

HAKATA-ZA

FUKUOKA, JAPAN



ACOUSTICAL CONSULTANT:

ARCHITECT:

OWNER:

THEATER CONSULTANT:

SOUND & COMMUNICATIONS:

THEATER DESIGN INSTRUCTION:

CONSTRUCTION COST:

COMPLETION DATE:

YAMAHA Ad. Sys. Dev. Center

NIHON SEKKEI, INC.

HAKATAZA THEATER

Theatre Workshop

YAMAHA Ad. Sys. Dev. Center

Theater Design, Ryoji Tsuji, et. al

31,300 Million JPY - include land acquisition

1999

The HAKATA-ZA was built in 1999 as a part of the complex "Riverain". It was designed specifically for classical Japanese theater performances including Kabuki, which is one of the most well-known forms among them. Its elaborate costume, striking makeup, and stylized movements of actors while entering and leaving via a "hanamichi", which is a special raised pathway through the audience are unique characteristics. The HAKATA-ZA has this "hanamichi" like other traditional Kabuki theaters and it can be removed during other performances such as Japanese folk singer concerts.

This is the first theater in Japan which is operated jointly by the city and private firms together. This venue has around 1,500 seats, which are arranged in three tiers so that an audience can see the stage clearly at any seats.

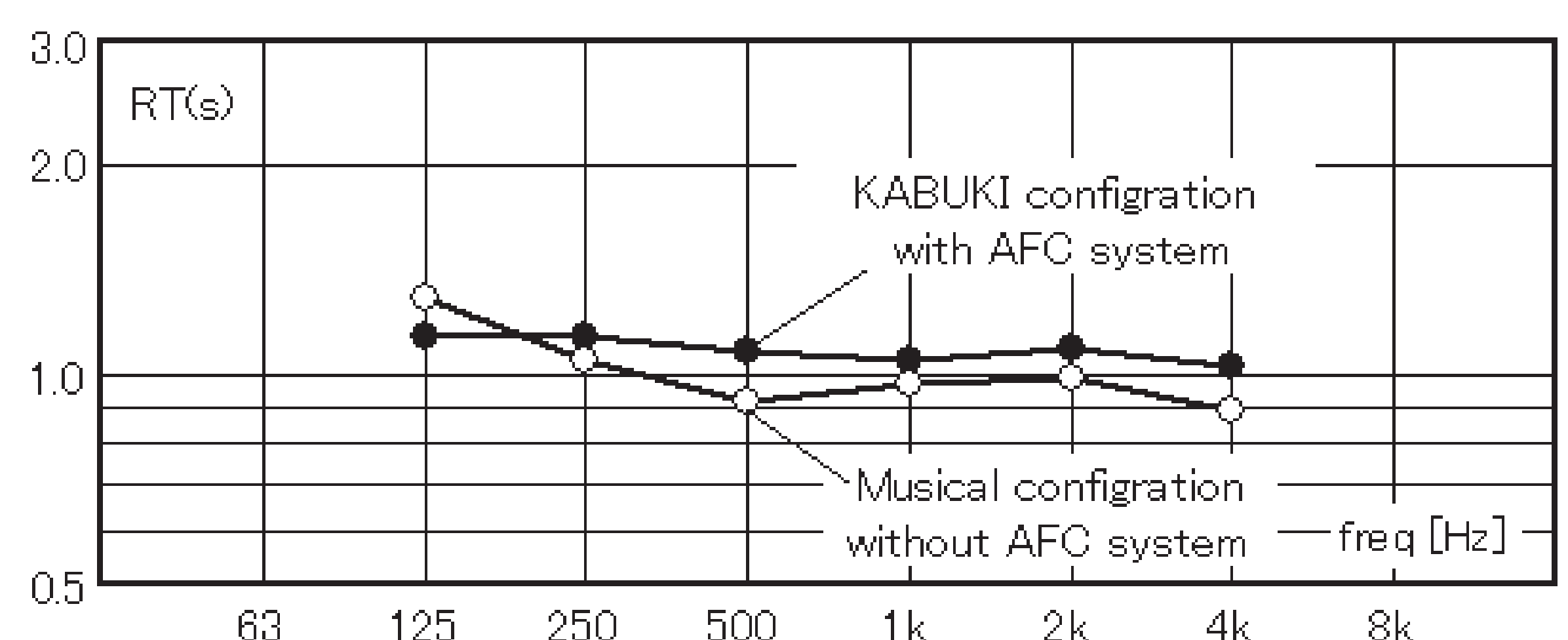
Since the hall is located close to the subway tracks, they encounter various acoustic problems, especially vibration problems from the trains. Before and during the construction, we performed the train vibration measurements on the site several times, then various measures were implemented according to these investigations. In addition, the logical predicting methods were developed to evaluate train vibration based on the vibration power concept and to estimate the effects of continuous underground wall/expansion joints.

The hall is based on a rectangular box shape and composed of three tiers with side balconies which can minimize the distance to the stage from any audience seats to get a sufficient direct sound and loudness. In addition, in order to get sufficient reflections to the under balcony seats during Kabuki performances, the uniformity throughout the entire room can be realized by Active Field Control.

The design of the speaker system including installation conditions is important for electro-acoustic system design in order to control characteristics at the listener's location. The installation conditions include the characteristics of the wall surrounding the speaker at low frequencies and that of the finishing materials (grill) in front of the speaker at middle and high frequencies. Differences in a loudspeaker's free-field characteristics at low frequencies are mainly caused by interference between direct sound and reflections of sound at the wall. Differences in these characteristics at middle and high frequencies are mainly caused by deviations in transmission characteristics due to grill and loudspeaker locations. In order to minimize these influences, we designed the acoustical transparency grill in front of the speakers.

CRITICAL DATA

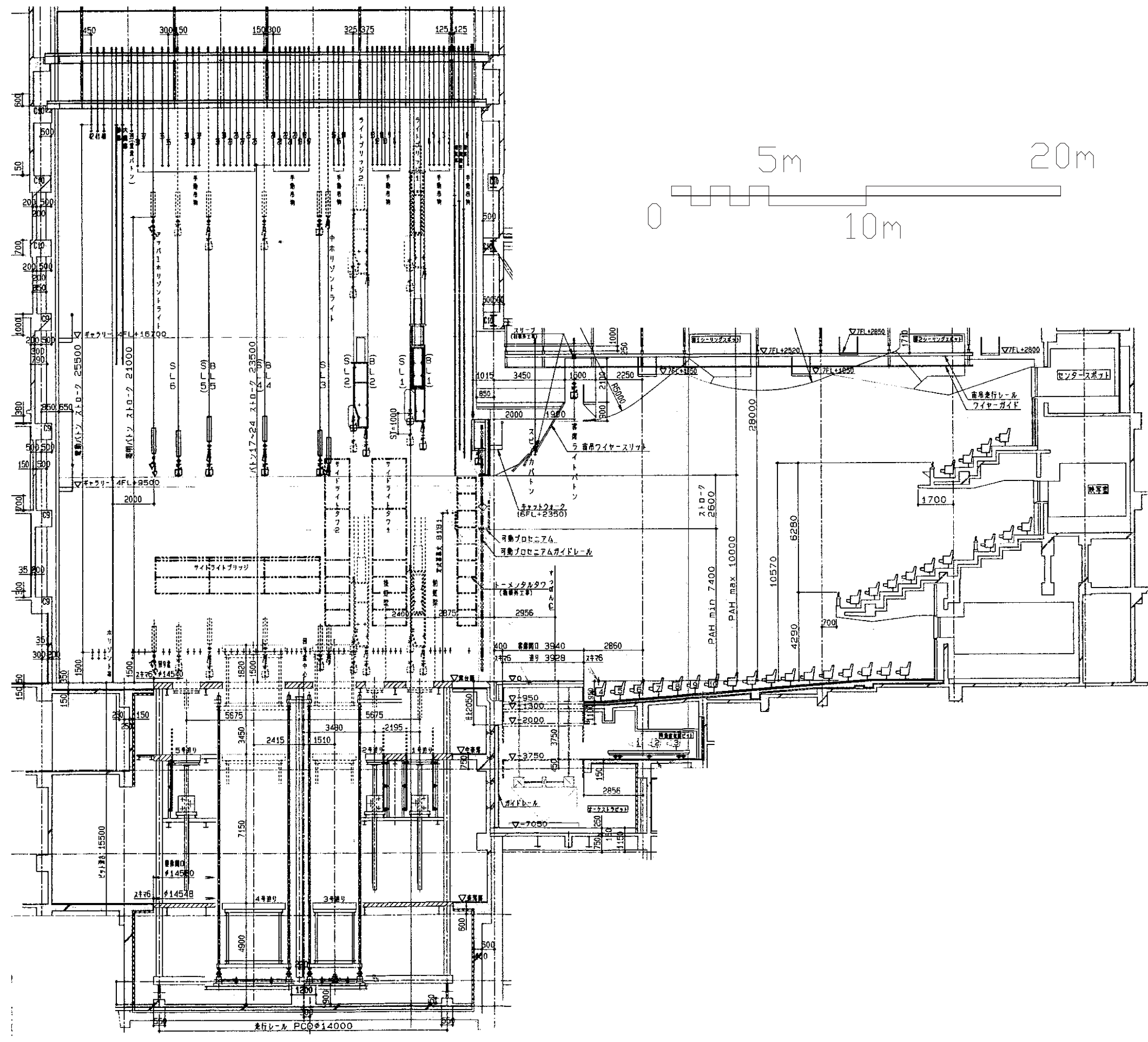
Seating Capacity	1,490
Volume	10,008 m ³
Surface area	4,319 m ²
Noise Level	NC-20
Definition (250 Hz-2 kHz ave.)	62 %



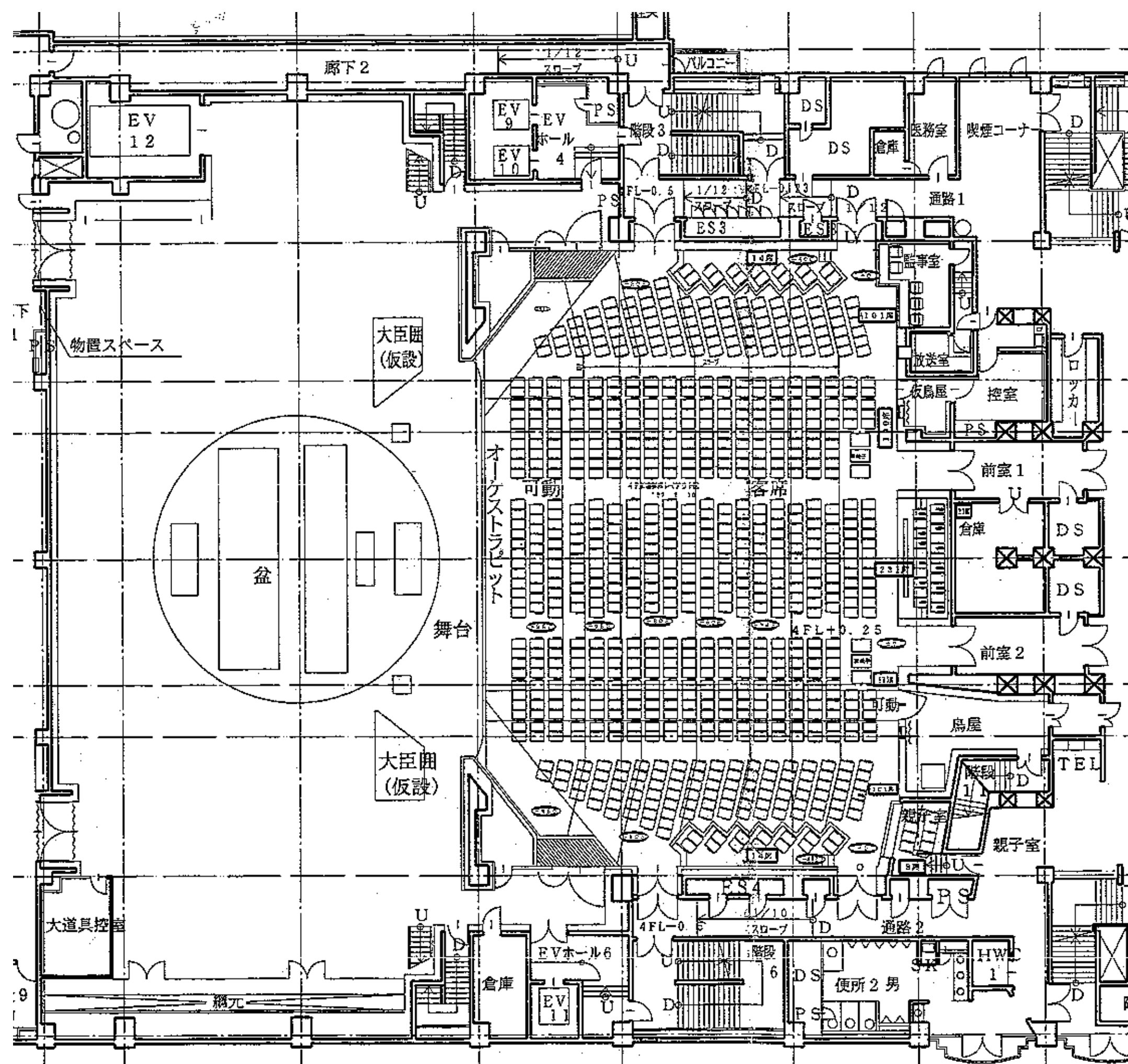
Estimated values for RT from measurement values are in the occupied condition.

HAKATA-ZA

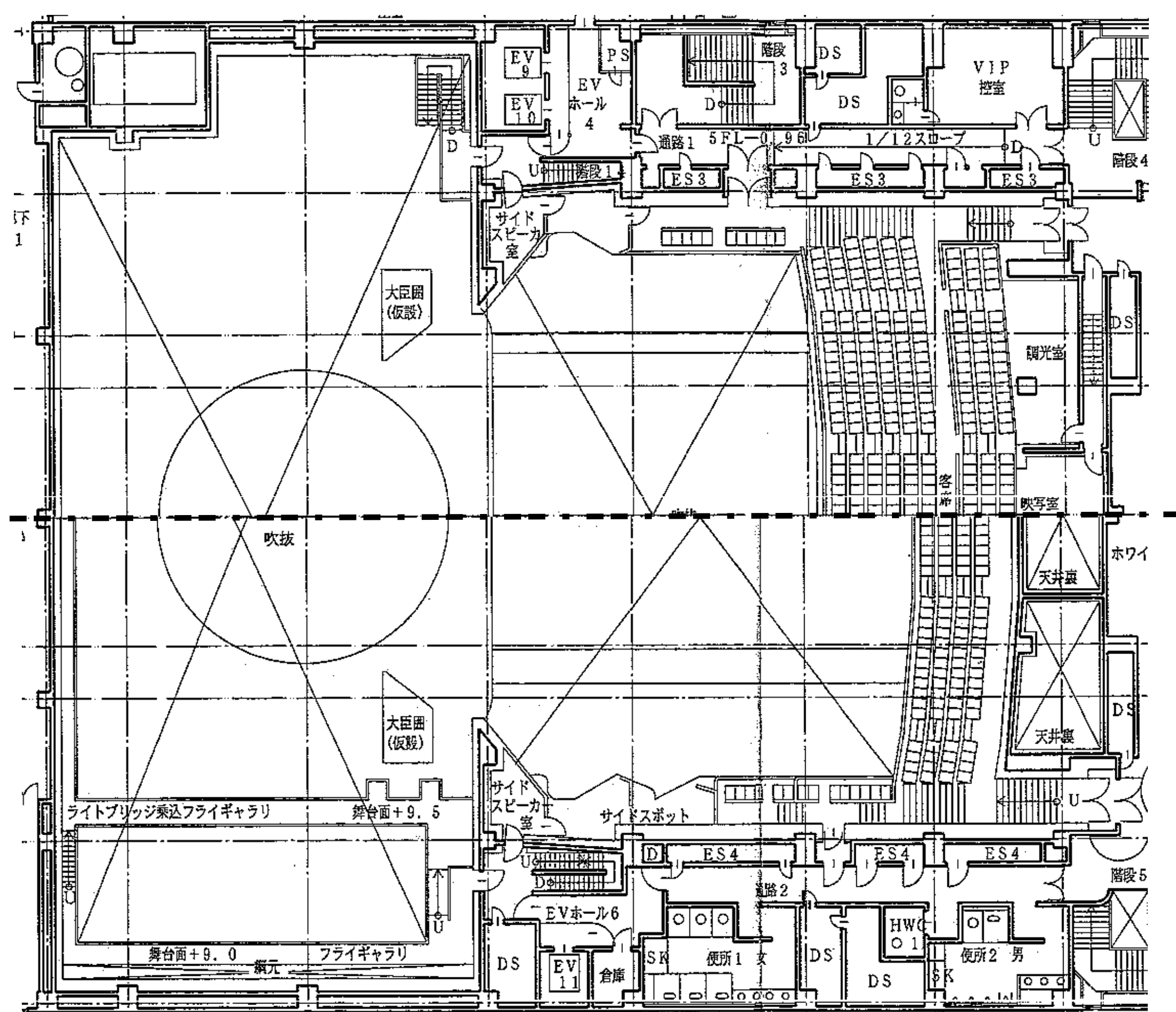
FUKUOKA, JAPAN



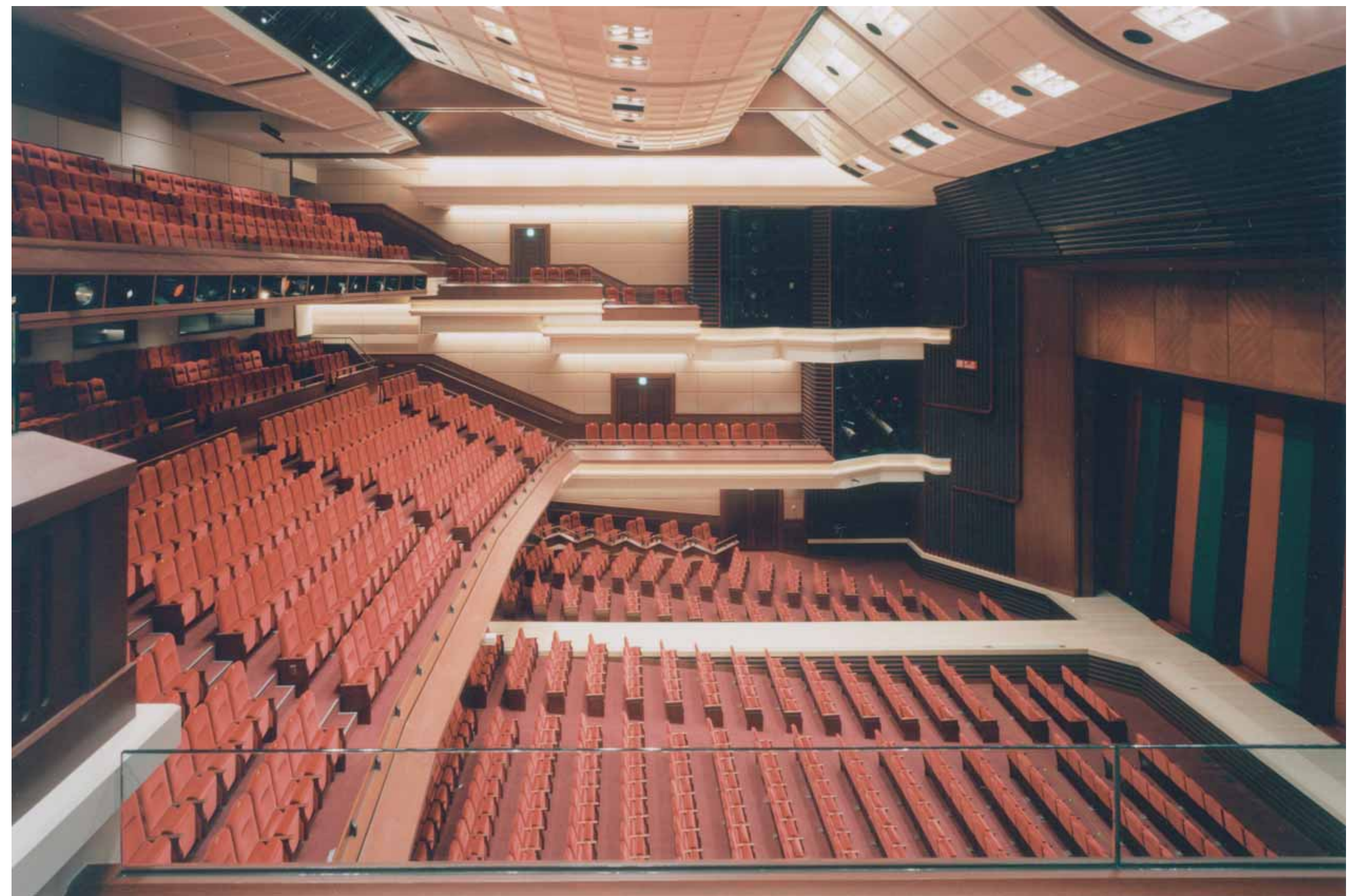
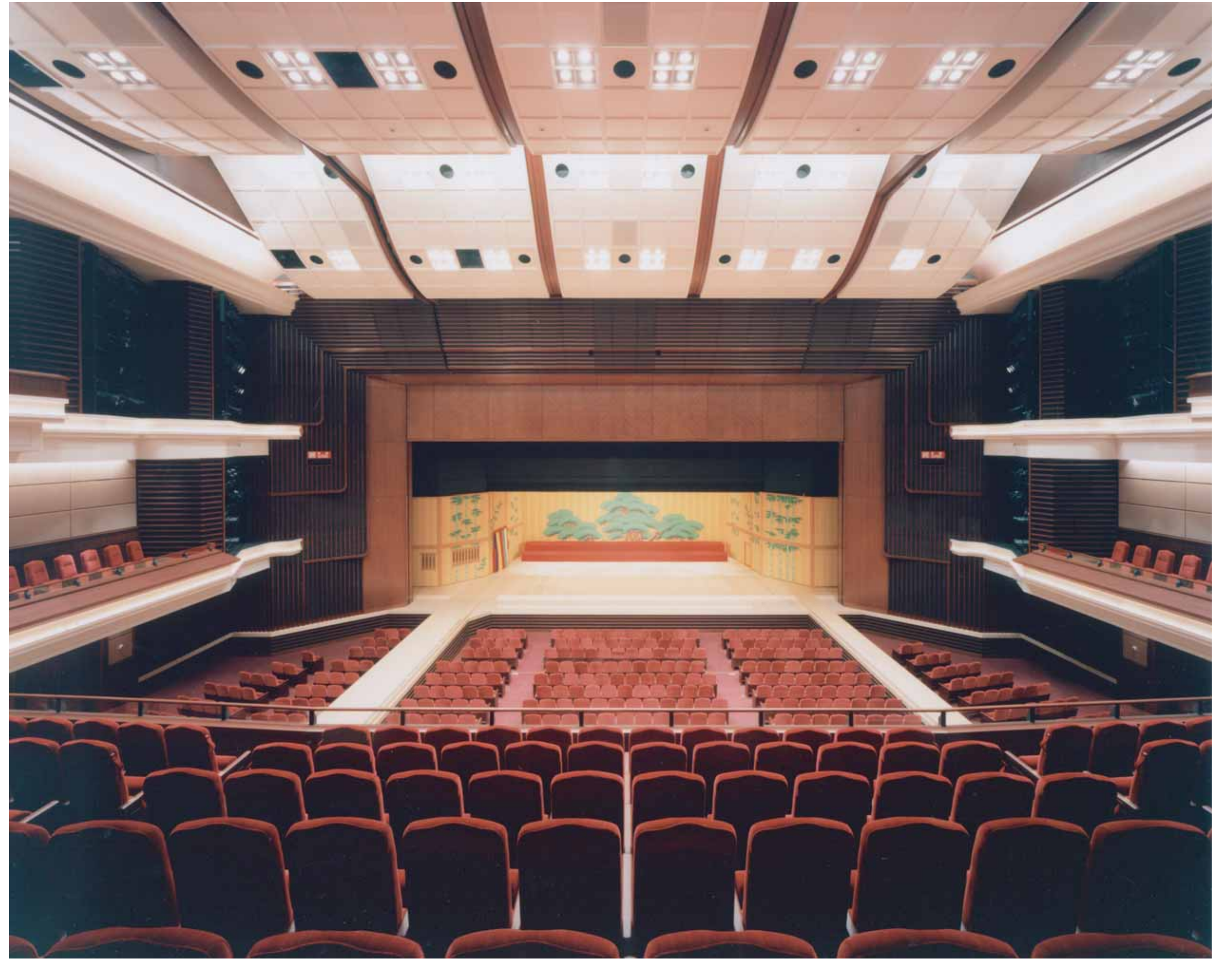
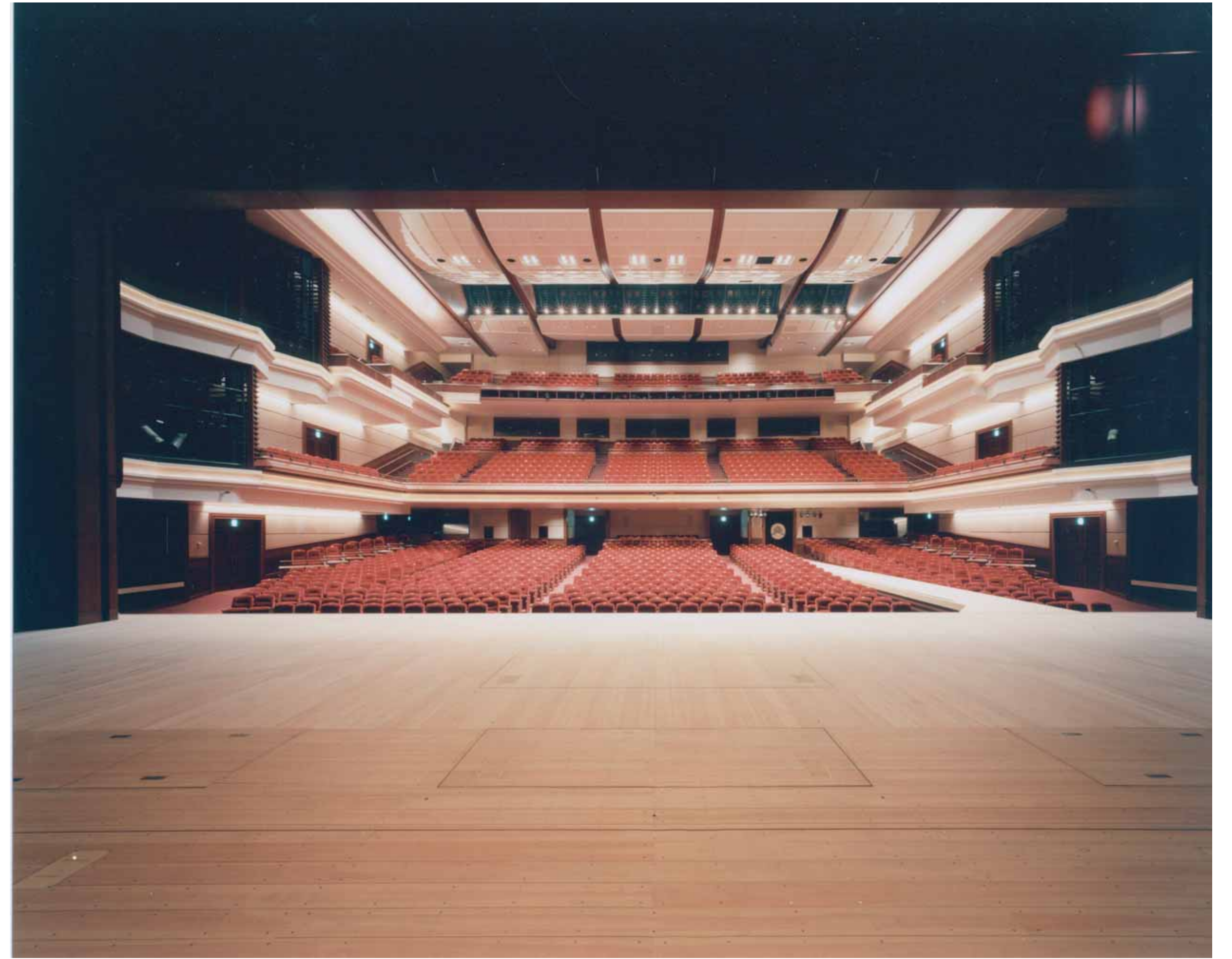
LONGITUDINAL SECTION



MAIN FLOOR PLAN



SECOND / THIRD TIER HALF PLANS



FINISHING MATERIAL
IN FRONT OF
THE SPEAKER