

To: Phil Healy, Port of Portland
Robin McCaffrey, Port of Portland

From: Tina Adams, MLG

CC: Roger Anderson, Port of Portland

Date: August 9, 2010

Re: **TRIP Tiger Grant Application – Life Cycle Costs for Graham Road**

As the Port requested, MLG has reviewed the difference in life-cycle costs for performing the Tiger 2 improvements to Graham Road, and comparing the improvements to a maintenance-phased approach that the City would likely have to incorporate if the Tiger 2 funding is not provided.

LIFE CYCLE COSTS

The lifecycle cost analysis to justify the Tiger2 project proposed pavement structure for Graham Road was performed in accordance with the method described by the FHWA’s RealCost software available at:
<http://www.fhwa.gov/infrastructure/asstmgmt/lccasoft.cfm>

An estimation of the City of Troutdale’s roadway maintenance for Graham Road, if the project is not funded, was also performed.

The traffic data from the draft traffic analysis report was used to generate the traffic numbers. The user costs and probability distributions recommended in the GreenRoads manual were utilized, since agency specific data is currently unknown. Note that the FHWA guidelines indicate to include pavement structure related costs only. No other costs, such as traffic control, reconstruction of curb, etc., are used in this specific comparison.

PAVEMENT IMPROVEMENTS

TIGER 2 PROPOSAL

The improvements estimated for the Tiger 2 alternative were the 40-year design life alternative included in the cost estimate. Slurry seal maintenance was then assumed to occur every seven years, for a total duration of 35 years. Assumed agency costs are included below. User costs are calculated by the RealCost program.

Year 0 (2012)	Pavement repair and reconstruction	\$669,000
Year 7	Pavement Slurry Seal	\$65,000
Year 14	Pavement Slurry Seal	\$65,000
Year 21	Pavement Slurry Seal	\$65,000
Year 28	Pavement Slurry Seal	\$65,000
Year 35	Pavement Slurry Seal	\$65,000

CITY MAINTENANCE

The following schedule of improvements was assumed:

Year 0 (2012)	Distressed pavement repair identified in the Pavement Design Report	\$177,000
Year 2	2" Pavement Overlay with additional pavement repair	\$397,000
Year 7	2" Pavement Overlay with additional pavement repair	\$350,000
Year 12	2" Pavement Overlay with additional pavement repair	\$300,000
Year 17	2" Pavement Overlay with additional pavement repair	\$250,000
Year 24	Pavement Slurry Seal	\$65,000
Year 31	Pavement Slurry Seal	\$65,000
(Year 38)	(2" Pavement Overlay – Planned, but not included in comparison of results by the program)	

RESULTS

The following analysis results were provided:

Total Cost				
Total Cost	Alternative 1: Reconstruct and Improve Road per Tiger Grant Estimate		Alternative 2: City Fix Distressed Pavement And Overlay Frequently	
	Agency Cost (\$1000)	User Cost (\$1000)	Agency Cost (\$1000)	User Cost (\$1000)
<i>Undiscounted Sum</i>	\$845.38	\$39.51	\$1,604.00	\$62.59
Present Value	\$844.73	\$39.43	\$1,598.15	\$62.25
Lowest Present Value Agency Cost	Alternative 1: Reconstruct and Improve Road per Tiger Grant Estimate			
Lowest Present Value User Cost	Alternative 1: Reconstruct and Improve Road per Tiger Grant Estimate			

Notes:

1. Estimated Agency Costs, as I entered into the software, are simply direct construction costs of the pavement and do not include inflation over time.
2. User costs reflect the higher traffic over time volumes over time.
3. The Agency Costs reflect that the pavement has additional structural design life available when the comparison is made between the two scenarios, at Year 35 (Comparison Year per GreenRoads recommendation).

Simply put, it is almost twice as much to “fix” the roadway a little at a time, than it is to fix it with the Tiger 2 funds then maintain it over the next 35 years. It is also less costly to the travelling public to perform the improvements while traffic is light, than after the industrial park is fully functioning.

If you have any questions, or need clarification of any of the items, please contact me at 503-726-3149 or tina.adams@moyanogroup.com.

Attachment: RealCostReport.pdf