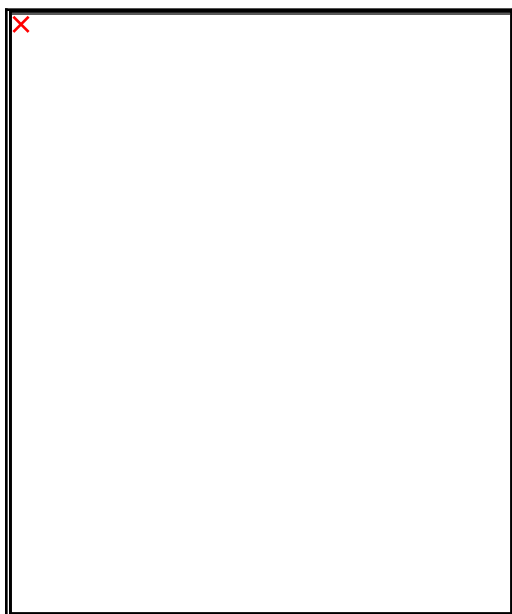


Vision: *The City of Greater Sudbury is a growing, world-class community bringing talent, technology and a great northern lifestyle together.*



Agenda

Operations Committee

meeting to be held

Monday, December 3rd, 2012

at 4:00 pm

Tom Davies Square

OPERATIONS COMMITTEE AGENDA

Operations Committee Meeting
Monday, December 3, 2012
Tom Davies Square

COUNCILLOR JACQUES BARBEAU, CHAIR

Claude Berthiaume, Vice-Chair

4:00 p.m. OPERATIONS COMMITTEE MEETING
COMMITTEE ROOM C-11

Council and Committee Meetings are accessible. For more information regarding accessibility,
please call 3-1-1 or email clerks@greatersudbury.ca.

DECLARATIONS OF PECUNIARY INTEREST AND THE GENERAL NATURE THEREOF

PRESENTATIONS

1. Report dated November 28, 2012 from the General Manager of Infrastructure Services regarding Update to Management's Response to Auditor General's Report regarding the Impact of Changes to Road Design . **6 - 22**

(ELECTRONIC PRESENTATION) (FOR INFORMATION ONLY)

- David Shelsted, Director of Roads & Transportation Services
- Peter Chiesa, Manager of Project Engineering

(This report provides a response to the various concerns raised by the Auditor General.)

2. Report dated November 28, 2012 from the General Manager of Infrastructure Services regarding Status Report - 2012 Capital Projects. **23 - 29**

(ELECTRONIC PRESENTATION) (FOR INFORMATION ONLY)

- Tony Cecutti, General Manager of Infrastructure Services

(This report provides the status of 2011 carry-over and 2012 capital projects, the stage that they are presently at and the work to be completed in the following year with an anticipated completion date. In addition, the design status of the 2013 capital projects will be discussed.)

CONSENT AGENDA

(For the purpose of convenience and for expediting meetings, matters of business of repetitive or routine nature are included in the Consent Agenda, and all such matters of business contained in the Consent Agenda are voted on collectively.

A particular matter of business may be singled out from the Consent Agenda for debate or for a separate vote upon the request of any Councillor. In the case of a separate vote, the excluded matter of business is severed from the Consent Agenda, and only the remaining matters of business contained in the Consent Agenda are voted on collectively.

Each and every matter of business contained in the Consent Agenda is recorded separately in the minutes of the meeting.)

CORRESPONDENCE FOR INFORMATION ONLY

- C-1. Report dated November 27, 2012 from the General Manager of Infrastructure Services regarding Rationalization of Fleet. **30 - 39**
(FOR DIRECTION ONLY)

(This report provides information regarding Fleet Services and its initiatives.)

- C-2. Report dated November 21, 2012 from the General Manager of Growth and Development regarding Airport Ground Transportation Tender - Status Report. **40 - 49**
(FOR INFORMATION ONLY)

(This report provides information on the status of the Request for Proposal by the Greater Sudbury Airport for Taxi and Shuttle Transportation Services.)

REGULAR AGENDA

MANAGERS' REPORTS

- R-1. Report dated October 31, 2012 from the General Manager of Infrastructure Services regarding Traffic Control - (1) Spruce Meadow Subdivision, Phases 5A & 5B (2) Copper Park Subdivision, Phase 9 . **50 - 53**
(RECOMMENDATION PREPARED)

(Two new subdivisions are currently developed in the City of Greater Sudbury. As part of these developments, the City of Greater Sudbury will assume new public roadways. To provide for a safe and orderly flow of traffic, traffic control signs will be required at newly created intersections.)

- R-2. Report dated November 22, 2012 from the General Manager of Infrastructure Services regarding Intersection of Notre Dame Avenue and Kathleen Street - Pedestrian Safety. **54 - 59**
(RECOMMENDATION PREPARED)

(At the Operations Committee meeting on July 9, 2012, it was requested that staff investigate alternatives to improve pedestrian safety at the intersection of Notre Dame Avenue and Kathleen Street. The report reviews and makes recommendations regarding various modes of traffic signal operation.)

ADDENDUM

CIVIC PETITIONS

QUESTION PERIOD AND ANNOUNCEMENTS

NOTICES OF MOTION

ADJOURNMENT

BRIGITTE SOBUSH, DEPUTY CITY CLERK

FRANCA BORTOLUSSI, COUNCIL ASSISTANT

For Information Only

Update to Management's Response to Auditor General's Report regarding the Impact of Changes to Road Design

Presented To:	Operations Committee
Presented:	Monday, Dec 03, 2012
Report Date	Wednesday, Nov 28, 2012
Type:	Presentations

Recommendation

For information only.

Introduction

On August 14, 2012, the Auditor General presented his report entitled "Impact of Changes to Road Design" to the Audit Committee. In the report, the Auditor General provided thirteen (13) recommendations based on his review and findings. Seven (7) of the recommendations have been implemented with the remaining six (6) to be implemented by the spring of 2013 or shortly afterwards.

This report will explain the procedures and guidelines in place that ensure the City is receiving what is specified in contract documents.

Background

The Auditor General reviewed the following contracts for the basis of his report:

1. Contract ENG08-18 Main Street (M.R. 15) from Highway 69 North to Belisle;
2. Contract ENG10-19 Highway 69 North (M.R. 80) from Frost to Glenn;
3. Contract ISF09-04 Lasalle Boulevard from Falconbridge to Notre Dame;
4. Contract ENG11-22 Regent Street from Loach's Road to the By-Pass;
5. Contract ENG11-21 Radar Road from Hydro Road to 2 km East.

Contracts ENG08-18 Main Street and ENG10-19 Highway 69 North were widening projects. Contracts ISF09-04 Lasalle, ENG11-21 Radar, and ENG11-22 Regent were asphalt rehabilitation projects. In reviewing these contracts, the Auditor General identified 13 recommendations. The recommendations were based on a review of evaluation of asphalt testing, cross-fall, reclaimed asphalt pavement (RAP), and the handling of progress payments.

Signed By

Report Prepared By

Peter Chiesa
Manager of Project Engineering
Digitally Signed Nov 28, 12

Division Review

Kevin Shaw, P.Eng
Director of Engineering Services
Digitally Signed Nov 28, 12

Recommended by the Department

Tony Cecutti, P.Eng., FEC
General Manager of Infrastructure Services
Digitally Signed Nov 28, 12

Recommended by the C.A.O.

Doug Nadorozny
Chief Administrative Officer
Digitally Signed Nov 28, 12

Management agreed to all of the recommendations of the Auditor General; however, several questions were raised regarding concerns and issues identified in the Auditor General's report and presentation that will be addressed in this report.

Report Findings

Attached to this report is all the background information described in detail that references manuals, procedures, protocol, and guidelines along with a status update to the recommendations of the Auditor General's report.

Summary

- **The Infrastructure Services Department subscribes to the theory of continuous quality improvement.**

Road infrastructure rehabilitation and repair is recognized as one of the highest priorities for the City of Greater Sudbury. The total annual investment and percent of contribution into our roads from the tax levy is significant and justifies staff's professional attention, and the scrutiny of independent observers. The infrastructure department subscribes to the theory of continual total quality improvement, and as such, an independent audit is a welcome component of that theory.

The Auditor General has identified a number of recommendations focused on the roads capital investment program. In total, there are thirteen recommendations principally related to the area of quality assurance, which is the City's process of checks and balances associated with inspection of contract work. The majority of the recommendations have been implemented already and will be in place for the 2013 construction season. A number of the recommendations would fall into the category of good practice and will involve staff monitoring their internal processes and making adjustments as required.

- **Staff have always incorporated a multiple barrier approach for inspection and testing in accordance with industry guides and standards.**

Quality Assurance and Quality Control is a complex process of redundant checks and balances to ensure that work is performed in general conformance with specifications and standards. For City road projects, staff have adopted inspection procedures developed principally through the Municipal Engineers Association (MEA) and as described in documents referenced as the Ontario Provincial Standard Specifications (OPSS). Generally, the process requires the contractor to perform quality control testing while City staff or independent companies perform quality assurance testing. City inspectors observe contractor procedures and monitor activities such as granular material quality, subgrade and granular compaction, weather conditions, and temperature and compaction of asphalt products. No one test is sufficient to warrant satisfaction or rejection of a finished product. The summary of all of the information must be taken into consideration in determining the acceptance of the finished road.

It should also be noted that if individual test results indicate non-compliance with a specification, a series of alternative mitigation measures are available to City inspectors and the Contractors. Among the many next steps, City staff would review additional testing performed by the Contractor, by independent testing companies, and staff would also review the balance of any other observations performed during the work including the weather conditions. An extended period of warranty, monitoring and observation is not uncommon and may show in time that the road performance is acceptable.

- **Inspection and Testing procedures performed by staff have ensured the City received value for money spent on road projects.**

While staff agrees that additional or modified testing procedures, as identified by the Auditor General, would be beneficial to mitigate the potential for unacceptable contract performance, staff is also confident that testing procedures performed to date have adequately protected the City's interests and valuable investment in the road system. Staff have also taken a number of initiatives not identified by the Auditor General to enhance our QA/QC procedures, such as the investment in a number of new nuclear density testing equipment, and will continue to make appropriate investments in this area in the future.

- **Innovation in road building technologies has and will continue to be a priority for staff to perform more road work with limited tax dollars.**

Staff also recognizes that innovation in road building technologies will continue to provide opportunities for stretching limited tax dollars. Staff is proud of their contributions in the field of asphalt recycling and these contributions have been recognized by industry associations. The Auditor General has also acknowledged our contributions and complimented staff for our efforts in this area. We know that these efforts have realized substantial financial benefit to the City particularly with the investment in the reconstruction of roads under the ISF program. Staff chose to use CIREAM, an asphalt product comprised of recycled materials, in advance of a recognized standard for performance measurement. This investment saved significant costs in the unit price placement of the road asphalt structure and allowed approximately 30% more road to be constructed for equivalent dollars. Although conventional testing methods at the time would have suggested that the asphalt product was non-compliant, later testing methodologies have since proven staff made an acceptable decision. CIREAM is now an industry accepted product with many beneficial uses and will continue to be used on City projects. While we agree with the Auditor General's recommendation to comply with standard specifications, we also recommend that there are circumstances where full compliance is not necessary provided appropriate risk mitigation measures are taken into consideration.

- **Limited opportunities exist for obtaining the full value of grindings, and staff will endeavour to identify the best end use through the competitive tendering process.**

The use of asphalt grindings will continue to be evaluated on future construction projects. We agree that the best end use should be an important consideration for the grindings. During the project execution of the ISF projects, City staff took a number of different approaches for the use of the grindings. Some of the grindings were used for maintenance projects, while other grindings were used by the contractors in the execution of their work. Due to the nature of the extraction process it is difficult to accurately measure the quantity of grindings removed, transported and re-used. Asphalt grindings have minimal value and can be considered a liability as the end use requires transporting the grindings by truck over any modest distance. To be of value, the grindings must be re-used in close proximity to the location of extraction.

Consistent with the Auditor General's recommendation, it is the intentions of staff to allow the competitive tendering process determine the best end use of the asphalt grindings unless staff has identified a necessary need for the product at the time of construction. We agree that the stock piling of asphalt grindings is not an appropriate means to achieve the best end value, and this practice will only be used where the alternative represents an unacceptable liability to the City.

In conclusion, staff appreciates the opportunity to work with the Auditor General on this important initiative and will continue to advance our road program to optimize value for the taxpayers.

Introduction

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This report will explain the procedures and guidelines in place that ensure the City is receiving what is specified in contract documents.

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Management agreed to all of the recommendations of the Auditor General; however, several questions were raised regarding concerns and issues identified in the Auditor General's report and presentation that will be addressed in this report.

Update Response: Audit of Impact of Changes to Road Design				
Rec No	Recommendation	Action Plan/ Time Frame August 2012	Action Plan/Time Frame Update December 2012	
1	The City should improve policies, procedures and reports supporting accountability for rejection of inferior products and enhanced follow-up on warranty issues.	Will formulate reporting procedure for test results. This can be completed within six months (March 2013).	Reporting procedure for test results in place as of September 2012.	
2	The City should further investigate rejectable materials from previous and current projects, and establish appropriate remedies where warranty provisions allow.	Will monitor and continue to monitor areas already identified and determine corrective measures. This has been implemented.	Two areas have been identified and additional monitoring is being performed. One location has had asphalt replaced with new coat of asphalt.	
3	The City should require asphalt suppliers to provide their quality control test results in accordance with OPS to Construction Services (as they become available) for all asphalt supplied to the City. Any deficiencies in the quality of the asphalt should be made known to management immediately so that corrective action can be taken if deemed necessary.	Asphalt suppliers will provide their quality controls results to Construction Services as per Ontario Provincial Standard Specification 310 Construction Specification for Hot Mix Asphalt Table 6 Sampling & Testing Frequency of Hot Mix Asphalt. This will be introduced starting January 1, 2013 and will become a standard for all future contracts. Contractors will be informed at the Annual Contractors Meeting.	City presently able to obtain quality control test results in accordance to Ontario Provincial Standard Specification. City will ask contractor for the quality control test results for our records.	
4	The City lab should immediately begin testing gradation and asphalt cement content according to the job mix formula as specified under OPSS 310 – Construction Specification for Hot Mix Asphalt.	Our laboratory started testing the gradation and asphalt cement content of the job mix formula in June 2012.	As stated, this has been implemented in June 2012.	

Update Response: Audit of Impact of Changes to Road Design			
Rec No	Recommendation	Action Plan/ Time Frame August 2012	Action Plan/Time Frame Update December 2012
5	Costs and quantities related to major items used in change orders should be identified and tracked separately under the change order item in progress payments.	This was performed in the past when requested by the Project Manager. To be consistent, this had been implemented as of July 2012.	As stated, this has been implemented in July 2012.
6	The City's current standard and tolerances to achieve a three percent cross fall on new construction, reconstruction or when grinding is done during a resurfacing or rehabilitation process, should be clearly stated in the contract.	Will state or indicate 3% crossfall and tolerances in standard drawings & specifications effective January 1, 2013. Contractors will also be made aware of this standard and tolerance at the Annual Contractors Meeting.	When required, will indicate in contract specifications on resurfacing contracts effective January 1, 2013. Construction projects always have 3% crossfall shown on construction drawings. Will also advise contractors at Annual Meeting in February 2013.
7	The City should improve policies, procedures and reports supporting accountability for rejection of incorrect cross fall as specified in the contract and/or drawings in order to comply with City standards.	Will research policies and procedures of the Ministry of Transportation and other municipalities in Ontario. Time frame may be 12 to 18 months.	Outstanding.
8	The City should communicate their willingness to accept RAP in the job mix formula for local roads in accordance with OPSS standards.	Will communicate our willingness and encouragement to local asphalt suppliers to use RAP in the production of hot mix asphalt. Will communicate this to contractors at the Annual Contractors Meeting.	At meeting held with local asphalt producers, made them aware of our willingness. Will also advise contractors at Annual Meeting in February 2013.
9	The City should communicate their willingness to accept RAP mixed with Granular A and Granular B Type I in accordance with OPSS standards.	Will communicate our willingness and encouragement to local aggregate suppliers to use RAP in the production of granular products. This will be communicated to contractors at the Annual Contractors Meeting.	Pending.

Update Response: Audit of Impact of Changes to Road Design				
Rec No	Recommendation	Action Plan/ Time Frame August 2012	Action Plan/Time Frame Update December 2012	
10	The City should continue to identify further opportunities for cost savings where road work is planned so that the asphalt removed from one road can be used on other nearby City use(s). The objective is to minimize trucking costs while recycling the greatest volume of RAP possible (in its highest and best use) to the advantage of the City.	Have performed this recommendation in the past and will continue to do so. Will continue to monitor best practices and other uses. (i.e. shouldering around guiderails, washouts, etc.).	Have involved our Operations staff on the use of milled asphalt.	
11	The City should continue to work with other interest groups and other Departments that could use the City's RAP in their nearby projects.	Have performed this recommendation in the past and will continue to do so. By January 2013, establish a request process where a master list will be created and maintained.	Pending.	
12	Ownership and disposition of RAP should be clearly stated in the contract documents.	Will include appropriate clauses in contract specifications for all future contracts starting January 1, 2013.	Pending.	
13	If alternate City uses are not identified for the RAP, they should be directed to go to the contractor.	Have performed this recommendation in the past and will continue to do so as contractors become better equipped to handle large volumes of RAP.	As stated, will continue to do this.	

Quality Control (QC) and Quality Assurance (QA) of Hot Mix Asphalt

The Ontario Provincial Standard Specifications (OPSS) standardize the production of asphalt and the construction of hot mix asphalt throughout the Province. They are specified in City contracts. These standards are for both Quality Control (QC) and Quality Assurance (QA). The QC and QA specifications ensure that the client is receiving the product that has been specified in the contract documents. Quality Control is testing performed by the Contractor to ensure the quality of the materials meet specifications. Quality Assurance is testing performed by the Owner (the City) to ensure the quality of the materials meet specifications.

To ensure Quality Control, the local asphalt producers must have a certified laboratory and certified technicians. This certification process is very stringent where the laboratory equipment is checked and calibrated on a set schedule and the laboratory technicians have the necessary certification. This certification process is performed every year. All the local asphalt producers have certified laboratories and certified technicians.

The Canadian Council of Independent Laboratories (CCIL) represents the independent testing industry in Canada. There are over 330 member facilities across the country. CCIL has approved the laboratory of all three local asphalt producers.

The material specification and asphalt cement content for the mix design criteria are specified in OPSS 1150 Material Specification for Hot Mix Asphalt (see Exhibit 1 attached). These charts specify the allowable range for the gradation requirements for the various types of hot mix asphalt along with the asphalt cement content. From the specifications, the asphalt producers prepare a Job-Mix Formula which identifies the gradation and asphalt cement for each type of asphalt that will be produced at the plant. The Job-Mix Formula will be dependent on materials that are available at the plant or can be produced at the plant. The Job-Mix Formula for HL3 will be different for each asphalt supplier, and Sudbury will not be the same as North Bay or Barrie. OPSS 310 Construction Specifications for Hot Mix Asphalt (HMA) specifies tolerances for the Job-Mix Formula (see Exhibit 2 attached).

OPSS 310 also states the following:

"If the HMA is deemed borderline for aggregate gradation or asphalt cement content according to Table 7, the Contractor shall be notified in writing by the Contract Administrator and shall take the immediate corrective action through process control at the HMA plant. A total of three borderline test results for the same attributes representing up to 5,000 tonnes of HMA production shall result in the work deemed rejectable.

If the HMA is deemed rejectable according to Table 7, both the Contract Administrator and the Contractor shall review, agree, and identify the limits of rejected HMA that has been placed. Referee samples within the limits of the affected area shall be delivered by the Contractor to a mutually agreed upon third party referee laboratory to verify aggregate gradation or asphalt cement content or both. When the results from the referee samples area deemed rejectable according to Table 7, the HMA pavement shall be removed and replaced with acceptable HMA pavement. Alternatively, the Contract Administrator may accept a guaranteed maintenance bond, an increased maintenance period, or a negotiated price adjustment."

Asphalt samples are obtained in the field as the asphalt is being placed. These samples are taken back to our laboratory where the asphalt sample is checked for gradation and asphalt cement. Our laboratory had been testing the sample to gradation and asphalt cement content

to determine if OPSS 1150 was met; however, the Job-Mix Formula should have been checked in accordance to OPSS 310. In reviewing all the previous samples and comparing our results to OPSS 310, the predominant sieve that did not meet the gradation specification was primarily the 600um sieve (see Exhibit 3).

SIEVE	WEIGHT	% RET.	% PASS	SPEC.
26.5				
19.0				
16.0				100
13.2	32.0	1.5	98.5	98-100
9.5	340.1	15.5	84.5	75-90
4.75	834.3	38.1	61.9	52.5-67.5
2.36	1067.5	48.7	51.3	36-60
1.18	1325.8	60.5	39.5	25-58
600	1697.6	77.5	22.5	23.4-33.4
300	1916.4	87.5	12.5	7-26
150	2035.1	92.9	7.1	3-10
75	2116.2	96.6	3.4	1.7-7.7
PAN	2191.0			
AC	5.67			4.7-5.7

out of spec 0.9
%

EXHIBIT #3

However, it is not the final decision on the rejection of the asphalt placed. Samples prior and preceding this sample would be examined to determine if a trend existed on the asphalt being delivered from the plant. Also, a request for the asphalt testing performed by the laboratory of the asphalt producers would be obtained in order to determine if we have obtained a sample that is not representative. Examining our test sample results with the asphalt producers' laboratory results will determine if additional testing would be required. Should additional testing be required, then a more comprehensive test of the sample's properties would be performed. This comprehensive test will determine rejection or acceptance. This comprehensive test will be performed by a certified third party referee laboratory. Depending on the results of the third party testing, then the necessary corrective action would be according to OPSS 310.

The City's Quality Assurance (QA) reporting procedure for hot mix asphalt has changed as a result of the Auditor General's report. Any questionable testing results are now immediately brought to the attention of management and the Contractor for resolution/action.

The chart below illustrates the number of hot mix asphalt samples that did not meet OPSS 1150 (our testing procedures) and the number of samples that did not meet OPSS 310.

The last column shows the number of additional samples that were discovered by performing the additional test to OPSS 310.

# of Samples Not Meeting Specifications			
Asphalt Type	OPSS 1150	OPSS 310	Additional
HL3	24	24	0
HL8	4	4	0
HDBC	20	22	2

During the audit, only the Quality Assurance test results were reviewed. This only represents a portion of the actual material testing as the Contractor also performs testing as part of their Quality Control. Throughout the Province, both the Quality Assurance testing and the Quality Control testing are reviewed in the assessment of construction projects.

As stated in OPSS 310, there are several alternatives for the Contract Administrator to consider when assessing test results. These alternatives range from removal of the material, to an extended warranty, to a price adjustment on the contract.

Quality Assurance – Road Crossfall

In all our capital projects where a road is reconstructed, rehabilitated, or widened, the crossfall of 3% is illustrated in a typical section on the contract drawings. On a resurfacing contract, where the existing roadway is milled or the asphalt removed, the crossfall is reinstated at 3%. Although this is not stipulated in the contract specifications on resurfacing contracts, it was understood through the years of working with local contracts that our standard was 3% where achievable.

The Auditor General indicated that the crossfall was not indicated in our specification for resurfacing contracts. This recommendation on specifying the crossfall shall be included in all contracts going forward.

Although a 3% crossfall will be specified, it will be difficult to achieve this crossfall when the following situations arise:

- Road widening when widening may occur on one side or both sides.
- All approaches to intersections, where each leg must be examined for drainage.
- Where resurfacing is planned and existing conditions must be met for driveways and commercial entrances.
- The existing high point in the crossfall is offset to accommodate left, right, centre lanes or any combinations of the above.
- The rehabilitation treatment may not be able to make a grade correction.

The Ministry of Transportation (MTO) Construction and Inspection Task Manual states “Paving an incorrect super-elevation or cross-fall (tangent sections) or full super areas only is a major deviation”. Although this statement is self-explanatory, the length of reconstruction projects on provincial highways is more than in urban areas. MTO will tender contracts that are 10 kms in length where there are no driveways, no commercial entrance and very few signalized intersections. It is an easier task to lay hot mix asphalt on long stretches of new construction where a roadway did not previously exist versus placing hot mix asphalt on roadways where there are restraints in an urban environment.

On page 94 of the MTO Construction Task Manual, it also states in reference to Major or Minor Deviation:

"It should be used as a guide in deciding whether a deviation is Major or Minor in nature".

The City of Greater Sudbury has not adopted this manual.

Reclaimed Asphalt Pavement (RAP)

The material that is produced when the existing asphalt is milled from the roadway (removed by mechanical means) is known as milled asphalt or cold-planed asphalt or grindings. RAP is the end product that is achieved by removing foreign material from the milled asphalt, screening to achieve proper gradation, removing or crushing the large segments of asphalt and stockpiling for future use.

The value of RAP is dependent on the location of where the asphalt grindings are generated. The haul distance from the grinding operation, to the crushing/processing location, and to the final destination comes at a hauling cost. Often with projects at a large haul distance, the production of asphalt grindings becomes a liability for the owner. In past projects, the City has specified that the asphalt grindings be reused in a short haulage distance to minimize costs and maximize value.

To achieve an acceptable RAP, the following must be achieved:

1. Asphalt cement types should be stockpiled separately.
2. Crack sealing material should be minimal.
3. There should be no contaminated material in the mix.
4. QC and QA must be in place for the production.

Although OPSS permits the use of RAP, it may not be economically feasible to produce RAP if quantities required for the production of hot mix are not warranted. Although it is estimated that RAP could be sold, the local suppliers of hot mix asphalt have indicated that there is currently no demand for this product.

The competitive tendering process will determine the best end use of the asphalt grindings, unless the City specifies a specific high value use in the contract. The following uses of asphalt grindings are common on City projects:

1. Stabilization of road base – Some of the grindings on any particular contract remain on the project site and become part of the road base. This could be through a recycling technology, blending with aggregate, or to provide a temporary driving surface during construction staging. Asphalt grindings could also be used on shoulders, or other high maintenance areas, to minimize future maintenance costs.
2. Overbuild a nearby road – On recent contracts the City has used the asphalt grindings from one project to overbuild and strengthen a nearby road. This technique minimizes the handling/hauling of the asphalt grindings, and eliminates the problems with stockpiling.
3. Use for maintenance needs – Relatively small volumes of asphalt grindings can be used by City work crews to treat areas that are prone to erosion, such as shoulders and between guiderails.

There is limited use for RAP in hot mix asphalt since OPSS does not permit RAP in heavy duty binder course (HDBC), Superpave (Super PERforming PAVement) or HL3HS (hot laid type 3, high stability). However, OPSS does allow RAP to be blended with granular materials to produce various types of granulars (i.e. Gran A, modified B, etc.). As stated above, should it be economically feasible for the RAP to be blended to produce granular materials, then market forces will decide.

Cold In-Place Recycled Expanded Asphalt Mix (CIREAM)

CIREAM means the in-place mixture or plant mixture of existing reclaimed asphalt pavement (RAP), corrective aggregate or active filler or both if required and expanded asphalt. The design requirements of the mixture, materials, equipment, and placement of CIREAM follow OPSS 335 Construction Specification for Cold In-Place Recycled Expanded Asphalt Mix.

The CIREAM process and resurfacing will increase the overall strength of the roadway in comparison to the previous roadway structure. In addition to increasing the overall strength, the cost for the CIREAM process in comparison to hot mix asphalt is lower thus allowing more rehabilitation work to be performed at the same cost. For example, in the Radar Road contract, CIREAM was approximately 30% of the cost for the equivalent virgin hot mix asphalt. This resulted in a savings of approximately \$640,000 for the contract.

There were problems with the Wet Tensile Strength and Dry Tensile Strength tests of CIREAM. This problem was not unique in the City as it occurred throughout the entire province. Although the tests failed, the material was not considered rejectable. The problem was that the sample tested at the laboratory was not representative of the material placed in the field. After much consultation with experts in the field of asphalt, a new specification was developed and the Ontario Provincial Standard Specification was revised.

As with any recycling technology, the quality of the end product is directly dependant on the quality of the material being recycled. This was the case with the Radar Road contract, when the testing for the CIREAM process identified that the asphalt cement in the existing asphalt was deficient. While specifications for strength could be met in a controlled laboratory setting, the City was advised that the field recycling process may not meet with the current specifications. In reviewing the options with the contractor and third party laboratory, the City accepted the risk and proceeded with the CIREAM process. The results of the QA/QC testing determined that the majority of the strength was achieved as well as the cost savings identified above.

Areas that do not meet the specification are being monitored during the warranty or extended warranty period. Should distresses in the asphalt be identified, additional field samples will be taken by a third party referee laboratory. Once results from these samples are received and reviewed, then a decision on the type of corrective action will be taken with consultation from the experts in the asphalt industry.

Summary

- **The Infrastructure Services Department subscribes to the theory of continuous quality improvement.**

Road infrastructure rehabilitation and repair is recognized as one of the highest priorities for the City of Greater Sudbury. The total annual investment and percent of contribution

into our roads from the tax levy is significant and justifies staff's professional attention, and the scrutiny of independent observers. The infrastructure department subscribes to the theory of continual total quality improvement, and as such, an independent audit is a welcome component of that theory.

The Auditor General has identified a number of recommendations focused on the roads capital investment program. In total, there are thirteen recommendations principally related to the area of quality assurance, which is the City's process of checks and balances associated with inspection of contract work. The majority of the recommendations have been implemented already and will be in place for the 2013 construction season. A number of the recommendations would fall into the category of good practice and will involve staff monitoring their internal processes and making adjustments as required.

- **Staff have always incorporated a multiple barrier approach for inspection and testing in accordance with industry guides and standards.**

Quality Assurance and Quality Control is a complex process of redundant checks and balances to ensure that work is performed in general conformance with specifications and standards. For City road projects, staff have adopted inspection procedures developed principally through the Municipal Engineers Association (MEA) and as described in documents referenced as the Ontario Provincial Standard Specifications (OPSS). Generally, the process requires the contractor to perform quality control testing while City staff or independent companies perform quality assurance testing. City inspectors observe contractor procedures and monitor activities such as granular material quality, subgrade and granular compaction, weather conditions, and temperature and compaction of asphalt products. No one test is sufficient to warrant satisfaction or rejection of a finished product. The summary of all of the information must be taken into consideration in determining the acceptance of the finished road.

It should also be noted that if individual test results indicate non-compliance with a specification, a series of alternative mitigation measures are available to City inspectors and the Contractors. Among the many next steps, City staff would review additional testing performed by the Contractor, by independent testing companies, and staff would also review the balance of any other observations performed during the work including the weather conditions. An extended period of warranty, monitoring and observation is not uncommon and may show in time that the road performance is acceptable.

- **Inspection and Testing procedures performed by staff have ensured the City received value for money spent on road projects.**

While staff agrees that additional or modified testing procedures, as identified by the Auditor General, would be beneficial to mitigate the potential for unacceptable contract performance, staff is also confident that testing procedures performed to date have adequately protected the City's interests and valuable investment in the road system. Staff have also taken a number of initiatives not identified by the Auditor General to enhance our QA/QC procedures, such as the investment in a number of new nuclear density testing equipment, and will continue to make appropriate investments in this area in the future.

- **Innovation in road building technologies has and will continue to be a priority for staff to perform more road work with limited tax dollars.**

Staff also recognizes that innovation in road building technologies will continue to provide opportunities for stretching limited tax dollars. Staff is proud of their contributions in the field of asphalt recycling and these contributions have been recognized by industry associations. The Auditor General has also acknowledged our contributions and complimented staff for our efforts in this area. We know that these efforts have realized substantial financial benefit to the City particularly with the investment in the reconstruction of roads under the ISF program. Staff chose to use CIREAM, an asphalt product comprised of recycled materials, in advance of a recognized standard for performance measurement. This investment saved significant costs in the unit price placement of the road asphalt structure and allowed approximately 30% more road to be constructed for equivalent dollars. Although conventional testing methods at the time would have suggested that the asphalt product was non-compliant, later testing methodologies have since proven staff made an acceptable decision. CIREAM is now an industry accepted product with many beneficial uses and will continue to be used on City projects. While we agree with the Auditor General's recommendation to comply with standard specifications, we also recommend that there are circumstances where full compliance is not necessary provided appropriate risk mitigation measures are taken into consideration.

- **Limited opportunities exist for obtaining the full value of grindings, and staff will endeavour to identify the best end use through the competitive tendering process.**

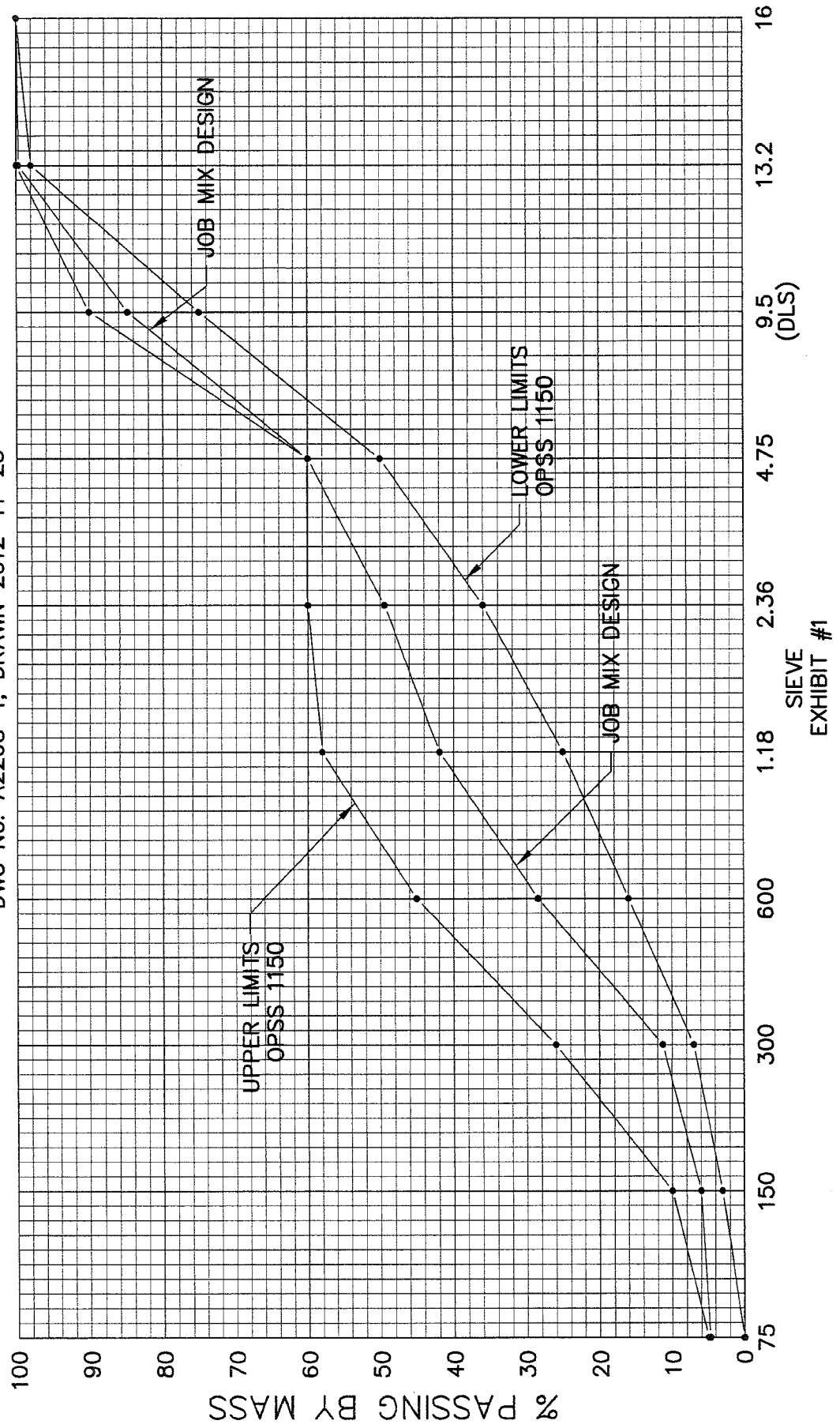
The use of asphalt grindings will continue to be evaluated on future construction projects. We agree that the best end use should be an important consideration for the grindings. During the project execution of the ISF projects, City staff took a number of different approaches for the use of the grindings. Some of the grindings were used for maintenance projects, while other grindings were used by the contractors in the execution of their work. Due to the nature of the extraction process it is difficult to accurately measure the quantity of grindings removed, transported and re-used. Asphalt grindings have minimal value and can be considered a liability as the end use requires transporting the grindings by truck over any modest distance. To be of value, the grindings must be re-used in close proximity to the location of extraction.

Consistent with the Auditor General's recommendation, it is the intentions of staff to allow the competitive tendering process determine the best end use of the asphalt grindings unless staff has identified a necessary need for the product at the time of construction. We agree that the stock piling of asphalt grindings is not an appropriate means to achieve the best end value, and this practice will only be used where the alternative represents an unacceptable liability to the City.

In conclusion, staff appreciates the opportunity to work with the Auditor General on this important initiative and will continue to advance our road program to optimize value for the taxpayers.

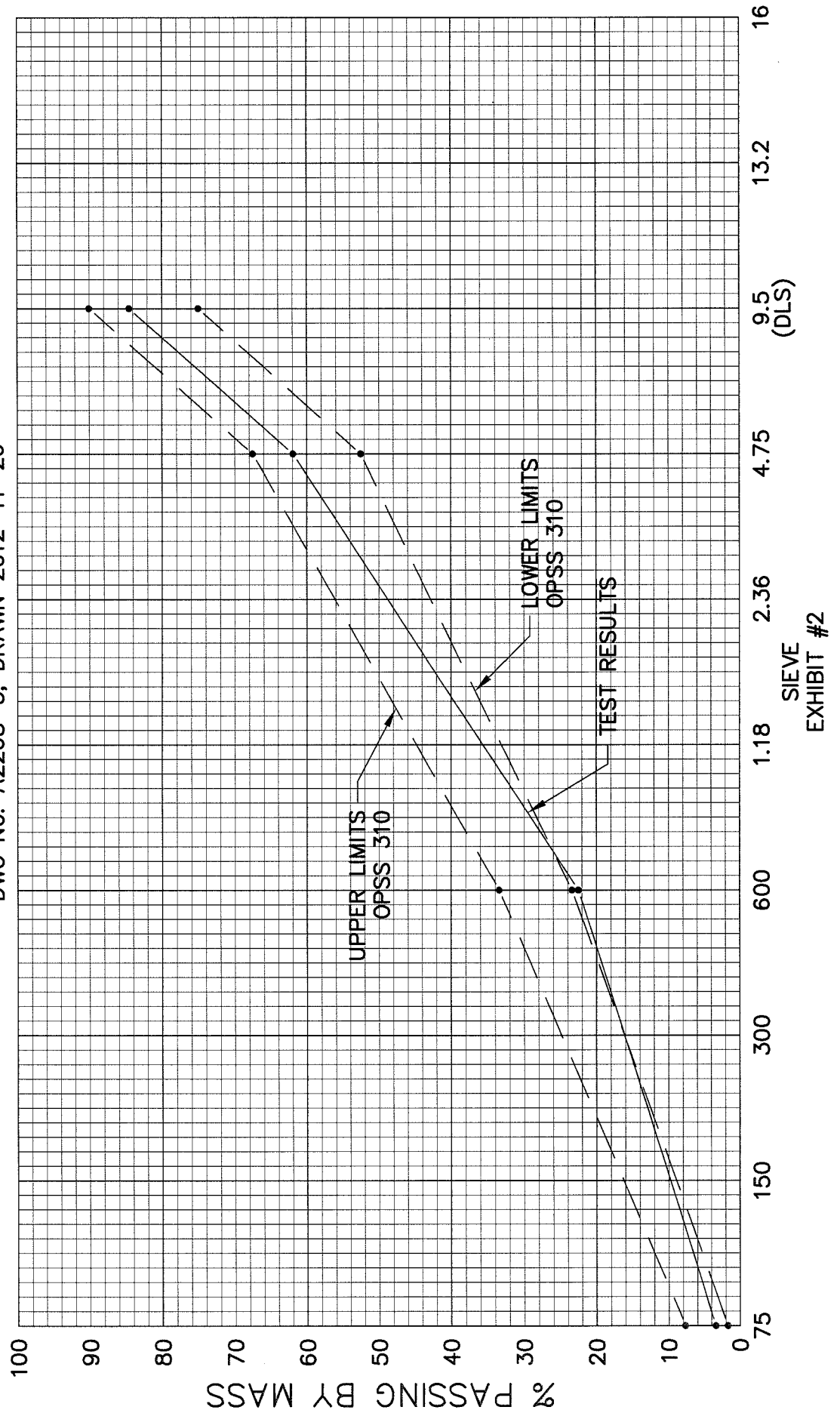
JOB FORMULA – MIX DESIGN, HL-3 SURFACE ASPHALT GRADATION REQUIREMENTS – OPSS 1150

DWG No. A2268-1, DRAWN 2012-11-23



TOLERANCES FOR JOB FORMULA – MIX DESIGN, HL-3 SURFACE ASPHALT GRADATION REQUIREMENTS – OPSS 310

DWG No. A2268-5, DRAWN 2012-11-26



For Information Only

Status Report - 2012 Capital Projects

Presented To:	Operations Committee
Presented:	Monday, Dec 03, 2012
Report Date	Wednesday, Nov 28, 2012
Type:	Presentations

Recommendation

For information only.

Introduction

This report provides an update of the status of the Capital Roads Projects approved in the 2012 Capital Budget including those 2012 Water/Wastewater projects that had a direct impact on the Roads capital program. It also provides the accomplishments and future direction on the 2013 Roads Capital Projects.

Background

In June 2011, Council approved the GSDC Industrial Land Strategy Report which highlighted the Lasalle/Elisabella Industrial Lands as a project to proceed in 2012 to upgrade the water and wastewater infrastructure contingent on the approval of a cost sharing formula with the industrial land owners. Engineering Services immediately took action and ordered all the survey work to prepare preliminary drawings and assigned two designers to start the design work for this project.

Commencing the Spring of 2011, Engineering Services proceeded to design the infrastructure for the projects identified in the 2012 Capital Budget.

Resources

With the approval of the Industrial Land Strategy Report, it became apparent that with our present resources, some projects would be tendered at a later date yet meet our goals of tendering all the projects in 2012.

In April of 2012, the Project Engineering Section lost two permanent employees. One retired and the other returned to school. Due to an inability to hire qualified personnel through job competitions, the Section had to resort to recently filling these vacancies as training opportunities. This impacted the productivity of the Section.

Signed By

Report Prepared By

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Digitally Signed Nov 28, 12

Recommended by the Department

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In May of 2012, one permanent design employee left the Section to go to a six month temporary posting in another Section. The Section has had a shortfall of three employees since May of 2012.

The Project Engineering Section presently has a full complement of staff for the design of the projects and is planning to tender all projects in 2013 except for complex projects. Bridges for example, have traditionally been handled by engineering consultants. We expect to commence work on the complex projects and complete the work in a practical fashion. This work will likely be delivered over a two year program.

2012 Highlights and Completed Construction

In 2012, the City of Greater Sudbury invested approximately \$35 million in roads, culverts, and bridges and \$3.4 million on water/wastewater infrastructure that impacted municipal road infrastructure. Some of the major projects in 2012 are highlighted below. A list of all road and underground infrastructure improvement projects has also been included for reference.

Major Construction Projects:

Municipal Road 4 (Hwy 17 West to C. Johnson)

The asphalt paving for this project is planned to be staged over future years.

Supported by the Federal Gas Tax Fund.

EXP Consulting is handling.

Arterial/Collector Roads:

Garson-Coniston Road (O'Neil to Paul)

Not Tendered.

Supported by the Federal Gas Tax Fund.

Resurfacing on Local Roads:

Churchill Avenue (Sudbury) (Falconbridge Highway to Gemmell)

Coleen Avenue (Hanmer) (Ivan to Gravel)

Kent Street (Sudbury) (Lorraine to O'Grady)

Lavoie Street (Sudbury) (Drummond to Montrose)

Included watermain renewal between Mayfair Court and Montrose.

Lincoln Crescent (Capreol) (Dennie to Hillcrest)

Lorraine Street (Sudbury) (Lasalle to Kent)

Melbourne Street (Sudbury) (Kelvin to Lansing)

New Cobden Road (Dowling Area) (Simmons to Highway 144)

O'Grady Street (Sudbury) (Lasalle to Kent)

Old Falconbridge Road (Sudbury) (South End to Maley)

St. Jean Street (Azilda) (Junction to Aldege)

South Bay Road (Sudbury) (Lake Laurentian Conservation Area to end)

Torbay Road (Sudbury) (Second to End)

Surface Treatment:

Bonin Street (Chelmsford) 0.3 km

Capreol Lake Road (Capreol) 0.3 km

Clark Road (Makada Lake area) 0.6 km

Crean Hill Road (Walden) 0.3 km

Desmarais Road (Valley East) 0.1 km

Edgewater Road (Long Lake area) 1.1 km

Fairbank Lake Road (Worthington) 1.0 km
Labine Street (Azilda) 0.5 km
Lavallee Road (Chelmsford area) 0.3 km
Main Street (Chelmsford) 0.1 km
Main Street (Valley East) Various Locations 4.5 km
Montee Rouleau (Azilda area) 0.9 km
Morgan Road (Dowling area) 1.2 km
North Shore Black Lake Road (Makada Lake area) 0.2 km
South Bay Road (Arlington to Laurentian Conservation Area) 2.0 km
O'Neil Drive West (Garson area) three locations totaling 0.9 km
Spanish River Road (Worthington) Various Locations 1.0 km
St. Pothier Road (Whitefish area) 1.0 km
Vachon Street (Vermilion River area) 0.2 km
Vermilion Lake Road Various Locations 0.3 km
West Bay Road (Wanapitei Lake area) 1.8 km

Water/Wastewater Main Renewal and Replacement Impacting Municipal Roads

Latimer Crescent (Sudbury) (Loach's to Hunter)
Water and sanitary sewer main renewal
Supported by the Federal Gas Tax Fund
Robinson Drive (Sudbury) (Southview to Kelly Lake)
Water and sanitary sewer main renewal
Supported by the Federal Gas Tax Fund
Vine Avenue (Sudbury) (Hawthorne to Gemmell)
Watermain renewal and partial sanitary sewer main renewal/repairs
Supported by the Federal Gas Tax Fund
William Avenue (Sudbury) (Hawthorne to Gemmell)
Watermain renewal and partial sanitary sewer main renewal/repairs

2012 Carry-over Projects

The City has adopted an approach that in most circumstances, postpones the placement of the surface asphalt until the next construction season. Although this approach creates a carry-over to most projects, it does however, provide an opportunity to correct settlement issues in advance of final asphalt paving.

It should be noted that on carry-over projects where temporary asphalt is being utilized, the placement and removal of this temporary asphalt is at the contractor's expense.

ENG11-17 Bancroft Drive Reconstruction

ENG12-1 Robinson Drive Watermain Improvements
Base asphalt from Southview to Stephen completed
Temporary skim of asphalt from Stephen to Kelly Lake
Watermain from Stephen to Kelly Lake not completed
Surface asphalt to be completed in 2013

ENG12-2 Latimer Crescent Watermain Improvements
Base asphalt from Loach's to Oriole completed
Temporary skim of asphalt between Oriole and house 1881 placed

Surface asphalt to be completed in 2013
Encountered rock and issues with blasting adjacent to Union Gas main

ENG12-5 Vine and William Avenue Watermain Improvements
Base asphalt on William between Hawthorne and Gemmell completed
Vine Avenue work carried-over to 2013
Temporary asphalt will be placed on Vine Avenue

ENG12-6 Foundry Street Watermain Improvements
Base asphalt will be completed
Surface asphalt to be completed in 2013

ENG12-16 Niemi Road Reconstruction
Base asphalt from Turner to Santala completed
Concrete curb and sidewalk completed between Sugarbush and Santala
800 meters of curb and 500 meters of sidewalk not completed
Surface asphalt to be completed in 2013

ENG12-17 Errington
Base asphalt for work started on Errington in 2012 completed
North end of project complete with base and concrete work
Concrete work for the middle of the project to be completed in 2013
Surface asphalt to be completed in 2013

ENG12-18 Douglas / Brady Roadway Rehabilitation
Upgrade of traffic signals at Douglas and Lorne, and watermain to be tied in next year
Work at railway delayed due to Railroad Authority and the inability to obtain construction materials for the railway crossing

ENG12-22 Attlee St. Traffic Calming
Carryover to 2013 due to tender irregularities subsequent Council report

ENG12-34 Third Avenue Reconstruction – Philip to End
Road reconstruction not completed due to late tender

The following projects were not tendered in 2012:

- Garson-Coniston Road, O'Neil Drive East to Paul Street
- Southview Drive, Bouchard to East Leg of Cranbrook
- Loach's Road (Sudbury) (Regent to Armstrong – including work on Windle from Loach's to Millwood)

Due to the unexpected work on the Industrial Land Strategy and the temporary lack of resources, our goals were prevented from being accomplished.

2013 Highlights

The City of Greater Sudbury's long-term financial plan provides for five year planning of capital renewal projects. The capital budget for road improvements for 2013 is approximately \$35 million and is distributed as follows:

Arterials – New Construction/Widening/Intersection Improvements	\$10.6
Arterial – Collector Roads	\$ 8.2
Local Roads	\$ 6.1
Bridges/Culverts	\$ 4.5
Street Lighting	\$ 1.0
Traffic Signals	\$ 0.2
Sidewalk/Curb	\$ 0.7
Surface Treatment	\$ 0.9
Other Road Programs/Projects	\$ 2.8

The following projects highlight the 2013 capital road program:

Major Construction Projects:

Lasalle Notre Dame Intersection Improvements

Arterial/Collector Roads:

Regent Street (Bouchard to Walford)

Includes watermain upgrading.

Supported by the Federal Gas Tax Fund.

Kingsway (Bancroft to 0.9 km West)

Includes watermain rehabilitation.

MR 15 (Main to MR 35)

Supported by the Federal Gas Tax Fund.

Bouchard Street (Regent to Southview)

Includes watermain upgrading.

Supported by the Federal Gas Tax Fund.

Southview Drive (Bouchard to Cranbrook Crescent East)

Includes watermain upgrading.

Supported by the Federal Gas Tax Fund.

Resurfacing on Local Roads

King Street (Notre Dame to Kehoe)

Supported by the Federal Gas Tax Fund.

Gravel Drive (Deschenes to Landfill Site Road)

Supported by the Federal Gas Tax Fund.

Haig Street (Whittaker to 0.1 km West of Byng)

Supported by the Federal Gas Tax Fund.

John Street (Sudbury) (Paris to Annie)

Supported by the Federal Gas Tax Fund.

Main Street (Sixth Avenue to Ninth Avenue)

Supported by the Federal Gas Tax Fund.

Jean Street (Sudbury) (Frood to Eva)

Supported by the Federal Gas Tax Fund.

Ontario Street (Sudbury) (Douglas to Regent)

Supported by the Federal Gas Tax Fund.

Charette Avenue (Fitzgerald to Bunker)

Supported by the Federal Gas Tax Fund.

Peter Street (Martin to Beverly)

Supported by the Federal Gas Tax Fund.

Loach's Road (Sudbury) (Regent to Armstrong – including work on Windle from Loach's to Millwood)
Water and sanitary sewer main renewal
Supported by the Federal Gas Tax Fund
Foch Street (Randolph to Sellwood)
Hillside Avenue (Valley East) (McCrea Heights to 0.4 km Northwest)
McKinnon Street (Bancroft to End)
Tilton Lake Road (Croatia to Pine Hill)
Melvyn Avenue (Hillcrest to Timothy)
Larch Street (Sudbury) (Durham to Elgin)
Railway Road (Robinson Drive to End)
Norfolk Court (St. Andrews to St. Andrews)
Ralph Street (Bellevue to End)
Cressey Street (Edna to End)
Subway Street (Serpentine to Rink)
Roy Street (West End to Robinson)
Michael Street (Chelmsford) (Highway 144 to Aurore)
Robinson Street (Highway 17 to Roy)
Frontenac Street (Carmelo to Papineau)

Surface Treatment on Local and Rural Roads

Goodwill Drive (1.6 km)
Fairbanks East Road (1.0 km)
Grassy Lake Road (1.0 km)
Capreol Lake Road (1.0 km)
Labine Street (0.8 km)
Montpellier Road (0.7 km)
Forest Lake Road (0.6 km)
Montee Principale (0.6 km)
Makada Road (0.5 km)
Kangas Street (0.2 km)

Water/Wastewater Main Renewal and Replacement (where road reinstatement is required)

Kelly Lake Road (Wastewater Treatment Plant to Copper)
Ramsey View Court (Centennial to Regent)
Beatrice Street (Watermain under CN Tracks)

Bridge/Culvert Repair (expected to be a two year program 2013 – 2014)

Riverside Drive Bridge
Vermilion River Bridge (Panache Lake Rd.)
Frappier Road Bridge (Whitson River)
MR 15 Bridge
Black Lake Road Bridge

Construction Phasing

Where capital projects impact our major arterial road network phasing of construction has been implemented. In 2013 we have work planned for Regent Street, the Lasalle/Notre Dame intersection and the Kingsway. This work will be phased to lessen the impact to motorists. Due to a short construction season this phasing will result in project carry-over. For example, phasing of the Lasalle/Notre Dame intersection is

currently being discussed by Staff.

Summary

In 2012, the Engineering Services Division was able to complete 84% of the work. Below is a summary of what was accomplished:

New/Replacement of Watermains	2,745 metres
New/Replacement of Sanitary Sewers	1,617 metres
Hot Mix Asphalt Laid	19,832 tonnes
Intersection Traffic Signalization	2 locations
Guide Rails	2,724 metres
Crack Sealing	33 lane kilometres
Surface Treatment	35 lane kilometres

Conclusion

The Engineering Services Division is continually improving its method of project delivery. The following are examples of where delivery, training and technology improvements have been employed to improve productivity and provide a better product:

- Utility Locates – working with our partners to reduce the time to provide both City and related utility locates to our Contractors
- As-built Drawings – constantly striving to provide more accurate data to eliminate conflicts with underground utilities. This is being achieved through the recording of information in conjunction with Geographical Information Systems (GIS) and the use of Closed Circuit Television (CCTV) for storm and sanitary sewer systems
- Early acquisition of property to provide time to discuss property issues with property owners and avoid potential conflicts
- Improvement of pre-construction consultation with property and business owners
- Updating of various manuals used by staff and consultants. These manuals will continue to standardize the direction and method of service delivery on capital projects
- Development of a contractor performance tool that will assist in completing annual prequalifications
- Ongoing training in the following areas:
 - Confined Space
 - Fall Arrest
 - Work Site Safety Awareness
 - Traffic Control
 - CPR/First Aid
 - Training of Field Inspectors through Ontario Good Roads Association (OGRA) courses

The Engineering Services Division faces unique challenges in providing the timely delivery of contract specifications and drawings. As detailed by the General Manager to the Finance Committee on November 21, 2012, we will endeavour to Think Positive, Do More with Less, and Think Clever to achieve our Goals and Objectives in providing and improving the delivery of our service.

For Information Only

Rationalization of Fleet

Presented To: Operations Committee

Presented: Monday, Dec 03, 2012

Report Date Tuesday, Nov 27, 2012

Type: Correspondence for
Information Only

Recommendation

For Information Only

Signed By

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Division Review

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REPORT FOR INFORMATION ONLY

Fleet Services is a Section within the Transit and Fleet Services Division responsible for the design and acquisition of City of Greater Sudbury vehicles, buses and equipment, repairs, maintenance, fuel and disposal of surplus assets. Our services are provided to all departments with the exception of Airport, Police and Fire emergency vehicles.

Fleet Capital Acquisitions

The purpose of the Fleet Capital Acquisition Process is to ensure the City of Greater Sudbury identifies and prioritizes the proper vehicles and equipment to meet current and planned customer requirements. In addition the objectives related to the acquisition process includes:

- 1) To ensure the appropriate value in meeting approved customer service needs will be derived from the vehicles and equipment.
- 2) To ensure that the evaluation process, including the determination of benefits is based on defined and reasonable policies.
- 3) To ensure that the City of Greater Sudbury's long term financial needs for capital vehicle and equipment replacement and acquisition are known and adequately planned for.
- 4) To ensure that the vehicles and equipment are acquired so that they will meet a defined technical standard or specification.

The acquisition process includes:

- Replacements
- New capital
- Analysis of changing needs, trends and issues
- Life Cycle cost analysis
- Benefits analysis (i.e. improved productivity/enhanced service)
- Capital inventory management
- Format for the request process (criteria and guidance)
- Purchasing specifications
- Prioritization of process criteria for capital replacements
- Reporting

Life Cycle Analysis

At the City of Greater Sudbury we group vehicles and equipment in vehicle maintenance categories that are utilized in determining appropriate maintenance schedules, expected life cycles and charge-back rates.

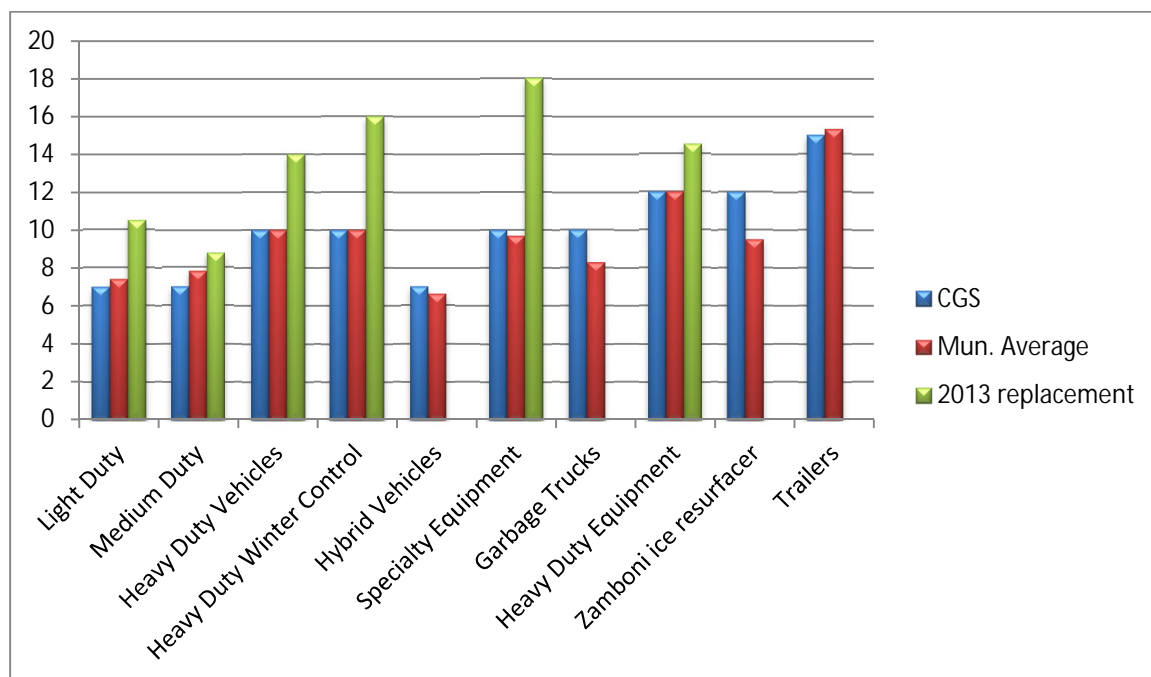
The vehicle maintenance categories and expected life cycles are:

1) Light Duty Vehicles	7 years/84 months
2) Medium Duty Vehicles	7 years/84 months
3) Heavy Duty Vehicles	10 years/120 months
4) Heavy Duty / Winter Control	10 years/120 months
5) Hybrid Vehicles	7 years/84 months
6) Specialty Equipment	10 years/120 months
7) Garbage Trucks	10 years/120 months
8) Heavy Duty Equipment	12 years/144 months
9) Zamboni Ice Resurfacer	12 years/144 months
10) Trailers	15 years/180 months
11) Retired Vehicle Pool	1 – 2 seasons

Fleet Services surveyed eleven Canadian Municipalities to compare their expected life cycles to those we utilize. Hamilton, Niagara Falls, Thunder Bay, Saint John, Vancouver, Brampton, Toronto, North Bay, Calgary, Ottawa and London were the municipalities providing information.

The attached graph illustrates the City of Greater cycles to the comparators average life cycles.

Transit buses are not included in the comparison with other cities. Our current replacement life cycle for Nova buses is 18 years with no major mid life rebuild.



In determining the capital replacement priorities for the annual capital budget the age of the vehicle or piece of equipment is only the “trigger” for initiating Fleet’s evaluation of the asset to determine the capital funds required. The factors that are assessed in this prioritization process include:

- a) Age of the vehicle or piece of equipment
- b) Kilometres or hours
- c) Condition, including body and mechanical
- d) Utilization
- e) Dependability (number of times in for repairs)
- f) Maintenance costs per hour or kilometre
- g) Fuel efficiency measured in litres/hour or litres/100 kilometres

Evaluation forms developed in co-operation with the American Public Works Association members are utilized as a tool to assist Fleet Services with determining the priority replacement list. Through the Capital Budget process, Council approves the years capital funding and Fleet Services proceeds with the acquisition of the replacement vehicles and equipment.

Once the replacement assets are received and put in service the replaced assets are either disposed of through public auction or they are transferred to the Retired Vehicle Pool.

2013 Fleet Capital

During the presentations of the 2013 Capital Budget the Fleet Planned Replacements included the following:

- | | |
|--------------------------------|--|
| a) Light Duty Vehicles | 18 units with an average age of 10.5 years |
| b) Medium Duty Vehicles | 8 units with an average age of 8.75 years |
| c) Heavy Duty Trucks | 2 units with an average age of 14 years |
| d) Heavy Duty / Winter Control | 3 units with an average age of 16 years |
| e) Heavy Duty Equipment | 2 units with an average age of 14.5 years |
| f) Specialty Equipment | 2 units with an average age of 18 years |

Fleet Assets

During 2012 Council approved five (5) new additional Fleet assets, which are as follows:

- a) Two (2) light duty vehicles for Building Services
- b) Two (2) medium duty vehicles for Parks Services
- c) One (1) specialty equipment for Environmental Services

The use of Custodial Use of a City of Greater Sudbury Vehicle was reduced by six (6) vehicles, three (3) in Transit/Fleet Services and three (3) in Water/Wastewater.

Scheduled for 2013 is the reduction of one (1) Custodial Use vehicle in the Assets Division and one (1) vehicle from Ontario Works.

Further reductions in Custodial Use vehicles or due to utilization are still to be determined and are dependent on two factors:

- 1) The conditions in the Vehicle Use Policy: This policy is under development at present however its purpose is to ensure that CGS Employees have a vehicle to use when the work they are performing requires it. In many cases Employees can be permitted to use their personal vehicle and be reimbursed at the per kilometer rate in CGS's mileage policy or the relevant Collective Bargaining Agreement. Alternatively, Employees may be able to use a pool vehicle that is available or to have the use of a vehicle while on standby.
- 2) The business plans of departments, divisions and sections utilizing Fleet Assets

The following chart details the number of Fleet assets by maintenance category.

Category	2005	2011	2013	Variance since 2005
Light Duty Vehicles	190	136	131	-59
Medium Duty Vehicles	121	118	118	-3 (note 1)
Heavy Duty Vehicles	25	12	12	-13
Heavy Duty – Winter Control	71	48	46	-25 (note 2)
Hybrid Vehicles	0	35	35	+35
Specialty Equipment	110	99	105	-5 (note 3)
Garbage Trucks	7	7	7	0
Heavy Duty Equipment	31	23	23	-8
Zamboni Ice Resurfacer	18	18	18	0
Trailers	55	49	53	-2 (note 4)
Totals	628	545	548	-80

Note 1: includes the addition of two 4x4 plow trucks for Parks.

Note 2: includes two vehicles reduced in size to the medium duty class.

Note 3: includes the addition of three asphalt grinder attachments, one sidewalk grinder attachment, asphalt heater attachment and one litter vacuum.

Note 4: includes two trailers purchased by Land Reclamation for towing ATVs and two trailers purchased for W/WW to carry trench boxes.

Retired Vehicle Pool and Rentals

The corporate demand for seasonal vehicles is significant. These are typically required for periods of approximately six months or less. The seasonal requirements are filled by utilizing assets from the Retired Vehicle Pool or by entering into short term rental agreements.

The following chart illustrates the rental requirements for the past three years as well as the projection for 2013.

	2010	2011	2012	2013
Rentals Required	48	26	21	21

The number of rentals required by the City of Greater Sudbury to carry out scheduled work is directly related to the number of vehicles available through the Retired Vehicle Pool. Fleet attempts to maintain sixty-five to seventy retired vehicles. To maintain this pool requires annual replacement of light duty vehicles and medium duty vehicles. When fewer vehicles are replaced annually the size of the Retired Vehicle Pool is reduced, increasing the demand for leased vehicles.

1160 Lorne St.

With the development of the 1160 Lorne St. Building and the consolidation of Transit and Fleet Services at the one site there are several synergies that will be realized. Some of these include:

- a) Improved supervision of Transit/Fleet staff including an enhanced ability to schedule work and draw on employee's strengths.
- b) Ability to provide a wider service range to our internal customers with increased productive man hours.
- c) Efficiencies in parts inventory management as we move from three (3) warehouse sites to one (1) centralized site.
- d) Efficiencies through consolidated maintenance functions, which are now separated geographically, including welding, body work, painting, and tire repairs.
- e) Rationalization of Transit/Fleet Services vehicle with anticipated reductions.
- f) Ability to offer services to other departments, such as Fire.

Fleet Initiatives

Transit/Fleet Services has undertaken several initiatives aimed at rationalizing fleet assets, rightsizing fleet assets and improving the efficiency of our vehicles and equipment as well as generating savings. The following details some of the initiatives currently being developed;

Reductions in custodial use:

To date there has been a reduction of six (6) vehicles used for custodial use purposes. Three (3) of these are from Transit/Fleet Services and three (3) are from Water/Wastewater. The custodial use reductions are a result of attrition, when a position became vacant it was filled with no provisions for custodial use of a vehicle. Of the six (6) vehicles four (4) were retained for carrying out daily duties within the area and two (2) were returned and re-assigned to other areas.

Rightsizing of vehicles:

As vehicles and equipment are tendered for replacement, meetings with the end-user are held to ensure that the vehicle or piece of equipment specified is properly matched to the work it is intended to carry out. Some examples of this are:

- a) In the W/WW Division commercial vans have been replaced with cab and chassis units equipped with service bodies and a crane. This allows for adequate load and trailer towing capacity as well as use of the crane significantly reduces the dependence on contracted services. This has resulted in an approximate savings of \$50,000.00 annually for contracted crane rentals.



- b) One ton commercial vans are being replaced with cab and chassis units equipped with service bodies. This allows for adequate load and trailer towing capacity as well as improves Safety and Health issues where employees are no longer exposed to shifting loads and fumes from parts and equipment being stored inside the vehicle.
- c) Where there is no need for carrying of heavy loads we are replacing one ton commercial vans with mini-vans. This allows for enhanced employee comfort and fuel efficiencies.
- d) Legacy vehicles (Ford Crown Victoria) are being replaced with Hybrid vehicles or compact vehicles which results in lower maintenance costs, increased fuel efficiency and reduced Green House Gas emissions.



- e) Heavy Duty trucks that had limited capabilities have been replaced with medium duty 4x4 trucks equipped with a dump body, plow and sander. The utilization of the unit is significantly reduced as it now can perform a wide variety of tasks including winter control functions.



Fleet Management and Inventory Control

Fleet has implemented the use of Diamond Solutions electronic fleet management and inventory control systems at our Transit garage. This system provides for accurate control and reporting of repairs, maintenance, fuel transactions and parts inventory. Annual inventory counts are being conducted to determine the accuracy of our inventory control at all Fleet warehouse sites.

Extra Clear Diesel Fuel:

The City of Greater Sudbury has entered into an agreement with our current provider to supply us with Extra Clear Diesel at a price of 1.5 cents lower than the Clear Diesel product previously supplied. Based on historical consumptions we estimate an approximate annual savings of \$60,000.00 for the product.

Transit Electric Cooling Systems:

Transit buses were traditionally built with hydraulically driven engine cooling systems. This type of system requires significant horsepower to properly operate the cooling system components. Developing horsepower requires the engine to run at higher loads which in turn burns fuel. Now available are Electric Cooling systems which do not require the hydraulic pump and the engine is not required to run at the higher loads, thus reducing fuel consumption. Transit has outfitted the newest seven (7) buses with electric cooling and we ran a fuel comparison to determine fuel efficiency. The electric cooled buses are 18% more fuel efficient.

On average a CGS bus travels 70,000 kilometers per year and requires 57 litres/100 kilometres for hydraulic cooling and 47 litres/100 kilometres for electric cooling. The fuel savings per bus would be approximately 7,000 litres annually.

Transit and Fleet Services will be purchasing new buses equipped with the electric cooling and will also carry out retrofits to existing units as budget funding allows.



Summary:

In providing support and services to City of Greater Sudbury departments, divisions and sections Fleet utilizes best practices and establishes goals that keep in mind the needs of our internal customers, Senior Management, Council and our citizens. Fleet Services is responsible for fleet assets from the time they are designed until they are disposed of (cradle to grave).

Fleet strategies and the number of fleet assets are dependent on City of Greater Sudbury policies, procedures and work plans for delivering services to the public. We provide support and guidance to our customers regarding the type of unit required, rightsizing, utilization and maintenance scheduling. We do not determine the number of vehicles and equipment required to carry out their work plans.

Upon reviewing the Life Cycle Analysis comparing our strategy to those of other municipalities, Fleet recommends adopting an expected life cycle of eight (8) years/96 months for both light duty and medium duty classed vehicles. This would be implemented for 2013 and would be utilized in determining 2014 Fleet Capital priorities and recommended replacements.

Fleet services will play a pivotal role in assisting management personnel in applying the Vehicle Use Policy to effect a reduction in the number of custodial vehicles over time.

Fleet remains committed to providing our services in the most cost efficient and timely manner possible. We are also committed to energy savings and the reduction of harmful Green House Gas emissions.

Fleet will continue to provide support and guidance to our customers keeping in mind the needs and goals established by Senior Management and Council.

For Information Only

Airport Ground Transportation Tender - Status Report

Presented To: Operations Committee

Presented: Monday, Dec 03, 2012

Report Date: Wednesday, Nov 21, 2012

Type: Correspondence for Information Only

Recommendation

For Information Only

Background

On May 22, 2012, Council received a report for information entitled "Airport Ground Transportation and Taxi Licensing By-law". The report provided a brief description of the current taxi licensing program and the resolution of the Board of Directors of the Greater Sudbury Airport Community Development Corporation (SACDC) to "obtain the necessary approvals from the City Council to amend the Taxi By-law to facilitate the tender of ground transportation services at the Greater Sudbury Airport." (See attachment to this report)

Greater Sudbury Airport Ground Transportation Services Tender - Update

Staff from Greater Sudbury Airport, Growth and Development and Legal Departments has met to discuss the tender document, the consultation process with the stakeholders in the taxi industry and by-law amendments that may be required to aid in the implementation of contracted transportation services at the Airport.

The tender document is expected to be released to the public on November 30, 2012. A letter will be sent to all licensed taxi and shuttle owners advising of the Request for Proposal (RFP) release and information meeting. The meeting will be mandatory for all bidders and is expected to be scheduled for no later than December 7, 2012. The meeting will be held by the Greater Sudbury Airport and Growth and Development Staff will be in attendance to answer questions. This will be part of the consultation process described in the previous report.

The RFP will have a target closing date of January 18, 2013, and is expected to be awarded before March 29, 2013. A report will be forthcoming to Council before March 8, 2013 with recommendations for proposed

Signed By

Report Prepared By

Darlene Barker
Manager of Compliance and
Enforcement
Digitally Signed Nov 21, 12

Division Review

Guido Mazza
Director of Building Services/Chief
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Recommended by the Department

Bill Lautenbach
General Manager of Growth and
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Recommended by the C.A.O.

Doug Nadorozny
Chief Administrative Officer
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by-law amendments essential to awarding the contract. The table included in this report provides a summary of the targeted milestone dates. Although staff are confident that these dates are realistic, they are targets and may have to be adjusted to allow for any contingencies in the process.

Event	To be Completed Before	Description
Release of RFP – through City Supplies and Services Dept.	November 30, 2012	Staff will send Information letter and invite to public meeting to all current licensed taxi and shuttle owners.
Information meeting with taxi industry and potential bidders	December 7, 2012	To be held at the Airport by Staff. Consultation with Taxi Industry
Closing date of RFP	January 18, 2013	
Evaluation and Contract Award	February 1, 2013	Recommendations made to SADC for contract award
Report to Council	March 8, 2013	Report to Council will recommend any requested by-law amendments, if necessary for contract award.
Contract Awarded	March 29, 2013	Conditional upon any required by-law amendments being enacted.
Transition Period	April thru June, 2013	Airport to work directly with contractor to finalize details of the contract. Staff will monitor and respond to any inquiries or requests from Taxi Industry and Council.
Ground Transportation Services in place by contractor	July 8, 2013	Review of services provided and respond to any question or concerns from the taxi industry. Final report to Council if required.

Anticipated By-law Amendments

The successful service provider of this contract will be expected to comply with the current provisions in place for taxi and shuttle services found in by-law that licenses and regulates these businesses. This will ensure that the standards in the by-law for health, safety and consumer protection are upheld and consistent with the current industry.

The Airport may approve the successful proponent to provide transportation services and implement those services without any amendments to the current by-law; however, there may be requests from the taxi industry and the Airport for changes to the by-law as a result. Staff will be using the process of this RFP to consult with both groups to determine what is desired, and present a report that contains options for Council's consideration.

Staff anticipates a request for amendments to the by-law for a more predictable and efficient method of calculating taxi and shuttle fares between the airport and destinations within the Greater City. There have been complaints in the past of the high cost of taxi rates to and from the airport and the method by which they are calculated. Staff sees this RFP process as an opportunity to review the rates and propose a new method of calculation which will benefit the taxi industry and the travelling public.

The report introducing this subject on May 22, 2012, indicated that contracting ground transportation services at the GSA may have an impact on the current taxi and shuttle operators at the airport. Staff will be

better able to determine what this impact is as this process unfolds. Consultation with the industry during this process and a review of the impact on the current licensees is essential prior to recommending any changes to the by-law. An update of this item will be included in the March report. If concerns by the taxi industry remain outstanding during the final review stage of this process, an additional report will be forthcoming to Council with recommendations addressing those concerns.

Conclusion

Staff has worked co-operatively to prepare and present an RFP for contracted ground transportation services at the Greater Sudbury Airport which is anticipated to be released at the end of November. Staff is prepared to follow this process and update Council with reports and options for potential amendments to the by-law addressing potential concerns from both the Greater Sudbury Airport and the current taxi and shuttle industry. These reports will provide a comprehensive review of the issues and comments received from the consultation process along with options for Council's consideration while at the same time upholding the intent of the by-law, fairness to the stakeholders of the industry and benefit the travelling public.

For Information Only

Airport Ground Transportation and Taxi Licensing By-law

Presented To: Finance and Administration Committee

Presented: Tuesday, May 22, 2012

Report Date: Tuesday, May 08, 2012

Type: Correspondence for Information Only

Recommendation

For Information Only

Current Taxi By-law Provisions

The City of Greater Sudbury Taxi By-law, 2008-180 as amended, regulates licenses and governs taxi, limousine and shuttle transportation for the purposes of health, safety and consumer protection. It provides for 3 classes of taxi licenses which restrict certain classes of taxicabs to certain geographic areas of the City. Part of the reason for this restriction was due to amalgamation. The effect of the system prior to amalgamation was that taxicab licenses within the former City of Sudbury were granted a monopoly to operate within the former City boundaries and were limited in number, while each of the outlying, rural municipalities had their own taxicabs with similar geographic restrictions on their areas of operations. The restrictions to the classes of licenses as follows is to ensure that residents and visitors within the outlying areas of the City of Greater Sudbury continue to have a level of taxicab service available to them which is timely and available from sources outside of the downtown core of the City. The following table shows the differences in the classes of taxi licenses.

Signed By

Report Prepared By

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Digitally Signed May 8, 12

Division Review

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Comparitive Chart of Taxicab License Classes

Class of Taxi	Zone 1	Zone 2	Zone 2 + Airport
Area of Operation	Pickup in Former City only – unless fare terminates in Former City Pickup and drop off at the Airport	Pickup in areas outside Former City only – unless the fare terminates outside Former City Cannot pick up at Airport	Pickup in areas outside Former City only – unless the fare terminates outside Former City Pickup and drop off at the Airport
Restrictions on Number of Taxicab Licenses	92 + 8 Accessible Taxi (1 taxicabs per 1000 residents as per formula)	No restrictions	No restrictions
Number of Current Licenses (April 2012)	92 + 7 Accessible Taxi	10 + 1 Accessible Taxi	16
Age of Taxicabs	Vehicles must be no older than 7 years	No restrictions	Vehicles must be no older than 7 years
Insurance	\$2 million	\$1 million	\$1 million
Availability	24 hrs/7 days a week	Unregulated	Unregulated
Minimum Annual Safety Inspections	2	1	2
Annual Licence Renewal Fee	\$200	\$100	\$200

Airport Ground Transportation

On June 13, 2011, the Greater Sudbury Airport (GSA) conducted a meeting with all the Zone 2 + Airport Taxi owners to introduce a "Code of Conduct" that was to be implemented to address the long list of known issues and challenges associated with the taxi and shuttle services being provided at the airport. The list included poor dress code and inadequate personal hygiene, intense competition for business which caused personal conflict and unsafe operating practices, inconsistency of operating hours and a host of other problems. Staff worked with the GSA closely in developing a Code of Conduct that clearly establishes the guidelines and procedures to be followed by the taxi operators, ensuring that the rules were consistent with the regulations currently established in the Taxi By-law and other relevant legislation.

The Code of Conduct was implemented by GSA in August, 2011, and all taxicab owners and drivers were required to sign an agreement and be approved to operate at the airport, pursuant to the Code of Conduct. As of April, 2012, 11 licensed taxi and shuttle companies and 40 licensed taxi drivers are authorized to wait in the queue to pick up fares at the airport.

On May 1, 2012, the Sudbury Airport community Development Corporation (SACDC) heard a report from the CEO of the Greater Sudbury Airport, identifying the shortfalls of the goals the Code of Conduct intended to reach; attached as Appendix 1. The report identifies the most significant problem still remains since implementing the Code; the unpredictability of taxi and shuttle operating hours which results in taxi shortages and/or no taxi services at all. The report also identifies that the Code of Conduct has not removed the competition between drivers which exposes customers to unsafe and unethical operating practices.

The Board of Directors of the SACDC passed a resolution on May 1, 2012 to direct the CEO of GSA "to obtain the necessary approvals from the City Council to amend the Taxi By-law to facilitate the tender of ground transportation services at the Greater Sudbury Airport." The resolution is also attached to this report as Appendix 2.

Conclusion

Although it was deemed that tendering ground transportation services at the GSA was the best option, it is understood that moving forward with the process involves a number of other important considerations, including the impact that this could potentially have on the livelihood of the current taxi and shuttle operators at the airport.

Staff is dedicated to continue to work with the Greater Sudbury Airport during the full tender process in consultation with the Taxi and Shuttle owners and drivers to ensure this transition is viable and successful for all involved. Consultation with the City's legal department is underway, and options will be investigated to facilitate the current affected taxi and shuttle licenses with the least impact as possible.

Once the tender document has been prepared and staff has a more fulsome review of the ground transportation requirements needed to service the GSA and has had an opportunity to review comparative models in other municipalities with the similar services, staff will be returning to Council with a comprehensive report. This report will include recommendations to amend the Taxi By-law to facilitate the tender of ground transportation services at the Greater Sudbury Airport while mitigating negative effects this may have on the current taxi and shuttle operators.

Background:

In August 2011 the Board was briefed on a joint initiative with the City to implement a "Code of Conduct" to improve ground transportation at the Greater Sudbury Airport. This initiative was seen as a last attempt to address major deficiencies in the present system.

The Board was made aware of a long list of issues and challenges associated with the present taxi and shuttle services. This list included poor dress code and inadequate personal hygiene, intense competition for business which caused personal conflict and unsafe operating practices, inconsistency of operating hours and a host of other problems.

The Board was further advised that the purpose of implementing the Code of Conduct system was to establish operating guidelines to improve ground transportation customer services. Operators failing to meet the standards set out in the policy would receive demerit points and would stand to lose their operating privileges at the GSA when their demerit points accumulated to certain levels (refer to attached policy).

While certain objectives of Code of Conduct were achieved the new system has fallen short of its overall goals. The most significant problem remains the unpredictability of taxi and shuttle operating hours. The operators (drivers) themselves determine when they will provide services and the hours they will work. This current system results in taxi shortages and/or no taxi services at all on many occasions during the week which creates a significant inconvenience, and on occasion, leaves customers stranded at the airport. As our business grows we have found the number of occasions when taxis aren't available is becoming more prevalent and customer complaints have escalated. Most shortages occur at the absolute worst times, late in the evening or on the weekends, and frustrated customers have directed their rage and discontentment towards the GSA. Consistent exposure to this shortcoming does irreparable damage to our reputation and negativity becomes deeply rooted in the minds of the traveling public.

The other most notable shortfall of the Code of Conduct system is that it does not remove the competition between drivers. Conflict between drivers has not diminished and continues to expose customers to unsafe and unethical operating practices.

Tender Service

On Monday March 26th, 2012, the various players from the City of Greater Sudbury and the GSA met to search for a permanent solution to the ground transportation debacle. In addition to City and Airport staff, Leah Miller from our Board also participated in the meeting.

Consensus was reached amongst the participants and a strong recommendation was put forth to tender the service. It was felt that tendering the service to one company would remove competition and provide the GSA the necessary contractual controls to ensure the highest and best standards in the industry.

While tendering was deemed to be the best option, it was well understood that moving forward with this process involved a number of other important considerations. The most notable was the fact that tendering the service could potentially impact the livelihood of the current operators at the airport. In addition, City Council would be required to approve amendments to the existing taxi By-Law.

From a strategic perspective, buy-in from all stakeholders was seen as a critical first step in the process. To this end, the first priority was identified as obtaining support from the City Senior Management Team (SMT), as well as, the SACDC Board of Directors. In addition, support will be solicited from various other stakeholders who have a vested interest in seeing ground transportation services improved at the GSA, which include the Chamber of Commerce, GSDC, Tourism and other businesses.

Once the support is in place a comprehensive report will be brought forth to City Council for approval. It is anticipated that before City Council deliberates the virtues of tendering airport ground transportation in an open camera public meeting, they would have had the benefit of being fully apprised of the issues at play and the reasons for the recommendations to amend the By-law.

In closing, as noted above, there is a considerable amount of work to do to achieve our goal of enhancing taxi and shuttle services. It will require open and honest dialogue with a number of stakeholders and the community in general. As we move forward through each stage in this process we will keep the Board apprised of our progress and of any issues that require the attention of the Board.

In light of the above, a resolution has been prepared for Board consideration.

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RESOLUTION OF THE BOARD OF DIRECTORS

OF

SUDBURY AIRPORT COMMUNITY DEVELOPMENT CORPORATION

(Hereinafter referred to as "the Corporation")

RESOLUTION #2012-426

WHEREAS the Greater Sudbury Airport is a gateway to the City of Greater Sudbury and represents on many occasions an opportunity to provide that first positive impression of our community;

AND WHEREAS the Greater Sudbury Airport strives to achieve the highest service standards on ground transportation;

AND WHEREAS the current ground transportation system has serious shortcomings which have undermined the Greater Sudbury Airport's efforts to implement a system with acceptable customer service standards;

NOW THEREFORE BE IT RESOLVED THAT the Board of the SACDC directs the CEO to obtain the necessary approvals from City Council to amend the Taxi By-law to facilitate the tender of ground transportation services at the Greater Sudbury Airport.

DATED: May 1, 2012

THE UNDERSIGNED, being an Officer of the Corporation, hereby signs the foregoing Resolution # **2012-426** pursuant to the provisions of the Corporations Act (Ontario).

Claude Lacroix, Chair

Request for Decision

Traffic Control - (1) Spruce Meadow Subdivision, Phases 5A & 5B (2) Copper Park Subdivision, Phase 9

Presented To: Operations Committee

Presented: Monday, Dec 03, 2012

Report Date: Wednesday, Oct 31, 2012

Type: Managers' Reports

Recommendation

That traffic at the intersection of Country Club Drive and Zina Street be controlled with a Yield sign facing westbound traffic on Zina Street, and;

That traffic at the intersection of Fleetwood Drive and Zina Street be controlled with a Yield sign facing eastbound traffic on Zina Street, and;

That traffic at the intersection of Sapphire Court and Palladium Place be controlled with a Yield sign facing eastbound traffic on Palladium Place, and;

That traffic at the intersection of Palladium Place and Topaz Court be controlled with a Yield sign facing eastbound traffic on Topaz Court, 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 changes all in accordance with the report from the General Manager of Infrastructure Services dated October 23, 2012.

Signed By

Report Prepared By

Dave Kivi
Co-ordinator of Transportation & Traffic Engineering Services
Digitally Signed Oct 31, 12

Division Review

David Shelsted, MBA, P.Eng.
Director of Roads & Transportation Services
Digitally Signed Oct 31, 12

Recommended by the Department

Tony Cecutti, P.Eng., FEC
General Manager of Infrastructure Services
Digitally Signed Oct 31, 12

Recommended by the C.A.O.

Doug Nadorozny
Chief Administrative Officer
Digitally Signed Oct 31, 12

Background

There are currently three new subdivisions being developed in the City of Greater Sudbury. The following report recommends the appropriate traffic control at newly assumed intersections.

1. Spruce Meadow Subdivision, Phases 5A and 5B

Spruce Meadow Subdivision, Phases 5A and 5B are currently being developed in Azilda (see Exhibit 'A'). The City of Greater Sudbury will assume Zina Street as a public road.

As shown in Exhibit 'A', at the easterly intersection, Zina Street intersects with Fleetwood Drive and forms a "T" intersection. A Yield sign is appropriate when the traffic volume is low, sight lines are good and stopping is not always required. It is recommended that traffic at this intersection be controlled with a Yield

sign, facing eastbound traffic on Street "A".

At the westerly intersection, Zina Street intersects with Country Club Drive and forms a "T" intersection. It is recommended that traffic at this intersection be controlled with a Yield sign, facing westbound traffic on Zina Street. This is a standard form of traffic control at a "T" intersection.

2. Copper Park Subdivision - Phase 9

Copper Park Subdivision, Phase 9 is currently being developed in the west end (see Exhibit 'B'). The City of Greater Sudbury will assume Palladium Place and Topaz Court as public roads.

Palladium Place intersects with Sapphire Court and forms a "T" intersection. A Yield sign is appropriate when the traffic volume is low, sight lines are good and stopping is not always required. Therefore, it is recommended that traffic at this intersection be controlled with a Yield sign facing eastbound traffic on Palladium Place.

Topaz Court intersects with Palladium Place and forms a "T" intersection (see Exhibit 'B'). Sight lines are good in both directions. A Yield sign is appropriate when the traffic volume is low, sight lines are good and stopping is not always required. Therefore, it is recommended that traffic at this intersection be controlled with a Yield sign facing eastbound traffic on Topaz Court.

It is recommended that a by-law be passed to amend Traffic and Parking By-Law 2010-1 in the City of Greater Sudbury, to implement the above recommended changes.

EXHIBIT: A

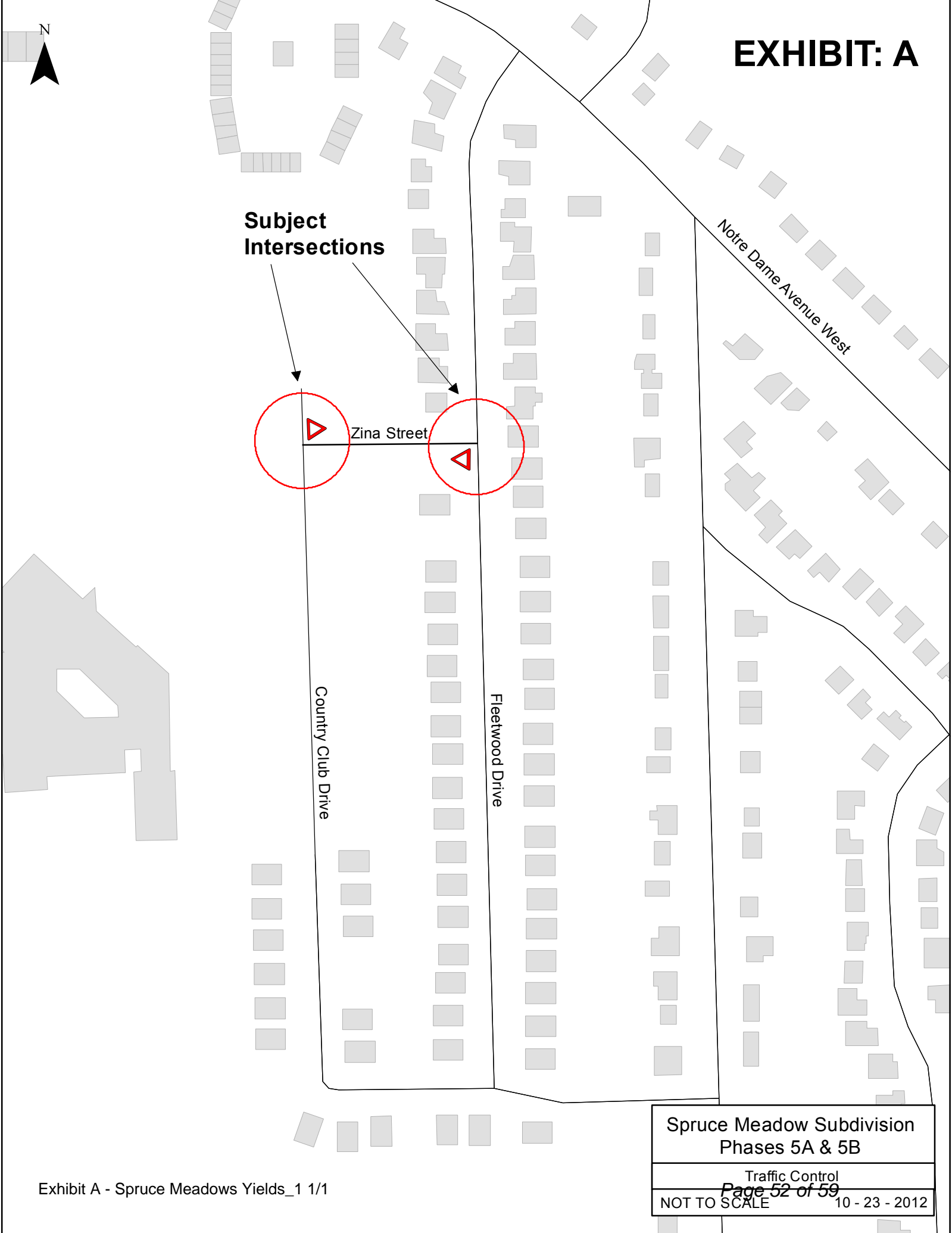
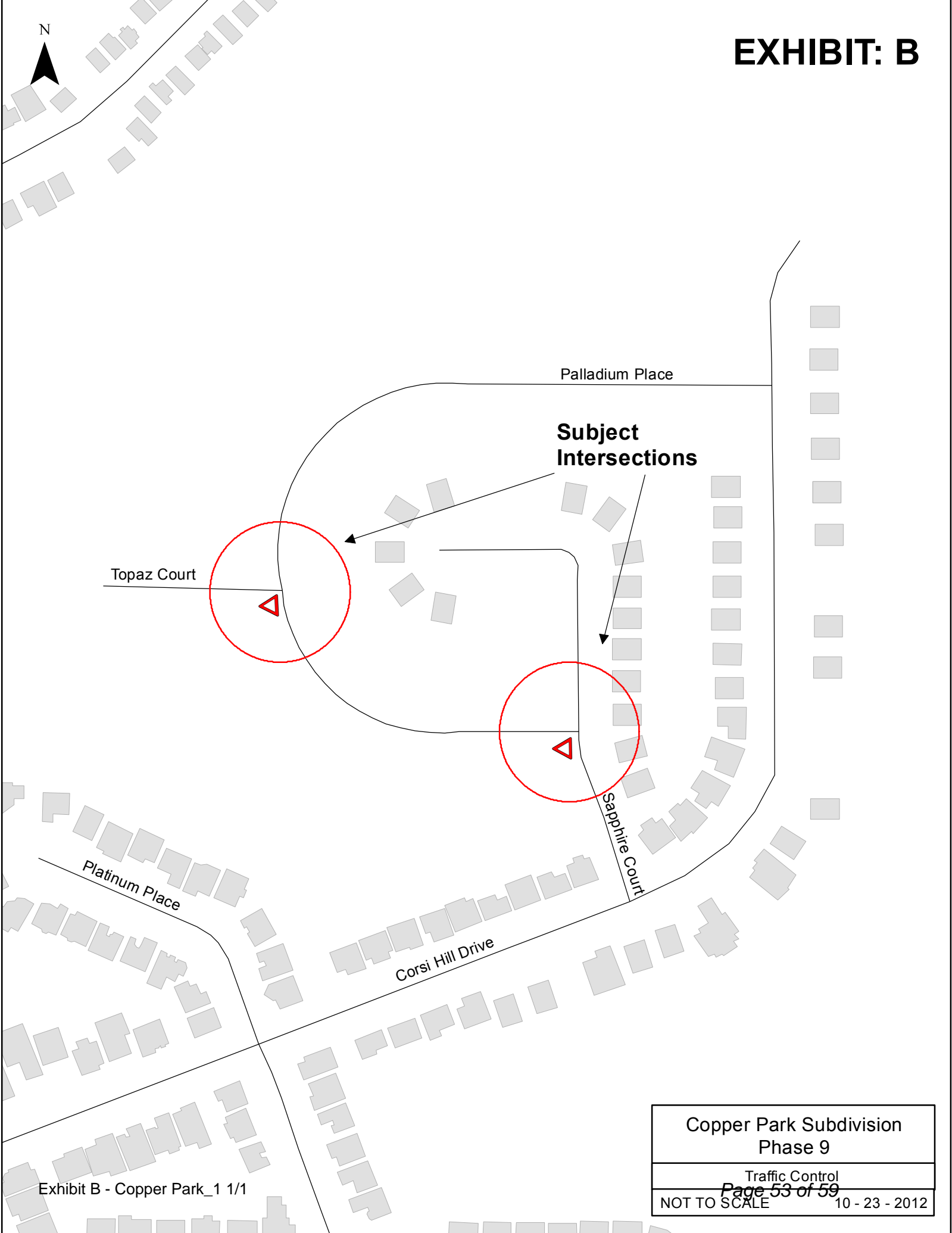


EXHIBIT: B



Subject
Intersections

Topaz Court

Palladium Place

Sapphire Court

Platinum Place

Corsi Hill Drive

Copper Park Subdivision
Phase 9

Traffic Control

Page 53 of 59

NOT TO SCALE

10 - 23 - 2012

Request for Decision

Intersection of Notre Dame Avenue and Kathleen Street - Pedestrian Safety

Presented To:	Operations Committee
Presented:	Monday, Dec 03, 2012
Report Date	Thursday, Nov 22, 2012
Type:	Managers' Reports

Recommendation

That no changes be made to the existing traffic signal control at this time, and;

That staff continue to monitor pedestrian safety at the intersection of Notre Dame Avenue and Kathleen Street to determine if improvements are required, and;

That staff continue to research new ways to enhance pedestrian safety within the city, all in accordance with the report from the General Manager of Infrastructure Services dated November 21, 2012.

Finance Implications

There are no financial implications with the status quo.

The following reflects the financial impact for implementation of each option: Option 1 - \$30,000 Option 2 - \$45,000 Option 3 - \$10,000

Background

At the Operation Committee meeting held on July 9, 2012, it was requested that staff investigate alternatives to improve pedestrian safety at the intersection of Notre Dame Avenue and Kathleen Street.

The main concern raised was that the left turning vehicles do not always yield for pedestrians when they are crossing Notre Dame Avenue as required by the Highway Traffic Act.

Notre Dame Avenue and Kathleen Street

The Notre Dame Avenue and Kathleen Street intersection is located in the area of the City known as the Flour Mill (see Exhibit 'A'). In this area, Notre Dame Avenue is constructed with three (3) through lanes in each direction with northbound and southbound left turn lanes. This section of Notre Dame Avenue is designated as a primary arterial roadway that carries an Annual Average Daily Traffic (AADT) volume of 28,000 and has a posted speed limit of 50 km/h.

Signed By

Report Prepared By

Dave Kivi
Co-ordinator of Transportation & Traffic
Engineering Services
Digitally Signed Nov 22, 12

Division Review

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Recommended by the Department

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General Manager of Infrastructure
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Recommended by the C.A.O.

Doug Nadorozny
Chief Administrative Officer
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Kathleen Street is designated as a collector road that carries an AADT of 5,500 and has a posted speed limit of 50 km/h. Kathleen Street intersects with Notre Dame Avenue at approximately 90 degrees and forms a four legged intersection with the entrance to the grocery store parking lot on the east side of the intersection. The grocery store approach is very wide and undefined due to the layout of the parking lot and close proximity of the building.

Collision History

A review of the City's collision data from 2009 to 2011 (inclusive) revealed that there were a total of twenty-five (25) reported collisions, which occurred in the vicinity of the intersection. During the three (3) year period, two (2) of the collisions involved pedestrians. The first involved a pedestrian crossing with the right-of-way, being struck by a northbound to westbound left turning vehicle. It should be noted that an advance left turn phase is provided for this movement. The second involved a motorized wheelchair crossing Notre Dame Avenue that was struck by a southbound right turning vehicle in the northwest corner of the intersection. The collision report indicates that the driver failed to yield the right-of-way to the pedestrian.

Completed Intersection Improvements

The following are some of the pedestrian safety improvements that have already been implemented at the intersection within the last few years:

- The pedestrian crossing times at the intersection were increased based on a slower than normal walking speed to account for the needs of seniors and special needs persons. This provides more time for pedestrians to complete their crossing.
- In 2008, as part of the reconstruction of Notre Dame Avenue, pedestrian push buttons and poles were installed closer to the crosswalk so that they would be more visible and easier for pedestrians to access.
- In 2010 the City painted zebra striped pedestrian crosswalks at the intersection to enhance the visibility of the crosswalks.
- In 2011 pedestrian count-down signals were installed at the intersection to improve pedestrian safety.

Pedestrian Right-of-Way

At the majority of traffic signals in the City, pedestrians cross the road with a walk display at the same time and direction as vehicles receive a green ball display. East and westbound traffic at the subject intersection currently operate in this manner.

In accordance with the Highway Traffic Act, at a traffic signal *“every pedestrian who lawfully enters a roadway in order to cross may continue to cross as quickly as reasonably possible despite a change in the indication he or she is facing, and for the purpose of crossing, has the right-of-way over vehicles”*. Therefore, vehicles turning right or left on a green ball must yield to pedestrians lawfully in the crosswalk.

At some signalized intersections, the City has installed various types of special left turn phases to improve the operation and safety of left turn movements. The decision whether to provide a left turn phase and the type to use, is based on a number of factors which include: the volume of left turns, volume of opposing

traffic, collision history, signal timing, number of left turn lanes and intersection geometry. While the introduction of a special left turn phase can reduce the number of conflicts between pedestrians and left turning traffic, they increase delay to pedestrians and all other movements of traffic and therefore should only be installed when warranted.

Existing Conditions

The traffic signals at the intersection of Notre Dame Avenue and Kathleen Street are coordinated with the signals at Leslie Street, King Street and Wilma Street to improve traffic flow and reduce delay and the number of stops. It should be noted that any increase to the signal cycle length at the subject intersection will result in the need to increase the cycle length at the other signalized intersections to maintain coordination. This will adversely impact the adjacent intersections by increasing the delay to minor street traffic and pedestrians waiting to cross Notre Dame Avenue. The existing cycle length for the Notre Dame Avenue system is 100 seconds.

Currently, the traffic signals at the subject intersection have an advance left turn arrow for northbound traffic on Notre Dame Avenue only. As previously described, pedestrians crossing Notre Dame Avenue will receive a walk display at the same time as east and westbound vehicles on Kathleen Street get a green ball. Left and right turning traffic must yield to pedestrians in the crosswalk. The existing level of service (LOS) for traffic on Notre Dame Avenue is 'B' with delays of sixteen (16) seconds. Traffic on Kathleen Street and the grocery store entrance are LOS 'C' with delays of about twenty-two (22) seconds.

The advantages for the existing mode of operation include the following:

- Maximize capacity.
- Minimize the overall intersection delay.
- Can operate at a lower cycle length compared to the other modes.

The disadvantage of this type of operation is the increased number of conflicts between left turning vehicles and opposing vehicle and pedestrian traffic.

Option #1 - Protected and Permissive Left Turn Operation

Under this scenario, eastbound and westbound left turning vehicles are first given a protected interval (green arrow) during which they may turn with opposing traffic stopped. The associated through and right turning vehicles are also allowed to proceed during the protected left turn phase if there are no opposing left turning vehicles.

Pedestrians are prohibited from crossing the path of the left turning vehicles during the protected left turn movement. After the protected movement terminates, the opposing traffic is released with a normal green ball display. Left turning vehicles are still permitted to turn; however, they must yield to any opposing vehicle traffic and pedestrians in the crosswalk. An example of an intersection with this type of phasing is Elm Street at Elgin Street, where northbound and southbound traffic on Elgin Street have protected and permissive left turn phases.

The advantages of this type of operation include:

- Increased left turn capacity.
- Provision for efficient left turn movement operation, often without causing a significant increase in delay to other movements.
- Reduction in angle and side-swipe types of collisions that involve left turning vehicles.

The disadvantages for this mode of operation include:

- Increased overall delay at the intersection.
- Need to increase the cycle length which will increase delay at adjacent intersections.
- Requirement to provide exclusive left turn lanes.
- Permissive phase still results in conflicts between left turning vehicles and pedestrians as well as opposing vehicle traffic.

Our analysis indicates that implementing protected and permissive left turn phasing for eastbound and westbound traffic on Kathleen Street will result in the need to increase the cycle length from 100 to 110 seconds. The level of service for traffic on Notre Dame will go from 'B' to 'C' in the afternoon peak hour with delays of 24 seconds.

The estimated cost to implement this option is \$30,000. This mode of operation will also require work on private property which will include eliminating some parking spaces and adding pavement markings for a left turn lane. Staff will need to negotiate with the property owner and enter an agreement to undertake the work on their property.

Option #2 - Fully Protected Left Turn Operation

Under this scenario, east and west left turn movements are provided their own traffic signal heads and operate as opposing simultaneous protected left turn phases. During this phase, traffic can only make a left turn and no other conflicting vehicle or pedestrian traffic is allowed to enter the intersection. After the simultaneous protected left turn phase has terminated, the right-of-way is transferred to straight through and right turning traffic on Kathleen Street and the grocery store driveway. During this movement, pedestrians who have actuated the pedestrian pushbutton are allowed to cross Notre Dame Avenue. An example of an intersection with this type of phasing is Paris Street at Brady Street where eastbound and westbound traffic on Brady Street have simultaneous fully protected left turn phases.

The advantages of this type of operation include:

- Increased left turn capacity.
- Conflicts eliminated between left turning traffic and opposing vehicles, and pedestrians.

The disadvantages for this mode of operation include:

- Increased delay to all movements of vehicles and pedestrian traffic.
- An exclusive left turn lane is required.
- Increase in the signal cycle length.
- Requires the construction of a median island on the east side of the intersection.

Our analysis indicates that by implementing fully protected left turn phasing, the signal cycle length will need to be increased from 100 seconds to 120 seconds. This will increase delay and reduce level of service for southbound traffic on Notre Dame Avenue from 'B' to 'C'. Delay on Kathleen Street will also significantly increase from 22 seconds to 44 seconds and the level of service will drop to 'D'.

The estimated cost to implement this option is also more expensive at \$45,000. In addition to upgrading the traffic signals, construction will also be required on the east side of the intersection to construct a median island. The island will encroach onto private property and require significant changes to the grocery store parking lot. The estimated cost does not include construction of the island or any work on private property.

Option #3 - Split Phasing

Under this scenario, the eastbound and westbound movements are allowed to proceed through the intersection during their own phase while all other conflicting traffic movements have red displays. This movement consists of green left arrow displays and green ball displays. Split phase timing allows pedestrian crossing movements to be completely free from conflicts with left turning vehicles. After the green intervals are terminated, the eastbound or westbound traffic will receive a clearance interval prior to the right-of-way being transferred to Notre Dame Avenue. This phasing is typically less efficient than other types of left-turn phasing. It usually increases the cycle length and/or reduces the green time available for the intersecting road. Due to the drawbacks of this mode of operation, it is generally only used at intersections with unusual lane geometry. An example of an intersection with this type of phasing is Lasalle Boulevard at Notre Dame Avenue which has split phases for eastbound and westbound traffic.

The advantages of this type of operation include:

- Traffic movements are totally separate.
- Conflict eliminated between pedestrians and left turning vehicles.
- Improved safety for intersections where the crash history indicates an unusually high number of sideswipe or head-on collision in the middle of the intersection involving left turning vehicles.

The disadvantages for this mode of operation include:

- Less efficient than other types of left turn phasing.
- Requires longer cycle length.
- Increased delay for vehicles and pedestrians.
- Usually inefficient particularly in low flow conditions.

The analysis shows that implementing split phasing for the eastbound and westbound movements on Kathleen Street will require that the cycle length be increased from 100 seconds to 125 seconds. As previously stated, the cycle lengths for the other signals along Notre Dame Avenue will also need to be increased to 125 seconds.

Split phasing will greatly increase the average delay for vehicle and pedestrian traffic on Notre Dame Avenue to 40 seconds and reduce the level of service from 'B' to 'D'. Delay for through traffic on Kathleen Street is also increased with this option.

The estimated cost to implement split phasing is approximately \$10,000. While modifications to the private parking lot on the east side of the intersection is recommended with this option, it is not a requirement.

Recommendations

The changes in Option #1 will not provide a definitive solution to the current safety concerns. While some of the left turning vehicles will proceed during the protected phase, frequent conflicts will still occur between left turning vehicles and pedestrians during the permissive phase.

Both Options #2 and #3 will separate the left turning traffic from conflicting with the pedestrians and provide a solution to the current safety concerns. However, they will significantly increase overall intersection delays and result in longer queue lengths on Notre Dame Avenue. The increased cycle length will create similar problems at Leslie Street, King Street and Wilma Street intersections.

These options will require significant upgrading to the current traffic signal plant. Some construction and alterations to the parking lot on private property will also be required on the east side of the intersection. Discussions and agreement with the property owner will need to occur prior to any changes taking place.

A review of the collision data revealed that neither of the two (2) pedestrian collisions at this intersection would have been preventable with the implementation of any of the three (3) options.

Based on the above information, staff recommends that no changes be made to the existing traffic signal control at this time. Staff will continue to monitor pedestrian safety at the intersection to determine if improvements are required. Also, staff will continue to research new ways to enhance pedestrian safety within the city.