

Professional Services
Various Routes
St. Louis, St. Charles Counties
Jefferson, Franklin Counties
City of St. Louis

Scope of Services

This document identifies a specific scope of professional services to be performed by Consultant in accordance with the standard practice of the Commission. The order in which the tasks are completed may or may not correspond to the sequence of the task numbers in the scope of services. In fact, some tasks listed within this scope may be carried out concurrently to expeditiously complete the study.

The Scope of Services defines tasks to be performed as follows:

- (1) Reconfigure the Commission's approximately **85** existing Econolite intersection video detection systems for data collection (speed and volume).
- (2) Configuration and integration of the video detection systems as noted in (1) into a central data collection management system (DCMS) for both data collection and streaming video. In addition, configure approximately **30** Iteris and Traficon video detection systems for streaming video.
- (3) Perform quality checks of the data collected as specified in (1) to another approved data collection methodology at all intersections.
- (4) Provide documentation and training to Commission staff on procedure and recommended best practices for configuring video detection for accurate data collection and any probable maintenance concerns as the cameras are replaced.

Task 1 – Field Work

Task 1.1 – Consultant Credentials: The Consultant will need to have access to the Commission's communication network, Autoscope Browser software, and DCMS system for the majority of the tasks listed in Scope of Services. The Consultant is strongly encouraged to perform work at the Transportation Management Center (TMC), and have their staff complete and submit the Commission's "Background Check Authorization Form" in order to be approved for access to the Commission's computer network.

The nature of the work requires Consultants who are experienced and knowledgeable about each of the video detection systems listed, in particular pertaining to video detection setup, detector file configuration and video detection system troubleshooting. Only Consultants authorized and/or previously trained by the listed video detection manufacturers will be allowed to configure the Commission's video detection systems. The Consultant shall be responsible for working with each video detection vendor to troubleshoot and/or determine best practices for completing required tasks.

Task 1.2 – Signal Cabinet Scoping: In certain situations where remote communications to the TMC fails and/or video feeds are lacking for all or certain approaches, the Consultant will need to field verify the locations to ensure the signal cabinet has the correct communication equipment and that it is properly connected and functional in order to network back to the TMC the real-time streaming video feed, video detection processor and all intersection approach cameras.

The real-time streaming video feed shall consist of the post processed video image that shows detector actuations. The networked streaming video feed shall not interfere with the ability to display the same video image on the video monitor or significantly degrade the quality of the existing video image being displayed on the monitor. If the signal cabinet is deficient in any one of these areas, the Consultant will inform the Commission and make recommendations, as well as assist the Commission as needed to rectify the problem.

Task 1.3 – Camera Adjustment and/or Detector Zone Calibration: For the Econolite video detection systems, the Consultant may need to adjust the video detection cameras field of view as necessary and/or recalibrate the entire camera detector file per manufacturer's recommendation to obtain accurate speed and volume data. However, in doing so, the vehicle detection function of the video detection system is not to be compromised, and any adjustments of the cameras should adhere to manufacturer's recommendations. All field equipment needed for such tasks are to be provided by the Consultant.

For Iteris and Traficon video detection systems within the scope of services, the Consultant shall review the existing vehicle detection zones and shall reconfigure the detection zones as needed to achieve optimal detection performance. The vehicle detection zones shall be configured to the maximum capability of the video detection system.

Task 2 – Integration into Centracs DCMS

Task 2.1 – Detector File Configuration: The Consultant shall reconfigure the Econolite detector files for volume and speed data per manufacturer's recommendation. Volumes shall be obtainable at a minimum for each vehicle movement and intersection approach or otherwise specified by the Commission. The Consultant shall recommend a naming convention when labeling the count zones that is to be approved by the Commission that allows for optimal data reporting formats.

The reconfigured detector file shall be saved and reloaded to the video detection processor. The Consultant shall verify the proper operation of the video detection system with the new detector file. Verification shall be done over a period of two weeks to check that the count and speed zones have not significantly affected the operation of the video detection system to detect vehicle presence to the extent that the load index on each camera exceeds 200. If over the verification period the load index does exceed 200, the Consultant shall continue to reconfigure the detector files until the load index is below this value.

Task 2.2 – Teleste Encoder Configurations: Intersections with existing Teleste encoders deployed for Econolite video detection systems may need to have encoder firmware upgraded and appropriate settings configured in order to obtain all streaming video feeds. The Consultant shall be responsible for these tasks if needed.

Task 2.3 – Calibration File: The Consultant will provide an image snapshot of the final calibrated detector files for each camera at the intersection regardless of whether there was a need to adjust the

camera field of view. The snapshot shall show the accurate layout of the detection zone either via cone placement or other visible markings on the pavement. The Consultant will save the snapshot in a jpeg file format to be delivered to the Commission upon project completion.

Task 2.4 – Centrac DCMS Configuration for Streaming Video: The Consultant shall configure the Commission's DCMS for streaming video and snapshots for each camera and at all locations in this scope of services regardless of the type of video detection system present. This task shall also include populating the DCMS map camera icons as specified by the Commission. The Commission will provide a convention for how to name the video streams in DCMS.

Task 2.5 – Centrac DCMS Data Collection: The Consultant shall configure the Commission's DCMS for proper volume and speed reporting for the Econolite video detection systems in reporting formats approved by the Commission. The Commission may request up to five (5) additional user defined formats to be configured outside the standard data reports already available in DCMS.

Task 2.6 – Response and Adjustments to Implementation: The Consultant will be responsible for ALL customer calls reported in regards to detection problems for a period of 30 days from the date the Consultant has reconfigured the intersection detector file for that intersection. The Commission will forward any complaints to the Consultant, who will observe, analyze and respond as necessary. The Consultant shall respond and/or correct any problems within two (2) working days and report to the Commission on the remedy, if any.

Task 3 – Data Validation

Task 3.1 - Data Quality Checks: The Consultant shall do quality control of the volume and speed data collected by the Econolite video detection systems. The Consultant shall select an approved alternate data collection methodology to be used for accuracy comparison. The number of acceptable hours for volume comparison shall be discussed during contract negotiations, but shall not exceed a maximum of 12-hour period. At minimum, the comparison shall be completed for a full 24-hour period. Quality control counts shall be completed within Tuesday to Thursday and shall exclude days with frozen precipitation. Data collected shall include speed and volumes for all approaches.

If the data comparison is greater than 10% between the two methodologies, the Commission may require the Consultant to recalibrate the video detection system, as needed to attempt to improve the data accuracy. When recalibration is required, the data quality check shall also be repeated.

It should be noted that turning movement counts will be collected in 15-minute increments and summarized hourly for each signalized movement at every noted intersection.

Task 3.2 – Preliminary Report: The consultant will prepare a brief preliminary report for the Commission's review that explains the quality control analysis procedure. Documentation is also required that shows the data comparison at each intersection.

Task 4 – Final Report and On-Site Training:

Task 4.1 - Provide final report and training to Commission staff on procedure and recommended best practices for configuring video detection for accurate data collection, and configuration into DCMS. The consultant shall also provide recommended field procedures for Econolite video detection systems that maybe required to address any maintenance concerns in regards to data collection as the cameras are replaced. Training shall occur at the St. Louis District Transportation Management Center (TMC) located at 14301 South Outer 40 Road, Chesterfield, Missouri 63017. This training will be a minimum of four (4) hours, and will be presented to a maximum of 20 MoDOT employees.