Appendix K
Noise Assessment

Ldn Consulting, Inc.
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December 1, 2020

A0702 Morgan Hill L.P.
Attn: Mark Irving
Urban Housing Communities
2000 E. Fourth Street #205
Santa Ana, CA 92705

SUBJECT: Royal Oak Village Residential Development Noise Assessment in the City of Morgan Hill CA

Ldn Consulting is pleased to submit the following noise impact analysis for the proposed Royal Oak Village Residential Development in Morgan Hill CA. The purpose of the survey is to determine the estimated exterior and interior noise levels within the residential structures of proposed buildings and residential units of the proposed residential project in Morgan Hill, CA. This analysis will recommend mitigation measures for compliance with the California Code of Regulations Title 24 and the City of Morgan Hill guidelines and requirements for interior noise.

PROJECT LOCATION/DESCRIPTION

The proposed project is located within the City of Morgan Hill, CA. More specifically, the project is located along Watsonville Road, southwest of Highway 101 and Monterey Road. Access to the project site is from Watsonville Road.

The proposed project consists of a new three-story residential building comprised of 140 attached multi-family condominium homes across 9 condominium buildings. The project vicinity can be seen in Figure 1 and the project site configuration is provided in Figure 2.

ACOUSTICAL FUNDAMENTALS

Noise is defined as unwanted or annoying sound which interferes with or disrupts normal activities. Exposure to high noise levels has been demonstrated to cause hearing loss. The individual human response to environmental noise is based on the sensitivity of that individual, the type of noise that occurs and when the noise occurs.

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Figure 1: Project Vicinity Map

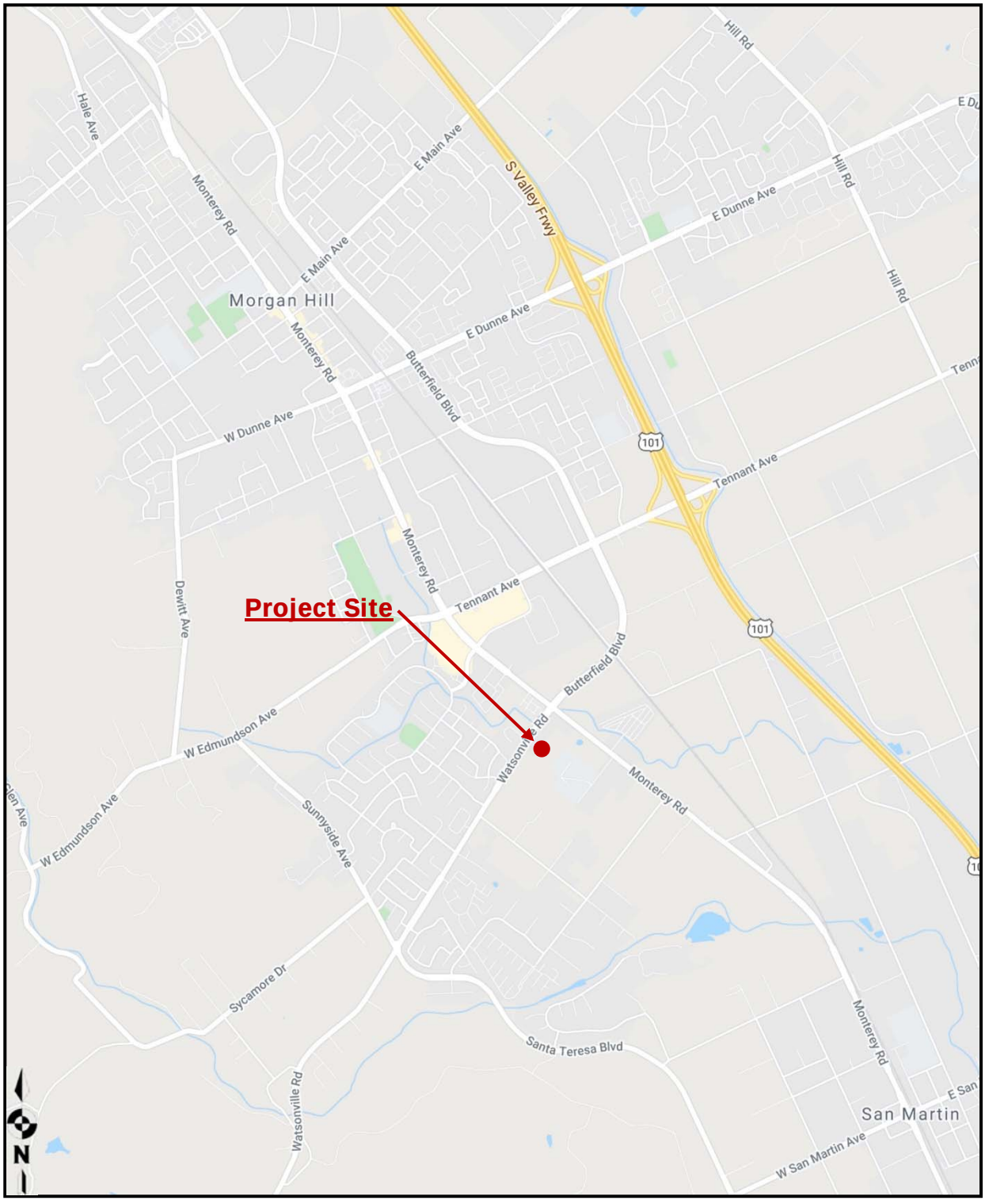

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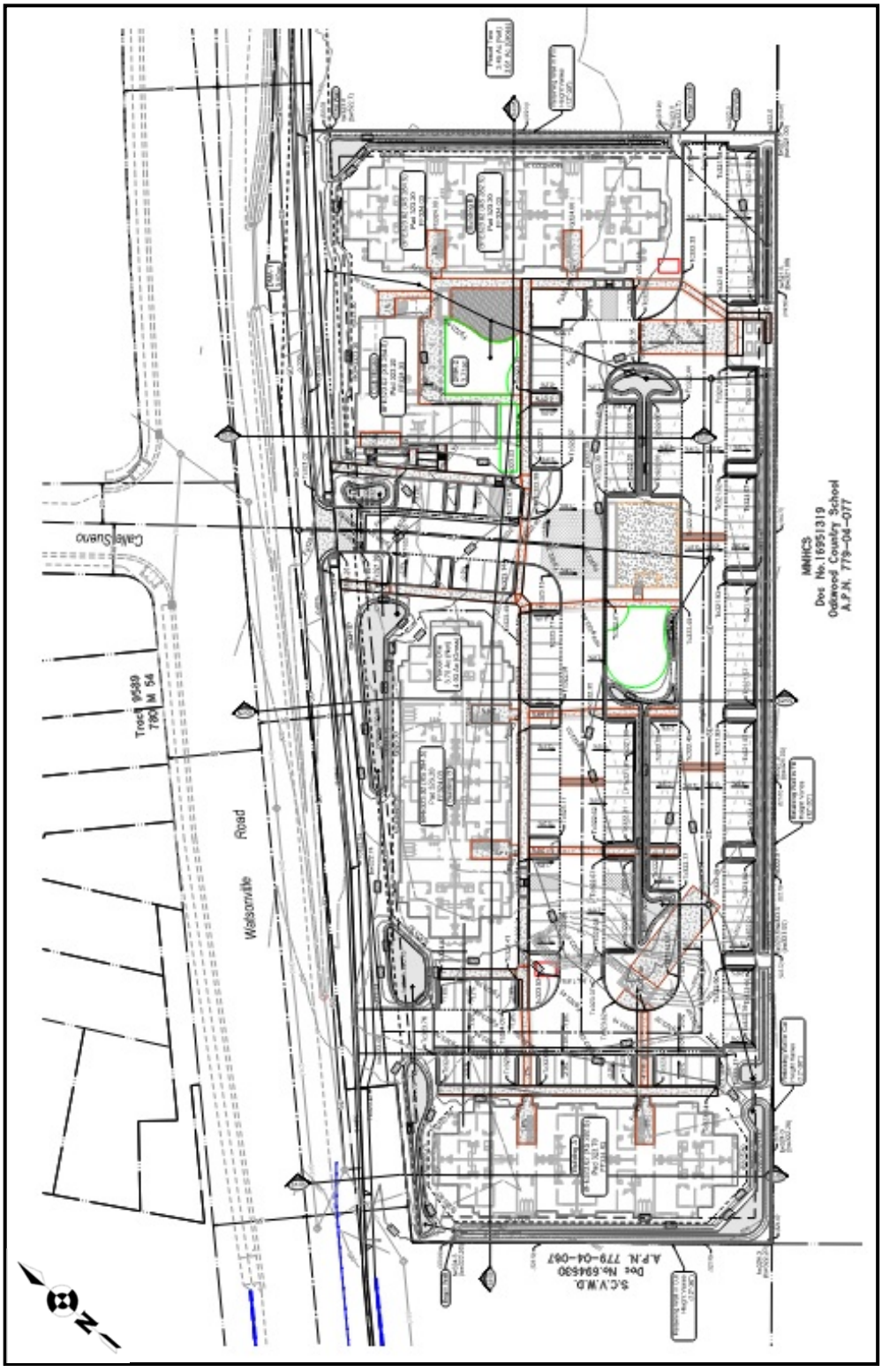
Figure 2: Project Site Plan



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Sound is measured on a logarithmic scale consisting of sound pressure levels known as a decibel (dB). The sounds heard by humans typically do not consist of a single frequency but of a broadband of frequencies having different sound pressure levels. The method for evaluating all the frequencies of the sound is to apply an A-weighting to reflect how the human ear responds to the different sound levels at different frequencies. The A-weighted sound level adequately describes the instantaneous noise whereas the equivalent sound level depicted as Leq represents a steady sound level containing the same total acoustical energy as the actual fluctuating sound level over a given time interval.

Mobile noise levels radiant in an almost oblique fashion from the source and drop off at a rate of 3 dBA for each doubling of distance under hard site conditions and at a rate of 4.5 dBA for soft site conditions. Hard site conditions consist of concrete, asphalt and hard pack dirt while soft site conditions exist in areas having slight grade changes, landscaped areas and vegetation.

The Day-Night Noise Level (Ldn) is the 24-hour A-weighted average for sound, with corrections for nighttime hours. The corrections require an addition of 10 decibels to sound levels at nighttime hours between 10 p.m. and 7 a.m. These additions are made to account for the increased sensitivity during the evening and nighttime hours when sound appears louder. Ldn values do not represent the actual sound level heard at any particular time, but rather represents the total sound exposure.

Additionally, Sound Transmission Class (or STC) is an integer rating of how well airborne sound is attenuated by a building partition. STC is widely used to rate interior partitions, ceilings/floors, doors, windows and exterior wall configurations (see ASTM International Classification E413 and E90). The STC number is derived from tested sound attenuation values found at the 1/3 octave band frequencies. These transmission-loss (TL) values are then plotted and compared to a standard reference contour. Acoustical engineers fit these values to the appropriate TL Curve to determine a single STC value found at 500 Hertz. STC is roughly the decibel reduction in noise a partition can provide, abbreviated 'dB'. If an 85 dB sound on one side of a wall is reduced to 50 dB on the other side, that partition is said to have an STC of 35. This number does not apply across the range of frequencies because the STC value is derived from a curve-fit from the tested 1/3 octave band frequencies. Any partition will have less TL at lower frequencies. For example, a wall with an STC of 35 may provide over 40 dB of attenuation at 3000 Hz but only 20 dB of attenuation at 125 Hz.

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NOISE STANDARDS

City of Morgan Hill Noise Standards

The City of Morgan Hill has established guidelines for acceptable community noise levels in the Noise Element of the General Plan. For noise sensitive multi-family developments, the City Noise Element requires an exterior noise level of less than 65 dBA LDN for outdoor usable areas. The City of Morgan Hill has adopted interior noise standards as part of the General Plan Noise Element for assessing the compatibility of land uses with transportation related noise impacts. The City General Plan requires that interior noise levels within new residential units not exceed 45 dBA Ldn. Interior noise levels in new residential development exposed to an exterior Ldn 60 dBA or greater should also be limited to a maximum instantaneous noise level (e.g., trucks on busy streets, train warning whistles) in bedrooms of 50 dBA, and 55 dBA in all other habitable rooms.

ANALYSIS PROCEDURES

Exterior Noise Levels

The primary sources of noise to the project site will be vehicular noise from adjacent Watsonville Road and nearby Monterey Street that could impact the site. Based on the future traffic projections along the roadways, a future 2035 noise level of 71.5 dBA Ldn at 50 feet from the centerline is anticipated along Watsonville Road and 75.1 dBA Ldn at 50 feet from the centerline is anticipated along Monterey Street (*Source: City of Morgan Hill General Plan 2035 Update Noise Section, 2017)*. The proposed building facades are located at least 75 feet from the centerline of Watsonville Road and the increased distance would lower the noise levels approximately 2 decibels to 69.6 dBA Ldn at the building facades. The proposed buildings are located over 620 feet from the centerline of Monterey Street and the increased distance lowers the noise levels below 65 dBA Ldn from Monterey Street. Predicted exterior instantaneous noise levels along the building facades of the residential dwellings could reach levels of almost 85 dBA Lmax adjacent to Watsonville Road and could be almost 80 dBA Lmax for the units facing Monterey Street.

As a design feature, noise barriers in the form of 4-foot barriers at the patios and balconies/decks of the units along Watsonville Road were found to comply with the City of Morgan Hill Noise standards of 65 dBA CNEL at the multi-family residences. The barriers must be constructed of a non-gapping material (i.e., masonry, stucco, ¼ inch thick glass or Plexiglas). The general locations of proposed noise barriers of the ground floor patios and balconies/decks are provided in Figure 3.

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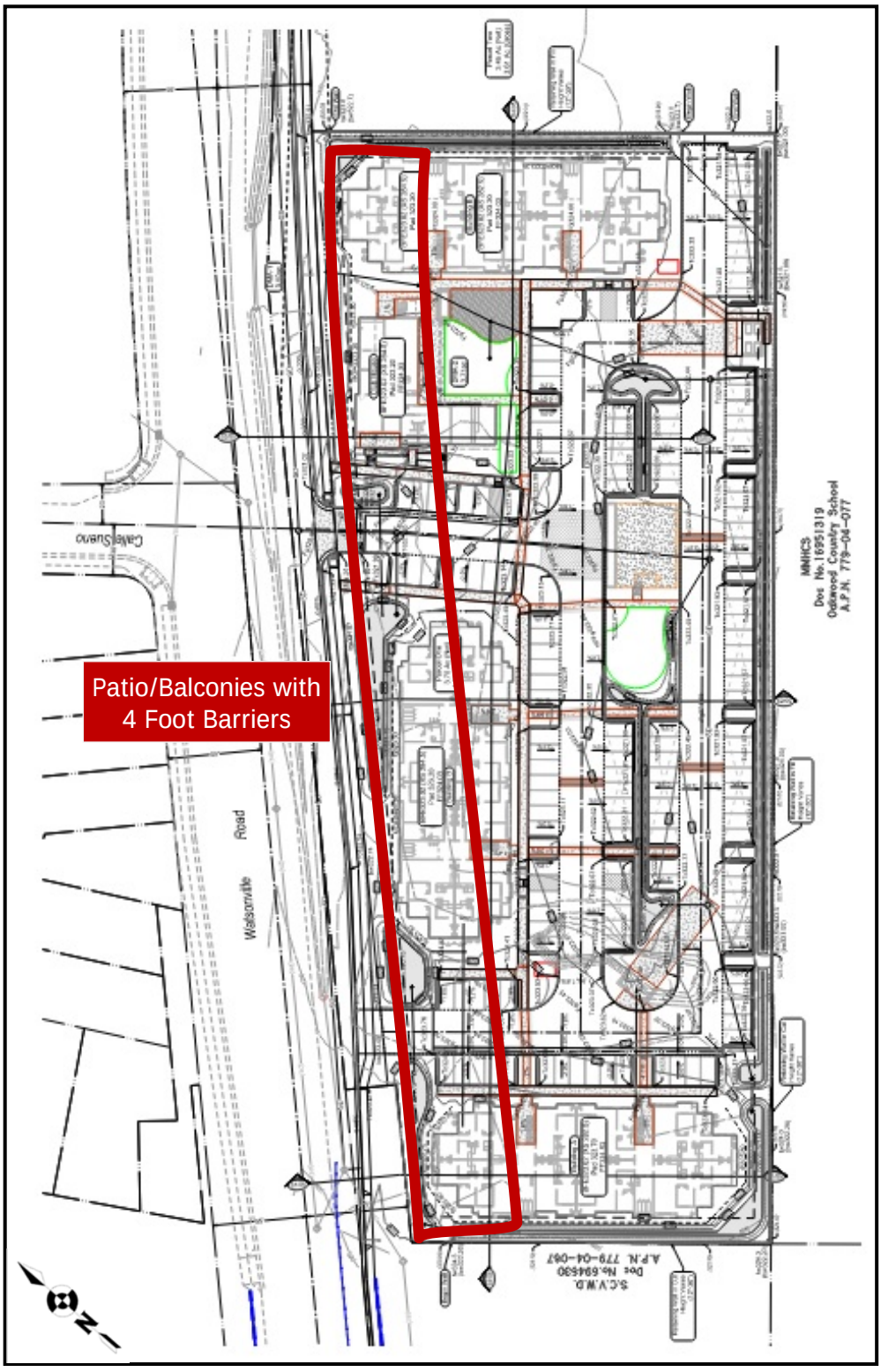
Figure 3: Proposed Noise Barriers



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Interior Noise Levels

The methodology used to determine the resultant interior noise levels is based upon the exterior noise level minus the sound transmission loss as identified in the American Society of Testing and Materials (ASTM) guidelines: E413 &E90. Standard building construction will provide a noise reduction of approximately 12-15 dBA with a windows open conditions and minimum 20 dBA noise reduction with the windows closed. The exterior noise levels at the proposed structures calculated in terms of dBA are converted to the six-octave band sound pressure levels between: 125 Hertz - 4000 Hertz.

Acoustical modeling of the proposed project dwelling units was performed in accordance with the above guidelines and included combining the transmission loss for each of the building components that will reduce the interior noise levels. Building components typically include the windows, exterior doors, and exterior walls. The total noise reduction is dependent upon the transmission loss of each building component, their subsequent surface area, quality of the building/construction materials, a building façade and angle correction.

The interior noise level is also dependent on the acoustical energy absorbed within the room based upon the Noise Reduction Coefficients (NRC). NRC is a scalar representation of the amount of sound energy absorbed upon striking a particular surface and the arithmetic value average of sound absorption coefficients indicating a material's ability to absorb sound. The absorption coefficients for individual surface areas such as carpet, drywall and furnishings are used to calculate the interior room effects. The calculated building noise reduction includes both the room absorption characteristics and the transmission loss from the exterior assembly.

The interior noise reduction calculations were performed using Ldn Consulting's interior noise model. The model converts the exterior sound level to octave band frequencies and accounts for the transmission loss, correction factors and room absorption. The floor plans used for this analysis were provided by KTGY, 2020. The following construction details were utilized for each of the building assemblies to determine the noise reduction characteristics:

Exterior walls and roof assemblies typically have a Sound Transmission Class (STC) rating of 46 or better. Exterior walls with this rating consist of 2"x 4" studs or larger, spaced 16" o.c. with minimum R-13 insulation and an exterior surface of hardiplank or stucco. Interior wall and ceiling surfaces shall be at least 1/2" thick gypsum or plaster. Roof assemblies should have a minimum of ½" sheathing, R-19 insulation and sealed to prevent noise leaks. Exterior entry doors should be of solid core construction. Glass assemblies should be dual-paned and have sealant applied around the exterior edges. The window assemblies are generally the weakest

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noise reducing component but are the most convenient and cost-effective elements to change if additional attenuation is needed. The STC ratings for the glass assemblies was calculated in the interior noise model and provided in the findings below.

A worst-case future projected building façade noise level of 70 dBA Ldn and the predicted exterior instantaneous noise levels of the residential dwellings could reach levels of 85 dBA Lmax was utilized for all floor areas for the unit along Watsonville Road.

Basic calculations show that a windows open condition will only reduce the interior noise levels 12-15 dBA Ldn and not provide adequate interior noise mitigation. To meet the 45 dBA Ldn interior noise standard and the maximum instantaneous noise level (e.g., trucks on busy streets, train warning whistles) in bedrooms of 50 dBA, and 55 dBA in all other habitable rooms, an interior noise level reduction of 25-35 dBA Ldn is needed for the proposed project. Therefore, a closed window and door condition is required to reduce interior noise levels to comply with CCR Title 24 and City of Morgan Hill requirements. The windows/doors closed condition does not require the windows or doors to be non-operable but does requires that mechanical ventilation be installed in those units identified in Figure 3 above to move air within the structure.

Modeling was conducted for each unit type and floor plan based upon the worst-case exterior noise levels, as identified above, to determine the required STC rating for the windows. The required noise reductions needed for all units having line of sight to the roadways in each building and the windows minimum STC Rating to meet the City's standards. The interior modeled results are provided as an attachment to this report.

To achieve the maximum instantaneous noise level in bedrooms of 50 dBA, and 55 dBA in all other habitable rooms, a minimum STC rating of 35 is needed for the units and assemblies adjacent to Watsonville Road as can be seen in Table 1. The units facing towards Monterey Road are predicted to have noise levels five decibels lower due to the distance separation and would need a minimum STC rating of 30. Use of higher STC-rated windows should be included where practical.

The necessary Sound Transmission Class (STC) ratings and transmission losses for the assemblies are also provided in Table 1, as a footnote, to reduce the interior noise levels at or below the 45 dBA Ldn standard. The minimum STC rating of 35 is needed for the glass assemblies for all units adjacent to Watsonville Road to achieve the 45 dBA Ldn and an STC of 30 is need for the units facing towards Monterey Road.

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Table 1: Sound Transmission Class Ratings

Units	Room	Threshold		STC Rating[1]	Interior Noise Level	
		Ldn	Lmax		Ldn	Lmax
Adjacent to Watsonville Road	Living	45	55	35	38	53
	Bedroom	45	50	35	35	50
Facing Monterey Road	Living	45	55	30	38	53
	Bedroom	45	50	30	35	50

[1] STC 35 needed to achieve the Lmax interior noise level threshold along Watsonville Road and an STC of 30 units facing towards Monterey Road. Higher STC ratings shown are to reduce Lmax noise levels to 50 dBA and 55 dBA in the bedrooms and living rooms, respectively and the use of higher STC-rated windows should be included where practical.

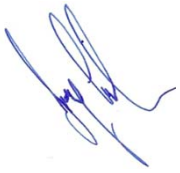
FINDINGS

As a design feature, noise barriers in the form of 4-foot high barriers at the patios and balconies/decks of the units along Watsonville Road were found to comply with the City of Morgan Hill Noise standards of 65 dBA CNEL at the multi-family residences. The barriers must be constructed of a non-gapping material (i.e., masonry, stucco, ¼ inch thick glass or Plexiglas) or a combination of these materials.

All glass assemblies should be dual-paned and have sealant applied around the exterior edges having an STC 35 rating along Watsonville Road and STC 30 for units facing Monterey Road to reduce the maximum noise levels. No impacts are anticipated with the incorporation of the reduction measures. If you have any questions, please do not hesitate to contact me directly at (760) 473-1253 or at jlouden@ldnconsulting.net.

Sincerely,

Ldn Consulting, Inc.



Jeremy Louden, Principal

Attachments: Interior Noise Model Calculations

INTERIOR NOISE CALCULATIONS

Project Name:	Crossings at Watsonville		Ldn Consulting, Inc.
Building	All		
Floor Level	All	Date:	10/21/20
Arch Plan or Unit(s):	1		
Room Type:	Living/Dining	Project #	20-71

Exterior Noise Levels

	dBA Ldn	Frequency (Hz.) 125	250	500	1000	2000	4000
Exterior Noise Level (Traffic Spectrum)	70.0	56.0	60.7	63.5	65.8	62.7	57.0
Correction for Angle and Façade	3	59.0	63.7	66.5	68.8	65.7	60.0
Adjusted Building Façade Levels	73.0	62.0	66.7	69.5	71.8	68.7	63.0

Transmission Loss (TL)

Exterior Assembly	*Source*	*Area*	*STC*	*Transmission Loss (dB) Frequency (Hz.) 125*	250	500	1000	2000	4000
Siding	Hardiplank	153	46	27	42	44	46	49	54
Windows	Starline	25	35	25	23	32	39	39	37
Glass Doors	Starline	24	35	24	23	34	37	40	39

Room Absorption (RA)

Interior Characteristics	*Source*		*NRC*	*Absorption Coefficients Frequency (Hz.) 125*	250	500	1000	2000	4000
Carpet	Army TM 5-805-4		0.28	0.15	0.17	0.12	0.32	0.52	0.30
Furnishings	Army TM 5-805-4		0.45	0.32	0.29	0.42	0.58	0.60	0.48
Drywall	Netwell		0.07	0.09	0.08	0.05	0.03	0.06	0.09
Overall Absorption Factor (Furnished Room)			0.8	0.56	0.54	0.59	0.93	1.18	0.87

Noise Reduction

	125	*250*	*500*	*1000*	*2000*	*4000*
Noise Reduction from Absorption based upon Floor Area	-23.8	-23.8	-23.8	-23.8	-23.8	-23.8
Noise Level Increase for Defects and Exposed Surface Area	17.0	17.0	17.0	17.0	17.0	17.0
Overall Reduction from Tranmission Loss + Room Absorption - Surface Exposure						32.1
Building Façade Noise Level (dBA Ldn)						70.0
Resultant Interior Noise Level (dBA Ldn)						**38**
Resultant Interior Noise Level (dBA Lmax)						**53**

INTERIOR NOISE CALCULATIONS

Project Name:	Crossings at Watsonville	Ldn Consulting, Inc.
Building	All	
Floor Level	All	Date: 10/21/20
Arch Plan or Unit(s):	1	
Room Type:	Bedroom	Project # 20-71

Exterior Noise Levels

	dBA Ldn	Frequency (Hz.) 125	250	500	1000	2000	4000
Exterior Noise Level (Traffic Spectrum)	70.0	56.0	60.7	63.5	65.8	62.7	57.0
Correction for Angle and Façade	3.0	59.0	63.7	66.5	68.8	65.7	60.0
Adjusted Building Façade Levels	73.0	59.0	63.7	66.5	68.8	65.7	60.0

Transmission Loss (TL)

Exterior Assembly	Source	Area	STC	Transmission Loss (dB) Frequency (Hz.) 125	250	500	1000	2000	4000
Siding	Hardiplank	72	46	27	42	44	46	49	54
Windows	Starline	25	35	25	23	32	39	39	37
Glass Doors	Starline	0	35	24	23	34	37	40	39

Room Absorption (RA)

Interior Characteristics	Source		NRC	Absorption Coefficients Frequency (Hz.) 125	250	500	1000	2000	4000
Carpet	Army TM 5-805-4		0.28	0.15	0.17	0.12	0.32	0.52	0.30
Furnishings	Army TM 5-805-4		0.45	0.32	0.29	0.42	0.58	0.60	0.48
Drywall	Netwell		0.07	0.09	0.08	0.05	0.03	0.06	0.09
Overall Absorption Factor (Furnished Room)			0.8	0.56	0.54	0.59	0.93	1.18	0.87

Noise Reduction

	125	250	500	1000	2000	4000
Noise Reduction from Absorption based upon Floor Area	-21.0	-21.0	-21.0	-21.0	-21.0	-21.0
Noise Level Increase for Defects and Exposed Surface Area	15.1	15.1	15.1	15.1	15.1	15.1
Overall Reduction from Tranmission Loss + Room Absorption - Surface Exposure						35.1
Building Façade Noise Level (dBA Ldn)						70.0
Resultant Interior Noise Level (dBA Ldn)						**35**
Resultant Interior Noise Level (dBA Lmax)						**50**

INTERIOR NOISE CALCULATIONS

Project Name:	Crossings at Watsonville	Ldn Consulting, Inc.
Building	All	
Floor Level	All	Date: 10/21/20
Arch Plan or Unit(s):	2	
Room Type:	Living/Dining	Project # 20-71

Exterior Noise Levels

	dBA Ldn	Frequency (Hz.) 125	250	500	1000	2000	4000
Exterior Noise Level (Traffic Spectrum)	70.0	56.0	60.7	63.5	65.8	62.7	57.0
Correction for Angle and Façade	3.0	59.0	63.7	66.5	68.8	65.7	60.0
Adjusted Building Façade Levels	73.0	62.0	66.7	69.5	71.8	68.7	63.0

Transmission Loss (TL)

Exterior Assembly	Source	Area	STC	Transmission Loss (dB) Frequency (Hz.) 125	250	500	1000	2000	4000
Siding	Hardiplank	153	46	27	42	44	46	49	54
Windows	Starline	25	35	25	23	32	39	39	37
Glass Doors	Starline	24	35	24	23	34	37	40	39

Room Absorption (RA)

Interior Characteristics	Source		NRC	Absorption Coefficients Frequency (Hz.) 125	250	500	1000	2000	4000
Carpet	Army TM 5-805-4		0.28	0.15	0.17	0.12	0.32	0.52	0.30
Furnishings	Army TM 5-805-4		0.45	0.32	0.29	0.42	0.58	0.60	0.48
Drywall	Netwell		0.07	0.09	0.08	0.05	0.03	0.06	0.09
Overall Absorption Factor (Furnished Room)			0.8	0.56	0.54	0.59	0.93	1.18	0.87

Noise Reduction

	125	250	500	1000	2000	4000
Noise Reduction from Absorption based upon Floor Area	-23.9	-23.9	-23.9	-23.9	-23.9	-23.9
Noise Level Increase for Defects and Exposed Surface Area	17.0	17.0	17.0	17.0	17.0	17.0
Overall Reduction from Tranmission Loss + Room Absorption - Surface Exposure						32.1
Building Façade Noise Level (dBA Ldn)						70.0
Resultant Interior Noise Level (dBA Ldn)						**38**
Resultant Interior Noise Level (dBA Lmax)						**53**

INTERIOR NOISE CALCULATIONS

Project Name:	Crossings at Watsonville	Ldn Consulting, Inc.
Building	All	
Floor Level	All	Date: 10/21/20
Arch Plan or Unit(s):	2	
Room Type:	Bedroom	Project # 20-71

Exterior Noise Levels

	dBA Ldn	Frequency (Hz.) 125	250	500	1000	2000	4000
Exterior Noise Level (Traffic Spectrum)	70.0	56.0	60.7	63.5	65.8	62.7	57.0
Correction for Angle and Façade	3.0	59.0	63.7	66.5	68.8	65.7	60.0
Adjusted Building Façade Levels	73.0	59.0	63.7	66.5	68.8	65.7	60.0

Transmission Loss (TL)

Exterior Assembly	Source	Area	STC	Transmission Loss (dB) Frequency (Hz.) 125	250	500	1000	2000	4000
Siding	Hardiplank	72	46	27	42	44	46	49	54
Windows	Starline	25	35	25	23	32	39	39	37
Glass Doors	Starline	0	35	24	23	34	37	40	39

Room Absorption (RA)

Interior Characteristics	Source		NRC	Absorption Coefficients Frequency (Hz.) 125	250	500	1000	2000	4000
Carpet	Army TM 5-805-4		0.28	0.15	0.17	0.12	0.32	0.52	0.30
Furnishings	Army TM 5-805-4		0.45	0.32	0.29	0.42	0.58	0.60	0.48
Drywall	Netwell		0.07	0.09	0.08	0.05	0.03	0.06	0.09
Overall Absorption Factor (Furnished Room)			0.8	0.56	0.54	0.59	0.93	1.18	0.87

Noise Reduction

	125	250	500	1000	2000	4000
Noise Reduction from Absorption based upon Floor Area	-21.0	-21.0	-21.0	-21.0	-21.0	-21.0
Noise Level Increase for Defects and Exposed Surface Area	15.1	15.1	15.1	15.1	15.1	15.1
Overall Reduction from Tranmission Loss + Room Absorption - Surface Exposure						35.1
Building Façade Noise Level (dBA Ldn)						70.0
Resultant Interior Noise Level (dBA Ldn)						**35**
Resultant Interior Noise Level (dBA Lmax)						**50**

INTERIOR NOISE CALCULATIONS

Project Name:	Crossings at Watsonville	Ldn Consulting, Inc.
Building	All	
Floor Level	All	Date: 10/21/20
Arch Plan or Unit(s):	3	
Room Type:	Living/Dining	Project # 20-71

Exterior Noise Levels

	dBA Ldn	Frequency (Hz.) 125	250	500	1000	2000	4000
Exterior Noise Level (Traffic Spectrum)	70.0	56.0	60.7	63.5	65.8	62.7	57.0
Correction for Angle and Façade	3.0	59.0	63.7	66.5	68.8	65.7	60.0
Adjusted Building Façade Levels	73.0	62.0	66.7	69.5	71.8	68.7	63.0

Transmission Loss (TL)

Exterior Assembly	Source	Area	STC	Transmission Loss (dB) Frequency (Hz.) 125	250	500	1000	2000	4000
Siding	Hardiplank	153	46	27	42	44	46	49	54
Windows	Starline	25	35	25	23	32	39	39	37
Glass Doors	Starline	24	35	24	23	34	37	40	39

Room Absorption (RA)

Interior Characteristics	Source		NRC	Absorption Coefficients Frequency (Hz.) 125	250	500	1000	2000	4000
Carpet	Army TM 5-805-4		0.28	0.15	0.17	0.12	0.32	0.52	0.30
Furnishings	Army TM 5-805-4		0.45	0.32	0.29	0.42	0.58	0.60	0.48
Drywall	Netwell		0.07	0.09	0.08	0.05	0.03	0.06	0.09
Overall Absorption Factor (Furnished Room)			0.8	0.56	0.54	0.59	0.93	1.18	0.87

Noise Reduction

	125	250	500	1000	2000	4000
Noise Reduction from Absorption based upon Floor Area	-24.8	-24.8	-24.8	-24.8	-24.8	-24.8
Noise Level Increase for Defects and Exposed Surface Area	17.0	17.0	17.0	17.0	17.0	17.0
Overall Reduction from Tranmission Loss + Room Absorption - Surface Exposure						33.0
Building Façade Noise Level (dBA Ldn)						70.0
Resultant Interior Noise Level (dBA Ldn)						**37**
Resultant Interior Noise Level (dBA Lmax)						**52**

INTERIOR NOISE CALCULATIONS

Project Name:	Crossings at Watsonville	Ldn Consulting, Inc.
Building	All	
Floor Level	All	Date: 10/21/20
Arch Plan or Unit(s):	3	
Room Type:	Bedroom	Project # 20-71

Exterior Noise Levels

	dBA Ldn	Frequency (Hz.) 125	250	500	1000	2000	4000
Exterior Noise Level (Traffic Spectrum)	70.0	56.0	60.7	63.5	65.8	62.7	57.0
Correction for Angle and Façade	3.0	59.0	63.7	66.5	68.8	65.7	60.0
Adjusted Building Façade Levels	73.0	59.0	63.7	66.5	68.8	65.7	60.0

Transmission Loss (TL)

Exterior Assembly	Source	Area	STC	Transmission Loss (dB) Frequency (Hz.) 125	250	500	1000	2000	4000
Siding	Hardiplank	180	46	27	42	44	46	49	54
Windows	Starline	25	35	25	23	32	39	39	37
Glass Doors	Starline	0	35	24	23	34	37	40	39

Room Absorption (RA)

Interior Characteristics	Source		NRC	Absorption Coefficients Frequency (Hz.) 125	250	500	1000	2000	4000
Carpet	Army TM 5-805-4		0.28	0.15	0.17	0.12	0.32	0.52	0.30
Furnishings	Army TM 5-805-4		0.45	0.32	0.29	0.42	0.58	0.60	0.48
Drywall	Netwell		0.07	0.09	0.08	0.05	0.03	0.06	0.09
Overall Absorption Factor (Furnished Room)			0.8	0.56	0.54	0.59	0.93	1.18	0.87

Noise Reduction

	125	250	500	1000	2000	4000
Noise Reduction from Absorption based upon Floor Area	-20.3	-20.3	-20.3	-20.3	-20.3	-20.3
Noise Level Increase for Defects and Exposed Surface Area	15.6	15.6	15.6	15.6	15.6	15.6
Overall Reduction from Tranmission Loss + Room Absorption - Surface Exposure						33.1
Building Façade Noise Level (dBA Ldn)						70.0
Resultant Interior Noise Level (dBA Ldn)						**37**
Resultant Interior Noise Level (dBA Lmax)						**52**