

# Denny Substation Concept Design Phase Review

with the

Seattle  
**design**  
Commission

June 6, 2013

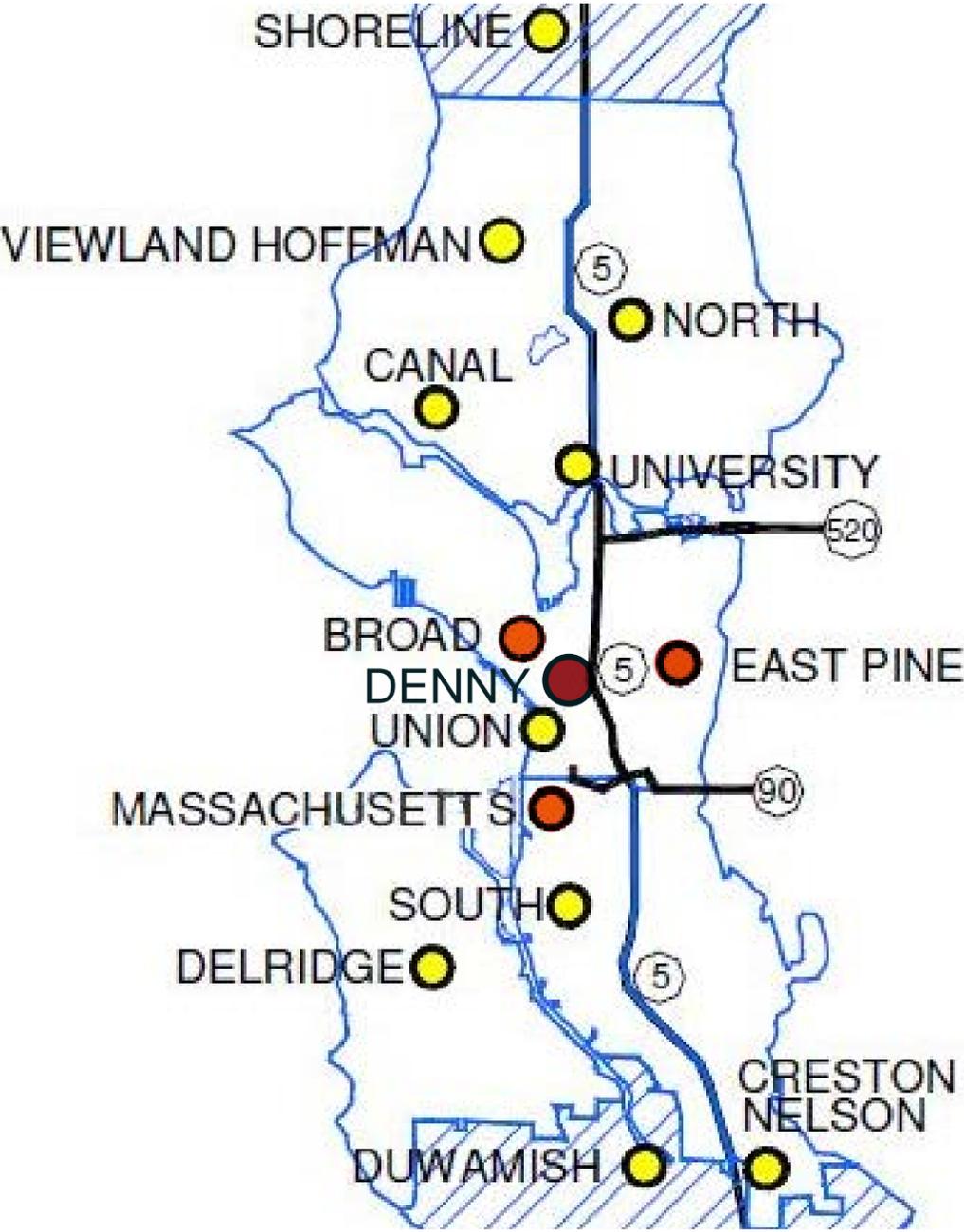
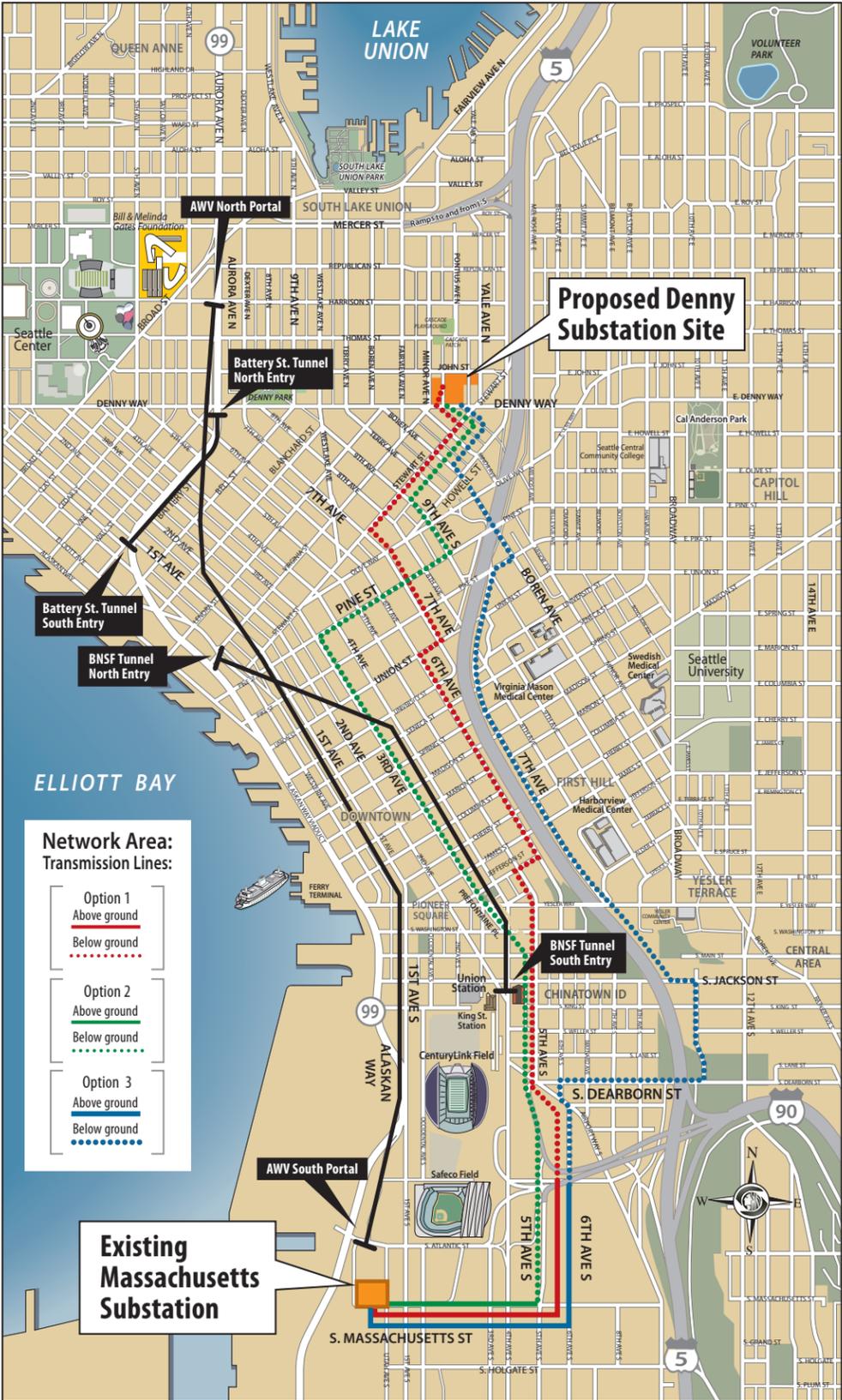


**Denny Substation Project**

*Powering Seattle through the 21st century*



# UTILITY MISSION

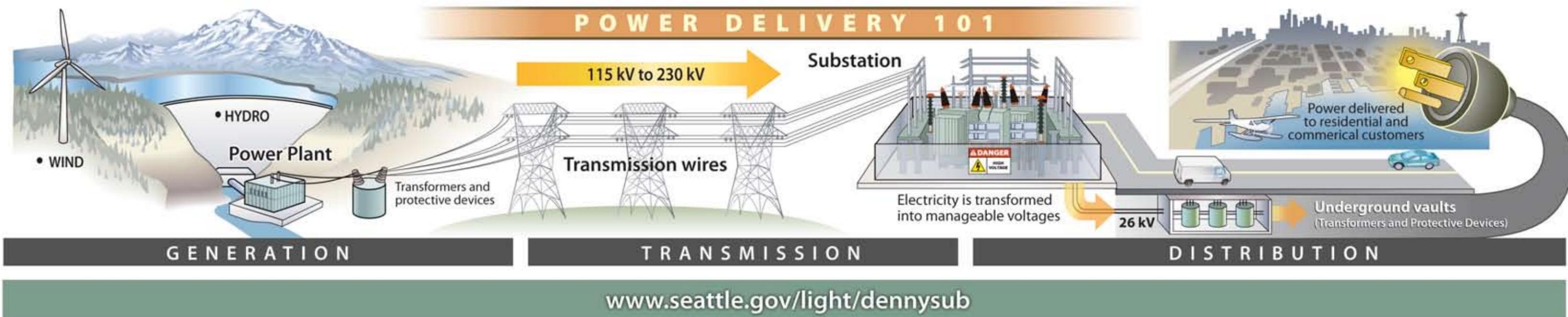


## **PROJECT SCOPE AND SCHEDULE**

- *ULTIMATELY DELIVER 825 - 930 MVA TRANSMISSION AND DISTRIBUTION CAPACITY*
- *PROVIDE A SECURE AND RELIABLE POWER SUPPLY AND REQUIRED POWER CAPACITY TO SOUTH LAKE UNION , DENNY TRIANGLE AND ADJACENT AREAS*
- *TO SUPPORT AND ADVANCE THE URBAN CENTER STRATEGIES AS DEFINED IN THE COMPREHENSIVE PLAN*
- *ADDRESS THE GROWING NEEDS OF CURRENT AND FUTURE DEVELOPMENT*
- *DEVELOP A LAYOUT FOR LONG TERM PHASING TO MEET FUTURE POWER NEEDS*
- *FIRST PHASE TO BE OPERATIONAL BY MID-2016 (270 MVA)*

## **SITE AND PROJECT REQUIREMENTS**

- *SITE IS MOST COST EFFICIENT GIVEN ITS PROXIMITY TO EXISTING TRANSMISSION LINES*
- *SITE FACILITATES MULTIPLE ROUTES FOR POWER DISTRIBUTION*
- *SITE FACILITATES EASE OF ACCESS FOR OVERSIZE VEHICLES*
- *UTILIZE GIS VERSUS AIR INSULATED EQUIPMENT TO MINIMIZE SITE AREA REQUIREMENTS*
- *IN ORDER TO ADDRESS THE DISTRIBUTION, PHASING AND ACCESS REQUIREMENTS PURSUE THE VACATION OF PONTIUS*
- *DEVELOP A PUBLIC BENEFIT PACKAGE TO ADDRESS THE ADJOINING NEIGHBOR AND COMMUNITY CONCERNS AND NEEDS*
- *DEVELOP A MASSING AND SITE EDGES THAT MITIGATE THE VISUAL IMPACT OF THE SUBSTATION*
- *SHOWCASE SUSTAINABLE STRATEGIES*





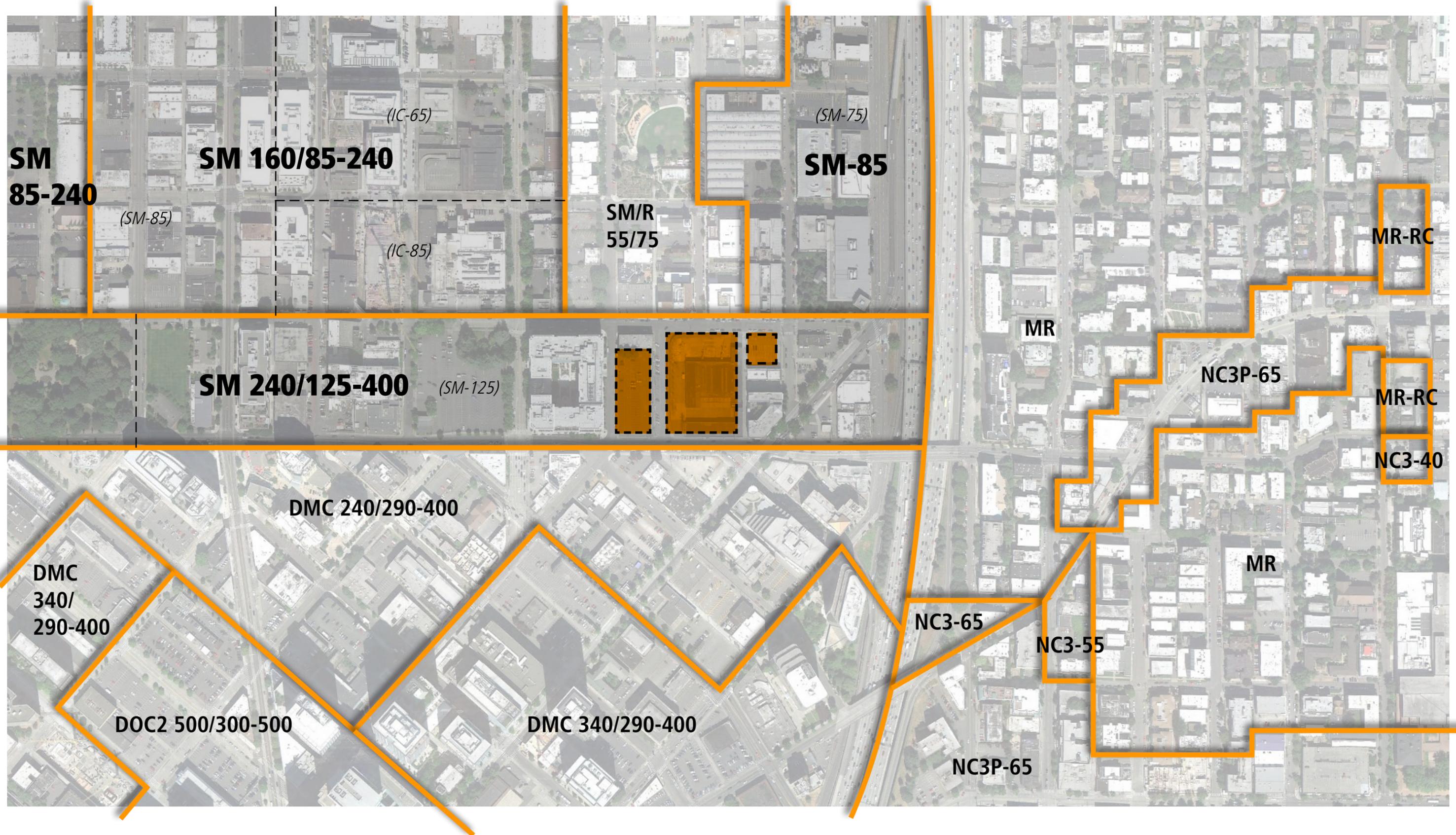
AERIAL VIEW FROM DENNY WAY



SITE PLAN

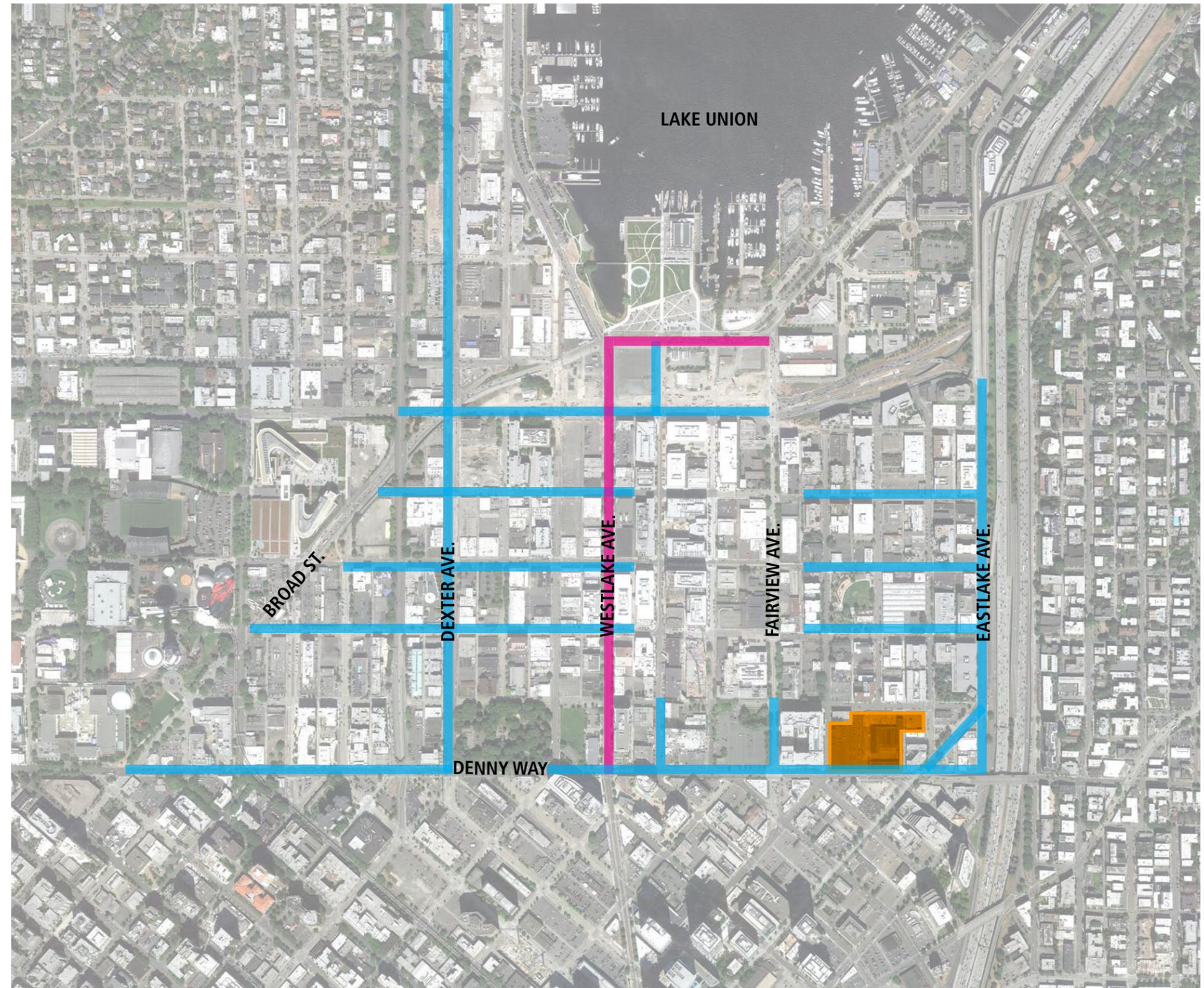


STREET VIEW ALONG DENNY WAY LOOKING NORTH



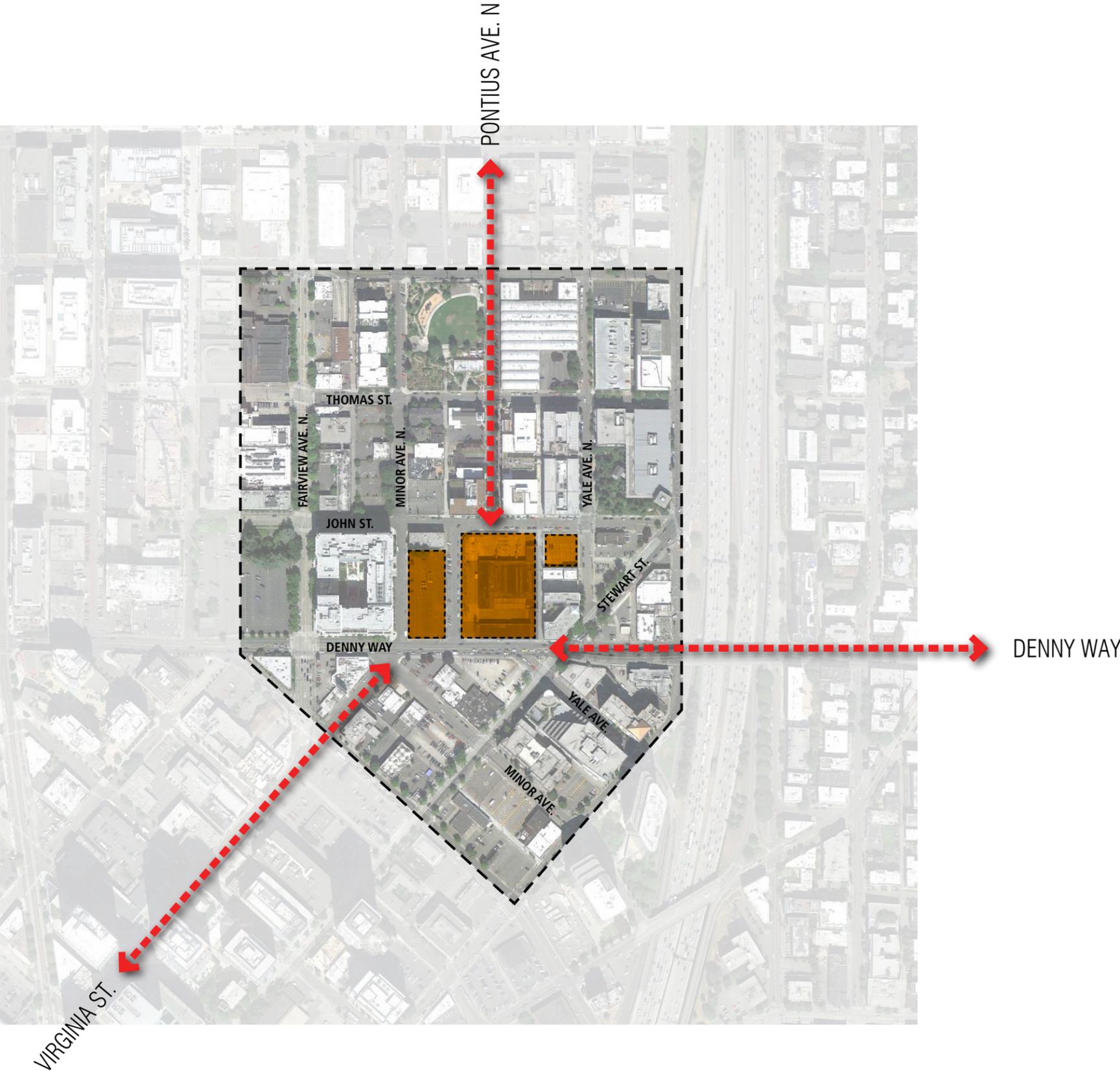
# PEDESTRIAN STREET CLASSIFICATIONS

- CLASS 1 PEDESTRIAN STREETS
- CLASS 2 PEDESTRIAN STREETS



\*On Valley Street, all Class 1 Pedestrian Streets requirements apply only to lots abutting on the south side of the street.

**9 BLOCK FOCUS AREA**



*USE TYPE*

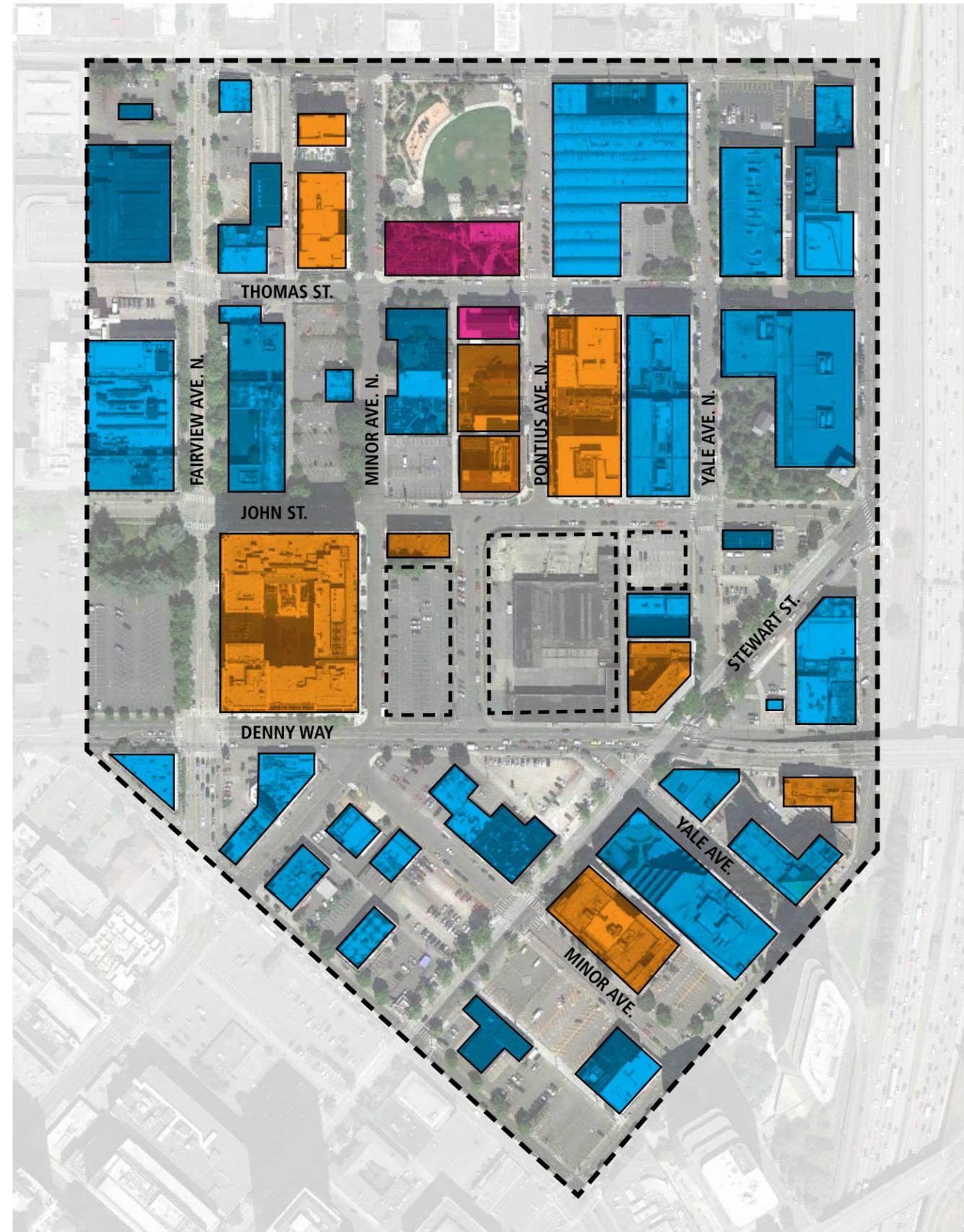
*COMMUNITY*



*COMMERCIAL*



*RESIDENTIAL*



*CASCADE PARK and  
PEA PATCH*

*REI TRAIL SYSTEM*

*SEATTLE TIMES BLDG.  
POCKET PARK*

*OPEN SPACE*



*TRANSIT*

*BUS ROUTES*



*ZIP CARS*



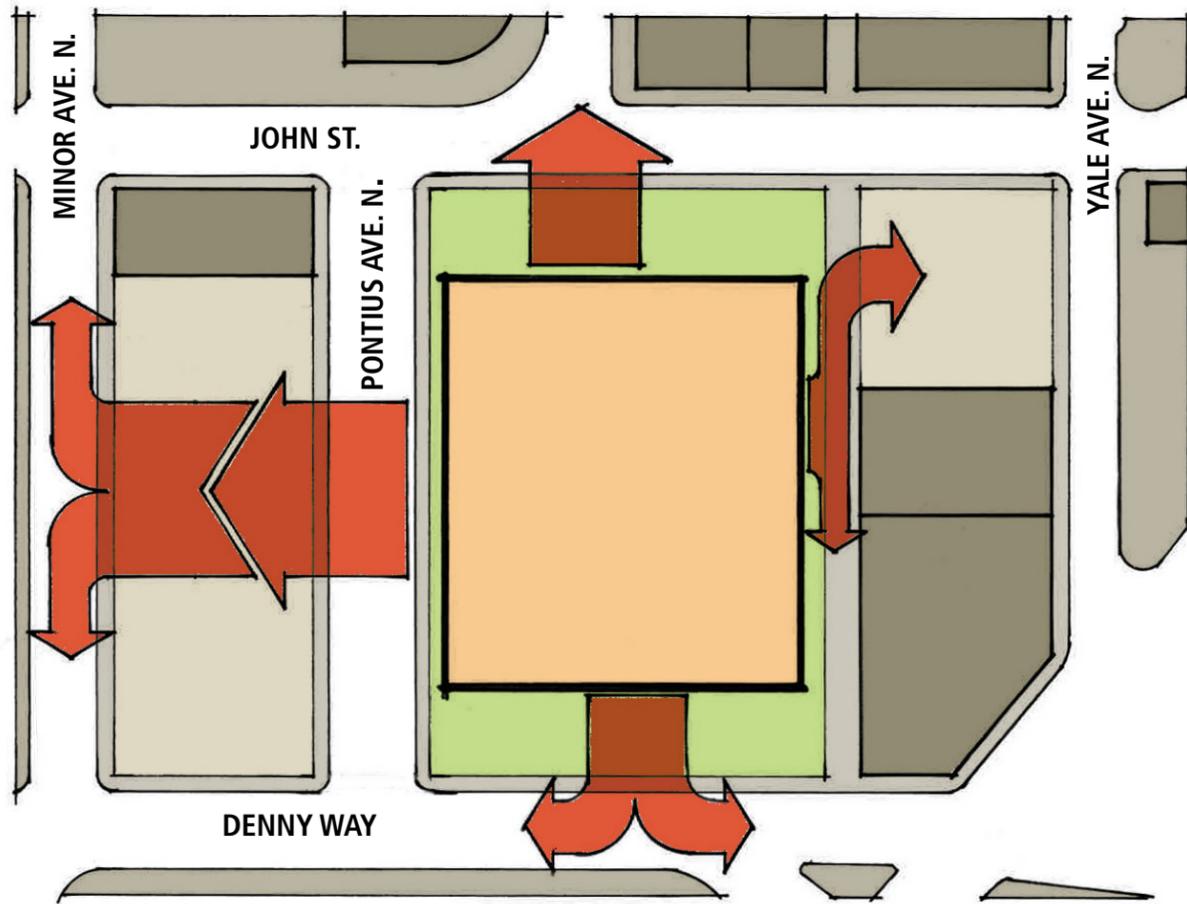
*BUS STOPS*



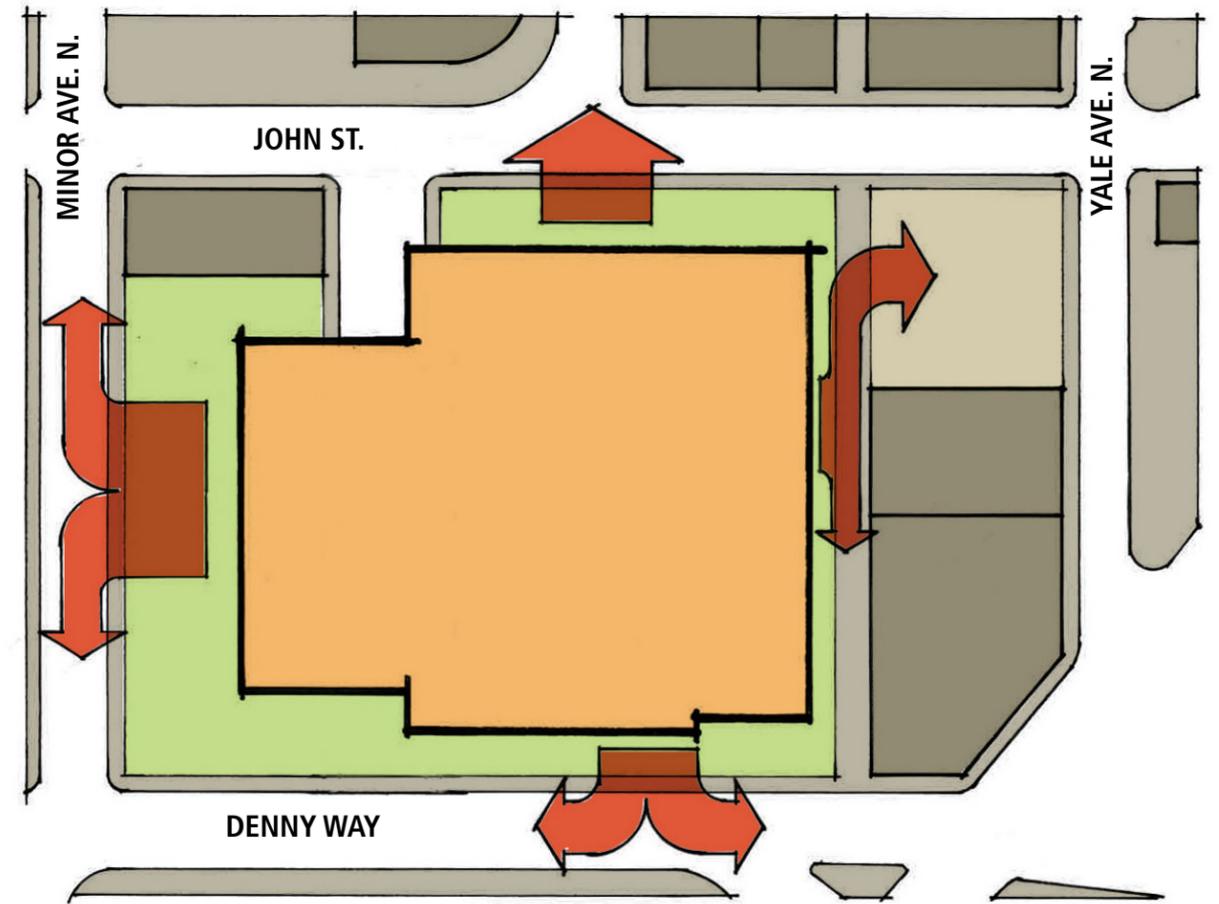
# TRAFFIC COUNTS

- THOMAS ST.**  = **240** VEHICLES / P.M. PEAK HOUR
- PONTIUS AVE. N**  = **120** VEHICLES / P.M. PEAK HOUR
- DENNY WAY**  = **2,000** VEHICLES / P.M. PEAK HOUR

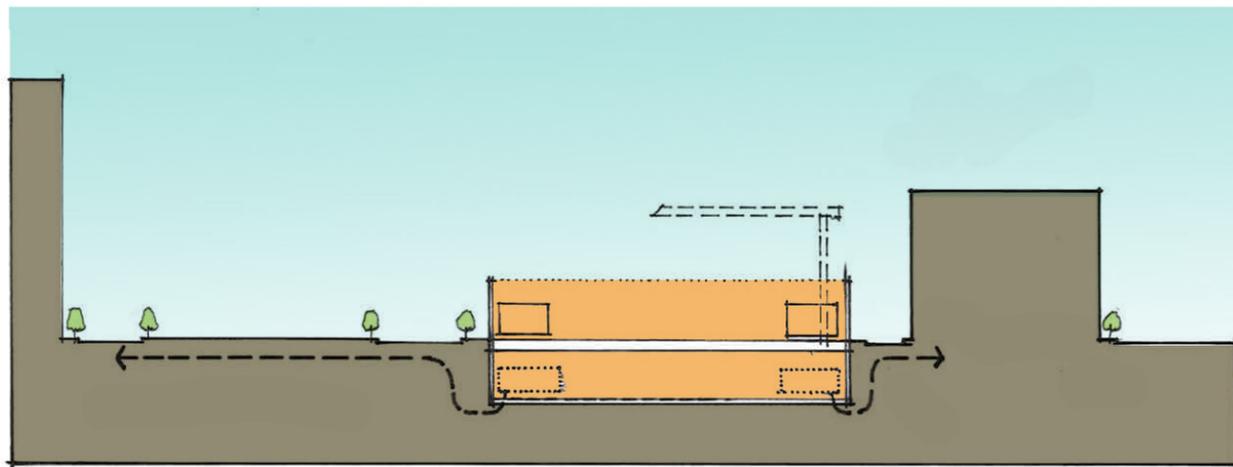




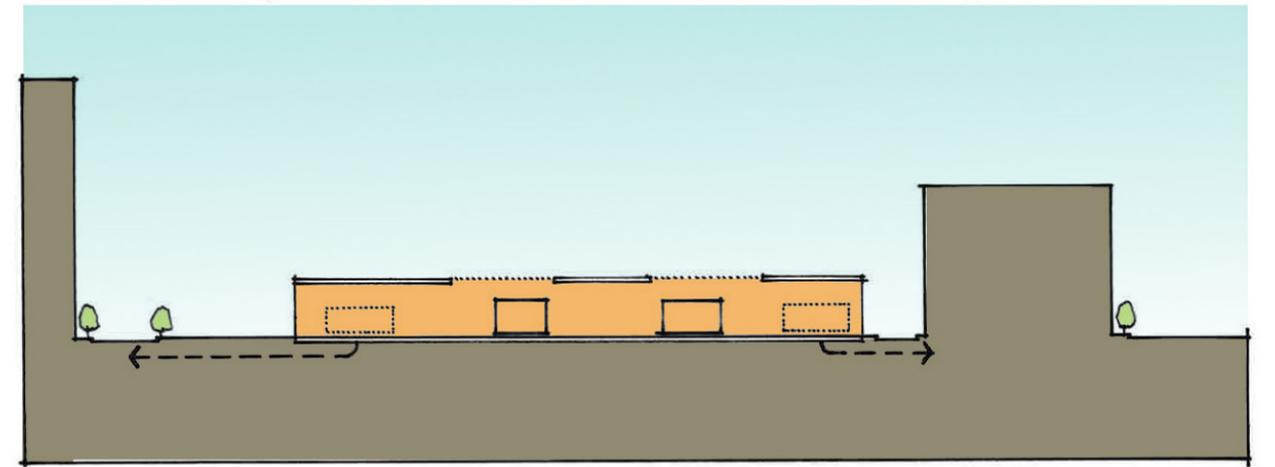
**NO VACATION OF PONTIUS: DISTRIBUTION ROUTING**



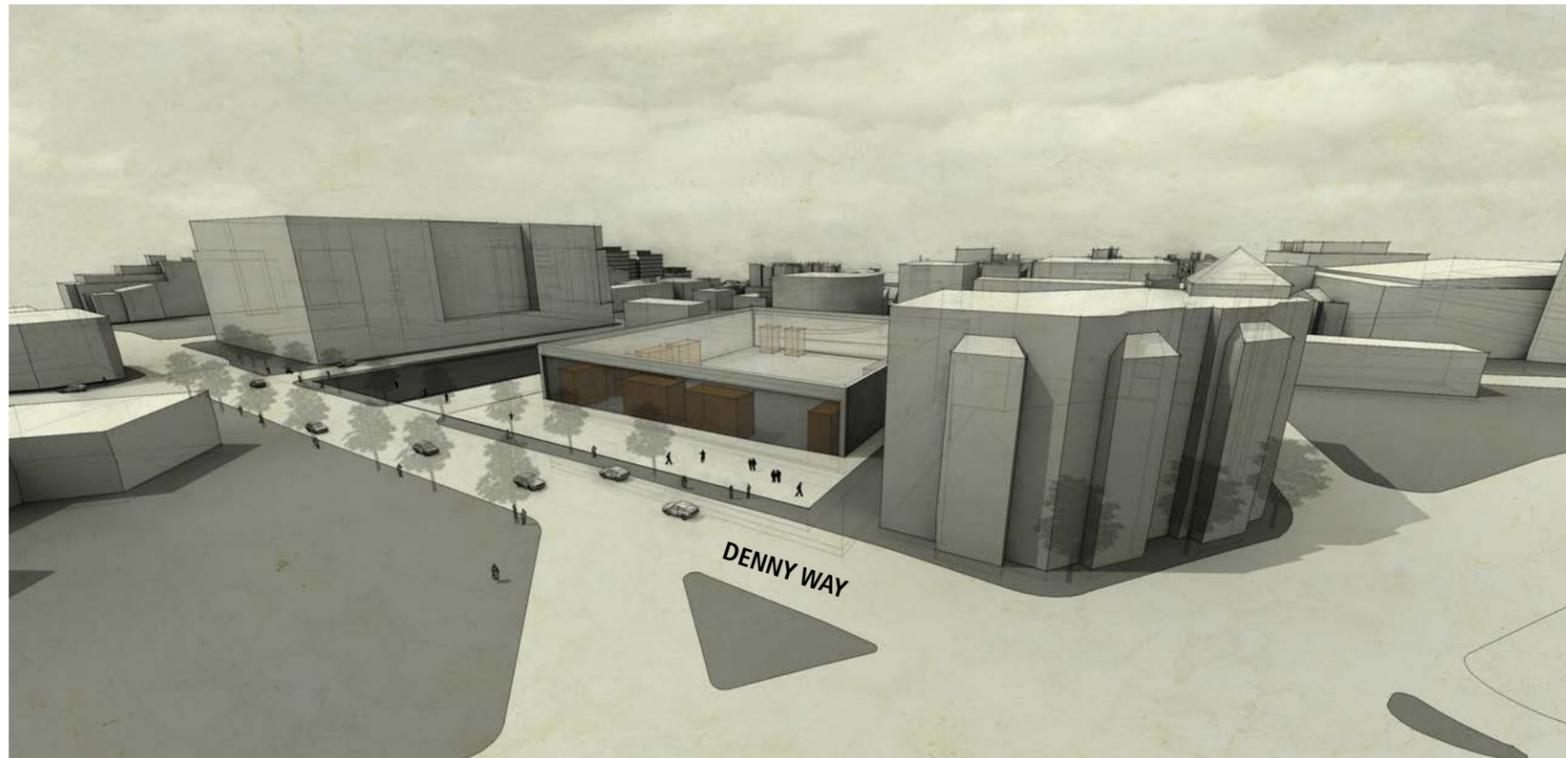
**VACATION OF PONTIUS: DISTRIBUTION ROUTING**



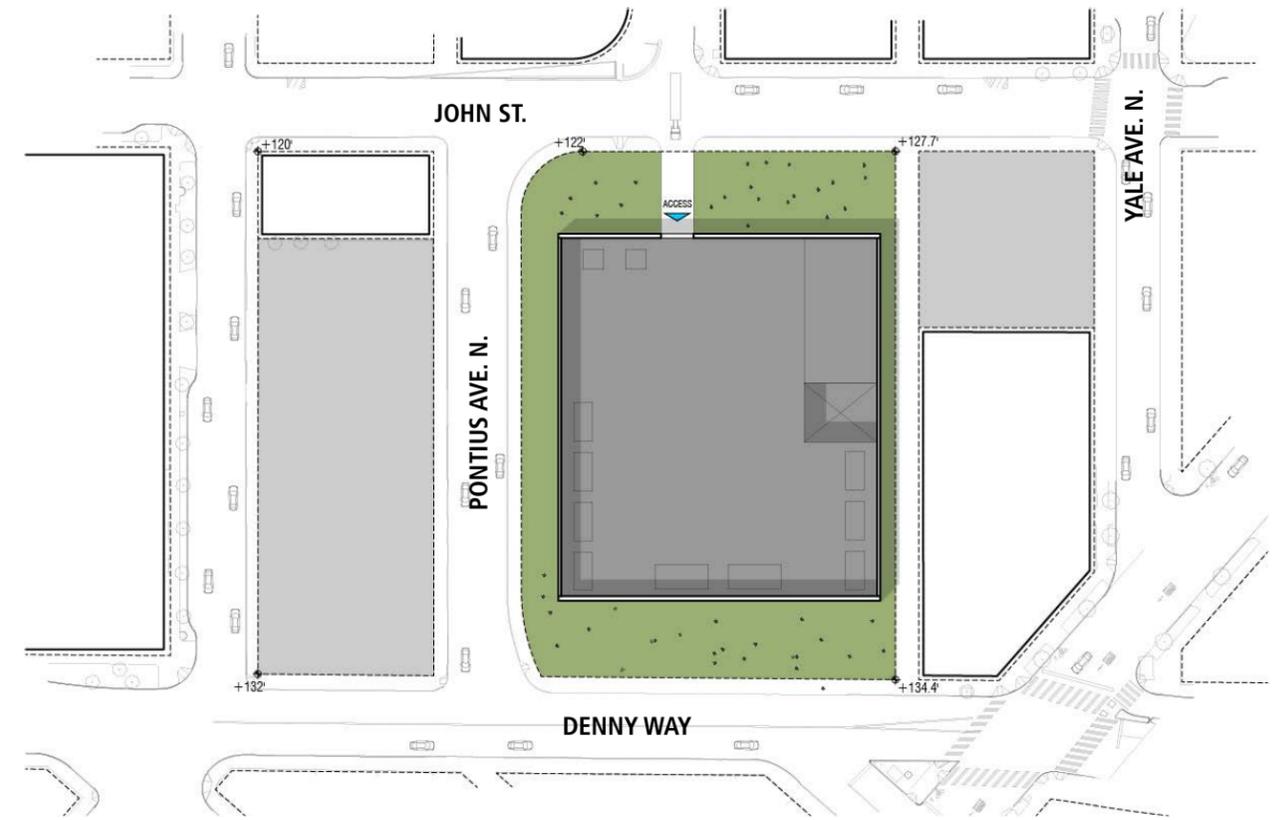
**NO VACATION OF PONTIUS: TWO LEVELS**



**VACATION OF PONTIUS: ONE LEVEL**



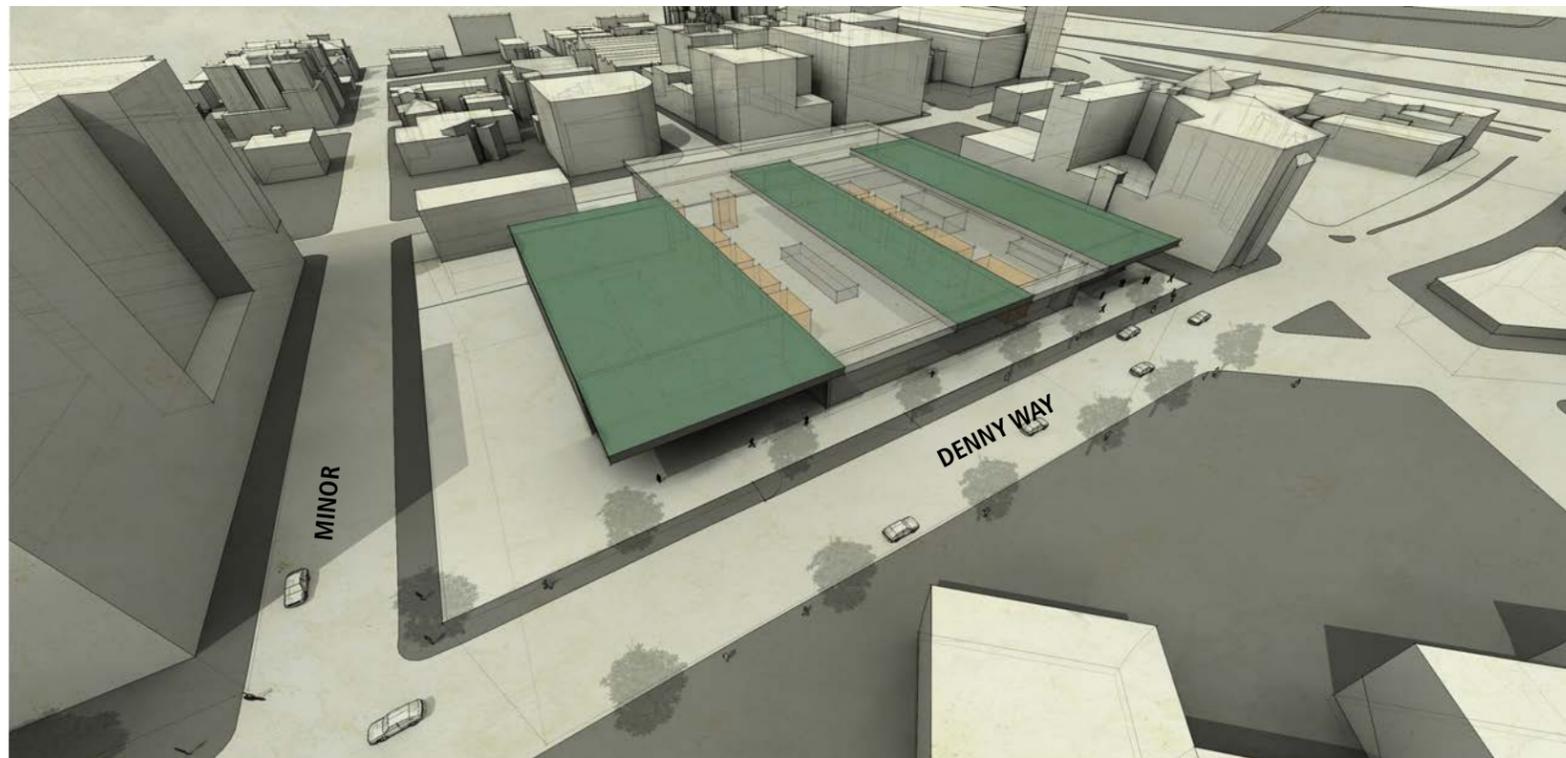
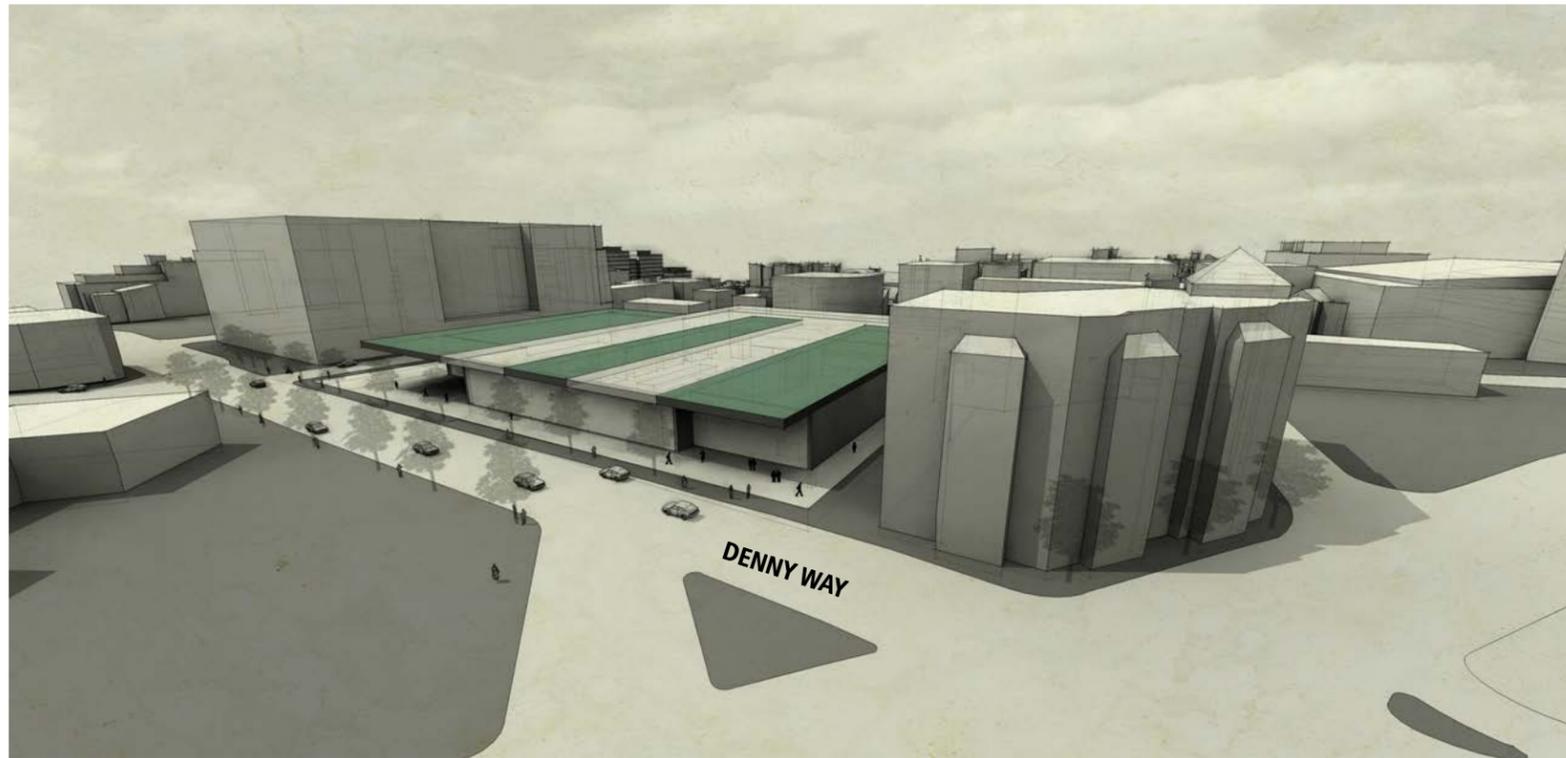
**AERIAL CONCEPT RENDERINGS LOOKING NORTH**



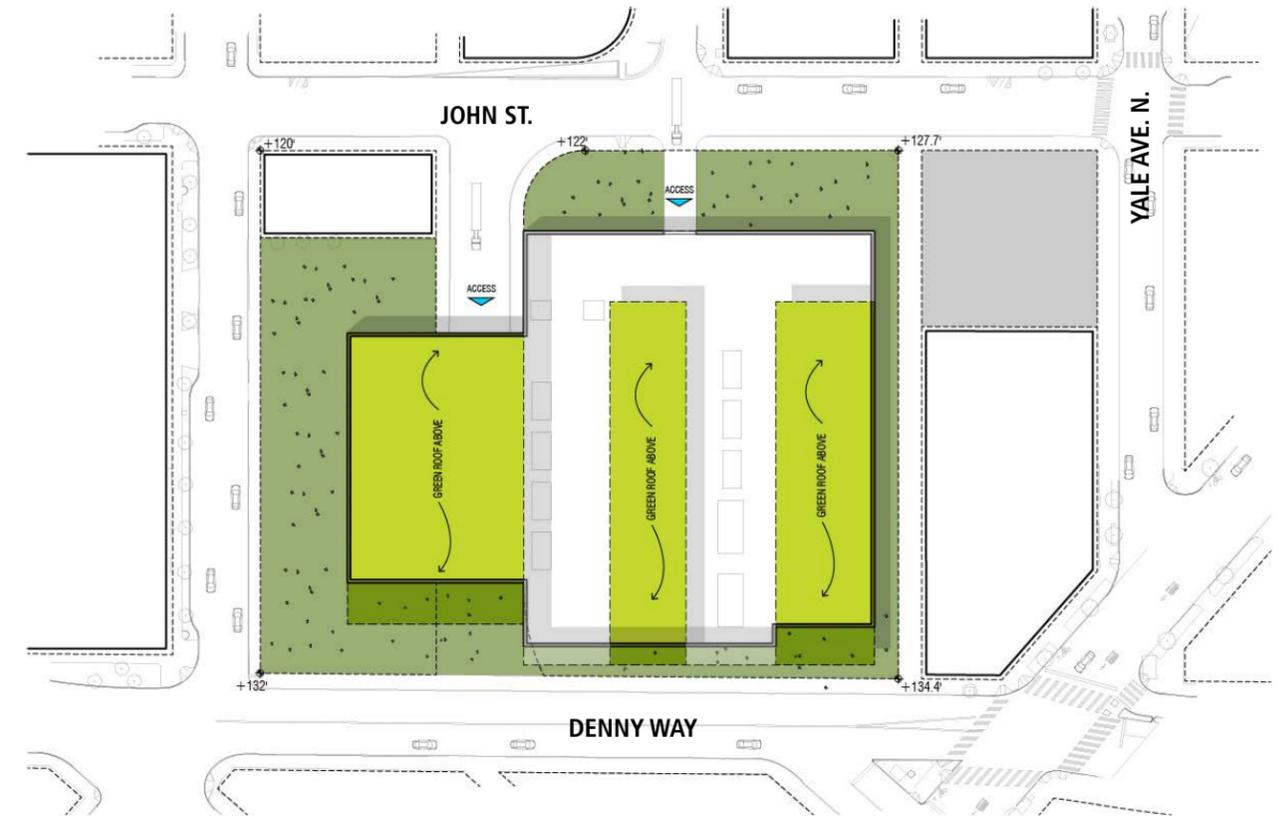
**SITE PLAN**



**SECTION LOOKING NORTH**



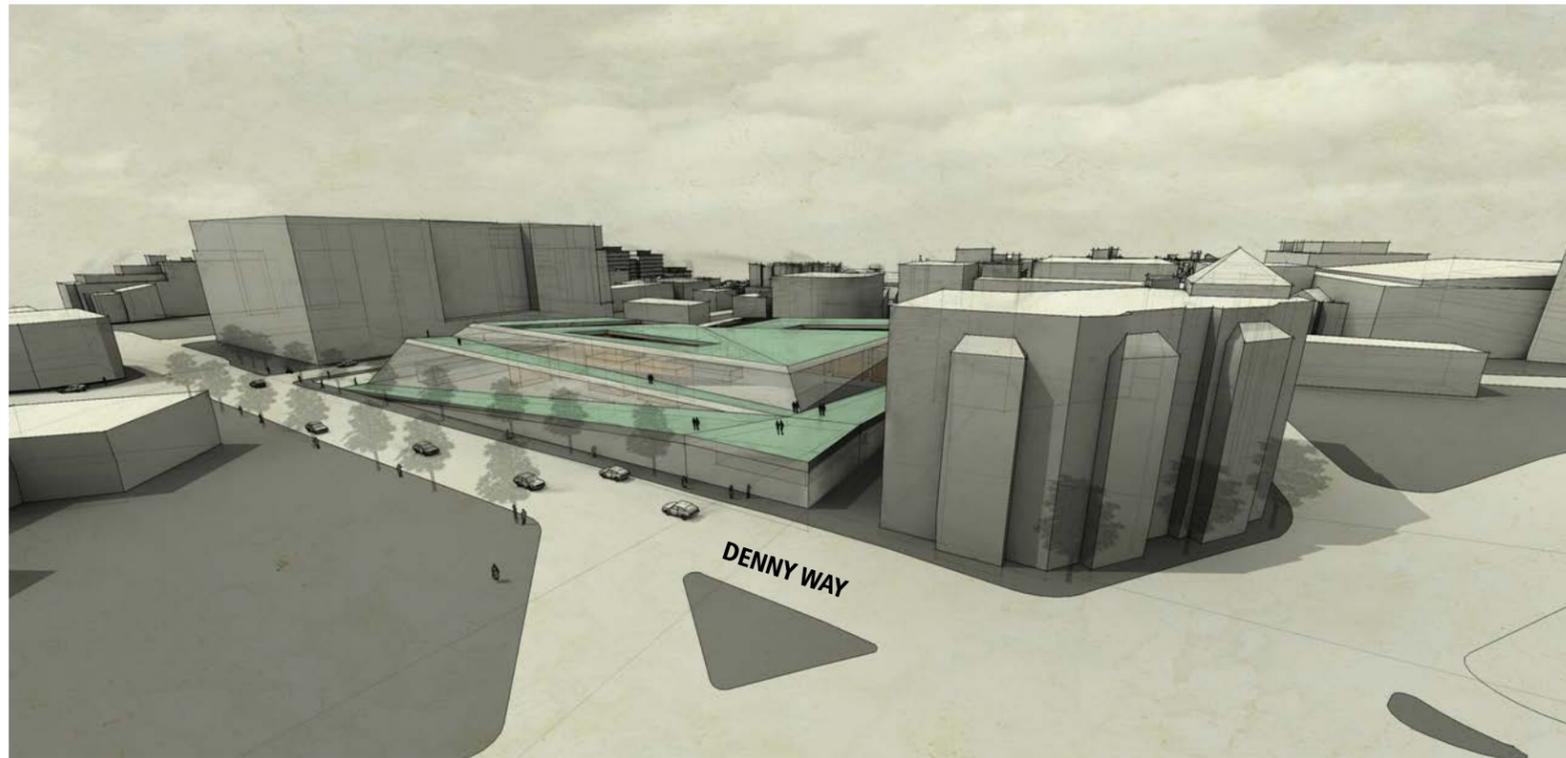
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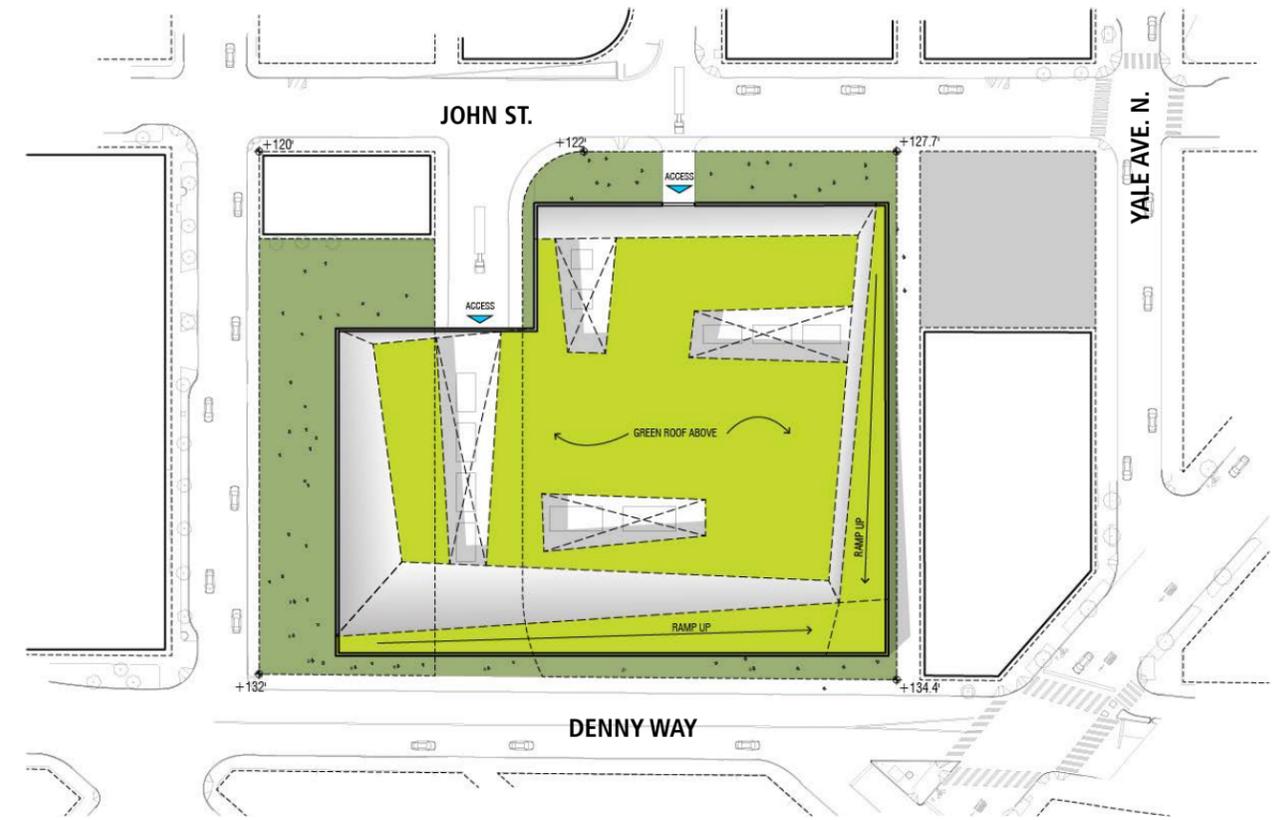
**SITE PLAN**



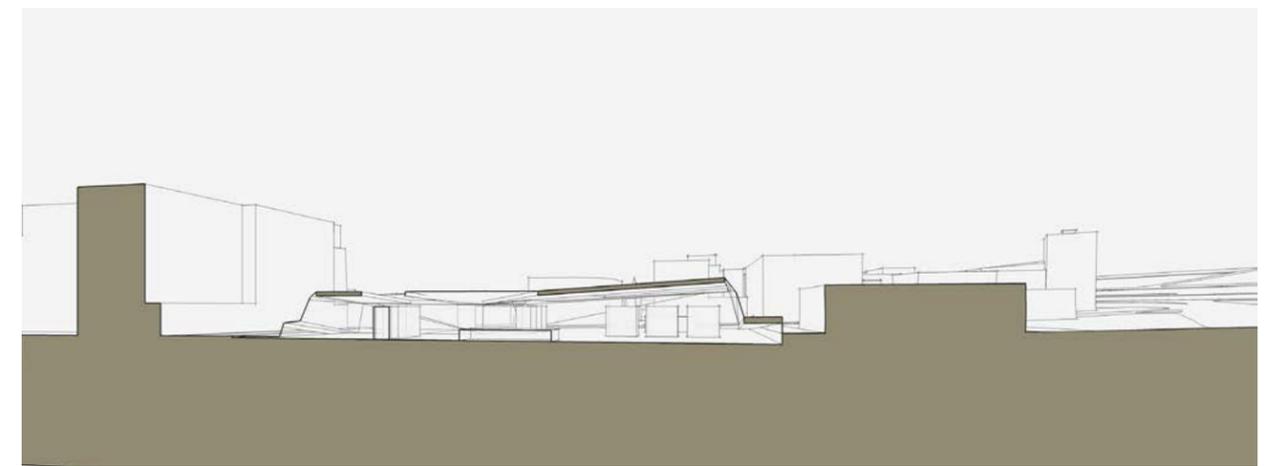
**SECTION LOOKING NORTH**



**AERIAL CONCEPT RENDERINGS LOOKING NORTH**



**SITE PLAN**



**SECTION LOOKING NORTH**

# DESIGN COMMISSION RECOMMENDATIONS (October 2012)

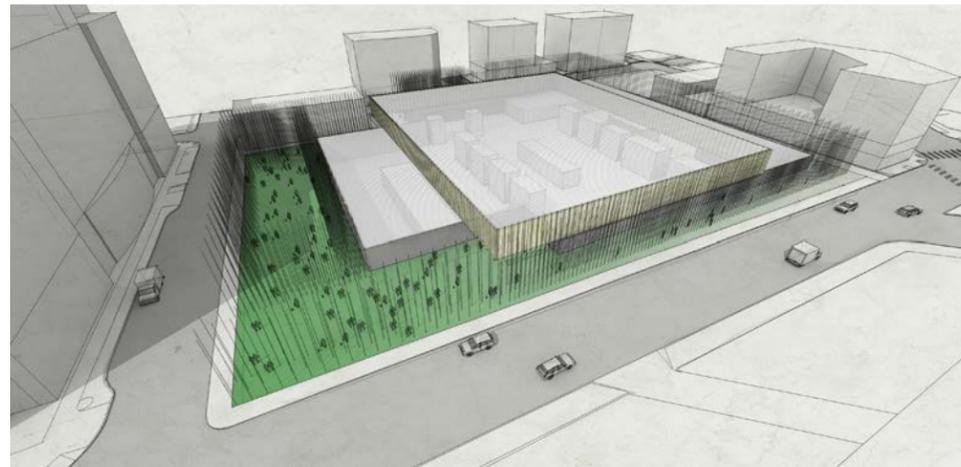
- *DESIGN CONCEPTS THAT “EXPOSE THE EQUIPMENT”*
- *THE BUILDING OBJECT IS THE AMENITY AND DRAW PEOPLE TO IT*
- *EXPLORE DESIGN BEYOND TRADITIONAL SUBSTATION INFRASTRUCTURE*
- *THE PROJECT AS A UNION OF A DOWNTOWN UTILITY AND ART*
- *DO NOT DEVELOP A DESIGN WITH BLANK WALLS*
- *ADDRESS DENNY WAY - CHALLENGES AND OPPORTUNITIES*
- *EMPHASIZE PROGRAMMING THAT BENEFITS THE NEIGHBORHOOD*
- *DEVELOP PUBLIC SPACES....OPTIONS FOR PROGRAMMING...24 HOUR DIVERSE USE*
- *STUDY CORNER OF JOHN AND DENNY SITE*
- *MITIGATE HEAT ISLAND, NOISE, AND EMF*
- *EXPLORE OPPORTUNITY FOR EDUCATION OF POWER GENERATION AND USE*

NO STREET VACATION OPTION

STREET VACATION OPTIONS



ALT. 1



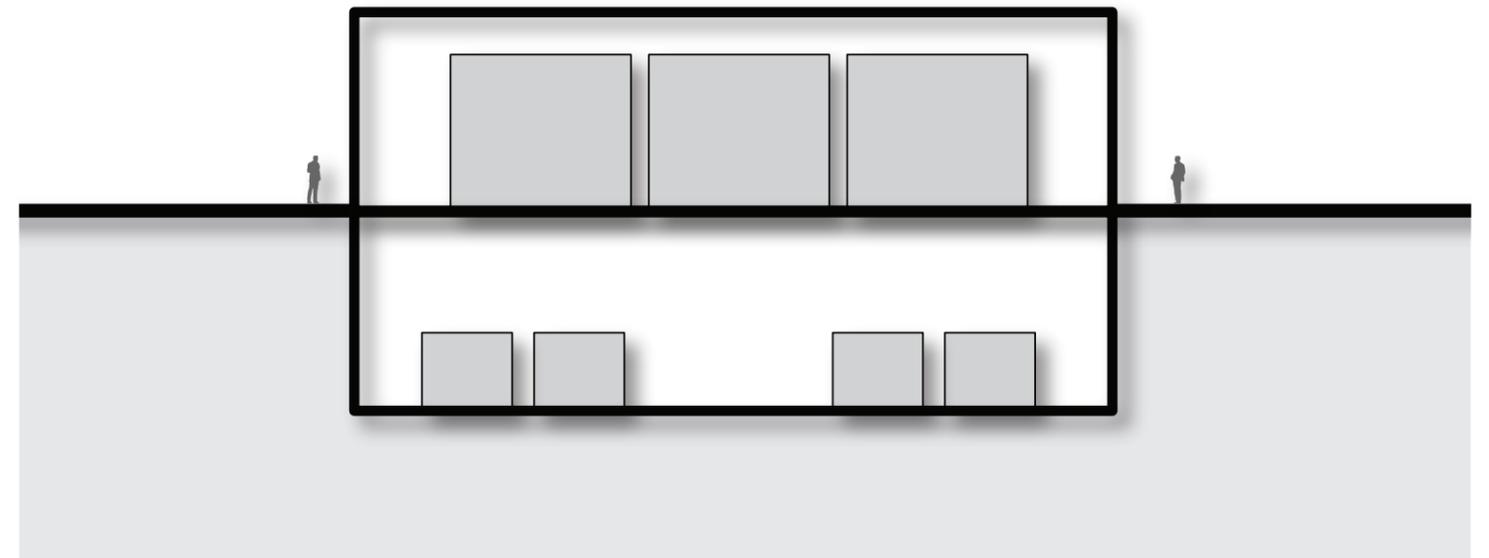
ALT. 2

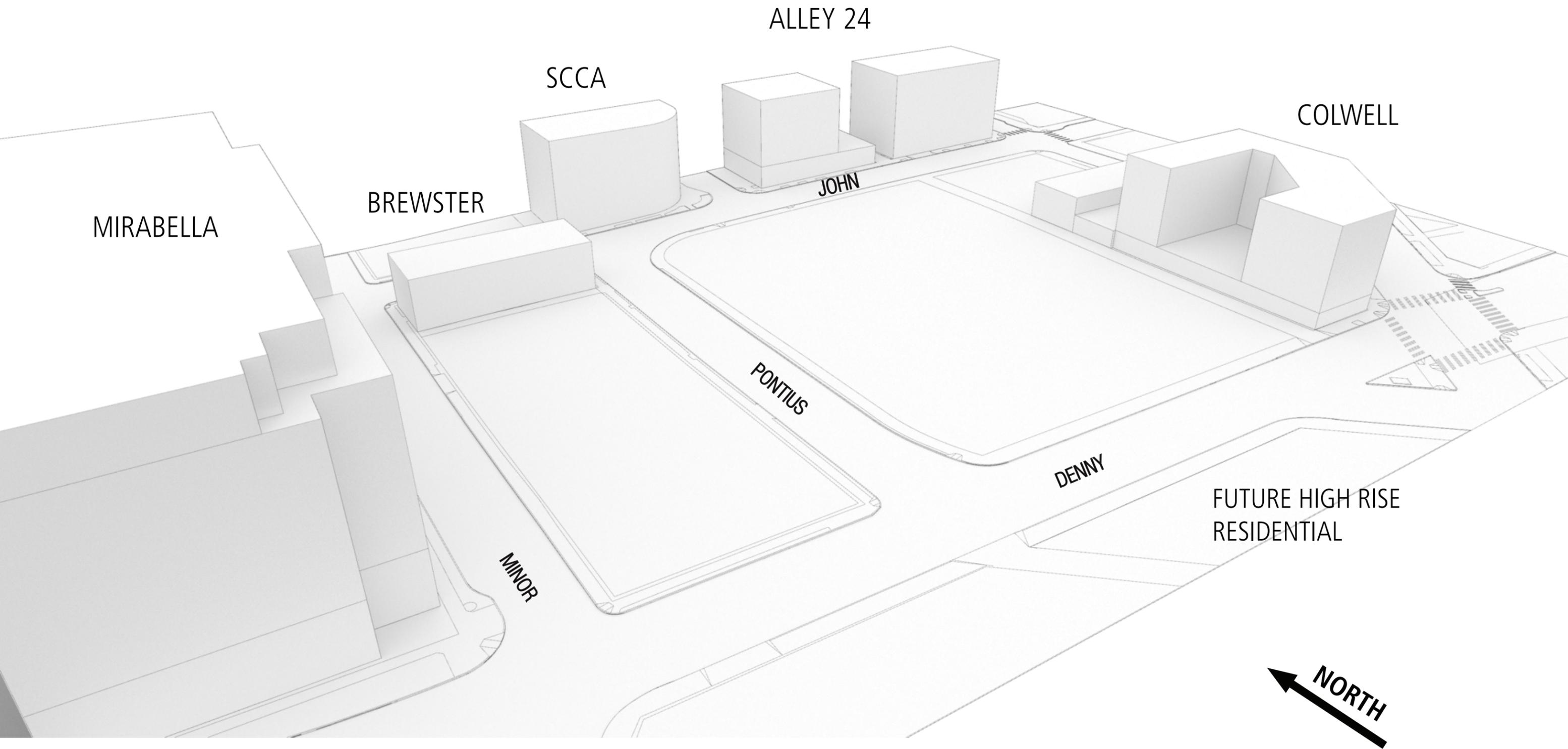


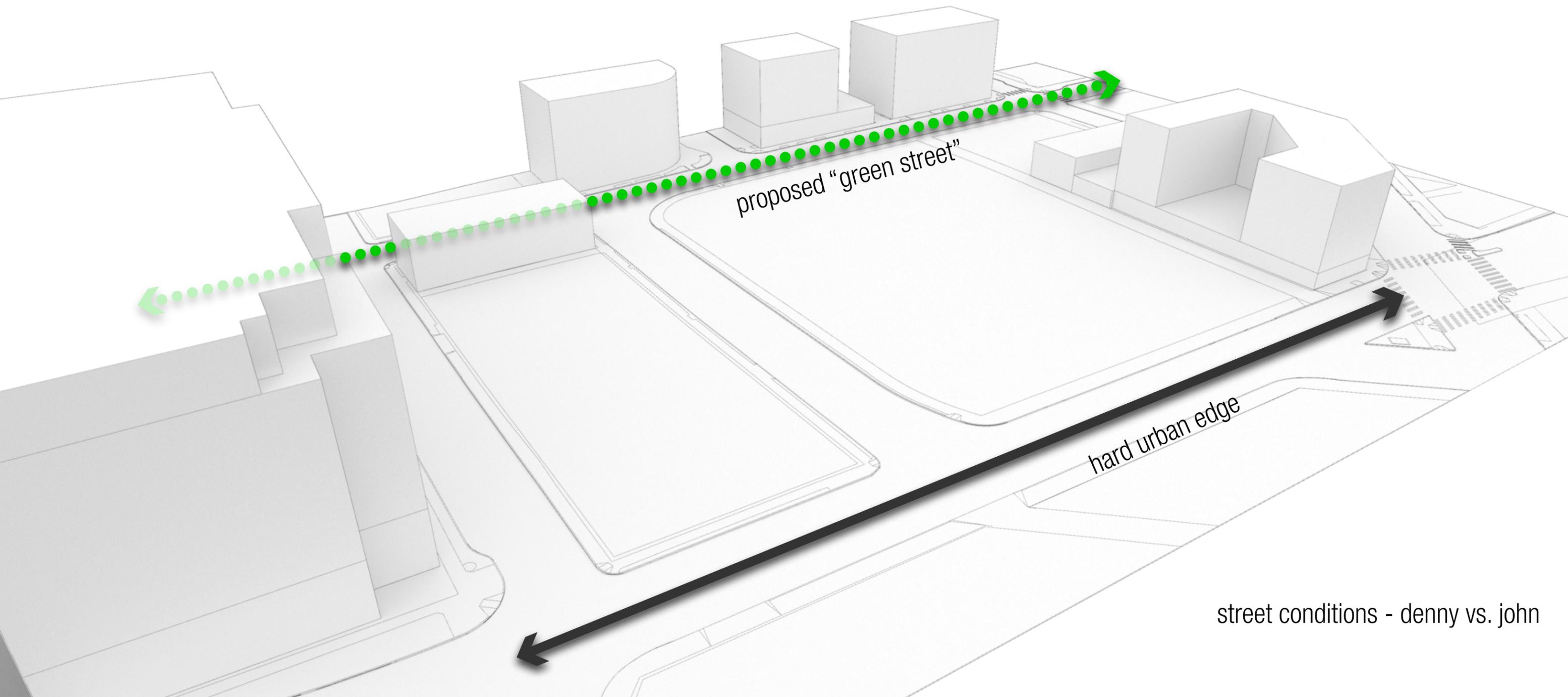
ALT. 3

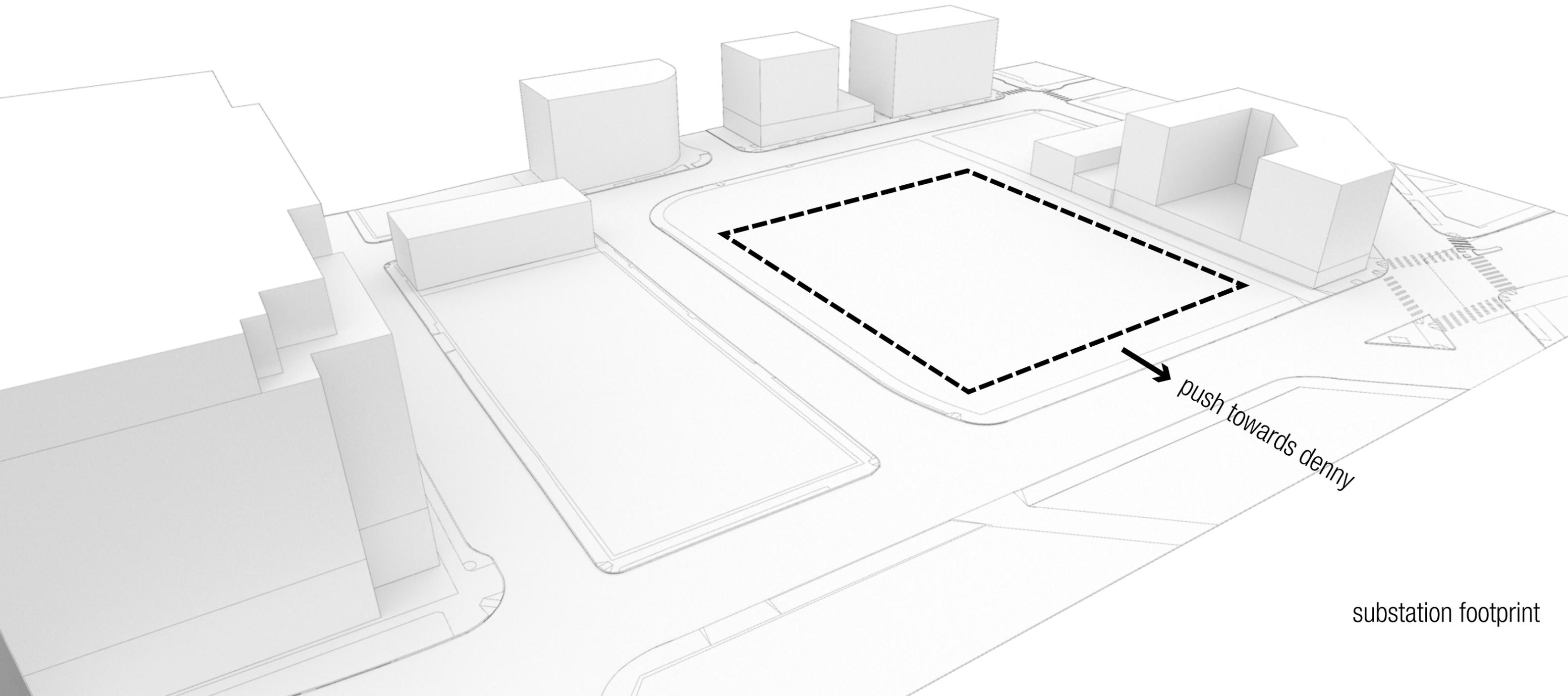
# ALTERNATIVE 1

## NO VACATION ALTERNATIVE

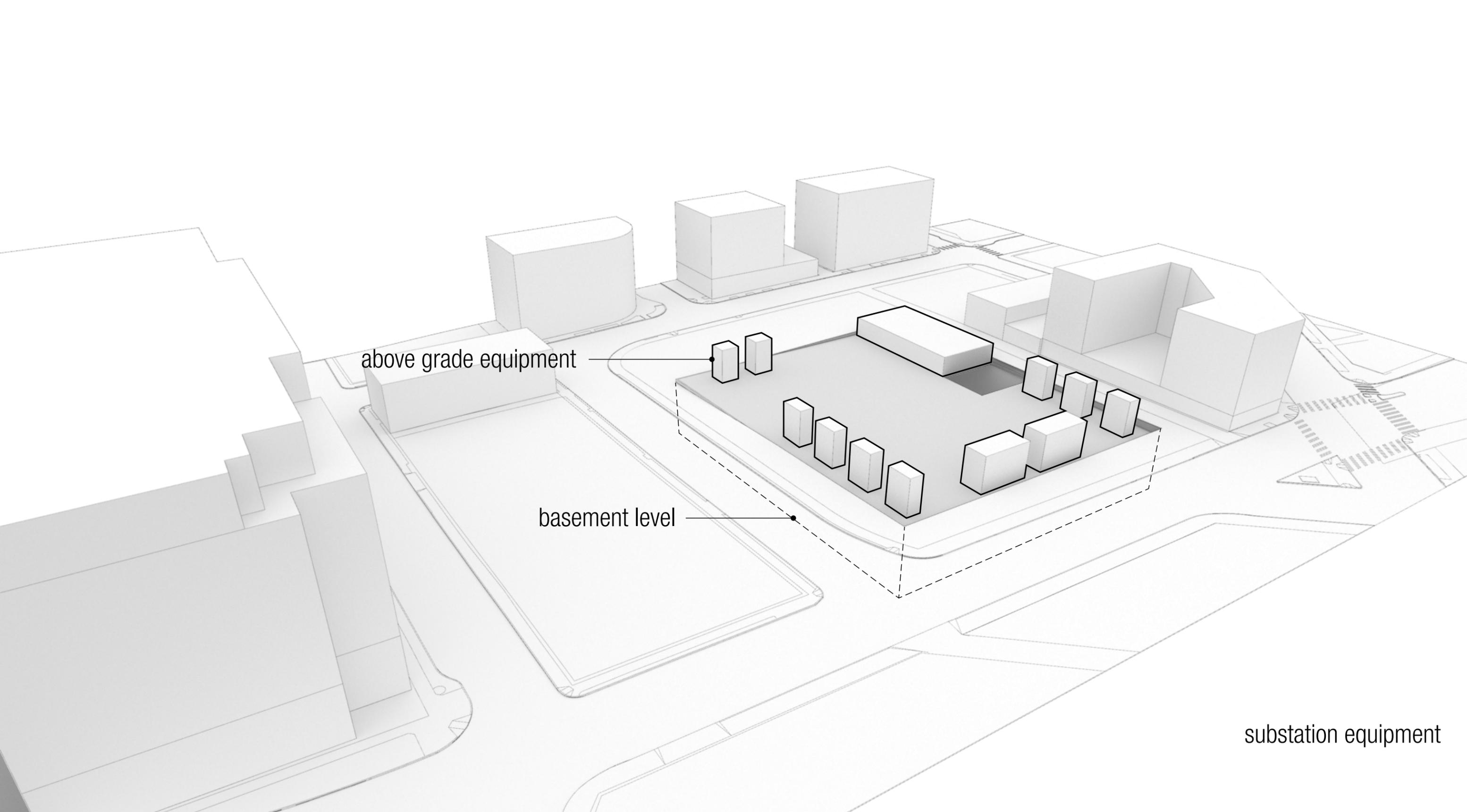


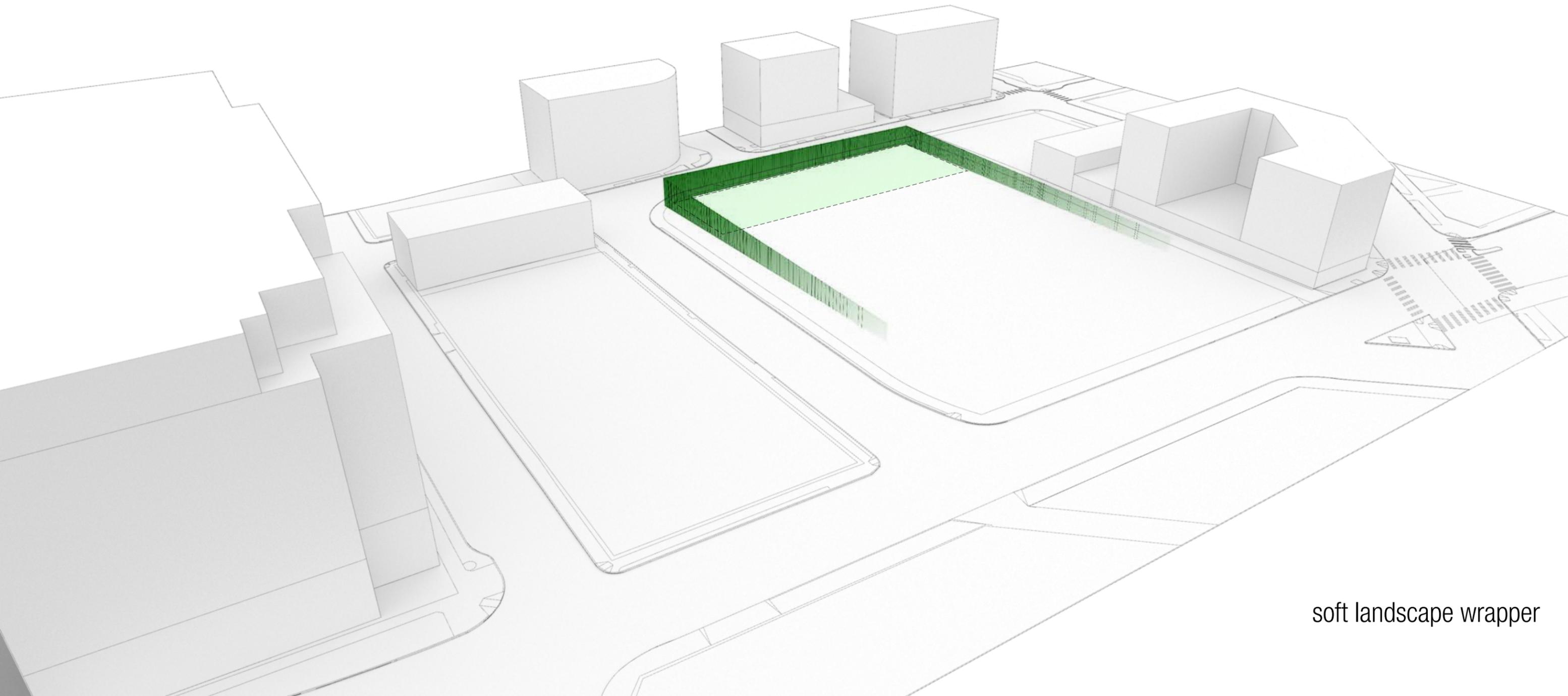




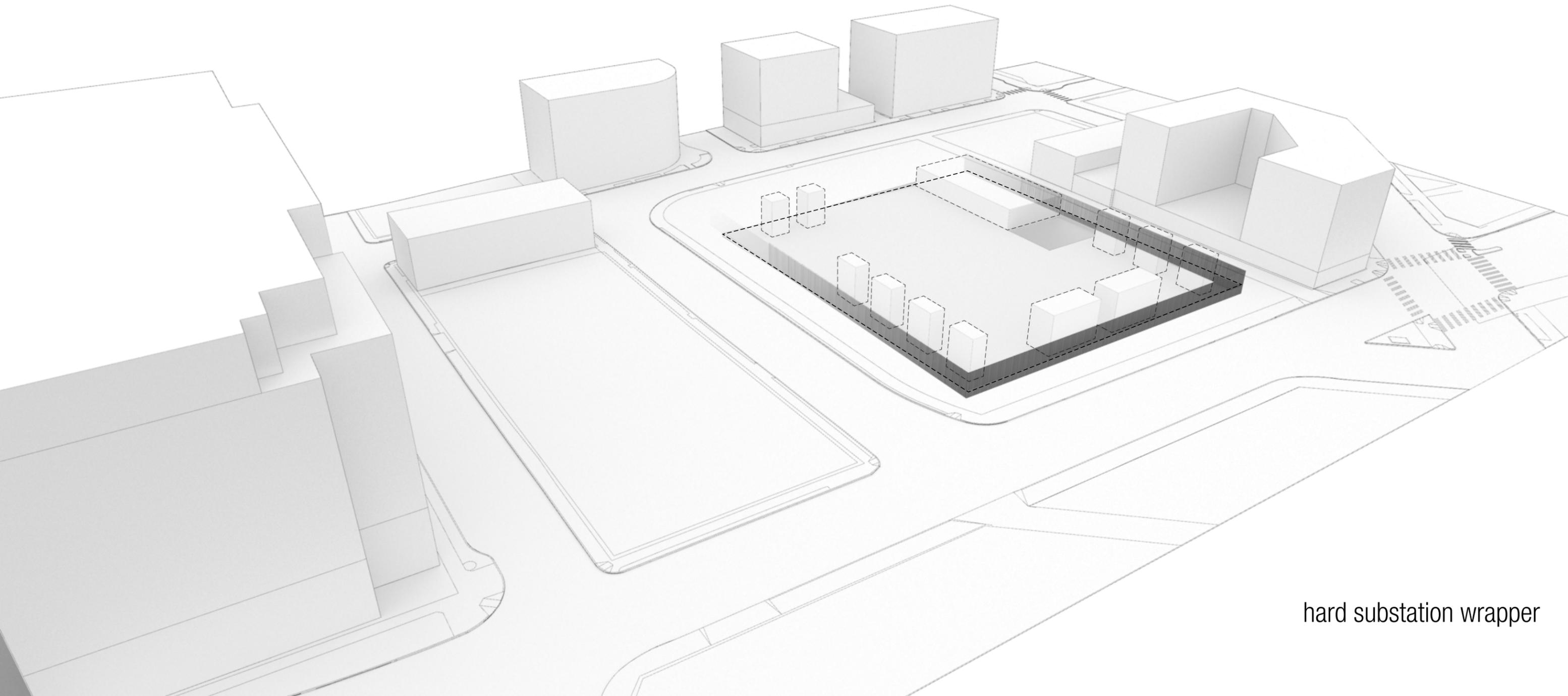


substation footprint

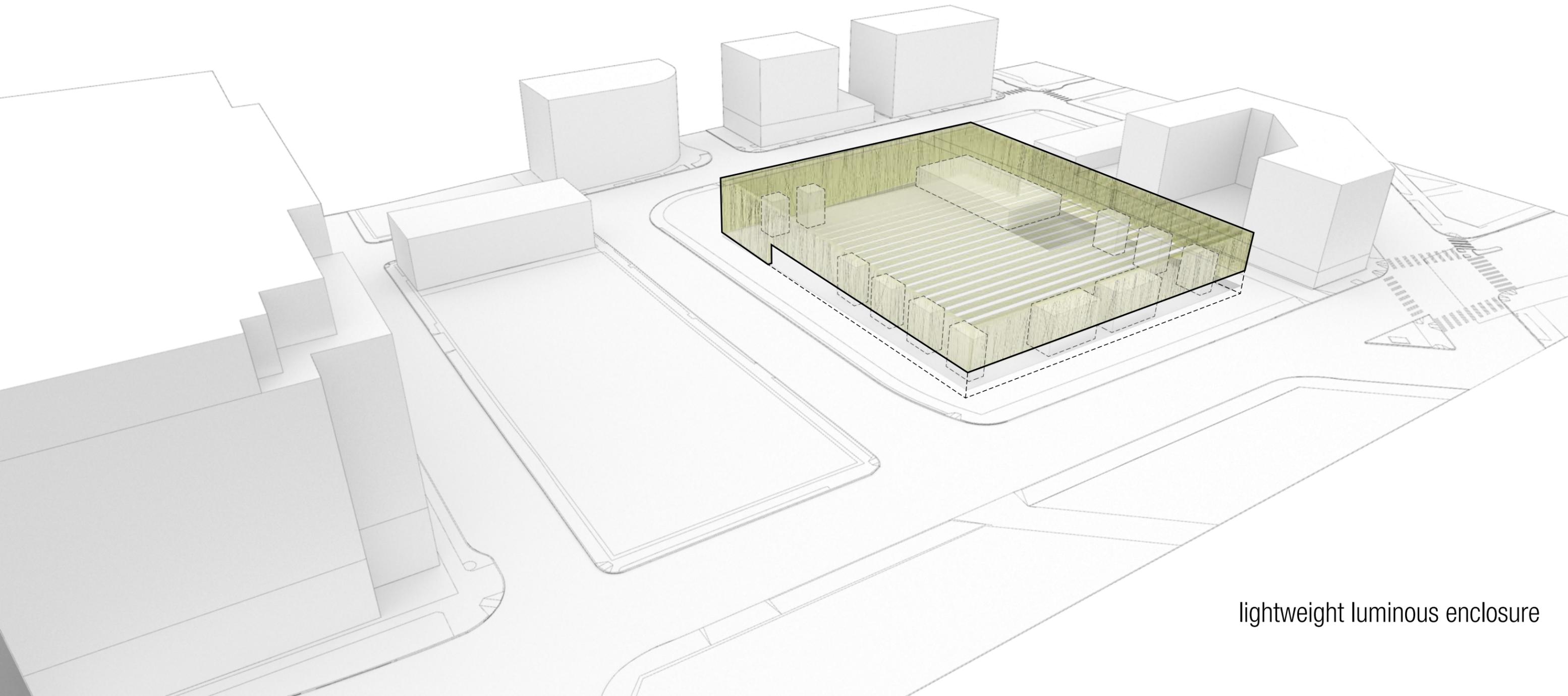




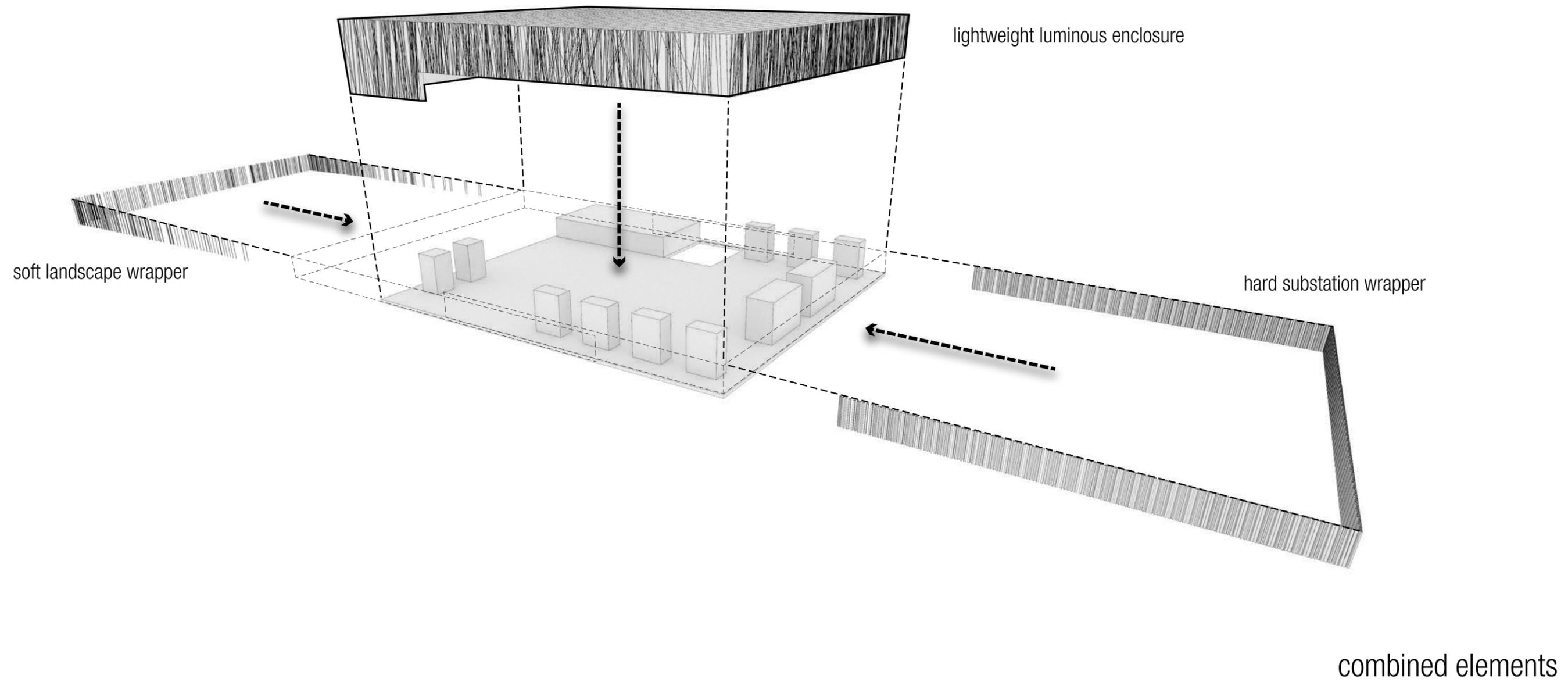
soft landscape wrapper

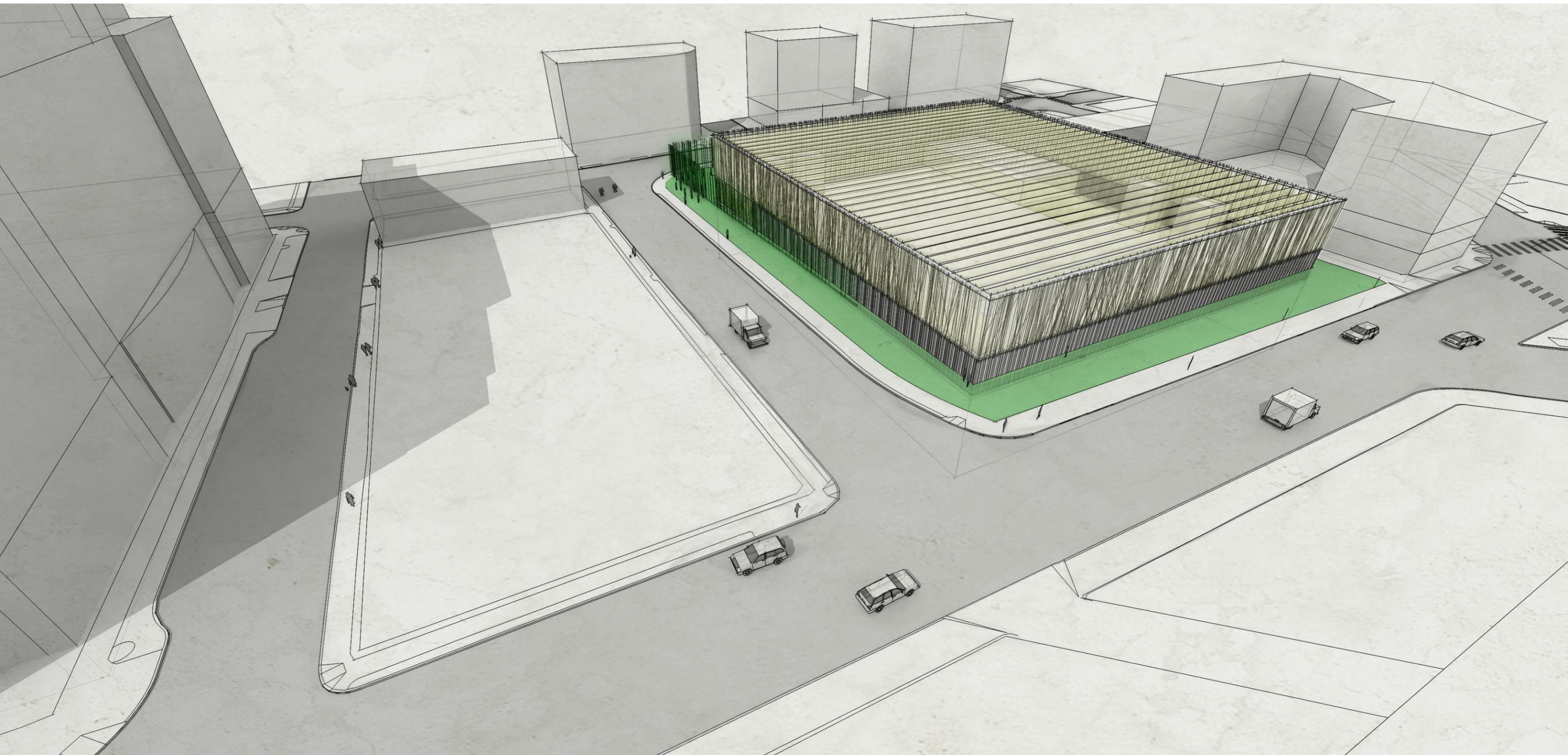


hard substation wrapper



lightweight luminous enclosure





# ALTERNATIVE 1

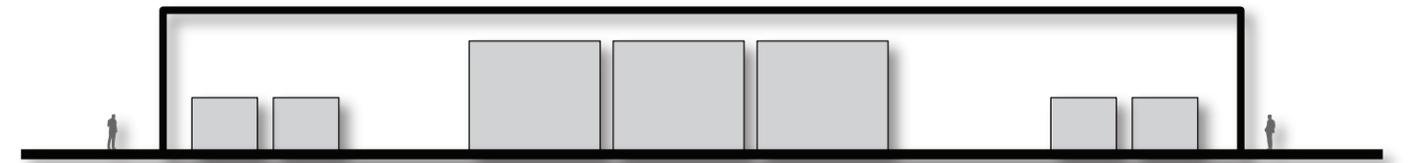
## NO VACATION ALTERNATIVE



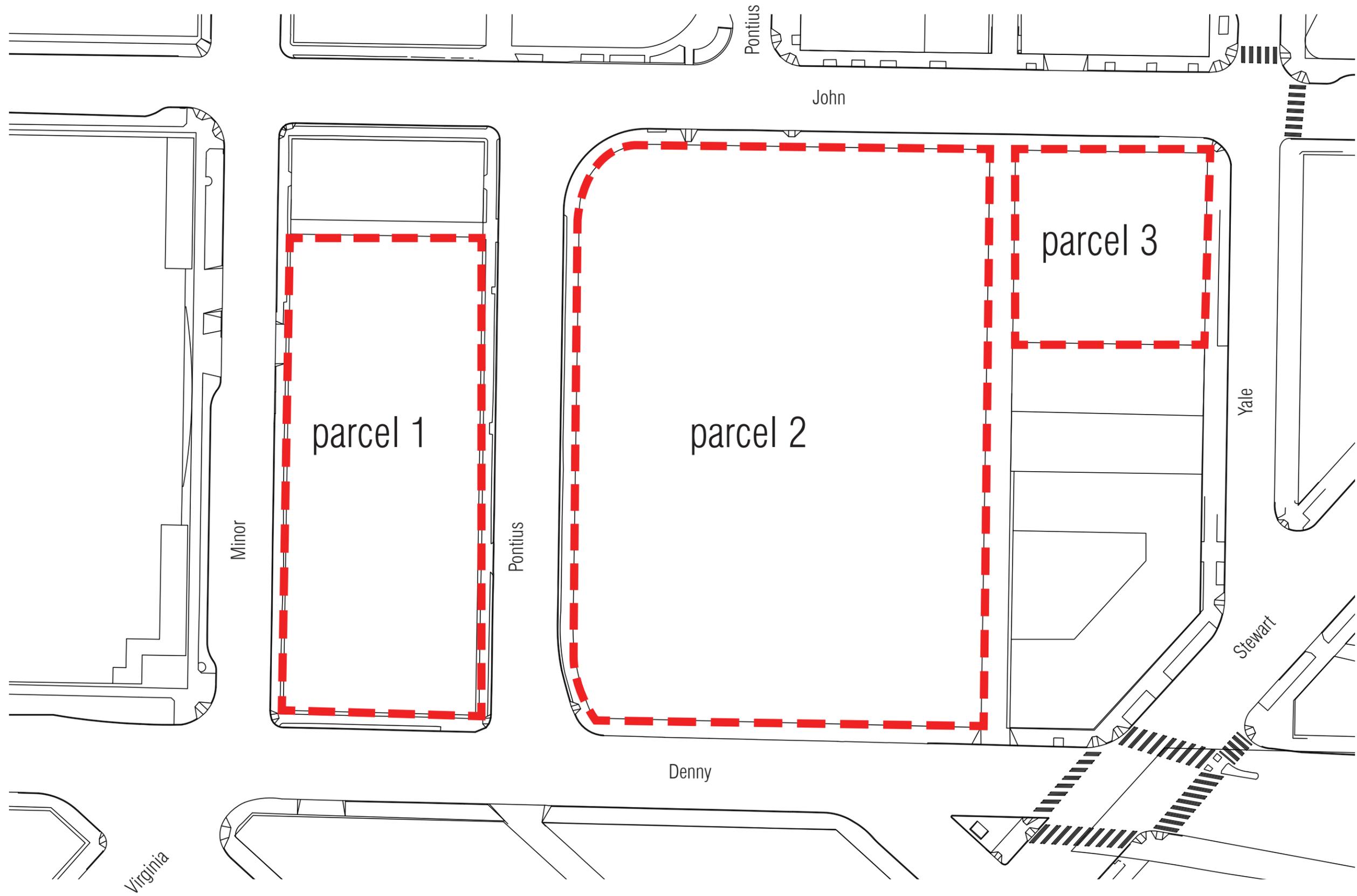
- Equipment layout restricted to Parcel 2
- Requires an above and below grade substation design
- Stacked layout complicates accessibility, maintenance, and safety
- Distribution lines routing occurs further below grade than desirable
- No opportunity for prominent urban amenities at the perimeter
- Higher capital cost (\$37M higher cost than Alternative 3)

# ALTERNATIVE 3

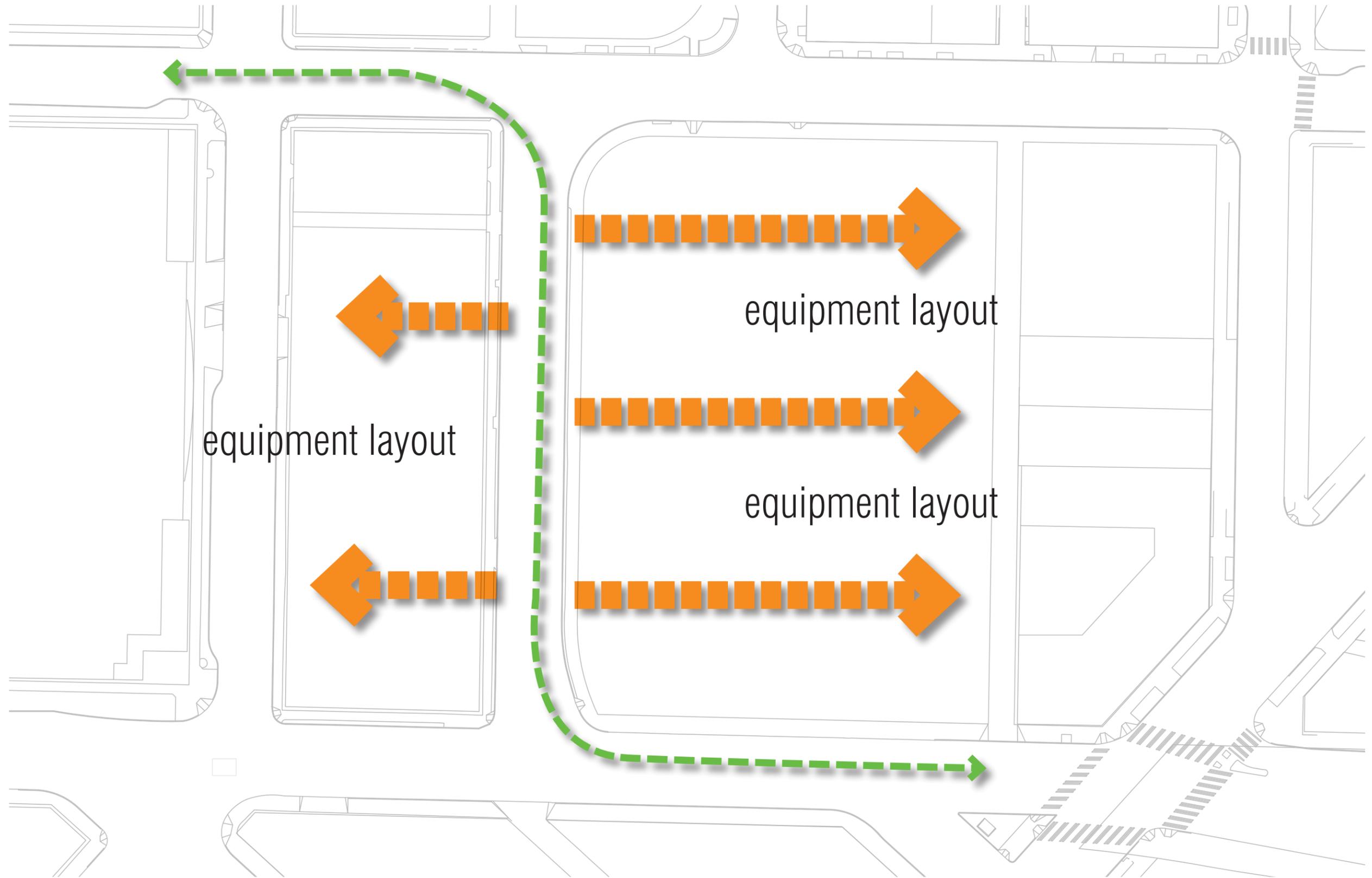
## STREET VACATION ALTERNATIVE

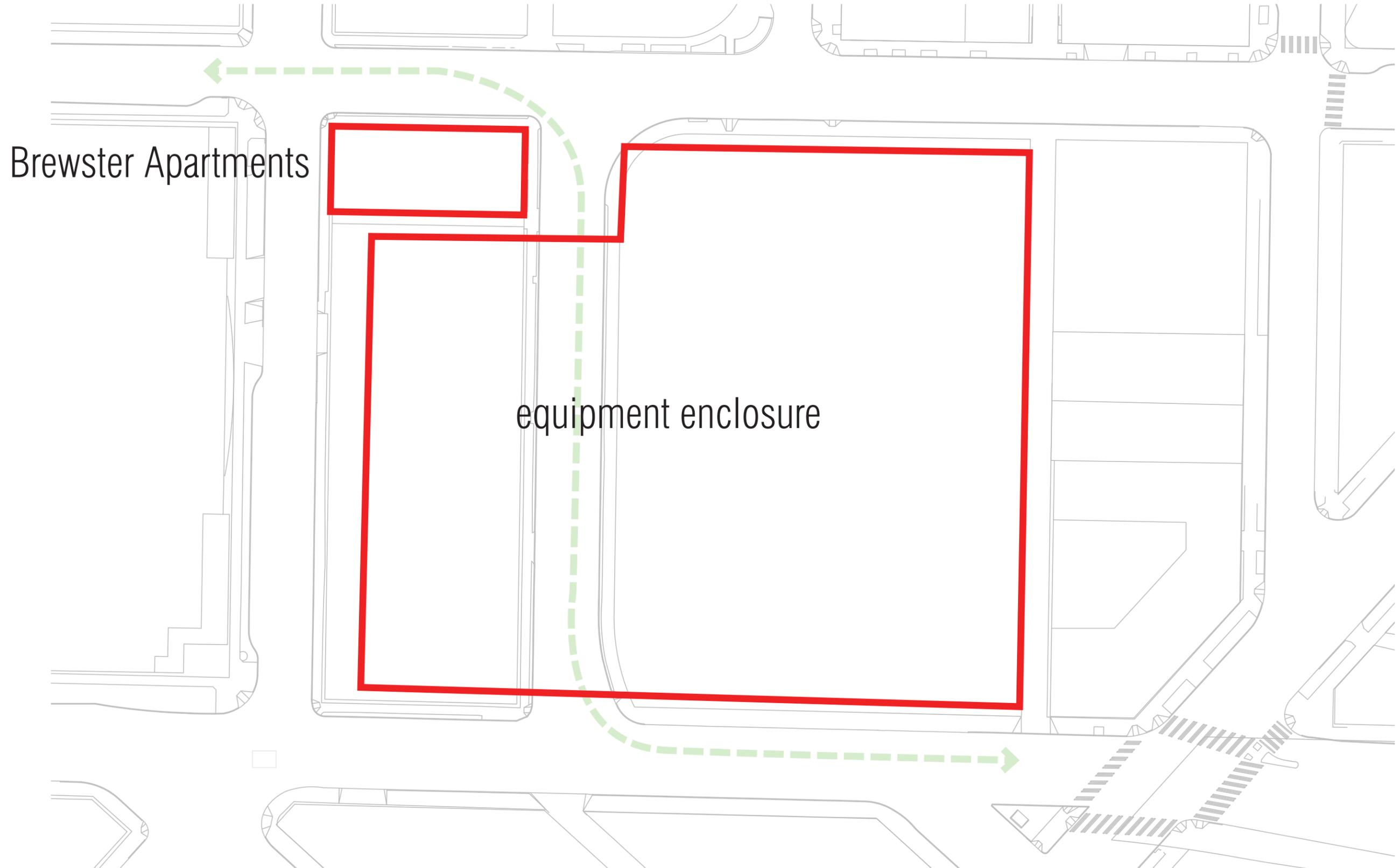


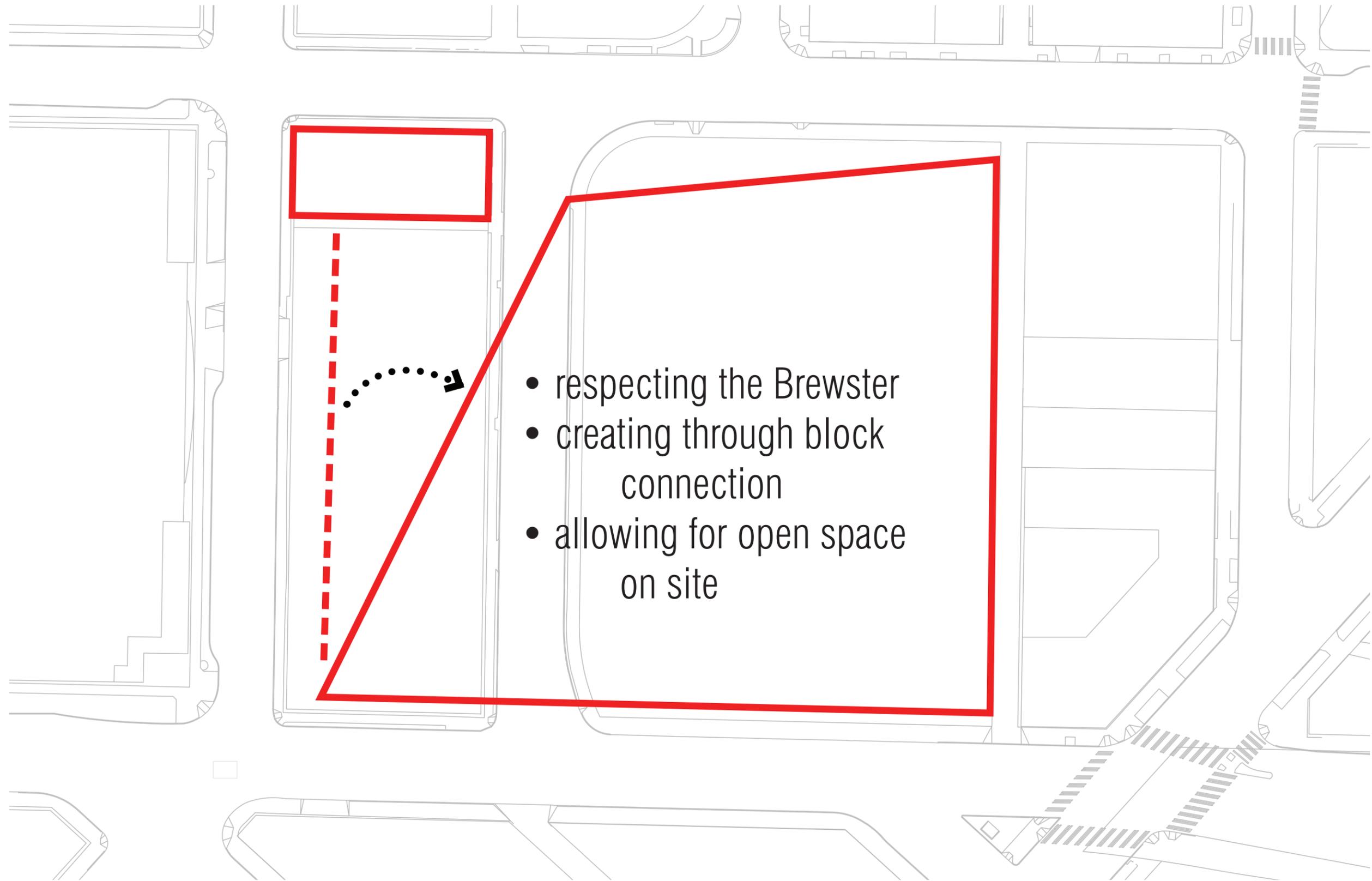
# SUBSTATION FOOTPRINT and EQUIPMENT LAYOUT

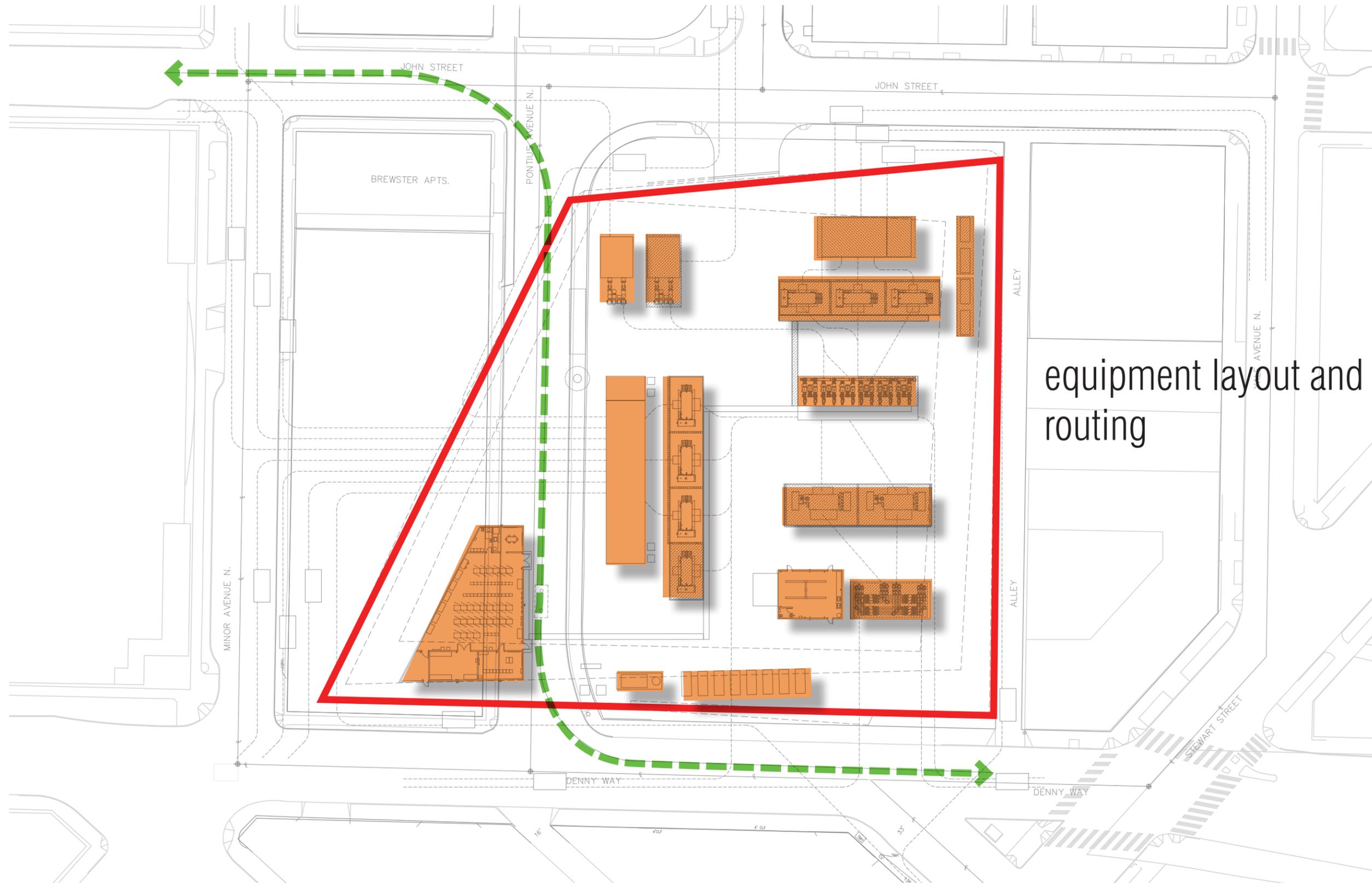


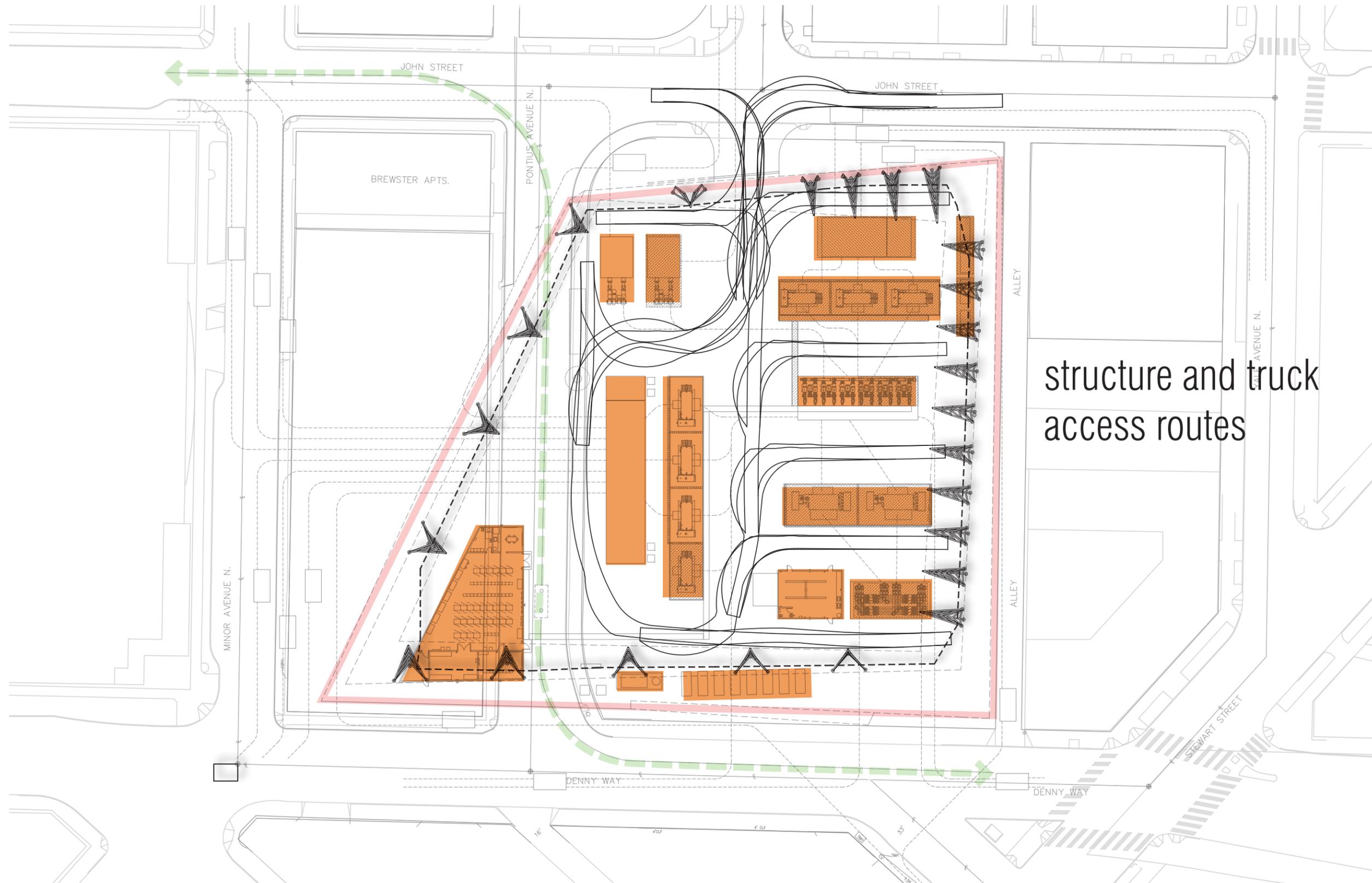






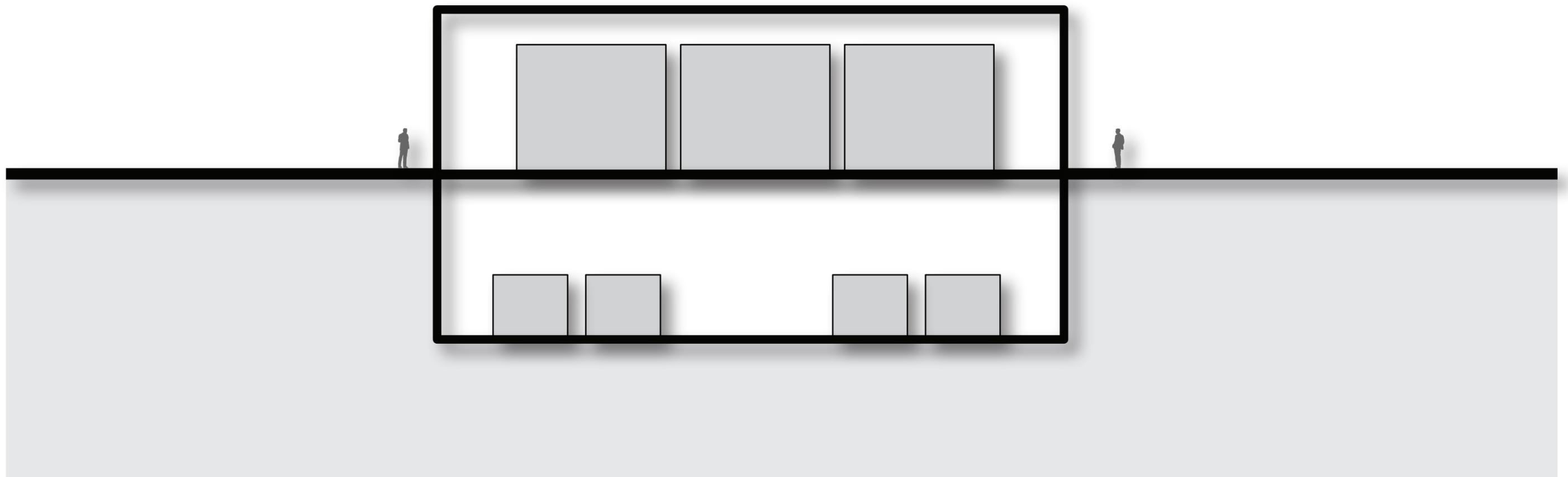




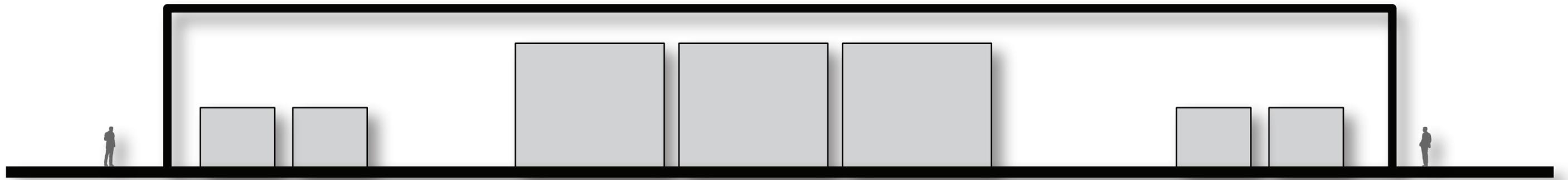


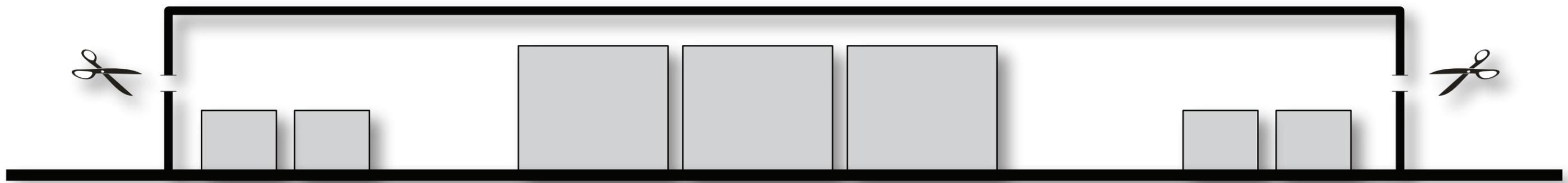
# SECTIONAL MASSING DIAGRAM

2 level substation above and below grade

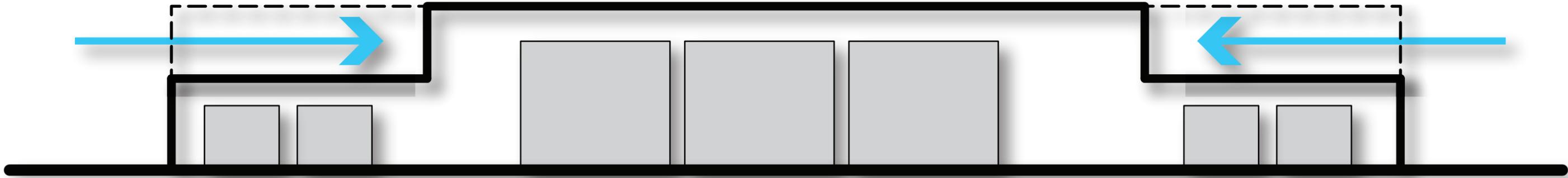


1 level substation above grade

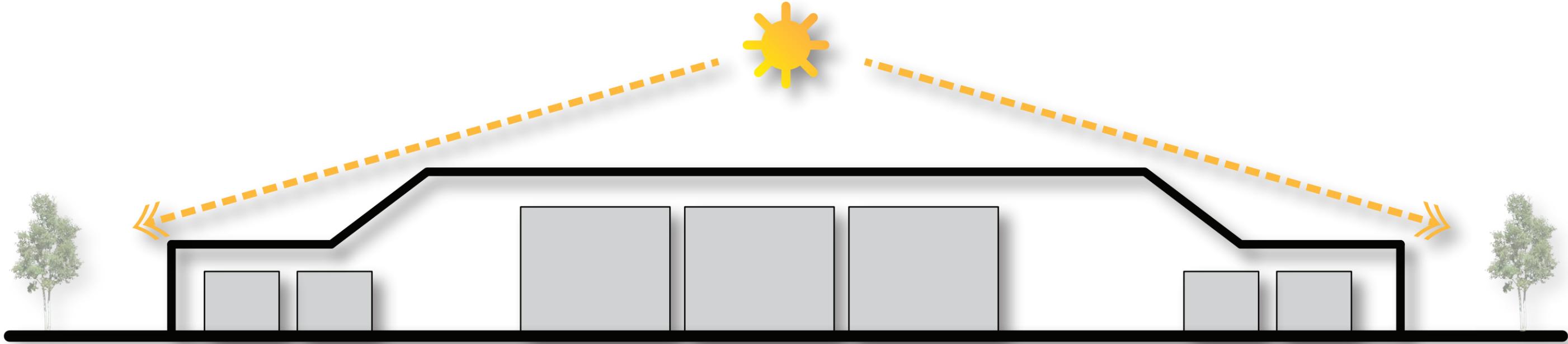




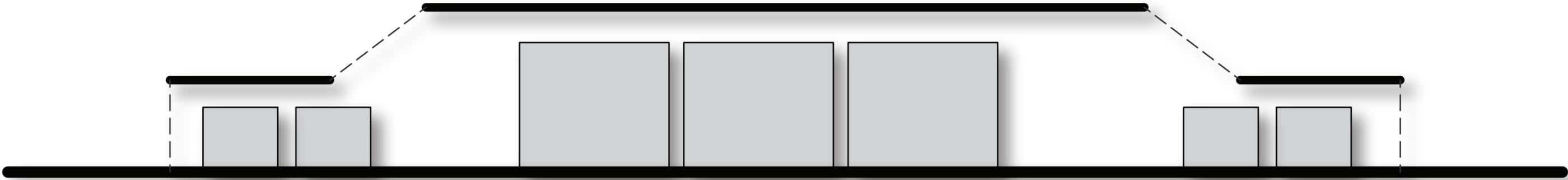
terrace the facade to reduce the massing  
for the pedestrian experience



angling the facade further to allow greater access to light and air in adjacent spaces



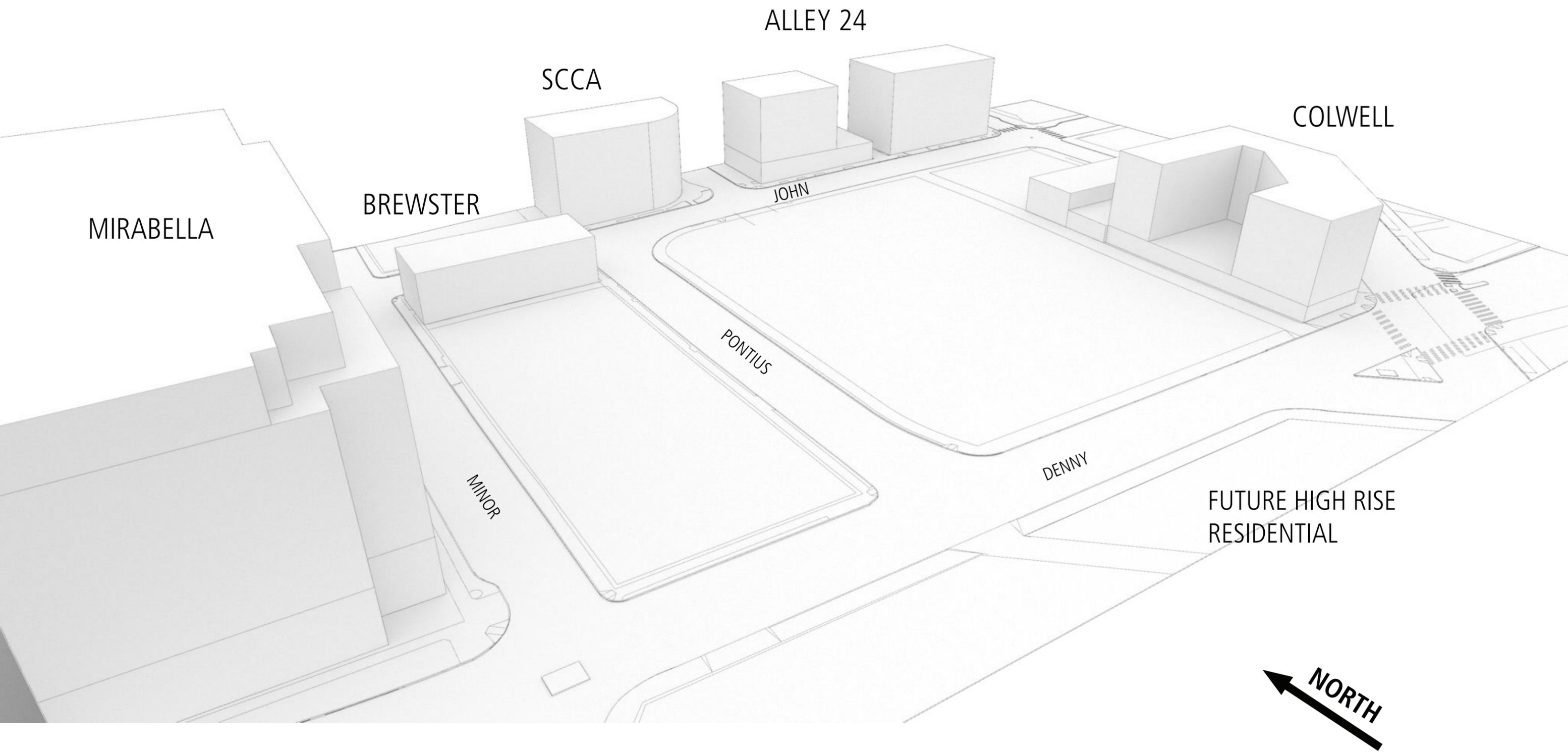
vertical and angled surfaces identified to allow views into the substation

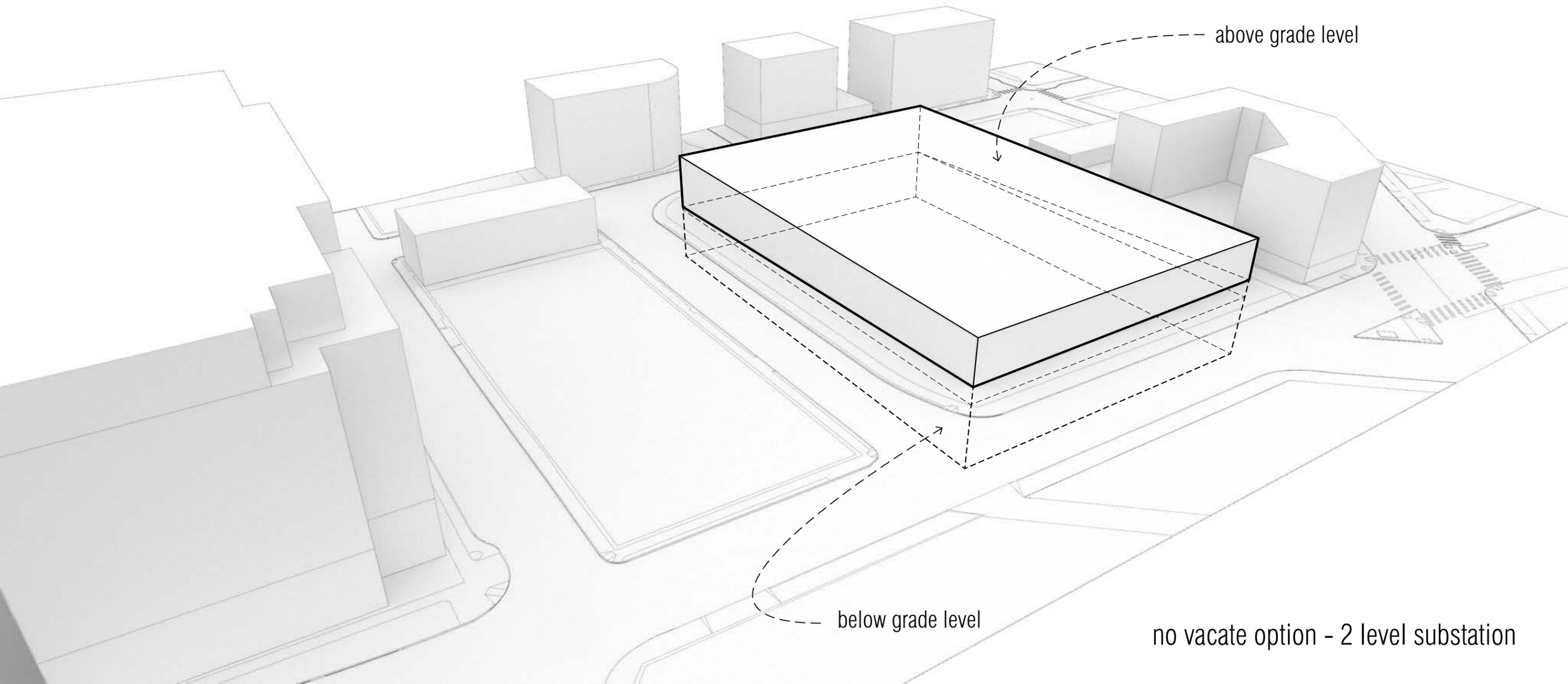


geometrical form allows for opportunities to occupy the interior edges of the substation

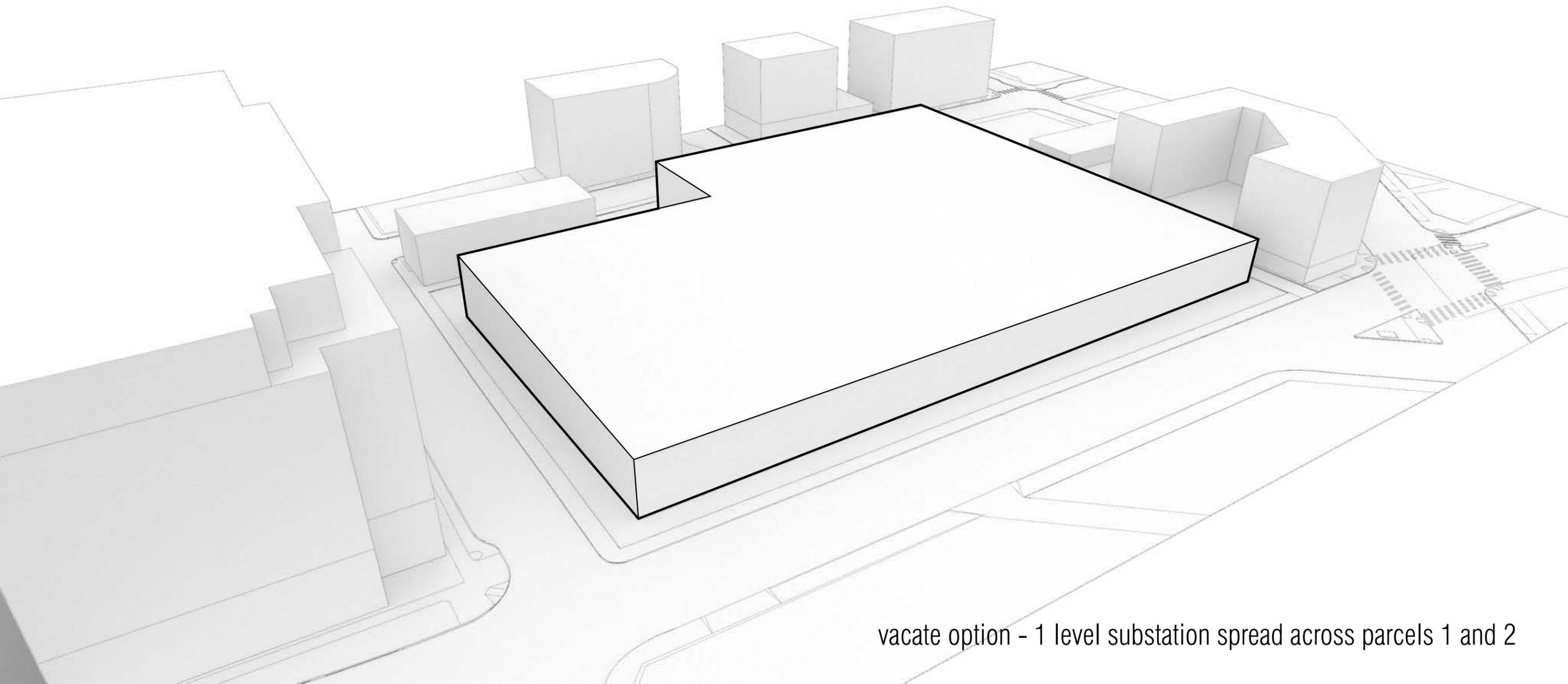


# MASSING DIAGRAM

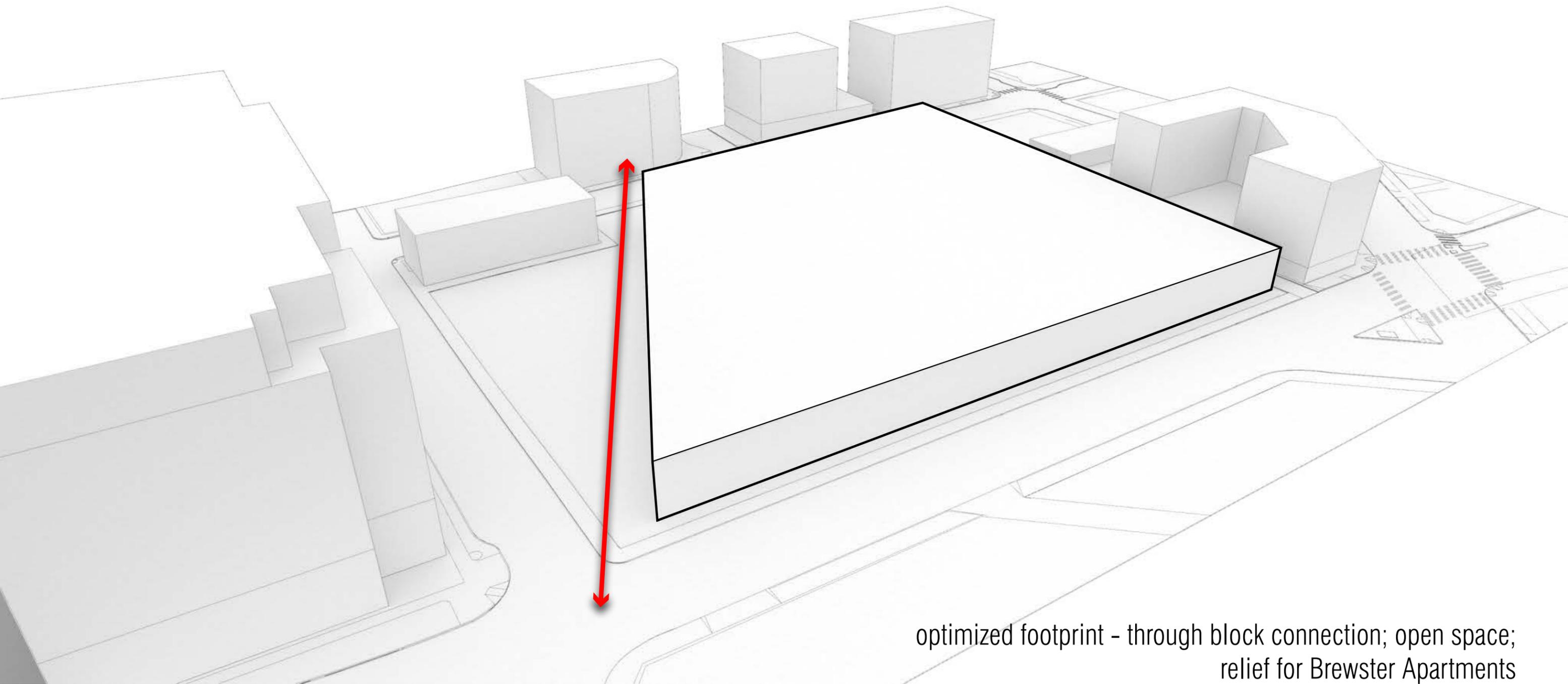




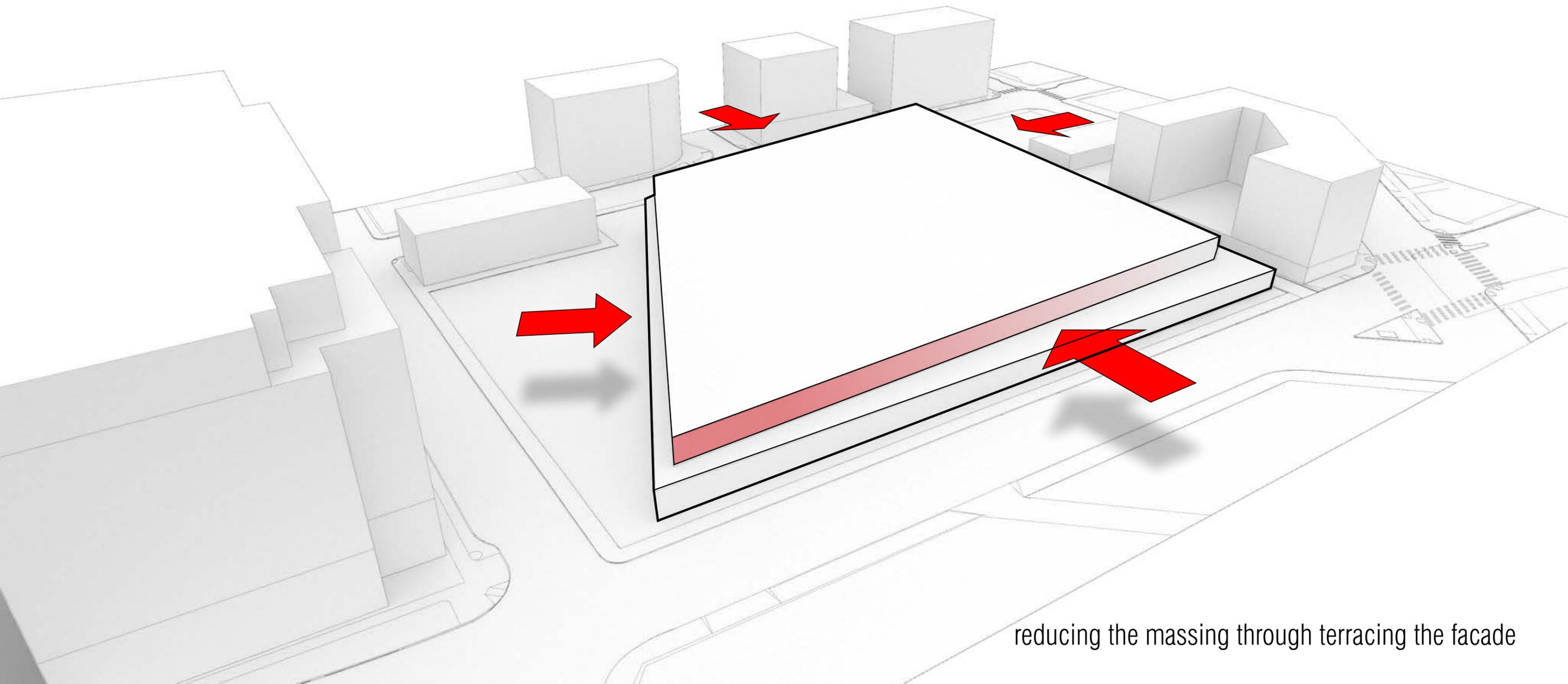
no vacate option - 2 level substation



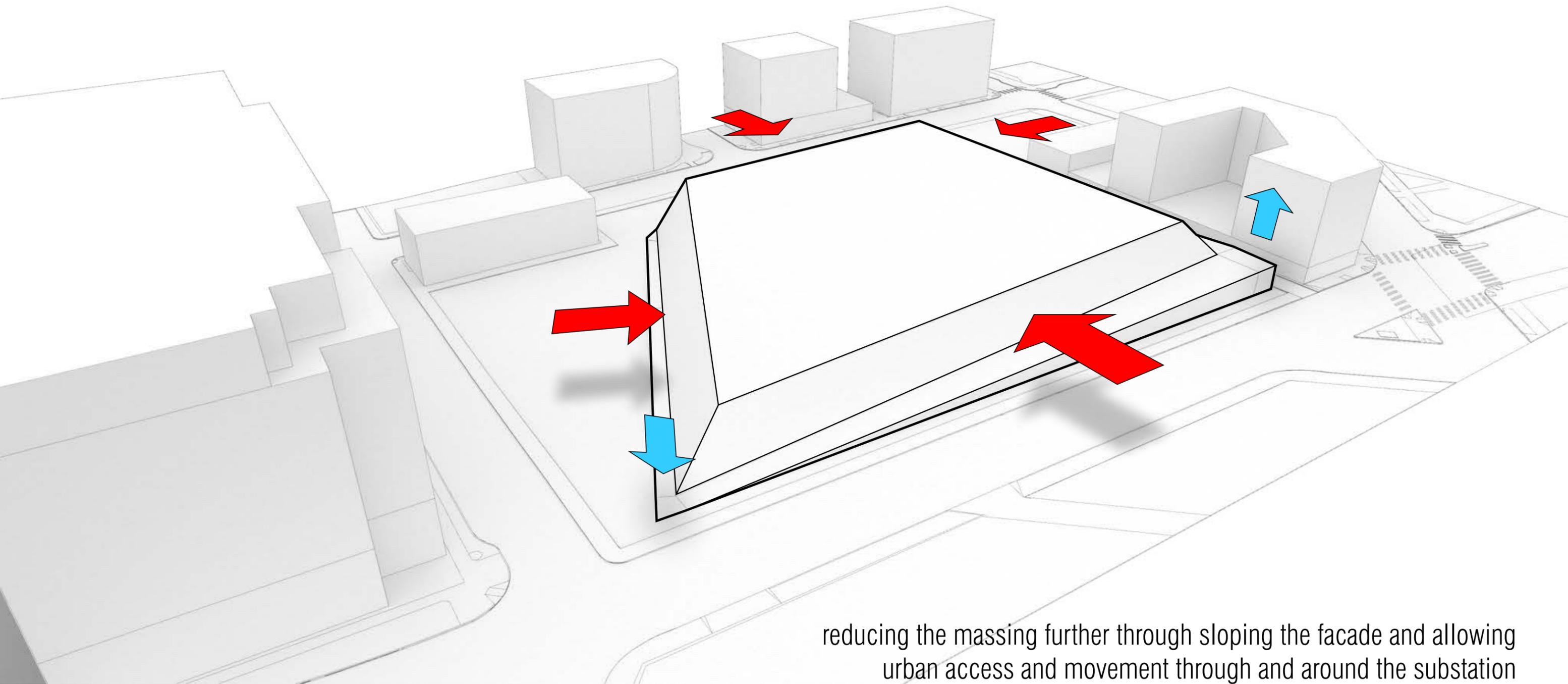
vacate option - 1 level substation spread across parcels 1 and 2



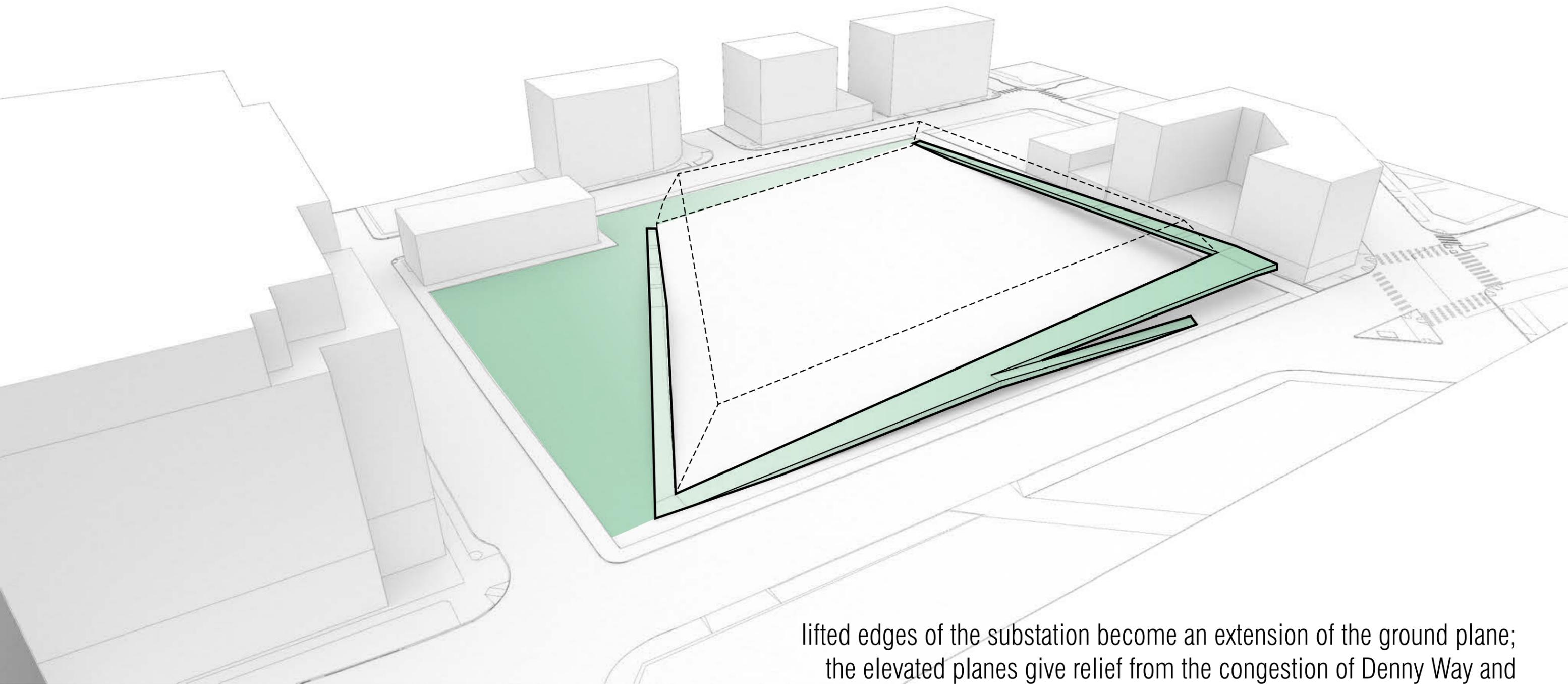
optimized footprint - through block connection; open space;  
relief for Brewster Apartments



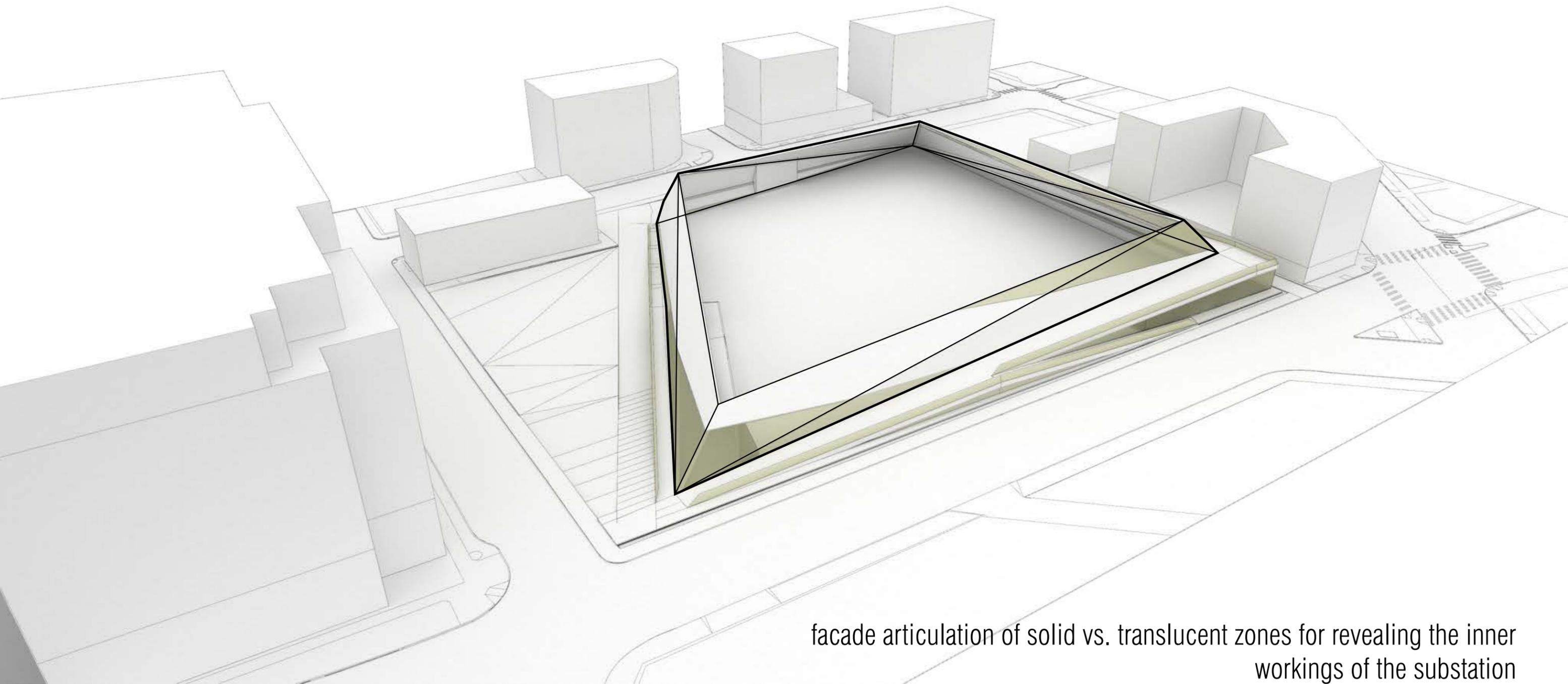
reducing the massing through terracing the facade



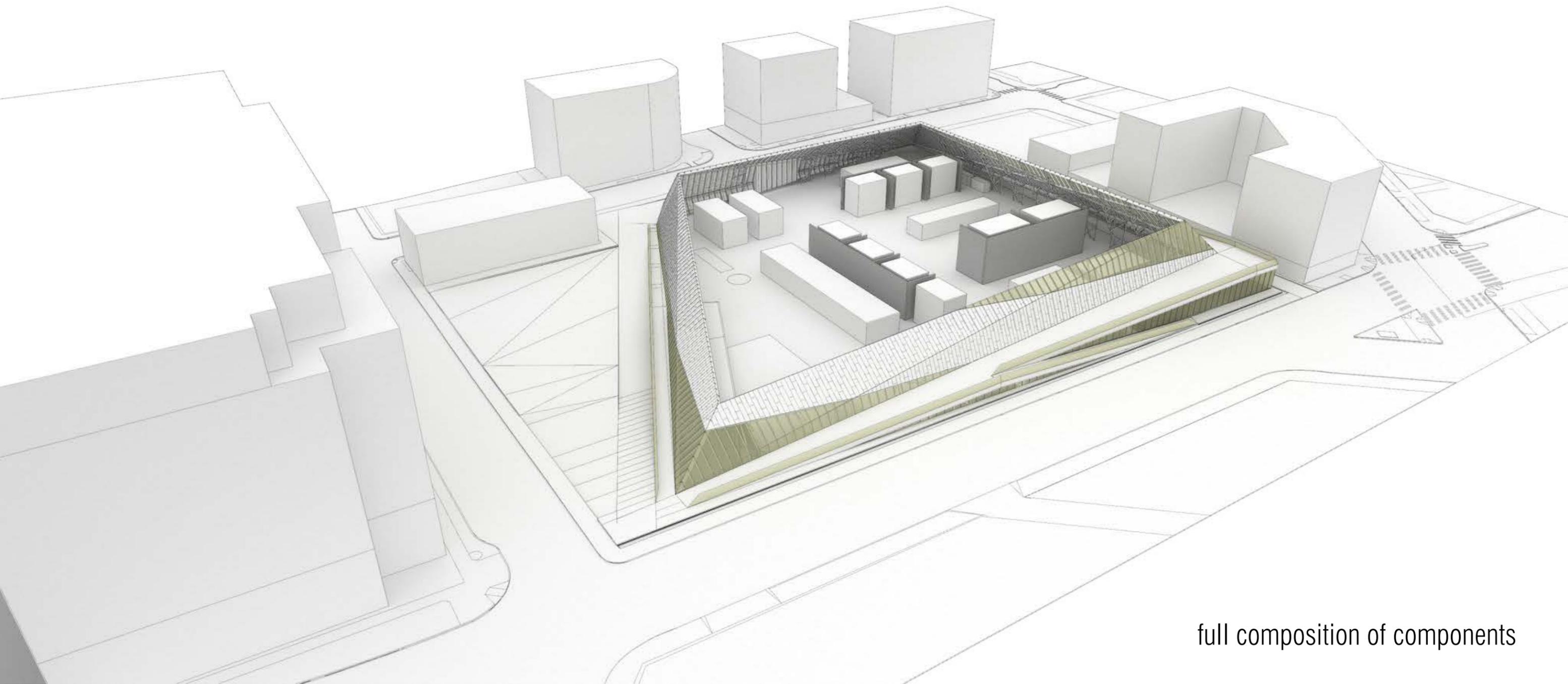
reducing the massing further through sloping the facade and allowing urban access and movement through and around the substation



lifted edges of the substation become an extension of the ground plane;  
the elevated planes give relief from the congestion of Denny Way and  
provide unique views and experience of the city

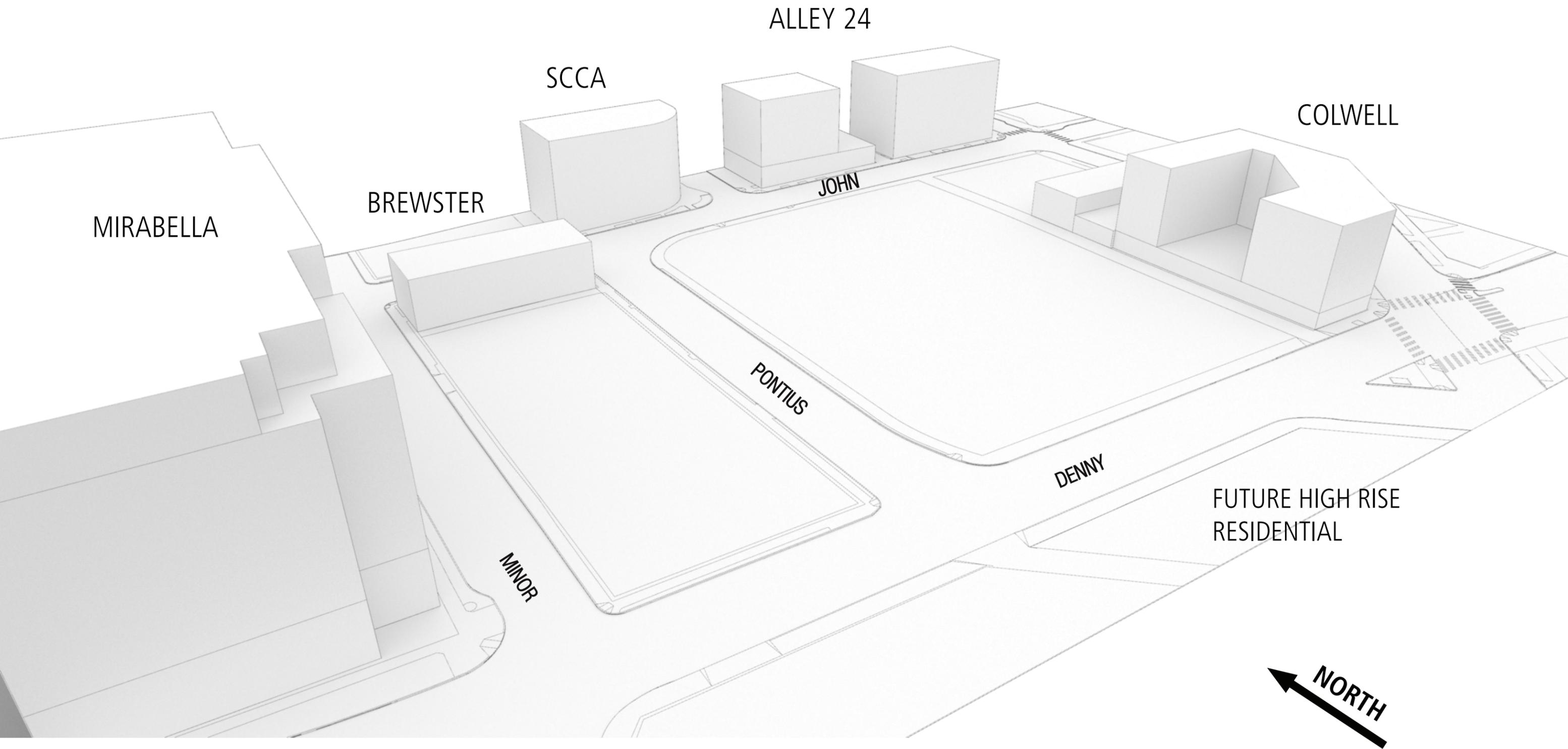


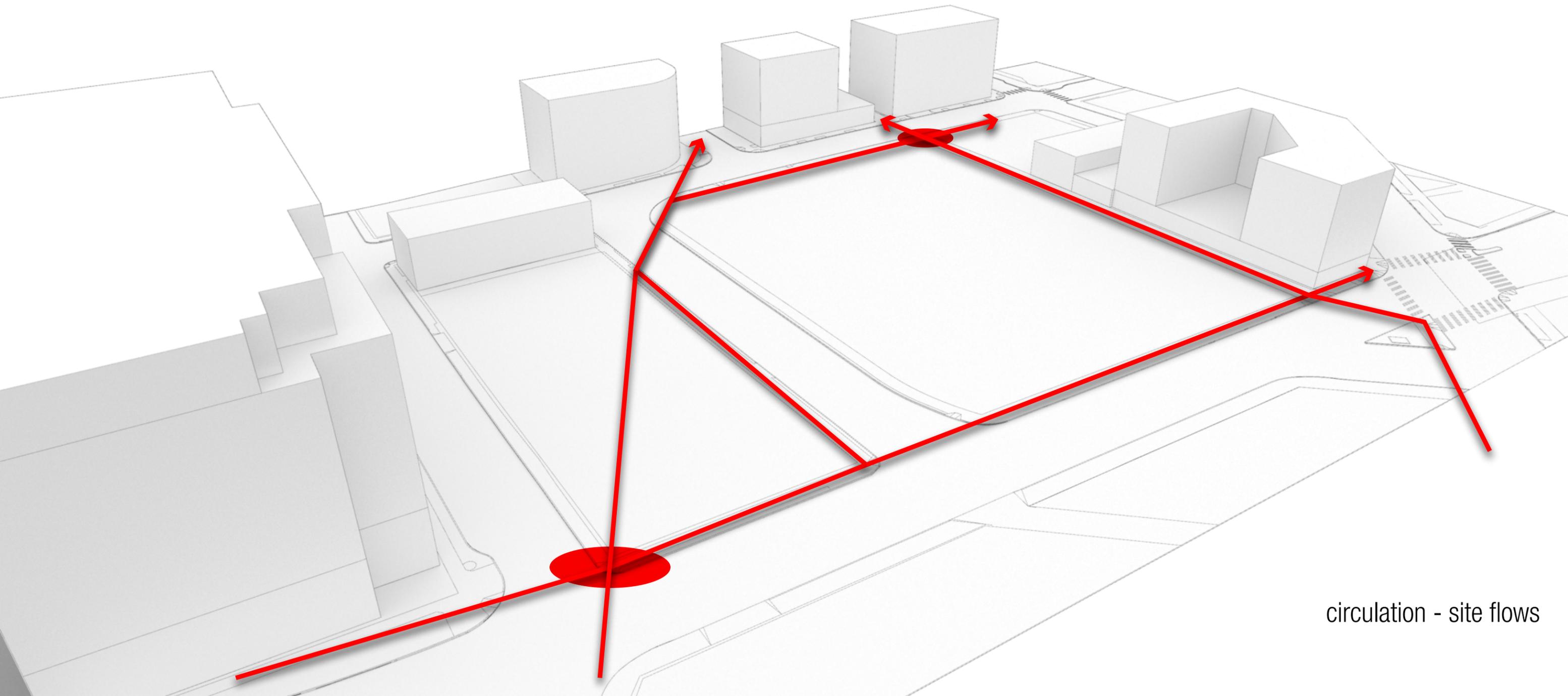
facade articulation of solid vs. translucent zones for revealing the inner workings of the substation



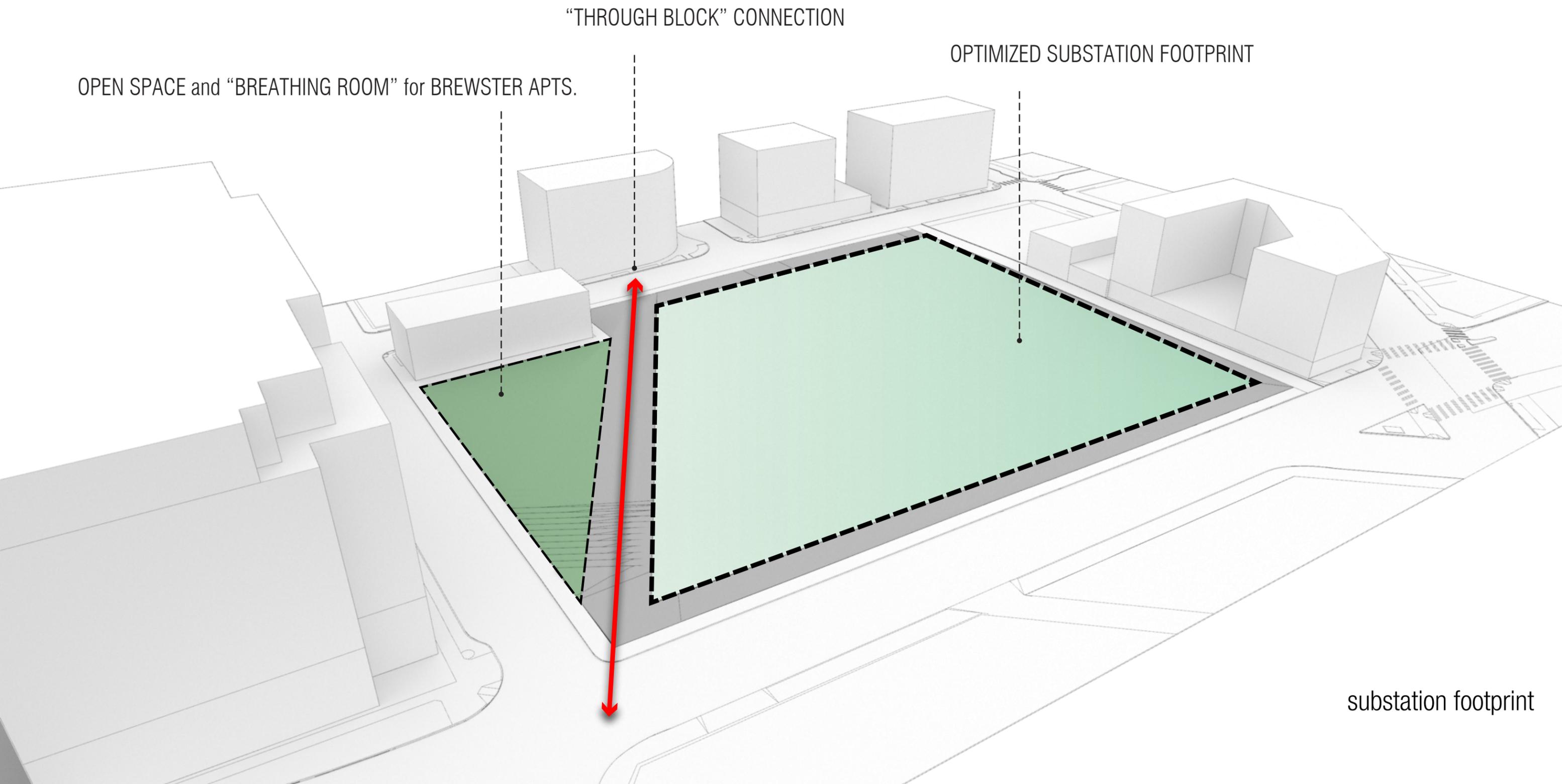
full composition of components

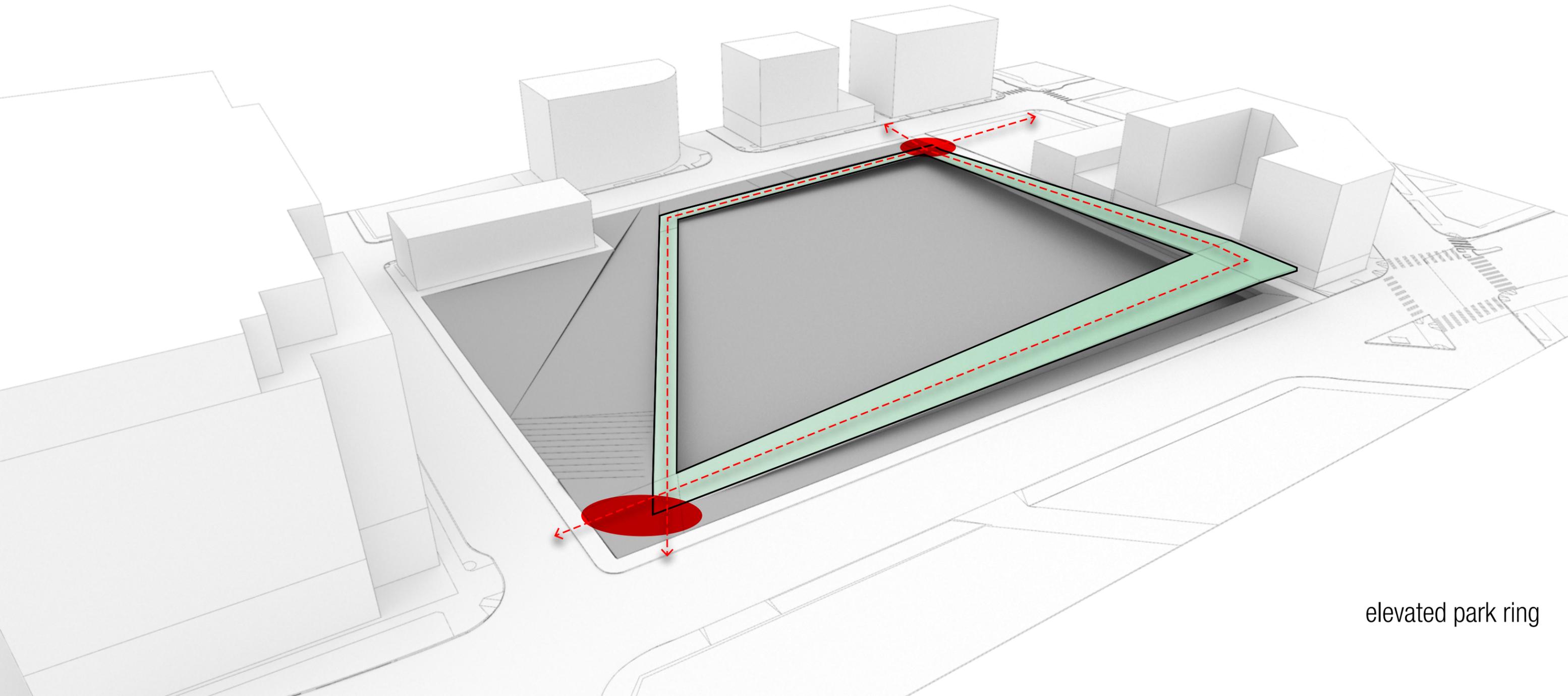
# CONTEXTUAL CONNECTION



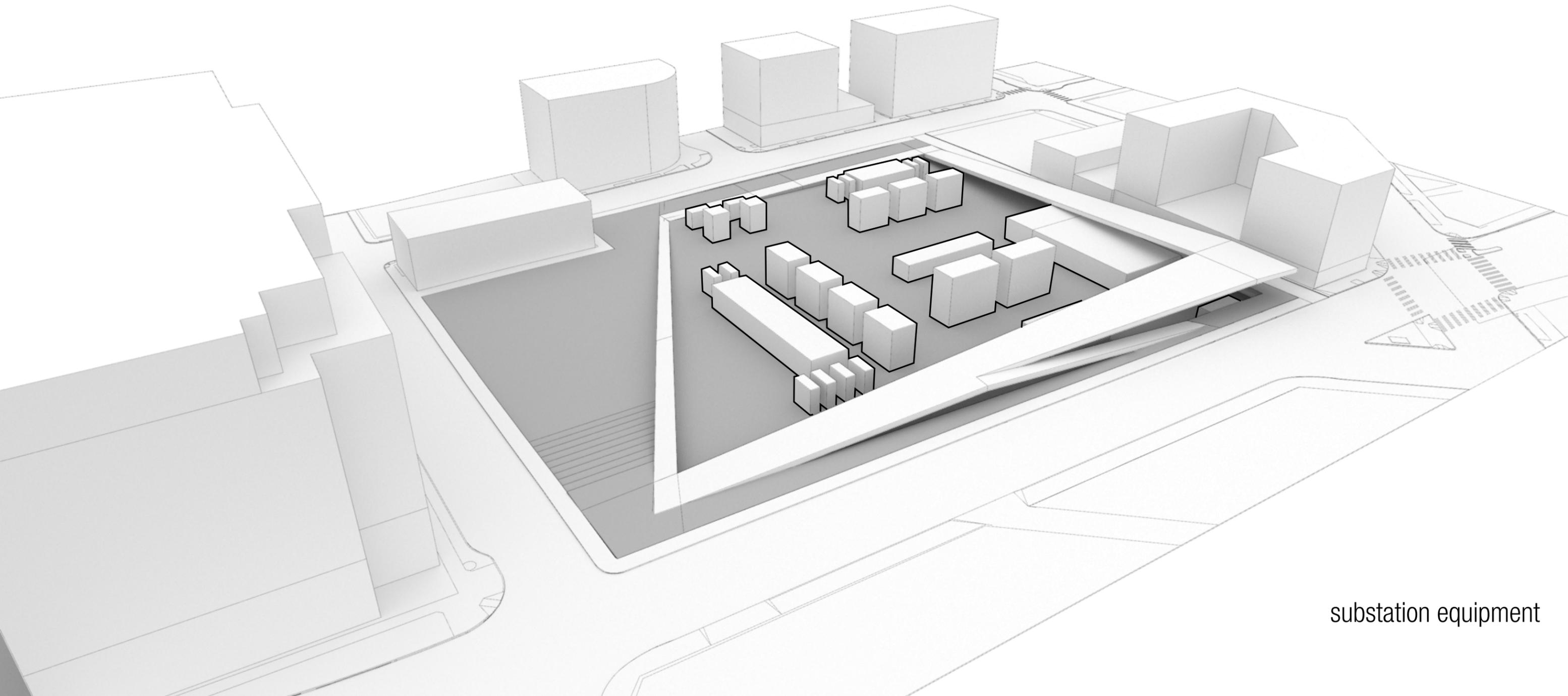


circulation - site flows

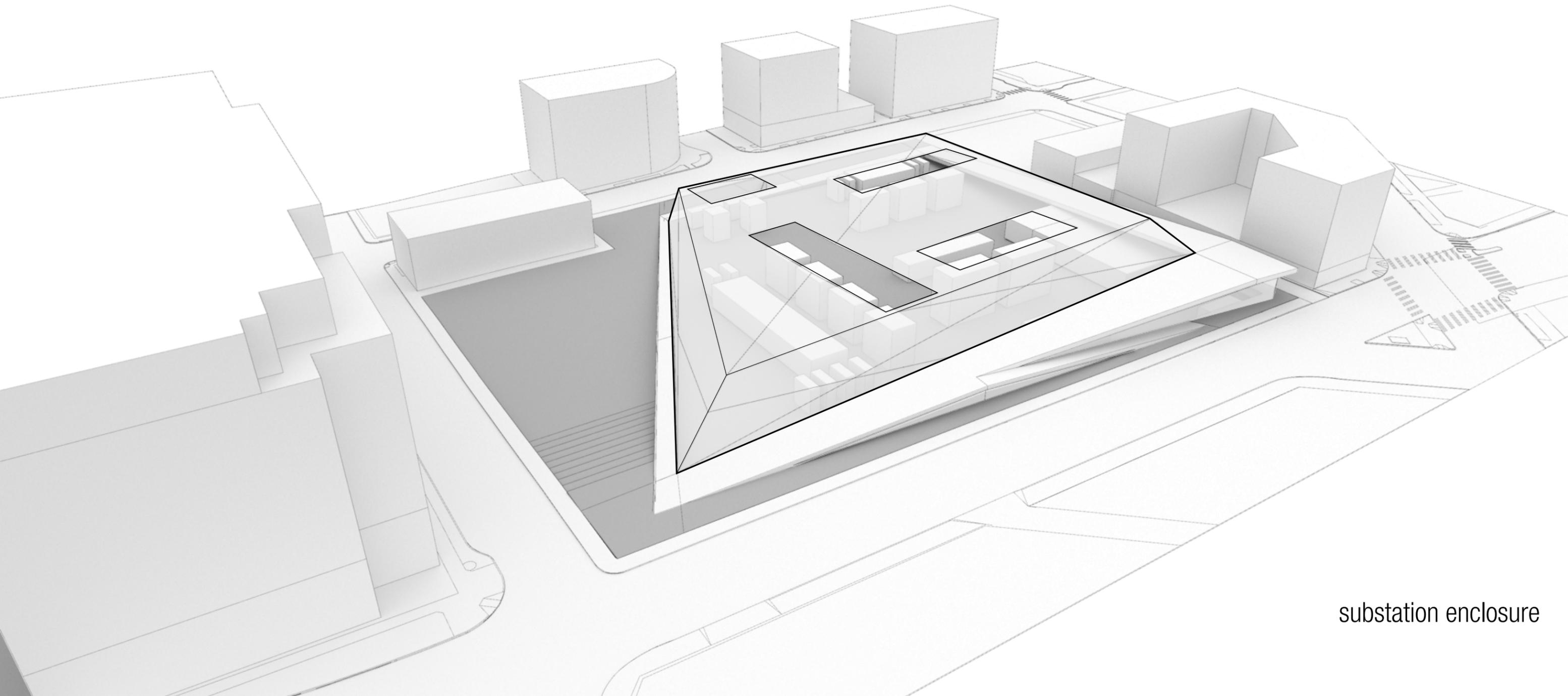




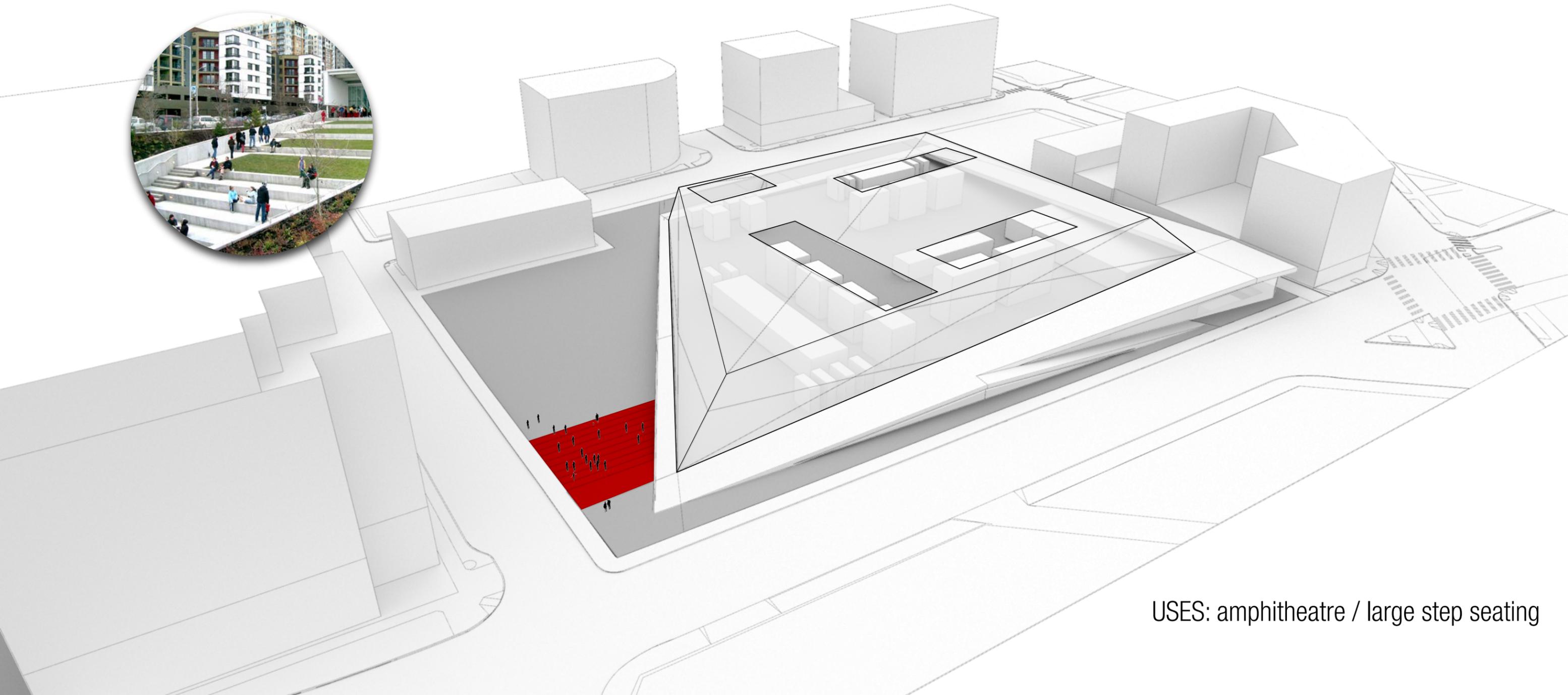
elevated park ring



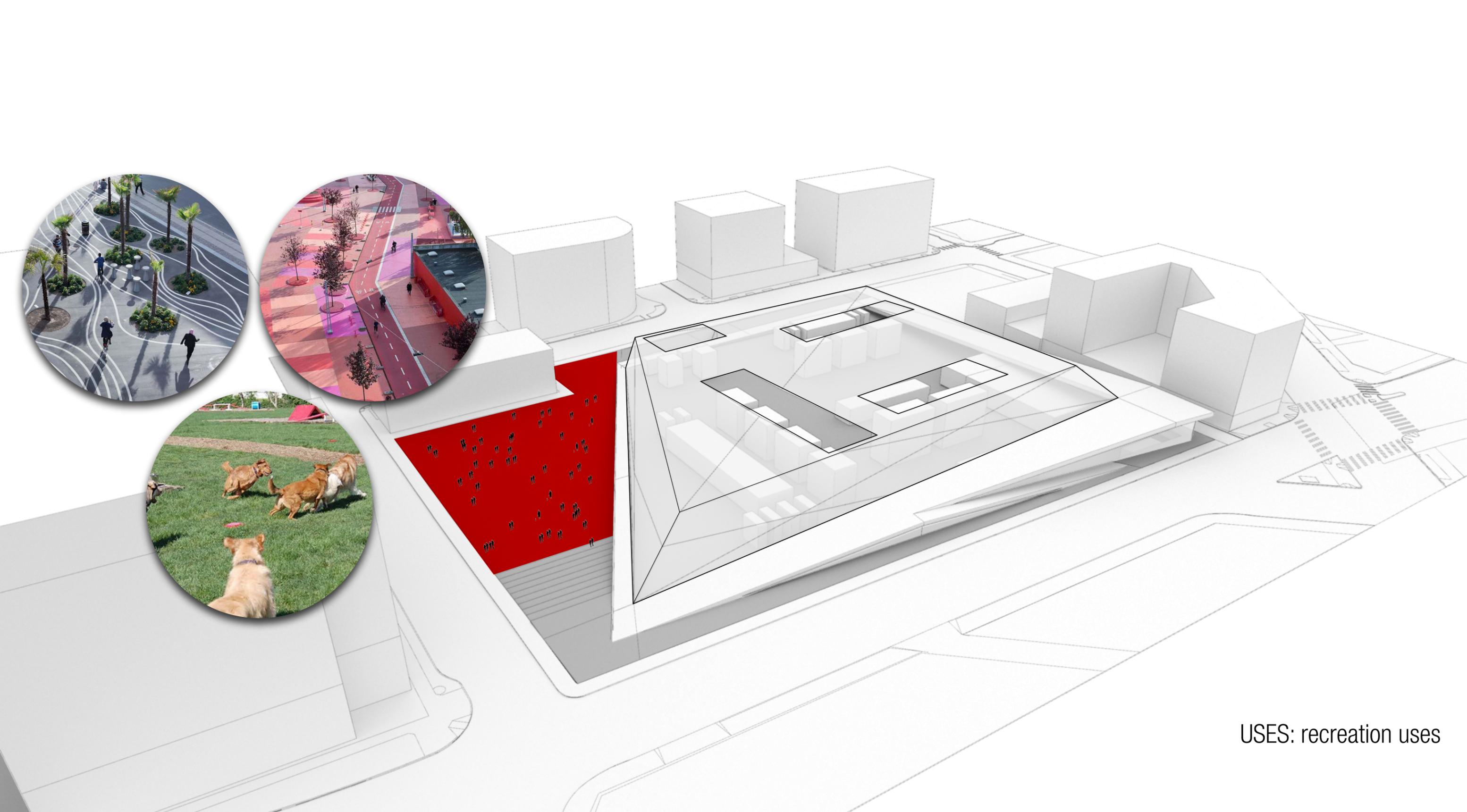
substation equipment



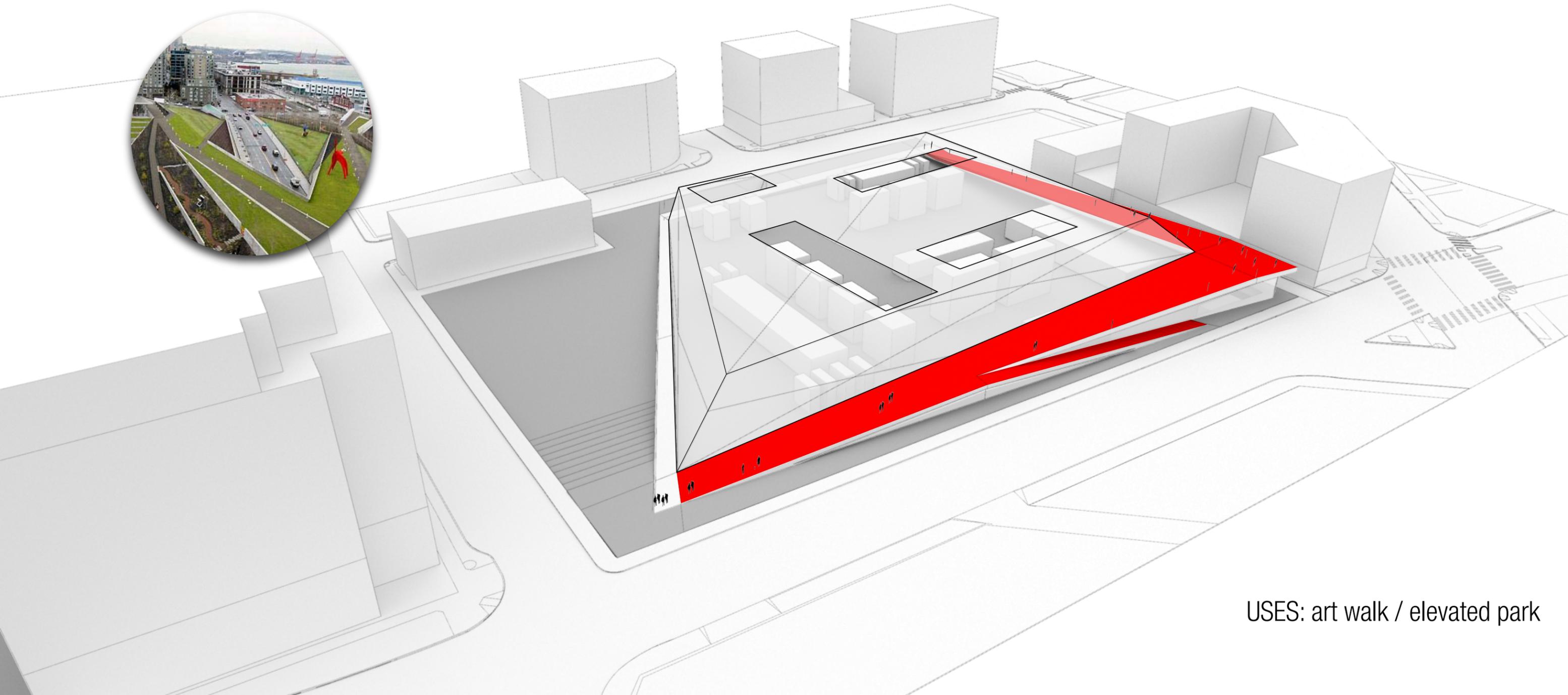
substation enclosure



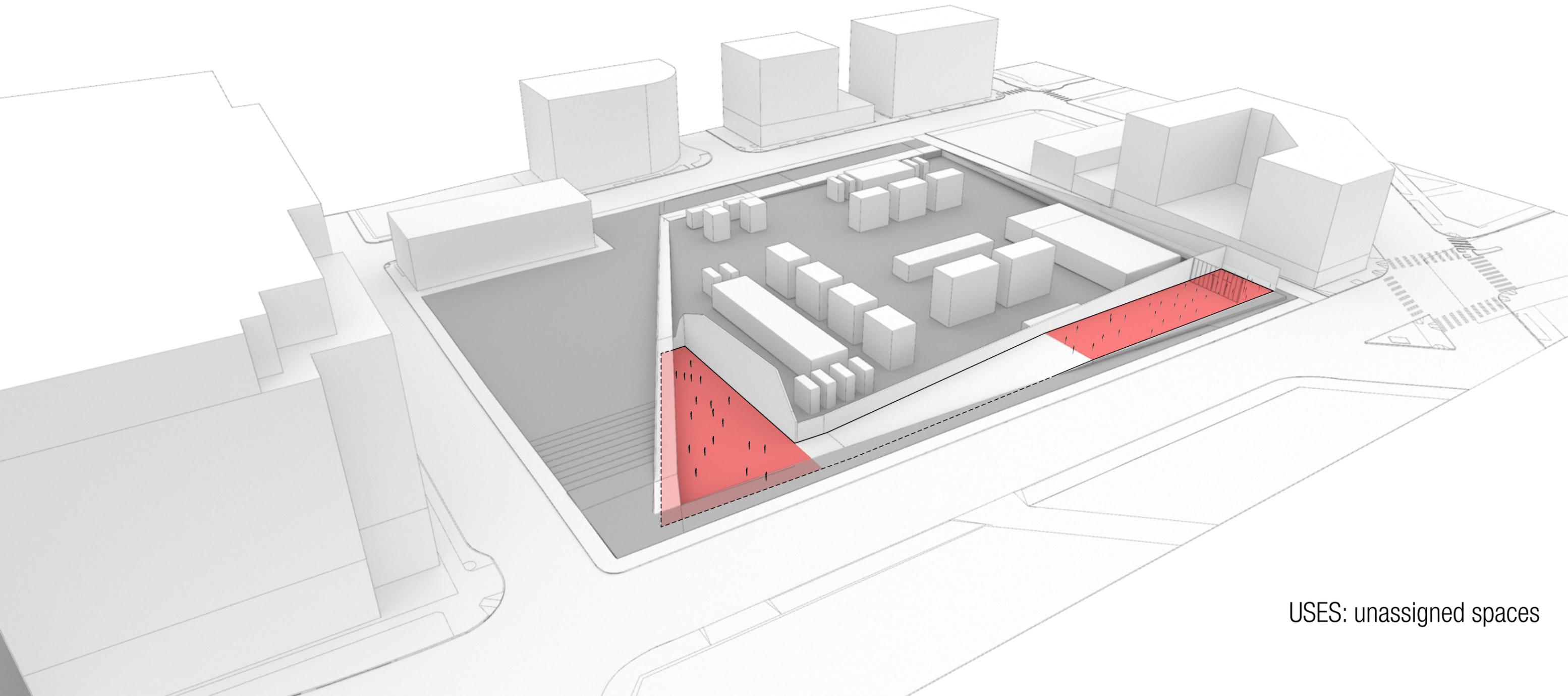
USES: amphitheatre / large step seating



USES: recreation uses

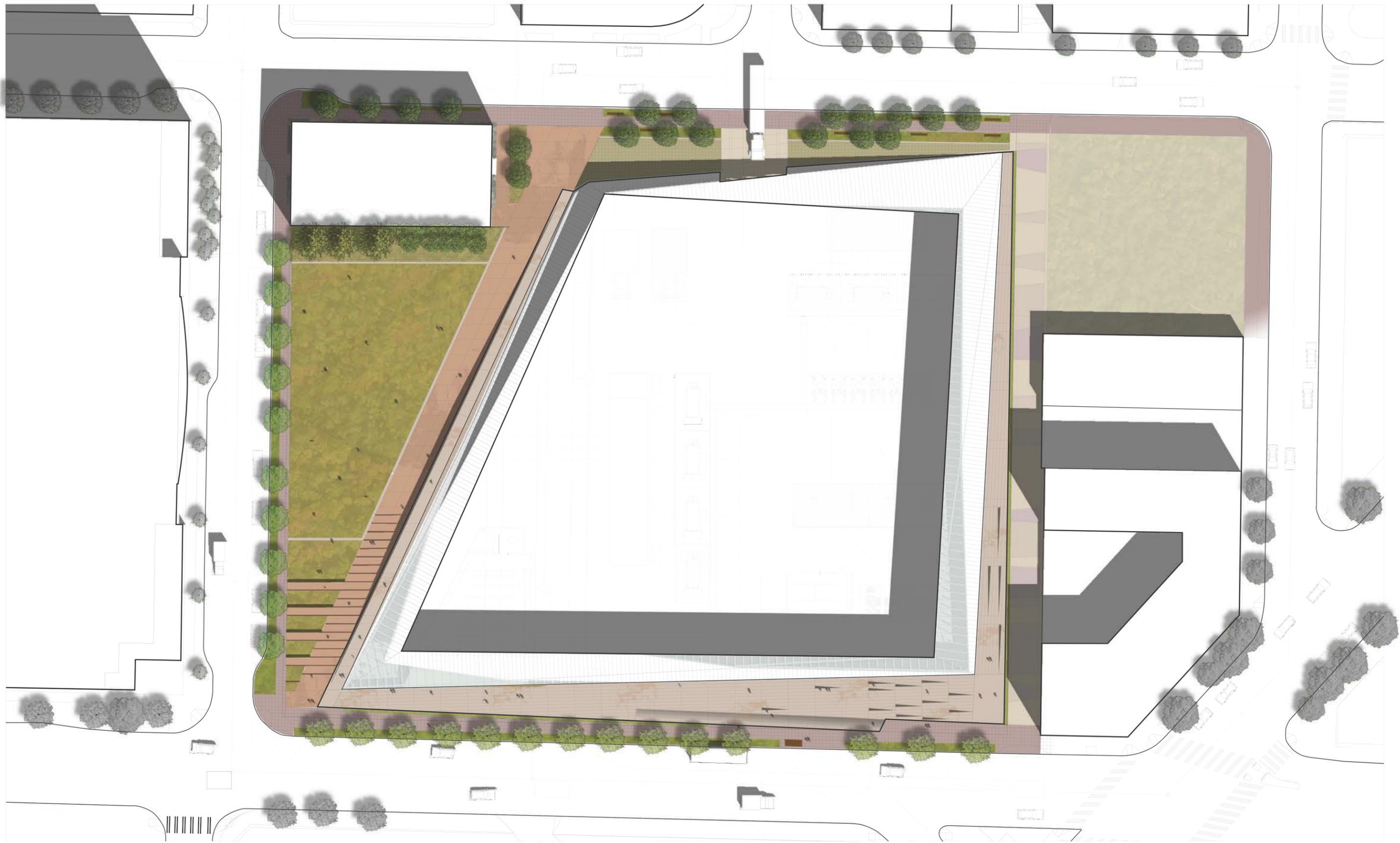


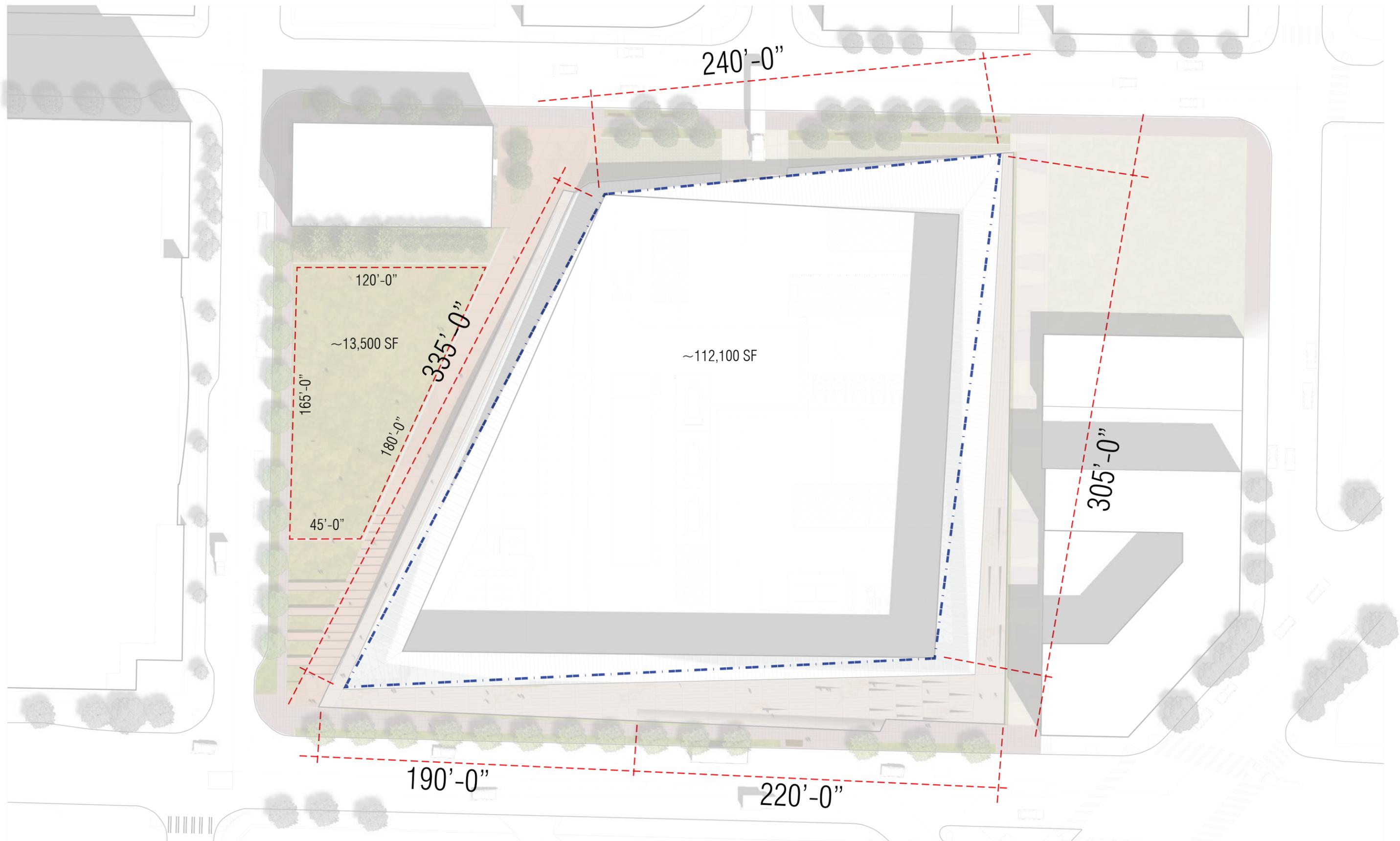
USES: art walk / elevated park



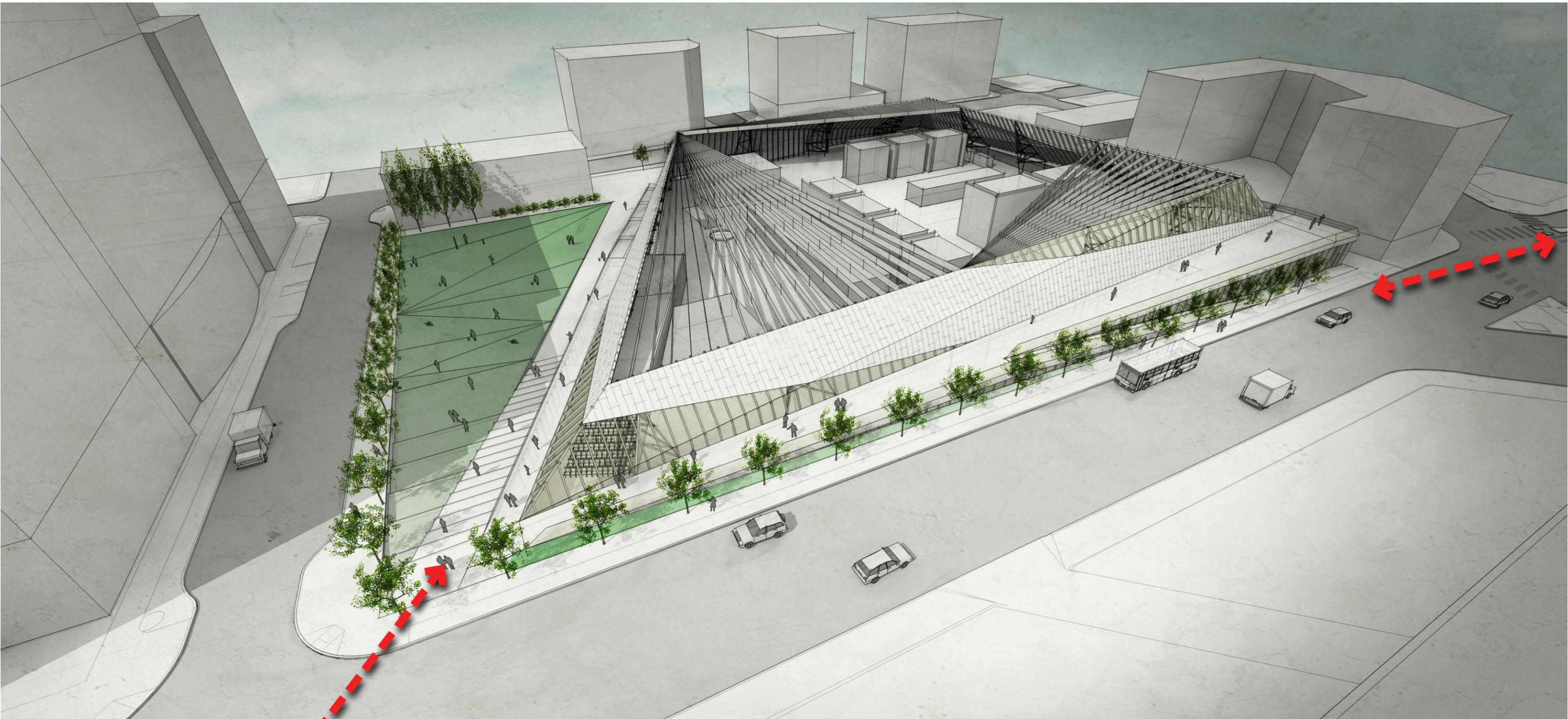
USES: unassigned spaces

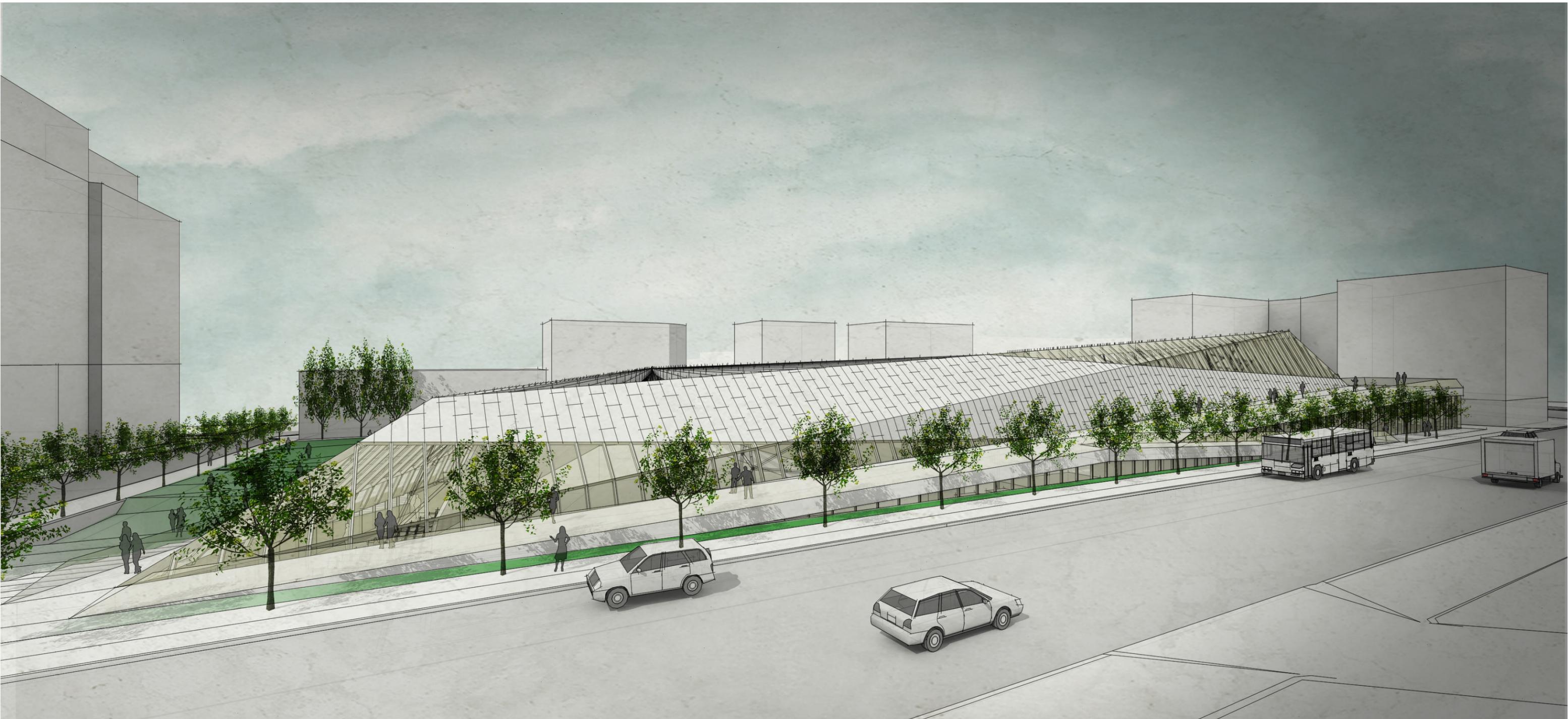


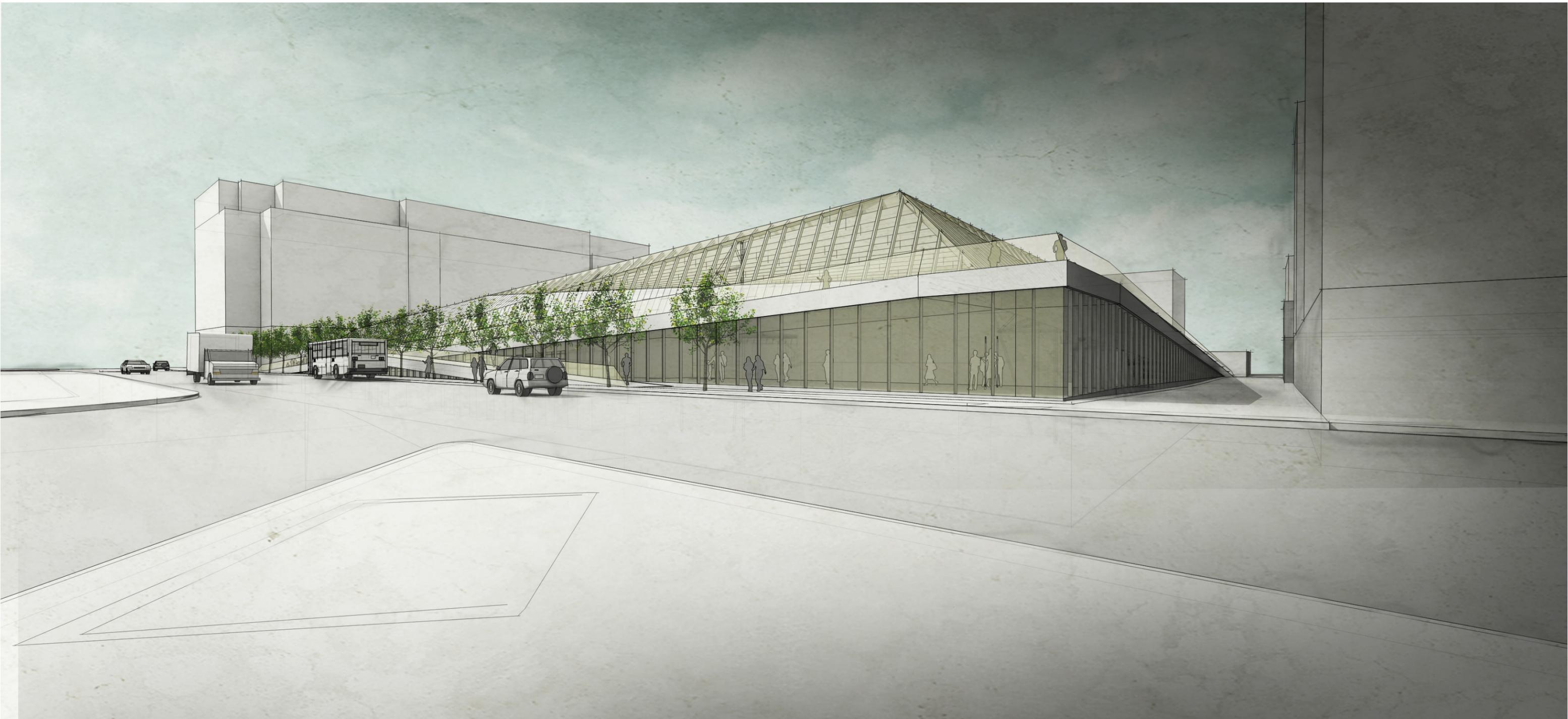


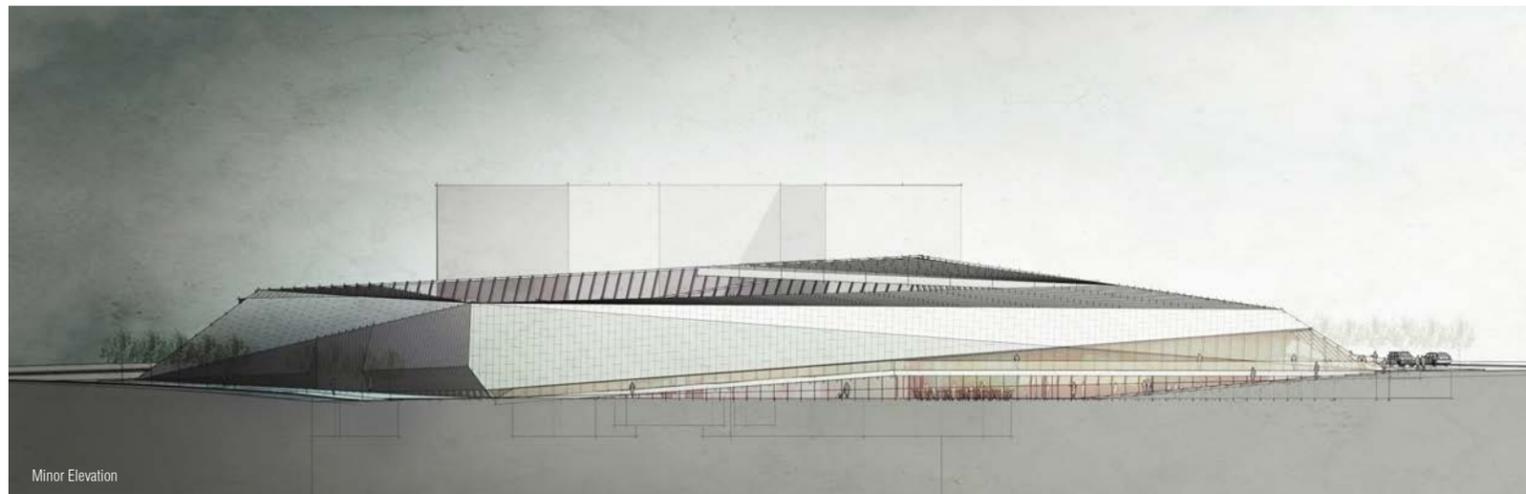
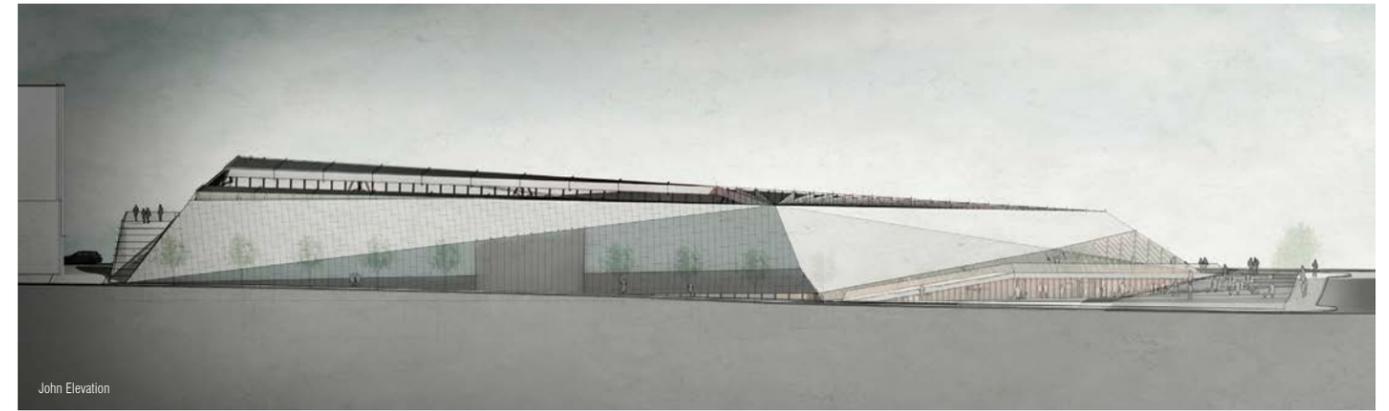
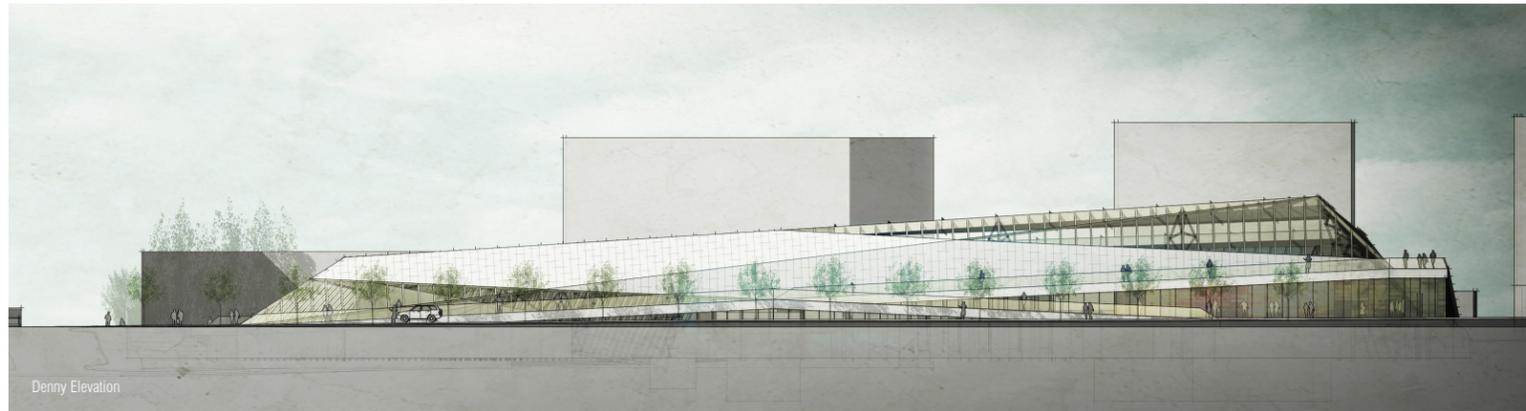


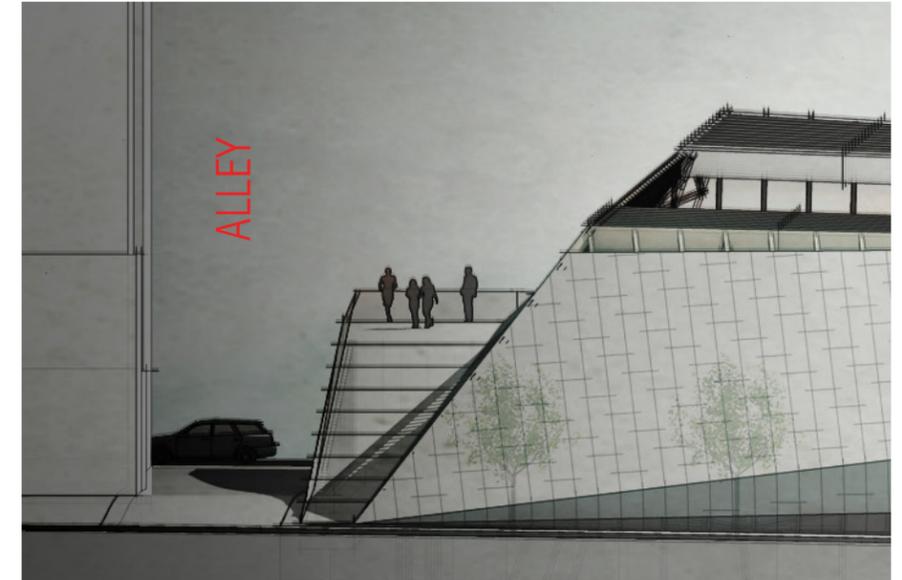
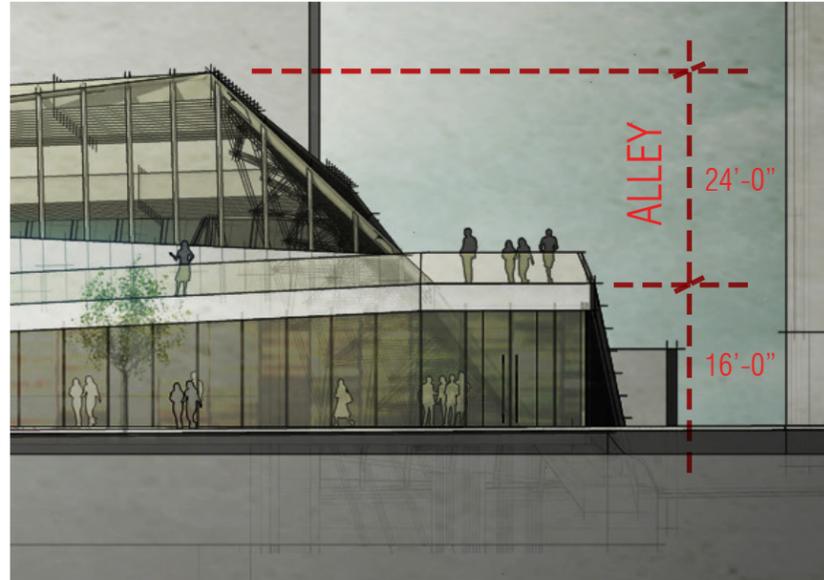
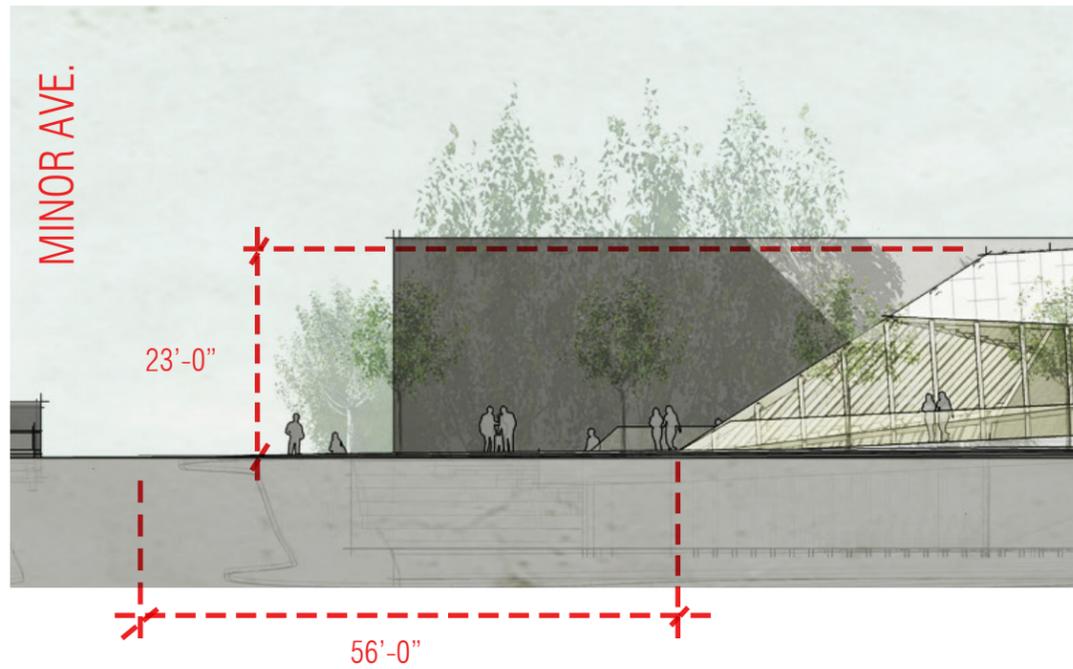
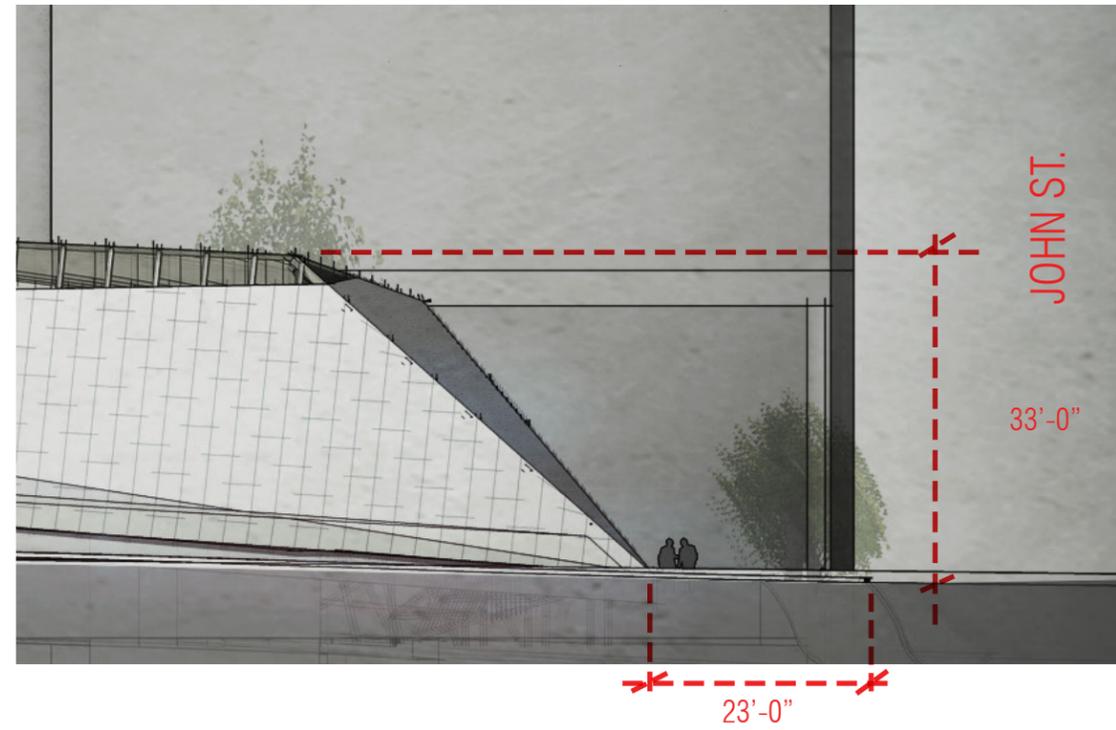
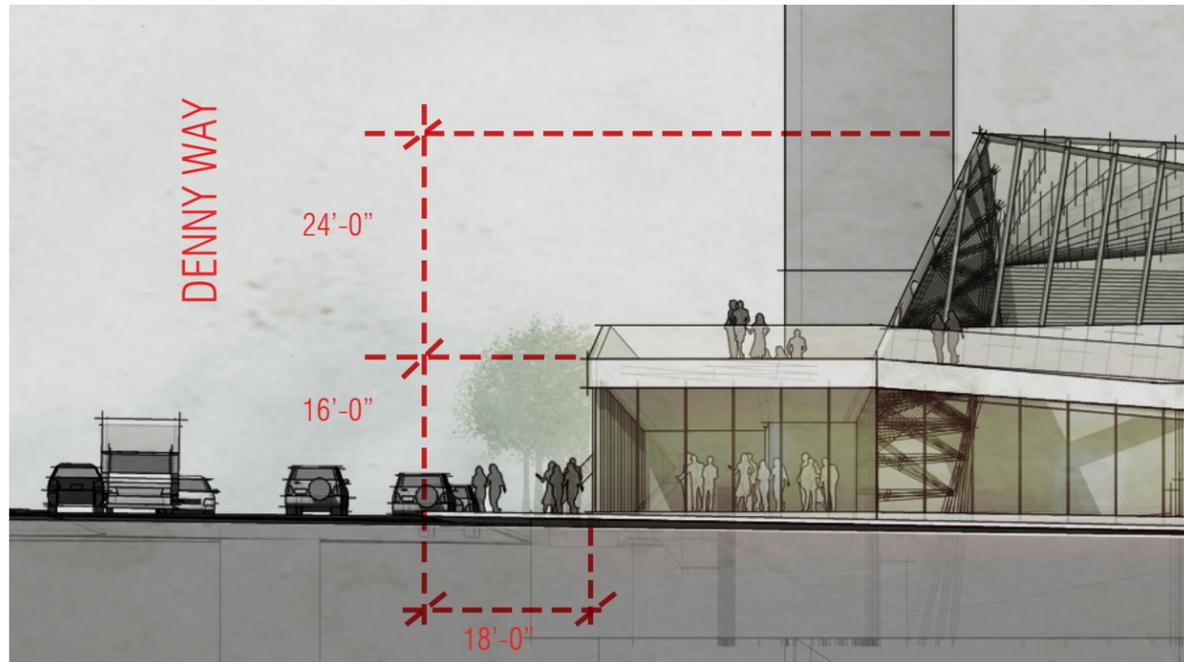


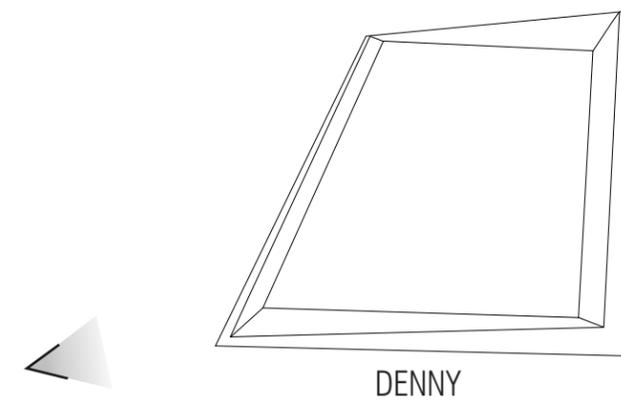
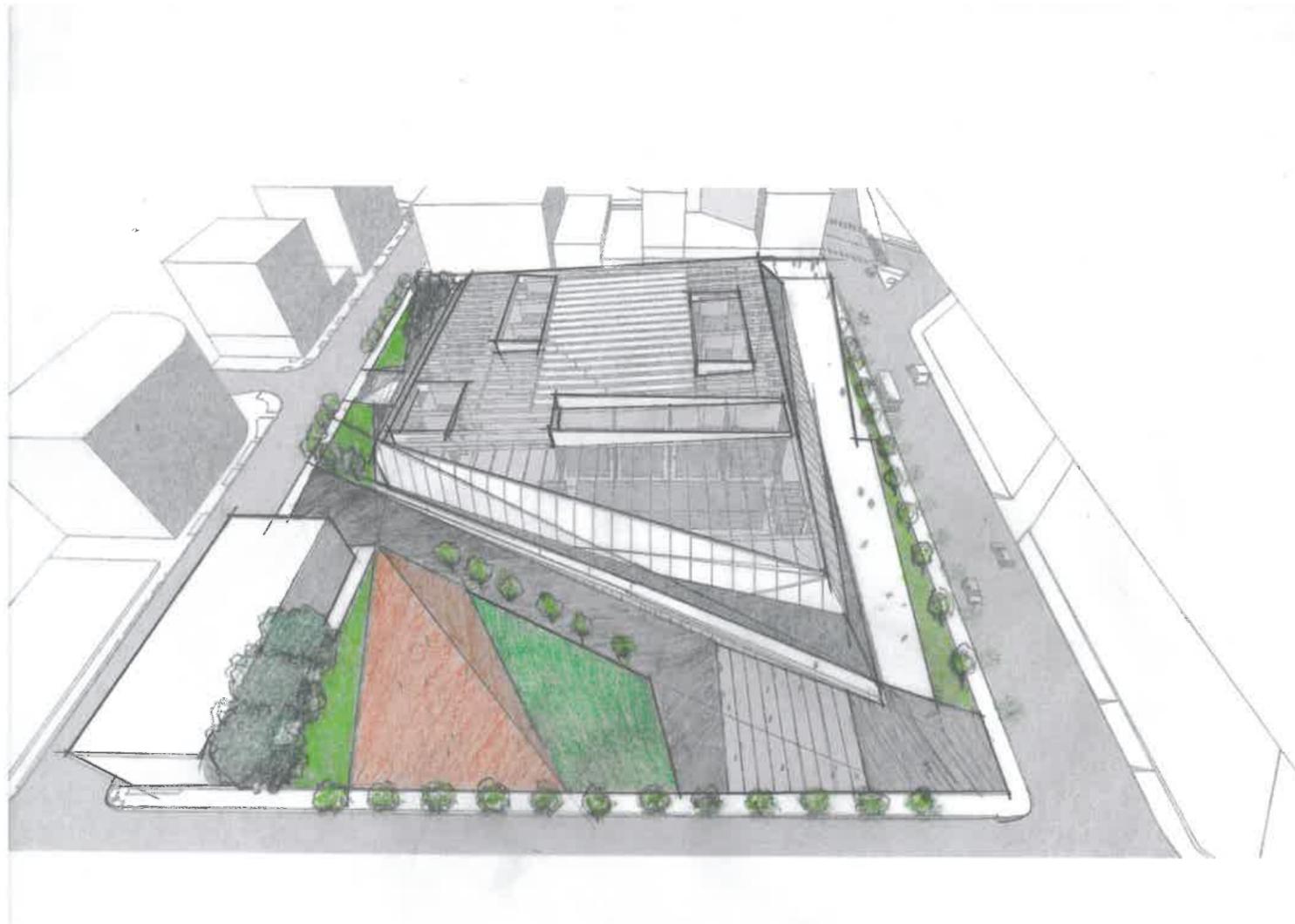


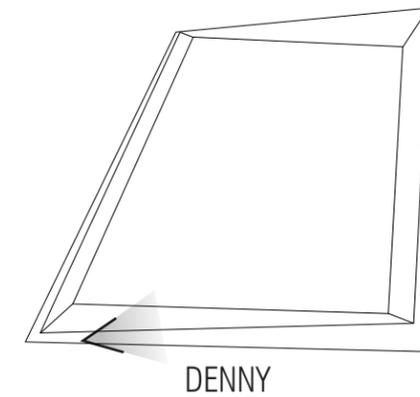
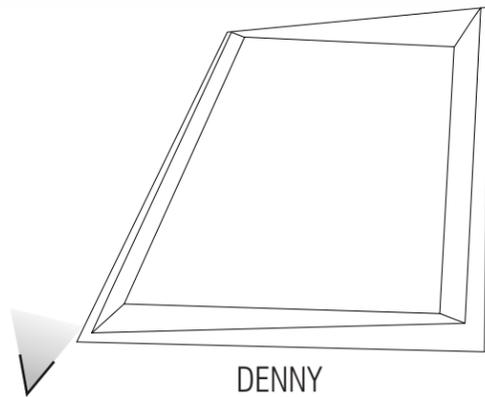


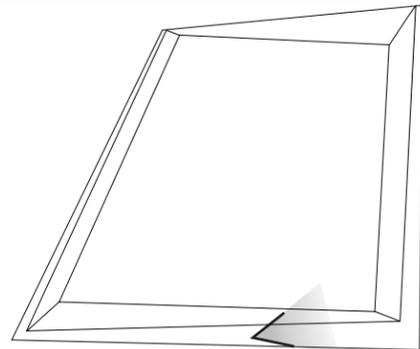
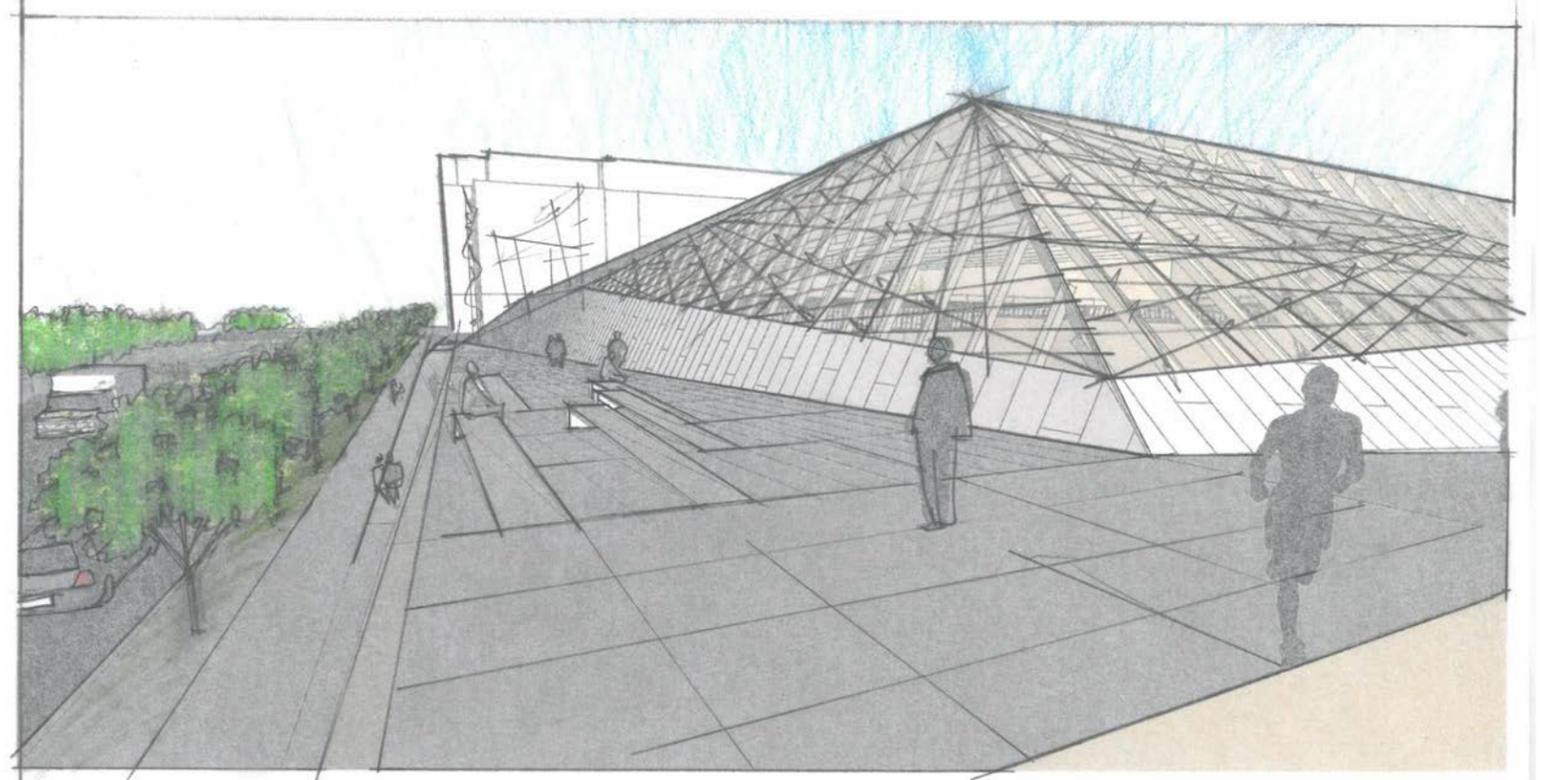




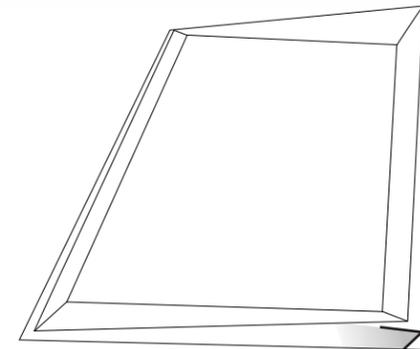




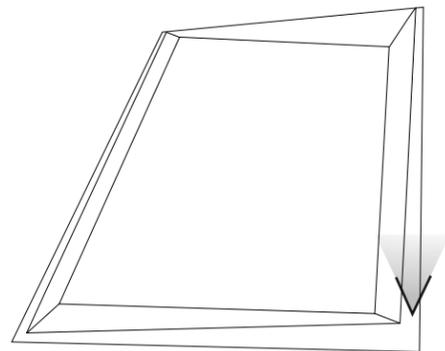
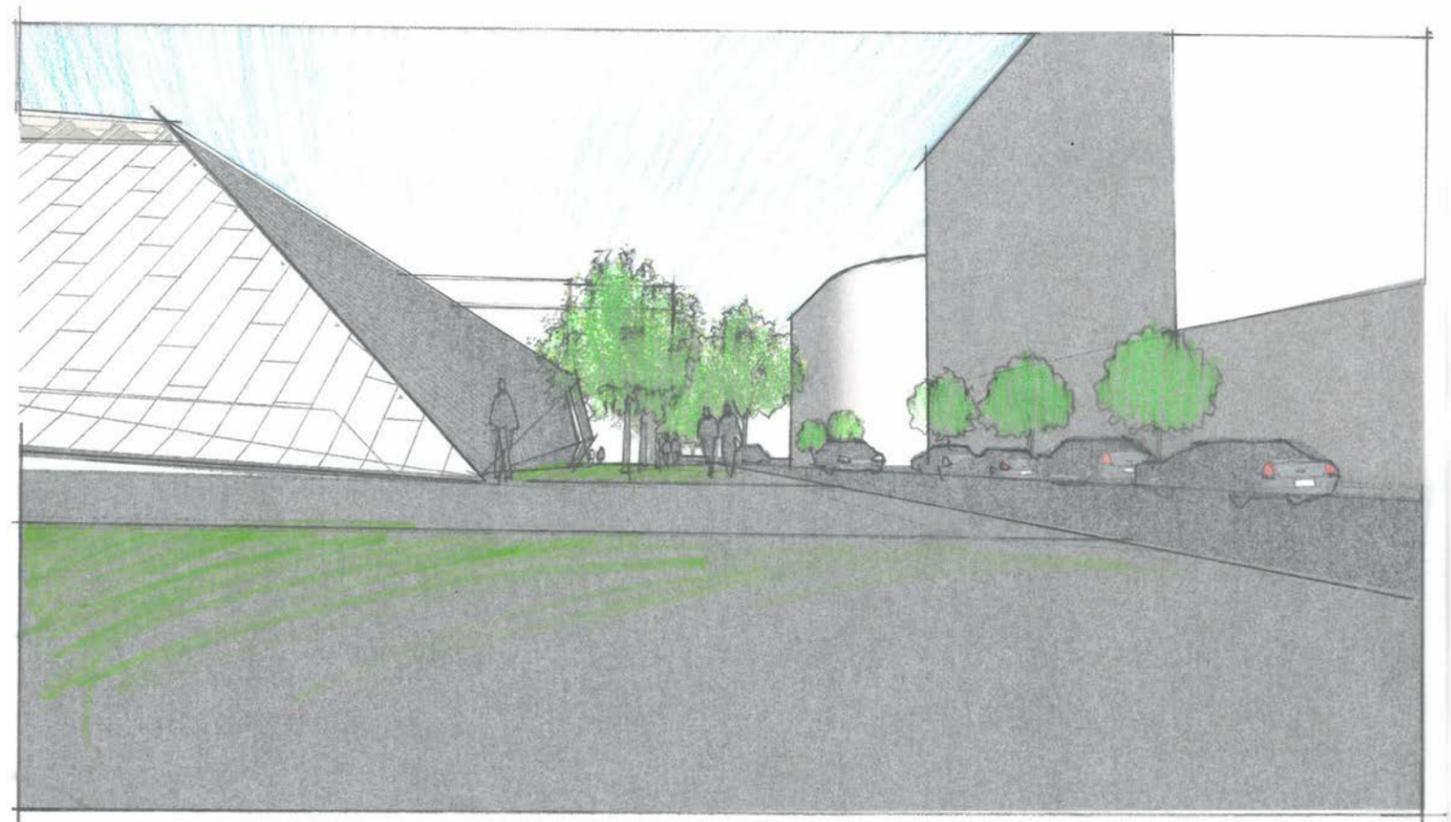
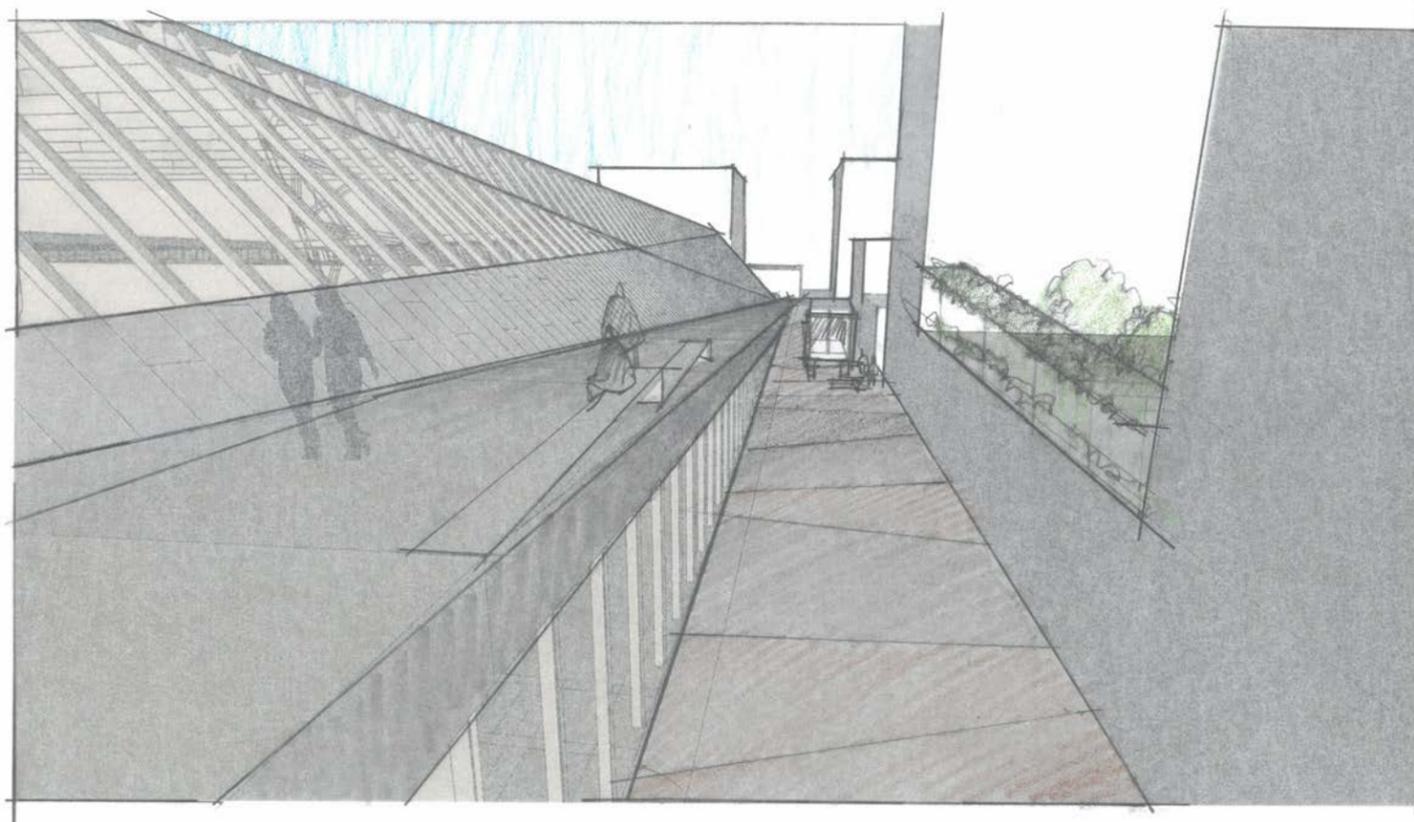




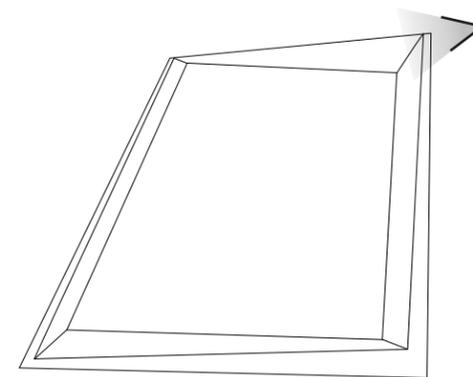
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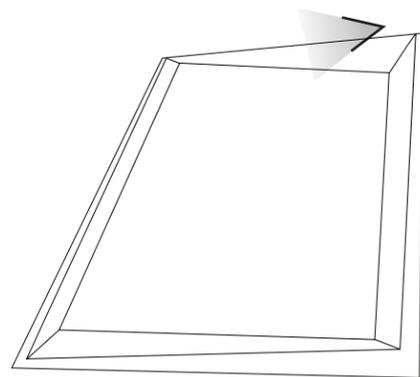
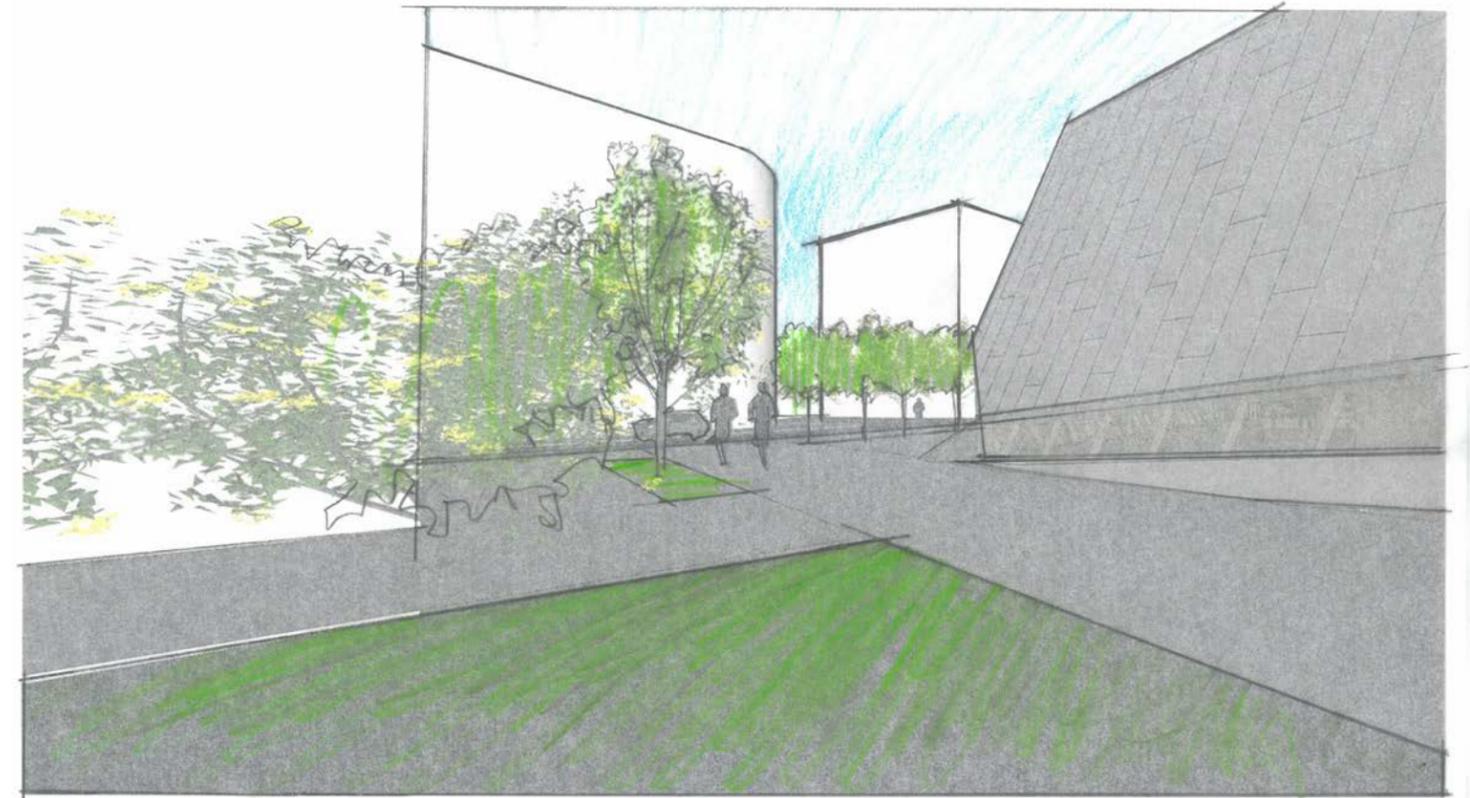
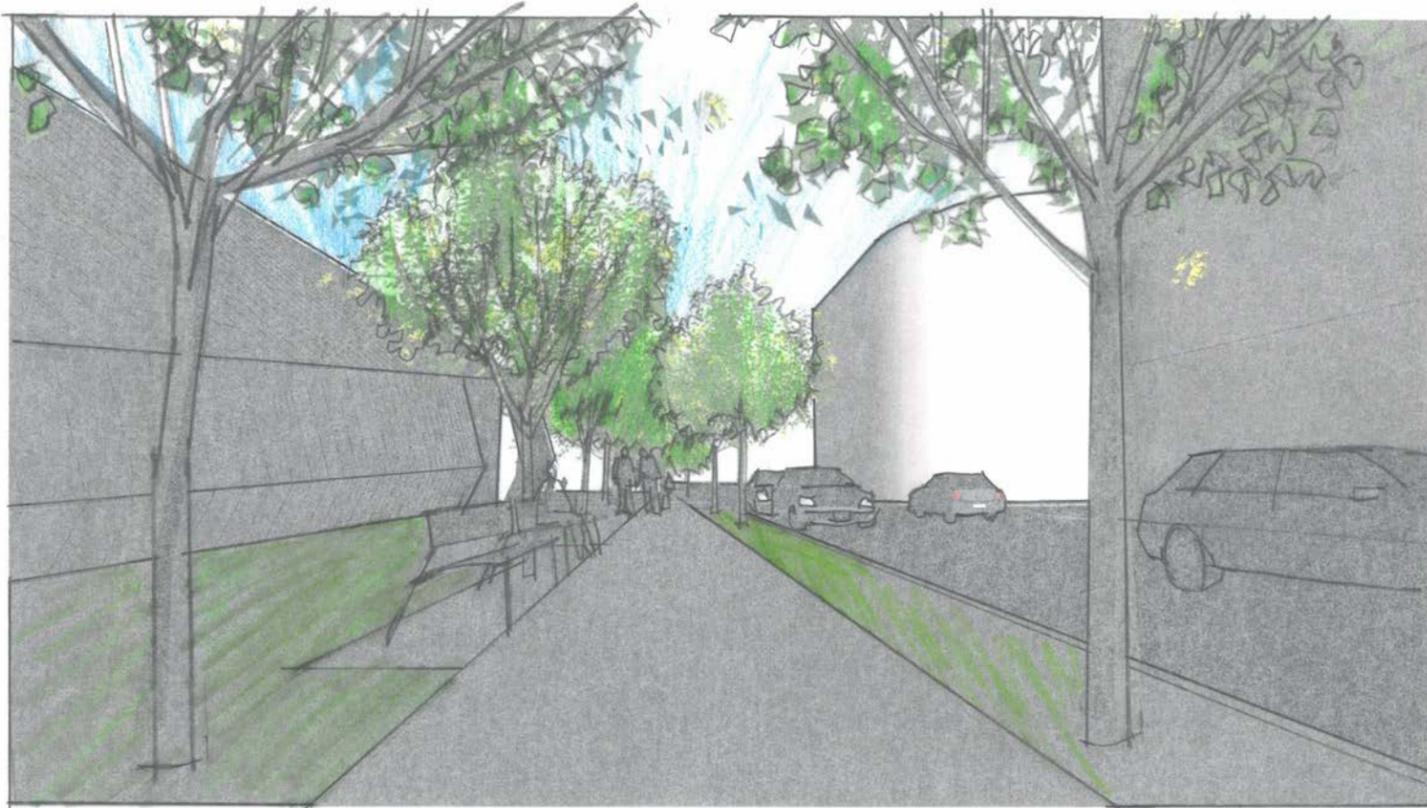
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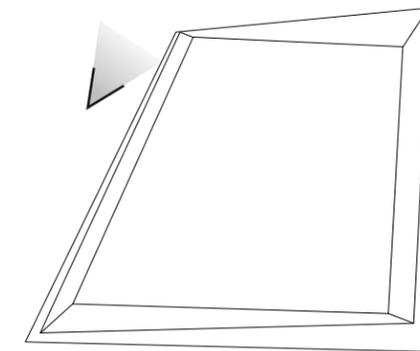
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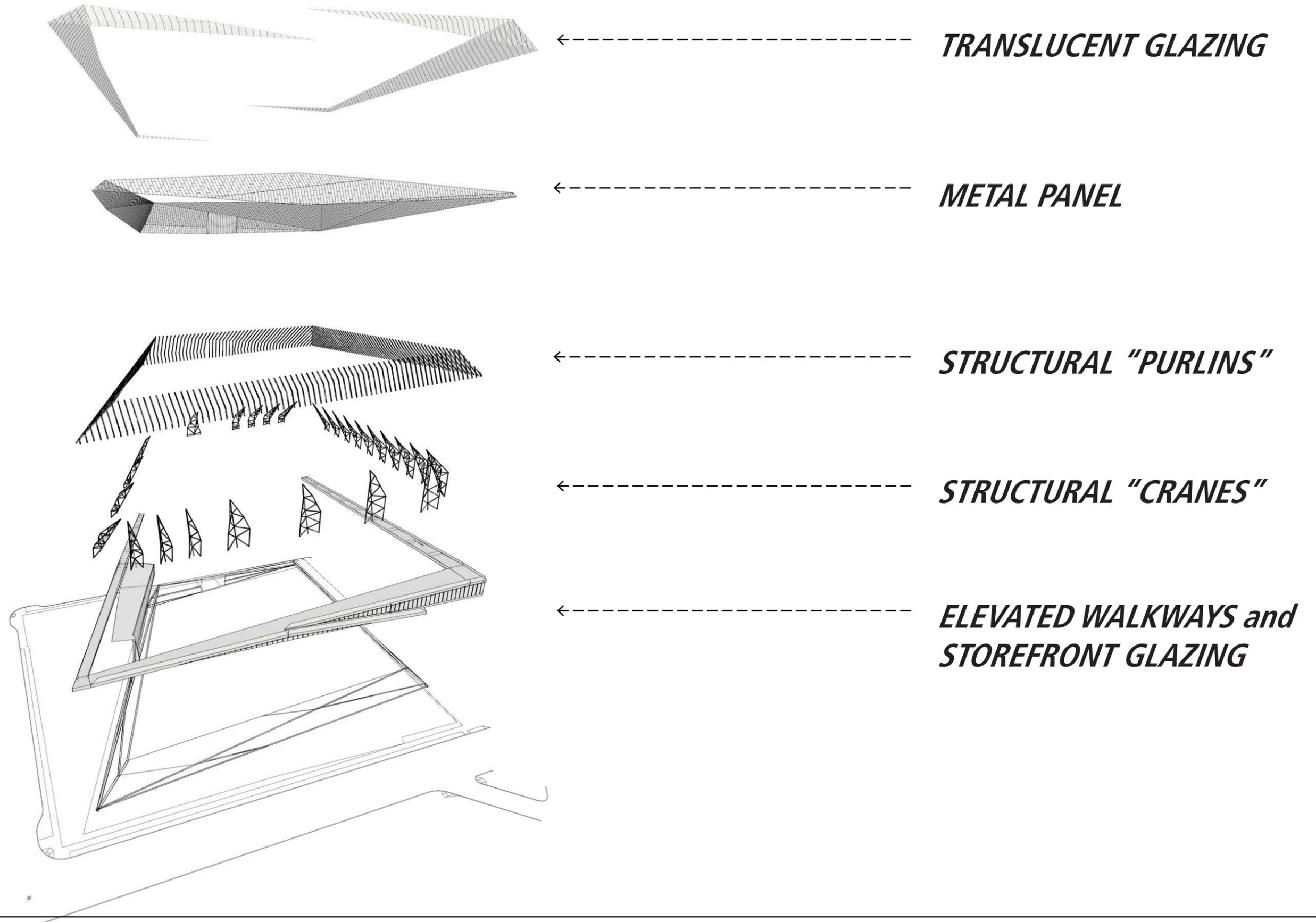
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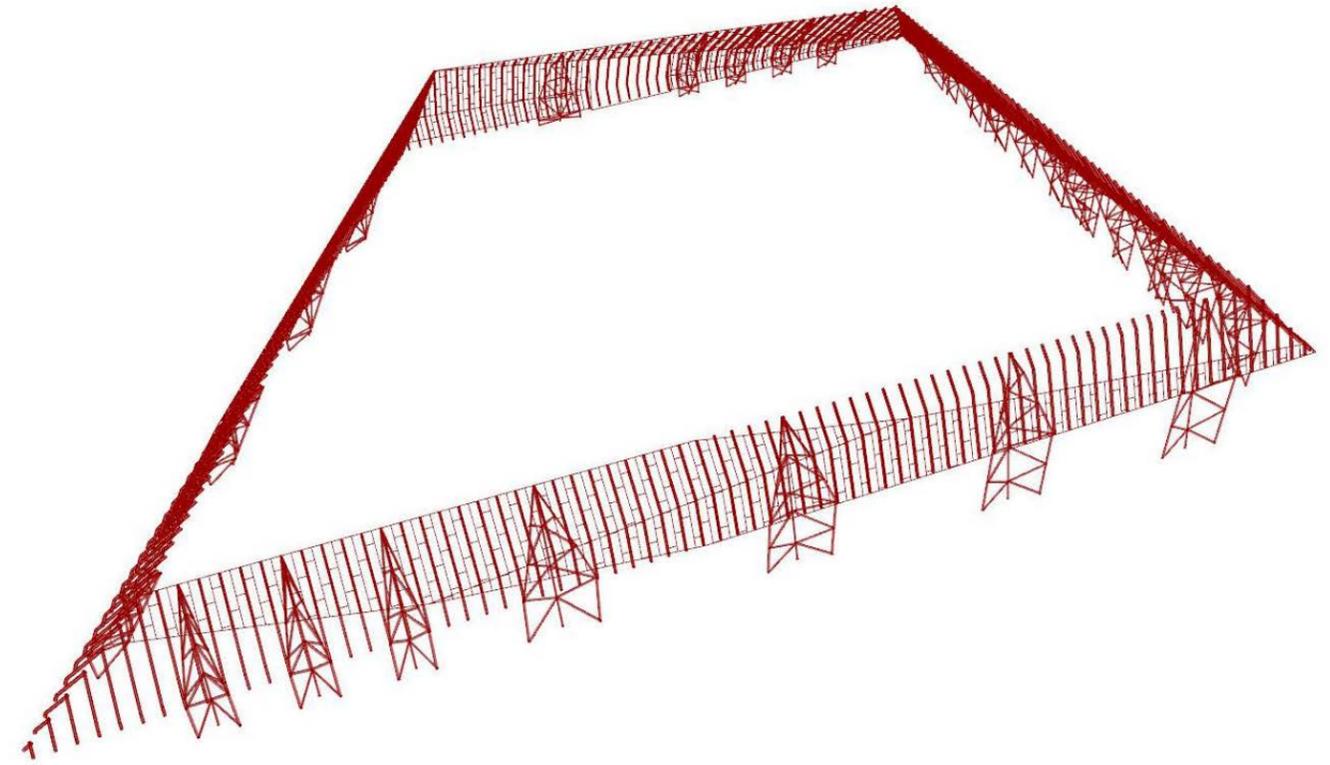
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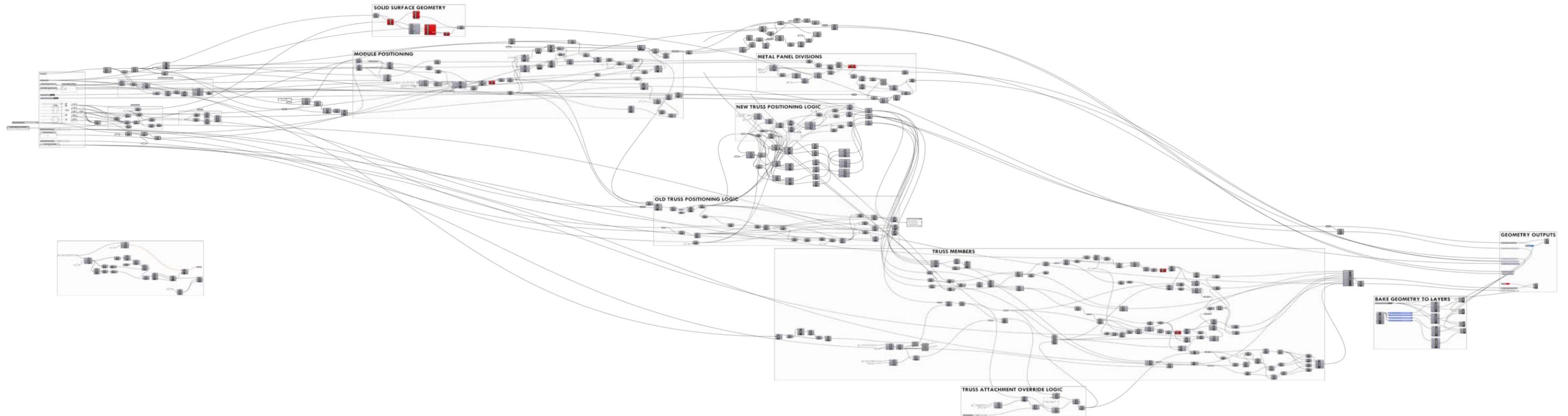
# PARAMETRIC DESIGN PROCESS

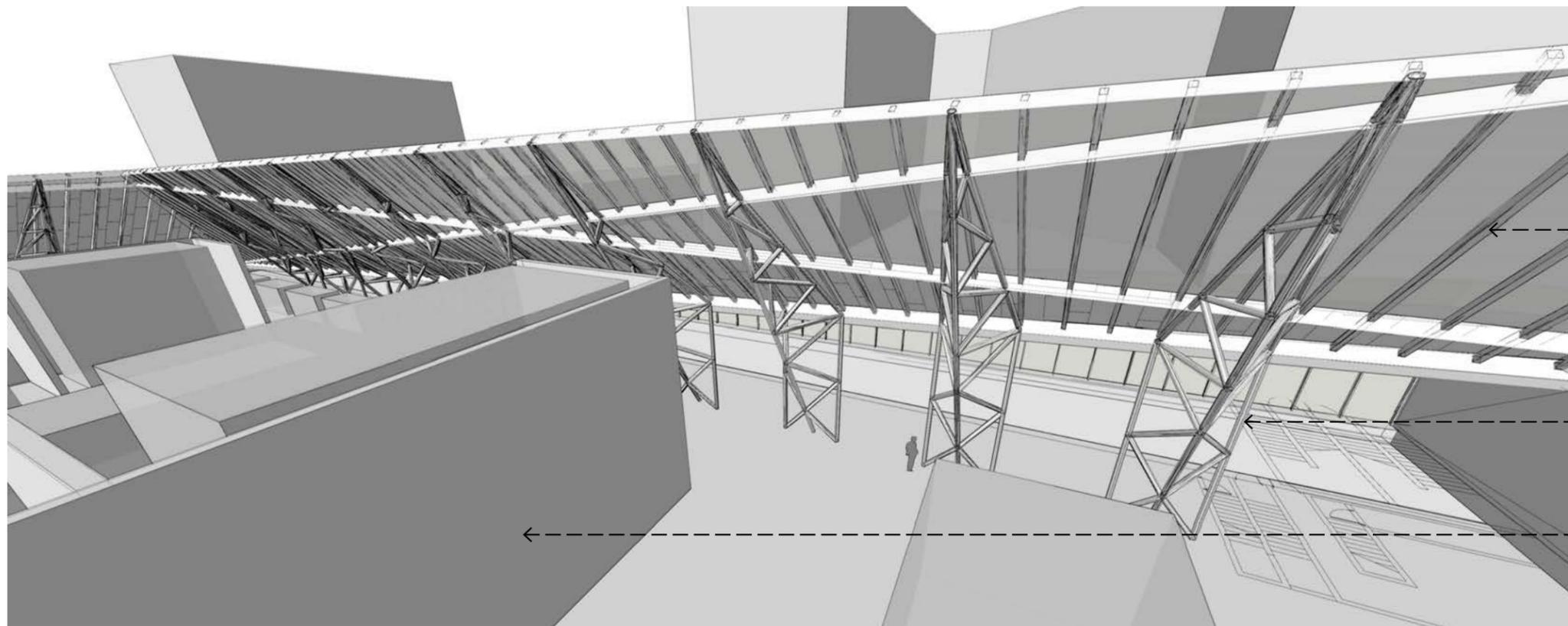
## RHINO and GRASSHOPPER

- Parametric design is the generation of geometry from the definition of a family of initial parameters and the design of the formal relations they keep with each other. It is about the use of variables and algorithms to generate a hierarchy of mathematical and geometric relations that allow you to generate a certain design, but to explore the whole range of possible solutions that the variability of the initial parameters may allow.
- Parametric design is fundamental when minimizing the effort needed to create and test design variants. Generating an automated process eliminates tedious repetitive tasks, the need for complicated calculations on the fly, the possibility of human error, and generates huge shifts in the outcomes with slight variations of the original parameters



(<http://www.parametriccamp.com/>)





*STRUCTURAL "PURLINS"*

*STRUCTURAL "CRANES"*

*SUBSTATION EQUIPMENT*

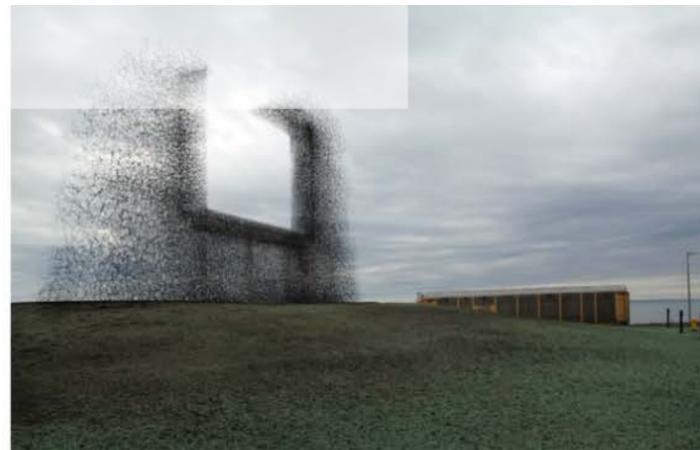
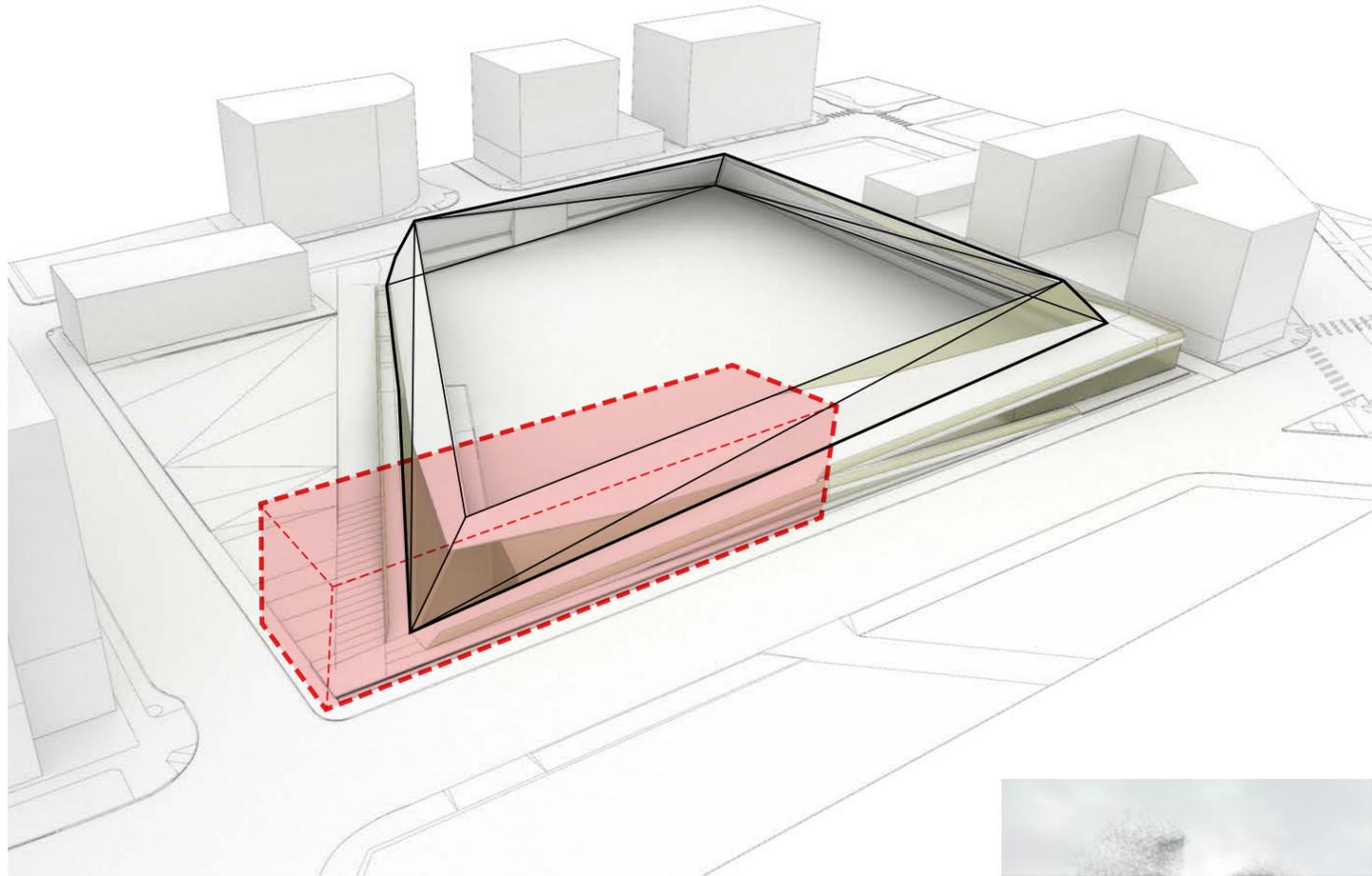


*STRUCTURAL "PURLINS"*

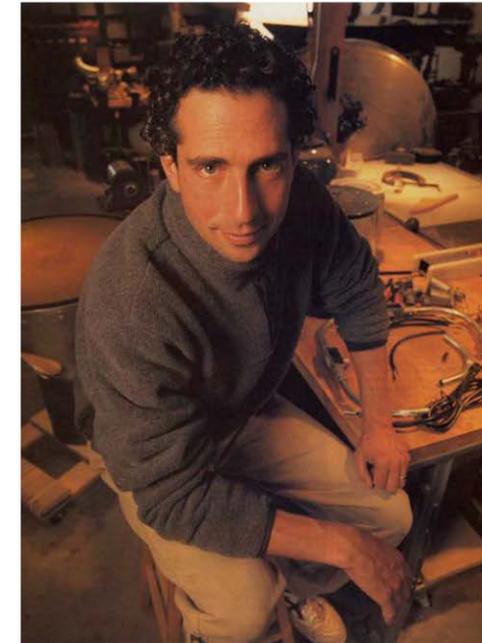
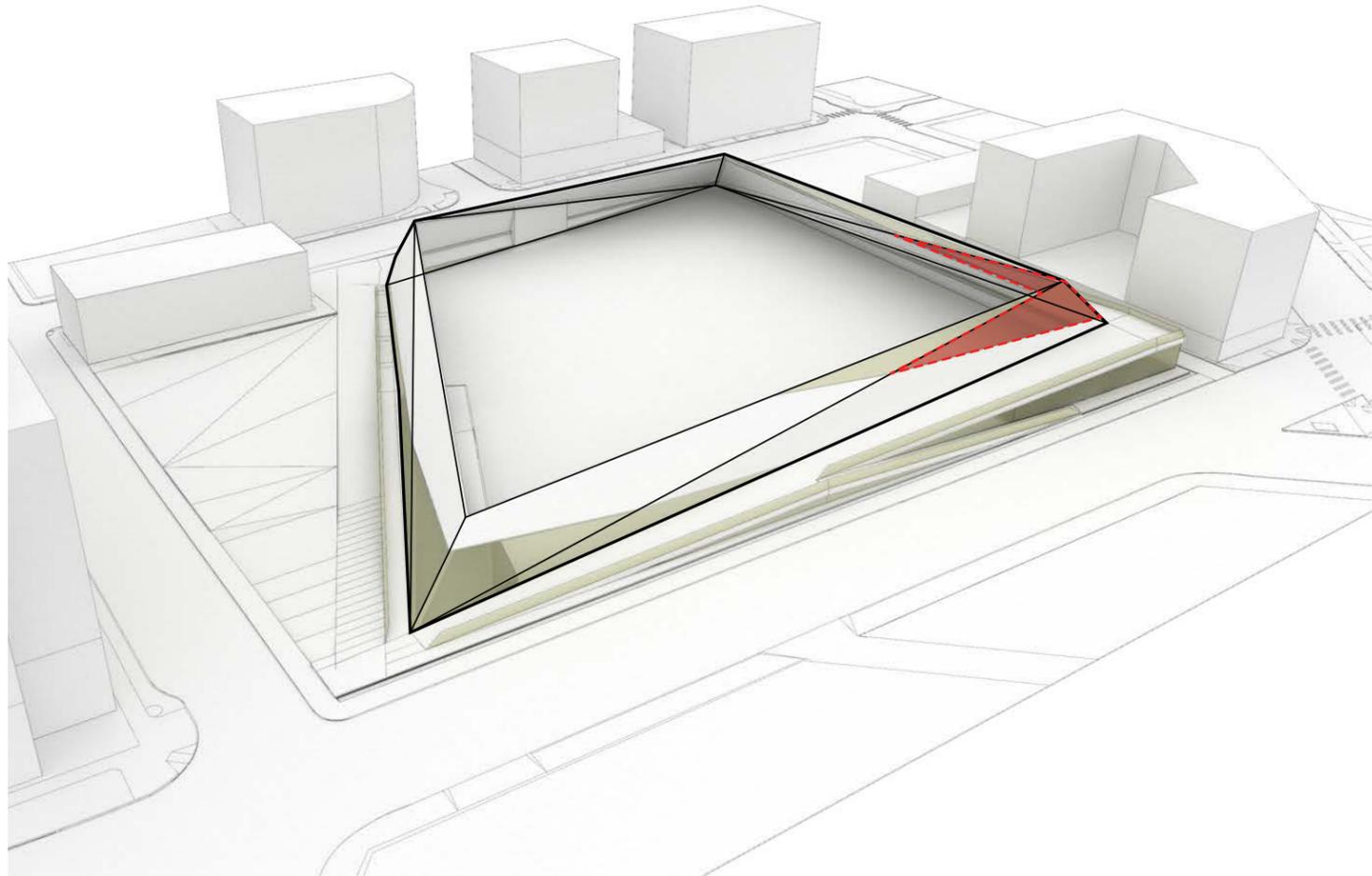
*STRUCTURAL "CRANES"*

# Lead Pencil Studio

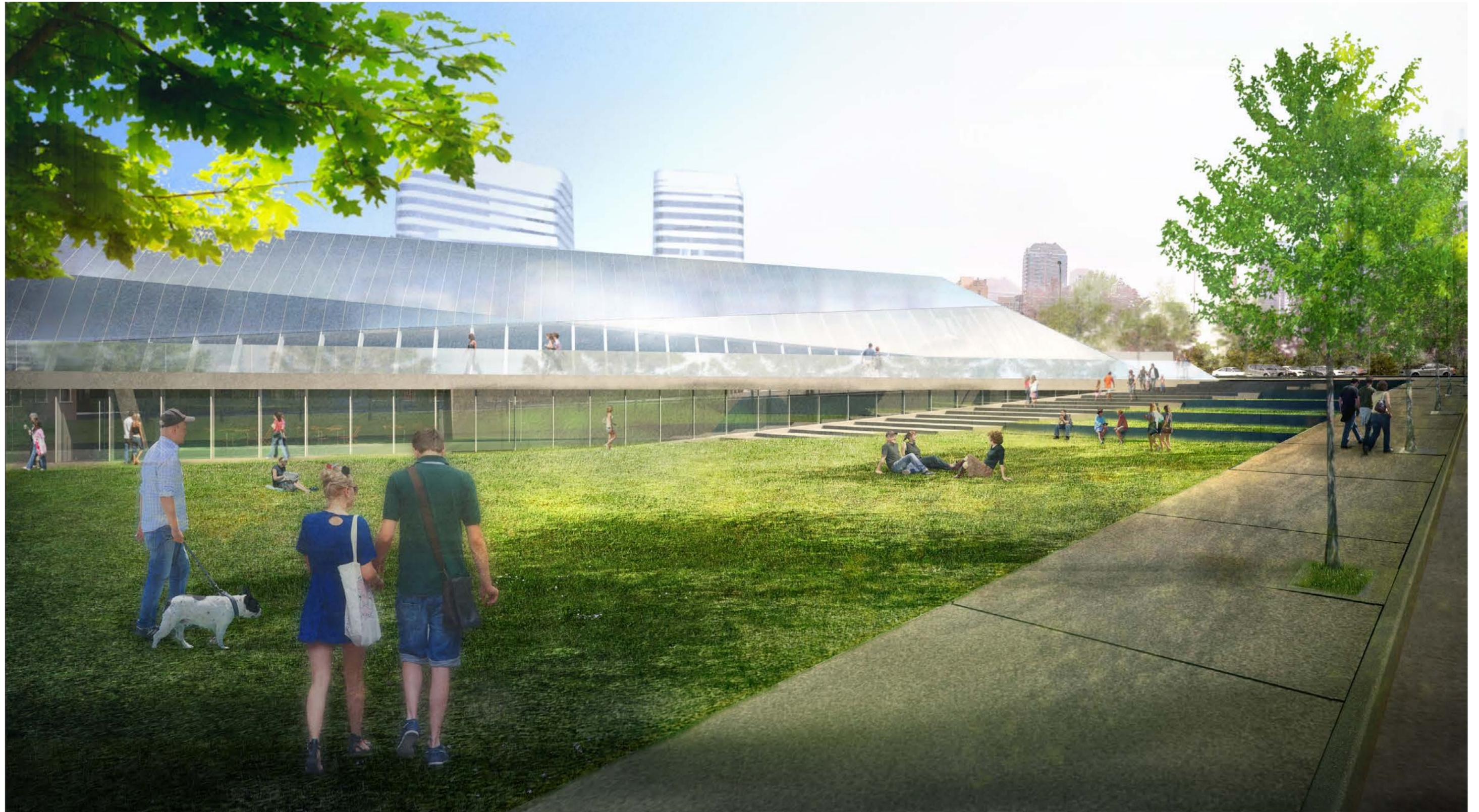
DANIEL MIHALYO and ANNIE HAN



# Ned Kahn Studios













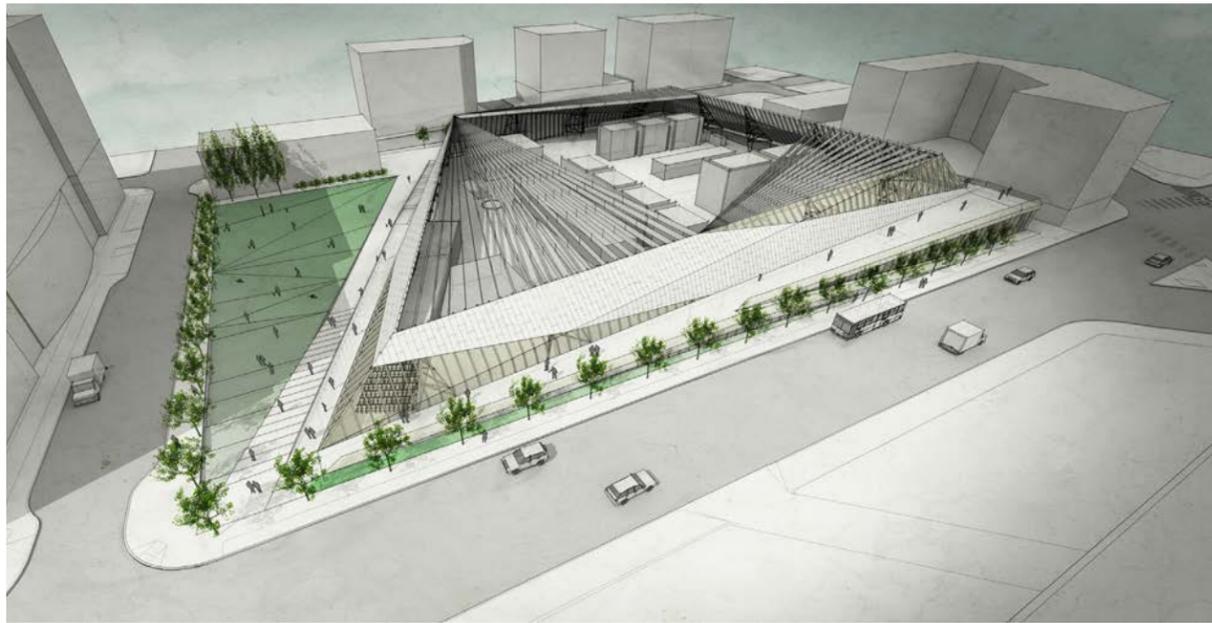


# DESIGN COMMISSION RECOMMENDATIONS (October 2012)

- *DESIGN CONCEPTS THAT “EXPOSE THE EQUIPMENT”*
- *THE BUILDING OBJECT IS THE AMENITY AND DRAW PEOPLE TO IT*
- *EXPLORE DESIGN BEYOND TRADITIONAL SUBSTATION INFRASTRUCTURE*
- *THE PROJECT AS A UNION OF A DOWNTOWN UTILITY AND ART*
- *DO NOT DEVELOP A DESIGN WITH BLANK WALLS*
- *ADDRESS DENNY WAY - CHALLENGES AND OPPORTUNITIES*
- *EMPHASIZE PROGRAMMING THAT BENEFITS THE NEIGHBORHOOD*
- *DEVELOP PUBLIC SPACES....OPTIONS FOR PROGRAMMING...24 HOUR DIVERSE USE*
- *STUDY CORNER OF JOHN AND DENNY SITE*
- *MITIGATE HEAT ISLAND, NOISE, AND EMF*
- *EXPLORE OPPORTUNITY FOR EDUCATION OF POWER GENERATION AND USE*

# ALTERNATIVE 3

## STREET VACATION ALTERNATIVE



- Equipment layout occurs on Parcel 2, a portion of Parcel 1, and over Pontius Street.
- Substation facility is accessible at grade for ease of maintenance and safety.
- Distribution lines occur slightly below grade as per standard for ease of access, maintenance, and lower cost
- Unassigned open space affords opportunities for potential public amenities
- Creates a unique condition for experiencing the neighborhood, art, and the substation
- Serves as a prominent landmark for the city and the neighborhood
- Current costs are aligned with anticipated baseline project cost