



System: BVTk

Kinetics Noise Control Solutions

Rooftop, Mechanical Equipment, Composite Solution

Client

National telecommunications corporation in a residential area.

The Situation

The noise sources are twenty rooftop air cooled condenser units placed on the customer services building in a densely populated downtown residential area. Mid/hi frequency noise from the up-blast fans was emanating into the residential neighborhood.

Issues

- The condenser units were installed with no regard to noise control.
- As soon as the condensers became operational, the neighbors filed complaints; especially about the night time noise levels.
- The condensers were installed very densely leaving very little room for sound attenuating products and support structure.

Solutions

- The client incorporated an acoustical consultant to bring down noise levels to comply with the city noise ordinance.
- 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 confirmed existing noise levels.
- The roof was densely configured with 20 air-cooled condensers, pumps and piping. A composite wall, half consisting of **NOISEBLOCK™** solid barrier wall panels and the balance consisting of similarly performing model VAL, fixed blade acoustic louvers along the roof parapet allowed for the air requirements of the condensers, while **NOISEBLOCK™** solid barrier wall panels were suspended above the condensers to attenuate noise from the up-blast fans.



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Advantages of Purposed Solution

- **NOISEBLOCK™** barrier walls 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 walls and acoustic louvers, thus ensuring the client noise reduction goals are met.

Project Goals

- Quiet the noise levels of the rooftop mechanical equipment to less than or equal to those dictated by the city ordinance.
- Design the barrier walls in order to prevent direct sight of up-blast fans from critical receiver positions.
- Consider seismic and wind loads on the whole structure.
- Stay within the client's budget and time-line.
- Make sure the performance of the mechanical equipment is not degraded by the introduction of sound attenuating products.

NOISEBLOCK™ Applied Products

KNC model STL-4, **NOISEBLOCK™** barrier 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 acoustic louvers similar to the method used to install the **NOISEBLOCK™** barrier panels. This common attachment methodology made efficient for the installer to complete the project.

The total outer barrier dimensions were 53.4 m (L) x 2.9 m (H), with suspended frames of **NOISEBLOCK™** barrier panels of 1.2 m height above the up-blast fans, rising up to 3.9 m beyond the roof.

Resolution

The sound pressure levels measured after the installation complied with city noise ordinance. Noise attenuation of 9.0 dBA* was achieved at neighboring critical receiver points. Design airflow allowed for proper equipment operation. The time-line was met. The client and acoustical consultant praised the work and highly recommend KNC for future projects.

***Note:** The human ear perceives a 10dBA reduction in sound as roughly halving the volume.