

Appendix FEIR-6

Revised Construction Noise Analysis



LACMA Building for the Permanent Collection Project - Updated Construction Noise Impact Analysis

INTRODUCTION

This report presents the results of a noise impact analysis associated with the updated construction schedule for the LACMA Building for the Permanent Collection Project (Project), as provided by Clark Construction on August 27, 2018. The updated construction schedule would reduce the construction period from 68 months (Base Schedule), as analyzed in the Draft Environmental Impact Report (Draft EIR)) to 51 months (Revised Schedule).

ON-SITE CONSTRUCTION NOISE

Noise levels associated with the Project construction activities were calculated based on the methodologies provided in the Project Draft EIR. A detailed construction noise model was created to calculate the construction-period noise levels at the off-site sensitive receptors, using the construction equipment reference noise levels provided by the Federal Highway Administration (FHWA).¹

Table 1 (on page 3) provides the estimated construction noise levels at the off-site noise-sensitive receptors, due to the Museum Building construction. As indicated in Table 1, the estimated construction noise levels at off-site receptors R3 and R4 would be below the significance threshold. At receptors R1, R2, R5 and R6, the estimated construction-related noise levels would exceed the significance threshold, including by 5.2 dBA at receptor R5 and to up to 18.8 dBA at receptor R6. Noise impacts associated with the Revised Schedule would be similar to the Base Schedule, and would be significant without mitigation measures.

Table 2 (on page 4) provides the estimated construction noise levels at the off-site noise sensitive receptors, due to the Ogden Parking Structure construction. As indicated in Table 2, the estimated noise levels would be below the significance threshold at all off-site noise sensitive receptors, with the exception of receptor R5. Therefore, similar to the Base Schedule, noise impacts associated with the on-site construction activities for the Ogden Parking Structure, under the Revised Schedule, would be significant without mitigation measures.

Under the Revised Schedule, there would be overlapping construction activities for the various construction phases. Table 3 (on page 5) provides the estimated construction noise levels at the off-site noise sensitive receptors, due to overlapping construction activities. The estimated noise levels represent the worst-case day with the maximum number of construction equipment on-site.

¹ FHWA Roadway Construction Noise Model User's Guide, 2006

site. As indicated Table 3, the estimated construction noise levels would exceed the significance threshold at receptors R1, R2, R5 and R6. The estimated construction-related noise levels for worst-case day would exceed the significance threshold by 5.6 dBA at receptor R5 and up to 19.2 dBA at receptor R6. Therefore, noise impacts due to the worst-case day construction would be significant without mitigation measures. The estimated maximum noise levels during the overlapping construction would result in a maximum noise increase of 0.4 dBA at receptors R1, R2 and R6 and 0.5 dBA at receptor R5, as compared to the Base Schedule. As described in the Draft EIR (Page IV.I-2), a change in sound level of 3 dB is considered “just perceptible” and a change in sound level of 5 dB is considered “clearly noticeable”. Therefore, the estimated maximum noise levels increase of 0.5 dBA due to the overlapping construction under the Revised Revised Schedule would be well below the perceptible level and is not considered a substantial increase when compared to the Base Schedule.

In addition, the erection of the temporary falsework structure over the Wilshire Boulevard would occur on weekdays and possibly on Saturdays, during the allowable daytime hours. Construction activities for the temporary falsework would be limited to the area adjacent to the Wilshire Boulevard. Table 7 (on page 10) presents the estimated noise levels associated with the temporary falsework structure erection at the off-site noise sensitive receptor locations. As indicated in Table 7, the estimated noise levels would be below the existing ambient noise levels at the off-site receptors R3, R4 and R5. The estimated noise levels would exceed the existing ambient noise levels at receptors R1, R2 and R6 by 3.3 dBA (L_{eq}) to 5.9 dBA (L_{eq}) at receptor R2, prior to mitigation measures. With the prescribed Mitigation Measure I-1, as provided in the Project Draft EIR, the construction noise associated with the temporary falsework at receptors R1, R2 and R6 would be reduced below the significance threshold. Therefore, noise impact associated with the construction associated with the temporary falsework would be less than significant with mitigation, and similar to the conclusions of the Draft EIR.

Table 1
Construction Noise Impacts – Museum Building

Off-Site Receptor Location	Approximate Linear Distance from Receptor to Project Construction Area (feet)	Estimated Construction Noise Levels by Construction Phases, L_{eq} (dBA)				Measured Ambient Noise Levels, L_{eq} (dBA)	Significance Threshold, ^a L_{eq} (dBA)	Significant Impact?
		Demolition	Grading/Excavation	Building Structure & Interior	Landscape/Finishing			
R1	25	79.6	76.5	77.5	76.6	58.6	63.6	Yes
R2	165	78.2	74.6	76.0	69.1	57.8	62.8	Yes
R3	875	60.2	54.6	58.7	48.4	64.0	65.0	No
R4	365	68.5	64.1	66.8	57.9	69.9	69.9	No
R5	565	70.2	64.6	68.7	58.4	63.0	65.0	Yes
R6	25	79.6	76.5	77.5	76.6	55.8	60.8	Yes

^a Significance thresholds are equivalent to the measured daytime ambient noise levels plus 5 dBA where the ambient noise level is less than 60 dBA; 65 dBA where the ambient noise is between 60 and 65 dBA; and equal to the ambient where the ambient noise level is greater than 65 dBA.

Source: AES, 2018.

Table 2
Construction Noise Impacts – Ogden Parking Structure

Off-Site Receptor Location	Approximate Linear Distance from Receptor to Project Construction Area (feet)	Estimated Construction Noise Levels by Construction Phases, L_{eq} (dBA)				Measured Ambient Noise Levels, L_{eq} (dBA)	Significance Threshold, ^a L_{eq} (dBA)	Significant Impact?
		Demolition	Grading/Excavation	Building Structure	Cladding/Finishing			
R1	610	58.7	56.6	53.6	48.4	58.6	63.6	No
R2	1125	53.4	51.3	48.3	43.1	57.8	62.8	No
R3	1755	49.5	47.4	44.4	39.3	64.0	65.0	No
R4	1180	53.0	50.9	47.9	42.7	69.9	69.9	No
R5	10	81.3	76.4	72.7	72.2	63.0	65.0	Yes
R6	905	55.3	53.2	50.2	45.0	55.8	60.8	No

^a Significance thresholds are equivalent to the measured daytime ambient noise levels plus 5 dBA where the ambient noise level is less than 60 dBA; 65 dBA where the ambient noise is between 60 and 65 dBA; and equal to the ambient where the ambient noise level is greater than 65 dBA.

Source: AES, 2018.

**Table 3
 Construction Noise Impacts – Worst-Case Day**

Off-Site Receptor Location	Approximate Linear Distance from Receptor to Project Construction Area (feet)	Estimated Construction Noise Levels with Overlapping Construction Phases, L_{eq} (dBA)					Measured Ambient Noise Levels, L_{eq} (dBA)	Significance Threshold, ^a L_{eq} (dBA)	Significant Impact?
		Demolition & Grading/Excavation	Demolition & Grading/Excavation & Building Structure	Building Structure & Building Interior	Building Structure & Building Interior & Paving/Landscape	Building Interior & Paving/Landscape			
R1	25	79.7	80.0	78.0	78.2	77.3	58.6	63.6	Yes
R2	165	78.3	78.6	76.8	77.0	74.1	57.8	62.8	Yes
R3	875	60.5	61.7	59.3	59.5	56.9	64.0	65.0	No
R4	365	68.7	69.7	67.1	67.4	65.6	69.9	69.9	No
R5	565	70.3	70.6	69.2	69.5	66.7	63.0	65.0	Yes
R6	25	79.7	80.0	78.0	78.2	77.3	55.8	60.8	Yes

^a Significance thresholds are equivalent to the measured daytime ambient noise levels plus 5 dBA where the ambient noise level is less than 60 dBA; 65 dBA where the ambient noise is between 60 and 65 dBA; and equal to the ambient where the ambient noise level is greater than 65 dBA.

Source: AES, 2018.

Table 4
Construction Noise Impacts – Falsework over Wilshire Boulevard

Off-Site Receptor Location	Approximate Linear Distance from Receptor to Project Construction Area (feet)	Estimated Construction Noise Levels, L_{eq} (dBA)	Measured Ambient Noise Levels, L_{eq} (dBA)	Significance Threshold, ^a L_{eq} (dBA)	Significant Impact?
R1	220	66.9	58.6	63.6	Yes
R2	320	68.7	57.8	62.8	Yes
R3	945	53.1	64.0	65.0	No
R4	835	56.0	69.9	69.9	No
R5	720	61.3	63.0	65.0	No
R6	230	66.6	55.8	60.8	Yes

^a *Significance thresholds are equivalent to the measured daytime ambient noise levels plus 5 dBA where the ambient noise level is less than 60 dBA; 65 dBA where the ambient noise is between 60 and 65 dBA; and equal to the ambient where the ambient noise level is greater than 65 dBA.*

Source: AES, 2018.

OFF-SITE CONSTRUCTION NOISE

Off-site construction noise includes trucks used for materials delivery, concrete mixing, and export haul (construction trucks), and construction worker vehicles. Based on the Revised Schedule, construction trucks would access the Project Site from the US-101 or the I-10 Freeway, via Fairfax Avenue, La Brea Avenue, Wilshire Boulevard, and 6th Street. In addition, the maximum number of construction-related truck trips for the Museum Building construction would occur during the grading/excavation phase with a maximum of 210 daily truck trips (105 incoming and 105 leaving) and 70 workers would be on-site. Table 5 (on page 8) provides the estimated noise levels associated with the Museum Building construction-related traffic along the anticipated haul routes with noise sensitive receptors. As indicated in Table 5, the noise levels generated by construction-related traffic would be below the existing daytime ambient noise level at all off-site haul routes.

Construction for the Ogden Parking Structure would generate maximum of 210 daily truck trips and 25 workers trips during the grading/excavation phase. Table 6 (on page 9) presents the estimated noise levels associated with the Ogden Parking Structure construction-related traffic. As indicated in Table 6, noise levels associated with the construction traffic (trucks and worker vehicles) would be below the existing daytime ambient noise levels along the anticipated haul routes.

As previously described, there would be overlapping construction activities under the Revised Schedule. Table 7 (on page 10) presents the estimated off-site construction noise levels due to the worst-case day from the overlapping construction activities. As indicated in Table 7, the estimated noise levels from construction-related traffic under a worst-case daytime noise scenario would be below the existing daytime ambient noise levels along the anticipated haul routes, including; Fairfax Avenue, La Brea Avenue, Wilshire Boulevard, and 6th Street. Therefore, estimated noise level along the construction haul routes under the Revised Schedule would not exceed the Project's significance threshold, and impacts would be less than significant, similar to the Base Schedule.

Table 5
Off-Site Construction Trucks Noise Impacts – Museum Building

Construction Phase	Estimated Number of Trips per Hour, ^a Construction Truck/Worker	Estimated Haul Truck Noise Levels Along the Project Haul Routes, dBA (L _{eq})			
		Wilshire Boulevard	La Brea Avenue	Fairfax Avenue	6th Street
Demolition	13/70	63.3	63.3	63.9	63.9
Grading/Excavation	27/60	65.9	65.9	66.6	66.6
Building Structure	24/100	65.8	65.8	66.4	66.4
Building Interior	13/100	63.7	63.7	64.3	64.3
Paving/Concrete/ Landscape	5/50	59.8	59.8	60.4	60.4
Existing Ambient Noise Levels Along the Project Haul Routes, L _{eq} (dBA) – Wilshire Boulevard/La Brea Avenue		72.4 ^b	73.3 ^b	70.0 ^c	69.9 ^d
Significance Threshold, ^e L _{eq} (dBA)		72.4	73.3	70.0	69.9
Significant Impact?		No	No	No	No
<p>^a For construction trucks, the number of hourly trips is based on an hourly average, assuming a uniform distribution of trips over an 8-hour work day. For worker vehicles, the number of hourly trips is based on half of the worker trips that would arrive in one hour (with maximum of 100 worker trips per hour) to represent a conservative analysis, as most workers would arrived at the job site before the construction begin.</p> <p>^b Ambient noise levels along Wilshire Boulevard and La Brea Avenue are calculated based on the existing traffic volumes.</p> <p>^c Ambient noise level along Fairfax Avenue is based on measured level from the Academy Museum of Motion Pictures Project Draft EIR, Table 4.H-1, August 2014.</p> <p>^d Ambient noise level along 6th Street is based on measured levels at Receptor Location R4 (Project Draft EIR Table IV.I-8).</p> <p>^e Significance thresholds are equivalent to the existing ambient noise levels or 75 dBA (County's noise standard for construction mobile source at residential uses), whichever is lower.</p> <p>Source: AES, 2018.</p>					

Table 6
Off-Site Construction Trucks Noise Impacts – Ogden Parking

Construction Phase	Estimated Number of Trips per Hour, ^a Construction Truck/Worker	Estimated Haul Truck Noise Levels Along the Project Haul Routes, dBA (L _{eq})			
		Wilshire Boulevard	La Brea Avenue	Fairfax Avenue	6th Street
Demolition	2/15	55.5	55.5	56.1	56.1
Grading/Excavation	27/25	65.7	65.7	66.4	66.4
Building Structure	11/45	62.4	62.4	63.0	63.0
Cladding/Finishes	4/50	59.2	59.2	59.8	59.8
Existing Ambient Noise Levels Along the Project Haul Routes, L _{eq} (dBA) – Wilshire Boulevard/La Brea Avenue		72.4 ^b	73.3 ^b	70.0 ^c	69.9 ^d
Significance Threshold, ^e L _{eq} (dBA)		72.4	73.3	70.0	69.9
Significant Impact?		No	No	No	No

^a For construction trucks, the number of hourly trips is based on an hourly average, assuming a uniform distribution of trips over an 8-hour work day. For worker vehicles, the number of hourly trips is based on half of the worker trips that would arrive in one hour (with maximum of 100 worker trips per hour) to represent a conservative analysis, as most workers would arrive at the job site before the construction begins.

^b Ambient noise levels along Wilshire Boulevard and La Brea Avenue are calculated based on the existing traffic volumes.

^c Ambient noise level along Fairfax Avenue is based on measured level from the Academy Museum of Motion Pictures Project Draft EIR, Table 4.H-1, August 2014.

^d Ambient noise level along 6th Street is based on measured levels at Receptor Location R4 (Project Draft EIR Table IV.I-8).

^e Significance thresholds are equivalent to the existing ambient noise levels or 75 dBA (County's noise standard for construction mobile source at residential uses), whichever is lower.

Source: AES, 2018.

Table 7
Off-Site Construction Trucks Noise Impacts – Worst-Case Day (Overlapping Construction)

Overlapping Construction	Estimated Number of Trips per Hour, ^a Construction Truck/Worker	Estimated Haul Truck Noise Levels Along the Project Haul Routes, dBA (L _{eq})			
		Wilshire Boulevard	La Brea Avenue	Fairfax Avenue	6th Street
Demo & Grading/Excavation	35/100	67.2	67.2	67.8	67.8
Demo, Grading/Excavation & Building Structure	50/100	68.6	68.6	69.2	69.2
Building Structure & Building Interior	37/100	67.4	67.4	68.0	68.0
Building Structure, Building Interior, & Paving/Landscape	37/100	67.4	67.4	68.0	68.0
Building Interior & Paving/Landscape	13/100	63.7	63.7	64.3	64.3
Existing Ambient Noise Levels Along the Project Haul Routes, L _{eq} (dBA) – Wilshire Boulevard/La Brea Avenue		72.4 ^b	73.3 ^b	70.0 ^c	69.9 ^d
Significance Threshold, ^e L _{eq} (dBA)		72.4	73.3	70.0	69.9
Significant Impact?		No	No	No	No

^a For construction trucks, the number of hourly trips is based on an hourly average, assuming a uniform distribution of trips over an 8-hour work day. For worker vehicles, the number of hourly trips is based on half of the worker trips that would arrive in one hour (with maximum of 100 worker trips per hour) to represent a conservative analysis, as most workers would arrived at the job site before the construction begin.

^b Ambient noise levels along Wilshire Boulevard and La Brea Avenue are calculated based on the existing traffic volumes.

^c Ambient noise level along Fairfax Avenue is based on measured level from the Academy Museum of Motion Pictures Project Draft EIR, Table 4.H-1, August 2014.

^d Ambient noise level along 6th Street is based on measured levels at Receptor Location R4 (Project Draft EIR Table IV.I-8).

^e Significance thresholds are equivalent to the existing ambient noise levels or 75 dBA (County's noise standard for construction mobile source at residential uses), whichever is lower.

Source: AES, 2018.

ON-SITE CONSTRUCTION VIBRATION

The Project would utilize similar construction equipment under the Revised Schedule as for the Base Schedule. Therefore, the on-site construction vibration impacts under the Revised Schedule would be similar to those identified for the Base Schedule. The on-site construction vibration impacts with respect to building damage would be reduced to less than significant with implementation of the prescribed Mitigation Measure I-2. Therefore, vibration impacts associated with on-site construction under the Revised Schedule would be less than significant, similar the Base Schedule.

As provided in the Project Draft EIR, there are no feasible mitigation measures that could be implemented to reduce the temporary vibration impacts associated with human annoyance from on-site construction activities. Therefore, the vibration impacts associated with human annoyance under the Revised Schedule would remain significant and unavoidable, similar to the Base Schedule.

OFF-SITE CONSTRUCTION VIBRATION

As described above, construction trucks would access the Project Site from the US-101 or the I-10 Freeway, via Fairfax Avenue, La Brea Avenue, Wilshire Boulevard, and 6th Street, under the Revised Schedule. Similar to the Base Schedule, construction-related trucks would generate vibration levels of 0.016 PPV or 72 VdB along the anticipated haul routes (i.e., Fairfax Avenue, La Brea Avenue, Wilshire Boulevard, and 6th Street). The estimated vibration levels of 0.016 PPV would be well below the most stringent building damage threshold of 0.12 PPV. In addition, the estimated vibration level of 72 VdB would be below the human annoyance significance threshold of 80 VdB (applicable to residential uses). Therefore, vibration impacts associated with off-site construction under the Revised Schedule would be less than significant, similar the Base Schedule.

MITIGATION MEASURES

The mitigation measures, as prescribed in the Draft EIR, include Mitigation Measure I-1 (installation of temporary sound barriers). Implementation of Mitigation Measure I-1 would reduce the on-site construction related noise by up to 15 dBA at receptors R1 and R6, and by up to 16 dBA at receptor R2. As described in the Draft EIR, there are no other feasible mitigation measures that could be implemented to further reduce the temporary noise impacts from on-site construction activities to a less than significant level. In addition, the estimated maximum noise increase of 0.4 dBA at receptors R1, R2 and R6 would be below the perceptible level of 3 dBA and is not considered a substantial increase. Therefore, noise impacts associated with the on-site construction activities under the Revised Schedule would remain significant and unavoidable, similar to the Base Schedule.