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**SIBLEY MEMORIAL HOSPITAL**

**WASHINGTON, DC**

**Preliminary Assessment of the  
Rooftop Mechanical Equipment Noise of the  
Proposed Medical Office Building**

**Gerald H. Henning  
President**

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A new Medical Office Building is proposed for the Sibley Memorial Hospital in Washington, DC. The location of the outdoor mechanical equipment is planned for the rooftop of the building. Provided herein is a preliminary study of the noise expected from this equipment.

## **DC NOISE CODE**

Under the District of Columbia Municipal Regulations, the maximum permissible noise level from outdoor mechanical equipment is 60 dBA at the property line. The A-weighted decibel (dBA) is a logarithmic unit of sound which simulates human hearing by rolling off the low and very high frequencies of sound. To help relate the A-weighted decibel system to subjective perceptions, a noise level decreased by 10 dBA is perceived to be roughly one-half as loud. Conversely, a noise level increased by 10 dBA is perceived to be roughly twice as loud. A difference of 3 dBA is generally the minimum perceivable difference between noise levels. For reference, the level of normal speech is approximately 60 dBA 3 ft from the person speaking, and the average noise level in a busy office is also approximately 60 dBA.

## **EXISTING AMBIENT NOISE LEVELS**

On October 5, 2006, between 12:00 p.m. and 12:35 p.m., typical ambient noise levels were measured on the sidewalk at the residences closest to the proposed Medical Office Building. These residences are located on Loughboro Road across the street from Sibley Memorial Hospital. The noise levels were measured with a Rion NA-27 Real Time Precision Analyzer with a windscreen on the microphone. The calibration of the instrument was verified before and after the noise measurements.

The noise levels were averaged during periods of 5 minutes each. The maximum noise levels during the 5-minute periods were also measured. The average noise levels measured 65-69 dBA, and the maximum noise levels measured 77-84 dBA. These ambient noise levels consisted primarily of noise from traffic on Loughboro Road. The average noise levels measured were noticeably to nearly twice as loud as mechanical equipment noise just meeting the maximum permissible level of 60 dBA under the DC

noise code. The maximum noise levels measured were approximately four times as loud as mechanical equipment noise just meeting the maximum permissible level of 60 dBA under the DC noise code.

## **MECHANICAL EQUIPMENT NOISE ASSESSMENT**

The Medical Office Building has not yet been designed, and the mechanical equipment for the building has not yet been selected. However, based on experience with the noise levels from rooftop mechanical equipment, the noise levels from the mechanical equipment on the rooftop of the Medical Office Building would be acceptable for the residents of the properties surrounding the proposed building. The sound power levels from the mechanical equipment on the rooftop of the proposed building would be reduced by more than 50 dBA at the nearest residential property (approximately 435 ft away) by distance alone. At residences further away from the proposed building, the noise levels would be further reduced by the greater distances and by the attenuation of intervening vegetation and structures.

The rooftop mechanical equipment noise levels are expected to comply with the DC noise code without any additional noise control measures. However, once the mechanical equipment is selected, a noise study will be performed. If necessary, noise reduction measures will be designed to ensure that the noise levels from the rooftop mechanical equipment do not exceed the maximum permissible noise levels. These measures may include noise barriers and/or equipment silencers. Based on the typical ambient noise levels measured, the noise from the mechanical equipment on the rooftop of the Medical Office Building, in addition to meeting the DC noise code, will not likely be noticeable in the surrounding community.