

# PREMISES LIABILITY

## **Finding answers to premises liability.**

Our premises liability team of architects and engineers is trained to investigate cases involving the design, construction, operation and maintenance of residential, institutional and commercial premises. Most common are slips, trips and falls. We conduct site inspections, perform tests and review applicable standards to learn facts and form opinions. We have specialists in the areas of human factors, visibility and meteorology who investigate warnings, line of sight and weather conditions.

## **Experts leading the industry.**

Our forensic experts maintain critical positions within recognized professional organizations that develop standards. They are regularly asked to provide input for developing new or refined standards.

## **Related Disciplines**

Architecture  
Biomechanical Engineering  
Civil Engineering  
Construction  
Elevators, Escalators & Conveyors  
Human Factors  
Materials Science  
Meteorology  
Products Liability  
Professional Liability  
Recreation  
Slips, Trips & Falls  
Structural Engineering

## **Sample Reports**

### **Airplane Hanger – Aircraft Door**

An employee was injured when he stepped into the path of a closing aircraft door. The client, James Franchek of Franchek & Porter, LLC, Boston, MA, asked Robson Forensic Inc. to determine if the manufacturer had any role in the incident.

### **Building Systems – Scalding**

A security guard for the District of Columbia Housing Authority was badly scalded while attempting to turn off water from a hose bib in building. The client, Joel DuBoff of DuBoff & Association, Chtd., Silver Spring, MD, asked Robson Forensic Inc. to determine if the Housing Authority had failed to properly construct, supervise and maintain the hose bib in a manner that caused the scalding.

### **Cemetery – Falling Memorial**

A child was injured when, while playing on a memorial in a cemetery, a headstone fell on him. The client, Joseph Lukomski of Rovner Allen Rovner Zimmerman & Nash, Feasterville, PA, asked Robson Forensic Inc. to determine if conditions existed that were dangerous in a manner that caused the injuries, and if the maintenance of the cemetery memorial complied with reasonable standards for safe property maintenance.

### **Sidewalk Trip – City Liability**

A man tripped on a sidewalk at the entrance to a residential parking lot. The client, Erica Weisler of Faust Goetz Schenker & Blee LLP, New York, NY, asked Robson Forensic Inc. to determine the responsibility of the New York City Housing Authority for the condition of the sidewalk at the location of the incident at the time of the fall.

### **Stair Fall – Apartment Home**

A resident fell while descending a single step in her apartment. The client, Joseph Campbell of Meltzer Fishman Madigan & Campbell, New York, NY, asked Robson Forensic Inc. to determine if conditions existed that were dangerous in a manner that was a cause of the fall.



## JEFFERSON PURCELL ACCIDENT

**ARCHITECT'S REPORT**

**MARCH 30, 2004**

### **A. INTRODUCTION**

On Tuesday January 25, 2000, Jefferson Purcell, an employee of Jet Aviation of America, tried to leave a jet airplane hangar by stepping into the path of a closing motorized aircraft door. A personnel door a few feet from this location had been blocked off. Mr. Purcell had opened the aircraft door a short way, pushed the "close" switch and then attempted to outpace the door's closing speed. He slipped and fell when he was in the path of the door and the door closed on him, pinning him until a co-worker reopened the door.

Robson Forensic, Inc. was requested to review the circumstances of this accident and to determine if Norco Manufacturing had any role in the accident. This review was performed by David C. Cowen, AIA.

### **B. MATERIALS AVAILABLE FOR REVIEW**

1. Suffolk Superior Court Complaint, June 14, 2001.
2. Jet Aviation of America, Hangar and Office Complex, construction drawings (partial set), by HTA-BCM Associates Inc., Architects, Londonderry, NH, August 16, 1985.
3. Norco Manufacturing Co. Shop Drawings, September 1985.
4. Deposition of Jefferson Purcell, December 11, 2001.
5. Deposition of Patrick Penta, February 19, 2002.
6. Deposition of Mark Quealy, February 19, 2002.
7. Plaintiff Answers to Defendant's First Interrogatories, Nov. 27, 2001.
8. 14 Photographs of the Jet Aviation Hangars.
9. My Site Inspection of February 19, 2004. Chris Wheeler and Emy Hoff, employees of Jet Aviation Inc., were present.

### **C. WORKPLACE ENVIRONMENT**

Jet Aviation is a company that serves the corporate aviation community (what is known to the public as "private jets") at airfields in the United States and around the world. The company provides all manner of care for the aircraft including repair, cleaning, provisioning, and general maintenance. They provide hangar and airfield areas for the parking and sheltering of aircraft. They also provide ground hospitality services for passengers, pilots and crews of these aircraft, with facilities including lounges, lockers, toilets, and showers.

Mr. Purcell had worked for Jet Aviation at the Bedford facility since 1997, performing line service duty. Line service duties include fueling jet aircraft, signaling pilots to park aircraft on the airfield, using motorized tugs to park aircraft, and de-icing aircraft by spraying with glycol, to name a few.

## D. HANGAR-OFFICE BUILDING, HANSCOM AIRFIELD

### General

The 1986 Jet Aviation Hangar-Office building, at Hanscom Airfield in Bedford, Massachusetts is approximately 240 feet long and 200 feet wide, 47 feet tall at its ridge and 28 feet tall at its eaves. A strip of the west and south sides of the building contain two levels of offices, toilets, lockers, customer service areas and other 'people' spaces. The remainder of the building, the vast majority of the volume of the building, is a two story high aircraft bay for the sheltering of aircraft, with adjacent equipment, parts storage and shop rooms.

### Security

Access to the building and adjacent airfield is secured from the general public by locked doors on the building and chain link fencing around the airfield. Vehicle and pedestrian access is through locked pedestrian and vehicle gates, which are monitored and buzzed open by Jet Aviation staff. Access to the jet hangar from inside the building is further controlled by a second set of locked doors accessible only to authorized personnel. Jet Aviation personnel are on duty in the building 24 hours a day.

### Hangar

The hangar bay is approximately 175 feet deep by 200 feet wide and over 28 feet high (clear height). The hangar can hold over a half dozen corporate jet aircraft, depending on the various models, and how closely they are parked. The hangar bay is well lit and heated with ceiling mounted radiant heaters to provide a comfortable environment for those servicing aircraft and working inside the hangar in cold weather.

### Hangar to Airfield Access for Personnel

As designed by the architect in 1985, the hangar-office building provided the following personnel doors leading from the hangar bay *directly* to the airfield: 1) vestibuled doors at the west end of the aircraft door (by the customer service center), 2) a pass door in the middle of the aircraft door, 3) an east-facing door at the north corner of the building, 4) a 10 foot wide motorized coiling overhead door next to door 3, and 5) an east-facing door near the south corner of the building.

### Hangar Aircraft Door

Aircraft are brought in and out of the hangar through a 180 foot wide and 28 foot tall, north-facing motorized industrial door, consisting of five (5) horizontally rolling panels, each 30 foot wide.

As noted above, in the center panel of the aircraft door assembly is a pass door, a man door allowing persons to exit the hangar to the airfield without opening the aircraft door. An electrical interlock prevents the aircraft door from operating if this pass door is open or ajar.

Each of the five panels is hung with rollers onto a track at the top, and roll horizontally on 9 inch steel wheels on a railroad track at the bottom. The railroad tracks are embedded in the floor even with the concrete floor slab at their top edges. Each panel has its own individual track above and below.

Each panel of the aircraft door is composed of a steel frame, with aluminum siding the full height on the exterior, and 12 feet high on the interior. The door panels are insulated and weather gasketed along all edges. Each door panel is more than a foot thick. When the aircraft door opens, the panels stack behind each other. The aircraft door can thus provide a clear width of 150 feet when fully opened. The door can be opened to either end, or stacked at the middle.

There is a motor and drive assembly at each of the two end panels, each allowing opening and closing of either end of the aircraft door independent of the other. An automated limit switch at each end shuts off the respective motor when the door reaches closed or fully open positions. Each motor turns a single rubber tire (an 8 inch rim wheel as is might be found on a recreational boat trailer) that "drives" along the floor, pushing and pulling the aircraft door panels open and closed.

Each motor is operated by a switch station, operating the drive tire at its same end of the opening. The switch stations are mounted directly on the end panels, as is the motor assembly. When the door is opening or closing, the switch stations move with the door. The switch station in place on the day of Mr. Purcell's accident had "Close," "Stop" and "Open" positions. Once "Open" or "Close" was selected, the aircraft door would move until completing the function, unless the switch was changed or electrical power cut off. The door's speed (last end panel closing) was timed at 41 feet per minute, or about 8 inches per second.

When the door motor is activated, a warning alarm bell automatically sounds continuously until the door motor stops running. An alarm bell is mounted on each of the end panels, approximately 20 feet above the floor, directly above each switch station. The alarm is audible throughout the hangar.

If an obstacle is encountered by the aircraft door during the opening or closing the aircraft door, the rubber drive tire loses traction and slips on the floor. The maximum force able to be exerted by the door against an obstacle is the co-efficient of friction of the small tire on the floor.

#### Aircraft Door Warnings

According to exhibits in Jefferson Purcell's deposition, two warning signs were present inside the hangar which read "CAUTION CHECK FOR CLEARANCE BEFORE OPENING" and "ATTENTION!! DO NOT LEAVE DOOR UNATTENDED WHILE OPERATING!!"

### **E. MAINTENANCE AND SAFETY TRAINING**

Mark Quealy, a Jet Aviation manager, testified that all line service employees require initial and on-going regular training for their duties, but the employees were given no training in the operation of the aircraft door, insofar as it was believed the safe operation of the door was obvious.

Mr. Quealy further testified that regular maintenance of the motor, drive tire, panel wheels and other moving parts was provided by companies other than Norco Manufacturing, on an as-needed basis.

## **F. NEW CONSTRUCTION AT THE TIME OF THE ACCIDENT**

At the time of the accident, a new construction project was underway. A second hangar was being built, joining onto the east wall of the existing hangar, where Mr. Purcell worked. Norco Manufacturing had no involvement with the construction of this new hangar.

Due to this new construction, the doors on the east wall of the 1986 hangar, that had been designed to provide convenient access to the airfield from the east side of the 1986 hangar without using the aircraft door, had been blocked off. A blocked door was about three paces from the scene of the accident.

## **G. ACCIDENT DESCRIPTION**

The accident occurred on Tuesday January 25, 2000, at 10:45 pm. Jefferson Purcell was working the 2:30 pm to 11:00 pm shift. The line service crew this shift included five others, and a line service manager. Mr. Purcell remembered the weather that afternoon and evening as very cold, with precipitations of snow and freezing rain.

Shortly before quitting time, Jefferson Purcell and a co-worker, Patrick Penta, decided to leave the hangar. They wanted to jumpstart a car parked on the airfield, outside the hangar. They chose not to leave through a personnel door, such as the pass-door through the middle of the aircraft door, or the vestibuled doors at the west end of the aircraft door, choosing instead to use the aircraft door, which was closed.

Using the aircraft door's switches, Jefferson Purcell opened the east end panel eight to ten feet wide. After Patrick Penta left the hangar through this opening, Mr. Purcell activated the "close" switch, and then headed to go out. He now needed to move faster than the closing aircraft door. He had to get ahead of the leading edge of the door, turn 90 degrees and pass the foot wide panel as it was closing. The door's speed required 12 seconds to close eight feet.

As Jefferson Purcell was turning to pass through the shrinking opening, he claims he slipped on the wet and icy surface and fell against the wall of the building. He claims he was unable to right himself and get clear of the moving door in time and was pinned against the door frame by the door. He was heard calling out and the door was opened by a co-worker.

## **H. NORCO MANUFACTURING**

Norco Manufacturing is a small company which fabricates and supplies components of industrial doors. Norco Manufacturing furnished major elements of the aircraft door at the 1986 Jet Aviation hangar in accordance with the design of the building's architect. Norco's shop drawings for the 1986 Hangar-Office complex indicate they furnished the door's tracks, the steel skeleton of the door panels and the operating system of the door, including the motors, wheels, rollers.

Other door components, including insulation, exterior and interior metal siding and trim, concrete, electrical conduit and wiring, and paint would have been furnished by other companies to the general contractor and/or other subcontractors.

All these elements were then installed by building contractors and tradesmen in their proper sequence to construct the finished aircraft door.

Norco would have been required to submit shop drawings of their work to the general contractor and the architect, and to receive the architect's approval, prior to beginning fabrication. Prior to final payment, the aircraft door would have been inspected, tested, and approved in the field by the general contractor and the architect and owner.

## **I. CODES AND STANDARDS AND APPROVALS**

1. The hangar building was required to be designed by a Massachusetts licensed architect or engineer to meet the requirements of the Massachusetts Building Code at the time of its design. The architectural design firm for the building, HTA-BCM Associates, of Londonderry, New Hampshire, designed the building under drawings stamped and signed by their architect, Mori Mitsui, Commonwealth of Massachusetts Registered Architect No. 4434.
2. Massport is the governing body that operates and oversees the civil air facilities at Hanscom field. Tenants, such as Jet Aviation, must receive Massport's fire department and engineering department review and approval prior to commencing construction.
3. The State Building Department, has jurisdiction over buildings at the airfield, and must issue a building permit for construction.
4. In 1986 the industrial door industry and Norco Manufacturing provided various optional features for industrial doors for selection by architects, engineers or building owners. The selection of features is subject to a number of factors, such as frequency of use, operations procedures of the user, and project budgets. Selections are made by the architect or engineer or building owner consistent with the needs of a particular facility. There were no violations of industry standards for the aircraft door at the time of its construction.

## **J. ANALYSIS**

1. Hangars and airfields are a hazardous work environment by their nature and character. Workers in this industry are routinely proximate to the hazards of the noise and movement of jets and jet engines, flammable jet fuel, toxic de-icing materials, sewage, motorized tools, and aircraft tugs, to name a few. Work near aircraft and at airfields demands and requires safety training.
2. The hangar is not open to the public and is accessible only to trained and authorized personnel. It is a workplace for the repair, maintenance, and shelter of corporate jet aircraft, costly and complex machines, which can be dangerous if safety procedures are not followed. Untrained unauthorized persons must be escorted.
3. The aircraft door is an industrial door. The door is not accessible to general public and is intended for use only by trained and authorized persons. The aircraft door is of necessity very large and heavy, and motorized. The aircraft door complied with requirements of the Massachusetts Building Code.
4. The 1986 Hangar construction documents were designed and prepared by an architect, reviewed and approved by the Massport Fire Department, the Massport Engineering Department, and the State Building Inspector. The architect had the responsibility to provide safe egress from the building, and he did so by providing numerous direct personnel doors from the hangar to the airfield, including man doors just past each end

- of the aircraft door.
5. Construction activity for the second hangar, on-going at the time of the accident, blocked the man door closest to the location where Mr. Purcell was pinned. This compromised the architect's safe exit design for the 1986 hangar.

## **K. FINDINGS**

Within the bounds of reasonable architectural and technical certainty, and subject to change if additional information becomes available, it is my professional opinion that:

1. There are no deficiencies in the components of the aircraft door furnished by Norco Manufacturing in 1986. Norco furnished parts of the aircraft door in accordance with the design and instruction of the architect, and with the approvals of the architect, Jet Aviation, Massport, and the State Building Department. The aircraft door components furnished by Norco complied with the requirements of the Massachusetts Building Code.
2. Norco Manufacturing was not hired to perform maintenance, service, revisions, or updates to the aircraft door, and had no responsibility after the original construction in 1986.
3. Mr. Purcell's accident was the result of a number of factors:
  - a. Mr. Purcell's decision to leave the hangar across the path of a closing and nearly-closed aircraft door was unsafe and a cause of his accident.
  - b. Wet and icy conditions from inclement weather throughout the day of the accident should have caused further caution and may have contributed to the slip and fall.
  - c. Jet Aviation Company's failure to train personnel in the safe use of the aircraft door was a contributing cause of Mr. Purcell's accident.
  - d. Jet Aviation's blocking of an exit door 10 feet from the accident was unsafe in that it may have encouraged Mr. Purcell to use the aircraft door improperly.

David C. Cowen, A.I.A.

## INVESTIGATION OF THE DIANE FOSTER SCALDING

ENGINEER'S PRELIMINARY REPORT

JUNE 1, 2000

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### A. INTRODUCTION

On March 26, 1998, Diane Foster was a security guard with the District of Columbia Housing Authority. Foster was badly scalded while attempting to turn off water from a hose bib at 601 Virginia Ave.

My investigation was performed to determine if the District of Columbia Housing Authority failed to properly construct, supervise, and maintain the hose bib in a way that caused Foster's injuries.

### B. INFORMATION AVAILABLE

1. Incident Report, 3/26/98
2. Defendant's responses to Plaintiff's Interrogatories, March 14, 2000
3. Defendant's responses to Plaintiff's Request for Production of Documents, March 14, 2000
4. Maintenance Control & Operation Center Work Order Procedures Manual, February 26, 1997
5. Defendant's Objections and Answers to Interrogatories, February 8, 2000
6. Copies of photographs depicting the Trash Room at 601 Virginia Ave.
7. Handwritten maintenance logs
8. Deposition Transcript of Edward R. Gantt
9. Deposition Transcript of Tony Oliver Powell
10. Boiler water analysis and treatment records

### C. BACKGROUND

601 Virginia Avenue is a multi-story residential facility owned, operated, and maintained by the District of Columbia Housing Authority. A trash room is located at the ground level. Trash chutes from the floors above terminate in the Trash Room. A hose bib is located in the room. A hose attached to the hose bib is used to wash down the Trash Room.

The building is heated by hot water. The heating hot water is delivered to 601 Virginia Avenue by underground steel piping from a boiler room in an adjacent building. Steam is generated by boilers in the Boiler Room and heat is transferred to the hot water loop by a steam to water heat exchanger. Pumps in the Boiler Room circulate the heating hot water to 601 Virginia Avenue and other buildings.

Domestic hot water is also produced in the Boiler Room. Steam from the boilers is supplied to a heat exchanger located in a domestic hot water storage tank. Domestic hot water from the tank is delivered to 601 Virginia Avenue and other buildings through underground copper piping.

On March 26, 1998, Diane Foster was making her rounds as a security guard for the District of Columbia Housing Authority. Foster noticed that the water hose attached to the Trash Room

hose bib was on. When she attempted to turn the water off, the hose "went wild" and caused severe burns on her leg.

#### **D. MY INSPECTION**

I inspected the Trash Room and ground level of 601 Virginia Avenue, and the Boiler Room in the adjacent building on March 28, 2000.

##### **Trash Room**

The Trash Room was a small room with concrete block walls, a concrete floor, and a roll up door. In the corner of the room near the door, a 3/4" hose bib was located about 75" above the floor. The hose bib was tapped off of a steel heating hot water pipeline with a combination of 1", 3/4", and 1/2" steel and copper pipe. There were three valves between the heating hot water return line and the hose bib. The first was a plug valve, then a yellow handled ball valve, then a red handled ball valve, and then the hose bib.

I traced the heating hot water line through the ground level to the point that it went below ground. At this point, two steel heating hot water lines and one copper domestic hot water line went below grade level and in the direction of the Boiler Room.

##### **Boiler Room**

The Boiler Room contained three steam boilers, a domestic hot water tank, a steam to water heat exchanger, pumps, and controls. I traced two steel heating hot water lines from the heat exchanger and pumps, and one copper domestic hot water line from the domestic hot water storage tank. These lines exited the Boiler Room below grade and headed in the direction of 601 Virginia Avenue.

#### **E. STANDARDS**

The danger posed by excessively high tap water temperatures has been well known since at least the mid-1970's. Abt Associates' 1975 report to The Consumer Product Safety Commission [A Systematic Approach to Reduce the Incidence and Severity of Bathtub and Shower Area Injuries](#) identified that burns from hot domestic water are of "enormous severity." Abt recommended:

The most cost effective countermeasure to bathroom burns is to turn down the temperature on the central water heater to 120° F.

Between 1978 and 1981, The Consumer Product Safety Commission identified that water heater settings over 130° F were dangerous. The commission identified that of the 71 issue-related deaths in their 1978 file:

The very young and the elderly are the principal victims; almost one-third of the injuries are to children age two or younger... The Commission notes that at a water temperature of 140° F scalding can occur in 1.5 seconds. At a water temperature of 130° F scalding occurs in 12 seconds, while at 120° F it takes over 5 minutes for a burn to occur. The commission believes that any water temperature above 130° F may entail a significant hazard to all persons and a

particular risk to the young, the elderly and the handicapped who may be unable to react quickly to the hazard.

Similar information has been widely disseminated by the Burn Foundation and in newspaper articles. A January 1995 *New York Times* article noted:

...scald burns account for about 100 deaths annually, most of them children under 4 or adults over 65 says the Gas Appliance Manufacturers Association...

## F. ANALYSIS

Powell testified that although there were sometimes problems with the hot water in the building, there was always hot water in the Trash Room unless there were problems with the heat (Powell, p.16, 17). Powell said that when the water is on, steam comes out (Powell, p.20).

Gantt testified that the hose bib must have come off a different line than the domestic hot water in the rest of the building because the water from the hose bib was much hotter than other hot water in the building (Gantt, p.56,57).

These accounts are consistent with my observations of the piping systems during my site inspection.

It is my opinion that the hose bib in the Trash Room at 601 Virginia Avenue was tapped off of the heating hot water return line.

Heating hot water systems typically operate between 180°F and 240°F. The ASHRAE 1996 Applications Handbook states:

### Low Temperature Heating Systems

These systems are used for heating spaces or processes directly, as with standing radiation or process heat exchangers, or indirectly, through air-handling unit coils for preheating, for reheating, or in hot water unit heaters. These systems are generally designed with supply water temperatures from 180°F to 240°F and temperature drops from 80°F to 100°F.

In the United States, hot water heating systems were historically designed for a 200°F supply water temperature and a 20°F temperature drop.<sup>1</sup>

According to maintenance records, from 3/9/97 to 3/11/98, the heating hot water supply temperature to 601 Virginia Avenue ranged between 206°F and 212°F. With a 20°F temperature drop, the heating hot water return temperature would have been between 186°F and 192°F.

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<sup>1</sup> 1996 Applications Handbook , p12.10, American Society of Heating, Refrigerating, and Air Conditioning Engineers. Inc. (ASHRAE)

It is my opinion that the water temperature from the hose bib in the Trash Room at 601 Virginia Avenue was greater than 185°F.

It is well known that water temperatures greater than 120°F are dangerous.

The burn time to water temperature relationship for an adult is shown as follows (Katcher, JAMA, Sept. 11, 1981):

| <u>Water Temp (°F)</u> | <u>Minutes to 3<sup>rd</sup> degree burn</u> |
|------------------------|--|
| 115                    | 60   |
| 120                    | 9.3  |
| 125                    | 2.3  |
| 130                    | 0.5  |

By allowing the hose bib to be connected to the heating hot water return line, the District of Columbia Housing Authority knew that anyone using the hose bib would be exposed to scalding hot water.

It is my opinion that allowing the Trash Room hose bib to be connected to the heating hot water return line was improper and dangerous and caused Diane Foster's scalding.

The District of Columbia Housing Authority was aware that the water from the hose in the Trash Room was extremely hot. Powell testified that the water coming from the hose in the Trash Room was "very hot, not like the water from the tap" (Powell p.7). Gantt testified that although he used the hose for cleaning the Trash Room, he never touched the water because it was very, very hot (Gantt, p.44). Gantt further testified that the water was so hot that he had to wear gloves to hold the hose (Gantt, p.84).

The Plumbing Design and Installation Reference Guide, by Tyler G. Hicks states:

Safety must be built into the systems by provisions to protect against the hazards of excessive pressure and excessive temperature so as to prevent injury to persons and damage to property which might otherwise occur.<sup>2</sup>

The OSHA Technical Manual states:

...if potential for scalding exists, appropriate fail-safe scald-protection equipment should be employed. For example, pressure-independent thermostatic mixing valves at delivery points can reduce delivery temperatures.<sup>3</sup>

Despite the District of Columbia Housing Authority's knowledge that the water from the hose bib was in excess of 185°F, no action was taken to protect their employees from extreme danger due to the scalding water. It would have been reasonable to re-pipe the hose bib, or to add a mixing valve to reduce the water temperature.

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<sup>2</sup> Plumbing Design and Installation Reference Guide, Tyler G. Hicks, P.E. Editor, McGraw-Hill, Inc., 1986.

<sup>3</sup> OSHA Technical Manual, Section III:, Chapter 7.

It is my opinion that the District of Columbia Housing Authority's failure to alter the water supply to eliminate the extreme danger presented by the scalding hot water at the hose bib in the Trash Room was improper and caused Diane Foster's scalding.

The District of Columbia Housing Authority was aware that the Trash Room was accessible during the day. Gantt testified that although the door to the room was closed, it was not locked and could be easily opened (Gantt, p.24). Gantt further testified that the Trash Room was frequently vandalized and misused (Gantt, p.34).

The hose bib was located near the ceiling of Trash Room. A 10ft. to 15ft. length of hose was attached to the hose bib. There was no rack to hang the hose on. Although there were three valves in the pipe leading to the hose, none of these valves were secured or locked to prevent misuse.

It is my opinion that the District of Columbia Housing Authority's failure to secure the hose and valves when they were not being used was improper, dangerous, and caused Diane Foster's Scalding.

## **G. FINDINGS**

Within the bounds of reasonable engineering certainty, and subject to change if additional information becomes available, it is my professional opinion that:

1. The hose bib in the Trash Room at 601 Virginia Ave. was tapped off of a heating hot water line.
2. The water temperature from the hose bib in the Trash Room at 601 Virginia Ave. was greater than 185°F.
3. Allowing the Trash Room hose bib to be connected to the heating hot water return line was improper, dangerous, and caused Diane Foster's scalding.
4. The District of Columbia Housing Authority's failure to alter the water supply to eliminate the extreme danger presented by the scalding hot water at the hose bib in the Trash Room was improper and caused Diane Foster's scalding.
5. The District of Columbia Housing Authority's failure to secure the hose and valves when they were not being used was improper and dangerous and caused Diane Foster's scalding.

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Dale J. Cagwin, P.E. (PA)



## BRANDEN SPECKMAN'S INJURY

PRELIMINARY REPORT

JULY 2, 2004

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### A. BACKGROUND

At about 8:00 p.m. on August 26, 2000, 22 month old Branden Speckman was with his father Wyatt Speckman and some neighborhood children on an outing to the local ice cream shop. They crossed through the Morris Cemetery, 428 Nutt Road, Phoenixville, PA. On the return portion of trip, one of the children dropped his ice cream. As Mr. Speckman attended to that child, Branden climbed onto a nearby memorial; the headstone toppled, fell on him, and he was injured.

The purpose of this investigation was to determine if conditions existed that were dangerous in a manner that caused Branden's injury, and if the maintenance of the cemetery memorial complied with reasonable standards for safe property maintenance.

### B. MATERIALS AVAILABLE FOR REVIEW

1. Plaintiffs' Application Pursuant to Rule 41.1(a) of the Local Rules of Civil Procedure, as to Non-Docketed Proceedings, and to Retain Case on Active List, dated May 21, 2004.
2. Second Amended Complaint, dated December 6, 2002.
3. Defendants Cornerstone Family Services, Inc.'s D/B/A the Morris Cemetery and The Morris Cemetery's Answer to Plaintiff's Second Amended Complaint, dated January 14, 2003.
4. Preliminary report by David H. Fleisher, P.E. dated April 2, 2003.
5. Plaintiffs' Answers to Personal Injury Interrogatories, dated October 15, 2003.
6. Defendant Cornerstone Family services, Inc. d/b/a The Morris Cemetery's Answers and Objections to Plaintiff's Interrogatories, dated December 11, 2003.
7. Phoenixville Police Department Dispatch/Complaint report, dated August 25, 2000.
8. William J. Black March 22, 2004 deposition transcript.
9. Lindsey Markey September 28, 2003 deposition transcript.
10. Kenneth E. Gresko March 22, 2004 deposition transcript.
11. Alan Fisher February 6, 2004 deposition transcript.
12. Thelma Beth Speckman February 2, 2004 deposition transcript.
13. Wyatt Speckman March 26, 2004 deposition transcript.
14. Color copies of eight color photographs (taken the night of Branden's injury).
15. Color copies of ten color photographs taken August 29, 2000.
16. (36) color photographs, dated November 1, 2001.
17. (34) color copies of color photographs.
18. Diagram of the Morris Cemetery.
19. Copy of aerial photograph of Morris Cemetery.
20. Copy of an August 29, 2000 *The Mercury* article.
21. Copy of an August 31, 2000 *The Mercury* article.
22. Video taken November 1, 2001.
23. Copy of an August 30, 2000 Daily Local News article.

24. Copy of a British newspaper article involving headstone safety.
25. September 12, 2003 letter from Edward C. Mintzer, Esq. to Joseph S. Lucomski, Esq., regarding the Defendant's Responding to Plaintiffs Request for Production of Documents and Things.
26. My June 24, 2004 site inspection.

### **C. BACKGROUND**

Morris Cemetery faces north abutting Nutt Road and is bordered by Cemetery Lane, Althouse Lane, and backs up to residential properties along Ringold Street at the rear of the property.

The Morris Cemetery was established as a public cemetery in 1867. There was a fence around the cemetery at the time. The cemetery has a chapel, office, and a veteran's garden of honor. The cemetery offers interment in traditional burial plots, a mausoleum, and lawn crypts. There are internal paved roads connecting the different parts of the cemetery

Branden was injured the A-East section of the cemetery which is the oldest portion of the cemetery created in 1867. The A-East section is located along the east side of the site. A fence had been installed around the perimeter of the cemetery. The fence was removed in about 1988.

Morris Street intersects Cemetery Lane on the east side of the property adjacent to the A-East and A-S sections of the cemetery (WS113). The memorial in question is located 32' north of the intersection of Morris Street and Cemetery Lane and about 42' onto the cemetery property (Photo 1). Morris Street intersects with Cemetery Lane on the southeast side of the cemetery property. The memorial is inscribed to Rosella Palagyi Geczi who was interred in 1941.

The memorial consists of two pieces: a base stone and a vertical slab commonly referred to as a headstone (Photo 2). The terms tombstone, headstone, and gravestone are used interchangeably. For this analysis, the upper stone of the memorial is referred to as the headstone.

The base measures 39" wide x 14" deep x 11" high with a slight bevel around the headstone setting plane. The headstone is 30" wide, 9" deep and is 24" high at the top of the arched top. The vertical sides of the headstone measure 20" high above the base. Except for the smooth beveled edges and the face of the headstone, both the headstone and the base are rough granite.

Photos taken the night of Branden's incident show the headstone leaning on top of base. Dirt lines visible on the base stone after it was reset match the tilt shown in photographs taken the night of Branden's injury. These show that the base had sunk into the ground and was tilted at least 12° to the east.

## **D. BRANDEN'S INJURY**

The Speckmans moved into 214 Morris Street about two to three weeks before Branden was injured (WS55). Branden's father, Wyatt Speckman, was unfamiliar with the area (WS66 114). August 26, 2000, Mr. Speckman and a group of neighborhood children, including Branden, went for ice cream at Petrucci's Ice Cream, 490 Nutt Road (WS81, LM28). This was diagonally across the cemetery from the intersection of Morris Street and Cemetery Lane. They took a shortcut through the cemetery (WS56, 65, 99, 122, 144). Mr. Speckman was the only adult (WS101). The children were between 20 months old and about 11 years old. Mr. Speckman was pulling a wagon (WS102).

On the way back from Petrucci's they returned through the cemetery, reversing their route (WS116). The older children were walking (WS164). Branden was in the wagon (WS108).

The group stopped when one of the children dropped his ice cream. While Mr. Speckman helped that child, Branden apparently climbed out of the wagon and onto Ms. Geczi's memorial (WS109, LM32). Lindsey Markey, reported that Branden climbed onto the memorial, it wobbled, and fell (LM31, 32, 33). The headstone fell on top of Branden, and he was injured. Human factors references identify that taking shortcuts and children climbing on things are normally expected behavior<sup>1</sup>.

## **E. DANGEROUS CONDITIONS THAT WERE CAUSES OF BRANDEN'S INJURY**

Dangerous conditions included the tilting and unstable memorial. The property manager's failure to maintain and repair the memorial resulted in Branden's injury.

## **F. ANALYSIS**

### 1. Standards for the cemetery maintenance/safety

Cemeteries in Pennsylvania are required to provide for the perpetual care, maintenance and preservation of cemetery lots and grounds, and the repair of and renewal of the buildings, and property connected with and forming part of the cemetery<sup>2</sup>. Morris Cemetery's Web site confirms knowledge of this mandate, indicating that a restricted fund is maintained for the future maintenance of the cemetery.

A Graveyard Preservation Primer<sup>3</sup> is a nationally published reference standard for graveyard preservation. A Graveyard Preservation Primer identifies that large tombstones (headstones) have a tendency to sink into the ground with the passage of time, and that resetting is sometimes necessary.

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<sup>1</sup> Human Factors Design Handbook, Wesley E. Woodson, et al, 1992.

<sup>2</sup> 1972, Nov. 15, P.L. 1063, No. 271.

<sup>3</sup> A Graveyard Preservation Primer, Lynette Stangstad, 1998.

Markers<sup>4</sup> is a nationally published journal that deals with gravestone studies and the care of old cemeteries. A 1979/1980 article, The Care of Old Cemeteries and Gravestones, identifies:

If a gravestone is tilting so that it is danger of falling over, or if it has already fallen, it should be reset in an upright position.

A Cemetery Should be Forever<sup>5</sup> identifies that property maintenance is one of the objectives of the endowment fund, and that large memorials may be subject to tilting, especially in areas where the ground freezes. A Cemetery Should be Forever also identifies:

Because of the diversity of operations of a cemetery, cemetery managers need to be aware of the breadth of their legal responsibilities. It is beyond the intent of this book to discuss these at length, but it is worth mentioning that **cemeteries need to be sensitive to laws regarding safety** (emphasis added).

The Borough of Phoenixville adopted<sup>6</sup> The BOCA National Property Maintenance Code<sup>7</sup> and subsequently the International Property Maintenance Code<sup>8</sup>. The purpose and intent of these property maintenance codes is to protect the public health, safety and welfare.

Since at least 1990, The BOCA National Property Maintenance Code has required the property owner maintain structures and the exterior property. The BOCA National Property Maintenance Code defines "Structure" as:

That which is built or constructed, including because of enumeration, buildings for any occupancy or use whatsoever, fences, signs, billboards, fire escapes, railings, water tanks, towers, open grade steps, sidewalks or stairways, tents or anything erected and framed of component parts which is fastened, anchored or rests on a permanent foundation or on the ground.

BOCA's definition of "Accessory structures" includes such things as fences and walls. The BOCA National Property Maintenance Code commentary notes that the code shall be applied liberally and justly and notes:

Accessory structures must be maintained in accordance with the criteria established by this section. Property owners often give detached garages, sheds, fences, retaining walls, and similar structures a lower maintenance priority than the primary structure.

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<sup>4</sup> Markers: The Annual Journal of the Association for Gravestone Studies, Vol. I, The Care of Old Cemeteries and Gravestones, Lance R. Mayer, 1979/1980.

<sup>5</sup> A Cemetery Should be Forever, John F. Llewellyn, 1998.

<sup>6</sup> June 25, 2004 telephone conversation with Phoenixville Borough code official Michael Zeleski.

<sup>7</sup> The BOCA Property Maintenance Code, Building Officials and Code Administrators International, Inc., 1990-1996.

<sup>8</sup> International Property Maintenance Code, International Code Council, 1998-2000.

These same provisions were included in the International Property Maintenance Code when BOCA was combined with other model code organizations as part of the International Code Council (ICC).

The International Property Maintenance Code commentary defines “Structure”, and notes:

This definition is intentionally broad so as to include within its scope, and therefore the scope of the code, everything that is built as an improvement to real property.

Phoenixville Borough code official Michael Zeleski confirmed that cemeteries are subject to the Borough’s property maintenance code<sup>9</sup>.

Nationally published risk management reference standards including Best’s Loss Control Engineering Manual<sup>10</sup> and Best’s Underwriting Guide<sup>11</sup> identify the hazards related to specific facility types. For “Cemeteries” Best’s identifies liability concerns regarding the condition of tombstones and memorials. Best’s Underwriting Guide also specifically identified in 1991:

Above ground tombstones are also more accessible to the general public and may pose an attractive nuisance to children and vandals. Claims have been reported for injuries stemming from inadequate maintenance of tombstones. For example, a young boy was crushed by a tombstone that had fallen on him as he leaned against it.

## 2. Memorial failure

The memorial was tilting at least 12° from vertical based on the dirt marking on the base stone. When the memorial was repaired, it was also revealed that the foundation cracked and sunk (KG81).

As a memorial with a base and headstone that are not doveled together tilts, the center of gravity of the headstone (or upper portion of the memorial) shifts and causes the headstone to become unstable. The greater the tilt, the less stable the memorial is and the less force required to move the headstone. When the memorial tilts enough and the headstone is not doveled to the base, the headstone would fall due to its own inadequately supported weight.

In this case, the headstone was set onto the base with setting compound. The setting compound is used to level between the headstone and the base, to prevent water from getting under the headstone (where it could freeze), and while the setting compound also may provide some bonding between the headstone and the base, it is not intended as an attachment. This particular memorial was installed in 1941, 59 years before Branden’s injury. Older setting compound deteriorates with time, and loses its strength and it’s adhesion to the headstone, the

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<sup>9</sup> June 25, 2004 telephone conversation with Phoenixville Borough code official Michael Zeleski.

<sup>10</sup> Best’s Loss Control Engineering Manual, Cemeteries and Memorial Parks, A.M. Best Company, 7/91 Revision.

<sup>11</sup> Best’s Underwriting Guide, Cemeteries and Memorial Parks, A.M. Best Company, 7/91 Revision.

base or both. This would reduce if not eliminate whatever bonding capacity it has. Photographs taken after the subject headstone fell indicate that portions of the setting compound were still attached to the base and the headstone, indicating that its bonding capabilities could not prevent the stone from overturning onto Branden.

The subject monument fell because it had been allowed to settle, tilt and become unstable. The owner's failure to maintain the memorial upright, and safe did not conform to reasonable standards for safe cemeteries and allowed a hazardous condition to exist that was a cause of Branden's injury.

### 3. Cemetery and Memorial Condition

Lindsey Markey lived in the neighborhood before the Speckman's moved in. She was about 11 years old at the time and had noticed that the tombstones in the cemetery were broken and lying on the ground before Branden's incident (LM19, 23). She reported that she had also felt loose memorials (LM22).

Cemetery maintenance worker, William Black, reported that all stones leaned one way or another (WB70). He identified that something was wrong with the subject headstone (WB156). Mr. Black reported the subject monument (memorial) was one of the largest memorials in the A-East section (WB184), the stone was leaning (WB210), and that the base of the stone sank about 3" before the incident (WB183).

Cemetery supervisor, Kenneth (Whitey) Gresko also reported that he noticed stones leaning, cocked, or sunk(en) prior to Branden's incident (KG54), and also had seen the subject memorial leaning (KG54).

Mr. Gresko reported that while running the lawn mover, if a memorial wobbled, he would fix them because he didn't want them falling in his lap (KG55). Mr. Gresko also reported that the base of the subject memorial was leaning (KG77, 116). When the memorial was being reset, he identified that there were soil marks on the base (KG75), the foundation was cracked (KG81), and he could tell the base had sunk (KG109, 127).

Mr. Gresko also reported there was a depression in front of the memorial. He referred to this as a "divot" that was as wide as the stone, in front of the stone about 3-4 inches down (KG122, 124, 128, 195), and the wheel from the lawnmower dipped into the divot. He identified that there were a number of potential causes, including the vault or the foundation collapsing that would have caused the ground to sink down (KG126, 131). Mr. Gresko identified that riding the mower through the area made the divot worse (KG188).

Mr. Gresko testified that he took care of the memorials himself, if he thought of it, if he thought they were going to fall over or hurt us as we were mowing or something. That is when he would fix them (KG186). Mr. Gresko reported that the base was leaning forward, might have been a problem, but he never saw the Palagy stone wobble (KG188). He reported that the only time he saw memorials wobble was if he skimmed them with the mower (KG189). Mr. Gresko identified that there really was no repair of the stones, unless they wobbled (KG193).

The memorials in the Morris Cemetery were known to be leaning. Branden weighted only about 30 pounds. The subject memorial was deteriorated and leaning enough that Branden action's caused it to fall.

John Knapton has been conducting research into memorial safety for the last ten years<sup>12</sup>. Through his research, he recommends that headstones out of alignment by five degrees or more or that can be moved by one person requires action. The subject memorial was tilting at least 12° from vertical, or twice as much.

The failure to reasonably inspect the subject memorials and identify structural problems at this memorial was unreasonable, did not conform to reasonable standards for safe cemeteries and allowed a hazardous condition to exist that was a cause of Branden's injuries.

#### 4. Critique of Morris Cemetery's Actions

Morris Cemetery was aware that people including, children, frequently cut through and played in the cemetery (LM12, 13, 16, WB71, 77, 173, KG38, 39, 40, 110). Mr. Gresko reported that there were incidents with stones being knocked over once a week (KG48). Human factors references identify that taking short cuts and children climbing on thing is normally expected behavior<sup>13</sup>.

Best's Loss Control Engineering Manual identifies that measures should be taken to discourage trespassing. This would include fences, locked gates and signs. Cemeteries are identified as a potential attractive nuisance to inquisitive children. Up until 1988 there was a fence around the cemetery. Morris cemetery was aware that neighbors wanted the fence back (KG59). There were no "No Trespassing" signs at the Cemetery at the time of Branden's incident.

Aside from asking people not to, the Morris Cemetery took no other actions to prevent people, especially children from using the cemetery either as a path or as a playground. The failure to provide a fence or provide effective warnings of the hazards in the cemetery, did not comply with reasonable standards for property maintenance, and was a cause of Branden's incident.

Alan Fisher is the Vice President of maintenance and development for Cornerstone Family Services which owns Morris Cemetery (AF16). Mr. Fisher reported that the Cemetery repaired memorials that were broken and/or leaning in the year before the accident (AF82). He identified there was a verbal maintenance policy (AF77, 85). Mr. Fisher reported that the Cemetery would inspect individual gravestones and/or tombstones if requested by the lot owner or if the memorial was leaning or broken (AF83).

Mr. Fisher was aware that leaning and loose and wobbly memorials were unsafe (AF54). He identified that there was no established policy for inspection of headstones (AF51, 59) and that Cornerstone did not provide a training program concerning inspections (AF65, 66). Mr. Fisher relied on the supervisor's common sense and experiences regarding if a stone is leaning too much (AF134).

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<sup>12</sup> Research into Memorial Safety, John Knapton, ([www.john-knapton.com/Cemeteries.htm](http://www.john-knapton.com/Cemeteries.htm)).

<sup>13</sup> Human Factors Design Handbook, Wesley E. Woodson, et al, 1992.

Mr. Gresko only received on the job training (KG148). He was not given any instructions about inspection of (KG28), or about fixing memorials (KG31). Mr. Gresko testified that maintenance of memorials was not priority (KG30).

Mr. Gresko was aware that there were memorials that were leaning, but wouldn't fix them, because there was too much to do. Even if they were leaning, Mr. Gresko would not fix them unless the memorial wobbled (KG29). Mr. Gresko believed that all the stones in the cemetery should have been fixed (KG54).

Mr. Fisher identified that a leaning, falling, loose, or wobbly memorial was to be reported (AF76). He identified that if the memorial would appear out of the ordinary to them or in an unsafe condition (AF69), that Mr. Gresko would report to Paul Albin, and George Taylor. Although aware that the memorials were leaning, Mr. Gresko made no recommendations about fixing them (KG54).

The owner's failure to maintain the headstone upright and safe did not conform to reasonable standards for safe cemeteries and allowed a hazardous condition to exist that was a cause of Branden's injury.

## **G. FINDINGS**

Within the bounds of reasonable technical and professional certainty, and subject to change if additional information becomes available, it is my opinion that:

1. The subject monument fell because it had been allowed to settle, tilt and become unstable. The owner's failure to maintain the memorial upright and safe did not conform to reasonable standards for safe cemeteries and allowed a hazardous condition to exist that was a cause of Branden's injury.
2. The failure to reasonably inspect the subject memorials and identify structural problems at this memorial was unreasonable, did not conform to reasonable standards for safe cemeteries and allowed a hazardous condition to exist that was a cause of Branden's injuries.
3. The owner's failure maintain the headstone up right and safe did not conform to reasonable standards for safe property management and allowed a hazardous condition to exist that was a cause of Branden's injury.

Julius Pereira III, A.I.A.

## ROSADO INJURY

**ENGINEER'S REPORT**

**JANUARY 20, 2005**

### **A. INTRODUCTION**

On December 13, 1997, at approximately 7:10 PM, Hector Rosado (Rosado) was walking southerly on the east side of Brook Avenue along the perimeter street sidewalk of the Mill Brook Houses, Bronx, New York. Approximately mid-way between East 135<sup>th</sup> Street and East 136<sup>th</sup> Streets, just north of the entrance gate to a resident parking lot, he tripped at a defective sidewalk area and was injured. Rosado testified that he was not aware of any witnesses to the incident.

Robson Forensic, Inc. was retained by the firm of Faust Goetz Schenker & Blee LLP, to perform an investigation and form an opinion as to the responsibility of the New York City Housing Authority (NYCHA) for the condition of the sidewalk at the location of the incident at the time Rosado fell and was injured.

### **B. AVAILABLE DOCUMENTS**

- Notice of Claim.
- 50-H Hearing of Hector Rosado, June 2, 1998.
- EBT's of:
  - Wayne Pionzio, October 8, 1999.
  - Lynette Williams, August 2, 1999.
  - Hector Rosado, August 2, 1999.
  - NYC Housing Authority, by Bartholomew Pulley, October 23, 2000.
- Affidavit's of:
  - Hector Rosado.
  - Wayne Pionzio, April 3 & April 13, 1998.
  - Salvatore Pitruzzella, April 1, 1998.
- NYCHA's logbook.
- Six (6) laser copies of photographs, Respondent's A&B, June 2, 1998.
- Verified Bill of Particulars, April 28, 1999.
- Correspondence between NYC Housing Authority & NYC DOT, January 4, 1995 & January 23, 1995.
- Part Plans of Big Apple Map (PLT Exh. 4, August 2, 1999).
- Expert Witness Information, Herbert W. Braunstein, P.E., January 4, 2005.

### **C. BACKGROUND**

Bartholomew Pulley (Pulley), the maintenance superintendent of Mill Brook Houses until 1995 or 1996, testified that it was the NYCHA required procedure to perform an annual grounds survey indicating lists of plants, shrubs and trees to be replaced and/or pruned, and grass seed to be ordered. The inspection would be performed by the NYCHA supervisor of housing and grounds, Wayne Pionzio (Pionzio) who held that title before and during Pulley's tenure at Mill Brook Houses from approximately 1993 to 1996, and at the time of the incident on December 13, 1997.

Pulley further testified that although the perimeter street sidewalks were not required to be included as part of the survey, Pionzio had brought to his attention perimeter sidewalks that needed repair. Pulley performed an inspection of the subject area and confirmed the presence of sunken and cracked sidewalk.

On January 4, 1995, Pulley wrote a letter to Robert Williams (Williams), Administrative Superintendent of Highway Operations, New York City Department of Transportation (NYCDOT), notifying him of the perimeter sidewalk depressions and tripping hazards which existed at Mill Brook Houses and noted the some areas had been repeatedly patched but were in need of permanent restoration.

On January 23, 1995, Williams responded to Pulley's above letter and advised him that his complaints had been referred to the NYCDOT Division of Capitol Planning to obtain funding and "In the interim we will make the area safe by repairing it with asphalt." Pulley testified that NYCDOT did make repairs utilizing asphalt sometime after William's letter of January 23, 1995 and after Pulley's tenure at Mill Brook Houses in 1995. Pulley further testified that both NYCHA and NYCDOT made temporary repairs to the sidewalk area. He did not recall how many times NYCDOT made temporary repairs, but he knew NYCHA has made repairs at least one time. The NYCHA repairs were performed by its ground staff utilizing cold patch and compacting it with a small hand roller.

#### **D. DESCRIPTION OF THE INCIDENT**

Rosado testified that at the time of the incident he was returning to his apartment at 440 East 134<sup>th</sup> Street from his sister's apartment located in the Mill Brook Houses on East 138<sup>th</sup> Street. From 138<sup>th</sup> Street he turned left and was walking southerly on the east side of Brook Avenue. Approximately mid-way between East 135<sup>th</sup> & East 136<sup>th</sup> Streets, just north of the double entrance gate leading to the resident parking area, he tripped and fell when his left foot went into a sidewalk defect that he testified was four (4") to six (6") inches deep. He also testified that the sidewalk was broken with many holes.

#### **E. ANALYSIS**

The latest Big Apple Map prior to the date of the incident and stamped received by NYCDOT on July 2, 1997, indicates by legend, both holes and raised or uneven portions of sidewalk on the east side of Brook Avenue between 135<sup>th</sup> & 136<sup>th</sup> Streets. This is consistent with Pulley's letter to NYCDOT of January 4, 1995 in which he notified NYCDOT of "...serious sidewalk depressions and major tripping hazards which exist...". Therefore, NYCDOT had been put on notice both by the Big Apple Map and NYCHA of the defective condition of the perimeter concrete sidewalk prior to the time Rosado was injured. The fact that NYCDOT, in their letter to Pulley of January 23, 1995, stated that they were arranging for funding and would temporarily repair the defective area is evidence that NYCDOT was responsible for maintenance of the concrete perimeter sidewalk.

The NYCHA had notified the city agency responsible for maintenance of the perimeter sidewalk, NYCDOT, of the hazardous condition. Noting that the condition had either not been addressed in a timely fashion by NYCDOT, or that the hazardous condition of the areas temporarily repaired by NYCDOT has recurred, NYCHA filled the holes with granular material and cold patch and compacted the cold patch with a small hand roller. This temporary repair of areas of the perimeter sidewalk, whose maintenance NYCHA was not responsible for, could only have alleviated the hazardous condition created by the depressed sidewalk areas.

In no way could the NYCHA temporary repair have exacerbated the defective condition. The repair was done in a manner which conformed to accepted construction industry practice for the repair of pavement openings utilizing cold patch material.

In their 3101(d), the plaintiffs stated that their expert, Herbert W. Braunstein, P.E., will testify that the area beneath the collapsing sidewalk was not properly compacted or feathered when the repair was made, sunk, and created the hole in the sidewalk area. The NYCHA grounds staff's temporary repair utilizing granular material to fill the hole and cold patch at the surface was for the purpose of temporarily alleviating the uneven condition at the surface. The subsurface area beneath the sidewalk could only be addressed by excavating the sidewalk and soil beneath it to determine the nature of the deficient subsurface condition. The responsibility for addressing any deficient subsurface condition was solely NYCDOT's who was responsible for maintenance of the perimeter sidewalk.

Feathering of an overlay of pavement is done to minimize the thickness of the exposed perimeter edge of the new pavement where it bears on the existing pavement. In this matter the hole was existing and therefore feathering would not be required. More importantly, whether a new pavement edge is feathered or not is totally unrelated to pavement sinking.

## **F. FINDINGS**

Within the bounds of reasonable engineering certainty, and subject to change if additional information becomes available, it is my professional opinion that:

- The NYCDOT had been put on notice of the defective perimeter street sidewalk condition both by the Big Apple Map it received on July 2, 1997 and a letter sent by the NYCHA on January 4, 1995. On January 23, 1995 NYCDOT responded to the aforesaid NYCHA letter and indicated that they would temporarily repair the defective areas and arrange for funding for permanent repairs. The failure of NYCDOT, the agency solely responsible for maintenance of the perimeter street sidewalk at the location of the incident, to properly repair the hazardous condition of the sidewalk caused Rosado to trip, fall and be injured.
- The NYCHA, aware of a hazardous condition created by holes and cracks in the perimeter street sidewalk, notified the NYCDOT, the department responsible for maintaining the sidewalk, of the hazardous condition. Noting that either NYCDOT has not addressed the repair in a timely fashion, or the hazardous condition had recurred after NYCDOT repair, NYCHA filled the holes with granular material and placed and hand rolled cold patch at the surface in accordance with accepted construction industry practice. There is no evidence that any work performed by NYCHA exacerbated the hazardous condition of the perimeter street sidewalk and/or contributed to Rosado's injury.

- The continued settlement of the areas repaired is indicative of a subsurface deficiency that could only be addressed by excavating the settled sidewalk areas, removing unacceptable material, backfilling with granular material and restoring the surface pavement. NYCDOT was solely responsible for the maintenance of the perimeter street sidewalk and the nature of the construction necessary to remediate any deficient subsurface condition.

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Joseph C. Cannizzo, P.E.

## PEARLIE HAYNES V. MONICA HAYNES AND JACQUELINE FRANCES

**ARCHITECT'S REPORT**

**DECEMBER 10, 2003**

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### **A. INTRODUCTION**

On September 2, 2001 while descending the single step in her apartment, at 3805 Avenue H, Brooklyn, New York, Ms Haynes fell and was injured.

I was asked to perform an investigation to determine if conditions existed that were dangerous in a manner that were a cause of Haynes' fall.

### **B. MATERIAL AVAILABLE FOR REVIEW**

1. My site investigation of November 12, 2003.
2. Affirmation in Support, dated October 10, 2003.

### **C. SITE DESCRIPTION**

Ms. Haynes resides in the bottom apartment at the 2-family residence at 3805 Avenue H, Brooklyn, New York. The apartment is in a converted garage and basement area on the lower level of the house. The apartment is on two levels. The living space and hallway (formerly the garage) is on an elevation 5-1/2" above the kitchen, bedrooms, and bath.

There is a single step transition between the two elevations. The single step occurs at the doorway that separates the hallway from the kitchen.

The floor of the apartment floor is concrete. The living room and hallway is surfaced in light gray, 12" square, vinyl composition tiles (VCT). The kitchen floor is surfaced in white, ceramic tiles, approximately 12" square. At the edge of the step, between the hallway and the kitchen, portions of the tile have been worn away, exposing the gray concrete. There is exposed, gray, concrete, at the bottom of the step. There is also a silver aluminum threshold between the section of bare concrete and the ceramic tile (in the kitchen), at the doorway.

I observed the following:

- The similarity of colors among the gray concrete, gray VCT, silver threshold, and white tile obscured the conspicuity of the edge of the step.
- The similarity of the colors, above, obscured the difference in elevation between the hallway and the kitchen.
- The construction of a single step at a doorway.

## D. ANALYSIS

### Dangerous Conditions

#### 1. There was no conspicuous delineation of the edge of the step.

The inconspicuousness of a single step riser makes it dangerous because pedestrians are likely not to identify their presence. The combination of a single step with an undelineated edge has been discussed as a hazardous condition by several, nationally recognized publications.

The U.S. Department of Housing and Urban Development issued **A Design Guide for Home Safety** in 1972. It states:

#### STAIRS – Small Elevation Changes

Small abrupt elevation changes create hazardous situations because often the change is unnoticed or unrecognized. The unexpected change in the elevation of the walking surface can cause a bad fall. ...Single risers in the residential scheme should be avoided.

**Guidelines for Stair Safety** (NBS Building Series 120, May 1979) is a nationally published study by the U. S. Consumer Product Safety Commission, whose findings serves as a standard for the safe stairway design. Section 2.5.6 identifies that a single step stair is hazardous because, the small overall change in floor level is not reliably detectable by pedestrians. It is recommended that when single steps exist:

...provide patterns of illumination, color or other cues, which emphasize the location of the step, stair or encroachment to draw the user's attention to it.

And:

If the stair treads are finished with a surface material or covering that has a distinct geometric, pictorial, floral or randomized pattern which is visually more pronounced than the edges of the treads themselves...  
Then replace the tread surfaces and nosings, and place an illumination source so that a clear visual distinction is provided between planes representing each stair tread including the top tread or landing when seen from above, and so that "visual noise" created by surface patterns is eliminated.

The lack of a conspicuous delineation of the step edge deprived Haynes of the opportunity to notice and negotiate the step.

Haynes' apartment was a garage and basement space renovated for apartment use. There are materials, readily available and inexpensive, for delineating and making conspicuous a single step, including:

- Application of an adhering or painted stripe of a highly contrasting color, (e.g. yellow, red) along the edge of the step.
- Installation of a nosing material at the edge.
- Installation of a handrail on the sides of the step, as handrails are a commonly used visual cue of the existence of a change in elevation.

- Installation of a warning sign indicating the single step.

## 2. Failure to provide a handrail.

Handrails serve several functions at stairs. They are visual clues as to the presence of stairs, they assist the pedestrian as a support while ascending and descending, and they can provide a means of support during a fall. Installation of handrails is an element of safe stair design.

The American Society of Testing Materials, American National Standards Institute, the National Safety Council, and the National Bureau of Standards, nationally recognized organizations concerned with safety standards, recommend the installation of handrails at steps.

Haynes stated that she was “trying to catch my balance, because there is nowhere there that I could hold on to.” The failure to provide handrails deprived Haynes of the opportunity of having something to aid her as she tried to regain her balance.

There are handrails, readily available and inexpensive, for both new and renovated construction in various types of configurations (e.g. wall-mounted, floor-mounted). Installation of handrails at the single step would have contributed to the safety of the step configuration.

## 3. Failure to provide safe premises.

The **Housing Maintenance Code** of the City of New York establishes requirements for the repair and maintenance of all dwellings in the city. It states:

### Sec. 27-2005 Duties of owner

- a. The owner of a multiple dwelling shall keep the premises in good repair.
- b. The owner of a multiple dwelling, in addition to the duty imposed upon such owner by subdivision (a) of this section, shall be responsible for compliance with the requirements of this code, except insofar as responsibility for compliance is imposed upon the tenant alone.
- c. The owner of a one- or two-family dwelling shall keep the premises in good repair, and shall be responsible for compliance with the provisions of this code, except to the extent otherwise agreed between such owner and any tenant of such dwelling by lease or other contract in writing, or except insofar as responsibility for compliance with this code is imposed upon the tenant alone.

The **Building Code** of the City of New York, in effect since 1969, establishes requirements for the construction and alteration of buildings, and for the repair and maintenance of buildings.

§27-127 Maintenance requirements. All buildings and all parts thereof shall be maintained in a safe condition. All service equipment, means of egress, devices, and safeguards that are required in a building by the provisions of this code or other applicable laws or regulations, or that were required by law when the building was erected, altered, or repaired, shall be maintained in good working order.

§27-128 Owner responsibility. The owner shall be responsible at all times for the safe maintenance of the building and its facilities.

## **E. FINDINGS**

Within the bounds of reasonable architectural certainty, and subject to change if additional information becomes available, it is my professional opinion that:

1. The failure to install a clearly delineated step edge deprived Haynes of the opportunity to recognize and negotiate the single step and was dangerous in a manner that was a cause of her fall.
2. The installation of the single step at an interior doorway where various flooring materials were similar in color and texture obscured the change in elevation and the single step and was dangerous in a manner that was a cause of Haynes' fall.
3. The owner created the dangerous condition by constructing an inconspicuous single step and failing to install a handrail and this was a cause of Haynes' fall.
4. The owner's failure to install any readily available material to make the single step more conspicuous and the failure to install any readily available handrail made the step dangerous in a manner that was a cause of Haynes' fall.

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Denise P. Bekaert, A.I.A.