APPENDIX K Noise and Vibration Technical Appendix

K-1 Construction Noise & Vibration Impact Study

Construction Noise & Vibration Impact Study

HOLLYWOOD CENTER PROJECT

Prepared for: Environmental Sciences Associates (ESA)

March 2020

Report Ref: R2019017.04

Prepared by: Acoustical Engineering Services, Inc. 22801 Crespi Street Woodland Hills, CA 91364

Table of Content

1	Introduction	
	1.2 Purpose	5
2	Environmental Setting	6
	2.1 Fundamentals of Sound and Environmental Noise	6
	2.1.1 Outdoor Sound Propagation	6
	2.1.2 Environmental Noise Descriptors	7
	2.2 Ground-borne Vibration	8
	2.3 Applicable Noise Regulations	8
	2.3.1 City of Los Angeles Noise Regulations (Chapter XI of the LAMC)	8
	2.4 Applicable Vibration Standards	
	2.5 Existing Ambient Noise Levels	11
3	Impact Analysis	
	3.1 Methodology	
	3.1.1 Construction Noise	16
	3.1.2 Construction Vibration	16
	3.2 Thresholds of Significance	17
	3.2.1 Construction Noise	17
	3.2.2 Construction Vibration	
	3.3 Construction Noise Impacts	
	3.1 Construction Vibration Impacts	
4	Mitigation Measures	
	4.1 Construction Noise	
	4.2 Construction Vibration	
5	Significance Level after Mitigation Measures	
	5.1 Construction Noise	
	5.2 Construction Vibration	
6	References	

List of Figures

Figure 1.	Noise Sensitive Receptor Locations	12
Figure 2.	Vibration Receptor Locations	13

List of Tables

Table 1.	Typical Noise Levels	.7
Table 2.	City of Los Angeles Presumed Ambient Noise Levels	.9
Table 3.	FTA Construction Vibration Impact Criteria for Building Damage	10
Table 4.	FTA Construction Vibration Impact Criteria for Human Annovance	11
Table 5.	Noise Sensitive Receptors	14

Table 6. Vibration Receptors	15
Table 7. Construction Equipment Noise Emission Reference Levels and Usage Factors	
Table 8. Construction Noise Levels – West Site	21
Table 9. Construction Noise Levels – East Site	
Table 10. Construction Noise Levels – Overlapping Construction	
Table 11. Construction Equipment Vibration Levels	
Table 12. Construction Vibration Impacts – Building Damage	
Table 13. Construction Vibration Impacts – Human Annoyance (West Site)	
Table 14. Construction Vibration Impacts – Human Annoyance (East Site)	

Appendix

Appendix A - Construction Noise & Vibration Calculations

1 Introduction

This Construction Noise & Vibration Impact Study (Study) has been prepared to evaluate potential noise and vibration impacts associated with the on-site construction activities for the proposed Hollywood Center Project (Project) in the City of Los Angeles (City), California.

1.1 Project Description

MCAF Vine LLC, 1750 North Vine LLC, 1749 North Vine Street LLC, 1770 Ivar LLC, 1733 North Argyle LLC, and 1720 North Vine LLC (collectively, the Applicant) proposes a new mixed-use development (Project) on an approximately 4.46-acre (194,495 square feet) site (Project Site) in the Hollywood Community Plan Area of the City of Los Angeles (City). The Project Site is bounded by Yucca Street on the north, Ivar Avenue on the west, Argyle Avenue on the east, and Hollywood Boulevard on the south, and is bifurcated by Vine Street. The portion of the Project located between Ivar Avenue and Vine Street is identified as the "West Site," and the portion located between Vine Street and Argyle Avenue is identified as the "East Site." The Project Site includes 10 individual parcels, and is currently occupied by a building leased by American Musical and Dramatic Academy (AMDA) and surface parking lot on the West Site, and the Capitol Records Building and Gogerty Building occupied by Capitol Records (the Capitol Records Complex) and a surface parking lot that serves the Capitol Records Complex and general public parking on the East Site.

The Capitol Records Complex would be preserved, although portions of its supporting parking area, along with some existing parking lot adjacent to the Capitol Records Complex, would be reconfigured and relocated to a subterranean and grade-level parking garage proposed on the East Site. The remaining surface parking uses on the Project Site would be removed in order to develop a mix of land uses, including residential uses (market-rate and senior affordable housing units), commercial uses, parking, and associated landscape and open space amenities. Four new buildings are proposed, including a 35-story building on the West Site (West Building), a 46-story building on the East Site (East Building), and two 11-story senior housing buildings (West Senior Building and East Senior Building) set aside for extremely-low and very-low income households (one senior housing building on each site). The Project would develop approximately 1,287,150 square feet of developed floor area, including: 1,005 residential housing units (872 market-rate units and 133 senior affordable housing units) totaling approximately 1,256,974 square feet of residential floor area; approximately 30,176 square feet of open space; up to 1,521 vehicle parking spaces; and up to 551 bicycle parking spaces.

Project construction would require grading and excavation activities on both the West and East Site down to a maximum depth of 82 feet below existing grade for building foundations and five levels of subterranean parking. No import of soil is proposed, and the Project would generate truck trips associated with the export of approximately 542,300 cubic yards of soil from the Project Site. Under a proposed East Site Hotel Option associated with the East Site (Project with the East Site Hotel Option), the Project would replace 104 residential units within East Building levels 3 through 12 with a 220-room hotel, with no change to building heights and massing. The number of affordable residential units within the East Senior Building would be reduced by 17 units and the height of the building would be reduced from 11 stories to 9 stories. Overall, under the Project with the East Site Hotel Option there would be approximately 1,272,741 square feet of developed floor area, including: 884 residential housing units (768 market-rate units and 116 senior affordable housing units) totaling approximately 1,112,287 square feet of residential floor area; a 220-room hotel with approximately 130,278 square feet of floor area; approximately 30,176 square feet of commercial floor area (retail and restaurant uses); approximately 150,371 square feet of open space; up to 1,521 vehicle parking spaces, and up to 554 bicycle parking spaces.

1.2 Purpose

The objectives of this noise study are to:

- a) Evaluate the Project construction-related noise and vibration impacts on sensitive uses in the vicinity of the Project Site; and
- b) Evaluate noise mitigation measures to avoid or reduce the potential noise and vibration impacts to less than significant levels.

Acoustical Engineering Services, Inc.

2 Environmental Setting

2.1 Fundamentals of Sound and Environmental Noise

Noise is commonly defined as sound that is undesirable because it interferes with speech communication, and hearing, causes sleep disturbance, or is otherwise annoying (unwanted sound). The decibel (dB) is a conventional unit for measuring the amplitude of sound because it accounts for the large variations in sound pressure amplitude and reflects the way people perceive changes in sound amplitude.¹ The human hearing system is not equally sensitive to sound at all frequencies. Therefore, to approximate this human frequency-dependent response, the A-weighted filtering system is used to adjust measured sound levels (dBA). The term "A-weighted" refers to filtering the noise signal in a manner that corresponds to the way the human ear perceives sound. Examples of various sound levels in different environments are provided in Table 1 (on page 7).

Generally, people judge the relative magnitude of sound sensation by subjective terms such as "loudness" or "noisiness." To the normal hearing a change in sound level of 3 dB is considered "just perceptible," a change in sound level of 5 dB is considered "clearly noticeable," and a change (i.e., increase) of 10 dB is generally recognized as "twice as loud."²

2.1.1 Outdoor Sound Propagation

In an outdoor environment, sound levels attenuate (reduce) through the air as a function of distance. Such attenuation is commonly referred to as "distance loss" or "geometric spreading," and is based on the noise source configuration (e.g., point source, or line source). For a point source, such as a piece of mechanical/electrical/construction equipment (e.g., air conditioner, electrical transformer, or bull dozer) the rate of sound attenuation is about 6 dB per doubling of distance from the noise source. For example, an outdoor condenser fan that generates a sound level of 60 dBA at a distance of five feet would attenuate to 54 dBA at a distance of 10 feet. For a line source, such as a constant flow of traffic on a roadway, the rate of sound attenuation is about 3 dB per doubling of distance.³

In addition, structures (e.g., buildings and solid walls) and natural topography (e.g., hills) that obstruct the line-of-sight between a noise source and a receptor further reduce the noise level if the receptor is located within the "shadow" of the obstruction, such as behind a sound wall. This type of sound attenuation is known as "barrier insertion loss." If a receptor is located behind the wall but still has a view of the source (i.e., line-of-sight is not fully blocked), some barrier insertion loss would still occur, however to a lesser extent. Additionally, a receptor located on the same side of the wall as a noise source may actually experience an increase in the perceived noise level as the wall reflects noise back to the receptor, thereby compounding

¹ All sound levels measured in decibel (dB) in this study are relative to $2x10^{-5}$ N/m².

² Engineering Noise Control, Bies & Hansen, 1988.

³ Caltrans, "Technical Noise Supplement (TeNS)", 2013.

the noise. Outdoor noise barriers can provide noise level reductions ranging from approximately 5 dBA (where a barrier just breaks the acoustic line-of-sight between the noise source and receiver) to an upper range of 20 dBA with a more substantial barrier.⁴

Common Outdoor Activities	Noise Levels, dBA	Common Indoor Activities
	110	Rock Band
Jet Fly-over at 1000 feet		
	100	
Gas Lawn Mower at 3 feet		
	90	
Diesel Truck at 50 feet at 50 mph		Food Blender at 3 feet
	80	Garbage Disposal at 3 feet
Noisy Urban Area, Daytime		
Gas Lawn Mower at 100 feet	70	Vacuum Cleaner at 10 feet
Commercial Area		Normal Speech at 3 feet
Heavy Traffic at 300 feet	60	
		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room
Quiet Suburban Nighttime		(Background)
	30	Library
Quiet Rural Nighttime		Bedroom at Night, Concert Hall
	20	(Background)
		Broadcast/Recording Studio
	10	
	0	
Source: Caltrans, Technical Noise Supplement (T	eNS), Table 2-5, 20	13

1 able 1. Typical Noise Levels	Table 1.	Typical	Noise	Levels
--------------------------------	----------	---------	-------	--------

2.1.2 Environmental Noise Descriptors

Several rating scales have been developed to analyze the adverse effect of community noise on people. Since environmental noise fluctuates over time, these scales consider the total acoustical energy content, as well as the time and duration of occurrence. The most frequently used noise descriptor, including those used by the City, is the equivalent sound level (L_{eq}).

Equivalent Sound Level (L_{eq}). L_{eq} is a measurement of the acoustic energy content of noise averaged over a specified time period. Thus, the L_{eq} of a time-varying sound and that of a

⁴ Caltrans, "Technical Noise Supplement (TeNS)", 2013.

steady sound are the same if they deliver the same amount of energy to the receptor's ear during exposure. L_{eq} for one-hour periods, during the daytime or nighttime hours, and 24 hours are commonly used in environmental noise assessments. L_{eq} can be measured for any time period, but is typically measured for an increment of no less than 15 minutes for environmental studies. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during day or night.

2.2 Ground-borne Vibration

Vibration is commonly defined as an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. The peak particle velocity (PPV) or the root-mean square (RMS) velocity is usually used to describe vibration amplitudes. PPV is defined as the maximum instantaneous peak of the vibration signal and is typically used for evaluating potential building damage.⁵ The RMS velocity is defined as the square-root of the average of the squared amplitude of the vibration signal and is typically more suitable for evaluating human response to ground-borne vibration.⁶ The RMS vibration velocity level can be presented in inch per second or in VdB (a decibel unit referenced to 1 micro-inch per second).⁷ Ground-borne vibration generated by man-made activities (e.g., road traffic, construction operations) typically weakens with greater horizontal distance away from the source of the vibration.

2.3 Applicable Noise Regulations

The City has adopted a number of regulations and policies, which are based in part on Federal and State regulations and are intended to control, minimize, or mitigate environmental noise effects. The Los Angeles Municipal Code (LAMC) Chapter XI, Noise Regulation provides regulations to control unnecessary, excessive, and annoying noise. In addition, the *L.A. CEQA Thresholds Guide* provides thresholds for determining construction noise impacts of a project. These regulations are described further below.

2.3.1 City of Los Angeles Noise Regulations (Chapter XI of the LAMC)

Chapter XI, Noise Regulation, of the LAMC (referred to herein as the Noise Regulations) establishes acceptable ambient sound levels to regulate intrusive noises (e.g., stationary mechanical equipment and vehicles other than those traveling on public streets) within specific land use zones and provides procedures and criteria for the measurement of the sound level of noise sources. These procedures recognize and account for differences in the perceived level of different types of noise and/or noise sources. In accordance with the

⁵ Vibration levels described in this report are in terms peak particle velocity level in the unit of inches per second.

⁶ Federal Transit Administration (FTA), "Transit Noise and Vibration Impact Assessment," Section 5.1, September 2018.

⁷ VdB (velocity level in decibel) = $20 \times Log (V / V_{ref})$, where V is the RMS velocity amplitude in micro-inch per second and V_{ref} is the reference velocity amplitude of 1×10^{-6} inch per second (1 micro-inch per second).

Noise Regulations, a noise level increase from certain regulated noise sources of 5 dBA over the existing or presumed ambient noise level at an adjacent property line is considered a violation of the Noise Regulations. The 5-dBA increase above ambient is applicable to City-regulated noise sources (e.g., mechanical equipment), and it is applicable any time of the day.⁸

The Noise Regulations state that the baseline ambient noise shall be the actual measured ambient noise level or the City's presumed ambient noise level, whichever is greater. The actual ambient noise level is the measured noise level averaged over a period of at least 15 minutes, L_{eq} (15-minute). The Noise Regulations indicate that in cases where the actual measured ambient conditions are not known, the City's presumed daytime (7:00 A.M. to 10:00 P.M.) and nighttime (10:00 P.M. to 7:00 A.M.) ambient noise levels defined in Section 111.03 of the LAMC should be used. The City's presumed ambient noise levels for specific land use zones, as set forth in LAMC Section 111.03, are provided in Table 2 (below).

	Daytime (7:00 A.M. to 10:00 P.M.)	Nighttime (10:00 P.M. to 7:00 A.M.)
Zone	dBA (Leq)	dBA (Leq)
Residential, School, Hospitals, Hotels	50	40
Commercial	60	55
Manufacturing (M1, MR1, and MR2)	60	55
Heavy Manufacturing (M2 and M3)	65	65
Source: LAMC Section 111.03.		

Table 2. City of Los Angeles Presumed Ambient Noise Levels

Section 112.05 of the LAMC sets a maximum noise level from construction equipment (powered equipment or powered hand tools) operating between the hours of 7:00 A.M. and 10:00 P.M., in any residential zone of the City or within 500 feet thereof, of 75 dBA, measured at a distance of 50 feet from the source, unless compliance with this limitation is technically infeasible.⁹

Section 41.40 of the LAMC prohibits construction noise that disturbs persons occupying sleeping quarters in any dwelling, hotel, or apartment or other place of residence between the hours of 9:00 P.M. and 7:00 A.M. Monday through Friday, before 8:00 A.M. and after 6:00 P.M. on Saturday or national holiday, and at any time on Sunday. Construction hours may be extended with approval from the Executive Director of the Board of Police Commissioners.

Section 91.3307.1 of the LAMC requires that adjoining public and private property shall be protected from damage during construction, remodeling, and demolition work. In addition,

⁸ Los Angeles Municipal Code, Chapter XI, Section 112.02.

⁹ In accordance with the Noise Regulations, "technically feasible" means that the established noise limitations can be complied with at a project site, with the use of mufflers, shields, sound barriers, and/or other noise reduction devices or techniques employed during the operation of equipment.

Acoustical Engineering Services, Inc.

Section 91.3307.1 states that "For excavations, adjacent property shall be protected as set forth in Section 832 of the Civil Code of California."

2.4 Applicable Vibration Standards

The City currently does not have any adopted standards, guidelines, or thresholds relative to ground-borne vibration. As such, available guidelines from the Federal Transit Administration (FTA) are utilized to assess impacts due to ground-borne vibration. The FTA has published a technical manual titled, "Transit Noise and Vibration Impacts Assessment," that provides ground-borne vibration impact criteria with respect to building damage during construction activities.¹⁰ Table 3 (below) provides the vibration criteria (based on FTA) applicable to construction activities. According to FTA guidelines, a vibration criterion of 0.20 PPV should be considered as the significant impact level for non-engineered timber and masonry buildings. Structures or buildings constructed of reinforced concrete, steel, or timber, have a vibration damage have a vibration damage criterion of 0.12 PPV, pursuant to the FTA guidelines.

Table 3.	FTA	Construction	Vibration	Impact	Criteria	for	Building Damage
----------	-----	--------------	-----------	--------	----------	-----	------------------------

	Peak Particle Velocity (PPV),
Building Category	(in/sec)
I. Reinforced-concrete, steel or timber (no plaster)	0.50
II. Engineered concrete and masonry (no plaster)	0.30
III. Non-engineered timber and masonry buildings	0.20
IV. Buildings extremely susceptible to vibration damage	0.12
Source: FTA, 2018	

In addition, the FTA guidance manual also provides vibration criteria for human annoyance for various uses. These criteria were established primarily for rapid transit (rail) projects and, as indicated in Table 4 (on page 11), are based on the frequency of vibration events. Specific criteria are provided for three land use categories: (1) Vibration Category 1—High Sensitivity; (2) Vibration Category 2—Residential; and (3) Vibration Category 3—Institutional.

¹⁰ FTA, "Transit Noise and Vibration Impact Assessment," September 2018.

Acoustical Engineering Services, Inc.

	Ground-Borne Vibration Impacts Levels (VdB)					
Land Use Category	Frequent Events ^a	Occasional Events ^b	Infrequent Events ^c			
Category 1: Building where vibration would interfere with interior operations	65 ^d	65 ^d	65 ^d			
Category 2: Residences and buildings where people normally sleep	72	75	80			
Category 3: Institutional land uses with primarily daytime uses	75	78	83			
 <i>a</i> "Frequent Events" are defined as more than 70 vibration events of the same source per day. <i>b</i> "Occasional Events" are defined as between 30 and 70 vibration events of the same source per day. <i>c</i> "Infrequent Events" are defined as fewer than 30 vibration events of the same source per day. <i>d</i> This criterion limit is based on the levels that are acceptable for most moderately sensitive equipment such as optical microscopes. 						

Table 4.	FTA	Construction	Vibration	Impact	Criteria	for	Human	Annoyance
----------	-----	--------------	-----------	--------	----------	-----	-------	-----------

2.5 Existing Ambient Noise Levels

A total of thirteen (13) noise receptor locations were selected by Environmental Sciences Associates (ESA) to represent noise sensitive uses surrounding the Project Site area. The locations of the noise-sensitive receptors are described in Table 5 (on page 14) and shown on Figure 1 (on page 12), as 1 through 13. These 13 receptor locations are also used to represent vibration sensitive (human annoyance) receptor locations in the immediate vicinity of the Project Site. Ambient noise levels were conducted by ESA at a total of eight (8) receptor locations (R1 through R8 on Figure 1). The measured environmental noise levels at R1 through R8 represent the current ambient noise levels at the Project Site selected noise sensitive receptor locations, as provided by ESA and depicted in Table 5. The existing ambient noise environment at all measurement locations, currently exceed the City's presumed daytime ambient noise standard of 50 dBA (L_{eq}) for residential use. Therefore, consistent with LAMC procedures, the measured noise levels are used as the baseline conditions for the purposes of determining Project impacts.

In addition, off- and on-site building structures and historic building structures located nearest to the Project Site were selected to evaluate the potential vibration impacts as related to building damage. Table 6 (on page 15) provides the list of building structures (off- and on-site) located nearest to the Project Site to the north, south, east and west. Also, included in Table 6 are historic structures located in the close vicinity of the Project Site. The locations of the vibration receptor locations are shown on Figure 2 (on page 13).









	Approximate Project S	Measured Daytime Ambient Noise	
Receptor Location ^a	West Site	East Site	Levels, ^b dBA L _{eq}
1. Multi-family residential uses along Ivar Avenue, north of Yucca Street	170	350	59.9
2. Vine Lodge Hotel	360	280	73.0
3. Argyle House at southwest corner of Yucca Street/Argyle Avenue	300	Adjacent	68.3
4. Kimpton Everly Hotel at northeast corner of Yucca Street/Argyle Avenue	550	230	68.3
5. Multi-family residential uses east of Argyle Avenue	530	80	68.3
6. AMDA – Vine Building	Adjacent	220	64.9
7. AMDA – Tower Building	125	295	64.9
8. Eastown multi-family residential uses east of Argyle Avenue	530	80	60.1
9. Pantages Theatre	280	Adjacent	60.1
10. The Lofts (Hollywood Equitable Building) at Hollywood Boulevard/Vine Street	280	100	68.1
11. h Club Los Angeles (formerly Redbury Hotel)	100	90	68.1
12. The Knickerbocker Senior Residential	90	300	63.2
13. Multi-family residential uses (including the St. Elmo Apartments at 6358 Yucca Street) west of Ivar Avenue	140	650	62.7
 ^a Refer to Figure 1 for receptor locations. ^b Based on measured ambient noise levels at measurement receptor - Measurements at R1 is applicable for receptor locations 6 and - Measurements at R2 is applicable for receptor locations 10 and - Measurements at R3 is applicable for receptor locations 8 and - Measurements at R4 is applicable for receptor location 12. - Measurements at R5 is applicable for receptor location 13. - Measurements at R6 is applicable for receptor location 1 - Measurements at R7 is applicable for receptor location 1 	ors R1 through R8: 7. d 11. 9.		

 Table 5. Noise Sensitive Receptors

- Measurements at R8 is applicable for receptor locations 3, 4 and 5.

Source: ESA, 2020

Location No. ^a	Building Structure Nearest to Project Site ^b	FTA Building Category ^c
Project West S	ite	
6	North – AMDA Vine Building	Category I
14	North – Art Deco Building at 6314-24 Yucca Street	Category IV
15	South – Avalon Hollywood	Category IV
16 and 17	West – Single-story commercial buildings on west side of Ivar Avenue (6340 Yucca Street, 1763 Ivar Avenue, and the Hollywood-Ivar Building at 1741 Ivar Avenue)	Category III
18 and 19	East – Capitol Records Complex (Capitol Records Building and Gogerty Building located on-site within the Project East Site)	Category I
Project East Si	ite	
3	North – Argyle House at the southwest corner of Yucca Street/Argyle Avenue	Category I
8	East – Eastown multi-family residential buildings	Category I
9	South – Pantages Theatre	Category IV
20	South – Single-story commercial building at 1718 N. Vine Street	Category III
11	West – h Club LA	Category III
15	West – Avalon Hollywood	Category IV
Historic Struct	tures	
9	Pantages Theatre	Category IV
10	The Lofts (Hollywood Equitable Building)	Category IV
13	St. Elmo Apartments at 6358 Yucca Street	Category IV
14	Art Deco Building at 6316-24 Yucca Street	Category IV
15	Avalon Hollywood	Category IV
17	Hollywood-Ivar Building at 1741 Ivar Avenue	Category IV
18 and 19	Capitol Records Complex (Capitol Records Building and Gogerty Building located on-site within the Project East Site)	Category IV
 Refer to Figu Represents of FTA's thresh Category I: I Category II: Category III Category III Category IV Source: ESA, 20 	re 2 for location number. ff-site building structures located nearest to the Project Site to the north, south, east holds for structural damage are as follows: Reinforced concrete, steel, or timber (no plaster) Engineered concrete and masonry (no plaster) : Non-engineered timber and masonry buildings : Buildings extremely susceptible to building damage 20	and west.

Table 6. Vibration Receptors

3 IMPACT ANALYSIS

3.1 Methodology

3.1.1 Construction Noise

Construction noise impacts due to on-site construction activities associated with the Project were evaluated by calculating the construction-related noise levels at representative sensitive receptor locations and comparing these estimated construction-related noise levels associated with construction of the Project to the existing ambient noise levels (i.e., noise levels without construction noise from the Project). Construction noise associated with the Project was analyzed based on the Project's potential construction equipment inventory, construction durations, and construction schedule. The construction equipment noise levels are based on the published noise data (equipment source levels) by Federal Highway Administration (FHWA) "Roadway Construction Noise Model (FHWA 2006)." The construction noise levels were then calculated for sensitive receptor locations based on the standard point source (e.g., generator or bulldozer) noise-distance attenuation factor of 6 dBA for each doubling of distance. Additional noise attenuation was assigned to receptor locations where the line-ofsight to the Project Site was interrupted by the presence of intervening structures. For the noise analysis, a 5 dBA attenuation was assigned for receptor locations with acoustic line-of-sight is just interrupted (i.e., around the edge of a building) and a 10 dBA for receptor locations with acoustic line-of-sight fully interrupted (i.e., by intervening buildings).

Although the East Senior Building under the Project with the East Site Hotel Option would be smaller (two floors lower), construction would require the same construction equipment as the Project. Construction duration for the Project with the East Site Hotel Option would slightly decrease due to smaller development. However, the amount of maximum daily construction equipment would occur under the Project with the East Site Hotel Option would be the same as the Project. Therefore, the Project's analysis of construction noise and vibration impacts would encompass the maximum anticipated noise and vibration for the Project with the East Site Hotel Option.

3.1.2 Construction Vibration

Ground-borne vibration impacts due to the Project's construction activities were evaluated by identifying potential vibration sources (i.e., construction equipment), estimating the vibration levels at the potentially affected receptors (building structures), and comparing the Project's activities to the applicable vibration significance thresholds, as described below.

Ground-borne vibration impacts due to the Project's construction activities were evaluated by identifying potential vibration sources (i.e., construction equipment), estimating the vibration levels at the potentially affected receptor, and comparing the Project's activities to the applicable vibration significance thresholds. Vibration levels were calculated based on the

FTA published standard vibration velocities for various construction equipment operations.¹¹ The vibration velocities were calculated based on a point source with standard distance propagation conditions, pursuant to FTA procedures. Construction of the Project would not use impact pile driving methods and as such, impact pile driving vibration is not included in this construction vibration analysis.

It is anticipated that the same typical of construction equipment would occur under the Project and the Project with the East Site Hotel Option. Therefore, the Project's analysis of construction vibration impacts would be same for the Project with the East Site Hotel Option.

3.2 Thresholds of Significance

In assessing the Project's potential impacts related to noise and vibration in this report, the analyses uses Appendix G of the 2019 State CEQA Guidelines as its thresholds of significance. The criteria and/or factors from the *2006 L.A. CEQA Thresholds Guide* (or Thresholds Guide) are used where applicable and relevant to assist in analyzing the Appendix G questions.

In accordance with the State CEQA Guidelines Appendix G, a project would have a significant impact related to construction noise and vibration if it would result in:¹²

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

b) Generation of excessive groundborne vibration or groundborne noise levels?

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

This report addresses Appendix G checklist items "a" and "b" with respect to noise and vibration impacts from on-site Project construction activities as there are no public airports or public use airports within two miles of the Project Site.

3.2.1 Construction Noise

The analysis of construction-related noise impacts considers the noise limits as provided by the City Noise Regulations and criteria provided in the *Threshold* Guide. Since the Threshold Guide applies to construction activities lasting more than 10 days in a three-month period and

¹¹ FTA, "Transit Noise and Vibration Impact Assessment," Table 7-4, September 2018

¹² Only applicable Appendix G Thresholds are shown, which pertain to construction noise and vibration since the nearest airport to the Project Site is 6.5 miles from the Site.

construction activities would occur over a period longer than 10 days in a three-month period, the applicable criteria from the Threshold Guide is used. Therefore, a project would normally have a significant impact on noise levels from construction if:

• On-site construction activities lasting more than 10 days in a three-month period would exceed existing ambient exterior noise levels by 5 dBA (hourly L_{eq}) or more at a noise-sensitive use.

3.2.2 Construction Vibration

As described above, the City currently does not have significance criteria to assess vibration impacts during construction. Thus, FTA guidelines set forth in FTA's Transit Noise and Vibration Assessment, dated September 2018, are used to evaluate the Project potential vibration impacts for both building damage and human annoyance. Based on this FTA guidance, impacts relative to ground-borne vibration associated with potential building damage would be considered significant if any of the following future events were to occur:

- Project construction activities cause ground-borne vibration levels to exceed 0.5 PPV at the nearest off-site reinforced-concrete, steel, or timber building.
- Project construction activities cause ground-borne vibration levels to exceed 0.3 PPV at the nearest off-site engineered concrete and masonry building.
- Project construction activities cause ground-borne vibration levels to exceed 0.2 PPV at the nearest off-site non-engineered timber and masonry building.
- Project construction activities cause ground-borne vibration levels to exceed 0.12 PPV at buildings extremely susceptible to vibration damage, such as historic buildings.

Based on FTA guidelines, construction vibration impacts associated with human annoyance would be significant if the following were to occur (applicable to frequent events; 70 or more vibration events per day):

- Project construction activities cause ground-borne vibration levels to exceed 72 VdB at off-site sensitive uses, including residential and theater uses.
- Project construction activities cause ground-borne vibration levels to exceed 75 VdB at off-site institutional uses.
- Project construction activities cause ground-borne vibration levels to exceed 65 VdB at off-site recording studios.

3.3 Construction Noise Impacts

Noise impacts from Project construction activities would be a function of the noise generated by construction equipment, the location of the equipment, the timing and duration of the noisegenerating construction activities, and the relative distance to noise-sensitive receptors. Construction activities for the Project would generally include demolition, site grading and excavation for the subterranean parking garage, and building construction. Each stage of construction would involve the use of various types of construction equipment and would, therefore, have its own distinct noise characteristics. Demolition would involves the use of concrete saw, jackhammer, excavators, front-end loaders, air compressors, and heavy-duty trucks. Drainage/utility phase would include the use of concrete saw, tractor/loader/backhoe, crane, and air compressors. Site preparation would include excavators and rubber tired loader. Grading and excavation would requires the use of excavators, tractors/loaders/backhoes, compactors, and heavy-duty trucks. Foundation phase would include the use of air compressors, crane, concrete pump, forklifts, jackhammer, tractor/loader/backhoe, and heavyduty truck. Building construction would involves the use of air compressors, bore/drill rig, cranes, concrete pump, forklifts, jackhammer, tractor/loader/backhoe, and delivery trucks. Architectural coating phase would include the use of air compressor, forklift, and delivery truck. Paving would involves the use of concrete saw, surfacing equipment, grader, plate compactor, sweeper/scrubber, paving equipment, roller and paver. Noise from construction equipment would generate both steady-state and episodic noise that could be heard within and adjacent to the Project Site.

Individual pieces of construction equipment that would be used for construction of the Project produce maximum noise levels of 74 dBA to 90 dBA at a reference distance of 50 feet from the noise source, as shown in Table 7 (on page 20). The construction equipment noise levels at 50 feet distance (Referenced Maximum Noise Levels) are based on the FHWA Roadway Construction Noise Model User's Guide (RCNM, 2006), which is a technical report containing actual measured noise data for construction equipment. These maximum noise levels would occur when equipment is operating under full power conditions (i.e., the equipment engine at maximum speed). However, equipment used on construction sites often operates under less than full power conditions, or part power. To more accurately characterize construction-period noise levels, the average (Hourly L_{eq}) noise level associated with each construction stage is calculated based on the quantity, type, and usage factors for each type of equipment that would be used during each construction stage.¹³ These noise levels are typically associated with multiple pieces of equipment operating simultaneously.

Table 8 and Table 9 (on pages 21 and 22) provide the estimated construction noise levels for various construction phases at the off-site noise sensitive receptors for construction activities at the West Site and East Site, respectively. To present a conservative impact analysis, the

¹³ Pursuant to the FHWA Roadway Construction Noise Model User's Guide, 2005, the usage factor is the percentage of time during a construction noise operation that a piece of construction is operating at full power.

Acoustical Engineering Services, Inc.

estimated noise levels were calculated with all pieces of construction equipment were assumed to operate simultaneously and be located at the construction area nearest to the affected receptors. As indicated in Table 8, the estimated West Site construction noise levels would exceed the significance threshold at receptors 1, 3, and 6 through 13. The estimated East Site construction noise levels would exceed the significance threshold at receptors 1, 3, 5 through 12, prior to mitigation measures.

In addition, the construction of the West Site and East Site would have the potential to overlap. Therefore, overlapping construction noise analysis was evaluated to determine the potential impacts. Table 10 (on page 23) provides the estimated noise levels due to overlapping construction activities. As indicated in Table 10, the estimated noise levels due to overlapping construction activities would exceed the significance threshold at receptors 1, 3, and 5 through 13.

Type of Equipment	Acoustical Usage Factor ^a	Reference Maximum Noise
	(/8)	Tevels at 30 Feet, Lmax (dDA)
Air Compressor	40	/8
Cement and Mortar Mixer	50	80
Compactor	20	83
Concrete Mixer Truck	40	79
Concrete Saw	20	90
Crane	16	81
Drill Rig	20	84
Forklift	20	75
Generator	50	81
Dump/Haul Truck	40	76
Jackhammer	20	89
Excavator	40	81
Pump	50	81
Roller	20	80
Rubber Tired Loader	40	79
Tractor/Loader/Backhoe	40	80
Pavement Scarafier	20	90
Delivery Truck	40	74
Welders	40	74

 Table 7. Construction Equipment Noise Emission Reference Levels and Usage Factors

^a The usage factor is the percentage of time during a construction noise operation that a piece of construction is operating at full power.

^b Construction equipment noise levels are based on the FHWA RCNM.

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

			Estimated Noise Levels by Construction Phase, dBA (Leq)										
Location	Distance to Const. Site, feet	Demolition and Drainage/ Utilities/ Trenching	Demolition, Site Prep., and Grading	Foundations/ Concrete Pour	Building Construction	Building Construction/ Architectural Coating	Building Construction/ Arch. Coating/ Paving	Significance Threshold, ^a dBA (L _{eq})	Sig. Impacts?				
1	170	78.9	79.4	74.8	75.2	75.7	79.4	64.9	Yes				
2	360	72.6	73.4	68.6	68.9	69.4	73.1	78.0	No				
3	300	74.2	74.9	70.1	70.5	71.0	74.7	73.3	Yes				
4 ^b	550	64.1	64.9	59.9	60.4	60.9	64.5	73.3	No				
5 ^b	530	59.4	60.2	55.3	55.7	56.2	59.9	73.3	No				
6	10	100.5	100.0	96.4	96.5	97.1	100.5	69.9	Yes				
7	125	81.4	81.8	77.4	77.7	78.2	82.0	69.9	Yes				
8	530	69.4	70.2	65.3	65.7	66.2	69.9	65.1	Yes				
9	280	74.8	75.4	70.7	71.0	71.5	75.3	65.1	Yes				
10	280	74.8	75.4	70.7	71.0	71.5	75.3	73.1	Yes				
11 ^b	100	73.3	73.6	69.2	69.5	70.0	73.8	73.1	Yes				
12	90	84.1	84.4	80.1	80.3	80.8	84.6	68.2	Yes				
13 ^b	140	75.5	75.9	71.5	71.8	72.3	76.0	67.7	Yes				
^a Significano	ce thresholds	are equivalent to the	measured davtime am	bient noise levels plus	s 5 dBA.								

Table 8. Construction Noise Levels – West Site

Significance inresholas are equivalent to the measured advite amotent noise levels pl
 b Receptor locations with acoustic line-of-sight to the Project construction site blocked,

Bold-faced represents noise levels exceeded the significance threshold.

Source: AES, 2020.

			Estimated Noise I	Levels by Construction	Phase, dBA (Leq)			
Location	Distance to Const. Site, feet	Site Prep./Utilities/ Trenching/ Grading	Foundations/ Concrete Pour	Building Construction	Building Construction/ Architectural Coating	Building Construction/ Architectural Coating/Paving	Significance Threshold, ^a dBA (L _{eq})	Sig. Impacts?
1 ^b	350	67.4	63.8	64.2	64.7	68.4	64.9	Yes
2 ^b	280	69.3	65.7	66.0	66.5	70.3	78.0	No
3	10	99.8	96.4	96.5	97.1	100.5	73.3	Yes
4 ^b	230	70.8	67.3	67.7	68.2	71.9	73.3	No
5	80	84.4	81.1	81.3	81.8	85.6	73.3	Yes
6	220	76.2	72.7	73.0	73.5	77.3	69.9	Yes
7	295	73.8	70.2	70.6	71.1	74.8	69.9	Yes
8	80	84.4	81.1	81.3	81.8	85.6	65.1	Yes
9	10	99.8	96.4	96.5	97.1	100.5	65.1	Yes
10	100	82.6	79.2	79.5	80.0	83.8	73.1	Yes
11	90	83.4	80.1	80.3	80.8	84.6	73.1	Yes
12	300	73.7	70.1	70.5	71.0	74.7	68.2	Yes
13	650	67.3	63.5	63.9	64.4	68.1	67.7	Yes
^a Significan	ca thrasholds	are equivalent to the meas	urad daytima ambiant noi	isa lavals plus 5 dBA				

 Table 9. Construction Noise Levels – East Site

Significance thresholds are equivalent to the measured daytime ambient noise levels plus 5 dBA.

^b Receptor locations with acoustic line-of-sight to the Project construction site blocked,

Bold-faced represents noise levels exceeded the significance threshold.

Source: AES, 2020.

			Estimated N	Noise Levels b	y Overlappin	g Constructio	on, dBA (Leq)				
Location	West Site Demo and Drainage/ Utilities/ Trenching	West Site Demo, Site Prep., and Grading	West Site Building Const., East Site Site Prep., Drainage/ Utilities/ Trench, & Grading	West Site Building Const. and Arch. Coating, and East Site Grading	West Site Building Const. and Arch. Coating, and East Site Found- ation	West Site Building Const. and Arch. Coating, and East Site Building Const.	West Site Building Const. and Arch. Coating, Paving, and East Site Building Const.	West Site Building Const. and Arch. Coating, and East Site Building Const. and Arch Coating	East Site Building Const., Arch. Coating, and Paving	Significance Threshold, ^a dBA (Leq)	Sig. Impacts?
1 ^b	78.9	79.4	75.9	76.0	75.9	76.0	79.5	76.0	68.4	64.9	Yes
2 ^b	72.6	73.4	72.1	71.1	70.9	71.0	73.9	71.2	70.3	78.0	No
3	74.2	74.9	99.8	94.6	96.4	96.5	96.5	97.1	100.5	73.3	Yes
4 ^b	64.1	64.9	71.2	68.5	68.2	68.5	69.4	68.9	71.9	73.3	No
5 ^b	59.4	60.2	84.4	80.5	81.1	81.3	81.3	81.8	85.6	73.3	Yes
6	100.5	100.0	96.5	97.1	97.1	97.1	100.5	97.1	77.3	69.9	Yes
7	81.4	81.8	79.2	78.9	78.8	78.9	82.3	79.0	74.8	69.9	Yes
8	69.4	70.2	84.4	80.7	81.2	81.4	81.6	81.9	85.6	65.1	Yes
9	74.8	75.4	99.8	94.6	96.4	96.5	96.5	97.1	100.5	65.1	Yes
10	74.8	75.4	82.9	79.6	79.9	80.1	80.9	80.6	83.8	73.1	Yes
11 ^b	73.3	73.6	83.6	80.1	80.5	80.7	81.2	81.2	84.6	73.1	Yes
12	84.1	84.4	81.2	81.2	81.2	81.2	84.8	81.2	74.7	68.2	Yes
13 ^b	75.5	75.9	73.1	73.0	72.8	72.9	76.3	72.9	68.1	67.7	Yes
a G: ·C	1 1 11	. 1	1 11	. 1: .	. 1 1 1	5 10 4					

^a Significance thresholds are equivalent to the measured daytime ambient noise levels plus 5 dBA.

Bold-faced represents noise levels exceeded the significance threshold.

Source: AES, 2019.

3.1 Construction Vibration Impacts

Construction activities can generate varying degrees of ground vibration, depending on the construction procedures and the type of construction equipment used. The operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of the construction site often varies, depending on soil type, ground strata, and construction characteristics of the receptor buildings.

With regard to potential building damage, the Project would generate ground-borne construction vibration forces during building demolition and site excavation/grading activities when heavy construction equipment, such as large bulldozers, drill rigs, and loaded trucks, would be used. The FTA has published standard vibration velocities levels for various construction equipment operations. Table 11 presents the typical vibration levels at a reference distance of 25 feet for construction equipment anticipated to be used during Project construction. Vibration impacts with regard to structures are evaluated at the nearest off-site buildings to the Project Site (north, south, east, and west) and the on-site Capitol Records Complex (i.e., Capitol Records Building and Gogerty Building), whereas the potential for human annoyance associated with construction-related vibration are evaluated at the 13 human annoyance vibration-sensitive receptor locations (receptors 1 through 13).

	Equipment vibration Levels at 25 feet,
Equipment	(PPV/VdB)
Vibratory Roller	0.210/94
Large Bulldozer	0.089/87
Caisson Drilling	0.089/87
Loaded Trucks	0.076/86
(e.g., haul trucks)	
Jackhammer	0.035/79
Small Bulldozer	0.003/58
Source: FTA, 2018	

Table 11. Construction Equipment Vibration Levels

Table 12 (on page 26) provides the estimated vibration levels (in terms of inch per second PPV) at the nearest off-site structures (including adjacent historic structures) to the Project Site. As indicated in Table 12, the estimated vibration velocity levels from all construction equipment would be below the building damage significance criteria at off-site building structures west and east of the Project West Site and East Site construction areas. The estimated vibration levels at the buildings adjacent to the north and south of the West Site and East Site construction areas would be up to 3.379 PPV, which would exceed the 0.12 PPV significance threshold at the Hollywood Playhouse and the Pantages Theatre; and the 0.50 PPV significance threshold at the AMDA Vine building, the Argyle House at southwest corner of Yucca/Argyle, and the on-site Capitol Records Building and Gogerty Building. The estimated vibration levels from

the Project construction activities at both the West Site and East Site would exceed the significance threshold of 0.12 PPV, as applicable to proximate historic buildings identified by ESA as including the Pantages Theatre, Hollywood Playhouse, and Art Deco Building Storefront.¹⁴ Therefore, the on-site vibration impacts, pursuant to the significance criteria for building damage, during construction of the Project would be significant, prior to implementation of mitigation measures. However, with implementation of mitigation measures (provided in Section 4 of this report) and compliance with LAMC Section 91.3307.1, vibration impacts would be reduced to less than significant levels.

Table 13 and Table 14 (on pages 28 and 29) present the estimated vibration levels (in terms of inch per second VdB) due to construction equipment at off-site vibration sensitive receptors; for construction activities at the West Site and East Site, respectively. As indicated in Table 13, the estimated vibration levels due to on-site construction equipment at the West Site would exceed the significance threshold at receptors 6 and 11 through 13. The estimated vibration levels due to construction equipment at the West Site would be below the significance threshold at receptors 1 through 5; and 7 through 10. As indicated in Table 14, the estimated vibration levels due to construction equipment at the East Site would exceed the Project vibration significance threshold at receptors 3, 5, and 8 through 11. The estimated vibration levels due to construction equipment at the West Site would be below the significance threshold at receptors 1, 2, 4, 6, 7, 12 and 13. Therefore, the on-site vibration impacts, pursuant to the significance criteria for human annoyance, during construction of the Project would be significant, prior to mitigation measures.

¹⁴ Project Draft EIR, Section IV.C Cultural Resources, April 2019

Acoustical Engineering Services, Inc.

Estimated Vibration Velocity Levels at the Nearest Off-Site Structures from the Project Construction Equipment, ^b inch/second (PPV)								
Nearest Off-Site Building Structures ^a	Vibratory Roller	Large Bulldozer	Caisson Drilling	Loaded Trucks	Jack- hammer	Small Bulldozer	Threshold, dBA (L _{eq})	Sig. Impacts?
	Wes	st Site						
North – AMDA Vine building ^f , Location 6	3.379	1.432	1.432	1.223	0.563	0.048	0.50°	Yes
North – Art Deco Building at 6314-24 Yucca Street, Location 14	3.379	1.432	1.432	1.223	0.563	0.048	0.12 ^c	Yes
South – Avalon Hollywood ^f , Location 15	3.379	1.432	1.432	1.223	0.563	0.048	0.12 ^c	Yes
East – Capital Records Complex (Capitol Records Building and Gogerty Building located on-site within the Project East Site), Locations 18 and 19	0.028	0.012	0.012	0.010	0.005	<0.001	0.50°	No
West – Single-story commercial buildings on west side of Ivar Avenue (6340 Yucca Street, 1763 Ivar Avenue, and the Hollywood-Ivar Building at 1741 Ivar Avenue), Locations 16 and 17	0.040	0.017	0.017	0.015	0.007	0.001	0.20 ^d	No
	Eas	t Site						
North – Argyle House at southwest corner of Yucca Street/Argyle Avenue ^f , Location 3	3.379	1.432	1.432	1.223	0.563	0.048	0.50 ^e	Yes
South – Pantages Theatre ^f , Location 9	3.379	1.432	1.432	1.223	0.563	0.048	0.12°	Yes
South – Single-story commercial building at 1718 N. Vine Street, Location 20	3.379	1.432	1.432	1.223	0.563	0.048	0.20 ^d	Yes
East – Eastown multi-family residential buildings, Location 8	0.040	0.017	0.017	0.015	0.007	0.001	0.50 ^e	No
West – h Club LA, Location 11	0.028	0.012	0.012	0.010	0.005	< 0.001	0.50 ^e	No
West – Avalon Hollywood ^f , Location 15	3.379	1.432	1.432	1.223	0.563	0.048	0.12°	Yes
	Historic	Structures						
Pantages Theatre ^f , Location 9	3.379	1.432	1.432	1.223	0.563	0.048	0.12°	Yes
The Lofts (Hollywood Equitable Building), Location 10	0.045	0.019	0.019	0.016	0.008	0.001	0.12°	No
St. Elmo Apartments at 6358 Yucca Street, Location 13	0.016	0.007	0.007	0.006	0.003	< 0.001	0.12°	No
Art Deco Building at 6316-24 Yucca Street ^f , Location 14	3.379	1.432	1.432	1.223	0.563	0.048	0.12°	Yes
Avalon Hollywood ^f , Location 15	3.379	1.432	1.432	1.223	0.563	0.048	0.12°	Yes
Hollywood-Ivar Building at 1741 Ivar Avenue, Location 17	0.040	0.017	0.017	0.015	0.007	0.001	0.12°	No
Capitol Records Building ^f (located on-site within the Project East Site), Location 18	3.379	1.432	1.432	1.223	0.563	0.048	0.50°	Yes

Table 12. Construction Vibration Impacts – Building Damage

Estimated Vibration Velocity Levels at the Nearest Off-Site Structures from the Project Construction Equipment, ^b inch/second (PPV)								
Nearest Off-Site Building Structures ^a	Vibratory Roller	Large Bulldozer	Caisson Drilling	Loaded Trucks	Jack- hammer	Small Bulldozer	Threshold, dBA (L _{eq})	Sig. Impacts?
Gogerty Building (located on-site within the Project East Site), Location 19	0.575	0.244	0.244	0.208	0.096	0.008	0.50 ^e	Yes
 ^a Represents off-site building structures located nearest to the Project Site to the north, south, east and west. Refer to Table 5 for location number. ^b Vibration level calculated based on FTA reference vibration level at 25 foot distance. ^c FTA criteria buildings extremely susceptible to building damage. Significance thresholds for the Hollywood Equitable Building are conservative, as it is a concreheave higher vibration limits. 						oncrete building,	which would	
 ^d FTA criteria for non-engineered timber and masonry buildings. ^e FTA criteria for reinforced concrete, steel or timber buildings. 								

^f The Project construction activities would be up to the property line adjacent to the buildings. Vibration levels at the property line are best estimate, as the FTA reference data are at 25 feet distance and FTA calculation procedure is generally applicable to distances greater than 25 feet.

Source: AES, 2020

Off-Site	Estimated	l Vibration V from the	elocity Leve Project Con V	ls at the Near struction Equ dB	est Off-Site S uipment,ª	Structures	Significance	
Receptor Location	Vibratory Roller	Large Bulldozer	Caisson Drilling	Loaded Trucks	Jack- hammer	Small Bulldozer	Threshold, dBA (L _{eq})	Sig. Impacts?
1	69	62	62	61	54	33	72	No
2	59	52	52	51	44	23	72	No
3	62	55	55	54	47	26	72	No
4	54	47	47	46	39	18	72	No
5	54	47	47	46	39	18	72	No
6	119	112	112	111	104	83	75	Yes
7	73	66	66	65	58	37	75	No
8	54	47	47	46	39	18	72	No
9	63	56	56	55	48	27	72	No
10	63	56	56	55	48	27	72	No
11	76	69	69	68	61	40	72	Yes
12	77	70	70	69	62	41	72	Yes
13	72	65	65	64	57	36	72	Yes
^a Vibration lev	vel calculated be	ased on FTA rej	ference vibratic	on level at 25 fo	ot distance.			

Table 13. Construction Vibration Impacts – Human Annoyance (West Site)

Bold-faced represents vibration levels exceeded the significance threshold.

Source: FTA, 2018; AES, 2019.

Off-Site	Significance							
Receptor Location	Vibratory Roller	Large Bulldozer	Caisson Drilling	Threshold, dBA (L _{eq})	Sig. Impacts?			
1	60	53	53	52	45	24	72	No
2	63	56	56	55	48	27	72	No
3	119	112	112	111	104	83	72	Yes
4	65	58	58	57	50	29	72	No
5	79	72	72	71	64	43	72	Yes
6	66	59	59	58	51	30	75	No
7	62	55	55	54	47	26	75	No
8	79	72	72	71	64	43	72	Yes
9	119	112	112	111	104	83	72	Yes
10	76	69	69	68	61	40	72	Yes
11	77	70	70	69	62	41	72	Yes
12	62	55	55	54	47	26	72	No
13	52	45	45	44	37	16	72	No
^a Vibration lev	vel calculated bo	ased on FTA ref	ference vibratic	on level at 25 fo	ot distance.			

Table 14. Construction Vibration Impacts – Human Annoyance (East Site)

Bold-faced represents vibration levels exceeded the significance threshold.

Source: FTA, 2018; AES, 2019.

4 Mitigation Measures

As analyzed above, the Project's on-site construction activities would result in a significant noise and vibration impacts without implementation of mitigation measures listed in Section 4.1. As it relates to potential damages to adjacent buildings from Project construction, the Project would be subject to Section 91.3307 of the LAMC (Protection of Adjoining Property). Specifically, Section 91.3307.1 (Protection Required) states adjoining public and private property shall be protected from damage during construction, remodeling and demolition work. The Project construction activities would be required to comply with the City's Ordinance Nos. 144,331 and 161,574, which prohibit the emission or creation of noise beyond 75 dBA at 50 feet from the equipment, unless technically infeasible.¹⁵ In addition, the Project would be subject to Section 91.106.4.8 (Construction Site Notice, City's Ordinance 178048), which requires a construction site notice to be provided that includes the following information: job site address, permit number, name and phone number of the contractor and owner or owner's agent, hours of construction allowed by code or any discretionary approval for the Site, and City telephone numbers where violations can be reported. Therefore, the following noise and vibration mitigation measures are recommended to reduce the Project's construction related noise and vibration to the sensitive uses in the vicinity of the Project Site:

4.1 Construction Noise

- NOI-1: Noise and vibration construction equipment whose specific location on the Project Site may be flexible (e.g., compressors and generators) shall be located away from the nearest off-site sensitive land uses (at least 100 feet away), or natural and/or manmade barriers (e.g., intervening construction trailers) shall be used to screen propagation of noise from such equipment towards these land uses.
- NOI-2: The project contractor shall use power construction equipment with state-ofthe-art noise shielding and muffling devices. In addition, no impact pile driving shall be utilized; augered or drilled piles are permitted. Flexible sound control curtains shall be placed around all drilling apparatuses, drill rigs, and jackhammers when in use.
- NOI-3: A construction liaison shall be provided to inform the nearby receptors 1, 3, and 5 through 13 when peak noise and vibration activities are scheduled to occur. Two weeks prior to the commencement of construction at the Project Site, notification shall be provided to these receptor properties that discloses the construction schedule, including the various types of activities and

¹⁵ Technical infeasibility shall mean that said noise limitations cannot be complied with despite the use of mufflers, shields, sound barriers, and/or other noise reduction devices or techniques during the operation of the equipment. LAMC Section 112.05.

Acoustical Engineering Services, Inc.

equipment that would be occurring throughout the duration of the construction period.

4.2 Construction Vibration

- NOI-4: The Applicant shall perform structural vibration monitoring during Project construction as follows:
 - a) Prior to start of construction, the Applicant shall retain the services of a licensed building inspector or structural engineer to visit the following buildings, which are located adjacent to the Project Site and to the west, to inspect and document (video and/or photographic) the apparent physical condition of the building's readily-visible features. This includes both historic buildings and non-historic buildings in proximity to the Project Site. For the historic buildings listed below, inspection and documentation shall also be carried out by and in coordination with a qualified preservation consultant. The non-historic buildings are as follows:
 - AMDA Vine Building
 - Argyle House
 - Single-story commercial building at 1718 N. Vine Street (if this building has already been demolished as part of Related Project No. 2, the provisions of this mitigation measure do not apply to this structure).

The historic buildings are as follows:

- Capitol Records Building (on-site)
- Gogerty Building (on-site)
- Pantages Theatre (off-site)
- Avalon Hollywood (off-site)
- 6316-24 Yucca Street/Art Deco Building Storefront (off-site)
- b) The Applicant shall retain the services of a qualified acoustical engineer to develop and implement a vibration monitoring program during the site demolition and grading/excavation, capable of documenting the construction-related ground vibration levels at the buildings listed above. The vibration monitoring system shall be placed at receptor building facades closet to Project construction activity or placed at a representative location if a receptor building façade is not accessible and shall continuously measure (in vertical and horizontal directions) and store the peak particle velocity (PPV) in inch/second. The systems shall also be programmed for two preset velocity levels: a warning level of 0.10 inch/second (PPV) for the off-site historic structures, 0.15 inch/second

(PPV) for the single-story commercial building at 1718 N. Vine Street (not required if this building has already been demolished as part of Related Project No. 2), and 0.45 inch/second (PPV) for the Capitol Records Building, Gogerty Building, AMDA Vine Building and the Argyle House and a regulatory level of 0.12 inch/second (PPV) for the off-site historic structures, 0.20 inch/second (PPV) for the single-story commercial building at 1718 N. Vine Street (not required if this building has already been demolished as part of Related Project No. 2), and 0.50 inch/second (PPV) for the Capitol Records Building, Gogerty Building, AMDA Vine Building and the Argyle House. In case where a receptor building façade is not accessible, the two preset velocity levels shall be programmed at equivalent levels based on distance and soil characteristics that affect vibration transmission over that distance. The systems shall also provide real-time alert when the vibration levels exceed the two preset levels.

- c) The vibration monitoring program shall be submitted, for review and approval, to the Department of Building and Safety, prior to initiating any construction activities.
- d) In the event the warning level [i.e., 0.10, 0.15, and 0.45 inch/second (PPV), or equivalent levels] is triggered, the contractor shall identify the source of vibration generation and provide feasible steps to reduce the vibration level, including but not limited to staggering concurrent activities (if doing so would not pose a safety risk to personnel or damage risk to buildings or facilities) and utilizing lower vibratory techniques.
- e) In the event the regulatory level [i.e., 0.12, 0.20, and 0.50 inch/second (PPV), or equivalent levels] is triggered, the contractor shall identify the source of vibration generation and implement feasible steps identified in Item "d" above to reduce the vibration level from construction activities to avoid or minimize damage from construction activities. The contractor shall visually inspect the building for any damage. Results of the inspection must be logged.
- f) In the event that the regulatory ground vibration levels are exceeded and there is documented evidence including a visual inspection that no damage to historic structures has occurred, the ground vibration levels can be increased to the criteria for the previous building structural category in increments as follows, subject to review and approval by the City, up to a maximum regulatory ground vibration level of 0.5 inch/second (PPV), or equivalent level.
 - From Category IV to Category III [0.12 to 0.20 inch/second (PPV), or equivalent level],
 - From Category III to Category II [0.20 to 0.30 inch/second (PPV), or equivalent level], or
• From Category II to Category I [0.30 to 0.50 inch/second (PPV), or equivalent level].

If the regulatory ground vibration level is increased, the warning level shall also be increased matching the corresponding Category as follows (or equivalent levels):

- Category I: 0.45 inch/second (PPV)
- Category II: 0.25 inch/second (PPV)
- Category III: 0.15 inch/second (PPV)
- Category IV: 0.10 inch/second (PPV)
- g) If new regulatory and warning levels are set pursuant to Item "f" above, the can be exceeded and increased again pursuant to the same requirements in Item "f".
- h) In the event damage occurs to the historic buildings (finish materials) due to construction vibration, such materials shall be repaired in consultation with a qualified preservation consultant, and, if warranted, in a manner that meets the Secretary of the Interior's Standards.

Acoustical Engineering Services, Inc.

5 Significance Level after Mitigation Measures

5.1 Construction Noise

Implementation of the mitigation measures NOI-1 and NOI-2, as described above, would reduce the Project's on-site construction noise impacts at the off-site noise sensitive receptors, to the extent technically feasible.¹⁶ However, with implementation of technical feasible mitigation, construction noise impacts at noise-sensitive receptors 1, 3, and 5 through 13 would still exceed the significance threshold. Therefore, construction noise impacts associated with on-site noise sources would remain temporarily significant and unavoidable.

5.2 Construction Vibration

With implementation of mitigation measure NOI-3, significant vibration impacts associated with potential damage to the Capitol Records Building and Gogerty Building would be reduced to less than significant levels. However, while implementation of mitigation measure NOI-4, and compliance with LAMC Section 91.3307.1, would provide the same or similar protections to the other buildings subject to potential structural damage from vibration which would reduce impacts to less than significant levels, because mitigation measure NOI-3 requires the consent of other property owners, who may not agree, it is conservatively concluded that structural vibration impacts on the AMDA Vine Building, the Argyle House at southwest corner of Yucca Street/Argyle Avenue, the Pantages Theatre, Avalon Hollywood, single-story commercial building at 1718 N. Vine Street, and Art Deco Building Storefront (6316-24 Yucca Street), would remain significant and unavoidable because it cannot be assured that all components of mitigation measure NOI-4 can be implemented.

Vibration impacts pursuant to human annoyance at the nearby noise sensitive receptors would exceed the significance thresholds (72 VdB at residential uses, 75 VdB at institutional uses, and 65 VdB at recording studios). Potential mitigation measures to reduce vibration impacts from on-site construction activities with respect to human annoyance include the installation of a wave barrier, which is typically a trench or a thin wall made of sheet piles installed in the ground (essentially a subterranean sound barrier to reduce noise). However, wave barriers must be very deep and long to be effective and are not considered feasible for temporary applications, such as the Project construction.¹⁷ Per Caltrans, the wave barrier would need to be at least two-thirds of the seismic wavelength and that the length of the barrier must be at least one wavelength (typical wavelength can be up to 500 feet). In addition, constructing a wave barrier to reduce the Project's construction-related vibration impacts would, in and of itself, generate ground-borne vibration from the excavation equipment. Thus, it is concluded that there are no

¹⁶ Technical infeasibility shall mean that said noise limitations cannot be complied with despite the use of mufflers, shields, sound barriers, and/or other noise reduction devices or techniques during the operation of the equipment. LAMC Section 112.05.

¹⁷ Caltrans, Transportation and Construction Vibration Guidance Manual, September 2013.

feasible mitigation measures that could be implemented to reduce the temporary vibration impacts from on-site construction associated with human annoyance. Therefore, project-level vibration impacts from on-site construction activities with respect to human annoyance would remain significant and unavoidable.

Acoustical Engineering Services, Inc.

6 References

- California Department of Transportation (Caltrans), Roadway Construction Noise Model User's Guide, January 2006.
- California Department of Transportation (Caltrans), *Transportation and Construction Vibration Guidance Manual*, September 2013.
- California Department of Transportation (Caltrans), *Technical Noise Supplement (TeNS"*, September 2013.
- City of Los Angeles, Municipal Code, Chapter XI Noise Regulation.
- D.A. Bies & C.H. Hansen, Engineering Noise Control, 1988.
- Federal Highway Administration (FHWA), *Roadway Construction Noise Model User's Guide*, 2006, May 2006.
- Federal Transit Administration (FTA), *Transit Noise and Vibration Impact Assessment*, September 2018.

Appendix A

Hollywood Center Project Construction Noise and Vibration Calculations



Construction Phase: Demolition West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	170	0
Jackhammer	1	89	20%	170	0
Excavator	1	81	40%	190	0
Rubber Tired Loader	1	79	40%	190	0
Air Compressor	1	78	40%	210	0
Dumpers/Tenders	1	76	40%	210	0
Concrete Saw	1	90	20%	230	0
Total # of equipment:	7				
Receptor:	1				
Results:					
	1-hour Leq:	76.9			



Construction Phase: Drainage/Utilities/Trenching West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	170	0
Tractor/Loader/Backho	e 1	84	40%	170	0
Crane	1	81	16%	190	0
Air Compressor	1	78	40%	190	0
Total # of equipment:	4				
Receptor:	1				
Results:					
	1-hour Leq:	74.6			



Construction Phase: Grading/Excavation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backhoe	1	84	40%	170	0
Drill Rig	1	84	20%	170	0
Cranne	1	81	16%	190	0
Plate Compactor	1	83	20%	190	0
Excavator	1	81	40%	210	0
Rubber Tired Loader	1	79	40%	210	0
Dumpers/Tenders	1	76	40%	230	0
Plate Compactor	1	83	20%	230	0
Excavator	1	81	40%	250	0
Rubber Tired Loader	1	79	40%	250	0
Dumpers/Tenders	1	76	40%	270	0
Excavator	2	81	40%	270	0
Total # of equipment:	13				
Receptor:	1				
Results:					

1-hour Leq: 75.0



Construction Phase: Site Preparation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	170	0
Rubber Tired Loader	1	79	40%	170	0
Total # of equipment:	2				
Pocontor:	- 1				
Receptor.	I				
Results:					
	1-hour Leq:	68.5			
	•				



Construction Phase: Foundation/Concrete Pour West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	170	0
Tractor/Loader/Backhoe	e 1	84	40%	170	0
Fork Lift	1	75	20%	190	0
Concrete Pump	2	81	20%	190	0
Air Compressor	1	78	40%	210	0
Dumpers/Tenders	2	76	40%	210	0
Crane	1	81	16%	230	0
Total # of equipment:	9				
	J 4				
Receptor: Results:	1				
	1-hour Leq:	74.8			



Construction Phase: Building Construction West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	170	0
Tractor/Loader/Backhoo	e 1	84	40%	170	0
Bore/Drill Rigs	1	84	20%	190	0
Crane	1	81	16%	190	0
Concrete Pump	1	81	20%	210	0
Dumpers/Tenders	2	76	40%	210	0
Air Compressor	1	78	40%	230	0
Fork Lift	1	75	20%	230	0
Crane	1	81	16%	250	0
Total # of equipment:	10				
Receptor:	1				
Results:					
	1-hour Leq:	75.2			



Construction Phase: Architectural Coating West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	170	0
Fork Lift	1	75	20%	170	0
Dumpers/Tenders	1	76	40%	190	0
Total # of equipment:	3				
	J 4				
Receptor:	1				
Results:					
	1-hour Leq:	65.8			



Construction Phase: *Paving West Site*

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	170	0
Surfacing Equipment	1	90	20%	170	0
Graders	1	85	40%	190	0
Plate Compactor	1	83	20%	190	0
Sweepers/Scrubbers	1	82	10%	210	0
Paving Equipment	1	77	50%	210	0
Roller	1	80	20%	230	0
Paver	1	77	50%	230	0
Total # of equipment:	0				
Total # of equipment:	8				
Receptor:	1				
Results:	_				

1-hour Leq: 77.0



Construction Phase: Site Preparation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	350	5
Rubber Tired Loader	1	79	40%	350	5
Total # of aquipmont:	<u>ົ</u> ງ				
	2				
Receptor:	1				
Results:					
	1-hour Lea:	57.2			
	i near Eoq.				



Construction Phase: Drainage/Utilities/Trenching East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	350	5
Tractor/Loader/Backhoe	e 1	84	40%	350	5
Crane	1	81	16%	370	5
Air Compressor	1	78	40%	370	5
Total # of equipment:	4				
Receptor:	1				
Results:					
	1-hour Leq:	63.4			



Construction Phase: Grading/Excavation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backhoe	1	84	40%	350	5
Drill Rig	1	84	20%	350	5
Crane	1	81	16%	370	5
Plate Compactor	1	83	20%	370	5
Excavator	1	81	40%	390	5
Rubber Tired Loader	1	79	40%	390	5
Dumpers/Tenders	1	76	40%	410	5
Plate Compactor	1	83	20%	410	5
Excavator	1	81	40%	430	5
Rubber Tired Loader	1	79	40%	430	5
Dumpers/Tenders	1	76	40%	450	5
Excavator	2	81	40%	450	5
Total # of equipment:	13				
Receptor:	1				
Results:					

1-hour Leq: 64.5



Construction Phase: Foundation/Concrete Pour East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	350	5
Tractor/Loader/Backhoe	e 1	84	40%	350	5
Fork Lift	1	75	20%	370	5
Concrete Pump	2	81	20%	370	5
Air Compressor	1	78	40%	390	5
Dumpers/Tenders	2	76	40%	390	5
Crane	1	81	16%	410	5
Total # of equipment:	9				
Becenter:	- -				
Receptor: Results:	1				
	1-hour Leq:	63.8			



Construction Phase: Building Construction East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	350	5
Tractor/Loader/Backhoe	e 1	84	40%	350	5
Bore/Drill Rigs	1	84	20%	370	5
Crane	1	81	16%	370	5
Concrete Pump	1	81	20%	390	5
Dumpers/Tenders	2	76	40%	390	5
Air Compressor	1	78	40%	410	5
Fork Lift	1	75	20%	410	5
Crane	1	81	16%	430	5
Total # of equipment:	10				
Receptor:	1				
Results:					
	1-hour Leq:	64.2			



Construction Phase: Architectural Coating East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	350	5
Fork Lift	1	75	20%	350	5
Dumpers/Tenders	1	76	40%	370	5
Total # of equipment:	3				
Pocontor:	1				
Receptor.	I				
Desulter					
Results:					
	1-hour Leq:	54.7			
	•				



Construction Phase: Paving East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	350	5
Surfacing Equipment	1	90	20%	350	5
Graders	1	85	40%	370	5
Plate Compactor	1	83	20%	370	5
Sweepers/Scrubbers	1	82	10%	390	5
Paving Equipment	1	77	50%	390	5
Roller	1	80	20%	410	5
Paver	1	77	50%	410	5
Total # of equipment:	8				
Receptor:	1				
Results:					
	1-hour Leq:	66.0			



Construction Phase: Demolition West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	360	0
Jackhammer	1	89	20%	360	0
Excavator	1	81	40%	380	0
Rubber Tired Loader	1	79	40%	380	0
Air Compressor	1	78	40%	400	0
Dumpers/Tenders	1	76	40%	400	0
Concrete Saw	1	90	20%	420	0
Total # of equipment:	7				
Personation:	2				
Receptor: Results:	2				
	1-nour Leq:	70.7			



Construction Phase: Drainage/Utilities/Trenching West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	360	0
Tractor/Loader/Backhoo	e 1	84	40%	360	0
Crane	1	81	16%	380	0
Air Compressor	1	78	40%	380	0
Total # of equipment:	4				
Receptor.	Z				
Results:					
	1-hour Leq:	68.2			



Construction Phase: Grading/Excavation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backho	e 1	84	40%	360	0
Drill Rig	1	84	20%	360	0
Cranne	1	81	16%	380	0
Plate Compactor	1	83	20%	380	0
Excavator	1	81	40%	400	0
Rubber Tired Loader	1	79	40%	400	0
Dumpers/Tenders	1	76	40%	420	0
Plate Compactor	1	83	20%	420	0
Excavator	1	81	40%	440	0
Rubber Tired Loader	1	79	40%	440	0
Dumpers/Tenders	1	76	40%	460	0
Excavator	2	81	40%	460	0
Total # of equipment:	13				
Receptor:	2				
Results:					
	1-hour Leq:	69.3			



Construction Phase: Site Preparation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	360	0
Rubber Tired Loader	1	79	40%	360	0
Total # of equipment:	2				
	2				
Receptor:	2				
Results:					
	1 hour Logi	62.0			
	-nour Leq:	02.0			



Construction Phase: Foundation/Concrete Pour West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	360	0
Tractor/Loader/Backhoe	e 1	84	40%	360	0
Fork Lift	1	75	20%	380	0
Concrete Pump	2	81	20%	380	0
Air Compressor	1	78	40%	400	0
Dumpers/Tenders	2	76	40%	400	0
Crane	1	81	16%	420	0
Total # of equipment:	9				
	9				
Receptor: Results:	2				
	1-hour Leq:	68.6			



Construction Phase: Building Construction West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	360	0
Tractor/Loader/Backhoe	e 1	84	40%	360	0
Bore/Drill Rigs	1	84	20%	380	0
Crane	1	81	16%	380	0
Concrete Pump	1	81	20%	400	0
Dumpers/Tenders	2	76	40%	400	0
Air Compressor	1	78	40%	420	0
Fork Lift	1	75	20%	420	0
Crane	1	81	16%	440	0
Total # of aquipment	10				
Total # of equipment:	10				
Receptor:	2				
Results:					
	1-hour Leq:	68.9			



Construction Phase: Architectural Coating West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	360	0
Fork Lift	1	75	20%	360	0
Dumpers/Tenders	1	76	40%	380	0
Total # of equipment:	3				
	0				
Receptor:	2				
Desulter					
Results:					
	1-hour Leq:	59.5			
	-				



Construction Phase: *Paving West Site*

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	360	0
Surfacing Equipment	1	90	20%	360	0
Graders	1	85	40%	380	0
Plate Compactor	1	83	20%	380	0
Sweepers/Scrubbers	1	82	10%	400	0
Paving Equipment	1	77	50%	400	0
Roller	1	80	20%	420	0
Paver	1	77	50%	420	0
Total # of equipment:	8				
Receptor:	2				
Results:					
	1-hour Leq:	70.7			



Construction Phase: Site Preparation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	280	5
Rubber Tired Loader	1	79	40%	280	5
Total # of equipment:	2				
Recentor:	2				
	2				
Results:					
	1-hour Leq:	59.2			



Construction Phase: Drainage/Utilities/Trenching East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	280	5
Tractor/Loader/Backhoe	e 1	84	40%	280	5
Crane	1	81	16%	300	5
Air Compressor	1	78	40%	300	5
Total # of equipment:	4				
	4				
Receptor:	2				
Results:					
	1-hour Leq:	65.4			



Construction Phase: Grading/Excavation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backhoe	e 1	84	40%	280	5
Drill Rig	1	84	20%	280	5
Crane	1	81	16%	300	5
Plate Compactor	1	83	20%	300	5
Excavator	1	81	40%	320	5
Rubber Tired Loader	1	79	40%	320	5
Dumpers/Tenders	1	76	40%	340	5
Plate Compactor	1	83	20%	340	5
Excavator	1	81	40%	360	5
Rubber Tired Loader	1	79	40%	360	5
Dumpers/Tenders	1	76	40%	380	5
Excavator	2	81	40%	380	5
Total # of equipment:	13				
Receptor:	2				
Results:					
	1-hour Leq:	66.2			



Construction Phase: Foundation/Concrete Pour East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	280	5
Tractor/Loader/Backhoe	e 1	84	40%	280	5
Fork Lift	1	75	20%	300	5
Concrete Pump	2	81	20%	300	5
Air Compressor	1	78	40%	320	5
Dumpers/Tenders	2	76	40%	320	5
Crane	1	81	16%	340	5
Total # of equipment:	9				
Becenter:	Ő				
Receptor: Results:	2				
	1-hour Leq:	65.7			



Construction Phase: Building Construction East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	280	5
Tractor/Loader/Backhoe	e 1	84	40%	280	5
Bore/Drill Rigs	1	84	20%	300	5
Crane	1	81	16%	300	5
Concrete Pump	1	81	20%	320	5
Dumpers/Tenders	2	76	40%	320	5
Air Compressor	1	78	40%	340	5
Fork Lift	1	75	20%	340	5
Crane	1	81	16%	360	5
T () () ()	10				
l otal # of equipment:	10				
Receptor:	2				
Results:					
	1-hour Leq:	66.0			



Construction Phase: Architectural Coating East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	280	5
Fork Lift	1	75	20%	280	5
Dumpers/Tenders	1	76	40%	300	5
Total # of equipment:	3				
Receptor:	2				
Results:					
	1-hour Leq:	56.6			



Construction Phase: Paving East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	280	5
Surfacing Equipment	1	90	20%	280	5
Graders	1	85	40%	300	5
Plate Compactor	1	83	20%	300	5
Sweepers/Scrubbers	1	82	10%	320	5
Paving Equipment	1	77	50%	320	5
Roller	1	80	20%	340	5
Paver	1	77	50%	340	5
Tatal Walter is most					
lotal # of equipment:	8				
Receptor:	2				
Results:					
	1-hour Leq:	67.9			



Construction Phase: Demolition West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	300	0
Jackhammer	1	89	20%	300	0
Excavator	1	81	40%	320	0
Rubber Tired Loader	1	79	40%	320	0
Air Compressor	1	78	40%	340	0
Dumpers/Tenders	1	76	40%	340	0
Concrete Saw	1	90	20%	360	0
Total # of equipment:	7				
Peaceter:	, 2				
Results:	3				
	1-hour Leq:	72.2			


Construction Phase: Drainage/Utilities/Trenching West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	300	0
Tractor/Loader/Backhoe	e 1	84	40%	300	0
Crane	1	81	16%	320	0
Air Compressor	1	78	40%	320	0
Total # of equipment:	4				
	-				
Receptor:	3				
Results:					
	1-hour Leq:	69.8			



Construction Phase: Grading/Excavation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backhoe	1	84	40%	300	0
Drill Rig	1	84	20%	300	0
Cranne	1	81	16%	320	0
Plate Compactor	1	83	20%	320	0
Excavator	1	81	40%	340	0
Rubber Tired Loader	1	79	40%	340	0
Dumpers/Tenders	1	76	40%	360	0
Plate Compactor	1	83	20%	360	0
Excavator	1	81	40%	380	0
Rubber Tired Loader	1	79	40%	380	0
Dumpers/Tenders	1	76	40%	400	0
Excavator	2	81	40%	400	0
Total # of equipment:	13				
Receptor:	3				
Results:					

1-hour Leq: 70.7



Construction Phase: Site Preparation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	300	0
Rubber Tired Loader	1	79	40%	300	0
Total # of aquipment:					
	2				
Receptor:	3				
Results:					
	1-hour Leq:	63.6			



Construction Phase: Foundation/Concrete Pour West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	300	0
Tractor/Loader/Backhoe	e 1	84	40%	300	0
Fork Lift	1	75	20%	320	0
Concrete Pump	2	81	20%	320	0
Air Compressor	1	78	40%	340	0
Dumpers/Tenders	2	76	40%	340	0
Crane	1	81	16%	360	0
Total # of equipment:	9				
	9				
Receptor:	٢				
Nesuls.	1-hour Leq:	70.1			



Construction Phase: Building Construction West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	300	0
Tractor/Loader/Backhoe	e 1	84	40%	300	0
Bore/Drill Rigs	1	84	20%	320	0
Crane	1	81	16%	320	0
Concrete Pump	1	81	20%	340	0
Dumpers/Tenders	2	76	40%	340	0
Air Compressor	1	78	40%	360	0
Fork Lift	1	75	20%	360	0
Crane	1	81	16%	380	0
Total # of equipment:	10				
	2				
Receptor:	3				
Results:					
	1-hour Leq:	70.5			



Construction Phase: Architectural Coating West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	300	0
Fork Lift	1	75	20%	300	0
Dumpers/Tenders	1	76	40%	320	0
Total # of equipment:	3				
	0				
Receptor:	3				
Results:					
	1-hour Lea:	61.0			



Construction Phase: *Paving West Site*

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	300	0
Surfacing Equipment	1	90	20%	300	0
Graders	1	85	40%	320	0
Plate Compactor	1	83	20%	320	0
Sweepers/Scrubbers	1	82	10%	340	0
Paving Equipment	1	77	50%	340	0
Roller	1	80	20%	360	0
Paver	1	77	50%	360	0
Total # of equipment:	8				
Receptor:	3				
Results:					
	1-hour Leq:	72.3			



Construction Phase: Site Preparation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	10	0
Rubber Tired Loader	1	79	40%	30	0
Total # of aquipmont:)				
	2				
Receptor:	3				
Results:					
	1-hour Leq:	91.3			



Construction Phase: Drainage/Utilities/Trenching East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	10	0
Tractor/Loader/Backhoe	e 1	84	40%	30	0
Crane	1	81	16%	30	0
Air Compressor	1	78	40%	50	0
Total # of equipment:	4				
Receptor:	3				
Results:					
	1-hour Leq:	97.3			



Construction Phase: Grading/Excavation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backhoe	1	84	40%	10	0
Drill Rig	1	84	20%	30	0
Crane	1	81	16%	30	0
Plate Compactor	1	83	20%	50	0
Excavator	1	81	40%	50	0
Rubber Tired Loader	1	79	40%	70	0
Dumpers/Tenders	1	76	40%	70	0
Plate Compactor	1	83	20%	90	0
Excavator	1	81	40%	90	0
Rubber Tired Loader	1	79	40%	110	0
Dumpers/Tenders	1	76	40%	110	0
Excavator	2	81	40%	130	0
Total # of equipment:	13				
Receptor:	3				
Results:					

1-hour Leq: 94.6



Construction Phase: Foundation/Concrete Pour East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	10	0
Tractor/Loader/Backhoo	e 1	84	40%	30	0
Fork Lift	1	75	20%	30	0
Concrete Pump	2	81	20%	50	0
Air Compressor	1	78	40%	50	0
Dumpers/Tenders	2	76	40%	70	0
Crane	1	81	16%	70	0
Total # of equipment:	9				
	9				
Receptor:	3				
Results:	4.1	00.4			
	1-nour Leq:	96.4			



Construction Phase: Building Construction East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	10	0
Tractor/Loader/Backhoe	e 1	84	40%	30	0
Bore/Drill Rigs	1	84	20%	30	0
Crane	1	81	16%	50	0
Concrete Pump	1	81	20%	50	0
Dumpers/Tenders	2	76	40%	70	0
Air Compressor	1	78	40%	70	0
Fork Lift	1	75	20%	90	0
Crane	1	81	16%	90	0
Total # of equipment:	10				
Recentor:	3				
Neveploi.	5				
Results:					
	1-hour Leq:	96.5			



Construction Phase: Architectural Coating East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	10	0
Fork Lift	1	75	20%	30	0
Dumpers/Tenders	1	76	40%	30	0
Total # of equipment:	3				
	0				
Receptor:	3				
Results:					
	1-hour Lea:	88.4			



Construction Phase: Paving East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	10	0
Surfacing Equipment	1	90	20%	30	0
Graders	1	85	40%	30	0
Plate Compactor	1	83	20%	50	0
Sweepers/Scrubbers	1	82	10%	50	0
Paving Equipment	1	77	50%	70	0
Roller	1	80	20%	70	0
Paver	1	77	50%	90	0
Total # of equipment:	8				
Receptor:	3				
Results:					
	1-hour Leq:	97.8			



Construction Phase: Demolition West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	550	5
Jackhammer	1	89	20%	550	5
Excavator	1	81	40%	570	5
Rubber Tired Loader	1	79	40%	570	5
Air Compressor	1	78	40%	590	5
Dumpers/Tenders	1	76	40%	590	5
Concrete Saw	1	90	20%	610	5
Total # of equipment:	7				
Pocontor:					
Results:	4	00.0			
	1-nour Leq:	62.2			



Construction Phase: Drainage/Utilities/Trenching West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	550	5
Tractor/Loader/Backhoo	e 1	84	40%	550	5
Crane	1	81	16%	570	5
Air Compressor	1	78	40%	570	5
Total # of equipment:	4				
Receptor.	-				
Results:					
	1-hour Leq:	59.5			



Construction Phase: Grading/Excavation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backho	e 1	84	40%	550	5
Drill Rig	1	84	20%	550	5
Cranne	1	81	16%	570	5
Plate Compactor	1	83	20%	570	5
Excavator	1	81	40%	590	5
Rubber Tired Loader	1	79	40%	590	5
Dumpers/Tenders	1	76	40%	610	5
Plate Compactor	1	83	20%	610	5
Excavator	1	81	40%	630	5
Rubber Tired Loader	1	79	40%	630	5
Dumpers/Tenders	1	76	40%	650	5
Excavator	2	81	40%	650	5
Total # of equipment:	13				
Receptor:	4				
Results:					
	1-hour Leq:	60.9			



Construction Phase: Site Preparation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	550	5
Rubber Tired Loader	1	79	40%	550	5
Total # of a guing anti-	0				
Total # of equipment:	2				
Receptor:	4				
Results:					
	1-hour Lea	53 3			
		55.5			



Construction Phase: Foundation/Concrete Pour West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	550	5
Tractor/Loader/Backhoo	e 1	84	40%	550	5
Fork Lift	1	75	20%	570	5
Concrete Pump	2	81	20%	570	5
Air Compressor	1	78	40%	590	5
Dumpers/Tenders	2	76	40%	590	5
Crane	1	81	16%	610	5
Total # of equipment:	9				
	3				
Receptor: Results:	4				
	1-hour Leq:	59.9			



Construction Phase: Building Construction West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	550	5
Tractor/Loader/Backhoe	e 1	84	40%	550	5
Bore/Drill Rigs	1	84	20%	570	5
Crane	1	81	16%	570	5
Concrete Pump	1	81	20%	590	5
Dumpers/Tenders	2	76	40%	590	5
Air Compressor	1	78	40%	610	5
Fork Lift	1	75	20%	610	5
Crane	1	81	16%	630	5
Total # of equipment:	10				
Receptor:	4				
Results:					
	1-hour Leq:	60.4			



Construction Phase: Architectural Coating West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	550	5
Fork Lift	1	75	20%	550	5
Dumpers/Tenders	1	76	40%	570	5
Total # of equipment:	3				
Receptor:	4				
	•				
Results:					
	1-hour Leq:	50.8			



Construction Phase: *Paving West Site*

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	550	5
Surfacing Equipment	1	90	20%	550	5
Graders	1	85	40%	570	5
Plate Compactor	1	83	20%	570	5
Sweepers/Scrubbers	1	82	10%	590	5
Paving Equipment	1	77	50%	590	5
Roller	1	80	20%	610	5
Paver	1	77	50%	610	5
Total # of equipment:	8				
Receptor:	4				
Results:					
	1-hour Leq:	62.1			



Construction Phase: Site Preparation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	230	5
Rubber Tired Loader	1	79	40%	230	5
Total # of equipment:	2				
Recentor:					
Neceptor.	-				
Results:					
	1-hour Leq:	60.9			



Construction Phase: Drainage/Utilities/Trenching East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	230	5
Tractor/Loader/Backhoe	e 1	84	40%	230	5
Crane	1	81	16%	250	5
Air Compressor	1	78	40%	250	5
Total # of equipment: Receptor:	4 4				
·					
Results:					
	1-hour Leq:	67.0			



Construction Phase: Grading/Excavation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backho	e 1	84	40%	230	5
Drill Rig	1	84	20%	230	5
Crane	1	81	16%	250	5
Plate Compactor	1	83	20%	250	5
Excavator	1	81	40%	270	5
Rubber Tired Loader	1	79	40%	270	5
Dumpers/Tenders	1	76	40%	290	5
Plate Compactor	1	83	20%	290	5
Excavator	1	81	40%	310	5
Rubber Tired Loader	1	79	40%	310	5
Dumpers/Tenders	1	76	40%	330	5
Excavator	2	81	40%	330	5
Total # of equipment:	13				
Receptor:	4				
Results:					
	1-hour Leq:	67.7			



Construction Phase: Foundation/Concrete Pour East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	230	5
Tractor/Loader/Backhoe	e 1	84	40%	230	5
Fork Lift	1	75	20%	250	5
Concrete Pump	2	81	20%	250	5
Air Compressor	1	78	40%	270	5
Dumpers/Tenders	2	76	40%	270	5
Crane	1	81	16%	290	5
Total # of equipment:					
Becenter:	Å				
Receptor: Results:	4				
	1-hour Leq:	67.3			



Construction Phase: Building Construction East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	230	5
Tractor/Loader/Backhoe	e 1	84	40%	230	5
Bore/Drill Rigs	1	84	20%	250	5
Crane	1	81	16%	250	5
Concrete Pump	1	81	20%	270	5
Dumpers/Tenders	2	76	40%	270	5
Air Compressor	1	78	40%	290	5
Fork Lift	1	75	20%	290	5
Crane	1	81	16%	310	5
Total # of equipment:	10				
Receptor:	4				
Results:					
	1-hour Leq:	67.7			



Construction Phase: Architectural Coating East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	230	5
Fork Lift	1	75	20%	230	5
Dumpers/Tenders	1	76	40%	250	5
Total # of equipment:	3				
Pecentor:	1				
Neceptor.	7				
Results:					
	1-hour Leq:	58.3			



Construction Phase: Paving East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	230	5
Surfacing Equipment	1	90	20%	230	5
Graders	1	85	40%	250	5
Plate Compactor	1	83	20%	250	5
Sweepers/Scrubbers	1	82	10%	270	5
Paving Equipment	1	77	50%	270	5
Roller	1	80	20%	290	5
Paver	1	77	50%	290	5
Tatal Walter is most					
I otal # of equipment:	8				
Receptor:	4				
Results:					
	1-hour Leq:	69.5			



Construction Phase: Demolition West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	530	10
Jackhammer	1	89	20%	530	10
Excavator	1	81	40%	550	10
Rubber Tired Loader	1	79	40%	550	10
Air Compressor	1	78	40%	570	10
Dumpers/Tenders	1	76	40%	570	10
Concrete Saw	1	90	20%	590	10
Total # of equipment:	7				
Total # of equipment:	7				
Receptor:	5				
Results:					
	1-hour Leq:	57.5			



Construction Phase: Drainage/Utilities/Trenching West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	530	10
Tractor/Loader/Backhoe	e 1	84	40%	530	10
Crane	1	81	16%	550	10
Air Compressor	1	78	40%	550	10
Total # of equipment:	4				
	4				
Receptor:	5				
Results:					
	1-hour Leq:	54.8			



Construction Phase: Grading/Excavation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backho	e 1	84	40%	530	10
Drill Rig	1	84	20%	530	10
Cranne	1	81	16%	550	10
Plate Compactor	1	83	20%	550	10
Excavator	1	81	40%	570	10
Rubber Tired Loader	1	79	40%	570	10
Dumpers/Tenders	1	76	40%	590	10
Plate Compactor	1	83	20%	590	10
Excavator	1	81	40%	610	10
Rubber Tired Loader	1	79	40%	610	10
Dumpers/Tenders	1	76	40%	630	10
Excavator	2	81	40%	630	10
Total # of equipment:	13				
Receptor:	5				
Results:					
	1-hour Leq:	56.2			



Construction Phase: Site Preparation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	530	10
Rubber Tired Loader	1	79	40%	530	10
Total # of oquipmont:	2				
	2				
Receptor:	5				
Results:					
	1-hour Lea:	48.6			
	i noui Eoq.				



Construction Phase: Foundation/Concrete Pour West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	530	10
Tractor/Loader/Backhoe	e 1	84	40%	530	10
Fork Lift	1	75	20%	550	10
Concrete Pump	2	81	20%	550	10
Air Compressor	1	78	40%	570	10
Dumpers/Tenders	2	76	40%	570	10
Crane	1	81	16%	590	10
Total # of equipment:	9				
	9				
Receptor: Results:	5				
	1-hour Leq:	55.3			



Construction Phase: Building Construction West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	530	10
Tractor/Loader/Backhoo	e 1	84	40%	530	10
Bore/Drill Rigs	1	84	20%	550	10
Crane	1	81	16%	550	10
Concrete Pump	1	81	20%	570	10
Dumpers/Tenders	2	76	40%	570	10
Air Compressor	1	78	40%	590	10
Fork Lift	1	75	20%	590	10
Crane	1	81	16%	610	10
Total # of equipment:	10				
Receptor:	5				
Results.					
Nogung.	1-hour Leg:	55.7			



Construction Phase: Architectural Coating West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	530	10
Fork Lift	1	75	20%	530	10
Dumpers/Tenders	1	76	40%	550	10
Total # of equipment:	3				
Receptor:	5				
	Ū				
Results:					
	1-hour Leq:	46.2			


Construction Phase: *Paving West Site*

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	530	10
Surfacing Equipment	1	90	20%	530	10
Graders	1	85	40%	550	10
Plate Compactor	1	83	20%	550	10
Sweepers/Scrubbers	1	82	10%	570	10
Paving Equipment	1	77	50%	570	10
Roller	1	80	20%	590	10
Paver	1	77	50%	590	10
 Total # of equipment:	8				
Receptor:	5				
	-				
Results:					
	1-hour Leq:	57.5			



Construction Phase: Site Preparation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	80	0
Rubber Tired Loader	1	79	40%	80	0
Total # of equipment:	2				
Receptor:	5				
Results:					
	1-hour Leq:	75.1			



Construction Phase: Drainage/Utilities/Trenching East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	80	0
Tractor/Loader/Backhoe	e 1	84	40%	80	0
Crane	1	81	16%	100	0
Air Compressor	1	78	40%	100	0
Total # of onvironments					
I otal # of equipment:	4				
Receptor:	5				
Results:					
	1-hour Leq:	81.1			



Construction Phase: Grading/Excavation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backho	e 1	84	40%	80	0
Drill Rig	1	84	20%	80	0
Crane	1	81	16%	100	0
Plate Compactor	1	83	20%	100	0
Excavator	1	81	40%	120	0
Rubber Tired Loader	1	79	40%	120	0
Dumpers/Tenders	1	76	40%	140	0
Plate Compactor	1	83	20%	140	0
Excavator	1	81	40%	160	0
Rubber Tired Loader	1	79	40%	160	0
Dumpers/Tenders	1	76	40%	180	0
Excavator	2	81	40%	180	0
Total # of equipment:	13				
Receptor:	5				
Results:					
	1-hour Leq:	80.5			



Construction Phase: Foundation/Concrete Pour East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	80	0
Tractor/Loader/Backhoe	e 1	84	40%	80	0
Fork Lift	1	75	20%	100	0
Concrete Pump	2	81	20%	100	0
Air Compressor	1	78	40%	120	0
Dumpers/Tenders	2	76	40%	120	0
Crane	1	81	16%	140	0
Total # of equipment:	- 9				
	5 F				
Receptor: Results:	5				
	1-hour Leq:	81.1			



Construction Phase: Building Construction East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	80	0
Tractor/Loader/Backhoe	e 1	84	40%	80	0
Bore/Drill Rigs	1	84	20%	100	0
Crane	1	81	16%	100	0
Concrete Pump	1	81	20%	120	0
Dumpers/Tenders	2	76	40%	120	0
Air Compressor	1	78	40%	140	0
Fork Lift	1	75	20%	140	0
Crane	1	81	16%	160	0
Total # of equipment:	10				
Receptor:	5				
Results:					
	1-hour Leq:	81.3			



Construction Phase: Architectural Coating East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	80	0
Fork Lift	1	75	20%	80	0
Dumpers/Tenders	1	76	40%	100	0
Total # of equipment:	3				
Pocontor:	5				
Receptor.	5				
Results:					
	1-hour Leq:	72.1			



Construction Phase: Paving East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	80	0
Surfacing Equipment	1	90	20%	80	0
Graders	1	85	40%	100	0
Plate Compactor	1	83	20%	100	0
Sweepers/Scrubbers	1	82	10%	120	0
Paving Equipment	1	77	50%	120	0
Roller	1	80	20%	140	0
Paver	1	77	50%	140	0
Total # of equipment:	8				
Receptor:	5				
Results:					
	1-hour Leq:	83.2			



Construction Phase: Demolition West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	10	0
Jackhammer	1	89	20%	30	0
Excavator	1	81	40%	30	0
Rubber Tired Loader	1	79	40%	50	0
Air Compressor	1	78	40%	50	0
Dumpers/Tenders	1	76	40%	70	0
Concrete Saw	1	90	20%	70	0
Total # of equipment:	7				
	1				
Receptor:	6				
Neguna.	1-hour Leq:	97.6			



Construction Phase: Drainage/Utilities/Trenching West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	10	0
Tractor/Loader/Backhoe	• 1	84	40%	30	0
Crane	1	81	16%	30	0
Air Compressor	1	78	40%	50	0
Total # of equipment:	4				
Becontory	6				
Receptor:	O				
Results:					
	1-hour Leq:	97.3			



Construction Phase: Grading/Excavation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backhoe	1	84	40%	10	0
Drill Rig	1	84	20%	30	0
Cranne	1	81	16%	30	0
Plate Compactor	1	83	20%	50	0
Excavator	1	81	40%	50	0
Rubber Tired Loader	1	79	40%	70	0
Dumpers/Tenders	1	76	40%	70	0
Plate Compactor	1	83	20%	90	0
Excavator	1	81	40%	90	0
Rubber Tired Loader	1	79	40%	110	0
Dumpers/Tenders	1	76	40%	110	0
Excavator	2	81	40%	130	0
Total # of equipment:	13				
Receptor:	6				
Results:					

1-hour Leq: 94.6



Construction Phase: Site Preparation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	10	0
Rubber Tired Loader	1	79	40%	30	0
Total II of a puint a sta	0				
l otal # of equipment:	2				
Receptor:	6				
Results:					
	1-hour Leq:	91.3			



Construction Phase: Foundation/Concrete Pour West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	10	0
Tractor/Loader/Backhoe	e 1	84	40%	30	0
Fork Lift	1	75	20%	30	0
Concrete Pump	2	81	20%	50	0
Air Compressor	1	78	40%	50	0
Dumpers/Tenders	2	76	40%	70	0
Crane	1	81	16%	70	0
Total # of equipment:	9				
Becenter:	Ĕ				
Receptor: Results:	O				
	1-hour Leq:	96.4			



Construction Phase: Building Construction West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	10	0
Tractor/Loader/Backhoe	e 1	84	40%	30	0
Bore/Drill Rigs	1	84	20%	30	0
Crane	1	81	16%	50	0
Concrete Pump	1	81	20%	50	0
Dumpers/Tenders	2	76	40%	70	0
Air Compressor	1	78	40%	70	0
Fork Lift	1	75	20%	90	0
Crane	1	81	16%	90	0
Total # of equipment:	10				
Receptor:	6				
Poculto					
กรอนแอ.					
	1-hour Leq:	96.5			



Construction Phase: Architectural Coating West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	10	0
Fork Lift	1	75	20%	30	0
Dumpers/Tenders	1	76	40%	30	0
Total # of equipment:	3				
Receptor:	6				
	-				
Results:					
	1-hour Leq:	88.4			



Construction Phase: *Paving West Site*

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	10	0
Surfacing Equipment	1	90	20%	30	0
Graders	1	85	40%	30	0
Plate Compactor	1	83	20%	50	0
Sweepers/Scrubbers	1	82	10%	50	0
Paving Equipment	1	77	50%	70	0
Roller	1	80	20%	70	0
Paver	1	77	50%	90	0
Total # of equipment:	8				
Receptor:	6				
Results:					
	1-hour Leq:	97.8			



Construction Phase: Site Preparation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	220	0
Rubber Tired Loader	1	79	40%	220	0
Total # of equipment:	2				
Receptor:	6				
	v				
Results:					
	1-hour Leq:	66.3			



Construction Phase: Drainage/Utilities/Trenching East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	220	0
Tractor/Loader/Backhoo	e 1	84	40%	220	0
Crane	1	81	16%	240	0
Air Compressor	1	78	40%	240	0
Total # of equipment:	4				
Becontor:	6				
Receptor.	0				
Results:					
	1-hour Leq:	72.4			



Construction Phase: Grading/Excavation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backho	e 1	84	40%	220	0
Drill Rig	1	84	20%	220	0
Crane	1	81	16%	240	0
Plate Compactor	1	83	20%	240	0
Excavator	1	81	40%	260	0
Rubber Tired Loader	1	79	40%	260	0
Dumpers/Tenders	1	76	40%	280	0
Plate Compactor	1	83	20%	280	0
Excavator	1	81	40%	300	0
Rubber Tired Loader	1	79	40%	300	0
Dumpers/Tenders	1	76	40%	320	0
Excavator	2	81	40%	320	0
Total # of equipment:	13				
Receptor:	6				
Results:					
	1-hour Leq:	73.1			



Construction Phase: Foundation/Concrete Pour East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	220	0
Tractor/Loader/Backhoo	e 1	84	40%	220	0
Fork Lift	1	75	20%	240	0
Concrete Pump	2	81	20%	240	0
Air Compressor	1	78	40%	260	0
Dumpers/Tenders	2	76	40%	260	0
Crane	1	81	16%	280	0
Total # of equipment:	9				
	9				
Receptor:	0				
Results:	4 Is a second second	70 7			
	1-nour Leq:	(2.)			



Construction Phase: Building Construction East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	220	0
Tractor/Loader/Backhoe	e 1	84	40%	220	0
Bore/Drill Rigs	1	84	20%	240	0
Crane	1	81	16%	240	0
Concrete Pump	1	81	20%	260	0
Dumpers/Tenders	2	76	40%	260	0
Air Compressor	1	78	40%	280	0
Fork Lift	1	75	20%	280	0
Crane	1	81	16%	300	0
Total # of equipment:	10				
Receptor:	6				
Results:					
	1-hour Leq:	73.0			



Construction Phase: Architectural Coating East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	220	0
Fork Lift	1	75	20%	220	0
Dumpers/Tenders	1	76	40%	240	0
Total # of equipment:	3				
	o				
Receptor:	0				
Results:					
	1-hour Lea:	63.7			
	· · · · · · · · · · · · · · · · · · ·				



Construction Phase: Paving East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	220	0
Surfacing Equipment	1	90	20%	220	0
Graders	1	85	40%	240	0
Plate Compactor	1	83	20%	240	0
Sweepers/Scrubbers	1	82	10%	260	0
Paving Equipment	1	77	50%	260	0
Roller	1	80	20%	280	0
Paver	1	77	50%	280	0
Total # of equipment:	8				
Receptor:	6				
Results:					
	1-hour Leq:	74.9			



Construction Phase: Demolition West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	125	0
Jackhammer	1	89	20%	125	0
Excavator	1	81	40%	145	0
Rubber Tired Loader	1	79	40%	145	0
Air Compressor	1	78	40%	165	0
Dumpers/Tenders	1	76	40%	165	0
Concrete Saw	1	90	20%	185	0
Total # of equipment:	7				
Receptor: Results:	/				
	1-hour Leq:	79.3			



Construction Phase: Drainage/Utilities/Trenching West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	125	0
Tractor/Loader/Backho	e 1	84	40%	125	0
Crane	1	81	16%	145	0
Air Compressor	1	78	40%	145	0
Total # of equipment:	4				
Receptor:	7				
Results:					
	1-hour Leq:	77.3			



Construction Phase: Grading/Excavation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backhoe	1	84	40%	125	0
Drill Rig	1	84	20%	125	0
Cranne	1	81	16%	145	0
Plate Compactor	1	83	20%	145	0
Excavator	1	81	40%	165	0
Rubber Tired Loader	1	79	40%	165	0
Dumpers/Tenders	1	76	40%	185	0
Plate Compactor	1	83	20%	185	0
Excavator	1	81	40%	205	0
Rubber Tired Loader	1	79	40%	205	0
Dumpers/Tenders	1	76	40%	225	0
Excavator	2	81	40%	225	0
Total # of aquipments	10				
Total # of equipment.	13 				
Receptor:	1				
Results:	_				

1-hour Leq: 77.3



Construction Phase: Site Preparation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	125	0
Rubber Tired Loader	1	79	40%	125	0
Total II of a muinter ante	0				
Total # of equipment:	2				
Receptor:	7				
Results:					
	1-hour Lea	71 2			
		11.4			



Construction Phase: Foundation/Concrete Pour West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	125	0
Tractor/Loader/Backhoo	e 1	84	40%	125	0
Fork Lift	1	75	20%	145	0
Concrete Pump	2	81	20%	145	0
Air Compressor	1	78	40%	165	0
Dumpers/Tenders	2	76	40%	165	0
Crane	1	81	16%	185	0
Total # of equipment:	9				
	7				
Receptor: Results:	7				
	1-hour Leq:	77.4			



Construction Phase: Building Construction West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	125	0
Tractor/Loader/Backhoe	e 1	84	40%	125	0
Bore/Drill Rigs	1	84	20%	145	0
Crane	1	81	16%	145	0
Concrete Pump	1	81	20%	165	0
Dumpers/Tenders	2	76	40%	165	0
Air Compressor	1	78	40%	185	0
Fork Lift	1	75	20%	185	0
Crane	1	81	16%	205	0
Total # of equipment:	10				
Receptor:	7				
Results:					
	1-hour Leq:	77.7			



Construction Phase: Architectural Coating West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	125	0
Fork Lift	1	75	20%	125	0
Dumpers/Tenders	1	76	40%	145	0
Total # of equipment:	3				
	3				
Receptor:	/				
Results:					
1	I-hour Leq:	68.4			



Construction Phase: *Paving West Site*

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	125	0
Surfacing Equipment	1	90	20%	125	0
Graders	1	85	40%	145	0
Plate Compactor	1	83	20%	145	0
Sweepers/Scrubbers	1	82	10%	165	0
Paving Equipment	1	77	50%	165	0
Roller	1	80	20%	185	0
Paver	1	77	50%	185	0
Total # of aquipment:	9				
	8 7				
Receptor:	/				
Results:					
	1-hour Leq:	79.6			



Construction Phase: Site Preparation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	295	0
Rubber Tired Loader	1	79	40%	295	0
Total # of equipment:	2				
	7				
Receptor:	/				
Populto					
Results:					
	1-hour Leq:	63.7			



Construction Phase: Drainage/Utilities/Trenching East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	295	0
Tractor/Loader/Backhoe	e 1	84	40%	295	0
Crane	1	81	16%	315	0
Air Compressor	1	78	40%	315	0
Total # of equipment:	4				
Receptor:	7				
Results:					
	1-hour Leq:	69.9			



Construction Phase: Grading/Excavation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backhoe	1	84	40%	295	0
Drill Rig	1	84	20%	295	0
Crane	1	81	16%	315	0
Plate Compactor	1	83	20%	315	0
Excavator	1	81	40%	335	0
Rubber Tired Loader	1	79	40%	335	0
Dumpers/Tenders	1	76	40%	355	0
Plate Compactor	1	83	20%	355	0
Excavator	1	81	40%	375	0
Rubber Tired Loader	1	79	40%	375	0
Dumpers/Tenders	1	76	40%	395	0
Excavator	2	81	40%	395	0
Total # of equipment:	13				
Receptor:	7				
Results:					

1-hour Leq: 70.8



Construction Phase: Foundation/Concrete Pour East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	295	0
Tractor/Loader/Backhoe	e 1	84	40%	295	0
Fork Lift	1	75	20%	315	0
Concrete Pump	2	81	20%	315	0
Air Compressor	1	78	40%	335	0
Dumpers/Tenders	2	76	40%	335	0
Crane	1	81	16%	355	0
Total # of equipment:	9				
	9				
Receptor: Results:	7				
	1-hour Leq:	70.2			



Construction Phase: Building Construction East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	295	0
Tractor/Loader/Backhoe	e 1	84	40%	295	0
Bore/Drill Rigs	1	84	20%	315	0
Crane	1	81	16%	315	0
Concrete Pump	1	81	20%	335	0
Dumpers/Tenders	2	76	40%	335	0
Air Compressor	1	78	40%	355	0
Fork Lift	1	75	20%	355	0
Crane	1	81	16%	375	0
Total # of equipment:	10				
Receptor:	7				
Results:					
	1-hour Leq:	70.6			


Construction Phase: Architectural Coating East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	295	0
Fork Lift	1	75	20%	295	0
Dumpers/Tenders	1	76	40%	315	0
Total # of equipment:	3				
Receptor:	7				
Results:					
	1-hour Leq:	61.2			



Construction Phase: Paving East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	295	0
Surfacing Equipment	1	90	20%	295	0
Graders	1	85	40%	315	0
Plate Compactor	1	83	20%	315	0
Sweepers/Scrubbers	1	82	10%	335	0
Paving Equipment	1	77	50%	335	0
Roller	1	80	20%	355	0
Paver	1	77	50%	355	0
Total # of equipment:	8				
Receptor:	7				
Results:					
	1-hour Leq:	72.4			



Construction Phase: Demolition West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	530	0
Jackhammer	1	89	20%	530	0
Excavator	1	81	40%	550	0
Rubber Tired Loader	1	79	40%	550	0
Air Compressor	1	78	40%	570	0
Dumpers/Tenders	1	76	40%	570	0
Concrete Saw	1	90	20%	590	0
Total # of equipment:	7				
	,				
Receptor:	8				
Results:					
	1-hour Leq:	67.5			



Construction Phase: Drainage/Utilities/Trenching West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	530	0
Tractor/Loader/Backho	e 1	84	40%	530	0
Crane	1	81	16%	550	0
Air Compressor	1	78	40%	550	0
Total # of equipment:	4				
Receptor:	8				
Results:					
	1-hour Leq:	64.8			



Construction Phase: Grading/Excavation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backho	e 1	84	40%	530	0
Drill Rig	1	84	20%	530	0
Cranne	1	81	16%	550	0
Plate Compactor	1	83	20%	550	0
Excavator	1	81	40%	570	0
Rubber Tired Loader	1	79	40%	570	0
Dumpers/Tenders	1	76	40%	590	0
Plate Compactor	1	83	20%	590	0
Excavator	1	81	40%	610	0
Rubber Tired Loader	1	79	40%	610	0
Dumpers/Tenders	1	76	40%	630	0
Excavator	2	81	40%	630	0
Total # of equipment:	13				
Receptor:	8				
Results:					
	1-hour Leq:	66.2			



Construction Phase: Site Preparation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	530	0
Rubber Tired Loader	1	79	40%	530	0
Total # of equipment:	2				
Receptor:	8				
	Ū				
Results:					
	1-hour Leq:	58.6			



Construction Phase: Foundation/Concrete Pour West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	530	0
Tractor/Loader/Backhoo	e 1	84	40%	530	0
Fork Lift	1	75	20%	550	0
Concrete Pump	2	81	20%	550	0
Air Compressor	1	78	40%	570	0
Dumpers/Tenders	2	76	40%	570	0
Crane	1	81	16%	590	0
Total # of equipment:	9				
	9				
Receptor: Results:	ð				
	1-hour Leq:	65.3			



Construction Phase: Building Construction West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	530	0
Tractor/Loader/Backhoe	e 1	84	40%	530	0
Bore/Drill Rigs	1	84	20%	550	0
Crane	1	81	16%	550	0
Concrete Pump	1	81	20%	570	0
Dumpers/Tenders	2	76	40%	570	0
Air Compressor	1	78	40%	590	0
Fork Lift	1	75	20%	590	0
Crane	1	81	16%	610	0
Total # of equipment:	10				
Receptor:	8				
Results:					
	1-hour Leq:	65.7			



Construction Phase: Architectural Coating West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	530	0
Fork Lift	1	75	20%	530	0
Dumpers/Tenders	1	76	40%	550	0
Total # of equipment:	3				
Receptor:	8				
	-				
Results:					
	1-hour Leq:	56.2			



Construction Phase: *Paving West Site*

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	530	0
Surfacing Equipment	1	90	20%	530	0
Graders	1	85	40%	550	0
Plate Compactor	1	83	20%	550	0
Sweepers/Scrubbers	1	82	10%	570	0
Paving Equipment	1	77	50%	570	0
Roller	1	80	20%	590	0
Paver	1	77	50%	590	0
T () () ()					
I otal # of equipment:	8				
Receptor:	8				
Results:					
	1-hour Leq:	67.5			



Construction Phase: Site Preparation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	80	0
Rubber Tired Loader	1	79	40%	80	0
Total # of equipment:	2				
Receptor:	8				
	U				
Results:					
1	-hour Leq:	75.1			



Construction Phase: Drainage/Utilities/Trenching East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	80	0
Tractor/Loader/Backhoe	e 1	84	40%	80	0
Crane	1	81	16%	100	0
Air Compressor	1	78	40%	100	0
Total # of equipment:	4				
	4 0				
Receptor:	0				
Results:					
	1-hour Leq:	81.1			



Construction Phase: Grading/Excavation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backho	e 1	84	40%	80	0
Drill Rig	1	84	20%	80	0
Crane	1	81	16%	100	0
Plate Compactor	1	83	20%	100	0
Excavator	1	81	40%	120	0
Rubber Tired Loader	1	79	40%	120	0
Dumpers/Tenders	1	76	40%	140	0
Plate Compactor	1	83	20%	140	0
Excavator	1	81	40%	160	0
Rubber Tired Loader	1	79	40%	160	0
Dumpers/Tenders	1	76	40%	180	0
Excavator	2	81	40%	180	0
Total # of equipment:	13				
Receptor:	8				
Results:					
	1-hour Leq:	80.5			



Construction Phase: Foundation/Concrete Pour East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	80	0
Tractor/Loader/Backhoe	e 1	84	40%	80	0
Fork Lift	1	75	20%	100	0
Concrete Pump	2	81	20%	100	0
Air Compressor	1	78	40%	120	0
Dumpers/Tenders	2	76	40%	120	0
Crane	1	81	16%	140	0
Total # of equipment:	9				
	9				
Receptor: Results:	ð				
	1-hour Leq:	81.1			



Construction Phase: Building Construction East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	80	0
Tractor/Loader/Backhoe	e 1	84	40%	80	0
Bore/Drill Rigs	1	84	20%	100	0
Crane	1	81	16%	100	0
Concrete Pump	1	81	20%	120	0
Dumpers/Tenders	2	76	40%	120	0
Air Compressor	1	78	40%	140	0
Fork Lift	1	75	20%	140	0
Crane	1	81	16%	160	0
Total # of equipment:	10				
Receptor:	8				
Results:					
	1-hour Leq:	81.3			



Construction Phase: Architectural Coating East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	80	0
Fork Lift	1	75	20%	80	0
Dumpers/Tenders	1	76	40%	100	0
Total # of equipment:	3				
Pecentor:	e e				
	0				
Results:					
	1-hour Leq:	72.1			



Construction Phase: Paving East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	80	0
Surfacing Equipment	1	90	20%	80	0
Graders	1	85	40%	100	0
Plate Compactor	1	83	20%	100	0
Sweepers/Scrubbers	1	82	10%	120	0
Paving Equipment	1	77	50%	120	0
Roller	1	80	20%	140	0
Paver	1	77	50%	140	0
Total # of equipment:	8				
Receptor:	8				
Results.					
Noouno.	1-hour Lea	83.2			
	i-noui Leq.	05.2			



Construction Phase: Demolition West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	280	0
Jackhammer	1	89	20%	280	0
Excavator	1	81	40%	300	0
Rubber Tired Loader	1	79	40%	300	0
Air Compressor	1	78	40%	320	0
Dumpers/Tenders	1	76	40%	320	0
Concrete Saw	1	90	20%	340	0
Total # of equipment:	7				
Total # of equipment:	1				
Receptor:	9				
Neguila.	1-hour Leq:	72.8			



Construction Phase: Drainage/Utilities/Trenching West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	280	0
Tractor/Loader/Backhoe	e 1	84	40%	280	0
Crane	1	81	16%	300	0
Air Compressor	1	78	40%	300	0
Total # of equipment:	4 9				
Receptor.	3				
Results:					
	1-hour Leq:	70.4			



Construction Phase: Grading/Excavation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backho	e 1	84	40%	280	0
Drill Rig	1	84	20%	280	0
Cranne	1	81	16%	300	0
Plate Compactor	1	83	20%	300	0
Excavator	1	81	40%	320	0
Rubber Tired Loader	1	79	40%	320	0
Dumpers/Tenders	1	76	40%	340	0
Plate Compactor	1	83	20%	340	0
Excavator	1	81	40%	360	0
Rubber Tired Loader	1	79	40%	360	0
Dumpers/Tenders	1	76	40%	380	0
Excavator	2	81	40%	380	0
Total # of equipment:	13				
Receptor:	9				
Results:					
	1-hour Leq:	71.2			



Construction Phase: Site Preparation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	280	0
Rubber Tired Loader	1	79	40%	280	0
Total # of equipment:	2				
Recentor:	Q				
	•				
Results:					
	1-hour Leq:	64.2			



Construction Phase: Foundation/Concrete Pour West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	280	0
Tractor/Loader/Backhoe	e 1	84	40%	280	0
Fork Lift	1	75	20%	300	0
Concrete Pump	2	81	20%	300	0
Air Compressor	1	78	40%	320	0
Dumpers/Tenders	2	76	40%	320	0
Crane	1	81	16%	340	0
I otal # of equipment:	9				
Receptor:	9				
Results:					
	1-hour Leq:	70.7			



Construction Phase: Building Construction West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	280	0
Tractor/Loader/Backhoo	e 1	84	40%	280	0
Bore/Drill Rigs	1	84	20%	300	0
Crane	1	81	16%	300	0
Concrete Pump	1	81	20%	320	0
Dumpers/Tenders	2	76	40%	320	0
Air Compressor	1	78	40%	340	0
Fork Lift	1	75	20%	340	0
Crane	1	81	16%	360	0
Total # of a guipment	10				
Total # of equipment:	10				
Receptor:	9				
Results:					
Noodilo.	1-hour Leg:	71.0			



Construction Phase: Architectural Coating West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	280	0
Fork Lift	1	75	20%	280	0
Dumpers/Tenders	1	76	40%	300	0
Total # of equipment:	3				
	0				
Receptor:	9				
Results:					
	1-hour Leq:	61.6			



Construction Phase: *Paving West Site*

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	280	0
Surfacing Equipment	1	90	20%	280	0
Graders	1	85	40%	300	0
Plate Compactor	1	83	20%	300	0
Sweepers/Scrubbers	1	82	10%	320	0
Paving Equipment	1	77	50%	320	0
Roller	1	80	20%	340	0
Paver	1	77	50%	340	0
Total # of equipment:	8				
Receptor:	9				
Results:					
	1-hour Leq:	72.9			



Construction Phase: Site Preparation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	10	0
Rubber Tired Loader	1	79	40%	30	0
Total # of equipment:	2				
Recentor:	9				
	5				
Results:					
	1-hour Leq:	91.3			



Construction Phase: Drainage/Utilities/Trenching East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	10	0
Tractor/Loader/Backhoe	e 1	84	40%	30	0
Crane	1	81	16%	30	0
Air Compressor	1	78	40%	50	0
Total # of equipment:	4				
Receptor:	9				
Results:					
	1-hour Leq:	97.3			



Construction Phase: Grading/Excavation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backhoe	1	84	40%	10	0
Drill Rig	1	84	20%	30	0
Crane	1	81	16%	30	0
Plate Compactor	1	83	20%	50	0
Excavator	1	81	40%	50	0
Rubber Tired Loader	1	79	40%	70	0
Dumpers/Tenders	1	76	40%	70	0
Plate Compactor	1	83	20%	90	0
Excavator	1	81	40%	90	0
Rubber Tired Loader	1	79	40%	110	0
Dumpers/Tenders	1	76	40%	110	0
Excavator	2	81	40%	130	0
Total # of equipment:	13				
Receptor:	9				
Results:					

1-hour Leq: 94.6



Construction Phase: Foundation/Concrete Pour East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	10	0
Tractor/Loader/Backhoe	e 1	84	40%	30	0
Fork Lift	1	75	20%	30	0
Concrete Pump	2	81	20%	50	0
Air Compressor	1	78	40%	50	0
Dumpers/Tenders	2	76	40%	70	0
Crane	1	81	16%	70	0
Total # of equipment:	9				
Receptor:	9				
Results:					
	1-hour Leq:	96.4			



Construction Phase: Building Construction East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	10	0
Tractor/Loader/Backhoe	e 1	84	40%	30	0
Bore/Drill Rigs	1	84	20%	30	0
Crane	1	81	16%	50	0
Concrete Pump	1	81	20%	50	0
Dumpers/Tenders	2	76	40%	70	0
Air Compressor	1	78	40%	70	0
Fork Lift	1	75	20%	90	0
Crane	1	81	16%	90	0
Total # of equipment:	10				
Receptor:	9				
Results:					
	1-hour Leq:	96.5			



Construction Phase: Architectural Coating East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	10	0
Fork Lift	1	75	20%	30	0
Dumpers/Tenders	1	76	40%	30	0
Total # of equipment:	3				
Receptor:	9				
	·				
Results:					
	1-hour Leq:	88.4			
	•				



Construction Phase: Paving East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	10	0
Surfacing Equipment	1	90	20%	30	0
Graders	1	85	40%	30	0
Plate Compactor	1	83	20%	50	0
Sweepers/Scrubbers	1	82	10%	50	0
Paving Equipment	1	77	50%	70	0
Roller	1	80	20%	70	0
Paver	1	77	50%	90	0
Total # of equipment:	8				
Receptor:	9				
Results:					
	1-hour Leq:	97.8			



Construction Phase: Demolition West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	280	0
Jackhammer	1	89	20%	280	0
Excavator	1	81	40%	300	0
Rubber Tired Loader	1	79	40%	300	0
Air Compressor	1	78	40%	320	0
Dumpers/Tenders	1	76	40%	320	0
Concrete Saw	1	90	20%	340	0
Total # of equipment:	7				
Receptor:	10				
Results:					
	1-hour Leq:	72.8			



Construction Phase: Drainage/Utilities/Trenching West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	280	0
Tractor/Loader/Backho	e 1	84	40%	280	0
Crane	1	81	16%	300	0
Air Compressor	1	78	40%	300	0
I otal # of equipment:	4				
Receptor:	10				
Results:					
	1-hour Leq:	70.4			



Construction Phase: Grading/Excavation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backho	e 1	84	40%	280	0
Drill Rig	1	84	20%	280	0
Cranne	1	81	16%	300	0
Plate Compactor	1	83	20%	300	0
Excavator	1	81	40%	320	0
Rubber Tired Loader	1	79	40%	320	0
Dumpers/Tenders	1	76	40%	340	0
Plate Compactor	1	83	20%	340	0
Excavator	1	81	40%	360	0
Rubber Tired Loader	1	79	40%	360	0
Dumpers/Tenders	1	76	40%	380	0
Excavator	2	81	40%	380	0
Total # of equipment:	13				
Receptor:	10				
Results:					
	1-hour Leq:	71.2			



Construction Phase: Site Preparation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	280	0
Rubber Tired Loader	1	79	40%	280	0
Total # of equipment:	2				
Receptor:	10				
Results:					
	1-bour Logy	61 2			
	i-nour Leq:	04.2			


Construction Phase: Foundation/Concrete Pour West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	280	0
Tractor/Loader/Backho	e 1	84	40%	280	0
Fork Lift	1	75	20%	300	0
Concrete Pump	2	81	20%	300	0
Air Compressor	1	78	40%	320	0
Dumpers/Tenders	2	76	40%	320	0
Crane	1	81	16%	340	0
Total # of equipment:	9				
	10				
Receptor:	10				
Results:	1-hour Lea:	70.7			
	avq.				



Construction Phase: Building Construction West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	280	0
Tractor/Loader/Backhoo	e 1	84	40%	280	0
Bore/Drill Rigs	1	84	20%	300	0
Crane	1	81	16%	300	0
Concrete Pump	1	81	20%	320	0
Dumpers/Tenders	2	76	40%	320	0
Air Compressor	1	78	40%	340	0
Fork Lift	1	75	20%	340	0
Crane	1	81	16%	360	0
	10				
	10				
Receptor:	10				
Results:					
	1-hour Leq:	71.0			



Construction Phase: Architectural Coating West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	280	0
Fork Lift	1	75	20%	280	0
Dumpers/Tenders	1	76	40%	300	0
Total # of equipment:	3				
Receptor:	10				
Poculter					
NC3UII3.					
	1-hour Leq:	61.6			



Construction Phase: *Paving West Site*

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	280	0
Surfacing Equipment	1	90	20%	280	0
Graders	1	85	40%	300	0
Plate Compactor	1	83	20%	300	0
Sweepers/Scrubbers	1	82	10%	320	0
Paving Equipment	1	77	50%	320	0
Roller	1	80	20%	340	0
Paver	1	77	50%	340	0
Total # of equipment:	8				
Receptor:	10				
Results:					
	1-hour Leq:	72.9			



Construction Phase: Site Preparation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	100	0
Rubber Tired Loader	1	79	40%	100	0
Total # of equipment:	2				
Recentor:	10				
Results:					
	1-hour Lea	73.1			
		, , , , ,			



Construction Phase: Drainage/Utilities/Trenching East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	100	0
Tractor/Loader/Backho	e 1	84	40%	100	0
Crane	1	81	16%	120	0
Air Compressor	1	78	40%	120	0
Total # of equipment:	4				
Pocontor:	10				
Receptor.	10				
Results:					
	1-hour Leq:	79.2			



Construction Phase: Grading/Excavation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backho	e 1	84	40%	100	0
Drill Rig	1	84	20%	100	0
Crane	1	81	16%	120	0
Plate Compactor	1	83	20%	120	0
Excavator	1	81	40%	140	0
Rubber Tired Loader	1	79	40%	140	0
Dumpers/Tenders	1	76	40%	160	0
Plate Compactor	1	83	20%	160	0
Excavator	1	81	40%	180	0
Rubber Tired Loader	1	79	40%	180	0
Dumpers/Tenders	1	76	40%	200	0
Excavator	2	81	40%	200	0
Total # of equipment:	13				
Receptor:	10				
Results:					
	1-hour Leq:	78.9			



Construction Phase: Foundation/Concrete Pour East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	100	0
Tractor/Loader/Backho	e 1	84	40%	100	0
Fork Lift	1	75	20%	120	0
Concrete Pump	2	81	20%	120	0
Air Compressor	1	78	40%	140	0
Dumpers/Tenders	2	76	40%	140	0
Crane	1	81	16%	160	0
Total # of equipment:	9				
	9				
Receptor:	10				
Results:					
	1-hour Leq:	79.2			



Construction Phase: Building Construction East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	100	0
Tractor/Loader/Backhoe	e 1	84	40%	100	0
Bore/Drill Rigs	1	84	20%	120	0
Crane	1	81	16%	120	0
Concrete Pump	1	81	20%	140	0
Dumpers/Tenders	2	76	40%	140	0
Air Compressor	1	78	40%	160	0
Fork Lift	1	75	20%	160	0
Crane	1	81	16%	180	0
Total # of equipment:	10				
Receptor:	10				
Results:					
	1-hour Leq:	79.5			



Construction Phase: Architectural Coating East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	100	0
Fork Lift	1	75	20%	100	0
Dumpers/Tenders	1	76	40%	120	0
Total # of equipment:	3				
Recentor:	10				
Receptor.	10				
Decultor					
resulls.					
	1-hour Leq:	70.3			



Construction Phase: Paving East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	100	0
Surfacing Equipment	1	90	20%	100	0
Graders	1	85	40%	120	0
Plate Compactor	1	83	20%	120	0
Sweepers/Scrubbers	1	82	10%	140	0
Paving Equipment	1	77	50%	140	0
Roller	1	80	20%	160	0
Paver	1	77	50%	160	0
Total # of equipment:	8				
Receptor:	10				
Results:					
	1-hour Leq:	81.4			



Construction Phase: Demolition West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	100	10
Jackhammer	1	89	20%	100	10
Excavator	1	81	40%	120	10
Rubber Tired Loader	1	79	40%	120	10
Air Compressor	1	78	40%	140	10
Dumpers/Tenders	1	76	40%	140	10
Concrete Saw	1	90	20%	160	10
Total # of equipment:	7				
Receptor:	11				
Results:					
	1-hour Leq:	71.1			



Construction Phase: Drainage/Utilities/Trenching West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	100	10
Tractor/Loader/Backho	e 1	84	40%	100	10
Crane	1	81	16%	120	10
Air Compressor	1	78	40%	120	10
Total # of equipment: Receptor:	4 11				
Results:					
	1-hour Leq:	69.2			



Construction Phase: Grading/Excavation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backho	e 1	84	40%	100	10
Drill Rig	1	84	20%	100	10
Cranne	1	81	16%	120	10
Plate Compactor	1	83	20%	120	10
Excavator	1	81	40%	140	10
Rubber Tired Loader	1	79	40%	140	10
Dumpers/Tenders	1	76	40%	160	10
Plate Compactor	1	83	20%	160	10
Excavator	1	81	40%	180	10
Rubber Tired Loader	1	79	40%	180	10
Dumpers/Tenders	1	76	40%	200	10
Excavator	2	81	40%	200	10
Total # of equipment:	13				
Receptor:	11				
Results:					
	1-hour Leq:	68.9			



Construction Phase: Site Preparation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	100	10
Rubber Tired Loader	1	79	40%	100	10
Total # of equipment:	2				
Recentor:	11				
Results:					
	1-hour Lea	63 1			
		00.1			



Construction Phase: Foundation/Concrete Pour West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	100	10
Tractor/Loader/Backho	e 1	84	40%	100	10
Fork Lift	1	75	20%	120	10
Concrete Pump	2	81	20%	120	10
Air Compressor	1	78	40%	140	10
Dumpers/Tenders	2	76	40%	140	10
Crane	1	81	16%	160	10
Total # of aquipment:	9				
	9				
Receptor:	11				
กธอนแอ.		<u> </u>			
	i-nour Leq:	69.Z			



Construction Phase: Building Construction West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	100	10
Tractor/Loader/Backhoe	e 1	84	40%	100	10
Bore/Drill Rigs	1	84	20%	120	10
Crane	1	81	16%	120	10
Concrete Pump	1	81	20%	140	10
Dumpers/Tenders	2	76	40%	140	10
Air Compressor	1	78	40%	160	10
Fork Lift	1	75	20%	160	10
Crane	1	81	16%	180	10
Total # of equipment:	10				
Receptor:	11				
Results:					
	1-hour Leq:	69.5			



Construction Phase: Architectural Coating West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	100	10
Fork Lift	1	75	20%	100	10
Dumpers/Tenders	1	76	40%	120	10
Total # of equipment:	3				
Recentor:	11				
Decultor					
Results:					
	1-hour Leq:	60.3			



Construction Phase: *Paving West Site*

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	100	10
Surfacing Equipment	1	90	20%	100	10
Graders	1	85	40%	120	10
Plate Compactor	1	83	20%	120	10
Sweepers/Scrubbers	1	82	10%	140	10
Paving Equipment	1	77	50%	140	10
Roller	1	80	20%	160	10
Paver	1	77	50%	160	10
Total # of equipment:	8				
Receptor:	11				
Results:					
	1-hour Leq:	71.4			



Construction Phase: Site Preparation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	90	0
Rubber Tired Loader	1	79	40%	90	0
Total # of equipment:	2				
Receptor:	11				
Results:					
	1-hour Lea:	74.0			



Construction Phase: Drainage/Utilities/Trenching East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	90	0
Tractor/Loader/Backho	e 1	84	40%	90	0
Crane	1	81	16%	110	0
Air Compressor	1	78	40%	110	0
Total # of equipment:	4				
Receptor:	11				
Results:					
	1-hour Leq:	80.1			



Construction Phase: Grading/Excavation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backhoe	1	84	40%	90	0
Drill Rig	1	84	20%	90	0
Crane	1	81	16%	110	0
Plate Compactor	1	83	20%	110	0
Excavator	1	81	40%	130	0
Rubber Tired Loader	1	79	40%	130	0
Dumpers/Tenders	1	76	40%	150	0
Plate Compactor	1	83	20%	150	0
Excavator	1	81	40%	170	0
Rubber Tired Loader	1	79	40%	170	0
Dumpers/Tenders	1	76	40%	190	0
Excavator	2	81	40%	190	0
Total # of equipment:	13				
Receptor:	11				
Results:					

1-hour Leq: 79.7



Construction Phase: Foundation/Concrete Pour East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	90	0
Tractor/Loader/Backhoo	e 1	84	40%	90	0
Fork Lift	1	75	20%	110	0
Concrete Pump	2	81	20%	110	0
Air Compressor	1	78	40%	130	0
Dumpers/Tenders	2	76	40%	130	0
Crane	1	81	16%	150	0
Total # of equipment:	9				
Peaceter:	4.4				
Receptor: Results:	11				
	1-hour Leq:	80.1			



Construction Phase: Building Construction East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	90	0
Tractor/Loader/Backhoe	e 1	84	40%	90	0
Bore/Drill Rigs	1	84	20%	110	0
Crane	1	81	16%	110	0
Concrete Pump	1	81	20%	130	0
Dumpers/Tenders	2	76	40%	130	0
Air Compressor	1	78	40%	150	0
Fork Lift	1	75	20%	150	0
Crane	1	81	16%	170	0
Total # of equipment:	10				
Receptor:	11				
Results:					
	1-hour Leq:	80.3			



Construction Phase: Architectural Coating East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	90	0
Fork Lift	1	75	20%	90	0
Dumpers/Tenders	1	76	40%	110	0
Total # of equipment:	3				
Receptor:	11				
Results:					
	1-hour Leq:	71.2			



Construction Phase: Paving East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	90	0
Surfacing Equipment	1	90	20%	90	0
Graders	1	85	40%	110	0
Plate Compactor	1	83	20%	110	0
Sweepers/Scrubbers	1	82	10%	130	0
Paving Equipment	1	77	50%	130	0
Roller	1	80	20%	150	0
Paver	1	77	50%	150	0
Total # of equipment:	8				
Receptor:	11				
Results:					
	1-hour Leq:	82.3			



Construction Phase: Demolition West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	90	0
Jackhammer	1	89	20%	90	0
Excavator	1	81	40%	110	0
Rubber Tired Loader	1	79	40%	110	0
Air Compressor	1	78	40%	130	0
Dumpers/Tenders	1	76	40%	130	0
Concrete Saw	1	90	20%	150	0
Total # of equipment:	7				
	1				
Receptor:	12				
Results:					
	1-hour Leq:	81.9			



Construction Phase: Drainage/Utilities/Trenching West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	90	0
Tractor/Loader/Backho	e 1	84	40%	90	0
Crane	1	81	16%	110	0
Air Compressor	1	78	40%	110	0
Total # of aquipment	1				
l otal # of equipment:	4				
Receptor:	12				
Results:					
	1-hour Leq:	80.1			



Construction Phase: Grading/Excavation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backho	e 1	84	40%	90	0
Drill Rig	1	84	20%	90	0
Cranne	1	81	16%	110	0
Plate Compactor	1	83	20%	110	0
Excavator	1	81	40%	130	0
Rubber Tired Loader	1	79	40%	130	0
Dumpers/Tenders	1	76	40%	150	0
Plate Compactor	1	83	20%	150	0
Excavator	1	81	40%	170	0
Rubber Tired Loader	1	79	40%	170	0
Dumpers/Tenders	1	76	40%	190	0
Excavator	2	81	40%	190	0
Total # of equipment:	13				
Receptor:	12				
Results:					
	1-hour Leq:	79.7			



Construction Phase: Site Preparation West Site

Equipment

of Noise Leve c. 50ft, Lma 81 79	el at Acoustica ax Usage Factor 40% 40%	I Distance to or Receptor, fr	Noise Shielding, dBA
b. 50ft, Lma 81 79	ax Usage Factor 40% 40%	or Receptor, ft	Shielding, dBA
81 79	40% 40%	90	0
79	40%	00	
	4070	90	0
a. 74.0			
· · · · · · · · · · · · · · · · · · ·			
	eq: 74.0	eq: 74.0	eq: 74.0



Construction Phase: Foundation/Concrete Pour West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	90	0
Tractor/Loader/Backhoo	e 1	84	40%	90	0
Fork Lift	1	75	20%	110	0
Concrete Pump	2	81	20%	110	0
Air Compressor	1	78	40%	130	0
Dumpers/Tenders	2	76	40%	130	0
Crane	1	81	16%	150	0
Total # of equipment:	9				
	40				
Receptor: Results:	12				
	1-hour Leq:	80.1			



Construction Phase: Building Construction West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	90	0
Tractor/Loader/Backho	e 1	84	40%	90	0
Bore/Drill Rigs	1	84	20%	110	0
Crane	1	81	16%	110	0
Concrete Pump	1	81	20%	130	0
Dumpers/Tenders	2	76	40%	130	0
Air Compressor	1	78	40%	150	0
Fork Lift	1	75	20%	150	0
Crane	1	81	16%	170	0
Tetal Hafaa jaaraat					
I otal # of equipment:	10				
Receptor:	12				
Results:					
	1-hour Leq:	80.3			



Construction Phase: Architectural Coating West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	90	0
Fork Lift	1	75	20%	90	0
Dumpers/Tenders	1	76	40%	110	0
Total # of equipment:	3				
Recentor:	12				
Neceptor.	12				
Results:					
	1-hour Leq:	71.2			



Construction Phase: *Paving West Site*

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	90	0
Surfacing Equipment	1	90	20%	90	0
Graders	1	85	40%	110	0
Plate Compactor	1	83	20%	110	0
Sweepers/Scrubbers	1	82	10%	130	0
Paving Equipment	1	77	50%	130	0
Roller	1	80	20%	150	0
Paver	1	77	50%	150	0
Total # of equipment:	8				
Receptor:	12				
Results:					
	1-hour Leq:	82.3			



Construction Phase: Site Preparation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	300	0
Rubber Tired Loader	1	79	40%	300	0
Total # of equipment:	2				
Receptor:	12				
Results:					
	1-hour Lea:	63.6			
	· · · · · · · · · · · · · · · · · · ·				



Construction Phase: Drainage/Utilities/Trenching East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	300	0
Tractor/Loader/Backho	e 1	84	40%	300	0
Crane	1	81	16%	320	0
Air Compressor	1	78	40%	320	0
Total # of equipment: Receptor:	4 12				
·					
Results:					
	1-hour Leq:	69.8			


Construction Phase: Grading/Excavation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backho	e 1	84	40%	300	0
Drill Rig	1	84	20%	300	0
Crane	1	81	16%	320	0
Plate Compactor	1	83	20%	320	0
Excavator	1	81	40%	340	0
Rubber Tired Loader	1	79	40%	340	0
Dumpers/Tenders	1	76	40%	360	0
Plate Compactor	1	83	20%	360	0
Excavator	1	81	40%	380	0
Rubber Tired Loader	1	79	40%	380	0
Dumpers/Tenders	1	76	40%	400	0
Excavator	2	81	40%	400	0
Total # of equipment:	13				
Receptor:	12				
Results:					
	1-hour Leq:	70.7			



Construction Phase: Foundation/Concrete Pour East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	300	0
Tractor/Loader/Backhoe	e 1	84	40%	300	0
Fork Lift	1	75	20%	320	0
Concrete Pump	2	81	20%	320	0
Air Compressor	1	78	40%	340	0
Dumpers/Tenders	2	76	40%	340	0
Crane	1	81	16%	360	0
Total # of equipment:	9				
	9 10				
Receptor: Results:	12				
	1-hour Leq:	70.1			



Construction Phase: Building Construction East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	300	0
Tractor/Loader/Backhoe	e 1	84	40%	300	0
Bore/Drill Rigs	1	84	20%	320	0
Crane	1	81	16%	320	0
Concrete Pump	1	81	20%	340	0
Dumpers/Tenders	2	76	40%	340	0
Air Compressor	1	78	40%	360	0
Fork Lift	1	75	20%	360	0
Crane	1	81	16%	380	0
Total # of equipment:	10				
Receptor:	12				
Results:					
	1-hour Leq:	70.5			



Construction Phase: Architectural Coating East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	300	0
Fork Lift	1	75	20%	300	0
Dumpers/Tenders	1	76	40%	320	0
Total # of equipment:	3				
Receptor:	12				
Posults:					
Nesuls.	4.1	04.0			
	1-hour Leq:	61.0			



Construction Phase: Paving East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	300	0
Surfacing Equipment	1	90	20%	300	0
Graders	1	85	40%	320	0
Plate Compactor	1	83	20%	320	0
Sweepers/Scrubbers	1	82	10%	340	0
Paving Equipment	1	77	50%	340	0
Roller	1	80	20%	360	0
Paver	1	77	50%	360	0
Total # of equipment:	8				
Receptor:	12				
Results:					
	1-hour Leq:	72.3			



Construction Phase: Demolition West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	140	5
Jackhammer	1	89	20%	140	5
Excavator	1	81	40%	160	5
Rubber Tired Loader	1	79	40%	160	5
Air Compressor	1	78	40%	180	5
Dumpers/Tenders	1	76	40%	180	5
Concrete Saw	1	90	20%	200	5
Total # of equipment:	7				
	40				
	13				
Results:					
	1-hour Leq:	73.4			



Construction Phase: Drainage/Utilities/Trenching West Site

Equipment

		Reference			Estimated	
	No. of	Noise Level at	Acoustical	Distance to	Noise	
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA	
Concrete Saw	1	90	20%	140	5	
Tractor/Loader/Backho	e 1	84	40%	140	5	
Crane	1	81	16%	160	5	
Air Compressor	1	78	40%	160	5	
Total # of equipment: Receptor:	4 13					
Results:						
	1-hour Leq:	71.3				



Construction Phase: Grading/Excavation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backho	e 1	84	40%	140	5
Drill Rig	1	84	20%	140	5
Cranne	1	81	16%	160	5
Plate Compactor	1	83	20%	160	5
Excavator	1	81	40%	180	5
Rubber Tired Loader	1	79	40%	180	5
Dumpers/Tenders	1	76	40%	200	5
Plate Compactor	1	83	20%	200	5
Excavator	1	81	40%	220	5
Rubber Tired Loader	1	79	40%	220	5
Dumpers/Tenders	1	76	40%	240	5
Excavator	2	81	40%	240	5
Total # of equipment:	13				
Receptor:	13				
Results:					
	1-hour Leq:	71.5			



Construction Phase: Site Preparation West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	140	5
Rubber Tired Loader	1	79	40%	140	5
Total # of equipment:	2				
Pecentor:	13				
Receptor.	15				
Results:					
	1-hour Leq:	65.2			



Construction Phase: Foundation/Concrete Pour West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	140	5
Tractor/Loader/Backhoe	e 1	84	40%	140	5
Fork Lift	1	75	20%	160	5
Concrete Pump	2	81	20%	160	5
Air Compressor	1	78	40%	180	5
Dumpers/Tenders	2	76	40%	180	5
Crane	1	81	16%	200	5
Total # of equipment:	9				
	40				
Receptor:	13				
	1-hour Leq:	71.5			



Construction Phase: Building Construction West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	140	5
Tractor/Loader/Backhoe	e 1	84	40%	140	5
Bore/Drill Rigs	1	84	20%	160	5
Crane	1	81	16%	160	5
Concrete Pump	1	81	20%	180	5
Dumpers/Tenders	2	76	40%	180	5
Air Compressor	1	78	40%	200	5
Fork Lift	1	75	20%	200	5
Crane	1	81	16%	220	5
Total # of equipment:	10				
Receptor:	13				
Results:					
	1-hour Leq:	71.8			



Construction Phase: Architectural Coating West Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	140	5
Fork Lift	1	75	20%	140	5
Dumpers/Tenders	1	76	40%	160	5
Total # of equipment:	3				
Pecentor:	12				
Neceptor.	15				
Results:					
	1 haur c	60 F			
	i-nour Leq:	62.5			



Construction Phase: *Paving West Site*

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	140	5
Surfacing Equipment	1	90	20%	140	5
Graders	1	85	40%	160	5
Plate Compactor	1	83	20%	160	5
Sweepers/Scrubbers	1	82	10%	180	5
Paving Equipment	1	77	50%	180	5
Roller	1	80	20%	200	5
Paver	1	77	50%	200	5
Total # of equipment:	8				
Receptor:	13				
Results:					
	1-hour Leq:	73.6			



Construction Phase: Site Preparation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Excavator	1	81	40%	650	0
Rubber Tired Loader	1	79	40%	650	0
Total # of equipment:	2				
Receptor:	13				
	10				
Results:					
	1-hour Leq:	56.9			



Construction Phase: Drainage/Utilities/Trenching East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	650	0
Tractor/Loader/Backho	e 1	84	40%	650	0
Crane	1	81	16%	670	0
Air Compressor	1	78	40%	670	0
Total # of equipment: Receptor:	4 13				
Results:					
	1-hour Leq:	63.1			



Construction Phase: Grading/Excavation East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Tractor/Loader/Backhoe	1	84	40%	650	0
Drill Rig	1	84	20%	650	0
Crane	1	81	16%	670	0
Plate Compactor	1	83	20%	670	0
Excavator	1	81	40%	690	0
Rubber Tired Loader	1	79	40%	690	0
Dumpers/Tenders	1	76	40%	710	0
Plate Compactor	1	83	20%	710	0
Excavator	1	81	40%	730	0
Rubber Tired Loader	1	79	40%	730	0
Dumpers/Tenders	1	76	40%	750	0
Excavator	2	81	40%	750	0
—					
l otal # of equipment:	13				
Receptor:	13				
Results:					

1-hour Leq: 64.5



Construction Phase: Foundation/Concrete Pour East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	650	0
Tractor/Loader/Backho	e 1	84	40%	650	0
Fork Lift	1	75	20%	670	0
Concrete Pump	2	81	20%	670	0
Air Compressor	1	78	40%	690	0
Dumpers/Tenders	2	76	40%	690	0
Crane	1	81	16%	710	0
Total # of equipments	0				
Total # of equipment:	9				
Receptor:	13				
Results:					
	1-hour Leq:	63.5			



Construction Phase: Building Construction East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Jackhammer	1	89	20%	650	0
Tractor/Loader/Backhoe	e 1	84	40%	650	0
Bore/Drill Rigs	1	84	20%	670	0
Crane	1	81	16%	670	0
Concrete Pump	1	81	20%	690	0
Dumpers/Tenders	2	76	40%	690	0
Air Compressor	1	78	40%	710	0
Fork Lift	1	75	20%	710	0
Crane	1	81	16%	730	0
Total # of aquipmont:	10				
Potal # of equipment.	10				
Receptor:	13				
Results:					
	1-hour Leq:	63.9			



Construction Phase: Architectural Coating East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Air Compressor	1	78	40%	650	0
Fork Lift	1	75	20%	650	0
Dumpers/Tenders	1	76	40%	670	0
Total # of equipment:	3				
Recentor:	13				
	10				
Results:					
	1-hour Leq:	54.4			



Construction Phase: Paving East Site

Equipment

		Reference			Estimated
	No. of	Noise Level at	Acoustical	Distance to	Noise
Description	Equip.	50ft, Lmax	Usage Factor	Receptor, ft	Shielding, dBA
Concrete Saw	1	90	20%	650	0
Surfacing Equipment	1	90	20%	650	0
Graders	1	85	40%	670	0
Plate Compactor	1	83	20%	670	0
Sweepers/Scrubbers	1	82	10%	690	0
Paving Equipment	1	77	50%	690	0
Roller	1	80	20%	710	0
Paver	1	77	50%	710	0
Total # of equipment:	8				
Receptor:	13				
Results:					
	1-hour Leq:	65.7			



Construction Vibration Impacts - WEST SITE

Reference Levels at 25 feet are based on FTA, 2006 (Transit Noise and Vibration Impact Assessment) Calculations using FTA procedure with 1.5 (for receptors 25 feet or greater) n= 1.1 (for receptors less than 25 feet, per Caltrans procedure) n=

ON-SITE CONSTRUCTION ACTIVITIES

Table 1: Construction Equipment Vibration Levels (PPV) - Building Damages (WEST SITE)

		Estimated	Vibration Lev	els at neares	t off-site buil	ding structur	es, distance ir	n feet, PPV	
	Reference Vibration Levels at 25	North, AMDA Vine Bldg. (1)	South, Avalon Hollywood (15)	East, Capitol Records Bldg (18)	East, Gogerty Bldg (19)	West, 6340 Yucca/1763 Ivar Bldgs (16)	West, Hollywood- Ivar Bldg (17)		
Equipment	ft., PPV	2	2	95	95	75	75		
Vibratory Roller	0.210	3.379	3.379	0.028	0.028	0.040	0.040		
Large Bulldozer	0.089	1.432	1.432	0.012	0.012	0.017	0.017		
Caisson Drilling	0.089	1.432	1.432	0.012	0.012	0.017	0.017		
Loaded Trucks	0.076	1.223	1.223	0.010	0.010	0.015	0.015		
Jackhammer	0.035	0.563	0.563	0.005	0.005	0.007	0.007		
Small bulldozer	0.003	0.048	0.048	0.000	0.000	0.001	0.001		

Table 2a: Construction Equipment Vibration Levels (VdB) - Human Annoyance (WEST SITE)

	Reference Vibration	Estimated Vibration Levels at Off-Site Receptors (at note distance in feet), VdB								
	Levels at 25	1	2	3	4	5	6	7	8	9
Equipment	ft., VdB	170	360	300	550	530	2	125	530	280
Vibratory Roller	94	69	59	62	54	54	119	73	54	63
Large Bulldozer	87	62	52	55	47	47	112	66	47	56
Caisson Drilling	87	62	52	55	47	47	112	66	47	56
Loaded Trucks	86	61	51	54	46	46	111	65	46	55
Jackhammer	79	54	44	47	39	39	104	58	39	48
Small bulldozer	58	33	23	26	18	18	83	37	18	27

Table 2b: Construction Equipment Vibration Levels (VdB) - Human Annoyance (WEST SITE)

	Reference Vibration	Estimated Vibration Levels at Off-Site Receptors (at note distance in feet), VdB								
	Levels at 25	10	11	12	13					
Equipment	ft., VdB	280	100	90	140					
Vibratory Roller	94	63	76	77	72					
Large Bulldozer	87	56	69	70	65					
Caisson Drilling	87	56	69	70	65					
Loaded Trucks	86	55	68	69	64					
Jackhammer	79	48	61	62	57					
Small bulldozer	58	27	40	41	36					



Construction Vibration Impacts - EAST SITE

 Reference Levels at 25 feet are based on FTA, 2006 (Transit Noise and Vibration Impact Assessment)

 Calculations using FTA procedure with
 n=

 1.5 (for receptors 25 feet or greater)

 n=
 1.1 (for receptors less than 25 feet, per Caltrans procedure)

ON-SITE CONSTRUCTION ACTIVITIES

Table 3: Construction Equipment Vibration Levels (PPV) - Building Damages (EAST SITE)

		Estimated	Vibration Lev	els at neares	t off-site buil	ding structur	es, distance i	n feet, PPV	
	Reference Vibration Levels at 25	North (3)	South (9 & 20)	East (8)	West (11)				
Equipment	ft., PPV	2	2	75	95				
Vibratory Roller	0.210	3.379	3.379	0.040	0.028				
Large Bulldozer	0.089	1.432	1.432	0.017	0.012				
Caisson Drilling	0.089	1.432	1.432	0.017	0.012				
Loaded Trucks	0.076	1.223	1.223	0.015	0.010				
Jackhammer	0.035	0.563	0.563	0.007	0.005				
Small bulldozer	0.003	0.048	0.048	0.001	0.000				

Table 4: Construction Equipment Vibration Levels (PPV) - Building Damages (Historical Resources) - Both Sites

		Estimated Vibration Levels at nearest off-site building structures, distance in feet, PPV								
		Capitol	H.L.				Hollywood-			
	Reference	Records	Gogerty			Avalon	Ivar		Art Deco	1
	Vibration	Building	Building	Pantages	The Lofts	Hollywood	Building	St. Elmo	Storefronts	
	Levels at 25	(18)	(19)	Theatre (9)	(10)	(15)	(17)	Apts (13)	(14)	
Equipment	ft., PPV	2	10	2	70	2	75	140	2	
Vibratory Roller	0.210	3.379	0.575	3.379	0.045	3.379	0.040	0.016	3.379	
Large Bulldozer	0.089	1.432	0.244	1.432	0.019	1.432	0.017	0.007	1.432	
Caisson Drilling	0.089	1.432	0.244	1.432	0.019	1.432	0.017	0.007	1.432	
Loaded Trucks	0.076	1.223	0.208	1.223	0.016	1.223	0.015	0.006	1.223	
Jackhammer	0.035	0.563	0.096	0.563	0.008	0.563	0.007	0.003	0.563	
Small bulldozer	0.003	0.048	0.008	0.048	0.001	0.048	0.001	0.000	0.048	

Table 5a: Construction Equipment Vibration Levels (VdB) - Human Annoyance (EAST SITE)

	Reference Vibration	Estimated Vibration Levels at Off-Site Receptors (at note distance in feet), VdB									
	Levels at 25	1	2	3	4	5	6	7	8	9	
Equipment	ft., VdB	350	280	2	230	80	220	295	80	2	
Vibratory Roller	94	60	63	119	65	79	66	62	79	119	
Large Bulldozer	87	53	56	112	58	72	59	55	72	112	
Caisson Drilling	87	53	56	112	58	72	59	55	72	112	
Loaded Trucks	86	52	55	111	57	71	58	54	71	111	
Jackhammer	79	45	48	104	50	64	51	47	64	104	
Small bulldozer	58	24	27	83	29	43	30	26	43	83	

Table 5b: Construction Equipment Vibration Levels (VdB) - Human Annoyance (EAST SITE)

	Reference Vibration	Estimated Vibration Levels at Off-Site Receptors (at note distance in feet), VdB								
	Levels at 25	10	11	12	13					
Equipment	ft., VdB	100	90	300	650					
Vibratory Roller	94	76	77	62	52					
Large Bulldozer	87	69	70	55	45					
Caisson Drilling	87	69	70	55	45					
Loaded Trucks	86	68	69	54	44					
Jackhammer	79	61	62	47	37					
Small bulldozer	58	40	41	26	16					