BICYCLE ADVISORY COMMITTEE

HIS WORSHIP, THE MAYOR
AND COUNCILLORS

RE: ASPHALT CURBS ON INTERIM ROADWAYS

RECOMMENDATION:

1. **THAT** Council forward a copy of this report to the Traffic and Transportation Committee (Traffic Safety Division) for information.

REPORT

The Bicycle Advisory Committee at its meeting held on 2001 May 24, received and adopted the attached report evaluating methods of mitigating the safety concerns of cyclists relative to extruded asphalt curbs on interim standard cycle roads which have narrow travel lanes.

Arising from the Committee's discussion, members expressed support for marking curbs for visibility but they were concerned that at times there is a paved shoulder behind edge markings. It was therefore requested that the Traffic Safety Division consider additional curb markings when there is not a rideable surface to the right of the edge and further suggested use of 'cat eyes' as an additional road marker. The members also requested consideration that the markings should not narrow the usable surface of the road.

The Committee concluded by suggesting that the Traffic Safety Division consider implementing a spot improvement program to address significant concern as identified.

Respectfully submitted,

Councillor N. Harris
Chair

Mayor D. Drummond
Vice Chair

CC: -CITY MANAGER
-DIRECTOR ENGINEERING

City of Burnaby

INTER-OFFICE COMMUNICATION

TO:	BICYCLE ADVISORY COMMITTEE	**DATE:**	2001 05 15
FROM:	ASST. DIRECTOR ENGINEERING, TRAFFIC & ENGINEERING SYSTEMS	**FILE:**	55-07-09

SUBJECT: **Asphalt Curbs on Interim Roadways**

PURPOSE: To evaluate methods of mitigating the safety concerns of cyclists relative to extruded asphalt curbs on interim standard cycle roads which have narrow travel lanes.

RECOMMENDATION:

1. **THAT** a copy of this report be sent to the Traffic Safety Committee for information.

REPORT

1.0 INTRODUCTION

At the March 22, 2001 meeting of the Burnaby Bicycle Advisory Committee (BAC), the Committee requested staff to review methods of addressing concerns with raised asphalt curbs on roads with narrow paved travel lanes. It is noted that the issue of narrow pavement widths with asphalt curbs was addressed by Council at its meeting of 1998 December 14 when the following recommendations of BAC were adopted.

" 1. **THAT** Council support the priority system used to determine where pavement widths designed to accommodate cyclists should be included in pavement rehabilitation projects be:

a) designated cycle roads
b) roads identified by the Bicycle Advisory Committee as important to cyclists
c) other collector and arterial roadways

2. **THAT** Council support application to the Provincial government and any other potential funding sources to provide pavement widths designed to accommodate cyclists on collector and arterial roads, however that the provision of pavement widths designed to accommodate cyclists not be contingent on securing external funding;

3 **THAT** Council support the priority system detailed above be used to evaluate where available funding is applied to provide pavement widths designed to accommodate cyclists;

4. **THAT** given sufficient width for the accommodation of cyclists, issues relevant to curbs required to channel water in order to protect the pavement structure become irrelevant."

Accordingly the current concern primarily relates to pavement rehabilitation projects on interim standard cycle roads carried out prior to 1998.

2.0 BACKGROUND

The City of Burnaby maintains two types of roadways; interim and finished standard. Interim roads have a paved asphalt cap for the travelled portion of the roadway usually flanked by a gravelled shoulder and drainage ditches. Finished urban standard roads have a cross section that includes curbs and gutters, piped drainage, streetlighting, sidewalks and boulevards. Finished standard roadways are achieved when adjacent property development occurs, or through a neighbourhood Local Improvement Program (LIP).

Hand formed asphalt curb is installed on interim roadways during road maintenance to address specific drainage problems. More significant lengths of machine extruded asphalt curbs may be installed under the City's road rehabilitation program. It is noted that the asphalt curbs do not diminish the width of the travelled lanes as the pavement is widened 200 - 300 mm to accept the extrusion. The asphalt curbs at the edge of the travel lane act to channel water runoff preventing damage to the subgrade and scouring of the gravel shoulder. The height of the curb varies but is considerably lower than a standard concrete curb. This practice has proven to substantially extend the effective life of the pavement thus reducing maintenance costs. The curb also holds the shoulder gravels in place more effectively and appears to keep the vehicular traffic off the edge of the pavement. The benefit to this is that the occurrence of potholes and rutting in the gravel shoulder adjacent to the asphalt is significantly reduced and therefore the deterioration of the edge of pavement is virtually eliminated.

3.0 THE PROBLEM

On some interim sections of roadway with narrow travel lanes the installation of asphalt curbs has become an issue in part because of the chance of vehicles "trapping" cyclists against the curb. When a cyclist is pinched toward a curb face by a vehicle passing too close the side of the bicycle tire can come in contact with a curb face. The forces on the wheel then cause the bike to lean, which in turn can cause a sudden fall. The hazard is more significant in proximity to moving vehicles, hence the concern by the BAC.

Part of the problem for cyclists is the lack of visual contrast between the asphalt curb and the asphalt roadway. Concrete curbs are more visible not only because they contrast with the asphalt due to difference in materials but also due to a greater "footprint" as they are higher and associated with a concrete gutter pan. The situation is more acute when lighting is poor during dawn and dusk especially when weather is inclement. The interim standard roadway is usually associated with reduced interim street lighting standards.

Cyclists are also concerned with the accumulation of debris behind the "dam" caused by the curb. Cyclists have noted that the debris can be a hazard in itself, result in tire puncture, and compound ponding water problems.

4.0 OPTIONS

Staff have identified 5 options for mitigating the problems posed by the asphalt curbs. The feasibility and desirability of each is briefly reviewed below.

4.1 Widening

Widening is being conducted with current rehabilitation projects or when the road is finished to a final standard. Current installation practices offset the negative concerns with the asphalt curb through added installed road width. The possibility of widening the roadways of current concern will be addressed at the next rehabilitation cycle. Retrofitting roads with a widened paved shoulder in advance of normal rehabilitation is not considered cost effective.

4.2 Removal of Curb

Consideration of the removal of the curbs must also weigh the reasons for installing them in the first place. Removal of the curbs alone would be expensive and damage the pavement structure hastening the need for repairs in addition to the removal costs.

4.3 Reprofiling the edge of curb face

"Ramping" of the edge of the curb would mitigate only a part of the concerns arising from crowding by vehicles. Reprofiling the longitudinal face of the curb would be very costly due to the need for specialized grinding equipment, the availability of which is uncertain.

4.4 Installation of Warning Signs

Installation of warning signs (WA-23R) showing roadway narrowing may be more confusing than helpful. Consistent placement of the signs requires that only one sign in advance of the initial narrowing is possible. Supplementary signs to advise of the raised edge condition and the hazard for cyclists would be desirable. As there is no "standard" sign one would need to be designed and again the message may confuse more

4.5 Marking a white edge line

As discussed the asphalt curb can be difficult to see at night or in poor lighting conditions. Marking the edge of the road is a cost effective measure and does not contravene road marking practices outlined in the Uniform Traffic Control Devices of Canada. Increasing the visibility of the travel lane edge also alerts motorists to the narrowness.

5.0 DISCUSSION AND CONCLUSION

While the asphalt curbs on roadways may create a hazard for cyclists in some circumstances they do obviate the greater hazard created by potholing and rutting of the shoulder at the edge of pavement. Similarly the concern regarding accumulation of debris in front of the curb must be balanced against the transfer of shoulder gravel to the paved surface which occurs with normal uncurbed cross-sections. Street sweeping equipment is more adept at cleaning the pavement to face of curb than to edge of shoulder.

The problem of cyclists being "pinched" against a curb can occur on finished streets with concrete curbs as well as interim roads with asphalt curbs. Concrete however presents a contrasting surface relative to the asphalt of the roadway. The asphalt curb at the edge of the asphalt travel surface is not as readily distinguished especially at night. Accordingly the definition of the edge of the lane, in front of the curb, by a solid white line should mitigate this concern.

Unless directed otherwise, staff will proceed with this edge lining in conjunction with the regular, seasonal, pavement marking program. We will look to the cycling community to identify problem areas relative to debris accumulation outside of the regular street sweeping program.

P. Liivamagi, P. Eng.
ASST. DIRECTOR ENGINEERING,
TRAFFIC & ENG. SYSTEMS

MDS:

cc: City Manager