

DATE: August 9, 2010

REPORT TITLE: **TRANSPORTATION DIVISION
TRAFFIC ENGINEERING INITIATIVE UPDATE**

FROM: Dan Labrecque, Commissioner of Public Works

OBJECTIVE

The purpose of this report is to apprise Regional Council on initiatives currently underway in the Traffic Engineering Section with respect to Intelligent Transportation Systems (ITS), Traffic Safety and the Region of Peel Controlled Access By-law 59-1977.

REPORT HIGHLIGHTS

- The Traffic Engineering section is in the process of developing an Intelligent Transportation System (ITS) Strategic Plan to determine a short and long term strategy to maximize existing roadway capacity and streamline the use of advanced traffic technologies.
- One of the mandates of the Traffic Engineering section is to develop and refine traffic safety measures and improvements on Regional Roads as well as to provide an up to date and reliable collision data system capable of addressing the current and future needs of Region of Peel.
- The Controlled Access By-law 59-1977 is currently being updated to reflect the needs of the citizens in Peel while protecting and maintaining the integrity and function of the Regional Arterial Road network.

DISCUSSION

1. Background

a) Intelligent Transportation System (ITS)

i) Strategic Plan

Intelligent Transportation Systems (ITS) is the application of advanced information processing, communications, technologies and management strategies in an integrated manner to improve the safety, capacity and efficiency of the transportation system.

The Traffic Engineering section in conjunction with the Transportation Planning section is currently in the process of developing an Intelligent Transportation System (ITS) Strategic Plan to determine a short and long term strategy which includes, exploring advanced traffic technologies to maximize existing roadway capacity. This strategy

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would further build on the current use of traffic technologies and target new initiatives to best manage traffic flow, road operations and safety.

Examples of ITS concepts that may be applicable in Peel include:

- Traffic Signal Control Systems that are responsive and are automatically adjusted to optimize traffic flow;
- Coordination with Provincial Freeway Management Systems that provide information to motorists and detect problems;
- Incident Management Systems that enable quick identification and response to collisions or breakdowns;
- Multimodal Traveler Information systems that provide road and transit information to travelers, businesses and motor carriers to make smarter choices about how, when and what routes to use in their trips;
- Multimodal Operator Information systems that provide real-time video information to system operators such as traffic signal agencies, transit systems (public transit and transit services for persons with disabilities), commercial vehicle fleets, and emergency vehicles;
- Intermodal Freight Management systems that track and monitor freight movement;
- Future traffic system upgrades in Caledon;
- The feasibility for an integrated Control area for Roads Operations, dispatch and Traffic Control.

ii) Official Plan and Intelligent Transportation Systems (ITS)

The Region has committed to optimizing the use of existing and new transportation infrastructure and services through the use of these innovative technologies. Policies in the Regional Official Plan call for the Region to:

- Promote the use of innovative technologies (e.g. Intelligent Transportation Systems) to improve the efficiency, reliability and safety of the Regional transportation system; and to
- Support the use of innovative transit technologies by area municipalities, such as transit signal priority and the provision of real-time information to transit riders, and support the identification by area municipalities of transit priority zones where transit priority measures will be put in place.

iii) Current Intelligent Transportation System (ITS) Initiatives

The Traffic Engineering section is currently piloting and involved with several new technologies to optimize traffic operations. Some of the technologies already in use, or under development to improve the functioning of the transportation system include:

- Railway Crossings that are coordinated with traffic signals and train movements;
- Upgrades and expansion of the Red Light Camera program;
- Wi-fi service in conjunction with the City of Brampton to be implemented on Brampton Transit Züm corridors;
- Piloting of video vehicle detection at selected intersections;
- Upgrade of the Actra traffic system in Brampton to Tactics to accommodate transit signal priority (for the Züm project);
- The City of Mississauga traffic control system replacement; and
- A version upgrade to the Aries traffic control system in Caledon.

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The need for a strategic plan is imperative to focus resources, budgeting as well as enhancing traffic management integration opportunities with various stakeholders, including the area municipalities and adjacent municipalities. The use of advanced traffic technologies will be systematically incorporated into the larger aspect of traffic management in the Region of Peel. The strategic plan will focus the direction of capital planning with respect to both integration and traffic management.

b) Traffic Safety

The Traffic Engineering section has incorporated traffic safety as one of the most important attributes on how we manage traffic in the Region of Peel. Part of the mandate is to develop and refine traffic safety measures and improvements on Regional Roads as well as to provide a functioning collision data system capable of addressing the current and future needs of all internal and external clients.

The Traffic Engineering section plans to report to Regional Council on an annual basis on collision trends and recommended improvements and future initiatives to be incorporated on Regional Roads.

Over five (5) million pieces of data spanning twelve (12) years of collision data have been validated, processed and entered into the newly acquired Traffic Engineering Software (TES) application. The TES application has allowed for the fastest and most accurate collision data housing and accessibility in the history of maintaining collision information at the Region of Peel. Additionally, the application lends itself flexibility to grow with the Region, by enabling the housing of all traffic volume data and future network screening in a single package.

Responsibilities with respect to safety include:

- The Region's Red Light Camera Program evaluation and monitoring of existing locations, identification of future locations;
- Harmonization of collision data entry and scanning with the Peel Regional Police, City of Brampton and City of Mississauga in the COMDAT (COMplete DATaset) project;
- Environmental Assessments;
- Road Safety Audits;
- Support roles for the Capital and Risk Management Groups;
- Project initiation for the acquisition of calibrated Safety Performance Functions;
- Research and Development of new and emerging technologies;
- Regional representation at various committees including ROSCO (Road Safety Committee of Ontario), BRSC (Brampton Road Safety Committee), MSC (Mississauga Safety Committee);
- Caledon Truck Safety Review and Monitoring.

Go forward projects will include a project for the acquisition of calibrated Safety Performance Functions (SPF's). SPF's are mathematical equations used in accident prediction to allow for proactive solutions as opposed to reactive approaches that utilize historical collision histories. Development of SPF's will focus proactive approaches in making safety improvements on Regional Roads.

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Secondly, the use of Accident Modification Factors (AMF's) will be used to assist in enhancing the safety of our roadways. AMF's are mathematical factors that can be applied to existing and proposed geometric enhancements to gain a better sense of what crash reductions can be expected for implementing certain safety enhancements.

c) Controlled Access By-law 59-1977 Update

One of the Traffic Engineering section's objectives is to protect the intended function of Regional Roads. One of the means designed to preserve the function and network effectiveness of Regional Roads is the Controlled Access By-law. The Controlled Access By-law will be updated to further reflect the needs of the citizens in Peel.

Access management grants the provincial or municipal authority to effectively manage the provision of access to the public road system. The major objective is to provide a safe access which is consistent with the function and operation of that public road and access needs of the adjacent land uses. In addition, it achieves the necessary balance between traffic movement and land use access by careful control of the location, type and design of driveways and municipal intersections.

Criteria used to evaluate the classification of a road include service function, flow characteristics, connections, transit, vehicle types, speed and volume.

The frequency and location of intersections and driveways strongly affect traffic safety and efficiency. Roadways populated with numerous accesses without effective controls impede traffic flow including goods movement and the intended function of the roadway is compromised. Once the capacity of a roadway is degraded adjacent roadways become more congested translating into further traffic congestion problems. Additional negative effects of frequent access points include problems with weaving and merging distances, safe stopping sight distances, acceleration rates, rear-end and angle collisions caused by turning drivers.

The proposed update to the Controlled Access By-law is intended to validate existing practices, provide enhancements as well as introduce new concepts. A report to Regional Council will be forthcoming at a later date.

CONCLUSION

The Traffic Engineering section is committed to supporting the Region of Peel's Official Plan by investigating advanced technologies to maximize the capacity of the existing arterial road network. Implementation of an ITS strategic plan will develop short and long term goals and build on current initiatives.

The Traffic Engineering section will focus on improving safety on the Regional road system and develop an annual report providing updates on trends that assist in setting the direction for future programs and initiatives.

The updated Controlled Access By-law will further strengthen and protect the function of Regional Roads.

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Dan Labrecque, Commissioner of Public Works

Approved for Submission:


for  D. Szwarc, Chief Administrative Officer

For further information regarding this report, please contact Joe Avsec at extension 7910 or via email at joe.avsec@peelregion.ca.


JA Authored By: Joe Avsec
c. Legislative Services