



P5:

# AFFORDABLE HOUSING SKYSCRAPER

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07-07-2020

Delft University of Technology  
Msc. 4 Architecture

Chair of Complex Projects  
AR3CP010 - Complex Projects Graduation Studio: Midtown NY

CP

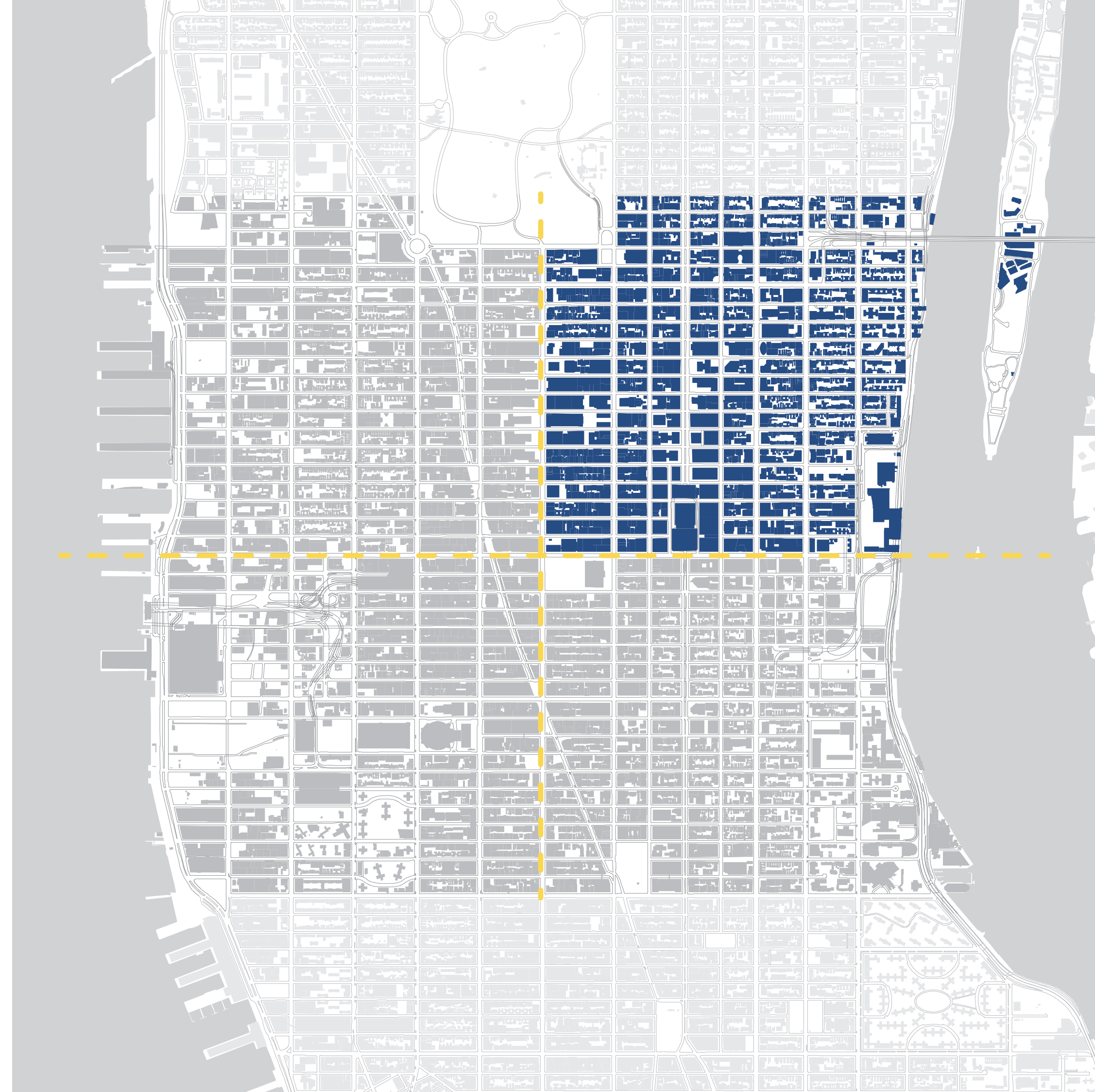


# PART I

## PROJECT INTRODUCTION

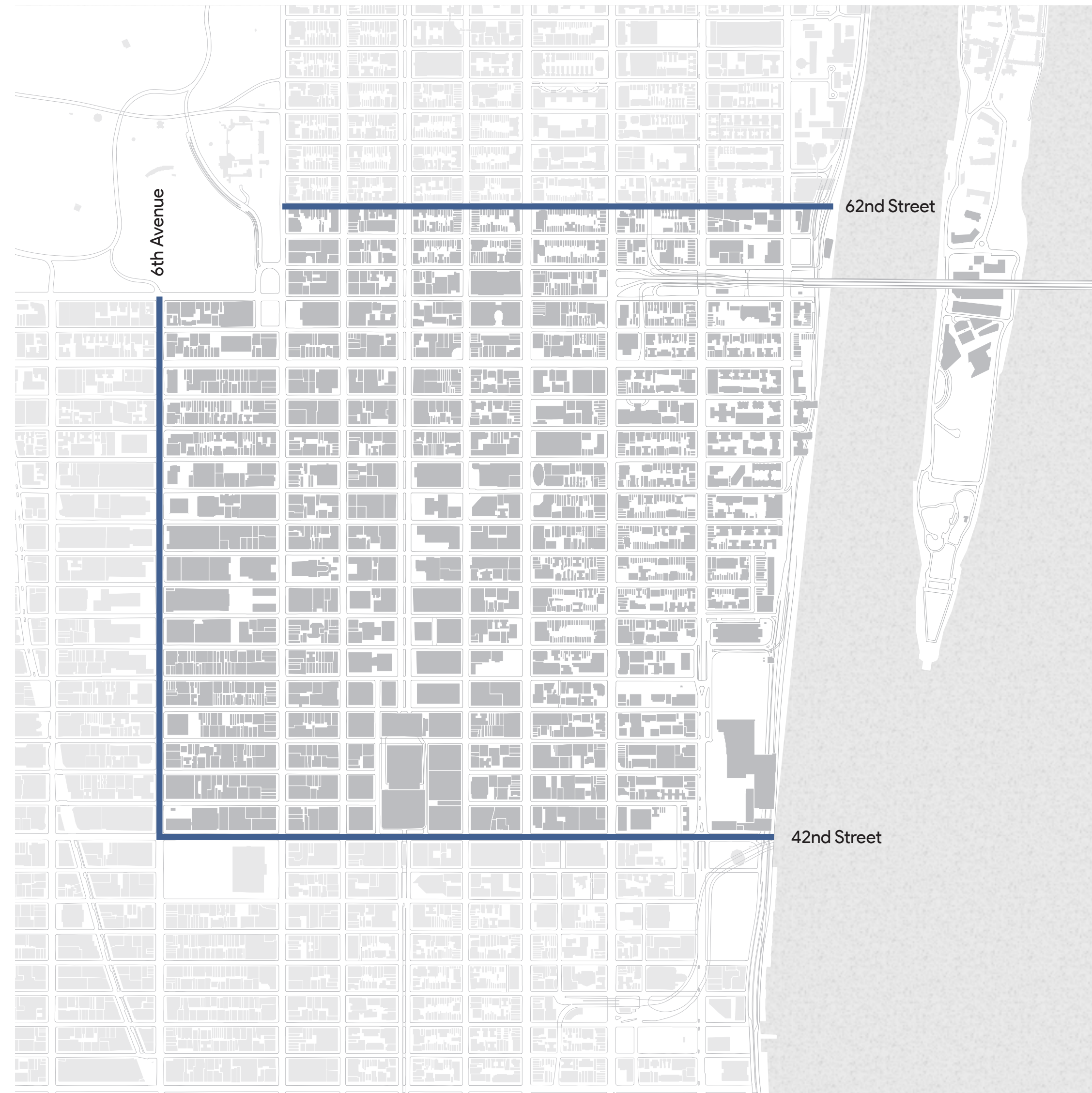


# CP MIDTOWN STUDIO



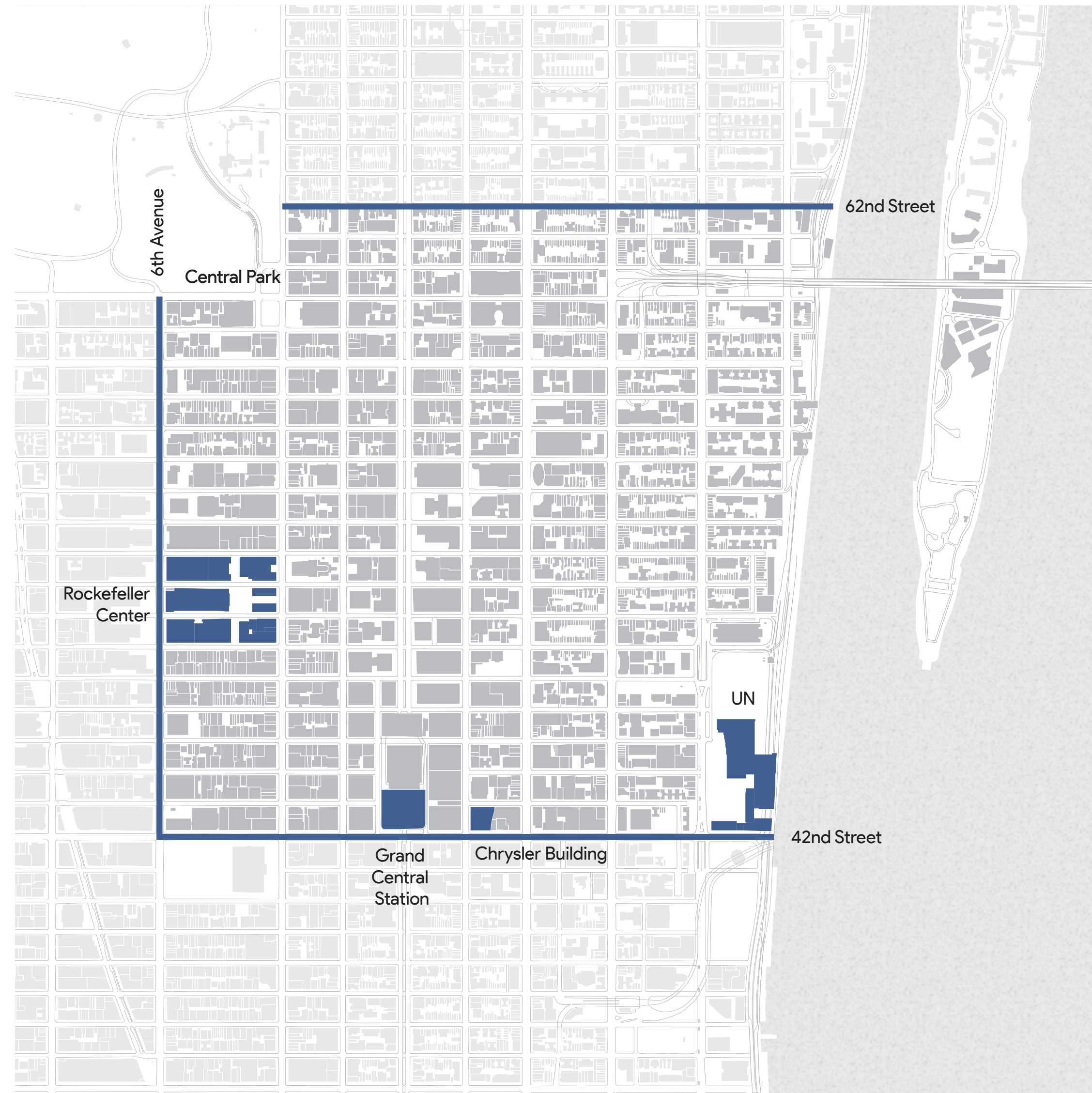


# THE VALLEY OF GIANTS



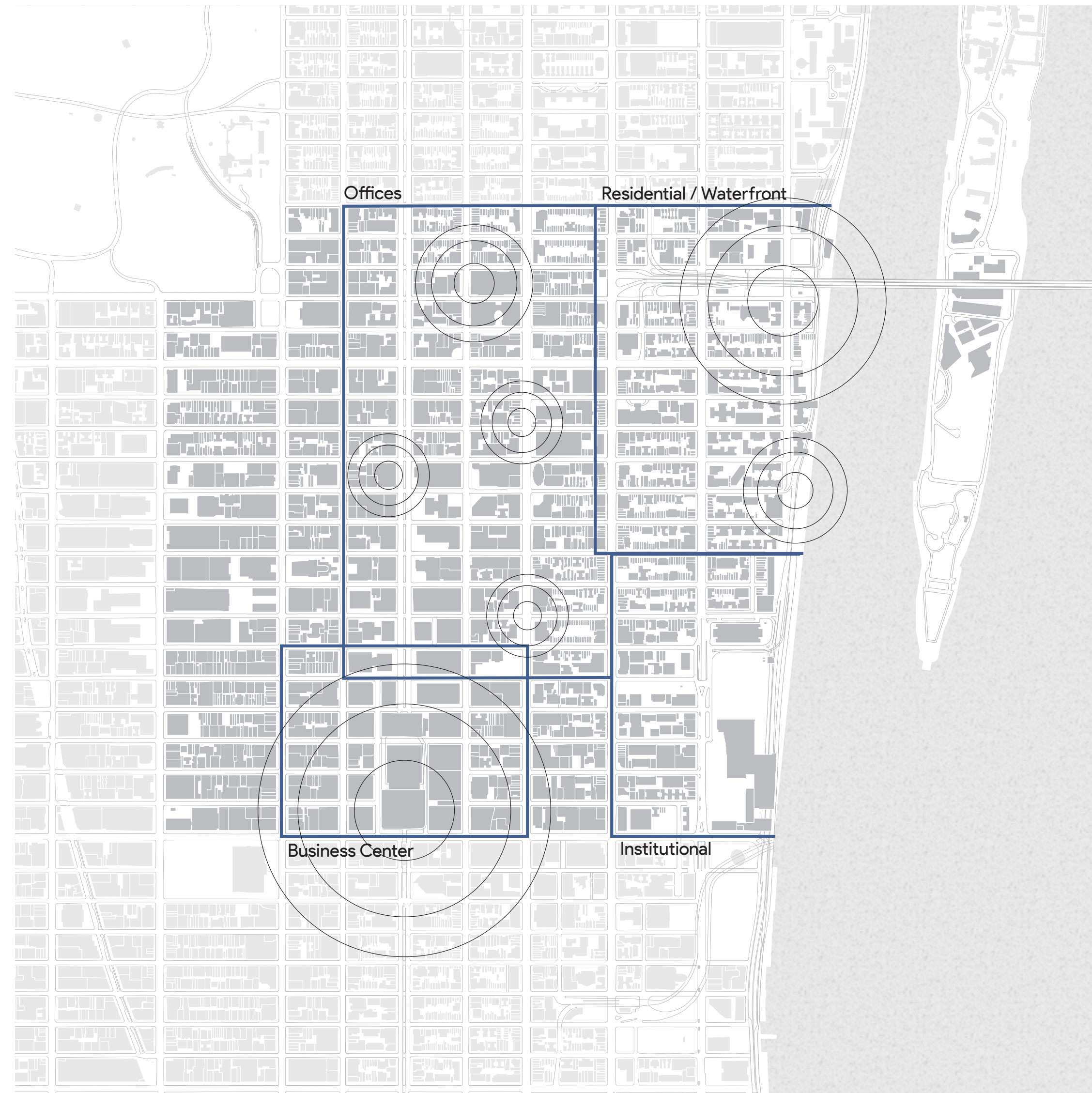


# THE VALLEY OF GIANTS



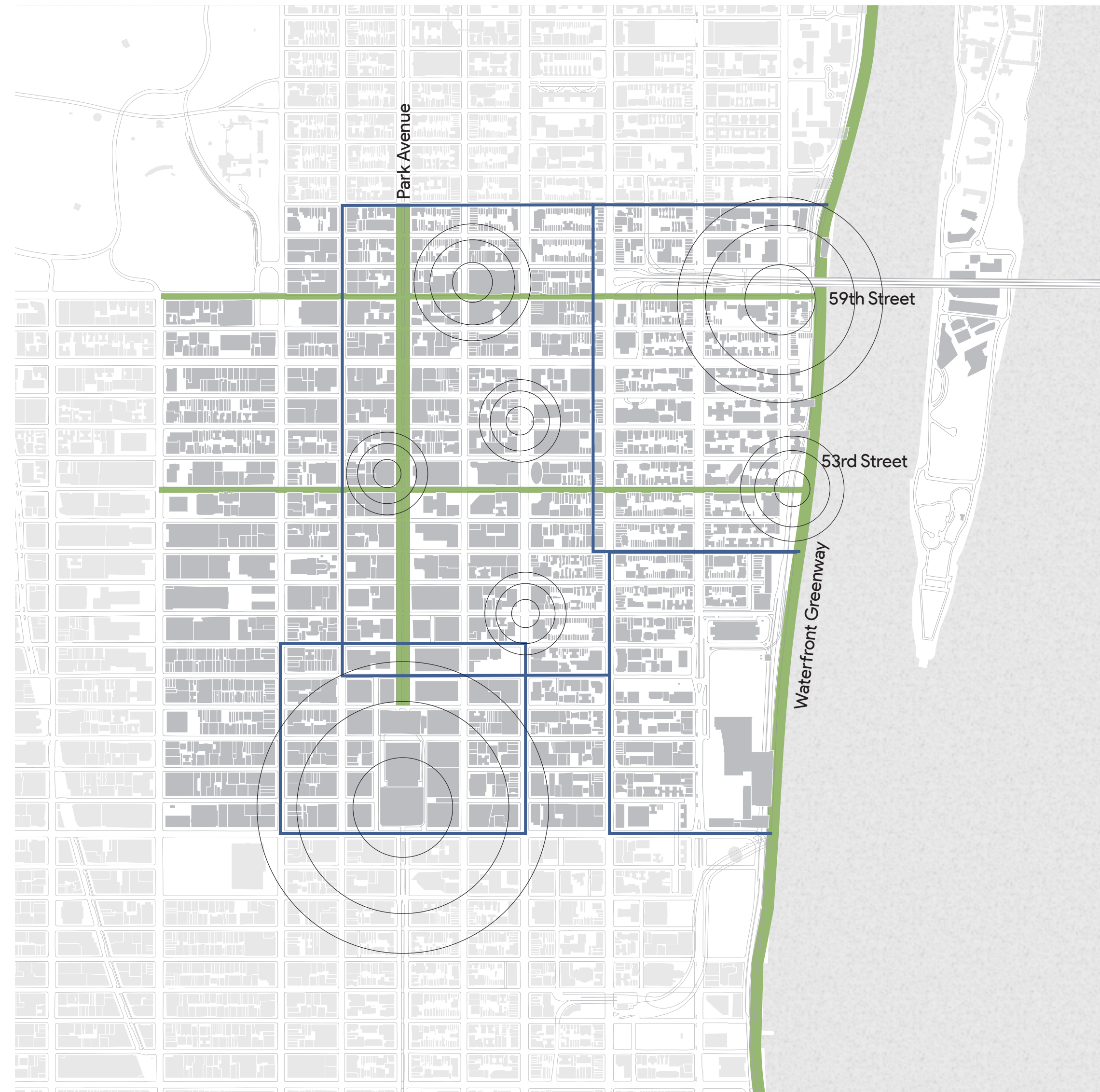


# GROUP MASTERPLAN

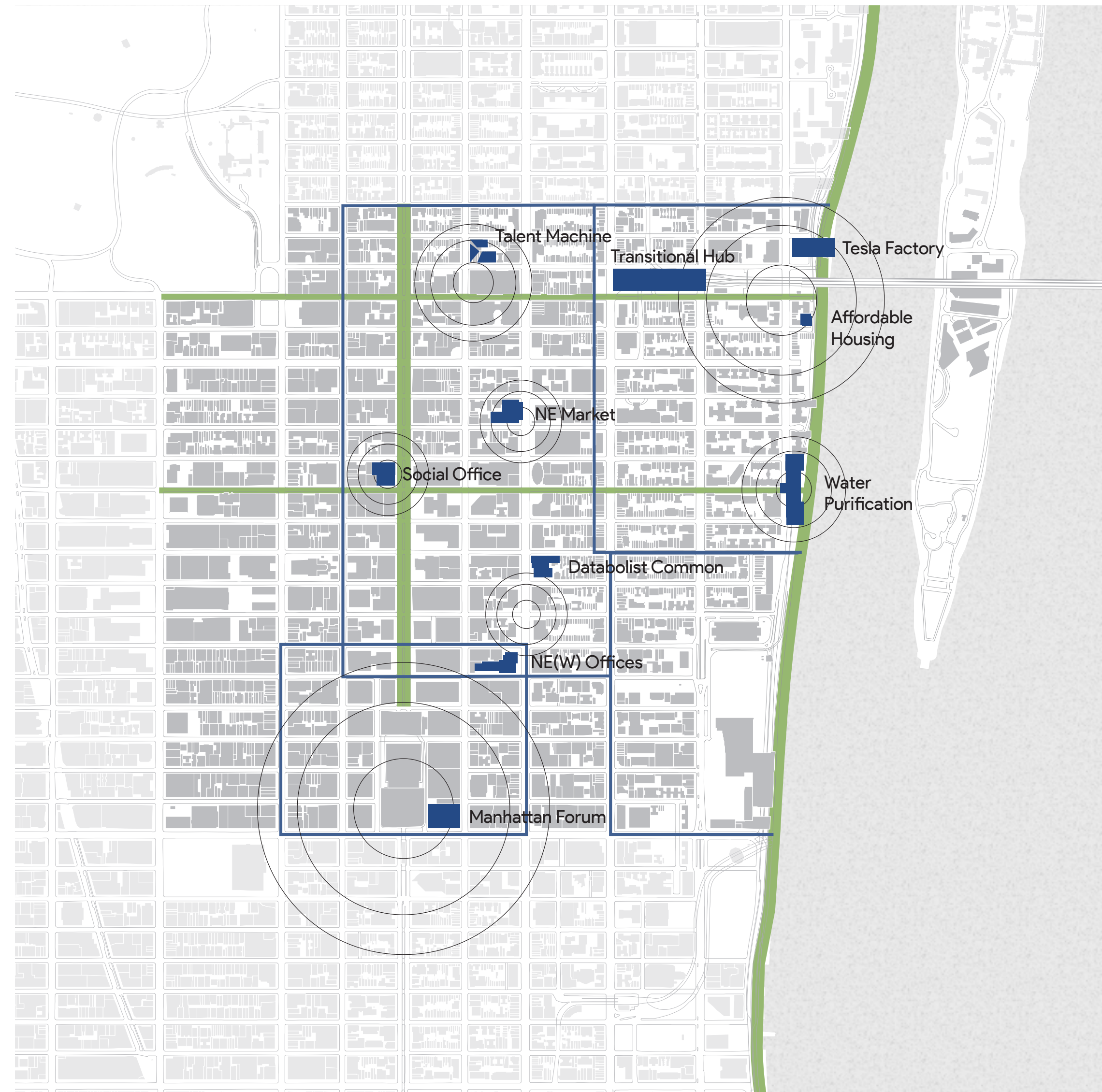




# GROUP MASTERPLAN

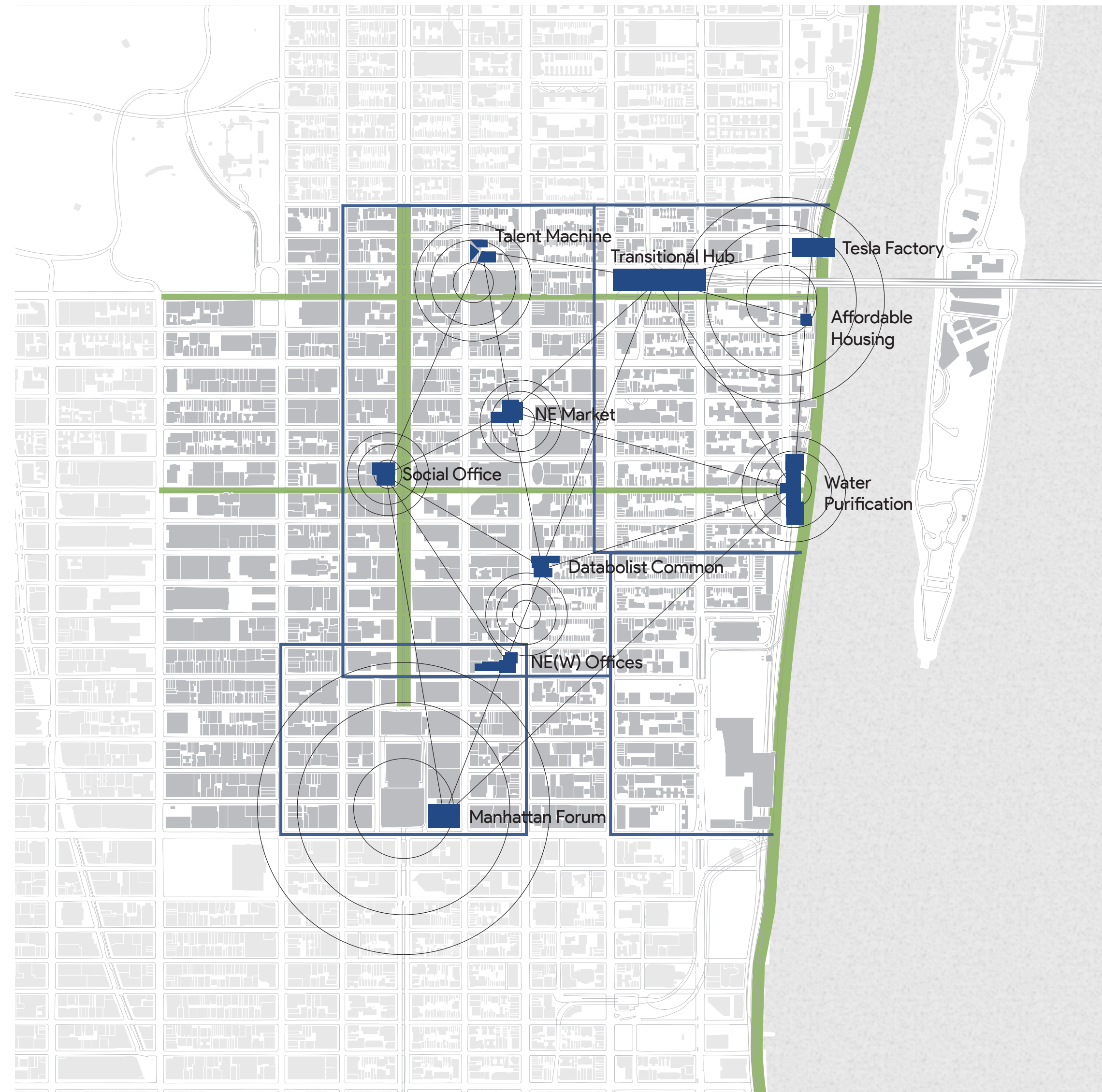


# GROUP MASTERPLAN





# GROUP MASTERPLAN



# PART II

## Research



CHANGE

2009





CHANGE



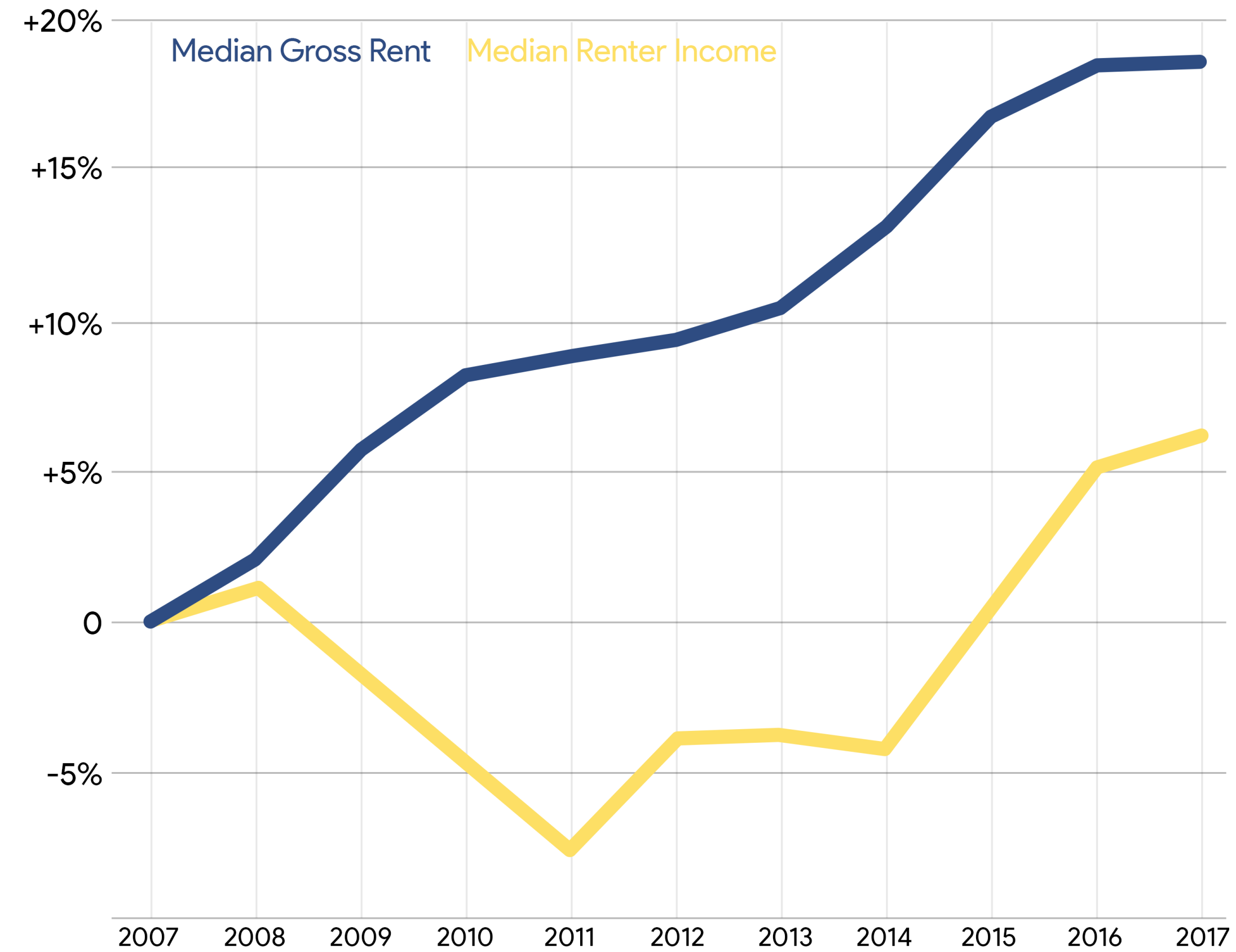


# CHANGE



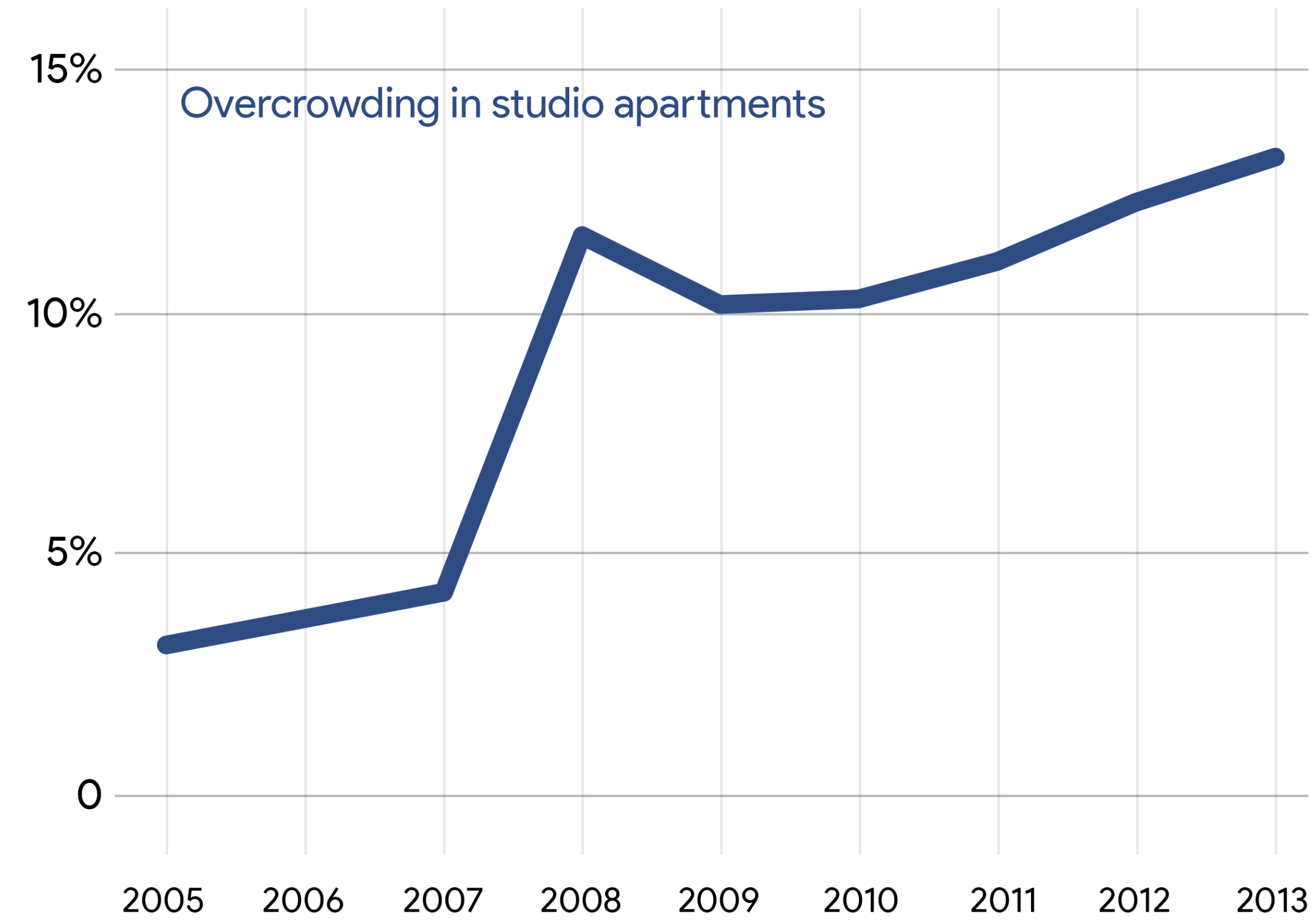


# AFFORDABLE HOUSING CRISIS





# EFFECTS



# EFFECTS





# EFFECTS





# MISMATCH





# SUTTON 58



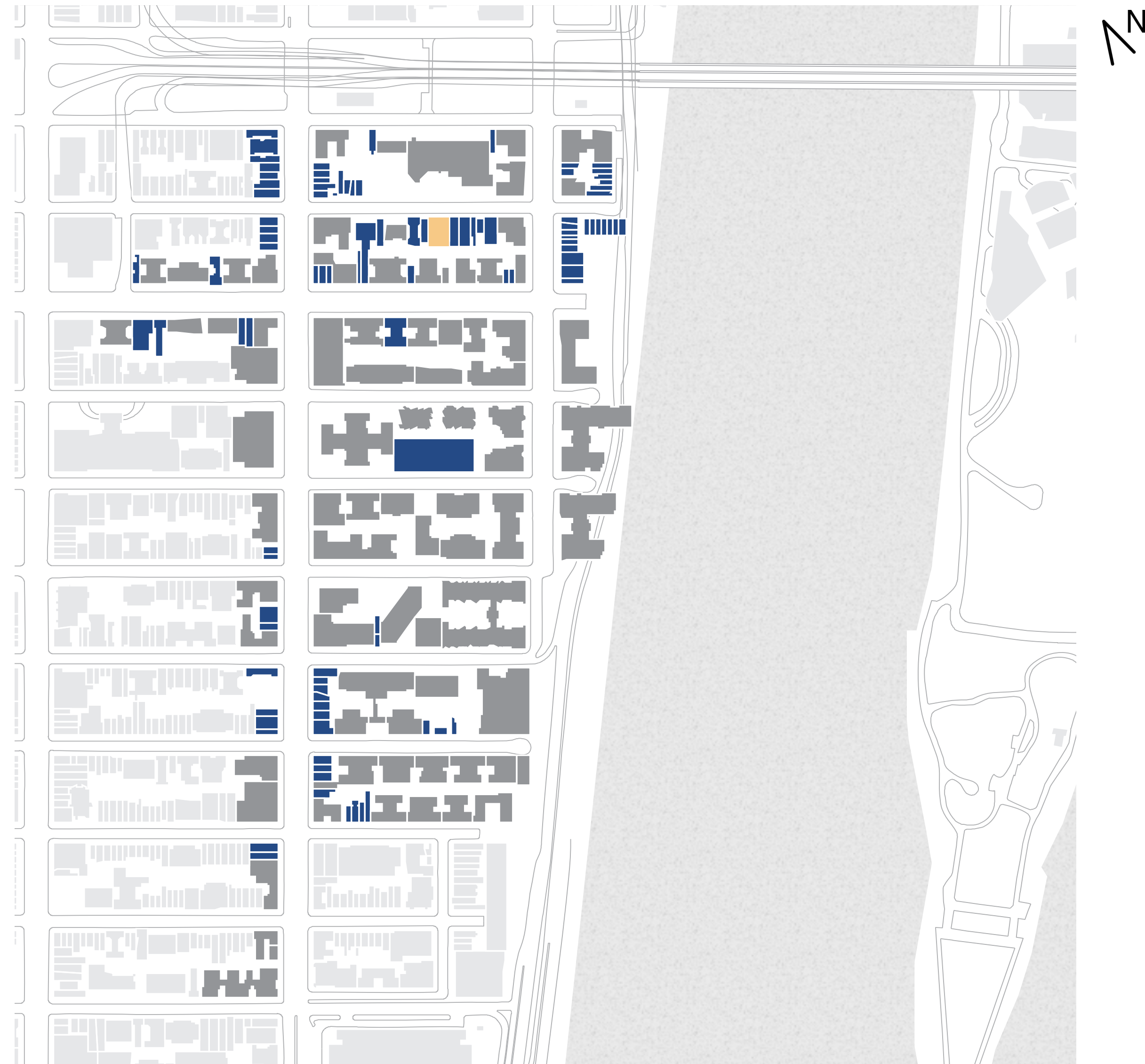


# SUTTON 58





# SOFT SITES





# THE SPARK

## (Un)Affordable Midtown





## THE SPARK

What if one of these soft-site developments could actually help the neighborhood?

## RESEARCH QUESTION

How can affordable housing be built in Midtown Manhattan?

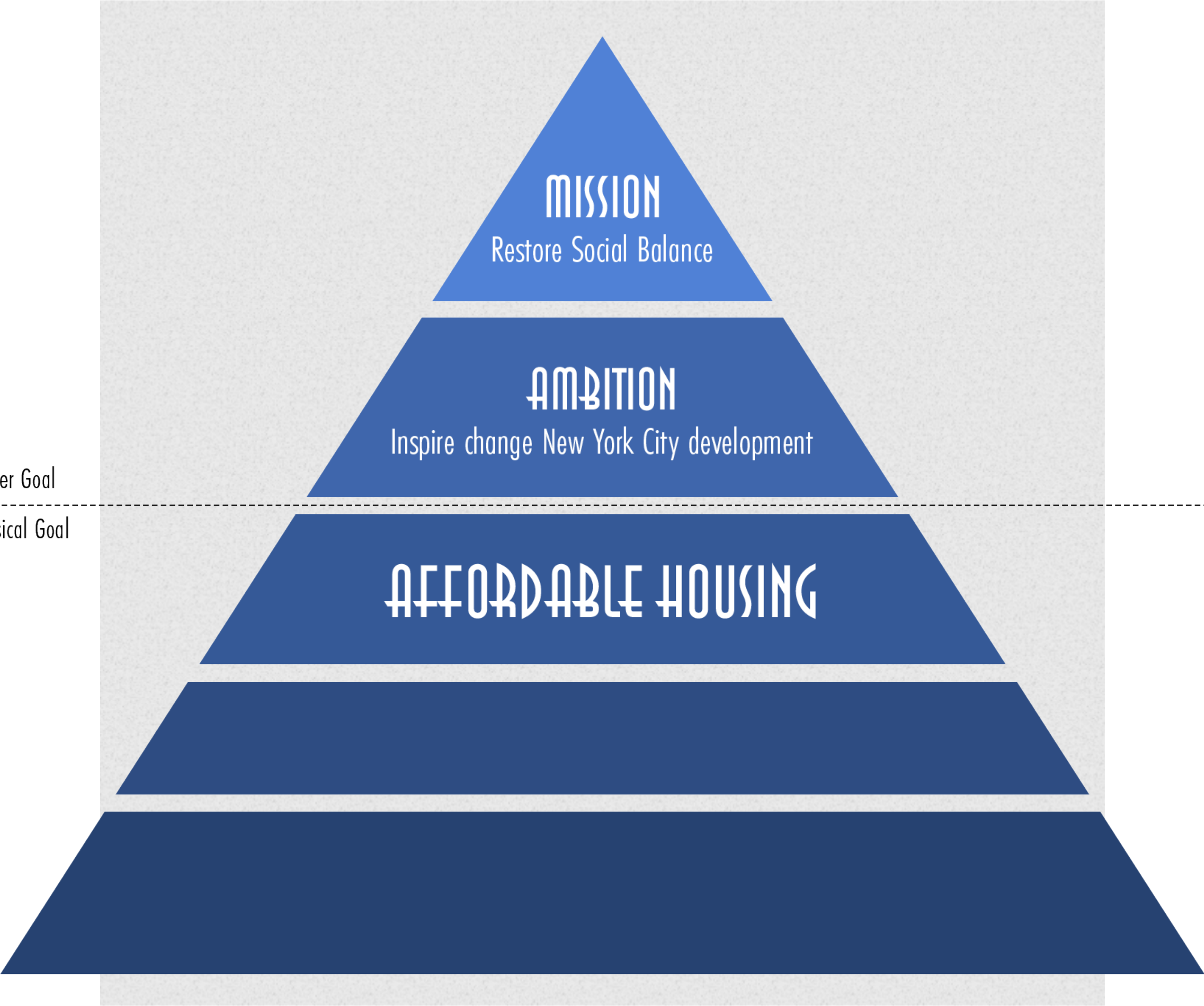


# PART III

## Project Goals

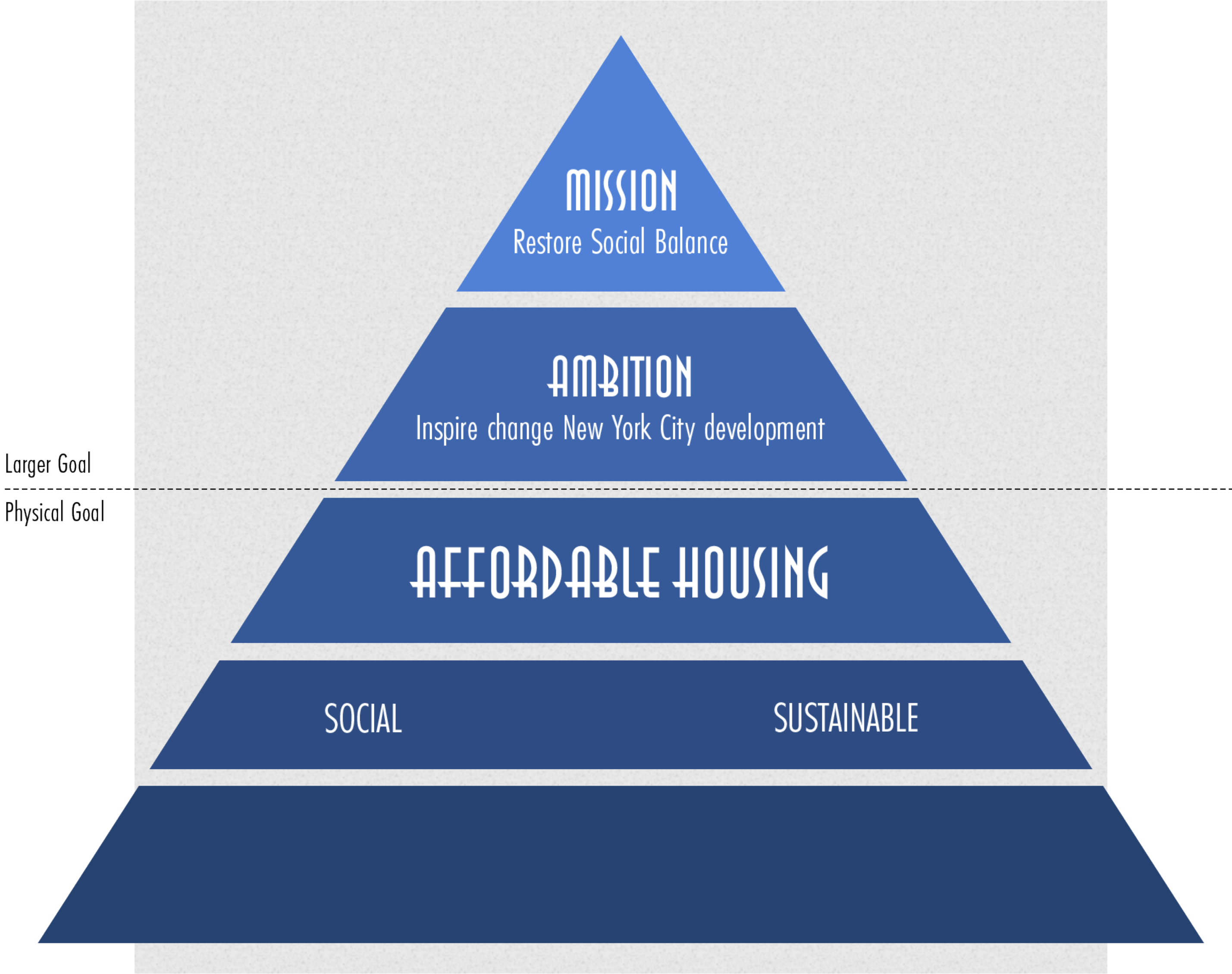


SOCIAL PROFIT



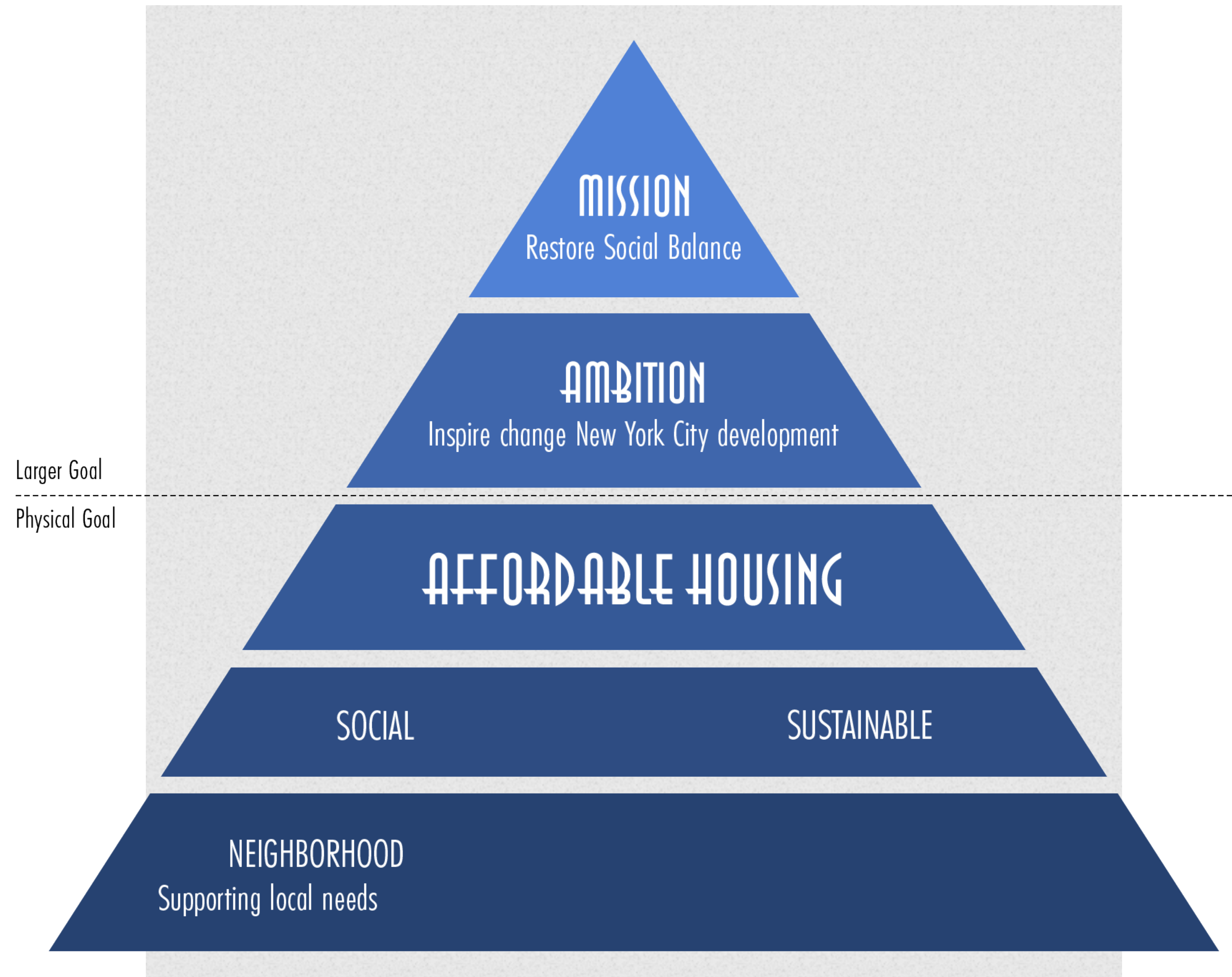


SOCIAL PROFIT



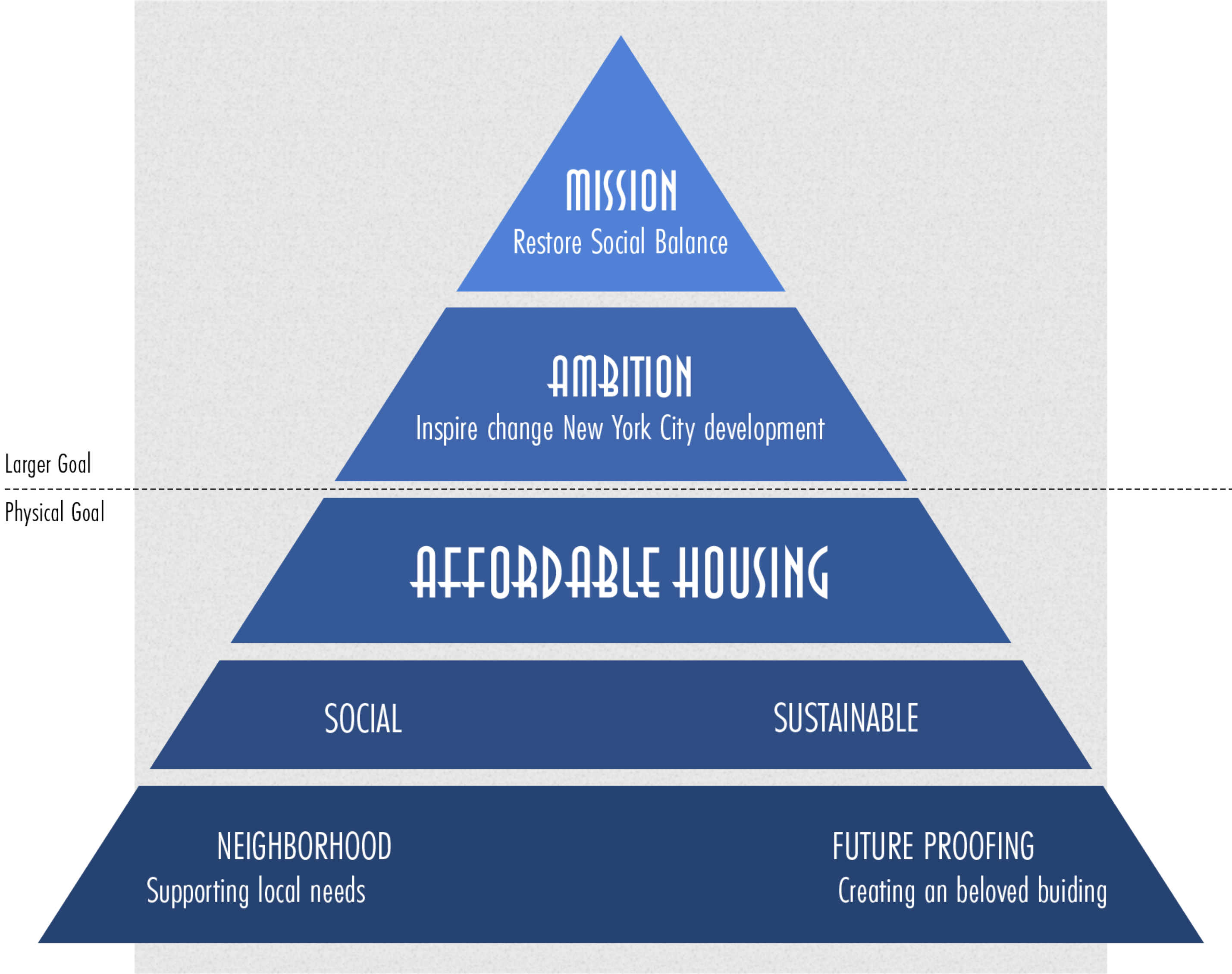


# SUSTAINABLE



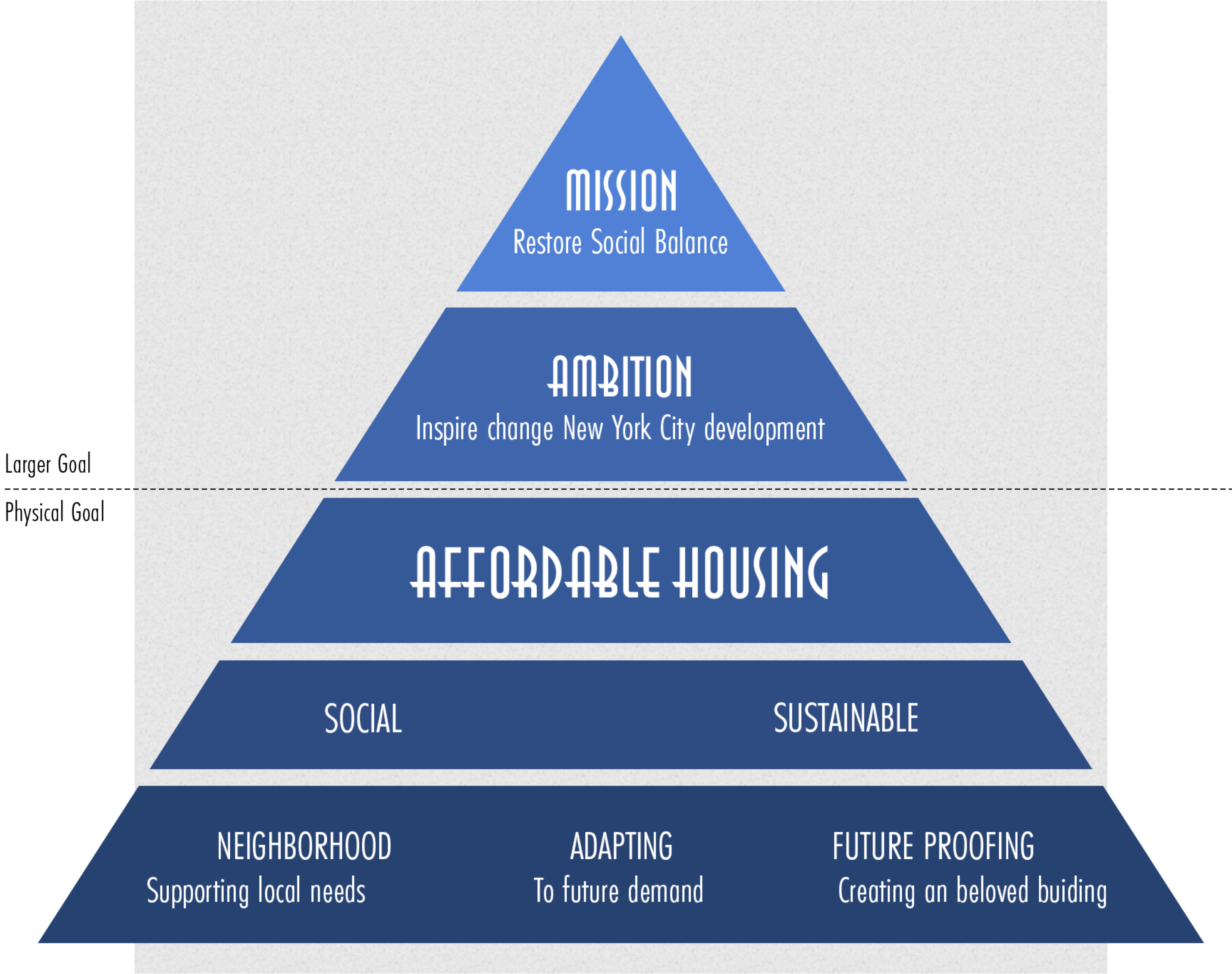


# INSPIRE





# INSPIRE



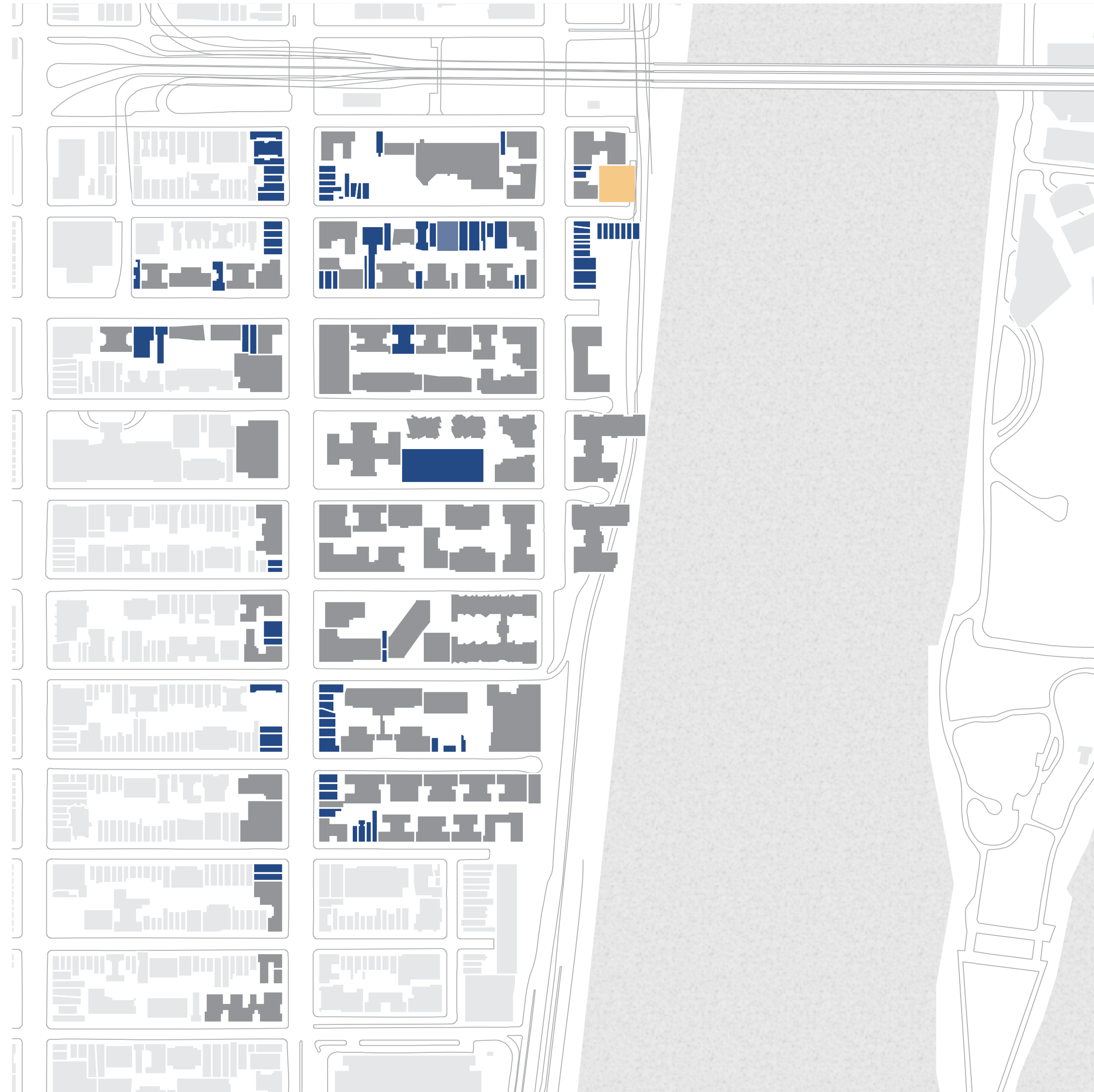


## PART IV

# The Concept



# LOCATION



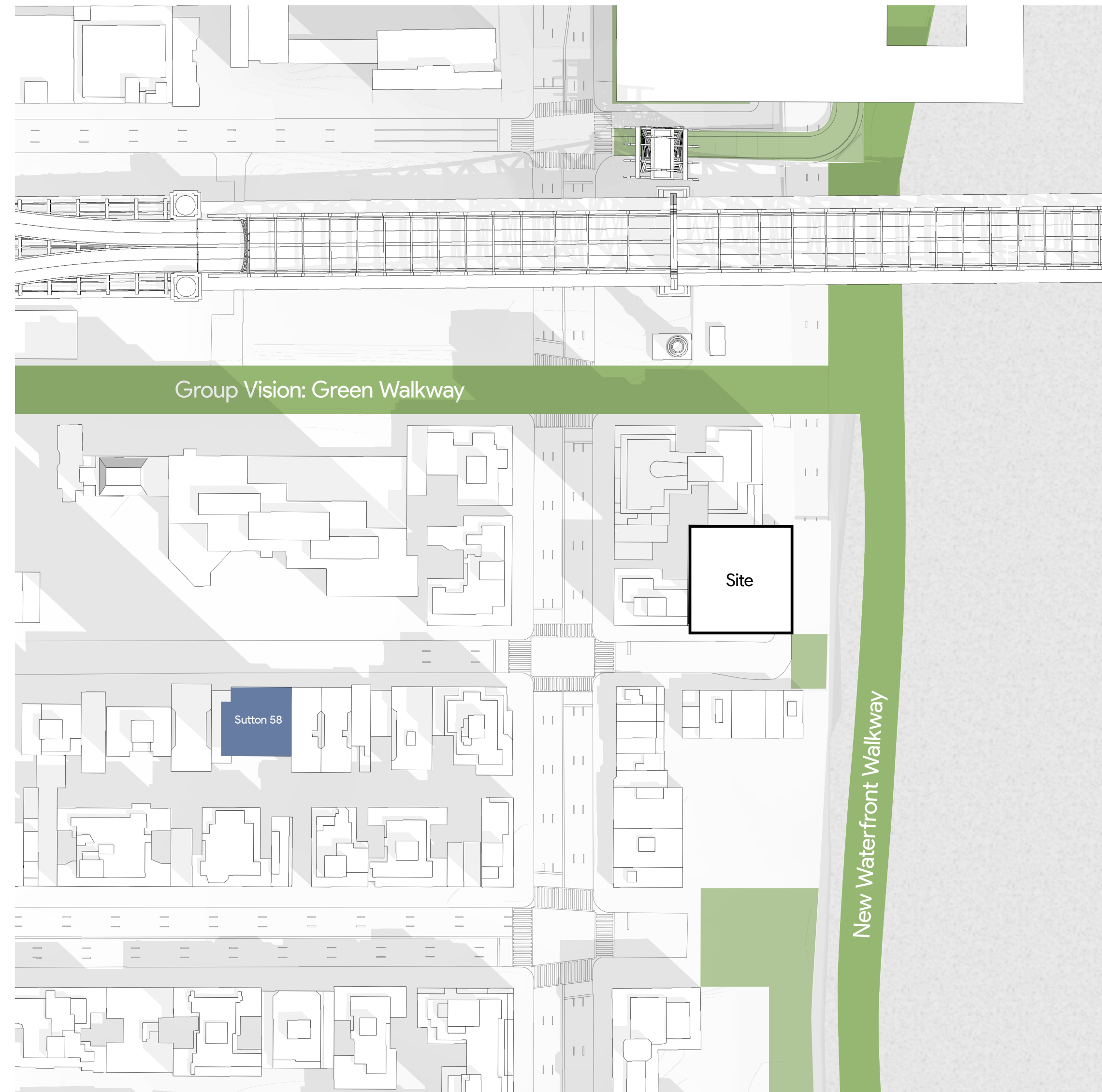


# RIVERVIEW TERRACE



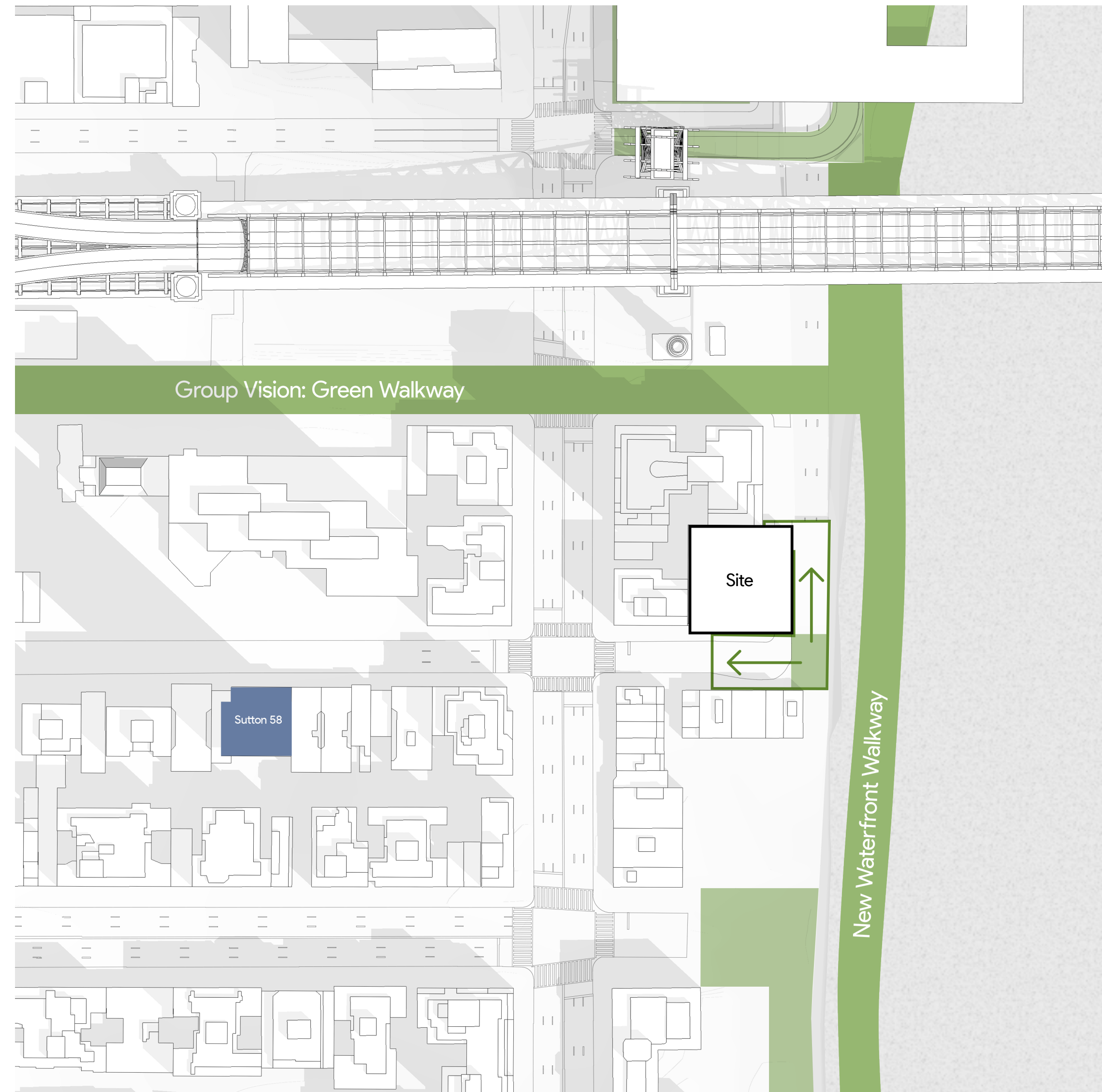


# LOCATION





# PARK EXPANSION



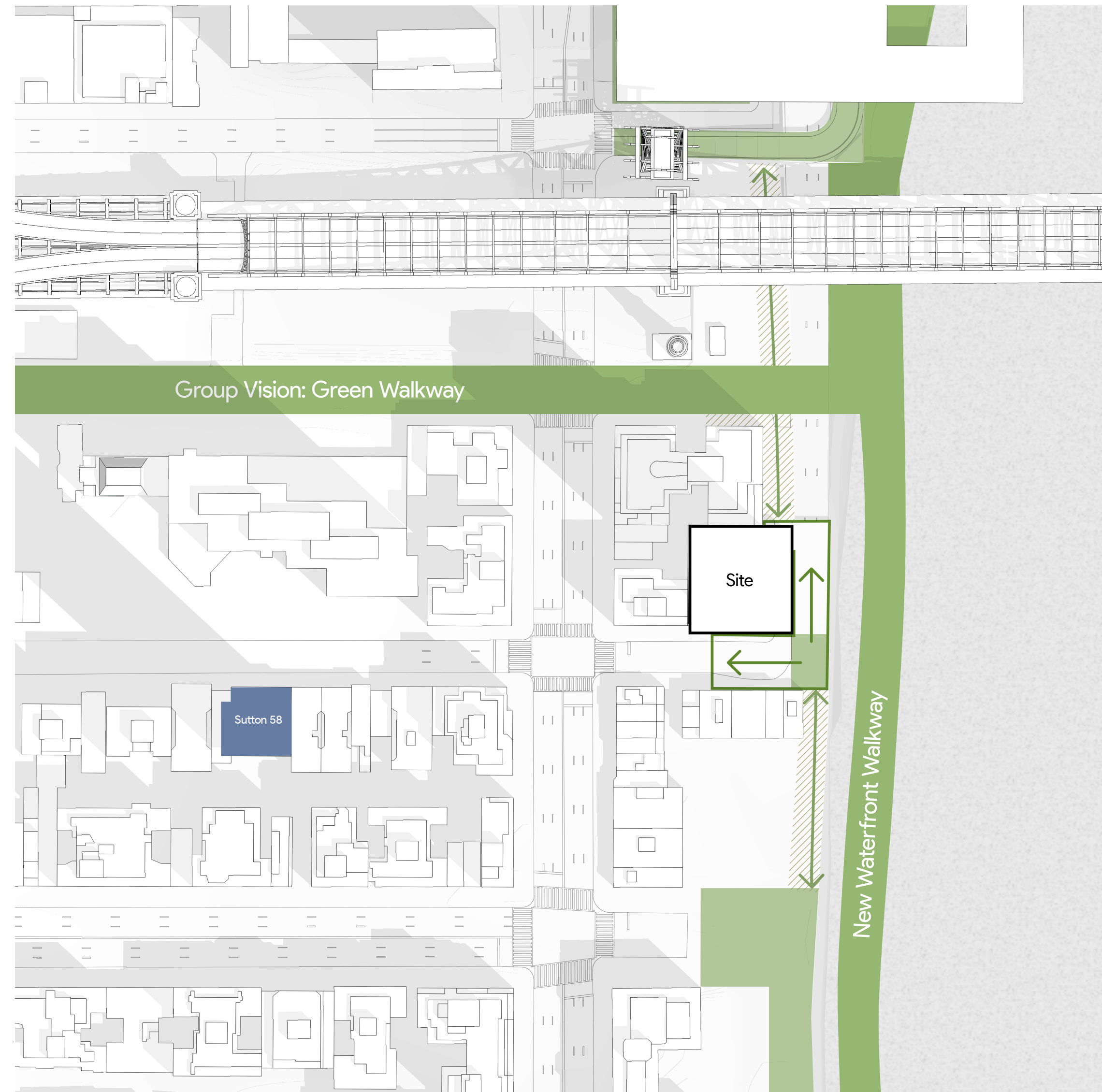


# SUTTON PARK



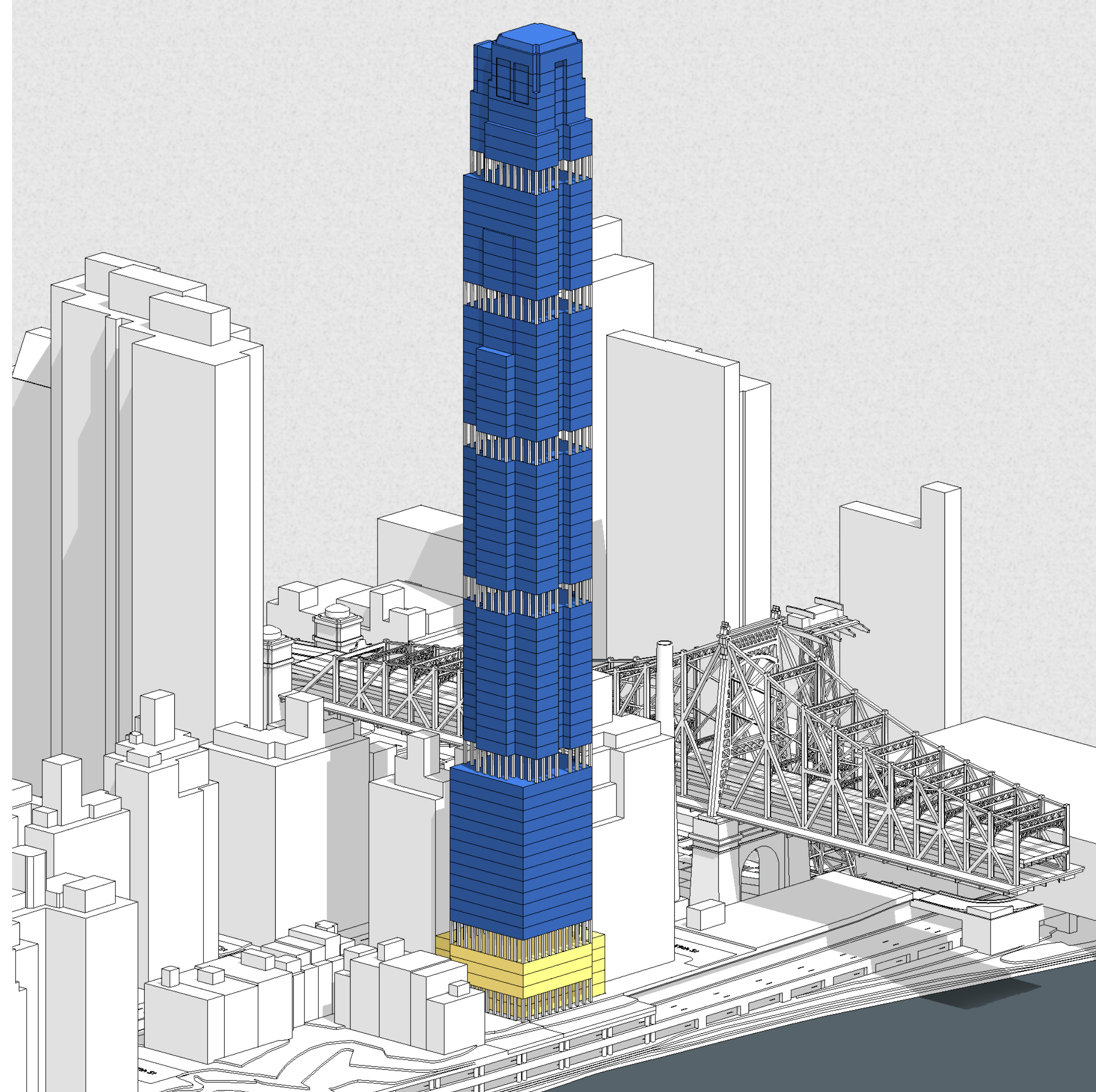


# PARK EXPANSION





# BUILDING PROGRAM



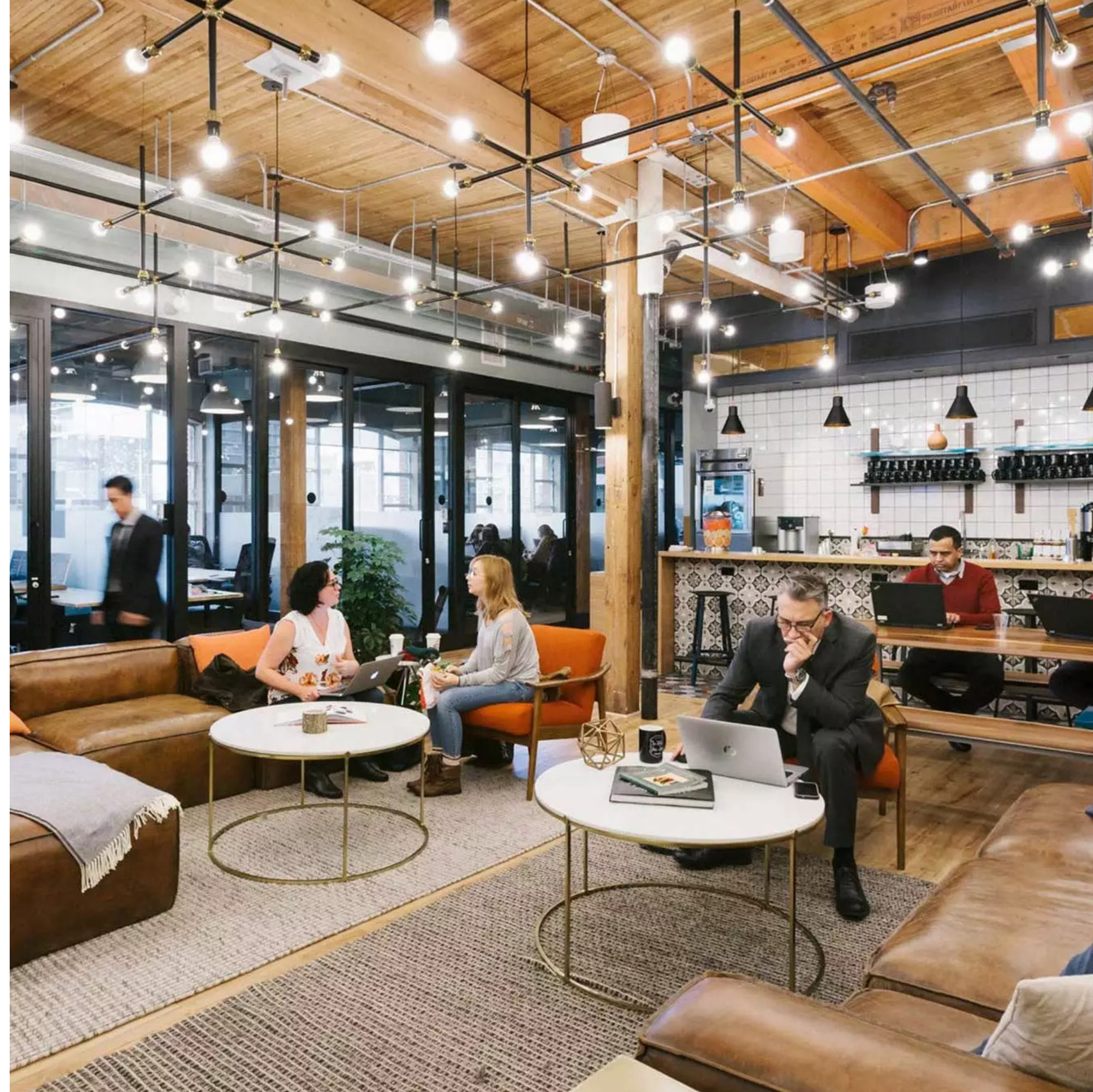


# PODIUM PROGRAM





# PODIUM PROGRAM





# TOWER PROGRAM





# TOWER PROGRAM



## HDC - Mixed-Middle Income Program (M2)

Land	Price (\$)	Area (SF)	\$/SF
7 Sutton Square	\$29,500,000.00	2846	\$10,365.43
3 Riverview Terrace	\$8,000,000.00	1438	\$5,563.28
4 Riverview Terrace	\$7,650,000.00	1200	\$6,375.00
5 Riverview Terrace	\$2,495,000.00	1328	\$1,878.77
6 Riverview Terrace	\$6,000,000.00	1266	\$4,739.34

FAR	Price (\$)	Area (SF)	\$/SF
Zoning Allowed Floor Area	\$53,645,000.00	181771	\$295.12
Bonus FAR Park	-	22721	-
Bought Air Rights	\$10,125,000.00	45000	\$225.00
Total	\$63,770,000.00	249493	\$255.60

Construction	\$/SF
Price land / Rentable SF	\$255.60
Hard Costs (Construction)	\$396.00
Soft costs (Administration etc.)	\$79.00
Total Cost per Buildable SF	\$730.60

Costs	
Annual Debt Service / SF	\$32.41
Interest Rate	2.00%
Period (Years)	30
Operating Expense Per Unit	\$6,700.00
Max Number of Units	267
Actual Number of Units	266
Total Annual Costs	\$9,867,063.48

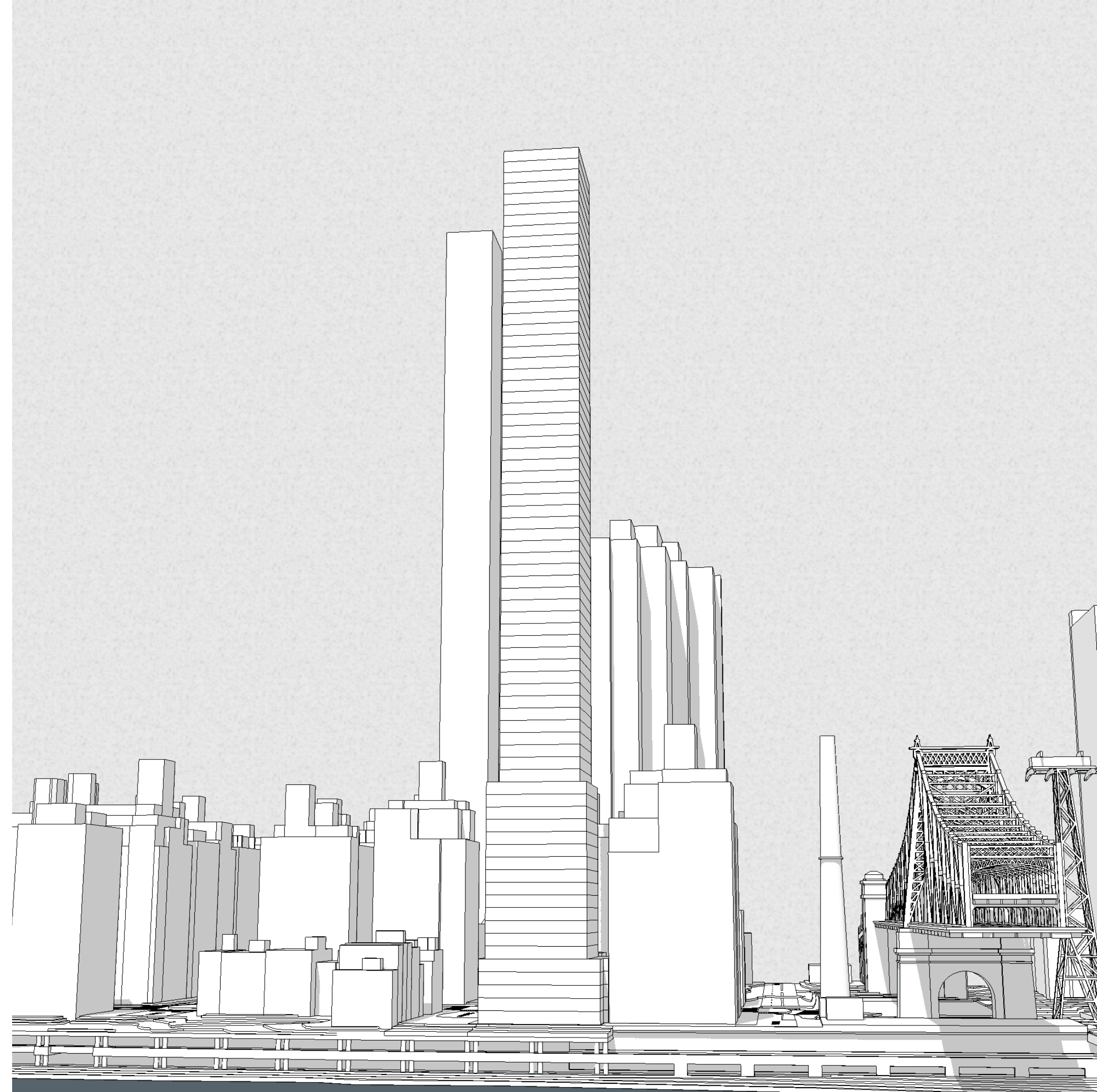
Unit Averages	
Average floor area per unit	937.9421053
Average rent per SF	\$3.30
Average rent per unit	\$3,091.19

HDC M2 Program		Income	Affordable Rent (30%)	% of units	no. of units	Income	Bedrooms	SF / Unit	Total SF	\$ / SF
Min 20% of units	< 50% AMI	\$53,350.00	\$1,333.75	25.00%	66.5	\$88,694.38	3	850	56525	\$1.57
Min 30% of units	80% - 100% AMI	\$106,700.00	\$2,667.50	30.00%	79.8	\$212,866.50	3	900	71820	\$2.96
Max 50% of units	130-165% AMI	\$176,055.00	\$4,401.38	45.00%	119.7	\$526,844.59	3	950	113715	\$4.63

Total monthly income	\$828,405.46	Total SF	242060
Total annual income	\$9,940,865.55	SF deficit	7433
Total annual deficit	\$73,802.07		

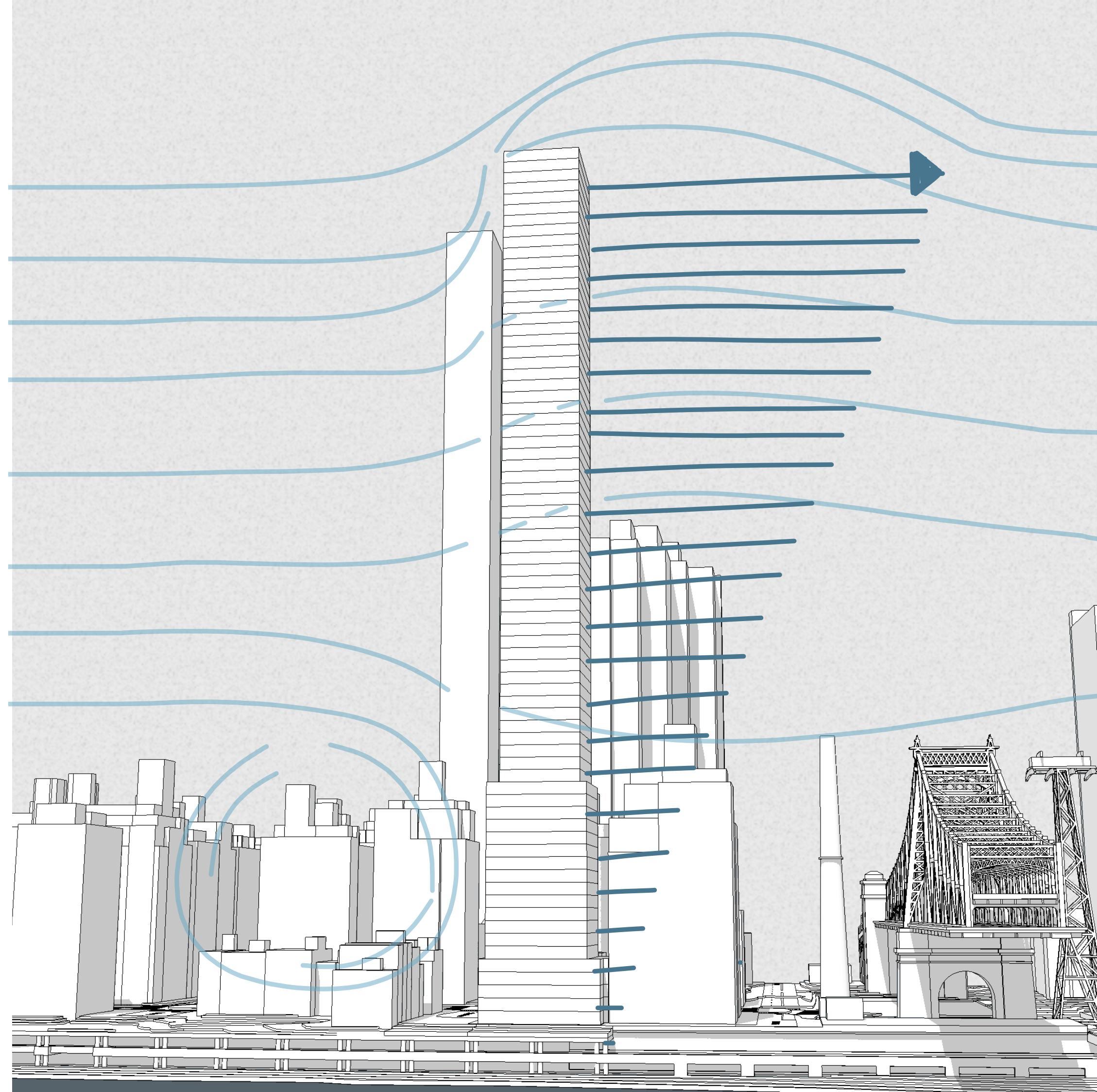


# NEEDLE





# NEEDLE



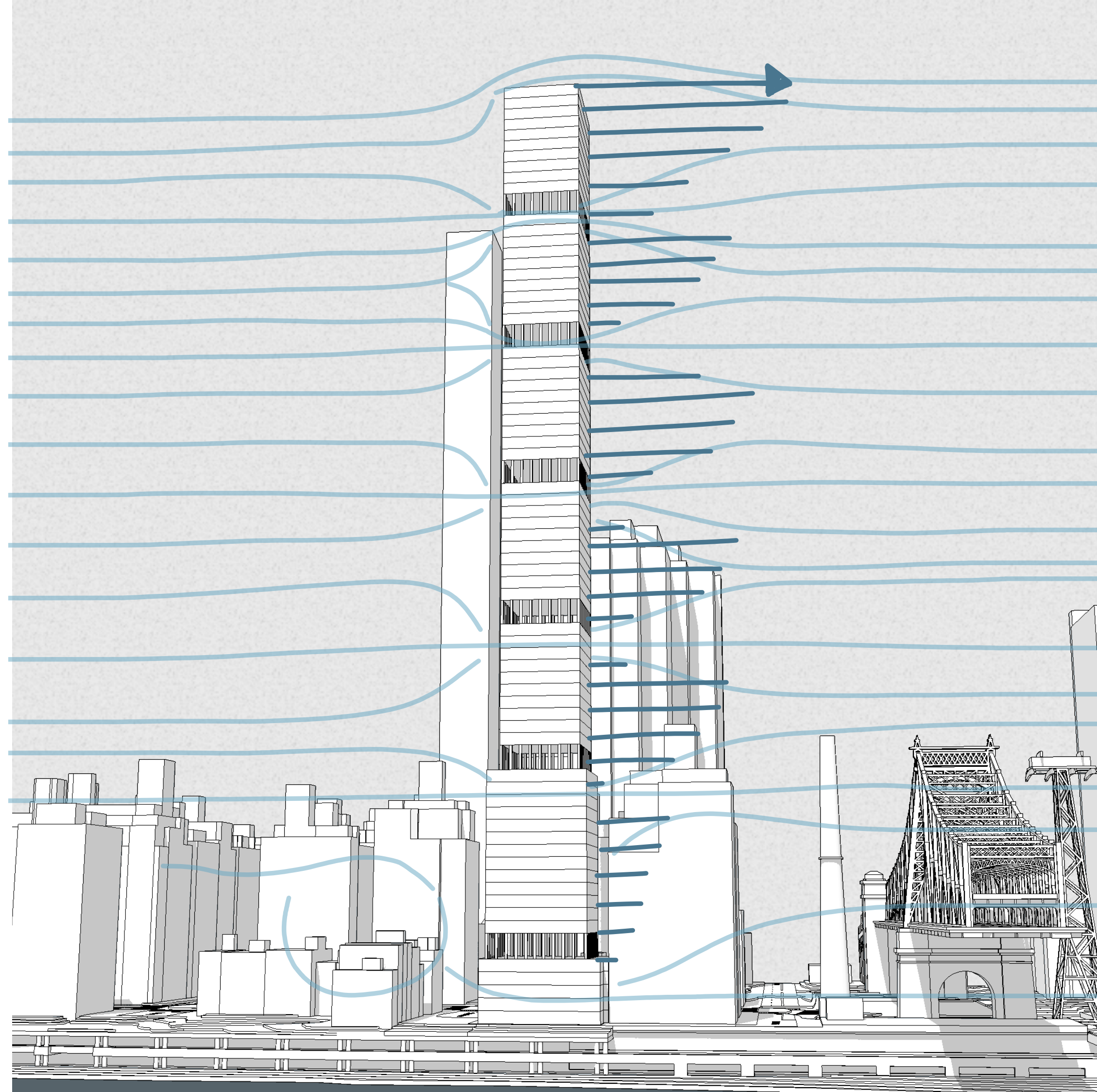


# MASS DAMPER





# OPEN FLOORS





# BELOVED ARCHITECTURE

How do you create a building that people want to keep?



## 3 ASPECTS FOR BELOVED ARCHITECTURE



**FUNCTIONAL**  
Adaptable



## 3 ASPECTS FOR BELOVED ARCHITECTURE

**FUNCTIONAL**

Adaptable

**UNIQUE**

Recognizable



## 3 ASPECTS FOR BELOVED ARCHITECTURE

**FUNCTIONAL**

Adaptable

**UNIQUE**

Recognizable

**CULTURAL**

Local Architectural  
Language



# ARCHITECTURAL LANGUAGE





# BUILDING DESIGN





## KEY ELEMENTS: PROPORTIONS





## KEY ELEMENTS: VERTICAL LINING





## KEY ELEMENTS: FORCED PERSPECTIVE





## KEY ELEMENTS: THE CROWN



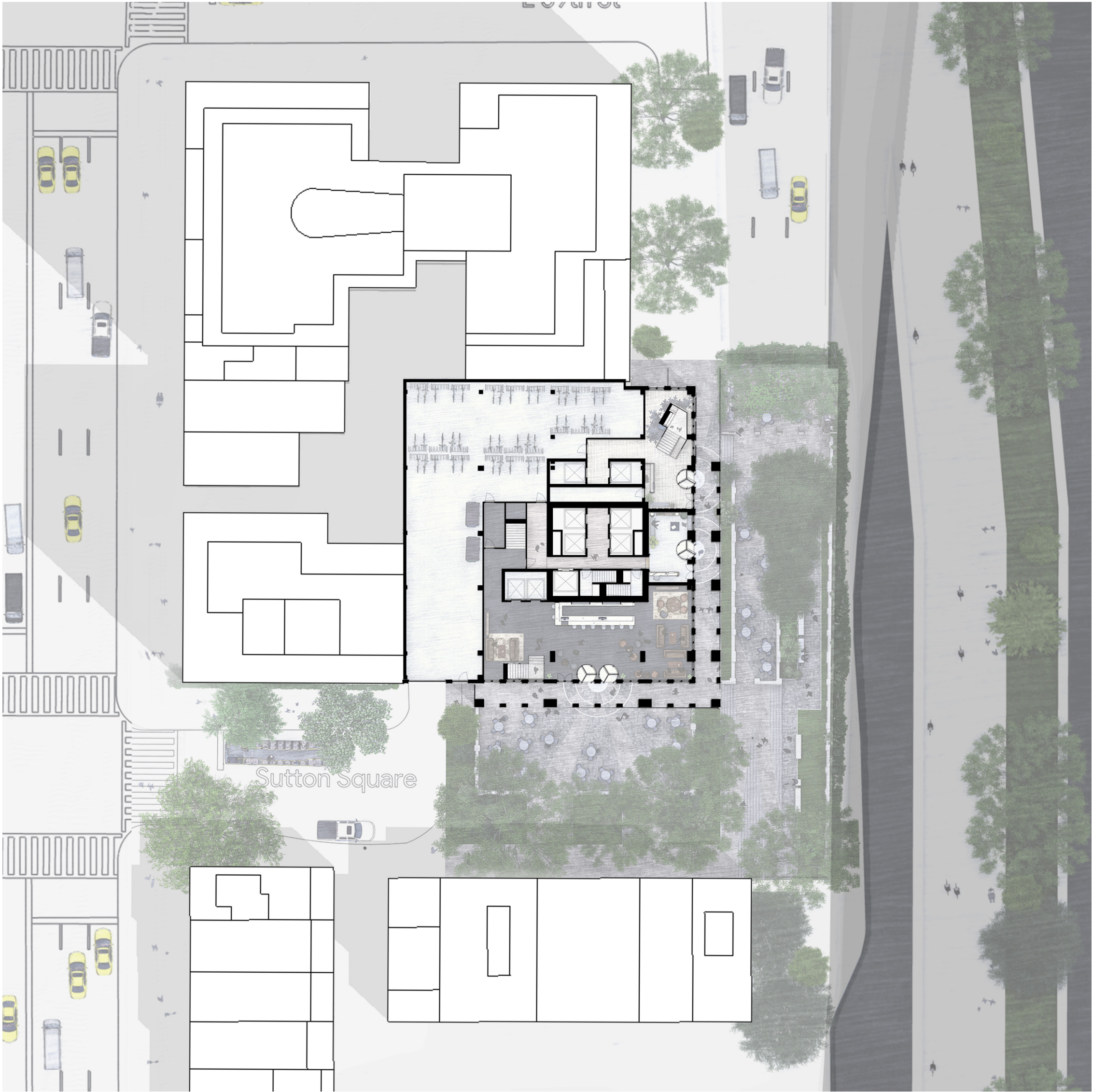


# PART V

## Implementation

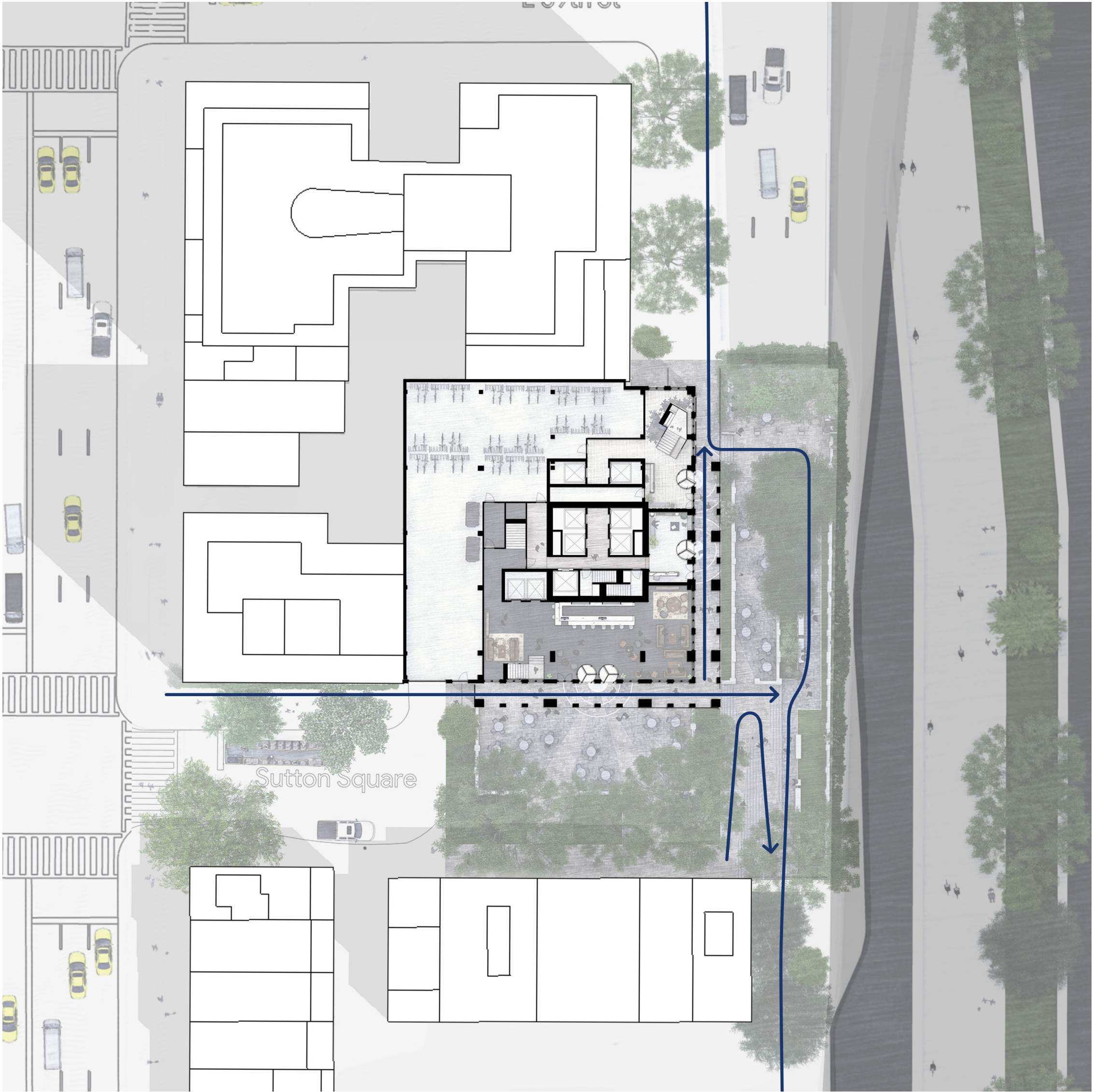


# URBAN INTEGRATION





URBAN INTEGRATION



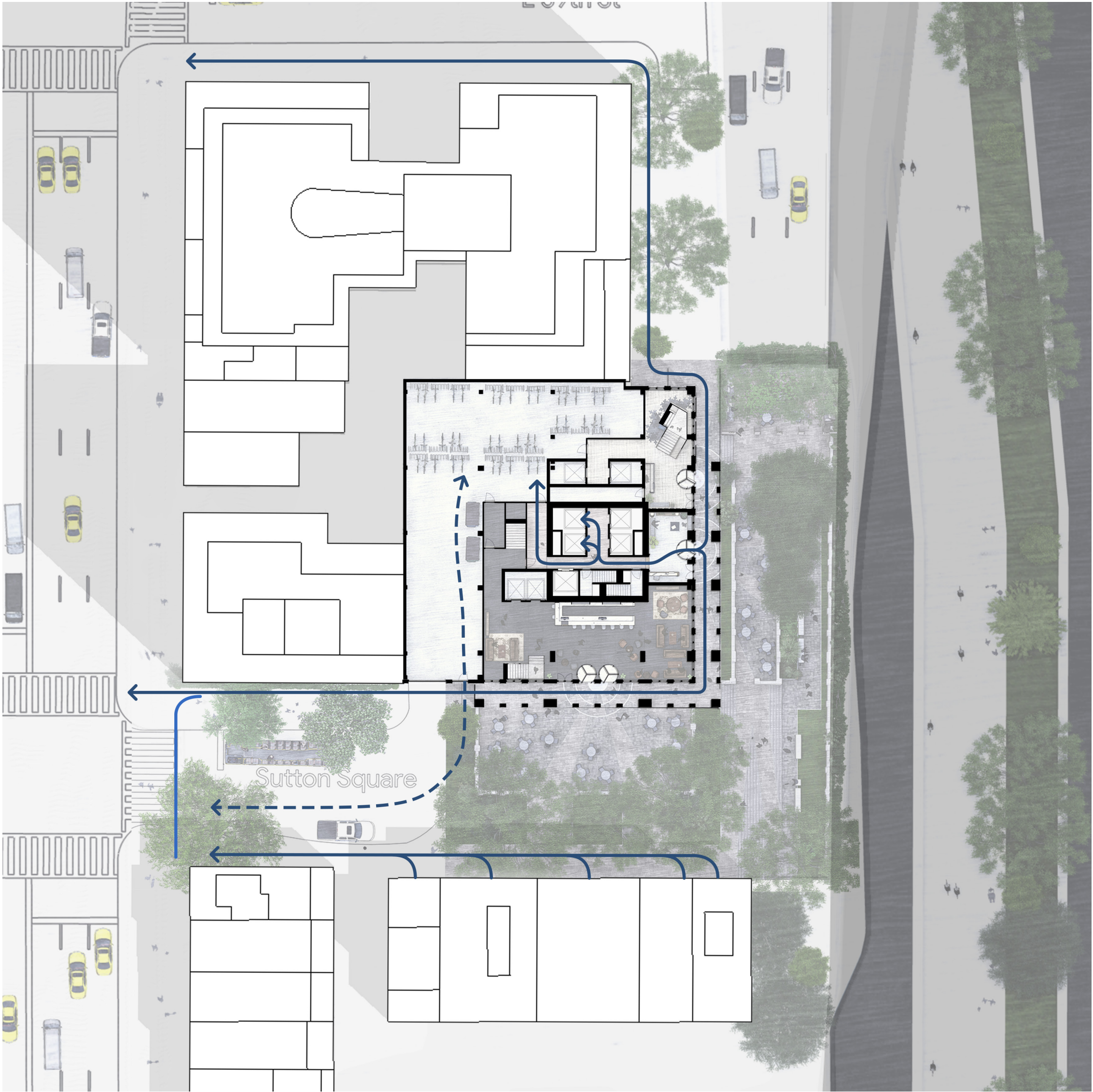


# FLWS



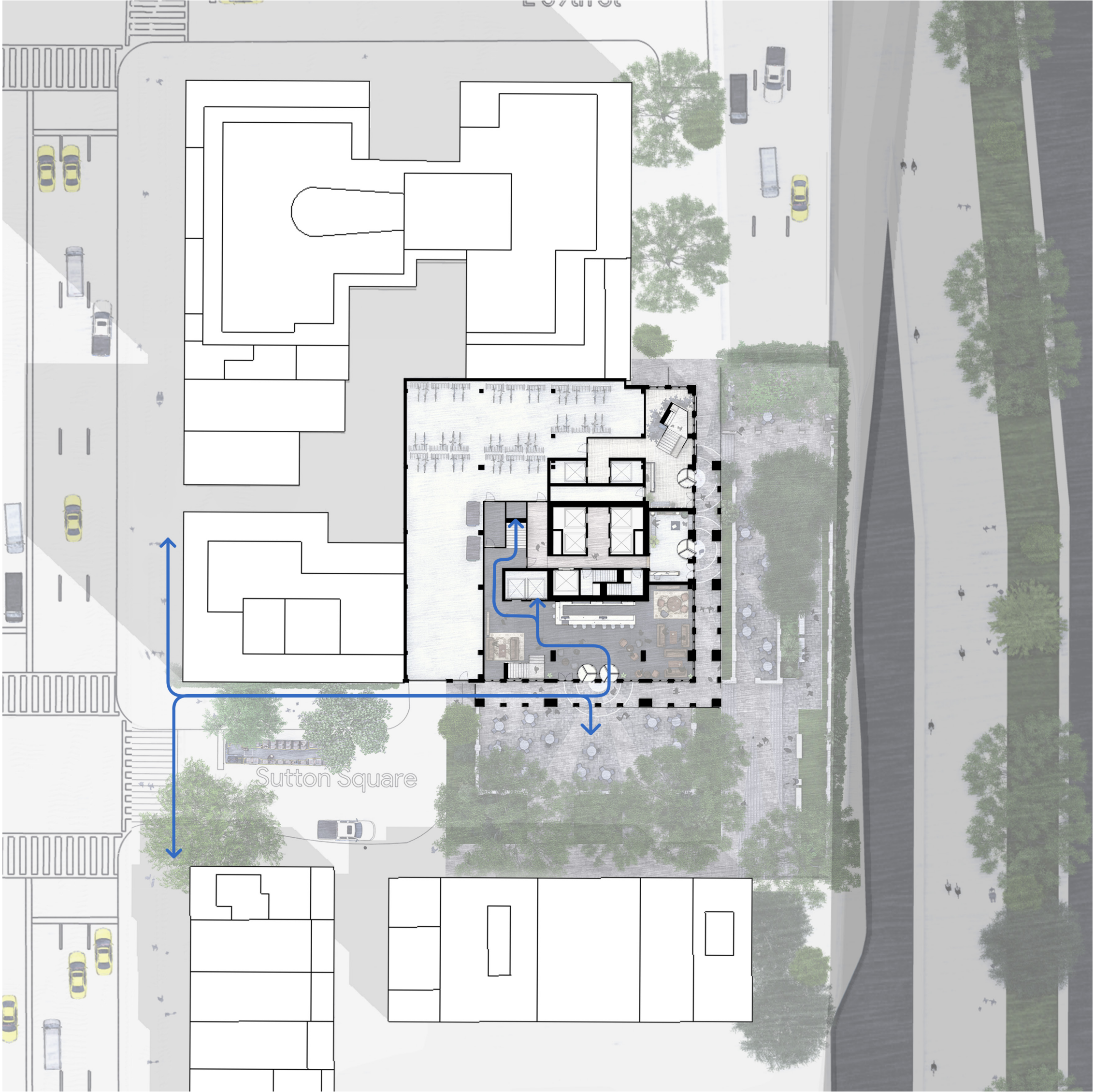


URBAN INTEGRATION





URBAN INTEGRATION



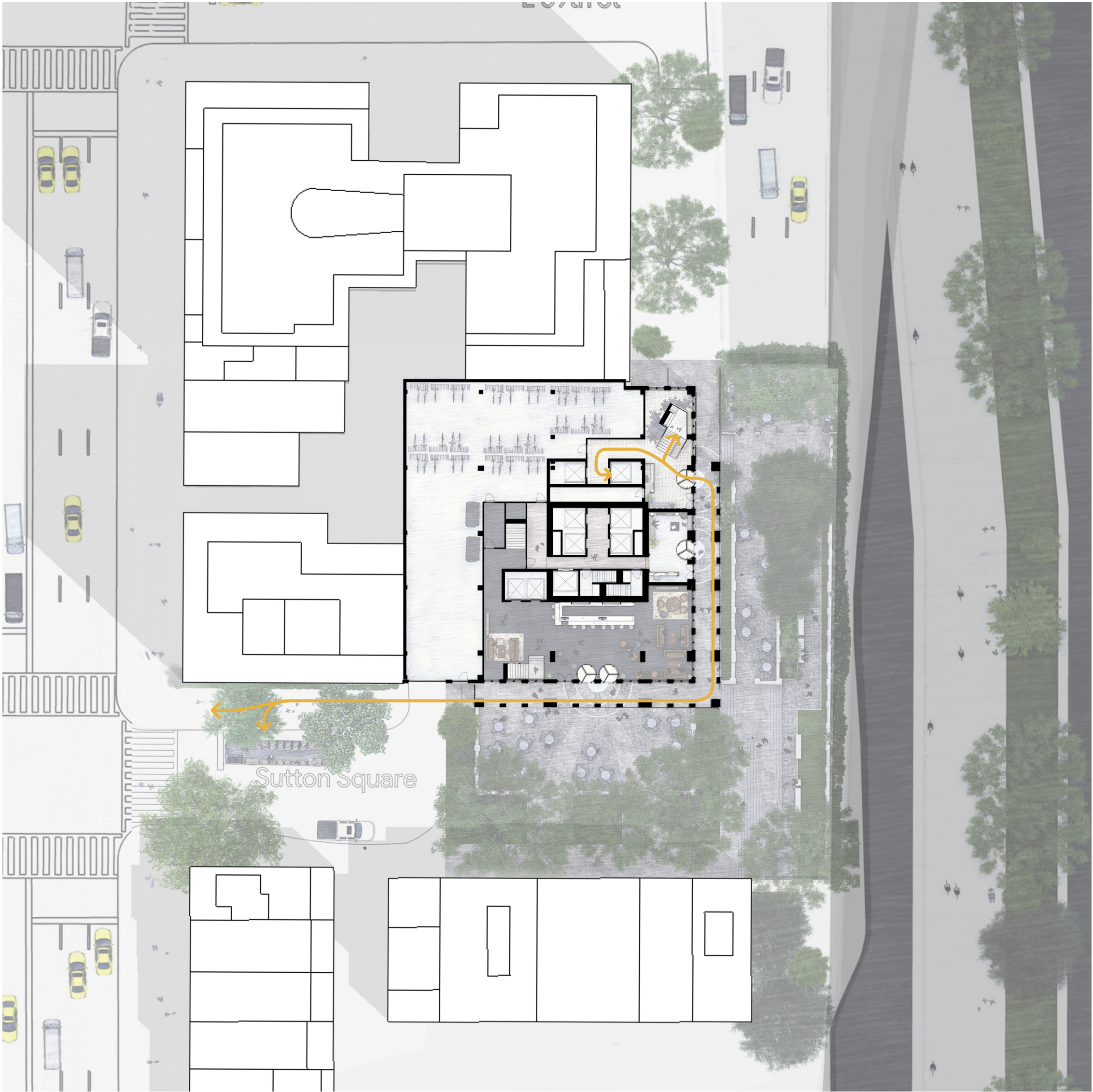


## GROUND FLOOR: ENTRANCE (CO-WORKING & CAFE)





# URBAN INTEGRATION



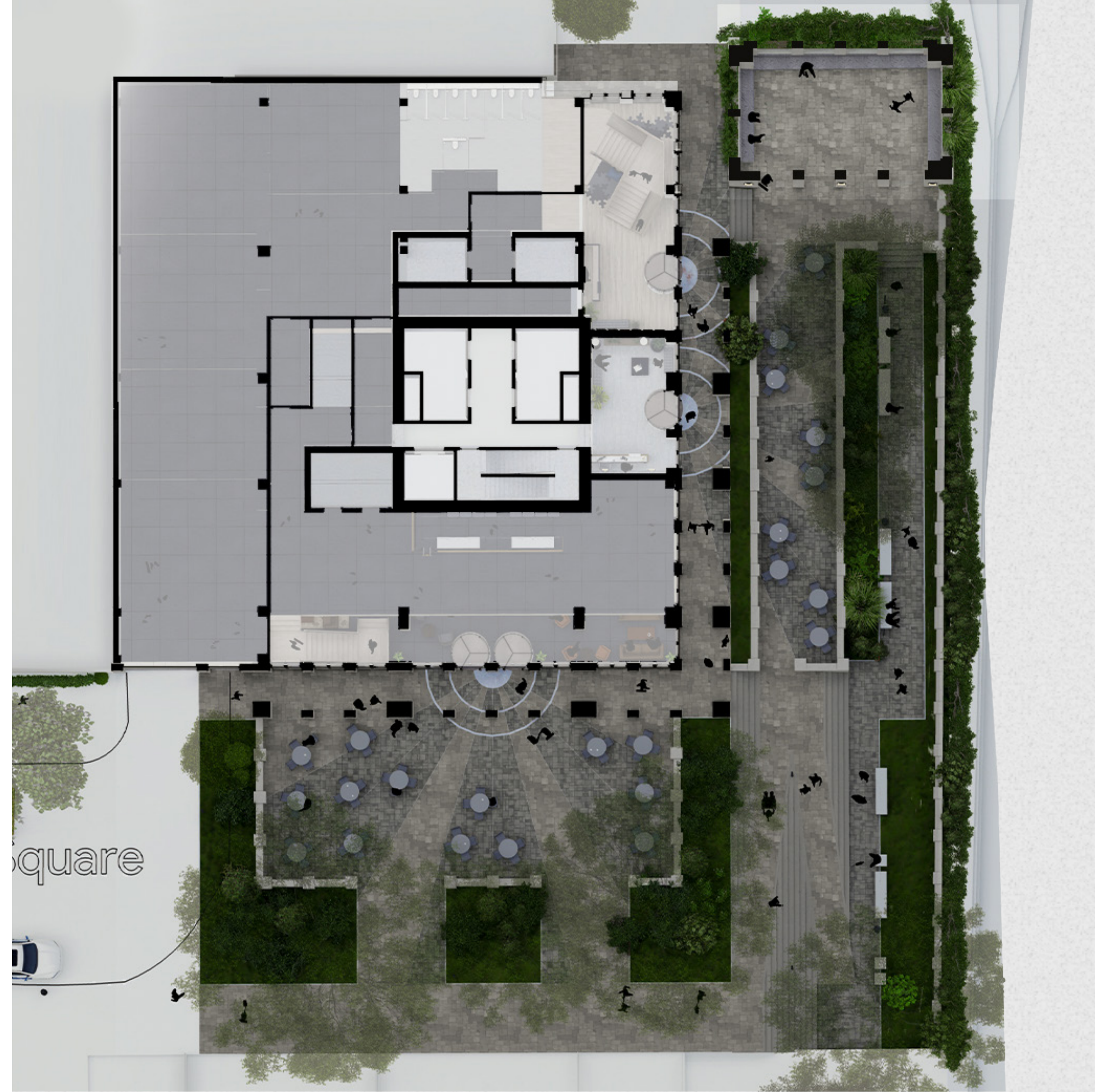


# THE PARK





# THE PARK



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# THE PARK





# THE PODIUM





# THE PODIUM





# GROUND FLOOR: ENTRANCE (CO-WORKING & CAFE





# GROUND FLOOR: ENTRANCE CO-WORKING & CAFE





## GROUND FLOOR: ENTRANCE (CO-WORKING & CAFE)





## FIRST FLOOR: CAFE





# FIRST FLOOR: CAFE





SECOND FLOOR: CO-WORKING SPACES



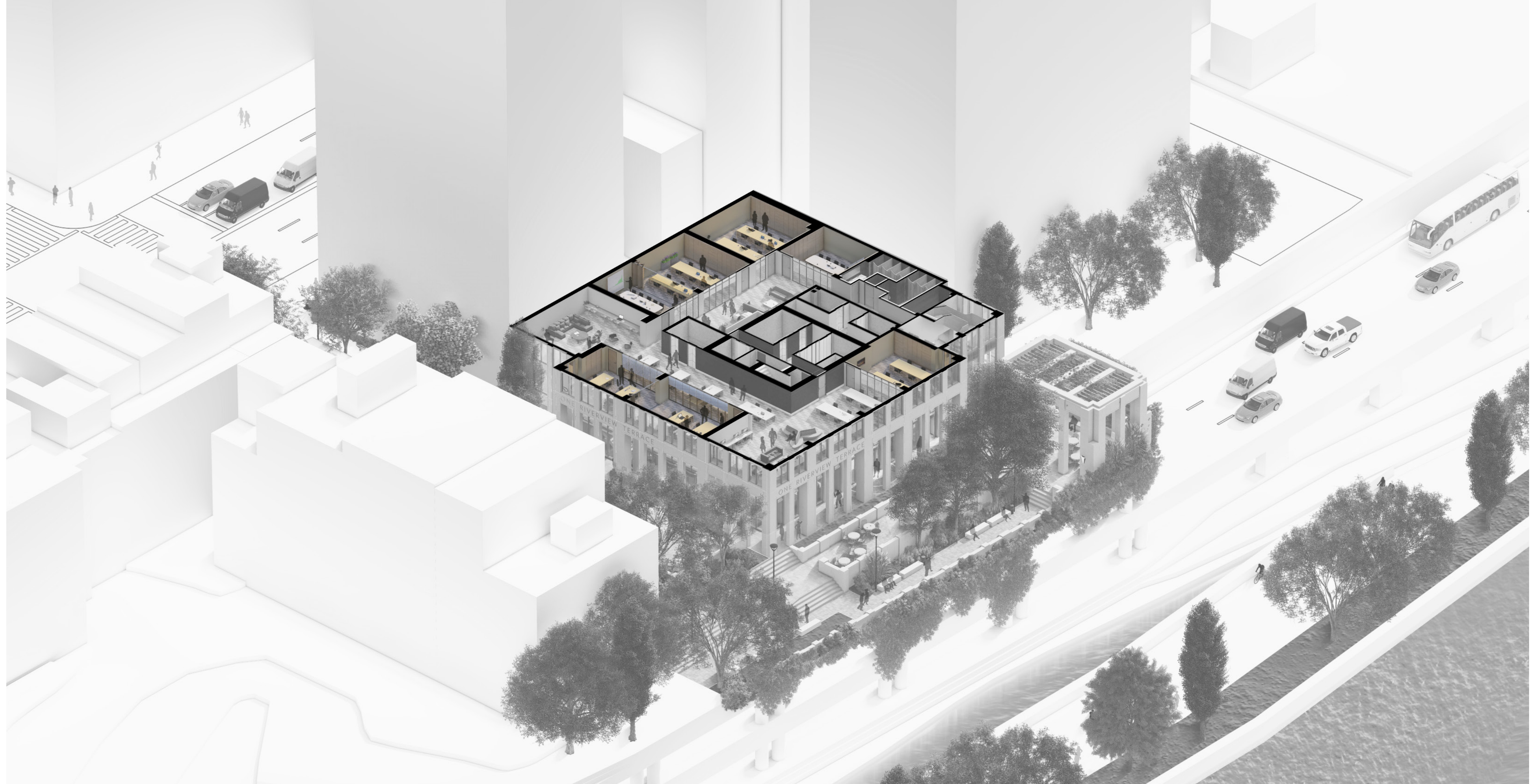


## SECOND FLOOR: CO-WORKING SPACES



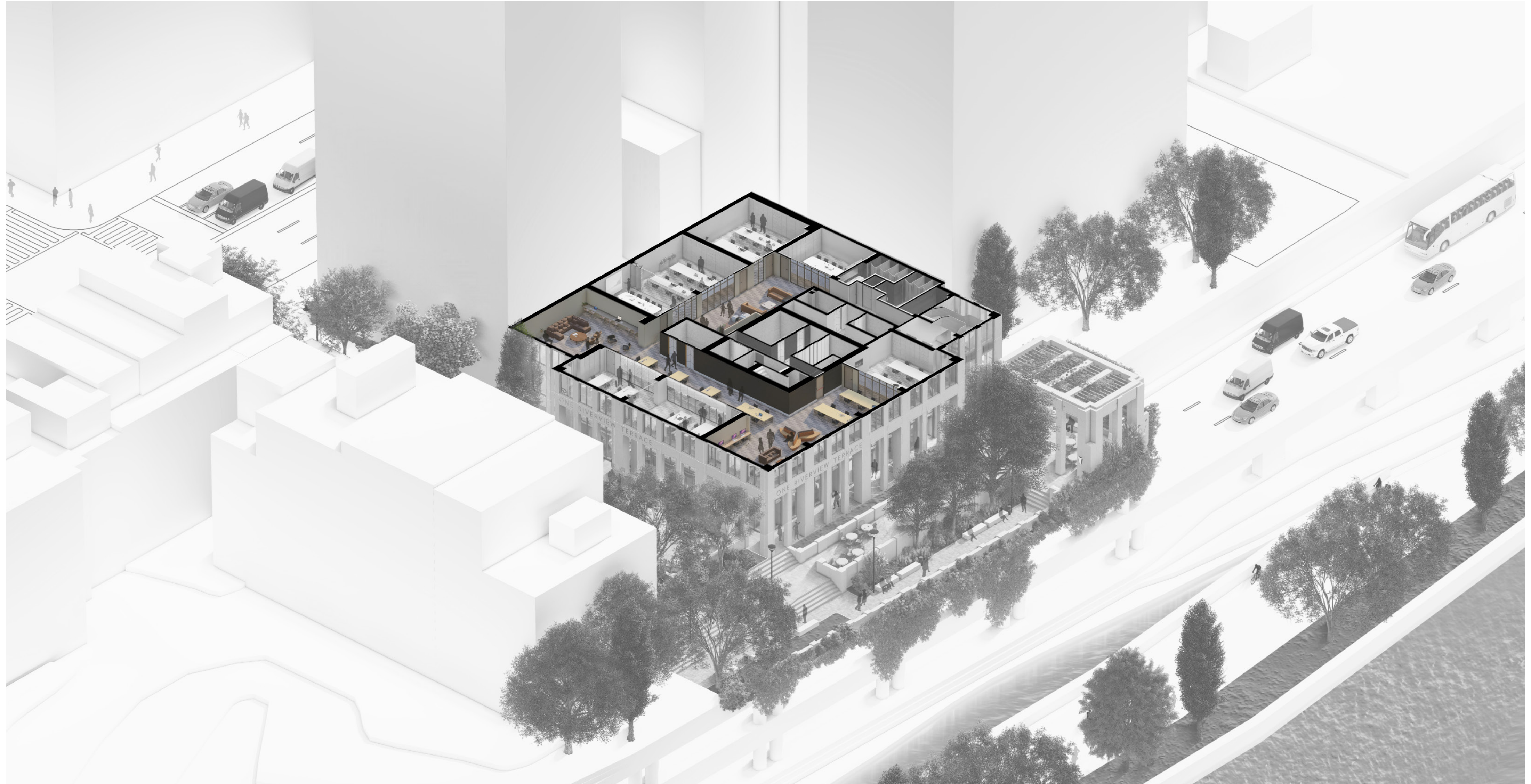


# RENTABLE OFFICES





# FLEXIBLE WORKSPACES





# FLEXIBLE WORKSPACES





# GROUND FLOOR: ENTRANCE PRESCHOOL





## GROUND FLOOR: ENTRANCE PRESCHOOL





3RD & 4TH FLOOR: PRESCHOOL





## 4TH FLOOR: PRESCHOOL





# CLASSROOMS





# INDOOR PLAYGROUND





# CLASSROOMS





# GROUND FLOOR: LOBBY & SERVICES



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## GROUND FLOOR: LOBBY



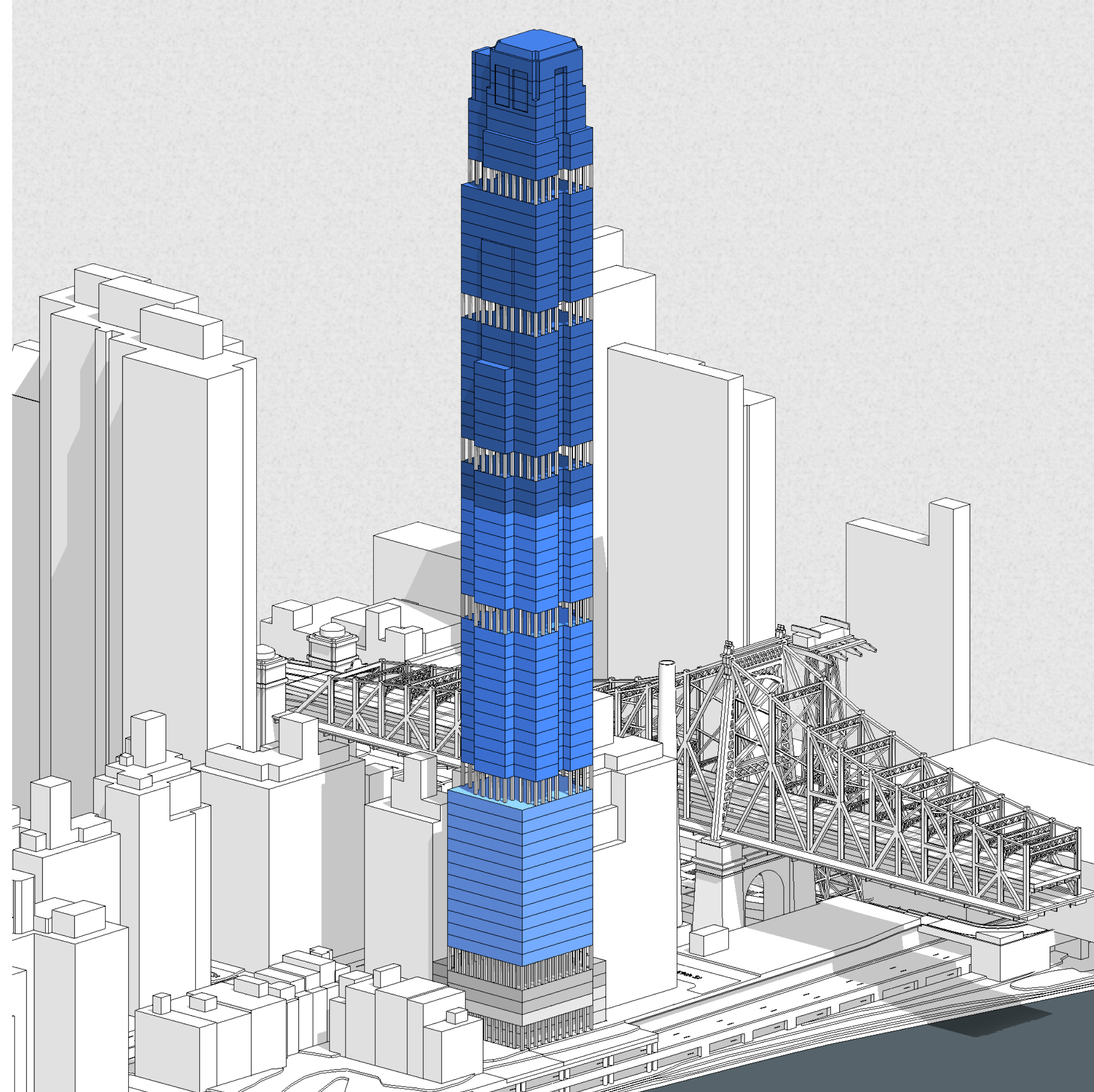


## PART VI

# The Tower



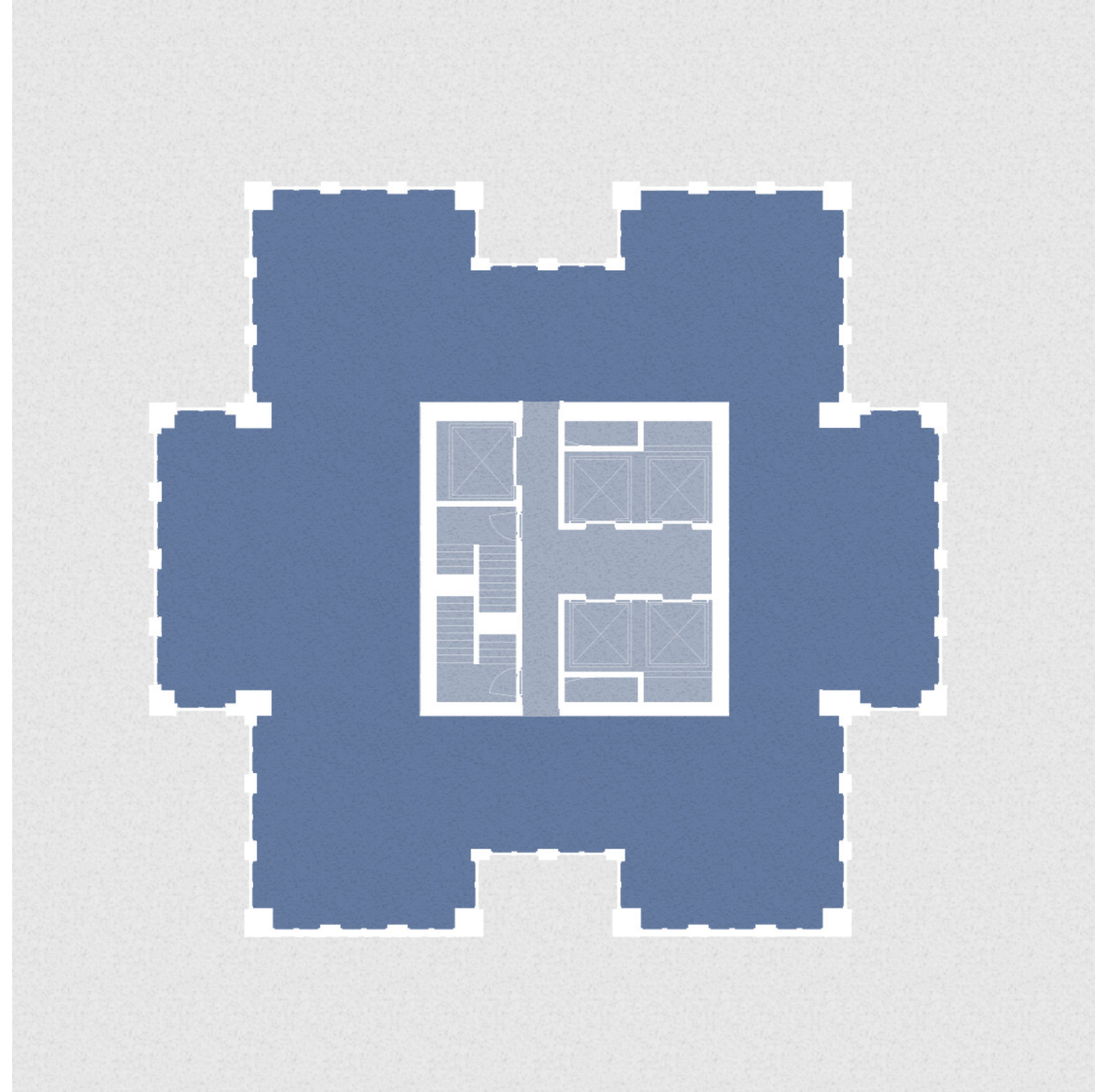
# TOWER PROGRAM



**45%** Middle-Income  
**30%** Moderate Income  
**25%** Low Income

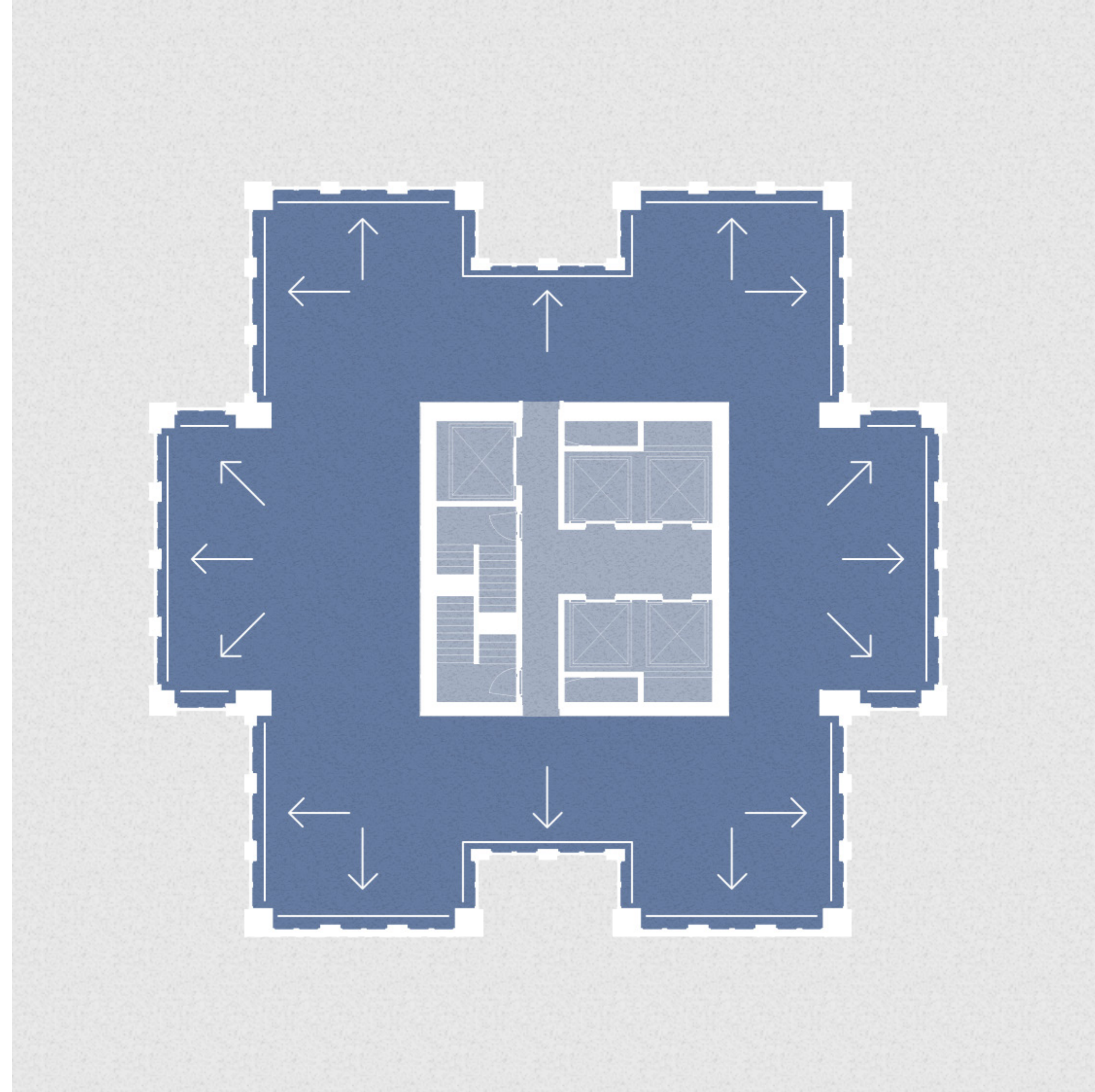


AFFORDABILITY = EFFICIENCY



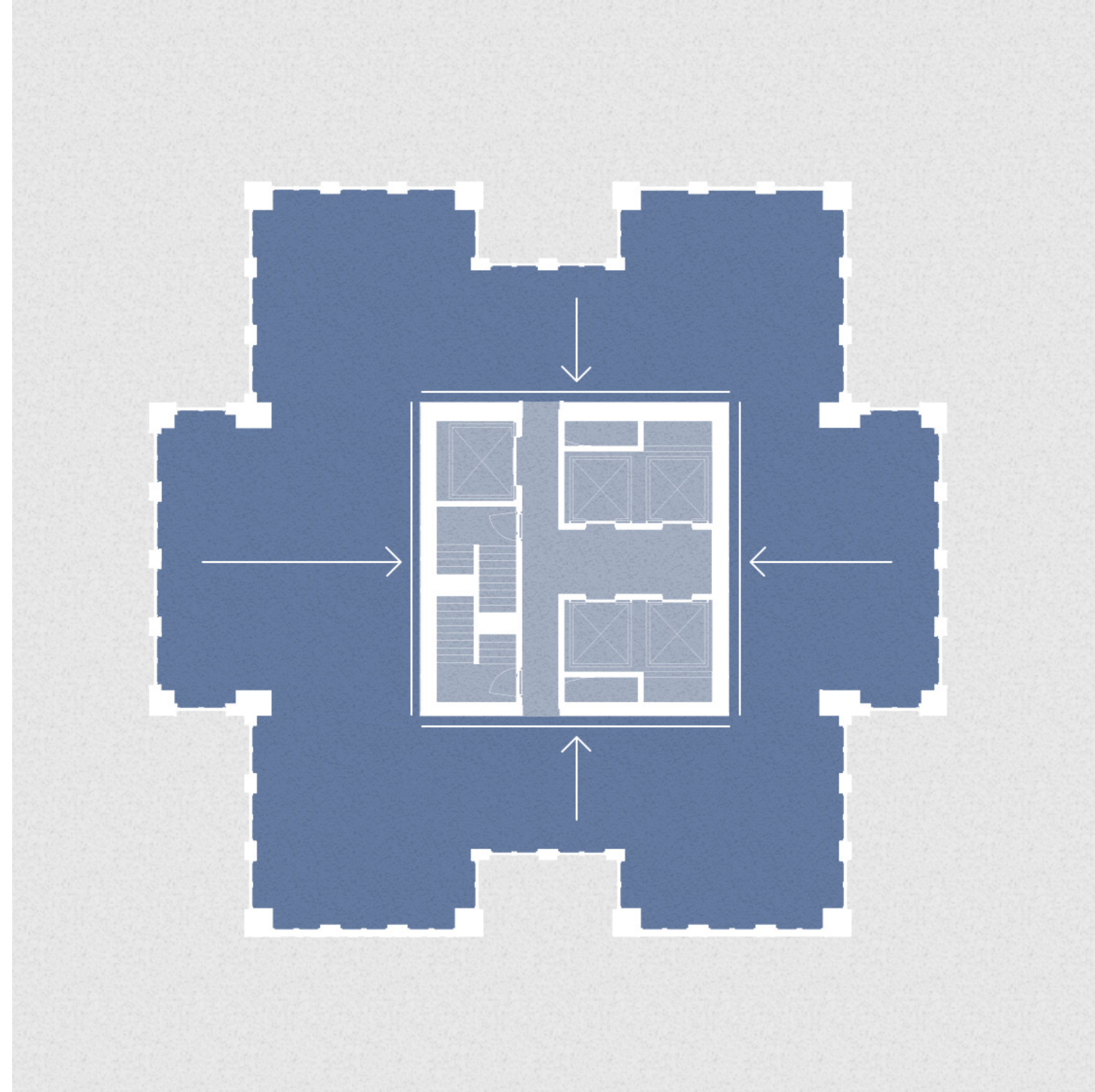


# OPTIMIZATION



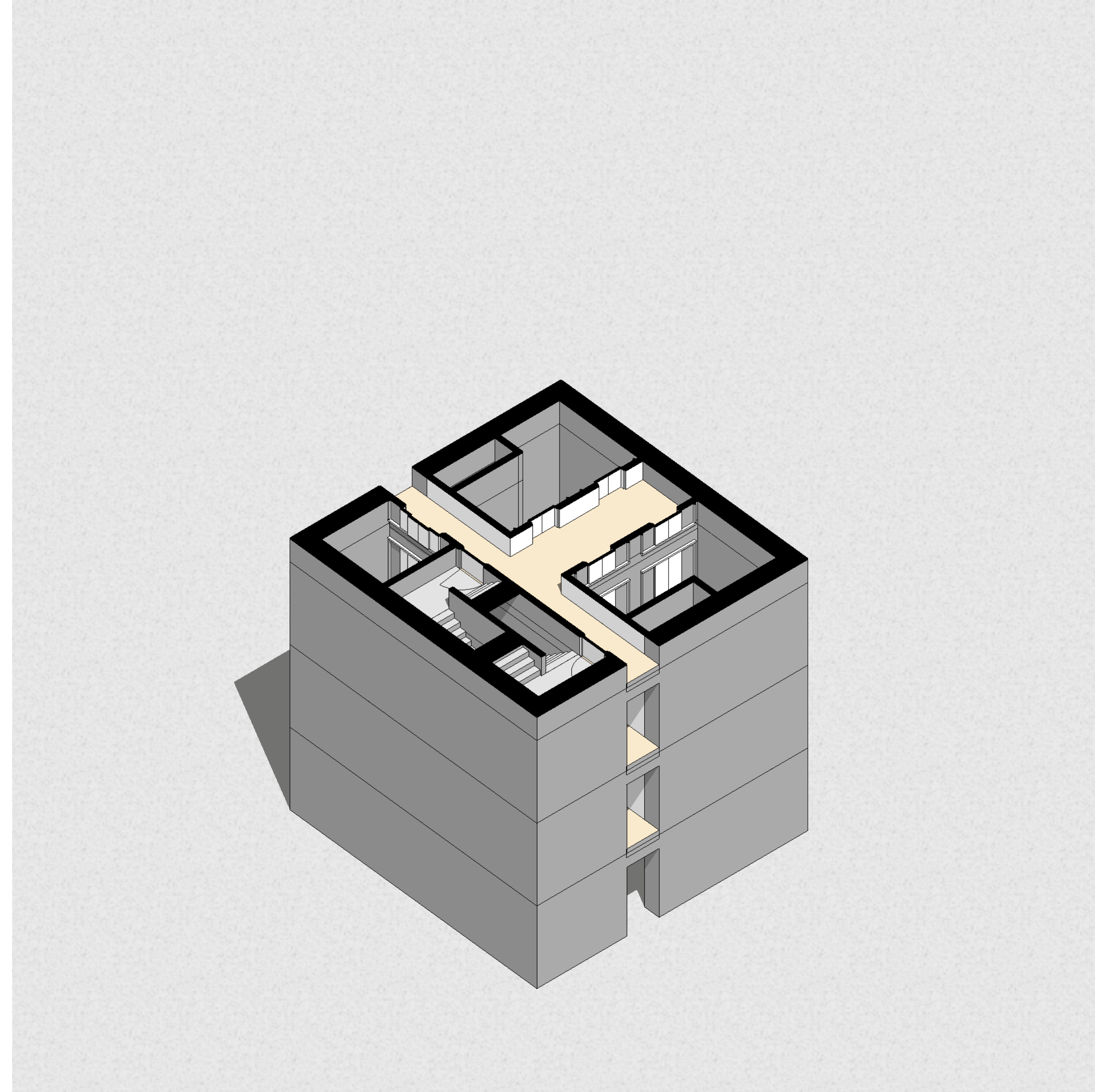


# OPTIMIZATION



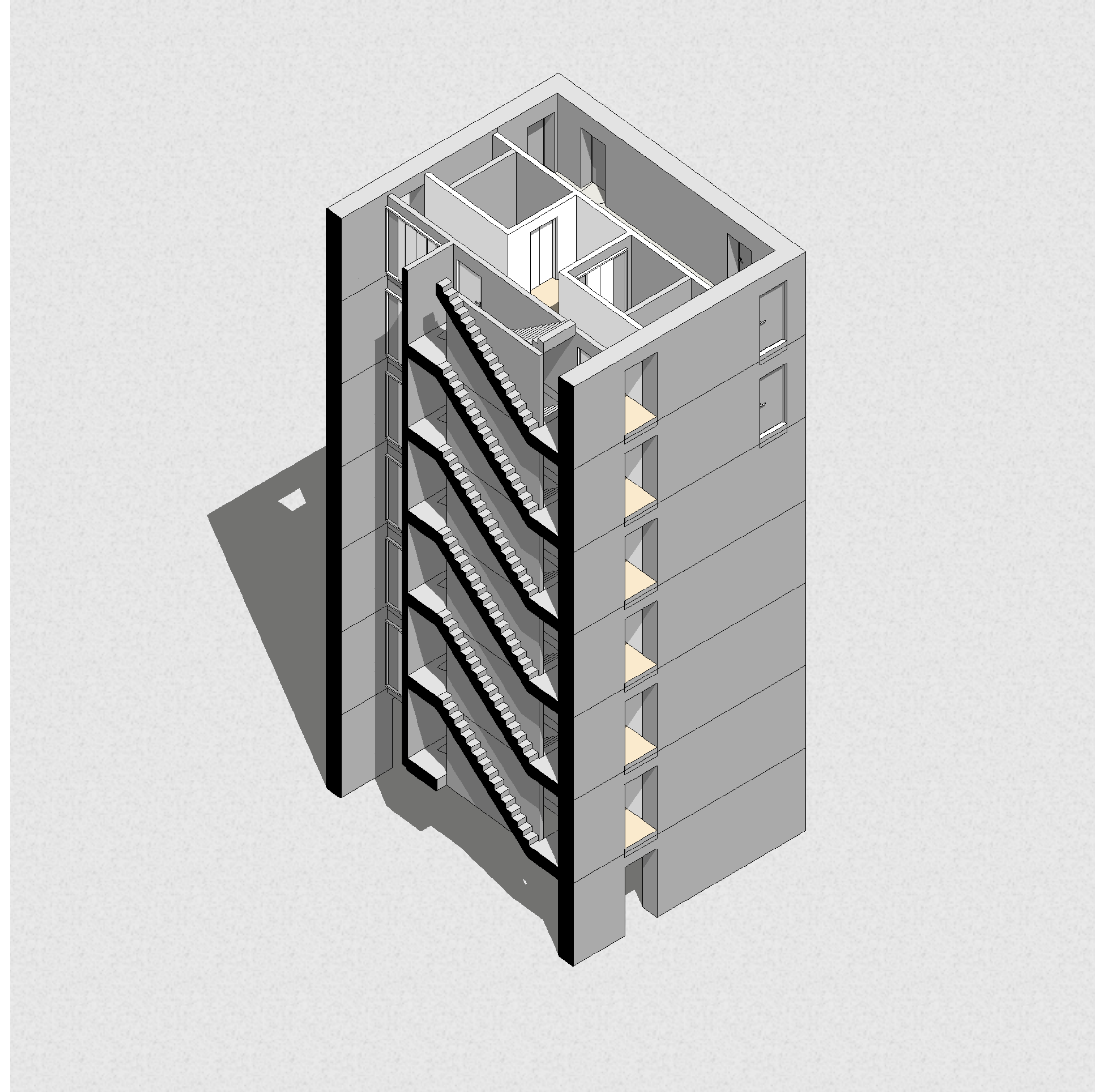


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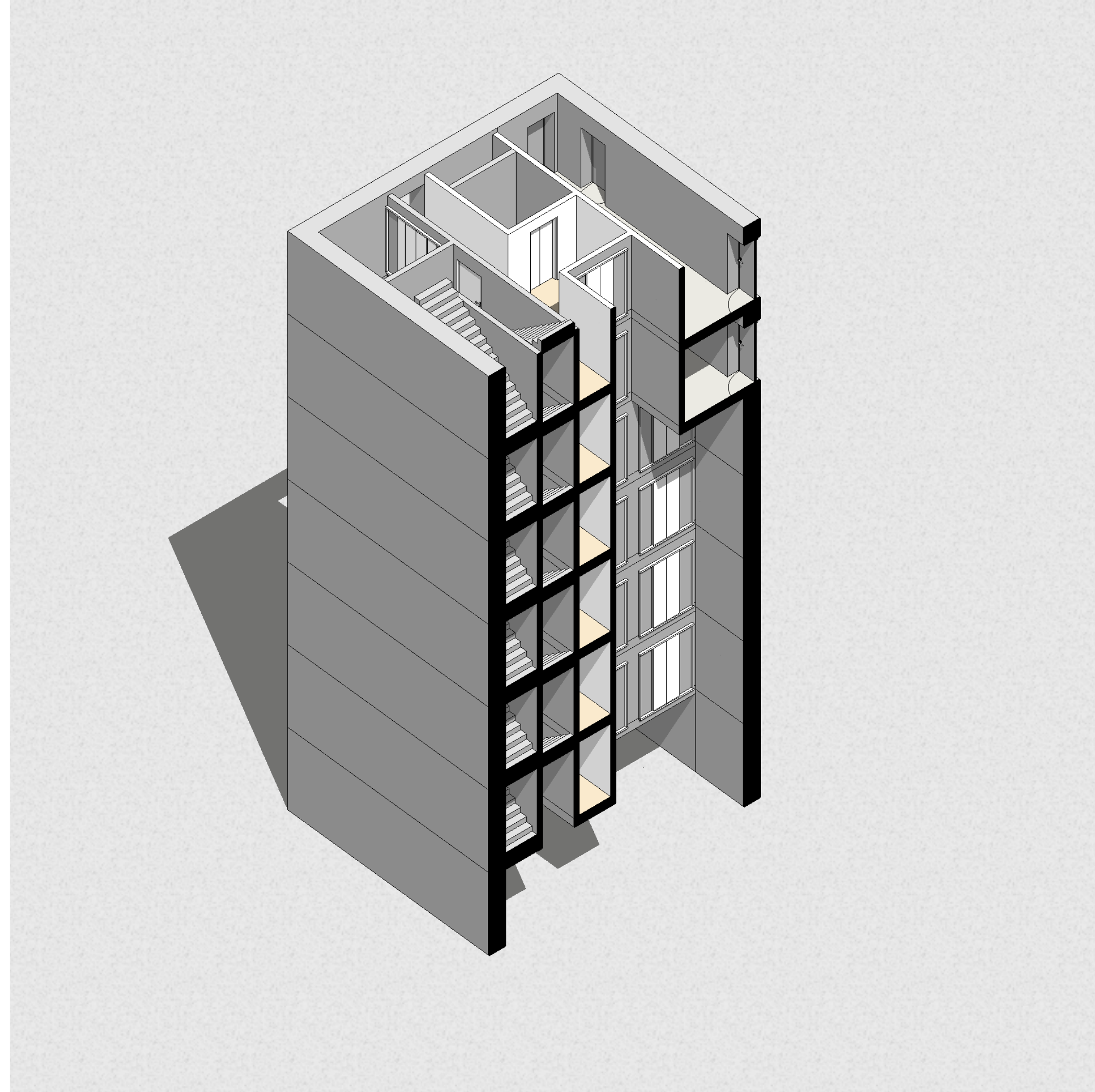


# OPTIMIZATION





# OPTIMIZATION

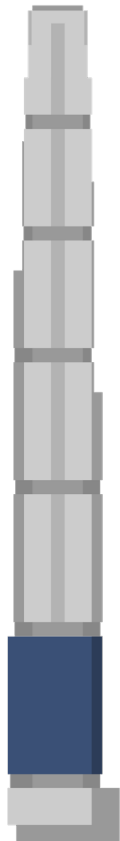




TYPICAL FLOORPLAN: APARTMENTS A

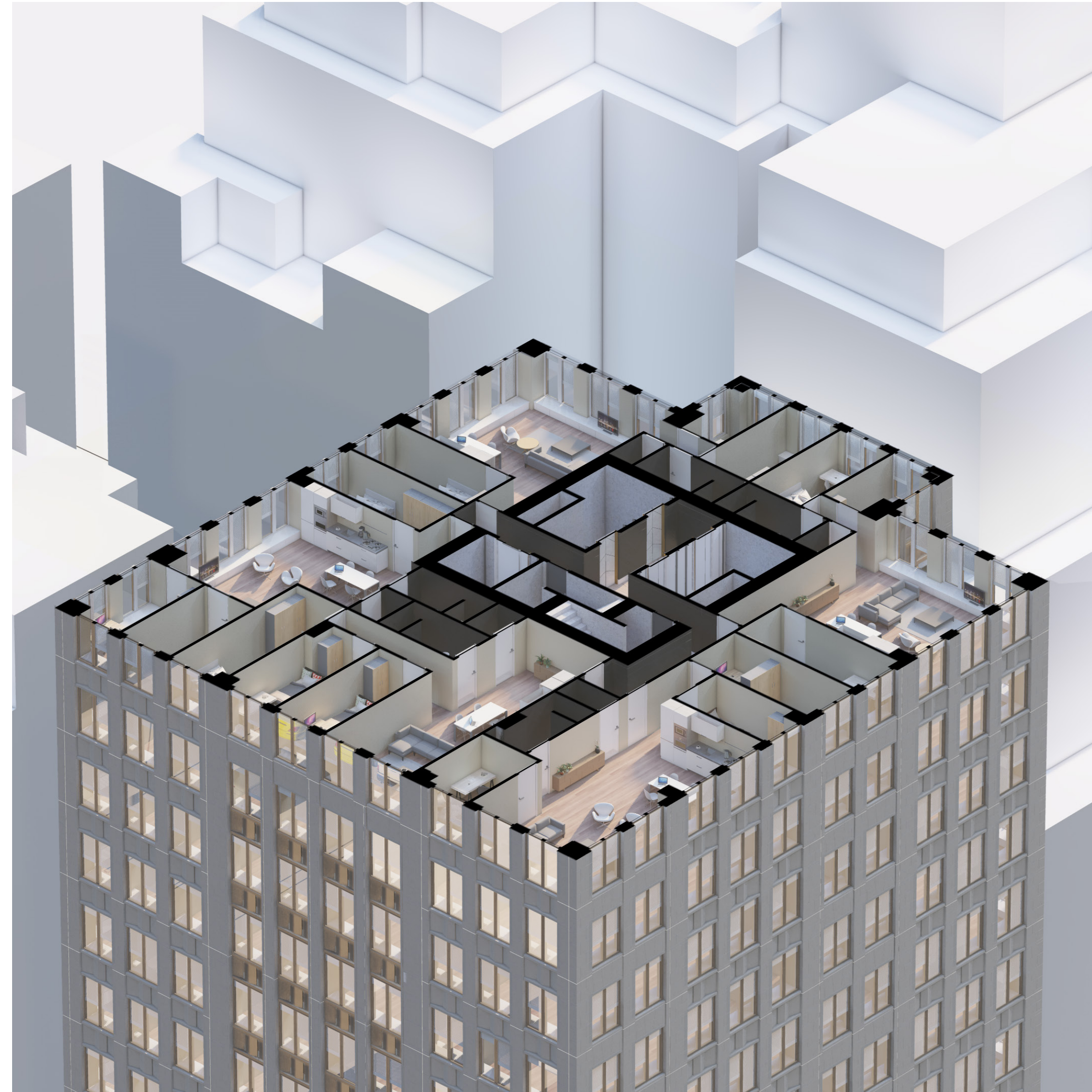


Floor 7-19  
21-57m





# APARTMENTS A



Floor 7-19  
21-57m

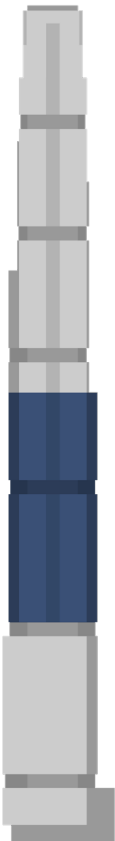




TYPICAL FLOORPLAN: APARTMENTS B

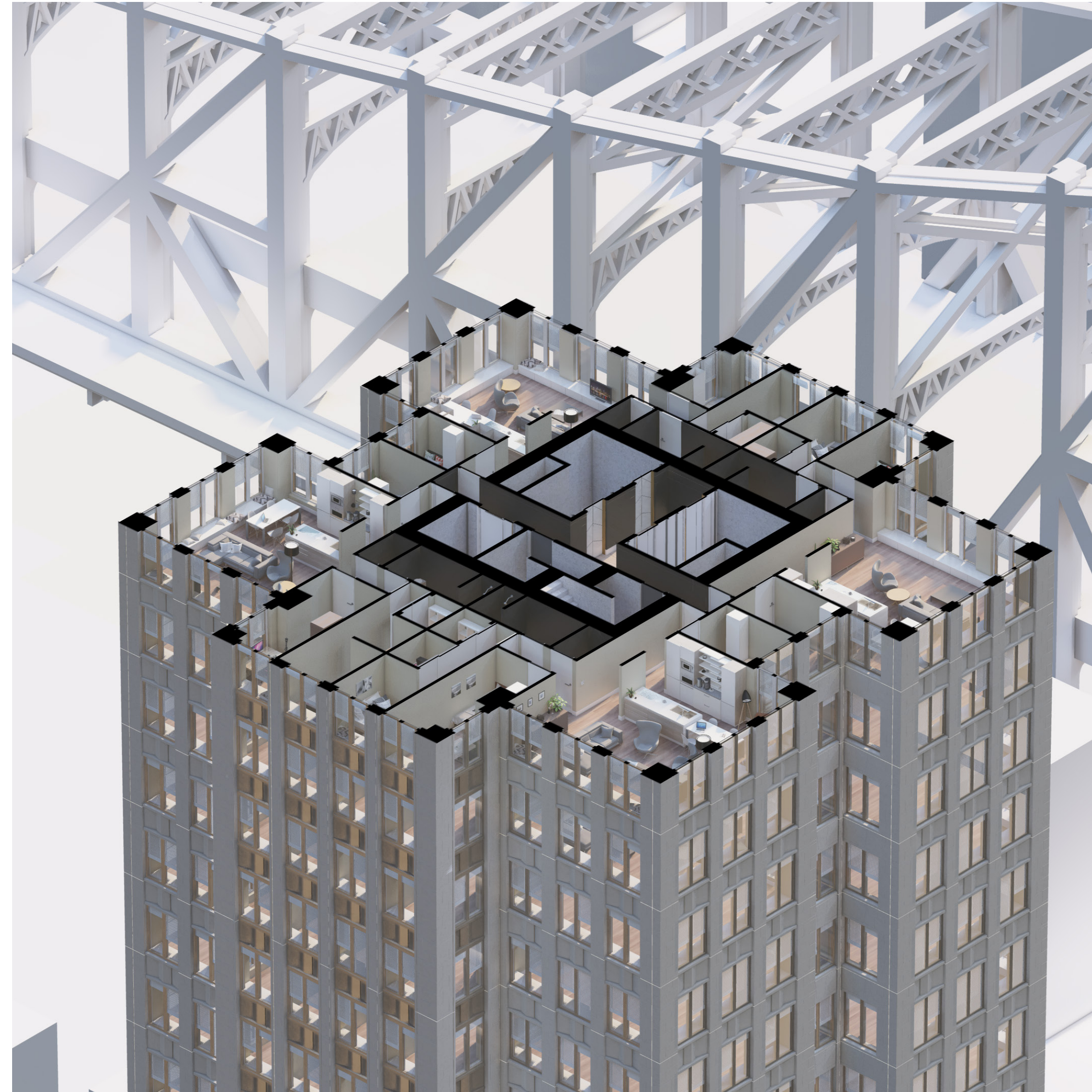


Floor 22-43  
66-129m

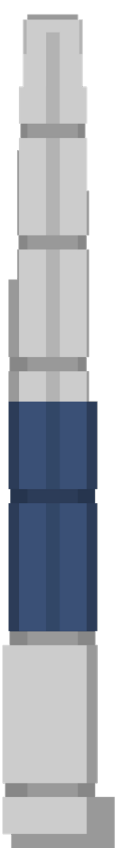




# APARTMENTS B



Floor 22-43  
66-129m

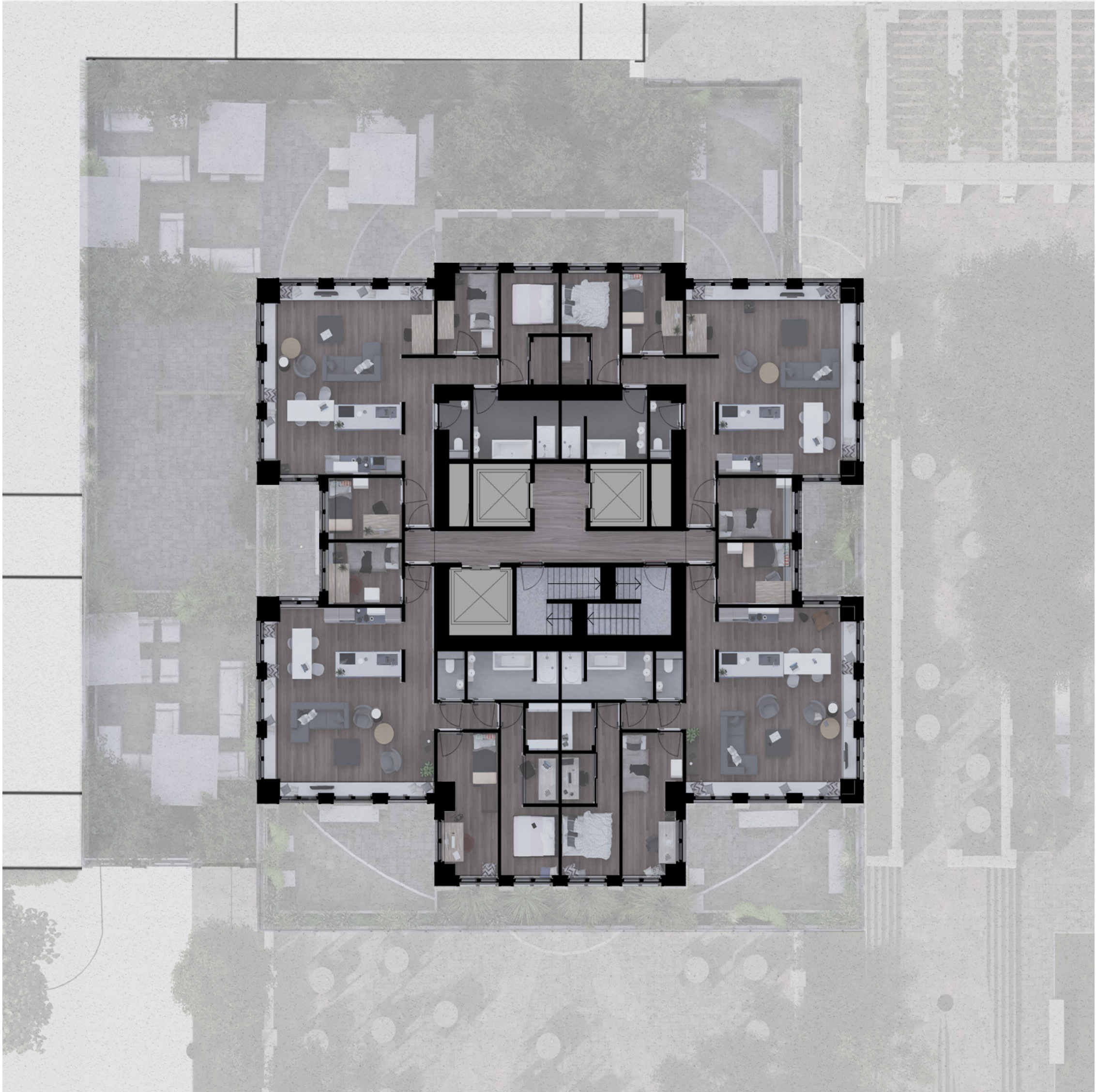




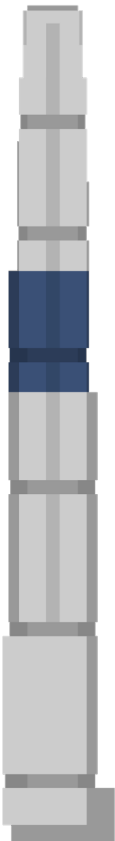




TYPICAL FLOORPLAN: APARTMENTS C

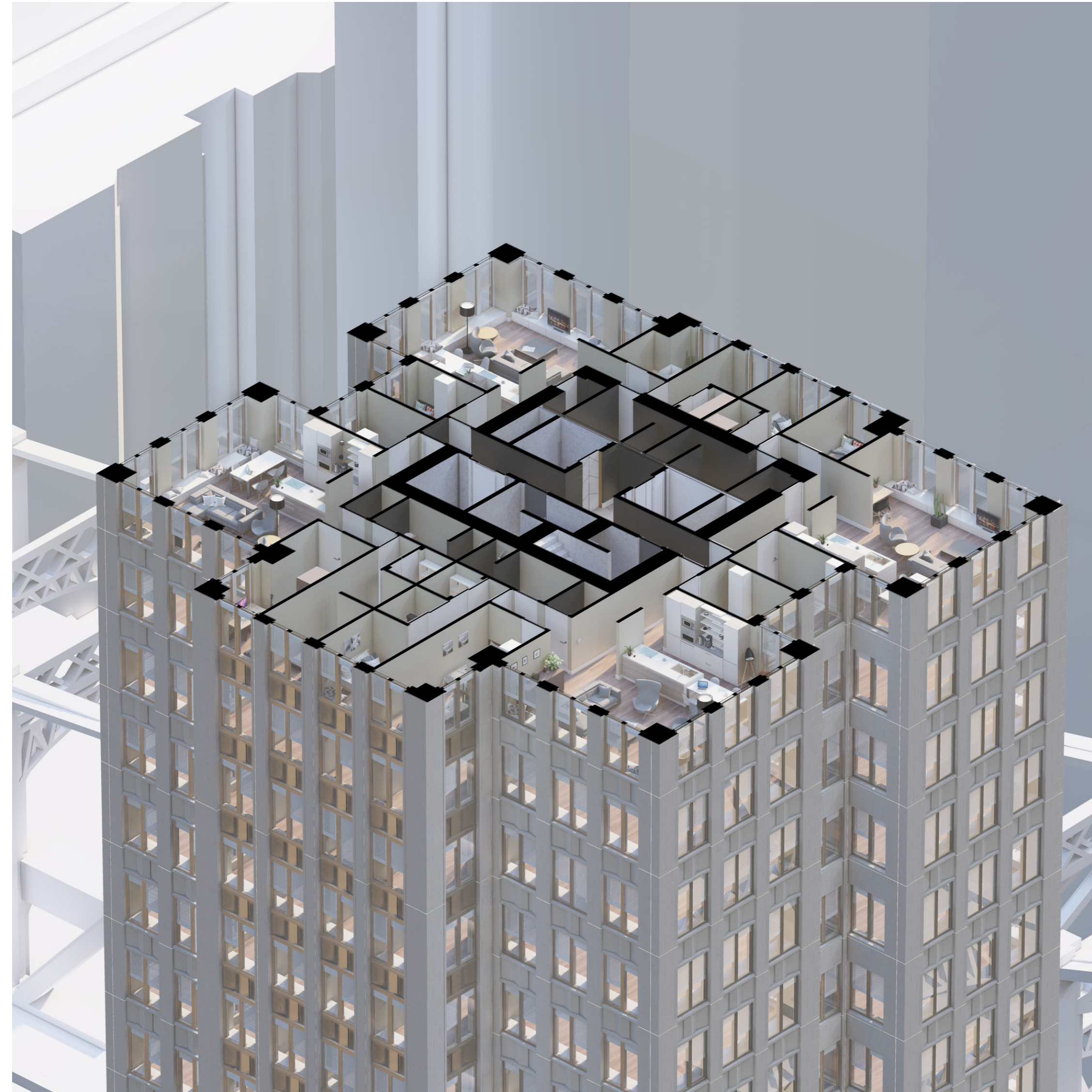


Floor 44-55  
132-165m

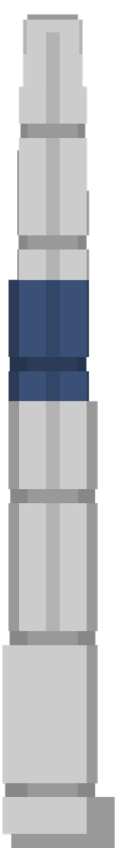




# APARTMENTS C



Floor 44-55  
132-165m

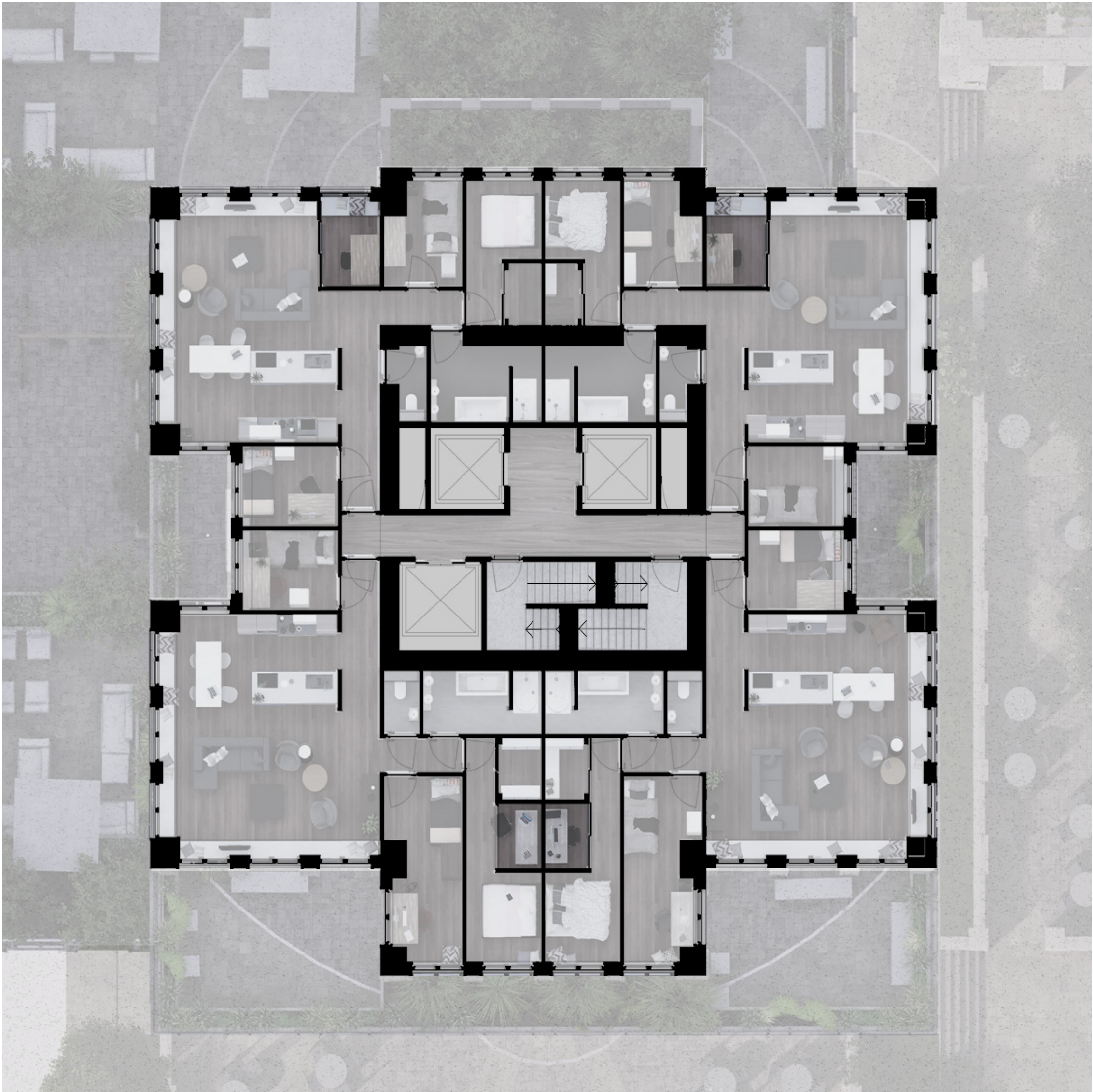








FUTURE PROOFING: WORKING FROM HOME



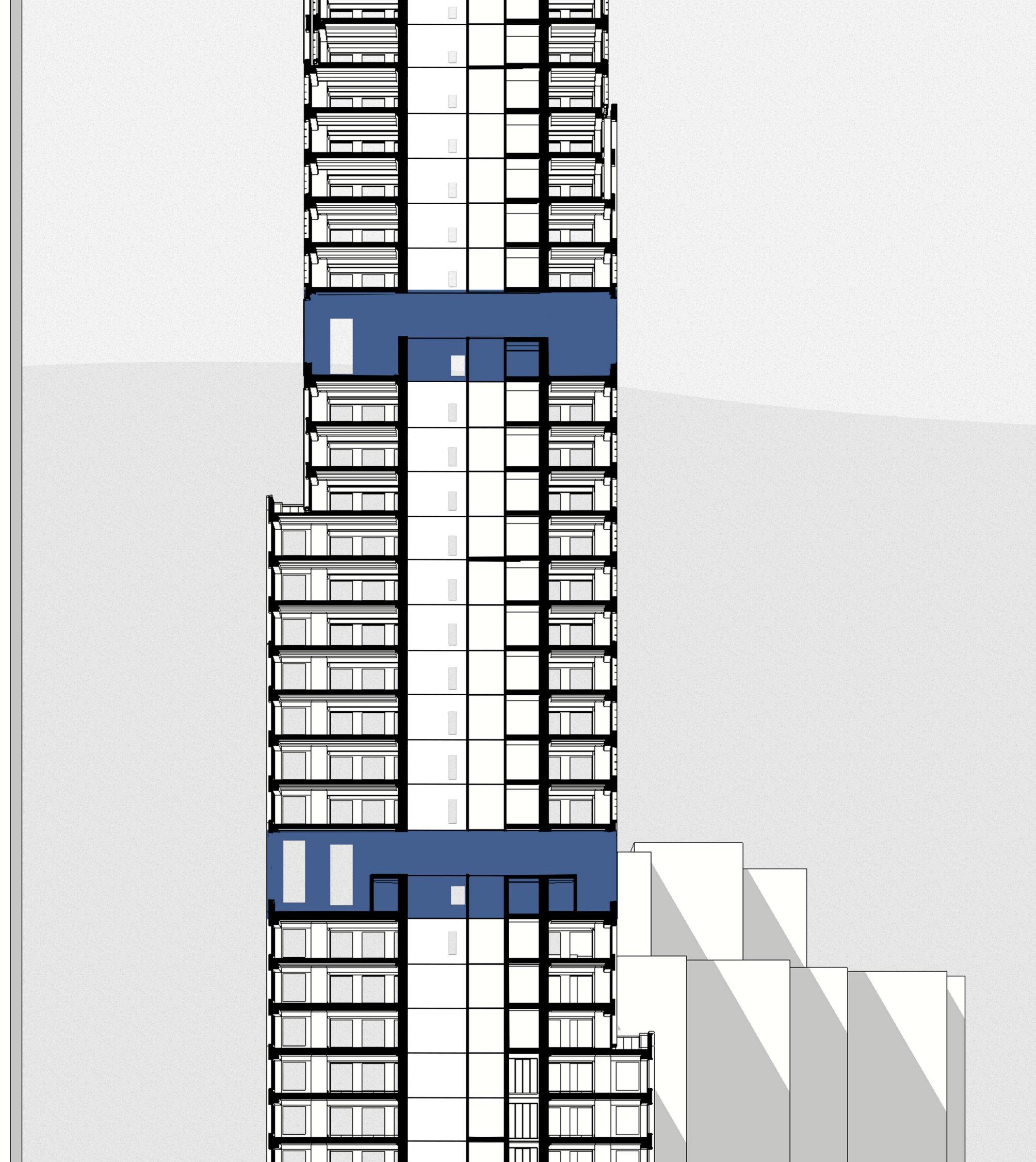
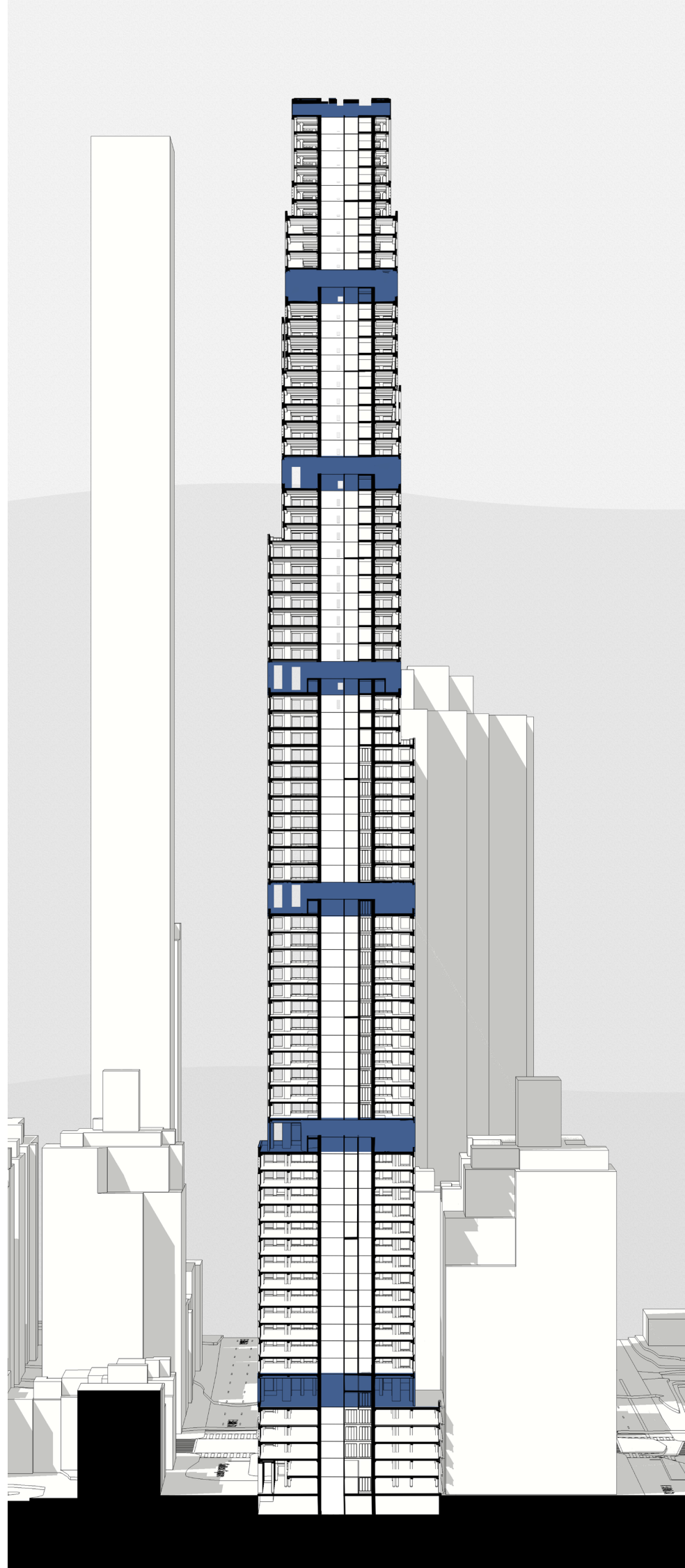


## PART VII

# Building Technology

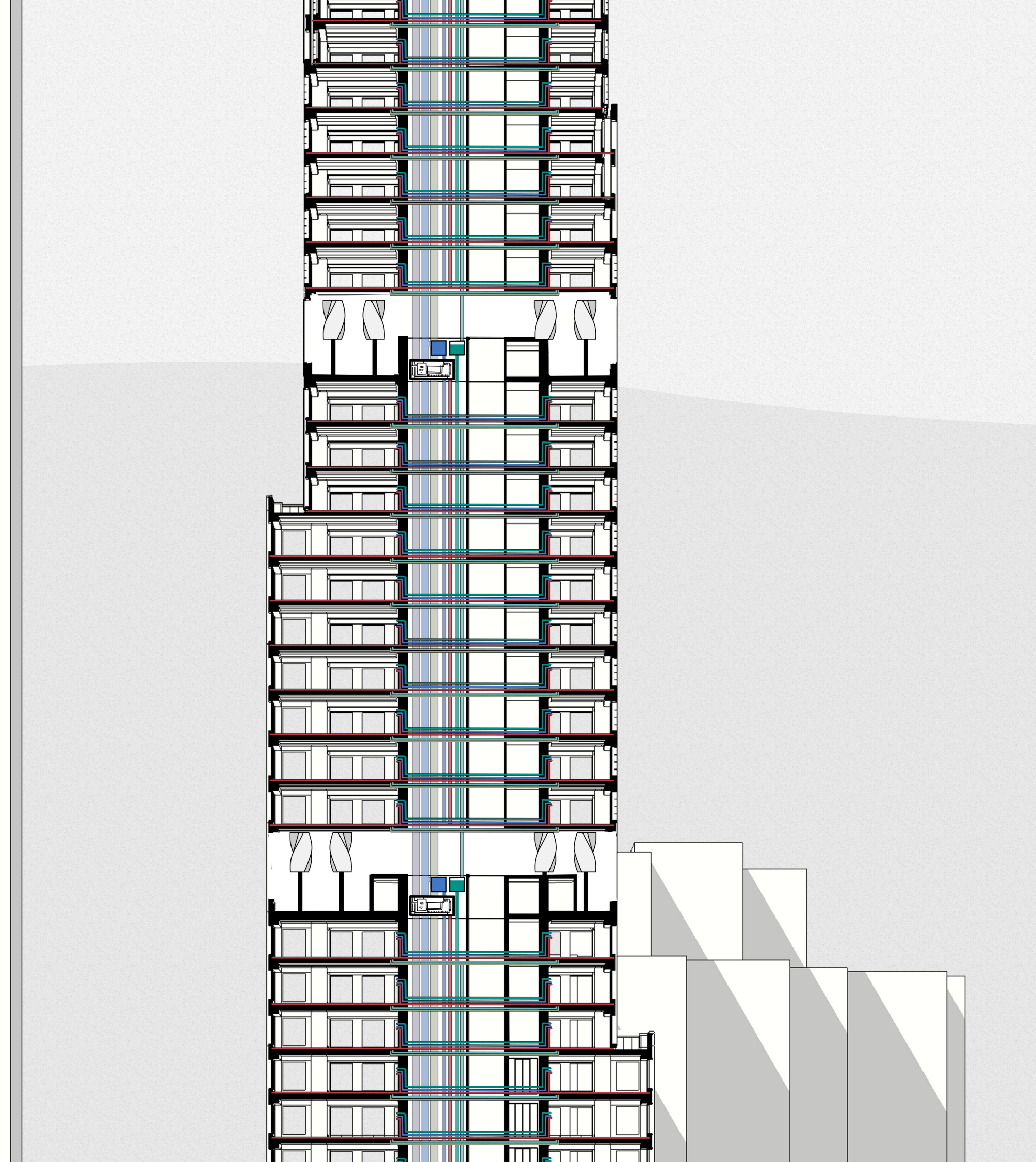
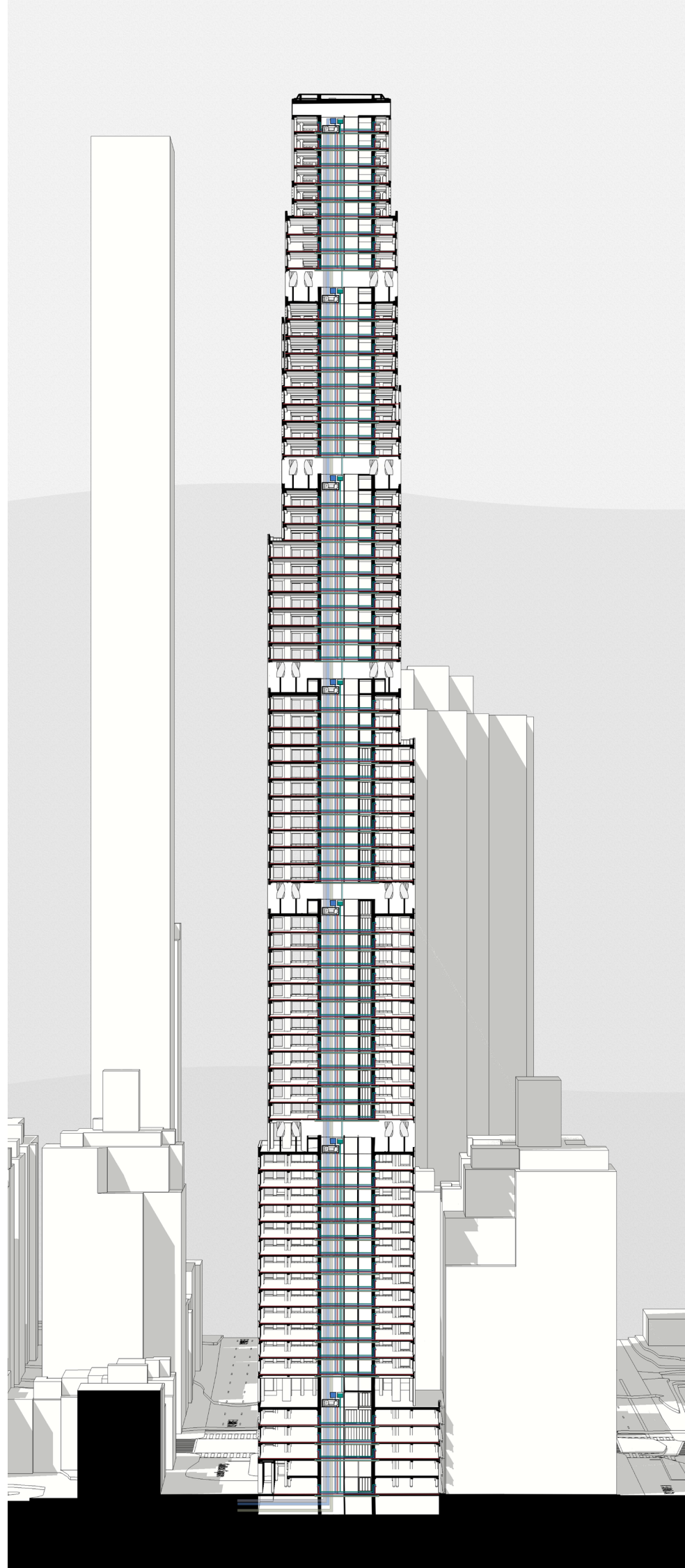


# SEGMENTATION



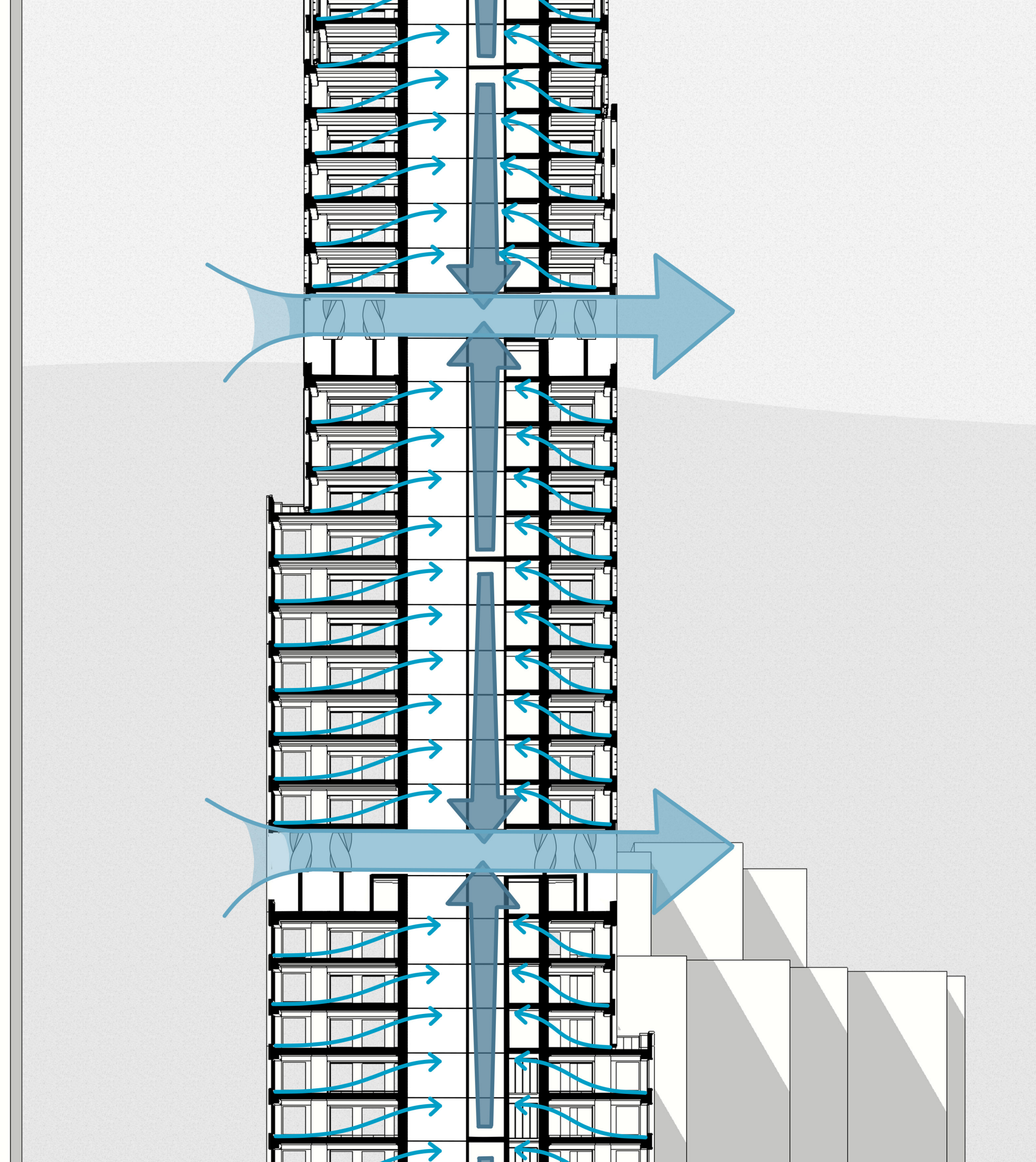
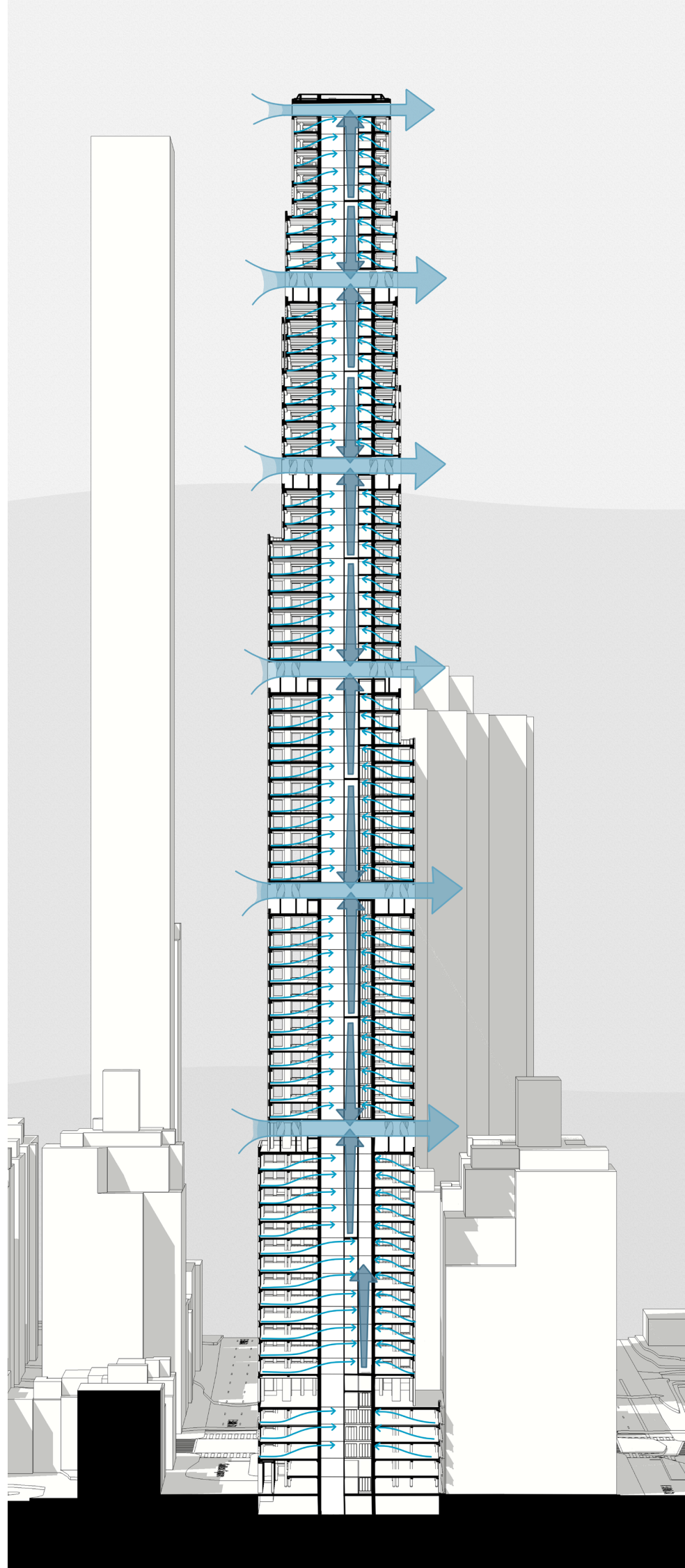


# SEGMENTATION



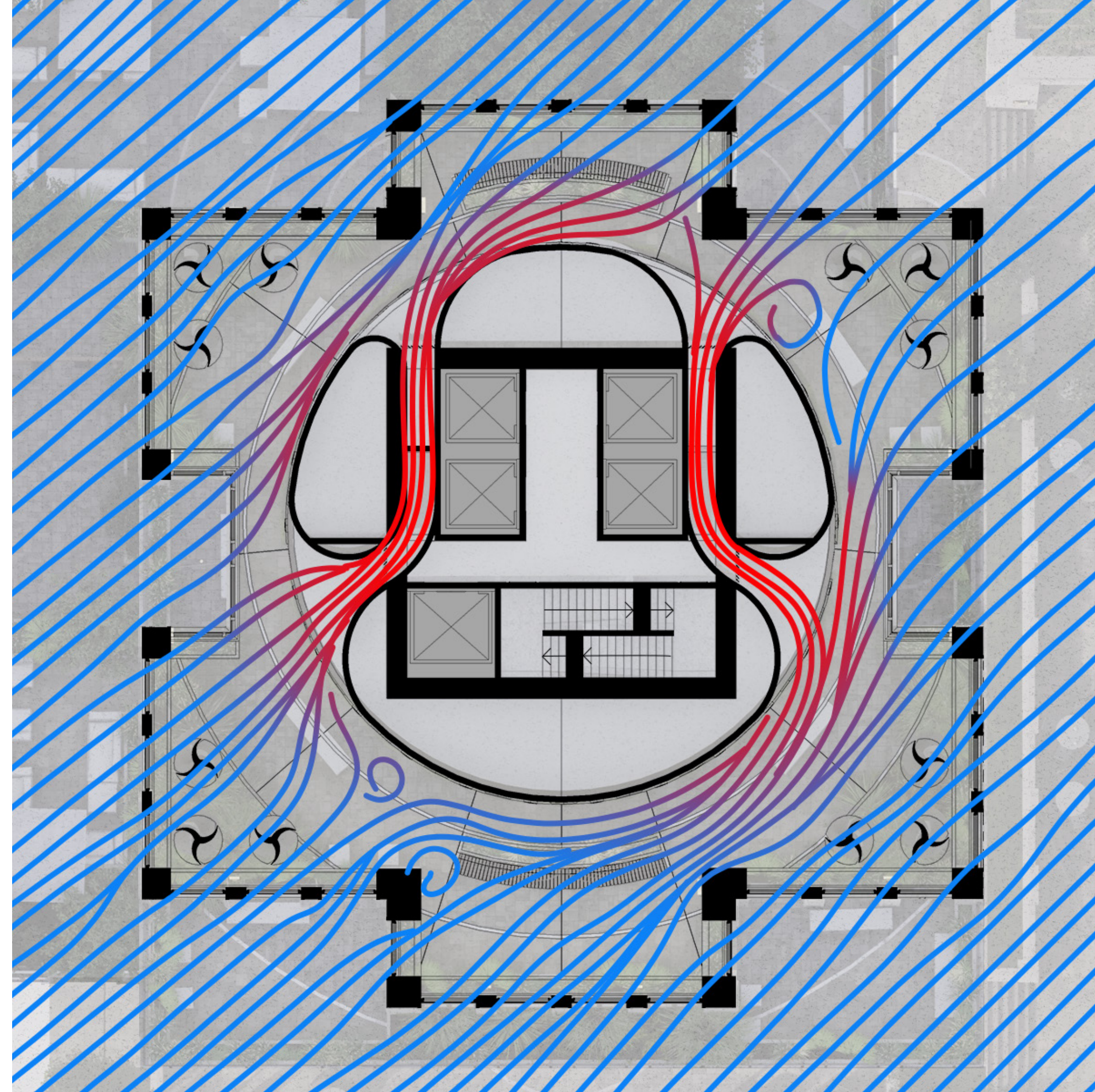


# VENTILATION





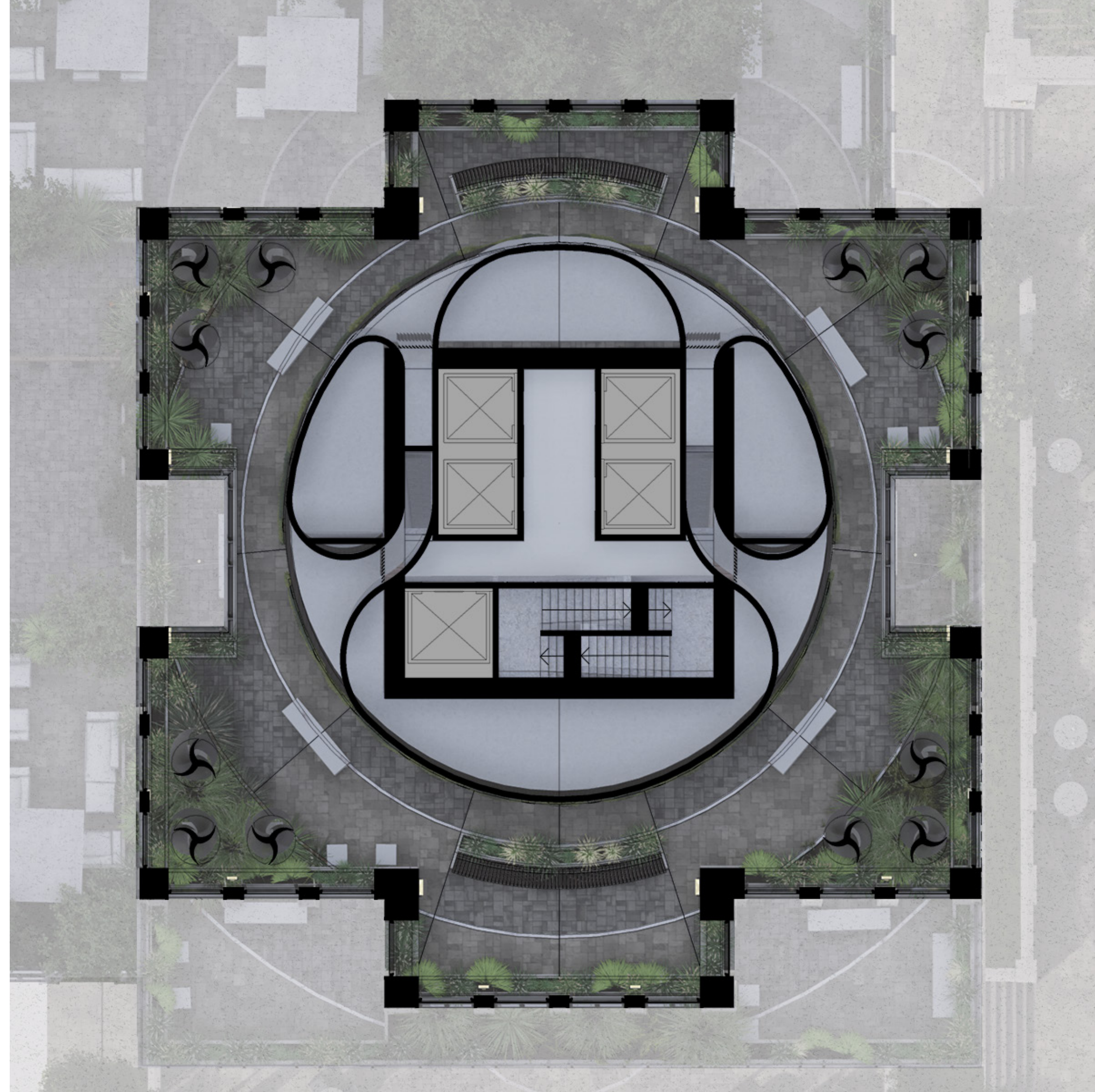
# VENTURI TUNNELS



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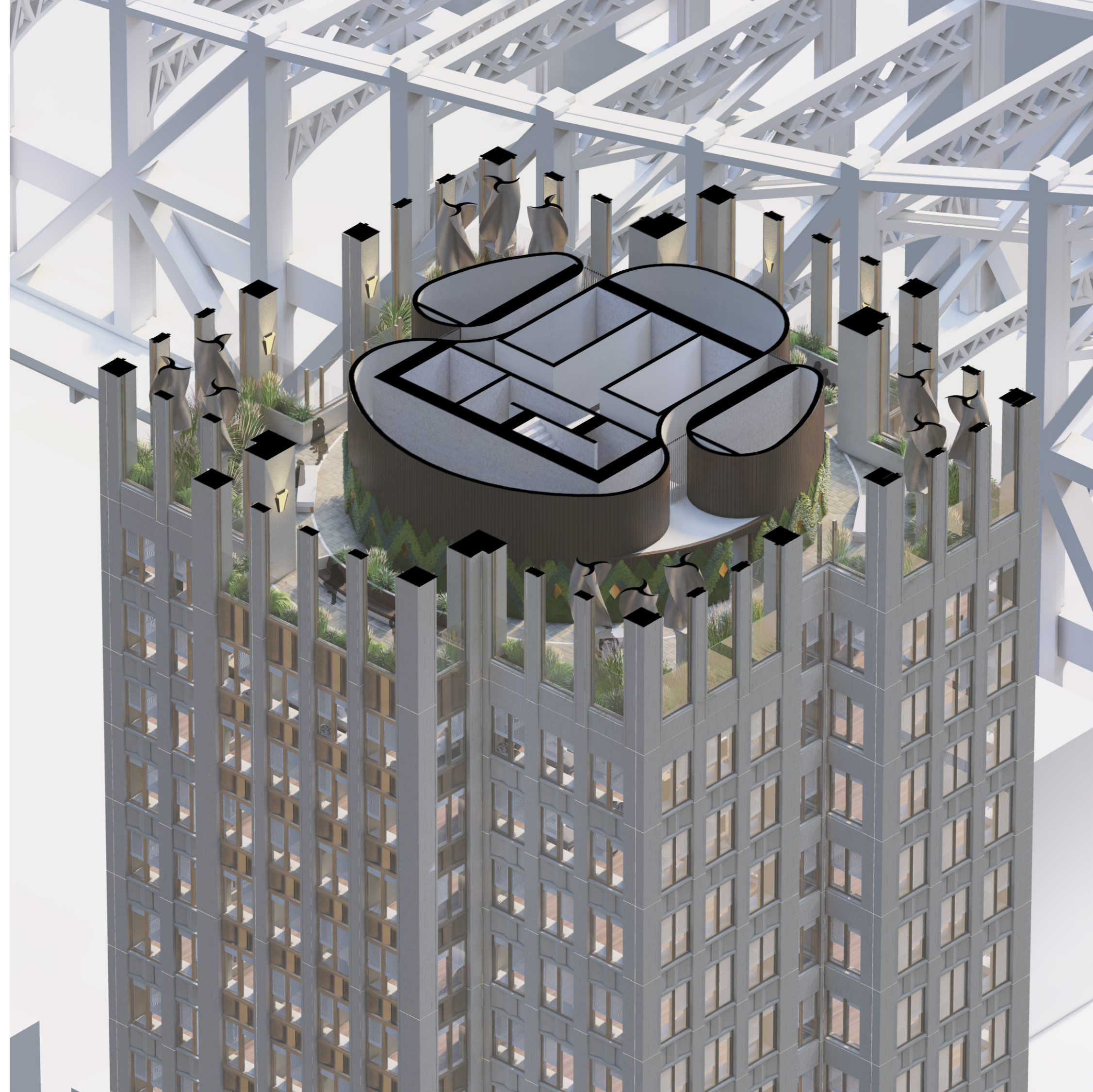


# SKY GARDENS





# SKY GARDENS



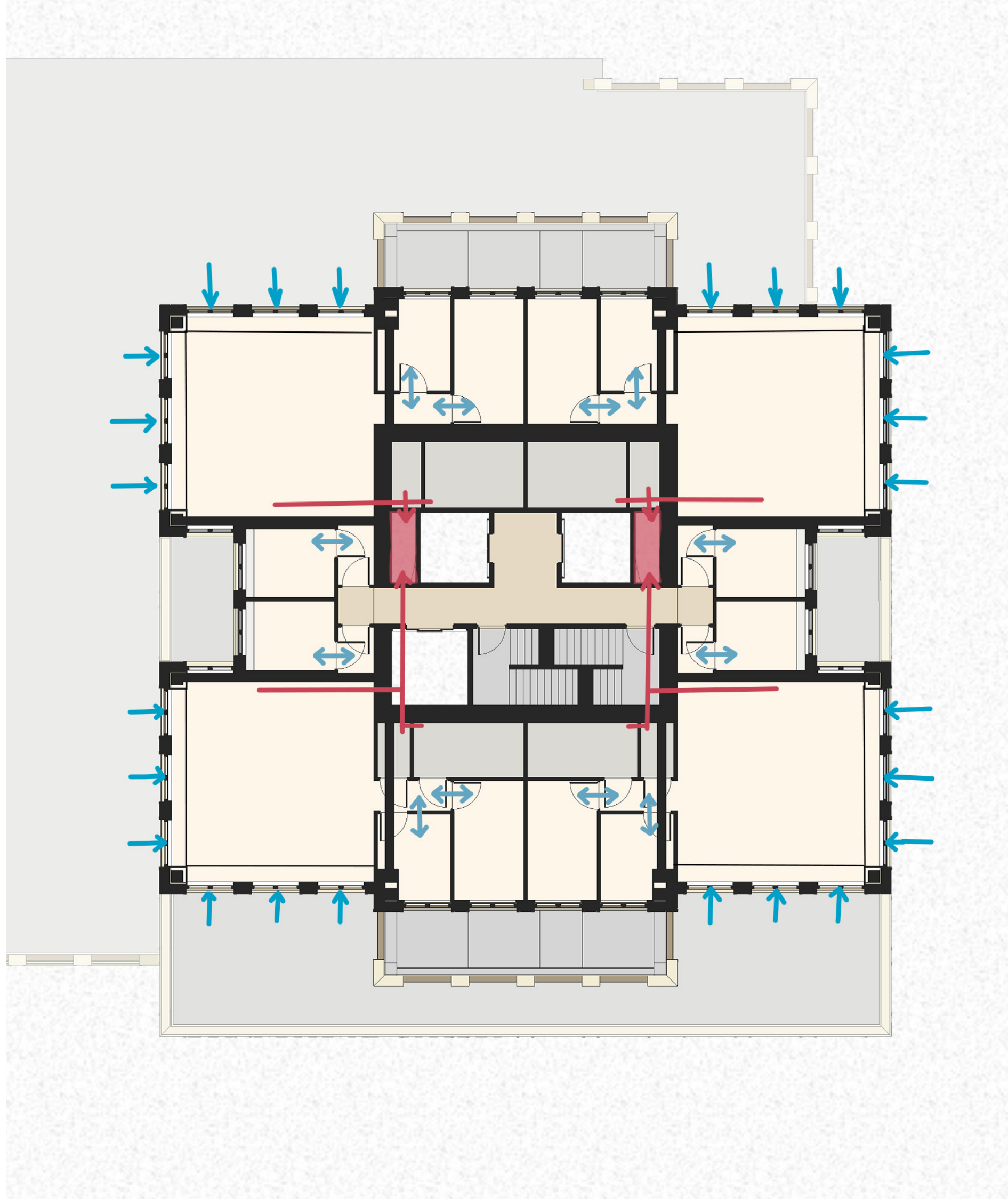


# SKY GARDENS





# APARTMENT CLIMATE



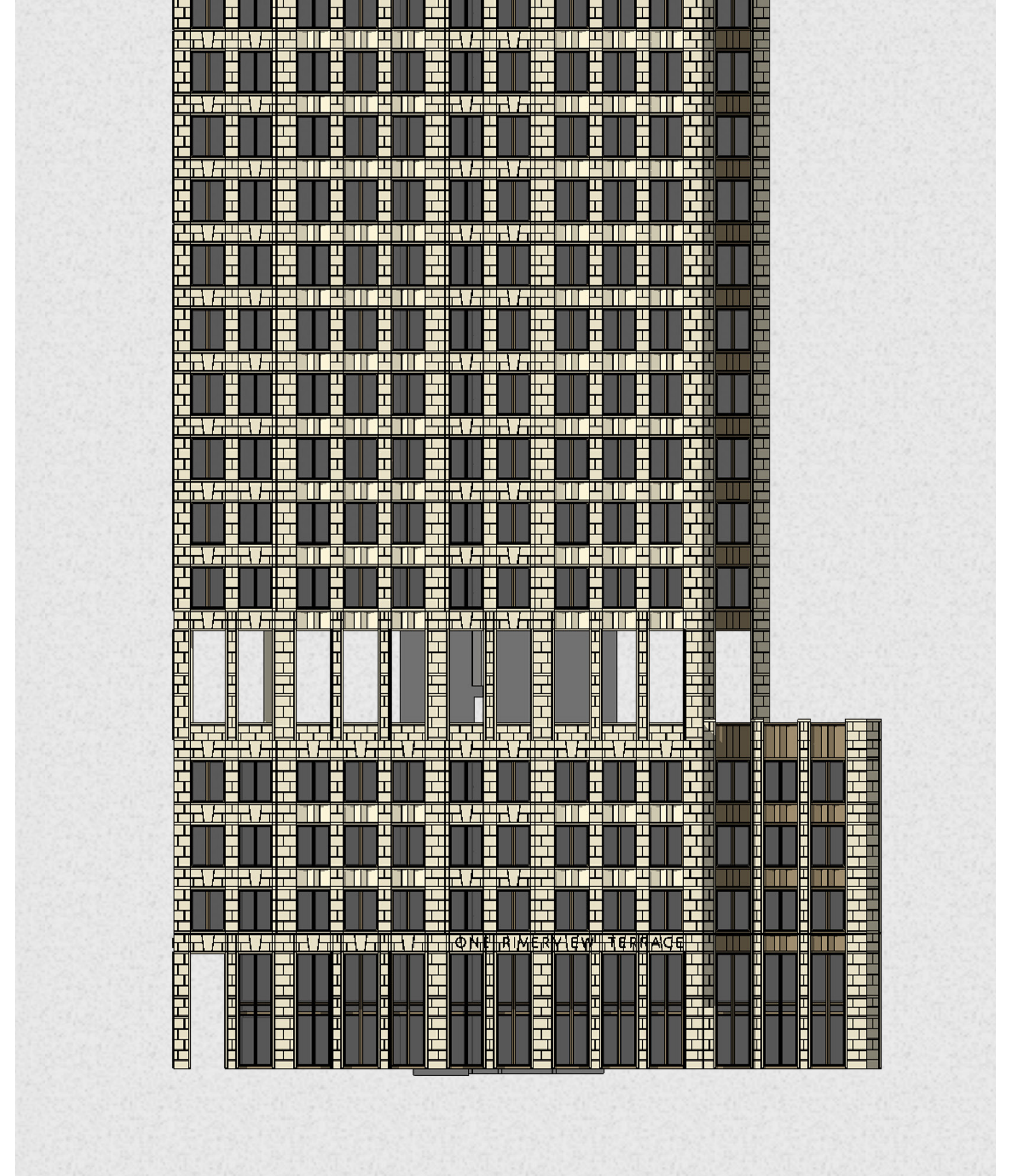
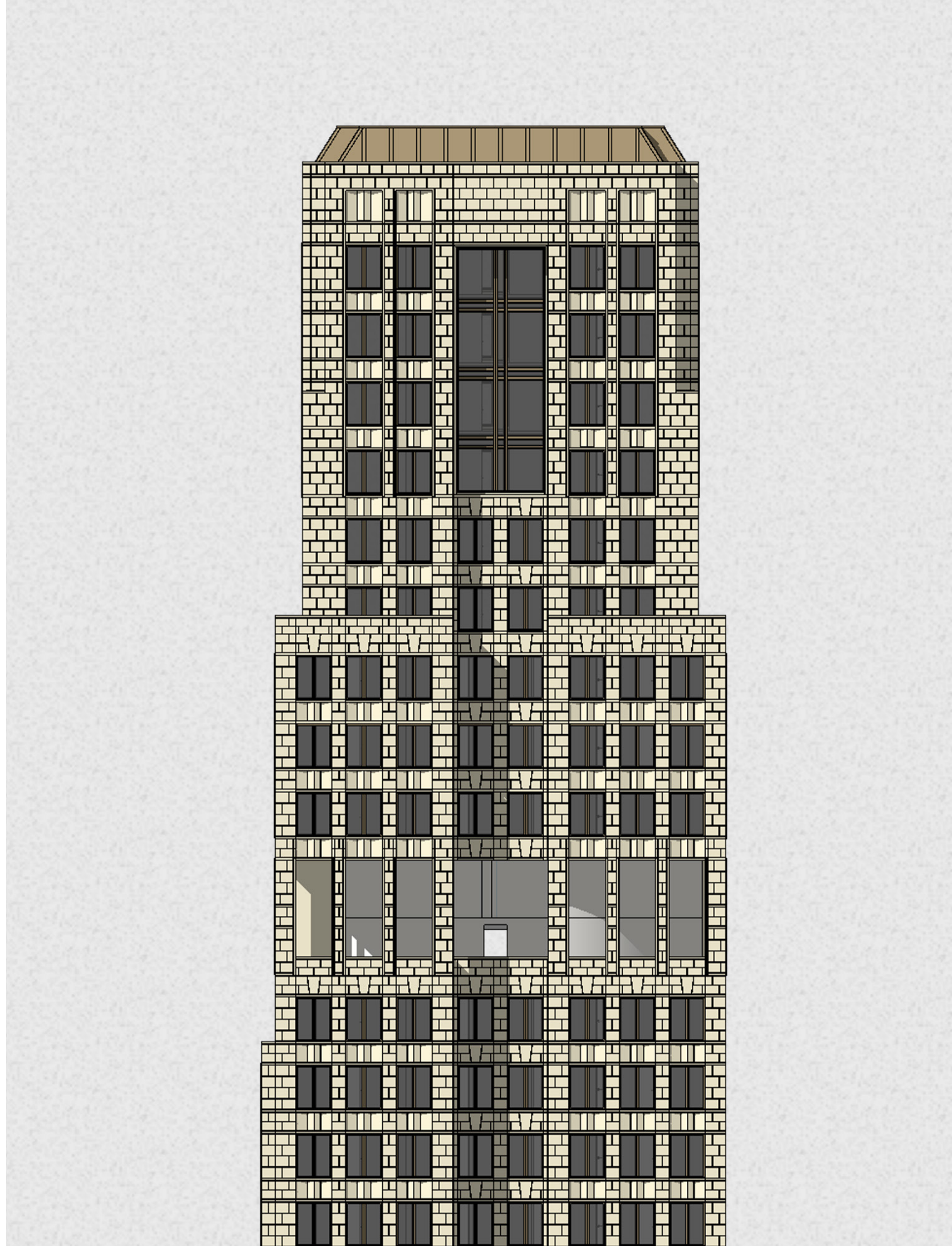
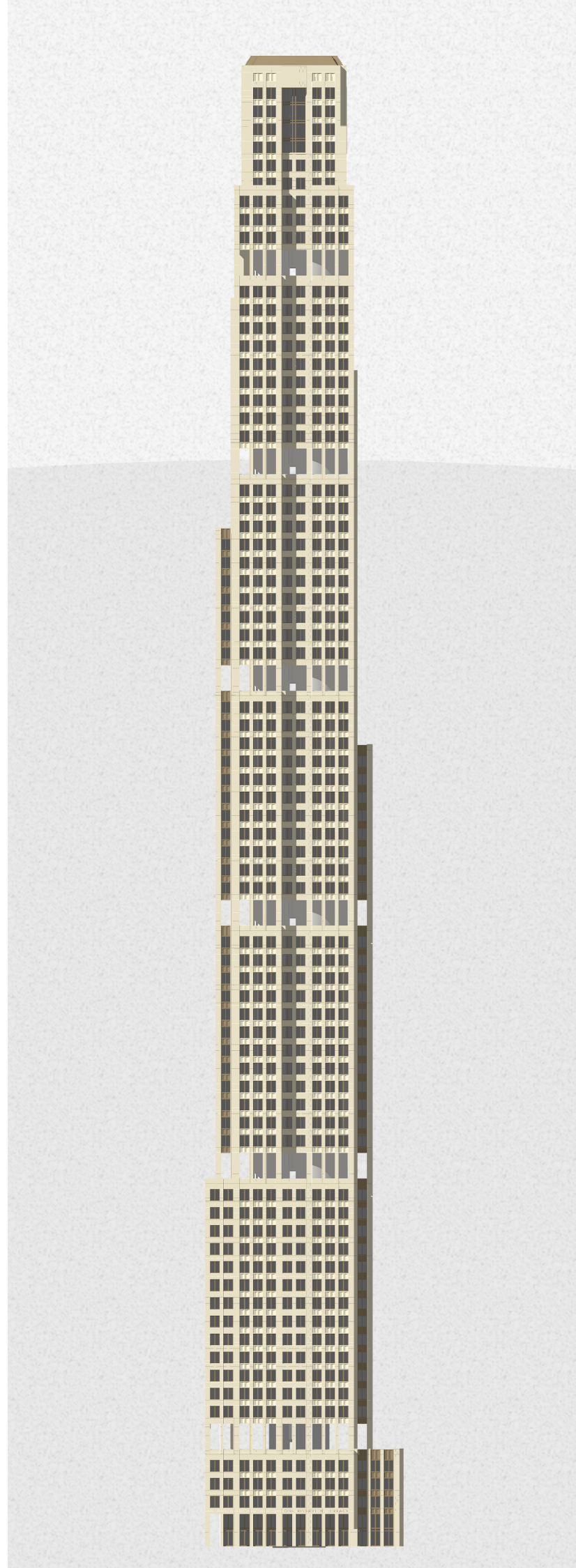


# WINDOWS



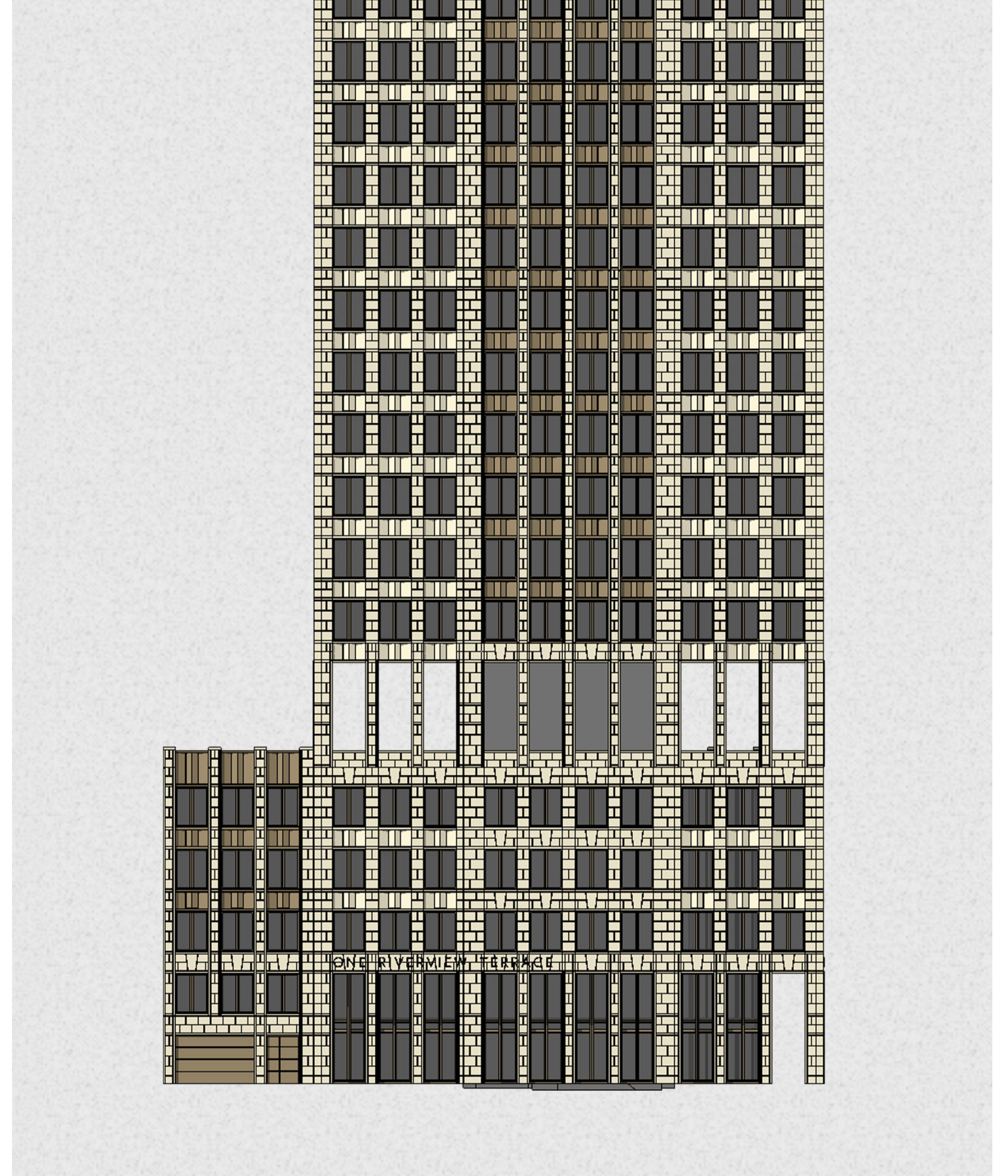
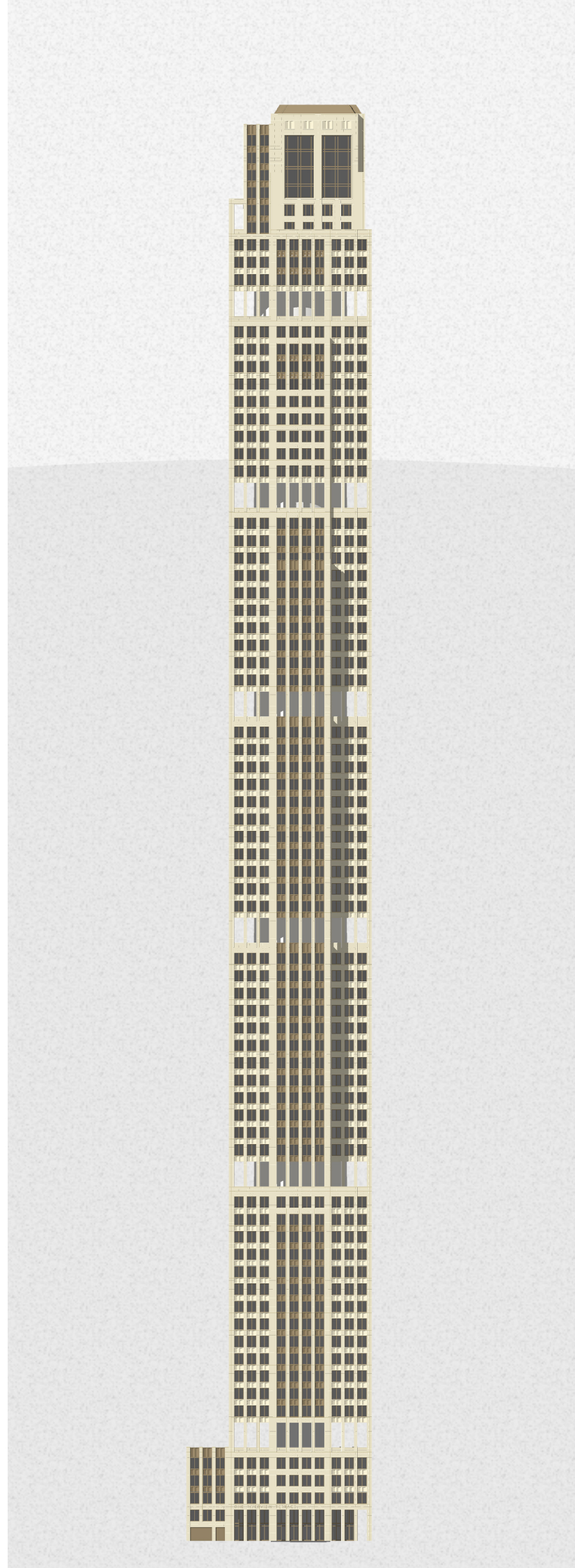


# FRONT ELEVATION



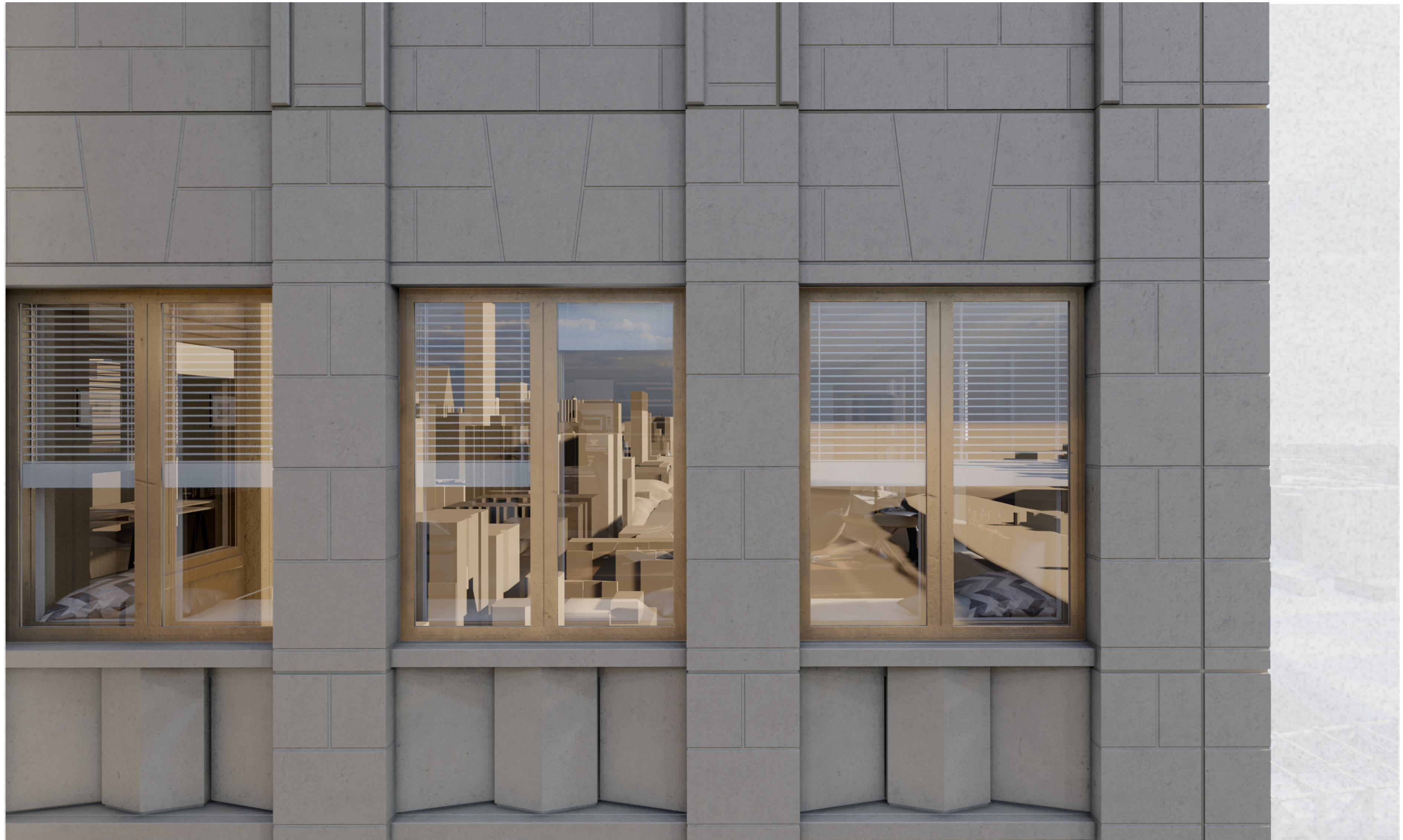


# SIDE ELEVATION



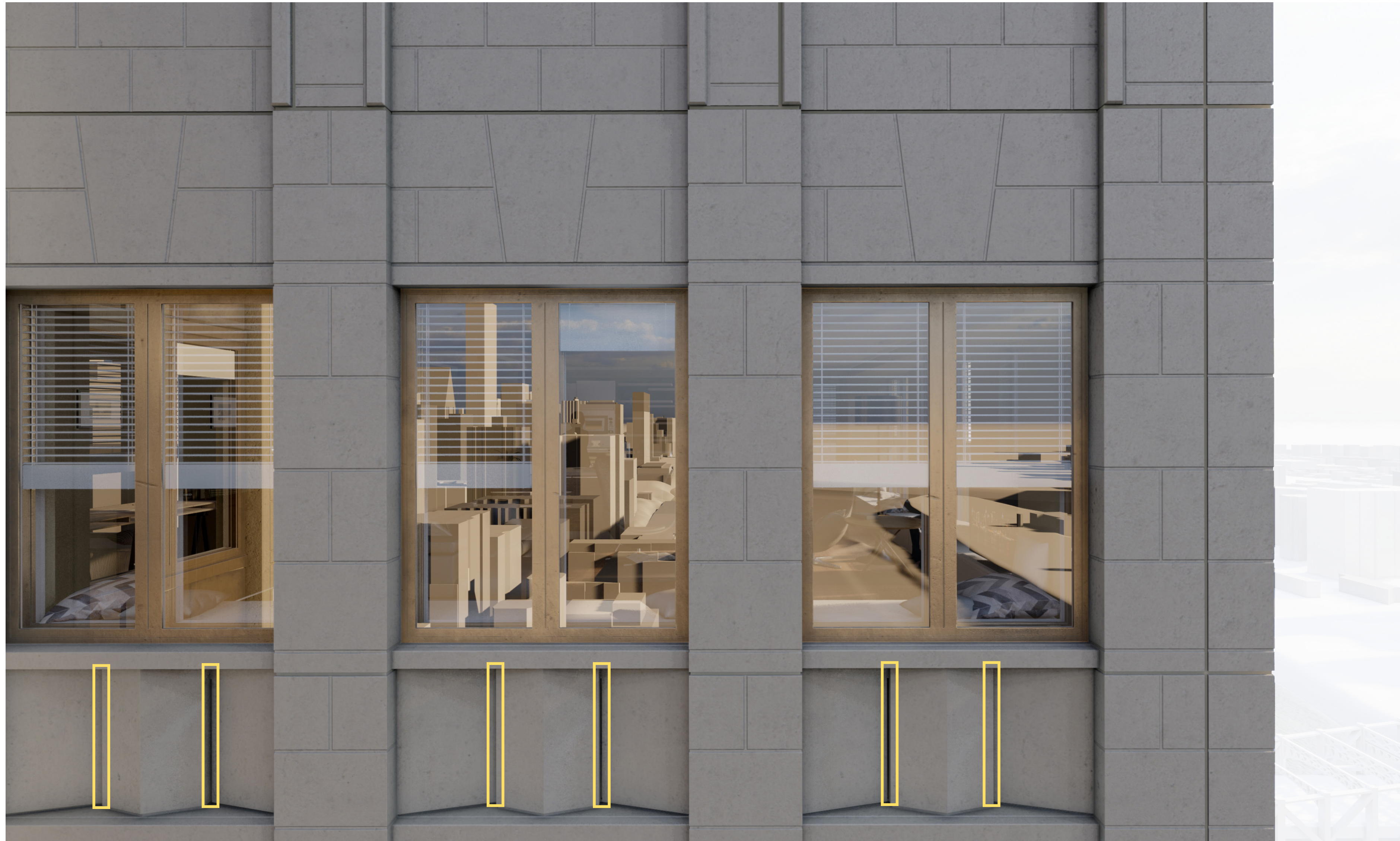


# ORNAMENTATION





# ORNAMENTATION





# ORNAMENTATION





# ORNAMENTATION





# PANELIZATION





# PANELIZATION



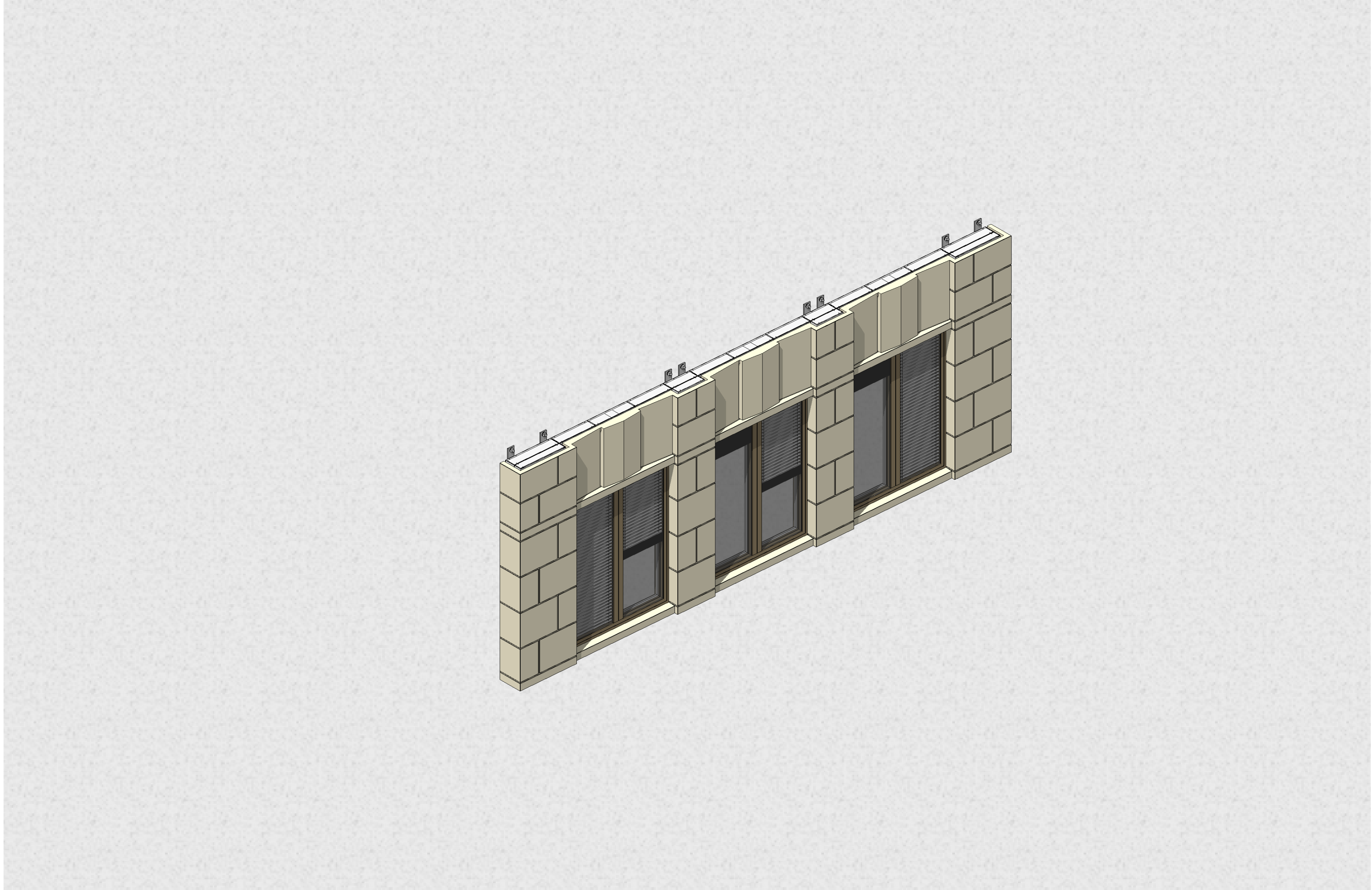


# PANELIZATION



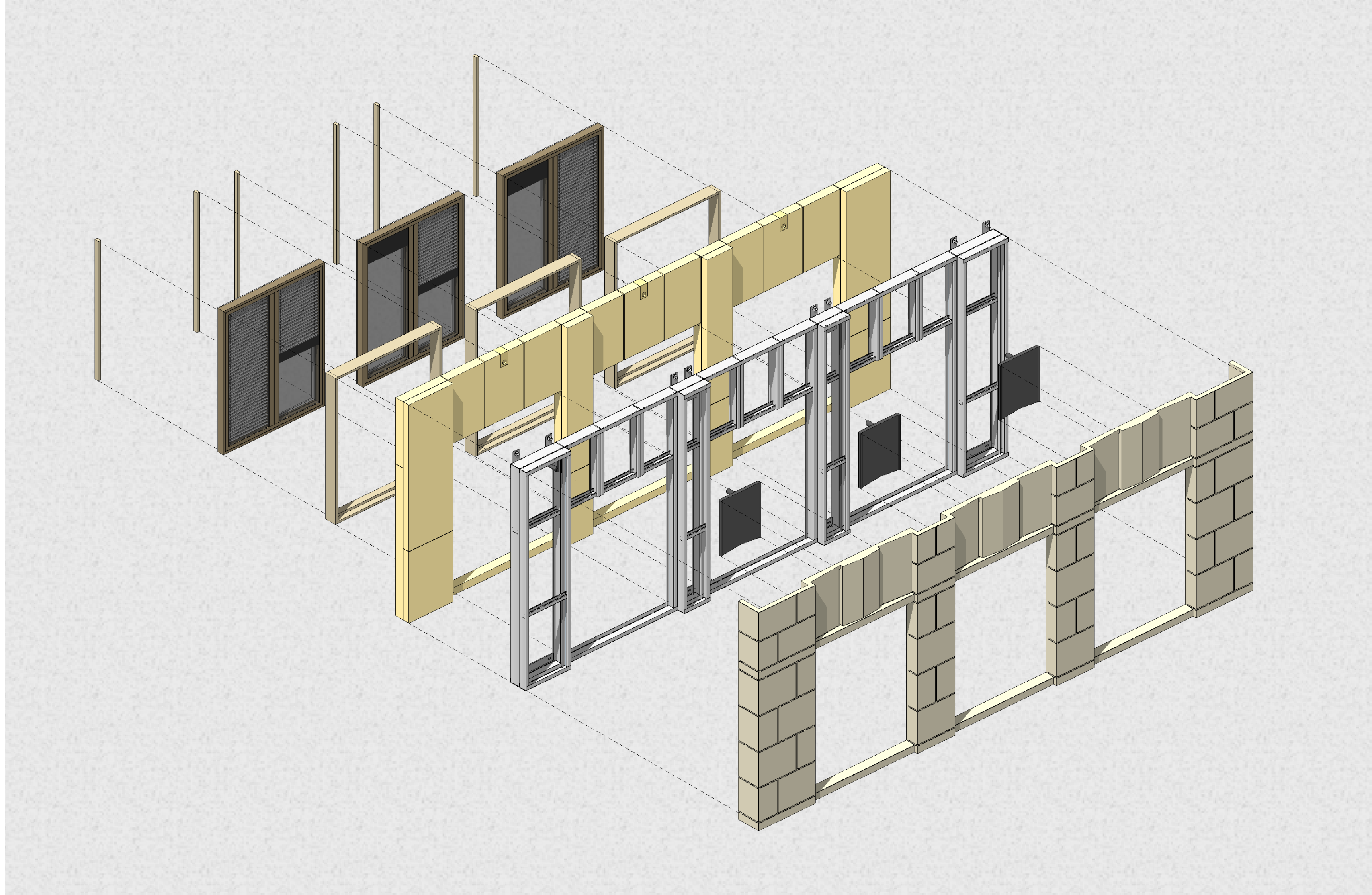


# PREFABRICATED PANEL



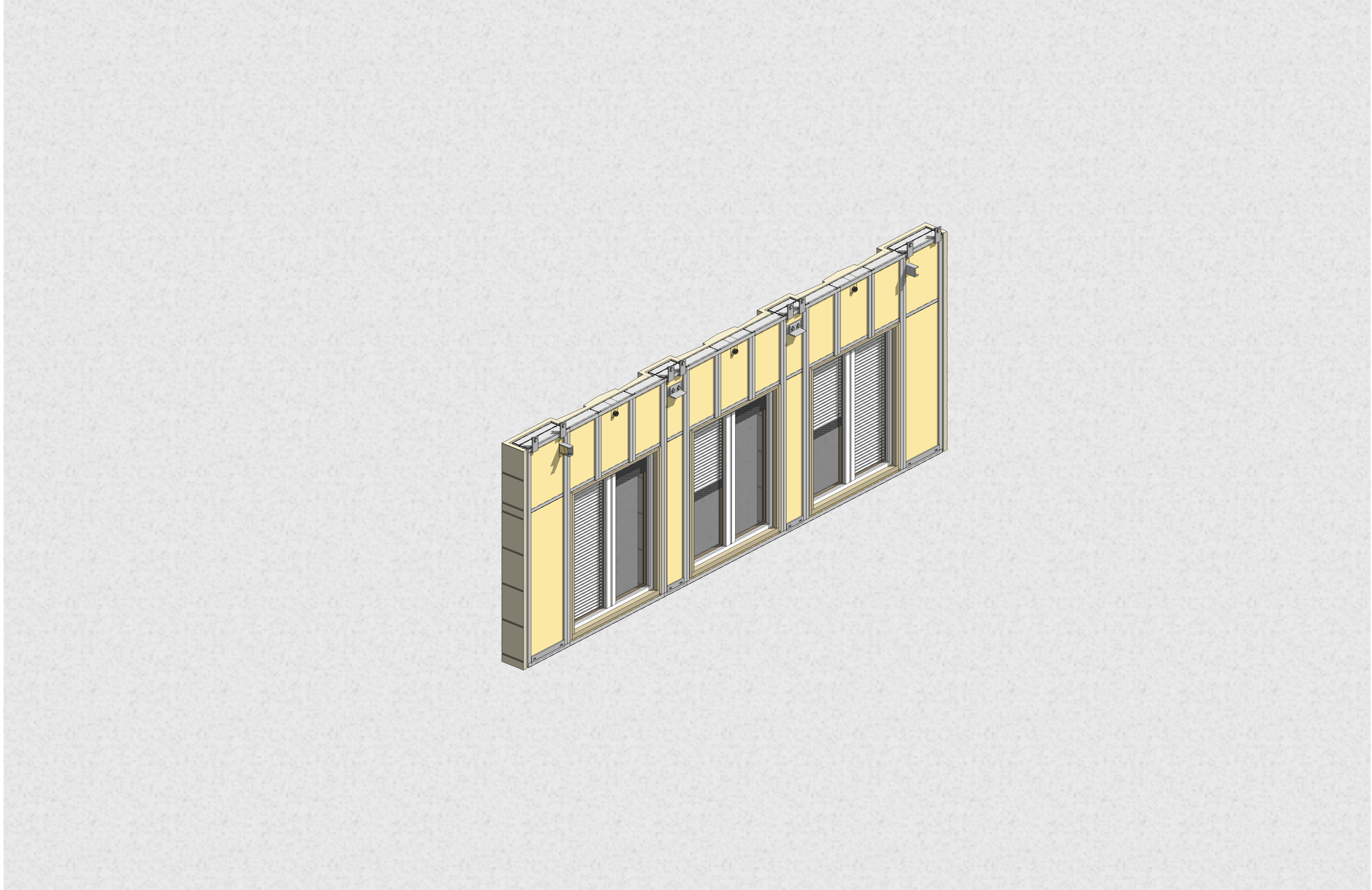


# PREFABRICATED PANEL



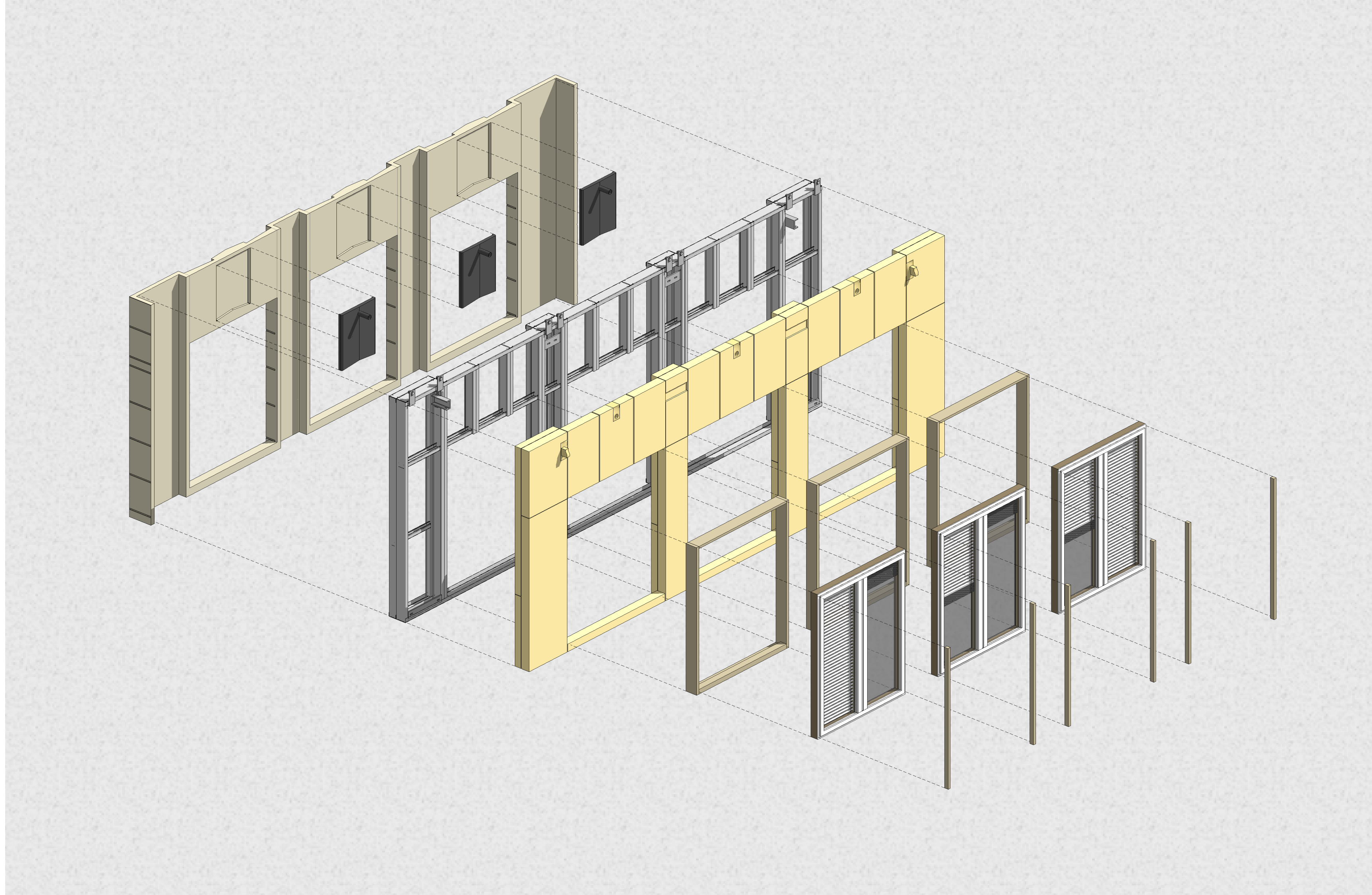


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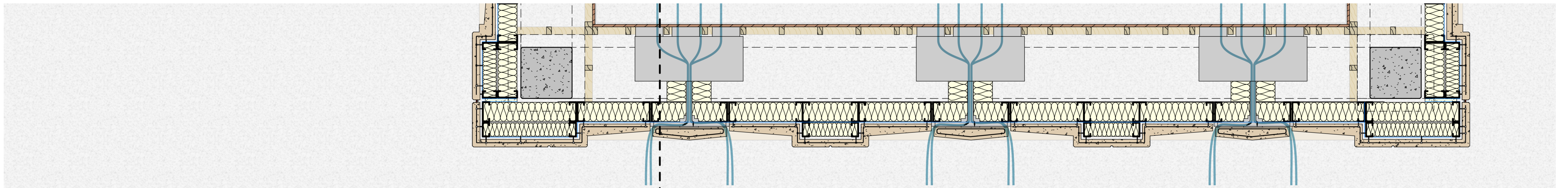
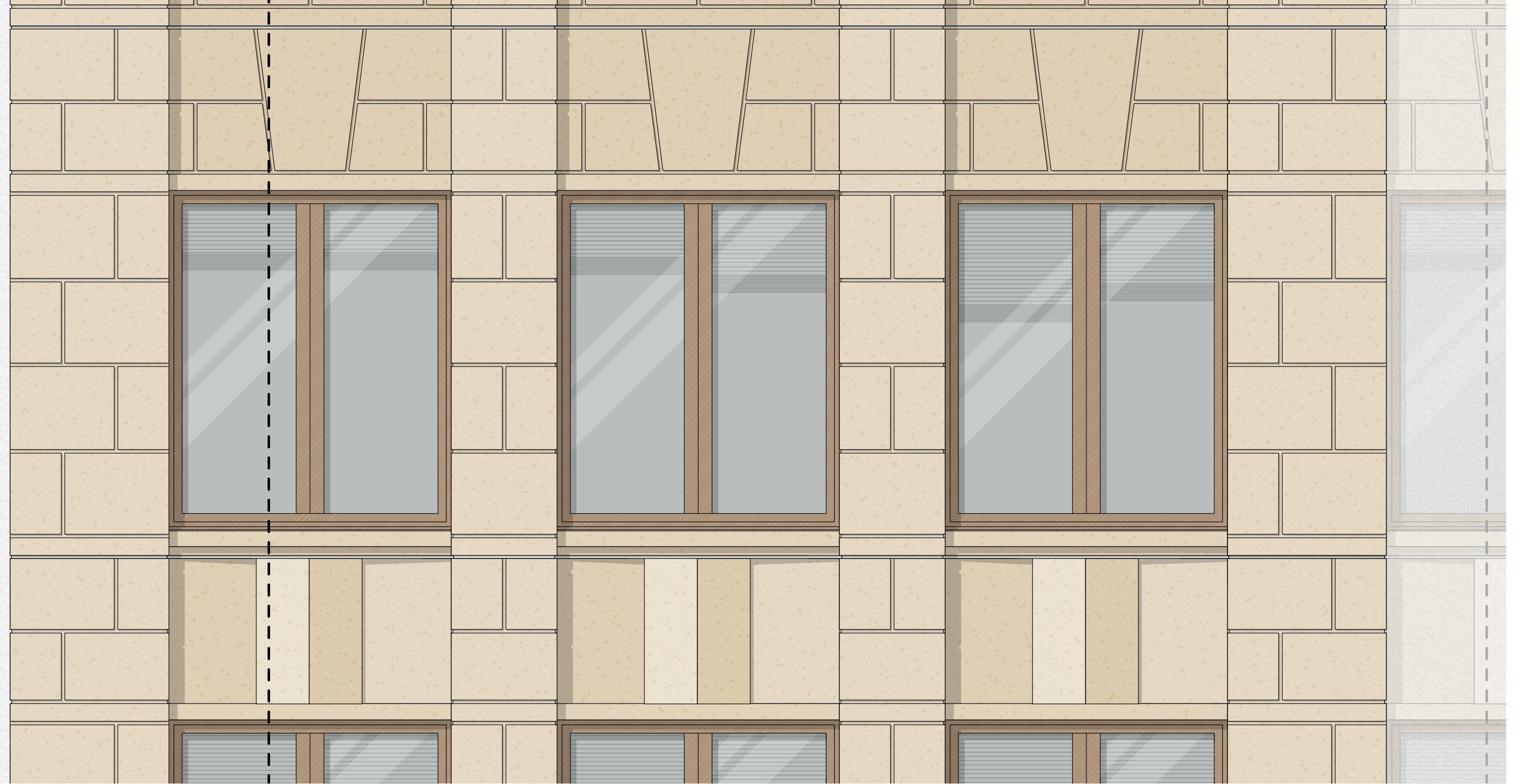
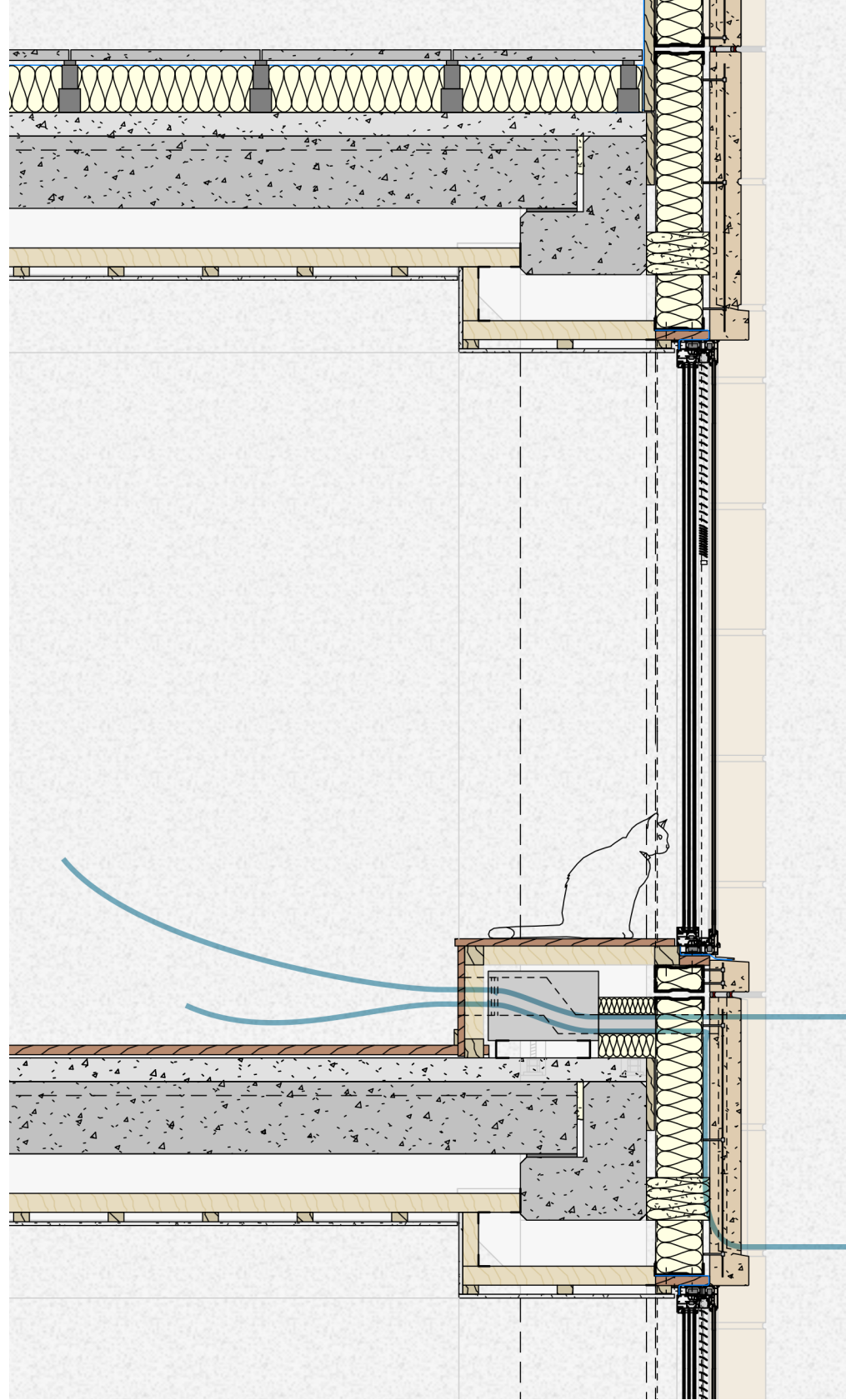


# PREFABRICATED PANEL





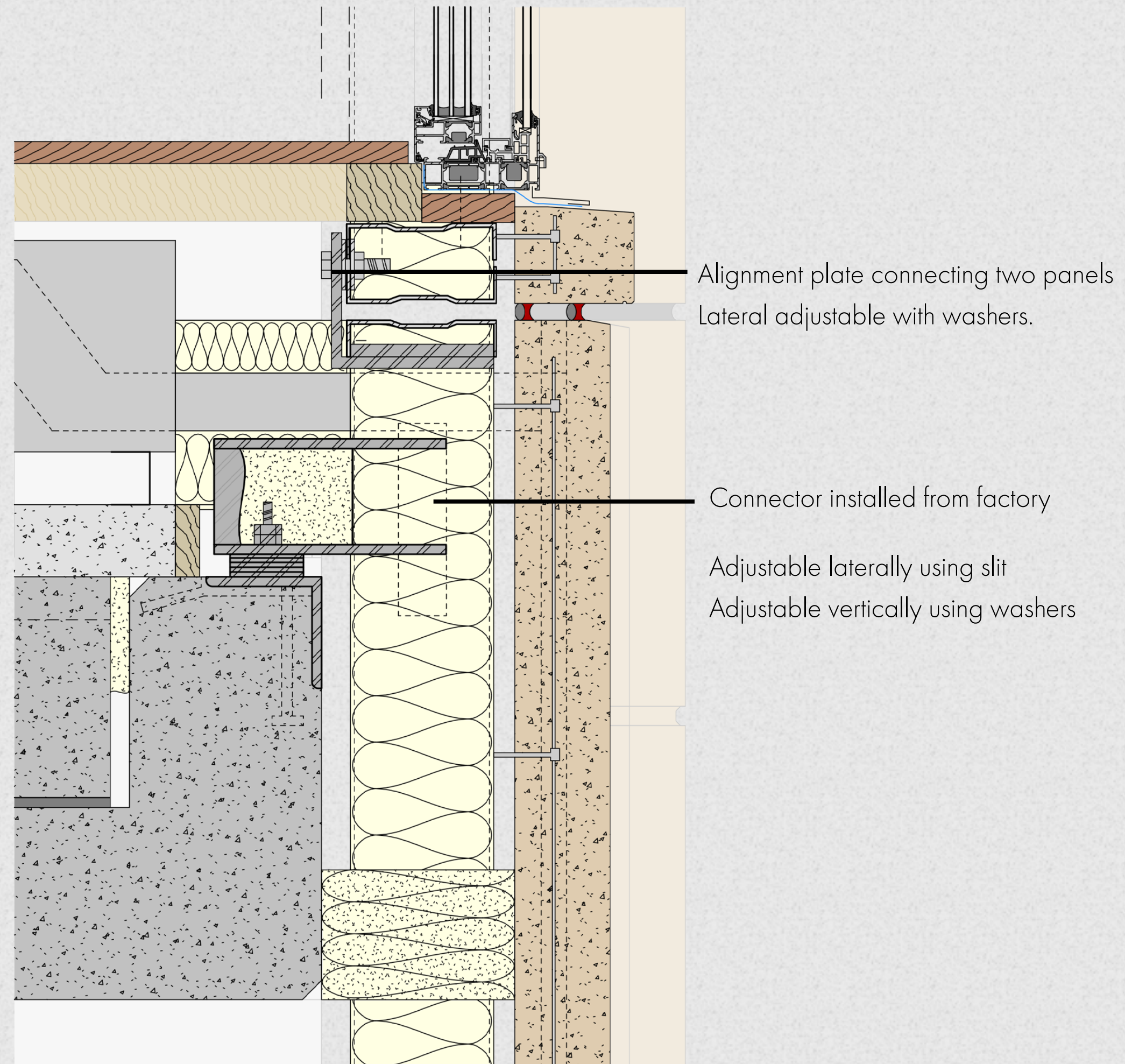
# PANEL DESIGN



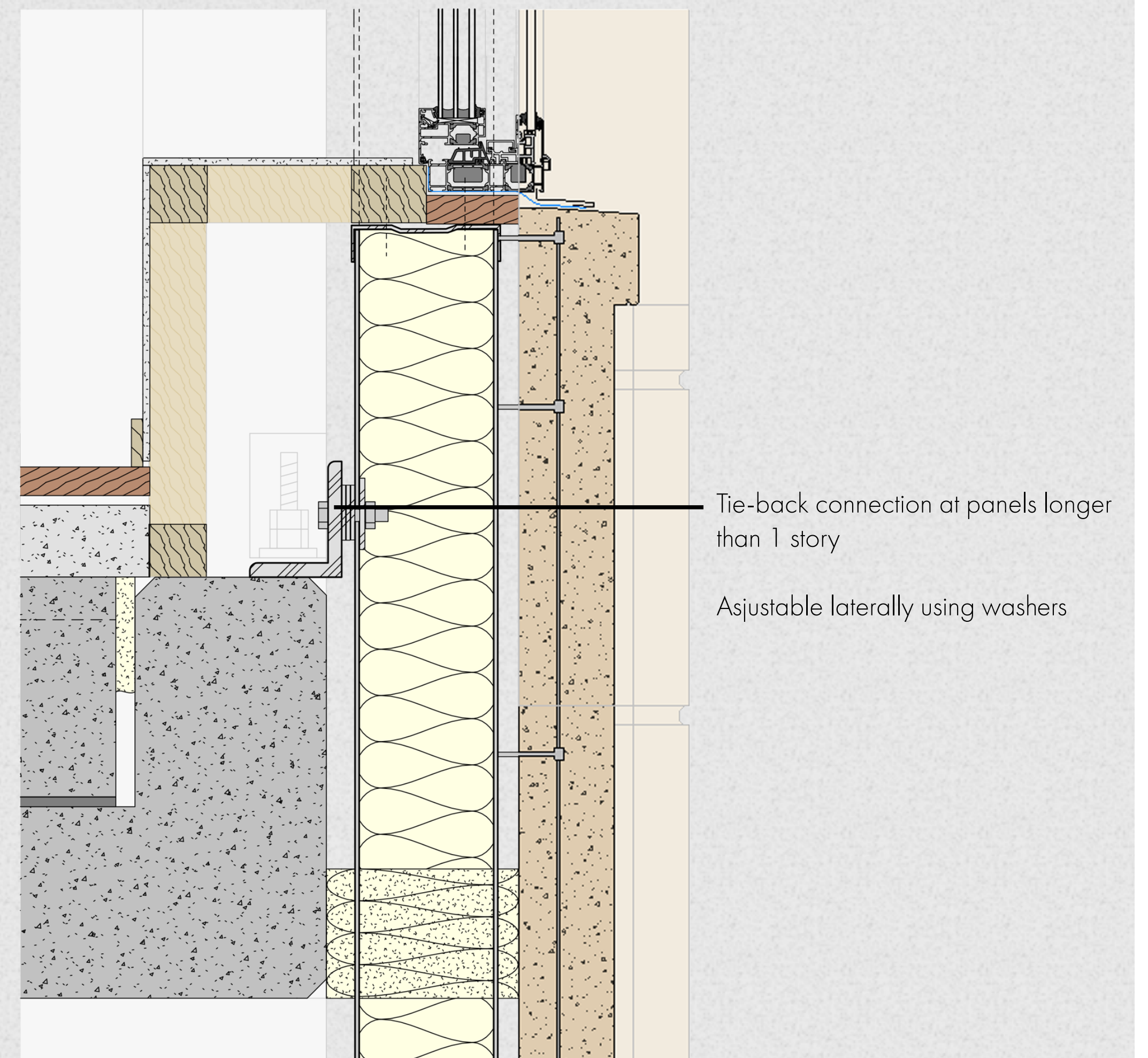


# PANEL CONNECTIONS

## Load Bearing Connection

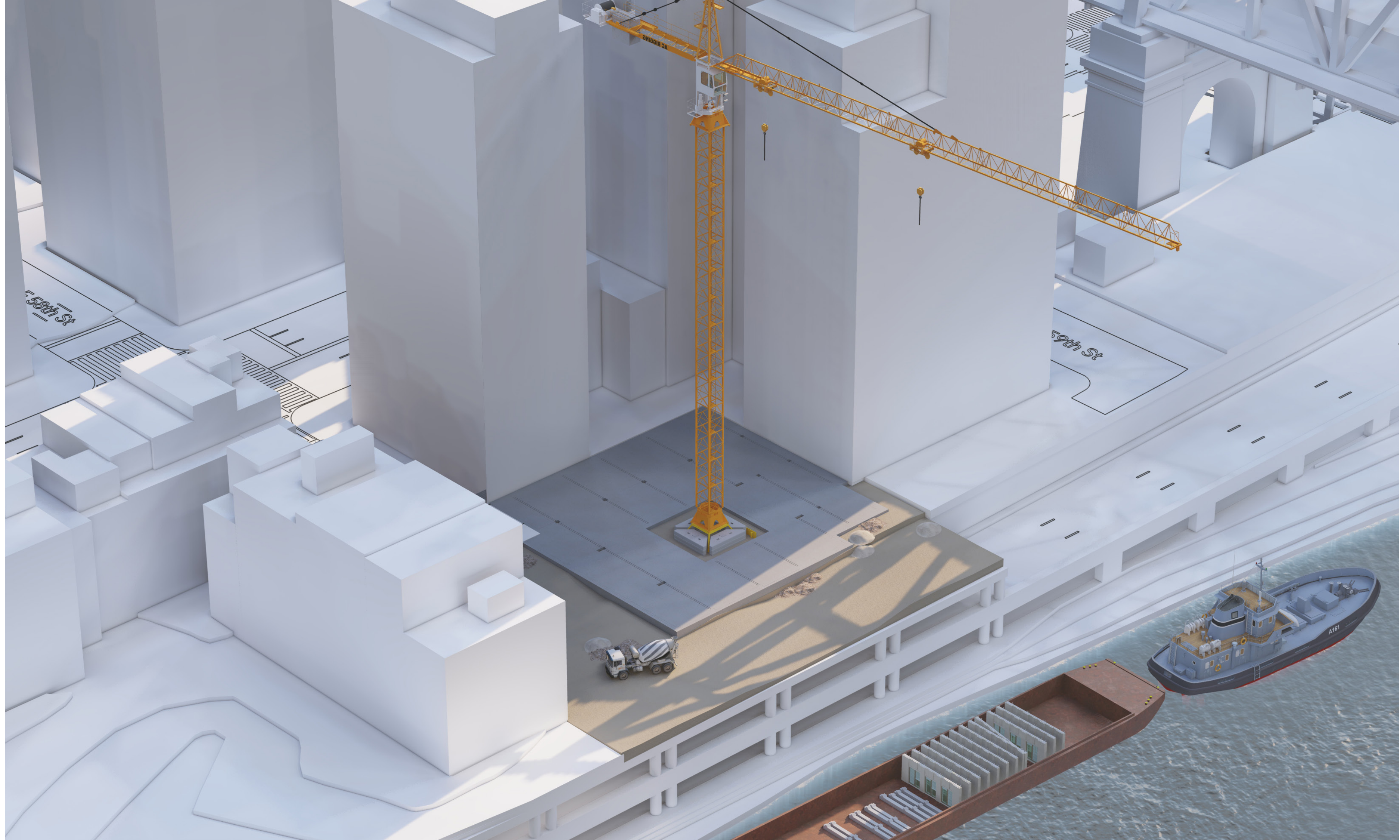


## Tie-back Connection



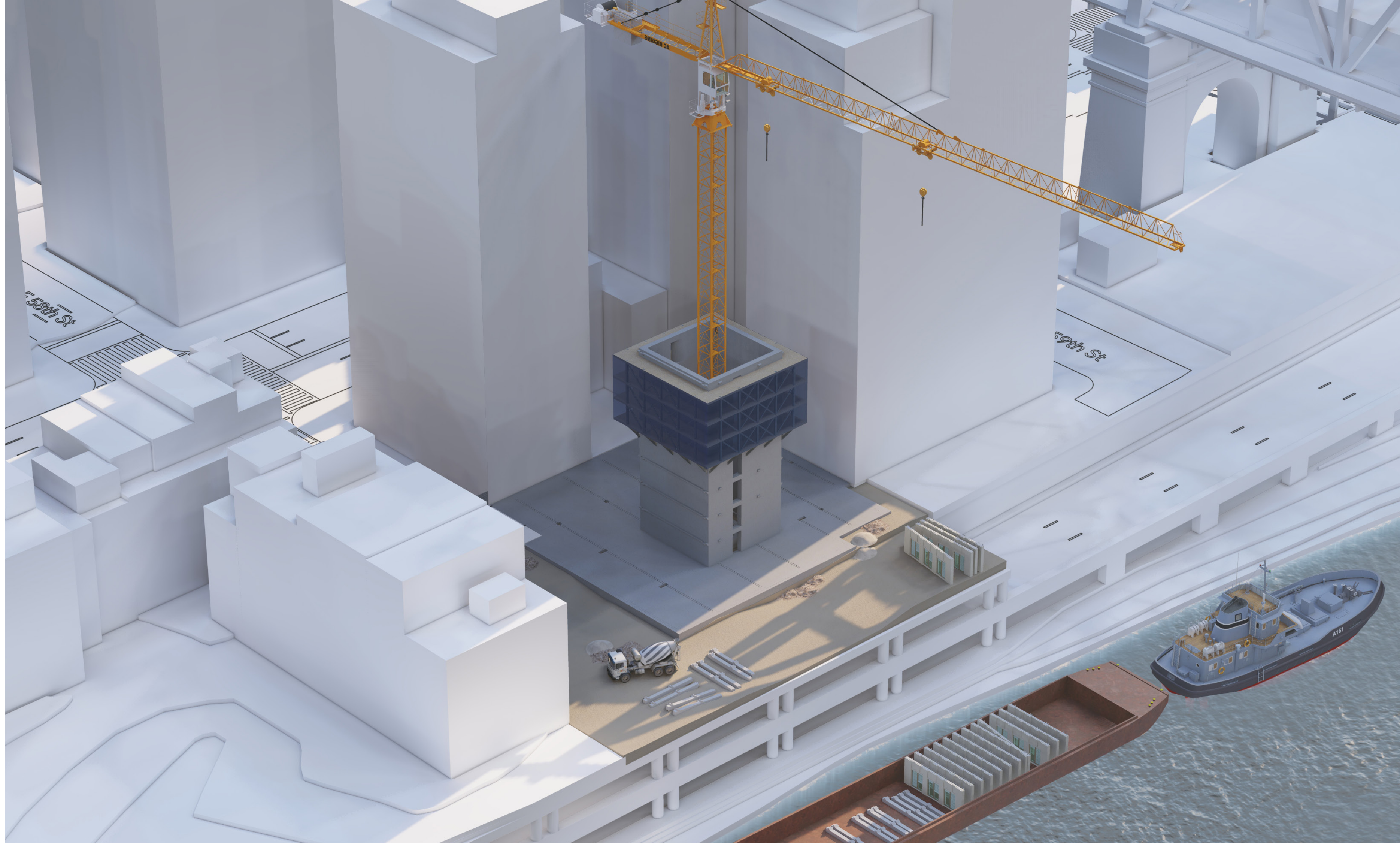


# CONSTRUCTION



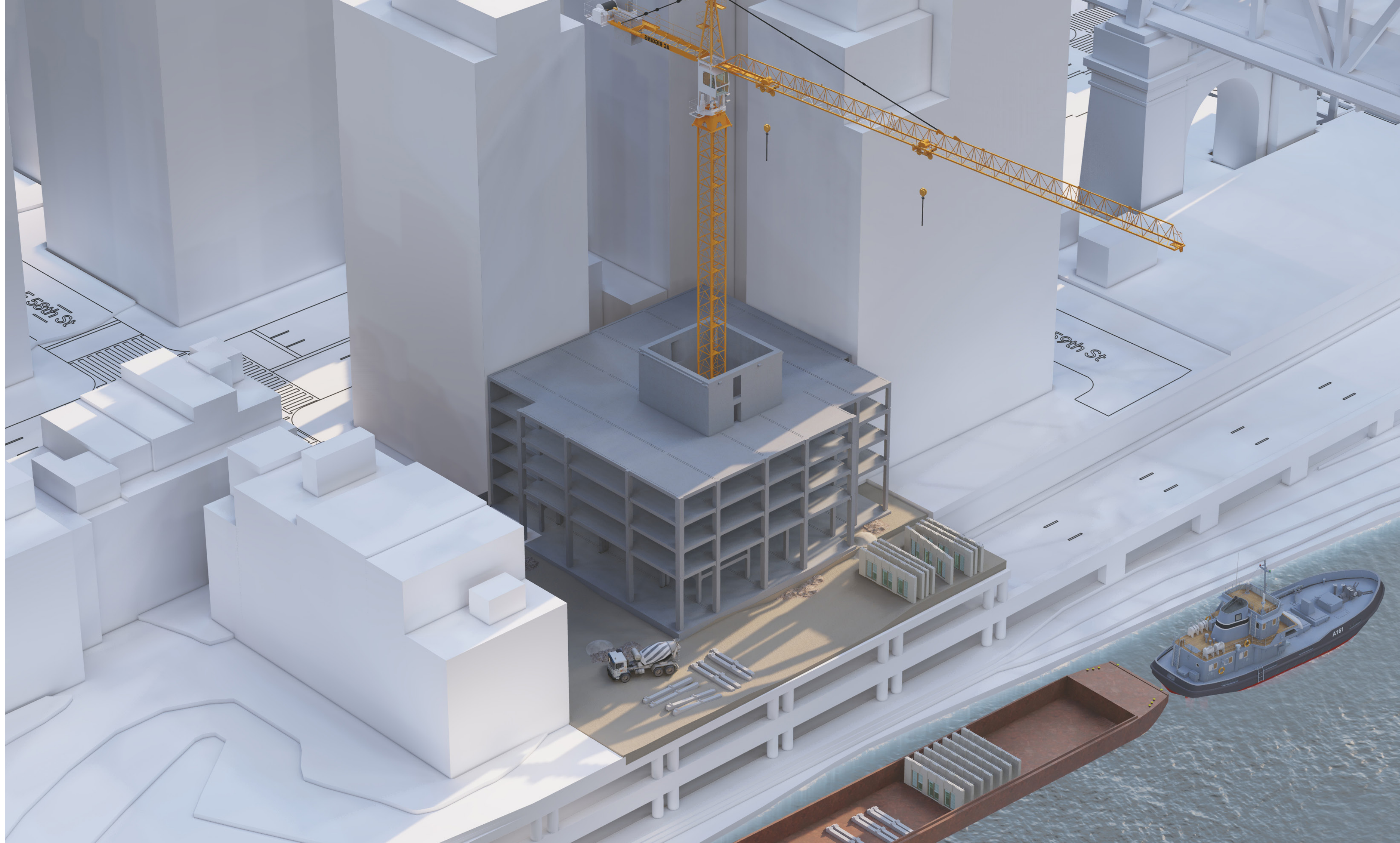


# CONSTRUCTION



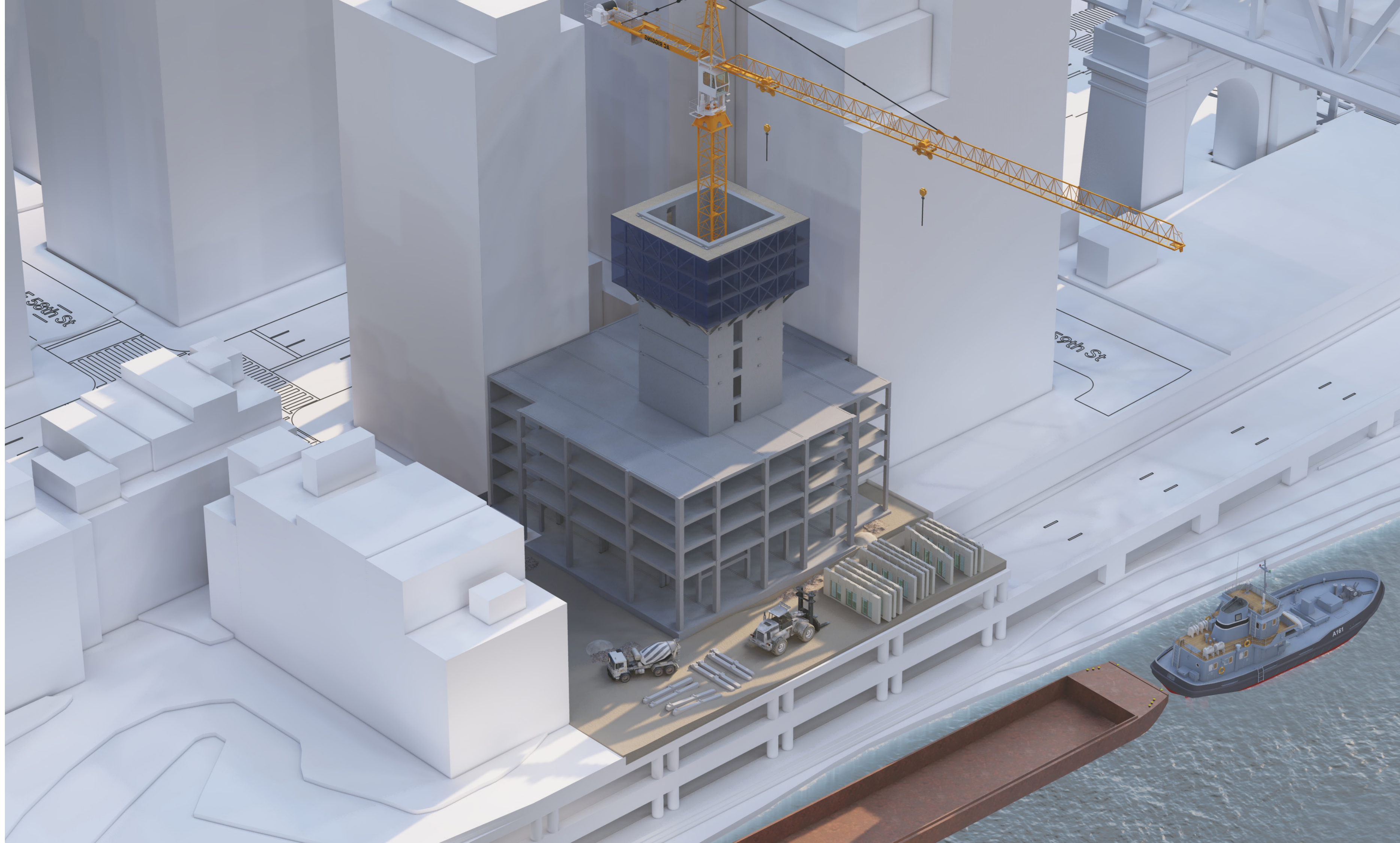


# CONSTRUCTION



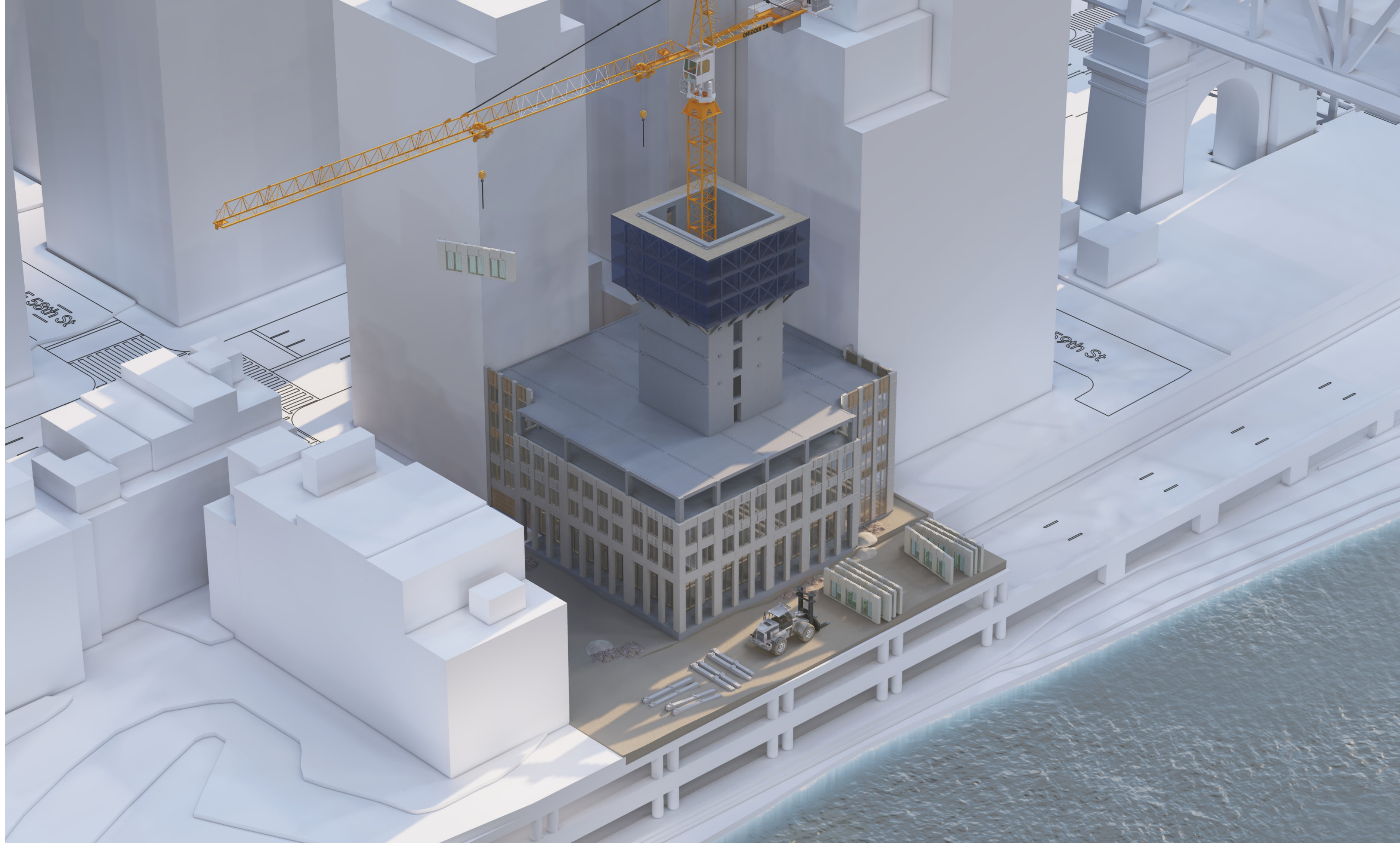


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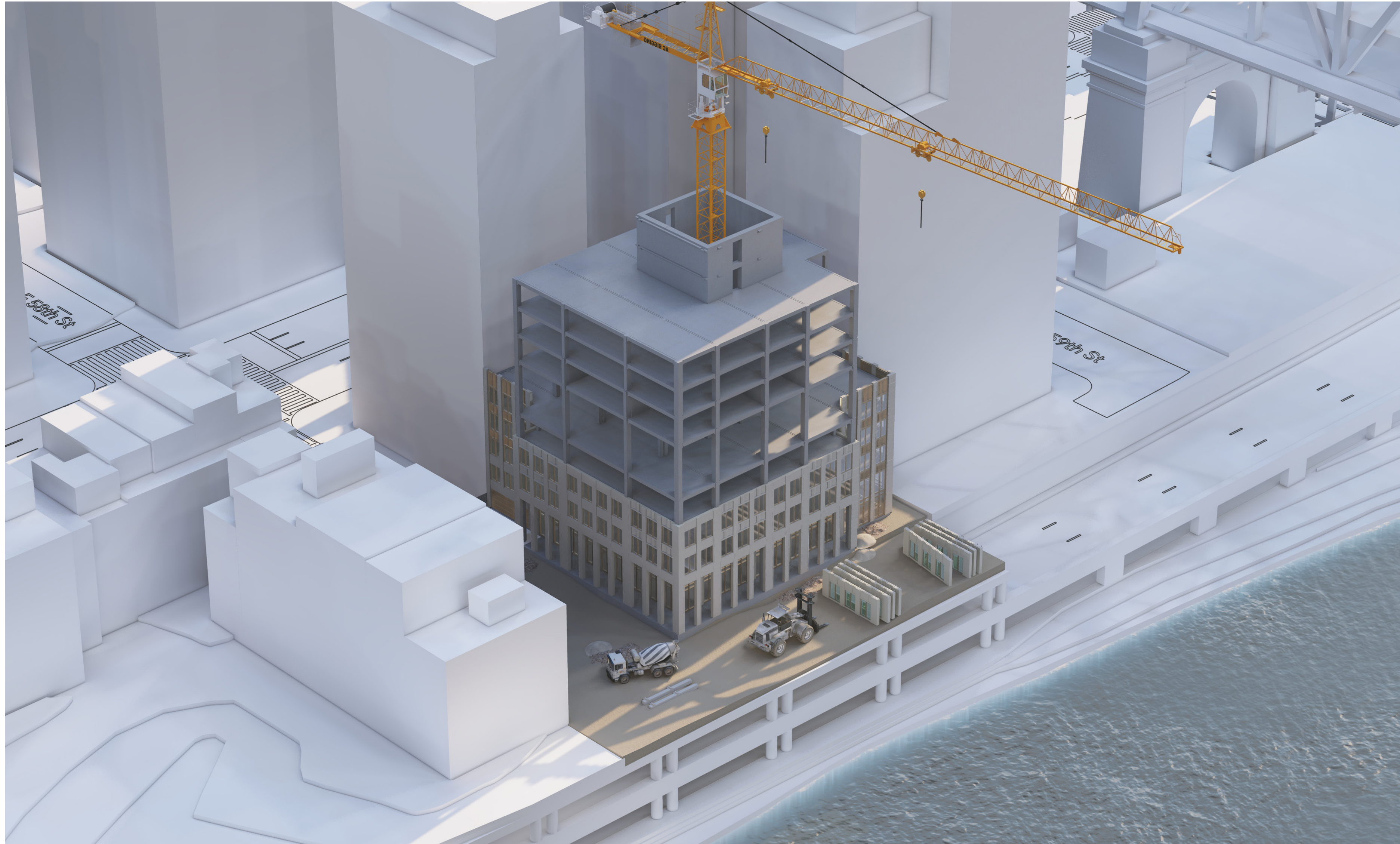


# CONSTRUCTION





# CONSTRUCTION





# CONSTRUCTION



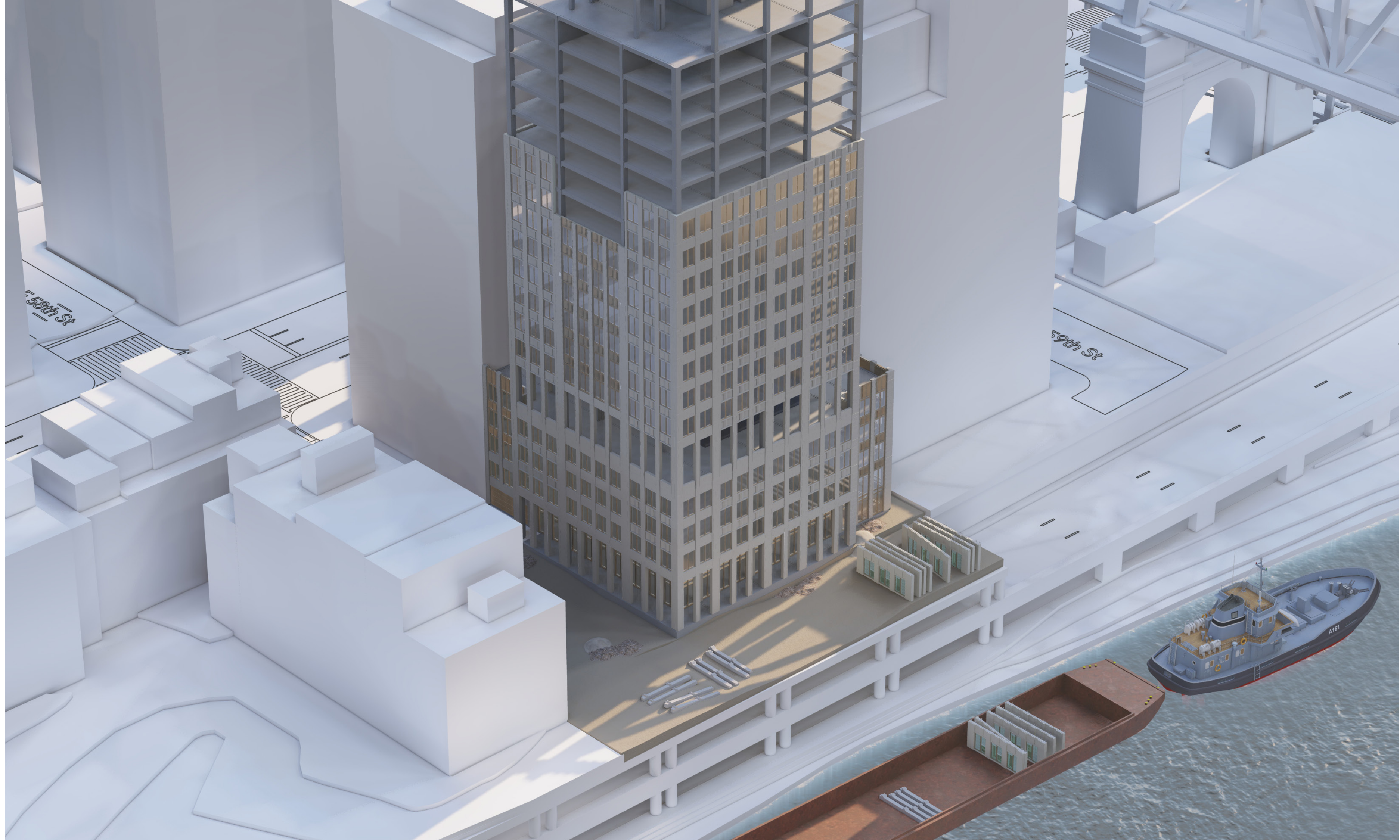


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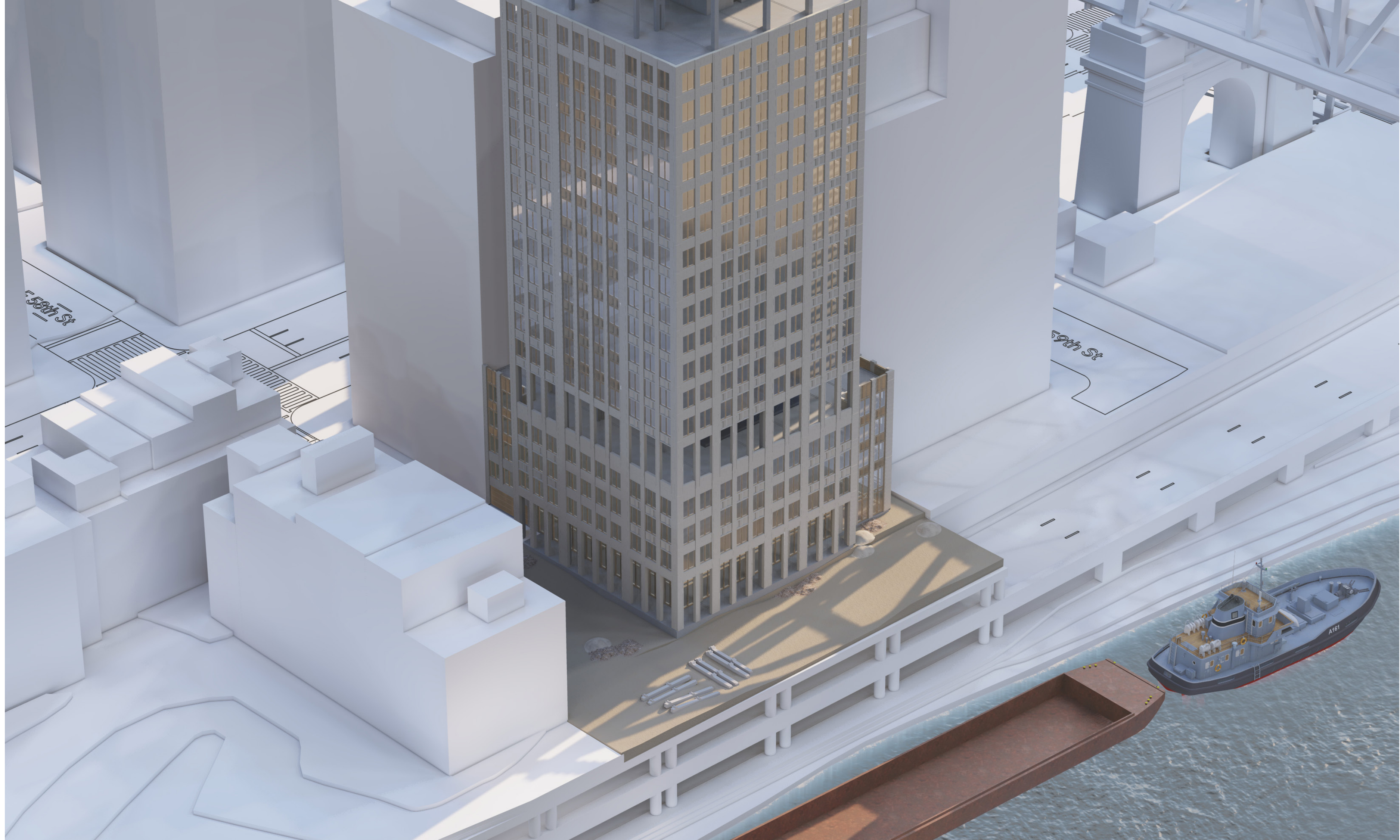


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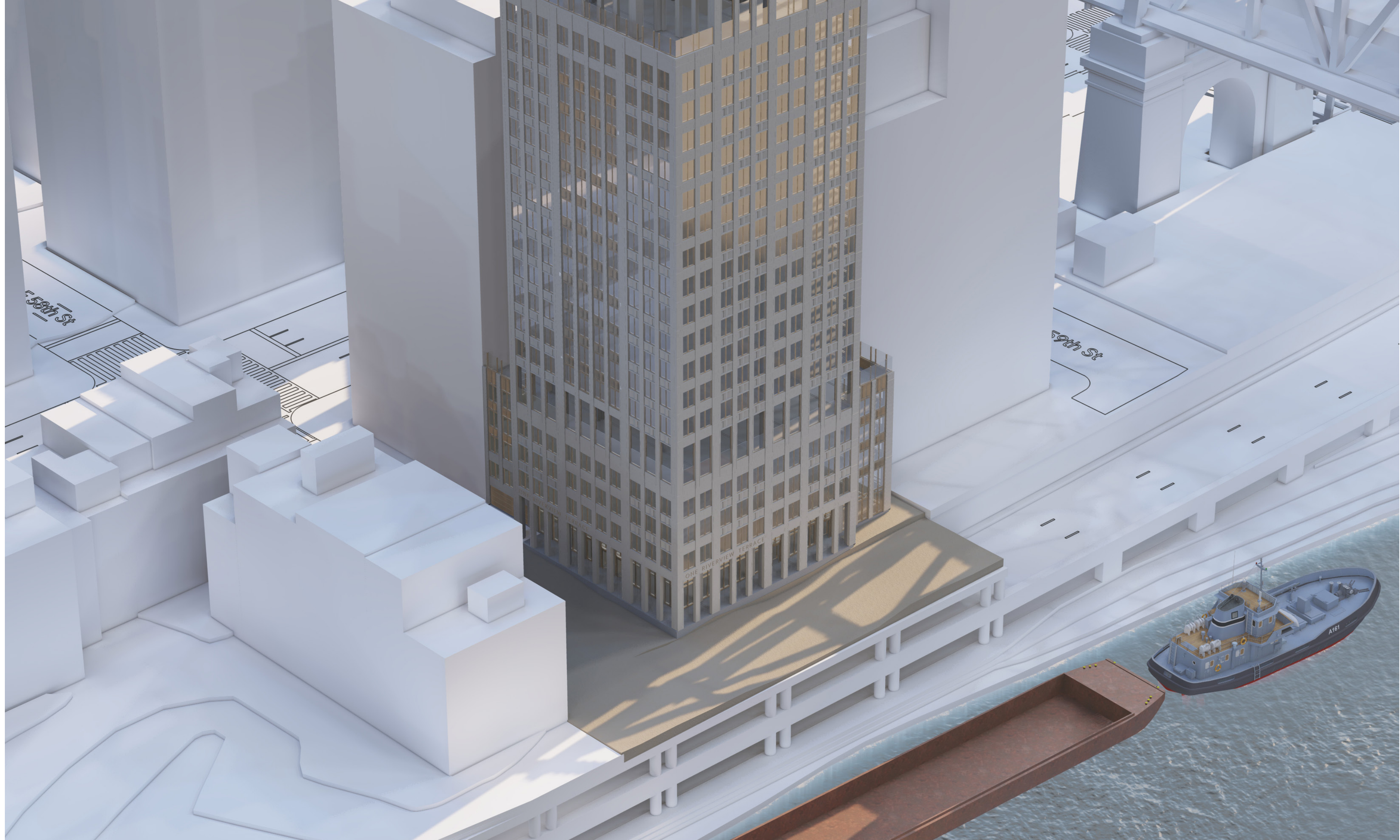


# CONSTRUCTION





# CONSTRUCTION





## PART VIII

# Result



# THE SPARK

## (Un)Affordable Midtown





# FINAL DESIGN

