



City of Richmond

Report to Committee

To: Public Works and Transportation Committee

Date: June 10, 2010

From: John Irving, P.Eng. MPA
Director, Engineering

File: 10-6060-01/2010-Vol 01

Re: Funding and Condition of Roads

Staff Recommendation

1. That \$574,000 be allocated to rehabilitation of No. 4 Road from Westminster Highway to Granville Avenue from the Asphalt Paving Provision Account.



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ROUTED TO:		CONCURRENCE		CONCURRENCE OF GENERAL MANAGER	
Budgets		Y	<input checked="" type="checkbox"/>	N	<input type="checkbox"/>
Roads & Construction		Y	<input checked="" type="checkbox"/>	N	<input type="checkbox"/>
REVIEWED BY TAG		YES	<input checked="" type="checkbox"/>	NO	<input type="checkbox"/>
		REVIEWED BY CAO		DEPUTY	
		YES	<input checked="" type="checkbox"/>	NO	<input type="checkbox"/>

Staff Report

Origin

The staff report titled "2010 Paving Program" was presented for information at the March 17, 2010 Public Works and Transportation Committee meeting. Since March, the public and Councillors have raised concerns with the condition of No. 4 Road from Westminster Highway to Granville Avenue.

The purpose of this report is to provide background on the funding and service levels for road maintenance and identify options for rehabilitation work on No. 4 Rd.

Findings Of Fact

The City of Richmond has an extensive road network that includes:

- 150 lane km of Major Road Network (MRN);
- 393 lane km of major roads;
- 850 lane km of local roads;
- 40 km of lanes; and
- 51 City owned parking lots.

This road network inventory has an estimated replacement value of approximately \$325 million (this value does not include property costs or the value of the utilities within the roadways). In Richmond, major road structures generally last 12 to 15 years provided they are not disturbed by utility trenching. Local roads can last up to 25 years.

As reported to Council in 1998, road structures fail according to the curve represented in Figure 1.

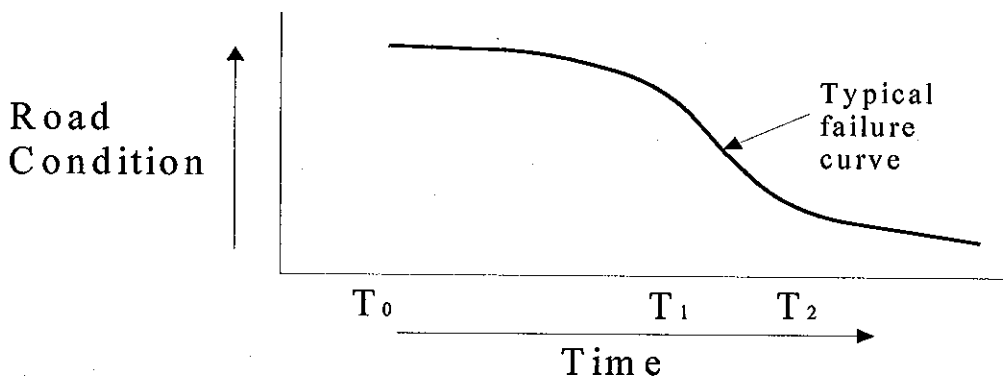


Figure 1

The time between T_0 and T_1 reflects the 12 to 15 year period when roads structures perform well. At T_1 the road structure begins to deteriorate and lose strength. T_2 represents failure of the road structure . Once T_1 is reached, failure occurs rapidly with $T_1 - T_2$ representing a period of approximately 3 to 5 years.

Road rehabilitation work performed at T_1 can effectively restore the road structure to a “like new” condition represented by T_0 . Failure to perform this rehabilitation work leads to the rapid deterioration and failure of the roadway. At T_2 , a complete rebuild of the road structure is required. The cost of rebuilding a roadway at T_2 is approximately 3 to 4 times the cost of rehabilitation at T_1 , therefore, it is to the City’s financial advantage to perform the rehabilitation at T_1 .

The City’s Pavement Management Model estimates the cost of performing road rehabilitation work at T_1 , which will minimize road failure and expensive road reconstruction on a City wide basis, is approximately \$6.3 million annually for non-MRN roads. MRN roads are funded through cost sharing agreements with Translink and are not addressed in this report. In 2006 Engineering identified \$5.0 million annually as the recommended funding level for road rehabilitation for non-MRN roads. The identified \$1.3 million increase is largely due to increasing oil prices and road network deterioration.

The City’s current annual funding level for asphalt paving is \$3.0 million for non-MRN roads, which is less than half of the annual funding required to maintain the non-MRN road network at it’s current standard. This level of funding is consistent with previous years and has resulted in a backlog of non-MRN roads that require rehabilitation or reconstruction. The Pavement Management Model indicates that:

- there is a \$4.7 million backlog of non-MRN roads that are failing (at T_2) and require reconstruction; and
- there is a \$21.7 million backlog of non-MRN roads that require rehabilitation (at T_1).

There is no provision in the City’s current budget to address this existing backlog, and at current funding levels, the non-MRN road network will deteriorate further over time. Roads that are currently at T_1 will continue to deteriorate to T_2 and fail. Half of the non-MRN roadways that are approaching T_1 will be added to the backlog.

It is important to recognize that if funding levels are not increased, the over all non-MRN roadway condition will continue to deteriorate and most roadways will eventually fail.

Analysis

As noted above, there is a growing backlog of non-MRN roadways that have reached T_1 that have no funding for rehabilitation. Examples of these backlogged rehabilitation projects are:

- No. 4 Road from Westminster Highway to Granville Avenue;

- Cambie Road from Garden City Road to No. 4 Road;
- Alderbridge Way from No. 3 Road to Minoru Boulevard;
- Blundell Road from No. 4 Road to No. 5 Road; and
- Triangle Road east of No. 6 Road.

No. 4 Road from Westminster Highway to Granville has required rehabilitation for a number of years and is deteriorating rapidly. Further inaction will lead to road failure and a requirement for road reconstruction. Preliminary work indicates that No. 4 Road requires a more substantial resurfacing program than a grind and overlay due to the road's current condition. The estimated cost of No. 4 Road rehabilitation from Westminster Highway to Granville is \$574,000.

The Asphalt Paving Provision Account has accumulated a balance of approximately \$1.2 million and staff requests that \$574,000 of these funds be allocated to the improvement of No. 4 Road. The Asphalt Paving Provision account is a collection of under spent Roads Maintenance programs and is not an annually funded program. The remainder of funds in the Paving Provision Account will be recommended for allocation to other backlog paving projects as they become critical, however, this remainder is clearly not adequate to fund rehabilitation of the entire backlog and additional funding will be required to maintain the non-MRN road network at its current condition.

Next Steps

Staff will make the following requests for Council's consideration in subsequent reports:

- One time funding requests to finance priority backlog non-MRN road rehabilitation or reconstruction projects; and
- Additional level request to finance the existing shortfall in the non-MRN annual asphalt paving budget.

Financial Impact

The Asphalt Paving Provision Account has a balance of approximately \$1.2 million. This balance has accumulated through under spent Road Maintenance programs over a number of years. Utilization of \$574,000 from this account on the No. 4 Road project will make these funds no longer available for unforeseen works projects.

Conclusion

Rehabilitation of asphalt pavement before roadways fail is a key component to minimizing road repair costs over the long term. Failure to rehabilitate roadways in a timely manner leads to road failure and road reconstruction that costs 3 to 4 times more than rehabilitation. The City's Pavement Management Software has identified a \$26.4 million backlog in non-MRN roadway reconstruction and rehabilitation projects. This is a key indicator that the current asphalt pavement budget is inadequate to maintain the condition of Richmond's roadways. The model

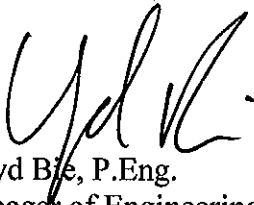
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estimates that \$6.3 million in non-MRN roadway rehabilitation funding is required annually, which is over double the \$3.0 million in the 2010 non-MRN asphalt pavement budget.

It is clear that without additional funding for non-MRN roadway rehabilitation the over all non-MRN road network will continue to deteriorate and will ultimately fail.

No. 4 Road from Westminster Highway to Granville Avenue requires rehabilitation and is not included in the 2010 paving program. The Engineering Department recommends that \$574,000 of the \$1.2 million in the Asphalt Paving Provision Account be made available for rehabilitation of No. 4 Road. Further inaction will result in failure of the road structure which will require road reconstruction which is more costly than rehabilitation.



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