APPENDIX K

NOISE REPORT

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August 28, 2019
Project No: 18-06879

Andrew Metzger
Circlepoint
46 S 1st Street
San Jose, California 95113
Via email: a.metzger@circlepoint.com

Subject: **1095 Rollins Road Apartment Development IS-MND, Noise Letter Report**
1095 Rollins Road, Burlingame, California, 94010

Dear Mr. Metzger:

This letter report analyzes the potential noise impacts of the proposed 1095 Rollins Road Apartment Project (project) in Burlingame, California. Rincon Consultants, Inc. (Rincon) prepared this letter report under contract to Circlepoint in support of the environmental documentation being prepared pursuant to the California Environmental Quality Act (CEQA). This analysis considers both temporary impacts that would result from project construction and long-term impacts associated with operation of the project.

Project Location

The project site is a 1.08-acre property comprising two assessor's parcels, located at 1095 Rollins Road in Burlingame, California (Assessor Parcel Numbers 026-231-250 and 026-231-260). The project site currently contains a restaurant on the western portion of the site and elevated tennis courts located on top of a parking structure on the eastern portion of the site. The project site is bound by a gas station to the west, Rollins Road and U.S. 101 to the north, a City utility station to the east, and a multi-family residential complex (Northpark Apartments) to the south and east.

Project Description

The project would include demolition of all existing structures on-site and construction of a six-story, 150-unit multi-family residential apartment building. Ten percent of units would be designated as affordable housing for moderate-income households. The building would also include a one-level subterranean garage with 192 parking spaces in traditional and stacked parking configurations. The building would include multiple roof decks with barbeques and fire pits, a programmed courtyard with bocce ball court, a fitness center, clubhouse, bicycle parking, and on-site storage. Access to the site would be provided via an entrance and exit along Rollins Road. See Attachment 1 for the project site plan.

Overview of Noise and Vibration

Noise

Sound is a vibratory disturbance created by a moving or vibrating source, which is capable of being detected by the hearing organs (e.g., the human ear). Noise is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and, in the extreme, hearing impairment.[1]

Noise levels are commonly measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels so that they are consistent with the human hearing response, which is most sensitive to frequencies around 4,000 Hertz (Hz) and less sensitive to frequencies around and below 100 Hz.[2] Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used to measure earthquake magnitudes. A doubling of the energy of a noise source, such as a doubling of traffic volume, would increase the noise level by 3 dB; similarly, dividing the energy in half would result in a decrease of 3 dB.[3]

Human perception of noise has no simple correlation with acoustical energy. The perception of noise is not linear in terms of dBA or in terms of acoustical energy. Two equivalent noise sources combined do not sound twice as loud as one source. It is widely accepted that the average healthy ear can barely perceive changes of 3 dBA, increase or decrease; that a change of 5 dBA is readily perceptible; and that an increase (decrease) of 10 dBA sounds twice (half) as loud.[4]

The impact of noise is not a function of loudness alone. The time of day when noise occurs and the duration of the noise are also important. In addition, most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors has been developed. The noise descriptors used for this analysis are the one-hour equivalent noise level (L_{eq}), the maximum noise level (L_{max}), and the community noise equivalent level (CNEL).

- The L_{eq} is the level of a steady sound that, in a stated time period and at a stated location, has the same A-weighted sound energy as the time-varying sound. For example, $L_{eq(1h)}$ is the equivalent noise level over a 1-hour period and $L_{eq(8h)}$ is the equivalent noise level over an 8-hour period. $L_{eq(1h)}$ is a common metric for limiting nuisance noise whereas $L_{eq(8h)}$ is a common metric for evaluating construction noise.
- The L_{max} is the highest root mean squared sound pressure level within a given measurement period.
- The CNEL is a 24-hour equivalent sound level. The CNEL calculation applies an additional 5 dBA penalty to noise occurring during evening hours (i.e., 7:00 p.m. to 10:00 p.m.) and an additional 10 dBA penalty is added to noise occurring during nighttime hours (i.e., 10:00 p.m. to 7:00 a.m.). These increases for certain times are intended to account for the added sensitivity of humans to noise during the evening and night.

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[1] Crocker, Malcolm J. Crocker (Editor). 2007. Handbook of Noise and Vibration Control Book, ISBN: 978-0-471-39599-7, Wiley-VCH, October.

[2] Kinsler, Lawrence E. and R. Frey, Austin and B. Coppens, Alan and V. Sanders, James. 1999. Fundamentals of Acoustics, 4th Edition. ISBN 0-471-84789-5. Wiley-VCH, December 1999.

[3] Crocker, Malcolm J. Crocker (Editor). 2007. Handbook of Noise and Vibration Control Book, ISBN: 978-0-471-39599-7, Wiley-VCH, October.

[4] California Department of Transportation (Caltrans). 2013a. Technical Noise Supplement to the Traffic Noise Analysis Protocol. (CT-HWANP-RT-13-069.25.2) September. http://www.dot.ca.gov/hq/env/noise/pub/TeNS_Sept_2013B.pdf (accessed August 2019).

Sound from a small, localized source (approximating a "point" source) decreases or drops off at a rate of 6 dBA for each doubling of the distance. However, traffic is not a single, stationary point source of sound. Over some time interval, the movement of vehicles makes the source of the sound appear to emanate from a line (line source) rather than a point. The drop-off rate for a line source is 3 dBA for each doubling of distance.

Vibration

While people have varying sensitivities to vibrations at different frequencies, they are generally most sensitive to low-frequency vibration. Vibration in buildings, such as from nearby construction activities, may cause windows, items on shelves, and pictures on walls to rattle. Vibration of building components can also take the form of an audible low-frequency rumbling noise, referred to as groundborne noise. Although groundborne vibration is sometimes noticeable in outdoor environments, it is almost never annoying to people who are outdoors. The primary concern from vibration is that it can be intrusive and annoying to building occupants and vibration-sensitive land uses. [5]

Vibration amplitudes are usually expressed in peak particle velocity (PPV) or RMS vibration velocity. The PPV and RMS velocity are normally described in inches per second (in/sec). PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is often used in monitoring of blasting vibration because it is related to the stresses that are experienced by buildings.[6]

Vibration significance ranges from approximately 50 vibration decibels (VdB), which is the typical background vibration-velocity level, to 100 VdB, the general threshold where minor damage can occur in fragile buildings. The general human response to different levels of groundborne vibration velocity levels is described in Table 1. [7]

Table 1 Human Response to Different Levels of Groundborne Vibration

Vibration Velocity Level	Human Reaction
65 VdB	Approximate threshold of perception for many people
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible (many people find that transportation-related vibration at this level is unacceptable)
85 VdB	Vibration acceptable only if there are an infrequent number of events per day

Source: Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual.

Existing Noise Setting

To characterize ambient sound levels, two short-term measurements were conducted at the project site on August 14, 2019. An Extech, Model 407780A, ANSI Type 2 integrating sound level meter was used to

[5] Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf (accessed August 2019).

[6] California Department of Transportation (Caltrans). 2013. Transportation and Construction Vibration Guidance Manual (CT-HWANP-RT-13-069.25.3). September. http://www.dot.ca.gov/hq/env/noise/pub/TCVGM_Sep13_FINAL.pdf (accessed August 2019).

[7] Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf (accessed August 2019).

conduct the measurements. Table 2 summarizes the results of the short-term noise measurements. Detailed sound level measurement data are included in Attachment 2. See Figure 1 for noise measurement locations.

Table 2 Sound Level Monitoring Results

#	Measurement Location	Sample Times	Approximate Distance to Primary Noise Source	L_{eq} (dBA)	L_{max} (dBA)
1	Northern boundary of project site along Rollins Road	10:35 – 10:50 a.m.	25 feet to the centerline of Rollins Road, 135 feet to the centerline of Highway. 101	68	86
2	Cadillac Way near adjacent apartment complex south of the project site	11:02 – 11:17 a.m.	15 feet from centerline of Cadillac Way	62	81

See Attachment 2 for noise monitoring data. See Figure 1 for noise measurement locations.

The City of Burlingame General Plan Noise Element establishes the most restrictive noise standards for wilderness-type parks, nature or contemplation areas of public parks, schools, hospitals, libraries, auditoriums, intensively used parks and playgrounds, public buildings, single-family homes, multi-family apartments and condominiums, and mobile home parks.[8] Therefore, this analysis considers these categories to be noise-sensitive land uses. The nearest noise-sensitive receivers to the project site are multi-family residences located adjacent to the project site's southern and eastern boundaries.

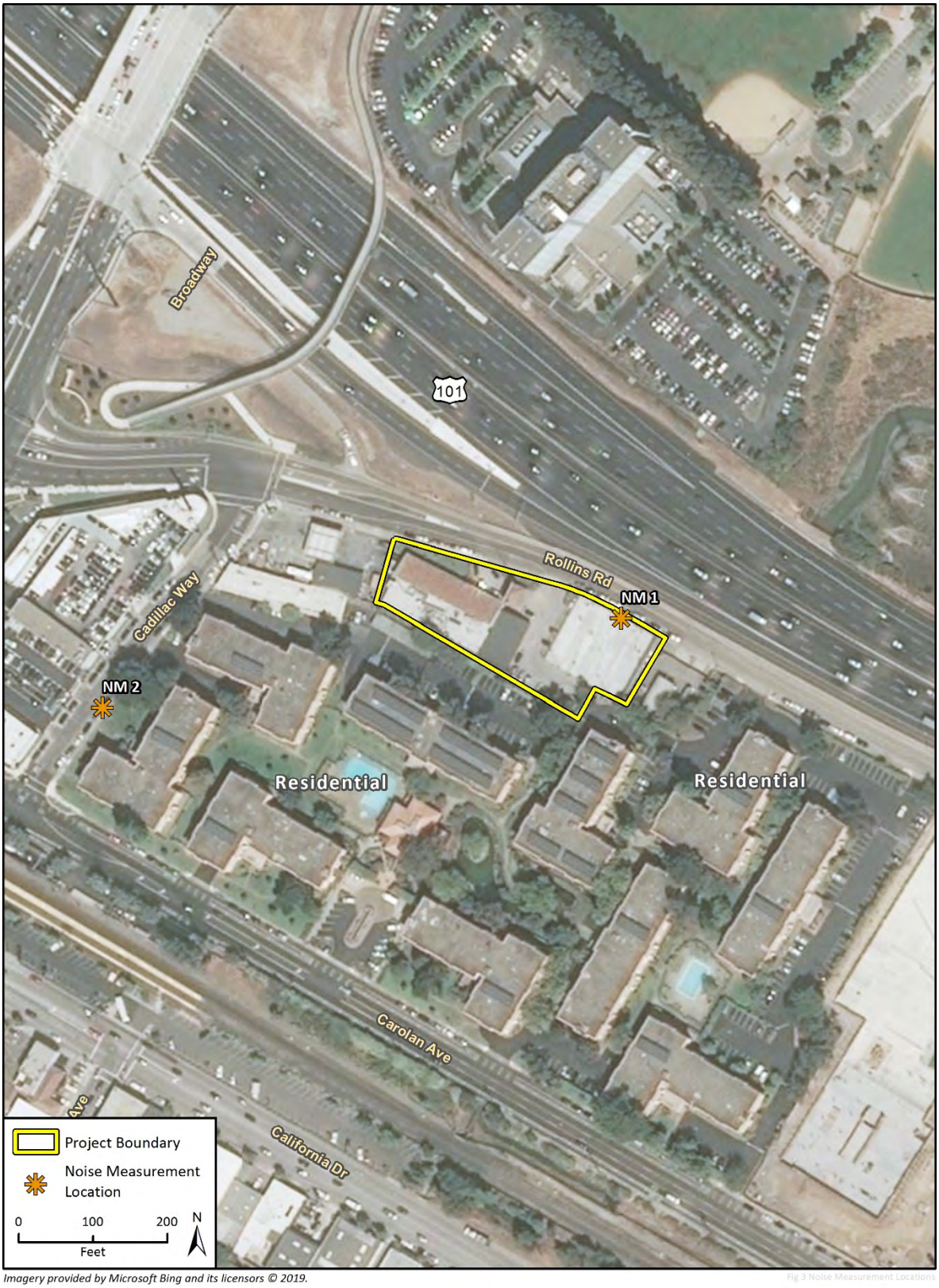
Regulatory Setting

City of Burlingame General Plan

The Burlingame General Plan Noise Element includes goals and policies to guide development and to protect citizens from the harmful and irritating effects of excessive noise. The Noise Element establishes noise/land use compatibility categories for new uses, which are summarized in Table 3. For residential uses, the City considers noise levels up to 60 CNEL to be acceptable.

[8] Burlingame, City of. 1975. City of Burlingame General Plan Noise Element. September 15, 1975. https://www.burlingame.org/departments/planning/general_and_specific_plans.php (accessed August 2019).

Figure 1 Noise Measurement Locations



Imagery provided by Microsoft Bing and its licensors © 2019.

Fig 3 Noise Measurement Locations

Table 3 Outdoor Noise Level Planning Criteria

Maximum Outdoor Noise Levels (dBA)	
Land Use Categories	**CNEL**
Public, Quasi-Public and Residential Schools, Hospitals, Libraries, Auditoriums, Intensively Used Parks and Playgrounds, Public Buildings, Single-Family Homes, Multi-Family Apartments and Condominiums, Mobile Home Parks	60
Passively-Used Open Space Wilderness-Type Parks, Nature or Contemplation Areas of Public Parks	45
Commercial Shopping Centers, Self-Generative Business, Commercial Districts, Offices, Banks, Clinic, Hotels, Motels	65
Industrial Non-Manufacturing Industry, Transportation, Communications, Utilities, Manufacturing	75

There criteria may be invoked for the following purposes:

a. To determine the suitability of development on lands considered as receptors to which the standards apply; and

b. To determine the suitability of building types and proposed construction materials to be applied on the site.

Source: City of Burlingame. 1975. City of Burlingame General Plan Noise Element, Table 4-2. September 15, 1975.

The City's General Plan Noise Element also provides allowable limits for construction equipment, as shown in Table 4. The General Plan states that no construction noise may be emitted beyond the property line so as to result in a noise level increase of more than 5 dBA L_{max} above the ambient L_{max} noise level.

Table 4 Maximum Allowable Noise Levels from Construction Equipment

Equipment	Peak Noise Level (dBA) at 50 Feet[1]
Earthmoving	
Front Loader	75
Backhoe	75
Dozer	75
Tractor	75
Scraper	80
Grader	75
Truck	75
Paver	80
Materials Handling	
Concrete Mixer	75
Concrete Pump	75
Crane	75
Derrick	75
Stationary	
Pump	75
Generator	75
Compressor	75
Impact	
Pile Driver	95
Jackhammer	75
Rock Drill	80
Pneumatic Tool	80
Other	
Saw	75
Vibrator	75

[1] These levels are assumed to be given in terms of L_{max}.
Source: City of Burlingame. 1975. City of Burlingame General Plan Noise Element, Table 4-6. September 15, 1975.

The Noise Element also provides guidelines for determining whether significant acoustical impacts from a project would occur and whether City staff should consider preparation of an Environmental Impact Report to evaluate noise impacts. The Noise Element states that a significant noise impact may occur under several conditions, including if a project would include construction of a residential development with more than 80 dwelling units; if project construction would occur for more than 30 days using a combination of equipment listed in Table 4; or if the project would introduce a new stationary noise source or otherwise induce increased traffic levels such that the noise climate for residential, hospital, school, park, commercial, professional, or open space use would be materially modified. The project would include construction of approximately 150 residential units, would require more than 30 days of construction activities using a combination of equipment listed in Table 4, and would include new stationary noise sources (i.e., heating, ventilation, and air conditioning [HVAC] equipment). However, as discussed under *Impact Analysis*, with implementation of mitigation measures, the project would not

result in significant impacts related to noise; therefore, noise impacts do not warrant further study in an Environmental Impact Report.

Burlingame Municipal Code

Burlingame Municipal Code (BMC) Section 18.07.110 states that allowable hours of construction in the City are between 8:00 a.m. and 7:00 p.m. on weekdays and 9:00 a.m. and 6:00 p.m. on Saturdays. Construction is not permitted on Sundays and holidays. An exception may be granted under circumstances of urgent necessity in the interest of public health and safety. An exception must be approved in writing by the building official and shall be granted for a period of no more than three days for projects including structures with a gross floor area of less than 40,000 square feet; and, when reasonable to accomplish the erection, demolition, alteration, or repair, the exception shall not exceed 20 days for projects including structures with a gross floor area of 40,000 square feet or greater.

BMC Section 10.40.020 prohibits the use of mechanical devices, machines, apparatuses, or instruments for the intensification or amplification of the human voice or any sound or noise in such a manner that the peace and good order of the neighborhood are disturbed or that persons owning, using or occupying the property in the neighborhood are disturbed or annoyed. BMC Section 10.40.035 prohibits the creation of any loud, unnecessary, or unusual noise that disturbs the peace and quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area. BMC Section 10.40.037 prohibits the operation of any lawnmower, lawn edge, riding tractor, or any other mechanical or electrical machinery that creates a loud, raucous, or impulsive sound within any residential district except between the hours of 8:00 a.m. and 7:00 p.m. on Monday through Saturday and between 10:00 a.m. and 6:00 p.m. on Sunday and holidays.[9] BMC Section 10.40.038 contains noise restrictions on leafblowers, including allowable hours of use, allowable areas of use, and noise level specifications.

Impact Analysis

Methodology

Construction Noise

Temporary noise levels caused by construction activity would be a function of the noise generated by construction equipment, the location and sensitivity of nearby land uses, and the timing and duration of noise-generating activities. Nearest receivers include multi-family residences located immediately south and east of the project site. While the project site is adjacent to existing residential land uses, construction equipment would be continuously moving across the site, coming near and then moving further away from individual receivers. Therefore, noise levels at the nearest sensitive receivers would vary over the course of the construction period depending on where construction activity is occurring on the project site.

Construction noise was estimated using the Federal Highway Administration Roadway Construction Noise Model (RCNM) (2006). RCNM predicts construction noise levels for a variety of construction

[9] Residential districts are defined as districts that are zoned R-1, R-2, R-3, and R-4. The project proposes to change the parcel's zoning to R-4; therefore, the parcel would be located in a residential district and these code provisions would apply.

operations based on empirical data and the application of acoustical propagation formulas. RCNM provides reference noise levels for standard construction equipment, with an attenuation of 6 dBA per doubling of distance for stationary equipment.

For construction noise assessment, construction equipment can be considered to operate in two modes: stationary and mobile. As a rule, stationary equipment operates in a single location for one or more days at a time, with either fixed-power operation (e.g., pumps, generators, and compressors) or variable-power operation (e.g., pile drivers, rock drills, and pavement breakers). Mobile equipment moves around the construction site with power applied in cyclic fashion, such as bulldozers, graders, and loaders.[10] Noise impacts from stationary equipment are assessed from the center of the equipment, while noise impacts from mobile construction equipment are assessed from the center of the equipment activity area (e.g., construction site).

Variation in power imposes additional complexity in characterizing the noise source level from construction equipment. Power variation is accounted for by describing the noise at a reference distance from the equipment operating at full power and adjusting it based on the duty cycle, or percent of operational time, of the activity to determine the L_{eq} of the operation.[11]

Each phase of demolition and construction has a specific equipment mix, depending on the work to be accomplished during that phase. Each phase also has its own noise characteristics; some will have higher continuous noise levels than others, and some may have high-impact noise levels. In typical demolition and construction projects, grading activities generate the highest noise levels because grading involves the largest equipment and covers the greatest area.

Project demolition and construction is estimated to occur over 20 months. Construction phases would include demolition, site preparation, grading, building construction, paving, and architectural coating. Construction would not require any blasting or pile driving. The construction equipment list for each phase was provided by the project applicant. It is assumed that diesel engines would power all construction equipment. The construction noise thresholds set forth by the City of Burlingame (discussed further under *Significance Thresholds*) are expressed in terms of maximum noise levels (L_{max}) for individual pieces of construction equipment at 50 feet and for each phase of construction at the property line. Therefore, L_{max} noise levels were estimated for each piece of construction equipment at a distance of 50 feet and for each phase of construction at a distance of 75 feet (the approximate distance from the center of the project site to the property line) using the Federal Highway Administration RCNM. RCNM calculations are included in Attachment 3.

Groundborne Vibration

Project construction activities would have the greatest potential to generate groundborne vibration affecting nearby receivers, especially during grading and paving of the project site. The greatest vibratory sources during construction would be rollers, bulldozers, and loaded trucks. Neither blasting nor pile driving would be required for project construction. Construction vibration estimates are based

[10] Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf (accessed August 2019).

[11] Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf (accessed August 2019).

on vibration levels reported by the California Department of Transportation (Caltrans) and the Federal Transit Administration (FTA).[12, 13]

A quantitative assessment of potential vibration impacts from construction activities, such as vibratory compaction, demolition, drilling, or excavation, was conducted using the estimates and equations developed by Caltrans and the FTA. Construction vibration impacts are assessed for individual pieces of construction equipment in accordance with FTA guidance.[14] Due to site constraints and worker safety limitations, individual pieces of vibratory construction equipment typically do not operate in close proximity to each other such that any single off-site structure would experience substantial levels of vibration from multiple pieces of construction equipment. Therefore, the additive impacts of multiple pieces of vibratory construction equipment operating simultaneously are not evaluated.

Thresholds

To determine whether a project would have a significant noise impact, Appendix G to the *CEQA Guidelines* requires consideration of whether a project would result in:

1. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
2. Generation of excessive groundborne vibration or groundborne noise levels; or
3. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, exposure of people residing or working in the project area to excessive noise levels.

Construction Noise

Construction noise would be significant if project construction would generate noise levels in excess of the following standards set forth by the City's General Plan Noise Element:

1. Maximum noise levels generated by individual pieces of construction equipment at 50 feet exceed the levels set forth in Table 4; or
2. The maximum noise level generated during any phase of construction would result in a noise level increase of more than 5 dBA L_{max} above the ambient L_{max} noise level as measured at the property line.

For the purposes of determining the numeric value of the second threshold stated above, the lowest L_{max} measured during sound level monitoring (81 dBA L_{max}), which occurred during Noise Measurement 2, was assumed to be representative of the ambient L_{max} noise level. Therefore, the maximum noise

[12] California Department of Transportation (Caltrans). 2013. Transportation and Construction Vibration Guidance Manual (CT-HWANP-RT-13-069.25.3). September. http://www.dot.ca.gov/hq/env/noise/pub/TCVGM_Sep13_FINAL.pdf (accessed August 2019).

[13] Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf (accessed August 2019).

[14] Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf (accessed August 2019).

level threshold for each phase of construction at the property line would be 86 dBA L_{max} (81 dBA L_{max} plus 5 dBA).

On-site Operational Noise

Based on published guidance from the U.S. EPA, Federal Interagency Committee on Noise, Caltrans, and the Governor's Office of Planning and Research, a readily noticeable change (i.e., an increase of 5 dBA) in the existing noise environment may be considered a significant impact. In addition, a doubling of sound energy (i.e., an increase of 3 dBA) at an existing noisy location may be considered a significant impact.[15, 16, 17] A noisy location is typically one that currently exceeds a community's noise/land use compatibility standards. Therefore, for this analysis, a substantial permanent increase in the ambient noise levels is defined as the following:

- A 5 dBA increase (or greater) over existing noise levels when existing and future noise levels are equal to, or below, the local jurisdiction's noise/land use compatibility standard, or
- A 3 dBA increase (or greater) when existing or future noise levels are equal to or above the jurisdiction's standard.

Ambient noise levels on the project site and at the adjacent residential use range from 62 to 68 dBA L_{eq}. In urban areas near heavy traffic, the peak hour L_{eq} is typically 2 to 4 dBA lower than the daily Ldn or CNEL.[18] Therefore, ambient noise levels on the project site and at the adjacent residential use are approximately 66 to 72 CNEL, which exceeds the City's outdoor noise level planning criterion of 60 CNEL for residential land uses (see Table 3). Because existing noise levels are above the City's noise/land use compatability standard, this analysis utilizes a threshold of 3 dBA for evaluating operational noise impacts.

Construction Vibration

The City of Burlingame has not adopted a significance threshold to assess vibration impacts during construction and operation. Therefore, the FTA guidelines set forth in the FTA *Transit Noise and Vibration Impact Assessment Manual* (2018) are used to evaluate potential construction vibration impacts related to both potential building damage and human annoyance. Based on the FTA criteria, construction vibration impacts would be significant if construction vibration levels exceed 100 VdB, which is the general threshold at which damage can occur to fragile buildings, or 72 VdB at residences during nighttime hours.[19]

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[15] California Department of Transportation (Caltrans). 2013. Technical Noise Supplement to the Traffic Noise Analysis Protocol. (CT-HWANP-RT-13-069.25.2) September. http://www.dot.ca.gov/hq/env/noise/pub/TeNS_Sept_2013B.pdf (accessed August 2019).

[16] United States Environmental Protection Agency (USEPA). 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. Prepared by the Office of Noise Abatement and Control. Washington, D.C. March 1974.

[17] Federal Interagency Committee on Noise. 1992. *Federal Agency Review of Selected Airport Noise Analysis Issues*. August 1992.

[18] California State Water Resources Control Board (SWRCB). 1999. General Waste Discharge Requirements for Biosolids Land Application Draft Statewide Program EIR – Appendix G. Background Information on Acoustics. http://www.waterboards.ca.gov/water_issues/programs/biosolids/deir/appendices/app_g.pdf (accessed July 2019).

[19] Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf (accessed August 2019).

Project Impacts and Mitigation Measures

Threshold 1:	Would the proposed project generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Construction Noise

Maximum noise levels were estimated for each piece of construction equipment at a distance of 50 feet and for each phase of construction at a distance of 75 feet (the approximate distance from the center of the project site to the property line) in accordance with the City's construction noise thresholds. Maximum construction noise levels from individual pieces of equipment and from each phase of construction are shown in Table 5. RCNM calculations are included in Attachment 3.

Table 5 Maximum Noise Levels from Project Construction

Noise Source	Noise Level[1, 2]	Threshold[3]	Threshold Exceeded?
Demolition			
Concrete/Industrial Saws	90 dBA L_{max}	75 dBA L_{max}	Yes
Excavators	81 dBA L_{max}	75 dBA L_{max}[4]	Yes
Dozers	82 dBA L_{max}	75 dBA L_{max}	Yes
Tractors/Loaders/Backhoes	78 dBA L_{max}	75 dBA L_{max}	Yes
Highest L_{max} at Property Line	86 dBA L_{max}	86 dBA L_{max}	No
Site Preparation			
Graders	85 dBA L_{max}	75 dBA L_{max}	Yes
Dozers	82 dBA L_{max}	75 dBA L_{max}	Yes
Tractors/Loaders/Backhoes	78 dBA L_{max}	75 dBA L_{max}	Yes
Highest L_{max} at Property Line	82 dBA L_{max}	86 dBA L_{max}	No
Grading/Excavation			
Excavators	81 dBA L_{max}	75 dBA L_{max}[4]	Yes
Bore/Drill Rig	84 dBA L_{max}	80 dBA L_{max}[5]	Yes
Tractors/Loaders/Backhoes	78 dBA L_{max}	75 dBA L_{max}	Yes
Generator	81 dBA L_{max}	75 dBA L_{max}	Yes
Highest L_{max} at Property Line	81 dBA L_{max}	86 dBA L_{max}	No
Building Construction			
Forklift	75 dBA L_{max}	n/a	n/a
Welders	74 dBA L_{max}	n/a	n/a
Highest L_{max} at Property Line	71 dBA L_{max}	86 dBA L_{max}	No
Architectural Coating			
Air Compressors	78 dBA L_{max}	75 dBA L_{max}	Yes
Aerial Lifts	75 dBA L_{max}	n/a	n/a
Highest L_{max} at Property Line	74 dBA L_{max}	86 dBA L_{max}	No

Paving			
Paver	77 dBA L_{max}	80 dBA L_{max}	No
Roller	80 dBA L_{max}	80 dBA L_{max}[6]	n/a
Tractor/Loader/Backhoe	78 dBA L_{max}	75 dBA L_{max}	Yes
Highest L_{max} at Property Line	77 dBA L_{max}	86 dBA L_{max}	No

[1] Peak noise levels for each piece of construction equipment were modelled at a distance of 50 feet in accordance with the City's maximum allowable noise levels for construction equipment, which are summarized in Table 4. Combined noise levels for each phase were modelled at a distance of 75 feet (i.e., the distance from the center of the project site to the property line) in accordance with the City's General Plan Noise Element prohibition on exceeding the ambient L_{max} noise level by more than 5 dBA at the property line.

[2] The L_{max} value is the maximum instantaneous noise level generated by the loudest single piece of equipment operating during each phase. L_{max} values for each construction phase are not summed because it is assumed that a given piece of equipment would not generate its peak noise level at the same time as another piece of equipment.

[3] Thresholds for individual pieces of equipment are based on the maximum allowable noise levels shown in Table 4. Thresholds for maximum noise levels at the property line were calculated by adding 5 dBA to the lowest ambient L_{max} measured during sound level monitoring (i.e., 81 dBA L_{max}), which occurred during Noise Measurement 2.

[4] Maximum allowable noise level for graders used as a proxy for excavators.

[5] Maximum allowable noise level for rock drills used as a proxy for bore/drill rigs.

[6] Maximum allowable noise level for pavers used as a proxy for rollers.

See Attachment 3 for RCNM calculations.

n/a = not applicable. The City has not specified a maximum allowable noise level for these pieces of equipment or for similar pieces of equipment that could be used as a proxy for the construction noise impact analysis.

As shown in Table 5, average maximum noise levels during each phase of construction at the property line would not exceed the threshold of 86 dBA L_{max} (i.e., 5 dBA L_{max} above the ambient L_{max}). However, average maximum noise levels generated by several pieces of equipment (including saws, excavators, dozers, backhoes, generators, and air compressors) would exceed the City's maximum allowable noise levels for construction equipment at 50 feet. Therefore, construction noise impacts would be potentially significant. Implementation of Mitigation Measure N-1 would be required to reduce construction noise impacts to a less than significant level.

Operational Noise

Project operation would generate noise from trash hauling services, residents' use of common space areas, landscaping activities, and HVAC equipment. Each of these noise sources is discussed separately below.

Periodic trash hauling services would not be a significant source of noise because trash trucks already frequent the project site to remove solid waste generated by the existing on-site restaurant. Furthermore, the project site is located in an urban area and is surrounded by existing residential and commercial uses that require similar trash hauling services. Therefore, because trash trucks are already a common occurrence in the project vicinity, trash hauling services would not result in a substantial permanent increase in ambient noise levels above levels existing without the project.

The project would include an outdoor courtyard with a bocce ball court and multiple roof decks with barbeques, fire pits, and outdoor seating along with associated landscaping. Operational noise associated with outdoor use areas would include conversations, laughter, music, other sound-generating equipment, and landscape equipment. Noise from conversation would be an intermittent and temporary noise source, which would typically be limited to the daytime, outside of noise-sensitive hours of sleep. In addition, residents and property owners would be subject to BMC Section 10.40.035, which prohibits the creation of nuisance noise; BMC Section 10.40.020, which governs noise generated

by sound-amplifying devices; and BMC Sections 10.40.037 and 10.40.038, which contain restrictions on noise generated by landscaping equipment. Furthermore, these noise-generating activities would be similar to those of the existing multi-family residential complex located immediately adjacent to the south and east and would result in a negligible change to existing noise levels.

The project would include rooftop HVAC equipment. HVAC equipment is a continuous noise source, and noise levels can reach up to 70 dBA L_{eq} at a distance of 15 feet from the source.[20] Rooftop equipment would be located as close as 72 feet from the project site's southern property line.[21] Assuming approximately one ton of HVAC systems would be required for every 600 square feet of residential floor space, the project would require approximately 210 tons of HVAC systems, or approximately 42 HVAC units.[22] To accommodate these on the roof, approximately one HVAC unit would be placed every 557 square feet, or approximately every 24 linear feet on the rooftop.[23] Therefore, the southernmost portion of the proposed building, which is the closest part of the building to the adjacent property line, would accommodate three HVAC units.[24] Assuming worst-case exposure of noise from up to three HVAC units at any point on the adjacent property, noise levels generated by HVAC equipment would be approximately 61 dBA at 72 feet.[25] As a result, HVAC equipment noise would increase the existing ambient noise level of 62 dBA L_{eq} on the adjacent property to approximately 64 dBA L_{eq}, which would be an increase of approximately 3 dBA above ambient noise levels (see Attachment 4 for summed noise calculations). Therefore, given that the project would not increase ambient noise levels by more than 3 dBA, impacts related to HVAC equipment noise would be less than significant.

Off-Site Traffic Noise

Existing traffic on local roadways and highways near the project site generates noise. The project would contribute to traffic noise levels if the project would increase daily traffic volumes on these roadways. However, according to the project traffic study, the project would generate approximately 816 daily vehicle trips, which would be 198 fewer trips as compared to the daily traffic volume generated by the existing restaurant on-site.[26] Therefore, the project would result in a decrease in traffic noise levels on local roadways and highways because the project would decrease daily traffic volumes as compared to existing conditions. Furthermore, under cumulative plus project conditions, the project would result in a decrease in cumulative traffic noise levels because the project would result in lower daily traffic volumes than if the existing use continued operating. Therefore, no traffic noise impact would occur.

[20] Illingworth & Rodkin, Inc. 2009. Wal-Mart Expansion, Williamson Ranch Plaza (Antioch, California) Environmental Noise Assessment. http://www.ci.antioch.ca.us/CityGov/CommDev/PlanningDivision/docs/Walmart/DEIR-VOLII-APPENDICES-C-H/Appendix%20G%20Noise%20Assessment.pdf (accessed August 2019).

[21] Diagonal distance between rooftop HVAC units and the property line, assuming a building height of 70.5 feet and a setback of 15 feet.

[22] 126,000 net residential square feet divided by 600 square feet per ton of HVAC system

[23] 23,414 square feet of rooftop area divided by 42 HVAC units

[24] 70 feet divided by 24 feet per HVAC unit

[25] All other HVAC units would be located at a greater distance from the adjacent residential property line and would therefore not generate substantial noise levels as compared to those located along the southernmost edge of the rooftop.

[26] W-Trans. 2019. IS-MND Transportation Analysis for the 1095 Rollins Road Project.

Mitigation Measure

N-1 Construction Noise Reduction Measures

The following mufflers and sound enclosures shall be utilized during project construction to reduce noise levels from individual pieces of construction equipment:

- Generators and air compressors shall be surrounded by acoustic shielding and/or sound enclosures capable of reducing noise by at least 6 dBA;
- An industrial grade muffler or muffler of similar capacity capable of reducing engine noise by at least 10 dBA shall be installed on excavators, dozers, tractors, loaders, backhoes, graders, and bore/drill rigs; and
- An industrial grade muffler or muffler of similar capacity capable of reducing engine noise by at least 15 dBA shall be installed on concrete/industrial saws.

Significance after Mitigation

As summarized in Table 6, implementation of Mitigation Measure N-1 would reduce noise levels from individual pieces of construction equipment to below the City's maximum allowable noise levels for construction equipment. With implementation of Mitigation Measure N-1, construction noise impacts would be reduced to less than significant.

Table 6 Mitigated Maximum Noise Levels from Project Construction

Noise Source	Mitigated Noise Level[1, 2]	Threshold[3]	Threshold Exceeded?
Demolition			
Concrete/Industrial Saws	75 dBA L_{max}	75 dBA L_{max}	No
Excavators	71 dBA L_{max}	75 dBA L_{max}[3]	No
Dozers	72 dBA L_{max}	75 dBA L_{max}	No
Tractors/Loaders/Backhoes	68 dBA L_{max}	75 dBA L_{max}	No
Site Preparation			
Graders	75 dBA L_{max}	75 dBA L_{max}	No
Dozers	72 dBA L_{max}	75 dBA L_{max}	No
Tractors/Loaders/Backhoes	68 dBA L_{max}	75 dBA L_{max}	No
Grading/Excavation			
Excavators	71 dBA L_{max}	75 dBA L_{max}[4]	No
Bore/Drill Rig	74 dBA L_{max}	80 dBA L_{max}[5]	No
Tractors/Loaders/Backhoes	68 dBA L_{max}	75 dBA L_{max}	No
Generator	75 dBA L_{max}	75 dBA L_{max}	No
Building Construction			
Forklift	75 dBA L_{max}	n/a	n/a
Welders	74 dBA L_{max}	n/a	n/a
Architectural Coating			
Air Compressors	72 dBA L_{max}	75 dBA L_{max}	No
Aerial Lifts	75 dBA L_{max}	n/a	n/a
Paving			
Paver	77 dBA L_{max}	80 dBA L_{max}	No
Roller	80 dBA L_{max}	80 dBA L_{max}[6]	n/a
Tractor/Loader/Backhoe	68 dBA L_{max}	75 dBA L_{max}	No

[1] Peak noise levels for each piece of construction equipment were modelled at a distance of 50 feet in accordance with the City's maximum allowable noise levels for construction equipment, which are summarized in Table 4.

[2] The noise level reduction for each piece of equipment was based on the type of enclosure/muffler required by Mitigation Measure N-1.

[3] Thresholds for individual pieces of equipment are based on the maximum allowable noise levels shown in Table 4.

[4] Maximum allowable noise level for graders used as a proxy for excavators.

[5] Maximum allowable noise level for rock drills used as a proxy for bore/drill rigs.

[6] Maximum allowable noise level for pavers used as a proxy for rollers.

n/a = not applicable. The City has not specified a maximum allowable noise level for these pieces of equipment or for similar pieces of equipment that could be used as a proxy.

Threshold 2:	Would the proposed project generate excessive groundborne vibration or groundborne noise levels?

Construction-Related Vibration

Certain types of construction equipment can generate high levels of groundborne vibration. The equipment utilized during project construction that would generate the highest levels of vibration would include rollers, loaded trucks, and bulldozers. This analysis conservatively assumes that construction equipment may operate at the southeastern corner of the project site at a distance of approximately 20 feet from the nearest building located at the gas station immediately west of the project site.

Table 7 shows typical vibration levels for various pieces of construction equipment used in the assessment of construction vibration. These pieces of construction equipment are anticipated to be used during project construction and would generate the highest levels of vibration as compared to construction equipment not included in this analysis.

Table 7 Vibration Levels Measured during Construction Activities

Equipment	PPV at 25 ft. (in/sec)	Approximate L_v VdB at 25 ft.
Vibratory Roller	0.21	94
Large Bulldozer	0.089	87
Loaded trucks	0.076	83

Source: Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual.

As shown in Table 8, vibration levels from individual pieces of construction equipment at a distance of 20 feet would not exceed 100 VdB, the threshold at which damage can occur to fragile buildings. Construction vibration levels at all other buildings in the immediate vicinity, including multi-family residences to the south and east, would be less than the levels shown in Table 8 because vibration levels would attenuate with distance. Furthermore, in accordance with BMC Section 18.07.110, project construction would be required to occur during daytime hours and would not disturb residences to the south and east during sensitive hours of sleep; therefore, project construction would not exceed the threshold of 72 VdB for residential uses during nighttime hours. Construction vibration impacts would be less than significant.

Table 8 Vibration Levels at Nearest Building

Equipment	Estimated VdB at Nearest Building (20 feet)
Vibratory Roller	69
Large Bulldozer	89
Loaded Truck	85
Threshold	**100**
Threshold Exceeded?	No

See Attachment 5 for vibration analysis worksheets.
Source: Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual.

Operational Vibration

The project includes residential land uses and would not generate significant stationary sources of vibration, such as manufacturing or heavy equipment operations. Therefore, no operational vibration impacts would occur.

Threshold 3:	For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the proposed project expose people residing or working in the project area to excessive noise levels?

The airport closest to the project site is the San Francisco International Airport, which is located approximately 1.5 miles northwest of the project site. However, the project site is located outside the 65 dBA contour for airport operations.[27] The project site is not in close proximity to a private airport. Therefore, the project would not expose people residing or working in the project area to excessive noise levels from airport operations. No impact would occur.

Conclusions

As detailed in the analysis above, the project would result in a potentially significant impact related to construction noise. However, implementation of Mitigation Measure N-1 would reduce this impact to a less than significant level by requiring implementation of construction noise reduction measures. In addition, the project would have less than significant or no impacts related to operational and off-site traffic noise, vibration, and airport operations.

Thank you for the opportunity to assist with this assignment. Please do not hesitate to contact us if you have questions about this report.

[27] City/County Association of Governments of San Mateo County. 2012. Comprehensive Airport Land Use Compatibility Plan for the Environs of San Francisco International Airport. November 2012. http://52.43.20.201/wp-content/uploads/2014/10/Consolidated_CCAG_ALUCP_November-20121.pdf (accessed August 2019).

Sincerely,
Rincon Consultants, Inc.

Kari Zajac, MESM
Project Manager

Abe Leider, AICP CEP
Principal

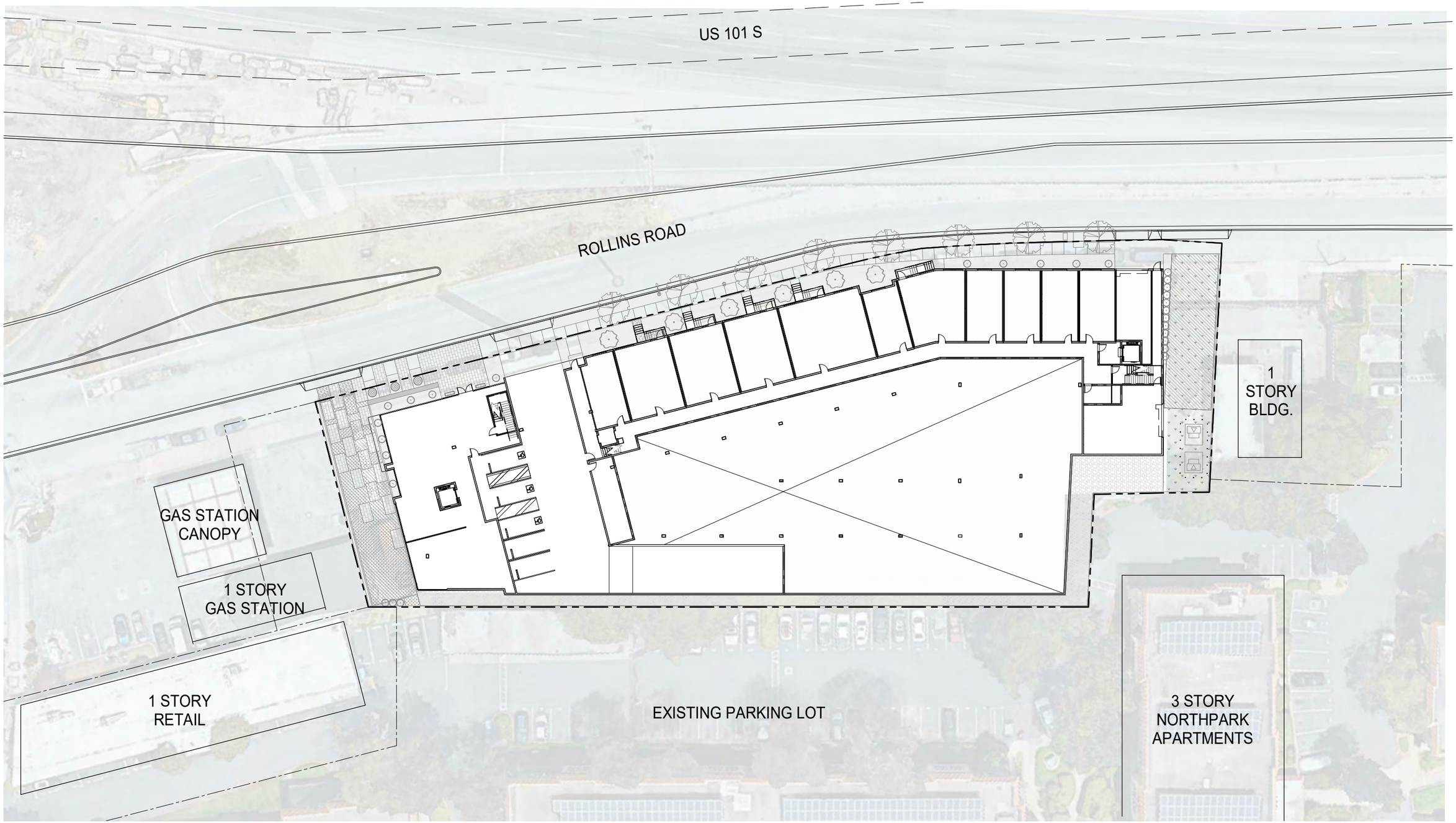
Attachments

Attachment 1	Project Site Plan
Attachment 2	Noise Monitoring Data
Attachment 3	Roadway Construction Noise Model Output Results
Attachment 4	Summed Noise Calculations
Attachment 5	Vibration Calculations

Attachment 1

Project Site Plan

1095 ROLLINS ROAD, BURLINGAME
PLANNING SUBMITTAL



SITE PLAN

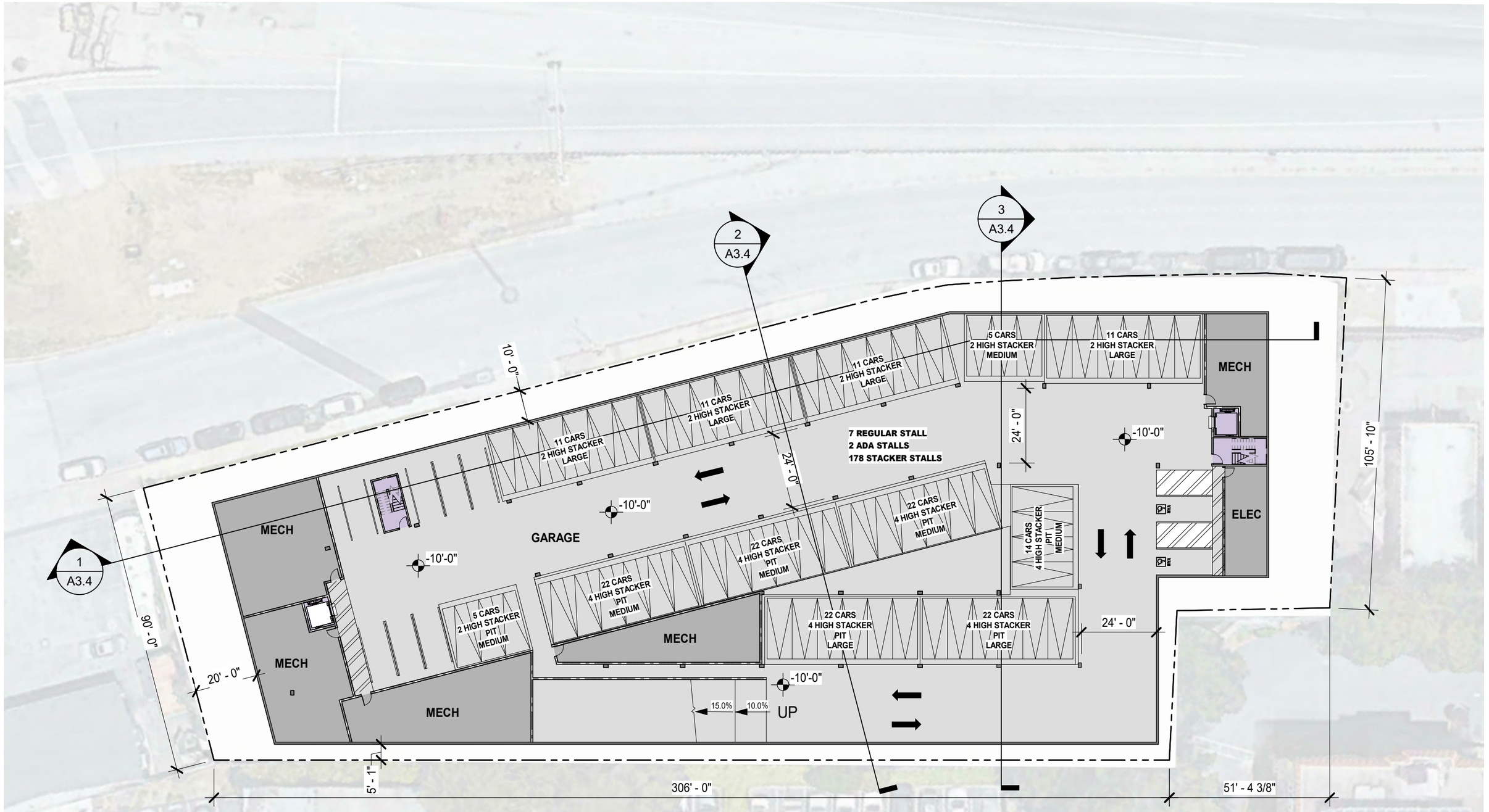
3DE ARCHITECTURE | THE HANOVER COMPANY | BKF ENGINEERS / SURVEYORS / PLANNERS

SCALE: 1" = 40'-0"

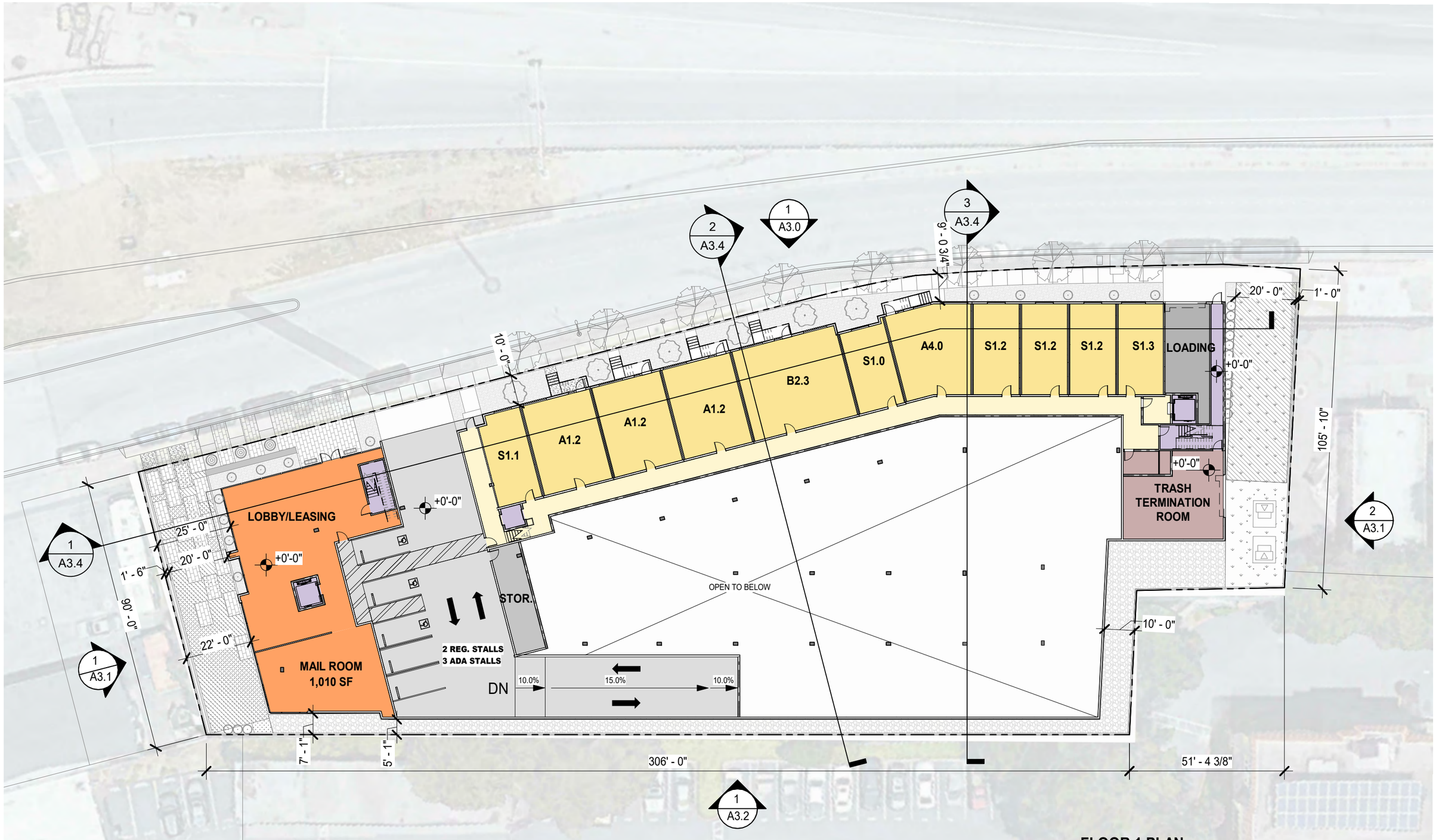
0' 20' 40' 80'

TRUE NORTH | PROJECT NORTH

1095 ROLLINS ROAD, BURLINGAME | 09/14/18 | A1.0



BASEMENT PLAN



FLOOR 1 PLAN

3DE ARCHITECTURE | THE HANOVER COMPANY | BKF ENGINEERS / SURVEYORS / PLANNERS

SCALE: 1" = 30'- 0"

0' 15' 30' 60'

TRUE NORTH | PROJECT NORTH

1095 ROLLINS ROAD, BURLINGAME | 09/14/18 | A2.1

FLOOR 2 PLAN

SCALE: 1" = 30'- 0"

0' 15' 30' 60'

TRUE NORTH / PROJECT NORTH

1095 ROLLINS ROAD, BURLINGAME | 9/14/18 | A2.2

3DE ARCHITECTURE | THE HANOVER COMPANY | BKF ENGINEERS / SURVEYORS / PLANNERS

FLOOR 3 - 5 PLAN

3DE ARCHITECTURE | THE HANOVER COMPANY | BKF ENGINEERS / SURVEYORS / PLANNERS

SCALE: 1" = 30'- 0"

0' 15' 30' 60'

TRUE NORTH | PROJECT NORTH

1095 ROLLINS ROAD, BURLINGAME | 9/14/18 | A2.3

FLOOR 6 PLAN

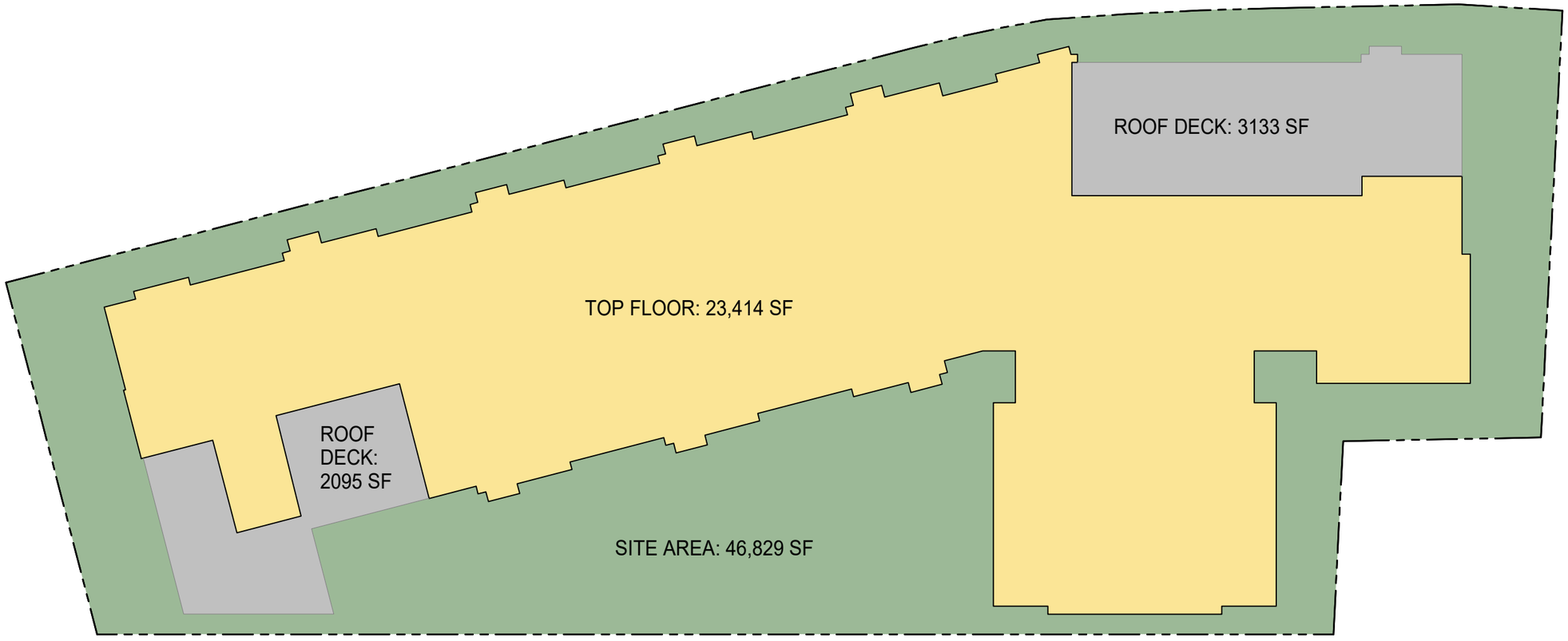
SCALE: 1" = 30'- 0"

0' 15' 30' 60'

TRUE NORTH PROJECT NORTH

BDE ARCHITECTURE | THE HANOVER COMPANY | BKF ENGINEERS · SURVEYORS · PLANNERS

1095 ROLLINS ROAD, BURLINGAME | 08/20/18 | A2.4



LOT COVERAGE

SITE AREA = Area within Property Line	46,829 SF
BUILDING FOOTPRINT = Top Floor + Roof Decks (23,414 SF + 3,133 SF + 2,095 SF)	28,642 SF
50% OF SITE AREA = (46,827 SF/2)	23,414 SF
TOP FLOOR = Excludes Roof Deck	23,414 SF

LOT COVERAGE

Attachment 2

Noise Measurement Data

Noise Measurement 1

Data Logger 2		
Duration (seconds)		1
Weighting	A	
Response	FAST	
Range	40-100	
L05		71.2
L10		69.8
L50		66.2
L90		64.3
L95		63.8
Lmax		86.2
Time		8/14/2019 10:50
SEL		97.5
Leq		68

Leq (Manual) **68.02607**

No.s	Date Time	dB	Sound Energy
1	8/14/2019 10:35	65.8	3801893.963
2	8/14/2019 10:35	66.4	4365158.322
3	8/14/2019 10:36	66.4	4365158.322
4	8/14/2019 10:36	66	3981071.706
5	8/14/2019 10:36	65.6	3630780.548
6	8/14/2019 10:36	66.7	4677351.413
7	8/14/2019 10:36	64.9	3090295.433
8	8/14/2019 10:36	64.5	2818382.931
9	8/14/2019 10:36	64.6	2884031.503
10	8/14/2019 10:36	64.8	3019951.72
11	8/14/2019 10:36	64.7	2951209.227
12	8/14/2019 10:36	65.2	3311311.215
13	8/14/2019 10:36	64.7	2951209.227
14	8/14/2019 10:36	64.4	2754228.703
15	8/14/2019 10:36	64.6	2884031.503
16	8/14/2019 10:36	65.8	3801893.963
17	8/14/2019 10:36	67.1	5128613.84
18	8/14/2019 10:36	69.9	9772372.21
19	8/14/2019 10:36	73.2	20892961.31
20	8/14/2019 10:36	71.1	12882495.52
21	8/14/2019 10:36	66.5	4466835.922
22	8/14/2019 10:36	67.7	5888436.554
23	8/14/2019 10:36	67.4	5495408.739
24	8/14/2019 10:36	71.2	13182567.39
25	8/14/2019 10:36	67.1	5128613.84
26	8/14/2019 10:36	67.4	5495408.739
27	8/14/2019 10:36	69.8	9549925.86

28	8/14/2019 10:36	71.8	15135612.48
29	8/14/2019 10:36	67	5011872.336
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32	8/14/2019 10:36	65.3	3388441.561
33	8/14/2019 10:36	65.4	3467368.505
34	8/14/2019 10:36	65.3	3388441.561
35	8/14/2019 10:36	65.1	3235936.569
36	8/14/2019 10:36	66.6	4570881.896
37	8/14/2019 10:36	67.4	5495408.739
38	8/14/2019 10:36	66.6	4570881.896
39	8/14/2019 10:36	67	5011872.336
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41	8/14/2019 10:36	68.1	6456542.29
42	8/14/2019 10:36	66.7	4677351.413
43	8/14/2019 10:36	65.6	3630780.548
44	8/14/2019 10:36	65.6	3630780.548
45	8/14/2019 10:36	66.3	4265795.188
46	8/14/2019 10:36	67.4	5495408.739
47	8/14/2019 10:36	66.9	4897788.194
48	8/14/2019 10:36	65.5	3548133.892
49	8/14/2019 10:36	64.3	2691534.804
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51	8/14/2019 10:36	65.5	3548133.892
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78	8/14/2019 10:37	65.6	3630780.548
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165	8/14/2019 10:38	67.5	5623413.252
166	8/14/2019 10:38	68.4	6918309.709
167	8/14/2019 10:38	68.3	6760829.754
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169	8/14/2019 10:38	71.2	13182567.39
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187	8/14/2019 10:39	66.2	4168693.835
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533	8/14/2019 10:44	66.4	4365158.322
534	8/14/2019 10:44	66	3981071.706
535	8/14/2019 10:44	66.9	4897788.194
536	8/14/2019 10:44	66.5	4466835.922
537	8/14/2019 10:44	65.6	3630780.548
538	8/14/2019 10:44	66.7	4677351.413
539	8/14/2019 10:44	65.4	3467368.505
540	8/14/2019 10:44	63.7	2344228.815
541	8/14/2019 10:44	64.2	2630267.992
542	8/14/2019 10:44	64.8	3019951.72
543	8/14/2019 10:45	62.7	1862087.137
544	8/14/2019 10:45	64.3	2691534.804

545	8/14/2019 10:45	66	3981071.706
546	8/14/2019 10:45	65.3	3388441.561
547	8/14/2019 10:45	68.3	6760829.754
548	8/14/2019 10:45	68.6	7244359.601
549	8/14/2019 10:45	69.2	8317637.711
550	8/14/2019 10:45	69	7943282.347
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552	8/14/2019 10:45	73.7	23442288.15
553	8/14/2019 10:45	76.6	45708818.96
554	8/14/2019 10:45	77.4	54954087.39
555	8/14/2019 10:45	74.9	30902954.33
556	8/14/2019 10:45	71.2	13182567.39
557	8/14/2019 10:45	69.5	8912509.381
558	8/14/2019 10:45	67	5011872.336
559	8/14/2019 10:45	65.4	3467368.505
560	8/14/2019 10:45	64.7	2951209.227
561	8/14/2019 10:45	65.4	3467368.505
562	8/14/2019 10:45	65.6	3630780.548
563	8/14/2019 10:45	64.5	2818382.931
564	8/14/2019 10:45	64.7	2951209.227
565	8/14/2019 10:45	64.1	2570395.783
566	8/14/2019 10:45	64.6	2884031.503
567	8/14/2019 10:45	64.8	3019951.72
568	8/14/2019 10:45	67.1	5128613.84
569	8/14/2019 10:45	68.7	7413102.413
570	8/14/2019 10:45	69.5	8912509.381
571	8/14/2019 10:45	67.1	5128613.84
572	8/14/2019 10:45	65.9	3890451.45
573	8/14/2019 10:45	64.3	2691534.804
574	8/14/2019 10:45	63.5	2238721.139
575	8/14/2019 10:45	65.8	3801893.963
576	8/14/2019 10:45	66.8	4786300.923
577	8/14/2019 10:45	66.3	4265795.188
578	8/14/2019 10:45	67.1	5128613.84
579	8/14/2019 10:45	70.9	12302687.71
580	8/14/2019 10:45	68	6309573.445
581	8/14/2019 10:45	66	3981071.706
582	8/14/2019 10:45	66	3981071.706
583	8/14/2019 10:45	66.4	4365158.322
584	8/14/2019 10:45	66.7	4677351.413
585	8/14/2019 10:45	64.4	2754228.703
586	8/14/2019 10:45	63.9	2454708.916
587	8/14/2019 10:45	64.4	2754228.703
588	8/14/2019 10:45	65	3162277.66
589	8/14/2019 10:45	67.1	5128613.84
590	8/14/2019 10:45	68.1	6456542.29
591	8/14/2019 10:45	69.2	8317637.711

592	8/14/2019 10:45	69.1	8128305.162
593	8/14/2019 10:45	66.7	4677351.413
594	8/14/2019 10:45	66	3981071.706
595	8/14/2019 10:45	64.3	2691534.804
596	8/14/2019 10:45	64.9	3090295.433
597	8/14/2019 10:45	67.5	5623413.252
598	8/14/2019 10:45	69	7943282.347
599	8/14/2019 10:45	66.1	4073802.778
600	8/14/2019 10:45	67	5011872.336
601	8/14/2019 10:45	66.5	4466835.922
602	8/14/2019 10:45	65.2	3311311.215
603	8/14/2019 10:46	65.5	3548133.892
604	8/14/2019 10:46	64.3	2691534.804
605	8/14/2019 10:46	64.4	2754228.703
606	8/14/2019 10:46	67.7	5888436.554
607	8/14/2019 10:46	65.1	3235936.569
608	8/14/2019 10:46	65	3162277.66
609	8/14/2019 10:46	68.4	6918309.709
610	8/14/2019 10:46	66.8	4786300.923
611	8/14/2019 10:46	66.8	4786300.923
612	8/14/2019 10:46	67.4	5495408.739
613	8/14/2019 10:46	67.6	5754399.373
614	8/14/2019 10:46	64.9	3090295.433
615	8/14/2019 10:46	62.9	1949844.6
616	8/14/2019 10:46	64.4	2754228.703
617	8/14/2019 10:46	64.9	3090295.433
618	8/14/2019 10:46	63.8	2398832.919
619	8/14/2019 10:46	64	2511886.432
620	8/14/2019 10:46	65.3	3388441.561
621	8/14/2019 10:46	67.3	5370317.964
622	8/14/2019 10:46	65.2	3311311.215
623	8/14/2019 10:46	64.7	2951209.227
624	8/14/2019 10:46	65	3162277.66
625	8/14/2019 10:46	66.1	4073802.778
626	8/14/2019 10:46	66.4	4365158.322
627	8/14/2019 10:46	66.3	4265795.188
628	8/14/2019 10:46	66	3981071.706
629	8/14/2019 10:46	66	3981071.706
630	8/14/2019 10:46	65.6	3630780.548
631	8/14/2019 10:46	65.7	3715352.291
632	8/14/2019 10:46	69.1	8128305.162
633	8/14/2019 10:46	69.8	9549925.86
634	8/14/2019 10:46	66.6	4570881.896
635	8/14/2019 10:46	64.9	3090295.433
636	8/14/2019 10:46	65.3	3388441.561
637	8/14/2019 10:46	64.6	2884031.503
638	8/14/2019 10:46	63.6	2290867.653

639	8/14/2019 10:46	62.8	1905460.718
640	8/14/2019 10:46	63.3	2137962.09
641	8/14/2019 10:46	64.5	2818382.931
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643	8/14/2019 10:46	66.8	4786300.923
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645	8/14/2019 10:46	65.6	3630780.548
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648	8/14/2019 10:46	64	2511886.432
649	8/14/2019 10:46	63.3	2137962.09
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652	8/14/2019 10:46	64.4	2754228.703
653	8/14/2019 10:46	65.4	3467368.505
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661	8/14/2019 10:46	66.9	4897788.194
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668	8/14/2019 10:47	65.5	3548133.892
669	8/14/2019 10:47	68.3	6760829.754
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673	8/14/2019 10:47	68	6309573.445
674	8/14/2019 10:47	67.4	5495408.739
675	8/14/2019 10:47	67.8	6025595.861
676	8/14/2019 10:47	66.1	4073802.778
677	8/14/2019 10:47	66.3	4265795.188
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709	8/14/2019 10:47	66.4	4365158.322
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715	8/14/2019 10:47	64.2	2630267.992
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718	8/14/2019 10:47	63.3	2137962.09
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737	8/14/2019 10:48	63.9	2454708.916
738	8/14/2019 10:48	64.1	2570395.783
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741	8/14/2019 10:48	65.8	3801893.963
742	8/14/2019 10:48	64.4	2754228.703
743	8/14/2019 10:48	64.6	2884031.503
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747	8/14/2019 10:48	66	3981071.706
748	8/14/2019 10:48	70.1	10232929.92
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756	8/14/2019 10:48	68.8	7585775.75
757	8/14/2019 10:48	72	15848931.92
758	8/14/2019 10:48	67.6	5754399.373
759	8/14/2019 10:48	67.2	5248074.602
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763	8/14/2019 10:48	66.5	4466835.922
764	8/14/2019 10:48	65.6	3630780.548
765	8/14/2019 10:48	66.4	4365158.322
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776	8/14/2019 10:48	71.3	13489628.83
777	8/14/2019 10:48	70.5	11220184.54
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783	8/14/2019 10:49	69.7	9332543.008
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787	8/14/2019 10:49	67.2	5248074.602
788	8/14/2019 10:49	67.1	5128613.84
789	8/14/2019 10:49	66.8	4786300.923
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792	8/14/2019 10:49	64.1	2570395.783
793	8/14/2019 10:49	66.1	4073802.778
794	8/14/2019 10:49	67.6	5754399.373
795	8/14/2019 10:49	66.3	4265795.188
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814	8/14/2019 10:49	70.3	10715193.05
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816	8/14/2019 10:49	65.3	3388441.561
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818	8/14/2019 10:49	68.1	6456542.29
819	8/14/2019 10:49	67.7	5888436.554
820	8/14/2019 10:49	66.7	4677351.413
821	8/14/2019 10:49	69.8	9549925.86
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823	8/14/2019 10:49	66.3	4265795.188
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834	8/14/2019 10:49	65.6	3630780.548
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837	8/14/2019 10:49	65.5	3548133.892
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839	8/14/2019 10:49	64.1	2570395.783
840	8/14/2019 10:49	64.1	2570395.783
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842	8/14/2019 10:49	64.7	2951209.227
843	8/14/2019 10:50	65.3	3388441.561
844	8/14/2019 10:50	64.8	3019951.72
845	8/14/2019 10:50	64.1	2570395.783
846	8/14/2019 10:50	62.3	1698243.652
847	8/14/2019 10:50	62.5	1778279.41
848	8/14/2019 10:50	63.6	2290867.653
849	8/14/2019 10:50	63.2	2089296.131
850	8/14/2019 10:50	63.7	2344228.815
851	8/14/2019 10:50	64.5	2818382.931
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853	8/14/2019 10:50	67.1	5128613.84
854	8/14/2019 10:50	68.1	6456542.29
855	8/14/2019 10:50	66.3	4265795.188
856	8/14/2019 10:50	66.9	4897788.194
857	8/14/2019 10:50	67	5011872.336
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861	8/14/2019 10:50	71.5	14125375.45
862	8/14/2019 10:50	68.6	7244359.601
863	8/14/2019 10:50	66.9	4897788.194
864	8/14/2019 10:50	68.4	6918309.709
865	8/14/2019 10:50	68.3	6760829.754
866	8/14/2019 10:50	67.2	5248074.602
867	8/14/2019 10:50	72	15848931.92
868	8/14/2019 10:50	73.7	23442288.15
869	8/14/2019 10:50	68.9	7762471.166
870	8/14/2019 10:50	69.5	8912509.381
871	8/14/2019 10:50	72.7	18620871.37
872	8/14/2019 10:50	83.9	245470891.6
873	8/14/2019 10:50	76.4	43651583.22

874	8/14/2019 10:50	68.8	7585775.75
875	8/14/2019 10:50	69.8	9549925.86
876	8/14/2019 10:50	69.7	9332543.008
877	8/14/2019 10:50	66.9	4897788.194
878	8/14/2019 10:50	67	5011872.336
879	8/14/2019 10:50	68.8	7585775.75
880	8/14/2019 10:50	69	7943282.347
881	8/14/2019 10:50	66.2	4168693.835
882	8/14/2019 10:50	65.2	3311311.215
883	8/14/2019 10:50	64.5	2818382.931
884	8/14/2019 10:50	66.7	4677351.413
885	8/14/2019 10:50	69.9	9772372.21
886	8/14/2019 10:50	64.8	3019951.72
887	8/14/2019 10:50	65.3	3388441.561
888	8/14/2019 10:50	66.4	4365158.322
889	8/14/2019 10:50	67.1	5128613.84
890	8/14/2019 10:50	65.6	3630780.548
891	8/14/2019 10:50	67.6	5754399.373
892	8/14/2019 10:50	68.4	6918309.709
893	8/14/2019 10:50	67.3	5370317.964
894	8/14/2019 10:50	65.6	3630780.548
895	8/14/2019 10:50	65.5	3548133.892
896	8/14/2019 10:50	66	3981071.706
897	8/14/2019 10:50	66.5	4466835.922
898	8/14/2019 10:50	65.2	3311311.215
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900	8/14/2019 10:50	65.9	3890451.45

Noise Measurement 2

Data Logger 2		
Duration (seconds)		1
Weighting	A	
Response	FAST	
Range	40-100	
L05		66.3
L10		64.5
L50		59.3
L90		56.5
L95		55.7
Lmax		81.0
Time		8/14/2019 11:04
SEL		91.9
Leq		62.3

Leq (Manual) **62.34281**

No.s	Date Time	dB	Sound Energy
1	8/14/2019 11:02	57.7	588843.6554
2	8/14/2019 11:02	58.4	691830.9709
3	8/14/2019 11:02	57.4	549540.8739
4	8/14/2019 11:02	57.4	549540.8739
5	8/14/2019 11:02	57.4	549540.8739
6	8/14/2019 11:02	56.9	489778.8194
7	8/14/2019 11:03	56.7	467735.1413
8	8/14/2019 11:03	57.2	524807.4602
9	8/14/2019 11:03	57.4	549540.8739
10	8/14/2019 11:03	56.8	478630.0923
11	8/14/2019 11:03	57.4	549540.8739
12	8/14/2019 11:03	58	630957.3445
13	8/14/2019 11:03	58.1	645654.229
14	8/14/2019 11:03	57.1	512861.384
15	8/14/2019 11:03	57.8	602559.5861
16	8/14/2019 11:03	60	1000000
17	8/14/2019 11:03	63.1	2041737.945
18	8/14/2019 11:03	64.3	2691534.804
19	8/14/2019 11:03	67.3	5370317.964
20	8/14/2019 11:03	64.4	2754228.703
21	8/14/2019 11:03	64.7	2951209.227
22	8/14/2019 11:03	66.6	4570881.896
23	8/14/2019 11:03	67.4	5495408.739
24	8/14/2019 11:03	68	6309573.445
25	8/14/2019 11:03	73.8	23988329.19
26	8/14/2019 11:03	72.9	19498446
27	8/14/2019 11:03	66.6	4570881.896

28	8/14/2019 11:03	64.9	3090295.433
29	8/14/2019 11:03	64.4	2754228.703
30	8/14/2019 11:03	63.2	2089296.131
31	8/14/2019 11:03	61.8	1513561.248
32	8/14/2019 11:03	60.7	1174897.555
33	8/14/2019 11:03	59.5	891250.9381
34	8/14/2019 11:03	59.9	977237.221
35	8/14/2019 11:03	59.1	812830.5162
36	8/14/2019 11:03	58.8	758577.575
37	8/14/2019 11:03	57.8	602559.5861
38	8/14/2019 11:03	57.8	602559.5861
39	8/14/2019 11:03	57.5	562341.3252
40	8/14/2019 11:03	57.9	616595.0019
41	8/14/2019 11:03	58.3	676082.9754
42	8/14/2019 11:03	58.1	645654.229
43	8/14/2019 11:03	58.4	691830.9709
44	8/14/2019 11:03	58.5	707945.7844
45	8/14/2019 11:03	59.3	851138.0382
46	8/14/2019 11:03	58.1	645654.229
47	8/14/2019 11:03	57.9	616595.0019
48	8/14/2019 11:03	57.8	602559.5861
49	8/14/2019 11:03	58.3	676082.9754
50	8/14/2019 11:03	57.3	537031.7964
51	8/14/2019 11:03	57.6	575439.9373
52	8/14/2019 11:03	57.6	575439.9373
53	8/14/2019 11:03	57.9	616595.0019
54	8/14/2019 11:03	58.4	691830.9709
55	8/14/2019 11:03	58.8	758577.575
56	8/14/2019 11:03	59.9	977237.221
57	8/14/2019 11:03	61.6	1445439.771
58	8/14/2019 11:03	59.7	933254.3008
59	8/14/2019 11:03	59.8	954992.586
60	8/14/2019 11:03	59.6	912010.8394
61	8/14/2019 11:03	58.2	660693.448
62	8/14/2019 11:03	59.1	812830.5162
63	8/14/2019 11:03	58.8	758577.575
64	8/14/2019 11:03	59.2	831763.7711
65	8/14/2019 11:03	59.3	851138.0382
66	8/14/2019 11:03	57.8	602559.5861
67	8/14/2019 11:04	57.9	616595.0019
68	8/14/2019 11:04	57.6	575439.9373
69	8/14/2019 11:04	58	630957.3445
70	8/14/2019 11:04	58.1	645654.229
71	8/14/2019 11:04	58.1	645654.229
72	8/14/2019 11:04	58.2	660693.448
73	8/14/2019 11:04	58.1	645654.229
74	8/14/2019 11:04	57.5	562341.3252

75	8/14/2019 11:04	57.6	575439.9373
76	8/14/2019 11:04	57.8	602559.5861
77	8/14/2019 11:04	57.7	588843.6554
78	8/14/2019 11:04	58.1	645654.229
79	8/14/2019 11:04	59.9	977237.221
80	8/14/2019 11:04	60.8	1202264.435
81	8/14/2019 11:04	63	1995262.315
82	8/14/2019 11:04	61.4	1380384.265
83	8/14/2019 11:04	61.3	1348962.883
84	8/14/2019 11:04	63.4	2187761.624
85	8/14/2019 11:04	66.6	4570881.896
86	8/14/2019 11:04	65.4	3467368.505
87	8/14/2019 11:04	67.4	5495408.739
88	8/14/2019 11:04	69.4	8709635.9
89	8/14/2019 11:04	70	10000000
90	8/14/2019 11:04	70.1	10232929.92
91	8/14/2019 11:04	69.6	9120108.394
92	8/14/2019 11:04	73.2	20892961.31
93	8/14/2019 11:04	79.4	87096359
94	8/14/2019 11:04	70.3	10715193.05
95	8/14/2019 11:04	70.4	10964781.96
96	8/14/2019 11:04	69.5	8912509.381
97	8/14/2019 11:04	64.7	2951209.227
98	8/14/2019 11:04	68.9	7762471.166
99	8/14/2019 11:04	63.7	2344228.815
100	8/14/2019 11:04	64.1	2570395.783
101	8/14/2019 11:04	68.6	7244359.601
102	8/14/2019 11:04	69.3	8511380.382
103	8/14/2019 11:04	64.7	2951209.227
104	8/14/2019 11:04	66.3	4265795.188
105	8/14/2019 11:04	66.2	4168693.835
106	8/14/2019 11:04	64.7	2951209.227
107	8/14/2019 11:04	62.4	1737800.829
108	8/14/2019 11:04	64.5	2818382.931
109	8/14/2019 11:04	64.6	2884031.503
110	8/14/2019 11:04	66	3981071.706
111	8/14/2019 11:04	63.1	2041737.945
112	8/14/2019 11:04	64.3	2691534.804
113	8/14/2019 11:04	61.9	1548816.619
114	8/14/2019 11:04	61.6	1445439.771
115	8/14/2019 11:04	60.2	1047128.548
116	8/14/2019 11:04	60.2	1047128.548
117	8/14/2019 11:04	59.1	812830.5162
118	8/14/2019 11:04	59.3	851138.0382
119	8/14/2019 11:04	59.3	851138.0382
120	8/14/2019 11:04	58.7	741310.2413
121	8/14/2019 11:04	59.3	851138.0382

122	8/14/2019 11:04	60.8	1202264.435
123	8/14/2019 11:04	61.9	1548816.619
124	8/14/2019 11:04	66.1	4073802.778
125	8/14/2019 11:04	60.8	1202264.435
126	8/14/2019 11:04	59.3	851138.0382
127	8/14/2019 11:05	58.7	741310.2413
128	8/14/2019 11:05	58.3	676082.9754
129	8/14/2019 11:05	58.2	660693.448
130	8/14/2019 11:05	58.8	758577.575
131	8/14/2019 11:05	58.3	676082.9754
132	8/14/2019 11:05	58.4	691830.9709
133	8/14/2019 11:05	58.5	707945.7844
134	8/14/2019 11:05	59.7	933254.3008
135	8/14/2019 11:05	59.7	933254.3008
136	8/14/2019 11:05	58.9	776247.1166
137	8/14/2019 11:05	58.7	741310.2413
138	8/14/2019 11:05	61	1258925.412
139	8/14/2019 11:05	61.6	1445439.771
140	8/14/2019 11:05	60.8	1202264.435
141	8/14/2019 11:05	63.7	2344228.815
142	8/14/2019 11:05	66.1	4073802.778
143	8/14/2019 11:05	63.5	2238721.139
144	8/14/2019 11:05	63.8	2398832.919
145	8/14/2019 11:05	60.3	1071519.305
146	8/14/2019 11:05	61	1258925.412
147	8/14/2019 11:05	61.9	1548816.619
148	8/14/2019 11:05	64.5	2818382.931
149	8/14/2019 11:05	60.5	1122018.454
150	8/14/2019 11:05	58.9	776247.1166
151	8/14/2019 11:05	59.3	851138.0382
152	8/14/2019 11:05	59.7	933254.3008
153	8/14/2019 11:05	59.2	831763.7711
154	8/14/2019 11:05	58.5	707945.7844
155	8/14/2019 11:05	58.2	660693.448
156	8/14/2019 11:05	57.9	616595.0019
157	8/14/2019 11:05	58.6	724435.9601
158	8/14/2019 11:05	57.9	616595.0019
159	8/14/2019 11:05	58	630957.3445
160	8/14/2019 11:05	57.7	588843.6554
161	8/14/2019 11:05	57.8	602559.5861
162	8/14/2019 11:05	58.2	660693.448
163	8/14/2019 11:05	58.4	691830.9709
164	8/14/2019 11:05	60	1000000
165	8/14/2019 11:05	61.4	1380384.265
166	8/14/2019 11:05	62.9	1949844.6
167	8/14/2019 11:05	66.4	4365158.322
168	8/14/2019 11:05	70	10000000

169	8/14/2019 11:05	62.2	1659586.907
170	8/14/2019 11:05	60.6	1148153.621
171	8/14/2019 11:05	58.8	758577.575
172	8/14/2019 11:05	58.5	707945.7844
173	8/14/2019 11:05	59	794328.2347
174	8/14/2019 11:05	59.3	851138.0382
175	8/14/2019 11:05	59	794328.2347
176	8/14/2019 11:05	59.7	933254.3008
177	8/14/2019 11:05	60.5	1122018.454
178	8/14/2019 11:05	61.8	1513561.248
179	8/14/2019 11:05	65.7	3715352.291
180	8/14/2019 11:05	65.4	3467368.505
181	8/14/2019 11:05	65.6	3630780.548
182	8/14/2019 11:05	63.3	2137962.09
183	8/14/2019 11:05	63.6	2290867.653
184	8/14/2019 11:05	65.5	3548133.892
185	8/14/2019 11:05	63.4	2187761.624
186	8/14/2019 11:05	60.2	1047128.548
187	8/14/2019 11:06	59.6	912010.8394
188	8/14/2019 11:06	59.6	912010.8394
189	8/14/2019 11:06	60.1	1023292.992
190	8/14/2019 11:06	59.4	870963.59
191	8/14/2019 11:06	60.1	1023292.992
192	8/14/2019 11:06	59	794328.2347
193	8/14/2019 11:06	60.7	1174897.555
194	8/14/2019 11:06	58.9	776247.1166
195	8/14/2019 11:06	58.5	707945.7844
196	8/14/2019 11:06	58.8	758577.575
197	8/14/2019 11:06	58.8	758577.575
198	8/14/2019 11:06	59.2	831763.7711
199	8/14/2019 11:06	59.1	812830.5162
200	8/14/2019 11:06	60.9	1230268.771
201	8/14/2019 11:06	62.5	1778279.41
202	8/14/2019 11:06	63.1	2041737.945
203	8/14/2019 11:06	68.1	6456542.29
204	8/14/2019 11:06	63.2	2089296.131
205	8/14/2019 11:06	61.2	1318256.739
206	8/14/2019 11:06	61	1258925.412
207	8/14/2019 11:06	60.3	1071519.305
208	8/14/2019 11:06	60.2	1047128.548
209	8/14/2019 11:06	59.2	831763.7711
210	8/14/2019 11:06	59.4	870963.59
211	8/14/2019 11:06	60.2	1047128.548
212	8/14/2019 11:06	60.5	1122018.454
213	8/14/2019 11:06	60	1000000
214	8/14/2019 11:06	60.3	1071519.305
215	8/14/2019 11:06	59.9	977237.221

216	8/14/2019 11:06	59.1	812830.5162
217	8/14/2019 11:06	60.2	1047128.548
218	8/14/2019 11:06	60.7	1174897.555
219	8/14/2019 11:06	59.7	933254.3008
220	8/14/2019 11:06	59.7	933254.3008
221	8/14/2019 11:06	58.9	776247.1166
222	8/14/2019 11:06	58.6	724435.9601
223	8/14/2019 11:06	59.1	812830.5162
224	8/14/2019 11:06	59	794328.2347
225	8/14/2019 11:06	58.7	741310.2413
226	8/14/2019 11:06	59.2	831763.7711
227	8/14/2019 11:06	60	1000000
228	8/14/2019 11:06	60.8	1202264.435
229	8/14/2019 11:06	64.4	2754228.703
230	8/14/2019 11:06	61	1258925.412
231	8/14/2019 11:06	66.8	4786300.923
232	8/14/2019 11:06	58.6	724435.9601
233	8/14/2019 11:06	58.6	724435.9601
234	8/14/2019 11:06	62	1584893.192
235	8/14/2019 11:06	58.7	741310.2413
236	8/14/2019 11:06	59.1	812830.5162
237	8/14/2019 11:06	59.6	912010.8394
238	8/14/2019 11:06	62	1584893.192
239	8/14/2019 11:06	66.2	4168693.835
240	8/14/2019 11:06	63.7	2344228.815
241	8/14/2019 11:06	61.6	1445439.771
242	8/14/2019 11:06	63.7	2344228.815
243	8/14/2019 11:06	62	1584893.192
244	8/14/2019 11:06	59.3	851138.0382
245	8/14/2019 11:06	59.9	977237.221
246	8/14/2019 11:06	60.6	1148153.621
247	8/14/2019 11:07	59.9	977237.221
248	8/14/2019 11:07	59.2	831763.7711
249	8/14/2019 11:07	60.1	1023292.992
250	8/14/2019 11:07	64	2511886.432
251	8/14/2019 11:07	70.8	12022644.35
252	8/14/2019 11:07	70.2	10471285.48
253	8/14/2019 11:07	64.5	2818382.931
254	8/14/2019 11:07	63.5	2238721.139
255	8/14/2019 11:07	62.7	1862087.137
256	8/14/2019 11:07	61.3	1348962.883
257	8/14/2019 11:07	60.9	1230268.771
258	8/14/2019 11:07	60.8	1202264.435
259	8/14/2019 11:07	60.2	1047128.548
260	8/14/2019 11:07	60.1	1023292.992
261	8/14/2019 11:07	62.7	1862087.137
262	8/14/2019 11:07	62	1584893.192

263	8/14/2019 11:07	59.5	891250.9381
264	8/14/2019 11:07	61.1	1288249.552
265	8/14/2019 11:07	61.1	1288249.552
266	8/14/2019 11:07	62.8	1905460.718
267	8/14/2019 11:07	65.8	3801893.963
268	8/14/2019 11:07	66.5	4466835.922
269	8/14/2019 11:07	62.3	1698243.652
270	8/14/2019 11:07	65	3162277.66
271	8/14/2019 11:07	64.1	2570395.783
272	8/14/2019 11:07	62.5	1778279.41
273	8/14/2019 11:07	63.1	2041737.945
274	8/14/2019 11:07	61.8	1513561.248
275	8/14/2019 11:07	60.6	1148153.621
276	8/14/2019 11:07	61.3	1348962.883
277	8/14/2019 11:07	62.5	1778279.41
278	8/14/2019 11:07	63.3	2137962.09
279	8/14/2019 11:07	62.9	1949844.6
280	8/14/2019 11:07	60.4	1096478.196
281	8/14/2019 11:07	60.1	1023292.992
282	8/14/2019 11:07	59.7	933254.3008
283	8/14/2019 11:07	58.7	741310.2413
284	8/14/2019 11:07	58.2	660693.448
285	8/14/2019 11:07	58.9	776247.1166
286	8/14/2019 11:07	60.5	1122018.454
287	8/14/2019 11:07	63.8	2398832.919
288	8/14/2019 11:07	64.5	2818382.931
289	8/14/2019 11:07	65.2	3311311.215
290	8/14/2019 11:07	69.2	8317637.711
291	8/14/2019 11:07	60.7	1174897.555
292	8/14/2019 11:07	59.9	977237.221
293	8/14/2019 11:07	60.4	1096478.196
294	8/14/2019 11:07	60.2	1047128.548
295	8/14/2019 11:07	59.5	891250.9381
296	8/14/2019 11:07	61.2	1318256.739
297	8/14/2019 11:07	61.3	1348962.883
298	8/14/2019 11:07	59.3	851138.0382
299	8/14/2019 11:07	60.6	1148153.621
300	8/14/2019 11:07	59.1	812830.5162
301	8/14/2019 11:07	59.3	851138.0382
302	8/14/2019 11:07	60.5	1122018.454
303	8/14/2019 11:07	59.3	851138.0382
304	8/14/2019 11:07	58.8	758577.575
305	8/14/2019 11:07	59	794328.2347
306	8/14/2019 11:07	58.4	691830.9709
307	8/14/2019 11:08	58.7	741310.2413
308	8/14/2019 11:08	59.2	831763.7711
309	8/14/2019 11:08	59.8	954992.586

310	8/14/2019 11:08	60.7	1174897.555
311	8/14/2019 11:08	59.8	954992.586
312	8/14/2019 11:08	60.9	1230268.771
313	8/14/2019 11:08	60.2	1047128.548
314	8/14/2019 11:08	59.3	851138.0382
315	8/14/2019 11:08	58.8	758577.575
316	8/14/2019 11:08	61.1	1288249.552
317	8/14/2019 11:08	60.5	1122018.454
318	8/14/2019 11:08	60.3	1071519.305
319	8/14/2019 11:08	60.9	1230268.771
320	8/14/2019 11:08	62.5	1778279.41
321	8/14/2019 11:08	63.9	2454708.916
322	8/14/2019 11:08	60.8	1202264.435
323	8/14/2019 11:08	60.7	1174897.555
324	8/14/2019 11:08	61	1258925.412
325	8/14/2019 11:08	63	1995262.315
326	8/14/2019 11:08	65	3162277.66
327	8/14/2019 11:08	59.6	912010.8394
328	8/14/2019 11:08	58	630957.3445
329	8/14/2019 11:08	58.3	676082.9754
330	8/14/2019 11:08	58.1	645654.229
331	8/14/2019 11:08	58.3	676082.9754
332	8/14/2019 11:08	58.7	741310.2413
333	8/14/2019 11:08	59.2	831763.7711
334	8/14/2019 11:08	59.7	933254.3008
335	8/14/2019 11:08	60.8	1202264.435
336	8/14/2019 11:08	63.2	2089296.131
337	8/14/2019 11:08	65.3	3388441.561
338	8/14/2019 11:08	65.1	3235936.569
339	8/14/2019 11:08	60.4	1096478.196
340	8/14/2019 11:08	59.4	870963.59
341	8/14/2019 11:08	59.3	851138.0382
342	8/14/2019 11:08	59.5	891250.9381
343	8/14/2019 11:08	59.4	870963.59
344	8/14/2019 11:08	60.2	1047128.548
345	8/14/2019 11:08	59.8	954992.586
346	8/14/2019 11:08	59.4	870963.59
347	8/14/2019 11:08	60.4	1096478.196
348	8/14/2019 11:08	60.9	1230268.771
349	8/14/2019 11:08	59.6	912010.8394
350	8/14/2019 11:08	60.2	1047128.548
351	8/14/2019 11:08	60.2	1047128.548
352	8/14/2019 11:08	60.4	1096478.196
353	8/14/2019 11:08	59.7	933254.3008
354	8/14/2019 11:08	60.8	1202264.435
355	8/14/2019 11:08	62	1584893.192
356	8/14/2019 11:08	60.7	1174897.555

357	8/14/2019 11:08	61.9	1548816.619
358	8/14/2019 11:08	61.8	1513561.248
359	8/14/2019 11:08	65.2	3311311.215
360	8/14/2019 11:08	66.9	4897788.194
361	8/14/2019 11:08	62.7	1862087.137
362	8/14/2019 11:08	62	1584893.192
363	8/14/2019 11:08	63.7	2344228.815
364	8/14/2019 11:08	61.4	1380384.265
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729	8/14/2019 11:15	55.7	371535.2291
730	8/14/2019 11:15	56.8	478630.0923
731	8/14/2019 11:15	56.9	489778.8194
732	8/14/2019 11:15	59.4	870963.59

733	8/14/2019 11:15	59.3	851138.0382
734	8/14/2019 11:15	61.9	1548816.619
735	8/14/2019 11:15	65.9	3890451.45
736	8/14/2019 11:15	60.8	1202264.435
737	8/14/2019 11:15	57.2	524807.4602
738	8/14/2019 11:15	56	398107.1706
739	8/14/2019 11:15	56.8	478630.0923
740	8/14/2019 11:15	57.2	524807.4602
741	8/14/2019 11:15	57.1	512861.384
742	8/14/2019 11:15	58.5	707945.7844
743	8/14/2019 11:15	58.3	676082.9754
744	8/14/2019 11:15	56.6	457088.1896
745	8/14/2019 11:15	58.4	691830.9709
746	8/14/2019 11:15	58.2	660693.448
747	8/14/2019 11:15	58.3	676082.9754
748	8/14/2019 11:15	59	794328.2347
749	8/14/2019 11:15	60	1000000
750	8/14/2019 11:15	60.9	1230268.771
751	8/14/2019 11:15	62.1	1621810.097
752	8/14/2019 11:15	63.1	2041737.945
753	8/14/2019 11:15	64.4	2754228.703
754	8/14/2019 11:15	64.7	2951209.227
755	8/14/2019 11:15	66.4	4365158.322
756	8/14/2019 11:15	67.4	5495408.739
757	8/14/2019 11:15	69.5	8912509.381
758	8/14/2019 11:15	72.3	16982436.52
759	8/14/2019 11:15	77.4	54954087.39
760	8/14/2019 11:15	76.8	47863009.23
761	8/14/2019 11:15	70.7	11748975.55
762	8/14/2019 11:15	67.2	5248074.602
763	8/14/2019 11:15	65.4	3467368.505
764	8/14/2019 11:15	63.1	2041737.945
765	8/14/2019 11:15	61	1258925.412
766	8/14/2019 11:15	59.2	831763.7711
767	8/14/2019 11:15	58.1	645654.229
768	8/14/2019 11:15	58.8	758577.575
769	8/14/2019 11:15	58.3	676082.9754
770	8/14/2019 11:15	58.1	645654.229
771	8/14/2019 11:15	58.1	645654.229
772	8/14/2019 11:15	57.6	575439.9373
773	8/14/2019 11:15	58.8	758577.575
774	8/14/2019 11:15	57.6	575439.9373
775	8/14/2019 11:15	57.7	588843.6554
776	8/14/2019 11:15	58.5	707945.7844
777	8/14/2019 11:15	59.3	851138.0382
778	8/14/2019 11:15	64.6	2884031.503
779	8/14/2019 11:15	60.7	1174897.555

780	8/14/2019 11:15	66.4	4365158.322
781	8/14/2019 11:15	61.2	1318256.739
782	8/14/2019 11:15	62.4	1737800.829
783	8/14/2019 11:15	60	1000000
784	8/14/2019 11:15	60.5	1122018.454
785	8/14/2019 11:15	60.4	1096478.196
786	8/14/2019 11:15	59.4	870963.59
787	8/14/2019 11:16	60.2	1047128.548
788	8/14/2019 11:16	61.6	1445439.771
789	8/14/2019 11:16	65.1	3235936.569
790	8/14/2019 11:16	66.4	4365158.322
791	8/14/2019 11:16	65.2	3311311.215
792	8/14/2019 11:16	61.7	1479108.388
793	8/14/2019 11:16	61.8	1513561.248
794	8/14/2019 11:16	61.6	1445439.771
795	8/14/2019 11:16	59.1	812830.5162
796	8/14/2019 11:16	61.2	1318256.739
797	8/14/2019 11:16	66	3981071.706
798	8/14/2019 11:16	60.7	1174897.555
799	8/14/2019 11:16	59.1	812830.5162
800	8/14/2019 11:16	58.8	758577.575
801	8/14/2019 11:16	59.5	891250.9381
802	8/14/2019 11:16	61.3	1348962.883
803	8/14/2019 11:16	58.5	707945.7844
804	8/14/2019 11:16	56.4	436515.8322
805	8/14/2019 11:16	56.5	446683.5922
806	8/14/2019 11:16	56.4	436515.8322
807	8/14/2019 11:16	56.4	436515.8322
808	8/14/2019 11:16	57.2	524807.4602
809	8/14/2019 11:16	56.7	467735.1413
810	8/14/2019 11:16	56.8	478630.0923
811	8/14/2019 11:16	57.6	575439.9373
812	8/14/2019 11:16	57.6	575439.9373
813	8/14/2019 11:16	57.9	616595.0019
814	8/14/2019 11:16	58	630957.3445
815	8/14/2019 11:16	59.2	831763.7711
816	8/14/2019 11:16	58.1	645654.229
817	8/14/2019 11:16	58	630957.3445
818	8/14/2019 11:16	56.4	436515.8322
819	8/14/2019 11:16	56.7	467735.1413
820	8/14/2019 11:16	56.2	416869.3835
821	8/14/2019 11:16	56.9	489778.8194
822	8/14/2019 11:16	63.4	2187761.624
823	8/14/2019 11:16	61.9	1548816.619
824	8/14/2019 11:16	55.3	338844.1561
825	8/14/2019 11:16	55.7	371535.2291
826	8/14/2019 11:16	55.9	389045.145

827	8/14/2019 11:16	56.3	426579.5188
828	8/14/2019 11:16	58.4	691830.9709
829	8/14/2019 11:16	60.9	1230268.771
830	8/14/2019 11:16	59.5	891250.9381
831	8/14/2019 11:16	57.3	537031.7964
832	8/14/2019 11:16	56.4	436515.8322
833	8/14/2019 11:16	55.9	389045.145
834	8/14/2019 11:16	55.6	363078.0548
835	8/14/2019 11:16	55.3	338844.1561
836	8/14/2019 11:16	56.1	407380.2778
837	8/14/2019 11:16	55.2	331131.1215
838	8/14/2019 11:16	55.1	323593.6569
839	8/14/2019 11:16	54.9	309029.5433
840	8/14/2019 11:16	55.4	346736.8505
841	8/14/2019 11:16	56.4	436515.8322
842	8/14/2019 11:16	56.8	478630.0923
843	8/14/2019 11:16	56.5	446683.5922
844	8/14/2019 11:16	56.6	457088.1896
845	8/14/2019 11:16	57.3	537031.7964
846	8/14/2019 11:16	56.1	407380.2778
847	8/14/2019 11:17	56.8	478630.0923
848	8/14/2019 11:17	57.3	537031.7964
849	8/14/2019 11:17	57.1	512861.384
850	8/14/2019 11:17	57.9	616595.0019
851	8/14/2019 11:17	57.6	575439.9373
852	8/14/2019 11:17	57.7	588843.6554
853	8/14/2019 11:17	57.6	575439.9373
854	8/14/2019 11:17	57.8	602559.5861
855	8/14/2019 11:17	57	501187.2336
856	8/14/2019 11:17	56.2	416869.3835
857	8/14/2019 11:17	56.1	407380.2778
858	8/14/2019 11:17	55.7	371535.2291
859	8/14/2019 11:17	55.8	380189.3963
860	8/14/2019 11:17	55.1	323593.6569
861	8/14/2019 11:17	55.7	371535.2291
862	8/14/2019 11:17	55.6	363078.0548
863	8/14/2019 11:17	55.7	371535.2291
864	8/14/2019 11:17	55.6	363078.0548
865	8/14/2019 11:17	56.1	407380.2778
866	8/14/2019 11:17	55.7	371535.2291
867	8/14/2019 11:17	57.1	512861.384
868	8/14/2019 11:17	56.8	478630.0923
869	8/14/2019 11:17	57.7	588843.6554
870	8/14/2019 11:17	57.1	512861.384
871	8/14/2019 11:17	56.5	446683.5922
872	8/14/2019 11:17	57	501187.2336
873	8/14/2019 11:17	56.6	457088.1896

874	8/14/2019 11:17	57.3	537031.7964
875	8/14/2019 11:17	59.5	891250.9381
876	8/14/2019 11:17	59.6	912010.8394
877	8/14/2019 11:17	63.3	2137962.09
878	8/14/2019 11:17	72.2	16595869.07
879	8/14/2019 11:17	64.6	2884031.503
880	8/14/2019 11:17	58.2	660693.448
881	8/14/2019 11:17	56.4	436515.8322
882	8/14/2019 11:17	56.6	457088.1896
883	8/14/2019 11:17	57	501187.2336
884	8/14/2019 11:17	56.3	426579.5188
885	8/14/2019 11:17	56.4	436515.8322
886	8/14/2019 11:17	56.6	457088.1896
887	8/14/2019 11:17	57.2	524807.4602
888	8/14/2019 11:17	58.5	707945.7844
889	8/14/2019 11:17	60.1	1023292.992
890	8/14/2019 11:17	61.2	1318256.739
891	8/14/2019 11:17	63.1	2041737.945
892	8/14/2019 11:17	66.5	4466835.922
893	8/14/2019 11:17	69.6	9120108.394
894	8/14/2019 11:17	61.2	1318256.739
895	8/14/2019 11:17	59.8	954992.586
896	8/14/2019 11:17	58.2	660693.448
897	8/14/2019 11:17	57.2	524807.4602
898	8/14/2019 11:17	56.9	489778.8194
899	8/14/2019 11:17	56	398107.1706
900	8/14/2019 11:17	56.1	407380.2778

Attachment 3

Roadway Construction Noise Model Output Results

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 08/19/2019
Case Description: Rollins Road - Demolition

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
50 Feet	Residential	65.0	45.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	50.0	0.0
Excavator	No	40		80.7	50.0	0.0
Dozer	No	40		81.7	50.0	0.0
Backhoe	No	40		77.6	50.0	0.0
Excavator	No	40		80.7	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	89.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.6	85.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Property Line	Residential	65.0	45.0	45.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Concrete Saw	No	20	89.6	75.0		0.0
Excavator	No	40	80.7	75.0		0.0
Dozer	No	40	81.7	75.0		0.0
Backhoe	No	40	77.6	75.0		0.0
Excavator	No	40	80.7	75.0		0.0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	86.1	79.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	77.2	73.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	78.1	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	74.0	70.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	77.2	73.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	86.1	82.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 08/19/2019
Case Description: 1095 Rollins Road - Site Preparation

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
50 Feet	Residential	65.0	45.0	45.0

Equipment

Description	Impact Device	Spec Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85.0		50.0	0.0
Dozer	No	40		81.7	50.0	0.0
Backhoe	No	40		77.6	50.0	0.0
Backhoe	No	40		77.6	50.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Grader	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	85.0	83.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Property Line	Residential	65.0	45.0	45.0

Equipment

Description	Spec	Actual	Receptor	Estimated

Description	Impact Device	Usage (%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Grader	No	40	85.0		75.0	0.0
Dozer	No	40		81.7	75.0	0.0
Backhoe	No	40		77.6	75.0	0.0
Backhoe	No	40		77.6	75.0	0.0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	81.5	77.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	78.1	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	74.0	70.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	74.0	70.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	81.5	80.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 08/19/2019
Case Description: 1095 Rollins Road - Grading

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
50 Feet	Residential	65.0	45.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	50.0	0.0
Auger Drill Rig	No	20		84.4	50.0	0.0
Backhoe	No	40		77.6	50.0	0.0
Generator	No	50		80.6	50.0	0.0
Backhoe	No	40		77.6	50.0	0.0
Auger Drill Rig	No	20		84.4	50.0	0.0

Results

			Noise Limits (dBA)				Noise Limit Exceedance (dBA)			
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Auger Drill Rig	84.4	77.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	80.6	77.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Auger Drill Rig	84.4	77.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	84.4	84.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night

Property Line	Residential	65.0	45.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	75.0	0.0
Auger Drill Rig	No	20		84.4	75.0	0.0
Backhoe	No	40		77.6	75.0	0.0
Generator	No	50		80.6	75.0	0.0
Backhoe	No	40		77.6	75.0	0.0
Auger Drill Rig	No	20		84.4	75.0	0.0

Results

			Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	77.2	73.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Auger Drill Rig	80.8	73.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	74.0	70.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	77.1	74.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	74.0	70.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Auger Drill Rig	80.8	73.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	80.8	80.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 08/19/2019
Case Description: 1095 Rollins Road - Building Construction

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
50 Feet	Residential	65.0	45.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	50.0	0.0
Welder / Torch	No	40		74.0	50.0	0.0
Welder / Torch	No	40		74.0	50.0	0.0
Welder / Torch	No	40		74.0	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Man Lift	74.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	74.0	70.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	74.0	70.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	74.0	70.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	74.7	75.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Property Line	Residential	65.0	45.0	45.0

Equipment

Description	Spec Actual	Receptor Estimated

Description	Impact Device	Usage (%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Man Lift	No	20	74.7	75.0		0.0
Welder / Torch	No	40	74.0	75.0		0.0
Welder / Torch	No	40	74.0	75.0		0.0
Welder / Torch	No	40	74.0	75.0		0.0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Man Lift	71.2	64.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	70.5	66.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	70.5	66.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	70.5	66.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71.2	72.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 08/19/2019
Case Description: 1095 Rollins Road - Paving

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
50 Feet	Residential	65.0	45.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	50.0	0.0
Roller	No	20		80.0	50.0	0.0
Backhoe	No	40		77.6	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	77.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	80.0	73.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	80.0	78.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Property Line	Residential	65.0	45.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)

Paver	No	50	77.2	75.0	0.0
Roller	No	20	80.0	75.0	0.0
Backhoe	No	40	77.6	75.0	0.0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	73.7	70.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	76.5	69.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	74.0	70.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	76.5	74.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

```
                    Roadway Construction Noise Model (RCNM),Version 1.1

Report date:           08/19/2019
Case Description:        Rollins Road - Architectural Coating

                              **** Receptor #1 ****

                                    Baselines (dBA)
Description    Land Use        Daytime    Evening    Night
-----------    --------        -------    -------    -----
50 Feet        Residential       65.0       45.0     45.0

                               Equipment
                               ---------
                               Spec    Actual    Receptor    Estimated
               Impact  Usage    Lmax    Lmax      Distance    Shielding
Description        Device   (%)     (dBA)   (dBA)     (feet)      (dBA)
-----------        ------  -----    -----   -----     --------    ---------
Compressor (air)       No     40            77.7        50.0         0.0
Compressor (air)       No     40            77.7        50.0         0.0
Compressor (air)       No     40            77.7        50.0         0.0
Compressor (air)       No     40            77.7        50.0         0.0
Compressor (air)       No     40            77.7        50.0         0.0
Compressor (air)       No     40            77.7        50.0         0.0
Compressor (air)       No     40            77.7        50.0         0.0
Compressor (air)       No     40            77.7        50.0         0.0
Man Lift             No     20            74.7        50.0         0.0
Man Lift             No     20            74.7        50.0         0.0

                               Results
                               -------
                                       Noise Limits (dBA)                  Noise Limit Exceedance (dBA)
                                   ----------------------------------------------    ----------------------------------------------
                    Calculated (dBA)       Day          Evening        Night              Day          Evening          Night
                    ----------------   --------------   -------------  --------------    --------------  --------------  --------------
Equipment                 Lmax    Leq       Lmax    Leq      Lmax    Leq      Lmax    Leq       Lmax    Leq      Lmax    Leq
Lmax    Leq
----------------------  ------  ------     ------  ------  ------  ------  ------  ------    ------  ------  ------  ------  ------  ------
Compressor (air)          77.7    73.7      N/A     N/A     N/A     N/A     N/A     N/A       N/A     N/A     N/A     N/A     N/A
N/A
Compressor (air)          77.7    73.7      N/A     N/A     N/A     N/A     N/A     N/A       N/A     N/A     N/A     N/A     N/A
N/A
Compressor (air)          77.7    73.7      N/A     N/A     N/A     N/A     N/A     N/A       N/A     N/A     N/A     N/A     N/A
N/A
Compressor (air)          77.7    73.7      N/A     N/A     N/A     N/A     N/A     N/A       N/A     N/A     N/A     N/A     N/A
N/A
Compressor (air)          77.7    73.7      N/A     N/A     N/A     N/A     N/A     N/A       N/A     N/A     N/A     N/A     N/A
N/A
Compressor (air)          77.7    73.7      N/A     N/A     N/A     N/A     N/A     N/A       N/A     N/A     N/A     N/A     N/A
N/A
Compressor (air)          77.7    73.7      N/A     N/A     N/A     N/A     N/A     N/A       N/A     N/A     N/A     N/A     N/A
N/A
Compressor (air)          77.7    73.7      N/A     N/A     N/A     N/A     N/A     N/A       N/A     N/A     N/A     N/A     N/A
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N/A
Man Lift              74.7    67.7       N/A     N/A     N/A     N/A     N/A     N/A      N/A     N/A     N/A     N/A     N/A
N/A
Man Lift              74.7    67.7       N/A     N/A     N/A     N/A     N/A     N/A      N/A     N/A     N/A     N/A     N/A
N/A
           Total      77.7    83.0       N/A     N/A     N/A     N/A     N/A     N/A      N/A     N/A     N/A     N/A     N/A
N/A

                         **** Receptor #2 ****

                                Baselines (dBA)
Description      Land Use       Daytime    Evening    Night
-----------      --------       -------    -------    -----
Property Line    Residential       65.0       45.0     45.0

                            Equipment
                            ---------
                            Spec    Actual    Receptor    Estimated
              Impact  Usage    Lmax    Lmax      Distance    Shielding
Description        Device   (%)     (dBA)   (dBA)      (feet)       (dBA)
-----------        ------  -----    -----   -----     --------    ---------
Compressor (air)       No     40           77.7        75.0         0.0
Compressor (air)       No     40           77.7        75.0         0.0
Compressor (air)       No     40           77.7        75.0         0.0
Compressor (air)       No     40           77.7        75.0         0.0
Compressor (air)       No     40           77.7        75.0         0.0
Compressor (air)       No     40           77.7        75.0         0.0
Compressor (air)       No     40           77.7        75.0         0.0
Compressor (air)       No     40           77.7        75.0         0.0
Man Lift             No     20           74.7        75.0         0.0
Man Lift             No     20           74.7        75.0         0.0

                            Results
                            -------
                                         Noise Limits (dBA)                  Noise Limit Exceedance (dBA)
                                ---------------------------------------------    ---------------------------------------------
                   Calculated (dBA)       Day         Evening        Night           Day         Evening        Night
                   ----------------   --------------  -------------  -------------    --------------  --------------  --------------
Equipment                 Lmax    Leq       Lmax    Leq     Lmax    Leq     Lmax    Leq      Lmax    Leq     Lmax    Leq
Lmax    Leq
---------------------  ------  ------     ------  ------  ------  ------  ------  ------    ------  ------  ------  ------  ------  ------
Compressor (air)        74.1    70.2       N/A     N/A     N/A     N/A     N/A     N/A      N/A     N/A     N/A     N/A     N/A
N/A
Compressor (air)        74.1    70.2       N/A     N/A     N/A     N/A     N/A     N/A      N/A     N/A     N/A     N/A     N/A
N/A
Compressor (air)        74.1    70.2       N/A     N/A     N/A     N/A     N/A     N/A      N/A     N/A     N/A     N/A     N/A
N/A
Compressor (air)        74.1    70.2       N/A     N/A     N/A     N/A     N/A     N/A      N/A     N/A     N/A     N/A     N/A
N/A
Compressor (air)        74.1    70.2       N/A     N/A     N/A     N/A     N/A     N/A      N/A     N/A     N/A     N/A     N/A
N/A
Compressor (air)        74.1    70.2       N/A     N/A     N/A     N/A     N/A     N/A      N/A     N/A     N/A     N/A     N/A
N/A
Compressor (air)        74.1    70.2       N/A     N/A     N/A     N/A     N/A     N/A      N/A     N/A     N/A     N/A     N/A
```

N/A														
Compressor (air)	74.1	70.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A														
Man Lift	71.2	64.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A														
Man Lift	71.2	64.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A														
Total	74.1	79.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A														

Attachment 4

Summed Noise Calculations

HVAC Equipment - Unmitigated

Addition														
	dBA_1	dBA_2	dBA_3	dBA_4	dBA_5	dBA_6	dBA_7	dBA_8	dBA_9	dBA_{10}	dBA_{11}	Total Summed Noise Level (dBA)	Sum of Summed Noise Levels (dBA)	Increase in Noise Levels (dBA)
Ambient Noise Level	62.0											62.0		
HVAC Equipment	56.0	56.0	56.0									60.8	64.4	2.4

Attachment 5

Vibration Calculations

Groundborne Noise and Vibration Modeling

Notes
The reference distance is measured from the nearest anticipated point of construction equipment to the nearest structure.

	Reference Level Inputs			
Equipment	**PPV_{ref} (in/sec)**	**Lv_{ref} (VdB)**	**RMS_{ref} (in/sec)**	**Reference Distance**
Vibratory Roller	0.21	94	0.050	25
Large bulldozer	0.089	87	0.022	25
Loaded trucks	0.076	83	0.014	25

	Vibration Level at Receiver			
Equipment	**Distance (feet)**	**PPV_x (in/sec)**	**Lv_x (VdB)**	**RMS_x (in/sec)**
Vibratory Roller	20	0.2684	96	0.064
Large bulldozer	20	0.1138	89	0.029
Loaded trucks	20	0.0971	85	0.018

Source
California Department of Transportation (Caltrans). 2013. Transportation and Construction Last Updated: 4/11/2019

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