

Fall 2020

Cheap Wonder, TYP.

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An assessment of the materials available on typical institutional projects today reveals that our materials are not the concrete of Le Corbusier, the bricks of Louis Kahn, the terracotta of Louis Sullivan, or the steel of Mies van der Rohe, instead they are inexpensive building products: sheetrock, metal studs, gyp-board, and ducting. Frequently we proceed by developing a design for the building and then deciding how it will be made and detailed from these materials, but this thesis proposes a method that works in the opposite direction, looking first to the strange beauty of these building products and working outwards to make spaces of wonder from them.

We can find one strategy for how to do this in the photographs of Andreas Gursky. These conjure the appearance of teeming vastness from the things we consider common, using an aerial viewpoint to detach this material from its conventional meaning. The Gursky photographs give a hint for how to define spatial, material, and perceptual wonder: the creation of an expansion of space, of vastness, infinity, of teeming and flickering matter.

In architecture, the sensibility we find in Gursky's photographs has been created in big spaces with lots of material on private projects that can afford the area and the real estate, for example in the hotels of John Portman. In art, it has been created nicely in small spaces, but with material and labor that

serves one function temporarily for an audience already seeking it out, for example in Samara Golden's installation at the Whitney Museum. In infrastructure, we again find this teeming vastness captured by Gursky, but at a scale outside the domain of a typical architectural project in our contractual structures.

This sense of vastness always seems to be either generated or enabled by capital and consumption – in other words, it needs lots of material, lots of space, lots of money, or an audience in the know – and as a result it is available to some and denied to others. But what if we could produce this vastness with material we already have, in small spaces, with minimal expense – then could it be made available to broader audiences?

This thesis tests the creation of vastness in small spaces with material we already have, aiming to make it flexible, functional and with economy of means in order to carve out room for the collective in cities where real estate is expensive and on briefs where budgets are tight. The aim is to make the experience of spatial expansion inside the infrastructure that a building already is.

There are practices already talking about using economy of means to carve out spaces for collectivity, for example Lacaton and Vassal, who at Nantes used low-cost construction systems to allow

for many different configurations over time. Material neutrality often results from this pursuit of flexibility, eliminating the material luxury architecture offers us. On the other hand, vastness is created using material we already have in El Anatsui's opulent textiles woven from discarded bottle caps and cans, but this luxury is enabled by the intensive labor of the communities he engages – here texture becomes a means of generating and expressing the collective, but it's difficult to imagine this in the context of the American construction economy on projects with limited budgets. However, I propose that in the context of the US construction economy we already have ample material and labor for the tectonic field project if we mine the elements of ordinary building for their perceptual and experiential potential. This thesis aims to use the material implicit in ordinary construction to create a sense of vastness, flicker, and luxury amidst constraint in search of tectonics that enchant the common material we have readily available. This thesis tests how this could work in the context of the often antithetical concerns of typical public buildings – security, navigability, and affordability. Is it possible to use materials and tectonics to create the perceptual space of the field project – of vastness, infinity, and flickering – in instances where it is impossible to create a literal architectural field, simply by controlling the perceptual relationships between a building's spaces and the flows of matter in construction? Can this focus on material effects carve out spaces of the

collective cheaply by creating places for engagement that feel vast and grand but are actually small, inexpensive, and practical, by offering a multiplicity of textures and experiences that bring individuals out of their bubbles and give them presence in shared space?

The research for the thesis collected the materials we have available in buildings today, their qualities and utilities, in search of infinity and flicker; asking not what does brick want but "What can make sheetrock vast? And "What does infinity say to metal panel?" Out of this collecting emerged categories of provocative materiality. The first is imperfections, in which material or construction defects produce effects, making texture without additional cost – perhaps one way to produce the texture and expression of craft in the context of the American construction economy. Ornamental infrastructures are halfway between decoration and utility, like the vines of conduit in Lewerntz's Flower Shop. Reveals make materials of construction conceptual territory by giving them relevant prominence. Paradoxes use misfortune as an opportunity for beauty, as in Doris Saucedo's Disremembered, where thousands of shimmering pins express the pain of mothers who have lost their children to gun violence. And infills use crowd-sourced material, like the bubble gum of teenagers, to texture a surface with collective engagement. To test the creation of vast tectonics inexpensively, the thesis seeks a brief that typically

ignores tectonics and material, that requires economy of means and serves a broad audience, and provides opportunities to relate the individual to the collective.

One such brief is the urban public high school. This typically has default tectonics, a limited budget, a bored audience, practical problems that cannot be ignored, and a collectivity fractured by cliques. The first opportunity in this brief is the default tectonics of the school: typical detailing that makes each unit identical. Against this landscape of tectonic uniformity the varied lives of the students play out. How is it possible to enchant and diversify the standard material and tectonic of the school to make it glimmer affordably for its students? In the United States, we already have inexpensive high school types, but we can no longer reproduce these types because of their anti-urban character. The public school typically takes one of two forms: the first is the double loaded corridor with circulation at its center and attached event spaces – typically a gym or lunchroom that present monolithic structural walls on the street. The second is a horizontally spreading aggregate – these work in places with access to land, but this land is usually fenced and off limits to the community.

In architectural history we can find examples of other school types. In Italy, Aldo Rossi's Fagnona Olona organizes a series of experiences along a

central spine with a special space at the center. Tectonics are mute but the plan speaks, making a figure that reappears in Rossi's work, trying to reintroduce the language of architecture into the school with an intellectual construct, the plan, formed independently of practical or material concerns.

But the context of a high school project in the United States today has a very different set of concerns than Rossi's Olona. We have significant practical concerns that need to be considered in the proposal for a new school building: the unfortunate concerns about safety related to the events at Columbine in 1999 and Sandy Hook in 2012, ongoing concerns about health in which schools are able to open again during epidemics like we are experiencing today if they can serve controlled portions of the overall student body, and concerns about the psychological atmosphere of the high school, in other words how is it possible to break down a bureaucratic thing into smaller communities to provide support to students in challenging situations. Here you can see regions in the country that have piloted small schools movement. In the context of these pressures to compartmentalize the school, how is it possible to create vastness and to reintroduce collectivity?

The thesis will use a test site in Boston, a city whose collective fabric is fractured by highways. Some of the existing high schools in the district are used

as sites for Boys and Girls club organizations that offer after school programs for students who don't have a stable place to go after school. The site is selected in an area with neither, but near community organizations that could benefit from the schools facilities.

The project begins by looking at the banal elements available for free in the site and program. How can working with this material allow us to create spaces of vastness and wonder? For example, can the materiality of homework create the walls of a room? Can the variation in treatments to prevent rust make Miesian planes of galvanized lockers? Could the waxed floor of the basketball gym revolve it into a tunnel-like infinity? And can the deflection of a chain link fence, usually a barrier to keep people out, make the batting cage an absorbing and soft expanse, deformed over time by successive baseball hits?

The organizational ideas of the building are generated by considering the basic functional diagram in terms of the spatial wonder and infinity it offers through programmatic and material requirements. Then these spaces are understood in terms of the rigid schedule of the high school – when does a student occupy these vast spaces and what is the rhythm of wonder that this sets up a student's day? This study reveals that the spaces with a higher potential for vastness are crammed at the end of the day. How would it be possible to distribute these

spaces more evenly throughout the day and solve the practical problems of the school? The study of the schedule also highlights the importance of the recurring passing period, the time and space between classes where students meet with friends and circulate through the building. Could this passing period become an immersion into a space of vastness?

These considerations of the material, functional diagram and schedule of the school create the overall organizational scheme, where spaces of vastness are distributed between the classrooms and circulation is organized along a central spine that slices across and connects these contrasting spaces, so that as students move from class to class they hover over and look down into these double height spaces of vastness. The plan becomes a journey through contrasting worlds, between classrooms and compartments of vastness. This organization breaks the singularity of the bar into smaller schools, of clusters of classrooms associated with these double height spaces simultaneously solving the big functional concerns of the school: allowing classrooms to be secured in the event of an emergency and separately ventilated in the perpendicular direction. This also means that many different schools exist within the school building: one that can stay open for after school, one associated to the theater, one associated to the gym. But all of these separate schools that exist in

the plan and section and reunited by a common roof landscape at the top, a fenced space that connects. So in a land of fences, the ground stays open the community, theater and gym available to the public are carved out of the ground, clusters of classrooms joined by a central circulation spine are stacked on top, double height worlds of vastness are interspersed between, and these sub-schools are stitched by a roof level only for all students that uses the material of the fence to make a crown, a specific figure not imposed like Rossi's but generated from the bottom up logics of material effect, vastness, and practical concerns.

The building provides the school as public in the ground plane, the school as sub-schools in the middle of the stack, and the school as collective at the top. This stacking helps to differentiate the experience in the section and is allowed structurally by a straightforward system of construction, one-way frames making the big spaces and supporting slabs that transfer loads laterally. Circulation can be hung from these slabs where necessary, and the classrooms are made from lighter construction in between. Crinkling of these one way frames inflects the surface of the facade. The building appears as one school even though it contains many separate schools all stitched by the roof level. Maximum density of the volume and efficiency of the plan allows the site to remain open to the city despite the safety concerns of the school program, to create an

amphitheater, wall ball courts, and a skatepark for the neighborhood.

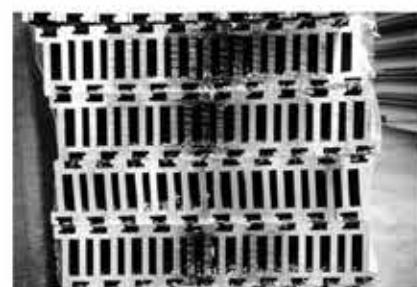
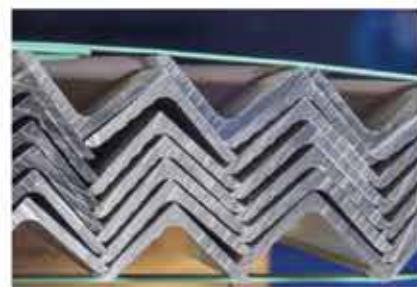
To quickly walk through the building, as a student or a visitor you would arrive at the drop-off on the north side, the back of the site where you pass over the worlds of the skatepark and wall ball to the entrance and the security checkpoint. Here you find a fifteen foot corridor on the north and south sides of the plan. From here you can peer down into the gym or into the theater. To access these spaces, you go to the vertical circulation at the end of the bar, into the gym, or to the other end of the bar. Students who are coming to school can continue up the vertical circulation at the ends to the world of lockers, located at the east end of the bar and then proceed to class where partition type II is detailed with layers of gyp-board for acoustic absorption. During the passing period, when students move from class to class, they will pass through one of these double height spaces, about fifty feet long, for example the workshop in orange, which has cable management running through the linoleum and wood storage at the back. Or a student can pass through the media center in purple, studded with floor boxes, shelving brackets for books, and equipment at the ceiling. This brings students to their next class which has a system of wall hooks. After class ends students might pass through the workshop space on the level above on their way to the roof, then move from the roof back into the building at the second level

of the media center to end in class again where the gyp and acoustic tile is multiplied to muffle sound from the workshop next door. For lunch all students would move up to the roof, where the lunchroom is located on the east end of the bar. Then students can move down at either end of the bar, through the world of the batting cages on the west side, or back through the lunchroom, to return to class. The roof is terraced in the section so that the upper level of worlds open out onto it, but the terracing is symmetrical to avoid creating a hierarchy between students and connected by stairs running across the basketball court.

The façade is made by weaving gleaming sheet metal to create a stable elevation on the short ends and ambiguous figures on the long sides. A fence that connects, the chainlink crown, grows out of the woven sheet metal, animated by changing conditions, and giving the building a specific identity from a distance in the city, but the diversity of the interior would mean that each student's experience would be particular: the jock, the nerd, and the theater kid each can inhabit their own versions of the building, but they are always moving through and getting a glimpse into the worlds of other students on their way to class. They meet all together on the roof, a fence that makes space for collectivity in a compact plan. There are many possible ways to experience the building and its different worlds – all stitched by the roof, the rhythm of the schedule, and

the contrast between compartments of vastness and the classrooms.

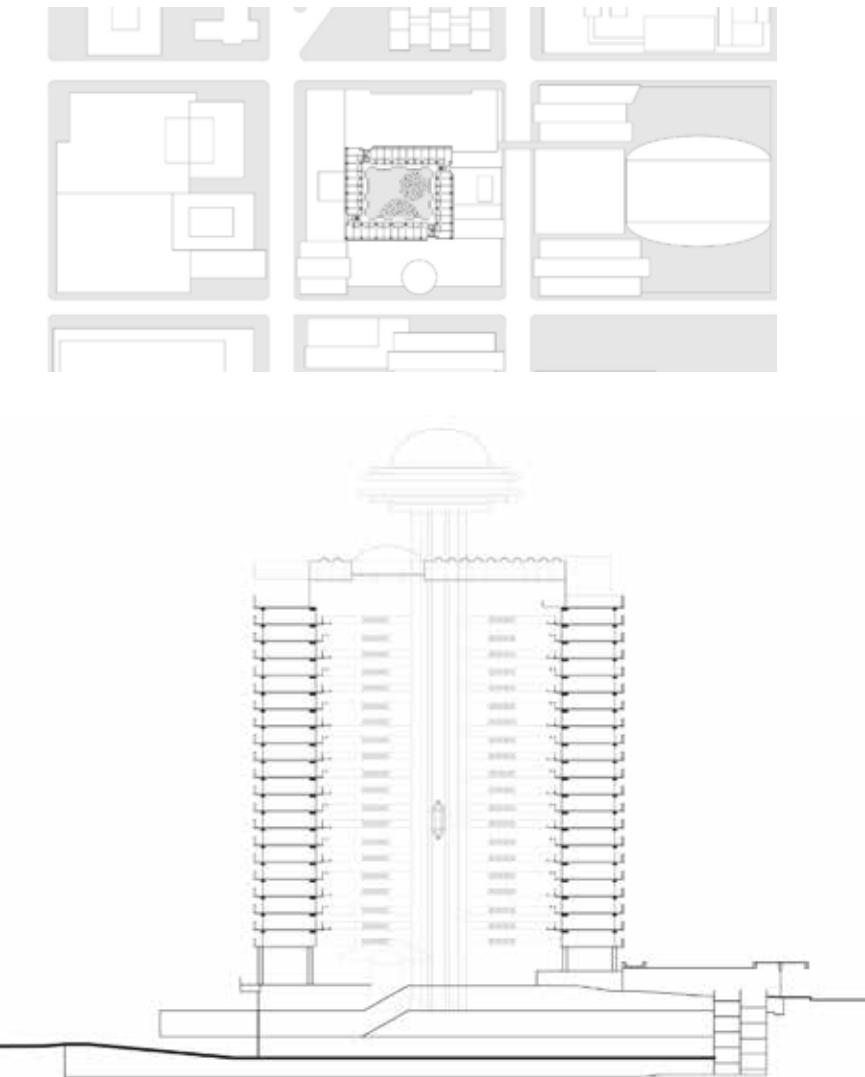
From a starting point of standard building products and their effects, flexibility, vastness, and material luxury are generated while simultaneously solving the big functional problems of the school, creating many experiences for a public school's many students, experiences that are not TYP.





"99 Cent", 1999, Andreas Gursky¹

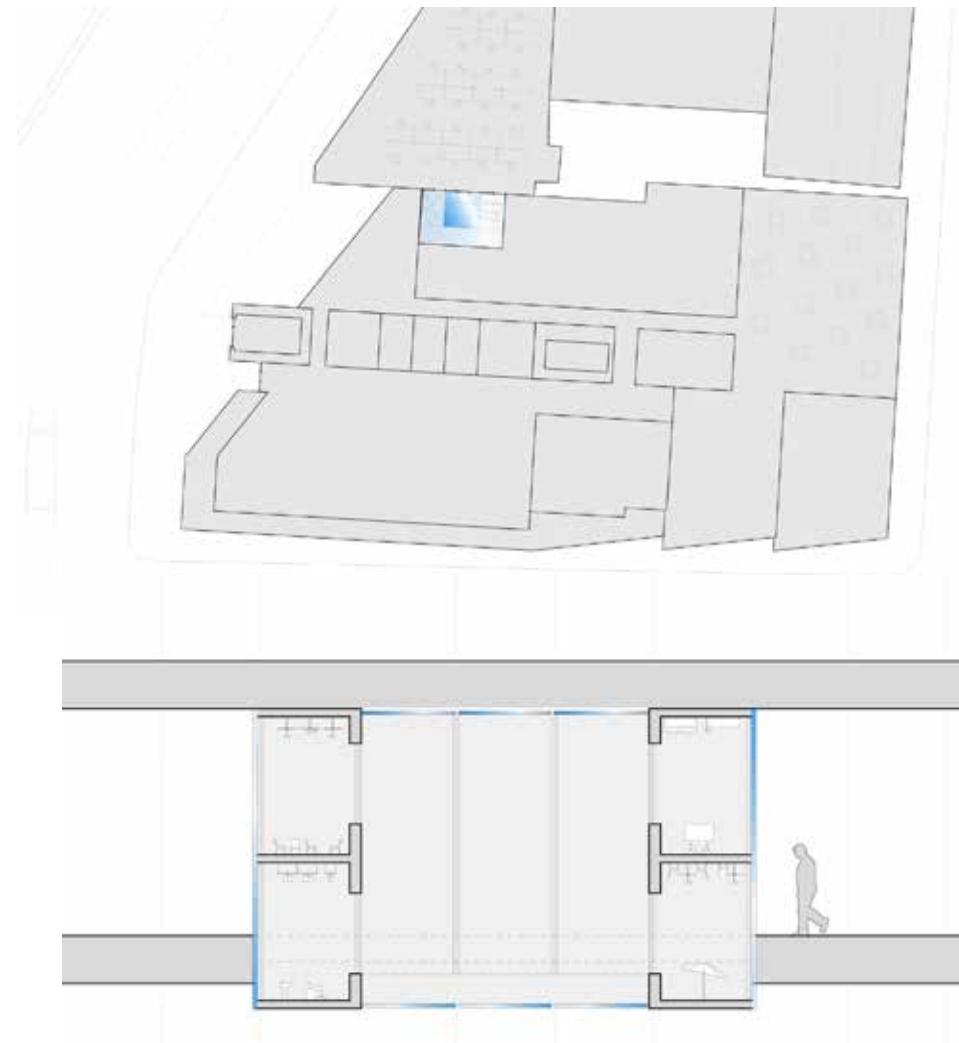
Wonder and vastness created with large spaces and ample material



Hyatt Regency Hotel, John Portman, 1967, Atlanta, U.S.²



Wonder and vastness created with material and labor that serves one function
for a short time, known only by certain audiences



"The Meat Grinder's Iron Clothes," Samara Golden, 2017, Whitney Museum, U.S.³

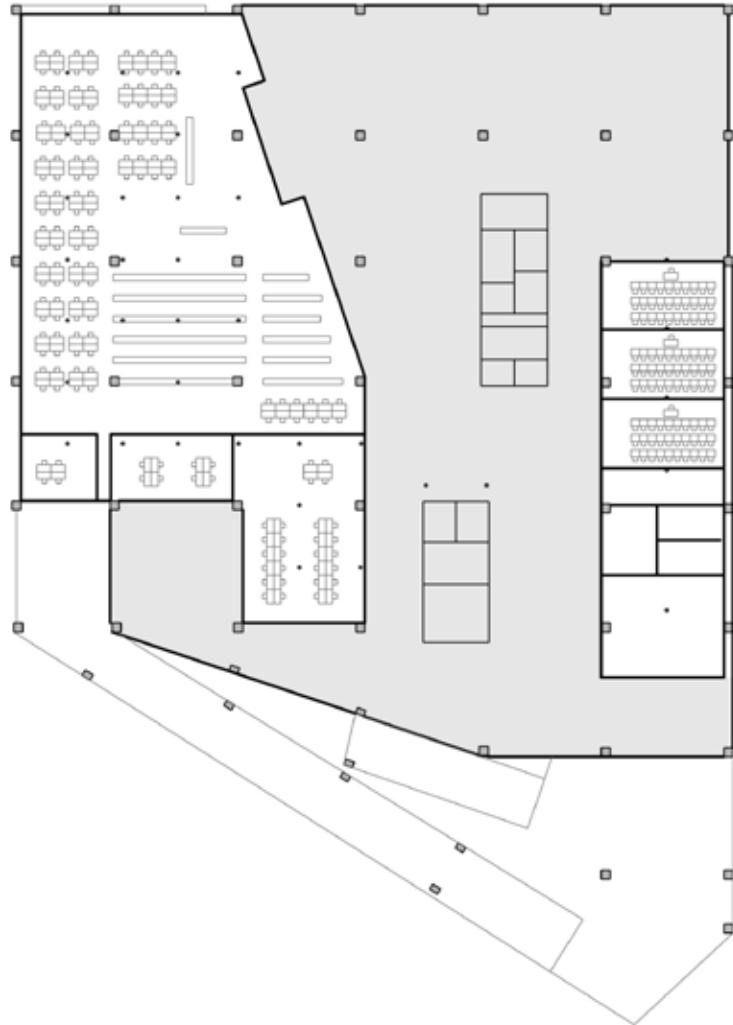




“Amazon,” 2016 Andreas Gursky ⁴

Vastness in small spaces with the material we already have
Flexible, functional, and made with economy of means to carve out space for the collective

A focus on economy of means and low-cost construction systems results in flexibility with no material luxury



Nantes School of Architecture, Lacaton & Vassal, 2009, Nantes, France⁵





"Metas III," 2014, El Anatsui⁶



Using material implicit in ordinary construction to create vastness, luxury, and flicker

Requirements of TYP. public buildings

security
navigability
durability
affordability

Spatial and material wonder

infinite space
hypnotizing vastness
flickering matter
the luxury of material glitter

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Spatial and material wonder

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Material Effects Carve out Spaces for the Collective?

Acrylic Skylight

Price: \$250-\$500 per unit

Material Type (Manufacture):

Module / Formed

Qualities:

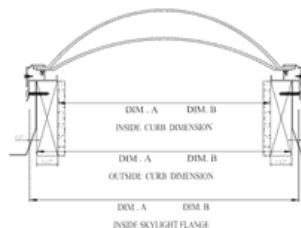
Optical Effects

Tendencies:

Clouding, Cracking

Potentials:

Optical Effects?

Utilities:Geometry creates rigidity and drainage.
Gets light from above but commonplace.

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ENCLOSURE?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
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ORDINARY?	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
CHEAP?	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
HOW MUCH?	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>



Used on the roof, seen mainly from below and planes

Always difficult to see unless from above, from a plane, or somehow celebrated with the roof geometry.

WOJR, House of the Woodland

The skylights create apertures casting specific beams of light below and giving a specific identity and "figuration" to the expression of the rooms within a grid

Glass

Price: \$300/SF (Est.)

Material Type (Manufacture):

Module / Multiple Construction Types

Qualities:

Reflectivity, Color, Mullions, Spandrels + Sills, Sealing Joints

Tendencies:

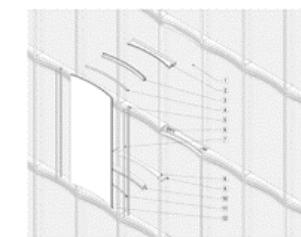
Cheap, Curtainwalls - Waviness

Potentials:

Optical Effects, Whistling (WTC7)

Utilities:

Building Envelope



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Go Hasegawa, House in Forest

The reflective glass surface or a table and the glass-covered floor void are used to try to create the perceptual effect of a continuous space of forest.

Dean Wolf - Skyscraper Nature

Surfaces of glass are used not to create transparency but to create reflectivities and virtuality. This makes two realms within the loft: that of the literal and that of the virtual.

Aluminum Slats

Price: \$70 per slat (Est.)

Material Type (Manufacture):

Slat / Extruded

Qualities:

Grain, Strength, Lightness

Tendencies:

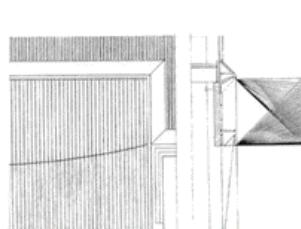
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Potentials:

Bending, Sliding, Oxidizing

Utilities:

Lightness, Operability, Relatively easy to recycle aluminum



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Aluminum slats form a standard factory roller door



Santiago Calatrava Factory Doors

Calatrava uses the opportunity of the roller door and the mechanism of the slat to achieve a kind of formal transformation consistent with his vision for architecture and his sensibility.

Greenhouses (Polycarb & Steel Frame)

Price: \$500 per assembly OTS

Material Type (Manufacture):

Polycarb / Extruded Thermoplastic / Steel / Rolled

Qualities:

Bright, Airy, Skeletal, Silhouetted

Tendencies:

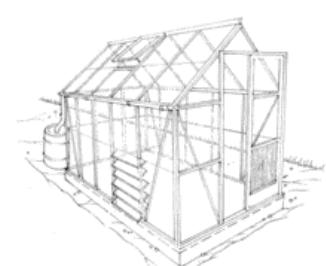
Polycarb: expanding, shrinking, cracking

Potentials:

?

Utilities:

In-between environment



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Components available off the shelf as a prefab package



Davies Toews Pavilion

Tube steel supporting poly doors creates the impressive with the structure that you are inside a forest

Imperfections

Cost effective texture or shoddy construction?



*Concrete Block Wall, Cactuspear.org*⁷

Ornamental Infrastructure

Decoration or utility?



Flower Kiosk, Sigurd Lewerentz, 1969⁸

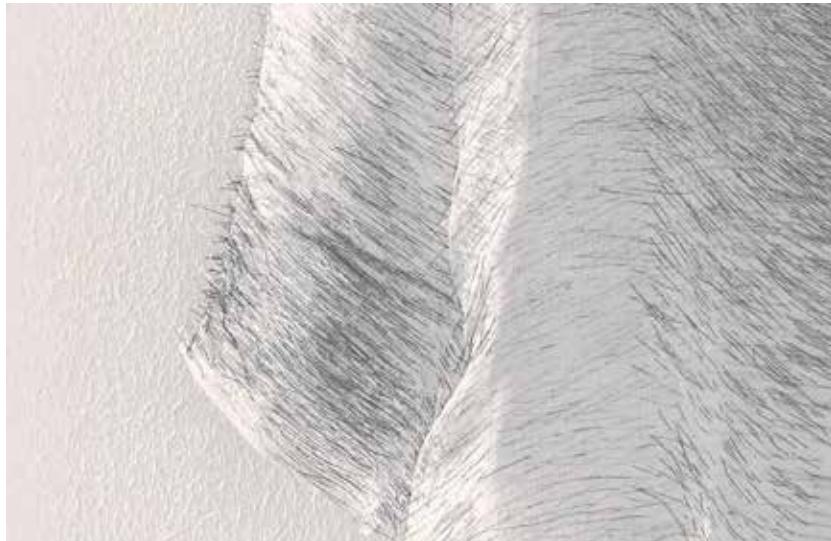
Reveals

Conceptual or constructive grid?



McCormick Tribune Campus Center at IIT, OMA, 2003⁹

Paradoxes
Tragedy or beauty?



Disremembered I, Doris Salcedo, 2014¹⁰

Infills

Collective anarchy by design or absence of design?

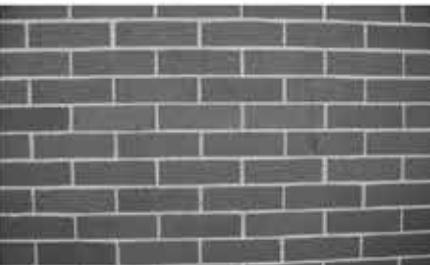
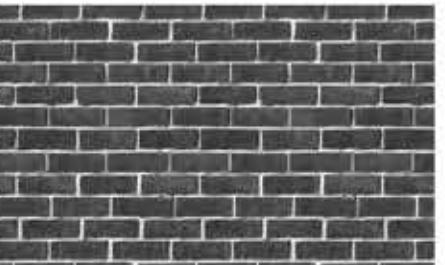
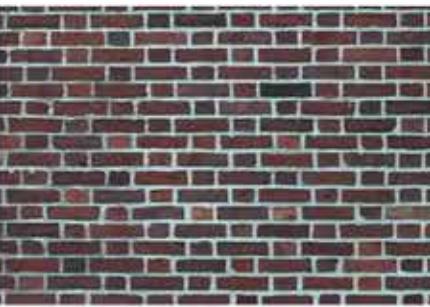
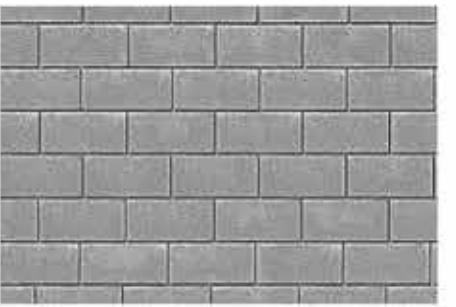
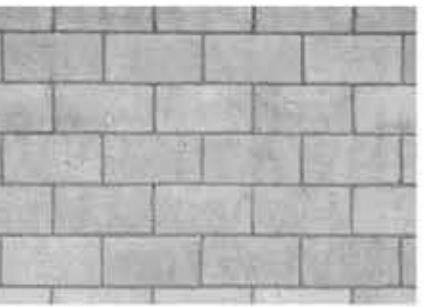
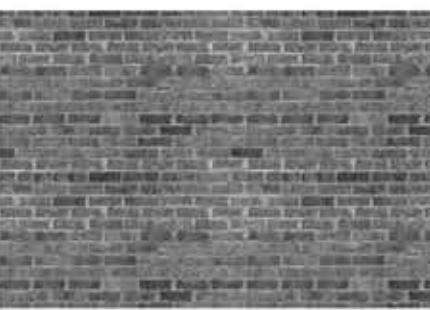
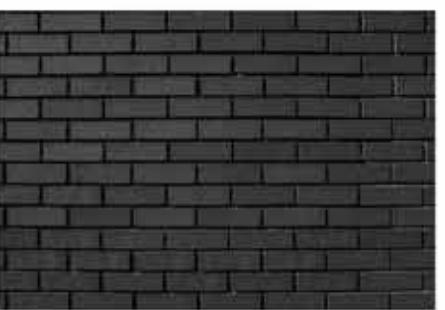
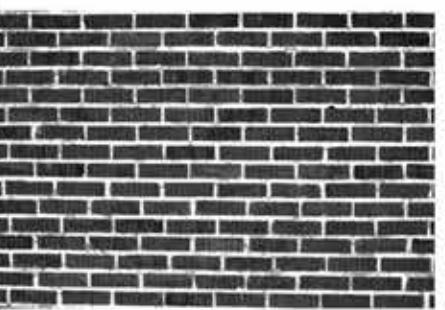
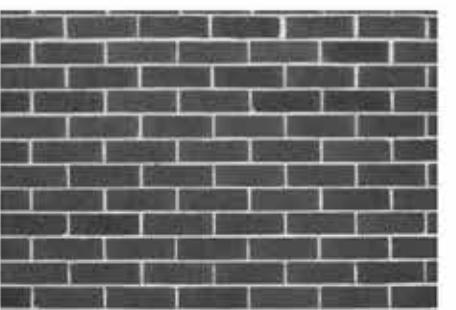
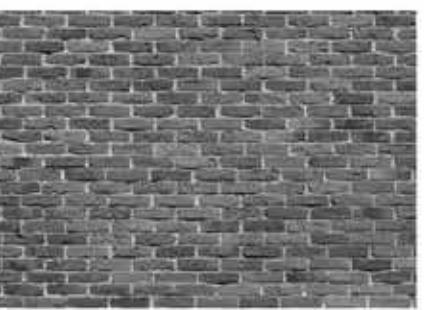
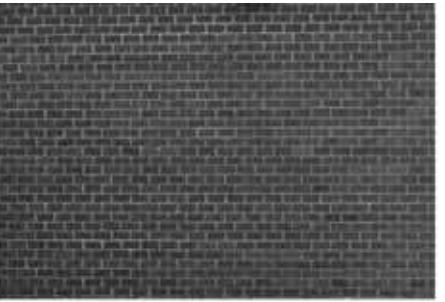
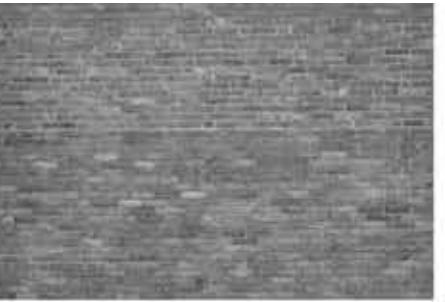
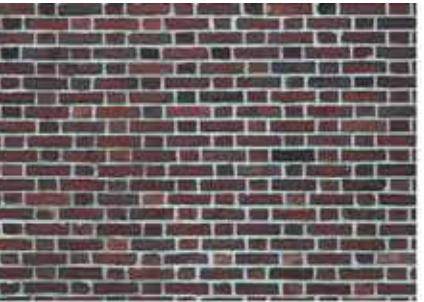


*Pike Place Market Gum Wall, Seattle, 2015*¹¹

The urban public high school

Default tectonics, a limited budget, a bored audience, practical problems, collectivity fractured by cliques

The Default Tectonics of the School





The Wood



Perks of Being a Wallflower



The Breakfast Club



Booksmart



Dope



The Wood



The Breakfast Club



Dope



Dope



Mean Girls



The Breakfast Club



Dope



Good Boys



Dope

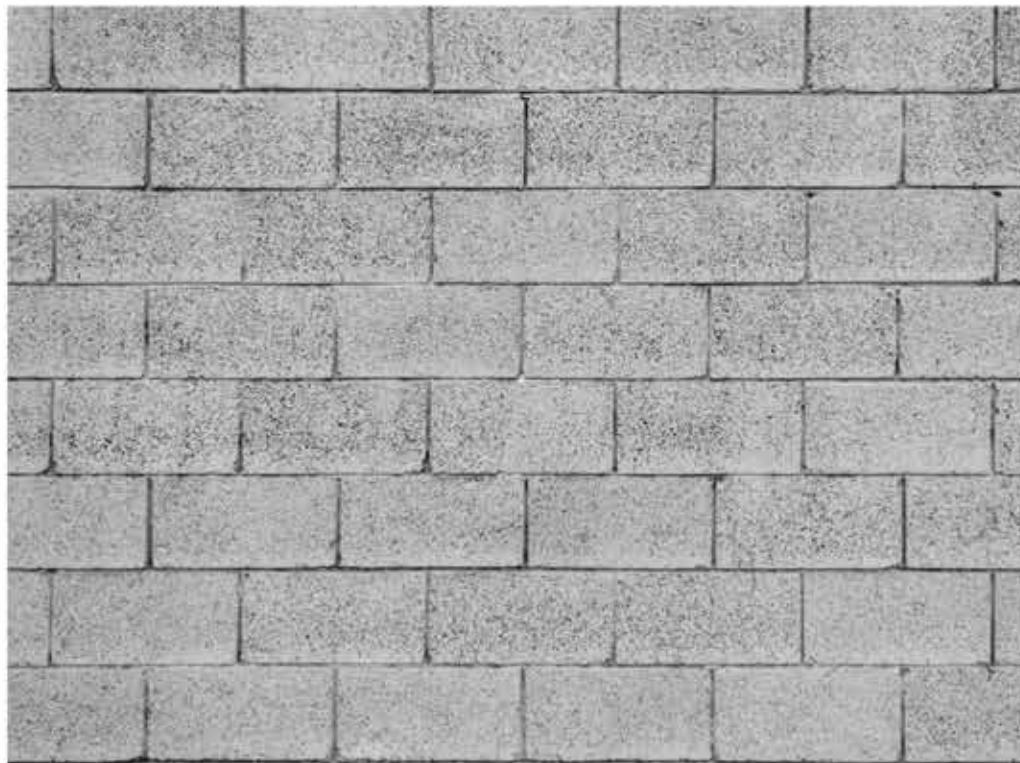


Ladybird



Ladybird

Default Tectonics

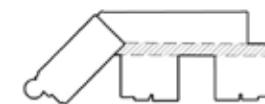
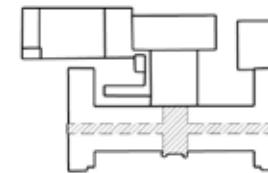
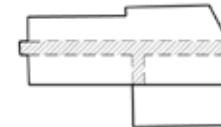
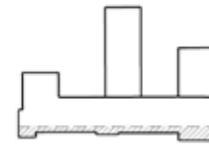


Material Glitter⁷



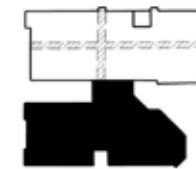
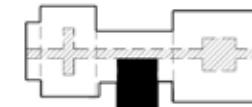
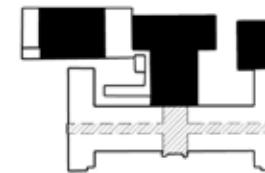
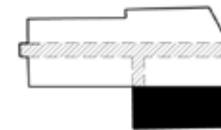
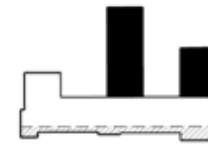
 CORRIDOR
 GYM/LUNCH
 CLASSROOMS

Existing School Type 1
Double Loaded Bar With Event Space Appendages



 CORRIDOR
 GYM/LUNCH
 CLASSROOMS

Existing School Type 1
Double Loaded Bar With Event Space Appendages

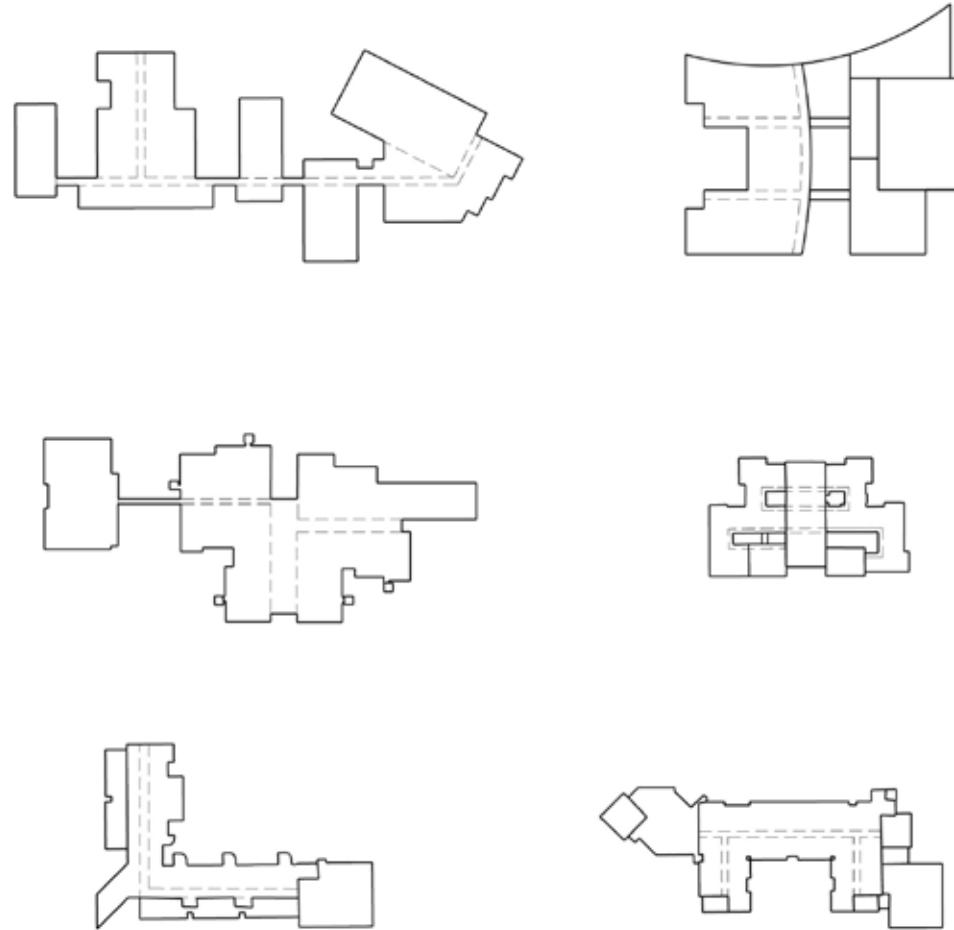




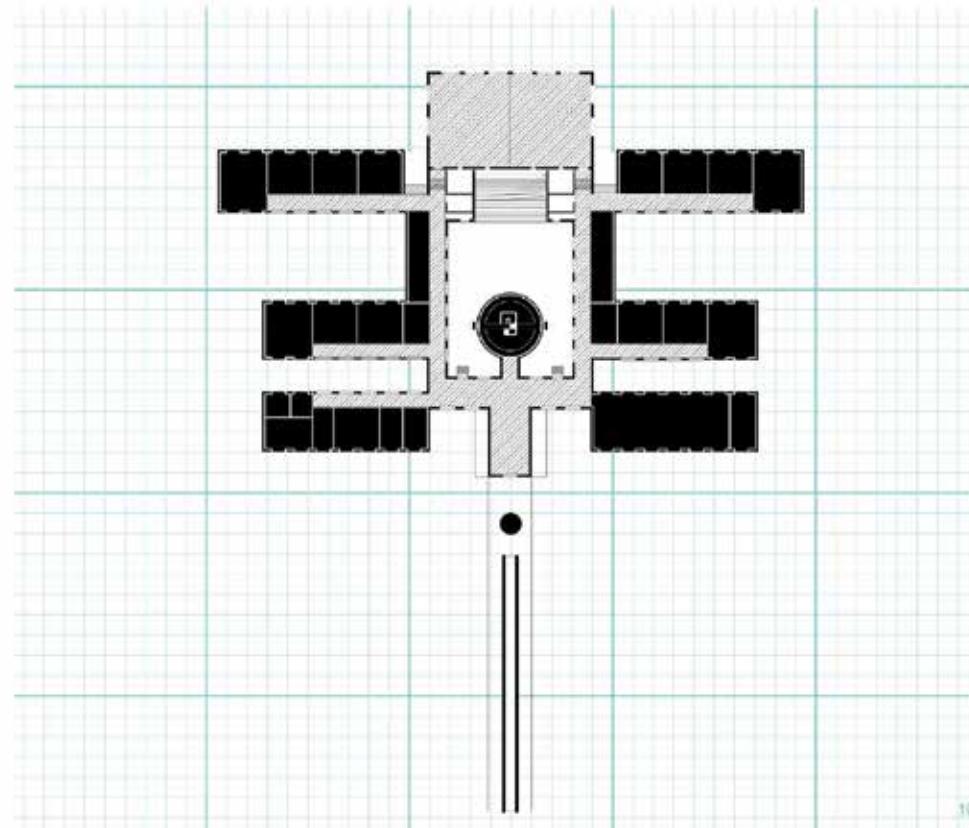
EVERYONE
IS
WELCOME
HERE!
stu

PATRICK J. KENNEDY
SCHOOLYARD
CLOSED AT SUNSET
THE BRONX SCHOOLS SUPERINTENDENT
THE CITY OF NEW YORK

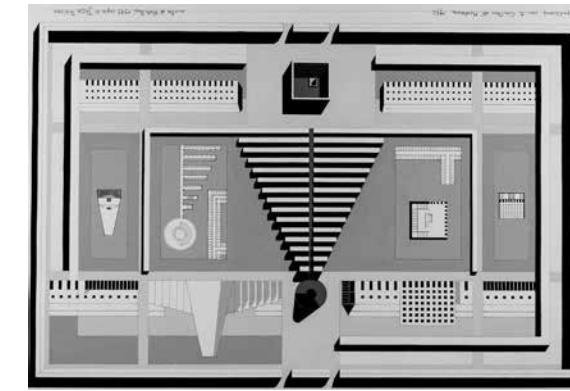
Existing School Type 2
Horizontally Spreading Aggregates of Type 1



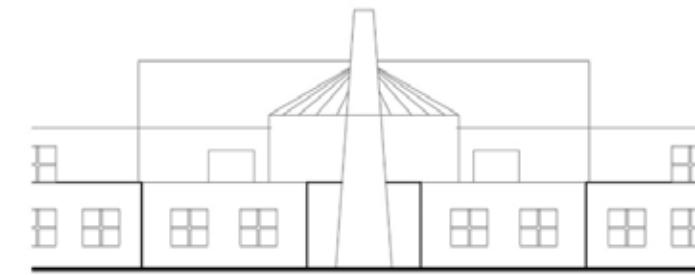




Fagnano Olona, Aldo Rossi, 1972, Olona, Italy



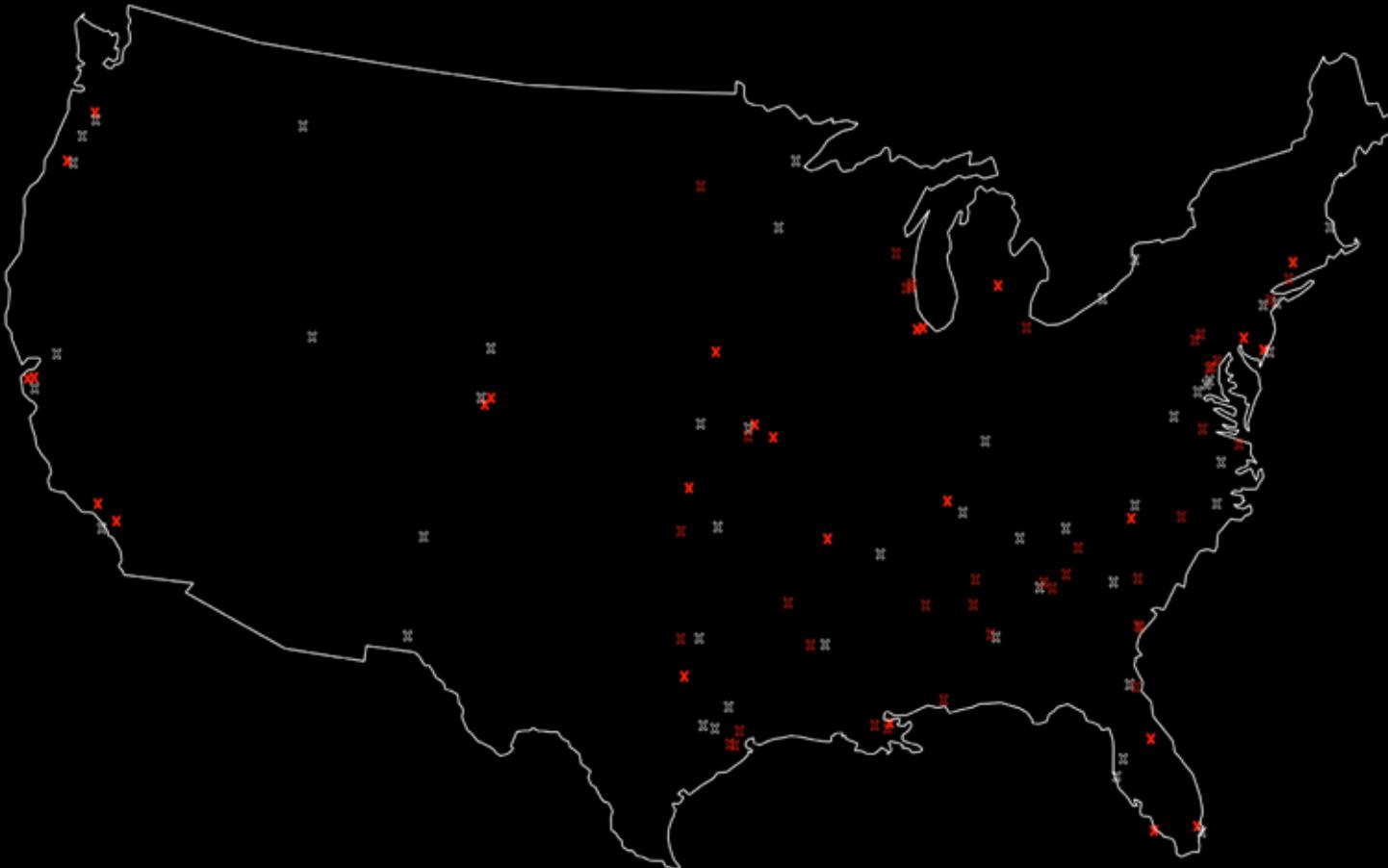
Composition with Modena Cemetery, 1979 (Upside Down)



Safety Concerns for Schools

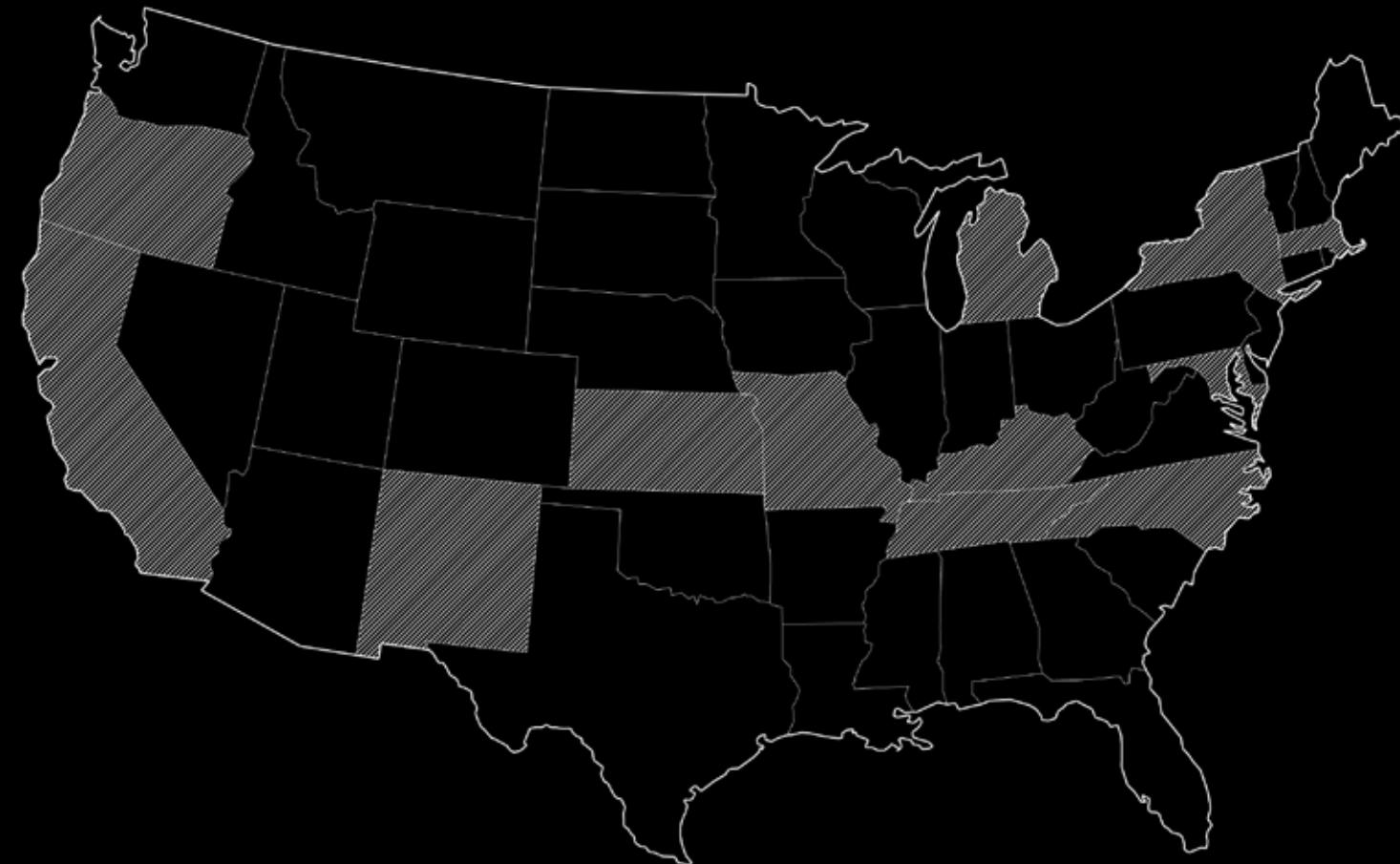
Firearm related incidents, injuries and fatalities in the United States in 2019. Everytown for Gun Safety Data

- INCIDENT
- INJURY
- FATALITY



Health Concerns for Schools

States with state ordered school closures



Small Schools Movement

Urban districts that have piloted programs breaking schools down into <400 students



In the context of these pressures to compartmentalize the school, how is it possible to create vastness and to reintroduce collectivity?





● School

- School
- Boys & Girls Club



A map of the Philippines showing the locations of various schools and Boys & Girls Clubs. The map features the country's outline and major islands. Data points are represented by white circles for schools and yellow circles for Boys & Girls Clubs. A large circular inset in the lower-left corner provides a detailed view of the Manila area, showing a grid of streets and buildings.

- School
- Boys & Girls Club

COMMUNITY GARDEN

SITE
1115 S. WASHINGTON STREET

BUS STOP NEEDS SOMETHING TO LOOK AT

BASEBALL FIELD NEEDS BATTING CAGES

DANCE SCHOOLS NEED THEATER

easels

basketball courts

tables

theater seats

lockers

lab benches

junction boxes

classrooms chairs

excavated dirt

unch trays

beakers

HVAC diffusers

classrooms

chemistry beakers

baseballs

ducting

chillers

pieces of gum

exit signs

expansion joints

conduit

floor boxes

emergency exits

parking spots

batting cages

structural system

sheetrock screws

pavement lights

street lights

urban worlds

HVAC system

toilets

big doors

elevators

trees

sinks

toilet partitions

structural frames

ceiling tiles

infinite shoe squeaking

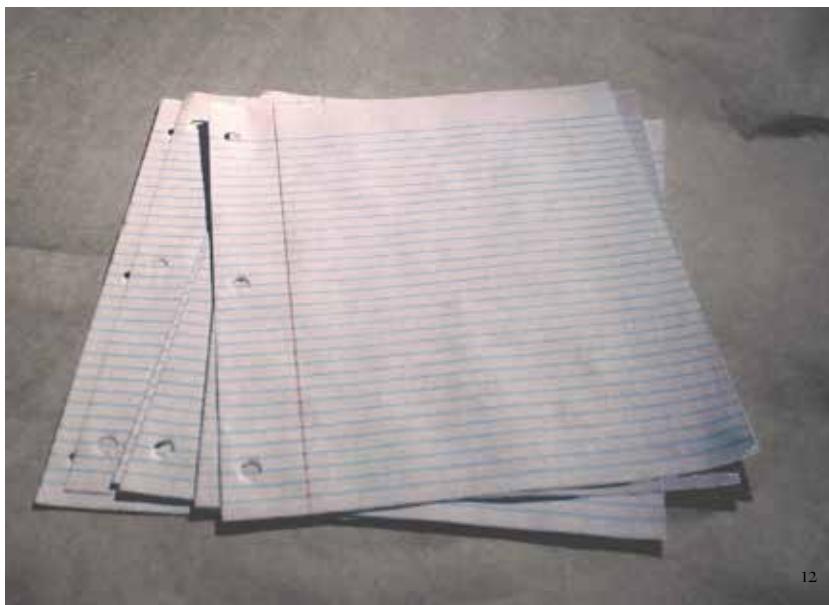
site with many sides

students

infinite sheetrock screws

ceramic tiles

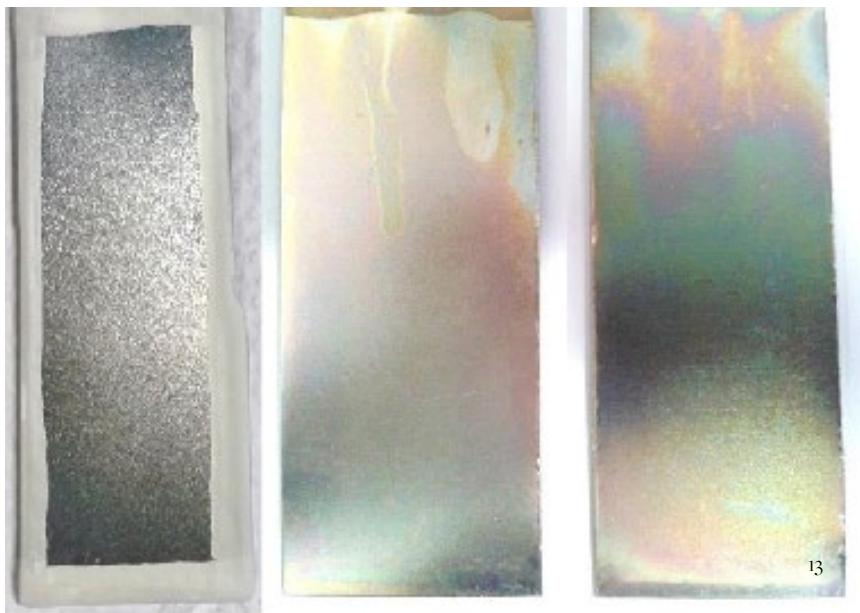
flourescent lights



12

The materiality of homework





The variation in treatments to prevent rust





14

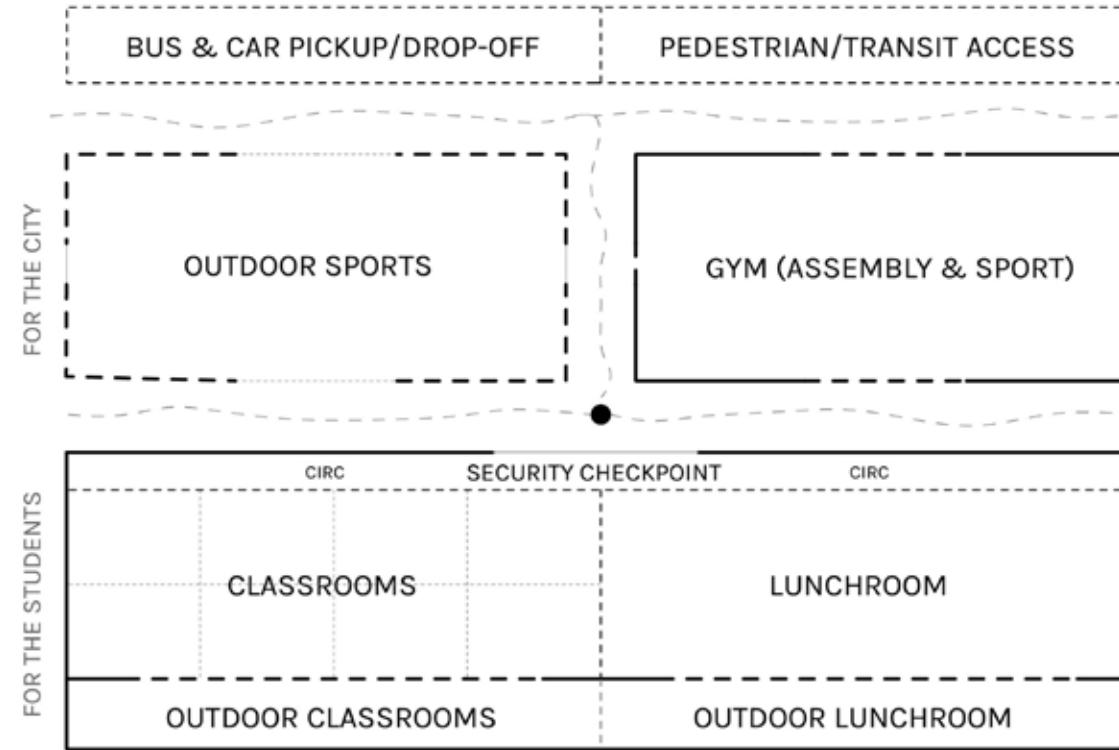
The waxed floor of the basketball gym

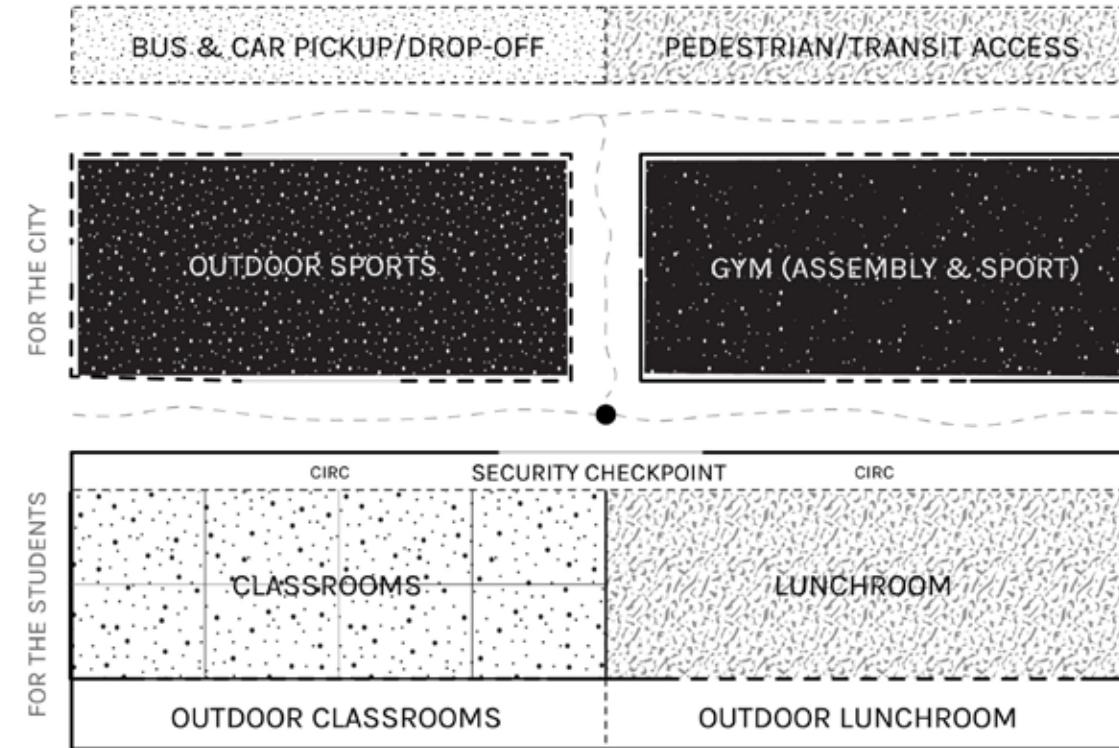




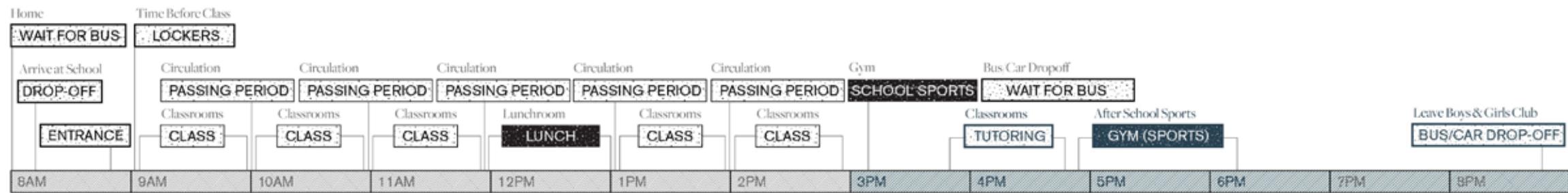
The deflection of chain-link fencing





 HINT (S) ZONE (M) ENVIRONMENT (L)

 HINT (S)
 ZONE (M)
 ENVIRONMENT (L)
 BOYS & GIRLS CLUB



PASSING PERIOD

1:50 PM

PASSING PERIOD

1:50 PM

DROPOFF

OUTDOOR SPORTS

CORRIDOR

CLASSROOM

CORRIDOR

CLASSROOM

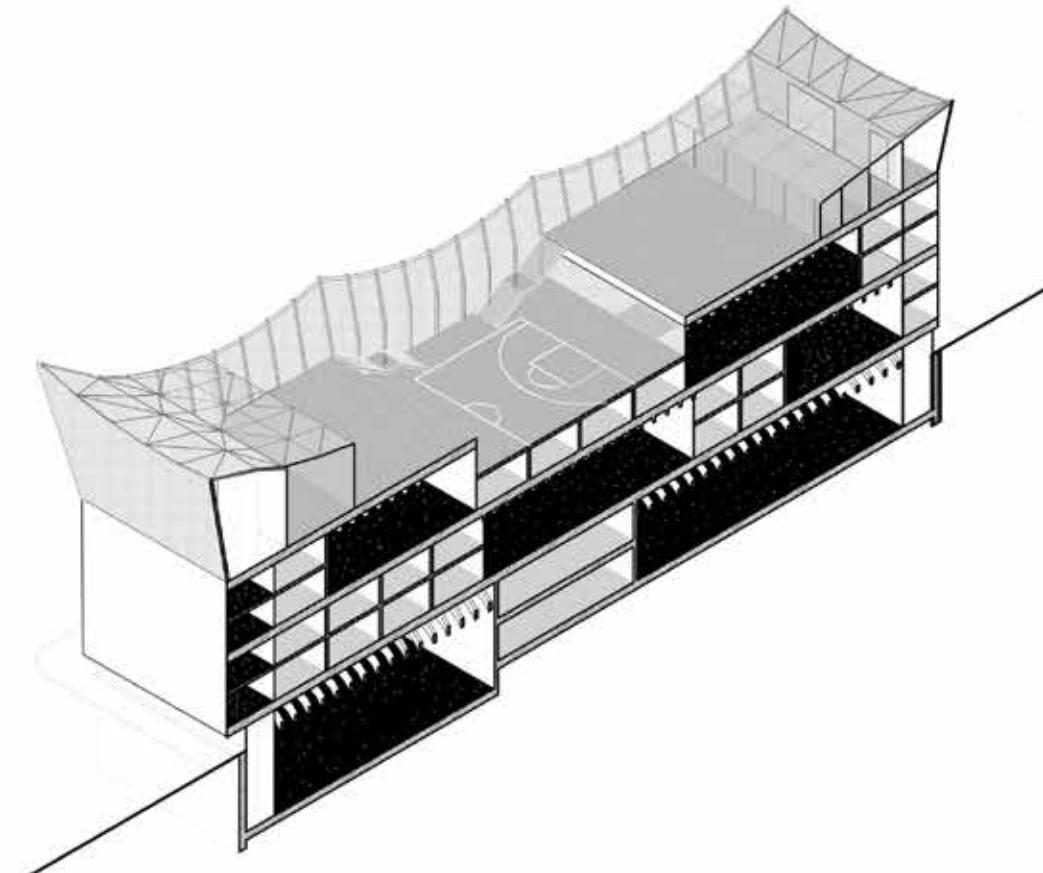
LUNCH ROOM

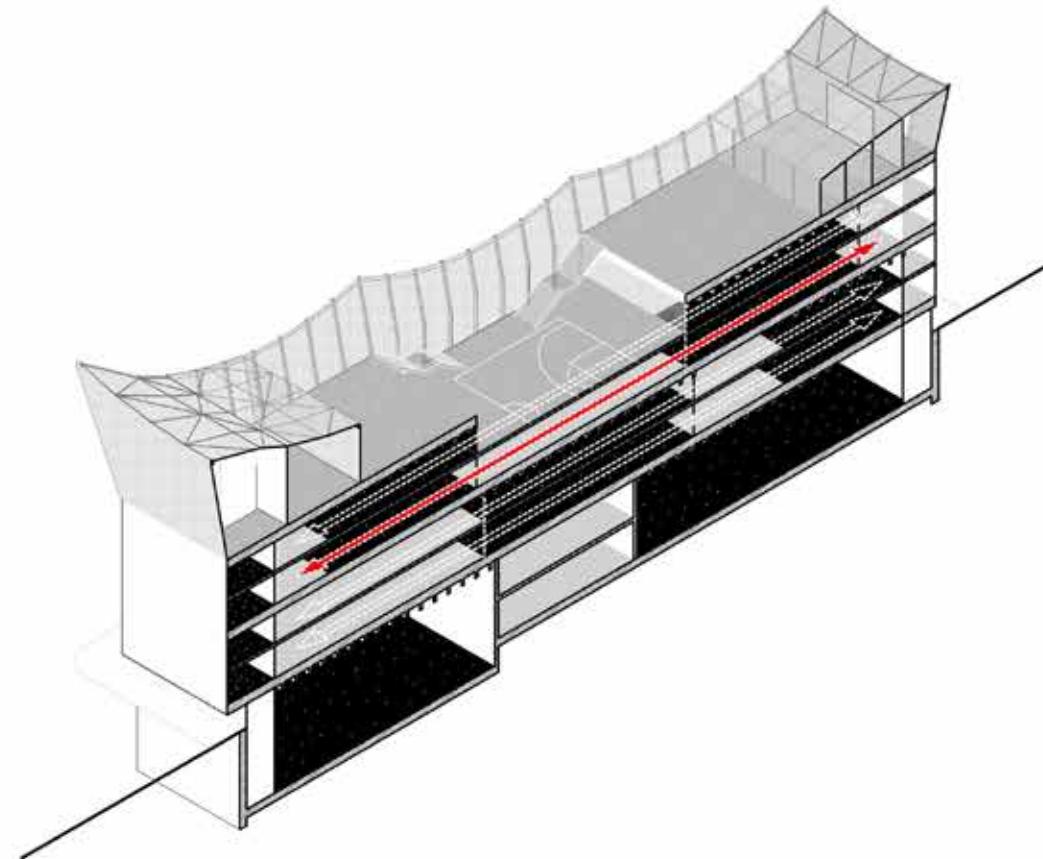
CLASSROOM

CORRIDOR

INDOOR SPORTS

BATTING CAGES





DROPOFF

OUTDOOR SPORTS

CORRIDOR

CLASSROOM

CORRIDOR

CLASSROOM

LUNCH ROOM

CLASSROOM

CORRIDOR

INDOOR SPORTS

BATTING CAGES

DROPOFF

OUTDOOR SPORTS

CORRIDOR

CLASSROOM

CORRIDOR

CLASSROOM

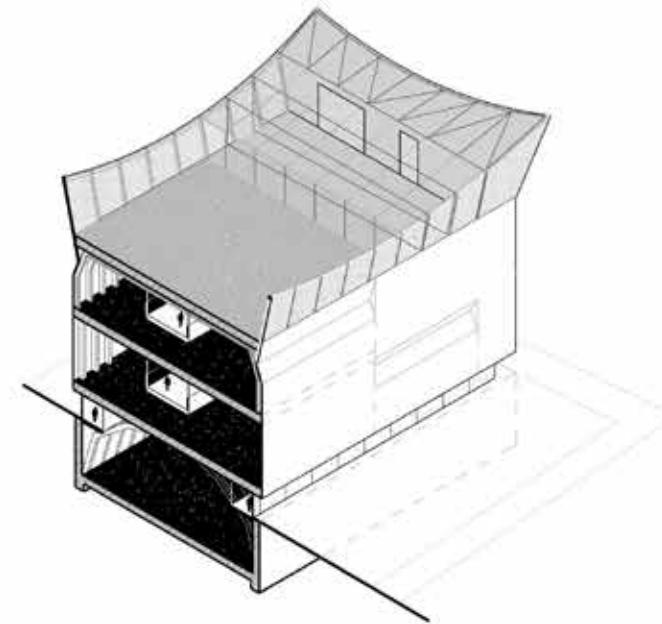
LUNCH ROOM

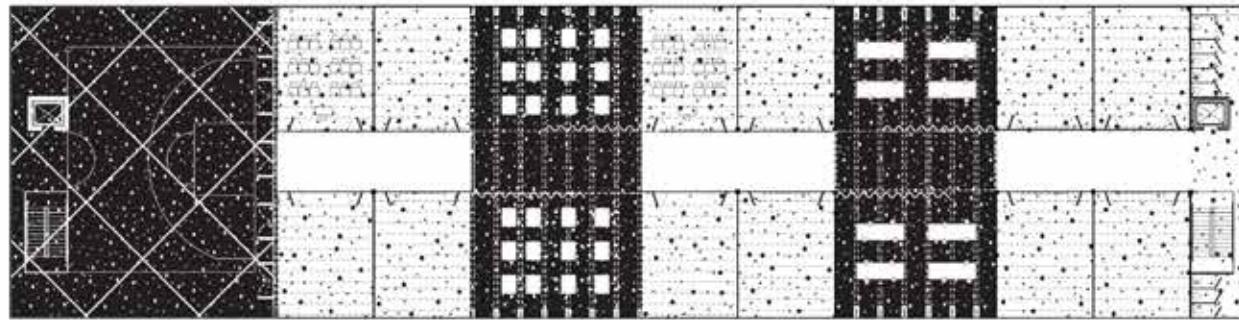
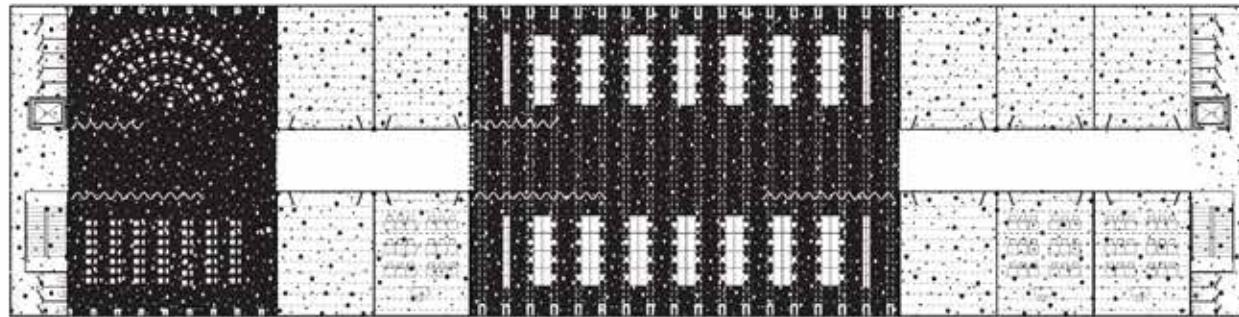
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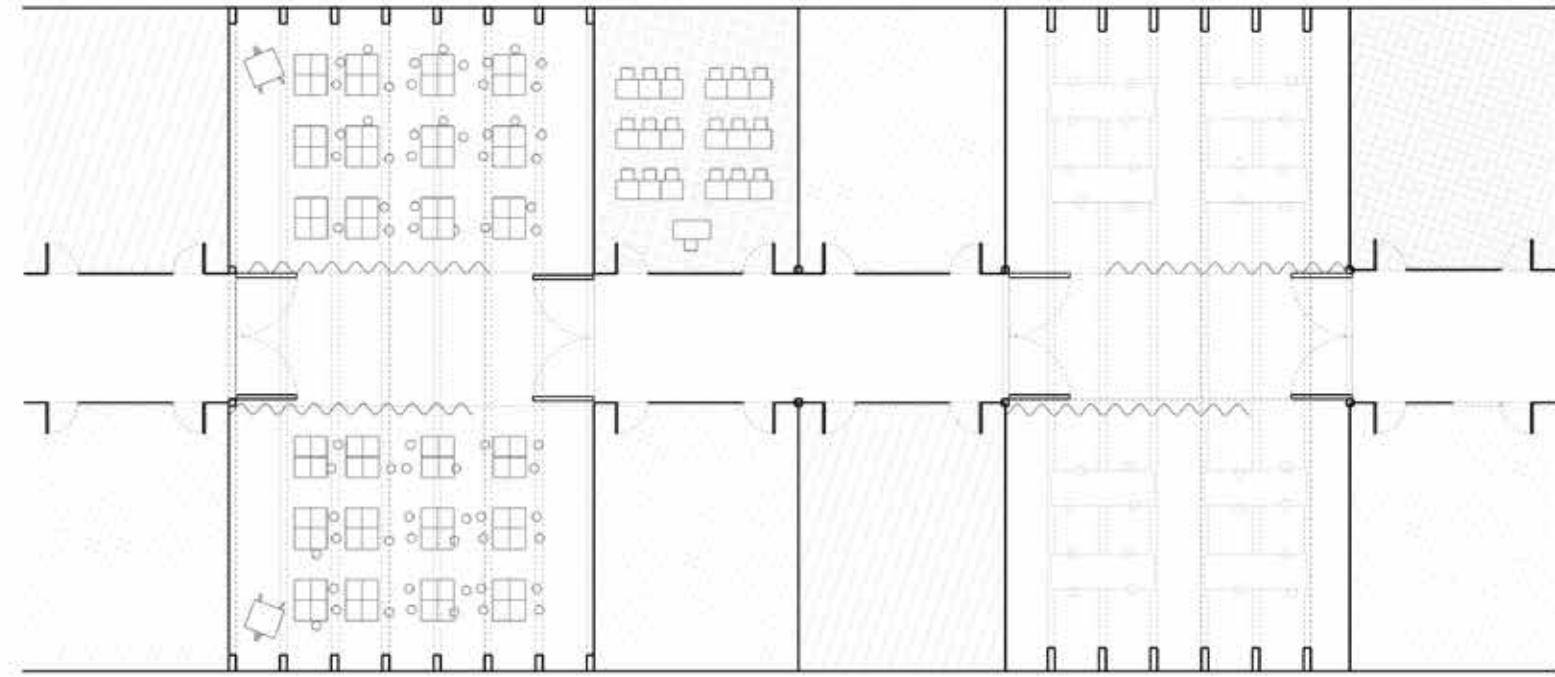
CORRIDOR

INDOOR SPORTS

BATTING CAGES









ROOF LEVEL



ROOF LEVEL



ROOF LEVEL



ROOF LEVEL



ENTIRE SCHOOL
LEVEL +3



AFTER SCHOOL PROGRAMS
LEVEL +3



THEATER SCHOOL
LEVEL +3



GYM SCHOOL
LEVEL +3



ENTIRE SCHOOL
LEVEL +2



AFTER SCHOOL PROGRAMS
LEVEL +2



THEATER SCHOOL
LEVEL +2



GYM SCHOOL
LEVEL +2



ENTIRE SCHOOL
LEVEL +1



AFTER SCHOOL PROGRAMS
LEVEL +1



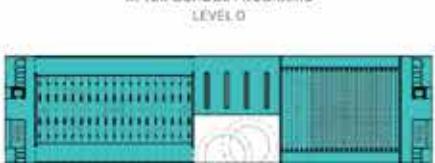
THEATER SCHOOL
LEVEL +1



GYM SCHOOL
LEVEL +1



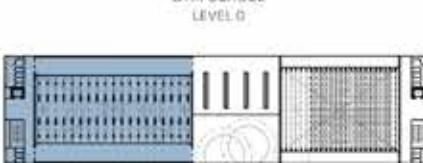
ENTIRE SCHOOL
LEVEL 0



AFTER SCHOOL PROGRAMS
LEVEL 0



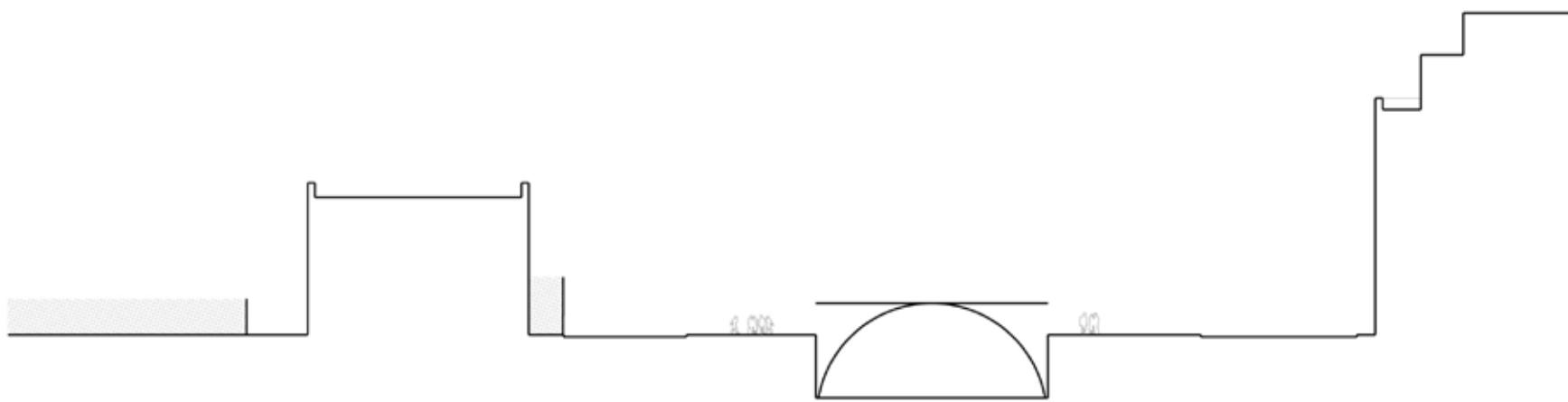
THEATER SCHOOL
LEVEL 0

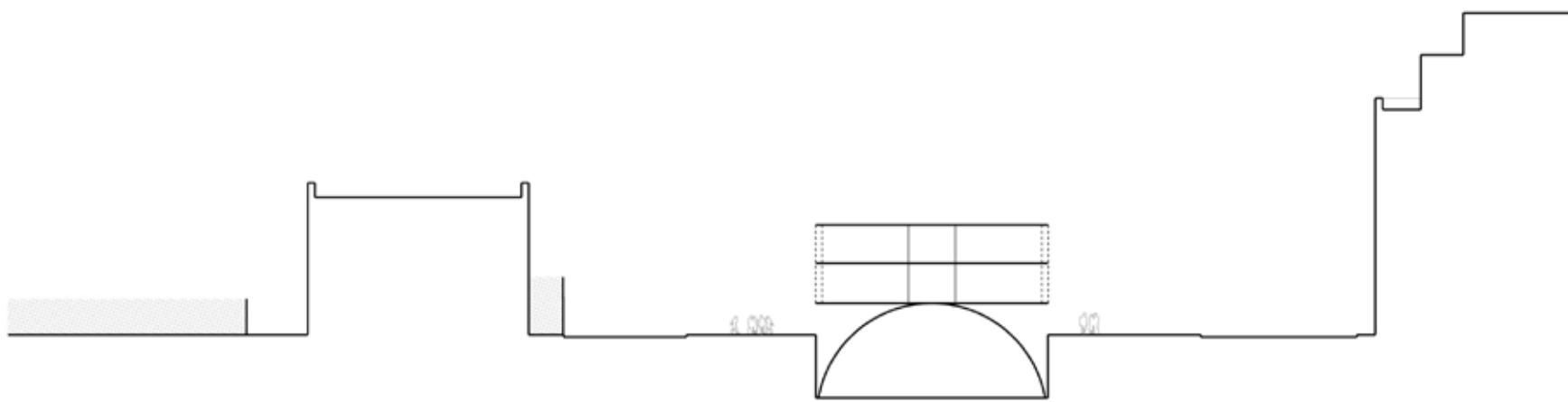


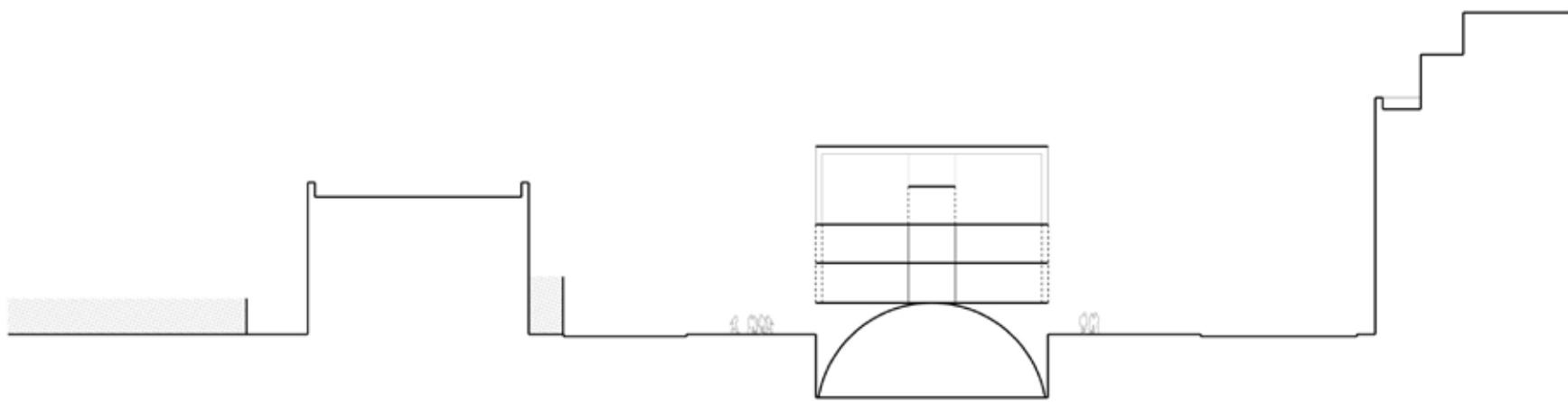
GYM SCHOOL
LEVEL 0

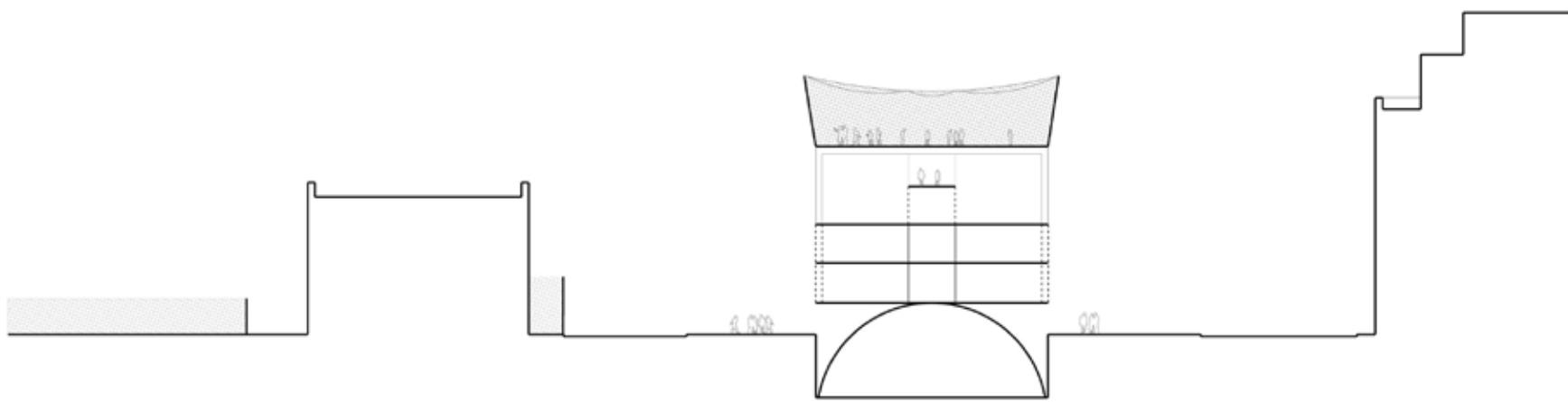


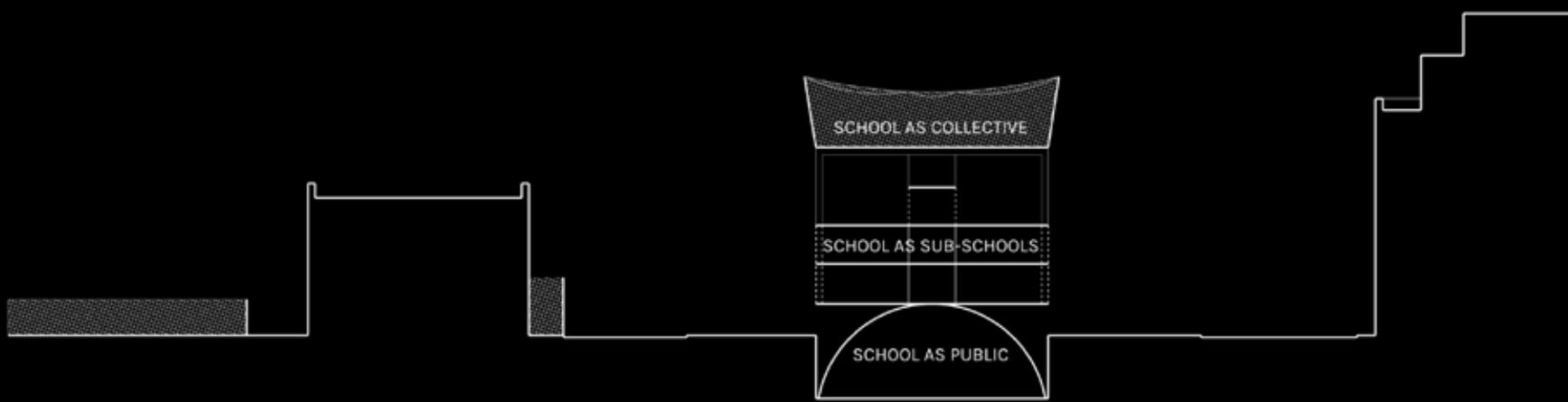


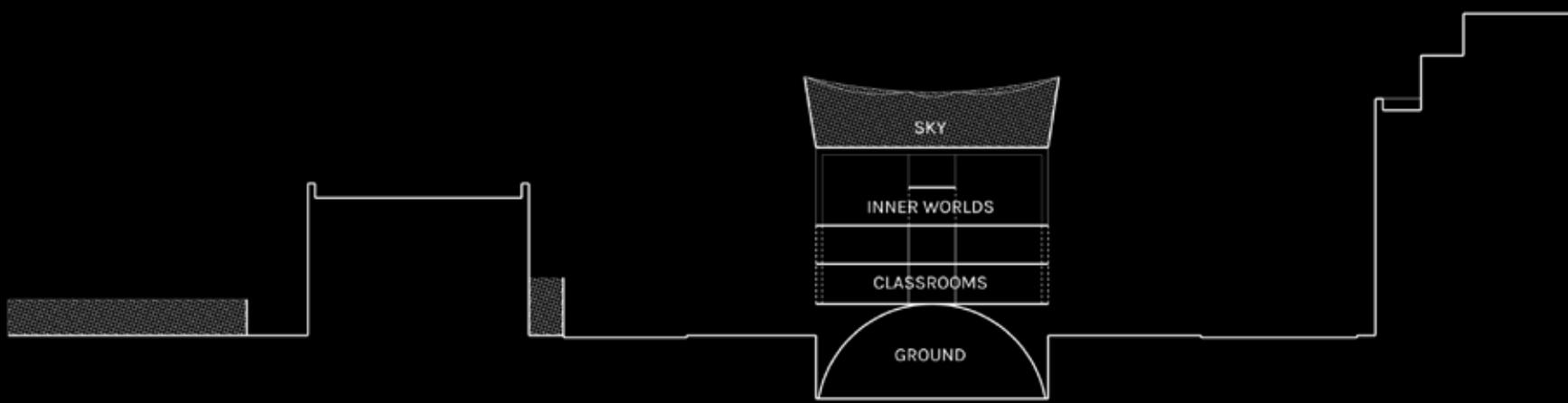


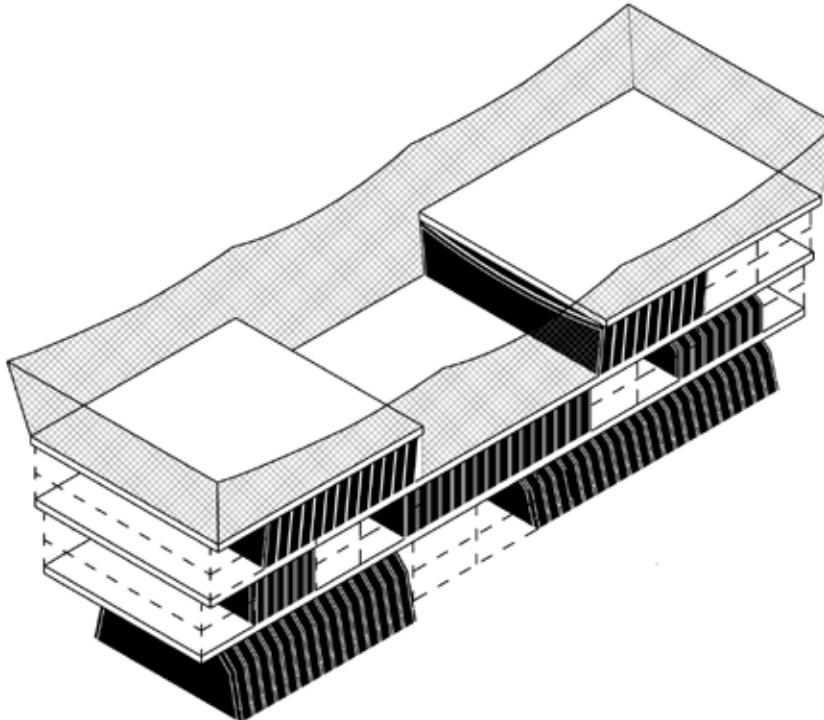


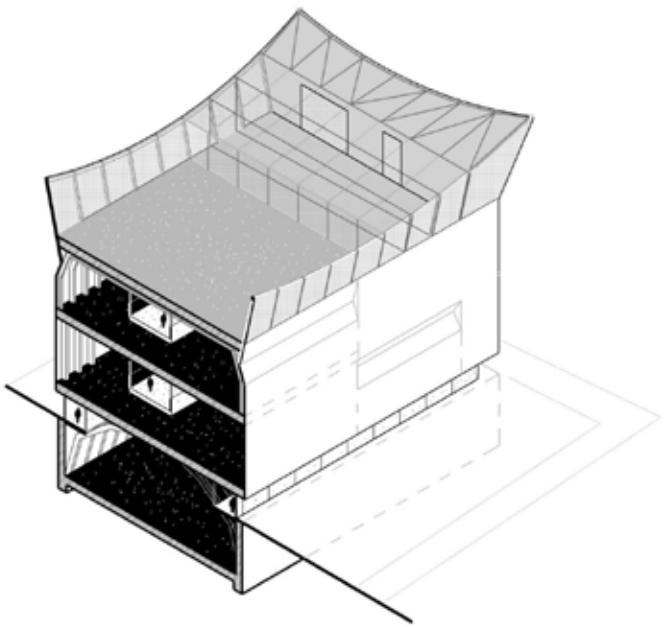


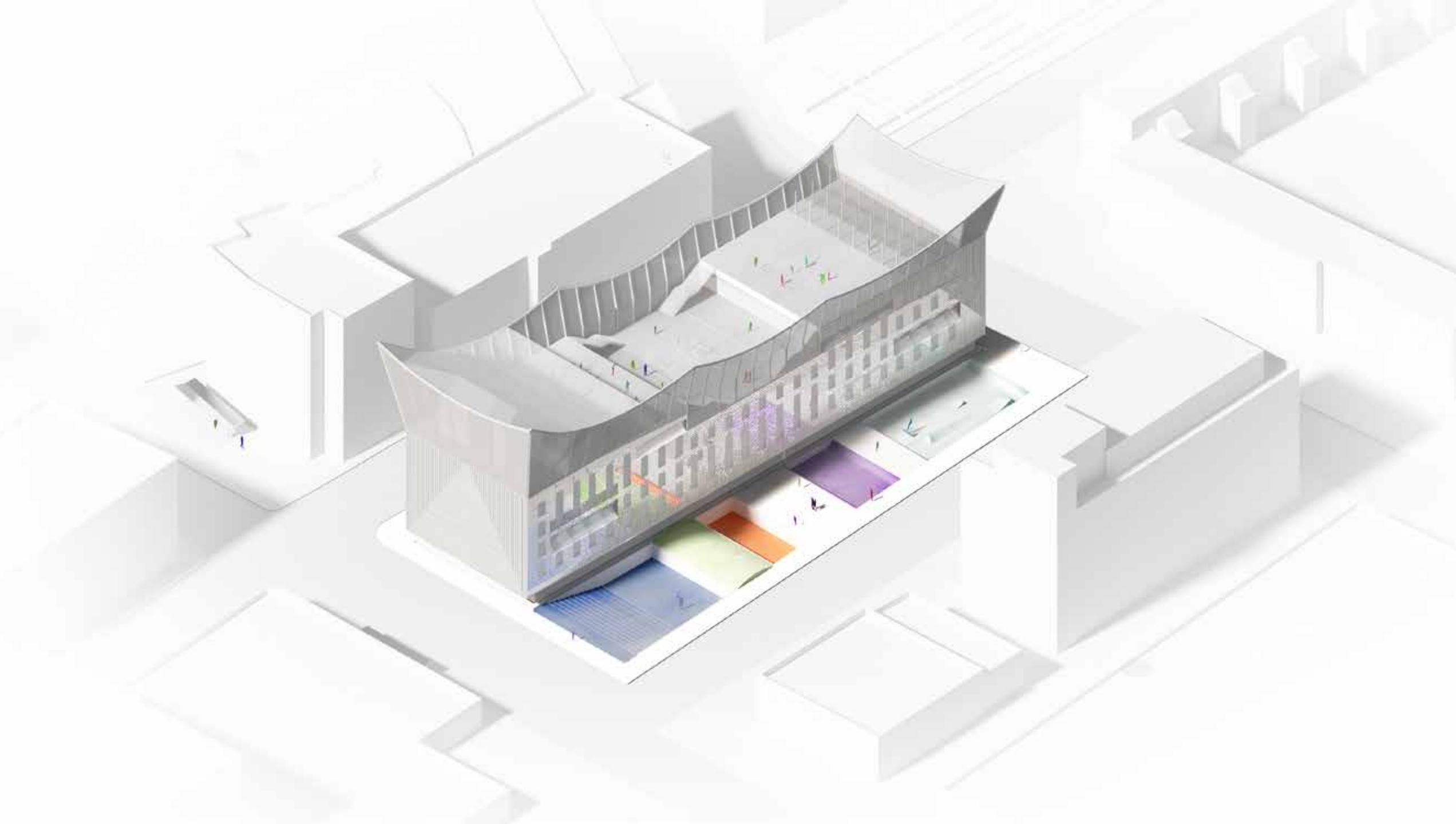






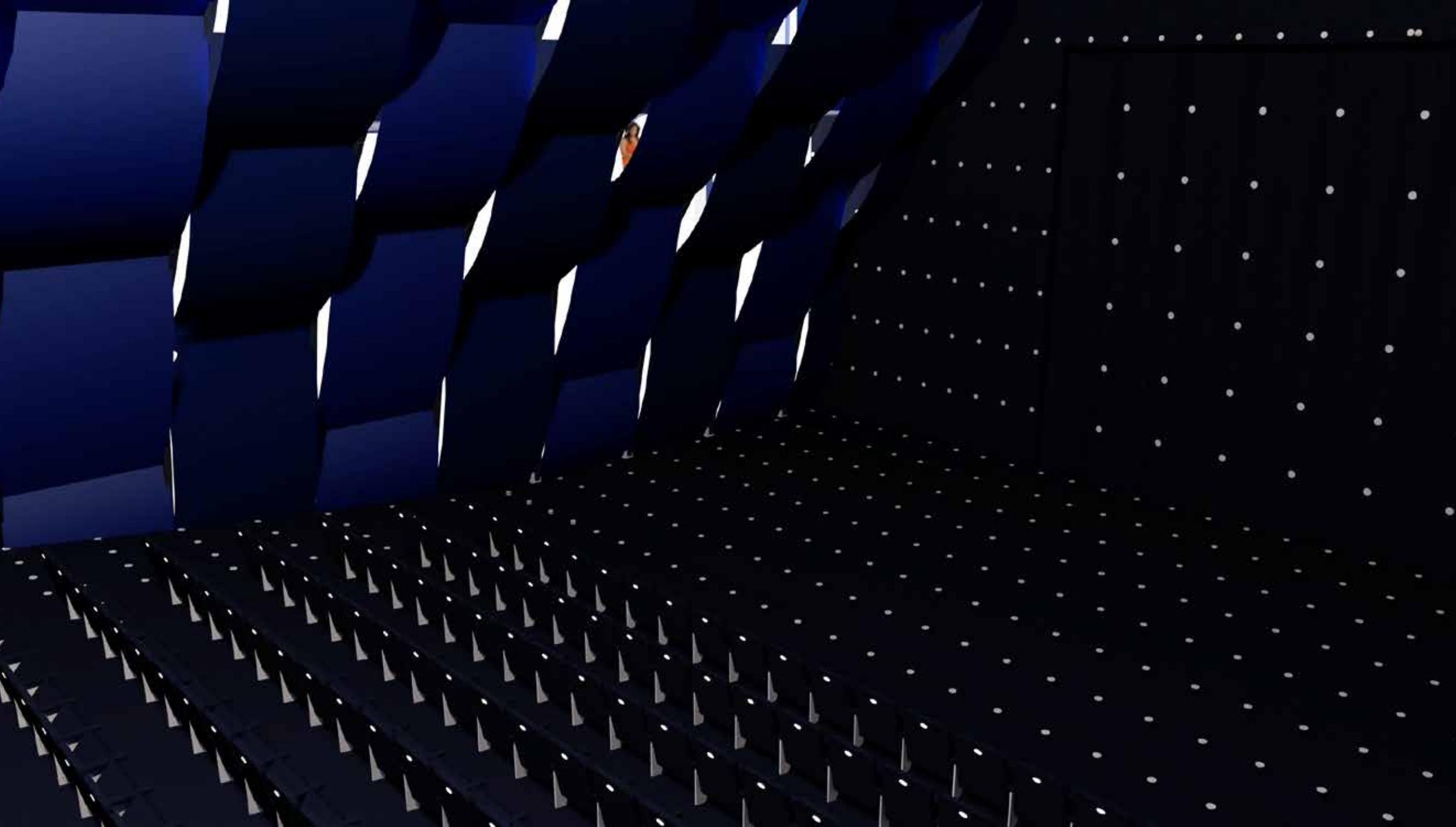


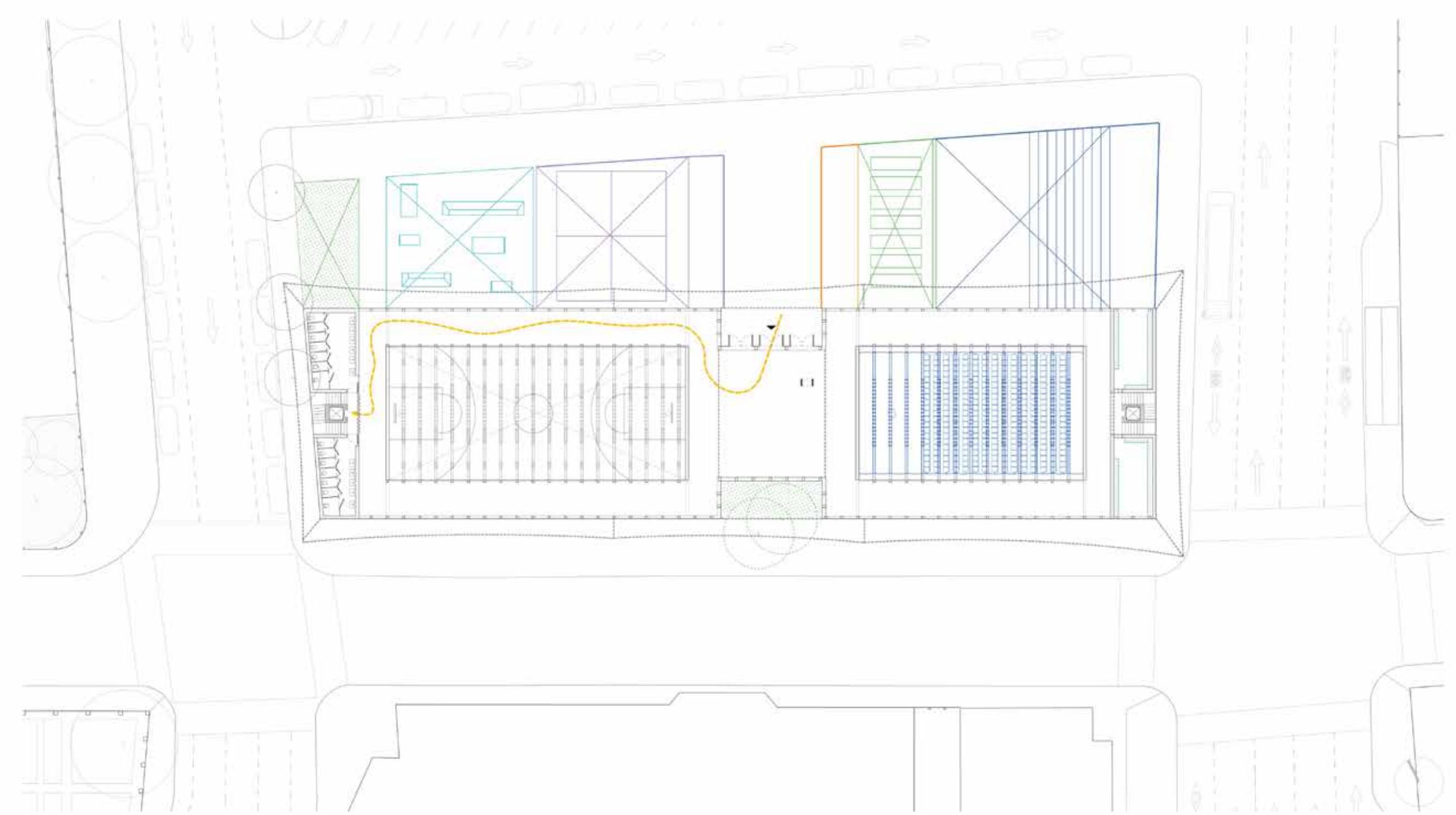




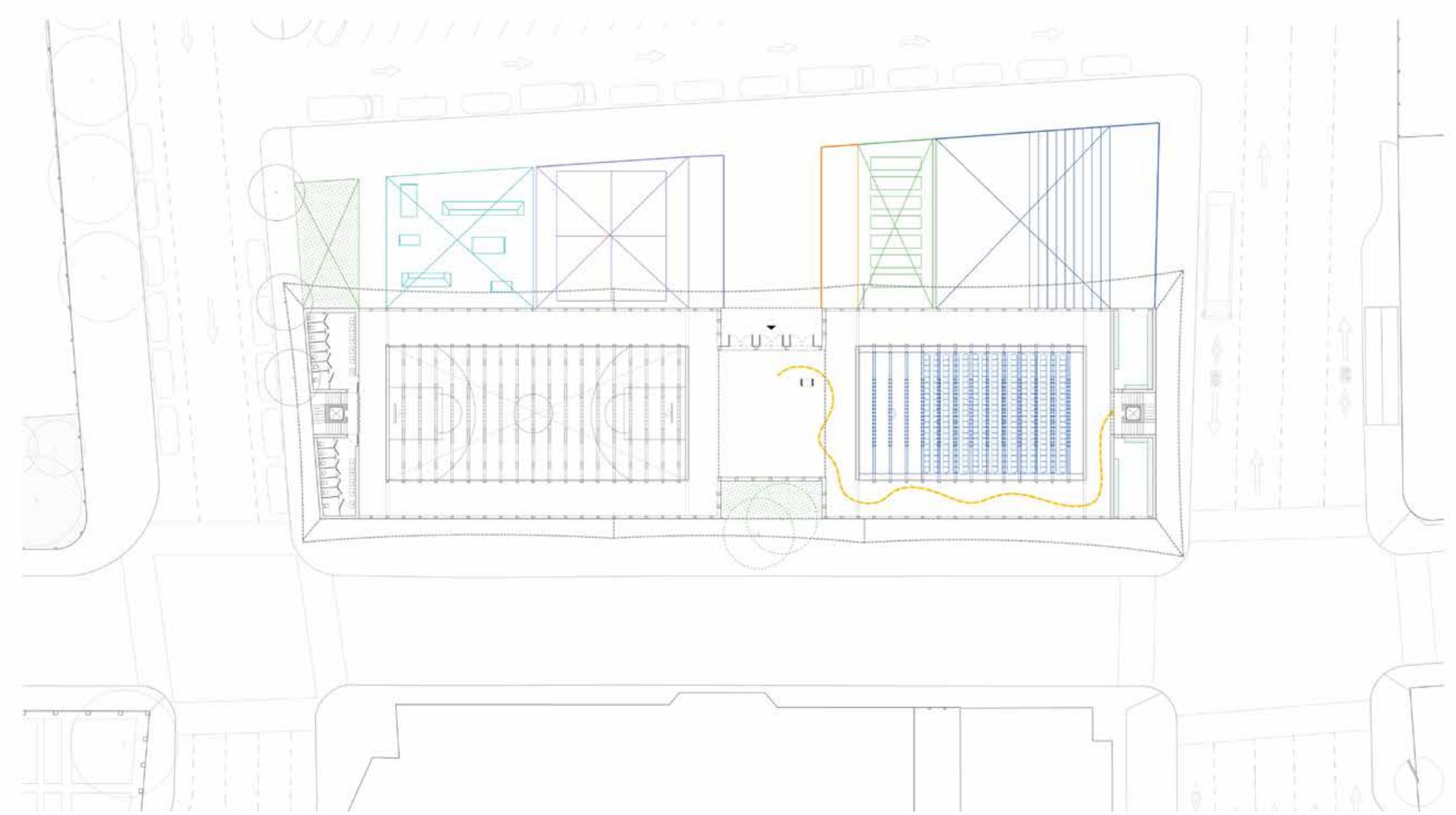


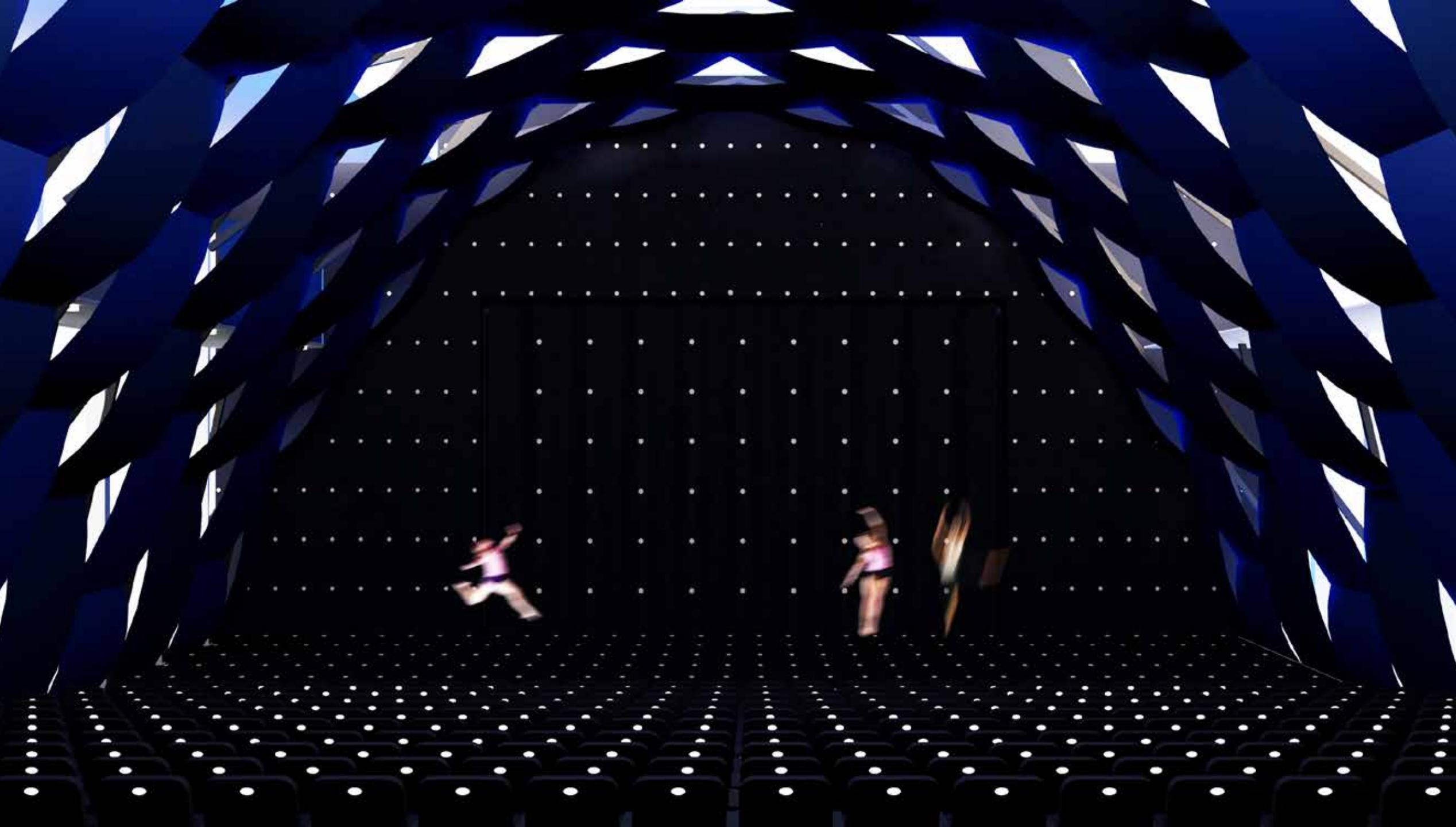


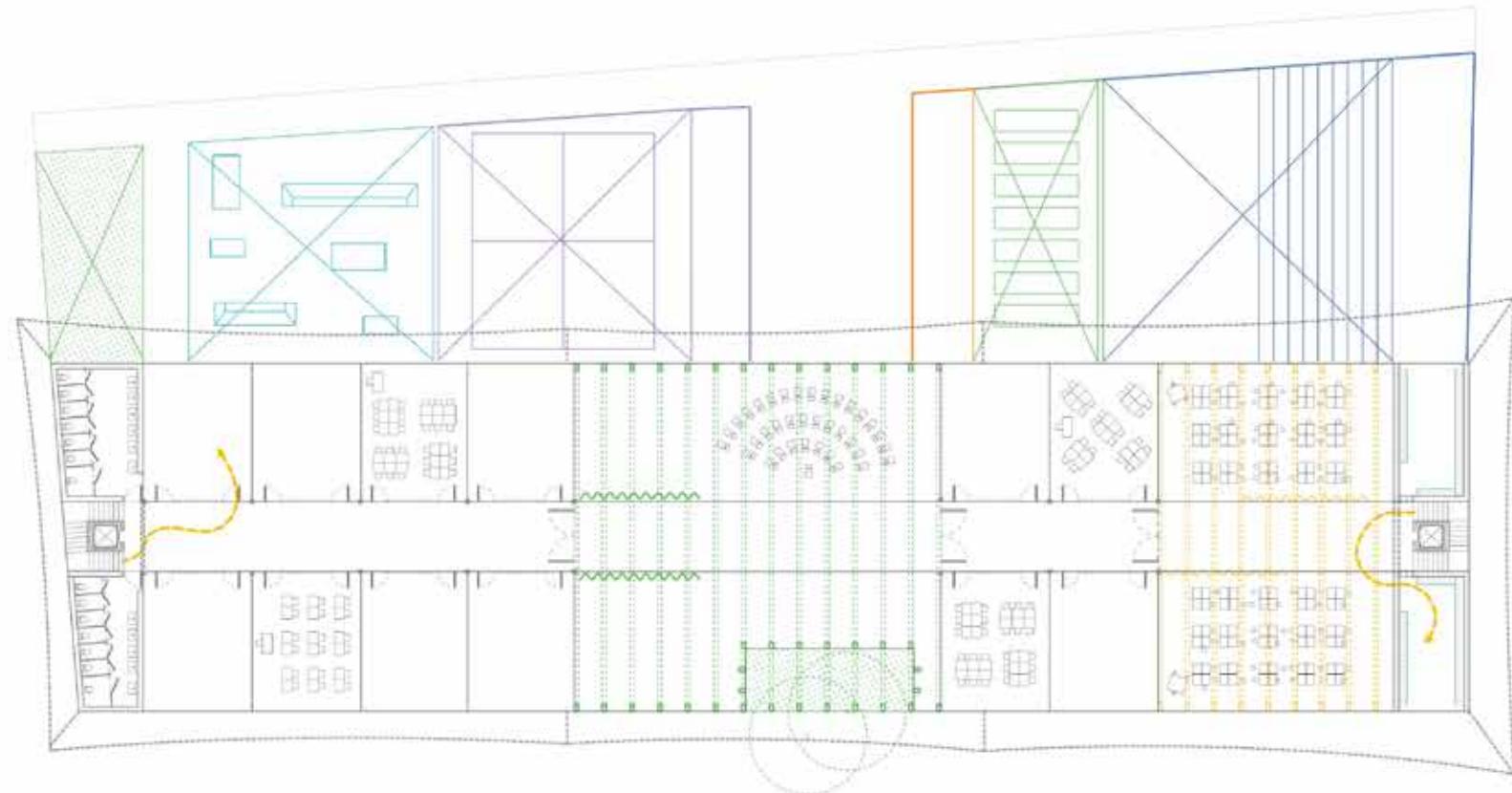












0' 10' 20' 40' 60'









0' 10' 20' 40' 60'





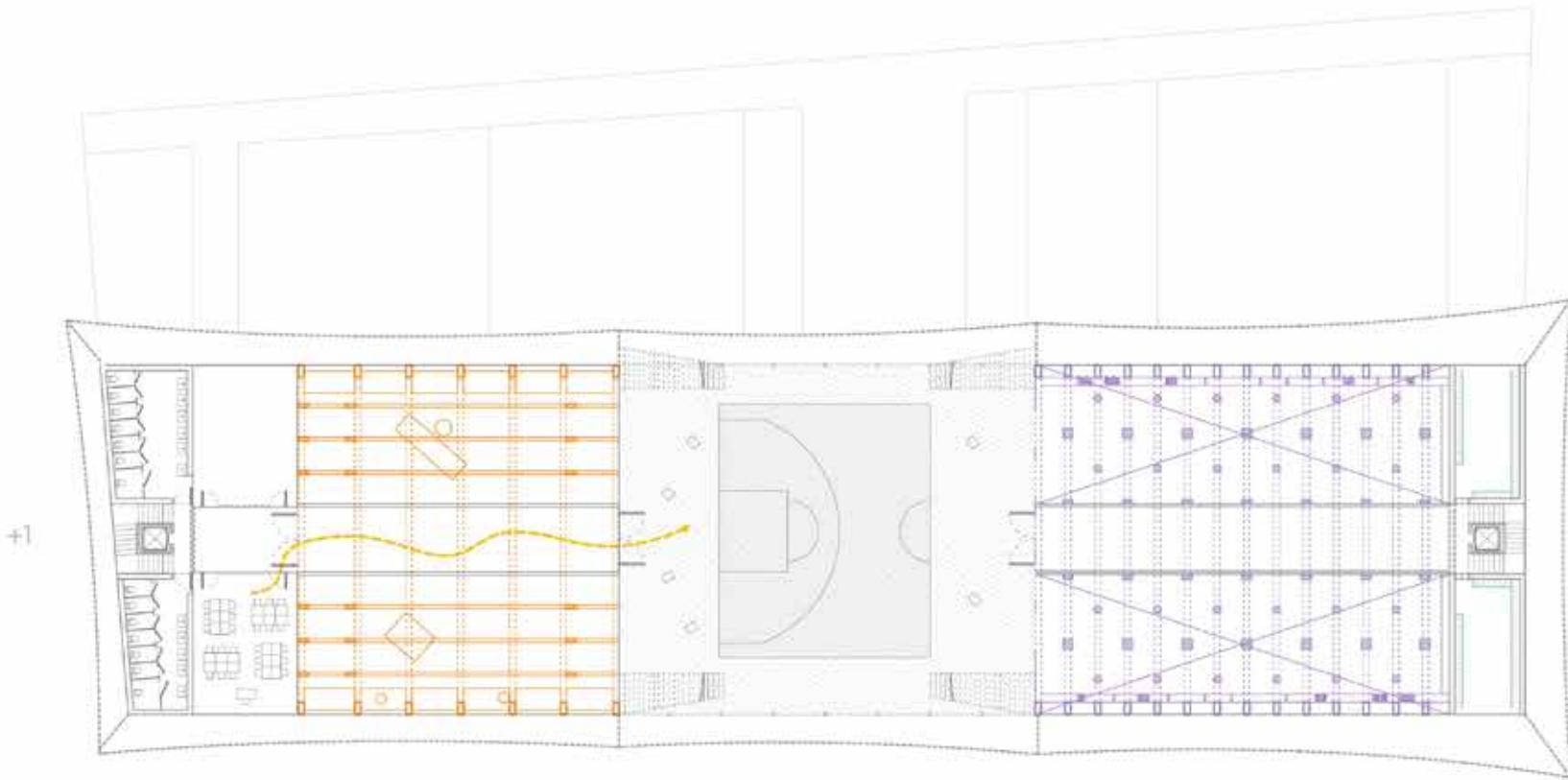


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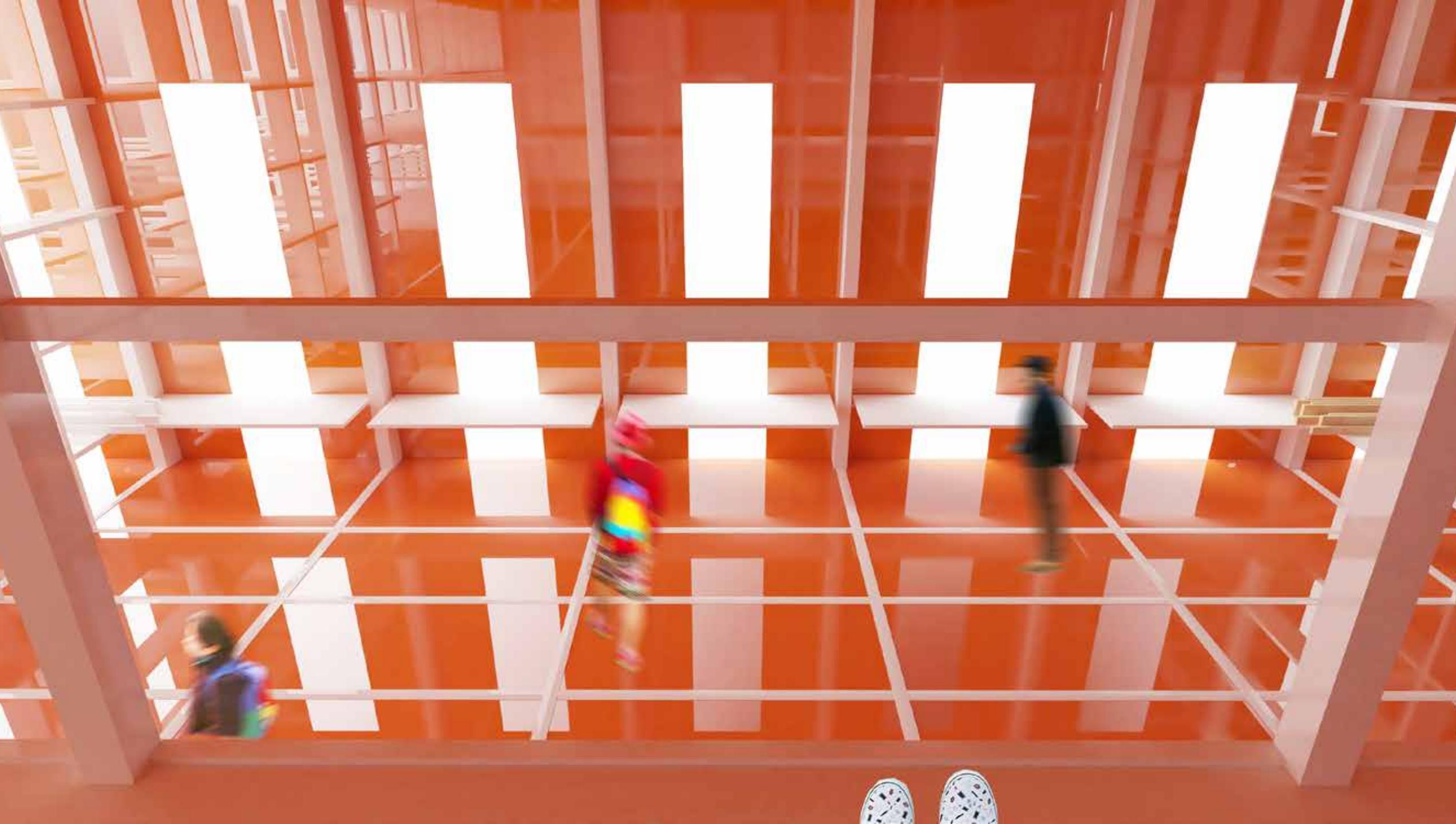




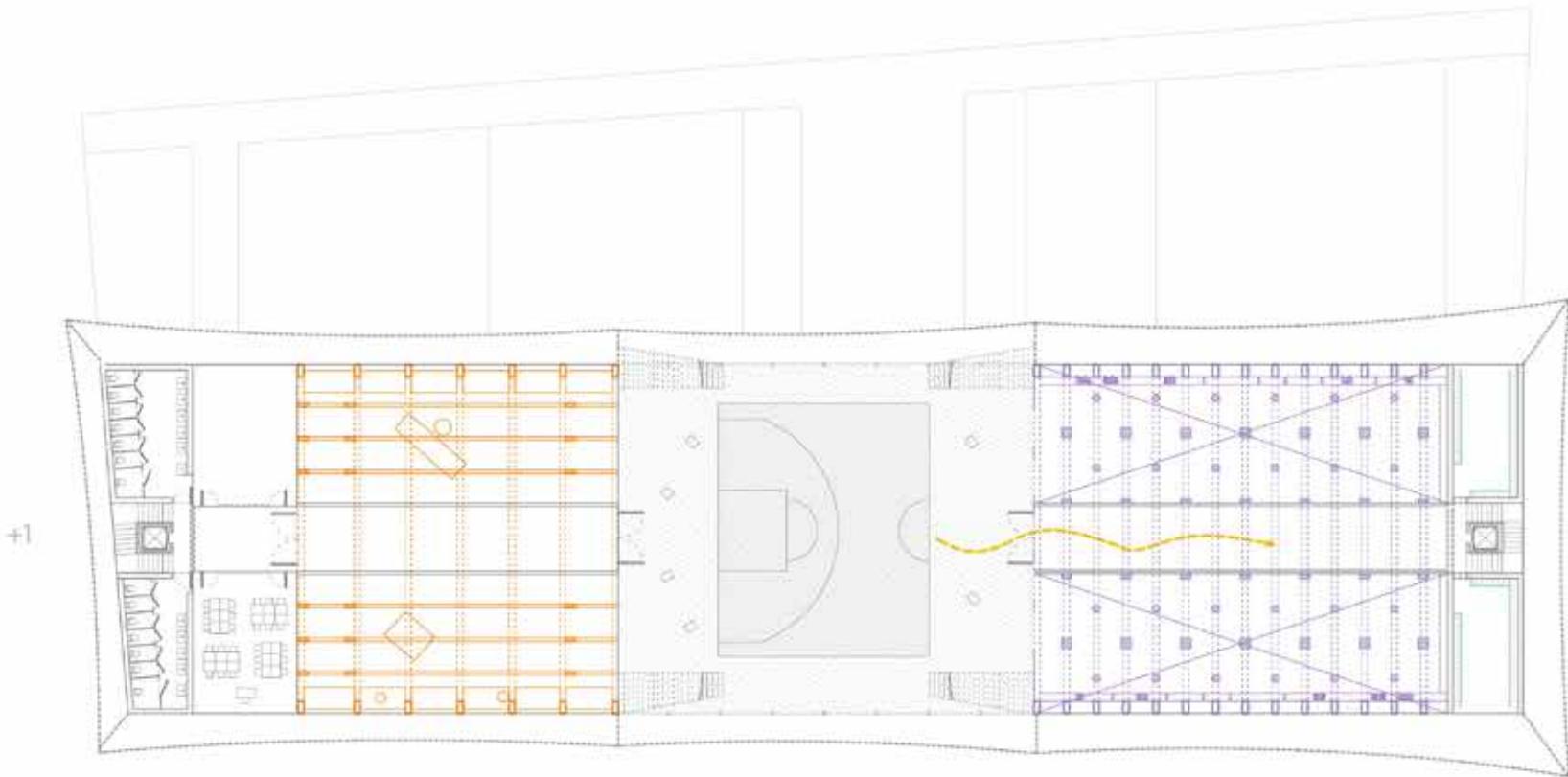


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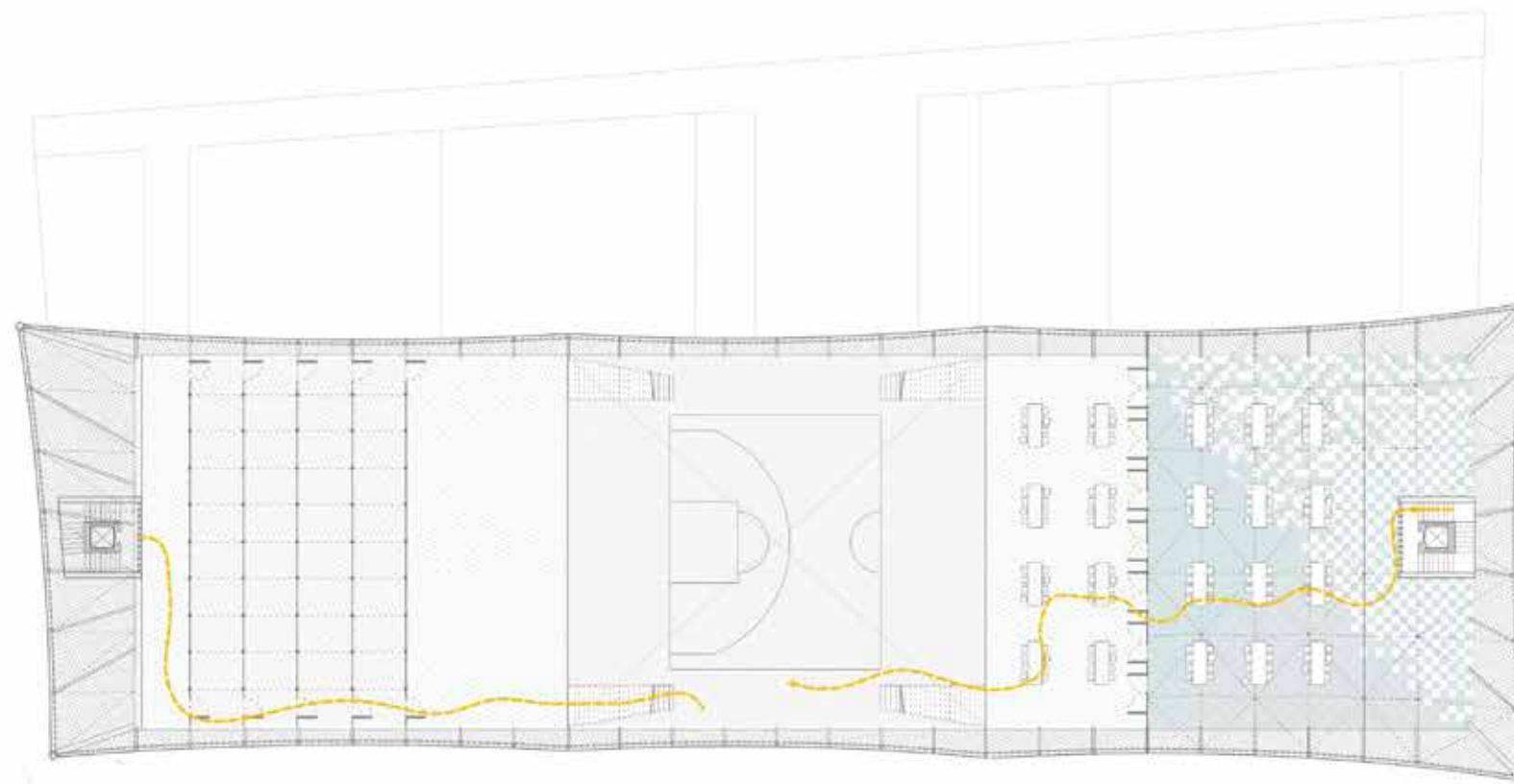


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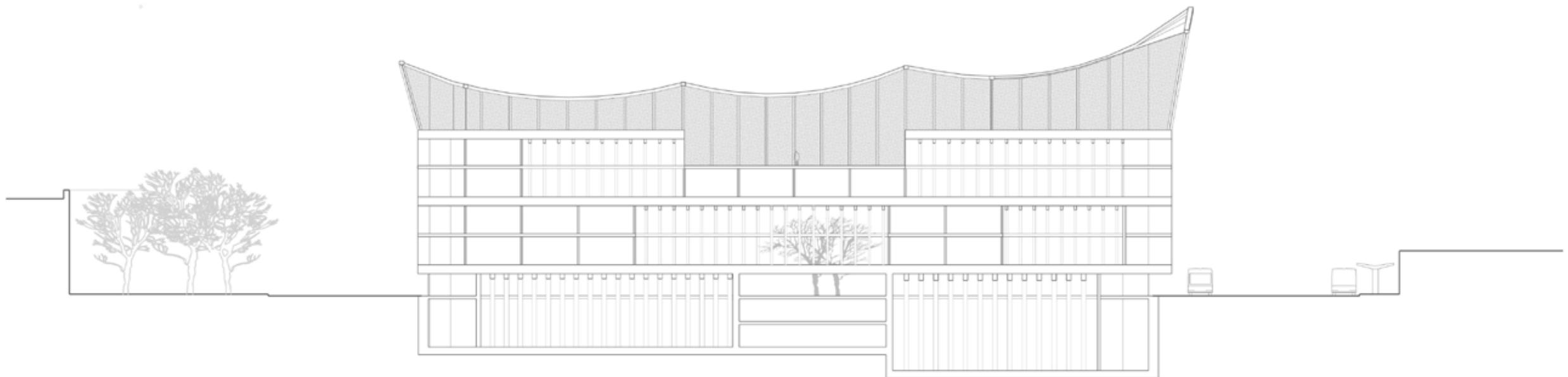


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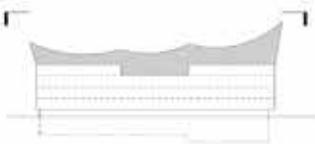
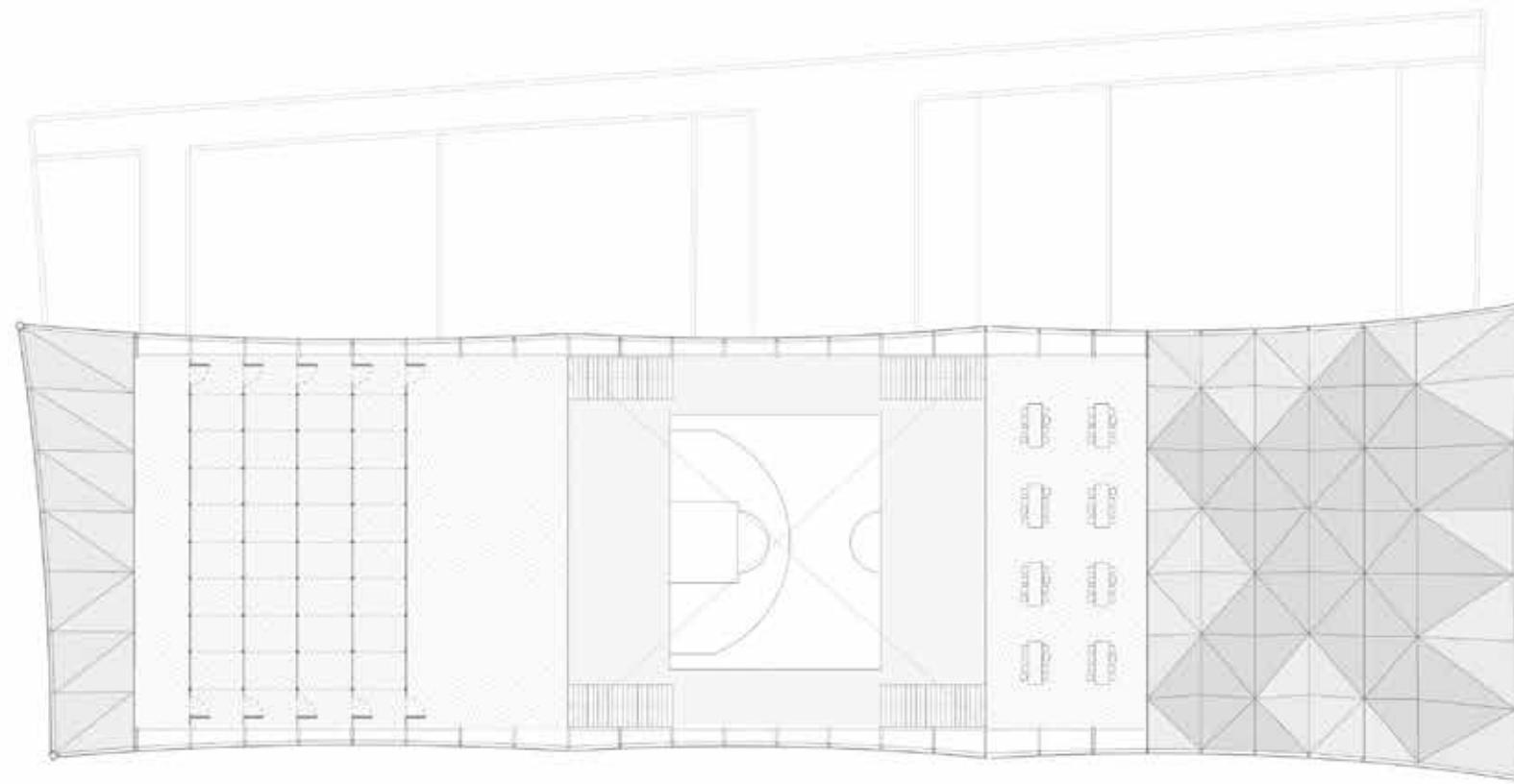






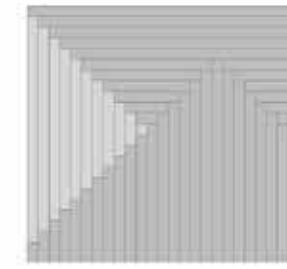
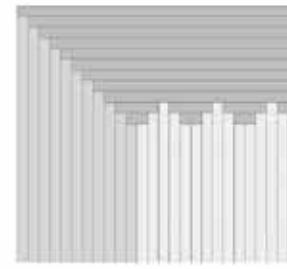
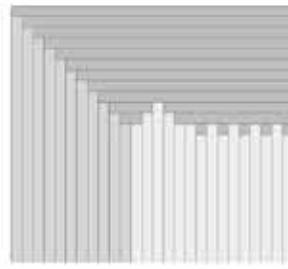
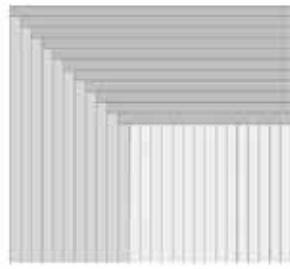
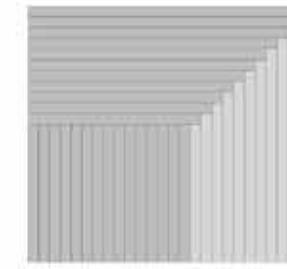
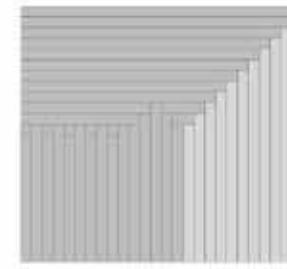
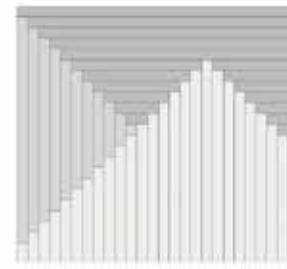
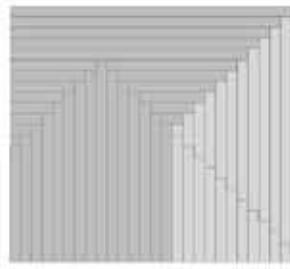


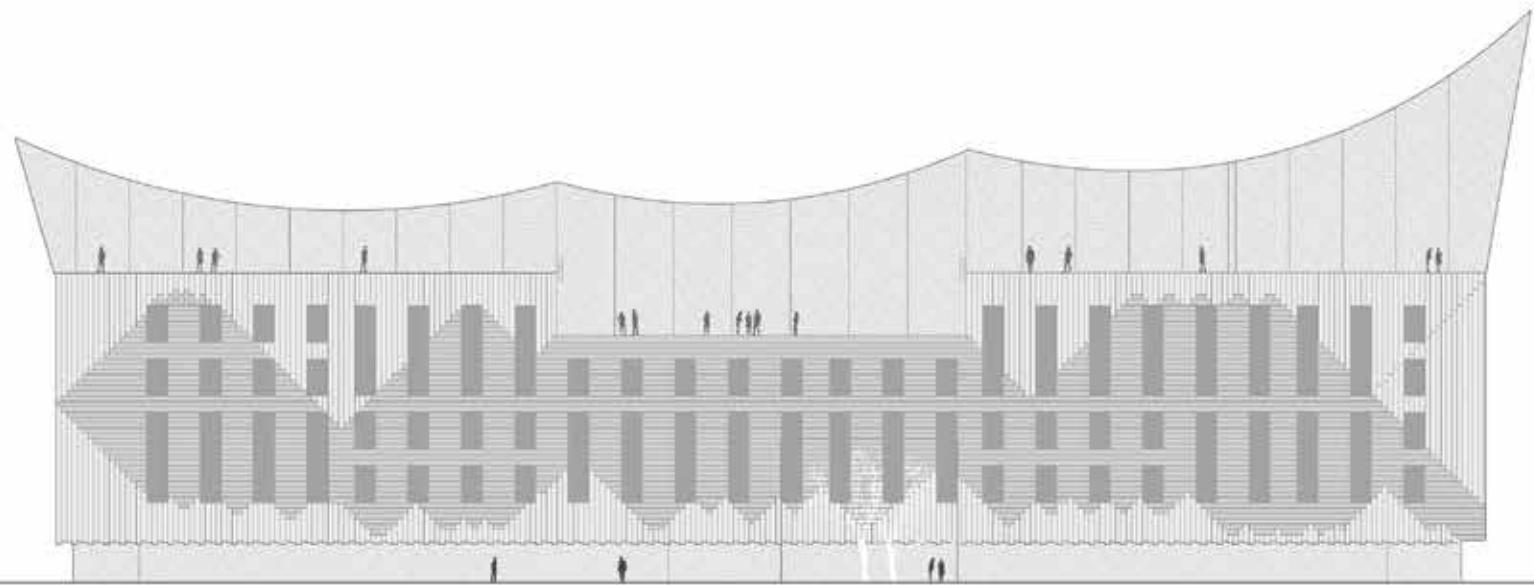
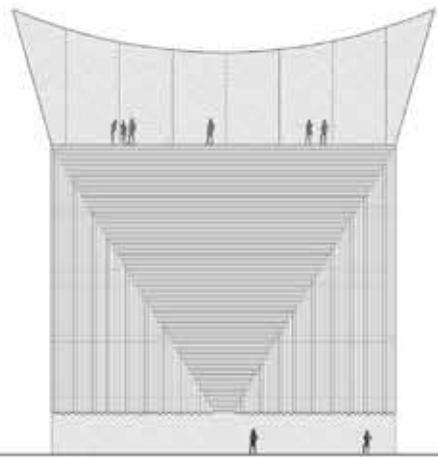
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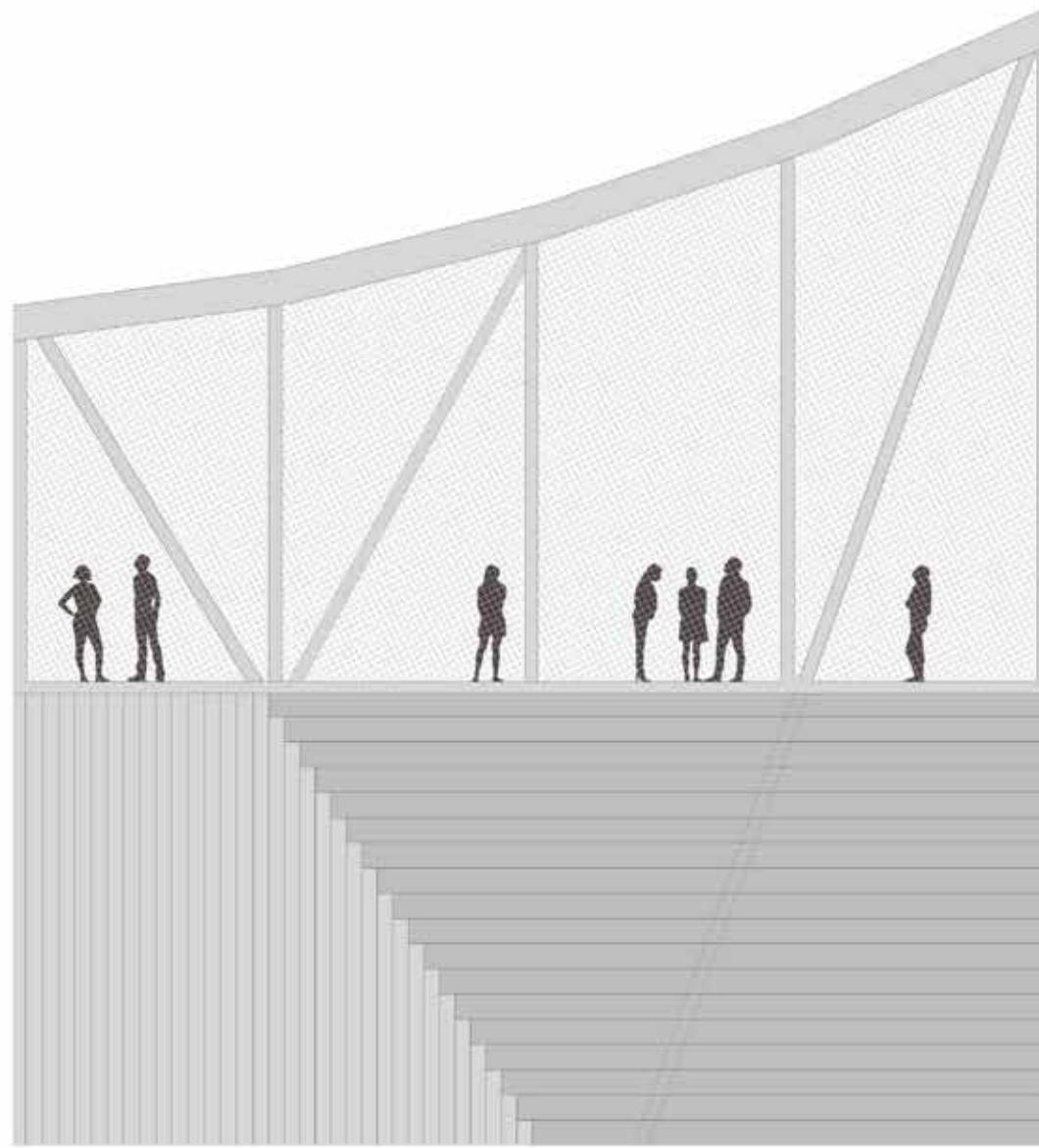


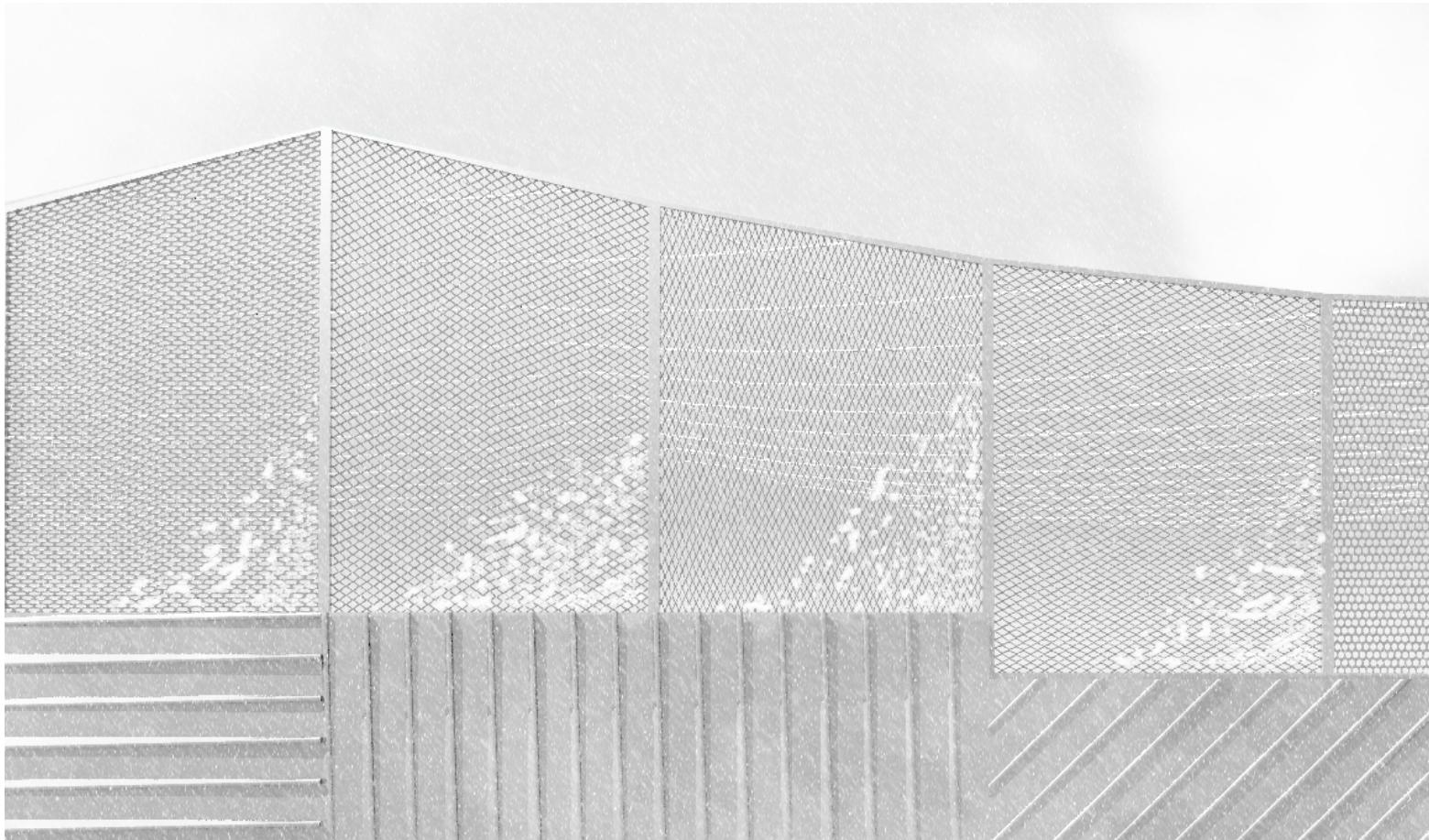
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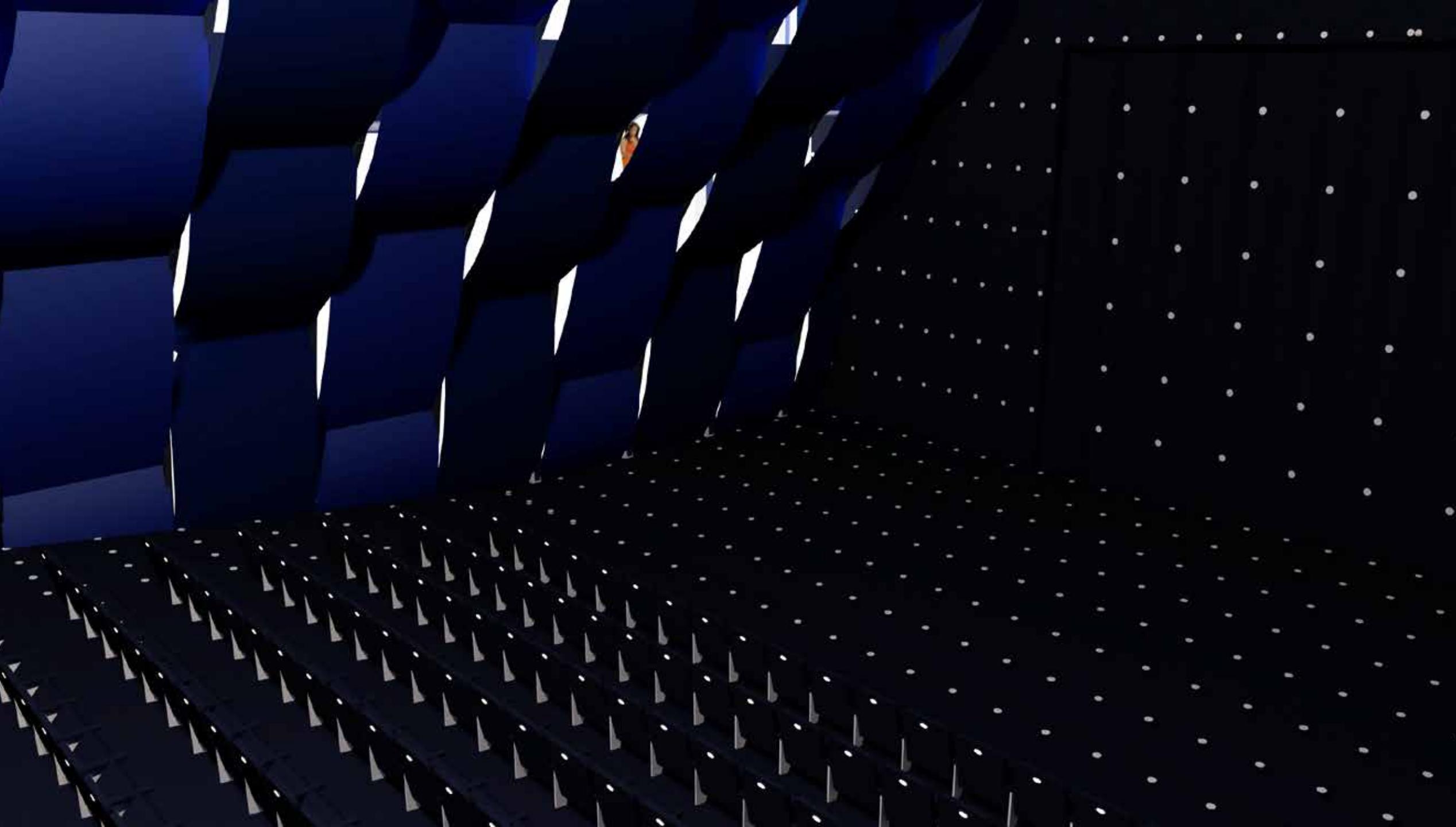




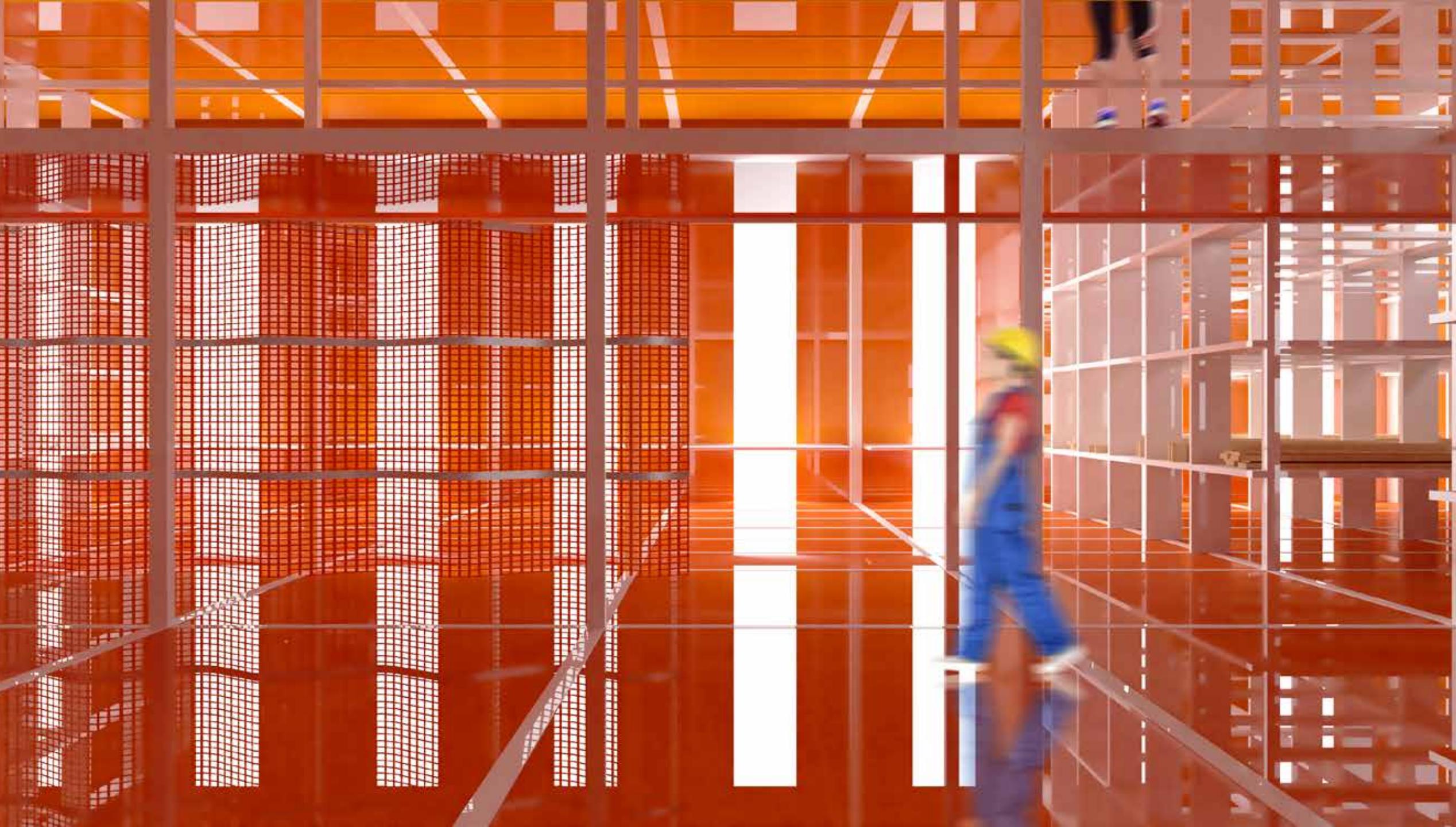




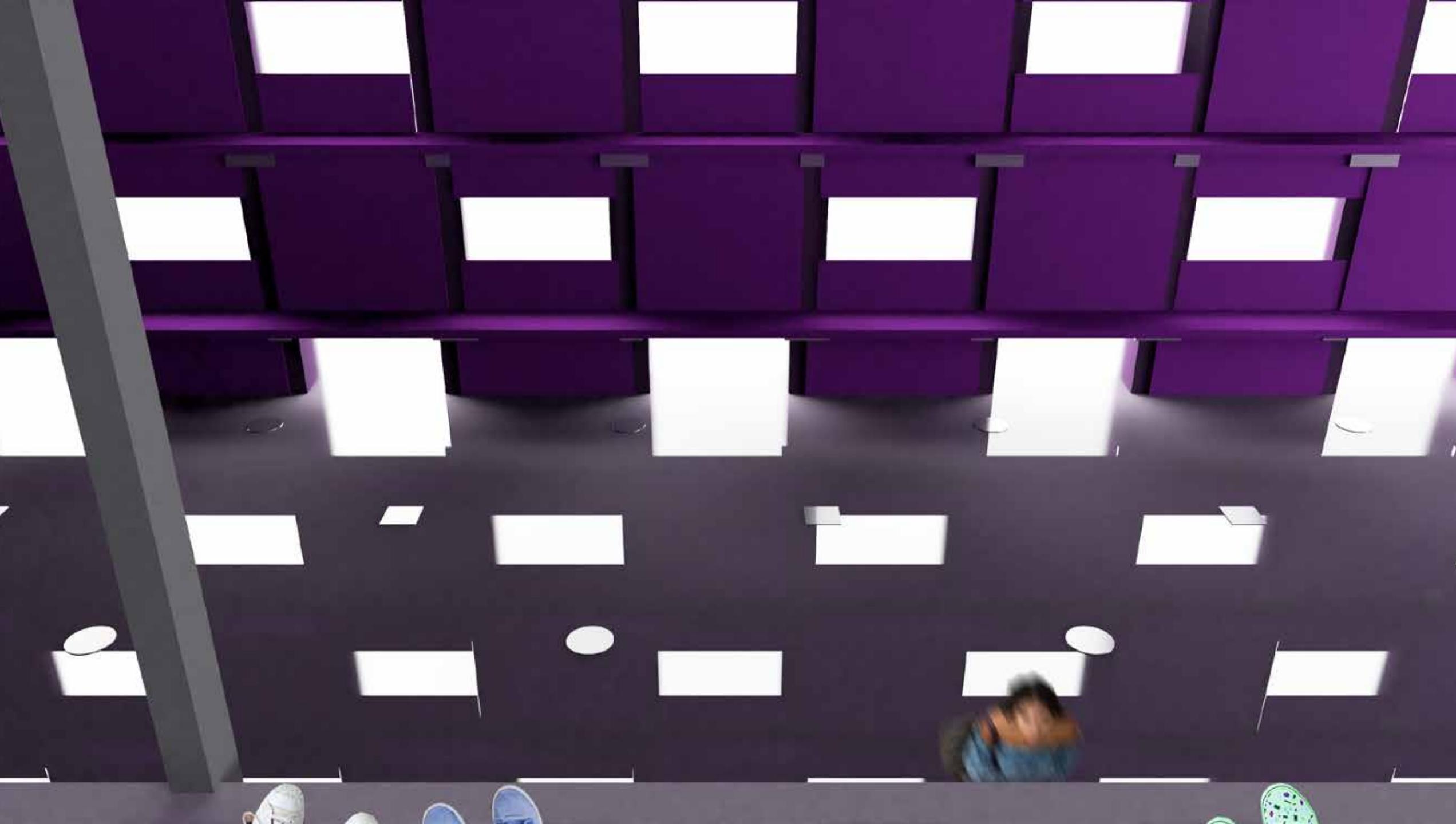






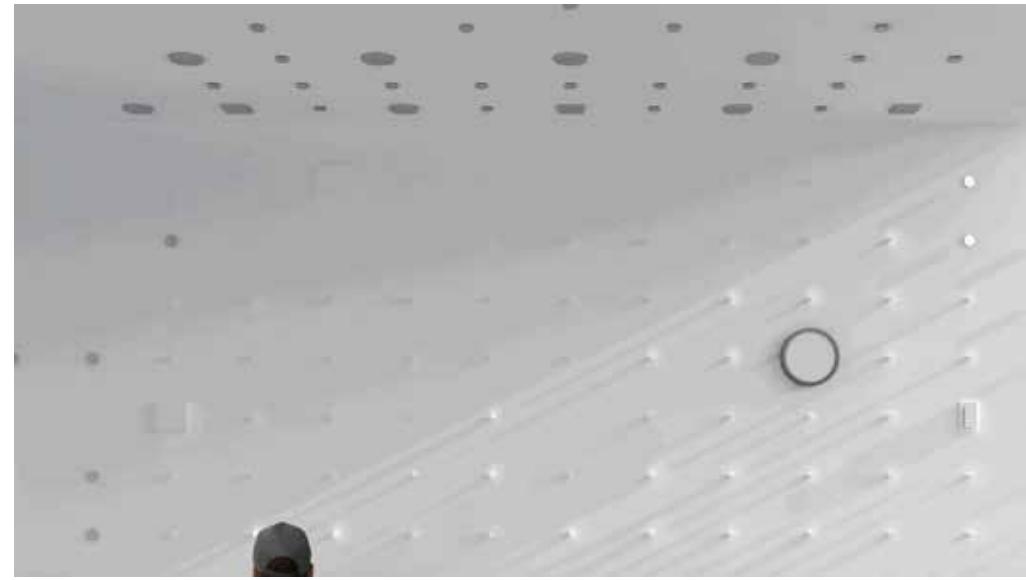














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thank you to Poap Panissutikorn, Sebastian Mancera, Tim Clements, Lane Raffaldini Rubin, Grace McEniry,
McKenna Mitchell, Grace Chee, Goli Jalali

Image Attributions

1 Gursky, Andreas, *99 Cent*, 1999, Andreas Gursky works.
<https://www.andreasgursky.com/en/works/1999/99-cent>

2 Seattle PI, “Cleaning Up Seattle’s Gum Wall”

3 Gursky, Andreas, *Amazon*, 2016, Andreas Gursky works.
<https://www.andreasgursky.com/en/works/2016/amazon>

4 El Anatsui, “Metas III,” 2014, Haus der Kunst.
<https://hausderkunst.de/en/exhibitions/elanatsui>

2 Gursky, Andreas, *Les Mees*, 2016, Andreas Gursky works.
<https://www.andreasgursky.com/en/works/2016/les-mees>

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¹Gursky, Andreas. "99 Cent" 1999. Andreas Gursky works. Accessed Online: <https://www.andreasgursky.com/en/works/1999/99-cent>

²Gursky, Andreas. "Atlanta." 1996. Accessed Online: <https://www.andreasgursky.com/en/works/1996/atlanta>

³Golden, Samara. "The Meat Grinder's Iron Clothes." 2017. Accessed Online: <https://samaragolden.com/artwork/4238897/The-Meat-Grinder-s-Iron-Clothes-looking-down-into-floor-mirrors.html>

⁴Gursky, Andreas. "Amazon." 2016. Accessed Online: <https://www.andreasgursky.com/en/works/2016/amazon>

⁵"Nantes School of Architecture by Lacaton & Vassal, Nantes, France." Architectural Review. Accessed Online: <https://www.architectural-review.com/today/nantes-school-of-architecture-by-lacaton-vassal-nantes-france>

⁶Anatsui, El. "Metas III." Haus der Kunst, 2019. Accessed Online: <https://hausderkunst.de/en/exhibitions/elanatsui>

⁷Concrete Block Wall, Cactus Pear.org Accessed Online: https://www.cactuspear.org/cgi-bin/main.cgi?dir=photos&page_concrete_block_wall

⁸"Lewerentz's Flower Shop." SOS Brutalism. Accessed Online: <http://www.sosbrutalism.org/cms/17384428>

⁹Ruault, Phillippe (Photographer), OMA (Architect), Barba, José Juan (Author). Accessed Online: <https://www.metalocus.es/en/news/iit-mccormick-tribune-campus-center-oma>

¹⁰Salcedo, Doris. "Disremembered I." 2014. Accessed Online: <https://www3.mcachicago.org/2015/salcedo/works/disremembered/> (Courtesy of Halle)

¹¹"Cleaning Up Seattle's Gum Wall," 2015, Seattle Post-Intelligencer. Accessed Online: <https://www.seattlepi.com/seattlenews/article/Cleaning-up-Seattle-s-gum-wall-6607651.php>

¹² Accessed Online: <https://www.dreamstime.com/stock-image-blue-lined-paper-image10249061#res26615551>.

¹³Costa, Josiane Soares; Raquel Dei Agnoli, and Jane Zoppas Ferreira. "Corrosion Behavior Of A Conversion Coating Based On Zirconium And Colorants On Galvanized Steel By Electrodeposition." Accessed Online: <https://tecnologiammm.com.br/article/10.4322/2176-1523.0852.pdf> tmm-12-2-167.pdf

¹⁴Accessed Online: <http://www.letsfixconstruction.com/blog/selecting-an-indoor-sport-flooring-finish>