

Project: Evergreen Imax Theater

Location: McMinnville, OR

Architect: Scott/Edwards Architecture, LLP

Products: Fireframes® Curtainwall Series (walls) and Fireframes® Heat Barrier Series (doors) with Pilkington Pyrostop® glass firewall



As part of its mission to inspire and educate people, and promote and preserve aviation history, the Evergreen Aviation and Space Museum – home of the world-famous Spruce Goose airplane – constructed a new facility with a 232-seat IMAX theater, conference center and open gallery space for displaying historic aircraft. The new building is a scaled replica of the adjacent massive hangar that houses the Spruce Goose, along with more than 85 vintage and modern aircraft. Both buildings incorporate glazing as a key design feature throughout, with multi-story curtain walls on their fronts to provide views into the interior from the nearby highway and adjoining parking areas.

The project's architects, Scott/Edwards Architecture, LLP, of Portland, Oregon, created an open interior design for the theater building that reflects the spirit and inspiration of flight. An 80-foot tall atrium is enclosed by glass on the north and south sides, and the lobby and two mezzanine levels open onto it, where biplanes and triplanes are suspended from the ceiling. To provide sweeping views of the interior and preserve the expansive feel of the space, the architects designed two open staircases. An enclosed staircase set in the back of the building would provide emergency egress in case of a fire.

During construction, the building management team requested a design change that eliminated the enclosed emergency stairs at the back of the building. To meet building codes, the architects were required to redesign one of the existing open staircases to provide a fire-safe exit. That late in the project, enclosing one of the very prominent staircases with masonry, gypsum or similar fire-blocking materials would have conflicted with the overall building design and marred a dramatic feature – three-story-high stairs that opened onto the atrium. To address this challenge, the architects proposed instead to use fire-rated glass and frames to enclose the stairs.

To meet the various design and code requirements for the enclosed staircase, the fire-rated glass had to do quadruple duty: 1) be clear and wireless with frames that matched the building's exterior glazed curtain wall as closely as possible; 2) block the spread of flames and smoke for up to two hours; 3) shield people exiting the building from the high heat of a structural fire; and 4) provide safety impact resistance since the glass would be in a floor-to-ceiling configuration.

Scott/Edwards found the solution with Pilkington Pyrostop® fire-rated glass and Fireframes® Curtainwall Series fire-rated frames from Technical Glass Products (TGP), Snoqualmie, Washington. The glass looks like ordinary window glass and provides a clear view in and out of the stairs. The curtain wall frames and doors are sleek and slender, unlike the bulky wrap-around style of traditional hollow metal steel. Together, the glass and frames are fire-rated for two hours and meet the highest impact safety ratings for glazing – CPSC 16CFR1201 Category II.

The doors leading to the stairs on each level also were required to be fire rated. For this application, the architects used 90-minute Fireframes Heat Barrier Series doors from TGP with Pilkington Pyrostop glass. While somewhat heavier than a traditional aluminum door assembly, the ability to provide narrow stile, full-lite fire doors meant the architect could meet all of the performance and aesthetic requirements of the project.

The architects report that the museum owners were pleased with the fire-rated glazing, which looks identical to a second, non-fire-rated glass staircase enclosure. "The TGP products integrated well with the overall design," said Jeff Hammond, project manager with Scott/Edwards Architecture. "The custom colors and frames matched the aesthetics of the other glazing used throughout the project, including the large curtain walls on the front and back of the building."

