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Memo

Date: July 2, 2018

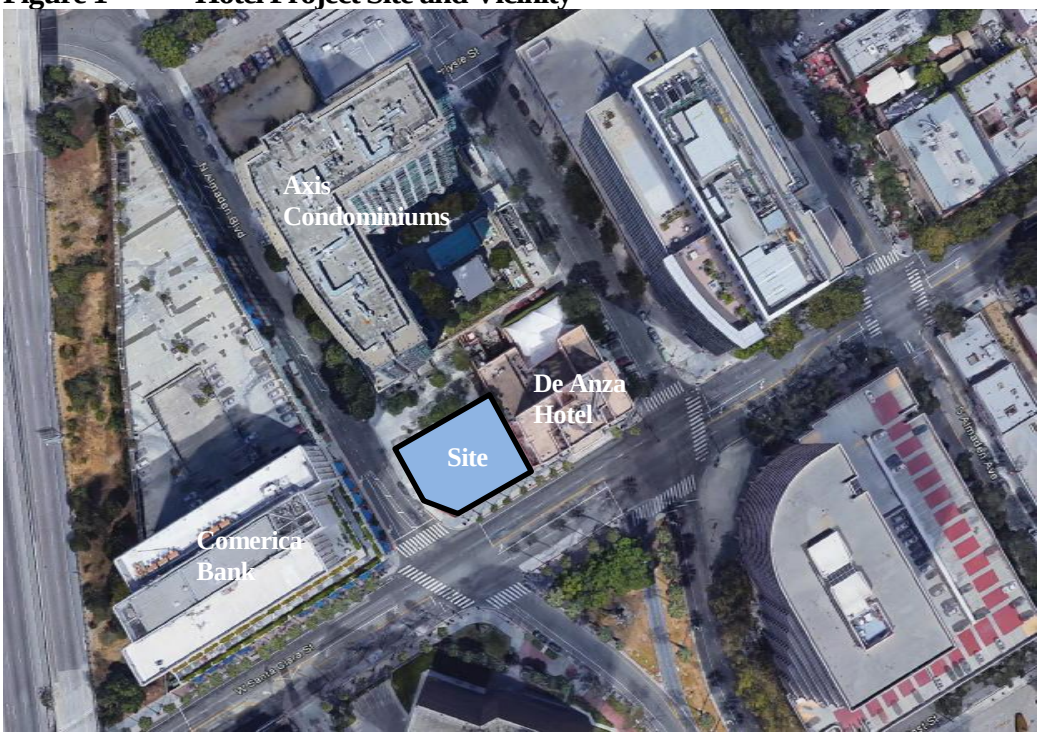
To: Caroline Weston
David J. Powers & Associates, Inc.

From: Dana Lodico, PE, INCE Bd. Cert.
Illingworth & Rodkin, Inc.

SUBJECT: **Almaden Corner Hotel Project, San José, California**
(IR Job # 18-087)

This memo has been prepared to describe the potential noise and vibration impacts resulting from the construction of the hotel proposed at 270 West Santa Clara Street in San José, California. The project proposes to construct a nineteen-story, 216-room hotel, with two underground levels for parking, meeting rooms on the ground floor, and rooftop amenities including a bar and pool area. Figure 1 shows the project site and vicinity.

Figure 1 Hotel Project Site and Vicinity



REGULATORY CRITERIA

City of San José General Plan policies related to construction noise and vibration include the following:

EC-1.7 Require construction operations within San José to use best available noise suppression devices and techniques and limit construction hours near residential uses per the City's Municipal Code. The City considers significant construction noise impacts to occur if a project located within 500 feet of residential uses or 200 feet of commercial or office uses would:

- Involve substantial noise generating activities (such as building demolition, grading, excavation, pile driving, use of impact equipment, or building framing) continuing for more than 12 months.

- For such large or complex projects, a construction noise logistics plan that specifies hours of construction, noise and vibration minimization measures, posting or notification of construction schedules, and designation of a noise disturbance coordinator who would respond to neighborhood complaints will be required to be in place prior to the start of construction and implemented during construction to reduce noise impacts on neighboring residents and other uses.

EC-2.3 Require new development to minimize vibration impacts to adjacent uses during demolition and construction. For sensitive historic structures, a vibration limit of 0.08 in/sec PPV (peak particle velocity) will be used to minimize the potential for cosmetic damage to a building. A vibration limit of 0.20 in/sec PPV will be used to minimize the potential for cosmetic damage at buildings of normal conventional construction.

Chapter 20.100.450 of the City of San José Municipal Code establishes allowable hours of construction within 500 feet of a residential unit between 7:00 am and 7:00 pm Monday through Friday unless permission is granted with a development permit or other planning approval. No construction activities are permitted on the weekends at sites within 500 feet of a residence.

SIGNIFICANCE THRESHOLDS

Paraphrasing from Appendix G of the CEQA Guidelines, a project would normally result in significant noise impacts if noise levels generated by the project conflict with adopted environmental standards or plans, if the project would generate excessive groundborne vibration levels, or if ambient noise levels at sensitive receivers would be substantially increased over a permanent, temporary, or periodic basis. The following criteria were used to evaluate the significance of noise and vibration resulting from the construction of the project:

- A significant noise impact would be identified if the project would expose persons to or generate noise levels that would exceed applicable noise standards presented in the General Plan or Municipal Code.

- A significant noise impact would be identified if construction-related noise would temporarily increase ambient noise levels at sensitive receptors. Hourly average noise levels exceeding 60 dBA L_{eq}, and the ambient by at least 5 dBA L_{eq}, at the property lines shared with residential land uses for a period of more than one year would constitute a significant temporary noise increase. Hourly average noise levels exceeding 70 dBA L_{eq}, and the ambient by at least 5 dBA L_{eq}, at the property lines shared with commercial land uses for a period of more than one year would also constitute a significant temporary noise increase.

- A significant impact would be identified if the construction of the project would expose persons to excessive vibration levels. Groundborne vibration levels exceeding 0.2 in/sec PPV would have the potential to result in cosmetic damage to normal buildings. Groundborne vibration levels exceeding 0.08 in/sec PPV would have the potential to result in cosmetic damage to sensitive historic structures.

CONSTRUCTION NOISE IMPACTS

Chapter 20.100.450 of the City of San José's Municipal Code establishes allowable hours of construction within 500 feet of a residential unit between 7:00 am and 7:00 pm Monday through Friday unless permission is granted with a development permit or other planning approval. No construction activities are permitted on the weekends at sites within 500 feet of a residence. Policy EC-1.7 of the City of San José's General Plan requires that all construction operations within the City use best available noise suppression devices and techniques and to limit construction hours near residential uses per the Municipal Code allowable hours. Further, the City of San José considers significant construction noise impacts to occur if a project located within 500 feet of residential uses or 200 feet of commercial or office uses would involve substantial noise-generating activities (such as building demolition, grading, excavation, pile driving, use of impact equipment, or building framing) continuing for more than 12 months.

Neither the City of San José nor the State of California specify quantitative thresholds for the impact of temporary increases in noise due to construction. The threshold for speech interference indoors is 45 dBA. Assuming a 15 dB exterior-to-interior reduction for standard residential construction with windows open and a 25 dB exterior-to-interior reduction for standard commercial construction, assuming windows closed, this would correlate to an exterior threshold of 60 dBA L_{eq} at residential land uses and 70 dBA L_{eq} at commercial land uses. Therefore, the project would be considered to generate a significant temporary construction noise impact if project construction activities exceeded 60 dBA L_{eq} at nearby residences or exceeded 70 dBA L_{eq} at nearby commercial land uses and exceeded the ambient noise environment by 5 dBA L_{eq} or more for a period longer than one year.

The significance of temporary noise increases resulting from construction depend upon the noise levels generated by various pieces of construction equipment, the timing and duration of noise-generating activities, the distance between construction noise sources and noise-sensitive areas, and the presence of intervening shielding features such as buildings or terrain. Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (e.g., early morning, evening, or nighttime hours), the construction occurs in areas immediately adjoining noise-sensitive land uses, or when construction lasts over extended periods of time.

Construction activities for individual projects are typically carried out in stages. During each stage of construction, there would be a different mix of equipment operating, and noise levels would vary by stage and vary within stages, based on the amount of equipment in operation and the location at which the equipment is operating. Typical construction noise levels at a distance of 50 feet are shown in Tables 1 and 2. Table 1 shows the average noise level ranges, by construction phase, and Table 2 shows the maximum noise level ranges for different construction equipment. Most demolition and construction noise falls with the range of 80 to 90 dBA at a distance of 50 feet from the source.

TABLE 1 Typical Ranges of Construction Noise Levels at 50 Feet, L_{eq} (dBA)

	Domestic Housing		**Office Building, Hotel, Hospital, School, Public Works**		**Industrial Parking Garage, Religious Amusement & Recreations, Store, Service Station**		**Public Works Roads & Highways, Sewers, and Trenches**	
	I	**II**	**I**	**II**	**I**	**II**	**I**	**II**
Ground Clearing	83	83	84	84	84	83	84	84
Excavation	88	75	89	79	89	71	88	78
Foundations	81	81	78	78	77	77	88	88
Erection	81	65	87	75	84	72	79	78
Finishing	88	72	89	75	89	74	84	84

I - All pertinent equipment present at site.
II - Minimum required equipment present at site.

Source: U.S.E.P.A., Legal Compilation on Noise, Vol. 1, p. 2-104, 1973.

TABLE 2 Construction Equipment 50-foot Noise Emission Limits

Equipment Category	L_{max} Level (dBA)[1,2]	Impact/Continuous
Arc Welder	73	Continuous
Auger Drill Rig	85	Continuous
Backhoe	80	Continuous
Bar Bender	80	Continuous
Boring Jack Power Unit	80	Continuous
Chain Saw	85	Continuous
Compressor[3]	70	Continuous
Compressor (other)	80	Continuous
Concrete Mixer	85	Continuous
Concrete Pump	82	Continuous
Concrete Saw	90	Continuous
Concrete Vibrator	80	Continuous
Crane	85	Continuous
Dozer	85	Continuous
Excavator	85	Continuous
Front End Loader	80	Continuous
Generator	82	Continuous
Generator (25 KVA or less)	70	Continuous
Gradall	85	Continuous
Grader	85	Continuous
Grinder Saw	85	Continuous
Horizontal Boring Hydro Jack	80	Continuous
Hydra Break Ram	90	Impact
Impact Pile Driver	105	Impact
Insitu Soil Sampling Rig	84	Continuous
Jackhammer	85	Impact
Mounted Impact Hammer (hoe ram)	90	Impact
Paver	85	Continuous
Pneumatic Tools	85	Continuous
Pumps	77	Continuous
Rock Drill	85	Continuous
Scraper	85	Continuous
Slurry Trenching Machine	82	Continuous
Soil Mix Drill Rig	80	Continuous
Street Sweeper	80	Continuous
Tractor	84	Continuous
Truck (dump, delivery)	84	Continuous
Vacuum Excavator Truck (vac-truck)	85	Continuous
Vibratory Compactor	80	Continuous
Vibratory Pile Driver	95	Continuous
All other equipment with engines larger than 5 HP	85	Continuous

Notes:

1 Measured at 50 feet from the construction equipment, with a "slow" (1 sec.) time constant.

2 Noise limits apply to total noise emitted from equipment and associated components operating at full power while engaged in its intended operation.

3 Portable Air Compressor rated at 75 cfm or greater and that operates at greater than 50 psi.

Source: Mitigation of Nighttime Construction Noise, Vibrations and Other Nuisances, National Cooperative Highway Research Program, 1999.

As shown in Tables 1 and 2, construction activities generate considerable amounts of noise, especially during earth-moving activities when heavy equipment is used. The highest noise levels are typically generated during grading, excavation, and foundation construction. The hauling of excavated materials and construction materials would generate truck trips on local roadways, as well. The erection of large buildings from steel structures could also cause considerable noise for fairly long durations. Specific project construction information is unavailable at this time; however, based on our knowledge of the construction of similar projects in downtown San José, we anticipated that the construction of the proposed project would involve grading, excavation to lay foundations, trenching, building erection, and paving and would occur over a period exceeding 12 months. Due to the density in the immediate area and proximity to other structures, pile driving, which can cause excessive vibration, would not be used and the use of auger cast piles is proposed instead.

Noise sensitive uses surround the site include the adjacent (less than 5 feet) De Anza Hotel to the east, the Axis Condominium Building, approximately 60 feet to the north, and the Comerica Bank, approximately 60 feet to the west. Noise levels due to construction activities would well exceed 60 dBA L_{eq} at nearby residences/hotels and 70 dBA L_{eq} at nearby commercial buildings and ambient levels by more than 5 dBA L_{eq} over a period exceeding one year. Construction-generated noise levels drop off at a rate of about 6 dBA per doubling of the distance between the source and receptor. Unshielded construction activities would be anticipated to exceed 60 dBA L_{eq} within 500 feet of unshielded construction and 70 dBA L_{eq} within 200 feet. Noise levels in shielded areas would be anticipated to be 5 to 20 dB lower.

Mitigation Measures for Construction Noise Impacts:

Policy EC-1.7 of the City's General Plan states that for large or complex projects within 500 feet of residential land uses or within 200 feet of commercial land uses or offices involving substantial noise-generating activities lasting more than 12 months, a construction noise logistics plan that specifies hours of construction, noise and vibration minimization measures, posting or notification of construction schedules, and designation of a noise disturbance coordinator who would respond to neighborhood complaints will be required to be in place prior to the start of construction and implemented during construction to reduce noise impacts on neighboring residents and other uses.

Modification, placement, and operation of construction equipment are possible means for minimizing the impact on the existing sensitive receptors. Construction equipment should be well-maintained and used judiciously to be as quiet as possible. Additionally, construction activities for the proposed project should include the following best management practices to reduce noise from construction activities near sensitive land uses:

- Construction activities shall be limited to the hours between 7:00 am and 7:00 pm, Monday through Friday, unless permission is granted with a development permit or other planning approval. No construction activities are permitted on the weekends at sites within 500 feet of a residence.

- Construct solid plywood fences around construction sites adjacent to operational businesses, residences, or other noise-sensitive land uses.

- Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.

- Unnecessary idling of internal combustion engines should be strictly prohibited.

- Locate stationary noise-generating equipment such as air compressors or portable power generators as far as possible from sensitive receptors. Construct temporary noise barriers to screen stationary noise-generating equipment when located near adjoining sensitive land uses. Temporary noise barriers could reduce construction noise levels by 5 dBA.

- Utilize "quiet" air compressors and other stationary noise sources where technology exists.

- Control noise from construction workers' radios to a point where they are not audible at existing residences bordering the project site.

- Notify all adjacent business, residences, and other noise-sensitive land uses of the construction schedule, in writing, and provide a written schedule of "noisy" construction activities to the adjacent land uses and nearby residences.

- A temporary noise control blanket barrier could be erected, if necessary, along building facades facing construction sites. This mitigation would only be necessary if conflicts occurred which were irresolvable by proper scheduling. Noise control blanket barriers can be rented and quickly erected.

- Designate a "disturbance coordinator" who would be responsible for responding to any complaints about construction noise. The disturbance coordinator will determine the cause of the noise complaint (e.g., bad muffler, etc.) and will require that reasonable measures be implemented to correct the problem. Conspicuously post a telephone number for the disturbance coordinator at the construction site and include in it the notice sent to neighbors regarding the construction schedule.

Implementation of the above measures would reduce construction noise levels emanating from the site, limit construction hours, and minimize disruption and annoyance. With the implementation of these measures, and recognizing that noise generated by construction activities would occur over a temporary period, the temporary increase in ambient noise levels would be *less-than-significant*.

CONSTRUCTION VIBRATION IMPACTS

Policy EC-2.3 of the City of San José General Plan establishes a vibration limit of 0.08 in/sec PPV to minimize the potential for cosmetic damage to sensitive historic structures, and a vibration limit of 0.2 in/sec PPV to minimize damage at buildings of normal conventional construction. The vibration limits contained in this policy are conservative and designed to provide the ultimate level of protection for existing buildings in San José. Demolition and construction activities required for construction often generate perceptible vibration levels and levels that could affect nearby structures when heavy equipment or impact tools (e.g. jackhammers, pile drivers, hoe rams) are used in the vicinity of nearby sensitive land uses. Building damage generally falls into three categories. Cosmetic damage (also

known as threshold damage) is defined as hairline cracking in plaster, the opening of old cracks, the loosening of paint or the dislodging of loose objects. Minor damage is defined as hairline cracking in masonry or the loosening of plaster. Major structural damage is defined as wide cracking or the shifting of foundation or bearing walls.

Construction activities associated with the project would include demolition of existing site improvements, site preparation, foundation work, and new building framing and finishing. According to construction information provided by the project design team, due to the density in the immediate area and proximity to other structures, piles will not be driven, but will be drilled instead. The drilled systems available for the shoring system (i.e. soldier pile and lagging using drilled holes and grouting) and the foundations (i.e. auger cast piles) minimize vibration to the extent feasible for the historic hotel as drilled foundations produce substantially lower vibration levels as compared to foundations constructed utilizing impact or vibratory hammers. The use of other high vibration generating equipment will be avoided.

Table 3 presents typical vibration levels from construction equipment at 25 feet. Jackhammers typically generate vibration levels of 0.035 in/sec PPV, and drilling typically generates vibration levels of 0.09 in/sec PPV at 25 feet. Vibration levels would vary depending on soil conditions, construction methods, and equipment used. Table 3 also presents construction vibration levels at various distances from the construction equipment. Calculations were made to estimate vibration levels at distances of 5 feet from the hotel, as well as distances of 30, 40, and 60 feet from the site to represent other nearby buildings. Vibration levels are highest close to the source, and then attenuate with increasing distance at the rate $(D_{ref}/D)^{1.1}$, where D is the distance from the source in feet and D_{ref} is the reference distance of 25 feet.

TABLE 3 Vibration Levels for Construction Equipment at Various Distances

Equipment		PPV at 5 ft. (in/sec)	PPV at 25 ft. (in/sec)	PPV at 30 ft. (in/sec)	PPV at 40 ft. (in/sec)	PPV at 60 ft. (in/sec)
Clam shovel drop		1.186	0.202	0.165	0.120	0.077
Hydromill (slurry wall)	in soil	0.047	0.008	0.007	0.005	0.003
	in rock	0.100	0.017	0.014	0.010	0.006
Vibratory Roller		1.233	0.210	0.172	0.125	0.080
Hoe Ram		0.523	0.089	0.073	0.053	0.034
Large bulldozer		0.523	0.089	0.073	0.053	0.034
Caisson drilling		0.523	0.089	0.073	0.053	0.034
Loaded trucks		0.446	0.076	0.062	0.045	0.029
Jackhammer		0.206	0.035	0.029	0.021	0.013
Small bulldozer		0.018	0.003	0.002	0.002	0.001

Source: Transit Noise and Vibration Impact Assessment, United States Department of Transportation, Office of Planning and Environment, Federal Transit Administration, May 2006 as modified by Illingworth & Rodkin, Inc., June 2018.

As indicated in Table 3, heavy vibration generating construction equipment, such as vibratory rollers or clam shovel drops, would have the potential to produce vibration levels of 0.08 in/sec PPV or more at historic buildings within 60 feet of the project site. This same equipment would have the potential to

produce vibration levels of 0.2 in/sec PPV or more at buildings of normal conventional construction located within 25 feet of the project site.

According to the City of San José Historic Resources Inventory,[1] there is one historic building, the De Anza Hotel (233 West Santa Clara Street), which adjoins the site to the east. Other nearby historic buildings include the Lyndon Building (177 West Santa Clara Street), the IBM Building (99 Notre Dame Avenue), the Hatman/Normandin Block (14-16 South Almaden Avenue), and the Alice McNally Residence (83 North Almaden Avenue); these buildings are all located 400 feet or further from the project site.

Project construction activities, such as drilling, the use of jackhammers, rock drills and other high-power or vibratory tools, and rolling stock equipment (tracked vehicles, compactors, etc.) may generate substantial vibration in the immediate vicinity of the historic De Anza Hotel Building. Some activities would occur at distances as close as 5 feet from the hotel, and at this distance, vibration levels due to construction are conservatively calculated to reach up to 1.2 in/sec PPV, which would exceed the 0.08 in/sec PPV threshold for historic buildings. Vibration levels at all other historic buildings in the vicinity are calculated to be below the historic building threshold and would not be anticipated to be impacted by project construction generated vibration.

The US Bureau of Mines has analyzed the effects of blast-induced vibration on buildings in USBM RI 8507[2], and these findings have been applied to vibrations emanating from construction equipment on buildings[3]. As shown on Figure 2, these studies indicate an approximate 20% probability of "threshold damage" (referred to as cosmetic damage elsewhere in this report) at vibration levels of 1.2 in/sec PPV or less and no observations of "minor damage" or "major damage" at vibration levels of 1.2 in/sec PPV or less. Figure 2 presents the damage probability as reported in USBM RI 8507 and reproduced by Dowding assuming a maximum vibration level of 1.2 in/sec PPV. Based on these data, cosmetic or threshold damage would be manifested in the form of hairline cracking in plaster, the opening of old cracks, the loosening of paint or the dislodging of loose objects. However, minor damage (e.g., hairline cracking in masonry or the loosening of plaster) or major structural damage (e.g., wide cracking or shifting of foundation or bearing walls) to the De Anza Hotel would not be anticipated to occur assuming a maximum vibration level of 1.2 in/sec PPV.

The closest buildings of normal conventional construction, the Axis Condominium Building (38 North Almaden Boulevard) and Comerica Bank (333 West Santa Clara Street), are both located about 60 feet from the project site. At these distances, vibration levels would be up to 0.08 in/sec PPV or less, which is below the 0.2 in/sec PPV threshold for normal buildings. There are no buildings of normal construction located within 25 feet of the project site.

At these locations, and in other surrounding areas where vibration would not be expected to cause structural damage, vibration levels may still be perceptible. However, as with any type of construction, this would be anticipated and would not be considered significant, given the intermittent and short

[1] "City of San José Historic Resources Inventory." City of San José, February 8, 2016, www.sanjoseca.gov/DocumentCenter/View/35475 .
[2] Siskind, D.E., M.S. Stagg, J.W. Kopp, and C.H. Dowding, Structure Response and Damage Produced by Ground Vibration form Surface Mine Blasting, RI 8507, Bureau of Mines Report of Investigations, U.S. Department of the Interior Bureau of Mines, Washington, D.C., 1980.
[3] Dowding, C.H., Construction Vibrations, Prentice Hall, Upper Saddle River, 1996.

duration of the phases that have the highest potential of producing vibration (use of jackhammers and other high-power tools). By use of administrative controls, such as notifying neighbors of scheduled construction activities and scheduling construction activities with the highest potential to produce perceptible vibration during hours with the least potential to affect nearby businesses, perceptible vibration can be kept to a minimum.

Mitigation Measures for Construction Vibration Impacts:

In summary, the construction of the project would generate vibration levels exceeding the General Plan threshold of 0.08 in/sec PPV at the historic De Anza Hotel, and such vibration levels would be capable of cosmetically damaging the hotel building. Project-generated vibration levels would fall below the General Plan threshold of 0.2 in/sec PPV at surrounding buildings of normal conventional construction and below 0.08 in/sec PPV at other surrounding historic buildings, and no damage would occur at these buildings as a result of the project.

The implementation of the following measures would reduce the vibration impact to a less-than-significant level at the De Anza Hotel:

- Prohibit impact or vibratory pile driving. Drilled piles cause lower vibration levels where geological conditions permit their use.

- A list of all heavy construction equipment to be used for this project known to produce high vibration levels (tracked vehicles, vibratory compaction, jackhammers, hoe rams, etc.) shall be submitted to the City by the contractor. This list shall be used to identify equipment and activities that would potentially generate substantial vibration and to define the level of effort required for continuous vibration monitoring.

- A construction vibration-monitoring plan shall be implemented to document conditions at the historic De Anza Hotel prior to, during, and after vibration generating construction activities. All plan tasks shall be undertaken under the direction of a licensed Professional Structural Engineer in the State of California and be in accordance with industry accepted standard methods. The construction vibration monitoring plan should be implemented to include the following tasks:

    - Identification of sensitivity to ground-borne vibration of the De Anza Hotel. A vibration survey (generally described below) would need to be performed.

    - Performance of a photo survey, elevation survey, and crack monitoring survey for the historic De Anza Hotel. Surveys shall be performed prior to, in regular intervals during, and after completion of vibration generating construction activities and shall include internal and external crack monitoring in the structure, settlement, and distress and shall document the condition of the foundation, walls and other structural elements in the interior and exterior of said structure.

    - Development of a vibration monitoring and construction contingency plan to identify where monitoring would be conducted, set up a vibration monitoring schedule, define structure-specific vibration limits, and address the need to conduct photo, elevation, and

crack surveys to document before and after pile driving. Construction contingencies would be identified for when vibration levels approach the limits.

- If vibration levels approach limits (0.08 in/sec PPV), suspend construction and implement contingencies to either lower vibration levels or secure the affected structure.

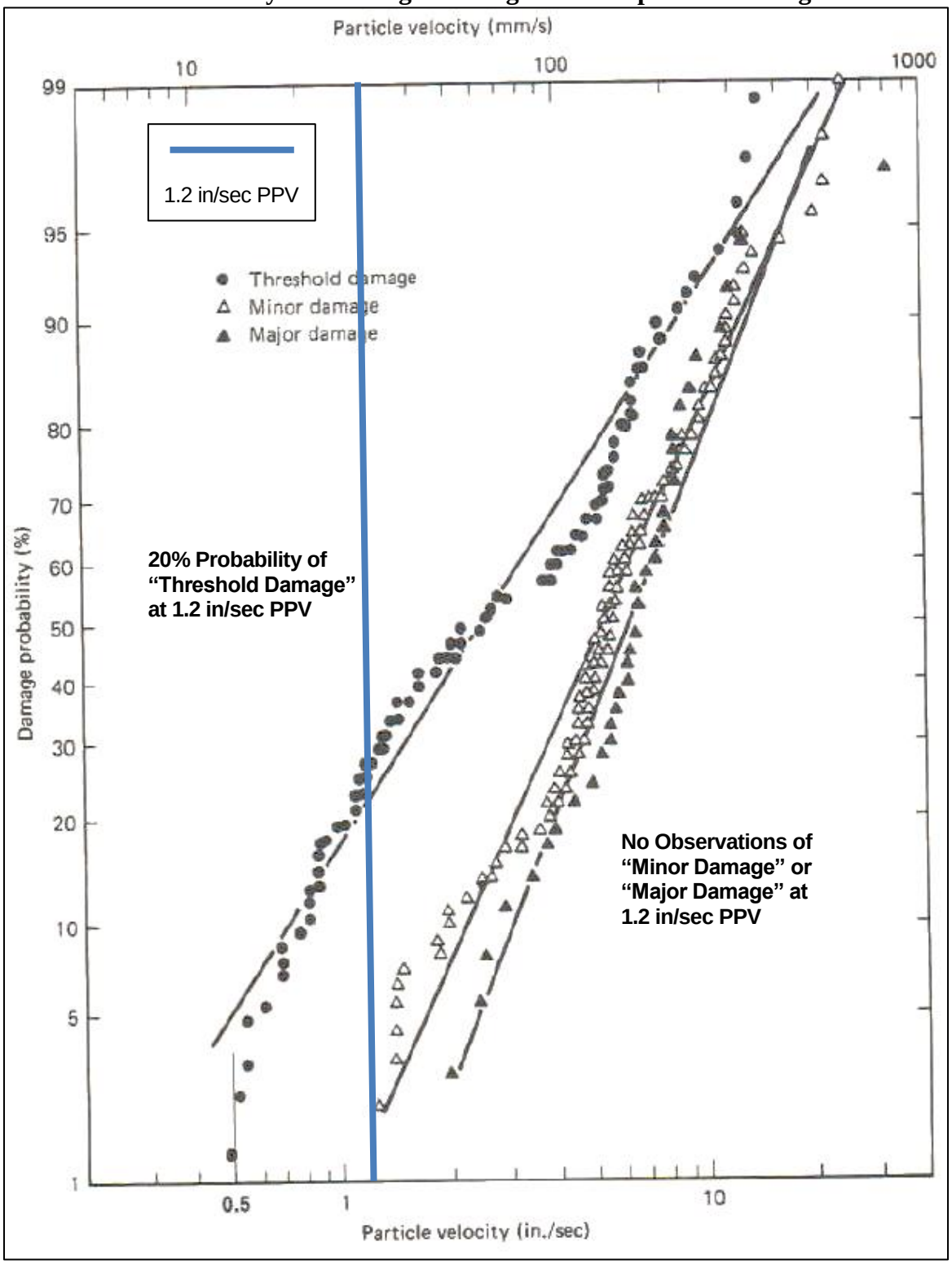
- Conduct a post-survey on the structure where either monitoring has indicated high levels or complaints of damage. Make appropriate repairs in accordance with the Secretary of the Interior's Standards where damage has occurred as a result of construction activities.

- The results of all vibration monitoring shall be summarized and submitted in a report shortly after substantial completion of each phase identified in the project schedule. The report will include a description of measurement methods, equipment used, calibration certificates, and graphics as required to clearly identify vibration-monitoring locations. An explanation of all events that exceeded vibration limits will be included together with proper documentation supporting any such claims.

- Designate a person responsible for registering and investigating claims of excessive vibration. The contact information of such person shall be clearly posted on the construction site.

Implementation of the above measures would reduce this impact to a *less-than-significant* level.

FIGURE 2 Probability of Cracking and Fatigue from Repetitive Loading



Source: Dowding, C.H., Construction Vibrations, Prentice Hall, Upper Saddle River, 1996 as modified by Illingworth & Rodkin, Inc., June 2018.

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality
429 E. Cotati Avenue
Cotati, CA 94931

Memo

Date: July 24, 2019

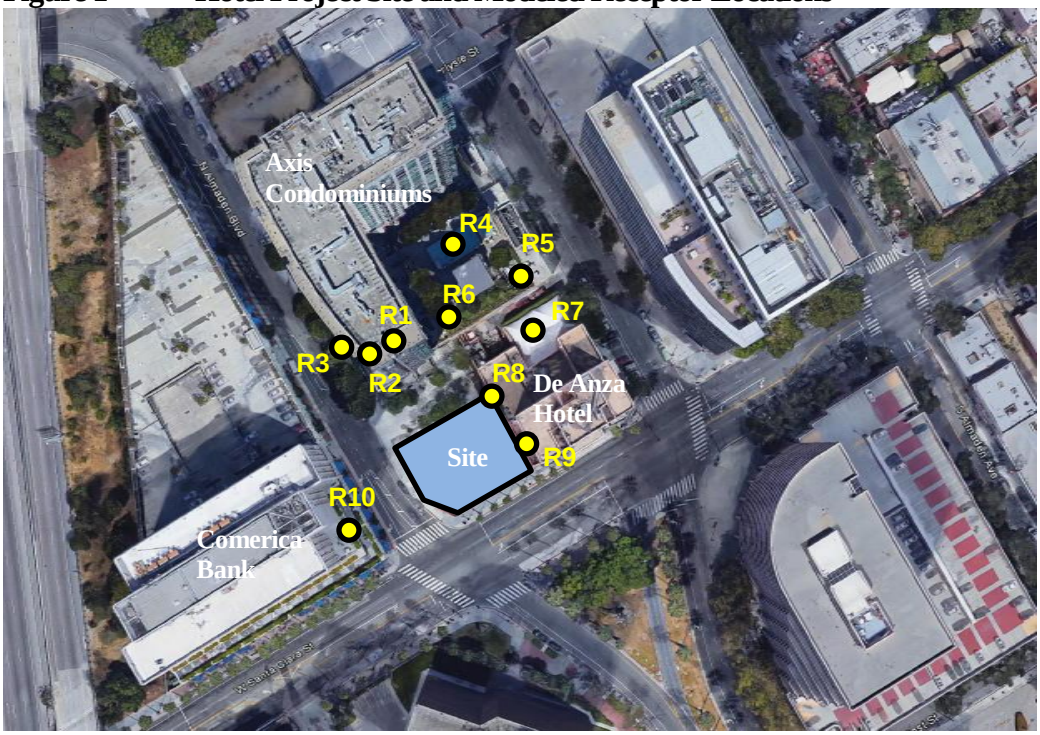
To: Michael Lisenbee
David J. Powers & Associates, Inc.

From: Dana Lodico, PE, INCE Bd. Cert.
Illingworth & Rodkin, Inc.

SUBJECT: **Almaden Corner Hotel Project, San José, California**
Noise from Rooftop Bar Activities
(IR Job # 18-087)

This memo has been prepared to describe the potential noise impacts resulting from activities occurring in the rooftop bar area proposed as part of the Almaden Corner Hotel at 270 West Santa Clara Street in San José, California. Noise sensitive uses surround the site include the adjacent (less than 5 feet) De Anza Hotel to the east, the Axis Condominium Building, approximately 60 feet to the north, and the Comerica Bank, approximately 60 feet to the west. Figure 1 shows the project site and vicinity.

Figure 1 Hotel Project Site and Modeled Receptor Locations



The rooftop bar would have a maximum occupancy of 135 people, with hours of operation from 4:00 pm to 12:00 pm. The venue does not propose any live music. An open terrace is proposed along the western portion of the rooftop, wrapping around to the south. The eastern portion of the bar/restaurant would be enclosed and would not be anticipated to generate noise that is audible outside of the building structure. The restaurant structure on the eastern portion of the rooftop would also provide substantial acoustical shielding from rooftop terrace activities to receptors to the east (De Anza Hotel).

The Downtown Strategy 2040 FEIR estimated noise levels in the area to reach approximately 70 to 75 dBA DNL. Projected aircraft noise contours for the Norman Y. Mineta San José International Airport indicate that the project site is, and will remain, exposed to an aircraft noise level of 65 DBA CNEL.

Table 1, below, lists typical noise levels generated by similar activities at a distance of 50 feet from the source. Noise levels during events with raised conversation would be anticipated to be 64 dBA L_{eq}, as measured at a distance of 50 feet from the source. Typical dinner conversation with background music would be anticipated to generate a noise level of about 57 dBA L_{eq} at 50 feet.

TABLE 1 Typical Noise Source Levels for Events (A-Weighted L_{eq} Levels)

Event or Activity	Typical Noise Level at 50 feet
Raised Conversation	64 dBA
Dinner with Background Music	57 dBA

Noise generated by rooftop bar activities at nearby noise sensitive spaces was modeled using SoundPLAN, a 3-dimentional noise modeling software that takes into account the characteristics of the noise source and the geometrics and shielding of the surrounding structures and terrain. Noise modeling receptor locations are shown in Figure 1.

Noise modeling results and associated calculations are shown in Table 1, which assumes a worst-case noise level of 64 dBA at a distance of 50 feet for raised conversation. Project generated DNL noise levels are calculated assuming continuous operations between 4:00 pm and 12:00 pm. A conservative existing (lowest) DNL level of 65 dBA is used to calculate increases above ambient attributable to the project. For areas with higher ambient noise exposure, increases would be less.

TABLE 2 Summary of Noise Modeling Results and Calculations, dBA

Building	Location	Bar Activity (Project)		Ambient	Ambient + Project	Project Generated Noise Increase
		Leq	DNL	DNL	DNL	
Axis Condominiums	R1: South Façade	40	41	65	65	0
	R2: Southwest Façade	42	42	65	65	0
	R3: West Façade	40	40	65	65	0
	R4: Pool Area	26	27	65	65	0
	R5: Hot Tub	27	27	65	65	0
	R6: Rooftop Area	26	26	65	65	0
De Anza Hotel	R7: Event Area	27	27	65	65	0

	R8: Northwest Façade	30	30	65	65	0
	R9: Southwest Façade	30	30	65	65	0
Comerica Bank	R10: East Facade	33	33	65	65	0

As indicated in Table 2, noise levels from worst-case rooftop activities would range from 26 to 42 dBA L_{eq} at surrounding land uses. Continuous activities occurring between 4:00 pm and 12:00 pm would equate to the DNL levels being 0.35 dBA higher than the L_{eq} levels, as reflected in Table 2. Project noise levels are 23 to 39 dBA below existing ambient noise levels in the area and would not be distinguishable from the existing noise environment. Given an ambient noise level of 65 dBA DNL, project rooftop activity noise would not contribute to increases in ambient noise levels at surrounding areas (increase would be 0 dBA).

REGULATORY CRITERIA

City of San José General Plan policies related to project generated noise at surrounding uses include the following:

EC-1.2 Minimize the noise impacts of new development on land uses sensitive to increased noise levels (Categories 1, 2, 3 and 6) by limiting noise generation and by requiring use of noise attenuation measures such as acoustical enclosures and sound barriers, where feasible. The City considers significant noise impacts to occur if a project would:

- Cause the DNL at noise sensitive receptors to increase by five dBA DNL or more where the noise levels would remain "Normally Acceptable;" or
- Cause the DNL at noise sensitive receptors to increase by three dBA DNL or more where noise levels would equal or exceed the "Normally Acceptable" level.

EC-1.3 Mitigate noise generation of new nonresidential land uses to 55 dBA DNL at the property line when located adjacent to existing or planned noise-sensitive residential and public/quasi-public land uses.

The City of San José Municipal Code Chapter 20.30.700 states that sound pressure levels generated by any use or combination of uses on a property shall not exceed 55 dBA at any property line shared with land zoned for residential use, except upon issuance and in compliance with a Conditional Use Permit. The code is not explicit in terms of the acoustical descriptor associated with the noise level limit. For 24-hour operational noise sources, a reasonable interpretation of this standard, which is based on policy EC-1.3 of the City's General Plan, would identify the ambient base noise level criteria as a day-night average noise level (DNL). For noise sources that are operational for only a portion of the day, L_{eq} is a more appropriate parameter.

NOISE IMPACT ANALYSIS

A significant noise impact would be identified if project noise levels were to exceed 55 dBA L_{eq} or DNL or a permanent noise increase of 3 dBA DNL or greater at nearby noise sensitive land uses. As shown in Table 2, noise levels from worst-case rooftop activities would range from 26 to 42 dBA L_{eq} and DNL at surrounding land uses. These levels would be 13 dBA or more below the City's threshold of 55 dBA L_{eq}/DNL. Additionally, project rooftop activity noise would not contribute to increases in ambient noise levels at surrounding areas (increase would be 0 dBA). This increase would be below the 3 dBA DNL noise increase threshold.

Noise generated during rooftop bar activities would result in a *less-than-significant* impact on surrounding land uses. No mitigation is necessary.