

Awarded Contracts for External Experts to Support the NIST World Trade Center (WTC) Disaster Investigation

Contract No.	Awarded to	Date Awarded
SB1341-04-W-0093	Hughes Associates, Inc. (HAI)	10/30/2003

ANALYSIS OF SMOKE MANAGEMENT SYSTEMS IN WTC BUILDINGS

Under solicitation number SB1341-03-Q-0835, a firm fixed price purchase order has been awarded to Hughes Associates, Inc. (HAI).

Established in 1980, HAI is a fire protection engineering, research, and consulting firm whose experience includes fire hazard and risk analysis, fire modeling, fire protection design, code consulting, product development, and litigation support. HAI's staff has earned an international reputation in the application of advanced technologies to solve both standard and unique fire protection problems.

Specific tasks related to WTC Buildings 1, 2, and 7 that the Hughes team will perform include:

- 1) Document the design and installation of the smoke management systems and compare designs to applicable code and standards requirements.
- 2) Document the normal operation of the fully functional smoke management systems and its potential effect on smoke conditions in WTC Buildings 1 & 2 on September 11, 2001.

HAI's project team includes senior level engineers and staff engineers with extensive experience in the design, specification, installation, testing, and performance assessment of smoke management systems, including new and existing systems. Experience in performance assessment includes (1) quantitative evaluations of system performance using fire models and building airflow models, (2) conceptual design of new or existing smoke management systems (both as the design engineer and as third party peer reviewer), (3) commissioning testing to evaluate the performance of installed smoke control systems and (4) code and standards compliance evaluation of existing systems.

Selected experience of the key personnel assigned to this effort is summarized below:

- Michael J. Ferreira, P.E., Principal Investigator – Mr. Ferreira has over 10 years experience including fire protection engineering R&D, quantitative fire hazards analysis, design and evaluation of smoke management systems and code and standards activities associated with smoke management systems. He is a member of NFPA Technical Committee on Smoke Management Systems and has published numerous technical papers on smoke control system design including the implementation of unique approaches in the application of building airflow and contaminant transport analysis software to evaluate smoke movement and smoke management systems in large complex structures including WTC 1 and 2.
- Mark T. Wright, P.E., Staff Engineer – Mr. Wright has over 5 years experience in the modeling of smoke management systems in large complex structures including high-rise buildings. Other experience includes egress evaluations from large complex structures, code consulting, smoke

control design. He is a member of NFPA, SFPE and is a two-time recipient of the SFPE Scholarship.

- Steve M. Strege, Staff Engineer – Mr. Strege’s experience includes fire/smoke, building airflow and contaminant transport modeling for several large complex structures. Other experience includes egress evaluations from large complex structures, code consulting, on-site fire investigations and the modeling and study of smoke plume behavior under various fire scenarios. He is a member of SFPE, NFPA, University of Maryland College Park Scholars and the recipient of several academic engineering scholarships.
- John A. Lee, P.E., Senior Fire Protection Engineer – Mr. Lee has almost 30 years of experience as a fire protection engineer. His experience includes design and testing installed smoke control systems for conformance to design and building codes. He also acted as a special inspector on several high-rise buildings including smoke management systems.
- Joseph L. Scheffey, P.E., Project QA/QC – Mr. Scheffey has over 20 years of experience in fire hazard analysis, fire/smoke modeling and smoke control system evaluation and is the author of over 100 technical publications.