Scope of Work

Task 0: Project Management and Meetings

Task 0.1 Project Management

This task includes general project administration, including management of project staff, quality control, and project accounting.

Kimley-Horn will submit monthly invoices with associated project status reports for the effort completed each month. Project reports will include status updates on completed and ongoing project tasks, deliverables completed, upcoming milestones, and potential constraints and risks to project progress.

Task 0.2 Kick-off and Project Coordination Meetings

Kimley-Horn will initiate this project with a Project Kick-Off Meeting with City and Sacramento Regional Transit (SacRT) staff. This meeting will discuss the overall project schedule and constraints, review scope of services elements, identify project coordination, discuss quality control, and review administrative and invoicing procedures.

During the course of the project, we will conduct up to eight (8) virtual project coordination meetings with the City to review project schedule, budget, progress status, and risks to the project. We will prepare and distribute materials and notes for each meeting.

Kimley-Horn will prepare a project schedule identifying key milestones, deliverables, and critical path tasks for the project. We will update the schedule throughout the project and have it available during meetings, or as requested.

Task 0 Deliverables:

- Meeting Notes, Agendas, and Meeting Materials
- Project Schedule (with updates)
- Monthly Invoices with Project Status Reports

Task 1: Data Collection and Existing Conditions Observations

Kimley-Horn shall be entitled to rely on the completeness and accuracy of all information provided by the City and SacRT. Kimley-Horn will request the following information from the City and SacRT for the purpose of performing the traffic operations analysis:

- Signal timing sheets
- Traffic signal as-built plans
- LRT as-built plans, including train detection, existing preemption logic, and equipment
- LRT schedules, headways, and operating speeds within project limits
- Available traffic count data
- Data from City's ATSPM system, including cycles/splits/offsets logs
- Synchro network files (if available) for the project corridor, including existing signal timing parameters for the seven signalized intersections

Kimley-Horn will collect weekday, peak-period intersection turning movement counts (vehicles, bicycles, and pedestrians) at the seven (7) signalized intersections along Folsom Boulevard between Iron Point Road and Natoma Street. The counts will be conducted on a typical weekday (Tuesday, Wednesday, or Thursday when local schools are in session) between the hours of 7-9 AM, 2-4 PM, and 4-6 PM.

Kimley-Horn will complete a site visit of the project corridor to observe existing operations and lane configuration, vehicle storage lengths, existing traffic control, speed limits, lane utilization, adjacent land uses, and other readily apparent features for the study facilities that are deemed by Kimley-Horn to be relevant to the scope of services. We will review existing traffic signal operations and light rail preemption, including existing traffic signal logic operation (i.e., detection, rail preemption, blank-out sign, overlaps). This site visit will be coordinated with City staff and SacRT.

Task 2: Traffic Signal Timing Updates

Kimley-Horn will analyze traffic signal and rail system operations and develop recommendations for signal operational strategies to improve traffic flow and corridor progression while effectively managing light rail preemption and maintaining safe and efficient intersection operations for all users. These operational enhancements may include modifications to signal coordination plans corridor-wide, signal phasing during rail preemption, preemption logic operation, time-out/cancel preemption functions, and other controller programming. Recommendations will address the integration of light rail operations with signal coordination plans, and may include adjustments to cycle lengths, splits, offsets, and transition strategies to maintain progression for vehicular traffic along Folsom Boulevard.

Kimley-Horn will provide marked up signal timing sheets documenting recommended modifications as part of our deliverable for Task 4.

Task 3: Signage and Safety Assessment

Based on field observations during the site visit (Task 1), Kimley-Horn will conduct a review of existing traffic control devices (including traffic signal infrastructure and signing and striping) and safety assessment at the seven project intersections. This includes review and assessment of CA MUTCD compliant signing and striping in development of intersection improvements to enhance multi-modal safety.

We will review crash data along the project corridor from the recently completed City of Folsom Local Road Safety Plan (LRSP), previously developed by Kimley-Horn. This assessment will include review of crash types, crash patterns, primary collision factors, severity levels, pedestrian or bicyclist involvement, and other information to inform recommended safety countermeasures and intersection improvements. This assessment will also include identification of geometric or visibility issues that may contribute to crash risk or present conflicts for vehicles, pedestrians, bicyclists, and light rail operations.

Efforts completed in this task will be documented in a technical memorandum format with graphics as deemed appropriate by Kimley-Horn. We will prepare and submit an electronic (PDF) version of the Draft Safety Assessment Memorandum to the City. Kimley-Horn will respond to a single set of consolidated, non-conflicting, and reasonable comments from the City on the Draft Memorandum. We will prepare and submit an electronic (PDF) version of the Final Safety Assessment Memorandum to the City.

Task 3 Deliverables:

- Safety Assessment Memorandum (Draft and Final)

Task 4: Logic Statement Development

Kimley-Horn will evaluate the current corridor's railroad preemption operation to determine where delays and queues are increasing while the signal is in active railroad preemption. Kimley-Horn will consider using the controller features provided by the Econolite's EOS controller firmware, including utilizing peer-to-peer through Ethernet communication and the City's Centracs Central Traffic Management System and the development of logic statements with the local traffic controller. Kimley-Horn will evaluate railroad preemption operation for each intersection and consider the following to improve traffic signal operations before, during, and after railroad preemption operations:

- Implement queue cutter detection by programming additional video detection zones via Iteris's Vantage Vector Video Detection System.
  - Queue cutter detection can be utilized to shorten a phase at its current intersection or an adjacent intersection through logic development and peer-to-peer communication.
- Send an advance preemption input from an adjacent signal through peer-to-peer communication to clear the left-turn and side street queue prior to the arrival of the light rail.
- Develop logic statements and modify railroad preemption settings to exit preemption operation more efficiently and return the signal and corridor back into step more efficiently.
- Implement Cascade logic wherein the system detects approaching LRT and adjusts traffic signal timing offsets at downstream signals to maintain coordination.

We will document recommended preemption logic and controller programming adjustments in marked-up traffic signal as-built plans and timing sheets for each of the project intersections.

This scope of services does not include development of construction documents or specifications for infrastructure improvements.

Task 4 Deliverables:

- Signal timing sheet markups

- Signal as-built plan markups

Task 5: Simulation and Analysis

This task includes focused technical analyses to establish existing conditions and identify recommended signal timing changes (with implementation of operational strategies and preemption logic). Kimley-Horn will complete a focused weekday AM and PM peak-hour intersection operations analysis including up to seven signalized intersections. These analyses will include delay, Level of Service (LOS), and queuing for the following scenarios:

- Existing (2025) Conditions
- Existing (2025) plus Proposed Project Conditions+

     + "Proposed Project" refers to the inclusion of the operational strategies and preemption logic to be determined in Tasks 2 and 4, respectively.

Kimley-Horn will analyze the impacts of the proposed signal timing changes on corridor and intersection performance. Delay and LOS will be determined using methods defined in the Highway Capacity Manual, using

appropriate traffic analysis software (VISSIM) and analysis procedures consistent with the City's current, published guidelines. Kimley-Horn will use EOS virtual controller to program test operational schemes prior to simulating in VISSIM. The ring-barrier controller in VISSIM will be configured to simulate signal controllers with preemption logic using the EOS virtual controller.

The primary purpose of this analysis will be to simulate preemption strategies to identify and inform the recommended operational strategies, including traffic signal timing parameters and preemption logic.

Efforts completed in this task will be documented in a technical memorandum format with graphics as deemed appropriate by Kimley-Horn. We will prepare and submit an electronic (PDF) version of the Draft Traffic Operations Memorandum to the City. Kimley-Horn will respond to a single set of consolidated, non-conflicting, and reasonable comments from the City on the Draft Memorandum. We will prepare and submit an electronic (PDF) version of the Final Traffic Operations Memorandum to the City.

Task 5 Deliverables:

- Traffic Operations Memorandum (Draft and Final)

Task 6: Implementation and Testing

Upon approval of final signal timing and logic strategies, Kimley-Horn will provide the City with technical assistance in bench testing and field implementation of the signal timing modifications. This task includes field observations, fine-tuning, and troubleshooting as needed for proper operation of preemption logic. This task includes up to 66 hours of bench testing and field support for implementation and fine tuning of signal timing modifications.

Efforts completed in this task will be documented in a technical memorandum format with graphics as deemed appropriate by Kimley-Horn. We will prepare and submit an electronic (PDF) version of the Draft Implementation Memorandum to the City. Kimley-Horn will respond to a single set of consolidated, non-conflicting, and reasonable comments from the City on the Draft. We will prepare and submit an electronic (PDF) version of the Final Implementation Memorandum to the City. Final deliverables will also include updated (marked-up) signal timing sheets, as-built plans, and controller programming files (as applicable).

Task 6 Deliverables:

- Implementation Memorandum (Draft and Final)
- Signal Timing Sheet Markups
- As-Built Plan Markups
- Controller Programming Files