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14 September 2011

Patty McHugh
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City of San Mateo
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Subject: Fire Station No. 24 Noise Study, San Mateo, CA
Noise Impact Analysis – Planning Application Resubmittal
CSA Project No. 11-0250

Dear Patty:

This report provides an environmental noise assessment for the new Fire Station No. 24 in San Mateo, California. The purpose of the study is to quantify noise levels generated by activities associated with the proposed project, and address any potential noise impacts on existing adjacent land-uses. This letter summarizes the City's noise goals, our on-site measurements, and a discussion of how the project relates to the City's goals.

The project site is located in the City of San Mateo, California situated on the north corner of E 4th Ave. and S. Humboldt St. Existing residential land-uses are located northwest, northeast, and southwest of the site. The dominant noise source is vehicular traffic along S. Humboldt St. Vehicular traffic along E. 4th Ave., located southeast of the site, also contributes to the noise environment, but to a lesser degree.

The project drawings dated 4 August 2011 show a proposed fire station to be constructed along S. Humboldt St., with new mechanical equipment to be installed behind the building. This will result in some shielding by the building to certain residences, but the residence northeast of the site will have full exposure.

In summary, noise levels generated by the fire station will meet the City's noise policies with mitigation measures outlined in this report.

EXISTING NOISE ENVIRONMENT

On-Site Acoustical Measurements

To quantify the existing noise environment at the project site, we conducted two continuous long-term 96-hour noise monitor measurements (L1 and L2) and short-term measurements (S1 and S2) throughout the project site between the 20th and 25th of June,

2011. The purpose of our measurements was to quantify the existing noise environment around the project site. Table 1 shows a summary of the acoustical measurements.

TABLE 1: MEASURED DATA		
Monitor	Location	Measured L_{dn}
L1	Approximately 20 feet southwest of centerline of S. Humboldt St., directly in front of 312 S. Humboldt St., 12 feet above grade	65 dBA
L2	Approximately 3 feet northwest of northwest property plane, 10 feet above grade	58 dBA
S1	Approximately 25 feet southwest of centerline of S. Humboldt St., directly in front of 306 Humboldt St., 4 feet above grade	62 dBA
S2	Approximately 25 feet southwest of centerline of S. Humboldt St., approximately 35 feet northwest of centerline of E. 4 th St., 4 feet above grade	69 dBA

Based on our observations, noise generated by vehicular traffic controls noise levels throughout the site.

ACOUSTICAL CRITERIA

City of San Mateo, California – Noise Regulation of the Municipal Code

7.30.040 Maximum Permissible Sound Levels.

(a) It is unlawful for any person to operate or cause to be operated any source of sound at any location within the city or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level when measured on any other property to exceed:

- (1) The noise level standard for that property as specified in Table 7.30.040 [Table 3, below] for a cumulative period of more than 30 minutes in any hour;
- (2) The noise level standard plus 5 dB for a cumulative period of more than 15 minutes in any hour;
- (3) The noise level standard plus 10 dB for a cumulative period of more than 5 minutes in any hour;
- (4) The noise level standard plus 15 dB for a cumulative period of more than 1 minute in any hour; or
- (5) The noise level standard or the maximum measured ambient level, plus 20 dB for any period of time.

(b) If the measured ambient level for any area is higher than the standard set in Table 7.30.040, then the ambient shall be the base noise level standard for purposes of subsection (a)(1) of this section. In such cases, the noise levels for purposes of subsections (a)(2) through (a)(5) of this section shall be increased in 5 dB increments above the ambient.

Table 3 – Noise Ordinance 7.30.040		
Noise Level Standards*		
Noise Zone	Time Period	Noise Level (dB)
Noise Zone 1 – Single-Family	10 p.m.- 7 a.m.	50
Residential, Parks, Open Space	7 a.m.- 10 p.m.	60

**Source: Adapted from “The Model Community Noise Control Ordinance,” Office of Noise Control, California Department of Health.*

(Ord. 2004-16 § 1, 2004).

FUTURE NOISE ENVIRONMENT

As part of the project, the existing fire station will be demolished and a new one built in its place. The 1 April 2011 drawings indicate a two story facility with space for two fire engines and an ambulance. The existing facility only has space for one fire engine; however, even though the new fire station will be larger, both residential and fire-station related traffic is not expected to increase based on the 8 September 2011 report by Hexagon Transportation Consultants, Inc.

In addition, a generator will be located approximately 25 feet from the nearest residential property line to the northeast. Based on acoustical data for the proposed back-up generator, we expect a noise level of 67 dBA at the property line. This exceeds the noise level allowable by the City and mitigation measures will be necessary.

The other mechanical equipment noise of concern is produced by the “blower” (exhaust system). A similar system will be installed at the new fire-station and to analyze potential impacts, we performed measurements of the existing blower to compare to the new “blower”. We measured the ambient noise levels at the residential property lines to be 54 to 56 dBA and the noise levels with “blower” on to be 60 to 61 dBA. Based on current conditions, we recommend locating the discharge for the new exhaust system no closer than 20 feet from the nearest residential property line. Also, the exhaust system is to be specified to include 15 feet of 1 inch thick internally lined duct between the fan and discharge and the fan should have an A weighted sound pressure level no greater than 75 dBA at 5.0 feet and an A-weighted sound power level no greater than 87 dBA, based on ANSI S1.4.

IMPACTS AND MITIGATION MEASURES

Impact 1: Mechanical equipment (e.g. back-up generator) noise will exceed the City’s municipal code.

As currently designed, the back-up generator will generate noise levels of approximately 67 dB at the nearest residential property line, which exceeds the City’s regulations. We understand that the generator is only used in emergencies and tested a few times a month for approximately 30 minutes.

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Mitigation: Provide an 8 foot tall barrier around the generator with sound absorptive material lining the interior face (facing the generator). The barrier is to have a surface weight of approximately 4 pounds per square foot and an NRC of 0.70 for the side facing the generator. If generator testing interval can be reduced to 15 minutes or less, the wall height could be reduced to 6 feet. Our noise monitoring measurements also indicate that noise levels stay relatively constant throughout the day; however, we would recommend that the generator not be tested early in the morning or in the evening.

* * *

This concludes our noise assessment for the new Fire Station No. 24 project located in San Mateo, California. Should you have any questions or comments, please do not hesitate to contact us.

Sincerely,

CHARLES M. SALTER ASSOCIATES, INC.



Robert P. Alvarado
Senior Vice President

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