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INTEGRATED
COMMUNICATIONS
TECHNOLOGY AND
ACOUSTIC CONSULTING

Re: Field School
Replacement Chiller Noise Levels
SM&W #12460as

NEW YORK

HONG KONG

WASHINGTON D.C.

CHICAGO

SAN FRANCISCO

PRINCETON

HOUSTON

DENVER

LONDON

LAS VEGAS

DUBAI

Dear Tom,

This letter summarizes our efforts to date to mitigate the chiller noise to the adjacent residences. We understand that a proposed condition of ANC approval is as follows:

Prior to the beginning of the occupancy of the new addition, The Field School will replace the cooling unit, now referred to as "The Chiller," next to the gymnasium with a unit that is at least 20% quieter.

It is important to note that sound is measured on a logarithmic scale (in terms of decibels, or dB) and we believe the intent of the above statement is to provide a reduction in the perceived loudness of 20%, not a 20% reduction in dB. As such, a reduction of approximately 3-5 dB could be interpreted as a 20% reduction; however, this does not address the issue that is the source of neighbor complaints – the tonal component of the existing chiller's sound.

In order to qualitatively improve the sound of the chiller to the neighbors, we have taken the following steps to evaluate the current noise and determine the best approach forward.

1. Previously, SM&W visited the Field School campus and measured the noise levels of the existing chiller to be 48 dBA at the property line, which is below the nighttime requirement of 55 dBA. Our testing also found that the tonal component of the chiller sound is the likely source of complaints. This information provides a baseline of the current conditions for comparison to alternate units.
2. SM&W has reviewed the factory sound data for several possible units to replace the existing chiller. Chiller data has been reviewed to exclude units with a strong tone and several units were determined to have a spectrum that is quieter with minimal tones. All proposed units include the low noise options which typically incorporate compressor wraps and upgraded low-noise fans. Additionally, scroll type compressors are included for all chillers under consideration. Scroll type compressors were not available when the original chiller was installed; however, these compressors tend to be quieter with less of a tonal spectrum when wrapped than the traditional screw type compressor.

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CASE NO. 18431
EXHIBIT NO. 33
Board of Zoning Adjustment
District of Columbia
CASE NO. 18431
EXHIBIT NO. 33

3. As a follow-up to the factory sound data review, SM&W then visited a similar unit in the Washington, D.C. area to determine if the actual operation noise levels matched the factory data. The results of the preliminary field testing indicate that a new unit will decrease the overall property line noise levels approximately 3-5 dBA. More importantly, the sound quality of the proposed new chiller will have a much more even sound spectrum with limited tonal elements achieved by taking advantage of the latest compressor technology and other measures including compressor wraps and low noise fans.
4. Additionally, we have requested that prior to the delivery of a new chiller, a factory witness test of the unit noise levels be required. This will allow the noise levels of the new chiller to be measured and a confirmation of minimal tones to be confirmed prior to leaving the factory.

We believe the steps taken by the design team are congruous with providing a new chiller with an improved quality of sound (i.e. quieter and with minimal tones). We caution against committing to a proposed % reduction or dB reduction in noise as such a requirement doesn't address the issue faced by neighbors. Additionally, we have made every effort to correctly quantify the site conditions and their effect on the chiller sound levels including the buildings, site elevation changes and barrier walls; however, such levels are reported as a range due to such factors including atmospheric conditions, unit size and location within the barrier walls.

Improving the overall quality of noise to the adjacent neighbors is the driving goal behind the chiller replacement and we believe that the current approach by the owner and design team will result in lower noise levels and a reduction in the tonal components of the sound.

Kind regards,
Shen Milsom & Wilke, LLC



Geoffrey S. Sparks, INCE, LEED AP
Senior Consultant