

DRAFT Concrete Lane Costs and Risks

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This memo documents some of the potential costs and risks to consider as the City of Eugene and LTD discuss the City's requirement to construct concrete lanes for all areas where EmX buses operate in mixed traffic.

Current Assumptions

- In areas where EmX buses operate in exclusive right-of-way (queue jumps, BAT or bus-only lane), the project would include the construction costs and impact analysis of full depth reconstruction to concrete for the exclusive lane.
- In areas where EmX buses operate in mixed traffic, the project would only include the construction costs and impact analysis of full depth reconstruction to concrete at stations including dwell pads adjacent to stations.
- All corridors include both exclusive running way and mixed traffic segments. EmX on Highway 99 and 30th Avenue/LCC operate primarily in mixed traffic. EmX on River Road operates primarily in exclusive right-of-way. EmX on Coburg is mixed between exclusive right-of-way and mixed traffic.

Attributes of Full-Depth Reconstruction

When lanes are reconstructed in concrete, they will require full-depth reconstruction. In addition to the costs of full-depth reconstruction, the following items will have implications for cost and impact:

- **Stormwater.** Where the roadway is reconstructed, the City or ODOT (depending on jurisdiction) would require treatment of all stormwater in the contributing impact area.
- **ADA.** All intersections that the reconstructed segment passes through will need to be improved to full ADA compliance including curb ramps and signal improvements.
- **Utilities.** Where the roadway is reconstructed, we could impact utilities and/or incur private utility coordination, construction and schedule risk.
- **Construction impacts.** As the project footprint expands, the impacts and duration of construction will also expand including business access impacts.
- **Analysis and design costs.** As the project footprint expands, the cost of design and environmental analysis will increase. This could impact the cost of and schedule for completing the AA.
- **Maintenance.** The maintenance responsibilities and assumptions could be different for concrete lanes as compared to mixed traffic operations.

Order of Magnitude Cost Difference

The cost of full reconstruction is roughly 3-5 times the per mile cost of reconstruction only at stations. Generally, the per mile cost of converting an existing lane to a concrete BRT lane might be \$5-8 million.

The per mile cost of running primarily in mixed traffic with EmX stations and some restriping of lanes might be about \$1-2 million. This cost is only for civil elements and does not include contingency costs.

The cost differential becomes significant when multiplied by the round trip lane miles in each corridor. For example, the Highway 99 Corridor is approximately 5.5 miles one-way. The cost to construct concrete lanes for the round trip distance of 11 miles is approximately \$66M for concrete lanes versus \$22M for concrete reconstruction only at stations.

Adding Concrete Lanes Where EmX Vehicles Travel (including mixed traffic)
Impact to Scope and Schedule

Environmental Discipline	Alternatives Analysis	NEPA / Project Design	Construction	Comments
Acquisition, Displacements	No	No	Yes - Potentially more acquisitions required for construction of ADA ramps	
Air Quality	No	No	Yes – more diesel machines running during construction	
Ecosystems (Biological, Fish Ecology, T&E Species)	Yes - Moderate	Yes – Moderate to High		Scope and schedule: Additional analysis related to stormwater, depends on stormwater treatment, ACOE/NMFS permitting, BA requirement and NMFS approval could add 1 yr to schedule for NEPA compliance and permitting
Capital Cost Estimating	Yes	No		
Cultural Resources (Above and Below Ground Resources)	Above Ground – Yes - Moderate Below Ground – Yes – Moderate to High	Above Ground – Yes – Moderate to High Below Ground – Yes - Moderate		Scope and schedule: Above Ground analysis would need to look at impacts to resource properties because of ADA ramps Below Ground – any areas of subsurface disturbance would require research, field review, which would add to scope and could add several months to schedule
Design	No	Yes - High	Yes – much more detailed/technical construction plans required	Scope and schedule: Additional roadway reconstruction would add to scope and schedule for engineering design efforts; location and design of stormwater facilities could add cost
Energy, Sustainability	No	No		
Financial Analysis	No	No		
Geology, Seismic	Yes – Low to Moderate	Yes – Low to Moderate		Scope and schedule: Subsurface disturbance for road reconstruction would require additional analysis, time
Hazardous Materials	No	Yes - High		Scope and schedule: Assumes non-AAI compliant corridor study for AA, AAI compliant Phase 1 ESA required for all areas of reconstruction, which would add to scope and several months to schedule for each corridor

Environmental Discipline	Alternatives Analysis	NEPA / Project Design	Construction	Comments
Land Use, Prime Farmlands	Yes – Low	No		Scope: Longer construction times may require some additional analysis for potential business impacts
Noise, Vibration	No	Yes – Low to Moderate	Yes – more construction related noise impacts	Scope and schedule: Construction related noise impacts could require additional permitting/variances
Operations & Maintenance Cost Estimating	No	No		
Parklands, Recreation Areas, Section 6(f)	No	No		
Public Outreach	Yes	Yes	Yes – much more intense outreach to property/business owners along the corridor during construction. More effort to put together access management plan for construction.	
Socioeconomics, Environmental Justice, Neighborhoods, Community Facilities, Public Services	No	No		
Street, Landscape Trees	Yes - High	Yes – Moderate to High	Yes – Moderate to High Potentially larger impact to root zones of trees	Scope and schedule: Tree analysis would be required where roadways are reconstructed, which would require expanded scope and up to 6 months to schedule
Transportation, Transit, Freight, Parking, Access, Pedestrian, Bicycle	No	Yes – Low to Moderate		Scope and schedule: Additional constructed related traffic analysis
Travel Demand, Ridership	No	No		
Utilities	Yes – Low to Moderate	Yes – Low to Moderate	Yes – Potentially High – need to relocate water pipes outside of roadway for easier access by utility or need to relocate deeper in the roadway	Scope: Additional utilities coordination related to roadway reconstruction
Visual / Aesthetics	Yes – Low to Moderate	No		Scope and schedule: Visual / aesthetics impacts analysis related to tree analysis would be required where roadways are reconstructed and trees may be lost, which would require expanded scope and a few months to schedule

Environmental Discipline	Alternatives Analysis	NEPA / Project Design	Construction	Comments
Water Quality and Hydrology	Yes – Low to Moderate	Yes - High		<p>Scope and Schedule: Additional analysis related to stormwater analysis, treatment and permitting would require some expanded scope and schedule</p> <p>During the NEPA documentation and preliminary design, scope and schedule could be greatly changed to address the sizing and location of stormwater treatment facilities, and it could add 1 yr to schedule for NEPA compliance and permitting</p>
Wetlands and Waters of the State and U.S.	No	No		

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