

4590 PATRICK HENRY DRIVE NOISE AND VIBRATION EVALUATION

Santa Clara, California

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I&R Project#: 23-096

Introduction

The purpose of this report is to evaluate temporary construction noise and vibration and permanent operational noise resulting from the proposed residential project at 4590 Patrick Henry Drive in Santa Clara, California. The project is located in the Patrick Henry Drive Specific Plan and is subject to the following mitigation measures contained in the Environmental Impact Report prepared for the Specific Plan: **Mitigation 13-1: Reduce Construction Noise Levels; Mitigation 13-2: Reduce Construction Vibration Levels; and Mitigation 13-3: Control fixed and Other On-site Noise-Generating Sources and Activities.** This report fulfills the following reporting requirements contained in the mitigation measures: Mitigation 13-1.7: Prepare Project-Specific Construction Noise Evaluation; Mitigation 13-1.8: Prepare a Construction Noise Complaint Plan; Prepare Project-Specific Vibration Evaluation; and, as described in Mitigation 13-3, prepare a project-specific operational noise analysis.

Project Description

The 2.79-acre existing project site at 4590 Patrick Henry Drive in Santa Clara includes a vacant, single-story office building, surrounded by an asphalt parking lot. The project proposes to demolish the existing building and parking lot to construct an eight-story, 292,450 square-foot (sf) residential building with a total of 284 units. The project would include a three-story above ground parking lot with a total of 327 parking spaces.

Discussion of Applicable Patrick Henry Drive Specific Plan Mitigation Measures

Mitigation 13-1: Reduce Construction Noise Levels

- 1) Notify Residential and Commercial Land Uses of Planned Construction Activities. This notice shall be provided at least one week prior to the start of any construction activities, describe the noise control measures to be implemented by the Project, and include the name and phone number of the designated contact for the Applicant/project representative and the City of Santa Clara responsible for handling construction-related noise complaints (per Section 8). This notice shall be provided to: A) The owner/occupants of residential dwelling units within 500 feet of construction work areas; B) The owner/occupants of commercial buildings (including Mission College) within 200 feet of construction work areas or within 400 feet of construction work areas if pile driving equipment will be used; and C) Mission College when construction work areas are within 500 feet of College athletic fields.*

Single-family residences along portions of Manzano Way, Oak Creek Way, and Prescott Avenue are located within 500 feet of the project site. There are four commercial properties located within 200 feet of the project site¹; 4600 Patrick Henry Drive to the north, 4701 Patrick Henry Drive located across the street to the northeast, 4575 Patrick Henry Drive located across the street to the east, and 3200 Patrick Henry Drive to the south. The nearest Mission College athletic field is located over 500 feet from the site.

¹ Pile driving equipment is not included in the construction equipment information provided by the Applicant, so commercial land uses located within 200 feet of the site are identified.

The owners and tenants of these residential and commercial properties require notification. The contact information for the designated representatives of the Applicant/project representative and City will be determined prior to notification and included in the notification letter. Recommended noise control measures are set forth in this report. The specific measures included in the permit will be summarized in the notification letter.

- 2) *Notify Calaveras Creek Trail² Users of Construction Activities. Prior to the start of construction activities within 500 feet of Calaveras Creek Trail, signs shall be posted along the trail warning of potential temporary elevated noise levels during construction. Signs shall be posted within 250 feet of impacted trail segments (i.e., portions of the trail within 500 feet of a work area) and shall remain posted throughout the duration of all substantial noise generating construction activities (typically demolition, grading, and initial foundation installation activities).*

The project site is located within 500 feet of the Calabazas Creek Trail. Notification is required.

- 3) *Restrict Work Hours. All construction-related work activities, including material deliveries, shall be subject to the requirements of City Municipal Code Section 9.10.230. Construction activities, including deliveries, shall occur only during the hours of 7:00 AM to 6:00 PM, Monday through Friday, and 9 AM to 6 PM on Saturday, unless otherwise authorized by City permit. The applicant/project representative and/or its contractor shall post a sign at all entrances to the construction site informing contractors, subcontractors, construction workers, etc. of this requirement.*

The City's Municipal Code establishing allowable work hours is as follows:

9.10.230 Regulation.

No person shall engage or authorize others to engage in construction of any building or related road or walkway, pool or landscape improvement, or in construction operations related thereto, including delivery of construction materials, supplies, or improvements on or to a construction site within three hundred (300) feet of any residentially zoned property except within the hours of 7:00 A.M. to 6:00 P.M. following on weekdays other than holidays, Monday through Friday, inclusive; and within the hours of 9:00 A.M. to 6:00 P.M. following, inclusive, on any Saturday which is not a holiday.”

The mitigation measure references the Municipal Code section but does not include the stipulation that the hours restriction contained in the Municipal Code only applies to construction within 300 feet of residentially zoned properties. Nonetheless, these are reasonable construction hours and have been established for projects within the Specific Plan Area in the CEQA process.

Proposed construction hours of 7:00 A.M. to 5:00 P.M. on weekdays other than holidays, Monday through Friday, are consistent with the City's Municipal Code.

² This analysis assumes that the “Calaveras Creek Trail” referenced in Mitigation Measure 13-1 should, in fact, be “Calabazas Creek Trail”, which borders the plan area to the west.

- 4) *Control Construction Traffic and Site Access. Construction traffic, including soil and debris hauling, shall follow City-designated truck routes and shall avoid routes (including local roads in the Plan Area) that contain residential dwelling units to the maximum extent feasible given specific project location and access needs.*

The site shall be accessed via Patrick Henry Drive. Construction truck traffic shall, to the extent feasible, utilize highways (SR-237 and US Highway 101), Great America Parkway and other major roadways in the site vicinity including Lawrence Expressway and Tasman Drive, and avoid routes that contain residential dwellings.

- 5) *Construction Equipment Selection, Use, and Noise Control Measures. The following measures shall apply to construction equipment used in the Plan Area: A) To the extent feasible, contractors shall use the smallest size equipment capable of safely completing work activities; B) Construction staging shall occur as far away from residential and commercial land uses as possible; C) All stationary noise generating equipment such as pumps, compressors, and welding machines shall be shielded and located as far from sensitive receptor locations as practical. Shielding may consist of existing vacant structures or a three- or four-sided enclosure provide the structure/barrier breaks the line of sight between the equipment and the receptor and provides for proper ventilation and equipment operations; D) Heavy equipment engines shall be equipped with standard noise suppression devices such as mufflers, engine covers, and engine/mechanical isolators, mounts, etc. These devices shall be maintained in accordance with manufacturer's recommendations during active construction activities; E) Pneumatic tools shall include a noise suppression device on the compressed air exhaust; F) The applicant/project representative and/or their contractor shall connect to existing electrical service at the site to avoid the use of stationary power generators; G) No radios or other amplified sound devices shall be audible beyond the property line of the construction site.*

The construction equipment, use, and noise control measures shall be implemented where appropriate. The staging area is proposed south of the primary building area on the site, and separated from 3200 Patrick Henry Drive to the south by Parcel 2. This construction staging area is as far away from residential and commercial land uses as possible. Shielding of small stationary sources shall be implemented by the contractor where these sources result in a complaint or are identified by City staff or the contractor as having the potential to result in complaints. All other measures shall be implemented.

- 6) *Implement Construction Activity Noise Control Measures: The following measures shall apply to construction activities in the Plan Area: A) Demolition: Activities shall be sequenced to take advantage of existing shielding/noise reduction provided by existing buildings or parts of buildings and methods that minimize noise and vibration, such as sawing concrete blocks, prohibiting on-site hydraulic breakers, crushing, or other pulverization activities, shall be employed to the maximum extent feasible; B) Demolition Site Preparation, Grading, and Foundation Work: During all demolition, site preparation, grading, and structure foundation work activities within 500 feet of a residential dwelling unit or 250 feet of a commercial building (including Mission College), a physical noise barrier capable of achieving a minimum 10 dB reduction in construction noise levels shall*

be installed and maintained around the site perimeter to the maximum extent feasible given site constraints and access requirements. Potential barrier options capable of achieving a 10 dB reduction in construction noise levels could include, but are not limited to: i) A six-foot-high concrete, wood, or other barrier installed at-grade (or mounted to structures located at-grade, such as a K-Rail), and consisting of a solid material (i.e., free of openings or gaps other than weep holes) that has a minimum rated transmission loss value of 20 dB; ii) Commercially available acoustic panels or other products such as acoustic barrier blankets that have a minimum sound transmission class (STC) or transmission loss value of 20 dB; iii) any combination of noise barriers and commercial products capable of achieving a 10 dBA reduction in construction noise levels during demolition, site preparation, grading, and structure foundation work activities; iv) The noise barrier may be removed following the completion of building foundation work (i.e., it is not necessary once framing and typical vertical building construction begins provided no other grading, foundation, etc. work is still occurring on-site); and C) Pile Driving: If pile driving activities are required within 500 feet of a residential dwelling unit or 400 feet of a commercial building (including Mission College), the piles shall be pre-drilled with an auger to minimize pile driving equipment run times.

Demolition noise would be reduced at the adjoining residential and commercial properties if the work is sequenced such that the facades of the exiting building are demolished last, thereby utilizing these walls as noise barriers until they are demolished. Residential buildings are located within 500 feet of the proposed construction areas, and commercial buildings are located within 250 feet of the proposed construction areas. A detailed analysis of the noise barrier requirements is included in Section 7 below.

- 7) *Prepare Project-Specific Construction Noise Evaluation. Prior to the start of any specific construction project lasting 12 months or more, the City shall review and approve a project-specific construction noise evaluation prepared by a qualified acoustical consultant that: A) Identifies the planned project construction sequence and equipment usage; B) Identifies typical hourly average construction noise levels for project construction equipment; C) Compares hourly average construction noise levels to ambient noise levels at residential and commercial land uses near work areas (ambient noise levels may be newly measured or presumed to be consistent with those levels shown in Table 13-2 and 13-3 of the Patrick Henry Drive Specific Plan Draft Environmental Impact Report (EIR); and D) Identifies construction noise control measures incorporated into the project that ensure: i) activities do not generate noise levels that are above 60 dBA Leq at a residential dwelling unit and exceed the ambient noise environment by at least 5 dBA Leq for more than one year; and ii) activities do not generate noise levels that are above 70 dBA Leq at a commercial building (including Mission College) and exceed the ambient noise environment by at least 5 dBA Leq for more than one year. Such measures may include, but are limited to: a) The requirements of Sections 4, 5, 6, and 8; B) Additional project and/or equipment-specific enclosures, barriers, shrouds, or other noise suppression methods. The use of noise control blankets on building facades shall be considered only if noise complaints are not resolvable with other means or methods.*

This section of the project specific construction noise evaluation establishes the construction noise barrier requirements for the project. Construction noise levels at nearby building facades were calculated for each phase of construction using information provided by the Applicant. These

levels were determined for construction equipment being used along the outer boundary of the proposed building footprint – “worst-case” (Table 1) as well as for construction equipment noise emanating from the acoustical center of the construction site – “typical” (Table 2). Equipment expected to be used in each construction phase are summarized in Tables 1 and 2, along with the quantity of each type of equipment, the reference noise level at 50 feet assuming the operation of the two loudest pieces of construction equipment, and the estimated noise levels at the nearest building facades. Federal Highway Administration’s (FHWA’s) Roadway Construction Noise Model (RCNM) was used to calculate the hourly average noise levels for each phase of construction, assuming the two loudest pieces of equipment would operate simultaneously, as recommend by the FTA for construction noise evaluations. This construction noise model includes representative sound levels for the most common types of construction equipment and the approximate usage factors of such equipment that were developed based on an extensive database of information gathered during the construction of the Central Artery/Tunnel Project in Boston, Massachusetts (CA/T Project or "Big Dig"). The usage factors represent the percentage of time that the equipment would be operating at full power.

As shown in Tables 1 and 2, construction noise levels would intermittently range from 61 to 84 dBA L_{eq} at the commercial building façade to the north, from 54 to 74 dBA L_{eq} at the commercial building façade to the northeast, from 55 to 74 dBA L_{eq} at the commercial building façade to the east, from 56 to 76 dBA L_{eq} at the commercial building façade to the south, and from 53 to 72 dBA L_{eq} at the residences to the west. Construction noise levels would exceed the exterior threshold of 70 dBA L_{eq} at the four nearby commercial buildings and would exceed the exterior threshold of 60 dBA L_{eq} at the nearest residential land uses. The project construction is expected to last for a period of approximately 27 months. At the commercial receptors to the northeast, east, and south, noise levels exceeding 70 dBA L_{eq} would last for less than a year. Mitigation measures would not be required for these receptors. At the north commercial property, project construction would produce noise levels above 70 dBA L_{eq} intermittently and last more than one year (i.e., Grading/Excavation, Trenching/Foundation, and Building Exterior phases). Utilizing data in the DEIR, the ambient noise levels along this segment of Patrick Henry Drive typically range from 60 - 65 dBA L_{eq} during the daytime. Projected construction noise levels would, therefore, also exceed existing ambient noise levels by more than 5 dBA. At the residences to the west, project construction would produce noise levels above 60 dBA L_{eq} intermittently and last more than one year (all phases except Building Interior/Architectural Coating). Projected construction noise levels at the residences would also exceed existing ambient noise levels by more than 5 dBA.

TABLE 1 Construction Noise Levels – Construction Equipment at Boundary of the Site

Phase (Work Days)	Construction Equipment (Quantity)	Calculated Hourly Average L_{eq} (dBA) at Nearest Buildings From Operation of Two Loudest Pieces of Construction Equipment near the Closest Façade of the Proposed Building					
		Noise Level at 50 feet	North Commercial (50 feet)	Northeast Commercial (155 feet)	East Commercial (160 feet)	South Commercial (130 feet)	West Residential (205 feet)
Demolition (65 days)	Excavator (2)* Skid Steer Loader (2)	80	80	70	70	72	68
Site Preparation (68 days)	Excavator (1)* Skid Steer Loader (2)*	79	79	69	69	71	67
Grading / Excavation (43 days)	Grader (1)* Rubber Tired Dozer (1) Tractor/Loader/Backhoe (2)*	84	84	74	74	76	72
Trenching / Foundation (200 days)	Tractor/Loader/Backhoe (2)* Concrete Trucks (10)	81	81	71	71	73	69
Building Exterior (260 days)	Crane (1) Forklift (2) Tractor/Loader/Backhoe (3)*	81	81	71	71	73	69
Building Interior/ Architectural Coating (90 days)	Aerial Lift (3)*	71	71	61	61	63	59
Paving (20 days)	Cement and Mortar Mixer (2)* Paver (1) Paving Equipment (2) Roller (1)	80	80	70	70	72	68

*Denotes two loudest pieces of construction equipment per phase. The two loudest pieces of construction equipment were selected to conservatively represent the entire period.

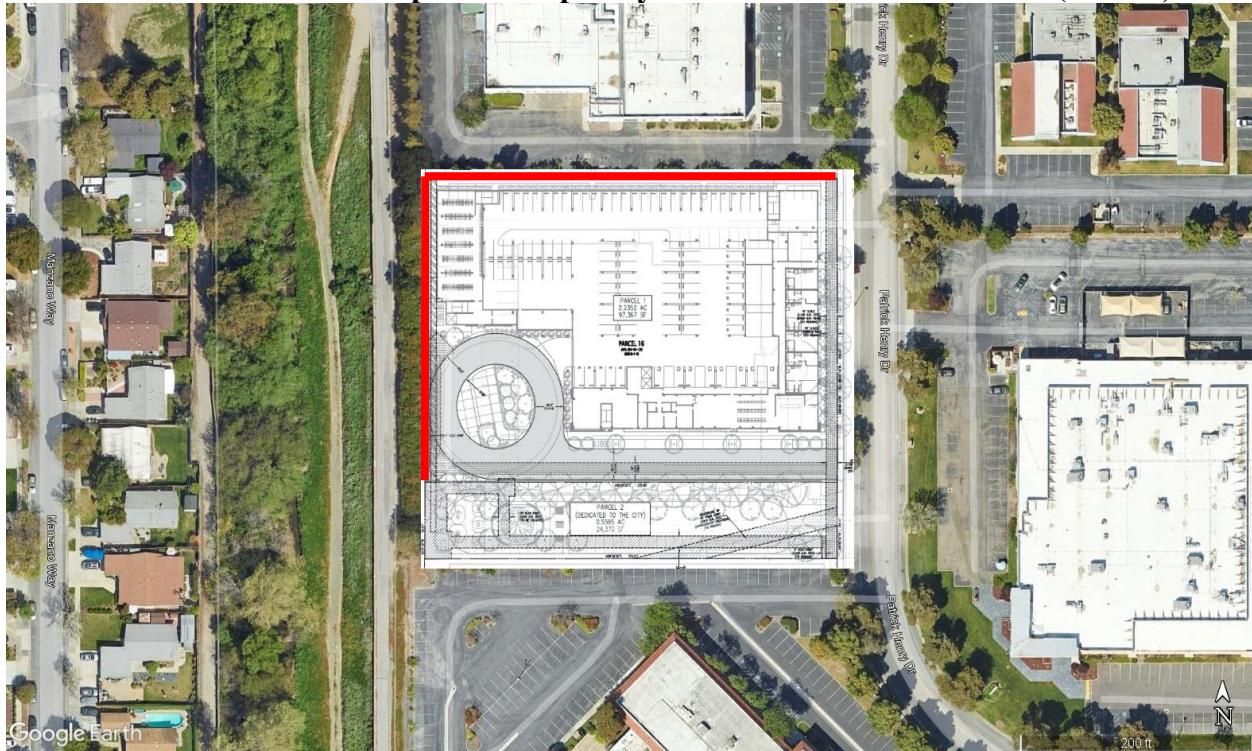
TABLE 2 Construction Noise Levels – Construction Equipment at Acoustic Center of the Site

Phase (Work Days)	Construction Equipment (Quantity)	Calculated Hourly Average L_{eq} (dBA) at Nearest Buildings From Operation of Two Loudest Pieces of Construction Equipment at Acoustic Center of the Site					
		Noise Level at 50 feet	North Commercial (155 feet)	Northeast Commercial (345 feet)	East Commercial (330 feet)	South Commercial (285 feet)	West Residential (400 feet)
Demolition (65 days)	Excavator (2)* Skid Steer Loader (2)	80	70	63	64	65	62
Site Preparation (68 days)	Excavator (1)* Skid Steer Loader (2)*	79	69	62	63	64	61
Grading / Excavation (43 days)	Grader (1)* Rubber Tired Dozer (1) Tractor/Loader/Backhoe (2)*	84	74	67	68	69	66
Trenching / Foundation (200 days)	Tractor/Loader/Backhoe (2)* Concrete Trucks (10)	81	71	64	65	66	63
Building Exterior (260 days)	Crane (1) Forklift (2) Tractor/Loader/Backhoe (3)*	81	71	64	65	66	63
Building Interior/ Architectural Coating (90 days)	Aerial Lift (3)*	71	61	54	55	56	53
Paving (20 days)	Cement and Mortar Mixer (2)* Paver (1) Paving Equipment (2) Roller (1)	80	70	63	64	65	62

*Denotes two loudest pieces of construction equipment per phase. The two loudest pieces of construction equipment were selected to conservatively represent the entire period.

Temporary construction noise barriers would be needed to reduce construction noise levels at the commercial building façade to the north by at least 10 dBA to 70 dBA L_{eq} or lower for no longer than 12 months. Temporary construction noise barriers would also be needed to reduce construction noise levels at the residences to the west by at least 10 dBA to 60 dBA L_{eq} or lower for no longer than 12 months. Twelve-foot-tall temporary construction noise barriers, measured above grade, along the north and west property lines of the site is calculated to reduce the highest construction related noise levels at the nearby receptors by at least 10 dBA (see Figure 1). Noise levels are projected to exceed 70 dBA L_{eq} intermittently during the noisiest periods when work is occurring nearby, but not for a duration of more than 12 months. The two most common construction site noise barriers are constructed of plywood or quilted noise control blankets. To be effective the barrier must be solid, without cracks or gaps over its face or at the base, have a surface weight of at least 2 pounds per square foot (e.g., 5/8 inch plywood) or have a Sound Transmission Class (STC) rating of at least STC 20. Suitable quilted noise control blanket barriers can be purchased or are available for rental in California. The noise barriers, in conjunction with the measures described in Sections 1-6 above, will mitigate the impact of construction noise.

FIGURE 1 Location of Proposed Temporary Construction Noise Barriers (12-foot)



Source: Google Earth, November 2023.

- 8) *Prepare a Construction Noise Complaint Plan. The Construction Noise Complaint Plan shall: A) Identify the name and/or title and contact information including phone number and email) for a designated project and City representative responsible for addressing construction-related noise issues; B) Includes procedures describing how the designated project representative will receive, respond, and resolve construction noise complaints; C) At a minimum, upon receipt of a noise complaint, the project representative shall notify the City contact, identify the noise source generating the complaint, determine the cause of the complaint, and take steps to resolve the complaint; D) The elements of the Construction Noise Complaint Plan may be included in the project-specific noise evaluation prepared to satisfy Section 7 or as a separate document.*

This Construction Noise Complaint Plan establishes protocols for receiving and logging complaints, explaining how the complaint will be addressed, identifying the source(s) of the complaint, and determining and implementing the steps necessary to resolve the complaint. The contact information (including phone number and email) for the designated representatives of the Applicant/project representative and City will be determined prior to notification and included in the notification letter (See 13-1 Section 1 above).

The designated Applicant/representative and the City representative shall determine how complaints are communicated, documented, and resolved. The following procedures shall be implemented in response to complaints related to construction noise:

- Establish a complaint log.
 - Create a standardized complaint form so that critical information regarding complaint can be documented (See Attachment 1).
 - The designated Applicant/representative shall be responsible for responding to all complaints.
 - If someone other than a designated Applicant/representative or the City receives a complaint, immediately route the complaint to the designated Applicant/representative.
 - Receipt of the complaint shall be acknowledged to the complainant within 72 hours.
 - The designated Applicant/representative shall obtain information regarding the complaint and record the information on the complaint form and enter the complaint in the complaint log.
 - Confirm source of complaint and determine and determine an action plan for implementing corrective actions.
 - After implementation of corrective actions, contact complainant to determine if the issue has been resolved.
- 9) *Owner/Occupant Disclosure: The City shall require future occupants/tenants in the Plan Area receive disclosure that properties in the Plan Area may be subject to elevated construction noise levels from development in the Plan Area. This disclosure shall be provided as part of the mortgage, lease, sub-lease, and/or other contractual real-estate transaction associated with the subject property*

This measure will be implemented by the Applicant.

Mitigation 13-2: Reduce Construction Vibration Levels

- 1) *Notify Residential and Commercial Land Uses of Planned Construction Activities. See Patrick Henry Drive Specific Plan Draft Environmental Impact Report (EIR) Mitigation Measure 13-1, Section 1.*

See Mitigation 13-1 Section 1.

- 2) *Restrict Work Hours. See Patrick Henry Drive Specific Plan Draft EIR Mitigation Measure 13-1, Section 2.*

See Mitigation 13-1 Section 2.

- 3) *Prohibit Vibratory Equipment if Feasible. The use of large vibratory rollers, vibratory/impact hammers, and other potential large vibration-generating equipment (e.g., hydraulic breakers/hoe rams) shall be prohibited within 100 feet of any residential building façade and 50 feet of any commercial building façade during construction activities. Plate compactors and compactor rollers are acceptable, and deep foundation piers or caissons shall be auger drilled.*

All vibratory equipment will be more than 200 feet from the nearest residential building façade, and more than 50 feet from the nearest commercial building façade.

- 4) *Prepare Project-Specific Construction Vibration Evaluation Plan. If it is not feasible to prohibit vibratory equipment per Section 3) due to site- or project-specific conditions or design considerations, the City shall review and approve a project specific construction vibration evaluation that: A) Identifies the project's planned vibration-generating construction activities (e.g., demolition, pile driving, vibratory compaction); B) the potential project-specific vibration levels (given project-specific equipment and soil conditions, if known) at specific building locations that may be impacted by the vibration-generating work activities (generally buildings within 50 feet of the work area); C) Identifies the vibration control measures incorporated into the project that ensure equipment and work activities would not damage buildings or result in vibrations that exceed Caltrans' strongly perceptible vibration detection threshold for peak particle velocity (PPV) of 0.1 inches/second (in/sec). Such measures may include, but are not limited to: i) the requirements of Sections 1, 2, and 3; ii) the use of vibration monitoring to measure actual vibration levels; iii) the use of photo monitoring or other records to document building conditions prior to, during, and after construction activities; and iv) the use of other measures such as trenches or wave barriers; D) Identifies the name (or title) and contact information (including phone number and email) of the Contractor and City-representatives responsible for addressing construction vibration-related issues; and E) Includes procedures describing how the construction contractor will receive, respond, and resolve to construction vibration complaints. At a minimum, upon receipt of a vibration complaint, the Contractor and/or City representative described in the first sub-bullet above shall identify the vibration source generating the complaint, determine the cause of the complaint, and take steps to resolve the complaint by reducing ground-borne vibration*

levels to peak particle velocity levels that do not exceed accepted guidance or thresholds for structural damage that are best applicable to potentially impacted buildings (e.g., see Patrick Henry Drive Specific Plan Draft EIR Table 13-6) and Caltrans' strongly perceptible vibration detection threshold (PPV of 0.1 in/sec, see Patrick Henry Drive Specific Plan Draft EIR Table 13-7).

Vibration source levels for construction equipment to be used for the project were evaluated and found to be below the 0.1 PPV threshold at all surrounding buildings. The highest projected vibration levels would be from a vibratory roller at 50 feet from the façade of the commercial building to the north. This piece of equipment would produce vibration levels of 0.098 PPV, below the 0.1 PPV threshold. Table 3 shows the vibration levels expected at nearby building facades.

TABLE 3 Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 ft. (in/sec)	Estimated Vibration Levels at Structures Surrounding the Project Site, in/sec PPV				
		North Commercial (50 feet)	Northeast Commercial (155 feet)	East Commercial (160 feet)	South Commercial (130 feet)	West Residential (205 feet)
Clam shovel drop	0.202	0.094	0.027	0.026	0.033	0.020
Hydromill (slurry wall)	in soil	0.008	0.001	0.001	0.001	0.001
	in rock	0.017	0.002	0.002	0.003	0.002
Vibratory Roller	0.210	0.098	0.028	0.027	0.034	0.021
Hoe Ram	0.089	0.042	0.012	0.012	0.015	0.009
Large bulldozer	0.089	0.042	0.012	0.012	0.015	0.009
Caisson drilling	0.089	0.042	0.012	0.012	0.015	0.009
Loaded trucks	0.076	0.035	0.010	0.010	0.012	0.008
Jackhammer	0.035	0.016	0.005	0.005	0.006	0.003
Small bulldozer	0.003	0.001	0.000	0.000	0.000	0.000

Source: Transit Noise and Vibration Impact Assessment Manual, Federal Transit Administration, Office of Planning and Environment, U.S. Department of Transportation, September 2018, as modified by Illingworth & Rodkin, Inc., November 2023.

Mitigation 13-3: Control fixed and Other On-site Noise-Generating Sources and Activities

- 1) *To ensure on-site, operations-related equipment and activities associated with the Specific Plan do not generate noise levels that exceed City standards or otherwise result in a substantial permanent increase in ambient noise levels, future development projects shall submit a project-specific operational noise analysis to the City for review and approval prior to the issuance of the first building permit for the project, or as otherwise determined by the City. The noise analysis shall be prepared by a qualified acoustical consultant and shall identify all major fixed machinery and equipment, non-residential truck docks/dedicated loading zones, waste collection areas, and above ground parking garages included in the final project design/site plan. The noise analysis shall also document how project noise sources and activities will comply with the exterior sound limits established in Municipal Code Section 9.10.040, Schedule A and the noise compatibility guidelines in General Plan Table 8.14-1. Fixed machinery and equipment may include, but is not limited to, pumps, fans (including air intake or exhaust fans in parking garages), compressors, air*

conditioners, generators, and refrigeration equipment. The control of noise from such equipment may be accomplished by selecting quiet equipment types, siting machinery and equipment inside buildings, within an enclosure (e.g., equipment cabinet or mechanical closets, or behind a parapet wall or other barrier/shielding. Truck docks/dedicated loading zones consist of a loading dock or other dedicated area for the regular loading and unloading of retail, commercial, or other non-residential goods from delivery trucks. The control of noise from such truck docks/loading areas, waste collection areas, and parking garages may be accomplished by placing such areas away from sensitive land uses, restricting activities or operating hours for certain areas, or other design means.

The site plan, floor plans, and building elevations provided by the Applicant were reviewed. Potential sources of noise shown on the plans that may affect adjoining properties include rooftop supply and exhaust fans, heating, ventilation, and air conditioning (HVAC) equipment, three transformers located outside the building along Patrick Henry Drive, and one transformer located near the southwest corner of the building.

The Applicant identified and provided manufacturer's sound data for the following HVAC equipment; two supply fans serving the corridors, three exhaust fans serving the corridors, one exhaust fan serving the trash room, two garage exhaust fans, and rooftop condensers for the residential units. The architectural roof plan and floor plans were used to determine the approximate locations of the equipment on the roof shown to be 84 feet above grade. The predicted HVAC noise levels at the property lines of nearby land uses were calculated. It is assumed that all equipment will run simultaneously. The calculated mechanical equipment noise levels are less than 30 dBA L_{eq} at the property lines of nearby land uses. The applicable noise limits are 70 dBA for the current Light Industrial land use category and 55 dBA during the daytime (7:00 AM to 10:00 PM) and 50 dBA during the nighttime (10:00 PM to 7:00 AM) if they become residential properties in the future (*Municipal Code Section 9.10.040, Schedule A*). The applicable noise limits are 55 dBA during the daytime and 50 dBA during the nighttime at the residential properties to the west. Projected noise levels are substantially below the allowable limits.

Three transformers are shown along Patrick Henry Drive adjacent to the proposed building. Specifications for the transformers are not yet available. Transformers up to 1,000 kVA typically generate noise levels up to 64 dB, the average level measured one foot from the surface of the transformer. Transformers up to 10,000 kVA typically generate noise levels up to 68 dBA. The nearest receptors are the properties directly across Patrick Henry Drive. At one location there are two transformers shown adjacent to each other near the northeast corner of the building outside of the electrical room. Under this worst-case scenario, the noise from the two transformers is calculated to range from 31 dBA to 35 dBA at the nearest property line across Patrick Henry Drive. Projected noise levels would be below the allowable limits.

The equipment proposed in mechanical rooms will be fully enclosed and will not affect noise levels on adjacent properties.

ATTACHMENT 1

EXAMPLE – Construction Noise/Vibration Complaint Form

Name of Complainant: _____

Address: _____

Phone Number/E-mail: _____

Source(s) of complaint (e.g., specific equipment or activity, starting too early, etc.)

Time of Day of Disturbance: _____

How often does the disturbance occur? (daily/weekly/monthly): _____

Over what timeframe has the disturbance been occurring? (week, month, year): _____

List Corrective Actions Taken:

Has Complaint been resolved?:

Site Representative:

Date:
