

**DRAFT CONSULTANT SERVICES AGREEMENT BETWEEN CITY OF SUNNYVALE AND  
KIMLEY HORN & ASSOCIATES, INC. FOR DESIGN AND CONSTRUCTION SUPPORT  
SERVICES FOR SIGNAL COORDINATION TIMING AND OPTIMIZATION**

THIS AGREEMENT, dated \_\_\_\_\_, is by and between the CITY OF SUNNYVALE, a municipal corporation ("CITY"), and KIMLEY HORN & ASSOCIATES, INC. ("CONSULTANT").

WHEREAS, CITY desires to secure professional services necessary for preparation of traffic signal coordination timing plans for implementation for a project known as Signal Coordination Timing and Optimization Project; and

WHEREAS, CONSULTANT represents that it, and its sub-consultants, if any, possess the professional qualifications and expertise to provide the required services and are licensed by the State of California to practice engineering in the required disciplines;

NOW, THEREFORE, THE PARTIES ENTER INTO THIS AGREEMENT.

1. Services by CONSULTANT

CONSULTANT shall provide services in accordance with Exhibit "A" entitled "Scope of Work." All exhibits referenced in this Agreement are attached hereto and are incorporated herein by reference. To accomplish that end, CONSULTANT agrees to assign Brian Sowers, P.E. this project, to act in the capacity of Project Manager and personally direct the professional services to be provided by CONSULTANT.

Except as specified in this Agreement, CONSULTANT shall furnish all technical and professional services, including labor, material, equipment, transportation, supervision and expertise to perform all operations necessary and required to satisfactorily complete the services required in this Agreement.

2. Notice to Proceed/Completion of Services

- (a) CONSULTANT shall commence services upon receipt of a Notice to Proceed from CITY. Notice shall be deemed to have occurred three (3) calendar days after deposit in the regular course of the United States mail.
- (b) When CITY determines that CONSULTANT has satisfactorily completed the services defined in Exhibit "A," CITY shall give CONSULTANT written Notice of Final Acceptance, and CONSULTANT shall not incur any further costs hereunder. CONSULTANT may request this determination of completion when, in its opinion, it has satisfactorily completed the Scope of Work (Exhibit "A"), and if so requested, CITY shall make this determination within fourteen (14) days of such request.

3. Project Schedule

The Project Schedule is set forth in the attached Exhibit "A-1."

4. Payment of Fees and Expenses

Payments shall be made to CONSULTANT on a monthly basis as set forth in the attached Exhibit "B" entitled "Compensation Schedule." All compensation will be based on monthly billings as provided in Exhibit "B." Compensation will not be due until said detailed billing is submitted to CITY within a reasonable time before payment is expected to allow for normal CITY processing. An estimate of the percent of total completion associated with the various categories of the services shall be furnished by CONSULTANT with said billing. When applicable, copies of pertinent financial records will be included with the submission of billing(s) for all direct reimbursables. Compensation shall not exceed the amounts set forth in Exhibit "B" for each phase. In no event shall the total amount of compensation payable under this agreement exceed the sum of Three Hundred Seventy Two Thousand Fifty and No/100 Dollars (\$372,050.00) unless upon written modification of this Agreement. All invoices, including detailed backup, shall be sent to City of Sunnyvale, attention Accounts Payable, P.O. Box 3707, Sunnyvale, CA 94088-3707.

CONSULTANT will be reimbursed as promptly as fiscal procedures will permit upon receipt by the CITY of itemized invoices in triplicate. Invoices shall be submitted no later than 45 calendar days after the performance of work for which CONSULTANT is billing. Invoices shall detail the work performed on each milestone and each project as applicable. Invoices shall follow the format stipulated in the Compensation Schedule and shall reference the project title. The final invoice must contain the final cost and all credits due CITY. The final invoice should be submitted within 60 calendar days after completion of CONSULTANT's work.

5. No Assignment of Agreement

CONSULTANT bind themselves, their partners, successors, assigns, executors, and administrators to all covenants of this Agreement. Except as otherwise set forth in this Agreement, no interest in this Agreement or any of the work provided for under this Agreement shall be assigned or transferred, either voluntarily or by operation of law, without the prior written approval of CITY. However, claims for money due to or to become due to CONSULTANT from CITY under this Agreement may be assigned to a bank, trust company or other financial institutions, or to a trustee in bankruptcy, provided that written notice of any such assignment or transfer shall be first furnished to CITY. In case of the death of one or more members of CONSULTANT's firm, the surviving member or members shall complete the services covered by this Agreement. Any such assignment shall not relieve CONSULTANT from any liability under the terms of this Agreement.

6. Consultant is an Independent Contractor

CONSULTANT is not an agent or employee of CITY but is an independent contractor with full rights to manage its employees subject to the requirements of the law. All persons employed by CONSULTANT in connection with this Agreement will be employees of CONSULTANT and not employees of CITY in any respect. CONSULTANT is responsible for obtaining statutory Workers' Compensation coverage for its employees.

7. Consultant's Services to be Approved by a Registered Professional

All reports, costs estimates, plans and other documents which may be submitted or furnished by CONSULTANT shall be approved and signed by a qualified registered professional in the State of California. The title sheet for calculations, specifications and reports, and each sheet of plans, shall bear the professional seal, certificate number, registration classification, expiration date of certificate

and signature of the professional responsible for their preparation.

8. Standard of Workmanship

CONSULTANT represents and maintains that it is skilled in the professional calling necessary to perform the services and its duties and obligations, expressed and implied, contained herein, and CITY expressly relies upon CONSULTANT's representations regarding its skills and knowledge. CONSULTANT shall perform such services and duties in conformance to and consistent with the standards generally recognized as being employed by professionals in the same discipline in the State of California.

The plans, designs, specifications, estimates, calculations reports and other documents furnished under the Scope of Work (Exhibit "A") shall be of a quality acceptable to CITY. The criteria for acceptance of the work provided under this Agreement shall be a product of neat appearance, well-organized, technically and grammatically correct, checked and having the maker and checker identified. The minimum standard of appearance, organization and content of the drawings shall be that used by CITY for similar projects.

9. Responsibility of CONSULTANT

CONSULTANT shall be responsible for the professional quality, technical accuracy and the coordination of the services furnished by it under this Agreement. Neither CITY's review, acceptance nor payment for any of the services required under this Agreement shall be construed to operate as a waiver of any rights under this Agreement or of any cause of action arising out of the performance of this Agreement and CONSULTANT shall be and remain liable to CITY in accordance with applicable law for all damages to CITY caused by CONSULTANT's negligent performance of any of the services furnished under this Agreement.

Any acceptance by CITY of plans, specifications, calculations, construction contract documents, reports, diagrams, maps and other material prepared by CONSULTANT shall not, in any respect, absolve CONSULTANT for the responsibility CONSULTANT has in accordance with customary standards of good engineering practice in compliance with applicable Federal, State, County and/or municipal laws, ordinances, regulations, rules and orders.

10. Right of CITY to Inspect Records of CONSULTANT

CITY, through its authorized employees, representatives, or agents, shall have the right, at any and all reasonable times, to audit the books and records including, but not limited to, invoices, vouchers, canceled checks, time cards of CONSULTANT for the purpose of verifying any and all charges made by CONSULTANT in connection with this Agreement. CONSULTANT shall maintain for a minimum period of three (3) years from the date of final payment to CONSULTANT or for any longer period required by law, sufficient books and records in accordance with generally accepted accounting practices to establish the correctness of all charges submitted to CITY by CONSULTANT. Any expenses not so recorded shall be disallowed by CITY.

11. Confidentiality of Material

All ideas, memoranda, specifications, plans, calculations, manufacturing procedures, data, drawings, descriptions, documents, discussions or other information developed or received by or for

CONSULTANT and all other written information submitted to CONSULTANT in connection with the performance of this Agreement shall be held confidential by CONSULTANT and shall not, without the prior written consent of CITY be used for any purposes other than the performance of the Project services, nor be disclosed to an entity not connected with the performance of the Project services. Nothing furnished to CONSULTANT which is otherwise known to CONSULTANT or is or becomes generally known to the related industry shall be deemed confidential. CONSULTANT shall not use CITY's name, insignia or distribute exploitative publicity pertaining to the services rendered under this Agreement in any magazine, trade paper, newspaper or other medium without the express written consent of CITY.

12. No Pledging of CITY's Credit

Under no circumstances shall CONSULTANT have the authority or power to pledge the credit of CITY or incur any obligation in the name of CITY.

13. Ownership of Material

All material, including information developed on computer(s), which shall include, but not be limited to, data, sketches, tracings, drawings, plans, diagrams, quantities, estimates, specifications, proposals, tests, maps, calculations, photographs, reports and other material developed, collected, prepared or caused to be prepared, under this Agreement shall be the property of CITY, but CONSULTANT may retain and use copies thereof.

CITY shall not be limited, in any way, in its use of said material, at any time, for work associated with Project. However, CONSULTANT shall not be responsible for damages resulting from the use of said material for work other than Project, including, but not limited to the release of this material to third parties for work other than on Project.

14. Hold Harmless/Indemnification

To the extent permitted by law (including, without limitation, California Civil Code section 2782.8), CONSULTANT agrees to indemnify, defend and hold harmless CITY, its officers and employees from any and all claims, demands, actions, causes of action, losses, damages, liabilities, known or unknown, and all costs and expenses, including reasonable attorneys' fees in connection with any injury or damage to persons or property to the extent arising out of any negligence, recklessness or willful misconduct of CONSULTANT, its officers, employees, agents, contractor, subcontractors or any officer, agent or employee thereof in relation to CONSULTANT's performance under this Agreement. In no event shall the cost to defend charged to the design professional exceed the design professional's proportionate percentage of fault. However, notwithstanding the previous sentence, in the event one or more defendants is unable to pay its share of defense costs due to bankruptcy or dissolution of the business, the design professional shall meet and confer with other parties regarding unpaid defense costs. Such defense and indemnification shall not apply in any instance of and to the extent caused by the sole negligence, recklessness or willful misconduct of CITY, its officers, employees, agents or representatives.

15. Insurance Requirements

CONSULTANT shall take out and maintain during the life of this Agreement policies of insurance as specified in Exhibit "C" attached and incorporated by reference, and shall provide all

certificates and/or endorsements as specified in Exhibit "C."

16. No Third Party Beneficiary

This Agreement shall not be construed or deemed to be an agreement for the benefit of any third party or parties and no third party or parties shall have any claim or right of action hereunder for any cause whatsoever.

17. Notices

All notices required by this Agreement, other than invoices for payment which shall be sent directly to Accounts Payable, shall be in writing, and sent by first class with postage prepaid, or sent by commercial courier, to address below.

Nothing in this provision shall be construed to prohibit communication by more expedient means, such as by email or fax, to accomplish timely communication. Each party may change the address by written notice in accordance with this paragraph. Notices delivered personally shall be deemed communicated as of actual receipt; mailed notices shall be deemed communicated as of three business days after mailing.

To CITY: Jennifer Ng, Assistant Director of Public Works/City Engineer  
Department of Public Works  
CITY OF SUNNYVALE  
P. O. Box 3707  
Sunnyvale, CA 94088-3707

To CONSULTANT: Kimley Horn & Associates, Inc  
Attn: Brian Sowers, P.E.  
4637 Chabot Drive, Suite 300  
Pleasanton, CA 94588

18. Waiver

CONSULTANT agrees that waiver by CITY of any one or more of the conditions of performance under this Agreement shall not be construed as waiver(s) of any other condition of performance under this Agreement.

19. Amendments

No alterations or changes to the terms of this Agreement shall be valid unless made in writing and signed by both parties.

20. Integrated Agreement

This Agreement embodies the agreement between CITY and CONSULTANT and its terms and conditions. No verbal agreements or conversation with any officer, agent or employee of CITY prior to execution of this Agreement shall affect or modify any of the terms or obligations contained in any documents comprising this Agreement. Any such verbal agreement shall be considered as

unofficial information and in no way binding upon CITY.

21. Conflict of Interest

CONSULTANT shall avoid all conflicts of interest, or appearance of conflict, in performing the services and agrees to immediately notify CITY of any facts that may give rise to a conflict of interest. CONSULTANT is aware of the prohibition that no officer of CITY shall have any interest, direct or indirect, in this Agreement or in the proceeds thereof. During the term of this Agreement CONSULTANT shall not accept employment or an obligation which is inconsistent or incompatible with CONSULTANT'S obligations under this Agreement.

22. Governing Law, Jurisdiction and Venue

This Agreement shall be governed by and construed in accordance with the laws of the State of California, excluding its conflict of law principles. Proper venue for legal actions will be exclusively vested in a state court in the County of Santa Clara. The parties agree that subject matter and personal jurisdiction are proper in state court in the County of Santa Clara, and waive all venue objections.

23. Records, Reports and Documentation

CONSULTANT shall maintain complete and accurate records of its operation, including any and all additional records required by CITY in writing. CONSULTANT shall submit to CITY any and all reports concerning its performance under this Agreement that may be requested by CITY in writing. CONSULTANT agrees to assist CITY in meeting CITY's reporting requirements to the state and other agencies with respect to CONSULTANT's work hereunder. All records, reports and documentation relating to the work performed under this Agreement shall be made available to City during the term of this Agreement.

24. Termination of Agreement

- A. If CONSULTANT defaults in the performance of this Agreement, or materially breaches any of its provisions, CITY at its option may terminate this Agreement by giving written notice to CONSULTANT. In the event of such termination, CONSULTANT shall be compensated in proportion to the percentage of satisfactory services performed or materials furnished (in relation to the total which would have been performed or furnished) through the date of receipt of notification from CITY to terminate. CONSULTANT shall present CITY with any work product completed at that point in time.
- B. Without limitation to such rights or remedies as CITY shall otherwise have by law, CITY also shall have the right to terminate this Agreement for any reason upon ten (10) days' written notice to CONSULTANT. In the event of such termination, CONSULTANT shall be compensated in proportion to the percentage of services performed or materials furnished (in relation to the total which would have been performed or furnished) through the date of receipt of notification from CITY to terminate. CONSULTANT shall present CITY with any work product completed at that point in time.
- C. If CITY fails to pay CONSULTANT, CONSULTANT at its option may terminate this Agreement if the failure is not remedied by CITY within (30) days after written notification of failure to pay.

25. Subcontracting

None of the services covered by this Agreement shall be subcontracted without the prior written consent of CITY. Such consent may be issued with notice to proceed if subcontract consultants are listed in the project work plan.

26. Fair Employment

CONSULTANT shall not discriminate against any employee or applicant for employment because of race, color, creed, national origin, sex, age, condition of physical handicap, religion, ethnic background or marital status, in violation of state or federal law.

27. Changes

CITY or CONSULTANT may, from time to time, request changes in the terms and conditions of this Agreement. Such changes, which are mutually agreed upon by CITY and CONSULTANT, shall be incorporated in amendments to this Agreement.

28. Other Agreements

This Agreement shall not prevent either Party from entering into similar agreements with others.

29. Severability Clause.

In case any one or more of the provisions contained herein shall, for any reason, be held invalid, illegal or unenforceable in any respect, it shall not affect the validity of the other provisions which shall remain in full force and effect.

30. Captions

The captions of the various sections, paragraphs and subparagraphs, of the contract are for convenience only and shall not be considered nor referred to for resolving questions of interpretation.

31. Entire Agreement; Amendment

This writing constitutes the entire agreement between the parties relating to the services to be performed or materials to be furnished hereunder. No modification of this Agreement shall be effective unless and until such modification is evidenced by writing signed by all parties.

32. Miscellaneous

Time shall be of the essence in this Agreement. Consultant shall not have liability for or be deemed in breach because of delays caused by any factor outside of its reasonable control, including but not limited to natural disaster, severe weather, or any mandatory governmental order. Failure on the part of either party to enforce any provision of this Agreement shall not be construed as a waiver of the right to compel enforcement of such provision or any other provision. This Agreement shall be governed and construed in accordance with the laws of the State of California. Due to the everchanging circumstances surrounding the COVID-19 Virus, situations may arise during the performance of this Agreement that affect availability of resources and staff of CONSULTANT, the

CITY, other consultants, and public agencies. There could be changes in anticipated delivery times, jurisdictional approvals, and project costs, and the parties agree to meet and confer within ten 10 days to come to a mutual agreement on revised project schedule. CONSULTANT will exercise reasonable efforts to overcome the challenges presented by current circumstances.

IN WITNESS WHEREOF, the parties have executed this Agreement.

ATTEST:

CITY OF SUNNYVALE ("CITY")

By \_\_\_\_\_  
City Clerk

By \_\_\_\_\_  
City Manager

KIMLEY HORN & ASSOCIATES, INC.  
("CONSULTANT")

APPROVED AS TO FORM:

By \_\_\_\_\_

\_\_\_\_\_  
Name/Title

\_\_\_\_\_  
City Attorney

By \_\_\_\_\_

\_\_\_\_\_  
Name/Title

# Signal Coordination Timing and Optimization

## Exhibit A

### SCOPE OF WORK

The following is the Scope of Services to complete this project for the City of Sunnyvale in accordance with the RFP and our proposed Approach. The project consists of traffic signal optimization and development of weekday and weekend signal coordination timing plans for the following seventy-three (73) traffic signals:

#### Mathilda Avenue/Sunnyvale-Saratoga Road Corridor:

1. 7100 Mathilda Avenue & 1st Avenue/Bordeaux Drive
2. 7043 Mathilda Avenue & Java Drive
3. 7002 Mathilda Avenue & 5th Avenue
4. 7042 Mathilda Avenue & Innovation Way
5. 7041 Mathilda Avenue & Moffett Park Drive- 237 WB Ramps - Caltrans
6. 7113 Mathilda Avenue & 237 EB Ramps - Caltrans
7. 7061 Mathilda Avenue & Ross Drive - Caltrans
8. Mathilda Avenue & 101 WB Ramps - Caltrans
9. Mathilda Avenue & 101 EB Ramps - Caltrans
10. 7075 Mathilda Avenue & Ahwanee Avenue
11. 7119 Mathilda Avenue & San Aleso Avenue
12. 7047 Mathilda Avenue & Maude Avenue
13. 7083 Mathilda Avenue & Indio Avenue
14. 7035 Mathilda Avenue & California Avenue
15. 7023 Mathilda Avenue & Washington Avenue
16. 7017 Mathilda Avenue & McKinley Avenue
17. 7072 Mathilda Avenue & Iowa Avenue
18. 7053 Mathilda Avenue & Olive Avenue
19. 5000 Mathilda Avenue & El Camino Real
20. 7126 Mathilda Avenue & Tennis Center
21. 7085 Mathilda Avenue & Sunnyvale-Saratoga-Talisman Drive
22. 7008 Sunnyvale-Saratoga Road & Remington Drive
23. 7048 Sunnyvale-Saratoga Road & Fremont Avenue
24. 7082 Sunnyvale-Saratoga Road & Cheyenne Drive-Connemara Way
25. 7077 Sunnyvale-Saratoga Road & Alberta Avenue-Harwick Way

#### Maude Avenue Corridor:

1. 7063 Maude Avenue & Macara Avenue
2. 7108 Maude Avenue & Mary Avenue
3. 7090 Maude Avenue & Pastoria Avenue
4. 7040 Maude Avenue & Borregas Avenue-N Sunnyvale Avenue

#### Java/Tasman Corridor:

1. 7101 Java Drive & Bordeaux Drive
2. 7044 Java Drive & Borregas Avenue
3. 7092 Java Drive & Geneva Drive
4. 7045 Java Drive & Crossman Avenue
5. 7109 Fair Oaks Avenue & Fair Oaks Way

# Signal Coordination Timing and Optimization

6. 7089 Fair Oaks Avenue & Tasman Drive (Reference point only)
7. 7103 Tasman Drive & Vienna Drive
8. 7019 Tasman Drive & Birchwood Drive
9. 7020 Tasman Drive & Reamwood Avenue
10. Tasman Drive & Adobe Wells Street

## Kifer Road Corridor:

1. 7034 Kifer Road & Fair Oaks Avenue (Reference point only)
2. 7099 Kifer Road & Pedestrian Signal
3. 7098 Kifer Road & Semiconductor Drive
4. 7025 Kifer Road & Costco/La Rambla

## Wolfe Road Corridor:

1. 7062 Wolfe Road & Fair Oaks Avenue (Reference point only)
2. 7104 Wolfe Road & Stewart Drive
3. 7037 Wolfe Road & Arques Avenue
4. 7067 Wolfe Road & Central Expressway
5. 7034 Wolfe Road & Kifer Road
6. 7046 Wolfe Road & Evelyn Avenue
7. 7056 Wolfe Road & Old San Francisco Road/Reed Avenue
8. 7076 Wolfe Road & Iris Avenue
9. 7065 Wolfe Road & Maria Lane
10. Wolfe Road & El Camino Real - Caltrans
11. 7005 Wolfe Road & Fremont Avenue
12. 7123 Wolfe Road & Marion Way
13. 7058 Wolfe Road & Inverness Way
14. Wolfe Road & Maude Avenue

## Homestead Road Corridor:

1. 7001 Homestead Road & Hollenbeck Avenue/DeAnza Boulevard
2. 7125 Homestead Road & Kennewick Way
3. 7059 Homestead Road & Mary Avenue
4. 7068 Homestead Road & Wright Way
5. 7117 Homestead Road & Bernardo Avenue
6. Homestead Road & Maxine Way - Caltrans
7. 7127 Homestead Road & Belleville Way/Barranca Drive

## Bernardo Avenue Corridor:

1. 7111 Bernardo Avenue & Evelyn Avenue
2. 7080 Bernardo Avenue & Washington Avenue
3. Bernardo Avenue & El Camino Real - Caltrans
4. 7009 Bernardo Avenue & Heatherstone Way

# Signal Coordination Timing and Optimization

## Duane Avenue Corridor:

1. 7015 Duane Avenue & Fair Oaks Avenue (Reference point only)
2. 7133 Duane Avenue & Britton Avenue
3. 7054 Duane Avenue & DeGuigne Avenue
4. 7093 Duane Avenue & Stewart Drive
5. 7105 Duane Avenue & Lakeside Way

The tasks below include the scope of services as included in the RFP, although the task description and order has been modified slightly based upon the anticipated flow of the project. Additional details on methods used during each task and additional details on specific considerations for the corridors are noted in the Scope of Work.

### **Task 1: Project Management and Meetings**

This task includes project management related tasks and meetings to consist of preparation of invoices, budget oversight, adherence to project scheduling, and general project coordination. An initial kick-off meeting will be arranged with City and Caltrans staff to review and discuss some of the elements associated with signal timing and to review project schedule, deliverables, and develop consensus on the overall project and signal timing approach. The Kimley-Horn project manager and one additional staff person will attend the kick-off meeting. With your involvement, we will review the proposed project approach and deliverables, and will set timetables for consultant deliverables, City review periods, scheduling of implementation, and other administrative details. We will also collect any available data for the signal timing effort that is available from the City, including:

- Hard copies or electronic copies of the existing timing sheets for the intersections to be re-timed
- Collision data for the past three years, preferably including intersection collision diagrams
- Information of service requests/citizen complaints
- Historic turning movement counts (if available)
- Strava Metro historic pedestrian/bicycle counts

Other than the kick-off meeting, four (4) project meetings to be held in the City offices (if feasible) with Caltrans staff are anticipated. The primary purposes of the meetings will be to review the signal grouping and cycle length analysis and to review the recommended timing. The Kimley-Horn project manager and one staff person will attend each meeting.

Kimley-Horn anticipates communicating frequently with the City project manager, including having bi-weekly calls to discuss project progress.

#### *Task 1 Deliverables:*

1. Attendance at kick-off meeting
2. Attendance at four (4) in-person or online project meetings
3. Attendance at bi-weekly calls with the City to discuss projects

### **Task 2: Data Collection**

#### Task 2.1 Traffic Counts

Prior to collecting any counts, Kimley-Horn will inform the City staff of the days and times the counts will be collected for coordination with the City's Police Department and Street Maintenance Department.

# Signal Coordination Timing and Optimization

24-hour machine counts will be collected for seven days, at 15 minute drop intervals, at critical and City-approved locations along the project corridors. Directional ADT and vehicular speed counts will be collected at up to sixteen (16) locations. The 24-hour hose counts will be collected prior to the turning movement counts to identify the peak periods for traffic count data collection. Traffic counts will be reviewed by a senior staff member and the City to ensure that the numbers are reasonable. All traffic counts will be provided to the City in electronic Excel format. For the 24-hour traffic counts, Excel files will include raw volumes and a formatted summary file with graphs.

Weekday turning movement counts, including vehicular, pedestrian, and bicycle counts, will be collected for three (3) hours during the AM and PM weekday peak periods and two (2) hours during the AM and PM weekend peak periods at all seventy-three (73) project intersections. Weekday turning movement counts, including vehicular, pedestrian, and bicycle counts, will be collected for two (2) hours during the midday weekday peak period at all seventy-three (73) project intersections. Traffic counts will not be collected near holidays or during abnormal weather conditions, on school breaks, or periods of construction.

Kimley-Horn will verify with the City the hours and locations (for ADT counts) of the counts to be collected. The traffic counts will be collected on the highest volume day selected from the 72-hr consecutive counts between Tuesday and Thursday. Weekend counts will be collected on the selected Saturday.

## Task 2.2 “Before” Study

Kimley-Horn is proposing to modify the approach to “Before” study data collection. Throughout the history of working on signal timing projects, Kimley-Horn noticed that projects that run through the whole year tend to return different results on “Before” vs. “After” study, if those are performed during different seasons, and not always due to new implemented traffic signal timing. Due to that, Kimley-Horn is proposing to split the “Before” study into two parts.

An “Initial Before” floating car study will be conducted during the 15-30 minutes of each, AM, midday, and PM peak hour to understand the corridor conditions and calibrate the Synchro model. This study will be performed at the beginning of the project during the days that the counts are collected. A maximum of two (2) runs in each direction will be conducted for each corridor during each peak period.

A “Secondary Before” floating car study will be conducted for each corridor one or two weeks prior to implementation of recommended timing. The “Secondary Before” study will be collected on each corridor for two (2) hours each during the AM, midday, and PM weekday peak periods and the AM and PM weekend peak periods. A minimum of six runs in each direction will be conducted for each corridor during each peak period that data is collected. The “Secondary Before” study will be used for comparison and performance measure to the “After” floating vehicle study.

Prior to the travel time runs, we will review the corridors with the City and the methodology for collecting the data. The travel time data will be collected using an Excel based data collection method developed internally by Kimley-Horn. If desired by the City, GPS technology can be used to collect the travel time data. Kimley-Horn will submit the travel time data to the City in Excel format and will include a summary that shows the average travel time, average stops, total delay time, average speed, average free flow speed, and distance traveled.

In addition to travel time data, each run will be recorded using a digital camera mounted on the window of the car. This will allow us to further verify conditions along the corridor by reviewing the video

# Signal Coordination Timing and Optimization

afterward. The video data files collected during the “Before” study, which have very large file sizes, can be provided to the City if desired.

In addition to traditional floating car studies, Kimley-Horn will collect and analyze both historic and current INRIX travel time data to supplement the field data collected. INRIX data will be used to supplement the “Before” and “After” conditions and will also be used to measure travel time trends to understand when traffic is returning to pre-pandemic conditions. INRIX travel time data will be reviewed and monitored to help determine when traffic count data collection (Task 2.2) can begin.

## Task 2.3 Field Observation

An important aspect of signal timing is field observation of traffic conditions in order to better understand signal timing issues such as queuing problems, lost times, early or late release times, pedestrian demands, and phase operation.

A field review will be conducted during each of the study periods by the staff who will be developing the signal models. Field review will consist of driving each corridor to observe general traffic flow conditions and standing along the corridor to review intersection operations to understand queuing and split demand issues. Field review will include reviewing the major traffic generators in the study area and to obtain an overall knowledge of the traffic conditions. A traffic engineer can rarely develop an effective model without a comprehensive field review. Additional field information will be collected to assist with the signal timing study. This information includes:

- Existing lane geometry and physical roadway features
- Other roadway conditions, such as on-street parking locations, bus stop locations, truck traffic
- Saturation flow rates for typical movements
- Initial lost times for typical intersections
- Queue lengths at key intersection and along the corridors
- Locations and movements with un-even lane distribution
- Travel speeds between intersections and along the corridors

## *Task 2 Deliverables:*

1. 24-hour machine counts in raw Excel format
2. 24-hour machine counts in summary Excel format
3. Turning movement counts for weekday and weekend periods in Excel format.
4. “Before” travel time studies in Excel

## **Task 3: Data Validation and Existing Conditions**

All collected data will be reviewed for reasonableness and to confirm that the traffic count data collected represents typical conditions. It is understood that the City may collect traffic data at selected locations and complete checks of the traffic data to confirm the data reasonableness. It should be noted that Kimley-Horn has seen traffic counts vary by as much as 10-15% on the daily and weekly basis. Therefore, Kimley-Horn will provide the City, as requested, videos of the turning movement count data collection to verify the counts collected.

Once the traffic data has been collected, the traffic signal timing model will be developed for the project intersections. Trafficware Synchro 9/10 software will be utilized for timing development. Traffic volumes,

# Signal Coordination Timing and Optimization

saturation flow rates, peak-hour factors, vehicle classification, and other traffic data collected will be entered into the model.

Once the traffic data has been entered into the traffic model, the model will be calibrated for existing conditions. Calibration of the model consists of verifying the input data and adjusting the model parameters so that the model output reasonably matches the observed conditions in the network. This is an important step in a retiming project because the effectiveness of the optimal timings depends on how closely the model represents the existing conditions. Factors collected in the field, such as saturation flow rates, peak hour factors, heavy vehicles percentages, parking maneuvers, pedestrian and bicycle conflicts, will be reflected in the Synchro model.

In addition, due to the current COVID-19 Pandemic, traffic count data may be reviewed and adjusted based upon historic traffic count data. Kimley-Horn will utilize available historic ADT counts, turning movement counts, and pedestrian/bicycle volumes (Strava Metro data) to review traffic count data collected. Based on the new data collected, along with a comparison of the historic data, adjustments may be made to the traffic count data to model pre-pandemic conditions rather than the “current” measured conditions.

Kimley-Horn will obtain existing measures of effectiveness (MOE), including delay, number of stops, travel time, and emissions from the models, and submit the models along with MOE to the City for review and approval during the submittal of Existing Conditions Report. In addition, Kimley-Horn will obtain Level of Service (LOS) measurement and compare the Synchro model results to City’s minimum acceptable LOS.

As part of the existing conditions review, Kimley-Horn will conduct a review of the existing initial and actuated signal timing parameters, such as pedestrian clearances, initial green times, yellow and all red clearance intervals, and minimum and maximum green settings. The parameters will be reviewed based on the City standards or the latest California MUTCD standards. In addition, Kimley-Horn will conduct a review of the collision data to identify patterns that are susceptible to correction through signal timing.

Kimley-Horn will develop an Existing Conditions Report summarizing the existing traffic volumes, information collected in the field review, the existing conditions models, recommended changes to the initial timings, the collision review, and performance measures. A draft of the Existing Conditions Report, along with Synchro models, will be submitted to the City for review. A Final Existing Report, along with updated Synchro models, and response to City’s comments memorandum, will be submitted afterwards.

## *Task 3 Deliverables*

1. Draft Existing Conditions Report
2. Final Existing Conditions Report
3. Response to City Memorandum
4. Existing Conditions Synchro models and Measures of Effectiveness

## **Task 4: Signal Timing Development and Optimization**

Once the model is calibrated to accurately represent the existing conditions, Kimley-Horn will conduct the signal timing analysis and develop recommended timings for the corridors. A minimum of three (3) weekday plans, to include the AM, midday, and PM peak periods and two (2) weekend plans, to include “Peak” and “Off-peak” periods will be prepared for the signals. Kimley-Horn will also review the need to develop additional school peak plans if deemed beneficial. It should be noted that “transition” periods will

# Signal Coordination Timing and Optimization

be considered when evaluating the need and benefit of using additional school peak plans. Lastly, if the current pandemic extends into the middle of 2021, Kimley-Horn will develop a second set of lower cycle length plans, in addition to those noted above, that may be implemented prior to the return of typical traffic conditions.

The initial step in the signal timing optimization process will be to review the grouping of traffic signals for coordination and the selection of optimum cycle lengths. The goal of signal grouping will be to cluster those intersections together that have similar operational characteristics such as cycle lengths, higher platooning traffic, and shorter travel time between intersections. As part of the signal grouping and cycle length analysis, Kimley-Horn will consider the operations of other adjacent corridors and intersections that currently are connected in coordination or could be connected in coordination with the project intersections.

Kimley-Horn will submit a summary of preliminary recommended signal groupings and Cycle Lengths Memorandum, including existing versus proposed performance measures, for review prior to development of the draft signal timing plans. This will allow the City to review the proposed cycle lengths prior to conducting the detailed timing analysis. Kimley-Horn will coordinate with the City to review and discuss the preliminary signal grouping and cycle lengths.

Once the cycle lengths are selected, optimum splits and offsets for the coordination plans will be developed in the Synchro model and adjusted, as needed, to provide for the optimum timing. The goal of split optimization will be to allocate green time to different approaches in proportion to the overall intersection volume and capacity. Development of the offsets will include an evaluation of the use of alternate phase sequencing (lead/lag phasing) and setting of the offsets based on the corridor traffic conditions (progression priority).

The recommended timing development will include the review of the time-of-operation of the signal coordination plans. The time-of-operation will be reviewed based on the daily and weekly volumes and based on field observed conditions. In addition, Kimley-Horn will review and prepare TSP settings for LRT for the ten (10) traffic signals along Java Drive and Tasman Drive. TSP settings will consist of split reduction and extension times and other relevant settings, such as arrival time settings.

After the Synchro models are completed, signal timing parameters, critical performance measure information, time-of-operation, and other relevant timing information will be summarized in a draft Optimized Conditions Report for transmission to the City for review. In addition, recommended Synchro models will be provided to the City. Based on comments received, a Final Optimized Conditions Report and final Synchro models will be submitted to the City.

## *Task 4 Deliverables:*

1. Cycle Lengths Memorandum
2. Draft Optimized Conditions Report
3. Final Optimized Conditions Report
4. Optimized Conditions Synchro models

## **Task 5: Implementation (Deployment) and Fine-Tuning of Signal Timing**

Once the recommended timings are finalized, Kimley-Horn will mark up timing sheets and revise City of Sunnyvale databases using the Intelight Controller Emulator. We will update signal timing databases, including initial timings, splits, offsets, cycle lengths, lead-lag (as needed), transition times, TSP settings

# Signal Coordination Timing and Optimization

(on certain corridors), and other parameters required for coordination. We will bench test the timing using the emulator and check all databases for errors, prior to submitting to the City for implementation. Kimley-Horn will also be available to assist with downloading the timings to the field for intersections with no connections to City's Central System.

As noted in Task 2.2, prior to implementation, Kimley-Horn will perform a "Secondary Before" floating car study to record existing conditions just before implementation, and to accurately compare the "Before" study to "After" study runs. The effort for the "Secondary Before" study is included in Task 2.2. As part of the "Secondary Before" study, INRIX travel time data will be collected and reduced.

Once the timing plans have been implemented, our team will also conduct a fine-tuning process by driving the corridors and standing at intersections to observe intersection operations. Kimley-Horn will accompany the City staff during fine-tuning or can complete the fine-tuning without City staff present. Kimley-Horn will notify the City of any fine-tuning adjustments and make changes directly into the system. It is estimated that two (2) days of fine-tuning on average will be conducted on each corridor during the weekday peak periods and one (1) day of fine-tuning on average will be conducted on each corridor during weekend peak periods, on days that are representative of typical traffic conditions. If needed, additional days of fine-tuning will be conducted to address City concerns. Up to six (6) days of fine-tuning will be completed to address City concerns. In total, Kimley-Horn will dedicate up to up to 320 hours, or approximately thirty (30) days, to conduct field fine-tuning.

Once fine-tuning is completed, Kimley-Horn will prepare final timing sheets in hardcopy format. The final timing sheets will be provided in hardcopy and electronic versions. In addition, Kimley-Horn will update the Synchro models to include fine-tuning adjustments. Final Synchro models will be submitted to the City in electronic format.

## *Task 5 Deliverables:*

1. Marked-up timing sheets for implementation
2. Final timing sheets
3. Fine-tuned Synchro models

## **Task 6: "After" Study and Evaluation**

After fine-tuning of the timings, a final "After" travel time study will be conducted to field measure the improvements in system performance. A floating car travel time study will be conducted for each corridor during the same times as the "Before" study was conducted. A minimum of six (6) runs in each direction will be conducted for each corridor during each peak and off-peak period. The travel time runs will be collected within thirty (30) calendar days after the timings are finalized. In addition, INRIX travel time data will be collected and analyzed for the "After" conditions.

The travel time data will be summarized for each corridor and include the average travel time, stops, total delay time, speed, and distance traveled. In addition, vehicle emissions will be calculated using the latest Bay Area Air Quality Management District methods and using the Synchro models. The "After" study data will be compared to the "Before" study to measure the improvement in system performance. Additionally, a comparison of the Measures of Effectiveness (MOEs) for before and after the project will be performed. MOEs will also include comparison between City's LOS minimum levels and existing/optimized conditions. The MOEs will include, travel time savings, delays and number of stops reduction, fuel consumption savings, CO2 emissions reduction, queue lengths, V/C ratio and Level of Service (LOS). In addition, Kimley-Horn will prepare and submit a one-page summary for each corridor

# Signal Coordination Timing and Optimization

highlighting the project benefits and performance measure results of the project. The summary will include a map of the signals, discussion of benefits to various travel modes, and graphical summary of the “Before” and “After” performance measures.

A Draft Timings and Evaluation Report will be prepared summarizing the comparison of the “Before” versus “After” conditions and submitted to the City electronically. “After” study floating car runs and emission calculation will also be submitted to the City electronically in Excel format. The report will also include a summary of any traffic issues resolved in the project, including recommendations for future projects to further enhance the traffic flow. A Final Timing and Evaluation Report will be submitted to the City after City’s review and approval of the Response to Comments Memorandum addressing City’s comments on the Draft Timing and Evaluation Report.

## *Task 6 Deliverables:*

1. Draft Timings and Evaluation Report
2. Response to Comments Memorandum
3. Final Timing and Evaluation Report
4. “After” travel time studies in Excel format
5. Emission calculations in Excel format
6. One-page project summaries in PDF format

City of Sunnyvale - Sunnyvale Signal Coordination Timing and Optimization Project (TFCA Timing) - SCHEDULE

Kimley-Horn & Associates

Project Start Date		Thu, 10/15/2020																	
Display Week:		1		Oct, 2020	Nov, 2020	Dec, 2020	Jan, 2021	Feb, 2021	Mar, 2021	Apr, 2021	May, 2021	Jun, 2021	Jul, 2021	Aug, 2021	Sep, 2021	Oct, 2021	Nov, 2021	Dec, 2021	
TASK	ASSIGNED TO	START	END	SUBMITTAL															
TASK 1: Project Management and Meetings (City and Caltrans Staff)																			
Project Management and Meetings	KH	10/15/20	12/10/21																
Kick-Off Meeting	KH/City	10/15/20	10/15/20																
Cycle Length Meeting	KH/City	3/24/21	3/24/21																
Project Meeting	KH/City	12/25/20	12/25/20																
Project Meeting	KH/City	6/11/21	6/11/21																
TASK 2: Data Collection																			
Traffic Counts	KH	1/18/21	2/21/21																
Initial Before Study	KH	10/20/20	11/7/20																
Field Observation	KH	11/4/20	11/19/20																
Secondary Before Study	KH	1/18/21	2/19/21																
TASK 3 - Data Validation and Existing Conditions																			
Draft Existing Condition Memorandum	KH	11/9/20	12/14/20	12/14/20															
City Review	City	12/15/20	1/25/21																
Final Existing Condtions Memorandum	KH	1/27/21	2/19/21	2/19/21															
TASK 4: Signal Tming Development and Optimization																			
Signal Grouping and Cycle Length Analysis	KH	2/14/21	3/19/21	3/19/21															
City Review	City	3/20/21	4/14/21																
Draft Recommended Timing Memorandum	KH	4/15/21	5/17/21	5/17/21															
City Review	City	5/20/21	6/13/21	6/13/21															
Final Recommended Timing Memorandum	KH	6/14/21	6/29/21	6/29/21															
TASK 5: Implementation (Deployment) and Fine-Tuning of Signal Timing																			
Initiate Implementation *	KH	7/1/21	8/2/21	8/3/21															
City Review of Timing Sheets **	City	8/3/21	8/27/21																
Initiate Fine Tunning ***	KH/City	9/4/21	10/14/21																
After Study	KH	9/26/21	10/29/21																
TASK 6: "After" Study and Evaluation																			
Draft Final Project Report	KH	10/10/21	11/12/21	11/12/21															
City Review	City	11/13/21	11/28/21																
Final Project Report	KH	11/28/21	12/10/21	12/10/21															
					Oct, 2020	Nov, 2020	Dec, 2020	Jan, 2021	Feb, 2021	Mar, 2021	Apr, 2021	May, 2021	Jun, 2021	Jul, 2021	Aug, 2021	Sep, 2021	Oct, 2021	Nov, 2021	Dec, 2021

\* During the implementation phase, timing sheets will be submitted to the City on the weekly basis.  
\*\* City is expected to review timing sheets as they are received on the weekly basis.  
\*\*\* Fine tuning will start after the first set of timing sheets for a particular corridor is reviewed

LEGEND

- TASK SUMMARY

- CITY REVIEW

- DELIVERABLE TO THE CITY

- PROJECT MEETING

Tasks		Labor									Subconsultants			ODCs	Total
Task #	Task Description	Project Manager	PIC/ QC/QA	Sr. Engineer	Engineer	Analyst II	Analyst I	Suppot	Total Hours	Total Labor Costs	Counts	Counts	Big Data	Other Direct Costs	Total Fee
		Sowers	Aguigui	Petrov	Wong Rainey	McCarron	Varies	Varies			IDAX	TDS	Street Light		
		\$270	\$295	\$200	\$165	\$160	\$140	\$110			LS (EA)	LS (EA)	LS (EA)		
1	Project Management and Meetings (City and Caltrans Staff)	24	4	16	8	8		8	68	\$14,340				\$660	\$15,000
2	Data Collection														
2.1	Traffic Counts	1		4	8	12	16	2	43	\$6,770	\$33,620	\$31,600		\$320	\$72,310
2.2	Before Study	4		12	40	80	100	2	238	\$37,100				\$3,710	\$40,810
2.3	Field Observation	12		24	24	40	40	2	142	\$24,220				\$1,120	\$25,340
3	Data Validation and Existing Conditions	12	2	24	60	40	100	4	242	\$39,370				\$1,820	\$41,190
4	Signal Timing Development and Optimization	40	4	40	60	48	40	4	236	\$43,600				\$2,010	\$45,610
5	Implementation (Deployment) and Fine-Tuning of Signal Timing	120	12	180	50	50	16	4	432	\$90,870				\$4,190	\$95,060
6	"After" Study and Evaluation	12	2	16	16	60	100	8	214	\$34,150				\$2,580	\$36,730
	Proposal Total	225	24	316	266	338	412	34	1615	\$290,420	\$33,620	\$31,600	\$0	\$16,410	\$372,050
	Optional Services														
									0	\$0				\$0	\$0
	Total Optional Services	0		0	0	0	0	0	0	0	0	\$0	\$0	\$0	\$0
	Total Including Optional Services	225	24	316	266	338	412	34	1,615	290,420	33,620	\$31,600	\$0	\$16,410	\$372,050
	Notes:														
1															
2															
3															

## Exhibit C INSURANCE REQUIREMENTS FOR CONSULTANTS

Consultant shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work by the Consultant, his agents, representatives, or employees.

Minimum Scope and Limits of Insurance. Consultant shall maintain limits no less than:

1. **Commercial General Liability:** \$2,000,000 per occurrence and \$4,000,000 aggregate for bodily injury, personal injury and property damage. ISO Occurrence Form CG 0001 or equivalent is required.
2. **Automobile Liability:** \$1,000,000 per accident for bodily injury and property damage. ISO Form CA 0001 or equivalent is required.
3. **Workers' Compensation** Statutory Limits and **Employer's Liability:** \$1,000,000 per accident for bodily injury or disease.

Industry Specific Coverages. If checked below, the following insurance is also required:

- ☒ Professional Liability Insurance / Errors and Omissions Liability in the minimum amount of \$2,000,000 per occurrence.
- ☐ If working directly with children, the Certificate of Insurance must include coverage for molestation and sexual abuse in the minimum amount of \$1,000,000 per occurrence and \$2,000,000 aggregate. In the event that Abuse & Molestation Liability coverage is provided via a Claims Made Policy, the coverage shall include a minimum of a five year extended reporting clause.
- ☐ Pollution Liability Insurance in the minimum amount of \$1,000,000 per occurrence
- ☐ MCS-90 Endorsement to Business Automobile insurance for transportation of hazardous materials and pollutants
- ☐ Builder's Risk / Course of Construction Insurance in the minimum amount of \$\_\_\_\_\_.

### Deductibles and Self-Insured Retentions

Any deductibles or self-insured retentions must be declared and approved by the City of Sunnyvale. The consultant shall guarantee payment of any losses and related investigations, claim administration and defense expenses within the deductible or self-insured retention.

### Other Insurance Provisions

The **general liability** and automobile liability policies (and if applicable, pollution liability, sexual abuse and molestation, and builder's risk policies) shall contain, or be endorsed to contain, the following provisions:

1. The City of Sunnyvale, its officials, employees, agents and volunteers are to be covered as additional insureds with respects to liability arising out of activities performed by or on behalf of the Consultant; products and completed operations of the Consultant; premises owned, occupied or used by the Consultant; or automobiles owned, leased, hired or borrowed by the Consultant. The coverage shall contain no special limitations on the scope of protection afforded to the City of Sunnyvale, its officers, employees, agents or volunteers.
2. For any claims related to this project, the Consultant's insurance shall be primary. Any insurance or self-insurance maintained by the City of Sunnyvale, its officers, officials, employees, agents and volunteers shall be excess of the Consultant's insurance and shall not contribute with it.
3. Any failure to comply with reporting or other provisions of the policies including breaches of warranties shall not affect coverage provided to the City of Sunnyvale, its officers, officials, employees, agents or volunteers.
4. The Consultant's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.
5. Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, cancelled by either party, reduced in coverage or in limits except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to the City of Sunnyvale.
6. The policy limits of coverage shall be made available to the full limits of the policy. The minimum limits stated above shall not serve to reduce the CONSULTANT'S policy limits of coverage. Therefore, the requirements for coverage and limits shall be (1) the minimum coverage and limits specified in this agreement, or (2) the broader coverage and maximum limits of coverage of any insurance policy or proceeds available to the named insured, whichever is greater.

### Acceptability of Insurers

Insurance is to be placed with insurers with a current A.M. Best's rating of not less than A:VII, unless otherwise acceptable to the City of Sunnyvale.

### Verification of Coverage

Consultant shall furnish the City of Sunnyvale with original a Certificate of Insurance effecting the coverage required. The certificates are to be signed by a person authorized by that insurer to bind coverage on its behalf. All certificates are to be received and approved by the City of Sunnyvale prior to commencement of work.

Subcontractors

CONSULTANT shall require all subcontractors to procure and maintain insurance policies subject to these requirements. Failure of CONSULTANT to verify existence of sub-contractor's insurance shall not relieve CONSULTANT from any claim arising from sub-contractors work on behalf of CONSULTANT.