A City Hall as Citizen Autonomy Center Focused on Environment — Tachikawa City Hall —

市民自治の拠点としての市庁舎を環境建築として構築する — 立川市庁舎 —

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Synopsis

Tachikawa city hall's design oriented from the open competition. In order to achieve low rise and large plan, pre-cast concrete has been selected for the structure. The function consists of three floors with spacious floor. Intermediate Seismic isolation devices are implemented in parking area at the basement, and at the same time, 4 pillars from the each floor are tied to form 1 iron post to create large plan.

Two large light wells and one atrium allow people to work under the sunlight thus achieving reduction of burden to environment together with other measures including greening on the roof, canopy, and almost all windows are allowed to open. Wind tower is attached on the top of atrium for natural ventilation and this served additional function to decrease internal temperature during between the seasons as well as summer nights. Environmental friendly measures were introduced during construction as well as operational phase such as without using wooden mold for pre-cast concrete.

There are stages shaped terrace along side of the street facing the west. Citizens can approach to each floor from the front garden.

Data

location: Tachikawa, Tokyo, Japan
Client: Tachikawa City
Main use: City hall
Years: 2005.12-2010.3
Site area: 11,000 m^2
Building coverage area: 6,880 m^2
Total floor area: 25,981 m^2
Structure: Precast prestressed concrete, Steel pillar, Base isolation

1. Introduction

It is a city hall establishment project through citizen involvements in the whole process of scheme, design development and construction, the method of which is called "Tachikawa model". It was designed based on the plan selected through open competition. Prior to the competition, Tachikawa City prepared a documents based on concepts by citizen, which includes the following five themes;

- Leadership of the surrounding town planning
- Environment conscious
- Center for citizen autonomy
- Construction through citizen involvements
- Economic rationality

From the beginning of the proposal, The authors considered to integrate clear answer to each theme into one building. Consequently, the entire or parts of building play various roles in correspondence to these themes.

Fig. 1 Westside

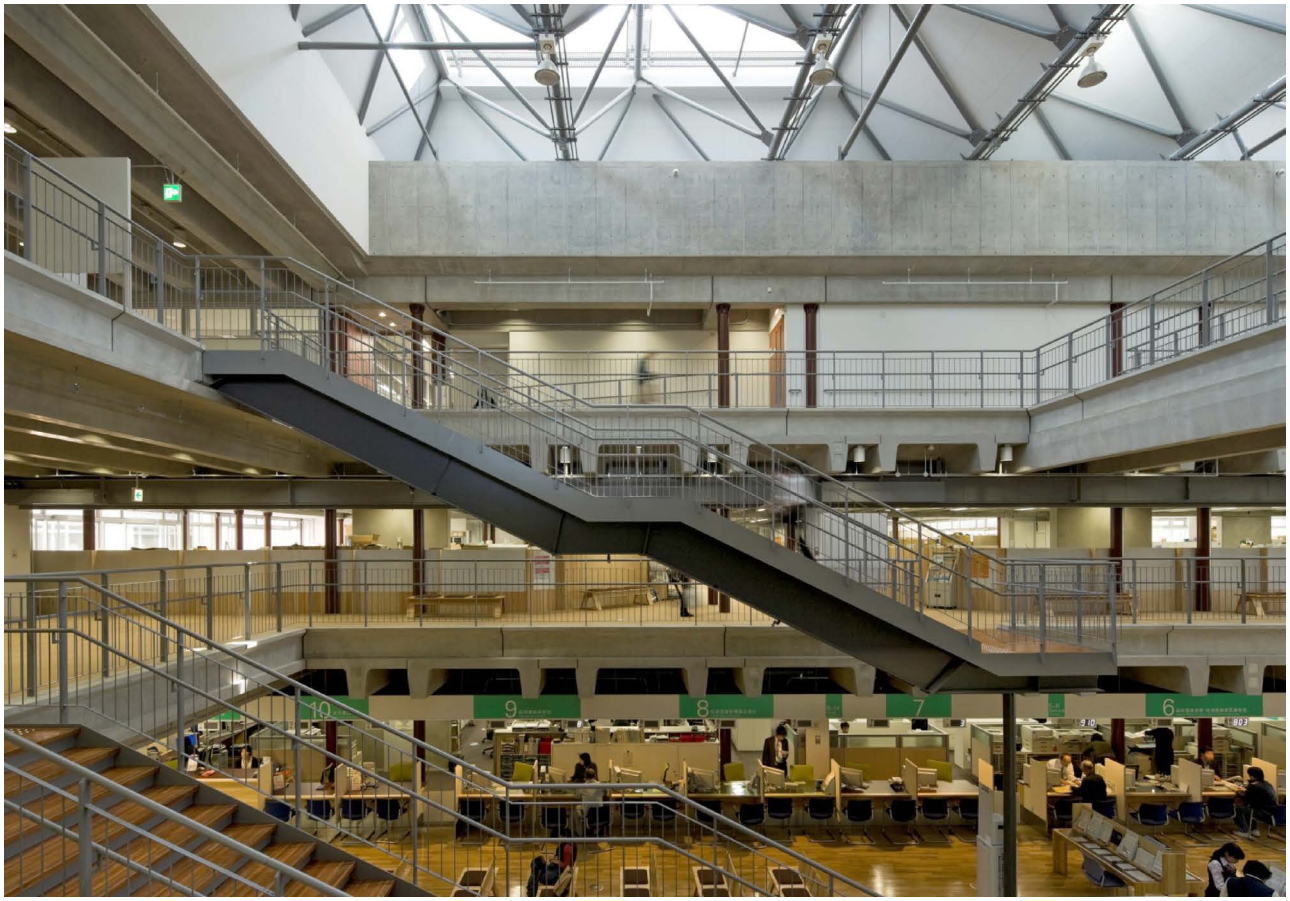

Fig. 2 Atrium

2. Design

(1) Low rise large plan, void, roof garden

City hall function consists of low-rise building in three floors with spacious floor area of 6,000 square meter. Low rise configuration enables to command a view of the whole city hall. Such “recognizability” is the biggest characteristics of building design. Voids of a floor connect spaces introduce natural lighting and accelerate natural ventilation with wind tower on top. On the roof, large scale roof garden reduces heat gain and utilized as public recreation area connecting to the terrace with big sun shade canopies. This green roof square,western side street trees of big zelkova and front garden of eastern side residences make a impressive large green landscape.

(2) Integration of hybrid construction method and utility plan

In view of reduction of life Cycle Cost (LCC), long life structure is designed with hybrid method of pre-cast concrete (PC) and steel structure. Cooling storage in summer nighttime is expected by exposing PC in majority of ceiling area. Floor air-conditioning system to serve inhabit area is mounted inside rib of PC with air intake under upper floor. Electrical wiring is

Fig. 3 Roof Green

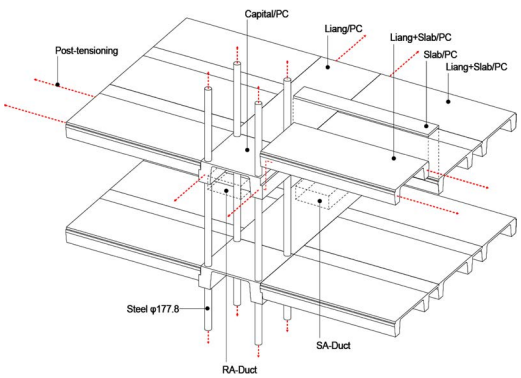

Fig. 4 Structure

arranged inside rib of PC ceiling as well. Making the most use of PC's shape, physical property and function, each environmental target is integrated to one building. In addition, various environmental devices such as outside air cooling, 60kw photovoltaic panel, geothermal panel, dimmer lighting system and micro co-generation system are introduced with verification of efficiency.

(3) Compatibility between high reliability and cost rationality

In consideration of liability as disaster-prevention facility and soil conditions neighboring fault belt, base isolation method is applied. To ensure compatibility between functionality and cost reduction methods, underground work was minimized by utilizing base isolation layer as underground parking.

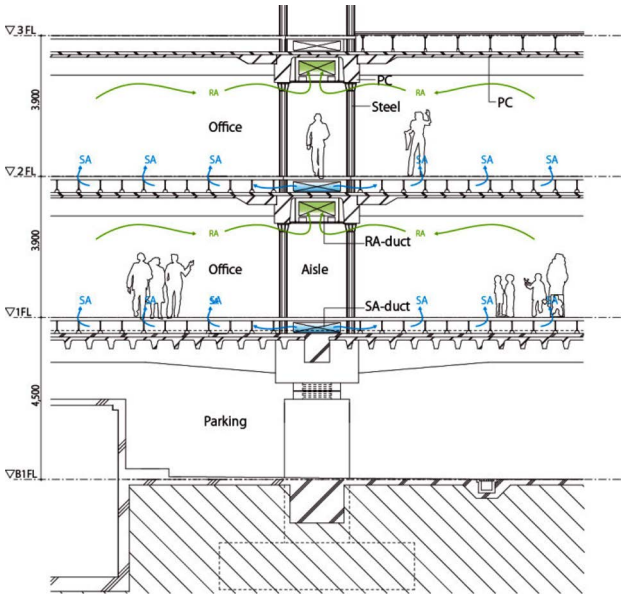

Fig. 5 Cross-section

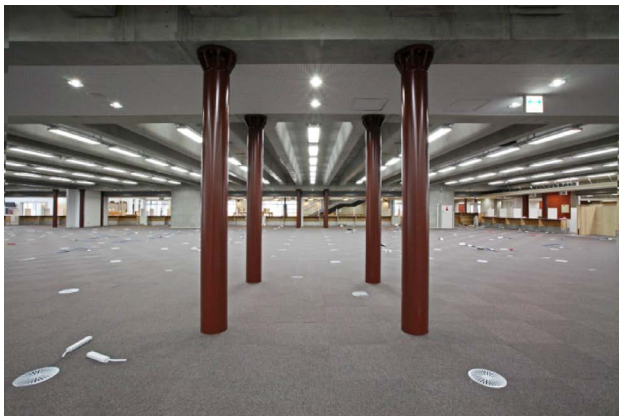

Fig. 6 Office

Fig. 7 Westside façade

(4) Continuing creation of city hall by citizen, municipal administration and congress

In consideration of use of building after office hours, citizen activity spaces, which support participation to municipal administration, are located in western zone along with clear security line. It is expected that citizen activities, municipal administration and congress will adapt altering functions and sustain to use transformed city hall responding to future needs.

Fig. 8 Under construction

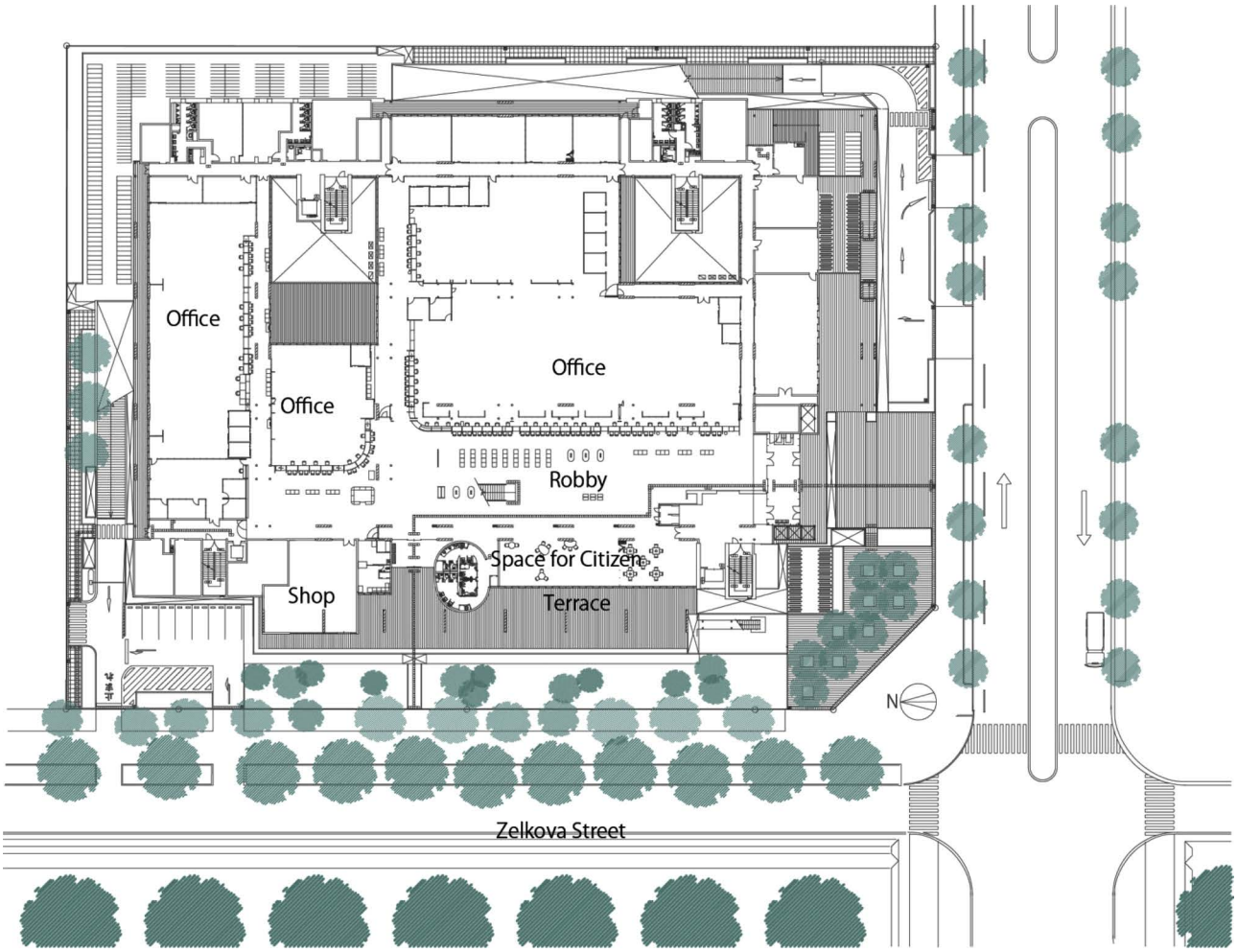

Fig. 9 First floor plan

概　要

立川市庁舎は市民参加型公開コンペにより選定された案をもとに設計されている。約7,000m^{2}を1フロアとし3層から構成される「低層大平面」という空間構成は，コンペで求められた「市民自治の拠点」として，将来の柔軟性を確保するための提案である。各層を大きな吹抜けによって視覚的に連続させることで，建物全体に一体感を生み出している。

技術的には大平面という特性を生かした「PC床版＋鋼管組柱」が特徴的である。PC床版は天井面に表しで使用することで，大容量の蓄熱体として活用できる。「屋上緑化」や「開口部の庇＋ペアガラス」といった日射負荷抑制技術と，この大容量蓄熱体により，空調負荷の小さな環境建築を実現しているのも立川市庁舎の大きな特徴の一つである。