Landscape Museum of Art
— Nippondaira Hotel —

風景美術館
— 日本平ホテル —

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Synopsis
Nippondaira Hotel is located in Nippondaira, Shizuoka Prefecture, one of a hundred famous scenic landscapes of Japan, at an elevation of 250m and with views of Mount Fuji (a UNESCO World Heritage site) and Suruga Bay. The aim was to create a building and space appropriate for Nippondaira Hotel that borrowed from the unchanging Japanese landscape and Mount Fuji and where guests could enter into dialogue with the scenery.

Structural Data
Location: Shizuoka City, Shizuoka Pref., Japan
Main Use: Hotel
Owner: Nippondaira Hotel
Site Area: 75,769.13m^2
Building Area: 6,153.43m^2
Total Floor Area: 18,678.62m^2
Number of Stories: B1F, 6F
Eave Height: 29.46m
Maximum Height: 29.96m
Structure: Reinforced concrete structure, part structural reinforced concrete structure, part structural steel
Designer: Nikken Sekkei, Ltd.
Contractor: Kiuchi Construction Co., Ltd.

1. Introduction
Nippondaira Hotel is referred to as a “landscape museum of art” because the view of the landscape from the plateau at an elevation of 250m is a dramatic view looking up to the peak of Mount Fuji at an angle of 4° and looking down on Shimizu Harbor including Miho no Matsubara at an angle of 7°, as if one were viewing a painting.

Photo 1. External view of the building

Nippondaira Hotel has a spacious grass plaza into which the distant views of Mount Fuji and Suruga Bay, the middle-distance views of Shimizu Harbor, and the near views of the grass plaza are interwoven, creating a location with unique and unparalleled scenery (**Photo 1**).

2. Design
(1) Cross-sectional Design Taking into Consideration Conservation of the Natural Environment
There is a clear cross-sectional configuration utilizing the gentle downward undulation toward Mount Fuji, with the second-story lobby floor in the center. Above

the lobby floor is a private zone that includes the guest rooms, upper lounge, and small banquet room. Below the lobby floor is a lively public zone that includes the restaurant and a large banquet room (**Fig.1**).
The quantity of excavated soil was minimized by configuring the various room volumes in accordance with the differing site levels, resulting in a design for which soil did not have to be transported off site.
The building height was reduced by placing the entrance on the second story, thereby reducing the presence of the building and minimizing the area exposed to the prevailing wind during summer.
Stacking the necessary functions in the optimum manner by utilizing the differing site levels minimized the building area and the amount of site preparation. Nevertheless, roughly 100 trees were unavoidably displaced by the building, but these were preserved as much as possible (e.g., by temporary transplantation), thereby producing an area of greenery of more than 40,000m², or roughly 60% of the site area.

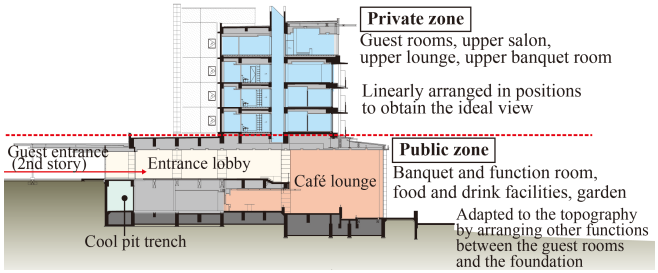

Fig.1 Design scheme utilizing differing site levels

(2) Architectural Features to Create an Impression

The relationship between the landscape and the building was considered carefully to maximize the views of Mount Fuji so that it could be enjoyed from every location. A 10-m-high and 35-m-wide atrium space is provided to create a scene in which Mount Fuji and the broad grassy plaza can be viewed initially from the entrance. Guests can enjoy the impressive integral view of the broad grassy plaza, Shimizu Harbor in the middle distance, and mount Fuji in the distance through a giant glass screen.
The ideal composition of Mount Fuji and Suruga Bay was obtained by rotating the axis of the building 5° to the line of sight to Mount Fuji, as if it were an ukiyo-e painting by Katsushika Hokusai. Impressive spaces were realized everywhere with views of Mount Fuji. For example, Mount Fuji is reflected (inverted) on the surface of the water feature, and for the ceremony room, the 5° axis is corrected to present a direct view of Mount Fuji (**Fig.2**, **Photos 2**, **3**).
In each guest room with a 6m opening, open views are realized by a bed layout that enables frontal views of Mount Fuji, and lowered balconies so that the view is not obstructed by handrails (**Photo 4**). The guests can enjoy how the landscape changes with time, such as Mount Fuji painted red by the evening sun, and nighttime views of Shimizu Harbor below.

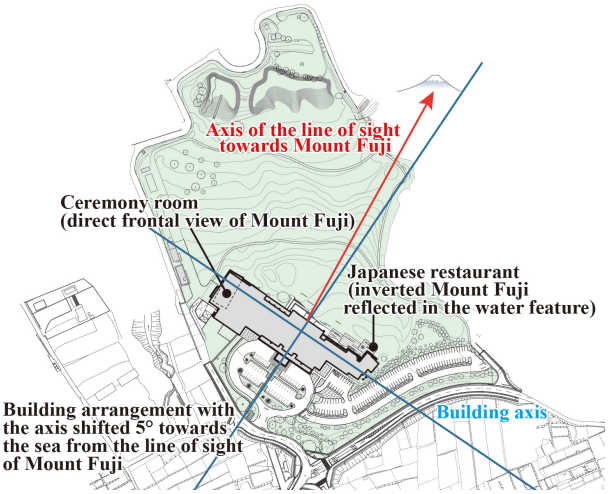

Fig.2 Layout

Photo 2. View when a guest first arrives in the hotel

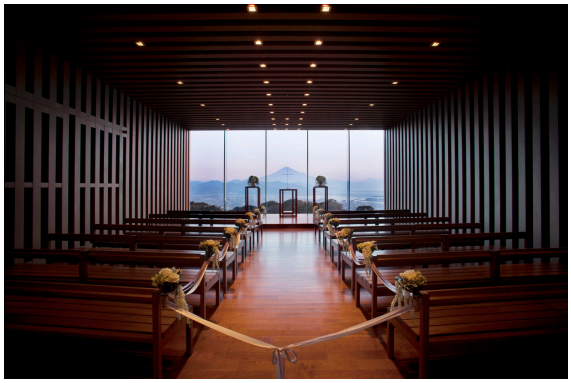

Photo 3. Ceremony room directly facing Mount Fuji

Photo 4. Guest room with 6m opening to enable a complete view of Mount Fuji and Suruga Bay

3. Structural Design

To increase the dwelling comfort as an accommodation facility, the main structure was chosen to be reinforced concrete, and economy and high seismic performance were achieved with a moment-resisting structure provided with seismic walls.

The structural design was carried out for the public and private zones in accordance with their respective uses to realize an attractive building that maximizes the views of Mount Fuji, and this resulted in rational design.

Integration of the architectural, structural, and services design was pursued in many ways, such as by creating a dramatic space without columns in the front entrance atrium (which extends upward for four levels), by eliminating three columns, and by the open feeling of the glass screen (**Photo 5**).

To conserve the natural environment, the foundation scheme was designed using the slope of the site taking into consideration soil pressure.

(1) Public Zone (Lower Levels)

The loads of four stories were supported and a large space was realized using high-stiffness cantilever beams in the three stories above the atrium (3F to 5F). The focus was on the seismic walls in the boundaries between units in the reinforced structure of the guest rooms in the high-rise levels to provide soundproofing (**Fig.3**).

The sixth story is used as a lounge and terrace, therefore the columns and roof of the northern part were constructed with a structural steel framework. The structural members provided a light design and reduced the weight, thereby reducing the stresses produced by the deep cantilever beam structure.

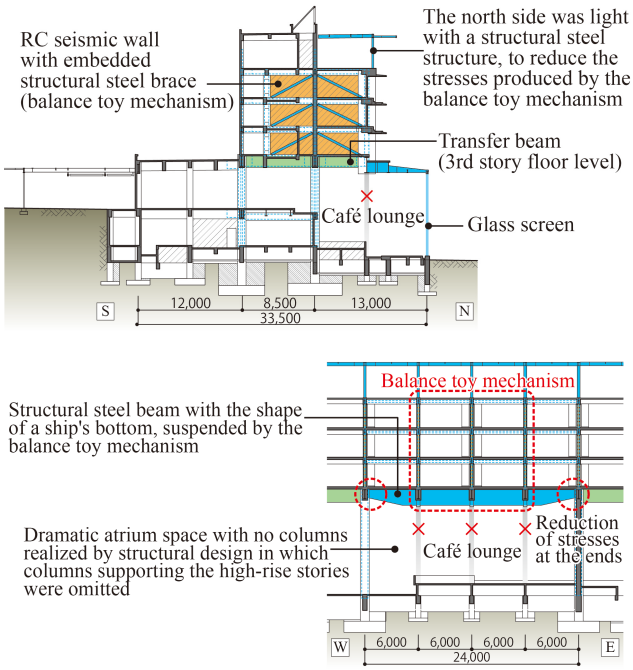

Fig.3 Structural scheme to realize atrium space with no columns

The deep cantilever beam structure above the large space had a structural reinforced concrete structure (structural steel braces within the seismic walls). This structural scheme provided constructability with a structural steel framework erected in advance so that falsework could be reduced and safety ensured. A structural steel beam shaped like a ship's hull and having a depth of 900–1,750mm was provided in the 24m span suspended below the bottom tips of the balance-toy seismic walls.

The structural steel braces within the seismic walls are a failsafe mechanism that is capable of supporting the building weight even if the stiffness was reduced by, for example, cracks in the concrete.

(2) Private Zone (Upper Levels)

Guest rooms with 6m openings through which Mount Fuji and Suruga Bay can be seen at a glance were realized by providing flat main beams on the north side of the guest rooms, arranging flat columns along the north–south direction on the north side, and lowering the balconies by 400mm so that the handrails would not block the view. In this way, the views were ensured and an open feeling was provided within the guest-room floors also (**Fig.4**, **Photo 7**).

Voided slabs with a thickness of 250mm were adopted for the floors to realize a design in which the ceilings are continuous with the soffits of the balconies, with no protruding beams so as to minimize the story height, and also considering the soundproofing of the floors regarding the building's function as a hotel.

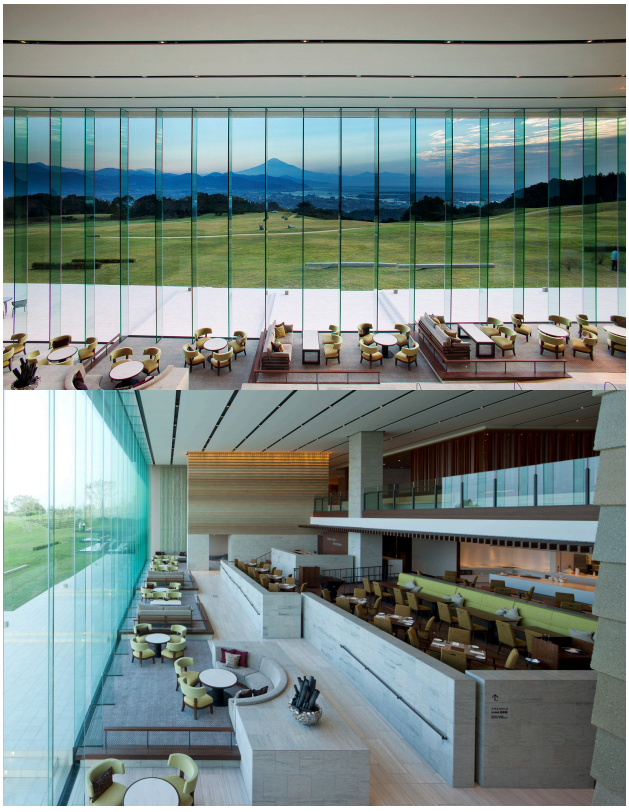

Photo 5. Panoramic view from café lounge in the column-less atrium space of the entrance lobby

(3) Structural Design Linking Public and Private Zones

The upper and lower stories serve different functions regarding the architectural scheme. Therefore, for the structural scheme, it was also necessary to connect structures having different column cross-sections and structural forms at the floor of the third story to transmit the forces rationally.

The method of resolving this was to provide a structural scheme with a transfer beam at the third-story floor. The transfer beam is a large deep reinforced concrete beam to enable it to play the role of a foundation beam. The stresses from the high-rise floors are transmitted to the columns of the lower stories via this transfer beam. Providing the transfer beam with a large depth increased the ceiling space, but this part was shifted from the guest-room floors to the public floor to allow it to be used effectively by installing services pipes and ducts laterally, thereby achieving consistency between the services scheme and the structural scheme.

4. Conclusion

Various measures were adopted to realize a hotel that harmonizes environmental considerations, taking into account the nature and climate of Shizuoka and environmental design for the comfort of the visiting guests (**Photos 6**, **8**). The project won the Award of the Japan Concrete Institute in 2014.

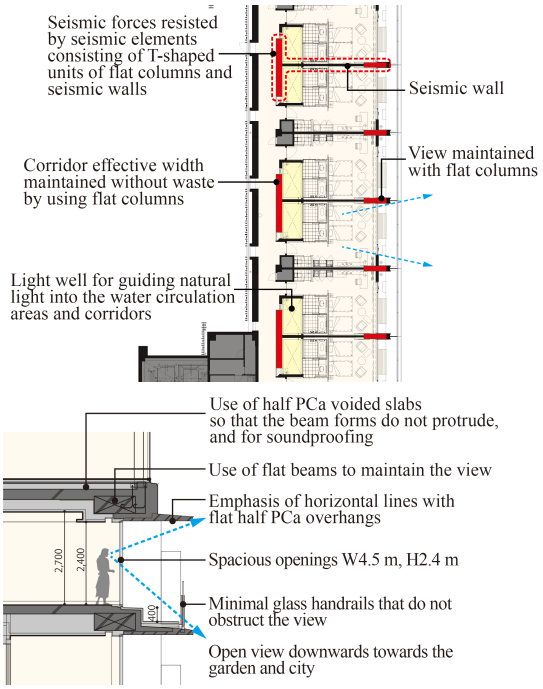

Fig.4 Achievement of both seismic scheme and maintenance of views using flat columns and seismic walls

Photo 6. Nippondaira in harmony with the landscape

Photo 7. Six-meter-wide guest room

Photo 8. External view of the building

概　要

日本平ホテルは，世界遺産「富士山」への眺望価値を最大化するため，風景と建築の関係を十分検証し，いたる場所から富士山の眺望が楽しめる計画としている。なかでも，２階エントランス正面のカフェラウンジに配した，幅35m高さ10m のガラススクリーンの額縁を通しての富士山と清水港，広大な芝生広場を望む大絵画を堪能できる無柱の吹抜空間は，「風景美術館」の名にふさわしいものとなっている。

構造計画では，遮音性にも配慮した高層階の客室空間に配した鉄筋コンクリート造の戸境耐震壁に着目し，吹抜上部を３層分（３階～５階）の剛性の高い片持ち梁とした「やじろべえ機構」により，４層分の荷重を支持し大空間を実現している。客室からも開放感ある眺望を確保するため，客室北側の大梁は扁平梁，北側の柱は南北方向に扁平柱とし間口6m の客室から富士山・駿河湾が一望できる客室計画としている。また，自然環境を保全するため，敷地傾斜を利用した基礎計画としている。