HAWTHORN SENIOR APARTMENTS NEPA NOISE ASSESSMENT

San José, California

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INTRODUCTION

This report presents the results of the noise assessment completed for the Hawthorn Senior Apartments project located at 118/124 North 15th Street in San José, California. The 1.11-acre site is currently a vacant parking lot. A 4-story residential building containing 103 affordable senior housing units is to be constructed on the lot. An outdoor podium courtyard is planned for the second-floor, open toward the northwest and enclosed on the remaining three sides by the building. A parking garage with access via North 15th Street is planned on the first floor underneath the courtyard, and will contain 48 vehicle parking spaces and a parking stacker system. Single-family residences exist along the northwest side of the site, while North 15th Street runs along the southwest side, North 16th Street runs along the northeast side, and East St. John Street runs along the southeast side of the site. Land uses in the vicinity include mostly single-family housing, with a mix of residential and commercial to the southeast across East St. John Street.

The project's potential to result in adverse effects with respect to applicable National Environmental Policy Act (NEPA) guidelines is assessed in this report. The report is divided into two sections. The Setting Section provides a brief description of the fundamentals of environmental noise, summarizes applicable regulatory criteria, and discusses the results of the ambient noise monitoring survey completed to document existing noise conditions. The NEPA Noise Assessment Section evaluates noise effects resulting from the project. Based on the results of the analysis, no additional noise abatement would be required to meet the U.S. Department of Housing and Urban Development (HUD) standards in relation to interior noise levels.

SETTING

Fundamentals of Environmental Noise

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its *pitch* or its *loudness*. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (*frequency*) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. A *decibel (dB)* is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10 decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 1.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level (dBA).* This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 2. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This *energy-equivalent sound/noise* descriptor is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

The scientific instrument used to measure noise is the *sound level meter*. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Since the sensitivity to noise increases during the evening and at night -- because excessive noise interferes with the ability to sleep -- 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Community Noise Equivalent Level (CNEL*) is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 pm - 10:00 pm) and a 10 dB addition to nocturnal (10:00 pm - 7:00 am) noise levels. The *Day/Night Average Sound Level (*L_{dn} or *DNL)* is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this three-hour period are grouped into the daytime period.

TABLE 1 Definition of Acoustical Terms Used in this Report

Term	Definition
Decibel, dB	A unit describing, the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 micro Pascals.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, L_{dn} or DNL	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels measured in the night between 10:00 pm and 7:00 am.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Handbook of Acoustical Measurements and Noise Control, Harris, 1998.

TABLE 2 Typical Noise Levels in the Environment

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110 dBA	Rock band
Jet fly-over at 1,000 feet		
	100 dBA	
Gas lawn mower at 3 feet		
	90 dBA	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80 dBA	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	70 dBA	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60 dBA	
		Large business office
Quiet urban daytime	50 dBA	Dishwasher in next room
Quiet urban nighttime	40 dBA	Theater, large conference room
Quiet suburban nighttime		
	30 dBA	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20 dBA	
		Broadcast/recording studio
	10 dBA	
	0 dBA	

Source: Technical Noise Supplement (TeNS), California Department of Transportation, September 2013.

Regulatory Background

HUD environmental noise regulations are set forth in 24CFR Part 51B (Code of Federal Regulations). The following exterior noise standards for new housing construction would be applicable to this project:

- 65 dBA DNL or less – acceptable.

- Exceeding 65 dBA DNL but not exceeding 75 dBA DNL – normally unacceptable (appropriate sound attenuation measures must provide an additional 5 decibels of attenuation over that typically provided by standard construction in the 65 dBA DNL to 70 dBA DNL zone; 10 decibels additional attenuation in the 70 dBA DNL to 75 dBA DNL zone).

- Exceeding 75 dBA DNL – unacceptable.

These noise standards also apply, "… at a location 2 meters from the building housing noise sensitive activities in the direction of the predominant noise source…" and "…at other locations where it is determined that quiet outdoor space is required in an area ancillary to the principal use on the site."

A goal of 45 dBA DNL is set forth for interior noise levels and attenuation requirements are geared toward achieving that goal. It is assumed that with standard construction any building will provide sufficient attenuation to achieve an interior level of 45 dBA DNL or less if the exterior level is 65 dBA DNL or less. Where exterior noise levels range from 65 dBA DNL to 70 dBA DNL, the project must provide a minimum of 25 decibels of attenuation, and a minimum of 30 decibels of attenuation is required in the 70 dBA DNL to 75 dBA DNL zone.

Existing Noise Environment

Figure 1 shows the site, adjacent land uses, and transportation noise sources in the project vicinity. The site is bordered by single-family residences to the northwest, North 15th Street to the southwest, North 16th Street to the northeast, and East St. John Street to the southeast. Vehicles along East St. John Street, North 15th Street, and North 16th Street are the main noise sources in the area, with distant traffic from major arterials also contributing to the noise environment at the project site. The Norman Y. Mineta San José International Airport is located approximately two miles west of the site, while the Reid-Hillview County Airport is located approximately 3 miles east of the site. The nearest railroad is located over 0.75 miles away.

FIGURE 1 Aerial Image Showing Noise Monitoring Locations

Source: Google Earth, September 2022.

A noise monitoring survey was completed by Illingworth & Rodkin, Inc. (I&R) between Monday, September 12, 2022, and Wednesday, September 14, 2022, to establish existing noise levels at the site. The noise survey consisted of two long-term (LT-1 and LT-2) and three short-term (ST-1 through ST-3) noise measurements. All measurement locations are shown in Figure 1. The noise measurements were conducted with Larson Davis Laboratories (LDL) Model 831 Type I Sound Level Meters fitted with ½-inch pre-polarized condenser microphones and windscreens. The meters were calibrated with a Larson Davis precision acoustic calibrator prior to and following the measurement survey. Weather conditions were good for conducting noise measurements during the survey.

Long-term noise measurement LT-1 was conducted approximately 35 feet northeast of the centerline of North 15th Street to document typical noise levels at the building façade proposed along North 15th Street. Hourly average noise levels at LT-1 typically ranged from 49 to 60 dBA L_{eq} during daytime hours (7:00 a.m. and 10:00 p.m.) and from 43 to 53 dBA L_{eq} during nighttime hours (10:00 p.m. and 7:00 a.m.). The day-night average noise level was 56 dBA DNL on Tuesday, September 13, 2022.

Long-term noise measurement LT-2 was conducted approximately 20 feet southwest of the centerline of North 16th Street to document typical noise levels at the building façade proposed along North 16th Street. Hourly average noise levels at LT-2 typically ranged from 48 to 57 dBA L_{eq} during daytime hours (7:00 a.m. and 10:00 p.m.) and from 41 to 55 dBA L_{eq} during nighttime hours (10:00 p.m. and 7:00 a.m.). The day-night average noise level was 55 dBA DNL on Tuesday, September 13, 2022.

Short-term noise measurement ST-1 was conducted on Wednesday, September 14, 2022, between 11:10 a.m. and 11:20 a.m. to document typical noise levels expected at the proposed building façade along East St. John Street. This location was approximately 40 feet from the centerline of East St. John Street. Local traffic typically produced noise levels ranging from 49 to 69 dBA, and aircraft produced noise levels ranging from 49 to 52 dBA. The 10-minute L_{eq} measured at ST-1 was 54 dBA. ST-1 was measured concurrently with LT-1 where the 10-minute L_{eq} was 57 dBA, and with LT-2 where the 10-minute L_{eq} was 53 dBA.

Short-term noise measurement ST-2 was conducted on Wednesday, September 14, 2022, between 11:20 a.m. and 11:30 a.m. to document typical noise levels expected at the proposed outdoor-use area to be located centrally on the site. This location was approximately 145 feet from the centerline of East St. John Street, 160 feet from the centerline of North 15th Street, and 155 feet from the centerline of North 16th Street. Local traffic typically produced noise levels ranging from 44 to 53 dBA, and aircraft produced noise levels ranging from 48 to 52 dBA. The 10-minute L_{eq} measured at ST-2 was 48 dBA. ST-2 was measured concurrently with LT-1 where the 10-minute L_{eq} was 51 dBA, and with LT-2 where the 10-minute L_{eq} was 49 dBA.

Short-term noise measurement ST-3 was conducted on Wednesday, September 14, 2022, between 11:30 a.m. and 11:40 a.m. to document typical noise levels expected at the proposed rear of the building. This location was approximately 225 feet from the centerline of East St. John Street, 180 feet from the centerline of North 15th Street, and 135 feet from the centerline of North 16th Street. Local traffic typically produced noise levels ranging from 46 to 52 dBA, and aircraft produced noise levels ranging from 46 to 52 dBA. The 10-minute L_{eq} measured at ST-3 was 45 dBA. ST-3 was measured concurrently with LT-1 where the 10-minute L_{eq} was 49 dBA, and with LT-2 where the 10-minute L_{eq} was 48 dBA. The short-term noise measurement results for ST-1 through ST-3 are summarized below in Table 3.

TABLE 3 Summary of Short-Term Noise Measurements (dBA) on September 14, 2022

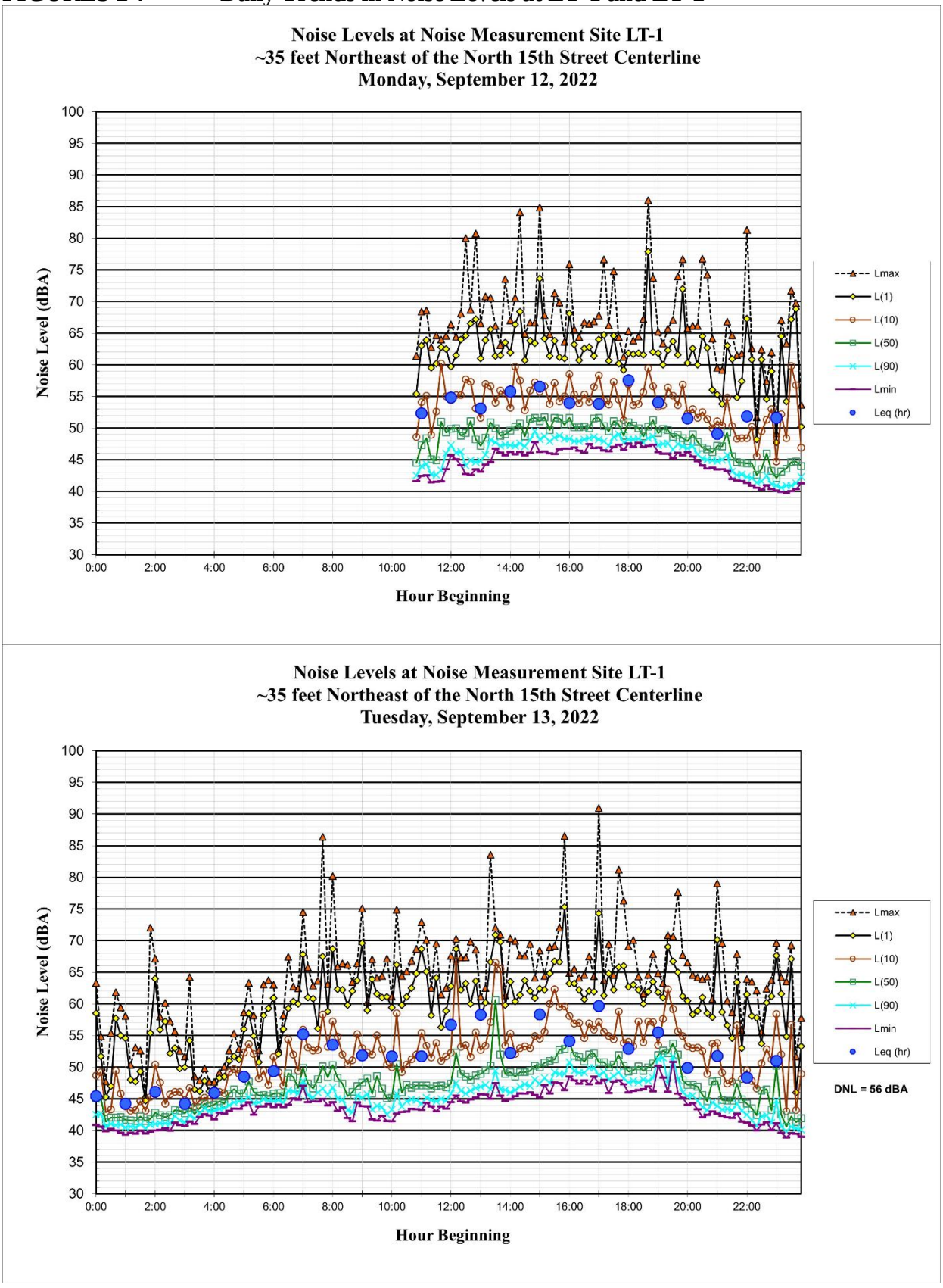
Noise Measurement Location	Time	Measured Noise Level, dBA					
		L_{max}	$L_{(1)}$	$L_{(10)}$	$L_{(50)}$	$L_{(90)}$	L_{eq}
ST-1: ~40 feet Northwest of the Centerline East St. John Street	11:10-11:20 a.m.	69	64	58	48	43	54
ST-2: ~145 feet Northwest of the Centerline East St. John Street	11:20-11:30 a.m.	64	58	49	45	43	48
ST-3: ~225 feet Northwest of the Centerline East St. John Street	11:30-11:40 a.m.	53	50	47	44	41	45

In addition to collecting long-term and short-term noise data, the HUD DNL Calculator (Appendix 1) was used to estimate the existing noise exposure at the site. Average daily traffic data from the City of San José GIS Open Data webpage were utilized for this noise study.[1]

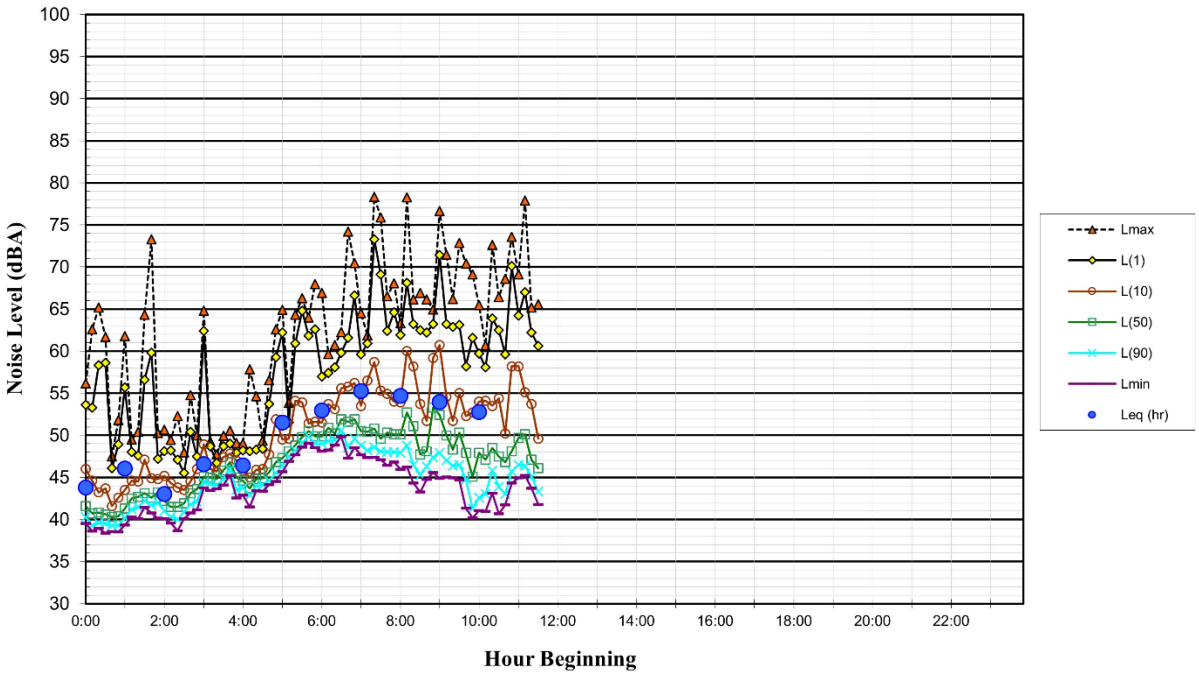
Based on the results of the HUD modeling, the existing worst-case noise exposure is at the southeast façade of the proposed building nearest East St. John Street, where the DNL is calculated to be 61 dBA. This location is shown as ST-1 in Figure 1. The noise level at the southwest façade of the proposed building along North 15th Street is calculated to be 57 dBA DNL, and is shown as LT-1 in Figure 1. The noise level at the northwest façade of the building is calculated to be 56 dBA DNL, and is shown as ST-3 in Figure 1. The noise level at the northeast façade of the building along North 16th Street is calculated to be 57 dBA DNL, and is shown as LT-2 in Figure 1. The noise level at the center of the proposed outdoor use area is calculated to be 56 dBA DNL, not accounting for the acoustical shielding that would be provided the proposed building. This location is shown as ST-2 in Figure 1. The on-site noise survey conducted by I&R concludes that noise levels throughout the site are 1 to 3 dBA lower than the HUD model calculated due to numerous intervening buildings in the vicinity that partially obstruct traffic noise levels from many of the nearby roads.

[1] San José GIS Open Data, *https:// https://gisdata-csj.opendata.arcgis.com/datasets/average-daily-traffic/explore*, September 1, 2022.

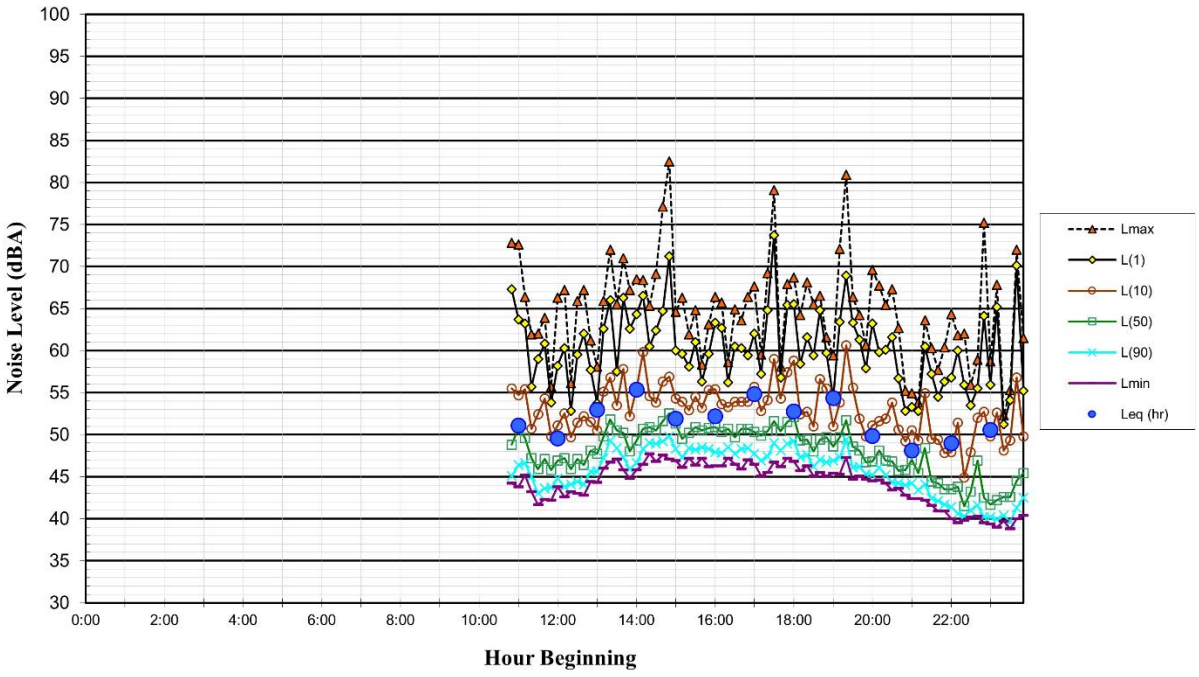
FIGURES 2-7 Daily Trends in Noise Levels at LT-1 and LT-2

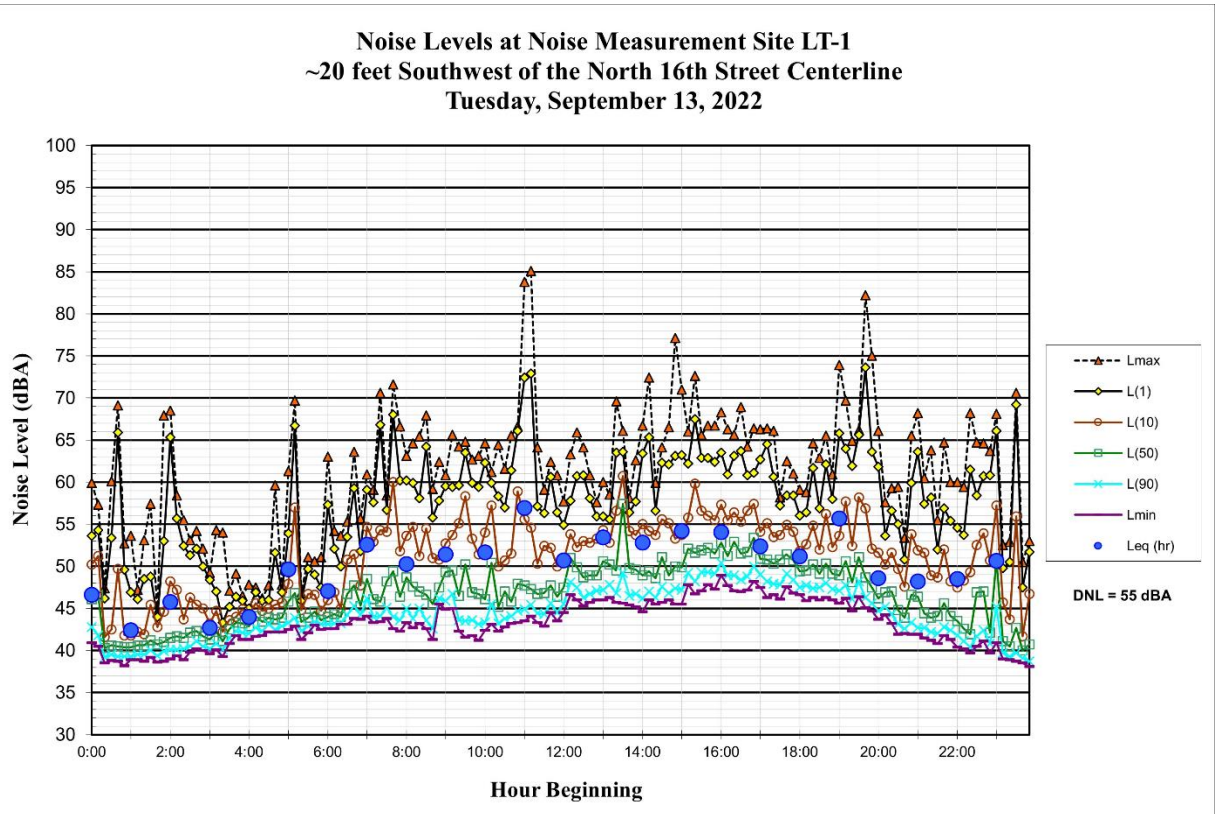


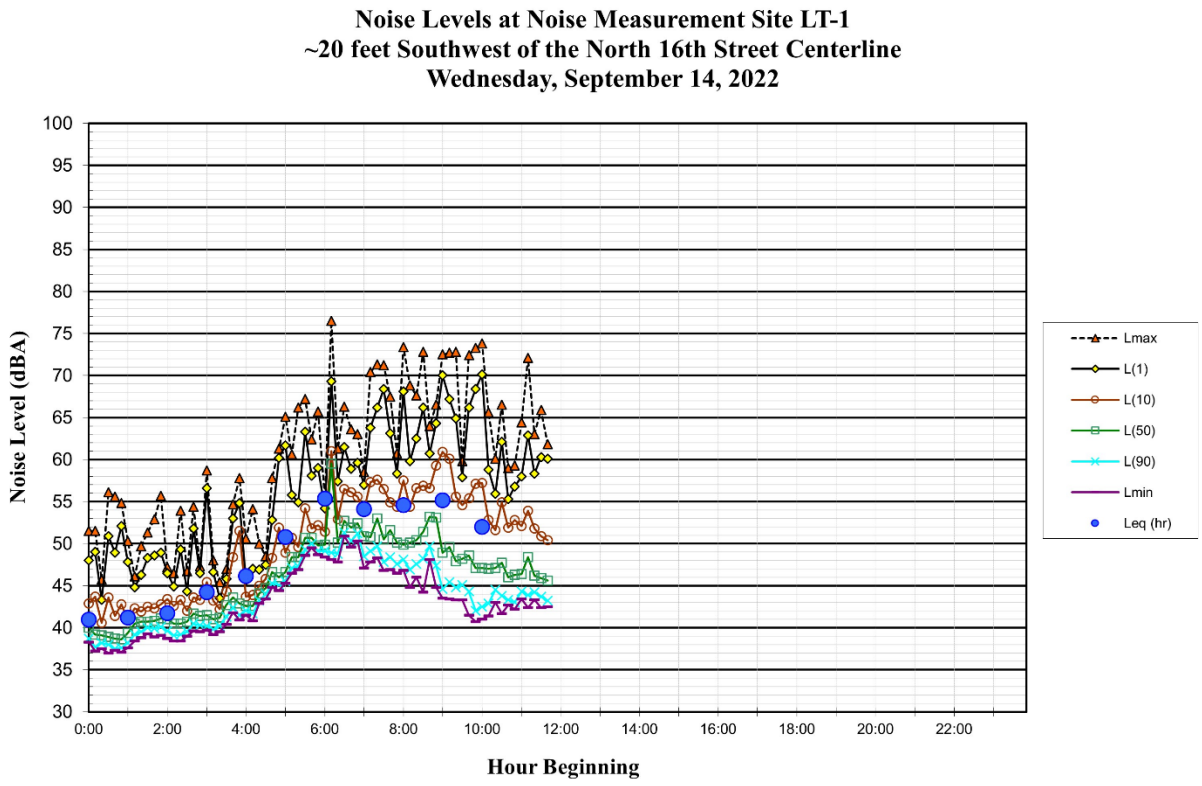
Noise Levels at Noise Measurement Site LT-1
~35 feet Northeast of the North 15th Street Centerline
Wednesday, September 14, 2022



Noise Levels at Noise Measurement Site LT-2
~20 feet Southwest of the North 16th Street Centerline
Monday, September 12, 2022




Noise Levels at Noise Measurement Site LT-1
~20 feet Southwest of the North 16th Street Centerline
Tuesday, September 13, 2022
Noise Level (dBA)
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)
DNL = 55 dBA


Noise Levels at Noise Measurement Site LT-1
~20 feet Southwest of the North 16th Street Centerline
Wednesday, September 14, 2022
Noise Level (dBA)
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Hour Beginning
Lmax
L(1)
L(10)
L(50)
L(90)
Lmin
Leq (hr)

NOISE ASSESSMENT

Significance Criteria

An adverse effect would result if noise levels at the project site would exceed HUD Guidelines for acceptability. Exterior noise levels exceeding 65 dBA DNL or interior noise levels exceeding 45 dBA DNL would exceed HUD's noise compatibility criteria.

Future Exterior Noise Environment

Pursuant to the HUD Guidelines, the noise exposure at least 10 years in the future must be considered in addition to the existing noise exposure. Under future conditions, local traffic along East St. John Street, North 15th Street, and North 16th Street is expected to continue to be the dominant noise source at the project site. A one-percent increase in vehicle traffic each year was assumed in estimating future traffic volumes. Based on future traffic volume estimates, the future noise environment on the project site is expected to increase by up to 1 dBA DNL or less throughout the site. According to the HUD modeling the future worst-case noise exposure will continue to be 61 dBA DNL at the southeast façade of the building, nearest East St. John Street. The predicted noise level at the center of the proposed outdoor use area would increase from 56 to 57 dBA DNL, while the southwest façade of the building would increase from 57 to 58 dBA DNL. All other areas of the site would remain at existing noise levels and within HUD's "acceptable" range of below 65 dBA DNL, and no additional noise attenuation would be required.

Future Interior Noise Environment

According to the HUD modeling, the residential units along the southeast façade of the proposed building nearest to East St. John Street would be exposed to future worst-case exterior noise levels reaching 61 dBA DNL. The predicted exterior noise level would be in HUD's "acceptable" exterior range of below 65 dBA DNL, and sixteen (16) decibels of attenuation would be required to achieve acceptable interior noise levels. Standard construction with the windows closed provides approximately 20 to 25 dBA of noise reduction in interior spaces. All other building façades would be exposed to noise levels less than at the northeastern façade. Interior noise levels within the building will be below the 45 dBA DNL threshold when doors and windows are closed. Forced air mechanical ventilation systems are provided so that windows and doors can be kept closed at the occupant's discretion to control noise intrusion indoors. Therefore, standard building construction provides the required attenuation such that future interior noise levels would be maintained below 45 dBA DNL, meeting HUD's interior noise criterion, and no additional noise abatement is required. See HUD Figure 19 in Appendix 2 for a description of noise attenuation measures related to acoustical construction.

Appendix 1 HUD DNL Calculator

DNL Calculator

The Day/Night Noise Level Calculator is an electronic assessment tool that calculates the Day/Night Noise Level (DNL) from roadway and railway traffic. For more information on using the DNL calculator, view the Day/Night Noise Level Calculator Electronic Assessment Tool Overview.

Guidelines

- To display the Road and/or Rail DNL calculator(s), click on the "Add Road Source" and/or "Add Rail Source" button(s) below.
- All Road and Rail input values must be positive non-decimal numbers.
- All Road and/or Rail DNL value(s) must be calculated separately before calculating the Site DNL.
- All checkboxes that apply must be checked for vehicles and trains in the tables' headers.
- **Note #1:** Tooltips, containing field specific information, have been added in this tool and may be accessed by hovering over all the respective data fields (site identification, roadway and railway assessment, DNL calculation results, roadway and railway input variables) with the mouse.
- **Note #2:** DNL Calculator assumes roadway data is always entered.

DNL Calculator

Site ID	Podium Open Space - Existing Conditions
Record Date	08/31/2022
User's Name	MPB

Road # 1 Name:	**E St John St**

Road #1

Vehicle Type	**Cars** ☑	**Medium Trucks** ☑	**Heavy Trucks** ☐
Effective Distance	145	145	
Distance to Stop Sign			
Average Speed	25	25	
Average Daily Trips (ADT)	3178	64	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	49	42	0
Calculate Road #1 DNL	50	Reset	

Road # 2 Name:	N 15th St

Road #2

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	160	160	
Distance to Stop Sign	100	100	
Average Speed	25	25	
Average Daily Trips (ADT)	630	13	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	35	28	0
Calculate Road #2 DNL	36	Reset	

Road # 3 Name:	N 16th St

Road #3

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	155	155	
Distance to Stop Sign	100	100	
Average Speed	25	25	
Average Daily Trips (ADT)	663	13	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	36	29	0
Calculate Road #3 DNL	36	Reset	

Road # 4 Name:	N 17th St

Road #4

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	470	470	470
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	3205	32	32
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	35	25	46
Calculate Road #4 DNL	46	Reset	

Road # 5 Name:	E St James St

Road #5

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	465	465	
Distance to Stop Sign			
Average Speed	25	25	
Average Daily Trips (ADT)	3147	63	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	41	34	0
Calculate Road #5 DNL	42	Reset	

Road # 6 Name:	E Santa Clara St

Road #6

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	775	775	775
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	15996	160	160
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	39	29	50
Calculate Road #6 DNL	50	Reset	

Road # 7 Name:	E Julian St

Road #7

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	1080	1080	1080
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	10279	103	103
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	35	25	45
Calculate Road #7 DNL	46	Reset	

Road # 8 Name:	N 13th St

Road #8

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	790	790	790
Distance to Stop Sign	100	100	100
Average Speed	30	30	30
Average Daily Trips (ADT)	5841	58	58
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	36	26	45
Calculate Road #8 DNL	46	Reset	

Airport Noise Level	50
Loud Impulse Sounds?	○Yes ◉No
Combined DNL for all Road and Rail sources	**55**
Combined DNL including Airport	**56**
Site DNL with Loud Impulse Sound	

Calculate Reset

DNL Calculator

Site ID	Northwest Façade - Existing Conditions
Record Date	08/31/2022
User's Name	MPB

Road # 1 Name:	**E St John St**

Road #1

Vehicle Type	**Cars** ☑	**Medium Trucks** ☑	**Heavy Trucks** ☐
Effective Distance	225	225	
Distance to Stop Sign			
Average Speed	25	25	
Average Daily Trips (ADT)	3178	64	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	46	39	0
Calculate Road #1 DNL	47	Reset	

Road # 2 Name:	N 15th St

Road #2

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	170	170	
Distance to Stop Sign	100	100	
Average Speed	25	25	
Average Daily Trips (ADT)	630	13	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	35	28	0
Calculate Road #2 DNL	36	Reset	

Road # 3 Name:	N 16th St

Road #3

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	145	145	
Distance to Stop Sign	100	100	
Average Speed	25	25	
Average Daily Trips (ADT)	663	13	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	36	29	0
Calculate Road #3 DNL	37	Reset	

Road # 4 Name:	N 17th St

Road #4

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	460	460	460
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	3205	32	32
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	35	25	46
Calculate Road #4 DNL	46	Reset	

Road # 5 Name:	E St James St

Road #5

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	385	385	
Distance to Stop Sign			
Average Speed	25	25	
Average Daily Trips (ADT)	3147	63	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	43	36	0
Calculate Road #5 DNL	43	Reset	

Road # 6 Name:	E Santa Clara St

Road #6

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	855	855	855
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	15996	160	160
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	38	28	49
Calculate Road #6 DNL	49	Reset	

Road # 7 Name:	E Julian St

Road #7

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	1000	1000	1000
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	10279	103	103
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	35	25	46
Calculate Road #7 DNL	46	Reset	

Road # 8 Name:	N 13th St

Road #8

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	800	800	800
Distance to Stop Sign	100	100	100
Average Speed	30	30	30
Average Daily Trips (ADT)	5841	58	58
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	36	26	45
Calculate Road #8 DNL	46	Reset	

Airport Noise Level	50
Loud Impulse Sounds?	○Yes ◉No
Combined DNL for all Road and Rail sources	**55**
Combined DNL including Airport	**56**
Site DNL with Loud Impulse Sound	

Calculate Reset

DNL Calculator

Site ID	Northeast Façade - Existing Conditions
Record Date	08/31/2022
User's Name	MPB

Road # 1 Name:	**E St John St**

Road #1

Vehicle Type	**Cars** ☑	**Medium Trucks** ☑	**Heavy Trucks** ☐
Effective Distance	140	140	
Distance to Stop Sign			
Average Speed	25	25	
Average Daily Trips (ADT)	3178	64	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	49	42	0
Calculate Road #1 DNL	50	Reset	

Road # 2 Name:	N 15th St

Road #2

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	265	265	
Distance to Stop Sign	100	100	
Average Speed	25	25	
Average Daily Trips (ADT)	630	13	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	32	25	0
Calculate Road #2 DNL	33	Reset	

Road # 3 Name:	N 16th St

Road #3

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	50	50	
Distance to Stop Sign	100	100	
Average Speed	25	25	
Average Daily Trips (ADT)	663	13	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	43	36	0
Calculate Road #3 DNL	44	Reset	

Road # 4 Name:	N 17th St

Road #4

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	365	365	365
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	3205	32	32
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	37	27	47
Calculate Road #4 DNL	48	Reset	

Road # 5 Name:	E St James St

Road #5

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	470	470	
Distance to Stop Sign			
Average Speed	25	25	
Average Daily Trips (ADT)	3147	63	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	41	34	0
Calculate Road #5 DNL	42	Reset	

Road # 6 Name:	E Santa Clara St

Road #6

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	770	770	770
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	15996	160	160
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	39	29	50
Calculate Road #6 DNL	50	Reset	

Road # 7 Name:	E Julian St

Road #7

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	1085	1085	1085
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	10279	103	103
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	35	25	45
Calculate Road #7 DNL	46	Reset	

Road # 8 Name:	N 13th St

Road #8

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	900	900	900
Distance to Stop Sign	100	100	100
Average Speed	30	30	30
Average Daily Trips (ADT)	5841	58	58
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	35	25	44
Calculate Road #8 DNL	45	Reset	

Airport Noise Level	50
Loud Impulse Sounds?	○Yes ◉No
Combined DNL for all Road and Rail sources	**56**
Combined DNL including Airport	**57**
Site DNL with Loud Impulse Sound	

Calculate Reset

DNL Calculator

Site ID	Southeast Façade - Existing Conditions
Record Date	08/31/2022
User's Name	MPB

Road # 1 Name:	**E St John St**

Road #1

Vehicle Type	**Cars** ☑	**Medium Trucks** ☑	**Heavy Trucks** ☐
Effective Distance	35	35	
Distance to Stop Sign			
Average Speed	25	25	
Average Daily Trips (ADT)	3178	64	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	58	51	0
Calculate Road #1 DNL	59	Reset	

Road # 2 Name:	N 15th St

Road #2

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	165	165	
Distance to Stop Sign	100	100	
Average Speed	25	25	
Average Daily Trips (ADT)	630	13	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	35	28	0
Calculate Road #2 DNL	36	Reset	

Road # 3 Name:	N 16th St

Road #3

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	150	150	
Distance to Stop Sign	100	100	
Average Speed	25	25	
Average Daily Trips (ADT)	663	13	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	36	29	0
Calculate Road #3 DNL	37	Reset	

Road # 4 Name:	N 17th St

Road #4

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	475	475	475
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	3205	32	32
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	35	25	46
Calculate Road #4 DNL	46	Reset	

Road # 5 Name:	E St James St

Road #5

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	575	575	
Distance to Stop Sign			
Average Speed	25	25	
Average Daily Trips (ADT)	3147	63	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	40	33	0
Calculate Road #5 DNL	41	Reset	

Road # 6 Name:	E Santa Clara St

Road #6

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	665	665	665
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	15996	160	160
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	40	30	51
Calculate Road #6 DNL	51	Reset	

Road # 7 Name:	E Julian St

Road #7

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	1190	1190	1190
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	10279	103	103
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	34	24	45
Calculate Road #7 DNL	45	Reset	

Road # 8 Name:	N 13th St

Road #8

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	795	795	795
Distance to Stop Sign	100	100	100
Average Speed	30	30	30
Average Daily Trips (ADT)	5841	58	58
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	36	26	45
Calculate Road #8 DNL	46	Reset	

Airport Noise Level	50
Loud Impulse Sounds?	○Yes ◉No
Combined DNL for all Road and Rail sources	**60**
Combined DNL including Airport	**61**
Site DNL with Loud Impulse Sound	

Calculate Reset

DNL Calculator

Site ID	Southwest Façade - Existing Conditions
Record Date	08/31/2022
User's Name	MPB

Road # 1 Name:	**E St John St**

Road #1

Vehicle Type	**Cars** ☑	**Medium Trucks** ☑	**Heavy Trucks** ☐
Effective Distance	110	110	
Distance to Stop Sign			
Average Speed	25	25	
Average Daily Trips (ADT)	3178	64	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	51	44	0
Calculate Road #1 DNL	52	Reset	

Road # 2 Name:	N 15th St

Road #2

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	55	55	
Distance to Stop Sign	100	100	
Average Speed	25	25	
Average Daily Trips (ADT)	630	13	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	42	35	0
Calculate Road #2 DNL	43	Reset	

Road # 3 Name:	N 16th St

Road #3

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	255	255	
Distance to Stop Sign	100	100	
Average Speed	25	25	
Average Daily Trips (ADT)	663	13	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	32	25	0
Calculate Road #3 DNL	33	Reset	

Road # 4 Name:	N 17th St

Road #4

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	575	575	575
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	3205	32	32
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	34	24	45
Calculate Road #4 DNL	45	Reset	

Road # 5 Name:	E St James St

Road #5

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	500	500	
Distance to Stop Sign			
Average Speed	25	25	
Average Daily Trips (ADT)	3147	63	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	41	34	0
Calculate Road #5 DNL	42	Reset	

Road # 6 Name:	E Santa Clara St

Road #6

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	745	745	745
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	15996	160	160
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	39	29	50
Calculate Road #6 DNL	50	Reset	

Road # 7 Name:	E Julian St

Road #7

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	1115	1115	1115
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	10279	103	103
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	35	25	45
Calculate Road #7 DNL	46	Reset	

Road # 8 Name:	N 13th St

Road #8

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	690	690	690
Distance to Stop Sign	100	100	100
Average Speed	30	30	30
Average Daily Trips (ADT)	5841	58	58
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	37	27	46
Calculate Road #8 DNL	46	Reset	

Airport Noise Level	50
Loud Impulse Sounds?	○Yes ◉No
Combined DNL for all Road and Rail sources	**56**
Combined DNL including Airport	**57**
Site DNL with Loud Impulse Sound	

Calculate Reset

DNL Calculator

Site ID	Podium Open Space - Future Conditions
Record Date	08/31/2022
User's Name	MPB

Road # 1 Name:	**E St John St**

Road #1

Vehicle Type	**Cars** ☑	**Medium Trucks** ☑	**Heavy Trucks** ☐
Effective Distance	145	145	
Distance to Stop Sign			
Average Speed	25	25	
Average Daily Trips (ADT)	3919	70	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	50	42	0
Calculate Road #1 DNL	51	Reset	

Road # 2 Name:	N 15th St

Road #2

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	160	160	
Distance to Stop Sign	100	100	
Average Speed	25	25	
Average Daily Trips (ADT)	1513	14	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	39	29	0
Calculate Road #2 DNL	39	Reset	

Road # 3 Name:	N 16th St

Road #3

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	155	155	
Distance to Stop Sign	100	100	
Average Speed	25	25	
Average Daily Trips (ADT)	733	15	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	36	29	0
Calculate Road #3 DNL	37	Reset	

Road # 4 Name:	N 17th St

Road #4

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	470	470	470
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	3540	35	35
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	36	26	46
Calculate Road #4 DNL	47	Reset	

Road # 5 Name:	E St James St

Road #5

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	465	465	
Distance to Stop Sign			
Average Speed	25	25	
Average Daily Trips (ADT)	3476	70	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	42	35	0
Calculate Road #5 DNL	43	Reset	

Road # 6 Name:	E Santa Clara St

Road #6

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	775	775	775
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	18078	177	177
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	40	29	50
Calculate Road #6 DNL	50	Reset	

Road # 7 Name:	E Julian St

Road #7

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	1080	1080	1080
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	11762	114	114
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	36	25	46
Calculate Road #7 DNL	46	Reset	

Road # 8 Name:	N 13th St

Road #8

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	790	790	790
Distance to Stop Sign	100	100	100
Average Speed	30	30	30
Average Daily Trips (ADT)	6452	62	62
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	37	26	45
Calculate Road #8 DNL	46	Reset	

Airport Noise Level	50
Loud Impulse Sounds?	○Yes ◉No
Combined DNL for all Road and Rail sources	**56**
Combined DNL including Airport	**57**
Site DNL with Loud Impulse Sound	

Calculate Reset

DNL Calculator

Site ID	Northwest Façade - Future Conditions
Record Date	08/31/2022
User's Name	MPB

Road # 1 Name:	**E St John St**

Road #1

Vehicle Type	**Cars** ☑	**Medium Trucks** ☑	**Heavy Trucks** ☐
Effective Distance	225	225	
Distance to Stop Sign			
Average Speed	25	25	
Average Daily Trips (ADT)	3919	70	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	47	40	0
Calculate Road #1 DNL	48	Reset	

Road # 2 Name:	N 15th St

Road #2

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	170	170	
Distance to Stop Sign	100	100	
Average Speed	25	25	
Average Daily Trips (ADT)	1513	14	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	39	28	0
Calculate Road #2 DNL	39	Reset	

Road # 3 Name:	N 16th St

Road #3

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	145	145	
Distance to Stop Sign	100	100	
Average Speed	25	25	
Average Daily Trips (ADT)	733	15	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	37	30	0
Calculate Road #3 DNL	37	Reset	

Road # 4 Name:	N 17th St

Road #4

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	460	460	460
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	3540	35	35
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	36	26	46
Calculate Road #4 DNL	47	Reset	

Road # 5 Name:	E St James St

Road #5

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	385	385	
Distance to Stop Sign			
Average Speed	25	25	
Average Daily Trips (ADT)	3476	70	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	43	36	0
Calculate Road #5 DNL	44	Reset	

Road # 6 Name:	E Santa Clara St

Road #6

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	855	855	855
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	18078	177	177
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	39	29	49
Calculate Road #6 DNL	50	Reset	

Road # 7 Name:	E Julian St

Road #7

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	1000	1000	1000
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	11762	114	114
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	36	26	46
Calculate Road #7 DNL	47	Reset	

Road # 8 Name:	N 13th St

Road #8

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	800	800	800
Distance to Stop Sign	100	100	100
Average Speed	30	30	30
Average Daily Trips (ADT)	6452	62	62
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	36	26	45
Calculate Road #8 DNL	46	Reset	

Airport Noise Level	50
Loud Impulse Sounds?	○Yes ◉No
Combined DNL for all Road and Rail sources	**55**
Combined DNL including Airport	**56**
Site DNL with Loud Impulse Sound	

Calculate Reset

DNL Calculator

Site ID	Northeast Façade - Future Conditions
Record Date	08/31/2022
User's Name	MPB

Road # 1 Name:	**E St John St**

Road #1

Vehicle Type	**Cars** ☑	**Medium Trucks** ☑	**Heavy Trucks** ☐
Effective Distance	140	140	
Distance to Stop Sign			
Average Speed	25	25	
Average Daily Trips (ADT)	3919	70	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	50	43	0
Calculate Road #1 DNL	51	Reset	

Road # 2 Name:	N 15th St

Road #2

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	265	265	
Distance to Stop Sign	100	100	
Average Speed	25	25	
Average Daily Trips (ADT)	1513	14	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	36	25	0
Calculate Road #2 DNL	36	Reset	

Road # 3 Name:	N 16th St

Road #3

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	50	50	
Distance to Stop Sign	100	100	
Average Speed	25	25	
Average Daily Trips (ADT)	733	15	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	44	37	0
Calculate Road #3 DNL	44	Reset	

Road # 4 Name:	N 17th St

Road #4

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	365	365	365
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	3540	35	35
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	37	27	48
Calculate Road #4 DNL	48	Reset	

Road # 5 Name:	E St James St

Road #5

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	470	470	
Distance to Stop Sign			
Average Speed	25	25	
Average Daily Trips (ADT)	3476	70	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	42	35	0
Calculate Road #5 DNL	43	Reset	

Road # 6 Name:	E Santa Clara St

Road #6

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	770	770	770
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	18078	177	177
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	40	30	50
Calculate Road #6 DNL	50	Reset	

Road # 7 Name:	E Julian St

Road #7

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	1085	1085	1085
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	11762	114	114
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	36	25	46
Calculate Road #7 DNL	46	Reset	

Road # 8 Name:	N 13th St

Road #8

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	900	900	900
Distance to Stop Sign	100	100	100
Average Speed	30	30	30
Average Daily Trips (ADT)	6452	62	62
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	36	26	44
Calculate Road #8 DNL	45	Reset	

Airport Noise Level	50
Loud Impulse Sounds?	○Yes ◉No
Combined DNL for all Road and Rail sources	**56**
Combined DNL including Airport	**57**
Site DNL with Loud Impulse Sound	

Calculate Reset

DNL Calculator

Site ID	Southeast Façade - Future Conditions
Record Date	08/31/2022
User's Name	MPB

Road # 1 Name:	**E St John St**

Road #1

Vehicle Type	**Cars** ☑	**Medium Trucks** ☑	**Heavy Trucks** ☐
Effective Distance	35	35	
Distance to Stop Sign			
Average Speed	25	25	
Average Daily Trips (ADT)	3919	70	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	59	52	0
Calculate Road #1 DNL	60	Reset	

Road # 2 Name:	N 15th St

Road #2

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	165	165	
Distance to Stop Sign	100	100	
Average Speed	25	25	
Average Daily Trips (ADT)	1513	14	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	39	29	0
Calculate Road #2 DNL	39	Reset	

Road # 3 Name:	N 16th St

Road #3

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	150	150	
Distance to Stop Sign	100	100	
Average Speed	25	25	
Average Daily Trips (ADT)	733	15	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	36	29	0
Calculate Road #3 DNL	37	Reset	

Road # 4 Name:	N 17th St

Road #4

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	475	475	475
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	3540	35	35
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	36	26	46
Calculate Road #4 DNL	47	Reset	

Road # 5 Name:	E St James St

Road #5

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	575	575	
Distance to Stop Sign			
Average Speed	25	25	
Average Daily Trips (ADT)	3476	70	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	40	33	0
Calculate Road #5 DNL	41	Reset	

Road # 6 Name:	E Santa Clara St

Road #6

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	665	665	665
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	18078	177	177
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	41	30	51
Calculate Road #6 DNL	51	Reset	

Road # 7 Name:	E Julian St

Road #7

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	1190	1190	1190
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	11762	114	114
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	35	25	45
Calculate Road #7 DNL	46	Reset	

Road # 8 Name:	N 13th St

Road #8

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	795	795	795
Distance to Stop Sign	100	100	100
Average Speed	30	30	30
Average Daily Trips (ADT)	6452	62	62
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	37	26	45
Calculate Road #8 DNL	46	Reset	

Airport Noise Level	50
Loud Impulse Sounds?	○Yes ◉No
Combined DNL for all Road and Rail sources	**61**
Combined DNL including Airport	**61**
Site DNL with Loud Impulse Sound	

Calculate Reset

DNL Calculator

Site ID	Southwest Façade - Future Conditions
Record Date	08/31/2022
User's Name	MPB

Road # 1 Name:	**E St John St**

Road #1

Vehicle Type	**Cars** ☑	**Medium Trucks** ☑	**Heavy Trucks** ☐
Effective Distance	110	110	
Distance to Stop Sign			
Average Speed	25	25	
Average Daily Trips (ADT)	3919	70	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	52	44	0
Calculate Road #1 DNL	52	Reset	

Road # 2 Name:	N 15th St

Road #2

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	55	55	
Distance to Stop Sign	100	100	
Average Speed	25	25	
Average Daily Trips (ADT)	1513	14	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	46	36	0
Calculate Road #2 DNL	46	Reset	

Road # 3 Name:	N 16th St

Road #3

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	255	255	
Distance to Stop Sign	100	100	
Average Speed	25	25	
Average Daily Trips (ADT)	733	15	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	33	26	0
Calculate Road #3 DNL	34	Reset	

Road # 4 Name:	N 17th St

Road #4

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	575	575	575
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	3540	35	35
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	34	24	45
Calculate Road #4 DNL	45	Reset	

Road # 5 Name:	E St James St

Road #5

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☐
Effective Distance	500	500	
Distance to Stop Sign			
Average Speed	25	25	
Average Daily Trips (ADT)	3476	70	
Night Fraction of ADT	15	15	
Road Gradient (%)			
Vehicle DNL	41	34	0
Calculate Road #5 DNL	42	Reset	

Road # 6 Name:	E Santa Clara St

Road #6

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	745	745	745
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	18078	177	177
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	40	30	50
Calculate Road #6 DNL	51	Reset	

Road # 7 Name:	E Julian St

Road #7

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	1115	1115	1115
Distance to Stop Sign	100	100	100
Average Speed	25	25	25
Average Daily Trips (ADT)	11762	114	114
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	35	25	46
Calculate Road #7 DNL	46	Reset	

Road # 8 Name:	N 13th St

Road #8

Vehicle Type	Cars ☑	Medium Trucks ☑	Heavy Trucks ☑
Effective Distance	690	690	690
Distance to Stop Sign	100	100	100
Average Speed	30	30	30
Average Daily Trips (ADT)	6452	62	62
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	37	27	46
Calculate Road #8 DNL	47	Reset	

Airport Noise Level	50
Loud Impulse Sounds?	○Yes ◉No
Combined DNL for all Road and Rail sources	**57**
Combined DNL including Airport	**58**
Site DNL with Loud Impulse Sound	

Calculate Reset

Mitigation Options

If your site DNL is in Excess of 65 decibels, your options are:

- **No Action Alternative**: Cancel the project at this location
- **Other Reasonable Alternatives**: Choose an alternate site
- **Mitigation**
    - Contact your Field or Regional Environmental Officer
    - Increase mitigation in the building walls (only effective if no outdoor, noise sensitive areas)
    - Reconfigure the site plan to increase the distance between the noise source and noise-sensitive uses
    - Incorporate natural or man-made barriers. See *The Noise Guidebook*
    - Construct noise barrier. See the Barrier Performance Module

Appendix 2 - HUD Figure 19

Figure 19
Description of Noise Attenuation Measures
(Acoustical Construction)

Part I

Project Name: 118 North 15th Street, San José, Southeast Façade of Proposed Building (Worst-Case Noise Exposure)

Location: San José, California

Sponsor/Developer: Santa Clara County Housing Authority

Noise Level (From NAG): 61 dBA DNL Attenuation Required: 16 dBA
Primary Noise Source(s): East Saint John Street traffic

Part II

1. For wall(s) facing and parallel to the noise source(s) (or closest to parallel:
   a. Description of wall construction*: Stucco Exterior, Insulated Wood Stud Wall, Gypsum Board Interior
   b. STC rating for wall (rated for no windows or doors): STC 46
   c. Description of windows: Double Glazed
   d. STC rating for window type: STC 26
   e. Description of doors: N/A
   f. STC rating for doors: N/A
   g. Percentage of wall (per wall, per dwelling unit) composed of windows: 22% and doors: N/A
   h. Combined STC rating for wall component: 31 dBA

2. For walls perpendicular to noise source(s):
   a. Description of wall construction*: Stucco Exterior, Insulated Wood Stud Wall, Gypsum Board Interior
   b. STC rating for wall (rated for no windows or doors): STC 46
   c. Description of windows: Double Glazed
   d. STC rating for window type: STC 26
   e. Description of doors: N/A
   f. STC rating for doors: N/A
   g. Percentage of wall (per wall, per dwelling unit) composed of windows: 28% and doors: N/A
   h. Combined STC rating for wall component: 30 dBA

3. Roofing component (if overhead attenuation is required to aircraft noise):
   a. Description of roof construction: N/A
   b. STC rating (rated as if no skylights or other openings): N/A
   c. Description of skylights or overhead windows: N/A
   d. STC rating for skylights or overhead windows: N/A
   e. Percentage of roof composed of skylights or windows (per dwelling unit): N/A
   f. Percentage of roof composed of large uncapped openings such as chimneys: N/A
   g. Combined STC rating for roof component: N/A

4. Description of type of mechanical ventilation provided: Satisfactory forced air mechanical ventilation system.