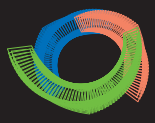
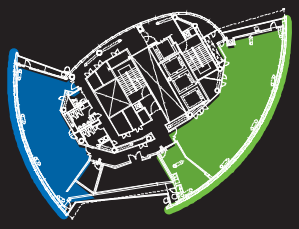
MODE GAKUEN SPIRAL TOWERS

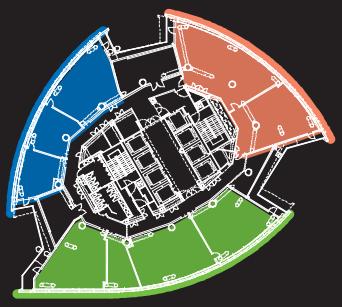
Owner MODE GAKUEN
Architect NIKKEN SEKKEI



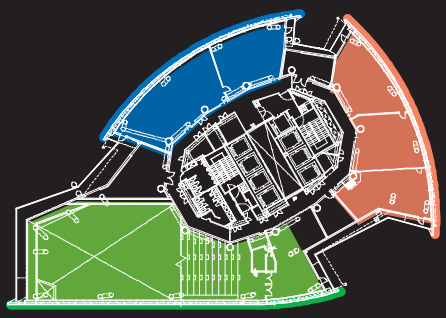
35th floor



30th floor



15th floor



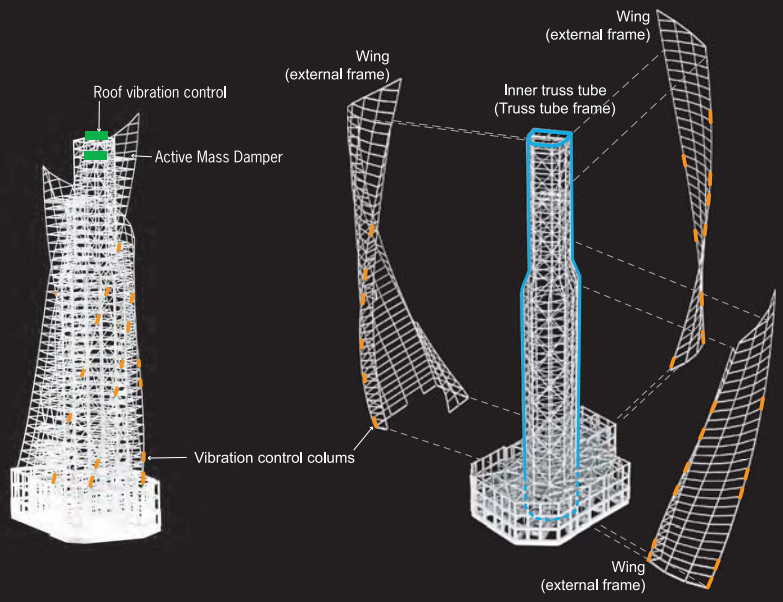
5th floor

Mode Gakuen Spiral Towers is named with the plural "Towers" because its design includes three towers intertwined in a spiral form, suggesting the intertwined rising energy of the students of Mode Gakuen's three school.

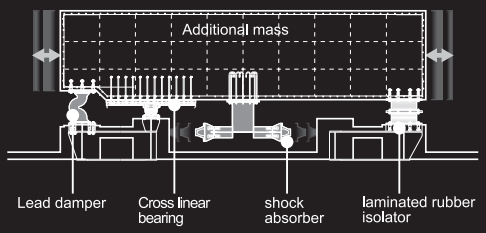
This building has 36 floors above ground, 3 basement levels, and 2 penthouse levels. Its height is 170 meters above ground and 21 meters underground. A central core having an oval cross-sectional shape consists of three wings having fan-shaped cross sections, radially arranged next to each other. The planar configuration changes with height. Three classrooms are arranged in the respective wings around the central core, which includes stairwells and elevator shafts. Ascending higher in the building in a spiral pattern, the rooms gradually become smaller in size. Displacement of the centers of rotation of the three wings produces an external appearance of organic curves.

Owner	Mode Gakuen
Architect	Nikken Sekkei
Structural engineer	Nikken Sekkei
Contractor	Obayashi Corporation
Site area	3,540.06 ㎡
Building area	2,365.75 ㎡
Total floor area	48,988.96 ㎡
Main uses	School and commercial facilities
Max. height	170.0m
Number of floors	36F, 3BF, 2PH
Structure	Steel structure (Concrete Filled Tube columns) above the ground

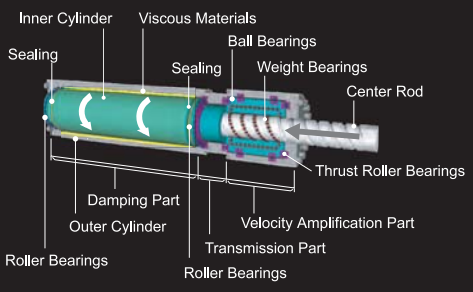
nikken.jp



Conceptual System of Framing



Roof Vibration Control



Vibration Control Column

12 straight columns are arranged around this core, and braces are connected to these columns in a mesh network, forming the thick central trunk of the tubular structure (called an "inner truss tube"). This tubular structure is highly strong and rigid with regard to horizontal and twisting forces exerted on the building by earthquakes and high winds, providing the necessary structural performance. With no braces around the outside, a transparent appearance is achieved; and minimal, thin-diameter columns provide lower rigidity for a light frame that does not bear seismic forces.

In a tower-shaped building, there is a great deal of bending deformation in the building as a whole and a high level of axial expansion and contraction on the outer columns, resulting in greater deformation at the top of the building. To efficiently attenuate earthquake energy, the building employs two new control systems that make use of this configuration. Quantitative analysis has confirmed that deformation during an earthquake can be reduced by up to 20% compared to the case of not adding any damping system.