



## Engineering Sciences Section - 2013

### C36 Forensic Architecture: An Introduction and Case Studies

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After attending this presentation, attendees will learn what forensic architecture is, and how it differs in practice from forensic cases in other fields of science. The presentation will examine how three types of cases were successfully managed.

This presentation will impact the forensic science community by an introduction to forensic architecture with pertinent details of three forensic cases and how they apply to the practice of architecture.

Forensic architecture varies from case to case, but seems to differ from cases in other forensic sciences, as it may involve situations both before and after the occasion of injury, damage, or public disputation.

Situations arising before the occasion tend to be preventive in nature, such as surveys to identify architectural barriers, or the development of standards that serve as guidelines to building safe environments. These cases usually do not become legal situations; however, cases that arise after the occasion of injury or loss due to non-adherence to building codes, regulations and/or construction specifications, usually end up in the legal system.

**Case 1:** A nationally franchised chain leased a building on the main street in a small Pennsylvania town, made interior renovations, and added a ramp from the public sidewalk to the front door. The ramp was constructed in violation of the building code, and the restaurant owner filed for approval of a variance to allow the ramp to remain. The variance was refused but the owner appealed, received a new hearing, and approval of the variance. A citizen filed a petition to deny variance and the case was reopened. When data was analyzed, the ramp was found to be egregiously in violation of the building code (14.4% slope vs. allowable maximum 8.33%) and not a safe wheelchair ramp. As proof, a center-of-gravity study was presented to demonstrate the danger of allowing the center of gravity of a person using a wheelchair to fall behind the point of support, creating conditions whereby wheelchair users would fall backward. Decision is pending from the Administrative Officer of the Pennsylvania Department of Labor and Industry.

**Case 2:** A home modification was necessitated by the tragic aftermath of a child's vaccination, resulting in a little girl suffering from mitochondrial disease, causing developmental delay, seizures, bronchospasm, and an inability to use her limbs. The family, who lives in suburban Atlanta, sued the Secretary of the U.S. Department of Health and Human Services. The Department of Justice undertook resolution of the matter. There was an inspection and analysis of the family's home. Field-measured drawings, photographs, interviews with the family, review of medical records, and observation of professional therapy sessions provided necessary data. A 3D computer model of the home was created and analyzed to provide a design solution and construction cost estimate of reasonable and necessary home modifications. The modifications included a residential elevator, reconfiguration of several rooms, and use of second-story space above the foyer to accommodate an accessible bedroom and bathroom for the child on the second floor, including a ceiling-mounted, motorized personal transport system to move her from bed to bathroom fixtures. Also provided were a small desk space for a nurse and caregivers, and storage for medical supplies. The garage door opening was raised for access by a wheelchair-accessible van, and ramping added for access to the front door and rear patio. A report was presented to the Special Master who accepted the design and settled the case.

**Case 3:** In 1993, three weeks before the official opening of the Holocaust Memorial Museum in Washington, a complaint of non-compliance with the Americans with Disabilities Act (ADA) was received from an advocacy organization maintaining that the new museum violated design guidelines of the ADA. The main objection of the organization was the inaccessibility of the sacred central space in the Hall of Remembrance. After study of the construction and upon meeting with the general counsel of the United States Architectural Transportation and Barriers Compliance Board (ATBCB), a design was proposed for a special wheelchair lift carefully integrated into the stairs to preserve the sacred atmosphere of the space. Thus, design issues regarding noncompliance with the ADA were resolved and the Holocaust Memorial Museum opened according to schedule.

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