

Valley Line West LRT Crossing Assessment Summary of Results - 87 Avenue and 178 Street

87 Avenue and 178 Street Intersection

The intersection of 87 Avenue and 178 Street is located at the intersection of Belmead, Summerlea, Thorncliff and Aldergrove communities and is directly adjacent to the southwest corner of West Edmonton Mall. The area experiences high pedestrian traffic due to local activity nodes such as the West Edmonton Mall and the adjacent transit center. The currently planned Valley Line West LRT alignment travels on an elevated guideway on the north side of 87 Avenue between 163 Street and 175 Street, with an elevated crossing across 87 Avenue before returning to at-grade and crossing 178 Street.

Various design options were considered. The three options that performed the best against the assessment criteria are: 1) elevated LRT guideway crossing over 178 Street along the south side of 87 Avenue, 2) elevated LRT guideway crossing over 178 Street along a median alignment of 87 Avenue, and 3) at-grade LRT crossing of 178 Street along the south side of 87 Avenue. Options 1 and 2 deviate from the approved LRT concept plan.

The below table summarizes performance of the top three design options in response to each of the assessment criteria.

Based on the LRT crossing assessment, the elevated LRT guideway along the median alignment performed marginally better than the elevated LRT guideway along the south alignment. The two elevated guideway options performed well in the categories of accessibility, network operations and urban design and social environment. The median alignment option performed better in the urban design and social environment category for the greater distance between elevated guideway structure and the adjacent south side residents. The south alignment option performed incrementally better in the accessibility category due to no impact to adjacent commercial accesses, more consistent roadway geometry and better sightlines along the 87 Avenue roadway. The south alignment option also performed incrementally better in the network operations category as the crossing of the 87 Avenue at one location, instead of two, is more efficient for LRT operation.

Based on these considerations, the elevated LRT guideway along the south alignment is recommended. The LRT would continue westbound on an elevated guideway from the West Edmonton Mall Station, transitioning to the south side of 87 Avenue and crossing over 178 Street before descending to grade level east of 182 Street.



At-Grade LRT, South Alignment



Elevated LRT Guideway, Median Alignment



Elevated LRT Guideway, South Alignment

	At-Grade LRT, South Alignment	Elevated LRT Guideway, Median Alignment	Elevated LRT Guideway, South Alignment																																																				
Accessibility	✓✓	✓✓✓	✓✓✓																																																				
Considerations	<ul style="list-style-type: none"> • 87 Avenue is a constrained right-of-way. It is challenging to fit existing roadways and walkways with the addition of LRT at-grade. The elevated guideway options allow greater opportunity to maintain existing south walkway east of 178 Street without additional property acquisitions. • The elevated guideway median alignment option may impact eastbound left turn access east of 178 Street due to pier placements and potential sightline concerns. Roadway configuration would be more challenging due to pier placement along median. 																																																						
Network Operations	✓	✓✓✓	✓✓✓																																																				
Considerations	<ul style="list-style-type: none"> • Based on initial traffic analysis, it has been determined that a grade-separation of LRT from intersection has the potential to reduce average vehicle travel time delay through the intersection by 14 seconds. The elevated guideway options would provide an average LRT travel time savings of 25 seconds through the intersection. • The elevated guideway median alignment option would require two shifts of track alignment, from north to center and from center to south; resulting in some impact to LRT operations. <p>Afternoon Peak Model Average Delay (seconds/vehicle)</p> <table border="1"> <thead> <tr> <th></th> <th>EBL</th> <th>EBT</th> <th>EBR</th> <th>WBL</th> <th>WBT</th> <th>WBR</th> <th>NBL</th> <th>NBT</th> <th>NBR</th> <th>SBL</th> <th>SBT</th> <th>SBR</th> </tr> </thead> <tbody> <tr> <td>Opening Day, No LRT</td> <td>41</td> <td>45</td> <td></td> <td>29</td> <td>32</td> <td></td> <td>45</td> <td>25</td> <td></td> <td>28</td> <td>16</td> <td></td> </tr> <tr> <td>30 year, At-Grade</td> <td>62</td> <td>23</td> <td>45</td> <td>69</td> <td>32</td> <td></td> <td>79</td> <td>42</td> <td>29</td> <td>125</td> <td>88</td> <td></td> </tr> <tr> <td>30 year, Grade Separated</td> <td>39</td> <td>32</td> <td>13</td> <td>40</td> <td>60</td> <td></td> <td>52</td> <td>29</td> <td>5</td> <td>39</td> <td>28</td> <td></td> </tr> </tbody> </table>				EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Opening Day, No LRT	41	45		29	32		45	25		28	16		30 year, At-Grade	62	23	45	69	32		79	42	29	125	88		30 year, Grade Separated	39	32	13	40	60		52	29	5	39	28	
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Urban Design and Social Environment	✓✓	✓✓✓	✓✓																																																				

Considerations	<ul style="list-style-type: none"> Elevated guideway options are visually and physically more intrusive compared to an at-grade LRT crossing. An elevated guideway along centre median alignment is considered less intrusive for adjacent residents as it is physically further away from existing properties. Limited opportunity to provide pedestrian walkway connections along south side of 87 Avenue, east of 178 Street. Limited right-of-way reduces at-grade performance for this category. 		
Feasibility and Construction	✓✓✓	✓	✓✓
Considerations	<ul style="list-style-type: none"> Elevated guideway options are higher cost compared to the at-grade option. The elevated guideway in median alignment is more challenging to design and construct. 		
Relative Ranking	3	2	1
Order of Magnitude Cost Estimate (+/- 30%)	-	An additional \$70 million	An additional \$80 million