APPENDIX F

Museum Market Plaza Specific Plan
Noise Impact Study

Prepared by

Endo Engineering
28811 Woodcock Drive
Laguna Niguel, CA 92677

September 9, 2008

NOTICE ON APPENDIX REDUCTION

This technical appendix has been reduced by 50% and printed double-sided to conserve paper and to allow the technical appendices to be incorporated into the EIR. If you wish to have a full-sized copy of this appendix, please contact the City of Palm Springs Planning Department at 760-323-8245.

Endo Engineering Traffic Engineering Air Quality Studies Noise Assessments

September 9, 2008

Mrs. Nicole Criste
Terra Nova Planning & Research, Inc.
400 South Farrell Drive, Suite 205
Palm Springs, CA 92262

SUBJECT: ***Palm Springs Museum Market Plaza Specific Plan***
Noise Impact Study

Dear Mrs. Criste:

Endo Engineering is pleased to submit this evaluation of the potential noise impacts associated with the proposed Museum Market Plaza Specific Plan in downtown Palm Springs. The 20.59-acre project site is located south of Amado Road and north of Arenas Road, between Museum Drive and Indian Canyon Drive. The area within the Museum Market Plaza Specific Plan is currently occupied by: the Desert Fashion Plaza (288,400 S.F. of retail and 41,600 S.F. of restaurant uses), the Town & Country Center (15,000 S.F. restaurant, 33,600 S.F. retail and 2,350 S.F. offices), the Zeldaz Nightclub (7,120 S.F.), the Mercado Plaza parking lot, and the vacant 0.83-acre Palm Hotel site. The proposed project is designed to serve visitors and local residents alike by re-integrating the site into the Palm Springs downtown.

The methodology employed to assess the potential noise impacts is consistent with the requirements of the City of Palm Springs. This report details in graphic and narrative form: (1) existing noise conditions in the project vicinity; (2) future year 2030 noise conditions with fifteen cumulative projects and the Preferred Project and three site development alternatives as well as the No-Project Alternative; and (3) mitigation measures recommended to reduce any potentially significant impacts identified to acceptable levels.

We trust that the information provided herein will be of value to City staff in their review of the impacts and mitigation measures associated with the project. Should questions or comments develop regarding the findings and recommendations within this report, please do not hesitate to contact our offices by telephone, by facsimile, or by electronic mail (endoengr@cox.net). We look forward to discussing our analyses and findings with you.

Cordially,
ENDO ENGINEERING

Vicki Lee Endo
Registered Professional
Traffic Engineer TR 1161

REGISTERED PROFESSIONAL ENGINEER
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12/31/2008
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STATE OF CALIFORNIA

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MUSEUM MARKET PLAZA SPECIFIC PLAN

NOISE IMPACT STUDY

SOUTH OF AMADO ROAD AND NORTH OF ARENAS ROAD
BETWEEN MUSEUM DRIVE AND INDIAN CANYON DRIVE

CITY OF PALM SPRINGS

SEPTEMBER 9, 2008

Prepared For:

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1.0 Executive Summary

1.1 Existing Noise Setting

1. The primary sources of noise in the study area are transportation facilities including the Palm Springs International Airport, railroad lines that pass through the city and master planned roadways.

2. Ambient noise levels emanating from area roadways currently range from a low of 45.0 CNEL (at 50 feet from the centerline of Andreas Road, west of Indian Canyon Drive) to a high of 74.5 CNEL (at 50 feet from the centerline of Indian Canyon Drive, south of Tahquitz Canyon Way).

3. Twenty percent of the roadway segments modeled (primarily along Belardo Road, Cahuilla Road and Andreas Road) currently generate noise levels which are below 60 CNEL at the right-of-way.

4. The 65 CNEL contours are located within the right-of-way along 21 of the roadway segments evaluated (39 percent). The 70 CNEL contours fall within the right-of-way along thirty-one (57 percent) of the roadway segments analyzed.

5. The project site is located outside of the current and future 60 CNEL contours associated with the Palm Springs International Airport.

1.2 Noise Impacts

1. Demolition activities, debris removal, grading, and other construction activities on-site will result in short-term increases in noise levels that will be noticeable to residents and visitors in the vicinity of the project site. The level of construction noise may cause annoyance but is not expected to cause long-term hearing loss or other severe effects. Noise impacts due to construction will be regulated through the City of Palm Springs Construction Regulations and Noise Ordinance as well as through environmental specifications in the construction contract and the Noise Control Act of 1972, which sets noise emission standards for construction machinery.

2. Motor vehicle noise resulting from the traffic generated by the Preferred Project and all site development alternatives will constitute a long-term incremental acoustic impact in the study area. These impacts are not projected to be significant, as shown in Tables 4-7 through 4-9.

3. Neither the Preferred Project, the Preserve Town & Country Center Alternative, nor Less-Intense Alternative B would generate an audible noise increase (greater than 3.0 dBA) along any of the roadway segments analyzed.

4. Less-Intense Alternative A would not generate an audible noise increase (greater than 3.0 dBA) along any of the roadway segments analyzed, except one (Andreas Road between Palm Canyon Drive and Indian Canyon Drive) where the projected noise level would increase by 9.9 but remain below 55 dBA.

5. On-site activities associated with the long-term use of the future facilities (such as landscaping equipment, building maintenance equipment, refuse pick-up vehicles,

heating/ ventilation/air conditioning units, swimming pool pumps, loading dock vehicles, and restaurant patrons in waiting areas) will generate intermittent operational noise. Although annoyance from nuisance sounds may occur, the anticipated noise levels are expected to be well below the limits identified in the *City of Palm Springs Noise Ordinance* for short-duration noise.

6. Noise levels associated with parking garage activities (engine noise, car door slamming, tire squealing) are expected to range between 55 dBA and 70 dBA at a distance of 50 feet from the noise source. Although annoyance from nuisance sounds may occur, parking structure noise is expected to be well below the limits identified in the *City of Palm Springs Noise Ordinance* for short-duration noise.

1.3 Noise Mitigation

The following measures are recommended for incorporation in the project to minimize the potential for significant short-term noise impacts. The City of Palm Springs should consider these measures in developing conditions of approval to ensure that the construction-related noise exposure of adjacent noise sensitive receptors will be reduced to the maximum extent feasible.

Measures Required to Comply With City Noise Policies

The following measures reflect rules, policies, or regulations that apply to all development in the City of Palm Springs.

1. Construction activities that impact adjacent residential units shall comply with the hours of operation and noise levels identified in the City Noise Ordinance. Grading and construction activities on-site shall be restricted to the hours between 7 a.m. and 7 p.m. on weekdays and the hours of 8 a.m. and 5 p.m. on Saturdays and not allowed on Sundays or federal holidays to minimize the potential for noise impacts during more sensitive time periods, as specified by *Palm Springs Municipal Code* Section 8.04.220. No construction will be permitted on the following holidays: Thanksgiving Day, Christmas Day, New Years Day, July 4th, Labor Day or Memorial Day.

2. Future on-site development shall comply with all relevant development standards and *Palm Springs Municipal Code* requirements to ensure that grading and construction activities and site operations do not create adverse noise impacts beyond the site boundaries as specified in the Noise Ordinance (*Palm Springs Municipal Code* Chapter 11.74). Construction activities shall incorporate feasible and practical techniques which minimize the noise impacts on adjacent uses, such as the use of mufflers and intake silencers no less effective than originally equipped per City Policy NS3.11.

3. The final layout and building design shall be evaluated by a qualified noise consultant to ensure that adequate noise attenuation features are incorporated in the project design to meet applicable City of Palm Springs noise standards as well as the California noise insulation standards. The applicant shall demonstrate to the City's satisfaction that all acoustic construction features required to produce acceptable interior noise levels (of 45 dBA CNEL or lower per City Policy NS1.6 and NS1.8) shall be incorporated in the project design, prior to the issuance of building permits.

4. Any parking structures shall be designed to minimize noise impacts on-site and on adjacent uses, including the use of materials that mitigate sound transmission and

configuration of interior spaces to minimize sound amplification and transmission per City Policy NS3.3.

5. Future on-site development shall comply with all relevant noise policies set forth in the Noise Element of the *Palm Springs 2007 General Plan* to minimize operational noise impacts including but not limited to the following:

   - Access to loading and trash areas shall be located at the maximum practical distance from residential parcels.
   - Parking adjacent to residential areas shall be enclosed within a structure.
   - Noise impacts on adjacent residential areas from live entertainment, amplified music, or other noise associated with the night club and restaurants or their patrons on-site shall be minimized to the greatest extent possible.
   - Techniques shall be employed to mitigate noise impacts on residential properties from truck deliveries such as the use of a sound wall or enclosure of the delivery area.
   - Require that construction activities that impact adjacent residential units comply with the hours of operation and noise levels identified in the City Noise Ordinances.
   - Require that construction activities incorporate feasible and practical techniques which minimize the noise impacts on adjacent uses, such as the use of mufflers and intake silencers no less effective than originally equipped.
   - Encourage the use of portable noise barriers for heavy equipment operations performed within 100 feet of existing residences, or make applicants provide evidence as to why the use of such barriers is not feasible.
   - Truck access routes and hours shall be reviewed and limited to minimize the potential for adverse impacts on the adjacent community related to trucks entering and leaving the site to make deliveries.

6. Drivers of diesel-fueled commercial vehicles (with gross vehicular weight ratings greater than 10,000 pounds) shall be prohibited from idling the vehicle's primary engine for more than five minutes at any location on-site per Section 2485 of Chapter 10, Article 1, Division 3 of Title 13, *California Code of Regulations*.

Measures Required to Mitigate Potentially Significant Impacts

The following measures are recommended for incorporation in the project to minimize the potential for significant short-term noise impacts. The City of Palm Springs should consider these measures in developing conditions of approval to ensure that the construction-related noise exposure of adjacent noise sensitive receptors will be reduced to the maximum extent feasible.

7. Prior to issuance of any grading or building permits, specifications shall be prepared that identify contract requirements regarding the attenuation of noise from construction vehicles and activities. The specifications shall include but not be limited to the following:

- A construction traffic routing plan shall be developed and submitted for approval that demonstrates, to the extent feasible, avoidance of congested routes and routes with adjacent noise sensitive receptors (particularly residential development).
- The contractor shall comply with all local sound control and noise level rules, regulations and ordinances which apply to any and all work performed pursuant to the contract.
- Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without said muffler.
- Construction activities shall incorporate feasible and practical techniques which minimize the noise impacts on adjacent uses.
- Construction activities shall take place only between 7:00 a.m. and 8:00 p.m. to minimize the potential for noise impacts during more sensitive time periods, as specified in the Palm Springs Noise Ordinance (*Municipal Code* Section 11.74.041). Construction activities shall not be permitted between the hours of 5:00 p.m. and 8:00 a.m. if the noise produced by such work is of such intensity or quality that it disturbs the peace and quiet of any other person of normal sensitivity, per the Palm Springs Construction Site Regulations (*Municipal Code* Section 8.04.220).
- All construction equipment, fixed or mobile, should be equipped with properly operating and maintained mufflers.
- Stationary equipment should be placed such that emitted noise is directed away from noise sensitive receptors.
- Stockpiling and vehicle staging areas should be located as far as practical from noise sensitive receptors.
- Every effort should be made to create the greatest distance between noise sources and sensitive receptors during construction activities.
- Project phasing shall include initial development adjacent to residential areas which then will shield them from noise generated during subsequent phases.
- The noisiest construction operations shall be arranged to occur together in the construction program to avoid continuing periods of greater annoyance.
- All construction equipment shall be in proper working order and maintained in a proper state of tune to reduce backfires.
- Parking, refueling and servicing operations for all heavy equipment and on-site construction vehicles shall be located as far as practical from existing homes and other sensitive receptors.

8. Any extension of construction hours shall require a permit to be issued by the City of Palm Springs as specified in the Palm Springs Noise Ordinance (*Municipal Code* Section 11.74.041).

2.0 PROJECT LOCATION AND DESCRIPTION

2.1 PROJECT LOCATION

The project site is located in the Coachella Valley, nestled against the base of the San Jacinto Mountains. The 20.59-acre site is south of Interstate 10, in the heart of downtown Palm Springs. Figure 2-1 depicts the project site in its regional context. The project site is more precisely located south of Amado Road and north of Arenas Road, between Museum Drive and Indian Canyon Drive, as shown in Figure 2-2.

Surrounding Land Uses

The Museum Market Plaza site is located west of Section 14 and east of the Palm Springs Art Museum and the O'Donnell Golf Club, in the Central Business District of Palm Springs, California. The *Section 14 Master Development Plan/Specific Plan* provides development standards and regulations for a variety of land uses (including commercial uses, a casino, and hotels) designed to energize downtown Palm Springs. The Palm Springs Convention Center and numerous new, expanded, and revitalized uses are planned and being developed within Section 14 to create an integrated destination resort environment that will appeal to all age groups. The Spa Resort Casino is located directly east of the project site. The Hyatt Regency Suites Hotel is north of and abuts the project site, between Palm Canyon Drive and Belardo Road. The Palm Mountain Resort is located immediately south of Tahquitz Canyon Way, between Belardo Road and Cahuilla Road.

Existing On-Site Land Uses

The area within the Museum Market Plaza Specific Plan includes: the Desert Fashion Plaza (288,400 S.F. of retail and 41,600 S.F. of restaurant uses), the Town & Country Center (15,000 S.F. restaurant, 33,600 S.F. retail and 2,350 S.F. offices), the Zeldaz Nightclub (7,120 S.F.), the Mercado Plaza surface parking lot, and the vacant 0.83-acre Palm Hotel site. Approximately 12 percent of the Desert Fashion Plaza is currently occupied.

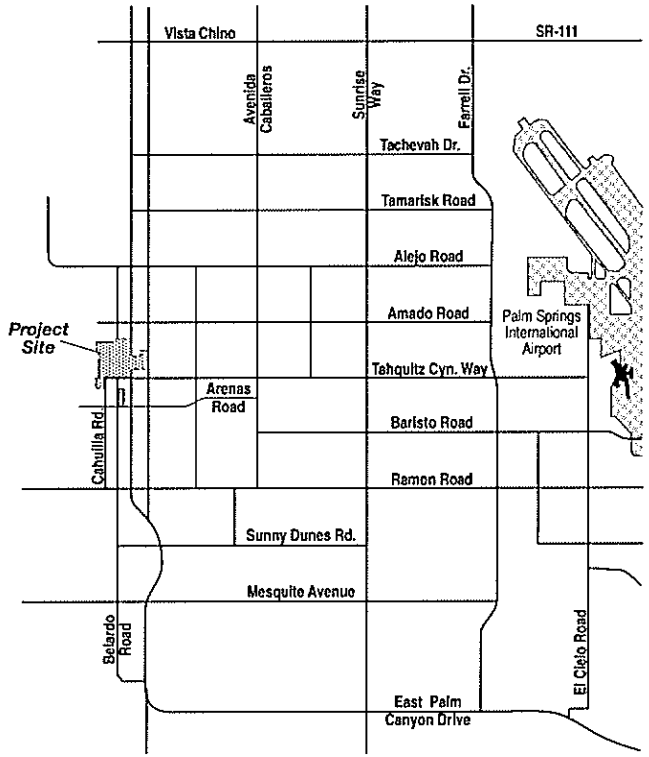
2.2 PROJECT DESCRIPTION

Proposed Land Uses

The proposed project is the Museum Market Plaza Specific Plan. The project is designed to serve visitors and local residents alike by re-integrating the site into the Palm Springs downtown and reducing the need for travel by automobile. The proposed project would provide a vibrant high-intensity mixed-use lifestyle center with living, shopping and entertainment venues in a central location. It would include upscale boutique shops, galleries, neighborhood conveniences, restaurants, residential uses, and boutique hotels.

The core area is located north of Tahquitz Canyon Way and west of Palm Canyon Drive (as shown in Figure 2-2). Development within the core area would provide a combination of retail and professional office space (with up to 385,000 S.F.), multiple-family attached residences (900 dwellings units), and 565 hotel rooms. The various areas on-site have been divided into Planning Area Blocks for ease of reference, as shown in Figure 2-3. The formerly proposed Palm Hotel site (Block L in Figure 2-3), could be developed with limited retail space (15,000 S.F.) and 55 hotel rooms or high-density residential dwellings.

Figure 2-1
Regional Location



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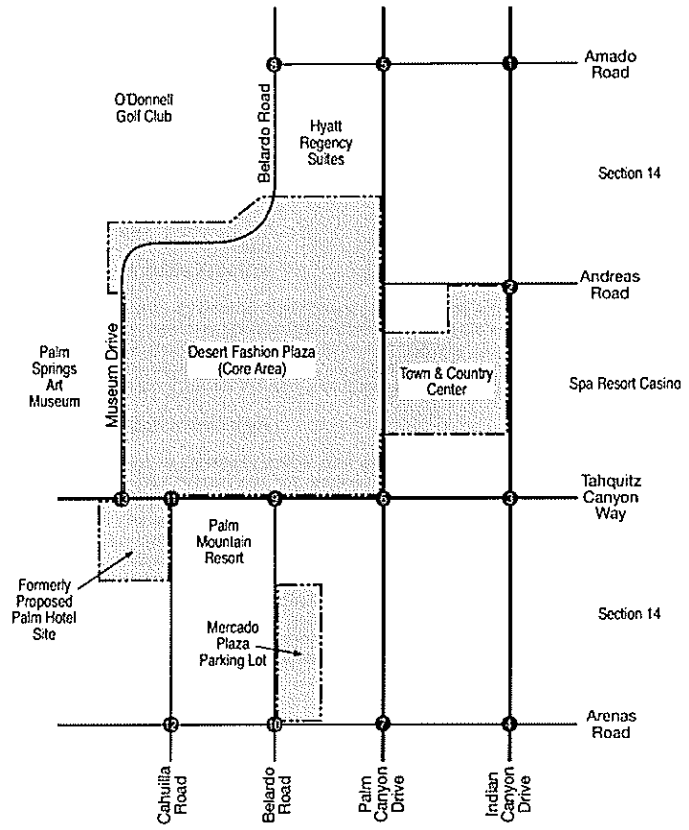
Scale: 1" = 2765'

Figure 2-2
Study Area and Key Intersections

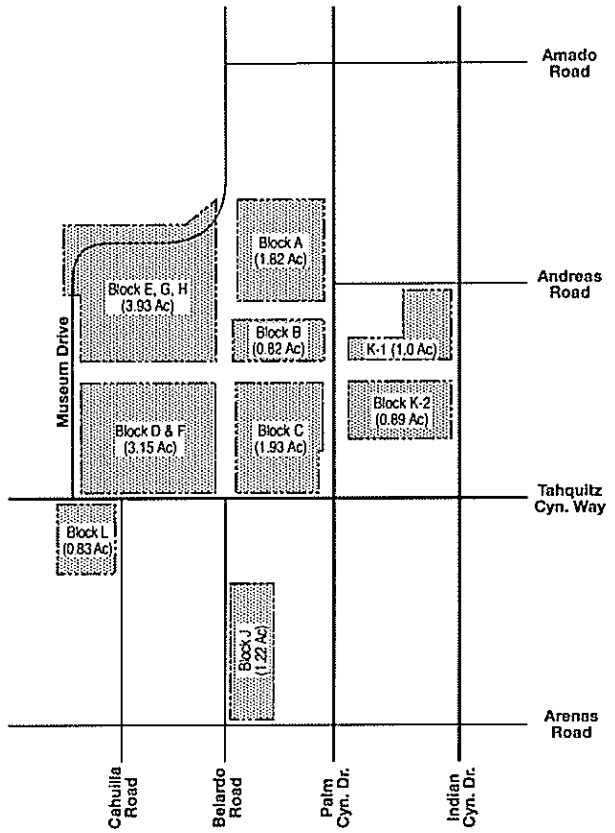


Endo Engineering

Scale: 1" = 350'

Figure 2-3

Planning Area Blocks Within the Project Site



Endo Engineering

Scale: 1" = 350'

The key elements of the internal circulation system with the Preferred Project are illustrated in Figure 2-4. With the Preferred Project, Belardo Road would be abandoned and vacated from the northern site boundary to the northern driveway of the Palm Springs Art Museum. Belardo Road would be reconnected across the site to Tahquitz Canyon Way as a two-lane private street with on-street parking and a 62-foot right-of-way.

A new private east/west boulevard (Museum Way) would be constructed to connect the Palm Springs Art Museum to Palm Canyon Drive and Indian Canyon Drive to enhance the pedestrian environment. In addition, a private east/west street would be constructed north of Museum Way, between Palm Canyon Drive and Belardo Road. Although the precise location of this roadway has not been determined, it would be south of Andreas Road, between Block A and Block B and is referred to herein as Street "A/B". The existing surface parking lot in Block J would be replaced by a three-level parking structure providing 500 parking spaces, 75 of which would be reserved for the Mercado Plaza.

Existing Uses To Be Removed

The project would require the demolition and redevelopment of existing land uses on various portions of the project site, as shown in Table 2-1. The existing uses to be replaced would include: the Town & Country Center and the Desert Fashion Plaza. With all development alternatives, except the No-Project Alternative, the Mercado Plaza parking lot in Block J, would be replaced by a three-story parking structure with 500 parking spaces. The existing surface parking lot would be retained with the No-Project Alternative.

Table 2-1

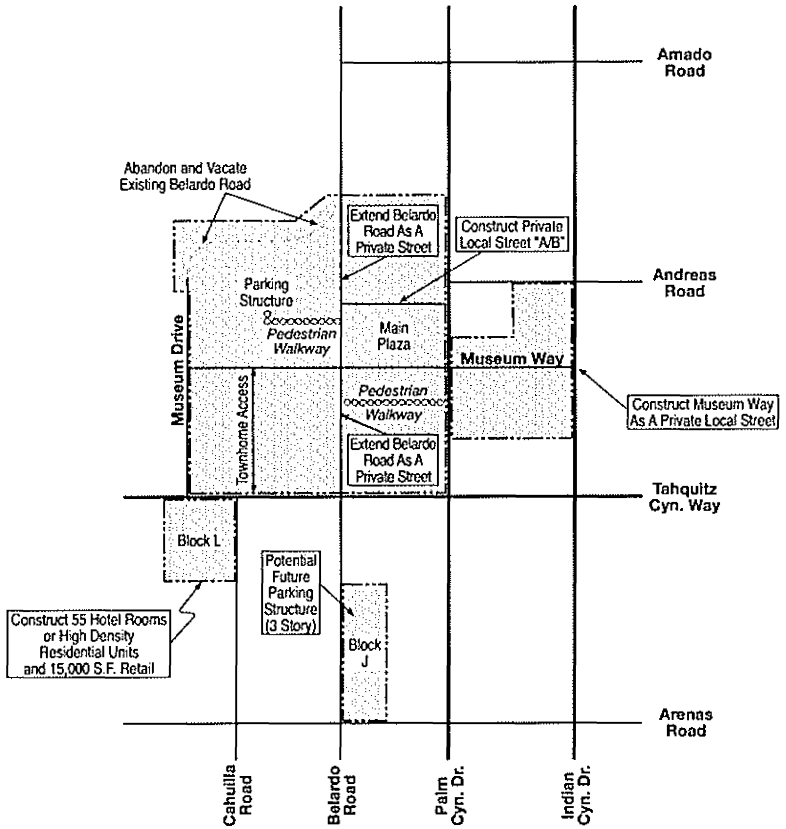
Existing Land Uses/Entitlements To Be Replaced

Land Use Type	Land Use Quantity	Development Status
Town & Country Center		
Old Bank of America	15,980 S.F.	Existing
Restaurant Use	15,040 S.F.[a]	Existing
Retail	17,610 S.F.	Existing
Office	2,350 S.F.	Existing
Total Square Footage	50,980 S.F.	
Desert Fashion Plaza		
Restaurant Space	11,335 S.F.	Existing
Retail Space	19,591 S.F.	Existing
Office Space	8,717 S.F.	Existing
Commercial Retail (Unoccupied)	290,357 S.F.	Unoccupied
Total Square Footage	330,000 S.F.	
Palm Hotel Site		
Hotel	45 Units	Entitlement/Vacant

a. Includes the existing Zeldaz Nightclub/Restaurant with 7,120 square feet.

The land uses proposed on-site are shown in Table 2-2. The Preferred Project would include: 565 to 620 hotel rooms, 300,000 square feet of retail uses, 100,000 square feet of office uses, and 900 to 955 multi-family residential dwelling units. Block J and/or Block L may be developed as a parking structure to meet the parking demands generated by the project.

Figure 2-4
Key Elements of The Preferred Project



Endo Engineering

Scale: 1" = 350'

Table 2-2
Land Use Summary By
Museum Market Plaza Specific Plan Alternative

Alternative/Land Use Type	Land Use Quantity
Preferred Project	
Hotel	565/620 Rooms[a]
Retail	300,000 S.F.
Office	100,000 S.F.
High Density Residential	955/900 D.U.[a]
No-Project Alternative	
Hotel	45 Rooms
Retail	330,000 S.F.
Retail	50,980 S.F.
Preserve Town & Country Center Alternative	
Hotel	365/420 Rooms[b]
Retail	412,000 S.F.
Restaurants	15,000 S.F.
Offices	2,350 S.F.
High-Density Residential	955/900 D.U.[b]
Less-Intense Alternative A	
Retail (Includes a 42,500 S.F. Supermarket)	203,500 S.F.
Office	42,350 S.F.
Restaurants	15,000 S.F.
Cinema	68,000 S.F.
High-Density Residential	120 D.U.
Less-Intense Alternative B	
Hotel	255 Rooms
Retail	330,000 S.F.
High-Density Residential	765 D.U.

a. With the Preferred Project, a total of 55 units may be ultimately hotel rooms or high-density residential units. If 565 hotel rooms are constructed, then 955 high-density dwelling units could be built. If 620 hotel rooms are constructed, then 900 high-density dwelling units could be built.
b. With the Preserve Town & Country Center Alternative, a total of 55 units may be ultimately hotel rooms or high-density residential units. Therefore, if 365 hotel rooms are constructed then 955 dwelling units could be built, whereas if 420 hotel rooms are constructed then 900 high-density dwelling units could be built.

Development Alternatives

Table 2-2 summarizes the land uses associated with each of the on-site development concept alternatives evaluated. The No-Project Alternative would refurbish the Desert Fashion Plaza in its current configuration and maintain the Town & Country Center and adjacent buildings as well as the surface parking lot at Mercado Plaza. With the No-Project Alternative, 45 hotel rooms would be constructed in Block L, as permitted by the *Palm Springs General Plan* and Zoning designations. Belardo Road would connect to Museum

Drive along the existing alignment with the No-Project Alternative, as shown in Figure 2-5. Museum Way would not be constructed across the site (east of Museum Drive) with the No-Project Alternative.

The Preserve Town & Country Center Alternative would rehabilitate the Town & Country Center (with the exception of the old Bank of America building on Palm Canyon Drive) and generally retain the existing development in Block K. The Preserve Town & Country Center Alternative is identical to the Preferred Project for the area west of Palm Canyon Drive. With this alternative, Museum Way would not extend between Palm Canyon Drive and Indian Canyon Drive, as shown in Figure 2-6.

Less-Intense Alternative A would reduce the building heights proposed and provide substantially less retail and office space, fewer high density residences, a cinema (with 68,000 S.F.), a supermarket, and a park in the center of the core area. Like the Preserve Town & Country Center Alternative, Less-Intense Alternative A would include the rehabilitation of the Town & Country Center. A total of 1,000 parking spaces would be provided throughout the project and Block L would be developed as a parking structure. The internal circulation elements proposed with Less-Intense Alternative A would differ from those associated with the other conceptual alternatives to accommodate the central park, as shown in Figure 2-7.

Less-Intense Alternative B represents a less intense version of the Preferred Alternative. This alternative would include approximately 45 percent of the hotel rooms of the Preferred Alternative. In addition, the number of residential units proposed would be reduced by approximately 20 percent. No office uses would be constructed with this alternative, although there would be 10 percent more retail uses. The internal circulation elements would be similar to those with the Preferred Project, as shown in Figure 2-8.

Proposed Roadway Modifications

As shown in Figure 2-4, the Preferred Project would provide a reconnection of Belardo Road through the project site. The Preferred Project would also include a new east/west boulevard (Museum Way) extending east from the entry to the Desert Art Museum to Palm Canyon Drive and Indian Canyon Drive. The No-Project Alternative would retain the existing street system, as shown in Figure 2-5.

The Preserve Town & Country Center Alternative (shown in Figure 2-6) would terminate Museum Way at Palm Canyon Drive. No new roadway would extend between Palm Canyon Drive and Indian Canyon Drive. With a central park, Less-Intense Alternative A, as shown in Figure 2-7, would include different internal roadway alignments with Belardo Road aligned around the central park and the east/west Museum Way extending only from Museum Drive east to Belardo Road. The street system shown in Figure 2-7 for Less-Intense Alternative B is the same as that proposed with the Preferred Project.

An east/west private two-lane street is planned extending from Belardo Road to Palm Canyon Drive, between Block A and Block B (see Figure 2-3) with the Preferred Project, the Preserve Town & Country Center Alternative and Less-Intense Alternative B. The final location of this second east/west street has not been determined to date. This roadway is referred to herein as Street "A/B".

As shown in Figure 2-9, the proposed project would maintain a minimum of three lanes on Palm Canyon Drive, and would provide angled parking on the west side of this roadway, but maintain the existing parallel parking on the east side of this roadway. Indian Canyon Drive would retain four through travel lanes, with parallel parking on the east side. If the

Figure 2-5

Key Elements of the No-Project Alternative

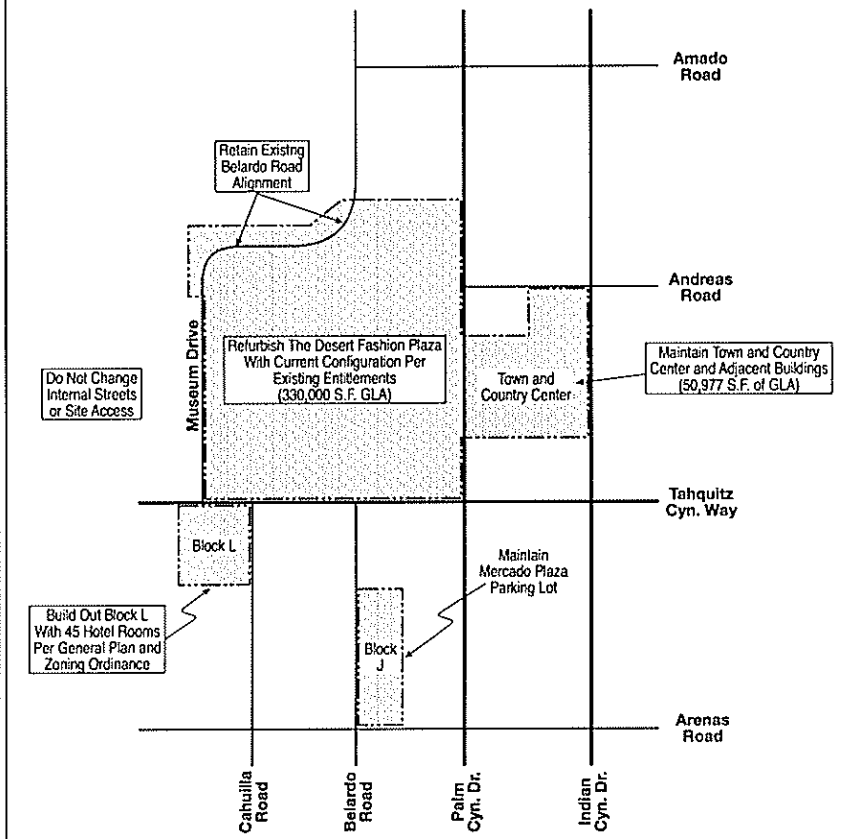
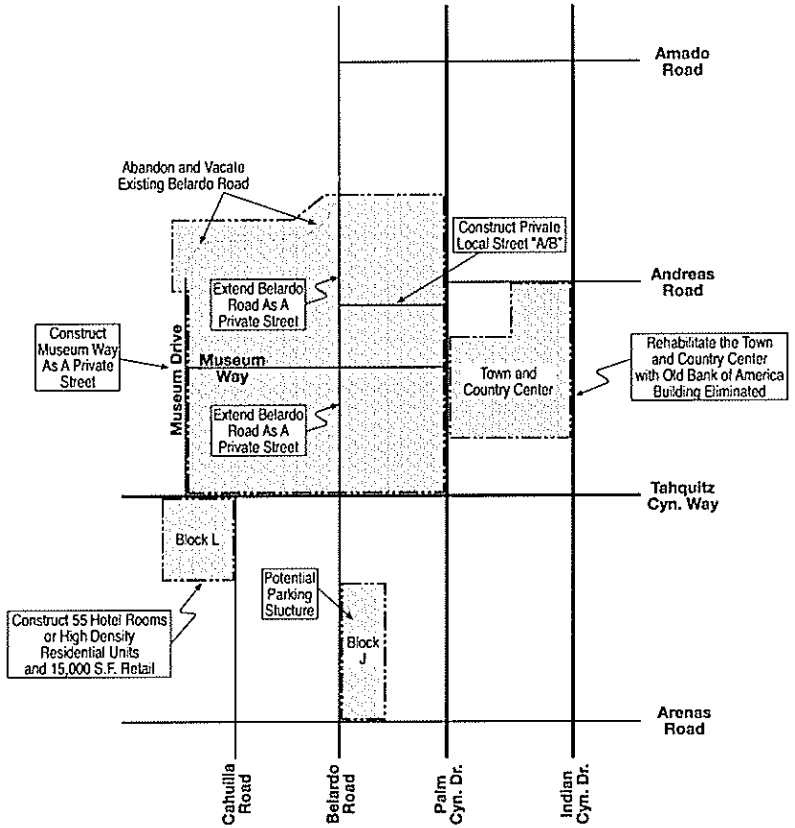


Figure 2-6

Key Elements of the Preservation of Town and Country Center Alternative



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Scale: 1" = 350'

Figure 2-7

Key Elements of Less-Intense Alternative A

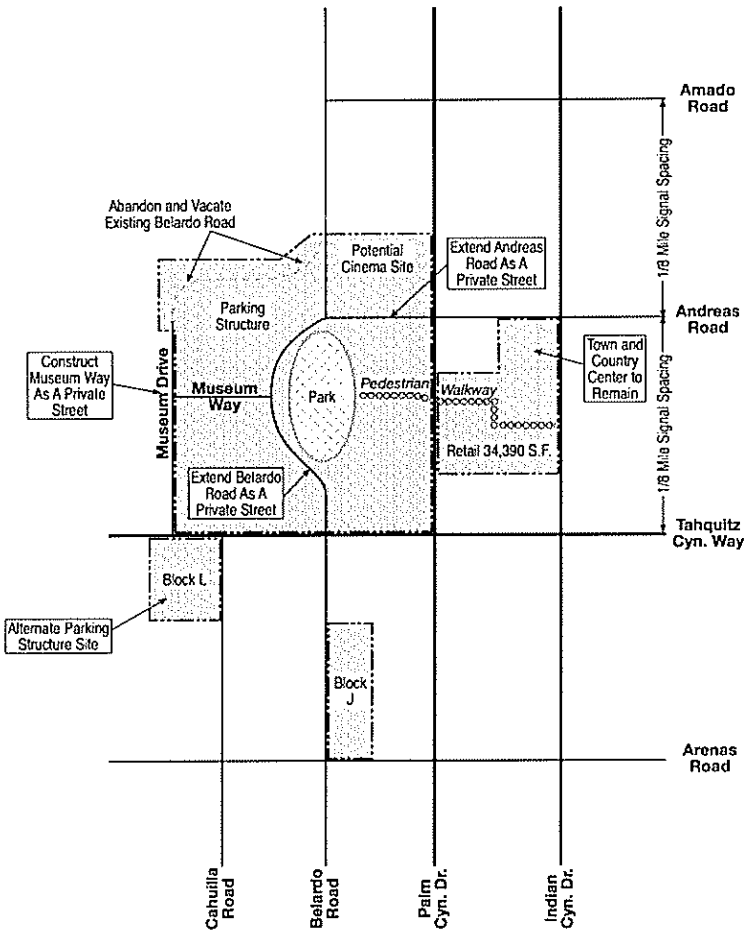

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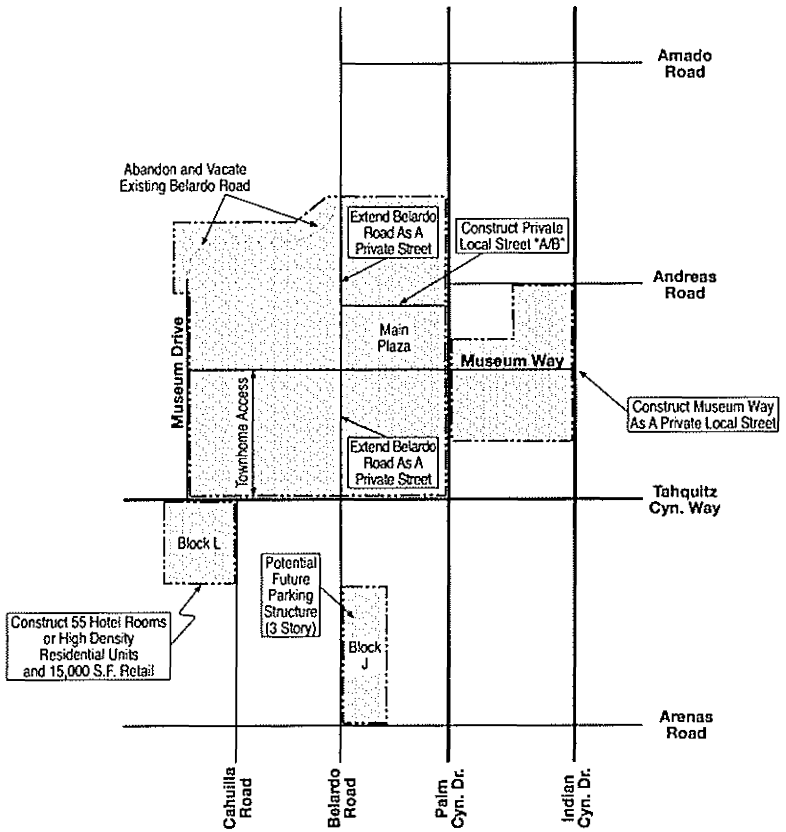
Figure 2-8

Key Elements of Less-Intense Alternative B



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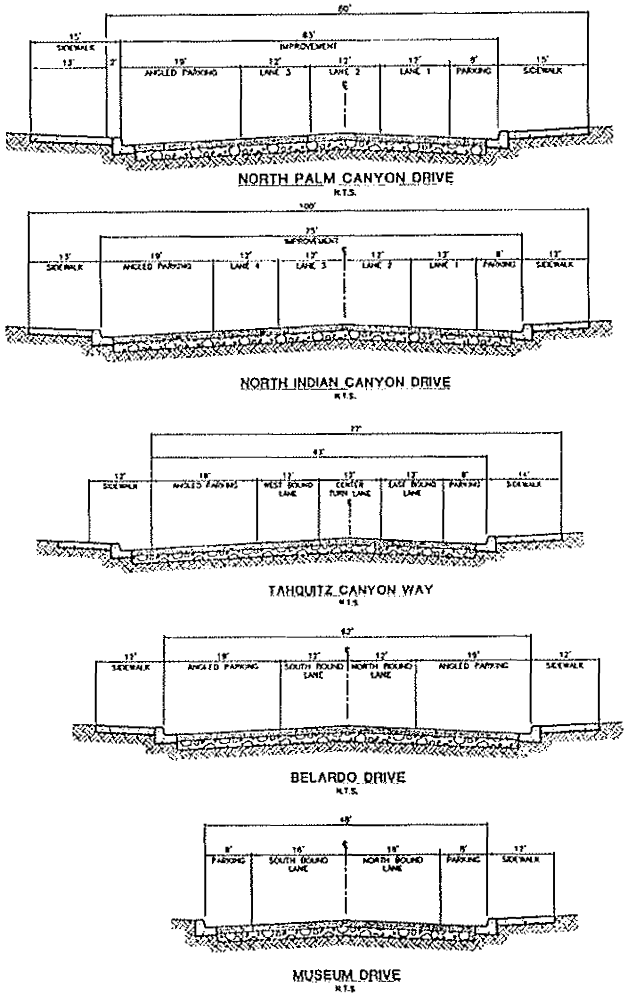
Scale: 1" = 350'

Figure 2-9

Proposed Street Cross-Sections



Source: Terra Nova Planning and Research Inc.

west side of Indian Canyon is modified to have angled parking, Indian Canyon Drive would need to be widened to avoid the encroachment of vehicles backing out of these angled parking spaces into the through travel lanes.

2.3 CUMULATIVE PROJECTS

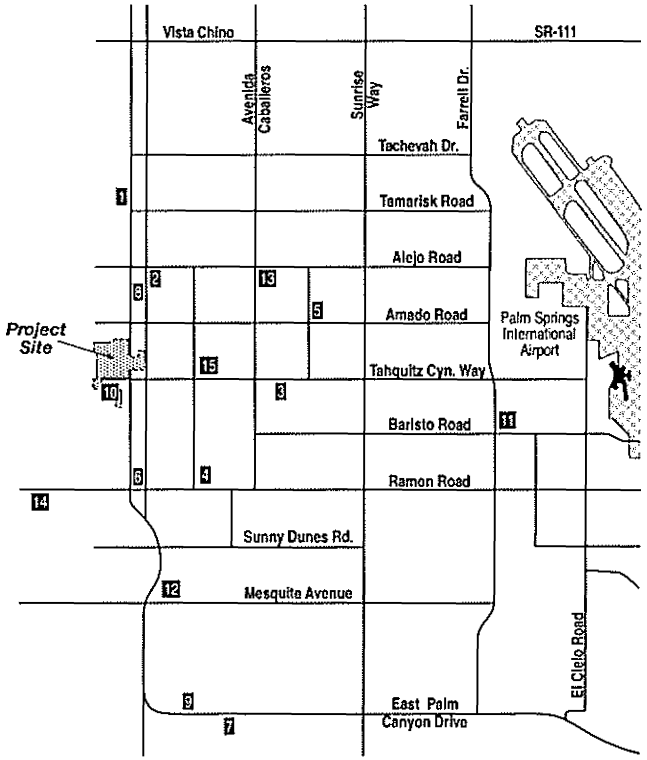
Through coordination with the City of Palm Springs, fifteen cumulative projects were identified that would generate traffic through the study area, as shown in Table 2-3. The area encompassed by the cumulative projects extended north to Tamarisk Road, east to Farrell Drive, and south to East Palm Canyon Drive. The location of each of the cumulative developments addressed herein is shown in Figure 2-10.

Table 2-3
Cumulative Projects Evaluated

Project	Land Use Category	ITE Code[a]	Quantity[b]
1. **Palm Cyn @ Tamarisk:**	Commercial	814	3,500 SF
	Residential- MFA	230	12 DU
2. **T.T. Map 31104**	Residential- MFA	230	20 DU
3. **Agua Caliente Museum**	Museum	Rael TIA	90,000 SF
4. **Village Traditions**	Residential- MFA	230	104 DU
5. **T.T. Map 33936**	Residential- MFA	230	21 DU
6. **The Palm Canyon** (TTM 33514)			
- Existing (50% Occupied)	Retail	820	45,936 SF
- Proposed	Retail	820	39,250 SF
	Residential - MFA	230	125 DU
7. **Camino Real, LLC**	Residential- MFA	230	25 DU
	Residential- SFD	210	9 DU
8. **Rael Development**			
- Existing	Commercial	814	17,490 SF
	General Office	SANDAG	2,500 SF
	Restaurant	932	1,620 SF
- Proposed	Commercial	814	28,000 SF
	Residential- MFA	230	130 DU
	General Office	SANDAG	4,400 SF
9. **T.T. Map 32378**	Residential- MFA	230	11 DU
10. **Palm Mountain Resort**	Hotel	310	40 Rooms
11. **T.T. Map 33341**	Residential- MFA	230	156 DU
12. **T.T. Map 33575**	Residential- MFA	230	100 DU
	Commercial	814	32,580 SF
13. **T.T. Map 34165**	Residential- MFA	230	84 DU
14. **T.T. Map 34938**	Residential- MFA	230	34 DU
15. **T.T. Map 35600**	Hotel	Hard Rock TIA	482 Rooms

a. The ITE Trip Generation Land Use Code is shown except for the museum (where the Rael trip generation forecast was assumed) and the small General Office use for which rates in the SANDAG *Traffic Generators* publication were assumed because the floor area was too small to fall within the cluster of data in the ITE *Trip Generation* manual.
b. SF = Square Feet. DU = Dwelling Units.

Figure 2-10
Fifteen Cumulative Projects



Legend

1 Palm Canyon @ Tamarisk	6 TTM 33514	11 TTM 33341
2 TTM 31104	7 Camino Real, LLC	12 TTM 33575
3 Agua Caliente Museum	8 Rael Development	13 TTM 34165
4 Village Traditions	9 TTM 32378	14 TTM 34938
5 TTM 33936	10 Palm Mountain Resort Hotel	15 TTN 35600

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Scale: 1" = 2765'

3.0 Existing Noise Environment

Noise in daily life fluctuates over time, with some fluctuations being minor while others are substantial. Some fluctuations are random while occurs exhibit regular patterns. Some noises seem relatively constant, while others change rapidly and vary widely. Some noises, like a single gun shot, are of extremely short duration (transient) while others, like pile driver noise, are intermittent.

Noise fundamentals are introduced below such as: noise rating schemes, typical noise levels of familiar noise sources, sound propagation, and various factors which affect motor vehicle noise levels. This information is followed by a discussion of: (1) the harmful effects of noise, (2) community responses to sound, (3) guidelines for achieving land use compatibility with noise, and (4) the current noise environment in the project vicinity. A glossary of technical terms related to noise is provided as Appendix A.

3.1 Fundamentals of Noise

Noise levels are measured on a logarithmic scale in decibels which are then weighted and added over a 24-hour period to reflect not only the magnitude of the sound, but also its duration, frequency, and time of occurrence. In this manner, various acoustical scales and units of measurement have been developed such as: equivalent sound levels (Leq), day-night average sound levels (Ldn) and community noise equivalent levels (CNELs).

A-weighted decibels (dBA) approximate the subjective response of the human ear to a broad frequency noise source by discriminating against the very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear. The decibel scale has a value of 1.0 dBA at the threshold of human hearing and 140 dBA nearing the threshold of pain. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud.

Under controlled conditions in a laboratory, the trained healthy human ear is able to discern changes in sound levels of 1 dBA, when exposed to steady single frequency signals in the mid-frequency range. Outside of these controlled conditions, the trained ear can detect changes of 2 dBA in normal environmental noise. A 3.0 decibel increase in noise level reflects a doubling of the acoustic energy. It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of 3 dBA.[1]

The human perception of loudness is nonlinear in terms of decibels and acoustical energy. For instance, if one source produces a noise level of 70 dBA, two of the same sources produce 73 dBA, three will produce about 75 dBA, and ten will produce 80 dBA. Human perception is complicated in that two identical noise sources do not sound twice as loud as one noise source.

Acoustic experts have tested thousands of subjects to establish the relationship between changes in acoustical energy and the corresponding human reaction. Table 3-1 summarizes their findings. The average human perceives a 10 dBA decrease in noise levels as one-half of the original level, even though it exposes the average human to one-tenth of the acoustic

1. Mr. Rudy Hendriks, Caltrans Environmental Engineering - Noise, Air Quality and Hazardous Waste Management Office, *Technical Noise Supplement*, October 1998, pg. 41.

energy associated with the reference sound. An increase of 3 dBA in noise level is perceived as a barely perceptible increase, but it actually exposes the listener to twice the acoustic energy of the noise level before the increase.

Table 3-1
Changes in Human Perception of Noise Level Changes[a]

Noise Level Change[b] (dBA)	Relative Energy Change	Perceived Change In Percentage[c]	Descriptive Change In Human Perception
+40 dBA	10,000 x		Sixteen Times as Loud
+30 dBA	1,000 x		Eight Times as Loud
+20 dBA	100 x	+300%	Four Times as Loud
+15 dBA	31.6 x	+183%	
+10 dBA	10 x	+100%	Twice as Loud
+9 dBA	7.9 x	+87%	
+8 dBA	6.3 x	+74%	
+7 dBA	5.0 x	+62%	
+6 dBA	4.0 x	+52%	
+5 dBA	3.16 x	+41%	Readily Perceptible Increase
+4 dBA	2.5 x	+32%	
+3 dBA	2.0 x	+23%	Barely Perceptible Increase
+0 dBA	**1**	**0%**	**Reference (No Change)**
-3 dBA	0.5 x	-19%	Barely Perceptible Reduction
-4 dBA	0.4 x	-24%	
-5 dBA	0.316 x	-29%	Readily Perceptible Reduction
-6 dBA	0.25 x	-34%	
-7 dBA	0.20 x	-38%	
-8 dBA	0.16 x	-43%	
-9 dBA	0.13 x	-46%	
-10 dBA	0.10 x	-50%	One-Half as Loud
-15 dBA	0.0316 x	-65%	
-20 dBA	0.01 x	-75%	One-Quarter As Loud
-30 dBA	0.001 x		One-Eighth as Loud
-40 dBA	0.0001 x		One-Sixteenth as Loud

a. Mr. Rudy Hendriks, Caltrans, *Technical Noise Supplement*, October, 1998.
b. Change in relative energy with respect to a zero change in dBA (no change).
c. Average human perceived change in noise level. A positive change represents an increase. A negative change represents a decrease.

Typical Noise Levels of Common Activities

Examples of the decibel level of various noise sources are shown in Figure 3-1. The quiet rustle of leaves generates 10 dBA. Ambient noise levels in a motion picture studio are typically 20 dBA. Interior noise in a library measures 35 dBA. A theater or large conference room exhibits ambient noise levels of 40 dBA. Ambient noise outdoors in a quiet urban area is 50 dBA during the daytime and 40 dBA during the nighttime hours. Normal conversation at 5 feet generates 55 dBA. The noise level in a commercial area is typically 65 dBA. A busy street generates 75 dBA at 50 feet and 60 dBA at 300 feet. The ambient noise level in a noisy urban area during daytime hours is approximately 75 dBA.

An automobile horn can generate 100 decibels at a distance of 16 feet. By comparison, a mother holding a screaming infant in her arms is subjected to noise levels of 100 to 117 decibels. A jackhammer generates 120 decibels at a distance of three feet. The Who is in the *Guinness Book of World Records* as the loudest rock band, for a 1976 concert at which the band generated a sound level of 120 decibels at a distance of 50 meters from the sound system. Football game crowds can cheer as loudly as a rock band can play. By comparison, a jet fly-over at 1,000 feet generates 105 dBA.

Noise Rating Schemes

Equivalent sound levels are not measured directly but rather calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (Leq) is the constant level that, over a given time period, transmits the same amount of acoustic energy as the actual time-varying sound. Equivalent sound levels are the basis for both the Ldn and CNEL scales.

Day-night average sound levels (Ldn) are a measure of the cumulative noise exposure of the community. The Ldn value results from a summation of hourly Leq's over a 24-hour time period with an increased weighting factor applied to the nighttime period between 10:00 PM and 7:00 AM. This noise rating scheme takes into account those subjectively more annoying noise events which occur during the normal sleeping hours.

Community noise equivalent levels (CNEL) also carry a weighting penalty for noises that occur during the nighttime hours. In addition, CNEL levels include a penalty for noise events that occur during the evening hours between 7:00 PM and 10:00 PM. Because of the weighting factors applied, CNEL values at a given location will always be larger than Ldn values, which in turn will exceed Leq values. However, CNEL values are typically within one decibel of the Ldn value.

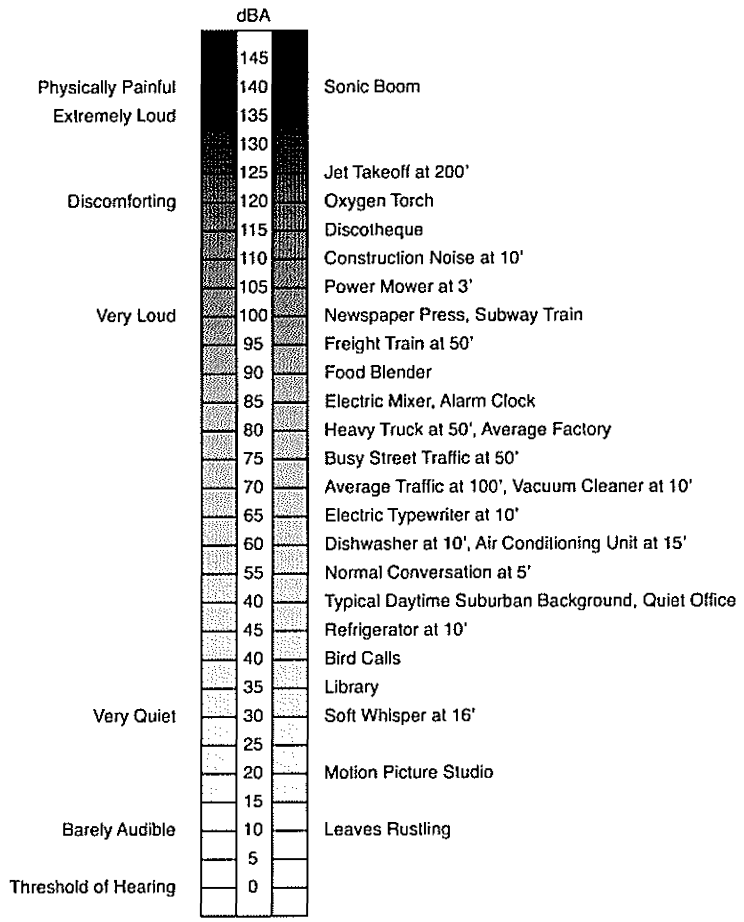
As used in General Plan applications, the CNEL metric means the annualized daily sound level (the sum of 365 days of individual CNEL values divided by 365). The annualized CNEL reflects the fundamental theory that real community impacts are related to long-term noise exposure levels. Consequently, airport, railroad, and highway noise impact criteria are all based on annualized CNEL values.

Sound Propagation

For a "line source" of noise such as a heavily traveled roadway, the noise level drops off by a nominal value of 3.0 decibels for each doubling of distance between the noise source and the noise receiver. Environmental factors such as wind conditions, temperature gradients, characteristics of the ground (hard or soft) and the air (relative humidity), and the presence of vegetation combine to increase the attenuation achieved outside laboratory conditions to 4.5 decibels per doubling of distance in many cases.

Figure 3-1

Typical Noise Levels of Familiar Sources



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Source: Tipler, Paul A. "Physics", New York: Worth Publishers, 1976

The increase in noise attenuation in exterior environments is particularly true: (1) for freeways where an elevated or depressed profile, higher truck mix, or the presence of intervening buildings or topography come into play; (2) where the view of a roadway is interrupted by isolated buildings, clumps of bushes, scattered trees; (3) when the intervening ground is soft or covered with vegetation; or (4) where the source or receiver is located more than three meters above the ground. The nominal value of 3.0 dBA with doubling applies to sound propagation from a "line source": (1) over the top of a barrier greater than 3 meters in height; or (2) where there is a clear unobstructed view of the highway, the ground is hard, no intervening structures exist, and the line-of-sight between the noise source and receiver averages more than 3 meters above the ground.[2]

In an area which is relatively flat and free of barriers, the sound level resulting from a single "point source" of noise drops by 6 decibels for each doubling of distance or 20 decibels for each factor of ten in distance. This applies to fixed noise sources and mobile noise sources which are temporarily stationary such as an idling truck or other heavy-duty equipment operating within a confined area (such as equipment used at loading docks, or construction activities at fixed locations).

One of the most effective ways of reducing noise is shielding. Shielding occurs when the observer's view of the noise source is obstructed by structures that interfere with the propagation of the sound waves. Shielding can be accomplished by using mufflers and shrouding on the construction equipment or by erecting a sound barrier between the construction equipment and the noise receiver. A solid noise barrier wall can typically shield receivers by up to 20 dBA.

Buildings closest to a noise source can attenuate noise levels in areas behind the buildings. The amount of attenuation provided by rows of buildings has a maximum value of 10 dBA and depends on the size of the gaps between the buildings. An attenuation of 3 dBA is typically allowed by the FHWA for the first row of buildings, if they occupy 40 to 65 percent of the row leaving gaps which occupy the remaining 35 to 60 percent of the row. An attenuation of 5 dBA is typically assumed when the buildings occupy 65 to 90 percent of the row, leaving 10 to 35 percent of the row as gaps. Rows of buildings behind the first row will also shield the area behind them and are typically assumed to attenuate the exterior sound levels behind them by 1.5 dBA for each row of buildings.

In most situations, if the exterior area can be protected, the interior will also be protected. The first step is to identify noise-sensitive areas where frequent human use occurs (like a patio, a porch, or a swimming pool). The interior noise levels may then be computed by subtracting from the predicted exterior noise levels the noise reduction expected to be provided by the building. Building noise reduction factors from exterior to interior range from a low of 10 dB (for all buildings with windows open) to a high of 35 dB (for masonry buildings with double- glazed windows). Masonry buildings with single-glazed windows achieve an exterior-to-interior noise reduction of 25 dB. Light-frame buildings with ordinary sash windows closed achieve a 20 dB noise reduction. Light-frame construction with storm windows can achieve a 25 dB reduction from outside-to-inside sound levels.

Factors Affecting Motor Vehicle Noise

The noise levels adjacent to "line sources" such as roadways increase by 3.0 dBA with each doubling in the traffic volume (provided that the speed and truck mix do not change). From the mathematical expression relating increases in the number of noise sources (motor

2. State of California, Department of Transportation, *Noise Manual*, 1980.

vehicles) to the increase in the adjacent sound level, it can be shown that a 26 percent increase in traffic volume will cause a 1.0 dBA increase in adjacent noise levels. Doubling the number of vehicles on a given route increases the adjacent noise levels by 3.0 dBA, but changing the vehicle speed has an even more dramatic effect.

Increasing the vehicle speed from 35 to 45 mph raises the adjacent noise levels by approximately 2.7 dBA. Raising the speed from 45 to 50 mph increases adjacent noise levels by 1.0 dBA. A speed increase from 50 to 55 mph increases adjacent noise levels by 0.9 dBA. Consequently, lower motor vehicle speeds can have a significant positive impact in terms of reducing adjacent noise levels.[3]

The truck mix on a given roadway has a significant effect on adjacent noise levels. As the number of trucks increases and becomes a larger percentage of the vehicle volume, adjacent noise levels increase. This effect is more pronounced if the number of heavy-duty (3+ axle) trucks is large, compared to the number of medium-duty (2-axle) trucks.

3.2 Harmful Effects of Noise

Noise can cause temporary physical and psychological responses in humans. Temporary physical reactions to passing noises range from a startle reflex to constriction in peripheral blood vessels, the secretion of saliva and gastric juices, and changes in heart rate, breathing patterns, the chemical composition of the blood and urine, dilation of pupils in the eye, visual acuity and equilibrium. The chronic recurrence of these physical reactions has been shown to cause fatigue, digestive disorders, heart disease, circulatory and equilibrium disorders. Moreover, noise is a causal factor in stress-related ailments such as ulcers, high blood pressure and anxiety.

Three harmful effects of noise which are commonly of concern include speech interference, the prevention or interruption of sleep, and hearing loss. Figure 3-2 illustrates how excessive background noises can reduce the amount and quality of verbal exchange and thereby impact education, family life-styles, occupational efficiency, and the quality of recreation and leisure time. Speech interference begins to occur at about 40 to 45 decibels and becomes severe at about 60 decibels. Background noise levels affect performance and learning processes through distraction, reduced accuracy, increased fatigue, annoyance and irritability, and the inability to concentrate (particularly when complex tasks are involved or in schools where younger children exhibit short concentration spans).

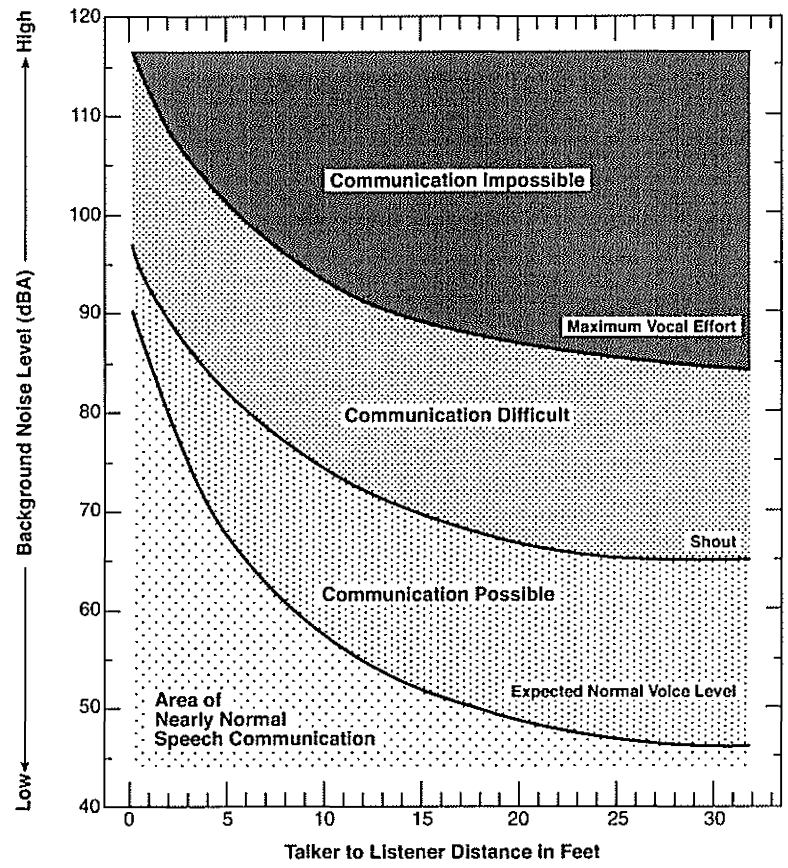
Several factors determine whether or not a particular noise event will interfere with or prevent sleep. These factors include the noise level and characteristics, the stage of sleep, the individual's age and motivation to waken. Ill or elderly people are particularly susceptible to noise-induced sleep interference, which can occur when intruding noise levels exceed the typical 35-45 decibel background noise level in bedrooms. Sleep prevention can occur when intruding noise levels exceed 50 dBA.

Hearing loss, which may begin to occur at 75 dBA (as shown in Table 3-2), is one of the most harmful effects of noise on people. Approximately 20 million people in the United States currently have some degree of hearing loss. In many of these cases, exposures to very loud, impulsive, or sustained noises caused damage to the inner ear which was substantial even before a hearing loss was actually noticed. The main causes of permanent damage are daily exposure to industrial noise. Transportation noise levels experienced by communities and the general public are normally not high enough to produce hearing

3. Endo Engineering conclusions based upon computer runs of RD-77-108 with all variables held constant except vehicle speed.

Figure 3-2

Speech Communication as a Function of Background Noise Level



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Source: Miller, "Effects of Noise on People", Journal of Acoustical Society of America, V.56, No. 3, 9/74

damage. To prevent the spread of hearing loss, a desirable goal would be to minimize the number of noise sources which expose people to sound levels above 70 decibels.

Table 3-2
Harmful Effects Of Noise[a]

Harmful Effect	Noise Levels at Which Harmful Effects Occur
Prevention or Interruption of Sleep	35 - 45 dB (A)
Speech Interference	50 - 60 dB (A)
Extra Auditory Physiological Effects	65 - 75 dB (A)
Hearing Loss	75 - 85 dB (A)

a. California Department of Public Health, *Report to 1971 Legislature*.

Hearing loss, like other adverse noise impacts, is related to a combination of noise amplitude and duration or exposure. The development of adverse reactions to sound usually occurs over a long period of time (with small exceptions like gun shots next to ears). Therefore, adverse reactions should be discussed in terms of the probability of the impact or the percent of the population affected.

In noise exposure, as in other aspects of life, the norm is to accept a certain level of risk. OSHA criteria that specify hearing protection in workplaces where noise levels exceed 90 dBA are based upon protecting only 80 percent of the population from hearing loss. Similarly, community annoyance criteria are frequently set at levels that allow up to a 15 percent probability of adverse reaction.

3.3 Community Responses to Sound

People react to sound in different ways. A high level noise is more objectionable than a low level noise. Intermittent truck peak noise levels are more objectionable than continuous level fan noise. Humans are more sensitive to high frequency noise than low frequency noise. People tend to compare an intruding noise with the existing background noise and usually find it objectionable if the new noise is: (1) readily identifiable, or (2) considerably louder than the ambient noise.

The nature of the work or activity that is underway when the noise exposure occurs affects the way listeners react to the new noise. For example, workers in a factory or office may not be disturbed by highway traffic noise, but people sleeping at home or studying in a library exposed to the same noise tend to be annoyed and find the noise objectionable. By the same token, an automobile horn at 2:00 a.m. is more disturbing than the same noise in traffic at 5:00 p.m.

A variety of reactions can be expected from people exposed to any given noise environment. Approximately 10 percent of the population has a very low tolerance for noise and will object to any noise not of their own making. Consequently, even in the quietest environment, some complaints will occur. Another 25 percent of the population will not complain even in very severe noise environments.[4]

4. Bolt Beranek & Newman, *Literature Survey for the FHA Contract on Urban Noise*, Report No. 1460, January 1967.

Despite this variability in behavior on an individual level, the population as a whole can be expected to exhibit the following responses to changes in noise levels. An increase or decrease of 1.0 dBA cannot be perceived except in carefully controlled laboratory experiments. A 3.0 dBA increase is considered just noticeable outside of the laboratory. An increase of 5.0 dBA is often necessary before any noticeable change in community response (i.e. complaints) would be expected.[5]

Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, depending upon each individual's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- fear associated with noise producing activities;
- socio-economic status and educational level of the receptor;
- noise receptor's perception that they are being unfairly treated;
- attitudes regarding the usefulness of the noise producing activity; and
- receptor's belief that the noise source can be controlled.[6]

Studies have shown that changes in long-term noise levels measured in units of Ldn or CNEL, are noticeable and are responded to by people. About ten percent of the people exposed to traffic noise of 60 Ldn will report being highly annoyed with the noise. Each increase of one Ldn is associated with approximately two percent more people being highly annoyed.

When traffic noise exceeds 60 Ldn or aircraft noise exceeds 55 Ldn, people begin complaining.[7] Group or legal actions to stop the noise should be expected to begin at traffic noise levels near 70 Ldn and aircraft noise levels near 65 Ldn.

3.4 Land Use Compatibility With Noise

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches and residences are more sensitive to noise intrusion than commercial or industrial activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process.

The annoyance-based research by the federal Environmental Protection Agency prescribes an average 24-hour noise level of 55 dBA as the goal for exterior noise levels in residential areas, with 75 dBA identified as the absolute upper limit of acceptability. Table 3-3 summarizes the EPA findings with regard to: (1) the effects of various noise levels on residential communities (in terms of hearing loss, speech interference and annoyance); (2) the general community attitude toward the area; and (3) the average community reaction to different noise exposure levels.

5. State of California, Department of Transportation, *Noise Manual*, 1980 and Highway Research Board, *National Cooperative Highway Research Program Report 117*, 1971.
6. United States Environmental Protection Agency, *Public Health and Welfare Criteria For Noise*, July 1973.
7. State of California, Department of Health Services, Dr. Jerome Lukas, Memo dated July 11, 1984.

Table 3-3

Effects of Noise on People
(Residential Land Uses Only)

Effects[1] / Day-Night Average Sound Level in Decibles	Hearing Loss	Speech Interference: Indoor	Speech Interference: Outdoor	Annoyance[2]	Average Community Reaction[4]	General Community Attitude Toward Area
	Qualitative Description	% Sentence Intelligibility	Distance in Meters for 95% Sentence Intelligibility	% of Population Highly Annoyed[3]		
75 and above	May Begin to Occur	98%	0.5	37%	Very Severe	Noise is likely to be the most important of all adverse aspects of the community environment.
70	Will Not Likely Occur	99%	0.9	25%	Severe	Noise is one of the most important adverse aspects of the community environment.
65	Will Not Occur	100%	1.5	15%	Significant	Noise is one of the important adverse aspects of the community environment.
60	Will Not Occur	100%	2.0	9%	Moderate to Slight	Noise may be considered an adverse aspect of the community environment.
55 and below	Will Not Occur	100%	3.5	4%		Noise is considered no more important than various other environmental factors.

1. "Speech Interference" data are drawn from the following tables in EPA's "Levels Document:" Table 3, Fig. D-1, Fig. D-2, Fig. D-3. All other data from National Academy of Science report "Guidelines for Preparing Environmental Impact Statements on Noise, Report of Working Group 69 on Evaluation of Environmental Impact of Noise" (1977).
2. Depends on attitudes and other factors.
3. The percentages of people reporting annoyance to lesser extents are higher in each case. An unknown small percentage of people will report being "highly annoyed" even in the quietest surroundings. One reason is the difficulty all people have in integrating annoyance over a very long time.
4. Attitudes or other non-acoustic factors can modify this. Noise at low levels can still be an important problem, particularly when it intrudes into a quiet environment.

Note: Research implicates noise as a factor producing stress-related health effects such as heart disease, high blood pressure and stroke, ulcers and other digestive disorders. The relationships between noise and these effects, however have not as yet been conclusively demonstrated.

Source: U.S. Department of Transportation "Guidelines for Considering Noise in Land Use Planning and Control", 1980

Interference with activity and annoyance will not occur if outdoor levels are maintained at an energy equivalent of 55 dB and indoor levels are at or below 45 dB. While these levels are relevant for planning and design, they are not land use planning criteria because they do not consider economic cost, technical feasibility or the development needs of the community. The EPA noise levels are guidelines for informational purposes that provide perspective on how residents may respond to a range of exterior noise exposures at their homes.

Palm Springs General Plan Standards and Policies

The City of Palm Springs has established goals and policies regarding land use compatibility with noise in the Noise Element of the *Palm Springs 2007 General Plan*. The goals of the Noise Element are: (1) to protect the public health, safety and welfare; (2) establish uniform direction to actions by individuals and agencies that eliminate or minimize noise pollution; and (3) to maintain a quiet environment for citizens and visitors of Palm Springs. The Noise Element also contains guidelines for land use compatibility with various community noise exposure levels to permit noise concerns to be incorporated in the land use planning process and prevent future noise incompatibilities.

As shown in Figure 3-3, community noise levels are identified for each land use category that are considered "normally acceptable", "conditionally acceptable", "normally unacceptable", or "clearly unacceptable". A "normally acceptable" designation indicates that conventional construction can occur with no special noise reduction requirements. A "conditionally acceptable" designation implies that new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements for each land use type is made and needed noise insulation features are incorporated in the design. If development is to proceed where a "normally unacceptable" designation would apply, the outdoor areas must be shielded and a detailed analysis of the noise reduction requirements must be undertaken to identify design features required to achieve acceptable indoor noise levels. New development should generally not be undertaken if a "clearly unacceptable" designation would be applicable.

As shown in Figure 3-3, hotels are considered "normally acceptable" in areas where the exterior noise exposure does not exceed 65 CNEL. Hotels are "conditionally acceptable" in areas where exterior noise exposure is between 60 CNEL and 70 CNEL. Low-density residential uses are considered "normally acceptable" where the community noise level remains below 60 CNEL. Multiple-family residential land uses are "normally acceptable" in areas where the exterior noise level is 65 CNEL or less, and "conditionally acceptable" in areas up to 70 CNEL. Schools, libraries, churches, hospitals and convalescent homes are considered "normally acceptable" uses in areas where the exterior noise levels are below 70 CNEL. Offices and commercial businesses are "normally acceptable" where exterior noise levels are below 70 CNEL and "conditionally acceptable" in areas exposed to noise levels as high as 77.5 CNEL.

To protect citizens from the harmful and annoying effects of exposure to excessive noise, the City of Palm Springs has adopted specific interior and exterior noise standards related to various land uses in the Noise Element of the *Palm Springs 2007 General Plan*. Table 3-4 presents the City policies regarding interior and exterior noise levels by land use category in terms of CNEL. Interior noise standards relate to indoor activity areas where no exterior noise-sensitive land use or activity is identified. Interior noise standards typically apply to indoor environments excluding bathrooms, kitchen areas, closets and corridors.

Table 3-4
City of Palm Springs Interior and Exterior Noise Standards[a]

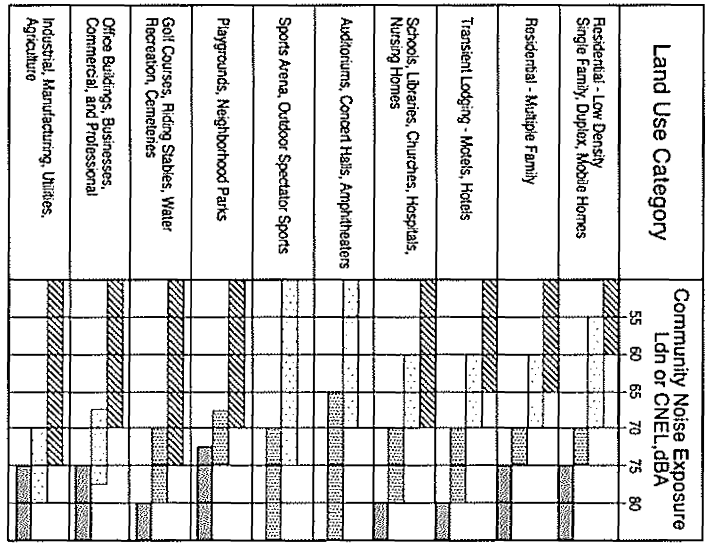
Land Use		CNEL (dBA)	
Categories	Uses	Interior[b]	Exterior[c]
Residential	Single-Family, Multiple-Family, Duplex	45[d]	65
	Mobile Homes	--	65[e]
Commercial	Hotel, Motel, Transient Housing	45	--
	Commercial Retail, Bank, Restaurant	55	--
	Office Building, Research and Development, Professional Offices	50	--
	Amphitheater, Concert Hall, Auditorium, Meeting Hall	45	--
	Gymnasium (Multipurpose)	50	--
	Sports Club	55	--
	Manufacturing, Warehousing, Wholesale, Utilities	65	--
	Movie Theaters	45	--
Institutional/ Public	Hospital, School, Classrooms/Playgrounds	45	65
	Church, Library	45	--
Open Space	Parks	--	65

a. Noise Element of the *Palm Springs 2007 General Plan*, Adopted October 24, 2007, pg. 8-8, based on the California Office of Planning and Research "General Plan Guidelines," 2003.
b. Indoor environment excluding bathrooms, kitchens, toilets, closets, and corridors.
c. The exterior noise levels are to be attained in habitable areas and need not encompass the entire property. Habitable areas are dwellings areas that are occupied, intended or designed to be occupied, with facilities for living, sleeping, cooking and eating. The outdoor environment is limited to: private yard of single-family dwellings; multiple-family private patios or balconies accessed from within the dwelling (balconies 6 feet deep or less are exempt); mobile home parks; park picnic areas; school playgrounds; and hospital patios.
d. Noise-level requirement with closed windows, mechanical ventilation, or other means of natural ventilation shall be provided per Chapter 12, Section 1205 of the Uniform Building Code.
e. Exterior noise levels should be such that interior noise levels will not exceed 45 dBA CNEL.

Exterior noise levels apply to outdoor areas which have regular human use and in which a lowered noise level would be beneficial. They need not be applied to areas having limited human use or where lowered noise levels would produce little benefit. Outdoor environments are generally limited to private yards of single-family residences, private patios or balconies of multi-family residences, mobile home parks, picnic areas at parks, and school playgrounds.

As shown in Table 3-4, the exterior noise standard is 65 CNEL for residential development, hospitals, school classrooms, playgrounds, and parks. There is no exterior noise standard for hotels, commercial retail uses, movie theaters, libraries, restaurants, or professional offices. Single-family and multiple-family residential development, movie theaters, libraries, and hotels have an interior noise standard of 45 CNEL. The interior noise standard is 50 CNEL for office buildings. Restaurants, commercial retail development, and sports clubs have an interior noise standard of 55 CNEL.

Figure 3-3
Land Use Compatibility for Community Noise Exposure



Interpretation

Normally Acceptable

Specified Land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise reduction insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice. Outdoor environment will seem noisy.

Normally Unacceptable

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made with needed noise insulation features included in the design. Outdoor areas must be shielded.

Clearly Unacceptable

New construction or development should generally not be undertaken. Construction costs to make the indoor environment acceptable would be prohibitive and the outdoor environment would not be usable.

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Source: "Palm Springs 2007 General Plan," Adopted October 24, 2007.

The following noise goals are set forth in the Noise Element of the *Palm Springs 2007 General Plan* and relevant to the proposed project.

- Protect residential areas and other sensitive land uses from impacts generated by exposure to excessive noise. (Goal NS1)
- Minimize, to the greatest extent possible, the impact of transportation-related noise on residential areas and other sensitive land uses. (Goal NS2)
- Minimize, to the greatest extent possible, the impact of non-transportation related stationary and temporary noise on residential areas and other sensitive land uses. (Goal NS3)

The City of Palm Springs has adopted numerous noise policies designed to achieve the City's noise goals. The following City noise policies are identified in the Noise Element of the *Palm Springs 2007 General Plan* and may be relevant to the proposed project.

Policy NS1.1 Continue to enforce acceptable noise standards consistent with health and quality of life goals established by the City and employ noise abatement measures, including the noise ordinance, applicable building codes, and subdivision and zoning regulations.

Policy NS1.2 Encourage the application of site planning and architectural design techniques that reduce noise impacts on proposed and existing projects.

Policy NS1.3 Utilize maximum anticipated, or "worst case," noise conditions as the basis for land use decisions and design controls as a means of preventing future incompatibilities.

Policy NS1.4 Evaluate the compatibility of proposed land uses with the existing noise environment when preparing, revising, or reviewing development proposals.

Policy NS1.6 Require mitigation where sensitive uses are to be placed along transportation routes to ensure compliance with state noise standards.

Policy NS1.7 Allow new developments in areas exposed to noise levels greater than 60 dB CNEL only if appropriate mitigation measures are included such that applicable noise standards are met.

Policy NS1.8 Include measures within project design that will assure that adequate interior noise levels are attained as required by the California Building Standards Code (*Title 24*), California Noise Insulation Standards (*Title 25*) and pertinent sections of the California Building Code and the City's Municipal Code.

Policy NS1.10 Minimize noise spill over from commercial uses into adjacent residential neighborhoods.

Policy NS2.1 Require noise-attenuating project design or sound barriers to reduce the level of traffic-generated noise on residential and other noise-sensitive land uses to acceptable levels.

Policy NS2.4 Require that new development minimize the noise impacts of trips it generates on residential neighborhoods by locating driveways and parking away from the habitable portions of dwellings to the greatest extent possible.

Policy NS2.5 Require that development generating increased traffic and subsequent increases in the ambient noise levels adjacent to noise-sensitive land uses provide appropriate mitigation to reduce the impact of noise.

Policy NS2.6 Employ noise-mitigation practices, such as natural buffers or setbacks between arterial roadways and noise-sensitive areas, when designing future streets and highways, and when improvements occur along existing road segments.

Policy NS2.11 Encourage employers to participate in van pools and other transportation demand management programs to reduce traffic and noise impacts in the City.

Policy NS2.12 Work with local agencies to provide public transit services that reduce traffic and noise and to ensure that the equipment they use does not generate excessive noise levels.

Policy NS2.15 Locate land uses that are compatible with higher noise levels adjacent to major roads and railway corridors.

Policy NS2.16 Restrict truck access in the City to approved truck routes and review hours of access to maximize residential and commercial activities free of truck traffic.

Policy NS2.17 Restrict early-morning trash pickup to less-sensitive land use areas where possible and rotate early morning pickup areas where restrictions are not possible.

Policy NS2.18 Require businesses that generate substantial parking overflow into residential areas to participate in the development of municipal or private parking structures.

Policy NS2.25 Encourage and facilitate the development of alternative transportation modes that minimize noise within residential areas such as bicycle and pedestrian pathways.

Policy NS3.1 Require that automobile and truck access to commercial properties - including loading and trash areas - located adjacent to residential parcels be located at the maximum practical distance from the residential parcel.

Policy NS3.2 Require that parking for commercial uses adjacent to residential areas be enclosed within a structure or separated by a solid wall with quality landscaping as a visual buffer.

Policy NS3.3 Require that parking lots and structures be designed to minimize noise impacts on-site and on adjacent uses, including the use of materials that mitigate sound transmissions and configuration of interior spaces to minimize sound amplification and transmission.

Policy NS3.4 Minimize, to the greatest extent possible, noise impacts on adjacent residential areas from live entertainment, amplified music, or other noise associated with nearby commercial or restaurant uses.

Policy NS3.5 Require that entertainment uses, restaurants, and bars control the activities of their patrons to the greatest extent possible to minimize noise impacts on adjacent residences.

Policy NS3.6 Restrict, where appropriate, the development of entertainment uses and other high-noise-generating uses adjacent to residential areas, senior citizen housing, schools, health care facilities, and other noise-sensitive uses.

Policy NS3.9 Encourage commercial uses that abut residential properties to employ techniques to mitigate noise impacts from truck deliveries, such as the use of a sound wall or enclosure of the delivery area.

Policy NS3.10 Require that construction activities that impact adjacent residential units comply with the hours of operation and noise levels identified in the City Noise Ordinances.

Policy NS3.11 Require that construction activities incorporate feasible and practical techniques which minimize the noise impacts on adjacent uses, such as the use of mufflers and intake silencers no less effective than originally equipped.

Policy NS3.12 Encourage the use of portable noise barriers for heavy equipment operations performed within 100 feet of existing residences, or make applicants provide evidence as to why the use of such barriers is not feasible.

Municipal Code Requirements

In addition to the maximum noise guidelines specified in the Noise Element, the City has adopted maximum permissible sound levels by receiving land use and maximum permissible dwelling interior sound levels, which are found in the Noise Ordinance of the *Palm Springs Municipal Code* (Chapter 11.74). No person shall operate or cause to be operated any source of sound at any location which causes the noise level when measured on any other property to exceed the limits identified in Sections 11.74.031 and 11.74.032, as outlined below.

The Palm Springs Noise Ordinance sets noise level limits in high density residential areas of 60 dBA (between 7:00 a.m. and 6:00 p.m.), 55 dBA (between 6:00 p.m. and 10:00 p.m.), and 50 dBA (between 10:00 p.m. and 7:00 a.m.). It specifies that these noise level limits may not be exceeded by five decibels or more at the residential property line, with allowances for time duration during the daytime. The time duration allowances include +3 dBA for up to 30 minutes per hour, +6 dBA for up to 15 minutes per hour, +8 dBA for up to 10 minutes per hour, +11 dBA for up to 5 minutes per hour, +15 dBA for up to 2 minutes per hour, +18 dBA for up to 1 minute per hour, +21 dBA for up to 30 seconds per hour, and +24 dBA for up to 15 seconds per hour.

Construction equipment activities are limited to the period between 7 a.m. and 8 p.m. (Section 11.74.041). The Construction Site Regulations (Chapter 8.04.200) also identify specific limits on hours of operation for construction equipment as not between 5 p.m. and 8 a.m. if the noise produced is of such intensity or quality that it disturbs the peace and quiet of any other person of normal sensitivity.

3.5 Current Noise Exposure

The primary sources of noise in the City of Palm Springs are transportation facilities including: the Palm Springs International Airport, railroad lines that pass through the city and master planned roadways. The Palm Springs International Airport is located east of the project site. The project site is located outside of the current and future 60 CNEL contours associated with the Palm Springs International Airport.[8]

8. Coffman Associates, *Noise Compatibility Study*, 1987.

Noise levels within the study area are characterized by roadway noise as well as occasional aircraft over flights associated with Palm Springs International Airport. Several master planned roadways are located in the vicinity of the project site that generate audible on-site noise levels.

Motor Vehicle Noise

Noise from motor vehicles is generated by engine vibrations, the interaction between the tires and the road, and the exhaust system. Reducing the speed of motor vehicles reduces the noise exposure of listeners both inside the vehicle and adjacent to the roadway.

The Federal Highway Traffic Noise Prediction Model (RD-77-108) developed by the Federal Highway Administration was used to evaluate existing highway noise conditions near the project site. This model accepts various parameters including the traffic volume, vehicle mix and speed, and roadway geometry, in computing equivalent noise levels during typical daytime, evening and nighttime hours. The resultant noise levels are then weighted, summed over 24 hours, and output as the CNEL value.

Noise contours are lines of constant sound level. Various CNEL contours were located through a series of computerized iterations designed to isolate the 60, 65, and 70 CNEL contour locations. As noted previously, the CNEL values include adjustments during the evening and night to compensate for the heightened sensitivity of the average listener during these hours.

The traffic data used for the noise modeling was taken from the *Museum Market Plaza Specific Plan Traffic Impact Study* (Endo Engineering; September 2, 2008). An eight percent truck mix was assumed for the noise modeling. To ensure a conservative analysis, all sites were considered "hard" as opposed to "soft" so that noise levels were attenuated by geometric spreading of the sound energy at a rate of 3.0 dBA per doubling of distance (rather than 4.5 dBA). However, given the level of development on-site and within the immediate vicinity, a noise attenuation of 4.5 dBA may more accurately reflect conditions within the study area.

Table 3-5 provides the current noise levels adjacent to roadways within the study area. The distances to various noise contours used for land use compatibility purposes were determined for inclusion therein by assuming a sound propagation with distance drop-off rate of 3.0 dBA with each doubling.[9] The noise contours provided in Table 3-5 are conservative in that they assume flat terrain without barrier interference or field-of-view restrictions (such as intervening buildings or landscaping).

As shown in Table 3-5, the ambient noise levels emanating from area roadways currently range from a low of 45.0 CNEL (at 50 feet from the centerline of Andreas Road, west of Indian Canyon Drive) to a high of 74.5 CNEL (at 50 feet from the centerline of Indian Canyon Drive, south of Tahquitz Canyon Way). At a distance of 50 feet from the centerline of eleven roadway segments (20 percent of those evaluated in the study area) the current traffic volumes generate noise levels which are below 60 CNEL. Sixteen roadway segments generate noise levels between 60 CNEL and 65 CNEL at 50 feet from their centerline (30 percent).

9. Riverside County Department of Health, Memorandum, December 21, 1990.

Table 3-5
Existing Exterior Noise Exposure
Adjacent to Area Roadways

Roadway Segment	A.D.T.[a] (Veh/Day)	CNEL @ 50 Feet[b]	Distance to Contours (Ft.)[c] 70 dBA	65 dBA	60 dBA
Palm Canyon Drive					
- North of Amado Road	16,400	74.1	121	380	1,199
- South of Amado Road	17,190	74.3	127	397	1,256
- North of Andreas Road	17,550	74.4	130	407	1,285
- South of Andreas Road	17,550	74.4	130	407	1,285
- North of Museum Way	17,550	74.4	130	407	1,285
- South of Museum Way	17,550	74.4	130	407	1,285
- North of Tahquitz Cyn Way	17,550	74.4	130	407	1,285
- South of Tahquitz Cyn Way	17,340	74.3	127	397	1,256
- North of Arenas Road	12,820	73.0	95	295	931
- South of Arenas Road	12,600	73.0	95	295	931
Indian Canyon Drive					
- North of Amado Road	14,590	73.9	110	341	1,077
- South of Amado Road	16,400	74.4	123	383	1,208
- North of Andreas Road	15,830	74.2	118	366	1,154
- South of Andreas Road	15,640	74.2	118	366	1,154
- North of Museum Way	16,450	74.4	123	383	1,208
- South of Museum Way	16,450	74.4	123	383	1,208
- North of Tahquitz Cyn Way	16,450	74.4	123	383	1,208
- South of Tahquitz Cyn Way	16,800	74.5	126	392	1,236
- North of Arenas Road	14,660	73.9	110	341	1,077
- South of Arenas Road	15,000	74.0	113	349	1,102
Belardo Road					
- North of Amado Road	2,740	59.2	R/W	R/W	42
- South of Amado Road	2,680	59.1	R/W	R/W	41
- South of Tahquitz Cyn Way	2,990	59.6	R/W	R/W	46
- North of Arenas Road	2,460	58.7	R/W	R/W	37
- South of Arenas Road	2,580	59.0	R/W	R/W	40
Museum Drive					
- South of Tahquitz Cyn Way	3,540	60.3	R/W	R/W	54
Cahuilla Road					
- South of Tahquitz Cyn Way	1,140	55.4	R/W	R/W	R/W
- North of Arenas Road	800	53.9	R/W	R/W	R/W
- South of Arenas Road	450	51.3	R/W	R/W	R/W
Amado Road					
- East of Belardo Road	1,630	62.9	R/W	R/W	97
- West of Palm Canyon Drive	1,900	63.6	R/W	R/W	114
- East of Palm Canyon Drive	5,660	68.3	R/W	106	336
- West of Indian Canyon Drive	4,200	67.0	R/W	79	249
- East of Indian Canyon Drive	2,340	64.5	R/W	R/W	140

a. A.D.T. is the average daily traffic volume on a typical weekday in the peak season of 2008.
b. CNEL values are given at 50 feet from all roadway centerlines (see Appendix B for assumptions).
c. All distances are measured from the centerline. R/W means the contour falls within the right-of-way.

Table 3-5 (Continued)
Existing Exterior Noise Exposure
Adjacent to Area Roadways

Roadway Segment	A.D.T.[a] (Veh/Day)	CNEL @ 50 Feet[b]	Distance to Contours (Ft.)[c] 70 dBA	65 dBA	60 dBA
Andreas Road					
- West of Indian Canyon Drive	220	45.0	R/W	R/W	R/W
- East of Indian Canyon Drive	1,830	54.2	R/W	R/W	R/W
Tahquitz Canyon Way					
- West of Museum Drive	860	55.5	R/W	R/W	R/W
- East of Museum Drive	4,150	62.7	R/W	33	89
- West of Cahuilla Road	4,180	62.7	R/W	33	89
- East of Cahuilla Road	4,010	62.5	R/W	32	85
- West of Belardo Road	3,590	62.0	R/W	30	76
- East of Belardo Road	3,890	67.8	R/W	91	282
- West of Palm Canyon Drive	6,090	69.8	R/W	142	446
- East of Palm Canyon Drive	9,480	71.7	71	219	690
- West of Indian Canyon Drive	9,330	71.6	70	214	675
- East of Indian Canyon Drive	9,950	72.2	77	231	728
Arenas Road					
- West of Cahuilla Road	1,080	61.1	R/W	R/W	64
- East of Cahuilla Road	860	60.1	R/W	R/W	51
- West of Belardo Road	950	60.5	R/W	R/W	56
- East of Belardo Road	1,560	62.7	R/W	R/W	93
- West of Palm Canyon Drive	1,800	63.3	R/W	R/W	106
- East of Palm Canyon Drive	2,210	64.2	R/W	42	131
- West of Indian Canyon Drive	2,180	64.2	R/W	42	131
- East of Indian Canyon Drive	2,510	62.4	R/W	R/W	86

a. A.D.T. is the average daily traffic volume on a typical weekday in the peak season of 2008.
b. CNEL values are given at 50 feet from all roadway centerlines (see Appendix B for assumptions).
c. All distances are measured from the centerline. R/W means the contour falls within the right-of-way.

Motor vehicles on 4 of the roadway segments modeled (7 percent) generate noise levels which are currently between 65 CNEL and 70 CNEL at 50 feet from the roadway centerline. Traffic noise currently exceeds 70 CNEL at fifty feet from the centerline along 23 of the 54 roadway segments (43 percent) modeled in the study area.

Existing exterior motor vehicle noise levels adjacent to Indian Canyon Drive and Palm Canyon Drive in the vicinity of the project site are 74.4 CNEL in the peak season on typical weekdays. Motor vehicle noise levels generated in the vicinity of Tahquitz Canyon Way are currently within the range of 62.7 CNEL to 69.8 CNEL, between Museum Drive and Palm Canyon Drive. Motor vehicle noise levels along Belardo Road currently range from a low of 58.7 CNEL (north of Arenas Road) to a high of 59.6 CNEL (south of Tahquitz Canyon Way).

Andreas Road currently carries so little traffic between Palm Canyon Drive and Indian Canyon Drive that the motor vehicle noise levels at 50 feet from the centerline are only 45.0 CNEL. Consequently, the motor vehicle noise generated by the more distant major

thoroughfares of Palm Canyon Drive and Indian Canyon Drive exceeds the 45 CNEL noise levels generated along Andreas Road.

The 60 CNEL contours are currently located within the right-of-way along 6 of the roadway segments modeled. The 65 CNEL contours are located within the right-of-way along 21 of the roadway segments evaluated (39 percent). The 70 CNEL contours fall within the right-of-way along thirty-one (57 percent) of the roadway segments analyzed.

The 70 CNEL contour extends beyond the right-of-way along 23 (43 percent) of the roadway segments modeled in the study area. The 65 CNEL contour is located outside the right-of-way adjacent to 33 (61 percent) of the roadway segments modeled in the study area.

3.6 Noise-Sensitive Receptors

Land uses deemed "noise-sensitive" by the State of California include: schools, hospitals, rest homes, long-term care and mental care facilities. Some jurisdictions elect to also consider day care centers, single-family dwellings, mobile home parks, churches, libraries, and recreation areas noise sensitive. Moderately sensitive land uses typically include: multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs and equestrian clubs. Relatively insensitive uses are business, commercial, and professional developments. Insensitive noise receptors include industrial, manufacturing, utilities, agriculture, natural open space, undeveloped land, parking lots, warehousing, and transit terminals.

The project site is located within the commercial shopping and entertainment district of downtown Palm Springs. It is an active pedestrian area with an established mix of hotel, retail, office, restaurant, and residential land uses.

Noise-sensitive land uses currently located within the project vicinity include: a library on the southeast corner of Palm Canyon Drive and Tahquitz Canyon Way, the residential community located west of Cahuilla Road and south of Arenas Road, as well as hotels and Bed-and-Breakfast uses. A multiple-family residential condominium development is located southwest of Block L.

The Hyatt Regency Suites abut the northern site boundary. The Palm Mountain Resort is located south of Tahquitz Canyon Way, between Belardo Road and Cahuilla Road. The Spa Resort Casino s located east of Indian Canyon Drive and north of Tahquitz Canyon Way. There are no schools, hospitals, rest homes, or mobile homes located within the area. Additional resort hotels are located primarily along Tahquitz Canyon Way, Indian Canyon Drive, and Palm Canyon Drive.

4.0 Noise Impact Analysis

4.1 Significance Thresholds

Since noise increases or decreases of 1.0 dBA cannot be perceived (except in carefully controlled laboratory experiments) project-related noise impacts of this magnitude are not considered to be significant herein. If a project-related change in noise levels exceeds 3.0 dBA, it is considered to be audible and "potentially significant," provided noise-sensitive receptors are present. If a project-related noise increase exceeds 3.0 dBA and a receiving land use is expected to exceed the noise standards detailed in the City Noise Element as a result, the noise impact is considered "clearly significant" and warrants the development of appropriate mitigation strategies.

4.2 Short-Term Construction-Related Impacts

Short-term acoustic impacts are those associated with construction activities necessary to implement the Museum Market Plaza Specific Plan. Short-term construction noise levels will be higher than the ambient noise levels in the project vicinity today, but will subside once construction is completed. Noise impacts due to construction will be regulated through the City of Palm Springs Construction Regulations and Noise Ordinance as well as through environmental specifications in the construction contract and the Noise Control Act of 1972 (which sets noise emission standards for construction machinery).

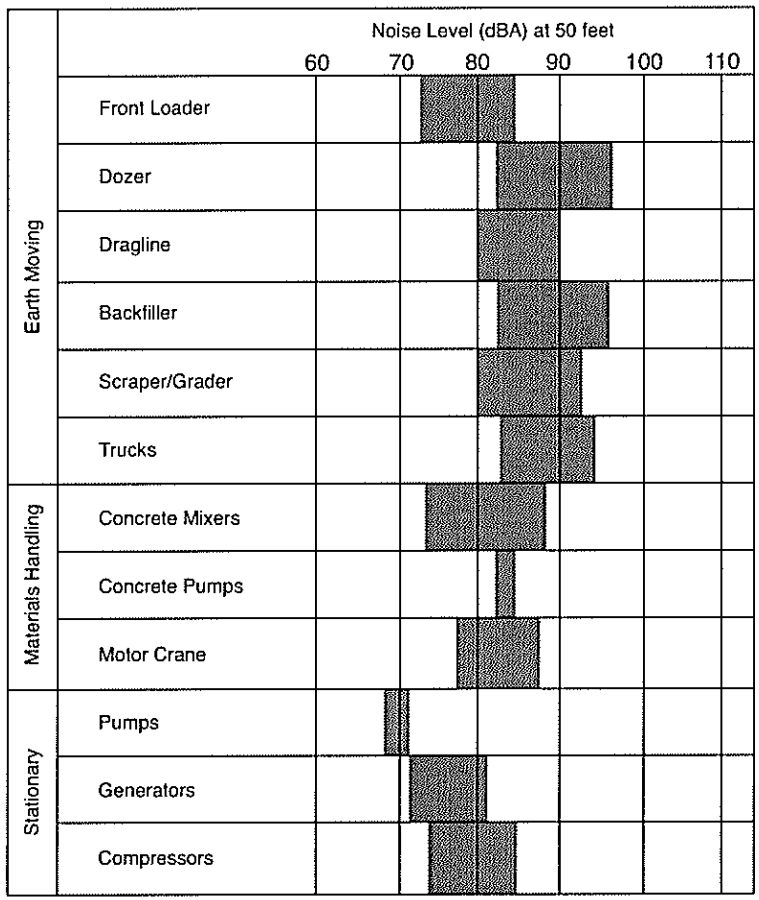
Two types of noise impacts should be considered during the construction phase. First, the transport of workers, equipment, and building materials to and from the construction sites will incrementally increase noise levels along the roadways leading to and from these sites. The increase, although temporary in nature, could be audible to noise receptors located along the roadways utilized for this purpose. Second, the noise generated by the actual on-site construction activities should be considered.

Construction activities are carried out in discrete steps, each of which has its own mix of equipment, and consequently its own noise characteristics. These various sequential phases will change the character of the noise levels surrounding the construction site as work progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow noise ranges to be categorized by work phase. Figure 4-1 illustrates typical construction equipment noise ranges at a distance of 50 feet.

The earth moving equipment category includes excavating machinery (backhoes, bulldozers, shovels, trenchers, front loaders, etc.) and parking lot preparation and paving equipment (compactors, scrapers, graders, pavers, etc.). Typical operating cycles may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Noise levels at 50 feet from earth moving equipment range from 73 to 96 dBA.

The Environmental Protection Agency has found that the noisiest equipment types operating at construction sites typically range from 88 to 91 dBA at 50 feet. Although noise ranges were found to be similar for all construction phases, the erection phase (laying sub-base and paving) tends to be less noisy. Noise levels vary from 79 dBA to 89 dBA at 50 feet during the erection phase of construction. The foundation phase of construction tends to create the highest noise levels, which range from 88 to 96 dBA at 50 feet.

Figure 4-1
Construction Noise



Source: EPA, 1971; "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances", NTID300.1

Endo Engineering

Construction activities are regulated on a case-by-case basis through conditions placed on entitlement permits and building permits. In addition, construction hours near noise-sensitive land uses are limited by the Palm Springs Noise Ordinance (Municipal Code Section 11.74.041) and the Palm Springs Construction Site Regulations (Chapter 8.04.220). To reduce the potential for short-term impacts, construction equipment hours of operation are normally controlled. To minimize the potential for noise impacts during more sensitive time periods, construction activities typically take place only between 7:00 a.m. and 8:00 p.m.

If the noise produced by such work is of such intensity or quality that it disturbs the peace and quiet of any other person of normal sensitivity, construction activities are typically not permitted between the hours of 5:00 p.m. and 8:00 a.m., per the Palm Springs Construction Site Regulations (Municipal Code Section 8.04.220). Construction hours are normally limited in this manner to maintain quiet during evening hours, Sundays and holidays, when residents of the surrounding community are more likely to be home.

Effects on Sensitive Noise Receptors

The City of Palm Springs has identified temporary construction noise as an area of concern in the *Palm Springs 2007 General Plan* because construction noise frequently provokes community annoyance and complaints. It will be important, therefore, to incorporate sufficient noise reducing measures into the construction specifications to ensure that the potential for adverse impacts on the adjacent community is reduced to the maximum extent feasible.

Numerous noise receptors are located within the study area and need to be considered in identifying future noise impacts. Since it is seldom feasible to examine potential impacts at all noise-sensitive receptor locations, a select number of representative noise receptors are typically identified for evaluation. The basis for the selection includes: (1) receptors in locations with the highest noise levels now and in the future; (2) receptors located closest to the on-site noise sources (the first row of residences); (3) noise-sensitive uses; and (4) receptors that are acoustically equivalent to others in the same area of potential impact.

The demolition, debris removal, grading, hauling, building construction and paving required to revitalize downtown Palm Springs would create short-term noise increases that would be noticeable to residents and visitors in the area surrounding the project site. Noise-sensitive receptors within the study area may perceive short-term noise increases when:

- construction vehicles enter and leave the site (with workers, building materials, and/or construction equipment);
- activities occur in construction staging areas;
- any temporary on-site generators are operated;
- any necessary demolition, debris removal, and grading activities are underway;
- any excess fill material is loaded onto trucks and hauled to the landfill;
- utilities re removed and relocated; and
- building activities occur.

The residents who live closest to the project site (i.e., those who live in the condominium complex located at the western terminus of Tahquitz Canyon Way) and visitors to the nearby hotels have the highest potential for acoustic impact during the construction activities required to implement the proposed project. The intensity of the noise impact will depend upon: (1) the proximity of each noise-sensitive receptor to the area under

construction; (2) the number and type of construction equipment operating each day; and (3) the length of time each piece of equipment is in use. Although grading activities typically exhibit one of the highest potentials for noise impacts, the site topography is relatively flat. However, underground parking facilities may require excavation and the removal of excess material by haul trucks. Similarly, the vacation and abandonment of Belardo Road/Museum Drive would entail removal of the existing street improvements and utilities as well as their relocation on-site.

The intensity of construction noise drops off in proportion to the square of the distance from the source. Provided there is line-of-sight exposure with no intervening structures, noise generated by a single point source of noise (such as a stationary piece of construction equipment) attenuates at a rate of 6 dB with each doubling of distance between the noise source and receptor. Therefore, a noise receptor located 100 feet from a construction noise source would benefit from a 6 dBA noise attenuation with distance. Those receptors with line-of-sight exposure located 200 feet away would perceive a 12 dB reduction in exterior construction noise levels. When the construction activities occur 400 feet away from noise receptors, an 18 dB reduction in noise levels would occur. To attenuate 91 dB by 26 decibels to 65 dB would require a distance of 1,000 feet between the construction noise source and a noise receiver with line-of-sight exposure to the noise source.

The noise-sensitive residential area located closest to the project site is at the western terminus of Tahquitz Canyon Way. The closest residential structure is approximately 100 feet from the closest corner of the project site (Block L) where construction noise would be generated. Although the closest residential structure is located 100 feet from the corner of Block L, the corner of the core commercial area is approximately 325 feet from the nearest residential structure, and the center of the core commercial area is 850 feet from the closest receptor. In addition, the condominium complex would be partially shielded from direct noise exposure by structures located directly to the east.

The level of construction noise anticipated in the study area may cause annoyance to residents and hotel guests in the project vicinity during the construction activities. However, it will not cause long-term hearing loss or other severe effects. Since construction operating cycles are limited to the less sensitive hours of the day and construction activities generate noise levels that are intermittent, hearing loss is not likely to occur.

The Hyatt Regency Suites building is located closest to the project site, abutting the north site boundary. Since the center of the project site is located 500 feet south of the closest face of the Hyatt Regency Suites building, the construction-related noise sources on-site would be located, on average, 500 feet from the closest point at the Hyatt Regency Suites which would benefit from a 20 dB noise attenuation with distance.

Noise-sensitive receptors using the outdoor swimming pool at the Hyatt Regency Suites would benefit from the acoustic shielding provided by the solid building located between the swimming pool and the project site (which continues around the south side of the swimming pool). Noise-sensitive receptors within the Hyatt Regency Suites building would benefit from the exterior-to-interior noise attenuation (approximately 30 dB) afforded by the building. Guests staying in rooms within the northern part of the Hyatt Regency Suites would be shielded by the intervening portions of the building in the southern portion of the development.

4.3 Long-Term Operational Impacts

Long-term noise concerns associated with the proposed development of the project site center primarily on mobile source noise emissions along the access roadways in the study area. Off-site noise impacts on surrounding noise-sensitive noise sensitive developments that may result from the intrusion of noise generated by future activities on-site is also a concern. On-site acoustic impacts may result from motor vehicle noise generated by ultimate traffic volumes on the master planned roadways adjacent to the site. If motor vehicle noise levels are sufficient, acoustic mitigation may be needed to comply with State and local noise standards that specify a maximum interior noise level of 45 dBA in habitable areas of multi-family dwelling units and hotels.

Off-Site Vehicular Noise Impacts

Noise levels on area streets were quantified for the future planning horizon year 2030. Traffic volumes in the year 2030 (with the No-Project Alternative, the Preferred Project, and three site development alternatives) were analyzed to determine the project-related impact on motor vehicle noise levels in the vicinity. The 2030 traffic projections were taken from the *Museum Market Plaza Specific Plan Traffic Impact Study* (Endo Engineering; September 2, 2008) included traffic associated with fifteen cumulative developments as well as area-wide build out per the 2007 *Palm Springs General Plan*. The year 2030 traffic projections were utilized to forecast ultimate on-site noise levels as well as identify the significance of long-term project-related increases in motor vehicle noise.

Since noise increases or decreases of 1.0 dBA cannot be perceived in the community, project-related motor vehicle noise impacts of this magnitude were not considered significant. Project-related changes in motor vehicle noise levels that exceed 3.0 dBA were considered potentially audible outside of a laboratory and potentially significant, provided noise-sensitive receptors would be affected.

Year 2030 Noise Impacts

Table 4-1 includes the projected motor vehicle noise levels throughout the study area in the year 2030 with the Preferred Project. Noise levels at 50 feet from the centerline of area roadways are projected to range from a low of 45.0 CNEL (along Andreas Road, west of Indian Canyon Drive) to a high of 75.7 CNEL (along Indian Canyon Drive, south of Tahquitz Canyon Way).

The 70 CNEL contour will remain within the right-of-way along 39 of the roadway segments analyzed. The 65 CNEL contour will remain within the right-of-way along 26 of the roadway segments analyzed. All but four of the roadway segments modeled will generate sound levels in excess of 60 CNEL at the right-of-way.

Upon build out of the Preferred Project and the 2007 *Palm Springs General Plan*, sixteen of the roadway segments modeled (26 percent) are projected to generate noise levels at a distance of 50 feet that exceed 75 CNEL. Seven of the links evaluated (11 percent) will generate noise levels at 50 feet that are between 70 CNEL and 75 CNEL. Eight roadway segments (13 percent of the links modeled) are projected to generate noise levels at 50 feet that are between 65 CNEL and 70 CNEL. Twenty-two links (35 percent of the links modeled) will generate noise levels at 50 feet that are between 60 CNEL and 65 CNEL. Noise levels at 50 feet from nine roadway segments will range be below 60 CNEL.

Table 4-1
Year 2030 Exterior Noise Exposure With The Preferred Project

Roadway Segment	A.D.T.[a] (Veh/Day)	CNEL @ 50 Feet[b]	Distance to Contours (Ft.)[c] 70 dBA	65 dBA	60 dBA
Palm Canyon Drive					
- North of Amado Road	21,770	75.3	159	500	1,581
- South of Amado Road	21,570	75.3	159	500	1,581
- North of Museum Way	21,960	75.4	163	512	1,618
- South of Museum Way	22,230	75.4	163	512	1,618
- North of Tahquitz Cyn Way	22,230	75.4	163	512	1,618
- South of Tahquitz Cyn Way	22,610	75.5	166	524	1,655
- North of Arenas Road	18,480	74.6	136	426	1,345
- South of Arenas Road	18,600	74.6	136	426	1,345
Indian Canyon Drive					
- North of Amado Road	20,000	75.2	147	460	1,453
- South of Amado Road	20,690	75.4	154	482	1,521
- North of Andreas Road	20,060	75.2	147	460	1,453
- South of Andreas Road	19,560	75.1	144	449	1,420
- North of Museum Way	20,460	75.3	151	471	1,486
- South of Museum Way	21,360	75.5	157	493	1,557
- North of Tahquitz Cyn Way	21,360	75.5	157	493	1,557
- South of Tahquitz Cyn Way	22,430	75.7	165	516	1,630
- North of Arenas Road	22,180	75.7	165	516	1,630
- South of Arenas Road	22,200	75.7	165	516	1,630
Belardo Road					
- North of Amado Road	3,260	60.0	R/W	R/W	50
- South of Amado Road	5,330	62.1	R/W	R/W	81
- North of Museum Way	6,470	63.0	R/W	32	99
- South of Museum Way	4,920	61.8	R/W	R/W	75
- North of Tahquitz Cyn Way	4,980	61.8	R/W	R/W	75
- South of Tahquitz Cyn Way	4,690	61.6	R/W	R/W	72
- North of Arenas Road	4,020	60.9	R/W	R/W	61
- South of Arenas Road	3,720	60.5	R/W	R/W	56
Museum Drive					
- North of Museum Way	2,650	59.1	R/W	R/W	41
- South of Museum Way	2,030	57.9	R/W	R/W	31
- North of Tahquitz Cyn Way	2,100	58.1	R/W	R/W	33
Cahuilla Road					
- South of Tahquitz Cyn Way	2,200	58.3	R/W	R/W	34
- North of Arenas Road	1,290	55.9	R/W	R/W	R/W
- South of Arenas Road	630	52.8	R/W	R/W	R/W
Amado Road					
- East of Belardo Road	7,320	69.4	R/W	137	432
- West of Palm Canyon Drive	7,320	69.4	R/W	137	432
- East of Palm Canyon Drive	7,820	69.7	R/W	147	463
- West of Indian Canyon Drive	6,210	68.7	R/W	117	368
- East of Indian Canyon Drive	5,690	68.3	R/W	106	336

a. A.D.T. refers to the average daily two-way traffic volume on a peak season weekday in the year 2030.
b. CNEL values are given at 50 feet from all roadway centerlines (see Appendix B for assumptions).
c. All distances are measured from the centerline. R/W means the contour falls within the right-of-way.

Table 4-1 (Continued)
Year 2030 Exterior Noise Exposure
With The Preferred Project

Roadway Segment	A.D.T.[a] (Veh/Day)	CNEL @ 50 Feet[b]	Distance to Contours (Ft.)[c] 70 dBA	65 dBA	60 dBA
Andreas Road					
- West of Indian Canyon Drive	220	45.0	R/W	R/W	R/W
- East of Indian Canyon Drive	4,090	57.7	R/W	R/W	30
Museum Way					
- West of Belardo Road	4,210	61.1	R/W	R/W	64
- East of Belardo Road	4,390	61.3	R/W	R/W	67
- West of Palm Canyon Drive	5,070	61.9	R/W	R/W	77
- East of Palm Canyon Drive	4,290	61.2	R/W	R/W	66
- West of Indian Canyon Drive	4,110	61.0	R/W	R/W	63
Tahquitz Canyon Way					
- West of Museum Drive	950	56.0	R/W	R/W	R/W
- East of Museum Drive	2,780	60.9	R/W	R/W	60
- West of Cahuilla Road	2,810	61.0	R/W	R/W	61
- East of Cahuilla Road	4,290	62.8	R/W	33	91
- West of Belardo Road	3,830	62.3	R/W	31	81
- East of Belardo Road	8,650	71.3	65	200	630
- West of Palm Canyon Drive	10,560	72.2	79	245	774
- East of Palm Canyon Drive	13,390	73.2	99	309	975
- West of Indian Canyon Drive	13,220	73.2	99	309	975
- East of Indian Canyon Drive	15,380	74.1	115	357	1,128
Arenas Road					
- West of Cahuilla Road	1,320	62.0	R/W	R/W	79
- East of Cahuilla Road	1,240	61.7	R/W	R/W	74
- West of Belardo Road	1,340	62.0	R/W	R/W	79
- East of Belardo Road	2,400	64.6	R/W	46	143
- West of Palm Canyon Drive	3,160	65.8	R/W	60	189
- East of Palm Canyon Drive	4,430	67.2	R/W	83	261
- West of Indian Canyon Drive	4,430	67.2	R/W	83	261
- East of Indian Canyon Drive	4,150	64.6	R/W	46	143

a. A.D.T. refers to the average daily two-way traffic volume on a peak season weekday in the year 2030.
b. CNEL values are given at 50 feet from all roadway centerlines (see Appendix B for assumptions).
c. All distances are measured from the centerline. R/W means the contour falls within the right-of-way.

Table 4-2 shows the projected year 2030 motor vehicle noise levels throughout the study area with the No-Project Alternative. As shown therein, ambient noise levels would range from a low of 45.0 CNEL to a high of 75.6 CNEL with the No-Project Alternative. Four fewer roadway segments would generate noise levels greater than 75 CNEL with the No-Project Alternative, compared to the Preferred Project. Seven roadway segments would generate noise levels between 70 CNEL and 75 CNEL with the No-Project Alternative and the Preferred Project.

Table 4-2
Year 2030 Exterior Noise Exposure
With The No-Project Alternative

Roadway Segment	A.D.T.[a] (Veh/Day)	CNEL @ 50 Feet[b]	Distance to Contours (Ft.)[c] 70 dBA	65 dBA	60 dBA
Palm Canyon Drive					
- North of Amado Road	21,070	75.2	156	489	1,545
- South of Amado Road	20,970	75.2	156	489	1,545
- North of Tahquitz Cyn Way	21,370	75.2	156	489	1,545
- South of Tahquitz Cyn Way	22,030	75.4	163	512	1,618
- North of Arenas Road	17,900	74.5	133	416	1,315
- South of Arenas Road	17,900	74.5	133	416	1,315
Indian Canyon Drive					
- North of Amado Road	19,300	75.1	144	449	1,420
- South of Amado Road	20,420	75.3	151	471	1,486
- North of Andreas Road	19,790	75.2	147	460	1,453
- South of Andreas Road	19,540	75.1	144	449	1,420
- North of Tahquitz Cyn Way	20,440	75.3	151	471	1,486
- South of Tahquitz Cyn Way	21,750	75.6	161	504	1,593
- North of Arenas Road	21,500	75.5	157	493	1,557
- South of Arenas Road	21,500	75.5	157	493	1,557
Belardo Road					
- North of Amado Road	3,180	59.9	R/W	R/W	49
- South of Amado Road	5,370	62.1	R/W	R/W	81
- South of Tahquitz Cyn Way	3,930	60.8	R/W	R/W	60
- North of Arenas Road	3,600	60.4	R/W	R/W	55
- South of Arenas Road	3,600	60.4	R/W	R/W	55
Museum Drive					
- North of Tahquitz Cyn Way	8,020	63.9	R/W	39	122
Cahuilla Road					
- South of Tahquitz Cyn Way	1,780	57.3	R/W	R/W	R/W
- North of Arenas Road	1,210	55.7	R/W	R/W	R/W
- South of Arenas Road	580	52.5	R/W	R/W	R/W
Amado Road					
- East of Belardo Road	7,500	69.5	R/W	140	442
- West of Palm Canyon Drive	7,500	69.5	R/W	140	442
- East of Palm Canyon Drive	8,110	69.9	R/W	154	485
- West of Indian Canyon Drive	6,500	68.9	R/W	122	385
- East of Indian Canyon Drive	5,400	68.1	R/W	102	321
Andreas Road					
- West of Indian Canyon Drive	220	45.0	R/W	R/W	R/W
- East of Indian Canyon Drive	4,200	57.8	R/W	R/W	31

a. A.D.T. refers to the average daily two-way traffic volume on a peak season weekday in the year 2030.
b. CNEL values are given at 50 feet from all roadway centerlines (see Appendix B for assumptions).
c. All distances are measured from the centerline. R/W means the contour falls within the right-of-way.

Table 4-2 (Continued)
Year 2030 Exterior Noise Exposure
With The No-Project Alternative

Roadway Segment	A.D.T.[a] (Veh/Day)	CNEL @ 50 Feet[b]	Distance to Contours (Ft.)[c] 70 dBA	65 dBA	60 dBA
Tahquitz Canyon Way					
- West of Museum Drive	950	56.0	R/W	R/W	R/W
- East of Museum Drive	8,700	65.9	R/W	60	182
- West of Cahuilla Road	8,730	65.9	R/W	60	182
- East of Cahuilla Road	10,150	66.5	R/W	68	209
- West of Belardo Road	9,690	66.3	R/W	65	200
- East of Belardo Road	9,770	71.8	73	224	706
- West of Palm Canyon Drive	12,200	72.8	91	282	889
- East of Palm Canyon Drive	14,870	73.7	111	346	1,094
- West of Indian Canyon Drive	14,700	73.6	108	338	1,069
- East of Indian Canyon Drive	14,580	73.9	110	341	1,077
Arenas Road					
- West of Cahuilla Road	1,270	61.8	R/W	R/W	75
- East of Cahuilla Road	1,110	61.2	R/W	R/W	66
- West of Belardo Road	1,210	61.6	R/W	R/W	72
- East of Belardo Road	2,140	64.1	R/W	41	128
- West of Palm Canyon Drive	2,400	64.6	R/W	46	143
- East of Palm Canyon Drive	4,100	66.9	R/W	77	243
- West of Indian Canyon Drive	4,100	66.9	R/W	77	243
- East of Indian Canyon Drive	4,100	64.5	R/W	45	140

a. A.D.T. refers to the average daily two-way traffic volume on a peak season weekday in the year 2030.
b. CNEL values are given at 50 feet from all roadway centerlines (see Appendix B for assumptions).
c. All distances are measured from the centerline. R/W means the contour falls within the right-of-way.

Table 4-3 shows the projected year 2030 motor vehicle noise levels within the study area with the Preferred Town & Country Center Alternative. With this site development alternative, 31 percent of the roadways would generate noise levels of 60 CNEL to 65 CNEL at 50 feet from the centerline. Nineteen percent of the roadway segments modeled would generate noise levels below 60 CNEL at 50 feet from the centerline. Noise levels adjacent to 13 roadway segments would exceed 75 CNEL at 50 feet with this alternative.

Table 4-4 provides the future motor vehicle noise levels along area roadways with Less-Intense Alternative A. Table 4-5 includes the future projected noise levels adjacent to area streets with Less-Intense Alternative B.

Table 4-6 more clearly shows the change in future noise levels by site development alternative. It provides the percentage of the roadway segments evaluated with each site development alternative that would be generating noise levels at 50 feet within each specified range of noise levels. Since the internal roadway networks would change with some site development alternatives, the number of roadway segments evaluated with each alternative varied. However, overall conclusions can be drawn from Table 4-6 regarding the level of motor vehicle noise generated by future year 2030 traffic volumes associated with each site development alternative compared to the No-Project Alternative.

Table 4-3
Year 2030 Exterior Noise Exposure With The
Preserve Town & Country Center Alternative

Roadway Segment	A.D.T.[a] (Veh/Day)	CNEL @ 50 Feet[b]	Distance to Contours (Ft.)[c] 70 dBA	65 dBA	60 dBA
Palm Canyon Drive					
- North of Amado Road	21,790	75.3	159	500	1,581
- South of Amado Road	21,870	75.3	159	500	1,581
- North of Museum Way	22,250	75.4	163	512	1,618
- South of Museum Way	22,500	75.5	166	524	1,655
- North of Tahquitz Cyn Way	22,500	75.5	166	524	1,655
- South of Tahquitz Cyn Way	22,660	75.5	166	524	1,655
- North of Arenas Road	18,530	74.6	136	426	1,345
- South of Arenas Road	18,660	74.7	139	436	1,377
Indian Canyon Drive					
- North of Amado Road	20,020	75.2	147	460	1,453
- South of Amado Road	20,190	75.3	151	471	1,486
- North of Andreas Road	19,560	75.1	144	449	1,420
- South of Andreas Road	19,180	75.0	141	439	1,387
- North of Tahquitz Cyn Way	20,080	75.2	147	460	1,453
- South of Tahquitz Cyn Way	22,360	75.7	165	516	1,630
- North of Arenas Road	22,110	75.7	165	516	1,630
- South of Arenas Road	22,220	75.7	165	516	1,630
Belardo Road					
- North of Amado Road	3,260	60.0	R/W	R/W	50
- South of Amado Road	6,300	62.8	R/W	31	95
- North of Museum Way	6,950	63.3	R/W	34	106
- South of Museum Way	6,810	63.2	R/W	33	104
- North of Tahquitz Cyn Way	7,220	63.4	R/W	35	109
- South of Tahquitz Cyn Way	4,750	61.6	R/W	R/W	72
- North of Arenas Road	4,080	61.0	R/W	R/W	63
- South of Arenas Road	3,720	60.5	R/W	R/W	56
Museum Drive					
- North of Museum Way	2,730	59.2	R/W	R/W	42
- South of Museum Way	2,080	58.0	R/W	R/W	32
- North of Tahquitz Cyn Way	2,150	58.2	R/W	R/W	33
Cahuilla Road					
- South of Tahquitz Cyn Way	2,260	58.4	R/W	R/W	35
- North of Arenas Road	1,310	56.0	R/W	R/W	R/W
- South of Arenas Road	630	52.8	R/W	R/W	R/W
Amado Road					
- East of Belardo Road	8,330	70.0	50	157	496
- West of Palm Canyon Drive	8,330	70.0	50	157	496
- East of Palm Canyon Drive	8,930	70.3	54	168	532
- West of Indian Canyon Drive	7,320	69.4	R/W	137	432
- East of Indian Canyon Drive	5,710	68.3	R/W	106	336

a. A.D.T. refers to the average daily two-way traffic volume on a peak season weekday in the year 2030.
b. CNEL values are given at 50 feet from all roadway centerlines (see Appendix B for assumptions).
c. All distances are measured from the centerline. R/W means the contour falls within the right-of-way.

Table 4-3 (Continued)
Year 2030 Exterior Noise Exposure With The
Preserve Town & Country Center Alternative

Roadway Segment	A.D.T.[a] (Veh/Day)	CNEL @ 50 Feet[b]	Distance to Contours (Ft.)[c] 70 dBA	65 dBA	60 dBA
Andreas Road					
- West of Indian Canyon Drive	220	45.0	R/W	R/W	R/W
- East of Indian Canyon Drive	4,180	57.8	R/W	R/W	31
Museum Way					
- West of Belardo Road	4,370	61.2	R/W	R/W	66
- East of Belardo Road	2,620	59.0	R/W	R/W	40
- West of Palm Canyon Drive	2,020	57.9	R/W	R/W	31
Tahquitz Canyon Way					
- West of Museum Drive	950	56.0	R/W	R/W	R/W
- East of Museum Drive	2,830	61.0	R/W	R/W	61
- West of Cahuilla Road	2,860	61.0	R/W	R/W	61
- East of Cahuilla Road	4,410	62.9	R/W	34	93
- West of Belardo Road	3,950	62.4	R/W	31	83
- East of Belardo Road	10,710	72.2	79	245	774
- West of Palm Canyon Drive	12,780	73.0	95	295	931
- East of Palm Canyon Drive	16,010	74.0	119	371	1,172
- West of Indian Canyon Drive	15,840	73.9	116	363	1,145
- East of Indian Canyon Drive	15,280	74.1	115	357	1,128
Arenas Road					
- West of Cahuilla Road	1,320	62.0	R/W	R/W	79
- East of Cahuilla Road	1,250	61.7	R/W	R/W	74
- West of Belardo Road	1,350	62.1	R/W	R/W	81
- East of Belardo Road	2,510	64.8	R/W	48	150
- West of Palm Canyon Drive	3,280	65.9	R/W	61	193
- East of Palm Canyon Drive	4,520	67.3	R/W	85	267
- West of Indian Canyon Drive	4,520	67.3	R/W	85	267
- East of Indian Canyon Drive	4,150	64.6	R/W	46	143

a. A.D.T. refers to the average daily two-way traffic volume on a peak season weekday in the year 2030.
b. CNEL values are given at 50 feet from all roadway centerlines (see Appendix B for assumptions).
c. All distances are measured from the centerline. R/W means the contour falls within the right-of-way.

For example, Less-Intense Alternative A would have the lowest percentage of roadway links with noise levels at 50 feet exceeding 75 CNEL. The No-Project Alternative would result in 38 percent of the roadway segments with noise levels at 50 feet below 65 CNEL compared to 50 percent of the roadways with the Preferred Project, the Preserve Town & Country Center Alternative and Less-Intense Alternative B. Less-Intense Alternative A would result in 49 percent of the roadway segments generating less than 65 CNEL at 50 feet from the centerline.

Table 4-4
Year 2030 Exterior Noise Exposure
With Less-Intense Alternative A

Roadway Segment	A.D.T.[a] (Veh/Day)	CNEL @ 50 Feet[b]	Distance to Contours (Ft.)[c] 70 dBA	65 dBA	60 dBA
Palm Canyon Drive					
- North of Amado Road	20,940	75.2	156	489	1,545
- South of Amado Road	21,200	75.2	156	489	1,545
- North of Andreas Road	20,050	75.0	149	467	1,475
- South of Andreas Road	19,460	74.8	142	446	1,409
- North of Tahquitz Cyn Way	21,440	75.3	159	500	1,581
- South of Tahquitz Cyn Way	21,840	75.3	159	500	1,581
- North of Arenas Road	17,710	74.4	130	407	1,285
- South of Arenas Road	17,770	74.4	130	407	1,285
Indian Canyon Drive					
- North of Amado Road	19,170	75.0	141	439	1,387
- South of Amado Road	20,680	75.4	154	482	1,521
- North of Andreas Road	20,050	75.2	147	460	1,453
- South of Andreas Road	19,460	75.1	144	449	1,420
- North of Tahquitz Cyn Way	20,360	75.3	151	471	1,486
- South of Tahquitz Cyn Way	21,540	75.5	157	493	1,557
- North of Arenas Road	21,290	75.5	157	493	1,557
- South of Arenas Road	21,370	75.5	157	493	1,557
Belardo Road					
- North of Amado Road	3,160	59.8	R/W	R/W	48
- South of Amado Road	4,100	61.0	R/W	R/W	63
- North of Museum Way	5,550	62.3	R/W	R/W	85
- South of Museum Way	4,960	61.8	R/W	R/W	75
- North of Tahquitz Cyn Way	5,080	61.9	R/W	R/W	77
- South of Tahquitz Cyn Way	4,350	61.2	R/W	R/W	66
- North of Arenas Road	3,800	60.6	R/W	R/W	57
- South of Arenas Road	3,570	60.4	R/W	R/W	55
Museum Drive					
- North of Museum Way	2,320	58.5	R/W	R/W	36
- South of Museum Way	1,830	57.5	R/W	R/W	R/W
- North of Tahquitz Cyn Way	1,890	57.6	R/W	R/W	R/W
Cahuilla Road					
- South of Tahquitz Cyn Way	1,920	57.7	R/W	R/W	30
- North of Arenas Road	1,160	55.5	R/W	R/W	R/W
- South of Arenas Road	580	52.5	R/W	R/W	R/W
Amado Road					
- East of Belardo Road	6,230	68.7	R/W	117	368
- West of Palm Canyon Drive	6,230	68.7	R/W	117	368
- East of Palm Canyon Drive	7,200	69.3	R/W	134	423
- West of Indian Canyon Drive	5,590	68.2	R/W	104	328
- East of Indian Canyon Drive	5,350	68.0	R/W	99	313

a. A.D.T. refers to the average daily two-way traffic volume on a peak season weekday in the year 2030.
b. CNEL values are given at 50 feet from all roadway centerlines (see Appendix B for assumptions).
c. All distances are measured from the centerline. R/W means the contour falls within the right-of-way.

Table 4-4 (Continued)
Year 2030 Exterior Noise Exposure
With Less-Intense Alternative A

Roadway Segment	A.D.T.[a] (Veh/Day)	CNEL @ 50 Feet[b]	Distance to Contours (Ft.)[c] 70 dBA	65 dBA	60 dBA
Andreas Road					
- West of Palm Canyon Drive	3,450	60.2	R/W	R/W	52
- West of Indian Canyon Drive	2,160	54.9	R/W	R/W	R/W
- East of Indian Canyon Drive	4,140	57.7	R/W	R/W	30
Museum Way					
- West of Belardo Road	2,920	59.5	R/W	R/W	45
Tahquitz Canyon Way					
- West of Museum Drive	950	56.0	R/W	R/W	R/W
- East of Museum Drive	2,570	60.6	R/W	R/W	57
- West of Cahuilla Road	2,600	60.6	R/W	R/W	57
- East of Cahuilla Road	3,610	62.0	R/W	30	76
- West of Belardo Road	3,150	61.5	R/W	R/W	68
- East of Belardo Road	7,980	71.0	61	187	588
- West of Palm Canyon Drive	10,050	72.0	76	234	740
- East of Palm Canyon Drive	13,190	73.2	99	309	975
- West of Indian Canyon Drive	10,050	72.0	76	234	740
- East of Indian Canyon Drive	13,190	73.4	99	304	960
Arenas Road					
- West of Cahuilla Road	1,270	61.8	R/W	R/W	75
- East of Cahuilla Road	1,150	61.4	R/W	R/W	69
- West of Belardo Road	1,250	61.7	R/W	R/W	74
- East of Belardo Road	2,310	64.4	R/W	44	137
- West of Palm Canyon Drive	2,920	65.4	R/W	55	172
- East of Palm Canyon Drive	4,340	67.1	R/W	81	255
- West of Indian Canyon Drive	4,340	67.1	R/W	81	255
- East of Indian Canyon Drive	4,100	64.5	R/W	45	140

a. A.D.T. refers to the average daily two-way traffic volume on a peak season weekday in the year 2030.
b. CNEL values are given at 50 feet from all roadway centerlines (see Appendix B for assumptions).
c. All distances are measured from the centerline. R/W means the contour falls within the right-of-way.

Table 4-7 shows the increase in motor vehicle noise associated with project-related traffic with the Preferred Project and the Preserve Town & Country Center Alternative compared to the No-Project Alternative on each roadway segment in the study area in the year 2030. Noise increases of less than 1.0 dBA are expected to occur in the year 2030 adjacent to 26 of the roadway segments modeled with the Preferred Project and 33 of the roadway segments modeled with the Preserve Town & Country Center Alternative.

Noise increases greater than 1.0 dBA but less than 3.0 dBA are projected to occur along only two roadway segments with the Preferred Project and the Preserve Town & Country Alternative. Neither the Preferred Project nor the Preserve Town & Country Center Alternative would generate an audible noise increase (greater than 3.0 dBA) along any of the roadway segments analyzed.

Table 4-5
Year 2030 Exterior Noise Exposure
With Less-Intense Alternative B

Roadway Segment	A.D.T.[a] (Veh/Day)	CNEL @ 50 Feet[b]	Distance to Contours (Ft.)[c] 70 dBA	65 dBA	60 dBA
Palm Canyon Drive					
- North of Amado Road	21,130	75.2	156	489	1,545
- South of Amado Road	20,960	75.2	156	489	1,545
- North of Museum Way	21,350	75.2	156	489	1,545
- South of Museum Way	21,560	75.3	159	500	1,581
- North of Tahquitz Cyn Way	21,560	75.3	159	500	1,581
- South of Tahquitz Cyn Way	20,040	75.0	149	467	1,475
- North of Arenas Road	17,890	74.5	133	416	1,315
- South of Arenas Road	17,970	74.5	133	416	1,315
Indian Canyon Drive					
- North of Amado Road	19,370	75.1	144	449	1,420
- South of Amado Road	20,150	75.3	151	471	1,486
- North of Andreas Road	19,520	75.1	144	449	1,420
- South of Andreas Road	19,020	75.0	141	439	1,387
- North of Museum Way	19,920	75.2	147	460	1,453
- South of Museum Way	20,630	75.4	154	482	1,521
- North of Tahquitz Cyn Way	20,630	75.4	154	482	1,521
- South of Tahquitz Cyn Way	21,820	75.6	161	504	1,593
- North of Arenas Road	21,570	75.6	161	504	1,593
- South of Arenas Road	21,560	75.6	161	504	1,593
Belardo Road					
- North of Amado Road	3,190	59.9	R/W	R/W	49
- South of Amado Road	4,810	61.7	R/W	R/W	74
- North of Museum Way	5,780	62.5	R/W	R/W	88
- South of Museum Way	4,440	61.3	R/W	R/W	67
- North of Tahquitz Cyn Way	4,450	61.3	R/W	R/W	67
- South of Tahquitz Cyn Way	4,400	61.3	R/W	R/W	67
- North of Arenas Road	3,810	60.7	R/W	R/W	59
- South of Arenas Road	3,610	60.4	R/W	R/W	55
Museum Drive					
- North of Museum Way	2,370	58.6	R/W	R/W	36
- South of Museum Way	1,880	57.6	R/W	R/W	R/W
- North of Tahquitz Cyn Way	1,940	57.7	R/W	R/W	30
Cahuilla Road					
- South of Tahquitz Cyn Way	1,530	56.7	R/W	R/W	R/W
- North of Arenas Road	1,190	55.6	R/W	R/W	R/W
- South of Arenas Road	590	52.5	R/W	R/W	R/W
Amado Road					
- East of Belardo Road	6,870	69.1	R/W	128	404
- West of Palm Canyon Drive	6,870	69.1	R/W	128	404
- East of Palm Canyon Drive	7,400	69.5	R/W	140	442
- West of Indian Canyon Drive	5,790	68.4	R/W	109	343
- East of Indian Canyon Drive	5,430	68.1	R/W	102	321

a. A.D.T. refers to the average daily two-way traffic volume on a peak season weekday in the year 2030.
b. CNEL values are given at 50 feet from all roadway centerlines (see Appendix B for assumptions).
c. All distances are measured from the centerline. R/W means the contour falls within the right-of-way.

Table 4-5 (Continued)
Year 2030 Exterior Noise Exposure
With Less-Intense Alternative B

Roadway Segment	A.D.T.[a] (Veh/Day)	CNEL @ 50 Feet[b]	Distance to Contours (Ft.)[c] 70 dBA	65 dBA	60 dBA
Andreas Road					
- West of Indian Canyon Drive	220	45.0	R/W	R/W	R/W
- East of Indian Canyon Drive	4,010	57.6	R/W	R/W	R/W
Museum Way					
- West of Belardo Road	3,420	60.2	R/W	R/W	52
- East of Belardo Road	3,460	60.2	R/W	R/W	52
- West of Palm Canyon Drive	3,910	60.8	R/W	R/W	60
- East of Palm Canyon Drive	3,380	60.1	R/W	R/W	51
- West of Indian Canyon Drive	3,240	59.9	R/W	R/W	49
Tahquitz Canyon Way					
- West of Museum Drive	950	56.0	R/W	R/W	R/W
- East of Museum Drive	2,620	60.7	R/W	R/W	58
- West of Cahuilla Road	2,650	60.7	R/W	R/W	58
- East of Cahuilla Road	3,770	62.2	R/W	30	79
- West of Belardo Road	3,310	61.7	R/W	R/W	71
- East of Belardo Road	7,720	70.8	59	178	561
- West of Palm Canyon Drive	9,480	71.7	71	219	690
- East of Palm Canyon Drive	12,610	73.0	95	295	931
- West of Indian Canyon Drive	12,440	72.9	93	288	910
- East of Indian Canyon Drive	14,820	73.9	110	341	1,077
Arenas Road					
- West of Cahuilla Road	1,280	61.8	R/W	R/W	75
- East of Cahuilla Road	1,180	61.5	R/W	R/W	70
- West of Belardo Road	1,280	61.8	R/W	R/W	75
- East of Belardo Road	2,260	64.3	R/W	43	134
- West of Palm Canyon Drive	2,920	65.4	R/W	55	172
- East of Palm Canyon Drive	4,310	67.1	R/W	81	255
- West of Indian Canyon Drive	4,310	67.1	R/W	81	255
- East of Indian Canyon Drive	4,120	64.6	R/W	46	143

a. A.D.T. refers to the average daily two-way traffic volume on a peak season weekday in the year 2030.
b. CNEL values are given at 50 feet from all roadway centerlines (see Appendix B for assumptions).
c. All distances are measured from the centerline. R/W means the contour falls within the right-of-way.

Table 4-8 shows the increase in motor vehicle noise associated with Less-Intense Alternative A and Less-Intense Alternative B compared to the No-Project Alternative on each roadway segment evaluated with year 2030 traffic volumes. Noise increases of less than 1.0 dBA are expected to occur in the year 2030 adjacent to eleven of the roadway segments modeled with Less-Intense Alternative A and thirteen of the roadway segments modeled with Less-Intense Alternative B. Noise increases greater than 1.0 dBA but less than 3.0 dBA are not projected to occur along any of the roadway segments modeled with Less-Intense Alternative A or Less-Intense Alternative B.

Table 4-6
Number of Roadway Segments
With Future Noise Levels Within Various Ranges[a]

Noise Level at 50 Feet	Preferred Project	No-Project Alternative	Preserve T&C Alt.	Less-Intense Alternative A	Less-Intense Alternative B
< 60 CNEL	9 (15%)	7 (14.5%)	11 (19%)	11 (19%)	11 (18%)
60-65 CNEL	22 (35%)	11 (23%)	18 (31%)	17 (30%)	20 (32%)
65-70 CNEL	8 (13%)	11 (23%)	7 (12%)	8 (14%)	8 (13%)
70-75 CNEL	7 (11%)	7 (14.5%)	9 (16%)	10 (18%)	9 (14%)
> 75 CNEL	16 (26%)	12 (25%)	13 (22%)	11 (19%)	14 (23%)

a. The format is Number of Roadway Links (Percentage of All Roadway Links Evaluated). The noise level projection at 50 feet from each roadway centerline was used to develop this information.

Neither Less-Intense Alternative A nor Less-Intense Alternative B would generate an audible noise increase (greater than 3.0 dBA) along any of the roadway segments analyzed, except one. Less-Intense Alternative A is projected to generate a noise increase of 9.9 dBA on Andreas Road (west of Indian Canyon Drive) because the traffic volumes projected with the No-Project Alternative are very low (220 trips per day). After project build out, the projected noise level on Andreas Road (west of Indian Canyon Drive) will remain below 55 CNEL with Less-Intense Alternative A.

Table 4-9 provides a generalized overview of the change in General Plan build out noise levels associated with each site development alternative, when compared to the No-Project Alternative. Since a change of 1.0 dBA is inaudible, roadway links with future noise levels that vary by 1.0 dBA or less should be considered to generate essentially the same ambient noise environment. A change of 3.0 dBA is clearly audible. Therefore, roadway links with future noise levels that vary by 3.0 dBA or more should be considered to generate different noise environments.

Changes in future noise levels that range between 1.0 and 3.0 dBA are potentially audible. Therefore, alternatives shown in Table 4-9 with more roadway links in this category have a greater potential for noise impact, compared to the No-Project Alternative. Similarly, if one alternative either increases or decreases future noise levels by more than 3 dBA, the noise impact will be audible and could be significant if the resulting noise environment would exceed City noise standards for adjacent noise sensitive land uses.

On-Site Vehicular Noise Impacts

The City has adopted an interior noise standard of 45 CNEL for hotels. A 50 CNEL interior standard applies to offices and a 55 CNEL interior standard applies to restaurants and retail commercial uses in Palm Springs. Since some of the areas on-site may be somewhat less noise sensitive than others, the developer should coordinate with the City of Palm Springs to determine the applicable interior noise standard for various on-site activity areas, as more detailed plans are developed.

Table 4-7
Change in Year 2030 Motor Vehicle Noise Levels With The
Preferred Project And The Preserve Town & Country Center Alternative

Roadway Segment	No-Project Alternative CNEL	Preferred Project CNEL	Change[a] In CNEL	Preserve T&C Alt. CNEL	Change[a] In CNEL
Palm Canyon Drive					
- North of Amado Road	75.2	75.3	0.1	75.3	0.1
- South of Amado Road	75.2	75.3	0.1	75.3	0.1
- North of Tahquitz Canyon Way	75.2	75.4	0.2	75.5	0.3
- South of Tahquitz Canyon Way	75.4	75.5	0.1	75.5	0.1
- North of Arenas Road	74.5	74.6	0.1	74.6	0.1
- South of Arenas Road	74.5	74.6	0.1	74.7	0.2
Indian Canyon Drive					
- North of Amado Road	75.1	75.2	0.1	75.2	0.1
- South of Amado Road	75.3	75.4	0.1	75.3	0.0
- North of Andreas Road	75.2	75.2	0.0	75.1	-0.1
- South of Andreas Road	75.1	75.1	0.0	75.0	-0.1
- North of Tahquitz Canyon Way	75.3	75.5	0.2	75.2	-0.1
- South of Tahquitz Canyon Way	75.6	75.7	0.1	75.7	0.1
- North of Arenas Road	75.5	75.7	0.2	75.7	0.2
- South of Arenas Road	75.5	75.7	0.2	75.7	0.2
Belardo Road					
- North of Amado Road	59.9	60.0	0.1	60.0	0.1
- South of Amado Road	62.1	62.1	0.0	62.8	0.7
- South of Tahquitz Canyon Way	60.8	61.6	0.8	61.6	0.8
- North of Arenas Road	60.4	60.9	0.5	61.0	0.6
Museum Drive					
- North of Tahquitz Canyon Way	63.9	58.1	-5.8	58.2	-5.7
Cahuilla Road					
- South of Tahquitz Canyon Way	57.3	58.3	1.0	58.4	1.1
- North of Arenas Road	55.7	55.9	0.2	56.0	0.3
- South of Arenas Road	52.5	52.8	0.3	52.8	0.3
Amado Road					
- East of Belardo Road	69.5	69.4	-0.1	70.0	0.5
- West of Palm Canyon Drive	69.5	69.4	-0.1	70.0	0.5
- East of Palm Canyon Drive	69.9	69.7	-0.2	70.3	0.4
- West of Indian Canyon Drive	68.9	68.7	-0.2	69.4	0.5
- East of Indian Canyon Drive	68.1	68.3	0.2	68.3	0.2
Andreas Road					
- West of Indian Canyon Drive	45.0	45.0	0.0	45.0	0.0
- East of Indian Canyon Drive	57.8	57.7	-0.1	57.8	0.0

a. A positive change represents an increase in noise level whereas a negative change represents a decrease.

Table 4-7 (Continued)
Change in Year 2030 Motor Vehicle Noise Levels With The
Preferred Project And The Preserve Town & Country Center Alternative

Roadway	No-Project Alternative CNEL	Preferred Project CNEL	Change[a] In CNEL	Preserve T&C Alt. CNEL	Change[a] In CNEL
Tahquitz Canyon Way					
- West of Museum Drive	56.0	56.0	0.0	56.0	0.0
- East of Museum Drive	65.9	60.9	-5.0	61.0	-4.9
- West of Cahuilla Road	65.9	61.0	-4.9	61.0	-4.9
- East of Cahuilla Road	66.5	62.8	-3.7	62.9	-3.6
- West of Belardo Road	66.3	62.3	-4.0	62.4	-3.9
- East of Belardo Road	71.8	71.3	-0.5	72.2	0.4
- West of Palm Canyon Drive	72.8	72.2	-0.6	73.0	0.2
- East of Palm Canyon Drive	73.7	73.2	-0.5	74.0	0.3
- West of Indian Canyon Drive	73.6	73.2	-0.4	73.9	0.3
- East of Indian Canyon Drive	73.9	74.1	0.2	74.1	0.2
Arenas Road					
- West of Cahuilla Road	61.8	62.0	0.2	62.0	0.2
- East of Cahuilla Road	61.2	61.7	0.5	61.7	0.5
- West of Belardo Road	61.6	62.0	0.4	62.1	0.5
- East of Belardo Road	64.1	64.6	0.5	64.8	0.7
- West of Palm Canyon Drive	64.6	65.8	1.2	65.9	1.3
- East of Palm Canyon Drive	66.9	67.2	0.3	67.3	0.4
- West of Indian Canyon Drive	66.9	67.2	0.3	67.3	0.4
- East of Indian Canyon Drive	64.5	64.6	0.1	64.6	0.1

a. A positive change represents an increase in noise level whereas a negative change represents a decrease.

The project is a mixed-use lifestyle center with various complementary uses. Based on the most restrictive noise performance standard in the Noise Element of the *Palm Springs 2007 General Plan*, the residential and hotel uses on-site would be the most noise-sensitive uses on-site and therefore the most likely to require noise mitigation to achieve the City of Palm Springs interior noise standard of 45 CNEL. An interior noise level of 45 CNEL is also mandated by the State of California Noise Insulation Standards (California Code of Regulations, Title 24, Part 6, Section T25-28) for hotel rooms and multiple-family residential dwelling units.

The Circulation Element of the *Palm Springs 2007 General Plan* includes two master planned major thoroughfares adjacent to the project site (Palm Canyon Drive and Indian Canyon Drive). Although these roadways will serve moderate traffic volumes at relatively low speeds, motor vehicle noise generated along these roadways will largely determine the future ambient sound levels on-site.

The project design orients the noise-sensitive activity areas on-site toward the center of the development. This permits the buildings on-site surrounding outdoor activity areas to shield them from intrusive noise levels. It also contains any noise that would be generated in the common areas and public spaces within the limits of the site.

Table 4-8
Change in Year 2030 Motor Vehicle Noise Levels
With Less-Intense Alternative A And Less-Intense Alternative B

Roadway	No-Project Alternative CNEL	Less-Intense Alternative A CNEL	Change[a] In CNEL	Preserve Alternative B CNEL	Change[a] In CNEL
Palm Canyon Drive					
- North of Amado Road	75.2	75.2	0.0	75.2	0.0
- South of Amado Road	75.2	75.2	0.0	75.2	0.0
- North of Tahquitz Canyon Way	75.2	75.3	0.1	75.3	0.1
- South of Tahquitz Canyon Way	75.4	75.3	-0.1	75.0	-0.4
- North of Arenas Road	74.5	74.4	-0.1	74.5	0.0
- South of Arenas Road	74.5	74.4	-0.1	74.5	0.0
Indian Canyon Drive					
- North of Amado Road	75.1	75.0	-0.1	75.1	0.0
- South of Amado Road	75.3	75.4	0.1	75.3	0.0
- North of Andreas Road	75.2	75.2	0.0	75.1	-0.1
- South of Andreas Road	75.1	75.1	0.0	75.0	-0.1
- North of Tahquitz Canyon Way	75.3	75.3	0.0	75.4	0.1
- South of Tahquitz Canyon Way	75.6	75.5	-0.1	75.6	0.0
- North of Arenas Road	75.5	75.5	0.0	75.6	0.1
- South of Arenas Road	75.5	75.5	0.0	75.6	0.1
Belardo Road					
- North of Amado Road	59.9	59.8	-0.1	59.9	0.0
- South of Amado Road	62.1	61.0	-1.1	61.7	-0.4
- South of Tahquitz Canyon Way	60.8	61.2	0.4	61.3	0.5
- North of Arenas Road	60.4	60.6	0.2	60.7	0.3
Museum Drive					
- North of Tahquitz Canyon Way	63.9	57.6	-6.3	57.7	-6.2
Cahuilla Road					
- South of Tahquitz Canyon Way	57.3	57.7	0.4	56.7	-0.6
- North of Arenas Road	55.7	55.5	-0.2	55.6	-0.1
- South of Arenas Road	52.5	52.5	0.0	52.5	0.0
Amado Road					
- East of Belardo Road	69.5	68.7	-0.8	69.1	-0.4
- West of Palm Canyon Drive	69.5	68.7	-0.8	69.1	-0.4
- East of Palm Canyon Drive	69.9	69.3	-0.6	69.5	-0.4
- West of Indian Canyon Drive	68.9	68.2	-0.7	68.4	-0.5
- East of Indian Canyon Drive	68.1	68.0	-0.1	68.1	0.0
Andreas Road					
- West of Indian Canyon Drive	45.0	54.9	9.9	45.0	0.0
- East of Indian Canyon Drive	57.8	57.7	-0.1	57.6	-0.2

a. A positive change represents an increase in noise level whereas a negative change represents a decrease.

Table 4-8 (Continued)
Change in Year 2030 Motor Vehicle Noise Levels
With Less-Intense Alternative A And Less-Intense Alternative B

Roadway	No-Project Alternative CNEL	Less-Intense Alt. A CNEL	Change[a] In CNEL	Preserve Alt. B CNEL	Change[a] In CNEL
Tahquitz Canyon Way					
- West of Museum Drive	56.0	56.0	0.0	56.0	0.0
- East of Museum Drive	65.9	60.6	-5.3	60.7	-5.2
- West of Cahuilla Road	65.9	60.6	-5.3	60.7	-5.2
- East of Cahuilla Road	66.5	62.0	-4.5	62.2	-4.3
- West of Belardo Road	66.3	61.5	-4.8	61.7	-4.6
- East of Belardo Road	71.8	71.0	-0.8	70.8	-1.0
- West of Palm Canyon Drive	72.8	72.0	-0.8	71.7	-1.1
- East of Palm Canyon Drive	73.7	73.2	-0.5	73.0	-0.7
- West of Indian Canyon Drive	73.6	72.0	-1.6	72.9	-0.7
- East of Indian Canyon Drive	73.9	73.4	-0.5	73.9	0.0
Arenas Road					
- West of Cahuilla Road	61.8	61.8	0.0	61.8	0.0
- East of Cahuilla Road	61.2	61.4	0.2	61.5	0.3
- West of Belardo Road	61.6	61.7	0.1	61.8	0.2
- East of Belardo Road	64.1	64.4	0.3	64.3	0.2
- West of Palm Canyon Drive	64.6	65.4	0.8	65.4	0.8
- East of Palm Canyon Drive	66.9	67.1	0.2	67.1	0.2
- West of Indian Canyon Drive	66.9	67.1	0.2	67.1	0.2
- East of Indian Canyon Drive	64.5	64.5	0.0	64.6	0.1

a. A positive change represents an increase in noise level whereas a negative change represents a decrease.

Standard construction techniques should be sufficient to reduce interior noise levels at the retail commercial uses proposed on-site to levels specified in the City of Palm Springs noise standards. The FHWA suggests, in the absence of measured or calculated building outdoor-to-indoor noise reduction factors, that masonry building noise reduction factors of 25 dB with single-glazed windows and 35 dB with double-glazed windows be assumed.[1] Therefore, noise insulation features such as closed windows with fresh air supply systems should be adequate to provide sufficient noise attenuation to achieve 55 CNEL inside the retail commercial buildings and 50 CNEL inside the professional office buildings proposed at the Museum Market Plaza site.

The multiple-family residential land uses proposed on-site would not be located adjacent to Indian Canyon Drive or Palm Canyon Drive. These dwelling units would be able to achieve the interior noise levels mandated by the California Noise Insulation Standards and identified by the City of Palm Springs in the General Plan. Exterior noise levels at the residential development proposed on-site would be attenuated by the distance to Palm Canyon Drive and Indian Canyon Drive as well as the shielding provided by intervening structures.

1. Federal Highway Administration, *Highway Traffic Noise Analysis and Abatement Policy and Guidance*, June 1995, pg. 10.

Table 4-9
Project-Related Change in General Plan Build Out
Noise Levels Compared to the No-Project Alternative

Change in Year 2030 CNEL Compared to No-Project Alt.	Preferred Project	Preserve T&C Alt.	Less-Intense Alternative A	Less-Intense Alternative A
Reduce CNEL				
- Less Than 1.0 dBA	9 Links	3 Links	17 Links	13 Links
- Between 1.0 and 3.0 dBA	None	None	2 Links	2 Links
- More Than 3.0 dBA	5 Links	5 Links	5 Links	5 Links
No Change in CNEL	5 Links	4 Links	11 Links	14 Links
Increase CNEL				
- Less Than 1.0 dBA	26 Links	33 Links	11 Links	13 Links
- Between 1.0 and 3.0 dBA	2 Links	2 Links	None	None
- More Than 3.0 dBA	None	None	1 Link	None
Total	47 Links	47 Links	47 Links	47 Links

Operational Noise Impacts

On-site activities associated with the long-term use of the future facilities on-site will generate intermittent operational noise. Individual noise sources that may contribute to noise levels on-site and in the vicinity at any given time include: landscaping equipment, building maintenance equipment, refuse pick-up vehicles, heating/ventilation/air conditioning (HVAC) units, swimming pool pumps, exercise equipment, delivery vehicles, parking garage activities (engine noise, car door slamming, tire squealing), and restaurant patrons in waiting areas.

Noise sources not related to transportation corridors are regulated by the Palm Springs Noise Ordinance. Building design and orientation will be utilized to interrupt the noise transmission paths between the noise sources on-site and sensitive receptors in the surrounding community. Most ancillary facilities with the potential to generate significant noise levels (e.g. the cinema) would be fully enclosed within the building structures and should not generate significant noise levels beyond the site boundary.

The *City of Palm Springs Noise Ordinance* permits an 18 dBA increase to the exterior noise standard if the duration of the event is less than one minute in any hour. Noise levels associated with parking activities in the garage are expected to range between 55 dBA and 70 dBA at a distance of 50 feet from the noise source. At 100 feet, the worst case intermittent noise level could range from 49 dBA to 64 dBA Leq.[2] Therefore, although annoyance from nuisance sounds may occur, parking structure noise is expected to be well below the limits identified in the *City of Palm Springs Noise Ordinance* for short-duration noise.

2. LSA Associates, Inc.; *Agua Caliente Gaming District Noise Study;* 1996.

Entrance and exit locations will be located where adjacent land uses are set back and/or have been planned for noise compatibility. The use of multiple access points will reduce the noise levels generated at each, rather than concentrating the noise at one location. The multi-level parking garage(s) will provide a grade separation between some of the vehicles generating noise and the at-grade noise-sensitive receptors in the community. This will increase the sound transmission path and reduce noise levels. Tire squealing that is commonly associated with parking structures, can be controlled through the use of a rough surface finish on the cement.

Activities at the loading docks could become operational noise sources associated with future hotels on-site. Loading docks are not typically a significant noise generator, but may be the source of periodic nuisance noise. The loading docks for the hotels should be carefully located to direct noise away from noise-sensitive land uses in the community as well as on-site noise-sensitive receptors.

Diesel-fueled engines are likely to be used to transport deliveries to the site. Truck idling and movement on-site will increase noise levels as will the operation of transport refrigeration units (TRUs) on-site by carriers using diesel-powered refrigeration systems on trucks and/or trailers to transport perishable goods. While perishable food is being transferred from delivery vehicles to hotels, diesel-fueled transport refrigeration units may be operated to run cooling fans for the perishables. Electrical standby is not commonly provided, because most TRUs are not equipped to operate on electrical standby and installation is costly. Drivers of diesel-fueled commercial vehicles (with gross vehicular weight ratings greater than 10,000 pounds) are prohibited from idling the vehicle's primary engine for more than five minutes at any location per Section 2485 of Chapter 10, Article 1, Division 3 of Title 13, *California Code of Regulations*. This will minimize the potential for delivery truck idling noise to impact the surrounding community.

5.0 NOISE MITIGATION MEASURES

Noise standards are implemented at various points in the planning and design of a development. At the preliminary planning levels, the land use type and density near noisy transportation facilities can be controlled. Later, at more detailed planning levels, proper structure arrangement and orientation can be evaluated, with approval conditioned upon setbacks, landscaped buffers, etc., that can resolve potential noise difficulties. Detailed noise abatement requirements such as architectural design, acoustic construction techniques and the erection of noise barriers are established at the final stages of the planning process, when deemed necessary. Long-term acoustic impacts can be mitigated more effectively through proper site design than through the use of noise reducing construction techniques.

5.1 GENERAL METHODS TO REDUCE NOISE IMPACTS

There are several basic techniques available to minimize the adverse effects of noise on noise sensitive receivers. Classical engineering principles suggest controlling the noise source, whenever feasible, and protecting the noise receptors when noise source control measures are inadequate. Many of the noise source control mechanisms are applied by state and Federal governments. Acoustic site planning, architectural design, acoustic construction techniques and the erection of noise barriers are all effective methods for reducing noise impacts when source control mechanisms are insufficient to achieve desired results.

Acoustic site planning involves the careful arrangement of land uses, lots and buildings to minimize intrusive noise levels. The placement of noise compatible land uses between the roadway and more sensitive uses is an effective planning technique. The use of buildings as noise barriers and their orientation away from the source of noise, can shield sensitive activities, entrances and common open space areas. Clustered and planned unit developments can maximize the amount of open space available for landscaped buffers in place of continuous noise barriers next to heavily traveled roadways.

Acoustic architectural design involves the incorporation of noise reducing strategies in the design and lay-out of individual structures. Building heights, room arrangements, window size and placement, balcony and courtyard design, and the provision of air conditioning all play an important role in shielding noise sensitive activities from intrusive noise levels. Roof designs which reflect the noise back towards the roadway also reduce noise intrusion into adjacent developments.

Acoustic construction is the treatment of various parts of a building to reduce interior noise levels. Acoustic wall design, doors, ceilings and floors, as well as dense building materials, the use of acoustic windows (double-glazed, double-paned, thick, non-openable, or small with air-tight seals) and the inclusion of maximum air spaces in attics and walls are all available options.

Normal residential construction techniques generally provide a 20 dBA reduction from outside to inside noise levels with windows closed. New energy insulation requirements for buildings can produce up to 25 dBA exterior to interior noise reductions with windows closed and 10 dBA reductions with open windows. Commercial construction with fixed windows can provide a 30 dBA reduction from outside to inside noise levels. Consequently, residential buildings with exterior noise exposures up to 70 dBA and

commercial buildings with exterior noise exposures up to 75 dBA can achieve 45 dBA interior noise levels with standard construction techniques.

Any solid barrier that breaks the line of sight between the noise-sensitive receiver and the passing vehicles will reduce traffic noise. To be an adequate noise shield, the mass and stiffness of the barrier must be sufficient to prevent bending or buckling and it must not vibrate easily or leak air. Up to 15 dBA reductions can be achieved using noise barriers.

Construction noise control strategies can be divided into five categories: (1) design considerations, (2) source control; (3) site control, (4) time and activity constraints, and (5) community awareness. Design consideration strategies include: project design and layout, the sequence of operations, and the use of alternate methods. Source control strategies include: muffler requirements, maintenance and operation strategies, and emission level requirements. Site control strategies involve control of the overall noise level by grouping equipment strategically, or spacing them, or locating them properly with respect to the surrounding noise receivers. Time and activity constraints involve limitations on the days and/or the hours of the construction activities that generate the offensive noise levels. Community awareness strategies involve public relations efforts to convey information related to the activities to be undertaken as well as the control strategies implemented to minimize the potential for adverse noise impacts.

5.2 Specific Mitigation

The project design effectively incorporates acoustic site planning techniques such as the provision of landscaped setbacks between the adjacent roadways and noise-sensitive areas on-site and the careful arrangement of buildings on-site to orient the noise-sensitive activity areas toward the center of the development. This design permits the buildings on-site to function as noise barriers shielding the outdoor common activity areas from intrusive motor vehicle noise levels. It also contains any noise generated around the pools to the area within the project site.

Commercial construction with fixed windows can provide a 30 dBA reduction from outside to inside noise levels. Standard hotel construction with noise insulation features such as closed windows with fresh air supply systems will most likely be adequate to provide sufficient noise attenuation to achieve a 45 CNEL interior standard in all habitable rooms.

As more detailed plans are developed, the acoustic architectural design including the incorporation of noise reducing strategies in the design and lay-out of individual structures will need to be reviewed Building heights, room arrangements, window size and placement, balcony and courtyard design, and the provision of air conditioning will all play an important role in shielding noise sensitive activities from intrusive noise levels.

All acoustic construction features (the treatment of various parts of a building to reduce interior noise levels) incorporated in the design to assure that adequate interior noise levels are attained as required by the California Building Standards Code (Title 24) the California Noise Insulation Standards (Title 25) and pertinent sections of the City's Municipal Code shall be submitted to the City of Palm Springs for review and approval when more construction details become available. Acoustic wall design, doors, ceilings and floors, as well as dense building materials, the use of acoustic windows (double-glazed, double-paned, thick, non-openable, or small with air-tight seals) and the inclusion of maximum air spaces in walls are all available options.

Measures Required to Comply With City Noise Policies

The following measures reflect rules, policies, or regulations that apply to all development in the City of Palm Springs.

1. Construction activities that impact adjacent residential units shall comply with the hours of operation and noise levels identified in the City Noise Ordinance. Grading and construction activities on-site shall be restricted to the hours between 7 a.m. and 7 p.m. on weekdays and the hours of 8 a.m. and 5 p.m. on Saturdays and not allowed on Sundays or federal holidays to minimize the potential for noise impacts during more sensitive time periods, as specified by *Palm Springs Municipal Code* Section 8.04.220. No construction will be permitted on the following holidays: Thanksgiving Day, Christmas Day, New Years Day, July 4th, Labor Day or Memorial Day.

2. Future on-site development shall comply with all relevant development standards and *Palm Springs Municipal Code* requirements to ensure that grading and construction activities and site operations do not create adverse noise impacts beyond the site boundaries as specified in the Noise Ordinance (*Palm Springs Municipal Code* Chapter 11.74). Construction activities shall incorporate feasible and practical techniques which minimize the noise impacts on adjacent uses, such as the use of mufflers and intake silencers no less effective than originally equipped per City Policy NS3.11.

3. The final layout and building design shall be evaluated by a qualified noise consultant to ensure that adequate noise attenuation features are incorporated in the project design to meet applicable City of Palm Springs noise standards as well as the California noise insulation standards. The applicant shall demonstrate to the City's satisfaction that all acoustic construction features required to produce acceptable interior noise levels (of 45 dBA CNEL or lower per City Policy NS1.6 and NS1.8) shall be incorporated in the project design, prior to the issuance of building permits.

4. Any parking structures shall be designed to minimize noise impacts on-site and on adjacent uses, including the use of materials that mitigate sound transmission and configuration of interior spaces to minimize sound amplification and transmission per City Policy NS3.3.

5. Future on-site development shall comply with all relevant noise policies set forth in the Noise Element of the *Palm Springs 2007 General Plan* to minimize operational noise impacts including but not limited to the following:

   - Access to loading and trash areas shall be located at the maximum practical distance from residential parcels per City Policy NS3.1.

   - Parking adjacent to residential areas shall be enclosed within a structure per City Policy NS3.2.

   - Noise impacts on adjacent residential areas from live entertainment, amplified music, or other noise associated with the night club and restaurants or their patrons on-site shall be minimized to the greatest extent possible per City Policy NS 3.4 and NS 3.5.

- Techniques shall be employed to mitigate noise impacts on residential properties from truck deliveries such as the use of a sound wall or enclosure of the delivery area per City Policy NS3.9.

- Require that construction activities that impact adjacent residential units comply with the hours of operation and noise levels identified in the City Noise Ordinances per City Policy NS3.10.

- Require that construction activities incorporate feasible and practical techniques which minimize the noise impacts on adjacent uses, such as the use of mufflers and intake silencers no less effective than originally equipped per City Policy NS3.11.

- Encourage the use of portable noise barriers for heavy equipment operations performed within 100 feet of existing residences, or make applicants provide evidence as to why the use of such barriers is not feasible per City Policy NS3.12.

- Truck access routes and hours shall be reviewed and limited to minimize the potential for adverse impacts on the adjacent community related to trucks entering and leaving the site to make deliveries per City Policy NS2.16.

6. Drivers of diesel-fueled commercial vehicles (with gross vehicular weight ratings greater than 10,000 pounds) shall be prohibited from idling the vehicle's primary engine for more than five minutes at any location on-site per Section 2485 of Chapter 10, Article 1, Division 3 of Title 13, *California Code of Regulations*.

Measures Required to Mitigate Potentially Significant Impacts

The following measures are recommended for incorporation in the project to minimize the potential for significant short-term noise impacts. The City of Palm Springs should consider these measures in developing conditions of approval to ensure that the construction-related noise exposure of adjacent noise sensitive receptors will be reduced to the maximum extent feasible.

7. Prior to issuance of any grading or building permits, specifications shall be prepared that identify contract requirements regarding the attenuation of noise from construction vehicles and activities. The specifications shall include but not be limited to the following:

    - A construction traffic routing plan shall be developed and submitted for approval that demonstrates, to the extent feasible, avoidance of congested routes and routes with adjacent noise sensitive receptors (particularly residential development).

    - The contractor shall comply with all local sound control and noise level rules, regulations and ordinances which apply to any and all work performed pursuant to the contract.

    - Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without said muffler.

    - Construction activities shall incorporate feasible and practical techniques which minimize the noise impacts on adjacent uses.

    - Construction activities shall take place only between 7:00 a.m. and 8:00 p.m. to minimize the potential for noise impacts during more sensitive time periods, as specified in the Palm Springs Noise Ordinance (*Municipal Code* Section 11.74.041). Construction activities shall not be permitted between the hours of 5:00 p.m. and 8:00 a.m. if the noise produced by such work is of such intensity or quality that it disturbs the peace and quiet of any other person of normal sensitivity, per the Palm Springs Construction Site Regulations (*Municipal Code* Section 8.04.220).

    - All construction equipment, fixed or mobile, should be equipped with properly operating and maintained mufflers.

    - Stationary equipment should be placed such that emitted noise is directed away from noise sensitive receptors.

    - Stockpiling and vehicle staging areas should be located as far as practical from noise sensitive receptors.

    - Every effort should be made to create the greatest distance between noise sources and sensitive receptors during construction activities.

    - Project phasing shall include initial development adjacent to residential areas which then will shield them from noise generated during subsequent phases.

    - The noisiest construction operations shall be arranged to occur together in the construction program to avoid continuing periods of greater annoyance.

    - All construction equipment shall be in proper working order and maintained in a proper state of tune to reduce backfires.

    - Parking, refueling and servicing operations for all heavy equipment and on-site construction vehicles shall be located as far as practical from existing homes and other sensitive receptors.

8. Any extension of construction hours shall require a permit to be issued by the City of Palm Springs as specified in the Palm Springs Noise Ordinance (*Municipal Code* Section 11.74.041).

Appendices

Appendix A
Noise Glossary

A-Weighted Sound Level (dBA) -- An A-weighted sound level is the sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and provides good correlation with subjective reactions to noise.

Ambient Noise Level -- The composite noise from all sources near and far is the ambient noise level. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

Barrier -- A natural or man-made object that interrupts the path of sound from the sound from the sound source to the sound receiver.

Community Noise Equivalent Level (CNEL) -- CNEL is the average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five decibels to sound levels occurring during the evening from 7 p.m. to 10 p.m. and addition of ten decibels to sound levels occurring during the night from 10 p.m. to 7 a.m. The 5 and 10 decibel penalties are applied to account for increased noise sensitivity during the evening and nighttime hours. The CNEL represents the daily energy noise exposure averaged on an annual basis. The State of California uses the dBA CNEL noise index to relate community noise exposure to compatibility criteria.

CNEL -- See Community Noise Equivalent Level.

Day-Night Average Noise Level (Ldn) -- The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of 10 decibels to sound levels occurring during the nighttime from 10 p.m. to 7 a.m. The 10-decibel penalty is applied to account for increased noise sensitivity during the nighttime hours. The Ldn represents the daily energy noise exposure averaged on an annual basis and is typically within 1 dBA of the CNEL value.

dB -- See Decibel.

dBA -- See A-Weighted Sound Level.

Decibel (dB) -- A decibel is a unit of measurement on a logarithmic scale which describes the magnitude of a particular quantity of sound pressure or power with respect to a standard reference value. A decibel is equal to 10 times the logarithm (to the base 10) of the ratio of the measured sound pressure squared to a reference pressure (i.e., 20 micro-pascals) squared.

Design Noise Level -- The noise level selected by the designer after consideration of applicable standards for various land use or activity categories to be used for determining traffic noise impacts and the assessment of the noise abatement treatment for a particular highway section.

EPA -- Environmental Protection Agency.

Equivalent Sound Level (Leq) -- An Leq is the sound level corresponding to a steady state sound level containing the same total energy as a time varying sound level over a given sample period.

FHWA -- Federal Highway Administration.

Frequency (Hz) -- The frequency is the number of times per second that a sound pressure signal oscillates about the prevailing atmosphere. The unit of frequency is the hertz.

Habitable Room -- A habitable room is defined as any room meeting the requirements of the Uniform Building Code or other applicable regulations that is intended to be used for sleeping, living, cooking or dining purposes, excluding such enclosed spaces as closets, pantries, bath or toilet rooms, service rooms, connecting corridors, laundries, unfinished attics, foyers, storage spaces, cellars, utility rooms and similar spaces.

Hz -- A unit of measurement of frequency, numerically equal to cycles per second (See Frequency).

Intrusive Noise -- That noise exceeding the existing ambient noise at a given location is termed an intrusive noise. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, time of occurrence and tonal or informational content, as well as prevailing ambient noise level.

Leq -- See Equivalent Sound Level.

Ldn -- See Day-Night Average Noise Level.

Line Source -- A noise source which generates sound along a line rather than at a single fixed point.

L Percentile -- L percentiles represent the A-weighted sound level exceeded for the identified percent of the sample time. For example, a value of 55 dBA L_{10} would mean that 55 dBA was exceeded 10 percent of the time. Other L percentiles commonly used include L_{50}, L_{90}, L_{99}, etc. The L_{50} corresponds to the average level of noise. The L_{10} corresponds to peaks of noise in the time history of environmental noise.

Noise -- Noise is any unwanted sound, or sound that is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "excessive undesirable sound".

Noise Attenuation -- Noise attenuation is the ability of a material substance, or medium to reduce the noise level from one place to another or between one room and another. Noise attenuation is specified in decibels.

Noise Contours -- The lines drawn around a noise source indicating constant or equal level of noise exposure from that source are termed noise contours. CNEL and Ldn are typical standards used for comparison.

Noise Sensitive Area -- An area of regular and intensive human usage where the usage is impaired or restricted when subjected to excessive levels of noise.

Noise Sensitive Land Use -- Noise-sensitive land uses are land uses associated with indoor and/or outdoor human activities that may be subject to stress and/or significant interference from noise. They include residential (single-family and multi-family dwellings, mobile home parks, dormitories and similar uses); transient lodging (including hotels, motels and similar uses); hospitals, nursing homes, convalescent hospitals and other facilities for long-term medical care; and public or private educational facilities, libraries, churches and places of public assembly.

Outdoor Living Area -- Outdoor living area is a term used to define spaces that are associated with residential land uses and are typically used for passive recreational activities. Such spaces include patio areas, barbecue areas, Jacuzzi areas, etc. Outdoor areas usually not included in this definition are front yard areas, driveways, greenbelts, maintenance areas and storage areas associated with residential land uses.

Point Source -- A stationary device which creates sounds while fixed or motionless.

Shadow Zone -- Area of reduced sound levels adjacent to a natural or man-made barrier.

Appendix B
Noise Model Assumptions

I. Temporal Traffic Distribution Assumed (Percent)

Table B-1
Secondary and Larger Highways

Type of Vehicle	Overall	Day	Evening	Night
Automobile	92	69.30	12.90	9.60
Medium Truck	3	1.44	0.06	1.50
Heavy Truck	5	2.40	0.10	2.50

Riverside County Department of Health acoustical parameters for County highways.

Table B-2
Collector and Smaller Streets

Type of Vehicle	Overall	Day	Evening	Night
Automobile	97.4	73.6	13.6	10.22
Medium Truck	1.84	0.90	0.04	0.90
Heavy Truck	0.74	0.35	0.04	0.35

Riverside County Department of Health acoustical parameters for County highways.

II. Road Grade Assumptions -- level terrain and roadway.

III. Roadway Widths Assumed -- were based upon the *Museum Market Plaza Specific Plan Traffic Impact Study* (Endo Engineering, dated September 2, 2008) and Endo Engineering field observations.

IV. Speeds Assumed -- were as shown on the following table.

V. RD-77-108 Input Parameters -- see the tables on the following pages.

VI. Alpha-- was assumed to be zero (3 decibels per doubling of distance).

Table B-3
Noise Model Assumptions

Roadway Segment	Speed[a] (mph)	Half-Width[b] (feet)	Percent Trucks[c] (% - Medium)	
Palm Canyon Drive				
- North of Amado Road	30	18	8.00	37.50
- South of Amado Road	30	18	8.00	37.50
- North of Andreas Road	30	18	8.00	37.50
- South of Andreas Road	30	18	8.00	37.50
- North of Museum Way	30	18	8.00	37.50
- South of Museum Way	30	18	8.00	37.50
- North of Tahquitz Cyn Way	30	18	8.00	37.50
- South of Tahquitz Cyn Way	30	18	8.00	37.50
- North of Arenas Road	30	18	8.00	37.50
- South of Arenas Road	30	18	8.00	37.50
Indian Canyon Drive				
- North of Amado Road	30	24	8.00	37.50
- South of Amado Road	30	24	8.00	37.50
- North of Andreas Road	30	24	8.00	37.50
- South of Andreas Road	30	24	8.00	37.50
- North of Museum Way	30	24	8.00	37.50
- South of Museum Way	30	24	8.00	37.50
- North of Tahquitz Cyn Way	30	24	8.00	37.50
- South of Tahquitz Cyn Way	30	24	8.00	37.50
- North of Arenas Road	30	24	8.00	37.50
- South of Arenas Road	30	24	8.00	37.50
Belardo Road				
- North of Amado Road	25	6	2.58	71.32
- South of Amado Road	25	6	2.58	71.32
- North of Museum Way	25	6	2.58	71.32
- South of Museum Way	25	6	2.58	71.32
- North of Tahquitz Cyn Way	25	6	2.58	71.32
- South of Tahquitz Cyn Way	25	6	2.58	71.32
- North of Arenas Road	25	6	2.58	71.32
- South of Arenas Road	25	6	2.58	71.32
Museum Drive				
- North of Museum Way	25	6	2.58	71.32
- South of Museum Way	25	6	2.58	71.32
- North of Tahquitz Cyn Way	25	6	2.58	71.32
Cahuilla Road				
- South of Tahquitz Cyn Way	25	6	2.58	71.32
- North of Arenas Road	25	6	2.58	71.32
- South of Arenas Road	25	6	2.58	71.32

a. Speed is based upon posted speed limits or conditions observed during field reconnaissance.
b. The half-width is the distance from the roadway centerline to the center of the outermost travel lane.
c. Truck mix provided by Riverside County Department of Health. The format is truck mix percentage of ADT, followed by the percentage of all trucks that are assumed to be medium-duty (2-axle) trucks.

Table B-3 (Continued)
Noise Model Assumptions

Roadway Segment	Speed[a] (mph)	Half-Width[b] (feet)	Percent Trucks[c] (% - Medium)	
Amado Road				
- East of Belardo Road	25	6	8.00	37.50
- West of Palm Canyon Drive	25	6	8.00	37.50
- East of Palm Canyon Drive	25	6	8.00	37.50
- West of Indian Canyon Drive	25	6	8.00	37.50
- East of Indian Canyon Drive	25	6	8.00	37.50
Andreas Road				
- West of Palm Canyon Drive	25	6	2.58	71.32
- West of Indian Canyon Drive	15	6	2.58	71.32
- East of Indian Canyon Drive	15	6	2.58	71.32
Museum Way				
- West of Belardo Road	25	6	2.58	71.32
- East of Belardo Road	25	6	2.58	71.32
- West of Palm Canyon Drive	25	6	2.58	71.32
- East of Palm Canyon Drive	25	6	2.58	71.32
- West of Indian Canyon Drive	25	6	2.58	71.32
Tahquitz Canyon Way				
- West of Museum Drive	30	6	2.58	71.32
- East of Museum Drive	30	18	2.58	71.32
- West of Cahuilla Road	30	18	2.58	71.32
- East of Cahuilla Road	30	18	2.58	71.32
- West of Belardo Road	30	18	2.58	71.32
- East of Belardo Road	30	18	8.00	37.50
- West of Palm Canyon Drive	30	18	8.00	37.50
- East of Palm Canyon Drive	30	18	8.00	37.50
- West of Indian Canyon Drive	30	18	8.00	37.50
- East of Indian Canyon Drive	30	24	8.00	37.50
Arenas Road				
- West of Cahuilla Road	25	6	8.00	37.50
- East of Cahuilla Road	25	6	8.00	37.50
- West of Belardo Road	25	6	8.00	37.50
- East of Belardo Road	25	6	8.00	37.50
- West of Palm Canyon Drive	25	6	8.00	37.50
- East of Palm Canyon Drive	25	6	8.00	37.50
- West of Indian Canyon Drive	25	6	8.00	37.50
- East of Indian Canyon Drive	15	6	8.00	37.50

a. Speed is based upon posted speed limits or conditions observed during field reconnaissance.
b. The half-width is the distance from the roadway centerline to the center of the outermost travel lane.
c. Truck mix provided by Riverside County Department of Health. The format is truck mix percentage of ADT, followed by the percentage of all trucks that are assumed to be medium-duty (2-axle) trucks.