APPENDIX 6

NOISE IMPACT ANALYSIS

NOISE IMPACT ANALYSIS

EL MONTE TRANSIT VILLAGE

EL MONTE, CALIFORNIA

Prepared for:

Tom Dodson & Associates
Attn: Tom Dodson
2150 N. Arrowhead Avenue
San Bernardino, California 92405

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NOISE SETTING

BACKGROUND

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

The unit of sound pressure expressed as a ratio to the faintest sound detectable to a person with normal hearing is called a decibel (dB). Sound or noise can vary in intensity by over one million times within the range of human hearing. A logarithmic loudness scale similar to the Richter Scale for earthquake magnitude is therefore used to keep sound intensity numbers at a convenient and manageable level. The human ear is not equally sensitive to all sound frequencies within the entire spectrum. Noise levels at maximum human sensitivity from around 500 to 2,000 cycles per second are factored more heavily into sound descriptions in a process called "A-weighting," written as "dBA." Any further reference to decibels in this report should be understood to be A-weighted.

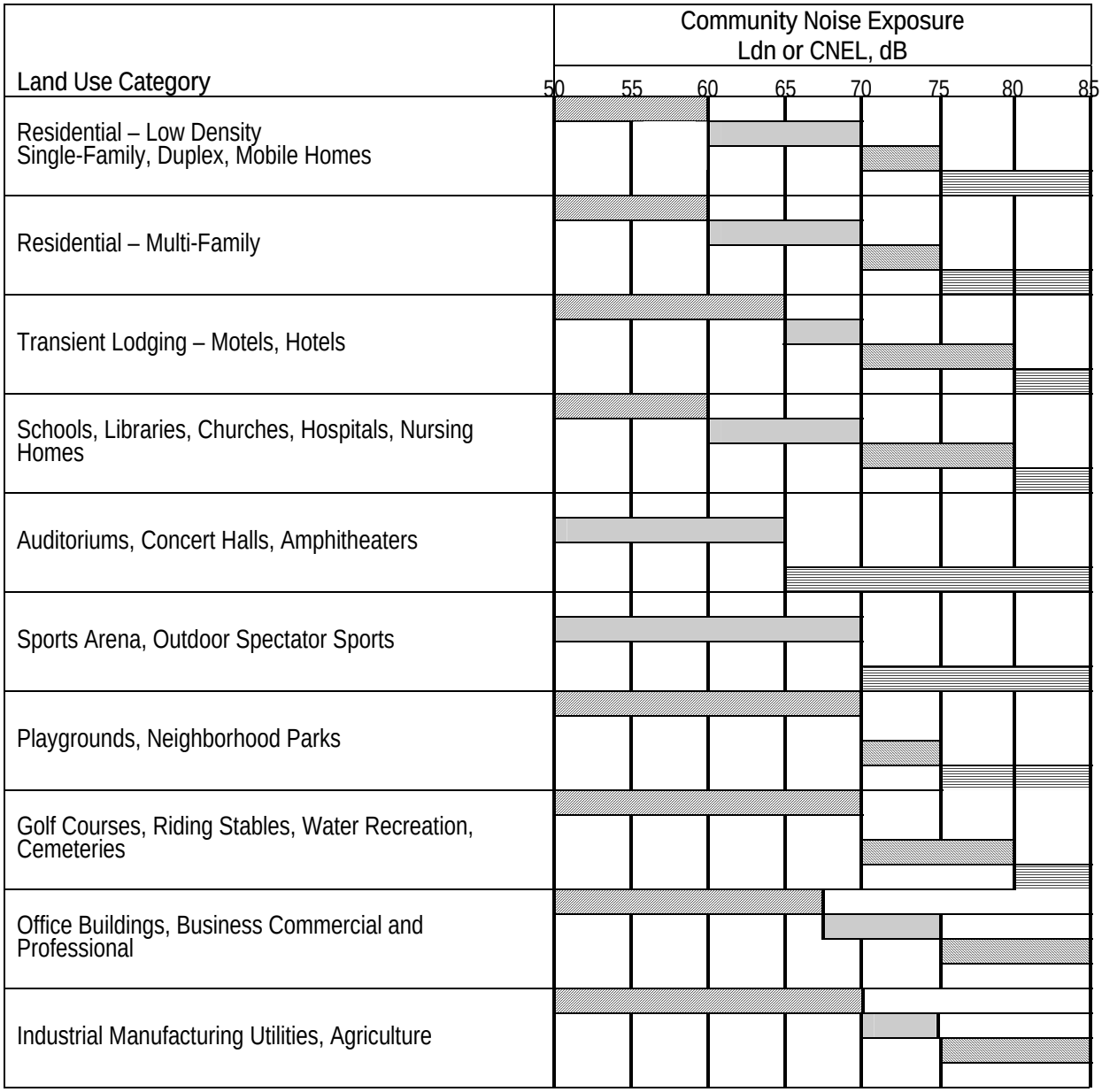
Alternatively, a statistical description of the sound level that is exceeded over some fraction of a given observation period can also be used to describe typical time-varying instantaneous noise. Finally, because community receptors are more sensitive to unwanted noise intrusion during more sensitive evening and nighttime hours, state law requires that an artificial dB increment be added to quiet time noise levels. The 24-hour noise descriptor with a specified evening and nocturnal penalty is called the Community Noise Equivalent Level (CNEL). CNEL is a weighted average calculated by adding +5 dB to evening noise events (7 – 10 p.m.), and +10 dB to all noise levels from 10 p.m. to 7 a.m.

NOISE STANDARDS

The Noise Element of the City of El Monte General Plan establishes noise quality standards for land use categories based on the State of California Office of Noise Control land use compatibility recommendations. Table 1 shows the community noise exposure recommended as normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable for various classes of land use sensitivity. The City of El Monte guidelines recommend an exterior noise exposure of 65 – 70 dB CNEL for residential uses, but notes that this is only a guideline. Because of complex land use patterns interspersed with freeways, trains, transit terminals and the El Monte Airport, noise exposure must generally be evaluated on a case-by-case basis.

Table 1

El Monte Noise/Land Use Compatibility Standards



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 insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

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 and needed noise insulation features included in the design.

Clearly Unacceptable: New construction or development should generally not be undertaken.

Source: State of California Governor's Office of Planning and Research, General Plan Guidelines, 1990., modified in El Monte General Plan

Residential interior noise exposure may not exceed 45 dBA CNEL with windows and doors closed. Requiring that windows and/or doors remain closed to achieve an acceptable interior noise level will necessitate the use of air conditioning and/or mechanical ventilation.

Noise levels up to 75 dB CNEL are considered "conditionally acceptable" for offices and business commercial land uses..

CNEL-based guidelines are generally land use standards that apply to transportation sources because the City is pre-empted from regulating the source itself. For non-preempted sources, the City of El Monte noise ordinance limits the noise level generated on a property that can cross to a neighboring property. The City's noise ordinance limits are in terms of an average sound level, with some allowance for periodic deviations from the average, as shown in Table 2. Ordinance limits generally apply to "stationary" sources such as mechanical equipment, manufacturing activities, or vehicles operating on private property.

BASELINE NOISE LEVELS

Noise measurements were made in order to document existing baseline levels in the area. These help to serve as a basis for projecting future noise exposure, both from projects upon the surrounding community and from ambient noise activity upon the proposed project. A short-term on-site noise measurement was conducted by Giroux & Associates on Wednesday, November 15, 2006, from 3:40 p.m. to 4:40 p.m., at three locations within the project site. The time frame was selected because late afternoon LEQ readings are a good approximation of existing 24-hour CNELs. The results of the measurements are shown below.

Transit Village Short-Term Noise Measurements (dB[A])

Site	Time	LEQ	Lmax	Lmin	L_{01}	L_{08}	L_{25}	L_{50}
M1	15:40-15:55	65	75	58	68	66	64	61
M2	16:00-16:15	63	79	57	63	61	60	59
M3	16:25-16:40	62	83	53	58	56	55	54

M1: Southeast corner of site, near Future Area 8A (Entertainment)

M2: Center of Site, Future Area 4 (Condos)

M3: Pioneer Park Baseball Diamonds, between rest rooms and snack bar

Monitoring experience has shown that 24-hour weighted CNELs are typically 2 dB higher than mid to late afternoon LEQ readings shown above. This would translate into existing on-site CNEL's of 64-67 dB. The City's guideline for usable outdoor space at noise-sensitive uses is 65 to 70 dB CNEL. Each monitoring location meets these guidelines, but only with a small margin of safety. Proposed uses with very direct exposures of freeway or transit activity noise other than the three sites tested may have noise levels in excess of City guidelines that will require an enhanced level of noise protection.

Table 2

City of El Monte Noise Ordinance Standards

Land Use Zone	7 a.m. – 10 p.m.	10 p.m. – 7 a.m.
Single Family Residential	50 dB	45 dB
Multi-Family Residential	55 dB	50 dB
Commercial	65 dB	60 dB
Industrial	70 dB	70 dB

It is unlawful for any person any location within the City to create any noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level to exceed the ambient level by more than 5 dB for more than 15 minutes.

At the boundary between a residential zone and a commercial and/or manufacturing zone, the residential standard shall apply.

If a residential use is located within a commercial or industrial zone, the ambient noise level shall not exceed 50 dB between the hours of 10 p.m. to 7 a.m.

Allowable deviations from the average standards stated above shall be as follows:

From 5 to 15 minutes	-	+ 5 dB
From 1 to 5 minutes	-	+ 10 dB
Less than 1 minute	-	+ 15 dB

Construction activities shall be exempt from the above standards from 6 a.m. to 7 p.m. on workdays, and from 8 a.m. to 7 p.m. on weekends.

Source: El Monte Municipal Code – Chapter 8.36 (Noise Control)

NOISE IMPACTS

IMPACT SIGNIFICANCE CRITERIA

Noise impacts are considered significant if:

1. They create violations of noise standards, or,

2. They substantially worsen an already excessive noise environment, or,

3. They substantially increase an existing quiet environment even if noise standards are not violated by the proposed action.

The term "substantial increase" is not defined by any responsible agency. The limits of perceptibility by ambient grade instrumentation (sound meters) or by humans in a laboratory environment is around 1.5 dB. Under ambient conditions, people generally do not perceive that noise has clearly increased until there is a +3 dB difference. A threshold of 3 dB is commonly used to define "substantial increase." An increase of +3 dB CNEL in traffic noise would normally be consistent a significant impact. However, noise and traffic are logarithmically related. It requires a doubling of traffic volumes to create a +3 dB CNEL noise increase. Because El Monte is substantially built out, few projects would create a doubling of traffic volumes on roadways that already experience substantially elevated levels of noise. Traffic noise impacts, except possibly directly adjacent to a specific project site, are therefore primarily cumulative in nature.

Two characteristic noise sources are typically identified with land use intensification such as that proposed for the development the Transit Village project. First, construction activities, especially heavy equipment, will create short-term noise increases near the project site. Such impacts may be important for nearby noise-sensitive receptors such as any existing residential uses. Secondly, upon completion, project-related traffic will cause an incremental increase in area-wide noise levels throughout the project area. Traffic noise impacts are generally analyzed both to insure that the project does not adversely impact the acoustic environment of the surrounding community, as well as to insure that the project site is not exposed to an unacceptable level of noise resulting from the ambient noise environment acting on the project.

CONSTRUCTION NOISE IMPACTS

Temporary construction noise impacts will vary markedly because the noise strength of construction equipment ranges widely as a function of the equipment used and its activity level. Short-term construction noise impacts tend to occur in discrete phases dominated initially by demolition of existing structures and large earth-moving sources, then by foundation and parking lot construction, and finally for finish construction. The demolition and earth-moving sources are the noisiest with equipment noise typically ranging from 75 to 90 dB at 50 feet from the source.

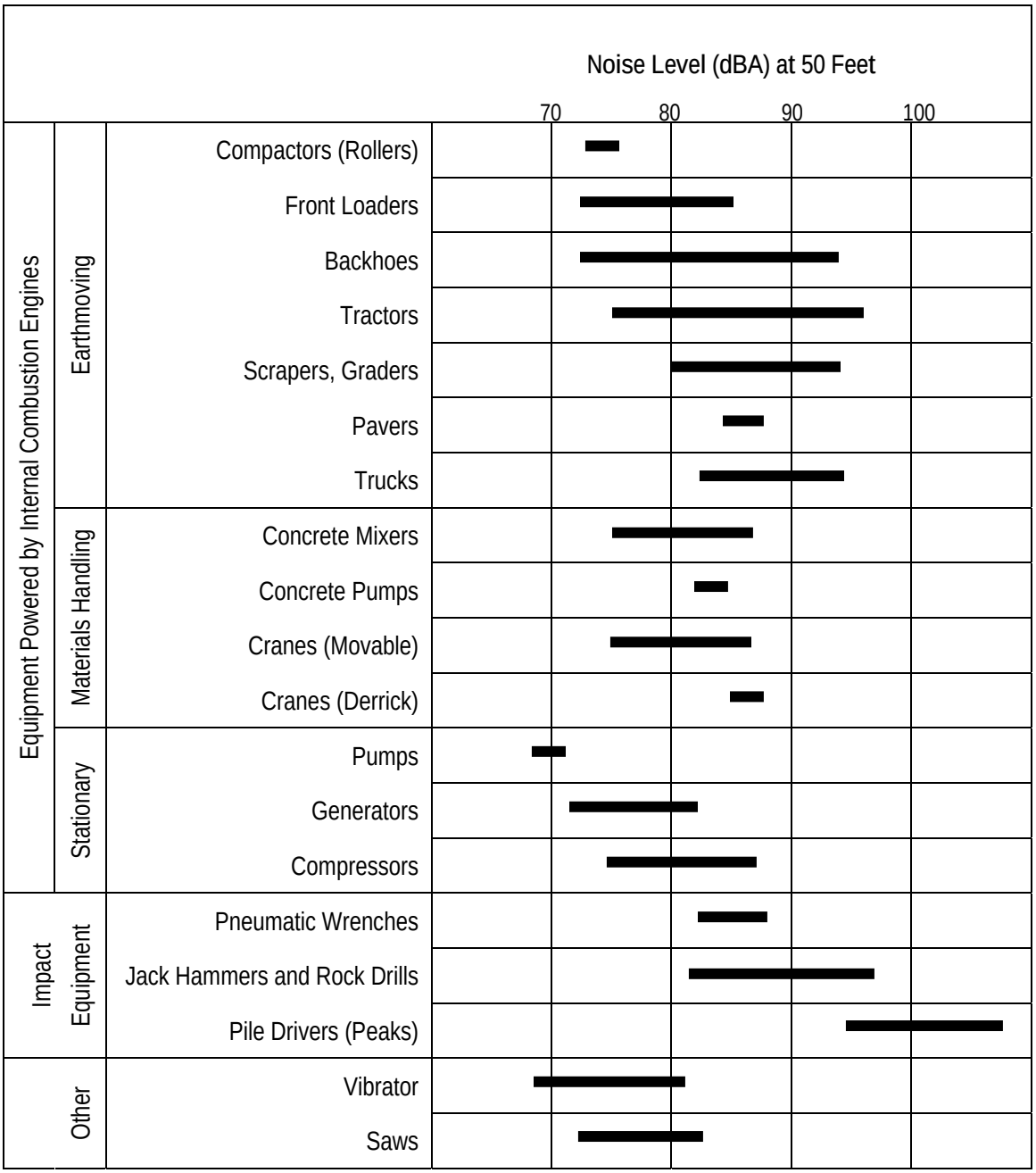
Figure 1 shows the range of noise emissions for various pieces of construction equipment. Point sources of noise emissions are attenuated by a factor of 6 dB per doubling of distance through geometrical (spherical) spreading of sound waves. The quieter noise sources will drop to a 65 dB exterior/45 dB interior noise level by about 200 feet from the source while the loudest may require over 1,000 feet from the source to reduce the 90+ dB source strength to a generally acceptable 65 dB exterior exposure level. This estimate assumes a clear line-of-sight from the source to the receiver. Any change in terrain or completed development will act as a noise barrier that will interrupt equipment noise propagation. Construction noise impacts are, therefore, somewhat less than that predicted under idealized input conditions.

The closest noise-sensitive land uses to the project site include scattered residences along the east side of Santa Anita Avenue south of Ramona Blvd., a mobile home park across the Rio Hondo Channel, and any on-site recreational facilities. If site development were to be phased, any existing tenants of an already completed phase could also be subject to construction noise from subsequent phases. Discretionary scheduling of noisiest activities may be required to minimize such possible construction noise intrusion. Noise can also be mitigated by locating all stationary noise generating construction equipment as far as practical from occupied residences or other noise-sensitive uses. If impulsive noise generation such as pile driving or jack-hammers is necessary close to noise-sensitive uses, activity scheduling to minimize off-site impacts, or erection of temporary barriers, may be necessary. Typically, temporary noise levels of up to 80 dB can be accommodated if they are controlled as to time and place (existing noise peaks are near 80 dB from traffic and other sources). The noise impact "envelope" for noisy equipment thus extends to approximately 160 feet from the activity. If demolition or heavy construction is planned for within 160 feet of on-site or adjacent noise-sensitive land uses, implementation of enhanced noise control (temporary barriers, alternate methods, special scheduling, etc.) will likely be necessary.

Construction activities are exempt from numerical noise regulations if they occur during the hours allowed by the Municipal Code. However, as noted above, heavy equipment noise may be a nuisance even if generated during allowable hours. Compliance with these hours (6 a.m. to 7 p.m. on workdays, 8 a.m. to 7 p.m. on weekends), plus enhanced control measures if heavy equipment or impulsive sources such as pile drivers, jack-hammers or "hoe-rams" operate within 160 feet of occupied residences or in-use on-site recreation areas, will maintain construction activity noise impacts at less-than-significant levels.

Figure 1

Typical Construction Equipment Noise Generation Levels



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

PROJECT-RELATED VEHICULAR NOISE IMPACTS

Long-term noise concerns from the increase of residential uses at the project site center primarily on vehicular operations on project area roadways. These concerns were addressed using the California specific vehicle noise curves (CALVENO) in the federal roadway noise model (the FHWA Highway Traffic Noise Prediction Model, FHWA-RD-77-108). The model calculates the LEQ noise level for a particular reference set of input conditions, and then makes a series of adjustments for site-specific traffic volumes, distances, speeds, or noise barriers.

Table 3 summarizes the 24-hour CNEL level at 50 feet from the roadway centerline along 25 roadway segments. Five traffic scenarios were analyzed; existing conditions, 2010 without and with project, and year 2030 without and with project.

As seen in Table 3, some of the roadway segments already exceed the 70 dB CNEL residential noise guideline at 50 feet from the roadway centerline. The surrounding community around the project site is highly developed and slow-growing. Traffic volume changes from infill development and from limited land use intensification, including the Transit Village project, will only moderately modify traffic volumes. The limited project-related and/or cumulative traffic growth will not create any significant increase in the existing traffic noise environment.

The project itself will not cause any roadway segments to exceed the +3.0 dB CNEL threshold. The largest project related impact is +2.4 dB CNEL on Santa Anita Avenue between the Site Entrance and I-10 in 2030. Twenty-three out of twenty-five of the analyzed segments will experience less than a 1.0 dB change due to the project. With reorientation of some traffic paths, a few segments will even experience a small cumulative traffic noise decrease. The traffic noise impact attributed to the project is not significant.

Table 3
Transit Village Project Traffic Noise Impact Analysis
(dB CNEL at 50 feet from centerline)

Roadway	Segment	2006 Existing	2010 no project	2010 w/project	2030 no project	2030 w/project
East -West						
Valley Blvd.	West of Temple City Blvd.	71.2	71.3	71.3	71.7	71.8
	Temple City-Baldwin Ave.	70.0	70.9	71.0	71.2	71.4
	Baldwin-Arden Drive	71.2	71.2	71.3	71.4	71.8
	Arden-Santa Anita Ave.	71.8	71.9	71.8	72.3	72.2
	Santa Anita-Tyler Ave.	71.2	71.3	71.3	71.4	71.4
	Tyler-Ramona Blvd.	71.5	71.5	71.5	71.6	71.6
	East of Ramona Blvd.	71.0	71.0	71.1	71.5	71.5
Valley Mall	Santa Anita-Tyler Ave	66.6	66.6	66.8	66.7	66.7
	Tyler-Ramona Blvd.	64.6	64.7	64.7	65.5	65.3
Ramona Bl.	Santa Anita-Tyler Ave.	68.0	68.0	69.3	68.1	69.9
	Tyler-Valley Blvd.	69.0	69.1	69.3	70.1	70.5
	East of Valley Blvd.	71.6	71.6	71.7	72.0	72.0
NorthSouth						
T. City Bl.	North of Valley Blvd.	70.1	70.1	70.2	70.4	70.6
	South of Valley Blvd.	69.4	69.4	69.4	69.4	69.5
Baldwin Av	North of Valley Blvd.	71.2	71.2	71.2	71.4	71.6
	South of valley Blvd..	71.3	71.3	71.1	71.7	70.3
Arden Dr.	North of Valley Blvd.	67.0	67.0	67.0	67.3	67.1
Santa Anita	North of Bryant Road	71.1	71.1	71.1	71.1	71.1
	Bryant-Valley Blvd.	71.4	71.4	71.4	71.5	71.5
	Valley-Valley Mall	71.7	71.8	71.8	72.3	72.3
	Valley Mall-Ramona Blvd.	72.5	72.6	73.2	72.9	73.1
	Ramona-Site Entrance	72.9	73.0	73.7	73.3	74.1
	Site Ent.-I-10	72.7	71.6	73.1	71.7	74.1
Tyler Road	North of Ramona Blvd.	69.4	69.5	69.5	69.6	69.4
	South of Ramona Blvd.	69.2	69.2	69.3	69.4	69.8

ON-SITE EXTERIOR NOISE ANALYSIS

The traffic report data is based on a mixed residential commercial site use. Residential development in a high noise environment, derived from freeway and arterial roadway traffic, from a Metrolink rail line, and from the bus transit center, poses noise abatement constraints upon the project plan. The coexistence of vibrant commercial uses, especially evening-oriented entertainment and retail, with planned residential components further creates a potential for noise conflicts unless noise mitigation is designed into the project.

On the project site, the residential units above the retail uses in Area 7 and those above the entertainment uses in Area 8 will be exposed to the highest traffic noise levels. Upper floor units in Area 8 closest to Santa Anita Avenue will have both elevated arterial roadway noise, as well as an audible contribution from I-10. Building façade noise levels along this southeast corner of the project will depend upon roadway set-back, but may be near 75 dB CNEL. If decks or balconies are oriented towardsSanta Anita Avenue, mitigation may be necessary. It would require 5 dB of attenuation to reduce the future traffic noise to the City's maximum recommended 70 dB CNEL exterior recreational noise standard at any usable residential outdoor space near the southeastern corner of the project.

Decks or balconies facing Santa Anita Avenue can be equipped with transparent glass or plastic shields that reduce noise, but retain views. A shield five (5) feet above the balcony surface would produce at least 5 dB of attenuation.

INTERIOR NOISE COMPLIANCE

To meet the City of El Monte interior noise standard of 45 dB CNEL, maximum building façade noise loading could be as high as 75 dB CNEL. Typical noise attenuation with single-paned windows is usually stated to be 20 dB. Enhanced structural features capable of up to 10 dB CNEL of additional mitigation may be needed to meet City standards. The hierarchy of structural noise mitigation is generally as follows:

Exterior to Interior Reduction Desired	**Measure(s) Needed**
0-10 dB	None
10-20 dB	Close windows facing roadway. Provide supplemental ventilation.
20-25 dB	Close standard dual-paned windows. Provide supplemental ventilation.
25-30 dB	Close upgraded dual-paned windows. Provide supplemental ventilation. Baffle vents and line ducts with absorbers.
>30 dB	Custom upgrades (dual layer drywall, triple-paned windows, steel doors, etc.)

Units along the southern and eastern project perimeter can easily meet interior noise requirements with the above list of candidate mitigation measures.

A supplemental acoustical analysis must be submitted in conjunction with the issuance of building permits to verify that adequate structural noise protection exists in perimeter residences along Santa Anita Avenue to meet the 45 dB CNEL interior standard. Supplemental ventilation (including air conditioning) is required in any livable space where window closure to shut out roadway noise is needed to meet interior standards. Because the exterior tier of development will assist in shielding interior units, the above acoustic upgrades are needed only on the front or rear and/or side face of the outermost tier of development.

If window closure is a necessary condition to meet the interior standard, the building code requires provision of supplemental ventilation. The requirement can be met with a fresh air inlet duct on the return air plenum on the furnace fan. The recommended ventilation rate is 15 CFM per person of fresh make-up air as per Title 24 of the California Code of Regulations. Code compliance for ventilation must similarly be documented on building plans for any project residential occupancies abutting Santa Anita Avenue.

ON-SITE NOISE GENERATION

In areas where commercial and residential uses share a common building, it is often not the overall magnitude of the noise that leads to conflict. It is more typically some unique aspect of the noise (music, amplified voice, whine or hum, etc.), or, most commonly, the time of day of the noise event that causes conflicts. Early morning deliveries, back-up alarms, rumbling and idling diesel trucks, are sources that can engender noise conflicts in a mixed use environment. Since on-site commercial activities will be located on the street level of many of the Transit Village buildings, nocturnal on-site activities could be audible late at night at upstairs residences when background noise levels are low. Care must be taken to ensure that the residential uses within Transit Village are adequately shielded from the on-site commercial noise.

Such impacts would possibly derive from unloading activities at the rear of stores or restaurants, from site maintenance such as sweeping or trash pick-up, from mechanical equipment on building roofs, and from on-site traffic patterns. If any ground-level commercial uses include food or beverage services that might have entertainment, such activity could also affect project residents, especially in the late evening. HVAC equipment will likely be rooftop and is not expected to exceed noise thresholds. HVAC equipment must be tested to ensure adherence to City of El Monte Noise Standards.

The City of El Monte requires the following residential noise thresholds to be met by on-site commercial/retail uses:

	Noise Level*	Time Period
Exterior Residential Standards	55 dB (A)	7:00 a.m. – 10:00 p.m.
	50 dB (A)	10:00 p.m. – 7:00 a.m.

* The noise standard for a cumulative period of more than 15 minutes in any hour.

Uses such as grocery stores or restaurants operate under conditional use permits (CUP). CUP's contain specific conditions to minimize noise impacts to adjacent uses. Although the exact mix of commercial tenants is unknown, mechanisms are in place to ensure that future mixed use of the project site will maintain compatibility with respect to noise generation. It is suggested that the CUP contain measures to limit night time deliveries to the commercial uses.

MITIGATION

Construction activities from proposed project development may impact surrounding or future on-site residential uses. Such impacts are mitigated by required compliance with grading and/or construction permits. These considerations include:

- The hours of construction operation shall be limited to be between the hours of 6:00 a.m. and 7:00 p.m. on weekdays and 8 a.m. to 7 p.m. on weekends. Outside construction activity shall be maintained at a minimum on Sundays and Federal holidays.
- Staging areas shall be located away from occupied residences.
- All construction equipment shall use properly operating mufflers.
- Impulsive construction equipment such as pile drivers, jackhammers, rock crushers, etc., and all mobile equipment over 200 HP proposed to operate within 160 feet of an occupied residence shall submit a noise control plan in conjunction with a grading permit application outlining those measures to be taken to minimize noise nuisance.

The project noise impact study indicates a less than significant noise impact from project-related traffic on project vicinity receptors. Traffic noise levels resulting from area growth were also shown to present no significant increases.

Possible decks or balconies for the residential facades closest to Santa Anita Avenue in Areas 7 or 8 may exceed City noise guidelines. Usable outdoor space can be equipped with transparent glass or plastic shields that reduce noise, but retain views.

Supplemental ventilation, in conjunction with air conditioning, is required in any livable space for perimeter residential occupancies abutting Santa Anita Avenue or with a direct view of I-10.

Project-related commercial on-site noise from uses such as markets, theaters or restaurants may impact on- or off-site residential uses and should be mitigated during the design stage through CUP conditions on any major users.