STANDARDIZED PAVEMENT CONDITION INDEX

Proposal

We are requesting that the Province consider implementation, promotion, and eventual enforcement of a standard road evaluation and condition rating process province-wide.

Background

Regular inspection to collect condition data is a vital component of developing or maintaining an asset management plan, and standardizing the way condition is quantified for specific asset types eases oversight and support. Assets like bridges are inspected per the requirements of the Ontario Structure Inspection Manual (OSIM) and have a resulting calculated Bridge Condition Index (BCI). However; there is no set required process to inspect or quantify the condition of roads. As a result, most municipalities follow a different process from one another or don't regularly evaluate their roads; and the management of roads suffers as a result. As there is no standard process in Ontario, road conditions in different municipalities cannot be compared to one another and the success, or failure, of asset management plans cannot be monitored. Standardizing the condition inspection and rating of roads would have benefits for municipalities as well as the Province.

Benefits of Standardization

There are many benefits that could be realized by standardizing road evaluations; such as, but not limited to, those listed below:

- 'Apples to apples' comparison of road conditions in different jurisdictions;
- Simplified asset management and planning for a major asset type;
- Better understanding of stage in life cycle for specific road sections;
- Municipalities could support one another in road inspections and management;
- Simplified oversight of road asset management plans and their effectiveness;
- Develop minimum or target condition rating for specific road classes;
- Potential for grant or funding formula linked to road conditions in municipalities.

Evaluation and Rating Process

There are many viable processes and guidelines for road evaluations; however, a combination of processes that have wide ranging capabilities, are relatively straight forward to use together, are already in use, and were developed by the Ministry of Transportation (MTO) include:

- SP-024, Manual for Condition Rating of Flexible Pavements;
- Pavement Condition Index (PCI) calculation; and
- MTO's Inventory Manual.

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The County of Renfrew utilizes the inspection procedure outlined in MTO's SP-024 to measure the severity of distresses, measure the density of distresses, calculate a Distress Manifestation Index (DMI), and identify a Ride Condition Rating (RCR) for road sections, which are then incorporated into the below formula in order to calculate the PCI rating.

$$PCI = MAX(0,MIN(100,13.75+(9*DMI)-(7.5*2.718^((8.5-RCR)/3.02))))$$

This process can be completed manually with a staff member undertaking data collection in the field which is used to calculate a PCI in an excel spreadsheet for individual road sections. Alternatively, the process can be completed by Consultant, such as LAS's StreetScan, using Lidar to collect the data. We have solicited the services of StreetScan to audit certain roads and confirmed that the calculated PCI values are similar over the same road sections regardless of the method used. The evaluation of Drainage, Structural Adequacy, Horizontal Alignment, Vertical Alignment, and Capacity similar to MTO's Inventory Manual are also included in the County's inspection process; however, they have no impact on PCI calculation and are used to establish life cycle and future engineering needs.

The above process is used by the County of Renfrew on both asphalt roads and surface treated roadways with success. However, it has not been tested on rigid concrete roads or gravel roadways as our County does not manage either of these surface types. As these surface types are present in many other municipalities, certain distresses may need to be incorporated, such as by integration of portions SP-025, Manual for Condition Rating of Gravel Surface Roads, and SP-026, Manual for Condition Rating of Rigid Pavements. It is important that the condition rating of different surface types is calculated in such a way that the values calculated for two different roads, with different surface types, can still be compared.