

March 29, 2006

File WTC
Memorial

Critics Raise Concerns Over 9/11 Memorial Exits

By **DAVID W. DUNLAP**

For two years, planners and architects have worked in the public spotlight on almost every aspect of design for the World Trade Center memorial and its museum: how much of it will be underground, how the waterfalls will work, how the names of victims will be arranged around the sunken pools, how the unidentified remains will be stored.

But now, with preparatory construction starting, another issue is coming into public view: How safe will the memorial be? Not safe enough, some critics fear. They raise the possibility of a fire or a bomb aimed at the thousands who will gather daily to remember the victims of two terrorist attacks on that very ground.

They point with concern to enormous halls far below street level. Advisers to the Skyscraper Safety Campaign, an organization led by two relatives of 9/11 victims, say that the plan for long transfer corridors between the exit doors and stairwells leading up to street level might prompt some visitors, particularly if they were disabled or out of shape, to reverse course and try get to the wide ramps in the central memorial hall, creating a potentially disastrous bottleneck.

The issue will almost certainly come up today in a hearing called by City Councilman Alan J. Gerson of Lower Manhattan. Although the Council has no authority over ground zero, Mr. Gerson said he was convening the session to get a number of issues involving the memorial out in the open, including questions about the emergency exits.

Less than a year ago, security concerns expressed by the New York Police Department forced a redesign of the Freedom Tower, immediately north of the memorial, delaying the project by months.

City and state officials insist that will not be the case this time.

"We are confident that the final result will be a memorial that's safe for the millions who will visit it," said Deputy Mayor Daniel L. Doctoroff, who is coordinating the review of the plans by the Buildings, Fire and Police Departments. Those reviews of the memorial are not finished, and he would not predict when they would be.

Mr. Doctoroff did say that the Port Authority of New York and New Jersey, which owns the site, and the Lower Manhattan Development Corporation, which is working on the memorial with the World Trade Center Memorial Foundation, had been cooperative in sharing information and responsive in addressing concerns.

"There's nothing we've seen that indicates that there are any major problems at all," he said yesterday.

The Port Authority has seen enough that its chief engineer, Francis J. Lombardi, could say yesterday:

"We are confident that the code has been met. We are confident that they have added enhancements that exceed code."

These include automatic sprinklers and a smoke exhaust system for the memorial galleries, which are technically regarded as outdoor spaces and do not need such measures under the code, Mr. Lombardi said. They also include pressurized stairwells and exit corridors, to prevent smoke infiltration, which are not required by code.

Exit stairs in the memorial could accommodate as many as 8,000 people, said Carl F. Krebs, a partner in Davis Brody Bond, the architectural firm working on the details of the memorial design, though the actual number of visitors in the memorial at any moment is not expected to exceed 2,000, with 3,000 more expected in the memorial museum. The complex is scheduled to open in 2009.

There will be at least eight exits from the main memorial level, 27 feet below ground, and at least eight exits from the main level of the museum, 69 feet below ground, not counting escalators, elevators and ancillary stairways. They will discharge at widely separated points: in the visitors' orientation center and the museum entrance pavilion, possibly in the West Street median or the World Financial Center, and in Tower 3 or Tower 4, office buildings planned on Greenwich Street.

Every visitor will be able to reach safety in a fire-protected, pressurized and structurally reinforced stairway or corridor within five minutes, said Kevin Morin, an engineer and project manager at Code Consultants Inc., which is working with Davis Brody Bond. Both the memorial and museum can be emptied of visitors in 20 to 30 minutes, he said, a pace that surpasses stadium and high-rise evacuations.

Code Consultants devised 11 computerized sequences projecting how visitors would get out of the memorial under varying catastrophic events in different parts of the structure. It also created a computer model to show the effects of fire and to help in the design of fire protection systems. Neither measure was required by the building code.

Although the Port Authority is not bound by local codes, it declared in a 2004 agreement with New York City that "it will comply with all applicable building code requirements" for "all construction work to be performed by the Port Authority or any of its net lessees" at the trade center site, which would include the memorial foundation.

~~One reason the memorial complies is that it has been technically classified an outdoor structure, akin to~~ a stadium. Its galleries will be open to the air, shielded only by the curtain of water provided by the waterfalls around the memorial voids. Exit requirements for outdoor structures are less restrictive, in location and capacity, than requirements for indoor assembly places like museums. Mr. Krebs said that the memorial would nonetheless meet the more stringent standards.

"I can't conceive of that being an outdoor space," said Glenn P. Corbett, an assistant professor of fire science at John Jay College of Criminal Justice and a technical adviser to the Skyscraper Safety Campaign. "It's not something I can walk away from. It's something I have to walk up and out of."

The Skyscraper Safety Campaign was founded by Sally Regenhart, whose son, Christian, a probationary firefighter, died on Sept. 11, 2001. It is fighting to force the Port Authority to be bound by the building code — rather than abide by it voluntarily — and to have what the campaign calls the "dangerous underground memorial" moved above ground.

Another technical adviser to the campaign, Jake Pauls, a consultant in building codes and public safety

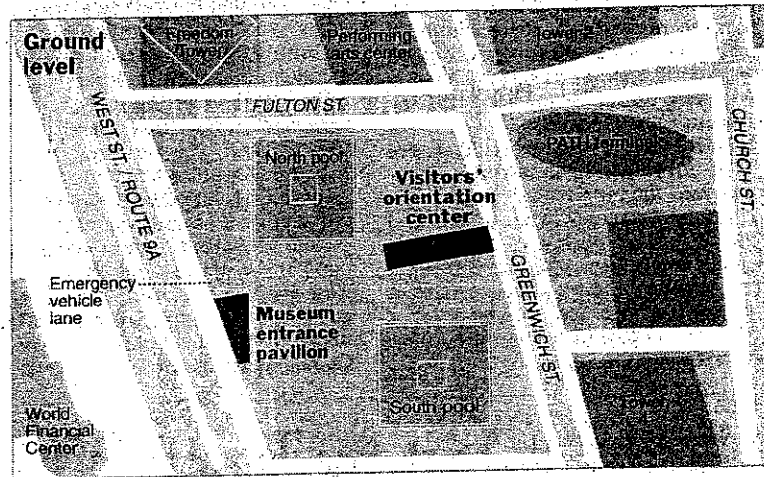
in Silver Spring, Md., raised concern about the hallways that will confront many visitors once they are past the exit doors.

"You go along what may be a long transfer corridor and then you're at the base of a stair and may have to climb 30 to 70 feet to the street," he said in an interview. "What troubles me is that the person would only find out about their difficulty with the stairs after they're a long, long way from the ramp. Then they have the problem of fighting their way upstream along this corridor. If that were true, if that were the scenario, this would be a recipe for disaster."

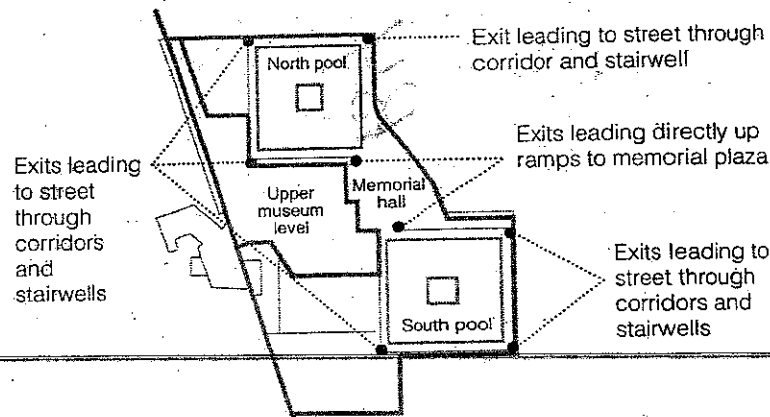
[Copyright 2006 The New York Times Company](#) | [Home](#) | [Privacy Policy](#) | [Search](#) | [Corrections](#) | [XML](#) | [Help](#) | [Cont](#)

How They Would Get Out

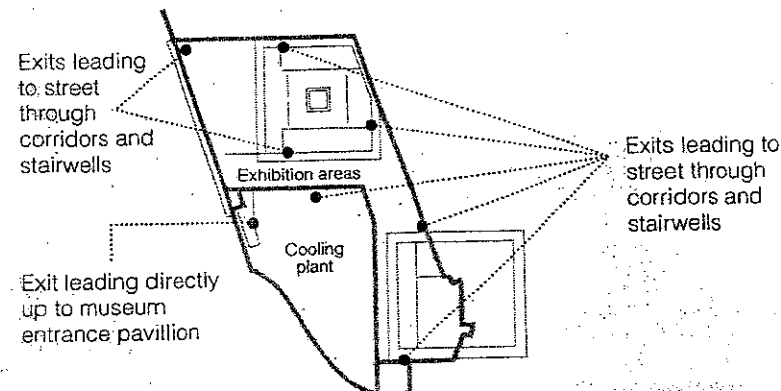
Floor plans show the location of 16 principal emergency exits in the World Trade Center memorial and memorial museum. Some exits would discharge visitors at street level in the museum entrance pavilion and the visitors' orientation center. Exits on the west may lead to the West Street median or the World Financial Center. Exits on the east may lead to Tower 3 or Tower 4.



Exits at the memorial level, 27 feet below ground



Exits at the main museum level, 69 feet below ground



Source: Lower Manhattan Development Corporation