January 3, 2014

Mr. David R. Riesland, P.E.
City Traffic Engineer
City of Norman, Oklahoma
1311 DaVinci Street
Norman, Oklahoma 73069

Dear Mr. Riesland:

Per your request, Econolite is pleased to offer the following quote to add the *Centracs Adaptive* module to the City of Norman's *Centracs* license. Econolite's Project Manager will schedule an on-site turn-on of *Centracs Adaptive* monitored by a system engineer. During this visit, the system engineer will install the central *Centracs Adaptive* module, implement *Centracs Adaptive* at six intersections, conduct hands-on instruction, and perform an acceptance test of the *Centracs Adaptive* system.

The effectiveness of any traffic adaptive solution hinges on a number of factors, all of which affect the performance of the adaptive algorithms of the system. Two of the most important factors that influence *Centracs Adaptive* are the existing arterial coordinated timing plans and the presence of adequate vehicle detection. A first step in the setup of *Centracs Adaptive* will be for Econolite to review existing timing plans. *Centracs Adaptive* will perform more efficiently using timing plans with adequate slack time (splits not equal to phase minimums to permit split adjustment by the algorithm). With respect to detection, of particular note is the requirement to provide advance detection at coordinated intersection approaches. The *Centracs Adaptive* system requires accurate descriptions of the detection solutions in place, including lane-by-lane detection zone placements, distances and phasing information. As detection is so crucial to the effectiveness of *Centracs Adaptive*, the second step in implementing *Centracs Adaptive* will be to collect the relevant information that will become the configuration parameters for the system. The City of Norman will be responsible for documentation of all detector information and verification that detectors are in good working order and their assignments are correct. It should also be noted that adaptive system performance cannot be guaranteed, particularly under oversaturated traffic conditions.

The *Centracs Adaptive* algorithms require frequent data updates from the controllers at each intersection under *Centracs Adaptive* control. The *Centracs Adaptive* module communicates via Ethernet with the *ASC/3* controllers in the field using special NTCIP objects designed for this purpose. The implementation of *Centracs Adaptive* requires *ASC/3* version 2.50 (or newer) software at the controller level, along with the *Centracs Adaptive* data-key to enable *Centracs Adaptive* at each intersection. For this project, Econolite will be responsible for providing the City of Norman with six *Centracs Adaptive* data keys. The City of Norman will be responsible for ensuring the controller firmware and data-keys are installed at all locations.

At this point, the *Centracs Adaptive* system can be configured for operation. Econolite representatives will work with City personnel to configure the system parameters and begin testing procedures.

Instruction on *Centracs Adaptive* will be provided during the on-site installation visit. This instruction will cover the basic *Centracs Adaptive* use-cases, algorithm overviews, and application of *Centracs Adaptive*. This instruction affords personnel the experience of adding intersections, arterials and configuring the system so they may monitor and tune the system as needed. During this hands-on instruction, we ask that personnel actively managing the system and intersection timings be given priority for instruction and hands-on learning. For *Centracs Adaptive*, we have found hands-on instruction during installation is more effective than formal classroom training.

Upon completion of integration and training by Econolite, acceptance testing will be conducted. The *Centracs Adaptive* Acceptance Test (CAAT) will involve a formal, documented test of the software's functional performance, ensuring adjustments to offsets and splits occur based on the parameters defined by the *Centracs Adaptive* system. Test documentation will be provided to the City for review prior to the testing upon request.

The following pricing is valid for a period of sixty days from the date of this quote.

Item	Quantity	Unit Price	Extended Price
Centracs Adaptive Module	LS	$25,000.00	$25,000.00
Centracs Adaptive Data Keys	6	$2,500.00	$15,000.00
Centracs Adaptive installation, training and testing	6	$750.00	$4,500.00
		Total Price	**$44,500.00***

*Price does not include sales tax.

Please feel free to contact us should you require additional information regarding this quote.

Sincerely,
Econolite Control Products, Inc.

Chris Carline
Eastern Region Sales Manager