LRT Tunnel, Elevated Structure Policy Direction and Costs Per Kilometre

Recommendation:
That the March 22, 2011, Transportation Department report 2011TD4999 be received for information.

Report Summary

This report provides details on an approach to a policy direction for incorporating elevated or tunnel sections associated with an LRT project and costs per kilometre.

Previous Council/Committee Action

At the December 8, 2010, Transportation and Public Works Committee meeting, the following motions were passed.

> That Administration prepare a report to Transportation and Public Works Committee identifying potential policy guidance for determining when tunnels or elevated structures must be used in LRT planning and design and costs associated with tunnels and elevated structures.
>
> That Administration provide a report to Transportation and Public Works Committee on the average kilometre cost of tunnelling out elevated structures and upgrade.

Report

LRT Tunnel and Elevated Structure Policy Direction

In response to the Audit of the Transportation Planning Branch, a Congestion Level Policy is being developed. The policy would establish specific direction from City Council regarding acceptable congestion levels for all modes of transportation within the city. This policy would develop recommended threshold levels for intersection congestion for areas including, but not limited to the Downtown, mature neighbourhoods, suburban neighbourhoods, LRT routes, and truck routes. As this policy is developed, the guidance for determining grade separations for LRT projects will be defined. This Congestion Level Policy is scheduled to be completed for City Council consideration in the fall of 2011.

Costs associated with Elevated Structures, Tunnels and per Kilometre

- Typically when estimating at a conceptual level the premium from at-grade to elevated LRT is three to five times and at-grade to tunneled LRT is five to ten times. These range estimates are based on unknowns associated with market, geotechnical, environmental, and historical conditions. Based on the level of design and the assessment of the factors above the Southeast to West LRT approximate average kilometre cost of at-grade LRT, elevated LRT and tunneled LRT in 2010 dollars are as follows:
  - At-grade LRT – $30 million per kilometre
  - Elevated LRT – $120 million per kilometre
  - Tunneled LRT – $200 million per kilometre

- The costs include track work, modification to existing roadway as a result of LRT alignment, signals and associated utility relocations. Costs relating to special track work, LRT systems design, LRT vehicles, station platforms, operation, and maintenance facility, park and ride facilities, and transit centres are not included in these average cost estimates.
- The LRT crossing of the North Saskatchewan River is a unique component of the Southeast LRT project. The conceptual cost estimate for a basic bridge structure over the North Saskatchewan River on the approved alignment in an equivalent kilometre cost is $530 million per kilometre. This premium is attributed to the complexity and stringent environmental requirement working over the North Saskatchewan River.

Others Reviewing this Report

- M. Koziol, General Manager, Capital Construction Department and Acting General Manager, Asset Management and Public Works Department