

March 13, 2026 revised April 22, 2026 revised May 12, 2026 revised May 29, 2026

Jason Green, COO
RAEDEN

RE: Project Taurus Mechanical Noise – Exterior Noise Design Analysis rev. C – Project Taurus Comprehensive Exterior Noise and Acoustical Design Analysis and Impact

Dear Jason:

This is a revised acoustic report related to the new mechanical (cooling) and backup power (generator) equipment planned to be added to support the new Project Taurus data center in Colorado Springs. Revisions to the 5/12/2026 revised report are focused mainly on the relocation of the generator yard to the north of the existing fab building, with other minor changes for clarity.

Please note, the analysis of the Project Taurus Development Plan involves direct inputs regarding power equipment, cooling equipment, and various other site development materials and solutions without bias. We simply inputted the Development Plan details into a computer model solely intended to consider every conceivable element of the Project Taurus site location and project.

Compliance with all other applicable codes should be reviewed by qualified personnel.

The Computer Model – Defined

Understanding the definition of “noise” requires the input and consideration of numerous factors, especially when considering multiple devices operating concurrently and large areas of space. The computer model allows for comprehensive incorporation of every conceivable aspect of the Project Taurus Development Plan, specifically precise manufacturer performance and operations data for the power and cooling devices proposed to the City of Colorado Springs for installation and operations to support the data center.

Key Terminologies applied to the model include:

- **Sound Power Data** – Effectively defined as “the cause” of the sound or noise being considered, meaning the total energy generated as sound from a machine.
 - Sound Power Data is supplied by the manufacturer of each specific device and represents the factory-validated measurements of that device. This data is used, as supplied, to generate the noise model.
- **Decibels, A-Weighted (dBA)** – The single-number measurement of airborne sound or noise, also known as **Sound Pressure**, adjusted using a weighted scale for judging loudness that corresponds to the hearing threshold of the human ear.
 - Means the actual sound level present at a listener position (human or microphone) some distance from the sound source.

- **Distance** – The physical distance from each element of consideration of the model.
- **Interference** – Physical or other means capable of reflecting or absorbing airborne sound at a given distance.

Simple explanation of the Key Terminologies:

- **Sound Power Data (in Decibels – dBA) = Wattage of a Light Bulb**
 - If a chiller in operation “causes” sound at 85dBA at 100% operational use the chiller will ALWAYS generate 85dBA of sound at 100% operational use.
 - A 100-watt light bulb will always emit 100 watts of light when turned completely on, regardless of the distance of the observer.
- **Sound Pressure (dBA) = Relationship (distance) From The “Cause” (Source of Sound)**
 - The closer the listener position to the “source” of the sound, the closer the dBA level will appear to the actual Sound Power Data for the device, or “source”.
 - This means that if one stands directly adjacent to a Chiller rated at 85 dBA, the airborne noise level as measured by a sound level meter will also be 85 dBA.
 - However, if one stands 100 yards away from a Chiller rated at 85 dBA, the distance (and other considerations) may make the same chiller sound like 55 dBA.
- **Light bulb Distance Analogy**
 - Standing next to a 100-watt light bulb will feel as bright as the light bulb can appear.
 - At a distance of 25 feet from a 100-watt light bulb, the light will appear much less bright because of the increased distance.
 - The distance between source and observer affects the perceived intensity of the light bulb, just as the same distance relationship affects the perceived noise level of a device.

Noise Study Methodology

In general, the strategy used in developing the noise model was to map out all aspects of the site in software designed to calculate a noise model based on industry standards. This included topography using available maps, building locations and heights, existing elements such as the screen wall south of the existing paved area, and finally, the sizes and locations of all the new equipment, as well as the barriers intended to control noise from the new equipment.

The software used for the noise model can be found at <https://dbmap.net>. All procedures used to generate the model are features provided by that website in modeling noise propagation.

Site Layout - Topography

The topography of the site can affect the way noise propagates through the area. The software includes a Ground Height tab, with which topographical contours can be added to the model based on available topographical maps. A sample of this mode can be seen below, with the contours represented by the black-and-white dotted lines. Note that all dimensions in the software are stated in meters, and the topo map is based on a datum set at an elevation of 6300 feet above sea level. For example, the 15.2m contour in the model is 15.2 meters above 6300 feet, or 6350 feet above sea level, as can be seen on the underlying topo map.

This portion of the model includes all elements present on the topographical maps, which includes gradual grade changes, such as those leading down to the concrete culvert to the north and south, and more severe grade changes, such as the sides of the culvert itself. The model includes the acoustic effects of all these elements in calculating noise propagation.

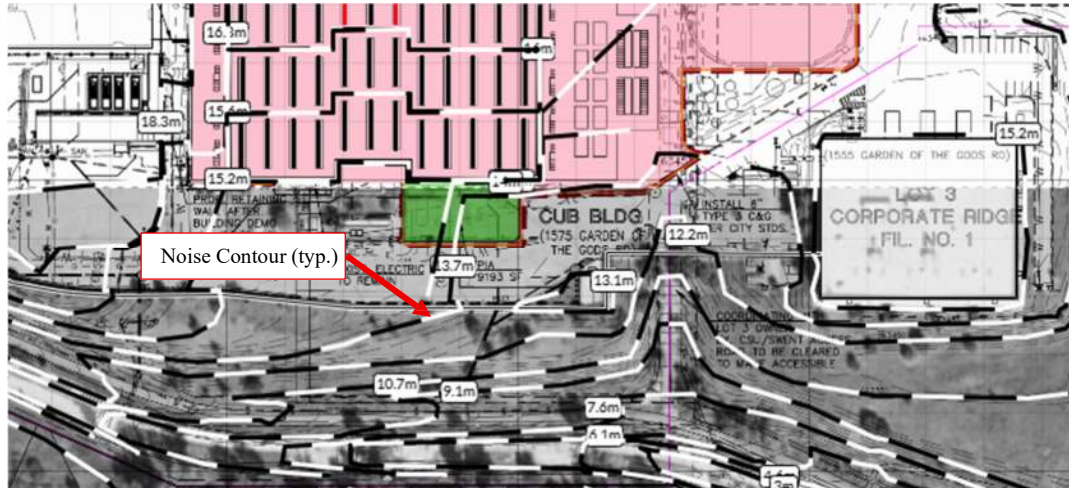


Figure 1. Topography Contours in Model

Site Layout – Buildings and Screen Wall

Once the topography is set, the site is populated with the surrounding buildings and other built elements that will be in place after site modifications are complete and will affect the way sound travels throughout the site. Using the Normal Mode of the software, buildings are added as objects, setting their plan dimensions and roof height using the Add Object dialog box. All heights for objects are based on the surrounding ground height, set in the previous step. The type of roof (flat, sloped, peaked, etc.) is set, as well as the acoustic properties of the building. In general, buildings are modeled as being highly sound reflective, although exterior building materials do generally exhibit some minor sound absorption.

The same process is used to add any other objects that are large enough to affect propagation of noise. For this model, only the existing screen wall at the south side of the paved area was included, as no other site elements were deemed substantial enough to affect the noise model.

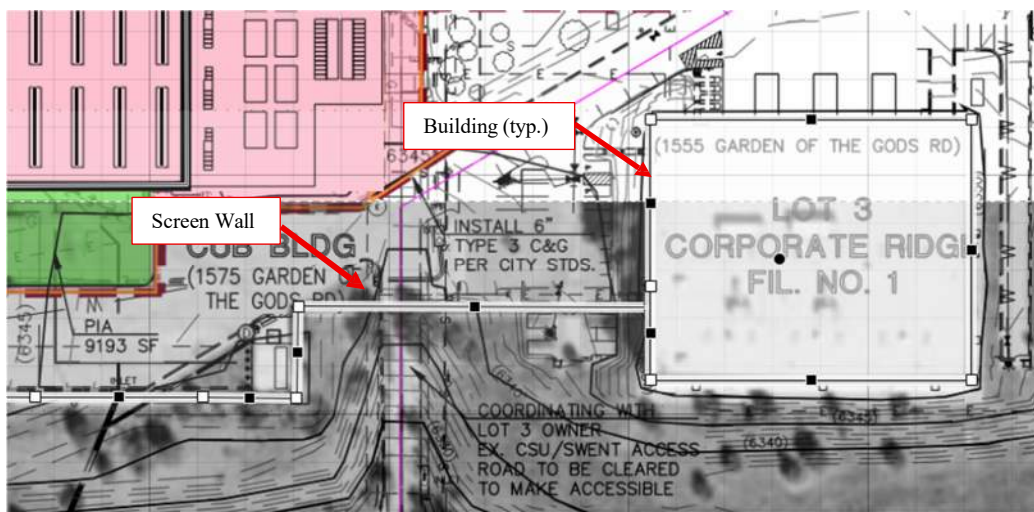


Figure 2. Site Object Entry – Buildings and Screen Wall

Site Layout – Noise Sources

Once the buildings and other permanent architectural elements are added to the model, the noise sources are added. Using the equipment layouts from the mechanical engineer, noise source objects are added to the model. In this case, the sound sources, chillers and generators, are much longer than they are wide, so they are modeled as line sources, with noise generated along their entire lengths, and not just from a single point, as a smaller noise source would be modeled.

The noise levels produced by the equipment are assigned to each individual noise source based on sound power data provided by the mechanical engineer. This data is provided in octave-band form for various operating conditions, with the noise generated at each frequency band included, not just the overall dBA level. The sound power data is typically determined by manufacturers using an industry standard, AHRI 370: Sound Performance Rating of Large Air-Cooled Outdoor Refrigerating and Air-Conditioning Equipment. This standard only covers frequencies from 63 Hz to 8000 Hz. While equipment produces sound in higher and lower frequencies, the levels are typically not high enough to require inclusion in the model.

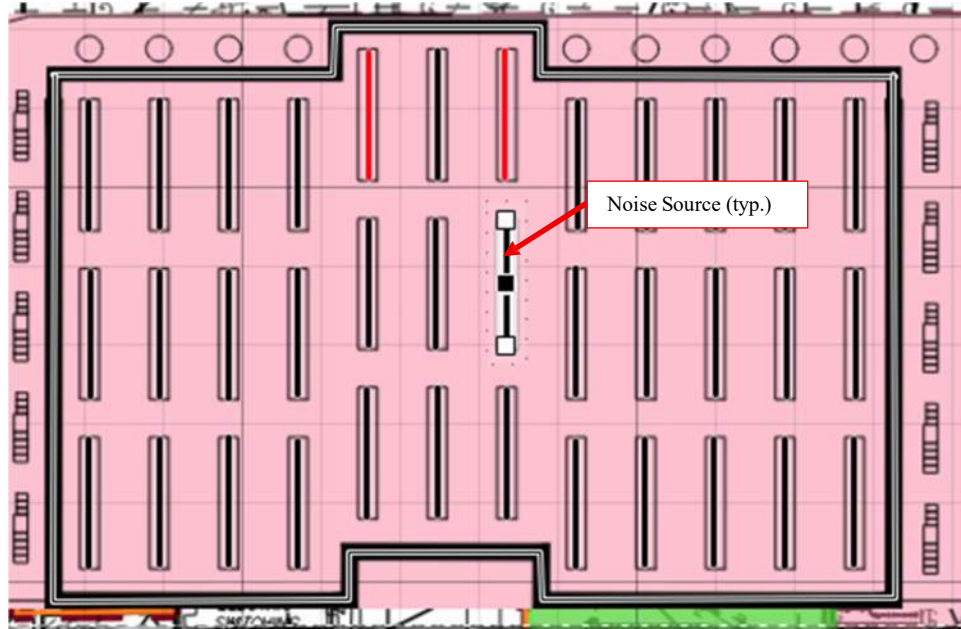


Figure 3. Noise Source Layout

Site Layout – Acoustic Barriers

To determine what additional sound mitigation measures would be required at the equipment yards, acoustic barriers are added around the noise sources in the computer model. Similar to other objects in the model, the barrier dimensions and heights are set using a dialog box. In addition, the acoustic characteristics of the barrier are set. In this case, the planned barriers are sound absorptive on the side facing the equipment, so the octave-band sound absorption values provided by the barrier manufacturer were included for each barrier object within the model.

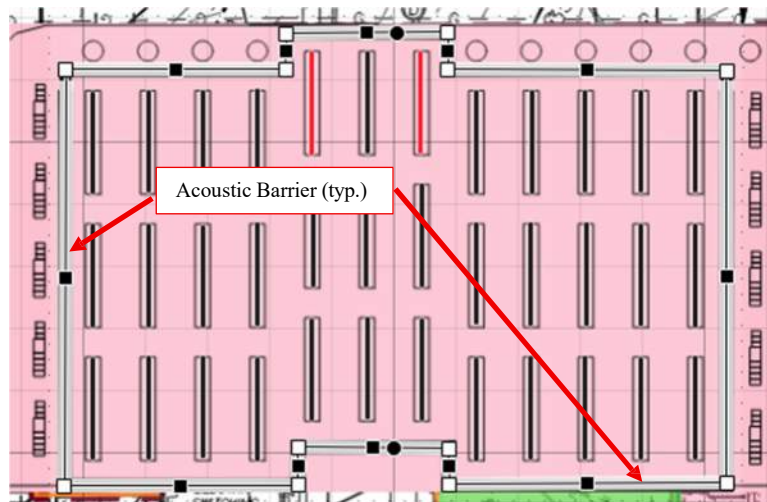


Figure 4. Acoustic Barrier Layout



Figure 5. Acoustic Barrier Properties

Note that the model assumes not only the sound absorptive properties of the barrier, but also the effect of the barrier's mass in blocking noise. The model assumes a minimum barrier surface density of 10 kg/m^2 . The barrier product selected for use on this project has a surface density of approximately 36 kg/m^2 , according to the panel manufacturer's technical data.

Noise Modeling - Calculation

Once all the site parameters have been entered into the model, the software generates a noise map based on the interaction of the noise sources with all the elements on the site (barriers, buildings, topography), color coded by dBA level. Calculations are performed by the software in accordance with ISO 9613-2:2024 – Engineering method for the prediction of sound pressure levels outdoors. This model includes parameters for temperature, wind speed, humidity, and ground type (paved vs. grass). Sample receiver positions can be placed to check noise levels at specific points within the model, set at 1.5m above ground height.

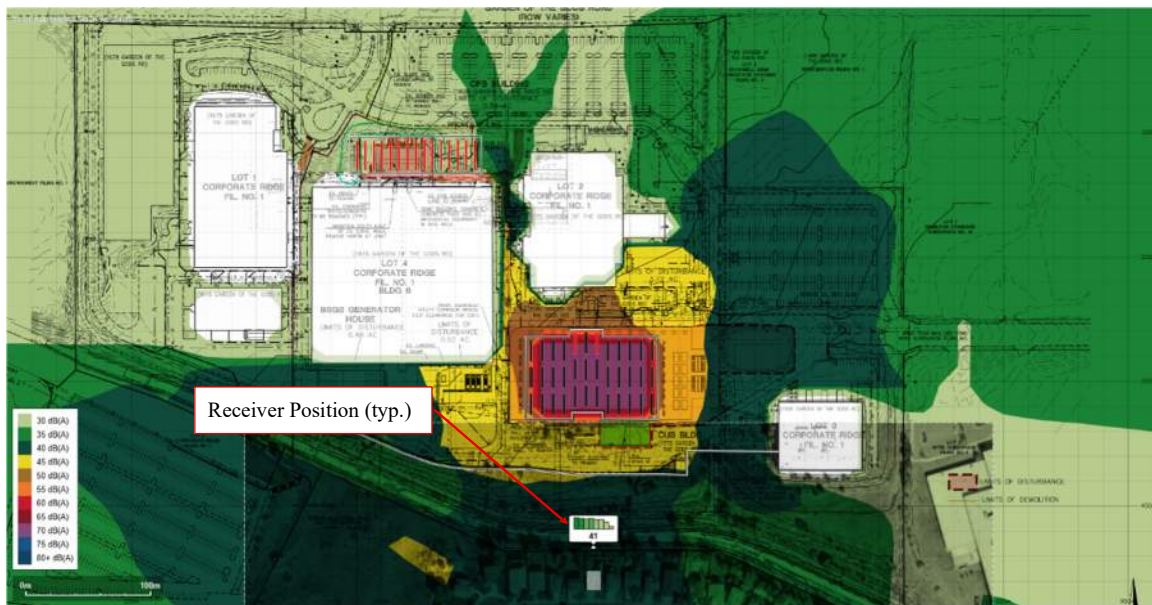


Figure 6. Final Noise Model Map

Background and Requirements

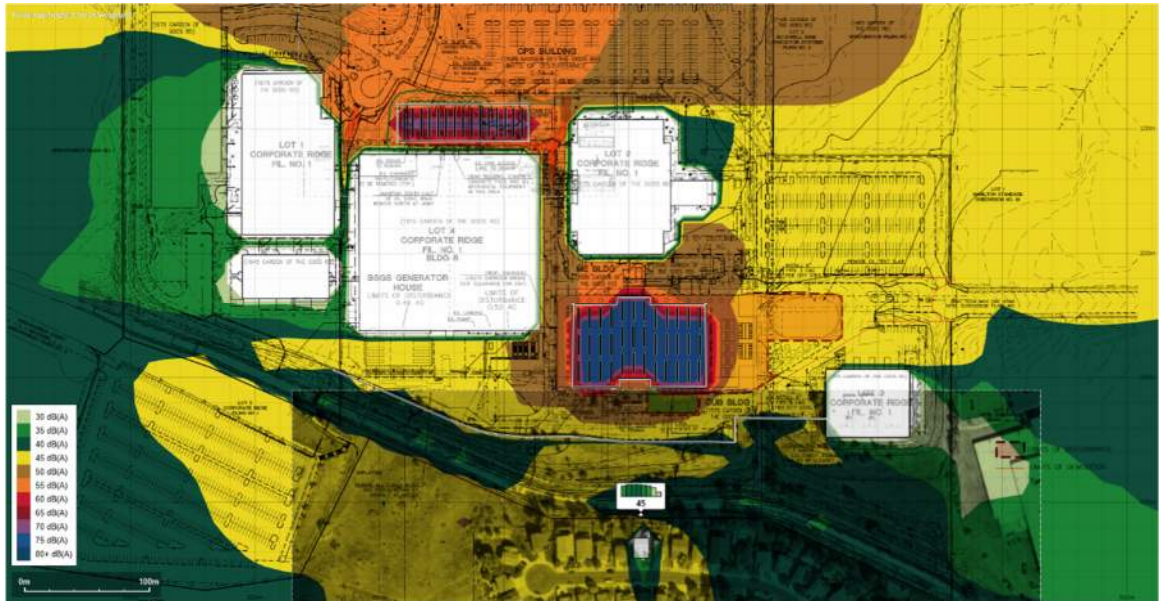
DLAA conducted a study concerning the anticipated exterior noise levels from backup power (generators) and mechanical (cooling – chillers) equipment planned to be installed at the Project Taurus site. The equipment consists of several back-up diesel generators installed in sound attenuation enclosures, as well as numerous new air-cooled chillers. To ensure the noise mitigation measures provided the appropriate amount of noise control for any situation, we modeled the most extreme operational condition possible. That is, the model assumed that every chiller and every generator installed at the exterior of the data center would be operating simultaneously at 100% capacity. The goal was to determine what site improvements, designs, engineering, products, and implementation measures were necessary to allow the new power and cooling equipment to comply with the designated maximum allowable noise level (55 dBA 7a-7p, 50dBA 7p-7a), as dictated by the City of Colorado Springs noise code. In particular, we looked at the construction required for several acoustic barriers that would surround the new equipment and block noise to surrounding noise-critical areas, particularly the residential area to the south of the Project Taurus site.

Mechanical (Cooling) and Electrical (Backup Generator) Noise Calculation

Baseline: The model includes and considers the entire area surrounding the chillers and generators as identified in the Project Taurus Development Plan and directly incorporates all the sound power data for all equipment, as provided by the mechanical engineer, to determine the expected exterior noise levels throughout the project site, including at the south property line of the project site, and in the neighborhood to the south.

The model was run with multiple scenarios, to demonstrate various anticipated operating conditions of the equipment, even those that are not expected to ever occur. In all cases, the scenarios were set up to model the worst case, with operational equipment chosen to be as close to neighboring residences as possible, even in cases where this would not normally be true. The scenarios are as follows:

1. Scenario 1 - 100% “worst-case” emergency condition. This scenario represents emergency operation, where site conditions (e.g., extreme weather) have caused on-site power to be lost. In this scenario, all 30 generators and all 36 chillers are operating simultaneously at 100% utilization. Though Project Taurus **cannot** operate all chillers and all generators at the same time under any condition, due to equipment limitations, we included this scenario to illustrate the highest sound levels possible.



2. Scenario 2 - Normal operation. This scenario represents the most realistic day-to-day mode of operation for the data center. Due to actual power requirements and equipment redundancies, the typical operating condition consists of 34 of 36 chillers running at 75% capacity, and zero generators.



3. Scenario 3 - Generator testing. This scenario represents an example of the sound levels anticipated during monthly daytime generator testing. As with normal operation, 34 chillers will be running during generator testing. Generators are tested in groups, not all at once, so this scenario includes five (5) total generators running at 100%. For purposes of this report, the five (5) generators closest to neighboring residences have been selected, though in reality, the tested generators would be spread throughout the two yards.



Figure 9. Scenario 3 Noise Model Map

4. Scenario 4 - Emergency condition, equilibrium. This scenario represents the same conditions as the first, but with all equipment in actual emergency mode, which does not require all equipment running at 100% capacity. While startup sound levels may be higher, the equipment would quickly settle into a lower operating condition. For this scenario, 34 of 36 chillers are running at 75% capacity, and 25 generators are running at 75% capacity.



Figure 10. Scenario 4 Noise Model Map

5. Scenario 5 - Nighttime “free cooling” operation. In cooler months, at night, because of the lower ambient temperatures on site, the chillers can utilize the air temperature to assist in cooling, which will allow them to run at lower utilization. This scenario assumes 34 chillers running at 50% capacity, and zero generators running. This reduced operational mode of the chillers results in a 3 dBA reduction in overall noise level at the property line. While this is not a dramatic change perceptually, it is a 50% reduction in sound energy being transmitted to the area surrounding the chiller yard.

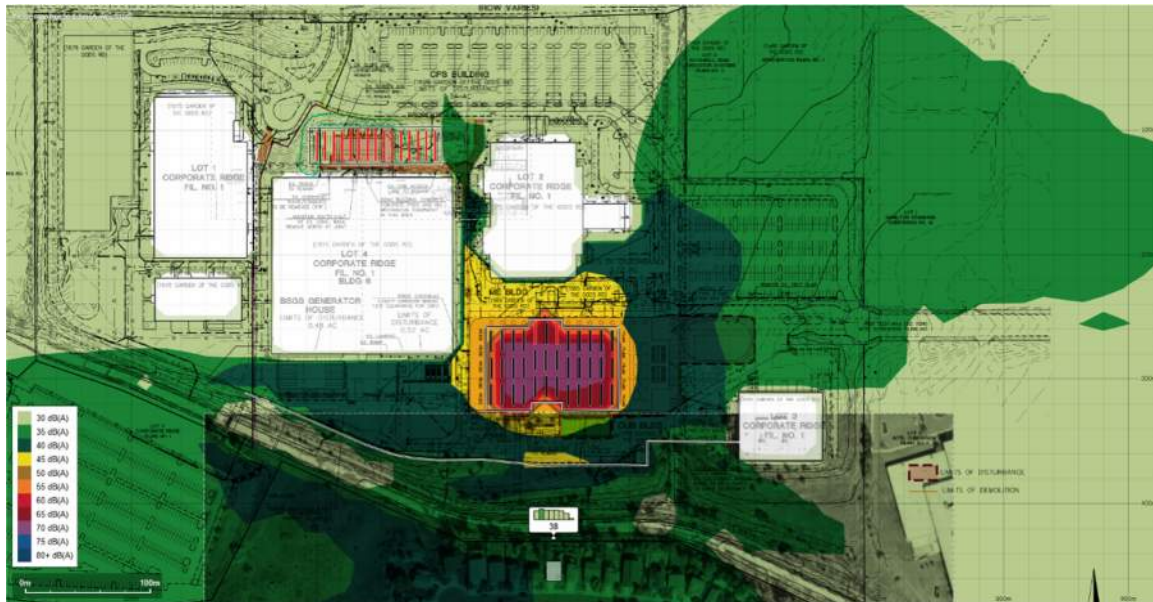


Figure 11. Scenario 5 Noise Model Map

Device Installation and Operations Criteria: The Development Plan identifies generators and chillers installed discreetly on the property. This means that Project Taurus will install all the generators in a specific defined area of the property, while Project Taurus will install all the chillers in a separate defined area of the property. The term “yard” will apply such all the generators will reside in the Generator Yard and all the chillers will reside in the Chiller Yard.

- Project Taurus will install 30 double-stacked and enclosed diesel generators.
- “Enclosed” means that Project Taurus has specified generators installed inside of a prefabricated sound-attenuated “box,” whose physical properties significantly reduce generator noise levels.
- Project Taurus will install 36 air-cooled chillers mounted on raised steel platforms.
- Generators will operate only in emergency stand-by situations should the utility (Colorado Springs Utility) lose power, as well as during standard monthly testing.
- Testing will typically occur for a maximum of five (5) of the generators at one time, and testing will last no longer than 30 minutes.
- Chillers will not typically run at full utilization, but will instead operate under conditions to match the performance of the computers operating inside of the main building (data center), which is simulated in scenarios 2 and 5 above.

Ground Height and Topology Considerations: The noise model incorporated the ground height throughout the project site, and along the north side of the nearby residential neighborhood, based on local topographical maps.

- Significant changes in elevation appear throughout the area.
- Despite elevation changes, the model does not indicate any negative effects of sound from Project Taurus to or through any of the surrounding areas, specifically the Residential Area.
- Inclusion of the Development Plan sound mitigation solutions defined as “acoustic barriers” further mitigates the presence of any negative sound effects.
- Height of the proposed “acoustic barriers” (sound walls around each Generator and Chiller Yards) will exceed the height of the installed devices, meaning no linear or direct path exists between mechanical equipment and listener positions at neighboring properties, even those on upper floors of buildings, further mitigating any impact of site elevation.

Existing Building Sound Impact: The model also incorporated the major buildings surrounding the Generator and Chiller Yards, to determine their effect on the noise radiated by the generators and chillers. The existing screen wall along the south edge of the paved area to the south of the chiller yard was also included in the model.

- All buildings represent reflection considerations for noise from each Yard. The materials used in the exterior facades of buildings are largely sound-reflective. Sound that reaches these buildings from within the equipment yards could reflect this energy to neighboring properties.
- The model also includes all existing physical elements on the property not removed as part of the Development Plan, and that could affect noise levels at neighboring properties.

New Acoustic Barriers (walls): The final model includes the effect of acoustic barriers erected around the three main yards containing noise-generating mechanical equipment.

- The barriers run along all sides of the generator equipment yard and around the entire perimeter of the chiller yard.
- The attached diagram shows the acoustic barrier layout for each mechanical yard, including maximum barrier heights.

Summary: Based on the results of the noise model, the cooling and electrical equipment to be installed at Project Taurus will not exceed local noise codes during normal operation, or during generator testing. Due to the location of the generator yard to the north side of the existing fab building, the expected maximum noise level on site during normal operation (Scenario 2), generator testing (Scenario 3) and during a power emergency (Scenario 4) will all be approximately 41 dBA. At times of year with cooler nighttime temperatures, when cooling equipment can run with reduced utilization (Scenario 5), the expected maximum noise level on site will be 38 dBA. See graph below for a comparison of calculated background noise levels for the scenarios described above. Note that because of the location of the generators, the noise levels at the south property line do not change appreciably for different generator operating conditions.

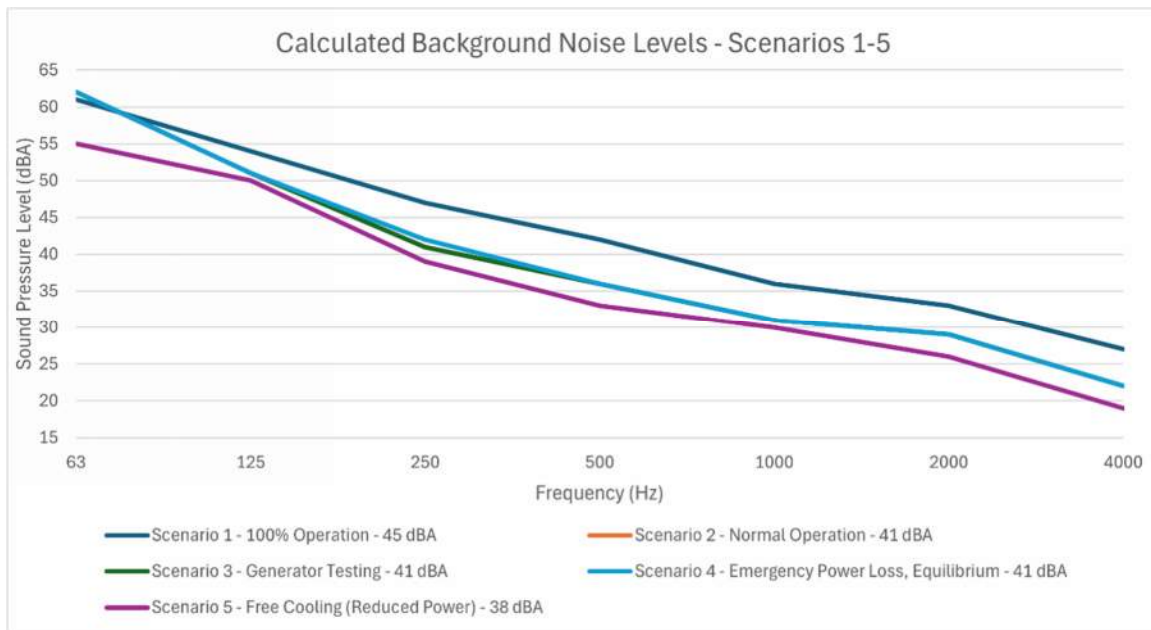


Figure 12. Calculated Noise Levels – All Scenarios

Acoustic Barriers – Benefits and Design

Effective acoustic barriers incorporate many helpful design features. All of the properties of acoustic barriers combine to produce an overall amount of noise reduction which, when included in the model, helps accurately predict noise levels at any chosen receiver position.

Breaking line-of-sight to the noise source is important, as this reduces noise levels at the receiver (or listener) position by requiring noise generated by the equipment to travel further over the top of the barrier. In addition, visually hiding the noise source reduces the perception of loudness on the part of the listener, in that a noise source that is not plainly visible tends to be perceived as less loud. Breaking line-of-sight is accomplished not only by setting the correct barrier height, but also by locating the barrier either close to the listener, or (as is the case with this project) close to the source, rather than somewhere in between.

Another property of an effective acoustic barrier is its mass, which blocks the path of direct noise. As a secondary effect, the barrier can be designed to absorb a portion of this noise using sound absorptive infill incorporated within the panel itself, behind a perforated face layer.

Our site noise model indicates that as long as each acoustic barrier is sufficiently tall, a prefabricated acoustic barrier system will be sufficient to provide the necessary noise reduction, with no need for heavier construction materials such as tilt-up concrete. We typically recommend a system that includes sound absorptive material within the panels, to maximize the benefit of the noise barrier, by absorbing a portion of the noise within each mechanical yard before it can travel outside its confines. For this project, the basis of design is the Silent Protector Plus product from AIL Sound Walls. This product not only provides the appropriate degree of acoustic performance but is also customizable to match the appearance of the existing building, reducing the visual impact of the new equipment, and increasing the psychological benefit of hiding the noise source. See attached cut sheets, and photos below, for examples of the appearance of acoustic barriers built using this product surrounding similar installations.

Installation Photos



Acoustic Barriers – Performance

Acoustic barriers are typically specified in terms of their Sound Transmission Loss (TL) values, which is a measure of the reduction in sound energy from one side of the barrier to the other. It is controlled primarily by the mass of the panel material, with heavier materials blocking more noise than lighter ones. The sound absorption of the panel provides other benefits but typically does not affect the overall TL of the panel.

Typically, we would recommend that the barrier be completely solid, starting at ground level, to avoid leaks or openings that would reduce the overall performance of the barrier. For this project, our understanding is that a certain amount of airflow through the barrier is important for the ventilation of the mechanical equipment. We will therefore need specialty acoustic louvers along the bottom of the barriers. These louvers, like the barrier panels, are specified in terms of TL values. Because their performance is controlled by their depth, the louvers will be thicker than the barrier panels (12” for the louvers vs. ~6” for the barrier panels). Which side of the barrier the louver sticks out from is not critical acoustically.

We recommend a product such as the IAC Slimshield Type SL-12; see attached cut sheet. The best location for these louvers is close to ground level, ideally in sections of the barrier not directly facing south. The total square footage of acoustic louvers should be minimized. Note that it is possible to provide louvered doors for access through the acoustic barrier, as shown in the attached cut sheet. These doors do not reduce the acoustic performance of the barrier.

The TL of each element in the acoustic barriers should be as follows:

Element	Sound Transmission Loss (dB)						
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
Barrier Panel	N/A*	30	28	34	43	45	49
Acoustic Louver	6	7	10	12	18	18	14

*Basis-of-design manufacturer does not have TL data at this frequency, which is common for this type of product.

Site Survey – Generator Testing

DLAA conducted an extended measurement of the existing sound levels at the site, caused by various existing noise sources (mechanical equipment, surface traffic, etc.), from February 18, 2026 to February 23, 2026. We anticipated that the average site noise levels would be well below the upper limit set by local noise code, which the measured data verifies. However, the generators do need to be tested regularly. The measured background noise data was analyzed to determine the noisiest times of the week; scheduling testing during any regularly noisy time period will reduce the impact on the nearby residences.

We determined that no particular day during the week had average background noise levels that were, on average, higher than on any other day, but that in general, the noisiest period of the day coincides with rush hour, or from 3pm-6pm. We would therefore recommend scheduling any generator testing during this time window. Generators will be tested individually, not all at once, so the increase in noise levels during testing will be minimal.

While we measured data for several days, weather conditions, primarily sustained high-speed wind, caused elevated noise levels during a portion of the test period. The levels on the 20th and 21st are most representative of the existing background noise level on the project site, near where the chiller yard will be situated. However, all levels were included in the table below for completeness' sake. All levels are expressed in terms of L90, which is the noise level in dBA that is exceeded for a maximum of 10% of the test period (by louder, infrequent noises, like loud trucks, aircraft, etc.). The L90 is generally deemed to be a good representation of the “average” noise level in a particular location.

Time Period	L90, Background Noise Level (dBA)					
	2/18	2/19	2/20	2/21	2/22	2/23
Day (7a-10p)	41.8	42.1	39.5	39.4	38.8	41.2
Night (10p-7a)	43.8	39.8	39.8	39.4	41.3	41.2

Responses to Specific Public Comments

After the initial issuance of this report, several comments were received regarding noise from mechanical equipment, some specifically about our calculations, and some more general regarding the effects of noise.

Noise Codes and Background Noise Levels

Noise codes are not intended to provide inaudibility of all noise sources at property lines. Setting such a constraint would likely make all new construction prohibitively expensive and/or difficult to impossible. The purpose of noise codes is to prevent sustained noise sources that would cause discomfort or disruption to the average listener, depending on the zoning of the site and the time of day. It is likely that common residential noise sources (air conditioners, street traffic, appliances, etc.) would all exceed the 50 dBA code maximum noise level. The table below lists several common noise sources, and their approximate dBA levels, for reference.

dBA Level	Example Sources	dBA Level	Example Sources
0-10	Threshold of hearing, Normal breathing	60-70	Normal conversation, Dishwasher
10-20	Whispering at 5 feet, Quiet natural area w/no wind	70-80	Freeway traffic, Whistling kettle
20-30	Leaves rustling, Soft whisper	80-90	Food processor, Semi truck
30-40	Quiet office, Library, Desktop computer	90-100	Power saw, Subway train at 200'
40-50	Living room, Moderate rainfall, Refrigerator	100-110	Loudest shouting, Leaf blower
50-60	Microwave, Sewing machine, Bathroom exhaust	110-120	Thunder, Chainsaw

Site Elevation and Barrier Height

Concern has been raised regarding the relative heights of the project site and the houses overlooking it. As discussed above, acoustic barriers work best when the line of sight is blocked between the noise source and the listener. Therefore, the relative heights of source and receiver positions have been taken into account when setting the heights of the acoustic barriers shown in the attached barrier plan.

dBA vs. dBC

Concern has been raised regarding the difference between dBA and dBC with regard to noise analysis. A-weighted decibels (dBA) and C-weighted decibels (dBC) are two means to express a sound level (e.g., environmental noise) as a single number value. dBA is the industry standard for measurement and analysis of environmental noise, regardless of what source is being measured. This is because, at the lower sound levels typical to most listening environments, the human ear is more sensitive to higher frequencies, and less sensitive at lower frequencies. The weighting used to express dBA reflects this aspect of human hearing, with low frequencies receiving lower weighting, and higher frequencies receiving higher weighting. Because of the fact that in practice, almost all instances involving humans interacting with noise sources occurs at these lower sound levels, manufacturer sound power data (standardized measurements of the noise generated by virtually any device or piece of equipment capable of making noise) is provided in dBA, industry noise standards like LEED and WELL (globally recognized building standards organizations) reflect dBA criteria, and all municipal noise codes are expressed in dBA.

The dBC weighting reflects the increase in sensitivity of human hearing at low frequencies when noise levels are much higher (100 dB or more), with lower frequencies not weighted significantly lower than higher frequencies, as they are within the dBA standard. **The instances in which noise levels are high enough to make dBC useful are unusual for the average listener, so using dBC to express noise levels is not as common.** These situations are typically industrial applications, such as exposure to noise generated within a manufacturing plant environment, where machinery can cause very high levels of low-frequency sound, enhanced and concentrated due to the closed (indoor) environment. The power and cooling equipment intended for installation at Project Taurus does not generate unusual levels of low frequency noise, nor does the outdoor nature of the intended equipment installation allow for the concentration of noise, particularly outside the acoustic barriers, where those experiencing noise from this equipment will be standing. So, in this case the dBC standard is not a useful metric in expressing noise levels. The levels of low frequency sound outside the acoustic barriers will not be high enough to cause the heightened response of the human ear that occurs with higher sound levels.

Note that dBA and dBC levels can be very different for the same noise source. This is because of the way each standard is calculated. Put simply, each octave-band noise level (the level of noise within a given frequency band) is weighted, with a standard adjustment value added or subtracted to the octave-band level. The adjustment values added or subtracted correspond to the sensitivity of the human ear at the noise level appropriate to the standard in question, as discussed above (dBA for normal listening levels, dBC for extremely high noise levels). The resulting adjusted octave-band levels are then added logarithmically to produce the single-number dBA or dBC level. See the table below for an example of this process, using the existing background noise levels as measured at the project site.

	Octave-Band Center Frequency (Hz)								Overall Level
	63	125	250	500	1000	2000	4000	8000	
Unweighted noise levels	43.9	40.0	42.3	37.5	31.5	27.1	17.3	11.9	47.7 dB
A-weighting adjustments	-26.2	-16.1	-8.6	-3.2	0	1.2	1.0	-1.1	-
A-weighted levels	17.7	23.9	33.7	34.3	31.5	28.3	18.3	10.8	38.8 dBA
Unweighted noise levels	43.9	40.0	42.3	37.5	31.5	27.1	17.3	11.9	47.7 dB
C-weighting adjustments	-0.8	-0.2	0	0	0	-0.2	-0.8	-3	-
C-weighted levels	43.1	39.8	42.3	37.5	31.5	26.9	16.5	8.9	47.4 dBC

With all of the above background in mind, the results of the noise model for Project Taurus can all be interpreted in terms of dBC. For example, in the scenario where chillers are running in normal operation, and generators are not running, the background noise level was calculated to be 41 dBA, and 62 dBC. For the nighttime free cooling scenario, the background noise level was calculated to be 38 dBA, and 56 dBC. Even the existing measured background noise level at the project site, as shown in the table above, appears significantly higher when expressed in dBC. **This aspect of the single-number ratings is often misinterpreted, with the assumption that a higher number means more noise, when in fact the two ratings express the exact same noise, just with different known weightings applied.** Again, at the levels of audible noise experienced outside the acoustic barriers, the low-frequency noise levels are not high enough to merit the dBC standard.

Note that while dBC is not the industry standard overall, it is included alongside dBA in several standards meant to provide acoustic guidelines for healthy work environments, such as WELL, and to facilitate teaching in educational spaces, such as ANSI/ASA S12.60. For example, WELL allows projects to earn a point for limiting background noise levels (typically from building HVAC systems) in occupied, **indoor** spaces to an average of 40-55 dBA (and 60-75 dBC) and a 5-minute maximum of 50-65 dBA (and 70-85 dBC). The project can earn two points for reaching an average of 35-50 dBA (and 55-70 dBC) and a 5-minute maximum of 45-60 dBA (and 65-80 dBC). These represent interior spaces where the dBC levels allowed for a space to meet an occupant wellbeing standard are well above the dBC levels generated by Project Taurus.

Health Effects of Infrasound

Concern was raised regarding the effects of infrasound, or sound below the frequencies humans can hear, on the health and wellbeing of those nearby. There is evidence that sufficient levels of this low-frequency sound can cause adverse health effects on those subjected to it. However, because the wavelengths of this sound are so long, only extremely large objects, such as wind turbine blades, can typically produce it in levels high enough to cause these adverse health effects. **The cooling and power generation equipment planned for installation as part of this**

project does not produce infrasound at high enough levels to adversely affect the health of people at neighboring properties.

Drainage Culvert

Concern has been raised regarding the concrete drainage culvert running along the southern edge of the project site, and its effects on the propagation of noise. While the shape of objects like the culvert can affect noise propagation, the effect would be most apparent for noise generated within the culvert itself, similar to the way the concave shape of an amphitheater helps reflect sound into audience areas. For noise generated outside the culvert, especially the relatively diffuse sound reaching the culvert over the tops of the acoustic barriers, the effect on propagation would be minimal, if any.

CHILLER YARD ACOUSTIC
BARRIER 33' TALL (max.)

PROP. RETAINING
WALL AFTER
BUILDING DEMO

PROJECT TAURUS MECHANICAL NOISE CONTROL
DLAA #26-024 - 05/29/2026 - CHILLER YARD BARRIER PLAN

CUB BLDG
(1575 GARDEN OF
THE GODS RD)

**GENERATOR YARD ACOUSTIC
BARRIER 45' TALL (max.)**

**PROJECT TAURUS MECHANICAL NOISE CONTROL
DLAA #26-024 - 05/29/2026 - GENERATOR YARD BARRIER PLAN**

AIL SOUND WALLS

- ▶ PVC Sound Barrier Wall Systems
- ▶ Lightweight and easy to install
- ▶ Lower installed costs
- ▶ Sustainable and low-maintenance
- ▶ Meets ASTM F3459 standards



Transportation & Rail



Commercial & Industrial



Energy, Oil & Gas



Municipal, Residential Development

ENGINEERED SOUND MITIGATION SOLUTIONS

NET ZERO BY
2050 ✓

ailsoundwalls.com | 1-866-231-7867

AIL SOUND WALLS

Engineered for maximum sound mitigation.

Easy to install with local crews and reduced need for lifting equipment.



PLAY OUR
INSTALLATION
VIDEO

With their lighter weight, lower installed cost and long-term durability, AIL Sound Walls are a perfect choice for efficient sound barrier solutions along busy transportation corridors, surrounding noisy equipment or in other applications.

These nimble PVC systems install easily on narrow road or rail job sites and make an efficient land use solution for urban applications.

They meet accelerated weathering test requirements for durability and, because they are impervious to rain, snow, ice and sleet, they will not rust, rot or stain. In fact, AIL Sound Walls are often replacing older, degraded sound barriers made of concrete or other materials.

They are also more environmentally friendly than other sound barrier wall materials and have a high percentage of recycled (and 100% recyclable) content and a lower carbon footprint.

Lightweight, easy-to-install, durable and cost-effective PVC sound barrier wall systems.

Tongue and groove PVC panels stack easily and within steel posts to the required height and are capped with a top panel.



- ▶ Lightweight and durable PVC construction
- ▶ Interlocking tongue and groove connection
- ▶ Quick and easy to install
- ▶ Adapt easily to site variations and design requirements
- ▶ Lower installed costs
- ▶ Sustainable and low-maintenance
- ▶ Will not rust, rot or stain
- ▶ Impervious to rain, snow and ice, unaffected by de-icing salts
- ▶ Environmentally friendly with recycled and recyclable content
- ▶ Variety of colors, textures and options
- ▶ Adaptable to different footing systems
- ▶ Available in panel lengths of up to 16' (4.9 m)
- ▶ Wind load tested for hurricane-force winds
- ▶ Meets accelerated test requirements for durability
- ▶ Designed to meet applicable design codes (AASHTO, IBC, CSA)
- ▶ Meets ASTM F3459-21 Standard Specification for PVC Exterior Profiles used for Sound Walls

Silent Protector® (Absorptive)

SILENT PROTECTOR® is an absorptive PVC sound barrier wall system with an acoustical mineral wool fill.

- ▶ Absorbs unwanted noise
- ▶ Sound Transmission Class (STC) rating of 32
- ▶ Noise Reduction Coefficient (NRC) rating of 0.95
- ▶ Available as Silent Protector XL® for extended panel lengths of up to 16' (4.9 m).

SILENT PROTECTOR PLUS® adds a sound-absorbing backer board behind the mineral wool batt for a heavier absorptive panel with higher sound mitigation properties.

- ▶ Sound Transmission Class (STC) rating of 39
- ▶ Noise Reduction Coefficient (NRC) rating of 0.90

Tuf-Barrier® (Reflective)

TUF-BARRIER® is a reflective PVC sound barrier wall system.

- ▶ Blocks and reflects unwanted noise
- ▶ Sound Transmission Class (STC) rating of 31
- ▶ Available as Tuf-Barrier XL® for extended panel lengths of up to 16' (4.9 m).

TUF-BARRIER PLUS® adds an acoustical mineral wool batt and a sound-absorbing backer board for a heavier panel with higher sound mitigation properties.

- ▶ Sound Transmission Class (STC) rating of 36



Available as absorptive or reflective systems in panel lengths of up to 16' (4.9 m) for an even lower installed cost.



With their light weight and versatile component structure, AIL Sound Walls systems offer numerous benefits that stack up to make them the go-to sound barrier wall solution for any number of applications.

Panel lengths of up to 16' (4.9 m) with our XL Series

AIL Sound Walls are now available in XL Series panel lengths of up to 16' (4.9 m) with fewer panels, post and foundations — for an even lower installed cost.



An environmentally friendly choice

- ▶ Made from recycled and recyclable PVC
- ▶ Highest percentage of recycled material
- ▶ A readily renewable and 100% recyclable product
- ▶ Minimized water consumption in manufacturing
- ▶ Optimized shipping for reduced CO₂ emissions
- ▶ Long product lifespan
- ▶ Excellent fire-resistant properties
- ▶ Smaller footprint, better urban land use
- ▶ Earn LEED Points for Green Building

Generator, HVAC and equipment enclosures of all shapes and sizes



Easily integrated with roof systems



For project planning and assistance, call toll-free 1-866-231-7867.

Access gates, doors, utility ports and site variations are easily accommodated



Custom structure-mounted solutions



Transportation & Rail

AIL Sound Walls are a perfect choice to keep the peace in neighborhoods along busy transportation corridors. They can be installed easily on narrow road or rail job sites and are an efficient land use solution in urban areas.

Applications include:

- ▶ Highways, Railways and Bridges (Structure-Mounted)
- ▶ LRT Guideways and Stations
- ▶ Transit or Intermodal Hubs
- ▶ Test Track Facilities
- ▶ Airports



I-190 at Route 12, Worcester, MA



MetroRail Expansion, Houston, TX



LRT Guideway, Vancouver, BC

AIL Sound Walls are perfect for narrow roadsides or railways and for mounting to bridges, barriers or retaining walls.

Commercial & Industrial

Noise from commercial and industrial developments and their associated mechanical systems and traffic can be mitigated economically with AIL Sound Walls.

Applications include:

- ▶ Big Box Stores
- ▶ Distribution Facilities
- ▶ Manufacturing Facilities
- ▶ Mechanical System Barriers
- ▶ Rooftop System Surrounds
- ▶ Loading Docks
- ▶ Generator Surrounds



FedEx Logistics Center, Hampton, VA



Graphic Packaging, Kalamazoo, MI



Cerner Data Center Rooftop, Kansas City, MO



Midstream Gas Compressor Station, LaSalle, CO



Compressed Natural Gas Station Enclosure, Norwalk, CA



Biosolids to Energy Equipment Enclosure, St. Petersburg, FL

Energy, Oil & Gas

Cost-effective AIL Sound Walls ship economically to remote sites and assemble quickly using local crews and less lifting equipment. This makes them ideal for energy and oil & gas applications.

Applications include:

- ▶ Oil and Gas
- ▶ Compressor Stations and Substations
- ▶ Liquid Natural Gas / Compressed Natural Gas
- ▶ Alternative Energy — Wind and Solar
- ▶ Chillers and Generators
- ▶ Vapor Walls

Our lightweight and nimble PVC systems easily adapt to site variations and design requirements.



APEX™
Angle-Top Sound Cove Solution

INNOVATION

Take any type of AIL Sound Walls (Silent Protector®, Tuf-Barrer®, Plus, XL Series), angle the top portion toward the noise source and you have APEX™ by AIL Sound Walls. The resulting “sound cove” effect helps contain the unwanted noise and reduce the wall heights while providing similar sound-mitigation effectiveness.

- ▶ Recommended for equipment enclosures and surrounds
- ▶ Contains unwanted sound and reduces overall wall height

Municipal

AIL Sound Walls offer proven sound mitigation solutions that are environmentally friendly and cost-effective solutions for today's municipalities and institutions.

Applications include:

- ▶ Waste Water Treatment Plants
- ▶ Pumping Stations
- ▶ Schools and Hospitals
- ▶ Equipment Barriers
- ▶ Rooftop Equipment Enclosures
- ▶ Natural Gas Reduction Sites



AIL Sound Walls are efficient noise control solutions for applications like generator enclosures and rooftop HVAC equipment.

Concrete-Free Foundation Solution **GEOSONIC** INNOVATION

Our new GeoSonic™ Concrete-Free Foundation Solution features a steel blade added to the steel posts or post sections to resist lateral pressure on the wall by forces such as wind load. They can be quickly installed by vibratory equipment without the need for excavation or concrete — greatly reducing the installation time and cost.

- ▶ No need for concrete foundations or excavation
- ▶ Faster, immediate installation of posts and panels
- ▶ Unaffected by water table





Vertical Panels, Oakville, ON



Giles Overlook Development, Lorton, VA



Sun Outdoors RV Resort Pool Equipment Surround, Chula Vista, CA



Solera Retirement Living, Kensington, MD

Residential Development

Smart developers know that AIL Sound Walls provide economical, long-lasting and effective noise mitigation solutions that improve their bottom lines and keep their residents happy.

Applications include:

- ▶ Abutting Roadways and Railways
- ▶ Rooftop HVAC Systems
- ▶ Equipment Surrounds
- ▶ Playgrounds, Daycares and Pools

Our sound barrier wall systems are available in a wide variety of colors and textures to enhance any architectural style.



VISIA™
Transparent Acrylic Panel Solution

INNOVATION

Reduce the tunnel effect and allow more natural light onto roadways and properties or into equipment enclosures by incorporating clear reflective panels into your design. Visia™ Transparent Panels have the same tongue and groove configuration as our sound barrier wall panels so they are easy to integrate.

- ▶ Durable, clear acrylic panels
- ▶ Available in various sizes and thicknesses
- ▶ Bird striping, tinting and non-glare available

All Sound Walls are available in a variety of attractive colors and textures in both Standard and Upgraded Finish Levels.

Standard Finish Level

Our Standard Finish Level provides an economical and attractive look with smooth panels and galvanized steel posts.

Features:

- ▶ Smooth panels
- ▶ Four standard colors available
- ▶ Galvanized steel posts

Options:

- ▶ Add post sleeves and caps¹
- ▶ Add an embossed woodgrain texture to standard color panels

Standard Finish Colors²

We offer four popular Standard Finish Colors that are designed to enhance any application: Gray, Adobe, Tan and White. Woodgrain texture can be added to any Standard Finish Color as an option.



Upgraded Finish Level

Our Upgraded Finish Level captures the essence of traditional wood fencing in a durable PVC sound barrier wall. It features woodgrain colored/textured panels accented by post sleeves, caps, top/bottom rails and reinforcement panels in one of our Standard Colors.

Features:

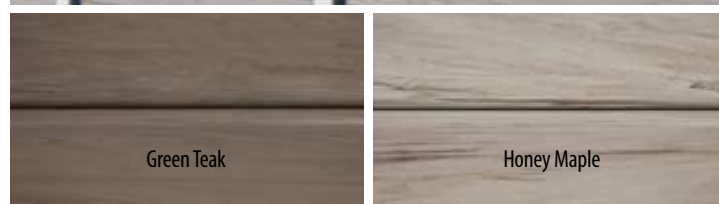
- ▶ Woodgrain colored/textured panels
- ▶ Two woodgrain colors available
- ▶ Post sleeves, caps, top/bottom rails and reinforcement panels in one of our Standard Colors

Options:

- ▶ Choose a Standard Color for post sleeves, caps, top/bottom rails and reinforcement panels
- ▶ Add woodgrain texture to bottom rails and reinforcement panels

Upgraded Finish Colors³:

We offer two popular Upgraded Finish Colors to enhance any application: Green Teak and Honey Maple.



¹ Not available on all post sizes.

² Color reproduction is subject to limitations of the printing process and/or screen viewing. Please ask your AIL Sound Walls Technical Sales Representative for actual color swatches.

³ Top Rails are always needed, but are not available in Green Teak or Honey Maple colors. The requirement for bottom rails and mid-wall reinforcement panels varies with sound barrier size and other factors. Larger post sizes may require powder coat finish instead of sleeves. Ask your AIL Sound Walls Technical Sales Representative for details before ordering.

Take a good look at our STC and NRC ratings.

There are two ways to measure a sound barrier's performance — Noise Reduction Coefficient (NRC) and Sound Transmission Class (STC). NRC measures the volume of sound absorbed versus the volume reflected, while STC measures the volume of sound that the wall allows to pass through. As shown below, all our sound wall products meet and surpass recommended NRC and STC standards.

For Product Specifications and Technical Drawings, visit ailsoundwalls.com



Product Specifications	Silent Protector® (Absorptive)	Tuf Barrier® (Reflective)
Span ¹	8 ft -16 ft (2.44 m -4.87 m) ²	8 ft -16 ft (2.44 m -4.87 m) ²
Panel Width	2.70 in (68.58 mm)	2.70 in (68.58 mm)
Panel Height	5.96 in ± .10 in (151.38 mm ± 0.25 mm)	5.96 in ± .10 in (151.38 mm ± 0.25 mm)
Weight	4.30 lbs/ft ² (21 kg/m ²) ³	Min. 4.10 lbs/ft ² (20 kg/m ²) ⁴
Wall Height	Greater than 30 ft / 9 m	Greater than 30 ft / 9 m
STC Rating	up to 39 ⁵	up to 36 ⁶
NRC Rating	0.95 ⁷	n/a

Product Specification Notes:

1. Span is governed by wind loads and varies on code requirements. Contact AIL Sound Walls for recommended panel spans for your project.
2. Achieve spans of up to 16 ft (4.88 m) with Silent Protector XL® or Tuf-Barrier XL®.
3. Weight of Silent Protector Plus® is 7.3 lbs/ft² (36 kg/m²).
4. Weight of Tuf-Barrier Plus® is 7.5 lbs/ft² (36.5 kg/m²).
5. Standard Silent Protector® has an STC rating of 32. Silent Protector Plus® can achieve an STC rating of 39.
6. Standard Tuf-Barrier® has an STC rating of 31. Tuf-Barrier Plus® can achieve an STC rating of 36.
7. Standard Silent Protector® NRC is 0.95. Silent Protector Plus® NRC is 0.90.

Sound Transmission Loss ASTM E90 / E413

Octave Band Number	2	3	4	5	6	7	STC
Center Frequency (Hz)	125	250	500	1000	2000	4000	—
Silent Protector®	23	21	28	42	48	49	32
Silent Protector® Plus	30	28	34	43	45	49	39
Tuf-Barrier®	23	19	30	45	45	54	31
Tuf-Barrier Plus®	24	21	36	45	49	57	36

Sound Absorption Coefficients ASTM C423/E795

Octave Band Number	2	3	4	5	6	7	NRC
Center Frequency (Hz)	125	250	500	1000	2000	4000	—
Silent Protector®	0.29	0.80	1.13	1.00	0.96	0.72	0.95
Silent Protector® Plus	0.28	0.71	1.06	0.97	0.94	0.78	0.90

STC – Sound Transmission Class

STC is an integer rating used to measure the decibel reduction through a partition. It states the number of decibels lost through that partition in a laboratory environment.

NRC – Noise Reduction Coefficient

NRC is a rating between 0 and 1 to index how absorptive a material is. An NRC of 0 means no sound waves are absorbed, whereas a rating of 1 means all of the sound waves are absorbed.

NRC	Qualitative
0.4 or less	Poor
0.5 to 0.6	Mediocre
0.6 to 0.7	Good
0.7 to 0.85	Very Good
> 0.85	Excellent
0.95	AIL Silent Protector®

For project planning and assistance, call toll-free 1-866-231-7867.

The AIL Sound Walls Team will work with you through the complete project cycle.

- ▶ Designs based on wind loading and local soil conditions
- ▶ Detailed proposals complete with installation budget estimates
- ▶ Engineer-stamped project drawings for approvals and construction
- ▶ Professional support in engineering, project management and site assistance
- ▶ Offering value engineered alternatives to help you save time and money



VIEW OUR
VALUE ENGINEERING
CASE STUDIES

ailsoundwalls.com

The information and suggested applications in this brochure are accurate and correct to the best of our knowledge and are intended for general information purposes only. These general guidelines are not intended to be relied upon as final specifications and we do not guarantee specific results for any particular purpose. We strongly recommend consultation with an AIL Sound Walls Technical Sales Representative before making any design and purchasing decisions.

PRINTED IN CANADA AIL-1294-03/2025



Structural Plate Bridges & Tunnels



Prefabricated Bridges



Pipe & Drainage Solutions



Retaining Walls & Abutments

Get more AIL infrastructure solutions working for your better bottom line.



AIL Sound Walls is a Division of Atlantic Industries Limited and is a member of The AIL Group of Companies. The AIL Group is made up of a network of companies with technical sales teams, engineering departments, manufacturing plants and distribution centers across Canada and in the United States. AIL International and the operations of The AIL Group's licensees in Europe and Australia help extend our global reach.



Acoustic Louvers

A Complete Range of Certified, High-Performance Acoustic Louvers to Solve Diverse Environmental Noise Pollution Problems



- Certified performance data per ASTM E90
- Easy to install and engineered for high performance
- Rugged galvanized construction (other materials available)
- Standard and specialty shaped louvers available
- Louver barriers/walls
- Airfoil and straight splitter blades available
- Variety of durable attractive finishes
- Over 60 years experience





Form & Function Together

IAC Acoustics Noishield™ (curved) or Slimshield™ (linear) blade louver styles can be used to match the overall scale and aesthetics of a new or existing building.

Our acoustic louvered screens result in a high performance solution to unwanted levels of noise without the need for additional architectural cladding.

Acoustic Louvers Range

Noishield™ – Airfoil Blade

- Model R & Model LP: 12" (305mm) deep
- Model 2R & Model 2LP: 24" (610mm) deep
- LF2-24: 24" (610mm) deep

Slimshield™ – Linear Blade

- SL-4: 4" (101mm) deep
- SL-6: 6" (152mm) deep
- SL-12: 12" (305mm) deep
- SL-24 (double banked): 24" (610mm) deep

Noishield™ Louvers – Sound Transmission Loss (dB)

Model	Louver Depth	Octave Band Center Frequency, Hz							
		63	125	250	500	1k	2k	4k	8k
		Sound Transmission Loss, dB							
Model R	12"	5	7	11	12	13	14	12	9
Model 2R	24"	6	12	15	21	24	27	25	20
Model LP	12"	4	5	8	9	12	9	7	6
Model 2LP	24"	5	8	12	16	22	18	15	14
Model LF2-24	24"	6	11	19	24	28	23	17	17

Slimshield™ Louvers – Sound Transmission Loss (dB)

Model	Louver Depth	Octave Band Center Frequency, Hz							
		63	125	250	500	1k	2k	4k	8k
		Sound Transmission Loss, dB							
SL-4	4"	5	4	5	6	9	13	14	13
SL-6	6"	6	6	8	10	14	18	16	15
SL-12	12"	6	7	10	12	18	18	14	13
SL-24	24"	7	9	12	24	31	30	29	30

IAC Acoustics' acoustical louvers adhere to and are applicable to ASTM Standard E90.



Integrated or Standalone

Our acoustic louvers can be used as standalone screens around mechanical plants, or be integrated into walls and building façades.



Product Features

Our acoustic louvers are multi-purpose, permitting air to flow, while shielding the environment from unwanted noise.

Both IAC Acoustics Noishield™ and Slimshield™ louvers are available in an array of standard modular sizes, meaning that a wide range of performance requirements can be met. By using our range of acoustic louvers, it overcomes architectural consistency issues, especially where space is limited.

Where access is required, both Noishield™ and Slimshield™ acoustic louvers can be supplied as doorsets, either for inclusion in louvered screens, or as standalone units.

Noishield™ Special Features

- Suitable for use behind architectural louvers (4" / 101mm air space is required between faces)
- Bold, curved blade appearance
- A highly economical louver system

Slimshield™ Special Features

- Linear appearance
- Superior high frequency performance

Finishes Available

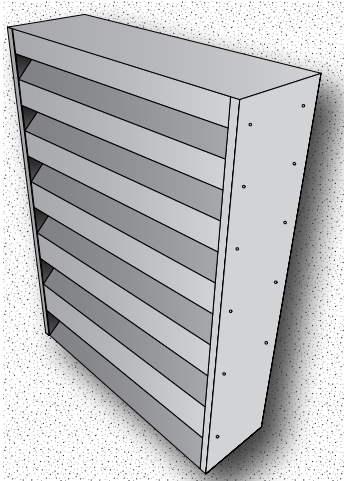
- Galvanized mill steel
- Aluminum
- Stainless steel
- Power coated finish

Other non-standard finishes are available including:

- Galvanized G-90 mill finish
- Galvannealed A-60 in various finishes
- Anodized aluminum
- Stainless steel
- Kynar finish



Slimshield™ Acoustic Louvers (Model SL-12)



Weight

10.3 lbs/ft² (50 kg/m²)

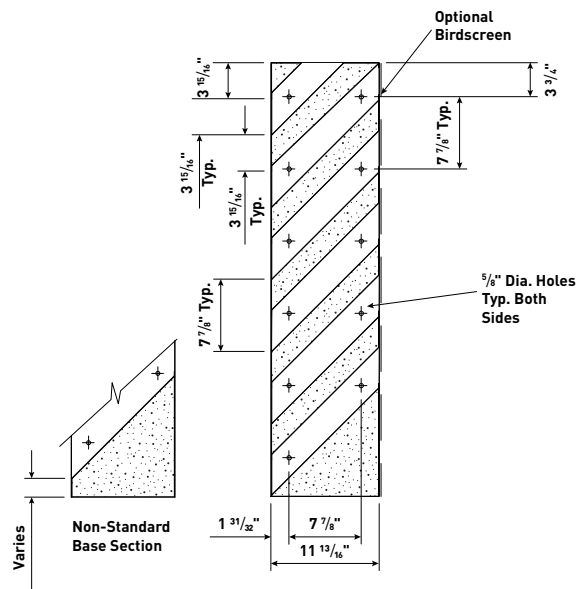
Typical Module Width

12" - 72" (305 - 1829 mm)

Standard Module Height

24" minimum, with increments of 12" (600mm minimum, with increments of 305 mm)

Intermediate heights are available



Acoustic Performance

Octave Band Center Frequency (Hz)	63	125	250	500	1K	2K	4K	8K
Transmission Loss (dB)	6	7	10	12	18	18	14	13

Transmission Loss tested in accordance with ASTM E90.
For Noise Reduction, add 6 dB to the above values.

Aerodynamic Performance

Static Pressure Drop (i.w.g.)	.05	.10	.15	.20	.25	.30	.40	.50	.60	.75	1.0	1.25
Face Velocity (fpm)	206	292	357	413	461	505	584	653	715	799	923	1032

For other velocities:
$$\Delta P_2 = \Delta P_1 \left(\frac{V_2}{V_1} \right)^2$$

Ex: 5,000 cfm through a 24" w x 63" h Model SL-12 Louver
Face Velocity = $V = 5,000 \text{ cfm} / 10.5 \text{ ft}^2 = 476 \text{ ft/min}$
 $\Delta P_s = 0.30 \times (476/505)^2 = 0.27'' \text{ wc}$

Nominal Free Area for standard heights: 30%

Water Penetration

To minimize water penetration, limit face velocity to 309 ft/min (1.57 m/sec).

Acoustic Louvered Doors

- Single and double doors are available in the SL-12 louver range
- See page 28 for further details

Acoustic Louvered Doors

- Single and double doors are available from the IAC Acoustics louver range
- The structural minimum is 33 1/2 in. (850mm) and is available up to 49" x 116" (1250 x 2950 mm) high as standard for a single door, and 98" x 116" (2500 x 2950 mm) high for a double door. Other widths and heights are available on request
- All doors can be supplied with various hardware, including hinges, latches, screws, nuts, bolts, washers, handles and supporting frames
- Acoustic louvered doors can be fitted with bird or insect screens on request
- Doors can be powder coated to match adjoining louvers
- Materials for the door and door frame include galvanized steel, stainless steel and aluminum
- Other door options may be available in the entire IAC Acoustics louver range. Please contact IAC Acoustics for more details.

