



**TABLE 3-25  
GROUND-BORNE VIBRATION IMPACT CRITERIA**

Land Use Category	Ground-Borne Vibration Impact (VdB re 1 micro inch/sec)	
	Frequent Events <sup>1</sup>	Infrequent Events <sup>2</sup>
<b>Category 1:</b> Buildings where low ambient vibration is essential for interior operations.	65 VdB <sup>3</sup>	65 VdB <sup>3</sup>
<b>Category 2:</b> Residences and buildings where people normally sleep.	72 VdB	80 VdB
<b>Category 3:</b> Institutional land uses with primarily daytime use.	75 VdB	83 VdB

<sup>1</sup> "Frequent Events" is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.  
<sup>2</sup> "Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.  
<sup>3</sup> This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.

Source: Federal Transit Administration, May 2006

**TABLE 3-26  
GROUND-BORNE VIBRATION IMPACT CRITERIA FOR SPECIAL BUILDINGS**

Type of Building or Room	Ground-Borne Vibration Impact Levels (VdB re 1 micro-inch/sec)	
	Frequent Events <sup>1</sup>	Infrequent Events <sup>2</sup>
Concert Halls	65 VdB	65 VdB
TV Studios	65 VdB	65 VdB
Recording Studios	65 VdB	65 VdB
Auditoriums	72 VdB	80 VdB
Theaters	72 VdB	80 VdB

<sup>1</sup> "Frequent Events" is defined as more than 70 vibration events per day. Most transit projects fall into this category.  
<sup>2</sup> "Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.  
<sup>3</sup> If the building will rarely be occupied when the trains are operating, there is no need to consider impact. As an example consider locating a commuter rail line next to a concert hall. If no commuter trains will operate after 7 pm, it should be rare that the trains interfere with the use of the hall.

Source: Federal Transit Administration, May 2006

### 3.6.2 Existing Vibration Conditions

Because there are no significant sources of existing vibration along the Irving Line of the Northwest Corridor, vibration measurements for this project focused on characterizing the vibration propagation properties of the soil at representative locations along the corridor. Three vibration testing sites, at the locations shown in **Figure 3-21**, were selected to represent the range of soil conditions in areas along the corridor that include a significant number of vibration-sensitive receptors.

At each of these sites, ground-borne vibration propagation tests were conducted by impacting the ground and measuring the input force and corresponding ground vibration response at various distances. The resulting force-response transfer function can be combined with the known input force characteristics of the DART light rail vehicle to predict future vibration levels at locations along the Project Corridor.