EXHIBIT B

WILSON IHRIG
ACOUSTICS, NOISE & VIBRATION

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TITLE 24 ACOUSTICAL EVALUATION EXTERIOR SOUND INSULATION and VIBRATION EVALUATION

Filbert Townhomes

Newark, California

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Executive Summary

This report presents an acoustical analysis for the Filbert Townhomes residential project in Newark, California. This analysis of the Project determines the expected exterior and interior noise exposure attributable to exterior noise sources, and recommends design measures to comply with the exterior and interior noise insulation requirements of the California Code of Regulations (CCR) Title 24 Noise Insulation Standards/California Building Code and the of the City of Newark. This report does not review interdwelling sound isolation.

The acoustical evaluation of the proposed building construction is based on information provided by the Project developer regarding building exterior shell design and site layout, as shown on in-progress drawings dated June 14 2016. A glossary of acoustical terms is enclosed at the end of this report for your reference.

The results of our analysis of the current noise environment and the proposed Project layout resulted in the following conclusions and recommendations regarding the proposed building design:

Exterior Noise Exposure

The general vicinity of the project site has industrial and residential land use. The existing noise environment is dominated by vehicular traffic and rail noise from the tracks on Sycamore. The Project is currently exposed to noise levels of up to 77 Ldn. The existing noise environment is not expected to change substantially with the addition of the Project. An annual increase of 3% activity for traffic over the next 10 years (assuming the same distribution of activity over a 24-hour period) would increase the noise by 1 dBA by the year 2026.

Note that the rail tracks at the project site appear to be spur tracks that feed off the Niles Subdivision. The new masonry perimeter wall would reduce noise from trains on the nearby spur railroad tracks by 5 to 13 dBA, but would not have a substantial effect on the noise from trains on the mainline tracks. Any future plans that require more frequent freight or even commuter trains operated on these tracks at speeds over 25 to 40 mph would potentially be incompatible with the residential land use proposed at the project site.

Interior Noise Exposure

Based on the estimated future noise environment, it will be possible to provide exterior shell elements suitable to provide an interior noise environment of 45 Ldn from exterior noise sources, in compliance with the California Noise Insulation Standards and the City of Newark General Plan. More details are provided in the report.

Rail Vibration

The existing train vibration at the site is well within the FTA criteria. The rail tracks at the project site appear to be spur tracks that feed off the Niles Subdivision. Future trains operated on the rail spur at speeds over 25 to 40 mph could exceed the 75 VdB criterion for occasional events, or they could exceed the 80 VdB criterion for infrequent events above 50 mph. It seems unlikely that schedule and speed changes of these magnitudes would occur in the foreseeable future; however, such expectations should be confirmed. More details are provided in the report.

1 APPLICABLE NOISE STANDARDS

1.1 Insulation from Exterior Noise Sources

The State of California Noise Insulation Standards (California Building Standards Code Section 1207/California Code of Regulations, Title 24, Part 2), provides sound insulation requirements which apply to construction of new multi-family dwellings, or other buildings, other than detached single-family dwellings, where noise could affect persons within the building, including interference with speech and sleep. This requirement applies to the proposed Project.

CCR Title 24 requires that an affected building be oriented, shielded, and designed to have sound insulation such that, with all exterior doors and windows in the closed position, the interior noise exposure level attributable to exterior sources will not exceed 45 dBA Day Night Level (Ldn) in any habitable room.

This State standard requires an acoustical analysis for any new multi-family residential structures to be located in an area where the annual exterior Ldn exceeds 60 dBA. The report for this analysis is required to show the predicted noise exposure levels at the exterior of the proposed structures based on present and future land use, and the basis for the predictions. Additionally, the report is to show the noise attenuation measures to be applied and analysis to show that the proposed buildings have been designed to limit intruding noise to the allowable interior noise exposure level of Ldn 45 dBA in any habitable room. Habitable rooms include bedrooms and living spaces; bathrooms are not considered habitable rooms.

The noise exposure at a site can be gauged by the Ldn, which represents the steady noise level containing the same total sound energy as the time-varying community noise levels measured over a 24-hour day. To compute the Ldn, the steady noise level is adjusted by a 10 dBA penalty during the nighttime period (10 PM to 7 AM) relative to the daytime to account for the higher sensitivity of people to noise, a 5 dBA penalty is applied during the evening period (7 PM to 10 PM).

Environmental noise is measured in A-weighted decibels, abbreviated dBA. The A-weighting scale causes the measuring instrumentation to respond to noise in a manner closely correlated with the response of the average person. Since community noise is universally measured in dBA, most community noise ordinances and standards are in terms of A-weighted noise levels and Ldn levels implicitly use A-weighting.

1.2 Ventilation Requirements

A determination of mechanical ventilation requirements is beyond the scope of this document, but be advised that for areas of the Project where the exterior noise exposure exceeds 60 Ldn, the windows in habitable spaces should be closed to provide the required noise insulation; these spaces may require an additional means of ventilation. The local interpretation for required mechanical or passive ventilation varies.

1.3 Newark Requirements

Per the policies outlined in the Newark General Plan (2013), it is our understanding that at areas where the exterior noise level will exceed 60 Ldn for the year 2036, the City of Newark requires the following confirmation:

- Building orientation, shielding and noise insulation design will provide an interior noise level within the residential areas will be 45 Ldn or less from exterior noise sources (e.g., railroad) for the year 2036 (Policy EH-7.5 and 7.7)

- Where this level is exceeded due to freeways, arterials, and/or railroads, the construction of berms, walls, buffer zones, and other noise-reduction measures to reduce noise to the greatest extent feasible will be required (Policy EH-7.4)

For new residential development, Newark requires the evaluation of potential vibration impacts for new development that occurs within 200 feet of a railroad track, in accordance with the Federal Transit Administration's (FTA) vibration screening distances. In such instances, the project property owner/developers shall retain an acoustical engineer to conduct an acoustic analysis and identify, where appropriate, site design features and/or required building construction improvements to ensure that vibration impacts would remain below acceptable levels for residential uses. (Policy EH-7.E)

Per the FTA guidance criteria, for infrequent events of the same type occurring fewer than 30 times per day vibration impact criteria is 80 VdB at residential buildings. The existing site experiences typically one freight train on the nearby spur per week. On the nearby railroad tracks on Sycamore freight traffic does occur. Similarly, commuter rail train traffic at Sycamore falls within the FTA category for occasional events (30 to 70 events per day), for which the FTA recommends a criterion of 78 VdB.

2 EXTERIOR CONDITIONS AT THE PROPOSED PROJECT SITE

2.1 Existing Noise Levels

An ambient long-term noise survey was conducted in July 2016. A logging sound level meter monitored noise levels continuously at the project site for several days. The noise survey provided data in hourly intervals throughout the survey duration. Equivalent noise data (Leq) were subsequently used to calculate the daily and typical Ldn at each location. The long-term noise measurements showed a maximum level of 77 Ldn. This noise environment appears to be controlled by the railroad horns occurring during nighttime hours (10 PM to 7 AM). Figure 1 shows the existing noise contours.

To determine the existing spectral composition of noise sources for the Project, a short-term (18-minute) recording was taken at the project site on Sunday, July 17, 2016. This measurement was made at a height of 5 feet above grade, but this did not include a train horn. The frequency content from the short-term measurement is shown in Appendix B, along with the typical train horn spectra obtained from our project archives.

2.2 Future Noise Levels

The existing noise environment is not expected to change substantially with the addition of the Project. An annual increase of 3% activity for traffic and trains over the next 10 years (assuming the

same distribution of activity over a 24-hour period) would increase the noise exposure by 1 dBA by the year 2026 to 78 Ldn. This acoustical report provides information on the necessary building design elements to comply with the State of California Noise Insulation Standards for exterior noise. The noise contours shown in Figure 1 would thus be louder by 1 dBA if they were representative of the future noise levels discussed below. The estimated future noise levels based on existing activities are shown in Figure 2.

We have assumed that any mechanical equipment affiliated with the project will be in compliance with the noise requirements of the applicable Newark municipal codes and will also be designed not to contribute substantially to the noise environment for the Project residences. Further review of the mechanical design will be done as part of the project drawing development process.

The rail tracks at the project site appear to be spur tracks that feed off the Niles Subdivision. Any future plans that require more frequent freight or even commuter trains operated on these tracks at speeds over 25 to 40 mph would potentially be incompatible with the residential land use proposed at the project site.

The Project includes an 12 ft high masonry wall along the perimeter. This wall will shield the ground level of unit 10 by 13 dBA from train locomotive noise on the nearby spur tracks. Noise from railroad cars will be reduced by 15 dBA at the ground level and 9 dBA at the 2nd floor level. At unit 9, the next closest unit to the railroad tracks, the masonry will reduce the train noise sources by 12 and 14 dBA, respectively, at the ground level, and 5 and 11 dBA at the 2nd floor level, respectively. However, since the total noise environment is also influenced by automotive traffic and train horns from the more frequent trains on the mainline tracks, the overall noise exposure level (Ldn) is not expected to be substantially different at any building façade with the perimeter wall.

2.3 Existing and Future Vibration Levels

The property line at the Filbert site would be about 50 ft. from the center line of near track and the nearest building would be about 68 ft. from the center of the near track. The vibration from trains along Sycamore were measured at 40 ft. from the centerline of the near track (58 ft. from the actual train); the measurement results are expected to be comparable or slightly higher than what could be experienced at the project site. We measured a passenger train at 66 VdB at a speed of 10 to 15 mph. Freight trains at a comparable distance could be expected to generate similar vibration levels. This vibration is well below the applicable FTA criteria of 75 VdB for occasional events and 80 VdB for infrequent events. Thus, the existing train vibration at the site is well within the criteria.

The rail tracks at the project site appear to be spur tracks that feed off the Niles Subdivision. Future trains operated on these rail tracks at speeds over 25 to 40 mph could exceed the 75 VdB criterion for occasional events, or they could exceed the 80 VdB criterion for infrequent events above 50 mph.

3 INTERIOR NOISE EXPOSURE LEVELS DUE TO EXTERIOR NOISE SOURCES

CCR Title 24 requires that the building be oriented, shielded, and designed to have such sound insulation that, with all exterior doors and windows in the closed position, the interior noise level attributable to exterior sources shall not exceed an annual Ldn of 45 in any habitable room.

Windows and exterior doors are inherently the weak link, acoustically, of a building's exterior envelope. Therefore, proper selection and installation of exterior glazing elements are paramount to achieving CCR Title 24 interior noise limits.

The homes along Filbert Street will be exposed to a noise level up to Ldn 78 in the year 2026 as discussed above. Thus, all exterior elements of these Filbert home facades must provide a minimum 33 dBA noise reduction, preferably at least 35 dBA (~OITC 35) to allow for minimal furnishings within the residence. From the noise exposure levels determined for the units along each side of the Project, the maximum interior noise exposure levels in any occupied room will be less than 45 Ldn, assuming building construction with the walls and windows as listed in Table I and use of good construction techniques as indicated below. A summary of the projected exterior and interior noise levels is presented in Table II.

These calculations assume that the units will be sparsely furnished or acoustically "hard" units; units with more absorption in the rooms, provided by carpeting and upholstered furniture should experience slightly improved (lower) noise levels.

We have reported here two sets of ratings for exterior acoustical assemblies, the Outdoor-Indoor Sound Transmission Class (OITC) and the Sound Transmission Class (STC). The STC was originally developed to evaluate speech privacy through interior partitions. The OITC rating was adopted more recently to provide a more accurate measure of the noise reduction for typical exterior noise sources (e.g., airplanes, traffic), which have a different frequency content than speech. We recommend that the OITC values recommended here be used in the design process, since they are more accurate. If the OITC values are not available and acoustical test data from which an OITC value may be derived are not available, then we have also provided a minimum STC value (which is somewhat conservative). Furthermore, for exterior assemblies, the noise reduction provided by an assembly in the Project noise environment is the final requirement, and if an equivalent assembly can be found which provides the noise reduction (dBA), then it can be approved, regardless of the rated OITC or STC values.

3.1 Exterior Wall

The exterior wall construction has not yet been fixed, but typical construction could consist of wood frame, stucco or siding, 2"x studs with R-13 or thicker batt insulation and one layer of 5/8" dry wall for the interior face. Stucco walls can achieve an OITC 37 rating (STC 46), but simple siding walls are expected to have sound insulation test ratings of about OITC 31 (comparable to STC 42). Thus, stucco exterior wall construction will satisfy the OITC and STC requirements to provide an interior noise environment 45 Ldn or less, and siding construction will typically require two or three total layers of gypsum board or densdeck.

3.2 Roof/Ceiling Assembly

An example of a roof/ceiling construction which would satisfy the requirements for this project would be one which utilizes 5/8" thick oriented strandboard screwed 6" o.c. to solid wood joists 9 ¼" thick with ¾" x 2.6" wood furring strips which were screwed 12" o.c. to 5"8 thick layer of gypsum board. This wall satisfies an STC 39 (NRCC test TLF-95-097a) which is sufficient to mitigate the exterior noise below the 45 Ldn required for interior habitable spaces.

3.3 Windows

The physical characteristics of a dual-paned window with equal glazing cause a resonance. Data for most dual-glazed assemblies with equal glazing show a resonance at 125 Hz, allowing noise in that frequency band to pass through, relatively unreduced. The resulting quality of the traffic noise is altered, with the result that the noise can be more annoying, particularly for units exposed to traffic and bus noise from nearby streets. This effect can be characterized as a "hollow" or "zinging" sound, as if the noise source were operating in a tin can. To minimize resident annoyance for units exposed to traffic noise, we recommend that the Project use windows with unequal glazing as follows: either 1) the exterior glazing is 1.5 times thicker than the interior glazing or 2) the exterior glazing is laminated.

As discussed above, to meet sound insulation requirements of the State of California, the interior Ldn must be reduced to Ldn 45 or less. The noise reduction provided by a manufacturer's window assembly will vary from project to project, depending on the noise source characteristics. Thus, the OITC (and STC) ratings are limited with regard to the correlating noise reduction provided. Window test data should be submitted and verified to provide the required noise reduction prior to product approval. The required acoustically-gasketed, dual-glazed assemblies are described in Table I. Both the OITC and STC ratings should be satisfied. The window requirements are also shown in Figure 3.

Various glazing options can be used to achieve the California sound insulation standards. Nominally, the windows should have a rating of OITC 29 (approx. STC 37). In the bedroom areas, we recommend an upgrade to OITC 31/STC 39 to further reduce the noise from the discrete train horn events. Courtyard facing units and those shielded from train and traffic can have slightly lower rated windows of OITC 25/STC 33. The actual correlation between OITC, STC and glazing will vary with assembly, framing and manufacturer. Lesser OITC or STC values can be used only if the tested window assembly provides the necessary A-weighted noise reduction, subject to review and approval of window acoustical test data.

3.4 Exterior Doors

Any exterior residential glass patio doors should follow the same design requirements discussed above for windows. While not required by CBC, given the exposure to diesel locomotive noise and train horns, we recommend that all other exterior entry doors should have solid wood core with or without metal cladding to provide STC 36 or better, with full sound gasketing with non-porous seals.

3.5 Ventilation

All of the units will be exposed to noise levels exceeding 60 Ldn and will require some form of ventilation, as discussed above, since the windows should be closed to achieve the required sound isolation. This can be achieved passively with z-ducts (e.g., Vibro-Acoustics), fresh air ducts from SilenceAir or approved equal.

4 Vibration Evaluation

With the existing rail traffic on the railroad spur, no measures would be required to comply with any of the FTA criteria. If there is a reason to believe that at least 30 railroad events could occur per day, at speeds on the order of 50 mph, some vibration mitigation design would be required to comply

with the Newark planning guidelines. It seems unlikely that schedule and speed changes of these magnitudes would occur in the foreseeable future; however, such expectations should be confirmed.

5 RECOMMENDED CONSTRUCTION TECHNIQUES

To achieve the expected interior noise levels and sound insulation between units it is necessary that good construction techniques and good materials be used for construction of the buildings. A significant increase in interior noise levels over expected levels could occur if workmanship or materials are of inferior quality. This is especially true for the windows since they are the weakest acoustical element of the exterior shell.

For Filbert Townhome residential project, we recommend that notes and details be included on the design drawings to ensure that the construction details achieve the insulation potential of the basic building assemblies. The following indicates the recommended additional notes and details:

- Use permanently non-hardening sealant around perimeter of window frames.
- Select window assemblies with effective nonporous gaskets or weather-stripping to minimize air infiltration and sound leakage.
- Provide airtight construction at all exterior walls with acoustical or other non-hardening sealant at floor plates.
- Use door jamb and head gasketing and door bottom gasketing at entry doors to seal the solid core doors against weather and sound.
- Caulk entry door thresholds as they are placed.

All of the above are required to comply with CCR Title 24 Thermal Insulation requirements.

It is important to note that any unlined ventilation or exhaust ducts directly exposed to the exterior noise sources can readily transmit that noise to the interior of the building. Therefore, unlined ducts or other elements having unshielded exterior openings with a line-of-sight to nearby roads are not recommended. To the extent feasible, any penetrations in the exterior walls having a direct view of the traffic on the roadways and railroads should be minimized.

TABLE I DESCRIPTION OF CONSTRUCTION ELEMENTS FOR THE POINT RESIDENTIALPROJECT

(i) Exterior Walls:

Typical construction with wood frame, stucco or siding, 2"x studs with R-13 or thicker batt insulation and one layer of 5/8" dry wall for the interior face.

- With 7/8" stucco this provides at least OITC 37 (comparable to STC 46).
- With ½" siding and ½" plywood sheathing this provides at least OITC 31 (comparable to STC 42). Add at least two or three total layers of Type X 5/8" or densglas

(ii) Ceiling/Roof:

An example of a roof/ceiling construction which would satisfy the requirements for this project would be one which utilizes 5/8" thick oriented strandboard screwed 6" o.c. to solid wood joists 9 ¼" thick with ¾" x 2.6" wood furring strips which were screwed 12" o.c. to 5"8 thick layer of gypsum board. This wall satisfies an STC 39 (NRCC test TLF-95-097a).

(iii) Windows (see also Figure 3):

Glazing for all sound rated windows and skylights should be of unequal thickness, as discussed in the report. The windows should have the performance characteristics listed below to provide the required (or recommended) noise reduction as indicated for each façade. Below are both the minimum requirements to meet code and our own recommendations which consolidate the window classifications in order to simplify the construction process.

- Living Areas – Required to meet State of California Requirements
  - Units facing Filbert and railroad tracks OITC 29/ STC 37
  - Units facing courtyard OITC 25/ STC 33
- *Recommended upgrade for bedroom areas*
  - *Units facing railroad tracks and Filbert OITC 31 / STC 39*

(iv) Exterior Doors

No requirements. Recommended that all other exterior entry doors have solid wood core with or without metal cladding to provide STC 36 or better, with full sound gasketing with non-porous seals.

TABLE II SUMMARY OF EXTERIOR AND INTERIOR NOISE EXPOSURE LEVELS WITH RECOMMENDED CONSTRUCTION ELEMENTS FOR THE FILBERT RESIDENTIAL PROJECT

Building Façade		Projected Maximum Noise Exposure Levels, Ldn				
		Exterior		Interior[1] (Future Year 2026)		
		Existing	Future[2]	Window[3]	Ceiling/Roof	Wall
Filbert/RR	All floors[4]	70-78	79	<45	<45	<33
Courtyard	All floors	68-73	74	<45	<45	<33
2nd row rear	All floors	65-70	71	<45	<45	<33

Note 1: Estimated noise as reduced by each main component of the exterior shell
Note 2: Up to 1 dBA increase applied to the existing noise levels
Note 3: Using windows indicated in Table I
Note 4: The new perimeter masonry wall will reduce noise from spur track trains at the ground level and at the second floor level of Unit 9. However, the overall Ldn is not expected to be affected substantially.

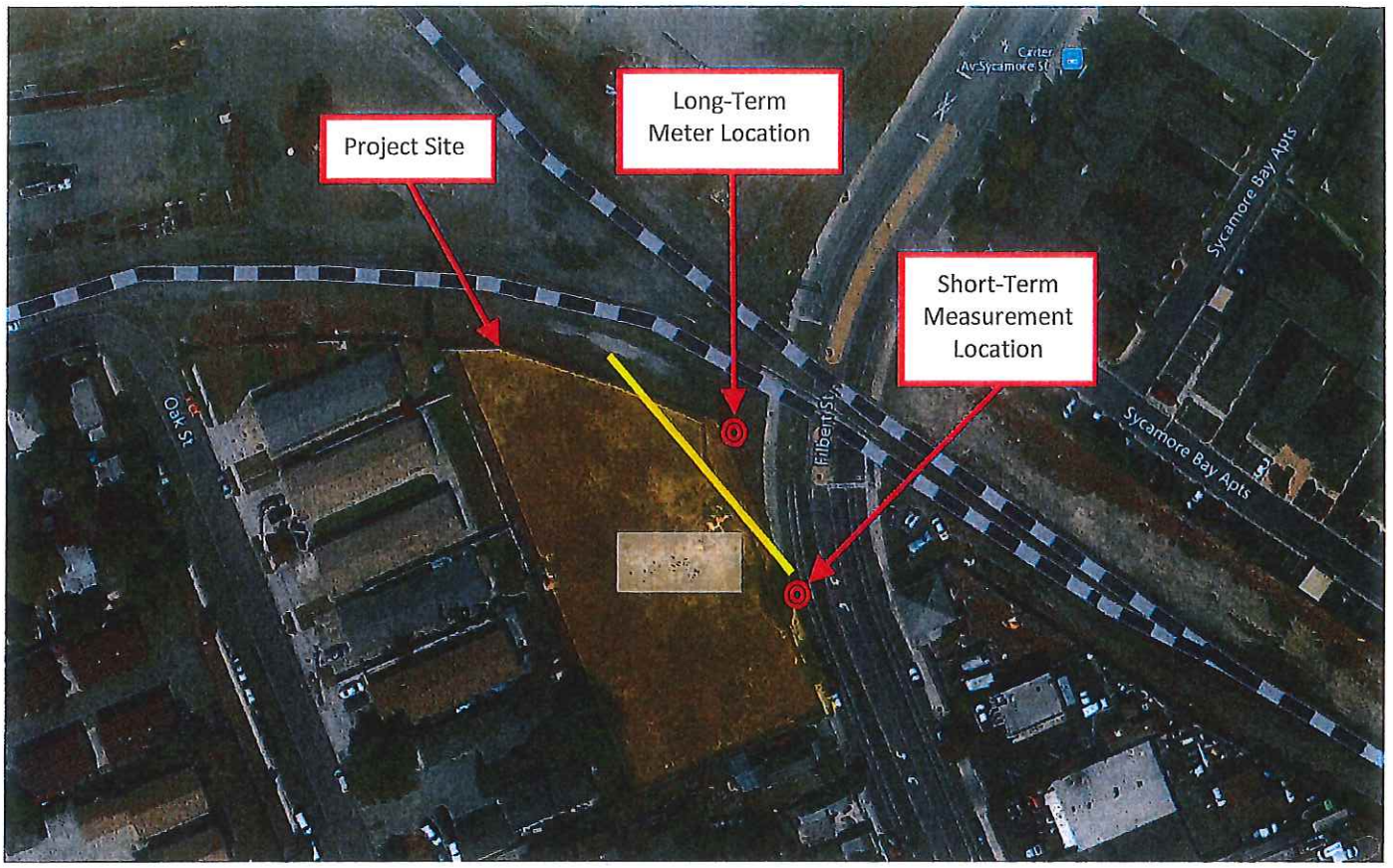


Figure 1 ***Project Site, Noise Measurement Locations and Existing Noise Contours***

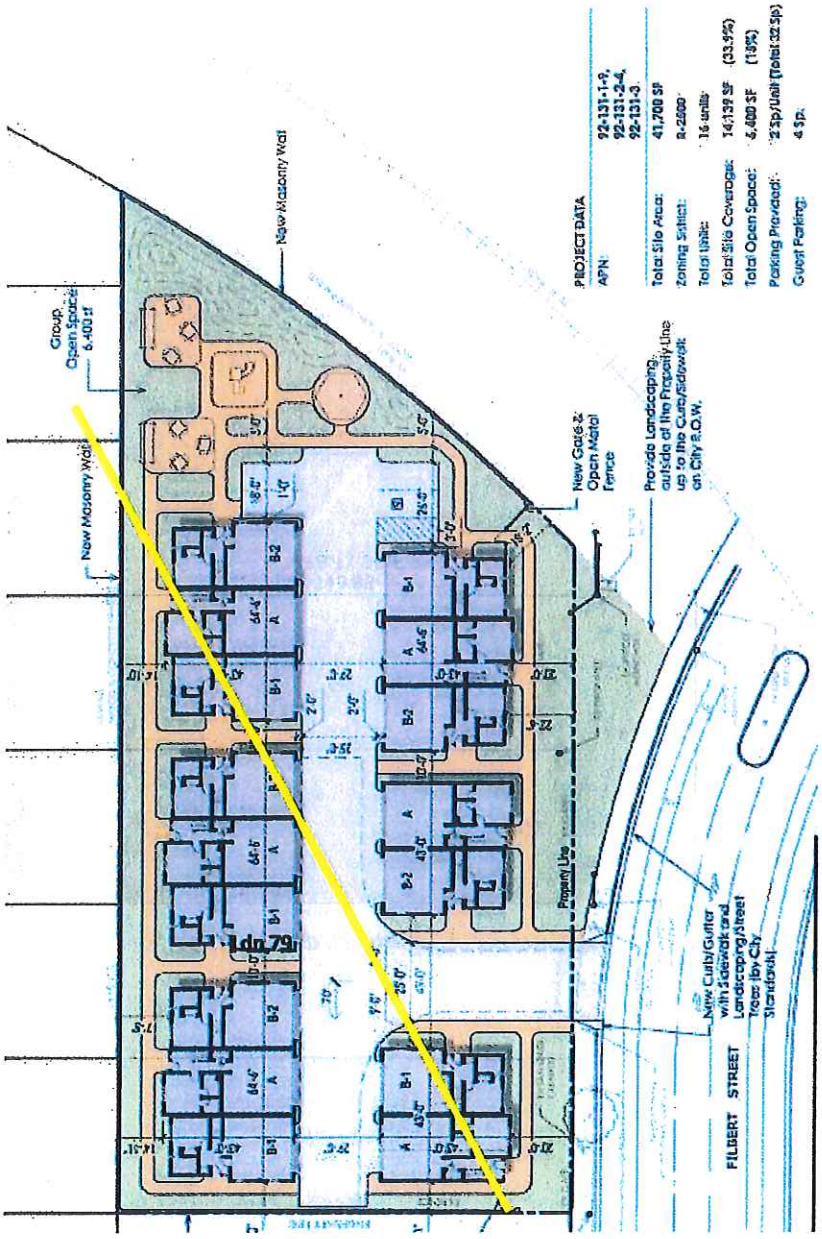


Figure 2 ***Project Layout and Future Noise Contours – Upper floors***
(ground floor 6 dBA less due to proposed barrier)

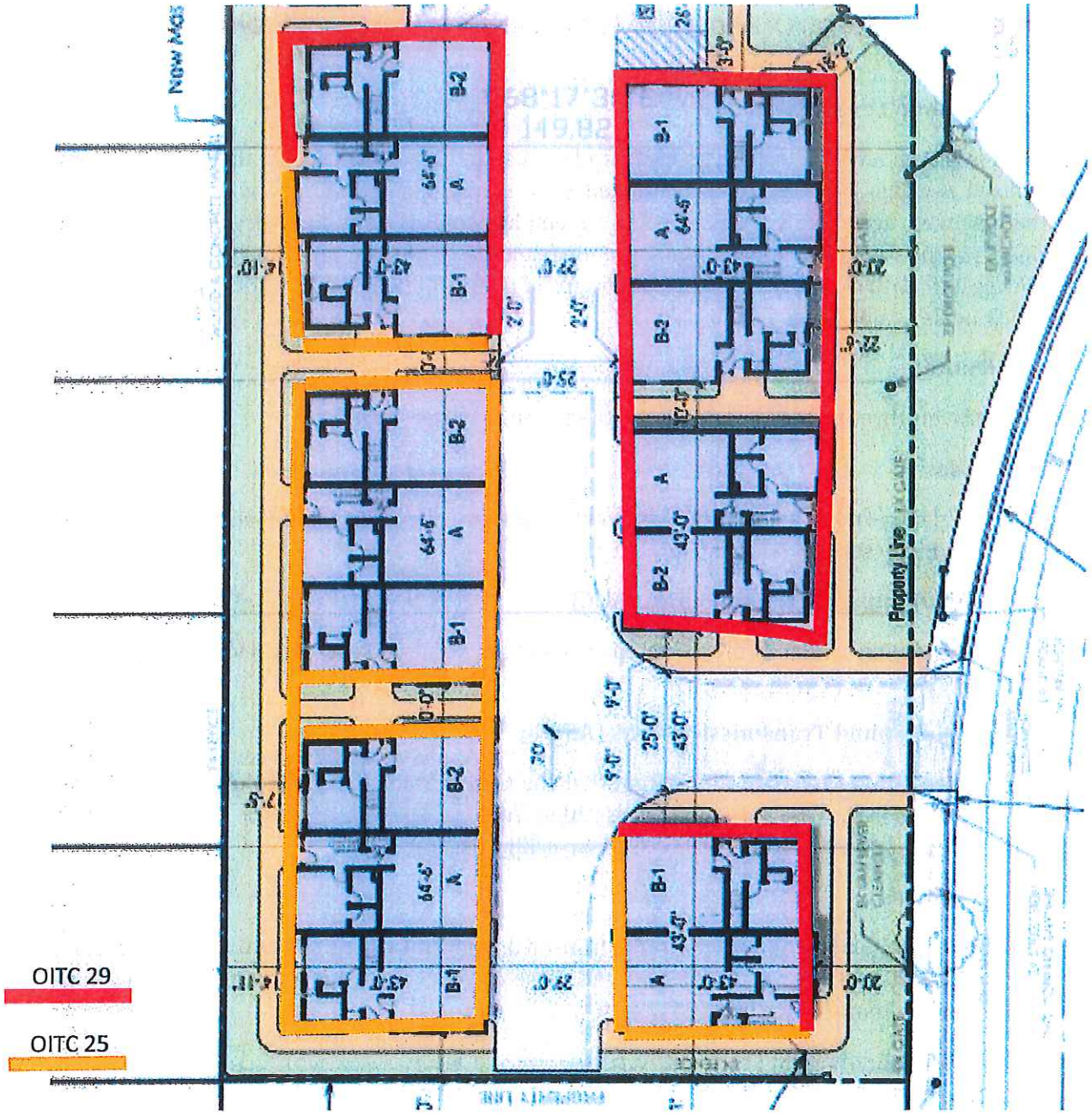


Figure 3 ***Window Requirements for Residential Units***
(See Table I for upgrade recommendations at bedroom windows)

Appendix A Description Of Acoustical Terms Relevant To Title 24 Projects

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 community noise evaluations.

Airborne Sound:

Sound that travels through the air, as opposed to structure-borne sound.

Ambient Noise:

The prevailing general noise existing at a location or in a space, which usually consists of a composite of sounds from many sources near and far.

Apparent (Field) Impact Insulation Class (AIIC):

A single number rating similar to the IIC except that the impact sound pressure levels are measured in the field.

Apparent (Field) Sound Transmission Class (ASTC):

A single number rating similar to STC, except that the transmission loss values used to derive the ASTC are measured in the field. All sound transmitted from the source room to the receiving room is assumed to be through the separating wall or floor-ceiling assembly.

Background Noise:

The general composite non-recognizable noise from all distant sources, not including nearby sources or the source of interest. Generally, background noise consists of a large number of distant noise sources and can be characterized by L90 or L99.

Community Noise Equivalent Level (CNEL):

The Leq of the A-weighted noise level over a 24-hour period with a 5 dB penalty applied to noise levels between 7 p.m. and 10 p.m. and a 10 dB penalty applied to noise levels between 10 p.m. and 7 a.m.

Day-Night Sound Level (Ldn):

The Leq of the A-weighted noise level over a 24-hour period with a 10 dB penalty applied to noise levels between 10 p.m. and 7 a.m.

Decibel (dB):

The decibel is a measure on a logarithmic scale of the magnitude of a particular quantity (such as sound pressure, sound power, sound intensity) with respect to a reference quantity.

Energy Equivalent Level (Leq):

The level of a steady noise which would have the same energy as the fluctuating noise level integrated over the time period of interest. Leq is widely used as a single-number descriptor of environmental noise. Leq is based on the logarithmic or energy summation and it places more emphasis on high noise level periods than does L50 or a straight arithmetic average of noise level over time. This energy average is not the same as the average sound pressure levels over the period of interest, but must be computed by a procedure involving summation or mathematical integration.

Frequency (Hz):

The number of oscillations per second of a periodic noise (or vibration) expressed in Hertz (abbreviated Hz). Frequency in Hertz is the same as cycles per second.

Impact Isolation Class (IIC):

A single number rating used to compare the effectiveness of floor-ceiling assemblies in providing reduction of impact generated sounds such as footsteps. It is derived from the measurement of impact sound pressure levels across a series of 16 test bands using a standardized tapping machine.

Outdoor-Indoor Transmission Class (OITC):

A single number classification, specified by the American Society for Testing and Materials (ASTM E 1332 issued 1994), that establishes the A-weighted sound level reduction provided by building facade components (walls, doors, windows, and combinations thereof), based upon a reference sound spectrum that is an average of typical air, road, and rail transportation sources. The OITC is the preferred rating when exterior facade components are exposed to a noise environment dominated by transportation sources.

Octave Band - 1/3 Octave Band:

One octave is an interval between two sound frequencies that have a ratio of two. For example, the frequency range of 200 Hz to 400 Hz is one octave, as is the frequency range of 2000 Hz to 4000 Hz. An octave band is a frequency range that is one octave wide. A standard series of octaves is used in acoustics, and they are specified by their center frequencies. In acoustics, to increase resolution, the frequency content of a sound or vibration is often analyzed in terms of 1/3 octave bands, where each octave is divided into three 1/3 octave bands.

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 as indicated in ANSI S1.8-1969, "Preferred Reference Quantities for Acoustical Levels".

Sound Transmission Class (STC):

STC is a single number rating, specified by the American Society for Testing and Materials, which can be used to measure the sound insulation properties for comparing the sound transmission capability, in decibels, of interior building partitions for noise sources such as speech, radio, and television. It is used extensively for rating sound insulation characteristics of building materials and products.

Structure-Borne Sound:

Sound propagating through building structure. Rapidly fluctuating elastic waves in gypsum board, joists, studs, etc.

Statistical Distribution Terms:

L99 and L90 are descriptors of the typical minimum or "residual" background noise (or vibration) levels observed during a measurement period, normally made up of the summation of a large number of sound sources distant from the measurement position and not usually recognizable as individual noise sources. Generally, the prevalent source of this residual noise is distant street traffic. L90 and L99 are not strongly influenced by occasional local motor vehicle passbys. However, they can be influenced by stationary sources such as air conditioning equipment.

L50 represents a long-term statistical median noise level over the measurement period and does reveal the long-term influence of local traffic.

L10 describes typical or average levels for the maximum noise levels occurring, for example, during nearby passbys of trains, trucks, buses and automobiles, when there is relatively steady traffic. Thus, while L10 does not necessarily describe the typical maximum noise levels observed at a point, it is strongly influenced by the momentary maximum noise level occurring during vehicle passbys at most locations.

L1, the noise level exceeded for 1% of the time is representative of the occasional, isolated maximum or peak level which occurs in an area. L1 is usually strongly influenced by the maximum short-duration noise level events which occur during the measurement time period and are often determined by aircraft or large vehicle passbys.

Appendix B Detailed Noise Measurement Results

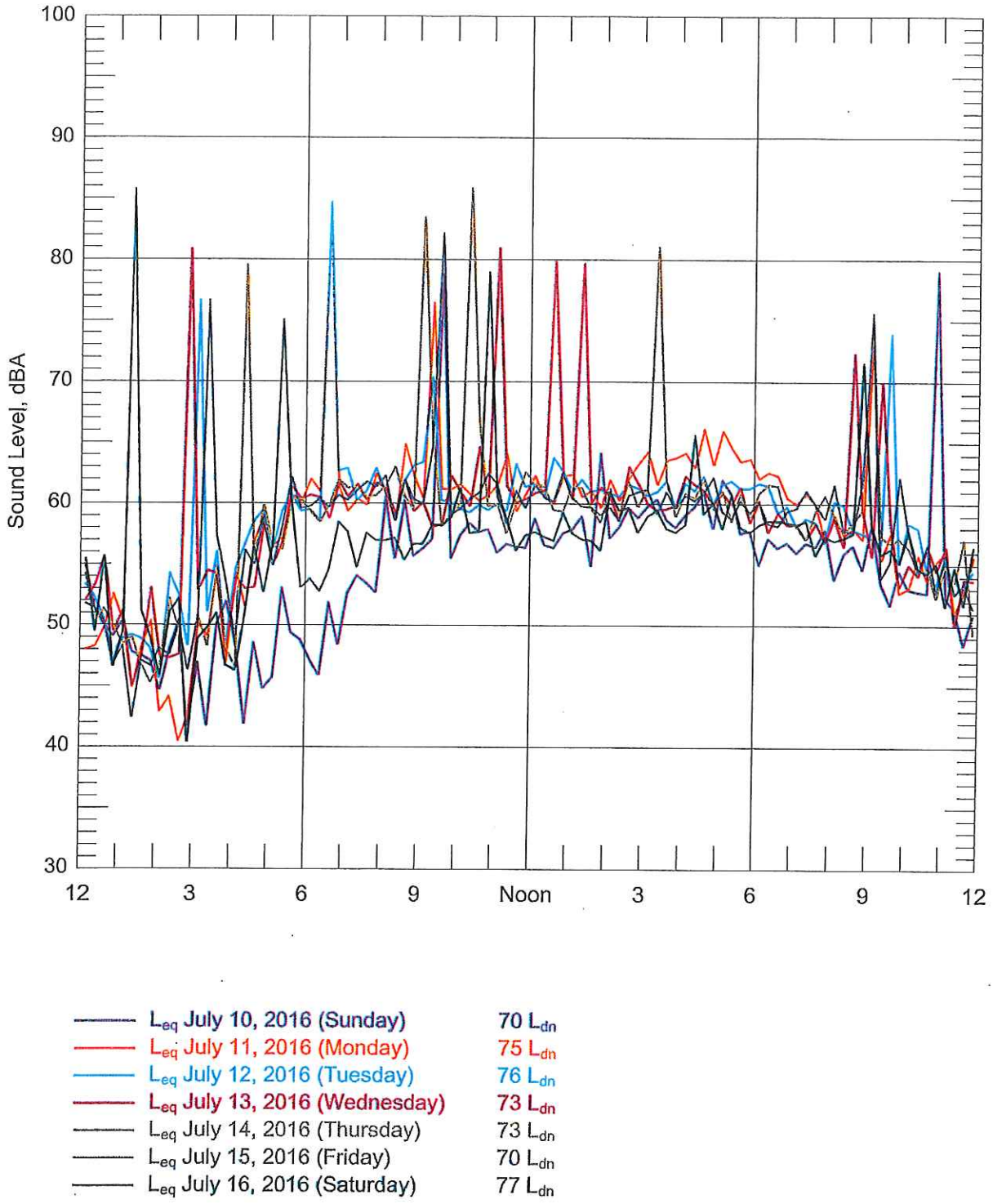
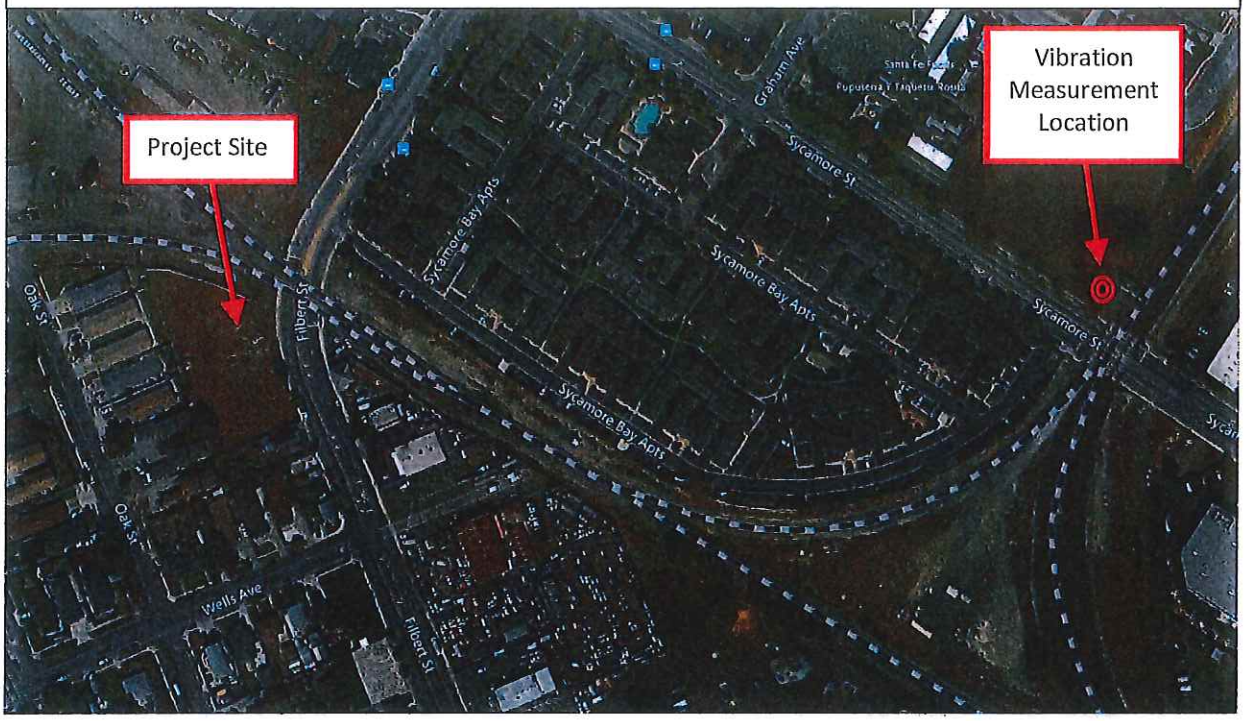
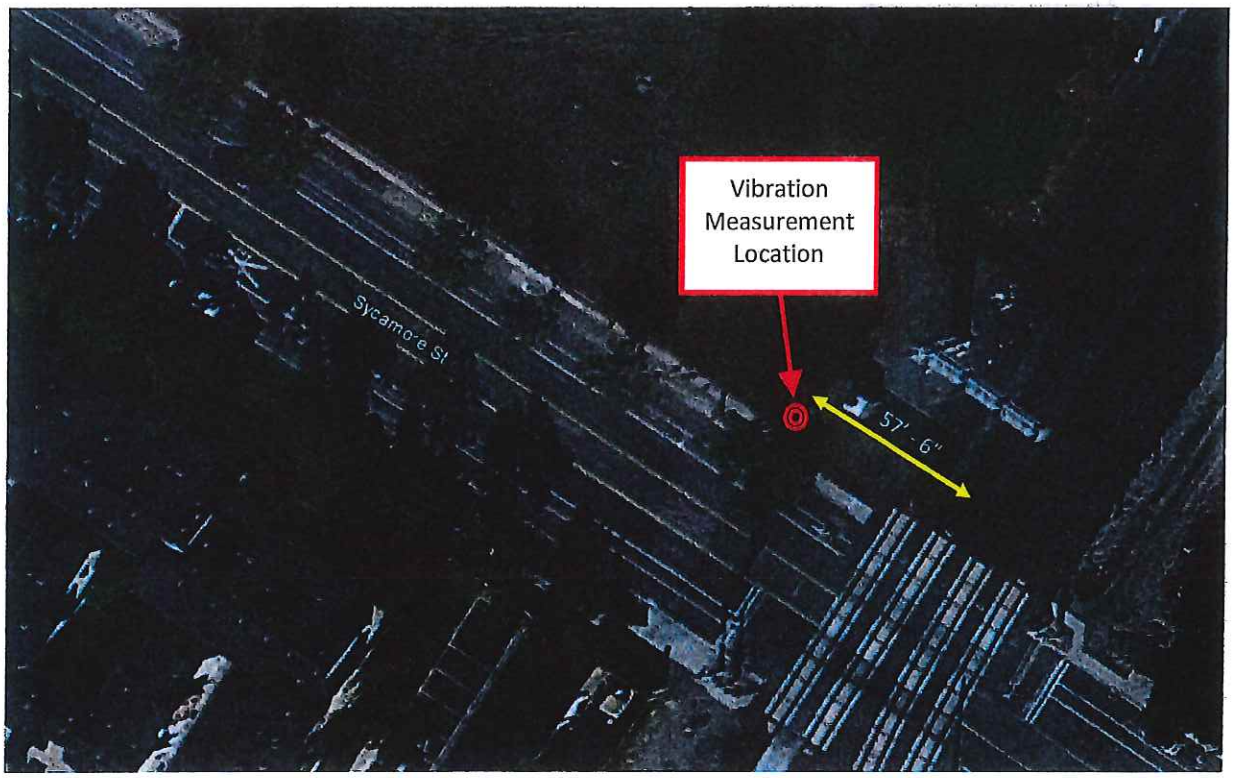


Figure 4 ***Long-Term Noise Survey Results at Project Site***

Rail Vibration Measurement Location – Filbert Townhomes





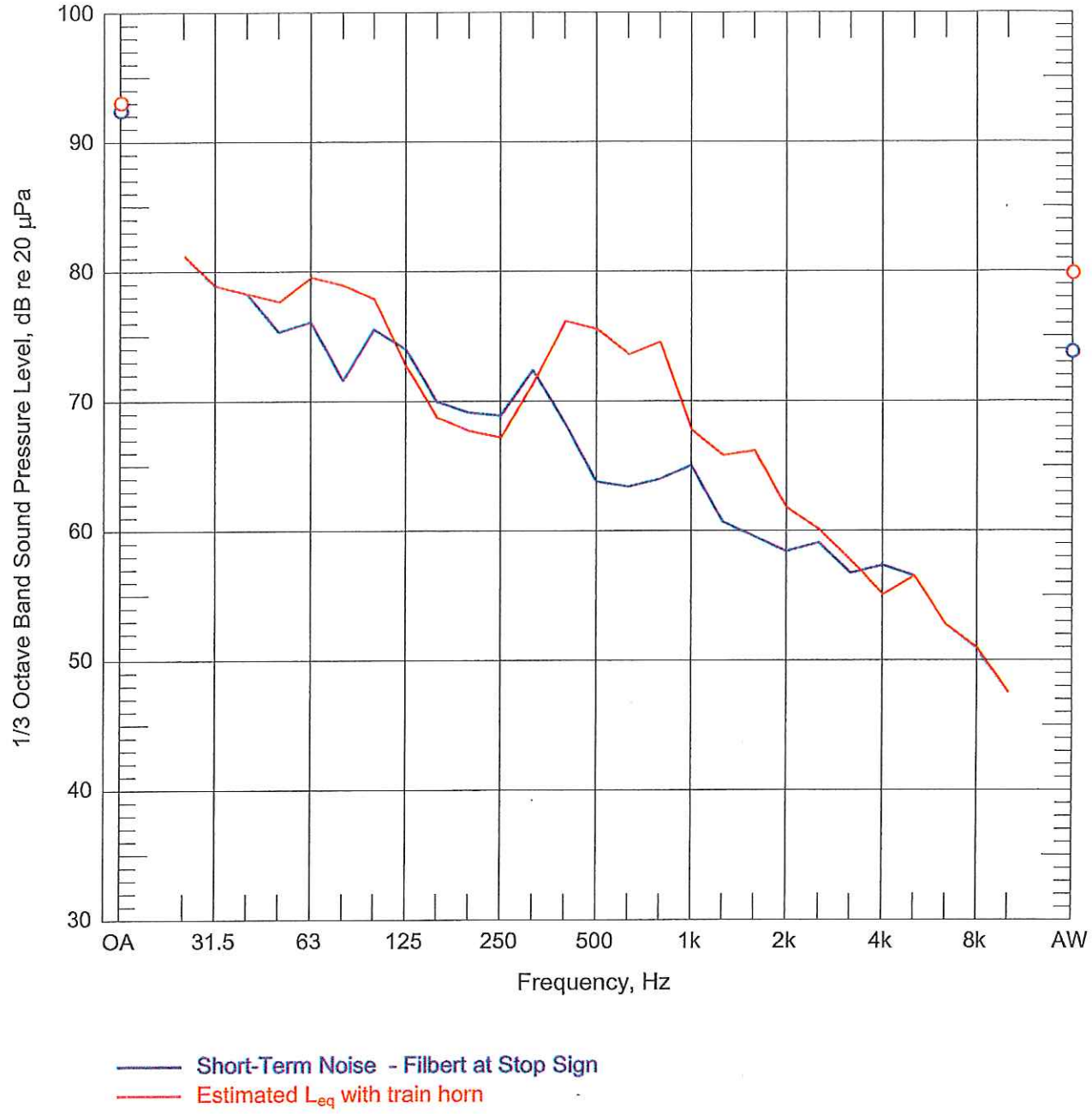


Figure 5 ***Measured and Estimated Noise Spectrum at the Project Site***