

## Actual Delivered Density (ADD) Testing of High-Volume Low-Speed (HVLS) Ventilation Fans

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This paper will describe the results of a project conducted at Southwest Research Institute<sup>®</sup> (SwRI<sup>®</sup>) in September 2008, in conjunction with Schirmer Engineering Corporation, on behalf of the Fire Protection Research Foundation (FPRF). Testing was conducted in accordance with Schirmer's Test Plan (SEC Project No.: 2008079-000), dated August 5, 2008.

The main objective of the testing was to explore effect of HVLS fans on sprinkler spray. Testing was conducted in general accordance with Section 30 of UL 1767, *Early-Suppression Fast-Response Sprinklers (2005 Edition)*. Specifically, test configuration number 2 and 8, from UL 1767, were used to evaluate the effect of a HVLS fan on the actual delivered density from the sprinkler(s).

The basic test setup from UL 1767 was employed, with the addition of a 20-ft diameter HVLS fan installed in various locations at the ceiling. The following table provides a summary of the tests conducted.

Test	Total Number of Sprinklers	Sprinkler Spacing	Horizontal Offset from Sprinkler	Vertical Offset from Sprinkler Deflector	Estimated % Obstruction
1	1	N/A	NO FAN	NO FAN	0
2	1	N/A	1 ft	3 ft	38%
3	1	N/A	1 ft	3 ft	38%
4	1	N/A	NO FAN	NO FAN	0
5	2	N/A	NO FAN	NO FAN	0
6	2	12 ft	6 ft	3 ft	19%
7	2	12 ft	6 ft	5 ft	19%

The ceiling sprinkler(s) were installed approximately 1 ft below the moveable ceiling. The ADD water collection bins were installed on the floor, such that a clear distance of 15 ft was measured between the top of the collection bins and the sprinkler deflector(s).

The SwRI ADD test setup and results from this project will be discussed and test data, photographs, and video will be shared in the presentation.