NYC BUILDINGS

NEW YORK CITY DEPARTMENT OF BUILDINGS
280 BROADWAY, NEW YORK, NY 10007-1801

PATRICIA J. LANCASTER, FAIA., COMMISSIONER

Fatma Amer, P.E.
Acting Deputy Commissioner
Technical Affairs
(212) 566-3248
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Fatmaa@buildings.nyc.gov

November 23, 2004

Chief Patrick McNally
NYC Fire Department
Bureau of Fire Protection
9 Metrotech Center, 3rd Floor
Brooklyn, NY 11201

Re: Freedom Tower – World Trade Center, Tower 1
Request for a Waiver of Rule 100.1d(2) of Reference Standard 18 in Regards to the use of a 5-car Passenger Elevator Grouping in a Single Hoistway

Dear Chief McNally:

This Department is in receipt of a letter from Saroj Bhol, P.E. of the Port Authority of NY & NJ dated November 22, 2004 along with supplementary correspondence from Jaros, Baum & Bolles Consulting Engineers in regards to the above referenced subject.

Please be advised that the Department of Buildings has no objection to the applicant's request, as the 5-car hoistway will allow for sufficient area to deal with the air displacement, aerodynamic buffeting and noise caused by the high-speed cars. As the detail criteria may entail a variation to the Fire Department's Standard Operating Procedures, we request that you review the aforementioned material and forward your comments to my office at your earliest convenience.

Mr. Saroj Bhol along with the design engineers of the Port Authority would be more than happy to meet with Fire Department personnel to address these issues.

Sincerely,

Fatma Amer, P.E.
Acting Deputy Commissioner

c: Patricia Lancaster, FAIA, Commissioner
Karl Schmid, P.E., Asst. Commissioner – Operation
Robert Carroll, Tech. Director – Elevators
Donald Gottfried, P.E., Director – MEA
Saroj Bhol, Port Authority, NY&NJ
Christopher Afawah, FDNY

THE PORT AUTHORITY OF NY & NJ

6395

Engineering Department

November 22, 2004

Hon. Fatma M. Amer, P. E.
Acting Deputy Commissioner, Technical Affairs
NYC Department of Buildings
280 Broadway, 7th Floor
New York, NY 10007

Re: World trade Center – Freedom Tower - Passenger Elevators

Dear Commissioner Amer:

Thank you for the meetings on October 1 and November 12, 2004, to discuss the elevator arrangement in the Freedom Tower, which is currently in the design phase. As discussed at the meetings and explained in the attached October 7, 2004 letter from Jaros Baum & Bolles (JB&B) to SOM, architects for the tower, five-car passenger elevator groupings in the tower are proposed.

The Port Authority agrees with JB&B's explanation in the letter that the objective behind Rule100.1d (2) of RS-18 in the New York City Building Code, for not permitting more than four elevators in a hoist way in buildings with multiple hoist ways, is to have access to a floor available in case of emergency even if a hoist way is lost. The Port Authority also concurs with JB&B's position that with two separate fireman's elevators, two separate service elevator groups that serve all floors of the building, and other safety enhancements as explained in the letter and shown in the enclosed drawings, the intent of the rule in Rs-18 is met.

You stated at the meetings that since the Fire Department responds to the emergencies, you might seek their opinion on the design. If you agree with our understanding of the code as explained above, and the Fire Department has no problem with the design, I would appreciate your concurrence.

Very truly yours,

Saroj Bhol, P. E.
Manager, Design Standards
att.

Fatma M. Amer, P.E.
Acting Deputy Commissioner
Technical Affairs

Gateway 3
100 Mulberry Street
Newark, NJ 07102

SOM

October 8, 2004

Mr. Saroj Bhol
Manager, Design Standards Unit-Quality Assurance Division-Eng Dept
Port Authority of New York and New Jersey
3 Gateway Center, 3rd Floor
Newark, New Jersey 07102

RE: WTC Tower One Request for Reconsideration
Five Car Single Hoistway

Dear Mr. Bhol:

In accordance with recent discussions on this subject, we respectfully request reconsideration of the requirements for limitation on the number of elevator cars within a single hoistway based on the details outlined in the attached letter from JB&B dated October 7, 2004 with explanatory sketches.

Sincerely yours,
SKIDMORE, OWINGS & MERRILL LLP

Carl Galioto, FAIA
Partner

Enclosure (1)

cc: D. Worsley
A. DiGiacomo
S. Kinnaman
K. Lewis
R. Bagnato
A. Arzano

Skidmore, Owings & Merrill LLP
14 Wall Street, New York, New York 10005
212 298-9300, Fax 212 298-9500, www.som.com

JB&B

Jaros Baum & Bolles
Consulting Engineers

Steve Kinnaman, Manager
Vertical Transportation Department
212.530.9424

Request for Reconsideraton — 5-Car/Single Hoistway
Freedom Tower — World Trade Center
New York, New York
Project No. 12767.0.000

October 7, 2004

Mr. Carl Galioto
Skidmore, Owings & Merrill
14 Wall Street
New York, New York 10005

Dear Mr. Galioto:

As discussed, please be advised as follows regarding the use of a single hoistway for five (5) cars.

As you know, we are in the process of designing the elevator cores for the proposed Freedom Tower at the World Trade Center site. Fundamental to the design of the building is the use of 5-car passenger elevator groupings as shown on the enclosed drawing, color-coded for ease of reference.

Rule 100.1d (2) of RS-18 in the New York City Building Code stipulates that no more than four (4) elevators shall be located in a single hoistway, which would mean that the 5-car groups would need to be divided into two (2) hoistways of three (3) and two (2) cars each. In particular, it is the 2-car groups that we are most concerned about and are addressing in this letter. The primary concern with respect to the 2-car hoistways is the inability of the hoistway to provide sufficient area to deal with the air displacement caused by the two (2) high-speed cars which will result in aerodynamic buffeting and noise (piston effect) imposed on the elevator cabs and riding passengers. Specifically, there are six (6) 5-car groups which have the issue, which break down as follows: two (2) 5-car groups traveling at 1,200 fpm, two (2) 5-car groups traveling 1,800 fpm, and two (2) 5-car groups traveling at 2,000 fpm.

Based on conversations we have had with members of the A17.1 Main Committee, which forms the basis of RS-18, they have stated that the fundamental objective in developing the Rule was to provide multiple hoistways for emergency access to a floor, so as to always have access to a floor even if a hoistway is "lost" for whatever reason. The limitation to four (4) cars in a common hoistway was an arbitrary number based on the then common arrangement of 4 facing 4, 8-car groups rather than the result of any specific research.

The A17.1 Elevator Code was subsequently revised in 1984, wherein the specific 4-car limitation was eliminated and the jurisdiction regarding any limitations was passed on to the local Building Codes.

With the current core design of the Freedom Tower, every commercial office floor level is served by three (3) separate elevator hoistways (i.e., two [2] service hoistways and one [1] passenger hoistway), which exceeds the intent of the Code of having two (2) separate and independent means of emergency access to each floor. This arrangement is a very common scenario with most recent

JB&B

James Baum & Bolles
Consulting Engineers

high-rise office buildings in New York City, such as an 8-car passenger group with 4 facing 4 making up two (2) hoistways and a third hoistway consisting of a pair of service elevators.

In addition to the Code-mandated building design features, the core design of the Freedom Tower is incorporating the following additional features to further enhance the safety of the occupants and the emergency response personnel. These features include:

- Reinforced concrete shear-wall construction on three (3) sides of the hoistways.
- Service Elevator Lobby pressurization.
- A pressurized stairwell within the Service Elevator Lobby with direct access from the pressurized Service Elevator Lobby.
- Two (2) water-resistant Fireman's elevators.
- Two (2) separate service elevator groups (i.e., a 3-car group and a 2-car group) which serve all floors of the building.

Finally, it should be noted that by combining the 2- and 3-car hoistways into a single 5-car hoistway, the efficiency of the hoistway vent system increases proportionally, thereby further enhancing the safety standard in the building.

It is our opinion that allowing five (5) adjacent cars to be served by a common Machine Room and common hoistway satisfies A17.1 and the intent of the current RS-18.

The specific safety enhancements incorporated into this project further the safety performance of the building beyond that required by the current Code.

Based on the above, we respectfully request that you grant a reconsideration for this project that will allow us to place five (5) passenger elevators into a common hoistway.

Very truly yours,

JAMES, BAUM & BOLLES

Steve Kinnaman
SK:kg
cc: (1) Mr. D. Worsley
(1) Mr. A. A. DiGiacomo
(1) Mr. M. W. Simpler
(1) Mr. S. Kinnaman
(1) File
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