Thornton Tomasetti is providing structural engineering and curtain wall peer review services for one of the world’s most distinctive and innovative high-rise buildings. The mixed-use development comprises 380,000 square meters and at 632 meters is one of the world’s tallest buildings under construction. The facility will house Class-A office space, retail, a luxury hotel, 2,200-seat arena, the world’s highest non-enclosed observation deck, and have connections to the Shanghai Metro and three floors of below-grade parking.

Thornton Tomasetti engineered a simple, safe and cost-effective structural system that enables a creative architectural form. The exterior of the tower has a twisting triangular shape, tapering with height, which drapes around an inner concrete structure comprising nine cylinders stacked one on top of another. The project team developed an efficient design of super-columns with outriggers that also support the twisting-form curtain wall. The outrigger trusses and super columns derive stiffness from the concrete inner building, comprising an effective system for resisting wind and seismic loads for supertall buildings.

The project incorporates the latest sustainable technologies, including wind turbines and solar panels as renewable energy sources to achieve a low carbon footprint. The project will seek LEED Gold certification by the China Green Building Council (in association with the USGBC).