Request for Decision

Intersection of M.R. 80 and M.R. 84 - Traffic Control

Presented To:	Operations Committee
Presented:	Monday, Aug 13, 2012
Report Date	Wednesday, Aug 01, 2012
Type:	Managers' Reports

Recommendation

Based on the concerns from Transport Canada and the intersection analysis, City staff recommends that traffic control at the intersection of Cote Boulevard (M.R.80) and Capreol Road (M.R. 84) be reassigned by removing the stop sign facing westbound traffic on Cote Boulevard, and;

That City staff monitor the traffic volumes and apply for funding from C.N. Rail and Transport Canada for future traffic signals, and;

That a By-law be passed by City Council to amend Traffic and Parking By-Law 2010-1 in the City of Greater Sudbury to implement the recommended change all in accordance with the report from the General Manager of Infrastructure Services dated August 1, 2012.

Signed By

Report Prepared By
Dave Kivi
Co-ordinator of Transportation & Traffic Engineering Services
Digitally Signed Aug 1, 12

Division Review
David Shelsted, MBA, P.Eng.
Director of Roads & Transportation Services
Digitally Signed Aug 1, 12

Recommended by the Department
David Shelsted, MBA, P.Eng.
Acting General Manager of Infrastructure Services
Digitally Signed Aug 1, 12

Recommended by the C.A.O.
Doug Nadorozny
Chief Administrative Officer
Digitally Signed Aug 1, 12

Background

The City's Traffic and Transportation Engineering Services Section received a letter from Transport Canada, dated June 1, 2011 (See Exhibit A), that raised concerns about safety issues at the railway crossing located just east of the intersection of Cote Boulevard (M.R. 80) and Capreol Road (M.R. 84) in Hanmer (See Exhibit B).

Transport Canada has indicated that with the current traffic control at the intersection, vehicles could potentially become trapped on the crossing which could result in significant injury and/or property damage if they were to be hit by a train. Transport Canada has requested that the City alter traffic control at this intersection to improve safety at the rail crossing.

Intersection of Cote Boulevard (M.R. 80) and Capreol Road (M.R. 84)

Cote Boulevard, west of Capreol Road is designated as a primary arterial road. It is constructed with four (4) traffic lanes and a sidewalk along the south side. West of the intersection, Cote Boulevard carries an annual average darily traffic (AADT) volume of 7,500 and has a posted speed limit of 60 km/h.

East of Capreol Road, Cote Boulevard is designated as a secondary arterial road that is constructed to a rural cross section with two eastbound lanes and one westbound lane. It carries an AADT of 5,450 and has a posted speed limit of 60 km/h.

Capreol Road is designated as a primary arterial road that is constructed with a southbound left turn lane, a right turn channelized ramp, and a single northbound lane. It carries an AADT of 5,500 and has a posted speed limit of 60 km/h north of Cote Boulevard.

Capreol Road intersects with Cote Boulevard at approximately 90 degrees forming a "T" intersection. Traffic at the intersection is currently controlled with stop signs facing southbound traffic on Capreol Road and westbound traffic on Cote Boulevard. Due to the high volume of eastbound traffic on Cote Boulevard, it currently operates free flow with no stop or yield signs. At one time Cote Boulevard and Capreol Road were part of the Provincial Highway system and traffic control was set to favor the major movements of traffic.

There is an at-grade C.N. Rail crossing located approximately 25 metres east of the subject intersection.

Collision History

A review of the City's collision data from 2009-2011 (inclusive) revealed that there were a total of seven (7) reported collisions which occurred in the vicinity of the intersection. Two of the incidents, which occurred in 2011, resulted in the vehicles striking the railway gate arms. One collision involved an eastbound vehicle and the other involved a westbound vehicle. In the case of the westbound vehicle, the arms came down on a tractor trailer.

In order to improve safety at the C.N. Rail crossing, City staff analyzed a number of alternative forms of traffic control which are indicated below.

Traffic Signals

A manual turning movement count was performed by City staff on June 14, 2011, and the data was applied to the provincial warrants for the installation of traffic signals. The results indicated that the minimum vehicle volume and delay to cross traffic warrants were 79% and 59% respectively. The installation of traffic signals is currently not warranted. Also, the installation of traffic signals will not prevent vehicles from stopping on the tracks and is therefore not recommended in the short term.

Capacity Analysis

In order to compare the different traffic control scenarios, staff has undertaken a capacity analysis for the afternoon peak hour at the intersection. The analysis carried out consisted of first looking at the capacity of the existing condition in terms of the delay per vehicle and queue length for each approach. The capacity analysis was performed using Synchro software and Simtraffic micro simulation. The results of the analysis are showed in Table 1 below.

Table 1 Summary of Intersection Capacity Analysis – P.M. Peak Hour

Parameters	**Scenario #1** **Existing Conditions**	**Scenario #2** **Convert to a three way stop**	**Scenario #3** **Remove one stop sign facing westbound traffic**
Delay/Vehicle	Eastbound Left = 0.2 s Through = 0.1 s Westbound Through = 7.3 s Right = 5.5 s Southbound Left = 3.8 s Right = 2.3 s	Eastbound Left = 4.2 s Through = 4.6 s Westbound Through = 7.1 s Right = 4.9 s Southbound Left = 4.0 s Right = 2.3 s	Eastbound Left = 3.7 s Through = 0.2 s Westbound Through = 1.1 s Right = 0.6 s Southbound Left = 10.5 s Right = 2.3 s
Maximum Queue length	Westbound Through-Right = 29 m Southbound Left = 13 m	Eastbound Left = 16 m Through-Right = 15 m Westbound Through-Right = 25 m Southbound Left = 13 m	Eastbound Left = 15 m Southbound Left = 13 m

Scenario #1 – Existing Condition

The capacity analysis as indicated in Table 1 showed that the average delay per vehicle for eastbound traffic is minimal. Delay for westbound traffic is 6.4 seconds, and 3.8 seconds for southbound left turning traffic. The existing maximum queue length for westbound traffic is 29 metres. However, the current storage length for westbound traffic is approximately 23 metres between the stop bar and the tracks. Under the current conditions, the westbound vehicle queues often extends beyond the rail crossing resulting in some vehicles stopping on the tracks.

Scenario #2 – Convert the intersection to all way stop control

Under this scenario, the lane configurations at the intersection would not change. Applying the data from our turning movement counts to the City's new Minimum Volume Warrant indicated that the traffic volume at this intersection meets the minimum vehicle volume requirements for an all way stop.

The results of the capacity analysis, as shown in Table 1, indicate that the average delay per vehicle for eastbound traffic will be 4.4 seconds, 6.0 seconds per westbound vehicle and 4.0 seconds per southbound vehicle.

The maximum queue length on the eastbound approach will be 15 metres, 25 metres on the westbound approach and 13 metres for southbound left turns. As noted in this scenario, there will be no significant decrease of the queue length on the westbound approach from the current condition.

This scenario will not provide the solution to the current safety concerns and will not reduce the potential risk of queued vehicles stopping on the tracks.

Scenario #3 – Remove stop sign facing westbound traffic on Cote Boulevard

Under this scenario, the existing stop sign facing westbound traffic on Cote Boulevard is removed, and only southbound traffic on Capreol Road will have a stop sign. This is a more standard form of traffic control at a "T" intersection.

With this configuration, Table 1 shows that the average delays will increase for the eastbound left turning vehicles from 0.2 to 3.7 seconds. The delay for the southbound left turning traffic will increase from 4.0 second to 10.5 seconds per vehicles. The delay for the westbound traffic will almost be eliminated.

The maximum queue length on the westbound approach would be reduced from the existing 29 metres to almost none with this scenario. Queue lengths for the eastbound left turning traffic will increase to 15 metres. Queue length for the southbound left turning traffic will be the same as they are now. As indicated above, the occurrence of vehicles stopping on the tracks will essentially be eliminated.

The biggest concern with changing traffic control at a busy intersection such as this is the driver confusion that can result immediately following the change. Drivers are creatures of habit and often do not respond well to the reassignment of right-of-way control. To try and minimize the risk of a collision, the Ontario Traffic Manual has provided a procedure that is to be followed to safely carry out the transition. The intent of the procedure is to change driver expectation and behavior by alerting drivers to a state of operational change. The following is a summary of the required procedure:

(1) Install new stop signs facing the eastbound traffic on Cote Boulevard with appropriate tabs to create an all way stop at the intersection. The all way stop is to remain in effect for at least 15 days.

(2) Install large signs on the southbound approach of Capreol Road indicating "cross traffic does not stop". Below this sign, a tab sign is installed stating "After", with the month and day indicating when the stop signs will be removed.

(3) In this case, an additional sign should be installed on the eastbound approach indicating that "oncoming traffic does not stop" with a tab indicating the month and day that the stop signs will be removed. This sign is necessary to warn the eastbound left turning traffic that the westbound traffic no longer stops.

(4) After at least 15 days, remove the stop signs facing the east and westbound traffic on Cote Boulevard. The tab signs with the month and day are also removed.

(5) After an additional period of at least 15 days, the "cross traffic does not stop" and "oncoming traffic does not stop" signs are removed.

Besides utilizing the above sign installation procedure, staff will utilize the media to advise the public of the change in traffic control at the intersection. Greater Sudbury Police Services will also be requested to increase the level of enforcement at the intersection during the transition period.

As traffic volumes increase, long term solutions for the intersection could include the installation of traffic signals with a railway pre-emption system. Staff recommends that with the potential future development in Capreol and the lands to the north, that traffic volumes be monitored. Staff shall also prepare an application to C.N. Rail and Transport Canada to contribute to the funding of future traffic signals. Realignment of Capreol Road to the east opposite Radar Road is also being reviewed as part of the Transportation Master Plan. Realignment of the road will eliminate the at grade rail crossing south of Suez Drive.

Transport Canada / Transports Canada

EXHIBIT: A

4900 Yonge St. 3rd Floor
Toronto, Ontario
M2N 6A5

Your file / Votre référence

Our file / Notre référence
6756982

LETTER OF SAFETY CONCERN

June 1, 2011

Mr. David Kivi
Coordinator of Transportation and Traffic Engineering
City of Greater Sudbury
1800 Frobisher Street
Sudbury, Ontario
P3A 5P3

Dear Mr. Kivi:

I am a Railway Safety Inspector designated by the Minister of Transport under Section 27.(1) of the *Railway Safety Act* (*RSA*).

On May 27th 2011, CN Rail called a site meeting to discuss safety concerns at the crossing located near the intersection of Cote Blvd (Regional Road #80) and Capreol Road (Regional Road 84) known as Mile 271.52 Bala Subdivision. During the site meeting, it was observed that a "Stop Sign" is located 80 feet west of the nearest rail of the crossing governing westbound traffic on Cote Blvd.

It was further observed that long tractor trailer trucks use this crossing on a regular basis. When these trucks approach the stop sign, some of the trucks pull a significant distance past the stop sign and into the intersection in order to avoid the tail end of their trailers fouling the railway tracks. However, a number of trucks do not pull ahead of the stop sign and therefore leave a portion of their truck foul of the crossing.

Additionally, it was observed, on a number of occasions, other vehicular traffic stopped behind the trucks fouling the railway crossing, despite signage east of the crossing advising traffic not to stop on the tracks. One such vehicle stopped on the tracks positioning the driver directly between the rails.

In light of the above observations, Transport Canada, Rail Safety, is concerned that:

The current modus-operandi of this intersection does not allow for the egress of long trucks, fouling the crossing while stopped at the stop sign, or vehicles stopped, fouling the crossing, waiting for traffic ahead to move past the stop sign into the intersection. This could potentially result in a vehicle being trapped on the crossing on the approach of a train resulting in the train striking the vehicle foul of the track and causing significant injury and/or property damage.

Please advise this office, in writing, no later than June 15th 2011 how the City of Sudbury intends to follow-up on these safety concerns. Please include any interim measures, pending the implementation of permanent corrective measures.

Should you require additional information on this matter, please do not hesitate to contact Jeffrey Young, at 416-973-5902 or by e-mail at Jeffrey.young@tc.gc.ca.

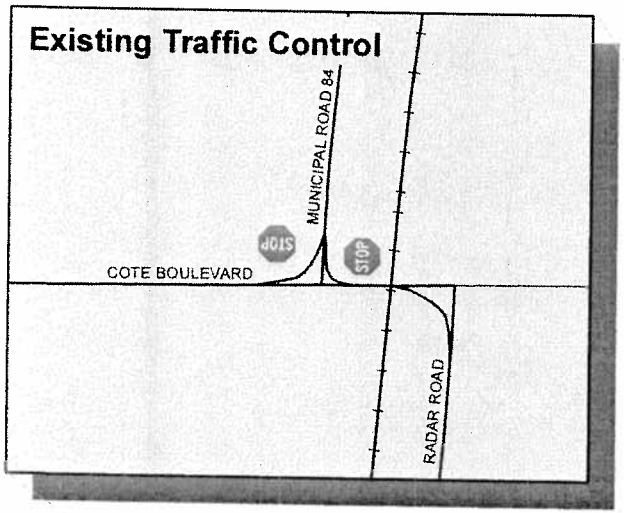
Yours sincerely,

Jeffrey A. Young, CET
Railway Safety Inspector
Surface Branch

cc: Kate Ash, CN Rail

Exhibit B 1/1

EXHIBIT: B



MUNICIPAL ROAD 84 ROAD

Subject Intersection

STOP

COTE BOULEVARD

Hanmer

LAURA STREET

/A STREET

RADAR ROAD

Intersection of M.R. 80 and M.R. 84

TRAFFIC CONTROL 2012 - 06 - 26