SCOPE OF SERVICES

FOR

DESIGN AND ENGINEERING SERVICES FOR THE BLACKSTONE/KINGS CANYON BUS RAPID TRANSIT STATION AT MARIPOSA AND VAN NESS AND ASSOCIATED BUS AND BUS LIVABILITY GRANT WORK

TASK 1 – PROJECT MANAGEMENT

Kimley-Horn will provide project management services for this additional working, following the original Fresno BRT project scope. Kimley-Horn will coordinate with subconsultants PIVOT, LCNA, Biggs Cardosa, AECOM, Quad Knopf, and Blackburn for design of the revised improvements around the Van Ness BRT station. Kimley-Horn will also work closely with the City to prepare and refine design concepts.

The Kimley-Horn project manager and ITS/Systems/Traffic Lead will meet with the City Public Works Department and others at the City as needed to review the proposed improvements and work to address and incorporate their comments into the final concept.

Kimley-Horn will also perform QC/QA services for this additional work. Our QC/QA will follow the Fresno BRT QC plan.

TASK 2 – DATA GATHERING

Sub-Task 2.1 Site Survey and Record Research

Our subconsultants Quad Knopf and AECOM will gather additional data in an expanded area around the two Van Ness BRT stations. Our team will provide data gathering services as outlined in the original scope. Kimley-Horn will coordinate its effort for efficiently performing field reconnaissance and gathering the required data/information. We will compile copies of these drawings, digitally (when available) and hard copies for the older mapping, and create a list of the archive improvement plans found.

Kimley-Horn will research governing agencies to locate and review readily available record drawings for the additional features around the new BRT station location. The drawings will include street plans, survey plats, Right of way maps, etc.

We will provide additional topographic data collection (mobile LIDAR supplemented by expanded field surveys). We assume we can utilize the existing aerial captured for the BRT project, along with the right-of-way lines resolved for the BRT under the original contract.

Our subconsultant Blackburn Consulting will provide geotechnical services for this effort, including completing a Draft and Final Foundation Report for design of the signal-span pedestrian bridge.

Sub-Task 2.2 Coordinate, Obtain Permits, and Mark for USA

Blackburn will coordinate with the client to discuss the project issues and schedule. They will review the site for drill rig access, mark the exploratory boring location and notify Underground Service Alert (USA). Blackburn will obtain an encroachment permit from the City of Fresno for drilling and access through City property. BCI assumes that the City will waive any encroachment permit fees and bond requirements.

Sub-Task 2.3 Subsurface Exploration

Blackburn will drill, log and sample one exploratory boring to a depth of about 50 feet below existing grade at the top of the existing stairway near the proposed east abutment.

Blackburn will core the existing concrete flatwork, and then advance the boring with 4-inch to 6-inch diameter solid or hollow stem augers, collecting samples at approximate 5-foot intervals with Standard Penetration Test (SPT) or California Modified samplers. A Blackburn Engineer or Geologist will log the boring and direct the sampling operations. Blackburn will backfill the boring with native cuttings, and patch the upper 10 inches with concrete.

Sub-Task 2.4 Laboratory Testing

Blackburn will perform the following laboratory tests on relatively undisturbed samples or bulk samples obtained from the exploratory borings:

- Moisture Content and Unit Weight for bearing capacity, lateral capacity, and settlement analyses.
- Sieve Analysis and Plasticity Index for classification and soil expansion potential.
- Resistivity, pH, Sulfate Content and Chloride Content for soil corrosivity analysis.

Sub-Task 2.5 Evaluation and Analysis

Blackburn will perform evaluation and engineering analysis (using computer software where applicable) for the following: foundation bearing capacity; lateral earth pressures; site seismicity (distance to nearby faults, peak ground acceleration (ARS curve) and liquefaction potential); and soil corrosivity in accordance with current Caltrans guidelines and recommendations. Blackburn will also evaluate suitable L-Pile soil parameters for lateral pile analysis to be performed by Biggs Cardosa Associates, Inc.

Sub-Task 2.6 Draft and Final Foundation Report

Blackburn will prepare and submit a Draft Foundation Report. The report will include preliminary recommendations for bridge design in general accordance with current Caltrans guidelines including: Scope of Work; Site Description; Project Description; Field Exploration; Laboratory Testing; Site Geology and Subsurface Conditions; Seismic Data and Evaluation; Liquefaction Evaluation; Foundation Recommendations, L-Pile Soil Parameters, Lateral Earth Pressures; Construction Considerations; Location Map; Log of Test Borings; and Laboratory Test Results.

Blackburn will submit the Draft Foundation Report for distribution to the project review team. Once we receive all draft report comments, we will complete the Final Foundation Report.

Blackburn will complete the Draft Foundation Report within 4-6 weeks of receiving a fully signed agreement assuming that encroachment permit restrictions that prevent or delay Blackburn from completing the boring. Blackburn will complete the Final Foundation Report within 1-2 weeks after receiving all draft report comments.

Sub-Task 2.7 Traffic Analysis

Kimley-Horn will evaluate the proposed Van Ness BRT station operation in relation to the adjacent Van Ness Avenue/Fresno Street and Van Ness Avenue/Tulare Street intersections. The operational evaluation will consider near-term and cumulative traffic conditions (without and with the station). The evaluation will also consider the effects of closing the free right turn from the underground parking garage onto Fresno Street (i.e. without and with the driveway closure). Traffic volumes will be obtained from the 2012 traffic impact study prepared by Fehr and Peers for the BRT EIR. The evaluation will be completed using Highway Capacity Manual methodology within Synchro software and a memorandum will be prepared which includes text and tables describing the results. Level of service results will be compared to the significance criteria from the Fehr and Peers report and impacts will be identified if present.

TASK 3 – UTILITY COORDINATION

Utility coordination at this location will be performed in accordance with the original project scope but in an expanded area around the two BRT stations. Subconsultants AECOM and Quad Kopf will request, research, and gather all readily available additional utility information to identify those utilities which could be affected by construction of the additional improvements at this location. They will also review utility information and determine additional utility conflicts that arise because of the revised design at this location. Once conflicts have been identified, the wet and dry utility coordinators will work with the respective utility companies and coordinate protect-in-place or relocation designs (assumed to be performed by the impacted utilities). This scope does not include utility relocation design by our team.

TASK 4 – CIVIL DESIGN AND PS&E PACKAGE

This task includes preparation of construction documents (plans, special provisions and estimates) for the additional civil improvements at the Van Ness Ave location. It specifically excludes the design of the two new stations at Van Ness, as those are covered by the existing BRT contract.

Our team will design and create PS&E for the new mid-block bulb-outs and sidewalk, roadway and median design along Van Ness (from Tulare to Fresno, including minor work across each intersection), signing and striping, and cost estimating. We will coordinate with the Structural subconsultant and Traffic Lead to assist in designing the signal pole foundations.

The following 2 submittals will be provided:

- 60% PS&E – stand-alone submittal
- 90% PS&E – combined with the BRT 90% deliverable
- 100% PS&E – combined with the BRT 100% deliverable

Should the 90% and 100% BRT submittals be combined, it is assumed that a third deliverable would be a final, or revised 100%, deliverable, as necessary.

Should additional revisions and submittals be required not due to Consultant's negligence, errors, or omissions, then these revisions will be considered additional services.

TASK 5 – TRAFFIC DESIGN

Kimley-Horn will perform traffic signal design for the new pedestrian mid-block traffic signal. This signal will require specialized foundations given their location on top of the existing parking garage. Biggs Cardosa will design those foundations as outlined in Task 6.

Kimley-Horn will also design traffic signal modifications to the signals at Van Ness/Tulare and Van Ness/Fresno to accommodate the revised Van Ness geometry. This may include new detection, new signal poles with signal head realignment, new signal heads on existing poles, and/or new conduit and pull boxes to accommodate new poles.

It is anticipated that the 60% PS&E for the Van Ness traffic signal will be a separate submittal from the BRT 60% due to the Fresno BRT schedule. It is anticipated that at the 90% and 100% submittal stage, the Van Ness improvements discussed in this scope would be combined with the BRT project 90% and 100% deliverables.

TASK 6 – STRUCTURAL DESIGN AND ARCHITECTURE SERVICES

Sub-Task 6.1 Structural Design Services

The following structural design services will be performed by subconsultant Biggs Cardosa:

General Scope of Work

- Collaborate with the Traffic Engineer, Architect and Geotechnical to evaluate the new pedestrian signal poles, aesthetic railing, pedestrian bridge, public restrooms, light fixtures/poles and access stair design concepts.
- Prepare Construction Documents in digital format per requirements of local jurisdictions for the structural work related to the construction of new signal pole foundations, aesthetic railing, pedestrian bridge, public restrooms, light fixtures/poles and access stair modifications. Prepare Structural Calculations documenting the structural design. Participate and respond to the plans approval process as required to obtain necessary permits and approvals.

Structural Design Services

- Collect and review existing data and as-built drawings. Review the existing underground parking structure drawings including post tension shop drawing (if available).
- Conduct a field review of the site, including the underground parking structure.
- Collaborate closely with Architect at all phases of the work to integrate the structural design and structural details with the bridge and railing architectural design. Prepare conceptual structural bridge plans, railing plans and misc detail sketches for the bridge prototype.
- Collaborate closely with the Traffic Engineer and Civil Lead, and design signal pole foundations. The foundations require the analysis of the existing underground parking structure to accommodate the additional loads.
- Collaborate closely with Architect at all phases of the work to integrate the structural design and details of the public restrooms with the architectural design. Prepare conceptual structural plans and misc. detail sketches as required.
- Collaborate closely with Electrical Engineer at all phases of the work to integrate the structural design and details of the light poles and fixtures
- Provide plans at the 60%, 90% and 100% milestones.
- Prepare structural calculations 60%, 90% and 100% milestones (as needed).
- Provide a specification list at the 60% milestone, draft specifications at the 90% milestone, and final specifications at the 100% submittal.
- Perform independent quality control check of structural plans, calculations, and specifications. The check will include the review the structural construction documents for conformance to the design criteria, completeness, and constructability. The check will also include a review of the interfaces with other design disciplines.

- Review of plans and specifications with required agencies to assist FAX in getting plans approval and determining required permits and application procedures related to the stations (3 meetings in Fresno).
- Provide regular informal communication with Architect regarding structural engineering and structural issues related to bridge and railing architecture. Attend meetings with the design team (4 meetings).
- Attend and participate in two workshops: Focus on pedestrian bridge and aesthetic railing design. The Kimley-Horn team to present early design concepts and refined concept workshop. Up to two unique pedestrian bridge designs and unique railing designs are to be investigated.
- The Underground Parking Structure as-built drawings are in bad shape with portions not legible. Since the proposed pedestrian bridge will likely be connected to the roof of the existing parking structure, understanding and having all available information is critical to the project.
- Since better as-built drawings and post tension stand layout record drawings are likely not available, an extended site visit including non-destructive test (NDT) will be performed. During the site visit, information on structure member sizes and locations would be recorded. NDT would be utilized to locate and map post tension stands and reinforcing in the structure roof, floors and walls.

Sub-Task 6.2 Pedestrian Enrichments

Subconsultant PIVOT will work with the City to refine various concepts, meet with FAX and others at the City, in order to solicit their input on the various concepts.

Pedestrian modifications include revisions to the street-side railing and the installation and design of a new pedestrian bridge across the opening to the pedestrian tunnel on the north side of Van Ness. PIVOT will lead a workshop to identify the aesthetic and functional goals for the new bridge and railings. Following the workshop, PIVOT will produce a summary report, refine the concepts (maximum of two concepts), and participate in a review meeting with City staff to determine the preferred design direction. The workshop will also address potential improvements to the streetscape including landscape and lighting opportunities that will be designed by others. PIVOT will work with Biggs Cardosa Associates to review impacts of new columns within the parking garage and assist KHA with revisions to parking striping.

Construction Documents for the bridge and railing will be provided by others. Minor modifications to the typical BRT station will be included in the station Construction Documents to integrate the pedestrian crossing with the station platforms. One additional trip for two PIVOT staff members is assumed in this proposal for the workshop. The travel time and expenses for the review meeting is assumed to be combined with a previously scoped trip.

TASK 7 – REST ROOM ENGINEERING

Sub-Task 7.1 REST ROOM DESIGN

Subconsultant PIVOT will lead the design efforts associated with the restroom design. We will work closely with City Maintenance staff to understand the liabilities of the existing restrooms, their intended maintenance procedures for the upgraded restrooms, and material and equipment preferences. *This proposal assumes a new stand-alone building will not be provided.*

- PIVOT will lead a meeting with City staff to identify the design goals and priorities for the renovated or replacement restrooms
- Visit and document the existing restrooms to determine the viability of renovation and understand current concerns. The original construction documents for the parking garage to be provided by the City.
- Provide Concept Level design for up to four restroom designs including relocation and renovation concepts. The concepts will address accessibility compliance, ease of maintenance, and CPTED principles. These concepts will be reviewed with the City to determine a preferred direction.
- Based on design direction from the City, PIVOT will develop 60% level drawings and outline specifications for the restrooms. Documents will include refined dimensions, preliminary material selections, and preliminary fixture selection. The work will be coordinated with the Mechanical, Electrical,
- Structural, and Civil Engineers. PIVOT will also coordinate with the Mariposa design team to integrate the aesthetics of the restrooms with the Mall design work.
- Provide code compliance review and coordinate with City permitting staff to determine the required permits and the appropriate process.
- Assist cost estimating efforts. Cost estimate to be provided by others.
- Complete architectural 100% construction documents and specifications.
- One trip to Fresno for two people is included in this task.

Sub-Task 7.2 HVAC, PLUMBING, AND FIRE PROTECTION

Subconsultant Lawrence Nye Carlson Associates (LNCA) will provide HVAC, plumbing, and fire protection engineering services for the project. Their work will include renovating or re-locating one set of Mens/Womens rest rooms within the existing parking garage.

HVAC and plumbing engineering will include design, CAD produced design plans, specifications prepared for plan check and bidding, and responses to plan check comments.

Normal fire protection engineering required for the bathroom improvements will be provided. This includes design, CAD produced design plans, specifications prepared for plan check and bidding, and responses to plan check comments.

TASK 8 – DESIGN SUPPORT DURING CONSTRUCTION (DSDC)

Kimley-Horn will provide DSDC, including supporting during advertising, bidding, and construction. It is assumed that this work will be performed in conjunction with the BRT project. This fee provides for up to 30 hours for Kimley-Horn to provide DSDC for this project.

The following DSDC services by subconsultant Biggs Cardosa are proposed:

- Provide support services during bidding of project (review proposed substitutions, issue addenda with corrections/clarifications as required).
- Provide Construction Administration support services related to Bridge Design and Signal Foundations; including review of shop drawings and product submittals, responding to Contractor questions and issuing clarifications and corrections as required, and reviewing test reports.
- Assume up to 20 hours of construction site visits.

The following DSDC services by subconsultant PIVOT are proposed:

PIVOT will work with the Kimley-Horn led design team to provide Bidding Support and DSDC. This works is assumed to be concurrent with DSDC services provided as part of the BRT project.
Services include:

- Bidding and Addenda assistance,
- Shop Drawing and Submittal review,
- Clarifications and other Contractor communication,
- One trip to Fresno for one person is included in this task,
- Up to 115 hours are included in this effort.