

### *U.S. Capitol Project Requires Innovation from RJA*

**Challenge.** The U.S. Capitol building, one of the nation's most recognizable structures, began its storied history when President George Washington placed its cornerstone in September 1793. The first phase of construction was completed in 1800, allowing Congress to meet there for the first time. Construction started again in 1803, which led to completion of its north and south wings.

British troops tried to burn it down during the War of 1812 and since then, renovations have taken place regularly, including expansions, repairs from additional fires, and replacement of the central dome. Nationally recognized as the centerpiece of Capitol Hill, the building has about 16.5 acres of floor area and houses meeting chambers for the Senate and the U.S. House of Representatives.

About eight years ago, Rolf Jensen & Associates (RJA) joined forces with architects at Beyer Blinder and Belle and the curators and historians of the Architect of the Capitol to provide fire safety expertise for code improvements at the U.S. Capitol. RJA specifically provided fire protection and life safety master planning, computer based fire and egress modeling, code consulting, and master plan implementation. The challenge was devising solutions that would address fire and life safety issues while maintaining the historic fabric of the building.

RJA first determined what fire and life safety issues existed at the Capitol and then participated in developing solutions.

One such issue was the Capitol's Grand Stairs, the large, open staircases that are a beautiful focal point in the structure. Because the stairs serve as a main egress route, life safety code requirements mandate that the stairs be enclosed. Enclosing the stairs was not a preferred option from a historic viewpoint however, because it would change the nature of an important, historic architectural feature.

**Solution.** Based on computer oriented fire and timed egress modeling, RJA proposed a smoke purge system be installed at the top of the Grand Stairs, to be specifically sequenced to remove smoke from the egress routes, depending on the location of the fire and its migration of smoke into the building. This idea basically converted the Grand Stairs into huge chimneys in case of a fire. This solution provides safe egress in the event of a fire while maintaining the Grand Stairs' historical appearance.

**Result.** Through collaboration with other master plan team members, including historians, curators and architects, RJA assisted in developing improved fire and life safety for the structure while maintaining its historic integrity. The Grand Stairs and other projects require unique solutions because of the building's landmark status and complexity of its architecture. Currently, RJA has 12 ongoing design projects to correct deficiencies and improve fire and life safety at the Capitol. Many will require innovative thinking and collaboration with others to bring them to fruition. Dedication to providing viable solutions for fire and life safety issues, such as those at the U.S. Capitol, has enhanced RJA's already solid reputation.



- Code Consulting
- Fire Protection Design



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