

TREE HOUSE



Our building design was inspired by the Treehouse as it is vital to retain our precious green and replenish them in our increasingly urban environment. This is especially so for our site which lies at the heart of Orchard Road and it being one of the few natural green areas left in that area. The Treehouse aims to push the boundaries of sustainable design coupled with innovative design for manufacturing and assembly (DFMA). A key principle of our design is the facade which integrates greenery and is enhanced to maximise DFMA capabilities, giving rise to a unique architectural design that is green and structurally efficient.



Green Oasis



Residential Balcony



Skygarden & Bar



Residences



Podium Rooftop



Naturally Lit Atrium Spaces



Naturally Lit Basement Spaces

Site Plan & Strategy

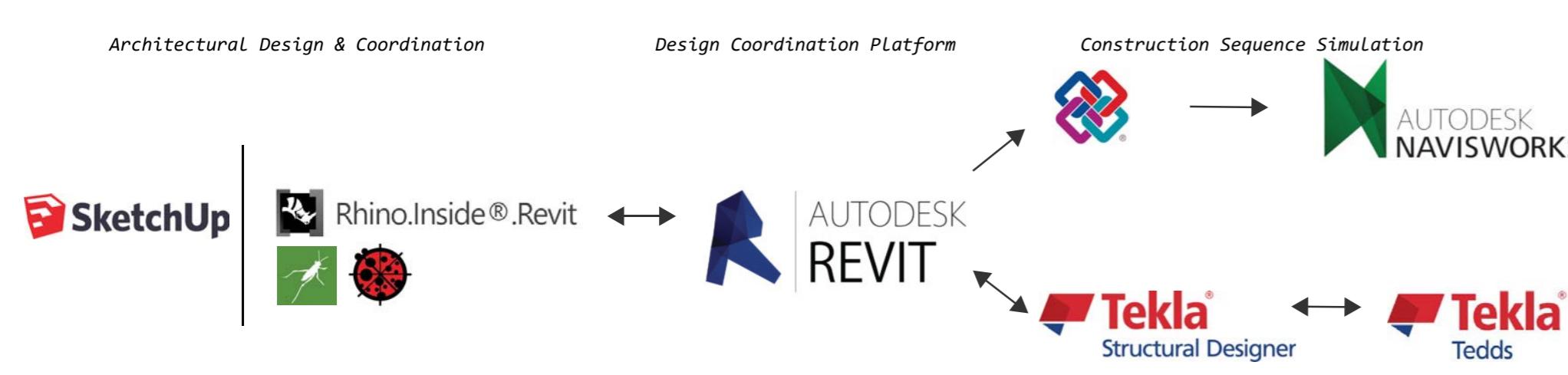
The URA Masterplan indicates future development for residential and commercial at 1st storey along Orchard Boulevard. This means there's potential to revitalize streets along this road as it is currently mainly used for vehicular purposes.



Concept Design

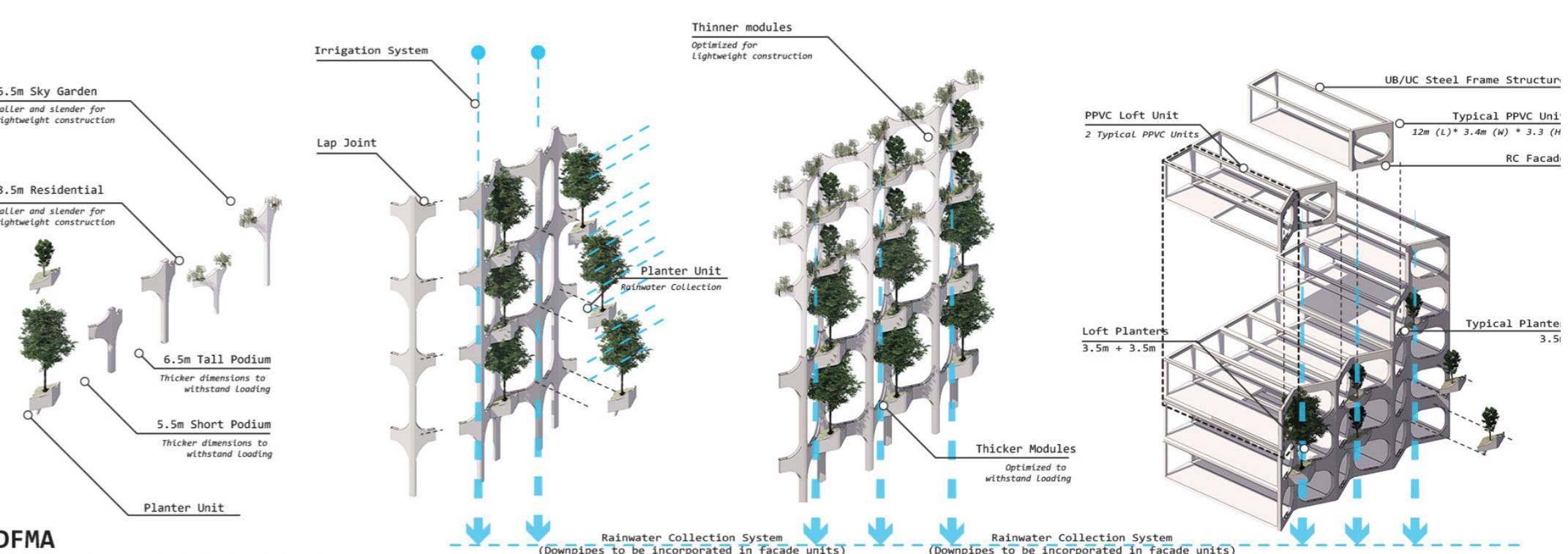


Collaborative Workflow

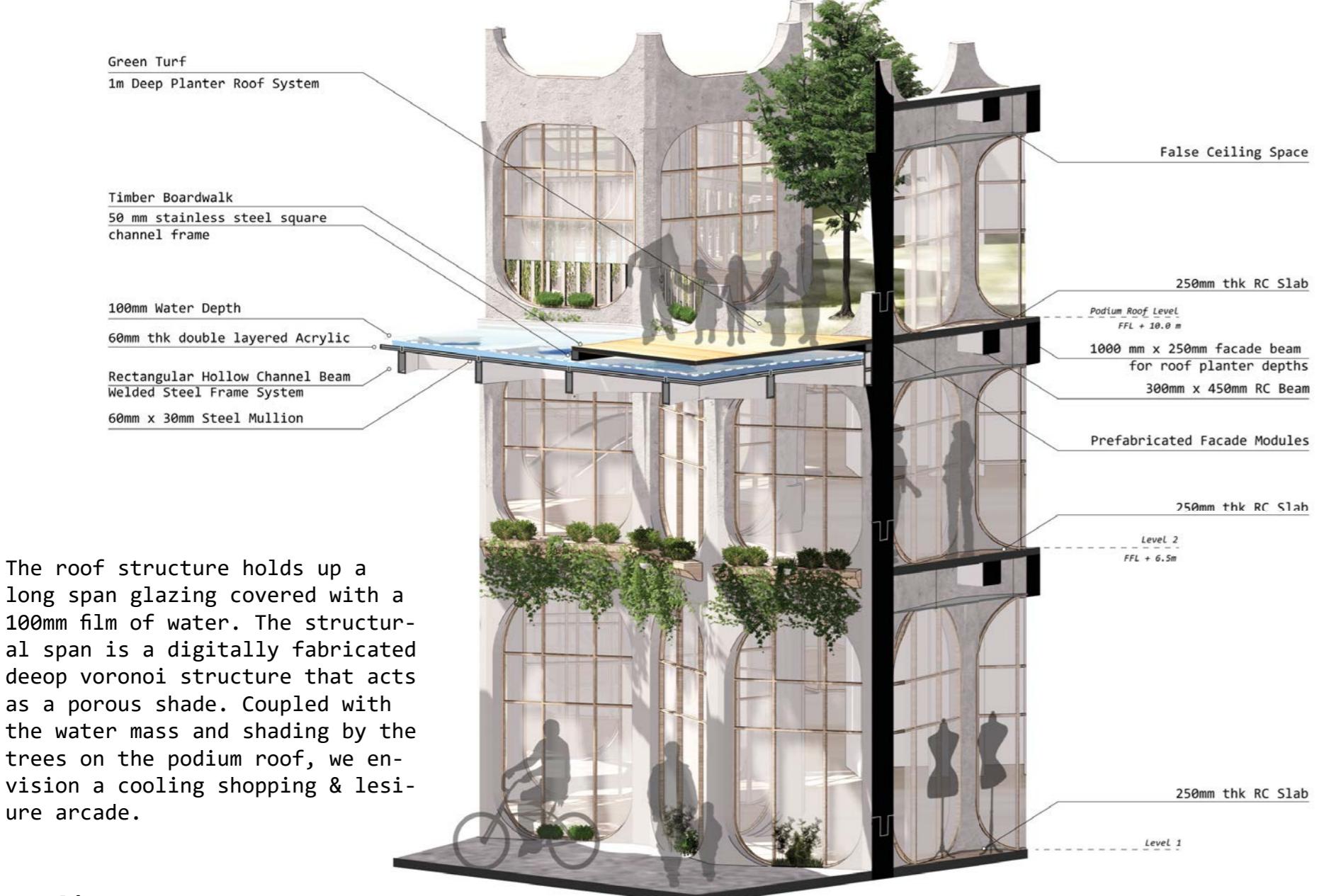


Integrated Design Delivery

PODIUM MASSING



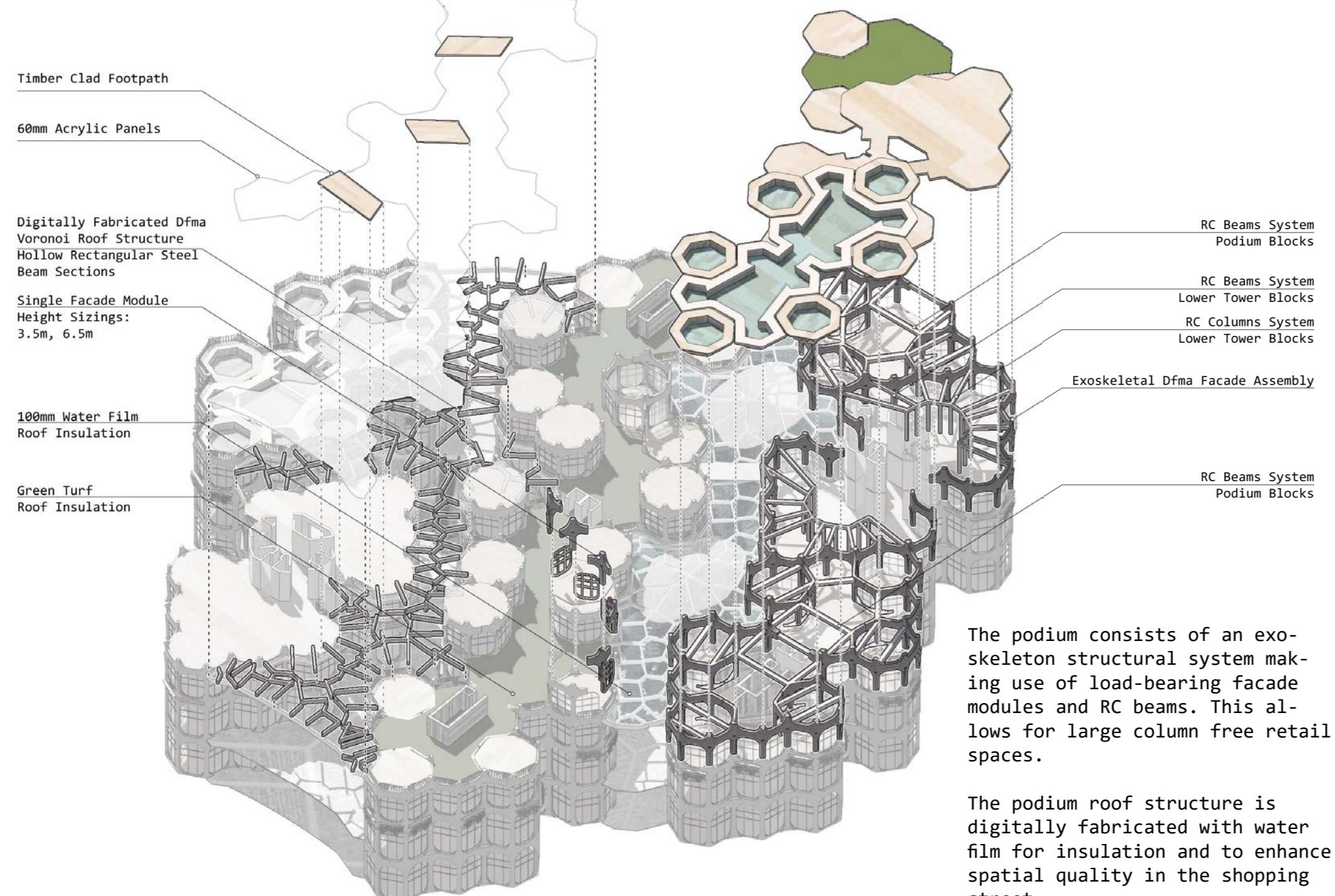
Construction Details



Podium

Design for Manufacture and Assembly

Podium Block DFMA Components



The podium consists of an exoskeleton structural system making use of load-bearing facade modules and RC beams. This allows for large column free retail spaces.

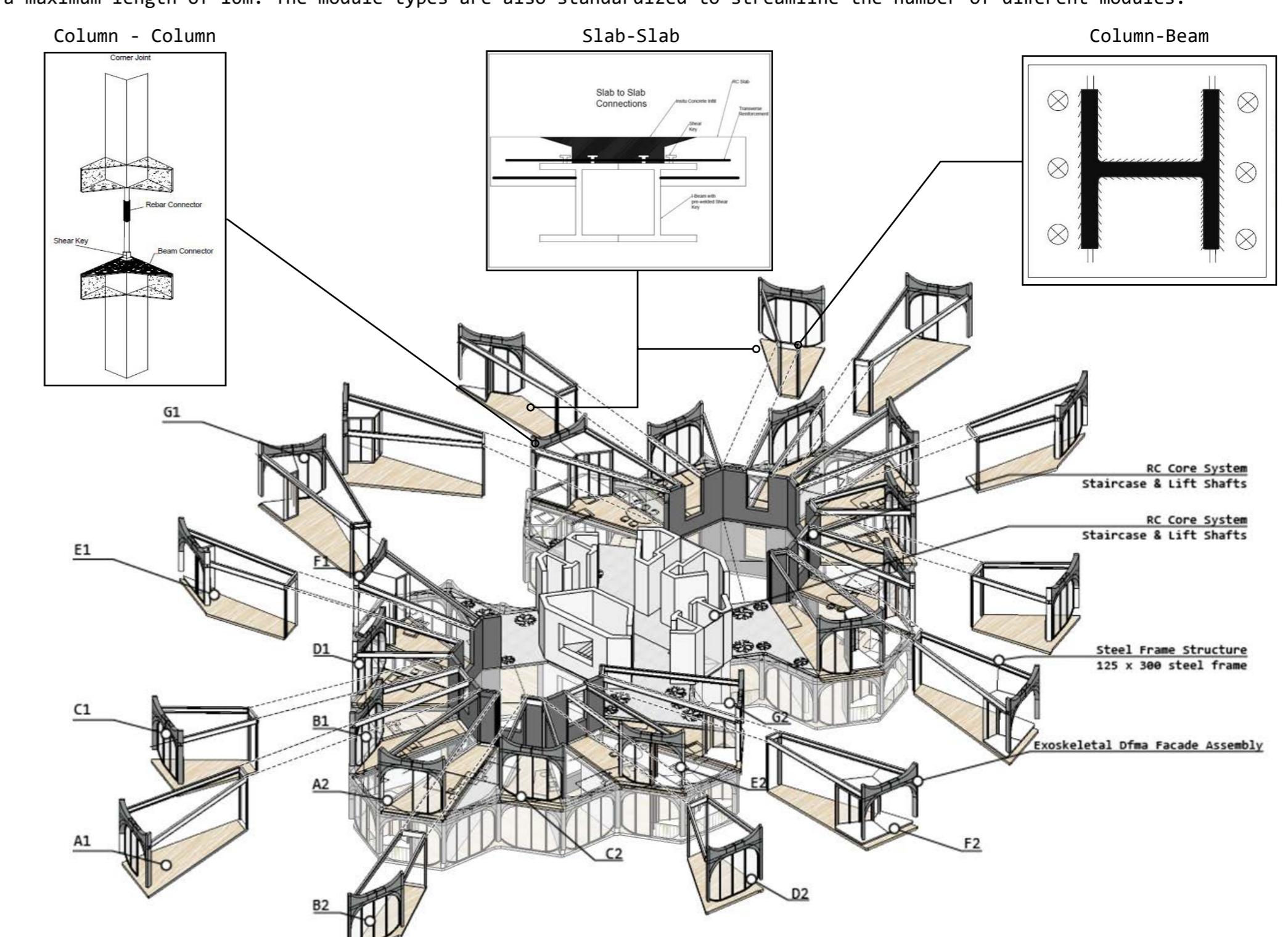
The podium roof structure is digitally fabricated with water film for insulation and to enhance spatial quality in the shopping street.



Tower

Tower Block PPVC Components

The tower's steel PPVC hybrid system comprises of steel frames and our load-bearing facade, allowing the interior spaces to be column free. The compartmentation of PPVC modules are in widths of 3.4m (consistent with our facade width) and a maximum length of 10m. The module types are also standardized to streamline the number of different modules.

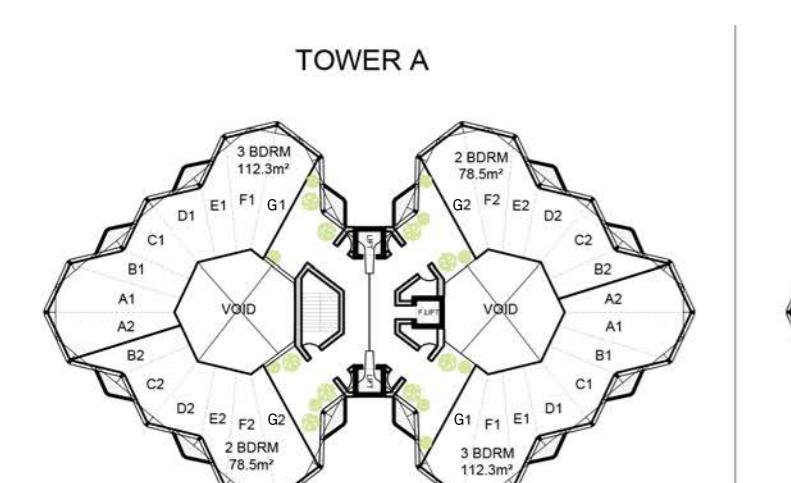


Sustainability Strategy - Crown Size Simulation:

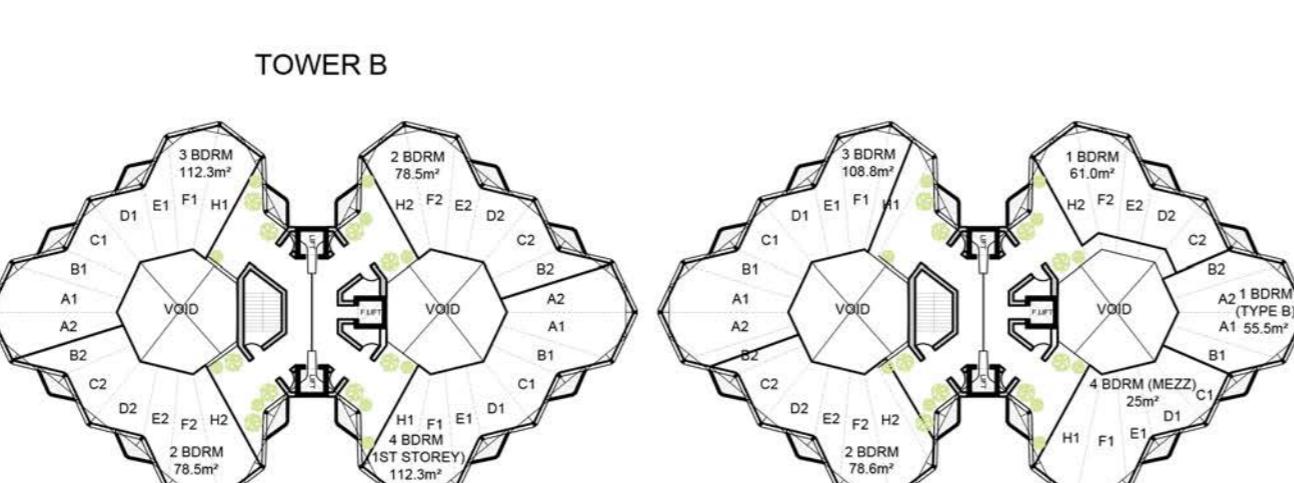
The planter facade and trees being central to our design project, the ladybug tool was used to analyze the sunhours that is received on each glazing panel. The crown sizes are dispatched digitally to the respective facade panels; larger and light loving ones to those exposed to longer sun hours, smaller and hardy ones to the shaded areas.



Design for Manufacture and Assembly



Floor Area Distribution



Floor Area Distribution



Sky Garden Plans



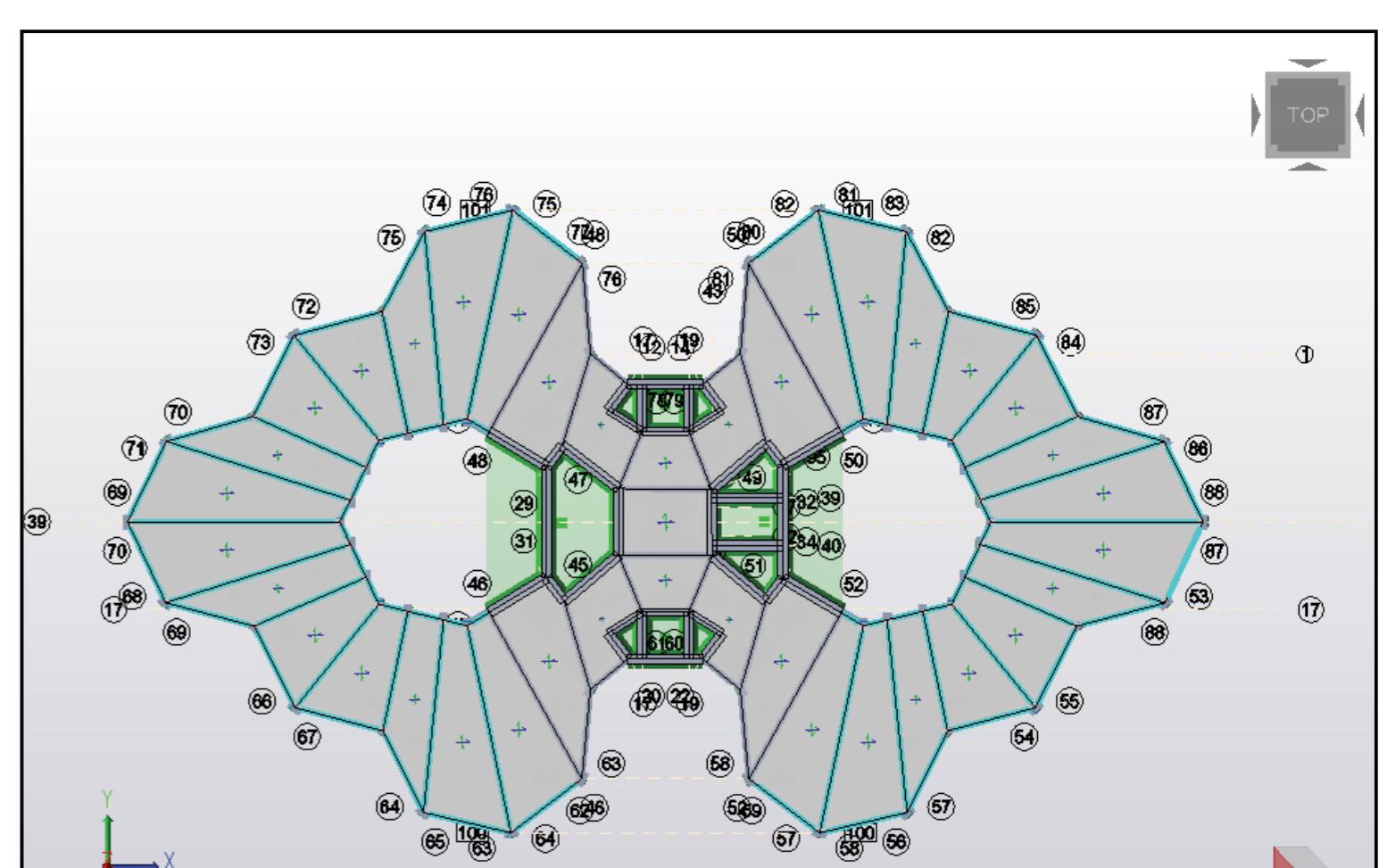
Structural Model



Construction Simulation Model

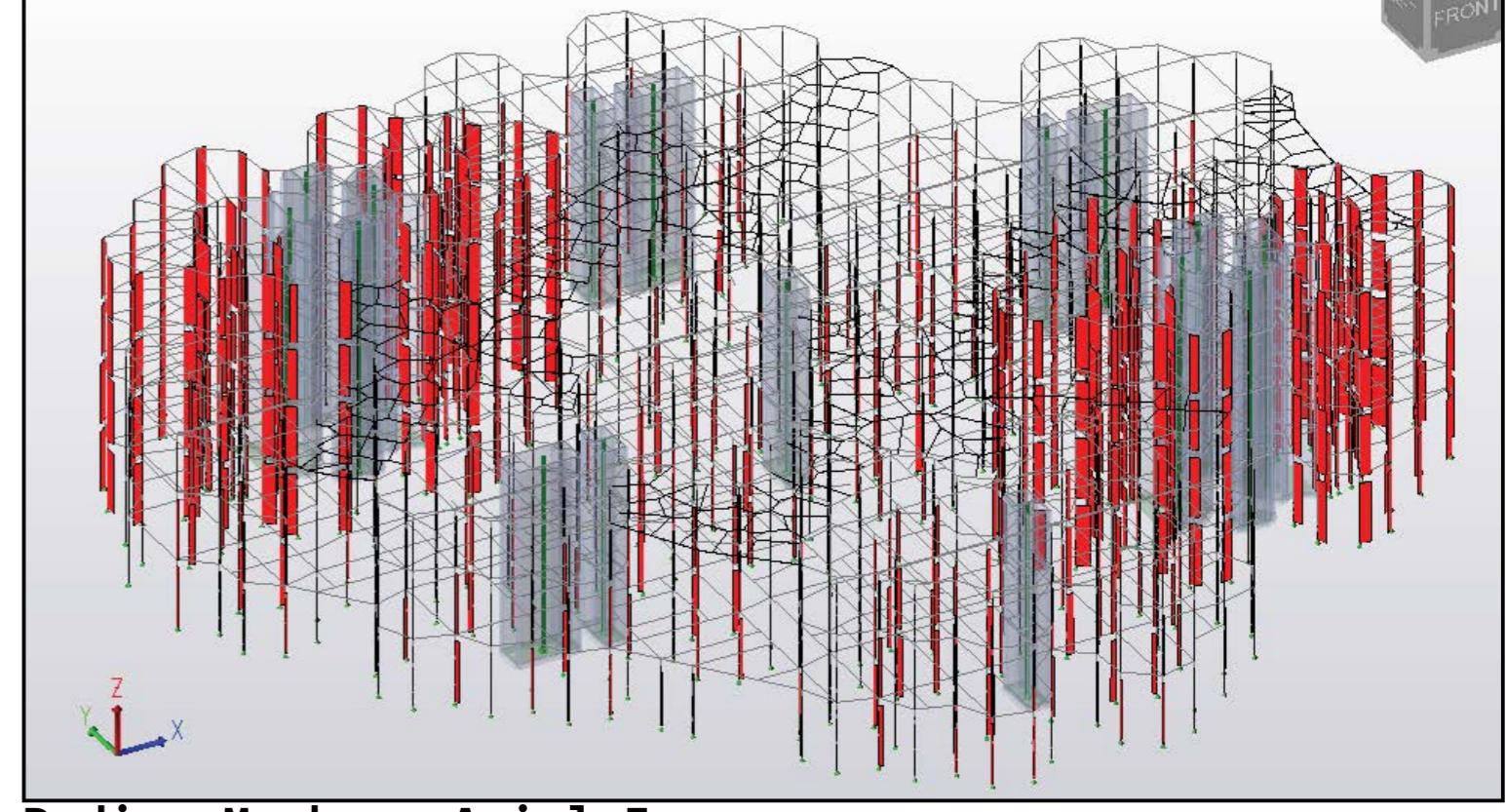


Site Plan Layout



Tower Structural Model Layout

First-order linear - 25 STR_{3.4}-1.35G+1.5Q+1.5RQ+EHF_{Dir2-} Member Axial Force : [-490.3/13265.6kN]



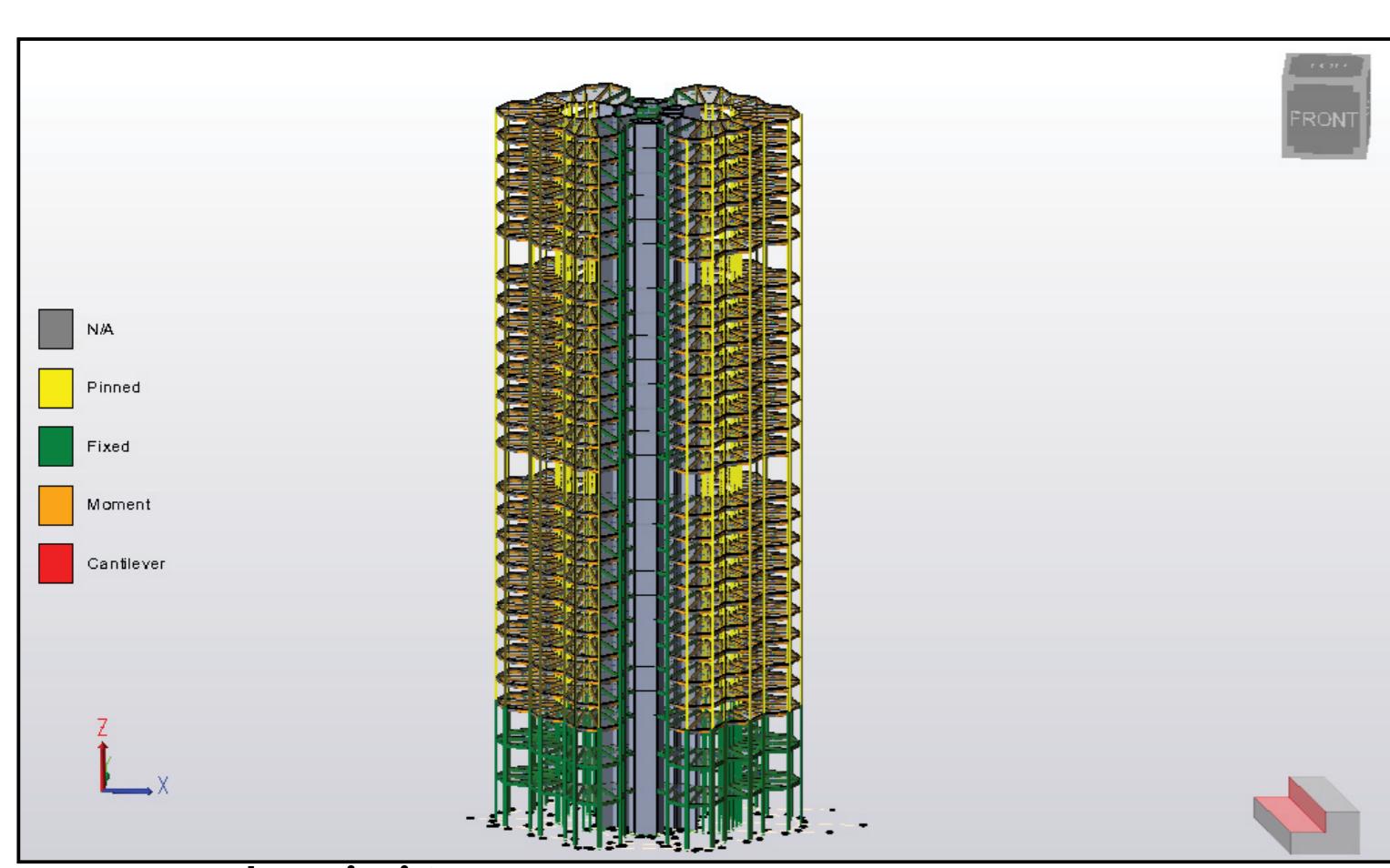
Podium Members Axial Force



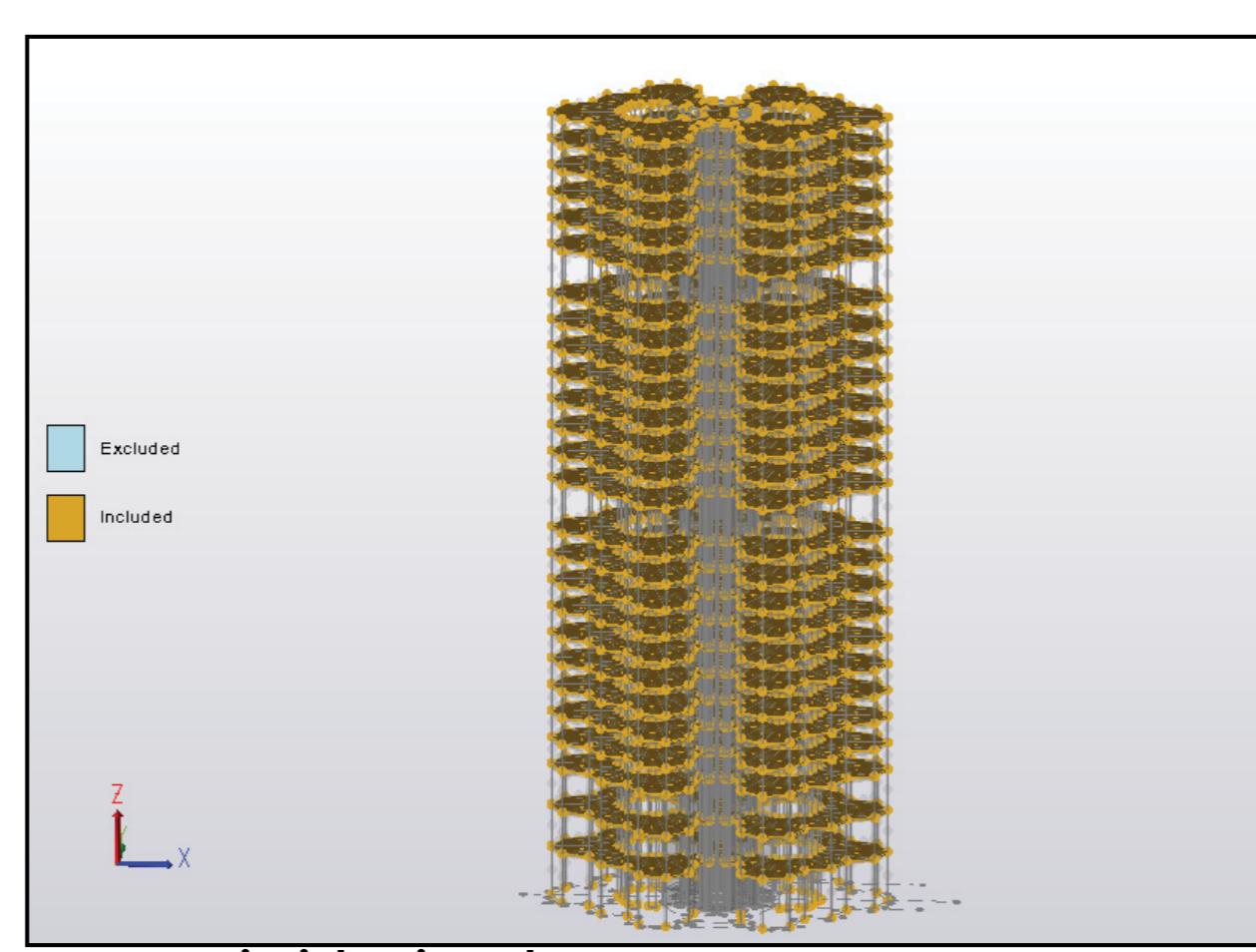
Podium Second Level Floor Plan



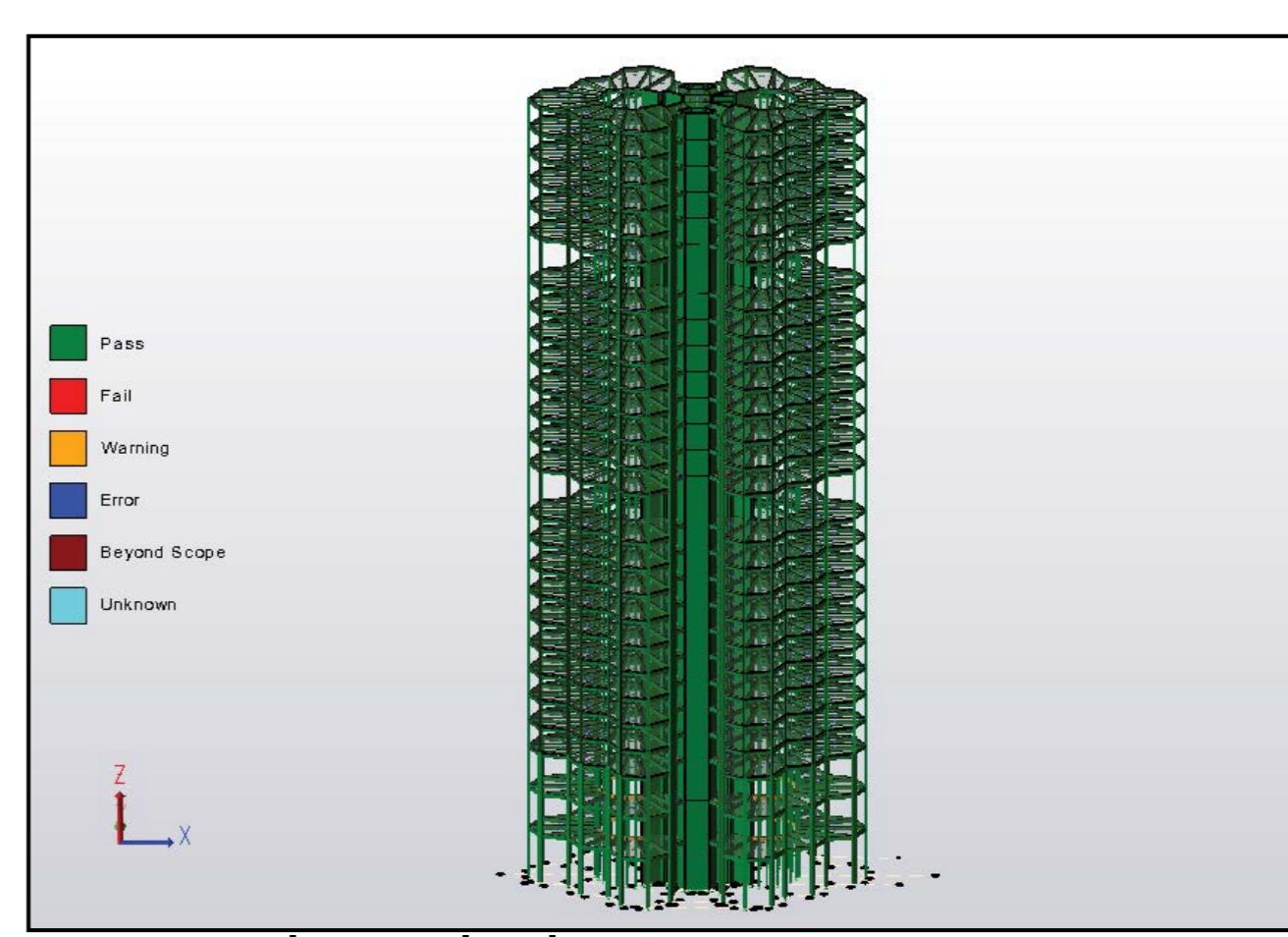
Podium Roof Level Plan



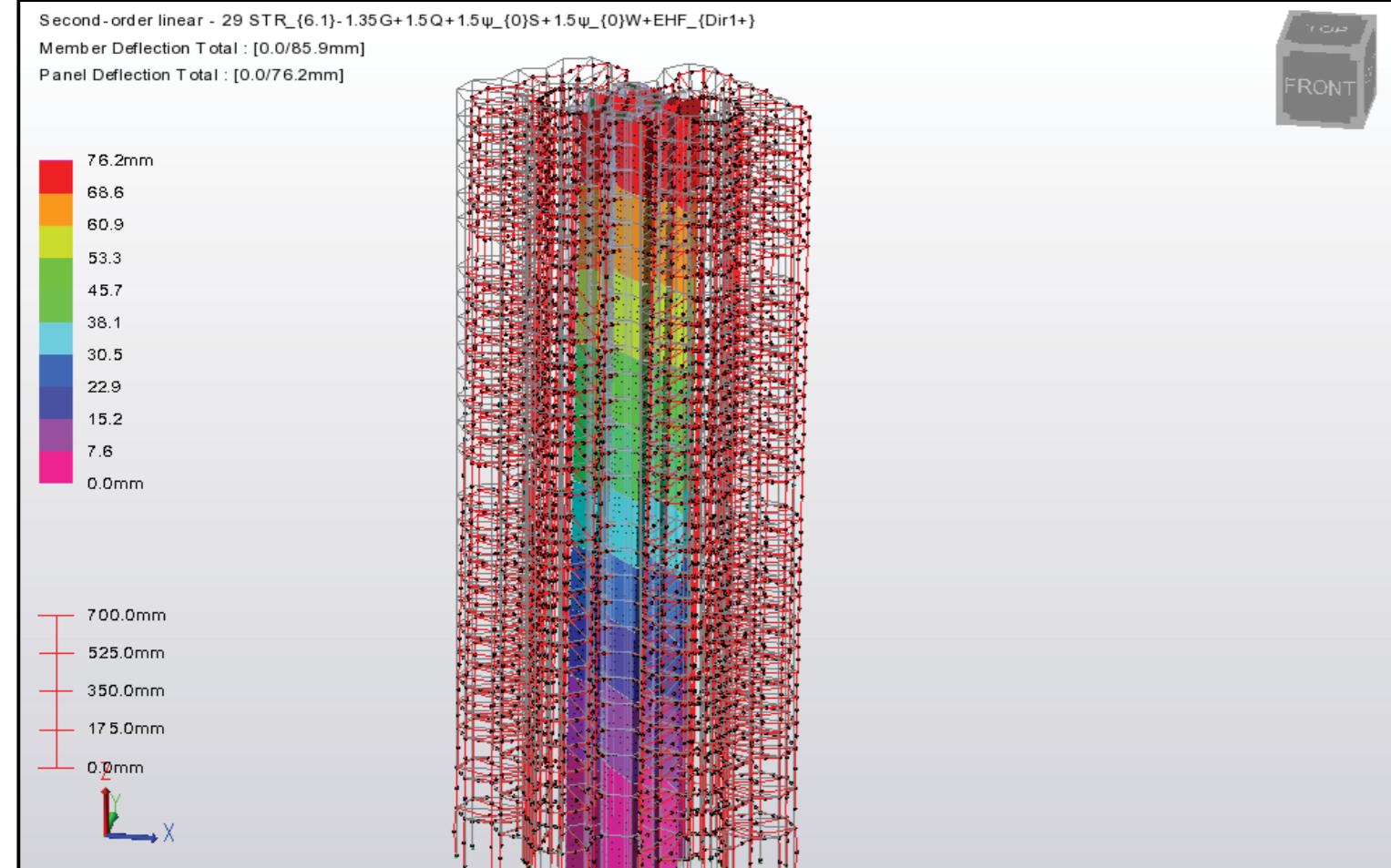
Tower Ends Fixity



Tower Rigid Diaphragm



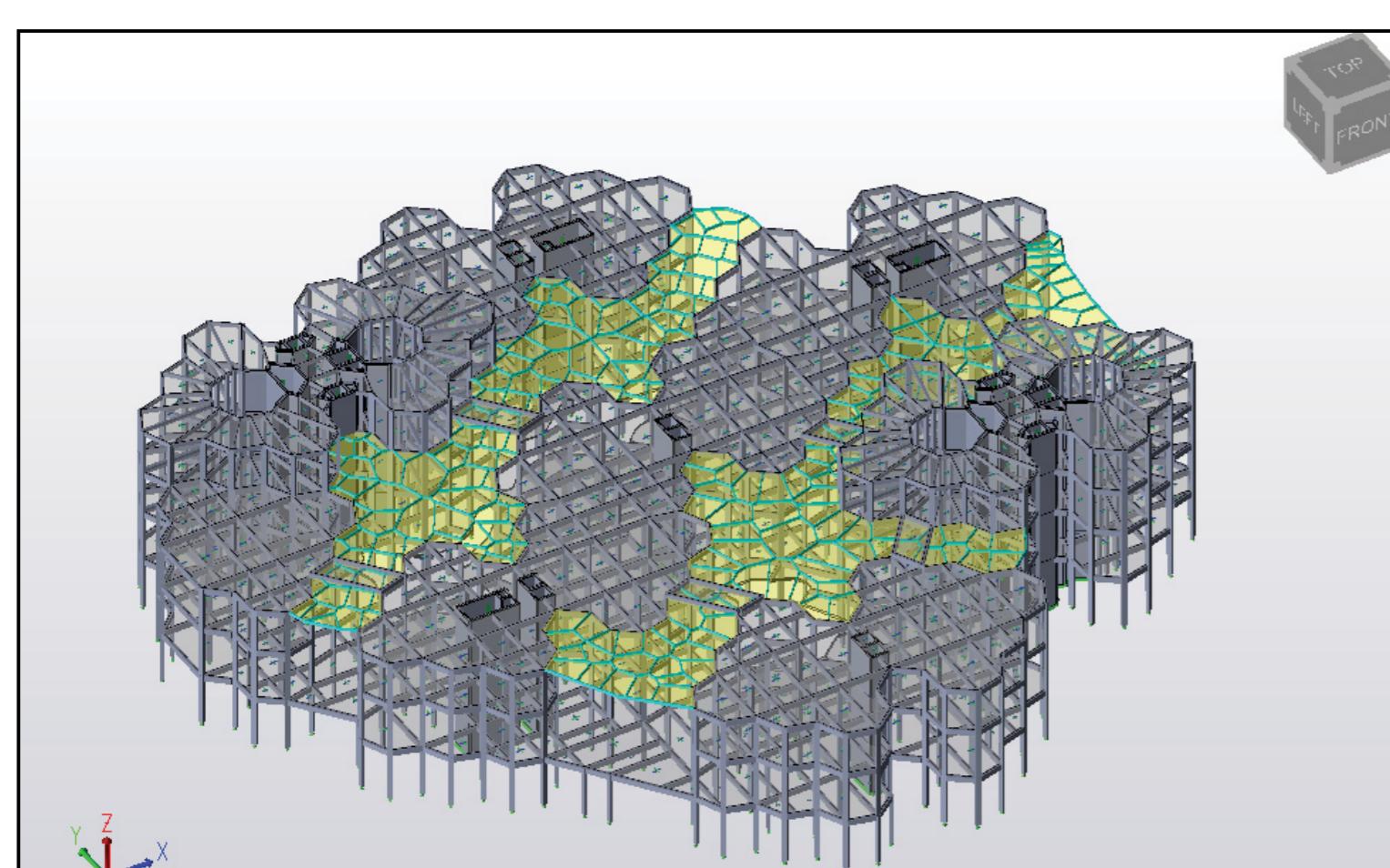
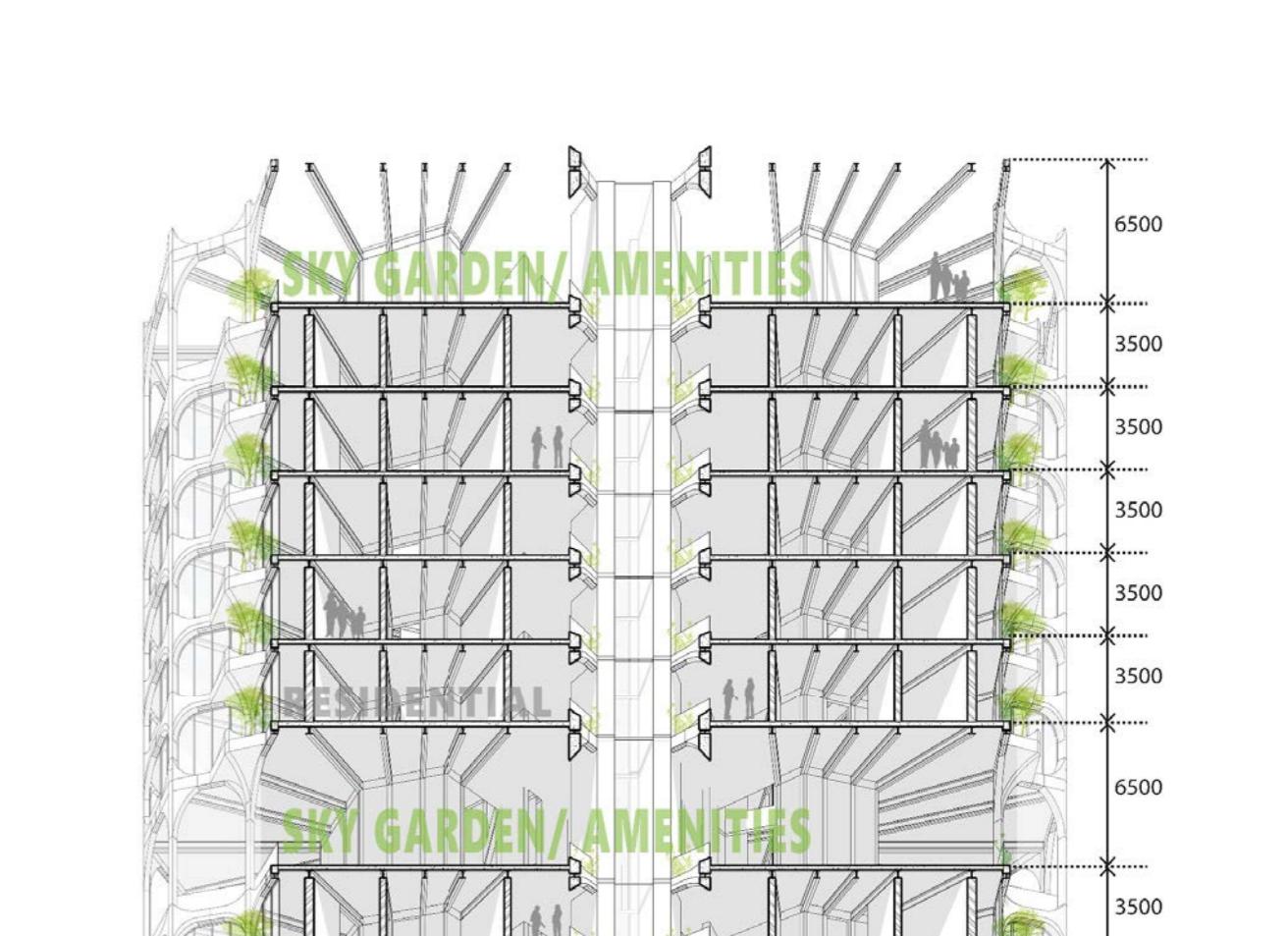
Tower Members Check



2nd Order Linear Deflection Analysis



Podium Members Design



Podium and Roof Structural Model

