City of Carson

South Bay Pavilion Movie Theater Project

Noise Study

April 2013

rincon

Environmental Scientists Planners Engineers

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April 4, 2013
Project No. 13-00852

Ms. Joy O'Brien
Vintage Real Estate, LLC
11611 San Vicente Boulevard, 10th Floor
Los Angeles, CA 90049

NOISE STUDY
South Bay Pavilion Movie Theater Project
Carson, California

Dear Ms. O'Brien:

Rincon Consultants, Inc. is pleased to submit the attached Noise Study for the proposed South Bay Pavilion Movie Theater Project in Carson, California. The proposed project would have a potentially significant impact related to temporary construction noise; however, restrictions on the timing of construction operations, construction equipment requirements, and neighbor notification would reduce this impact to a less than significant level. The proposed project would not result in long-term noise levels that would exceed the noise standards policies in the City of Carson's General Plan Noise Element or Municipal Code. As such, impacts related to noise as a result of the proposed project would be less than significant. If you have any questions regarding this study or if we can provide you with other environmental consulting services, please feel free to contact us.

Sincerely,

RINCON CONSULTANTS, INC.

Chris Bersbach
Environmental Planner

Joe Power, AICP
Principal

South Bay Pavilion Movie Theater Project

Noise Study

Prepared for:

Vintage Real Estate, LLC
11611 San Vicente Boulevard, 10th Floor
Los Angeles, California 90049

Prepared with the assistance of:

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Ventura, California 93003

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South Bay Pavilion Movie Theater Project Noise Study

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SOUTH BAY PAVILION MOVIE THEATER PROJECT CARSON, LOS ANGELES COUNTY NOISE STUDY

This report is an analysis of the potential noise impacts of the proposed South Bay Pavilion Movie Theater project in the City of Carson. The report has been prepared by Rincon Consultants, Inc. under contract to Vintage Real Estate, LLC for use by the City of Carson, in support of the environmental documentation being prepared pursuant to the California Environmental Quality Act (CEQA). The purpose of this study is to analyze the proposed project's potential temporary noise impacts associated with construction activity and long-term noise impacts associated with project operation, including roadway noise from vehicle trips generated by the proposed project. The analysis herein is based partially on the project traffic study prepared by Linscott, Law & Greenspan, Engineers (March 26, 2013).

PROJECT DESCRIPTION

The project site is located at 20700 Avalon Boulevard at South Bay Pavilion in the City of Carson, California. South Bay Pavilion is an existing regional mall with approximately 1,013,023 square-feet (SF) of floor area anchored by Target, IKEA, Sears and JC Penney.

The Movie Theater project would involve the demolition of 41,433 square feet of space in the existing mall that is now occupied by Chuck E. Cheese's and New Millennium Secondary School and the construction of a 55,482 square foot movie theater with 14 screens and 2,474 seats in the same location, for a net increase of 14,049 square feet of development. The additional 14,049 square feet would be built along the eastern side of the building. Parking for the project would be provided via the existing surplus for the entire South Bay Pavilion, which totals 4,640 spaces; however, the proposed project would also modify the parking lot to add 72 new parking spaces.

There are multiple ingress and egress locations for South Bay Pavilion; however, primary project access is expected to occur at the signalized driveways along Avalon Boulevard at Carson Plaza Drive and Carson Mall. Project-related activity at the other driveways is expected to be nominal. The South Bay Pavilion is also located adjacent to a stop that includes all Carson Circuit Transit System routes, as well as regional transit lines, such as the Los Angeles Metropolitan Transit Authority (MTA) line.

SETTING

Overview of Sound Measurement

Noise level (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels to be consistent with that of human hearing response, which is most sensitive to frequencies around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz).

Sound pressure level is measured on a logarithmic scale with the 0 dB level based on the lowest detectable sound pressure level that people can perceive (an audible sound that is not zero sound pressure level). Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dBA, and a sound that is 10 dBA less than the ambient sound level has no effect on ambient noise. Because of the nature of the human ear, a sound must be about 10 dBA greater than the reference sound to be judged as twice as loud. In general, a 3 dBA change in community noise levels is noticeable, while 1-2 dB changes generally are not perceived. Quiet suburban areas typically have noise levels in the range of 40-50 dBA, while arterial streets are in the 50-60+ dBA range. Normal conversational levels are in the 60-65 dBA range, and ambient noise levels greater than 65 dBA can interrupt conversations.

Noise levels typically attenuate (or drop off) at a rate of 6 dBA per doubling of distance from point sources (such as industrial machinery). Noise from lightly traveled roads typically attenuates at a rate of about 4.5 dBA per doubling of distance. Noise from heavily traveled roads typically attenuates at about 3 dBA per doubling of distance. Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. The manner in which older homes in California were constructed (approximately 30 years old or older) generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer residential units and office buildings is generally 30 dBA or more (HMMH, 2006).

In addition to the actual instantaneous measurement of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. One of the most frequently used noise metrics that considers both duration and sound power level is the equivalent noise level (Leq). The Leq is defined as the single steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time (essentially, the average noise level). Typically, Leq is summed over a one-hour period. Lmax is the highest RMS (root mean squared) sound pressure level within the measuring period, and Lmin is the lowest RMS sound pressure level within the measuring period.

The time period in which noise occurs is also important since noise that occurs at night tends to be more disturbing than that which occurs during the day. Community noise is usually measured using Day-Night Average Level (Ldn), which is the 24-hour average noise level with a 10-dBA penalty for noise occurring during nighttime (10 p.m. to 7 a.m.) hours, or Community Noise Equivalent Level (CNEL), which is the 24-hour average noise level with a 5 dBA penalty for noise occurring from 7 p.m. to 10 p.m. and a 10 dBA penalty for noise occurring from 10 p.m. to 7 a.m. Noise levels described by Ldn and CNEL usually do not differ by more than 1 dB.

Sensitive Receptors

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with each of these uses. The City of Carson General Plan Noise Element includes a variety of land use and development types that are noise sensitive. Noise sensitive land uses include residences, schools, churches, and hospitals and elderly care facilities. Nearby sensitive receptors include multi-family residences approximately 650 feet east of the proposed movie

theater site and approximately 100 feet east of the proposed parking lot improvements; single-family residences approximately 765 feet north of the proposed movie theater site and approximately 180 feet north of the proposed parking lot improvements; a church located approximately 775 feet east of the proposed movie theater site and approximately 710 feet south of the proposed parking lot improvements; and an ambulance center approximately 1,075 feet east of the movie theater site and approximately 900 feet southeast of the parking lot improvements.

Project Site Setting

The most common and primary sources of noise in the project site vicinity are motor vehicles (e.g., automobiles, buses, trucks, and motorcycles) along East Del Amo Boulevard, South Avalon Boulevard, and the San Diego 405 Freeway. Motor vehicle noise is of concern because it is characterized by a high number of individual events, which often create a sustained noise level, and because of its proximity to noise sensitive uses. Additional sources of noise in the project site vicinity include operations associated with the existing shopping center on the project site.

The City of Carson General Plan Noise Element provides noise contours associated with existing and 2020 roadway traffic volumes, which provide a visualization of estimates of sound level. Land forms and man-made structures have very complex effects on sound transmission and on noise contours. Generally, barriers between a source and receiver absorb or reflect noise resulting in a quieter environment. Where barriers or land forms do not interrupt the noise transmission path from source to receiver, the contours prove to be good estimates of the average noise level from roadway traffic. In areas where barriers or land forms interrupt the sound transmission, the noise contours overestimate the extent to which a source intrudes into the community. The noise contour distances describe worst-case conditions because they do not account for any obstructions to the noise path, such as walls, berms, or buildings.

Two weekday morning 20-minute noise measurements were taken at the project site using an ANSI Type II integrating sound level meter in March 2013. These noise measurements provide an estimate of the general noise environment on the project site, which includes noise from moving vehicles in the South Bay Pavilion parking lot, human conversations on the sidewalk outside the shopping mall, roadway noise from Leapwood Avenue, and infrequent airplane flyovers. Table 1 identifies the noise measurement locations and measured noise levels.

Table 1
Noise Monitoring Results

Measurement Location	Primary Noise Source	Sample Time	Leq (dBA)
Southeastern boundary of proposed theater, approximately 580 feet from centerline of Leapwood Avenue	On-site parking lot, Leapwood Avenue	Weekday morning	60.3
Northeastern boundary of proposed theater, approximately 740 feet from centerline of Leapwood Avenue	On-site parking lot, Leapwood Avenue	Weekday morning	60.1

Source: Field visit using ANSI Type II Integrating sound level meter.
See Appendix for noise monitoring data sheets

Regulatory Setting

In 1976, the California Department of Health, State Office of Noise Control published a recommended noise/land use compatibility matrix which many jurisdictions have adopted as a standard in their general plan noise elements. This matrix indicates that residential land uses and other noise sensitive receptors generally should locate in areas where outdoor ambient noise levels do not exceed 65 to 70 dBA (CNEL or Ldn).

The City of Carson's Municipal Code contains regulations that establish exterior noise limits for stationary sources of noise, which is noise from sources other than transportation sources. The City of Carson Municipal has adopted the Los Angeles County noise standards, but includes amendments to the Los Angeles County standards. The broad aim is to maintain ambient noise at acceptable levels, with specific and separate standards established for residential, commercial, and industrial districts during construction and operational activities. Table 2 shows the City of Carson noise standards for construction noise. Construction noise is divided into two categories: non-scheduled, intermittent, short-term operations of 20 days or less and repetitively-scheduled and relatively long-term operations of 21 days or more. The table shows the standard for both short-term (20 days or less) and long-term (21 days or more) construction activities.

Table 2
Maximum Exterior Noise Limits – Construction Noise

Region	Short Term 7:00 a.m. to 8:00 p.m.[1, 2]	Short Term 8:00 p.m. to 7:00 a.m.[1, 2]	Long Term 7:00 a.m. to 8:00 p.m.[1, 2]	Long Term 8:00 p.m. to 7:00 a.m.[1, 2]
Single-family Residential	75 dBA	60 dBA	65 dBA	55 dBA
Multi-family Residential	80 dBA	64 dBA	70 dBA	60 dBA

Source: Carson Municipal Code, Chapter 5, Section 5502.
1. Construction noise is divided into two categories: non-scheduled, intermittent, short-term operations of 20 days or less and repetitively-scheduled and relatively long-term operations of 21 days or more.
2. The noise limits for the 7:00 a.m. to 8:00 p.m. period apply to all days except Sunday and federal holidays, when the standards for the 8:00 p.m. to 7:00 a.m. period apply.

The City of Carson Municipal Code Standards for exterior noise levels are shown in Table 3, as adopted from the Los Angeles County Municipal Code.

Table 3
Maximum Exterior Noise Limits – Operational Noise

Region	7:00 a.m. to 10:00 p.m.	10:00 p.m. to 7:00 a.m.
Residential	50 dBA	45 dBA
Commercial	60 dBA	55 dBA
Industrial	70 dBA	70 dBA

Source: Carson Municipal Code, Chapter 5, Section 5502.

In addition, Title 24 of the California Health and Safety Code establishes an interior noise standard of 45 dBA for multiple residential unit and hotel/motel structures.

The City of Carson relies on project-specific interior/exterior noise standards to guide land use planning decisions, such as the siting of new noise-sensitive land uses. These standards account for non-stationary source environmental noise, such as roadway noise, and are shown in Table 4. The maximum noise level standard for interior areas of movie theater uses is 45 dBA CNEL.

Table 4
Interior/Exterior Noise Standards

Land Use	Maximum Exterior Noise Level (CNEL)	Maximum Interior Noise Level (CNEL)
Residential:		
Single-Family and Multifamily	50-60	45-55
Mobile Home	65	45
Institutional		
Hospital, Schools' classrooms	65	45
Church, Library	--	45
Commercial/Industrial/Institutional		
Hotel, Motel, Transient Lodging	--	45
Commercial Retail, Bank, Restaurant	--	55
Offices	--	50
Amphitheater, Concert Hall, Auditorium	--	45
Gymnasium	--	50
Sports Club	--	55
Manufacturing, Warehousing, Wholesale Utilities	--	65
Movie Theaters	--	45
Open Space/Recreation		
Parks	65	--

Source: Carson General Plan Noise Element

IMPACT ANALYSIS

Methodology and Significance Thresholds

Construction noise estimates are based upon noise levels reported by the Federal Transit Administration, Office of Planning and Environment, and the distance to nearby sensitive receptors. Reference noise levels from that document were then used to estimate noise levels at nearby sensitive receptors based on a standard noise attenuation rate of 6 dB per doubling of distance (line-of-sight method of sound attenuation). Construction noise level estimates do not account for the presence of intervening structures or topography, which could reduce noise levels at receptor locations. Therefore, the noise levels presented herein represent a conservative estimate of actual construction noise. The maximum exterior noise limits shown above in Table 2 were used to determine whether or not construction noise would result in a significant impact on nearby sensitive receptors.

Noise levels associated with existing and future traffic along area roadways were calculated using the Traffic Noise Model Version 2.5 Look-Up Tables (U.S. Department of Transportation, Federal Highway Administration [FHWA], April 2004) (noise modeling data sheets can be viewed in the Appendix). The model calculations are based on traffic data from the project traffic study.

For traffic-related noise, impacts are considered significant if project-generated traffic results in exposure of sensitive receptors to an unacceptable increase in noise levels. Recommendations contained in the May 2006 Transit Noise and Vibration Impact Assessment created by the Federal Transit Administration (FTA) were used to determine whether or not increases in roadway noise would be significant. The allowable noise exposure increase is reduced with increasing ambient existing noise exposure, such that higher ambient noise levels have a lower allowable noise exposure increase. Table 5 shows the significance thresholds for increases in traffic-related noise levels caused either by the project alone or by cumulative development.

Table 5
Significance of Changes in Operational Roadway Noise Exposure

Ldn or Leq in dBA	
Existing Noise Exposure	**Allowable Noise Exposure Increase**
45-50	7
50-55	5
55-60	3
60-65	2
65-74	1
75+	0

If sensitive receptors would be exposed to traffic noise increases exceeding the above criteria, impacts would be considered significant. Impacts related to on-site activities, such as noise from long-term project operation, including the proposed parking structure, would be considered significant if project activities would result in noise levels exceeding City standards shown in Table 3.

Temporary Construction Noise

Project construction could intermittently generate high noise levels on and adjacent to the project site. Temporary noise impacts associated with construction may adversely affect nearby residential, institutional, and medical uses. The main sources of noise during construction activities would include heavy machinery used in demolition, grading, and clearing the site, as well as equipment used during building construction. Table 6 demonstrates the typical noise levels associated with heavy construction equipment. As shown therein, average noise levels associated with the use of heavy equipment at construction sites can range from about 76 to 95 dBA at 25 feet from the source, depending upon the types of equipment in operation at any given time and phase of construction (Hanson, Towers, and Meister, May 2006).

Table 6
Typical Noise Levels at Construction Sites

Equipment	Typical Level (dBA) 25 Feet from the Source
Air Compressor	87
Backhoe	86
Concrete Mixer	91
Paver	95
Saw	76
Scraper	95
Truck	94

Source: Hanson, Towers, and Meister, May 2006.

Noise-sensitive uses near the project site include multi-family residences approximately 650 feet east of the proposed movie theater site and approximately 100 feet east of the proposed parking lot improvements; single-family residences approximately 765 feet north of the proposed movie theater site and approximately 180 feet north of the proposed parking lot improvements; a church located approximately 775 feet east of the proposed movie theater site and approximately 710 feet south of the proposed parking lot improvements; and an ambulance center approximately 1,075 feet east of the movie theater site and approximately 900 feet southeast of the parking lot improvements. These land uses may experience a temporary increase in noise during construction of the proposed movie theater and the associated parking lot improvements. Table 7 shows typical maximum construction noise levels at various distances from construction activity, based on a standard noise attenuation rate of 6 dBA per doubling of distance.

Table 7
Typical Maximum Construction Noise Levels at Various Distances from Project Construction

Distance from Construction	Maximum Noise Level at Receptor (dBA)
50 feet	89
100 feet	83
250 feet	75
500 feet	69
1,000 feet	63
2,500 feet	55

The sensitive receptors nearest to the proposed parking lot improvements are multi-family residences located 100 feet to the east. As shown in Table 7, noise levels from construction of the proposed parking lot improvements could be up to 83 dBA at a distance of 100 feet from the source. The paving of parking spaces is currently expected to be a short-term operation of 20 days or less. Based on the City's exterior noise limits for short-term construction noise shown in Table 3, noise levels of 83 dBA would exceed the standards of 80 dBA during daytime hours (7 a.m. to 8 p.m.) and 64 dBA during nighttime hours (8 p.m. to 7 a.m.) at multi-family residences.

The multi-family residences adjacent to the project site would experience lower noise levels from construction of the proposed movie theater than from the proposed parking lot improvements, as the theater construction would be located 650 feet from these receptors. Based on an attenuation rate of 6 dBS per doubling of distance from point sources, noise levels from construction of the proposed movie theater would attenuate to approximately 67 dBA at a distance of 650 feet. Construction of the proposed movie theater building is anticipated to extend for longer than 21 days. As shown in Table 7, the applicable thresholds for long-term operational noise during construction projects, as experienced by multi-family residences, are 70 dBA from 7 a.m. to 8 p.m. and 60 dBA from 8 p.m. to 7 a.m. Construction noise at a level of 67 dBA would not exceed the daytime threshold for long-term operations but would exceed the nighttime threshold.

Because project construction would be a substantial source of noise for nearby residences, mitigation is recommended for construction activities associated with the proposed project.

Mitigation Measures

Temporary construction impacts would be reduced to a less than significant level through implementation of the following mitigation:

N-1(a) **Construction Timing**. Construction activities should be limited to the hours between 7:00 a.m. and 8:00 p.m., Monday through Saturday. Construction equipment maintenance shall be limited to the same hours. No construction activities shall occur on Sundays or State or federal holidays.

N-1(b) **Construction Equipment**. If electrical service is available within 150 feet, electrical power shall be used to run air compressors and similar power tools. Internal combustion engines should be equipped with a muffler of a type recommended by the manufacturer and in good repair. All diesel equipment should be operated with closed engine doors and should be equipped with factory-recommended mufflers. Construction equipment that continues to generate substantial noise at the project boundaries should be shielded with temporary noise barriers, such as barriers that meet a sound transmission class (STC) rating of 25, sound absorptive panels, or sound blankets on individual pieces of construction equipment. Stationary noise-generating equipment, such as generators and compressors, should be located as far as practically possible from the nearest residential property lines.

N-1(c) **Neighbor Notification**. Provide notification to residential occupants adjacent to the project site at least 24 hours prior to initiation of construction activities that could result in substantial noise levels at outdoor or indoor living areas. This notification should include the anticipated hours and duration of construction and a description of noise reduction measures being implemented at the project site. The notification should include a telephone number for local residents to call to submit complaints associated with construction noise. The notification should be posted on Leapwood Avenue and East Denwall Drive adjacent to the project site, and should be easily viewed from adjacent public areas.

Residual Impacts

Project construction would represent a temporary source of noise at the project site. Mitigation Measures N-1(a) through N-1(c) would reduce construction noise levels to the maximum extent feasible and would be expected to limit noise to the hours allowed by the City of Carson Municipal Code. For these reasons and because of the temporary nature of construction noise, implementation of the recommended noise reduction measures would reduce construction-related noise impacts to a less than significant level.

Long-Term Operational Noise Exposure

The proposed project would introduce a new movie theater and parking uses on the project site. Existing sensitive uses near the project site and proposed new uses on-site may periodically be subject to noise associated with operation of the proposed project, including stationary equipment, such as heating, ventilation, and air conditioning (HVAC) systems, parking noise, and other general activities associated with the proposed uses.

HVAC Equipment. Noise levels from commercial ventilation and air conditioning equipment can reach 100 dBA at a distance of three feet (USEPA, 1971). These units usually have noise shielding cabinets, placed on the roof or mechanical equipment rooms and are not usually significant sources of noise impacts. Typically, the shielding and location of these units reduces noise levels to no greater than 55 dBA at 50 feet from the source. Based on the project plans, the proposed new uses would be located a minimum of 650 feet from the nearest residences to the northeast of the project site. Based on an attenuation rate of 6 dB per doubling of distance, this would result in an external noise level at the nearest residential receptor (650 feet) of 33 dBA, which would not exceed City standards at nearby residences; therefore, noise from HVAC systems would be less than significant.

Parking Lot. The proposed project would add 72 new parking spaces to the existing parking supply at South Bay Pavilion, which currently includes 4,640 spaces. These new parking spaces would be constructed at grade level. Typical noise sources associated with parking lots include tire squeal, doors slamming, car alarms and horns, and engine start-ups. Noise from typical parking lot activities such as car alarms can reach up to 66 dBA Lmax at 50 feet; door slams up to 72 dBA Lmax at 50 feet; vehicle tire squeals up to 72 dBA Lmax at 50 feet; and vehicle start-ups up to 73 dBA Lmax at 50 feet. Parking lot noise at South Bay Pavilion also includes human conversations on the sidewalk adjacent to the shopping mall. Noise levels

within the parking lot would fluctuate with the amount of automobile and human activity. More generally, noise levels would be highest during the day, when the largest number of customers and employees would enter and exit the parking lot. The additional parking spaces would incrementally contribute to noise from automobile and human activity in the South Bay Pavilion parking lot; however, due to the scale of the existing parking lot, the addition of 72 spaces would not be expected to substantially increase the overall level of parking lot noise experienced by existing receptors adjacent to the project site. Therefore, the proposed project would not result in new parking lot noise that would exceed the City's exterior noise limits for residences, as shown in Table 3.

Long-Term Regional Impacts

The proposed project would result in increased noise on area roadways due to increased traffic to and from the project site. The traffic noise analysis is based on the traffic estimates provided in the project traffic study. The primary roadways affected by the project would be Avalon Boulevard, Del Amo Boulevard, Dominguez Street, and Leapwood Avenue.

Roadway noise levels along these roadway segments were estimated using the Traffic Noise Model Version 2.5 Look-Up Tables (U.S. Department of Transportation, Federal Highway Administration [FHWA], April 2004). Roadway noise levels were estimated for the Friday p.m. peak hour, when the proposed project would add the largest volume of new vehicles to area roadways. For the segments of Avalon Boulevard and Del Amo Boulevard in the project vicinity, the traffic study provided turning volumes at area intersections which were used to calculate traffic levels during the Friday p.m. peak hour. Because turning volumes were not provided for all intersections on Dominguez Street and Leapwood Avenue, peak hour traffic levels on these roadway segments were assumed to be approximately 10% of daily traffic volumes for Friday; this percentage is a common factor for estimating peak hour traffic volume. Traffic noise was modeled at the posted speed limit for each roadway segment. In addition, traffic was assumed to include an average mix of 90% automobiles, 5% medium trucks, and 5% heavy trucks.

Table 8 shows the existing and anticipated future (cumulative) noise levels at 50 feet from the centerline of roadway segments along project-area roadways that would experience increases in noise due to project-generated traffic. The roadway segments shown in Table 8 represent the locations where the most substantial increase in traffic due to the project and cumulative development would occur. A noise model summary and results are included in the Appendix.

Table 8
Calculated Noise Associated with Traffic on Surrounding Roadways

Roadway	Projected Noise Level (dBA Leq)				Change In Noise Level (dBA Leq)		
	Existing (1)	Existing + Project (2)	Cumulative (3)	Cumulative + Project (4)	Due to Project Traffic (2-1)	Due to Project Traffic Under Future (2015) Conditions (4-3)	Due to Project and Future Traffic (4-1)
Del Amo Boulevard between Avalon Boulevard and Leapwood Avenue	73.2	73.3	73.8	73.9	0.1	0.1	0.7
Avalon Boulevard between Del Amo Boulevard and Dominguez Street	72.1	72.1	72.5	72.6	0.1	0.1	0.5
Dominguez Street between Avalon Boulevard and Leapwood Avenue	66.3	66.3	66.3	66.3	0.0	0	0
Leapwood Avenue between Dominguez Street and Del Amo Boulevard	64.8	65.0	64.9	65.1	0.2	0.2	0.3

Estimates of noise generated by traffic from roadway centerline at 50 feet.
Refer to Appendix for full noise model output. Noise levels presented do not account for attenuation provided by existing barriers or future barriers; therefore, actual noise levels at sensitive receptor locations influenced by study area roadways may in many cases be lower than presented herein.
Source: Federal Highway Administration Traffic Noise Model Version 2.5 Look-Up Tables.

The guidelines shown in Table 5 are used to determine whether noise associated with increased traffic would be significant. Because existing roadway noise levels are between 60 and 65 dBA on the Leapwood Avenue segment, a 2 dBA noise increase attributable to the project would be considered significant. As shown in Table 8, the expected noise level increase associated with project traffic on Leapwood Avenue would be 0.2 dBA under existing plus project conditions. This increase in roadway noise levels would not result in a noise increase greater than 2 dBA.

Existing roadway noise levels are between 65 and 74 dBA on the segments of Del Amo Boulevard, Avalon Boulevard, and Dominguez Street in the vicinity of the project site. Based on Table 5, a 1 dBA noise increase attributable to the project would be considered significant. As shown in Table 8, the expected noise level increase associated with project traffic on these roadway segments would be 0.2 dBA or less under existing plus project conditions. This increase in roadway noise levels would not result in a noise increase greater than 1 dBA. Therefore, the project's impact with respect to traffic noise would be less than significant.

The project would contribute to a cumulative traffic noise increase, as shown in the final column of Table 8. The cumulative noise level increase would be approximately 0.7 dBA along Del Amo Boulevard, 0.5 dBA along Avalon Boulevard, and 0.3 dBA along Leapwood Avenue. However, the project's contribution to this cumulative increase would be 0.2 dBA or less, which would not exceed the FTA significance thresholds shown in Table 5. Therefore, the project's cumulative impact would be less than significant.

REFERENCES

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Appendix

Noise Measurement Data and Roadway Noise Modeling

Address	Time	Measurment Time	LAeq	LAE	LAmax	LAmin	LA10
1	3/13/2013 11:19	0:20:00	60.3	91.1	84.6	47.8	63.5

LA33	LA50	LA90	LA95	Lppeak	Over	Under	Pause
57.2	53.6	49.8	49.4	100.1	-	-	Pause

Address	Time	Measurment Time	LAeq	LAE	LAmax	LAmin	LA10
1	3/13/2013 11:45	0:20:00	60.1	90.9	76.3	50.3	63.2

LA33	LA50	LA90	LA95	Lppeak	Over	Under	Pause
58.7	57	54	53.3	95.2	-	-	-

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Del Amo Blvd - Friday PM peak hours - existing noise

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h): 1986.0
Average automobile speed (mph): 45.0
Medium truck volume (v/h): 110.0
Average medium truck speed (mph): 45.0
Heavy truck volume (v/h): 110.0
Average heavy truck speed (mph): 45.0
Bus volume (v/h): 0.0
Average bus speed (mph): 0.0
Motorcycle volume (v/h): 0.0
Average Motorcycle speed (mph): 0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

50 feet from roadway centerline

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 73.2

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Avalon Blvd - Friday PM peak hours - existing noise

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h): 2040.0
Average automobile speed (mph): 40.0
Medium truck volume (v/h): 113.0
Average medium truck speed (mph): 40.0
Heavy truck volume (v/h): 113.0
Average heavy truck speed (mph): 40.0
Bus volume (v/h): 0.0
Average bus speed (mph): 0.0
Motorcycle volume (v/h): 0.0
Average Motorcycle speed (mph): 0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

50 feet from roadway centerline

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 72.1

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Leapwood Avenue - Friday PM peak hours - existing noise

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h): 687.0
Average automobile speed (mph): 35.0
Medium truck volume (v/h): 38.0
Average medium truck speed (mph): 35.0
Heavy truck volume (v/h): 38.0
Average heavy truck speed (mph): 35.0
Bus volume (v/h): 0.0
Average bus speed (mph): 0.0
Motorcycle volume (v/h): 0.0
Average Motorcycle speed (mph): 0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: soft

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

50 feet from roadway centerline

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 64.8

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Dominguez St - Friday PM peak hours - existing noise

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1132.0
Average automobile speed (mph):	25.0
Medium truck volume (v/h):	63.0
Average medium truck speed (mph):	25.0
Heavy truck volume (v/h):	63.0
Average heavy truck speed (mph):	25.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

50 feet from roadway centerline

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	66.3

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Del Amo - Friday PM peak hours - existing + project

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	2004.0
Average automobile speed (mph):	45.0
Medium truck volume (v/h):	112.0
Average medium truck speed (mph):	45.0
Heavy truck volume (v/h):	112.0
Average heavy truck speed (mph):	45.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

50 feet from roadway centerline

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	73.3

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Avalon Blvd - Friday PM peak hours - existing + project

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h): 2118.0
Average automobile speed (mph): 40.0
Medium truck volume (v/h): 117.0
Average medium truck speed (mph): 40.0
Heavy truck volume (v/h): 117.0
Average heavy truck speed (mph): 40.0
Bus volume (v/h): 0.0
Average bus speed (mph): 0.0
Motorcycle volume (v/h): 0.0
Average Motorcycle speed (mph): 0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

50 feet from roadway centerline

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 72.2

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Leapwood - Friday PM peak hours - existing + project

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h): 729.0
Average automobile speed (mph): 35.0
Medium truck volume (v/h): 40.0
Average medium truck speed (mph): 35.0
Heavy truck volume (v/h): 40.0
Average heavy truck speed (mph): 35.0
Bus volume (v/h): 0.0
Average bus speed (mph): 0.0
Motorcycle volume (v/h): 0.0
Average Motorcycle speed (mph): 0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: soft

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

50 feet from roadway centerline

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 65.0

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Del Amo - Friday PM peak hours - cumulative

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	2287.0
Average automobile speed (mph):	45.0
Medium truck volume (v/h):	127.0
Average medium truck speed (mph):	45.0
Heavy truck volume (v/h):	127.0
Average heavy truck speed (mph):	45.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

50 feet from roadway centerline

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	73.8

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Avalon - Friday PM peak hours - cumulative

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	2234.0
Average automobile speed (mph):	40.0
Medium truck volume (v/h):	124.0
Average medium truck speed (mph):	40.0
Heavy truck volume (v/h):	124.0
Average heavy truck speed (mph):	40.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

50 feet from roadway centerline

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	72.5

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Leapwood - Friday PM peak hours - cumulative

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h): 700.0
Average automobile speed (mph): 35.0
Medium truck volume (v/h): 39.0
Average medium truck speed (mph): 35.0
Heavy truck volume (v/h): 39.0
Average heavy truck speed (mph): 35.0
Bus volume (v/h): 0.0
Average bus speed (mph): 0.0
Motorcycle volume (v/h): 0.0
Average Motorcycle speed (mph): 0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: soft

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

50 feet from roadway centerline

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 64.9

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Dominguez - Friday PM Peak hours - cumulative

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h): 1154.0
Average automobile speed (mph): 25.0
Medium truck volume (v/h): 64.0
Average medium truck speed (mph): 25.0
Heavy truck volume (v/h): 64.0
Average heavy truck speed (mph): 25.0
Bus volume (v/h): 0.0
Average bus speed (mph): 0.0
Motorcycle volume (v/h): 0.0
Average Motorcycle speed (mph): 0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

50 feet from roadway centerline

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 66.3

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Del Amo - Friday PM peak hours - cumulative + project

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	2305.0
Average automobile speed (mph):	45.0
Medium truck volume (v/h):	129.0
Average medium truck speed (mph):	45.0
Heavy truck volume (v/h):	129.0
Average heavy truck speed (mph):	45.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

50 feet from roadway centerline

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	73.9

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Avalon - Friday PM peak hours - cumulative + project

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	2312.0
Average automobile speed (mph):	40.0
Medium truck volume (v/h):	128.0
Average medium truck speed (mph):	40.0
Heavy truck volume (v/h):	128.0
Average heavy truck speed (mph):	40.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

50 feet from roadway centerline

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	72.6

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Leapwood - Friday PM peak hours - cumulative + project

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h): 742.0
Average automobile speed (mph): 35.0
Medium truck volume (v/h): 41.0
Average medium truck speed (mph): 35.0
Heavy truck volume (v/h): 41.0
Average heavy truck speed (mph): 35.0
Bus volume (v/h): 0.0
Average bus speed (mph): 0.0
Motorcycle volume (v/h): 0.0
Average Motorcycle speed (mph): 0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: soft

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

50 feet from roadway centerline

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 65.1