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Memo

Date: March 26, 2018

To: Natalie Noyes, AICP
David J. Powers & Associates, Inc.

From: Michael Thill
Illingworth & Rodkin, Inc.

SUBJECT: **459 and 469 Piercy Road Hotel Project, San José, California**
(IR Job # 18-020)

This memo has been prepared to describe the potential noise and vibration impacts resulting from the construction of the hotels proposed at 459 and 469 Piercy Road in San José, California.

Project Description

The 459 Piercy Road Hotel project proposes to develop a five-story hotel with up to 112 guest rooms. It is anticipated that the project would be constructed over an approximate 15-month period, beginning in April 2019. The 469 Piercy Road Hotel project proposes to develop a six-story hotel with up to 175 guest rooms. It is anticipated that the project would be constructed over an approximate 18-month period, also beginning in April 2019. Construction equipment would be staged on the project site, as necessary.

Figure 1 shows the project site plans and land uses located in the project 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'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. This analysis assumes that

construction activities will occur only during the allowable hours. Project construction hours will be consistent with the Municipal Code limits, and the impact related to the project's consistency with applicable noise standards presented in the General Plan or Municipal Code is less-than-significant.

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. 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.

Construction activities generate considerable amounts of noise, especially during earth-moving activities when heavy equipment is used. The construction of the proposed project would involve demolition of existing structures, grading, excavation to lay foundations, trenching, building erection, and paving. The hauling of imported and exported soil and materials would generate truck trips on local roadways as well.

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 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 50 feet from the source.

The US Department of Transportation, Federal Highway Administration's, Roadway Construction Noise Model (RCNM v. 1.1) was used to model construction noise levels produced by demolition and construction activities at the project site. The construction equipment input to the model was based on estimates for the number and type of equipment anticipated by the applicant for the 459 Piercy Road hotel project. Similar estimates were not available for the 469 Piercy Road hotel project; however, the construction noise analysis assumed a similar distribution of equipment as provided for the 459 Piercy Road hotel project and that construction would occur concurrently. The typical hourly average construction-generated noise levels were calculated considering the distance from the centers of the construction sites to the nearest receptors.

Based on the RCNM output, hourly average noise levels due to construction activities during busy construction periods would range from about 82 to 89 dBA L_{eq} at 50 feet. Construction-generated noise levels drop off at a rate of about 6 dBA per doubling of the distance between the source and receptor. The nearest commercial land uses are to the northwest are approximately 135 feet and 470 feet from the centers of the two project sites, respectively. At these distances, hourly average noise levels during busy construction periods would range from 73 to 80 dBA L_{eq} at the commercial property line to the northwest of the site. On the southeast, the nearest commercial land uses are located approximately 310 feet and 650 feet from the centers of the project sites, respectively. At these distances, hourly average noise levels during busy construction periods would range from 67 to 74 dBA L_{eq} at the commercial property line to the southeast. Construction noise levels at commercial land uses would exceed 70 dBA L_{eq} and would exceed the ambient

noise environment by at least 5 dBA L_{eq} for a period exceeding one year at the nearby commercial land uses to the northwest, but would only exceed 70 dBA L_{eq} and the ambient noise environment by at least 5 dBA L_{eq} for a period of about 40 days at the commercial land uses to the southeast. The nearest residential land use would be approximately 275 feet and 425 feet from the centers of the project sites, respectively, and hourly average noise levels are calculated to range from 68 to 75 dBA L_{eq}. Construction noise levels at the nearest residential land use would be expected to exceed 60 dBA L_{eq} and the ambient noise environment by at least 5 dBA L_{eq} for a period exceeding one year. Construction would occur within 500 feet of existing residences and within 200 feet of existing commercial uses. Per Policy EC-1.7 of the City's General Plan, the temporary construction impact would be potentially significant.

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

Equipment Category	L_{max} Level (dBA)[1,2]	Impact/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.

Mitigation Measures:

Reasonable regulation of the hours of construction, as well as regulation of the arrival and operation of heavy equipment and the delivery of construction material, are necessary to protect the health and safety of persons, promote the general welfare of the community, and maintain the quality of life.

The City shall require the construction crew to adhere to the following construction best management practices to reduce construction noise levels emanating from the site and minimize disruption and annoyance at existing noise-sensitive receptors in the project vicinity to the extent feasible.

The applicant shall develop a construction noise control plan, including, but not limited to, the following available controls:

- In accordance with Policy EC-1.7 of the City's General Plan, utilize the best available noise suppression devices and techniques during construction activities.

- Construct temporary noise barriers, where feasible, to screen stationary noise-generating equipment. Temporary noise barrier fences would provide a 5 dBA noise reduction if the noise barrier interrupts the line-of-sight between the noise source and receiver and if the barrier is constructed in a manner that eliminates any cracks or gaps.

- 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 as feasible. If they must be located near receptors, adequate muffling (with enclosures where feasible and appropriate) shall be used reduce noise levels at the adjacent sensitive receptors. Any enclosure openings or venting shall face away from sensitive receptors.

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

- Construction staging areas shall be established at locations that will create the greatest distance between the construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction.

- 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.

- Locate material stockpiles, as well as maintenance/equipment staging and parking areas, as far as feasible from residential receptors.

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

- Notify in writing all adjacent business, residences, and other noise-sensitive land uses of the construction schedule.

- 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.

The construction noise control plan shall be implemented during all phases of construction activity to reduce the noise exposure of neighboring properties. Implementation of the above controls would reduce construction noise levels emanating from the site, minimizing disruption and annoyance. These controls, in combination with the limitations on hours set forth in the Municipal Code, would reduce the impact to a less-than-significant level.

Construction Vibration Impacts

The construction of the project may generate perceptible vibration at nearby residential and commercial land uses when heavy equipment or impact tools (e.g. jackhammers, hoe rams) are used near the perimeter of the project site. Vibration-producing activities would include demolition, site preparation work, grading and excavation, trenching, and paving. Foundation construction techniques involving impact or vibratory pile driving, which can cause excessive vibration, are not anticipated as part of the project.

According to Policy EC-2.3 of the City of San José General Plan, a vibration limit of 0.08 in/sec PPV shall be used to minimize the potential for cosmetic damage to sensitive historical structures, and a vibration limit of 0.2 in/sec PPV shall be used to minimize damage at buildings of normal conventional construction. A review of the City of San Jose Historic Resource Inventory[1] was made and no properties of historical significance were identified in the project vicinity. Therefore, the vibration limit of 0.2 in/sec PPV would apply to the nearest structures.

Table 3 presents typical vibration levels that could be expected from construction equipment at 25 feet and vibration levels that would be expected at the nearest residential and commercial buildings to the project site. The dropping of heavy equipment (e.g., clam shovel drop) and vibratory rollers produce vibration levels ranging from 0.202 to 0.210 in/sec PPV 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.

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 activities, but the vibration levels would be expected to attenuate with distance from the source. The nearest commercial buildings would be located approximately 85 feet northwest and southeast of the project boundaries. At this distance, vibration levels due to construction activities would reach 0.032 to 0.033 in/sec PPV, and would not exceed the 0.2 in/sec PPV threshold. The nearest residential building southwest of the site, opposite Hellyer Avenue, would be approximately 230 feet from locations of the project site where heavy construction would be expected. At this distance, vibration levels due to construction activities would reach 0.007 to 0.008 in/sec PPV, but would remain well below the 0.2 in/sec PPV threshold.

Although construction vibration would not be expected to cause damage to nearby buildings, vibration levels may still be perceptible to occupants. However, as with any type of construction, this would be anticipated and would not be considered significant, given the intermittent and short duration of the phases that have the highest potential of producing vibration (use of high power tools). By use of administrative controls, such as notifying neighbors of scheduled construction activities and scheduling

[1] http://www.sanjoseca.gov/DocumentCenter/View/35475, accessed March 2018.

construction activities with the highest potential to produce perceptible vibration during hours with the least potential to affect nearby businesses and residences, perceptible vibration can be kept to a minimum.

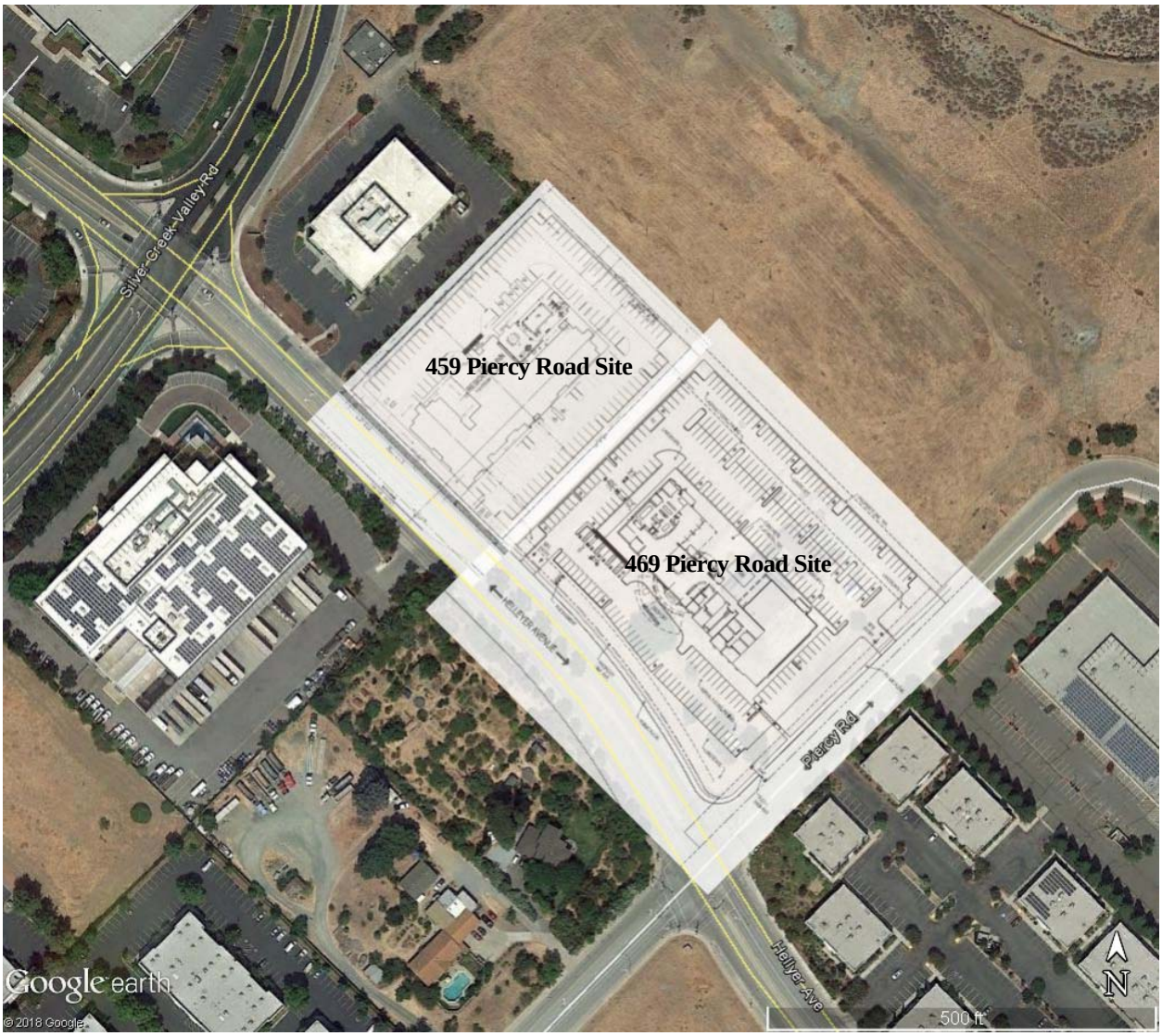
Vibration produced by project construction activities would result in a less-than-significant impact and no mitigation is required.

TABLE 3 Vibration Source Levels for Construction Equipment

Equipment		PPV at 25 ft. (in/sec)	PPV at 85 ft. (in/sec)	PPV at 230 ft. (in/sec)
Clam shovel drop		0.202	0.032	0.007
Hydromill (slurry wall)	in soil	0.008	0.001	0.000
	in rock	0.017	0.003	0.001
Vibratory Roller		0.210	0.033	0.008
Hoe Ram		0.089	0.014	0.003
Large bulldozer		0.089	0.014	0.003
Caisson drilling		0.089	0.014	0.003
Loaded trucks		0.076	0.012	0.003
Jackhammer		0.035	0.006	0.001
Small bulldozer		0.003	0.000	0.000

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., March 2018.

Figure 1 Project Site Plans and Vicinity



Source: Google Earth, March 2018.