

**Scope of work for Traffic Signal Timing Optimization and Implementation**  
**W. Gore Blvd Signal Timing Plan and Implementation**  
**City of Lawton, Oklahoma**

The city of Lawton, Oklahoma, aims to conduct a signal timing optimization study to enhance operations and safety along a 6-mile stretch of Gore Blvd, spanning from 45<sup>th</sup> Street on the east side to 82<sup>nd</sup> Street on the west side (**Figure 1**). The study will include both weekdays and weekends. Additionally, an evaluation of the signal equipment and communication necessary for the implementation of the new timing will be conducted. Below are the scope items to complete this study. It is recommended that traffic volume counts be conducted when the schools are in session, to represent peak demand.



Figure 1

**1. Corridor wide Traffic Signal Timing Analysis/Improvement**

Traffic analysis aims at the development of optimized and, when practical, coordinated traffic signal timing plans for Gore Blvd. within the City limits. Existing signal timing plans will be evaluated. Collected data will be analyzed to determine the need for time-of-day timing. Prioritization criteria will be identified, and modifications will be made to the timing at each intersection with Gore Blvd to minimize or balance the impact to the cross street.

The study includes an update to the yellow, red, and pedestrian clearance intervals for all traffic signals, aligning them with established traffic signal timing guidelines. An evaluation of "before" and "after" travel time data collection will be conducted to validate project benefits. The project's assessment and documentation will encompass the identified benefits.

### **1.1. Data Collection**

The following data will be collected during the data collection effort:

- Request and receive data about existing traffic signal timing plans, interconnectivity (communication), and modes of remote traffic signal monitoring and operations.
- Collect 48-hour counts and Intersection Turning movement counts (TMCs) including passenger cars, light trucks, heavy vehicles, bikes and pedestrians. For both weekdays and weekend, at the signalized intersections along the corridor. **It is recommended to collect the data when the schools are in session to represent the peak operational characteristics.**
- Data about existing traffic signal hardware, software, and communication (see section 2, below).
  - It is assumed that field work will be needed to collect or verify the equipment data

### **1.2. Traffic Condition Analysis**

Weekday and weekend traffic counts will be reviewed to determine the need for time-of-day traffic signal timing. The operational analysis for the existing network configuration will be performed utilizing Synchro 12 and its simulation component SimTraffic.

The base Synchro model for each time of day will be set up with proper input data including geometric information, signal phasing and timing, volume information, pedestrian timings, truck percentage and peak hour factors. The model will provide output data including travel time, average delay per vehicle, and total network delay to facilitate the corridor signal timing calibration process.

### **1.3. Cycle Length Analysis and Signal Phasing/Timing Plan Optimization**

Cycle length analyses for each of the proposed timing periods will be conducted. Corridor Specific An evaluation will be made to determine whether coordinate cycle length vs individual intersection cycle length is appropriate at each intersection.

### **1.4. Phasing/Timing Plan Development**

This is an iterative process that will include selection of intersection phase splits, offsets, phase sequencing and “hand-adjustments” of timing plans. The Synchro model optimizes these timing parameters, which are considered a “first-cut” in the process of developing good timing plans. The timing plans will be fine-tuned according to the analysis results, field data collections, WSB staff knowledge of the operation of the corridor, and City staff input. An assessment will be made as to the suitability of fixed time versus actuated timing at individual intersections.

### **1.5. Timing Plan Implementations and Fine-Tuning**

It is assumed that the City staff will program the new timing into the controllers, and conduct field observations after the implementation to fine tune the proposed timing. If so directed WSB will be available to assist the City staff with these tasks, pending separate scope and fee. New signal timing plans implementation and fine tuning generally includes the following steps:

- Program new timings into the controllers.
- Verify cycle lengths and offsets at each intersection.
- Check individual intersections for any capacity/queuing problems and make necessary timing changes.
- Check corridor progression for each direction of travel and each period.
- Recommend fine-tuning adjustments (splits/offsets).

### **1.6. Method of Measuring Benefits**

The primary benefits of signal re-timing can be measured through the collection of “before” and “after” travel-time/delay run data. The field runs will be conducted in accordance with prevailing standards of practice. Additionally, Measures of Effectiveness (MOE) such as travel time and delay will be generated from Synchro and provided to the City.

## **2. Traffic Signal Equipment**

WSB will request, receive, and catalogue available information about existing traffic signal field and office equipment and hardware, including traffic signal structures, control cabinets, controllers and other equipment inside cabinets, communication, control software, traffic signals head arrangements, and detection devices. WSB will make an assessment of the capabilities of the existing equipment to allow full implementation of the proposed timing and recommend any upgrades. This review will include an evaluation of the existing radio and cellular communications and determine their integration into one system of traffic signal interconnect.

It is anticipated that field data collection or verification will be needed by WSB.

## **3. Technical Memorandum**

WSB will prepare a concise technical memorandum summarizing the process, key findings, recommendations and the implementation process. The technical memorandum will be circulated for review before it is finalized.

## **4. Council Presentations**

WSB staff will prepare exhibits and presentations and make up to two presentations to the City council. Additionally, WSB will participate in periodic progress meetings with the City staff.

### **Exclusions:**

- Corridor timing optimization on cross streets is not included in this scope.
- Programming new timing into the controllers and fine tuning are not included in this scope.