System: CLAG

Kinetics Noise Control Solutions

Equipment Yard Barrier Wall System – Sound Control

Client

Owner of an Olympic size, velodrome training facility (a velodrome is an indoor arena for high speed, track cycling consisting of steeply banked oval tracks.

Issues

- The originally designed, concrete block, outdoor, equipment yard barrier was designed with no attention to acoustics.

- The project was well underway, in fact, the mechanical equipment was already installed and operating in the yard, when the owner became concerned about the noise emanating from the yard to the velodrome entrance as well as to the surrounding residential neighborhood.

- The architect wanted the acoustical consultant to determine how much higher the existing concrete block wall should be and then increase it by using additional concrete block.

- Increasing the wall height would introduce the need for attenuated ventilation as well as sound absorption and sound transmission loss (blocking).

Solutions

- The acoustical consultant had much experience using Kinetics Noise Control, Inc. (KNC) products and services and contacted KNC's local representative.

- The KNC representative and in-house engineer visited the site to finalize submittals with the contractor and confirm existing noise levels.

- The equipment yard was configured with pumps and transformers at one end and air handling units (AHU's) at the other. A composite wall, half consisting of **NOISEBLOCK**™ solid panels and the balance consisting of similarly performing model VAL, fixed-blade sound louvers allowed for the air requirements of the AHU's.

Advantages of Proposed Solution

• **NOISEBLOCK**™ barrier wall systems are easily designed to any required wind and seismic loads.

• The Kinetics Noise Control, Inc. (KNC) engineering team and representative are experienced with working with acoustical consultants, owner and community representatives.

• KNC specializes in the manufacture of **NOISEBLOCK**™ barrier wall and acoustical louver systems, thus ensuring the client noise reduction goals are met.

Considerations

• Environmental noise issue
• Large concrete block equipment yard
• Time constraints
• Continuous operation
• The barrier wall system must be designed as free standing without knee braces
• Existing concrete block wall cannot withstand additional external loading
• Low pressure drop but high attenuation requirement

Project Goals

• Meet the imposed time constraints
• Reduce the noise levels to within acceptable levels for community and patrons

NOISEBLOCK™ Applied Products

KNC model STL-4, **NOISEBLOCK**™ panels were manufactured of 16 gage solid outer skin and 22 gage, perforated inner skin with acoustic grade fill suitable for outdoor exposure, all material galvanized steel, Type G90. The tongue and groove panel connections allowed for quick installation and inherent drainage of rain water. The structural steel components were supplied as assemblies with a factory hot-dipped, galvanized finish. All products are cost effective and backed by KNC's extensive, independently tested database and proven performance.

KNC model VAL/2, 6-inch deep acoustic louvers were used for the balance. The structural steel support system was designed to readily accept the louvers similar to the method used to install the **NOISEBLOCK**™ panels. This common attachment methodology made efficient for the installer to complete the project. Since the existing wall could not support the reaction forces of the base plates if mounted on top, the structural steel columns were designed to run behind the wall up from grade.

The final barrier dimensions were 162'-0" L x 31'-0" W x 6'-6" H extension.

Resolution

The installed composite barrier wall system yielded the necessary 12 dBA sound reduction. This was perceived by the residential neighbors and surrounding patrons as sounding half as loud as the untreated noise. Proper air allowed for proper equipment operation. The time-line was met. The architect and acoustical consultant praised the work and highly recommend KNC for future projects.