



5.5 VIBRATION

5.5.1 Ground Vibration Impact Assessment

Vibration Impact Assessment Methodology

The potential vibration impact from LRT operation was assessed on an absolute basis using the FTA criteria. The same representative sensitive receptors identified in Section 3.6.2, Existing Vibration Conditions, were considered for the vibration impact assessment. The following factors were used in determining potential vibration impacts along the project corridor:

- No ambient vibration measurements were conducted along the proposed alignment because there are no significant sources of existing vibration along the corridor.
- Vibration propagation tests were conducted at three sites along the corridor near sensitive receptors. These tests measured the response of the ground to an input force. The results of these tests were combined with available vibration source level data for the DART vehicle to project vibration levels from vehicles operating on the project corridor.
- Vehicle operating speeds are based on the TPC Simulations for the project corridor. The speed limits range from 10 mph to 65 mph along the corridor.

Projected Vibration Levels

The No-Build Alternative is not expected to result in any ground-borne vibration impacts. Traffic, even heavy trucks and buses, rarely creates perceptible ground-borne vibration unless vehicles are operating very close to buildings or there are irregularities, such as potholes or expansion joints, in the roadway. The pneumatic tires and suspensions systems of normal automobiles, trucks and buses are sufficient to minimize most ground-borne vibration forces.

With regard to the LRT Alternative, the estimated root mean square (RMS) velocity levels (VdB re 1 micro-in./sec.) for sensitive receptors at representative distances are provided in **Tables 5-9** and **5-10**. These tables summarize the results of the analysis in terms of anticipated exceedances of the FTA criteria for “frequent events” (defined as more than 70 events per day). The criteria are discussed in more detail in Section 3.6.1.

Location	Civil Stn.	Distance to Near Track (ft)	Speed (mph)		Project Vibration Level ¹	Vibration Impact Criterion ¹	No. of Res. Impacts
			EB	WB			
Cistercian Abbey Living Quarters	188	260	40	45	53	72	0
Mandalay on the Lake Apartments	236	60	43	38	65	72	0
Lofts at Los Colinas and Delano	272	60	45	39	65	72	0
Candlewood Suites Hotel	344	230	38	47	65	72	0
Fairfield Inn Hotel	345	620	35	42	61	72	0
Las Colinas Studio Plus Hotel	347	220	27	32	62	72	0
Extended Stay Deluxe Hotel	347	400	27	32	58	72	0
Villas at Beaver Creek	358	130	25	25	66	72	0
Archstone at MacArthur Apartments	391	60	45	45	66	72	0
Mandalay Place	408	80	52	36	70	72	0
Total:							0

¹ Vibration levels are measured in VdB referenced to 1 µin/sec.
Source: HMMH, 2006