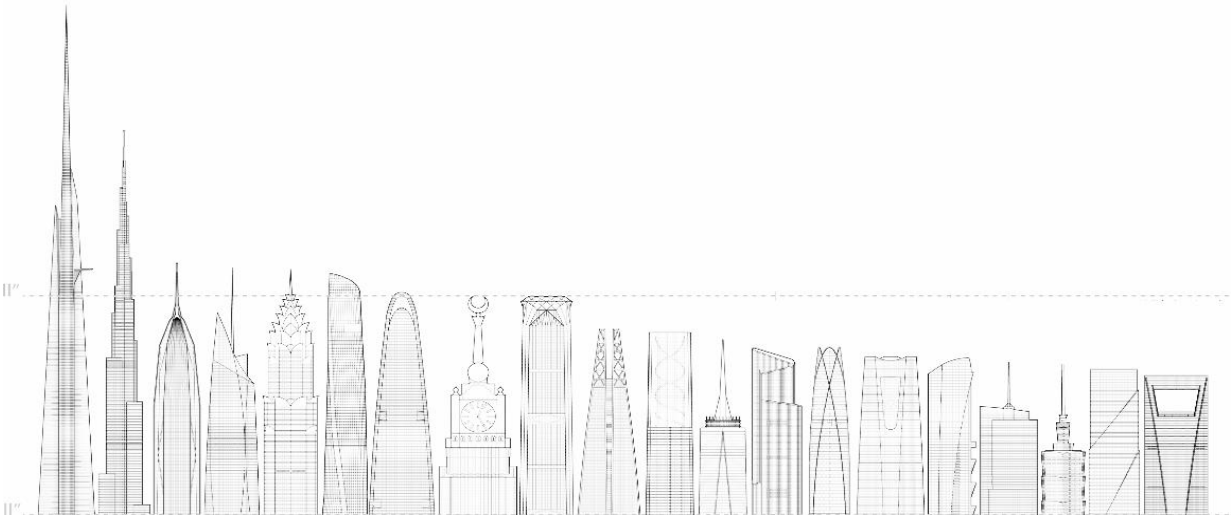
Structures of Tall Buildings



Starting from the first skyscraper, the 55-meter-high Home Insurance Building with 12 stories, the title of World's Highest Building has been assigned to 15 different buildings in 4 different countries within 125 years. First 113 years of this period, United States of America kept holding the record alone with a 390-meter improvement in their buildings. In following 12 years, mankind succeeded to rise up another 390 meter and reach up to 830 meters. Today, 142 supertalls (tall buildings higher than 300 meters) are existing throughout the World and more than 100 of them are under construction. In other words, despite substantial complaints about tall buildings, another supertall will rise up in every fifteen days in next 4 years. Respecting the vertiginous journey of tall buildings, this presentation summons the engineers, architects, planners, and developers to be prepared for the next frontier of the princesses of structures. Their design considerations, materials and structural systems; namely shear frame, mega column, mega core, tube, outriggered frame, and buttressed core systems are presented through case studies including structural system axons, floor plans with dimensions and aspect ratios. Aiming to make a contribution to the participants' understanding of structures of tall buildings, a broad overview of supertalls, including but not limited to irregular forms with complex geometries will be provided.