PORTFOLIO OF JUNMING LIAO

SELECTED WORKS 2022 - 2023

B.Arch, Syracuse University
MSAAD, Columbia University

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PROLOGUE

The operation of structure has consistently emerged as a theme throughout both my academic study and professional practice. Although I used to regard the function of architectural structure in an ontological sense i.e., purely to support notions of program and form. Throughout the course of my architectural education, I have become more interested in 'structure' as a vehicle for architects to operate within larger social domains. In my eyes, structure has a greater responsibility than just the articulation of architects' utopian imagination and should be viewed as an instrument or an opportunity to participate in the discourse of the specific locale's sociopolitical issues. This more wholistic, albeit optimistic, view implies the potential of exploring tectonic structure as the catalyst for a more participatory architecture, one that remembers that its job is to serve the constituents it houses.

In this portfolio, I would like to give a critical view of architectural and urban development through my four academic projects and one research-focus project, examining and exploring potential relationships between the local and overall.

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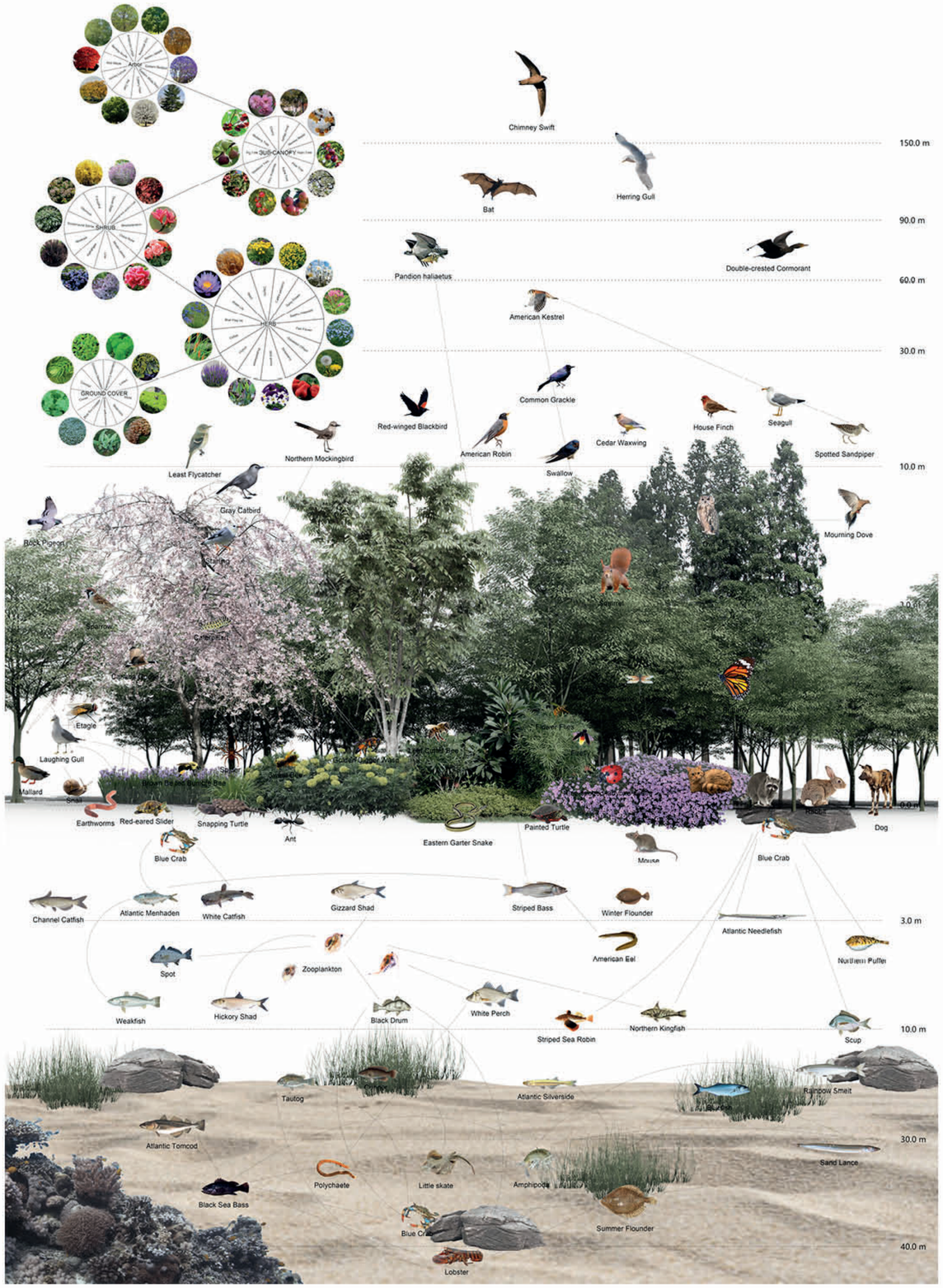


01 “CITY IN THE CITY”

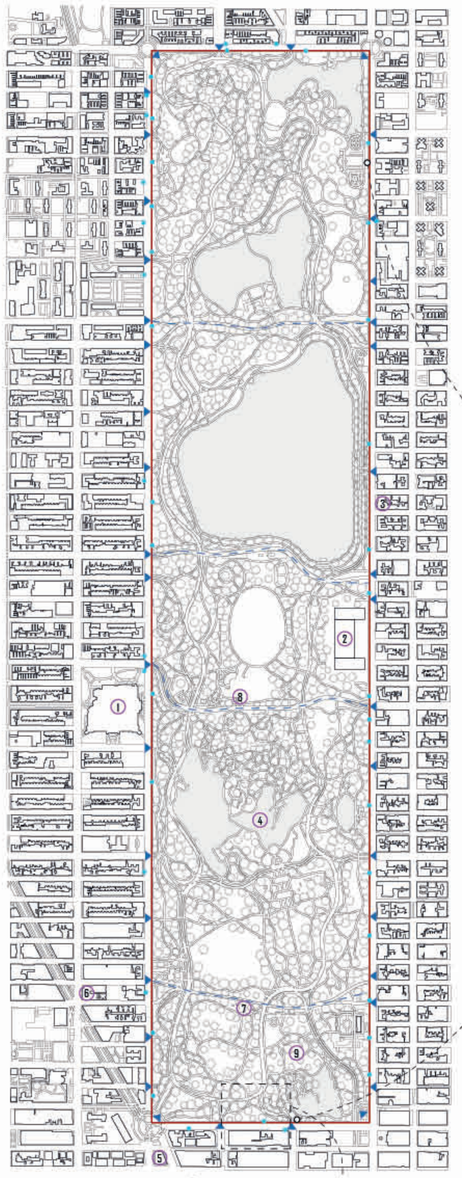
Rosevelt Island Natural Preservation

Columbia, 2023 Summer
Columbia University, MSAAD

Site: Rosevelt Island, New York

Group Member: Junming Liao, Zhihao Xu
Advisor: David Eugin Moon

CENTRAL PARK AREA: 1.32mi²



1. AMERICAN MUSEUM OF NATURAL HISTORY

4. LAKES

6. AMERICAN FOLK ART MUSEUM

8. BELVEDERE CASTLE

2. THE METROPOLITAN MUSEUM OF ART

5. MUSEUM OF ARTS AND DESIGN

7. CAROUSEL

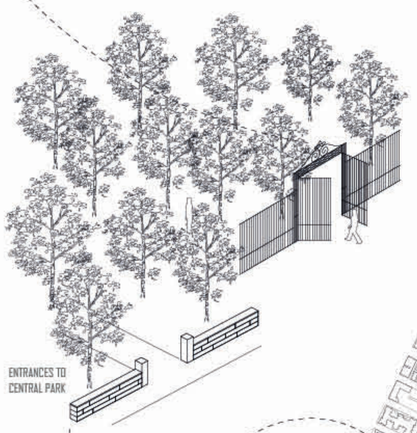
9. WOLLMAN RINK

3. SOLOMON R. GUGGENHEIM MUSEUM

HOUSING

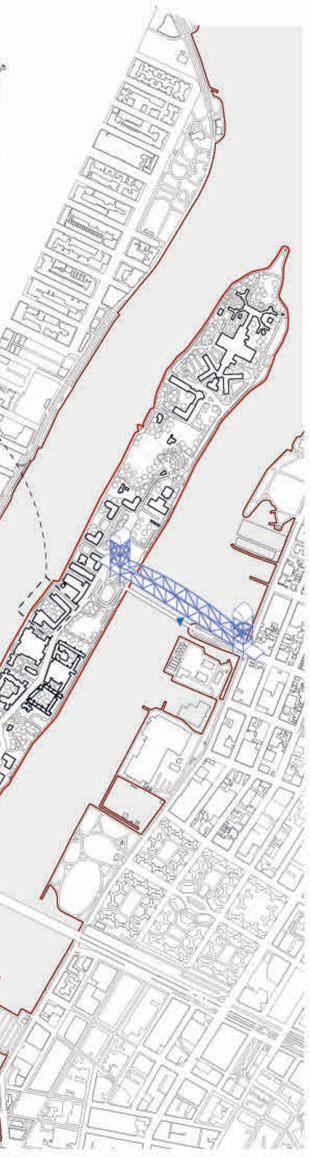
Recorded sales data from January 2016 to August 2016 showed us that the median price of units in the first row of blocks across Central Park were 25% more expensive than the median of every bordering neighborhood. The median home sale price of all the bordering neighborhoods combined was $1,222,500, while the median of the first row of blocks was $1.4 million—a $277,500 difference.
(source:Property Shark)

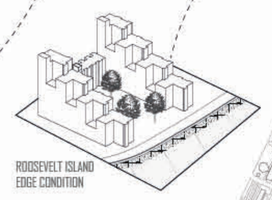
New Yorkers, he discovered, are generally willing to pay 10 to 25 percent more for an apartment that allows them to wander over to the window and take in the sights — whether that's a boat moving up the river or the rolling lawns of Central Park.
(source:The New York Times)



ENTRANCES TO CENTRAL PARK

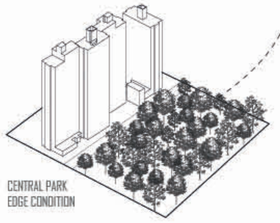
ROOSEVELT ISLAND AREA: 0.28mi²



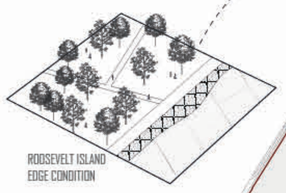


ROOSEVELT ISLAND EDGE CONDITION

SITE LOCATION
ACCESS
ATTRACTION
BUS STOP



CENTRAL PARK EDGE CONDITION



ROOSEVELT ISLAND EDGE CONDITION

CITY IN CITY
Roosevelt Island

EXCLUSIVE

Government

Residence

Hospital

Education

Public

Park

INCLUSIVE

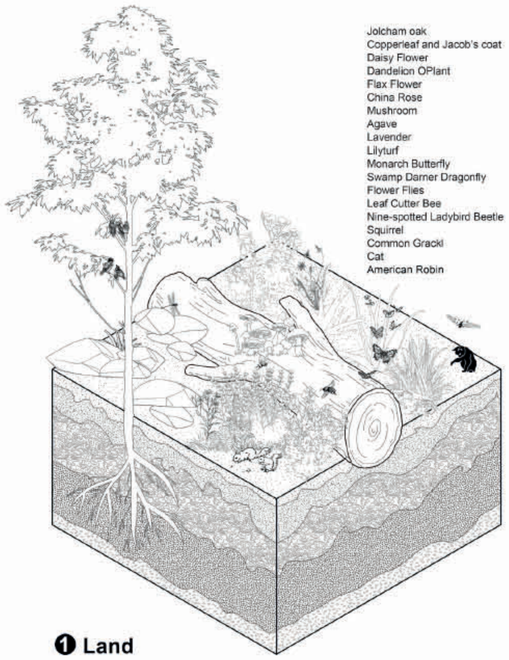
Transportation

CITY IN THE CITY

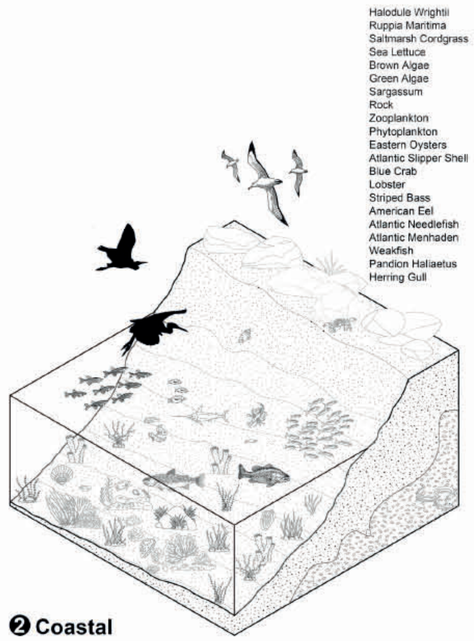
——Roosevelt Island

This is the city for animals in the city.

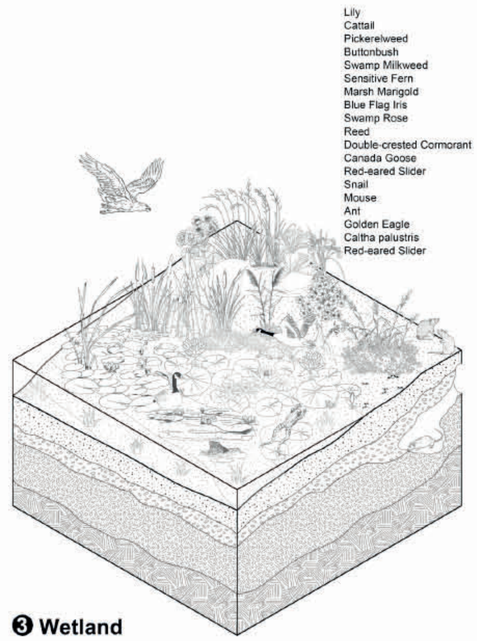
In City Island studio, the discussion about the idea of urbanization and deurbanization referring to the areas of Central Park and Roosevelt Island were focused in our project. The natural and urban typology differences existing in the two sites led the study to the relationship between human and nature. Through the establishment of a noun-human preserved area for animals with a steel bridge across for visitors on the south end of Roosevelt Island, the project tries to bring out a possible way of interaction between human and nature. The introduction of the new programs on Roosevelt Island could attract people, and also provide a refugee for animals to inhabit. Thus, transforming Roosevelt Island to more a activate and vibrant area in terms of programs and natural perspectives. As time goes by, the natural preserved area could potentially extend to the rest of Roosevelt Island, making the relationship between nature and humans more harmonious.



❶ Land

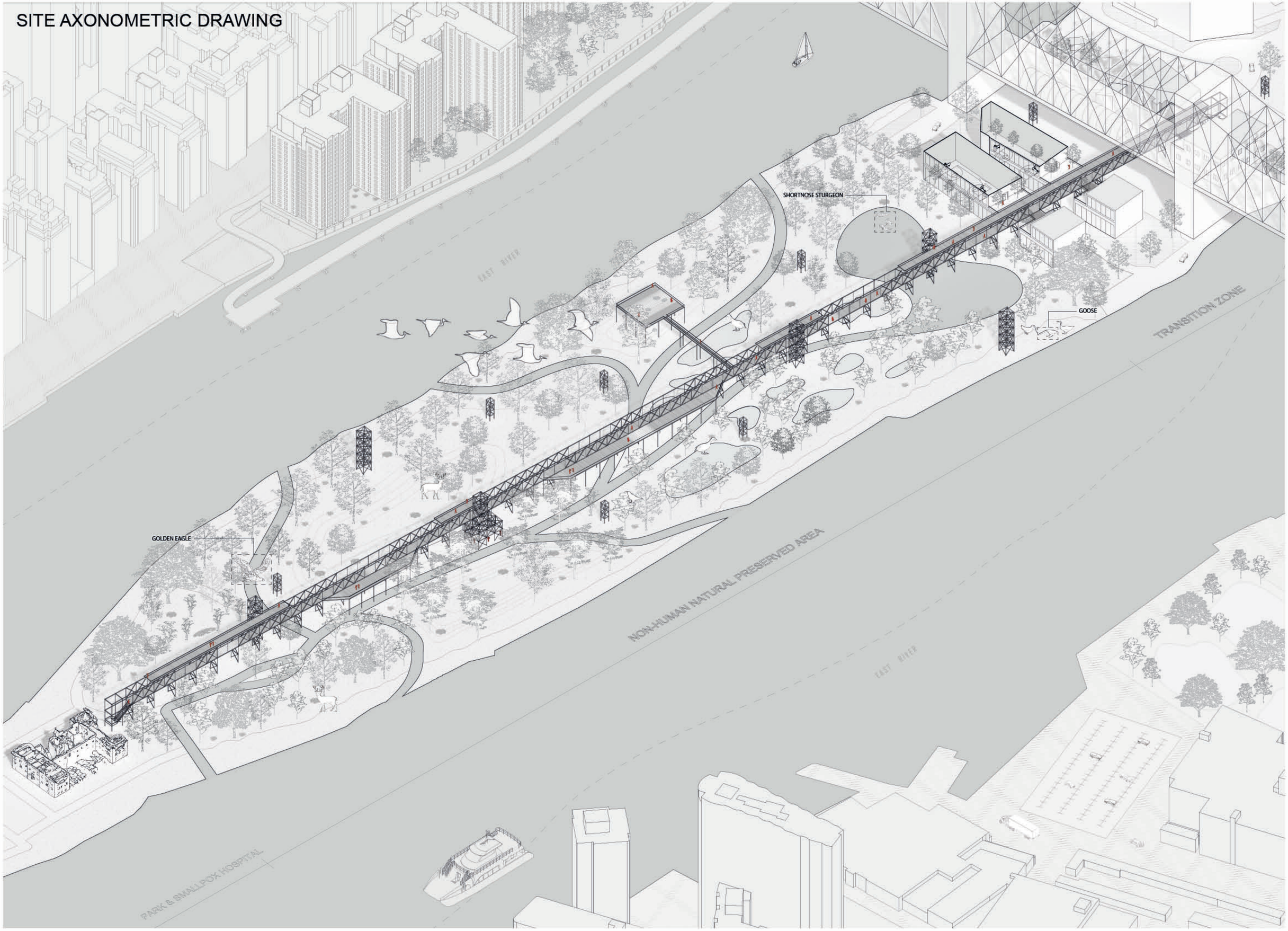


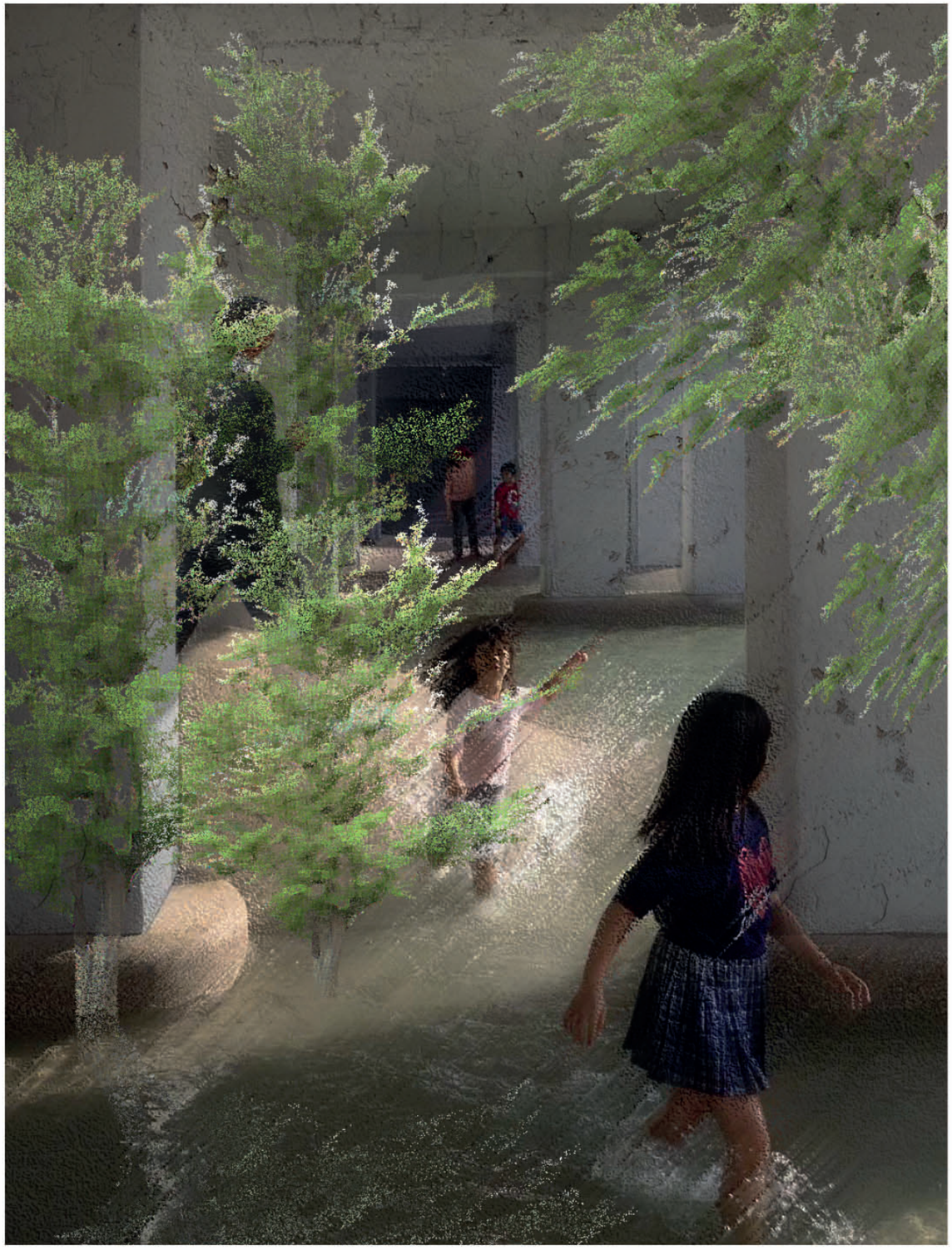
❷ Coastal



❸ Wetland

SITE AXONOMETRIC DRAWING





SCRAP FRAMEWORK

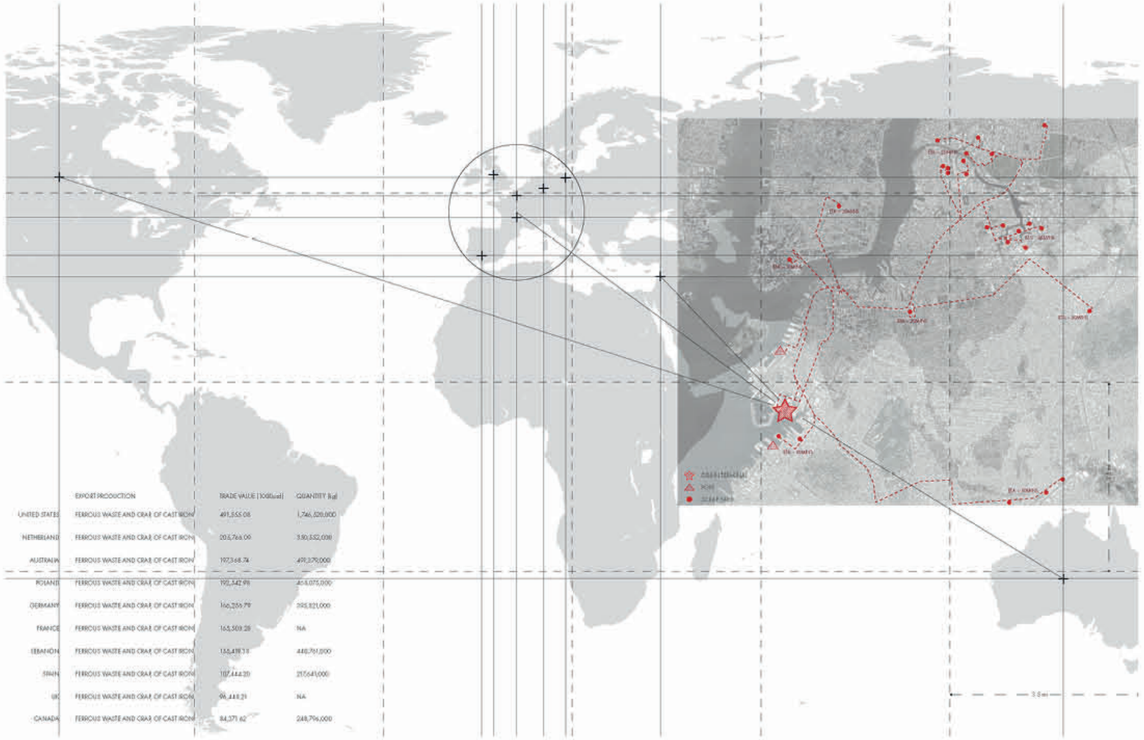
02 “SCRAP FRAMEWORK”

Recycling Center and Making Studio

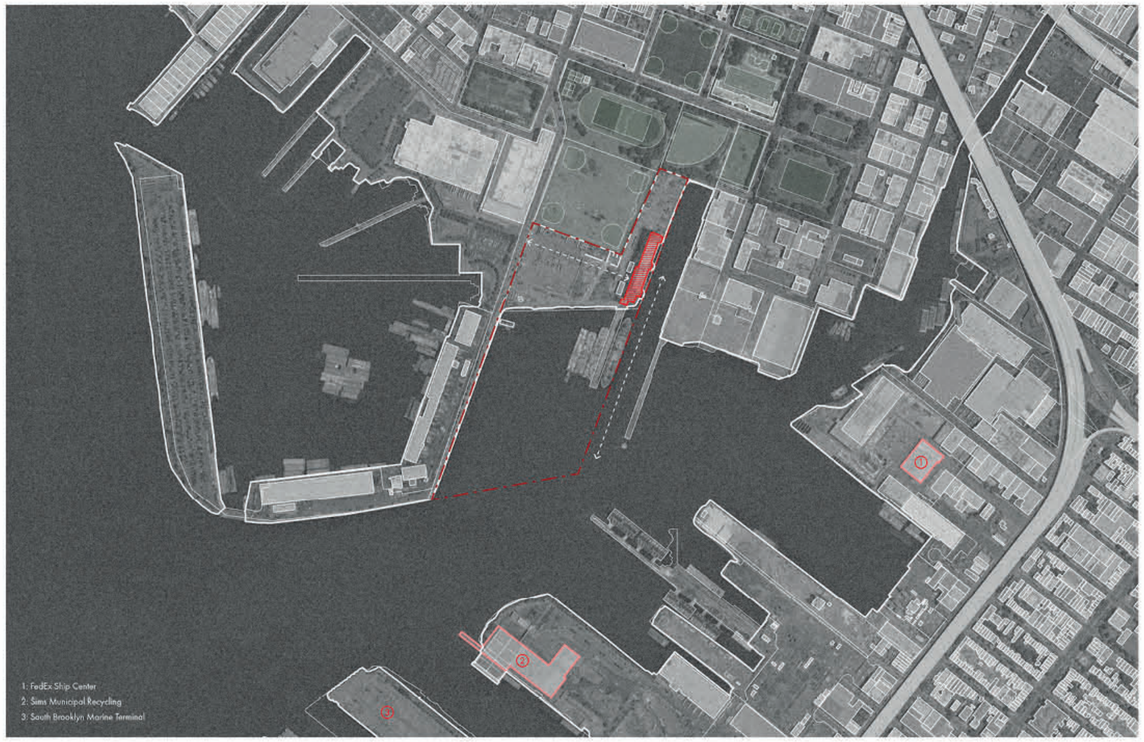
Columbia, 2023 Fall
Columbia University, MSAAD

Site: Brooklyn Grain Terminal, New York

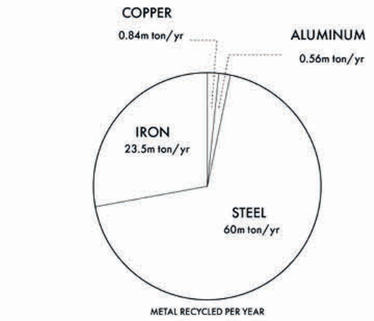
Advisor: Ruth Mandl, Bobby Johnston



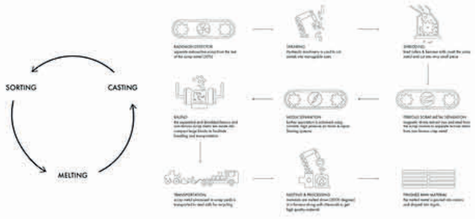
	EXPORT PRODUCTION	TRADE VALUE	QUANTITY
UNITED STATES	FERROUS WASTE AND CRAP OF CAST IRON	491,555.08	1,746,520,000
NETHERLAND	FERROUS WASTE AND CRAP OF CAST IRON	20,576.06	3,80,552,030
AUSTRALIA	FERROUS WASTE AND CRAP OF CAST IRON	197,368.74	491,370,000
POLAND	FERROUS WASTE AND CRAP OF CAST IRON	192,342.99	414,075,000
GERMANY	FERROUS WASTE AND CRAP OF CAST IRON	166,256.79	393,821,000
FRANCE	FERROUS WASTE AND CRAP OF CAST IRON	163,509.28	NA
LEBANON	FERROUS WASTE AND CRAP OF CAST IRON	155,438.13	448,761,000
SPAIN	FERROUS WASTE AND CRAP OF CAST IRON	107,444.20	257,641,000
UK	FERROUS WASTE AND CRAP OF CAST IRON	96,448.21	NA
CANADA	FERROUS WASTE AND CRAP OF CAST IRON	84,571.62	248,796,000

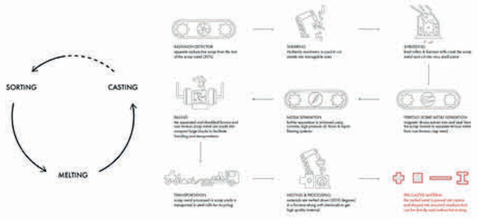


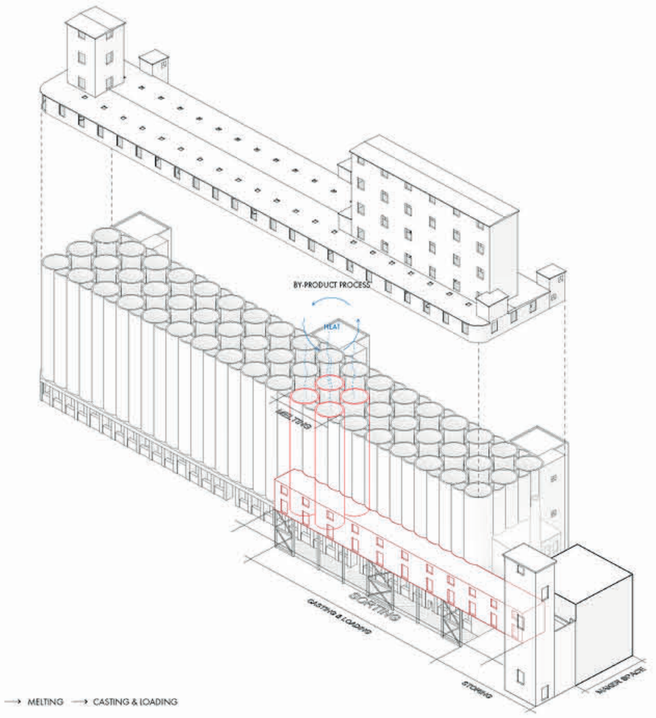
STEEL	ALUMINUM
100% recyclable without losing prperties	100% recyclable without losing prperties
FE2 + H2O = FE(OH)2 Rust begin to occure when steel exposed to water.	2Al + 6H2O = 2Al(OH)3 + 3H2 Layer of aluminum oxide on surface for protection
melting point: 2500-2800 °F	melting point: 1221 °F
Beams for structural frameworks Sheeting for commercial building walls and roofs Structural steelwork	Windows and door frames Offshore superstructures Metal roofing sheets Metal roofing sheets
IRON	**COPPER**
close to 100% recyclable	100% recyclable without losing prperties
Iron metal does not react with water under normal conditions	Copper reacts with moist air and develops a protective green layer
melting point: 2800 °F	melting point: 1984 °F
Creating alloys for stronger metals Producing rods for concrete structure strength improvements Bridge structure construction	Incomparable strength in low temperature Plumbing systems Exterior cladding



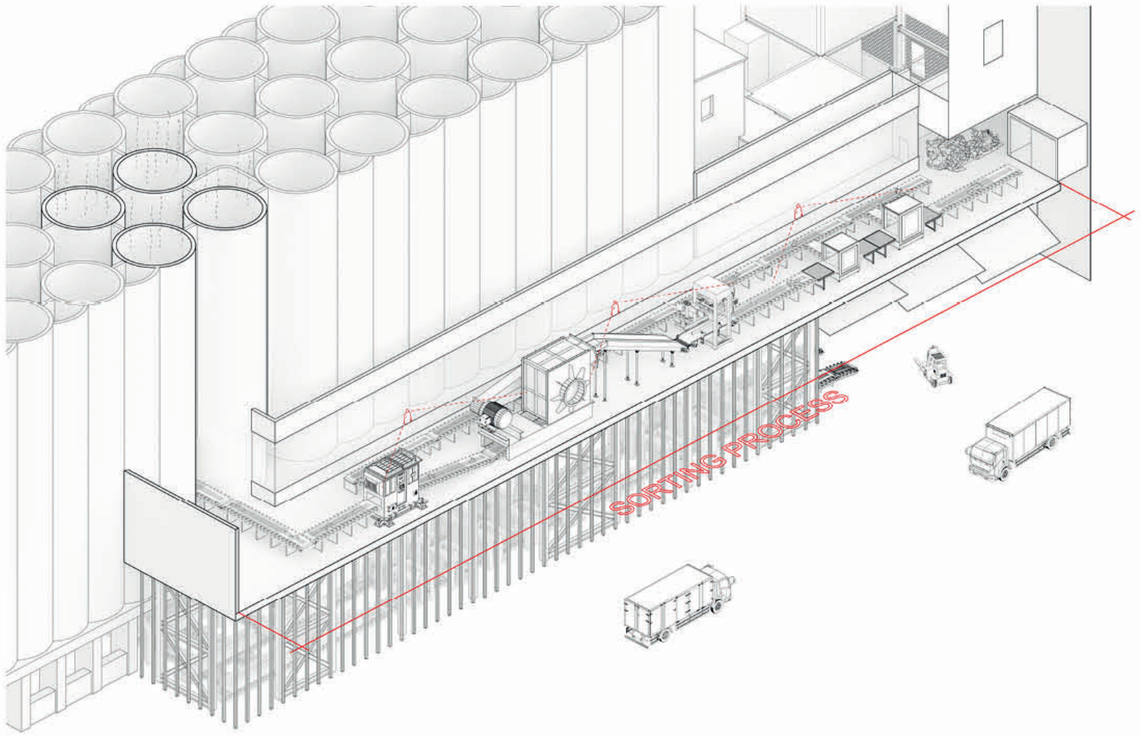
IRON	$ 0.04 / lb	STEEL	$ 0.05 / lb
ALUMINUM	$ 0.55 / lb	COPPER	$ 3.41 / lb

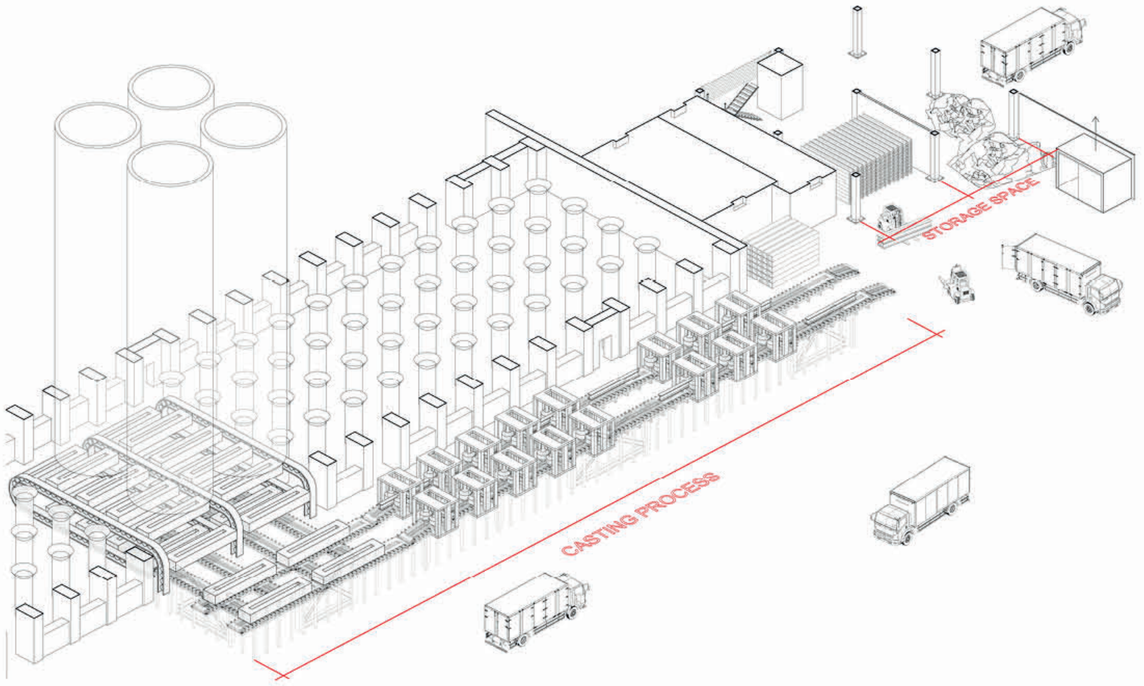


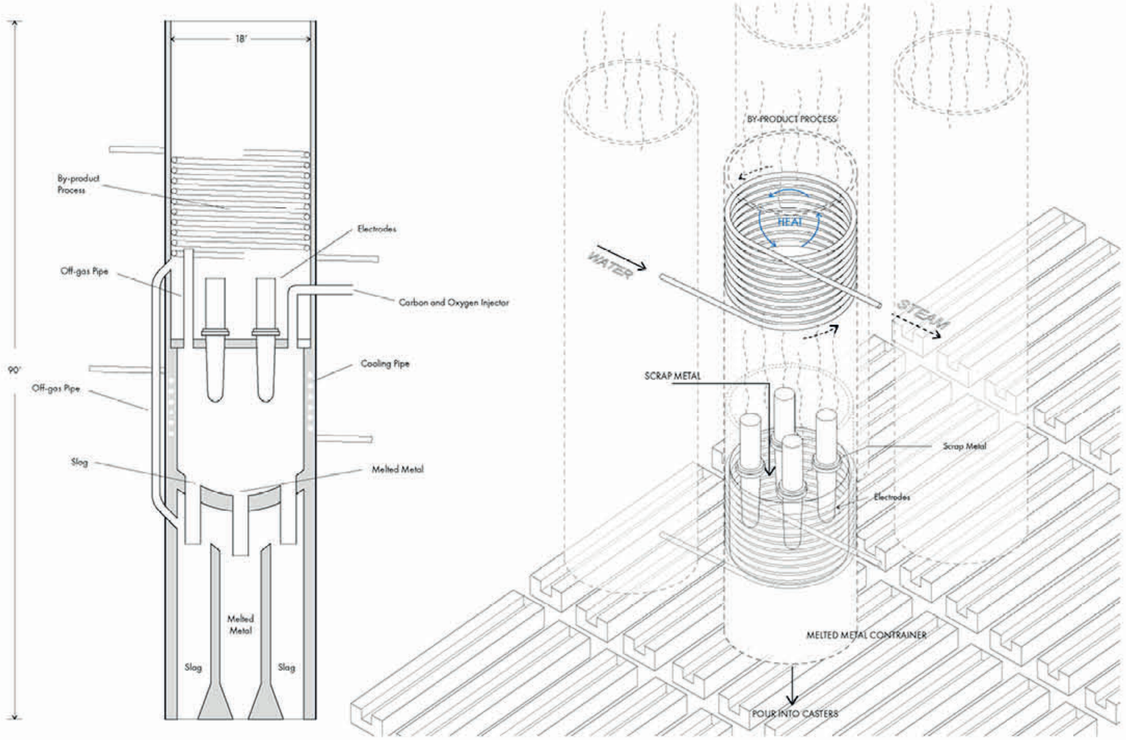


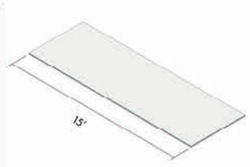
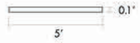
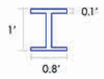
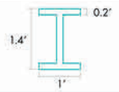
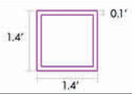
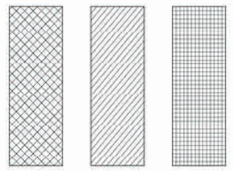
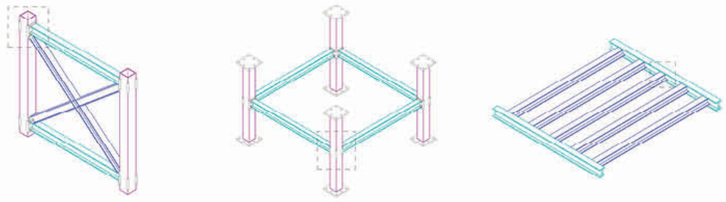
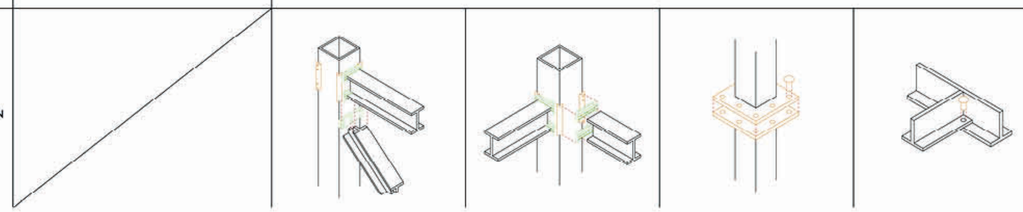


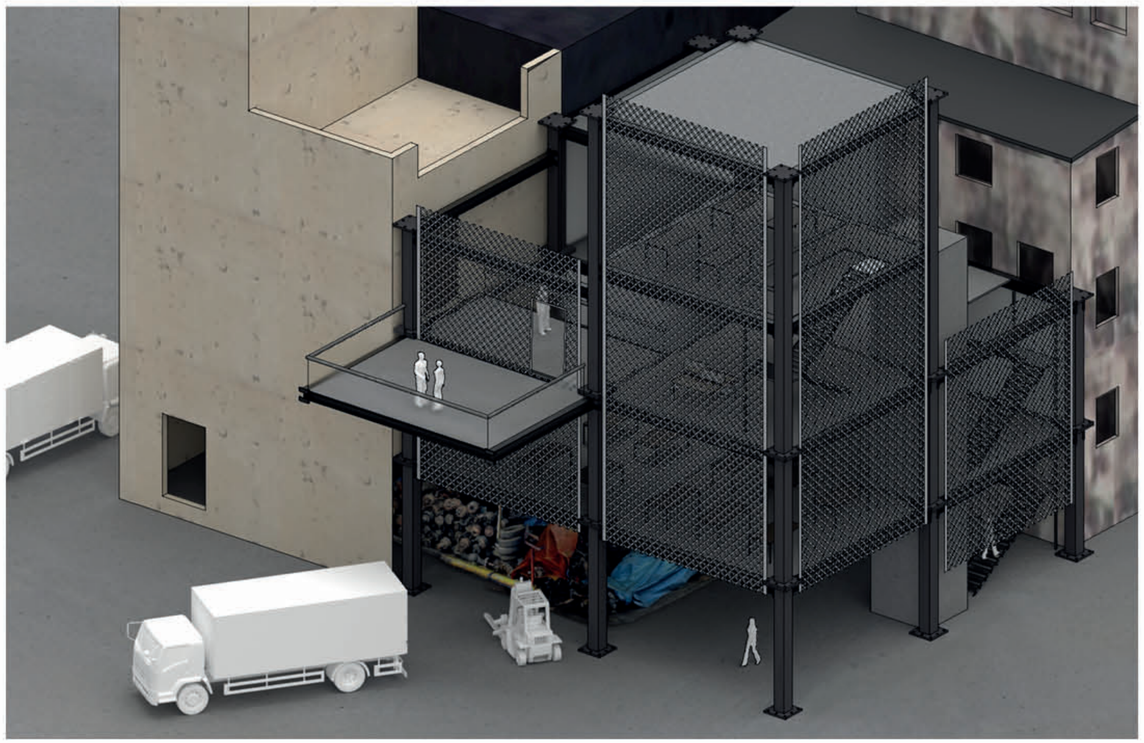
UNLOADING & STORING → SORTING → MELTING → CASTING & LOADING


SORTING PROCESS

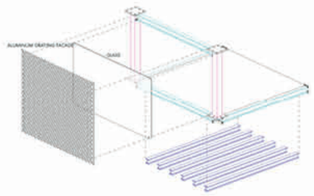

STORAGE SPACE
CASTING PROCESS


18'
90'
By-product Process
Electrodes
Off-gas Pipe
Carbon and Oxygen Injector
Cooling Pipe
Off-gas Pipe
Slag
Melted Metal
Melted Metal
Slag
Slag
BY-PRODUCT PROCESS
HEAT
WATER
STEAM
SCRAP METAL
Scrap Metal
Electrodes
MELTED METAL CONTRAINER
POUR INTO CASTERS

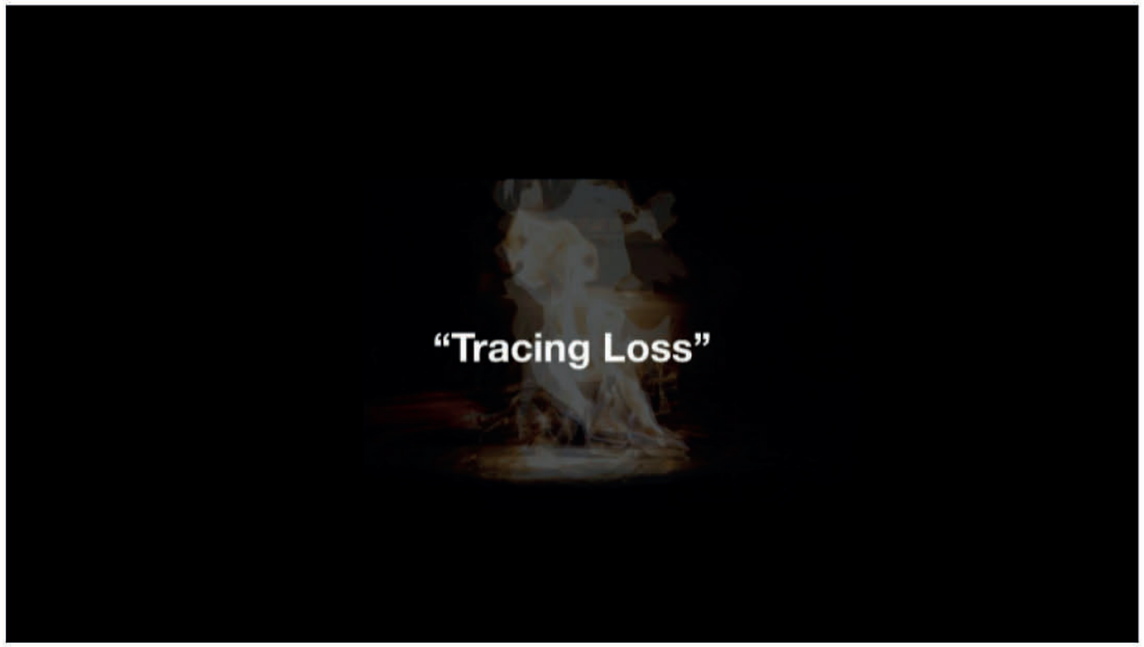
FINAL PRODUCT				
FINISH	Electroplating	Phosphate Coating	Phosphate Coating	Powder Coating
SECTION				
APPLICATION				
CONNECTION				



FACADE DETAIL



EXPLODED FACADE DETAIL



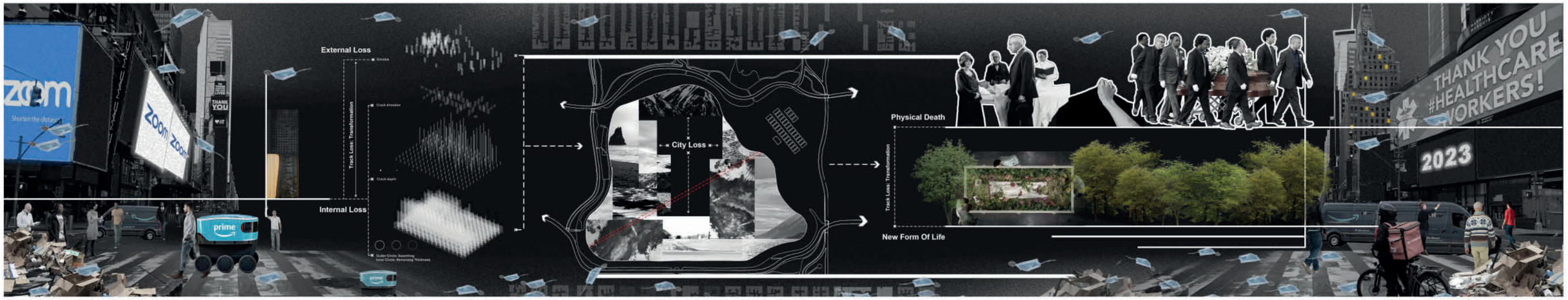
03 “TRACING LOSS”

Central Park Nursery

Columbia, 2023 Fall
Columbia University, MSAAD

Site: Centarl Park, New York

Advisor: Karla Rothstein


External Loss
Internal Loss
Track Loss: Transformation
Smoke
Crack direction
Crack depth
Outer Circle: Soothing
Inner Circle: Remaining Thickness
City Loss
Physical Death
Track Loss: Transformation
New Form Of Life
THANK YOU #HEALTHCARE WORKERS!
2023


TIME
JOURNEY
LIFE ENDS
PHYSICAL DEATH The hospital declared it end of life.
TRANSPORTATION BEGINS WHEN NOTIFIED BY STAFF
LEAVE THE CITY Temporarily stored at the hospital and then transported to the venue when the staff there informs them that a place is available.
TAKE HALF A DAY TO SAY FINAL GOODBYES
END OF THE FORMAL LIFE
BEGIN OF THE NEW LIFE
In the ceremony of this building, people say their last goodbyes to their loved ones with a sense of sadness. After people see tree farm here, they realize that the lives of their loved ones are not gone, but are about to be transformed into another form
SIXTY DAYS OF TEMPORARY STORAGE ON THE BRIDGE
WHERE TRANSFORAMTION BEGINS
Because fermation, the process of degradation to fertilizer, takes 60 days, dead loved ones are temporarily stored at the bridge
SPEND THREE YEARS OF LIFE TRANSFORMING INTO ANOTHER FORM
LIVE NURSERY Spend three years here converting to a new life form in preparation for reentry into the city
BACK TO GITY
TRANSPORTATION BACK TO THE CITY
NEW FORM OF LIFE
They will be reunited with their loved ones again when they are reborn in the form of a walking tree

CEREMONY PLACE

TERRAMATION BRIDGE

TERRAMATION PROCESS

TREE NURSERY

REBORN AS A TREE