



Location: Ontario, Canada

Client: Ministry of Transportation for Ontario (MTO)

ITP: Quixote Traffic Corporation



Product: Quixote Traffic ADR-6000™ incorporating Idris DR420 software

Project: Traffic data collection in Canada

Background: Traffic has significantly increased in the past ten years, and the number of cars on the road is projected to continue increasing by as much as 50% in the next decade. As vehicle traffic increases, it has become increasingly difficult to collect traffic data accurately on congested routes using traditional sensors such as piezos, road-tube or standard inductive loops.

Quixote Traffic is one company who continue to develop and improve their comprehensive portfolio of data collection and classification solutions. Their response to the critical problem was to combine 40 years of expertise in data collection and inductive loop knowledge with the advanced inductive loop detection algorithms known as Idris®. At the top of the data collection portfolio is the state-of-the-art ADR-6000™ counter/classifier.

Project Detail: The MTO had a requirement to purchase approximately 70 data recording units for the ongoing collection of traffic data. They were to be installed in a number of environments, from rural 2 lane roads to urban areas with densely populated traffic such as Toronto & Ottawa with up to 6 lanes of traffic. They needed a technology able to count and classify to greater than 95% accuracy levels and operate in all weather and traffic flow conditions.

This specification raised several requirements which standard data collection units were unable to meet. Firstly some of the rural sites would see sporadic traffic flow, therefore needing a technology which operates in low flow rate, has a high mean time before failure and low maintenance costs. Traditional sensors do not count accurately at low speeds and suffer from mechanical degradation.

At the other end of the scale, the urban sites were more likely to contend with bumper-to-bumper traffic. Most sensors cannot operate in congestion or stop-go traffic. In these traffic flow situations traditional inductive loop technology can join vehicles resulting in lower counts. Piezos and road tube sensors miss axles or miscalculate spacing at low or irregular speeds resulting in inaccurate vehicle classification.

One data collection product which would enable MTO to collect data to the FHWA from their arterial routes and urban freeways, especially at peak times, was the ADR-6000™.

How It Works: The ADR-6000™ counter/classifier uses state-of-the-art inductive loop signature analysis with patented Idris® technology. It is a modular single or multi-lane data collection system that offers accurate vehicle count and axle-based classification in traffic conditions ranging from free-flow to stop-and-go congestion. The ADR-6000™, enhanced by the Idris algorithms, utilises sophisticated signal processing techniques to extract minute changes in inductance from standard loops. This enables intelligent profile and axle classification with wide area tracking of vehicles. The unit is capable of determining tailgating versus towing vehicles and also identifies vehicles straddling lanes and places them into



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the correct lane. The classification scheme is based on features extracted by the ADR-6000™, these include length, speed, number and spacing of axles. It is the only traffic data counter/classifier that collects vehicle volume and class data with greater than 95% accuracy in all weather and traffic conditions.

Conclusion: The installation of the 70 units has been ongoing beginning prior to 2002 and there is continued development work with MTO to enhance the systems capabilities. The expected accuracy level for the ADR-6000™ is greater than 95%. However for the MTO installations, very long loop leads were required instead of a standard length and tar rather than loop sealant was used. In light of these deviations, a lower accuracy level of 90% was agreed upon. That being said, the systems typically perform well above 90% (normally above 95%). The data collected is binned and uses the standard rule file based on FHWA scheme F using a standard 2 main loop array and the patented axle loops. The ADR-6000™ units continue to meet MTO's accuracy expectations under all traffic flow conditions.

Idris® is a registered trade mark of Diamond Consulting Services Ltd.

The Idris Technology is protected by one or more of the following patents: EP0879457, USA 6345228, 6337640 and 6483443. Patent Applications Pending in other Countries



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