YUSUHARA TOWN HALL

Address of building
Yusuhara/Japan

Client
Stadtverwaltung Yusuhara

Architects
Kengo Kuma&Associates

Structural design
K. Nakata&Associates, Tokio

Completion
2006
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KENGO KUMA

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Yusuhara town hall serves the community by providing public administration facilities, the chamber of industry, the Agricultural Cooperative Society, a bank and a IT center. The huge folding doors connect the two-story atrium to the front courtyard occasionally functioning as a public space for traditional performances and events.

The façade consists of glazing panels and wooden cladding orientating like a puzzle. The pattern serves a signature of the building without install any signage for indication. The material and the traditional overhang is intended to celebrate the traditional Japanese wooden structure.
The major structure is organized in a grid system that is supported by columns. Instead of having a massive timber column, Kuma decided to split the columns into 4 smaller members. Beams in 8.5" wide then penetrate between the members of the columns and be stabilized with bolts. The comspited columns give flexibility to allow the beams to go through the columns in both ways. Also, breaking down the columns in to four parts, Kuma created the illusion of smaller columns supporting the loads as opposed to one massive column. The atmosphere becomes lighter while lights can get through the structure. Besides that, by breaking down the columns, it contributes to save more materials.
The grid system consists of 5 layers of thick wooden girders. The thickness of the whole girder system is over 7 feet. However, by particlizing the system, it does not feel as heavy as it should. The layering of members replaces the use of massive beams meanwhile allowing lights to get through the system. The support of the system is as strong as the single beam system, which can support the heavy snow loads in the area. Each layer of the girders and intermediate support is 2'-4" deep crossing each other. All the blocks are notched at the top and bottom to fit themselves with the beams. This notching method is inspired by Japanese traditional joinery when the bolts were not existed. However, for security and safety reasons, bolts were still used in the joints. All the bolts were recessed and flushed with the members to emphasize the notches. Also, the beams are extended 3’ overhang at the south façade, which has the language of traditional Japanese construction.
MATERIAL

When Kengo Kuma was awarded by the town to begin this project in 1994, he was given complete freedom in design except that the material must be from Yusuhara. Since most of the industries in Yusuhara are forestry, locally harvested Japanese cedar was used almost every single part of the load-bearing structure in this building. Kengo Kuma understood well of the properties of Local Japanese cedar, he created a double lattice girder structure with almost 59ft long span.
Kuma has developed his own design process, which he terms “the particlization.” We can easily find this style from his other designs as well. It offers a discontinuous continuity. He intends to break the materials down into small pieces allowing light, wind, sound, to penetrate freely. He also attempted to use this method in this building. On the building envelope, glass and wood panels particlize the façade and form a filter for air, light and sound. Also, he utilized this method in wood construction Japanese cedar is relatively weak. Thus, structure of wood girders was created acting like a typical frame construction with layers of materials in different scales. Rather than fragmenting the form, the architect chose to fragment the materials.
Kengo Kuma took lots of considerations in terms of sustainability in this building. He carefully designed the building systems and manage the construction to ensure a sustainable construction process, operational life, and disposal for the building. The goal was to use the local harvested Japanese cedar as most of the structural members. As a result, it can minimize the use of transportation, which greatly reduces the carbon emission from building construction. Kengo Kuma utilized lots of sustainable methods, for instance, low-E double glass to minimize the heat loss, heat insulating blinds and face panels, and recycled paper insulation.