45dB
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, **Project 1709**

All Saints-by-the-Sea
83 Eucalyptus Lane
Montecito, CA

Mechanical Yard

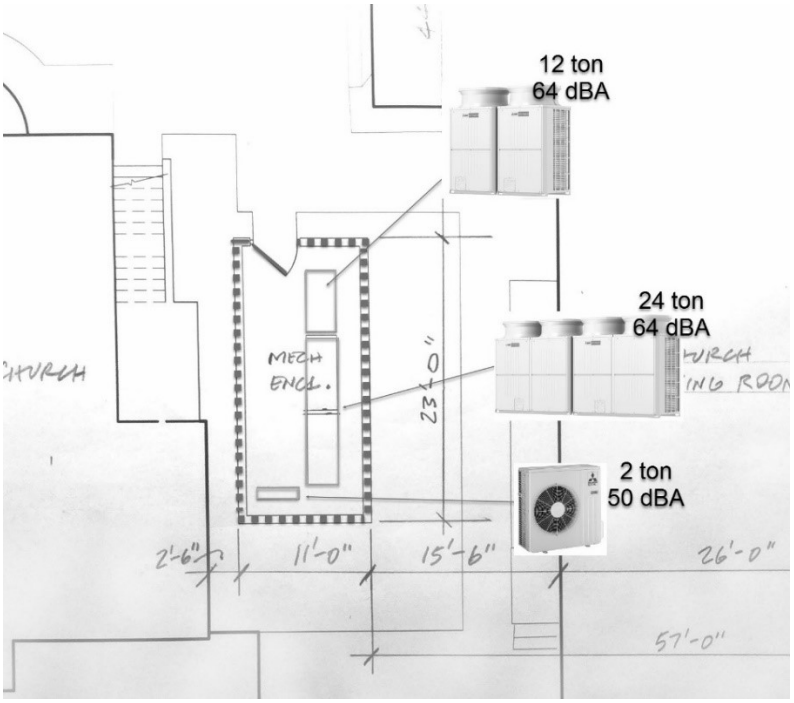
Condenser Noise Analysis and Mitigation

This report describes the noise modeling and analysis of the mechanical yard at All Saints-by-the-Sea. Mitigation of noise with a masonry wall enclosure, 8 feet high above finish grade is tested and confirmed.

1.1 Layout of Mechanical Yard

The mechanical yard measures approximately 23 feet by 11 feet and sits in an area between the Church and the Church meeting room

Figure 1 Layout and adjacency of Mechanical Yard with Equipment



The Mechanical Yard will have three significant pieces of equipment:

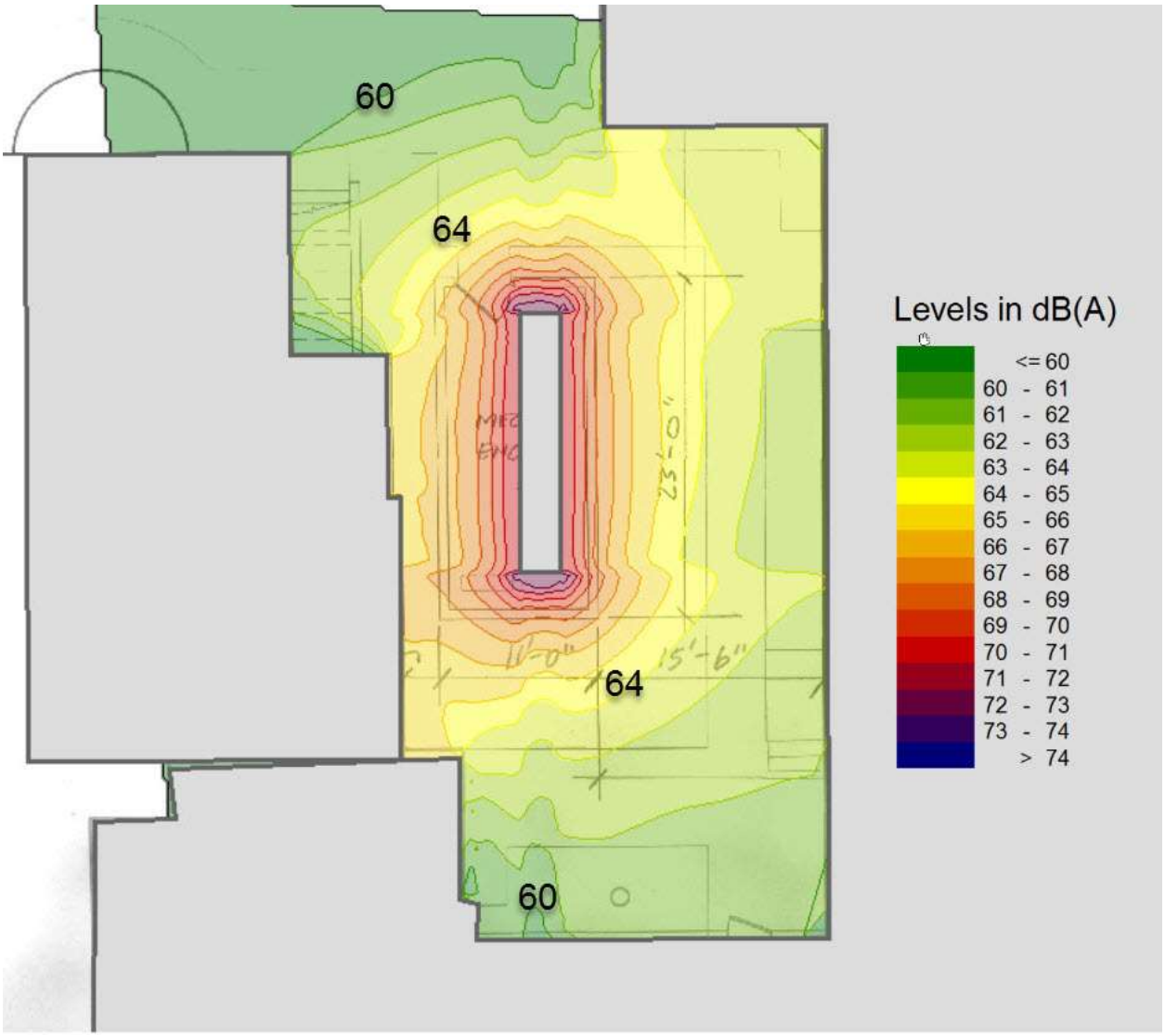
1. A 12-ton Mitsubishi outdoor VRF heat pump, listed at Sound Pressure Level of 64 dBA at one meter (3 feet)

2. A 24-ton Mitsubishi Outdoor VRF heat pump, listed at Sound Pressure Level of 64 dBA at one meter (3 feet), and

3. A 2 ton ducted heat pump system for the new organ inside the Church, listed at 50 dBA.

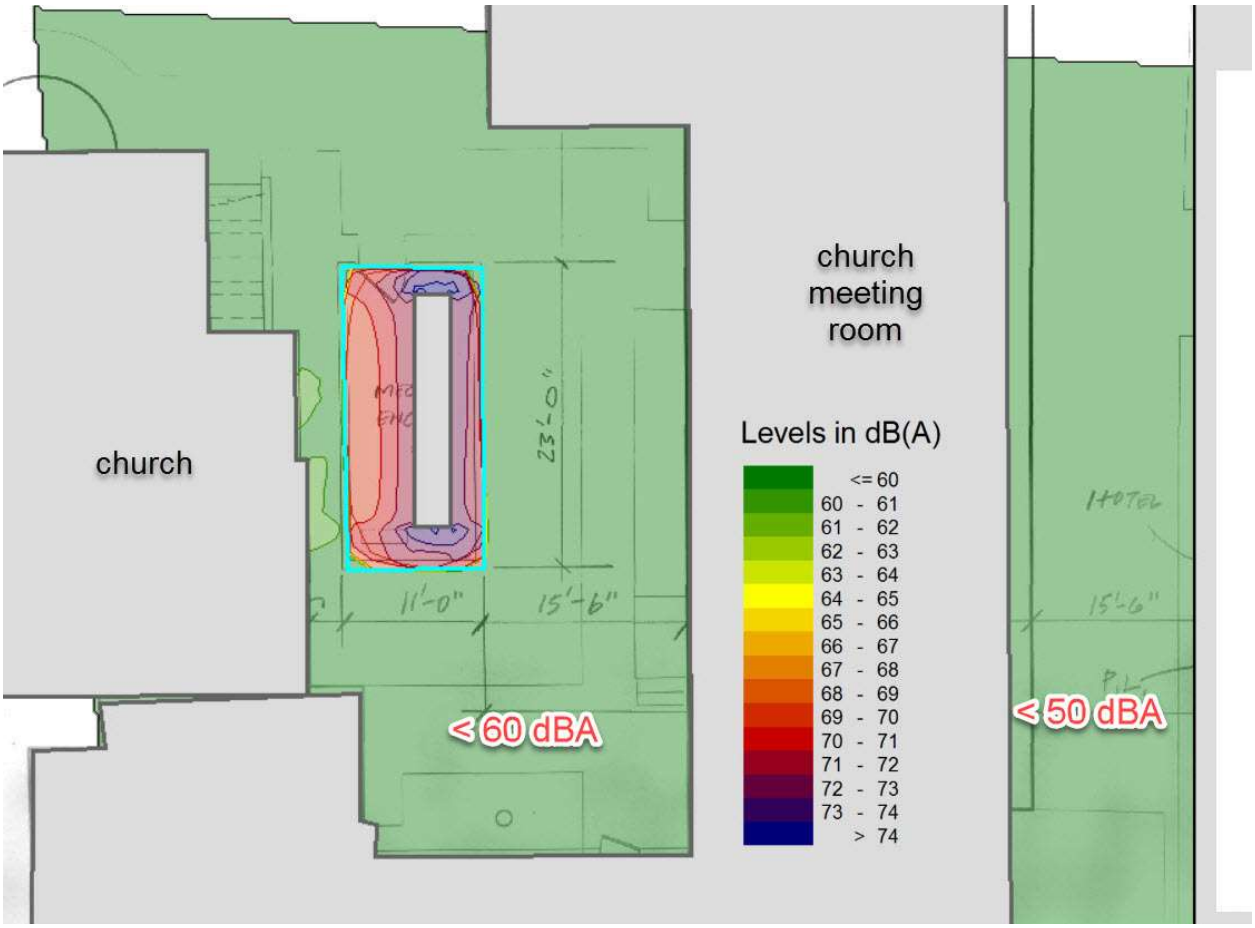
1.2 Noise Level without Mitigation

Figure 2. Noise level, all equipment running, no mitigation



1.3 Noise Level With Mitigation

Figure 3. Noise levels, dBA, all equipment running.
8 foot masonry wall enclosure in place.
Area in courtyard is generally less than 60 dBA.
At the property line to the east, sound level is less than 50 dBA.



Noise level is reduced to less than 60 dBA in courtyard between church and church meeting room. Noise level is reduced to less than 50 dBA beyond the church meeting room at the east property boundary next to the hotel.

1.4 Noise Level in adjacent spaces.

Sound level of 60 dBA is reduced by minimal wall / window construction by Sound Transmission Class (STC) = 15 to less than 45 dBA in the interior space of the classroom and less than 35 dBA in the distant hotel rooms to the east. This is illustrated in the diagram below

Figure 4. Attenuation of sound from mechanical yard to courtyard and toward the east property boundary. Minimal STC values for wall assemblies will reduce interior sound levels to below 45 dBA in the classroom space and in the hotel toward the east. It is assumed classroom wall/window assemblies meet STC 15 or better. It is assumed hotel wall/window assemblies meet STC 5 or better.

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