



Stressed Tower

Seoul, South Korea



Location	Seoul, Korea	Floor Area Ratio	799.80%
Use	Office	Structural Engineer	CNP Dongyang
Date	2011-2015	Cost	10 billion Won
Client	YUKI LTD.	Main Contractor	Jiwon Yegon
Site Area	2,100m ²	Awards	Korean Institute of Architects
Gross Floor Area	4,771.37m ²		

Office is not an object.
It is about office life.

The office has commonly been perceived as a neutral and indefinite space, using repetitive designs, and curtain walls for ease of maintenance. Stressed Tower differentiates itself from other offices, while still resolving practical issues through its structural organization.

The northern part of the site has an elevation limitation of 27 degrees from Seolleung Park. This created three practical requirements: the optimization of the floor area, a flexible office floor plan, and ensuring an economical cost of construction.

Flat slabs without beams allowed an appropriate ceiling height to be maintained, while securing 800% of the floor area. Additionally, the design's 13m wide spans provided a flexible arrangement of space without the need for additional columns. The construction cost proved to be more economical compared to the standard RC structure.

The constructive organization is incorporated by stress intended trajectories to resist the overall forces of wind pressure and lateral forces by earthquake. As such, stressed wall, facing Royal Tombs in Chosun Dynasty, has basic grid frames of 350mm thick reinforced concrete. It is intensified by increasing material quantity. It raises resistance to external forces and aligns unbalance with the core. Also, the stress trajectories are created to transfer the loads to the 3 columns to facilitate car parking planning in the basements. In a consequence of simulation, the north façade with the intended stressed trajectories controls the displacement by reducing it by 30%.

The post-tension system enables column-free 13-metre-long spans in the office floor plan, providing flexibility to the tenants. Compared to the RC beam girder system, the structural depth is reduced by 30%. Moreover, it removes girders and creates a clean surface under the floor plate in order to minimize MEP intervention. As a result, it is a successful construction system in terms of both economical and spatial efficiency.