

### ***Wind Analysis and Code Consulting Expertise Enable RJA to Design the Appropriate Fire and Life Safety Package for High-Rise Complex***

**Challenge.** The Infinity Towers is a high-rise, mixed-use residential complex nearing completion at 300 Spear Street in San Francisco, California. The project incorporates four buildings: two high-rises of 37 and 42 stories, respectively, and two mid-rise towers of eight and nine floors. The mid-rise towers are being constructed atop a podium structure that will contain a five-story, below-grade parking garage. The site is bound on three sides by public streets.

The high-rise tower elements of the project will stand far above the current high-rise structures in the area of the city between the Embarcadero waterfront and Spear Street and will serve as a stunning introduction to San Francisco for people entering via the Bay Bridge. The architectural design is a collaborative effort between the architectural firms Heller Manus Architects and Arquitectonica.

Construction began in April 2005, with a phased opening beginning in late 2007 and final completion scheduled for the latter part of 2008. Excavation for the massive five-story underground parking lot and foundation took nearly seven months, during which time a buried 1818 whaling ship was unearthed just to the south of Spear Street. It was later identified that the future complex is located over land that was once a harbor. This discovery delayed the project as maritime archeologists came to the construction site to dig up the remnants of the whaling ship.

**Solution.** To address the unique fire and life safety needs of this project, Tishman Speyer Properties contracted with Rolf Jensen & Associates (RJA) to provide a full services package, including building code consulting, smoke control system design, and design of the fire alarm and fire detection systems for the complex.

One of the unique challenges was the incorporation of operable windows and sliding glass patio doors in the building's architectural design. When RJA was designing the complex's smoke control system, RJA needed to ensure that these windows and doors met the requirements of the California Building Code and San Francisco Fire Department amendments to the state code.

RJA analyzed several design scenarios utilizing CONTAMW wind analysis software. This enabled RJA to show how prevailing wind speed and direction impacted the recommended smoke control design approaches, using exhaust or pressurization methods.

**Result.** RJA was able to show that the high-rise towers met code requirements associated with the amount of force exiting occupants needed to exert to open doors under various climatic conditions while the towers were in smoke control mode.

RJA also recommended having the fire alarm/life safety system for the complex operate from a single fire command room located in one of the mid-rise towers. The use of "distributed system" architecture minimizes space requirements in the fire command room, while providing a fire detection and emergency voice communication system. By doing so, a single point of failure would have a minimal impact on the life safety systems in each tower.

RJA suggested locating remote LCD annunciators, matrix style graphic annunciators, and a firefighter's communication system handset in the first floor elevator lobbies of each of the four tower buildings. This was intended to provide the San Francisco Fire Department with a point of remote access to the fire alarm systems for each respective tower and communication with the centralized fire command room.

By providing fire and life safety code consulting up front to ensure compliance with relevant codes, and by recommending additional safety measures in case of emergency, RJA has gone beyond the basics to ensure that The Infinity Towers residents, tenants and guests are fully protected.



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- Fire Protection Design
- Code Consulting



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