

**CONSULTANT SERVICES AGREEMENT BETWEEN CITY OF SUNNYVALE
AND KIMLEY-HORN AND ASSOCIATES, INC. FOR SIGNAL COORDINATION
TIMING AND OPTIMIZATION PROJECT**

THIS AGREEMENT dated _____ is by and between the CITY OF SUNNYVALE, a municipal corporation ("CITY"), and Kimley-Horn and Associates, Inc. ("CONSULTANT").

WHEREAS, CITY desires to secure professional services necessary for the 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. to 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, and shall include services as identified in Exhibit "A" in the amount of Two Hundred Forty Thousand Nine Hundred Thirty One and No/100 Dollars (\$240,931) for the duration of the contract. In no event shall the total amount of compensation payable under this agreement exceed the sum of Two Hundred Forty Thousand Nine Hundred Thirty One and No/100 Dollars (\$240,931) 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.

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. 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 shall be personally delivered, sent by first class with postage prepaid, or sent by commercial courier, addressed as follows:

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 and Associates, Inc
Attn: Brian Sowers, P.E.
4637 Chabot Drive, Suite 300
Pleasanton, CA 94588

Nothing in this provision shall be construed to prohibit communication by more expedient means, such as by telephone or facsimile transmission, to accomplish timely communication. However, to constitute effective notice, written confirmation of a telephone conversation or an original of a facsimile transmission must be sent by first class mail, by commercial carrier, or hand-delivered. 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 days after mailing, unless such date is a date on which there is no mail service. In that event communication is deemed to occur on the next mail service day.

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. California Agreement

This Agreement has been entered into in the State of California and this Agreement shall be governed by California law.

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

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. If CITY fails to pay CONSULTANT, CONSULTANT at its option may terminate this Agreement if the failure is not remedied by CITY within thirty (30) days after written notification of failure to pay.

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.

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. 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.

IN WITNESS WHEREOF, the parties have executed this Agreement.

ATTEST:

CITY OF SUNNYVALE ("CITY")

By _____
City Clerk

By _____
City Manager

APPROVED AS TO FORM:

KIMLEY-HORN and ASSOCIATES, INC.
("CONSULTANT")

City Attorney

By _____

Name/Title

By _____

Name/Title

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 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. Also, we have noted specific additional tasks and scope that was not included in the RFP, but is included at no additional cost in the basic Scope of Services. To summarize, these added value items are as follows:

- Video recordings will be collected with the Before and After studies and will be available to the City if desired.
- During the timing analysis, we will consider the timing of adjacent corridors and intersections and the potential to connect adjacent corridors/intersections in coordination or maintain existing cross coordination that exists.
- At the end of the project, Kimley-Horn will develop a one-page summary for each corridor 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.

Task 1: Project Management and Meetings (City and Caltrans Staff)

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

Other than the Kick-off meeting, four (4) project meetings to be held in the City offices 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 monthly calls to discuss project progress.

Task 1 Deliverables:

1. Attendance at Kick-off meeting
2. Attendance at four (4) project meetings with Caltrans staff

Task 2: Data Collection

Task 2.1 Traffic Counts

24-hour machine counts will be collected for 7 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 nine (9) 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 an 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, two (2) hours during the midday weekday peak period and two (2) hours during the AM and PM weekend peak periods at all forty-four (44) 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

A floating car study will be conducted for each corridor before the signal timing analysis and implementation is completed. Prior to the travel time runs, we will review the corridors with the City and the methodology for collecting the data. Travel time runs will be collected on each corridor for two 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 travel time data will be collected using an Excel based data collection method developed internally by Kimley-Horn. 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 afterward. The video data files collected during the "Before" study, which have very large file sizes, can be provided to the City if desired.

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
- 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
- Other roadway conditions, such as on-street parking locations, bus stop locations, and truck traffic

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 software will be utilized for timing development, although a higher version of the software can be used if preferred by the City. Traffic volumes, 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 Synchro model.

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 Comments 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, at no additional cost, if deemed beneficial. It should be noted that "transition" periods will be considered when evaluating the need and benefit of using additional school peak plans.

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.

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 of Signal Timing

Once the recommended timings are finalized, marked-up timing sheets will be prepared and submitted to the City for review. The marked-up timing sheets will be submitted to the City. Depending on City preference, the data can be entered into the system by Kimley-Horn staff at no additional cost. Once the timing is reviewed by the City, Kimley-Horn will be available to assist with downloading the timings to the field.

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 anticipated that two (2) days of fine-tuning will be conducted along each corridor, on days that are representative of typical traffic conditions. If needed, additional days of fine-tuning will be conducted to address City concerns.

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: Deployment, Fine Tuning, 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.

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 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. In addition, if desired by the City, Kimley-Horn will prepare and submit a one-page summary for each corridor highlighting the project benefits and performance measure results of the project at no additional cost.

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

EXHIBIT A-1 PROJECT SCHEDULE

Task Name	2018		2019									
	November	December	January	February	March	April	May	June	July	August	September	October
Notice to Proceed		◆										
Task 1 - Project Management and Meetings		◆	◆									
Task 2 - Data Collection			★									
<i>Traffic Counts</i>			■									
<i>Before Study</i>			■									
<i>Field Observation</i>			■									
Task 3 - Data Validation and Existing Conditions				★	★							
City Review (3 Weeks)					■							
Task 4 - Signal Timing Development and Optimization							★	★				
<i>Cycle Length Analysis and Meeting</i>						■						
City Review (3 Weeks)							■					
Task 5 - Implementation of Signal Timing									★			
City Review of the Timing Sheets (2 Weeks)									■			
Task 6 - Deployment, Fine Tuning, and Evaluation												★

Legend

- ◆ Notice to Proceed
- ◆ Project Meeting(s)
- Task Summary
- City Review
- ★ Deliverable

**EXHIBIT B
COMPENSATION SCHEDULE**

Tasks		Labor							Subconsultants	ODCs	Total
Task #	Task Description (Change task titles as detailed in the scope of work)	Project Manager	Engineer	Engineer	Analyst	Admin	Total Hours	Total Labor Costs	Counts	Other Direct Costs	Total Fee
		Sowers	Petrov/Wages	Rainey	Wong/McCarron	Varies			NDS		
		\$265	\$176	\$150	\$140	\$100			LS		
1	Project Management	24	12		8	4	48	\$9,992		\$460	\$10,452
2	Data Collection										
2.1	<i>Traffic Counts</i>		4	12		2	18	\$2,704	\$38,135	\$130	\$40,969
2.2	<i>Before Study</i>	4	12	24	100	2	142	\$20,972		\$1,470	\$22,442
2.3	<i>Field Observation</i>	12	24	16	36	2	90	\$15,044		\$700	\$15,744
3	Data Validation and Existing Conditions	12	36	24	124	4	200	\$30,876		\$1,430	\$32,306
4	Signal Timing Development and Optimization	24	24	18	80	4	150	\$24,884		\$1,150	\$26,034
5	Implementation of Signal Timing	12	24	24	48	4	112	\$18,124		\$840	\$18,964
6	Deployment, Fine Tuning, and Evaluation	120	100	40	100	4	364	\$69,800		\$4,220	\$74,020
	Total	208	236	158	496	26	1124	\$192,396		\$10,400	\$240,931

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**: \$1,000,000 per occurrence and \$2,000,000 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.
4. **Errors and Omissions** Liability Insurance appropriate to the Consultant's Profession: \$1,000,000 per occurrence.

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** policy 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.

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.