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Traffic Committee AGENDA

NINTH MEETING OF THE TRAFFIC COMMITTEE
*TO BE HELD ON **AUGUST 26, 2009** AT **4:00 P.M.***
*IN **COMMITTEE ROOM C-11**, TOM DAVIES SQUARE*

DECLARATION OF PECUNIARY INTEREST AND THE GENERAL NATURE THEREOF

REFERRED & DEFERRED ITEMS

R-1. Report dated April 29, 2009 from the General Manager of Infrastructure Services regarding All-Way Stops, Various Locations. **1 - 38**
(RECOMMENDATION PREPARED)

(The report recommends All-Way Stop requests at the intersections of Woodbine Avenue and Agincourt Avenue and Lamothe Street and Lincoln Road be denied.)

R-2. Report dated July 28, 2009 from the General Manager of Infrastructure Services regarding One-way Street Designation - William Street, Garson. **39 - 44**
(RECOMMENDATION PREPARED)

(The report recommends William Street be designated as a "One-Way" street for southbound traffic between Birch Street and Falconbridge Road.)

MANAGERS' REPORTS

PAGE NO.

R-3 Report dated July 22, 2009 from the General Manager of Infrastructure Services regarding Traffic Control - Toya Court, Hanmer. **45 - 47**
(RECOMMENDATION PREPARED)

(The report recommends a yield sign at the intersection of Toya Court and Lee Street, Hanmer.)

R-4 Report dated July 22, 2009 from the General Manager of Infrastructure Services regarding School Zone Speed Limit - Junction Avenue and Laurin Street, Azilda. **48 - 51**
(RECOMMENDATION PREPARED)

(The report recommends the speed limit on Junction Avenue from Charlebois Street to St. Jean Street and Laurin Street from Charlebois Street to 12 metres south of Notre Dame be reduced to 40 km/h due to the presence of École publique Franco-Nord.)

MANAGERS' REPORTS (CONT'D) **PAGE NO.**

R-5 Report dated July 22, 2009 from the General Manager of Infrastructure Services regarding Parking Restrictions - Woodbine Avenue, Sudbury. **52 - 54**
(RECOMMENDATION PREPARED)

(The report recommends parking be prohibited on the north side of Woodbine Avenue from Agincourt Avenue to 120 metres east of Agincourt Avenue.)

R-6 Report dated July 22, 2009 from the General Manager of Infrastructure Services regarding New Traffic Signal Installations. **55 - 59**
(RECOMMENDATION PREPARED)

(The report recommends new traffic signals on Ste. Anne Road; Long Lake Road and Gateway Avenue; and Barrydowne Road and Marcus Drive.)

NEXT MEETING DATE

ADJOURNMENT (RECOMMENDATION PREPARED)

COMMITTEE MEMBERS
Councillor Cimino
Councillor Landry-Altmann
Councillor Rivest

DISTRIBUTION
Mayor and Members of Council
D. Nadorozny
T. Beadman
G. Clausen
M. Leduc
C. Hallsworth
L. Hayes
C. Matheson
B. Lautenbach
P. Thomson
R. Swiddle
R. Falcioni
D. Kivi
D. Shelsted
A. Haché
L. Oldridge

LISA OLDRIDGE
DEPUTY CITY CLERK

LIZ COLLIN
PLANNING COMMITTEE SECRETARY

Request for Recommendation
Traffic Committee

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Type of Decision

Meeting Date	May 6, 2009					Report Date	April 29, 2009				
Recommendation		Yes	X	No		Priority	x	High		Low	
	Direction Only					Type of Meeting	x	Open		Closed	

Report Title

All-Way Stops - Various Locations

Policy Implications + Budget Impact

	This report and recommendation(s) have been reviewed by the Finance Division and the funding source has been identified

X	Background attached

Recommendation

That All-Way Stop Control not be installed at the following intersections:

1) Lamothe Street at Lincoln Road
2) Woodbine Avenue at Agincourt Avenue

all in accordance with the report from the General Manager of Infrastructure Services, dated April 29, 2009.

	Recommendation attached

Recommended by the Department Head

Greg Clausen, P. Eng.
General Manager of Infrastructure Services

Recommended by the C.A.O.

Doug Nadorozny
Acting Chief Administrative Officer

Report Authored By	Division Review
Dave Kivi, Coordinator of Transportation and Traffic Engineering Services	Robert M. Falcioni, P. Eng. Director of Roads and Transportation

Background:

At the Traffic Committee meeting held on February 12, 2009, the report dated January 30, 2009 from the General Manager of Infrastructure Services titled All-Way Stop Control - Various Locations was reviewed (see Exhibit "A"). At the request of Councillor Landry-Altmann, decisions regarding the intersections of Woodbine Avenue and Agincourt Avenue and Lamothe Street at Lincoln Road were deferred.

This report will provide an update and recommendation on the intersections that were deferred.

Lamothe Street at Lincoln Road

In 2008 there was one (1) collision reported at this intersection. Therefore, over the four (4) year period reviewed, there was a total on one (1) collision. While all collisions are undesirable, the collision experience would not be considered high, and does not show a pattern that could be corrected with an All-Way Stop.

Woodbine Avenue at Agincourt Avenue

A review of the City's collision information for 2008 revealed there were no collisions at the intersection of Woodbine Avenue at Agincourt Avenue. Therefore, over the four (4) year period reviewed, there was a total of one (1) collision. While all collisions are undesirable, the collision experience would not be considered high, and does not show a pattern that could be corrected with an All-Way Stop.

Request for Recommendation
Traffic Committee

Greater/Grand Sudbury
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Type of Decision

Meeting Date	February 12, 2009				Report Date	January 30, 2009			
Recommendation		Yes	X	No	Priority	x	High		Low
	Direction Only				Type of Meeting	x	Open		Closed

Report Title

All-Way Stops - Various Locations

Policy Implications + Budget Impact

	This report and recommendation(s) have been reviewed by the Finance Division and the funding source has been identified

X	Background attached

Recommendation

That All-Way Stop Control not be installed at the following intersections:

1) Woodbine Avenue at Agincourt Avenue
2) Lamothe Street at Lincoln Road
3) Montee Rouleau Street and Laurent Street
4) Lansing Avenue at Melbourne Place
5) Lamothe Street at Prestige Place

all in accordance with the report from the General Manager of Infrastructure Services, dated January 30, 2009.

	Recommendation attached

Recommended by the Department Head

Greg Clausen, P. Eng.
General Manager of Infrastructure Services

Recommended by the C.A.O.

Doug Nadorozny
Acting Chief Administrative Officer

Title: All Way Stop Control - Various Locations

Date: January 30, 2009

Report Authored By

Dave Kivi, Coordinator of Transportation and Traffic Engineering Services

Division Review

Robert M. Falcioni, P. Eng.
Director of Roads and Transportation

Background:

On September 23, 2008, the Traffic Committee reviewed the report dated September 23, 2008 from the General Manager of Infrastructure Services regarding All-Way Stop Control - Various Intersections (see Exhibit "A"). The Traffic Committee recommended deferment of a number of intersections for various reasons outlined in the Deputy City Clerk's correspondence dated October 30, 2008 (see Exhibit "B").

This report will provide an update and recommendation on the intersections that were deferred.

New Collision Information

The Greater Sudbury Police Services (GSPS) was contacted to obtain more recent collision information at all twenty (20) intersections that were analysed for All-Way Stop Control using the new criteria approved by City Council. The GSPS was able to provide updated collision information from October 2007 to October 2008 that revealed a total of three (3) collisions occurred at all twenty (20) intersections combined. Two (2) of the three (3) collisions occurred at the intersection of Roy Avenue and Lamothe Street, and the third collision occurred at the intersection of Lamothe Street and Lincoln Road.

Roy Avenue and Lamothe Street

Based on the new collision information, the intersection of Roy Avenue and Lamothe Street has experienced a total of three (3) collisions during a four (4) year period. For a minor collector roadway, the new warrant for All-Way Stop Control requires a minimum of three (3) collisions per year over a three (3) year period for a total of at least nine (9) collisions. Therefore, an All-Way Stop in not warranted.

It is difficult to tell if the two (2) recent collisions are a result of a change in traffic patterns, or just isolated incidents. However, Council has recently approved the reduction of the speed limit on Roy Avenue from Lasalle Boulevard to Leon Avenue to 40 hm/h, which should reduce operating speeds. The Traffic Committee has also recommended that Roy Avenue be reviewed under the Traffic Calming Policy. In addition to these measures, Staff can monitor the collisions at this intersection to ensure that a pattern of collisions that can be corrected does not continue.

Lamothe Street and Lincoln Road

Based on the new collision information, the intersection of Lamothe Street and Lincoln Road has had one (1) collision over a four (4) year period. While all collisions are undesirable, the collision experienced would not be considered high, and does not show a pattern that could be corrected with an All-Way Stop.

Background Continued:

Traffic Calming Policy

At the meeting held on January 28, 2009, City Council approved the Traffic Calming Policy on a trial basis. The following intersections were deferred by the Traffic Committee on September 23, 2009 to be reviewed under the Traffic Calming Policy:

1) Dell Street at Bruce Avenue
2) Lillian Boulevard at Holland Road
3) Algonquin Road at Tuscany Trail/Trailridge Drive
4) Roy Avenue at Lamothe Street

Traffic Calming is reviewed on a road segment basis as opposed to a single intersection. Therefore, it is recommended that Dell Street, Lillian Boulevard, Algonquin Road and Roy Avenue be analysed and ranked as per the approved Traffic Calming Policy. Staff will report on the results of these locations and others requested by the end of 2009.

Exhibit "A"

Request for Recommendation
Traffic Committee

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Type of Decision

Meeting Date	September 23, 2008					Report Date	September 23, 2008			
Recommendation		Yes	X	No		Priority	x	High		Low
	Direction Only					Type of Meeting	x	Open		Closed

Report Title

All-Way Stop Control - Various Intersections

Policy Implications + Budget Impact

This report and recommendation(s) have been reviewed by the Finance Division and the funding source has been identified

X Background attached

Recommendation

That the Leslie Street and Mont Adam Street intersection be controlled by an All-Way Stop, and that;

A by-law be passed by City Council to amend Traffic and Parking By-Law 2001-1 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 September 23, 2008.

Recommendation attached

Recommended by the Department Head

Greg Clausen, P. Eng.

Recommended by the C.A.O.

Mark Mieto

Report Authored By:

Dave Kivi, Coordinator of Transportation and Traffic, Engineering Services

Division Review:

for Robert M. Falcioni, P. Eng.
Director of Roads and Transportation

Introduction:

On May 7, 2008, the Traffic Committee approved a new modified warrant for determining the need for All-Way Stops. A copy of the Staff report can be found in Exhibit "A". The modified warrant significantly reduces the minimum vehicle and pedestrian volume thresholds for minor collector roads and local roads. Collision frequency requirements have also been reduced for these roadway classifications.

The new All-Way Stop Policy also states that "Only those intersections that satisfy the requirements for All-Way Stop control will be brought forward to the Traffic Committee for consideration". However, to deal with the numerous requests originating prior to the policy, and to see the effect of the new warrant, it was agreed that both warranted and unwarranted intersections would be brought back to the Traffic Committee.

The City's Transportation and Traffic Engineering Services Section has conducted an All-Way Stop review of 20 intersections throughout the City of Greater Sudbury that includes the three (3) classifications of roadways being arterial/major collectors, minor collectors and local roads. The following report will provide a brief description of each intersection and how the traffic volumes and collision information compare to the minimum warrants for All-Way Stop control. A summary of all the intersections reviewed can be found on the table in Exhibit "B". This table ranks the intersections by their classification and provides a comparison between the new warrant and the old warrant.

Purpose of All-Way Stops:

The purpose of an All-Way Stop is to alternate the right-of-way at an intersection. They can be an effective traffic control device when installed at busy intersections with similar traffic volumes and characteristics. However, All-Way Stops disrupt the flow of traffic and introduce delay to all drivers passing through the intersection. Therefore, they should only be installed when warranted.

Often time, All-Way Stops are requested by residents to slow traffic down on a roadway. Unfortunately, All-Way Stops are not effective as speed control devices. Studies have shown that speeds are only reduced in close proximity to the sign, and mid-block speeds actually increase after stop signs are installed as drivers attempt to make up for lost time. It is a common belief that All-Way Stops will increase safety at an intersection. Stop signs can reduce certain types of collisions such as right angle or turning types if they are prevalent at an intersection. However, the unwarranted installation of an All-Way Stop increases driver frustration, reduces compliance, and creates disrespect for stop signs. This behaviour can spread to other intersections where stop signs are required. The inappropriate use of All-Way Stops can decrease safety for pedestrians and cyclists, especially young children, as they expect drivers to actually stop at the sign.

All-Way stops are relatively inexpensive to install, which is one reason they are requested so often. However, they can greatly increase fuel consumption, noise, and air pollution due to the constant braking and acceleration that occurs. It has been reported that additional gasoline consumed from one (1) stop sign on a typical collector road is 25 litres per day or 9,125 litres per year.

The Ministry of Municipal Affairs and Housing indicates that a typical four-way stop generates the following emissions on a yearly basis:

- 657 kg of Hydro Carbons
- 8,760 kg of Carbon Monoxide
- 675 kg of Nitrogen Oxide
- 65,700 kg of Carbon Dioxide

Arterial/Major Collector Roadways:

1) Martindale Road at Copper Street

The City's Traffic and Transportation Engineering Services section received a request from the Councillor for Ward 1, Joe Cimino, to review the traffic control at the intersection of Martindale Road and Copper Street.

Martindale Road at Copper Street is a three legged intersection located three blocks south of Lorne Street (see Exhibit "C"). This intersection contains a sharp horizontal curve on Martindale Road and is part of a Greater Sudbury Transit route. Currently this intersection is controlled with a stop sign facing eastbound traffic on Copper Street.

Applying the data from the turning movement count that was conducted on June 11, 2008 to the Minimum Volume Warrant indicates that the side street volume from Copper Street meets 78% of the volume requirements. A review of the City's collision information from 2003 to 2005, inclusive, revealed that one collision that would be susceptible to relief through an All-Way Stop occurred during this three year period. For an Arterial/Major Collector roadway, the Collision Warrant requires a minimum of four collisions per year over a three year period.

Based on the traffic volumes and collision history, staff does not recommend installing an All-Way Stop at the intersection of Martindale Road and Copper Street. Should an All-Way Stop be installed at this intersection, staff recommends that the intersection be reconstructed to reduce Martindale Road to one lane of traffic in each direction. This will improve safety for pedestrians crossing Martindale Road.

2) Kelly Lake Road at Copper Street

The City's Traffic and Transportation Engineering Services section received a request from the Councillor for Ward 1, Joe Cimino, to review the traffic control at the intersection of Kelly Lake Road and Copper Street.

Kelly Lake Road at Copper Street is a three legged intersection located approximately one kilometer south of the Lorne Street (see Exhibit "C"). This intersection is part of a Greater Sudbury Transit route. Currently this intersection is controlled with a stop sign facing westbound traffic on Copper Street.

2) Kelly Lake Road at Copper Street - (continued)

Applying the data from the turning movement count that was conducted on June 11, 2008 to the Minimum Volume Warrant indicates that the traffic split between Kelly Lake Road and Copper Street meets 50% of the volume requirements. A review of the City's collision information from 2003 to 2005, inclusive, revealed that there were no collisions that would be susceptible to relief through an All-Way Stop during this three year period. For an Arterial/Major Collector roadway, the Collision Warrant requires a minimum of four collisions per year over a three year period.

Based on the traffic volumes and collision history, staff does not recommend installing an All-Way Stop at the intersection of Kelly Lake Road and Copper Street.

3) Lansing Avenue at Melbourne Street

The City's Traffic and Transportation Engineering Services section received a petition from area residents to install an All-Way Stop at the intersection of Lansing Avenue at Melbourne Street.

Lansing Avenue at Melbourne Street is a four legged intersection located two blocks north of Lasalle Boulevard (see Exhibit "D"). This intersection is part of a Greater Sudbury Transit route. Currently this intersection is controlled with a stop sign facing westbound and eastbound traffic on Melbourne Street.

Applying the data from the turning movement count that was conducted on June 30, 2008 to the Minimum Volume Warrant indicates that the side street volume from Melbourne Street meets 25% of the volume requirements. A review of the City's collision information from 2003 to 2005, inclusive, revealed that there was one collision that may be susceptible to relief through an All-Way Stop during this three year period. While all collisions are undesirable, the collision experience would not be considered high, and does not show a pattern that could be corrected with an All-Way Stop. For an Arterial/Major Collector roadway, the Collision Warrant requires a minimum of four collisions per year over a three year period.

Based on the traffic volumes and collision history, staff does not recommend installing an All-Way Stop at the intersection of Lansing Avenue and Melbourne Street.

4) Kathleen Street at Bessie Avenue

The City's Traffic and Transportation Engineering Services section received a request from an area business owner to install an All-Way Stop at the intersection of Kathleen Street at Bessie Avenue.

Kathleen Street at Bessie Avenue is a four legged intersection located less than 200 metres east of Frood Road (see Exhibit "E"). The north and south legs of Bessie Avenue are offset where they intersect Kathleen Street. Currently this intersection is controlled with stop signs facing northbound and southbound traffic on Bessie Avenue.

4) Kathleen Street at Bessie Avenue - (continued)

Applying the data from the turning movement count that was conducted on July 30, 2008 to the Minimum Volume Warrant indicates that this intersection meets 23% of the volume requirements. A review of the City's collision information from 2003 to 2005, inclusive, revealed that there were no collisions that would be susceptible to relief through an All-Way Stop during this three year period. For an Arterial/Major Collector roadway, the Collision Warrant requires a minimum of four collisions per year over a three year period.

Based on the traffic volumes, collision history, and the offset of Bessie Avenue, staff does not recommend installing an All-Way Stop at the intersection of Kathleen Street and Bessie Avenue.

Minor Collector Roadways:

5) Leslie Street at Mont Adam Street

The City's Traffic and Transportation Engineering Services section received a request from area residents to review the traffic control at the intersection of Leslie Street and Mont Adam Street due to safety concerns.

Leslie Street at Mont Adam Street is a three legged intersection located two blocks east of Notre Dame Avenue (see Exhibit "E"). Visibility on the northeast corner is restricted due to a Canada Post mailboxes installed in the sight triangle and parked vehicles along Leslie Street. Currently this intersection is controlled with a stop sign facing westbound traffic on Mont Adam Street.

Applying the data from the turning movement count that was conducted on July 4, 2007 to the Minimum Volume Warrant indicates that this intersection meets the new minimum volume requirements. A review of the City's collision information from 2003 to 2005, inclusive, revealed that there were no collisions that would be susceptible to relief through an All-Way Stop during this three year period. For a Minor Collector roadway, the Collision Warrant requires a minimum of three collisions per year over a three year period.

Based on the existing traffic volumes, staff recommends installing an All-Way Stop at the intersection of Leslie Street at Mont Adam Street.

6) Dell Street at Bruce Avenue

The City's Traffic and Transportation Engineering Services section received a request from the Councillor for Ward 12, Joscelyne Landry-Altmann, to review the traffic control at the intersection of Dell Street and Bruce Avenue.

6) Dell Street at Bruce Avenue - (continued)

Dell Street at Bruce Avenue is a four legged intersection located between Notre Dame Avenue and Frood Road (see Exhibit "E"). Queen Elizabeth Public School is situated on the northeast corner of this intersection. Visibility on the southwest corner is restricted due to a large fence that has been constructed in the sight triangle. This intersection is also part of a Greater Sudbury Transit route. An All-Way Stop is currently installed at the Dell Street and Melvin Avenue/Snowdown Avenue intersection which is less than 150 metres from the subject intersection. Currently this intersection is controlled with Stop signs facing northbound and southbound traffic on Bruce Avenue.

Applying the data from the turning movement count that was conducted on June 12, 2008 to the Minimum Volume Warrant indicates that the side street volume from Bruce Avenue meets 79% of the volume requirements. A review of the City's collision information from 2003 to 2005, inclusive, revealed that there was one collision that may be susceptible to relief through an All-Way Stop during this three year period. While all collisions are undesirable, the collision experience would not be considered high, and does not show a pattern that could be corrected with an All-Way Stop. For a Minor Collector roadway, the Collision Warrant requires a minimum of three collisions per year over a 3 year period.

Based on the traffic volumes, collision history, and the close proximity to the Dell Street and Melvin Street/Snowdown Avenue intersection, staff does not recommend installing an All-Way Stop at the intersection of Dell Street at Bruce Avenue. Staff has advised the By-Law department of the fence that was constructed in the sight triangle.

7) Lillian Boulevard at Holland Road

The City's Traffic and Transportation Engineering Services section received a request from the Councillor for Ward 12, Joscelyne Landry-Altmann, to review the traffic control at the intersection of Lillian Boulevard and Holland Road.

Lillian Boulevard at Holland Road is a three legged intersection located two blocks west of Barry Downe Road (see Exhibit "D"). This intersection is part of a Greater Sudbury Transit route. Currently this intersection is controlled with a yield sign facing northbound traffic on Holland Road.

Applying the data from the turning movement count that was conducted on February 20, 2007 to the Minimum Volume Warrant indicates that the side street volume from Holland Road meets 71% of the volume requirements. A review of the City's collision information from 2003 to 2005, inclusive, revealed that there were no collisions that would be susceptible to relief through an All-Way Stop during this three year period. For a Minor Collector roadway, the Collision Warrant requires a minimum of three collisions per year over a 3 year period.

Based on the traffic volumes and collision history, staff does not recommend installing an All-Way Stop at the intersection of Lillian Boulevard and Holland Road. While sight lines are good, staff has no objection to changing the existing yield sign on Holland Road to a stop sign.

8) Montee Rouleau at St. Laurent Street

The City's Traffic and Transportation Engineering Services section received a request from the Ward 4 Councillor, Evelyn Dutrisac, to review the traffic control at the intersection of Montee Rouleau and St. Laurent Street.

Montee Rouleau at St. Laurent Street is a four legged intersection located east of Municipal Road 15 (see Exhibit "F"). Visibility on the southwest corner is restricted due to a large tree that has grown in the sight triangle. Currently this intersection is controlled with stop signs facing eastbound and westbound traffic on St. Laurent Street.

Applying the data from the turning movement count that was conducted on June 12, 2008 to the Minimum Volume Warrant indicates that the side street volume from St. Laurent Street meets 70% of the volume requirements. A review of the City's collision information from 2003 to 2005, inclusive, revealed that there were two collisions that may be susceptible to relief through an All-Way Stop during this three year period. While all collisions are undesirable, the collision experience would not be considered high, and does not show a pattern that could be corrected with an All-Way Stop. For a Minor Collector roadway, the Collision Warrant requires a minimum of three collisions per year over a 3 year period.

Based on the traffic volumes and collision history, staff does not recommend installing an All-Way Stop at the intersection of Montee Rouleau and St. Laurent Street. Staff noted that the total vehicle volume at this intersection has increased to 366 vehicles during the four peak hours in 2008 from 184 vehicles during the four peak hours in 2003. This increase in traffic volumes is likely due to construction on Municipal Road 15 and Municipal Road 80. However, staff will perform an additional count at this intersection in the spring of 2009 to ensure that the increased traffic volume is not due to growth in the area.

9) Algonquin Road at Tuscany Trail/Trailridge Drive

The City's Traffic and Transportation Engineering Services section received a request from area residents to review the traffic control at the intersection of Algonquin Road and Tuscany Trail/Trailridge Drive due to safety concerns.

Algonquin Road at Tuscany Trail/Trailridge Drive is a four legged intersection located one block east of the Algonquin Road at Countryside Drive intersection (see Exhibit "G"). This intersection is part of a Greater Sudbury Transit route. Currently this intersection is controlled with Stop signs facing northbound traffic on Tuscany Trail and southbound traffic on Trailridge Drive.

Applying the data from the turning movement count that was conducted on May 6, 2008 to the Minimum Volume Warrant indicates that the side street volume from Tuscany Trail and Trailridge Drive meets 62% of the volume requirements. A review of the City's collision information from 2003 to 2005, inclusive, revealed that there were no collisions that would be susceptible to relief through an All-Way Stop during this three year period. For a Minor Collector roadway, the Collision Warrant requires a minimum of three collisions per year over a three year period.

9) Algonquin Road at Tuscany Trail/Trailridge Drive - (continued)

Based on the traffic volumes and collision history staff does not recommend installing an All-Way Stop at the intersection of Algonquin Road and Tuscany Trail/Trailridge Drive.

10) Woodbine Avenue at Agincourt Avenue

The City's Traffic and Transportation Engineering Services section received a request from the Councillor for Ward 12, Joscelyne Landry-Altmann, to review the traffic control at the intersection of Woodbine Avenue and Agincourt Avenue.

Woodbine Avenue at Agincourt Avenue is a three legged intersection located four blocks west of Barry Downe Road (see Exhibit "D"). An All-Way Stop is installed at the intersection of Woodbine Avenue and Beaumont Avenue/Abigail Court which is located less than 200 metres west of the subject intersection. Currently this intersection is controlled with a stop sign facing southbound traffic on Agincourt Avenue.

Applying the data from the turning movement count that was conducted on June 13, 2008 to the Minimum Volume Warrant indicates that the side street volume on Agincourt Avenue meets 55% of the volume requirements. A review of the City's collision information from 2003 to 2005, inclusive, revealed that there was one collision that may be susceptible to relief through an All-Way Stop during this three year period. While all collisions are undesirable, the collision experience would not be considered high, and does not show a pattern that could be corrected with an All-Way Stop. For a Minor Collector roadway, the Collision Warrant requires a minimum of three collisions per year over a three year period.

Based on the traffic volumes and collision history, staff does not recommend installing an All-Way Stop at the intersection of Woodbine Avenue and Agincourt Avenue.

11) Roy Avenue at Lamothe Street

The City's Traffic and Transportation Engineering Services section received a request from the Councillor for Ward 12, Joscelyne Landry-Altmann, to review the traffic control at the intersection of Roy Avenue and Lamothe Street.

Roy Avenue at Lamothe Street is a four legged intersection located two blocks north of Lasalle Boulevard (see Exhibit "D"). This intersection is part of a Greater Sudbury Transit route and Carl A. Nesbitt Public School is situated on the southwest corner of this intersection. Currently this intersection is controlled with Stop signs facing eastbound and westbound traffic on Lamothe Street.

11) Roy Avenue at Lamothe Street - (continued)

Applying the data from the turning movement count that was conducted on June 12, 2008 to the Minimum Volume Warrant demonstrates that the side street volume from Lamothe Street meets only 48% of the volume requirements. A review of the City's collision information from 2003 to 2005, inclusive, revealed that there was one collision that may be susceptible to relief through an All-Way Stop during this three year period. While all collisions are undesirable, the collision experience would not be considered high, and does not show a pattern that could be corrected with an All-Way Stop. For a Minor Collector roadway, the Collision Warrant requires a minimum of three collisions per year over a three year period.

Based on the traffic volumes and collision history, staff does not recommend installing an All-Way Stop at the intersection of Roy Avenue and Lamothe Street.

12) St. Charles Lake Road at Brenda Drive/Wayne Road

The City's Traffic and Transportation Engineering Services section received a request from area residents to review the traffic control at the intersection of St. Charles Lake Road and Brenda Drive/Wayne Road due to safety concerns.

St. Charles Lake Road at Brenda Drive at Wayne Road is a four legged intersection located less than 100 metres west of the Long Lake Road and St. Charles Lake Road traffic control signals (see Exhibit "G"). Brenda Drive and Wayne Road are offset from one another when they intersect St. Charles Lake Road. Currently this intersection is controlled with a Stop sign facing southbound traffic on Brenda Drive and northbound traffic on Wayne Road.

Applying the data from the turning movement count that was conducted on August 22, 2008 to the Minimum Volume Warrant indicates that the total vehicle volume from all of the approaches meets only 48% of the volume requirements. A review of the City's collision information from 2003 to 2005, inclusive, revealed that there were no collisions that would be susceptible to relief through an All-Way Stop during this three year period. For a Minor Collector roadway, the Collision Warrant requires a minimum of three collisions per year over a three year period.

Based on the traffic volumes and collision history, staff does not recommend installing an All-Way Stop at the intersection of St. Charles Lake Road and Brenda Drive/Wayne Road.

13) Third Avenue at Highgate Road

The City's Traffic and Transportation Engineering Services section received a request from area residents to review the traffic control at the intersection of Third Avenue and Highgate Road.

Third Avenue at Highgate Road is a three legged intersection located two blocks south of the Kingsway (see Exhibit 'H'). This intersection is part of a Greater Sudbury Transit route. Currently this intersection is controlled with a stop sign facing eastbound traffic on Highgate Road.

13) Third Avenue at Highgate Road - (continued)

Applying the data from the turning movement count that was conducted on July 23, 2008 to the Minimum Volume Warrant indicates that the side street volume from Highgate Road meets only 22% of the volume requirements. A review of the City's collision information from 2003 to 2005, inclusive, revealed that there were no collisions that would be susceptible to relief through an All-Way Stop during this three year period. For a Minor Collector roadway, the Collision Warrant requires a minimum of three collisions per year over a three year period.

Based on the traffic volumes and collision history, staff does not recommend installing an All-Way Stop at the intersection of Third Avenue and Highgate Road.

14) Lamothe Street at Prestige Place

The City's Traffic and Transportation Engineering Services section received a request from the Councillor for Ward 8, Ted Callaghan, to review the traffic control at the intersection of Lamothe Street and Prestige Place.

Lamothe Street at Prestige Place is a three legged intersection located two blocks north of Lasalle Boulevard (see Exhibit "D"). This intersection is part of a Greater Sudbury Transit route and an All-Way Stop is installed at the intersection of Lamothe Street and Paquette Street which is located 200 metres west of the subject intersection. Currently this intersection is controlled with a Stop sign facing northbound traffic on Prestige Place.

Applying the data from the turning movement count that was conducted on February 28, 2007 to the Minimum Volume Warrant indicates that the side street volume from Prestige Place meets only 12% of the volume requirements. A review of the City's collision information from 2003 to 2005, inclusive, revealed that there were no collisions that would be susceptible to relief through an All-Way Stop during this three year period. For a Minor Collector roadway, the Collision Warrant requires a minimum of three collisions per year over a three year period.

Based on the traffic volumes and collision history, staff does not recommend installing an All-Way Stop at the intersection of Lamothe Street and Prestige Place.

15) Third Avenue North at School Street

The City's Traffic and Transportation Engineering Services section received a request from the Councillor for Ward 3, Claude Berthiaume, to review the traffic control at the intersection of Third Avenue North at School Street due to safety concerns.

Third Avenue North at School Street is a four legged intersection located four blocks west of Municipal Road 8 (see Exhibit "F"). The Levack Estates Subdivision will be constructed on the southwest corner of the intersection. Currently this intersection is controlled with a Stop sign facing northbound and southbound traffic on School Street.

15) Third Avenue North at School Street - (continued)

Applying the data from the turning movement count that was conducted on August 29, 2008 to the Minimum Volume Warrant indicates that the side street volume from School Street meets only 11% of the volume requirements. A review of the City's collision information from 2003 to 2005, inclusive, revealed that there were no collisions that would be susceptible to relief through an All-Way Stop during this three year period. For a Minor Collector roadway, the Collision Warrant requires a minimum of three collisions per year over a three year period.

Based on the traffic volumes and collision history, staff does not recommend installing an All-Way Stop at the intersection of Third Avenue North and School Street. Staff was also informed by area residents that traffic volumes are heavier at 6:30 AM and 6:30 PM due to shift change at the local mines. While these times are outside of our normal count periods, due to the low traffic volumes, staff does not recommend recounting the intersection.

Local Roadways:

16) Greenbriar Road at Scarlett Road

The City's Traffic and Transportation Engineering Services section received a request from area residents to review the traffic control at the intersection of Greenbriar Road at Scarlett.

Greenbriar Road at Scarlett Road is a three legged intersection located two blocks east of Second Avenue (see Exhibit "H"). This intersection is part of a Greater Sudbury Transit route. Currently this intersection is controlled with stop signs facing northbound and southbound traffic on Greenbriar Road which is not a standard form of traffic control at this type of intersection.

Applying the data from the turning movement count that was conducted on May 21, 2008 to the Minimum Volume Warrant indicates that the total vehicle volume from all of the approaches meets 57% of the volume requirements. A review of the City's collision information from 2003 to 2005, inclusive, revealed that there were no collisions that would be susceptible to relief through an All-Way Stop during this three year period. For a Local roadway, the Collision Warrant requires a minimum of two collisions per year over a three year period.

Based on the traffic volumes and collision history, staff does not recommend installing an All-Way Stop at the intersection of Greenbriar Road and Scarlett Road.

17) Corsi Hill at Gemma Street

The City's Traffic and Transportation Engineering Services section received a request from the Councillor for Ward 1, Joe Cimino, to review the traffic control at the intersection of Corsi Hill at Gemma Street.

Corsi Hill at Gemma Street is a three legged intersection located three blocks east of Kelly Lake Road (see Exhibit "C"). Currently this intersection is controlled with a stop sign facing northbound traffic on Gemma Street.

Applying the data from the turning movement count that was conducted on July 19, 2007 to the Minimum Volume Warrant indicates that the total vehicle volume from all of the approaches meets only 46% of the volume requirements. A review of the City's collision information from 2003 to 2005, inclusive, revealed that there were no collisions that would be susceptible to relief through an All-Way Stop during this three year period. For a Local roadway, the Collision Warrant requires a minimum of two collisions per year over a three year period.

Based on the traffic volumes and collision history, staff does not recommend installing an All-Way Stop at the intersection of Corsi Hill and Gemma Street.

18) Meehan Avenue at Coulson Street

The City's Traffic and Transportation Engineering Services section received a request from the Councillor for Ward 7, Russ Thompson, to review the traffic control at the intersection of Meehan Avenue and Coulson Street due to a recent collision.

Meehan Avenue at Coulson Street is a four legged intersection located one block east of Municipal Road 84 (see Exhibit "J"). The Capreol Community Centre and the Capreol Arena are situated on the southwest corner of the intersection. There is an existing All-Way Stop installed at the intersection of Hanna Avenue and Meehan Avenue which is located less than 150 metres east of the subject intersection. Currently this intersection is controlled with stop signs facing northbound and southbound traffic on Coulson Street.

Applying the data from the turning movement count that was conducted on December 11, 2007 to the Minimum Volume Warrant indicates that the total vehicle volume from all of the approaches meets only 43% of the volume requirements. A review of the City's collision information from 2003 to 2005, inclusive, revealed that there was one collision that may be susceptible to relief through an All-Way Stop during this three year period. While all collisions are undesirable, the collision experience would not be considered high, and does not show a pattern that could be corrected with an All-Way Stop. For a Local roadway, the Collision Warrant requires a minimum of two collisions per year over a three year period.

Based on the traffic volumes and collision history, staff does not recommend installing an All-Way Stop at the intersection of Meehan Avenue and Coulson Street.

19) Lamothe Street at Lincoln Road

The City's Traffic and Transportation Engineering Services section received a request from the Councillor for Ward 12, Joscelyne Landry-Altmann to review the traffic control at the intersection of Lamothe Street and Lincoln Road.

Lamothe Street at Lincoln Road is a four legged intersection located one block west of Barry Downe Road (see Exhibit "D"). There is an existing All-Way Stop installed at the intersection of Lamothe Street and Holland Road which is located 100 metres west of the subject intersection. Currently this intersection is controlled with stop signs facing eastbound and westbound traffic on Lamothe Street.

Applying the data from the turning movement count that was conducted on February 28, 2007 to the Minimum Volume Warrant indicates that the total vehicle volume from all of the approaches meets only 29% of the volume requirements. A review of the City's collision information from 2003 to 2005, inclusive, revealed that there were no collisions that would be susceptible to relief through an All-Way Stop during this three year period. For a Local roadway, the Collision Warrant requires a minimum of two collisions per year over a three year period.

Based on the traffic volumes, collision history and the close proximity to the Lamothe Street at Holland Road All-Way Stop, staff does not recommend installing an All-Way Stop at the intersection of Lamothe Street and Lincoln Road.

20) Rheal Street at Donald Street

The City's Traffic and Transportation Engineering Services section received a request from area residents to review the traffic control at the intersection of Rheal Street at Donald Street due to the increased traffic from the new Moonlight Ridge subdivision being built.

Rheal Street at Donald Street is a three legged intersection located two blocks south of the Kingsway (see Exhibit "H"). Currently this intersection is controlled with a stop sign facing southbound traffic on Donald Street.

Applying the data from the turning movement count that was conducted on July 18, 2008 to the Minimum Volume Warrant indicates that the total vehicle volume from all of the approaches meets only 23% of the volume requirements. A review of the City's collision information from 2003 to 2005, inclusive, revealed that there were no collisions that would be susceptible to relief through an All-Way Stop during this three year period. For a Local roadway, the Collision Warrant requires a minimum of two collisions per year over a three year period.

Based on the traffic volumes and collision history, staff does not recommend installing an All-Way Stop at the intersection of Rheal Street and Donald.

EXHIBIT: A

Request for Recommendation
Traffic Committee

Greater/Grand Sudbury
www.city.greatersudbury.on.ca

Type of Decision

Meeting Date	May 7, 2008					Report Date	April 30, 2008		
Recommendation	X	Yes		No		Priority	x	High	Low
	Direction Only					Type of Meeting	x	Open	Closed

Report Title

All-Way Stop Policy

Policy Implications + Budget Impact

This report and recommendation(s) have been reviewed by the Finance Division and the funding source has been identified

X Background attached

Recommendation

That the City of Greater Sudbury approve the modified warrant for determining the need for all-way stops. The modified warrant reduces the minimum volume and collision threshold as described in the report dated April 30, 2008 from the General Manager of Infrastructure Services.

That only those requests for all-way stops that satisfy the minimum warrants be brought forward for Council's consideration.

Recommendation attached

Recommended by the Department Head

Greg Clausen, P. Eng.
Senior Manager of Infrastructure Services

Recommended by the C.A.O.

Mark Mieto
Chief Administrative Officer

Report Authored By

Dave Kivi, Coordinator of Transportation and Traffic, Engineering Services

Division Review

Robert M. Falcioni, P. Eng.
Director of Roads and Transportation

Introduction

At the Traffic Committee meeting held on September 18, 2007, staff was requested to survey other municipalities regarding their All-Way Stop policies and recommend an All-Way stop policy for the City of Greater Sudbury.

In late November 2007 a survey was sent to over 30 Ontario municipalities requesting information regarding their policies and procedures related to All-Way stops and number of other traffic related issues. As of February 2008, a total of 12 surveys have been returned to us. In addition to these, we were able to find All-Way stop policies for a number of other municipalities through an internet literature review. A summary of the survey questions and responses received are contained in Exhibit "A".

Background

It is a common perception that All-Way stops are the answer to neighborhood traffic problems. People often believe that they reduce speeding and improve safety. The purpose of an All-Way stop is to alternate right-of-way at an intersection. All-Way stops can be an effective traffic control device when installed at busy intersections with similar traffic volumes and characteristics. All-Way stops disrupt the flow of traffic and introduce delay to all drivers within the intersection. Therefore, they should only be installed at intersections based on the vehicle and pedestrian volumes or at intersections having a high collision frequency.

Speed Control

Often times, All-Way stops are requested by residents to slow traffic down on a roadway. Unfortunately, All-Way stops are not effective as speed control devices. Studies have shown that speeds are only reduced in close proximity to the sign, and mid-block speeds actually increase after stops signs are installed as drivers attempt to make up for lost time.

Safety

It is common belief that All-Way stops will increase safety at an intersection. Stop signs can reduce certain types of collisions such as right angle or turning types if they are prevalent at an intersection. However, the unwarranted installation of All-Way stops increases driver frustration, reduces compliance, and creates disrespect for stop signs. This behavior can spread to other intersection where stop signs are required. The inappropriate use of All-Way stops can decrease safety for pedestrians and cyclists, especially young children, as they expect drivers to actually stop at the sign.

Environment and Economic Impact

All-Way stops are relatively inexpensive to install, which is one reason they are requested so often. However, they can greatly increase fuel consumption, noise, and air pollution, due to constant braking and acceleration

that occurs. It has been reported that additional gasoline consumed from one stop sign on a typical collector road is 25 litres per day or 9,125 litres per year.

The Ministry of Municipal Affairs and Housing indicates that a typical four-way stop generates the following emissions on a yearly basis:

657 kg of Hydro Carbons
8,760 kg of Carbon Monoxide
675 kg of Nitrogen Oxide
65,700 kg of Carbon Dioxide

All-Way Stop Warrant

As previously mentioned, All-Way stops can be an effective means of traffic control when installed under the proper circumstances. Currently, the City of Greater Sudbury follows Provincial Warrants published in the "Ontario Traffic Manual" for determining the need for All-Way stop control. This warrant is used by five (5) of the twelve (12) municipalities surveyed and is the most commonly used warrant in Ontario. The use of standard criteria, or warrants, is very important for determining the need for All-Way stops and other traffic control devices. Warrants provide a method of analysis that is based on engineering principles which can be applied consistently at intersections throughout the City of Greater Sudbury.

The following is some of the criteria that is used in the Provincial Warrant:

Minimum Volume Warrant

1) Arterial and Major Collector Roads:

a) Total vehicle volume on all approaches exceeds 500 vehicles per hour for an eight (8) period, and

b) A combined vehicle and pedestrian volume from the minor street is more than 200 per hour for the same eight (8) hours, and

c) The traffic volume on the intersecting streets is similar and does not exceed a split of 70/30.

2) Minor and Local Streets

a) Total vehicle volume for all approaches exceeds 350 vehicles for the highest hour, and the volume split does not exceed 75/25 for three-way control and 65/35 for four-way control.

Collision Warrant

For both major and minor roadways, All-Way stops are warranted when there is an average of four (4) or more collisions per year over a three (3) year period. Only those collisions that are susceptible to correction, though multi-way stop control must be considered, such as angle and turning movement collisions.

Other Considerations

The Ontario Traffic Manual states that all-way stops should not be used under the following conditions.

- As a speed control device
- Solely to protect pedestrians, especially school aged children
- Where traffic would be required to stop on grades
- At offset intersections, or intersections with poor geometry or more than four (4) legs
- On multi-lane approaches
- Higher speed roadways (speed limit greater than 60 km/h)
- Where visibility of the sign is hampered by curves
- Within 250 metres of traffic signals or another stop sign
- On truck or bus routes, except in industrial areas where two such routes cross

Modified Warrant

Based on the comments of the Traffic Committee that the Provincial All-Way Stop Warrants are too restrictive; staff has developed an alternative warrant based on the survey results and policies used by other Ontario municipalities. This Warrant is based on the same principles contained in the Ontario Traffic Manual. The main difference is that the traffic volume and collision warrants have been reduced for lower volume collector roads and residential roadways. If approved, the proposed warrant would be similar to the warrants used in the cities of Toronto and Oakville. A summary of this warrant is shown in Exhibit "B", and described below.

Minimum Volume Warrant

1) **Arterial and major collector roadways with Annual Average Daily Traffic volume (AADT) greater than 5,000.**

   a) Traffic volume and collision warrant remains as per the Ontario Traffic Manual.

2) **Minor collector roads with an AADT between 1,000 and 5,000.**

   a) Total vehicle volume on all approaches reduced from 500 vehicles per hour for eight (8) hours to 350 vehicles per hour for only four (4) hours.

   b) The combined vehicle and pedestrian volume on the minor approach reduced from 200 per hour for eight (8) hours to 140 per hour for only four (4) hours.

   c) The volume split remains at a ratio of 70/30.

   d) Collision frequency is reduced from four (4) per year to three (3) per year over a three (3) year period. Only collisions that may be corrected with an all-way stop are to be considered.

3) **Local roads with an AADT less than 1,000.**

   a) The total vehicle volume on all approaches reduced from 350 vehicles in the highest hour to 250 vehicles per hour for a four (4) hour period.

b) Simplify the volume split at a ratio of 70/30 for all conditions where a split of 75/25 for the three-way control and 65/35 for four-way control are currently required.

c) Collision frequency is cut in half from four (4) collisions per year to two (2) collisions per year for a three (3) year period. Only collisions that may be corrected with an all-way stop are to be considered.

Other Considerations

Remain as per the Ontario Traffic Manual.

Procedures

In order to ensure that all-way stops serve their intended purpose and make the best use of staff time, it is recommended that the following procedures be followed.

1) Requests for all-way stops related to a speeding problem will be referred to the City's Speed Watch Program and the Traffic Calming Policy, which is currently being developed.

2) Requests for all-way stops related to right of way control or to correct a collision problem will be analyzed based on the approved all-way stop policy.

3) Only those intersections that satisfy the requirements for all-way stop control will be brought forward to the Traffic Committee for consideration.

EXHIBIT: A

TRAFFIC SURVEY
ALL-WAY STOP

Municipality	All-Way Stop Warrant	Detailed Engineering Analysis	Council or Committee Report
City of Waterloo	OTM Book 5	Review traffic count, collisions, geometrics and operational constraints	Only those that meet the warrants.
City of Barrie	OTM Book 5	Review traffic count, collisions, geometrics and operational constraints	All of the requests
City of Windsor	Minimum vehicle volumes on all approaches Collector & Local = 250 veh per hour Minimum vehicular + Pedestrian volume Collector & Local = 150 veh per hour	Review traffic count, collisions, geometrics and operational constraints. Speed concerns are refered to the traffic calming policy	Only those that meet the warrants
City of Brockville	OTM Book 5	Review traffic count, collisions, geometrics and operational constraints	Only those that meet the warrants.
City of Oakville	Minimum vehicle volumes on all approaches Major collector = 400 veh per hour Minor collector = 350 veh per hour Local = 300 veh per hour Minimum vehicular + Pedestrian volume Major collector = 160 veh per hour Minor collector = 140 veh per hour Local = 120 veh per hour Collision history Artenal & Major collector 5 per year over a 3 year period	Review traffic count, collisions, geometrics and operational constraints	All of the requests
City of Cambridge	OTM Book 5 (Modified) Minimum vehicle volumes on all approaches Local = 250 veh per hour	Review traffic count, collisions, geometrics and operational constraints. Speed concerns are referred to the traffic calming policy	Report is prepared when the request is volume based or when the request is pushed forward by a Councilor.
City of Vaughan	OTM Book 5	Review traffic count, collisions, geometrics and operational constraints	All of the requests.
City of London	Minimum vehicle volumes on all approaches Minor Collector = 350 veh per hour	Review traffic count (5 peak hours), collisions, geometrics and operational constraints	Only 10% of the major issues are reported to Council.
City of Niagara Falls	Minimum vehicle volumes on all approaches Minor collector & Local = 350 veh per hour Minimum vehicular + Pedestrian volume Minor collector & Local = 160 veh per hour	Assess speed to determine if there is a speeding problem (speed study). Assess whether an all way stop is warranted based on collisions, visibility problems and 8 hour TMC. Petition households within 75 m of the intersection preference	Reports are only prepared for intersections which meet the warrant, unless it is a specific request from committee or council. If it is not warranted a letter would be typically sent to residents within the 75 m of the intersection to advise of the decision
Town of Newmarket	Modified OTM Book 5 warrant without the directional splits but an increased emphasis on pedestrian activity	Review TMC and all way stop warrant analysis	All of the requests

Municipality	All-Way Stop Warrant	Detailed Engineering Analysis	Council or Committee Report
City of Guelph	OTM Book 5	Review traffic count, collisions, geometrics and operational constraints. When a local road intersects another local road only the peak hour volume is looked at initially.	No, unless directed specifically by Council to report back on the matter
Region of Niagara	OTM Book 5	Review traffic count, collisions, geometrics and operational constraints	No, only respond back to the individual request.

EXHIBIT: B

Sudbury

CITY OF GREATER SUDBURY
ALL-WAY STOP WARRANTS

Location: _____
Date of TM Count: _____ Date: _____
Type of Intersection: _____ Analyst: _____

All-Way Stop Warrant Summary

Warrant #1	Minimum Vehicle Volume	%
Warrant #2	Collision History	%
Warrant #3	Traffic Control Signals	Y/N

All-Way Stop Warranted? Y/N

Warrant #1 - Minimum Vehicle Volume

Roadway Type	Arterial/Major Collector	Minor Collector	Local	Vehicles per hour	Percent Compliance
AADT	> 5000	1000 - 5000	< 1000		
Count Period	7 hours	4 peak hours	4 peak hours		
Total vehicle volume from all approaches is ≥	500/hr	350/hr	250/hr		
Veh + Pedestrian volumes from side street is ≥	200/hr	140/hr	N/A		
Traffic Split	70/30	70/30	70/30	/	Y/N

Warrant #2 - Collision History

Roadway Type	Arterial/Major Collector	Minor Collector	Local	Number of Collisions per year	Percent Compliance
Collisions per Year over 3 year period	4*	3*	2*		

Warrant #3 **Traffic Control Signals are warranted and urgently needed, signs to be used as interim measures.** Y/N

* Only those collisions susceptible to relief through multi-way stop control must be considered (i.e. right angle and turning types).

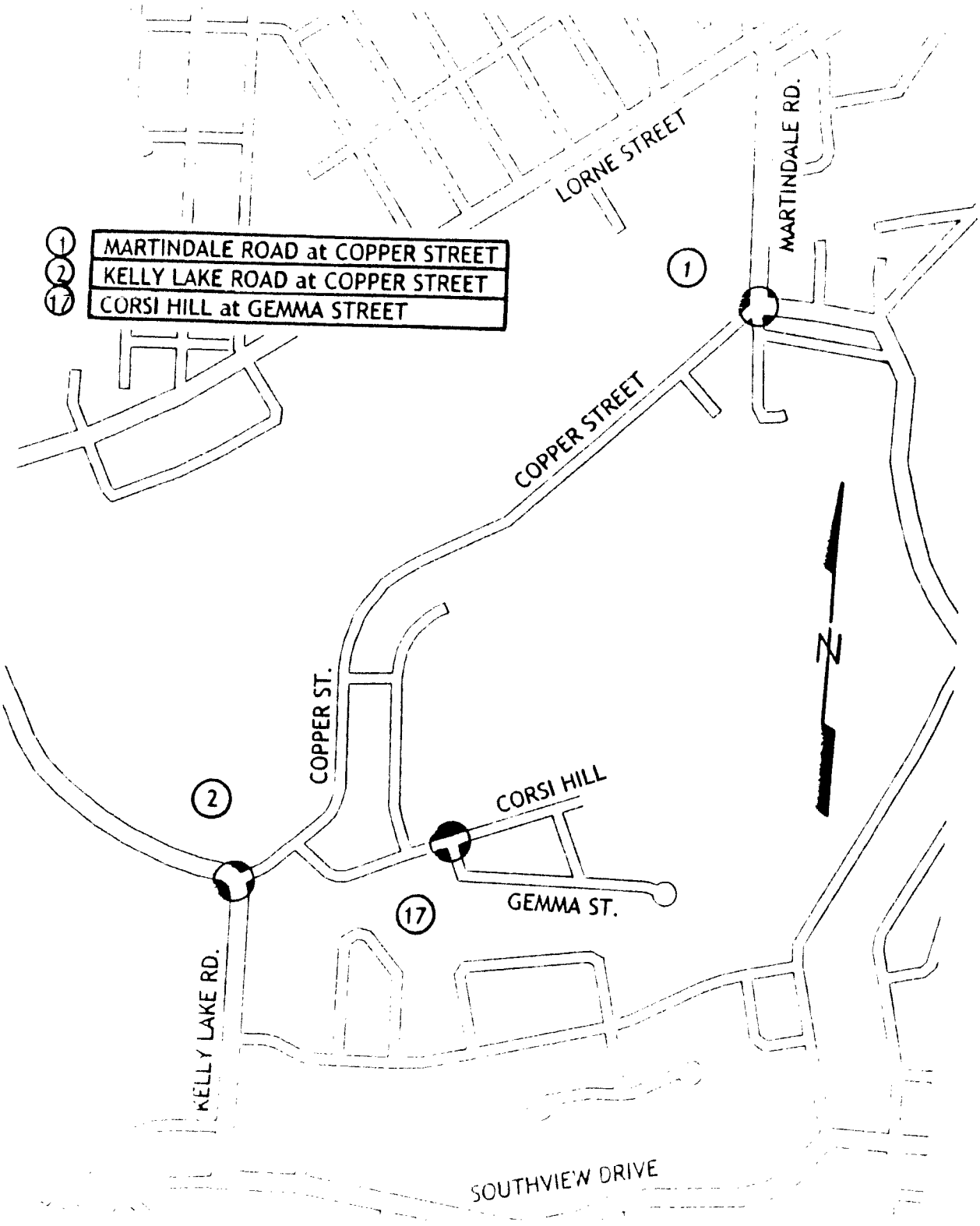
- If the intersection meets warrant # 1, then the all-way stop is recommended regardless of the remaining warrants.
- If the intersection does not meet warrant #1 and does not meet warrant #2, then the all-way stop is not recommended.
- If the intersection does not meet warrant #1 and does meet warrant #2 then the all-way stop is recommended

EXHIBIT: B

All-Way Stops Warrant Summary

#	Location	Warrant #1 - Minimum Volume Summary								Warrant #2 - Collision Warrant	All-Way Stop Warranted? (CGS Warrant)
		New CGS All-Way Stop Warrant					Ontario Traffic Manual All-Way Stop Warrant				
		Total Vehicle Volume From All Approaches (#/hour)	Vehicle and Pedestrian Volume From Side Street (#/hour)	Traffic Split	Percent Compliance	Rank	Total Vehicle Volume From All Approaches (#/hour)	Vehicle and Pedestrian Volume From Side Street (#/hour)	Percent Compliance	Number Of Collisions Over 3 Year Period	
Arterial/Major Collector											
	Minimum Required	**500**	**200**	**70/30**			**500**	**200**		**12**	
1	Martindale Road at Copper Street	577	157	73/27	78	1	577	157	78	1	No
2	Kelly Lake Road at Copper Street	868	127	85/15	50	2	868	127	50	0	No
3	Lansing Avenue at Melbourne Street	460	50	89/11	25	3	460	50	25	1	No
4	Kathleen Street at Bessie Avenue	313	16	91/9	23	4	63	23	23	0	No
Minor Collector											
	Minimum Required	**350**	**140**	**70/30**			**500**	**200**		**9**	
5	**Leslie Street at Mont Adam Street**	**410**	**176**	**58/42**	**100**	**1**	410	172	82	0	Yes
6	Dell Street at Bruce Avenue	280	111	72/28	79	2	280	111	55	1	No
7	Lillian Boulevard at Holland Road	283	99	67/33	71	3	283	99	49	0	No
8	Montee Rouleau at St. Laurent Street	366	98	73/27	70	4	268	79	40	2	No
9	Algonquin Road at Tuscany Trail/Trailridge Drive	278	86	75/25	62	5	278	86	43	0	No
10	Woodbine Avenue at Agincourt Avenue	477	77	84/16	53	6	381	32	32	1	No
11	Roy Avenue at Lamothe Street	206	68	70/30	48	7	206	68	34	1	No
12	St. Charles Lake Road at Brenda Drive/Wayne Road	169	76	58/42	48	8	169	76	34	0	No
13	Third Avenue at Highgate Road	106	31	72/28	22	9	106	31	15	0	No
14	Lamothe Street at Prestige Place	241	17	94/6	12	10	241	17	9	0	No
15	Third Avenue North at School Street	76	15	36/14	11	11	76	15	8	0	No
Local											
	Minimum Required	**250**	**N/A**	**70/30**			**350**	**N/A**		**6**	
16	Greenbriar Road at Scarlett Road	142		16/54	57	1	168		18	0	No
17	Corsi Hill at Gemma Street	116		33/17	46	2	126		36	0	No
18	Meehan Avenue at Coulson Street	107		59/11	43	3	124		35	1	No
19	Lamothe Street at Lincoln Road	71		81/19	29	4	35		21	0	No
20	Pheal Street at Donald Street	57		36/14	23	5	61		17	0	No

EXHIBIT: C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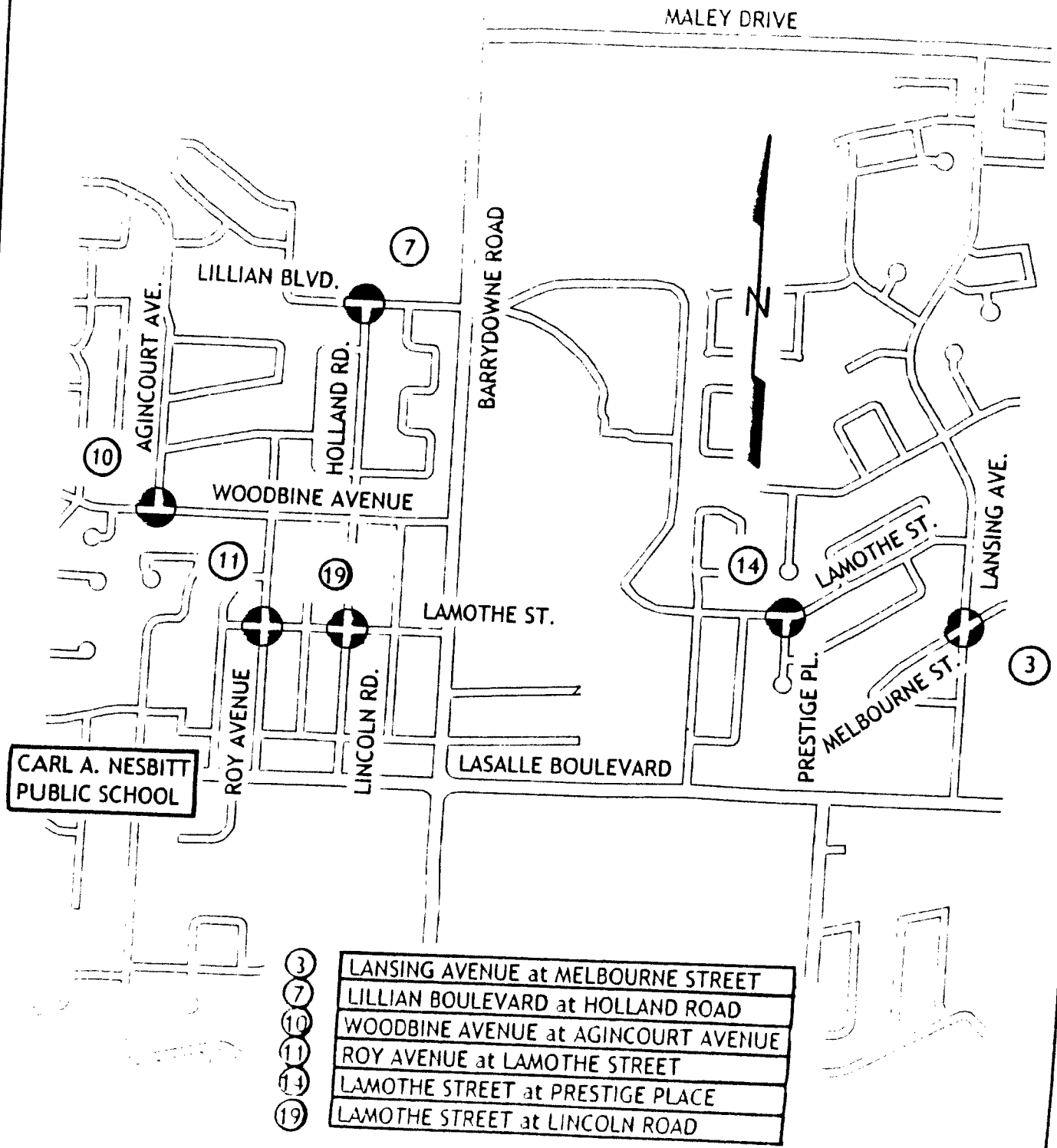
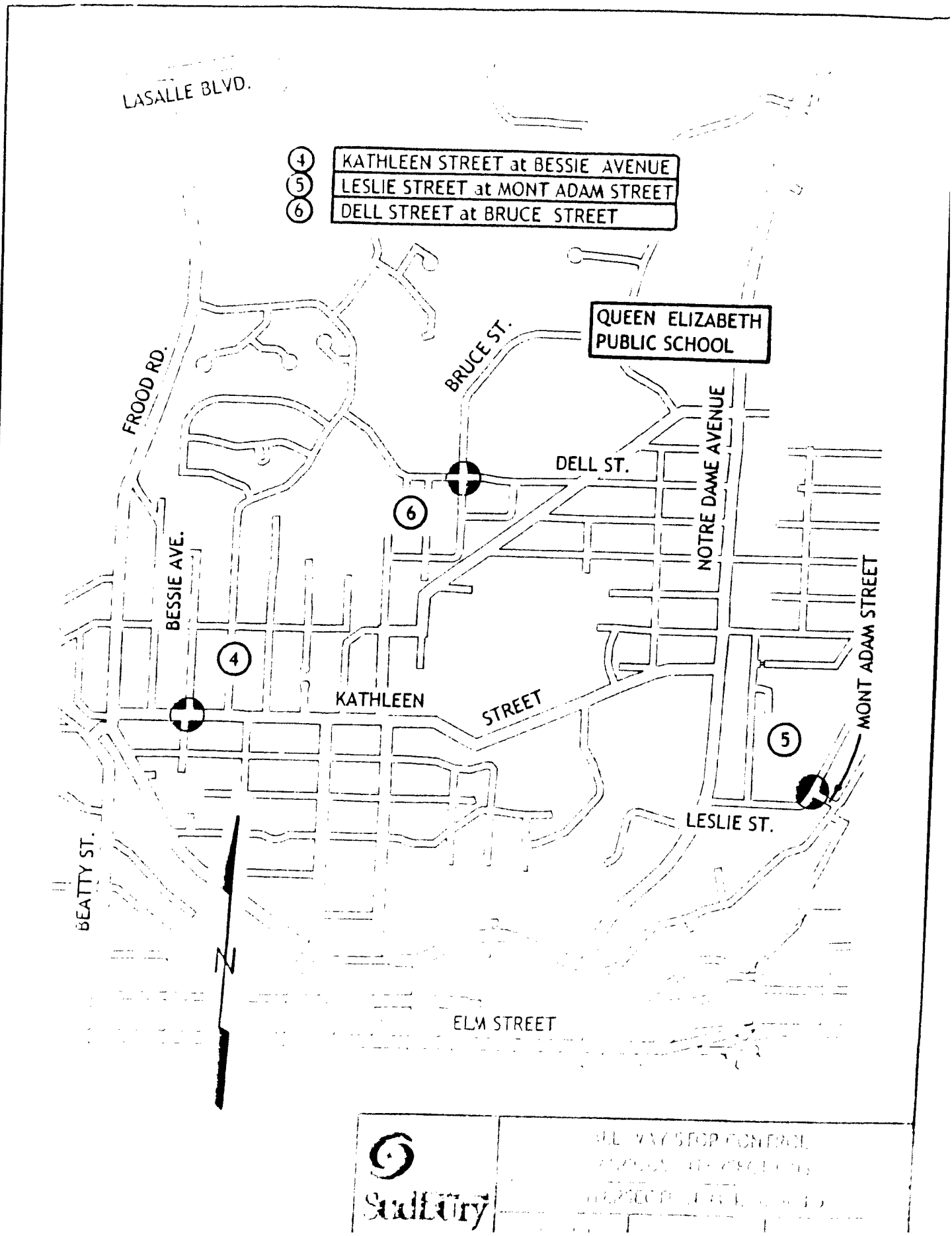
2 KELLY LAKE ROAD at COPPER STREET
17 CORSI HILL at GEMMA STREET
LORNE STREET
MARTINDALE RD.
COPPER STREET
COPPER ST.
CORSI HILL
GEMMA ST.
KELLY LAKE RD.
SOUTHVIEW DRIVE
N

EXHIBIT: D



Sudbury

EXHIBIT: E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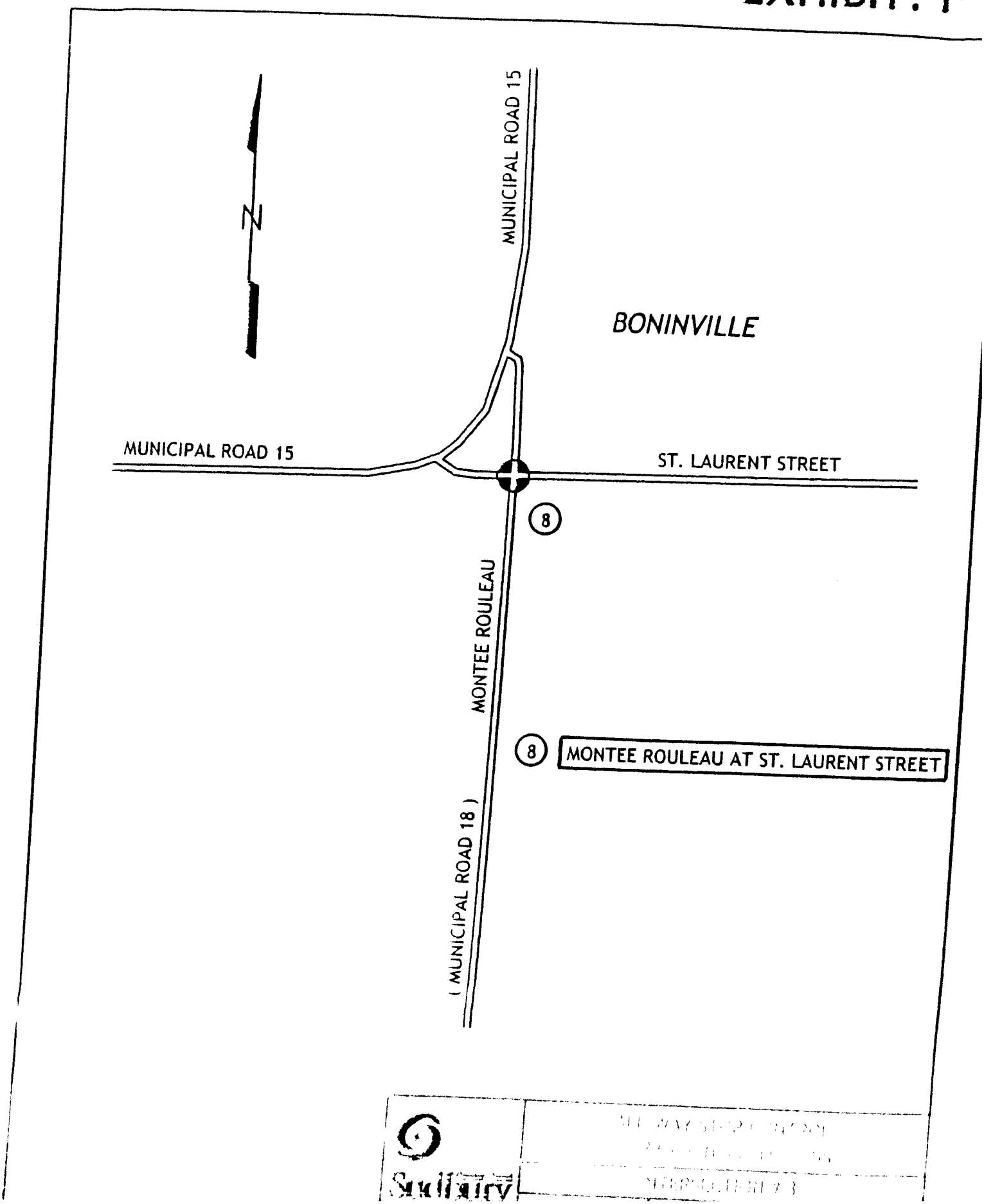
4 KATHLEEN STREET at BESSIE AVENUE
5 LESLIE STREET at MONT ADAM STREET
6 DELL STREET at BRUCE STREET
QUEEN ELIZABETH PUBLIC SCHOOL
FROOD RD.
BRUCE ST.
DELL ST.
NOTRE DAME AVENUE
BESSIE AVE.
KATHLEEN STREET
MONT ADAM STREET
LESLIE ST.
BEATTY ST.
ELM STREET
N
StadiCity

EXHIBIT: F



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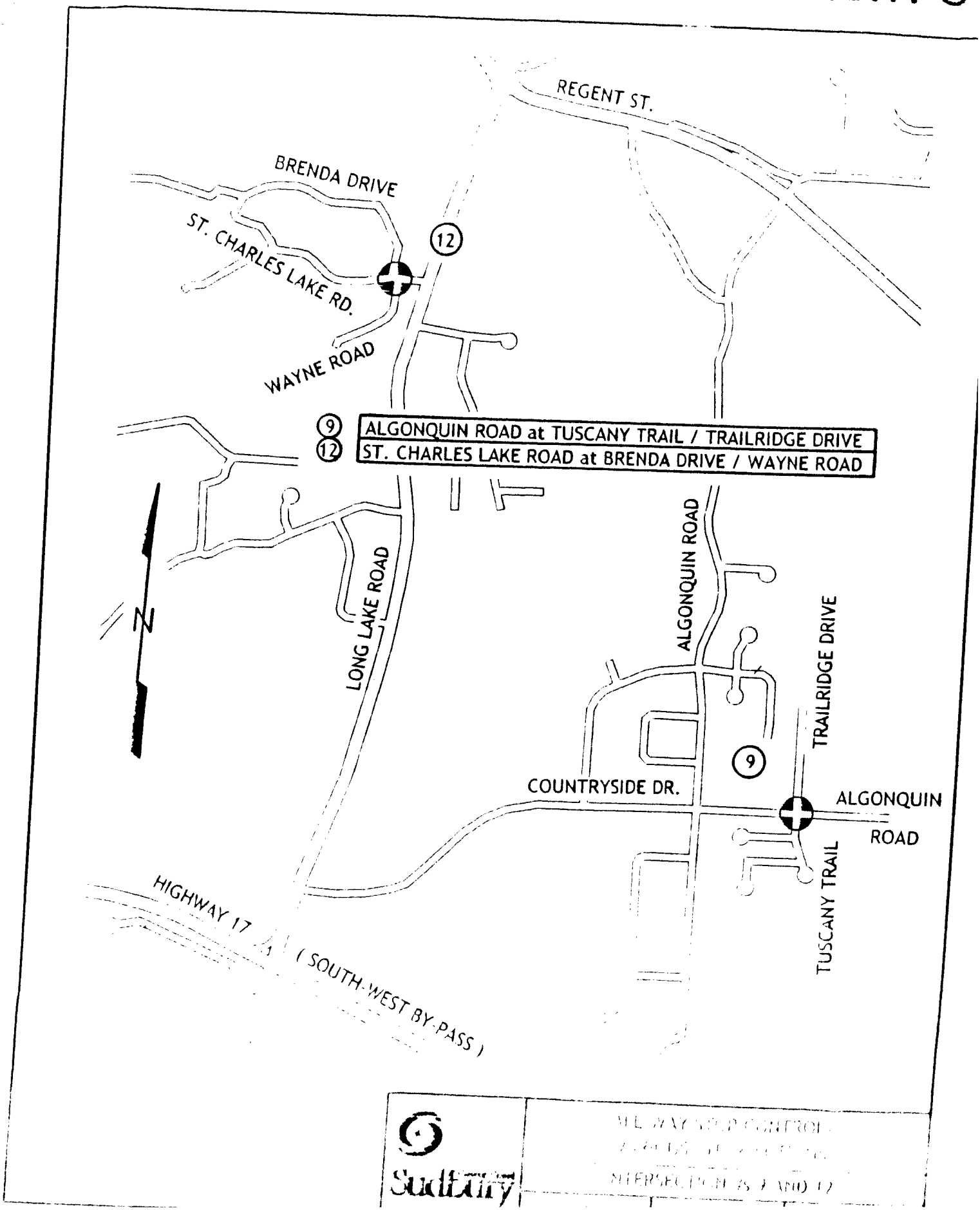
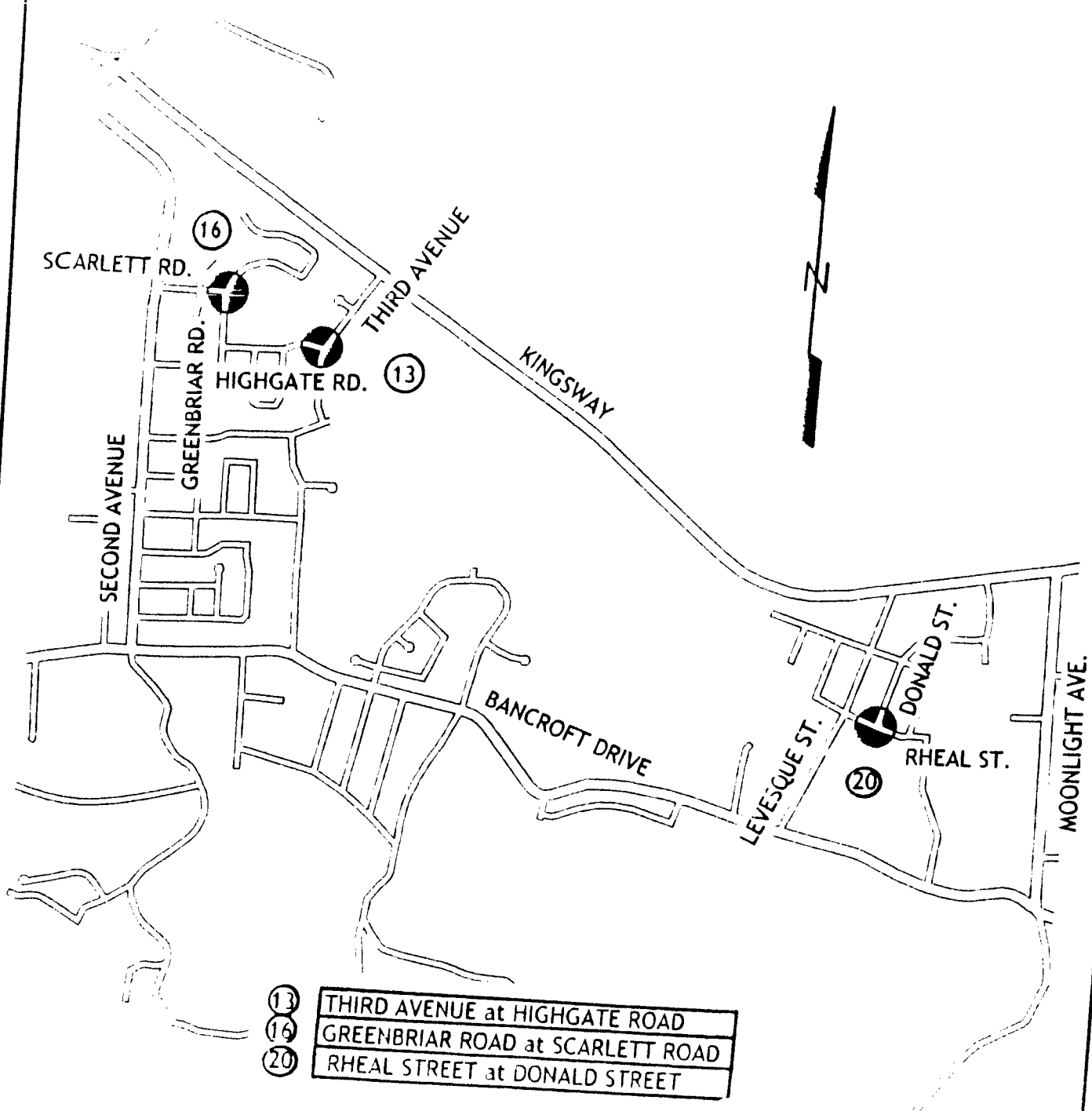

REGENT ST.
BRENDA DRIVE
ST. CHARLES LAKE RD.
WAYNE ROAD
12
9
12
ALGONQUIN ROAD at TUSCANY TRAIL / TRAILRIDGE DRIVE
ST. CHARLES LAKE ROAD at BRENDA DRIVE / WAYNE ROAD
N
LONG LAKE ROAD
ALGONQUIN ROAD
TRAILRIDGE DRIVE
9
COUNTRYSIDE DR.
ALGONQUIN
ROAD
TUSCANY TRAIL
HIGHWAY 17
(SOUTH-WEST BY-PASS)
Sudbury

EXHIBIT: H



SudBury

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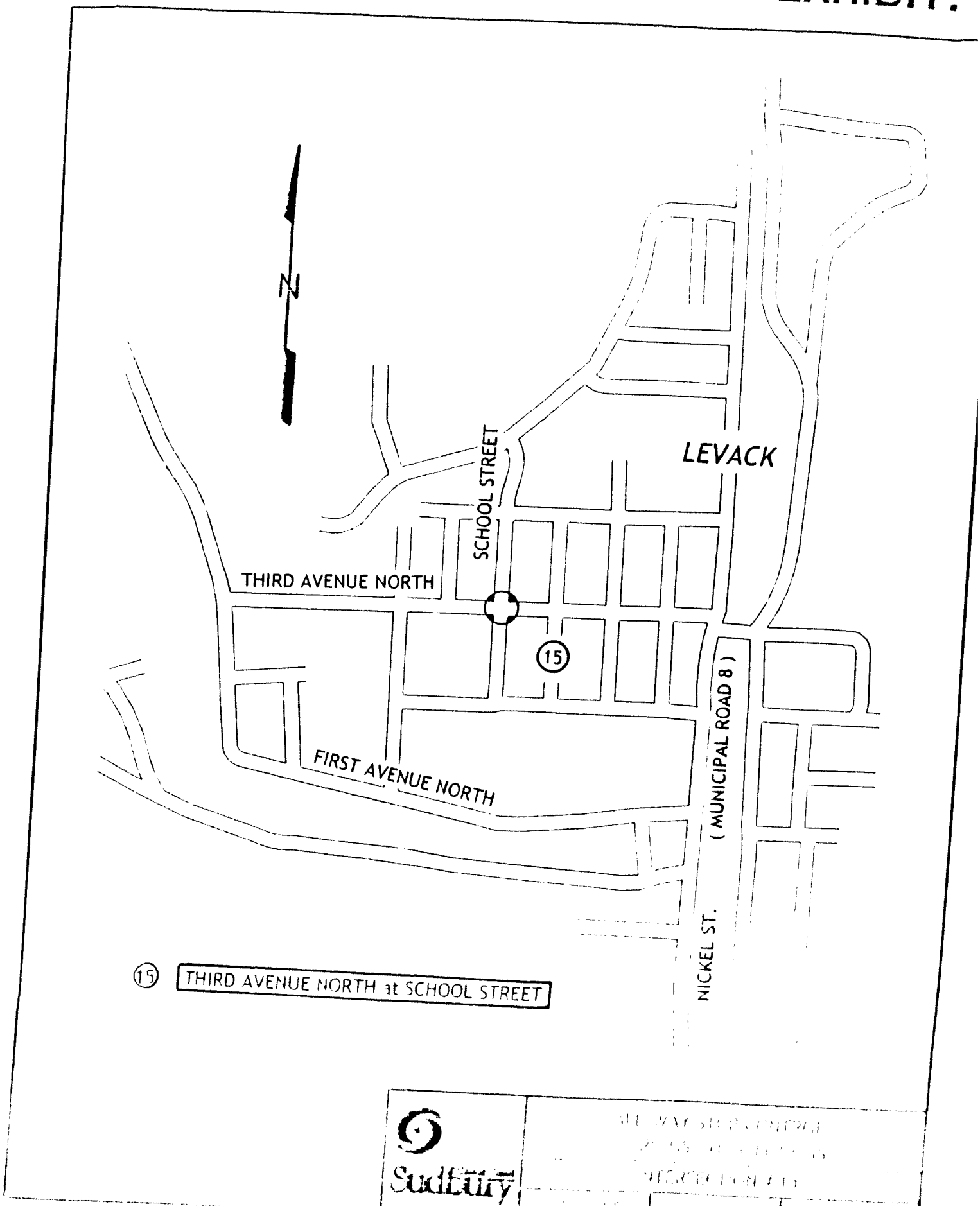
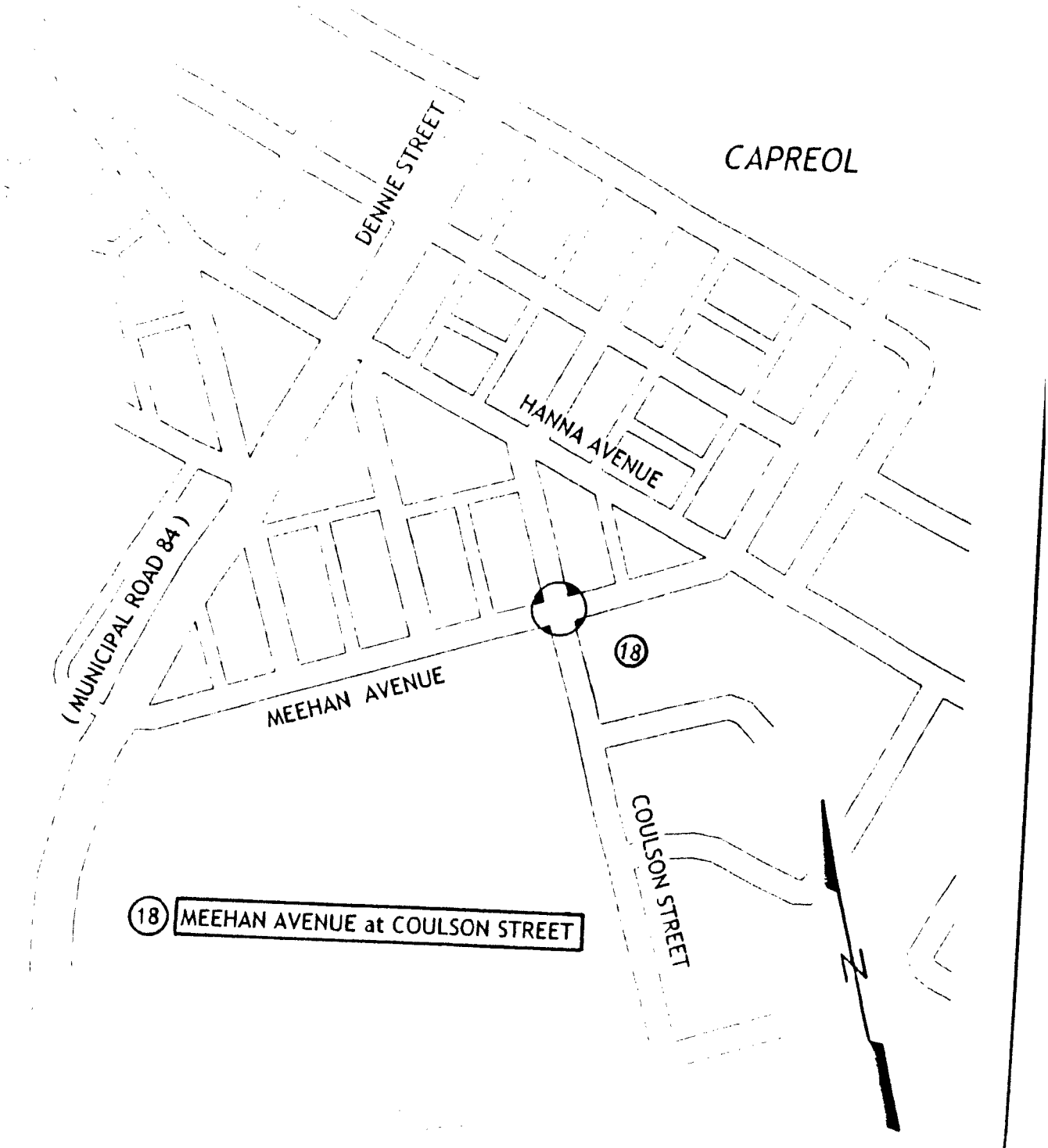

N
LEVACK
SCHOOL STREET
THIRD AVENUE NORTH
15
FIRST AVENUE NORTH
(MUNICIPAL ROAD 8)
NICKEL ST.
15 THIRD AVENUE NORTH at SCHOOL STREET
Sudbury

EXHIBIT: J


CAPREOL
DENNIE STREET
HANNA AVENUE
(MUNICIPAL ROAD 84)
MEEHAN AVENUE
18
COULSON STREET
N
18 MEEHAN AVENUE at COULSON STREET

CITY OF GREATER SUDBURY

SCHEDULE "O" TO BY-LAW 2001-1

STOPS AT INTERSECTIONS

(1) Intersection	(2) Direction of Travel
ADD:	
Leslie Street - Mont Adam Street (Sudbury)	North and South on Leslie Street West on Mont Adam Street

Exhibit "B"

Greater Grand Sudbury
www.greatersudbury.ca

Interoffice Correspondence

October 30th, 2008

TO: G. Clausen, General Manager Infrastructure Services

FROM: L. Oldridge, Deputy City Clerk

RE: All-Way Stops - Various Intersections

The following intersections were recommended for deferment to be reviewed under the Traffic Calming Policy:

- Intersection #6 - Dell Street at Bruce Avenue;
- Intersection #7 - Lillian Boulevard at Holland Road;
- Intersection #9 - Algonquin Road at Tuscany Trail/Trailridge Drive;
- Intersection #11 - Roy Avenue at Lamothe Street.

The following intersection was recommended for deferment for annual traffic counting as new subdivisions will likely increase traffic:

- Intersection #2 - Kelly Lake Road and Copper Street.

The following intersections were recommended for deferment while waiting on further information from the Ward Councillor:

- Intersection #3 - Lansing Avenue at Melbourne Street;
- Intersection #14 - Lamothe Street at Prestige Place.

The following intersections were recommended for deferment until current collision data could be obtained:

- Intersection #10 - Woodbine Avenue at Agincourt Avenue;
- Intersection #19 - Lamothe Street at Lincoln Road.

The following intersection was recommended for deferment until current collision information can be obtained:

- Intersection #8 - Montee Rouleau Street and Laurent Street.

/ec

Lisa Oldridge
Deputy City Clerk

cc: R. Falcioni
D. Kivi
D. Sheldsted

Request for Recommendation
Traffic Committee

Greater | Grand Sudbury
www.city.greatersudbury.on.ca

Type of Decision

Meeting Date	August 26, 2009					Report Date	July 28, 2009				
Recommendation		Yes	x	No		Priority	x	High		Low	
	Direction Only					Type of Meeting	x	Open		Closed	

Report Title

One-way Street Designation
William Street, Garson

Policy Implications + Budget Impact

	This report and recommendation(s) have been reviewed by the Finance Division and the funding source has been identified

X	Background attached

Recommendation

That William Street be designated as a "One-Way" street for southbound traffic between Birch Street and Falconbridge Road (MR 86) and;

That the by-law be passed by City Council to amend Traffic and Parking By-Law 2001-1 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 26, 2009.

	Recommendation attached

Recommended by the Department Head

Greg Clausen, P. Eng.
General Manager of Infrastructure Services

Recommended by the C.A.O.

Doug Nadorozny
Chief Administrative Officer

Report Authored By	Division Review
Dave Kivi, Coordinator of Transportation and Traffic, Engineering Services	for Robert M. Falcioni, P. Eng. Director of Roads and Transportation

Background:

At the City Council meeting of June 10, 2009, Councillor Thompson submitted a petition that William Street be made a "One-way" street (see Exhibit "A"). The petition requests that William Street be designated as "One-Way" in the southbound direction to improve safety near St. John School due to the presence of school buses, parent parking and pedestrian activity.

William Street is a local residential road located in the community of Garson that provides a connection between Falconbridge Highway (MR 86) and Birch Street (see Exhibit "B"). William Street is constructed to an urban standard with an asphalt surface width of eight (8) metres and a sidewalk along the east side.

St. John's Elementary School is located near the north end of the street. Due to the lack of on-site parking, school buses currently use the west side of William Street to load and unload children. Parents also use the east side of the street to pick up and drop off children making it very difficult for vehicles travelling in opposite directions to by-pass each other.

Changing William Street to "One-Way" in the southbound direction will improve traffic operations near St. John School. In addition, left turns which currently occur at the intersection of Falconbridge Highway and William Street, without the benefit of a left turn lane, will move to the signalized intersection of Falconbridge Highway and Church Street which has a left turn lane and advanced left turn signal phase. It will also be relatively easy to sign William Street for "One-Way" traffic as there are no intersections along it other than at each end.

While there are a number of advantages to making William Street "One-Way", there are also a number of disadvantages. Travel distance will increase, especially for residents who live near the south end of the street. Traffic volumes will also increase at the north end of the street. In addition, some residents may chose to travel in the wrong direction to save time, and unfamiliar drivers may go the wrong way by mistake.

Staff supports the petition, which has been signed by the majority of the residents, to change William Street to "One-Way" in the southerly direction. The change will improve traffic operations and safety near St. John School. The Sudbury Student Services Consortium have also indicated their support for the One-Way Designation.

COPY TAKE EXHIBIT: A

Greater | Grand Sudbury
www.greatersudbury.ca

INTEROFFICE MEMO

Greater Sudbury
Roads/Transportation
JUN 25 2009
Director's Office

DATED: June 17, 2009

TO: G. Clausen, General Manager of Infrastructure Services

FROM: A. Haché, City Clerk

RE: **Petition – William Street, Garson**

At the City Council meeting of June 10, 2009, Councillor Thompson submitted a petition to the City Clerk requesting that William Street be made a one-way street signed by approximately 34 residents.

Attached is a copy of the cover page of the petition and the first page of signatures. The complete petition is available in the Clerk's Office if you wish to review it.

A. Haché

Angie Haché
City Clerk

/fb

Attachment

cc: R. Falcioni, Director of Roads & Transportation

PETITION FOR WIILIAM STREET

GARSON,ONTARIO

William street in the winter can be very frustrating. The street is very narrow and the sidewalk does not get cleaned. There is barely enough room for two vehicles to go by. In the morning and afternoon when school busses are out , the vechiles must try and pull to the side to let them go by; if you meet a school bus on the corner you have to back up. Pedestrians must walk on the road. There is more traffic on this road due to the daycare at the school. Cars park in front of the school to pick up their children and with the buses there also, sometimes you cannot get by. The only solution to this problem would be to keep the street and sidewalk clean or make the street a one way. Enter off Birch St. and exit on to Falconbridge Hwy.

Harvey Quackenbush 107 william st.
Leslie + Stuart Vallier 57 William.
Marianne Sheridan
Janet Tait 104 William St.
Suzanne Lord 110 William St
Kevin Senenik 149 william st
Lorraine + Denis Moss-Desloges 141 William St.
Robin Gunn 152 William
William Rorison 120 William.
Mary McLean 159 william St
[illegible] Dunlop 164 William St
[illegible] MacInnis 176. William St

PETITION FOR WIILIAM STREET

GARSON,ONTARIO

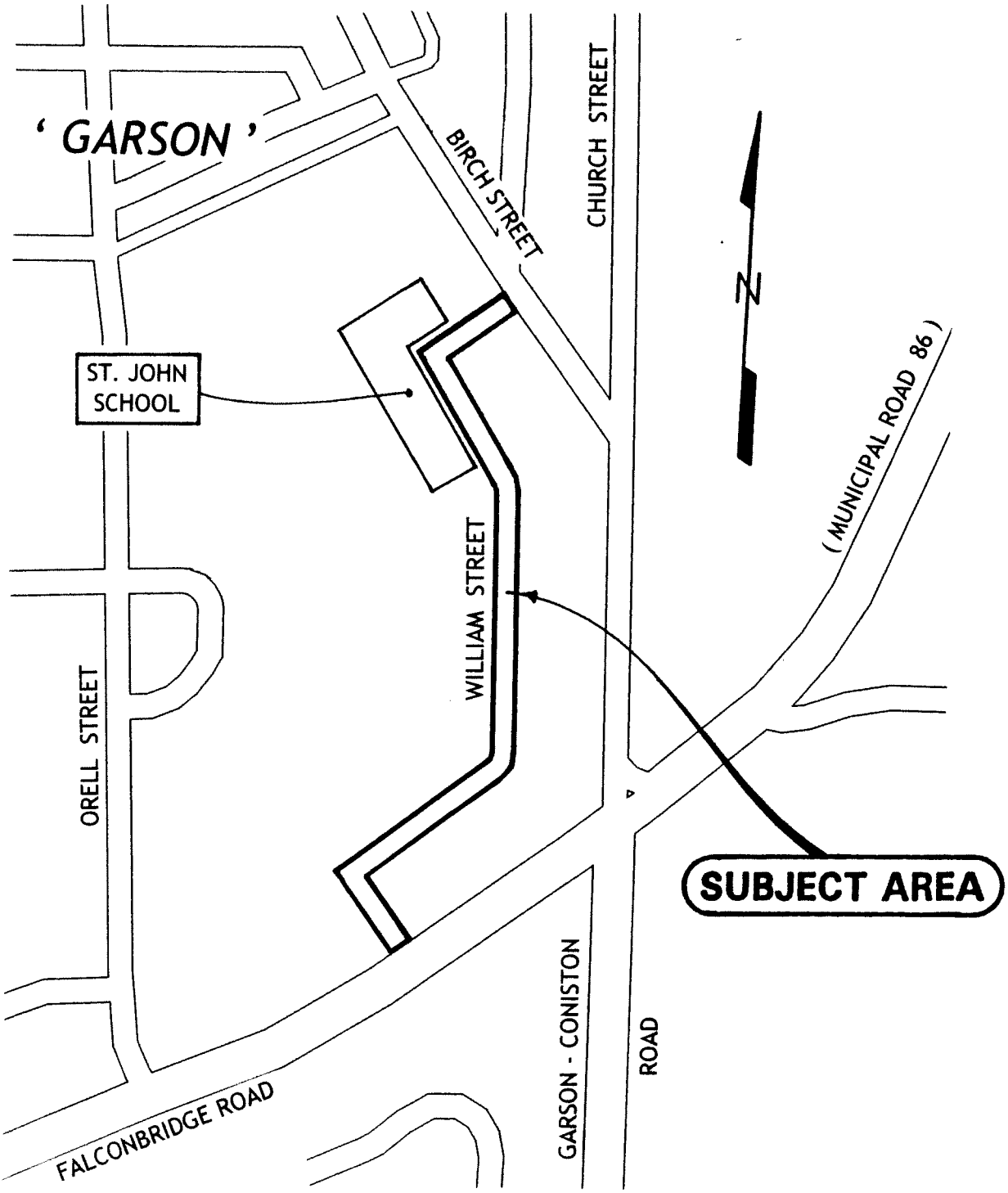
William street in the winter can be very frustrating. The street is very narrow and the sidewalk does not get cleaned. There is barely enough room for two vehicles to go by. In the morning and afternoon when school busses are out , the vechiles must try and pull to the side to let them go by; if you meet a school bus on the corner you have to back up. Pedestrians must walk on the road. There is more traffic on this road due to the daycare at the school. Cars park in front of the school to pick up their children and with the buses there also, sometimes you cannot get by. The only solution to this problem would be to keep the street and sidewalk clean or make the street a one way. Enter off Birch St. and exit on to Falconbridge Hwy.

Theresa Parsoll 115 William St.
Jeannine Desjardins 89 William St.
Mel Hrytsak 71 William St
Tina Goulet 65 William St.
Al Bonhomme 53 William St
Barry Hewlett 103 WILLIAM ST.
Sylvia Larocque 76 William
K Boivin 82 William Street
J Deevar 92 William
Dennis B. RULE 123 William St Garson
Joanne [illegible] 134 William St.
[illegible] 133 William ST
[illegible] 156 William St.
Cindy Lachance 153 William St.
Lisa Berndt 147 William St
Sylvie Bedard 198 William str
J. Beaudoin 226 William St

Ed Clarke 88 William St.

Bill Monaghan

EXHIBIT: B



Sudbury Greater Grand

ONE - WAY STREET DESIGNATION

WILLIAM STREET, GARSON

NOT TO SCALE		2009-08-12

Request for Recommendation
Traffic Committee

Greater | Grand Sudbury
www.city.greatersudbury.on.ca

Type of Decision

Meeting Date	August 26, 2009					Report Date	July 22, 2009				
Recommendation		Yes	x	No		Priority	x	High		Low	
	Direction Only					Type of Meeting	x	Open		Closed	

Report Title

Traffic Control - Toya Court, Hanmer

Policy Implications + Budget Impact

	This report and recommendation(s) have been reviewed by the Finance Division and the funding source has been identified

X	Background attached

Recommendation

That the Toya Court and Lee Street intersection be controlled with a "Yield" sign facing eastbound traffic on Toya Court;

And

That a by-law be passed by City Council to amend Traffic and Parking By-Law 2001-1 in the City of Greater Sudbury to implement the recommended changes all in accordance with the report from the General Manager of Infrastructure Services dated July 22, 2009.

	Recommendation attached

Recommended by the Department Head

Greg Clausen, P. Eng.
General Manager of Infrastructure Services

Recommended by the C.A.O.

Doug Nadorozny
Chief Administrative Officer

Report Authored By	Division Review
Dave Kivi, Coordinator of Transportation and Traffic, Engineering Services	for Robert M. Falcioni, P. Eng. Director of Roads and Transportation

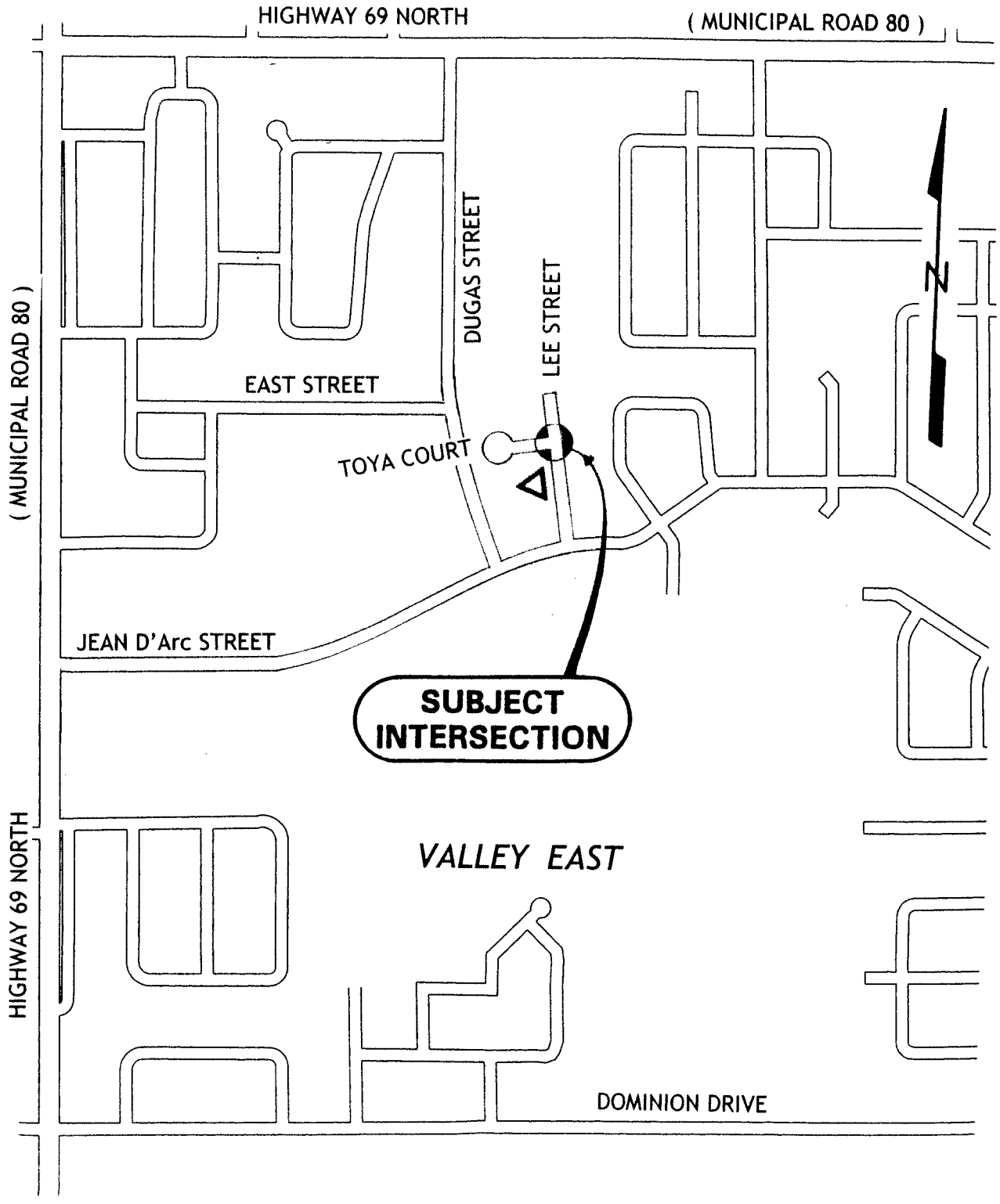
Background:

Phase 11 of the Dominion Parc subdivision is currently being developed in Hanmer (see Exhibit 'A'). The City of Greater Sudbury will assume Toya Court as a public road and traffic control is required at the intersection of Toya Court and Lee Street.

Toya Court intersects Lee Street forming a "T" intersection. A Yield sign is appropriate when the traffic volume is low, sight lines are good and stopping is not always required. At this intersection all of these conditions are met; therefore it is recommended that traffic be controlled with a Yield sign facing eastbound traffic on Toya Court.

It is recommended that a by-law be passed to amend the Traffic and Parking By-Law 2001-1 in the City of Greater Sudbury, to implement this change.

EXHIBIT: A



Sudbury	TOYA COURT HANMER	
	TRAFFIC CONTROL	
NOT TO SCALE		2009-08-12

Request for Recommendation
Traffic Committee

Greater Grand Sudbury
www.city.greatersudbury.on.ca

Type of Decision

Meeting Date	August 26, 2009					Report Date	July 22, 2009				
Recommendation		Yes	x	No		Priority	x	High		Low	
	Direction Only					Type of Meeting	x	Open		Closed	

Report Title

School Zone Speed Limit - Junction Avenue and Laurin Street, Azilda

Policy Implications + Budget Impact

	This report and recommendation(s) have been reviewed by the Finance Division and the funding source has been identified

X	Background attached

Recommendation

That the speed limit on Junction Avenue from Charlebois Street to St. Jean Street, and the speed limit on Laurin Street from Charlebois Street to 120 metres south of Notre Dame Street be reduced to 40km/h due to the presence of École publique Franco-Nord.

And;

That a by-law be passed by City Council to amend Traffic and Parking By-Law 2001-1 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 July 22, 2009.

	Recommendation attached

Recommended by the Department Head

Greg Clausen, P. Eng.
General Manager of Infrastructure Services

Recommended by the C.A.O.

Doug Nadorozny
Chief Administrative Officer

Report Authored By	Division Review
Dave Kivi, Coordinator of Transportation and Traffic, Engineering Services	for Robert M. Falcioni, P. Eng. Director of Roads and Transportation

Background:

The City's Traffic and Transportation Engineering Section has received a request from the Chairperson of the Conseil scolaire public du Grand Nord de l'Ontario to reduce the speed limit on Junction Avenue and Laurin Street to 40km/h (see Exhibit A).

École publique Franco-Nord is a primary grade aged school situated between Junction Avenue and Laurin Street (see Exhibit B).

Junction Avenue and Laurin Street are both Local residential roadways that are constructed to a rural standard with an asphalt surface width of approximately ten meters and gravel shoulders. The existing maximum speed limit on both Junction Avenue and Laurin Street is 50 km/h.

To deal with numerous requests to reduce the speed limit near schools, City Council adopted a school zone speed reduction policy in 2001 and further revised the policy in 2009. The approved policy states the following:

> That Staff be directed to bring to the attention of City Council request for speed reduction zones adjacent to schools based on the following considerations:
>
> - That a school speed zone be installed at schools with primary grade aged students.
> - That the school speed zone be limited to residential streets or residential collector streets.
> - That the maximum speed of the roadways considered for school speed zones be 50 km/h.
> - That if schools are closed, the speed limit will revert back to 50 km/h.
> - That only those requests that meet the above four criteria be brought forward by Staff to City Council for consideration.

As the request is in keeping with the City's policy, Staff recommends that the speed limit on Junction Avenue from Charlebois Street to St. Jean Street, and the speed limit on Laurin Street from Charlebois Street to 120 metres south of Notre Dame Street be reduced to 40km/h

EXHIBIT: A

CONSEIL SCOLAIRE PUBLIC
DU GRAND NORD DE L'ONTARIO

CSPGNO

May 11, 2009

TRANSLATION

Mr. Dave Kivi
Coordinator of Transportation and Traffic Engineering Services
City of Greater Sudbury
Infrastructure Services
Roads and Transportation
1800, rue Frobisher
Sudbury ON P3A 5P3

Mr. Kivi,

As Chairperson of the Conseil scolaire public du Grand Nord de l'Ontario (CSPGNO), I wish to advise you that the School Board requests that the speed zone in front of the elementary school, École publique Franco-Nord, situated at 178 Junction Avenue in Azilda be reduced. Please note that this request is in keeping with By-law 2004-275 of the City of Greater Sudbury regarding a School Zone Speed Policy. Moreover, CSPGNO is requesting that the City of Greater Sudbury install speed signs indicating a maximum speed of 40 km/h.

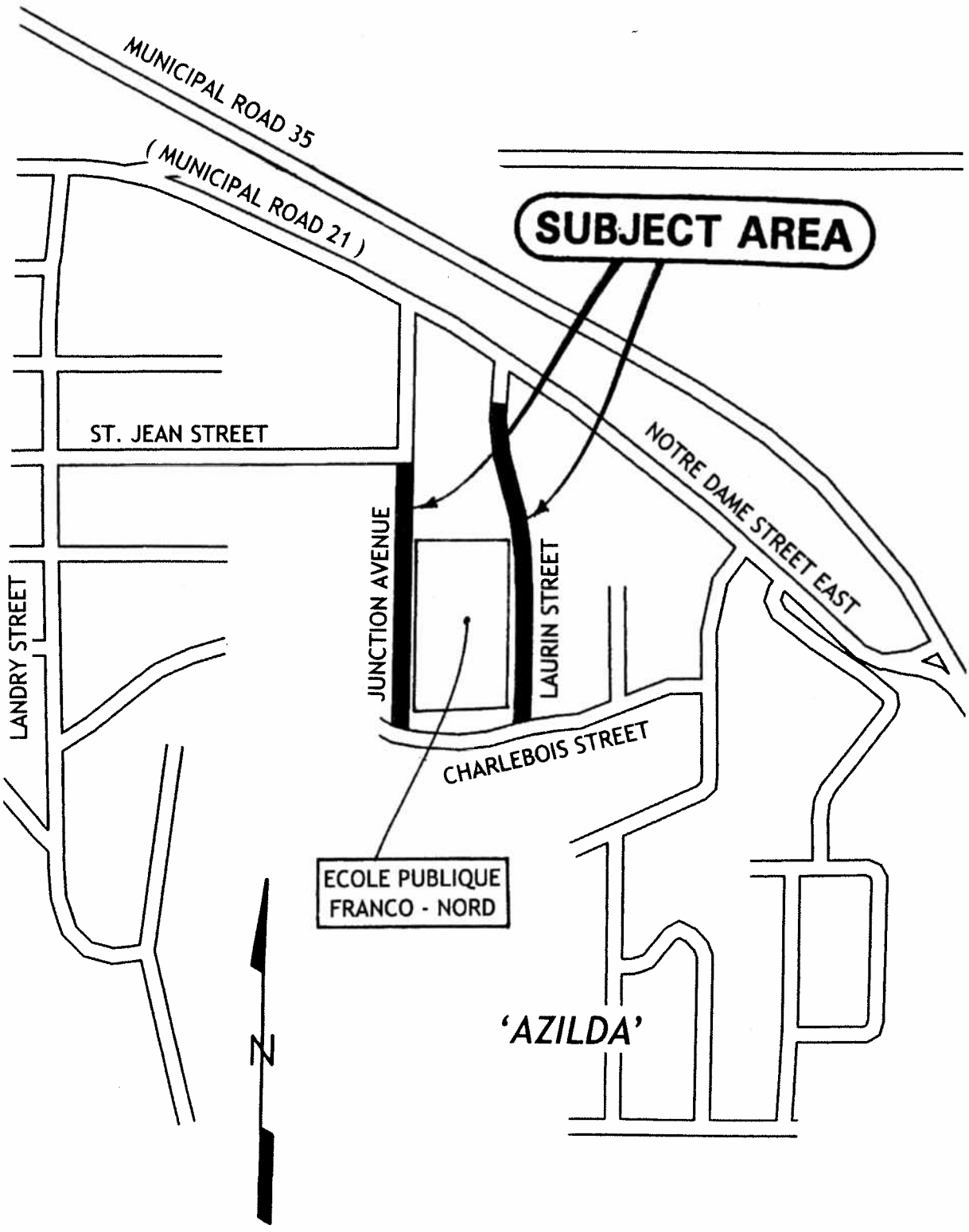
It is of utmost importance to the School Board that the safety of students, staff members and the general public be ensured at all times. I am confident that the City of Greater Sudbury will support all measures taken to this end.

Yours sincerely,

Jean-Marc Aubin
Chairperson

c.c. Trustees
Pierre Riopel, Superintendent

EXHIBIT: B



Sudbury	JUNCTION AVENUE and LAURIN STREET AZILDA	
	SCHOOL ZONE SPEED LIMIT	
	NOT TO SCALE	2009-08-12

Request for Recommendation
Traffic Committee

Greater | Grand Sudbury
www.city.greatersudbury.on.ca

Type of Decision

Meeting Date	August 26, 2009					Report Date	July 22, 2009				
Recommendation		Yes	x	No		Priority	x	High		Low	
	Direction Only					Type of Meeting	x	Open		Closed	

Report Title

Parking Restrictions - Woodbine Avenue, Sudbury

Policy Implications + Budget Impact

	This report and recommendation(s) have been reviewed by the Finance Division and the funding source has been identified

X	Background attached

Recommendation

That parking be prohibited on the north side of Woodbine Avenue from Agincourt Avenue to 120 metres east of Agincourt Avenue.

And;

That a by-law be passed by City Council to amend Traffic and Parking By-Law 2001-1 in the City of Greater Sudbury to implement the recommended changes all in accordance with the report from the General Manager of Infrastructure Services dated July 22, 2009.

	Recommendation attached

Recommended by the Department Head

Greg Clausen, P. Eng.
General Manager of Infrastructure Services

Recommended by the C.A.O.

Doug Nadorozny
Chief Administrative Officer

Report Authored By	Division Review
Dave Kivi, Coordinator of Transportation and Traffic, Engineering Services	for Robert M. Falcioni, P. Eng. Director of Roads and Transportation

Background:

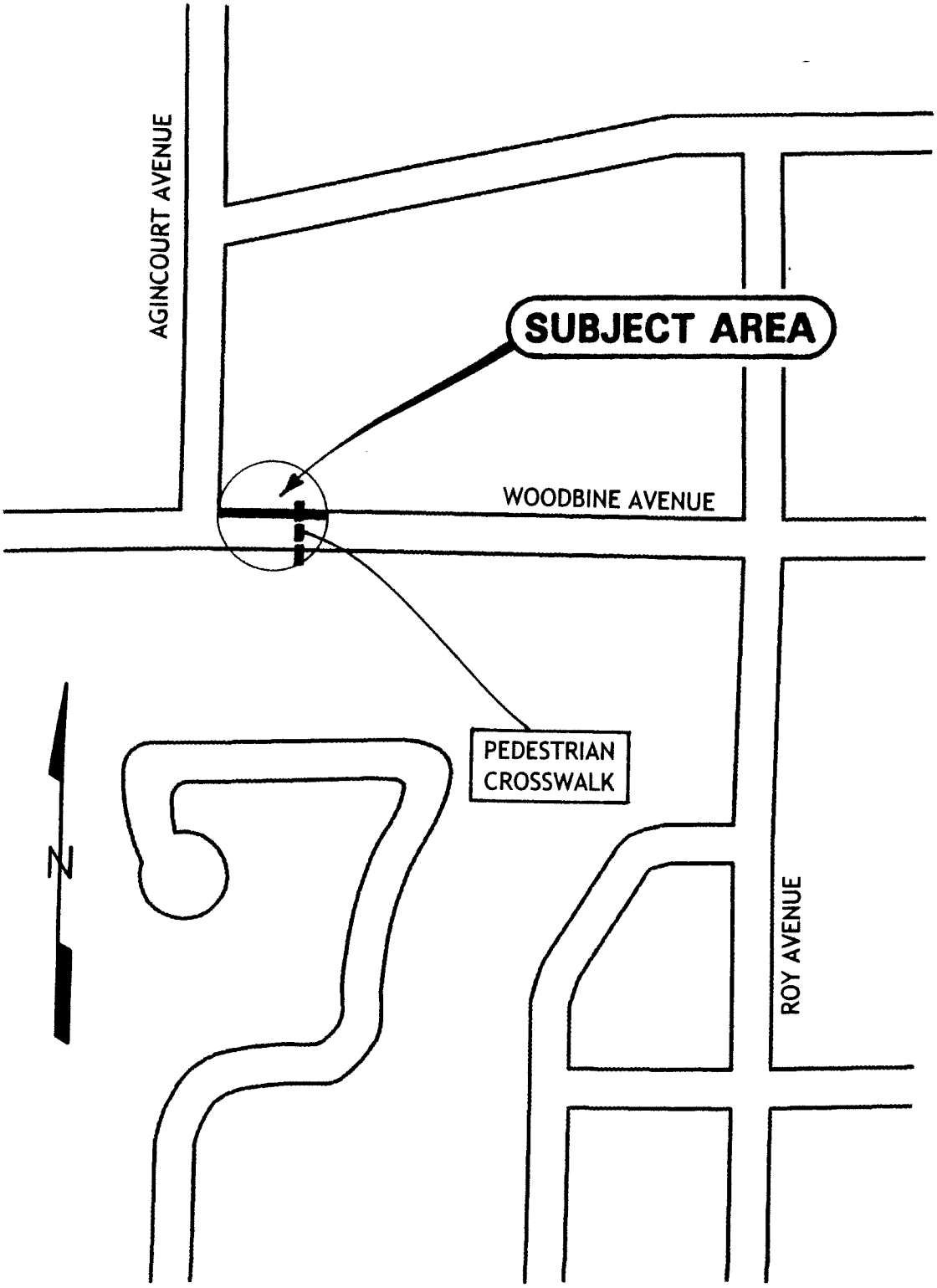
The City's Traffic and Transportation Engineering Services Section received a request at the Ward 12 New Sudbury CAN meeting on May 26th, 2009, to prohibit parking on the north side of Woodbine Avenue from Agincourt Avenue to 120 metres east of Agincourt Avenue.

Woodbine Avenue is a collector roadway (see Exhibit 'A') that is constructed to an urban standard with an asphalt surface width of ten metres and a sidewalk along the north side. The posted speed limit is 50 km/h and parking is currently allowed along both sides of the road.

It has been brought to our attention that vehicles are often parked on the north side of Woodbine Avenue, between Agincourt Avenue and the pedestrian crosswalk that is 100 metres to the east. These parked vehicles restrict visibility for vehicles exiting Agincourt Avenue and people using the pedestrian crosswalk. These problems are made worse by the vertical crest curve on Woodbine Avenue, east of the intersection.

To improve safety, we recommend that parking be prohibited along on the north side of Woodbine Avenue from Agincourt Avenue to 120 metres east of Agincourt Avenue. It is recommended that a by-law be passed to amend Traffic and Parking By-Law 2001-1 in the City of Greater Sudbury, to implement these changes.

EXHIBIT: A



Greater Grand Sudbury	PARKING RESTRICTIONS WOODBINE AVENUE	
	SUDBURY	
NOT TO SCALE		2009-08-12

Request for Recommendation
Traffic Committee

Greater | Grand Sudbury
www.city.greatersudbury.on.ca

Type of Decision

Meeting Date	August 26, 2009					Report Date	July 22, 2009			
Recommendation		X	Yes		No	Priority		High		Low
		Direction Only				Type of Meeting		Open		Closed

Report Title

New Traffic Signal Installations
1) St. Anne Road, 165 m west of Notre Dame Avenue
2) Long Lake Road and Gateway Avenue
3) Barry Downe Road and Marcus Drive

Policy Implications + Budget Impact

	This report and recommendation(s) have been reviewed by the Finance Division and the funding source has been identified

X	Background attached

Recommendation

That a By-Law be passed by Council of the City of Greater Sudbury to amend Traffic and Parking By-Law 2001-1 in the City of Greater Sudbury, to install three (3) new traffic signals at the following locations:

1. St. Anne Road, 165 m west of Notre Dame Avenue;
2. Long Lake Road and Gateway Avenue; and
3. Barry Downe Road and Marcus Drive.

	Recommendation attached

Recommended by the Department Head

Greg Clausen, P. Eng.
General Manager of Infrastructure Services

Recommended by the C.A.O.

Doug Nadorozny
Chief Administrative Officer

Title: New Traffic Signal Installations
Date: July xxx, 2009

Report Authored By	Division Review
Dave Kivi, Coordinator of Transportation and Traffic, Engineering Services	for Robert M. Falcioni, P. Eng. Director of Roads and Transportation

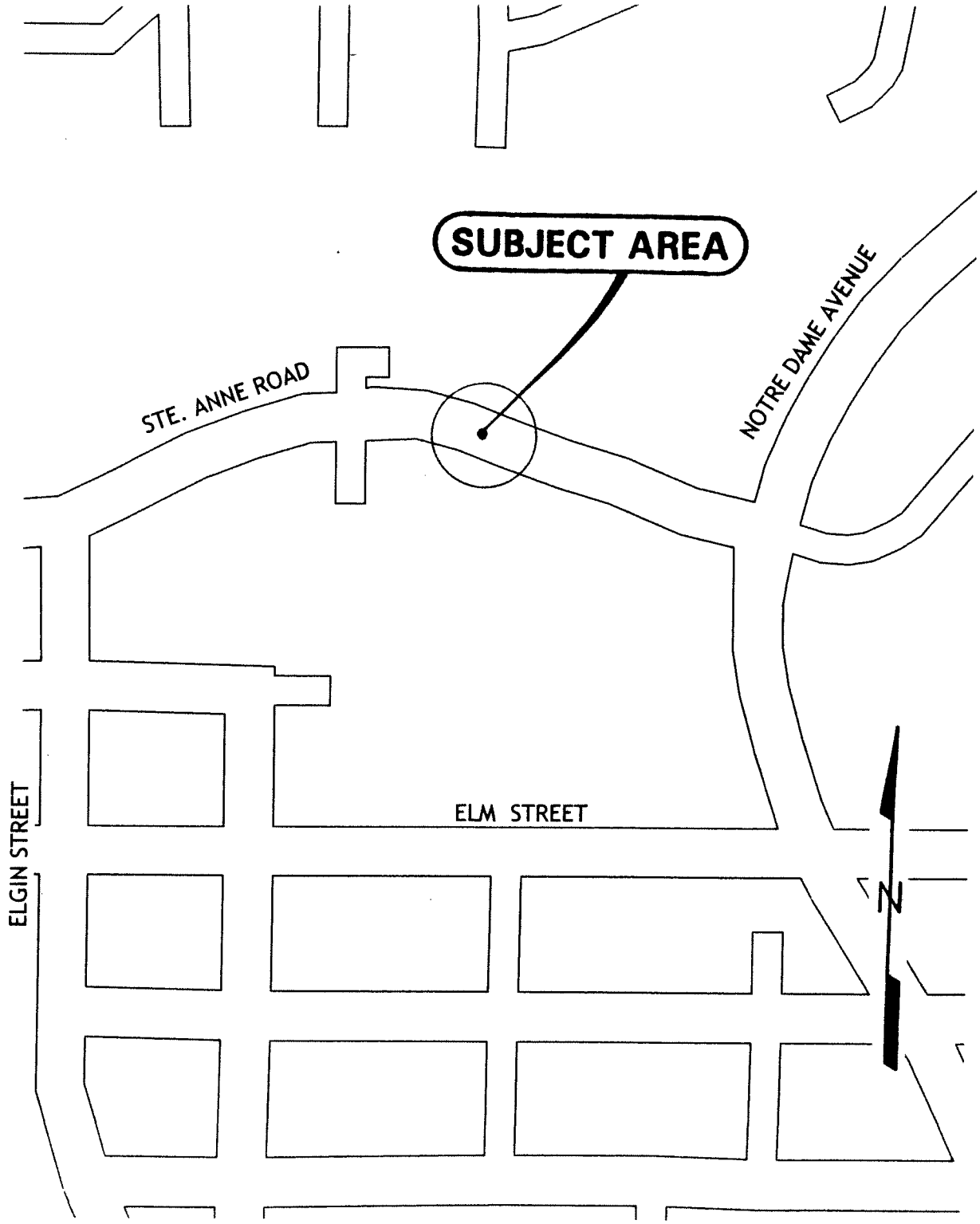
Background:

As part of the City's capital construction program, new traffic signals are being constructed on Ste. Anne Road, approximately 165 metres west of Notre Dame Avenue (see Exhibit "A"). The contract for this project is currently being tendered by the City.

Also, large retail developments for SmartCentre in the south end of the city, and the Silver Hills Centre in New Sudbury, are currently under construction. The increased traffic generated by these retail expansions will result in the need for new traffic signals at the intersections of Long Lake Road and Gateway Avenue (See Exhibit "B") and Barry Downe Road and Marcus Drive (see Exhibit "C"). The contracts for these projects have been tendered by the Developers.

It is expected that these projects will be completed later this fall. An amendment to the City's Traffic and Parking By-Law 2001-1 is required to implement the new traffic signals.

EXHIBIT: A



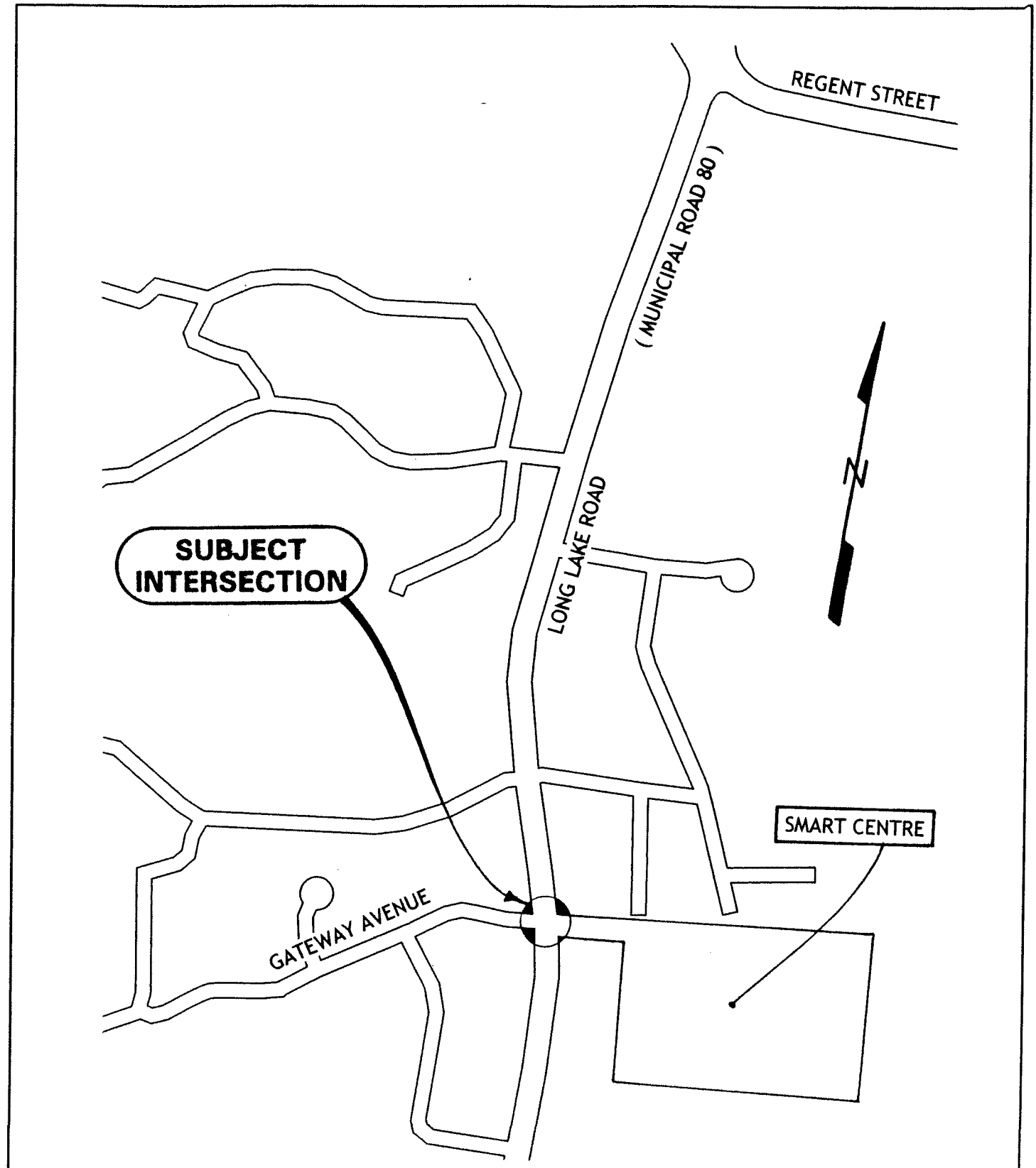
Sudbury

NEW TRAFFIC SIGNAL INSTALLATIONS

165 METRES WEST OF NOTRE DAME AVENUE

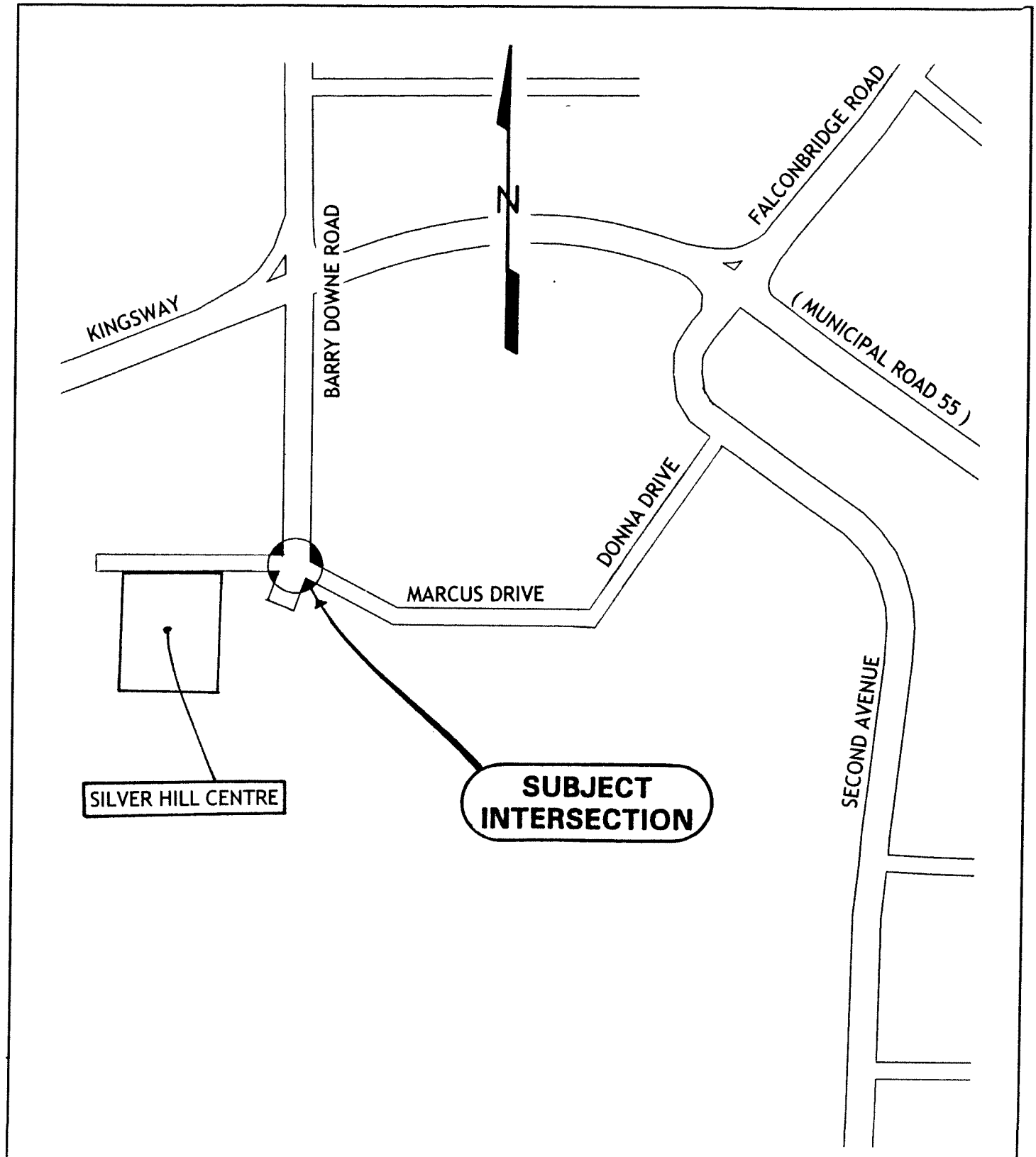
NOT TO SCALE | | 2009-08-12

EXHIBIT: B



Sudbury	NEW TRAFFIC SIGNAL INSTALLATIONS	
	LONG LAKE ROAD and GATEWAY AVENUE	
NOT TO SCALE		2009-08-12

EXHIBIT: C



Sudbury Greater Grand

NEW TRAFFIC SIGNAL INSTALLATIONS

BARRY DOWNE ROAD and MARCUS DRIVE

NOT TO SCALE | | 2009-08-12