

# Severud Associates

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December 19, 2013

Re: #14547  
Additional Floors on Existing Garage  
Methodist Hospital  
Brooklyn, NY

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Frank Gunther  
Perkins Eastman Architects  
115 Fifth Avenue  
New York, NY 10003

Dear Frank:

We have evaluated the existing New York Methodist Hospital parking garage, located on the western portion of the block bounded by 5<sup>th</sup> and 6<sup>th</sup> Street and 7<sup>th</sup> and 8<sup>th</sup> Avenues in Brooklyn, to determine its capacity to sustain increased loads resulting from construction above the existing structure. Our analysis took into account gravity, wind and seismic forces. As described below, a vertical enlargement of the garage to add 5 new floors would not require the seismic retrofitting of the structure but would require a disruption of some or all of the garage's operations.

We understand that the existing garage was constructed pursuant to a variance and special permit granted by the Board of Standards and Appeals (BSA) in 1994. The garage contains three cellar levels, an enclosed first floor, and a second-floor roof deck, all of which contain parking spaces. The construction of the garage was not subject to the current New York City Building (BC) provisions pertaining to seismic load resistance, which were promulgated in 1995.

The structural drawings for the garage state that the structure's columns and footings were designed to support an additional 5 floors above the second-floor deck. An e-mail communication we received from the garage's original design engineer states that an evaluation of lateral loads should be made prior to constructing these 5 floors. We evaluated the existing structure and concur that 5 floors plus roof, constructed of structural steel and metal deck/concrete slabs, with 14-foot floor heights, could be supported by the existing structure. However, due to the limited capacity of several transfer beams, some columns cannot be extended to future floors, requiring smaller floor plates than in the existing garage. These columns are identified on the attached annotated sketch as columns 81, 82, and 87. We have also been informed by Perkins Eastman Architects that the applicable zoning regulations limit the new floor plates to a depth of 70 feet from 5<sup>th</sup> Street.

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Frank Gunther  
Perkins Eastman Architects

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We understand that you have studied a complying development which would include the construction of a new 10-story building above the existing garage, with floor plates above the ground floor that cover a portion of the garage to a depth of 70 feet from 5<sup>th</sup> Street. Since the existing garage structure can sustain only 5 additional floors, the construction of the complying building would require significant additional structural work, including, in particular, the reinforcement of the garage's columns and foundations. While the existing columns could be appropriately reinforced by adding steel plates or additional concrete, the reinforcement of the footings would necessitate the removal of the slab on ground, new excavation at each footing, and the placement of drilled dowels and additional reinforced concrete around each footing. In addition, since the overbuild column grid would probably not match the existing garage column grid, a structural transfer system would be required at the first new structural level. These construction measures would entail significant costs and would create an inefficient structure.

In addition, the construction of the complying building would require the seismic retrofitting of the garage. This may involve adding diagonal braces or concrete shear walls which may interfere with the flow of traffic and/or reduce the area of parking. It would also require the suspension of service for the entire garage.

Should you have any questions or require further information please call.

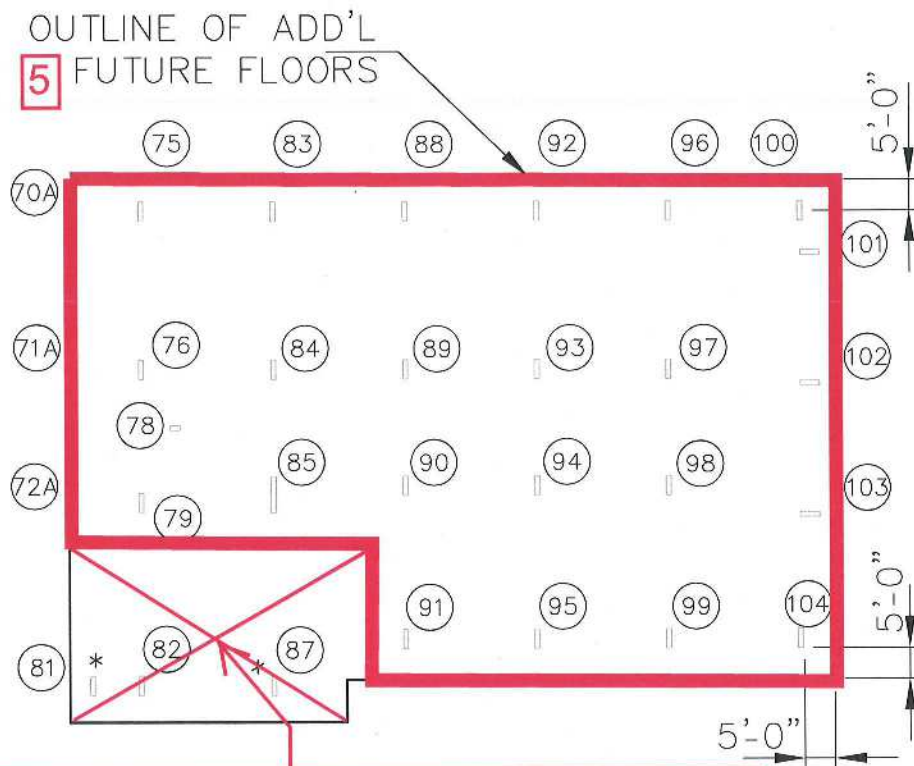
Very truly yours,

**Severud Associates**



John Baranello, Jr., PE  
Principal  
JB/mmi  
encl





Since transfer girders supporting columns 81, 82 and 87 were not designed for future floors, the future garage floors must be stepped as shown.

## SCHEMATIC FUTURE BUILDING EXTENSION PLAN

### NOTES

1. COLUMNS AND FOOTINGS ARE DESIGNED FOR ADDITIONAL **5** FUTURE FLOORS ABOVE 2<sup>ND</sup> FLOOR DECK SHOWN ON DWG. S-4
2. WHERE NOTED THUS \* INDICATES ADDITIONAL MEASURES WOULD BE REQUIRED AT TRANSFER MEMBERS BELOW, WHICH ARE NOT DESIGNED FOR ANY FUTURE LOADS.
3. FOR COLUMN REBAR DETAIL OF FUTURE EXTENSION SEE TYPICAL DETAIL DWG S-7.