



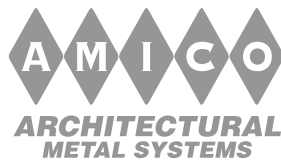
# UTILIZING PERFORATED METAL IN ACOUSTICALLY COMPLEX ENVIRONMENTS

AMPHITHÉÂTRE COGECO TROIS-RIVIÈRES, QUEBEC

## Advantages to Perforated Metal Solutions in Acoustic Applications

- ◆ Many acoustic panels lack the durability needed for outdoor or high traffic areas. Perforated metal is easy to maintain and can act as a protective barrier to increase the lifespan and performance of acoustic panels.
- ◆ Perforated holes are easily customized to meet the detailed frequency needs of a given application.
- ◆ Aluminum and stainless steel provide aesthetically attractive surfaces to complete your design.
- ◆ Perforated metal is easy to form, bend, and shape. This allows the architect to apply the panels in a wide variety of forms to meet design needs.
- ◆ Aluminum is excellent for fire safety as it is noncombustible with a 660°C melting point





When considering designing with perforated metal for acoustically demanding situations, it can be used to either actively manage frequencies or be an acoustically transparent protective surface for another material. These solutions most frequently utilize aluminum or stainless steel for their light weight and corrosion resistance properties.

### **Acoustically Transparent Perforated Metals**

Perforated metal as an acoustically transparent surface is often used in high traffic or outdoor settings where an acoustic tile is added to protect and improve aesthetics.

In these applications, it is important to have a hole pattern that is small and dense to ensure a

maximum number of frequencies pass through the metal and into the backer to then be either absorbed, reflected, or scattered.

### **Using Perforated Metals to Actively Manage Frequencies**

In applications where the perforated metal is managing the frequencies, the holes of the panels interact with a layer of trapped air to concentrate the absorbed sounds into a specific frequency range. This arrangement is best used when needing to absorb low frequency sounds.

To achieve the desired result, the perforation pattern, pitch, and thickness of the metal material are also critical and require extensive analysis.



**Case Study - Amphithéâtre Cogeco  
Trois-Rivières, Quebec**

The Cogeco Amphitheater is a 9,000-seat open air amphitheater positioned between two rivers. Without acoustical intervention, the sound would leave the stage and fade quite easily. Octave was hired on as the acoustical consultant to project the sound out effectively. The strategy adopted was to use the lower level walls and electronics to do the work of projecting and reflecting the sound, while the monumental

iconic red roof line would then dampen and absorb the sound to avoid echoing. AMICO perforated aluminum was used as an acoustically transparent protective façade surrounding Rockwool fiberglass acoustic panels. The aluminum was able to benefit the project because it could protect and extend the life of the acoustic panels in the harsh humid environment that varied from -30°C to 30°C, as well as take on color to create the exemplary red structural form that architect Atelier Paul Laurendeau so keenly designed.

