

# RESIDENTIAL MECHANICAL VOIDS FINDINGS

Building Permits Issued b/w 2007 and 2017  
R6 through R10 Districts

April 2018  
(Updated: February 2019)





## **Part 1: R6, R7 and R8 Districts**

## **Part 2: R9 and R10 Districts**



## Study area:

- Non-contextual R6, R7 and R8 residential districts and
- Their equivalent commercial districts
- That are located outside of Special Districts that impose special bulk controls



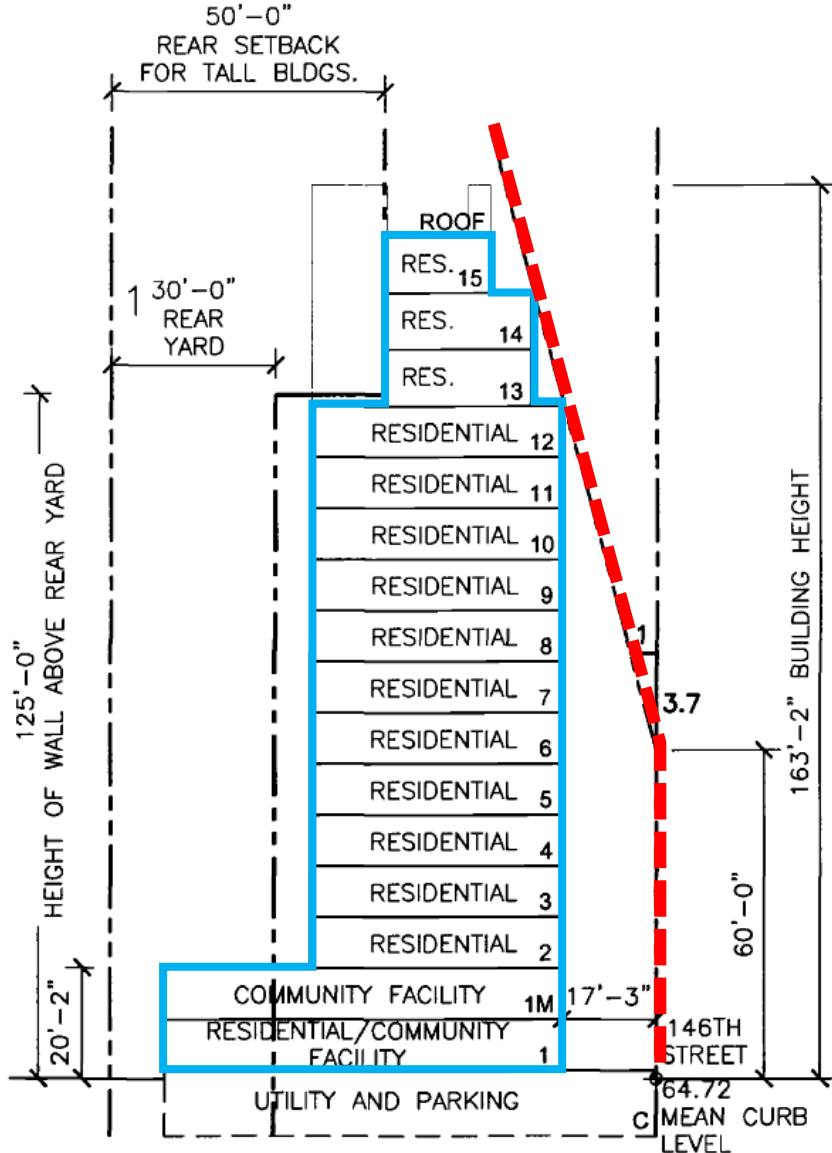
- Between 2007 and 2017, 718 new building permits were issued within the study area
- 49 out of the 718 buildings exceeded the optimum ***height factor*** heights of 21 stories in R8, 15 stories in R7, or 13 stories in R6
- None exhibited large mechanical voids

## SUMMARY OF DETAILED STUDY FINDINGS

District/ Bulk	# of Buildings Surveyed	Large voids
R8/HF	10	0
R7/HF	17	0
R6/HF	22	0

# Typical HF Building

## R7-1: 35-08 145th Street, QN



A typical *height factor* building:

- Locates mechanical spaces in the cellar and on the roof
- On a typical 200 feet deep city block, a building cannot be much taller than:
  - 20 stories in R8
  - 13 stories in R7
  - 11 stories in R6



- While building heights can vary dependent on the size of a lot, height factor zoning regulations seems to effectively prevent the creation of large mechanical voids



## Study area:

- Non-contextual R9 and R10 districts and
- Their equivalent commercial districts
- That are located outside of Special Districts that impose special bulk controls



- Taller buildings in these districts are called *towers* whose bulk is controlled by setbacks, lot coverage, etc.
- Between 2007 and 2017, 78 new building permits were issued
- 46 buildings exceeded the contextual Quality Housing heights of 21 stories in R10, or 14 stories in R9
- 10 of those buildings were NYC sponsored or special permit projects
- The remaining 36 building permits were carefully reviewed
- One 2018 building permit with visible mechanical voids issue was added to the study

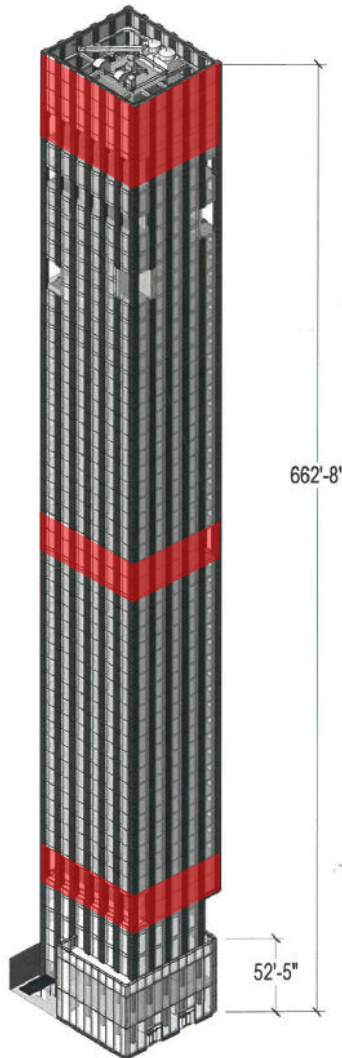
## SUMMARY OF DETAILED STUDY FINDINGS

District/ Bulk	# of Buildings Surveyed	Large Voids
R10/TOB	12	1
R10/ST	24	6
R9/ST	1	0
Overall	37	7

# Typical Residential Tower

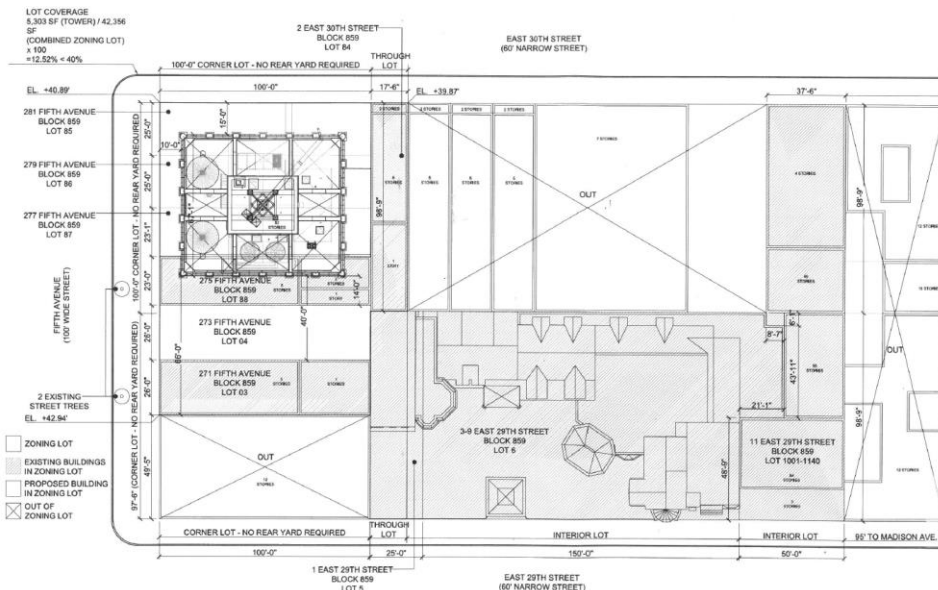
## C5-2(R10)/ST: 281 Fifth Avenue, MN

662'-8" BUILDING HEIGHT  
AS PER ZR-23-692

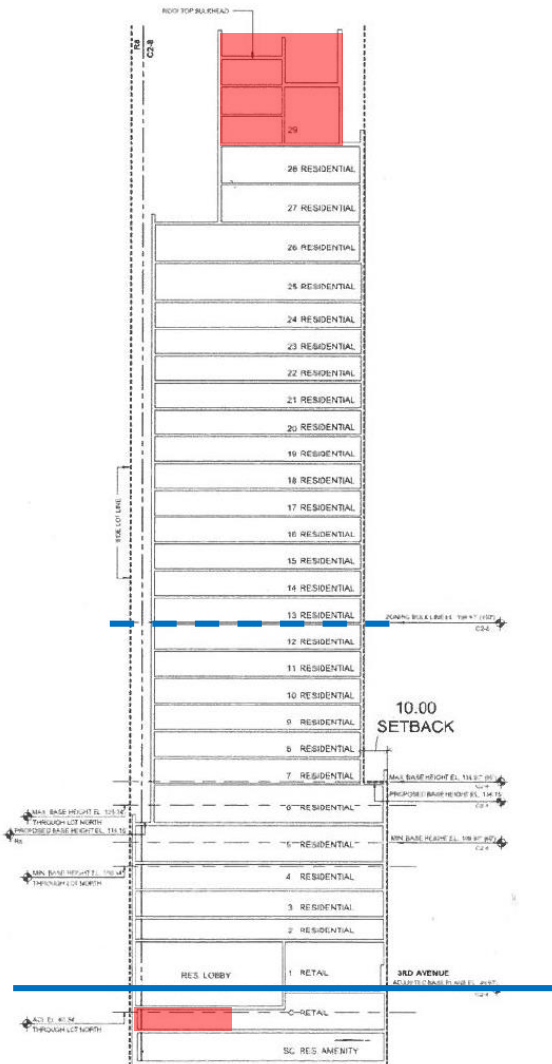


A typical *standard* tower has:

- A mechanical floor at a lower level, typically in between non-residential floors and residential floors
- Taller towers typically have an additional mechanical floor every 20 stories or so
- A larger mechanical bulkhead on the top



# Typical Residential Tower C2-8(R10)/TOB: 1681 Third Avenue



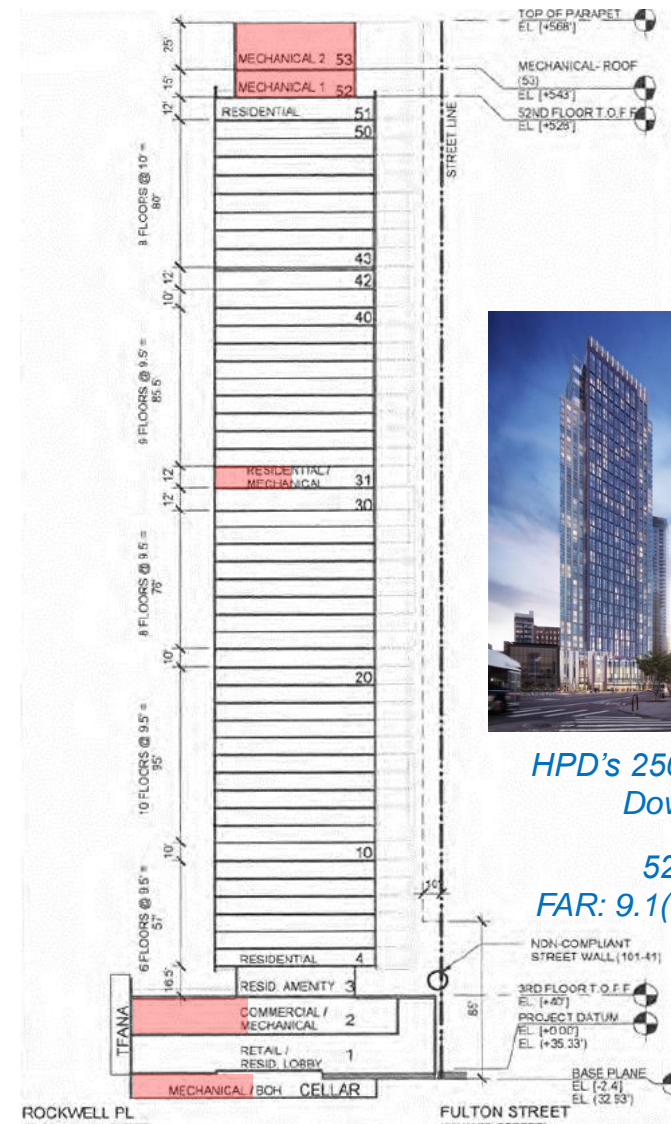
A typical *tower-on-a-base* (TOB) building has:

- Limited commercial mechanical space on a lower floor
- Most, if not all, residential mechanical spaces are located in the cellar and in a mechanical penthouse

# Typical Residential Tower

## Typical Mechanical Floors

- Only a few TOB buildings had a mechanical floor below the highest residential floor (exclusive of cellars)
- Many non-TOB towers had one or more mechanical floors below the highest residential floor. Their typical height was 12-15 feet, but some exceeded 20 feet.



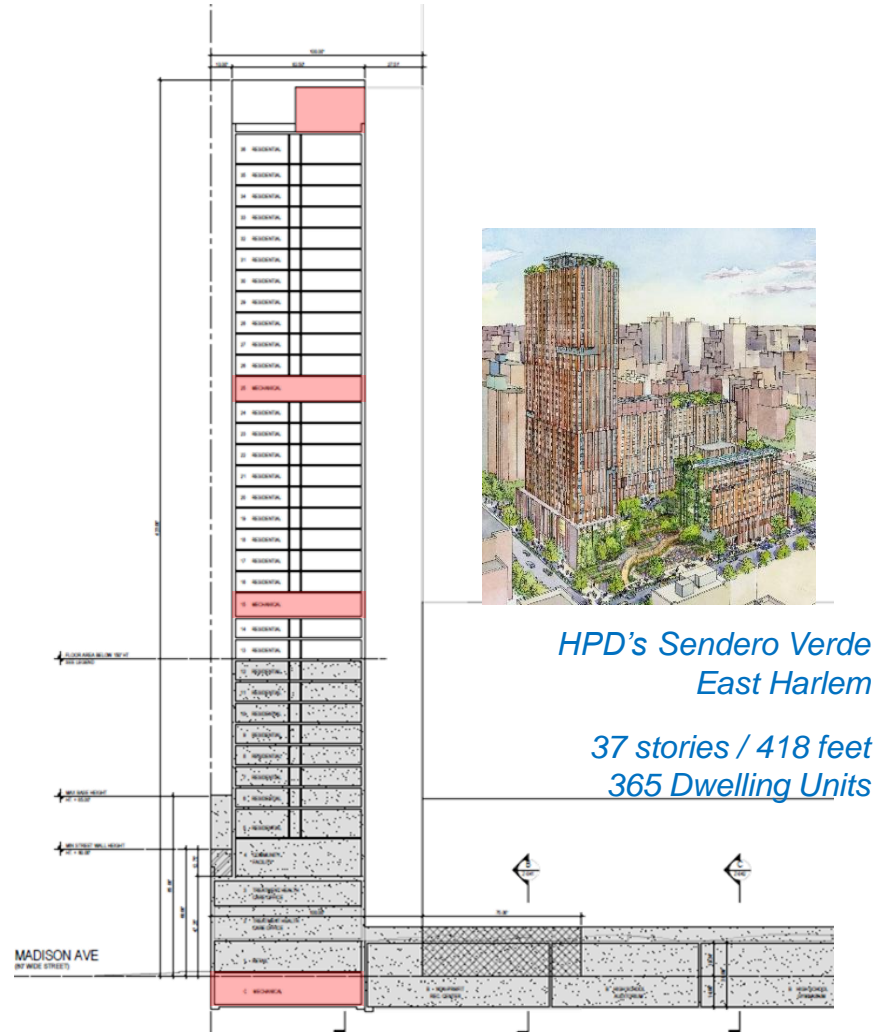
HPD's 250 Ashland Place,  
Downtown Brooklyn

52s/568', 585 DUs  
FAR: 9.1(Res)/0.44(CF/C)

# Typical Residential Tower

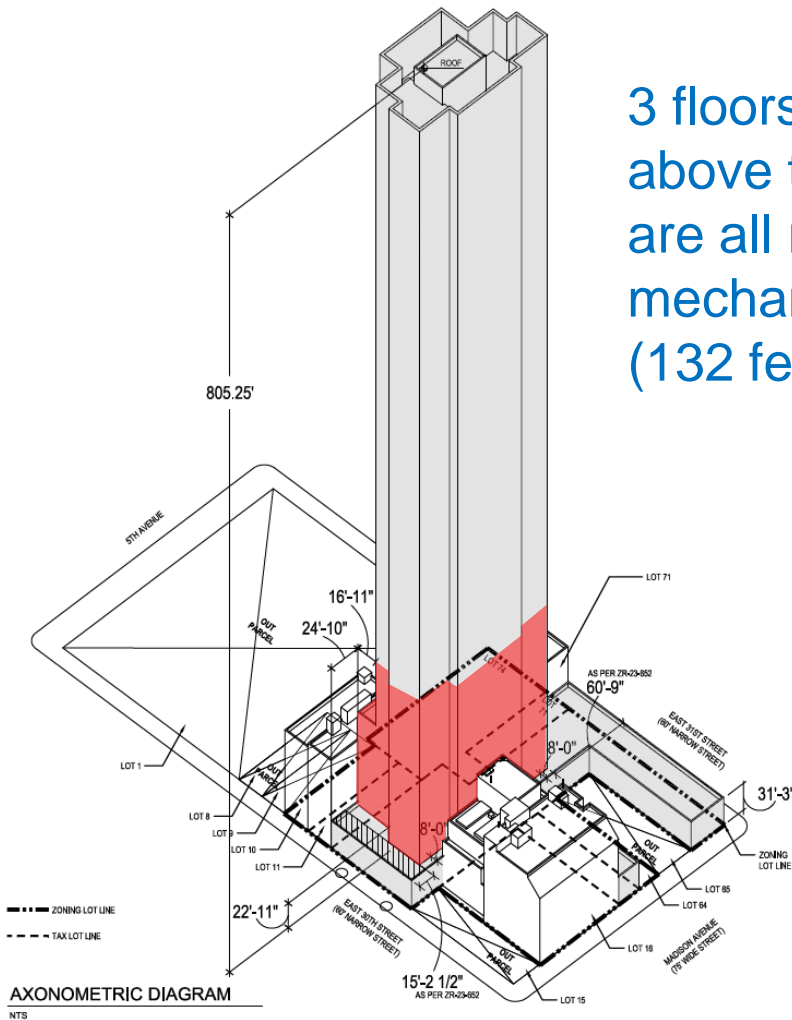
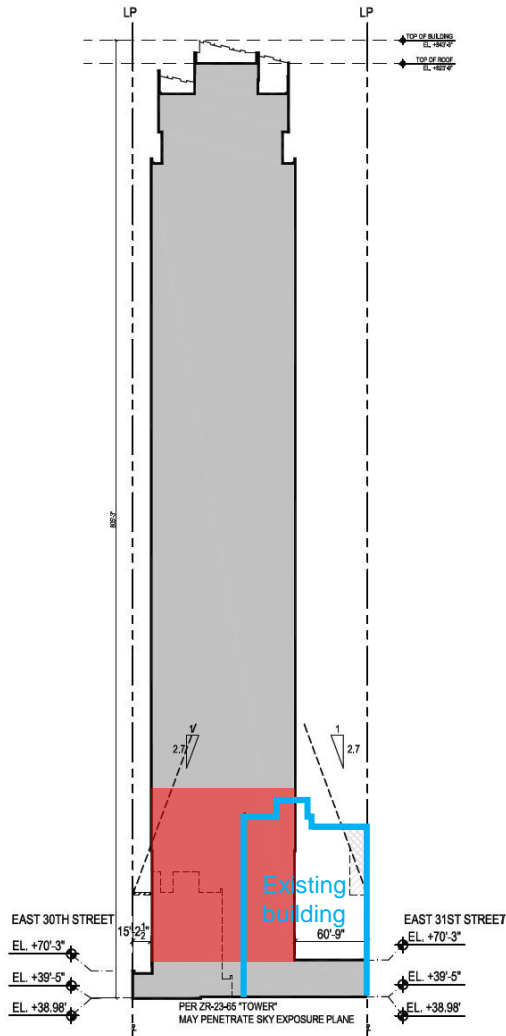
## Typical Mechanical Floors

- Those towers with a mechanical floor below the highest residential floor typically had a mechanical floor for every 15-30 stories
- HPD's Sendero Verde (37s/418') has a mechanical floor for every 9 to 10 stories
- Many factors contribute to a configuration of mechanical space: type of mechanical units, density of residential units per floor, TOB's density packing rule, the amount of non-residential floor space, ability to use cellar mechanical space for residential uses, etc.



# Towers with Visible Mechanical Voids

## 15 East 30th Street, MN (under construction) / C5-2

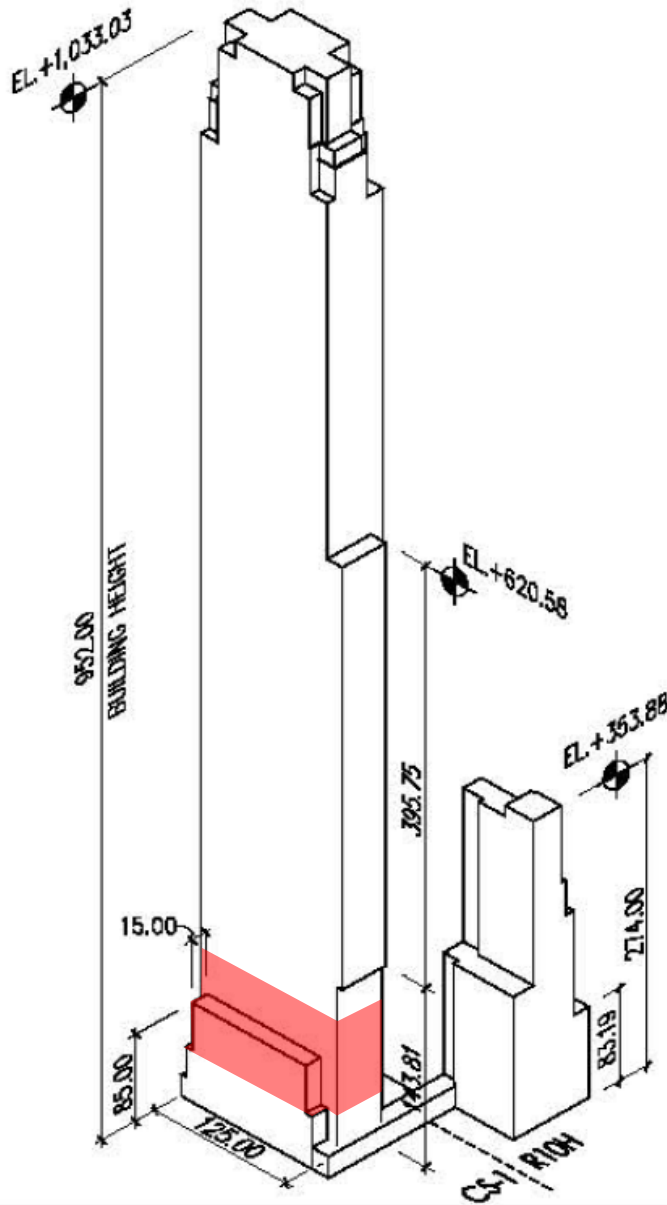


3 floors immediately above the ground floor are all residential mechanical voids (132 feet tall in total)

AXONOMETRIC DIAGRAM  
NTS

# Towers with Visible Mechanical Voids

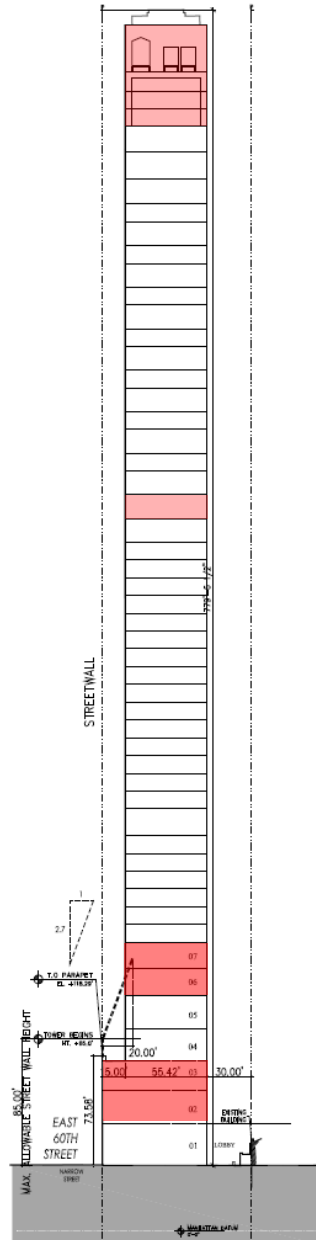
## C5-1(R10)/ST: 220 Central Park South, MN



Floors 3 through 7 of the taller tower are double height mechanical voids

# Towers with Visible Mechanical Voids

## C5-1(R10): 520 Park Avenue, MN

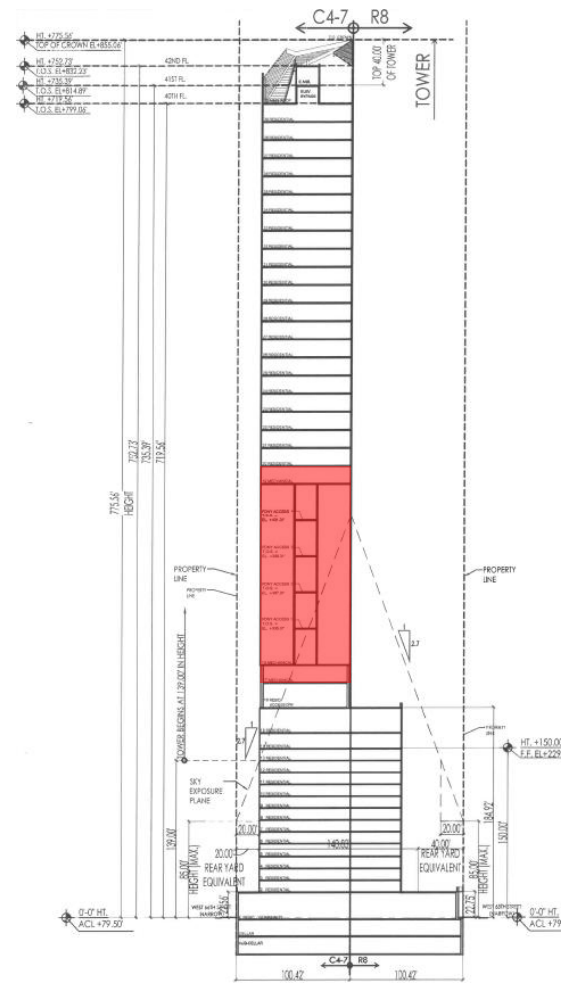
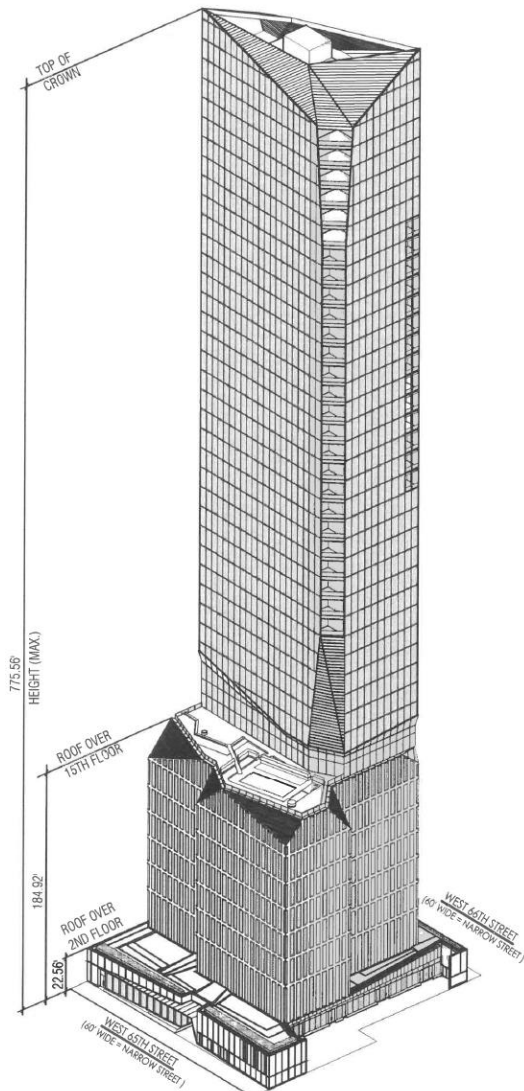


4 out of the first 7 floors are double height mechanical voids

# Towers with Visible Mechanical Voids

## 36 West 66th Street, MN (proposed) / C4-7/Lincoln Square

Floors immediately above 150 feet from the curb level are all residential mechanical voids (approx. 160 feet tall)



# R9/R10 Study Conclusions 1



- Given the design flexibility inherent in tower rules, designers provide a variety of building design elements
- Excessive mechanical voids are rare, even at these densities
- While TOB void buildings have garnered the most attention, excessive mechanical voids are most often found in non-TOB buildings
- Buildings in TOB districts with excessive mechanical voids provide them above 150 feet; buildings in standard tower districts provide them at the lower level of the building.