

## *Mixed-Use Development Relies on Expert Fire Modeling Analysis*

**Challenge.** By summer 2008, the doors will open to the MGM Grand at Foxwoods, a breathtaking \$700 million mixed-use, high-rise project that will adjoin the Foxwood Resort and Casino in Ledyard, Connecticut. The MGM Grand will consist of an 825-room hotel tower, a 50,000 square foot casino, a 21,000 square foot spa, a ballroom, an additional 145,000 square feet of meeting space, various retail stores and restaurants, a nightclub, and a multi-purpose event center space. The building area is approximately 1.3 million square feet with an additional 710,000 square feet in parking garage — totaling nearly 2 million square feet of overall space.

As a mixed-use, high-rise building, the project presented a few key challenges. The 4,000-seat theater and its entry point, the pre-function atrium, necessitated smoke analysis assessment. The smoke control system would have to be provided in accordance with the International Building Code (IBC) and Life Safety Code (LSC). The size and type of facility also called for specific requirements for egress, fire and life safety features.

**Solution.** To address the smoke control requirements of the IBC and the LSC, Rolf Jensen & Associates (RJA) performed computer fire modeling analysis of both the proposed theater and atrium space. RJA developed a model that summarized the program by inputting assumptions, fire scenarios, tenability criteria, and requirements for approval by the design team members and the building and fire departments. RJA's performance-based testing demonstrated code compliance for smoke protected seating and atrium space while maintaining a tenable environment in the means of egress.

RJA services also included a fire protection report, which summarized the major fire/life safety requirements and features. The report also identified items that required clarification or that could utilize an equivalency concept to achieve equal or superior life safety as intended by the codes and Authority Having Jurisdiction. The report was updated during the design of the project to incorporate decisions reached during jurisdictional meetings and include other specific design issues, such as fire protection requirements, sprinkler requirements, fire alarm, detection and annunciation requirements, and approved equivalencies.

RJA prepared a master egress study, which identified building construction features, rated partitions, building occupant loads, stair width, and locations and widths of key exiting components, to demonstrate methods of egress were code compliant.

**Result.** RJA has successfully worked on many large mixed-use, high-rise projects by assisting design teams with negotiations and addressing developer requirements for fire/life safety and fire protection features, which uniquely qualified RJA to assist MGM Grand. RJA's extensive experience with smoke control system designs and fire/life safety issues for mixed-use, high-rise facilities greatly contributed to the success of this project.



- Fire Protection Design
- Code Consulting
- Performance-Based Design



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