

Configurations of flexible acoustics

Trompete Practice

Preset 5: Water Level 5.31 m
Attenuated Frequencies: 92 - 183-223-316 Hz
Low reverberation times are appreciated for music practice. The Helmholtz Resonators are set to **Preset 5** and absorb Low Frequencies of 92-183-250-316 Hz. Mid- High Frequencies are absorbed by the acoustic curtains and by the public.

Cello Chamber Concert

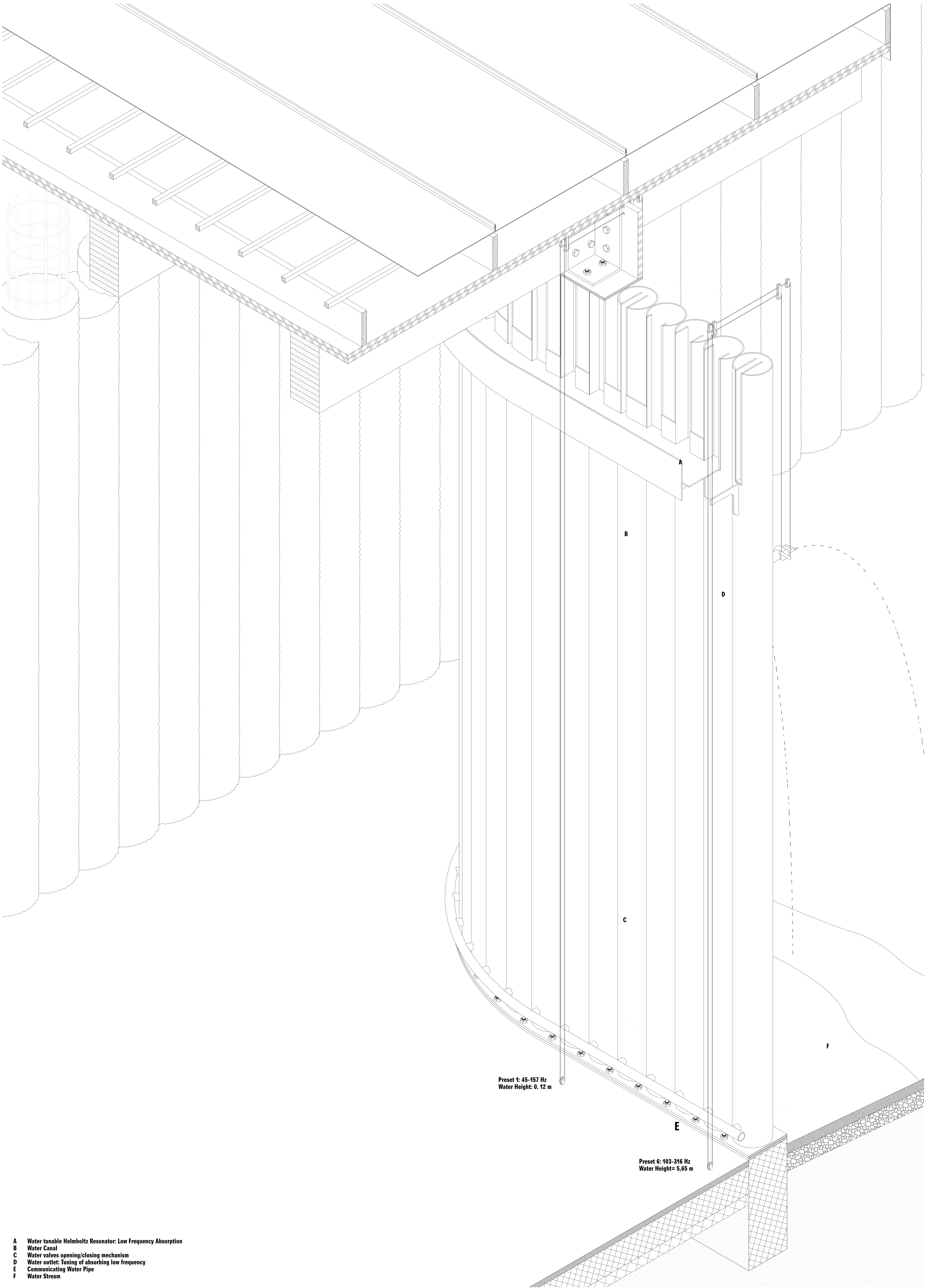
Preset 1: Water Level 0.12 m
Attenuated Frequencies: 45- 91- 111- 157 Hz
Higher reverberation times are welcome, as it emphasizes the powerful sound of the instruments. The Helmholtz Resonators are set to **Preset 1** and absorb Low Frequencies between 45-91-111-157 Hz. The Mid- High Frequencies absorbing curtains are folded. The hard surfaces of the concrete and copper elements reflect and diffuse sound, while the public absorb the mid and high frequencies.

Speech

Preset 6: Water Level 5.65 m
Attenuated Frequencies: 103- 204- 250- 354 Hz
Shorter reverberation times are needed for clarity of speech. The Helmholtz Resonators are set to **Preset 6** and absorb Low Frequencies between 103-183-250-316 Hz. Mid-High Frequencies are absorbed by the acoustic curtains and by the public.

Contemporary Dance

Sound of free water flow
The acoustic conditions generated by the flowing water inside the resonators can also be used for other kind of activities, for example dancers that would like to experiment with the background sounds of the falling water.



- A Water tunable Helmholtz Resonator: Low Frequency Absorption
- B Water Canal
- C Water valves opening/closing mechanism
- D Water outlet: Tuning of absorbing low frequency
- E Communicating Water Pipe
- F Water Stream

Detail 1:10

Water Flow & Sound

Stand-By Mode

When it is not in use, water can freely flow in and out of the resonators, emitting a constant white noise from the opening of the resonators as water falls into them. On the exterior, with the valves of the resonators open, water can be heard dripping into flat water pools and flowing across the square. Depending on the naturally available water flowing down from the glaciers, these sound can vary.



Filling the Resonators

In preparation for an event, the outlet valves of the resonators are closed and each resonator is filled to the top. As the water level inside the resonators raises, so does the pitch of the sound of the falling water. When the resonators are completely full, the water starts to spill out of its channel giving a signal to close the water inlet from the stream. Once closed, the water continues its original course across the stream, flowing around the building.



Setting the Absorption Frequencies

In order to tune the resonators to the desired absorption frequency, the corresponding valves on the exterior of the building must be opened. 7 preset are available, i.e several sets of valves positioned at 7 different heights. Once a set of valves is opened, the water flows out into the "pools" until it reaches the level of those valves. Since all the resonators are connected, the water level will be the same across all resonators.



During Performance

Water inside the resonators is set at a specific level, granting the desired absorption. Both water inlet and outlets are closed. Water is flowing either into the original stream or spilling around the building.
After flowing across the building, the water remains visible at the surface of the square and gets redirected towards the Chelchichach, which runs through the city of Naters and finally flows into the Rhône River.
tween both mediums.

