



ALVERNO HEIGHTS ACADEMY

November 22, 2022

MEMORANDUM

TO: Vincent Gonzales,
Director of Planning and Community Preservation
City of Sierra Madre

FROM: Julia Fanara
Head of School
Alverno Height Academy

SUBJECT: **Review of Michillinda Playground Noise Mitigations**

The Planning Commission is considering Alverno Heights Academy's (AHA's) request for an amendment to the school's master plan. At the October 6th public hearing the Commission requested that AHA review noise mitigation measures related to the playground area on Michillinda Avenue. This area serves for parking and a volleyball/basketball court, which are typical uses for schools, including schools in Sierra Madre.

The staff report listed noise mitigation measures, which are explored in this memorandum. One was the substitution of rubberized asphaltic concrete typically used for street surfaces to minimize noise and noise barriers constructed of dimensional fabric applied to fencing to minimize noise transmission. This memo explores the noise reductions suggested in the staff report, along with the construction costs and other options.

Alverno Heights Noise Studies

AHA contracted with CSDA Design Group for two separate noise studies of campus activities in 2021 and 2022, including reviewing the noise generated from afterschool sports in support of the 2021 Master Plan Amendment. The second evaluation, the 2022 noise study, was performed at the request of the neighbors. It studied the noise level at the school when Los Angeles County Health Department permitted the resumption of in person learning during the Covid-19 pandemic. Enrollment had reached 374 students for the second study. The two studies included Community Noise Exposure Level (CNEL) and the loudest hourly noise levels. Table 2 of the April 5, 2022 study compares CNEL and 1-hour Period Leq, dBA for 2021 and 2022.

The studies reveal that the average noise level from outdoor activities at the school are within 3 dBA of the traffic noise, indicating that the neighborhood noise levels are dominated by traffic noise. This conclusion is similar to the findings from the Planning Center noise study conducted for the school's 2011 Master Plan Amendment. The measurements indicate noise levels are less than 80 dBA during the after-school outdoor activities, indicating compliance with the General Plan, Chapter 6, section on "Noise Control of Non-Transportation Noise Sources."



Option One – Construction of a 10-foot chain link fence, wrapped in a 1 psf. sound blanket. CSDA Design Group estimates a 20 dBA noise reduction from this design. The estimated construction cost do not include soft costs of design, engineering, permits, inspections, and construction contingency. Estimated construction cost is \$68,949.

Option Two – Construction of 10-foot plywood fencing, 1 psf. sound blanket affixed to ¾ inch plywood, mounted on 4-inch metal posts. The backside of the fence would also be ¾ inch plywood with a 1 psf. sound blanket. The estimated noise reduction is 20 to 30 dBA. The estimated construction cost do not include soft costs of design, engineering, permits, inspections, and construction contingency. The estimated construction costs are \$323,612.

Option Three – Construction of 10- foot modular sound barrier of prefabricated panels, with vertical steel columns. The estimated noise reduction is 35 dBA. The estimated construction cost do not include design, engineering, permits, inspections, and construction contingency. The estimated construction cost is \$327,348.

Construction of New Lower School Sports Court

AHA is proposing to construct two Lower School sports courts as part of the Master Plan. One court would be a full-sized court for basketball and volleyball. The second court would be a half-court for basketball practice and a play area. The courts would be constructed with special surfaces to reduce noise impacts. The estimated construction cost, not including design, engineering, permits, and inspections is \$405,000

Other Alternatives

There may be operational and other low cost mitigation measures which can be implemented. For example, the school has been obtaining estimates from vendors of portable play courts and “snap courts.” These portable courts are composed of rubberized material and would provide noise reduction. The court would need to be removed when events require the parking area. It is estimated that the portable court would cover approximately 13 parking stalls. The estimated costs are \$10,000. The Michillinda sports court is used primarily for practices. Both volleyball and basketball games rotate between AHA and the opposing school. This sports court is not used by the upper school students.

Summary

It should be noted that the construction of sound walls and the Lower School sports courts would be a major financial commitment, requiring a capital campaign. Based on the school’s past experience, fund raising campaigns require significant effort and organization. They can require anywhere from two to five years to complete.

Attachment: AHA Master Plan Amendment – Sound Wall Study/Michillinda Basketball/Volleyball Court
Soundwall Cost Estimates, Yuang Tai, Inc, 11/21/22

Rubberized Asphalt

AHA explored the option of replacing the volleyball/basketball court with rubberized asphalt (100 feet in width by 160 feet in length). The estimated costs are \$20,000 for paving, and striping. It is difficult to quantify noise reductions from rubberized asphalt since noise studies on rubberized asphalt have focused on vehicle noise. Vehicular noise reductions are in the range of 1 dBA to 5 dBA, depending on a number of factors, including vehicle speeds and mix of vehicles. We have not found a study that specifically measures noise reduction from playgrounds paved with rubberized asphalt.¹

There are other issues related to playgrounds and rubberized asphalt. Raveling is an issue and slow vehicle turning movements, such as in parking lots, increases raveling. There will also be loose aggregate which will require regular sweeping. Rubberized asphalt is less durable and may last only 8 to 12 years. Rubberized asphalt does not provide any structural strength, so the existing asphalt paving will need to remain. The surface of rubberized asphalt is very porous and rough. Scrapes and rashes from falling on the surface will be much worse than the current pavement. The surface cannot be sealed since the voids provide noise reduction. The voids will be susceptible to filling in with sediment, reducing the effectiveness of any potential noise reduction. Another consideration is that some of the noise is from cheering and referee whistles, which is not mitigated by the rubberized asphalt.

Noise Wall Options

AHA studied three noise wall options (see attached Soundwall Study/Michillinda Basketball/Volleyball Court). One of the major factors in constructing the noise wall is the height of the wall in relationship to the line of sight from the homes on Grandview into the school. In order to understand the impact of this grade change, AHA requested that RKA Construction Group prepare a cross section in order to determine the line of sight and the optimum height of a noise wall. As the cross section illustrates, the homes on Grandview Avenue are located approximately 8 feet above the street. Receptors are then six feet above this elevation. Grandview Avenue is also above the parking lot/play area. The school's existing perimeter wall is six feet in height and also is not structurally sufficient to serve as a noise wall and cannot be increased in height.

The line of sight study revealed that the noise wall would need to be 10 feet in height on the campus. The proposed location would be ten feet from the north and west ends of the volleyball/basketball court. The wall would be set back from the existing olive trees on the school's perimeter to protect these trees and to provide screening for the neighbors. The noise wall would be approximately 180 linear feet along Grandview Avenue and 80 linear feet along Michillinda Avenue. AHA studied three construction options, the resulting noise reductions with each option and the costs of each option. Construction costs were estimated by Young Tai and Associates.

¹ See "Highway Traffic Noise: Analysis and Abatement Guidance," U.S. Department of Transportation, Federal Highway Administration, FHWA-HEP-10-025, December 2011; "Highway Traffic Noise – Guidance on Pavement as Noise Abatement Measure," Arizona Department of Transportation, April 2012; "Quieter Pavement, Acoustic Measurement and Performance," CalTrans, Division of Environmental Analysis, February 2018