3.11 Noise and Vibration

This section is based on the *Sepulveda Transit Corridor Project Noise and Vibration Technical Report*, incorporated into this DEIR as Appendix O.

3.11.1 Regulatory and Policy Framework

3.11.1.1 Federal

Transit Noise and Construction Noise

The Federal Transit Administration (FTA) standards and criteria for assessing noise impacts related to transit projects are based on community reactions to noise. The criteria reflect changes in noise exposure using a sliding scale where the higher the level of existing noise, the lower the increase in total noise exposure is allowed. Some land use activities are more sensitive to noise than others, such as parks, churches, and residences, compared with industrial and commercial uses. Table 3.11-1 presents FTA's land use categories and metrics for transit noise impact criteria. Most commercial or industrial uses are not considered noise-sensitive because activities within these buildings are generally compatible with higher noise levels. Businesses can be considered noise-sensitive if low noise levels are an important part of operations, for example, sound and motion picture recording studios. Parks used primarily for active recreation such as sports complexes and bike or running paths are not considered noise-sensitive. However, parks (even some in dense urban areas) primarily used for passive recreation such as reading, conversation, or meditation may be valued as havens from the noise and rapid pace of everyday city life. These types of parks are treated as noise-sensitive and are included in land use Category 3. Non-sensitive uses do not require a noise impact assessment.

Table 3.11-1. Land Use Categories and Metrics for Transit Noise Impact Criteria

Land Use Category	Land Use Type	Noise Metric (dBA)	Description of Land Use Category
1	High Sensitivity	Outdoor L_{eq} (1 hr)	This category is applicable to land where quiet is an essential element of its intended purpose. Example land uses include preserved land for serenity and quiet, outdoor amphitheaters and concert pavilions, and national historic landmarks with considerable outdoor use. Recording studios and concert halls are also included in this category.
2	Residential	Outdoor L_{dn}	This category is applicable to all residential land use and buildings where people normally sleep, such as hotels and hospitals.
3	Institutional	Outdoor L_{eq} (1 hr)	This category is applicable to institutional land uses with primarily daytime and evening use. Example land uses include schools, libraries, theaters, and churches, where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds, and recreational facilities are also included in this category.

Source: FTA, 2018

dBA = A-weighted decibel
hr = hour
L_{dn} = day-night noise level
L_{eq} = equivalent noise level
Note: L_{eq} (1 hr) is based on the loudest hour of project-related activity during hours of noise sensitivity.

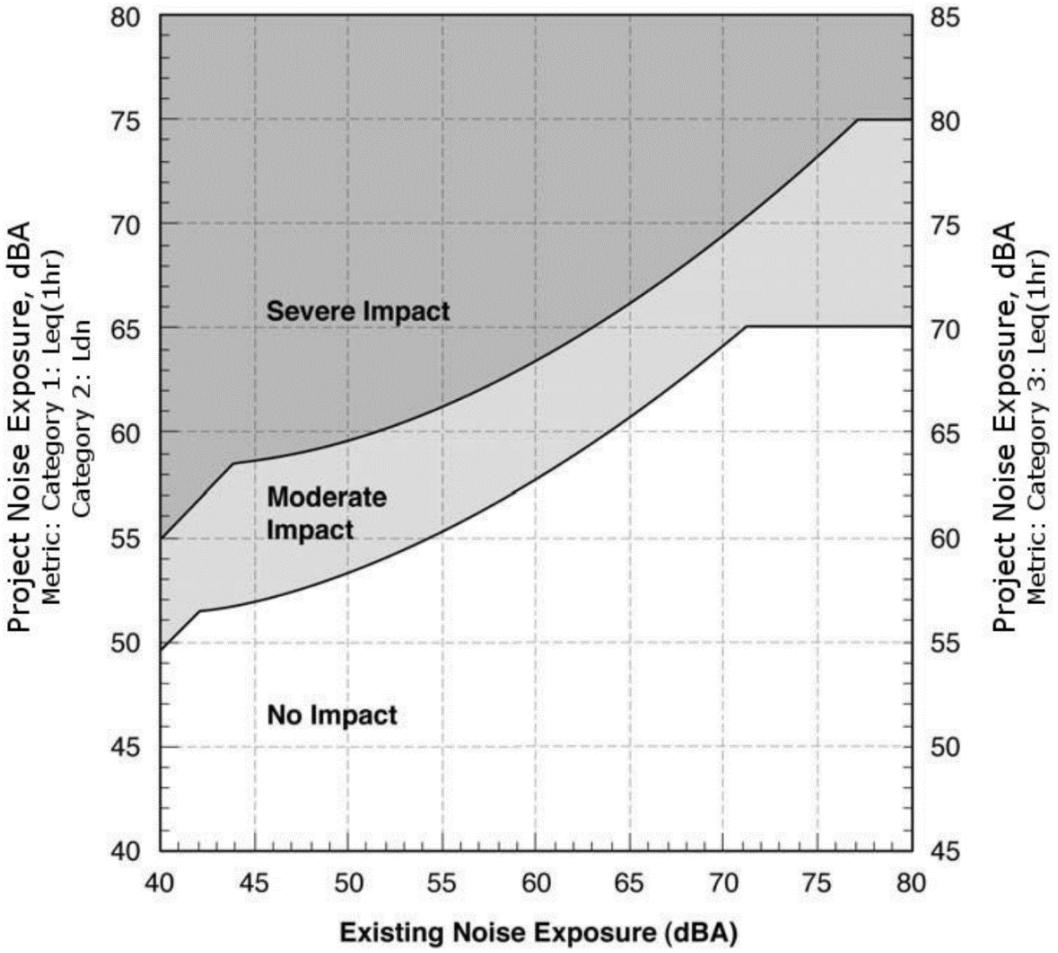
FTA has defined three levels of impacts for sensitive uses affected by transit projects: no impact, moderate impact, or severe impact. A description of each impact level is shown in Table 3.11-2 and illustrated on Figure 3.11-1.

Table 3.11-2. Levels of Impact

Level of Impact	Description
No Impact	Project-generated noise is not likely to cause community annoyance. Noise projections in this range are considered acceptable by the Federal Transportation Administration and mitigation is not required.
Moderate Impact	Project-generated noise in this range is considered to cause an impact at the threshold of measurable annoyance. Moderate impacts serve as alerts to project planners that potential adverse impacts and complaints from the community may occur. Mitigation should be considered at this level of impact depending on project specifics and details concerning the affected properties.
Severe Impact	Project-generated noise in this range is likely to cause a high level of community annoyance. The project sponsor should first evaluate alternative locations/alignments to determine whether it is feasible to avoid severe impacts altogether. In densely populated urban areas, evaluation of alternative locations may reveal a trade-off of affected groups, particularly for surface rail alignments. Projects that are characterized as point sources rather than line sources often present greater opportunity for selecting alternative sites. The Federal Transportation Administration's *Transit Noise and Vibration Impact Assessment* Manual (FTA, 2018) and environmental impact regulations both encourage project sites that are compatible with surrounding development when possible. If it is not practical to avoid severe impacts by changing the location of the project, mitigation measures must be considered.

Source: FTA, 2018

Figure 3.11-1. Noise Impact Criteria for Transit Projects



Source: FTA, 2018

The noise impact criteria for transit operations are summarized in Table 3.11-3. The first column shows the existing noise exposure and the remaining columns show the additional noise exposure caused by a transit project that would result in the two impact levels. As the existing noise exposure increases, the amount of allowable increase in noise exposure from the build alternatives decreases. For the purposes of this analysis the FTA impact criteria was calculated for each cluster based on existing noise exposure. The future noise exposure would be the combination of the existing noise exposure and the additional noise exposure caused by a transit project.

Table 3.11-3. Noise Impact Criteria for Transit Operations

Existing Noise Exposure, dBA L_{eq} (1 hr) or L_{dn}	Project Noise Impact Exposure, dBA					
	Category 1 ($L_{eq(1\ hr)}$) or 2 (L_{dn}) Sites			Category 3 ($L_{eq\ (1\ hr)}$)		
	No Impact	Moderate Impact	Severe Impact	No Impact	Moderate Impact	Severe Impact
<43	<Ambient + 10	Ambient + 10 to 15	>Ambient + 15	< Ambient + 15	Ambient + 15 to 20	>Ambient + 20
43	<52	52-58	>58	<57	57-63	63
44	<52	52-58	>58	<57	57-63	63
45	<52	52-58	>58	<57	57-63	63

Existing Noise Exposure, dBA L_{eq} (1 hr) or L_{dn}	Project Noise Impact Exposure, dBA					
	Category 1 ($L_{eq(1\ hr)}$) or 2 (L_{dn}) Sites			Category 3 ($L_{eq\ (1\ hr)}$)		
	No Impact	Moderate Impact	Severe Impact	No Impact	Moderate Impact	Severe Impact
46	<53	53-59	>59	<58	58-64	64
47	<53	53-59	>59	<58	58-64	64
48	<53	53-59	>59	<58	58-64	64
49	<54	54-59	>59	<59	59-64	64
50	<54	54-59	>59	<59	59-64	64
51	<54	55-60	>60	<59	59-65	65
52	<55	55-60	>60	<60	60-65	65
53	<55	55-60	>60	<60	60-65	65
54	<55	55-61	>61	<60	60-66	66
55	<56	55-61	>61	<61	61-66	66
56	<56	56-62	>62	<61	61-67	67
57	<57	57-62	>62	<62	62-67	67
58	<57	57-62	>62	<62	62-67	67
59	<58	58-63	>63	<63	63-68	68
60	<58	58-63	>63	<63	63-68	68
61	<59	59-64	>64	<64	64-69	69
62	<59	59-64	>64	<64	64-69	69
63	<60	60-65	>65	<65	65-70	70
64	<61	61-65	>65	<66	66-70	70
65	<61	61-66	>66	<66	66-71	71
66	<62	62-67	>67	<67	67-72	72
67	<63	63-67	>67	<68	68-72	72
68	<63	63-68	>68	<68	68-73	73
69	<64	64-69	>69	<69	69-74	74
70	<65	65-69	>69	<70	70-74	74
71	<66	66-70	>70	<71	71-75	75
72	<66	66-71	>71	<71	71-76	76
73	<66	66-71	>71	<71	71-76	76
74	<66	66-72	>72	<71	71-77	77
75	<66	66-73	>73	<71	71-78	78
76	<66	66-74	>74	<71	71-79	79
77	<66	66-74	>74	<71	71-79	79
>77	<66	66-75	>75	<71	71-80	80

Source: FTA, 2018

+ = plus
< = less than
> = greater than
dBA = A-weighted decibel
hr = hour
L_{dn} = day-night noise level
L_{eq} = equivalent noise level

Construction noise is assessed using guidance provided in the FTA *Transit Noise and Vibration Impact Assessment Manual* (FTA Assessment Manual) (FTA, 2018). FTA construction noise criteria are shown in

Table 3.11-4. The 8-hour equivalent noise level for equipment ($L_{eq.equip}$) construction noise criteria is the combined noise level of equipment operating over an 8-hour period.

Table 3.11-4. Federal Transit Administration Construction Noise Impact Criteria

Land Use	8-hour $L_{eq.equip}$ (dBA)	
	Day	Night
Residential	80	70
Commercial	85	85
Industrial	90	90

Source: FTA, 2018

dBA = A-weighted decibel
$L_{eq.equip}$ = equivalent noise level for equipment

Transit Vibration and Construction Vibration

FTA developed impact criteria for acceptable levels of groundborne noise (GBN) and groundborne vibration (GBV). Table 3.11-5 summarizes the impact criteria and presents it in terms of acceptable indoor GBV and noise levels. Impacts will occur if these levels are exceeded. Criteria for GBV are expressed in terms of root means square velocity levels in decibel notation (VdB), and criteria for GBN are expressed in terms of A-weighted sound pressure levels in A-weighted decibel (dBA). The FTA vibration impact criteria are based on the maximum indoor vibration level from a train passby. There are no impact criteria for outdoor spaces such as parks. The vibration criteria are based on the overall vibration velocity level for use in the general impact assessment methodology from the FTA Assessment Manual (FTA, 2018), which was used for this study.

Table 3.11-5. Groundborne Vibration and Groundborne Noise Impact Criteria for General Assessment

Land Use Category	Groundborne Vibration Impact Levels (VdB, 1 micro-inch per second)			Groundborne Noise Impact Levels (dBA, 20 micro pascals)		
	Frequent Events[a]	Occasional Events[b]	Infrequent Events[c]	Frequent Events[a]	Occasional Events[b]	Infrequent Events[c]
Category 1: Buildings where vibration would interfere with interior operations[d]	65	65	65	NA	NA	NA
Category 2: Residences and buildings where people normally sleep	72	75	80	35	38	43
Category 3: Institutional land uses with primarily daytime use	75	78	83	40	43	48

Source: FTA, 2018

[a]"Frequent Events" is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.

[b]"Occasional Events" is defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines fall into this category.

[c]"Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day. Most commuter rail branch lines fall into this category.

[d]This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes.

dBA = A-weighted decibel
NA = not applicable
VdB = vibration decibel

Table 3.11-6 shows the criteria for special buildings such as concert halls, television and recording studios, auditoriums, and theaters, which are also sensitive to vibration but do not fit into the three FTA sensitive land use categories previously described. Since the Sepulveda Transit Corridor Project (Project) may have more than 70 train passbys per day, the FTA criteria for frequent events is used to assess potential impacts. Table 3.11-5 and Table 3.11-6 include the consideration of frequency of vibration events.

Table 3.11-6. Groundborne Vibration and Groundborne Noise Impact Criteria for Special Buildings

Type of Building or Room	Groundborne Vibration Impact Levels (VdB, 1 micro-inch per second)		Groundborne Noise Impact Levels (dBA, 20 micro Pascals)	
	Frequent Events[a]	Occasional or Infrequent Events[b,c]	Frequent Events[a]	Occasional or Infrequent Events[b,c]
Concert Halls	65	65	25	25
Television Studios	65	65	25	25
Recording Studios	65	65	25	25
Auditoriums	72	80	30	38
Theaters	72	80	35	43

Source: FTA, 2018

[a]"Frequent Events" is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.

[b]"Occasional Events" is defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines fall into this category.

[c]"Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day. Most commuter rail branch lines fall into this category.

dBA = A-weighted decibel
VdB = vibration decibel

For at-grade or aerial transit systems, the GBN is not considered because the airborne noise from the train passby would result in higher noise levels at the interior of the receiver buildings. GBN is a potential impact from underground transit operations where there is no airborne noise.

To evaluate potential annoyance or interference with vibration-sensitive activities caused by construction vibration, the criteria for general assessment shown in Table 3.11-5 and Table 3.11-6 can be applied. In most cases, the primary concern regarding construction vibration relates to potential damage effects. Table 3.11-7 provides the vibration damage criteria for various structural categories. A damage risk criterion of 0.2 inch per second (in/sec) (peak particle velocity [PPV]) is protective of all but the most fragile buildings. The limit of 0.12 PPV for fragile historic structures is among the most restrictive limits used for vibration damage risk to buildings.

Table 3.11-7. Construction Vibration Damage Risk Criteria

Building Category	Peak Particle Velocity (inches per second)
I. Reinforced-concrete, steel, or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Non-engineered timber and masonry buildings and historic buildings that have average sensitivity to vibration damage	0.2
IV. Buildings extremely susceptible to vibration damage	0.12

Source: FTA, 2018

3.11.1.2 State

There are no state statutes related to noise criteria that would apply to the proposed Project. However, there are noise-related state codes that are included for informational purposes.

California Public Utilities Commission

The California Public Utilities Commission (CPUC) has jurisdiction over the operation of passenger rail transit systems. CPUC regulations require the use of audible warning devices, including on-vehicle audible warnings and crossing bells at all grade crossings that are protected by crossing gates. California Public Utilities Code Section 7604 states that "a bell, siren, horn, whistle or similar audible warning device should be sounded at any public crossing." CPUC General Order 75-D specifies that: "Bells or other audible warning devices shall be included in all automatic warning device assemblies and shall be operated in conjunction with the flashing light signals." The General Order does not specify a sound level for the bells or other audible warning devices.

CPUC has the final decision in designing grade crossings and implementing warning systems. Intersections with grade crossings must be designed to meet the CPUC regulations and the Federal Railroad Administration warning standards. CPUC considers each intersection during the final design process and works with the lead agency to install warning devices where necessary and wayside horns where appropriate. CPUC rules related to public crossings would not be applicable to the underground tunnel segments or aerial segments of the Project because neither include at-grade public crossings that would be subject to CPUC regulations.

California Government Code Section 65302(f)

California State Government Code Section 65302(f) mandates that noise elements be included as a part of county and city general plans and that counties and cities adopt comprehensive noise ordinances. At a minimum the noise element should consider the following sources of noise:

- Highways and freeways
- Primary arterials and major local streets
- Passenger and freight on-line railroad operations and ground rapid transit systems
- Commercial, general aviation, heliport, helistop and military airport operations, aircraft overflights, jet engine test stands, and other ground facilities and maintenance functions related to airport operation
- Local industrial plants, including, but not limited to, railroad classification yards
- Other ground stationary noise sources identified by local agencies as contributing to the community noise environment

The noise element must assess current and future noise levels, establish standards for acceptable noise levels, and provide policies and regulations to control and reduce noise at noise sensitive land uses.

3.11.1.3 Regional

The regulations of regional jurisdictions generally do not apply to transit noise, which is most appropriately assessed using guidance provided by FTA. However, the regulations of regional jurisdictions are relevant with regard to project construction.

Los Angeles County

The *Los Angeles County General Plan 2035*, adopted in October 2015, provides the policy framework and establishes the long-range vision for how and where the unincorporated areas of the county will grow (LA County Planning, 2024). The Noise Element sets the goals and policy direction for the management of noise in the unincorporated areas. The Los Angeles County Noise Control Ordinance establishes standards to regulate intrusive noise in the county. Table 3.11-8 lists the applicable codes, goals, and policies designed to regulate noise.

Table 3.11-8. Los Angeles County – Relevant Noise and Vibration Codes, Goals, and Policies

Code/Goal/Policy	Description
Los Angeles County Noise Control Ordinance	
Section 12.08.390	**Exterior Noise Standards** • Noise Zone I, Noise Sensitive Area: 45 dB at any time of the day • Noise Zone II, Residential Properties: 45 dB from 10:00pm to 7:00am (nighttime) and 50 dB from 7:00am to 10:00pm (daytime) • Noise Zone III, Commercial Properties: 55 dB from 10:00pm to 7:00am (nighttime) and 70 dB from 7:00am to 10:00pm • Noise Zone IV, Industrial Properties: 70 dB at any time of the day
Section 12.08.400	**Interior Noise Standards** • Multi-family: 40 dB from 10:00pm to 7:00am • Residential 45 dB from 7:00am to 10:00pm
Section 12.08.440 (a)	Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between weekday hours of 7:00pm and 7:00am, or at any time on Sundays or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real-property line, except for emergency work of public service utilities or by variance issued by the health officer is prohibited.

Code/Goal/Policy	Description
Section 12.08.440 (b)	**Noise Restrictions at Affected Structure** The contractor shall conduct construction activities in such a manner that the maximum noise levels at the affected buildings will not exceed those listed in the following schedule: **Maximum noise levels for short-term operation of mobile equipment (less than 10 days)** **7:00am to 8:00pm daily and all day Sundays and holidays** • Single-family residential 75 dBA • Multi-family residential 80 dBA • Semi-residential/commercial 85 dBA **8:00pm to 7:00am daily and all day Sundays and holidays** • Single-family residential 60 dBA • Multi-family residential 64 dBA • Semi-residential/commercial 70 dBA **At Business Structures daily, including Sunday and legal holidays, all hours** • 85 dBA **Maximum noise levels for long-term operation of stationary equipment (more than 10 days)** **7:00am to 8:00pm daily and all day Sundays and holidays** • Single-family residential 60 dBA • Multi-family residential 65 dBA • Semi-residential/commercial 70 dBA **8:00pm to 7:00am daily and all day Sundays and holidays** • Single-family residential 50 dBA • Multi-family residential 55 dBA • Semi-residential/commercial 60 dBA
Section 12.08.460	Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans or similar objects between the hours of 10:00pm and 6:00am in such a manner as to cause noise disturbance is prohibited.
Section 12.08.560	Operating or permitting the operation of any device that creates vibration, which is above the vibration perception threshold of any individual at or beyond the property boundary of the source if on private property, or at 150 feet (46 meters) from the source if on a public space or public right-of-way is prohibited. The perception threshold shall be a motion velocity of 0.01 inch per second over the range of 1 to 100 hertz.
12.08.570 (d) (1)	Exemption from exterior noise standards. The following activities are exclusively regulated by Part 4 of Chapter 12.08. •Construction
Los Angeles County General Plan Noise Element	
Goal N 1	The reduction of excessive noise impacts.
Policy N 1.1	Utilize land uses to buffer noise-sensitive uses from sources of adverse noise impacts.
Policy N 1.3	Minimize impacts to noise-sensitive land uses by ensuring adequate site design, acoustical construction, and use of barriers, berms, or additional engineering controls through best available technologies.
Policy N 1.7	Utilize traffic management and noise suppression techniques to minimize noise from traffic and transportation systems.
Policy N 1.8	Minimize noise impacts to pedestrians and transit-riders in the design of transportation facilities and mobility networks.

Code/Goal/Policy	Description
Policy N 1.9	Require construction of suitable noise attenuation barriers on noise sensitive uses that would be exposed to exterior noise levels of 65 dBA CNEL and above, when unavoidable impacts are identified.
Policy N 1.12	Decisions on land adjacent to transportation facilities, such as the airports, freeways, and other major highways, must consider both existing and future noise levels of these transportation facilities to assure the compatibility of proposed uses.

Source: Los Angeles County, 2024; LA County Planning, 2015

CNEL = community noise equivalent level
am = ante meridiem (before noon)
dB = decibel
dBA = A-weighted decibel
pm = post meridiem (after noon or midday)

3.11.1.4 Local

City of Los Angeles

The City of Los Angeles has established policies and regulations concerning the generation and control of noise that could adversely affect its citizens and noise-sensitive land uses. The City of Los Angeles Municipal Code and the *City of Los Angeles General Plan Noise Element* are the two documents designed to regulate noise within the City (DCP, 1998). Codes and policies designed to regulate noise are shown in Table 3.11-9. It should be noted that not every policy would be directly applicable to the Project.

Table 3.11-9. City of Los Angeles – Relevant Noise and Vibration Codes and Policies

Code/Policy	Description
City of Los Angeles Municipal Code	
Section 41.40	Engaging in construction, repair, or excavation work with any construction type device or jobsite delivering of construction materials without a Police Commission approved variance would constitute a violation: • Between the hours of 9:00pm and 7:00am of the following day • In any residential zone, or within 500 feet of land so occupied, before 8:00am or after 6:00pm on any Saturday, or at any time on any Sunday In a manner as to disturb the peace and quiet of neighboring residents or any reasonable person of normal sensitiveness residing in the area.
Section 41.40(j)	States that the noise standards do not apply to major public works construction by the City of Los Angeles and its proprietary Departments, including all structures and operations necessary to regulate or direct traffic due to construction activities. It also states that the Board of Police Commissioners will grant a variance for this work and construction activities will be subject to all conditions of the variance as granted. Concurrent with the request for a variance, the City of Los Angeles Department that will conduct the construction work will notify each affected Council district office and established Neighborhood Council of projects where proposed Sunday and/or Holiday work will occur.
Section 91.1206.14.2	Interior noise levels attributable to exterior sources shall not exceed 45 dB. in any habitable room. The noise metric shall be either the day-night average sound level (L_{dn}) or the CNEL, consistent with the noise element of the local general plan.

Code/Policy	Description
Section 112.05	Specifies the maximum noise level of powered equipment or powered hand tools. Any powered equipment or hand tool that produces a maximum noise level exceeding 75 dBA at a distance of 50 feet when operated within 500 feet of a residential zone is prohibited between the hours of 7:00am and 10:00pm. However, this noise limitation does not apply where compliance is technically infeasible. Technically infeasible means the above noise limitation cannot be met despite the use of mufflers, shields, sound barriers and/or any other noise reduction device or techniques during the operation of equipment.
City of Los Angeles General Plan Noise Element	
Policy 2.2	Enforce and/or implement applicable city, state and federal regulations intended to mitigate proposed noise producing activities, reduce intrusive noise and alleviate noise that is deemed a public nuisance.
P5	Continue to enforce, as applicable, city, state and federal regulations intended to abate or eliminate disturbances of the peace and other intrusive noise.
P10	Continue to encourage public transit and rail systems operating within the city's borders, but which are not within the jurisdiction of the city, to be constructed and operated in a manner that will assure compliance with the city's noise ordinance standards.
P11	For a proposed development project that is deemed to have a potentially significant noise impact on noise sensitive uses, as defined by this chapter, require mitigation measures, as appropriate, in accordance with CEQA and city procedures.
P12	When issuing discretionary permits for a proposed noise- sensitive use (as defined by this chapter) or a subdivision of four or more detached single-family units, and which use is determined to be potentially significantly impacted by existing or proposed noise sources, require mitigation measures, as appropriate, in accordance with procedures set forth in the CEQA guidelines so as to achieve an interior noise level of a CNEL of 45 dB, or less, in any habitable room, as required by Los Angeles Municipal Code Section 91.
P13	Continue to plan, design, and construct or oversee construction of public projects, and projects on city owned properties, so as to minimize potential noise impacts on noise sensitive uses and to maintain or reduce existing ambient noise levels.
P16	Use, as appropriate, the "Guidelines for Noise Compatible Land Use" (Exhibit I), or other measures that are acceptable to the city, to guide land use and zoning reclassification, subdivision, conditional use and use variance determinations and environmental assessment considerations, especially relative to sensitive uses, as defined by this chapter, within a CNEL of 65 dB airport noise exposure areas and within a line-of-sight of freeways, major highways, railroads or truck haul routes.
P17	Continue to encourage the California Department of Transportation, the Los Angeles County Metropolitan Transportation Authority, or their successors, and other responsible agencies to plan and construct transportation systems so as to reduce potential noise impacts on adjacent land uses, consistent with the standards and guidelines contained in the noise element.

Source: City of Los Angeles Municipal Code; DCP, 1998

CNEL = community noise equivalent level
dB = decibel
dBA = A-weighted decibel
L_{dn} = day-night noise level

City of Santa Monica

The City of Santa Monica is located within the Project Study Area. However, no sensitive receptors are located within the screening distance for noise or vibration. Chapter 4.12 of the Santa Monica Municipal Code has established exterior noise standards applicable to designated noise zones. The allowable

exterior 15-minute equivalent noise level (L_{eq}) for Noise Zone I, which includes residential properties, is 60 dBA between 7am and 10pm and 50 dBA between 10pm and 7am on weekdays. On Saturday and Sunday, 60 dBA 15-minute L_{eq} exterior noise limit is in effect between 8am and 10pm, and the 50-dBA limit applies to the time period between 10pm and 8am. The city's exterior noise limits are increased by 5 dBA when noise duration is 5 minutes (i.e., 65 dBA daytime and 55 dBA nighttime).

Santa Monica Municipal Code also prohibits creation of any GBV that is perceptible without instruments at any point on any property. The code defines the vibration perception threshold to be more than 0.05 inch per second root mean square velocity. The city exempts construction activities, moving vehicles, trains, and aircraft from its vibration limit.

3.11.2 Methodology

3.11.2.1 Existing Noise Conditions

The existing noise conditions along the project alternative alignments were documented through noise monitoring activities performed at representative noise-sensitive locations along the proposed alignments. Representative noise-sensitive locations were identified by using preliminary alignment maps, aerial photographs, visual surveys, and proximity to aboveground noise sources associated with each of the project alternatives. Long-term (24-hour) noise measurements were conducted at a total of 48 locations representing Category 2 land uses. Short-term noise measurements (two 1-hour measurements for each site) were obtained at 21 locations representing exterior areas of Category 3 land uses, including schools, religious facilities, museums, and amphitheaters along the project alignment segments with aboveground noise sources.

The noise monitors were programmed to continuously collect data for a minimum of 24 hours. The microphones were generally placed on tripods about 5 feet above the ground at locations near the setback of habitable buildings, between the buildings and the proposed project alignment. Refer to the *Sepulveda Transit Corridor Project Noise and Vibration Technical Report* ([Metro, 2025) for detailed results of 24-hour and short-term measurements, respectively. The attachment material also includes photographic exhibits of the measurement locations.

3.11.2.2 Existing Vibration Conditions

Primary existing sources of GBV include trucks traveling along roadways, construction sites using heavy equipment, and existing transit lines. According to FTA guidance, the background VdB levels are expected to range from 50 to 65. Ambient vibration levels were not measured during this stage of the Project. However, measurement of vibration levels is not necessary to complete the general assessment procedure for vibration analysis. The vibration impact assessment is based on FTA vibration impact criteria. These criteria were used to identify vibration-sensitive receivers along the project alignment where potential impacts may occur, based on existing land use activities.

3.11.2.3 Operation Noise

Noise exposure from train movements on the proposed Project rail tracks was evaluated using the detailed noise assessment procedure in the FTA Assessment Manual (FTA, 2018). Rail operations noise levels at representative noise-sensitive receptors were predicted by using the reference sound exposure level (SEL) from 6-car trains for Alternatives 1 and 3, and 3-car trains for Alternatives 4, 5, and 6. Under Alternatives 1 and 3, the reference SEL used in the noise analysis for a 6-car train traveling at a speed of 90 kilometers per hour or 56.3 miles per hour (mph) is 81.5 dBA at a reference distance of 50 feet from

the track. The reference SEL for a 3-car train traveling at 50 mph is 84.8 dBA at a distance of 50 feet under Alternatives 4, 5, and 6.

At each analyzed receptor location, train passby noise levels were calculated by applying the reference noise levels for a single passby, adjusting for distances to the tracks, train speeds, and accounting for the total number of train passbys on each track. Other factors accounted for in the noise model include adjustments for rail crossovers, shielding provided by intervening building rows, transit operating on an aerial structure on slab track (not applicable to monorail Alternatives 1 and 3), and wheel squeal at curves with a radii less than 1,000 feet. Wheel squeal noise is generated by the slip-stick interaction of metal wheels and rails. It is not anticipated to be a factor under Alternative 1 and Alternative 3 operations, as the proposed vehicles for those alternatives will be rubber-tired vehicles moving along straddle-beams. Noise barrier reductions were also calculated for existing soundwalls and proposed soundwalls along the project alignment, where applicable, were calculated based on the geometric relationship of source, barrier, and receivers.

The 24-hour day-night noise level (L_{dn}) for Category 2 noise-sensitive receptors and the hourly L_{eq} during peak headways for Category 3 noise-sensitive receptors were predicted based on anticipated rail operations volumes.

Ancillary sources of noise associated with the Project include traction power substation (TPSS) units and proposed ventilation facilities, where needed for underground segments. The ancillary equipment required is specific to each alternative alignment. The primary noise sources on TPSS units are the transformer hum and noise from its cooling systems or ventilation fan. The cooling fans are the primary noise sources on the TPSS units used on other Los Angeles County Metropolitan Transportation Authority (Metro) projects. Metro specifications limit TPSS noise and ventilation fan noise to a maximum of 50 dBA at 50 feet from any side of the equipment (according to Metro Rail Design Criteria). Therefore, a noise level of 50 dBA at a distance of 50 feet was used to evaluate Project TPSSs and ventilation facilities noise impacts.

Noise and vibration from the proposed maintenance and storage facility (MSF) options associated with the project alternatives was predicted by inclusion of train movements on lead tracks, wheel squeal on tight radius curves, track crossovers, the car wash facility, maintenance shop, and TPSS equipment within the MSF yard.

3.11.2.4 Construction Noise

Construction noise levels were predicted based on anticipated numbers and types of construction equipment to be utilized during each phase of project construction. Equipment noise levels from the FTA Assessment Manual (FTA, 2018) were used in the construction noise analysis. The FTA Assessment Manual includes noise levels for common pieces of construction equipment. For equipment noise levels not listed in the FTA Assessment Manual, noise levels from the Federal Highway Administration (FHWA) Roadway Construction Noise Model were used. Construction noise levels were assessed by applying the reference noise levels and utilization rates for each equipment type. 8-hour L_{eq} noise levels for each phase of construction along the project alignment were predicted at a reference distance of 50 feet from construction activities and projected to the nearest noise-sensitive areas. The predicted construction noise levels were compared to the FTA construction 8-hour L_{eq} noise criteria to assess noise impacts.

3.11.2.5 Operation Vibration

For the operations GBV and noise impact analyses, FTA's general vibration assessment procedure from the FTA's Assessment Manual (FTA, 2018) is used to conservatively identify potential vibration impacts at the land use categories of interest along each project alternative alignment. Under this approach, buildings within vibration-sensitive land use categories are identified along each project alternative alignment, and pertinent GBV and GBN impact criteria are assigned to the identified land uses. For the vibration analyses, a horizontal screening distance of 200 feet from underground tunnel or aerial guideway alignments was used for Category 2 and Category 3 land uses. The more vibration sensitive Category 1 buildings were screened to a distance of 600 feet from the project alignment. The screening distances encompass the area at which a vibration impact would occur, and land uses outside of the screening distance would not be exposed to vibration levels that would exceed the GBV or GBN impact criteria.

GBV levels at the identified vibration-sensitive buildings were predicted by first selecting the appropriate base curve for ground surface vibration based on the transit mode of the project alternative being evaluated. Adjustments to the selected standard vibration curve were then applied based on factors such as vehicle speeds, distance to the tracks, and other adjustments based on project-specific features, including transit station box structures, crossovers, presence of direct fixation rail fasteners, and train movements on aerial structures.

Evaluation of potential GBN impacts from the project was performed by converting the predicted GBV levels to GBN levels (as outlined in the FTA Assessment Manual [FTA, 2018]). GBN levels are predicted in dBAs, meaning that site-specific conditions dictating the frequency range at which vibration levels would be prevalent are taken into account. The standard vibration curves utilized for the FTA general vibration assessment procedure represent upper ranges of vibration levels from well-maintained systems. Therefore, the use of these curves is inherently a conservative approach to identifying GBV and noise impacts. This approach identifies locations where vibration impacts would be probable and may identify more vibration impacts than would occur under real world conditions.

Detailed vibration assessment would be conducted during the Project final design at vibration-sensitive locations where the general vibration assessment has identified impacts. The detailed vibration assessment would require on-site vibration measurements at impacted locations to establish existing vibration levels and local point- or line-source transfer mobility and building outdoor-to-indoor vibration response, as needed. This method would estimate the vibration impacts more precisely according to site-specific characteristics and may result in a revised conclusion of no impacts or less costly mitigation measures than those initially determined through a general vibration assessment.

3.11.2.6 Construction Vibration

Some project construction activities, such as pavement breaking, tunnel boring, and the use of heavy tracked vehicles (e.g., bulldozers), could result in perceptible levels of GBV in the vicinity of construction sites. A tunnel boring machine is slow moving and causes very little vibration and GBN to the surrounding area when operating at full tunnel depths. Estimated vibration levels that would be generated during construction of the Project were determined by using the vibration source levels from FTA's Assessment Manual (FTA, 2018) and were adjusted to account for the distance of the equipment to the receiver.

3.11.2.7 CEQA Thresholds of Significance

For the purposes of the Environmental Impact Report, impacts are considered significant if the project would:

- Result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established by the Federal Transit Administration.
- Result in generation of excessive groundborne vibration or groundborne noise levels.
- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in exposing people residing or working in the project area to excessive noise levels.

3.11.3 Project Measures

No project measures have been proposed.

3.11.4 Existing Conditions

Noise

The existing noise environment in the Project Study Area is dominated by traffic noise, including freeways such as Interstate 405 (I-405), Interstate 10 (I-10), and U.S. Highway 101 (US-101) and arterial roads, including Sepulveda Boulevard, Santa Monica Boulevard, Wilshire Boulevard, and others. Aircraft flyovers are also contributors to the existing noise environment in most areas along the project alignments. Existing transit lines also contribute to the existing noise environment. The following land uses exist along the various alternative alignments:

- Single- and multi-family residential uses
- Lodging facilities
- Educational facilities
- Public facilities
- Public and commercial office buildings
- Various types of commercial uses
- Institutional uses
- Surface parking facilities
- Recording studios
- Medical facilities and laboratories
- Parking structures

Table 3.11-10 presents a summary of long-term (24-hour) noise measurements taken at locations that are representative of the residential and lodging land uses along the project alignments. Long-term (24-hour) noise levels ranged from 47.4 dBA L_{dn} to 87.0 dBA L_{dn}. Short-term noise measurements for two 1-hour periods at each site were also taken at Category 3 (institutional) land uses. The general locations of the measurement sites are shown on Figure 3.11-2 and Figure 3.11-3. Short-term (1-hour) noise levels ranged from 54.2 dBA L_{eq} to 78.0 dBA L_{eq}. The general locations of the measurement sites are shown on Figure 3.11-2 and Figure 3.11-3.

Table 3.11-10. Summary of Existing 24-hour Noise Measurements for Category 2 Land Uses

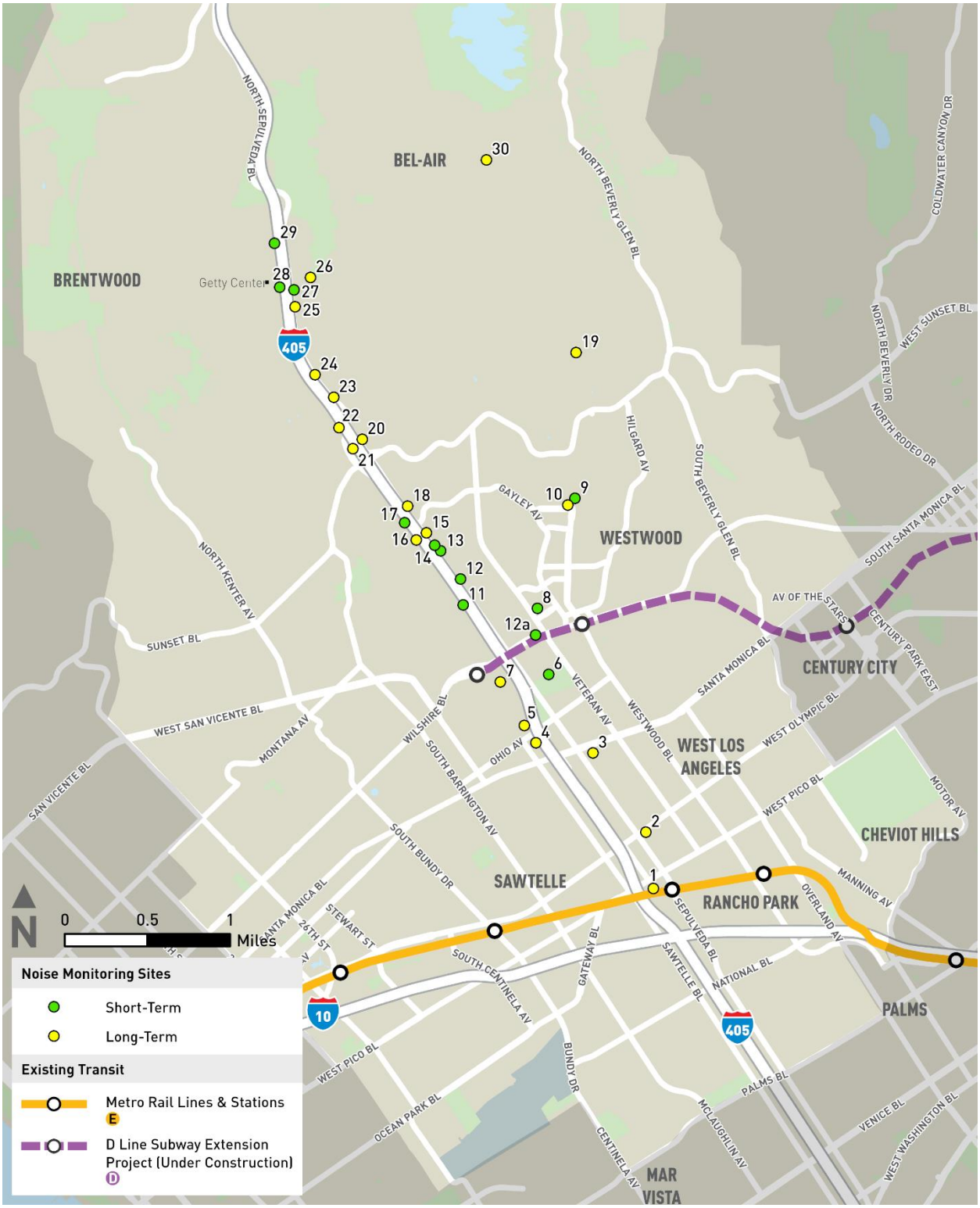
Site No.	Location	Primary Noise Source(s)	Measurement Start		Measured Existing L_{dn} (dBA)
			Date	Time	
1	2435 S Sepulveda Boulevard	I-405 traffic	6/28/2023	11:00am	73.9
2	2203 S Bentley Avenue	Local traffic	7/5/2023	10:00am	65.9
3	1726 S Bentley Avenue	Local traffic	7/12/2023	10:00am	62.0
4	1521 Beloit Avenue	I-405 and Santa Monica Boulevard	7/12/2023	10:00am	66.7
5	Greater LA Fisher House	I-405 traffic	7/25/2023	10:00am	69.5
7	West LA VA Medical Center	I-405 traffic	7/25/2023	9:00am	67.3
10	UCLA Luskin Conference Center	Local traffic	5/25/2023	3:00pm	62.2
15	426 S. Sepulveda Boulevard	I-405 and Sepulveda Boulevard	6/6/2023	11:00am	71.0
16	11330 Denair Street	I-405 traffic	6/7/2023	3:00pm	75.9
18	353 Dalkeith Avenue	I-405, Sepulveda Boulevard	6/7/2023	11:00am	72.0
19	10615 Bellagio Road	Bellagio Road	6/2/2023	12:00pm	63.4
20	11420 Thurston Circle	I-405, Sepulveda Boulevard	6/27/2023	10:00am	73.1
21	Hotel Bellagio 170 N Church Lane	I-405 traffic	6/8/2023	12:00pm	87.0
23	11720 Bellagio Road	I-405, Sepulveda Boulevard	6/21/2023	11:00am	71.3
24	11812 Bellagio Road	I-405, Sepulveda Boulevard	6/6/2023	11:00am	70.5
25	Leonard I. Beeman Early Childhood Center	I-405, Sepulveda Boulevard	6/14/2023	12:00pm	71.7
26	1399 Casiano Road	I-405 traffic	5/17/2023	3:00pm	76.0
30	10635 Levico Way	Distant aircraft	6/6/2023	1:00pm	55.4
31	2607 Basil Lane	Distant aircraft	6/7/2023	12:00pm	47.4
32	2341 Donella Circle	Roscomare Road	6/6/2023	2:00pm	63.4
37	3490 Vista Haven Road	Distant aircraft, local traffic	5/30/2023	4:00pm	54.3
38	15460 Briarwood Drive	I-405 traffic	6/20/2023	9:00am	74.1
39	15515 Woodcrest Drive	I-405 traffic	5/30/2023	1:00pm	63.3
41	15371 Del Gado Drive	I-405 traffic	6/29/2023	10:00am	72.5
42	15350 Sutton Street	I-405 traffic	6/8/2023	9:00am	72.4
43	4440 Sepulveda Boulevard	I-405, Sepulveda Boulevard	3/25/2024	12:00pm	76.5
44	4800 Sepulveda Boulevard	Sepulveda Boulevard	5/30/2023	11:00am	65.8
45	15233½ Valleyheart Drive	Sepulveda Boulevard	7/25/2023	7:00am	63.7
47	14520 Magnolia Boulevard	Van Nuys Boulevard, Shell car wash	4/3/2024	7:00am	64.0
48	15231 Magnolia Boulevard	Sepulveda Boulevard	7/13/2023	12:00pm	66.9
49	5329 Sepulveda Boulevard	Sepulveda Boulevard	6/15/2023	8:00am	67.7
50	15353 Weddington	I-405 traffic	7/18/2023	9:00am	67.2
51	5450 Sepulveda Boulevard	Sepulveda Boulevard	6/13/2023	12:00pm	69.9
52	6200 Blucher Avenue	I-405, Metro G-Line, local traffic	3/25/2024	1:00pm	62.9
53	6201 Blucher Avenue	I-405, Metro G-Line, local traffic	3/25/2024	1:00pm	62.9
55	6224 Peach Avenue	Sepulveda Boulevard	5/24/2023	2:00pm	57.3
56	6561 Sepulveda Boulevard	Sepulveda Boulevard	6/15/2023	8:00am	66.5
57	6546 Aqueduct Avenue	I-405 traffic	5/24/2023	12:00pm	69.1

Site No.	Location	Primary Noise Source(s)	Measurement Start		Measured Existing L_{dn} (dBA)
			Date	Time	
58	14419 Vanowen Street	Sepulveda Boulevard, Vanowen Street	3/25/2024	2:00pm	59.6
59	6920 Sepulveda Boulevard	Sepulveda Boulevard	6/13/2023	11:00am	65.6
60	6841 Firmament Avenue	I-405 traffic	6/6/2023	9:00am	65.3
61	13917 Cohasset Street	LOSSAN rail corridor, distant traffic	6/13/2023	10:00am	52.8
62	7467 Sylmar Avenue	Van Nuys Boulevard	6/14/2023	9:00am	55.1
63	15235 Wyandotte Street	Sepulveda Boulevard	7/18/2023	9:00am	60.0
64	15550 Wyandotte Street	I-405 traffic	5/30/203	11:00am	66.5
65	15559 Covello Street	I-405 traffic	6/27/2023	9:00am	66.7
66	15018 Marson Street	LOSSAN rail corridor	5/24/2023	11:00am	60.5
67	7824 Zombar Avenue	Local traffic, distant aircraft	6/20/2023	9:00am	58.0

Source: HTA, 2024

dBA = A-weighted decibel
L_{dn} = day-night noise level
No. = number

Figure 3.11-2. Noise Monitoring Sites – Project Study Area - South



Source: HTA, 2024

Figure 3.11-3. Noise Monitoring Sites – Project Study Area - North

Source: HTA, 2024

Table 3.11-11. Summary of Existing Short-Term (1-Hour) Noise Measurements for Category 3 Land Uses

Site No.	Location	Primary Noise Source(s)	Measurement Start		Measured Existing L_{dn} (dBA)
			Date	Time	
6	Westwood Park, north of soccer field on lawn near parking lot	I-405 traffic, local traffic	4/12/2023	9:17am	54.2
			4/13/2023	10:23am	59.0
8	UCLA Williams Institute, southwest corner of building	Local traffic, fire station activities	5/26/2023	9:29am	63.9
			5/30/2023	1:41pm	61.3
9	UCLA Computer Science/Engineering IV building	Local traffic, students' chatter	5/25/2023	1:04pm	57.9
			5/26/2023	3:36pm	58.8
11	LA National Cemetery Columbarium, near east wall	I-405 traffic	7/25/2023	1:21pm	59.7
			7/26/2023	9:26am	62.7
12a	LA National Cemetery north of Wilshire Boulevard	Wilshire Boulevard and I-405 traffic	7/25/2023	11:48am	65.4
			7/26/2023	10:48am	65.0
12	LA National Cemetery east of I-405, no freeway soundwall	I-405 and Sepulveda traffic	7/25/2023	10:10am	72.4
			7/26/2023	12:04pm	71.8
13	LA National Cemetery east of I-405, with freeway soundwall	I-405 and Sepulveda traffic	7/25/2023	10:10am	67.3
			7/26/2023	12:04pm	67.0
14	LA National Cemetery north fence, with freeway soundwall	I-405 and Sepulveda traffic	4/12/2023	11:55am	69.0
			4/13/2023	9:03am	69.5
17	Village Church, 343 S Church Lane sidewalk next to front lawn	I-405 traffic	4/12/2023	1:32pm	63.6
			4/13/2023	8:55am	65.5
22	Getty South Building, near buildings setback west of I-405	I-405 traffic	5/17/2023	3:00pm	74.3
			5/18/2023	7:00am	78.0
27	Leo Baeck Temple, west of building, facing I-405	I-405 traffic, Sepulveda Boulevard	6/14/2023	12:19pm	67.1
			6/15/2023	10:40am	67.4
28	The Getty Tram Station, in lawn area north of the Station	I-405 traffic	5/17/2023	11:54am	59.4
			5/18/2023	11:25am	60.9
29	Future Oak parking lot at The Getty, in currently unpaved lot	I-405 traffic	5/17/2023	11:54am	66.9
			5/18/2023	11:25am	68.2
33	Skirball Cultural Center, Ziegler Amphitheater, east façade	I-405 traffic, Sepulveda Boulevard	5/17/2023	7:53am	60.9
			5/18/2023	7:45am	61.7
34	Skirball Cultural Center, Ziegler Amphitheater, at bleachers	I-405 traffic, Sepulveda Boulevard	5/17/2023	7:53am	56.6
			5/18/2023	7:45am	57.1
35	Milken Community School, first floor facing I-405	I-405 traffic, student chatter	5/17/2023	9:40am	70.9
			5/18/2023	9:20am	72.2
36	Milken Community School, second floor facing I-405	I-405 traffic, student chatter	5/17/2023	9:40am	70.6
			5/18/2023	9:20am	71.3
40	15347 Del Gado Drive, at south end of vacant lot[a]	I-405 traffic	6/30/2023	8:42am	57.8

Site No.	Location	Primary Noise Source(s)	Measurement Start		Measured Existing L_{dn} (dBA)
			Date	Time	
46	Ivy Bound Academy, basketball courts near US-101 to I-405 ramp	I-405 mainline and ramp traffic	5/25/2023	7:10am	67.9
			5/26/2023	6:57am	68.8
54	Contractors State License School, 6222 Sepulveda Boulevard	Sepulveda Boulevard traffic	4/13/2023	1:07pm	73.6
			5/11/2023	11:36am	72.4
68	La Iglesia de Jesucristo de los Santos de los Últimos Días	I-405 traffic, distant aircraft	4/13/2023	1:27pm	62.5
			5/11/2023	10:17am	64.5

Source: HTA, 2024

[a]This short-term measurement location was used to estimate noise levels at residential locations farther east of I-405 than the 24-hour site located at 15371 Del Gado Drive.

dBA = A-weighted decibel
L_{dn} = day-night noise level

Vibration

Primary existing sources of GBV are from trucks, traveling along roadways; construction sites, where heavy equipment is used; and existing transit lines. According to FTA guidance, the background VdB levels are expected to range from 50 to 65 VdB. Ambient vibration levels were not measured during this stage of the Project. However, as noted in Section 3.11.2.2, measurement of vibration levels is not necessary to complete the general assessment procedure for vibration analysis.

3.11.5 Environmental Impacts

3.11.5.1 Impact NOI-1: Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established by the Federal Transit Administration?

Project Alternatives

No Project Alternative

Impact Statement

Operational Impact: No Impact

Construction Impact: Less than Significant

Operational Impacts

Under the No Project Alternative, existing noise sources such as freeways, including I-405, I-10, and US-101; arterial roads, including Sepulveda Boulevard, Santa Monica Boulevard, Wilshire Boulevard; and aircraft flyovers would remain the dominant noise sources in the Project Study Area. The only reasonably foreseeable transit improvement within the Project Study Area would be rerouting Metro Line 761 to serve the Metro G Line Van Nuys Station and the Metro E Line Expo/Sepulveda Station. Metro Line 761 is an existing bus route that already operates along Sepulveda Boulevard and Van Nuys Boulevard. Routing buses to the Metro G Line Van Nuys Station and the Metro E Line Expo/Sepulveda Station would result in no change to the ambient noise levels. Noise standards would not be exceeded under the conditions previously described. Therefore, the no impact would occur related to operational noise.

Construction Impacts

Under the No Project Alternative, the proposed Project would not be constructed. The only reasonably foreseeable transit improvement within the Project Study Area would be rerouting Metro Line 761 to serve the Metro G Line Van Nuys Station and the Metro E Line Expo/Sepulveda Station. Construction activities associated with rerouting Metro Line 761 would be limited to installation of bus stop infrastructure such as signs and street furniture. These activities would not require substantial heavy equipment or other particularly noisy equipment. It is not anticipated that construction noise impacts would occur and noise standards would not be exceeded under the conditions previously described. Therefore, the No Project Alternative would result in a less than significant impact related to construction noise.

Alternative 1

Impact Statement

Operational Impact: Less than Significant with Mitigation

Construction Impact: Significant and Unavoidable

Operational Impacts

Rail Operations Noise

Noise exposure from the train movements was evaluated using the detailed noise assessment procedure in the FTA Assessment Manual (FTA, 2018). The rail operations noise analysis includes noise generated by vehicle passbys, consisting of motor noise, tire-guideway noise, aerodynamic noise, and noise from air conditioning and other auxiliary equipment on the vehicles. Other factors such as crossover noise and attenuation effects of intervening buildings and existing soundwalls are also included in the analysis.

Table 3.11-12 is a summary of noise-sensitive receptors where operational, moderate noise impacts would occur. Alternative 1 would result in moderate impacts at five Category 2 receptors, representing 26 single-family units, 5 multi-family buildings, and 1 hotel, and no noise impacts at Category 1 or Category 3 receptors. These noise impacts are considered potentially significant impacts. Other noise-sensitive receptors would not be exposed to noise levels in excess of the FTA noise impact criteria because the receptor is located farther away, speeds may be slower in their vicinity (resulting in decreased noise levels), the receptor is located away from special trackwork that generates elevated noise levels, or because of the presence of intervening building rows between the alignment and the noise-sensitive receptor.

Table 3.11-12. Alternative 1: Summary of Rail Operations Noise Impacts

Receptor ID	Location	Land Use	FTA Category[a]	Calculated (L_{dn}, dBA)	Existing (L_{dn}, dBA)	Noise Impact Criteria (L_{dn}, dBA)		Impact
						Moderate	Severe	
NL-1.44	Alber's Apartments, 15328 Albers Street, Sherman Oaks	Residences	2	67	70	65-69	>69	Moderate
NL-1.45	Best Western Plus Carriage Inn-South 5525 Sepulveda Boulevard, Sherman Oaks	Hotel	2	63	67	63-67	>67	Moderate

Receptor ID	Location	Land Use	FTA Category[a]	Calculated (L_{dn}, dBA)	Existing (L_{dn}, dBA)	Noise Impact Criteria (L_{dn}, dBA)		Impact
						Moderate	Severe	
NL-1.59	Granada Apartments, 15630 Vanowen Street, Van Nuys	Residences	2	67	71	66-70	>70	Moderate
NL-1.62	15623 Hart Street, Van Nuys	Residences	2	65	67	63-67	>67	Moderate
NL-1.70	15559 Covello Street, Van Nuys	Residences	2	63	67	63-67	>67	Moderate

Source: HTA, 2024

[a]FTA Category 2 noise levels are in terms of the day-night equivalent level (L_{dn}) and FTA Category 3 noise levels are in terms of hourly average level (L_{eq}).

dBA = A-weighted decibel
L_{dn} = day-night noise level

To mitigate rail operations noise impacts mitigation measure (MM) NOI-1.1 would require the installation of soundwalls along the east side of the northbound tracks. Soundwalls reduce noise levels at noise-sensitive receptors by breaking the direct line-of-sight between source and receptor with a solid wall. Aerial guideways typically do not require tall walls due to the height of the guideway over the receptor; a 3.5-foot wall height was the effective height determined to reduce noise level to below the FTA noise impact criteria. Further description of mitigation measures is included in Section 3.11.6. Rail operations noise impacts after implementation of MM NOI-1.1 are shown on Figure 3.11-4, Figure 3.11-5, and Figure 3.11-6. Impacts would be reduced to less than significant. As shown in Table 3.11-13, monorail noise levels would be reduced to below the FTA moderate impact threshold at the impacted receptors. Therefore, Alternative 1 would result in a less than significant impact with mitigation related to rail operations noise.

Table 3.11-13. Alternative 1: Summary of Noise Impacts and Mitigation Measures

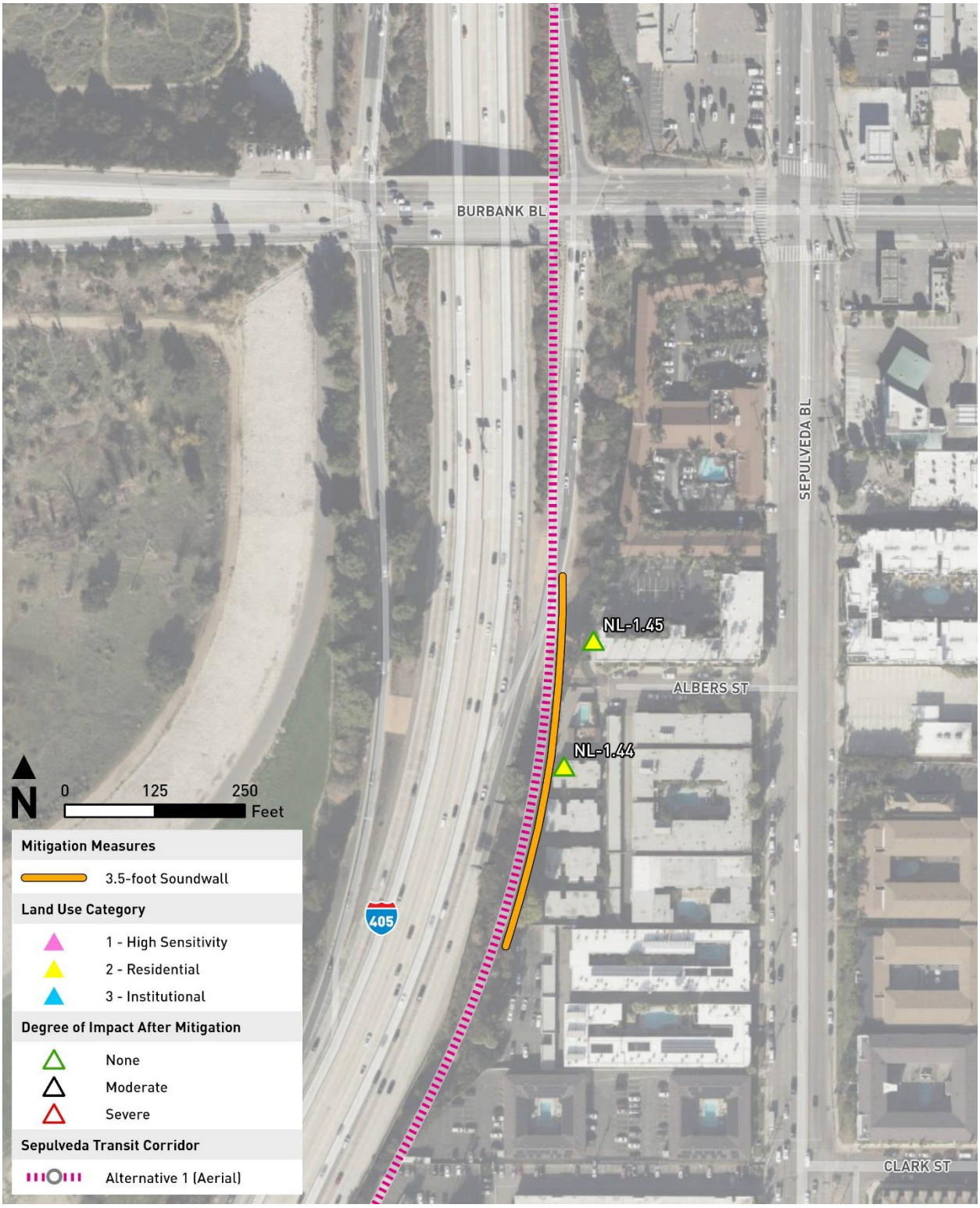
Receptor ID	Location	Land Use	FTA Category[a]	Noise Impact Criteria (L_{dn}, dBA)		Unmitigated Impact	Mitigation		
				Moderate	Severe		Mitigation Measure	Project Noise Level (L_{dn}, dBA)	Impact Level
NL-1.44	Alber's Apartments, 15328 Albers Street Sherman Oaks	Residences	2	65-69	>69	Moderate	MM NOI-1.1	57	**No Impact**
NL-1.45	Best Western Plus Carriage Inn-South 5525 Sepulveda Boulevard Sherman Oaks	Hotel	2	63-67	>67	Moderate	MM NOI-1.1	56	**No Impact**
NL-1.59	Granada Apartments 15630 Vanowen Street Van Nuys	Residences	2	66-70	>70	Moderate	MM NOI-1.1	60	**No Impact**
NL-1.62	15623 Hart Street Van Nuys	Residences	2	63-67	>67	Moderate	MM NOI-1.1	56	**No Impact**
NL-1.70	15559 Covello Street Van Nuys	Residences	2	63-67	>67	Moderate	MM NOI-1.1	55	**No Impact**

Source: HTA, 2024

[a]FTA Category 2 noise levels are in terms of the day-night equivalent level (Ldn)

dBA = A-weighted decibel
L_{en} = day-night noise level
MM = mitigation measure
NOI = noise

Figure 3.11-4. Alternative 1: Mitigated Rail Operations Noise Impacts – Magnolia Boulevard to Burbank Boulevard

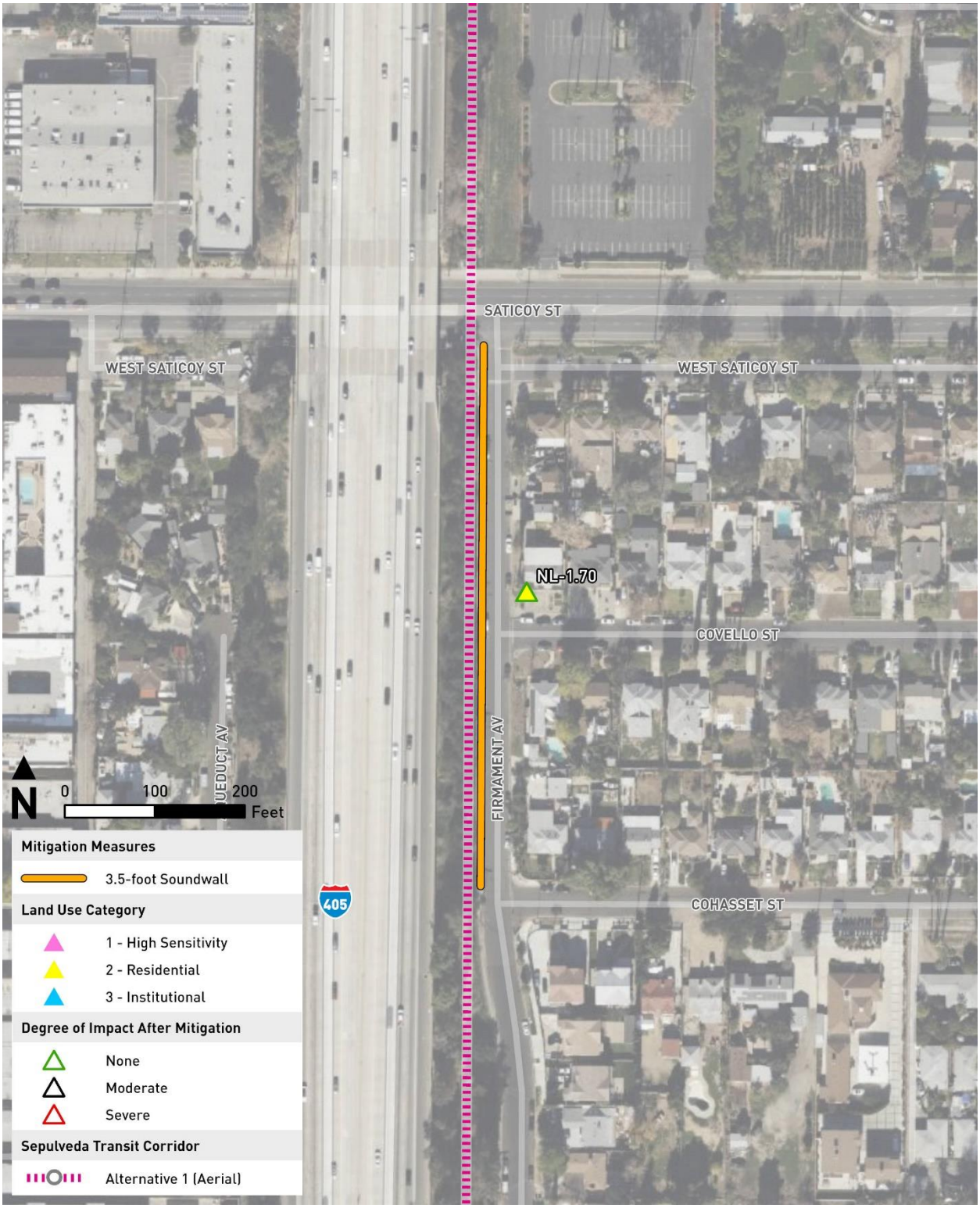


Source: HTA, 2024

Figure 3.11-5. Alternative 1: Mitigated Rail Operations Noise Impacts – Vanowen Street to Vose Street

Source: HTA, 2024

Figure 3.11-6. Alternative 1: Mitigated Rail Operations Noise Impacts – Cohasset Street to Saticoy Street



Source: HTA, 2024

Electric Bus Operations Noise

The electric bus connecting the Wilshire Boulevard/Metro D Line Station, Westwood Village, and UCLA Gateway Plaza would be a battery electric, low-floor transit bus, either 40 or 60 feet in length. The buses would operate at the same headways as the monorail, which would result in 30 buses in each direction during peak daytime hours. The electric bus service would operate in existing mixed-flow travel lanes on Wilshire Boulevard and Westwood Boulevard.

During peak daytime hours, electric bus service would result in an hourly L_{eq} of approximately 57 dBA at the nearest locations within the LA National Cemetery, which is located approximately 75 feet from the centerline of Wilshire Boulevard. Measured existing daytime hourly noise levels within the LA National Cemetery near Wilshire Boulevard are approximately 65 dBA L_{eq} (Site 12A in Table 3.11-11). Given this existing noise level, the FTA threshold of moderate impact would be 61 dBA L_{eq} at these locations. The electric bus noise level of 57 dBA L_{eq} would be below the FTA moderate impact threshold of 61 dBA L_{eq}. Therefore, electric bus operations under Alternative 1 would not result in significant noise impacts at outdoor Category 3 noise-sensitive receptors along Wilshire Boulevard.

Along the Westwood Boulevard segment, electric bus operations would generate 55 dBA L_{eq} at setbacks of educational and medical buildings along Westwood Boulevard. Existing measured daytime noise levels at such locations are near 58 dBA L_{eq} (noise measurement Site 9 as shown in Table 3.11-11). Therefore, daytime noise exposure from electric bus passbys would be below the FTA impact threshold of 57 dBA L_{eq}. At exterior areas of the Luskin Conference Center and medical buildings along Westwood Boulevard, which are considered to be noise Category 2 land uses, existing measured L_{dn} is 62 dBA (noise measurement site 10 in Table 3.11-10). Electric bus daily operations would result in a noise exposure of approximately 52 dBA L_{dn} at such locations, which is below the applicable FTA moderate impact threshold of 59 dBA L_{dn}. Therefore, Alternative 1 would result in a less than significant impact related to electric bus operations.

Ancillary Facilities (TPSS) Noise

Noise generated by ancillary facilities associated with Alternative 1 would be due to ventilation system fans at TPSS facilities along the project alignment. Eleven TPSS sites would be required and six would be located near noise-sensitive receptors. Table 3.11-14 shows a summary of the Alternative 1 TPSS noise impact assessments. TPSS facilities would not result in noise impacts at sensitive receptors. This is primarily because TPSS facilities would be in noisy areas and located at sufficient distances from the nearest noise-sensitive land uses to allow for noise attenuation. Therefore, Alternative 1 would result in a less than significant impact related to ancillary facilities noise.

Operational Noise Summary

The combination of operational noise sources, including rail operations, electric bus, ancillary facilities, and MSF, under Alternative 1 would result in moderate impacts at five Category 2 receptors, representing 26 single-family units, 5 multi-family buildings, and 1 hotel, and no noise impacts at Category 1 or Category 3 receptors. As shown in Table 3.11-14, the combination of TPSS noise and rail operations noise would not result in additional noise impacts. Noise impacts would result from rail operations as described previously. As shown in Table 3.11-13, MM NOI-1.1 would reduce all operational noise impacts to below significant. Therefore, Alternative 1 would result in a less than significant impact with mitigation related to operational noise.

Table 3.11-14. Alternative 1: Ancillary Facility Noise Impacts by Traction Power Substation Site and Combined Rail/TPSS Noise

TPSS Site	Nearest Noise-Sensitive Land Use	Land Use	FTA Category[a]	Distance (feet)	Existing Sound Level (dBA, Ldn or Hourly L_{eq})	TPSS Noise Level (dBA, Ldn or Hourly L_{eq})	Combined Rail, MSF and TPSS Operations Noise Level (dBA, Ldn or Hourly L_{eq})	Noise Impact Thresholds		TPSS Noise Level of Impact	Combined Noise Level of Impact
								Moderate	Severe		
1	Receptor NL-1.1: 2435 S Sepulveda Boulevard	Residences	2	350	74	39	52	66-72	>72	**No Impact**	**No Impact**
2	Receptor NL-1.5: Veterans Hospital 11301 Wilshire Boulevard	Hospital	2	740	67	33	47	63-67	>67	**No Impact**	**No Impact**
3	Receptor NL-1.21: Nearest condos in Museum Heights 171 N Church Ln, Los Angeles	Residences	2	350	72	39	53	66-71	>71	**No Impact**	**No Impact**
4	No nearby sensitive land uses	--	--	--	--	--	--	--	--	**No Impact**	**No Impact**
5	No nearby sensitive land uses	--	--	--	--	--	--	--	--	**No Impact**	**No Impact**
6	Receptor NS-1.14: Skirball Cultural Center Ziegler Amphitheater	Community Center	3	260	61	36	51	59-64	>64	**No Impact**	**No Impact**
7	Alister Sherman Oaks 4440 Sepulveda Boulevard, Sherman Oaks	Residences	2	300	76	41	49	66-74	>74	**No Impact**	**No Impact**
8	No nearby sensitive land uses	--	--	--	--	--	--	--	--	**No Impact**	**No Impact**
9	Receptor NL-1.65: Helen Towers Apartments 15549 Sherman Way	Residences	2	150	67	47	49	63-67	>67	**No Impact**	**No Impact**

TPSS Site	Nearest Noise-Sensitive Land Use	Land Use	FTA Category[a]	Distance (feet)	Existing Sound Level (dBA, Ldn or Hourly L_{eq})	TPSS Noise Level (dBA, Ldn or Hourly L_{eq})	Combined Rail, MSF and TPSS Operations Noise Level (dBA, Ldn or Hourly L_{eq})	Noise Impact Thresholds		TPSS Noise Level of Impact	Combined Noise Level of Impact
								Moderate	Severe		
10	No nearby sensitive land uses	--	--	--	--	--	--	--	--	**No Impact**	**No Impact**
11	No nearby sensitive land uses	--	--	--	--	--	--	--	--	**No Impact**	**No Impact**

Source: HTA, 2024

[a]FTA Category 2 noise levels are in terms of the day-night equivalent level (L_{dn}) and FTA Category 3 noise levels are in terms of hourly average level (L_{eq}).

-- indicates data not applicable
dBA = A-weighted decibel
L_{dn} = day-night noise level
L_{eq} = equivalent noise level

Construction Impacts

Construction of Alternative 1 would include various phases that would involve the use of construction equipment at specific locations along the proposed alignment. Construction noise levels from Alternative 1 were predicted in terms of 8-hour L_{eq} for each phase of construction based upon the number and types of off-road construction equipment to be employed during the given phase. Table 3.11-15 shows the results of the construction noise predictions at a reference distance of 50 feet from construction activities and at the nearest sensitive receptors.

The FTA has provided guidance for assessing construction noise associated with transit projects. The criteria are based upon an 8-hour L_{eq}, as shown in Table 3.11-4. For residential uses, the threshold is 80 dBA for daytime construction and 70 dBA for nighttime construction. Commercial uses are held to an 85-dBA daytime and nighttime noise construction threshold, while industrial uses are held to a 90-dBA daytime and nighttime construction noise threshold. For the purposes of this analysis, FTA's detailed assessment construction noise limit criteria of 8-hour L_{eq} have been applied. Table 3.11-15 is a summary of expected construction noise levels at locations of nearest noise-sensitive receptors to each construction activity. Additional details regarding construction equipment and noise levels by phase are included in Attachment 4 of the *Sepulveda Transit Corridor Project Noise and Vibration Technical Report* ([Metro, 2025*)*. Construction noise would range from 8-hour L_{eq} noise levels of approximately 79 to 101 dBA at the nearest sensitive receptors. As shown in Table 3.11-15, construction activities would result in levels that exceed the FTA 80-dBA daytime and 70-dBA nighttime 8-hour L_{eq} thresholds for residential land uses.

The construction noise contours are depicted graphically on Figure 3.11-7 through Figure 3.11-14, which represent the noise levels that could potentially occur along the entirety of the alignment. The noisiest phase of construction is used to depict the contours. An interval of 5 dBA is used for each contour and each contour was calculated based on the distance at which noise would decrease by 5 dBA, starting at a noise level of 90 dBA L_{eq} to 70 dBA L_{eq}. The 90 dBA L_{eq} noise level is representative of the FTA daytime and nighttime construction noise threshold for industrial uses. The 70 dBA L_{eq} contour shows the areas where construction noise levels would exceed the nighttime construction noise threshold for residential uses. Between the proposed Van Nuys Metrolink Station and the Getty Center, the 90 dBA L_{eq} contour includes areas within a distance of 100 feet from the nearest construction activity. The 70 dBA L_{eq} contour extends to a maximum distance of 1,000 feet. South of the Getty Center, the 90 dBA L_{eq} contour covers areas within a distance of 63 feet from the nearest construction activity. The 70 dBA L_{eq} contour extends to a maximum distance of 630 feet. The construction noise contours do not include noise reductions that may occur as a result of terrain or intervening structures. As an example of how to read the contours, the figures show that within the first contour of 100 feet (shown in dark purple), the calculated construction noise levels may be above 90 dBA L_{eq}. At the next distance of 178 feet (shown in light purple), noise levels would decrease to approximately 85 dBA L_{eq}.

Pile driving may be required for installation of retaining walls. Impact or vibratory piledrivers are the most noise intensive construction equipment that could result in elevated noise levels above typical construction methods. It is unknown at this stage of design if pile driving would be the required construction method which is dependent on soil type. Typically, where possible, piles are drilled which is a quieter method of pile installation such as cast-in-drilled-holes (CIDH). For instance, foundations for the aerial guideway are proposed to be constructed using CIDH instead of impact driven piles. Impact pile driving generates an hourly noise level of approximately 94.3 dBA L_{eq} at 50 feet, vibratory pile driving generates an hourly noise level of 93.8 dBA $L_{eq,}$ at 50 feet and CIDH generates an hourly noise level of approximately 77.4 dBA L_{eq} at 50 feet. Vibratory pile driving is approximately 0.5 dBA quieter

than impact pile driving and CIDH is approximately 16.9 dBA quieter. To reduce noise levels where piles may be required, MM NOI-1.2 would require impact pile driving to be avoided where possible and to use drilled or vibratory piles where feasible.

Alternative 1 would result in temporary and periodic increases in ambient noise levels due to construction activity that would exceed FTA's criteria, and, where applicable, the standards established by the local noise ordinances. While MM NOI-1.2 would be implemented, which would include noise-reducing measures, there may still be temporary or periodic increases in ambient noise levels that exceed FTA construction impact criteria. There are no additional feasible mitigation measures to reduce construction noise levels. Therefore, impacts related to construction noise would be significant and unavoidable.

Regarding health effects of noise, it is unlikely for construction noise to result in noise-induced hearing loss for persons residing or working near construction zones, as this is an occupational hazard related to working over long periods of time (years) in high noise environments. However, construction noise could increase stress at affected sensitive uses. Nighttime construction could adversely affect sleep for residents living near active construction sites. As required by MM NOI-1.2, if required by the jurisdiction a noise variance would be prepared that demonstrates the implementation of control measures to maintain noise levels below the applicable Federal Transit Administration and local standards. Nonetheless, construction noise could potentially still exceed the FTA nighttime criteria.

Table 3.11-15. Alternative 1: Predicted Construction Noise Levels

Construction Phase	8-hour L_{eq} (dBA) at 50 feet	8 -hour L_{eq} (dBA) at Nearest Receptors	Exceeds 80-dBA 8-Hour L_{eq} Daytime Threshold?	Exceeds 70-dBA 8-Hour L_{eq} Nighttime Threshold?
Monorail Transit Segments 1-4 Construction				
Utility Relocations	87	92	Yes	Yes
Demolition/Site Preparation	87	92	Yes	Yes
Substructure Foundations (CIDH)[a]	87-96	92-101	Yes	Yes
Precast Superstructure Assembly	87	92	Yes	Yes
Finishing Work	85	90	Yes	Yes
Aerial Station Construction				
Utility Relocations	87	81	Yes	Yes
Demolition/Site Preparation	87	81	Yes	Yes
Substructure Foundations (CIDH)	87	81	Yes	Yes
Precast Superstructure Assembly	87	81	Yes	Yes
Finishing Work	85	79	No	Yes
Traction Power Substation Construction				
Utility Relocations	87	83	Yes	Yes
Demolition/Site Preparation	85	81	Yes	Yes
Excavation	87	83	Yes	Yes
Concrete Work	83	79	No	Yes
Utility Work	87	83	Yes	Yes
Paving	88	84	Yes	Yes
Maintenance and Storage Facility Construction				
Utility Relocation	87	85	Yes	Yes
Demolition/Site Preparation	87	85	Yes	Yes
Excavation	89	87	Yes	Yes

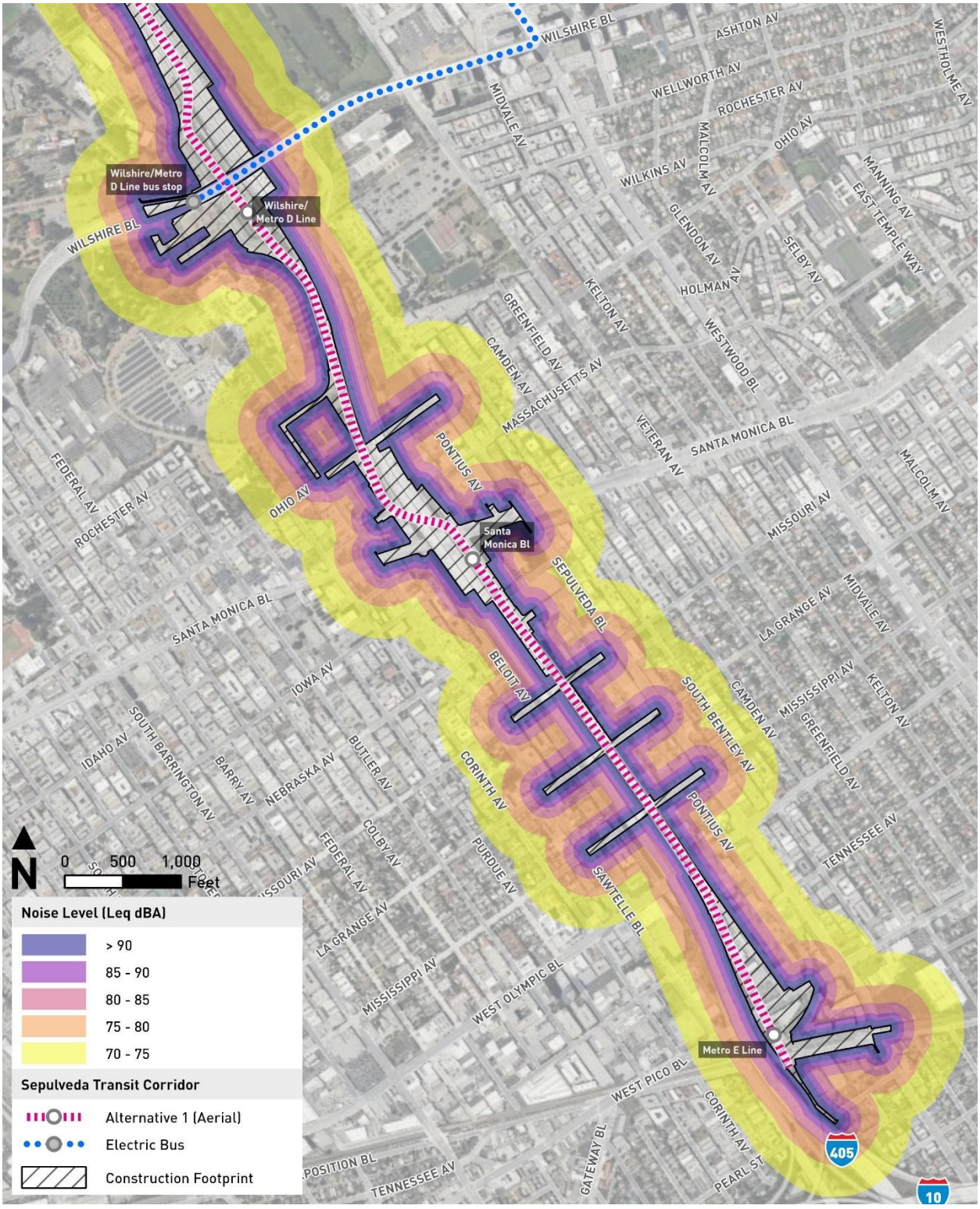
Construction Phase	8-hour L_{eq} (dBA) at 50 feet	8 -hour L_{eq} (dBA) at Nearest Receptors	Exceeds 80-dBA 8-Hour L_{eq} Daytime Threshold?	Exceeds 70-dBA 8-Hour L_{eq} Nighttime Threshold?
Concrete Work	86	84	Yes	Yes
Utility Work	87	85	Yes	Yes
Paving	88	86	Yes	Yes
Haynes Street Construction				
Utility Relocation	90	92	Yes	Yes
Missouri Avenue Construction				
Utility Relocation	90	92	Yes	Yes
La Grange Avenue Construction				
Utility Relocation	90	92	Yes	Yes
Mississippi Avenue Construction				
Utility Relocation	90	92	Yes	Yes
I-405 Improvements				
Utility Relocation	87	84	Yes	Yes
Demolition/Site Preparation	91	88	Yes	Yes
Grading/Excavation	94	91	Yes	Yes
Concrete Work	87	84	Yes	Yes
Precast Yard Construction				
Demolition/Site Preparation	87	85	Yes	Yes
Excavation	89	87	Yes	Yes
Concrete Work	89	87	Yes	Yes
Utility Work	87	85	Yes	Yes
Paving	88	86	Yes	Yes
Guideway Fabrication	86	84	Yes	Yes

Source: HTA, 2024

[a]Variation in noise levels for this phase are due to variation in number of equipment used for different segments.

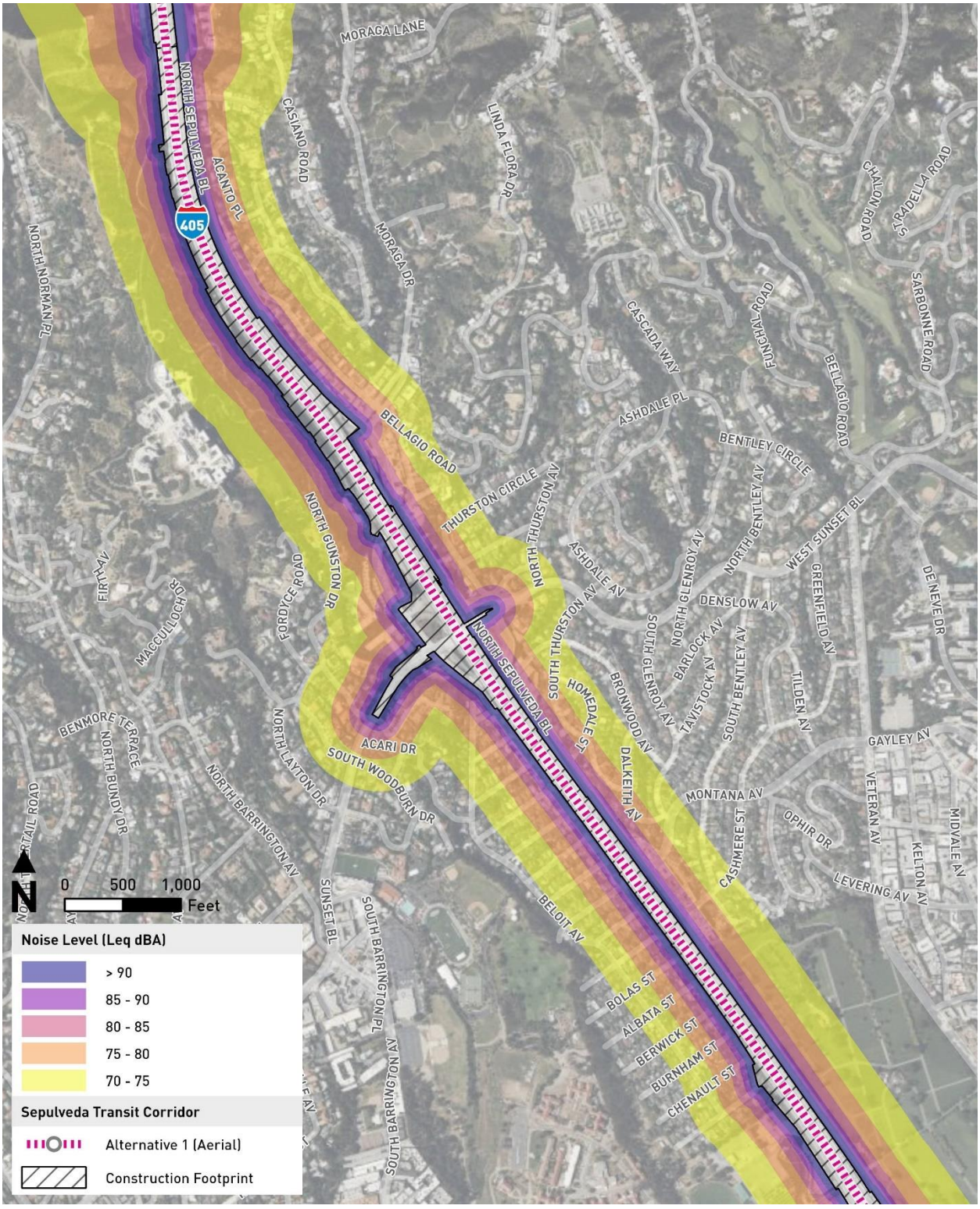
CIDH = cast-in-drilled-hole
dBA = A-weighted decibel
L_{eq} = equivalent noise level

Figure 3.11-7. Alternative 1: Construction Noise Contours – View 1



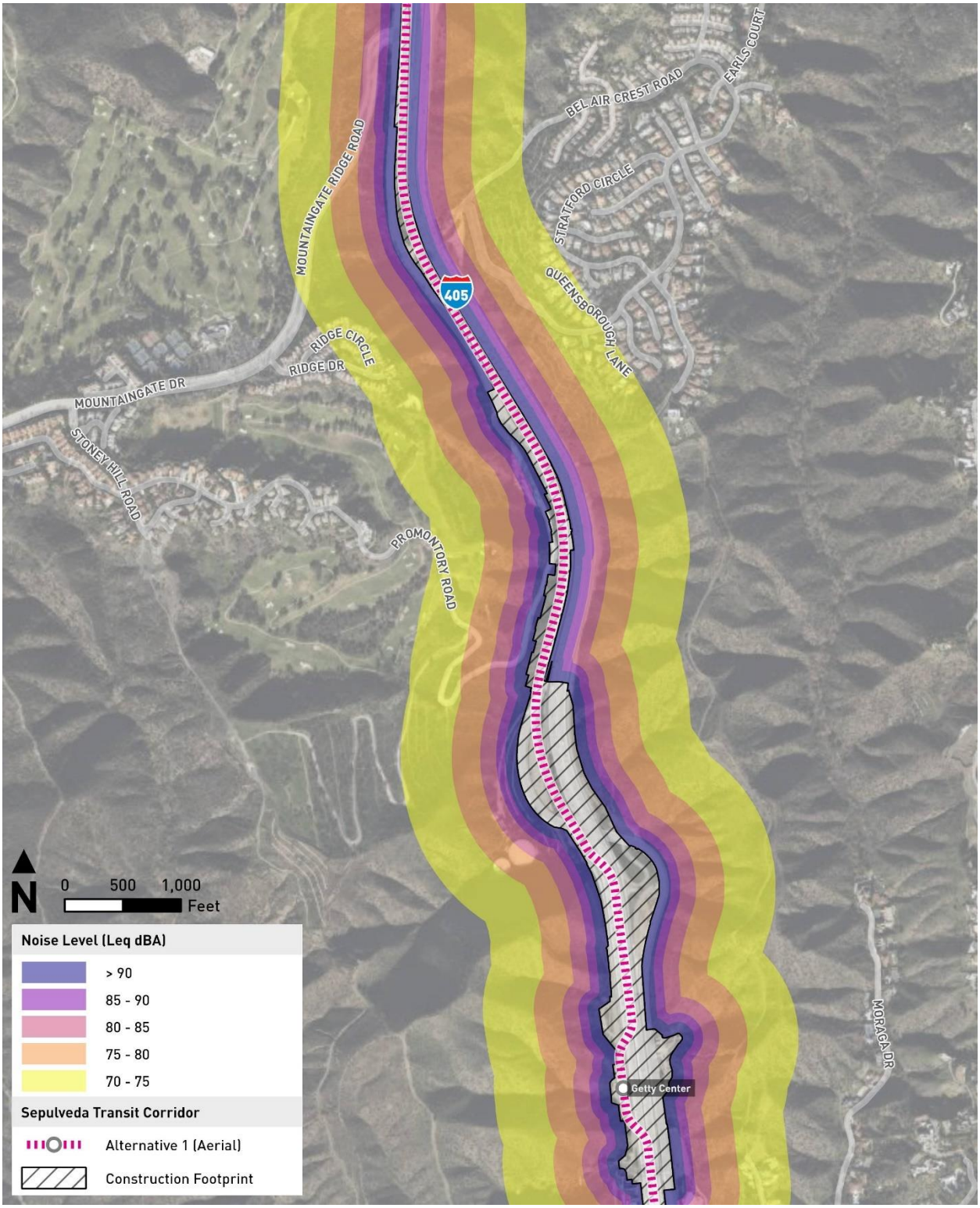
Source: HTA, 2024

Figure 3.11-8. Alternative 1: Construction Noise Contours – View 2



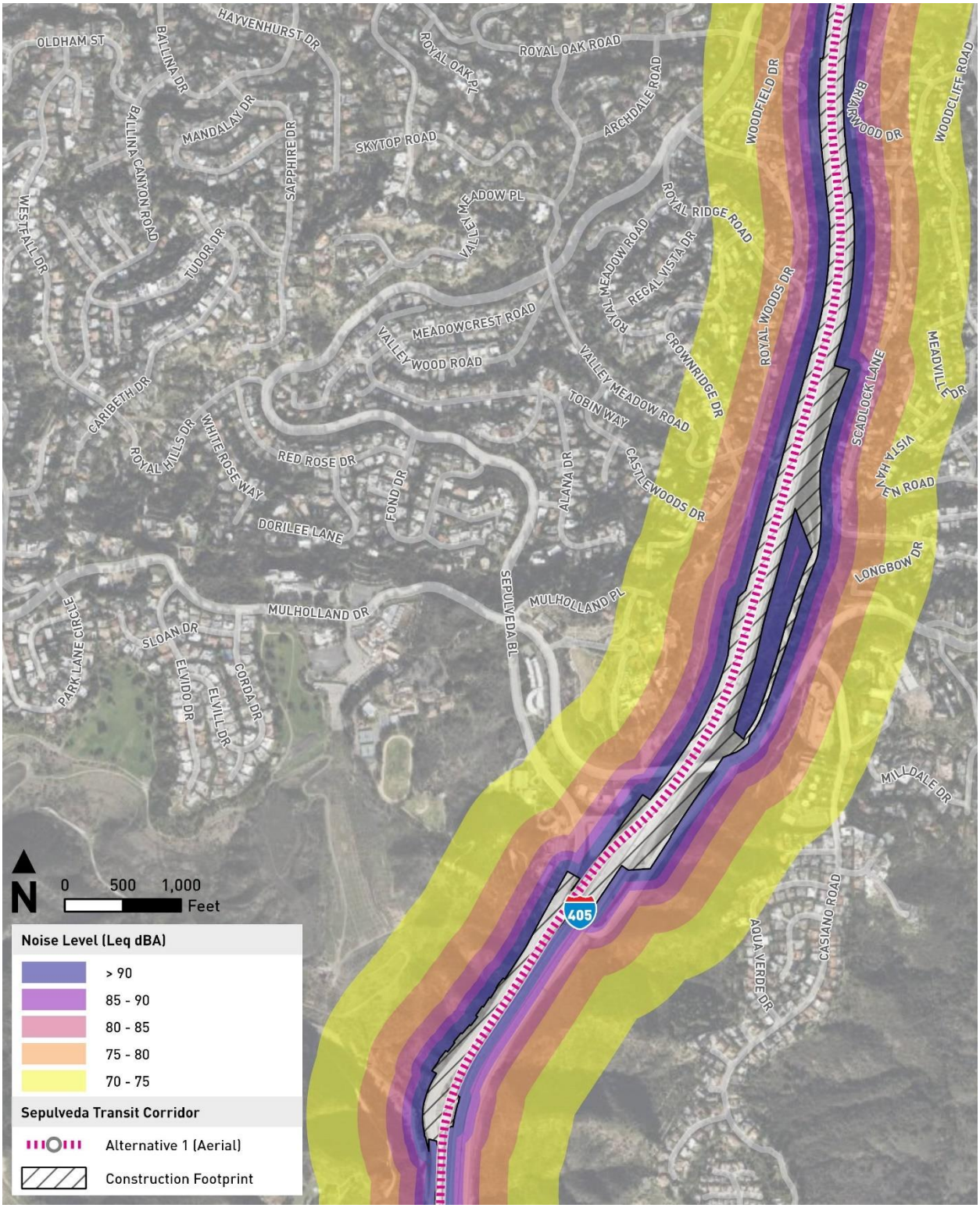
Source: HTA, 2024

Figure 3.11-9. Alternative 1: Construction Noise Contours – View 3



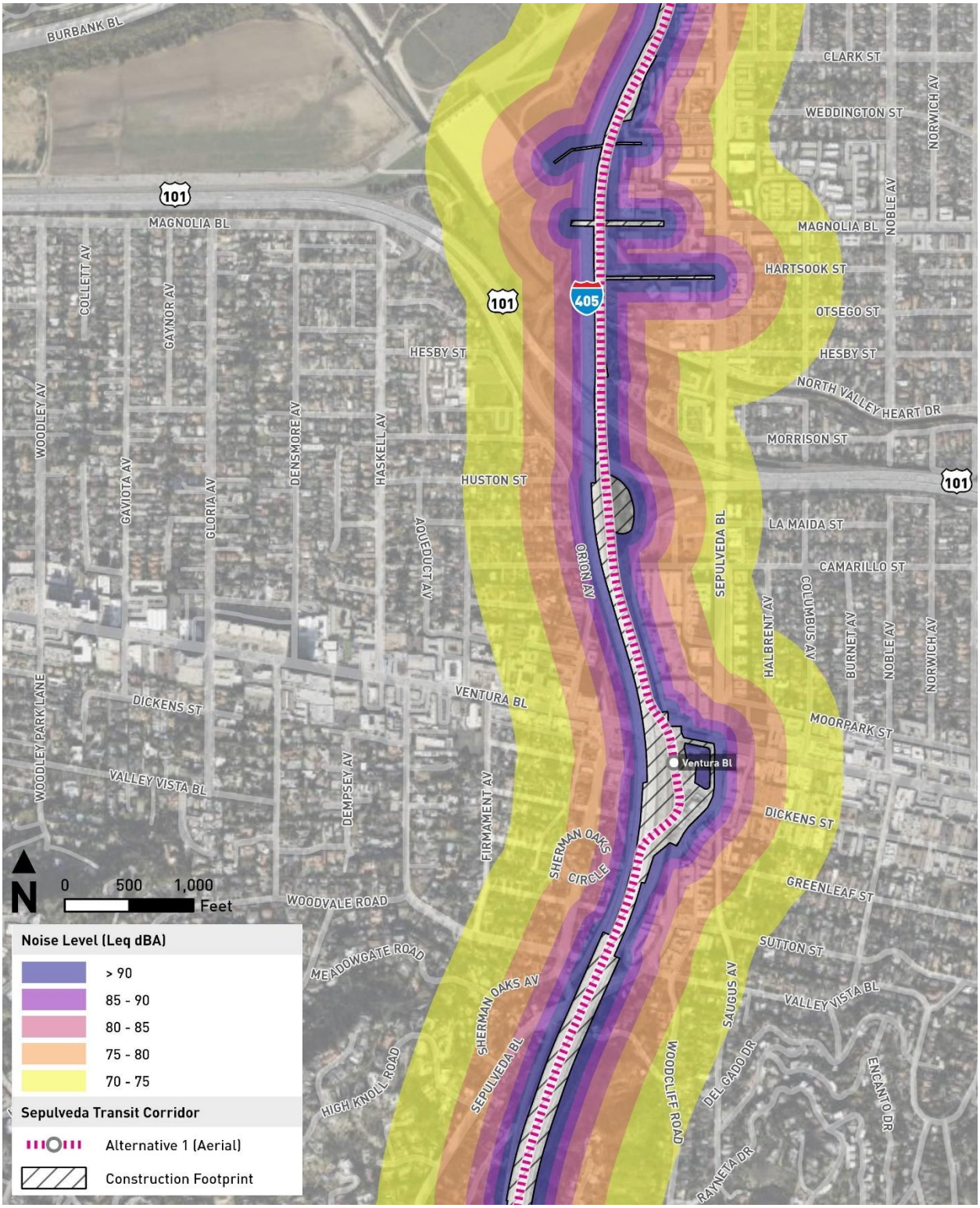
Source: HTA, 2024

Figure 3.11-10. Alternative 1: Construction Noise Contours – View 4



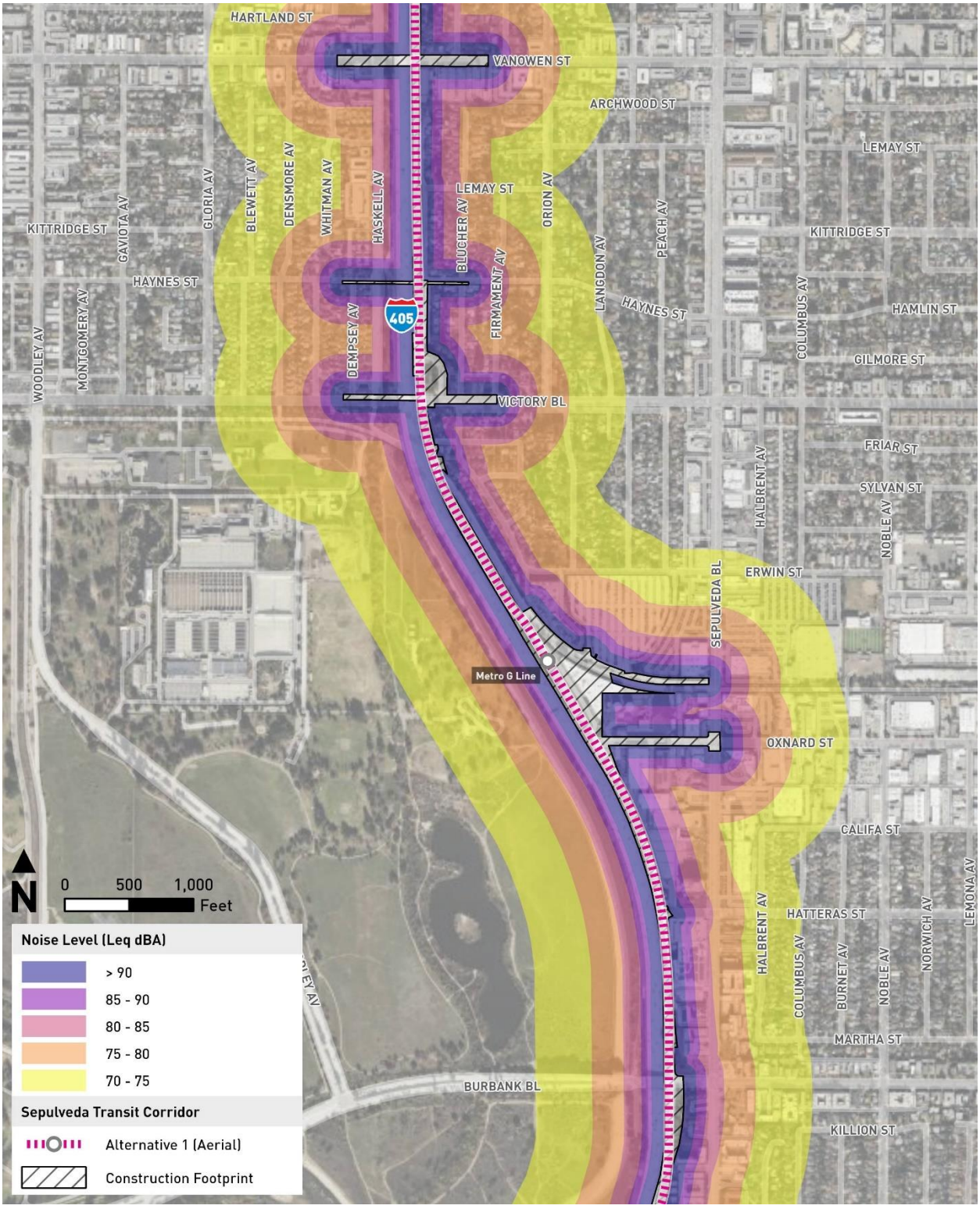
Source: HTA, 2024

Figure 3.11-11. Alternative 1: Construction Noise Contours – View 5



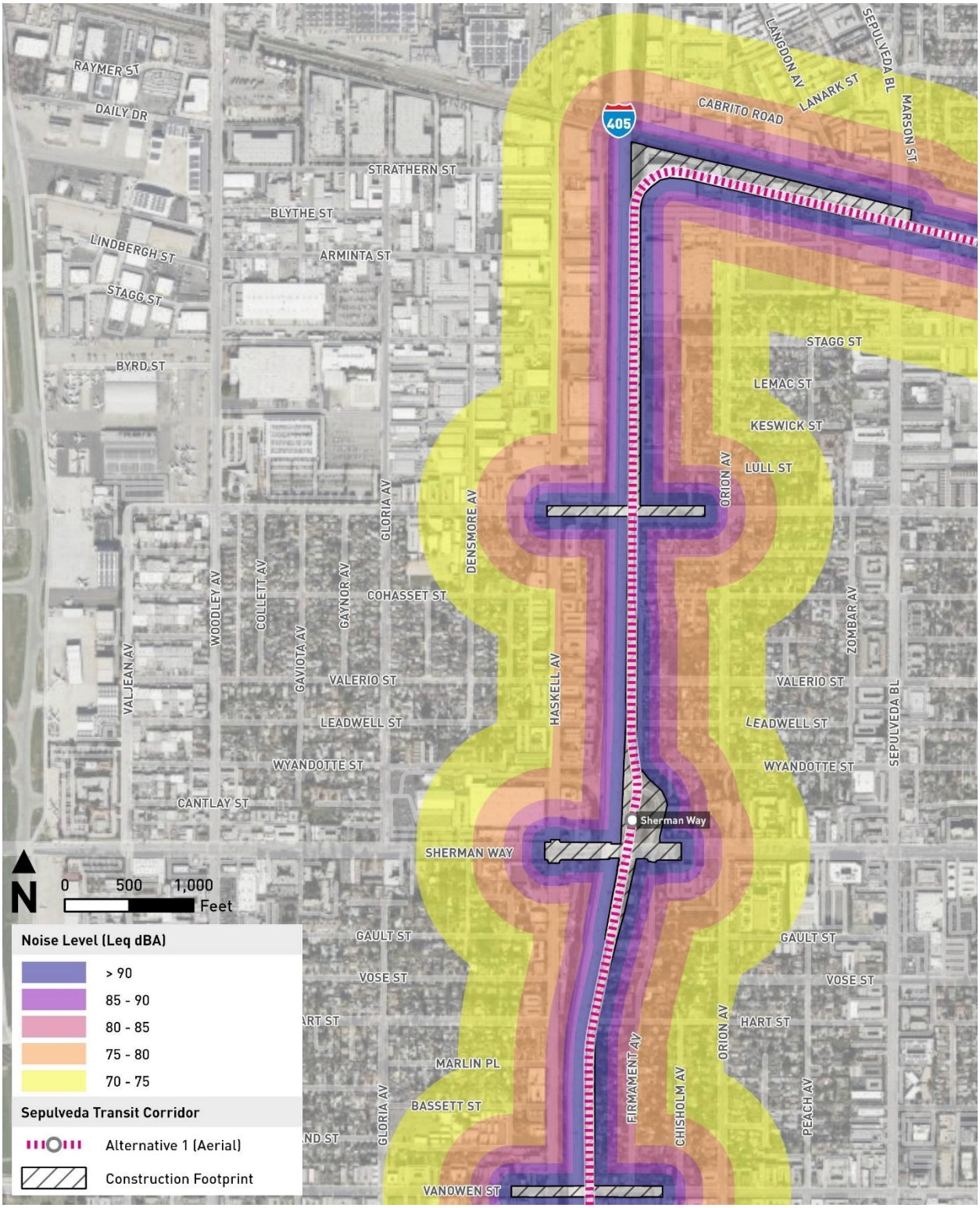
Source: HTA, 2024

Figure 3.11-12. Alternative 1: Construction Noise Contours – View 6



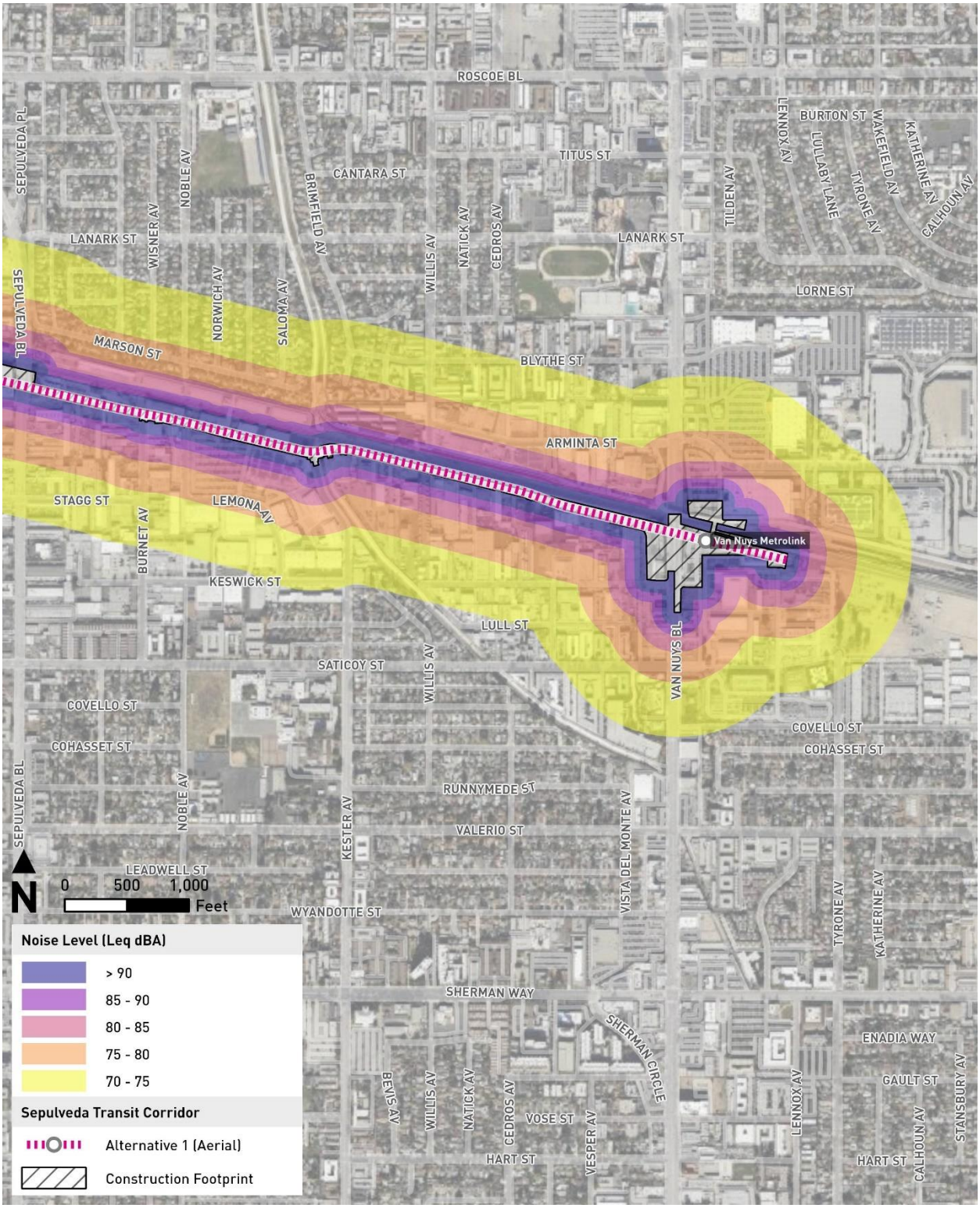
Source: HTA, 2024

Figure 3.11-13. Alternative 1: Construction Noise Contours – View 7



Source: HTA, 2024

Figure 3.11-14. Alternative 1: Construction Noise Contours – View 8



Source: HTA, 2024

Alternative 3

Impact Statement

Operational Impact: Less than Significant with Mitigation

Construction Impact: Significant and Unavoidable

Operational Impacts

Rail Operations Noise

Noise exposure from train movements was evaluated using the detailed noise assessment procedure in the FTA Assessment Manual (FTA, 2018). The rail operations noise analysis includes noise generated by vehicle passbys, consisting of motor noise, tire-guideway noise, aerodynamic noise, and noise from air conditioning, and other auxiliary equipment on the vehicles. Other factors such as crossover noise and attenuation effects of intervening buildings and existing soundwalls are also included in the analysis.

Table 3.11-16 is a summary of noise-sensitive receptors where operational moderate noise impacts would occur. Alternative 3 would result in moderate impacts at five Category 2 receptors, representing 26 single-family units, 5 multi-family buildings, and 1 hotel. No impacts would occur at Category 1 or Category 3 receptors. The noise impacts are considered potentially significant impacts. Other noise-sensitive receptors would not be exposed to noise levels in excess of the FTA noise impact criteria because the receptor is located farther away, speeds may be slower in their vicinity (resulting in decreased noise levels), the receptor is located away from special trackwork that generates elevated noise levels or because of the presence of intervening building rows between the alignment and the noise-sensitive receptor.

Table 3.11-16. Alternative 3: Summary of Rail Operations Noise Impacts

Receptor ID	Location	Land Use	FTA Category[a]	Calculated (L_{dn}, dBA)	Existing (L_{dn}, dBA)	Noise Impact Criteria (L_{dn}, dBA)		Impact
						Moderate	Severe	
NL-3.22	Alber's Apartments, 15328 Albers Street, Los Angeles	Residences	2	67	70	65-69	>69	Moderate
NL-3.23	Best Western Plus Carriage Inn-South 5525 Sepulveda Boulevard, Los Angeles	Hotel	2	63	67	63-67	>67	Moderate
NL-3.37	Granada Apartments, 15630 Vanowen Street, Van Nuys	Residences	2	67	71	66-70	>70	Moderate
NL-3.40	15623 Hart Street, Van Nuys	Residences	2	65	67	63-67	>67	Moderate
NL-3.48	15559 Covello Street, Van Nuys	Residences	2	63	67	63-67	>67	Moderate

Source: HTA, 2024

[a]FTA Category 2 noise levels are in terms of the day-night equivalent level (L_{dn}) and FTA Category 3 noise levels are in terms of hourly average level (L_{eq}).

dBA = A-weighted decibel
L_{dn} = day-night noise level

To mitigate rail operations noise impacts MM NOI-3.1 would require the installation of soundwalls along the east side of the northbound tracks. Soundwalls reduce noise levels at noise-sensitive receptors by breaking the direct line-of-sight between source and receptor with a solid wall. Aerial guideways typically do not require tall walls due to the height of the guideway over the receptor; a 3.5-foot wall height was the effective height determined to reduce noise level to below the FTA noise impact criteria. Further description of mitigation measures is included in Section 3.11.6. Rail operations noise impacts after implementation of mitigation are shown on Figure 3.11-15 through Figure 3.11-17. As shown in Table 3.11-17, monorail noise levels would be reduced to below the FTA moderate impact threshold at the impacted receptors. Therefore, Alternative 3 would result in a less than significant impact with mitigation related to rail operations noise.

Table 3.11-17. Alternative 3: Summary of Noise Impacts and Mitigation Measures

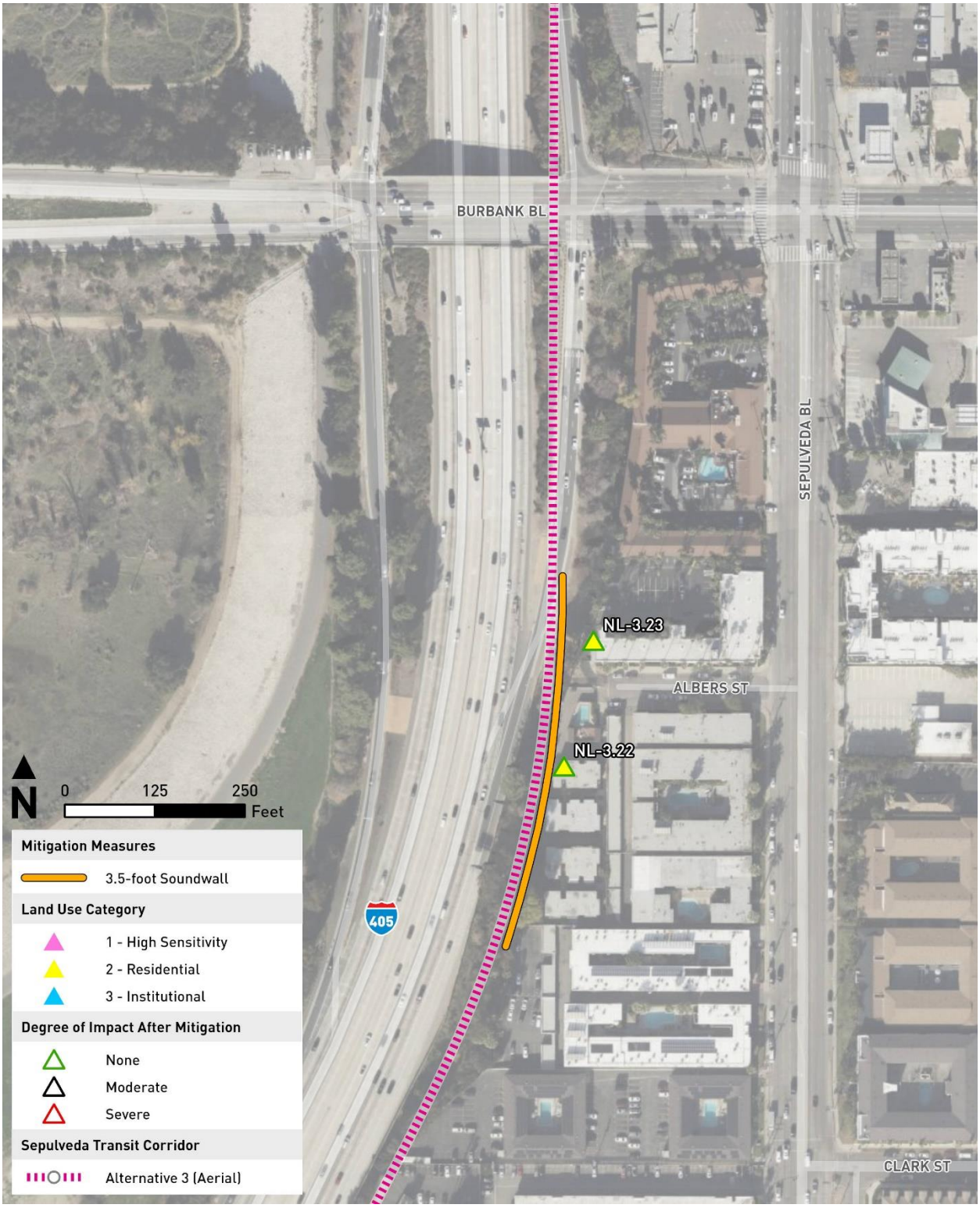
Receptor ID	Location	Land Use	FTA Category	Noise Impact Criteria (L_{dn}, dBA)		Unmitigated Impact	Mitigation		
				Moderate	Severe		Mitigation Measure	Project Noise Level (L_{dn}, dBA)	Impact Level
NL-3.22	Alber's Apartments, 15328 Albers Street, Sherman Oaks	Residences	2	65-69	>69	Moderate	MM NOI-3.1	59	**No Impact**
NL-3.23	Best Western Plus Carriage Inn-South 5525 Sepulveda Boulevard, Sherman Oaks	Hotel	2	63-67	>67	Moderate	MM NOI-3.1	57	**No Impact**
NL-3.37	Granada Apartments, 15630 Vanowen Street, Van Nuys	Residences	2	66-70	>70	Moderate	MM NOI-3.1	61	**No Impact**
NL-3.40	15623 Hart Street, Van Nuys	Residences	2	63-67	>67	Moderate	MM NOI-3.1	56	**No Impact**
NL-3.48	15559 Covello Street, Van Nuys	Residences	2	63-67	>67	Moderate	MM NOI-3.1	56	**No Impact**

Source: HTA, 2024

[a]FTA Category 2 noise levels are in terms of the day-night equivalent level (L_{dn}) and FTA Category 3 noise levels are in terms of hourly average level (L_{eq}).

dBA = A-weighted decibel
L_{dn} = day-night noise level
MM = mitigation measure

Figure 3.11-15. Alternative 3: Mitigated Rail Operations Noise Impacts – Magnolia Boulevard to Burbank Boulevard

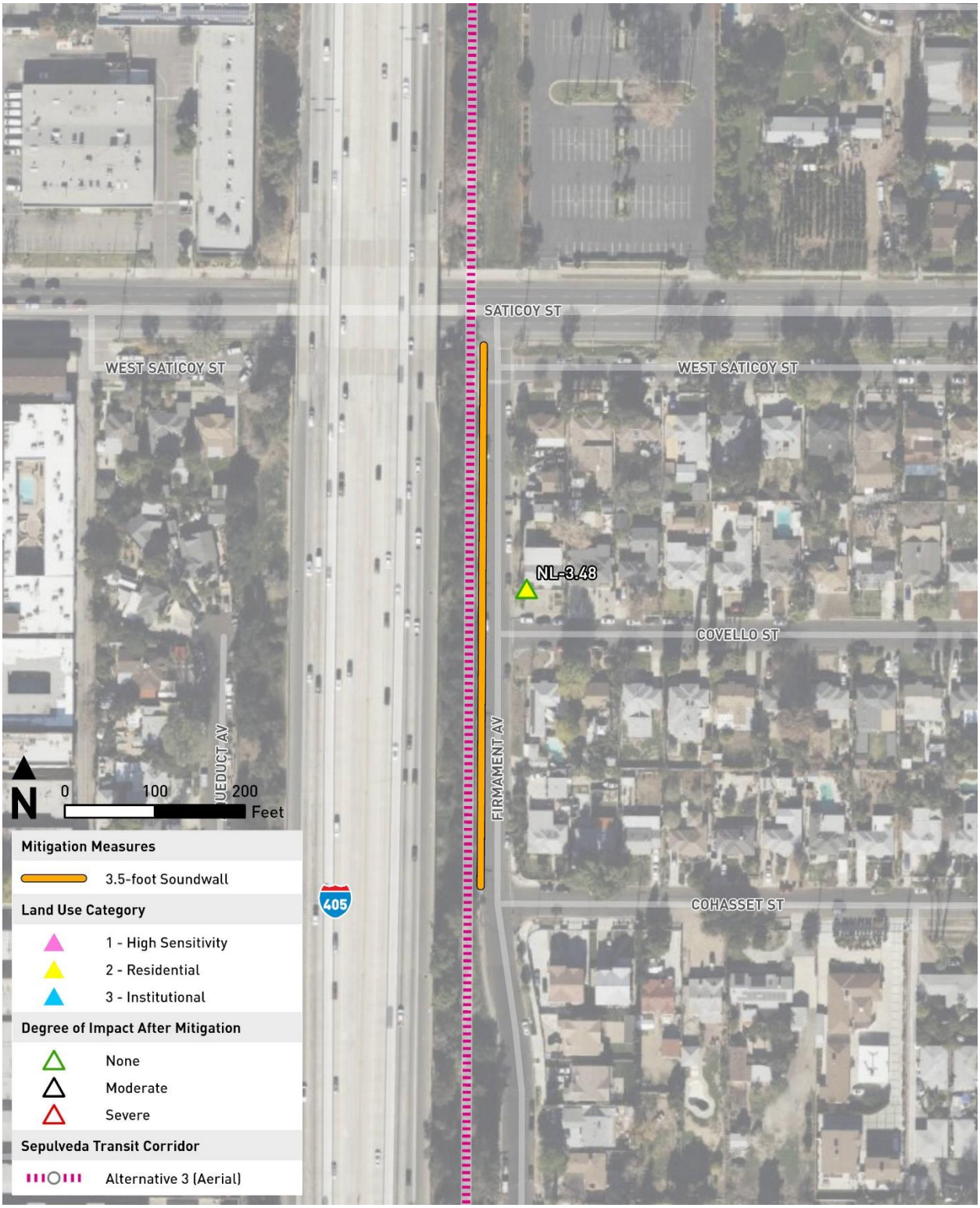


Source: HTA, 2024

Figure 3.11-16. Alternative 3: Mitigated Rail Operations Noise Impacts – Vanowen Street to Vose Street

Source: HTA, 2024

Figure 3.11-17. Alternative 3: Mitigated Rail Operations Noise Impacts – Cohasset Street to Saticoy Street



Source: HTA, 2024

Ancillary Facilities (TPSS) Noise

Noise generated by ancillary facilities associated with Alternative 3 would be due to ventilation system fans at TPSS facilities along the project alignment. Fourteen TPSS sites would be required and four would be located near noise-sensitive receptors. Table 3.11-18 shows a summary of the Alternative 3 TPSS noise impact assessment. TPSS facilities would not result in noise impacts at sensitive receptors. This is primarily because TPSS facilities would be in noisy areas and located at sufficient distances from the nearest noise-sensitive land uses to allow for noise attenuation.

Table 3.11-18. Alternative 3: Ancillary Facility Noise Impacts by Traction Power Substation Site and Combined Rail/TPSS Noise

TPSS Site[a]	Nearest Noise-Sensitive Land Use	Land Use	FTA Category[b]	Distance (feet)	Existing Sound Level (dBA, L_{dn} or Hourly L_{eq})	TPSS Noise Level (dBA, L_{dn} or Hourly L_{eq})	Combined Rail and TPSS Operations Noise Level (dBA, L_{dn} or Hourly L_{eq})	Noise Impact Thresholds		TPSS Level of Impact	Combined Level of Impact
								Moderate	Severe		
1	Receptor NL-3.1: 2435 S Sepulveda Boulevard	Residences	2	350	74	39	52	66-72	>72	**No Impact**	**No Impact**
2	No nearby sensitive land uses	--	--	--	--	--	--	--	--	**No Impact**	**No Impact**
3	No nearby sensitive land uses	--	--	--	--	--	--	--	--	**No Impact**	**No Impact**
4	Receptor NS-3.6: Skirball Cultural Center Ziegler Amphitheater	Community Center	3	260	61	36	51	59-64	>64	**No Impact**	**No Impact**
5	Alister Sherman Oaks 4440 Sepulveda Boulevard, Sherman Oaks	Residences	2	300	76	41	49	66-74	>74	**No Impact**	**No Impact**
6	No nearby sensitive land uses	--	--	--	--	--	--	--	--	**No Impact**	**No Impact**
7	Receptor NL-3.43: Helen Towers Apartments 15549 Sherman Way	Residences	2	150	67	47	49	63-67	>67	**No Impact**	**No Impact**
8	No nearby sensitive land uses	--	--	--	--	--	--	--	--	**No Impact**	**No Impact**
9	No nearby sensitive land uses	--	--	--	--	--	--	--	--	**No Impact**	**No Impact**
10	No nearby sensitive land uses	--	--	--	--	--	--	--	--	**No Impact**	**No Impact**
11	No nearby sensitive land uses	--	--	--	--	--	--	--	--	**No Impact**	**No Impact**

Source: HTA, 2024

[a]Under Alternative 3, TPSS Sites 12, 13, and 14 would be located underground.
[b]FTA Category 2 noise levels are in terms of the day-night equivalent level (Ldn) and FTA Category 3 noise levels are in terms of hourly average level (Leq).

-- indicates data not applicable.
dBA = A-weighted decibel
L_{dn} = day-night noise level
SFR = single-family residential

Other ancillary facilities under Alternative 3 would include vents located at the southern tunnel portal near the Federal Building parking lot, Wilshire/Metro D Line Station, UCLA Gateway Plaza Station, and at the northern portal near the Leo Baeck Temple parking lot. Table 3.11-11 shows the measured existing noise levels at noise-sensitive locations in the vicinity of each of the ventilation facilities. Predicted ventilation noise at the nearest multi-family residential buildings along the east side of Veteran Avenue would be near 36 dBA L_{eq}, which is well below the background noise levels in this area (Site 6 in Table 3.11-11). At Category 3 land uses in the vicinity of the Wilshire/Metro D Line Station and the UCLA Gateway Plaza Station, ventilation noise would be in the range of 52 dBA to 54 dBA L_{eq}. The ventilation noise levels would be below the impact thresholds at short-term measurement locations representing these areas (Site 9 in Table 3.11-11). The closest noise-sensitive receptor to the ventilation at the north tunnel portal is the Leo Baeck Temple. Ventilation noise on the north side of the Temple facing the tunnel portal would be about 41 dBA L_{eq}, which is far below background daytime noise level of 67 dBA L_{eq} at this location (Site 27 in Table 3.11-11). Noise from tunnel ventilation facilities would be less than existing noise levels at all of the nearest noise-sensitive receptors. Therefore, Alternative 3 would result in a less than significant impact related to ancillary facilities noise.

Operational Noise Summary

The combination of operational noise sources including rail operations, ancillary facilities, and MSF under Alternative 3 would result in moderate impacts at five Category 2 receptors, representing 26 single-family units, 5 multi-family buildings, and 1 hotel, and no noise impacts at Category 1 or Category 3 receptors. As shown in Table 3.11-18, the combination of TPSS noise and rail operations noise would not result in additional noise impacts. Noise impacts would result from rail operations as described previously. As shown in Table 3.11-17, MM NOI-3.1 would reduce all operational noise impacts to below significant. Therefore, Alternative 3 would result in a less than significant impact with mitigation related to operational noise.

Construction Impacts

Construction of Alternative 3 would include various phases that would involve the use of construction equipment at specific locations along the proposed alignment. Construction noise levels from Alternative 3 were predicted in terms of 8-hour L_{eq} for each phase of construction based upon the number and types of off-road construction equipment to be employed during the given phase. Table 3.11-19 shows the results of the construction noise predictions at a reference distance of 50 feet from construction activities and at the nearest sensitive receptors.

The FTA has provided guidance for assessing construction noise associated with transit projects. The criteria are based upon an 8-hour L_{eq}, as shown in Table 3.11-4. For residential uses, the threshold is 80 dBA for daytime construction and 70 dBA for nighttime construction. Commercial uses are held to an 85-dBA daytime and nighttime noise construction threshold, while industrial uses are held to a 90-dBA daytime and nighttime construction noise threshold. For the purposes of this analysis, the FTA's detailed assessment construction noise limit criteria of 8-hour L_{eq} have been applied. Table 3.11-19 is a summary of expected construction noise levels at locations of nearest noise-sensitive receptors to each construction activity. Additional detail regarding construction equipment and noise levels by phase are included in Attachment 7 of the *Sepulveda Transit Corridor Project Noise and Vibration Technical Report* ([Metro, 2025). Construction noise would range from 8-hour L_{eq} noise levels of approximately 79 to 101 dBA at the nearest sensitive receptors. A tunnel boring machine (TBM) would be required for tunneling underground segments of Alternative 3, but it would not generate aboveground noise. As shown in

Table 3.11-19, construction activities would result in levels that exceed the FTA 80-dBA daytime and 70-dBA nighttime 8-hour L_{eq} thresholds for residential land uses.

The construction noise contours are depicted graphically on Figure 3.11-18 through Figure 3.11-25, which represent the noise levels that could potentially occur along the entirety of the alignment. The noisiest phase of construction is used to depict the contours. An interval of 5 dBA is used for each contour and each contour was calculated based on the distance at which noise would decrease by 5 dBA, starting at a noise level of 90 dBA L_{eq} to 70 dBA L_{eq}. The 90 dBA L_{eq} noise level is representative of the FTA daytime and nighttime construction noise threshold for industrial uses. The 70 dBA L_{eq} contour shows the areas where construction noise levels would exceed the nighttime construction noise threshold for residential uses. Between the proposed Van Nuys Metrolink Station and the Getty Center, the 90 dBA L_{eq} contour includes areas within a distance of 100 feet from the nearest construction activity. The 70 dBA L_{eq} contour extends to a maximum distance of 1,000 feet. South of the Getty Center, the 90 dBA L_{eq} contour covers areas within a distance of 63 feet from the nearest construction activity. The 70 dBA L_{eq} contour extends to a maximum distance of 630 feet. The construction noise contours do not include noise reductions that may occur as a result of terrain or intervening structures. As an example of how to read the contours, the figures show that within the first contour of 100 feet (shown in dark purple), the calculated construction noise levels may be above 90 dBA L_{eq}. At the next distance of 178 feet (shown in light purple), noise levels would decrease to approximately 85 dBA L_{eq}.

Pile driving may be required for installation of retaining walls or potentially at TBM launch locations. Impact or vibratory piledrivers are the most noise intensive construction equipment that could result in elevated noise levels above typical construction methods. It is unknown at this stage of design if pile driving would be the required construction method which is dependent on soil type. Typically, where possible, piles are drilled which is a quieter method of pile installation such as CIDH. For instance, foundations for the aerial guideway are proposed to be constructed using CIDH instead of impact driven piles. Impact pile driving generates an hourly noise level of approximately 94.3 dBA L_{eq} at 50 feet, vibratory pile driving generates an hourly noise level of 93.8 dBA $L_{eq,}$ at 50 feet and CIDH generates an hourly noise level of approximately 77.4 dBA L_{eq} at 50 feet. Vibratory pile driving is approximately 0.5 dBA quieter than impact pile driving and CIDH is approximately 16.9 dBA quieter. To reduce noise levels where piles may be required, MM NOI-3.2 would require impact pile driving to be avoided where possible and to use drilled or vibratory piles where feasible. Soil improvements such as grouting injection would be required for cut-and-cover construction to stabilize soils. Soil improvement activity would typically require drilling equipment and pumping equipment to inject the grout into the soil. A noise level of 87 dBA 8-hour $L_{eq\_}$ at 50 feet reflects equipment required for cut-and-cover construction, which is shown in Table 3.11-19 as “Station Construction (UCLA and Wilshire).”

Alternative 3 would result in temporary and periodic increases in ambient noise levels due to construction activity that would exceed FTA’s criteria, and, where applicable, the standards established by the local noise ordinances. While MM NOI-3.2 would be implemented, which would include noise-reducing measures, there may still be temporary or periodic increases in ambient noise levels that exceed FTA construction impact criteria. There are no additional feasible mitigation measures to reduce construction noise levels. Therefore, impacts related to construction noise would be significant and unavoidable.

Regarding health effects of noise, it is unlikely for construction noise to result in noise-induced hearing loss for persons residing or working near construction zones, as this is an occupational hazard related to working over long periods of time (years) in high noise environments. However, construction noise could increase stress at affected sensitive uses. Nighttime construction could adversely affect sleep for

residents living near active construction sites. As required by MM NOI-3.2, if required by the jurisdiction a noise variance would be prepared that demonstrates the implementation of control measures to maintain noise levels below the applicable Federal Transit Administration and local standards. Nonetheless, construction noise could potentially still exceed the FTA nighttime criteria.

Table 3.11-19. Alternative 3: Predicted Construction Noise Levels

Construction Phase	8-hour L_{eq} (dBA) at 50 feet	8-hour L_{eq} (dBA) at Nearest Receptors	Exceeds 80-dBA 8-Hour L_{eq} Daytime Threshold?	Exceeds 70-dBA 8-Hour L_{eq} Nighttime Threshold?
Monorail Transit Segments 1-4 Construction				
Utility Relocations	87	92	Yes	Yes
Demolition/Site Preparation	87	92	Yes	Yes
Substructure Foundations (CIDH)[a]	87-96	92-101	Yes	Yes
Launch Box (Segment 6)	88	80	Yes	Yes
Precast Superstructure Assembly	87	92	Yes	Yes
Finishing Work	85	90	Yes	Yes
Station Construction				
Utility Relocations	87	81	Yes	Yes
Demolition/Site Preparation	87	81	Yes	Yes
Substructure Foundations	87	81	Yes	Yes
Precast Superstructure Assembly	87	81	Yes	Yes
Support of Excavation (UCLA and Wilshire)	87	85-92	Yes	Yes
Station Construction (UCLA and Wilshire)	87	85-92	Yes	Yes
Finishing Work	85	79	No	Yes
Traction Power Substation Construction				
Utility Relocations	87	83	No	Yes
Demolition/Site Preparation	85	81	No	Yes
Excavation	87	83	No	Yes
Concrete Work	83	79	No	No
Utility Work	87	83	Yes	Yes
Paving	88	84	Yes	Yes
Maintenance and Storage Facility Construction				
Utility Relocation	87	85	Yes	Yes
Demolition/Site Preparation	87	85	Yes	Yes
Excavation	89	87	Yes	Yes
Concrete Work	86	84	Yes	Yes
Utility Work	87	85	Yes	Yes
Paving	88	86	Yes	Yes
Haynes Street Construction				
Utility Relocation	90	92	Yes	Yes
Missouri Avenue Construction				
Utility Relocation	90	92	Yes	Yes
La Grange Avenue Construction				
Utility Relocation	90	92	Yes	Yes
Mississippi Avenue Construction				
Utility Relocation	90	92	Yes	Yes
I-405 Improvements				
Utility Relocation	87	84	Yes	Yes

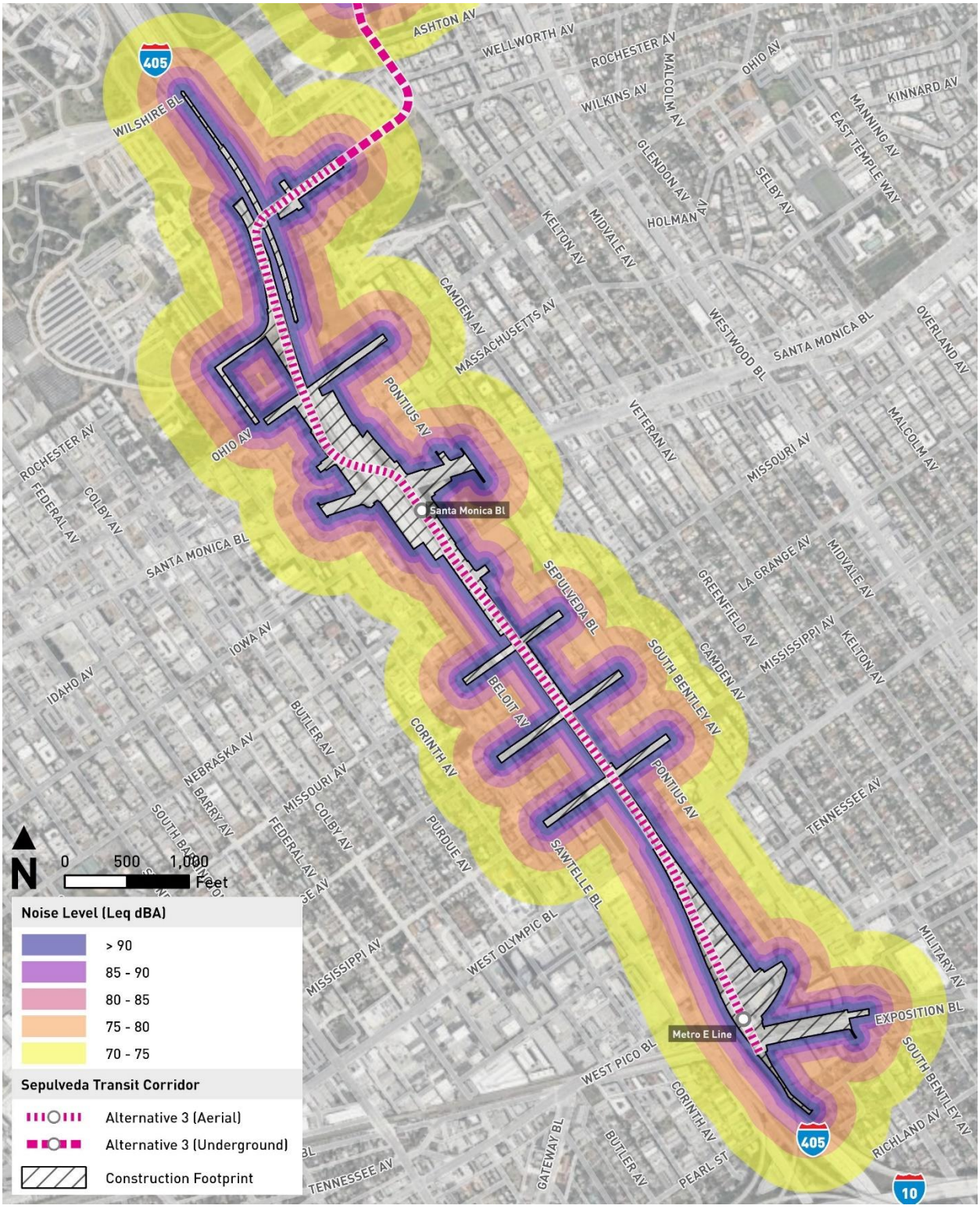
Construction Phase	8-hour L_{eq} (dBA) at 50 feet	8-hour L_{eq} (dBA) at Nearest Receptors	Exceeds 80-dBA 8-Hour L_{eq} Daytime Threshold?	Exceeds 70-dBA 8-Hour L_{eq} Nighttime Threshold?
Demolition/Site Preparation	91	88	Yes	Yes
Grading/Excavation	94	91	Yes	Yes
Concrete Work	87	84	Yes	Yes
Precast Yard Construction				
Demolition/Site Preparation	87	85	Yes	Yes
Excavation	89	87	Yes	Yes
Concrete Work	89	87	Yes	Yes
Utility Work	87	85	Yes	Yes
Paving	88	86	Yes	Yes
Guideway Fabrication	86	84	Yes	Yes

Source: HTA, 2024

[a]Variation in noise levels for this phase are due to variation in number of equipment used for different segments.

CIDH = cast-in-drilled-hole
dBA = A-weighted decibel
L_{eq} = equivalent noise level

Figure 3.11-18. Alternative 3: Construction Noise Contours – View 1

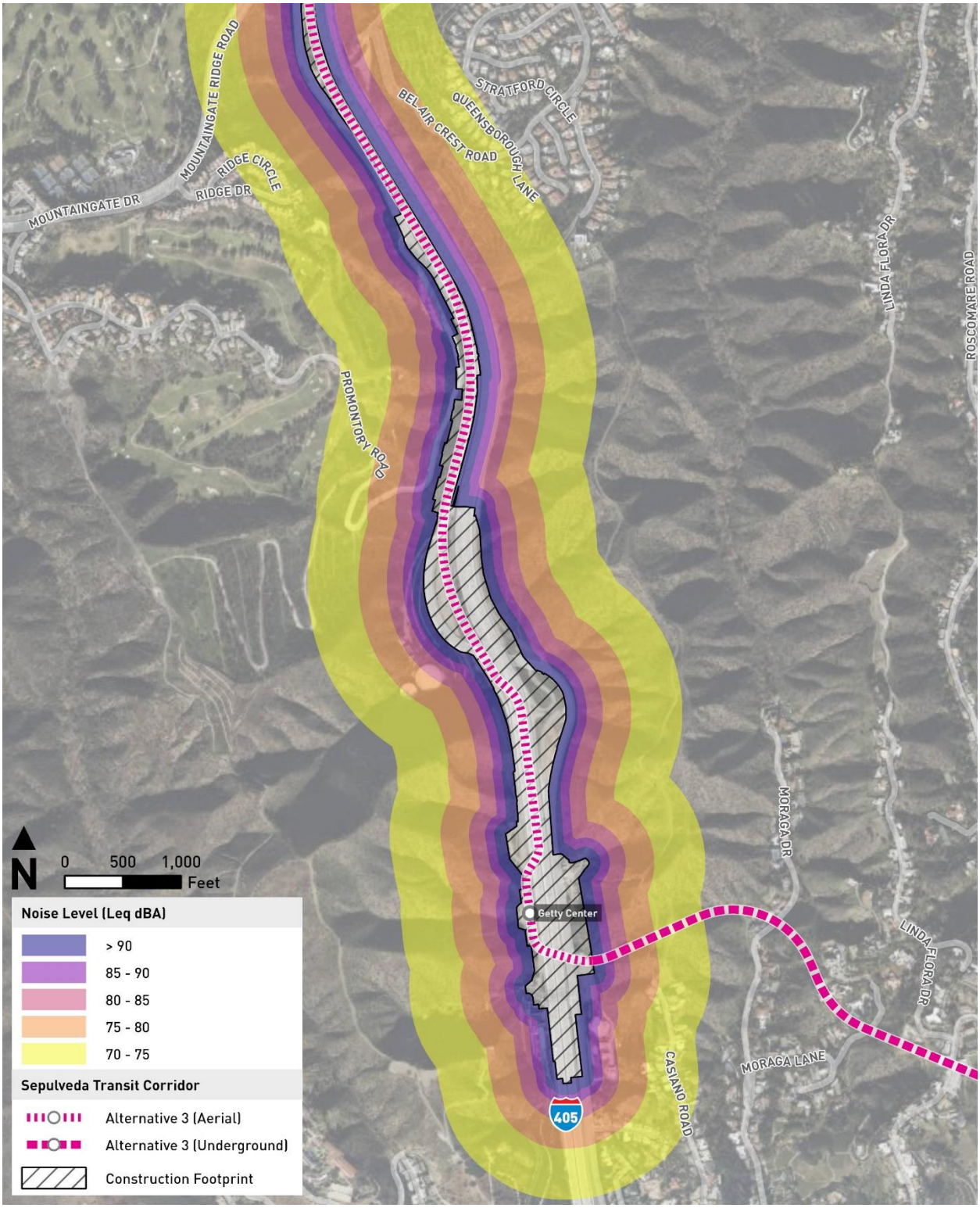


Source: HTA, 2024

Figure 3.11-19. Alternative 3: Construction Noise Contours – View 2

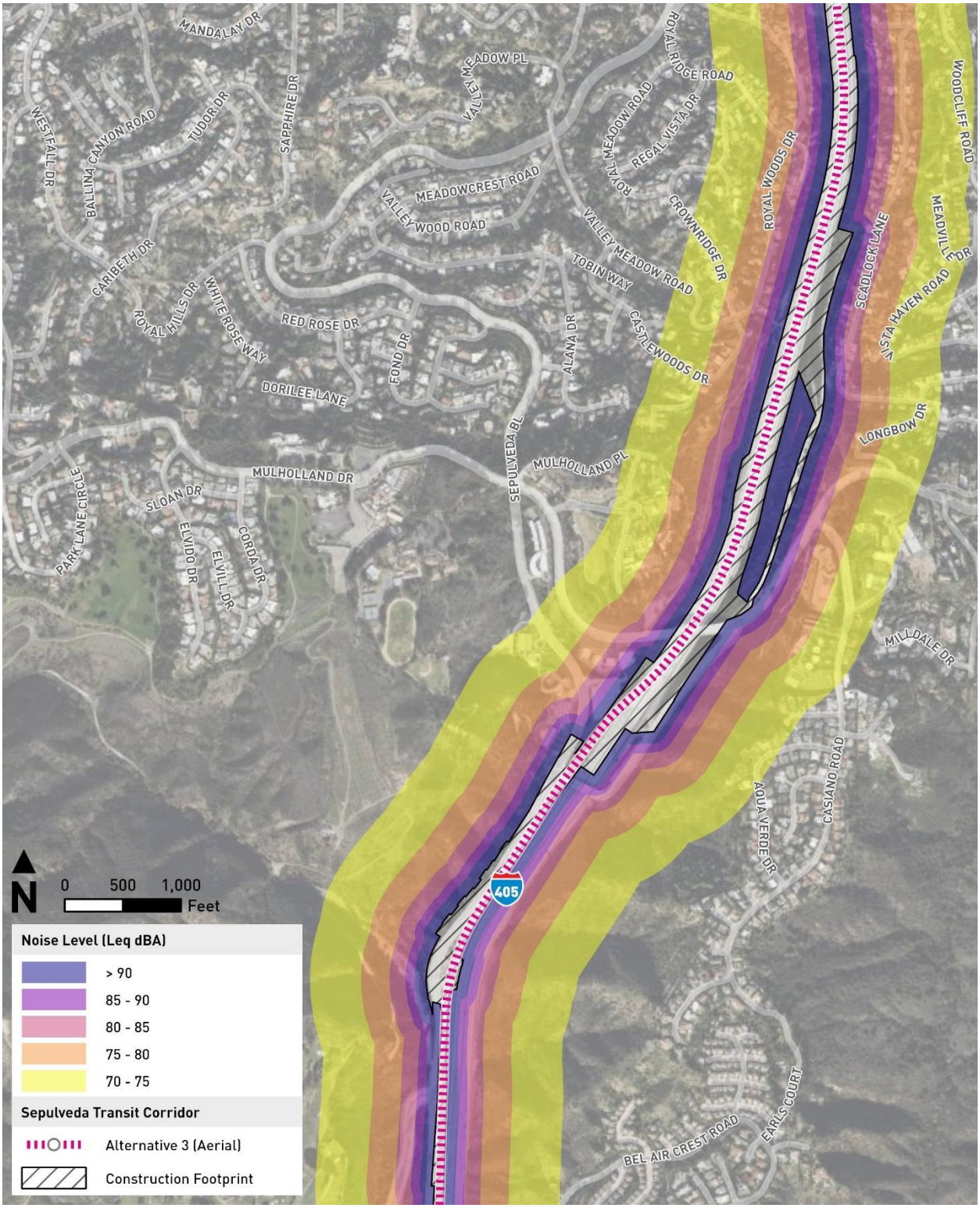
Source: HTA, 2024

Figure 3.11-20. Alternative 3: Construction Noise Contours – View 3



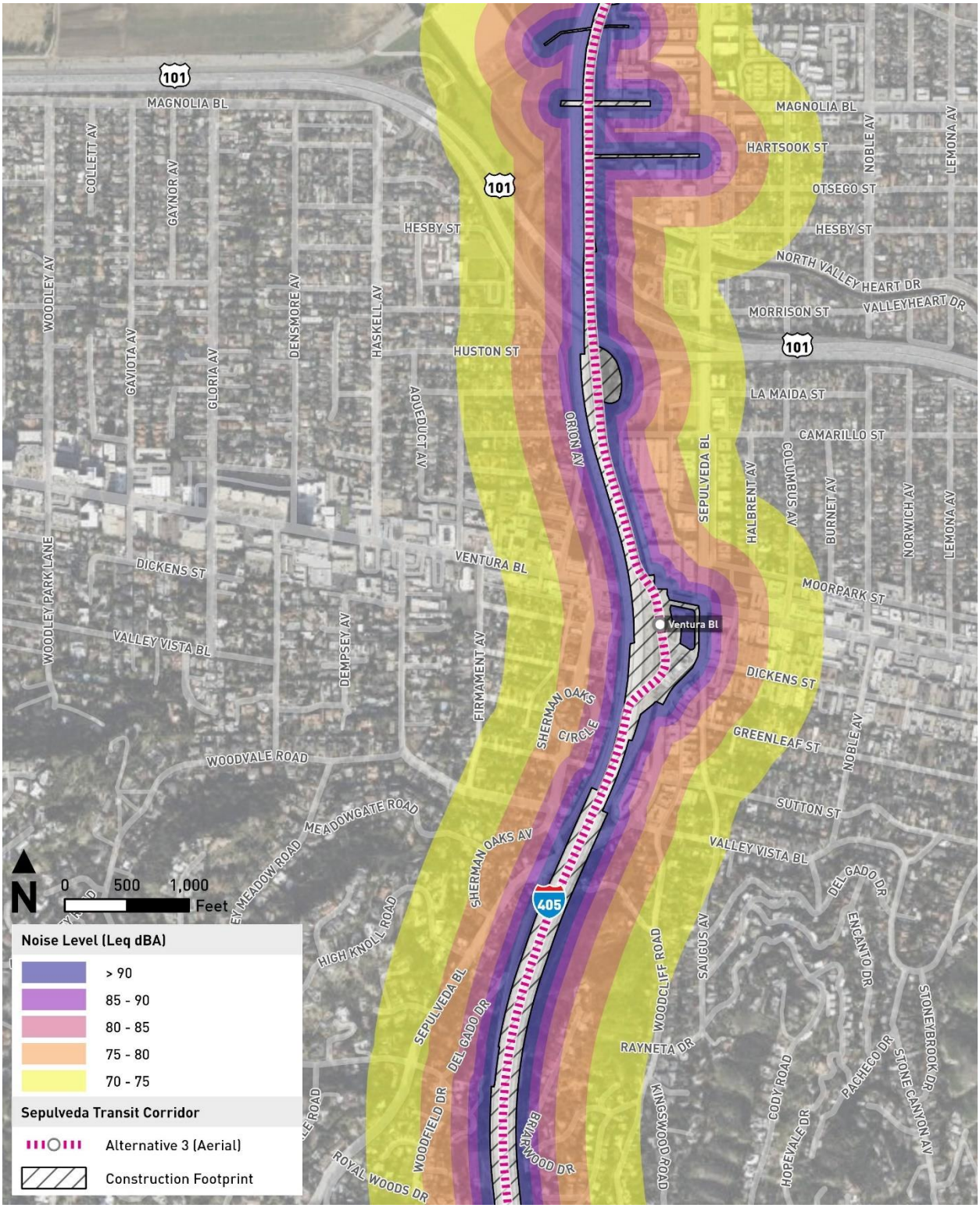
Source: HTA, 2024

Figure 3.11-21. Alternative 3: Construction Noise Contours – View 4



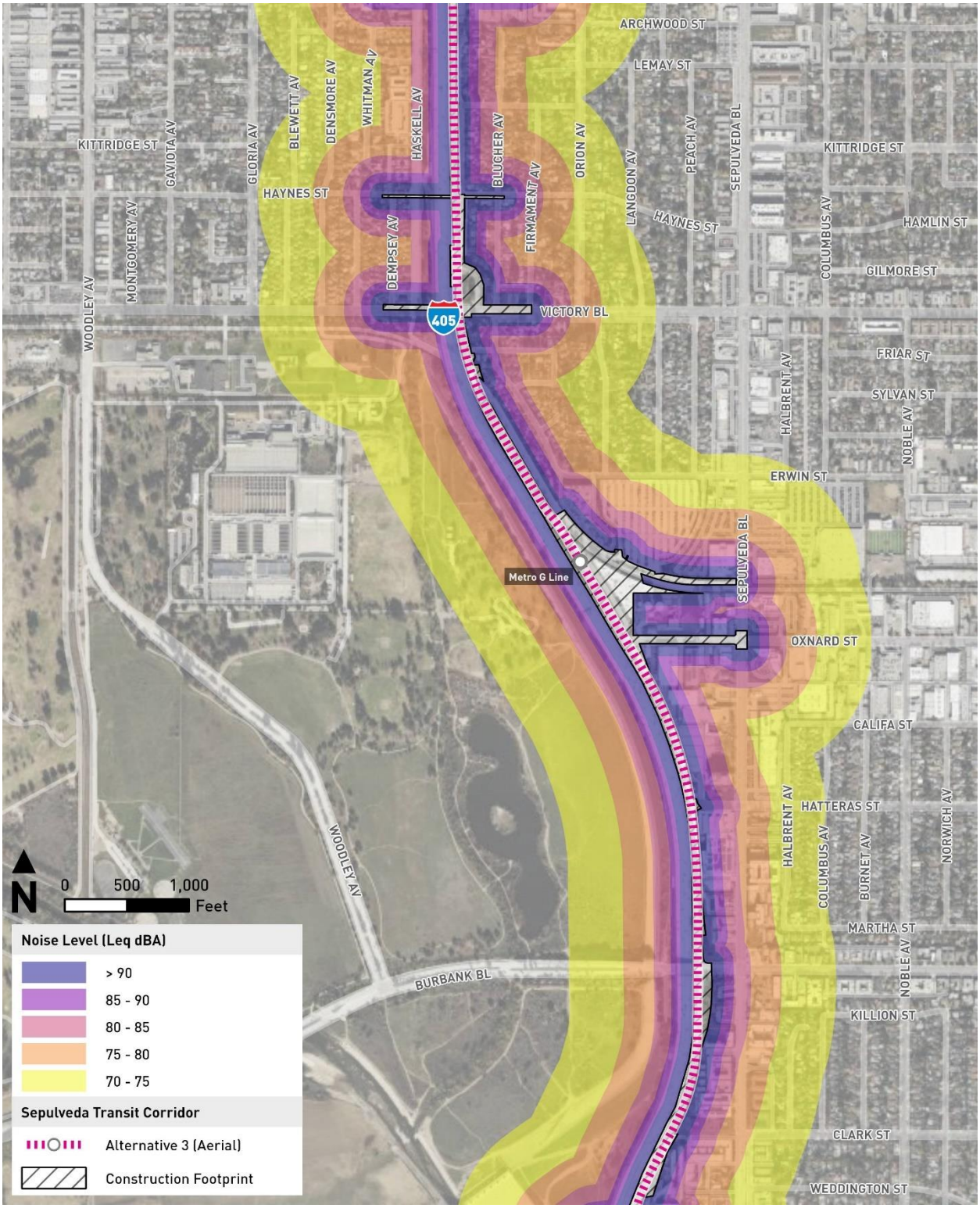
Source: HTA, 2024

Figure 3.11-22. Alternative 3: Construction Noise Contours – View 5



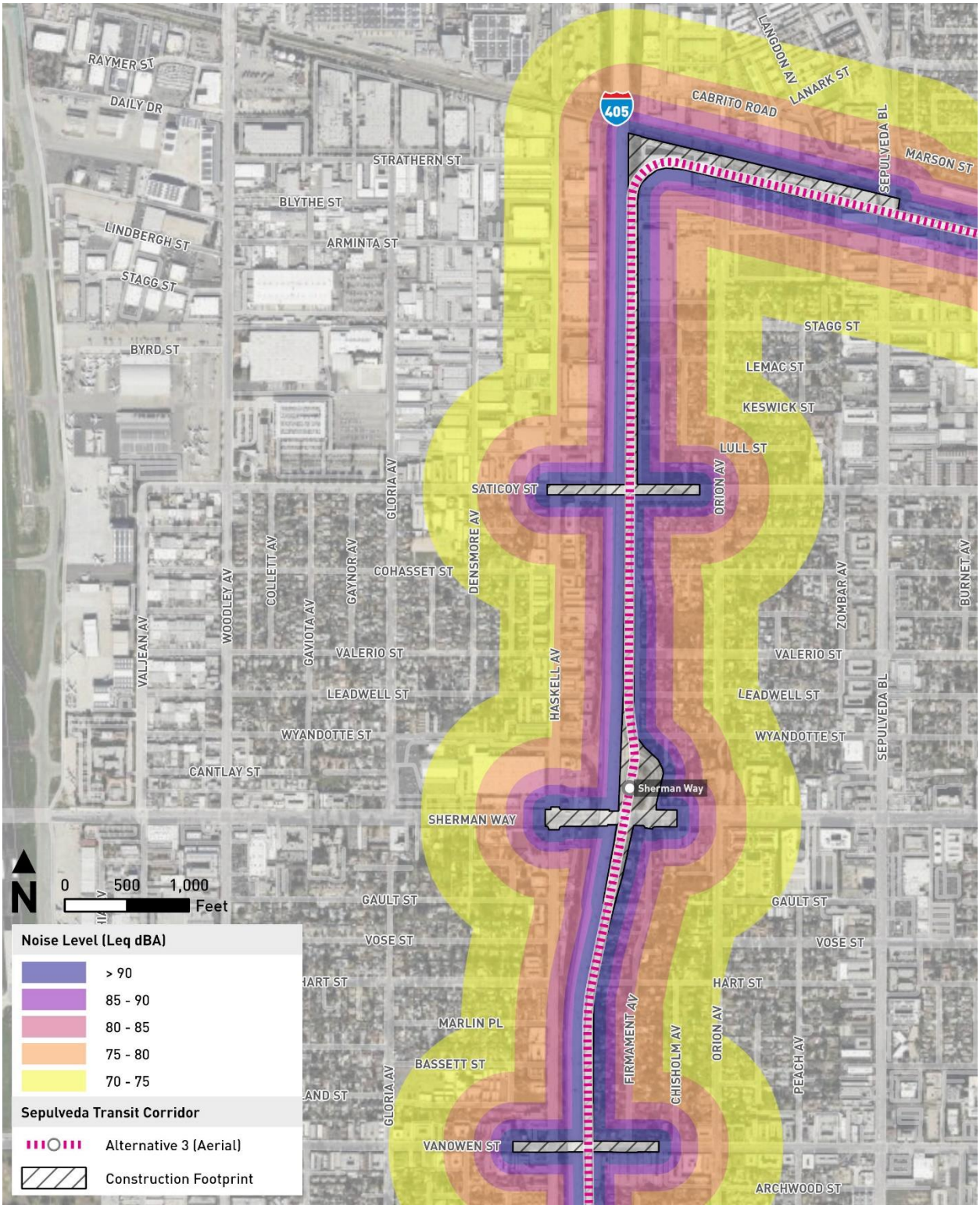
Source: HTA, 2024

Figure 3.11-23. Alternative 3: Construction Noise Contours – View 6



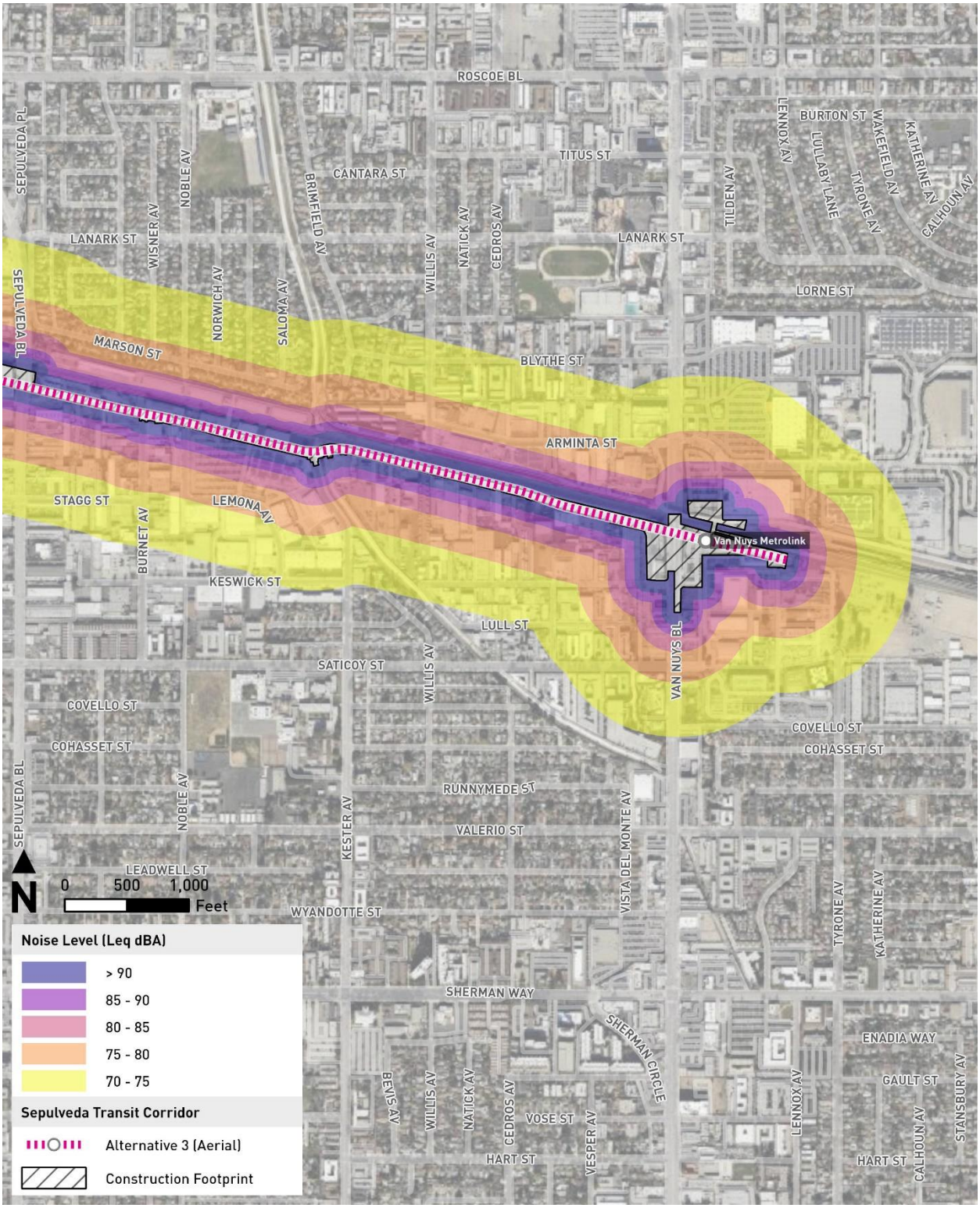
Source: HTA, 2024

Figure 3.11-24. Alternative 3: Construction Noise Contours – View 7



Source: HTA, 2024

Figure 3.11-25. Alternative 3: Construction Noise Contours – View 8



Source: HTA, 2024

Alternative 4

Impact Statement

Operational Impact: Less than Significant with Mitigation

Construction Impact: Significant and Unavoidable

Operational Impacts

Rail Operations Noise

Noise exposure from the train movements on the aerial guideway section of Alternative 4 (north of the north tunnel portal) was evaluated using the detailed noise assessment procedure in the FTA Assessment Manual (FTA, 2018). The rail operations noise analysis includes noise generated by rail vehicle passbys, consisting of motor noise, wheel-steel noise, aerodynamic noise, and noise from air conditioning, and other auxiliary equipment on the vehicles. Other factors such as crossover noise, increased noise from aerial guideways, and attenuation effects of intervening buildings, existing soundwalls, and the U-shaped girder around the tracks are also included in the analysis. The only curve along the Alternative 4 aerial segment with a radius less than 1,000 feet that would potentially cause generation of wheel squeal is the curve at the northernmost point of Sepulveda Boulevard turning to the southeast to parallel the Los Angeles-San Diego-San Luis Obispo (LOSSAN) rail corridor. Wheel squeal noise related to this curve was included in the rail operations noise calculations for noise-sensitive receptors representing the single-family residential (Category 2) land uses along the east side of Zombar Avenue, west of Sepulveda Boulevard in Van Nuys and single-family homes along the south side of Marson Street, between Sepulveda Boulevard and the Pacoima Wash in Panorama City.

Table 3.11-20 is a summary of noise-sensitive receptors where operational moderate or severe noise impacts would occur. Alternative 4 would result in moderate impacts at four Category 2 receptors and severe impacts at six Category 2 receptors. No impacts would occur at Category 1 or Category 3 receptors. Generally, the rail operations noise impacts would occur at higher floors of multi-family residential or hotel buildings with direct lines of sight to the aerial guideway tracks. The noise impacts are considered potentially significant impacts. Other noise-sensitive receptors would not be exposed to noise levels in excess of the FTA noise impact criteria because the receptor is located farther away, speeds may be slower in their vicinity (resulting in decreased noise levels), the receptor is located away from special trackwork that generates elevated noise levels or because of the presence of intervening building rows between the alignment and the noise-sensitive receptor.

Table 3.11-20. Alternative 4: Summary of Rail Operations Noise Impacts

Receptor ID	Location	Land Use	FTA Category[a]	Calculated (L_{dn}, dBA)	Existing (L_{dn}, dBA)	Noise Impact Criteria (L_{dn}, dBA)		Impact
						Moderate	Severe	
N-4.9	4410 Sepulveda Boulevard, Sherman Oaks	Residences	2	65	70	65-69	>69	Moderate
N-4.11	4440 Sepulveda Boulevard, Sherman Oaks	Residences	2	72	76	66-74	>74	Moderate
N-4.44	5307 Sepulveda Boulevard, Sherman Oaks	Residences	2	69	70	65-69	>69	Moderate
N-4.57	Hampton Inn 5638 Sepulveda Boulevard, Van Nuys	Hotel	2	66	70	65-69	>69	Moderate
N-4.58	5700 Sepulveda Boulevard, Van Nuys	Residences	2	72	70	65-69	>69	Severe
N-4.78	6500 Sepulveda Boulevard, Van Nuys	Residences	2	72	70	65-69	>69	Severe
N-4.82	6530 Sepulveda Boulevard, Van Nuys	Residences	2	72	70	65-69	>69	Severe
N-4.125	7317 Sepulveda Boulevard, Van Nuys	Residences	2	70	70	65-69	>69	Severe
N-4.131	7400 Sepulveda Boulevard, Van Nuys	Residences	2	68	67	63-67	>67	Severe
N-4.135	7440 Sepulveda Boulevard, Van Nuys	Residences	2	68	67	63-67	>67	Severe

Source: HTA, 2024

[a]FTA Category 2 noise levels are in terms of the day-night equivalent level (L_{dn}) and FTA Category 3 noise levels are in terms of hourly average level (L_{eq}).

dBA = A-weighted decibel
L_{dn} = day-night noise level

To mitigate rail operations noise impacts MM NOI-4.1 would require the installation of soundwalls along the aerial guideway to reduce rail operations noise. Soundwalls reduce noise levels at noise-sensitive receptors by breaking the direct line-of-sight between source and receptor with a solid wall. Soundwalls are proposed at heights of 3 feet to 10 feet to reduce noise at sensitive receptors. Further description of mitigation measures is included in Section 3.11.6. Rail operations noise impacts after implementation of mitigation are shown on Figure 3.11-26 through Figure 3.11-29. As shown in Table 3.11-21, MM NOI-4.1 would result in reduced heavy rail transit (HRT) noise levels to below the FTA moderate impact threshold. Therefore, Alternative 4 would result in a less than significant impact with mitigation related to rail operations noise.

Table 3.11-21. Alternative 4: Summary of Operational Noise Impacts After Mitigation

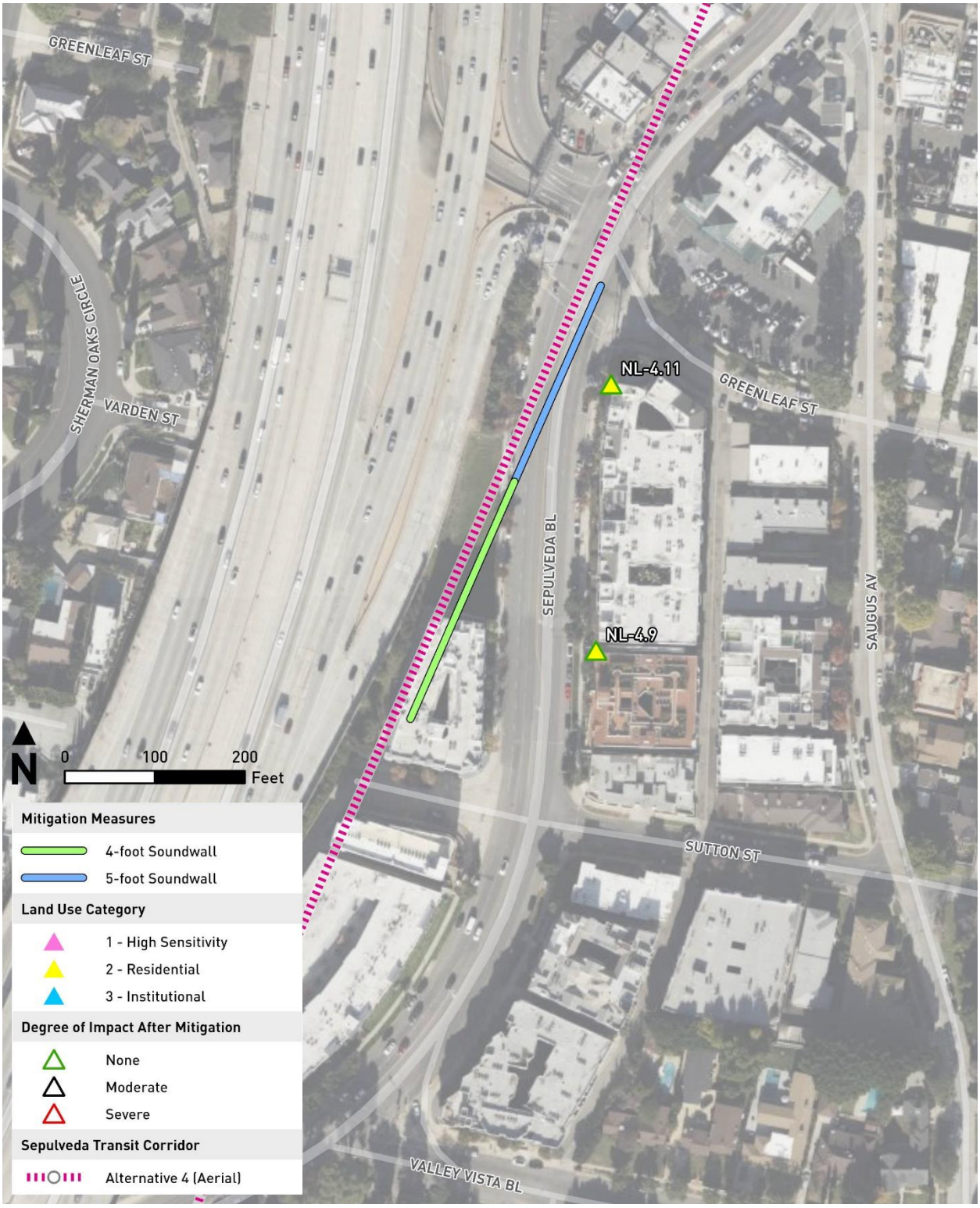
Receptor ID	Location	Land Use	FTA Category[a]	Noise Impact Criteria (L_{dn}, dBA)		Unmitigated Impact	Mitigation		
				Moderate	Severe		Mitigation Measure	Project Noise Level (L_{dn}, dBA)	Impact Level
N-4.9	4410 Sepulveda Boulevard, Sherman Oaks	Residences	2	65-69	>69	Moderate	MM NOI-4.1	57	**No Impact**
N-4.11	4440 Sepulveda Boulevard, Sherman Oaks	Residences	2	66-74	>74	Moderate	MM NOI-4.1	65	**No Impact**
N-4.44	5307 Sepulveda Boulevard, Sherman Oaks	Residences	2	65-69	>69	Moderate	MM NOI-4.1	61	**No Impact**
N-4.57	Hampton Inn 5638 Sepulveda Boulevard, Van Nuys	Hotel	2	65-69	>69	Moderate	MM NOI-4.1	59	**No Impact**
N-4.58	5700 Sepulveda Boulevard, Van Nuys	Residences	2	65-69	>69	Severe	MM NOI-4.1	61	**No Impact**
N-4.78	6500 Sepulveda Boulevard, Van Nuys	Residences	2	65-69	>69	Severe	MM NOI-4.1	61	**No Impact**
N-4.82	6530 Sepulveda Boulevard, Van Nuys	Residences	2	65-69	>69	Severe	MM NOI-4.1	64	**No Impact**
N-4.125	7317 Sepulveda Boulevard, Van Nuys	Residences	2	65-69	>69	Severe	MM NOI-4.1	63	**No Impact**
N-4.131	7400 Sepulveda Boulevard, Van Nuys	Residences	2	63-67	>67	Severe	MM NOI-4.1	62	**No Impact**
N-4.135	7440 Sepulveda Boulevard, Van Nuys	Residences	2	63-67	>67	Severe	MM NOI-4.1	62	**No Impact**

Source: HTA, 2024

[a]FTA Category 2 noise levels are in terms of the day-night equivalent level (L_{dn}) and FTA Category 3 noise levels are in terms of hourly average level (L_{eq}).

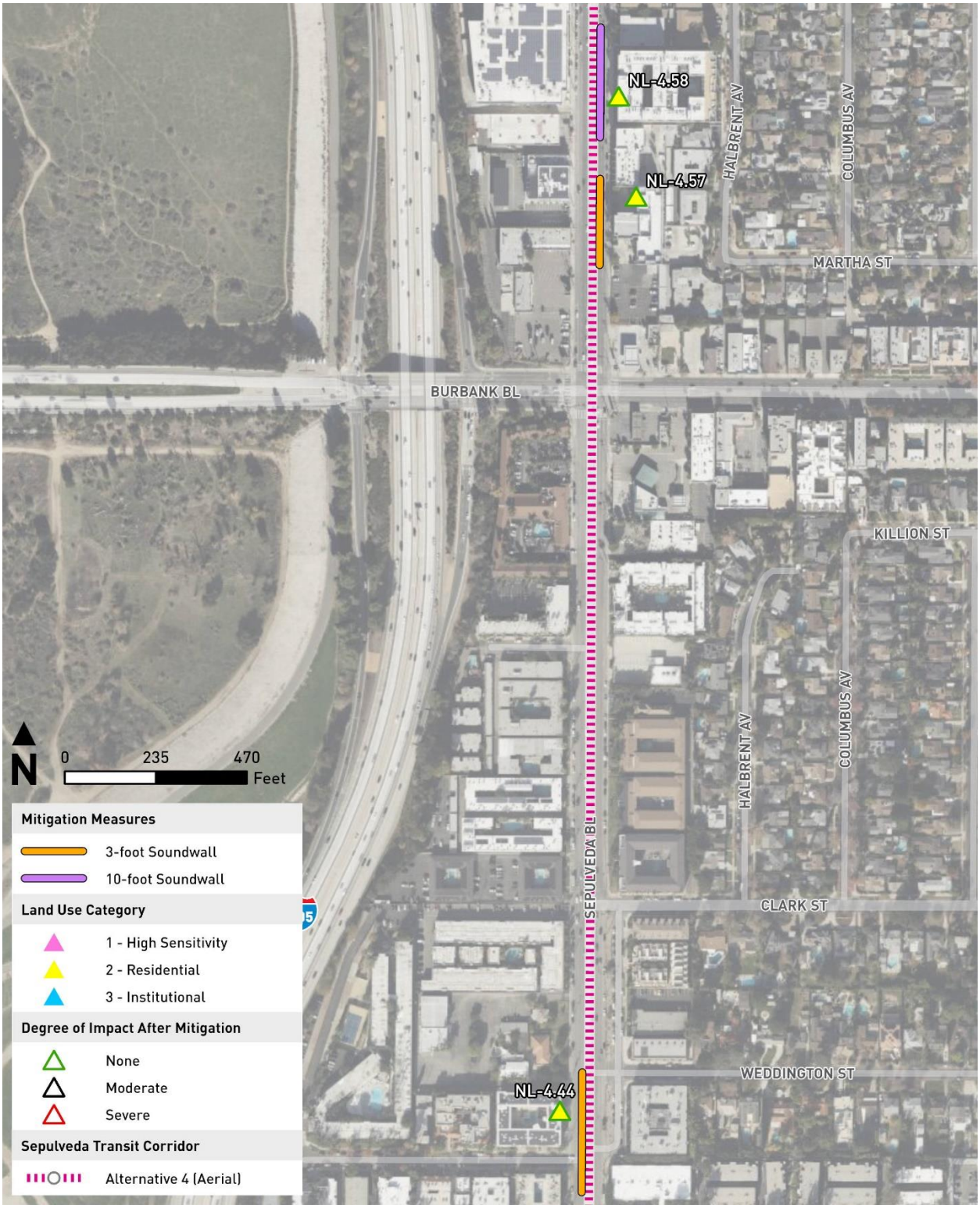
dBA = A-weighted decibel
L_{dn} = day-night noise level
MM = mitigation measure
NOI = noise

Figure 3.11-26. Alternative 4: Mitigated Rail Operations Noise Impacts – Sepulveda Boulevard South of Greenleaf Street



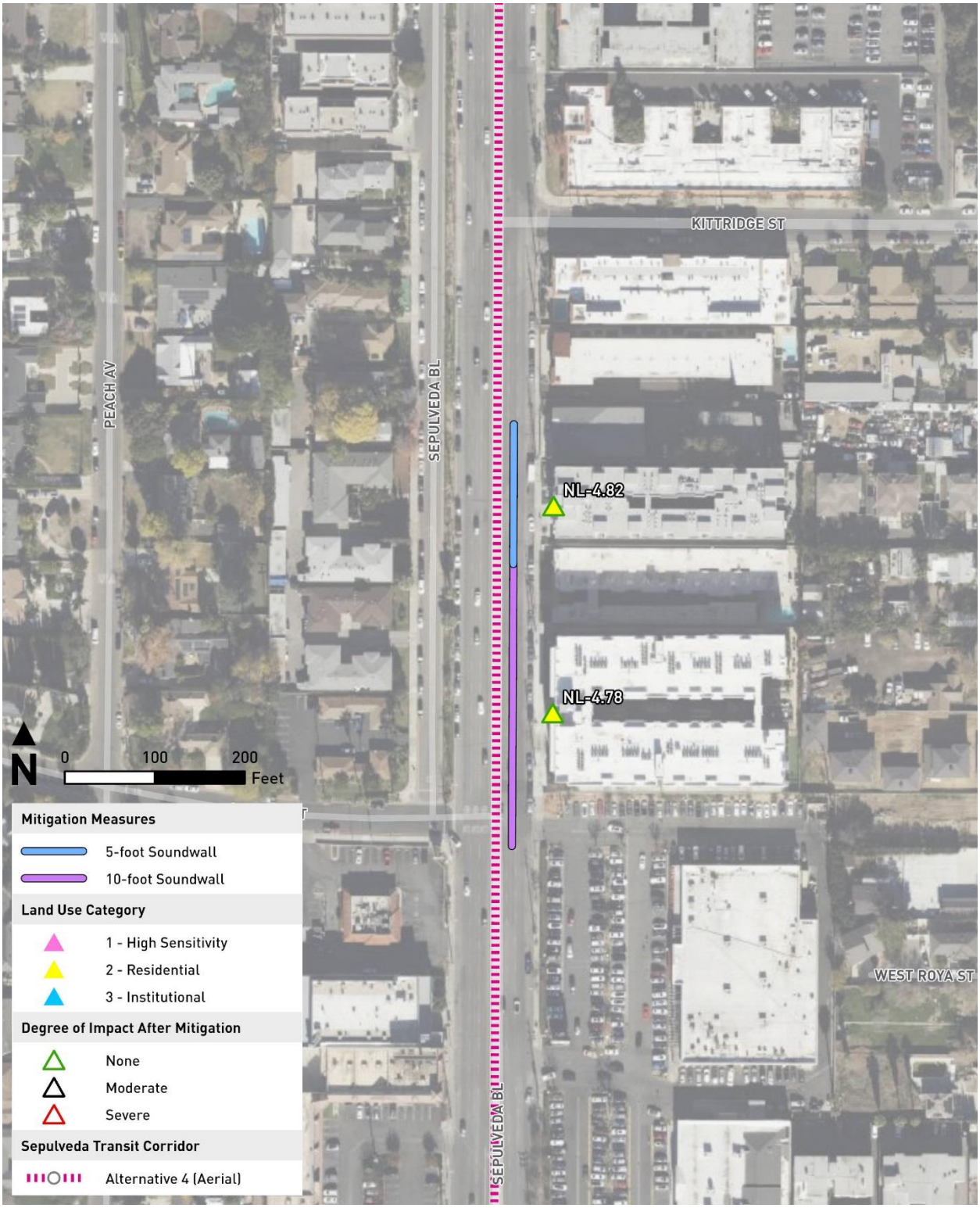
Source: HTA, 2024

Figure 3.11-27. Alternative 4: Mitigated Rail Operations Noise Impacts – Sepulveda Boulevard and Burbank Boulevard



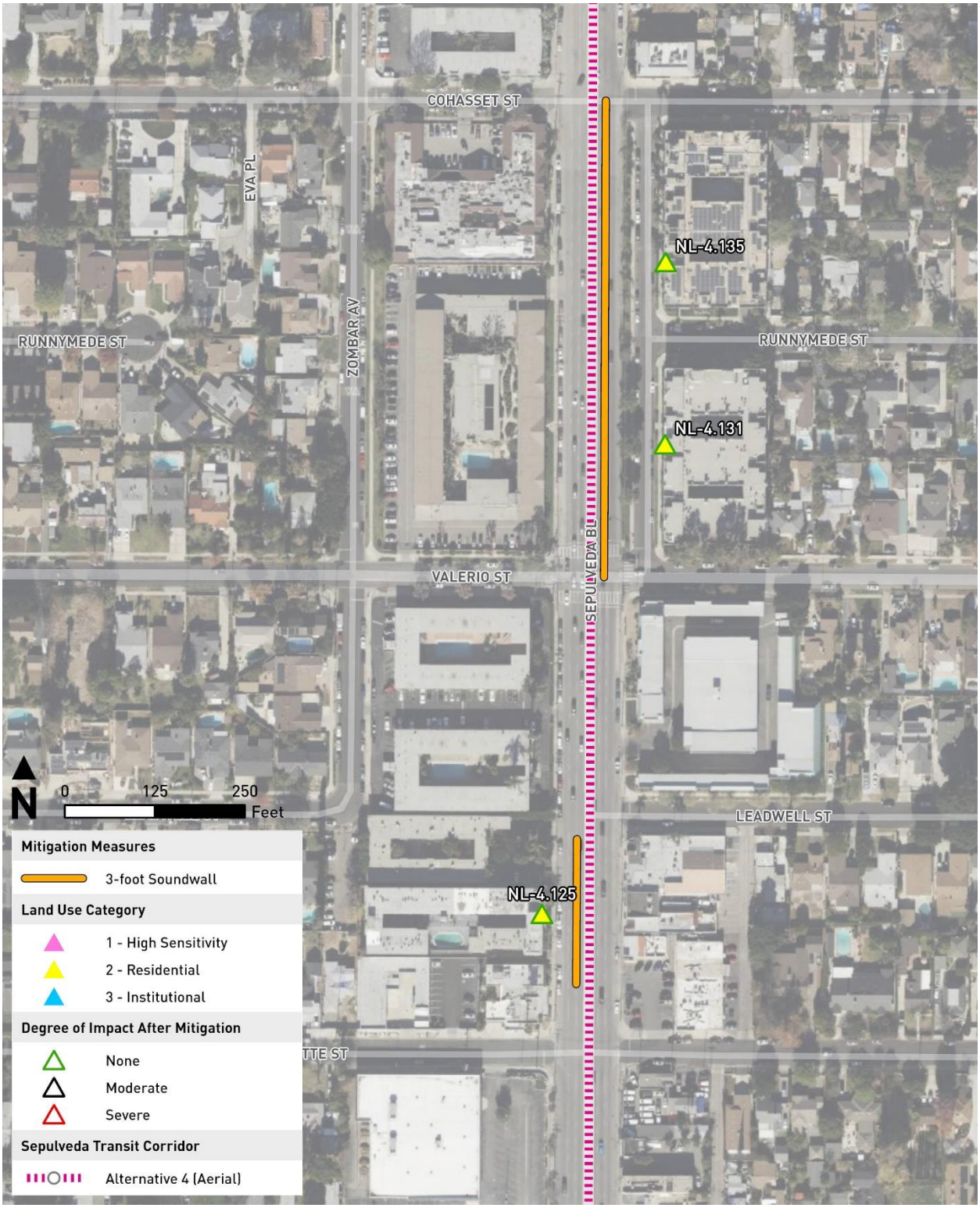
Source: HTA, 2024

Figure 3.11-28. Alternative 4: Mitigated Rail Operations Noise Impacts – Sepulveda Boulevard South of Kittridge Street



Source: HTA, 2024

Figure 3.11-29. Alternative 4: Mitigated Rail Operations Noise Impacts – Sepulveda Boulevard, Wyandotte Street to Cohasset Street



Source: HTA, 2024

Ancillary Facilities (TPSS) Noise

Noise generated by ancillary facilities associated with Alternative 4 would be due to ventilation system fans at TPSS facilities along the project alignment and tunnel ventilation facilities located near the north portal at the beginning of the aerial guideway. Twelve TPSS sites would be required, of which three would be located near noise-sensitive receptors. Table 3.11-22 shows a summary of Alternative 4 TPSS noise impact assessments. TPSS facilities would not result in noise impacts at sensitive receptors. This is primarily because TPSS facilities would be in noisy areas and located at sufficient distances from the nearest noise-sensitive land uses to allow for noise attenuation.

Other ancillary facilities under Alternative 4 would include a ventilation facility at the tunnel portal on the northern end of the tunnel segment, located east of I-405 and south of Del Gado Drive. Within this facility, ventilation fan rooms would provide both emergency ventilation, in case of a tunnel fire, and regular ventilation, during non-revenue hours. The noise sources within the ventilation facility would be enclosed and the facility would adhere to Metro's design specification for ancillary facilities, which establishes a limit of 50 dBA L_{eq} at a distance of 50 feet from the ventilation rooms (according to Metro Rail Design Criteria). Assuming a noise level of 50 dBA at 50 feet from the facility, predicted ventilation noise at the nearest single-family residential land uses along Del Gado Drive east of the facility would be 38 dBA, which is approximately 20 dBA below the existing daytime background noise levels of 58 dBA hourly L_{eq} in these areas (Site 40 in Table 3.11-11). As such, noise from tunnel ventilation facilities would be nearly inaudible at the nearest noise-sensitive residential receptors. Therefore, Alternative 4 would result in less than a significant impact related to ancillary facility noise.

Operational Noise Summary

The combination of operational noise sources including rail operations, ancillary facilities, and MSF under Alternative 4 would result in moderate impacts at four Category 2 receptors and severe impacts at six Category 2 receptors. No impacts would occur at Category 1 or Category 3 receptors. As shown in Table 3.11-22, a moderate impact would occur at Receptor N-4.11, which would be affected by both TPSS and rail operations noise. However, the impact would be caused by rail operations noise and the overall number of moderate impacts would not change. As shown in Table 3.11-21, MM NOI-4.1 would reduce all operational noise impacts to below significant. As shown in Table 3.11-23, the combined noise levels of TPSS and rail operations would not result in an impact after implementation of MM NOI-4.1. Therefore, Alternative 4 would result in a less than significant impact with mitigation related to operational noise.

Table 3.11-22. Alternative 4: Ancillary Facility Noise Impacts by Traction Power Substation Site and Combined Rail/TPSS Noise

TPSS Site[a]	Nearest Noise-Sensitive Land Use	Land Use	FTA Category[b]	Distance (feet)	Existing Sound Level (dBA, L_{dn} or Hourly L_{eq})	TPSS Noise Level (dBA, L_{dn} or Hourly L_{eq})	Combined Rail and TPSS Operations Noise Level (dBA, L_{dn} or Hourly L_{eq})	Noise Impact Thresholds		TPSS Level of Impact	Combined Level of Impact
								Moderate	Severe		
7	Receptor N-4.11: Alister Sherman Oaks 4440 Sepulveda Boulevard, Sherman Oaks	Residences	2	350	76	39	72	66-74	>74	**No Impact**	**Moderate[c]**
8	No nearby sensitive land uses	--	--	--	--	--	--	--	--	**No Impact**	**No Impact**
9	Receptor NS-4.3: US Census Library 15549 Sherman Way, Van Nuys	Library	3	140	65	47	51	61-66	>66	**No Impact**	**No Impact**
10	Receptor N-4.160: Single-family Residence 14940 Marson Street, Panorama City	Residences	2	270	60	42	50	58-63	>63	**No Impact**	**No Impact**
11	No nearby sensitive land uses	--	--	--	--	--	--	--	--	**No Impact**	**No Impact**
12	No nearby sensitive land uses	--	--	--	--	--	--	--	--	**No Impact**	**No Impact**

Source: HTA, 2024

[a]Under Alternative 4, TPSS Sites 1 through 6 are proposed to be located underground.
[b]FTA Category 2 noise levels are in terms of the day-night equivalent level (Ldn) and FTA Category 3 noise levels are in terms of hourly average level (Leq).
[c]Noise impact at this location would primarily be due to train passby noise. TPSS contribution to overall noise level would be negligible.

-- indicates data not applicable.
dBA = A-weighted decibel
L_{dn} = day-night noise level
SFR = single-family residential

Table 3.11-23. Alternative 4: Combined Rail/TPSS Noise Impacts After Mitigation

TPSS Site[a]	Nearest Noise-Sensitive Land Use	Land Use	FTA Category[b]	Distance (feet)	Existing Sound Level (dBA, Ldn or Hourly Leq)	TPSS Noise Level (dBA, Ldn or Hourly Leq)	Mitigated Combined Rail and TPSS Operations Noise Level (dBA, Ldn or Hourly Leq)	Noise Impact Thresholds		Level of Impact
								Moderate	Severe	
7	Receptor N-4.11: Alister Los Angeles 4440 Sepulveda Boulevard, Los Angeles	Residences	2	350	76	39	65	66-74	>74	**No Impact[c]**
8	No nearby sensitive land uses	--	--	--	--	--	--	--	--	**No Impact**
9	Receptor NS-4.3: US Census Library 15549 Sherman Way, Van Nuys	Library	3	140	65	47	51	61-66	>66	**No Impact**
10	Receptor N-4.160: Single-family Residence 14940 Marson Street, Panorama City	Residences	2	270	60	42	50	58-63	>63	**No Impact**
11	No nearby sensitive land uses	--	--	--	--	--	--	--	--	**No Impact**
12	No nearby sensitive land uses	--	--	--	--	--	--	--	--	**No Impact**

Source: HTA, 2024

[a]Under Alternative 4, TPSS Sites 1 through 6 are proposed to be located underground.
[b]FTA Category 2 noise levels are in terms of the day-night equivalent level (Ldn) and FTA Category 3 noise levels are in terms of hourly average level (Leq).
[c]Noise impact at this location would primarily be due to train passby noise. TPSS contribution to overall noise level would be negligible.

-- = data not applicable.
dBA = A-weighted decibel
L_{dn} = day-night noise level
SFR = single-family residential

Construction Impacts

Construction of Alternative 4 would include various phases that would involve the use of construction equipment at specific locations along the proposed alignment. Construction noise levels from Alternative 4 were predicted in terms of 8-hour L_{eq} for each phase of construction based upon the number and types of off-road construction equipment to be employed during the given phase. Table 3.11-24 shows the results of the construction noise predictions at a reference distance of 50 feet from construction activities and at the nearest sensitive receptors.

The FTA has provided guidance for assessing construction noise associated with transit projects. The criteria are based upon an 8-hour L_{eq}, as shown in Table 3.11-4. For residential uses, the threshold is 80 dBA for daytime construction and 70 dBA for nighttime construction. Commercial uses are held to an 85-dBA daytime and nighttime noise construction threshold, while industrial uses are held to a 90-dBA daytime and nighttime construction noise threshold. For the purposes of this analysis, FTA's detailed assessment construction noise limit criteria of 8-hour L_{eq} have been applied.

Table 3.11-24 is a summary of expected construction noise levels at locations of nearest noise-sensitive receptors to each construction activity. Additional details regarding construction equipment and noise levels by phase are included in Attachment 10 of the *Sepulveda Transit Corridor Project Noise and Vibration Technical Report*. Construction noise would range from 8-hour L_{eq} noise levels of approximately 66 to 102 dBA at the nearest sensitive receptors. A TBM would be required for tunneling underground segments of Alternative 4, but it would not generate aboveground noise. As shown in Table 3.11-24, construction activities would result in noise levels that exceed the FTA 80-dBA daytime and 70-dBA nighttime 8-hour L_{eq} thresholds for residential land uses.

The construction noise contours are depicted graphically on Figure 3.11-30 through Figure 3.11-35, which represent the noise levels that could potentially occur along the entirety of the alignment. Construction noise contours are only included for aboveground construction activities because activities such as tunnelling would not generate noise at aboveground receptors. The noisiest phase of construction is used to depict the contours. An interval of 5 dBA is used for each contour and each contour was calculated based on the distance at which noise would decrease by 5 dBA, starting at a noise level of 90 dBA L_{eq} to 70 dBA L_{eq}. The 90 dBA L_{eq} noise level is representative of the FTA daytime and nighttime construction noise threshold for industrial uses. The 70 dBA L_{eq} contour shows the areas where construction noise levels would exceed the nighttime construction noise threshold for residential uses. The 90 dBA contour covers areas within a distance of 80 feet from the nearest construction activity. The 70 dBA L_{eq} contour extends to a maximum distance of 793 feet. The construction noise contours do not include noise reductions that may occur as a result of terrain or intervening structures. As an example of how to read the contours, the figures show that within the first contour of 80 feet (shown in dark purple), the calculated construction noise levels may be above 90 dBA L_{eq}. At the next distance of 141 feet (shown in light purple), noise levels would decrease to approximately 85 dBA L_{eq}.

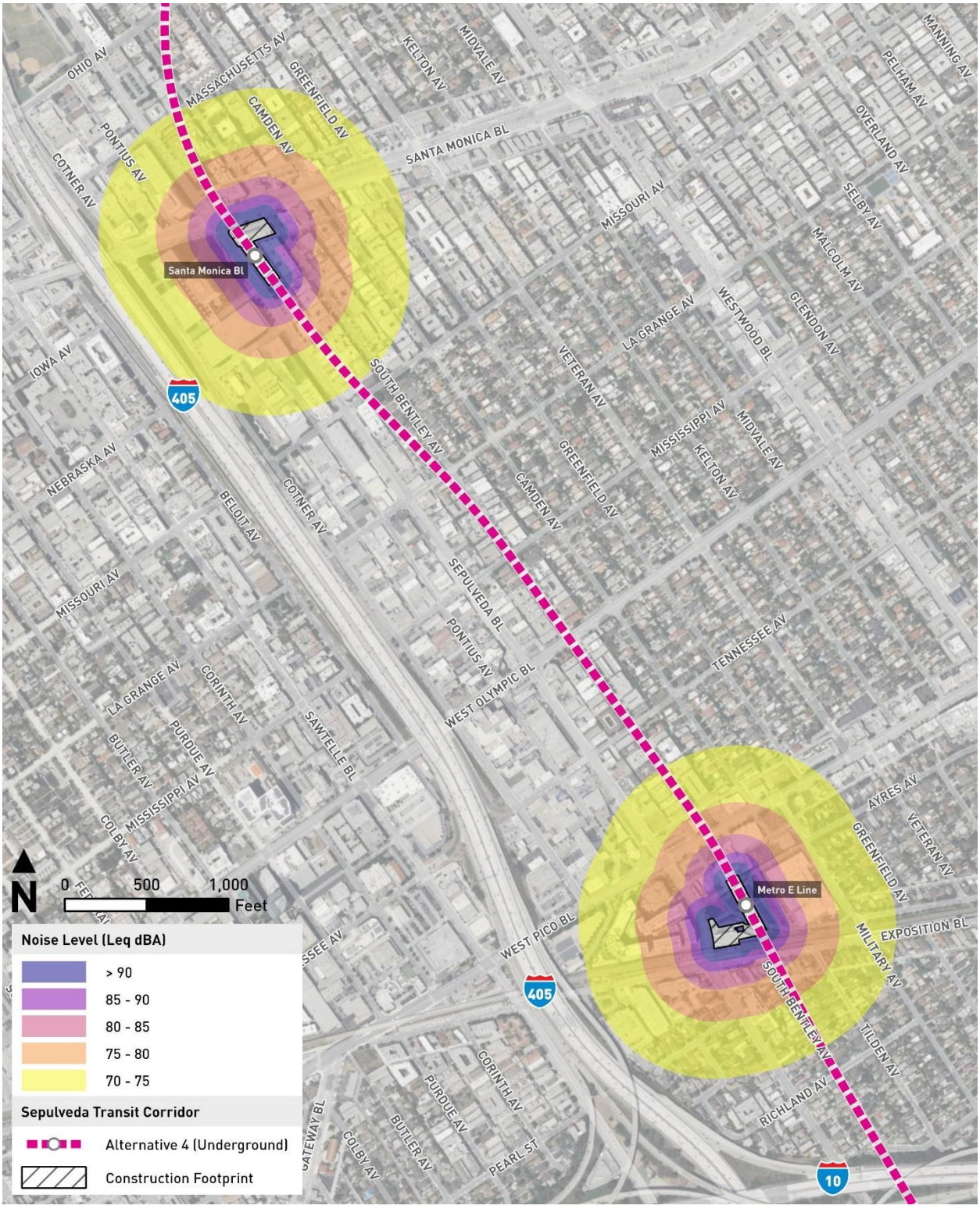
Pile driving may be required for installation of retaining walls or potentially at TBM launch locations. Impact or vibratory piledrivers are the most noise intensive construction equipment that could result in elevated noise levels above typical construction methods. It is unknown at this stage of design if pile driving would be the required construction method which is dependent on soil type. Typically, where possible, piles are drilled which is a quieter method of pile installation such as CIDH. For instance, foundations for the aerial guideway are proposed to be constructed using CIDH instead of impact driven piles. Impact pile driving generates an hourly noise level of approximately 94.3 dBA L_{eq} at 50 feet, vibratory pile driving generates an hourly noise level of 93.8 dBA $L_{eq,}$ at 50 feet and CIDH generates an

hourly noise level of approximately 77.4 dBA L_{eq} at 50 feet. Vibratory pile driving is approximately 0.5 dBA quieter than impact pile driving and CIDH is approximately 16.9 dBA quieter. To reduce noise levels where piles may be required, MM NOI-4.2 would require impact pile driving to be avoided where possible and to use drilled or vibratory piles where feasible. Soil improvements such as grouting injection would be required for cut-and-cover construction to stabilize soils. Soil improvement activity would typically require drilling equipment and pumping equipment to inject the grout into the soil. A noise level of 90 dBA 8-hour $L_{eq\_}$ at 50 feet reflects equipment required for cut-and-cover construction, which is shown in Table 3.11-24 as "Support of Excavation."

Alternative 4 would result in temporary and periodic increases in ambient noise levels due to construction activity that would exceed FTA's criteria, and, where applicable, the standards established by the local noise ordinances. While MM NOI-4.2 would be implemented, which would include noise-reducing measures, there may still be temporary or periodic increases in ambient noise levels that exceed FTA construction impact criteria. There are no additional feasible mitigation measures to reduce construction noise levels. Therefore, impacts related to construction noise would be significant and unavoidable.

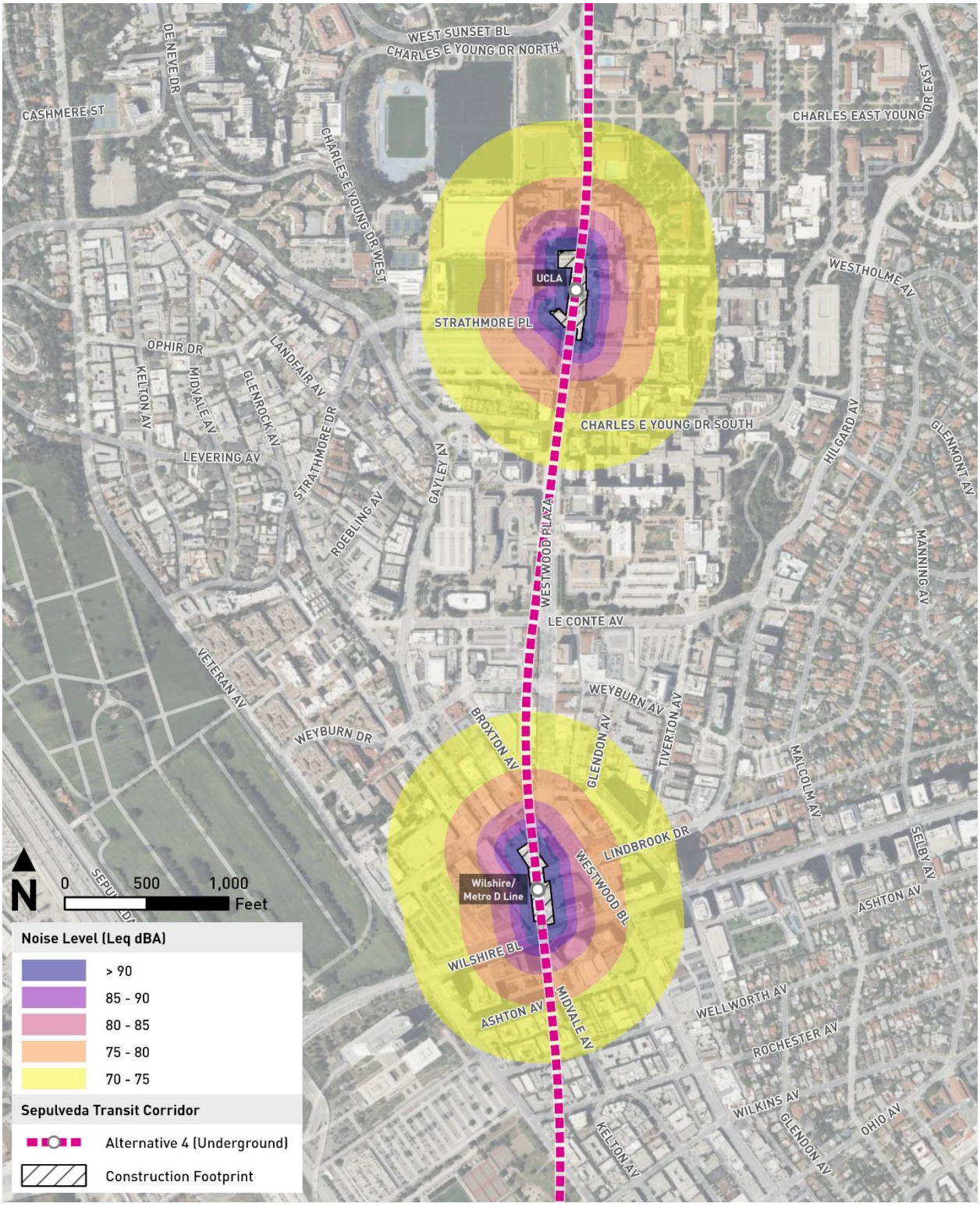
Regarding health effects of noise, it is unlikely for construction noise to result in noise-induced hearing loss for persons residing or working near construction zones, as this is an occupational hazard related to working over long periods of time (years) in high noise environments. However, construction noise could increase stress at affected sensitive uses. Nighttime construction could adversely affect sleep for residents living near active construction sites. As required by MM NOI-4.2, if required by the jurisdiction a noise variance would be prepared that demonstrates the implementation of control measures to maintain noise levels below the applicable Federal Transit Administration and local standards. Nonetheless, construction noise could potentially still exceed the FTA nighttime criteria.

Figure 3.11-30. Alternative 4: Construction Noise Contours – View 1



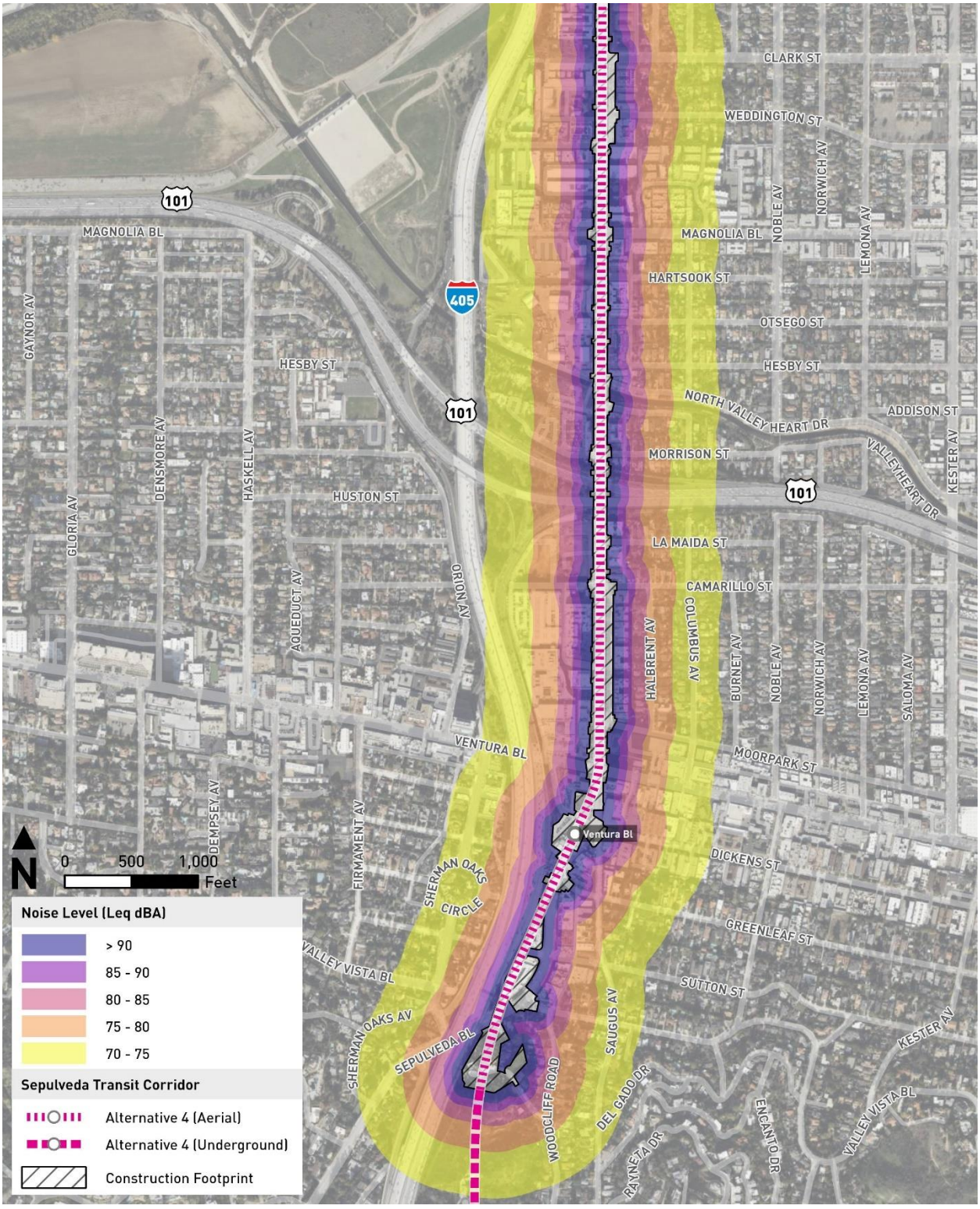
Source: HTA, 2024

Figure 3.11-31. Alternative 4: Construction Noise Contours – View 2



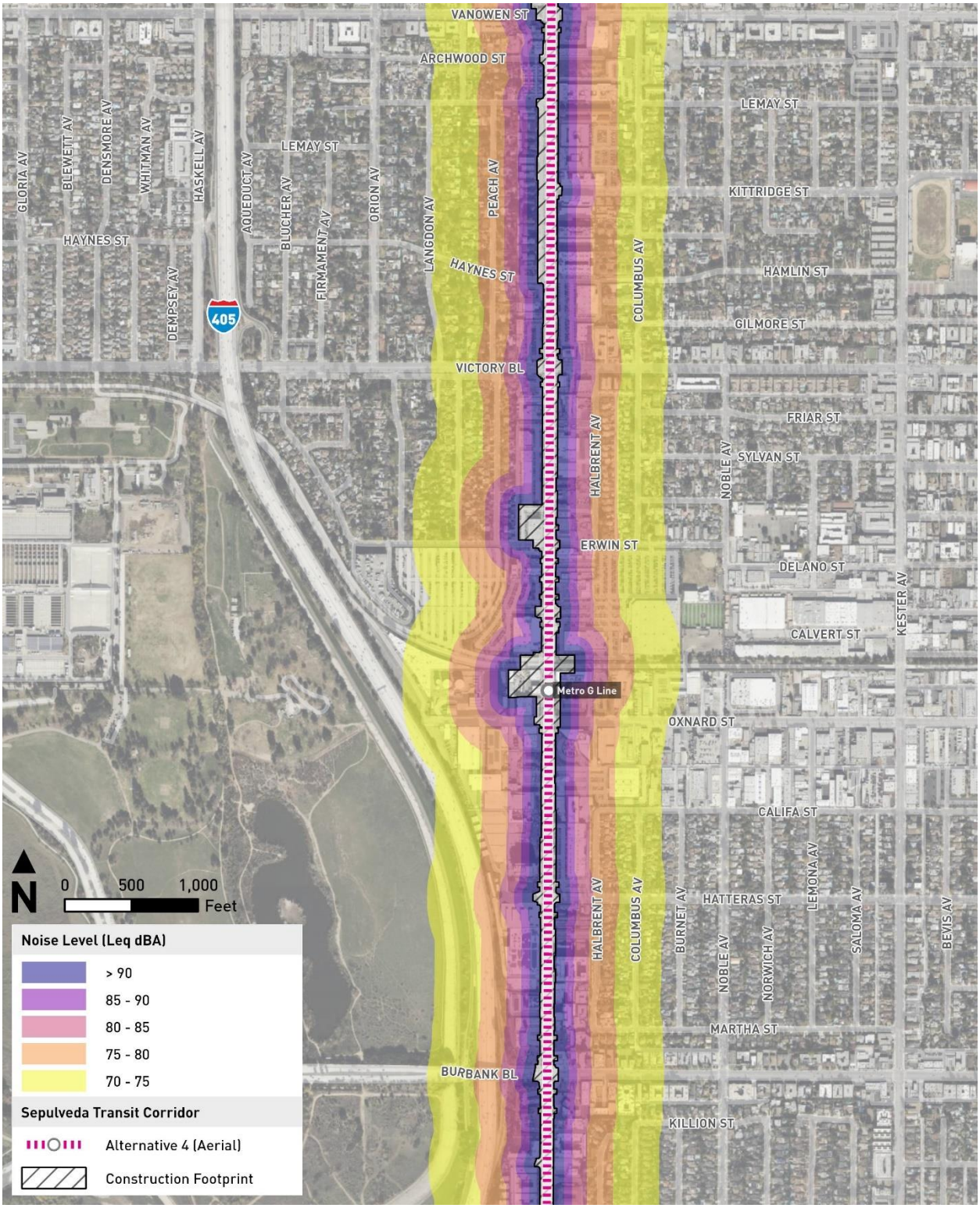
Source: HTA, 2024

Figure 3.11-32. Alternative 4: Construction Noise Contours – View 3



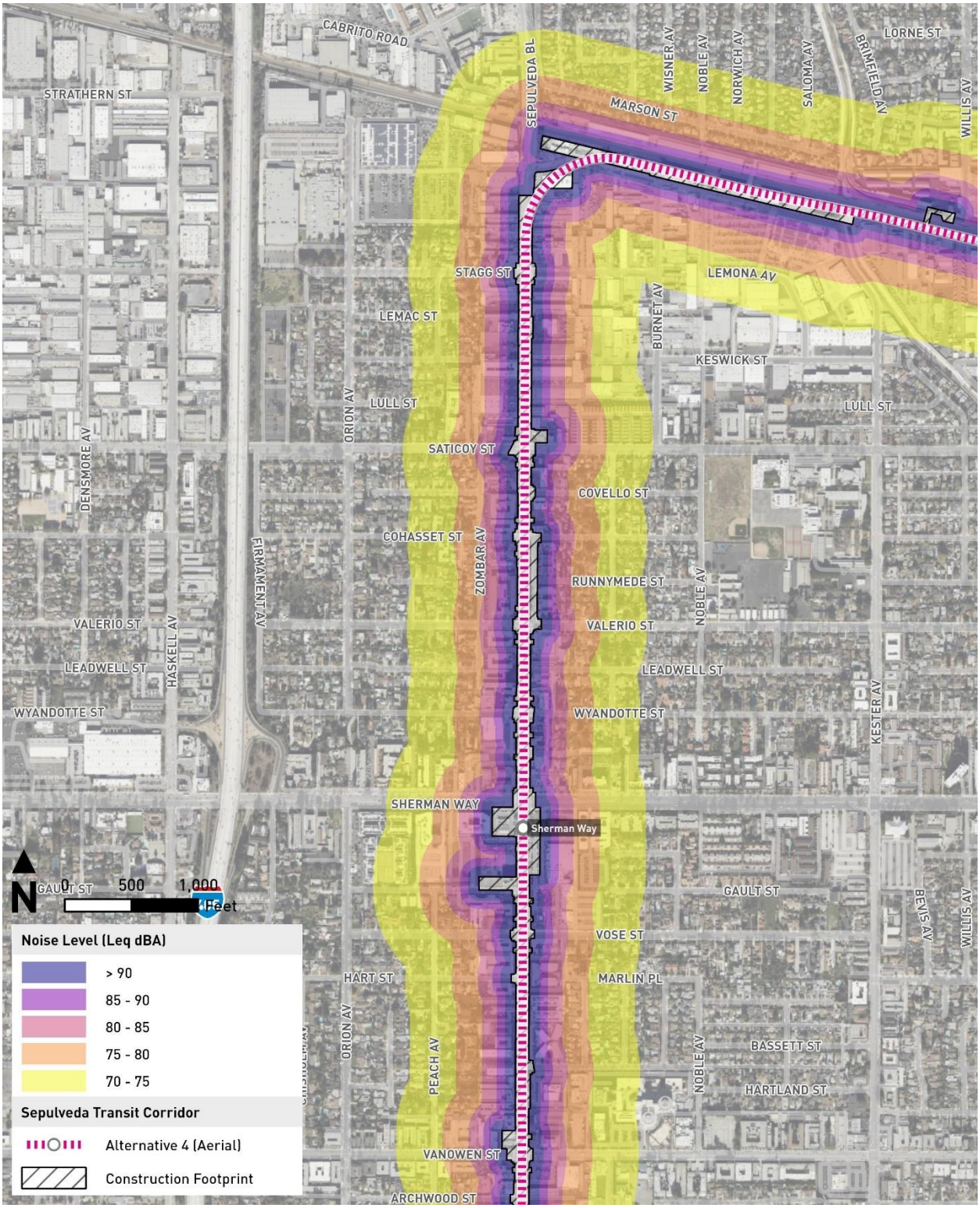
Source: HTA, 2024

Figure 3.11-33. Alternative 4: Construction Noise Contours – View 4



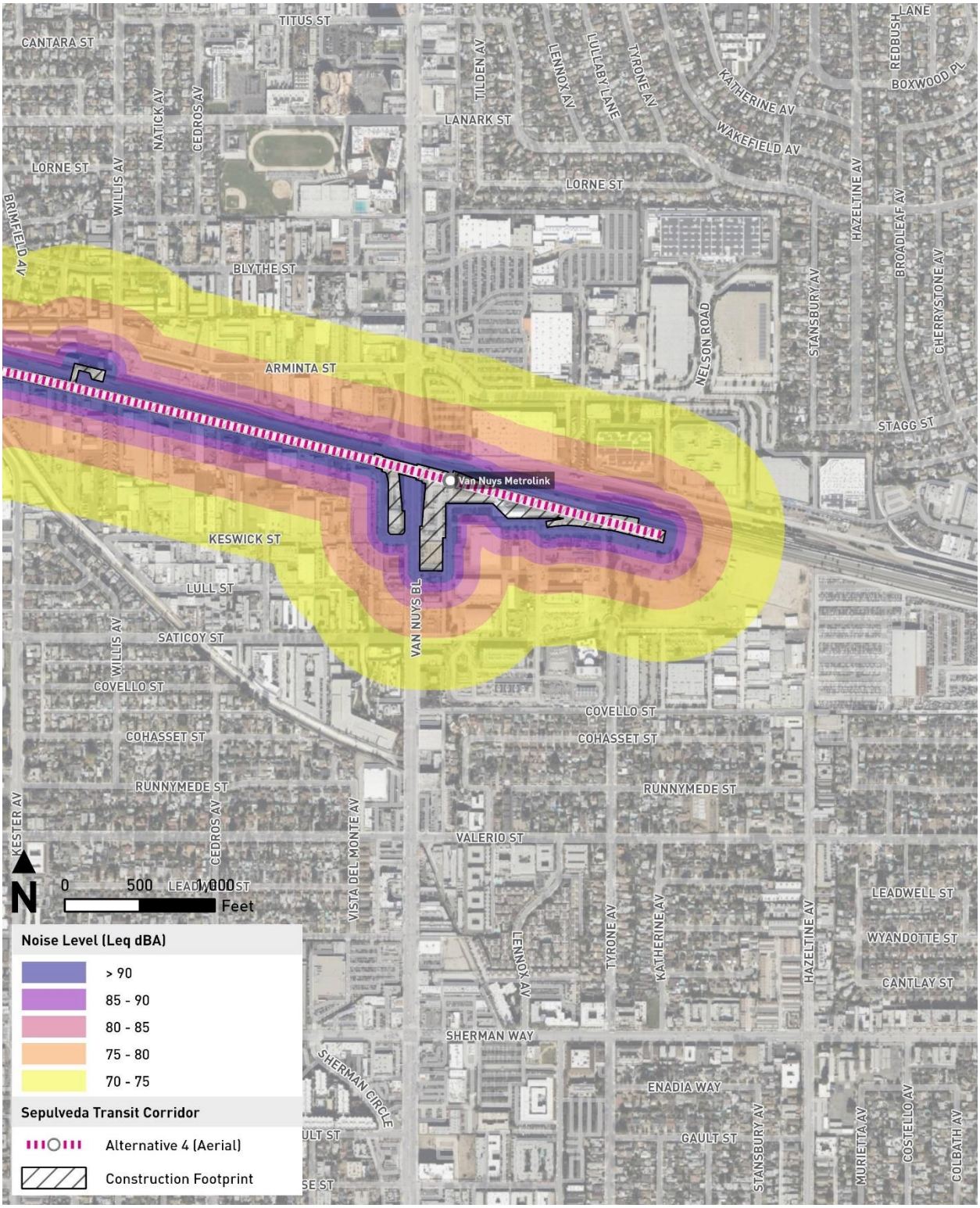
Source: HTA, 2024

Figure 3.11-34. Alternative 4: Construction Noise Contours – View 5



Source: HTA, 2024

Figure 3.11-35. Alternative 4: Construction Noise Contours – View 6



Source: HTA, 2024

Table 3.11-24. Alternative 4: Predicted Construction Noise Levels

Construction Phase	L_{eq} (dBA) at 50 feet	L_{eq} (dBA) at Nearest Receptors	Exceeds 80-dBA 8-Hour L_{eq} Daytime Threshold	Exceeds 70-dBA 8-Hour L_{eq} Nighttime Threshold
Segment 1 (Southern Terminus)				
Demolition/Site Preparation	88	86	Yes	Yes
Launch Box Support of Excavation	90	88	Yes	Yes
Launch Box Excavation	87	85	Yes	Yes
Launch Box Concrete Work	86	84	Yes	Yes
Tunnel Boring Machine Mobilization	86	84	Yes	Yes
Segment 3-Aerial Guideway				
Demolition/Site Preparation	88	96	Yes	Yes
Foundation (CIDH)	94	102	Yes	Yes
Columns	87	95	Yes	Yes
Bent Caps	87	95	Yes	Yes
Assemble Gantry	85	93	Yes	Yes
Segmental Girders	87	93	Yes	Yes
Demobilize Gantry	85	93	Yes	Yes
Guideway Trackwork	87	93	Yes	Yes
Systems Installation	85	91	Yes	Yes
Paving	88	96	Yes	Yes
Ventura Station Staging Area				
Demolition/Site Preparation	88	72	No	Yes
Laydown Activity	82	66	No	No
Underground Stations				
Demolition/Site Preparation	88	90	Yes	Yes
Support of Excavation	90	92	Yes	Yes
Box Excavation	87	89	Yes	Yes
Tunnel Boring Machine Pass-Through Maintenance	80	82	Yes	Yes
Station Structural Concrete	88	90	Yes	Yes
Fit Out and Completion	85	87	Yes	Yes
Paving/Architectural Coatings	86	88	Yes	Yes
Aerial Stations				
Demolition/Site Preparation	88	80	Yes	Yes
Foundations and Columns	91	83	Yes	Yes
Bent Cap Installation	86	78	No	Yes
Girder Installation/Station Fit Out	88	80	Yes	Yes
Paving/Architectural Coatings	86	78	No	Yes
Traction Power Substation Construction				
Site Preparation-Traction Power Utilities	80	72	No	Yes
Grounding-Foundations	80	72	No	Yes
TPSS Installation	80	72	No	Yes
Site Restoration	82	74	No	Yes
Maintenance and Storage Facility Construction				
Demolition	89	93	Yes	Yes
Site Preparation	87	91	Yes	Yes
Grading	89	93	Yes	Yes

Construction Phase	L_{eq} (dBA) at 50 feet	L_{eq} (dBA) at Nearest Receptors	Exceeds 80-dBA 8-Hour L_{eq} Daytime Threshold	Exceeds 70-dBA 8-Hour L_{eq} Nighttime Threshold
Building Construction	84	76	No	Yes
Paving	88	92	Yes	Yes
Architectural Coating	77	69	No	No
Test Track	81	85	Yes	Yes
Pre-Cast Yard				
Concrete Activity	89	93	Yes	Yes
North and South Construction Work Zone Staging Area				
Staging Activity	85	85	Yes	Yes

Source: HTA, 2024

CIDH = cast-in-drilled-hole
dBA = A-weighted decibel
L_{eq} = equivalent noise level
Note: Variation in noise levels for this phase are due to variation in number of equipment used for different segments.

Alternative 5

Impact Statement

Operational Impact: Less than Significant

Construction Impact: Significant and Unavoidable

Operational Impacts

Rail Operations Noise

Alternative 5 consists of an HRT system with a primarily underground guideway track configuration, including seven underground stations and one aerial station. The short aerial section of the alignment would be located in an industrial area south of the LOSSAN rail corridor. Train movements along the Alternative 5 underground alignment would not result in any airborne noise. Where the HRT system would be on an aerial guideway calculated noise exposure due to rail operations would be 49 dBA L_{dn} at residential receptors north of the LOSSAN rail corridor. The existing noise level at the residential areas is 60 dBA L_{dn} and a noise level of 58 dBA L_{dn} would result in a moderate impact. The predicted rail operations noise level of 49 dBA L_{dn} would be below the FTA moderate impact threshold of 58 dBA L_{dn}. Therefore, Alternative 5 would result in a less than significant impact related to rail operations noise.

Ancillary Facilities Noise

Noise generated by ancillary facilities associated with Alternative 5 would be due to ventilation system fans at TPSS facilities along the project alignment and tunnel ventilation facilities. Twelve TPSS sites would be required, of which three would be located aboveground and only one near noise-sensitive receptors. Table 3.11-25 shows a summary of Alternative 5 TPSS noise impact assessments. TPSS facilities would not result in noise impacts at sensitive receptors. This is primarily because TPSS facilities would be in noisy areas and located at sufficient distances from the nearest noise-sensitive land uses. Therefore, Alternative 5 would result in a less than significant impact related to ancillary facilities noise.

Table 3.11-25. Alternative 5: Ancillary Facility Noise Impacts by Traction Power Substation Site

TPSS Site[a]	Nearest Noise-Sensitive Land Use	Distance (feet)	Land Use	FTA Category [a]	Existing Sound Level (dBA, L_{dn})	TPSS Noise Level (dBA, L_{dn})	Noise Impact Thresholds		Level of Impact
							Moderate	Severe	
10	Single-family Residence 14940 Marson Street, Panorama City	270	Residences	2	60	42	58-63	>63	**No Impact**
11	No nearby sensitive land uses	--	--	--	--	--	--	--	**No Impact**
12	No nearby sensitive land uses	--	--	--	--	--	--	--	**No Impact**

Source: HTA, 2024

[a]Under Alternative 5, TPSS Sites 1 through 9 are proposed to be located underground.
[b]FTA Category 2 noise levels are in terms of the day-night equivalent level (Ldn) and FTA Category 3 noise levels are in terms of hourly average level (Leq).

dBA = A-weighted decibel
L_{dn} = day-night noise level

The other ancillary facility under Alternative 5 would be a ventilation facility at the tunnel portal on the northern end of the tunnel segment located east Sepulveda Boulevard and south of Raymer Street in Van Nuys. Within this facility, ventilation fan rooms would provide both emergency ventilation, in case of a tunnel fire, and regular ventilation, during non-revenue hours. The nearest noise-sensitive areas to the proposed location of the ventilation facility are single-family and multi-family uses located over 400 feet north of the facility across the LOSSAN rail corridor. At these distances, the ventilation facility noise is predicted to be 32 dBA equivalent noise level (L_{eq}), which would be below the existing daytime and nighttime noise levels in these areas, which range from 36 to 65 dBA L_{eq} (refer to long-term noise monitoring location 66 in Attachment 1 of the *Sepulveda Transit Corridor Project Noise and Vibration Technical Report* [[Metro, 2025] for further detail). Therefore, Alternative 5 would result in less than a significant impact related to ancillary facility noise.

Operational Noise Summary

The combination of operational noise sources including rail operations, ancillary facilities, and MSF under Alternative 5 would not result in impacts at Category 1, Category 2, or Category 3 receptors. Therefore, Alternative 5 would result in a less than significant impact related to operational noise.

Construction Impacts

Construction of Alternative 5 would include various phases that would involve the use of construction equipment at specific locations along the proposed alignment. Construction noise levels from Alternative 5 were predicted in terms of an 8-hour L_{eq} for each phase of construction based upon the number and types of off-road construction equipment to be employed during the given phase. Table 3.11-26 shows the results of the construction noise predictions at a reference distance of 50 feet from construction activities and at the nearest sensitive receptors.

The FTA has provided guidance for assessing construction noise associated with transit projects. The criteria are based upon an 8-hour L_{eq}, as shown in Table 3.11-4. For residential uses, the threshold is 80 dBA for daytime construction and 70 dBA for nighttime construction. Commercial uses are held to an 85-dBA daytime and nighttime noise construction threshold, while industrial uses are held to a 90-dBA

daytime and nighttime construction noise threshold. For the purposes of this analysis, FTA's detailed assessment construction noise limit criteria of an 8-hour L_{eq} have been applied.

Table 3.11-26 is a summary of expected construction noise levels at locations of nearest noise-sensitive receptors to each construction activity. Additional details regarding construction equipment and noise levels by phase are included in Attachment 12 of the *Sepulveda Transit Corridor Project Noise and Vibration Technical Report* ([Metro, 2025). Construction noise would range from 8-hour L_{eq} noise levels of approximately 57 to 93 dBA at the nearest sensitive receptors. A TBM would be required for tunneling underground segments of Alternative 5, but it would not generate aboveground noise. As shown in Table 3.11-26, construction activities would result in noise levels that exceed the FTA 80-dBA daytime and 70-dBA nighttime 8-hour L_{eq} thresholds for residential land uses.

The construction noise contours are depicted graphically on Figure 3.11-36 through Figure 3.11-39, which represent the noise levels that could potentially occur along the entirety of the alignment. Construction noise contours are only included for aboveground construction activities because activities such as tunnelling would not generate noise at aboveground receptors. The noisiest phase of construction is used to depict the contours. An interval of 5 dBA is used for each contour and each contour was calculated based on the distance at which noise would decrease by 5 dBA, starting at a noise level of 90 dBA L_{eq} to 70 dBA L_{eq}. The 90 dBA L_{eq} noise level is representative of the FTA daytime and nighttime construction noise threshold for industrial uses. The 70 dBA L_{eq} contour shows the areas where construction noise levels would exceed the nighttime construction noise threshold for residential uses. The 90 dBA L_{eq} contour covers areas within a distance of 45 feet from the nearest construction activity. The 70 dBA L_{eq} contour extends to a maximum distance of 562 feet. The construction noise contours do not include noise reductions that may occur as a result of terrain or intervening structures. As an example of how to read the contours, the figures show that within the first contour of 45 feet (shown in dark purple), the calculated construction noise levels may be above 90 dBA L_{eq}. At the next distance of 100 feet (shown in light purple), noise levels would decrease to approximately 85 dBA L_{eq}.

Pile driving may be required for installation of retaining walls or potentially at TBM launch locations. Impact or vibratory piledrivers are the most noise intensive construction equipment that could result in elevated noise levels above typical construction methods. It is unknown at this stage of design if pile driving would be the required construction method which is dependent on soil type. Typically, where possible, piles are drilled which is a quieter method of pile installation such as CIDH. For instance, foundations for the aerial guideway are proposed to be constructed using CIDH instead of impact driven piles. Impact pile driving generates an hourly noise level of approximately 94.3 dBA L_{eq} at 50 feet, vibratory pile driving generates an hourly noise level of 93.8 dBA $L_{eq,}$ at 50 feet and CIDH generates an hourly noise level of approximately 77.4 dBA L_{eq} at 50 feet. Vibratory pile driving is approximately 0.5 dBA quieter than impact pile driving and CIDH is approximately 16.9 dBA quieter. To reduce noise levels where piles may be required, MM NOI-5.1 would require impact pile driving to be avoided where possible and to use drilled or vibratory piles where feasible. Soil improvements such as grouting injection would be required for cut-and-cover construction to stabilize soils. Soil improvement activity would typically require drilling equipment and pumping equipment to inject the grout into the soil. A noise level of 90 dBA 8-hour $L_{eq\_}$ at 50 feet reflects equipment required for cut-and-cover construction, which is shown in Table 3.11-26 as "Support of Excavation."

Alternative 5 would result in temporary and periodic increases in ambient noise levels due to construction activity that would exceed FTA's criteria, and, where applicable, the standards established by the local noise ordinances. While MM NOI-5.1 would be implemented, which would include noise-reducing measures, there may still be temporary or periodic increases in ambient noise levels that

exceed FTA construction impact criteria. There are no additional feasible mitigation measures to reduce construction noise levels. Therefore, impacts related to construction noise would be significant and unavoidable.

Regarding health effects of noise, it is unlikely for construction noise to result in noise-induced hearing loss for persons residing or working near construction zones, as this is an occupational hazard related to working over long periods of time (years) in high noise environments. However, construction noise could increase stress at affected sensitive uses. Nighttime construction could adversely affect sleep for residents living near active construction sites. As required by MM NOI-5.1, if required by the jurisdiction a noise variance would be prepared that demonstrates the implementation of control measures to maintain noise levels below the applicable Federal Transit Administration and local standards. Nonetheless, construction noise could potentially still exceed the FTA nighttime criteria.

Table 3.11-26. Alternative 5: Predicted Construction Noise Levels

Construction Phase	8-hour L_{eq} (dBA) at 50 feet	8-hour L_{eq} (dBA) at Nearest Receptors	Exceeds 80-dBA 8-Hour L_{eq} Daytime Threshold	Exceeds 70-dBA 8-Hour L_{eq} Nighttime Threshold
Segment 1 to Segment 5 Tunnel Construction				
Demolition/Site Preparation	88	86	Yes	Yes
Launch Box Support of Excavation	90	88	Yes	Yes
Launch Box Excavation	87	85	Yes	Yes
Launch Box Concrete Work	86	84	Yes	Yes
Tunnel Boring Machine Mobilization	86	84	Yes	Yes
Tunnel Boring Machine Tunneling/Precast Liners	84	82	Yes	Yes
Tunnel Boring Machine Demobilization	86	84	Yes	Yes
Invert Fill	81	79	No	Yes
Segment 6-Reach 3 Portal to Maintenance and Storage Facility Cut-and-Cover Box				
Demolition/Site Preparation	88	73	No	Yes
Support of Excavation	90	75	No	Yes
Excavation	87	72	No	Yes
Concrete Work	86	71	No	Yes
Trackwork/Systems Installation	83	68	No	No
Aerial Guideway Foundation (CIDH)	91	76	No	Yes
Columns	84	69	No	No
Bent Caps	84	69	No	No
Assemble Gantry	85	70	No	Yes
Segmental Girders	87	72	No	Yes
Demobilize Gantry	85	70	No	Yes
Guideway Trackwork	86	71	No	Yes
Systems Installation	85	70	No	Yes
Paving	85	70	No	Yes
Tunnel Boring Machine Access Shaft Staging Site				
Demolition/Site Preparation	88	77	No	Yes
Shaft Support of Excavation	91	80	Yes	Yes
Shaft Excavation	87	76	No	Yes
Shaft Concrete Work	84	73	No	Yes
Staging Area TBM Support Activities	86	75	No	Yes

Construction Phase	8-hour L_{eq} (dBA) at 50 feet	8-hour L_{eq} (dBA) at Nearest Receptors	Exceeds 80-dBA 8-Hour L_{eq} Daytime Threshold	Exceeds 70-dBA 8-Hour L_{eq} Nighttime Threshold
Underground Stations				
Demolition/Site Preparation	88	90	Yes	Yes
Support of Excavation	90	92	Yes	Yes
Box Excavation	87	89	Yes	Yes
Tunnel Boring Machine Pass-Through Maintenance	80	82	Yes	Yes
Station Structural Concrete	88	90	Yes	Yes
Fit Out and Completion	85	87	Yes	Yes
Paving/Arch Coatings	86	88	Yes	Yes
Aerial Stations				
Demolition/Site Preparation	88	59	No	No
Foundations and Columns	91	62	No	No
Bent Cap Installation	86	57	No	No
Girder Installation/Station Fit Out	88	59	No	No
Paving/Arch Coatings	86	57	No	No
Traction Power Substation Construction				
Site Preparation-Traction Power Utilities	80	72	No	Yes
Grounding-Foundations	80	72	No	Yes
Traction Power Substation Installation	80	72	No	Yes
Site Restoration	82	74	No	Yes
Maintenance and Storage Facility Construction				
Demolition	89	93	Yes	Yes
Site Preparation	87	91	Yes	Yes
Grading	89	93	Yes	Yes
Building Construction	84	76	No	Yes
Paving	88	92	Yes	Yes
Architectural Coating	77	69	No	No
Test Track	81	85	No	Yes
Pre-Cast Yard				
Concrete Activity	89	93	Yes	Yes
North and South Construction Work Zone Staging Area				
Staging Activity	85	85	Yes	Yes

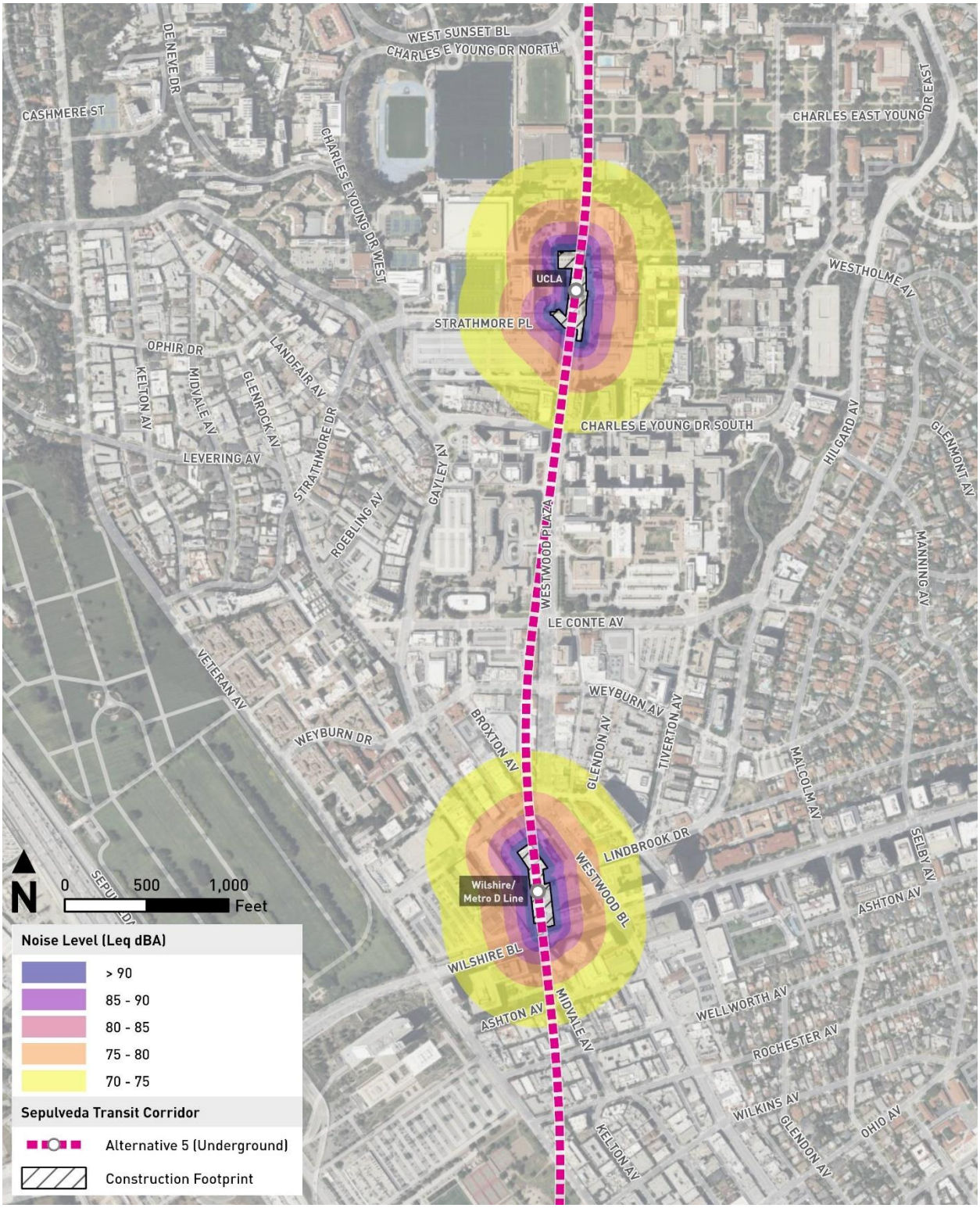
Source: HTA, 2024

CIDH = cast-in-drilled-hole
dBA = A-weighted decibel
L_{eq} = equivalent noise level
Note: Variation in noise levels for this phase are due to variation in number of equipment used for different segments.

Figure 3.11-36. Alternative 5: Construction Noise Contours – View 1

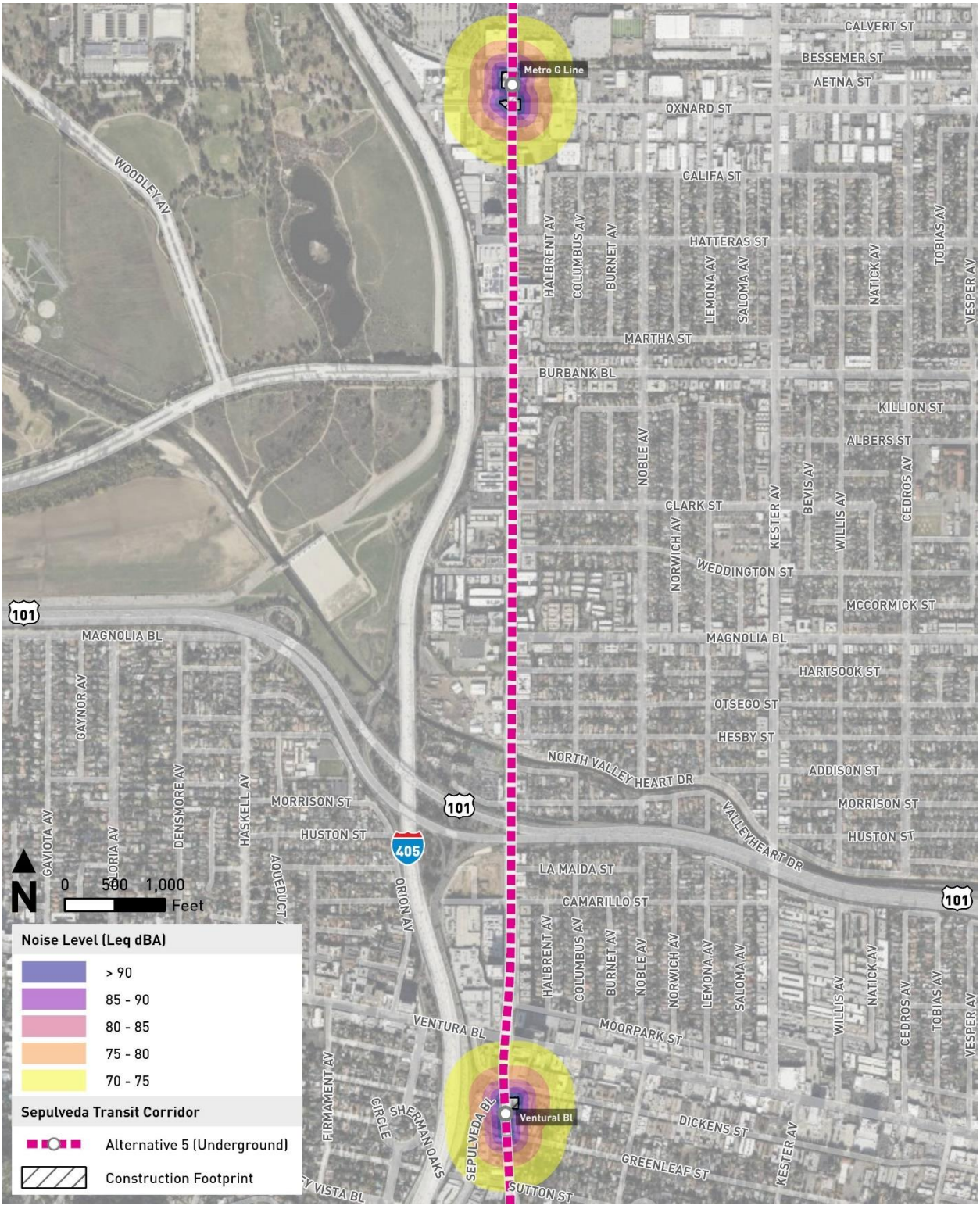
Source: HTA, 2024

Figure 3.11-37. Alternative 5: Construction Noise Contours – View 2



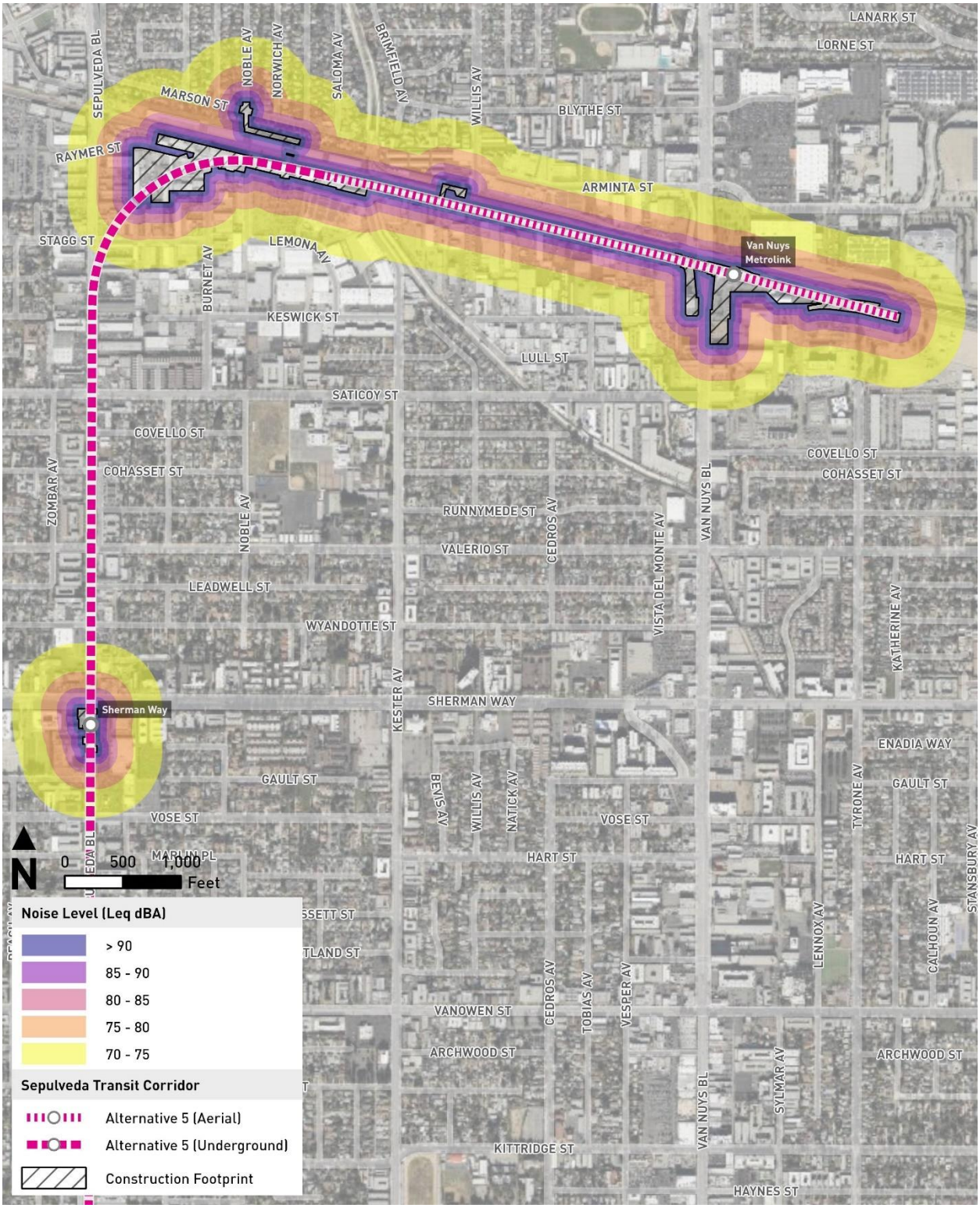
Source: HTA, 2024

Figure 3.11-38. Alternative 5: Construction Noise Contours – View 3



Source: HTA, 2024

Figure 3.11-39. Alternative 5: Construction Noise Contours – View 4



Source: HTA, 2024

Alternative 6

Impact Statement

Operational Impact: Less than Significant with Mitigation

Construction Impact: Significant and Unavoidable

Operational Impacts

Rail Operations Noise

Alternative 6 consists of an HRT system in a two underground tunnel configuration, including seven underground stations. Train movements along the Alternative 6 alignment would not result in any airborne noise impacts at sensitive receptors located above the underground tunnels. Therefore, Alternative 6 would result in a less than significant impact related to rail operations noise.

Ancillary Facilities Noise

Noise generated by ancillary facilities associated with Alternative 6 would be due to ventilation system fans at TPSS facilities along the alignment and tunnel ventilation facilities. Eleven (11) TPSS sites would be required, of which four would be located aboveground. Of the four at-grade TPSS units, two would be near noise-sensitive receptors. Table 3.11-27 shows a summary of Alternative 6 TPSS noise impact assessments. One moderate impact would occur at the nearest sensitive receptor to TPSS Site 7 and one moderate impact would occur at the nearest sensitive receptor to TPSS Site 9. These impacts are considered potentially significant. Impacted noise-sensitive receptors are shown on Figure 3.11-40 and Figure 3.11-41.

Operational Noise Summary

The combination of operational noise sources including rail operations, ancillary facilities, and MSF under Alternative 6 would not result in impacts at Category 1, Category 2, or Category 3 receptors. Therefore, Alternative 6 would result in a less than significant impact related to operational noise.

Table 3.11-27. Alternative 6: Ancillary Facility Noise Impacts by Traction Power Substation Site

TPSS Site[a]	Nearest Noise-Sensitive Land Use	Land Use	FTA Category[b]	Distance (feet)	Existing Sound Level (dBA, L_{dn})	TPSS Noise Level (dBA, L_{dn})	Noise Impact Thresholds		Level of Impact
							Moderate	Severe	
5	No nearby sensitive land uses	--	--	--	--	--	--	--	**No Impact**
7	TPSS 6.7: Magnolia Terrace Apartments 14520 Magnolia Boulevard, Sherman Oaks	Residences	2	25	63	62	60-65	>65	**Moderate**
9	TPSS 6.9a: HFL Vanowen Apartments 14419 Vanowen Street, Van Nuys	Residences	2	30	60	61	58-63	>63	**Moderate**
	TPSS 6.9b: Multi-Family Residential 6822 Van Nuys Boulevard, Van Nuys	Residences	2						
11	No nearby sensitive land uses	--	--	--	--	--	--	--	**No Impact**

Source: HTA, 2024

[a]Under Alternative 6, TPSS Sites 1 through 4, 6, 8, and 10 are proposed to be located underground.
[b]FTA Category 2 noise levels are in terms of the day-night equivalent level (L_{dn}) and FTA Category 3 noise levels are in terms of hourly average level (L_{eq}).

-- = data not applicable.
dBA = A-weighted decibel
L_{dn} = day-night noise level
L_{eq} = equivalent noise level
Note: Tunnel ventilation for Alternative 6 would be similar to existing Metro ventilation systems for light and heavy rail underground subways. In case of emergency, smoke would be directed away from trains and extracted through the use of emergency ventilation fans installed at underground stations and crossover locations adjacent to the stations. In addition, a mid-mountain ventilation shaft for the extraction of air would be located on City of Los Angeles Department of Water and Power property east of Stone Canyon Reservoir in the Santa Monica Mountains.

Noise would also be generated by the mid-mountain shaft. The horizontal distance between the mid-mountain shaft and nearest residential properties along Basil Lane is approximately 840 feet. In addition, there is an existing ridgeline between the sensitive land uses and the proposed location of the mid-mountain shaft. The predicted equivalent noise level (L_{eq}) from the mid-mountain shaft at the nearest homes east of its proposed location would be below 25 dBA and would be inaudible when the shielding effect of the ridgeline is considered. Furthermore, existing noise levels at the nearest residence are approximately 63.4 dBA day-night noise level (L_{dn}) (Site 32) and existing sources would mask the mid-mountain shaft noise. No impacts would occur as a result of the mid-mountain shaft.

Without mitigation, TPSS units proposed to be located at sites 7 and 9 would generate noise levels at nearby residential land uses that would exceed the moderate impact thresholds. MM NOI-6.1 would require implementation of TPSS noise reduction features such as orienting cooling fans and heating, ventilation, and air conditioning (HVAC) equipment away from sensitive receptors, installation of an enclosure around the TPSS, installing additional sound insulation around the TPSS, or using quieter cooling fans and HVAC equipment. As shown in Table 3.11-28, implementation of MM NOI-6.1 would reduce TPSS noise levels to below the moderate impact threshold at each site. Therefore, Alternative 6 would result in a less than significant with mitigation related to ancillary facilities noise.

Table 3.11-28. Alternative 6: Ancillary Facility Noise Impacts by Traction Power Substation Site After Mitigation

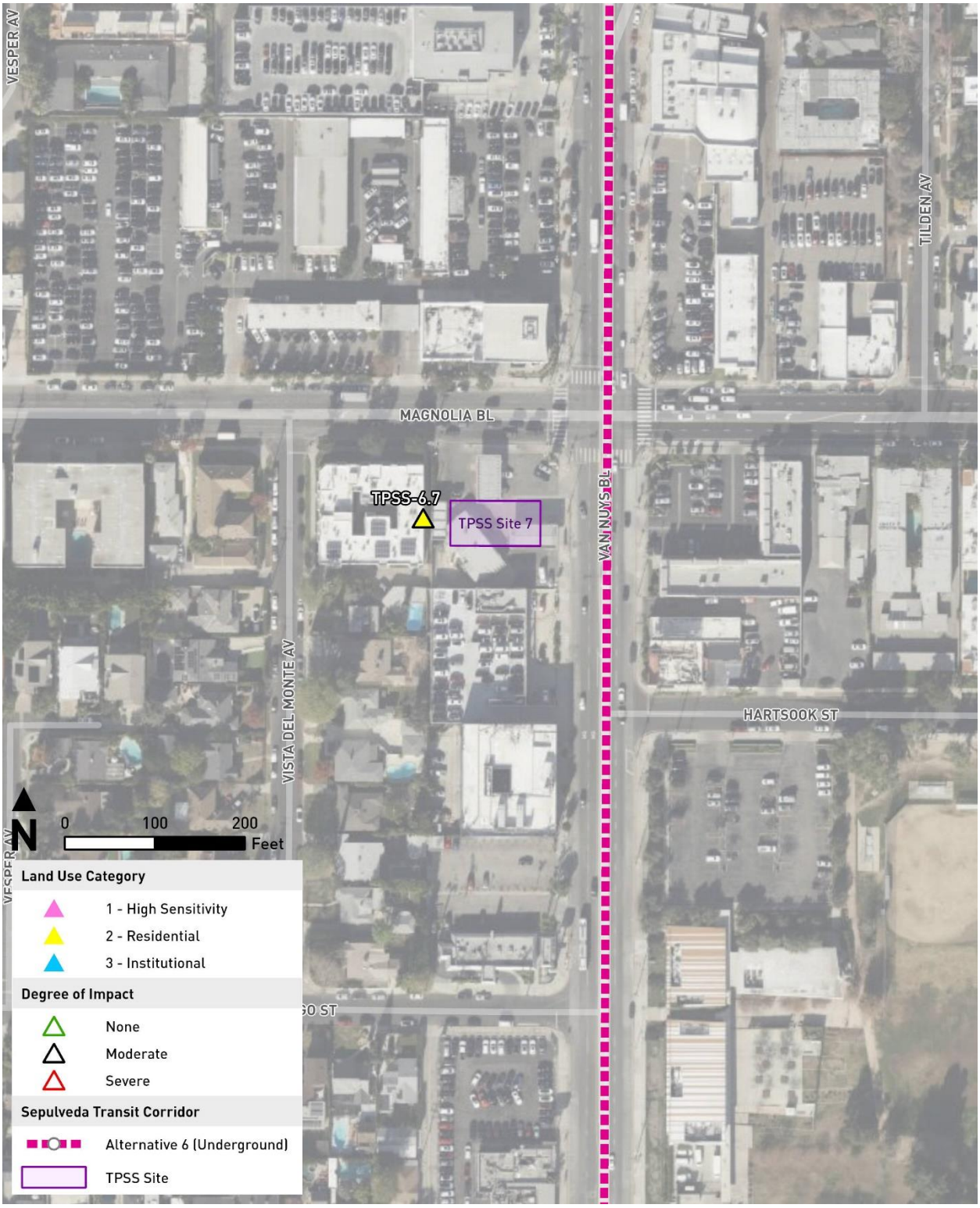
TPSS Site	Nearest Noise-Sensitive Land Use	Land Use	FTA Category[a]	Existing Sound Level (dBA, L_{dn})	TPSS Noise Level After Mitigation (dBA, L_{dn})	Noise Impact Thresholds		Level of Impact
						Moderate	Severe	
7	TPSS 6.7: Magnolia Terrace Apartments 14520 Magnolia Boulevard, Sherman Oaks	Residences	2	63	56	60-65	>65	**No Impact**
9	TPSS 6.9a: HFL Vanowen Apartments 14419 Vanowen Street Van Nuys	Residences	2	60	56	58-63	>63	**No Impact**
	TPSS 6.9b: Multi-Family Residential 6822 Van Nuys Boulevard Van Nuys	Residences	2					

Source: HTA, 2024

[a]FTA Category 2 noise levels are in terms of the day-night equivalent level (L_{dn}).

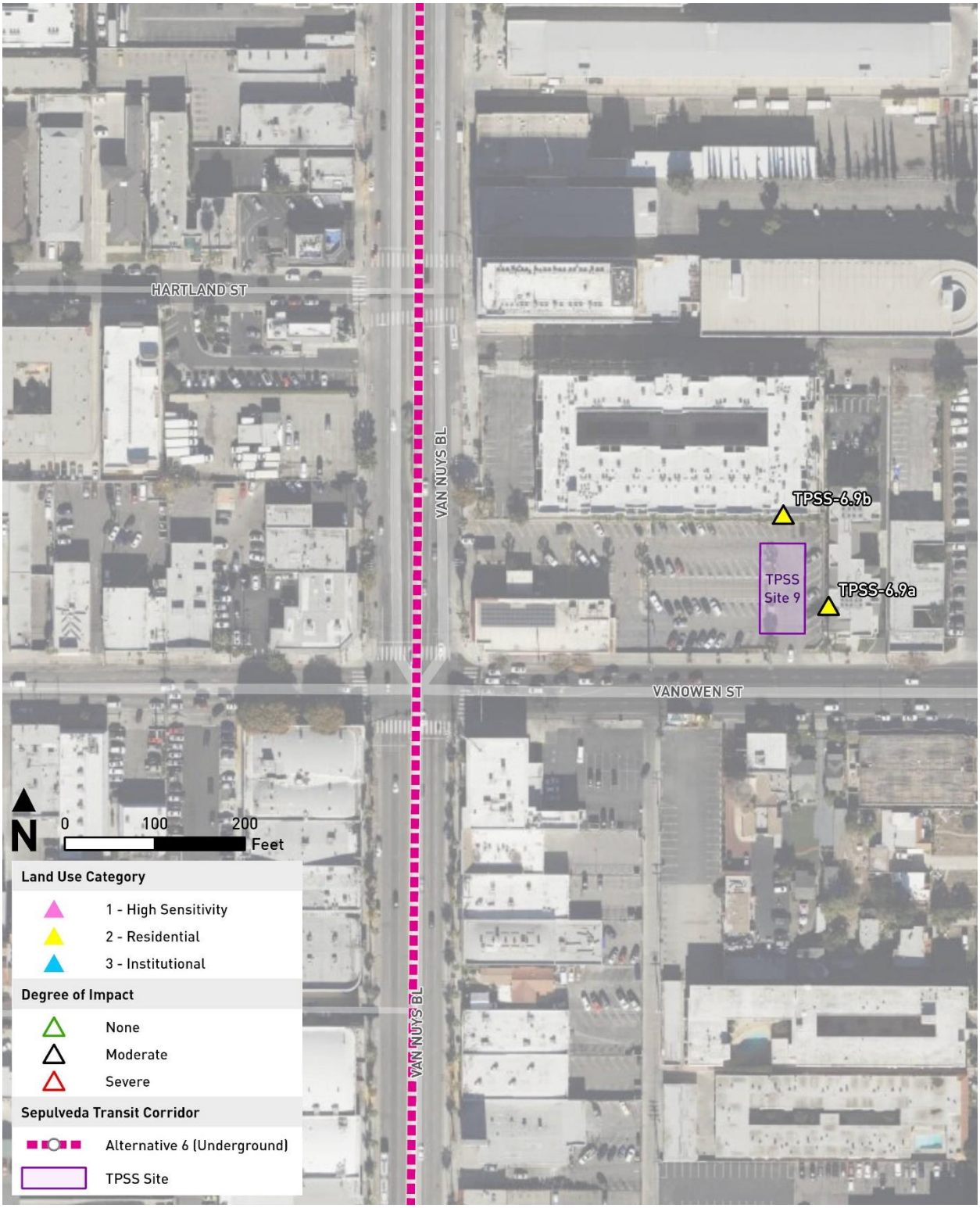
dBA = A-weighted decibel
L_{dn} = day-night noise level

Figure 3.11-40. Alternative 6: Ancillary Facility Noise Impacts – TPSS Site 7



Source: HTA, 2024

Figure 3.11-41. Alternative 6: Ancillary Facility Noise Impacts – TPSS Site 9



Source: HTA, 2024

Construction Impacts

Construction of Alternative 6 would include various phases that would involve the use of construction equipment at specific locations along the proposed alignment. Construction noise levels from Alternative 6 were predicted in terms of the 8-hour L_{eq} for each phase of construction based upon the number and types of off-road construction equipment to be employed during the given phase. Table 3.11-29 shows the results of the construction noise predictions at a reference distance of 50 feet from construction activities and at the nearest sensitive receptors.

The FTA has provided guidance for assessing construction noise associated with transit projects. The criteria are based upon an 8-hour L_{eq}, as shown in Table 3.11-4. For residential uses, the threshold is 80 dBA for daytime construction and 70 dBA for nighttime construction. Commercial uses are held to an 85-dBA daytime and nighttime noise construction threshold, while industrial uses are held to a 90-dBA daytime and nighttime construction noise threshold. For the purposes of this analysis, FTA's detailed assessment construction noise limit criteria of an 8-hour L_{eq} have been applied.

Table 3.11-29 is a summary of expected construction noise levels at locations of nearest noise-sensitive receptors to each construction activity. Additional details regarding construction equipment and noise levels by phase are included in Attachment 14 of the *Sepulveda Transit Corridor Project Noise and Vibration Technical Report* ([Metro, 2025). Construction noise would range from 8-hour L_{eq} noise levels of approximately 59 to 98 dBA at the nearest sensitive receptors. A TBM would be required for tunneling underground segments of Alternative 6 but would not generate aboveground noise. As shown in
Table 3.11-29, construction activities would result in noise levels that exceed the FTA 80-dBA daytime and 70-dBA nighttime 8-hour L_{eq} thresholds for residential land uses.

The construction noise contours are depicted graphically on Figure 3.11-42 through Figure 3.11-47, which represent the noise levels that could potentially occur along the entirety of the alignment. Construction noise contours are only included for aboveground construction activities because activities such as tunnelling would not generate noise at aboveground receptors. The noisiest phase of construction is used to depict the contours. An interval of 5 dBA is used for each contour and each contour was calculated based on the distance at which noise would decrease by 5 dBA, starting at a noise level of 90 dBA L_{eq} to 70 dBA L_{eq}. The 90 dBA L_{eq} noise level is representative of the FTA daytime and nighttime construction noise threshold for industrial uses. The 70 dBA L_{eq} contour shows the areas where construction noise levels would exceed the nighttime construction noise threshold for residential uses. The 90 dBA L_{eq} contour covers areas within a distance of 63 feet from the nearest construction activity. The 70 dBA L_{eq} contour extends to a maximum distance of 630 feet.

For TPSS sites, the 90 dBA L_{eq} contours cover areas within a distance of 25 feet from the nearest construction activity. The 70 dBA L_{eq} contours extend to a maximum distance of 251 feet. For the mid-mountain shaft, the 90 dBA L_{eq} contours cover areas within a distance of 35 feet from the nearest construction activity. The 70 dBA L_{eq} contours extend to a maximum distance of 354 feet. The construction noise contours do not include noise reductions that may occur as a result of terrain or intervening structures. As an example of how to read the contours, the figures show that within the first contour of 63 feet (shown in dark purple), the calculated construction noise levels may be above 90 dBA L_{eq}. At the next distance of 112 feet (shown in light purple), noise levels would decrease to approximately 85 dBA L_{eq}.

Pile driving may be required for installation of retaining walls or potentially at TBM launch locations. Impact or vibratory piledrivers are the most noise intensive construction equipment that could result in

elevated noise levels above typical construction methods. It is unknown at this stage of design if pile driving would be the required construction method which is dependent on soil type. Typically, where possible, piles are drilled which is a quieter method of pile installation such as CIDH Impact pile driving generates an hourly noise level of approximately 94.3 dBA L_{eq} at 50 feet, vibratory pile driving generates an hourly noise level of 93.8 dBA $L_{eq,}$ at 50 feet and CIDH generates an hourly noise level of approximately 77.4 dBA L_{eq} at 50 feet. Vibratory pile driving is approximately 0.5 dBA quieter than impact pile driving and CIDH is approximately 16.9 dBA quieter. To reduce noise levels where piles may be required, MM NOI-6.2 would require impact pile driving to be avoided where possible and to use drilled or vibratory piles where feasible. Soil improvements such as grouting injection would be required for cut-and-cover construction to stabilize soils. Soil improvement activity would typically require drilling equipment and pumping equipment to inject the grout into the soil. A noise level of 90 dBA 8-hour $L_{eq\_}$ at 50 feet reflects equipment required for cut-and-cover construction, which is shown in Table 3.11-29 as "Support of Excavation."

Alternative 6 would result in temporary and periodic increases in ambient noise levels due to construction activity that would exceed FTA's criteria, and, where applicable, the standards established by the local noise ordinances. While MM NOI-6.2 would be implemented, which would include noise-reducing measures, there may still be temporary or periodic increases in ambient noise levels that exceed FTA construction impact criteria. There are no additional feasible mitigation measures to reduce construction noise levels. Therefore, impacts related to construction noise would be significant and unavoidable.

Regarding health effects of noise, it is unlikely for construction noise to result in noise-induced hearing loss for persons residing or working near construction zones, as this is an occupational hazard related to working over long periods of time (years) in high noise environments. However, construction noise could increase stress at affected sensitive uses. Nighttime construction could adversely affect sleep for residents living near active construction sites. As required by MM NOI-6.2, if required by the jurisdiction a noise variance would be prepared that demonstrates the implementation of control measures to maintain noise levels below the applicable Federal Transit Administration and local standards. Nonetheless, construction noise could potentially still exceed the FTA nighttime criteria.

Table 3.11-29. Alternative 6: Predicted Construction Noise Levels

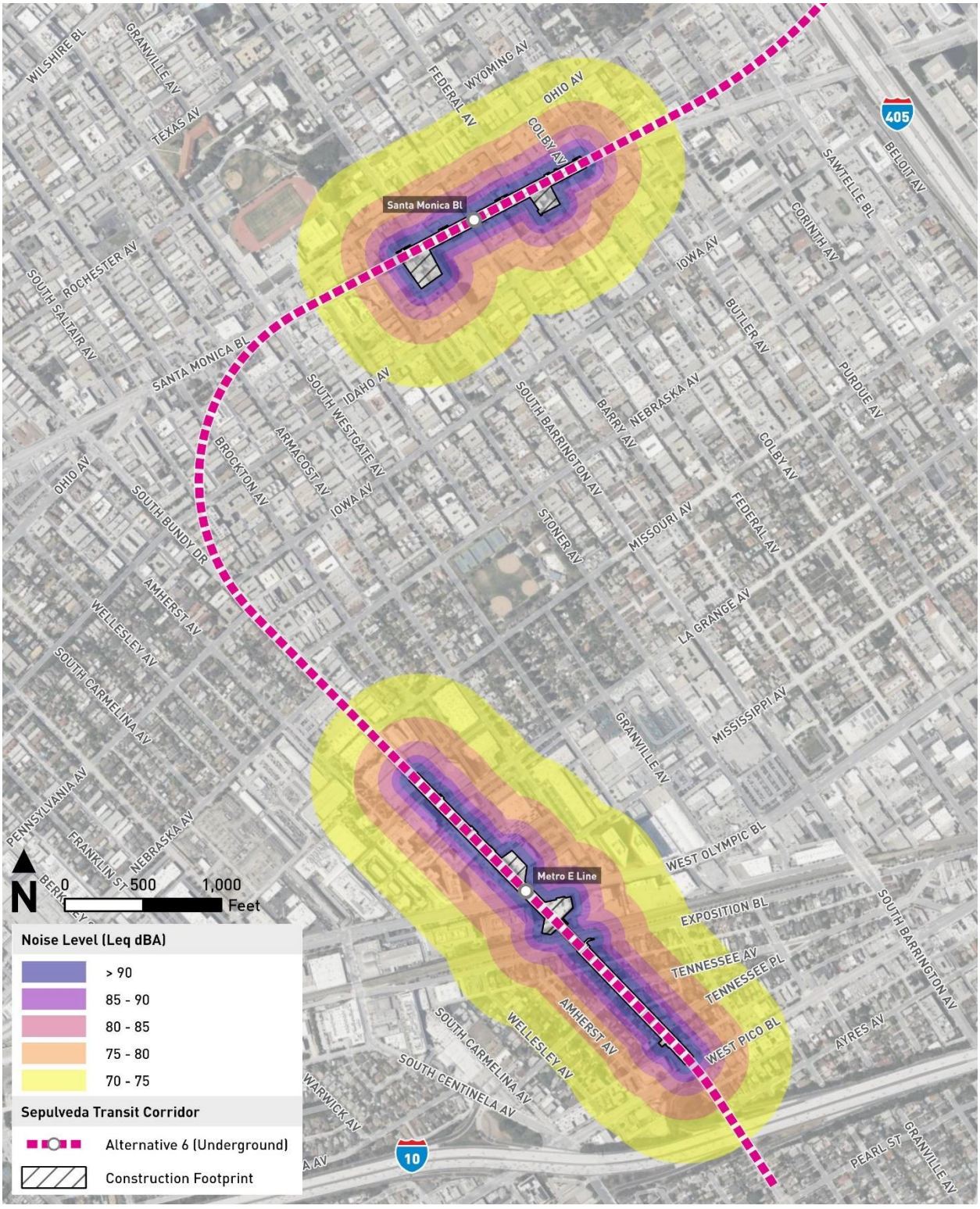
Construction Phase	8-hour L_{eq} (dBA) at 50 feet	8-hour L_{eq} (dBA) at Nearest Receptors	Exceeds 80-dBA 8-Hour L_{eq} Daytime Threshold	Exceeds 70-dBA 8-Hour L_{eq} Nighttime Threshold
Segment 1-Westside, Segment 2-Mountain, and Segment 3-Valley				
Ground Improvements	89	95	Yes	Yes
Tunnel Boring Setup/Assembly	83	89	Yes	Yes
Tunnel Boring/Tunneling	81	87	Yes	Yes
Tunnel Boring Machine Retrieval/Tunnel Preparation	81	87	Yes	Yes
Annular Grouting	89	95	Yes	Yes
Invert Construction	77	83	Yes	Yes
Cross Passage	87	93	Yes	Yes
Rail and Plinth	74	80	Yes	Yes
Systems, Testing, Commissioning	86	92	Yes	Yes
Mid-Mountain Shaft				
Site Preparation/Demolition	83	59	No	No

Construction Phase	8-hour L_{eq} (dBA) at 50 feet	8-hour L_{eq} (dBA) at Nearest Receptors	Exceeds 80-dBA 8-Hour L_{eq} Daytime Threshold	Exceeds 70-dBA 8-Hour L_{eq} Nighttime Threshold
Access Road	88	64	No	No
Drainage/Utilities	84	60	No	No
Shaft Drilling	87	63	No	No
Cavern and Adit	85	61	No	No
Underground Station Construction				
Utility Relocation	92	98	Yes	Yes
Demolition/Site Preparation	90	96	Yes	Yes
Grading	85	91	Yes	Yes
Drainage/Utilities	86	92	Yes	Yes
Support of Excavation	90	96	Yes	Yes
Station Excavation	92	98	Yes	Yes
Station Construction	87	93	Yes	Yes
Final Roadway Construction	89	95	Yes	Yes
Station Finishes and Testing	84	90	Yes	Yes
TPSS Construction (Vanowen St/Van Nuys Blvd TPSS and Magnolia TPSS, and Mid-Mountain Shaft TPSS)				
Site Preparation-Traction Power Utilities	84	90	Yes	Yes
Foundation Construction	78	84	Yes	Yes
Traction Power Substation Installation	80	86	Yes	Yes
Maintenance and Storage Facility Construction				
Site Preparation/Demolition	87	91	Yes	Yes
Grading	87	91	Yes	Yes
Building Construction	90	94	Yes	Yes
Pavements	88	92	Yes	Yes
Drainage/Utilities	86	90	Yes	Yes
Pre-Cast Yard				
Concrete Activity	85	89	Yes	Yes

Source: HTA, 2024

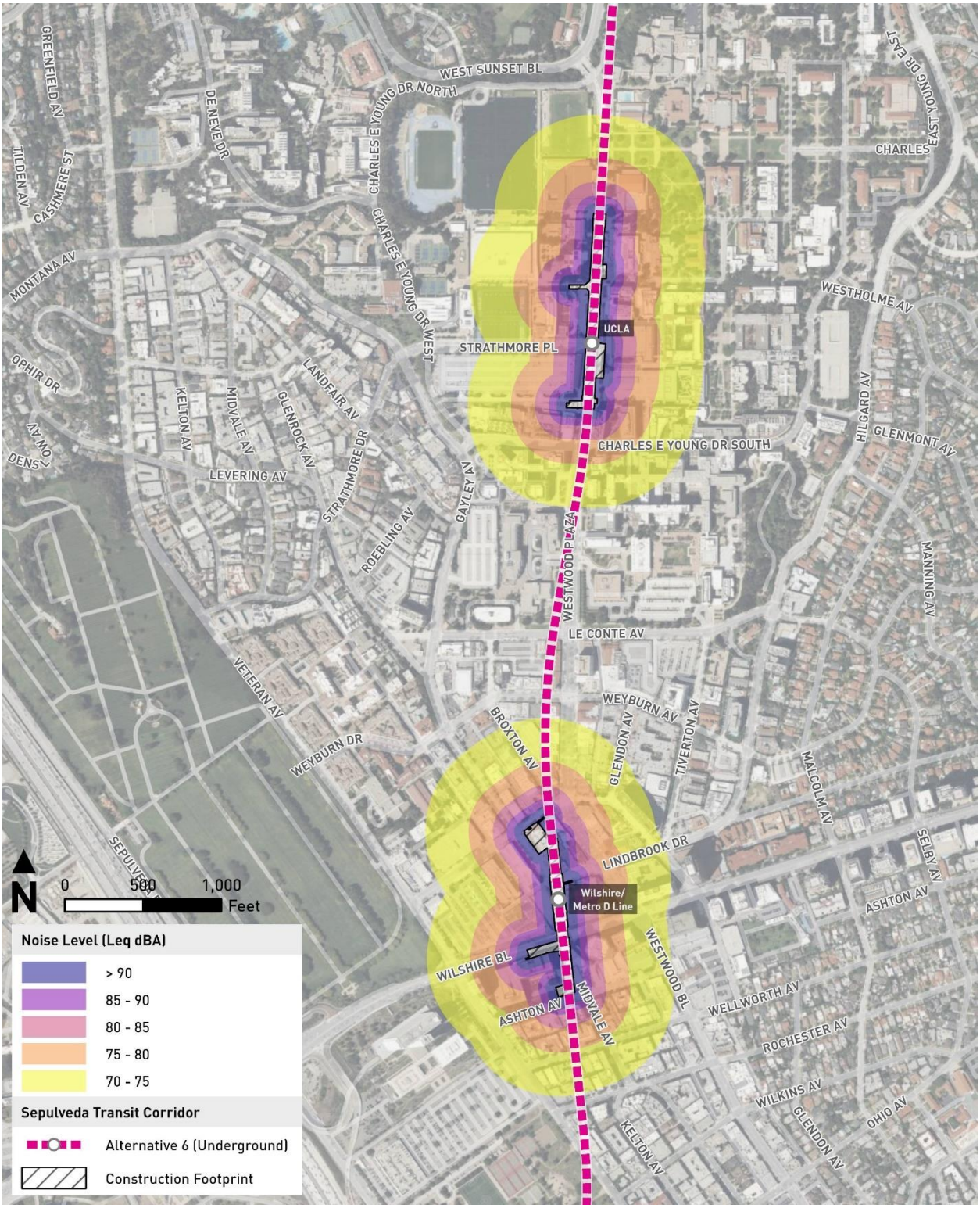
Blvd = Boulevard
dBA = A-weighted decibel
L_{eq} = equivalent noise level
St = Street

Figure 3.11-42. Alternative 6: Construction Noise Contours – View 1



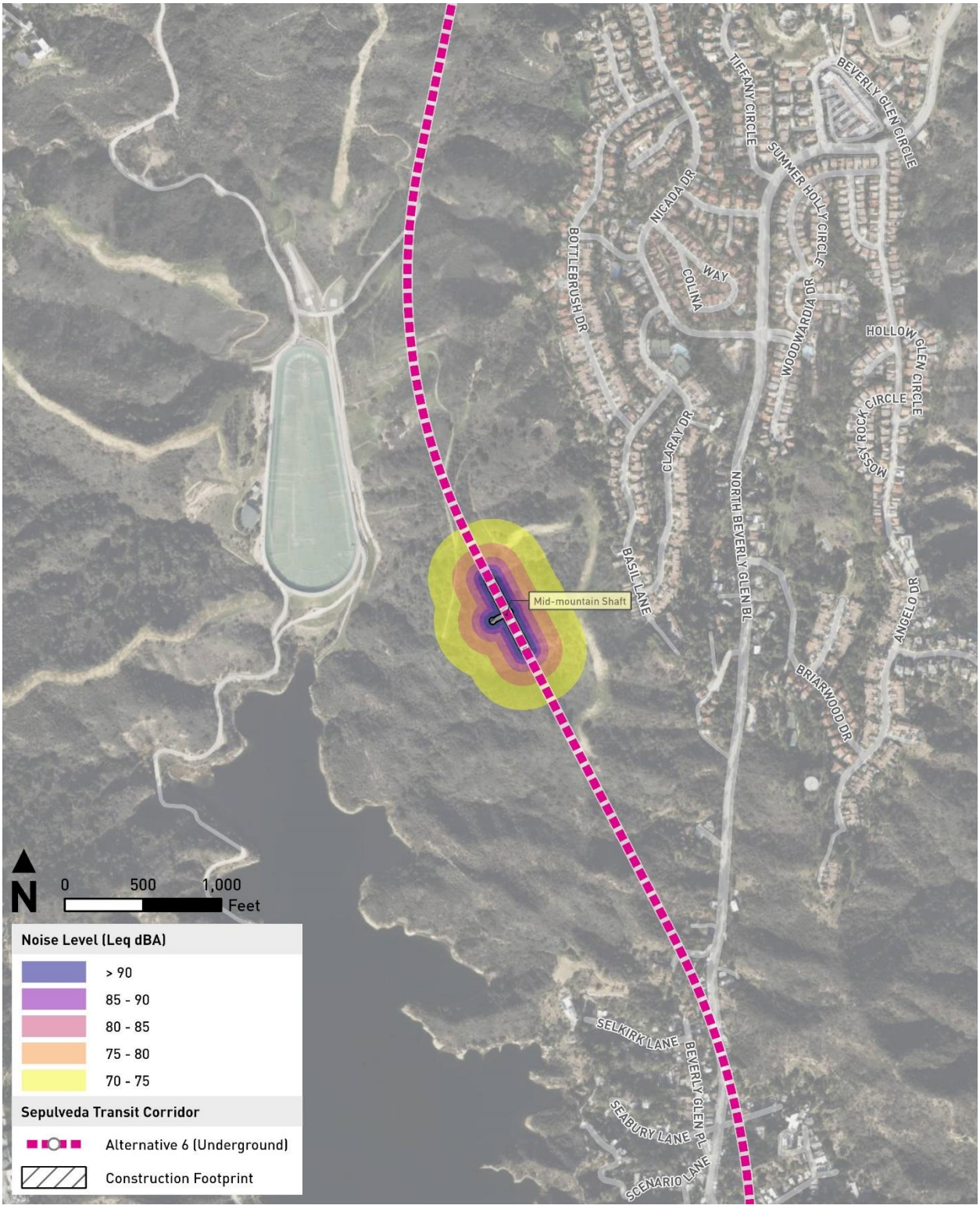
Source: HTA, 2024

Figure 3.11-43. Alternative 6: Construction Noise Contours – View 2



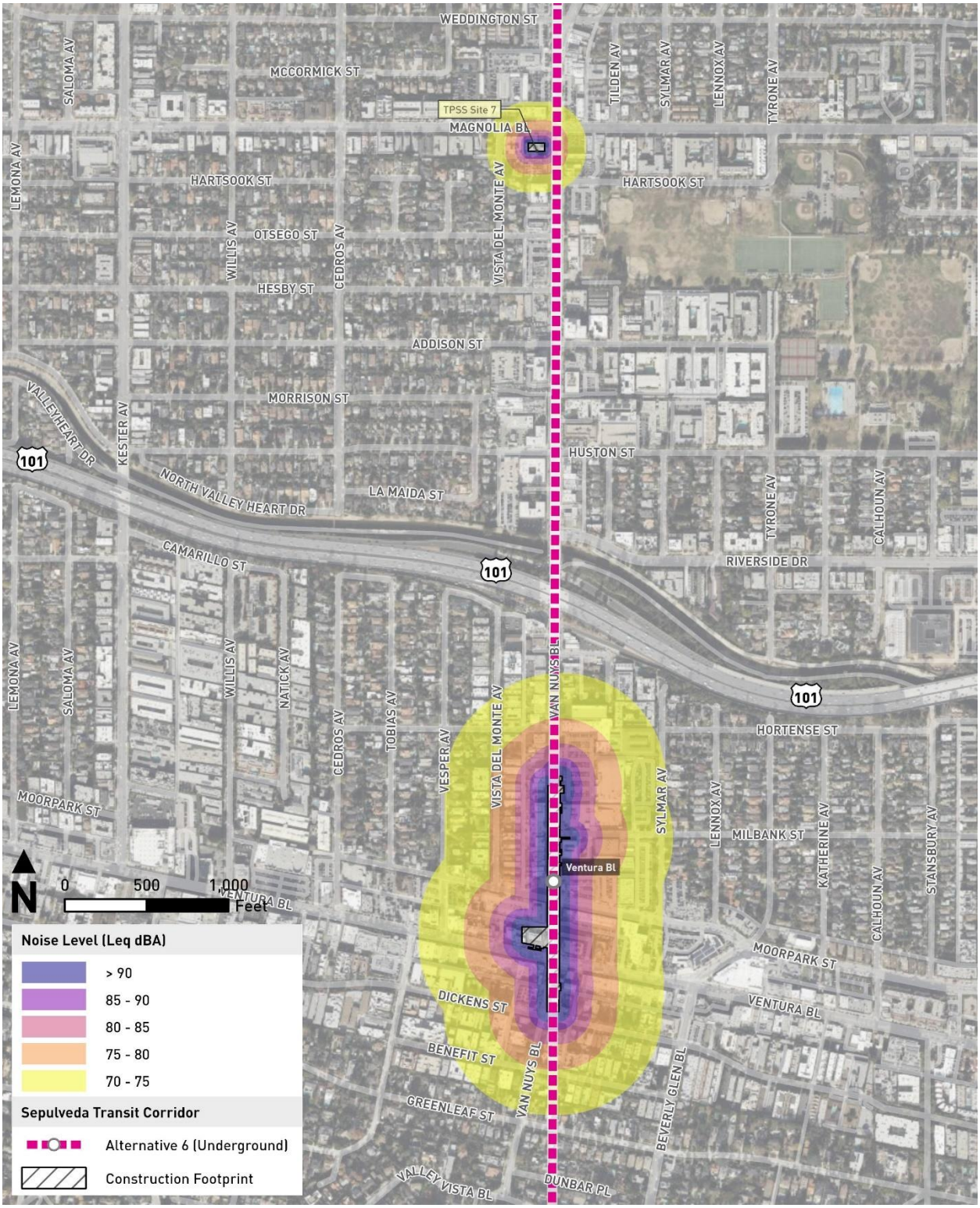
Source: HTA, 2024

Figure 3.11-44. Alternative 6: Construction Noise Contours – View 3



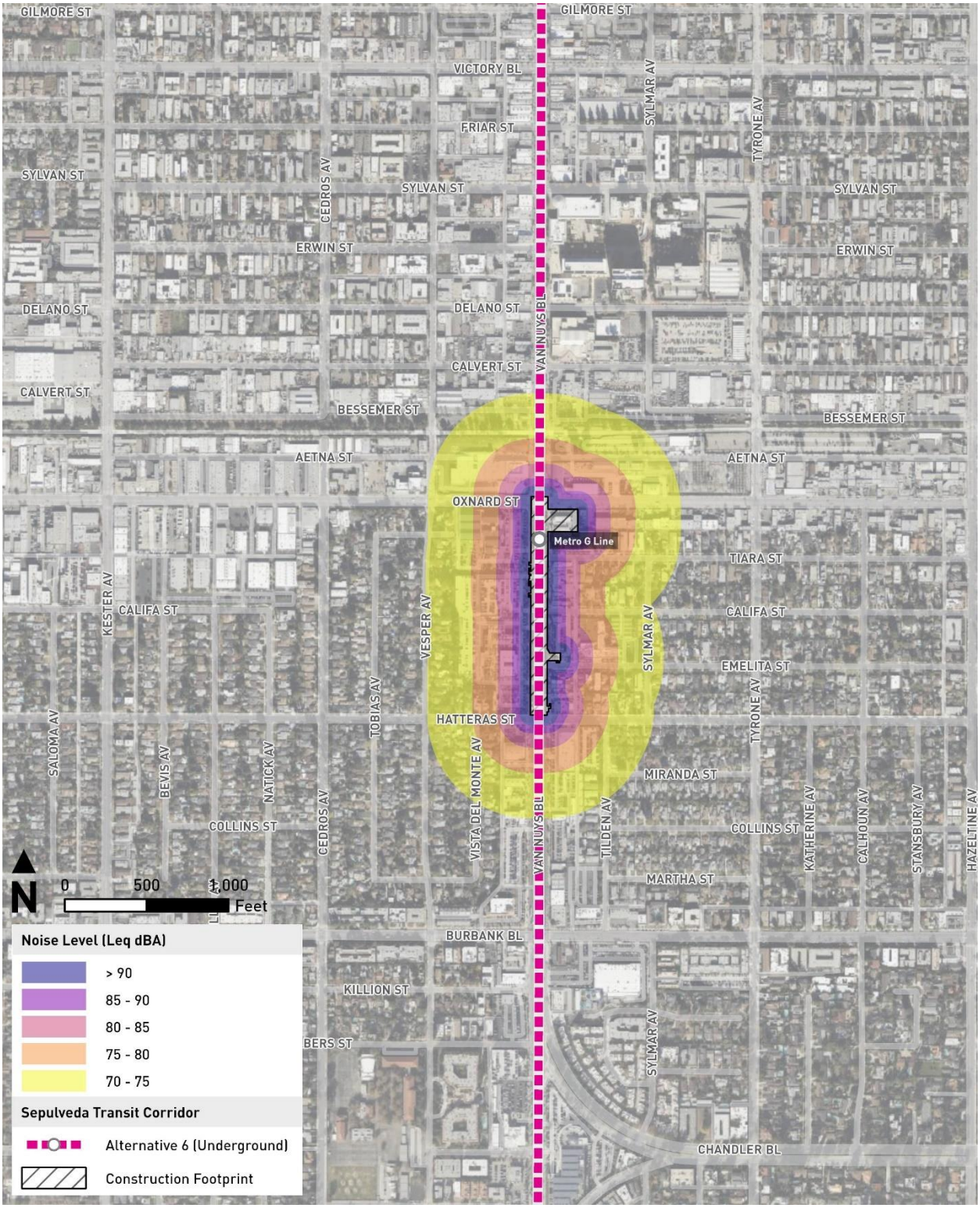
Source: HTA, 2024

Figure 3.11-45. Alternative 6: Construction Noise Contours – View 4



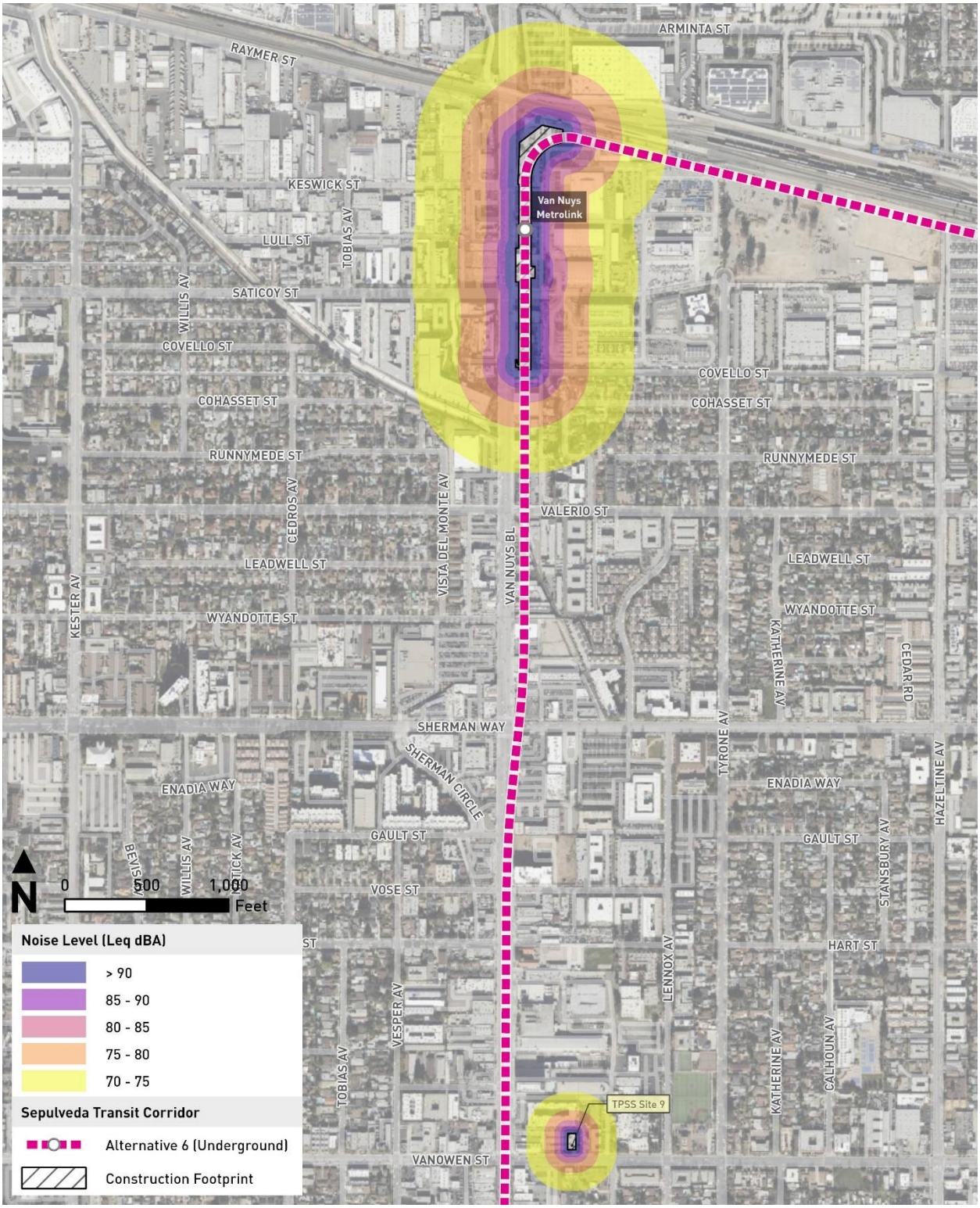
Source: HTA, 2024

Figure 3.11-46. Alternative 6: Construction Noise Contours – View 5



Source: HTA, 2024

Figure 3.11-47. Alternative 6: Construction Noise Contours – View 6



Source: HTA, 2024

Maintenance and Storage Facilities

Monorail Transit Maintenance and Storage Facility Base Design (Alternatives 1 and 3)

Impact Statement

Operational Impact: Less than Significant

Construction Impact: Significant and Unavoidable

Operational Impacts

The MSF Base Design for Alternatives 1 and 3 would be located on an 18-acre City of Los Angeles Department of Water and Power property east of the Van Nuys Metrolink Station. The MSF Base Design site would be designed to accommodate a fleet of 208 monorail vehicles. In the MSF Base Design, the MSF would be located on industrial property, abutting Orion Avenue, south of the LOSSAN rail corridor. Noise would be generated by train movements on lead tracks, wheel squeal on tight radius curves, track crossovers, the car wash facility, the maintenance shop, and TPSS equipment within the MSF yard.

Table 3.11-30 shows the predicted noise levels from the MSF Base Design layout at representative noise-sensitive receptors. The MSF Base Design would not result in noise impacts at noise-sensitive receptors. Therefore, the MSF Base Design would result in a less than significant impact related to operational noise.

Table 3.11-30. Alternatives 1 and 3: Predicted Maintenance and Storage Facility Base Design Noise

Receptor ID	Location	Land Use	FTA Category	Existing Sound Level (dBA, L_{dn})	Predicted MSF Noise Level (dBA, L_{dn})	Noise Impact Thresholds		Level of Impact
						Moderate	Severe	
MSF-1.5	14347 Cohasset Street	SFR	2	53	39	55-60	>60	**No Impact**
MSF-1.6	14347 Cohasset Street	SFR	2	53	42	55-60	>60	**No Impact**
MSF-1.7	14019 Cohasset Street	SFR	2	53	41	55-60	>60	**No Impact**

Source: HTA, 2024

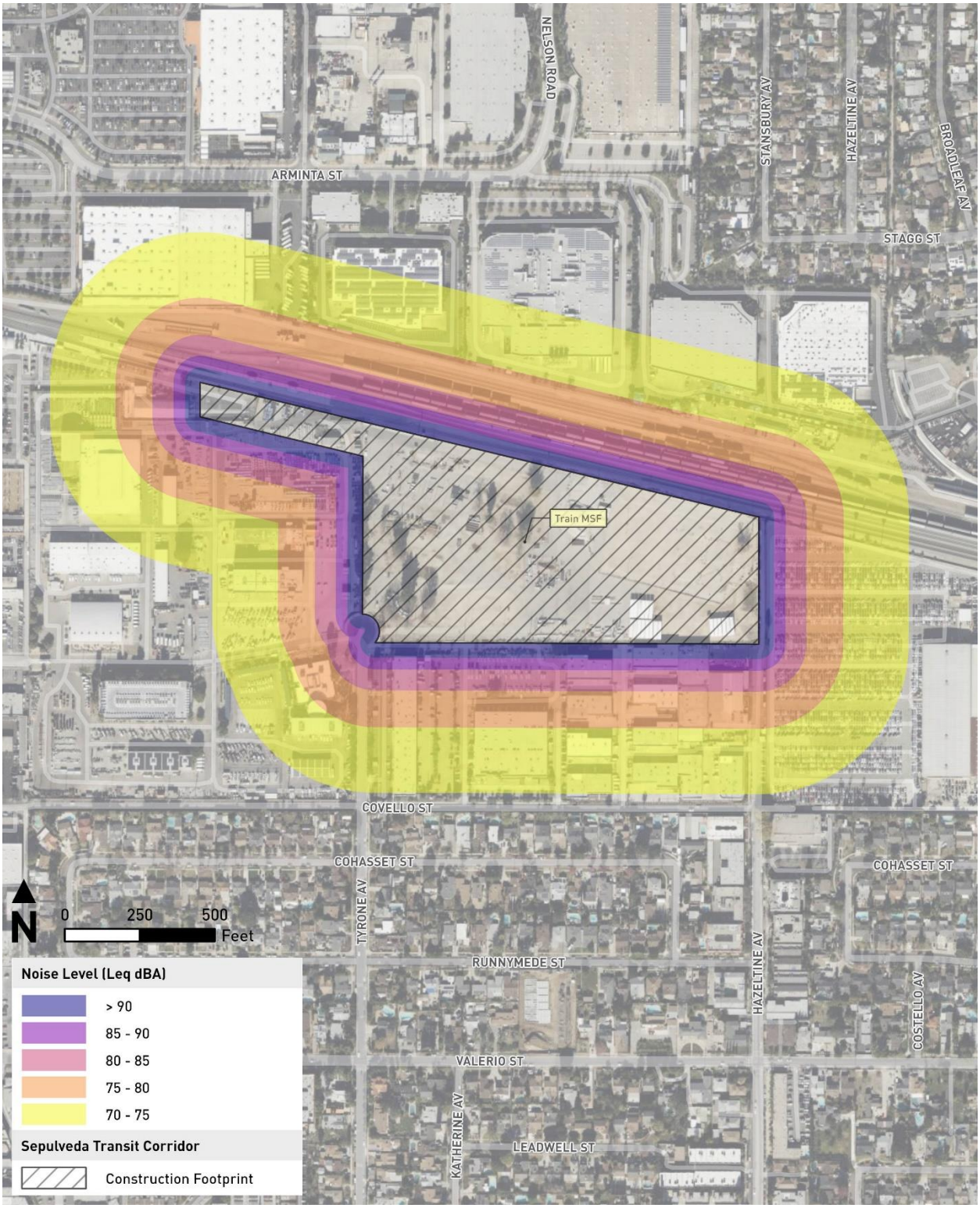
dBA = A-weighted decibel
L_{dn} = day-night noise level
SFR = single-family residential

Construction Impacts

Construction of the MSF Base Design would involve activities such as utility relocation, demolition, excavation, concrete work, utility installation, and paving. As shown in Table 3.11-15, MSF construction would result in phased noise levels of approximately 86 to 89 dBA, an 8-hour L_{eq} at 50 feet. Sensitive receptors adjacent to the MSF site would be potentially exposed to noise levels that would exceed the FTA 80-dBA daytime and 70-dBA nighttime 8-hour L_{eq} thresholds for residential land uses. Construction of the MSF would result in temporary and periodic increases in ambient noise levels due to construction activity that would exceed FTA's criteria, and, where applicable, the standards established by the local noise ordinances. The construction noise contours are depicted graphically on Figure 3.11-48. The 90 dBA L_{eq} contours cover areas within a distance of 50 feet from the nearest construction activity. The 70 dBA L_{eq} contours extend to a maximum distance of 500 feet. While MM NOI-1.2 under Alternative 1

and MM NOI-3.2 under Alternative 3 would be implemented, which would include noise-reducing measures, there may still be temporary or periodic increases in ambient noise levels that exceed FTA construction impact criteria. There are no additional feasible mitigation measures to reduce construction noise levels. Therefore, impacts related to construction noise would be significant and unavoidable.

Figure 3.11-48. Alternatives 1 and 3: Monorail Transit Maintenance and Storage Facility Base Design - Construction Noise Contours



Source: HTA, 2024

Monorail Transit Maintenance and Storage Facility Design Option 1 (Alternatives 1 and 3)

Impact Statement

Operational Impact: Less than Significant

Construction Impact: Significant and Unavoidable

Operational Impacts

MSF noise would be generated by train movements on lead tracks, wheel squeal on tight radius curves, track crossovers, the car wash facility, the maintenance shop, and TPSS equipment within the MSF yard. Table 3.11-31 shows the predicted noise levels from the MSF Design Option 1 layout. MSF Design Option 1 would not result in noise impacts at noise-sensitive receptors. Therefore, the MSF Design Option 1 would result in a less than significant impact related to operational noise.

Table 3.11-31. Alternatives 1 and 3: Predicted Maintenance and Storage Facility Design Option 1 Noise

Receptor ID	Location	Land Use	FTA Category	Existing Sound Level (dBA, L_{dn})	Predicted MSF Noise Level (dBA, L_{dn})	Noise Impact Thresholds		Level of Impact
						Moderate	Severe	
MSF-1.2	15524 Stagg Street	SFR	2	58	48	57-62	>62	**No Impact**
MSF-1.3	7826 Orion Avenue	SFR	2	58	48	57-62	>62	**No Impact**
MSF-1.4	7827 Zombar Avenue	SFR	2	58	41	57-62	>62	**No Impact**

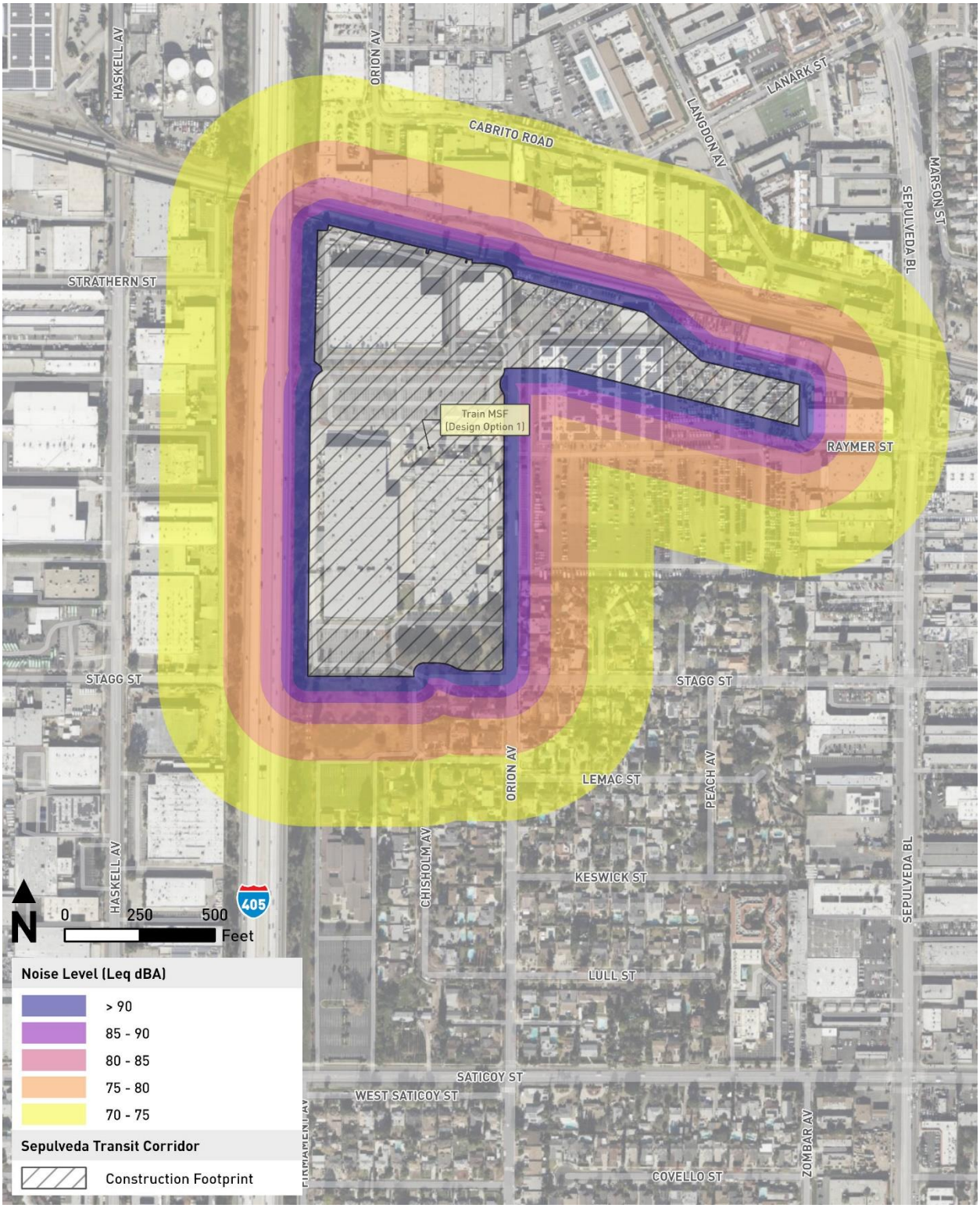
Source: HTA, 2024

dBA = A-weighted decibel
L_{dn} = day-night noise level
SFR = single-family residential

Construction Impacts

Construction of the MSF Design Option 1 would involve activities such as utility relocation, demolition, excavation, concrete work, utility installation, and paving. As shown in Table 3.11-15 and Table 3.11-19 MSF construction would result in phased noise levels of approximately 86 to 89 dBA, an 8-hour L_{eq} at 50 feet. Sensitive receptors adjacent to the MSF site would be potentially exposed to noise levels that would exceed the FTA 80-dBA daytime and 70-dBA nighttime 8-hour L_{eq} thresholds for residential land uses. Construction of the MSF would result in temporary and periodic increases in ambient noise levels due to construction activity that would exceed FTA's criteria, and, where applicable, the standards established by the local noise ordinances. The construction noise contours are depicted graphically on Figure 3.11-49. The 90 dBA L_{eq} contours cover areas within a distance of 50 feet from the nearest construction activity. The 70 dBA L_{eq} contours extends to a maximum distance of 500 feet. While MM NOI-1.2 under Alternative 1 and MM NOI-3.2 under Alternative 3 would be implemented, which would include noise-reducing measures, there may still be temporary or periodic increases in ambient noise levels that exceed FTA construction impact criteria. There are no additional feasible mitigation measures to reduce construction noise levels. Therefore, impacts related to construction noise would be significant and unavoidable.

Figure 3.11-49. Alternatives 1 and 3: Monorail Transit Maintenance and Storage Facility Design Option 1 - Construction Noise Contours



Source: HTA, 2024

Electric Bus Maintenance and Storage Facility (Alternative 1)

Impact Statement

Operational Impact: Less than Significant

Construction Impact: Significant and Unavoidable

Operational Impacts

The electric bus MSF is proposed to be located on an approximately 2-acre property located at the northwest corner of Pico Boulevard and Cotner Avenue in West Los Angeles. The MSF would be designed to accommodate 14 electric buses. Noise would be generated by electric buses entering and exiting the MSF, the car wash facility, and the maintenance shop within the MSF yard. Table 3.11-32 shows the predicted noise levels from the Electric Bus MSF layout at the nearest noise-sensitive receptor south of Pico Boulevard. The Electric Bus MSF would not result in noise impacts at noise-sensitive receptors. In addition, assuming 12 electric bus trips in and out of the MSF per hour, the noise levels from such trips would be 53 dBA L_{eq} per hour at 50 feet. The predicted noise level is far below the existing noise levels generated by traffic along Pico Boulevard or Sepulveda Boulevard at similar distances from the roadways. For example, the existing measured hourly L_{eq} at measurement Site 1 (south of the MSF) are between 62 to 71 dBA, which is well above the predicted noise from electric buses. Therefore, the Electric Bus MSF would result in a less than significant impact related to operational noise.

Table 3.11-32. Alternative 1: Predicted E-Bus Maintenance and Storage Facility Noise

Receptor ID	Location	Land Use	FTA Category	Existing Sound Level (dBA, L_{dn})	Predicted MSF Noise Level (dBA, L_{dn})	Noise Impact Thresholds		Level of Impact
						Moderate	Severe	
MSF-1.1	2435 S Sepulveda Boulevard	SFR	2	69	44	64-69	>69	**No Impact**

Source: HTA, 2024

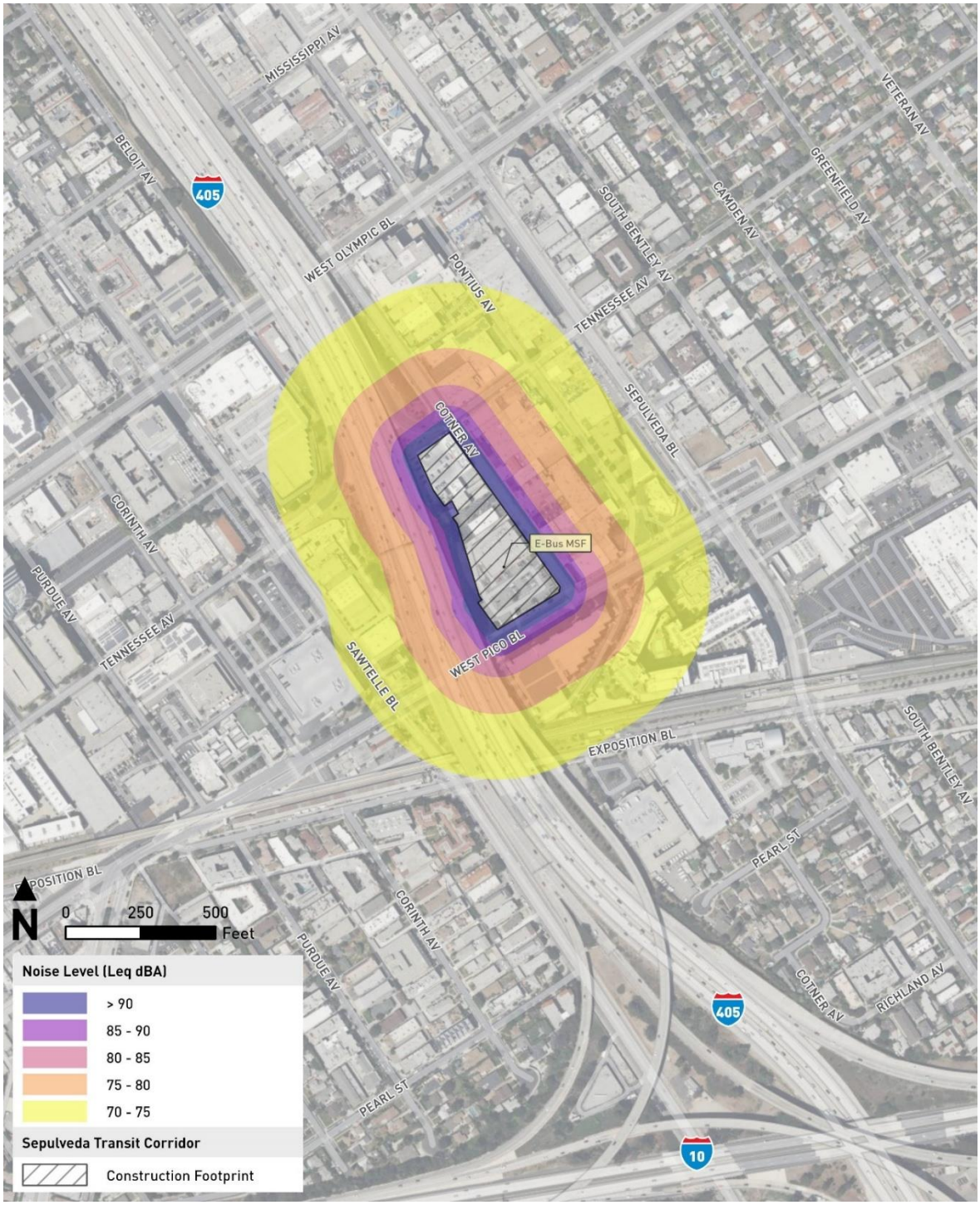
dBA = A-weighted decibel
L_{dn} = day-night noise level
SFR = single-family residential

Construction Impacts

Construction of the Electric Bus MSF would involve activities such as utility relocation, demolition, excavation, concrete work, utility installation, and paving. As shown in Table 3.11-15 MSF construction would result in phased noise levels of approximately 86 to 87 dBA, an 8-hour L_{eq} at 50 feet. Sensitive receptors adjacent to the MSF site would be potentially exposed to noise levels that would exceed the FTA 80-dBA daytime and 70-dBA nighttime 8-hour L_{eq} thresholds for residential land uses. Construction of the MSF would result in temporary and periodic increases in ambient noise levels due to construction activity that would exceed FTA's criteria, and, where applicable, the standards established by the local noise ordinances. The construction noise contours are depicted graphically on Figure 3.11-50. The 90 dBA L_{eq} contours cover areas within a distance of 50 feet from the nearest construction activity. The 70 dBA L_{eq} contours extend to a maximum distance of 500 feet. While MM NOI-1.2 would be implemented, which would include noise-reducing measures, there may still be temporary or periodic increases in ambient noise levels that exceed FTA construction impact criteria. There are no additional feasible

mitigation measures to reduce construction noise levels. Therefore, impacts related to construction noise would be significant and unavoidable.

Figure 3.11-50. Alternative 1: Electric Bus Maintenance and Storage Facility - Construction Noise Contours



Source: HTA, 2024

Heavy Rail Transit Maintenance and Storage Facility (Alternatives 4 and 5)

Impact Statement

Operational Impact: Less than Significant

Construction Impact: Significant and Unavoidable

Operational Impacts

The MSF for Alternatives 4 and 5 would be located east of the Van Nuys Metrolink Station and would encompass approximately 46 acres. The MSF would be designed to accommodate 136 rail cars. The site would be bounded by single-family residences to the south, the LOSSAN rail corridor to the north, Woodman Avenue on the east, and Hazeltine Avenue and industrial manufacturing enterprises to the west. Noise sources included in the MSF noise analysis are train movements on lead tracks, including potential wheel squeal noise on tight curve tracks and increased noise at yard switches located near residential land uses, washing and blowdown activities at the car wash, maintenance shop operations, and TPSS units within the MSF yard. Based on the analysis results, the primary sources of noise from the MSF would be train movements along the lead tracks, on the tight radius curve (causing wheel squeal), and over track crossovers. Noise from the maintenance shop, car wash facilities, and TPSS units within the MSF would be secondary due to their greater distances from the residential receptors south of the yard and orientation of the car wash and maintenance shop. Table 3.11-33 shows the predicted noise levels at representative noise-sensitive receptors from the proposed MSF layout. The proposed MSF would not result in noise levels exceeding the noise impact thresholds at the backyards of adjoining single-family residential properties located along Cohasset Street and immediately south of the proposed MSF. Therefore, impacts related to MSF noise would be less than significant.

Table 3.11-33. Alternatives 4 and 5: Predicted Maintenance and Storage Facility Noise

Receptor ID	Location	Land Use	FTA Category	Existing Sound Level (dBA, L_{dn})	Predicted MSF Noise Level (dBA, L_{dn})	Noise Impact Thresholds		Level of Impact
						Moderate	Severe	
MSF-4.1/MSF-5.1	14001 Cohasset Street, Van Nuys	SFR	2	53	48	55-60	>60	No Impact
MSF-4.2/MSF-5.2	13837 Cohasset Street, Van Nuys	SFR	2	53	51	55-60	>60	No Impact
MSF-4.3/MSF-5.3	13741 Cohasset Street, Van Nuys	SFR	2	53	41	55-60	>60	No Impact

Source: HTA, 2024

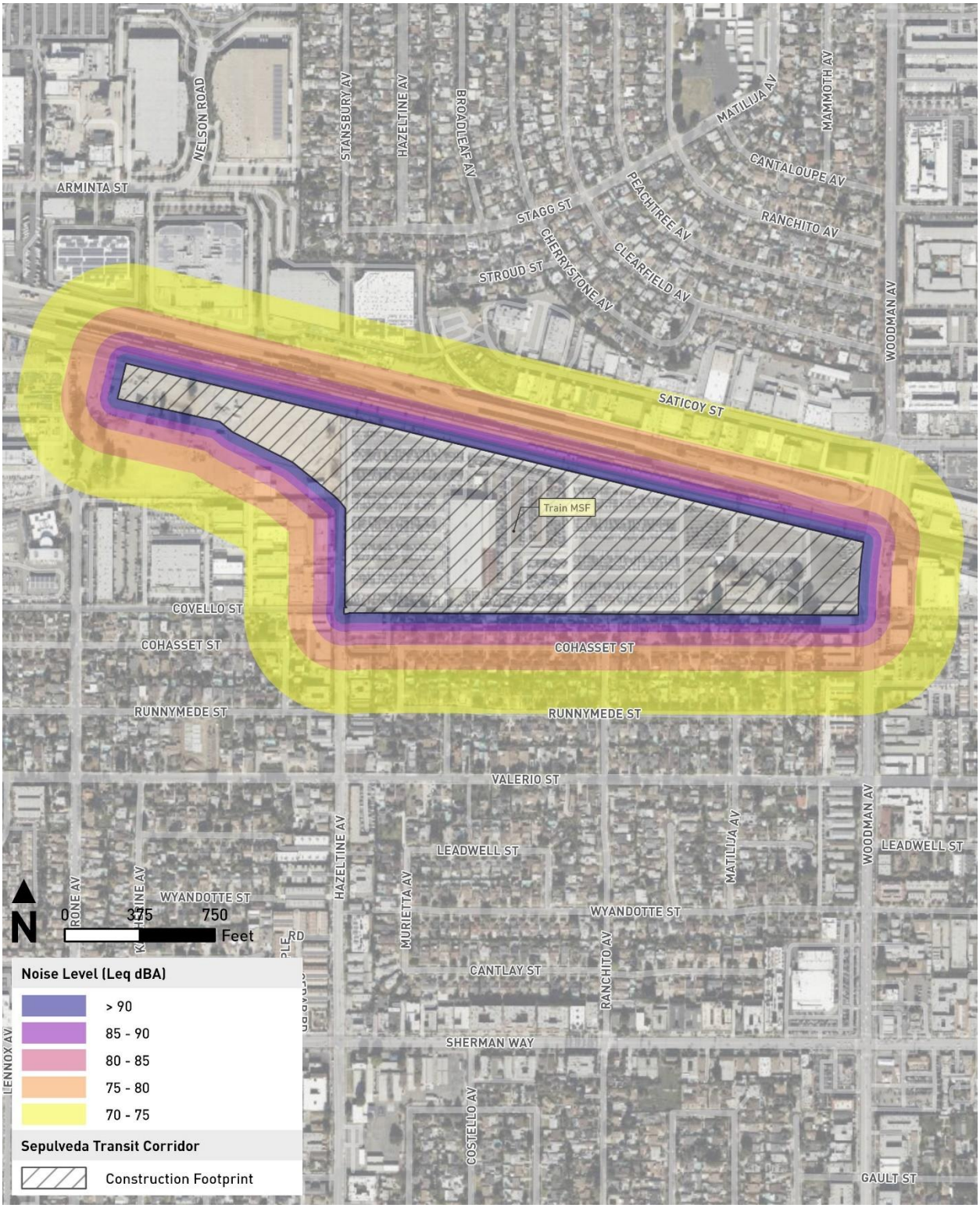
dBA = A-weighted decibel
L_{dn} = day-night noise level
SFR = single-family residential

Construction Impacts

Construction of the MSF would involve activities such as utility relocation, demolition, excavation, concrete work, utility installation, and paving. As shown in Table 3.11-24, MSF construction would result in phased noise levels of approximately 77 to 89 dBA, 8-hour L_{eq} at 50 feet. Sensitive receptors adjacent to the MSF site would be potentially exposed to noise levels that would exceed the FTA 80-dBA daytime and 70-dBA nighttime 8-hour L_{eq} thresholds for residential land uses. Construction of the MSF would result in temporary and periodic increases in ambient noise levels due to construction activity that

would exceed FTA's criteria, and, where applicable, the standards established by the local noise ordinances. The construction noise contours are depicted graphically on Figure 3.11-51. The 90 dBA L_{eq} contours cover areas within a distance of 50 feet from the nearest construction activity. The 70 dBA L_{eq} contours extend to a maximum distance of 500 feet. While MM NOI-4.2 under Alternative 4 and MM NOI-5.1 under Alternative 5 would be implemented, which would include noise-reducing measures, there may still be temporary or periodic increases in ambient noise levels that exceed FTA construction impact criteria. There are no additional feasible mitigation measures to reduce construction noise levels. Therefore, impacts related to construction noise would be significant and unavoidable.

Figure 3.11-51. Alternatives 4 and 5: Heavy Rail Transit Maintenance and Storage Facility - Construction Noise Contours



Source: HTA, 2024

Heavy Rail Transit Maintenance and Storage Facility (Alternative 6)

Impact Statement

Operational Impact: Less than Significant

Construction Impact: Significant and Unavoidable

Operational Impacts

The MSF for Alternative 6 would be located east of the proposed Van Nuys Metrolink Station and would encompass approximately 41 acres. The MSF would be designed to accommodate 94 vehicles. The site would be bounded by single-family residences to the south, the LOSSAN rail corridor ROW to the north, Woodman Avenue on the east, and Hazeltine Avenue and industrial manufacturing enterprises to the west. Noise sources included in the MSF noise analysis are train movements on lead tracks, including potential wheel squeal noise on tight curve tracks and increased noise at yard switches located near the residential land uses, washing and blowdown activities at the car wash, maintenance shop operations, and TPSS units within the MSF yard. The primary sources of noise from the MSF would be from train movements along the lead tracks and on the tight radius curve and moving over tracks crossovers. Noise from the maintenance shop, car wash facilities, and TPSS units within the MSF would be secondary due to a combination of larger distances to and orientation of such facilities. Table 3.11-34 shows the predicted noise levels from the proposed Alternative 6 MSF layout at representative noise-sensitive receptors in the vicinity of the yard. The proposed MSF would not result in noise levels that would exceed the noise impact thresholds at the backyards of adjoining single-family residential properties located along Cohasset Street and immediately south of the proposed MSF. Therefore, impacts related to MSF noise would be less than significant.

Table 3.11-34. Alternative 6: Predicted Maintenance and Storage Facility Noise

Receptor ID	Location	Land Use	FTA Category	Existing Sound Level (dBA, L_{dn})	Predicted MSF Noise Level (dBA, L_{dn})	Noise Impact Thresholds		Level of Impact
						Moderate	Severe	
MSF-6.1	14001 Cohasset Street, Van Nuys	SFR	2	53	46	55-60	>60	No Impact
MSF-6.2	13827 Cohasset Street, Van Nuys	SFR	2	53	52	55-60	>60	No Impact
MSF-6.3	13741 Cohasset Street, Van Nuys	SFR	2	53	41	55-60	>60	No Impact

Source: HTA, 2024

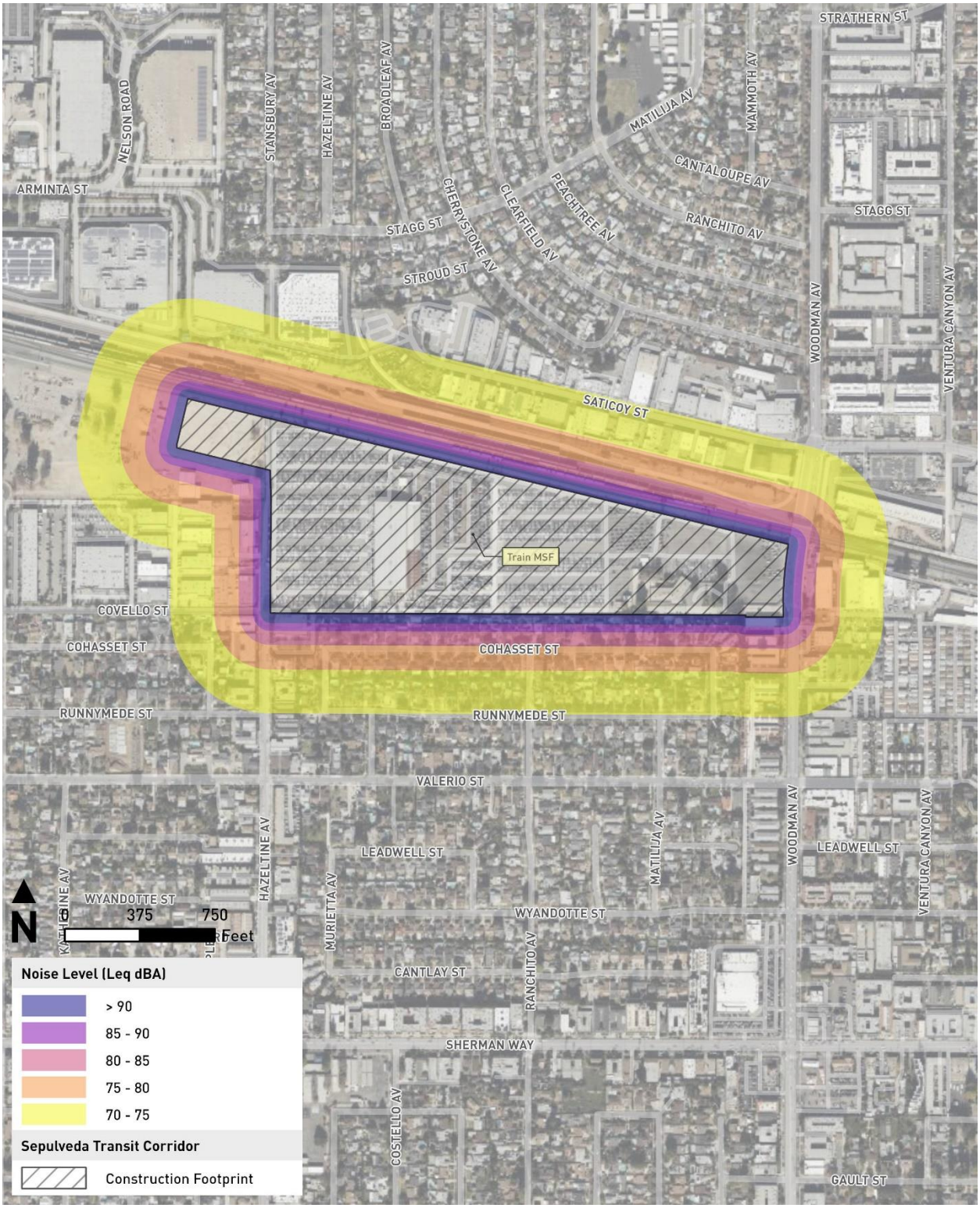
dBA = A-weighted decibel
L_{dn} = day-night noise level
SFR = single-family residential

Construction Impacts

Construction of the MSF would involve activities such as utility relocation, demolition, excavation, concrete work, utility installation, and paving. As shown in Table 3.11-29, MSF construction would result in phased noise levels of approximately 86 to 90 dBA, 8-hour L_{eq} at 50 feet. Sensitive receptors adjacent to the MSF site would be potentially exposed to noise levels that would exceed the FTA 80-dBA daytime and 70-dBA nighttime 8-hour L_{eq} thresholds for residential land uses. Construction of the MSF would result in temporary and periodic increases in ambient noise levels due to construction activity that

would exceed FTA's criteria, and, where applicable, the standards established by the local noise ordinances. The construction noise contours are depicted graphically on Figure 3.11-52. The 90 dBA L_{eq} contours cover areas within a distance of 50 feet from the nearest construction activity. The 70 dBA L_{eq} contours extend to a maximum distance of 500 feet. While MM NOI-6.2 would be implemented, which would include noise-reducing measures, there may still be temporary or periodic increases in ambient noise levels that exceed FTA construction impact criteria. There are no additional feasible mitigation measures to reduce construction noise levels. Therefore, impacts related to construction noise would be significant and unavoidable.

Figure 3.11-52. Alternative 6: Heavy Rail Transit Maintenance and Storage Facility - Construction Noise Contours



Source: HTA, 2024

3.11.5.2 Impact NOI-2: Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Project Alternatives

No Project Alternative

Impact Statement

Operational Impact: Less than Significant

Construction Impact: Less than Significant

Operational Impacts

Under the No Project Alternative, the proposed Project would not be constructed. Metro Line 761 is an existing bus route that would be rerouted that is an existing source of GBV. Rubber tires and suspension systems of buses provide vibration isolation which makes it unusual for buses to cause GBV or GBN outside the roadway right-of-way. It is not anticipated that rerouting Metro Line 761 would have any effect on vibration level experienced by nearby land uses. No project-related operational vibration impacts would occur under the conditions previously described. Therefore, no impact would occur related to operational vibration.

Construction Impacts

Under the No Project Alternative, the proposed Project would not be constructed. Construction activities associated with rerouting Metro Line 761 would be limited to installation of bus stop infrastructure such as signs and street furniture. These activities would not require substantial heavy equipment that would generate excessive vibration. No project-related construction vibration impacts would occur under the conditions previously described. Therefore, the No Project Alternative would result in a less than significant impact related to construction vibration.

Alternative 1

Impact Statement

Operational Impact: Less than Significant

Construction Impact: Significant and Unavoidable

Operational Impacts

Rail Operations Vibration

Train operations would potentially generate vibration and GBN at sensitive receptors. GBV and GBN levels were evaluated at a total of 52 receptor locations representing all the sensitive land uses along the Alternative 1 alignment within the vibration screening distance. Predicted GBV levels from rail operations are between 19 VdB to 50 VdB. The predicted GBV levels from Alternative 1 vehicle passbys are below the FTA criteria of 72 VdB for Category 2 land uses and 75 VdB for Category 3 land uses. GBN levels are predicted to be up to 30 dBA, which is also below the GBN criterion of 35 dBA for residential uses.

Attachment 5 of the *Sepulveda Transit Corridor Project Noise and Vibration Technical Report* ([Metro, 2025) shows the details of the operational vibration impact assessment at the representative Category 2 and Category 3 receptors along the Alternative 1 alignment. Based on the results of the vibration analysis, there would be no GBV nor GBN impacts at sensitive receptors along the alignment. Therefore,

Alternative 1 would result in a less than significant impact related to GBV and GBN generated by rail operations.

Electric Bus Operations Vibration

The electric bus service connecting the Wilshire Boulevard/Metro D Line Station, Westwood Village, and UCLA Gateway Plaza would operate in existing mixed-flow travel lanes on Wilshire Boulevard and Westwood Boulevard. Additionally, there would be occasional electric bus movements between the electric bus MSF and Wilshire Boulevard/Metro D Line Station via Pico Boulevard or Sepulveda Boulevard. Electric bus operations along these routes would generate GBV and GBN at vibration-sensitive land uses located along the roadways. The GBV from electric bus operations would be 50 to 54 VdB at typical distances of 35 to 100 feet from the outside lanes of Wilshire Boulevard to the nearest vibration-sensitive buildings along Wilshire Boulevard. Calculated GBN at the nearest buildings along Wilshire Boulevard would reach levels of up to 19 dBA, which would not exceed the FTA GBN noise impact criteria for Category 3 noise-sensitive receptors along Wilshire Boulevard. Along the Westwood Boulevard segment, electric bus operations would generate GBV of up to 54 VdB at setbacks of the nearest educational and medical buildings. GBN at the nearest Category 1 and Category 3 buildings along Wilshire Boulevard would reach levels of up to 19 dBA.

Electric bus movements along Sepulveda Boulevard and Pico Boulevard, between the Wilshire Boulevard/Metro D Line Station and the electric bus MSF, would result in GBV of 53 to 56 VdB at the nearest Category 1 and Category 3 buildings. GBN due to electric bus movements would reach 21 dBA at the nearest buildings along Sepulveda Boulevard and Pico Boulevard. All of the anticipated GBV and GBN levels associated with electric bus operations would be below the applicable FTA GBV and GBN criteria. Therefore, Alternative 1 would result in a less than significant impact related GBV and GBN generated by electric bus operations.

Construction Impacts

Construction Vibration Impacts on Sensitive Receptors

The primary concern related to vibration during construction is the potential to damage structures. Construction activities, such as pile driving, use of drill rigs, pavement breaking, and the use of tracked vehicles (e.g., bulldozers) and hoe rams, could result in perceptible levels of GBV at sensitive buildings located in close proximity to construction sites. These activities would typically be limited in duration and their vibration levels are likely to be well below thresholds for minor cosmetic building damage.

Project construction would include a limited number of activities expected to generate vibration that approaches the lowest building damage limit of 0.12 in/sec PPV (refer to Table 3.11-7). Table 3.11-35 shows the distances at which the 0.12 in/sec PPV, 0.2 in/sec PPV, and 0.3 in/sec PPV thresholds would not be exceeded. For example, use of a drilling rig, hoe ram, or large bulldozer would be safe at distances greater than 22 feet from Category IV buildings. A vibratory roller would be safe at distances greater than 22 feet from Category IV buildings and typical impact pile driver operation would be safe at distances of 79 feet or greater. Typical building construction in an urban setting consists of buildings that are Category II engineered concrete and masonry that have a 0.3 in/sec PPV threshold or Category III non-engineered timber and masonry buildings that have a 0.2 in/sec PPV threshold. Typical construction equipment, such as a large bulldozer, would not exceed the 0.2 in/sec PPV building damage criterion at distances of 18 feet or greater and would not exceed the 0.3 in/sec PPV building damage criterion at distances of 13 feet or greater. A vibratory roller would not exceed the 0.2 in/sec PPV building damage criterion at distances of 32 feet or greater and would not exceed the 0.3 in/sec PPV building damage

criterion at distances of 23 feet or greater. An impact pile driver would not exceed the 0.2 in/sec PPV building damage criterion at distances of 67 feet or greater and would not exceed the 0.3 in/sec PPV building damage criterion at distances of 47 feet or greater.

Table 3.11-35. Construction Equipment Vibration Damage Potential by Distance

Equipment	Reference Vibration Level PPV (inches/second)	Distance to not Exceed 0.12 PPV Damage (feet)	Distance to not Exceed 0.2 PPV Damage (feet)	Distance to not Exceed 0.3 PPV Damage (feet)
Drill (CIDH)	0.089	22	18	13
Impact Pile Driver	0.644 (typical vibration level)	79	67	47
	1.518 (upper range vibration level)	140	117	84
Large Bulldozer	0.089	22	18	13
Vibratory Pile Driver	0.17 (typical vibration level)	33	28	20
	0.734 (upper range vibration level)	87	73	52
Vibratory Roller	0.210	38	32	23

Source: HTA, 2024

PPV = peak particle velocity
CIDH = cast-in-drilled-hole

Vibration annoyance is another concern during construction. In rare instances, when vibration-intensive construction activities occur close to sensitive structures (within 25 feet), such as residential buildings or special use buildings like laboratories or recording studios, vibration could exceed the FTA vibration annoyance criteria shown in Table 3.11-5 and Table 3.11-6.

Construction occurring in the area south of the Santa Monica Mountains would be in the urban environment and would have higher potential for construction equipment to operate within 25 feet or less of adjacent buildings. In particular, between Exposition Boulevard and Wilshire Boulevard, construction equipment could operate in proximity to buildings that would potentially result in building vibration damage or vibration annoyance. Construction activity would typically occur at distances greater than 50 feet from sensitive buildings between Wilshire Boulevard, through the Santa Monica Mountains, and Green Leaf Street in the Valley, because the alignment would be located in either the I-405 freeway ROW or in areas immediately adjacent to the freeway, where there are limited to no structures. North of Greenleaf Street, the alignment would travel along the east side of I-405 in a constrained area with buildings adjacent to the construction footprint. The FTA building damage criteria and vibration annoyance criteria could potentially be exceeded at buildings in these areas.

While MM VIB-1.1 would be implemented, which would include vibration-reducing measures, there may still be temporary or periodic increases in vibration levels that exceed FTA construction vibration impact criteria. There are no additional feasible mitigation measures to reduce construction vibration levels. Therefore, impacts related to construction vibration would be significant and unavoidable.

Construction Vibration Impacts on Historic Resources

Construction under Alternative 1 would have the potential to damage historic buildings in close proximity to vibration-intensive construction activities. Using the reference levels in the FTA *Transit Noise and Vibration Impact Assessment Manual* (FTA, 2018), vibration levels from project construction activities were estimated at historic buildings or structures eligible for the National Register of Historic

Places along the Alternative 1 alignment. Such buildings are generally classified as extremely susceptible to vibration damage (Building Type IV in Table 3.11-7).

Findings of the construction vibration assessment at historic structures are as follows:

- The historic building located at 4511 Sepulveda Boulevard is very close to the Alternative 1 alignment. Most vibration-intensive construction activities at this location would result in levels exceeding the damage criterion of 0.12 in/sec PPV. Special consideration should be made for this building in MM VIB-1.1 (Vibration Control Plan) outlined in Section 3.11.6.
- Pile driving at locations along the alignment in the vicinity of the following historic properties would potentially result in GBV levels exceeding the damage criterion of 0.12 in/sec PPV. Therefore, these locations must be addressed in the Vibration Control Plan if pile driving is to occur within 150 feet of the buildings:
  - Photo Electronics Corp. Building, 1944 Cotner Avenue, Los Angeles
  - Dual Ultimate Pharmacy, 2020 Cotner Avenue, Los Angeles
  - Building at 2114 Cotner Avenue, Los Angeles
  - Rodeo Realty, 15300 Ventura Boulevard, Sherman Oaks
  - Historic building located at 14746 Raymer Street, Van Nuys

Implementation of MM VIB-1.1 would reduce the potential for permanent damage to occur at historic resources. Vibration levels would be monitored at historic resources to determine if the vibration damage criterion of 0.12 in/sec PPV would be exceeded. A pre-construction and post construction survey would be prepared, and any damage noted and restored per the requirements of Secretary of the Interior's (SOI's) Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings. Therefore, impacts related to construction vibration at historic resources would be less than significant with mitigation.

Alternative 3

Impact Statement

Operational Impact: Less than Significant

Construction Impact: Significant and Unavoidable

Operational Impacts

Rail Operations Vibration

Train operations would potentially generate vibration and GBN at sensitive receptors. GBV and GBN levels were evaluated at a total of 102 receptor locations representing all the sensitive land uses along the Alternative 3 aerial and underground alignments. Predicted GBV levels from rail operations at Category 1 receptors above the underground segment of Alternative 3 in the UCLA area are between 39 VdB to 49 VdB, below the FTA criterion of 65 VdB. The highest predicted GBN levels at these receptors are up to 19 dBA, which is below the criterion of 25 dBA.

The predicted GBV levels from Alternative 3 vehicle passbys at Category 2 land uses, including residential and lodging facilities, are between 22 VdB to 44 VdB along the aerial segments. GBN levels at such locations are predicted to be up to 30 dBA, which is also below the GBN criterion of 35 dBA for residential uses. At residential structures above the Alternative 3 underground segment, predicted GBV and GBN levels are up to 51 VdB and 31 dBA, respectively. These levels are also below the applicable FTA criteria.

At the nearest Category 3 receptors, including educational, cultural, and religious facilities, along the Alternative 3 alignment, the predicted GBV levels are between 36 VdB to 48 VdB. Such levels are below the FTA GBV criterion of 75 VdB. The highest GBN levels from Alternative 3 rail operations at Category 3 land uses are predicted to be 28 dBA, which is well below the criterion of 40 dBA.

Attachment 8 of the *Sepulveda Transit Corridor Project Noise and Vibration Technical Report* ([Metro, 2025) shows the details of the operational vibration impact assessment at the representative Category 1, 2, and 3 receptors along the Alternative 3 alignment. Based on the results of the vibration analysis, there would be no GBV impacts nor GBN impacts at sensitive receptors along the alignment. Therefore, Alternative 3 would result in a less than significant impact related to rail operations GBV and GBN.

Construction Impacts

Construction Vibration Impacts on Sensitive Receptors

The primary concern related to vibration during construction is the potential to damage structures. Construction activities, such as pile driving, use of drill rigs, pavement breaking, and the use of tracked vehicles (e.g., bulldozers) and hoe rams, could result in perceptible levels of GBV at sensitive buildings located in close proximity to construction sites. These activities would typically be limited in duration and their vibration levels are likely to be well below thresholds for minor cosmetic building damage. Alternative 3 would also include the use of a TBM to construct the underground alignment.

Project construction would include a limited number of activities expected to generate vibration that approaches the lowest building damage limit of 0.12 in/sec PPV (refer to Table 3.11-7). Table 3.11-35 shows the distances at which the 0.12 in/sec PPV, 0.2 in/sec PPV, and 0.3 in/sec PPV thresholds would not be exceeded. For example, use of a drilling rig, hoe ram, or large bulldozer would be safe at distances greater than 22 feet from Category IV buildings. A vibratory roller would be safe at distances greater than 22 feet from Category IV buildings and typical impact pile driver operation would be safe at distances of 79 feet or greater. Typical building construction in an urban setting consists of buildings that are Category II engineered concrete and masonry that have a 0.3 in/sec PPV threshold or Category III non-engineered timber and masonry buildings that have a 0.2 in/sec PPV threshold. Typical construction equipment, such as a large bulldozer, would not exceed the 0.2 in/sec PPV building damage criterion at distances of 18 feet or greater and would not exceed the 0.3 in/sec PPV building damage criterion at distances of 13 feet or greater. A vibratory roller would not exceed the 0.2 in/sec PPV building damage criterion at distances of 32 feet or greater and would not exceed the 0.3 in/sec PPV building damage criterion at distances of 23 feet or greater. An impact pile driver would not exceed the 0.2 in/sec PPV building damage criterion at distances of 67 feet or greater and would not exceed the 0.3 in/sec PPV building damage criterion at distances of 47 feet or greater.

Vibration annoyance is another concern during construction. In rare instances, when vibration-intensive construction activities occur close to sensitive structures (within 25 feet), such as residential buildings or special use buildings like laboratories or recording studios, vibration could exceed the FTA vibration annoyance criteria shown in Table 3.11-5 and Table 3.11-6.

Along the underground alignment of Alternative 3, the TBM would be the main source of GBVs. However, the TBM is slow moving and causes very little vibration and related GBN to the surrounding area when operating at full tunnel depths. The Alternative 3 underground tunnel would be at depths of less than 20 feet to nearly 400 feet from the aboveground buildings along the tunnel alignment. In a few multi-family residential areas south of Wilshire Boulevard and for residential buildings closest to the north tunnel portal, GBV from the TBM may be felt distinctly for a short period (about two days) while

the machine passes under the receptor locations. Throughout the rest of the tunnel alignment, GBV from the TBM would be either not perceptible or just barely perceptible to some building occupants. Expected TBM vibration levels, however, would be well below the strictest building damage threshold of 0.12 in/sec. Construction of the proposed Wilshire/Metro D Line station along the underground alignment would likely be cut-and-cover construction, which could result in aboveground vibration. However, buildings would typically be located more than 50 feet away from station construction and appear to be constructed of engineered concrete and masonry (0.3 in/sec threshold), resulting in limited potential for excessive vibration damage and annoyance. The alignment would surface in the Santa Monica Mountains near the Getty Center parking area. Construction activity would typically occur at distances greater than 50 feet from sensitive buildings in the Santa Monica Mountains between the Getty Center and Green Leaf Street in the Valley because the alignment would be located in either the I-405 ROW or areas immediately adjacent to I-405, where there are limited to no structures. The potential for vibration damage and annoyance would be limited in this area. North of Greenleaf Street, the alignment would travel along the east side of I-405 in a constrained area with buildings adjacent to the construction footprint. The FTA building damage criteria and vibration annoyance criteria could potentially be exceeded at buildings in these areas.

While MM VIB-3.1 would be implemented, which would include vibration-reducing measures, there may still be temporary or periodic increases in vibration levels that exceed FTA construction vibration impact criteria. There are no additional feasible mitigation measures to reduce construction vibration levels. Therefore, impacts related to construction vibration would be significant and unavoidable.

Construction Vibration Impacts on Historic Resources

Construction under Alternative 3 would have the potential to damage historic buildings in close proximity to vibration-intensive construction activities. Using the reference levels in the FTA *Transit Noise and Vibration Impact Assessment Manual* (FTA, 2018), vibration levels from project construction activities were estimated at historic buildings or structures eligible for the National Register of Historic Places along the Alternative 3 alignment. Such buildings are generally classified as extremely susceptible to vibration damage (Building Type IV in Table 3.11-7).

Findings of the construction vibration assessment at historic structures are as follows:

- Historic building located at 4511 Sepulveda Boulevard is very close to the Alternative 3 alignment. Most vibration-intensive construction activities at this location would result in levels exceeding the damage criterion of 0.12 in/sec PPV. Special consideration should be made for this building in MM VIB-3.1 (Vibration Control Plan) outlined in Section 3.11.6.
- Pile driving at locations along the alignment in the vicinity of the following historic properties would potentially result in GBV levels exceeding the damage criterion of 0.12 in/sec PPV. Therefore, these locations must be addressed in the Vibration Control Plan if pile driving is to occur within 150 feet of the buildings:
  - Photo Electronics Corp. Building, 1944 Cotner Avenue, Los Angeles
  - Dual Ultimate Pharmacy, 2020 Cotner Avenue, Los Angeles
  - Building at 2114 Cotner Avenue, Los Angeles
  - UCLA Ackerman Hall, 308 Westwood Plaza, Los Angeles
  - Rodeo Realty, 15300 Ventura Boulevard, Los Angeles
  - Historic building located at 14746 Raymer Street, Van Nuys

Implementation of MM VIB-3.1 would reduce the potential for permanent damage to occur at historic resources. Vibration levels would be monitored at historic resources to determine if the vibration damage criterion of 0.12 in/sec PPV would be exceeded. A pre-construction and post construction survey would be prepared, and any damage noted and restored per the requirements of SOI's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings. Therefore, impacts related to construction vibration at historic resources would be less than significant with mitigation.

Alternative 4

Impact Statement

Operational Impact: Less than Significant with Mitigation

Construction Impact: Significant and Unavoidable

Operational Impacts

Rail Operations Vibration

Train operations would potentially generate vibration and GBN at sensitive receptors. Based on the results of the vibration analysis, there would be GBV and/or GBN impacts at sensitive receptors along the alignment. Table 3.11-36 summarizes the results of the GBV and noise impact analysis by land use category. Attachment 11 of the *Sepulveda Transit Corridor Project Noise and Vibration Technical Report* ([Metro, 2025) shows the details of operations vibration impact assessment at the representative Category 1, 2, and 3 receptors along the Alternative 4 alignment. Alternative 4 would result in impacts at 133 Category 2 receptors and 15 Category 1 receptors. No impacts would occur at Category 3 receptors. Graphical representations of impacted receptors are included in the *Sepulveda Transit Corridor Project Noise and Vibration Technical Report* ([Metro, 2025).

Table 3.11-36. Alternative 4: Summary of Groundborne Vibration and Noise Impact Assessment

Impact Area	Description of Impacted Area	Calculated GBV (VdB)	Calculated GBN (dBA)	Number of Impacts by FTA Category	
				Category 1	Category 2
1	Pico Boulevard to Tennessee Avenue	72-81	37-46	1	14
2	Tennessee Avenue to Olympic Boulevard	70-81	35-46	0	14
3	Olympic Boulevard to Mississippi Avenue	71-73	36-38	0	15
4	Mississippi Avenue to Santa Monica Station	71-72	36-38	1	32
5	South of Ashton Avenue and Midvale Avenue	72-74	37-39	0	4
6	Wilshire/Westwood Station to Le Conte Avenue	61-62	26-27	4	0
7	Le Conte Avenue to UCLA Gateway Plaza Station	67-73	32-38	9	0
8a/8b	Sunset Boulevard to Stone Canyon Road	68-72	35-37	0	24
9a/9b	Mulholland Drive to North Tunnel Portal	70-72	35-38	0	30
Total Number of Impacts				**15**	**33**

Source: HTA, 2024

dBA = A-weighted decibel
GBN = groundborne noise
GBV = groundborne vibration
VdB = vibration decibel

The impacted receptors shown in Table 3.11-36 include various FTA category land uses, described as follows:

- **Impact Areas 1, 2, 3, and 4**: Seventy-five single- and multi-family Category 2 residential buildings along South Bentley Avenue between Pico Boulevard and the Santa Monica Station would be exposed to GBV or GBN levels that exceed the FTA Category 2 criteria. Two Category 1 animal hospitals on Sepulveda Boulevard along this segment of the alignment would be exposed to GBV or GBN levels that exceed the FTA Category 1 criteria.
- **Impact Area 5**: Four multi-family Category 2 residential buildings along the south side of Ashton Avenue at Midvale Avenue would be exposed to GBV and GBN levels that would exceed the FTA Category 2 criteria. These buildings are located in proximity to a double crossover, which increases the vibration level.
- **Impact Area 6**: A total of four Category 1 receptors, including the UCLA Science and Technology Research Building on Veteran Avenue and three music or video production facilities along Glendon Avenue, would be exposed to GBN levels that exceed the FTA 25 dBA GBN criterion for Category 1 receptors.
- **Impact Area 7**: Along Westwood Boulevard, between Le Conte Avenue and the UCLA Gateway Plaza Station, Nine Category 1 medical buildings and research laboratories would be exposed to GBV and GBN that would exceed the FTA criteria.
- **Impact Area 8a/8b**: In the mountain segment, between Sunset Boulevard and Stone Canyon Road, 23 single-family Category 2 residential receptors and the Bel Air Hotel would be exposed to GBN levels that would exceed the FTA Category 2 criteria. Of these, six single-family dwellings would be subject to GBV levels slightly above the 72 VdB criterion.
- **Impact Area 9a/9b**: Also in the mountain segment, between Mulholland Drive and the north tunnel portal, seven single-family Category 2 residential buildings would be exposed to GBV that would meet the 72 VdB FTA groundborne criterion. GBN at 30 Category 2 residential receptors, inclusive of the seven impacted by GBV, would slightly exceed the FTA criterion in this same segment.

MM VIB-4.1 would require installation of high resilience direct fixation rail fasteners (HRDF), low-impact or spring frogs, floating slab track, and resiliently supported ties to reduce vibration generated by rail operations. High resilience direct fixation rail fasteners, floating slab track, and resiliently supported ties all serve to reduce vibration of the rails as the transit vehicle passes over thereby reducing vibration further away at sensitive receptors. Low-impact or spring frogs work by closing the gap at crossovers, which reduces impact vibration generated at these distinct locations. Results of implementation of MM VIB-4.1 are shown in Table 3.11-37 and vibration as a result of rail operations would be reduced to below the applicable FTA vibration criteria for both GBV and noise. Therefore, Alternative 4 would result in a less than significant impact with mitigation related to GBV and GBN generated by rail operations.

Table 3.11-37. Alternative 4: Summary of Groundborne Vibration and Groundborne Noise Impacts After Mitigation

Impact Area	Description of Impacted Area	Civil Station Limits		Calculated GBV (VdB)	Calculated GBN (dBA)	Impacts After Mitigation	
		Start	End			Category 1	Category 2
1	Pico Boulevard to Tennessee Avenue	519+00	525+00	57-69	22-34	0	0
2	Tennessee Avenue to Olympic Boulevard	525+00	532+00	65-69	30-34	0	0
3	Olympic Boulevard to Mississippi Avenue	532+00	538+00	66-68	31-33	0	0
4	Mississippi Avenue to Santa Monica Station	538+00	555+50	58-66	21-33	0	0
5	South of Ashton Avenue and Midvale Avenue	599+73	602+31	67-69	32-34	0	0
6	Wilshire/Westwood Station to Le Conte Avenue	611+50	616+00	56-57	21-22	0	0
7	Le Conte Avenue to UCLA Gateway Plaza Station	625+50	639+00	52-59	17-24	0	0
8a/8b	Sunset Boulevard to Stone Canyon Road	673+50	711+00	65-67	30-32	0	0
9a/9b	Mulholland Drive to North Tunnel Portal	907+00	931+00	65-68	30-33	0	0

Source: HTA, 2024

dBA = A-weighted decibel
GBN = groundborne noise
GBV = groundborne vibration
VdB = vibration decibel

Construction Impacts

Construction Vibration Impacts on Sensitive Receptors

The primary concern related to vibration during construction is the potential to damage structures. Construction activities, such as pile driving, use of drill rigs, pavement breaking, and the use of tracked vehicles (e.g., bulldozers) and hoe rams, could result in perceptible levels of GBV at sensitive buildings located in close proximity to construction sites. These activities would typically be limited in duration and their vibration levels are likely to be well below thresholds for minor cosmetic building damage. Alternative 4 would also include the use of a TBM along the underground alignment.

Project construction would include a limited number of activities expected to generate vibration that approaches the lowest building damage limit of 0.12 in/sec PPV (refer to Table 3.11-7). Table 3.11-35 shows the distances at which the 0.12 in/sec PPV, 0.2 in/sec PPV, and 0.3 in/sec PPV thresholds would not be exceeded. For example, use of a drilling rig, hoe ram, or large bulldozer would be safe at distances greater than 22 feet from Category IV buildings. A vibratory roller would be safe at distances greater than 22 feet from Category IV buildings and typical impact pile driver operation would be safe at distances of 79 feet or greater. Typical building construction in an urban setting consists of buildings that are Category II engineered concrete and masonry that have a 0.3 in/sec PPV threshold or Category III non-engineered timber and masonry buildings that have a 0.2 in/sec PPV threshold. Typical construction equipment, such as a large bulldozer, would not exceed the 0.2 in/sec PPV building damage criterion at

distances of 18 feet or greater and would not exceed the 0.3 in/sec PPV building damage criterion at distances of 13 feet or greater. A vibratory roller would not exceed the 0.2 in/sec PPV building damage criterion at distances of 32 feet or greater and would not exceed the 0.3 in/sec PPV building damage criterion at distances of 23 feet or greater. An impact pile driver would not exceed the 0.2 in/sec PPV building damage criterion at distances of 67 feet or greater and would not exceed the 0.3 in/sec PPV building damage criterion at distances of 47 feet or greater.

Along the underground alignment of Alternative 4, the TBM would be the main source of GBVs. However, the TBM is slow moving and causes very little vibration and related GBN to the surrounding area when operating at full tunnel depths. The Alternative 4 underground tunnel would be at depths of approximately 30 feet to over 750 feet from the aboveground buildings along the tunnel alignment. In some residential areas, GBV from the TBM may be felt for a short period (about two days) while the machine passes under the receptor locations. In residential areas in the mountain region between Sunset Boulevard and the north tunnel portal, GBV from the TBM would not be perceptible, because the tunnel would be very deep underground. Expected TBM vibration levels would be well below the strictest building damage threshold of 0.12 in/sec along the entire underground alignment. Construction of the proposed Metro E Line and Santa Monica Boulevard Stations along the underground alignment would likely be cut-and-cover construction, which could at times occur within 25 feet of structures, potentially resulting in excessive vibration. The alignment would surface in the Santa Monica Mountains near Del Gado Drive. Between Del Gado Drive and Ventura Boulevard, construction activity could occur at distances of 25 feet or less of adjacent buildings, including single-family residences, multi-family residences, and commercial buildings. Construction activity in this area could result in the exceedance of the FTA building damage or vibration annoyance criteria. North of Ventura Boulevard, construction activity would typically occur within the Sepulveda Boulevard ROW, and nearby buildings would typically be located at distances of 50 feet or greater, thus reducing the potential for vibration damage or annoyance. In some instances, construction activity may occur at closer distances to sensitive buildings or more intense vibration-generating equipment (vibratory roller) may be used, which could result in the potential to exceed the FTA building damage or vibration annoyance criteria. East of the intersection of Sepulveda Boulevard and Raymer Street, construction activity would primarily occur in the LOSSAN rail corridor that is surrounded by industrial buildings, which would have limited potential for vibration damage and annoyance.

While MM VIB-4.2 would be implemented, which would include vibration-reducing measures, there may still be temporary or periodic increases in vibration levels that exceed FTA construction vibration impact criteria. There are no additional feasible mitigation measures to reduce construction vibration levels. Therefore, impacts related to construction vibration would be significant and unavoidable.

Construction Vibration Impacts on Historic Resources

Construction under Alternative 4 would have the potential to damage historic buildings in close proximity to vibration-intensive construction activities. Using the reference levels in the FTA *Transit Noise and Vibration Impact Assessment Manual* (FTA, 2018), vibration levels from project construction activities were estimated at historic buildings or structures eligible for the National Register of Historic Places along the Alternative 4 alignment. Such buildings are generally classified as extremely susceptible to vibration damage (Building Type IV in Table 3.11-7).

Findings of the construction vibration assessment at historic structures are as follows:

- The following historic buildings are very close to the proposed project construction areas. Most vibration-intensive construction activities at these locations would likely result in levels exceeding the damage criterion of 0.12 in/sec PPV. Special consideration should be made for these buildings in MM VIB-4.2 (Vibration Control Plan), which is outlined in Section 3.11.6.
  - Gayley Center located at 1101 Gayley Avenue, Los Angeles adjoining the proposed Wilshire Boulevard/Metro D Line Station
  - Linde Medical Building located at 10921 Wilshire Boulevard, Los Angeles adjacent to the proposed Wilshire Boulevard/Metro D Line Station
  - Tishman Building located at 10950 Wilshire Boulevard, Los Angeles adjacent to the proposed Wilshire Boulevard/Metro D Line Station
  - Historic building located at 4511 Sepulveda Boulevard, Los Angeles, next to the proposed aerial structure
  - UCLA Ackerman Hall, 308 Westwood Plaza, Los Angeles
- Pile driving at locations along the alignment in the vicinity of the following historic properties would potentially result in GBV levels exceeding the damage criterion of 0.12 in/sec PPV. Therefore, these locations must be addressed in the Vibration Control Plan if pile driving is to occur within 150 feet of the buildings:
  - Historic buildings located at 15300 and 15233 Ventura Boulevard, Sherman Oaks
  - Historic building located at 4700 Sepulveda Boulevard, Sherman Oaks
  - Lt. Patrick H. Daniels United States Army Reserve Center located at 5161 Sepulveda Boulevard, Sherman Oaks
  - Starlight Cottage located at 5450 Sepulveda Boulevard, Sherman Oaks
  - Cathedral of St. Mary Church located at 5335 Sepulveda Boulevard, Sherman Oaks
  - Historic building located at 5724 Sepulveda Boulevard, Van Nuys
  - Cabana Motel located at 5764 Sepulveda Boulevard, Van Nuys
  - El Cortez Motel located at 5746 Sepulveda Boulevard, Van Nuys
  - Historic building located at 6160 Sepulveda Boulevard, Van Nuys
  - Historic building located at 6833 Sepulveda Boulevard, Van Nuys
  - Lancer Lion II Apartments located at 7657 Sepulveda Boulevard, Van Nuys
  - Historic building located at 7721 Sepulveda Boulevard, Van Nuys
  - The Performing Arts Center located at 7735 Sepulveda Boulevard, Van Nuys
  - Historic building located at 6833 Sepulveda Boulevard, Van Nuys
  - Historic building located at 14746 Raymer Street, Van Nuys

- Air Raid Siren No. 110 located at the northeast corner of Covello Street and Sepulveda Boulevard
- Air Raid Siren No. 117 on the north side of Oxnard Street just west of Sepulveda Boulevard in Van Nuys

Implementation of MM VIB-4.2 would reduce the potential for damage to occur at historic resources. Vibration levels would be monitored at historic resources to determine if the vibration damage criterion of 0.12 in/sec PPV would be exceeded. A pre-construction and post construction survey would be prepared, and any damage noted and restored per the requirements of SOI's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings. Therefore, impacts related to construction vibration at historic resources would be less than significant with mitigation.

Alternative 5

Impact Statement

Operational Impact: Less than Significant with Mitigation

Construction Impact: Significant and Unavoidable

Operational Impacts

Rail Operations Vibration

Train operations would potentially generate vibration and GBN at sensitive receptors. Attachment 13 of the *Sepulveda Transit Corridor Project Noise and Vibration Technical Report* ([Metro, 2025) shows the details of operations vibration impact assessment at the representative Category 1, 2, and 3 receptors along the Alternative 5 alignment. Based on the results of the vibration analysis, there would be GBV and/or GBN impacts at sensitive receptors along the alignment. Table 3.11-38 summarizes the results of the GBV and noise impact analysis by land use category. Alternative 5 would result in impacts at 292 Category 2 receptors and 21 Category 1 receptors. No impacts would occur at Category 3 receptors. Graphical representations of impacted receptors are included in the *Sepulveda Transit Corridor Project Noise and Vibration Technical Report* ([Metro, 2025).

Table 3.11-38. Alternative 5: Summary of Groundborne Vibration and Noise Impact Assessment

Impact Area	Description of Impacted Area	Calculated GBV (VdB)	Calculated GBN (dBA)	Number of Impacts by FTA Category	
				Category 1	Category 2
1	Pico Boulevard to Tennessee Avenue	72-81	37-46	1	14
2	Tennessee Avenue to Olympic Boulevard	70-81	35-46	0	14
3	Olympic Boulevard to Mississippi Avenue	71-73	36-38	0	15
4	Mississippi Avenue to Santa Monica Station	71-72	36-38	1	32
5	South of Ashton Avenue and Midvale Avenue	72-74	37-39	0	4
6	Wilshire/Westwood Station to Le Conte Avenue	61-62	26-27	4	0
7	Le Conte Avenue to UCLA Gateway Plaza Station	67-73	32-38	9	0
8a/8b	Sunset Boulevard to Stone Canyon Road	68-72	35-37	0	24
9a/9b	Mulholland Drive to Valley Vista Boulevard	70-72	35-37	0	58
10	Valley Vista Boulevard to Ventura Boulevard/Sepulveda Boulevard Station	70-79	35-44	0	15
11	Ventura Boulevard/Sepulveda Boulevard Station to US-101	68-72	33-37	2	15
12	US-101 to Magnolia Boulevard	70-71	35-36	0	11
13	Magnolia Boulevard to Burbank Boulevard	70	35	1	20
14	Burbank Boulevard to Metro G-Line/Sepulveda Station	71	36	0	8
15	Metro G-Line/Sepulveda Station to Victory Boulevard	70	35	0	1
16	Victory Boulevard to Vanowen Street	71-73	36-38	0	31
17	Vanowen Street to Sepulveda/Sherman Way Station	70-77	35-42	0	18
18	Sepulveda/Sherman Way Station to Saticoy Street	70-72	35-37	0	11
19	Saticoy Street to Van Nuys Metrolink Station	62-71	27-36	3	1
Total Number of Impacts				**21**	**292**

Source: HTA, 2024

dBA = A-weighted decibel
GBN = groundborne noise
GBV = groundborne vibration
VdB = vibration decibel

The impacted receptors shown in Table 3.11-38 include various FTA category land uses, described as follows:

- **Impact Areas 1, 2, 3, and 4**: Seventy-five single- and multi-family Category 2 residential buildings would be affected by GBV or GBN levels that exceed the FTA Category 2 criteria along South Bentley Avenue between Pico Boulevard and the Santa Monica Station. Two Category 1 animal hospitals on Sepulveda Boulevard along this segment of the alignment would also be affected by GBV or GBN levels that exceed the FTA Category 1 criteria.
- **Impact Area 5**: Four multi-family Category 2 residential buildings along the south side of Ashton Avenue at Midvale Avenue in the vicinity of the double crossover would be exposed to GBV and GBN levels in excess of the FTA Category 2 criteria.

- **Impact Area 6**: Four Category 1 uses including the UCLA Science and Technology Research Building on Veteran Avenue and three music or video production facilities along Glendon Avenue would be exposed to GBN levels that exceed the 25 dBA GBN criterion for Category 1 uses.
- **Impact Area 7**: Nine Category 1 medical buildings and research laboratories would be exposed to GBV and GBN in excess of the FTA criteria along Westwood Boulevard between Le Conte Avenue and the UCLA Gateway Plaza Station.
- **Impact Area 8a/8b**: In the mountain segment, between Sunset Boulevard and Stone Canyon Road, 24 Category 2 uses including 23 single-family homes, and the Bel Air Hotel would be exposed to GBN levels that would exceed the FTA Category 2 criteria. Of these uses, six single-family Category 2 dwellings would be exposed to GBV levels slightly above the 72 VdB criterion.
- **Impact Area 9a/9b**: In the mountain segment, between Mulholland Drive and Valley Vista Boulevard in Sherman Oaks, eight single-family Category 2 buildings along Saugus Avenue between Encanto Drive and Valley Vista Boulevard would be exposed to GBV that would meet the 72 VdB criterion. GBN at 58 Category 2 residential uses, including the eight impacted by vibration, would slightly exceed the applicable FTA GBN criterion in this same segment.
- **Impact Area 10**: Between Valley Vista Boulevard and the proposed Ventura Boulevard/Sepulveda Boulevard Station, 15 single- and multi-family Category 2 residential buildings would be exposed to vibration that would exceed the FTA GBN criterion. Nine of the same Category 2 structures would also be exposed to GBV levels that reach or exceed the FTA criterion. The presence of a double crossover south of the underground station would result in GBV levels as high as 79 VdB in this area.
- **Impact Area 11**: Between the Ventura Boulevard/Sepulveda Boulevard Station and US-101, two Category 1 receptors, Premiere Networks/Steve Harvey/Fox Sports Radio and 3 Ball Entertainment, would be exposed to GBV and GBN in excess of the FTA criteria. In addition, 15 Category 2 receptors (14 multi-family buildings and a hotel) along Sepulveda Boulevard would also be impacted. GBV levels at three of these buildings would reach 72 VdB and the buildings would experience GBN levels between 35 to 37 dBA.
- **Impact Area 12**: Between US-101 and Magnolia Boulevard, 11 single- and multi-family Category 2 buildings would be exposed to GBN levels at the FTA threshold of impact. GBV levels along this segment would be below the FTA impact threshold.
- **Impact Area 13**: Along the segment between Magnolia Boulevard and Burbank Boulevard, 20 multi-family buildings would be exposed to GBN levels that would meet the 35 dBA FTA criterion for residential uses. At one Category 1 use, LA Live Stream (audio/video production), GBV and GBN would exceed the applicable FTA criteria.
- **Impact Area 14**: From Burbank Boulevard to the Metro G-Line/Sepulveda Station, eight Category 2 buildings, including three hotels/motels and five residential buildings, would be exposed to GBN levels at the threshold of impact.
- **Impact Area 15**: Between the Metro G-Line/Sepulveda Station and Victory Boulevard, one Category 2 motel, Cinema Motel, would be impacted by GBN.
- **Impact Area 16**: Along the tunnel segment between Victory Boulevard and Vanowen Street, 31 Category 2 receptors, including 29 multi-family buildings, one motel and a hospital (Beverly Manor Convalescent Center), would be exposed to GBN levels that reach or exceed the 35 dBA FTA criterion. GBV levels at 13 of these buildings would be between 72 to 73 VdB.

- **Impact Area 17**: Between Vanowen Street and Sepulveda/Sherman Way Station, there would be GBN impacts at 18 Category 2 receptors, including one hospital (Valley Presbyterian), two hotels/motels and 15 multi-family residential buildings. Of those, six structures would also be exposed to GBV levels that reach or exceed the FTA criterion. The presence of a double crossover south of the underground station would result in GBV levels as high as 77 VdB at a hotel and multi-family building in this area.
- **Impact Area 18**: A total of 11 Category 2 receptors (Ten multi-family buildings and a nursing home) along the underground alignment located between Sepulveda/Sherman Way Station and Saticoy Street would be exposed to GBN levels that reach or slightly exceed the FTA criterion. Five of these receptors would also experience GBV levels at the threshold of impact.
- **Impact Area 19**: Between Saticoy Street and the Van Nuys Metrolink Station, one Category 2 hotel and three Category 1 receptors including two recording studios (Third Encore Annex Studios – Stagg and Stagg Street Studio), and one animal hospital (Valley Animal Hospital) would be exposed to GBV and GBN levels exceeding the FTA criteria.

MM VIB-5.1 would require installation of HRDF, low-impact or spring frogs, floating slab track, and resiliently supported ties to reduce vibration generated by rail operations. High resilience direct fixation rail fasteners, floating slab track, and resiliently supported ties all serve to reduce vibration of the rails as the transit vehicle passes over thereby reducing vibration further away at sensitive receptors. Low-impact or spring frogs work by closing the gap at crossovers, which reduces impact vibration generated at these distinct locations. Results of implementation of MM VIB-5.1 are shown in Table 3.11-39 and vibration as a result of rail operations would be reduced to below the applicable FTA vibration criteria for both GBV and noise. Therefore, Alternative 5 would result in a less than significant impact with mitigation related to GBV and GBN generated by rail operations.

Table 3.11-39. Alternative 5: Summary of Groundborne Vibration and Groundborne Noise Impacts After Mitigation

Impact Area	Description of Impacted Area	Civil Station Limits		Calculated GBV (VdB)	Calculated GBN (dBA)	Number of Impacts After Mitigation	
		Start	End			Category 1	Category 2
1	Pico Boulevard to Tennessee Avenue	519+00	525+00	57-69	22-34	0	0
2	Tennessee Avenue to Olympic Boulevard	525+00	532+00	65-69	30-34	0	0
3	Olympic Boulevard to Mississippi Avenue	532+00	538+00	66-68	31-33	0	0
4	Mississippi Avenue to Santa Monica Station	538+00	555+50	58-66	21-33	0	0
5	South of Ashton Avenue and Midvale Avenue	599+73	602+31	67-69	32-34	0	0
6	Wilshire/Westwood Station to Le Conte Avenue	611+50	616+00	56-57	21-22	0	0
7	Le Conte Avenue to UCLA Gateway Plaza Station	625+50	639+00	52-59	17-24	0	0
8a/8b	Sunset Boulevard to Stone Canyon Road	673+50	711+00	65-67	30-32	0	0

Impact Area	Description of Impacted Area	Civil Station Limits		Calculated GBV (VdB)	Calculated GBN (dBA)	Number of Impacts After Mitigation	
		Start	End			Category 1	Category 2
9a/9b	Mulholland Drive to Valley Vista Boulevard	907+00	948+00	65-67	30-32	0	0
10	Valley Vista Boulevard to Ventura Boulevard/ Sepulveda Boulevard Station	949+00	958+00	65-69	30-34	0	0
11	Ventura Boulevard/Sepulveda Boulevard Station to US-101	965+90	987+00	55-67	20-32	0	0
12	US-101 to Magnolia Boulevard	990+70	1007+80	65-66	30-31	0	0
13	Magnolia Boulevard to Burbank Boulevard	1008+50	1034+00	55-65	20-30	0	0
14	Burbank Boulevard to Metro G-Line/Sepulveda Station	1038+00	1047+50	66	31	0	0
15	Metro G-Line/Sepulveda Station to Victory Boulevard	1078+30	1078+60	65	30	0	0
16	Victory Boulevard to Vanowen Street	1094+50	1110+30	66-68	31-33	0	0
17	Vanowen Street to Sepulveda/Sherman Way Station	1117+00	1133+00	65-71	30-36	0	0
18	Sepulveda/Sherman Way Station to Saticoy Street	1148+30	1163+50	65-67	30-32	0	0
19	Saticoy Street to Van Nuys Metrolink Station	1168+50	1188+00	57-66	22-31	0	0
Total Number of Impacts						**0**	**0**

Source: HTA, 2024

dBA = A-weighted decibel
GBN = groundborne noise
GBV = groundborne vibration
VdB = vibration decibel

Construction Impacts

Construction Vibration Impacts on Sensitive Receptors

The primary concern related to vibration during construction is the potential to damage structures. Construction activities, such as pile driving, use of drill rigs, pavement breaking, and the use of tracked vehicles (e.g., bulldozers) and hoe rams, could result in perceptible levels of GBV at sensitive buildings located in close proximity to construction sites. These activities would typically be limited in duration and their vibration levels are likely to be well below thresholds for minor cosmetic building damage. Alternative 5 would also include the use of a TBM along the underground alignment.

Project construction would include a limited number of activities expected to generate vibration that approaches the lowest building damage limit of 0.12 in/sec PPV (refer to Table 3.11-7). Table 3.11-35 shows the distances at which the 0.12 in/sec PPV, 0.2 in/sec PPV, and 0.3 in/sec PPV thresholds would not be exceeded. For example, use of a drilling rig, hoe ram, or large bulldozer would be safe at distances greater than 22 feet from Category IV buildings. A vibratory roller would be safe at distances greater than 22 feet from Category IV buildings and typical impact pile driver operation would be safe at distances of 79 feet or greater. Typical building construction in an urban setting consists of buildings that

are Category II engineered concrete and masonry that have a 0.3 in/sec PPV threshold or Category III non-engineered timber and masonry buildings that have a 0.2 in/sec PPV threshold. Typical construction equipment, such as a large bulldozer, would not exceed the 0.2 in/sec PPV building damage criterion at distances of 18 feet or greater and would not exceed the 0.3 in/sec PPV building damage criterion at distances of 13 feet or greater. A vibratory roller would not exceed the 0.2 in/sec PPV building damage criterion at distances of 32 feet or greater and would not exceed the 0.3 in/sec PPV building damage criterion at distances of 23 feet or greater. An impact pile driver would not exceed the 0.2 in/sec PPV building damage criterion at distances of 67 feet or greater and would not exceed the 0.3 in/sec PPV building damage criterion at distances of 47 feet or greater.

Vibration annoyance is another concern during construction. In rare instances, when vibration-intensive construction activities occur close to sensitive structures (within 25 feet), such as residential buildings, or special use buildings like laboratories or recording studios, Vibration could exceed the FTA vibration annoyance criteria shown in Table 3.11-5 and Table 3.11-6. Significant GBV could exceed the FTA vibration damage and vibration annoyance criteria when certain construction activities would occur at close distances to sensitive receptors.

Along the underground alignment of Alternative 5, the TBM would be the main source of GBVs. However, the TBM is slow moving and causes very little vibration and related GBN to the surrounding area when operating at full tunnel depths. The Alternative 5 underground tunnel would be at depths of approximately 30 feet to over 750 feet from the aboveground buildings along the tunnel alignment. In some residential areas, GBV from the TBM may be felt for a short period (about two days) while the machine passes under the receptor locations. In residential areas in the mountain region between Sunset Boulevard and Valley View Boulevard, GBV from the TBM would not be perceptible because the tunnel would be very deep underground. Expected TBM vibration levels would be well below the strictest building damage threshold of 0.12 in/sec along the entire underground alignment. Construction of the proposed Metro E Line, Santa Monica Boulevard, Wilshire/Metro D Line, UCLA Gateway Plaza, Ventura Boulevard, Metro G Line, and Sherman Way Stations along the underground alignment would likely be cut-and-cover construction, which could at times occur within 25 feet of structures, potentially resulting in excessive vibration. The alignment would surface near the intersection of Raymer Street and Burnett Avenue. Nearby structures are primarily industrial and would be most similar to engineered and concrete masonry buildings with a 0.3 in/sec PPV vibration damage threshold. Vibration annoyance impacts are unlikely to occur in this area, as the uses are not vibration sensitive. However, due to the proximity of nearby buildings, there is potential for vibration damage to occur. East of the tunnel portal, construction activity would primarily occur in the LOSSAN rail corridor surrounded by industrial buildings, which would have limited potential for vibration damage and annoyance.

While MM VIB-5.2 would be implemented, which would include vibration-reducing measures, there may still be temporary or periodic increases in vibration levels that exceed FTA construction vibration impact criteria. There are no additional feasible mitigation measures to reduce construction vibration levels. Therefore, impacts related to construction vibration would be significant and unavoidable.

Construction Vibration Impacts on Historic Resources

Construction under Alternative 5 would have the potential to damage historic buildings in close proximity to vibration-intensive construction activities. Using the reference levels in the FTA *Transit Noise and Vibration Impact Assessment Manual* (FTA, 2018), vibration levels from project construction activities were estimated at historic buildings or structures eligible for the National Register of Historic

Places along the Alternative 5 alignment. Such buildings are generally classified as extremely susceptible to vibration damage (Building Type IV in Table 3.11-7).

Findings of the construction vibration assessment at historic structures are as follows:

- The following historic buildings are very close to the proposed project construction areas. Most vibration-intensive construction activities at these locations would likely result in levels exceeding the damage criterion of 0.12 in/sec PPV. Special consideration should be made for these buildings in MM VIB-5.2 (Vibration Control Plan) outlined in Section 3.11.6.
  - Gayley Center located at 1101 Gayley Avenue, Los Angeles adjoining the proposed Wilshire Boulevard/Metro D Line Station
  - Linde Medical Building located at 10921 Wilshire Boulevard, Los Angeles adjacent to the proposed Wilshire Boulevard/Metro D Line Station
  - Tishman Building located at 10950 Wilshire Boulevard, Los Angeles adjacent to the proposed Wilshire Boulevard/Metro D Line Station
  - UCLA Ackerman Hall, 308 Westwood Plaza, Los Angeles
- Pile driving at locations along the alignment in the vicinity of the following historic properties would potentially result in GBV levels exceeding the damage criterion of 0.12 in/sec PPV. Therefore, these locations must be addressed in the Vibration Control Plan if pile driving is to occur within 150 feet of the buildings:
  - Historic building located at 4506 Saugus Street, Sherman Oaks
  - Historic building located at 14746 Raymer Street, Van Nuys

Implementation of MM VIB-5.2 would reduce the potential for damage to occur at historic resources. Vibration levels would be monitored at historic resources to determine if the vibration damage criterion of 0.12 in/sec PPV would be exceeded. A pre-construction and post construction survey would be prepared, and any damage noted and restored per the requirements of SOI's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings. Therefore, impacts related to construction vibration at historic resources would be less than significant with mitigation.

Alternative 6

Impact Statement

Operational Impact: Less than Significant

Construction Impact: Significant and Unavoidable

Operational Impacts

Rail Operations Vibration

Train operations would potentially generate vibration and GBN at sensitive receptors. Alternative 6 would implement the use of high resilient direct fasteners, low-impact or spring frogs, floating slab track, and resiliently supported ties throughout the project alignment as part of the project design. High resilience direct fixation rail fasteners, floating slab track, and resiliently supported ties all serve to reduce vibration of the rails as the transit vehicle passes over, thereby reducing vibration further away at sensitive receptors. Low-impact or spring frogs work by closing the gap at crossovers, which reduces

impact vibration generated at these distinct locations. These vibration-reduction measures were implemented as part of the project design and included in the vibration analysis. The vibration-reduction measures would be installed in areas where it was determined vibration generated by the project could exceed the FTA GBV or GBN criteria. Attachment 15 of the *Sepulveda Transit Corridor Project Noise and Vibration Technical Report* ([Metro, 2025) shows the details of the operations vibration impact assessment at the representative Category 1, 2, and 3 receptors along the Alternative 6 alignment. Locations where vibration-reduction measures would be included as part of project design are as follows:

- Exposition Boulevard to Missouri Avenue
- Between Barrington Avenue and Colby Avenue
- Butler Avenue to west I-405
- Pontius Avenue to Weyburn Avenue
- Le Conte Avenue to the proposed UCLA Gateway Plaza Station
- North Beverly Glen Boulevard/Sumac Drive Intersection to the proposed Ventura Boulevard/Van Nuys Boulevard Station
- Proposed Ventura Boulevard/Van Nuys Boulevard Station to Magnolia Boulevard
- Oxnard Street to Victory Boulevard
- Vanowen Street to Sherman Way

Based on the results of the vibration analysis, GBV levels and GBN levels under Alternative 6 would not meet or exceed the applicable impact thresholds at sensitive receptors along the alignment. Therefore, Alternative 6 would result in a less than significant impact related to GBV and GBN generated by rail operations.

Construction Impacts

Construction Vibration Impacts on Sensitive Receptors

The primary concern related to vibration during construction is the potential to damage structures. Construction activities, such as pile driving, use of drill rigs, pavement breaking, and the use of tracked vehicles (e.g., bulldozers) and hoe rams, could result in perceptible levels of GBV at sensitive buildings located in close proximity to construction sites. These activities would typically be limited in duration and their vibration levels are likely to be well below thresholds for minor cosmetic building damage. Alternative 6 would also include the use of a TBM along the underground alignment.

Project construction would include a limited number of activities expected to generate vibration that approaches the lowest building damage limit of 0.12 in/sec PPV (refer to Table 3.11-7). Table 3.11-35 shows the distances at which the 0.12 in/sec PPV, 0.2 in/sec PPV, and 0.3 in/sec PPV thresholds would not be exceeded. For example, use of a drilling rig, hoe ram, or large bulldozer would be safe at distances greater than 22 feet from Category IV buildings. A vibratory roller would be safe at distances greater than 22 feet from Category IV buildings and typical impact pile driver operation would be safe at distances of 79 feet or greater. Typical building construction in an urban setting consists of buildings that are Category II engineered concrete and masonry that have a 0.3 in/sec PPV threshold or Category III non-engineered timber and masonry buildings that have a 0.2 in/sec PPV threshold. Typical construction equipment, such as a large bulldozer, would not exceed the 0.2 in/sec PPV building damage criterion at distances of 18 feet or greater and would not exceed the 0.3 in/sec PPV building damage criterion at distances of 13 feet or greater. A vibratory roller would not exceed the 0.2 in/sec PPV building damage criterion at distances of 32 feet or greater and would not exceed the 0.3 in/sec PPV building damage

criterion at distances of 23 feet or greater. An impact pile driver would not exceed the 0.2 in/sec PPV building damage criterion at distances of 67 feet or greater and would not exceed the 0.3 in/sec PPV building damage criterion at distances of 47 feet or greater.

Along the underground alignment of Alternative 6, the TBM would be the main source of GBVs. However, the TBM is slow moving and causes very little vibration and related GBN to the surrounding area when operating at full tunnel depths. The Alternative 6 underground tunnels would be at depths of approximately 40 feet to over 700 feet from the aboveground buildings along the tunnels' alignment. In some residential areas, GBV from the TBM may be felt for a short period (about two days) while the machine passes under the receptor locations. In residential areas in the mountain region between Sunset Boulevard and Mulholland Drive, GBV from the TBM would not be perceptible, because the tunnels would be very deep underground. Expected TBM vibration levels would be well below the strictest building damage threshold of 0.12 in/sec along the entire alignment. In some residential areas, GBV from the TBM may be felt for a short period (about two days) while the machine passes under the receptor locations. Construction of the proposed Metro E Line, Santa Monica Boulevard, Wilshire/Metro D Line, UCLA Gateway Plaza, Ventura Boulevard, Metro G Line, and Van Nuys Metrolink Stations along the underground alignment would likely be cut-and-cover construction, which could at times occur within 25 feet of structures, therefore potentially resulting in excessive vibration. Regarding the mid-mountain shaft, the nearest structures would be located more than 500 feet to the east of construction activity, and there would be no potential for vibration damage or annoyance impacts to occur.

While MM VIB-6.1 would be implemented, which would include vibration-reducing measures, there may still be temporary or periodic increases in vibration levels that exceed FTA construction vibration impact criteria. There are no additional feasible mitigation measures to reduce construction vibration levels. Therefore, impacts related to construction vibration would be significant and unavoidable.

Construction Vibration Impacts on Historic Resources

Construction under Alternative 6 would have the potential to damage historic buildings in close proximity to vibration-intensive construction activities. Using the reference levels in the FTA *Transit Noise and Vibration Impact Assessment Manual* (FTA, 2018), vibration levels from project construction activities were estimated at historic buildings or structures eligible for the National Register of Historic Places along the Project alignment. Such buildings are generally classified as extremely susceptible to vibration damage (Building Type IV in Table 3.11-7).

Findings of the construction vibration assessment at historic structures are as follows:

- The following historic buildings are very close to the proposed project construction areas. Most vibration-intensive construction activities at these locations would likely result in levels exceeding the damage criterion of 0.12 in/sec PPV. Special consideration should be made for these buildings in MM VIB-4.2 (Vibration Control Plan) outlined in Section 3.11.6.
  - Gayley Center located at 1101 Gayley Avenue, Los Angeles adjoining the proposed Wilshire Boulevard/Metro D Line Station
  - Linde Medical Building located at 10921 Wilshire Boulevard, Los Angeles adjacent to the proposed Wilshire Boulevard/Metro D Line Station
  - Tishman Building located at 10950 Wilshire Boulevard, Los Angeles adjacent to the proposed Wilshire Boulevard/Metro D Line Station
  - UCLA Ackerman Hall, 308 Westwood Plaza, Los Angeles

- Pile driving at locations along the alignment in the vicinity of the following historic properties would potentially result in GBV levels exceeding the damage criterion of 0.12 in/sec PPV. Therefore, these locations must be addressed in the Vibration Control Plan if pile driving is to occur within 150 feet of the buildings:
  - Historic building located at 5958 Van Nuys Boulevard, Sherman Oaks

Implementation of MM VIB-6.2 would reduce the potential for damage to occur at historic resources. Vibration levels would be monitored at historic resources to determine if the vibration damage criterion of 0.12 in/sec PPV would be exceeded. A pre-construction and post construction survey would be prepared, and any damage noted and restored per the requirements of SOI's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings. Therefore, impacts related to construction vibration at historic resources would be less than significant with mitigation.

Maintenance and Storage Facilities

Monorail Transit Maintenance and Storage Facility Base Design (Alternatives 1 and 3)

Impact Statement

Operational Impact: Less than Significant

Construction Impact: Less than Significant

Operational Impacts

Under the MSF Base Design, monorail trains would access the site from the main alignment's northern tail tracks at the northwest corner of the site. Trains would travel parallel to the LOSSAN rail corridor before curving southeast to maintenance facilities and storage tracks. The guideway would remain in an aerial configuration within the MSF Base Design, including within maintenance facilities. Rail tracks in this MSF would be located in an industrial area with the nearest sensitive structures nearly 700 feet south of the maintenance facilities tracks. The vibration level at 700 feet would be 36 VdB and would be below the 72 VdB criterion for residential uses. Therefore, the MSF Base Design would result in a less than significant impact related to GBV and GBN during operations.

Construction Impacts

Vibration-sensitive structures located closest to the construction of the MSF Base Design are residential buildings located along the east side of Orion Avenue and north of Stagg Street. The nearest residential structure in this area would be approximately 90 feet from excavating/grading activities and 240 feet from structural foundation construction vibration damage risk criteria of 0.2 in/sec PPV. At such distances, the anticipated vibration levels from construction would be 0.031 in/sec PPV from the use of vibratory rollers during paving, 0.013 in/sec PPV from a large bulldozer, and 0.003 in/sec PPV from caisson drilling. All these levels are below the construction vibration damage risk criteria for all building types (see Table 3.11-7). Therefore, the MSF Base Design would result in a less than significant impact related to construction vibration.

Monorail Transit Maintenance and Storage Facility Design Option 1 (Alternatives 1 and 3)

Impact Statement

Operational Impact: Less than Significant

Construction Impact: Significant and Unavoidable

Operational Impacts

Under MSF Design Option 1, monorail trains would access the site from the monorail guideway east of Sepulveda Boulevard. From the northeast corner of the site, trains would travel parallel to the LOSSAN rail corridor before turning south to maintenance facilities and storage tracks parallel to I-405. The guideway would remain in an aerial configuration within the MSF Design Option 1, including within maintenance facilities. Distances from the elevated tracks to the nearest sensitive buildings would be nearly 400 feet to residences along Marson Street in Panorama City, 585 feet to 740 feet from the nearest residential structures southeast of the MSF. The nearest storage tracks would be located between 300 to 400 feet from the nearest residential buildings to the east and southeast of the MSF Design Option 1. At the nearest sensitive receptor located 300 feet away vibration levels from monorail movements within the MSF Design Option 1 would be 40 VdB and would be below 72 VdB criterion for residential uses. Vibration levels at sensitive receptors further away would also be below the 72 VdB criterion for residential uses. Therefore, the MSF Design Option 1 would result in a less than significant impact related to GBV and GBN during operations.

Construction Impacts

The nearest existing building to the construction of the MSF Design Option 1 is a light industrial building located at 7605 Hazeltine Avenue in Van Nuys which would have a vibration damage risk criterion of 0.3 in/sec PPV (Building Type II in Table 3.11-7). The closest façade of this building is adjacent to the southern property line of the proposed MSF site. Estimated vibration levels from caisson drilling would be 0.03 in/sec. The highest vibration levels from construction of the MSF Design Option 1 at the closest off-site building would be 0.83 in/sec PPV from the use of a vibratory roller during paving, and 0.35 in/sec PPV from a large bulldozer during the grading phase which would exceed the applicable vibration damage risk criterion of 0.3 in/sec. The minimum distance from the subject building at which large bulldozers and vibratory rollers must operate is 20 feet from the north façade of the building during the construction of the MSF Design Option 1. While MM VIB-1.1 under Alternative 1 and MM VIB-3.1 under Alternative 3 would be implemented, which would include vibration-reducing measures, there may still be temporary or periodic increases in vibration levels that exceed FTA construction vibration impact criteria. There are no additional feasible mitigation measures to reduce construction vibration levels. Therefore, impacts related to construction vibration would be significant and unavoidable.

Electric Bus Maintenance and Storage Facility (Alternative 1)

Impact Statement

Operational Impact: Less than Significant

Construction Impact: Less than Significant

Operational Impacts

Vibration within MSFs is typically generated by rail vehicles moving along tracks near sensitive receptors. Electric buses travelling with the MSF would be moving at slow speeds which would generate minimal vibration levels. As noted in the FTA Assessment Manual (FTA, 2018), rubber tires and suspension systems of buses provide vibration isolation which makes it unusual for buses to cause GBV or GBN. Typically bus-related vibration is generated by potholes, bumps or other roadway inconsistencies which would not be present in the MSF. The Electric Bus MSF would not include other significant sources of vibration during operations. Therefore, the Electric Bus MSF would result in a less than significant impact related to GBV and GBN during operations.

Construction Impacts

The nearest existing buildings to the construction of the Electric Bus MSF are light industrial buildings located along the east side of Cotner Avenue north of Pico Boulevard. The closest west façades of these buildings are between 60 to 65 feet from the proposed MSF site. The highest vibration levels from construction of the Electric Bus MSF Design the closest off-site buildings would be 0.06 in/sec PPV from the use of a vibratory roller during paving, 0.02 in/sec from the use of a hoe ram during building demolitions, and 0.024 in/sec PPV from a large bulldozer during the grading phase. Estimated vibration levels from caisson drilling for new building foundations would be 0.02 in/sec. All these levels are below the construction vibration damage risk criteria for all building types (see Table 3.11-7). Therefore, the Electric Bus MSF would result in a less than significant impact related to construction vibration.

Heavy Rail Transit Maintenance and Storage Facility (Alternatives 4 and 5)

Impact Statement

Operational Impact: Less than Significant

Construction Impact: Significant and Unavoidable

Operational Impacts

The MSF for Alternatives 4 and 5 would be located east of the Van Nuys Metrolink Station. Trains would access the site from the fixed guideway's tail tracks at the northwest corner of the site. Trains would then travel southeast to maintenance facilities and storage tracks. Vibration levels from trains heading towards the maintenance facility and storage tracks along the curved tracks, where they come closest to the residential buildings south of the MSF, were evaluated. The MSF vibration analysis assumed that HRT vehicles would be traveling at speeds of 25 mph along the tracks. Increases in GBV levels due to presence of rail switches were also taken into account. Predicted MSF vibration levels at the nearest residential structures south of the yard are between 67 VdB and 69 VdB. These levels are below the FTA impact criterion of 72 dBA for Category 2 land uses. Therefore, the Alternative 4 and 5 MSF would result in a less than significant impact related to GBV and GBN during operations.

Construction Impacts

The nearest existing buildings to the construction of the proposed MSF are buildings within the residential properties along Cohasset Street south of the MSF site which would have a vibration damage risk criterion of 0.2 in/sec PPV (Building Type III in Table 3.11-7). The closest structures within the residential properties are as close as 17 feet from the proposed construction activities. Estimated vibration levels from ballast tamper and caisson drilling would be less than the applicable vibration damage risk criterion for the building type in this area is 0.2 in/sec PPV. The highest vibration levels from construction of the MSF at the closest off-site building would be 0.375 in/sec PPV from the use of a vibratory roller during paving and 0.16 in/sec PPV from a large bulldozer during the grading phase which would exceed the applicable vibration damage risk criterion of 0.2 in/sec. The minimum distance from the south property line of the MSF site at which large vibratory rollers must operate is 26 feet during the construction of the proposed MSF. While MM VIB-4.2 under Alternative 4 and MM VIB-5.2 under Alternative 5 would be implemented, which would include vibration-reducing measures, there may still be temporary or periodic increases in vibration levels that exceed FTA construction vibration impact criteria. There are no additional feasible mitigation measures to reduce construction vibration levels. Therefore, impacts related to construction vibration would be significant and unavoidable.

Heavy Rail Transit Maintenance and Storage Facility (Alternative 6)

Impact Statement

Operational Impact: Less than Significant

Construction Impact: Significant and Unavoidable

Operational Impacts

The MSF for Alternative 6 would be located east of the Van Nuys Metrolink Station. Trains would access the site from the fixed guideway's tail tracks at the northwest corner of the site. Trains would then travel southeast to maintenance facilities and storage tracks. Vibration levels from trains heading towards the storage tracks along the curved tracks, where they come closest to the residential buildings south of the MSF, were evaluated. The MSF vibration analysis assumed that HRT vehicles would be traveling at speeds of 25 mph along the tracks. Increases in GBV levels due to presence of rail switches were also taken into account. Predicted MSF vibration levels at the nearest residential structures south of the yard are between 67 VdB and 69 VdB. These levels are below the FTA impact criterion of 72 dBA for Category 2 land uses. Therefore, Alternative 6 MSF would result in a less than significant impact related to GBV and GBN during operations.

Construction Impacts

The nearest existing buildings to the construction of the proposed MSF are buildings within the residential properties along Cohasset Street south of the MSF site. The closest structures within the residential properties are as close as 17 feet from the proposed construction activities which would have a vibration damage risk criterion of 0.2 in/sec PPV (Building Type III in Table 3.11-7). Estimated vibration levels from ballast tamper and caisson drilling would be less than the applicable damage risk criterion for the building type in this area is 0.2 in/sec PPV. The highest vibration levels from construction of the MSF at the closest off-site building would be 0.375 in/sec PPV from the use of a vibratory roller during paving and 0.16 in/sec PPV from a large bulldozer during the grading phase which would exceed the 0.2 in/sec PPV vibration damage risk criterion. While MM VIB-6.1 would be implemented, which would include vibration-reducing measures, there may still be temporary or periodic increases in vibration levels that exceed FTA construction vibration impact criteria. There are no additional feasible mitigation measures to reduce construction vibration levels. Therefore, impacts related to construction vibration would be significant and unavoidable.

3.11.5.3 Impact NOI-3: For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Project Alternatives

No Project Alternative

Impact Statement

Operational Impact: No Impact

Construction Impact: No Impact

The No Project Alternative would not construct any uses that would be exposed to excessive noise levels related to private airstrips or airports. No Impact would occur.

Alternative 1

Impact Statement

Operational Impact: No Impact

Construction Impact: No Impact

The Santa Monica Airport (anticipated to be closed during period of construction) and Van Nuys Airport are located within 2 miles of Alternative 1. However, Alternative 1 is a transit project that is not sensitive to noise. Transit riders would not dwell at one location for an extended period of time that would result in exposure to excessive airport noise. Construction workers working on Alternative 1 would utilize ear protection as required while working on the Project. Therefore, no impacts related to airport noise would occur.

Alternative 3

Impact Statement

Operational Impact: No Impact

Construction Impact: No Impact

The Santa Monica Airport (anticipated to be closed during period of construction) and Van Nuys Airport are located within 2 miles of Alternative 3. However, Alternative 3 is a transit project that is not sensitive to noise. Transit riders would not dwell at one location for an extended period of time that would result in exposure to excessive airport noise. Construction workers working on Alternative 3 would utilize ear protection as required while working on the Project. Therefore, no impacts related to airport noise would occur.

Alternative 4

Impact Statement

Operational Impact: No Impact

Construction Impact: No Impact

The Santa Monica Airport (anticipated to be closed during period of construction) and Van Nuys Airport are located within 2 miles of Alternative 4. However, Alternative 4 is a transit project that is not sensitive to noise. Transit riders would not dwell at one location for an extended period of time that would result in exposure to excessive airport noise. Construction workers working on Alternative 4 would utilize ear protection as required while working on the Project. Therefore, no impacts related to airport noise would occur.

Alternative 5

Impact Statement

Operational Impact: No Impact

Construction Impact: No Impact

The Santa Monica Airport (anticipated to be closed during period of construction) and Van Nuys Airport are located within 2 miles of Alternative 5. However, Alternative 5 is a transit project that is not sensitive to noise. Transit riders would not dwell at one location for an extended period of time that would result in exposure to excessive airport noise. Construction workers working on Alternative 5 would utilize ear

protection as required while working on the Project. Therefore, no impacts related to airport noise would occur.

Alternative 6

Impact Statement

Operational Impact: No Impact

Construction Impact: No Impact

The Santa Monica Airport (anticipated to be closed during period of construction) is located within 2 miles of Alternative 6. However, Alternative 6 is a transit project that is not sensitive to noise. Transit riders would not dwell at one location for an extended period of time that would result in exposure to excessive airport noise. Construction workers working on Alternative 6 would utilize ear protection as required while working on the Project. Therefore, no impacts related to airport noise would occur.

Maintenance and Storage Facilities

Monorail Transit Maintenance and Storage Facility Base Design (Alternatives 1 and 3)

Impact Statement

Operational Impact: No Impact

Construction Impact: No Impact

The Van Nuys Airport is located more than 2 miles from the Base Design MSF. The MSF site would be an industrial use and not sensitive to noise. Construction workers working on the MSF site would utilize ear protection as required while working on the Project. Employees at the MSF would not be exposed to excessive airport noise. Therefore, no impacts related to airport noise would occur.

Monorail Transit Maintenance and Storage Facility Design Option 1 (Alternatives 1 and 3)

Impact Statement

Operational Impact: No Impact

Construction Impact: No Impact

The Van Nuys Airport is located more than 2 miles from the MSF Design Option 1. The MSF site would be an industrial use and not sensitive to noise. Construction workers working on the MSF site would utilize ear protection as required while working on the Project. Employees at the MSF would not be exposed to excessive airport noise. Therefore, no impacts related to airport noise would occur.

Electric Bus Maintenance and Storage Facility (Alternative 1)

Impact Statement

Operational Impact: No Impact

Construction Impact: No Impact

The Santa Monica Airport (anticipated to be closed during period of construction) is located within 2 miles of the Electric Bus MSF. The MSF site would be an industrial use and not sensitive to noise. Construction workers working on the MSF site would utilize ear protection as required while working on the Project. Employees at the MSF would not be exposed to excessive airport noise. Therefore, no impacts related to airport noise would occur.

Heavy Rail Transit Maintenance and Storage Facility (Alternatives 4 and 5)

Impact Statement

Operational Impact: No Impact

Construction Impact: No Impact

The Van Nuys Airport is located more than 2 miles from the MSF. The MSF site would be an industrial use and not sensitive to noise. Construction workers working on the MSF site would utilize ear protection as required while working on the Project. Employees at the MSF would not be exposed to excessive airport noise. Therefore, no impacts related to airport noise would occur.

Heavy Rail Transit Maintenance and Storage Facility (Alternative 6)

Impact Statement

Operational Impact: No Impact

Construction Impact: No Impact

The Van Nuys Airport is located more than 2 miles from the MSF. The MSF site would be an industrial use and not sensitive to noise. Construction workers working on the MSF site would utilize ear protection as required while working on the Project. Employees at the MSF would not be exposed to excessive airport noise. Therefore, no impacts related to airport noise would occur.

3.11.6 Mitigation Measures

3.11.6.1 Alternative 1

MM NOI-1.1: Soundwalls:

- *Soundwalls of 3.5 feet in height shall be installed above the top of the guideway beams to reduce noise to below the Federal Transit Administration moderate-impact noise criteria. Locations shall be verified during final design as necessary to reduce noise to below the Federal Transit Administration moderate-impact noise criteria. Table 3.11-40 shows the soundwall locations.*

Table 3.11-40. Alternative 1: MM NOI-1.1 Soundwalls Locations

Location	Type	Civil Station Location	Track Side
Alber's Apartments, 15328 Albers Street and Best Western Plus Carriage Inn 5525 Sepulveda Boulevard	3.5-foot-high soundwall above the guideway beams	1047+80 to 1053+00 East of tracks	Northbound
Granada Apartments 15630 Vanowen Street	3.5-foot-high soundwall above the guideway beams	1137+40 to 1142+00 East of tracks	Northbound
Single-family Backyards east of I-405, between Vanowen Street and Lili Way	3.5-foot-high soundwall above the guideway beams	1142+00 to 1160+30 East of tracks	Northbound
Single-family homes along the east side of Firmament Ave, between Cohasset Street and Saticoy Street	3.5-foot-high soundwall above the guideway beams	1189+00 to 1195+00 East of tracks	Northbound

Source: HTA, 2024

MM = mitigation measure
NOI = noise

MM NOI-1.2: ***Noise Control Plan****:*

- *Prior to the initiation of localized construction activities, the Project contractor shall develop a Noise Control Plan demonstrating how the Federal Transit Administration 8-hour $L_{eq.equip}$ (equivalent noise level of equipment) noise criteria would be achieved during construction. The Noise Control Plan shall be prepared by a board-certified acoustical engineer. The Federal Transit Administration 8-hour $L_{eq.equip}$ construction noise standards are as follows: Residential daytime standard of 80 dBA $L_{eq.equip}$ and nighttime standard of 70 dBA $L_{eq.equip}$, Commercial daytime and nighttime standard of 85 dBA $L_{eq.equip}$, and Industrial daytime and nighttime standard of 90 dBA $L_{eq.equip}$. The Noise Control Plan shall be designed to follow Metro requirements, and shall include measurements of existing noise, a list of the major pieces of construction equipment that would be used, predictions of the noise levels at the closest noise-sensitive receptors (residences, hotels, schools, religious facilities, and similar facilities), and noise mitigation measures to be implemented to achieve compliance with the Federal Transit Administration 8-hour $L_{eq.equip}$ construction noise standards to the degree feasible. The Noise Control Plan must be approved by Metro prior to initiating noise-generating construction activities. The Project contractor shall conduct continuous noise monitoring to demonstrate compliance with the Federal Transit Administration 8-hour $L_{eq.equip}$ noise limits. If the FTA 8-hour $L_{eq.equip}$ criteria are exceeded, the Project contractor shall implement measures to reduce construction noise as much as feasible. The Project contractor shall establish a public information and complaint system. The Project contractor shall respond to and provide corrective action for complaints within 24-hours. In addition, The Project shall comply with local noise ordinances when applicable, including by obtaining a variance(s) from the applicable local jurisdiction when nighttime work is required. Noise reducing methods that may be implemented by the Project contractor include:*
- *If nighttime construction is planned, a noise variance may be prepared by the Project contractor, if required by the jurisdiction, that demonstrates the implementation of control measures to maintain noise levels below the applicable Federal Transit Administration and local standards.*
- *Where nighttime construction would exceed the FTA nighttime criteria, avoid nighttime construction to the degree feasible.*
- *Utilize specialty equipment equipped with enclosed engines and/or high performance mufflers as feasible. The Project contractor shall locate equipment and staging areas as far from noise-sensitive receptors as possible.*
- *Limit unnecessary idling of equipment.*
- *Install temporary noise barriers as needed where feasible.*
- *Reroute construction related truck traffic away from residential streets to the extent permitted by the relevant municipality.*
- *Avoid impact pile driving where possible. Drilled piles or vibratory pile drivers would be required where feasible.*

- *Where Project construction cannot be performed in accordance with the requirements of the applicable noise limits, the Project contractor shall be required to investigate alternative construction methods that would result in lower sound levels.*

MM VIB-1.1: Vibration Control Plan:

- *Prior to construction, the Project contractor shall prepare a Vibration Control Plan demonstrating how the Federal Transit Administration building damage risk criteria and the Federal Transit Administration vibration annoyance criteria would be achieved. The Vibration Control Plan must be approved by Metro prior to initiating vibration-generating construction activities. The Vibration Control Plan shall include a list of the major pieces of construction equipment that will be used, and the predictions of the vibration levels at the closest sensitive receivers. The Project contractor shall conduct vibration monitoring to demonstrate compliance with the vibration limits during construction activity. Where the construction cannot be performed to meet the vibration criteria, the Project contractor shall implement alternative means and methods of construction measures to reduce vibration levels as much as feasible. Vibration reducing methods that may be implemented by the Project contractor include:*
  - *When feasible, less vibration intensive equipment or techniques near vibration sensitive locations.*
  - *Use as small an impact device (i.e., hoe ram, pile driver) as possible to accomplish necessary tasks.*
  - *Avoid impact pile driving where possible. Drilled piles or vibratory pile drivers will be required where feasible.*
  - *When feasible, in construction areas close to sensitive buildings, select non-impact demolition and construction methods such as saw or torch cutting and removal for off-site demolition, and use chemical splitting, or hydraulic jack splitting, instead of high impact methods.*
- *The Project contractor shall monitor construction vibration levels at structures identified as a "historic" resource within the meaning of CEQA Guidelines Section 15064.5(a) to ensure the vibration damage threshold of 0.12 in/sec peak particle velocity shall not be exceeded. The vibration monitoring shall be conducted by a qualified professional for real-time vibration monitoring for construction work at the Project construction site requiring heavy equipment or ground compaction devices. A pre-construction and post-construction survey of these buildings shall be conducted by a qualified structural engineer. Any damage shall be noted. All vibration monitors used for these measurements shall be equipped with an "alarm" feature to provide advanced notification that vibration impact criteria have been approached. Documented damage in the post-construction survey shall be repaired as required by the Secretary of the Interior's (SOI's) Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings. The following historic resources shall be included in the Vibration Control Plan.*

- *Historic building located at 4511 Sepulveda Boulevard, Sherman Oaks*
- *Photo Electronics Corp. Building, 1944 Cotner Avenue, Los Angeles*
- *Dual Ultimate Pharmacy, 2020 Cotner Avenue, Los Angeles*
- *Building at 2114 Cotner Avenue, Los Angeles*
- *Rodeo Realty, 15300 Ventura Boulevard, Sherman Oaks*
- *Historic building located at 14746 Raymer Street, Van Nuys*

3.11.6.2 Alternative 3

MM NOI-3.1: ***Soundwalls*:**

- *Soundwalls of 3.5 feet in height shall be installed above the top of the guideway beams to reduce noise to below the Federal Transit Administration moderate-impact noise criteria. Locations shall be verified during final design as necessary to reduce noise to below the Federal Transit Administration moderate-impact noise criteria. Table 3.11-41 shows the soundwall locations.*

Table 3.11-41. Alternative 3: MM NOI-3.1 Soundwalls Locations

Location	Type	Civil Station Location	Track Side
Alber's Apartments, 15328 Albers Street and Best Western Plus Carriage Inn 5525 Sepulveda Boulevard	3.5-foot-high soundwall above the guideway beams	1047+80 to 1053+00 East of tracks	Northbound
Granada Apartments 15630 Vanowen Street	3.5-foot-high soundwall above the guideway beams	1137+40 to 1142+00 East of tracks	Northbound
Single-family Backyards east of I-405, between Vanowen Street and Lili Way	3.5-foot-high soundwall above the guideway beams	1142+00 to 1160+30 East of tracks	Northbound
Single-family homes along the east side of Firmament Avenue, between Cohasset Street and Saticoy Street	3.5-foot-high soundwall above the guideway beams	1189+00 to 1195+00 East of tracks	Northbound

Source: HTA, 2024

MM = mitigation measure
NOI = noise

MM NOI-3.2: ***N*oise Control Plan:**

- *Prior to the initiation of localized construction activities, the Project contractor shall develop a Noise Control Plan demonstrating how the Federal Transit Administration 8-hour $L_{eq.equip}$ (equivalent noise level of equipment) noise criteria would be achieved during construction. The Noise Control Plan shall be prepared by a board-certified acoustical engineer. The Federal Transit Administration 8-hour $L_{eq.equip}$ construction noise standards are as follows: Residential daytime standard of 80 dBA $L_{eq.equip}$ and nighttime standard of 70 dBA $L_{eq.equip}$, Commercial daytime and nighttime standard of 85 dBA $L_{eq.equip}$, and Industrial daytime and nighttime standard of 90 dBA $L_{eq.equip}$. The Noise Control Plan shall be designed to follow Metro requirements, and shall include measurements of existing noise, a list of the major pieces of construction equipment that would be used, predictions of the noise levels at the closest noise-sensitive receptors (residences, hotels, schools, religious facilities, and similar facilities), and noise mitigation measures*

to be implemented to achieve compliance with the Federal Transit Administration 8-hour $L_{eq.equip}$ construction noise standards to the degree feasible. The Noise Control Plan must be approved by Metro prior to initiating noise-generating construction activities. The Project contractor shall conduct continuous noise monitoring to demonstrate compliance with the Federal Transit Administration 8-hour $L_{eq.equip}$ noise limits. If the Federal Transit Administration 8-hour $L_{eq.equip}$ criteria are exceeded, the Project contractor shall implement measures to reduce construction noise as much as feasible. The Project contractor shall establish a public information and complaint system. The Project contractor shall respond to and provide corrective action for complaints within 24-hours. In addition, the Project shall comply with local noise ordinances when applicable, including by obtaining a variance(s) from the applicable local jurisdiction when nighttime work is required. Noise reducing methods that may be implemented by the Project contractor include:

- *If nighttime construction is planned, a noise variance may be prepared by the Project contractor, if required by the jurisdiction, that demonstrates the implementation of control measures to maintain noise levels below the applicable Federal Transit Administration and local standards.*
- *Where nighttime construction would exceed the FTA nighttime criteria, avoid nighttime construction to the degree feasible.*
- *Utilize specialty equipment equipped with enclosed engines and/or high performance mufflers as feasible. The Project contractor shall locate equipment and staging areas as far from noise-sensitive receptors as possible.*
- *Limit unnecessary idling of equipment*
- *Install temporary noise barriers as needed where feasible.*
- *Reroute construction related truck traffic away from residential streets to the extent permitted by the relevant municipality.*
- *Avoid impact pile driving where possible. Drilled piles or vibratory pile drivers would be required where feasible.*
- *Where Project construction cannot be performed in accordance with the requirements of the applicable noise limits, the Project contractor shall be required to investigate alternative construction methods that would result in lower sound levels.*

MM VIB-3.1: ***Vibration Control Plan:***

- *Prior to construction, the Project contractor shall prepare a Vibration Control Plan demonstrating how the Federal Transit Administration building damage risk criteria and the Federal Transit Administration vibration annoyance criteria would be achieved. The Vibration Control Plan must be approved by Metro prior to initiating vibration-generating construction activities. The Vibration Control Plan shall include a list of the major pieces of construction equipment that will be used, and the predictions of the vibration levels at the closest sensitive receivers.*

The Project contractor shall conduct vibration monitoring to demonstrate compliance with the vibration limits during construction activity. Where the construction cannot be performed to meet the vibration criteria, the Project contractor shall implement alternative means and methods of construction measures to reduce vibration levels as much as feasible. Vibration reducing methods that may be implemented by the Project contractor include:

- *When feasible, less vibration intensive equipment or techniques near vibration sensitive locations.*
- *Use as small an impact device (i.e., hoe ram, pile driver) as possible to accomplish necessary tasks.*
- *Avoid impact pile driving where possible. Drilled piles or vibratory pile drivers will be required where feasible.*
- *When feasible, in construction areas close to sensitive buildings, select non-impact demolition and construction methods such as saw or torch cutting and removal for off-site demolition, and use chemical splitting, or hydraulic jack splitting, instead of high impact methods.*

- *The Project contractor shall monitor construction vibration levels at structures identified as a "historic" resource within the meaning of CEQA Guidelines Section 15064.5(a)to ensure the vibration damage threshold of 0.12 in/sec peak particle velocity shall not be exceeded. The vibration monitoring shall be conducted by a qualified professional for real-time vibration monitoring for construction work at the Project construction site requiring heavy equipment or ground compaction devices. A pre-construction and post-construction survey of these buildings shall be conducted by a qualified structural engineer. Any damage shall be noted. All vibration monitors used for these measurements shall be equipped with an "alarm" feature to provide advanced notification that vibration impact criteria have been approached. Documented damage in the post-construction survey shall be repaired as required by the Secretary of the Interior's (SOI's) Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings. The following historic resources shall be included in the Vibration Control Plan.*
  - *Historic building located at 4511 Sepulveda Boulevard, Sherman Oaks*
  - *Photo Electronics Corp. Building, 1944 Cotner Avenue, Los Angeles*
  - *Dual Ultimate Pharmacy, 2020 Cotner Avenue, Los Angeles*
  - *Building at 2114 Cotner Avenue, Los Angeles*
  - *UCLA Ackerman Hall, 308 Westwood Plaza, Los Angeles*
  - *Rodeo Realty, 15300 Ventura Boulevard, Los Angeles*
  - *Historic building located at 14746 Raymer Street, Van Nuys*

3.11.6.3 Alternative 4

MM NOI-4.1: ***Soundwalls***:

- *Soundwalls of heights of 3 to 10 feet shall be installed above the rail girder structure to reduce noise impacts to below the Federal Transit Administration*

moderate noise impact criteria. Locations shall be verified during final design as necessary to reduce noise to below the Federal Transit Administration moderate-impact noise criteria. Table 3.11-42 shows the recommended locations of soundwalls.

Table 3.11-42. Alternative 4: MM-NOI-4.1 Soundwall Locations

Location	Type	Civil Stations	Track Side
East of aerial guideway, between Sutton Street and Greenleaf Street	4-foot-high absorptive soundwall atop U-shaped girder	958+00 to 961+00	Northbound
	5-foot-high absorptive soundwall atop U-shaped girder	961+00 to 963+00	Northbound
West of aerial guideway, north of Weddington Street	3-foot-high absorptive soundwall atop U-shaped girder	1018+00 to 1021+00	Southbound
East of aerial guideway, between Burbank Boulevard and Hatteras Street	3-foot-high absorptive soundwall atop U-shaped girder	1041+60 to 1044+40	Northbound
	10-foot-high absorptive soundwall atop U-shaped girder	1045+00 to 1048+00	Northbound
East of aerial guideway, between Haynes Street and Kittridge Street	10-foot-high absorptive soundwall atop U-shaped girder	1098+00 to 1101+00	Northbound
	5-foot-high absorptive soundwall atop U-shaped girder	1101+00 to 1102+50	Northbound
West of aerial guideway, between Wyandotte Street and Leadwell Street	3-foot-high absorptive soundwall atop U-shaped girder	1152+00 to 1154+00	Southbound
East of aerial guideway, between Valerio Street and Cohasset Street	3-foot-high absorptive soundwall atop U-shaped girder	1157+50 to 1161+00	Northbound
	3-foot-high absorptive soundwall atop U-shaped girder	1161+00 to 1164+20	Northbound

Source: HTA, 2024

MM = mitigation measure
NOI = noise

MM NOI-4.2: **Noise *Control Plan:***

- *Prior to the initiation of localized construction activities, the Project contractor shall develop a Noise Control Plan demonstrating how the Federal Transit Administration 8-hour $L_{eq.equip}$ (equivalent noise level of equipment) noise criteria would be achieved during construction. The Noise Control Plan shall be prepared by a board-certified acoustical engineer. The Federal Transit Administration 8-hour $L_{eq.equip}$ construction noise standards are as follows: Residential daytime standard of 80 dBA $L_{eq.equip}$ and nighttime standard of 70 dBA $L_{eq.equip}$, Commercial daytime and nighttime standard of 85 dBA $L_{eq.equip}$, and Industrial daytime and nighttime standard of 90 dBA $L_{eq.equip}$. The Noise Control Plan shall be designed to follow Metro requirements, and shall include measurements of existing noise, a list of the major pieces of construction equipment that would be used, predictions of the noise levels at the closest noise-sensitive receptors (residences, hotels, schools, religious facilities, and similar facilities), and noise mitigation measures to be implemented to achieve compliance with the Federal Transit Administration 8-hour $L_{eq.equip}$ construction noise standards to the degree feasible. The Noise Control Plan must be approved by Metro prior to initiating noise-generating*

construction activities. The Project contractor shall conduct continuous noise monitoring to demonstrate compliance with the Federal Transit Administration 8-hour $L_{eq.equip}$ noise limits. If the Federal Transit Administration 8-hour $L_{eq.equip}$ criteria are exceeded, the Project contractor shall implement measures to reduce construction noise as much as feasible. The Project contractor shall establish a public information and complaint system. The Project contractor shall respond to and provide corrective action for complaints within 24-hours. In addition, the Project shall comply with local noise ordinances when applicable, including by obtaining a variance(s) from the applicable local jurisdiction when nighttime work is required. Noise reducing methods that may be implemented by the Project contractor include:

- *If nighttime construction is planned, a noise variance may be prepared by the Project contractor, if required by the jurisdiction, that demonstrates the implementation of control measures to maintain noise levels below the applicable Federal Transit Administration and local standards.*
- *Where nighttime construction would exceed the FTA nighttime criteria, avoid nighttime construction to the degree feasible.*
- *Utilize specialty equipment equipped with enclosed engines and/or high performance mufflers as feasible. The Project contractor shall locate equipment and staging areas as far from noise-sensitive receptors as possible.*
- *Limit unnecessary idling of equipment.*
- *Install temporary noise barriers as needed where feasible.*
- *Reroute construction related truck traffic away from residential streets to the extent permitted by the relevant municipality.*
- *Avoid impact pile driving where possible. Drilled piles or vibratory pile drivers would be required where feasible.*
- *Where Project construction cannot be performed in accordance with the requirements of the applicable noise limits, the Project contractor shall be required to investigate alternative construction methods that would result in lower sound levels.*

MM VIB-4.1: Trackwork Isolation Methods:

- *The Project shall implement trackwork isolation to reduce groundborne vibration levels to below the Federal Transit Administration groundborne vibration impact criteria for frequent events at the locations where exceedance of the groundborne vibration impact criteria are anticipated to occur. The Project shall isolate trackwork using one of the following four methods:*
  - *High Resilience Direct Fixation Rail Fasteners (HRDF): HRDF attaches the rail directly to the fastener body. HRDF is used to attach the rails to the first concrete pour and then the space around the tacks is filled with precast*

concrete panels. There are several models of highly resilient direct fixation fasteners available that can be effective at controlling vibration.

- *Low-Impact or Spring Frogs: Wheel impacts at crossovers could increase vibration levels up to 10 VdB at sensitive buildings near the crossovers. Where vibration impact occurs at the crossovers along the project alignment, the impact vibration can be reduced through the use of low-impact frogs.*
- *Floating Slab Track: This approach typically provides the highest reduction in GBV levels and is employed near Category 1 buildings where thresholds of impact are more stringent. Under this method, the track is constructed on a concrete slab that is supported by either resilient pads or a continuous resilient mat.*
- *Resiliently Supported Ties: The resiliently supported tie system consists of concrete ties supported by rubber pads resting on top of a slab track or subway invert. The rails are fastened directly to the concrete ties using standard rail clips. This type of system has been shown to reduce GBV levels by up to 10 VdB.*

- *Locations where mitigation is required are identified in Table 3.11-43 and will be verified during final design.*

Table 3.11-43. Alternative 4: MM VIB-4.1 Vibration and Groundborne Noise Mitigation Measures

Mitigation Measure Type	Civil Station Limits From – To		Location Description
High Resilience Direct Fixation Rail Fasteners	519+00	520+50	Between 2355 S Bentley Avenue and 2345 S Bentley Avenue
Floating Slab	520+50	525+50	2337 S Bentley Avenue to Tennessee Avenue
High Resilience Direct Fixation Rail Fasteners	525+50	549+00	Tennessee Avenue to 1921 S Bentley Avenue
Floating Slab	549+00	551+00	1921 S Bentley Avenue to Missouri Avenue
High Resilience Direct Fixation Rail Fasteners	551+00	555+50	Missouri Avenue to 1835 S Bentley Avenue
Spring Frogs at Double Crossover	599+73	602+31	Crossovers north of Ashton Avenue
High Resilience Direct Fixation Rail Fasteners	611+50	616+00	1101 Westwood Boulevard to 1045 Westwood Boulevard
Floating Slab	625+50	630+00	North of Le Conte Avenue to 100 Medical Plaza
Resiliently Supported Ties	630+00	633+00	100 Medical Plaza to 710 Westwood Plaza
Floating Slab	633+00	639+00	710 Westwood Plaza to south of 570 Westwood Plaza
High Resilience Direct Fixation Rail Fasteners	673+50	711+00	South side of 121 Udine Way to north side of Hotel Bel-Air
High Resilience Direct Fixation Rail Fasteners	721+00	722+50	Residence located at 10651 Capello Way
High Resilience Direct Fixation Rail Fasteners	727+00	733+00	10650 Somma Way to 10687 Somma Way
High Resilience Direct Fixation Rail Fasteners	771+00	773+00	Residence located at 1545 Tanner Bridge Road

Mitigation Measure Type	Civil Station Limits From – To		Location Description
High Resilience Direct Fixation Rail Fasteners	907+00	909+00	3671 Meadville Drive to 3677 Meadville Drive
High Resilience Direct Fixation Rail Fasteners	918+00	931+00	3800 Scadlock Lane to north end of Briarwood Drive cul-de-sac

Source: HTA, 2024

MM = mitigation measure
VIB = vibration

MM VIB-4.2: ***Vibration Control Plan:***

- *Prior to construction, the Project contractor shall prepare a Vibration Control Plan demonstrating how the Federal Transit Administration building damage risk criteria and the Federal Transit Administration vibration annoyance criteria would be achieved. The Vibration Control Plan must be approved by Metro prior to initiating vibration-generating construction activities. The Vibration Control Plan shall include a list of the major pieces of construction equipment that will be used, and the predictions of the vibration levels at the closest sensitive receivers. The Project contractor shall conduct vibration monitoring to demonstrate compliance with the vibration limits during construction activity. Where the construction cannot be performed to meet the vibration criteria, the Project contractor shall implement alternative means and methods of construction measures to reduce vibration levels as much as feasible. Vibration reducing methods that may be implemented by the Project contractor include:*
  - *When feasible, less vibration intensive equipment or techniques near vibration sensitive locations.*
  - *Use as small an impact device (i.e., hoe ram, pile driver) as possible to accomplish necessary tasks.*
  - *Avoid impact pile driving where possible. Drilled piles or vibratory pile drivers will be required where feasible.*
  - *When feasible, in construction areas close to sensitive buildings, select non-impact demolition and construction methods such as saw or torch cutting and removal for off-site demolition, and use chemical splitting, or hydraulic jack splitting, instead of high impact methods.*
- *The Project contractor shall monitor construction vibration levels at structures identified as a "historic" resource within the meaning of California Environmental Quality Act Guidelines Section 15064.5(a)to ensure the vibration damage threshold of 0.12 in/sec peak particle velocity shall not be exceeded. The vibration monitoring shall be conducted by a qualified professional for real-time vibration monitoring for construction work at the Project construction site requiring heavy equipment or ground compaction devices. A pre-construction and post-construction survey of these buildings shall be conducted by a qualified structural engineer. Any damage shall be noted. All vibration monitors used for these measurements shall be equipped with an "alarm" feature to provide advanced*

notification that vibration impact criteria have been approached. Documented damage in the post-construction survey shall be repaired as required by the Secretary of the Interior's (SOI's) Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings. The following historic resources shall be included in the Vibration Control Plan.

- *Gayley Center located at 1101 Gayley Avenue, adjoining the proposed Wilshire Boulevard/Metro D Line Station, Los Angeles*
- *Linde Medical Building located at 10921 Wilshire Boulevard, Los Angeles adjacent to the proposed Wilshire Boulevard/Metro D Line Station*
- *Tishman Building located at 10950 Wilshire Boulevard, Los Angeles adjacent to the proposed Wilshire Boulevard/Metro D Line Station*
- *Historic building located at 4511 Sepulveda Boulevard, Los Angeles, next to the proposed aerial structure*
- *UCLA Ackerman Hall, 308 Westwood Plaza, Los Angeles*
- *Historic buildings located at 15300 and 15233 Ventura Boulevard, Sherman Oaks*
- *Historic building located at 4700 Sepulveda Boulevard, Sherman Oaks*
- *Lt. Patrick H. Daniels United States Army Reserve Center located at 5161 Sepulveda Boulevard, Sherman Oaks*
- *Starlight Cottage located at 5450 Sepulveda Boulevard, Sherman Oaks*
- *Cathedral of St. Mary Church located at 5335 Sepulveda Boulevard, Sherman Oaks*
- *Historic building located at 5724 Sepulveda Boulevard, Van Nuys*
- *Cabana Motel located at 5764 Sepulveda Boulevard, Van Nuys*
- *El Cortez Motel located at 5746 Sepulveda Boulevard, Van Nuys*
- *Historic building located at 6160 Sepulveda Boulevard, Van Nuys*
- *Historic building located at 6833 Sepulveda Boulevard, Van Nuys*
- *Lancer Lion II Apartments located at 7657 Sepulveda Boulevard, Van Nuys*
- *Historic building located at 7721 Sepulveda Boulevard, Van Nuys*
- *The Performing Arts Center located at 7735 Sepulveda Boulevard, Van Nuys*
- *Historic building located at 6833 Sepulveda Boulevard, Van Nuys*
- *Historic building located at 14746 Raymer Street, Van Nuys*
- *Air Raid Siren No. 110 located at the northeast corner of Covello Street and Sepulveda Boulevard in Van Nuys, and*

- *Air Raid Siren No. 117 on the north side of Oxnard Street just west of Sepulveda Boulevard in Van Nuys*

3.11.6.4 Alternative 5

MM NOI-5.1: **Noise Control Plan:**

- *Prior to the initiation of localized construction activities, the Project contractor shall develop a Noise Control Plan demonstrating how the Federal Transit Administration 8-hour $L_{eq.equip}$ (equivalent noise level of equipment) noise criteria would be achieved during construction. The Noise Control Plan shall be prepared by a board-certified acoustical engineer. The Federal Transit Administration 8-hour $L_{eq.equip}$ construction noise standards are as follows: Residential daytime standard of 80 dBA $L_{eq.equip}$ and nighttime standard of 70 dBA $L_{eq.equip}$, Commercial daytime and nighttime standard of 85 dBA $L_{eq.equip}$, and Industrial daytime and nighttime standard of 90 dBA $L_{eq.equip}$. The Noise Control Plan shall be designed to follow Metro requirements, and shall include measurements of existing noise, a list of the major pieces of construction equipment that would be used, predictions of the noise levels at the closest noise-sensitive receptors (residences, hotels, schools, religious facilities, and similar facilities), and noise mitigation measures to be implemented to achieve compliance with the Federal Transit Administration 8-hour $L_{eq.equip}$ construction noise standards to the degree feasible. The Noise Control Plan must be approved by Metro prior to initiating noise-generating construction activities. The Project contractor shall conduct continuous noise monitoring to demonstrate compliance with the Federal Transit Administration 8-hour $L_{eq.equip}$ noise limits. If the Federal Transit Administration 8-hour $L_{eq.equip}$ criteria are exceeded, the Project contractor shall implement measures to reduce construction noise as much as feasible. The Project contractor shall establish a public information and complaint system. The Project contractor shall respond to and provide corrective action for complaints within 24-hours. In addition, the Project shall comply with local noise ordinances when applicable, including by obtaining a variance(s) from the applicable local jurisdiction when nighttime work is required. Noise reducing methods that may be implemented by the Project contractor include:*
  - *If nighttime construction is planned, a noise variance may be prepared by the Project contractor, if required by the jurisdiction, that demonstrates the implementation of control measures to maintain noise levels below the applicable Federal Transit Administration and local standards.*
  - *Where nighttime construction would exceed the FTA nighttime criteria, avoid nighttime construction to the degree feasible.*
  - *Utilize specialty equipment equipped with enclosed engines and/or high performance mufflers as feasible. The Project contractor shall locate equipment and staging areas as far from noise-sensitive receptors as possible.*
  - *Limit unnecessary idling of equipment.*
  - *Install temporary noise barriers as needed where feasible.*

- *Reroute construction related truck traffic away from residential streets to the extent permitted by the relevant municipality.*
- *Avoid impact pile driving where possible. Drilled piles or vibratory pile drivers would be required where feasible.*
- *Where Project construction cannot be performed in accordance with the requirements of the applicable noise limits, the Project contractor shall be required to investigate alternative construction methods that would result in lower sound levels.*

MM VIB-5.1: Trackwork Isolation Methods:

- *The Project shall implement trackwork isolation to reduce groundborne vibration levels to below the Federal Transit Administration groundborne vibration impact criteria for frequent events at the locations where exceedance of the groundborne vibration impact criteria are anticipated to occur. The Project shall isolate trackwork using one of the following four methods:*
  - *High Resilience Direct Fixation Rail Fasteners (HRDF): HRDF attaches the rail directly to the fastener body. HRDF is used to attach the rails to the first concrete pour and then the space around the tacks is filled with precast concrete panels. There are several models of highly resilient direct fixation fasteners available that can be effective at controlling vibration.*
  - *Low-Impact or Spring Frogs: Wheel impacts at crossovers could increase vibration levels up to 10 VdB at sensitive buildings near the crossovers. Where vibration impact occurs at the crossovers along the project alignment, the impact vibration can be reduced through the use of low-impact frogs.*
  - *Floating Slab Track: This approach typically provides the highest reduction in GBV levels and is employed near Category 1 buildings where thresholds of impact are more stringent. Under this method, the track is constructed on a concrete slab that is supported by either resilient pads or a continuous resilient mat.*
  - *Resiliently Supported Ties: The resiliently supported tie system consists of concrete ties supported by rubber pads resting on top of a slab track or subway invert. The rails are fastened directly to the concrete ties using standard rail clips. This type of system has been shown to reduce GBV levels by up to 10 VdB.*
- *Locations where mitigation is required are identified in Table 3.11-44 and will be verified during final design.*

Table 3.11-44. Alternative 5: MM VIB-5.1 Groundborne Vibration and Groundborne Noise Mitigation Measures

Mitigation Measure Type	Civil Station Limits (From - To)		Location Description
High Resilience Direct Fixation Rail Fasteners	519+00	520+50	Between 2355 S Bentley Avenue and 2345 S Bentley Avenue
Floating Slab	520+50	525+50	2337 S Bentley Avenue to Tennessee Avenue
High Resilience Direct Fixation Rail Fasteners	525+50	549+00	Tennessee Avenue to 1921 S Bentley Avenue
Floating Slab	549+00	551+00	1921 S Bentley Avenue to Missouri Avenue
High Resilience Direct Fixation Rail Fasteners	551+00	555+50	Missouri Avenue to 1835 S Bentley Avenue
Spring Frogs at Double Crossover	599+73	602+31	Crossovers north of Ashton Avenue
High Resilience Direct Fixation Rail Fasteners	611+50	616+00	1101 Westwood Boulevard to 1045 Westwood Boulevard
Floating Slab	625+50	630+00	North of Le Conte Avenue to 100 Medical Plaza
Resiliently Supported Ties	630+00	633+00	100 Medical Plaza to 710 Westwood Plaza
Floating Slab	633+00	639+00	710 Westwood Plaza to south of 570 Westwood Plaza
High Resilience Direct Fixation Rail Fasteners	673+50	711+00	South side of 121 Udine Way to north side of Hotel Bel-Air
High Resilience Direct Fixation Rail Fasteners	721+00	722+50	residence located at 10651 Capello Way
High Resilience Direct Fixation Rail Fasteners	727+00	733+00	10650 Somma Way to 10687 Somma Way
High Resilience Direct Fixation Rail Fasteners	771+00	773+00	residence located at 1545 Tanner Bridge Road
High Resilience Direct Fixation Rail Fasteners	907+00	909+00	3671 Meadville Drive to 3677 Meadville Drive
High Resilience Direct Fixation Rail Fasteners	910+00	911+50	3721 Meadville Drive to 3719 Meadville Drive
High Resilience Direct Fixation Rail Fasteners	918+00	950+00	South end of Kingswood Road to 15259 Valley Vista Boulevard
High Resilience Direct Fixation Rail Fasteners	952+50	954+00	4321 Saugus Avenue to Sutton Street
Resiliently Supported Ties	954+00	958+00	Sutton Street to Ventura Boulevard/Sepulveda Boulevard Station
Low-Impact Frogs at Double Crossover	957+70	960+30	Crossovers south of Ventura Boulevard/Sepulveda Boulevard Station
Resiliently Supported Ties	965+50	967+00	Television and radio studios located at 15260 Ventura Boulevard
Floating Slab	970+00	972+00	3 Ball Entertainment video production located at 15301 Ventura Boulevard
High Resilience Direct Fixation Rail Fasteners	973+00	987+00	4650 Sepulveda Boulevard to US-101 southbound onramp
High Resilience Direct Fixation Rail Fasteners	990+00	1005+00	South of US-101 northbound offramp to Hartsook Street
Floating Slab	1008+00	1011+00	LA Live Stream film production at 15315 Magnolia Boulevard
High Resilience Direct Fixation Rail Fasteners	1011+00	1034+00	5225 Sepulveda Boulevard to south side of Burbank Boulevard

Mitigation Measure Type	Civil Station Limits (From - To)		Location Description
High Resilience Direct Fixation Rail Fasteners	1038+00	1048+00	5638 Sepulveda Boulevard to Hatteras Street
High Resilience Direct Fixation Rail Fasteners	1078+00	1079+00	Cinema Motel located at 6242 Sepulveda Boulevard
High Resilience Direct Fixation Rail Fasteners	1094+50	1111+00	Haynes Street to north side of Archwood Street
High Resilience Direct Fixation Rail Fasteners	1117+00	1129+00	6831 Sepulveda Boulevard to north side of 7007 Sepulveda Boulevard
Resiliently Supported Ties	1129+00	1134+00	North side of 7007 Sepulveda Boulevard to Sherman Way Station
Low-Impact Frogs at Double Crossovers	1131+30	1133+87	crossovers south of Sherman Way Station
High Resilience Direct Fixation Rail Fasteners	1148+00	1164+00	North of Wyandotte Street to north of Covello Street
High Resilience Direct Fixation Rail Fasteners	1168+00	1170+00	La Posada Motel locates at 7615 Sepulveda Boulevard
Resiliently Supported Ties	1175+00	1177+00	7721 Sepulveda Boulevard and 7735 Sepulveda Boulevard
Resiliently Supported Ties	1181+00	1183+00	Third Encore Annex Studios – Stagg 15239 Stagg Street
High Resilience Direct Fixation Rail Fasteners	1186+00	1189+00	Stagg Street Studio 15147 Stagg Street

Source: HTA, 2024

MM VIB-5.2: ***Vibration Control Plan:***

- *Prior to construction, the Project contractor shall prepare a Vibration Control Plan demonstrating how the Federal Transit Administration building damage risk criteria and the Federal Transit Administration vibration annoyance criteria would be achieved. The Vibration Control Plan must be approved by Metro prior to initiating vibration-generating construction activities. The Vibration Control Plan shall include a list of the major pieces of construction equipment that will be used, and the predictions of the vibration levels at the closest sensitive receivers. The Project contractor shall conduct vibration monitoring to demonstrate compliance with the vibration limits during construction activity. Where the construction cannot be performed to meet the vibration criteria, the Project contractor shall implement alternative means and methods of construction measures to reduce vibration levels as much as feasible. Vibration reducing methods that may be implemented by the Project contractor include:*
  - *When feasible, less vibration intensive equipment or techniques near vibration sensitive locations.*
  - *Use as small an impact device (i.e., hoe ram, pile driver) as possible to accomplish necessary tasks.*
  - *Avoid impact pile driving where possible. Drilled piles or vibratory pile drivers will be required where feasible.*

  - *When feasible, in construction areas close to sensitive buildings, select non-impact demolition and construction methods such as saw or torch cutting and removal for off-site demolition, and use chemical splitting, or hydraulic jack splitting, instead of high impact methods.*

- *The Project contractor shall monitor construction vibration levels at structures identified as a "historic" resource within the meaning of California Environmental Quality Act Guidelines Section 15064.5(a)to ensure the vibration damage threshold of 0.12 in/sec peak particle velocity shall not be exceeded. The vibration monitoring shall be conducted by a qualified professional for real-time vibration monitoring for construction work at the Project construction site requiring heavy equipment or ground compaction devices. A pre-construction and post-construction survey of these buildings shall be conducted by a qualified structural engineer. Any damage shall be noted. All vibration monitors used for these measurements shall be equipped with an "alarm" feature to provide advanced notification that vibration impact criteria have been approached. Documented damage in the post-construction survey shall be repaired as required by the Secretary of the Interior's (SOI's) Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings. The following historic resources shall be included in the Vibration Control Plan.*

  - *Gayley Center located at 1101 Gayley Avenue, adjoining the proposed Wilshire Boulevard/Metro D Line Station, Los Angeles*
  - *Linde Medical Building located at 10921 Wilshire Boulevard, adjacent to the proposed Wilshire Boulevard/Metro D Line Station, Los Angeles*
  - *Tishman Building located at 10950 Wilshire Boulevard, adjacent to the proposed Wilshire Boulevard/Metro D Line Station, Los Angeles*
  - *UCLA Ackerman Hall, 308 Westwood Plaza, Los Angeles*
  - *Historic buildings located at 4506 Saugus Street, Sherman Oaks*
  - *Historic building located at 14746 Raymer Street, Van Nuys*

3.11.6.5 Alternative 6

MM NOI-6.1: ***Traction Power Substation Noise Reduction****:*

- *The Project shall implement measures including, but not limited to, the following to reduce traction power substation noise:*

  - *Orient cooling fans and HVAC equipment away from sensitive receptors (i.e., At site 7, traction power substation fans shall be located on the sides of units closest to and facing Van Nuys Boulevard. At Site 9, traction power substation fans shall be located nearest to Vanowen Street and away from the nearest buildings north and east of the site.)*
  - *Use quieter cooling fans or heating, ventilation, and air conditioning equipment*

- *Provide a surrounding enclosure around the traction power substation unit.*
- *Install baffles on the exterior of the cooling fan and heating, ventilation, and air conditioning equipment.*
- *Provide sound insulation of traction power substation unit enclosure or mount sound-isolation materials to minimize transformer hum.*

MM NOI-6.2: ***No*ise Control Plan:**

- *Prior to the initiation of localized construction activities, the Project contractor shall develop a Noise Control Plan demonstrating how the Federal Transit Administration 8-hour $L_{eq.equip}$ (equivalent noise level of equipment) noise criteria would be achieved during construction. The Noise Control Plan shall be prepared by a board-certified acoustical engineer. The Federal Transit Administration 8-hour $L_{eq.equip}$ construction noise standards are as follows: Residential daytime standard of 80 dBA $L_{eq.equip}$ and nighttime standard of 70 dBA $L_{eq.equip}$, Commercial daytime and nighttime standard of 85 dBA $L_{eq.equip}$, and Industrial daytime and nighttime standard of 90 dBA $L_{eq.equip}$. The Noise Control Plan shall be designed to follow Metro requirements, and shall include measurements of existing noise, a list of the major pieces of construction equipment that would be used, predictions of the noise levels at the closest noise-sensitive receptors (residences, hotels, schools, religious facilities, and similar facilities), and noise mitigation measures to be implemented to achieve compliance with the Federal Transit Administration 8-hour $L_{eq.equip}$ construction noise standards to the degree feasible. The Noise Control Plan must be approved by Metro prior to initiating noise-generating construction activities. The Project contractor shall conduct continuous noise monitoring to demonstrate compliance with the Federal Transit Administration 8-hour $L_{eq.equip}$ noise limits. If the Federal Transit Administration 8-hour $L_{eq.equip}$ criteria are exceeded, the Project contractor shall implement measures to reduce construction noise as much as feasible. The Project contractor shall establish a public information and complaint system. The Project contractor shall respond to and provide corrective action for complaints within 24-hours. In addition, the Project shall comply with local noise ordinances when applicable, including by obtaining a variance(s) from the applicable local jurisdiction when nighttime work is required. Noise reducing methods that may be implemented by the Project contractor include:*
  - *If nighttime construction is planned, a noise variance may be prepared by the Project contractor, if required by the jurisdiction, that demonstrates the implementation of control measures to maintain noise levels below the applicable Federal Transit Administration and local standards.*
  - *Where nighttime construction would exceed the FTA nighttime criteria, avoid nighttime construction to the degree feasible.*
  - *Utilize specialty equipment equipped with enclosed engines and/or high performance mufflers as feasible. The Project contractor shall locate equipment and staging areas as far from noise-sensitive receptors as possible.*

- *Limit unnecessary idling of equipment.*
- *Install temporary noise barriers as needed where feasible.*
- *Reroute construction related truck traffic away from residential streets to the extent permitted by the relevant municipality.*
- *Avoid impact pile driving where possible. Drilled piles or vibratory pile drivers would be required where feasible.*
- *Where Project construction cannot be performed in accordance with the requirements of the applicable noise limits, the Project contractor shall be required to investigate alternative construction methods that would result in lower sound levels.*

MM VIB-6.1: ***Vibration Control Plan:***

- *Prior to construction, the Project contractor shall prepare a Vibration Control Plan demonstrating how the Federal Transit Administration building damage risk criteria and the Federal Transit Administration vibration annoyance criteria would be achieved. The Vibration Control Plan must be approved by Metro prior to initiating vibration-generating construction activities. The Vibration Control Plan shall include a list of the major pieces of construction equipment that will be used, and the predictions of the vibration levels at the closest sensitive receivers. The Project contractor shall conduct vibration monitoring to demonstrate compliance with the vibration limits during construction activity. Where the construction cannot be performed to meet the vibration criteria, the Project contractor shall implement alternative means and methods of construction measures to reduce vibration levels as much as feasible. Vibration reducing methods that may be implemented by the Project contractor include:*
  - *When feasible, less vibration intensive equipment or techniques near vibration sensitive locations.*
  - *Use as small an impact device (i.e., hoe ram, pile driver) as possible to accomplish necessary tasks.*
  - *Avoid impact pile driving where possible. Drilled piles or vibratory pile drivers will be required where feasible.*
  - *When feasible, in construction areas close to sensitive buildings, select non-impact demolition and construction methods such as saw or torch cutting and removal for off-site demolition, and use chemical splitting, or hydraulic jack splitting, instead of high impact methods.*
- *The Project contractor shall monitor construction vibration levels at structures identified as a "historic" resource within the meaning of California Environmental Quality Act Guidelines Section 15064.5(a)to ensure the vibration damage threshold of 0.12 in/sec peak particle velocity shall not be exceeded. The vibration monitoring shall be conducted by a qualified professional for real-time vibration monitoring for construction work at the Project construction site requiring heavy equipment or ground compaction devices. A pre-construction and post-*

construction survey of these buildings shall be conducted by a qualified structural engineer. Any damage shall be noted. All vibration monitors used for these measurements shall be equipped with an "alarm" feature to provide advanced notification that vibration impact criteria have been approached. Documented damage in the post-construction survey shall be repaired as required by the Secretary of the Interior's (SOI's) Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings. The following historic resources shall be included in the Vibration Control Plan.

- *Gayley Center located at 1101 Gayley Avenue, adjoining the proposed Wilshire Boulevard/Metro D Line Station, Los Angeles*
- *Linde Medical Building located at 10921 Wilshire Boulevard, adjacent to the proposed Wilshire Boulevard/Metro D Line Station, Los Angeles*
- *Tishman Building located at 10950 Wilshire Boulevard, adjacent to the proposed Wilshire Boulevard/Metro D Line Station, Los Angeles*
- *UCLA Ackerman Hall, 308 Westwood Plaza, Los Angeles*
- *Historic buildings located at 5958 Van Nuys Boulevard, Sherman Oaks*

3.11.6.6 Impacts After Mitigation

A summary of applicable mitigation measures and impacts after mitigation is included in Table 3.11-45 for project construction and operations. A summary of applicable MSF mitigation measures and impacts are mitigation are included in Table 3.11-46.

Operational Noise

Implementation of the mitigation measures previously listed would mitigate impacts to noise related to project operations to less than significant.

Construction Noise

Project construction would result in temporary and periodic increases in ambient noise levels due to construction activity that would exceed FTA's criteria, and where applicable, the standards established by the local noise ordinances. While MM NOI-1.2, NOI-3.2, NOI 4.2, NOI-5.1, and NOI-6.2 would be implemented, which would include noise-reducing measures, there may still be temporary or periodic increases in ambient noise levels that exceed FTA construction impact criteria. There are no additional feasible mitigation measures to reduce construction noise levels. Therefore, impacts related to construction noise would be significant and unavoidable.

Operational Vibration

Implementation of the mitigation measures previously listed would mitigate impacts to noise related to project operations to less than significant.

Construction Vibration

Significant GBV could exceed the FTA vibration damage and vibration annoyance criteria when certain construction activities would occur at close distances to sensitive receptors. While MM VIB-1.1, VIB-3.1, VIB-4.2, VIB-5.2, and VIB-6.1 would be implemented, which would include vibration-reducing measures, there may still be temporary or periodic increases in vibration levels that exceed FTA construction

vibration impact criteria. Historic resources have been identified in MM VIB-1.1, VIB-3.1, VIB-4.2, VIB-5.2, and VIB-6.1 that would require vibration monitoring and pre-construction and post-construction surveys. The mitigation would also require a pre-construction and post construction survey to be prepared, and any damage noted and restored per the requirements of SOI Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings. Therefore, impacts related to construction vibration at historic resources would be less than significant with mitigation. Regarding construction vibration at non-historic structures, in some instances it may not be possible to reduce vibration by using less vibration intensive equipment due to geological conditions or physical constraints of the construction site. There are no additional feasible mitigation measures to reduce construction vibration levels. Therefore, impacts related to construction vibration would be significant and unavoidable.

Table 3.11-45. Summary of Mitigation Measures and Impacts Before and After Mitigation for the Project Alternatives

CEQA Impact Topic		No Project	Alt 1	Alt 3	Alt 4	Alt 5	Alt 6
Operational							
Impact NOI-1: Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established by the Federal Transit Administration?	Impacts Before Mitigation	LTS	PS	PS	PS	LTS	PS
	Applicable Mitigation	NA	MM NOI-1.1	MM NOI-3.1	MM NOI-4.1	NA	MM NOI-6.1
	Impacts After Mitigation	LTS	LTS	LTS	LTS	LTS	LTS
Impact NOI-2: Would the project result in generation of excessive groundborne vibration or groundborne noise levels?	Impacts Before Mitigation	LTS	LTS	LTS	PS	PS	LTS
	Applicable Mitigation	NA	NA	NA	MM VIB-4.1	MM VIB-5.1	NA
	Impacts After Mitigation	LTS	LTS	LTS	LTS	LTS	LTS
Impact NOI-3: For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	Impacts Before Mitigation	NI	NI	NI	NI	NI	NI
	Applicable Mitigation	NA	NA	NA	NA	NA	NA
	Impacts After Mitigation	NI	NI	NI	NI	NI	NI
Construction							
Impact NOI-1: Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established by the Federal Transit Administration?	Impacts Before Mitigation	LTS	PS	PS	PS	PS	PS
	Applicable Mitigation	NA	MM NOI-1.2	MM NOI-3.2	MM NOI-4.2	MM NOI-5.1	MM NOI-6.2
	Impacts After Mitigation	LTS	SU	SU	SU	SU	SU
Impact NOI-2: Would the project result in generation of excessive groundborne vibration or groundborne noise levels?	Impacts Before Mitigation	LTS	PS	PS	PS	PS	PS
	Applicable Mitigation	NA	MM VIB-1.2	MM VIB-3.1	MM VIB-4.2	MM VIB-5.2	MM VIB-6.1
	Impacts After Mitigation	LTS	SU	SU	SU	SU	SU

CEQA Impact Topic		No Project	Alt 1	Alt 3	Alt 4	Alt 5	Alt 6
Impact NOI-3: For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	Impacts Before Mitigation	NI	NI	NI	NI	NI	NI
	Applicable Mitigation	NA	NA	NA	NA	NA	NA
	Impacts After Mitigation	NI	NI	NI	NI	NI	NI

Source: HTA, 2024

LTS = less than significant
MM = mitigation measure
NA = not applicable
NI = no impact
NOI = noise
PS = potentially significant
SU = significant and unavoidable
VIB = vibration

Table 3.11-46. Summary of Mitigation Measures and Impacts Before and After Mitigation for the Maintenance and Storage Facilities

CEQA Impact Topic		MRT MSF Base Design (Alts 1 and 3)	MRT MSF Design Option 1 (Alts 1 and 3)	Electric Bus MSF (Alt 1)	HRT MSF (Alts 4 and 5)	HRT MSF (Alt 6)
Operational						
Impact NOI-1: Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established by the Federal Transit Administration?	Impacts Before Mitigation	LTS	LTS	LTS	LTS	LTS
	Applicable Mitigation	NA	NA	NA	NA	NA
	Impacts After Mitigation	LTS	LTS	LTS	LTS	LTS
Impact NOI-2: Would the project result in generation of excessive groundborne vibration or groundborne noise levels?	Impacts Before Mitigation	LTS	LTS	LTS	LTS	LTS
	Applicable Mitigation	NA	NA	NA	NA	NA
	Impacts After Mitigation	LTS	LTS	LTS	LTS	LTS
Impact NOI-3: For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	Impacts Before Mitigation	NI	NI	NI	NI	NI
	Applicable Mitigation	NA	NA	NA	NA	NA
	Impacts After Mitigation	NI	NI	NI	NI	NI
Construction						
Impact NOI-1: Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established by the Federal Transit Administration?	Impacts Before Mitigation	PS	PS	PS	PS	PS
	Applicable Mitigation	MM NO-1.2, MM NOI-3.2	MM NO-1.2, MM NOI-3.2	MM NOI-1.2	MM NOI-4.2, MM NOI-5.1	MM NOI-6.2
	Impacts After Mitigation	SU	SU	SU	SU	SU
Impact NOI-2: Would the project result in generation of excessive groundborne vibration or groundborne noise levels?	Impacts Before Mitigation	LTS	PS	LTS	PS	PS
	Applicable Mitigation	NA	MM VIB-1.1, MM VIB-3.1	NA	MM VIB-4.2, MM VIB-5.2	MM VIB-6.3
	Impacts After Mitigation	LTS	SU	LTS	SU	SU

CEQA Impact Topic		MRT MSF Base Design (Alts 1 and 3)	MRT MSF Design Option 1 (Alts 1 and 3)	Electric Bus MSF (Alt 1)	HRT MSF (Alts 4 and 5)	HRT MSF (Alt 6)
Impact NOI-3: For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	Impacts Before Mitigation	NI	NI	NI	NI	NI
	Applicable Mitigation	NA	NA	NA	NA	NA
	Impacts After Mitigation	NI	NI	NI	NI	NI

Source: HTA, 2024

LTS = less than significant
MM = mitigation measure
NA = not applicable
NI = no Impact
NOI = noise
PS= potentially significant
SU = significant and unavoidable
VIB = vibration