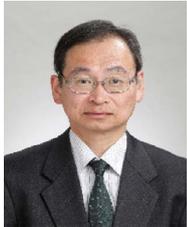


## Music Hall Designed with Seven Different Concrete Interior and Exterior Expressions — ARTEPIA Yasugi General Culture Hall —

7種類のコンクリートによる内外装表現でデザインされた音楽ホール  
— 安来市総合文化ホール アルテピア —



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### Synopsis

Yasugi General Culture Hall, called “Artepia”, was built as a facility for the city’s cultural activities and a communication center for its residents. “Arte” means “art” in Spanish and Italian, and “pia” comes from the English word “utopia,” meaning an ideal world. Artepia is intended as an exchange center where citizens can enjoy high-quality art and culture, enrich their lives through various activities, and enjoy cultural and artistic activities that attract many people. The facility includes a large hall (1,008 seats), a small hall (300 seats), studios, exhibition rooms, and a cafe (**Fig. 1**).

### Structural Data

*Location:* Yasugi City, Shimane, Japan

*Main Use:* Hall

*Site Area:* 13,345.25 m<sup>2</sup>

*Building Area:* 4,982.45 m<sup>2</sup>

*Total Floor Area:* 7,477.03 m<sup>2</sup>

*Number of Stories:* 4

*Maximum Height:* 29.91 m

*Structure:* Steel-framed reinforced concrete, reinforced concrete and steel-framed construction

*Owner:* Yasugi City

*Designer:* RIA · Tanaka · KI joint venture

*Contractor:* Kounoike · Hirai joint venture

*Construction Period:* Aug. 2015 – Jul. 2017



**Fig. 1** Artepia

### 1. Introduction

As people in the city enjoy listening to music, the main use of the building is as a music-related facility, and the authors designed the building with consideration of acoustic performance.

The design period coincided with a period of high construction costs, and thus the authors were very cost-conscious. They attempted to create a structural and architectural plan that would enhance the building’s design, seismic performance, acoustic performance, and sound insulation performance at a relatively low cost.



Fig. 2 Large hall

## 2. Design

### (1) Structural Design

A hybrid structure consisting of concrete and steel was adopted in order to adapt to the high story height and long span in the halls. The type of structure is a moment frame with earthquake-resistant walls.

In addition, the primary use of reinforced concrete (RC) contributes favorably to the building's sound insulation and acoustic performances (Table 1).

### (2) Design Concept

The authors used concrete not only as a structural material but also as the exterior and interior materials. The construction cost was reduced by using a single material.

The building is divided into several zones, each of which has a different concrete finishing pattern, resulting in seven different patterns. Furthermore, the finishing patterns are used not only for design but also for sound insulation and acoustics.

The façade consists of fair-faced concrete whose design is randomly striped, evoking the flow of the Yasugi River and the motif of a bamboo grove.

The building has volumes with several stacked boxes made of fair-faced concrete, and each box has a randomly vertical striped design. On top of that, concrete walls are combined with the roof tiles of Sekishu and glass. The mixture of materials shows the different patterns in these boxes, leading to the design of each box being unique.

The internal wall design of the large hall is also made of randomly striped concrete, with the concrete stripes switched on each floor level. The randomly striped concrete design has a pattern of cedar and random blocks, which results in a sense of splendor (Fig. 2).

The authors used concrete as the internal material of each common room, such as the entrance lobby, but the type of concrete used was changed, thereby succeeding in creating a sequence from room to room with a sense of unity of design (Figs. 3–7).



Fig. 3 Entrance exterior



Fig. 4 Entrance lobby

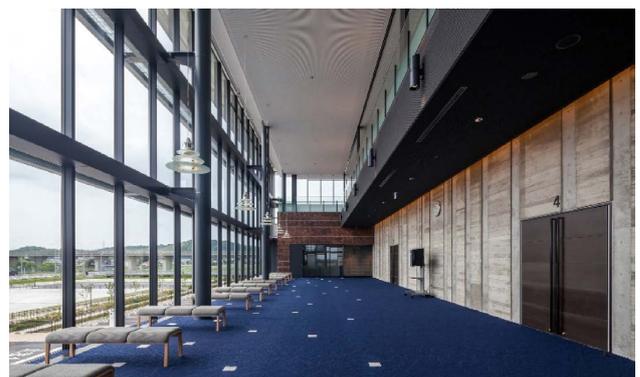


Fig. 5 Foyer of large hall

**Table 1 Seven different concrete interior and exterior expressions**

	Construction photo	Under construction photo
<p>1. Bumpy decorative formwork on the outside</p> <p>Main use: Outside wall Formwork material: Plywood for concrete formwork Class A, veneer for concrete formwork</p>		
<p>2. Decorative formwork with groove</p> <p>Main use: Outside wall Formwork material: Plywood for concrete formwork Class A and square chamfer strip</p>		
<p>3. Cedar board formwork</p> <p>Main use: Outside wall Formwork material: Cedar board for concrete formwork</p>		
<p>4. Decorative formwork</p> <p>Main use: Restroom Formwork material: Plywood for concrete formwork Class A</p>		
<p>5. Decorative formwork with triangle chamfer strip</p> <p>Main Use: Dressing room corridor Formwork material: Plywood for concrete formwork Class A and triangle chamfer strip</p>		
<p>6. Bumpy decorative formwork on the inside</p> <p>Main use: Foyer Formwork material: Plywood for concrete formwork Class A, Veneer for concrete formwork</p>		
<p>7. Patterned polystyrene foam formwork</p> <p>Main Use: Sidewall in large hall Formwork material: Styrofoam</p>		

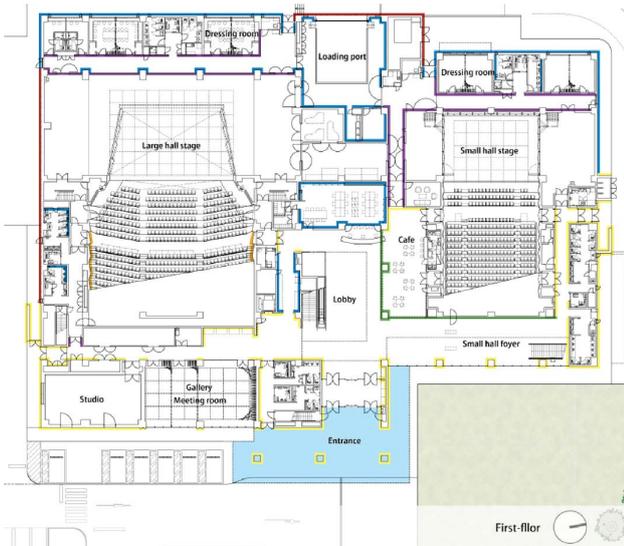


Fig. 6 First-floor plan

### 3. Acoustic Simulation

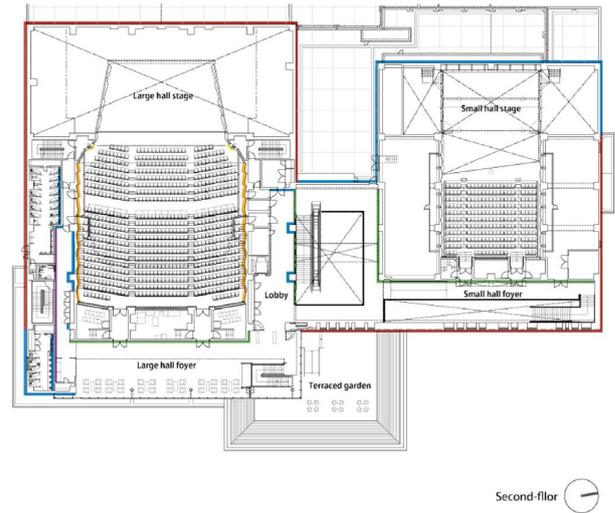
Based on a careful acoustic simulation (Fig. 8), the authors used the same shape, size, and pattern for both internal walls, which consisted of concrete and wooden reflectors in the large hall.

The effects of using Styrofoam formwork and uneven RC walls are as follows:

- A. The rigidity of the walls could be increased to the utmost limit, ensuring a strong resonance in the low-frequency range.
- B. The uneven surfaces equalize the acoustic field while mitigating strong reflected sound in the high-frequency range.

In addition, the hall layout of the audience seating was also carefully considered. The concrete internal walls can echo even a high-to-low pitched sound, and the authors succeeded in creating a more immersive atmosphere by having the seats of the first and second floors be close to the stage.

Audiences for performances of classical music and live theater comment favorably, saying that the atmosphere in the hall feels more immersive and that it is as though the sounds surround them.



7 different concrete interior and exterior expressions

	1. Bumpy decorative formwork on the outside
	2. Decorative formwork with groove
	3. Cedar board formwork
	4. Decorative formwork
	5. Decorative formwork with triangle chamfer strip
	6. Bumpy decorative formwork on the inside
	7. Patterned polystyrene foam formwork

Fig. 7 Second-floor plan

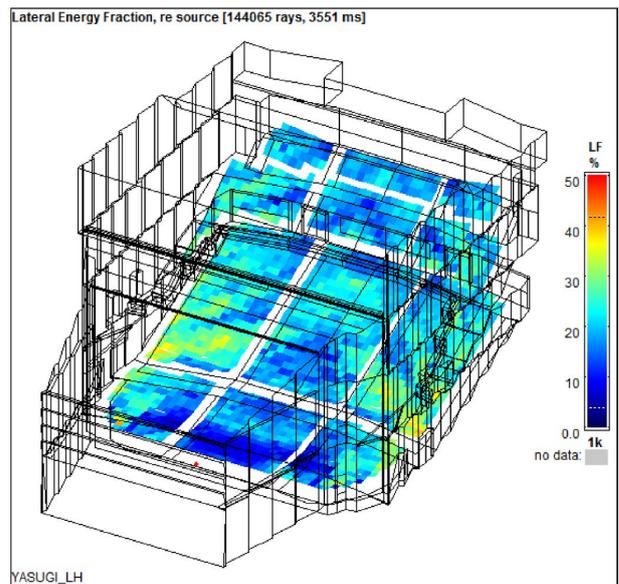


Fig. 8 Large hall acoustic simulation

## 概要

安来市総合文化ホールアルテピアは文化芸術活動の拠点、また活動を通じた新たなコミュニケーションを育むまちづくり拠点施設として建設された。音楽利用を主体とした1008席の大ホールと300席の小ホールを中心に、練習室や展示室、カフェ等が併設される。

建物全体がコンクリート造の本建物は、部位ごとに異なった表情を持たせるべく「7種のコンクリート打ち放し」による内外装計画を行った。また、デザインとしてだけでなくその性能に注視し、コンクリートによる遮音計画だけでなく、建築音響計画にまで及んだ。音響上有効な壁面形状を実現するために大ホールの型枠には発泡スチロールを使用した型枠を採用し、他の型枠には島根県産の杉板材を多用して環境や地産地消に配慮している。