Attachment 3b Construction Equipment Noise Analysis Technical Memorandum

LAX Airfield and Terminal Modernization Project EIR Addendum

Construction Equipment Noise Analysis

Technical Memorandum

HMMH Project Number 23-0041D.001
December 2024

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1. Summary

This memorandum provides updates to the noise analysis for planned construction activities for the certified Los Angeles International Airport (LAX) Airfield and Terminal Modernization Project (ATMP or "Project") Final Environmental Impact Report (EIR) that was prepared pursuant to the requirements of the California Environmental Quality Act (CEQA). Detailed information regarding the construction noise analysis completed for the ATMP EIR is provided in Appendix F.3, *Construction Equipment Noise Analysis Technical Report,* of the EIR. The updates to the EIR construction noise analysis that are presented herein account for proposed design refinements to the ATMP roadway system improvements and the development of more detailed construction approach information. The proposed design refinements are the result of more detailed engineering design and planning that has been undertaken since the 2021 certification of the EIR and approval of the Project. In conjunction with the more detailed engineering design and planning, additional details regarding construction of the proposed roadway system improvements were developed including an updated construction equipment list and more information about the anticipated activity schedule ("use schedule") for certain construction equipment.

In light of the proposed design refinements and additional construction information related to the proposed roadway system improvements, this memorandum provides updates to the construction noise impacts analysis of the ATMP EIR, particularly as related to the potential for significant impacts to noise-sensitive receptors.[1] The ATMP EIR noise analysis evaluated potential construction noise impacts at 11 noise-sensitive locations including residential areas to the north of the ATMP area and hotels to the east of the ATMP area. The updated construction noise analysis evaluated potential impacts at these same receptors. Similar to the EIR, the updated analysis evaluated potential construction noise impacts directly related to the proposed roadway improvements as well as potential impacts related to roadway construction in combination with other major elements of the ATMP such as concourse/terminal improvements and airfield improvements.

The ATMP EIR noise analysis determined that five of the 11 noise-sensitive receptors would, without mitigation, be significantly impacted by noise from construction of the roadway improvements or from the combined construction of roadway improvements and concourse/terminal improvements. That was also found to be the case in the updated construction noise analysis. Although the updated analysis found that construction noise levels would be higher than those identified in the EIR (i.e., construction noise levels associated with the Project with the proposed roadway system design refinements would be higher than those associated with the Approved ATMP), primarily due to the additional equipment contained in the updated construction equipment list, the increases in construction noise levels would be approximately three A-weighted decibels (3 dBA) or less. A change in noise level of 3 dBA is considered to be "just noticeable" (i.e., not substantial). The significant construction noise impacts identified in the ATMP EIR, as also identified in the updated noise analysis, would be reduced to less than significant with implementation of the construction noise mitigation measures presented in the EIR. As such, the conclusions of the ATMP Final EIR related to construction noise impacts remain valid when taking into consideration the proposed refinements to roadway system improvements and the additional information pertaining to construction equipment for the subject improvements.

2. Methodology

Construction activities typically generate noise from the operation of equipment required for demolition and construction of various facilities. Noise impacts from on-site construction and construction staging areas have been evaluated by considering the different types of construction activity, calculating the construction-related noise level at nearby noise-sensitive receptor locations, comparing these construction-related noise levels to existing ambient noise levels, and determining whether construction-related increases in ambient noise levels would result in significant impacts. The methodology used to determine construction noise levels for the updated noise analysis is the same as was applied in the ATMP EIR with integration of new/additional construction

[1] Noise-sensitive uses are places that might contain noise-sensitive equipment; individuals who are particularly susceptible to noise stimuli, such as children or the elderly; or accommodations for people to sleep. Such uses include residences, hospitals, hotels, and schools.

information where appropriate, as described below. Specifically, the following steps were undertaken to calculate construction-period noise levels:

1. Existing (ambient) Community Noise Equivalent Level (CNEL) dBA noise levels at surrounding noise-sensitive receptor locations were estimated in the ATMP EIR based on aircraft noise levels that were modeled in the Federal Aviation Administration's (FAA's) Aviation Environmental Design Tool (AEDT) for existing conditions (since aircraft noise is the dominant noise source for areas around LAX, the aircraft noise modeling provides an effective way to estimate existing noise levels in proximity to the nearby noise-sensitive receptors). The existing ambient CNEL from the EIR was reused in the updated noise analysis in order to identify changes in construction noise levels directly attributable to the new/additional construction information (i.e., the design refinements, updated construction equipment list, and changes in use schedule would not alter existing ambient noise levels [without Project construction]).
2. Typical noise levels for each type of construction equipment were obtained from the Federal Highway Administration's (FHWA's) Roadway Construction Noise Model (RCNM). Usage factors for equipment types were included in the calculations, based on factors identified by FHWA as being typical for construction of roadway infrastructure projects and are consistent with the roadway construction efforts for the Project. Evening and nighttime penalties were applied and then the noise levels were averaged to determine a 24-hour Equivalent Sound Level (L_{eq}) usage factor. The RCNM construction equipment noise levels are the same reference levels as in the EIR (refer to Table 2 in Appendix F3 of the EIR). The updated construction equipment list obtained from the Project design/construction team included several types of equipment that were not in the original list used for the ATMP EIR noise analysis. That additional equipment was accounted for in calculating composite noise levels for all construction equipment combined, which is reflected in the *Updated Roadway Construction Equipment Table* presented in **Appendix A**.
3. Distances between construction sites and construction staging area locations (i.e., Project-related noise sources) and surrounding noise-sensitive receptors were measured using Project plans and aerial imagery from building facades or outdoor use areas to nearest edge of construction activity in the construction plans. It should be noted that changes in roadway segment alignments proposed in conjunction with the design refinements occurred in areas located away from noise-sensitive receptors. None of the design refinements resulted in roadway segments being placed materially closer to noise-sensitive receptors than what was assumed in the EIR analysis. As such, the EIR distances between edges of construction and the nearest noise-sensitive receptors did not change for the updated noise analysis.
4. Construction noise levels were calculated for noise-sensitive receptor locations based on the conventional standard point source noise-distance attenuation factor of 6.0 dBA for each doubling of distance. Construction noise levels were quantified at predetermined distances from the construction sites and staging areas using CNEL. These calculations are considered conservative, as they do not account for noise reductions from intervening structures, walls, or other barriers. This was the same for the EIR noise analysis and the updated noise analysis.
5. Calculated noise levels associated with Project construction sound level dBA $L_{eq}(h)$ at noise-sensitive receptor locations were then assessed an evening noise penalty of +5 dBA and a nighttime noise penalty of +10 dBA, consistent with noise weighting for determining the 24-hour CNEL dBA, and then logarithmically added to the estimated existing ambient CNEL dBA AEDT noise levels to determine total sound level CNEL. In conjunction with development of the updated construction equipment list, the Project design/construction team identified a particular piece of equipment (i.e., vibratory driver/extractor) that would be operated only during daytime hours (i.e., being operated periodically between 7 a.m. and 7 p.m.). As such, it would not contribute a 5 dB evening penalty or a 10 dB nighttime penalty to the composite CNEL. That Use Schedule is accounted for in the calculation of the composite construction equipment CNEL value presented in Appendix A.
6. Calculated total noise levels at noise-sensitive receptor locations were then compared to estimated existing ambient noise levels and the identified construction noise significance thresholds.

3. Existing Conditions

Many government agencies have established noise standards and guidelines to protect citizens from potential hearing damage and various other adverse effects associated with noise and ground-borne vibration. The City of Los Angeles has adopted a number of policies that are based in part on federal and state regulations and are directed at controlling or mitigating environmental noise effects. The government agency policies that are relevant to the construction noise impacts analysis for the Project are discussed below.

Nearby noise-sensitive receptors or land uses were selected for the ATMP EIR due to proximity to construction activity planned for the Project, which were also used for the updated analysis. To determine background ambient sound levels from aircraft noise, the FAA's AEDT modeling program was utilized. Due to the proximity of these sites to LAX, this was determined to be appropriate. AEDT models aircraft performance in space and time to estimate noise levels. Utilizing flight data acquired through LAX's Airport Noise and Operations Management System (ANOMS) for 2018Q4 to 2019Q3, background ambient sound levels from aircraft noise were determined.

Table 1 lists the noise-sensitive receivers selected for the construction noise analysis with the AEDT background sound levels and land use description. **Figure 1** shows the locations of these noise-sensitive receivers around the airport that were evaluated in this analysis. Noise levels at the locations identified in Table 1 are considered representative of other locations in proximity thereto.

Table 1. Existing Conditions at Construction Noise-Sensitive Receptors

ID	Receptor Location	Background Conditions CNEL (dBA)[1]	Land Use Setting
R1	Residential development in Playa del Rey	67.8	Residential north of airport
R2	Saint Bernard High School	67.7	High school in a residential area north of airport
R3	Residential development along southern edge of Westchester	68.4	Residential north of airport
R4	Park West Apartments on Lincoln Boulevard	66.3	Residential north of airport
R5	Residential uses along West 88th Street near Liberator Ave	67.9	Residential north of airport
R6	Residential uses near Westchester Parkway and Kittyhawk Ave	72.0	Residential north-east of airport
R7	Residence Inn by Marriott Los Angeles LAX/Century Boulevard	70.2	Commercial east of airport
R8	Sheraton Gateway Los Angeles Hotel	69.3	Commercial east of airport
R9	H Hotel Los Angeles, Curio Collection by Hilton	70.4	Commercial east of airport
R10	Hyatt Regency Los Angeles International Airport	73.4	Commercial east of airport
R11	Courtyard Los Angeles LAX/Century Boulevard	71.7	Commercial east of airport

Source: HMMH, 2020.

Note:
[1] Background condition obtained through AEDT.

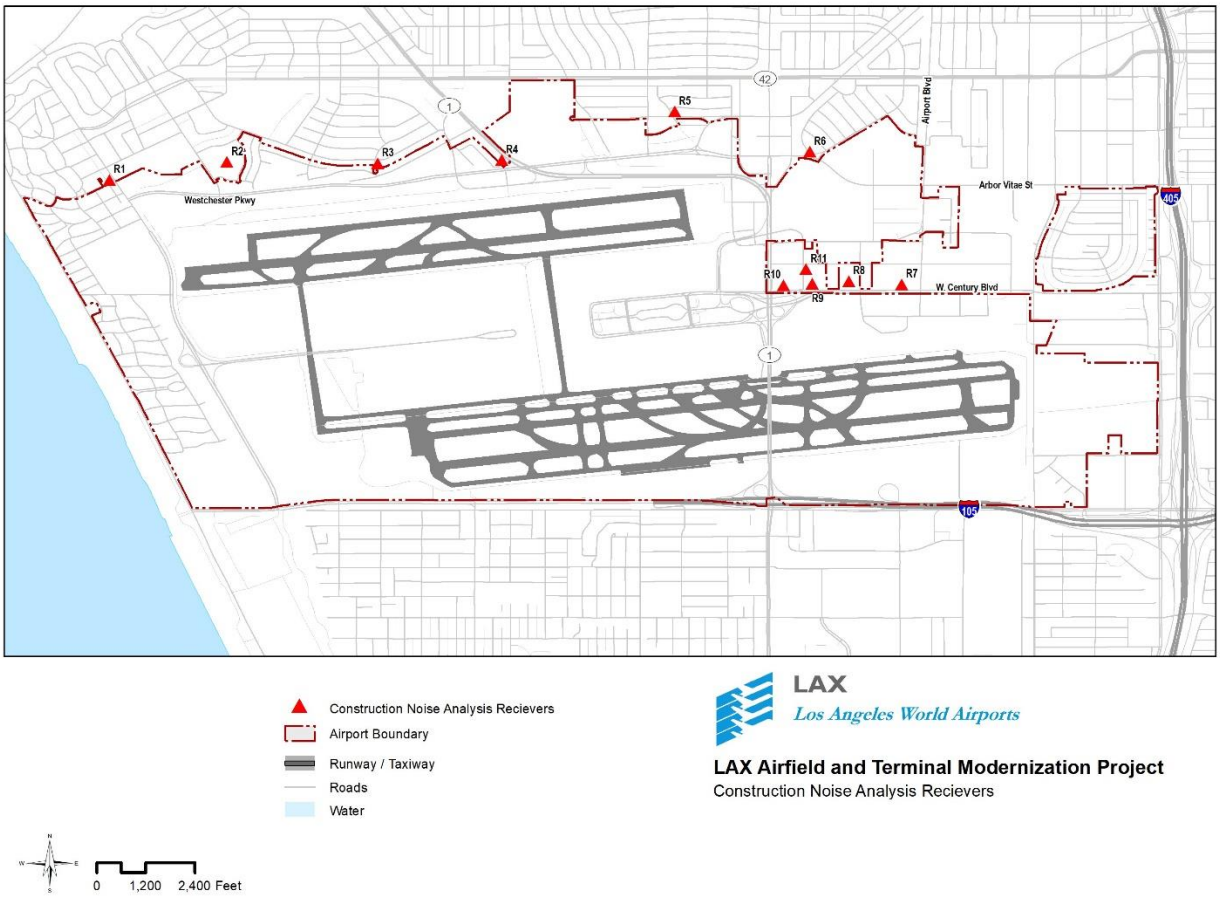

Figure 1. Construction Noise Analysis Receivers

Source: HMMH 2019

3.1 City of Los Angeles Noise Regulation

The City of Los Angeles Municipal Code (LAMC) (Chapter IV, Article I, Section 41.40, and Chapter XI, Articles 1 through 6) establishes regulations regarding allowable increases in noise levels in terms of established noise criteria. Supplementing these LAMC regulations, the City has also established CNEL guidelines that are used for land use planning purposes. Section 41.40 of the LAMC regulates construction that utilizes power equipment that generates loud noises. This regulation includes various restrictions on noise-generating activities and defines procedures for administering the regulations, including definitions of applicability and provisions for variances or exemptions.[2]

[2] Chapter IV, Section 41.40(j) empowers the Executive Director of the Board of Police Commissioners to make a determination that Section 41.40(c) of the regulations do not apply to major public works projects undertaken by the City of Los Angeles and its proprietary departments.

Chapter XI of the Los Angeles Municipal Code (City of Los Angeles Noise Ordinance) establishes acceptable ambient sound levels to regulate intrusive noises (e.g., stationary mechanical equipment and vehicles other than those traveling on public streets) within specific land use zones. However, the provisions of Chapter XI do not apply to construction noise. (LAMC Section 112.03.)

4. Threshold of Significance

The Project would result in a significant impact related to construction equipment noise if construction activities would:

- Exceed existing ambient exterior noise levels by 5 dBA or more at a noise-sensitive use in association with the following:
  - Construction activities lasting more than 10 days in a 3-month period; or
  - Construction activities occurring between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or at any time on Sunday.

This threshold is based on the L.A. CEQA Thresholds Guide's significance thresholds for construction noise[3] and is the same threshold used in the analysis of construction equipment noise in the ATMP EIR. It is anticipated that construction of most, if not all, of the improvements associated with the Project would involve construction activities lasting more than ten days in a three month period, and it is likely that Project-related construction may periodically occur within evening/nighttime hours and on weekends; hence, this threshold was utilized for the construction equipment noise impact analysis.

5. Impact Analysis

5.1 Construction Phases

To calculate construction and staging area CNELs, usage factors representing the percentage of time that equipment is used during an hour are used to calculate the $L_{eq}(h)$. The usage factors, which are based on typical construction efforts as documented in FHWA's RCNM, are expressed as a percentage of time that construction activities would be active (i.e., incremental period when maximum equipment noise level would be generated). The resulting $L_{eq}(h)$ can be thought of as average levels. The $L_{eq}(h)$ are then applied a penalty-weighting of 5 dB to the construction noise levels that would occur in the evening (7:00 p.m. to 9:59 p.m.) and 10 dB during nighttime hours (10:00 p.m. to 6:59 a.m.).

Vibratory pile driving/extraction (i.e., such as for placement and removal of temporary sheet piles) construction activities would be the source of the highest construction noise level associated with the Project. Although the loudest construction source, vibratory pile driving/extraction would occur during daytime hours and is not an impact device, such as a jackhammer, and the vibratory pile driver/extractor would be used for much shorter durations. Operation of a vibratory driver/extractor would generate noise levels as high as 101 dBA L_{max} within 50 feet.

[3] City of Los Angeles, *L.A. CEQA Thresholds Guide, Your Resource for Preparing CEQA Analyses in Los Angeles*, 2006.

As shown in **Figure 1** and described in **Table 1**, there are several types of noise-sensitive uses in proximity to the north airfield and around the eastern portion of the airport where the various Project improvement sites, including the roadway system improvements, and construction staging areas would be located. Locations for analysis were selected based on the types of noise-sensitive uses occurring in the general area and their proximity to anticipated Project construction activities, as was assumed for the EIR analysis and for the updated analysis. **Table 2** shows the construction noise levels at each receptor with implementation of the Project with the proposed roadway refinements and updated construction equipment list/use schedule. **Table 3** provides comparison of the construction noise levels at each receptor with implementation of the approved ATMP evaluated in the EIR to that of the construction noise levels at each receptor with implementation of the Project with the proposed roadway refinements and updated construction equipment list/use schedule, as well as the associated impacts levels of significance. As indicated in Table 3, construction of the roadway system improvements under the current proposal, with the design refinements and additional information regarding construction equipment types and usage, would result in increases in estimated construction noise levels of up to 2.5 dBA CNEL compared to what was assumed in the EIR for the approved ATMP. As described in Section 4.7.1.1.2, *Noise Descriptors,* of the EIR, a noise level change of 3 dBA is considered just noticeable, while a change of 5 dBA is clearly noticeable; and a change of 10 dBA is perceived as a doubling or halving of sound level. As such, the estimated increases in construction noise levels associated with the proposed roadway system design refinements are not considered to be a substantial change in noise impacts, including as related to the severity of the significant construction noise impacts disclosed in the ATMP EIR.

Table 2. Construction Noise Levels at Noise-Sensitive Receptor Sites with Proposed Roadway Refinements and Updated Construction Equipment List/Use Schedule

ID	Receptor	Background Conditions[1] CNEL (dBA)	Distance from Construction Activity (feet)	Construction Activity	Construction Equipment CNEL (dBA)	Total[2] CNEL (dBA)	Significance Threshold[3]	Above Threshold?
R1	Residential development in Playa del Rey	67.8	3,200	Airfield improvements	60.5	68.5	72.8	No
R2	Saint Bernard High School	67.7	2,500	Airfield improvements	62.6	68.9	72.7	No
R3	Residential development along southern edge of Westchester	68.4	1,500	Airfield improvements	67.1	70.8	73.4	No
R4	Park West Apartments on Lincoln Boulevard	66.3	1,200	Airfield improvements	69.0	70.9	71.3	No
R5	Residential uses along West 88th Street near Liberator Ave	67.9	2,500	Airfield improvements	62.6	69.0	72.9	No
R6	Residential uses near Westchester Parkway and Kittyhawk Ave	72.0	1,750	Airfield improvements	65.7	72.9	77.0	No
		72.0	2,850	Terminal (C0) construction	61.9	72.4	77.0	No
		72.0	1,500	Roadway construction	69.8	74.0	77.0	No
		72.0	NA	Combined airfield improvements, terminal (C0) construction, and roadway construction	71.7	74.9	77.0	No
R7	Residence Inn by Marriott Los Angeles LAX/Century Boulevard	70.2	2,900	Terminal (C0) construction	61.7	70.9	75.2	No
		70.2	900	Terminal (T9) construction	71.9	74.1	75.2	No
		70.2	900	Roadway construction	74.2	75.7	75.2	Yes[4]
		70.2	NA	Combined terminal (C0 and T9) and roadway construction	76.4	78.8	75.2	Yes[4]
R8	Sheraton Gateway Los Angeles Hotel	69.3	1,600	Terminal (C0) construction	66.9	71.3	74.3	No
		69.3	300	Terminal (T9) construction	81.4	81.7	74.3	Yes[4]
		69.3	100	Roadway construction	93.3	93.3	74.3	Yes[4]
		69.3	NA	Combined terminal (C0 and T9) and roadway construction	93.6	93.6	74.3	Yes[4]

ID	Receptor	Background Conditions[1] CNEL (dBA)	Distance from Construction Activity (feet)	Construction Activity	Construction Equipment CNEL (dBA)	Total[2] CNEL (dBA)	Significance Threshold[3]	Above Threshold?
R9	H Hotel Los Angeles/ Homewood Suites by Hilton Los Angeles International Airport	70.4	1,200	Terminal (C0) construction	69.4	72.9	75.4	No
		70.4	250	Terminal (T9) construction	83.3	83.3	75.4	Yes[4]
		70.4	55	Roadway construction	98.5	98.5	75.4	Yes[4]
		70.4	NA	Combined terminal (C0 and T9) and roadway construction	98.6	98.6	75.4	Yes[4]
R10	Hyatt Regency Los Angeles International Airport	73.4	350	Terminal (C0) construction	80.1	80.9	78.4	Yes[4]
		73.4	550	Terminal (T9) construction	76.2	78.0	78.4	No
		73.4	150	Roadway construction	89.8	89.9	78.4	Yes[4]
		73.4	NA	Combined terminal (C0 and T9) and roadway construction	90.4	90.7	78.4	Yes[4]
R11	Courtyard Los Angeles LAX/Century Boulevard	71.7	1,000	Terminal (C0) construction	71.0	74.4	76.0	No
		71.7	600	Terminal (T9) construction	75.4	76.9	76.7	Yes[4]
		71.7	150	Roadway construction	89.8	89.9	76.7	Yes[4]
		71.7	NA	Combined terminal (C0 and T9) and roadway construction	90.0	90.2	76.7	Yes[4]

Source: HMMH, 2024.
Notes:
[1] Background condition obtained through AEDT using 24-hour CNEL dBA.
[2] Background plus Project construction noise.
[3] Significance Threshold = Background CNEL + 5 dBA
[4] Construction equipment noise levels conservatively assume all equipment would be utilized at the same time and at all hours of the 24-hour day (with the exception of a vibratory driver/extractor, which would operate only during daytime hours), both of which are unlikely.

Key:
C0 = Concourse 0; T9 = Terminal 9

Table 3. Comparison of Construction Noise Levels at Noise-Sensitive Receptor Sites with Approved and Proposed Roadway Refinements and Updated Construction Equipment List/Use Schedule

ID	Receptor	Construction Activity	Total[1] CNEL (dBA)		Difference in CNEL Proposed Compared to Approved	Above Threshold? (i.e., Is difference between Background CNEL and Total CNEL > 5 dBA?)	
			Approved	Proposed		Approved	Proposed
R1	Residential development in Playa del Rey	Airfield improvements	68.5	68.5	0.0	No	No
R2	Saint Bernard High School	Airfield improvements	68.9	68.9	0.0	No	No
R3	Residential development along southern edge of Westchester	Airfield improvements	70.8	70.8	0.0	No	No
R4	Park West Apartments on Lincoln Boulevard	Airfield improvements	70.9	70.9	0.0	No	No
R5	Residential uses along West 88th Street near Liberator Ave	Airfield improvements	69.0	69.0	0.0	No	No
R6	Residential uses near Westchester Parkway and Kittyhawk Ave	Airfield improvements	72.9	72.9	0.0	No	No
		Terminal (C0) construction	72.4	72.4	0.0	No	No
		Roadway construction	73.3	74.0	0.7	No	No
		Combined airfield improvements, terminal (C0) construction, and roadway construction	74.3	74.9	0.6	No	No
R7	Residence Inn by Marriott Los Angeles LAX/Century Boulevard	Terminal (C0) construction	70.9	70.9	0.0	No	No
		Terminal (T9) construction	74.1	74.1	0.0	No	No
		Roadway construction	74.1	75.7	1.6	No	Yes
		Combined terminal (C0 and T9) and roadway construction	76.3	78.8	2.5	Yes	Yes
R8	Sheraton Gateway Los Angeles Hotel	Terminal (C0) construction	71.3	71.3	0.0	No	No
		Terminal (T9) construction	81.7	81.7	0.0	Yes	Yes
		Roadway construction	91.0	93.3	2.3	Yes	Yes
		Combined terminal (C0 and T9) and roadway construction	91.5	93.6	2.1	Yes	Yes

ID	Receptor	Construction Activity	Total[1] CNEL (dBA)		Difference in CNEL Proposed Compared to Approved	Above Threshold? (i.e., Is difference between Background CNEL and Total CNEL > 5 dBA?)	
			Approved	Proposed		Approved	Proposed
R9	H Hotel Los Angeles/ Homewood Suites by Hilton Los Angeles International Airport	Terminal (C0) construction	72.9	72.9	0.0	No	No
		Terminal (T9) construction	83.3	83.3	0.0	Yes	Yes
		Roadway construction	96.2	98.5	2.3	Yes	Yes
		Combined terminal (C0 and T9) and roadway construction	96.4	98.6	2.2	Yes	Yes
R10	Hyatt Regency Los Angeles International Airport	Terminal (C0) construction	80.9	80.9	0.0	Yes	Yes
		Terminal (T9) construction	78.0	78.0	0.0	No	No
		Roadway construction	87.7	89.9	2.2	Yes	Yes
		Combined terminal (C0 and T9) and roadway construction	88.6	90.7	2.1	Yes	Yes
R11	Courtyard Los Angeles LAX/Century Boulevard	Terminal (C0) construction	74.4	74.4	0.0	No	No
		Terminal (T9) construction	76.9	76.9	0.0	Yes	Yes
		Roadway construction	87.6	89.9	2.3	Yes	Yes
		Combined terminal (C0 and T9) and roadway construction	88.0	90.2	2.2	Yes	Yes

Source: HMMH, 2024.
Note:
[1] Background plus Project construction noise.
Key:
C0 = Concourse 0; T9 = Terminal 9

5.1.1 Roadway Construction

Construction noise exposure at residences northeast of the intersection of Kittyhawk Avenue and Westchester Parkway (R6) during the construction of the proposed refined landside access improvements (roadways) would be approximately 67.1 dBA CNEL. The anticipated noise level is below the existing ambient noise level of 72.0 dBA CNEL. Therefore, at residences located northeast of the Sepulveda Boulevard and Westchester Parkway intersection, which represents residential receptors nearest to proposed refined roadway improvements, the impacts related to noise from construction activities would be less than significant.

Hotels along Century Boulevard would be subject to the most disturbance by roadway construction noise due to the proximity to the Project. Roadway construction noise exposure at the H Hotel Los Angeles (R9) would be highest at approximately 98.5 dBA CNEL. Inclusive of the background CNEL from aircraft operating near the area, the total CNEL would be approximately as high as 98.5 dBA CNEL at the hotel, which is the same as construction noise alone and is due to the fact that construction noise would dominate at times over the aviation noise sources. This noise level assumes that all construction equipment is operating at the same time 50 feet from the hotel, which is unlikely. Nevertheless, these construction noise levels can be considered "worst-case" and would be significant. Other hotels in the area (R7, R8, R10, and R11), would also have significant impacts associated with roadway construction, although to a lesser extent than at the H Hotel (see Table 2). Noise levels at the locations identified in Table 2 are considered representative of other locations in proximity thereto. As shown in Table 2, roadway construction noise of 74.2 dBA CNEL at the Residence Inn by Marriott (R7) when combined with the existing background noise level of 70.2 dBA CNEL would total 75.7 dB CNEL, which would exceed the significance threshold of 75.2 dBA CNEL by 0.5 dBA. Although that exceedance of the significance threshold associated solely with roadway construction did not occur with the original construction equipment list assumed in the EIR construction noise analysis, the EIR identified a significant construction noise impact at that receptor from the combined terminal (C0 and T9) and roadway construction, as further described below in Section 5.1.2. As such, there is not a new significant construction noise impact at the Residence Inn by Marriott (R7). Additionally, it should be noted that significant construction noise impacts identified at all locations in the EIR noise analysis would be reduced to less than significant with implementation of the mitigation measures presented in the EIR and also described below in Section 6 *Construction Noise Mitigation*.

It should also be noted that the estimated noise levels do not account for any intervening topography, buildings, or other obstructions that would reduce noise. It should also be noted that hotels located in proximity to LAX including, but not limited to, the specific hotels identified above, are subject to the *Sound Insulation Requirements for Noise Sensitive Structures Near Los Angeles International Airport* established by the City of Los Angeles Department of Building and Safety.[4] The purpose of those requirements is to protect persons within designated noise-sensitive buildings from excessive exterior noise, with the goal to ensure that, after proper sound insulation measures are taken, the interior CNEL does not exceed 45 dBA. Given the existing setting of these hotels, being in proximity to aircraft operations at LAX and the associated high noise levels, the outdoor to indoor noise reduction levels at the hotels is greater than in most typical buildings due to extra sound insulation/attenuation features integrated into the buildings' design and construction. While exterior noise levels would exceed the significance thresholds, it is not expected that these exceedances would result in sleep disturbance, given the heightened standards for interior noise insulation.

5.1.2 Combined Construction of Terminal Improvements and Landside Access Improvements

The five hotels at receptor locations R7 through R11 are situated in proximity to both the planned terminal improvements and the proposed refined landside access improvements and could be subject to construction noise impacts from both types of improvements should the subject construction activities occur simultaneously. Combined construction noise from the planned airfield improvements, the proposed refined landside access

[4] City of Los Angeles, Department of Building and Safety, *Information Bulletin/Public – Building Code, Reference No.: LAMC 91.1207, Document No.: P/BC 2014-074, Sound Insulation Requirements for Noise Sensitive Structures Near Los Angeles International Airport*, Effective January 1, 2014. Available: https://www.ladbs.org/docs/default-source/publications/information-bulletins/building-code/sound-insulation-requirements-for-noise-sensitive-structures-near-los-angeles-international-airportib-p-bc2014-074.pdf?sfvrsn=13.

improvements, and planned Concourse 0 was also evaluated for receptor location R6. Table 2 presents the estimated noise levels at each receptor location for the combined construction activities. As shown, the combined planned airfield, proposed refined landside access, and planned terminal improvements construction noise exposure would be 70.4 dBA CNEL at Receptor R6, which would be less than existing exterior ambient noise levels (72 dBA). Total noise at this receptor would not exceed existing ambient exterior noise levels by 5 dBA.

As shown on Table 2, relative to the five significantly impacted hotel sites, the combined planned terminal improvements and proposed refined landside access improvements construction noise exposure would range from 76.4 dBA CNEL at the Residence Inn by Marriott (R7) to 98.6 dBA CNEL at the H Hotel/Homewood Suites (R9) under worst-case conditions (which assumes all construction equipment is in use over a 24-hour day, with the exception of a vibratory driver/extractor that would only operate during daytime hours), and all planned terminal-related and proposed refined roadway-related construction activities are occurring at the same time). As shown in Table 2, total noise levels (i.e., background ambient noise level plus planned terminal and proposed refined roadway construction noise) would range from 78.8 dBA to 98.6 dBA, and would be greater than existing ambient exterior noise levels by 5 dBA or more at all five hotels analyzed. Therefore, construction equipment noise from potential combined construction of the planned terminal improvements and the proposed refined roadway improvements could result in a temporary but significant impact to noise-sensitive uses in the nearby area including, but not limited to, the Residence Inn by Marriott, Sheraton Gateway, H Hotel/Homewood Suites, Hyatt Regency, and Courtyard Los Angeles LAX/Century Boulevard, under conservative, worst-case conditions. It should be noted, as indicated above, although exterior noise levels would exceed the significance thresholds, it is not expected that these exceedances would result in sleep disturbance, given the heightened standards for interior noise insulation.

As noted previously, actual noise exposure at these receptor locations would likely be lower than the levels analyzed herein because it is unlikely that all equipment would be in use at any one time and all construction equipment would not be operated at distances closest to noise-sensitive receptors.

6. Construction Noise Mitigation

As noted above, the Project may generate construction noise that results in significant impacts at noise-sensitive receptors consisting of hotels located along Century Boulevard, as was previously disclosed in the ATMP EIR. These impacts would occur during construction of Concourse 0, Terminal 9, and proposed refined landside access improvements. Mitigation measures included in the ATMP EIR and the related ATMP Mitigation Monitoring and Report Program (MMRP) to reduce significant impacts related to construction equipment noise are provided below.

- **MM-CN (ATMP)-1. Construction Noise Control Plans.**

  LAWA shall require all prime construction contractors working on the landside access (i.e., roadway) improvements, the Concourse 0 improvements, and the Terminal 9 improvements, including the Terminal 9 APM station, to develop noise control plans to address construction equipment noise at noise-sensitive receptors where construction noise impacts may be significant. Such noise-sensitive receptors include, but may not be limited to, the Residence Inn by Marriott Los Angeles LAX/Century Boulevard, Sheraton Gateway Los Angeles Hotel, H Hotel/Homewood Suites by Hilton Los Angeles International Airport, Hyatt Regency Los Angeles International Airport, and Courtyard Los Angeles LAX/Century Boulevard. (Note: Those are the hotel names/chains as of October 2020. This mitigation requirement still applies to those facilities if the names/chains subsequently change). The noise control plans shall be approved by LAWA prior to implementation. The noise control plans shall calculate the total maximum noise level (in CNEL) associated with construction of each Project component, as well as cumulative noise impacts that account for Project-related activities that would occur concurrently with construction of other Project components and construction of other nearby LAX projects. If the calculated construction-related noise levels indicate an increase of 5 dBA over the existing exterior noise level at any noise-sensitive receptor, the noise control plan shall specify provisions and/or measures to be implemented during construction that will attenuate construction noise levels to be less than 5 dBA over the existing exterior noise level. The noise control plans

shall include a section describing noise monitoring equipment, locations and methods for establishing a representative baseline exterior noise level. Potential noise attenuation measures could include, but are not limited to, noise curtains, noise blankets, temporary sound walls, or their equivalent during construction. The noise control plans shall include a provision that states that, if noise levels exceed the 5 dBA increase, LAWA will require the contractor to implement additional noise attenuation measures until the noise increase is less than 5 dBA. To verify efficiency of the construction noise attenuation measures, noise measurements shall be taken at the closest noise-sensitive receptors to confirm that the attenuated construction noise levels are less than 5 dBA over the existing exterior noise level.

- **MM-CN (ATMP)-2. Construction Scheduling.**

The timing and/or sequence of the noisiest on-site construction activities shall avoid noise-sensitive times of the day, as feasible (9:00 p.m. to 7:00 a.m. Monday - Friday; 6:00 p.m. to 8:00 a.m. Saturday; anytime on Sunday or holidays).

- **MM-CN (ATMP)-3. Construction Equipment.**

Stationary source equipment whose use is flexible with regard to relocation (such as generators and compressors) shall be located at the greatest distance practical from noise-sensitive land uses. "Quiet-design" air compressors and other quieter construction equipment shall be used when feasible and when such technology/equipment is commercially available.

- **MM-C (ATMP)-1. Construction Mitigation Oversight.**

LAWA shall require Airfield and Terminal Modernization Project prime contractors to designate an individual responsible for ensuring implementation of all construction-related mitigation measures and LAWA policies/requirements.

The construction noise mitigation measures identified in the EIR under Mitigation Measure MM-CN (ATMP)-1 were created to develop construction noise control plans for each phase of construction work at noise-sensitive receptors where construction noise impacts may be significant. These measures, though still to be determined, will ensure that construction-related noise levels will be attenuated to a noise level less than 5 dBA over the baseline exterior noise levels; therefore, avoiding significant noise impacts during construction of the proposed roadway system design refinements.

7. Summary of Construction Noise Impacts and Mitigation Measures

Table 4. Summary Matrix of Impacts and Mitigation Measures Associated with the Project Related to Construction Equipment Noise

Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
Impact 1: Implementation of the Project has the potential to cause construction noise levels that would exceed existing ambient exterior noise levels by 5 dBA or more at a noise-sensitive use. As such, this would be a significant impact.	Construction: Significant Operation: Not applicable	MM-CN (ATMP)-1 MM-CN (ATMP)-2 MM-CN (ATMP)-3 MM-C (ATMP)-1	Construction: Less than Significant Operation: Not applicable
Impact 2: Implementation of the Project has the potential to cause construction noise levels that would exceed existing ambient exterior noise levels by 5 dBA or more at a noise-sensitive use between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or at any time Sunday. As such, this would be a significant impact.	Construction: Significant Operation: Not applicable	MM-CN (ATMP)-1 MM-CN (ATMP)-2 MM-CN (ATMP)-3 MM-C (ATMP)-1	Construction: Less than Significant Operation: Not applicable

Appendix A

Table A-1. Roadway Construction Table dBA CNEL Noise Level at 50 Feet with Proposed Roadway Refinements and Updated Construction Equipment List/Use Schedule

Time of Day	Hour	Hourly Activity Factor[1]	Hourly Average Sound Level (L_{eq})[2]	Weight-Hourly Average Sound Level (L_{eq} + Penalty[3])
Nighttime	12:00 a.m. - 1:00 a.m.	37%	96.0	106.0
	1:00 a.m. - 2:00 a.m.	37%	96.0	106.0
	2:00 a.m. - 3:00 a.m.	37%	96.0	106.0
	3:00 a.m. - 4:00 a.m.	37%	96.0	106.0
	4:00 a.m. - 5:00 a.m.	37%	96.0	106.0
	5:00 a.m. - 6:00 a.m.	37%	96.0	106.0
	6:00 a.m. - 7:00 a.m.	37%	96.0	106.0
Daytime	7:00 a.m. - 8:00 a.m.	37%	96.0	96.0
	8:00 a.m. - 9:00 a.m.	37%	96.0	96.0
	9:00 a.m. - 10:00 a.m.	37%	96.0	96.0
	10:00 a.m. - 11:00 a.m.	37%	96.0	96.0
	11:00 a.m. - 12:00 p.m.	37%	96.0	96.0
	12:00 p.m. - 1:00 p.m.	37%	96.0	96.0
	1:00 p.m. - 2:00 p.m.	37%	96.0	96.0
	2:00 p.m. - 3:00 p.m.	37%	96.0	96.0
	3:00 p.m. - 4:00 p.m.	37%	96.0	96.0
	4:00 p.m. - 5:00 p.m.	37%	96.0	96.0
	5:00 p.m. - 6:00 p.m.	37%	96.0	96.0
	6:00 p.m. - 7:00 p.m.	37%	96.0	96.0
Evening	7:00 p.m. - 8:00 p.m.	37%	96.0	101.0
	8:00 p.m. - 9:00 p.m.	37%	96.0	101.0
	9:00 p.m. - 10:00 p.m.	37%	96.0	101.0
Nighttime	10:00 p.m. - 11:00 p.m.	37%	96.0	106.0
	11:00 p.m. - 12:00 a.m.	37%	96.0	106.0
Estimated Daily CNEL[4]				**99.3**

Notes:
1. This is an average usage factor for all of the equipment operating during construction and is based on the default usage factors for each individual piece of equipment that are provided in FHWA's RCNM user's manual (FHWA 2006).
2. Noise value is calculated by adding 10*LOG(Hourly Activity Factor/100) to the RCNM L_{max} dBA at 50 feet for the composite of construction equipment typically associated with the subject type of construction. Hourly activity factor presented is the average usage factor for each piece of equipment in the construction phase.
3. The penalty value added to L_{eq} is the same level used to calculate CNEL to account for the greater sensitivity of nearby land uses in the evening (7:00 p.m. to 10:00 p.m.) and at night (10:00 p.m. to 7:00 a.m.), 5 dB and 10 dB, respectively.
4. CNEL represents cumulative sound level 50 feet from the sources (i.e., construction equipment for a given phase of construction).

Table A-2. Updated Roadway Construction Equipment Table

Construction Phase	Equipment Type	L_{max} @ 50 feet
Roadway Construction	Backhoe	78.0
	Bobcat S650	79.0
	Compactors	83.0
	Concrete Pump Truck	81.0
	Concrete Trucks	81.0
	Crane	81.0
	Delivery Truck (Semi)	74.0
	Delivery Trucks	74.0
	Dozers	82.0
	Excavator	81.0
	Flat Bed Trucks	74.0
	Generators	81.0
	Grader	85.0
	Loaders	79.0
	Milling Machine	77.0
	Pier Drill	79.0
	Precast Delivery (Semi)	74.0
	Small Tandem Compactor	83.0
	Trencher	80.0
	Water/Form Trucks	74.0
	Pneumatic Tools	79.0
	Impact Demo Breaker/Concrete Muncher	90.0
	Walk Behind Pavement Saw	90.0
	Hand held gas cut-off saw	84.0
	Hydraulic casing oscillator	81.0
	Vibratory Driver/Extractor	101.0
	Grout pump	81.0
	Street sweeper	82.0
	Vacuum hydro jet excavator truck trailer	85.0
	Portable light tower plant	73.0
	Refrigerative water chiller	73.0
Composite Daytime Leq @ 50 Feet		**96.0**
Composite Evening/Nighttime Leq @ 50 Feet		**91.6**
Composite dBA CNEL @ 50 Feet		**99.3**

Source: SKANSKA/Flatiron Joint Venture, 2024 and sound levels from the Roadway Construction Noise Model by FHWA.