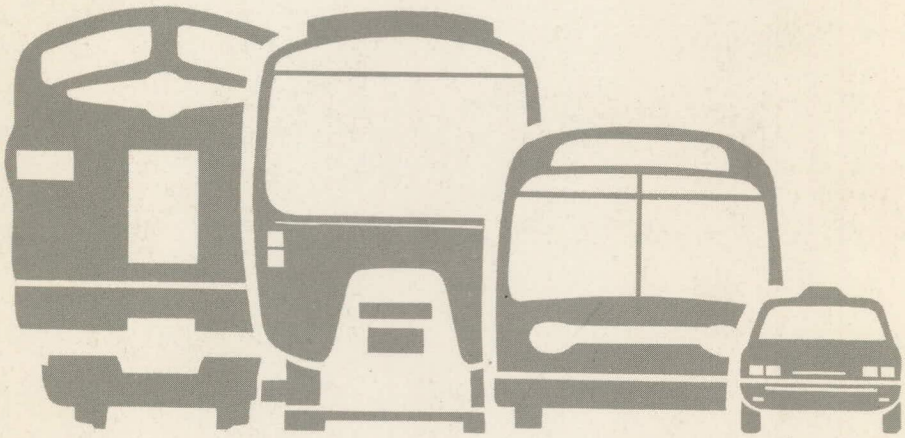
ASSESSMENT OF THE EFFECTIVENESS OF THE BUS LANE ON THE SOUTH APPROACH TO THE HONORÉ MERCIER BRIDGE



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FICHE ANALYTIQUE DE RAPPORT

Titre et sous-titre du rapport
Bus Lane Efficiency Study
on the South Approach of Honoré-Mercier Bridge

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RTQ-89-11A

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But de l'étude, recherche et renseignements supplémentaires
The object of this report is to evaluate bus lane efficiency on road 132/138 on the south approach to Honoré-Mercier bridge and to examine its potential extension in westerly direction.

Résumé du rapport

The analysis demonstrates the bus lane efficiency and, therefore, it should be maintained. This efficiency is illustrated by:

- an increase of more 40% of the period during which the bus lane is helpful in relieving congestion on adjacent lanes;
- a travel time reduction averaging 15 minutes;
- a 5,6% annual increase of public transit ridership in this corridor.

The deterioration of traffic conditions in the recent years implies an increase of the congestion which extends regularly beyond the actual bus lane, causing important delays to buses. The proposed extension of 1,5 kilometer is necessary to regularize travel time, to improve service reliability and to reduce operation costs of transit companies.

Nbre de pages	Nbre de photos	Nbre de figures	Nbre de tableaux	Nbre de références bibliographiques	Langue du document	Autre (spécifier)
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ASSESSMENT OF THE EFFECTIVENESS OF THE BUS LANE ON THE SOUTH APPROACH TO THE HONORÉ MERCIER BRIDGE

may 1989

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Direction générale du transport
des personnes et des marchandises,
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SUMMARY AND CONCLUSIONS

This study is a requirement of the follow-up needed for the Honoré Mercier Bridge bus lane project. It was also undertaken to satisfy the requirements of the 1987-1989 agreement between the M.T.Q. and Kahnawake Mohawk Council.

The results of the analysis show that the existing bus lane is effective and, consequently, should be maintained.

This effectiveness is indicated by:

- an increase of more than 40% in the period each day during which the bus lane enables authorized vehicles to avoid the congestion in the adjacent lanes, from 1.75 to 2.5 hours;

- an average maximum saving of 15 minutes for vehicles using the bus lane. When the bus lane was opened in 1985, this saving stood at only 7.5 minutes. On heavily congested mornings, which is the case one to two out of every five mornings, the saving rises to 25-30 minutes;

- an average annual increase in public transit usage in this corridor of some 5.6%;

- adequate safety since no accidents have been noted involving buses and automobiles in the bus lane since it was inaugurated.

As a result, the bus lane is considered a success and continues to meet the objectives for which it was established. In addition, it has no effect on traffic in the adjacent lanes.

However, worsening traffic conditions during the past few years have produced greater congestion extending back from the existing bus lane.

Despite the savings afforded by the bus lane, delays of 15 to 20 minutes behind schedule are common. Once or twice a week, the delay reaches 30 to 40 minutes, depending on weather and traffic conditions. This situation poses a growing problem concerning the reliability of arrival times at the Angrignon terminal in the morning. To provide adequate service, carriers must pay an additional $75 000 to $100 000 per year.

It is therefore more than necessary that the existing bus lane be extended 1.5 km to stabilize travel time, improve the reliability of the bus service, and reduce carrier operating costs.

An extended bus lane could provide motorists using this corridor with a greater incentive to use public transit, given its highly visible effect. In this way, motor vehicle traffic could improve.

1.0 INTRODUCTION

The Honoré Mercier Bridge corridor is one of the major axes linking the South Shore to the Island of Montréal. It serves the Châteauguay region more particularly. Given its distance from the other bridges, users have little choice concerning their route to Montréal and must put up with lengthy delays during rush hour. Every day, the congestion extends from the bridge's southern approaches to the Kahnawake (Bédard) traffic circle and, once or twice a week, as far as the railway track.

The regularity of this congestion indicates that the bridge's capacity is reached during rush hour. The problem affects motorists, public transit users and the bus companies.

The problems caused by this daily congestion date back several years. In 1975, a ministère des Transports study indicated the desirability of an exclusive approach south of the Mercier Bridge for mass transit vehicles. In 1978, the Conseil des transports de la région de Montréal (COTREM) also recommended preferential treatment for bus service in the southern corridor of the Mercier Bridge.

Following an agreement with the Kahnawake authorities, the M.T.Q. initiated, on a trial basis, a bus lane in the fall of 1985 between the Kahnawake traffic circle and the Route 207 interchange; the lane was built on the shoulder of Route 138 (see Figure 1). At the same time, the Department was undertaking an assessment study of the effectiveness of the bus lane.

The study concluded the bus lane was effective, and the lane was converted on a more permanent basis, in view of the anticipated benefits in terms of time savings, on the one hand, and the agreement of the Kahnawake authorities to carry out the necessary shoulder improvement work.

However, the authorization included in the agreement covered a limited period, from January 1, 1987 to June 30, 1989. The agreement's extension was conditional on the completion of an assessment study of the effectiveness of the bus lane during this period.

The scope of the problems in this sector of the South Shore prompted the ministère des Transports, in its action plan released in August 1988, to stress the need to achieve a long-term increase in the capacity of the Honoré Mercier Bridge axis.

The action plan also proposed a commuter train line in the Conrail railway right of way since, according to various studies, it would be difficult to duplicate the existing bridge or increase its capacity without significant harm to the nearby environment on the South Shore and the Island of Montréal.

However, during the Parliamentary Commission in January 1989, the community indicated that its immediate preference was for the continuation and extension of the existing bus lane and the completion of a bus terminal and park'n'ride lot in Châteauguay.

In keeping with the January 1987 agreement, the Kahnawake authorities restated that extension of the lane was subject to new discussions.

2.0 OBJECTIVES OF THE EVALUATION REPORT

The essential purpose of this report is to demonstrate the continued need for the existing bus lane based on its effectiveness, and the necessity of its extension beyond the Kahnawake traffic circle. This initial analysis will provide a basis for a more exhaustive follow-up of the bus lane.

This report must be submitted to the Kahnawake authorities as stipulated in agreement # 1691, dated January 29, 1987 between the ministère des Transports du Québec and the Kahnawake Council.

Sub-section H of article 4 mentions that the ministère des Transports must complete a study of the effectiveness of the existing bus lane.

Article 5 of the agreement also calls for the negotiation of a common agreement on the westward extension of the existing bus lane based on this study.

This report, which takes into account certain requests formulated by the community during the Parliamentary Commission in January 1989, will shed some light on the advisability of maintaining and extending this bus lane, in view of an eventual decision.

3.0 FEATURES OF THE BUS LANE

3.1 Description of existing bus lane

Right of way and geometry

The existing bus lane extends 1.5 km back from the southern approach of the Mercier Bridge. Buses heading south over the bridge in the evening are not given preferential treatment on the northern approaches to the bridge.

The bus lane was built entirely within the right of way of the existing road by converting a shoulder which was 3.65 m wide into a bus lane. A new paved shoulder, 3.0 m wide, was also added.

Figure 1 shows the existing plan of the bus lane and Figures 2, 3 and 4 show a number of cross sections.

Signs

Signs were installed all along the bus lane and immediately before it, at the Kahnawake traffic circle. A traffic light system was installed on Route 132/138 at the Route 207 access ramp. This system is manually operated and gives priority to buses over general traffic heading towards the Mercier Bridge. Distinctive markings were also painted on the road surface.

Hours of operation

The bus lane was initially put into service from 7 am to 9 am. This was subsequently changed to from 6 am to 9 am to accommodate emerging needs more adequately.

Monitoring

Under the memorandum of understanding reached by Kahnawake and the Québec government, the Kahnawake Mohawk Council maintains law and order over the entire length of the existing bus lane. The Kahnawake Peacekeepers are responsible for this task and are equipped with two patrol cars.

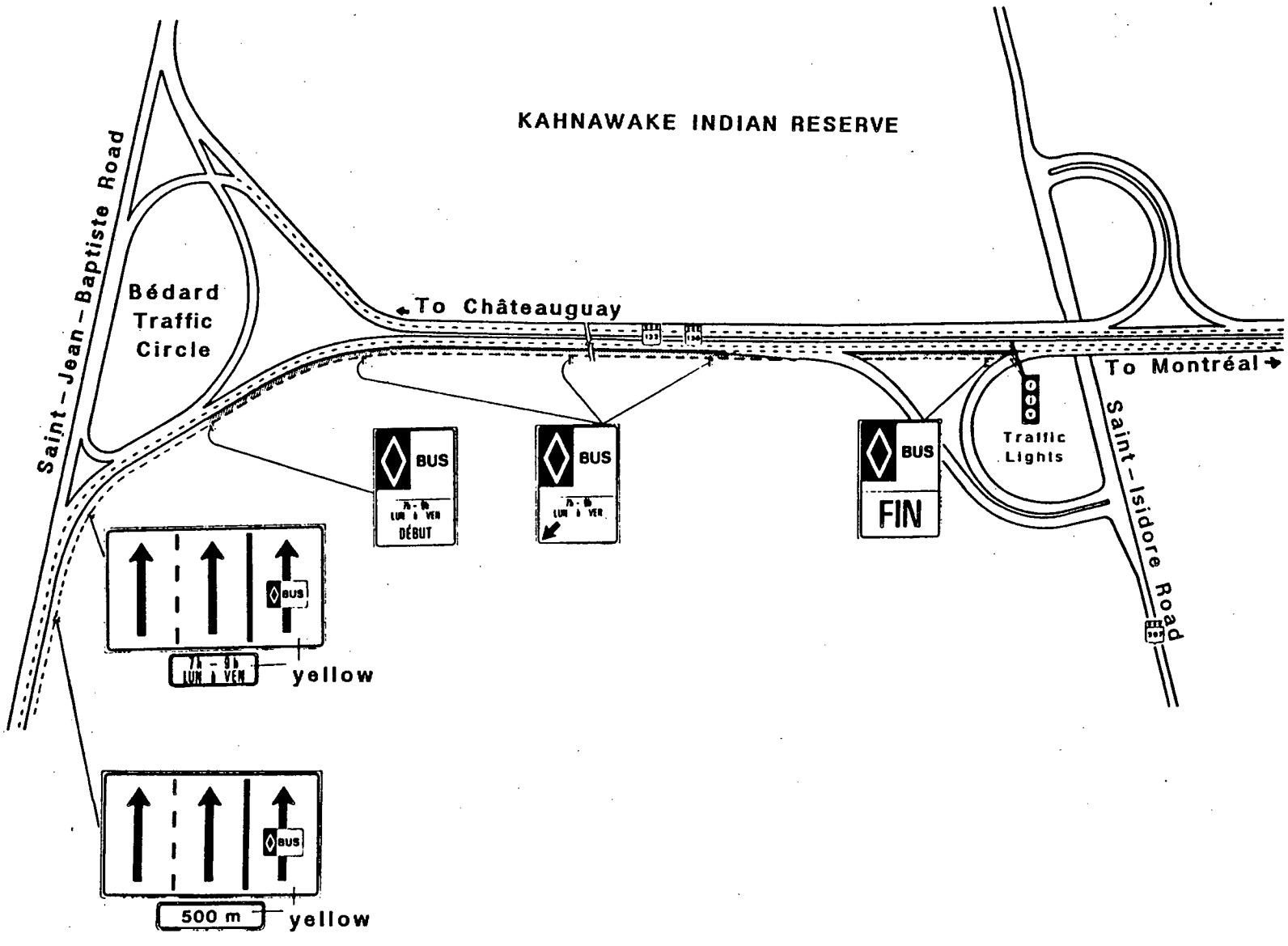

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Figure 1

Bus Lane
Mercier Bridge
South Approach

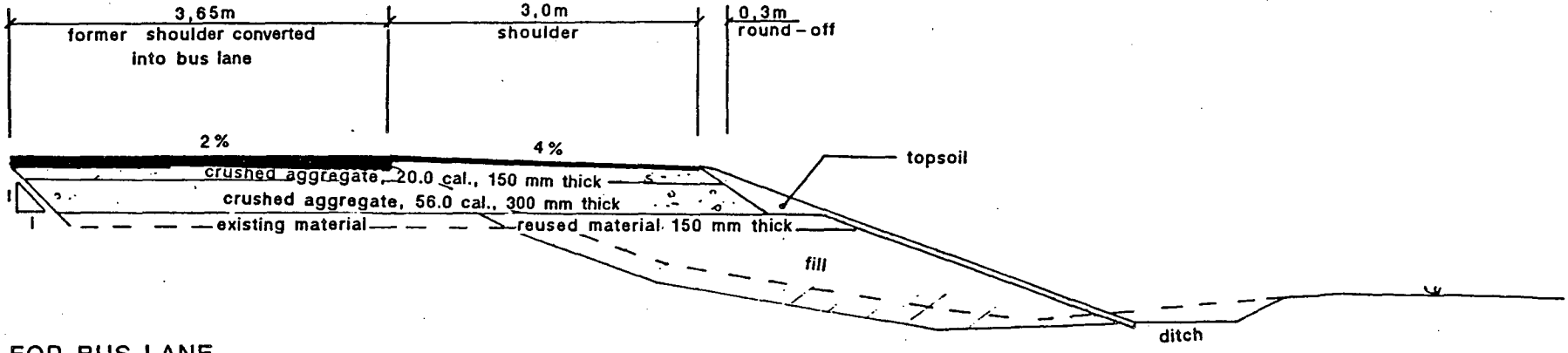
---- shoulder border

—— double width white line

▒▒ bus lane

FIGURE 2

ROUTE 132 – 03 – 042 KAHNAWAKE



– FOR BUS LANE
ASPHALT PAVEMENT 260 kg/m2, two layers: surface MB – 4 110kg/m2
base MB – 2 150kg/m2

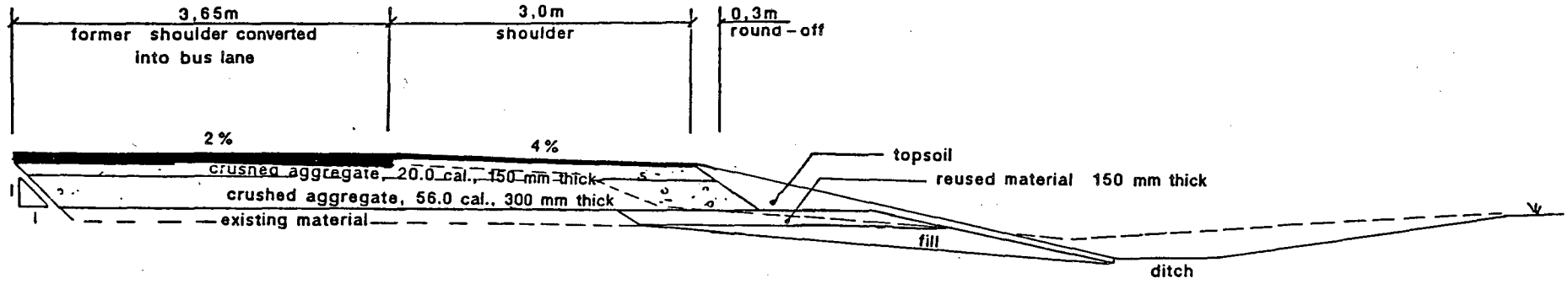
– FOR SHOULDER
ASPHALT PAVEMENT 125kg/m2, single layer: MB – 4

CROSS SECTION

station 0 + 395

FIGURE 3

ROUTE 132 – 03 – 042 KAHNAWAKE



– FOR BUS LANE
ASPHALT PAVEMENT 260 kg/m2, two layers: surface MB – 4 110kg/m2
base MB – 2 150kg/m2

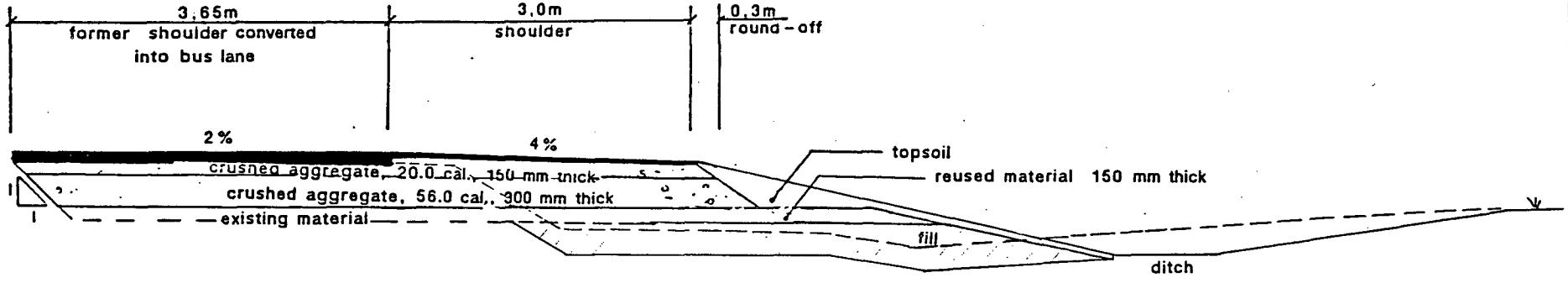
– FOR SHOULDER
ASPHALT PAVEMENT 125kg/m2, single layer: MB – 4

CROSS SECTION

from station 0+700 to 0+860

FIGURE 4

ROUTE 132 – 03 – 042 KAHNAWAKE



– FOR BUS LANE
ASPHALT PAVEMENT 260 kg/m2, two layers: surface MB – 4 110kg/m2
base MB – 2 150kg/m2

– FOR SHOULDER
ASPHALT PAVEMENT 125kg/m2, single layer: MB – 4

CROSS SECTION

from station 1+260 to 1+595

3.2 Authorized vehicles

In accordance with the initial plan, the Honoré Mercier Bridge bus lane is open to all bus and mini-bus type vehicles, according to the definitions given in the Highway Safety Code, section 4, namely:

"bus": means a motor vehicle other than a minibus, designed for the transportation of more than nine occupants at a time and used mainly for that purpose;

"minibus": means a motor vehicle of the small van type designed for the transportation, for a fare, of more than seven occupants at a time or for the group transportation of handicapped persons.

These vehicles are registered with a plate bearing the prefix "A".[1]

Mini-buses satisfying this requirement have had access to the bus lane from the beginning because of the specific features of this lane, in particular the fact that traffic flows in the same direction as regular traffic.

Since it is easy to visually identify the types of vehicles authorized to use the bus lane, because of their physical resemblance, the Kahnawake Peacekeepers can more easily enforce the exclusive access to the lane for public transit vehicles.

Finally, emergency vehicles (ambulances, police, fire trucks, etc.) are also authorized to use the bus lane whenever required.

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[1] Under new provisions of the Highway Safety Code, in effect since November 23, 1988.

4.0 EVALUATION OF THE EFFECTIVENESS OF THE EXISTING BUS LANE

4.1 Evaluation criteria

The criteria adopted to evaluate the effectiveness of the bus lane were the travel time for buses in the corridor, volume of public transit traffic, quality of bus service, travel time for motorists in adjacent lanes and, finally, the safety of the bus lane.

We therefore assessed the degree of improvement or deterioration, or the stability, in each of these factors.

If the overall performance of the bus lane is stable or has improved, then its continuation and extension can be recommended. If its performance has declined, then the reasons for the deterioration should be investigated and recommendations made to achieve the desired effectiveness.

4.1.1 Travel time for buses

The effectiveness of the bus lane in terms of travel time is assessed by the time savings achieved solely over the bus lane section.

On the other hand, the travel time for the entire bus trip should also be measured since it more closely corresponds to the perspective of public transit users. The user is much more concerned with the total time required for his trip than with the time required to cover a given section.

4.1.1.1 Travel time for buses on the bus lane section

The bus lane becomes useful once the speed in the adjacent lanes for regular traffic drops below the operating speed of the bus lane (generally 50-60 km/h).

When the adjacent lanes are congested and traffic is backed up beyond the beginning of the bus lane, the time saved over this section is at a maximum.

However, buses do not operate in the bus lane at the maximum allowable speed to avoid an unauthorized vehicle suddenly entering the bus lane.

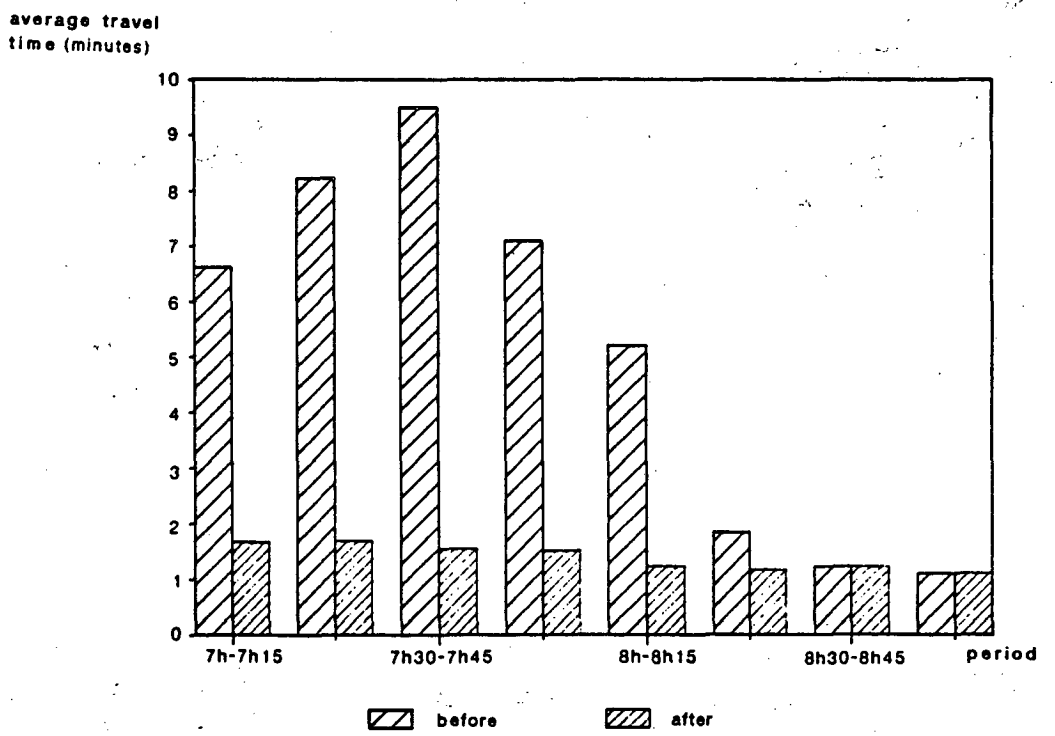
The initial evaluations of the impact of the bus lane in 1985 and 1986 indicated the average maximum time saving

over the bus lane section was about 7.5 minutes during the peak rush hour period from 7:30 am to 7:45 am.

Figure 5 shows the time needed to travel over the bus lane section before and after the lane was established in 1985.

FIGURE 5

AVERAGE TRAVEL TIME
for buses on the bus lane section



Congestion seemed to begin at about 6:30 am and traffic was backed up beyond the beginning of the bus lane by 7 am. Maximum time savings were thus realized over this section of the road until about 8:15 am.

The daily starting time for the bus lane was therefore moved ahead from its initial time of 7 am to 6 am. This increased the bus lane's effectiveness since time savings were realized over a longer period.

More recent measurements show that traffic back-ups before the beginning of the bus lane now last longer. The main carrier using the bus lane indicates that by 6 am, traffic is backed up to mid-way between the Kahnawake traffic circle and the Honoré Mercier Bridge.

Under normal traffic and weather conditions, it is now estimated that the bus lane is useful beginning at 6 am, and saves time over this section during a two-hour period, from about 6:30 am to 8:30 am (see Table 1).

TABLE 1 - DAILY PERIOD OF EFFECTIVENESS OF BUS LANE

	Time congestion starts in adjacent lanes	Time congestion extends beyond bus lane	Time congestion ends
1986-87	06 h 30	07 h 00	08 h 15
1988-89	06 h 00	06 h 30	08 h 30

<-------- Period of effectiveness ------->
1986-87: 1 h 45 min.
1988-89: 2 h 30 min.

Maximum
<-- effectiveness -->
1986-87: 1 h 45 min.
1988-89: 2 h 00 min.

Since 1987, the period during which traffic has been backed up beyond the beginning of the bus lane has risen by about 45 minutes. The bus lane thus provides maximum effectiveness over a broader time slot.

In addition, once or twice a week, traffic accidents or weather conditions cause increased congestion which may last beyond the above-mentioned periods.

On the other hand, a private carrier in the Châteauguay sector using the bus lane since March 1989 has indicated that he has consistently been able to save about 15 minutes on his total travel time by using the bus lane. However, when congestion is worse than usual, which happens once or twice a week, this time saving rises to 25-30 minutes.

Since 1987, the speed of traffic in the adjacent lanes has declined because of the constant increase in the number of vehicles from eastbound Route 132. As traffic queues get longer, the daily time saving rises proportionally.

Based on these various observations, **the time saved by using the bus lane has virtually doubled from its initiation, rising from 7.5 minutes to 15 minutes, and to more than 25-30 minutes when traffic or the weather is particularly bad. The bus lane is therefore more effective than before.**

4.1.1.2 Total travel time for bus trips

The time savings described above do not necessarily produce a reduction in the total time required for a bus trip.

When the bus lane was inaugurated, the time saved was directly transferred to the total time required for the entire trip.

Since then, the savings realized in comparison with the earlier situation have been nullified in whole or in part when other factors have combined to raise total trip time.

Total trip time depends not only on the time required to cover the bus lane, but also on the travel time before and after the bus lane. As such, it depends on traffic conditions on these sections of the road.

For a given trip, greater volume of traffic on the Honoré Mercier Bridge and on other sections of the road may cause total trip time to be unchanged from what it was a few years ago, in spite of the bus lane.

In fact, this appears to be the case given the increase in traffic on the Honoré Mercier Bridge from eastbound Route 132. Traffic queues are also longer compared to the earlier situation. It is now routine for traffic heading for the bridge to be backed up beyond the Kahnawake traffic circle. This congestion in turn causes delays for buses.

The daily observations of traffic experts and public and private carriers indicate that one or two mornings out of five, or from 20% to 40% of bus lane's operating time, traffic is backed up beyond the Kahnawake traffic circle, and at times even beyond the railway track to the outskirts of Châteauguay.

Some of the savings in total travel time compared to the previous situation have therefore been lost. However, this is not due to the bus lane, which continues to be effective. It is also clear that without the existing bus lane, the total travel time required for the various routes would be even greater.

To maintain or improve travel time compared to the earlier situation, certain measures can be taken into consideration both before the bus lane and after the Honoré Mercier Bridge along the approaches to Ville LaSalle.

Extending the bus lane back into Kahnawake territory and improving access within Ville LaSalle would reduce the total time required for bus routes or at least maintain the savings on total travel time already achieved.

4.1.2 Public transit usage

Public transit is estimated to carry about 1 900 passengers during rush hours. CITSO buses carry about 1 530 in the Châteauguay/Montréal corridor and 130 in the Valleyfield/Montréal corridor, while the Haut Saint-Laurent CIT handles about 245 passengers. Table 2 shows how rush hour public transit usage has grown for the two main public carriers using the bus lane on the south approach to the Mercier Bridge.

TABLE 2 - PUBLIC TRANSIT USAGE, MERCIER BRIDGE BUS LANE, MORNING RUSH PERIOD[4]

	CITSO		CIT H.ST-LAURENT		TOTAL	
YEAR	Number of users[1]	% Dif[1].	Number of users[2]	% Dif[2].	Number of users	% Dif.
1984	1 285	N/A	N/A	N/A	N/A	N/A
1985[3]	1 267	-1,4	242	N/A	1 509	N/A
1986	1 350	+6,6	206	-14,7	1 556	+3,1
1987	1 475	+9,3	208	+ 0,9	1 683	+8,2
1988	1 530	+3,7	245	+17,6	1 775	+5,5

NOTES:

1 According to CITSO data for the Châteauguay/Montréal corridor. A further 130 passengers were carried in the Valleyfield/Montréal corridor during 1988 (data for previous years not available).

2 According to CIT Haut St-Laurent annual usage data. The annual rates of increase were applied to the five rush period departures in 1988 based on 49 seated passengers per departure (about 245 for an average rush period in 1988).

3 Bus lane operative October 7, 1985.

4 Morning rush period: 5:10 am to 8:30 am.

Since the introduction of the bus lane, public transit ridership has thus risen each year.

4.1.3 Quality of bus service

Quality of bus service is measured in terms of number of departures, frequency and regularity of service and the reliability of the operation. Whereas the number of departures and frequency are directly related to demand (as evidenced by ridership), the regularity of the service and reliability of the operation can be influenced by the Honoré Mercier Bridge bus lane.

However, quality of bus service is measured over all trips rather than over a specific section such as the bus lane. Changes in traffic conditions in these sections are therefore likely to affect the quality of service.

As a result, apart from the initial opening of the bus lane when this was the sole factor affecting bus service, the prevailing operating conditions since then are attributable to a number of factors. Although the bus lane has been reconstructed on a permanent infrastructure since 1985, its operational effect has not substantially changed.

Initially, the bus lane had a direct positive impact on the quality of bus service. From the time of the lane's opening in 1985, bus owners report that bus service was more punctual while users' comments were definitely positive.

However, beginning in 1987, arrival delays were noted at the Angignon terminal, thus affecting the scheduled returns of vehicles for subsequent departures.

In 1989, the CITSO noted that bus arrivals at the Angrignon metro station were regularly up to 20 minutes late and, at times (once or twice a week), as much as 30 to 40 minutes behind schedule because traffic was backed up beyond the level crossing in Kahnawake. Occasionally, when traffic is tied up as far as the outskirts of Châteauguay, delays of 50-55 minutes can be expected.

This reliability problem with respect to travel time forces the carrier to add vehicles in the morning to maintain scheduled departures. The cost of these departures is

estimated at $75 000 to $100 000 annually, accounting for about 30 additional vehicles dispatched per month.

These additional departures essentially offset buses not able to return on time. **The reliability of the departure schedule is therefore maintained** as far as the user is concerned, but at significant additional cost to the carrier.

These observations point to a **growing problem of reliability with respect to destination arrival times and total travel times tied to daily traffic congestion. Without the bus lane, more additional buses would be needed to maintain scheduled departures and the quality of service that is essential to maintain and increase public transit ridership.**

On the other hand, the portion of the route covering the bus lane **offers certain qualitative advantages in terms of comfort.** Compared to the situation without bus lanes, users spend less time in the bus, are subjected to less stop-and-go motion and fewer sharp accelerations or decelerations.

4.1.4 Travel time for motorists and capacity of adjacent lanes

The bus lane was added to the roadway and does not occupy a previously existing lane. Therefore, it did not reduce the capacity of Route 132/138 in the direction of the Honoré Mercier Bridge. Furthermore, a small number of buses use the bus lane compared to its theoretical capacity.

A system of traffic lights has been installed on Route 132/138 at the intersection with Route 207. The lights are manually operated and give priority to bus traffic over general traffic at the end of the bus lane.

Since traffic is already very slow or at a standstill, the priority granted to buses has no effect on the travel time of motorists in the adjacent lanes.

4.1.5 Safety

Unauthorized vehicles are not allowed to travel or park on the bus lane or the adjacent shoulder. The lack of a sufficiently wide shoulder made it difficult to apprehend

motorists who ignored these limitations. This has been remedied with the reconstruction of the bus lane.

In 1986, the Kahnawake Peacekeepers noted about three infractions per rush hour. **The situation today in terms of infractions appears essentially unchanged.**

Over the past few years, the Peacekeepers' patrols have been adequately reinforced to the satisfaction of all those concerned.

On the other hand, **no accident involving a bus and an automobile in the bus lane has occured since the lane was opened.**

Route 207 Interchange

However, it should be mentioned here that the actual capacity of the bus lane is limited by the right exit at the interchange to Route 207 and by the nearby traffic lights.

The current traffic volume and the forecast volume in the short and medium terms for vehicles using the bus lane and vehicles exiting at road 207 are low enough so the latters can cross without incident. There is sufficient empty space between authorized vehicles in the bus lane to allow motorists in the adjacent regular traffic lanes to reach the exit easily.

In addition, the theoretical capacity of the bus lane could be also limited by the relatively short distance between this exit and the traffic lights which give priority to buses moving into normal traffic. However, the current traffic volume and the forecast for the medium term do not indicate an accumulation of vehicles between these two points.

5.0 EXTENSION OF THE EXISTING BUS LANE

5.1 PROBLEMS

The previous section showed that the existing bus lane shortens travel time for buses over this specific section, but not necessarily over the entire trip since buses are often delayed by congestion before reaching the bus lane. An extension of the bus lane therefore appears increasingly necessary to improve the quality of bus service in this corridor.

In addition, the 1988-98 action plan of the ministère des Transports dealing with transportation infrastructures in the Montréal region proposed the extension of the bus lane as far as the level crossing as a project which could be completed in the short term.

This section will review the specific problems of the south approach to the Honoré Mercier Bridge and discuss certain points which justify extending the existing bus lane.

5.1.1 Traffic

The Mercier Bridge is the only route providing fast, direct access to Montréal for residents of Sainte-Catherine, Saint-Constant, Delson and, above all, the Châteauguay region. In 1987, an average of 37 830 vehicles crossed the bridge towards Montréal every day.

Morning rush hour traffic reached the bridge's capacity many years ago. Currently, traffic flow during the morning rush hour is measured at about 4 200 vehicles per hour, whereas the bridge's theoretical capacity is 3 760. This flow/capacity ratio of 1.12 makes that bridge one of the most critical access points in the Montréal region.

In addition, the particular geometry of the South Shore approaches to the bridge, namely sharp curves at a steep grade and the junction of two traffic flows at the very entrance to the bridge roadway causing a bottleneck (reduction from three lanes to two), is also responsible for the frequent congestion on the approach to the bridge. Access time to the Honoré Mercier Bridge is therefore subject to significant variation.

Hourly volumes are not evenly distributed on the bridge access ramps of Route 138/132 from Châteauguay and Route 132 from Saint-Constant. In 1987, the volume from the Châteauguay access ramp reached 2 600 and the volume of the Saint-Constant access ramp was measured at 1 500 vehicles.

To facilitate the flow of traffic from the two ramps, the M.T.Q. installed a manually operated system of traffic lights several years ago at the junction of westbound Route 138/132 and eastbound Route 132 at the beginning of the bridge deck. The system enables vehicles in the right lane of the Route 138 ramp to continue on the right lane of the bridge without interruption. Vehicles in the left lane of the 132/138 ramp use the left lane of the bridge in turn with traffic from the Saint-Constant access ramp (see Figure 6).

5.1.1.1 Changes in traffic volume from 1984 to 1987

Over the past few years, the situation on the Mercier Bridge appears to have deteriorated. The volume of traffic has continued to increase. Since the bridge's capacity has been reached, long traffic queues, caused by the least incident, are a frequent occurrence. From 1984 to 1987, the average daily traffic volume has risen by about 18.4% (see Table 3).

This increase is attributable to the greater volume of traffic from eastbound Route 132. During the same period, from 1984 to 1987, the average daily volume at the approach to the Mercier Bridge at Sainte-Catherine rose by 35%. Traffic flow at rush hour has grown by 18.7%. This situation is partly the result of the sustained residential development over the past few years in the Delson, Sainte-Catherine and, especially, Saint-Constant areas.

The annual average daily traffic flow on Route 138 before reaching the bus lane has risen 8%. However, average rush hour traffic flow has fallen by some 15%. This reflects a wider time spread of traffic during the day and, possibly, some degree of modal transfer from automobile to bus transport. And in fact, bus traffic has continued to grow since the bus lane was put into service.

With the recent increase in the volume of traffic from eastbound Route 132, the waiting time for vehicles from Châteauguay has risen substantially, since these two traffic flows must share the left lane of the Mercier

FIGURE 6

SOUTH ACCESS RAMPS TO HONORÉ MERCIER BRIDGE

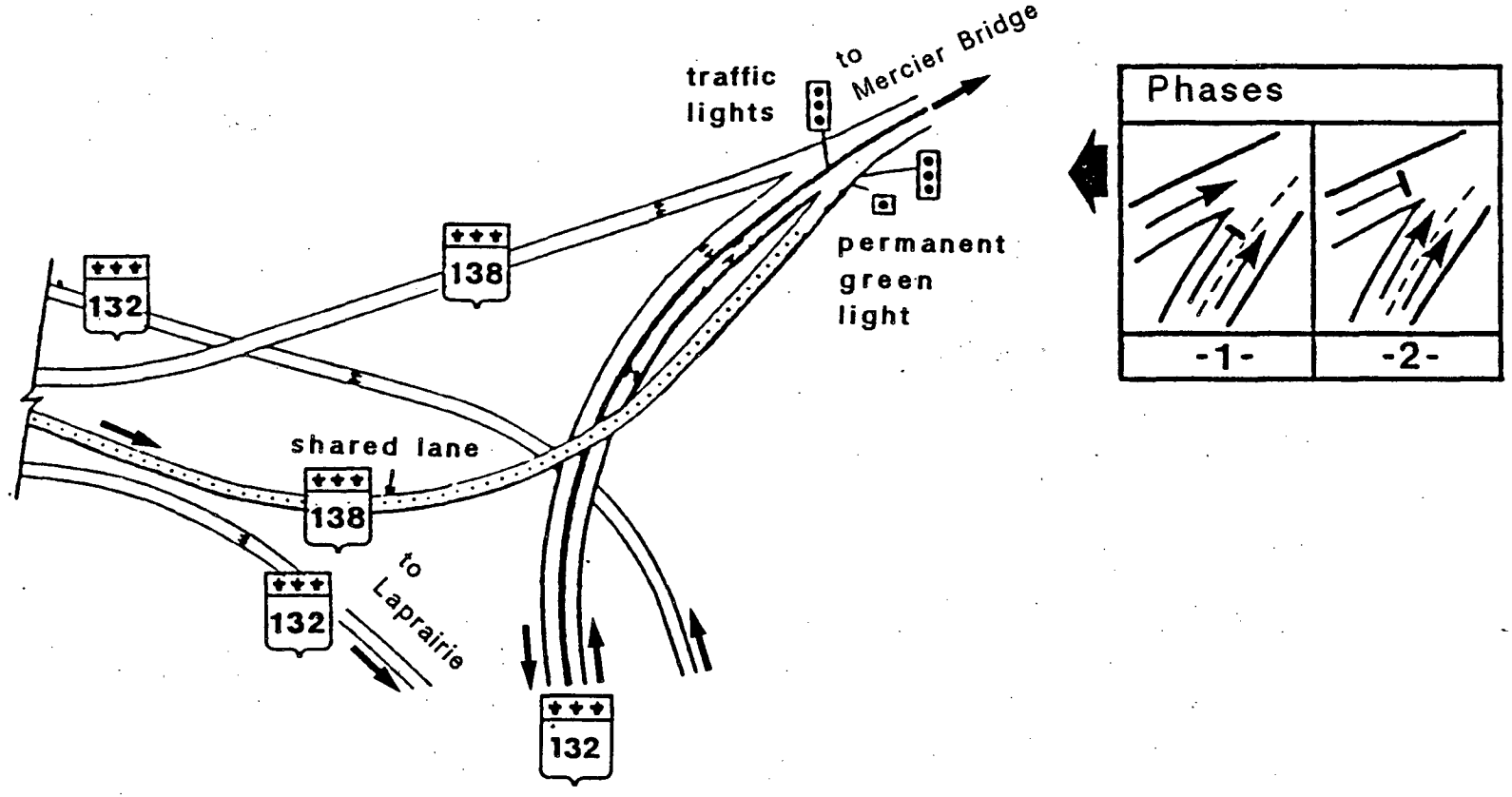


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TABLE 3

TRAFFIC VOLUME IN 1984 AND 1987
SOUTHERN APPROACH TO HONORÉ MERCIER BRIDGE,
TO MONTREAL

	AVERAGE RUSH HOUR VOLUME 1984	AVERAGE RUSH HOUR VOLUME 1987	AVERAGE RUSH HOUR VOLUME 1984-87 %	AVERAGE ANNUAL DAILY VOLUME 1984	AVERAGE ANNUAL DAILY VOLUME 1987	AVERAGE ANNUAL DAILY VOLUME 1984-1987 %
HONORÉ MERCIER BRIDGE	-	-	-	29,470.00	34,901.00	18.43
ROUTE 132 EAST STE-CATHERINE/ MERCIER BRIDGE SECTION	1,240.00	1,472.00	18.71	12,106.00	16,349.00	35.05
ROUTE 132/138 CHATEAUGUAY/KAHNAWAKE TRAFFIC CIRCLE SECTION KAHNAWAKE	3,032.00	2,571.00	(15.20)	21,294.00	23,092.00	8.44

Note: Numbers in parentheses indicate a negative quantity.

Source: M.T.Q. sampling station counts.

Bridge. As a result, long queues over this section are common.

5.1.1.2 Length of traffic queues

The C.I.T.S.O., the C.I.T. Haut-St-Laurent and traffic reporters all confirmed that the traffic queue regularly extends about three kilometres from the traffic lights at the junction of eastbound Route 132 and westbound Route 138/132 to the Kahnawake traffic circle, which marks the beginning of the existing bus lane.

In addition, the same sources agree that the queue can extend beyond the railway track, covering a distance of about four kilometres from the approaches to the bridge. They indicate that this situation occurs once or twice a week, when an accident or other incident occurs, or when weather conditions are particularly adverse.

5.1.2 Bus service

The congestion of the southern approach to the Honoré Mercier Bridge regularly extends beyond the existing bus lane and causes significant delays for buses using this corridor.

We have demonstrated above that these delays affect the quality of bus service (total travel time increased, inability to meet scheduled arrival times) and cause additional costs for carriers.

5.1.3 Conclusion

Although the existing bus lane has significantly shortened travel time over that specific section of the route, long delays are frequently observed before reaching the bus lane, thus affecting the quality and effectiveness of bus service. This has an impact on reliability, which should normally further increase public transit ridership, so that the bus service provides a less attractive alternative to the automobile.

An extension of the bus lane to before the railway track appears justified. It will help preserve the gains made in terms of travel time over the section covered by the bus lane and maintain the reliability of the bus service, which will promote the use of public transit.

5.2 PROPOSED EXTENSION

5.2.1 Objectives

The proposed extension is designed to meet the short and medium-term objectives of increasing the capacity of the Honoré Mercier Bridge axis. The solution can be implemented in the short term, at an acceptable cost and within the existing rights of way.

5.2.2 Proposed development for the bus lane

The bus lane could be extended 1.5 kilometres back from the existing lane, i.e. to 300 m (258 m) beyond the Conrail railway track (see Figure 7).

As is the case with the existing bus lane, it is completely developed within the existing Route 132/138 right of way and would not decrease its capacity.

As Figure 8 shows, the central axis of the roadway is relocated 3.65 metres west to retain the street lights along the east side of the highway. To remain within the right of way, the addition of a fifth lane for buses only means the shoulder on the west side must be cut back by 0.75 metre. Underground drainage would therefore be necessary. The right lane in the direction of Châteauguay is widened to 4.2 metres, offsetting the reduction in the width of the shoulder.

5.2.3 Geometry improvement of the Kahnawake traffic circle

The ministère des Transports also plans to improve the geometry of the Kahnawake traffic circle to improve its geometry. The preliminary design was submitted to the Kahnawake authorities in April 1986. It involves replacing the traffic circle with a level "T" crossing equipped with a system of traffic lights.

At this intersection, the development of the new bus lane extension will enable part of the existing roadway, which will not be used by regular traffic, to be reclaimed. In addition, this lane will be independent of the intersection and its traffic lights and so will spare buses an additional delay and minimize potential conflicts with vehicles from the Kahnawake urban sector. Road signs will be installed at the intersection to advise motorists of the bus lane.

FIGURE 7

POTENTIAL EXTENSION OF EXISTING BUS LANE

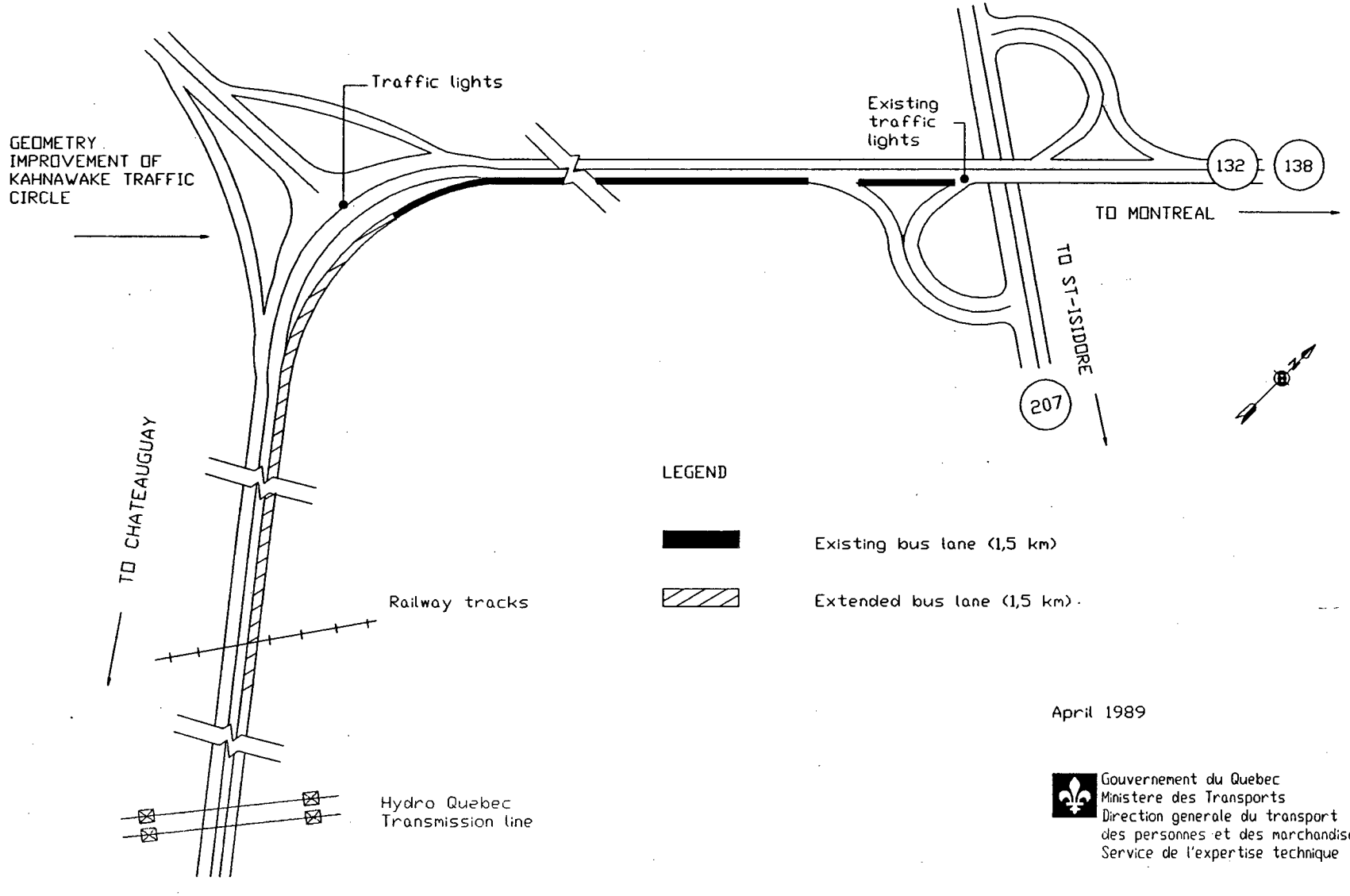

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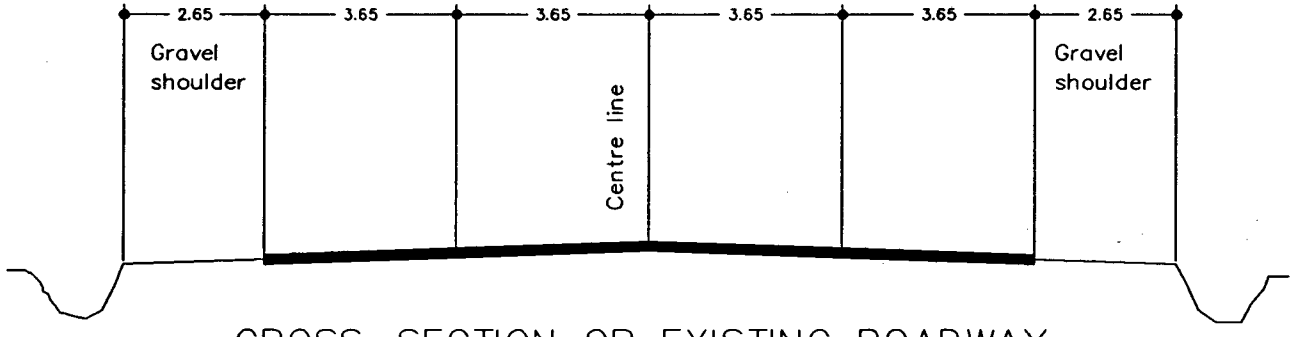
FIGURE 8

BUS LANE

FROM KAHNAWAKE TRAFFIC CIRCLE

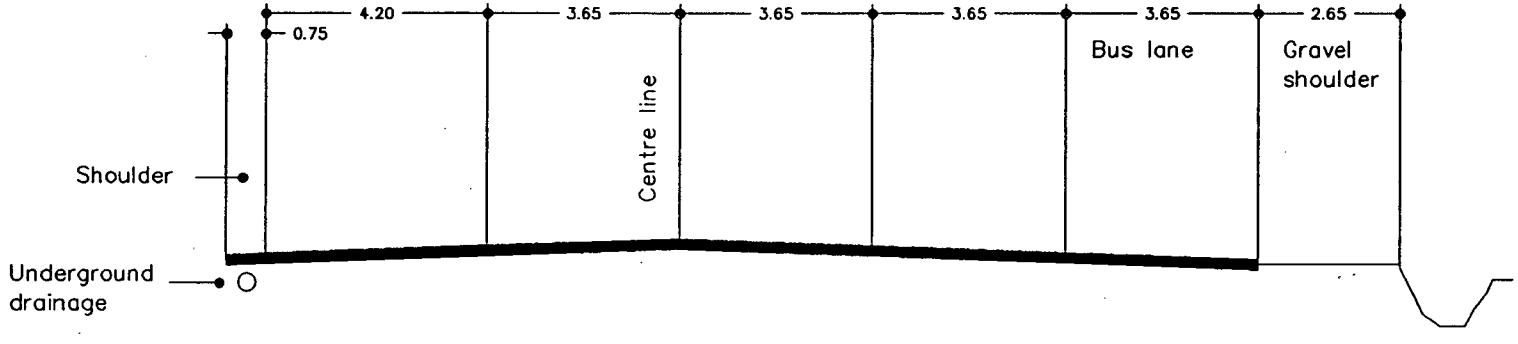
TO 300 M BEFORE THE RAILWAY TRACK



CROSS-SECTION OR EXISTING ROADWAY

ROUTE 132/138

WEST EAST



PROPOSED CROSS-SECTION

ROUTE 132/138

Note: Dimensions are given in metres.

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5.3 Expected benefits

Apart from the reduction in average travel time for buses achieved by using the extended bus lane, other benefits are also expected:

- the extension of the bus lane will significantly improve the reliability, regularity and punctualness of the bus service;

- the extended bus lane will help to increase public transit ridership, in view of its highly visible effect on motorists using this corridor and especially in the context of the major road works planned for the Montréal region in the short and medium terms. This context will help encourage some modal transfer from the automobile to buses and create a lasting habit for many users;

- the extension will help reduce the operating costs of the various carriers using the bus lane.

The funds thus saved could be redirected towards the development of new public transit services such as new routes based on the specific needs of regional users.

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