NOISE IMPACT ANALYSIS

SAN JOSE CITY COLLEGE FACILITIES MASTER PLAN UPDATE 2021

CITY OF SAN JOSE, CALIFORNIA

Prepared for:

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NOISE SETTING

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

The decibel (dB) scale is used to quantify sound pressure levels. Although decibels are most commonly associated with sound, "dB" is a generic descriptor that is equal to ten times the logarithmic ratio of any physical parameter versus some reference quantity. For sound, the reference level is the faintest sound detectable by a young person with good auditory acuity.

Since the human ear is not equally sensitive to all sound frequencies within the entire auditory spectrum, human response is factored into sound descriptions by weighting sounds within the range of maximum human sensitivity more heavily in a process called “A-weighting,” written as dB(A). Any further reference in this discussion to decibels written as "dB" should be understood to be A-weighted.

Time variations in noise exposure are typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called LEQ), or alternately, as a statistical description of the sound pressure level that is exceeded over some fraction of a given observation period. Finally, because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law requires that, for planning purposes, an artificial dB increment be added to quiet time noise levels in a 24-hour noise descriptor called the DNL (Daily Noise Level) or the Community Noise Equivalent Level (CNEL). The CNEL metric has gradually replaced the DNL factor, but the two descriptors are essentially identical. The CNEL, used in California, includes a 5 decibel penalty during the hours of 7:00 p.m. to 10:00 p.m. in addition to the DNL's 10 dB nighttime penalty. The CNEL noise scale is similar to the DNL noise scale (within 1 dBA of each other) and the terms are typically interchangeable.

DNL/CNEL-based standards are generally applied to transportation-related sources because local jurisdictions are pre-empted from exercising direct noise control over vehicles on public streets, aircraft, trains, etc. Local governments therefore regulates the noise exposure of the receiving property through land use controls.

CITY OF SAN JOSE NOISE STANDARDS

Implementation of the proposed Facilities Master Plan Update may affect land uses in the City of San Jose surrounding the campus. The City of San Jose's General Plan contains policies and goals which pertain to desired noise levels for various land uses located within the City. These policies and goals are expressed in terms of the DNL. As shown in Figure 1, the General Plan cites exterior DNL goals for school use is 70 dBA DNL as long as interior noise is attenuated to less than 45 dBA.

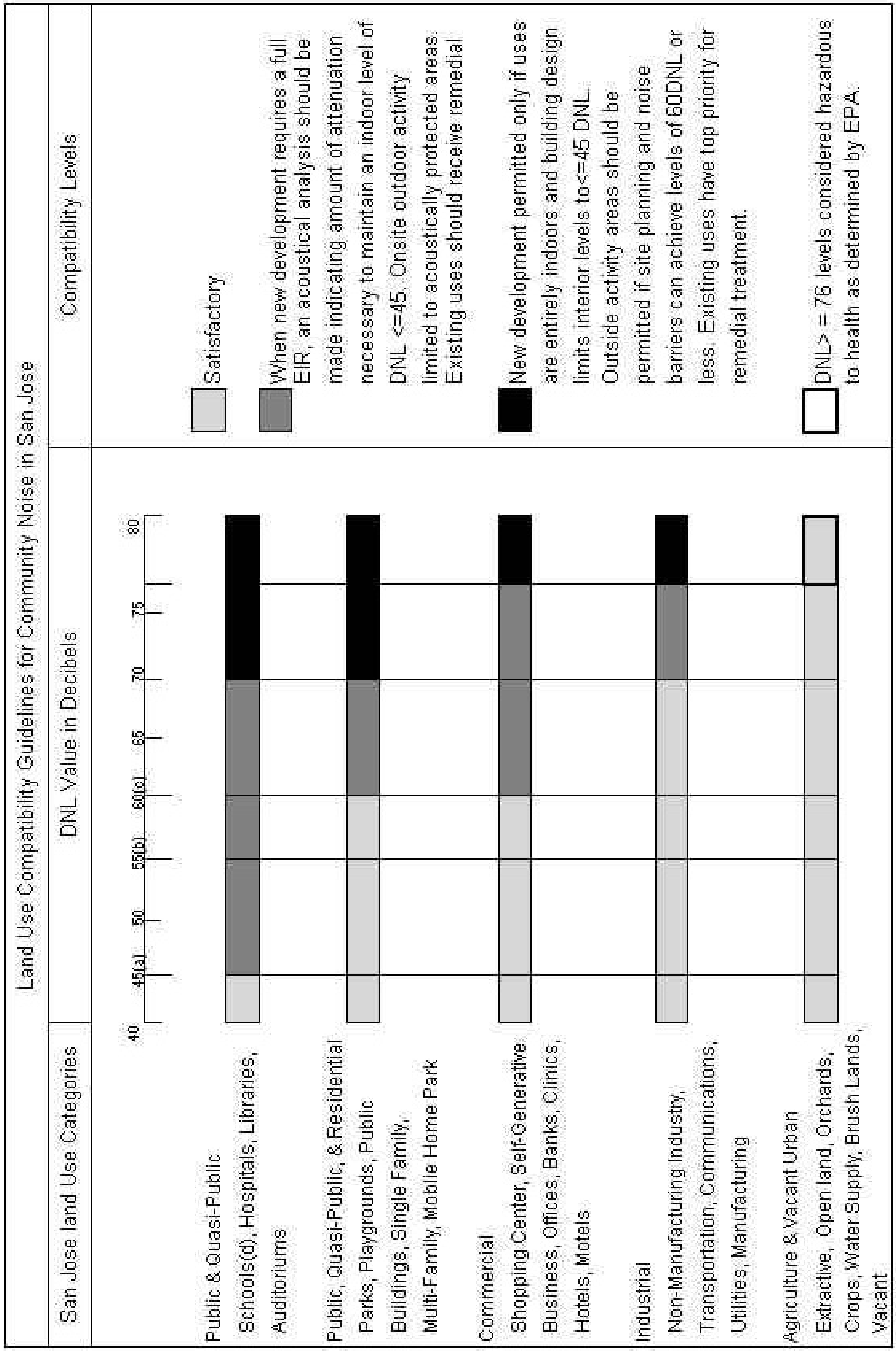
The General Plan distinguishes between noise from transportation sources and noise from nontransportation (i.e., stationary) sources. Though the short-term exterior noise goal for schools is 70 dBA DNL for transportation sources, for stationary sources, the exterior noise goal is 55 dBA DNL at the property line between sensitive land uses (e.g., residences, schools, libraries, hospitals, etc.) and non-sensitive land uses (e.g., industrial, commercial, etc.).

San Jose Municipal Code Section 20.100.450, limits construction hours within 500 feet of residences to 7 am - 7 pm weekdays, with no construction on weekends or holidays.

CALIFORNIA GENERAL PLAN GUIDELINES

Community college districts in California follow state guidelines as to noise exposures of various elements of the learning environment. The State of California, Department of Health Services Environmental Health Division has published recommended guidelines for mobile source noise exposure and land use compatibility. These guidelines are illustrated in Figure 2. As shown, 60 dB(A) CNEL is the "normally" acceptable exterior noise level for residential use, and 70 dB CNEL is considered to be acceptable for schools and libraries. As previously stated, CNEL and DNL are essentially identical. The San Jose/ Evergreen Community College District, as the CEQA lead agency, would employ the above compatibility guidelines.

Figure 1
San Jose Noise Compatibility Guidelines



(a) Interior Noise Quality Level
(b) Long-Range Exterior Noise Quality Level
(c) Short-Range Exterior Noise Quality Level
(d) Leq value of Leq (30) = is used for the evaluation of school impact by the airport

Figure 2
Land Use Compatibility Guidelines

BACKGROUND NOISE LEVELS

Campus facilities currently include academic and administrative buildings, a library, student center, theatre, child development center, gymnasium, stadium, athletic fields, and parking lots. Principal vehicular traffic routes near the campus include Interstate 280 (1-280), Moorpark Avenue, Bascom Avenue, Fruitdale Avenue, and Leigh Avenue. North of the campus, the I-280 is separated from the site by the Moorpark Avenue right-of-way. The I-280 freeway segment immediately adjacent to the campus is depressed and is approximately 30 feet below the grade of the campus. Freeway traffic noise, as well as noise from Moorpark Avenue, dominate the noise environment along the northern campus perimeter. Traffic noise levels along Moorpark Avenue are in the low 70 dB CNEL range.

Bascom Avenue bounds the western campus perimeter and is separated from the campus by commercial uses. Traffic noise levels along Bascom Avenue in the campus vicinity are estimated to be 72 dB CNEL at 50 feet from the roadway centerline, though the campus buildings benefit from approximately 350 feet of setback from the Bascom Avenue centerline.

Leigh Avenue bounds the campus to the east. Across Leigh Avenue are residential uses. Traffic noise levels along Leigh Avenue in the campus vicinity are calculated to be 70 dB CNEL at 50 feet from the roadway based upon current traffic volumes and travel speeds.

In addition to traffic noise from surrounding roadways, the parking lots located throughout the campus are the dominant point (stationary) sources of noise. Other sources of noise heard on the campus are generally composed of normal student and staff activities, and noise generated within the adjacent residential neighborhoods. A comprehensive noise study conducted for the 2000 Master Plan (Prior Plan) found exterior noise levels within the interior of the campus to be typically in the 50-60 dB range. With only a limited change in enrollment and traffic, such levels are likely to still be fully representative.

Noise levels are also generated periodically by on-site athletic and community activities at the existing stadium, athletic facilities, and parking lots in the eastern and southern portions of the campus. College and high school football games are held in the stadium an average of 20 days per year (generally on Friday and Saturday nights during the months of September through early December). Noise levels occur from the use of a public address (PA) system, people yelling, occasional school bands, referee's whistles, etc. Based on a study of a comparable stadium in southern California as reported in the Prior Plan DEIR, background noise levels preceding a football game average 55 to 60 dB(A) just outside of the stadium. During the game, noise levels averaged 60 to 65 dB(A) when the PA system was not in use, 65 to 75 dB(A) during the use of PA equipment, and 70 to 75 dB(A) during the playing of amplified music. Instantaneous noise events of up to 80 dB(A) are expected by the blowing of whistles. The stadium is located close to residential uses to the south and east. The closest homes are 500 feet east and 400 feet south of the stadium seating. These residents are therefore exposed to stadium activity noise on Friday and Saturday nights for much of the fall season. Because the Facilities Master Plan update will not affect stadium operations, this condition is not expected to change.

NOISE IMPACTS

IMPACT SIGNIFICANCE CRITERIA

Noise impacts are considered significant if they create the following conditions:

- ✓ Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- ✓ Exposure of persons to or generation of excessive groundborne vibration or groundbourne noise levels.
- ✓ A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- ✓ A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
- ✓ For a project located within 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.
- ✓ For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.

The campus is located 2.7 miles from the closest end of San Jose International Airport, and well outside the noise zone from any private airstrip. Airport noise is not an issue.

A "substantial" noise increase is not defined in any guidelines. The accuracy of sound level meters and of sound propagation computer models is no better than ±1 dB. This is also the human loudness difference discrimination level under ideal laboratory conditions. Most people cannot distinguish a change in the noise environment that differs by less than 3 dB between the pre- and post-project exposure if the change occurs under ambient conditions. For the purposes of this analysis, an increase of 3 dB in off-site traffic noise would be considered a significant degradation of noise quality. This "measurable" significance criteria applies to on-road traffic noise. On-site noise generation is regulated by the ordinance limits.

Three characteristic noise sources are typically identified with land use intensification such as that proposed for the San Jose City College Facilities Master Plan Update project. Construction activities, especially heavy equipment, will create short-term noise increases near the project site. Such impacts may be important for nearby noise-sensitive receptors such as any existing residential uses. Upon completion, project-related traffic will cause an incremental increase in area-wide noise levels throughout the project area. Traffic noise impacts are analyzed to insure that the project does not adversely impact the acoustic environment of the surrounding community. This project will cause an increase in area wide traffic but the increase will likely be small relative to the overall traffic volumes. Finally, stationary noise associated with the new parking areas and buildings and any sports facilities changes must be examined to ensure that surrounding sensitive land uses are not adversely impacted.

PROJECT SIGNIFICANCE CRITERIA

Noise impacts from project development will derive mainly from the traffic generated by site activities. The proposed Facilities Master Plan Update will provide a small increase in traffic volumes with the increase from 10,000 students to 12,000 students. The proposed increase of 2,000 students is expected to generate an additional 2,761 trips per day, but these trip increases are generally less than 10 percent of existing volumes of traffic on area roadways. On-site parking may affect off-site, noise-sensitive land uses. Temporary construction noise will also result during building construction. Such sources are short-term and will not affect the long-term noise exposure in the project vicinity. Because construction is restricted to daytime hours, construction impacts could occur directly adjacent to classrooms, administrative offices or other campus facilities.

Based on the San Jose General Plan and project significance criteria, the proposed project would result in a significant noise impact if:

- Project related off-site traffic noise were to increase by + 3 dB CNEL or more at any off-site sensitive land use.

- Any project related stationary noise sources (such as parking lot noise or HVAC equipment) would result in an off-site noise levels exceeding 55 dB DNL.

- The project would result in a significant construction or vibration noise impact if construction activity were to occur outside of the hours permitted by the City's noise ordinance (i.e., between the hours of 7 p.m. and 7 a.m. on weekdays, or at any time on weekends or a public holiday).

A significant noise impact is also presumed to occur if any proposed facilities would be constructed in noise environments exceeding the colleges' noise/land use compatibility criteria previously shown in Figure 2.

CONSTRUCTION NOISE IMPACTS

Temporary construction noise impacts vary markedly because the noise strength of construction equipment ranges widely as a function of the equipment used and its activity level. Short-term construction noise impacts tend to occur in discrete phases dominated by large, earth-moving and/or demolition equipment sources. Construction activities are treated separately in various community noise ordinances because they do not represent a chronic, permanent noise source.

Demolition and clearing will be followed by excavation and grading. Construction and finishing will occur after clearing and site preparation. During these phases of building assembly and finish construction, equipment is generally less noisy. Figure 3 shows the typical range of construction activity noise generation as a function of equipment used in various building phases. The earth-moving sources are seen to be the noisiest with equipment noise ranging up to about 90 dB(A) at 50 feet from the source. Spherically radiating point sources of noise emissions are atmospherically attenuated by a factor of 6 dB per doubling of distance, or about 20 dB in 500 feet of propagation. The loudest earth-moving noise sources may therefore sometimes be detectable above the local background beyond 1,000 feet from the construction area. An impact radius of 1,000 feet or more pre-supposes a clear line-of-sight and no other machinery or equipment noise that would mask project construction noise. With buildings and other barriers to interrupt line-of-sight conditions, the potential "noise envelope" around individual construction sites is reduced. Construction noise impacts are, therefore, somewhat less than that predicted under idealized input conditions. In general construction noise is of limited duration and restricted to daytime hours. For this reason, impacts to most nearby residences would be adverse but not significant as most individuals would not be expected to be at home.

In the southwestern part of the campus, construction of the new parking garage may require pile driving. However, the parking garage is approximately 300 feet from the nearest sensitive receptor. Unattenuated exterior noise levels due to pile-driving could exceed 85 dB at the closest residence. With partially open windows, interior noise levels near 70 dB could interfere with normal conversation, and would be sleep disturbing. Therefore exposure to instantaneous pile driving noise could be considered to be noise intrusive at the nearest off-site residential uses. Pile driving could also be used for construction of the vocational training building and gymnasium but neither of these buildings is immediately adjacent to off-site sensitive receptors and both buildings are surrounded by other intervening structures which would assist in noise attenuation at the closest residential uses. Pile driving noise may also be audible at the hospital west of Bascom. Peak exterior noise levels will be attenuated -24 dB by distance spreading losses within 800 feet of propagation. With closed windows, interior noise levels in hospital rooms facing Bascom would be reduced an additional -30 dB. The residual interior noise level would be 47 dB. Such levels could be slightly sleep-disturbing, but typically less than "normal" conversation or equipment noise found in a health-care environment. Pile driving noise during construction of the parking structure can be partially mitigated as follows:

- Because the repetitive noise of pile driving may be intrusive, the allowable hours of pile driving should be restricted from 8 a.m. to 4 p.m. on Monday through Friday.

Construction activities are exempt from numerical noise regulations if they occur during the hours allowed by the Municipal Code, 7 a.m. to 7 p.m., Monday through Friday when within 500 feet of a residential unit. However, as noted above, heavy equipment noise may be a nuisance even if generated during allowable hours. Compliance with more restrictive hours (8 a.m. to 4 p.m. Monday-Friday), plus enhanced control measures if heavy equipment or impulsive sources such as pile drivers are utilized, will maintain construction activity noise impacts at less-than-significant levels.

Figure 3

Typical Construction Equipment Noise Generation Levels

CONSTRUCTION ACTIVITY VIBRATION

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

Vibration is most commonly expressed in terms of the root mean square (RMS) velocity of a vibrating object. RMS velocities are expressed in units of vibration decibels. The range of vibration decibels (VdB) is as follows:

65 VdB	-	threshold of human perception
72 VdB	-	annoyance due to frequent events
80 VdB	-	annoyance due to infrequent events
100 VdB	-	minor cosmetic damage

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

	Approximate Vibration Levels (VdB)*			
Equipment	**25 feet**	**50 feet**	**100 feet**	**500 feet**
Large Bulldozer	87	81	75	61
Loaded Truck	86	80	74	60
Jackhammer	79	73	67	53
Small Bulldozer	58	52	46	32
Pile Driver	93	87	81	67

* (FTA Transit Noise & Vibration Assessment, Chapter 12, Construction, 1995)

With the exception of pile driving which generates the highest vibration level of all types of construction equipment, the on-site construction equipment that will create the maximum potential vibration is a large bulldozer. The stated vibration source level in the FTA Handbook for such equipment is 87 VdB at 25 feet from the source.

Typical background vibration levels in residential areas are usually 50 VdB or lower, below the threshold of human perception. Perceptible vibration levels inside residences are attributed to the operation of heating and air conditioning systems, door slams or street traffic. Construction activities and street traffic are some of the most common external sources of vibration that can be perceptible inside residences.

The closest construction activity anticipated to occur adjacent to a residential area is construction of the Maintenance and Operations building at the southwest corner of the campus. This

structure is approximately 50 feet from the nearest residence. At this separation distance, vibration levels are reduced to below 81 VdB from occasional heavy equipment activity which may exceed the annoyance threshold at the nearest off-site residence.

Pile driving may be used for construction of the new parking structure also located in the southwest of the campus vicinity. Getting the piles into the ground, as with other construction activities, cannot be done without causing some vibration. This can create concern when these activities take place near residences. Pile driving is, however, a necessary construction activity.

The stated vibration source level in the FTA Handbook for such equipment is 93 VdB at 25 feet from the source. The residences closest to the parking structure are separated by a distance of approximately 300 feet from the closest pile driving activity. The level of vibration to be experienced at this home would be approximately 71 VdB. Such as level is below the stated annoyance threshold, and would be far less than the cosmetic damage threshold of 100 VdB.

Groundborne vibration attenuates quickly with distance. Vibration levels from heavy equipment may be perceptible at the nearest off-site homes but will not exceed the building damage threshold. Construction activity vibration impacts are judged as less-than-significant.

At the hospital grounds, vibration levels will be reduced to 63 VdB by continued distance attenuation. This is less than the threshold of human perception, and well below the level in the low 70 VdB range created by heavy trucks driving on Bascom Avenue.

OFF-SITE VEHICULAR NOISE IMPACTS

Long-term noise concerns from the increased urbanization of the project area center primarily on mobile source emissions surrounding the project site. These concerns were addressed using the California specific vehicle noise curves (CALVENO) in the federal highway noise prediction model (FHWA-RD-77-108) in a computerized version of the model developed by Caltrans. The model calculates the LEQ noise level for a particular reference set of input conditions, and then makes a series of adjustments for site-specific traffic volumes, distances, speeds, or noise barriers.

Table 3 summarizes the 24-hour CNEL level at 50 feet from the roadway centerline along area roadway segments. Five traffic scenarios were evaluated; "existing conditions", "background" "background with project", "cumulative" and "cumulative with project". The noise analysis utilized data from the traffic analysis, prepared by the Fehr & Peers for this project.

Traffic attributed to the proposed project will increase the total traffic traveling along the major thoroughfares within the project vicinity by slightly less than 10 percent. Close to or within the project site, traffic noise may be perceptibly increased. As project-related traffic becomes progressively diluted on any particular roadway, the incremental contribution to the noise environment becomes continually smaller.

At completion, the project is expected to generate 2,761 "new" daily project-generated trips. However, as shown in Table 1, project implementation does little to change the traffic noise environment. Elevated non-project traffic levels on area roadways will substantially mask most project noise contributions. As shown in Table 2, none of the area roadway segments are predicted to experience traffic noise increases greater than the +3.0 dB CNEL threshold. The largest noise increase of +2.5 dB CNEL occurs along the SJCC entryway, just east of Bascom Avenue. However, this noise increase will not impact any off-site sensitive uses and its impacts will be limited to the campus area. The largest off-site noise increase is +0.8 dB CNEL. Project related traffic noise increases are less-than-significant.

The Prior Plan (2000) evaluated traffic noise impacts based upon a projected traffic growth of 7,700 trips per day. It found no significant off-site traffic noise impacts. This update anticipates 2,761 new trips, or almost 5,000 fewer trips. Assuming a general proportionality of trips and traffic noise, this update will produce substantially less of an impact than previously analyzed.

Cumulative impacts are defined as the difference between the "cumulative with project" scenario and "existing" noise levels. As seen in Table 2, the only cumulative impact which exceeds the significance threshold is +5.1 dB CNEL and is predicted to occur along Renova Drive west of Bascom Avenue. However, the project does not contribute to this noise increase and this increase would occur even without project implementation. Additionally, the effected segment is surrounded by commercial uses and there are no adjacent sensitive uses. Cumulative impacts are less-than-significant.

Table 1
Traffic Noise Impact Analysis
(dB CNEL at 50 feet from centerline)

Roadway		Existing	Background	Background W/ Project	Cumulative	Cumulative w/project
Bascom Ave/	Scott-Parkmoor	71.5	71.6	71.9	72.3	72.3
	Parkmoor-Moorpark	72.1	72.2	72.7	73.1	73.1
	Moorpark-Renova	72.0	72.1	72.6	73.1	73.1
	Renova-SJCC Dwy	71.9	71.9	72.0	72.3	72.3
	SJCC Dwy-Enborg	71.8	71.9	72.0	72.2	72.3
	S of Enborg	71.4	71.4	71.7	72.1	72.1
Leland Ave/	Scott-Parkmoor	63.5	63.5	63.5	63.6	63.6
	Parkmoor-Moorpark	65.0	65.0	65.8	66.4	66.4
Sherman Oaks Dr/	N of Fruitdale	59.9	60.0	60.7	60.0	60.7
Leigh Ave/	Scott-Parkmoor	67.0	67.1	67.1	67.4	67.4
	Parkmoor-Moorpark	67.3	69.7	69.9	69.9	70.0
	Moorpark-Fruitdale	69.7	69.7	69.8	69.9	70.0
	S of Fruitdale	68.1	68.1	68.2	68.3	68.4
Parkmoor Ave/	W of Bascom	60.3	60.3	60.3	60.4	60.5
	E of Bascom	66.9	66.9	67.6	68.0	68.1
	W of Leland	69.5	69.5	70.2	70.5	70.6
	Leland-Leigh	68.5	68.5	69.0	69.2	69.3
	E of Leigh	69.1	69.1	69.6	69.6	69.8
Moorpark Ave/	W of Bascom	71.1	71.2	71.7	72.1	72.2
	E of Bascom	70.3	70.3	71.1	71.5	71.6
	W of Leland	71.7	71.7	72.3	72.6	72.7
	Leland-Leigh	71.2	71.2	71.8	72.0	72.2
	E of Leigh	70.2	70.2	70.8	71.1	71.2
Renova Dr/	W of Bascom	61.4	64.5	65.0	66.4	66.4
SJCC Driveway/	E of Bascom	53.8	53.8	56.3	53.8	56.3
Enborg Ln/	W of Bascom	64.8	64.8	66.0	66.9	66.9
	Bascom-Sherman Oaks	68.3	68.3	68.5	68.7	68.7
Fruitdale Ave/	Sherman Oaks-Leigh	69.2	69.3	69.5	69.5	69.6
	E of Leigh	67.8	68.0	68.2	68.2	68.3

Table 2
Project Only and Cumulative Impact
(dB CNEL at 50 feet from centerline)

Roadway		Project Only Impacts		Cumulative Impacts
		Background	Cumulative	
Bascom Ave/	Scott-Parkmoor	0.3	0.0	0.8
	Parkmoor-Moorpark	0.5	0.1	1.0
	Moorpark-Renova	0.5	0.0	1.1
	Renova-SJCC Dwy	0.1	0.0	0.4
	SJCC Dwy-Enborg	0.1	0.0	0.4
	S of Enborg	0.3	0.0	0.7
Leland Ave/	Scott-Parkmoor	0.0	0.0	0.1
	Parkmoor-Moorpark	0.8	0.0	1.4
Sherman Oaks Dr/	N of Fruitdale	0.8	0.8	0.9
Leigh Ave/	Scott-Parkmoor	0.0	0.0	0.4
	Parkmoor-Moorpark	0.2	0.1	2.7
	Moorpark-Fruitdale	0.1	0.1	0.3
	S of Fruitdale	0.1	0.1	0.3
Parkmoor Ave/	W of Bascom	0.0	0.1	0.2
	E of Bascom	0.7	0.1	1.2
	W of Leland	0.7	0.1	1.1
	Leland-Leigh	0.5	0.2	0.8
	E of Leigh	0.5	0.2	0.7
Moorpark Ave/	W of Bascom	0.5	0.0	1.0
	E of Bascom	0.8	0.1	1.3
	W of Leland	0.7	0.1	1.1
	Leland-Leigh	0.6	0.1	0.9
	E of Leigh	0.6	0.1	1.0
Renova Dr/	W of Bascom	0.5	0.0	5.1
SJCC Driveway/	E of Bascom	2.5	2.5	2.5
Enborg Ln/	W of Bascom	1.1	0.0	2.1
	Bascom-Sherman Oaks	0.2	0.0	0.4
Fruitdale Ave/	Sherman Oaks-Leigh	0.2	0.1	0.5
	E of Leigh	0.2	0.1	0.6

ON-SITE VEHICULAR NOISE IMPACTS

Traffic from surrounding roadways will also impact noise levels on campus. The increase in traffic noise levels along the following campus perimeter roadways will be as follows:

Perimeter Roadway	Project Impact	With Project Noise Level @ 50 feet from centerline
Bascom Ave/		
Moorpark- Renova	0.5 dB	73.1 dB CNEL
Renova-SJCC Driveway	0.1 dB	72.3 dB CNEL
SJCC Driveway-Enborg	0.1 dB	72.3 dB CNEL
Leigh Avenue/		
Moorpark-Fruitdale	0.1 dB	70.0 dB CNEL
SJCC Driveway/		
East of Bascom	2.5 dB	56.3 dB CNEL

All project impacts would be less than the +3.0 dB CNEL significance threshold and would not be noticeable to the human ear. Only one on-site roadway segment along the eastern perimeter driveway is even close to the threshold, but the traffic noise level is only 56.3 dB CNEL which is much less than the school use compatibility threshold of 70 dB DNL.

Along Bascom Avenue noise levels exceed 70 dB DNL at 50 feet from the centerline. However, none of the campus buildings are immediately adjacent to the roadway and are approximately 350 from the Bascom Avenue centerline. At this distance, traffic noise is attenuated to well below 65 dB CNEL. Given this, the traffic noise impacts within the SJCC campus will be less than significant.

OPERATIONAL NOISE IMPACT

Existing residential and other noise-sensitive uses such that the hospital that are near the proposed development areas on the campus would experience a slight change in their ambient noise environment as a result of the proposed Facilities Master Plan update. However, the increase in student use of campus facilities would generate similar types and magnitudes of noise as are currently generated on site. It is expected that the student population at the college will increase from 10,000 to 12,000 students. The increase of 2,000 students could theoretically create a +0.8 dB increase in noise levels (10 * log {12,000/10,000} = +0.8 dB). This increase can be accommodated within the existing noise environment without exceeding noise standards or the +3 dB significance threshold.

The proposed new facilities involve changes to several campus areas. A possible new parking structure is proposed at the southwest corner of the campus. A new Gym and Physical Education Building is proposed in the central south eastern area. New Multi-disiplinary classroom and Vocational Technology buildings are proposed for the central campus area.

The potential new parking garage proposed under the Master Plan would contribute to off-site exterior noise levels. Typical parking lot noise includes doors shutting, engines starting, and acceleration. Other noises can include tire squeal noise, loud stereos and car alarms. These noises would occur intermittently and are not long in duration. The frequency of these on-site noise events would increase as a result of the project because an increased number of cars would park on the site and be concentrated in this location.

The residents most impacted due to operation of the proposed parking structure would be those southwest of the parking lot along Kingman and Laswell Avenue. The closest residences are about 300 feet from the proposed parking structure. The parking structure replaces on-site surface parking although the garage would accommodate more cars that the existing surface parking lot.

A DNL noise measurement is time averaged over 24 hours and is appropriate for continuous noise sources such as traffic. A typical noise measurement at the façade of a parking structure is 55 dB CNEL/LDN. However parking lot noise is more appropriately analyzed as a hourly average, or peak noise level, Lmax. As a result, although parking lots may result in peak bursts of noise of 60-70 dB Lmax at 50 feet (car doors slamming, an engine starting up), the continuous noise level is much less. Parking lot activities are primarily limited to daytime hours of lesser noise sensitivity and noise from parking lot activities would be attenuated by distance separation of 300 feet. Using the standard attenuation rate for a soft site, parking lot noise levels at the property line of the closest residence would be attenuated by 12 dB. Continuous noise levels are thus not expected to exceed the City's 55 dB DNL noise standard.

Improvements to the baseball field at the southeast corner of the campus are proposed. The field will have speakers but no lighting. Therefore the field will not be used in night time hours of greater noise sensitivity. The PA system at the upgraded baseball field would be oriented toward

the bleachers pointing away from the closest homes. A “user-friendly” array of low-mounted multiple small speakers is recommended to focus local audibility without broadcasting into the neighborhood. Baseball typically does not attract large crowds of spectators compared to football. The ball field is equipped with a well-designed PA system, and baseball games are restricted to daytime hours by the absence of lighting. Measured baseball field activity noise for a typical mix of participants and spectators at the outfield perimeter is 55 dB Leq. Assuming four hours of daytime field activity, the corresponding CNEL would be 47 dB. This is well below existing ambient levels and below the City of San Jose noise standard of 55 dB CNEL/DNL. Baseball field activities will not measurably increase noise levels at the closest homes.

Stationary noise sources which may have an impact on the nearest residential activities are mechanical equipment source noise including electrical and mechanical air conditioning, most of which is typically located on rooftops, and will be screened from possible on-site sensitive use areas to reduce audibility. Noise standards for "stationary" sources allow for no more than DNL of 55 at the residential boundary.

Potential noise generated by HVAC equipment was evaluated using typical maximum HVAC equipment noise levels. The exact type and quantity of HVAC equipment is not yet known. The hourly average reference noise level at a 50-foot analysis distance for typical rooftop mounted equipment is 54 dB at 50 feet. Standard design features such as shielding and parapets would reduce noise emissions below this level. For direct line-of-sight conditions, the above point source data can be adjusted for geometrical (spherical) spreading losses at a 6 dB per distance doubling between the source and the closest receiver. At the nearest distance to a sensitive off-site receptor of 50 feet (Maintenance and Operations building), noise from HVAC equipment would be approximately 54 dB without shielding. Shielding would reduce noise levels to less than 50 dB.

Project implementation will cause a relocation of some loading docks or trash enclosures, service truck traffic routes or trash collection points. The number of service trucks for the classroom, vocational technology and gym buildings will be minimal. These buildings will not have loading docks for large delivery trucks. Trash bins for these buildings will be within the campus interior and shielded by surrounding buildings. Trash pick-up noise during the raising, lowering and compaction process lasts less than two minutes. Reported peak noise levels during this process are 85 dB (Lmax) at 50 feet from the operation. For one minute of peak noise and one minute of truck idle at 70 dB, the hourly average noise level for this operation is 67 dB Leq, or 53 dB CNEL/DNL. Even at 50 feet from the trash enclosure, the City of San Jose “stationary source” noise standard would not be exceeded.

Most new campus buildings will be in the center of campus and there will be substantial noise loss from intervening structures at the closest off-site sensitive uses. Further, use of the campus will be sporadic and the associated vehicular noise levels will only occur during peak arrival and departure hours, and will by no means be constant. Because of the distance to the nearest off-site sensitive receptor and the masking effect of street traffic as well as probable low parking lot traffic speed, it is improbable that there exists any potential noise nuisance. Anticipated operational impacts associated with project implementation are less than significant.

The new Operations and Maintenance Building would be located close to off-site residences. Repair activities involving hammering or use of compressed air could create a noise nuisance, if such activities were conducted outside. A requirement that all maintenance activities be conducted inside the building with closed doors would minimize impact potential.

SUMMARY

Short-term construction noise intrusion and vibration impacts will be limited by conditions on construction permits requiring compliance with the City of San Jose Noise Ordinance. The allowed hours of construction are from 7:00 a.m. to 7:00 p.m. on Monday through Friday. The presumption is that compliance with these hours reduces construction noise impacts to less-than-significant. However, because pile-driving noise could be sleep disturbing or impede the comfortable use of outdoor space, the following construction practices are recommended:

- Pile driving, if required, should be restricted to the hours of 8:00 a.m. to 4:00 p.m. on Monday through Friday.

Traffic noise resulting from project implementation on area roadways will be less-than-significant. In addition traffic noise will have a less than significant impact on the campus itself.

Noise generation from campus activities will generally have a minimal impact on surrounding residential uses. The following conditions will maintain impacts at less-than-significant:

- Baseball field activities will continue to utilize a "user friendly" PA system of distributed small speakers.

- Repair activities at the new Operations and Maintenance Building shall be conducted indoors with closed doors.