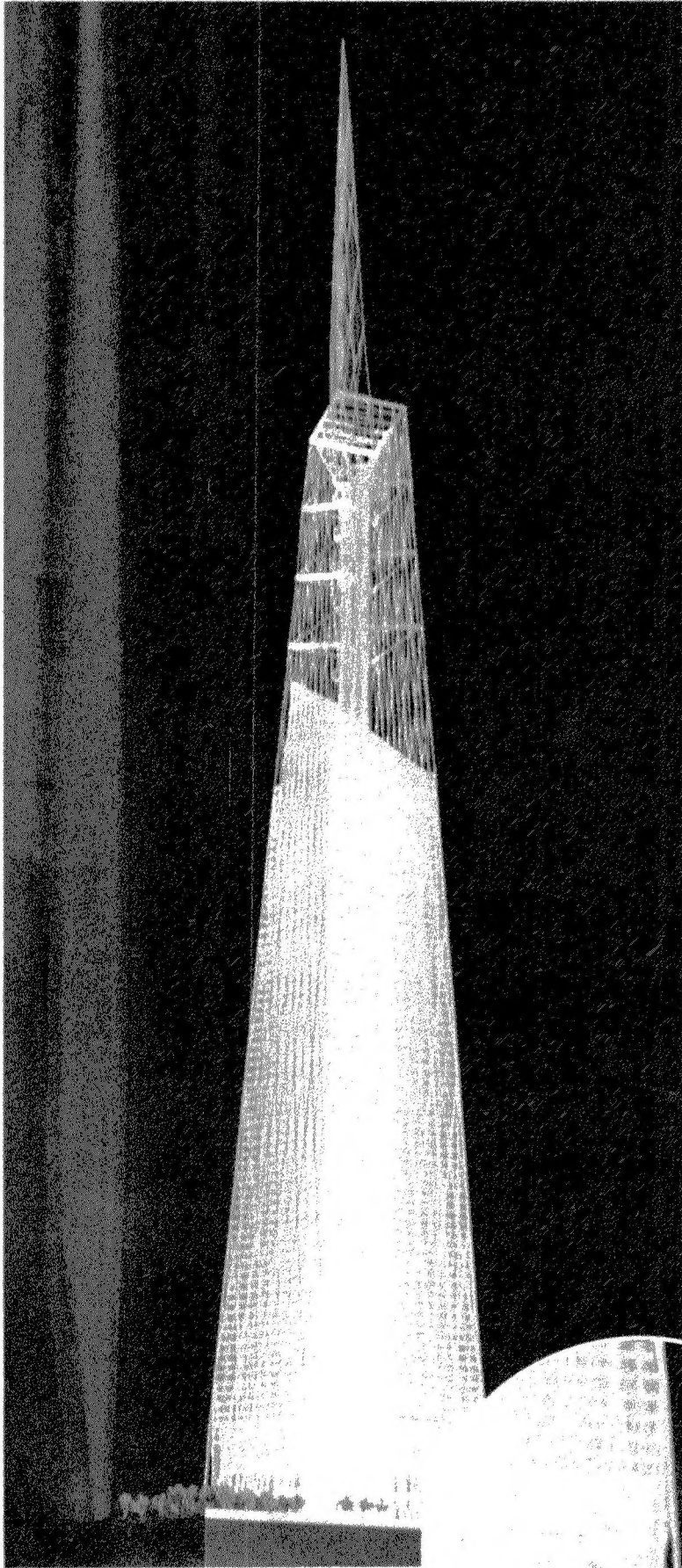


The Metro Section

The New York Times



AFP/Getty Images

The current design of the Freedom Tower includes exposed columns at the base, right, one of the security concerns that led Gov. George E. Pataki to order the redesign of the tower, now under way.

Many Demands On New Tower At Ground Zero

Seeking Better Security At a Symbol of Resolve

By GLENN COLLINS
and DAVID W. DUNLAP

Once intended as a shimmering, soaring declaration of political resolve and architectural ambition, the Freedom Tower at the site of the World Trade Center is being reimagined as something more impregnable. So the challenge now faced by its designers is to keep it from looking like a high-rise bunker.

The Freedom Tower may end up with a structurally massive base that is distinctly different from the upper office floors. The designers may use stainless-steel cladding, reinforced glass or even translucent concrete, a new material embedded with strands of glass that transmits light and shadow through seemingly impervious walls.

The redesign, ordered by Gov. George E. Pataki last month in response to security concerns raised by the New York Police Department, will add tens of millions of dollars to the building's estimated \$1.5 billion cost. Less than four weeks before the governor's deadline of the end of June, details of the redesign are still being worked out, said Silverstein Properties, developers of the Freedom Tower and 7 World Trade Center, and Skidmore, Owings & Merrill, the architects of both buildings.

The urgent push to fortify what had already been called "probably the safest building in the world" by its chief architect, David M. Childs of Skidmore, has raised broader questions about the site planning and architectural criteria for the trade center redevelopment project.

Today, two City Council committees will consider security concerns at the Freedom Tower and the larger issue of Police Department involvement in the design and construction of big buildings and development projects.

If antiterrorist security had been the one and only consideration at the trade center site, the first designs for the Freedom Tower and other projects would seem to flout some basic axioms put forth by the Defense Department, the Federal Emergency Management Agency and the American Institute of Architects.

In publicly available reports, they advise that attention-getting architectural symbols are prime targets and should be located far from potential vehicle-borne bombs; glass facades can be lethal in a blast; train stations and underground garages are especially vulnerable to attack; and spacious, column-free interiors under other structures may be liable to collapse.

At the trade center site, planners have envisioned a defiantly tall skyscraper laden with symbolism on

Continued on Page B4

Lightly, s Event

who has a long association with other Paris fashion houses including Yves Saint Laurent, reflect another element of the awards ceremony: It is no longer limited to American honorees. She presented an award to Gilles Bensimon, the French-born publication director of *Elle* magazine. Ms. Moss, who retains an award for her influence on fashion, is British, and Diane von Furstenberg, who won a lifetime achievement award, became a United States citizen only in 2002.

And if she liked American fashion, Deneuve looked stricken. "I don't comment," she replied, before offering for an American who lives in Paris. "I do love Marc Jacobs," Mr. Jacobs, who won an award for best accessories designer of the year, his seventh from the Council of Fashion Designers of America, later returned the compliment. "She is a great friend," he said.

Awards were also presented to American designers in several other categories, the recipients of which were not announced until last night. Wang, who has transformed her retail business into a full ready-to-wear collection in recent years, won for women's wear designer of the year. John Varvatos won for men's wear designer of the year, and categories for emerging talent, Best New Designer, and Best Established Designer. Mr. Elbaz won an award for women's wear designer; Alexandre Plokhov won for men's wear designer; and the two-man team of Tony Camargo and Nak Armbrister won for accessories.

There was fashion to speak of in a crowd of its influencers, it was a twist, reflecting the romantic floor-length gowns of Alber Elbaz, the designer of Paris-based house Lanvin. "I was surprised by how many long gowns there are in a room that is green without air-conditioning," said Ms. Wang.

Elbaz, who was given an award for his standing as an influential designer, looked around the assembled crowd and was reminded of something else. "It felt like a wedding banquet more than a ceremony," Mr. Elbaz said. "Only my mother wishes the marriage to be mine."

Accused Hotel Phone

es, and asked that bail be set at \$1 million. The defense, Mr. Lefcourt explained, that Mr. Crowe had made numerous attempts to get a call to Australia to speak to his daughter, Danielle Spencer.

a very, very charitable, defendant being with an excellent record," Mr. Lefcourt said.

Mr. Martin Murphy released Crowe on his own recognizance. That, Mr. Crowe put on his shoes and walked out of the courtroom with reporters trailing behind him. He did not say a word as he was escorted into a black G.M.C. Denali

Security Planters: Hard Reminders Of Stark Realities

By ANTHONY DePALMA

HOW fleeting the memories of ordinary days — the glimpse of sailboats on the sound, for instance, or shadows dancing beneath a young maple in spring — yet how eternal the remembrance of horrible events.

Not that it would ever be possible to completely banish memories of what happened on 9/11, but thoughts of that day — and days like it that may yet come — are set off by the innumerable security planters erected on city sidewalks. They are inescapable reminders, as difficult to overlook as they are to get around. Whether squat or square, they all are meant to do the same thing: keep truck bombs out of the buildings that terrorists



Ozler Muhammad/The New York Times

think represent America.

Most of these bulkheads are sown with live plants, but a bit of greenery cannot erase the memory of 9/11, especially after two explosive devices placed in security planters went off last month near an office building on Third Avenue housing the British Consulate.

In a different world, the security planters could be revered as urban bonsai. But in New York, they often end up being treated like elephantine ashtrays. Take the 52 lined up outside the Port Authority Bus Terminal. Within hours of being installed,

INK



Robert D. Kolakowski, left, maintenance manager at Port Authority Bus Terminal, pruning plants. Above, planters on Broadway

the eight-foot-long cement boxes were littered with cigarette butts, coffee cups and other debris. People lounged on them as though they were leather, not concrete. The plants died.

The Port Authority recently took another stab at blurring the planters' grim mission. Crews painted them mahogany brown, planted new juniper shrubs and erected a protective fence around each one.

"You need some kind of green out there to make it look good," said Robert D. Kolakowski, a manager of the Laro Maintenance Corporation, which now takes care of the planters, a riskier job than might be supposed. Mr. Kolakowski has his men wear leather-palmed gloves when they clean the planters. They have found broken bottles and hypodermic needles. The other day it was a headless

BOLDFACE

CAMPBELL ROBERTSON

No, Not the Show With Paula Abdul

Yes, Sunday night was the Tony Awards ceremony, and we all know what that means, right? Excuse us? The Tony Awards. They're for theater. Yes, the show that was on with **HUGH JACKMAN**. Yes, one of the X-Men. Yes, it's cool when he wears the claws.

As we were saying, it's time for the Boldy Awards Show Awards, that time-honored celebration of the Tony Awards, which, in case you've already forgotten, are about theater. Envelope, please.

The Edward R. Murrow Award for Distinguished Red-Carpet Journalism: **AN ENTERTAINMENT REPORTER**, for her interview of **HANK AZARIA**, who was nominated for his role in "Spamalot."

thing? I saw you last year in Chicago at the Cheesecake Factory! I was like, is that Hank Azaria?

Mr. Azaria: We were doing "Spamalot" there.

The Sean Penn Award for Ability to Make a Red-Carpet Reporter Fear Being Slapped: Hank Azaria.

"Listen," he said to us, "this is reward enough, just to be invited to the big dance, as they say. I think that's what **BURT REYNOLDS** would say: 'invited to the big dance.'"

Do you often think about what Mr. Reynolds would say?

"I'm in almost a constant state of thinking about what Burt Reynolds would say. It's a terrible burden."

Best Reason for Hugh Jackman and Aretha Franklin Not to Worry About That "Somewhere" Duet: "Nobody ever really watches the Tonys, do they?" said **MARY-LOUISE PARKER**.

The James Lipton Award for Discriminate Celebration of Mous: The legions of people outside the Marriott Marquis cheering loudly as **BILL IRWIN** won his award for best actor in a play, said one of the spectators when asked if he knew who **MARY-LOUISE PARKER** was.

Achievements in Relishing Success, We Can't Figure Out What Means Either Category: **JOHN RICK SHANLEY**, sitting in the hall of the Rainbow Room less than an hour after he won the award for "Doubt."

"You look disenfranchised," said to us.

What? Us? What about you? "I am. I'm completely dis-

Ground Zero

'Lactivists' Taking Their Cause, and Their Babies, to the Streets

By AMY HARMON

The calls for a "nurse-in" began on the Internet mere moments after Barbara Walters uttered a negative remark about public breast-feeding on her ABC talk show, "The View."

The protest, inspired by similar events organized by a growing group of unlikely activists nationwide in the last year, brought about 200 women to ABC's headquarters yesterday. They stood nursing their babies in the unmistakably public venue of Columbus Avenue and West 67th Street. They held signs reading, "Shame on View," and "Babies are born to be breastfed." Ms. Walters, who remarked a few weeks ago on the show that the sight of a woman breast-feeding on an airplane next to her had made her uncomfortable, said through a spokesman that "it was a particular circumstance and we are surprised that it warrants a protest."

But the rally at ABC is only the most visible example of a recent wave of "lactivism." Prodded by mothers who say they are tired of being asked to adjourn to the bathroom while nursing in a public space, six states have recently passed laws giving a woman the right to breast-feed wherever she "is otherwise authorized to be."

An Ohio bill saying a woman is "entitled to breast-feed her baby in any place of public accommodation" passed last month over the objection of one representative who wanted to exempt businesses from liability for accidents caused by "spillage."

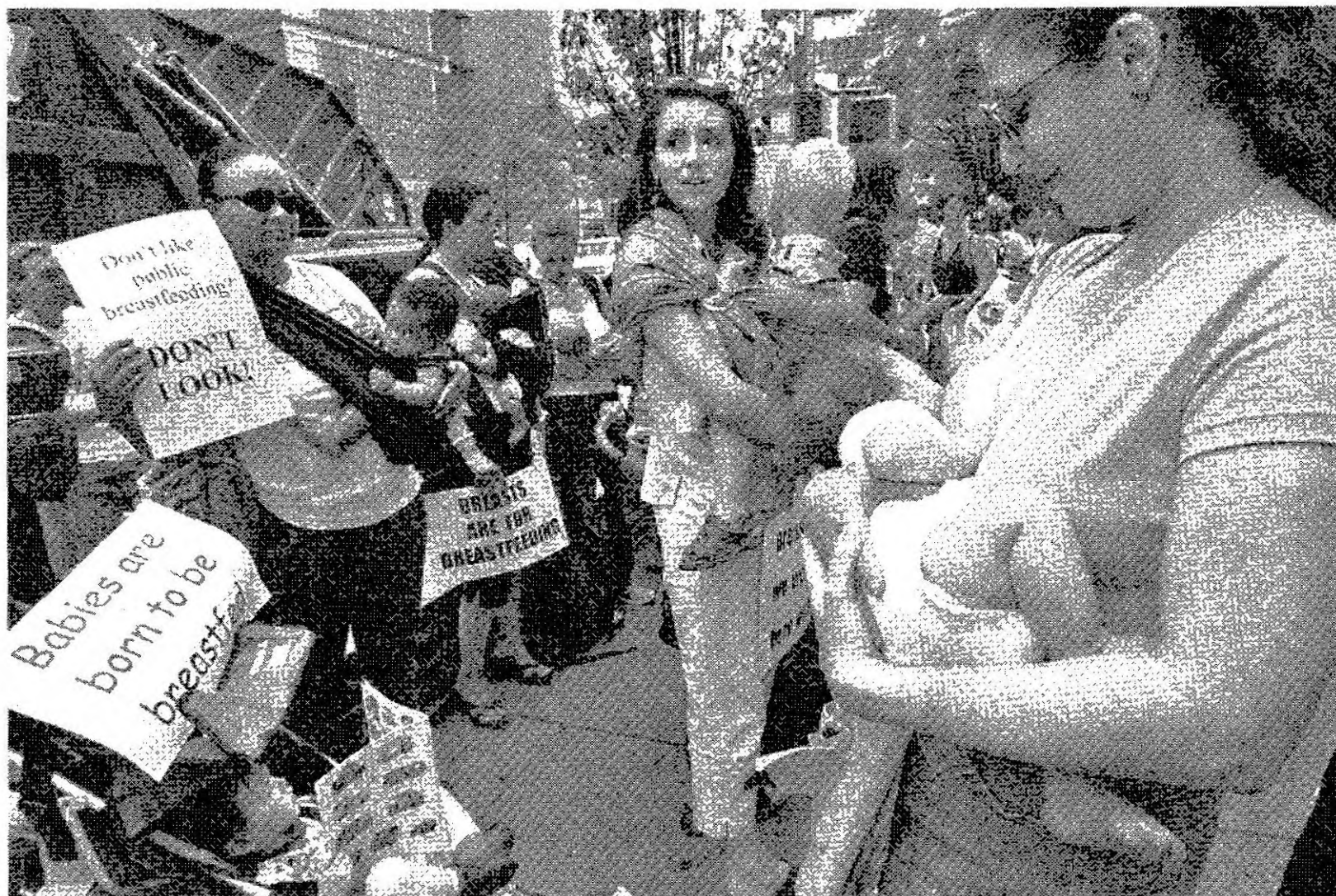
"I really don't know any women who 'spill,'" said Lisa Wilson, the mother of a 4-month-old in Fairview Park, Ohio, who helped organize a nurse-in at a local deli to support the bill.

Representative Carolyn B. Maloney, Democrat of New York, held a nurse-in on the Capitol's Cannon Terrace last month as she reintroduced federal legislation to amend the Civil Rights Act to protect women from employment discrimination for using a breast pump or feeding their babies during breaks.

Nursing mothers are pressuring businesses, too. Burger King has declared that mothers are welcome to nurse. Starbucks — the target of a letter-writing campaign that asked "What's more natural than coffee and milk?" — has, too.

The moves come as the number of American mothers who choose to breast-feed has climbed to about 70 percent in 2003, the last year for which information was available, from about 50 percent in 1990. Many otherwise apolitical women say they found themselves unexpectedly transformed into lactivists after fielding a nasty comment or being asked to stop nursing in public.

"We're all told that breast-feeding is the best, healthiest thing you can do for your child," said Lorin Charkoudian, 32, who started the Web site www.nurseatstarbucks.com after being asked to use the bathroom to nurse at her local Starbucks. "And then we're made to feel ashamed to



Tamara Tsoutsouris, right, feeding her 7-week-old yesterday outside ABC headquarters as part of a protest over remarks by Barbara Walters.

do it without being locked in our homes."

But Ms. Walters is not the only one who might prefer not to be confronted with breast-feeding at close quarters. Legislators, business owners and family members are debating how to reconcile the health benefits of nursing with the prevailing cultural squeamishness toward nursing in public.

In interviews and Internet discussions, hundreds of women recount

More mothers demand the right to nurse in public.

being asked to stop nursing in public spots, including the Children's Museum in Huntsville, Ala.; a knitting store in the East Village; a Radisson Hotel lobby in Virginia; a public bus in Los Angeles; and a city commission meeting in Miami Beach.

"It's nothing against breast-feeding, it's about exposing yourself for people who don't want to see it," said Scotty Stroup, the owner of a restaurant in Round Rock, Tex., where a nursing mother was refused service last fall.

But the new generation of lacti-

vists compare discomfort with seeing breast-feeding in public to discomfort with seeing interracial couples or gays holding hands.

"It's like any other prejudice. They have to get used to it," said Rebecca Odes, co-founder of "The New Mom" blog, who attended the ABC protest. "People don't want to see it because they feel uncomfortable with it, and they feel uncomfortable with it because they don't see it."

Whether to breast-feed in public, many nursing mothers say, is not simply a matter of being respectful of another person's sensibilities. They cite research by the Food and Drug Administration showing that the degree of embarrassment a mother feels about breast-feeding plays a bigger role in determining whether she is likely to do so than household income, length of maternity leave or employment status.

The American Academy of Pediatrics urges women to feed their babies only breast milk for the first six months, and continue breast-feeding for at least an additional six months. If its recommendations were followed, the group estimates that Americans would save \$3.6 billion in annual health care costs because breast-fed babies tend to require less medical care. But while more women are breast-feeding for the first few weeks, fewer than one-third are still nursing after six months. Some

doctors attribute the decline to self-consciousness and the difficulties of finding spaces where nursing seems acceptable.

"To many mothers, breast-feeding runs up against sexual attitudes toward the breast," said Dr. Lawrence Gartner, who leads the academy's research on breast-feeding. "That reduces the prevalence of breast-feeding, which is a bad situation because duration of breast-feeding is an important factor in children's health."

Even mothers who are committed to nursing say they are shaken when confronted with the hostility or consternation of strangers observing them.

"People make you feel like you're doing something dirty, almost," said Rene Harrell, 26, of Chantilly, Va., who said she was recently asked to leave a Delta airport lounge in Atlanta as she nursed her 8-month-old son, Elijah.

Once on the plane awaiting takeoff, she said, a man across the aisle complained loudly about her into his cellphone as she continued to nurse.

The scene, said Ms. Harrell, reminded her of the one Ms. Walters described, which she read about on an Internet discussion board.

"It's just, where would you like me to go so I don't bother you by being here?" Ms. Harrell said. "He was not on solids. It's not like I could have

given him something to tide him over. He needed to eat."

Marilyn Yalom, the author of "History of the Breast," says Americans' views of the breast has changed over time, and could change again. More than in other countries, she said, the breast is seen here as a sexual object.

"We live in a very mechanistic society and almost anything that doesn't come out of a package is somehow suspect," Ms. Yalom said. "So milk that comes out of a real human breast, we're not very comfortable with, it brings us too close to our animal nature."

The nurse-in at ABC was perhaps the largest of the dozen or so held around the country over the last year.

"I have the right to breast-feed my child without getting nasty looks," said Patricia Lechuga, 32, who said she watches "The View" every morning while breast-feeding her 10-month-old daughter before her nap. "So many people watch the show, I was just so disappointed in them."

On the Upper West Side, it was hard to find anyone to disagree with her.

"Are there people who are against breast-feeding?" asked Rich Flisher, 39, a neighborhood resident passing by the nurse-in. "I do prefer it if you're discreet, but hey, I'm behind you. Go go go."

Hunt for Missing Swimmer, 16, Is Called Off

By ANAHAD O'CONNOR and JANON FISHER

A squad of scuba divers looking for a missing swimmer spent several hours searching the water off Rockaway Beach yesterday morning, but called off their hunt as a potentially dangerous high tide approached, police officials said.

The swimmer, Jermaine Cohen, 16, disappeared in a violent rip tide after he and three friends waded in near Beach 93rd Street on Sunday evening after the lifeguards left for the day. Detective John Sweeney, a police spokesman, said that the search would resume this morning but that Jermaine was presumed dead.

"It's now a search and recovery; it's no longer a search and rescue," Detective Sweeney said.

THE DANGER JUST OFFSHORE

Using field measurements and lab models to try to predict rip currents. *Science Times*, Page F1.

borhood of the Rockaways where Mr. McDonald, and presumably Jermaine, perished is known to be particularly dangerous, claiming the lives of more than a dozen people in the last decade alone.

As divers from the Police Department and the Coast Guard scoured

'Jermaine was going down so I grabbed his

hand, then...

"It was like a treadmill; you swim but you're not going anywhere," said Jammie, a neighbor of Jermaine's from Crown Heights. "Jermaine was going down so I grabbed his hand; then a wave came along and we both went under, so I just swam in."

Standing nearby was Jermaine's father, Delroy Cohen, who expressed sympathy for Mr. McDonald's family but angrily blamed lifeguards for not being on hand to rescue his son. "They should make sure everybody's out of the water; that's what they get paid for," said Mr. Cohen, 42, a mechanic who said that Jermaine had planned the same career.

But Norberto Ferrer, 43, a lifeguard at Rockaway Beach who was on duty yesterday, said the rip tide surge that dragged the boys under happened about 6:30 p.m. almost



Alison Thompson, Jermaine Cohen's mother, was supported by a friend.

Test Scores To Be Used To Analyze Schools' Roles

By DAVID M. HERSZENHORN

Schools Chancellor Joel I. Klein will unveil plans today for a more sophisticated analysis of annual standardized test scores that he said will provide a clearer picture of which schools are helping students and which schools are lagging behind.

The new analysis, which will be based on the same annual reading and math scores currently used, will compare a school's results, grade by grade, against those of peer schools with students starting out at generally the same level.

Known as a value-added approach because it seeks to judge how much value schools add to their students' educations, the analysis is intended to offset some of the limitations in the way scores are traditionally examined.

The traditional measures, for instance, make it extremely hard to determine if generally high-performing schools are helping their students advance even further.

The approach would also identify low-performing schools that are nonetheless helping students make significant progress, relative to their peers. "The power in this," Mr. Klein said, "is being able to recognize higher-performing schools at the bottom of the pack."

The value-added method is also a first step toward even more highly sophisticated methods of analyzing school performance. Once the new system starts to make better sense out of year-to-year changes in scores, officials can then examine factors that might be influencing the scores, like teacher absences and parent participation.

In other states, the value-added approach has been instrumental in moving toward merit-pay programs, in which teachers or even entire school staffs, including administrators, secretaries and custodians, are rewarded when a school outperforms its benchmarks.

In New York City, the current method of analysis looks primarily at one year's fourth grade, for example, versus the previous year's fourth grade — even though those groups include different students. The value-added approach looks specifically at the performance of students who remain in the same school from one year to the next.

And while traditional measures also focus overwhelmingly on the students moving from below state standards to performing at or above grade level, the new approach would look at how students progress, regardless of where they start out.

Supporters of the value-added approach say this helps to discourage teachers from simply allowing high-performing students to coast, or from neglecting the very lowest-performing students in favor of those just below grade level, who can meet the state standards with just a little extra help.

Chancellor Klein had initially pledged to unveil the new accountability system for the start of school this past September. James E. Sallier, the official who initially led the effort to develop the method for New York City, left the city Education Department in July 2004, saying his work had been completed.

Mr. Klein said that the program could have been adopted earlier, but that the department was already introducing an array of ambitious policies and programs.

Officials said that initially the new system would not impose any additional costs on the school department.

Mr. Klein will describe the new approach in a speech today at a luncheon of the Center for Education Innovation-Public Education Association, a nonprofit group that has been involved in creating new public schools and other education programs.

In an interview yesterday, the

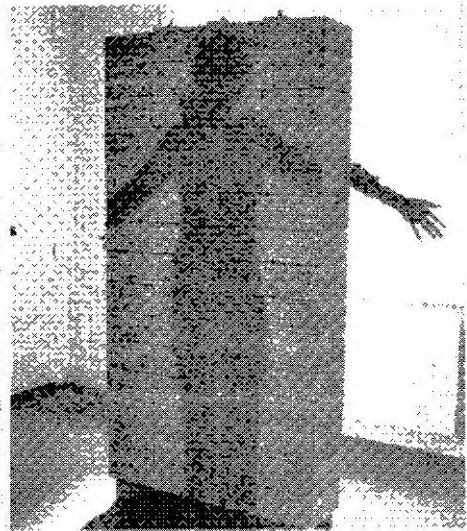
Security at a Symbol of Resolve: Many Demands on a New Ground Zero Tower

Continued From Page B1

a site bounded by a heavily trafficked state highway; a memorial that is expected to draw millions of visitors; and a transparent, glimmering museum directly above the broad, column-free mezzanine of a busy commuter rail and subway station. City streets will lace the site. Below them will be a network of ramps, roadways, loading docks and parking spaces.

Officials still intend to follow this broad development outline, but the design of the Freedom Tower is being revised to provide a greater shield from vehicle-borne explosives. This is generally described as "the most important consideration" in antiterror structural design by the emergency management agency, even though the last attack on the trade center was an aerial assault. Cars and trucks have proven to be an effective way of delivering large explosive charges.

The first version of the Freedom Tower was unveiled in 2003 and publicly embraced by city and state leaders, including officials of the Port Authority of New York and New Jersey, which owns the site. The design placed the building as close as 25 feet from West Street-Route 9A. From a parallelogram base ringed by an arcade of exposed columns, the tower was to twist as it rose, culminating after 70 floors of occupied space in an open-air superstructure of cables, power-generating windmills and an off-center spire meant to echo the Statue of Liberty.



LiTraCon, a type of concrete with imbedded strands of glass to make it translucent, may be used in the Freedom Tower.

People who have been informed about the redesign discussions say that the architects will probably set the building back at least twice as far from the street to limit blast damage from a car or truck bomb, and untwist it. The new building is likely to have a square floor plan, with a different summit and several more occupied floors than were in the original design. Windows below the 150-foot level will almost certainly be fewer and smaller, and views will be limited. The arcade around the base may be eliminated.

Managers of the redevelopment insist that the trade center site can be made safe through a series of protective zones, with checkpoints, bollards and other barriers.

And they say the Freedom Tower and other sensitive buildings can be hardened with blast-resistant materials. Some, like Daniel Libeskind, the site's master planner, say the new World Trade Center "will be as safe as any site in the world today, if not safer."

"We are responding to the need for security, but we are also responding to life," Mr. Libeskind added. "We cannot make the Freedom Tower a tower of fear."

There is no denying, however, that this site has been attacked twice. In this context, the assessment of security is something of a gamble against unknowable, and possibly deadly, odds.

Much about security preparedness has been deliberately shrouded in secrecy. Some experts and public officials spoke anonymously for this article because they are forbidden contractually, or by the agencies they work for, to publicly discuss questions of safety. They also say that specifying security details is an invitation to terrorists to exceed them.

Some with knowledge of the Police Department's evaluation of risk on the site said that its experts favor caution in security tradeoffs, but do not want to be unrealistic in demanding assurances of absolute safety. These experts acknowledge that an urban site cannot be built that is totally im-

mune from attack, but insist that its buildings must not be so vulnerable that they invite an attack.

The Freedom Tower's original "threat and risk assessment" report, these experts say, specified that the building achieve the security standards for a high-level government structure in Washington, capable of resisting a 5,000-pound truck bomb — more than the size of the 4,000-pound Oklahoma City explosion in 1995.

Though such criteria were unusually high for an office building, the police rejected them as inadequate, given the Freedom Tower's height, its role as a political statement, its planned glass exterior and its proximity to West Street-Route 9A.

The police did suggest some redesign options and submitted a report detailing the history of truck-bomb attacks, according to some with knowledge of the ensuing dialogue. Finally, in early May, the governor announced that the Freedom Tower would be moved away from West Street, and that the tower exterior would be strengthened.

Untwisting the torqued design of the original tower would reduce the size of the building's base, and help meet the Police Department's requirement that it be set back farther from the street.

The original distance of 25 feet from West Street-Route 9A will be doubled, at a minimum; as much as 65 feet is conceivable. Since the distance from Vesey and Fulton Streets will be considerably less, traffic on those streets will most likely have to be limited.

Such seemingly minor differences matter "because explosive pressures decay so rapidly with distance. Literally, every foot counts," said Eve Hinman, the president of Hinman Consulting Engineers and a principal author of "Primer for Design of Commercial Buildings to Mitigate Terror Attack," issued in 2003 by the emergency management agency.

The Freedom Tower architects have said that the building's stairwells, like those of the new 7 World Trade Center but unlike those of the twin towers, will be protected by reinforced concrete instead of wallboard, and will be pressurized to keep stair passages from filling with smoke.

Architects are planning to include separate emergency-responder staircases and elevators that could be used in a crisis. The designers hope to incorporate redundant sets of pipes feeding the fire sprinklers. And signal-boosting radio repeaters are planned to enhance radio communication.

The security consultant on the Freedom Tower project is Weidinger Associates, an engineering firm with decades of experience in blast resistance.

Over all, Mayor Michael R. Bloomberg has said, the redesigned Freedom Tower will be built to achieve United States embassy security standards. The base, up to 150 feet, will have what consultants call "a hard bottom," built to Department of Defense standards of blast resistance. Although the size of this threat is classified, an emergency management agency report recommends protection against at least 10,000 pounds of explosives. (The largest truck bombing against an American target, the Marine barracks in Beirut in 1983, involved some 12,000 pounds of explosives.)

Among the sheathing materials under consideration for the Freedom Tower are stainless steel, laminated glass and translucent concrete, an expensive material, some of which is sold under the brand name LiTraCon, for light transmitting concrete.

The redesign is likely to eliminate arcade columns, which the emergency management agency recommends avoiding in its design primer since they are "primary structural elements that hold up part of the building," said Dr. Hinman, the author of the report, in an interview.

To compensate for the reduction in floor space caused by the redesign, the occupied portion of the building, originally to be 70 stories, will probably increase by another few floors.

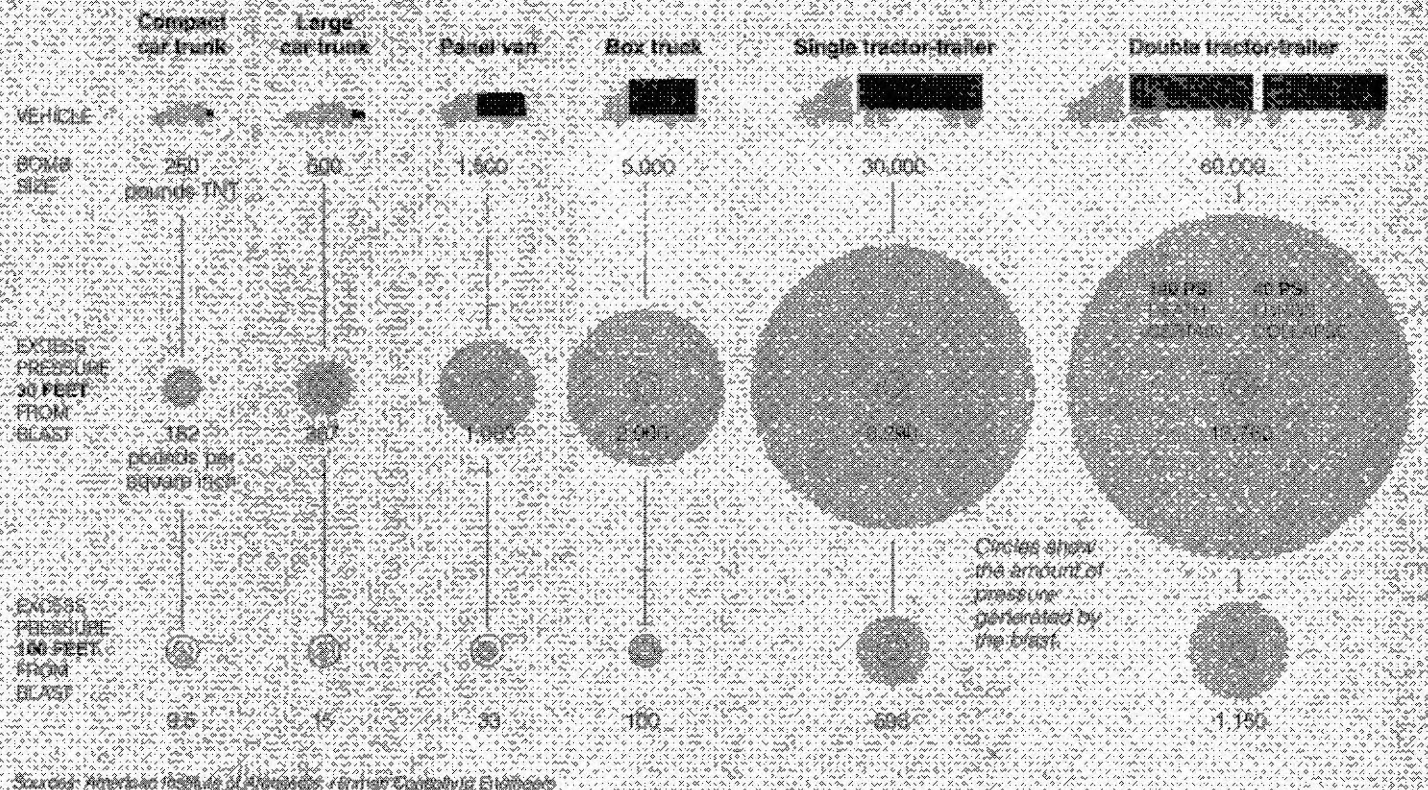
Publicly trumpeted flourishes at the top of the building — a wind farm, an observation deck, restaurants and exterior cabling at the spire — are likely to change. But none of the original elements has thus far been written off. One possibility is that a single antenna structure will allow the tower to reach 1,776 feet.

That height remains the governor's goal, even though some security experts say it substantially raises the security ante. "In my opinion the height is a negative because of the risk of another aerial attack," Dr. Hinman said.

Mr. Libeskind, however, said that "a four-story building on that site wouldn't be less attractive to those who want to destroy this country."

Why Setbacks Matter

The power of a bomb blast decreases significantly with distance. Below are some common vehicles, how large a bomb they could contain, and what the power of the blast would be — measured in pounds per square inch of excess atmospheric pressure — at distances of 30 and 100 feet. Human lungs collapse at 30 to 40 pounds per square inch of excess pressure, and death is certain at 150 to 120 pounds per square inch.



Carl Galoto, a partner at Skidmore, said, "Our client and the governor have asked us to design something great."

Greatness aside, the security goal is to make the Freedom Tower structurally reusable after an explosion. Such engineering standards do not assume that the lives of all the people within the building could be saved in an attack, though hardening the structure could prevent many deaths.

The original plaza of the World Trade Center, which acted as a sometimes windswept barrier to the surrounding neighborhood, might have been preferable purely from a security point of view because it

future glass-clad headquarters of The New York Times across Eighth Avenue from the Port Authority Bus Terminal. This transportation hub has for months been undergoing a security upgrade. Bare steel support columns in upstairs parking areas have been encased in reinforced concrete to enhance their fire and blast resistance.

Several experts question the location of the Freedom Tower near a state highway, three through streets and the headquarters of at least two high-profile companies, American Express and Verizon.

"The best thing from a security standpoint would be to move the Freedom Tower to Church Street," said Guy J. Nordenson, a structural engineer and a professor of architecture at Princeton University who is currently involved in several projects at the trade center site. "You could control truck traffic access better on Church Street than on West Street, and you would be able to achieve setbacks more easily on that site."

Trucks are not the only threat. "Large passenger vehicles like S.U.V.'s are able to carry more explosives unobtrusively and are a major hazard," Dr. Hinman said. She said the current estimate of how much a big S.U.V. can carry is the equivalent of the charge used in the Oklahoma City bombing.

To make underground parking safe, all vehicles entering the subterranean roadways would be subject to inspection at the entrances off Liberty and Vesey Streets, said Stefan Pryor, president of the Lower Manhattan Development Corporation.

Security experts underscore that terrorists' intentions cannot be predicted, and they recommend the installation of specially designed air intakes and ventilation systems in buildings at the site to counter radiological, chemical and biological threats.

Also undergoing scrutiny is the \$2 billion PATH station and transportation hub by the architect Santiago Calatrava, which poses many engineering challenges, including the routing of the PATH tracks directly under the Freedom Tower site, meaning that the tower's supporting columns must be threaded among the rails.

Mr. Calatrava said in an interview that he could deliver "a beautiful building that accomplishes all the needs of security," adding that "95 percent of people in the station will be in lower levels," and therefore more shielded from the possibility of explosion. The distance from Church Street to the above-ground part of the terminal has not yet been determined by the Port Authority, which runs PATH, but engineers have set 50 feet as a goal.

To support the bulk of the museum building, transfer girders will be used to redistribute its weight out to the sides of the PATH station mezzanine directly below. Generally speaking, the use of transfer girders is "strongly discouraged" in the emergency management agency's primer.

"If you lose the transfer girder, a lot more

of the building is going to come down," Dr. Hinman said in an interview. The failure of structural transfer systems contributed to the collapse of the original 7 World Trade Center and of the Alfred P. Murrah Federal Building in Oklahoma City.

But the transfer girders above the PATH station have been designed "in a way that the global collapse of the building would be almost impossible," Mr. Calatrava said.

The museum is to have a "crystalline facade" of glass prisms set into walls of wood or terra-cotta designed to capture light, said Craig Dykers of the Norwegian architectural firm Snohetta. "We have been apprised of the security requirements," he added, "and we plan to meet and exceed them."

But relatives of those who died in the trade center have expressed concern about all of the glass facades planned for the site, said Monica Iken, whose husband, Michael, died in the south tower. "For many family members who were talking on the phone to their loved ones," she said, "the last thing they heard was the shattering of glass."

Based on past terrorist incidents, Dr. Hinman said, up to 80 percent of injuries from terrorist attack are from breaking glass.

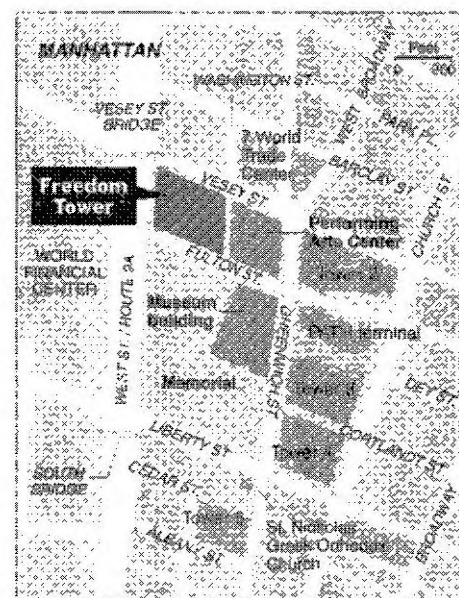
In an explosion, even safety glass "breaks into thousands of pellets, each with sharp edges flying at near-supersonic speed," according to "Security Planning and Design," a 2004 safety primer from the American Institute of Architects. The Department of Defense requires a minimum of quarter-inch-thick laminated glass for exterior windows and glazed doors.

The police have neither seen nor approved the redesign of the Freedom Tower, but on the basis of briefings about the safety criteria for the revision, they have judged that the new building will be very resistant to a truck bomb, though they will reserve comment until they see more specifics.

The police have not yet given security approval to the PATH station or to the museum that will be above it, but some who have knowledge of Mr. Calatrava's presentation to law enforcement agencies say he impressed them with the security awareness he demonstrated from his designs of seven previous stations.

In the end, some decisions about security at ground zero may necessarily be arbitrary, political and imperfect: in short, a compromise. Family members of trade center victims underscore the fearful gravity of these choices.

"From the beginning it has been a rush to rebuild," said Monica Gabrielle, co-chairwoman of the Skyscraper Safety Campaign, who lost her husband, Richard, in the south tower. "But let what they build on that site be a monument to a change in mentality about safety and security. No one should ever suffer like my husband did, and the 3,000 other families. We want no one to walk in our shoes, ever."



Security on the streets near the Freedom Tower is being re-evaluated.