



Slender Precast Concrete Column with Steel Plates using façade of the Building

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Summary

Recently, in architectural design, cases adopting a structural member which also serves as an exterior material of buildings is increasing.

Also in this building, precast concrete (hereinafter, PCa) with a built-in steel by placing an X shape on the outer periphery of the pillar building is employed to serve the exterior design and structure of the building.

In Tokyo, Japan, a research headquarter building has been designed as a comfortable space with extremely high seismic performance, with a rational structural scheme for a building as described above.

1. Introduction

This is a structural steel building with five stories above ground and one-story below ground, having the building height of 24.8 m. The plan shape is a modified hexagon with the length of one side about 40 to 60 m. It is a seismic isolation building in which the seismic isolation layer placed is between the first floor (in part the basement first floor) and the foundations.



Photo 1 Overall photograph

A seismic isolation structure was adopted as the structural scheme, and the structural type and structural form of the upper structure were a structural steel moment resisting

structure. Also, around the whole outer periphery of the building a structural system that includes precast concrete columns (hereafter referred to as PCa columns) in which steel plates are embedded has been adopted.

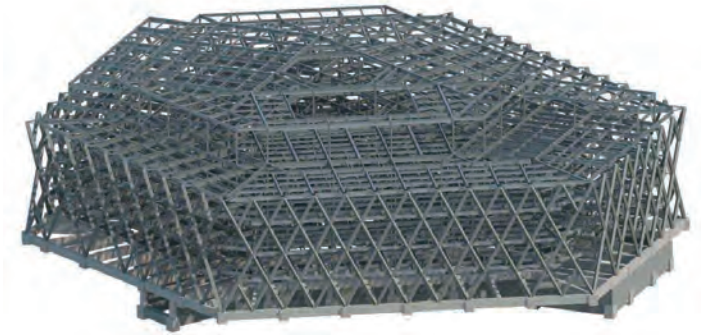


Fig. 1 Perspective view of the structural framework

2. Conclusions

As described above, in this building a design system was achieved in which function as both structural members and function as a façade was achieved by proposing a cross-sectional composition in which architectural spaces with different uses, namely offices and research and development, were stacked alternately. Also, a building with high seismic performance was realized by adopting a seismic isolation structure.

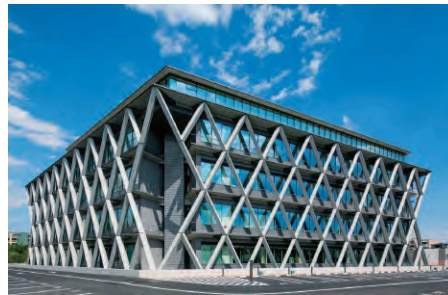


Photo 2 Exterior photograph



Photo 3 Exterior photograph