

Memo

Date: August 14, 2020

To: David Hogan, AICP
M-Group

From: Steve J. Deines
Staff Consultant
Illingworth & Rodkin, Inc.

Dana M. Lodico, PE, INCE Bd. Cert
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RE: Results of Noise Wall Analysis, Benedetti Car Wash, Sebastopol, CA

A detailed analysis was conducted to determine the potential noise reduction provided by a noise wall for the proposed Benedetti Car Wash project in Sebastopol, California. The analysis was completed using SoundPLAN 8.2, a three-dimensional noise modeling software that considers site geometry, the characteristics of the noise sources, and shielding from structures and barriers. Four heights were analyzed for a barrier located along the eastern property line of the project site, extending from the southwest corner of the 6791 Sebastopol Avenue building to the northern end of the car wash building.

Summary of Regulations and Previous Conclusions

In June 2020, Illingworth & Rodkin, Inc. completed a noise and vibration assessment (ENA) of the project¹. In the assessment, it was determined that equipping the car wash blower dryer system with the specified silencer would reduce noise levels at surrounding sensitive uses to a less-than-significant level. Further analysis was requested to determine the effectiveness of a noise wall along the eastern property line with the goal of preventing noise originating from the project site from reaching a level of 70 dBA L_{eq} or greater at the neighboring property to the east.

¹ Benedetti Car Wash Noise and Vibration Assessment, Illingworth & Rodkin, Inc., June 25, 2020

Results of Detailed Barrier Analysis

As seen in Figure 3 of the ENA shown below, the noise model shows that a small segment of the neighboring property to the east would experience noise levels exceeding 70 dBA L_{eq} during periods of heavy, sustained car wash operation, even with the use of the silencer. A sound wall was introduced into the model and calculations were made to determine its effectiveness in preventing operational noise from reaching or exceeding 70 dBA L_{eq} at the neighboring property. Figures 5, 6, 7, and 8 show the calculated noise exposure resulting from the project with introduction of a wall along a segment of the eastern property line with heights of four, six, eight, and ten feet, respectively. Table 10 summarizes the noise reduction at the southern façade of the 6791 Sebastopol Avenue building resulting from construction of a noise wall at the specified heights. Noise levels at this location are representative of the overall noise exposure of the neighboring property and demonstrate the effectiveness of construction of a noise wall.

TABLE 10 Results of Noise Wall Modeling (dBA L_{eq})

Barrier Height	Noise Level at Southern Façade of 6791 Sebastopol Avenue (with Silencer)	Reduction in Noise Level Resulting from Noise Wall
No Barrier	62 to 63	--
4 feet	62 to 63	0
6 feet	61	1 to 2
8 feet	59	3 to 4
10 feet	57	5 to 6

FIGURE 3 Noise Exposure Resulting from Car Wash Operations – With Silencer



FIGURE 5 Noise Exposure Resulting from Car Wash Operations – With Silencer and 4ft Noise Wall



FIGURE 6 Noise Exposure Resulting from Car Wash Operations – With Silencer and 6ft Noise Wall



FIGURE 7 Noise Exposure Resulting from Car Wash Operations – With Silencer and 8ft Noise Wall



FIGURE 8 Noise Exposure Resulting from Car Wash Operations – With Silencer and 10ft Noise Wall



Results of the noise model show that use of the silencer and construction of a barrier with a minimum height of six feet would reduce noise exposure at the neighboring property to the east below 70 dBA L_{eq} . As seen in Table 10 and Figure 5, a four foot high noise wall is not anticipated to provide substantial noise reduction. As the noise wall height increases and approaches the height of the car wash exit, greater noise reduction is provided. As seen in Table 10 and Figures 6 and 7, a noise wall reaching six feet or eight feet in height would provide a measurable noise reduction and noise levels resulting from project operations would not reach or exceed 70 dBA L_{eq} at any location on the neighboring property to the east. Construction of a ten foot noise wall would provide for further noise reduction, as seen in Table 10 and Figure 8.

Recommendations

To reduce noise exposure on the neighboring property to the east resulting from project operations to a level not reaching or exceeding 70 dBA L_{eq} , the car wash blower dryer system should be equipped with the specified silencer and a noise wall with a minimum height of six feet should be constructed along the shared property line, extending from the southwest corner of the 6791 Sebastopol Avenue building to the northern façade of the proposed car wash building.



Please feel free to contact us with any questions on the analysis or if we can be of further assistance.

Sincerely,

Handwritten signature of Steve J. Deines, appearing as a stylized, cursive script.

Steve J. Deines
Illingworth & Rodkin, Inc.

Handwritten signature of Dana M. Lodico, appearing as a stylized, cursive script.

Dana M. Lodico, PE, INCE Bd. Cert
Illingworth & Rodkin, Inc.