

Appendix B

Noise Impact Analysis

**NOISE IMPACT ANALYSIS
MODIFICATION TO ROCKEFELLER GROUP PROFESSIONAL CENTER
PROJECT
CITY OF TORRANCE, CALIFORNIA**

Prepared for:

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Project Location

The Project Site encompasses a 23.58-acre site located on the south side of Lomita Boulevard between Garnier Street and Crenshaw Boulevard in the southerly extent of the City of Torrance, Los Angeles County, California. The Project Site is bounded by Lomita Boulevard on the north, an access road to Sam's Club on the east, a Costco store and parking lot to the south, and retail and office uses and a church/private school to the west.

Approved Project

The Rockefeller Group Professional Center Project (Approved Project), as initially proposed and analyzed in the Environmental Impact Report (EIR) prepared for the Rockefeller Group Professional Center Project (State Clearinghouse No. 2007121119), (Certified EIR), included approximately 351,200 square feet of medical/office, professional office and light industrial condominium buildings, to be developed in two phases. The Approved Project included subdivision of an existing 23.58-acre parcel into three lots measuring 14.04 acres, 4.72 acres and 4.82 acres.

Construction of Phase I of the Approved Project was anticipated to require approximately 12 months to complete, while Phase II was estimated to require approximately 11 months to complete. No demolition was proposed. However, approximately 78,300 cubic yards of soil would be brought to the site to raise the grade. Recompaction of this material in each phase was expected to take approximately two months. In addition, grading would take approximately two months.

Modified Project

The Applicant proposes to modify the Approved Project to eliminate the professional office and light industrial square footage, to reduce the amount of medical office square footage down to 75,000 square feet, and to provide for the development of 75,000 square feet of medical office and a 161,200 square-foot Costco warehouse with a 20-position fueling station and on the Project Site (Modified Project). Costco would vacate the 148,000-square-foot existing warehouse that it currently occupies adjacent to the Project Site. The Costco warehouse and fueling station would employ approximately 200 to 250 people.

Similar to the Approved Project, the Modified Project would be constructed in two phases. The entire Project Site would be graded as part of Phase I and would require approximately 60,000 cubic yards of soil import and include over excavation and

recompaction of building pad areas. Phase I would include construction of the 161,500-square-foot Costco warehouse with a car wash and fueling station. This Phase would commence mid-2015 and require approximately 8 months to complete. Phase II would include development of 75,000 square feet of medical uses. This Phase would commence in 2017 and require approximately 12 months to complete. Buildout of the Modified Project would be completed in 2018.

Noise and Vibration

Noise

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is generally defined as unwanted sound. Sound is characterized by various parameters that describe the rate of oscillation of sound waves, the distance between successive troughs or crests, the speed of propagation, and the pressure level or energy content of a given sound wave. In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level.

The unit of sound pressure ratioed to the lowest sound level detectable by a young person with good auditory acuity is called a decibel (dB). Because sound or noise can vary in intensity by over one million times within the range of human hearing, decibels are a logarithmic progression used to keep sound intensity numbers at a convenient and manageable level. Since the human ear is not equally sensitive to all sound frequencies within the entire spectrum, noise levels at maximum human sensitivity are factored more heavily into sound descriptions in a process called "A-weighting" written as dBA. Any further reference to decibels written as "dB" should be understood to be A-weighted.

Leq is a time-averaged sound level; a single-number value that expresses the time-varying sound level for the specified period as though it were a constant sound level with the same total sound energy as the time-varying level. Its unit is the decibel (dB). The most common averaging period for Leq is hourly.

Because community receptors are more sensitive to unwanted noise intrusion during more sensitive evening and nighttime hours, state law requires that an artificial dBA increment be added to quiet time noise levels. The 24-hour noise descriptor with a specified evening and nocturnal penalty is called the Community Noise Equivalent Level (CNEL). CNEL's are a weighted average of hourly Leq's.

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration can be a serious concern causing buildings to shake and rumbling sounds to be heard. In contrast to noise, vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of vibration are trains, buses on rough roads, and construction activities, such as blasting, pile driving and heavy earth-moving equipment.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings and is usually

measured in inches per second. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration.

High levels of vibration may cause physical personal injury or damage to buildings. However, groundborne vibration to be an annoyance that may affect concentration on disturb sleep. In addition, high levels of groundborne vibration (e.g. electron microscopes).

To counter the effects of groundborne vibration, the Federal Railway Administration (FRA) has published guidance relative to vibration impacts. According to the FRA, fragile buildings can be exposed to groundborne vibration levels of 0.5 inches per second PPV without experiencing structural damage.

In contrast to noise, groundborne vibration is not a phenomenon that most people experience every day. The background vibration velocity level in residential areas is usually 50 VdB RMS. Most perceptible indoor vibration is caused by caused by sources within buildings, such as operation of mechanical equipment, movement of people or slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is smooth, the vibration from traffic is rarely perceptible.

Commercial Use Planning Guidelines

The City of Torrance has established guidelines for acceptable community noise levels, which are based upon the CNEL rating scale to insure that noise exposure is compatible with new development. CNEL-based standards apply to noise sources whose noise generations are preempted from local control (such as from on-road vehicles, trains, airplanes, etc.) and are used to make land use decisions as to the suitability of a given site for its intended use. These CNEL-based standards are articulated in the Noise Element of the Torrance General Plan.

For less noise-sensitive land uses, such as commercial, noise levels up to 67.5 dB are considered “normally acceptable” and levels up to 75 dB CNEL are considered "conditionally acceptable" as shown in the Torrance Land Use Compatibility Table in the General Plan. “Conditionally acceptable” requires that noise mitigation requirements are evaluated.

Typical interior levels of commercial uses are 50-55 dB CNEL. Noise attenuation in air – conditioned commercial buildings with limited numbers of doors/windows is typically greater than 25 dB between the exterior façade loading and levels within the interior. Exterior levels of 75 dB CNEL can thus be readily accommodated and still meet interior goals with a wide margin of safety.

If commercial projects include noise-sensitive activities such as outdoor dining, it is recommended that noise exposure be limited to 65 dB CNEL or less in the outdoor eating area, as anything above this level can interfere with speech. If the relocated Costco warehouse will have an outdoor eating area, it is recommended that patio/outdoor eating area noise levels be mitigated to below 65 dB CNEL.

For commercial uses such as the proposed Costco warehouse relocation, noise issues would center more on noise from on-site operations possibly impacting off-site sensitive receivers rather than from site suitability to the ambient noise environment. On-site noise generation is regulated by the Torrance Municipal Code.

Noise Ordinance Standards

Those noise sources that are amenable to local control are regulated by the City of Torrance Municipal Code (Section 46.7.2). The ordinance establishes allowable levels of sound that may cross any adjacent property line, as well as prohibiting general nuisance noise and identifying a number of specific prohibitions. These exterior noise standards are applicable to noise emanating from one property and crossing the property line of another property.

The City of Torrance experiences noise from a variety of sources, mostly transportation-related. The I-405 Freeway traverses the northeastern portion of the city and the BNSF Railway substantially bisects the city. Torrance Municipal Airport, near the southern perimeter of the city, historically generated noise complaints from loud operations. The adoption and enforcement of an airport Noise Abatement Program (NAP) has substantially reduced airport-related noise conflicts. Infrequent airport activity noise complaints derive primarily from transient aircraft not fully aware of the requirements of the NAP (General Plan, 2010, Chapter 4).

Noise regulation in Torrance is a function of the source-receiver location, and the noise sensitivity of the receiving property, and the time of day. There are four noise limit regions in the city. Region 1 is the industrial uses around the refineries between Hawthorne and Western south of 190th Street. Region 2 is an airport noise impacted area between Hawthorne and Crenshaw north of PCH to approximately 500 feet north of Lomita Blvd. The existing Costco Warehouse and the proposed relocation are located in Region 2. Region 3 encompasses the residential area south of PCH and west of Hawthorne. All the rest of the city is in Region 4.

Table 1 summarizes the noise limits applicable to Region 2 for commercial activities such as the proposed project. The ordinance is silent on the applicable noise metric. Conventionally, the limit is understood to be the one-hour energy weighted average called “Leq”. The ordinance also requires that commercial uses in Region 2 also not cause residential standards to be exceeded for homes beyond the Region 2 boundaries. The thresholds vary depending on whether the residences are located within a 500-foot

transition zone or not. For the Costco site, the closest homes are on 235th Street. They are located outside the 500-foot transition area. The applicable noise standards for the proposed project are thus as follows (dB Leq):

Location	7 a.m. – 10 p.m.	10 p.m. – 7 a.m.
Region 2 Boundary	60	55
Closest Residence (235 th St)	55	50
Bread of Life Church	60	55

The various correction factors shown in Table 1 also apply. Costco warehouse and gas station operations generally do not generate noise that would meet the noise standard correction factors (no ready audible tone such as whine, screech or hum, no repetitive hammering or riveting, etc.). The only possible correction is that the facilities operate before noon on Sunday when a -5 dB correction is applicable.

Construction activities are exempt from these standards if they occur between 7:30 a.m. to 6 p.m. (Monday through Friday) and 9:00 a.m. to 5:00 p.m. on Saturdays. Construction is prohibited on Sundays and Holidays observed by the City Hall. There are no numerical noise performance standards for construction activities as long as activities occur within the allowed times of lesser noise sensitivity. However, in recognition of the proximity of the nearest sensitive receptor, the Bread of Life Church and Pre-School to future medical office building (MOB) construction, a “good neighbor” noise shield was recommended in the Rockefeller Group Professional Center EIR (2008) that would remain applicable to the currently proposed project modification.

Table 1

Noise sources in Region 2: It shall be unlawful for any person in Region 2 to produce noise levels at the boundary of Region 2 in excess of 60 dB during the day or 55 dB during the night.

Corrections to the Noise Limits: The numerical limits given in Sec. 46.7.2. (a) and (b) shall be adjusted by addition of the following corrections where appropriate.

Noise Conditions	Correction to the Limits, decibels
1. Noise contains a steady, audible tone, such as a whine, screech or hum	-5
2. Noise is a repetitive impulsive noise, such as hammering or riveting	-5
3. If the noise is not continuous, one of the following corrections to the limits shall be applied:	
a) Noise occurs less than 5 hours per day or less than 1 hour per night	+5
b) Noise occurs less than 90 minutes per day or less than 20 minutes per night	+10
c) Noise occurs less than 30 minutes per day or less than 6 minutes per night	+15
4. Noise occurs on Sunday morning (between 12:01 A.M. and 12:01 P.M. Sunday)	-5

Baseline Noise Levels

Despite the proximity of the airport, aircraft noise is not a substantial contributor to the project site noise environment. The airport noise signature is dominated by the runway orientation and take-off and landing paths. The 65 dB CNEL airport noise contour therefore does not extend far in a cross-runway direction. The project site has an airport noise exposure of well under 60 dB CNEL.

On- and off-site noise measurements were conducted for the RGPC EIR in 2008 by Terry Hayes & Associates (TAHA). Vehicular traffic is the predominant noise source. Although these readings are over 5 years old, decibels are a logarithmic progression. Even if the number of automobiles or aircraft had doubled in 5 years, noise levels would only increase by +3 dB. With the City of Torrance substantially built-out and airport activity levels fairly “flat,” roadway or airport traffic volume growth is one percent per year. At such a growth rate, the noise levels in 2014 are within 1 dB of their levels observed in 2008. Measured levels were as follows:

Bread of Life Church (rear parking lot) – 60 dB Leq

Northern site boundary (clear view of Lomita Blvd.) – 70 dB Leq

The Bread of Life reading represents the closest noise-sensitive receiver to the project site. The Lomita Blvd. reading represents the maximum existing traffic noise loading to the project site. The Bread of Life Church is 100 feet from the Phase II project site. With substantial distance separation to Phase I, the closest Phase I building construction and operational activities would be 1,100 feet away. Experience has shown that 24-hour CNELs are perhaps 2-3 decibels higher than mid-day Leq levels. The northeastern site boundary thus has an existing traffic noise level of 73 dB CNEL. As previously noted, levels up to 75 dB are considered acceptable for planned commercial uses. With the setback of the gas station, and with substantial setback of the Costco warehouse building itself, existing noise is not considered a constraint for the proposed use.

The certified EIR for the RGPC Approved Project analyzed traffic noise patterns on ten roadway segments surrounding the site. The proposed modified project anticipates a redistribution of assigned traffic geographically over a wider area. The traffic study for the proposed modification covers several arterials not included in the noise report for the approved project. The analysis of the existing traffic noise environment was expanded to include several additional roadway segments that may be affected by project implementation as shown in Table 2. Table 2 demonstrates that background noise levels exceed 70 dB CNEL at 50 feet from the centerline of almost all arterial roadways in the project vicinity. The compatibility standard for noise-sensitive land uses in the city of Torrance is typically 65 dB CNEL in usable outdoor space. Placement of such uses near project-vicinity arterial roadways requires greater set-back or the presence of intervening barriers.

The calculation of existing traffic noise in the low 70 dB CNEL range almost exactly matches the existing estimated CNELs shown in Table 3.4-2 of the Certified EIR. As noted above, the passage of 5 – 6 years has had little effect on traffic noise during a period of small growth in traffic volumes. These values suggest that more heavily traveled arterials in the project vicinity are best suited for commercial development, or that mitigation be applied to shield any sensitive receiver development.

The existence of elevated existing traffic noise can be considered two ways. If levels are already high, development of traffic-generating uses may cumulatively exacerbate an already degraded noise environment. Conversely, if baseline levels are elevated, the noise from the addition of a traffic increment will be completely masked by background conditions. Both conditions must be considered in the development of impact significance thresholds for a proposed action.

Table 2
Existing Traffic Noise Levels (dB CNEL @ 50 feet to centerline)

Expanded Analysis Segments		dB CNEL
Hawthorne Blvd	N of Lomita	73.6
Hawthorne Blvd	S of Lomita	73.1
Western Avenue	N of Lomita	68.3
Western Avenue	S of Lomita	68.4
Approved Project		
Lomita Blvd	Early Ave and Garnier Street	71.4
Lomita Blvd	Garnier St and Project Driveway	71.6
Lomita Blvd	Project Driveway and Crenshaw Blvd	71.6
Lomita Blvd	Crenshaw Blvd and Pennsylvania Ave	72.3
Skypark Drive	Garnier St and Costco Driveway	69.6
Skypark Drive	Costco Driveway and Crenshaw Blvd	70.5
Garnier Street	Lomita Blvd and Skypark Drive	58.9
Crenshaw Blvd	Lomita Blvd and Torrance Crossroads	73.8
Crenshaw Blvd	Torrance Crossroads and Skypark Drive	73.1

Note: Levels are shown in nearest 0.1 dB for comparative purposes, the accuracy of both noise monitoring or modeling is closer to +/- 1 dB CNEL

NOISE IMPACTS

Thresholds of Significance

Based on the City of Torrance Municipal Code and the State Land Use Compatibility Matrix (Table 3.4-3 of the Certified EIR), the Modified Project would result in significant noise impacts if it would generate noise levels in excess of the following thresholds.

Construction Phase Significance Criteria

A significant construction noise impact would result if:

- Construction activity would occur outside of the hours permitted by the City's noise ordinance (i.e., outside of the hours of 7:30 a.m. to 6:00 p.m. on weekdays, 9:00 a.m. to 5:00 p.m. on Saturdays, or at any time on Sundays or a public holiday); and
- Construction activity would occur within 300 feet of a residential zone unless a special construction permit has been issued by the City. Such a permit could be issued by the City for low noise level construction activities (e.g., painting and interior improvements).

Operational Phase Significance Criteria

A significant operational noise impact would result if:

- The proposed project would expose existing sensitive receptors to noise levels that exceed the Municipal Code standards. If existing noise levels exceed the noise standards, a significant impact would occur if the project-related vehicular noise results in a 5-dBA increase; and
- Mobile noise levels would increase by 3 dBA CNEL to or within the "normally unacceptable" or "clearly unacceptable" category or any 5-dBA or more increase in noise level.

Ground-borne Vibration Significance Criteria

There are no adopted State or City of Torrance ground-borne vibration standards. Based on federal guidelines, the proposed project would result in a significant construction or operational vibration impact if:

- The proposed project would expose buildings to the FRA building damage threshold level of 0.5 inches per second PPV;
- Construction activity would occur outside of the hours permitted by the City's noise ordinance (i.e., between the hours of 6:00 p.m. and 7:30 a.m. on weekdays, 5:00 p.m. to 9:00 a.m. on Saturdays, or at any time on Sundays or a public holiday); and
- Construction activity would occur within 300 feet of a residential zone unless a special construction permit has been issued by the City. Such a permit could be issued by the City for low noise level construction activities (e.g., painting and interior improvements).

Environmental Impacts

Three characteristic noise sources are typically identified with projects such as the proposed Costco Warehouse relocation. Construction activities, especially heavy equipment, will create short-term noise increases near the project sites. Upon completion, vehicular traffic on streets around the proposed project area may create a higher noise exposure as access patterns change. In already-developed areas, the change in traffic patterns will only increase incrementally on existing roadways. These noise impacts are typically masked by the baseline, and likely preclude perception of any substantial noise level increase. Project activities may entail operation of a gas station, carwash and a tire center. Operational noise sources that could be of concern are discussed in this report. The residual medical office building (MOB) will have minimal operational noise impacts, except for parking lot traffic. That impact was previously analyzed in the RGPC Final EIR and was found to be less-than-significant. The proximity of the MOB complex to the adjacent Bread of Life Pre-School was identified as a source of construction noise concern and mitigated by Measure 3.4(4). That impact and mitigation remains unchanged by the proposed warehouse store relocation.

Noise and vibration impacts most often focus on sensitive receivers who are more readily impacted than commercial or industrial uses. For the proposed Costco operations, all sensitive receivers are located 1,000 feet or more from site activities or equipment. The closest sensitive receivers include:

- Bread of Life Church and Pre-School playground (approximately 1,100 feet from Phase I and 100 feet from Phase II construction)
- Residential areas east of Crenshaw on 237th/238th Streets (approximately 1,500 feet away)
- Residential area north of the refinery tank farm north of 235th Street (approximately 1,700 feet away)

Construction Noise

Approved Project

The Certified EIR identified a substantial temporary construction activity noise increase at the Bread of Life Pre-School during construction of the MOB complex on the northwest corner of the site. In Table 3.4-6 of the Certified EIR, peak noise was calculated to be 83.0 dB (Lmax) from anticipated Phase II MOB construction activities closest to the pre-school. This compared to a measured ambient level of 59.5 dB (Leq) near the pre-school play yard. Construction of Phase I uses, including the proposed warehouse relocation, was calculated to generate a peak level of only 60.8 dB (Leq).

Although the Certified EIR concluded that construction activity noise impacts of the Approved Project would be less-than-significant with compliance with the City's Noise Ordinance, erection of a 6-foot high temporary barrier was recommended on the northwest site perimeter as a "good neighbor" measure to block out part of the 23.5 dB noise increase from adjacent medical office complex construction.

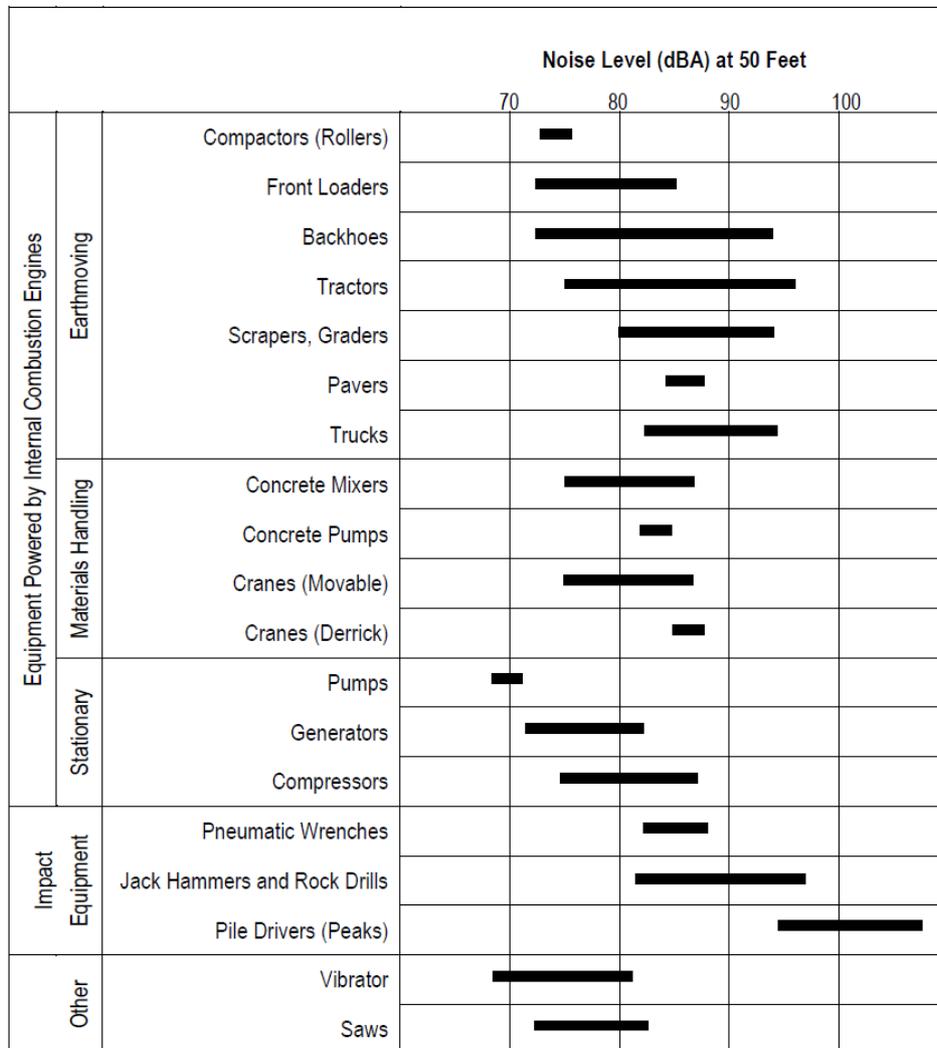
Modified Project

Temporary construction noise impacts vary markedly because the noise strength of construction equipment ranges widely as a function of the equipment used and its activity level. Short-term construction noise impacts tend to occur in discrete phases dominated initially by earth-moving sources, then by foundation and parking area construction, and finally for finish construction.

Figure 1 shows the typical range of construction activity noise generation as a function of equipment used in various building phases. The earth-moving sources are seen to be the noisiest with equipment noise ranging up to about 90 dBA at 50 feet from the source. Major earth-moving equipment is not anticipated to be required for this project. Spherically radiating point sources of noise emissions are atmospherically attenuated by a factor of 6 dB per doubling of distance, or about 20 dB in 500 feet of propagation. The loudest earth-moving noise sources will therefore sometimes be detectable above the local background beyond 1,000 feet from the construction area. An impact radius of 1,000 feet or more pre-supposes a clear line-of-sight and no other machinery or equipment noise that would mask project construction noise. With buildings and other barriers to interrupt line-of-sight conditions, the potential "noise envelope" around individual construction sites is reduced. Construction noise impacts are, therefore, somewhat less than that predicted under idealized input conditions.

Construction activity noise impacts are governed by the Torrance Noise Ordinance. Compliance with time limits on allowed hours of construction; 7:30 a.m. to 6 p.m. (Monday through Friday) and 9:00 a.m. to 5:00 p.m. on Saturdays, is presumed adequate to maintain a less than significant impact. Construction is prohibited on Sundays and Holidays observed by the City Hall.

Figure 1 Typical Construction Equipment Noise Generation Levels



Source: EPA PB 206717, Environmental Protection Agency, December 31, 1971, "Noise from Construction Equipment and Operations."

During construction, the Modified Project would utilize similar types and amounts of equipment on a daily basis. Therefore, the Modified Project would result in temporary increases in noise levels, including at the Bread of Life playground. However, like the Approved Project, the Modified Project would comply with the standards of the Noise Ordinance, so impacts would be less than significant. Also like the Approved Project, the Modified Project would implement the mitigation measures below to reduce further to reduce construction-related noise levels.

Construction Phase Ground-borne Vibration Impacts

Approved Project

The Certified EIR analyzed construction activity vibration impacts to the Bread of Life site. The analysis concluded that construction of the closest Phase II MOB structures would create a peak particle velocity (ppv) of 0.011 inches per second compared to the potential building damage threshold of 0.5 inches/second ppv. The analysis concluded that MOB construction vibration impacts to the Bread of Life site were less than significant.

Modified Project

Construction activities generate ground-borne vibration when heavy equipment travels over unpaved surfaces or when it is engaged in soil movement. The effects of ground-borne vibration include discernible movement of building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. Within the “soft” sedimentary surfaces of much of Southern California, ground vibration is quickly damped out. Because vibration is typically not an issue, very few jurisdictions have adopted vibration significance thresholds. Vibration thresholds have been adopted for major public works construction projects, but these relate mostly to structural protection (cracking foundations or stucco) rather than to human annoyance.

To determine potential impacts of the project’s construction activities, estimates of vibration levels induced by the construction equipment at various distances are presented below:

Equipment	Approximate Vibration Levels (ppv)*				
	25 feet	50 feet	100 feet	1,100 feet	1,500 feet
Large Bulldozer	0.089	0.031	0.011	<0.001	<0.001
Loaded Truck	0.076	0.027	0.010	<0.001	<0.001
Jackhammer	0.035	0.014	0.004	<0.001	<0.001
Small Bulldozer	0.003	0.001	<0.001	<0.001	<0.001

* (FTA Transit Noise & Vibration Assessment, Chapter 12, Construction, 1995) and point-source propagation conditions

The on-site construction equipment that will create the maximum potential vibration during Phase I Costco Warehouse construction is a large bulldozer. The stated vibration source level in the FTA Handbook for such equipment is 0.089 inches/second ppv at 25 feet from the source. At the church/pre-school site at slightly over 1,000 feet away from planned building construction, the peak vibration level of less than 0.001 inches/second ppv be well below the potential building damage threshold of 0.5.

The nearest residential structures to the project site, are to the north, along 235th Street, over 1,500 feet from occasional heavy equipment activity. Vibration levels at these locations will not exceed the potential building damage threshold of 0.5 inches per second PPV. Construction activity vibration impacts would be similar to those of the Approved Project and also less-than-significant.

Operational Noise

Vehicular Noise

Approved Project

The RGPC EIR calculated the traffic noise associated with a predicted 7,107 daily vehicle trips assigned to various roadway segments around the center. The maximum predicted traffic noise increase of +1.3 dB CNEL on Garnier Street between Lomita Blvd and Skypark Drive would not cause the City of Torrance General Plan Noise Element standard to be exceeded and would not be a substantial increase (+5 dB CNEL). General Plan threshold would not be exceeded along any other roadway segments analyzed. Traffic noise impacts for implementation of the approved project were determined to be less-than-significant.

Modified Project

Off-site impacts resulting from changes in site access patterns would be significant if the roadway noise caused the City of Torrance general plan standard for noise-sensitive uses to be exceeded or measurably increased (+3 dB CNEL). A substantial increase would also be significant (+5 dB). For commercial uses, a level of 75 dB CNEL is considered normally unacceptable in the Noise Element of the general plan. The threshold criteria for less noise-sensitive land uses are thus similar as for residences, schools, etc. except the reference level is 75 dB CNEL.

Traffic noise changes were calculated using the federal highway noise prediction model (FHWA-RD-77-108). Table 3 summarizes the CNEL levels at 50 feet from the centerline of project vicinity roadways and several area arterials without and with the proposed relocation. In the absence of any substantial number of noise-sensitive uses along these roadways, levels of 75 dB CNEL would be contrary to general plan standards. Table 3 shows that these standards are not exceeded and that the project traffic noise impact less than 1 dB CNEL on all roadways analyzed. Traffic noise impacts from implementation of

the proposed project are considered less-than-significant.

Table 3
Traffic Noise Levels (dB CNEL @ 50 feet to centerline)

Expanded Analysis Segments		Existing	Approved	Modified
Hawthorne Blvd	N of Lomita	73.6	74.1	74.1
Hawthorne Blvd	S of Lomita	73.1	73.5	73.6
Western Avenue	N of Lomita	68.3	68.4	68.4
Western Avenue	S of Lomita	68.4	68.5	68.6
Approved Project				
Lomita Blvd	Early Ave and Garnier Street	71.4	72.2	72.4
Lomita Blvd	Garnier St and Project Driveway	71.6	72.0	72.3
Lomita Blvd	Project Driveway and Crenshaw Blvd	71.6	72.0	72.8
Lomita Blvd	Crenshaw Blvd and Pennsylvania Ave	72.3	72.6	72.6
Skypark Drive	Garnier St and Costco Driveway	69.6	69.7	69.7
Skypark Drive	Costco Driveway and Crenshaw Blvd	70.5	70.6	70.5
Garnier Street	Lomita Blvd and Skypark Drive	58.9	60.1	59.3
Crenshaw Blvd	Lomita Blvd and Torrance Crossroads	73.8	74.2	74.2
Crenshaw Blvd	Torrance Crossroads and Skypark Drive	73.1	73.3	73.4

Note: Levels are shown in nearest 0.1 dB for comparative purposes; the accuracy of both noise monitoring or modeling is closer to +/- 1 dB CNEL

The data in Table 3 include traffic associated with site build-out into the proposed Costco operations as well as use of the 6.19 acre residual parcel as medical office buildings (MOB). They also include traffic pattern changes associated with retail uses of the “repurposed” existing Costco building. Because daily (24-hour) traffic volumes are based upon an assumption that the ADT is ten times the p.m. peak hourly volume as assumed in the RGPC Final EIR, the ADT calculation is very sensitive to hourly traffic behavior. Table 8 of the project traffic study (Kittelson & Associates, March, 2014) shows that proposed trips (relocated Costco, 6.19 acre MOB, repurposed existing) minus approved Rockefeller Center minus existing Costco are small regionally in both the a.m. and p.m. peak hours. As a result there is a low predicted traffic noise impact because the 2,483 net new trips would occur during off-peak hours. Because the traffic impact modification study for the proposed modification did not estimate 24-hour volumes needed for CNEL calculations, the peak hour adjustment to predict daily volumes was retained for consistency with the approved project EIR.

The change in CNELs from implementation of the RGPC was predicted to be small due to masking effects of the traffic baseline. The proposed project will similarly have a negligible off-site traffic noise impact. The incremental impact identified is the approved project EIR versus the proposed modification are shown in Table 4.

Table 4
Traffic Noise Level Changes (dB CNEL @ 50 feet to centerline)

Expanded Analysis Segments		Approved vs Existing	Modified vs Existing	Modified vs Approved
Hawthorne Blvd	N of Lomita	+0.5	+0.5	+0.0
Hawthorne Blvd	S of Lomita	+0.4	+0.5	+0.1
Western Avenue	N of Lomita	+0.1	+0.1	+0.0
Western Avenue	S of Lomita	+0.5	+0.0	+0.0
RGPC Approved Project Segments				
Lomita Blvd	Early Ave and Garnier Street	+0.8	+1.0	+0.2
Lomita Blvd	Garnier St and Project Driveway	+0.4	+0.7	+0.3
Lomita Blvd	Project Driveway and Crenshaw Blvd	+0.4	+1.2	+0.8
Lomita Blvd	Crenshaw Blvd and Pennsylvania Ave	+0.3	+0.3	+0.0
Skypark Drive	Garnier St and Costco Driveway	+0.1	+0.1	+0.0
Skypark Drive	Costco Driveway and Crenshaw Blvd	+0.1	+0.0	-0.1
Garnier Street	Lomita Blvd and Skypark Drive	+1.2	+0.4	-0.8
Crenshaw Blvd	Lomita Blvd and Torrance Crossroads	+0.4	+0.4	+0.0
Crenshaw Blvd	Torrance Crossroads and Skypark Drive	+0.2	+0.3	+0.1

Note: Levels are shown in nearest 0.1 dB for comparative purposes, the accuracy of both noise monitoring or modeling is closer to +/- 1 dB CNEL

Vehicular noise levels generated by the Modified Project would be very similar to the Approved Project, and also less than significant.

Stationary Noise

Approved Project

Stationary noise sources associated with the approved project would include mechanical equipment and parking lot activity noise. The mechanical equipment was presumed to be screened by enclosures as to not increase ambient levels by more than +5 dB. The playground of the Bread of Life Church Pre-School was predicted to experience an increase of +1.9 dB due to the operation of a 1,450 space parking lot. Neither stationary noise source was determined to cause the City of Torrance significance threshold of a +5 dB increase above ambient to be exceeded. Stationary noise source impacts were determined to be less-than-significant.

Modified Project

On-site operational noise will derive from a variety of activities, including:

- delivery truck maneuvering;
- loading dock operations;
- tire center operations;
- fuel dispensing facilities;

- roof-top mechanical equipment; and
- self-service car wash. .

In order to enhance Costco membership convenience, many recently developed warehouse stores include a self-service car wash. The dryers are noisy because they rely on high velocity air movement to remove most of the water from the cars. Since the noisiest activity occurs within the tunnel near the exit end, the noise pattern is highly asymmetrical.

The activities that would generate operational noise would be dispersed throughout the relocation site. It was assumed that the average distance to the closest Region 2 boundary was 1,000 feet and the closest home was 1,500 feet from the noise source. The church/preschool was assumed to be 1,100 feet from the center of Costco store activity noise generation which will be distributed over a substantial distance from less than 1,000 to more than 1,500 feet from the church/preschool. The reference noise levels for the noise-generating operational activities has been measured at a number of Costco facilities and other big box retail stores at other locations . There is obvious variability, and many sources have short-term maxima but relatively smaller hourly averages. The estimated off-site noise from on-site operations is shown in Table 5. Noise ordinance standards will be met by a wide margin of safety.

Table 5 demonstrates that both the daytime and nocturnal noise ordinance standards will be met regardless of time of occurrence. Although most on-site noise generation will occur during daytime hours, truck/trailer unloading often begins around 4 a.m. The self-service gas station may open at 5 a.m. Neither activity would remotely threaten the ability to meet the City’s nocturnal noise standard.

**Table 5
Off-Site Noise from On-Site Operations (dB Leq)**

Source	Ref Level @ 50'	Region 2 Boundary	Church/Pre- School	Nearest Home
Semi-Truck Maneuvering	53	27	23	20
Loading Dock Operation	50	24	20	17
Roof-Top Mechanical Equipment	52	26	22	19
Tire Center Operations	60	34	30	27
Gas Station and Parking Lot	60	34	36	33
Car Wash (Tunnel Exit)	76	50	48	43
All Sources Simultaneously	-	50	48	43
Daytime Ordinance Standard	-	60	55	55
Nocturnal Ordinance Standard	-	55	50	50

The possible car wash tunnel exit is the noisiest on-site source at any off-site sensitive receivers. However, the car wash would only operate during daytime hours such that a

large margin of safety would be maintained between peak off-site noise levels at the church/pre-school or the nearest homes and the City's noise ordinance standard. Noise impacts from stationary noise sources under the Modified Project would be greater than under the Approved Project, but still less than significant.

Parking Noise

Approved Project

The Approved Project would include a surface parking lot of approximately 1,450 spaces. The Certified EIR found that the Bread of Life playground would experience an ambient noise increase of 1.9 dBA due to parking noise. Because this increase in ambient noise would not exceed the significance threshold of 5 dBA, the Certified EIR found that parking noise from the Approved Project would result in a less than significant impact.

Modified Project

Parking lot noise impacts for the approved project would derive primarily from visitor vehicles at the MOB parked in very close proximity to the church/preschool. Costco visitor vehicles would be parked from 500 to 1,300 feet from the playground with many of them parked closer to the Costco front door at 1,100 feet to the preschool. The spreading loss difference in noise propagation for a car parked 100 feet away versus a car 1,000 feet away is -20 dB. Whereas noise levels from nearby Phase II parking lot activity is around 60 dB, Costco parking lot activity noise would be 40 dB, or much less than ambient levels.

Operational Phase Ground-borne Vibration Impacts

Approved Project

The Approved Project would not include significant stationary sources of ground-borne vibration, such as heavy equipment operations. Operational ground-borne vibration in the project vicinity would be generated by vehicular travel on the local roadways. However, similar to existing conditions, traffic related vibration levels with respect to the Approved Project would not be perceptible by sensitive receptors. Thus, the Certified EIR concluded that operational vibration generated by the Approved Project would result in a less than significant impact.

Modified Project

Like the Approved Project, the Modified Project would not include significant stationary sources of ground-borne vibration, such as heavy equipment operations. Operational ground-borne vibration in the project vicinity would be generated by vehicular travel, including delivery trucks, on the local roadways. However, as compared to the Approved

Project would generate fewer daily trips. Moreover, delivery trucks are currently travelling on local roadways to the existing Costco on the adjacent site, which will be relocated to the project site. It is possible that one additional delivery truck might visit the site per day. All delivery trucks would use the existing drive aisle along the western site boundary. The addition of one truck, if any at all, would not increase the vibration severity of any single pass-by event. Therefore, like the Approved Project, traffic related vibration levels with respect to the Modified Project would not be perceptible by sensitive receptors. Therefore, operational vibration under the Modified Project would also be less than significant.

MITIGATION MEASURES

Construction Phase

3.4(1) All construction equipment shall be equipped with mufflers and other suitable noise attenuation devices.

3.4(2) Grading and construction contractors shall use quieter equipment as opposed to noisier equipment (such as rubber-tired equipment rather than track equipment).

3.4(3) Equipment staging areas shall be located on the eastern portion of the project site, as far away as possible from the Bread of Life Church.

3.4(4) During building construction, a temporary 6-foot sound wall constructed out of solid material (e.g., plywood) shall be located such that line of sight from construction activity and the Bread of Life Church is blocked. The wall shall extend for approximately 400 feet from the northwest corner of the project site toward the south and along the project site boundary.

Operational Phase

Operational phase noise impacts would be less than significant, and no mitigation measures are required.

Ground Borne Vibration

Construction and Operational phase groundborne vibration impacts would be less than significant and no mitigation measures are required.

Impacts After Mitigation

With the implementation of the mitigation measures identified in the Certified EIR, construction noise impacts would be less than significant for both the approved project as well as for the modified project. Construction activities for Phase II of the project, after application of the above measures, may create peak hour noise levels of 75 dB (Leq) at the adjacent Bread of Life Church. This represents a 16 dB increase above ambient conditions.

Construction Phase

During Phase I construction, for both the approved project and the modified project, construction activity noise levels would be 60 dB (Leq) at the church property. This represents a +1 dB increase above ambient. The human noise perception threshold in ambient environments is approximately 3 dB.

Noise impact conclusions for construction activities are thus unchanged from those in the Certified EIR, namely:

- a. Phase II construction noise impacts with the application of available mitigation for both the approved project and the proposed modified project may be clearly audible at the adjacent church property. However, Mitigation Measure 3.2(1) would reduce construction noise levels by approximately 3 dB. The sound wall displayed in Figure 3.2-3 of the Certified EIR, and discussed in Mitigation Measure 3.2(2) and 3.2(3) would assist in attenuating construction noise levels. With implementation of Mitigation Measure 3.2(1) though 3.2(4), construction noise levels at the Bread of Life Church would be reduced by at least 8 dB during construction activity. The mitigated construction related noise level at the Bread of Life Church would be approximately 75.1 dB Leq during PhaseII construction activity, and 60.3 dB Leq during Phase I construction activity. However, construction activity would comply with the Noise Ordinance. Therefore, construction noise would result in a less than significant impact.
- b. Phase I construction noise for both the approved project and the modified project will be imperceptible at the nearest sensitive receiver.

Operational Phase

Not applicable. The project related operational noise would result in a less than significant impact without mitigation.

Groundborne Vibration

Not applicable. Both project related construction and operational groundborne vibrations would result in a less than significant impact without mitigation.

Cumulative Impacts

Approved Project

In the preparation of the Certified EIR, the traffic consultant took 42 additional projects into consideration. Thus, the future traffic results without and with the approved project already account for the cumulative impacts from these other projects. The maximum cumulative roadway noise increase would be 2.0 dB CNEL and would occur along Garnier Street between Lomita Boulevard and Skypark Drive. As such, cumulative roadway noise levels would not exceed the 3 dB threshold increment and would not result in a perceptible change in noise level. Therefore, the approved project would not result in a cumulatively considerable impact with respect to the roadway noise.

The predominant vibration source near the project site is heavy trucks traveling on the local roadways. Neither the approved project nor related projects would substantially increase heavy duty vehicle traffic near the project site and would not cause a substantial increase in heavy duty trucks on local roadways. As such, the approved project would not add to a cumulative vibration impact.

Modified Project

Traffic noise level changes associated with the modified project, including all area-wide cumulative projects, were shown in Table 4. The shift in Costco access from Skypark Drive to Lomita Blvd would create a maximum traffic noise increase of +1.2 dB CNEL on Lomita Blvd from the main site entrance eastward toward Crenshaw Blvd. This increase would not exceed the adopted 3 dB significance threshold.

No substantial change in truck site access or daily volumes is anticipated for the modified project. As such, the modified project would not add to a cumulative vibration impact.