. It is the objective of Omnitrans to resolve all substantial design issues to develop capital cost estimates by Contract Unit as a part of preliminary design completion. The Consultant shall provide such engineering services required to satisfy the City requirements for all work within the City right of way. The Consultant should draw from previously completed work.
- ii) The Consultant should show examples of how the Project will be successfully integrated with the adjacent community. This integration must be applied to all components of the Project (station architecture, hardscape and landscape, art program components, etc.). The Urban Design Integration and Station Architecture are to be coordinated with Omnitrans departments.

JJ) STRUCTURE TYPE, SIZE AND LOCATION

- i) The Subtasks defined here are intended to produce the most advantageous configuration of the Project or system structure components in terms of cost, aesthetics, environmental impact and constructability, including the evaluation of alternative materials and the selection of a preferred choice for the Project site conditions. This scope statement encompasses any type of station and drainage structures.
- ii) In determining the station locations, the Consultant shall give thorough consideration to pedestrian connections (locating stations where high concentrations of pedestrian activity exist) as well safety of the location.

KK) PRELIMINARY ALIGNMENT DESIGN

- i) At the completion of the preliminary engineering design phase, the horizontal and vertical alignment of the Project must be more than "preliminary". It must be near final and fully mathematized, subject to only adjustments engendered by the final design of structures and systems. Given the Project

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

location as concluded through the Alternatives Analysis phase, the Consultant shall refine the Project control lines which have been selected to define alignment by applying the geometric design criteria and recognizing the constraints and controls on location presented by the site.

- ii) Consideration shall also be given to constraints on final vertical alignment (profile) including minimum overhead clearances at crossings of streets, highways, water courses, railroads, buildings and overhead utilities, criteria limitations on maximum and minimum profile grades and vertical curve standards. As portions of the Project alignment in graphical form become less variable and essentially final, compute the alignment and tie its control points into the State coordinate system and the Project control baselines and benchmarks.

LL) PLAN, CROSS SECTIONS AND PROFILE DRAWINGS

- i) Given the conceptual engineering work completed, including drawings, the Consultant shall develop PE drawings, which includes, but are not be limited to, a set of plan, cross sections, and profile drawings based on the final design base mapping at the selected final design scale, screened to accent proposed features. The Consultant shall submit a layout of the proposed plans and profiles for the Project to Omnitrans and coordinate with the PDT before proceeding with the preliminary design drafting.
- ii) Prepare plans and cross-sections of the existing and proposed construction and existing development (streets, freeways, railroads, buildings, water courses, utilities, significant property boundaries and the like). Plans should show the following:
 - (a) Street roadways, structures, earthwork, grading, paving, drainage system (including culverts, and pipes), bikeways, landscaped areas, erosion controls, security/safety fence, lighting, striping, traffic signaling, vehicle control system, and location of proposed utility connection points for services.
 - (b) Planimetrics – existing structures, roads, walls, facilities, vegetation, etc., location of existing utilities and structures from record information (including assumed depths or cover where applicable).
 - (c) Existing railroad tracks and structures and proposed relocation or other adjustments.
 - (d) Stations locations and design concepts.
 - (e) Existing right of way and property lines and easements.
 - (f) Street improvements and proposed modifications to existing

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

conditions in the corridor, if applicable, such as utility modifications or relocations, street relocations and other street modifications/improvements, grading, modifications to existing retaining walls, grade separation structures, grade crossings and drainage systems.

- (g) Connections to the main line, portion of the adjacent storage yard and shops, bus access, circulation and storage, and non-revenue operating segment of the line at sites of proposed maintenance facilities.
- (h) The plan and profile drawings shall show a strip of the linear plan view above a vertical profile grid such that the stationing of each corresponds as much as possible.
- (i) Existing grade line, major overhead and underground utilities, and significant subsurface geologic conditions.
- (j) Mathematized horizontal and vertical geometry, control point coordinates and elevations, bearings, horizontal and vertical curve data, grades in tabular form, major dimensions, critical vertical and horizontal clearance dimensions, major existing finished floor elevations, and other parameters of design on the drawings. Include details and sections for any areas that will be particularly challenging or have non-standard elements or construction challenges along with notes stating the Consultant's assumptions for how it can be handled.

iii) Deliverables:

- (a) Produce a set of 30% preliminary design drawings including, plans, profiles, and sections. Also, produce a set of composite plans at 1":80' scale. These drawings shall be in the standard CAE/CADD format and reproduced in standard Mylar drawing sheets. Geometric approval of these plans should be acquired by all applicable jurisdictions.

MM) STATION AND STATION SITE DEVELOPMENT

- i) The Consultant shall develop standard station plan layouts, canopy, amenities, and equipment and perform modifications to make it site specific for each station. Concurrent with the work of other tasks, coordinate with Omnitrans departments and PDT to obtain input/consensus regarding functional requirements and scope of each station, and develop for each passenger station in the Project under design an individual Program which will assemble on one or two pages the basic functional requirements and scope of each station. The Consultant shall provide to the station design sub-consultant the projected passenger loadings to be accommodated in terms of "off's" and "on's" by peak and base period, the maximum buses by vehicle type, the quantified

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

requirements for parking and map cases, station pylon markers and other informational/way finding structures, and other equipment space and other features to be accommodated in the design.

- ii) For each station, advance the design to a level of completion resolving the station configuration, its major dimensions; vertical circulation elements; parking facilities; lighting system; access and circulation roadways; the location of each with respect to a stationed centerline of Project, and the following:
- (a) Auxiliary rooms if needed for stations, including for electrical, mechanical, and systems requirements shall be included.
 - (b) Parking if needed for stations based on parking demand projects to be provided by Consultant. Include accessible and van accessible spaces, taxi stands, drop-off, pick-up, including auto circulation within the site and local street access.
 - (c) Bus bays, bus stops, and bus circulation roadways, for transit buses (e.g. bus interface amenities such as bus benches and shelters).
 - 1. Consideration of the Station Kit of Parts developed as part of the Alternatives Analysis study, Omnitrans' *Transit Design Guidelines* document, Crime Prevention through Environmental Design principles, and consideration of protection from the weather (especially summer heat) when selecting materials for benches, shelters, and other amenities.
 - 2. Develop three concept options for side-running stations and three concept options for center-running stations, to be presented to jurisdictional agencies and project development team.
 - (d) Features to assure compliance with the latest requirements of the Americans with Disabilities Act and state Title 24, such as curb ramps, directional bars, international symbol of accessibility, clear zone for wheelchair lift deployment, accessible signs, etc.
 - (e) Artwork locations as approved by Omnitrans.
 - (f) Signage (based off of signage standards from Omnitrans' E Street sbX Green Line project).
 - (g) Consideration for where operator shift changes will happen on route, as well as breaks and bus change-outs.
 - (h) Electrical and communications for lighting, public address system,

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

variable message signs, public pay phones, passenger assistance telephones, emergency telephones, maintenance telephones, closed-circuit television (CCTV) for security cameras (with pan, tilt and zoom capacity), maintenance equipment, intrusion detection systems, fire and emergency management systems and related racks, conduits and cable trays; etc.

- (i) Irrigation and planting, including hose bibs for maintenance.
 - (j) Architectural features and finishes, including paint specifications and colors.
 - (k) Clear lines of sight to all areas for security in accordance with CPTED (Crime Prevention through Environmental Design) principals.
- iii) Develop economical Project station features, utilizing uniform features where appropriate, and reflecting the unique character of the neighborhood in which it exists and the joint development opportunities of the site. Produce a set of preliminary station and station site development design drawings including plans, sections, elevations, and details, at scales to be agreed with Omnitrans, to support the plan and profile drawings and for approval prior to commencement of final design, and to form bases for preliminary capital cost estimates and construction contract documents.
- iv) Reflect all proposed features which will occupy the station site development, including adjacent transit line sections, parking (if needed), intermodal transfer facilities, plazas, bicycle racks/lockers; bikeways; signage; traffic control devices; lighting; and landscaped areas.
- v) The stations are to be designed in a modular fashion. Standardized elements shall be incorporated to provide unity and minimize costs. Coordinate with PDT and other Consultants involved in the station area community linkage designs to ensure coordination of the station design with any ongoing station area planning.
- vi) Consultant shall analyze the connections to surrounding intermodal transit connections that might include city and municipal bus stops, passenger rail, bike paths, bus benches and shelters, bike racks and lockers.
- vii) The Consultant may be asked to consider “smart growth” joint development opportunities at some or all of the station sites in cooperation with the PDT. Investigating these joint development opportunities would expand the scope of work to include a larger station footprint with residential and/or commercial designs.

(a) *Deliverable:*

1. Six (6) professional renderings for Phase 1 work.

NN) CENTER-RUNNING BUS LANES AND MEDIAN STATIONS

- i) The scope of the Project includes two segments of center-running bus lanes on Holt Boulevard in the City of Ontario, which adds up to a total of 3.5 miles of dedicated bus lanes, with six median stations. Depending on the outcome of the phasing/financing plan, the final design of the dedicated bus lanes and median stations (which is part of this contract) will be provided by the Consultant either in the full plan set for the Project, or as a separate plan set for Phase 2 of the Project.
- ii) The design of the dedicated bus lanes and stations must include the following considerations:
 - (a) Street cross-section widths, and a plan with right-of-way lines that shows which properties are impacted. (Right-of-way acquisition will be handled outside of this contract.)
 - (b) All components of design for widening Holt Boulevard along the 3.5 miles planned for dedicated bus lanes, including the following:
 1. Curb and gutter reconstruction;
 2. Repaving of any needed lanes;
 3. Reinforced concrete bus pads within the pavement where the buses stop;
 4. Intersection work, including relocation or replacement, as needed, of traffic signal equipment, and pedestrian crossings.
 5. All utility relocation needed as a result of Project, as well as utilities needed to stations, such as electrical and fiber lines.
 - (c) Dedicated bus lanes, including the following:
 1. Pavement markings;
 2. Barriers for separation from mixed-flow lanes (such as concrete curbs);
 3. Safe and efficient transitions where dedicated bus lanes end (using sbX Green Line and other BRT projects from around the country as examples).
 - (d) Six median stations, including the following:

1. Pedestrian safety barriers at stations;
2. Shelters and all passenger amenities included in Station Kit of Parts;
3. Landscaping;
4. ADA-accessible pedestrian pathways from public sidewalk and crosswalk to access station.

iii) Deliverable:

- (a) One (1) professional rendering for Phase 2 work

OO) STATION DEFINITION-REFINE STATION DESIGN AND URBAN DESIGN CONCEPTS

- i) Review and evaluate station locations recommended in Alternatives Analysis phase.
- ii) Transit stations are places where users interact with the transit system. Not only do transit stations need to be functional, but they also need to brand the system by announcing that a new form of transit is available in the community. Individual site design concepts will be prepared for each station, and the Consultant team will also confirm the sbX name and branding. The station plans should be refined based on new information. They should be heavily based on the sbX station kit-of-parts, as updated and refined during the West Valley Connector Corridor Alternatives Analysis.
- iii) The Consultant team shall review the station locations illustrated in the Alternatives Analysis Summary Report to determine any concerns with the location of stations and to identify other special conditions along the corridor. The branded design and the current kit-of-parts concept, with its capability to adjust to varying sidewalk widths, will be discussed. Using the newly updated base information, design criteria, and field visits by the Team, each station site will be reviewed. This review will consider existing and future sidewalk widths, existing utilities, and linkages to adjoining existing and proposed future developments. The Consultant team will meet with Omnitrans and the City to define station passenger amenities, their locations, and any betterments that the cities may be anticipating.
- iv) Updated station plans will be produced by the Consultant using available new aerial photography and digital and hard copy detailed field surveys on base sheets which show right-of-way, pavement widths, sidewalks, and footprints of adjacent buildings, adjacent parking, existing trees, street lighting, curb cuts, and other major features along the alignment.

v) Deliverables:

- (a) Station plans;
- (b) Exhibit-type graphical representations and architectural renderings including 3-d renderings of stations in multiple lights and angles;
- (c) Material sample boards; and
- (d) One (1) finished scale model of a typical station.

PP) BRANDING DESIGN

- i) The Consultant will be responsible for adapting existing sbX graphics (from sbX graphic design standards developed during the E Street sbX Green Line project) to work for 40' vehicles, 60' vehicles, and to be integrated with station design.
- ii) The station branding will also include the line's color line name designation. The Holt/4th line was originally designated as purple, but the final color line name needs to be confirmed with Omnitrans, the PDT members, and Omnitrans' Board of Directors.
- iii) Deliverables:
 - (a) Bus fleet graphic design (for 40' and 60' vehicles), and station design with integrated system branding using the sbX logo.

QQ) STATION ART PROGRAM

- i) The Consultant will provide an art coordinator who will manage an art program working with members of the community and the sbX PDT. The art coordinator should propose an art program for the Project that involves local youth and/or community members, is community-based, low-cost, and can be maintained within Omnitrans' ongoing station maintenance budget. The Consultant shall coordinate with Omnitrans Project Manager to incorporate artwork and artist ideas into the overall design. The program should draw lessons learned from the E Street sbX project public art program.
- ii) The art coordinator will be responsible for drafting legal agreements related to implementation of art program, along with coordination with local community organizations, artists, Omnitrans Project Manager, and PDT members.
- iii) *Deliverables:*
 - (a) Art program proposal
 - (b) Meeting agendas and minutes/notes

- (c) Draft agreements
 - (d) Outreach/informational materials related to art program
 - (e) Project art policy
- iv) Art Program Proposal – The Consultant will prepare for and facilitate a meeting with the project design team to:
- (a) Define a vision for public art for the West Valley Connector Corridor project
 - (b) Identify opportunities for public art within system
 - (c) Review art process and results from sbx E Street project
 - (d) Identify appropriate staff members who oversee public art projects within stakeholder cities
 - (e) Define methods for artist and artwork selection for a range of project opportunities with consideration of local artists
 - (f) Discuss and determine method of procurement for artist design and fabrication services
 - (g) Establish art program proposal budget
 - (h) Establish contracting requirements for artists to streamline art fabrication, delivery and installation
 - (i) Consider special project initiatives that may include temporary art, artists in signage, landscape and functional object designs
 - (j) *Deliverables:*
 1. Draft public art program proposal for Omnitrans review and comment.
 2. Finalize art program proposal.
 3. Present final art program proposal to Omnitrans Board for final acceptance if necessary.
 4. Provide status reports on art program for Omnitrans as needed
- v) Implement Approved Artist Selection Process - The Consultant will provide services to coordinate the review and selection of artists for the project. This shall include:
- (a) Meet with staff to finalize RFQ for artist application to project

- (b) Assist in the development of outreach effort to encourage local artist participation
 - (c) Organize station art selection committee
 - (d) Coordinate outreach effort with team
 - (e) Coordinate review of artist qualifications with station artist selection panel members
 - (f) Coordinate with design team art options for development of preliminary design concepts
 - (g) Provide Omnitrans staff with draft agreements for artist services per approved artist selection plan
 - (h) Coordinate final review of artist presentations for final artist selection
 - (i) Inform all artists of final selection process results
 - (j) *Deliverables:*
 - 1. Draft boilerplate artist agreements.
 - 2. Provide meeting minutes and presentations as needed for outreach or stakeholder meetings.
 - 3. Provide status reports on art program for Omnitrans as needed.
- vi) Integration of Artist Design Concepts - To facilitate the integration of artwork into the construction document, the Consultant shall provide the following services:
- (a) Work with Omnitrans to initiate final design services agreement for project artists
 - (b) Meet with project architect to discuss artwork integration into construction documents
 - (c) Develop and conduct conservation review process for materials and methods of art fabrication
 - (d) Check references for proposed fabricators, coordinate inspection and materials testing as needed
 - (e) Monitor artist deliverables to integrate artwork into construction documents
 - (f) Discuss and develop proposed maintenance criteria for artwork
 - (g) Provide status reports on art program for Omnitrans as needed
 - (h) Conduct review of construction schedule and artist fabrication schedule
 - (i) Work with project architect to develop specifications for artwork as needed for construction documents

(j) *Deliverables:*

1. Report to Omnitrans regarding conservation review of materials and methods for fabrication and maintenance of artwork.
2. Artist submittals for integration of artwork into construction documents.
3. Specifications in construction documents for artwork as needed.
4. Provide status reports on art program for Omnitrans as needed

RR) TRAFFIC ANALYSIS

- i) The Consultant shall perform all necessary work to determine the traffic impact of the transit signal priority infrastructure as part of the project.
- ii) Develop preliminary plans for improvements to intersections and crossings for bicycle, pedestrian and vehicular traffic through, across or along the Project corridor. The Consultant's team will be responsible for determining urban design concepts for pedestrian access to each station.

SS) PRELIMINARY TRAFFIC ENGINEERING DESIGN

- i) In support of the preliminary design of transit facilities, study and resolve traffic-engineering issues resulting from development of Project facilities in coordination with Third Party Representatives, including:
 - (a) Street traffic conflicts with transit operations, requiring street closings, frontage road development, cul-de-sac development, grade-level crossings, grade separations, street widening, parking lane removal, median break closures, mixed traffic operations and other methods of conflict resolution.
 - (b) Coordinated bus control and traffic control systems including transit preemption of "green time" and addition of bus segments to the traffic control cycles.
 - (c) Other traffic control signals and signing to facilitate traffic movement.
 - (d) Patron access to stations and station sites by all modes and traffic control at station site entrances.
 - (e) Grade crossing protection.
 - (f) Surface treatments to discourage vehicular encroachment.
 - (g) Alternative public parking provisions.

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

- (h) Traffic maintenance during construction of proposed transit facilities.
 - (i) Construction truck access to construction sites.
 - (j) Secondary analysis including signal coordination and timing sheets.
- ii) Evaluate these issues where they occur and develop preliminary designs of changes to existing streets, facilities and traffic control devices and input the results into the plan and profile drawings and preliminary design drawings. Coordinate all work involving traffic jurisdictions of the State, County and City with the designated representatives of such agencies and Omnitrans' Representative. Produce a detailed report on resolution of traffic conflicts, the "before" and "after" traffic conditions and allocation of responsibilities affecting modifications (design and construction) and maintaining and operating new devices including interface between bus control and traffic control. Coordinate with cities and other affected agencies who will provide guidelines and review and approve the completed design and drawings for traffic signals, signs, striping, and worksite traffic control plans and specifications for work within the City right-of-way. Perform traffic-engineering design to a level that identifies and resolves all issues relating to traffic signal modifications, improvements and new signal requirements to the satisfaction of Omnitrans, Cities, and other affected agencies. Prepare plans and details of traffic signals, signs, striping and worksite traffic control plans for the Project and obtain approval from the applicable jurisdiction authorities.

Deliverables:

- (a) Three preliminary schematic traffic signal plans, one each for the Cities of Pomona, Rancho Cucamonga and Fontana.
 - (b) Preliminary signs, striping and worksite traffic control plans.
- iii) Field Review and Final Field Element Locations
- (a) Existing information pertaining to the project will be collected and reviewed to assess the accuracy of field conditions and to identify potential utility conflicts. The Consultant will conduct a field review to verify and inspect the existing sanitary sewer and water line facilities. Video inspection is not anticipated. Information may include existing applicable plans, such as highway and roadway improvements, utility plans, traffic signals, signal interconnects, and highway lighting as-builts. A detailed field review will also be conducted. The following information at all approaches and corners for each location where improvements are recommended will be collected:

1. Existing cabinets

Scope of Work

2. Cabinet equipment, including controller type and firmware
 3. Existing services
 4. Traffic signal standards
 5. Mast-arms
 6. Push buttons
 7. Size and type of signal heads
 8. Existing loops
 9. ITS elements, such as closed-circuit television (CCTV) cameras and video detection cameras
 10. Existing pull boxes
 11. Existing vaults
 12. Driveways
 13. Storm drains
 14. Utility manholes/vaults
 15. Existing ADA compliance
- iv) Finalize Queue Jump Locations
- (a) Determine whether queue jump locations are feasible within existing right-of-way and work with local jurisdiction and Omnitrans Project Manager to determine locations and criteria for queue jump locations.
- v) TSP and Queue Jump System Architecture Design
- (a) The technology to be used for the provision of signal priority for the vehicles will be key in the development of the final design elements. As part of the activities for this task, the technology and approach for TSP and queue jump will be identified and reviewed with each involved agency.
- vi) Identify Transit Signal Priority Technology

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

- (a) As part of this task, TSP system requirements will need to be developed. In essence, when a vehicle passes an imaginary trip-wire location that is established a user-defined distance before the intersection, the vehicle's TSP call is first received at the intersection controller. This is conceptually known as a "Check-In" type of detection. Once the check-in TSP call has been received, the controller begins to make its own calculations and/or adjustments to signal timing, as needed, to better match that approach's green signal display with the anticipated arrival of the vehicle.
- (b) The "Check-Out" action also needs to be accomplished by the TSP call system so that the controller knows when the vehicle has reached the intersection and no longer needs the controller to provide priority service for that approach. The combination of check-in/check-out can be achieved technologically in many different ways, including the following:
1. Optical, continuous active command directed to intersection (such as Opticom) – A strobe beacon that is attached to the front of the bus emits precisely timed light flashes of a relatively uniform intensity. The detector at the intersection continuously 'watches' down an approach to the intersection for this optical energy. When the system's "signature" flashing sequence is recognized (meaning that a valid emitter-equipped bus is approaching), and the intensity of the energy signal received exceeds a certain user-set threshold, then the presence of the bus is active. Since the amount of energy received from a light source is directly proportional to its distance, the user- set threshold energy level corresponds to a specific distance from the intersection. Beyond that point, buses may be "seen" by the detector, but they do not create a TSP call. From that point, all the way to the intersection, there is a continuous TSP call produced. A filter is used with the emitter on transit vehicles so that only invisible infrared light is produced.
 2. Radio frequency tag passage detection at a trigger point – A radio-frequency (RF) device is mounted on the bus. This device is called an RF tag, and it would be similar in size and capability to a toll tag transponder. An RF tag reader is constructed or installed at a location in advance of the intersection where it has been determined that a TSP call should be initiated. From that location, the TSP call is forwarded (by either wireless or wired means) to the targeted intersection's controller. The data message size capability of an
 3. RF tag-to-reader system is much larger than that required to

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

produce a TSP call, and some systems use this data capacity to extract status or other information from the bus.

4. Infrared tag passage detection at a trigger point – This setup is virtually identical to the RF tag installation described above. Instead of wireless energy in the radio frequency spectrum, the data are transmitted in the infrared light spectrum.
5. Loop detection at a trigger point – A traditional detector loop is installed in the street at the point where it has been determined that a TSP call should be initiated. A device is mounted on the bus undercarriage that continuously transmits RF energy of a particular “signature.” The loop detector unit is specially tuned to “listen” for this signature and is triggered when it detects the bus over the loop. From its roadside location, the TSP call is forwarded (by either wireless or wired means) to the targeted intersection’s controller.
6. Real-time, continuous location tracking by centralized system – Automated Vehicle Location (AVL) tracking devices are becoming more commonplace on many transit systems for active monitoring purposes. Most of the newer implementations utilize the national GPS to triangulate locations from three or more of the geosynchronous satellites in earth’s orbit. Use of the same GPS tracking system to provide reliable and accurate vehicle locations for transit priority purposes may or may not be possible because of the frequency of data sent and the speed/position of the bus. Some transit agencies have had to install more than one GPS tracking system on their buses because the first system installed was not designed to allow for multiple uses of the GPS location information. In some transit districts, where a preponderance of close, tall buildings or other impediments restrict the available sky view, GPS-based systems can exhibit problems in determining a correct location. In such cases, the GPS system can be augmented or totally replaced by a the dead reckoning (DR)-based system. A DR system counts wheel revolutions and thus knows how far along the route that particular bus has traveled. For use in AVL systems, the bus location information must be transmitted wirelessly to some external TSP component that makes TSP decisions. A limitation of many AVL systems is the time interval between routine AVL transmissions, which may play a significant role in whether AVL alone can be effectively used for TSP purposes. Many transit properties’ AVL systems get location reports from buses only once every minute or two. If the reporting rate were one minute, then the worst-case condition would be that the

vehicle location report was received 61 seconds prior to the arrival of a bus. Estimating the arrival time of the bus from that great a distance (approximately 0.25- to 0.33-mile in advance) may not be accurate enough for TSP. One solution to overcome this lag problem would be to reduce the time interval for transmitting location, typically to less than 30 seconds, but this may also encounter problems due to limitations on the wireless radio system's bandwidth capacity.

- (c) Design a uniform platform that is proven and will be accepted by all agencies involved.

vii) Develop TSP and Queue Jump Operation Standards

- (a) In a normal cycle for a signalized intersection operating under coordinated control, the cycle length is common for all of the intersections within the same coordination area or zone. This must be true so that the progressive traffic flow that is set up in the timing pattern for a major road is repeatable, cycle after cycle.
- (b) Typical signal coordination patterns have been developed to benefit a hypothetical platoon of moving vehicles that do not stop unless required to by a red signal. The typical transit vehicle does not or cannot stay within this hypothetical platoon due to passenger stops. The arrival of a transit bus to an intersection is totally disassociated with how the controller is serving the various movements. Sometimes, the bus may arrive during the green "window" for that approach, but more often than not, the bus will arrive at some time when the signal is red. The concept of TSP is that the signal controller is able to recognize when a bus is arriving in relation to its green window, and make instantaneous adjustments to the signal timing to shift the traffic signal's green window(s) on the approach of the bus to the intersection to better match the arrival of the bus.
- (c) Three signal cycle strategies are currently being implemented in TSP systems. In all three, the traffic signal controller modifies its regular timing to provide a priority service to the approaching bus. The shift can be implemented in the following three basic ways:
 1. Green is "held" for the approaching bus, but no extension of the normal phase split is required. The phase green is held, but since the bus is arriving during the normal green window for that phase, no extended time is required. While the signal cycle is not changed, the signal is not allowed to shift from green even though it senses no other traffic at the approach. This type of priority action can also be utilized for any approach that is not the arterial green phase in a coordinated system operation;

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

therefore, it could be applied to a side street approach or a left-turn phase for the bus. It is also applicable to any phase during those times when the intersection is not under coordination timing control (e.g., late night and/or weekend), where each phase is actuated and responding to the absence of approach vehicles for some gapout time.

2. Green Extension – The green phase for an approaching bus is held for a few seconds longer than “normal” to allow it through. A time extension of approximately 10 seconds (or in some cases, 10 percent of the cycle length) has been used by many cities as an acceptable extension time. This timing shift would be in response to a bus that is expected to arrive just a short time (usually a few seconds) after the signal would have otherwise turned yellow. Successful implementation of this scenario means that the bus (and the vehicles traveling alongside of the bus) would be spared a long wait at a red signal.
 3. Early Green – In this scheme, the bus is due to arrive some amount of time before the approach phase’s normal green window. To reduce the time spent waiting in the queue, or perhaps eliminate the stop-and-go action entirely, the preceding phase green times are reduced somewhat so that the green for the bus can commence sooner. Again, many agencies set the threshold at approximately 10 seconds. This priority action results in saving just a few seconds for transit vehicles, far less than that saved by the successful extended green priority mentioned above. Some cities refer to this as “Red Truncation,” because phases preceding the transit movement are cut off early, producing an earlier end of the red light for the bus.
- (d) TSP is a feature that *attempts* to modify normal signal timing in response to a special TSP call. It should not be confused with pre-emption, which is provided only for special vehicles (i.e., trains, emergency vehicles) approaching the intersection where their through passage *must* be provided. Pre-emption functions take precedence over TSP, even if TSP service is in progress. The controller will always service a pre-emption call and begin serving it immediately upon its receipt.
- (e) As part of this analysis, provide the following services:
1. Technical memorandum describing the state of the practice in TSP. This will include typical operational parameters and settings used, such as TSP services per cycle, amount of time allocated to TSP, use of early green service, and use of extended

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

green service. This will be specific to the needs of each individual agency.

2. Technical memorandum of the TSP functionalities available with each City's existing traffic controller firmware and system (both currently running 170 controllers with Bi-Tran firmware). If a need for upgrades is found, then those will be identified and detailed out. Upgrade alternatives will also be identified along with cost information.

- (f) Based on the TSP objectives and parameters that are identified and the capabilities of each controller firmware/system that will ultimately be in operation, develop a technical memorandum (draft and final version) that will describe the details of the proposed operational parameters of TSP for the targeted intersections. This will include typical operational parameters and settings used, such as TSP services per cycle, amount of time allocated to TSP, use of early green service, and use of extended green service.

viii) Identification of Upgrade Needs

- ix) The first step prior to developing the PS&E package is to prepare a preliminary design report (PDR) that qualifies and quantifies the project elements. Under this task, the Consultant shall detail the design of the intersection improvements (i.e., signing and striping, pole replacement, detection upgrades, operational enhancements, controller hardware/firmware replacement, and cabinet change-outs), signal system upgrade requirements, and communication infrastructure needs to support the signal operations.

- (a) Upon completion of the field surveys and the development of the queue jump and TSP architecture, we will prepare a draft and final PDR, which will serve as a basis for design.

TT) PRELIMINARY DESIGN OF UTILITY RELOCATIONS

- i) Utilizing the recorded and checked locations of utility lines and facilities in or near the Project, determine under this subtask the methods by which conflicts between such existing utility lines and structures and Omnitrans' proposed construction and facilities may be resolved. The Consultant, working with Omnitrans and utility owners, shall identify the utility segments requiring relocations. At least one field visit shall be scheduled with each affected utility company to review all conflicts and discuss resolution of the conflicts. Where conflicts are proposed to be resolved by reconfiguring utility networks, capacity studies shall be performed. Corrosion control shall be considered for any metallic utility crossings. Relocated utilities shall provide service equal to the existing installations; upgrades shall not be considered without Omnitrans' approval. The Consultant shall evaluate the viable options for each alternative

Scope of Work

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

for permanent and temporary relocation, and assist Omnitrans to conclude, with the utility owner, a course of action.

- ii) For each utility relocation to be performed prior to the award of the design-bid-build contract, the Consultant shall identify and recommend critical utilities whose locations should be precisely located. Upon approval by Omnitrans and the utility owners, the Consultant shall arrange to have potholing performed. Where feasible, the potholing shall consist of actually digging a hole to expose the subject utility and getting it surveyed. Potholing requirements are contingent upon the preferred alternative selected for design. Costs for potholing will be obtained from Optional Services. Vacuum extraction or other methods can be proposed in areas where exposing the utility would cause too great an impact.
- iii) For utility owners who design and construct relocations to their facilities (i.e., natural gas, electric, telephone, fiber-optic, and oil pipelines), the Consultant shall identify conflicts and coordinate with the utility owners. The PE plans shall include the utilities in both their existing and relocated configurations. The cost estimate shall include these third-party relocation costs.
- iv) The Consultant shall identify all utility services required for the project (e.g., power, communications, etc.). The Consultant shall verify that services are located nearby and shall include proposed service points on the PE plans. If services are not available, the Consultant shall reconsider their design or show the necessary utility connections on the PE Plans and include these costs in the cost estimate. The PE utility plans shall demonstrate how maintenance access to manholes, vaults, cabinets, or other key facilities, new or existing, is maintained. In some instances, it may be necessary for the Consultant to design maintenance roads and/or crossings and include them in the cost estimate.
- v) Develop preliminary designs of the agreed relocations or other work and assist Omnitrans with coordination of this effort with the owner. Where Omnitrans and a utility owner have agreed, the owner will design the utility relocation and review such third-party design work to verify its conformance with Omnitrans' needs and to identify any betterments which may be included. Prepare preliminary utility drawings, including street lighting, at the base map scale. The drawings shall include composite plans of existing utilities, sections, rearrangement concepts and profiles and details of major utility rearrangements. These will include preliminary sanitary sewer and water line plans for those that are in conflict with the proposed project improvements. Approval of the preliminary design shall be obtained from the utility owners.

Deliverables:

Schematic Relocation Exhibits of proposed utility relocations at each project

Scope of Work

location (27 sites and the 3 mile widening of Holt Blvd).

Service point exhibits identifying existing electric and phone or fiber infrastructure and determine potential service point locations for the new electric and phone or fiber services to the OmniTrans.

Preliminary Sanitary Sewer Design Report, which will document the basis of design for the proposed sanitary sewer relocations. The report will also discuss the proposed method for addressing sanitary sewer laterals that might be impacted by the Project improvements.

UU) PRELIMINARY LANDSCAPE DESIGN

- i) For the Project, develop a preliminary landscape master plan based on the concept of minimal landscaping and entirely drought-tolerant landscaping. The landscaping elements selected must be consistent with each City or jurisdictional agency's landscape guidelines and/or requirements.
- ii) Preliminary landscape master plan must define where landscaping is needed, the type of landscaping required, and anticipated needs to repair and restore existing planting after completion of facility construction. Review the proposed facility locations, the planned rights-of-way and the adjacent development, land uses and remainders. Develop a preliminary landscape design for each station site, along the corridor, and at parking and O&M facilities.
- iii) Coordinate the landscaping plans with Cities, PDT and Omnitrans. Plans shall include palette of recommended trees, plants and shrubs for each community area. The landscape palette is to utilize drought tolerant plants, preferable those native to Southern California/Inland Empire or other plant materials approved by each city in their ROW. Consider continuity of design and intent.
- iv) Recognize need to control erosion of slopes using vegetation and to create physical and visual barriers within the right-of -way. Produce a landscape master plan to include introductory comments, key sketches and a description of proposed landscape treatment. Produce landscaping drawings and details at the base map scale. Also select the applicable directive drawings or, if appropriate, prepare new drawing sheets detailing the landscape design elements for the Project. Develop budget estimate for the landscaping work defined.

VV) PRELIMINARY DESIGN OF SIGNAGE, STRIPING, AND GRAPHICS

- i) Based heavily off of signage design standards from the E Street sbX Green Line project, Consultant will support the architectural and systems design

work to establish spatial requirements for signage, striping, and graphics, including station identification, pylons, directional signs, site and system maps and their cases, fire equipment related signage, fire/life and safety signage, traffic control signs, pavement delineation, milepost signs, vehicle clearance markers, and station site directional signage for various intermodal transfer movements. Make sure all signage adheres to ADA requirements and that handicapped accessible routes are clearly marked. Prepare preliminary drawings showing the siting of each sign and graphic element and the standard or special text intended for each, and pavement delineation plan showing striping. Ensure review and approval by Omnitrans Marketing & Planning Department prior to finalization of preliminary design.

WW) CONSTRUCTABILITY REVIEW SUPPORT

- i) Provide engineering support to Omnitrans and its Contractors conducting constructability reviews. This will include responding to questions and providing additional information as necessary. Identify needs for other contractors' worksite and materials storage space and develop preliminary capital costs with advice on schedule impacts on construction due to site access, traffic maintenance options, inclement weather, interface relationships, material and equipment procurement lead times, and availability of utilities connections. This support may include:
 - (a) Define a noise/vibration-monitoring Program for implementation during construction to identify and mitigate potential impacts created by the Project.
 - (b) Identification of construction easements.
 - (c) Identification and timing of any required permits and easements.
 - (d) Potential interface problems with other adjoining Contractors and options for resolution.
 - (e) Emergency access for fire, police, and emergency medical services.
 - (f) Operational access for building tenants, customers, delivery service and trash removal.
 - (g) Mobility through or across corridor.
 - (h) Disruption due to noise, vibration, dust and silting.
 - (i) Conformance with noise ordinances.
 - (j) Truck haulage and railroad operations disruption.

- (k) Access to construction work areas and storage areas.
 - (l) Reduced street parking.
 - (m) Disruption of marquees, sub-sidewalk spaces and signs.
 - (n) Visibilities of storefront show windows.
 - (o) Bus stop and route disruption.
 - (p) Access to parking garages, driveways, and auto service centers.
 - (q) Work hours per day, workdays per week, impact on commuter hours, and special holiday considerations for traditional parade routes and the holiday shopping season.
 - (r) Traffic disruptions at intersections for grade-crossing construction.
 - (s) Practicality of traffic maintenance.
 - (t) Impacts on traffic on other streets from construction detours and activities.
 - (u) Utilities disruption.
 - (v) Safety to general public.
 - (w) Coordination with other Projects.
- ii) For the Project, develop a report on construction period issues as foreseen at the preliminary design level and define construction area control requirements which must be addressed in the drawings and specifications, including the requirements of the local traffic jurisdiction for maintenance of traffic at reduced levels, varying by hours of the day and days of the week, hours of construction operations; spoil disposition; truck routing; noise, dust and erosion control; temporary fencing, lighting, striping, and signing and other constraints of other Contractors.
- iii) In addition to matters of constructability that are due to site and institutional constraints, review the facilities design work in progress to determine that there is at least one practical way of constructing the facility under current design. Monitor the evolving details especially of structures, the joining of structures, the drainage of structures, the mounting and attachment of architectural features, the anchorages of equipment, the maintainability of the resulting structures, the sequence of construction and assembly, the difficulty of forming and making field connections and other challenges to reasonably, economic and overall construction capability.

- iv) PDF and CADD files depicting the existing sanitary sewer and water line facilities as well as the conceptual relocations of these facilities within the Project limits will be provided. A hard copy and a PDF camera-ready file of the Preliminary Sanitary Sewer Design Report will also be provided.

XX) FIRE/LIFE SAFETY REVIEWS

- i) Coordinate with Omnitrans Safety & Security Manager or staff on issues relating to fire/life safety and code compliance. Provide support at selected meetings on issues relating to the Project. Submit appropriate documentation to justify issuance of a Certificate of Occupancy from the Safety & Security Manager for the Project.
- ii) Develop the System Safety Plan applicable to the Project and accommodate the reviews by local jurisdictions of design work in progress, including the review of any proposed exceptions to criteria. Recognize the goals of such design review are: (1) to identify fire and life safety issues impacting the design early in the design process so that cost effective alternative solutions can be developed during this phase of the Project, and (2) to verify that the design of the Project is responsive to the fire and life safety design and performance criteria.

YY) ELECTRICAL DESIGN

- i) Develop and identify Electrical design characteristics required as input for civil engineering and systems preliminary engineering efforts including functional description and operating philosophy; incoming electric power service and its characteristics from service providers along the corridor. Using architectural plans as a base, the space requirement shall be verified for all electrical rooms. Enlarged plans of auxiliary power room, if needed, shall be prepared showing all equipment sizing and layout to verify working spaces inside electrical rooms.

Electrical engineering includes:

- a. Establish space requirements for electrical equipment.
- b. Establish project scope for the following systems to establish criteria for power and lighting system, approximate sizes and capacities of major components, preliminary equipment layout and space for equipment, and required chases and clearances.
 - 1. Lighting (station lights and station related street lights)
 - 2. Power Distribution
 - 3. Emergency lighting
 - 4. Electrical engineering for support equipment such as ticket vending machines, ticket validators, variable message signs, maintenance equipment, fire and emergency management systems, etc.

Scope of Work

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

- c. Prepare Preliminary Engineering (Basis of Design) Report
- d. Prepare Preliminary Engineering design drawings and specifications
- e. Infrastructure for communications and security equipment will be referred to but not shown within the drawings.
- f. Coordination with the local utility to bring power and site utilities to the stations will be provided by others.

Plumbing/mechanical engineering is to include:

- a) Establish sizing requirements for drainage of canopy structures
 - b) Provide plumbing engineering for station drinking fountains
 - c) Provide cooling/ventilation for communication cabinets
 - d) Prepare Preliminary Engineering (Basis of Design) Report
 - e) Prepare Preliminary Engineering design drawings and specifications
- ii) Prepare electrical layout plans, elevations, one-line diagrams, details at the base map scale, and calculations. Electrical requirements, including stations and streets, shall be incorporated in the electrical design and plans.

ZZ) PRELIMINARY DESIGN OF SYSTEMS EQUIPMENT

- i) Under this task, the Consultant shall advance the level of Systems Design from concept to completed preliminary designs in preliminary engineering phase documents including performance specifications of various systems elements required for the Project in the construction and or Final Design phase. This task will establish the functional requirements for all the system components. Coordinate Project integration and interface requirements. When this design milestone is completed, all design issues and performance parameters shall have been resolved except where specific options have been earmarked for advancement into the final design/construction phase for resolution or for presentation to bidders as formal options or alternatives. The preliminary level specifications include block functional schematics, interface diagrams and text outlining the significant performance requirements. Completion of this work will find the systems elements defined as to methods of procurement and installation and as to the scope of each Omnitrans contract. Consultant shall develop capital cost estimates. Develop and submit for approval the required deliverables.
- ii) For each of the systems listed herein, periodically review the in-progress results with Omnitrans and participate with Omnitrans to obtain approval for the evolving design concept. Work closely with Omnitrans on planning the scope and method of procurement. For each of the systems listed, produce the following:
- (a) A performance or procurement specification which resolves the

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

interfacing and principal performance requirements;

- (b) Drawings by station of installation layouts;
- (c) A report on trade-off analyses;

AAA) VEHICLES

- i) The Consultant shall provide support as needed to Omnitrans in procurement of vehicles. Work will include development of guidelines or performance specifications and principal performance requirements for the vehicle procurement.

BBB) SIGNALING AND VEHICLE CONTROL AND COMMUNICATIONS

- i) Identify and develop Signaling/Vehicle Control and Communications specifications required as input for facilities and systems preliminary engineering efforts. The scope of this subtask includes preliminary engineering of all concepts as required toward development of an adaptable modular concept.
- ii) In establishing the performance parameters of the signaling/vehicle control and communication systems, consider the functional description and operating philosophy; compatibility and interface philosophy with existing signaling/vehicle control and communication systems (Central Control Center, bus, streets, Police Departments, Fire Department, Sheriff Department) and future extensions; the near term operations and any foreseeable changes in the future which might argue for a concept which could be later modified as circumstances dictate; advances in the state of the technology since the previous procurement, changes in the industry and marketplace, lessons learned by other US public transit agencies and new or differing functional requirements of the immediate Project.
- iii) The wayside signaling system must be industry proven for transit operations. Work with City Traffic Departments to develop wayside requirements such as signals, special signaling necessary for at grade areas where street crossings occur for transit vehicles and other vehicles; input power requirements; equipment space and access requirements, and coordination with traffic signaling in the local jurisdictions. Verify the existing vehicle specifications and incorporate these into workable interfacing bus control equipment design.
- iv) Evaluate fiber optic system and provide recommendations and solutions on the best use. Coordinate with Omnitrans IT Department on development and/or improvements of communication, existing and or new as it relates to transit communications integration. Communication systems such as surveillance camera system should be compatible with Omnitrans' existing

systems to the extent possible.

- v) Coordinate with Omnitrans and PDT members and perform sufficient design to identify station and wayside requirements such as conduits, cabling, and antennas; develop expansion plan of Central Control including equipment layout and space requirements; develop block diagram of overall system; and identify requirements for the signaling/vehicle control and communication systems, which should be added to the cost estimate, and includes: Closed Circuit Television (CCTV), Variable Message Sign (VMS), Omnitrans network Telephone system along with public telephones, Public Address, transit vehicle on-board equipment, cable communication system, electrical clearance (based on operating voltages and NEC, CPUC, and NEMA codes), intrusion detection systems; fire alarms, high water, or other incident warnings tied to the signaling system; Bus location and centralized control at Montclair; providing a fiber-optic trunk line; security cameras; and communications compatible with Omnitrans security, and the appropriate police and fire agencies; and other unique related issues. These unique issues include, but are not limited to, specific control systems and line-of-sight operation sections shall be identified. The Consultant shall submit product information on which the design is based.

CCC) CENTRAL/SATELLITE CONTROL FACILITY FUNCTIONAL PLAN

- i) Evaluate existing Control Center(s) and recommend if the Project can be connected to an existing Control Center. Where a Project includes development of a new central or satellite control facility, define the functional requirements based on the O&M Plan. Where a Project is to be connected to an existing Control Center, define the expanded or added functional requirements to be accommodated at such existing or programmed facility. Develop design guidance in preliminary design of both new and revised control center offices or buildings, as deemed necessary during this PE.

DDD) OTHER RECOMMENDED EQUIPMENT

- i) The Project philosophy is to specify the simplest, most cost effective, safe and reliable equipment that easily interfaces with existing vehicles. Therefore, recommend other equipment that may be required for complete system operation. These systems may or may not include: Signs, Transit Automatic Controls, Fire and Emergency Management System, Fiber Optic and Cable Transmission system, Gas monitoring, or Seismic Detection. Assure that the recommended system interfaces with existing communication systems (Central Control Center, bus, Police Department, Fire Department), future extensions; station/wayside equipment; Central Control and the overall system block diagram.

EEE) SYSTEM TESTING AND CUT OVER PLAN

- i) Develop and identify the System Testing and Cut Over Plan (based heavily on that prepared for the E Street sbX/Green Line Corridor Project). Identify the interface philosophy with existing facilities and systems (Central Control Center, bus, Police Department, Fire Department) and operational lines, stations and wayside. Show the requirements for testing of each subsystem.

ii) *Deliverable:*

- (a) System Testing and Cut Over Plan

10.101 FINAL DESIGN OF PHASE I (TASK 9)

FINAL DESIGN ASSUMPTIONS:

The Consultant will submit four Plans, Specifications and Estimates (PS&E) packages at 65%, 90%, 100% and Final. The consultant will deliver Phase 1 and 2 work on current schedules, in a combined package.

A) FINAL DESIGN PURPOSE AND INTENT

- iii) Upon written authorization from Omnitrans to proceed, the Consultant shall continue to progress and perform all required work to finalize all design tasks and advance the level of Final Design from completed preliminary engineering design to completed technical portions of the bid documents required to procure construction contracts. This task will encompass the design of the Phase I of the Project, which is the Rapid line on the entire 25-mile corridor, with the exception of the 3.5 miles of dedicated lanes in Ontario, as referenced in Chapter 5 – Phasing Plan.
- iv) The Consultant shall provide the services necessary to fix and describe the size and character of the entire Project including civil, architectural, structural, landscaping, art, utilities, mechanical, electrical, systems design, equipment, construction sequencing and scheduling, economic analysis of construction and operations, user safety and maintenance requirements. Final Design (FD) provides for each discipline, a description of the economic factors influencing the choice of basic materials, equipment or systems, and an economic analysis considering estimated initial costs and projected costs over the life of the facility. It provides sufficient information to demonstrate that the functional needs and space requirements can be met within the programmed budget and scope of work. FD establishes the design of the basic civil, structural, mechanical, electrical, communication systems, fare collection, vehicles and other system wide interfaces. At the completion of Final Design, the Consultant shall produce contract specifications and plans, and performance requirements at large for the project for the procurement of the facilities and systems construction. In general, the services performed in the Final Design Services are:

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

- (a) Architectural Design/Documentation services consisting of continued development and expansion of architectural design documents to establish the final scope, relationships, forms, appearance, and development of outline specifications or material lists to establish special design features, materials, finish and colors, and landscaping of the Project.
- (b) Civil Design/Documentation services consisting of continued development and expansion of civil design documents and development of outline specifications or material lists.

Assumptions: For Phase 1 & 2, Drainage design consists of pipe extensions to adjusted inlet locations and conveyance of flows contributed by proposed project improvements. Potential impacts to the flood channel along Holt Boulevard are included in Optional Services.

Deliverables:

- a. Prepare title sheet, keymap, sheet index & general notes, survey control sheets , typical cross sections, layouts, removal plans, construction details, profile sheets, drainage plan & profiles, traffic handling plans, signing & striping plans, traffic signal plans, street lighting plans, communications systems, architectural plan sheets and landscape & irrigation sheets
- (c) Structural Design/Documentation services consisting of continued development of specific structural systems in sufficient detail to establish basic structural systems and dimensions, preliminary sizing of major structural components, including associated foundations and outline specifications or material lists.

Deliverables:

- a. Prepare station structural sheets.
- (d) Utilities Design/Documentation consisting of continued development of specific utilities systems in sufficient details to identify any required relocation of existing utilities.

Assumptions: For Phase 1, it is assumed that existing sanitary sewer and water line facilities will remain in their existing locations and will not require relocation. It is also assumed that existing laterals will not require replacement or modification as a result of the Project improvements and that work within the Phase 1 limits will only consist of vertical adjustment of manholes and cleanouts or vertical adjustments of valves and meter boxes. The Consultant will prepare the layouts and details for the sanitary sewer facilities that will require modifications. Sanitary Sewer Relocation Layout Plans will only be prepared for areas where Sanitary Sewer modifications are required.

Deliverables:

- a. Prepare utility relocation sheets.
 - b. Prepare sewer and water relocation sheets.
- (e) Mechanical/Electrical Design/Documentation services consisting of continued development and expansion of electrical Preliminary design Documents and development of outline specifications or material lists to establish criteria for power and lighting systems, approximate sizes and capacities of major components, preliminary equipment layout and space for equipment, and required chases and clearances.

Deliverables:

- a. Prepare electrical layout plans, elevations, one-line diagrams, details at the base map scale, and calculations.
 - b. Prepare plumbing/mechanical layout plans, elevations, one-line diagrams, details at the base map scale, and calculations.
- (f) Systems Design/Documentation services consisting of continued development and expansion of systems design documents and development of outline specifications for various sub-systems or equipment lists to establish criteria, approximate sizes and capacities for major components, equipment layout and space for equipment. Systems design shall be brought to the level necessary for the construction contract.

Deliverables:

- a. Systems Design Documents

- (g) The Consultant will attend two constructability review meetings of the Phase 1 final engineering design after the 65% and 90% submittals. This review will consider the following:
1. Biddability of contract documents
 2. Construction schedule including restrictions for hours of work, holidays, events, etc.
 3. Required construction staking and survey information
 4. Construction staging, traffic maintenance, vehicular and pedestrian access for residents and businesses
 5. Access for services including bus, fire, mail, etc.
 6. Confirm means and methods for construction equipment and access
 7. Vertical and aerial clearance for construction equipment such as boom trucks and cranes
 8. Confirm temporary construction easement and right-of-way limits
 9. Confirm limits and type of materials to be removed or rehabilitated
 10. Precise grading for stations and handicap ramps
 11. Private property improvements
 12. Construction materials and alternatives
 13. Confirm method for relocation/adjustment of existing utilities, vaults, and manholes
 14. Requirements for utility shutdowns
 15. Confirm existing and proposed tree locations
 16. Confirm structural canopy and traffic signal footing locations
- (h) Consultant will respond to redline comments on the 65% and 90% Phase 1 plans as well as a comment matrix and will attend (2) meetings to review the comments with the design team.

Deliverables:

- a. Responses to redline comments of 65% and 90% Phase 1 plans
- b. Comment matrix of redline comments

B) TECHNICAL AND PERFORMANCE SPECIFICATIONS

- i) Produce Standard Specifications for the Project. Produce technical and performance specifications part of civil construction contracts to furnish and install facilities and equipment related to the Project. Include coverage of civil, utility, structural, architectural, mechanical and electrical work and work related to systems procurements/installations (bus vehicle, fare collection system, traffic signal, and bus control system, communication system, central control system, pumps, fans and dampers, signage and graphics, and the like).

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

- ii) Prepare specifications for the furnishing and installation of structures construction contract(s) for the Project. These specifications shall be based on Caltrans Standard Specifications, using Caltrans Standard Special Provisions (SSPs) where possible, the Greenbook Standard Specifications for Public Works Construction for items of work that are not covered in the Caltrans standard Specifications or as required to meet Local Agency requirements. The specifications shall clearly define work to be included in each bid item, unit of measurement, and unit price. Also, the specifications shall clearly make reference to all appropriate sections of standard specifications to define the performance and quality requirements for the construction contractor's work, including all major material testing and acceptance criteria. The special provisions should identify any restrictions or other special requirements placed on the contractor.
- iii) Prior to the submission of any contract specification submittals, the Consultant shall complete a quality assurance verification of the specifications. The Consultant shall have a qualified individual or individuals, not directly involved in the preparation of the specifications verify correctness and accuracy. The reviewer shall verify that measurement and payment provisions are consistent with the description of the work on the plans and the bid list and are consistent with any construction notes or written directions. The reviewer shall verify and initial that previous comments on the specifications have been resolved.
- iv) Index facilities specs to the master list of section numbers in the format of CSI divisions 1 through 50.
- v) Produce technical and performance specifications for the Systems construction contracts to furnish and install communications, vehicles, signaling, fare collection and other systems elements determined during PE.
- vi) *Deliverable:*
 - (a) Complete specifications for construction contractor

C) CONSTRUCTION AND PROCUREMENT PACKAGING

- i) Implementation of the Project may be affected by a series of contracts and other agreements by which the required design services, construction work, equipment procurement and installation and other Services are procured by Omnitrans. There are many alternative methods of procurement within the constraints of applicable codes and regulations and there are many ways of subdividing the procurements into discrete contracts. Omnitrans will select the delivery option that minimizes project risks and provides the greatest likelihood of implementation success while minimizing cost overruns and schedule slippages. The work of this task is to assist Omnitrans in planning the most advantageous methods of contracting and contract scoping for the

Scope of Work

Project.

- ii) As soon as the project scope is well defined and at least six months prior to the request to enter Construction, a formal Risk Assessment shall be performed on the Project. The Consultant shall be a member of a multi-disciplinary Risk Management Group that will include the PDT and Omnitrans. Risk Assessment includes identification of risks, evaluation/measurement of risks, analysis of risk treatment alternatives (i.e., avoidance, prevention, mitigation, cost control, and insurance), assignment of risk and monitoring/evaluating the performance of measures implemented.
- iii) Omnitrans will consider the following project delivery options within the context of project risk analysis and procurement planning: Design-Build (D/B), Design-Bid-Build (D/B/B), and Construction Manager/General Contractor (CM/GC). The Project could be implemented with a combination of contracting approaches.
- iv) During the preliminary engineering design, assist Omnitrans in determining how the Project work will be subdivided for final design, for construction by other Omnitrans Contractors, for construction by third parties' Contractors or third-party force accounts, for procurement of materials and equipment items and their installation by other Contractors, and procurement of equipment systems.
- v) In the planning of Omnitrans procurements of construction and equipment, the Contract documents prepared by the Consultant shall reflect California Public Contracts Code Section 3400, which states, among other stipulations, that the specifications are to be prepared so as to not limit the bidding, directly or indirectly, to any one specific supplier and, further, that the specifications shall not designate a material, product, thing or service by specific brand or trade name unless at least two brands or trade names of comparable quality or utility are cited, followed by the words "or equal'.
- vi) Assist Omnitrans by evaluating the following:
 - (a) Final Design Packaging:
 - 1. Development of final designs and bid documents for a given construction Contract Unit (i.e., final design package interfaces should coincide with construction contract interfaces, although a final design subcontract may cover more than one construction Contract Unit).
 - 2. If not already governed by the types of construction that make up the Contracts ready for final design, final design packages should contain one dominant type of line and station structure or

Scope of Work

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

building structures so that design A&E firms with that particular experience may focus on competing for selection.

3. Construction Contract Packaging
4. Within the statutory and policy constraints that apply to Omnitrans, evaluate on special case bases alternative methods of procurement of and contracting for final design, construction, third-party conflict removals and procurement. Among the contracting methods to be considered are:
 - (i) Competitive single-step, low-bid, lump-sum contract.
Competitive single-step, low-bid, unit-price contract.
 - (ii) Negotiated competitive procurement contract.
 - (iii) Competitive two-step contracting process with pre-qualification of bidders (technical evaluation followed by low bid).
5. Evaluate the advantages and risks to Omnitrans of the following scopes of contracts:
 - (i) Final design and preparation of bidding contract documents, followed by public advertising and award of a separate construction or procurement contract (Conventional U.S. public works practice).
 - (ii) Design-build contracting wherein bids are solicited and taken on the basis of preliminary designs and all detailed design and construction are parts of the contractor's scope.
 - (iii) Turnkey contracting wherein the scope includes the design-bid-build aspects but is more comprehensive and includes integrated testing and commissioning of a major segment of a Project.
 - (iv) Turnkey of a discrete fixed facility such as a maintenance facility.
 - (v) Turnkey of a combination of system-wide elements.
 - (vi) Turnkey of all elements of a Project such as an extension of an operating line.
6. Also included in this subtask are evaluations of contract inclusions and options and of terms where choices are viable,

Scope of Work

including:

- (i) Provision of insurance coverage and limits and related liability terms.
- (ii) Use of standard contract specifications versus guideline specifications.
- (iii) Accommodation of some level of installation contractor financing.
- (iv) Liquidated damages terms and conditions.
- (v) Dispute resolution provisions.
- (vi) Construction contract interfaces should be defined to minimize control across such interfaces.
- vii) Packaging should minimize Project/contract cost and time of completion.
- viii) Packaging must reflect logical and cost effective sequencing and phasing of work and the overall schedule of completion.
- v) Size of contracts in terms of dollar value should encourage competition among qualified bidding contractors.
- vi) The mix of contracts should include smaller contracts of less complex scope to permit smaller and more local contractors to compete, considering among other factors ability to obtain bid and performance bonds.
- vii) Greatly dissimilar work should not be included in one contract.
- viii) Problems with third-party clearances and acquisition of right-of-ways may influence scoping of contracts, allowing "clean site" contracts to be let earlier.
- v) Packaging should reflect industry and marketing conditions.

7. Procurement Contract Packaging

- (i) System-wide elements of a Project are usually packaged for fabrication, furnishing and installation on a basis of a
Scope of Work

MKP15-37

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

given system over the Project extent, in order to obtain the same proprietary equipment and workmanship for the entire Project.

- (ii) Procurement contracts are more susceptible to constraints on phasing and sequencing of facilities and systems work and must be scoped with the overall schedule in mind.
 - (iii) There may be cost, schedule and interface control advantages to certain logical combinations of different systems into fewer, larger contracts. Among the combinations which may prove cost-effective is fiber optics with PA/VMS/CCTV.
 - (iv) Lead times for procurements should also be considered in overall project schedule.
- vii) There may be advantages to Omnitrans' direct procurement of equipment items and materials by contract followed by separate contracts for installation. In such cases, Omnitrans may receive and take title to the procured items and then issue them as Omnitrans' furnished material to an installation contractor, or Omnitrans may procure items and require the supplier to furnish them directly to installation contractors.

D) CONTRACT UNIT DESCRIPTIONS

- i) Once Omnitrans determines the methods of contracting and work, apply the WBS and assign Contract Unit nomenclature to the proposed Contract Units.
- ii) Prepare a set of Contract Unit Descriptions (CUD) which will detail each design, construction and procurement contract and define its type of contract, its limits, its scope, its length, major quantities or size and the estimated duration under normal construction conditions. Add the new CUD to the Project CUD book, or form such book, as appropriate. Over the course of preliminary engineering design, maintain the CUDs as changes in interfaces and scopes are decided.
- iii) *Deliverable:*
 - (a) Contract Unit Descriptions

E) COST ESTIMATES

- i) Update existing and prepare new capital and operating cost estimates for the Project. The Consultant shall perform and submit a price analysis to support the unit costs developed for the cost estimate and shall provide quantity estimates to support the cost estimates, to be reviewed by Omnitrans staff.

Since the delivery method has not yet been selected, Omnitrans may request the cost estimate certified and in a format suitable for bidding.

- ii) The Consultant shall prepare a detailed Engineer's Cost Estimate at each major design milestone of the Project. Prior to the submittal of any cost estimate, the Consultant shall complete a quality assurance verification of the estimate. The Consultant shall have a qualified individual or individuals, not directly involved in the preparation of the estimate, verify correctness and accuracy. The reviewer shall verify the methods of quantity calculation and spot-check quantity calculations; verify that quantity calculations match the information depicted on the plans; verify that quantity and unit cost extensions are correct and accurate; and verify the unit prices were reasonably derived and correctly applied. Omnitrans may have an independent third-party review of the cost estimate.
- iii) The Consultant shall reconcile any differences greater than ten percent on any item resulting from any cost estimate reviews. The cost estimate should be reconciled with any major change in design of the Project.
- v) *Deliverable:*
 - (a) Updated cost estimate at each milestone

F) CONSTRUCTION SCHEDULE REVIEW

- i) The Consultant shall prepare an estimate of the construction schedule, including the number of working days required for each of the construction contracts, along with key milestone dates. This estimate of working days shall be supported by a construction schedule and narrative describing anticipated construction methods, assumptions, and key milestones and interfaces with adjacent contractors.

G) PREPARATION OF CONSTRUCTION CONTRACT DOCUMENTS

- i) The Consultant shall prepare Project Definition Documents for a construction contract(s) not to exceed 8 contracts to completely define the scope of work of, and establishes the budget and schedule for, and advertising of each construction contract. Following design documents shall be included in the Project Definition Documents:
 - (a) Volume I - General Requirements
 - (b) Volume II - Statement of Work (including or reference to all applicable specifications)
 - (c) Volume IV - Drawings

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

(d) Volume V - Technical Reports and Other Mandatory Requirements

(e) Volume VI - Mandatory Requirements and Non-Mandatory Reference Information

- ii) Also, the Consultant shall produce all calculations and other documents that provides basis and supports the Consultant's design work. The Consultant shall submit signed and sealed certification of all Consultant developed mandatory requirements included in the construction contract documents.
- iii) Note that Omnitrans will develop the Front End documents (General Conditions, Special Provisions and other commercial requirements). The Consultant shall review the General Conditions and Special Provisions to identify any duplications and/or conflicting technical requirements, and to ensure that all contract documents developed by the Consultant are consistent, complementary and complete.

H) FINAL GEOTECHNICAL DESIGN (PHASE 1)

- i) **Field Investigation:** The Consultant will conduct a geotechnical investigation along the roadways with 1 borehole (up to 15' depth) at or near each individual station, bus lot, and/or bus pad. This scope of work (SOW) assumes a total of up to 30 boreholes and 7 drill days. The station borings double for pavement borings. The SOW is based on a minimized number of borings. One (1) boring is to be drilled for a group of 2 or 3 stations that are located 500 ft or closer to each other.

All boring locations are in traveled right of way. Dry auger boreholes using rubber-tired truck mounted drill rigs are proposed to reduce drilling and lane closure time. Cone Penetration Testing (CPT) can be considered to supplement the soil borings in special situations when borings are not possible. CPT provides stratigraphic and correlated strength information but does not allow for soil sampling for laboratory testing. The Consultant will arrange for underground utility clearance prior to drilling. A professional moving traffic control service will be used where required on travelled roadway using a standard plan for an exterior temporary lane closure.

Boreholes may be terminated above target depth if refusal is encountered. If chemically impacted soil is observed, it will be noted on the log of test borings. If hazardous materials are encountered, we will terminate the boring and notify the controlling agency. This scope includes a small budget for a hazardous waste hauler contractor to dispose of the materials encountered. Environmental sampling is not included although the geologists and technicians carry handheld monitoring devices to detect volatile gas emissions for worker's safety. Soil cuttings from those borings will be drummed, tested and disposed of by State

certified waste hauler services.

(a) Laboratory Testing

The field boring logs will be analyzed to select bulk and undisturbed samples for laboratory testing. Results of the laboratory tests, together with the field boring data, will be used for engineering analyses. The following laboratory tests are envisioned:

1. In-place moisture and density (for earthwork)
2. Plasticity (plasticity of cohesive soils)
3. Grain size distribution (soil classification and earthwork)
4. Direct shear and unconsolidated undrained compression tests (soil strength)
5. Consolidation (settlement)
6. Soil corrosivity (foundations)
7. Maximum density (earthwork)
8. R-Value (pavement design)

All tests will be conducted in general accordance with Caltrans Test Methods or American Standard Test Methods (ASTM).

ii) Geotechnical Engineering Analyses: Using the findings from the field investigation and laboratory testing program, the Consultant will address the following:

(a) Fault rupture potential - The corridor crosses a fault. A lineament analysis may need to be conducted to evaluate any geologic features in or crossing the project corridor area that indicate the presence of active earthquake faults capable of producing a ground fault rupture. This evaluation will be conducted using dated stereographic aerial photographs which theoretically allows for observation of natural conditions before modification by urban development and agriculture. However, the project area is within areas already altered by urban development and this type of analysis could be highly interpretive. The reports will include one of the following recommendations: (1) fault rupture is not an issue, or (2) fault rupture appears to be an issue and additional work is required to decide on design criteria. The fee estimate does not include item (2).

(b) Roadway - The Consultant will analyze flexible on rigid concrete pavement structural sections for the roadway widenings/modifications and bus lanes using the results of the laboratory test results, and Traffic Indexes provided by Parsons, per Caltrans Highway Design Manual procedures pavements meeting local section requirements. We can also provide geogrid-reinforced alternatives to improve weak subgrade and/or thin the structural section and save construction cost.

- (c) Foundations - The Consultant will perform engineering analyses to develop soil profiles, foundation design parameters and design recommendations for station structure foundations. This includes seismic design criteria (causative fault, site distance, Peak Bedrock Acceleration and ARS design spectra using Caltrans Seismic Design Criteria and California Building Code).

- (d) Utilities/Culverts - The Consultant will provide soil corrosivity test results from 10 station borings (i.e., 1 out of every 3 stations) that can be used for utility/culvert design.

- iii) Report Preparation - The Consultant will prepare a single Draft Geotechnical Report that will combine the content of a materials report and a foundation report providing the following:
 - (a) Site geology including fault rupture potential
 - (b) Soil and groundwater conditions determined by field investigation
 - (c) Log of Test Borings Sheets
 - (d) Laboratory testing
 - (e) Engineering analyses
 - (f) Summary of existing pavement sections
 - (g) New pavement structural sections for all new lanes, roadway widenings and modifications
 - (h) Design recommendations for structure foundations (seismic design criteria: causative fault, site distance, Peak Bedrock Acceleration and ARS design spectra using Caltrans Seismic Design Criteria)
 - (i) Soil corrosivity and recommendations for utility/culvert design
 - (j) Recommendations for construction for earthwork, roadway, and foundation construction

The Draft Report will be submitted to the same reviewing agencies as the draft Preliminary Foundation Report. Caltrans review is not anticipated. Review comments related to geotechnical issues will be addressed by the Consultant. Upon approval of the responses, the Consultant will incorporate the responses and comments into a Final Geotechnical Report which will be submitted for distribution.

I) ARTWORK

- i) To facilitate the timely fabrication and delivery of artwork for the project, the Consultant shall provide the following services:
 - (a) Work with Omnitrans and contractor to finalize the fabrication agreement for artwork
 - (b) Develop art fabrication schedule in cooperation with project schedule
 - (c) Provide assistance to artists in coordination of submittals to general contractor for approval.
 - (d) Perform periodic review of art fabrication progress

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

- (e) Monitor schedule, deliverables and payments to project artists
 - (f) Assist in coordination of artist sub-contractors as needed
 - (g) Meet with contractor to review installation procedures and conservation review recommendations
 - (h) Document artwork delivery protocol and protection of artwork if needed
 - (i) Provide onsite services with contractor during installation
 - (j) Review final art installation with contractor
 - (k) *Deliverables:*
 - 1. Artwork delivery schedules
 - 2. Documentation of art fabrication progress
 - 3. Provide Omnitrans with signage guidelines and samples for artwork
 - 4. Provide status reports on art program for Omnitrans as needed
- ii) Final Project Documentation – To facilitate the long term maintenance of artwork and assist Omnitrans in the promotion of artwork for new projects, the Consultant shall provide the following services:
- (a) Work with Omnitrans staff to develop materials for art project promotion
 - (b) Coordinate the delivery of electronic files for art replacement as needed
 - (c) Monitor schedule, deliverables and payments to project artists
 - (d) *Deliverables:*
 - 1. Develop maintenance handbook for Omnitrans maintenance staff
 - 2. Assist in the development of press and promotional materials relevant to the project art program
 - 3. Provide status reports on art program for Omnitrans as needed

11.101 FINAL DESIGN OF PHASE 2 (TASK 10)

- A) This task will include the final design of Phase 2 of the Project, which encompasses the 3.5 miles of dedicated lanes and six median stations on Holt Boulevard in the City of Ontario (as described in Chapter 5 – Phasing Plan). The subtasks and deliverables are the same as described in the above chapter. Depending upon the Phasing Plan developed under Task 5, the construction of Phase 1 and Phase 2 may be bid separately. The final design for Phase 2 will be put out to bid when funding is available for construction of Phase 2.

FINAL GEOTECHNICAL DESIGN (PHASE 2)

The Phase 2 Alternative includes the same elements as Phase 1 but replaces 6 side stations on exterior lanes on Holt Boulevard in Ontario with approximately 3 median (in-line) stations and adds 3.5 miles of dedicated center lanes. This adds up to 12 exploratory boreholes (generally 5' depth) spaced about 1,200 ft apart on exterior lanes, for roadway modifications and pavement design.

MKP15-37

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

The general scope of work is the same as Phase 1 (Task 9), except that the field investigation adds these 12 pavement borings and drill days increase by 2 days.

- B) This task order may be cancelled if funding is not available for this task.

12.101 BID PERIOD SERVICES (TASK 11)

- A) Prepare addenda to an advertised Contract Unit for issuance by Omnitrans, including such additional design work, drawings, specification writing and contract document revisions as are required.
- B) Develop Engineer's Estimates consistent with the Project Definition Documents and other Invitation for Bid documents issued to bidders.
- C) Provide material for Omnitrans to present at pre-bid conference(s). Attend one (1) pre-bid conference. Respond to bidders questions.
- D) Assist Omnitrans in responding to technical questions posed by plan-holders. Participate in pre-bid meetings, issuance of addenda and re-packaging of rejected bids. Assist Omnitrans in the evaluation of bids during any competitive negotiated procurement process and in conforming the contract documents prior to Notice-to-Proceed.

13.101 DESIGN SERVICES DURING CONSTRUCTION (TASK 12)

- A) Consultant shall provide a full-time on-site representative at the construction trailer for the majority of the construction phase, or as designated as needed by Omnitrans.
- B) The Consultant shall attend Pre-construction Meeting.
- C) The Consultant shall attend Partnering Meetings.
- D) The Consultant shall attend weekly, monthly and quarterly Project Review Meetings (estimated 50 meetings).
- E) Review and evaluate the design drawings and specifications submitted by the construction contractor(s) for conformance with the preliminary ~~engineering~~ and Final Design.
- F) Respond to requests for information and other technical issue resolution posed by construction contractor(s).
- G) Review and approve submittals, such as product and material submittals, and change notices received from construction contractor(s).
- H) Update the contract drawings to reflect revisions to the design during the construction

process.

- I) Review and approve As-Built drawings.
- J) Attend meetings, perform site tours, witness factory acceptance tests and performance, and develop certification plans and procedure for revenue operations.
- K) The Consultant shall provide updates to Safety and Security Management Plan (SSMP) and related documents requested by Omnitrans.
- L) The Consultant shall provide other miscellaneous engineering design and consulting services during construction as requested by Omnitrans.
- M) Other direct costs associated with construction.
- N) Project management and/or administration.
- O) Field visits as requested by Omnitrans.
- P) Provide specialty sub-consultant services as requested by Omnitrans. This will include providing technicians and engineers for foundation construction inspection and soil testing. Inspections and testing may be performed during any of the following stages of construction:
 - i) Grading operations, including excavations and placement of compacted fill
 - ii) Shoring installation
 - iii) Removal or support of buried utilities or structures
 - iv) Excavations for foundations
 - v) Backdrain installation and backfilling of (culvert) walls, if any
 - vi) Removal or installation of support of buried utilities or structures when any unusual subsurface conditions are encountered.

The Consultant can monitor excavations and placement of backfill during construction. A technician can perform field and laboratory soil density testing to verify that backfill is being placed to the minimum required relative compaction. If density testing is performed, a letter report summarizing the soil compaction test results will be prepared by the Consultant upon completion of earthwork activities.

- Q) The Consultant shall provide any additional engineering services during construction, start-up and close-out phase as requested by Omnitrans.
- R) Consultant shall provide final Mylar As-Built/Record Drawings for each local agency.

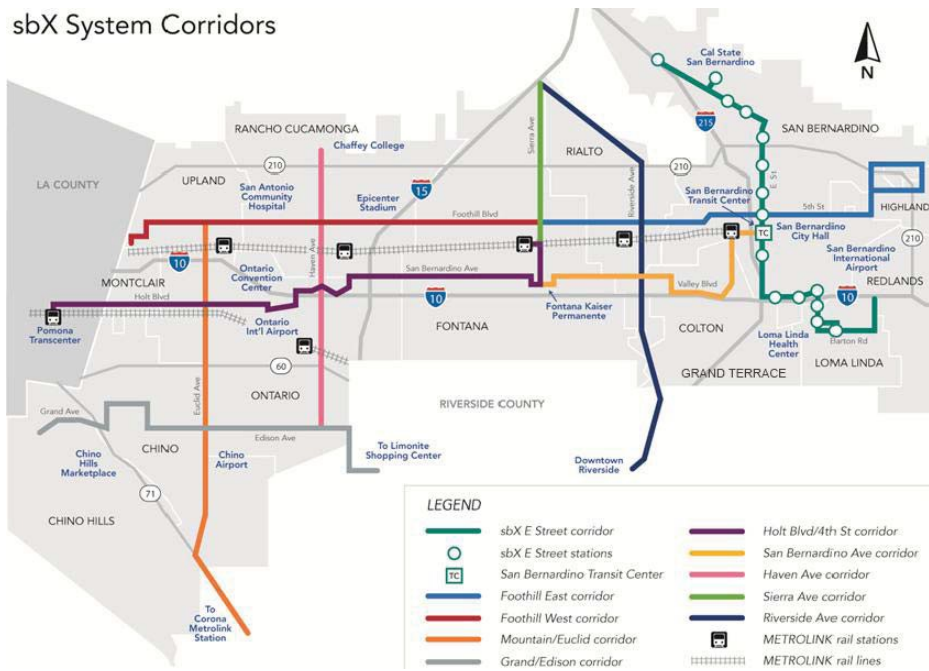
14.101 TRANSIT PLANNING SUPPORT (TASK 13)

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
 SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

A) PRODUCE AN UPDATED OMNITRANS SYSTEM-WIDE TRANSIT
 CORRIDORS PLAN

- i) An initial sbX BRT System-wide Plan for Omnitrans was prepared at the beginning of the Alternative Analysis Phase (2004) and was adopted by the Omnitrans Board of Directors. The System-Wide Plan was updated in 2009 and adopted by the Board of Directors in 2010, and reflects ten (10) potential corridors with proposed alignments and station locations (as shown in the figure below).

sbX System Corridors



- ii) The Contractor shall provide an update of this plan, which will reflect the change in the Holt/4th and Foothill West corridors due to the West Valley Connector Corridor (which combines the two corridors). The plan update will include a map update that assigns new colors and names to the corridors based on the aforementioned changes.
- iii) The plan update should include recommendations for implementing the remaining corridors, including a prioritized order based on ridership productivity, potential benefits (ridership increase, time savings, congestion reduction, connections to jobs), and ease of implementation (including ability to capture potential funding). The recommendations

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

should include how to capitalize on the E Street and West Valley Connector corridors to create extensions or connections with future corridors, as well— as capacity expansions or future phases of improvements that may be needed on the E Street or West Valley Connector corridors. The plan should include a recommended implementation strategy, including timeline, action items/steps to implementation, and potential funding sources for all corridors. The plan may also make suggestions of other planning considerations that could augment or improve the premium transit corridor system (such as how to connect with other planned regional projects, etc.)

- iv) The Consultant will provide ridership forecasts for the changes to the Holt/4th and Foothill West corridors due to the West Valley Connector Corridor. The Consultant will develop recommendations using the following criteria: productivity, potential benefits (ridership increase, time savings, congestion reduction, connections to jobs), and ease of implementation (including ability to capture potential funding).

The Consultant can also provide data (as available) to support analysis of other planning considerations that could augment or improve the premium transit corridor system (such as how to connect with other planned regional projects, etc.).

- v) The Consultant will reference recently completed plans along the corridors, such as SANBAG's Foothill/5th Street Transit and Land Use Study (2014), the City of Ontario's Holt Boulevard Mobility & Streetscape Strategic Plan (2013), the City of Fontana's Sierra and Valley Land Use Study (2013), the City of Rancho Cucamonga's Foothill BRT Strategic Plan (2013), and the City of Highland's Baseline VMT to BRT Plan (2012).
- vi) All ridership forecasting activities will be consistent with Federal Transit Administration requirements regarding Small/New Starts Criteria.

B) ASSIST WITH REGIONAL PLAN UPDATES

- i) The Consultant team shall assist Omnitrans, as needed, with providing information needed to update regional partner agencies' plans to include the West Valley Connector Corridor project. The Consultant shall provide guidance to Omnitrans on which regional plans may need to be updated for consistency with the West Valley Connector project (particularly because it alters the Holt/4th and Foothill West corridors originally reflected in the regional system-wide plans). The Consultant team shall provide any plan language and data needed to Omnitrans for the plan updates.

C) TRAFFIC SIMULATIONS

- i) Upon completion of final design on the preferred alternative, the Consultant will prepare traffic simulations at two critical intersections per City (excluding Montclair) along the corridor (total of eight intersections) to demonstrate how the TSP system will function. Simulations would be prepared for a “No Build” condition without TSP and a “Preferred Alternative Build” condition with TSP as determined by the PDT. It is assumed that traffic count data and model data would be utilized from the work effort on the TIA, and any current signal timing data would be obtained from each respective agency.

Deliverables:

Simulation of TSP operations at eight (8) intersections

~~D) PEDESTRIAN AND BICYCLE COUNTS~~

- ~~i) The Consultant team shall conduct bicycle and pedestrian counts at the 27 major intersections along the corridor during the design process. The counts should be conducted on two different days of the week, and the results should include two hour peak counts and daily average estimates. This data will be used for before and after comparisons for future reporting. As an optional task order, the Consultant team shall conduct the “after” counts after the service begins operation (upon the request of the Omnitrans Project Manager).~~

15.101 MISCELLANEOUS SERVICES (TASK 14)

A) SUBSURFACE UTILITY SCANNING/POTHOLING

- i) Subsurface and surface utilities will be located along 3.5 miles of Holt Blvd and will cover a 50’ swath along the planned centerline and dedicated bus way lanes and stations.

Subsurface and surface utilities will be located along the planned 27 bus stop locations. Utilities will be located at each planned stop within a 200’x30 swath.

Utility locating and mapping will be based upon the ASCE guidelines for Subsurface Utility Engineering. Upon completion of the surface and subsurface utility locating, a 3D utility map will be prepared depicting those utilities located. Inverts for Storm and Sewer manholes identified by the client will be surveyed.

Utility budget included under this task will be used for potholing or a combination of potholing and subsurface scanning.

ii) Deliverables:

- (a) 3D Utility Mapping File based on field scan
- (b) Utility potholing data

B) SURVEYED RIGHT OF WAY MAPPING

- i) Surveyed Right of Way mapping will be developed for the impacted parcels identified upon completion of the Preliminary Engineering phase.

Legal descriptions and exhibits for partial acquisitions, permanent easements, and/or temporary construction easements to support the Appraisal and acquisition process will be provided. Up to 200 legal descriptions are estimated.

ii) Deliverables:

- (a) Optional Surveyed Right of Way Base Mapping
- (b) Optional Legal Descriptions & Plat Exhibits

C) ADDITIONAL TRAFFIC SIGNAL MODIFICATIONS

- i) Based on results of the Preliminary Engineering analysis, additional Traffic Signal Modifications plans for up to 30 signalized intersections can be developed.

- ii) *Deliverables:* 65%, 90%, 100% and Final Traffic Signal Plans, specifications and estimates for up to 30 additional signalized intersections.

D) FLOOD CHANNEL IMPACT REQUIREMENTS

An existing San Bernardino County flood channel runs north-south under Holt Boulevard and is located between N. Grove Avenue and N. Imperial Avenue. Alternatives will be evaluated to avoid impact to the channel. However, should impacts require modification to the channel the following optional tasks will be required to obtain approval from the necessary stakeholders.

i) **SURVEYING/MAPPING**

Consultant shall perform additional Survey of existing box culvert within the West Cucamonga Channel.

ii) **GEOTECHNICAL ENGINEERING**

Consultant shall perform one deep boring for the box culvert extension designs.

iii) **PRELIMINARY STRUCTURAL DESIGN**

Scope of Work

The structural work on this project consists of the extension of the box culvert on E. Holt Boulevard. The General Plan for the box culvert extension shall meet the requirements of the City of Ontario and the San Bernardino County Flood Control District.

Structure General Plans

The General plan for the drainage structure shall be prepared. The General Plan shows the layout, structure type, approach railing, dimensions of existing culvert and widening, water surface elevations, foundation type, slope protection, temporary construction easements, wingwalls, headwalls, retaining walls, channel slopes and roadway slopes, construction staging, and detours. The structure shall be reviewed with the City and the San Bernardino County Flood Control District.

A complete set of structural plans shall be prepared for all structures. A total of 2 structure plan sheets are anticipated for the proposed project.

Deliverable:

- (a) Structure General Plans

iv) PERMITS

Section 404 USACE Permit - The proposed project qualifies for the following Section 404 Army Corps of Engineers Nationwide Permit 14 for Linear Transportation Projects, as the project is anticipated to have less than 0.5 acre of permanent impacts to jurisdictional waters. This permit is required for the construction, expansion, modification, or improvement of linear transportation projects in waters of the United States. To initiate permit process, Consultant shall submit the permit application along with all necessary engineering and environmental support information so that the ACOE may authorize use of the Nationwide 14 Permit. Two Section 404 USACE permits shall be prepared. The first set shall be for construction of project drainage. The second shall encompass the road widening.

Deliverable:

- (a) Section 404 Permit

Section 1602 CDFW Permit

Consultant shall coordinate with the California Department of Fish and Wildlife (CDFW) to obtain a Section 1602 Streambed Alteration Agreement. The culvert extension beneath E. Holt Boulevard, between N. Grove Avenue and N. Imperial Avenue, shall require notification of proposed streambed alterations to the CDFW. Consultant shall delineate boundaries of CDFW jurisdiction, assess project impacts, prepare a Notification of Streambed Alteration, and enter into a

Streambed Alteration Agreement with CDFW.

Deliverable:

(a) Section 1602 Permit

San Bernardino County Flood Board Permit

Consultant shall coordinate with the San Bernardino County Flood Control District (SBCFCD) to obtain a permit for culvert extension into the West Cucamonga Channel. An application package shall be prepared to include design plans and supporting documentation.

Consultant shall prepare the storm drain extension application package for submittal to the San Bernardino County Flood Control District. Consultant shall coordinate with the Flood Control District prior to submittal of the application to ensure all needed materials are included, and shall conduct any necessary follow up coordination and permit application revisions to make sure the City receives the final permit required for construction. The application package will include all items listed on the SBCFCD's permit application checklist. The hydraulic calculations will be submitted in a memo format to provide the conclusions and results of the analyzed headwater elevations. This will be performed using CulvertMaster software. It is assumed that no Location Hydraulic Study will be required by SBCFCD to issue the permit.

Deliverable:

(a) San Bernardino County Flood Control District Permit

E) MAJOR SEWER/WATER UTILITY RELOCATIONS

If it impacts to sewer/water utilities are unavoidable through design measures, the following optional tasks will be performed to design plans for relocation of the facilities.

- i) Video Inspection of Existing Facilities – The Consultant will conduct Closed Circuit Televisions (CCTV) inspections of existing sanitary sewer manholes and pipe. The pipe condition will be assessed and rated according to the National Association of Sanitary Sewer Companies (NASSCO) Pipeline Assessment & Certification Program (PACP). This task allows for up to 7 days of CCTV inspections and assumes that the existing pipes will be sufficiently clean to be able to perform the CCTV inspections. Any cleaning of pipes is assumed to be done by others.
- ii) Preliminary Design of Utility Relocations – The Consultant will develop preliminary sanitary sewer and water line plans that will depict the conceptual relocations for facilities that are in conflict with the proposed project improvements. The plans will be prepared at a scale of 1"=40'.

Scope of Work

The Preliminary Sanitary Sewer Design Report prepared by the Consultant will include those sanitary sewer systems that are required to be relocated to clear the project improvements.

(b) Deliverables:

- CADD files and PDF version of the conceptual relocation plans of the sanitary sewer and water line facilities
- 1 hard copy and 1 PDF camera-ready file of the Preliminary Sanitary Sewer Design Report

iii) Preparation of Construction Contract Documents (Phase 1 and Phase 2)

- (b) Sanitary Sewer Plans, Profiles, and Details - The Consultant will prepare the layouts, profiles, and details for the sanitary sewer facilities that will require relocation or modifications. Plans will be prepared at a scale of 1"=40'.
- (c) Sanitary Sewer Technical Specifications – The Consultant will provide the necessary technical specifications for the construction of the sanitary sewer relocation work within the project area. The technical specifications will be provided in Microsoft Word format to be incorporated into the Project specifications.
- (d) Sanitary Sewer Plans Quantity Estimates – The Consultant will provide the quantity estimates for the sanitary sewer relocation work.
- (e) Water Line Plans – The Consultant will prepare the layouts plans for the water line facilities and will be prepared at a scale of 1" = 40'.
- (f) Water Line Details – The Consultant will prepare details for the water line facilities that will require relocation.
- (g) Water Line Technical Specifications – The Consultant will provide necessary technical specifications for the construction of the water relocation work within the project area. The technical specifications will be provided in Microsoft Word format to be incorporated into the Project specifications.
- (h) Water Line Plans Quantity Estimates – The Consultant will provide the quantity estimates for the water line relocation work.
- (i) Sanitary Sewer Design Report – The Consultant will prepare a Sanitary Sewer Design Report for Phase 1 and Phase 2 of the project. The reports will document the existing system and design standards used during the

development of the plans. The reports will also include the required analysis of the proposed system.

Assumptions:

- The Final Design of Phase 1 and Phase 2 will each include the 65%, 90%, 100% and Final submittals
- One (1) set of Contract Plans, Specifications, and Estimates will be prepared for the entire Phase 1 limits regardless of the jurisdiction of the improvements.
- One (1) set of Contract Plans, Specifications, and Estimates will be prepared for the entire Phase 2 limits regardless of the jurisdiction of the improvements.
- The Sanitary Sewer Design Report will be submitted with the 100% submittal
- CADD files and PDF version of the sanitary sewer and water line relocation plans, profiles, and details
- MS Word document of the sanitary sewer and water line relocation technical specifications
- MS Excel document of the sanitary sewer and water line relocation quantity estimates

F) ADDITIONAL PRESENTATION BOARDS AND RENDERINGS

- i) Should it be needed, up to five additional display boards will be prepared for presentations.

Deliverables:

Five (5) display boards could be provided.

~~G) PEDESTRIAN AND BICYCLE COUNTS (AFTER)~~

~~The Consultant team will conduct bicycle and pedestrian counts at the 27 major intersections along the corridor after construction. The counts will be conducted on two different days of the week, and the results should include two-hour peak counts and daily average estimates. This data will be used for before and after comparisons for future reporting.~~

~~H) ACTIVE TRANSPORTATION GRANT ENVIRONMENTAL DOCUMENT~~

~~Parsons will prepare a Categorical Exemption/Categorical Exclusion (CE/CE) environmental documentation to provide environmental clearance for the ATP-funded non-motorized project features. It is our understanding that the project has obtained ATP funding from FHWA and approval of the NEPA environmental document (Categorical Exclusion) is delegated to Caltrans' Local Assistance by FHWA. The scope and fee provided in our estimate is based on our assumption that~~

ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR

~~the non-motorized project features does not require the preparation of noise and air-quality studies, and would not require right-of-way acquisitions.~~

DG) SURVEY/ENGINEERING SUPPORT OF RIGHT OF WAY ACQUISITION ACTIVITIES

Assumptions: It is anticipated that Right of Way Appraisal and Acquisition Activities will be performed by a separate agency. These activities include ordering of Preliminary Title Reports (PTRs), appraisal preparation, appraisal review, property owner negotiations, escrow coordination and title clearance. The following tasks support the Right of Way Acquisition activities.

i) Survey Staking of Partial Acquisition and/or Easement Parcel Limits

Field crews will stake the limits of partial acquisitions, permanent and/or temporary construction easements, so that property owners can visualize the fee take and easement line locations affecting their properties. Related office services will be needed to prepare field packages and calculate the acquisition lines. It is assumed that these services will be performed for up to 200 parcels.

ii) Engineering Support of Right of Way Acquisition

Engineering staff will provide support to Right of Way Acquisition activities for up to 200 parcels. Support efforts include field reconnaissance prior to survey staking of parcels, coordination with Right of Way and Survey staff, and field meetings with right of way staff, surveyor and owners. Engineering staff will develop individual property owner exhibits to support field meeting activities. The exhibits will illustrate project specific improvements to property owners. Cost to Cure Estimates will be developed for inclusion into the Right of Way Agreements. Property Owners will be monetarily compensated for impacts.

LIST OF ACRONYMS

AA – Alternatives Analysis

AASHTO – American Association of State Highway and Transportation Officials

ACI – American Concrete Institute

ADA – Americans with Disabilities Act

A&E – Architectural and Engineering (design)

AISC - American Institute of Steel Construction

ANSI - American National Standards Institute

APE – Area of Potential Effects

AQMD (or SCAQMD) – South Coast Air Quality Management District

AQMP – Air Quality Management Plan

ASHRAE - American Society of Heating, Refrigerating, and Air-Conditioning Engineers

ASTM - American Society for Testing and Materials

AVL – Automatic Vehicle Location

BMPs – Best Management Practices

BOD – Basis of Design (also Board of Directors)

BRT – Bus Rapid Transit

CAE/CADD – Computer Aided Engineering / Computer Aided Design and Drafting

Caltrans – California Department of Transportation

CN – Change Notice

CCN – Contractor Change Notice

CCTV – Closed-circuit television (surveillance system)

CEQA – California Environmental Quality Act

CFR – Code of Federal Regulations

MKP15-37

**ARCHITECTURAL, ENGINEERING AND FINAL DESIGN
SERVICES FOR THE WEST VALLEY CONNECTOR CORRIDOR**

CMP – Configuration Management Plan

CPTED – Crime Prevention Through Environmental Design

CPUC – California Public Utilities Commission

CSI - Construction Specifications Institute

CUD – Contract Unit Descriptions

D/B, D/B/B, and CM/GC – Design/Build, Design/Bid/Build, and Construction Manager/General Contractor (construction procurement approaches)

DBE – Disadvantaged Business Enterprise

DCL – Document Control Log

DCN – Design Change Notice

DOE – Determination of Eligibility Report

DPR – California Department of Parks and Recreation

DR – The Dead Reckoning (or Deduced Reckoning) Navigation

System DTM – Digital Terrain Modeling

EA – Environmental Analysis (pursuant to NEPA)

EEO – Equal Employment Opportunity

EIR – Environmental Impact Report (pursuant to CEQA)

EMFAC – Emissions Factors model used by California Air Resources Board

FD – Final Design

FHWA – Federal Highway Administration

FOE – Finding of Effects Report

FONSI – Finding of No Significant Impact (pursuant to NEPA)

FTA – Federal Transit Administration

GHG – Greenhouse Gas Emissions

GPS – Global Positioning System

Scope of Work

IEEE - Institute of Electrical and Electronics

Engineers ITE – Institute of Transportation Engineers

IT – Information Technology (Omnitrans department)

ITS – Intelligent Transportation Systems

LACMTA – Los Angeles County Metropolitan Transportation Authority (LA
Metro) Ldn (or DNL) – Day-night average sound level

Leq (or LAeq) – Equivalent sound level

LPA – Locally Preferred Alternative

MMRP – Mitigation Monitoring and Reporting Program

MOA – Memorandum of Agreement

MUTCD – Manual on Uniform Traffic Control Devices

NEC – National Electrical Code

NEPA – National Environmental Protection

Act NR – National Register

O&M – Operations and Maintenance

PA – public address system

PBCR – Project Budget Change

Request PDT – Project Development

Team

PE – Preliminary Engineering phase

PIP – Project Implementation Plan

PS&E – Plans Specifications and Estimates (phase of design)

QA/QC – Quality Assurance and Quality Control

RAMD – System Reliability/Availability/Maintainability/Dependability Plan

RF – Radio-Frequency

RFI – Request for Information

SANBAG – San Bernardino Associated Governments

sbX – Omnitrans’ planned system of ten bus rapid transit corridors (San Bernardino Valley Express)

SCAG – Southern California Association of Governments

SOW – Scope of Work

Governments SHPO – State Historic Preservation Officer

SSP – Caltrans Standard Special Provisions

TCQSM – Transit Capacity and Quality of Service

Manual TCRP – Transit Cooperative Research Program

TIGER - Transportation Investment Generating Economic Recovery (US Department of Transportation grant program)

TSP – Transit Signal Priority

USFWS – U.S. Fish and Wildlife

Service VE – Value Engineering

VMS – Variable Message Sign (real-time bus arrival information electronic signage)

VMT – Vehicle Miles Traveled

WBS – Work Breakdown Structure

WVC or WVCC – West Valley Connector Corridor (“Project”)

AMENDMENT 2

CONTRACT MKP15-37

BETWEEN

OMNITRANS

AND

PARSONS TRANSPORTATION GROUP, INC.

Architectural, Engineering and Final Design Services for the West Valley Connector Corridor

This CONTRACT AMENDMENT 2, effective _____, 2016 is entered into by and between Omnitrans (hereinafter called "Agency") and Parsons Transportation Group, Inc. (hereinafter called "Consultant").

RECITALS

WHEREAS:

- I. Agency and Consultant entered into Contract MKP15-37 on November 10, 2015; and
- II. Agency and Consultant amended the Contract under Amendment 1 to exercise all Miscellaneous Services, Milestone 20, in a not-to-exceed amount of \$2,024,627, for a total maximum cumulative payment obligation of \$10,024,627; and revised Attachment C; and
- III. Agency and Consultant hereby agree to amend the Contract under Amendment 2 to revise the Attachment A - Scope of Work, to add environmental tasks for the new Haven Branch Alignment, and increase maximum cumulative payment obligation by \$199,900, for a new total contract not-to-exceed amount of \$10,224,527.

NOW THEREFORE, AGENCY and CONSULTANT hereby amend their Contract as follows:

- I. Contract Agreement title page, Contract Amount, delete in its entirety and replace with:

Contract Amount \$10,224,527

- II. Contract Agreement, Page 5, delete Section 3. Compensation in its entirety and replace with the following:

For CONSULTANT's full and complete performance of its obligations under this Agreement, OMNITRANS shall pay CONSULTANT on a LUMP SUM basis as shown in Attachment C, and subject to the maximum cumulative payment obligation.

OMNITRANS' maximum cumulative payment obligation under this Agreement shall not exceed Ten Million, Two Hundred Twenty-Four Thousand, Five Hundred Twenty-Seven Dollars (\$10,224,527), including all amounts payable to CONSULTANT for all costs, including but not limited to direct labor, other direct costs, subcontracts, indirect costs including, but not limited to, leases, materials, taxes, insurance, and profit.

- III. Contract Agreement, Attachment A Scope of Work, Section 8.101, Environmental Clearance (Task 7), add Subsection Q – Additional Tasks – Haven Branch Alignment as follows:

- i. Alternative Analysis – Include new alignment in Alternatives Analysis section.
- ii. Cultural Studies – Update APE map. Obtain building permits and library research. Literature and records search at the CSU Fullerton CHRIS center. Historical building and archaeological surveys. Preparation of Department of Parks and Recreation (DPR) forms. Assess for additional impacts to cultural resources. Update and finalize Determination of Eligibility Report (Historic Property Survey Report, Historical Resources Evaluation Report, and Archaeological Study Report).

- iii. Paleontological Resources Assessment Report – Conduct an assessment for paleontological resources, determine impacts, and prepare and finalize report.
 - iv. Biological Study Report – Assess for additional impacts to biological resources, including vegetation, plant and wildlife species, and wetlands. Update and finalize Biological Study Report.
 - v. Water Quality Report – Assess for additional impacts to water resources and water quality. Update and finalize Water Quality Report.
 - vi. Community Impact Report – Assess for additional impacts to community facilities and services, demographics, and socioeconomics. Update and finalize Community Impact Report.
 - vii. Initial Site Assessment – Conduct environmental database search, agency records search, interviews, historical records search, and site reconnaissance. Assess for additional hazardous waste/materials impacts. Update and finalize Initial Site Assessment.
 - viii. Relocation Impact Report – Assess for additional residential and business displacement impacts. Update and finalize Relocation Impact Report.
 - ix. Visual Impact Assessment – Assess for additional visual and aesthetic impacts pertaining to proposed stations and impacts to trees. Update and finalize Visual Impact Assessment.
 - x. Air Quality Report – Conduct additional air modeling. Update and finalize Air Quality Report.
 - xi. Noise Study Report – Conduct three additional short-term and three additional long-term noise measurements. Conduct additional noise modeling. Update and finalize Noise Study Report.
 - xii. Public Services and Utilities Analysis – Assess for additional impacts to public services and utilities.
 - xiii. Project Description – Include new alignment in project description.
 - xiv. Construction Timeline – Update construction timeline.
 - xv. Construction Impact Analysis – Assess for additional construction impacts.
 - xvi. Admin Draft EIR/EA – Assess new alignment in Admin Draft EIR/EA.
 - xvii. Screencheck Draft EIR/EA – Assess new alignment in Screencheck Draft EIR/EA.
 - xviii. Finding of Effects Report – Include any additional significant environmental effects into Finding of Effects Report.
 - xix. Mitigation Monitoring and Reporting Program – Include any additional mitigation measures to MMRP.
 - xx. Proposed Bus Stops – Haven Avenue and 6th Street (2 bus stops); Haven Avenue and Arrow Route (2 bus stops); Haven Avenue and Foothill Boulevard (2 bus stops); Foothill Boulevard and Spruce Avenue (2 stops); Foothill Boulevard and Rochester Avenue (2 bus stops); Victoria Gardens Lane in the southeast corner of Victoria Gardens (1 bus stop).
- IV. Contract Agreement, Attachment A Scope of Work, Section 9.101, Preliminary Engineering (Task 8), add Subsection FFF – Additional Tasks – Haven Branch Alignment as follows:
- i. Supplemental Ground Mapping – Include supplemental Ground mapping for new stations.
 - ii. 30% Preliminary Design Drawings – Addition of Branch Line Alternative for new stations.
 - iii. Draft Preliminary Engineering Report – Addition of Branch Line Alternative into Report and engineering support of environmental.
 - iv. Additional Traffic Analysis – Include Branch Line Alternative Traffic Volumes and Operations.
- V. Contract Agreement, Attachment C Milestones and Deliverables, delete in its entirety and replace with revised Attachment C (September 29, 2016).
- VI. Unless changed herein, the remainder of Contract MKP15-37 remains in full force and effect.

IN WITNESS WHEREOF, the parties hereto have caused this Amendment 2 to Contract MKP15-37 to be executed on the date first written above.

Omnitrans executes this Amendment 2 effective as of the day and year first therein above written.

OMNITRANS

PARSON TRANSPORTATION
GROUP, INC.

P. SCOTT GRAHAM
CEO/General Manager

CHRIS A. JOHNSON, P.E.
Vice President

Date: _____

Date: _____

DP

AMENDMENT 3

CONTRACT MKP15-37

BETWEEN

OMNITRANS

AND

PARSONS TRANSPORTATION GROUP, INC.

Architectural, Engineering and Final Design Services for the West Valley Connector Corridor

This ~~CONTRACT AMENDMENT 3~~, effective _____, 2016 is entered into by and between Omnitrans (hereinafter called "Agency") and Parsons Transportation Group, Inc. (hereinafter called "Consultant").

RECITALS

WHEREAS:

- ~~I. Agency and Consultant entered into Contract MKP15-37 on November 10, 2015; and~~
- ~~H. Agency and Consultant amended the Contract under Amendment 1 to exercise all Miscellaneous Services, Milestone 20, in a not to exceed amount of \$2,024,627, for a total maximum cumulative payment obligation of \$10,024,627; and revised Attachment C; and~~
- ~~III. Agency and Consultant amended the Contract under Amendment 2 to revise the Scope of Work, to add additional environmental tasks for the new Haven Branch Alignment, and increase maximum cumulative payment obligation by \$199,900, for a total maximum cumulative payment obligation of \$10,224,527; and~~
- ~~IV. Agency and Consultant hereby agree to amend the Contract under Amendment 3 to revise the Scope of Work, to add environmental tasks for the sidewalk improvements along Foothill Boulevard between East Avenue and Sierra Avenue, and increase maximum cumulative payment obligation by \$54,900, for a new total contract not to exceed amount of \$10,279,427.~~

NOW THEREFORE, AGENCY and CONSULTANT hereby amend their Contract as follows:

- ~~I. Contract Agreement title page, Contract Amount, delete in its entirety and replace with:~~

~~Contract Amount \$10,279,427~~

- ~~H. Contract Agreement, Page 5, delete Section 3. Compensation in its entirety and replace with the following:~~

~~For CONSULTANT's full and complete performance of its obligations under this Agreement, OMNITRANS shall pay CONSULTANT on a LUMP SUM basis as shown in Attachment C, and subject to the maximum cumulative payment obligation.~~

~~OMNITRANS' maximum cumulative payment obligation under this Agreement shall not exceed Ten Million, Two Hundred Seventy Nine Thousand, Four Hundred Twenty Seven Dollars (\$10,279,427), including all amounts payable to CONSULTANT for all costs, including but not limited to direct labor, other direct costs, subcontracts, indirect costs including, but not limited to, leases, materials, taxes, insurance, and profit.~~

- ~~III. Contract Agreement, Attachment A Scope of Work, Section 15.101, Miscellaneous Services (Task 14H); add Subsections i, ii, and iii. Additional Tasks as follows:~~

~~i) Cultural Studies~~

- ~~(a) Revise APE Map to include additional areas. This activity includes GIS Mapping (APE, survey areas, project location maps).~~
- ~~(b) Obtain building permits and library research.~~
- ~~(c) Literature and records search at the SCU Fullerton CHRIST center.~~
- ~~(d) Historical buildings and archaeological surveys.~~
- ~~(e) Preparation of Department of Parks and Recreation (DPR) forms (evaluation of approximately 100 potential historic buildings).~~
- ~~(f) Preparation of Historic Properties Survey Report (includes Historic Resources Evaluation Report and Archaeology Survey Report).~~

~~ii) CE/CE Re-Validation~~

- ~~(a) Preparation of NEPA Revalidation Form~~

~~iii) Coordination with Caltrans and Local Assistance~~

~~IV. Contract Agreement, Attachment C Milestones and Deliverables, delete in its entirety and replace with revised Attachment C (November 2, 2016).~~

~~V. Unless changed herein, the remainder of Contract MKP15-37 remains in full force and effect.~~

~~IN WITNESS WHEREOF, the parties hereto have caused this Amendment 3 to Contract MKP15-37 to be executed on the date first written above.~~

~~Omnitrans executes this Amendment 3 effective as of the day and year first therein above written.~~

~~OMNITRANS _____ PARSONS TRANSPORTATION
_____ GROUP, INC.~~

~~_____
P. SCOTT GRAHAM _____ CHRIS A. JOHNSON, P.E.
CEO/General Manager _____ Vice President~~

~~Date: _____ Date: _____~~

~~_____
DP~~

AMENDMENT 4

CONTRACT MKP15-37

BETWEEN

OMNITRANS

AND

PARSONS TRANSPORTATION GROUP, INC.

Architectural, Engineering and Final Design Services for the West Valley Connector Corridor

This CONTRACT AMENDMENT 4, effective _____, 2016 is entered into by and between Omnitrans (hereinafter called "Agency") and Parsons Transportation Group, Inc. (hereinafter called "Consultant").

RECITALS

WHEREAS:

- I. Agency and Consultant entered into Contract MKP15-37 on November 10, 2015; and
- II. Agency and Consultant amended the Contract under Amendment 1 to exercise all Miscellaneous Services, Milestone 20, in a not-to-exceed amount of \$2,024,627, for a total maximum cumulative payment obligation of \$10,024,627; and revised Attachment C; and
- III. Agency and Consultant amended the Contract under Amendment 2 to revise the Scope of Work, to add additional environmental tasks for the new Haven Branch Alignment, and increase maximum cumulative payment obligation by \$199,900, for a total maximum cumulative payment obligation of \$10,224,527; and
- IV. Agency and Consultant amended the Contract under Amendment 3 to revise the Scope of Work, to add additional environmental tasks for the sidewalk improvements along Foothill Boulevard between East Avenue and Sierra Avenue, and increase maximum cumulative payment obligation by \$54,900, for a total maximum cumulative payment obligation of \$10,279,427.
- V. Agency and Consultant hereby agree to amend the Contract under Amendment 4 to revise the Scope of Work, to provide additional property owner outreach along Holt Boulevard, and increase maximum cumulative payment obligation by \$15,180, for a new total contract not-to-exceed amount of \$10,294,607.

NOW THEREFORE, AGENCY and CONSULTANT hereby amend their Contract as follows:

- I. Contract Agreement title page, Contract Amount, delete in its entirety and replace with:

Contract Amount \$10,294,607

- II. Contract Agreement, Page 5, delete Section 3. Compensation in its entirety and replace with the following:

For CONSULTANT's full and complete performance of its obligations under this Agreement, OMNITRANS shall pay CONSULTANT on a LUMP SUM basis as shown in Attachment C, and subject to the maximum cumulative payment obligation.

OMNITRANS' maximum cumulative payment obligation under this Agreement shall not exceed Ten Million, Two Hundred Ninety-Four Thousand, Six Hundred Seven Dollars (\$10,294,607), including all amounts payable to CONSULTANT for all costs, including but not limited to direct labor, other direct costs, subcontracts, indirect costs including, but not limited to, leases, materials, taxes, insurance, and profit.

- III. Contract Agreement, Attachment A Scope of Work, Section 3.101, Public Relations (Task 2), add Subsections ix through xi, Additional Tasks as follows:

- ix) Gather and compile a list of property addresses for impacted property owners and tenants on Holt Boulevard, as well as property owners within ¼ mile of the impacted properties.
- x) Prepare exhibits showing potential project impacts to an owner's parcel.
- xi) Prepare a letter informing affected property owners and tenants on Holt Boulevard, and a postcard informing affected property owners and tenants within ¼ mile of the impacted properties about the project.

IV. Contract Agreement, Attachment C Milestones and Deliverables, delete in its entirety and replace with revised Attachment C (December 19, 2016).

V. Unless changed herein, the remainder of Contract MKP15-37 remains in full force and effect.

IN WITNESS WHEREOF, the parties hereto have caused this Amendment 4 to Contract MKP15-37 to be executed on the date first written above.

Omnitrans executes this Amendment 4 effective as of the day and year first therein above written.

OMNITRANS

PARSONS TRANSPORTATION
GROUP, INC.

P. SCOTT GRAHAM
CEO/General Manager

CHRIS A. JOHNSON, P.E.
Vice President

Date: _____

Date: _____

DP

AMENDMENT 5

CONTRACT MKP15-37

BETWEEN

OMNITRANS

AND

PARSONS TRANSPORTATION GROUP, INC.

Architectural, Engineering and Final Design Services for the West Valley Connector Corridor

This CONTRACT AMENDMENT 5, effective _____, 2016 is entered into by and between Omnitrans (hereinafter called "Agency") and Parsons Transportation Group, Inc. (hereinafter called "Consultant").

RECITALS

WHEREAS:

- I. Agency and Consultant entered into Contract MKP15-37 on November 10, 2015; and
- II. Agency and Consultant amended the Contract under Amendment 1 to exercise all Miscellaneous Services, Milestone 20, in a not-to-exceed amount of \$2,024,627, for a total maximum cumulative payment obligation of \$10,024,627; and revised Attachment C; and
- III. Agency and Consultant amended the Contract under Amendment 2 to revise the Scope of Work, to add additional environmental tasks for the new Haven Branch Alignment, and increase maximum cumulative payment obligation by \$199,900, for a total maximum cumulative payment obligation of \$10,224,527; and
- IV. Agency and Consultant amended the Contract under Amendment 3 to revise the Scope of Work, to add additional environmental tasks for the sidewalk improvements along Foothill Boulevard between East Avenue and Sierra Avenue, and increase maximum cumulative payment obligation by \$54,900, for a total maximum cumulative payment obligation of \$10,279,427.
- V. Agency and Consultant amended the Contract under Amendment 4 to revise the Scope of Work, to provide additional property owner outreach along Holt Boulevard, and increase maximum cumulative payment obligation by \$15,180, for a total maximum cumulative payment obligation of \$10,294,607.
- VI. Agency and Consultant hereby agree to amend the Contract under Amendment 5 to revise the Scope of Work, to provide additional routing options analysis, and increase maximum cumulative payment obligation by \$99,532, for a new total contract not-to-exceed amount of \$10,394,139.

NOW THEREFORE, AGENCY and CONSULTANT hereby amend their Contract as follows:

- I. Contract Agreement title page, Contract Amount, delete in its entirety and replace with:

Contract Amount \$10,394,139
- II. Contract Agreement, Page 5, delete Section 3. Compensation in its entirety and replace with the following:

For CONSULTANT's full and complete performance of its obligations under this Agreement, OMNITRANS shall pay CONSULTANT on a LUMP SUM basis as shown in Attachment C, and subject to the maximum cumulative payment obligation.

OMNITRANS' maximum cumulative payment obligation under this Agreement shall not exceed Ten Million, Three Hundred Ninety-Four Thousand, One Hundred Thirty-Nine Dollars (\$10,394,139), including

all amounts payable to CONSULTANT for all costs, including but not limited to direct labor, other direct costs, subcontracts, indirect costs including, but not limited to, leases, materials, taxes, insurance, and profit.

- III. Contract Agreement, Attachment A Scope of Work, Section 4.101, Refinement of Routing Alignment and Station Locations (Task 3), add to Subsection A) iii through vi, Additional Tasks as follows:
 - iii) Conduct analysis of four additional routing options.
 - iv) Refine station locations.
 - v) Presentation materials.
 - vi) Evaluations and recommendations.
- IV. Contract Agreement, Attachment C Milestones and Deliverables, delete in its entirety and replace with revised Attachment C (December 20, 2016).
- V. Unless changed herein, the remainder of Contract MKP15-37 remains in full force and effect.

IN WITNESS WHEREOF, the parties hereto have caused this Amendment 5 to Contract MKP15-37 to be executed on the date first written above.

Omnitrans executes this Amendment 5 effective as of the day and year first therein above written.

OMNITRANS

PARSONS TRANSPORTATION
GROUP, INC.

P. SCOTT GRAHAM
CEO/General Manager

CHRIS A. JOHNSON, P.E.
Vice President

Date: _____

Date: _____

DP