

REGIONAL MUNICIPALITY OF OTTAWA-CARLETON
MUNICIPALITÉ RÉGIONALE D'OTTAWA-CARLETON

REPORT
RAPPORT

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DATE 12 August 1998

TO/DEST. Co-ordinator Transportation Committee

FROM/EXP. Director Mobility Services and Corporate Fleet Services
Environment and Transportation Department

SUBJECT/OBJET **BUS BAY GUIDELINES**

DEPARTMENTAL RECOMMENDATION

That the Transportation Committee recommend Council approve the guidelines for the installation and removal of bus bays on Regional roads as outlined in Annex A.

INTRODUCTION

On 01 April 1998, the Transportation Committee requested a report on the subject of removing bus bays that are currently used by OC Transpo. In response to this, the Transit Priority Task Force reviewed the existing guidelines for bus bays, updated them and considered how the elimination of bus bays can be included in the transit priority programme. The analysis and conclusions are summarized in this report.

BACKGROUND

Until 1995, the RMOC did not have explicit guidelines on the installation of bus bays. The RMOC practice had evolved over many years and bus bays were normally provided on high volume arterial roadways unless cost considerations or property constraints prevented them from being constructed. The decision to construct bus bays was left to the discretion of the designer with input from the Mobility Services Division and OC Transpo.

Bus Bay Removal on Baseline Road

In the Fall of 1994, six existing bus bays were removed on Baseline Road between Merivale Road and Fisher Avenue. This was done as a pilot project to evaluate the improvement that would result from the elimination of delay experienced by buses when leaving bus bays to re-enter the traffic stream and to determine the effects on other traffic. The results of the evaluation show that

the removal of the six bus bays on Baseline Road contributed to a higher quality transit service without measurable safety or delay consequences. Therefore, the Transit Priority Task Force will recommend that the temporary construction of the filled-in bus bays be made permanent.

Following the removals, the Region and OC Transpo received both supportive and critical responses. OC Transpo customers and bus drivers praised the removal of bus bays on the basis of the eliminated re-entry delay. Some motorists perceived a safety hazard caused by buses stopped in the travelling lane. The Region received complaints from residents who claimed that the bus bay removal in front of their property created an unacceptable safety hazard when leaving their driveways.

One of the main concerns raised when the bus bays were removed was the potential deterioration of safety. It was argued that buses stopped in the travelling lane would increase the number of rear-end and side-swipe collisions. However, the analysis of accidents at the affected sections of Baseline Road did not reveal a safety problem (Annex C). It should be pointed out, however, that the speed limit on the observed section is 60 km/hr. Therefore, the same conclusions might not be appropriate for road sections with significantly higher speed limits.

BUS BAY GUIDELINES

1. New Construction and Reconstruction

In 1995, following an extensive literature review (Annex D) and the “after” study of the Baseline Road pilot project, bus bay installation guidelines were formulated for future road construction and reconstruction. These guidelines (Annex B) were included in the 1996 Transit Priority Progress Report and presented to the Transportation Committee on 07 February 1996 and approved by Council on 28 February 1996. The guidelines were applied to the reconstruction of Baseline Road and March Road, and to the analysis of bus bay removal on Montreal Road at Bathgate Drive and at Bethamy Lane.

Following the approval of the Region’s Official Plan and Transportation Master Plan (TMP), which include strong support for transit priority measures, a review of the guidelines is timely. The proposed guidelines assume a transit friendly, no bus bay default approach; the installation of bus bays will be considered only if bus bays would decrease the chance of collision (Safety Criteria) or bus bays would increase the efficiency of the transportation system by decreasing total person-delay (Total Person-Delay Criteria).

- Safety Criteria

Experience in Ottawa-Carleton and elsewhere show that, for speed limits of less than 70 km/hr, bus bays are not required for safety reasons, except at locations with substandard alignment.

The 1996 guidelines recommend bus bays be constructed on arterial roads with design speed of 80 km/hr or above. The 80 km/hr design speed usually corresponds to 70 km/hr posted speed limit.

The analysis of accidents before and after the bus bay removal on Baseline Road, where the speed limit is 60 km/hr, did not reveal a safety problem. Therefore, the established threshold of 80 km/hr design speed should remain. However, to make it more understandable to the public at large, the speed threshold should be based on the posted speed limit, of 70 km/hr or more, rather than the road's design speed.

Raising the threshold in the guidelines is not recommended because the safety consequences of bus bay removals on higher speed roads are unknown. Raising the threshold would have insignificant effect on overall transit delay because only a small number of bus stops would be affected; 99 % of the 5200 bus stops in the Region are on roadways with speed limits lower than 70 km/hr. Furthermore, all the reviewed literature recommend the provision of bus bays on high speed roads.

The 1996 guideline recommends bus bays at locations with substandard alignment. This includes, but is not limited to, horizontal and vertical curves with limited sight distance and bus stops at the bottom of a steep grade. This safety consideration should remain.

- Total Person-Delay Criteria

In order to avoid excessive delay to other vehicles, including buses, it is recommended that bus bays be provided at locations where buses wait for a significant length of time, or where traffic tie-ups would occur on a regular basis without the bay.

The TMP calls for the analysis of total person-delay instead of total vehicle-delay when comparing alternative designs. Therefore, bus bays should be installed when their presence would decrease total person-delay. Specific conditions when this would normally occur are:

- a) Average dwell time during the peak hours is longer than 25 to 30 seconds.
- b) The queue behind the stopped bus would cause a recurring failure of the adjacent signalised intersection. Bus frequencies and vehicular volumes are implicitly included in this criterion. To determine whether this criteria is fulfilled, a detailed analysis of intersection operation might be required. Normally, most mid-block bus stops would be curb side stops while most far-side or near-side bus stops would be in the auxiliary lanes which would also serve as bus bays.

2. Existing Bus Bays

The 1996 guidelines did not address the removal of existing bus bays. The Transit Priority Task Force recommends that the removal of existing bus bays should be treated in the same way as any other new transit priority improvement. A list of problematic bus bays will be developed and evaluated to prioritize the order in which their removal will be addressed. The safety criteria described for new construction and reconstruction will be observed. All projects in the Transit Priority Programme, including bus bay removals, will be ranked on the basis of a cost-benefit analysis when the annual programme is developed each year.

CONSULTATION

The preparation of these guidelines does not require a public hearing. Normal public consultation procedures will be followed for specific construction projects.

Telephone interviews with staff from 12 major cities revealed that although none had explicit policies on the provision of bus bays, normally, mid-block bus bays would not be installed in Toronto, Hamilton, Vancouver, Edmonton, Montreal and Fredericton.

This report has been circulated to the Regional Cycling Advisory Group (RCAG). According to RCAG, roadways without bus bays create less chances for conflicts between cyclists and buses, therefore, they support the recommended guidelines.

FINANCIAL IMPLICATIONS

In the case of new construction and reconstruction, bus bays increase construction and maintenance costs. Therefore, the implementation of the proposed guidelines are likely to decrease costs of construction. The removal of existing bus bays will be financed from the Arterial Transit Priority Budget, Account 942-30634.

CONCLUSIONS

The proposed guidelines support the objectives of the Region's Transportation Master Plan and are based on the Transit Priority Task Force's direct experience with bus bays and the documented experience in other jurisdictions.

For new construction or reconstruction, a bus bay will be constructed only if the absence of a bus bay would increase total person-delay or if required for safety reasons.

Bus bay removal projects will be ranked with other bus priority projects based on a cost-benefit analysis while the safety criteria is observed.

*Approved by G. Malinsky on behalf of
Doug Brousseau*

KM/ks

Attach. (3)

RECOMMENDED BUS BAY GUIDELINES

During the design stage of the construction of new roadways or rehabilitation of existing roadways, the provision of bus bays will be evaluated individually. Input will be obtained from both O.C. Transpo and the Mobility Services Division. These guidelines may be modified as additional experience is gained.

The installation of new bus bays will be considered only if the Safety or Total Person-Delay Criteria is met.

a) Safety Criteria:

- (1) Speed limit is 70 km/hr or over.
- (2) Substandard horizontal or vertical alignment.

b) Total Person-Delay Criteria (including car and bus occupants):

- (1) Average dwell time for buses at the stop during the peak hours is at least 25 to 30 seconds.
- (2) The queue behind the stopped bus would cause a recurring failure of the adjacent signalized intersection.

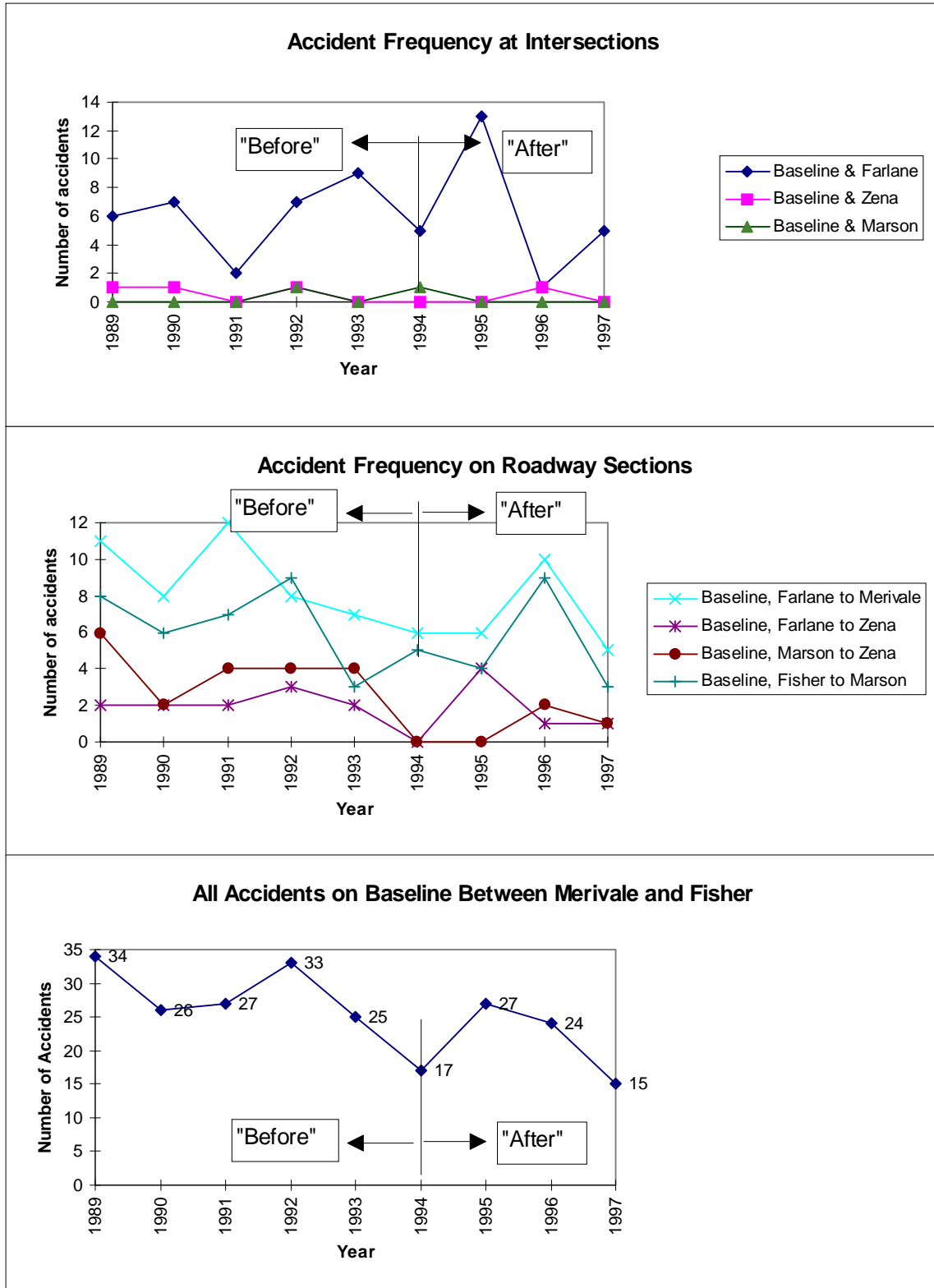
Removal of existing bus bays be ranked with other transit priority measures on the basis of a cost-benefit analysis.

1996 BUS BAY GUIDELINES

During the design stage of the construction of new roadways or rehabilitation of existing roadways, the provision of bus bays should be evaluated individually in accordance with the following guidelines. Input should be obtained from both OC Transpo and the Mobility Services Division. These guidelines will apply primarily to suburban arterial roadways as the provision of bus bays on other roadways is often dictated by property and development constraints. It should be noted that these are guidelines only, which may or may not be applied in any particular case and that they will be modified as additional experience is gained. It is felt that considerable experience must be gained with these guidelines and the pending yield to bus legislation before a firmer policy can be established.

- a) Bus bays should not be built if they prevent provision of adequate passenger amenities, such as shelters or adequate waiting space, as deemed necessary by OC Transpo.
- b) Bus bays should not be provided if they will unduly impact property or construction costs.
- c) Generally bus bays should not be provided on six-lane arterial roadways.
- d) Consideration should be given to providing bus bays when design speeds are 80 km/hr or greater.
- e) Consideration should be given to installing bus bays when a bus stop is located where horizontal or vertical roadway alignment conditions are less than ideal, for example, at the bottom of a steep grade or where sight distance is limited.
- f) Consideration should be given to providing bus bays for heavily used stops where high dwell times are expected.
- g) Generally bus bays should be considered when stops are located at signalized intersections where they can be incorporated with right-turn lanes.
- h) Decisions about mid-block bus bays should take into account the intersection between buses and platooning traffic.
- i) Bus bays should be provided, if possible, at stops which will be used as time points.

ACCIDENT STATISTICS FROM THE BASELINE BUS BAY REMOVAL PROJECT



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