



HILLFIRE FORENSICS

STEPHEN M. HILL, P.E.

Owner, Fire Protection Engineer

Education

M.S., Fire Protection Engineering,
University of Maryland, 1997

B.S., Fire Protection Engineering,
University of Maryland, 1995

Registered PE

WV, No. 18586 (2010)

Associations

- Member, National Fire Protection Association (NFPA)
- Member, Society of Fire Protection Engineers (SFPE)
- Member, International Association of Arson Investigators (IAAI)
- Member, Maryland Fire and Explosion Investigator's Association (MFEIA)
- Member, National Fire Investigators Association (NAFI)

Awards

Manager's Award, RJA, 2013
Young Engineer of the Year,
Engineering Society of Baltimore,
2001

Best Paper Award, 2nd International
Conference of Fire Research and
Engineering (ICFRE2), 1999

Contact

Hillfire Forensics, Inc.
P.O. Box 531
Olney, MD 20830-0531
C: (240) 338-7599
stephill@hillfireforensics.com

Stephen Hill, P.E. is the founder and owner of Hillfire Forensics, Inc., established in Olney, Maryland in 2021. A licensed Fire Protection Engineer, Mr. Hill focuses primarily in the areas of forensics and fire protection engineering, providing litigation support services involving fire and explosion investigations and fire protection system performance. In addition to subject matter expert work, Mr. Hill has experience in building, fire and life safety code consulting, performance-based design, fire protection system commissioning, inspections and property condition assessments.

PROFESSIONAL HIGHLIGHTS

Owner, Fire Protection Engineer, Hillfire Forensics, Inc., Olney, MD (2021 – Present). Conducts investigations of fires and explosions, provides litigation support services, expert witness testimony and fire forensic / fire protection engineering analysis for post-fire and explosion losses. Types of support include fire protection system failure analysis, building, fire and life safety code compliance assessments, heat transfer, fire dynamics, fire growth and spread analysis, computer fire and egress modeling, structural fire protection and building materials evaluations, and design and execution of fire tests.

Vice President, Fire Forensics, Jensen Hughes, Baltimore, MD, (2020 – 2021); Regional Director, Fire Forensics-East (2019); Senior Consultant, 2009 –2018). Managed company-wide fire forensic services, leading a team of fire investigators and engineers. Provided litigation support services: evaluation of construction deficiencies, fire protection system failure analysis, kitchen hood duct and fire suppression system analysis, product liability and loss investigations. Responsible for: fire scene documentation, code review, scientific and failure analyses, fire modeling, generating technical reports, expert witness testimony, and designing and executing fire tests. Conducted Computational Fluid Dynamics (CFD) fire modeling and egress modeling analyses. Performed internal peer reviews of fire and egress models. Prepared engineering judgments and building code modification requests. Conducted building and life safety code analyses and property condition assessments for fire and life safety.

Principal, CORE Engineers Consulting Group, Inc., Washington, DC, 2008–2009. Conducted building and life safety code analysis. Performed analyses and prepared technical reports/building code modification requests justifying performance-based designs to authorities having jurisdiction. Reviewed architectural drawings and construction documents to determine compliance with fire protection, life safety, and ADA requirements. Conducted third-party acceptance testing for fire alarm, smoke control, and fire suppression systems.

PROFESSIONAL HIGHLIGHTS (CONTINUED)

Fire Protection Engineer, Forensic Fire Analysis, LLC, Olney, MD, 2006–2009. Provided post-fire incident investigation support. Activities included: documentation of fire scene, code review, performing scientific analyses, conducting fire modeling, generating technical reports, providing expert witness testimony, and designing small- and full-scale fire tests.

Fire Protection Engineer, Lourenco Consultants, Inc., Washington, DC, 2006–2008. Conducted third-party plans review and inspections of fire protection and life safety systems. Types of review and inspection include: suppression, fire alarm, life safety and smoke control systems. Provided third-party reviews of performance-based designs. Analyzed: fire growth and dynamics, fire modeling, structural integrity, heat transfer and timed egress analysis. Performed building and life safety code analyses.

Fire Research Engineer, United States Department of Justice–Bureau of Alcohol, Tobacco, Firearms and Explosives, Beltsville, MD, 2000–2006. Provided on-site technical investigative support relating to incidents involving arson or accidental fires resulting in large loss of life or significant property damage. Conducted research and other investigative work on the prediction of fire hazard development, fire risk evaluation, performance design and acceptance, evacuation analysis, performance of materials, and fire model development. Supported fire investigations and resolution of fire-related crimes using professional engineering methods to reconstruct fire development in buildings, structures and other facilities, including the development and design of fire tests and/or computer programs. Equipped special agents, certified fire investigators, U.S. attorneys and district attorneys with technical advice in the prosecution of arson incidents. Testified as an expert witness for grand juries and trial courts for violations relating to the behavior and dynamics of fire. Supervised student interns, and was an active member of ATF National Response Team. Developed and instructed course segments to ATF Certified Fire Investigator (CFI) Candidates, CFIs, and state and local investigators.

Fire Protection Engineer, Schirmer Engineering Corporation, Arlington, VA, 1997–2000. Conducted performance-based designs using state of the art computer fire modeling programs, egress modeling, heat transfer, and other theoretically-based analyses. Prepared technical reports and building code modification requests justifying performance-based designs to authorities having jurisdiction. Cooperatively developed and presented company-wide training program for BRI2 computer fire model. Reviewed architectural drawings to determine compliance with fire protection, life safety, and ADA requirements. Provided litigation support services including laboratory testing and technical analyses for fire loss investigations. Analyzed test data and reconstructed fire scenarios; presented results for use in expert witness testimony. Conducted third-party acceptance testing for fire alarm, smoke control, and fire suppression systems.

COMMITTEES

National Fire Protection Association

Chair, Technical Committee on Dry and Wet Chemical Extinguishing Systems (DRY-AAA), NFPA 17/17A
Principal, Technical Committee on Venting Systems for Cooking Appliances (VEN-AAA), NFPA 96
Principal, Technical Committee on Portable Fire Extinguishers (PFE-AAA), NFPA 10

Society of Fire Protection Engineers

Fire Model Selection Task Group
Forensics Task Group
Membership Committee

NOTABLE PUBLICATIONS AND PRESENTATIONS

Hill, S. et al, "Mechanism for Localized Floor Burn-Through", *Journal of Fire Sciences, Special Issue Article*, Vol 35(5) 345-358, 2017

Hill, S.M., "Mechanism for Localized Floor Burn-Through", *International Symposium on Fire Investigation Science & Technology, Proceedings, National Association of Fire Investigators (NAFI)*, Scottsdale, AZ, 2016

Hill, S.M. et al., "Fire Exposure Impact on New Cantilevered Buildings" *National Fire Protection Association World Conference and Expo*, Chicago, IL, 2015

Hill, S.M., "Forensic Loss Investigations," *New Jersey Chapter of the Society of Fire Protection Engineers – East Hannover*, NJ, 2014

Hill, S.M. and Whitman, S.J., "Justification of a Natural Ventilation Smoke Control Design for a Complex Atrium" *National Fire Protection Association World Conference and Expo*, Chicago, IL, 2013

NOTABLE PUBLICATIONS AND PRESENTATIONS (CONTINUED)

- Hill, S.M. and Lord, J., "Dynamics of Slow Ignition Scenarios," *Maryland Fire and Explosive Investigator's Association (MFEIA) Training Seminar*, Frederick, MD, 2013
- Hill, S.M., "Investigation of Fires Caused by Self Heating and Spontaneous Ignition," *University of New Haven SFPE Student Chapter 3rd Annual Technical Seminar*, New Haven, CT, 2013
- Hill, S.M., "Case Study Example Using SFPE Guidelines for Substantiating a Fire Model for a Given Application," *Society of Fire Protection Engineers Annual Meeting*, Portland, OR 2011
- Hill, S.M., "Case Study Example Using SFPE Guidelines for Substantiating a Fire Model for a Given Application," *Thunderhead Engineering Fire and Evacuation Modeling Technical Conference*, Baltimore MD, 2011
- Hill, S.M., "High Speed Pressure Measurements of Fuel-Air Explosions," *California Conference of Arson Investigators*, San Luis Obispo, CA, 2005
- Hill, S.M., "Fire Dynamics Predictions," *IAAI 56th Annual Training Conference – ATF Lab Tour*, Ammendale, MD, 2005
- Hill, S.M., "Smoldering Combustion," "Spontaneous Ignition," and "Response of Materials to Fire," *ATF Certified Fire Investigator Candidate (CFIC) Enclosure Fires Course*, Ammendale, MD, 2003, 2004, 2005
- Hill, S.M., "The ATF Fire Research Laboratory – Forensic Fire Science in Support of Investigation," *IAAI 2003 Indiana Fire and Arson Conference*, Indianapolis, IN, 2003
- Hill, S.M., "Computer Fire Modeling and Arson Investigation," *Prince William County Public Safety Academy*, Prince William County, VA, 2001
- Hill, S.M., "Basic Concepts in Enclosure Fire Dynamics," *IAAI Virginia Annual Seminar*, Williamsburg, VA, 2001
- Hill, S.M. et al., "Characterization of an Infrared Spectrograph for Non-Contact Thermometry Applications Using a Sodium Heat Pipe Blackbody", *Thermosense XXIII, Proceedings, International Society for Optical Engineering (SPIE)*, Orlando, FL, 2001
- Hill, S.M. et al., "Atrium Smoke Control Design – BRI2 Zone Fire Modeling versus FDS Field Modeling and Concerns with FDS", *Third Technical Symposium on Computer Applications in Fire Protection Engineering. Proceedings. Society of Fire Protection Engineers*, Baltimore, MD, 2001
- Hill, S.M. et al., "Investigating Materials from Fires Using a Test Method for Spontaneous Ignition," *Fire and Materials*, **24** (1), January/February 2000
- Hill, S.M. et al., "Analysis of Smoke Layer Properties During the Transient Filling Period in Atria and Other Large-Volume Spaces", *International Conference on Fire Research and Engineering (ICFRE2), 2nd. Proceedings. National Institute of Standards and Technology (NIST) and Society of Fire Protection Engineers (SFPE)*, Gaithersburg, MD, 1997; Boston, MA, 1998
- Hill, S.M. et al., "Investigating Materials From Fires Using a Test Method for Spontaneous Ignition: Case Studies", *Fire and Materials '98 International Conference, 5th. Proceedings. Interscience Communications Ltd.*, San Antonio, TX, 1998
- Hill, S.M. et al., "Investigating Materials from Fires Using a Test Method for Spontaneous Ignition: Case Studies," *International Conference on Fire Research and Engineering (ICFRE2), 2nd. Proceedings. National Institute of Standards and Technology (NIST) and Society of Fire Protection Engineers (SFPE)*, Boston, MA, 1997
- Hill, S.M. et al., "Full-Scale Room Fire Experiments Conducted at the University of Maryland", *National Institute of Standards and Technology*, 1996
- Hill, S.M., "Investigation of Materials from Fires Using a Test Method for Spontaneous Ignition", *Master's Thesis*, 1995