

- Residential interior noise levels of Ldn 45 dBA or greater caused by noise level increases due to the project.
- Construction noise levels not in compliance with the City of Sacramento Noise Ordinance.
- Occupied existing and project residential and commercial areas are exposed to vibration peak particle velocities greater than 0.5 in/sec due to project construction.
- Project residential and commercial areas are exposed to vibration peak particle velocities greater than 0.5 in/sec due to highway traffic and rail operations.
- Historic buildings and archaeological sites are exposed to vibration peak particle velocities greater than 0.25 in/sec due to project construction, highway traffic, and rail operations.

5.3.5 Impacts and Mitigation

Impact NV-1 Construction of the project may expose the public to high noise levels

Analysis Potentially Significant

The Sacramento Municipal Code, Title 8 - Health and Safety, Chapter 8.68 – Noise Control, limits construction activity to the period between the hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday. Construction is also limited to the hours between 9:00 a.m. and 6:00 p.m. on Sunday. However, the Codes do not mandate maximum allowable construction noise levels. Provided that the proposed construction activities occur during the allowed hours specified above, no significant construction noise impacts are anticipated. Table 5.3-3 summarizes construction noise levels at various distances.

Mitigation

NV-1 - Noise control devices, such as equipment mufflers, enclosures, and barriers can be used to reduce construction noise. Natural and artificial barriers such as ground elevation and existing buildings can shield construction noise. Staging areas should be kept as far from sensitive noise receptors as possible. noise barriers, such as temporary walls or piles of excavated material, should be constructed between noisy activities and noise-sensitive receivers.

Avoid residential areas when planning haul truck routes.

Replace noisy equipment with quieter equipment, such as vibratory pile driver instead of a conventional pile driver, enclosed air compressors, and mufflers on all engines.

The LRT vehicles have warning devices that are sounded as the vehicles enter the stations and at-grade crossings. The City does not impose a quantitative noise limit specifically on warning devices. A noise criterion for warning devices recommended by American Association of Railroads’ Signal Manual specifies that the noise levels of a warning bell should not be more than 105 dBA and not less than 75 dBA at a point 10 feet from the source. The warning device must be clearly audible to alert pedestrians or drivers on the roadways of imminent train pass-bys.

Table 5.3-4: Summary of Operational Noise Impact Analysis

Site Number	Land Use Category ¹	Distance to Track ² , feet	Ambient Noise Level L _{dn} , dBA	Project-level Noise Level, L _{dn} , dBA	Cumulative Noise, L _{dn} , dBA	Increase in Cumulative Noise, dBA	Interior Noise Level due to Project, L _{dn} /Leq, dBA	Noise Impact
11	SFR	41	67	68	70	3	47	Yes
12	SFR	43	67	67	70	3	47	Yes

Notes:

1. SFR: single-family residence;

2. Measured from the center of the railroad alignment to the receptor points shown on Figure 5.3-1

Mitigation

NV – 3 - Sound insulation could be used to reduce impacts by adding glazing to windows, or replacing outdated single-paned windows to acoustically-rated modern dual-pane windows. These forms of sound insulation can result in a 10 to 30-dB reduction; thus, the noise levels would be mitigated. The types and details of window material and design shall be discussed during the final stage of design.

At locations along the alignment where there are tight-turn radii in the tracks, wheel squeal may become a source of noise complaints. To avoid wheel squeals, it is recommended that the track turn radius be kept above 1,000 feet at all locations. However, RT is aware that one turning radius would be 82 feet. Rail lubrication on sharp turns would be used to reduce or minimize squeals.

As rails wear, both noise levels may increase. Grinding down or replacing worn rail will assist with maintaining operating levels of noise and vibration. Also, wheel truing, the grinding down of flat spots on the rails’ wheels that occur due to braking, will reduce noise and vibration effects. Overall vehicle maintenance will help reduce the likelihood of increased noise and vibration.

In regards to the warning device, transit gongs are designed to be clearly audible for safety reasons. Various gong sounding treatment options or mounting modifications can be applicable for noise reduction.

Significance After Mitigation

Less than significant.

Impact NV-4 Operation of the proposed project may permanently expose sensitive receptors to increased vibration levels

Analysis Less than Significant

The proposed LRT vehicles for this project would be similar to the vehicles in existing service for the Blue and Gold lines. The current revenue vehicles are manufactured by Siemens Transportation Systems and Construcciones y Auxiliar de Ferrocarriles. As a result, future pass-by vibration levels would closely resemble the levels currently experienced by the adjacent sensitive receptors. For sensitive receptors north of H Street, the new proposed LRT service would be a new source of ground-borne vibration.

experienced by the adjacent sensitive receptors. For sensitive receptors north of H Street, the new proposed LRT service would be a new source of ground-borne vibration.

According to the results summarized in Table 5.3-2, LRT pass-by Peak Particle Velocity (PPV) vibration levels are lower by almost an order of magnitude than the City's required 0.5 in/sec for residential structures and 0.25 in/sec for historical buildings.

For the new construction segment of the proposed alignment north of H Street, the closest residential structure is at least 50 feet away from the proposed tracks. Measured vibration levels were recorded at approximately 50 feet away from existing tracks. These measured vibration levels can be used to estimate future operational vibration impacts at the residences north of H Street due to their comparable distances to the source. According to the measured levels, these residences would experience LRT pass-by vibration levels in the range of 0.008 and 0.048 in/sec that are well below the City's mandated vibration levels of 0.5 in/sec for residential structures and 0.25 in/sec for historical buildings. No operational vibration impacts are anticipated for these residences north of H Street.

Mitigation ***No mitigation is necessary.***

No Project Alternative

Under the No Project Alternative, the proposed MOS-1 Project would not be constructed and no new noise impacts would result.

Cumulative Impacts:

Overall noise increase due to the proposed LRT operation would be perceived at nearby sensitive locations in various levels. Along the new alignment north of H Street, the project would result in an approximate increase of 3-dB of cumulative noise levels at nearby sensitive locations including two single-family residences. No significant cumulative vibration impacts are anticipated.