

CRANE PLAY
QIAOCHU WANG
TERM 3 PORTFOLIO



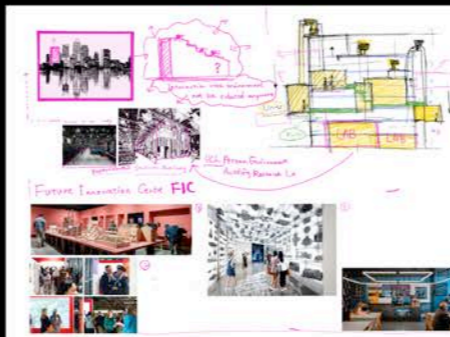
Material Waste Problem

Canary Wharf is undergoing massive urban renewal. Each year, large volumes of structural steel, glass curtain walls, and concrete components are discarded from demolition or renovation projects. Yet, there is no infrastructure to test, reuse, or reimagine these materials architecturally.

15 Westferry Circus, Canary Wharf



Site Mapping & Urban Context



Functional Gap in Canary Wharf

Compared to HereEast, UCL PEARL, and King's Cross, Canary Wharf lacks:

- 1:1 architectural testing space
- Structural performance platforms
- Material re-fabrication & prototyping labs
- Public-facing research environments
- The district remains dominated by closed office buildings, with no infrastructure for experimentation, reuse, or public engagement in architecture.



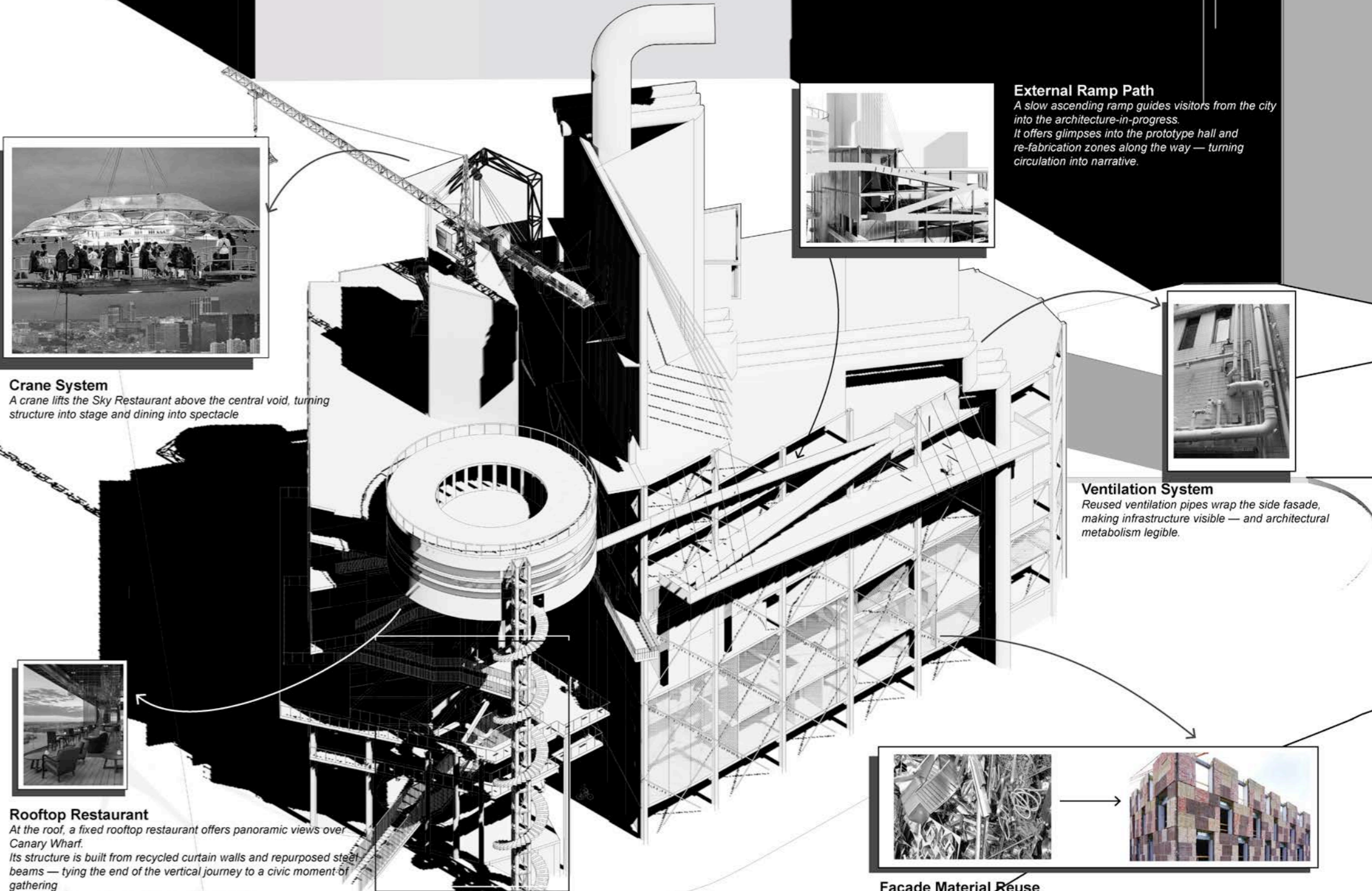
Crane System

A crane lifts the Sky Restaurant above the central void, turning structure into stage and dining into spectacle.



Rooftop Restaurant

At the roof, a fixed rooftop restaurant offers panoramic views over Canary Wharf. Its structure is built from recycled curtain walls and repurposed steel beams — tying the end of the vertical journey to a civic moment of gathering.



Observation Deck

A cantilevered platform overlooking the vertical void. Visitors observe real-time crane operations, component testing, and structural movement — turning construction into performance.



External Ramp Path

A slow ascending ramp guides visitors from the city into the architecture-in-progress. It offers glimpses into the prototype hall and re-fabrication zones along the way — turning circulation into narrative.



Ventilation System

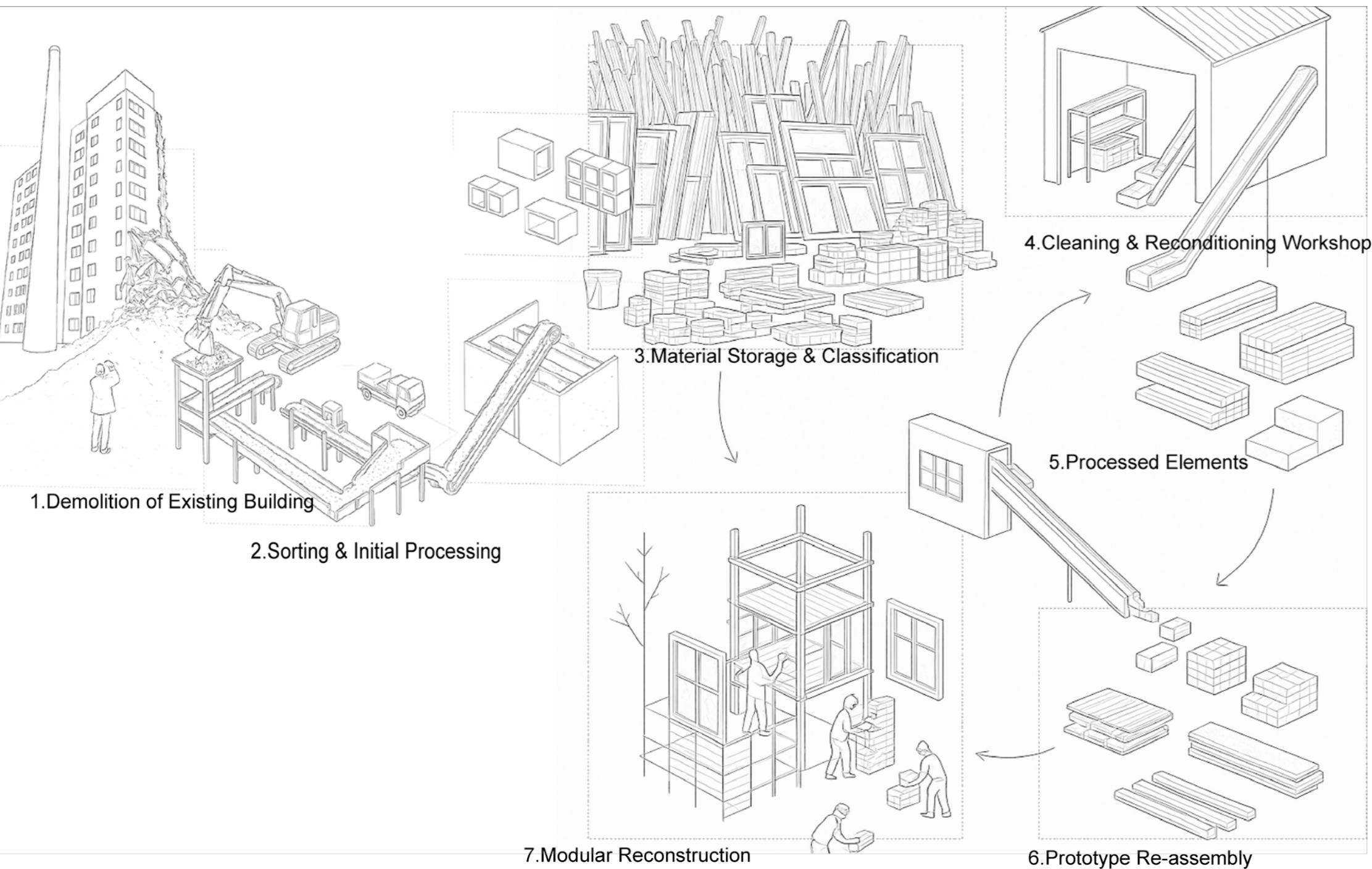
Reused ventilation pipes wrap the side facade, making infrastructure visible — and architectural metabolism legible.



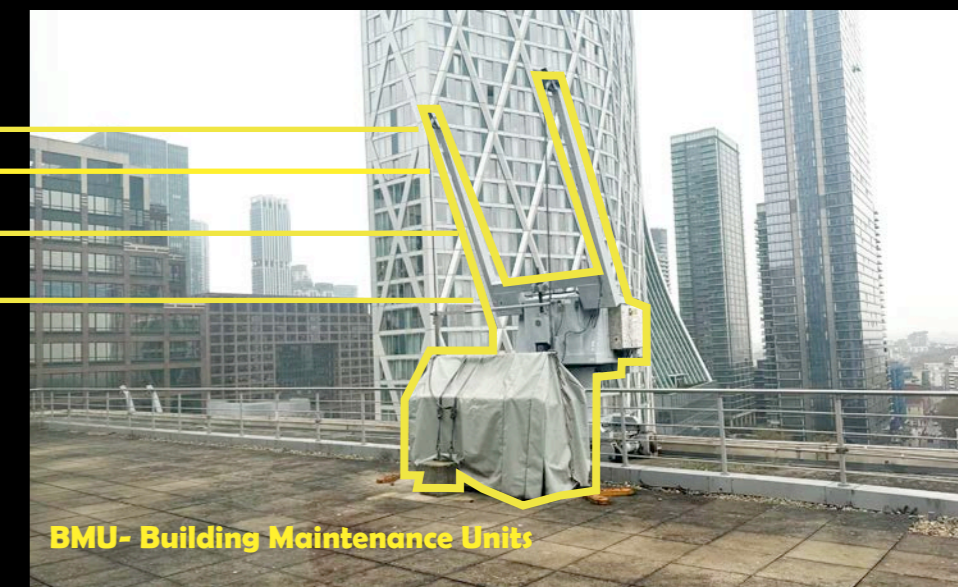
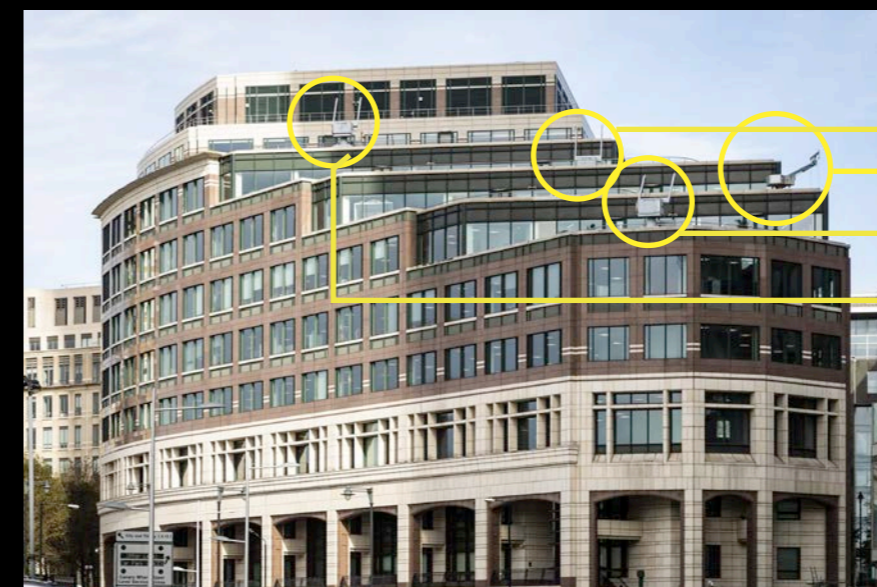
Facade Material Reuse

The facade is composed of crushed and reassembled demolition components — turning waste into architectural memory.

Material Reuse Workflow



Compression ARTIFACT

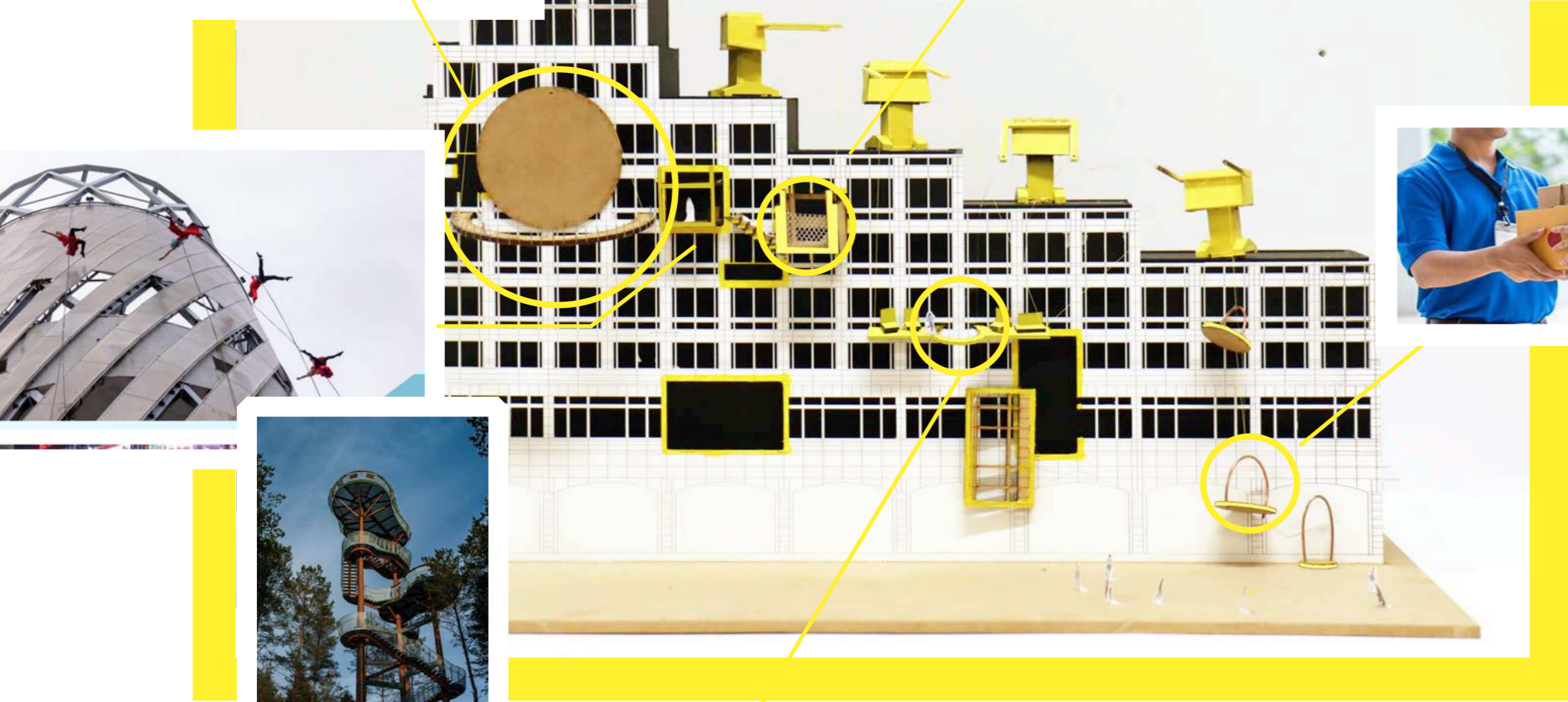


I am interested in BMUs because they represent a dynamic element within the typically static nature of buildings. This contrast brings a sense of vitality to architecture, yet their functional significance is often overlooked. Through redesigning BMUs, I aim to explore their multifunctional potential—not just as cleaning tools but as bridges to enhance interaction and user experience within the building. The unique motion and visual impact of BMUs captivate me, revealing their potential to play a larger role in architectural storytelling.

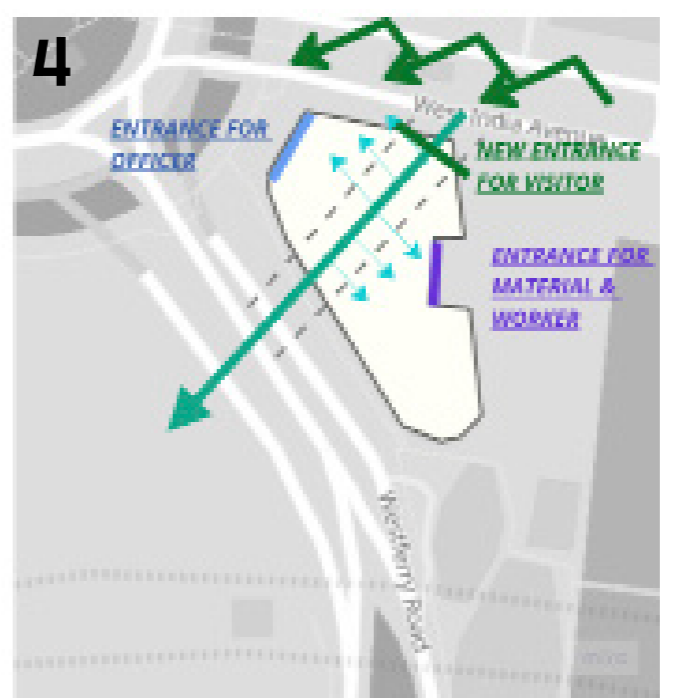
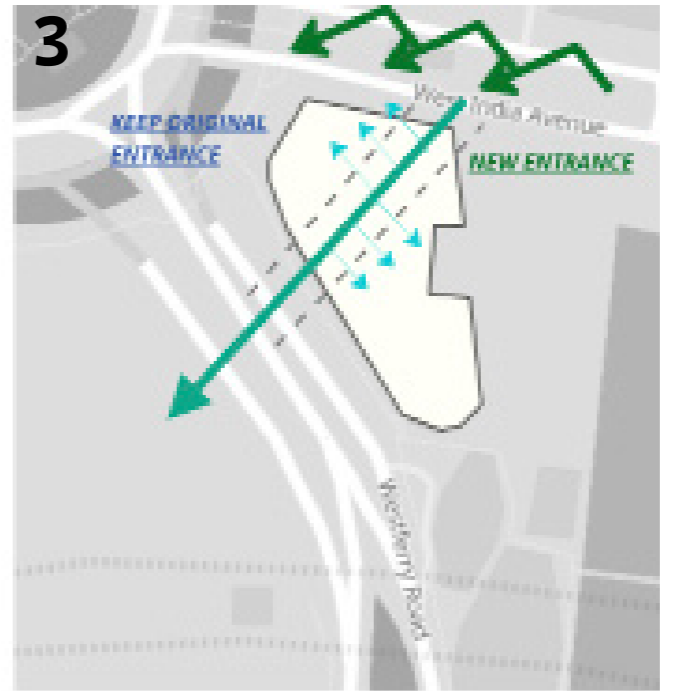
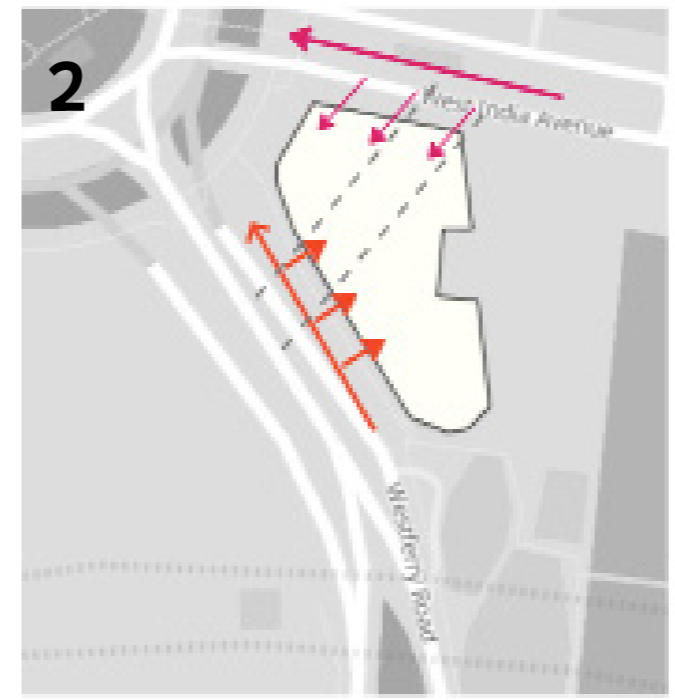
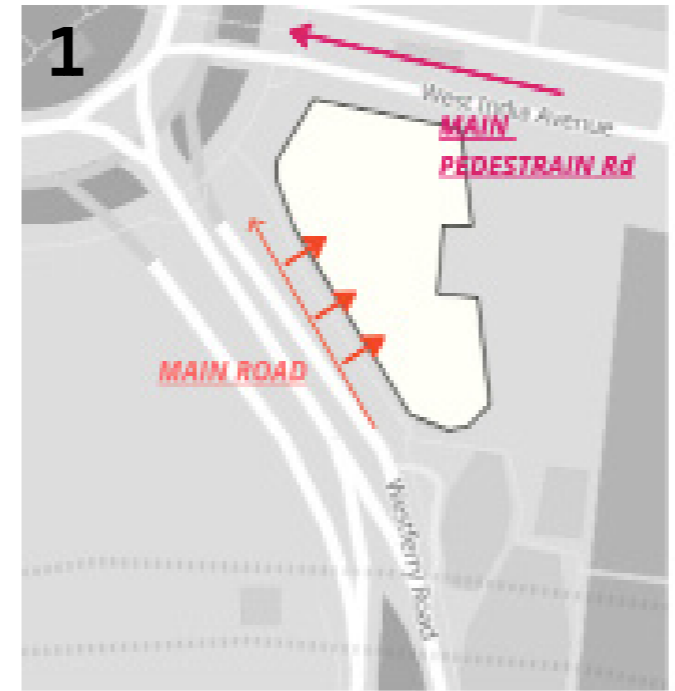


- Frequency:** Typically cleaned 4-6 times a year, especially for high-rise glass curtain wall buildings like those in **Canary Wharf**, to maintain transparency and a polished appearance. Reason: Commercial buildings have higher aesthetic standards to attract clients and maintain their image.
- Residential Buildings:** Frequency: Usually cleaned 2-4 times a year, which is less frequent than commercial buildings. Reason: Residential buildings place less emphasis on façade cleanliness and focus more on functional maintenance.
- Special Purpose Buildings:** For buildings such as hospitals, hotels, or airports, the maintenance frequency might be higher depending on the materials used on the façade and cleaning requirements.
- Low Usage Frequency:** BMUs are idle for most of the year, which presents opportunities for multifunctional designs. They could serve as observation decks, temporary event spaces, or advertising platforms, thereby improving efficiency and enhancing the building's overall experience.

Compression ARTIFACT



STRADGY



I have analyzed the site and observed that people primarily move through these two directions. Therefore, I divided the building into two main sections based on the dominant pedestrian flow. The road on the west side is the primary pedestrian route, which naturally gathers the most public attention and visual focus. To respond to this, I designed the western section of the building as an exposed structure, showcasing a dynamic and visible system to attract passersby. This area functions as the public-facing zone, encouraging interaction through exhibition, demonstrations, and real-time façade testing related to the BMU (Building Maintenance Unit) Research and Testing.

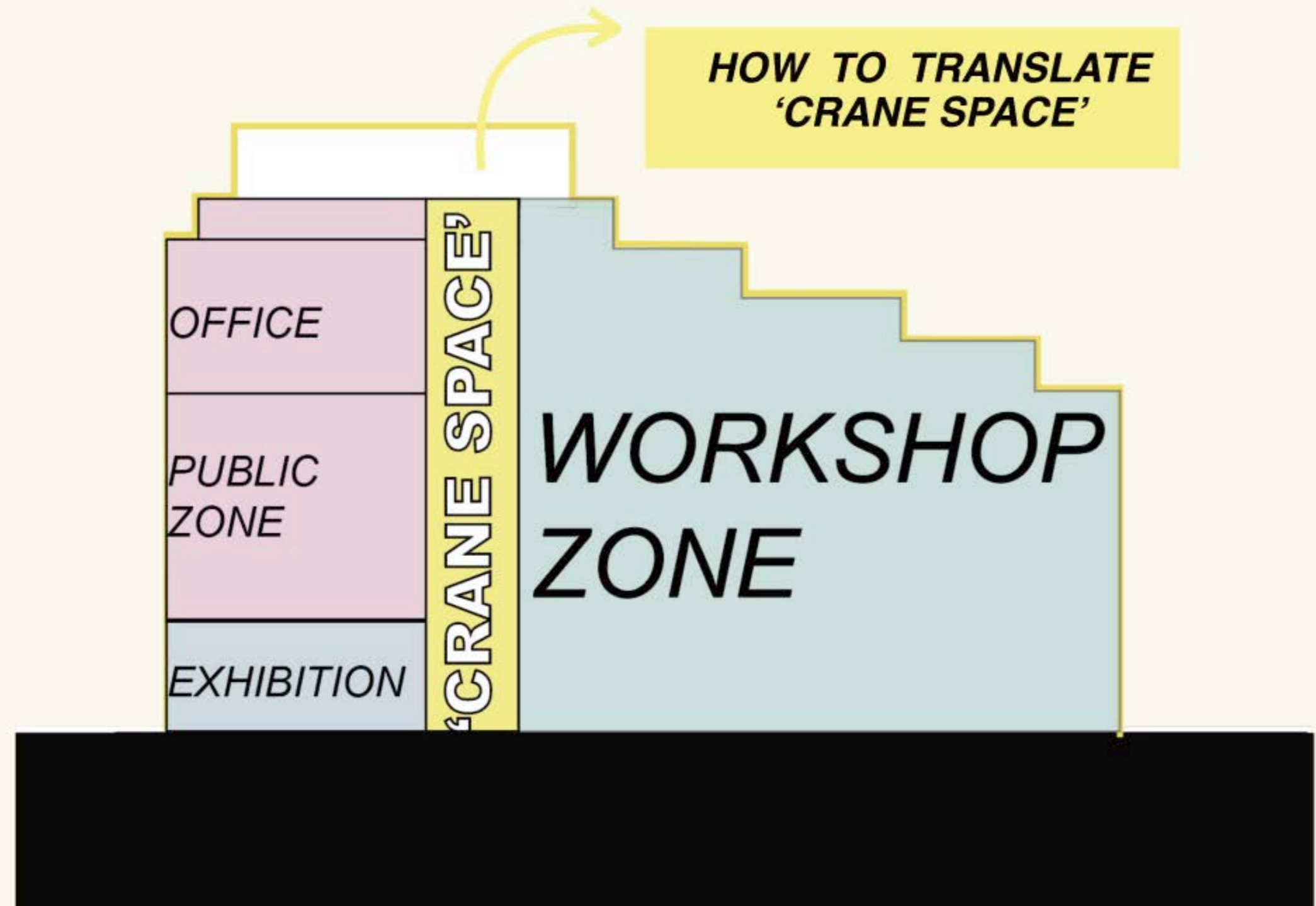
This exposed façade will also serve as a testing ground for adaptive systems, BMU payload tests, and emergency support functions—demonstrating how BMUs can go beyond cleaning to support material transportation, logistics, and even emergency evacuation scenarios. This not only activates the edge of the site but also embeds ongoing experimentation visibly into the urban fabric.

On the east side of the building, which faces more vehicle and delivery traffic, is the Innovation Centre's primary entrance. This entrance leads directly into the research and development zones, including the Smart Manufacturing and Robotics Labs, where modular construction, automated logistics, and material supply chain systems are developed. A secondary entrance is designated for material and equipment transportation, ensuring that logistics functions are clearly separated from the public and staff access points.

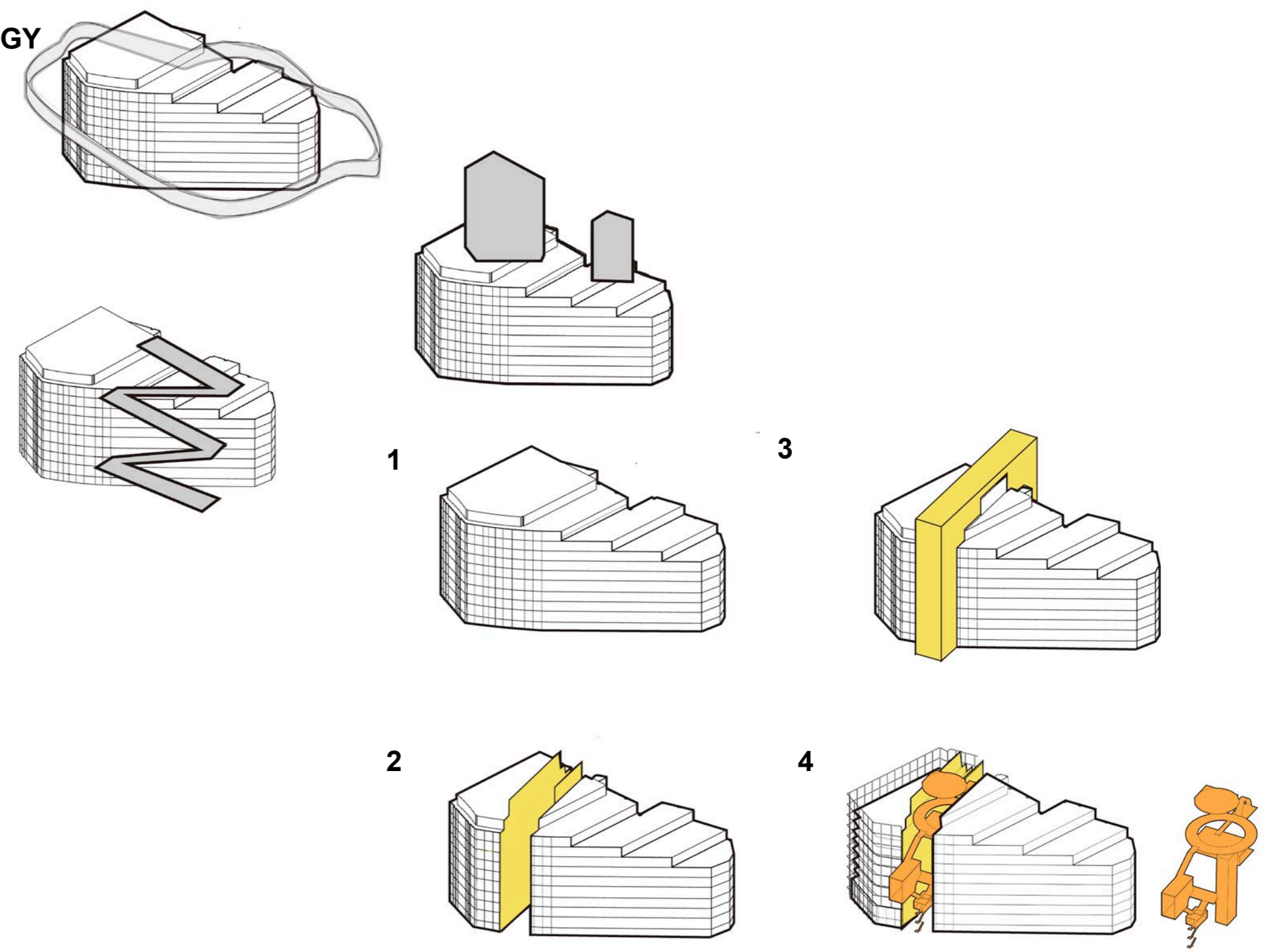
As such, the building is clearly split into two core areas:

- West Side - Public exhibition and interaction area
- East Side - Innovation labs, co-working, and smart manufacturing workspaces

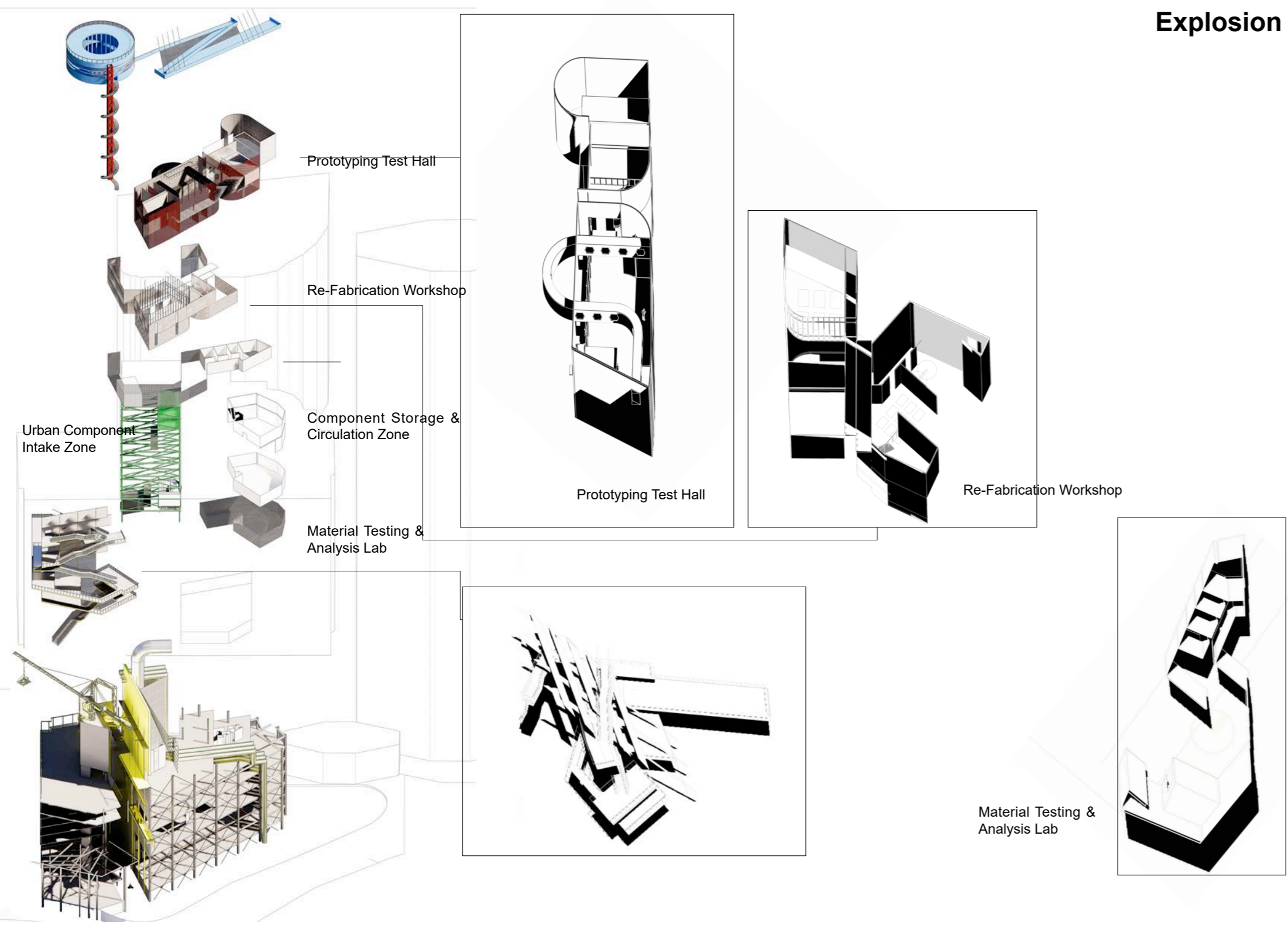
STRADGY



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Explosion



Testing & Analysis Lab

Recycled Double-Glazed Curtain Wall Units

Metal Honeycomb Insulation Panels

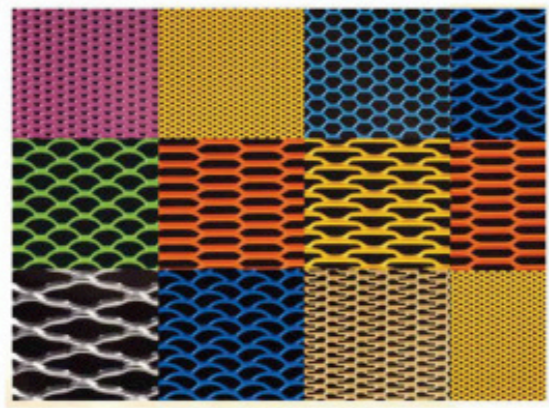


Façade Material Reuse



Prototype Test Hall

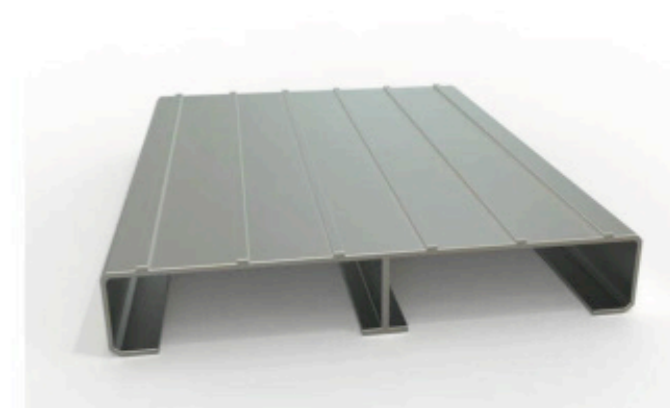
Steel Mesh Structures



Re-Fabrication Workshop

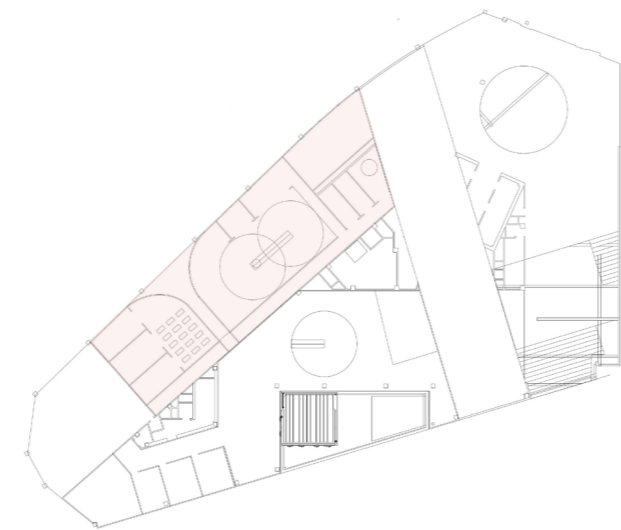
Dismantled Structural Steel Components (e.g. beams and columns)

Salvaged Steel Decking Panels





Prototyping Test Hall



Prototyping Test Hall

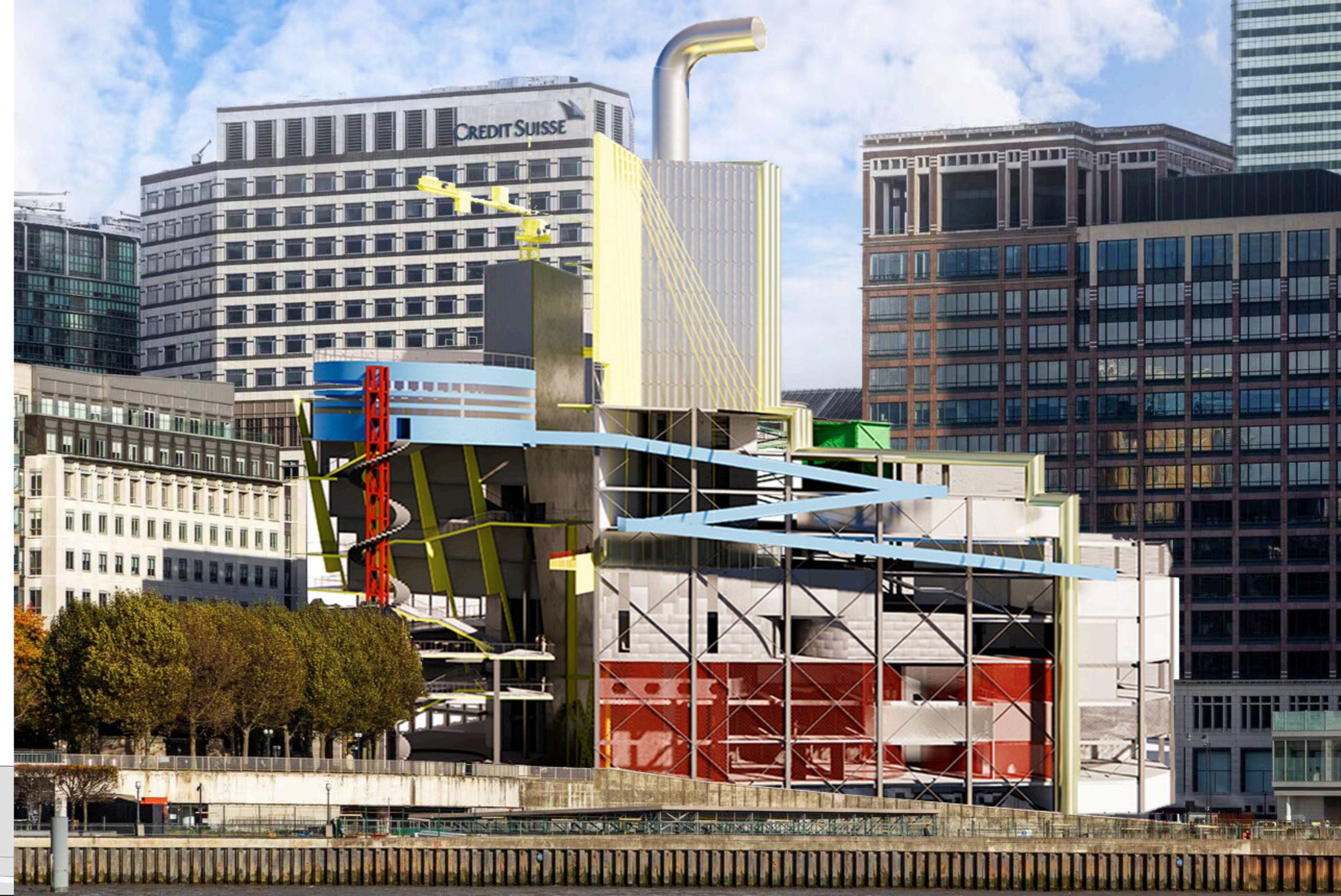
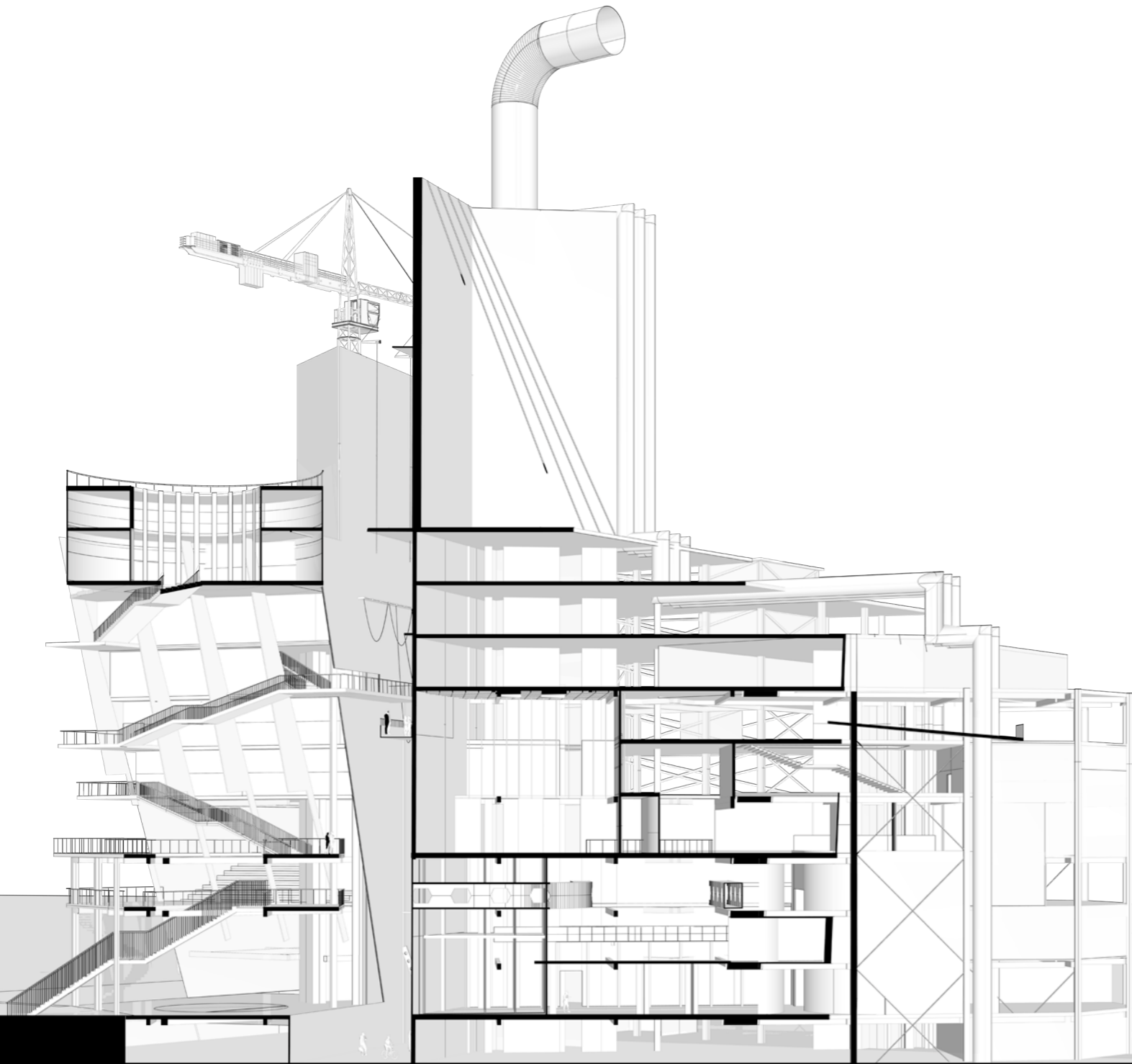


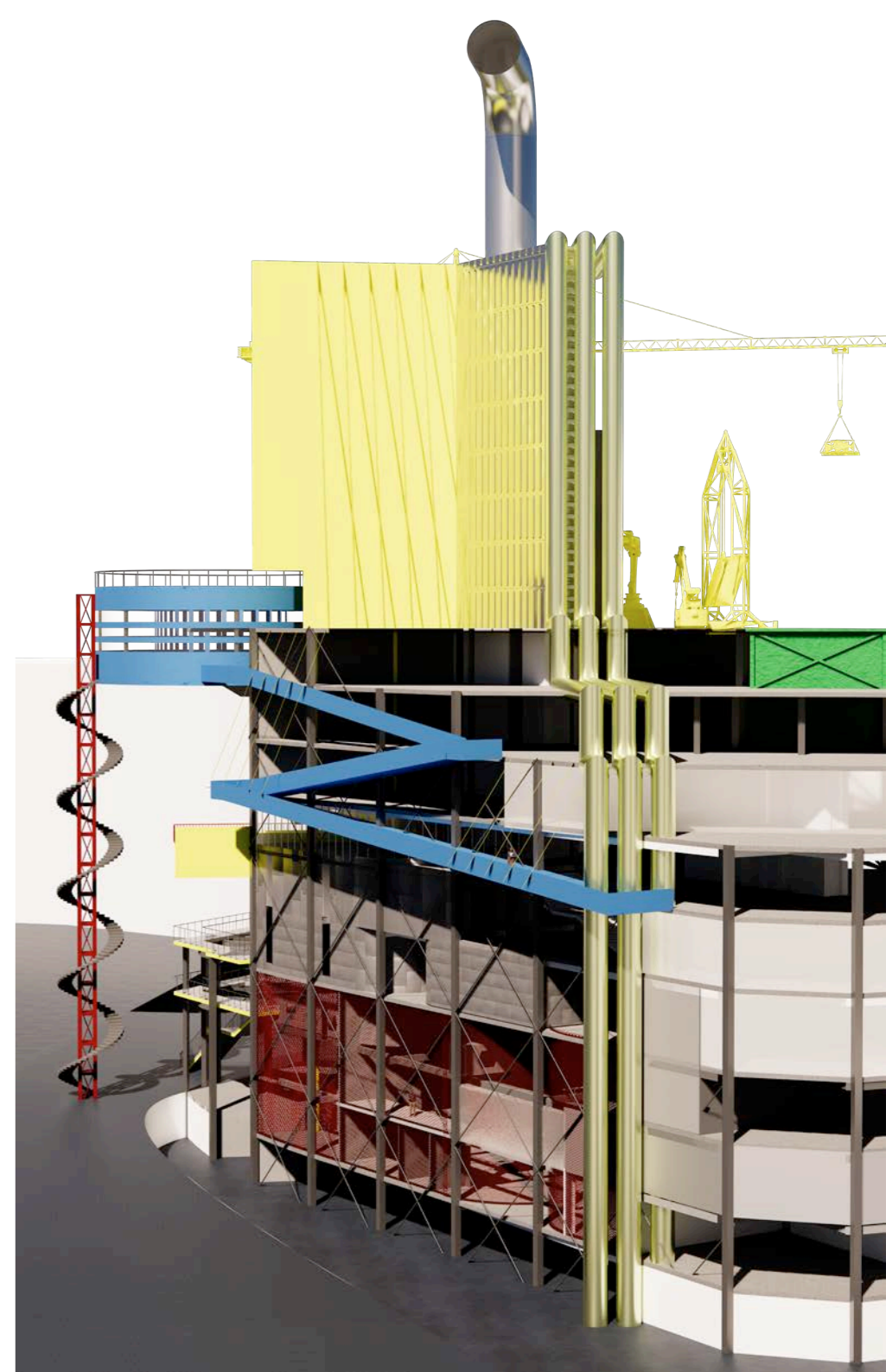
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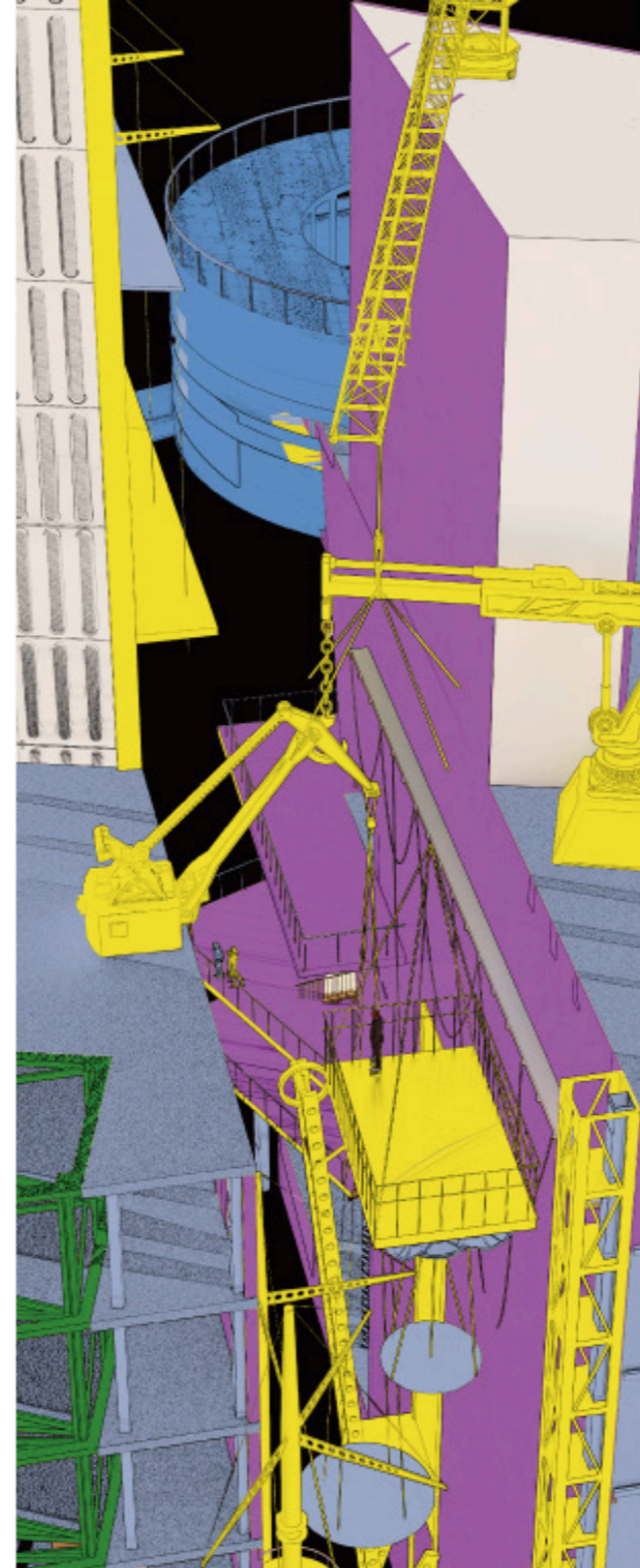


Urban Component Intake Zone

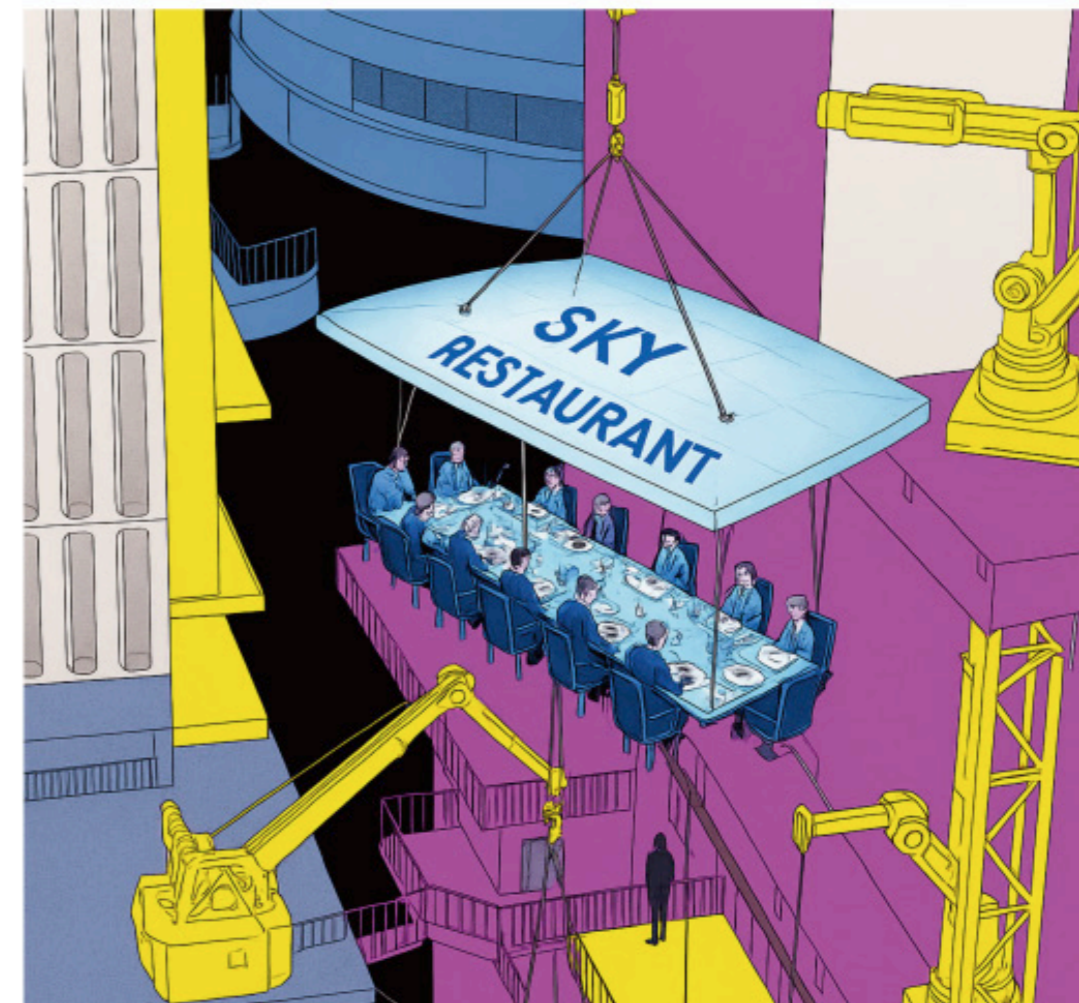
SECTION

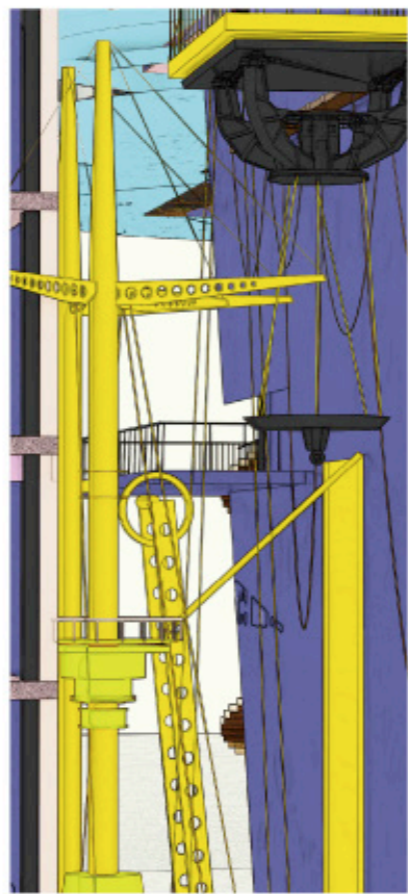






Sky Restaurant

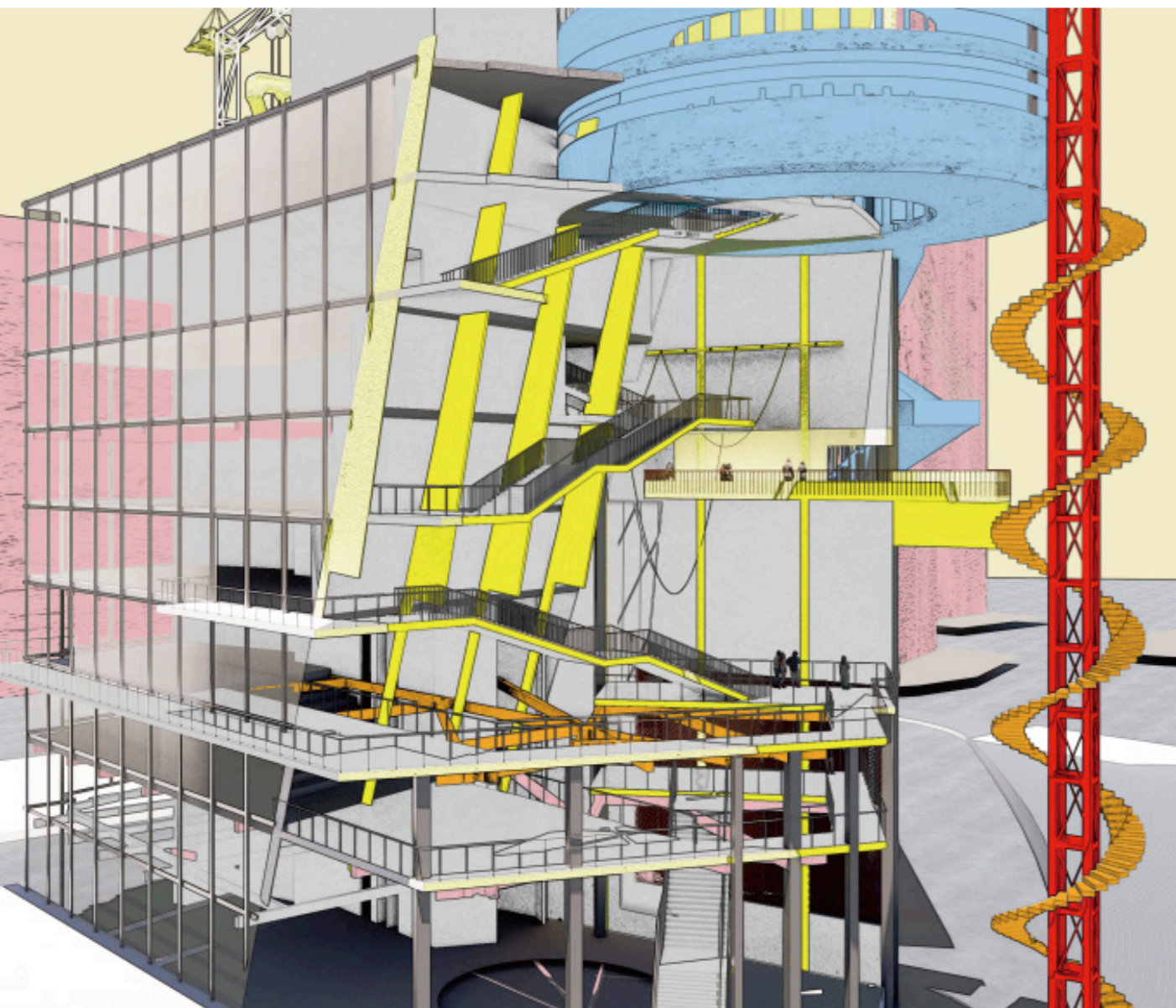




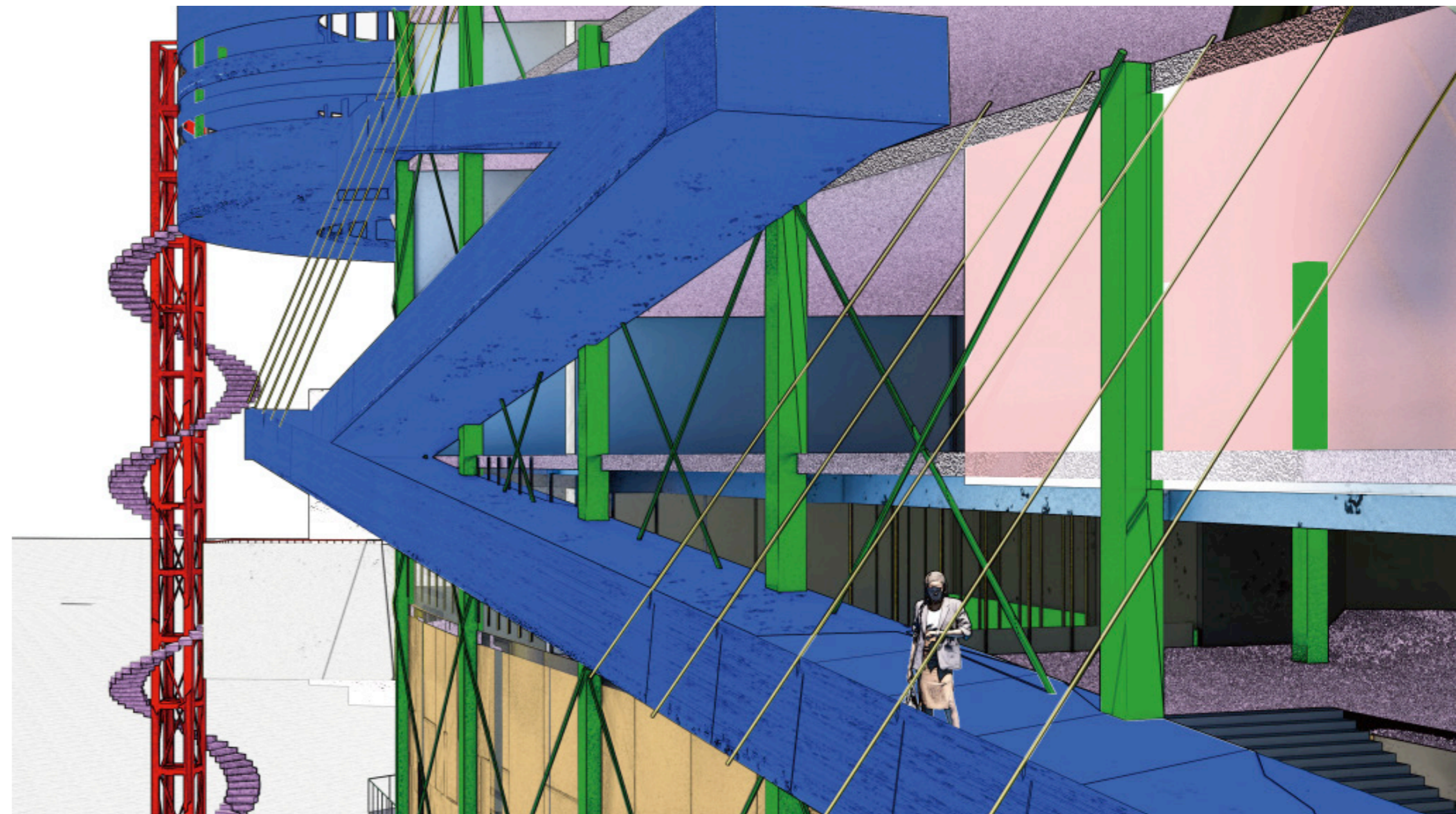
Architectural Aerial Performance



Observation Deck



External Ramp



External Ramp

