Wilshire Grand Center, Los Angeles

“Wilshire Grand’s ‘Crown sail’, will be the crowning achievement of the Los Angeles skyline for many years.”

OWNER: Hanjin International Corporation
PBD CONSULTANT: Thornton Thomasetti
ARCHITECT: AC Martin Patners, Inc.
CONTRACTOR: Turner Construction

PROJECT DESCRIPTION
The Wilshire Grand Center is a 73-story steel tower in downtown Los Angeles with a project budget of $1.3 billion dollars. It is the tallest building west of the Mississippi and the tallest building in the United States outside of New York City and Chicago. The Tower and Podium structure are approximately 2 million square feet of Hotel, office, retail and parking. The upper 43 stories are for 900 hotel rooms and the lower 30 stories are for office. The structure has a 5 level subterranean parking structure for approximately 1,000 vehicles. The building will receive LEED GOLD Certification.

PROJECT CHALLENGES
How do you design the tallest building west of the Mississippi River on a sloping site at one of the busiest corners in Downtown Los Angeles, adjacent to a major subway, with a pencil thin aspect ratio of 9-to-1?

You need a GRAND solution!

IMPACT ON THE PUBLIC
The Project has highlighted the importance of Structural Engineering from start to finish. It made an immediate impact with its “Grand Pour” over President’s Day weekend in 2014. When the Guinness Book of World Records certified it as the largest continuous concrete pour, it brought to the attention of the public that Los Angeles would soon have the tallest building in the United States west of the Mississippi River. Over the next 2½ years, the residents of LA watched the structure climb over all the other buildings in its prominent location. The completion of the curved glass sail and spire changed the DTLA skyline forever by diverting from the flat top design of all other high-rises in the city. And when it was finished, the 70th floor public hotel lobby and 73rd floor outdoor bar invite the public to experience the full impact of this new record-setting building.

IMPORTANT STRUCTURAL DESIGN FEATURES
- Hybrid, 73-story structure with concrete core and steel frame
- Concrete core with a 27:1 aspect ratio
- Detailed Performance Based Design
- 180 BRB outriggers at upper, middle and lower levels
- Exterior belt trusses at the upper and lower BRB’s
- Overturning forces distributed to concrete-filled exterior steel box columns
- Elastic shortening of the concrete core mitigated by pre-loading the upper BRB’s
- Podium structure separated 15” from tower along undulating glass/steel roof
- Grade difference of 37ft. at the base of the building
- Mat foundation up to 18ft. thick included cooling piping to allow a single pour
- Glass & steel crown sail cantilevers 85ft. above the concrete core
- 258 ft. tall steel spire cantilevers 173 ft. above the crown sail
- Tactical approach helipad in lieu of flat roof

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