ATTACHMENT NO. 2

BRICK & MACHINE OFFHOURS CONTRUCTION
9735 WASHINGTON BOULEVARD, CULVER CITY

Noise Analysis Report

Prepared for
Clarett West Development, LLC
1901 Avenue of the Stars, Suite 1465
Los Angeles, CA 90067

January 2020

ESA

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Executive Summary

Clarett West Development, LLC (Client) proposes off-hours construction activities for the proposed Brick & Machine Development at 9735 Washington Boulevard in Culver City, CA (Project). The Client is submitting an application to Culver City (City) to obtain a temporary use permit (TUP) to allow for off-hours concrete pours and tower crane erection/dissemble at the Brick & Machine Development at 9735 Washington Boulevard in Culver City, CA (Project).

The Client's General Contractor, Benchmark Contractors, Inc. requests permission for the off-hours Project construction activities to ensure the highest quality of the concrete structure and to reduce the overall impact to the surrounding communities through a shortened construction duration and peak activities. The off-hours work would result in limiting the number of mat foundation pours by one to: yield maximum strength of the material and prevent cracking, reduce the number of trucks to the site, and reduce the potential for concrete spoiling in concrete truck during delivery. Most importantly, extended hours will reduce the number of pours for this area of the project, which reduces the duration for mat foundation activities and in turn, the overall project by five days.

The City's Municipal Code (noise ordinance) states that construction activity shall be prohibited, except between the hours of 8:00 A.M. and 8:00 P.M. Mondays through Fridays; 9:00 A.M. and 7:00 P.M. Saturdays; 10:00 A.M. and 7:00 P.M. Sundays. However, Culver City Planning Commission Resolution 2017-P015, Condition of Approval No. 60, provides that hours of construction shall be limited to the following: 8:00 AM to 7:00 PM Monday through Friday, and 9:00 AM to 6:00 PM Saturday, ad no work shall be allowed on Sunday and National holidays. The Project's off-hours activities would occur from 7:00 a.m. to 8:00 a.m. on weekdays. Therefore, the Client is proposing an off-hours construction work plan to the City to obtain a TUP to conduct project construction activities outside of the allowable construction hours of City's noise ordinance and Condition No. 60. The off-hours Project construction work would occur on the designated work area of traffic lane of Washington Boulevard and Delmas Terrace adjacent to the Project Site's southwest corner. The mat foundation and elevated deck concrete pours would include a total of four concrete trucks at the Project Site, with two at the hopper discharging concrete and two waiting in the queue, and a concrete pump at any given time within the designated work area of each of the roadways, pumping concrete into the interior of the Project Site for the foundation pour and the deck pours of the below-grade parking garage on-site. In addition, a tower crane on-site would be erected and disassembled by equipment (mobile cranes, forklifts, and trucks) within the designated work area of Washington Boulevard. The Project Site includes a temporary 20-foot high construction sound wall, erected temporarily for Project construction on-site.

This report has been prepared to support the City's environmental review process regarding potential noise and other environmental impacts associated with the proposed off-hours Project's construction. This analysis is required as part of the Project's proposed off-hours construction work plan to be submitted to the City to obtain a TUP allowing a variance to the City' noise ordinance and Condition No. 60 to work outside of the City's allowable construction hours. The noise analysis will estimate the noise levels generated by the proposed off-hours activities

including the noise attenuation provided by the distance between noise sources and receptors and whether the noise levels would exceed applicable City noise standards or substantially increase existing ambient noise levels at the adjacent noise sensitive receptors (i.e., adjacent residential building and hospital).

This report summarizes the Project off-hours construction noise levels generated on-site and attenuated by distance and the existing sound wall to the nearest noise sensitive receptors off-site, and the potential for the Project to conflict with the applicable Culver City noise regulations, standards, and thresholds:

- the Project's maximum off-hours construction noise levels:
    - at the exterior of the lower floors of the adjacent hospital and residential building from the concrete pours and the tower crane erection/dissemble would not exceed the City's daytime maximum noise standard of 70 dBA L_{max},
    - at the exterior of the upper floors of the hospital of 80 dBA L_{max} from the concrete pours would exceed the City's daytime maximum noise standard of 70 dBA L_{max} (by 10 dBA), and
    - at the exterior of the upper floors of the hospital of 73 dBA L_{max} from the tower crane erection/disassembly would slightly exceed the City's daytime maximum noise standard of 70 dBA L_{max} (by 3 dBA); and

- the Project's hourly average off-hours construction noise levels:
    - at the exterior of the residential building and the lower and upper levels of the hospital from the concrete pours would exceed the City's daytime hourly average noise standard of 55 dBA L_{eq},
    - at the exterior of the lower level of the hospital and the residential building from the tower crane erection/disassembly would not exceed the City's daytime hourly average noise standards of 55 dBA L_{eq},
    - at the exterior of the upper floors of the hospital of 75 dBA Leq from the concrete pours would exceed the City's daytime hourly average noise standard of 55 dBA Leq, and
    - at the exterior of the upper floors of the hospital of 65 dBA Leq from the tower crane erection/disassembly would exceed the City's daytime hourly average noise standard of 55 dBA Leq.

However, the measured ambient noise levels at this location already exceed the City's daytime hourly average noise standard of 55 dBA Leq. As such, the City's daytime standard is adjusted for this impact analysis by adding 5 dBA to the measured off-hours day ambient levels (e.g., the weekday daytime ambient noise level of 62 dBA Leq plus 5 dBA equals an adjusted off-hours weekday daytime standard of 67 dBA Leq). Therefore, only the average off-hours construction noise levels of 75 dBA Leq at the exterior of the upper levels of the hospital from the concrete pours would exceed the adjusted weekday daytime standard of 67 dBA Leq (by 8 dBA).

In addition to City noise standards, the Project's off-hours construction noise levels were compared to the measured ambient noise levels to estimate the increase in ambient levels at the receptors. During the concrete pours of 75 dBA L_{eq} at the exterior of the upper floors of the

hospital, the resultant ambient noise level during the concrete pours would be approximately 75 dBA L_{eq}, which would increase measured weekday daytime ambient levels of 62 dBA L_{eq} by approximately 13 dBA Leq. During the tower crane erection/disassembly of 65 dBA L_{eq}, the resultant ambient noise level would be approximately 65 dBA L_{eq}, which would increase measured weekday daytime ambient levels of 62 dBA L_{eq} by approximately 3 dBA Leq. Though these increases would be perceptible at the exterior of the upper floors of the hospital, assuming windows closed and sufficient hospital building sound attenuation of 25 dBA or greater (Gordon et. al., 1971), the increase in average interior noise levels as a result of concrete pours and tower crane erection/disassembly would be 50 dBA L_{eq} or below, which is within the City's standards.

Implementation of mitigation measures NOISE-1 through NOISE-6, identified previously in the Project's Mitigated Negative Declaration (MND) and revised under the Culver City Planning Commission Resolution 2017-P015, Condition of Approval No. 63, would reduce construction noise impacts to less than the City standards.

1. Introduction

Clarett West Development, LLC proposes off-hours construction activities for the proposed Brick & Machine Development at 9735 Washington Boulevard in Culver City, CA (Project). This report has been prepared to support the City's environmental review process regarding potential noise and other environmental impacts associated with the proposed off-hours Project's construction. This analysis is required as part of the Project's proposed off-hours construction work plan to be submitted to the City to obtain a Temporary Use Permit (TUP) allowing a variance to the City' noise ordinance to work outside of the City's allowable construction hours, which limits general construction to between the hours of 8:00 A.M. and 8:00 P.M. Mondays through Fridays; 9:00 A.M. and 7:00 P.M. Saturdays; 10:00 A.M. and 7:00 P.M. Sundays. However, Culver City Planning Commission Resolution 2017-P015, Condition of Approval No. 60, provides that Hours of construction shall be limited to the following: 8:00 AM to 7:00 PM Monday through Friday; 9:00 AM to 6:00 PM Saturday; no work shall be allowed on Sunday and National holidays. Dirt hauling and construction material deliveries or removal are prohibited during the morning (7:00 AM to 9:00 AM) and afternoon (4:00 PM to 6:00 PM) peak traffic periods. All construction workers shall be respectful of the surrounding neighborhood and keep non construction related noise to a minimum prior to, during, and after permissible construction hours. Construction hours shall include any activity on the construction site or on City streets including any staging activities or any vehicle operation or any activity of any kind.

This report identifies applicable City noise regulations, and evaluates potential noise impacts associated with the proposed off-hours construction of the Project. Information used to prepare this analysis includes the environmental analysis in the Project's *9735 Washington Boulevard Mitigated Negative Declaration* (MND) prepared by ESA (ESA 2017) in accordance with the California Environmental Quality Act (CEQA), the City's General Plan Noise Element and Municipal Code noise ordinance, off-hours Project construction data provided by the applicant's general contractor (Benchmark Contractors, Inc.), and other sources identified herein.

1.1 Project Location and Surrounding Land Uses

The Project is redeveloping a 0.66-acre property located at 9735 West Washington Boulevard on the northern corner of its intersection with Delmas Terrace in Culver City (Project Site), as shown in **Figures 1 and 2**. The Project is a proposed mixed-use retail, restaurant, and office users within a partial 4-story building including a 3-level subterranean parking structure. Land uses surrounding the Project Site include Southern California Hospital Culver City with associated medical offices/facilities adjacent to the north, 2-story multi-family residential apartment building adjacent to the east of the Project Site, and commercial adjacent to the east, and commercial to the south and west across Washington Boulevard and Delmas Terrace, respectively.

1.2 Project Background

The off-hours Brick & Machine Development is pursuant to the recent Project MND including the construction of proposed below-grade parking garage within the allowable construction hours

SOURCE: Open Street Map, 2016.

9735 Washington Boulevard

Figure 1

Regional and Project Vicinity Locations

ESA PCR

SOURCE: Google Map, 2015 (Aerial).

9735 Washington Boulevard

Figure 2

Aerial Photograph with Surrounding Land Uses

ESA PCR

of the City's noise ordinance, which includes an existing 20-foot-high temporary sound wall along the perimeter of the Project Site, including the proposed parking garage. The proposed off-hours Project construction activities (concrete pours and tower crane erection/disassemble) would occur as an early start (7:00 a.m.) to the construction activities assessed in the Project MND, which would end at 4:00 p.m. on weekdays and 5:00 p.m. on Saturdays.

2. Project Description

2.1 Project Understanding

The proposed off-hours Project construction activities are based information and data provided to ESA from the Client and General Contractor (Benchmark Contractors, Inc) via email and phone conversations, and Project Site observations via Google Earth. To ensure the highest quality of the concrete structure and to reduce the overall impact to the surrounding communities through a shortened construction duration and peak activities, Benchmark Contractors, Inc. requests permission for the off-hours Project construction activities to limit the number of mat foundation pours by one to:

- yield maximum strength of the material and prevent cracking;
- limit the impact that large volume pours (i.e., reduce the number of trucks to the site) may have on the surrounding community to a total of three events; and
- reduce the potential for concrete spoiling in concrete truck during deliver while they are attempting to reach the project site.

The extended hours would reduce the number of pours for this area of the project, which reduces the duration for mat foundation activities and in turn, the overall project construction by five days.

The City's Municipal Code (noise ordinance) states that construction activity shall be prohibited, except between the hours of 8:00 A.M. and 8:00 P.M. Mondays through Fridays; 9:00 A.M. and 7:00 P.M. Saturdays; 10:00 A.M. and 7:00 P.M. Sundays. The Project's off-hours activities would occur from 7:00 a.m. to 8:00 a.m. on weekdays. However, Culver City Planning Commission Resolution 2017-P015, Condition of Approval No. 60, provides that Hours of construction shall be limited to the following: 8:00 AM to 7:00 PM Monday through Friday; 9:00 AM to 6:00 PM Saturday; no work shall be allowed on Sunday and National holidays.

Therefore, the Client is proposing an off-hours construction work plan to the City to obtain a TUP to the City's noise ordinance to conduct project construction activities outside of the allowable construction hours of City's noise ordinance and Planning Commission Resolution 2017-P015, Condition of Approval No. 60. The Client has requested that ESA assist in the submittal by completing an off-hours noise study and updated environmental review of the proposed off-hours construction work to support submittal of the TUP application to the City for approval at the soonest possible bi-monthly City Council Hearing.

The Project's off-hours work would generate noise during the City's daytime period in proximity to the adjacent hospital and residential building including an existing temporary sound wall

surrounding the Project Site (specifications detailed in Appendix A), which was erected to reduce Project construction noise (by 20 dB or more) generated on the Project Site to the nearest noise sensitive receptors. The noise impact analysis is based on the City's established noise level limits of the Noise Element of the City's 1975 General Plan, which establishes a daytime (7:00 a.m. to 10:00 p.m.) hourly average noise level limit of 55 dBA L_{eq} and a maximum noise level limit of 70 dBA L_{max} at a residential property line (City 1975).

2.2 Project Description

The proposed off-hours Project construction activities are detailed in Benchmarks Contractors July 23, 2019 letter to the City requesting an extended hours permit, as attached in Appendix B, and summarized herein. The off-hours mat foundation and elevated deck concrete pours would include the operation of concrete pumps, concrete trucks, a crane, and generator; and the off-hours tower crane erections/disassemble would include the operation of a mobile crane, forklift, and truck. The off-hours construction activities would not require additional artificial lighting equipment (i.e., portable light towers) at the off-hours construction area of the Project Site, as the lighting provided by the existing street lights and natural sunlight (sunrise at approximately 6:30 – 6:50 a.m. December 2019 – February 2020 (timeanddate.com 2019)) would be sufficient lighting for the off-hours work, as determined by the contractor.

The off-hours Project construction work would occur on the designated work area of traffic lane of Washington Boulevard and Delmas Terrace adjacent to the Project Site's southwest corner, as discussed and shown in Appendix B. The mat foundation and elevated deck concrete pours would include a total of four concrete trucks at the Project Site, with two at the hopper discharging concrete and two waiting in the queue, and a concrete pump at any given time within the designated work area of each of the roadways, pumping concrete into the interior of the Project Site for the foundation pour and the deck pours of the below-grade parking garage on-site, as shown in Appendix B. The tower crane would be erected and disassembled within the designated work area of Washington Boulevard, as shown in Appendix B.

The Project off-hours construction activities would occur over variable day events beginning at 7:00 a.m. or 9:00 a.m., depending upon the day of the week (weekday or weekend) and the activity (mat foundation concrete pours, elevated deck concrete pours, and tower crane erection/disassemble), as follows, and detailed in Appendix B:

- Concrete Pours (Mat Foundation) – a total of three 1-day events over a 3-week period, with a target start date of December 1, 2019, starting at 9:00 a.m. on a weekend day.
- Concrete Pours (Elevated Decks) – a total of 17 separate 1-day events over a 7-month period, with a target start date of February 1, 2020, starting at 7:00 a.m. on a weekday.
- Tower Crane Erection/Dissemble – a total of six days of two separate 3-day events the first with a target start dates of February 1, 2020, and November 1, 2020, respectively, starting at 7:00 a.m. on a weekday.

3. Environmental Setting

3.1 Noise Characteristics and Descriptors

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air). Noise is generally defined as unwanted sound (i.e., loud, unexpected, or annoying sound). Acoustics is defined as the physics of sound. In acoustics, the fundamental scientific model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determines the sound level and characteristics of the noise perceived by the receiver. Acoustics addresses primarily the propagation and control of sound.

Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) that is measured in decibels (dB), which is the standard unit of sound amplitude measurement. The dB scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound, with 0 dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain. Pressure waves traveling through air exert a force registered by the human ear as sound. Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude. When all the audible frequencies of a sound are measured, a sound spectrum is plotted, consisting of a range of frequency from 20 to 20,000 Hz.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. Sound is measured using an electronic filter that deemphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to extremely low and extremely high frequencies. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements.

Noise Exposure and Community Noise

An individual's noise exposure is a measure of noise over a period of time. A noise level is a measure of noise at a given instant in time. The noise levels are representative of measured noise at a given instant in time; however, they rarely persist consistently over a long period of time. Rather, community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic. What makes community noise variable throughout a day, besides the slowly changing background noise, is the addition of short-duration, single-event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual.

These successive additions of sound to the community noise environment change the community noise level from instant to instant, requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

L_{eq}: The equivalent sound level used to describe noise over a specified period of time in terms of a single numerical value; the L_{eq} of a time-varying signal and that of a steady signal are the same if they deliver the same acoustic energy over a given time. The L_{eq} may also be referred to as the average sound level.

L_{max}: The maximum, instantaneous noise level experienced during a given period of time.

CNEL: The Community Noise Equivalent Level, is the average A-weighted noise level during a 24-hour day that is obtained after an addition of 5 dB to measured noise levels between the hours of 7:00 a.m. to 10:00 p.m. and after an addition of 10 dB to noise levels between the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively.

Noise Effects on People

Noise is generally loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity that is a nuisance or disruptive. The effects of noise on people can be placed into four general categories:

- Subjective effects (e.g., dissatisfaction, annoyance);
- Interference effects (e.g., communication, sleep, and learning interference);
- Physiological effects (e.g., startle response); and
- Physical effects (e.g., hearing loss).

Although exposure to high noise levels has been demonstrated to cause physical and physiological effects, the principal human responses to typical environmental noise exposure are related to subjective effects and interference with activities. Interference effects of environmental noise refer to those effects that interrupt daily activities and include interference with human communication activities, such as normal conversations, watching television, telephone conversations, and interference with sleep. Sleep interference effects can include both awakening and arousal to a lesser state of sleep. With regard to the subjective effects, the responses of individuals to similar noise events are diverse and are influenced by many factors, including the type of noise, the perceived importance of the noise, the appropriateness of the noise to the setting, the duration of the noise, the time of day and the type of activity during which the noise occurs, and individual noise sensitivity.

Overall, there is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction on people. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise. Thus, an important way of predicting a human

reaction to a new noise environment is the way it compares to the existing environment to which one has adapted (i.e., comparison to the ambient noise environment). In general, the more a new noise level exceeds the previously existing ambient noise level, the less acceptable the new noise level will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships generally occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3 dBA change in noise levels is considered to be a barely perceivable difference;
- A change in noise levels of 5 dBA is considered to be a readily perceivable difference; and
- A change in noise levels of 10 dBA is subjectively heard as doubling of the perceived loudness.

These relationships occur in part because of the logarithmic nature of sound and the dB scale. The human ear perceives sound in a non-linear fashion hence the dB was developed. Because the dB scale is based on logarithms, two noise sources do not combine in a simple additive fashion, but rather logarithmically. Under the dB scale, a doubling of sound energy corresponds to a 3 dBA increase. In other words, when two sources are each producing sound of the same loudness, the resulting sound level at a given distance would be approximately 3 dBA higher than one of the sources under the same conditions. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA. Under the dB scale, three sources of equal loudness together produce a sound level of approximately 5 dBA louder than one source, and ten sources of equal loudness together produce a sound level of approximately 10 dBA louder than the single source.

Noise Attenuation

When noise propagates over a distance, it changes in level and frequency content. The manner in which noise reduces with distance depends on factors such as the type of noise source and the propagation path. Noise from a localized source (i.e., point source) propagates uniformly outward in a spherical pattern; therefore, this type of propagation is referred to as “spherical spreading.” Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate between 6 dBA for acoustically “hard” sites and 7.5 dBA for acoustically “soft” sites for each doubling of distance from the reference measurement as their energy is continuously spread out over a spherical surface. Hard sites are those with a reflective surface between the source and the receiver, such as asphalt or concrete surfaces or smooth bodies of water. No excess ground attenuation is assumed for hard sites and the changes in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. Soft sites have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees. In addition to geometric spreading, an excess ground attenuation value of 1.5 dBA (per doubling distance) is normally assumed for soft sites.

Roadways and highways consist of several localized noise sources on a defined path, and hence are treated as “line” sources, which approximate the effect of several point sources. Noise from a line source propagates over a cylindrical surface, often referred to as “cylindrical spreading.”

Line sources (e.g., traffic noise from vehicles) attenuate at a rate between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement.[1] Therefore, noise due to a line source attenuates less with distance than that of a point source with increased distance.

Additionally, receptors located downwind from a noise source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects.

3.2 Existing Conditions

The off-hours Project construction would be part of the proposed Project construction on the Project Site, which was assessed for noise impacts during the City's allowable construction hours in the Project MND (ESA 2017). The predominant source of noise in the vicinity of the Project Site is vehicle traffic from roadways adjacent to the Project Site; i.e., primarily Washington Boulevard, and to a lesser extent on Delmas Terrance and Watseka Avenue. Secondary noise sources include commercial and hospital activities such as, loading docks, and trash and recycling collections, and residential activities, such as, landscaping.

Noise Sensitive Receptors

Noise sensitive receptors are defined as those specific land uses that have associated indoor and/or outdoor human activities that may be subject to stress and/or significant interference from noise produced by community sound sources. Typically, residences, hospitals, and schools are considered noise sensitive, as their land uses of sleeping, recuperation, and concentration, can be adversely affected by noise.

The noise sensitive land use closest to the Project Site are the adjacent:

- 7-story Southern California Hospital Culver City with associated medical offices/facilities located immediately north of the Project Site along Delmas Terrace; and
- 2-story multi-family residential apartment building located immediately east of the Project Site along Watseka Avenue (identified as R1 on Figure B-3 in Appendix C).

These represent the nearest sensitive receptors to the off-hours construction on and adjacent to the Project Site, and, therefore, illustrates the worst-case scenario for potential noise impacts from the off-hours construction activities of the Project.

Existing Ambient Noise Levels

To characterize the existing ambient noise levels for the Project MND, noise measurements were conducted during a 24-hour period from 5:00 p.m. Friday to 5:00 p.m. Saturday on January 13-14, 2017 at noise sensitive receptors near the Project Site for the Project MND, including a long-

[1] California Department of Transportation (Caltrans), *Technical Noise Supplement* (TeNS). September, 2013.

term (24-hour) noise measurement performed at R1 (at the northwest corner of the Project Site adjacent to the hospital, as shown in Appendix C, **Figure B-3**. Short-term (15-min) daytime measurements were performed at R2 through R5 for anticipated daytime Project construction hours in the Project MND. The 24-hour measurement at R1 includes weekend hourly average ambient noise levels that would represent the weekend baseline ambient noise levels that would be anticipated at the nearest noise sensitive land use (i.e., hospital and multi-family residences) during the same hours when the proposed off-hours work would occur at the Project Site.

The hourly average ambient noise levels during the start and end hours of the proposed off-hours work were approximately 58 dBA L_{eq} (7:00 a.m. to 8:00 a.m.) at the R1 noise measurement location (at the adjacent hospital, near the residence).

Weekday ambient noise levels were measured over a 3-day period from Tuesday, May 15, 2018 through Friday, May 18, 2018 (Wilson Ihrig 2018) at LT-1 (northwest corner of the Project Site at the adjacent residential building, as shown in Appendix C, **Figure 4** (Wilson Ihrig 2018). The hourly average ambient noise levels during the start and end hours of the proposed off-hours work were approximately 62 dBA L_{eq} (7:00 a.m. to 8:00 a.m.) at the LT-1 noise measurement location (at the adjacent residence, near the hospital).

A summary of the noise measurement data is provided in **Table 1**.

TABLE 1
SUMMARY OF AMBIENT NOISE MEASUREMENTS

Location, Day of the Week, Date, and Hours	Hourly Average Noise Levels, dBA L_{eq}
R1 Weekend Saturday, 1/14/17 7:00 a.m. to 8:00 a.m.	58
SOURCE: ESA, 2019.	
LT-1 Weekday average Wednesday, 5/16/18 to Friday, 5/16/18 7:00 a.m. to 8:00 a.m.	62
SOURCE: Wilson Ihrig, 2018.	

3.3 Regulatory Setting

Culver City General Plan Noise Element

The Noise Element of the General Plan identifies noise-sensitive land uses and noise sources, defines areas of noise impact, and establishes goals, policies, and programs to ensure that City residents are protected from excessive noise (Culver City 1995). The noise goals and policies of the Noise Element applicable to the Project's off-hours construction includes:

Policy 2.A Create a comprehensive ordinance establishing noise regulation criteria, and standards for noise sources and receptors to include but not be limited to the following:

- Noise reduction features during site planning to mitigate anticipated noise impacts on affected noise sensitive land uses, such as schools, hospitals, convalescent homes, and libraries.
- Temporary sound barrier installation at construction site if construction noise is impacting nearby noise sensitive land uses.
- Noise abatement and acoustical design criteria for construction and operation of any new development.

The City's noise standards are contained in the City's 1995 General Plan Noise Element, which establishes a daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) hourly average noise level limit of 55 dBA L_{eq} and 50 dBA L_{eq}, respectively, and a maximum noise level limit of 70 dBA L_{max} and 65 dBA L_{max} based on the 70 dBA L_{eq} (daytime) and 65 dBA L_{eq} (daytime) for a duration of one minute at the residential property line, as shown in **bold** in **Table 2** (Culver City 1995).

TABLE 2
CULVER CITY NOISE STANDARDS

Daytime levels 7:00 AM – 10:00 PM	Nighttime Levels 10:00 PM – 7:00 AM	Duration
55 dBA - Leq	**50 dBA - Leq**	**30 minute**
60 dBA - Leq	55 dBA - Leq	15 minute
65 dBA - Leq	60 dBA - Leq	5 minute
70 dBA - Leq	**65 dBA - Leq**	**1 minute**
75 dBA - Leq	70 dBA - Leq	Never

Source: Culver City 1995.

Culver City Municipal Code

Chapter 9.07 of the City of Culver City Municipal Code (CCMC) provides specific noise restrictions and exemptions for noise sources within Culver City. Culver City's noise regulations state that construction activity shall be prohibited, except between the hours of 8:00 A.M. and 8:00 P.M. Mondays through Fridays; 9:00 A.M. and 7:00 P.M. Saturdays; 10:00 A.M. and 7:00 P.M. Sundays.

Culver City Planning Commission

The Culver City Planning Commission Resolution 2017-P015, Condition of Approval No. 60, provides that Hours of construction shall be limited to the following: 8:00 AM to 7:00 PM Monday through Friday; 9:00 AM to 6:00 PM Saturday; no work shall be allowed on Sunday and National holidays. Dirt hauling and construction material deliveries or removal are prohibited during the morning (7:00 AM to 9:00 AM) and afternoon (4:00 PM to 6:00 PM) peak traffic periods. All construction workers shall be respectful of the surrounding neighborhood and keep non construction related noise to a minimum prior to, during, and after permissible construction

hours. Construction hours shall include any activity on the construction site or on City streets including any staging activities or any vehicle operation or any activity of any kind.

4. Impacts and Mitigation Measures

This section describes the impact analysis relating to noise impacts for the Project including the methodology, applicable impact thresholds used to determine the impacts of the Project. If impact thresholds are exceeded, mitigation measures are proposed to reduce noise impacts.

4.1 Methodology

Project off-hours construction noise levels at the nearest residence were estimated using the Federal Highway Administration (FHWA)'s Roadway Construction Noise Model (RCNM) and equipment noise levels at the source, and construction equipment information and location on-site, provided by Benchmark Contractors, Inc. (Appendix B). The off-hours noise levels were calculated based on the number and type of equipment operating simultaneously for each of the three activity events (i.e., mat foundation concrete pour, elevated deck concrete pours, and tower crane erection/dissemble), and their location and elevation adjacent to the Project Site, as shown in in Appendix C. Potential off-hours construction noise levels from the off-hours construction activities were attenuated by distance and intervening barriers (i.e., existing temporary site perimeter construction sound wall, and/or the extent of the Project building construction height and density (as a barrier) at the time of each activity) to the nearest noise sensitive receptor (i.e., the adjacent residential building and the hospital. These assumptions represent the worst-case off-hours noise scenario for the sensitive receptors (i.e., adjacent hospital and residence. The estimated Project off-hours construction noise levels at the affected receptor were then analyzed against the off-hours construction noise standards established by Culver City, to determine whether an exceedance of allowable noise levels would occur.

4.2 Impact Thresholds

Off-hours project construction noise level limits are based on Culver City noise standards for daytime (7:00 a.m. to 10:00 p.m.). Therefore, the Project's off-hours maximum construction noise (L_{max}), estimated at the property line of the nearest noise sensitive receptor in Culver City, shall not exceed 70 dBA L_{max} during the daytime hours. In addition, the Project's off-hours hourly average construction noise (L_{eq}), estimated at the property line of the nearest noise sensitive receptor in Culver City, shall not exceed the daytime standard level of 55 dBA L_{eq} (Culver City 1995) during the daytime hours, as previously shown in Table 2. However, the measured hourly average ambient levels at the northwest corner of the Project Site adjacent to the residence and hospital already exceeds the City's daytime standard of 55 dBA L_{eq}. As established in the Project MND, the applicable limit for construction noise is 5 dB over the existing ambient level. Therefore, using the measured weekday daytime baseline of 62 dBA L_{eq}, the adjusted weekday noise limit would be 67 dBA L_{eq}.

4.3 Project Impact Analysis

The proposed off-hours construction activities of the Project would occur as either mat foundation concrete pours, elevated deck concrete pours, or tower crane erection/dissemble, all requiring the operation of heavy-duty construction equipment. During either of the concrete pours, a similar mix of equipment would be used (concrete pumps, concrete trucks, a crane, and generator), while during the tower crane erection/dissemble, a different type and mix of equipment would be used (a mobile crane, forklift, and truck). As such, construction activity noise levels on the Project site and at the nearest receptor would vary depending on the particular type, number, duration of use, and location (distance and elevation) of the equipment for the concrete pours or tower crane erection/dissemble.

As shown in Table 3, the construction equipment anticipated during Project's off-hours construction produce maximum noise levels of approximately 75 to 81 dBA L_{max} at a reference distance of 50 feet from the noise source (FHWA 2006). These maximum noise levels would occur when equipment is operating at full power, and includes estimated usage factors for the equipment, which are based on FHWA's RNCM User's Guide.[2] Table 3 shows the equipment type and number, noise level, usage factor, and distance to the property line of the nearest off-site noise sensitive receptor.

TABLE 3
OFF-HOURS CONSTRUCTION EQUIPMENT NOISE LEVELS AND DISTANCE TO RECEPTORS

Construction Phase Equipment Type	No. of Equip.	Reference Noise Level at 50ft, L_{max}	Acoustical Usage Factor (%)	Distance (ft) to Receptors
Mat Foundation & Deck Concrete Pours				
Concrete Mixer Trucks	2	79	40	160
Concrete Mixer Trucks	2	79	40	215
Concrete Pump Trucks	1	81	20	120
Cranes	1	81	16	140
Pumps	1	81	50	90
Generator Sets	1	81	40	120
Tower Crane Erection/Dissemble				
Mobile Cranes	1	81	16	120
Forklifts	1	75	10	140
Trucks	1	76	40	160

Source: FHWA 2006, Benchmark 2019, ESA 2019.

During off-hours Project construction, the nearest offsite noise sensitive receptor that would be exposed to the Project's off-hours construction noise would be the adjacent hospital and

[2] Federal Highway Administration (FHWA), Roadway Construction Noise Model User's Guide, 2006.

residential building. The highest noise levels would be generated when multiple pieces of construction equipment are being operated simultaneously for each of the off-hours events. As discussed previously, the Project's estimated off-hours construction noise levels were calculated for the maximum equipment required to operate simultaneously within an off-hours event (e.g. an off-hours concrete pour) shown in Table 3 (i.e., the worst-case noise scenario). The estimated noise levels at the offsite sensitive receptors were calculated using FHWA's RCNM, and the overall results are shown Table 4, and detailed in Appendix D.

Table 4 shows the estimated construction noise levels that would occur at the nearest offsite noise sensitive use (adjacent residential building and hospital) during the Project's off-hours construction activities at the Project site, based on noise attenuation provided by the distance between and the existing 20-foot-high temporary construction noise wall along the perimeter of the Project Site (where intervening with the adjacent residential building and the lower levels of the hospital exterior), without the implementation of any additional noise reduction measures not previously considered in the Project MND, e.g., additional noise barriers.

TABLE 4
OFF-HOURS CONSTRUCTION NOISE LEVELS AT OFFSITE NOISE-SENSITIVE RECEPTORS

Construction Phases Sensitive Receptors	**Estimated Maximum Construction Noise Levels (dBA L_{max})**	**Estimated Average Construction Noise Levels (dBA L_{eq})**
Concrete Pours (Mat Foundation or Elevated Deck)		
Hospital (lower levels)	65	61
Hospital (upper levels)	**80**	**75**
Residential Building	64	59
Tower Crane Erection/Disassembly		
Hospital (lower levels)	58	50
Hospital (upper levels)	**73**	65
Residential Building	55	47
---	---	---
City Off-Hours Noise Standards		
Daytime 7:00 a.m. to 10:00 p.m.	*70*	*55 (67 weekday)**

* Existing measured ambient levels at the project and receptor site boundary, as shown in Table 1, already exceed these standards; therefore, the existing ambient levels (plus 5 dBA) are assumed to be the standards not to exceed (e.g., 62 dBA Leq measured on a weekday from 7:00 a.m. to 8:00 a.m. is greater than the City's daytime standard of 55 dBA Leq, therefore, the adjusted day standard for this weekday off-hour would be 67 dBA Leq).

Exceedances shown in **bold**.

SOURCE: ESA, 2019, Culver City 2015.

As shown in Table 4, the Project's maximum off-hours construction noise levels at the exterior of the lower floors of the adjacent hospital and residential building from the concrete pours and the tower crane erection/dissemble would not exceed the City's daytime maximum noise standards of 70 dBA L_{max}. In addition to maximum noise levels, the Project's hourly average off-hours construction noise levels, as also shown in Table 4, from the concrete pours and the tower crane

erection/dissemble at the exterior of the residential building, and from the tower crane erection/dissemble at the exterior of upper and lower floors of the hospital, would not exceed the City's daytime hourly average noise standards of 55 dBA L_{eq}.

However, as shown in **bold** in Table 4, the Project's maximum off-hours construction noise levels of 80 dBA L_{max} at the exterior of the upper floors of the hospital from the concrete pours would exceed the City's daytime maximum noise standard of 70 dBA L_{max} (by 10 dBA); and 73 dBA L_{max} at the exterior of the upper floors of the hospital from the tower crane erection/disassembly would slightly exceed the City's daytime maximum noise standard of 70 dBA L_{max} (by 3 dBA).

In addition, the Project's hourly average off-hours construction noise levels of 75 dBA L_{eq} at the exterior of the lower and upper floors of the hospital, from the concrete pours would exceed the City's daytime hourly average noise standard 55 dBA L_{eq}. However, the measured weekend and weekday daytime ambient noise levels at this location, shown in Table 1, already exceed the City's day hourly average daytime noise standard of 55 dBA L_{eq}. As such, the City's daytime standard is adjusted for this impact analysis by adding 5 dBA to the measured weekend and weekday off-hours daytime ambient levels, as shown in Table 4.

The average off-hours construction noise levels of 75 dBA L_{eq} at the exterior of the upper levels of the hospital from the concrete pours would exceed the adjusted weekday daytime standard of 67 dBA L_{eq} (by 8 dBA). The average off-hours construction noise levels of 65 dBA L_{eq} at the exterior of the upper floors of the hospital from the tower crane erection/disassembly would not exceed the adjusted weekday daytime standard of 67 L_{eq}.

In addition to City noise standards, the Project's off-hours construction noise levels were compared to the measured ambient noise levels to estimate the increase in ambient levels at the receptors. During the concrete pours, when the construction noise is added to the measured existing ambient noise, the resultant noise level would reach up to 75 dBA L_{eq} at the exterior of the upper floors of the hospital, which would be an increase of approximately 13 dBA L_{eq} compared to the measured existing ambient noise level. During the tower crane erection/disassembly, when the construction noise is added to the measured existing ambient noise, the resultant noise level would reach up to 65 dBA L_{eq}, which would be an increase of approximately 3 dBA L_{eq} compared to the measured existing ambient noise level. Though these increases would be perceptible at the exterior of the upper floors of the hospital, assuming windows closed and sufficient hospital building sound attenuation of 25 dBA or greater (Gordon et. al., 1971), the increase in average interior noise levels as a result of concrete pours and tower crane erection/disassembly would be 50 dBA L_{eq} or below, which is within the City's standards.

4.4 Mitigation Measures

The following mitigation measures were identified previously in the Culver City Planning Commission Resolution 2017-P015, Condition of Approval No. 60, and would reduce construction noise impacts to less than the City standards:

NOISE-1 The Project shall implement noise reduction strategies to reduce noise levels from construction to achieve a performance standard of less than 63 dBA Leq

measured at the building facade of the nearest adjacent patient room at the hospital and at the building façade of the nearest residential uses. Noise reduction strategies shall include one or a combination of the following to achieve the performance standard.

- Use construction equipment, fixed or mobile, that individually generates less noise than presumed in the FHWA RCNM (refer to Table B-14 of the MND). Examples of such equipment are compact, small, or mini model versions of backhoes, cranes, excavators, loaders, tractors, of other applicable equipment that are equipped with engines typically less than 125 horsepower. Construction equipment noise levels shall be documented based on manufacturer's specifications. The construction contractor shall keep construction equipment noise level documentation onsite for the duration of construction.

- Noise-generating equipment operated at the project site shall be equipped with the most effective noise control devices, i.e., mufflers, lagging, and/or motor enclosures. All equipment shall be properly maintained to assure that no additional noise, due to worn or improperly maintained parts, would be generated. The reduction in noise from noise shielding and muffling devices shall be documented based on manufacturer's specifications. The construction contractor shall keep noise shielding and muffling device documentation onsite and documentation demonstrating that the equipment has been maintained in accordance with the manufacturers' specifications onsite for the duration of construction.

- Stage noise-generating construction equipment as far away from adjacent sensitive receptors as practicable.

- With the hospital's consent, provide and/or install portable sound blanket screens for placement on the interior or exterior of patient room windows with a line of sight to the construction area.

- Mitigation Measure NOISE-4 requires a noise barrier that shields portions of the adjacent hospital from the construction area. If warranted, an approximate 10-foot long angled extension shall be added to the required minimum 20-foot tall noise barrier to provide further noise level reductions for patient rooms on the upper floors. The effectiveness of the noise reduction strategies to achieve the performance standard shall be documented by on-site noise monitoring, conducted by a qualified acoustical analyst using a Type 1 instrument in accordance with the American National Standards Institute (ANSI) S1.4. The contractor shall install and maintain at least two continuously operational automated noise monitors with one noise monitoring location selected at the building façade (window adjacent) of the nearest sixth floor patient room with direct line-of-sight to the project construction and one noise monitoring location selected at the building façade (window adjacent) of the nearest third floor patient room with direct line-of-sight to the project construction.

Construction noise monitoring for the project shall follow protocol outlined in Mitigation Measure NOISE-6, with noise monitoring data collected by the contractor and reported to the City Chief Building Office on a weekly basis. Noise monitoring shall be conducted throughout project construction. The results of the noise monitoring shall be used to inform the extent to which the noise reduction strategies shall be implemented throughout the duration of construction and what additional measures, if need, shall be implemented. All noise monitoring shall be conducted to the satisfaction of the City of Culver City, and per Mitigation Measure NOISE-6.

NOISE-2 The project applicant shall designate a construction relations officer to serve as a liaison with surrounding residents and property owners who is responsible for responding to any concerns regarding construction noise and vibration. The liaison's telephone number(s) shall be prominently displayed at the project site. Signs shall also be posted at the project site that includes permitted construction days and hours.

NOISE-3 Construction and demolition activities shall be scheduled so as to avoid operating one piece of motorized equipment simultaneously within 15 feet of the adjacent sensitive receptor's property line. The Chief Building Official, or designated representative, shall conduct periodic site visits to ensure compliance with the requirements set forth in this measure.

NOISE-4 Temporary noise barriers at a minimum height of 20-feet shall be installed along the northwestern and northeastern boundary during project construction. Detailed noise barrier specifications including but not limited to barrier construction details and Sound Transmission Class (STC) ratings should be approved by a qualified acoustical consultant and submitted to the City Chief Building Office for approval prior to the start of project construction.

NOISE-5: Contractors shall phase in construction activity, use low-impact construction technologies, and avoid the use of heavy vibrating equipment to reduce or avoid construction vibration impacts. The use of a hoe ram shall be at least 30 feet and use of a concrete mixer truck and dump truck shall be at least 10 feet from the property line of the adjacent hospital.

In order to ensure that construction vibration levels do not exceed applicable thresholds (0.2 PPV in/sec for structural damage, 0.035 PPV in/sec for human annoyance, and 72 VdB for hospital operating rooms), the contractor shall install and maintain at least two continuously operational automated vibrational monitors with one adjacent to the nearest sensitive space within the basement of the hospital; and one on the adjacent residential building at the locations closest to the active auger bit at minimum throughout all ground-disturbing significant impact construction activities (demolition, shoring, excavation, and foundation work) and until sufficient compliance has been demonstrated to the satisfaction of the Chief Building Official or designated representative. The monitoring system must produce real-time specific alarms (via text message and/ or email to onsite-personnel and selected Hospital representatives) when vibration velocities are approaching, but prior to, the

applicable vibration threshold, as outlined in Mitigation Measure NOISE-6. In the event of an alarm after steps have been taken to reduce vibratory levels, work in the vicinity shall be halted and potential adjustments to the construction program assessed to ensure that vibration thresholds would not be exceeded upon continuation of construction activity.

In the event that the structural damage threshold is exceeded, the adjacent hospital and residential buildings shall be inspected for damage, as applicable. In the event damage occurs due to construction vibration, repairs shall be arranged by the contractor and/or the applicant's representative in consultation with SCH-CC, the residential building owner and/or the City Building Official, as necessary.

The construction contractor shall be responsible for implementing this measure during the construction phase. The Chief Building Official, or designated representative, shall conduct periodic site visits to ensure compliance with the requirements set forth in this measure. Vibration monitoring data shall be collected by the contractor and reported to the City Chief Building Office on a weekly basis.

NOISE-6: The contractor shall provide a noise and vibration monitoring plan, prepared by a qualified acoustical consultant for City review and approval prior to the start of project construction. For this type of sensitive adjacency, a mitigation measure of this nature is essential to the protection of the sensitive receptor. At minimum, the plan should include, but not be limited to: monitoring instrument specifications, instrument calibration certificates, list of exact monitoring locations, ambient/existing vibration survey results, data collection protocol, alarming and alerting protocol (including but not limited to a fail-safe to ensure compliance with the stop-work requirements when the vibration measures are triggered), weekly reporting protocol (including but not limited to listing a summary of construction activities performed during the previous week, and to be performed during the upcoming week), maintenance and service outage protocol, and a redundancy mechanism in case the vibration monitors malfunction. The plan should detail compliance procedures to meet requirements outlined in Mitigation Measures NOISE-1 and NOISE-5. Additionally, the detailed baseline construction schedule shall be provided to the noise and vibration monitoring consultant prior to project construction. The ambient/ existing vibration assessment shall be performed at the nearest sensitive space within the basement of the hospital for a minimum 24-hour period prior to the start of project construction. To determine applicable "warning" thresholds, "test" construction work activities shall be conducted, measuring the vibration response at the nearest sensitive space within the basement of the hospital to equipment usage with the most potentially significant vibration impacts (i.e. hoe ram usage, auger drill usage, etc.) for each ground-disturbing work phase, as per the 30 April 2018 Revision A construction vibration analysis.

Mitigation measure NOISE-6 ensures that there is a means in place to verify that the actual noise and vibration control is retained and meets the requirements during the course of construction and that the hospital is suitably protected from noise and vibration.

Note that Mitigation Measures NOISE-3 and NOISE-4 are incorporated into the above analysis. NOISE-1, NOISE-2, NOISE-5, and NOISE-6 are qualitative measures that would help limit impacts and identify any noise concerns at the nearby sensitive receptors. All of the listed measures would help to substantially reduce the noise impacts at the sensitive receptors.

5. References

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Environmental Science Associates (ESA), 2017. *9735 Washington Boulevard Mitigated Negative Declaration,* March.

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Appendix A

Existing Temporary Sound Wall Design and Specifications

Exhibit A.13 - Noise Barrier Specification

ENVIRONMENTAL
NOISE CONTROL

24 FT TEMPORARY SOUND BARRIER SYSTEMS

The modular design of our temporary acoustical noise barrier panel systems allow for **quick** and **easy** delivery, installation and removal - while meeting or exceeding code requirements. Commercial noise barrier panels can be **customized** to meet your needs, with heights up to 40 feet and accomodations for doors, gates and emergency exits. Our 24 foot tall sound walls are engineered to meet UBC/IBC wind loading requirements.

BARRIER BLANKET SPECIFICATIONS

- Sound Transmission Class rated STC-25, 32 & 43 in accordance with ASTM E-413
- Engineered to meet UBC/IBC Wind Load requirements
- California Fire Marshal Flame Retardant Fabric Registration No. F-41501.00
- Accordant with NYC Fire Regulation §805-01(e)
  Length of Char: 3.5, After Flame: 2 Seconds
- Working Temperature: -40 °F to +200 °F
- Oil resistant, UV resistant, Fiber-Free, Anti-Fungal, Self-Drying Poly-Vinyl Chloride Outer Shell with specially developed inner core septum barrier

Learn more about commercial noise control at
www.environmental-noise-control.com or call us at **1-800-679-8633**

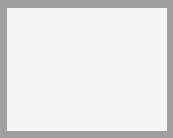
TEMPORARY ACOUSTICAL NOISE BARRIER SYSTEMS

Designed to provide optimum sound control in blocking and absorbing unwanted noise.

ENVIRONMENTAL

ENTERTAINMENT

CONSTRUCTION



INDUSTRIAL

OIL & GAS

TEMPORARY NOISE BARRIER PANEL SYSTEM

At the heart of our temporary sound wall is our Environmental Noise Control (ENC) acoustical noise barrier panel system, which is manufactured using state-of-the-art acoustical composite materials. Our sound panels are fabricated with a polyvinyl-chloride coated outer shell, multiple layers of noise absorbing and blocking material and feature a specially developed septum barrier inner core. The ENC temporary sound wall system is available from 6 to 40 ft. high.

Temporary Sound Panel Systems

Sound Transmission Loss (dB)

% Octave Band Center Frequency	STC 25 Transmission Loss	STC 32 Transmission Loss
63 Hz	8 dB	16 dB
80 Hz	10 dB	20 dB
100 Hz	11 dB	18 dB
125 Hz	10 dB	16 dB
160 Hz	7 dB	16 dB
200 Hz	7 dB	17 dB
250 Hz	11 dB	19 dB
315 Hz	17 dB	23 dB
400 Hz	23 dB	26 dB
500 Hz	28 dB	32 dB
630 Hz	33 dB	34 dB
800 Hz	36 dB	35 dB
1000 Hz	39 dB	35 dB
1250 Hz	41 dB	36 dB
1600 Hz	41 dB	36 dB
2000 Hz	40 dB	36 dB
2500 Hz	41 dB	37 dB
3150 Hz	44 dB	39 dB
4000 Hz	46 dB	40 dB
5000 Hz	50 dB	43 dB

The modular design of ENC's temporary sound panel systems **meets or exceeds** code requirements.

An independent acoustical laboratory has conducted tests in accordance with ASTM E-90 and ASTM E-413 requirements, to measure sound transmission loss and validating the Sound Transmission Class rating of STC-25, STC-32 and STC-43. The ENC composite barrier/absorber blankets, which are laboratory tested and certified, meet or exceed the specifications in the Sound Transmission Loss Data Table.

1 (800) 679 8633 | International +1 310 679 8633 | www.environmental-noise-control.com

CORPORATE OFFICE
Hawthorne, CA

REGIONAL OFFICES & FIELD OPERATIONS
Aledo, TX; Carson, CA; Firestone, CO
Napa, CA; Shreveport, LA; Washington, PA
Calgary, Alberta

For more information on our quality products or possible applications, please see our website or call to speak with one of our ENC representatives. Rapid engineering and deployment response is available worldwide.

Behrens & Associates, Inc.
Environmental Noise Control

ENVIRONMENTAL
NOISE CONTROL

Appendix B
Off-hours Scope of Work

A Morley Builders Company
BENCHMARK Contractors, Inc.

3330 Ocean Park Blvd.
Santa Monica, California 90405-2938
Telephone: 310/392-7272
Fax: 310/452-5652
www.morleybuilders.com

October 22, 2019

CITY OF CULVER CITY

RE: Extended Hours Permit - 9735 Washington Blvd.

To Whom It May Concern:

Per Conditions of Approval Item #60, hours of construction are limited to 8:00 AM to 7:00 PM Monday through Friday, and 9:00 AM through 6:00 PM Saturday. Dirt hauling and construction material deliveries or removal are prohibited during morning (7:00 AM to 9:00 AM) and afternoon (4:00 PM to 6:00 PM) peak traffic periods.

However, in order to ensure the highest level of quality of our concrete structure and to reduce the overall impact to the surrounding communities through a shortened construction duration and peak activities, we would like to request permission for an extended hours permit for the Brick & Machine project located 9735 Washington Blvd. in Culver City.

We are committed to being a good Culver City neighbor, and we understand the sensitivity of the noise and traffic that may be generated from construction activities. Since we are adjacent to Southern California Hospital at Culver City, and located on a main Culver City street, Washington Boulevard, we believe limiting traffic during working hours would have a much bigger impact to the surrounding streets and to Culver City Fire Department. Therefore, we wanted to respectfully request for an extended hours construction permit for the following activities to mitigate the impacts and disruptions to the normal business operations taking in place at Downtown Culver City:

1) Concrete Pours (Mat Foundation) – Mat Pour Site Logistics (3 days)
    a) Start Date & Duration: Total of three-day extended-hour events over the course of a three-week period commencing at the fourth month of construction, with a target start date of December 1, 2019.
    b) Start – Stop Hours for **Weekend: 9:00 a.m. – 6:00 p.m.**
    c) Reasons: We are requesting extended hours in order to limit the number of pours by one for the mat foundation. The number of pours needs to be limited for various reasons, including the following:
        - In order to yield maximum strength of the material
        - Prevent cracking
        - Limiting the impact that large volume pours (i.e. number of trucks to the site) may have on the surrounding community to a total of three events
        - Reduced potential for concrete "spoiling" in delivery trucks while they're attempting to reach the project site

        Most importantly, extended hours will reduce the number of pours for this area of the project, which reduces the duration for mat foundation activities and, in turn, the overall project by five days. The surrounding community will benefit by seeing a reduced overall duration for peak construction activities.
    d) Equipment: Concrete pump and concrete trucks.

A Morley Builders Company
BENCHMARK Contractors, Inc.

3330 Ocean Park Blvd.
Santa Monica, California 90405-2938
Telephone: 310/392-7272
Fax: 310/452-5652
www.morleybuilders.com

2) Concrete Pours (Deck Pours) – Pour Day Closure (17 days)
   a) Start Date & Duration: Total of seventeen separate days over the course of a seven-month period commencing at the seventh month of construction, with a target start date of February 1, 2020.
   b) Start – Stop Hours: **7:00 a.m. – 4:00 p.m.**
   e) Reasons: We are requesting extended hours in order to limit the number of pours by one per deck, with a total of six decks or six pours. The number of pours needs to be limited for various reasons, including the following:
      - In order to yield maximum strength of the material4562
      - Prevent cracking
      - Reduced potential for concrete "spoiling" in delivery trucks while they're attempting to reach the project site

      Most importantly, extended hours will reduce the number of pours for this area of the project, which reduces the duration for deck activities and, in turn, the overall project by thirty days. The surrounding community will benefit by seeing a reduced overall duration for peak construction activities.
   c) Equipment: Concrete pump and concrete trucks.

3) Tower Crane Erection/Dissemble – Tower Crane (6 days)
   a) Start Date & Duration: Total of two separate three-day events, the first of which will occur during the sixth month of construction, with a target start date of January 27, 2020 and the second of which will occur during the seventeenth month of construction, with a target start date of November 1, 2020.
   b) Start – Stop Hours: **7:00 a.m. – 4:00 p.m.**
   c) Reasons: The physical requirements to erect and dismantle the tower crane will require extended work hours to safely complete this activity, while avoiding prolonged exposure to the surround community and minimizing impacts to weekday commuter traffic.
   d) Equipment: Mobile cranes, forklifts, trucks.

As noted per Construction Management Plan, please contact Project Superintendent, Jeff Asher at 310-493-5194 in case of field emergencies.

Thank you for your consideration.

Sincerely,

Katie Lee
Senior Project Engineer
Benchmark Contractors, Inc.

SU19-0378

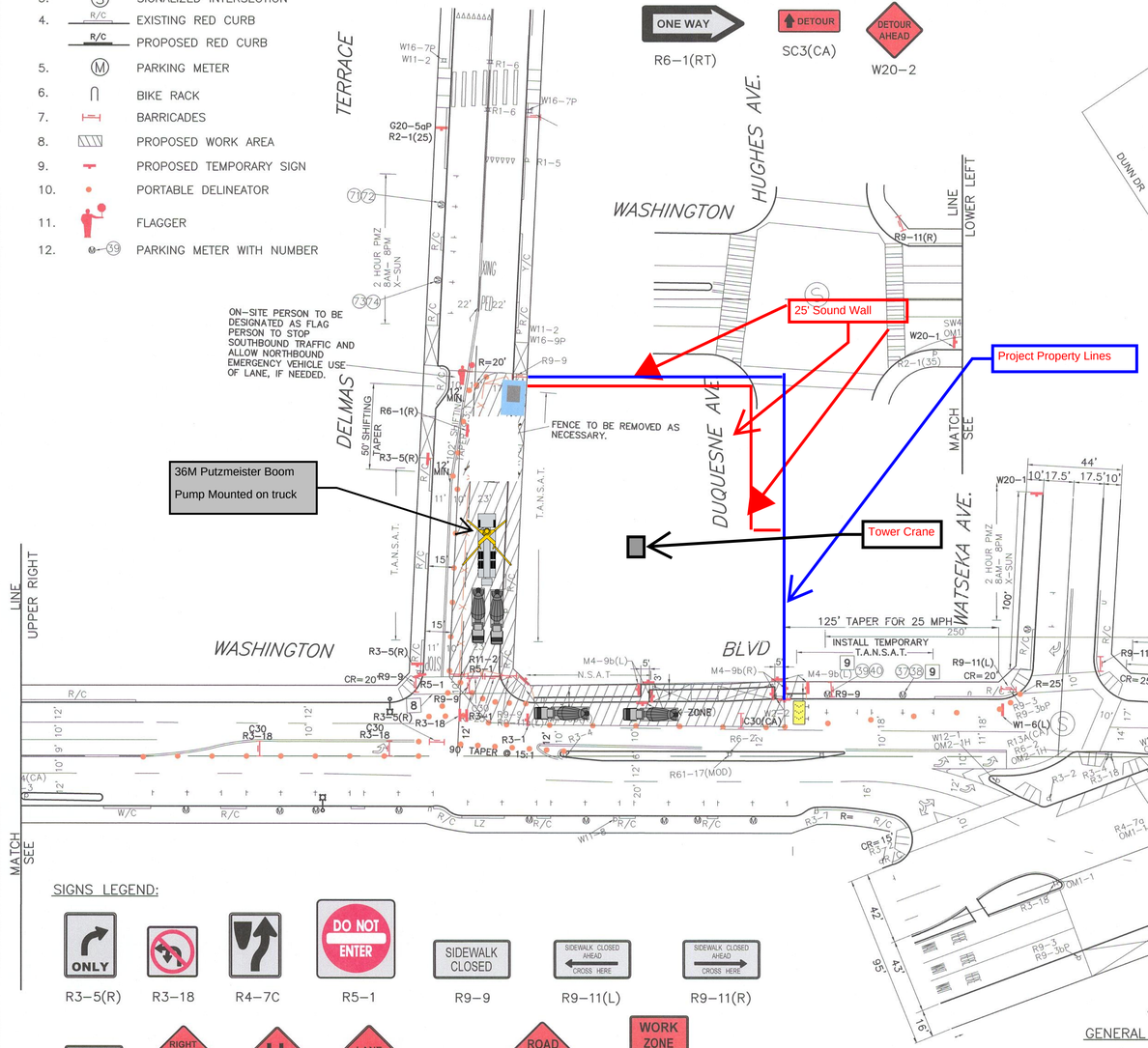
BENCHMARK
MBD-037.2 - Traffic Control Plans
08/27/2019

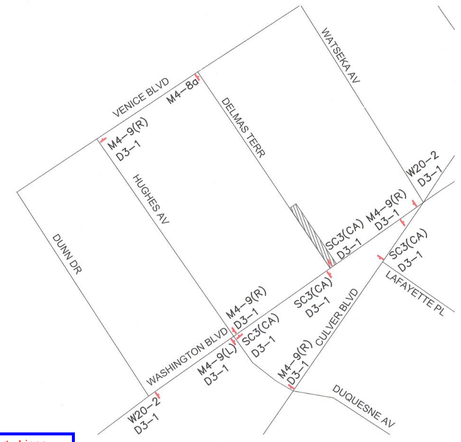
LEGEND

1. EXISTING STRIPING & MARKINGS TO REMAIN
2. EXISTING SIGNS ▸ PROPOSED SIGNS
3. SIGNALIZED INTERSECTION
4. EXISTING RED CURB / PROPOSED RED CURB
5. PARKING METER
6. BIKE RACK
7. BARRICADES
8. PROPOSED WORK AREA
9. PROPOSED TEMPORARY SIGN
10. PORTABLE DELINEATOR
11. FLAGGER
12. PARKING METER WITH NUMBER

DETOUR SIGNS LEGEND:

DELMAS TERR — D3-1
END DETOUR — M4-8a
DETOUR — M4-9(L)
DETOUR — M4-9(R)
ONE WAY — R6-1(RT)
DETOUR — SC3(CA)
DETOUR AHEAD — W20-2

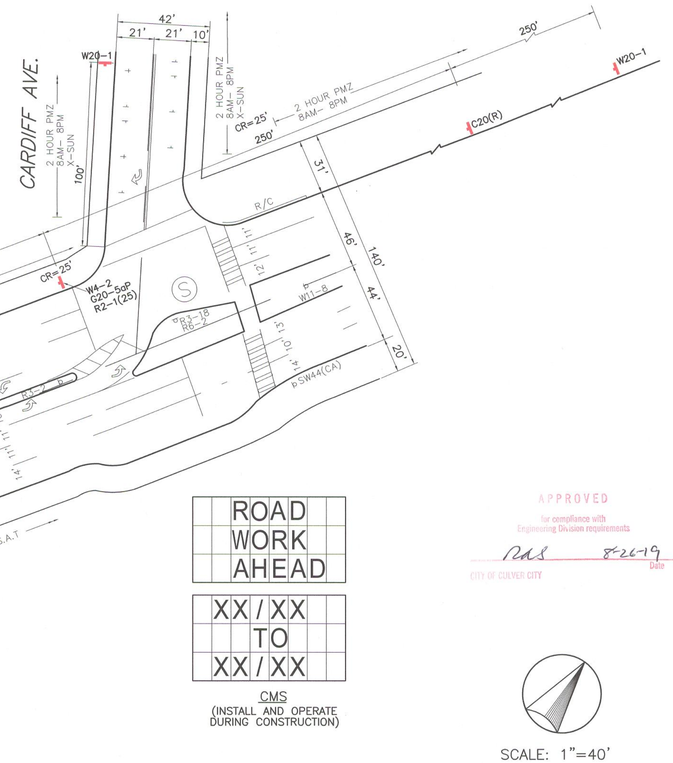




DETOUR MAP (N.T.S.)

STRIPING NOTES:

1. FOR ALL STRIPING DETAILS AND ARROW TYPES REFER TO THE MOST RECENT STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION STANDARD PLANS AND STANDARD SPECIFICATIONS.
2. LENGTH OF DESIGN: 350 ±
3. REMOVAL OF CONFLICTING LINES AND MARKINGS SHALL BE BY WET SANDBLASTING.
4. ALL STRIPING AND PAVEMENT MARKINGS SHALL BE THERMOPLASTIC.
5. ALL STRIPING, PAVEMENT MARKINGS AND MARKERS OBLITERATED BY THE WORK AUTHORIZED BY THIS PERMIT SHALL BE REPLACED IN KIND OR BETTER AS DIRECTED BY THE CITY PERMIT INSPECTOR AT NO COST TO THE CITY.
6. ALL ARROW MARKINGS SHALL BE TYPE IV (R OR L) UNLESS OTHERWISE NOTED.
7. ALL SIGNING SHOWN HEREON SHALL BE INSTALLED, RELOCATED, OR REMOVED BY THE CONTRACTOR.
8. USE TEMPORARY TRAFFIC TAPE TO COVER CONFLICTING EXISTING STRIPING.
9. TEMPORARY COVER METER PARKING(S).



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R4-7C
R5-1 DO NOT ENTER
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R9-11(L) SIDEWALK CLOSED AHEAD CROSS HERE
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W4-2
C30 LANE CLOSED
W1-6(L)
W20-1 ROAD WORK AHEAD
G20-5aP R2-1(25) WORK ZONE SPEED LIMIT 25

ROAD WORK AHEAD

XX/XX TO XX/XX

CMS
(INSTALL AND OPERATE DURING CONSTRUCTION)

APPROVED
for compliance with Engineering Division requirements
8-26-19
CITY OF CULVER CITY Date

SCALE: 1"=40'

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CONCRETE POURS, MASS EX, TOWER CRANE
DURATION: 40 DAYS (NON-CONTINUOUS)

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Culver City, California 90230
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PLAN RECOMMENDED BY:
George Rhyner
REGISTERED CIVIL ENGINEER
DATE: 8/22/19

REGISTERED PROFESSIONAL ENGINEER GEORGE RHYNER NO. 047763 Exp. 12-31-2019 CIVIL STATE OF CALIFORNIA

CITY OF CULVER CITY
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

TEMPORARY TRAFFIC CONTROL PLAN

WASHINGTON BOULDEVARD
FROM CULVER BLVD TO DUQUESNE AVE.

BENCH MARK:

NO.	REVISION	BY	APPR.	DATE
3				
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1				

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SU19-0378

BENCHMARK
MBD-037.2 - Traffic Control Plans
08/27/2019

LEGEND

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4. EXISTING RED CURB / PROPOSED RED CURB
5. PARKING METER
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8. PROPOSED WORK AREA
9. PROPOSED TEMPORARY SIGN
10. PORTABLE DELINEATOR
11. FLAGGER
12. PARKING METER WITH NUMBER

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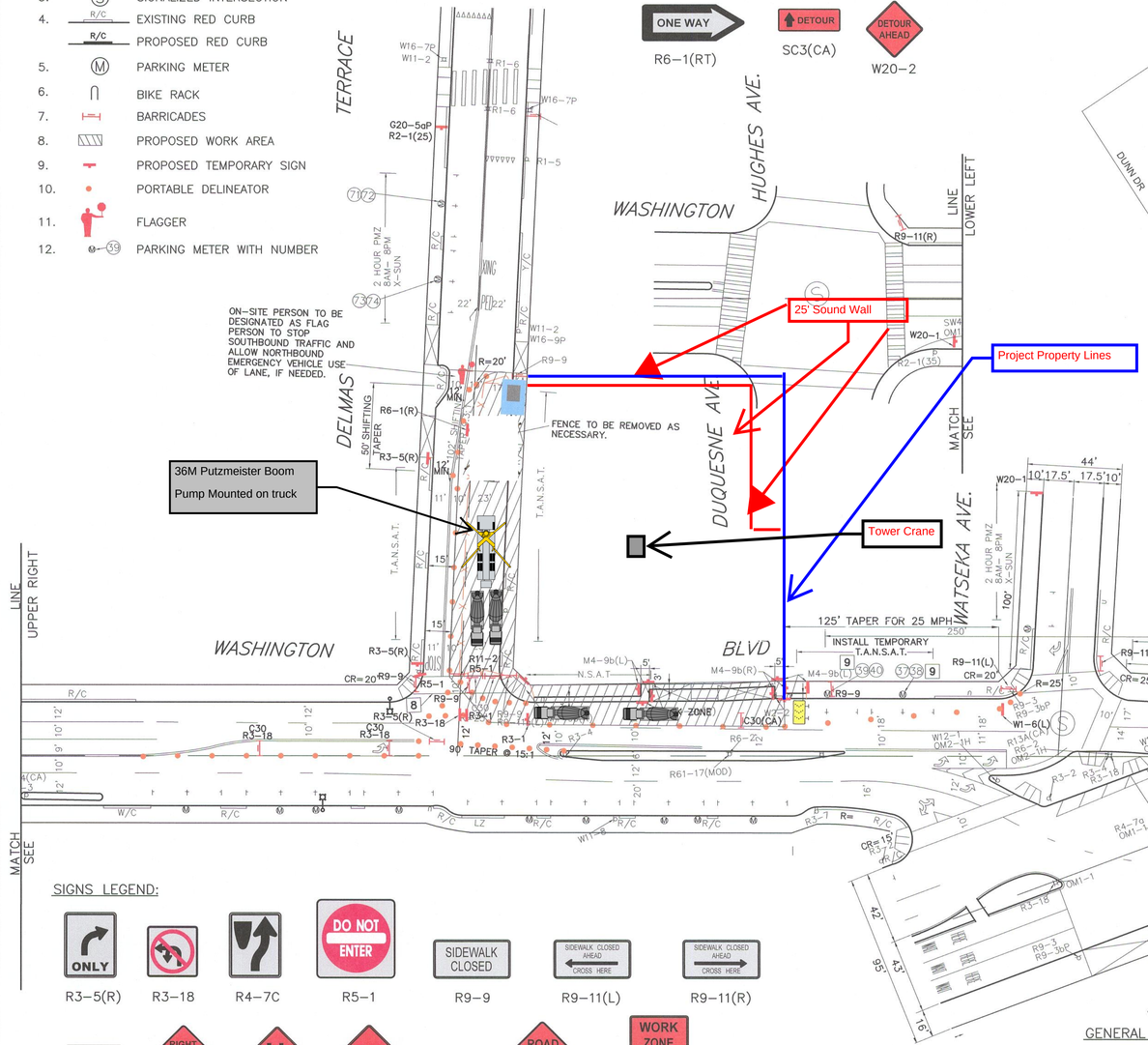

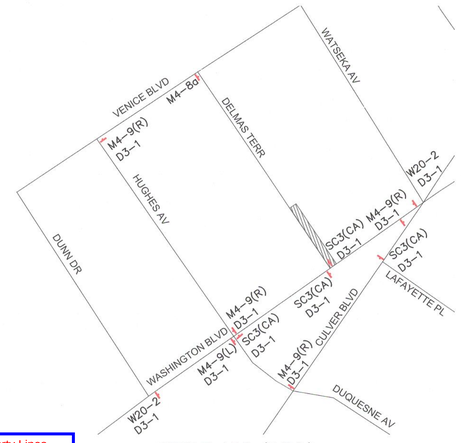

DETOUR MAP (N.T.S.)

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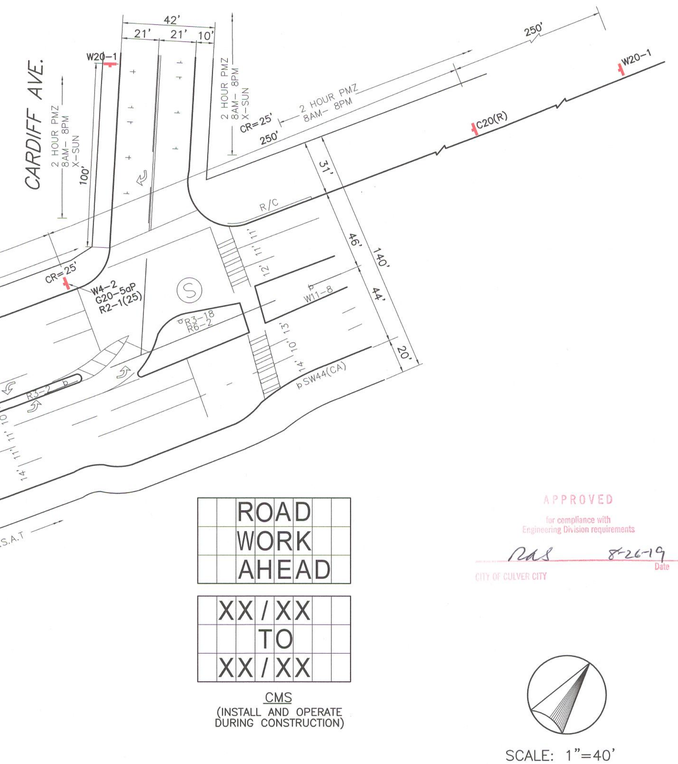

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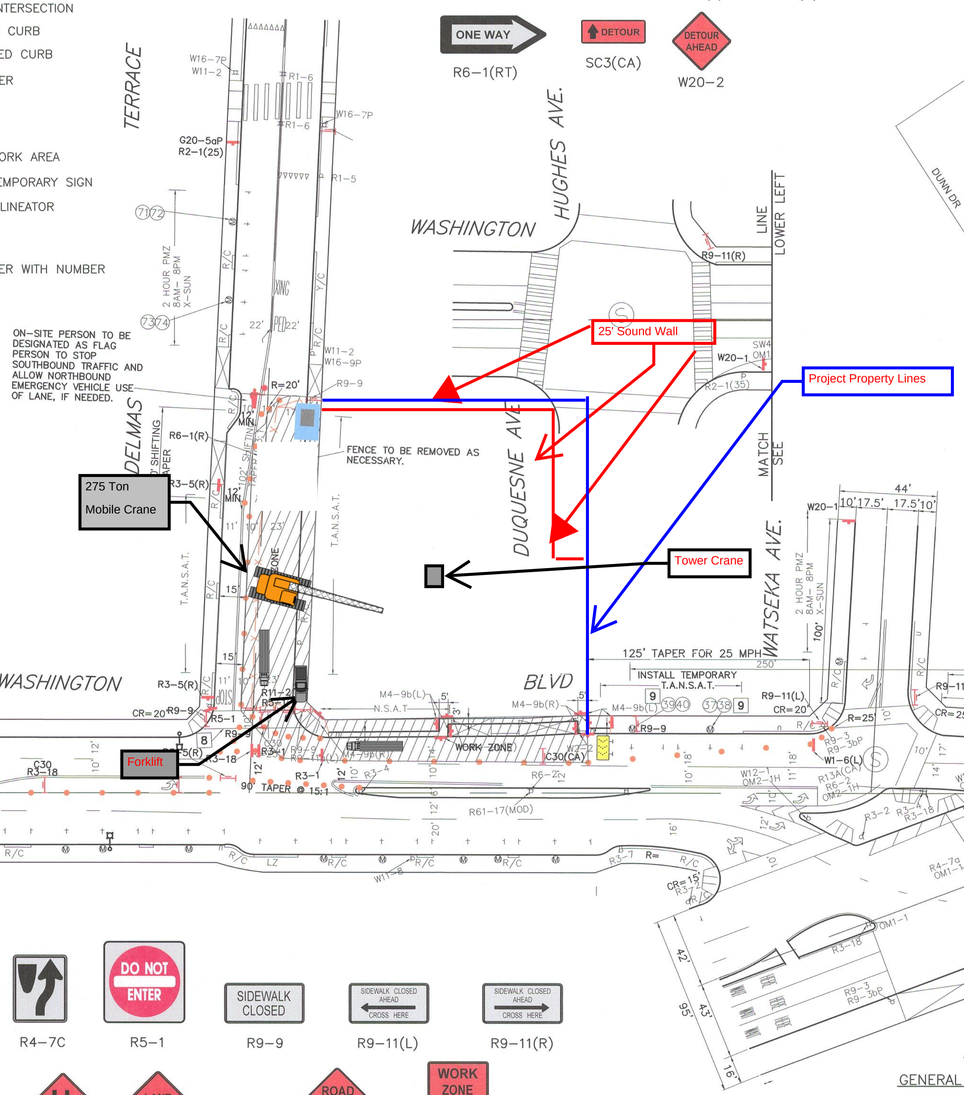

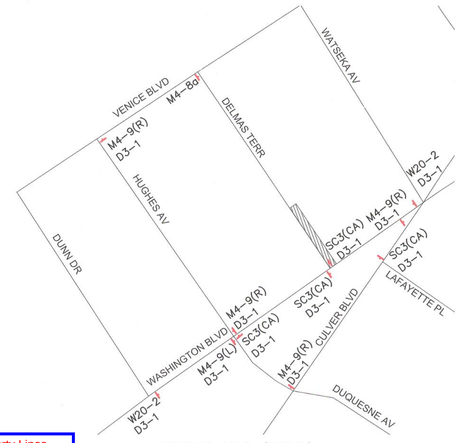

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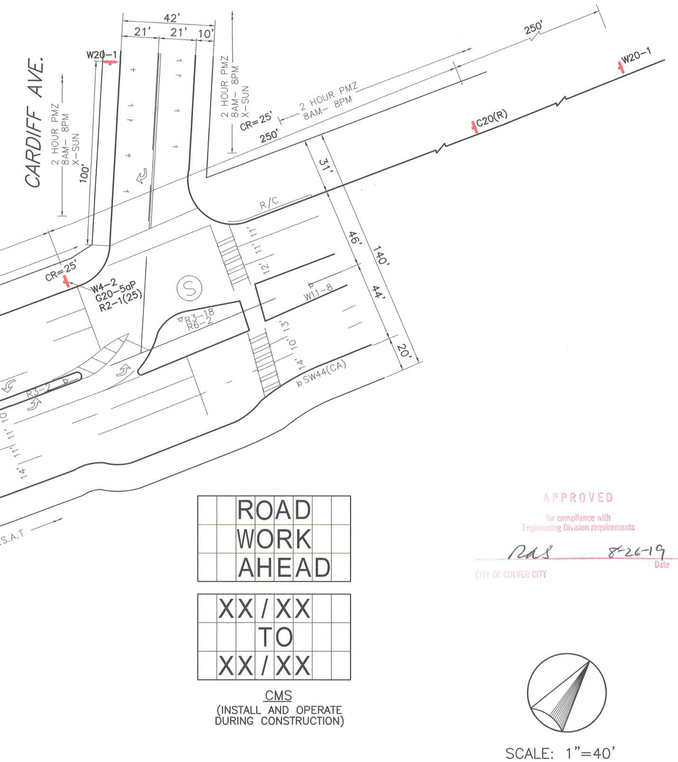

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Appendix C

Ambient Noise Measurement at Nearest Noise Sensitive Receptor

SOURCE: Google Map, 2015 (Aerial).

9735 Washington Boulevard

Figure B-3

Noise Measurement Locations

ESA PCR

WILSON IHRIG
ACOUSTICS, NOISE & VIBRATION

CALIFORNIA
WASHINGTON
NEW YORK

BRICK AND MACHINE DEVOPMENT PROJECT

9735 WASHINGTON BOULEVARD, CULVER CITY

DRAFT CONSTRUCTION NOISE AND VIBRATION MONITORING PLAN

Revision B

20 May 2019

Submitted To:

Elkins Kalt Weintraub Reuben Gartside LLP
2049 Century Park East, Suite 2700
Los Angeles, California 90067

By:

James E. Phillips, MS, FASA
Principal

WI #17-093

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1 INTRODUCTION

This Draft Construction Noise & Vibration Monitoring Plan outlines the proposed approach to meet the requirements of adopted mitigation measures NOISE-1 through NOISE-6 for the Brick and Machine office and retail development (Project) at 9735 Washington Boulevard, Culver City, California. After review of this draft plan by the City of Culver City, a Final Construction Noise & Vibration Monitoring Plan documenting the exact monitoring locations, monitoring equipment installed, and verification of threshold exceedance notifications will be submitted by the Project a minimum of 24 hours prior to the start of Project construction.

The monitoring plan described within this document was developed based upon the expected construction schedule and roster of equipment provided in Table 1.

Table 1 Expected project schedule and roster of equipment

Demolition/Site Preparation, approximately 4 weeks, month 1 Excavator (with grapple and mounted pneumatic impact hammer, i.e. "hoe ram") Concrete Saw 2 Dump Trucks (to be loaded with excavator)
Shoring, approximately 2 weeks, month 2 to 2.5 Drill Rig Hydraulic Crane Concrete Pump Skip Loader Tie-back Rig Air Compressor Small Tools – Chain Saws, etc. Welding Equipment with Generator 110-yard Ready Mix Truck (one truck on site at a time)
Excavation, approximately 12 weeks, month 2.5 to 5.5 Excavator Loader Backhoe Street Sweeper Up to 3 Bottom Dump Trucks on site at a time
Foundation/Superstructure, approximately 54 weeks, month 5.5 to 19 Concrete Pump Truck Air Compressor Forklift Crane Manlift Generator Pump Up to 2 Pneumatic Tools at a time Up to 2 Ventilation Fans at a time Welder

The maximum noise levels emitted by construction equipment listed in Table 2 will be verified prior to use either by review of the equipment specifications provided by the equipment manufacturer or by acoustical measurements; either the review or measurements will be conducted by the acoustical consultant of either the Brick and Machine or the hospital. The above assumes that such information from the equipment manufacturer is available or measurements are feasible.

Table 2 Maximum noise emissions allowed for project construction equipment

Description	Lmax (dBA at 50 ft)*
Excavator	85
Crane	85
Drill Rig	85
Tie-back Rig	85
Concrete Pump	82
Generator (>25 kVA)	82
Loader	80
Air Compressor	80

*Measured using the slow meter setting with the microphone of the sound level meter located 50 feet away from the equipment, at 5 feet above the ground surface, away from any other reflective surfaces.

In addition to the noise monitoring described herein, a sound barrier will be constructed along the north and east property lines of the project site to control project related construction noise at the adjacent properties. Details of the sound barrier and the sequence of its construction will be provided for approval by the City of Culver City in a submittal separate from this Construction Noise & Vibration Monitoring Plan prior to the start of construction.

A period of approximately two weeks is anticipated for construction of the sound barrier. In order to facilitate construction of the sound barrier, noise levels during construction of the sound barrier will not be monitored. No other project construction activities will be allowed until the construction of the sound barrier is completed and noise monitoring begun.

2 NOISE MONITORS

2.1 Noise Monitoring Stations

Noise monitoring stations will include the following features:

- Weather resistant enclosures
- Type I (Precision) sound level meters with digital data logging
- Audio recordings of loud events
- Wireless modems for real-time remote data access on a 24-hour basis
- Internal memory card data storage if the cellular network signal drops
- External power sources, either line power with 30-minute battery backup or solar power

The noise monitoring system will be provided by Seti-Media, Inc. of Sherbrooke, Quebec, Canada or equivalent. The system is based on a commercially-manufactured sound level meter, the Larson Davis Model 831. The specifications for the Larson Davis Model 831 Sound Level Meter are attached to this document. Using the raw data from this meter, the Seti-Media system provides sophisticated

communication, system health-monitoring, and data processing capabilities. Wilson Ihrig has partnered with Seti-Media on dozens of projects over the past 10 years, and the two firms work together to continue to develop and refine the Seti-Media monitoring systems.

2.2 Noise Monitoring Locations and Installation

- Location N1: South facing building façade of the Southern California Hospital – Culver City (SCH-CC), adjacent to the patient room window on Level 3.
- Location N2: South facing building façade of the SCH-CC, adjacent to the patient room window on Level 6.

A satellite view of the monitoring locations is shown in Figure 1. Figure 2 is a view of the SCH-CC from Washington Boulevard, indicating the proposed locations for the noise monitoring station microphones. The microphones will be located outside the patient rooms which are closest to the Project site. The locations indicated in Figure 2 are proposed to minimize shielding of the microphones from the Project site caused by the southernmost corner of the building. Final locations will be approved by the acoustical consultants of both Brick and Machine and the hospital.

The Project will need access and permission from SCH-CC to attach microphones to the façade of the building and to attach instrumentation cables from the roof to the monitoring equipment on the wall. The Project will also need permission to install monitoring station equipment on the SCH-CC roof. If available, access to AC line power on the roof is desired. If line power is not available, solar panels and batteries for powering the monitoring stations will be installed on the roof.

Each sound level meter will be calibrated immediately prior to installation. Physical calibration of the sound level meters will be performed using an acoustic calibrator that has been calibrated within the past year with traceability to the National Institute of Standards and Technology (NIST). Calibration of the acoustic calibrator will be performed by a company within the United States of America. Physical inspection and calibration of the noise monitors will be conducted every four months, by either the acoustical consultant of Brick and Machine or the hospital.

Monitoring equipment instrument calibration certificates and documentation of the exact microphone locations will be provided in the Final Construction Noise & Vibration Monitoring Plan submitted to the City.

Figure 1 Satellite view of noise monitor locations relative to Project site

Figure 2 View from Washington Boulevard of proposed noise monitoring locations

2.3 Noise Monitoring Metrics

DEFINITIONS

Sound Pressure Level (SPL): The sound pressure level of sound in decibels is 20 times the logarithm to the base of 10 of the ratio of the RMS value of the sound pressure to the RMS value of a reference sound pressure. The standard reference sound pressure is 20 micro-Pascals.

A-Weighted Sound Level (dBA): The sound pressure level in decibels as measured on a sound level meter using the internationally standardized A-weighting filter or as computed from sound spectral data to which A-weighting adjustments have been made. A-weighting de-emphasizes the low and very high frequency components of the sound in a manner similar to the response of the average human ear. A-weighted sound levels correlate well with subjective reactions of people to noise and are universally used for construction and environmental noise evaluations. Figure 3 shows typical A-weighted environmental noise levels.

Energy Equivalent Level (L_{eq}): The level of a steady sound which would have the same energy as the fluctuating noise level integrated over the time period of interest. L_{eq} is based on the logarithmic or energy summation and it places more emphasis on high sound level periods than a straight arithmetic average of noise level over time.

Daytime Equivalent Level (L_{day}): The energy equivalent level, L_{eq}, integrated over the time period from 7:00 a.m. to 7:00 p.m. (07:00 to 19:00).

***Maximum Sound Level (L_{max})*:** The maximum sound level measured during a measurement period. The noise monitoring stations measure A-weighted sound levels in decibels (dBA re: 20 micro-Pascals) with a "slow" meter response. Figure 3 shows typical, A-weighted, slow noise levels.

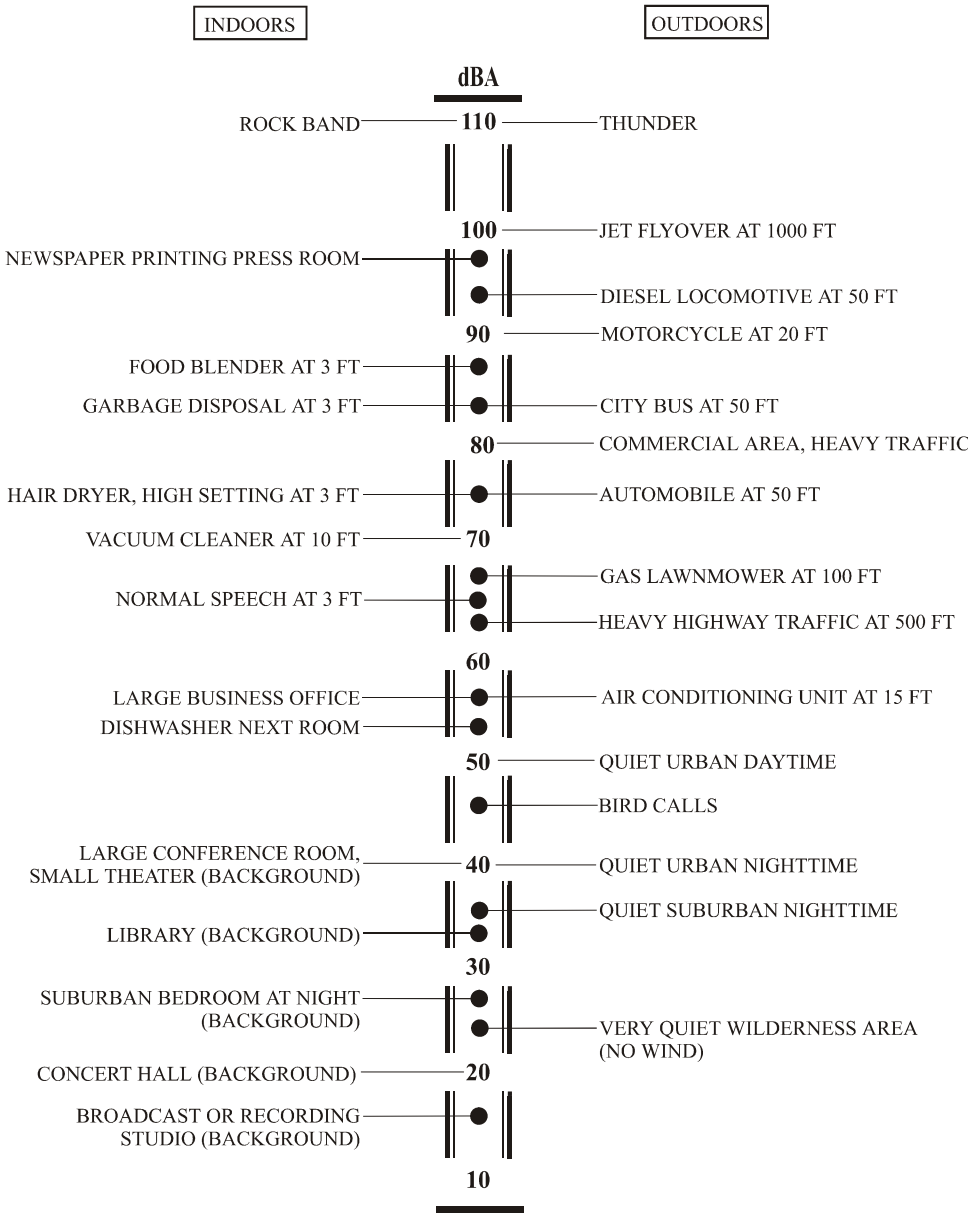

Figure 3 Typical environmental noise levels

2.4 Noise Monitoring Threshold

The threshold for significant noise impact included in the initial Mitigated Negative Declaration (MND) prepared for the Project was based upon an ambient daytime equivalent noise level (L_{day}) of 58 dBA at the property line between the Project and the SCH-CC obtained by continuous sound level measurements conducted by Environmental Science Associates (ESA) during a 24-hour period from 5:00 p.m. Friday to 5:00 p.m. Saturday, on 13-14 January 2017. However, traffic noise levels during the weekend are often less than those during the weekday due to differences in hourly traffic volumes and patterns. Therefore, it was necessary to measure the baseline sound level during weekdays so that the appropriate noise monitoring threshold for work during weekdays could be determined.

Wilson Ihrig installed digitally logging, precision sound level meters on site on Tuesday, 15 May 2018, and left them on site until they were recovered on Friday, 18 May 2018. As such, ambient noise data were acquired for a total of 72-hours on weekdays. Additionally, short-term, attended measurements were conducted at the property line between the Project and SCH-CC to augment the data from the above long-term measurements.

Two precision, digitally logging, calibrated sound level monitoring systems were installed in the vicinity of the site at Locations LT-1 and LT-2, as indicated in Figure 4, on 15 May 2018. For security purposes, the monitors were installed at approximately 12 feet above grade level on a utility pole located near the northeast corner of the Project site (LT-1) and a street light pole across Delmas Terrace from the northwest corner of the site (LT-2).

After installing the long-term noise monitors, calibrated digital recordings of ambient noise were conducted for a minimum of ten minutes each, at three locations (ST-1, ST-2, ST-3) along the property line as indicated in Figure 4. The microphone of the recording system was positioned above the existing SCH-CC wall, to avoid reflections from the surface of the wall affecting the recorded sound pressure levels. The recordings were conducted between 16:25 and 17:00 (4:25 p.m. to 5:00 p.m.) on 15 May 2018. The energy equivalent level (L_{eq}) measured at each location was analyzed from the recorded data upon return to Wilson Ihrig.

Figures 5 and 6 are plots of the measured hourly L_{eq} sound pressure levels at Locations LT-1 and LT-2, respectively. For the most part, the data indicate hourly trends typical in an urban setting. The ambient noise was lowest during the early morning hours, rising during the beginning of the morning commute, staying reasonably constant through the daytime, then gradually reducing into the late-night hours. The data in Figures 5 and 6 indicate that the existing, weekday, ambient sound pressure levels in the vicinity of the SCH-CC are 61 to 63 dBA (L_{day}).

At LT-1, L_{day} ranged from 59 to 63 dBA with an average of 61 dBA over the three measured day-time periods, whereas at LT-2, L_{day} ranged from 61 to 64 dBA with a 3-day average of 63 dBA. It is reasonable for the data at LT-2 to be higher than the data at LT-1 due to LT-2 being close to traffic on Delmas Terrace. The L_{eq} measured at short-term locations ST-1 and ST-2 was 61 dBA while the L_{eq} at ST-3 was 65 dBA. Like LT-2 above, the data at ST-3 is higher than the other short-term locations due to proximity to Delmas Terrace.

Based upon the measured data described above, a L_{day} value of 61 dBA appears to be representative of the daytime equivalent sound pressure level of the existing ambient noise at the property line

between the Project and the SCH-CC during weekdays. This is 3 dBA higher than the 58 dBA L_{day} obtained by ESA on the weekend.

As established in the MND, the applicable limit for construction noise is 5 dB over the existing ambient. Using the measured weekday baseline of 61 dBA, the weekday limit for construction noise will be 66 dBA, assessed on an hourly equivalent (L_{eq_1hr}) basis. For work on the weekend, construction noise will be limited to 63 dBA, L_{eq_1hr}.

In addition, noise levels in excess of the hourly equivalent noise level limits described above will be limited to the levels and durations outlined in Table 3 for each hour. The limits in Table 3 are intended to provide timely alerts to avoid exceeding the hourly equivalent noise level limits above. The L_{max} limits in Table 3 are based upon results from the ambient noise survey described above and were selected to avoid false alarms from sources of noise not related to project construction.

Monitoring will be continuous and analyzed on a 1 second basis. Alerts will be generated if any of the maximum durations in Table 3 are reached.

Table 3 Noise levels allowed to be exceeded and allowed durations within each hour

Weekday Limits (dBA)	Weekend Limits (dBA)	Maximum Duration in an Hour
66	63	15 minutes
71	68	5 minutes
76	73	2 minutes
81	78	30 seconds
86	86	at no time, sirens excluded

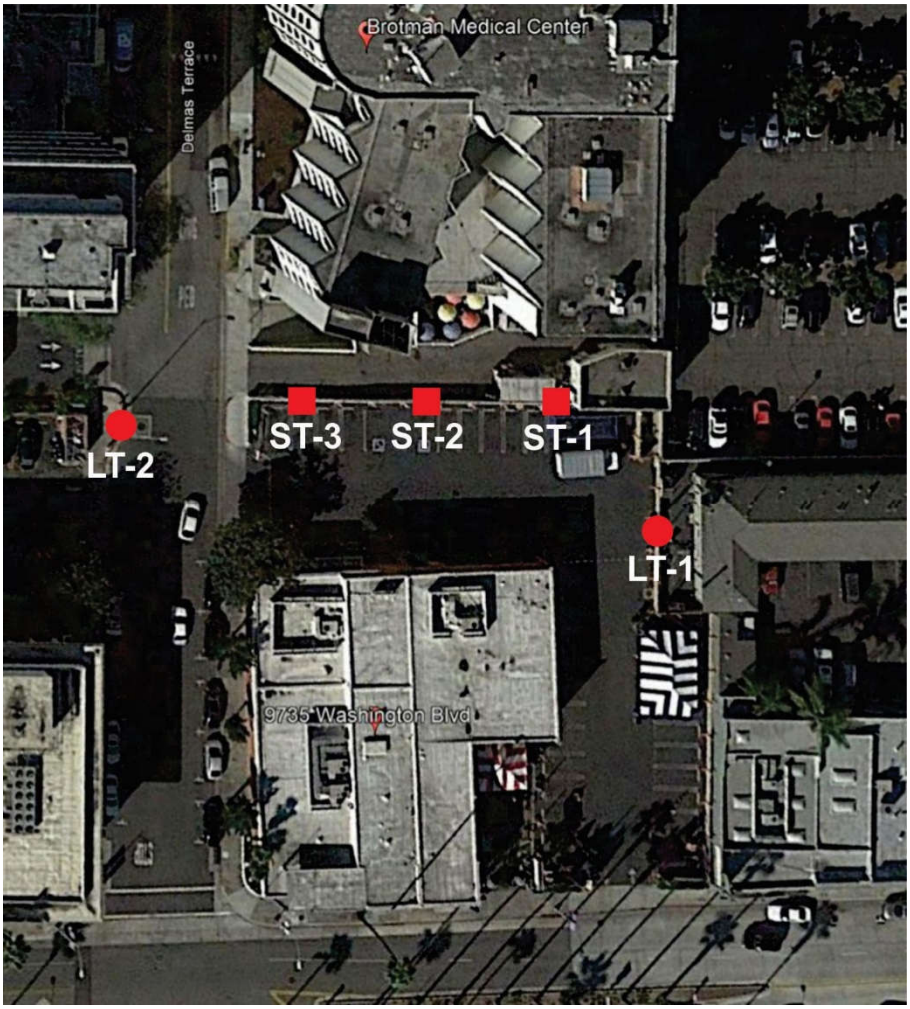

Figure 4 Ambient noise survey locations, May 2018

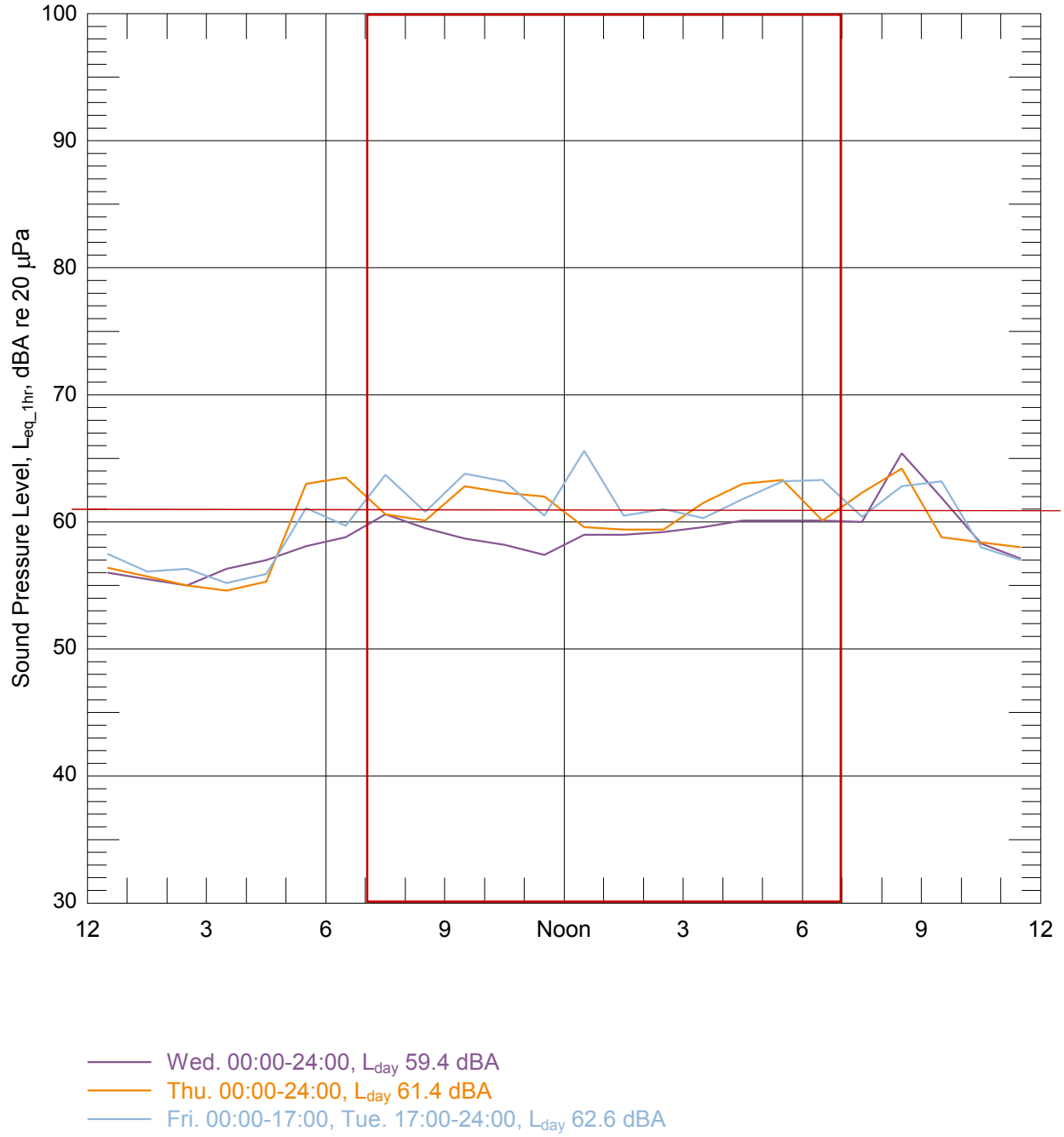

Figure 5 Hourly energy equivalent sound pressure levels (Leq) at Location LT-1, near the northeast corner of the site, May 15-18, 2018, average L_{day} 61 dBA (07:00-19:00)

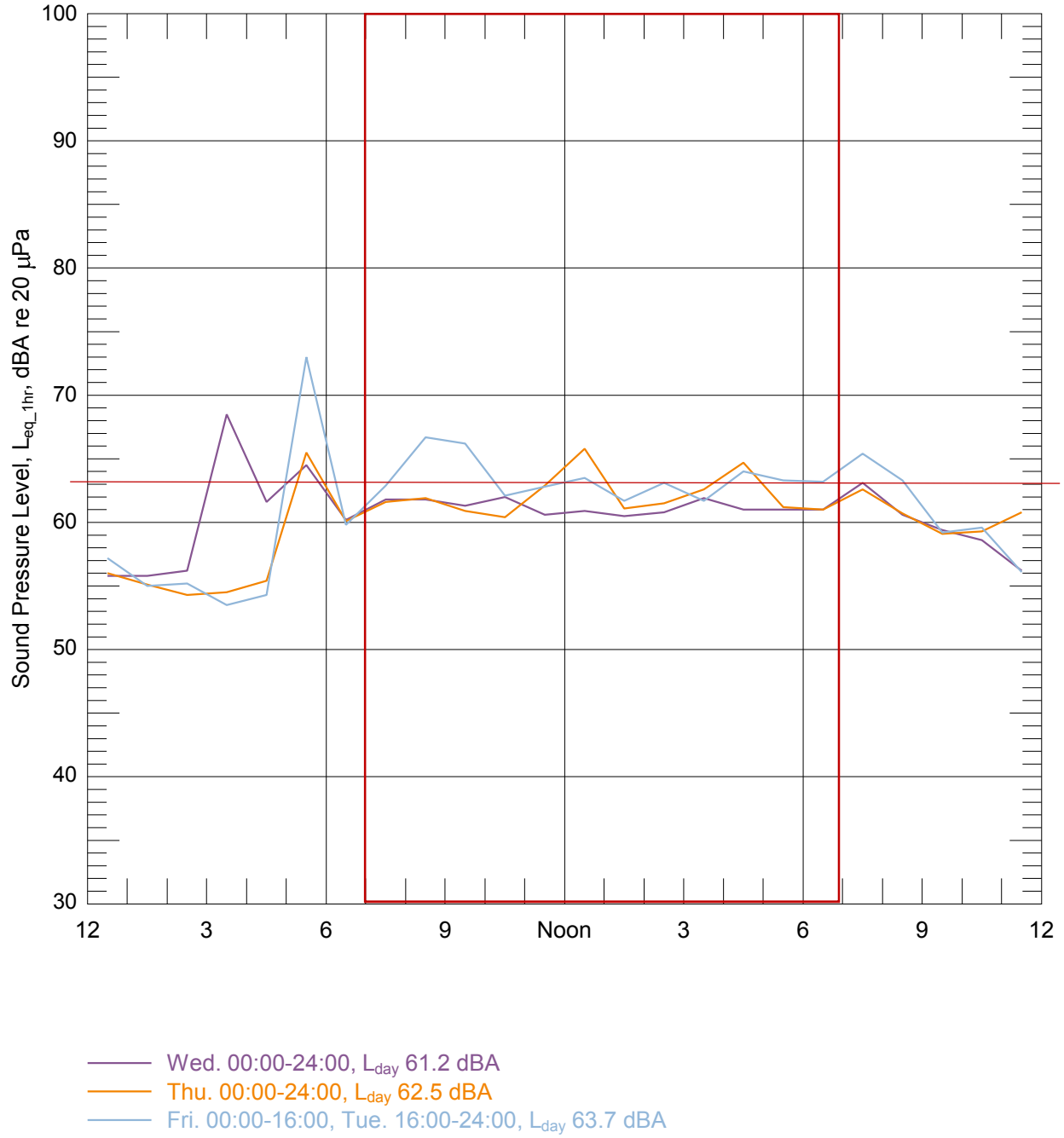

Figure 6 Hourly energy equivalent sound pressure levels (Leq) at Location LT-2, near the northwest corner of the site, May 15-18, 2018, average L_{day} 63 dBA (07:00-19:00)

3 VIBRATION MONITORS

3.1 Vibration Monitoring Stations

Vibration monitoring stations will include the following features:

- Tri-axial vibration sensor
- Wireless modem for remote data access on 24-hour basis
- Internal memory card stores data between data transmission
- Requires external line power source (30-minute battery backup)

The vibration monitoring system will also be provided by Seti-Media, Inc, or equivalent. The system is based on a commercially-manufactured vibration meter, the Larson Davis Model HVM100. The specifications for the Larson Davis HVM100 are attached to this document. As with the noise monitoring system, the vibration monitoring system provides sophisticated communication, data-processing, and system health-monitoring capabilities.

3.2 Vibration Monitoring Locations and Installation

- Location V1: SCH-CC Cardiac Procedures Room
- Location V2: Imuno-Hematology Room/Stat-Laboratory
- Location V3: Utility Room at 3871 Watseka Avenue (pending availability)

A satellite view of the monitoring vibration locations is shown in Figure 7. A partial plan of the SCH-CC basement is provided in Figure 8 for reference.

Location V1 will be installed on the floor along the south wall inside one of the rooms adjacent to the Cardiac Procedures Room. This location will be located at a similar distance from the Project site as the Imuno-Hematology Room/Stat-Laboratory, providing redundancy in the event that there is equipment failure at Location V2.

If acceptable to the SCH-CC, Location V2 will be installed on the floor within either the Imuno-Hematology Room or the Stat-Laboratory, along the south wall, closest to the Project site. If activity within those rooms or concerns for safety or sanitation prevents installing Location V2 within those rooms, then the monitor will be installed either next to the south wall within the Blood Bank adjacent to the Imuno-Hematology Room. As mentioned above, Location V2 will provide redundancy in the event that there is equipment failure at Location V1.

Location V3 will be located within the apartment building east of the Project site at 3871 Watseka Avenue. There appears to be a utility room with an exterior door on the ground floor at the west end of the apartment building which would be a good location for the monitoring equipment. The Project will need to obtain access from the building owner, including a key to the utility room. We do not recommend placing the equipment within a tenant unit because 24-hr notice would need to be given to the tenant any time access to the equipment was needed, plus there would be a high risk of false-alarms due to tenant activity. If a suitable interior space is not available, the vibration monitoring station will be located on the ground immediately adjacent to the exterior of the building. The system

is weather-resistant, but security provisions would have to be made with the property owner's cooperation.

Monitoring equipment instrument calibration certificates and documentation of the exact vibration monitoring station locations will be provided in the Final Construction Noise & Vibration Monitoring Plan submitted to the City.

Figure 7 Satellite view of vibration monitor locations relative to Project site

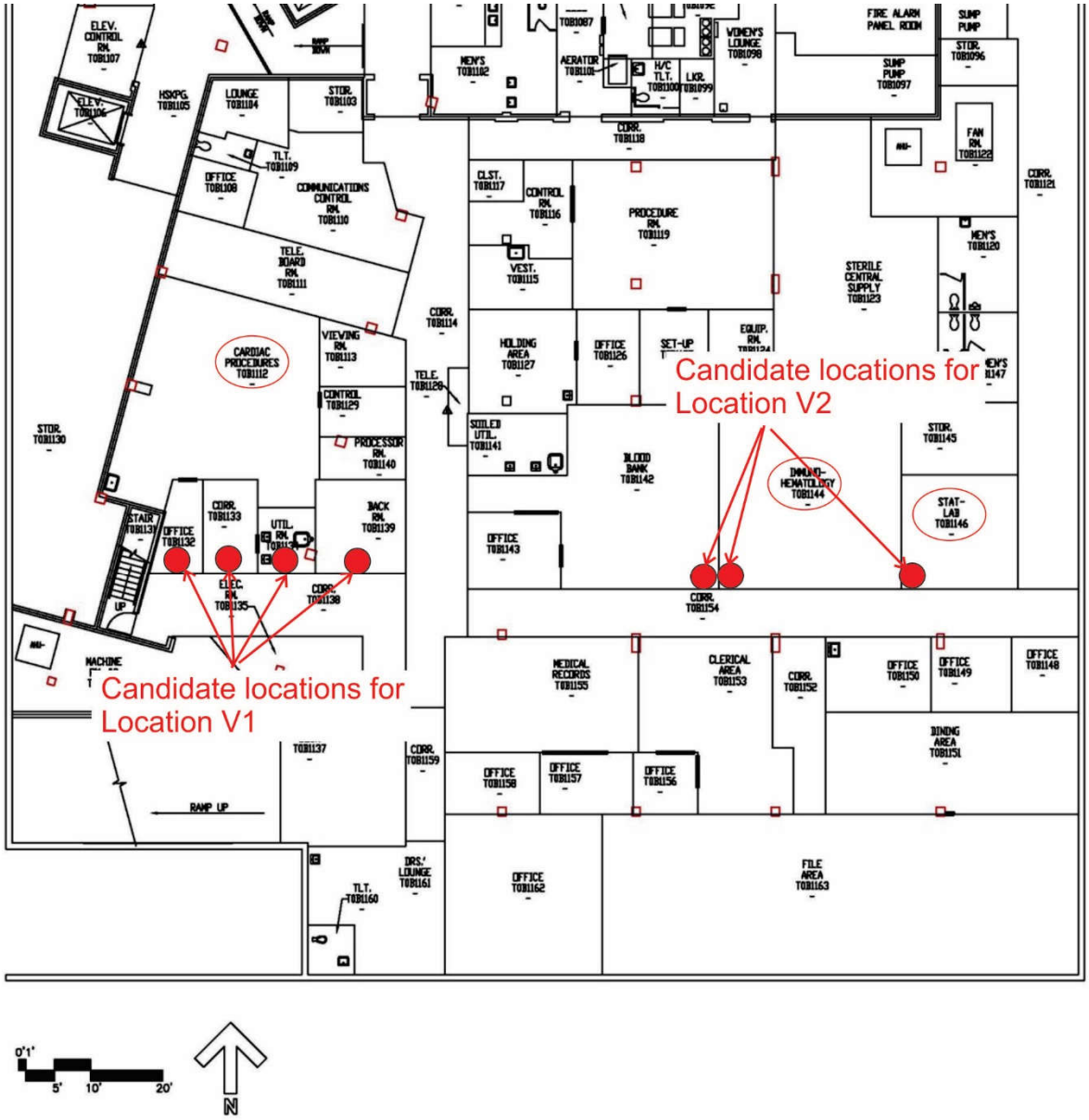

Figure 8 Candidate locations for Locations V1 and V2

3.3 Vibration Monitoring Metrics

DEFINITIONS

Vibration Velocity Level (VdB): The vibration velocity level in decibels is 20 times the logarithm to the base of 10 of the ratio of the RMS value of the particle velocity to the RMS value of a reference velocity. The standard reference velocity is 1 micro-inch/second.

Peak Particle Velocity (inches/sec PPV): The maximum rate of change of ground displacement with time. It is typically measured simultaneously in three directions oriented 90 degrees to each other (longitudinal, transverse, and vertical). The standard units are inches/second.

Figures 9 and 10 show typical responses to levels of VdB and peak particle velocity, respectively, for general context.

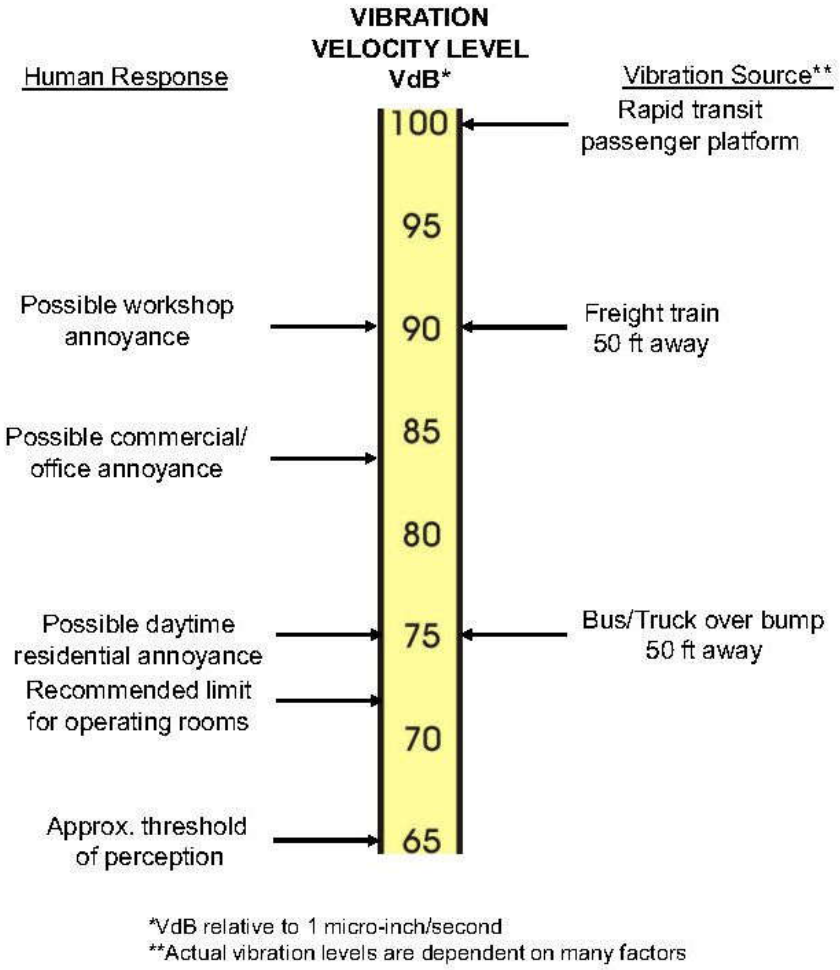

Figure 9 Typical environmental vibration levels, VdB

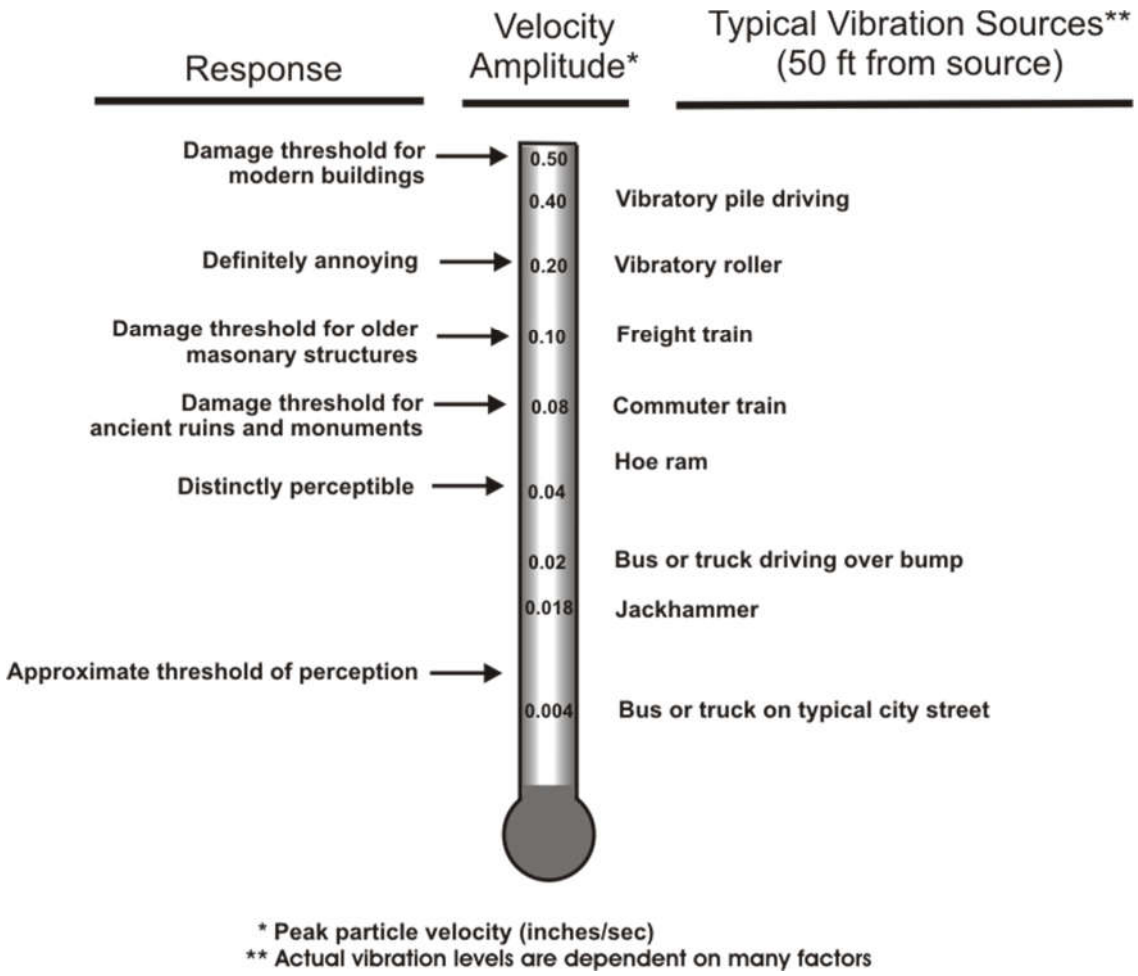

Figure 10 Typical environmental vibration levels, Peak Particle Velocity (inches/sec)

3.4 Vibration Monitoring Thresholds

Vibration monitoring thresholds are presented in Table 4. The thresholds are based upon the requirements of adopted mitigation measure NOISE-5. The limits within the SCH-CC are intended to avoid interference with medical procedures within the vibration sensitive spaces. The limit at the adjacent residence is intended to avoid human annoyance. Both limits are well below the threshold for structural damage.

To coordinate setting the vibration monitoring thresholds with the noise & vibration consultant, the contractor will provide the consultant a current work equipment analysis and schedule prior to the beginning of construction. The contractor will notify the consultant of any changes in the start of any phase of the work a minimum ten working days prior to the start of each work phase. The contractor will also notify the consultant a minimum ten working days prior to the use of any potentially significant vibration source that has not been used previously on the site.

The vibration monitoring equipment will be set up to send warning notifications when the vibration exceeds levels that are lower than the thresholds specified in NOISE-5 and indicated in Table 4. The purpose of the lower, warning thresholds will be to advise the contractor that construction vibration is approaching the allowable limit, giving the contractor the opportunity to adjust their means and methods accordingly, if necessary. The warning thresholds will be established once the monitoring systems are installed to avoid excessive warning notifications. The warning thresholds will be set and tested, as needed, with the most potentially significant sources of vibration impacts (i.e. hoe ram usage, auger drill usage, etc.) for each ground-disturbing work phase. Warning threshold levels will be submitted to the City within 24 hours of being determined, or the next business day.

Table 4 Vibration monitoring thresholds

Location	Monitoring Threshold Limit
V1: SCH-CC Cardiac Procedures	72 VdB
V2: SCH-CC Imuno-Hematology Room/Stat-Laboratory	72 VdB
V3: Adjacent Residential, 3871 Watsheka Avenue*	0.035 in/s PPV

*Pending access available

4 MONITORING PROTOCOLS

4.1 Data Collection

Noise monitoring and data collection will be conducted throughout the duration of the Project construction. Vibration monitoring and data collection will be conducted during ground-disturbing construction activities (demolition, shoring, excavation, and foundation work) until sufficient compliance has been demonstrated.

The noise monitoring systems will include a web interface for reviewing real-time data and summaries of daily, weekly, and monthly historical data. Detailed graphs showing time histories of the noise and vibration data with comparisons to the thresholds will be available on the web interface. This interface will be verified and documented in the Final Construction Noise & Vibration Monitoring Plan. Information for accessing the Project monitoring system web interface will be provided in the monitoring plan.

The Project website will provide several tools for assisting with source identification and review of data, including the ability to view detailed waveform information and the ability to listen to audio records when levels exceed a determined trigger level.

It will be possible to add user comments or "memos" regarding project activity and/or monitoring data for each location and monitor.

Examples of the information and capabilities provided by the Project website will be included in the Final Construction Noise & Vibration Monitoring Plan submitted to the City.

4.2 Alarming and Alerting

Construction relations personnel for this project will be designated prior to start of construction. They will be responsible for responding to any concerns regarding construction noise and vibration. The liaison's telephone number(s) will be prominently displayed at the project site.

Table 5 shows the users who will be provided access to the Project website along with the initial configuration for Project notifications. With initial configuration, each user will receive exceedance notification emails on weekdays during construction hours between 7:00 AM and 7:00 PM when noise levels are above Project thresholds. Comment and system self-check notification emails will be sent out at all times of day. SMS (text message) notification options are also available for exceedances, comments, and system self-checks. Each user will be able to reconfigure notifications if desired.

In the case of a threshold exceedance notification:

- Designated construction personnel will investigate and identify noise/vibration source(s) on site as soon as they receive a notification.
- If needed, measurements will be taken of the noise emitted by the source identified as the cause of the exceedance for comparison to the corresponding reference noise level within the then current FHWA Construction Noise Handbook in as timely a manner as feasible. If the source is out of compliance with the FHWA handbook, reasonable effort will be taken to modify the source to reduce the noise emitted to acceptable levels or the source will be replaced or removed from the project site.
- The following will be documented (either via the web interface or email):

- Is the source related to the project construction or not? If project construction related, the following will be documented
- Source Type (e.g., drill, saw, dump truck, etc.)
- Equipment Make/Model/Quantity
- Location and Distance from noise monitoring station where exceedance was triggered
- Brief Description of activity/operation (e.g., "hoe ram banging on concrete")
- Approximate Duration of activity
- A-weighted sound pressure level (Lmax, dBA, slow) measured at 50 feet from the source and statement whether the source is in compliance with the reference noise levels in the FHWA Construction Noise Handbook. Alternately, the sound pressure level at 50 feet from the source will be calculated from the noise level detected at the noise monitoring station and the distance between the source and the monitoring station using the following formula:

$$SPL(50\ feet) = SPL(at\ monitor) + 20 \times log_{10}\left(\frac{distance\ from\ source\ to\ monitor\ in\ feet}{50}\right)$$

- Comments regarding construction activity will be included in weekly reports to the extent that such information is available.

Table 5 Initial Notifications Configuration

			Notification Alerts		
Name	Org.	Email/Phone Number	Exceedance	When users enter comments	When system loses power or data transmit
Don Driscoll	SCHCC, VP Fac. Mgmt	951-581-8385	•		
Armando Trujilo	SCHCC, Proj. Mgr.	562-787-1079	•		
Shana Crittenden	SCHCC, COO	954-288-5499	•		
Jason Gray	SCHCC, Sr. Proj. Mgr.	949-338-9648	•		
Farrell Johnson	SCHCC, VP Corp. Const.	323-629-1823	•		
Omar Ramirez	SCHCC, VP Corp. Ops.	626-705-5210	•		

Michael Klepin	SCHCC, CEO	469-745-9403	●		
Michele Prata	Morley Builders	mprata@morleybuildders.com	●	●	
Mike Stone	Morley Builders	mstone@morleybuildders.com	●	●	
Jeff Asher	Morley Builders	jasher@morleybuildders.com	●	●	
Katie Lee	Morley Builders	klee@morleybuildders.com	●	●	
Frank Stephan	Clarett West	Frank.Stephan@clarettwest.com	●	●	
Carol Camp	Clarett West	Carol.Camp@clarettwest.com	●	●	
Sarah Kaddatz	Wilson Ihrig	skaddatz@wiai.com	●	●	●
Patrick Murphy	Wilson Ihrig	pmurphy@wiai.com	●	●	●
James Phillips	Wilson Ihrig	jphillips@wiai.com	●	●	●

Notes:

1. Settings can be adjusted during the project by user or informing Wilson Ihrig.
2. Notifications apply between hours of 07:00 to 19:00.
3. All other hours (00:00 to 06:59; 19:00 to 00:00) will have thresholds set to avoid triggering alerts.

4.3 Weekly Reporting

Noise monitoring data will be reported to the City Chief Building Office on a weekly basis for the duration of the Project construction. Vibration monitoring data will be reported on a weekly basis to the City Chief Building office during ground-disturbing construction activities (demolition, shoring, excavation, and foundation work) until sufficient compliance has been demonstrated. Weekly reports will include a summary of construction activities performed during the previous week, and to be performed the following week.

4.4 Maintenance, Service Outage, Redundancy

Routine maintenance for the monitoring stations will not be required with the exception of annual re-calibration. If any aspect of the monitoring systems malfunction, Wilson Ihrig will address the issue either remotely, if possible, or by coordinating with designated local personnel, or by sending personnel to the Project site in a timely fashion.

The monitoring systems have a good record for not malfunctioning, but, as physical equipment, they may. In the event of any service outages, the monitoring system web interface will automatically send email/SMS alerts to the people designated in Table 5. Wilson Ihrig will endeavor to get the monitoring system functioning again as quickly as possible.

The two vibration monitoring stations, V1 and V2, will provide redundancy for each other in the event that one fails to operate.

Appendix D
Off-Hours Noise Calculations

Project: 9735 Washington Concrete Pour

Construction Noise Impact on Sensitive Receptors

Parameters

Construction Hours:	8	Daytime hours (7 am to 7 pm)
	0	Evening hours (7 pm to 10 pm)
	0	Nighttime hours (10 pm to 7 am)
Leq to L10 factor	3	

				Hospital (lower levels)					Hospital (upper levels)					Multi-family Residence adjacent to the east			
Construction Phase **Equipment Type**	**No. of Equip.**	**Reference Noise Level at 50ft, Lmax**	**Acoustical Usage Factor**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Estimated Noise Shielding, dBA**	**Distance (ft)**	**Lmax**	**L10**	**Estimated Noise Shielding, dBA**
Mat/Deck Pouring					***65***	***61***				***80***	***75***				***64***		
Concrete Mixer Trucks	2	79	40%	160	56	52	55	16	171	71	67	70	0	170	55	54	16
Concrete Mixer Trucks	2	79	40%	215	53	49	52	16	223	69	65	68	0	160	56	55	16
Concrete Pump Trucks	1	81	20%	120	57	50	53	16	134	72	65	68	0	170	54	50	16
Cranes	1	81	16%	140	56	48	51	16	152	71	63	66	0	100	59	54	16
Pumps	1	81	50%	90	60	57	60	16	108	74	71	74	0	170	54	54	16
Generator Sets	1	81	40%	120	57	53	56	16	134	72	68	71	0	170	54	53	16
Crane Assembly					***58***	***50***				***73***	***65***				***55***		
Cranes	1	81	16%	120	57	49	52	16	134	72	64	67	0	170	54	49	16
Forklift	1	75	10%	140	50	40	43	16	152	65	55	58	0	170	48	41	16
Dump/Haul Trucks	1	76	40%	160	50	46	49	16	171	65	61	64	0	170	49	48	16

Sources:

- Equipment was provided by the construction team.
- Ref. Noise Levels: LA CEQA Guides, 2006 & FHWA RCNM, 2005

-Sound attenuation accounts for a 25 foot noise barrier (estimated as a 15 dBA reduction) on the lower levels of the hospital and at the multi-family residences.

-Sound attenuation resulting in a 22 dBA reudction from glass windows accounted for at the hospital lower and upper levels and is based on FHWA's Nosie Barrier Design Handbook, Chapter 3, Table 3. https://www.fhwa.dot.gov/environment/noise/noise_barriers/design_construction/design/design03.cfm