Thesis Dossier
ARB301 Project Thesis
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The Berlage Center for
Advanced Studies in Architecture
and Urban Design

Aardkt

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This contribution is a wholesale market that reintroduces the face-to-face interaction within the trading process, catalyzing a paradigm shift in the Dutch potato production mode quantitatively and qualitatively.

The Netherlands is internationally recognized as one of the world's largest food exporters due to its excellent connectivity throughout Europe and is home to world-class research institutions. It is—in effect—feeding the world. Driven by the anticipation for a renewable future, the country's journey towards optimization, sustainability, and health requires a paradigm shift in the food industry.

As the COVID-19 pandemic has reshaped the retail market in unprecedented ways, consumers shifted around lifestyle and value. This demanded new spatial configurations of the supermarket, transitioning between a pre-COVID-19 and a post-COVID-19 society. Resting within its etymology—where "super" alludes to supremacy concerning size, quality, and quantity, while "market" refers to trading in goods of value—the supermarket, selling food and household goods, first originated in the 19th century with the novel concept of a self-serve store. As a platform of recurring successful innovations, their profits increased during the COVID-19 pandemic, underscoring that supermarkets are now an essential service - representing a new civic presence.

The collective project on the spatial implications of the food industry in the Netherlands and beyond seeks to redesign the supermarket—currently occupying the most densely used square meters in a city—to implement developments within the meticulously designed sales floor via craft, reshoring, protectionism, automation, and extinction—for an immersive consumer experience—and the concealed back of house through the notions of tastemaking, scarcity, sensorialism, inclusivity, and trade—associated with the product's supply chain—ensuring a frictionless future for shoppers.

These ten contributions explore the architectural and urban design possibilities within the future of the food industry across sites within the Blue Banana—the European Megalopolis—transporting products and radiating back to the Albert Heijn shelves in Delft. They collectively form a project for the design of a future supermarket on the current site of the Albert Heijn XL on Martinus Nijhofflaan in Delft. These contributions provide modifications in the supply chain, product distribution, and store planning, in relation to the products, their associated building types, and their extensive territories. The collective design of this Albert Heijn XL will raise issues of scenography, product flow, human interaction, digital technology, and consumer experience, in an attempt to address the future of the food industry.

At a time when the world is pulling through the COVID-19 pandemic, faced anew with the impending environmental crisis, the collective project raises questions about the ever-changing relation of architecture and the food industry in the Netherlands and beyond.

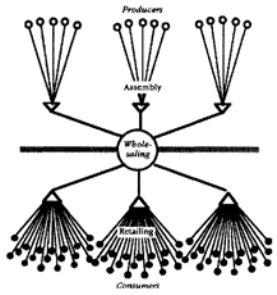


Figure 1
The structure of a classical food trade system, where (wholesale) market sits in between the producers and consumers.
"Wholesale Markets," FAO, accessed October 4, 2021, http://www.fao.org/3/t0521e/t0521e00.htm.

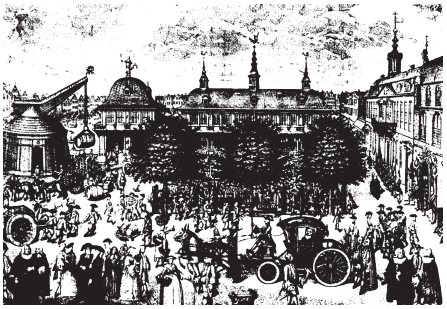


Figure 2
The old stock exchange on Nikolaifleet, Hamburg around 1735. To the left of the stock exchange building is the Chamber of Commerce and a crane (far left). To the right is the old town hall.
Hamburg's town centre, Christian Fritzsch, 1735, wikicommons, accessed July 4, 2021.

Figure 3
Aerial view of the Tsukiji fish market when it was finished in 1934. On the foreground were piers where seafood transported from Tokyo harbour off-loaded. Marine products traveled perpendicularly to the building's fan-shape, and entered Tokyo city. On the right the black rectangular shaped buildings are the outer retail market, which is still under operation today.
Tokyo City. 1934. Aerial View of the Central Wholesale Market. Tokyo Central Wholesale Market Tsukiji Market - Architectural Drawings. https://ndlonline.ndl.go.jp/#!/detail/R300000001-I000000765120-00.

Figure 4
The cross section of the Tsukiji fish market. Structures align from left to right are: loading hall, shops for fish wholesale dealers, shops for fish jobbers (two spans), and loading sheds for fish.
Tokyo City. 1934. Aerial View of the Central Wholesale Market. Tokyo Central Wholesale Market Tsukiji Market - Architectural Drawings. https://ndlonline.ndl.go.jp/#!/detail/R300000001-I000000765120-00.

Figure 5
The auction house at Strooveer in Rotterdam around the 1910s. Wholesalers transported their products to the auction in their own barge. Water transportation was crucial for farms to bring their products, while such importance soon decreased and it was no longer necessary for auction buildings to be built next to major canals.
https://web.archive.org/web/20201023093546/https://sites.google.com/site/oudberkelrodenrijsinfo/f-overig/veiling

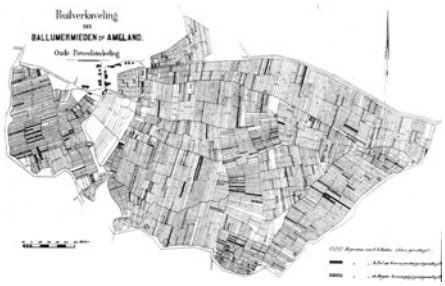


Figure 6
The cadastral map of Ameland in the Netherlands demonstrating the existing status of agrarian land. There were 3659 plots divided the 190 hectare land.
Schroor, Meindert. 2000. "Ballumer Mieden: The First Land Consolidation in the Netherlands." Noorderbreedte. December 1, 2000. https://web.archive.org/web/20190403203047/https://noorderbreedte.nl/2000/12/01/ballumer-mieden-de-eerste-ruilverkaveling-in-nederland/ . Archived 2019-04-03 at the Wayback Machine

Figure 7
The cadastral map demonstrating the consolidation plan of Ameland in the Netherlands. The number of plots had been reduced to 235, with the 12 meters main road projected north-south direction and 9 meters side roads.
Schroor, Meindert. 2000. "Ballumer Mieden: The First Land Consolidation in the Netherlands." Noorderbreedte. December 1, 2000. https://web.archive.org/web/20190403203047/https://noorderbreedte.nl/2000/12/01/ballumer-mieden-de-eerste-ruilverkaveling-in-nederland/ . Archived 2019-04-03 at the Wayback Machine

The term “trade” in the food industry encompasses a series of transactions, processes, and distributors. Involving both raw ingredients and human labor, trade moves food from the productive field of agriculture and manufacture to consumptive markets and households (see fig. 1). Over millennia, societies have successfully developed a complex and sophisticated network of trade that turned food into a commodity, where feeding the population is no longer its primary goal, but a by-product. Throughout the supply chain, architectural interventions are deployed to jointly form a mechanism of making profit.

From wholesale markets to stock exchanges, processing plants to packaging factories, refrigerated warehouses to logistics centers, buildings that bridge the polarized productive and consumptive landscapes can thus be regarded as the architecture of the food trade. These structures, reflecting a particular spatial and temporal context on both interior and exterior spaces, can be understood through three aspects. Firstly, territorial design on multiple scales establishes the foundation for planning and designing marketplaces. Then, policymaking and financial models stretch the length of the supply chain and proliferate warehouse architecture. Last but not least, the evolving awareness and preferences of consumers incubates the rethinking and repurposing of existing structures.

As food production tends to concern vast land areas, territorial designs concerning land-use patterns, plot, and infrastructure are crucial for determining the geography and spatial morphology of the architecture of the food trade. The origins of food trade architecture can be traced back to the marketplace, where farmers brought fresh produce and livestock to sell to customers. Primary and secondary markets are established to serve different target groups and catchment areas.1 The primary—or terminal—market is a highly buyer-orientated marketplace that is generally located within or nearby conurbations. Agorae in ancient Greek and bazaar in Western Asian, Middle Eastern, and some African cities are widely acclaimed examples of prototypical terminal marketplaces. In the thirteenth to fifteenth centuries, the notion of a market broadened to include brokers dealing in contracts instead of goods, leading market towns in northern and central Europe to start building stock exchanges. A painting depicting the old stock exchange in Hamburg illustrates how architecture regulated the international grain trade (see fig. 2). After the nineteenth century, over-population and expansion into urban areas caused by industrialization forced Western cities to demand larger markets to fulfill the needs of its modern societies. The expansion of the marketplace does not merely enlarge the space for exchanging physical merchandise, but rather integrates logistic and marketing facilities such as transportation infrastructures, warehouses, showrooms, and retail spaces to meet the economics of scale. As the traditional marketplace evolved to a more specialized building type—namely the wholesale market—the internal spatial structure gradually gained emphasis.

The Tsukiji fish market in the Tokyo Metropolitan Central Wholesale Market served as an exemplar of a modern wholesale market in which the renowned quarter-circular layout accelerated the pace of seafood entering Tokyo, aiding freshness (see fig. 3). The spatial sequences (see fig. 4) of the Tsukiji fish market are carefully planned to facilitate the trade process and conscientiously accommodate the population and Tokyo’s urban fabric. The secondary market, on the contrary, is the rural assembly market that focuses on congregating goods for potential buyers to browse and purchase in bulk. Transportation is crucial to this type of marketplace owing to their more remote locations and land-use patterns. Falling on the opposite end of the market spectrum is the Dutch auction house, providing a different demonstration of how a shift in territorial design affects the architecture of trade.2 Before World War II, polders still dominated the Netherlands’ rural landscape and arable land was predominately long and narrow, compartmentalized by ditches and canals. As a result, markets utilizing waterways for transportation provided an ideal site for farmers, wholesalers, and brokers to gather. Early examples of Dutch auction houses were often located at nodes for water transport where farmers’ barges carrying vegetables and fruit either off-loaded at the adjoining yard or directly sailed into the auction house (see fig. 5). Nevertheless, the land consolidation movement in the late 1960s resulted in the increase in plot size (and thus in production, see figs. 6 and 7), and the importance of road transport advanced the change of Dutch auction houses. Smaller auction houses merged into big wholesale complexes in which, despite the exponential growth on buying in bulk, the actual auction room remained the same size or only expanded slightly. Now, logistics facilities occupy approximately 90% of the floor area in wholesale markets that still conduct the Dutch auction method (see fig. 8). Territorial design has always had an essential and profound influence on the architecture of the food trade, whether it concerns site specification, building layout, or affiliated amenities and infrastructures.

Along with the commodification of food, the architecture of the food trade has become the machine for facilitating maximized profit, ultimately reforming the appearance of the entire network. Sicco Mansholt, a Dutch farmer and politician who actively participated in European agricultural policymaking from 1958 to 1972, promoted agriculture subsidies to European governments and later the European Union.3 While being widely criticized for overproduction and waste, Mansholt’s policy did loosen the traditional socioeconomic structure of buying and selling created by the establishment of the wholesale markets.4 In addition, bankers found a new way to get more capital from agriculture and food production by founding the “middle man” through procurement companies or equipment suppliers.5 These factors jointly formed an alternative supply chain that bypassed the conventional wholesale market, binding food producers with grocery enterprises via jobbers. As the economist and long-time critic of contemporary agriculture and the food industry Brewster Kneen points out, “the basic principle (of the corporate food system) which seems to drive everything is ‘distancing’.”6

The utmost goal of a food intermediate is to separate the public as far as possible from where their food originates. Furthermore, the distancing effect does not just apply to physical spacing, but also to how many distinct processes the food must go through before being served on the table. With policymaking and financial tools advancing, the once-prominent architecture of the food trade had been divided and scattered in the rural hinterlands. With the fragmentation of food trade architecture, building types that used to be considered ancillary constructions proliferated in the countryside worldwide—refrigerated

Figure 8
Size comparison of dutch auction houses built in different periods. The grey filled spaces are for product storage and logistics, whereas the actual auction room is marked as white. The shrink of auction rooms' percentage is a result of improvement on infrastructure so that the auction house can handle more products and technology that automatic conveyor belts and information systems allow multiple auctions to take place simultaneously.

Figure 9
A collage of three old food wholesale markets in London, namely Smithfield meat market, Billingsgate fish market and New Spitalfields fruit and flower markets from left to right.
wikicommons

Figure 10
A concept rendering submitted by the City of London of Corporation for the review of the move of the wholesale markets in London.

Figure 11
A photo shot in the Markthalle Neun in Berlin. The industrial roof structure and facilities make it easy for small-scale farmers and start-ups to adapt various business plans.

ripening rooms for early harvest fruits, fully automated distribution centers, and offices that monitor market trends in real-time.

As the food trade turns more to speculation rather than to feeding people, the importance of physical trade decreases, reducing the architecture of the food trade to its simplest form—big white boxes. A concept rendering for the relocation of the three primary food trading markets in London—Smithfield meat market, Billingsgate fish market, and New Spitalfields fruit and flower markets—revealed their fate (see figs 9 and 10). This ubiquitous building form problematizes the current situation of the food system; architecture and space governed by policies and financial means are only interested in massive and industrial production, therefore creating heterotopic buildings regardless of both the production and consumption landscapes.

In response to the growing preference for a healthier and more sustainable diet, marketplaces are confronting the transition point where contemporary business models require new hybrid programs and spatial experience. Old urban marketplaces like Markthalle Neun in Berlin and Centrale Markthal in Amsterdam began to repurpose existing structures to create greener solutions, applying sustainable building techniques and providing organic grown food products. The "everything under one roof" design logic of market halls built in the twentieth century turns out to be competent for hosting small-scale food producers (see fig. 11). Meanwhile, an emphasis on extending the customer's experience on both the productive and consumptive end—to agritourism, exhibitions, and cooking sessions—strengthens the intimacy and dynamic between producers and consumers.

Frequent extreme weather events and the COVID-19 pandemic have caused significant disruption in global trade, exposing the vulnerability of the corporate food supply systems and catalyzing the further exploration of building localized food supply chains disconnected from the mainstream global food industry. More and more organizations seek to build a shorter supply chain to reduce carbon footprints as well as exclude exploitation from wholesalers and brokers. Different from the traditional assembly markets, these new rising groups are dedicated to local resources including production, distribution, and marketing to maximize participation in the process of the food trade as well as financial gain.

The architecture of the food trade once played an important role in the human living environment before being pushed away to the periphery and hidden from people's sight. Its inherent characteristics of localities, transaction modes, and infrastructures articulate the spatial structure of the building and contextualize the surrounding regions at large. Since 2008, increasing investment and speculation in the food industry have marginalized the two supposed beneficiaries: producers and consumers, creating homogeneous and monocultural structures.7

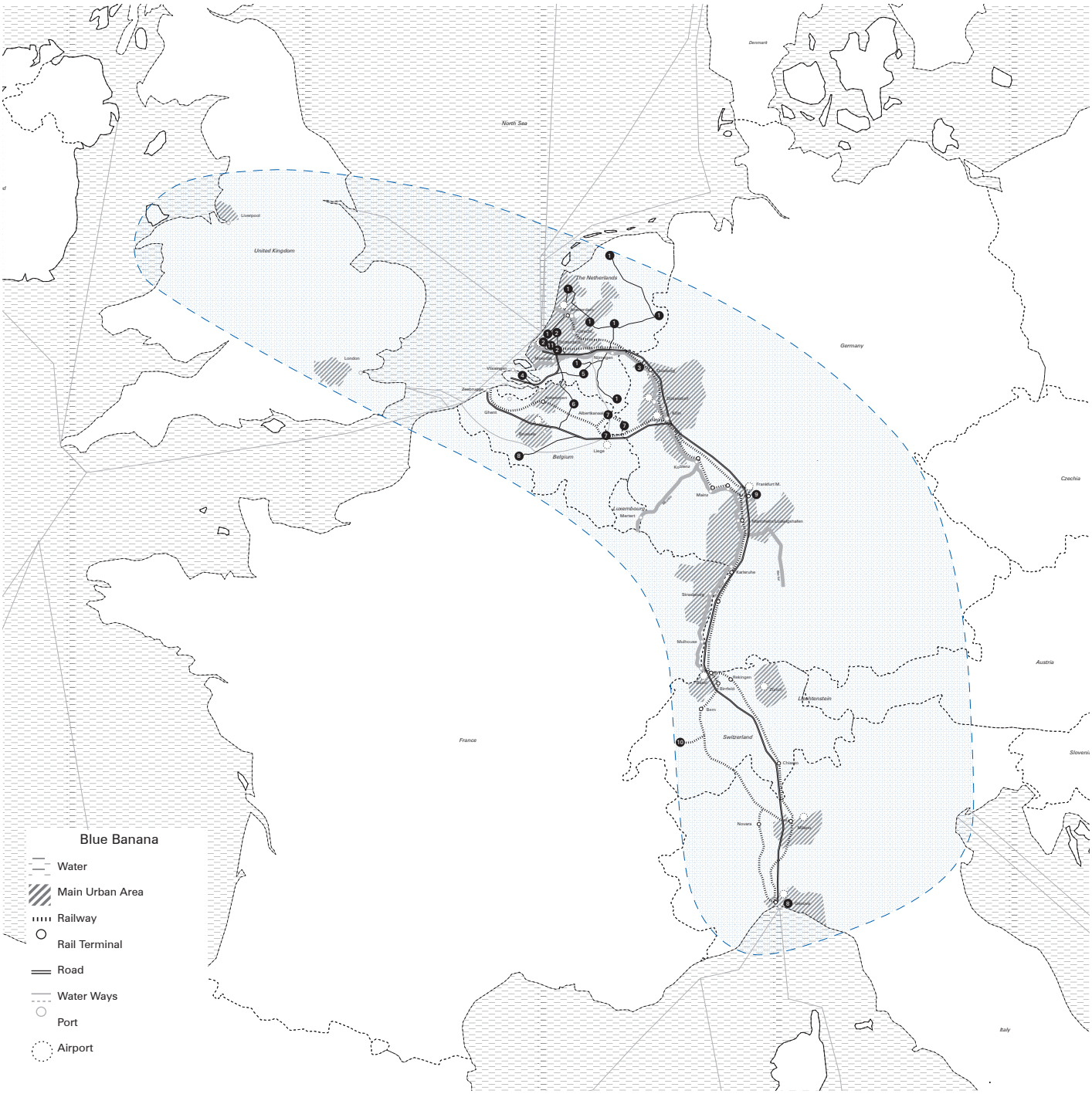
As society enters a post-pandemic era, new challenges concerning territory, financing, and consumer behavior require a fundamental rethinking of food trade architecture. While much effort has been put into the restoration of food trade buildings in the urban context, the rural markets that functioned as centralizing and regulating vessels in the spacious hinterland remain neglected. The result, counter to the current big white boxes, requires structures that operate within the landscape on a more localized scale to provide more affordable and environmentally friendly foods, while spaces themselves remain open to all participants in the food industry.

Endnotes:

1. "Wholesale Markets," FAO, accessed October 4, 2021, http://www.fao.org/3/t0521e/t0521e00.htm.
2. Compared to most auction practices, Dutch auction house prices are partially driven down by time, making it more suitable for trading perishable goods such as fresh produce such as fish and flowers.
3. "De Graanrepubliek," Frank Westerman, accessed August 19, 2021, https://www.frankwesterman.nl/en/books/de-graanrepubliek/.
4. Polygoon-Profilti, "Milk War" archival video, 1968, Netherlands Institute for Sound and Vision, accessed October 4, 2021, https://www.openbeelden.nl/media/15290/Melkoorlog.
5. Craig Mellow, "Food Finance," Global Finance Magazine (January 7, 2021)
6. Brewster Kneen. 1994. From land to mouth Interview with Brewster Kneen Interview by Diana Holland. Share International.
7. Food, especially raw ingredients, is considered an essential commodity that a buyer can always find regardless of price. May Rosenthal Sloan, "Trading: Introduction," in eds. Catherine Flood and May Rosenthal Sloan, Food: Bigger than the Plate (London: V&A Publishing).

The Blue Banana—a term coined in 1989 by a group of French geographers—is a name used to describe a European corridor of almost continuous urbanization. Home to 110 million people, the corridor contains metropolitan areas, industrial sites, and major economic centers, stretching all the way from Manchester to Milan, connecting the Irish Sea to the Mediterranean.

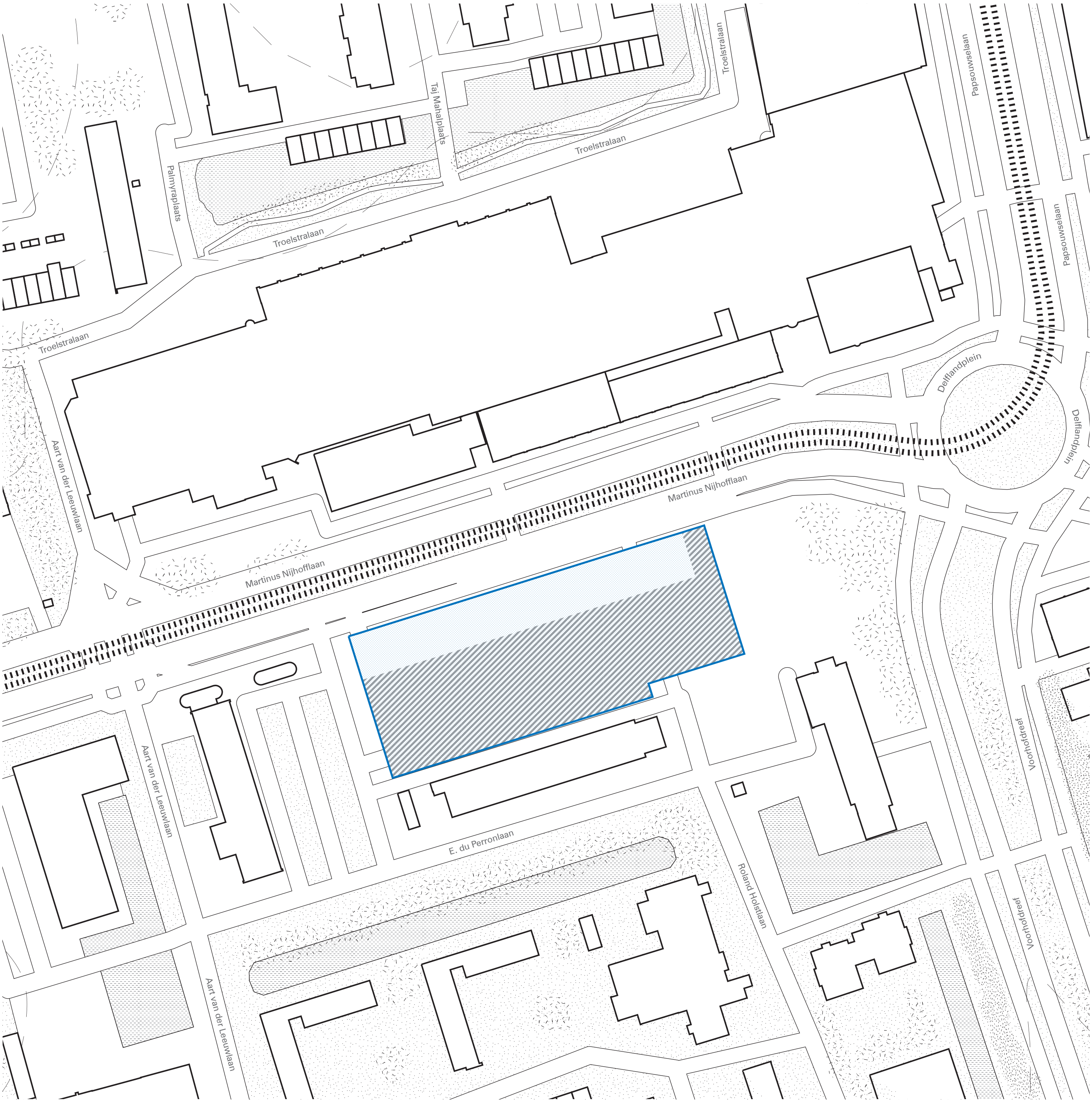
Ten contributions speculate upon the spatial implications of the food industry across the Blue Banana—the European Megalopolis—responding to the specificity of the sites, while, at the same time, providing modifications throughout the supply chain in relation to their respective products that radiate back to the supermarket shelves in Delft.

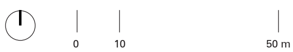


1 Lab Oratory
2 Whole Milk
3 Pink is Not a Color
4 The Tastemaking Estate
5 Aardket
6 Sensatorium
7 Domus Leo
8 Food Utility Network
9 Fresh Forword
10 Crafted with Care
11 Albert

Albert Heijn XL

The collective project for the design of a future supermarket is located on the current site of the Albert Heijn XL on Martinus Nijhofflaan in Delft. Amidst a densifying residential area, with a variety of stores on the ground floor and social housing above, multicultural demography, proximity to the parking garage, and excellent connectivity to road infrastructure and public transport, the location of the Albert Heijn XL provides the opportunity to reciprocate with its adjacent and peripheral territory.


Troelstralaan
Taj Mahalplaats
Troelstralaan
Palmyraplaats
Troelstralaan
Papsouwselaan
Papsouwselaan
Troelstralaan
Delflandplein
Delflandplein
Aart van der Leeuwlaan
Martinus Nijhofflaan
Martinus Nijhofflaan
Aart van der Leeuwlaan
E. du Perronlaan
Roland Holstlaan
Voorhofdreef
Voorhofdreef
Aart van der Leeuwlaan


0
10
50 m

The collective research—focused on the food industry in the Netherlands and beyond—commenced with the typological analysis of a supermarket. Analysing a local Albert Heijn, it examined the relation between products, their associated building types, and territories, from raw materials to supermarket shelves.

While a supermarket operates within a highly efficient tailored space, how do design decisions vary between intervening in an existing canal house and a purpose-built suburban supermarket?

Transitioning from the mimicry of local markets to promotions on digital screens, what role does scenography play in the design of a supermarket's storefront?

How does the prediction of supply and demand through data-driven decision-making and automation affect the organization, product distribution, and design within supermarkets and the ever-changing future of retail?

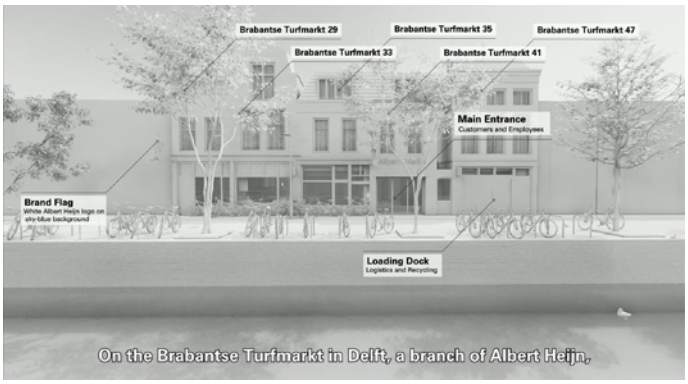
How does the incorporation of a supermarket reciprocate with its adjacent and peripheral demography, real estate, and territory and in turn affect land appreciation?

How does the design of the layout of the concealed back of house relate to the meticulously designed sales floor?

With a constant flow of products, what spatial consequences are posed by the standardized packaging sizes, product distribution, and store planning on the supply chain of a supermarket?

With ever-increasing reliance on e-commerce and perpetually improving digital experiences, what will the future hold for supermarkets in the Netherlands?

The annotated analysis of Albert Heijn reveals the dichotomy within the functioning of a supermarket, between the meticulously designed sales floor for an immersive consumer experience and the concealed back of house associated with the product's supply chain.



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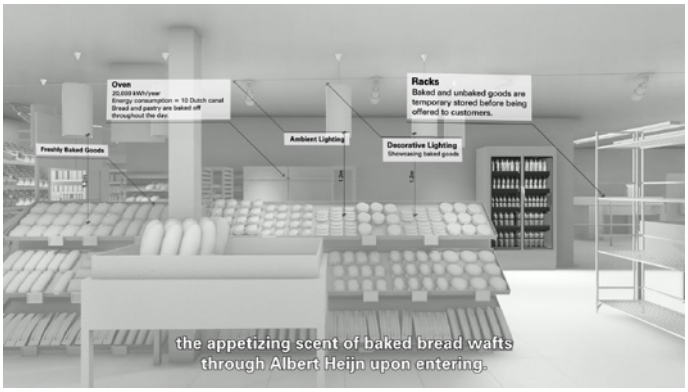

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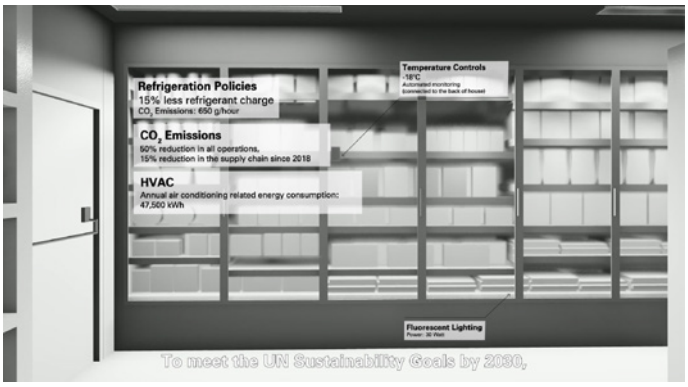
6

Scenes from annotated analysis of
Albert Heijn



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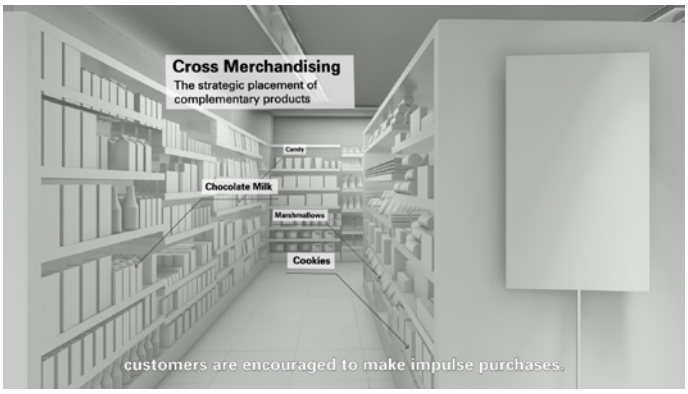

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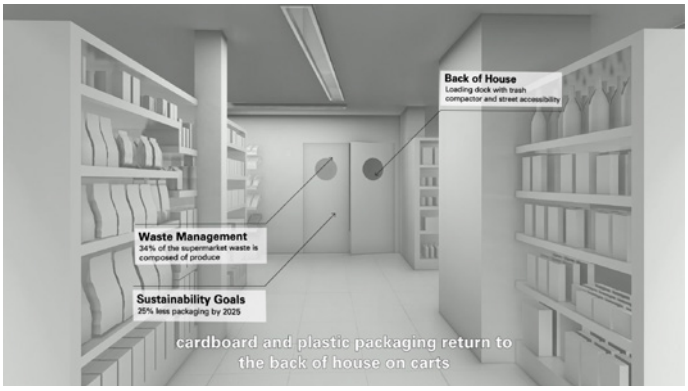

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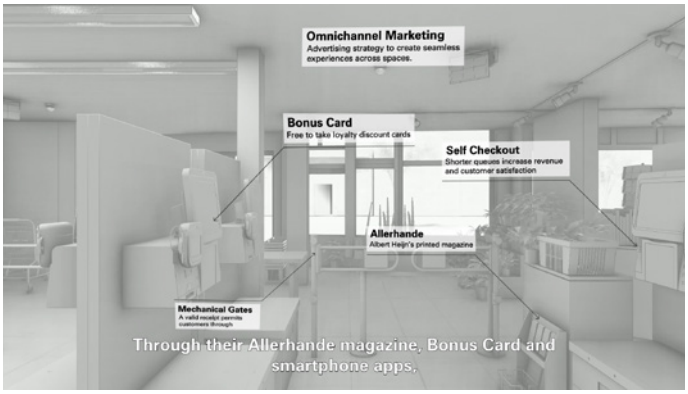
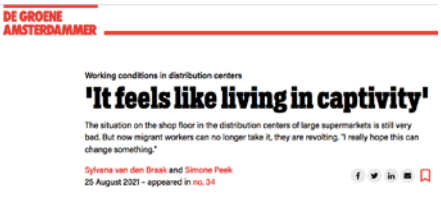


11

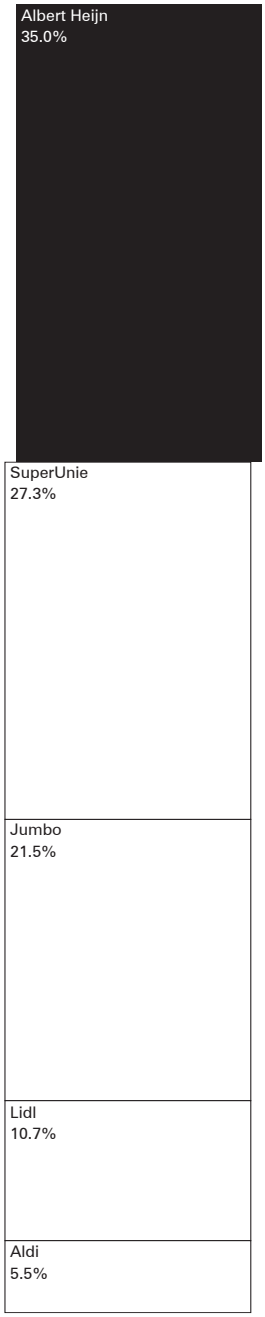
1 Facade
2 Fresh Produce
3 Fresh Produce
4 Bakery
5 Bakery
6 Condiments and Spreads
7 Refrigerated Section
8 Back of House
9 Confections
10 Loading Dock
11 Point of Sale

The Supermarket Reconstructed.

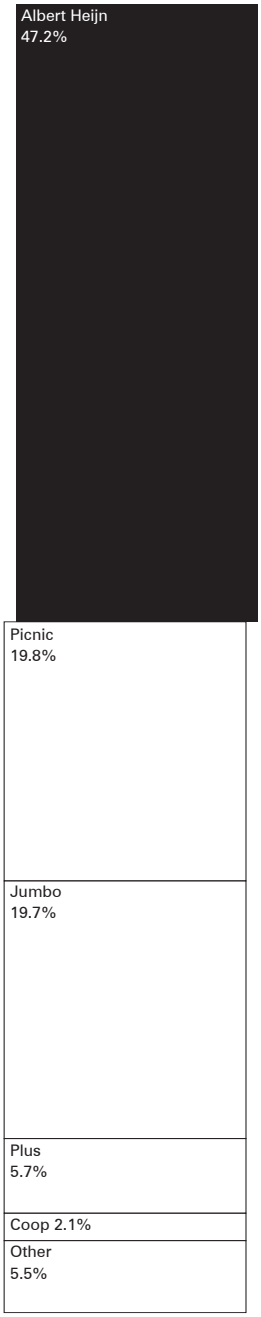
On trade- The dynamic provenance of potatoes is put on display.



Recent headlines describe the supermarket and its distribution network in the Netherlands as a highly competitive sector, with questionable working conditions, while unregulated competitors are set out to disrupt the market.

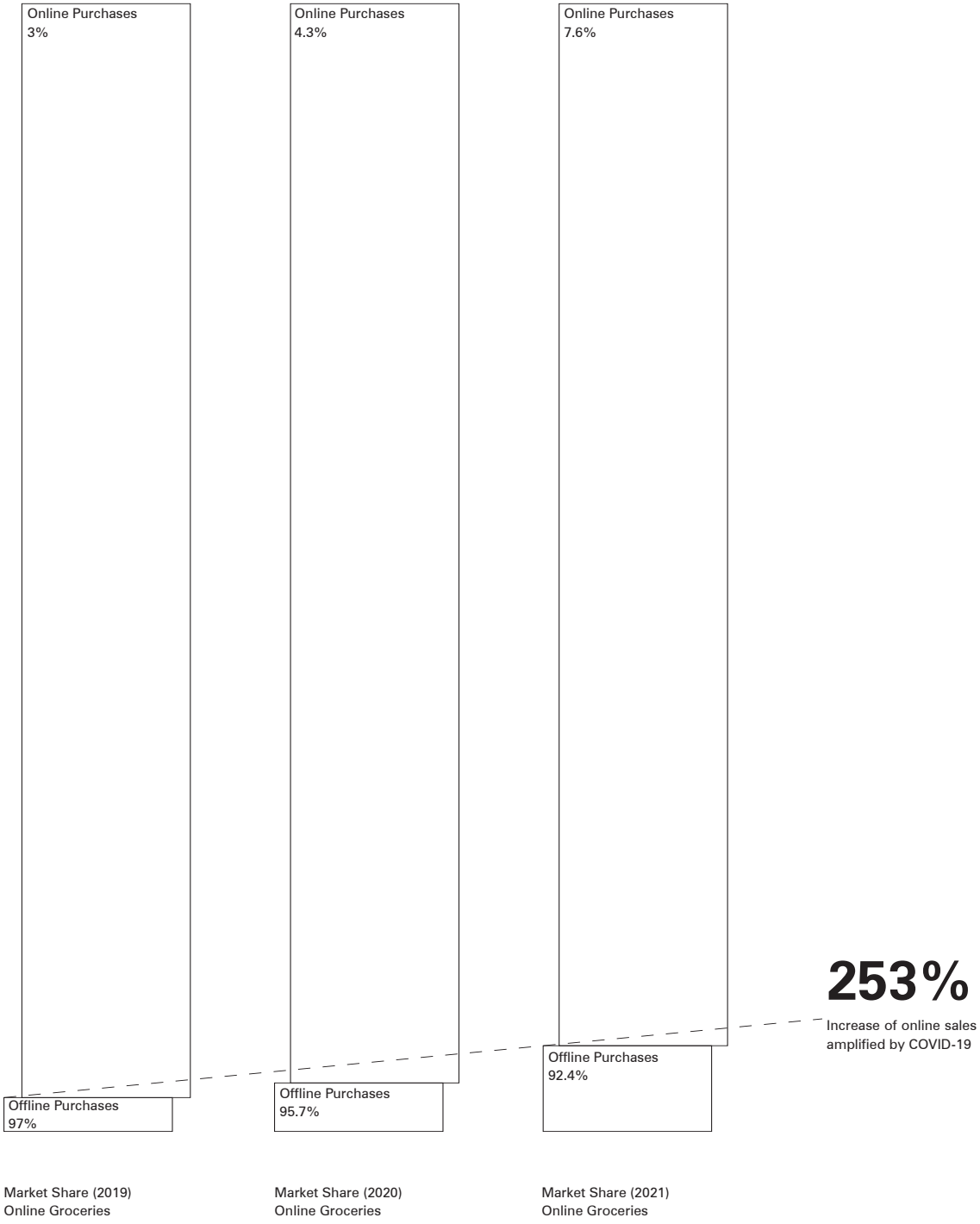


Market Share (2020)
Supermarkets



Market Share (2020)
Online Groceries

The “supermarket war” in the Netherlands, has led to a consolidation of companies and a seemingly oligopolized landscape of grocers, in which Albert Heijn has the greatest market share in both physical and digital stores.



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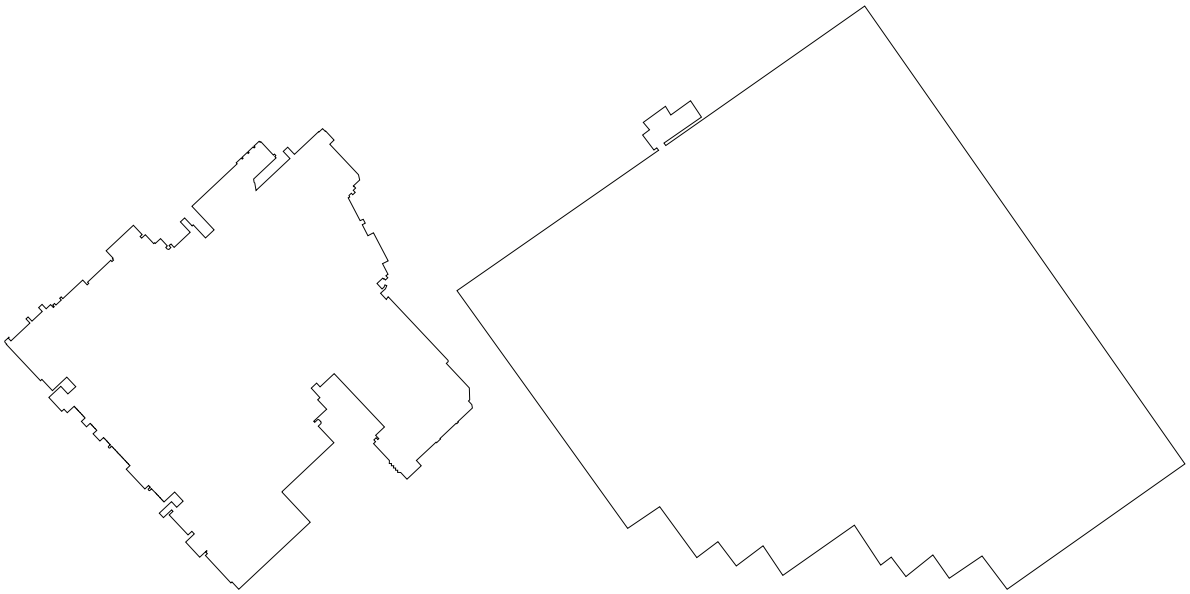
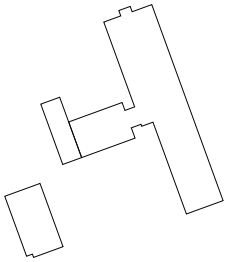
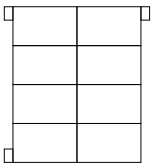


Royal Flora Holland
Aalsmeer
433,000 m²

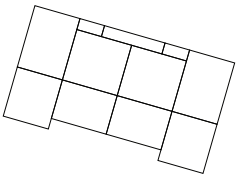
Royal Pride Holland BV
Wieringermeer
1,010,000 m²



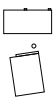
Ahold-Delhaize DC
Delfgauw
62,750 m²



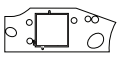
Coolblue DC
Tilburg
90,000 m²



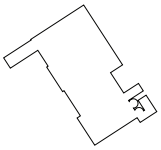
Zalando
Bleijswijk
140,000 m²



Amazon
Heerlen
9,000 m²

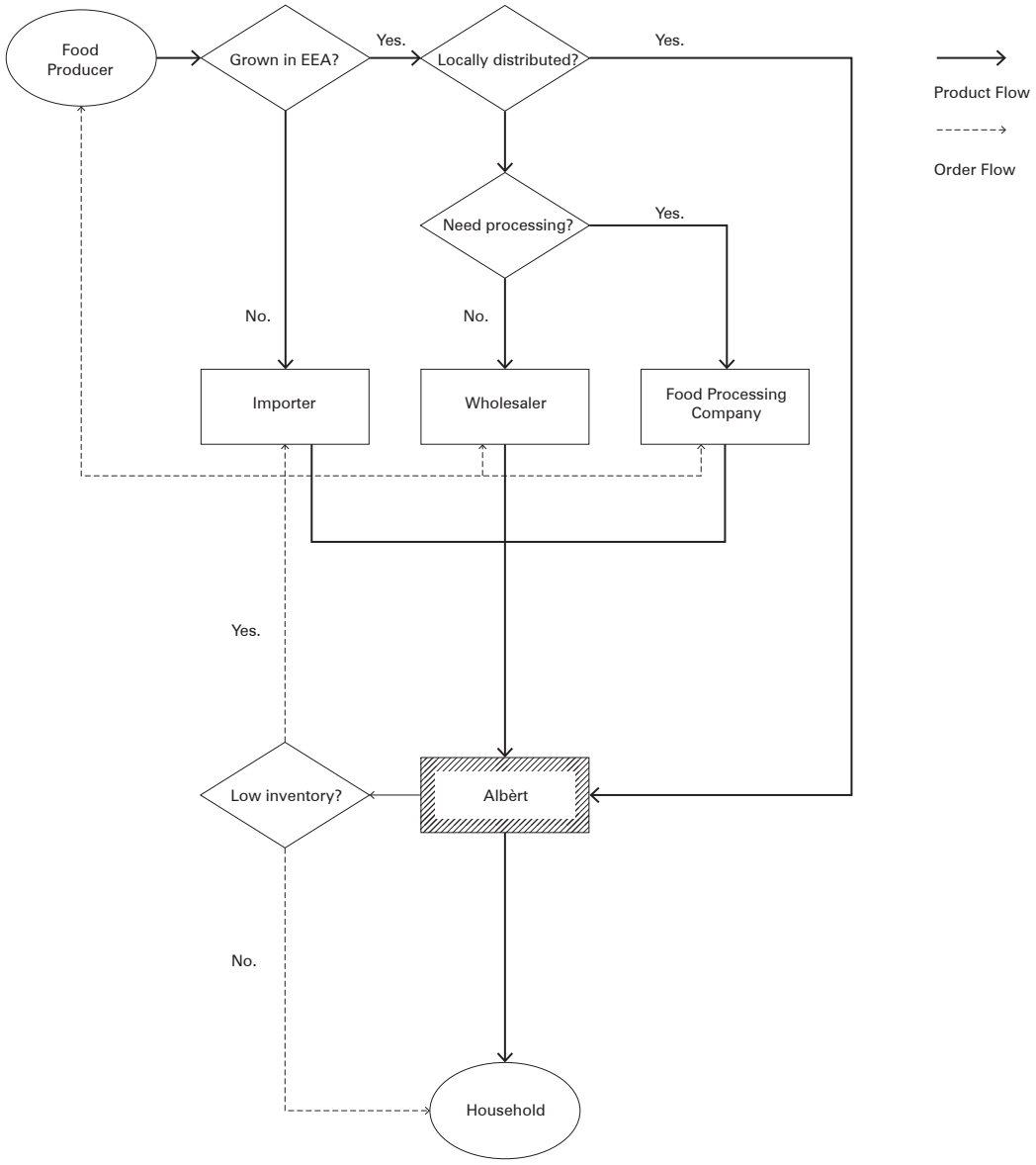


Albèrt
Delft
18,600 m²



IKEA
Delft
40,000 m²

The concealed back of house extends to the peripheries of the Dutch urban areas, taking upon a variety of spatial dimensions, accommodating different quantities of workers, and serving a range of regions.



Producers and suppliers respond to complex market dynamics through just-in-time production, relying on automation, logistics, and infrastructure within the Blue Banana, allowing supermarkets to optimize their stocking to shopper's demand.

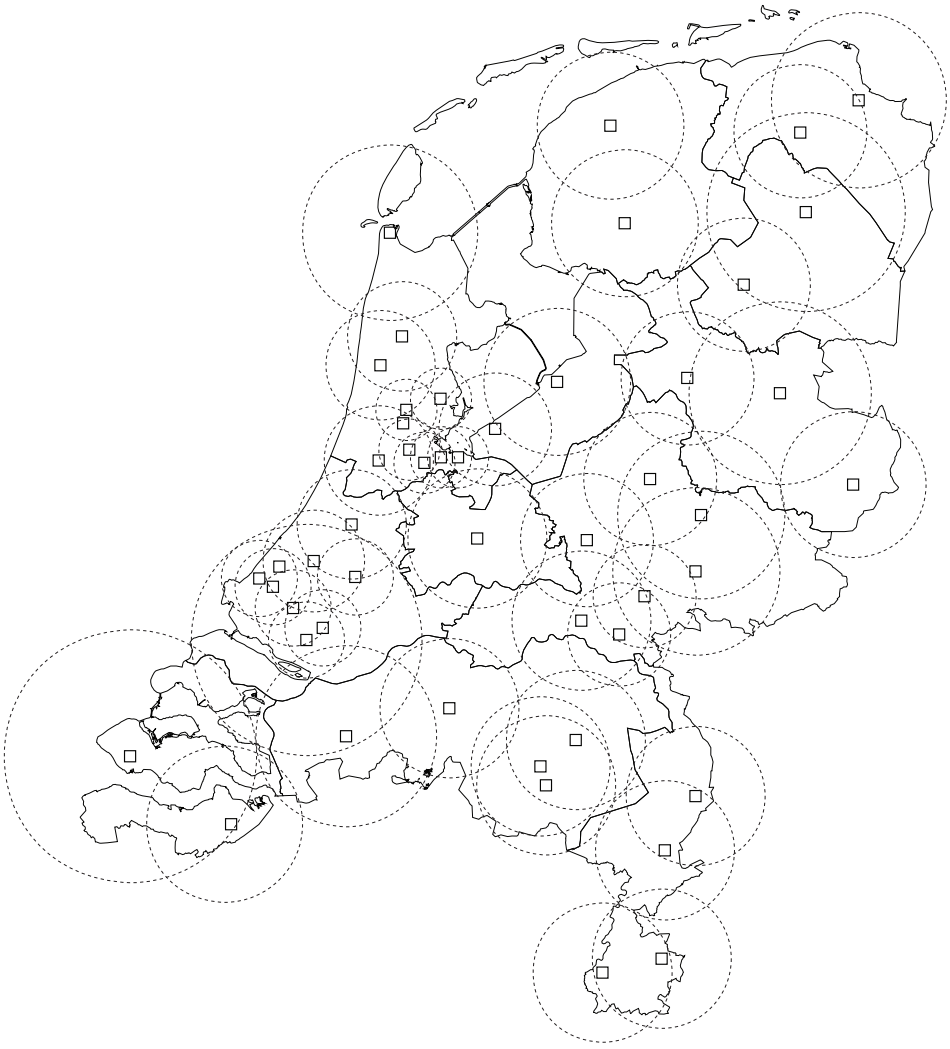
Employees keep track of just-in-time arrivals of products, while their prices are informed by market conditions and proximity.

2022

In an effort to break open the centralized and concealed distribution network of the supermarket, the role of the distribution centers is shifted to large-scale supermarkets such as Albert Heijn XL—now Albèrt—with a floor area of at least two thousand square meters, ready to serve a larger region through e-commerce.

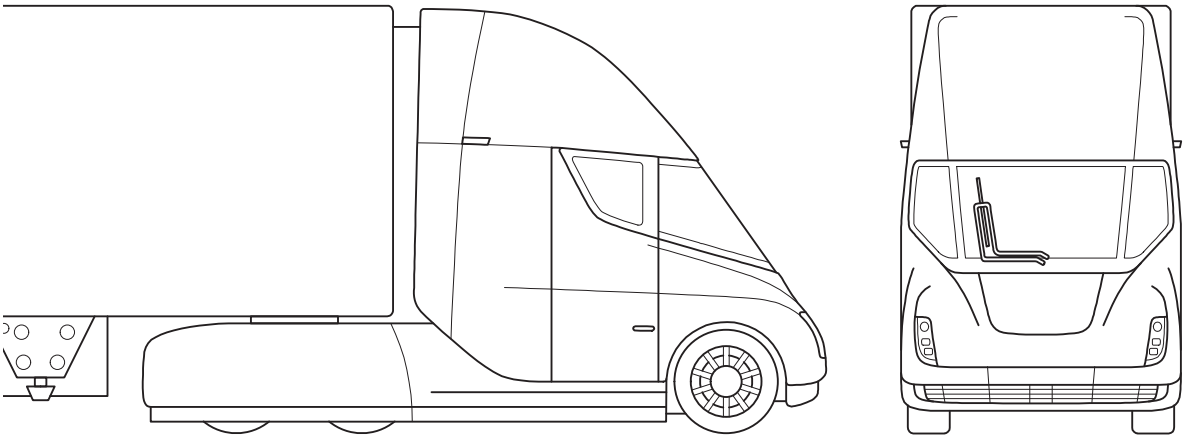
2030

Albèrt

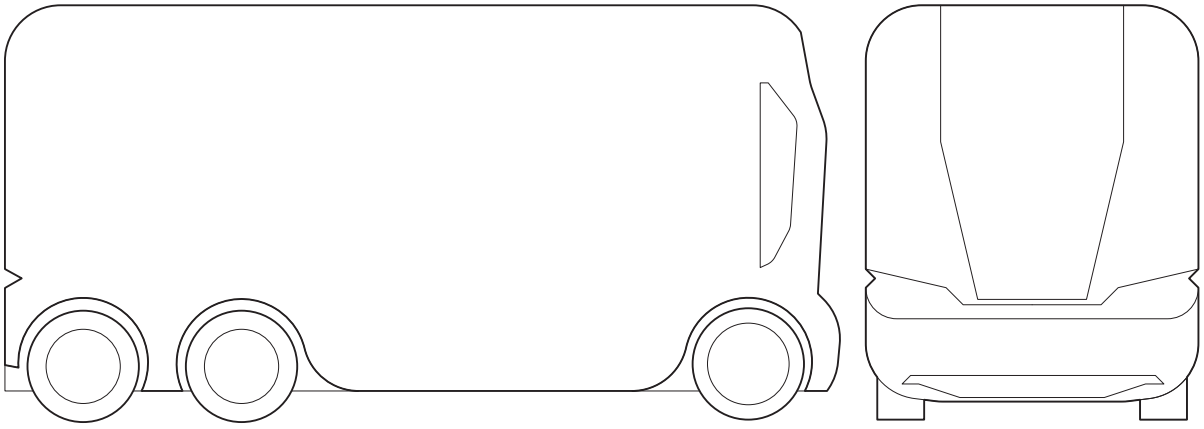


The number of supermarkets and their siting are regulated through municipal planning, leading to an even distribution over Delft's urban expansion areas. Delft's historic center, however, exhibits a high density of supermarkets and speed delivery hubs, responding to valuable shoppers in their proximity. This informs the future distribution of Albèrt and smaller-footprint Albèrtjes.

The essential products in these multiple Albèrtje stores within each city are fed by the distribution centers integrated within each Albèrt, while also having products directly sourced from local suppliers within the city, with the choice of having fine quality products and essential goods at the same place.



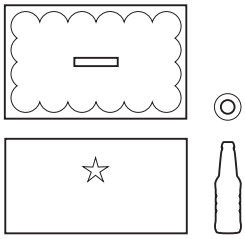
Freight-truck



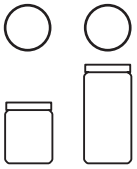
Albèrt truck

By distributing the supply chain from centralized warehouses to large supermarkets in the vicinity, electric semi-trucks with shorter roundtrips take care of transport between producers, supermarkets, and homes.

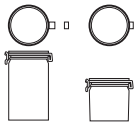
PET Bottle 1.5 l



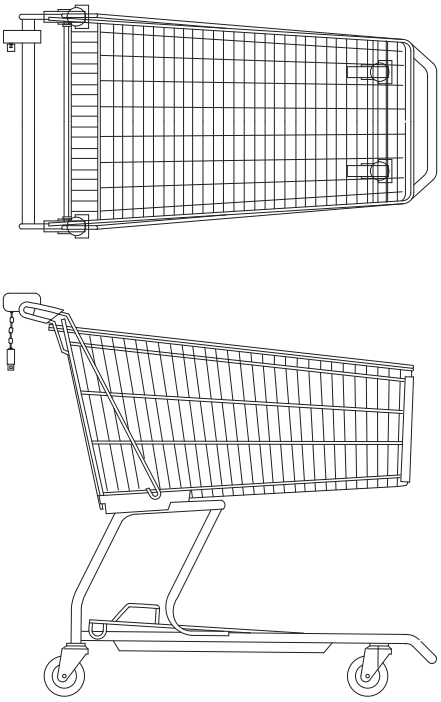
Crate and Glass Bottle, 33 cl



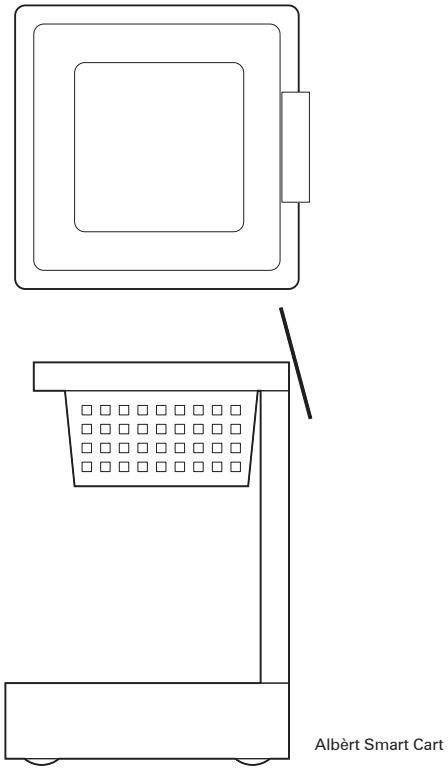
Albèrt Smart Cart



Pieter Pot Reusable Glass Jars, various volumes

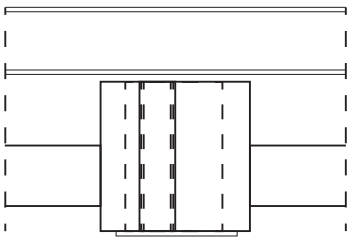


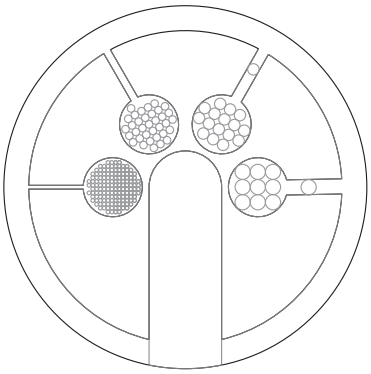
Supermarket shopping cart and shopping basket

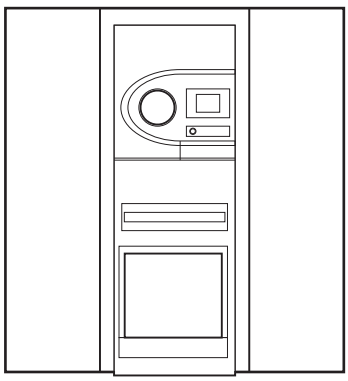


Albèrt Smart Cart

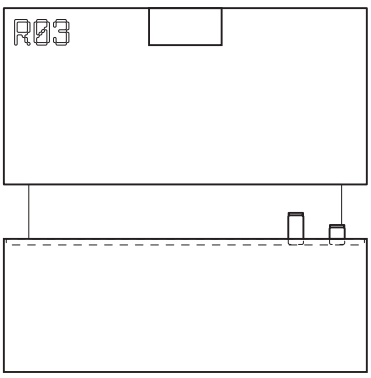
To eliminate single-use packaging and optimize logistic processes, a unified container-deposit system is introduced, limiting the variety of product dimensions in Albèrt. Displays on the smart cart and supermarket hosts guide shoppers in finding their products.





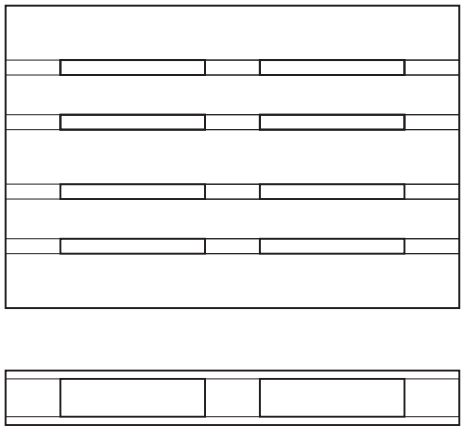


Container-deposit machine

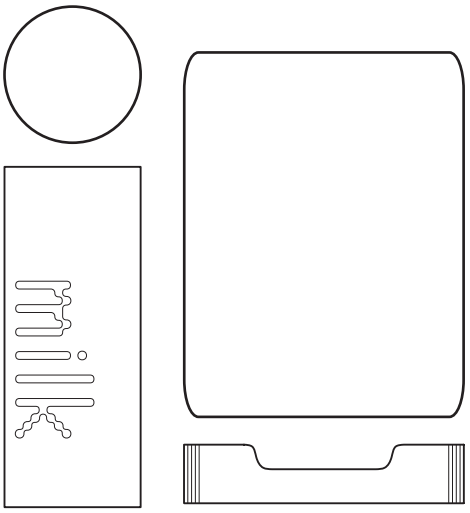


Albèrt Container Return Point

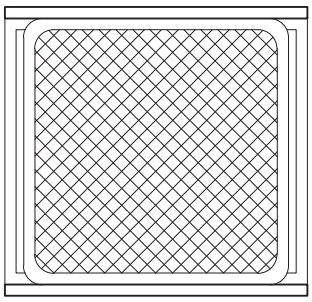
Albèrt's container deposit system utilizes the shopper's existing familiarity with return points for used bottles and crates.

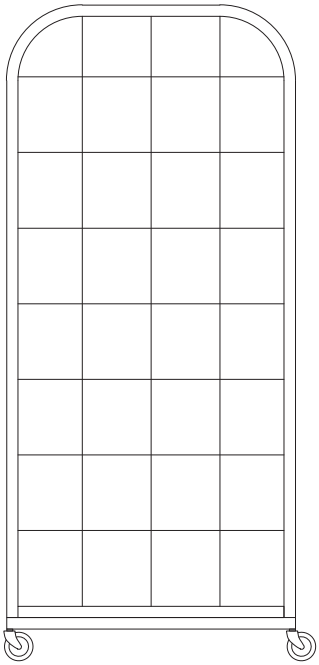


EPAL-Pallet

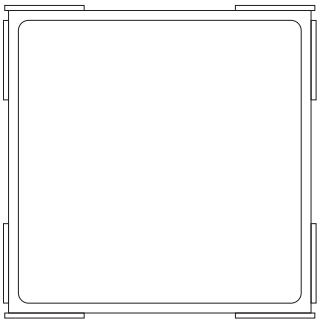


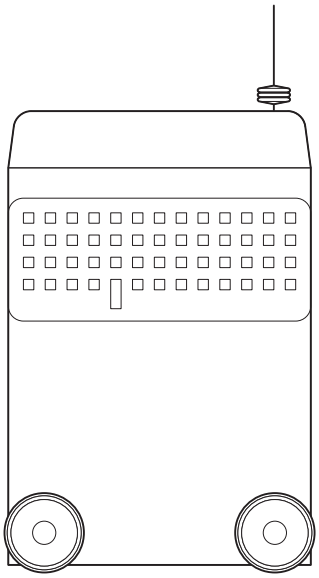
Albèrt Bulk Containers and Crates





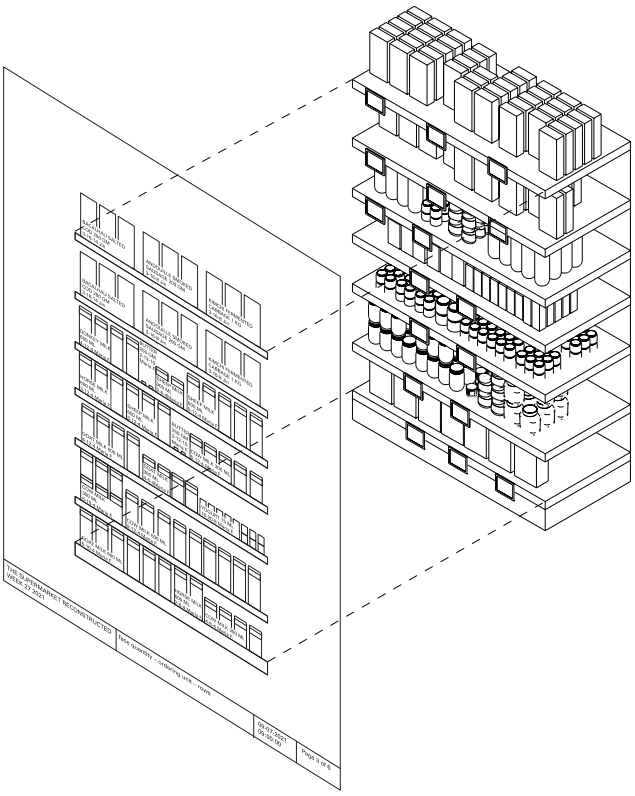
Stocking Cart

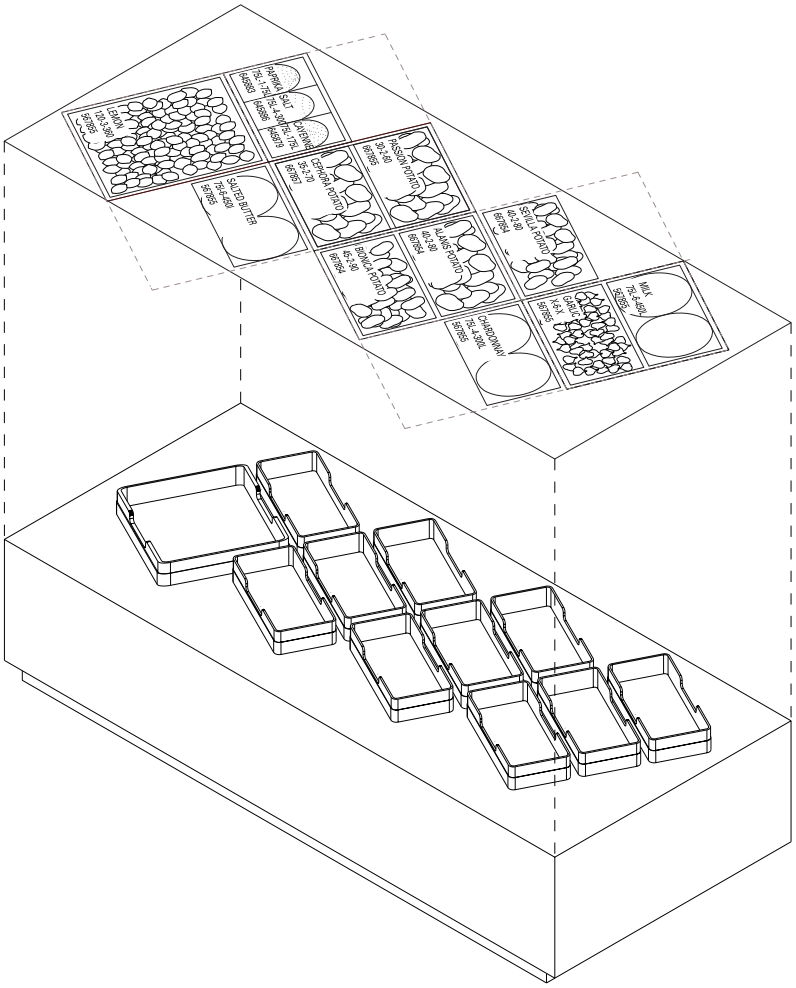




Ocado Robot

Albèrt's automatized warehouse, making use of Ocado robots, considers legacy dimensions based on the EPALpallet, by adhering to an 80 x 80 cm grid.



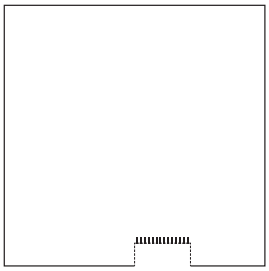


Planograms are an elevational system to optimize the relation between shoppers and the grocer's shelves, in order to maximize sales and minimize wasted space. By introducing a flexible automatized stocking system, the planogram is transformed into a planar organization, in which the retail experience can be dynamically adjusted to market conditions and seasonality.

1970
Thermal printed price label with European Article Number and unit price
120 x 100 mm

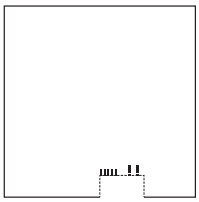
Self-service store with checkout counters
~170 m^2

1936
Self adhesive price label
21 x 12 mm



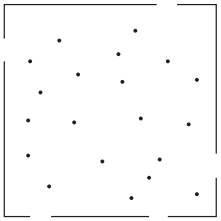
Hypermarket with checkout counters
~6000 m^2

2020
Electronic Shelf labeling system with dynamic display
70 x 36 mm



Modern Supermarket with omi-channel checkouts
~3000 m^2

2030
NFC tag embedded in the crate
Ø3 mm



2030
Albèrt with smart carts
Ø3 mm

The introduction of the fixed price—attached to a product through a sticker—has allowed the grocer to develop into self-service stores, informing the architectural type of the supermarket. Technological developments such as thermal printing, e-ink, NFC tags, and computer vision reintroduce dynamic pricing while offering novel spatial solutions for the supermarket, such as the elimination of the physical check-out point.

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3. Bright and Werkend Landschape, "Black Boxes ", *Bright*, (Design & Development: LAVA Amsterdam, 2017), Accessed August 19, 2021, https://bright.coop/black-boxes/

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4. Diana Holland, "From Land to Mouth: Interview with Brewster Kneen", *Share International*, accessed August 15, 2021, https://www.share-international.org/archives/economics/ec_dhfromland.htm

An interview discussing a book critiquing the corporate food industry with a call for local farming practices.

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Global statistics and trends on the use of biotech/GM crops.

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8. Franziska Bollerey, *Setting the Stage for Modernity: Cafés, Hotels, Restaurants, Places of Pleasure and Leisure* (Jovis Verlag GmbH, 2019).

An analysis of the representations and scenographies to discuss the dichotomies of dining culture.

9. Ignite2X,"The Rise of Artisanal Brands," *Ignite2X*, published July 18, 2019, https://www.ignite2x.com/rise-artisanal-brands/

Research and projections on the sale of artisanal brands by a marketing firm.

10. Lia Ryerson, "12 Foods That Might Soon Be Extinct," *World Economic Forum*, published February 22, 2018, https://www.weforum.org/agenda/2018/02/12-of-your-favorite-foods-that-might-be-going-extinct-soon.

A list of foods in danger of extinction due to climate change and market demands.

11. Lia Ryerson, "Bigger Hauls, Fewer Choices: How the Pandemic Has Changed Our Grocery Shopping Habits Forever," *The Washington Post*, September 1, 2020.

An article cataloguing new market trends in the American supermarket after
COVID-19.

12. Marcus Case and Ember Smith, "Automation From Farm to Table: Technology's Impact on the Food Industry," *Brookings*, November 23, 2020.

An article bringing up the incorporation of automation in different parts of the food industry along with its potential impacts on policy and labor.

13. Marten Kuijpers and Ludo Groen, "Automated Landscapes and the Human Dream of Relentlessness," *Strelka Mag*, March 3, 2020.

An article about large automated production spaces in the Netherlands and their effects on people and land.

14. Melissa Repko, "Grocery Shoppers Trade Up From Dried Beans and Rice to Premium Foods as Covide Cases Rise," *CNBC*, November 12, 2020.

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15. Michelle Dunne and Angela Wright, *Local and Artisan Food: A Case For Supermarket Space?* (11th Annual Tourism and Hospitality Research in Ireland Conference (THRIC), 2015).

A literary and market study on the possibility of the placement of local and artisan foods in Irish supermarkets.

16. Nicola Twilley, "The Coldscape: From the Tank Farm to the Sushi Coffin." *Cabinet*, published 2012, https://www.cabinetmagazine.org/issues/47/twilley.php

The history and development of various refrigerated storage related to the food industry.

17. "Off the Table," ed. Anne Riley Moffat, *Bloomberg Businessweek*, August 23, 2021.

Four human-interest stories about the impacts of rising food costs after COVID-19.

18. Peter Del Tredici, "The Flora of the Future", in *Projective Ecologies*, ed. Chris Reed and Nina-Marie Lister (New York: Actar D, Harvard Graduate School of Design, 2014).

An article claiming the significance of biodiversity in urban areas.

19. Peter Wyeth, "Modernist Cooks!" *The Modernist*, #38 Kitchen.

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20. Sylvana van den Braak and Simone Peek, "'It Feels Like Living in Captivity,'" *De Groene Amsterdammer*, #34 (August 25, 2021). Translated by Google Translate from 'Het voelt als leven in gevangenschap'.

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21. Matthijs Van Sterkenburg, "The Power of Prediction: How AholdDelhaize is Using Data and AI to Provide More Personalised Shopping Experiences," *Microsoft Pulse*, accessed August 10, 202, https://pulse.microsoft.com/en/transform-en/retail-en/fa2-the-power-of-prediction-how-aholddelhaize-is-using-data-and-ai-to-provide-more-personalised-shopping-experiences/

A case study on the use of Microsoft's data and AI technology for Albert Heijn.

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An excerpt from a book questioning the notion of nature and a human's place within it.

24. David Wallace-Wells, "What Happens When All the Bugs Die?", *New York Magazine*, July 31, 2021.

An interview with Dave Goulson about Silent Earth, a book on insects and the possibility of extinction they face.

25. Zachary Stieber, "GMOs, A Global Debate: South Africa, Top GMO-Producer in Africa", *The Epoch Times* (October 19, 2013).

An article on the connection between GM crops and pest control and the opposing views and policies surrounding the use of GM crops in South Africa.

Supermarket is a collective project on the spatial implications of the food industry in the Netherlands and beyond, redesigning this now considered essential architecture to entail a paradigm shift in its journey towards optimization, sustainability, and health consciousness. It imagines a future supermarket that integrates retail experiences with distribution, supply chains, and product display to ensure a frictionless future for conscious consumers; while, at the same time, creating a new civic presence for the city and its residents.

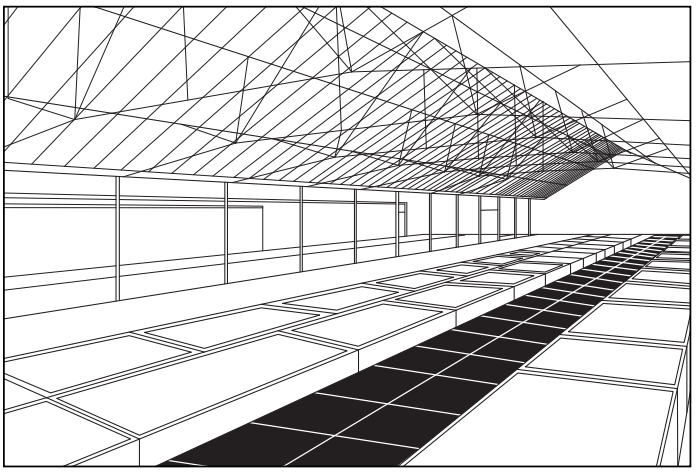
The envisioned supply chain for the future supermarket commences with the Blue Banana, enhancing the position of the Netherlands— one of the world's largest food exporters and home to world-class research institutions—in this urbanized trade corridor. From Genoa to Delft, and from the supermarket's back of house to the sales floor, Supermarket addresses multifaceted aspects of the food industry— scarcity, trade, inclusivity, sensorialism, tastemaking, craft, reshoring, protectionism, automation, and extinction—through ten architectural and urban design contributions.

Ten products, along with their associated building types and territories demonstrate how a modified food distribution network converges at the future supermarket—Albèrt—on Martinus Nijhofflaan in Delft. Albèrt seeks to display products and their supply chain by integrating the once stand-alone and distant distribution center with an automated Ocado grid system, asserting itself as the generator of a just-in-time production system—thereby disrupting the seriality of infinite supermarket aisles. With all Albèrt supermarkets operating as distribution centers for multiscalar Ahold Delhaize branches—such as Albert Heijn and Albertje—the supply chain, and its resultant territories, are condensed and reconfigured.

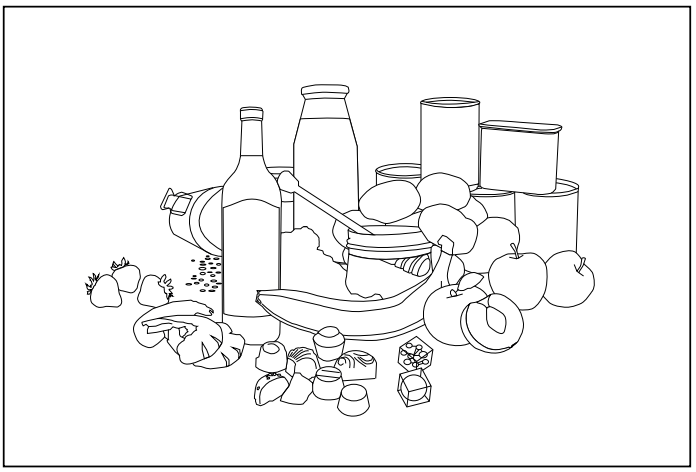
Albèrt offers an omni-channel consumer experience in both physical and digital forms. It reflects on the traditional supermarket's backstory, effectuating sustainability goals throughout a reimagined supply chain. The supermarket assures optimization in unison with the country's circular economy by implementing reusable packaging for all Albèrt products, extending shelf-life from data-driven decision making, offering digitized scanners informing conscious consumers of product particularities, and by providing dynamic pricing for food security.

Along with a flexible open-plan allowing various iterations of product displays to maximize profits and render a unique shopping experience, Albèrt 's business models are diversified, generating revenues from branded products staged in shop-in-shops and electric car-sharing facilities to encourage consumer traffic.

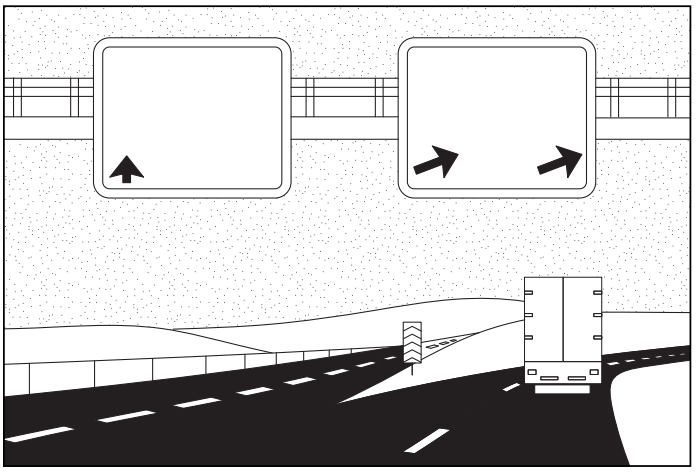
The supermarket—previously conceived as a destination—incorporates a pathway to meet the constant movement of divergent consumers with the conjunction of fast-paced pick-up zones—promoting cycling, delivery, and e-commerce—and slow-paced demonstration zones offering novel tasting experiences along with the green public spaces on the periphery. Albèrt demonstrates an innovative retail experience beyond the technology of the new integrated distribution center, extending its perimeter toward the Delft city center to establish a new civic presence.



The Netherlands is internationally recognized as one of the world's largest food exporters due to its excellent connectivity throughout Europe. Home to world-class research institutions, it is—in effect—feeding the world. However, food production and consumption are responsible for around 25% of the total emission of greenhouse gases and for 60% of the terrestrial loss of variation in plant and animal species. When it comes to the food industry, the country's journey towards optimization, sustainability, and health requires a paradigm shift.



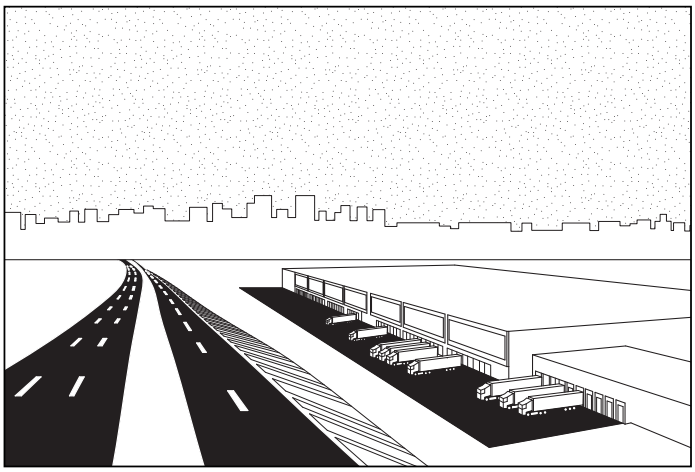
Ten architectural and urban design contributions sited within the Blue Banana—a European corridor of almost continuous urbanization—originating from supermarket products, <<<redesign the future supermarket of 2030.



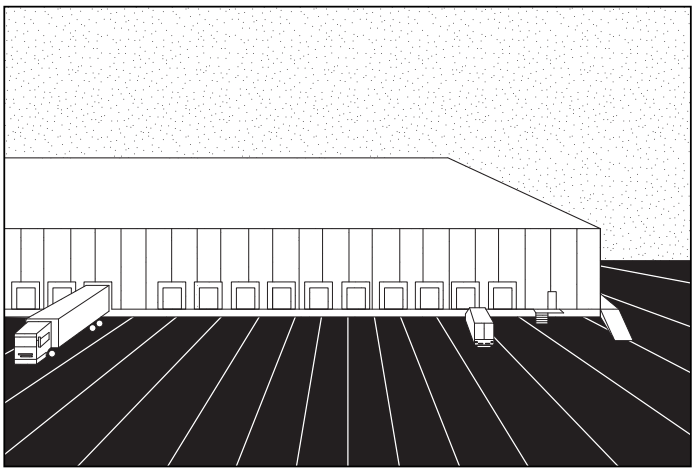
A continuous supply of products and materials, to and from the current supermarket, is made possible through a vast network of roads, rails, and waterways, connecting it to various infrastructural nodes and European trade routes within the Blue Banana.

Supermarkets occupy the most densely used square meters in a city. Resting within its etymology—where «super» alludes to supremacy concerning size, quality, and quantity, while «market» refers to trading in goods of value—the supermarket, selling food and household goods, first originated in the 19th century with the novel concept of a self-serve store.

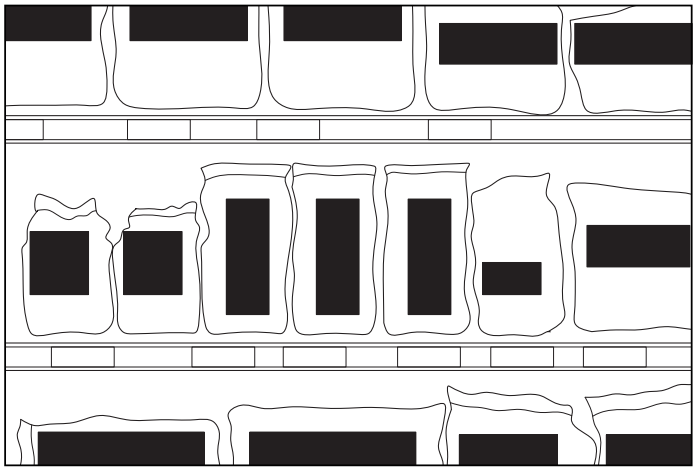
Presented in a set of spatial narratives, the collective project addresses multifaceted aspects of the food industry and its distribution network commencing with the Blue Banana's urbanized trade corridor to reconfigure at the future supermarket—Albèrt—on Martinus Nijhofflaan in Delft.



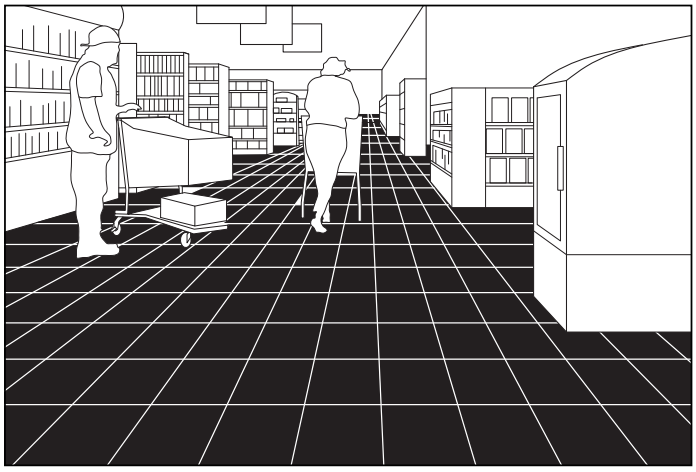
These ten contributions provide modifications to the supply chain, product distribution, and store planning, in relation to the products, their associated building types, and their extensive territories through a vast network of transportation nodes.



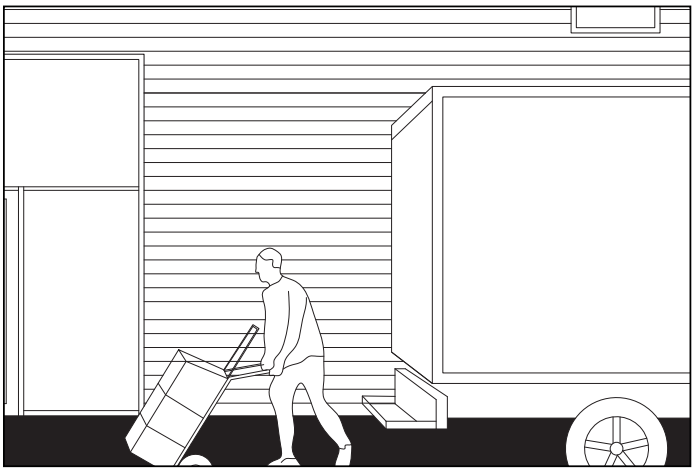
For this purpose, distribution centers currently serve as the epicenter, exploring the resultant spatial characteristics, and linking these ten contributions with the future supermarket.



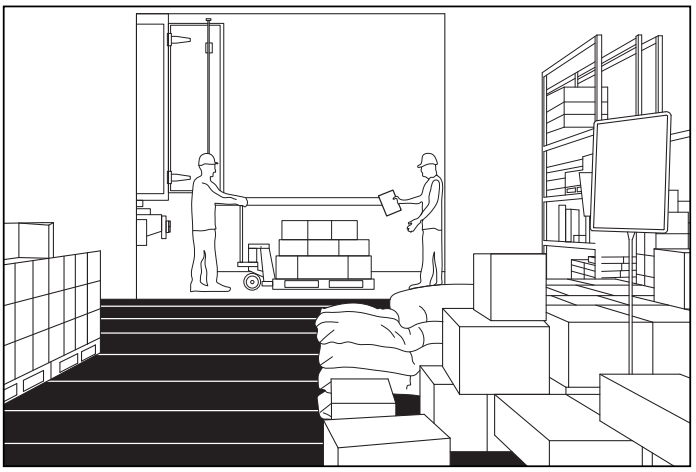
Fixed prices that originated in order to accelerate grocery sales had a huge impact on consumer experience. From standardization of price tags to uniformity of products, and from barcodes to electronic shelf labeling, the improved logistics, shorter employee training periods, a monitored supply system, and efficient shelf organization.



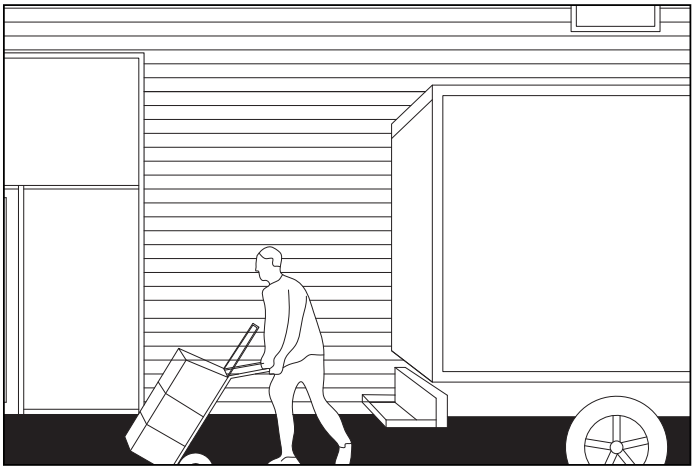
As the COVID-19 pandemic has reshaped the retail market in unprecedented ways, consumers shift around lifestyle and value. Its profits increased up to 40% and physical stores overflowed with people seeking to maintain a sense of normalcy, underscoring it as an essential service, one that represents a new civic presence. This demands new spatial configurations of a supermarket transitioning between a pre-COVID-19 and a post-COVID-19 society.



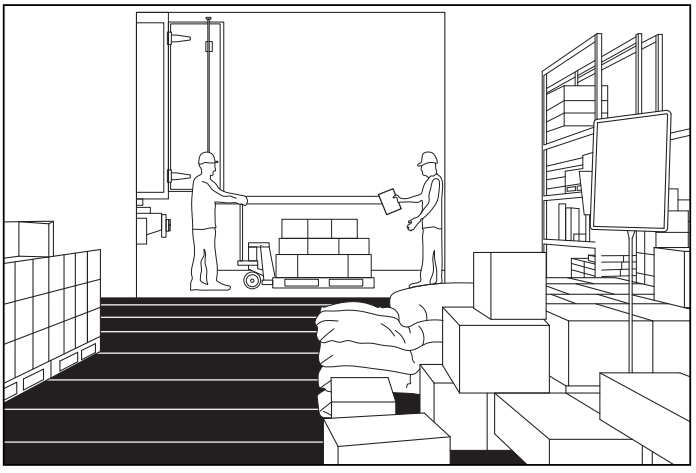
Home delivery and e-commerce businesses grew up to 5 times faster than before the pandemic, giving rise to an online distribution center that offers the convenience of a digital supermarket.



The supermarket analysis reveals its functional logic through the concealed back of house that is associated with the product's supply chain. Regarded as the employee's domain, the back of house is concerned with product flow, supply, and demand through data-driven decision-making, standardized packaging sizes, and product distribution via tastemaking, scarcity, sensorialism, inclusivity, trade, and biodiversity.



Home delivery and e-commerce businesses grew up to 5 times faster than before the pandemic, giving rise to an online distribution center that offers the convenience of a digital supermarket.



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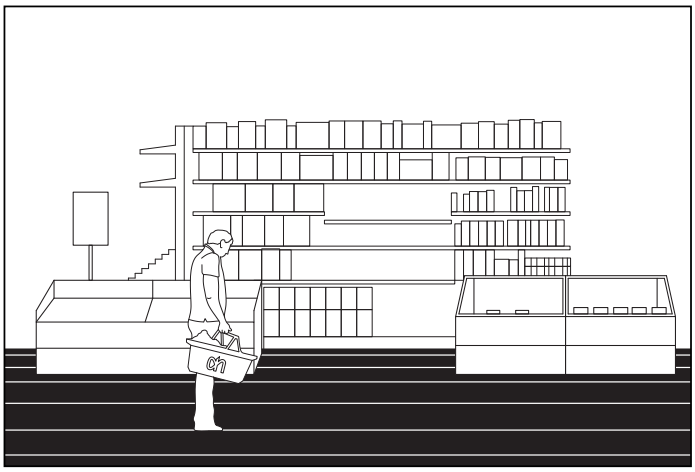
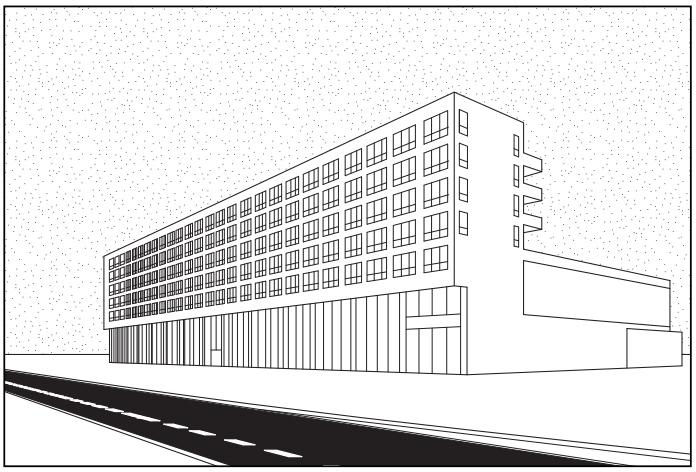
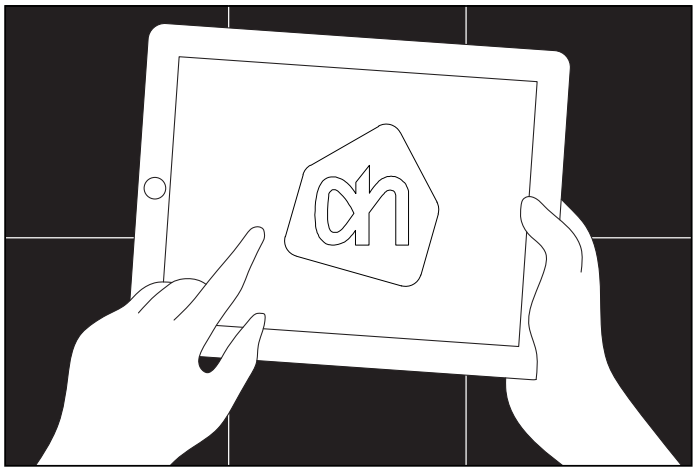
Presented in a set of spatial narratives, the collective project addresses multifaceted aspects of the food industry and its distribution network commencing with the Blue Banana's urbanized trade corridor to reconfigure at the future supermarket—Albèrt—on Martinus Nijhofflaan in Delft.



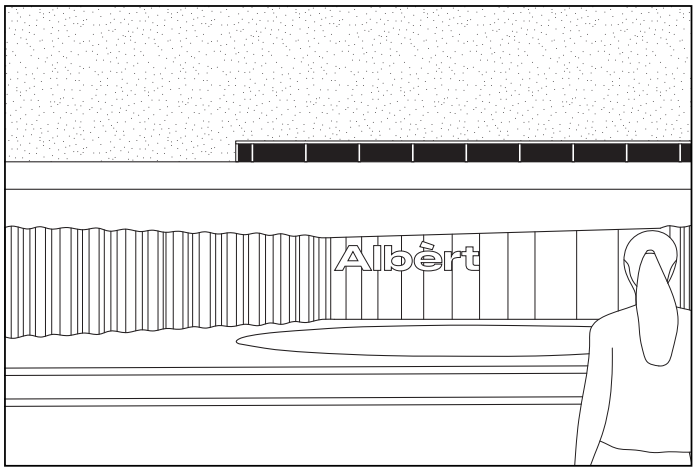
Secondly, the meticulously designed sales floor provides an immersive consumer experience. The sales floor raises issues of scenography, human interaction, digital technology, and the organization of supermarkets within the ever-changing future of retail through the notions of craft, reshoring, protectionism, automation, and extinction.



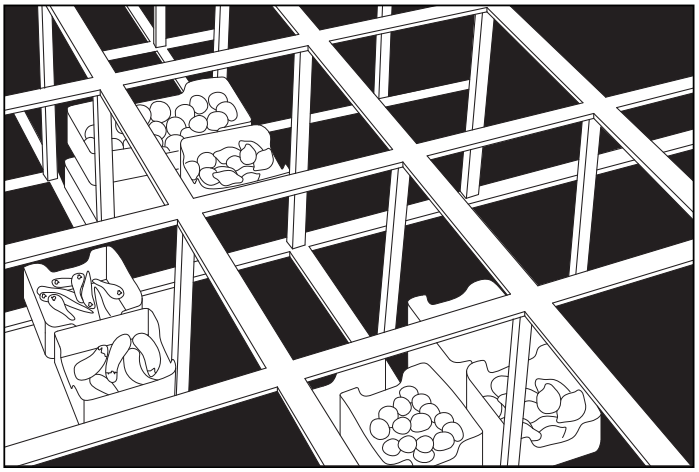
The collective project on the spatial implications of the food industry in the Netherlands and beyond redesigns a future supermarket on the current site of the Albert Heijn XL on Martinus Nijhofflaan in Delft, implementing developments on the sales floor and the back of house ensuring a frictionless future for shoppers.



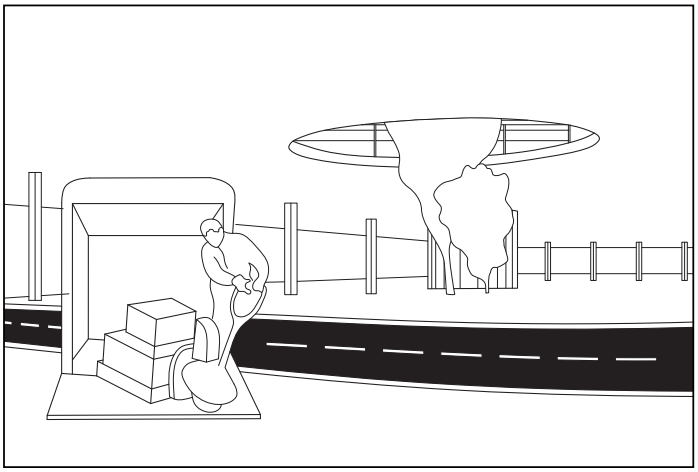
Situated in a densifying expansion area of Delft, a forecasted demography of (international) students, families, and elderly will make use of this supermarket and its e-commerce services.



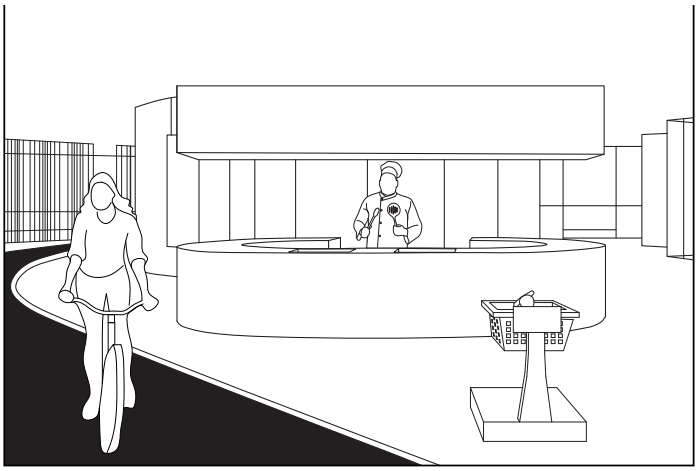
Responding to technical, environmental, and societal demands from the Blue Banana's urbanized corridor to the new Albért, and from the supermarket's back of house to the sales floor, new spatial propositions redefine the future supermarket of 2030.



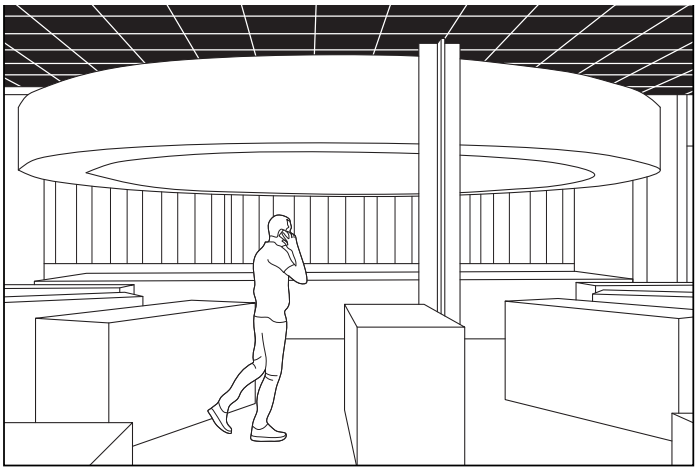
The reimagined supermarket—Albèrt—seeks to display both the product and its supply chain, in turn, the sales floor and the back of house, by integrating the distribution center with an automated Ocado grid system, asserting itself as the generator of a just-in-time production system.



With all Albèrt supermarkets functioning as distribution centers for multi-scale Ahold Delhaize branches—such as Albert Heijn and Albèrtje—the supply chain, and its resultant territories are condensed and redefined. Product distribution within each network thus densifies within smaller radii, becoming open to more local suppliers frequenting small-batch deliveries, while also providing proximity to consumers in the city.

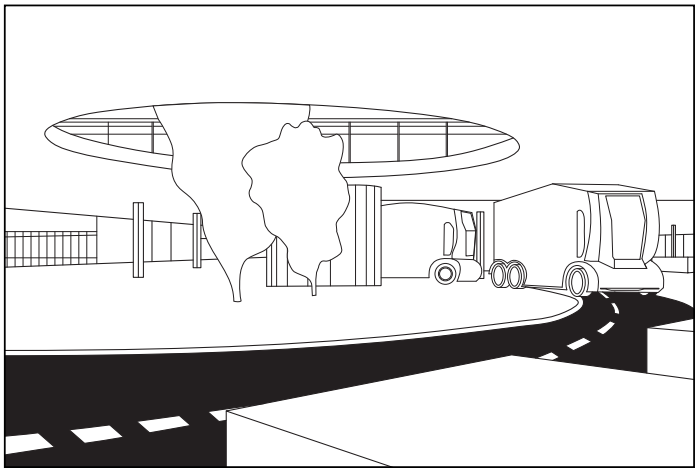


The storefront of the supermarket moves beyond blocked-off rows of checkout lanes and security gates to designated slow-paced zones with product demonstrations, workshops, and exclusive shops that entice consumers into the supermarket.

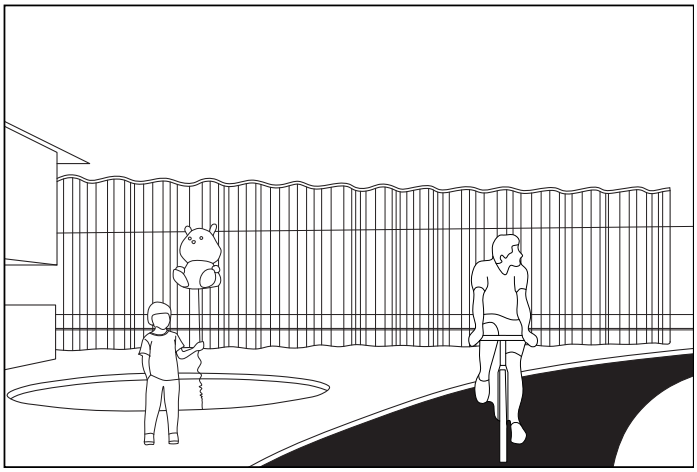


The automated Ocado system in the distribution center above allows for the diversion of labor in the supermarket towards hospitality and social interaction through various host stands—strategically placed to encounter pedestrian flows—offering a tailored shopping experience.

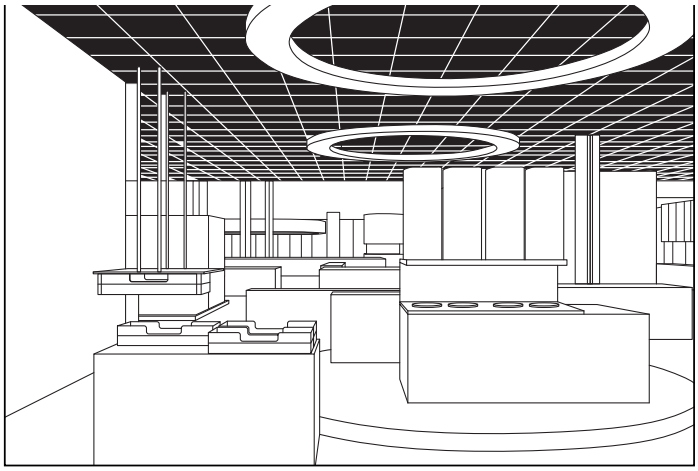
Presented in a set of spatial narratives, the collective project addresses multifaceted aspects of the food industry and its distribution network commencing with the Blue Banana's urbanized trade corridor to reconfigure at the future supermarket—Albèrt—on Martinus Nijhofflaan in Delft.



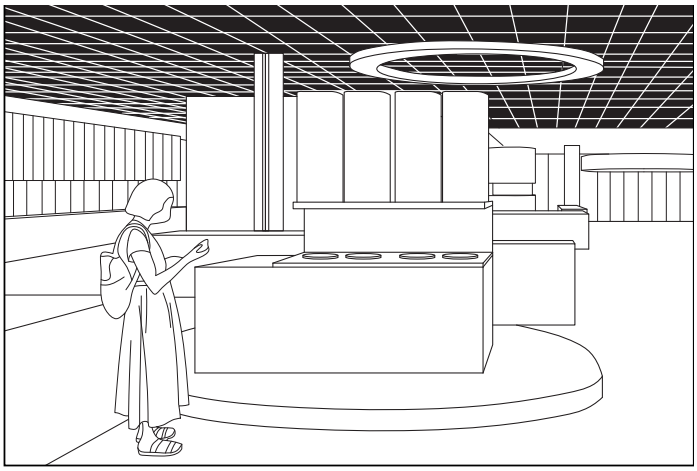
The relationship between the supermarket and the city changes with a modified transitional system that showcases the dynamic loading dock and its functioning on the sales floor, diverts private vehicular flow, e-trucks, and car-sharing services towards the Albèrt parking on the site, and promotes cyclists by providing access on the sales floor through the incorporation of a pathway for fast-paced pick-up zones with an increase in delivery and e-commerce.



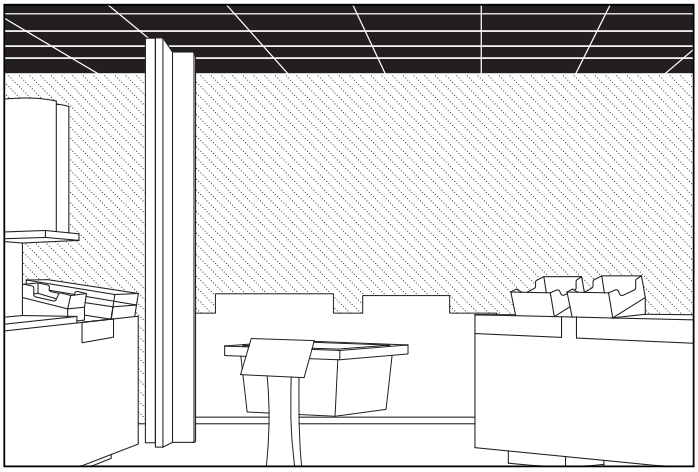
The supermarket provides several entrances—strategically located near high traffic zones—to move away from a one-directional circulation path to a multi-directional circulation pattern within the organic layout of the facade that is designed in response to the surrounding context.



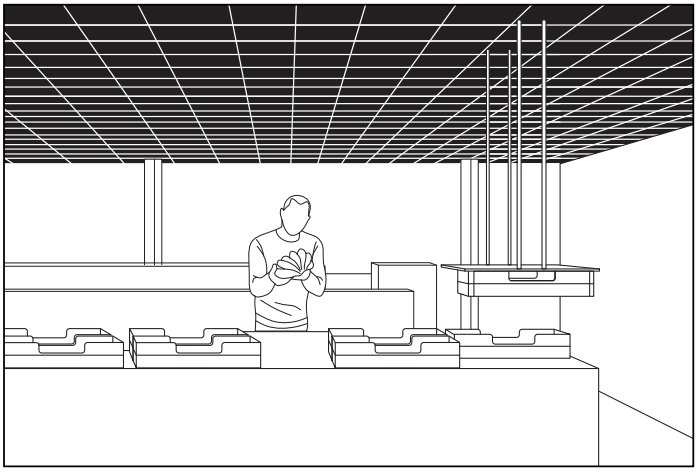
The supermarket is reorganized according to the central high yield automated distribution center within a static grid ceiling that offers dynamic robotic movements, allowing various iterations of product displays in reaction to seasonality and specialties, to render an open floor plan shopping experience.



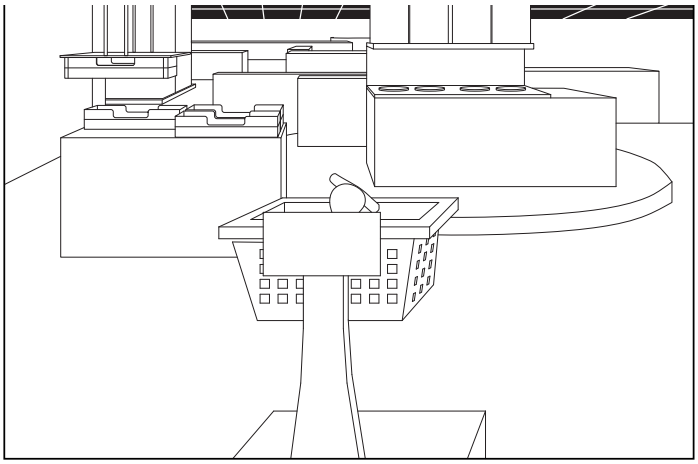
Stores will continue to use planograms, working on existing principles of increasing sales. From bulk shelves to fresh produce crates, shelving systems within the open plan generate new episodic formats of planograms, while accommodating changes in circulation with the incorporation of electronic signage to guide the consumers.



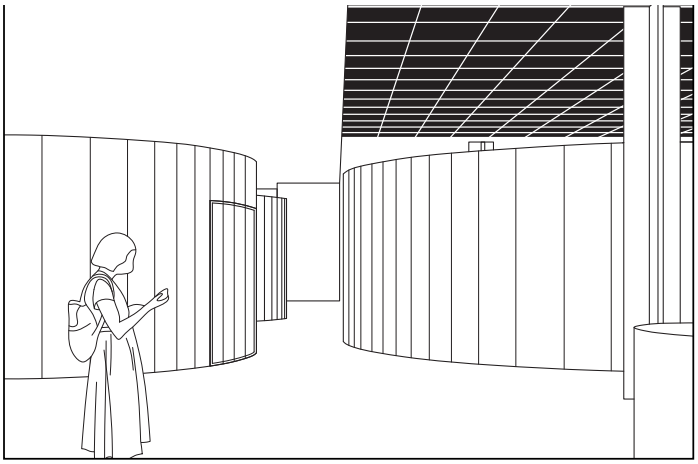
Responding to the supermarket's visibility of the supply chain, vertical experiential walk-in refrigerators represent the ripening rooms and recreate the conditions of refrigerated trucks to extend the distribution center to the sales floor with a convenient product flow, allowing consumers to momentarily enter the varied environments of the food supply chain.



All new shelves, carts, packaging, and delivery methods work within the 800mm x 800mm grid to ensure full standardization within the supply chain system starting from the cargo pallet itself.



Once an item is delivered, the screen on the smart cart displays other useful items, or the next item on the shopping list while still incorporating key supermarket sales concepts and experiences like cross-merchandising and impulse buys.



Business models and real-estate strategies—introduced through independent areas defined for peripheral store-in-stores—promote collaborations with exclusive brands and local entrepreneurs by bringing in highly curated experiences, catering to the experimental and diverse tastes of Delft residents.

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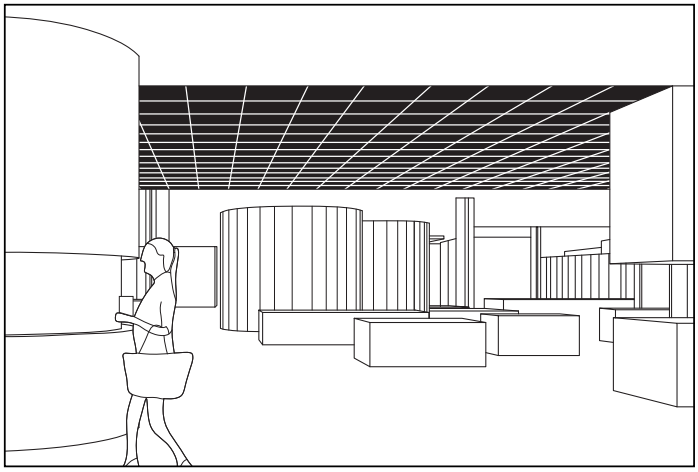
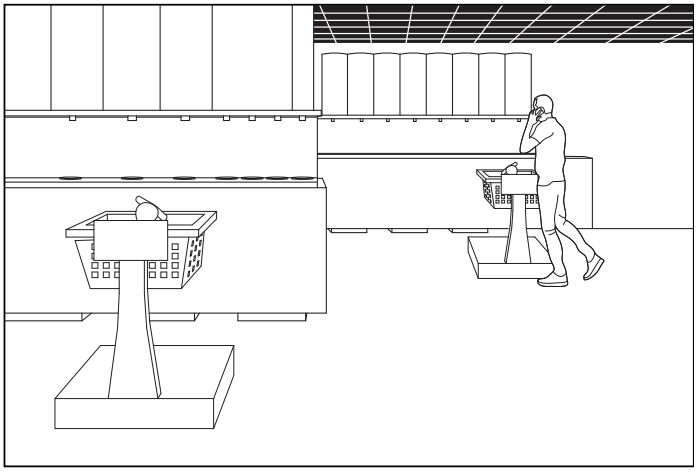
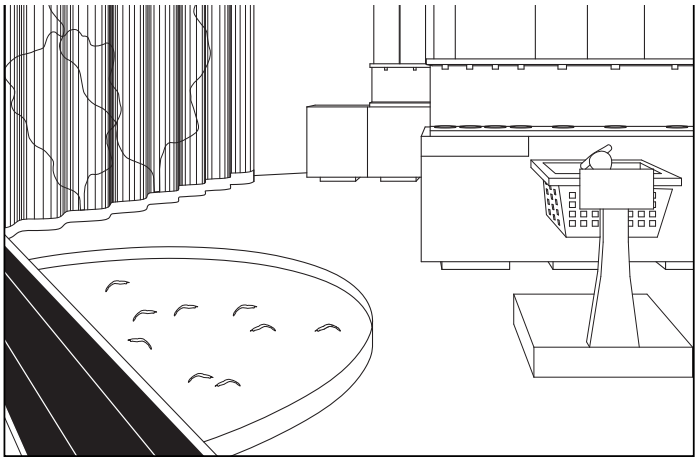


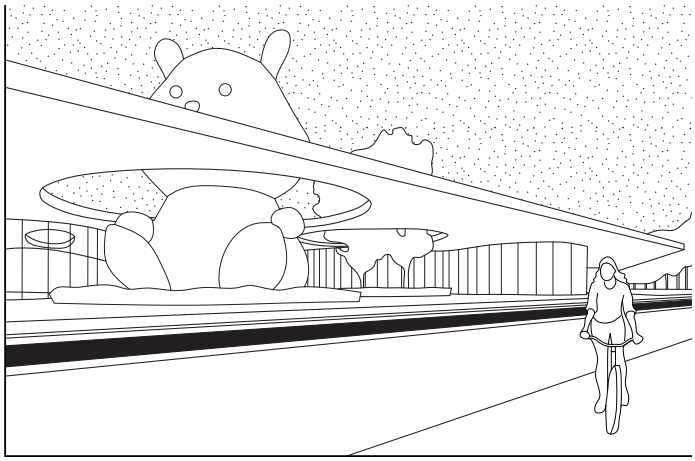
The future supermarket addresses sustainability goals through a reimagined supply chain with reusable packaging for all Albèrt products that are collected, cleaned, and redistributed on site in various return points, cleaning stations, and end-cap gondolas respectively, that remain scattered throughout the sales floor.



Smart carts with digitized scanners react to the particularities of the product on the shelf with information on the provenance of products for conscious consumers. Electronic displays are connected to expiration dates, supply, and demand through dynamic pricing monitored by data-driven decision-making.



As an essential service, the supermarket's design incorporates several public green zones amidst the sales floor to entice the consumers to spend more time inside, while at the same time providing a healthier working environment, through biodiverse farming solutions, integrated agriculture strategies, and a green roofscape.



Albèrt offers a new retail experience open to Delft by putting both the product and its supply chain on display. A flexible open plan within and beyond the high yield automated distribution center—now a part of the supermarket—extends its perimeter towards the city and its residents, establishing a new civic presence.

The introduction of fast-paced zones in the supermarket spreads along the bike lane, featuring a demonstration kitchen and pick-up points.

Live shrimps and small-batch milk deliveries demonstrate freshness and reusable packaging within a just-in-time production system.

Permaculture as a new farming method inside the supermarket boosts biodiversity and rewards the cultivation of GMOs

View of the automated Ocado grid system and the distribution center on the ceiling from the concierge desk on the sales floor.

The smart cart eliminates the boundaries of the supermarket's sales floor while dynamic pricing and digitalized labels inform the consumers about the product's supply chain and provenance.

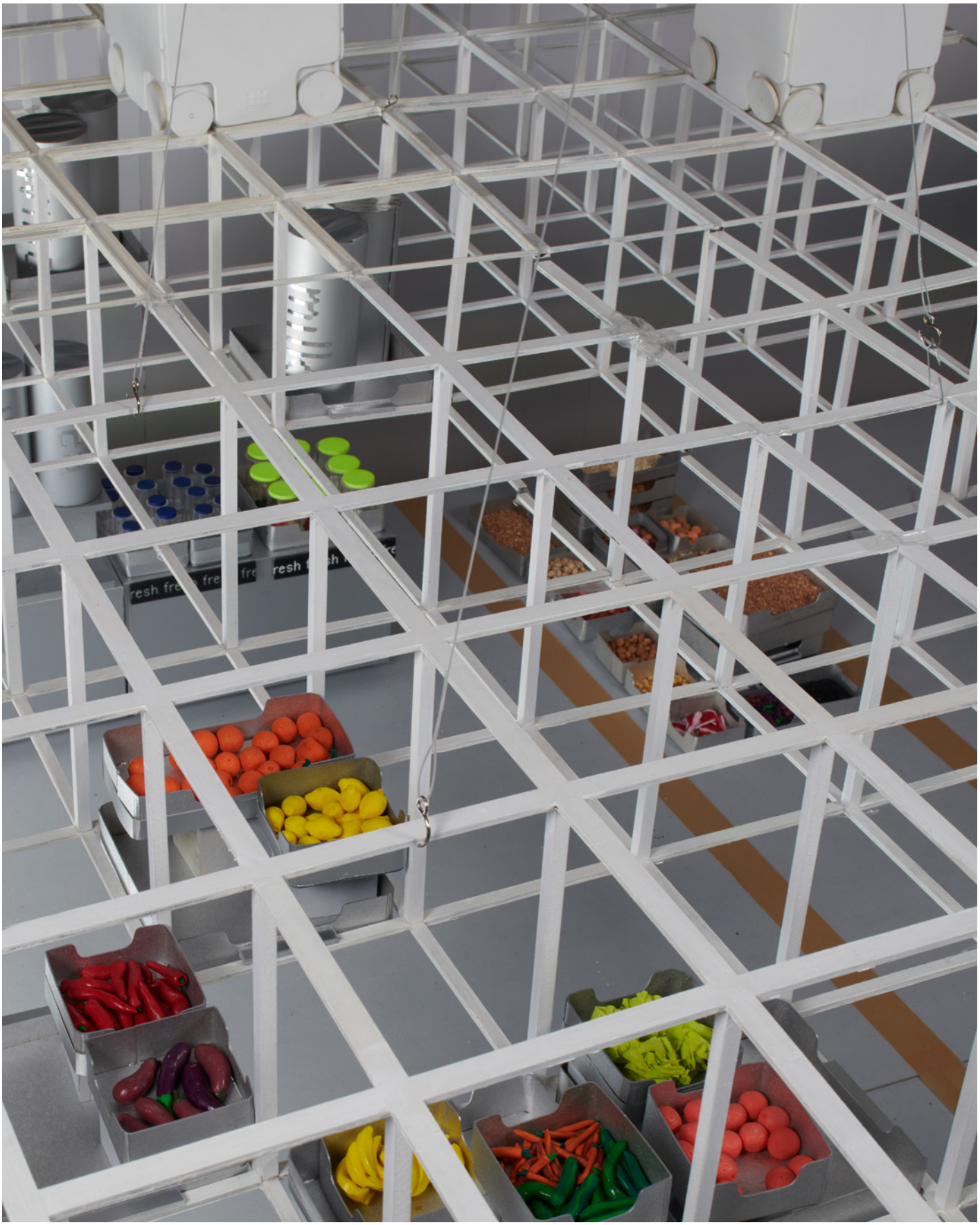
Dynamic robotic movement above the open sales floor allows for various iterations of product displays, according to seasonality, discounts, and specialties.

Free food is no longer shameful, facing the luxury products of the Hermès store-in-a-store.

The walk-in refrigerator extends the distribution center to the sales floor, offering a momentary experience in the varied environments of the food supply chain.

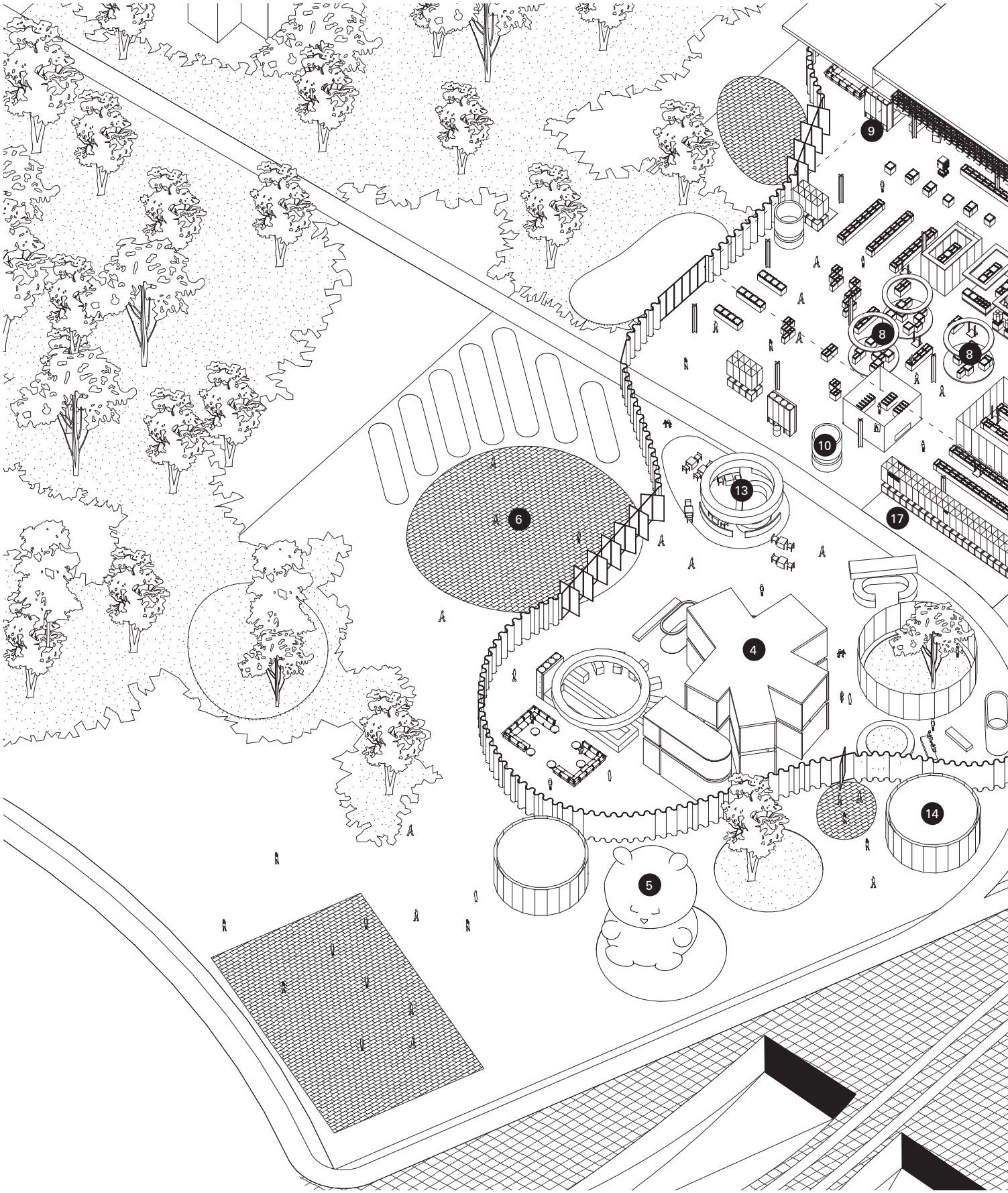
A wine bar next to an automat restaurant are part of the slow-paced zones of the supermarket, introducing a novel tasting experience next to a public green terrace.

Beyond the internal core, Albèrt offers an innovative retail experience, opening up the supermarket's perimeter towards the city.



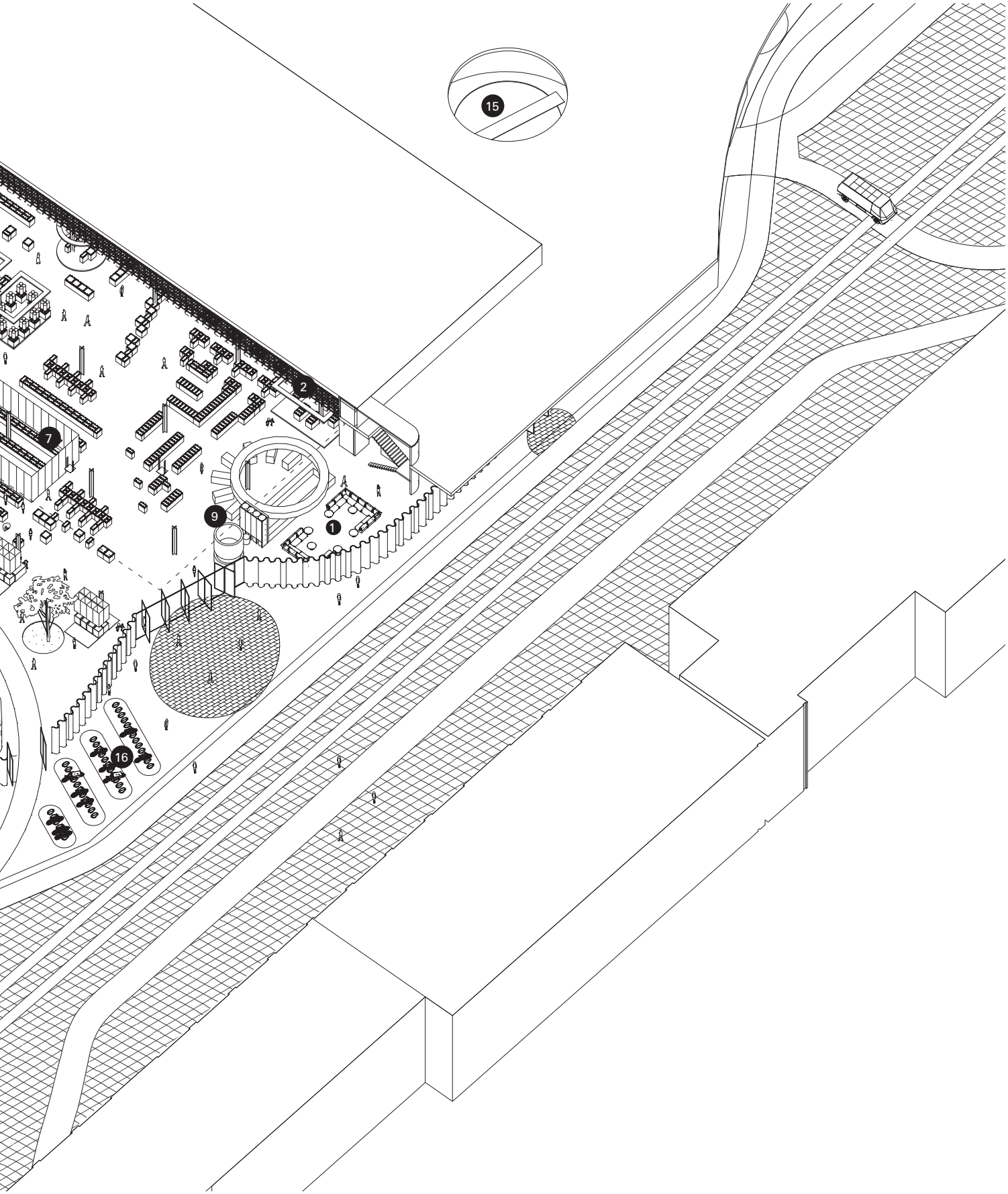
View of the loading dock on the sales floor from the automated distribution center on the ceiling.

A green roofscape amidst the residential neighborhood, provides a healthy working and living environment.

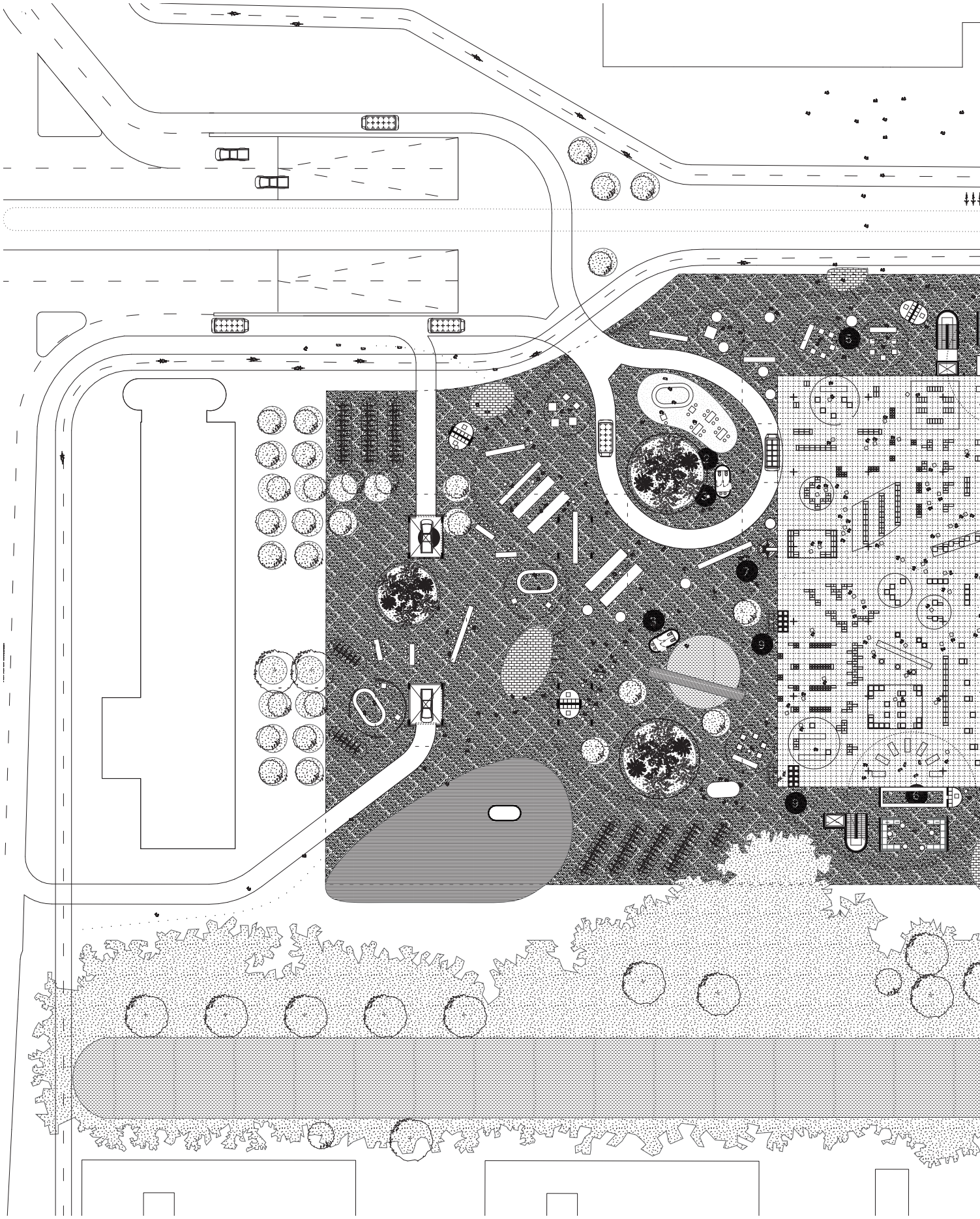


A cut-out axonometric exposing the blurred boundaries between the supermarket, the landscape, and the city of Delft.

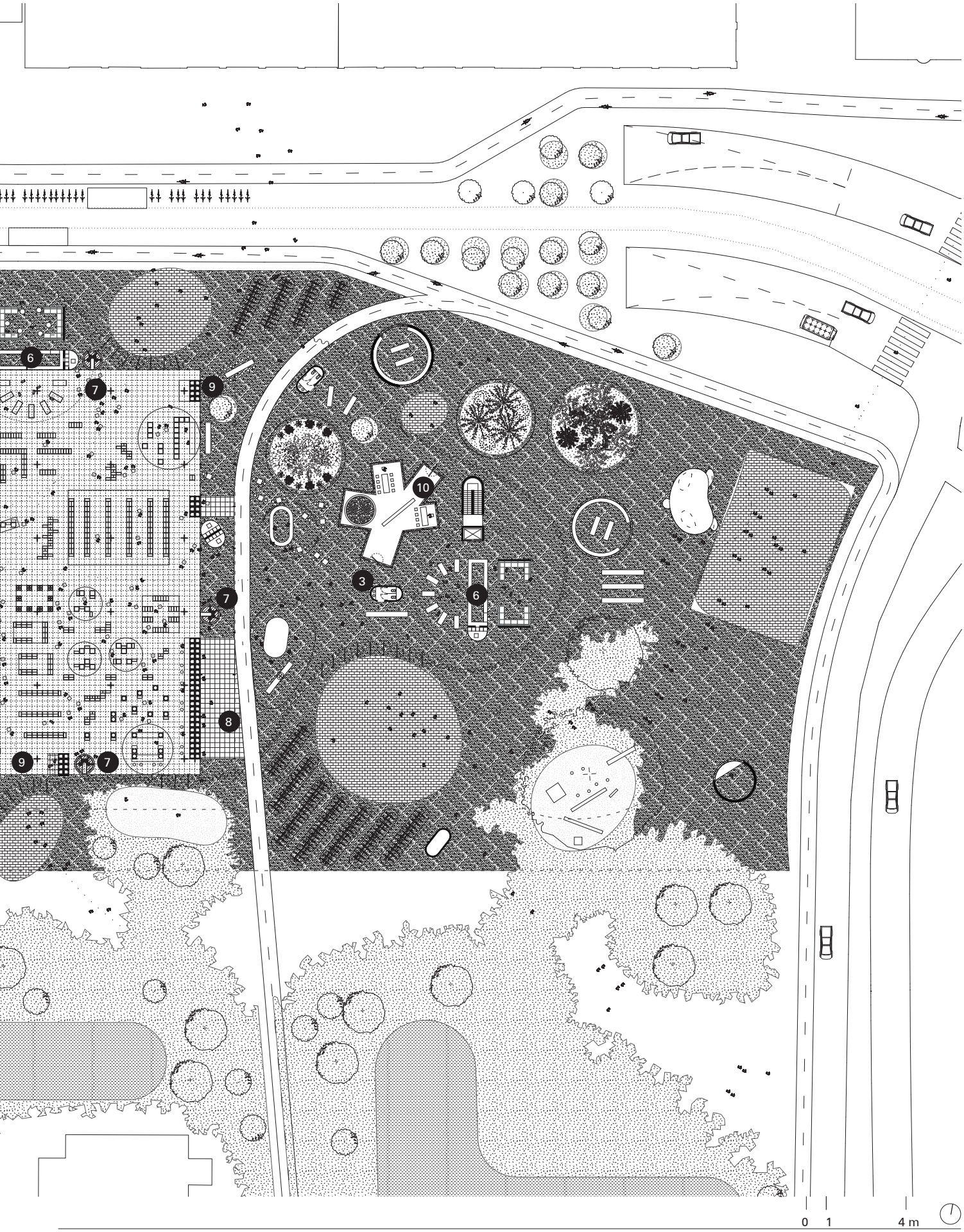
1 Concierge
2 Automated Ocado grid
3 Vertical circulation core
4 Kindergarten
5 Sculpture of Albèrt's mascot
6 Entrance
7 Refrigerated area
8 Specialty displays



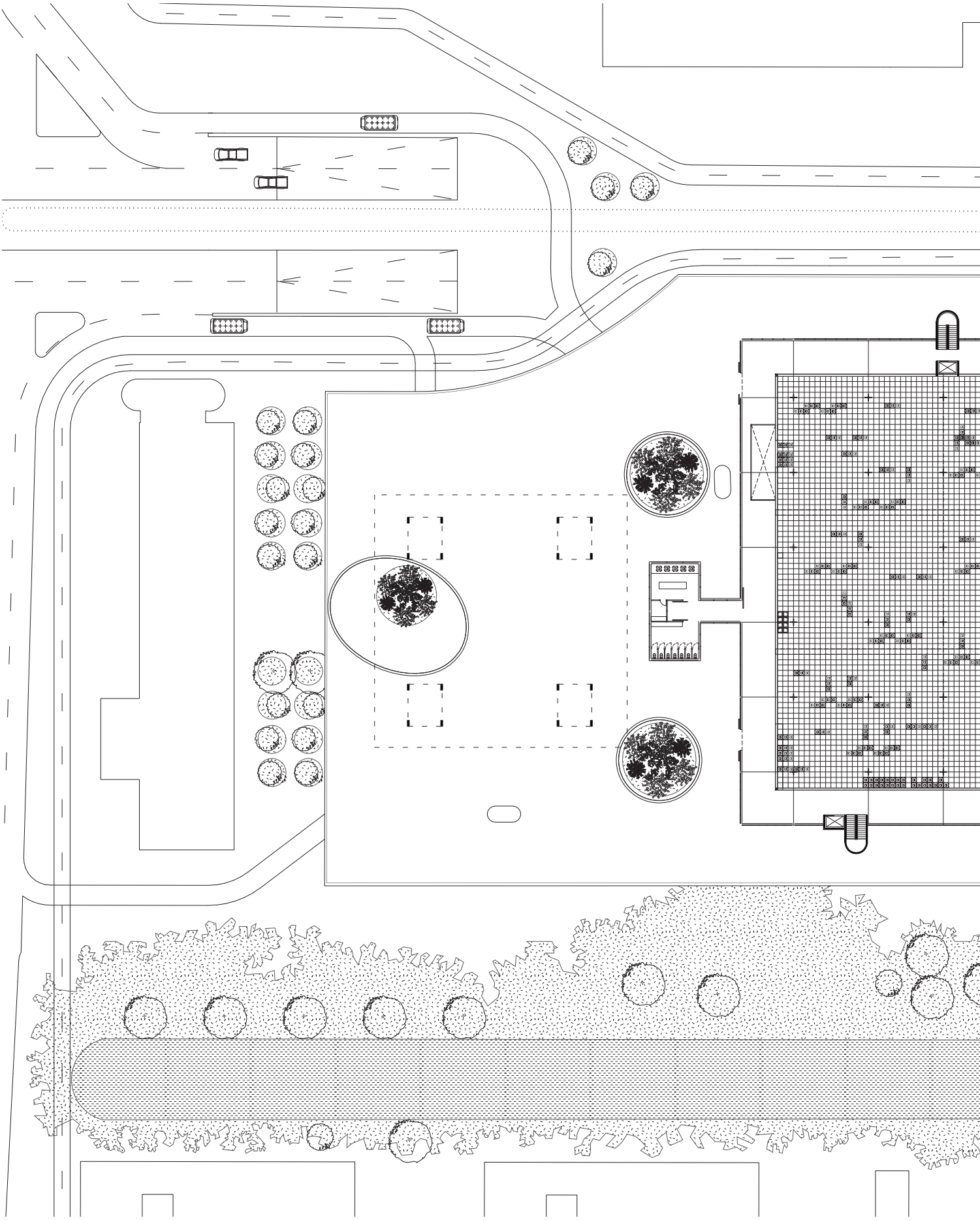
9 Smart cart station
10 Return points
11 Pick up points
12 Cycle track
13 Demonstration kitchen
14 Shop-in-shops
15 Shrimp pond
16 Bycicle parking
17 Automat



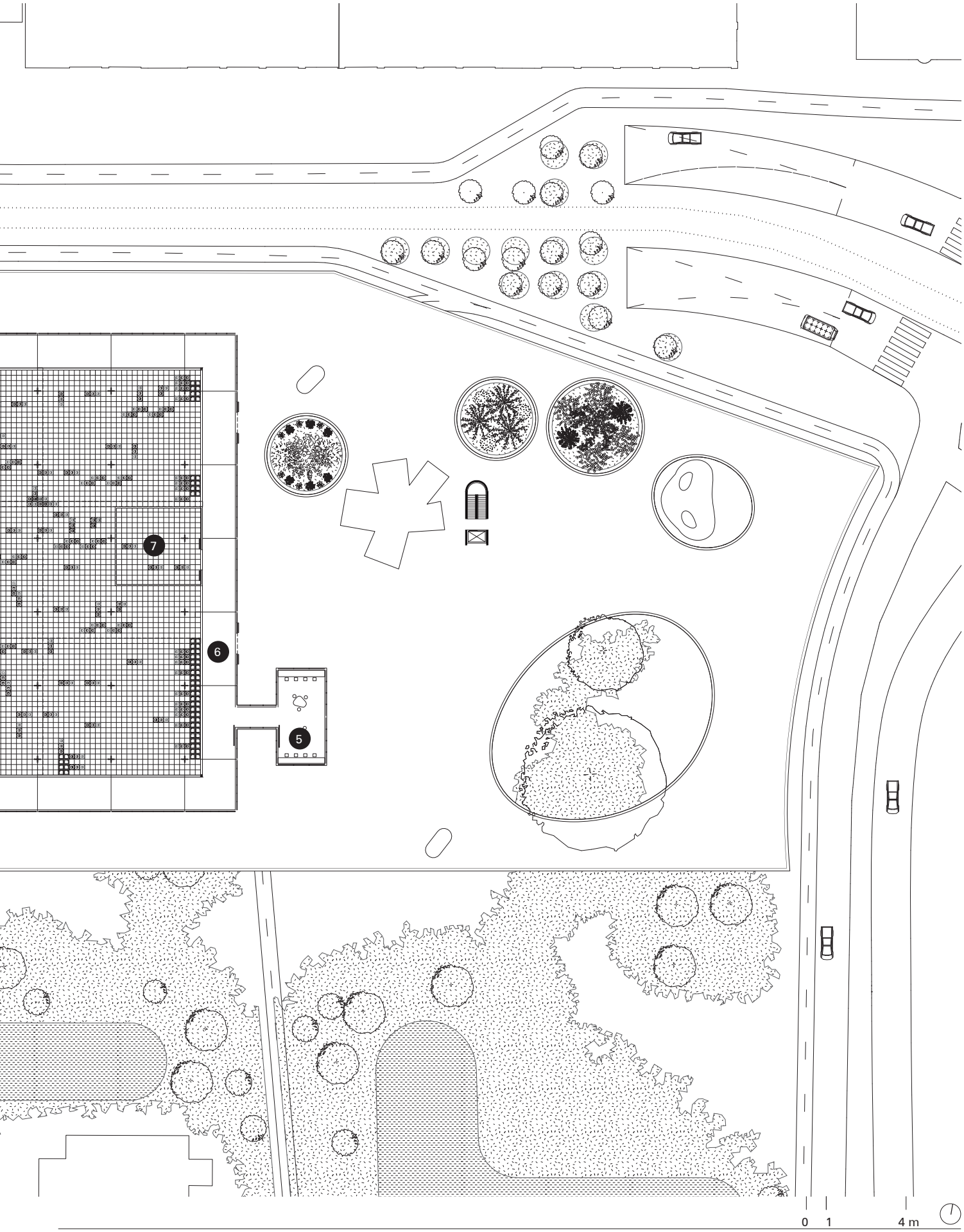
Albèrt offers a new retail experience with a flexible open plan within and beyond the high yield automated distribution center to display both the product and its supply chain. The supermarket is organized in three different zones, consisting of the central high yield core, the interior periphery of the glass facade, and the outdoor facilities covered by the cantilevered roof.



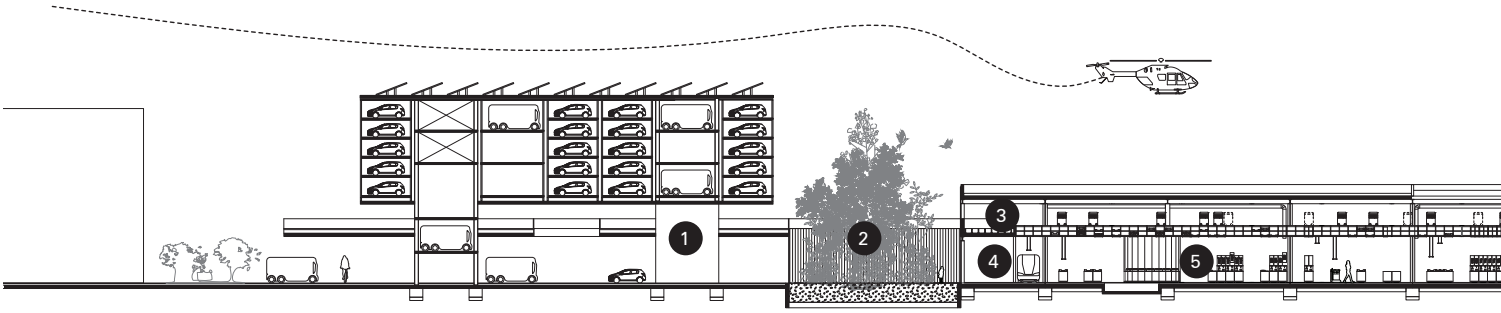
1 Access to Parking
2 Loading dock
3 Estructural cores, toilets, HVAC
4 Shrimp pond
5 Shop-in-shop
6 Concierge
7 Return point
8 Automat
9 Pick up points
10 Kindergarten

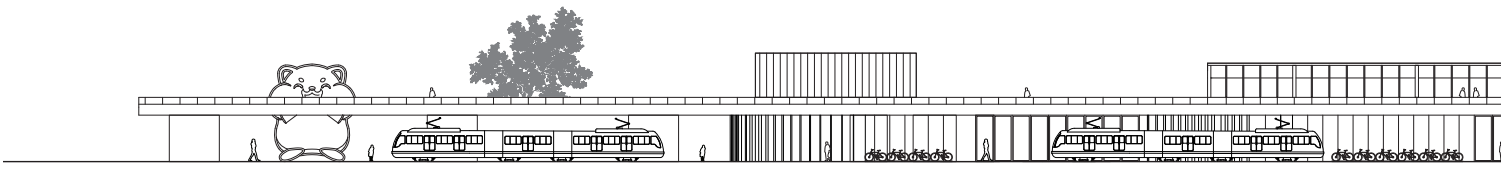


The back of house operates as a distribution center above the sales floor, consisting of the automated Ocado system in the static grid ceiling core that offers dynamic robotic movements.

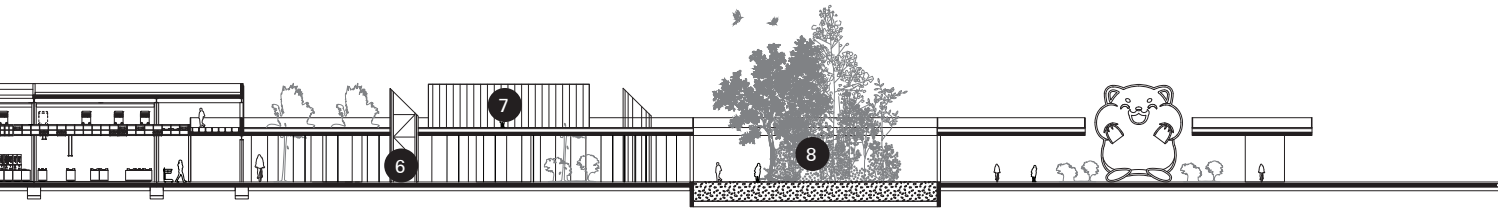


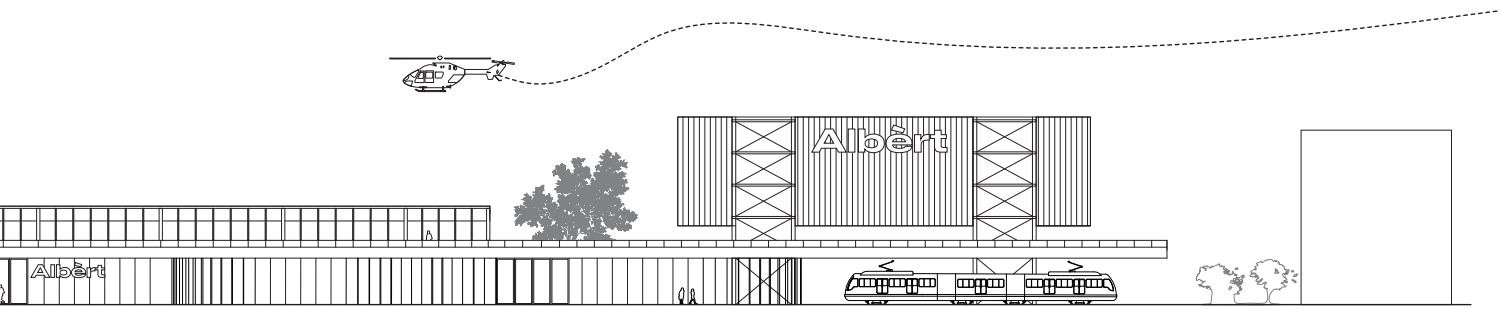
1 Maintenance point
2 Toilets
3 Automated Ocado grid
4 Vertical core
5 Offices
6 Perimeter for humans
7 Refrigerated area





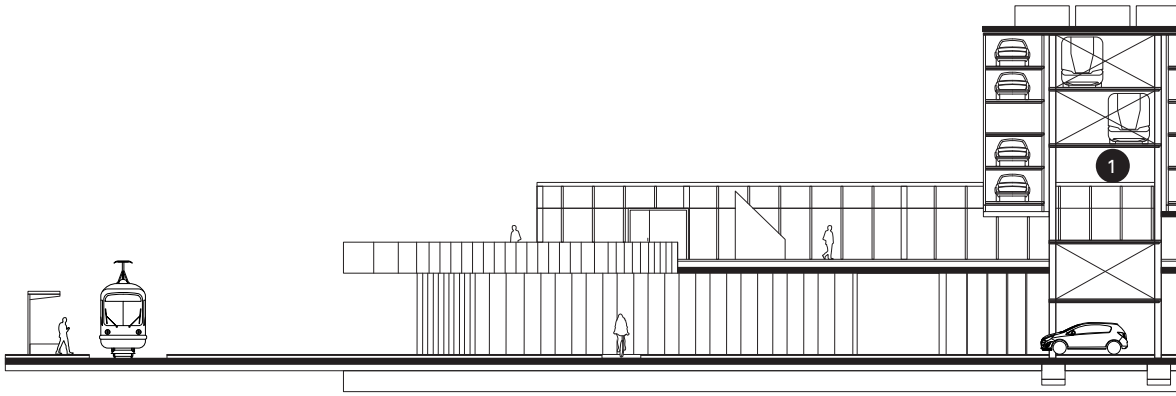
The reimagined relationship between the supermarket's sales floor and back of house is vertical, juxtaposed with the additional Albèrt car-sharing facilities and parking on the site that caters to the supermarket's customers, e-trucks, and the neighborhood's needs.

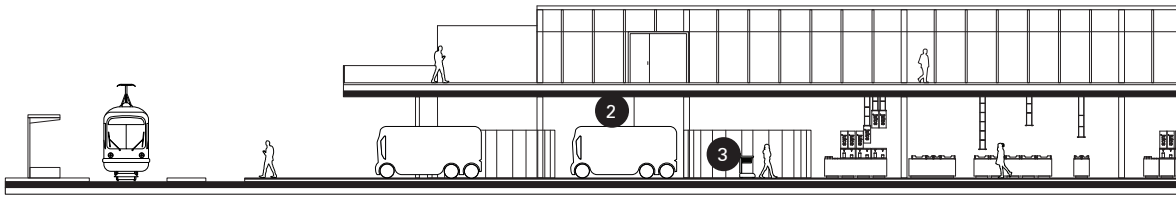




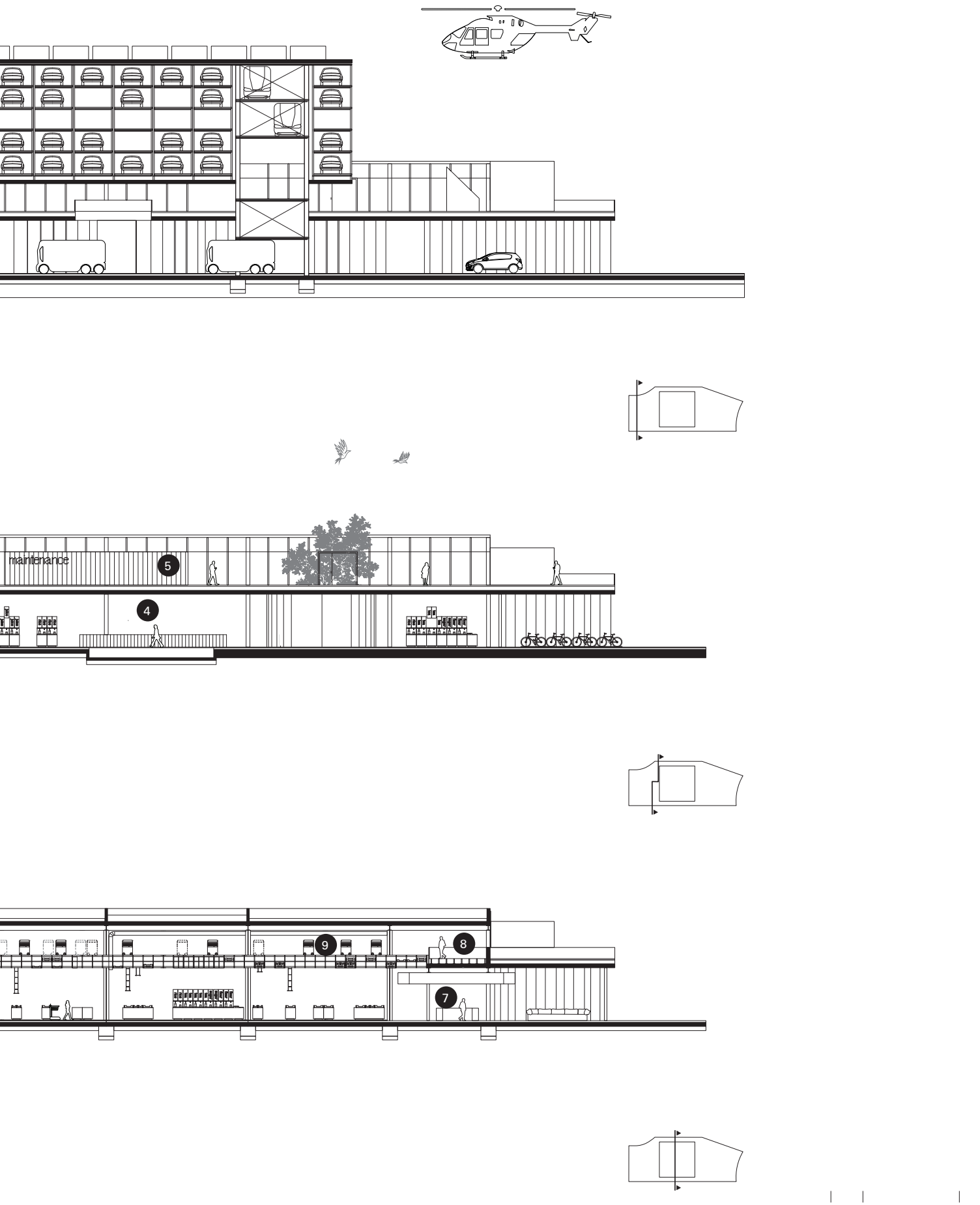
0 1 4 m

1 Maintenance point
2 Toilets
3 Automated Ocado grid
4 Vertical core

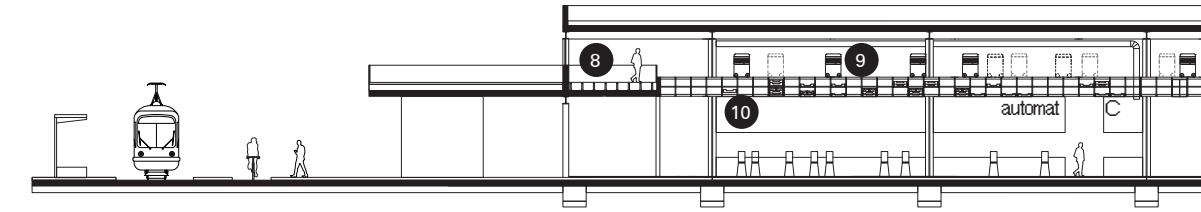


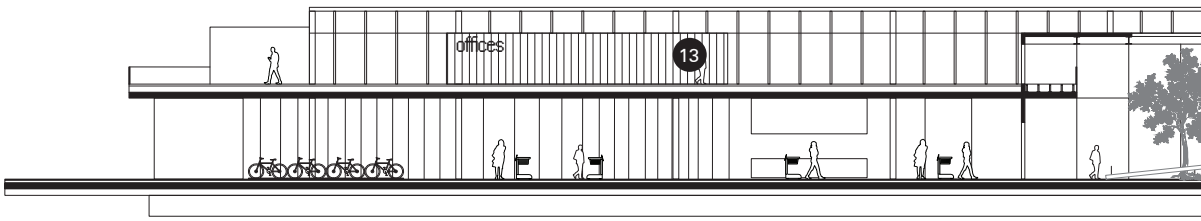


The organization of the building around the central high yield distribution center allows for various iterations of product displays on the sales floor, disrupting the infinite seriality of the supermarket aisles.



1 Automated parking
2 Loading dock
3 Shop-in-shop
4 Shrimp pond
5 Maintenance point
6 Vertical core
7 Concierge
8 Perimeter for humans
9 Automated Ocado grid





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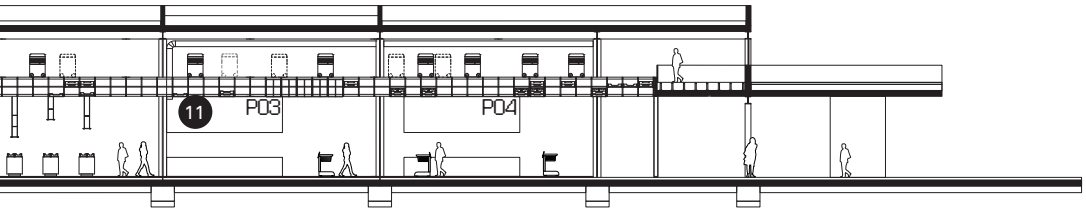
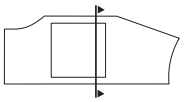
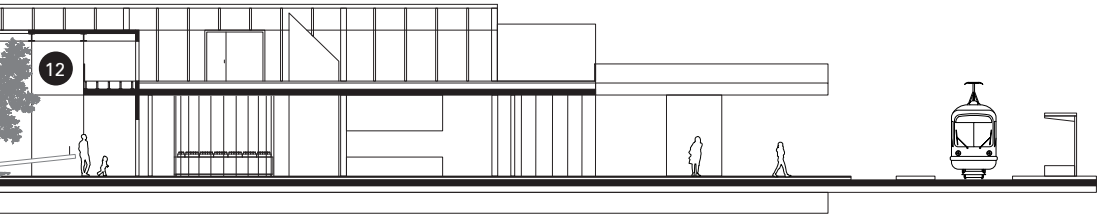
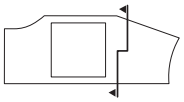
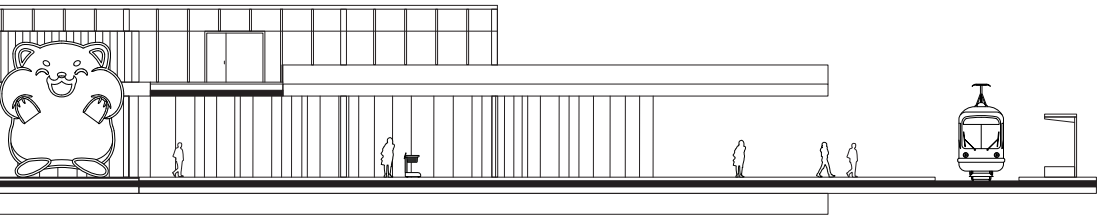
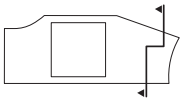






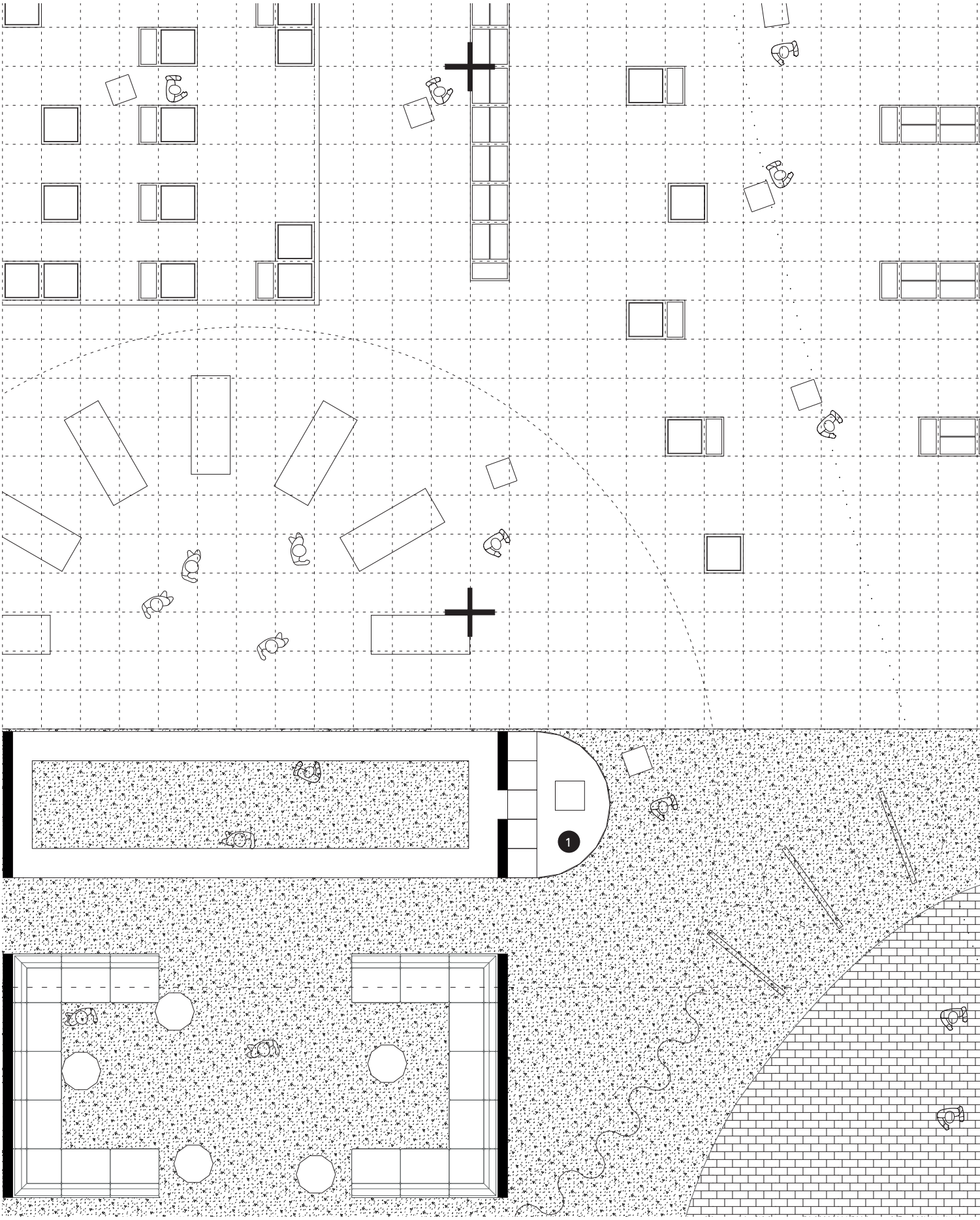




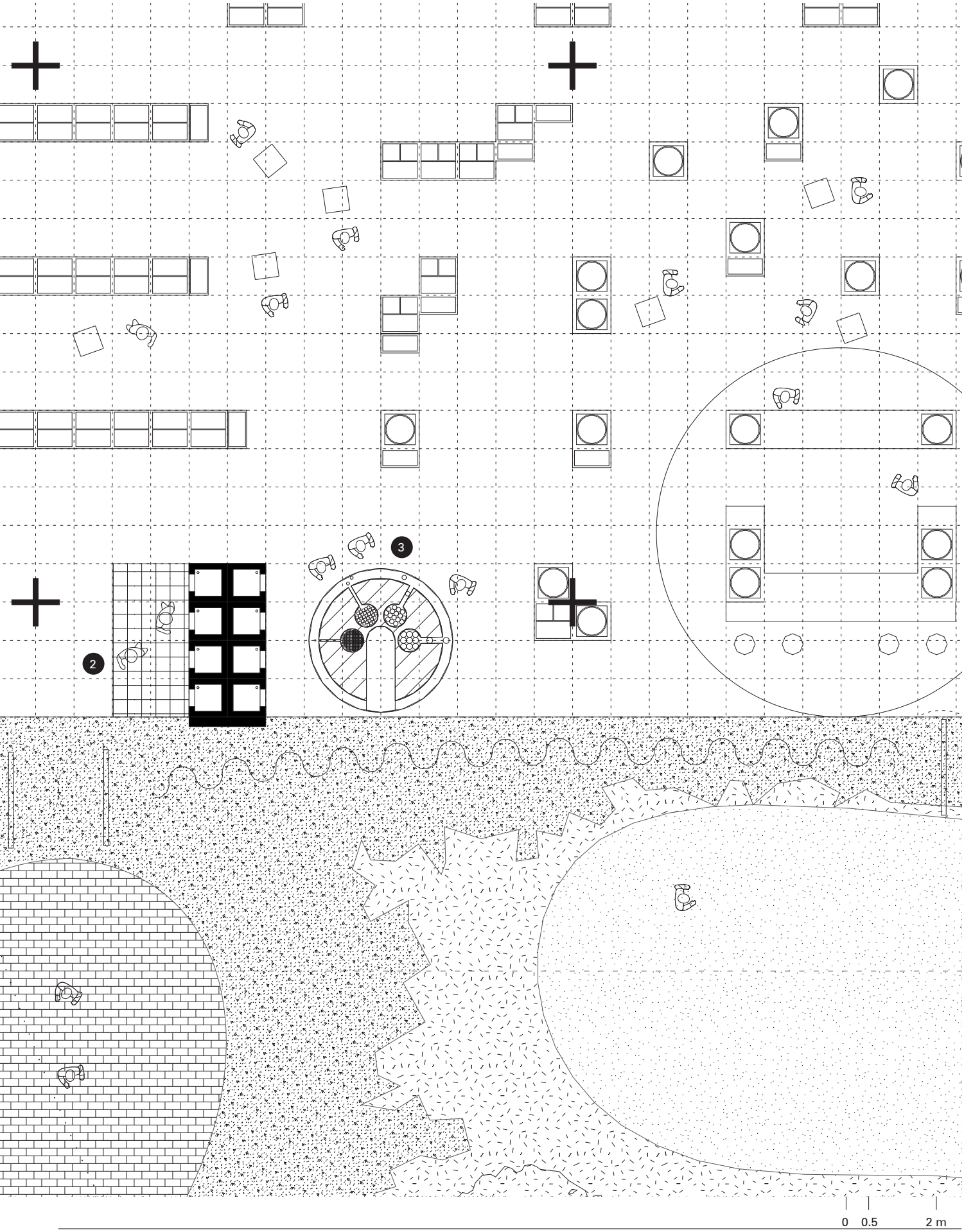


0 2.5 10 m

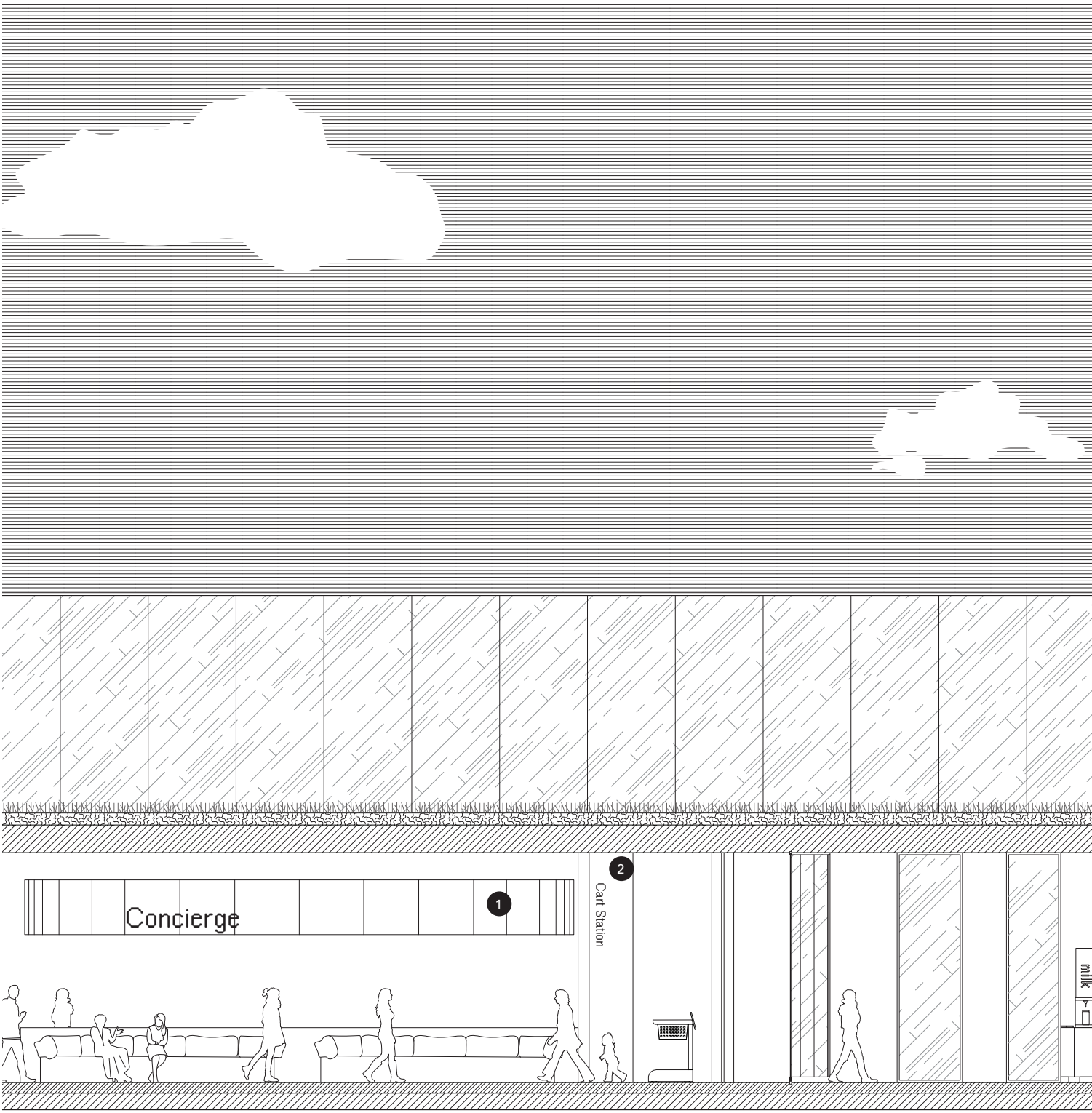
1 Automated parking
2 Loading dock
3 Shop in shop
4 Shrimp pond
5 Maintenance point
6 Vertical core
7 Host
8 Perimeter for humans
9 Automated ceiling
10 Automat
11 Pick up points
12 Kindergarten



The dynamic robotic movements allow for the reconfiguration of the supermarket shelves in reaction to seasonality and specialties, rendering a unique shopping experience.



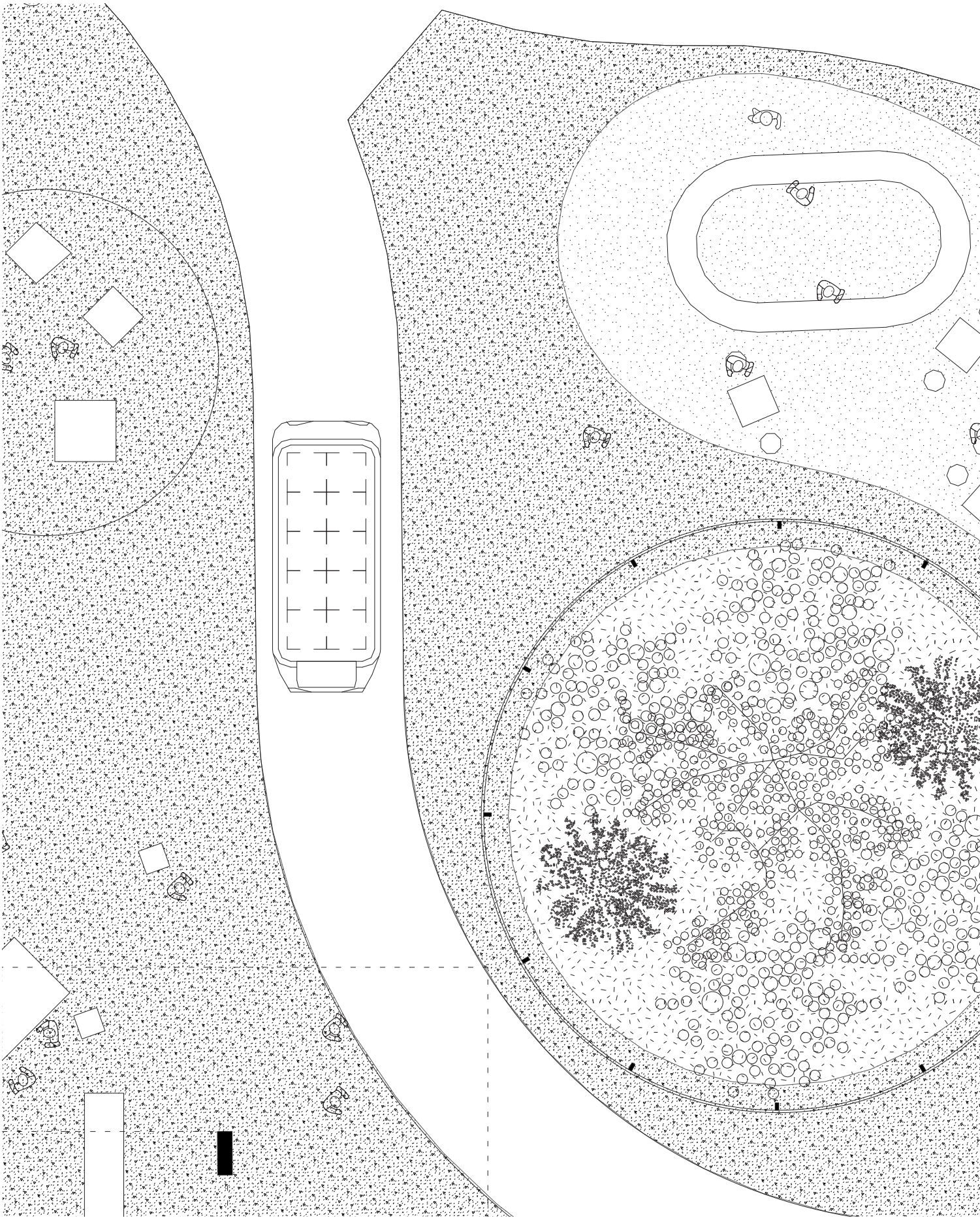
1 Concierge
2 Pick up points
3 Returning point



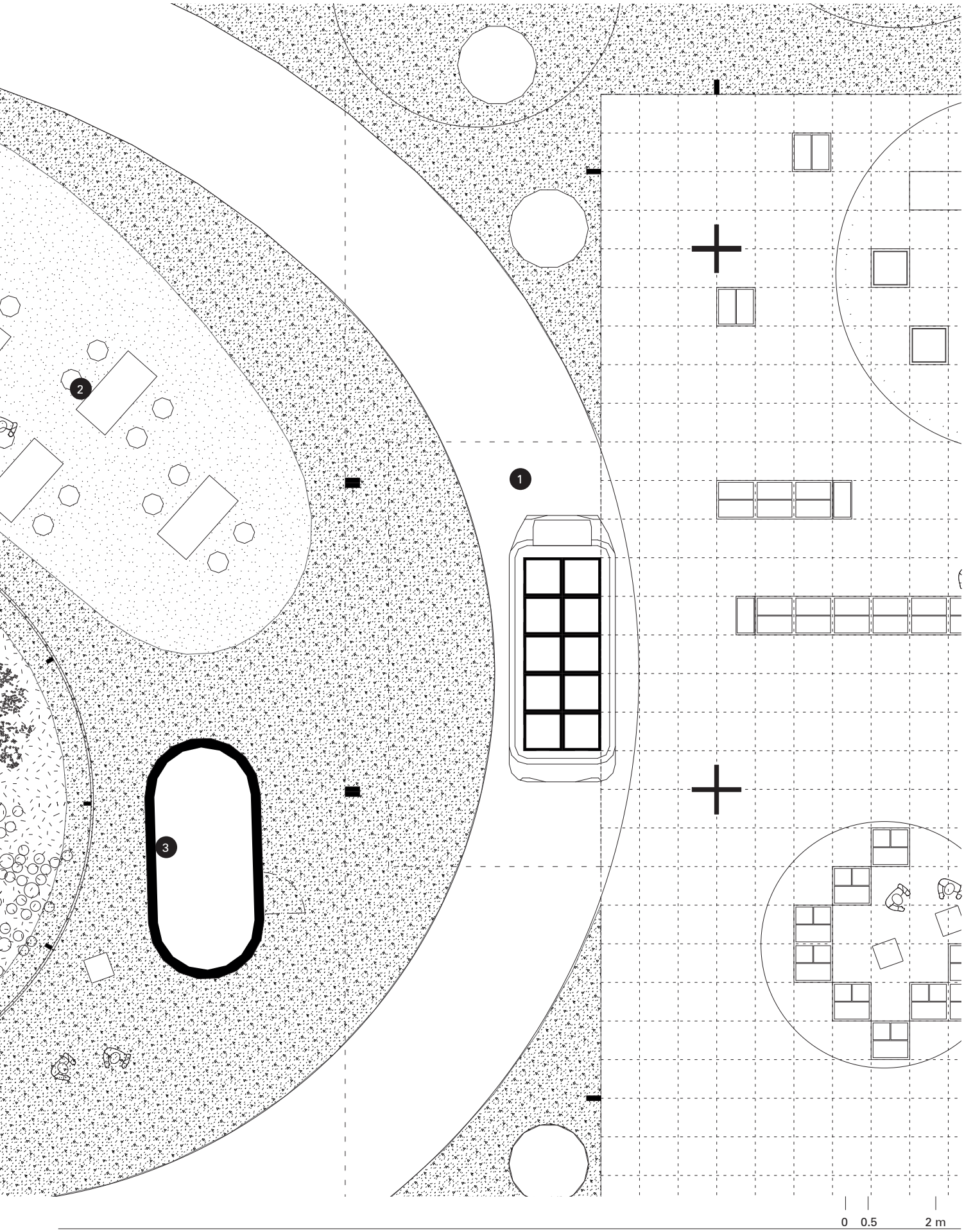
The dynamic robotic movements allow for the reconfiguration of the supermarket shelves in reaction to seasonality and specialties, rendering a unique shopping experience.

0 0.5 2 m

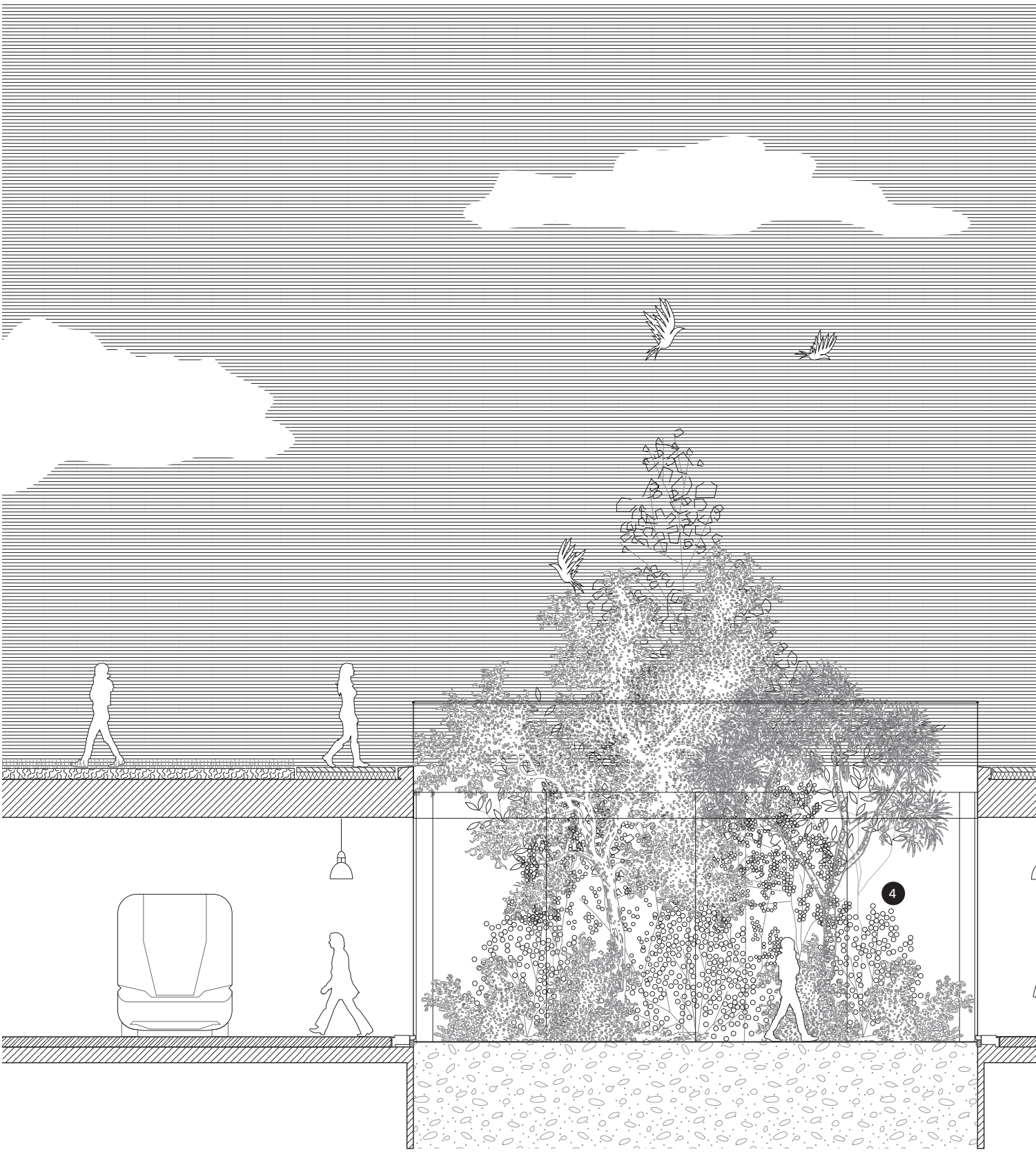
1 Host
2 Cart station



A ritual of loading and unloading is experienced on the sales floor, exposing the supermarket's supply chain to the conscious consumers.



1 Loading dock
2 Bar
3 Structural core and HVAC
4 Permaculture



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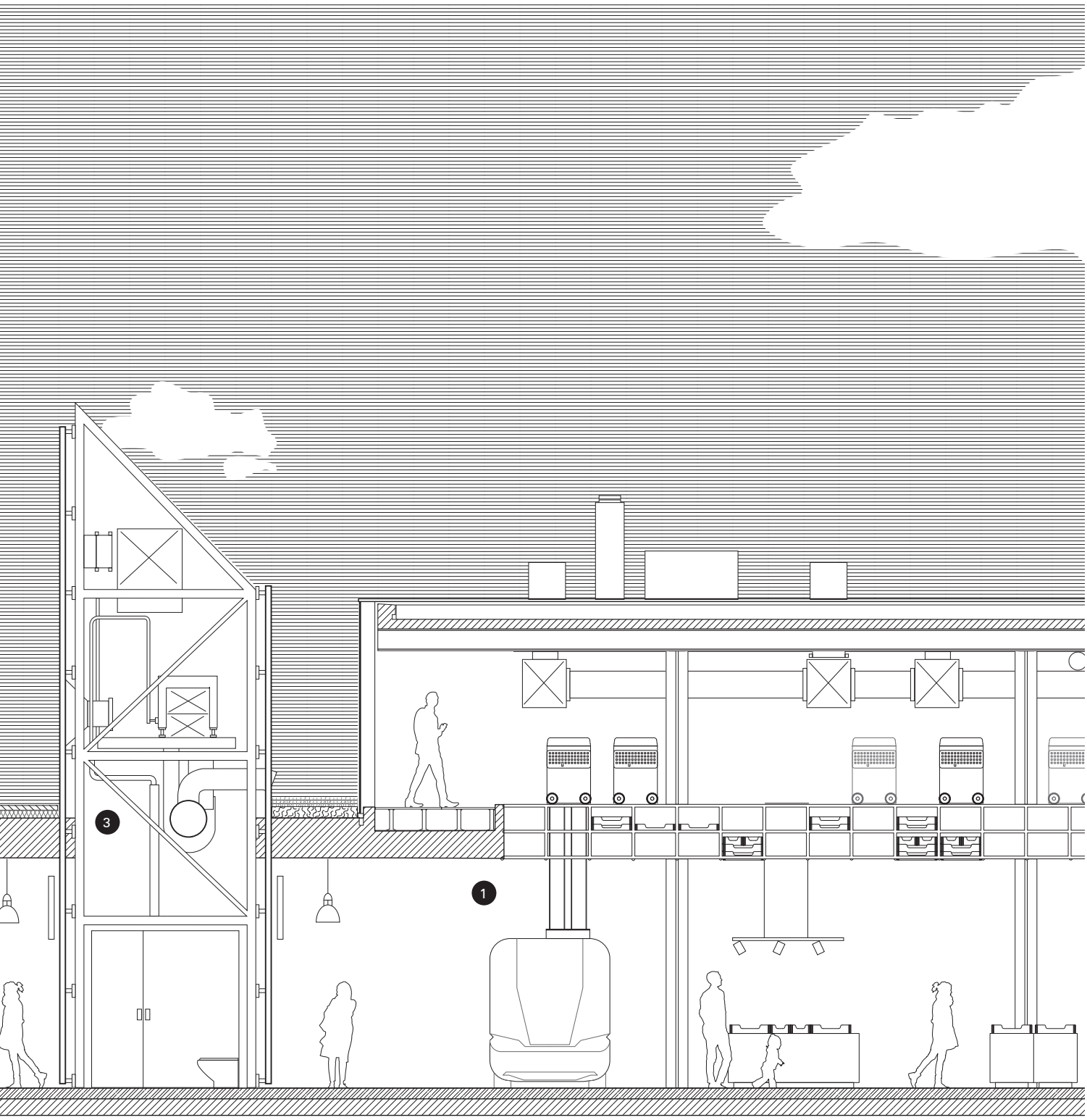

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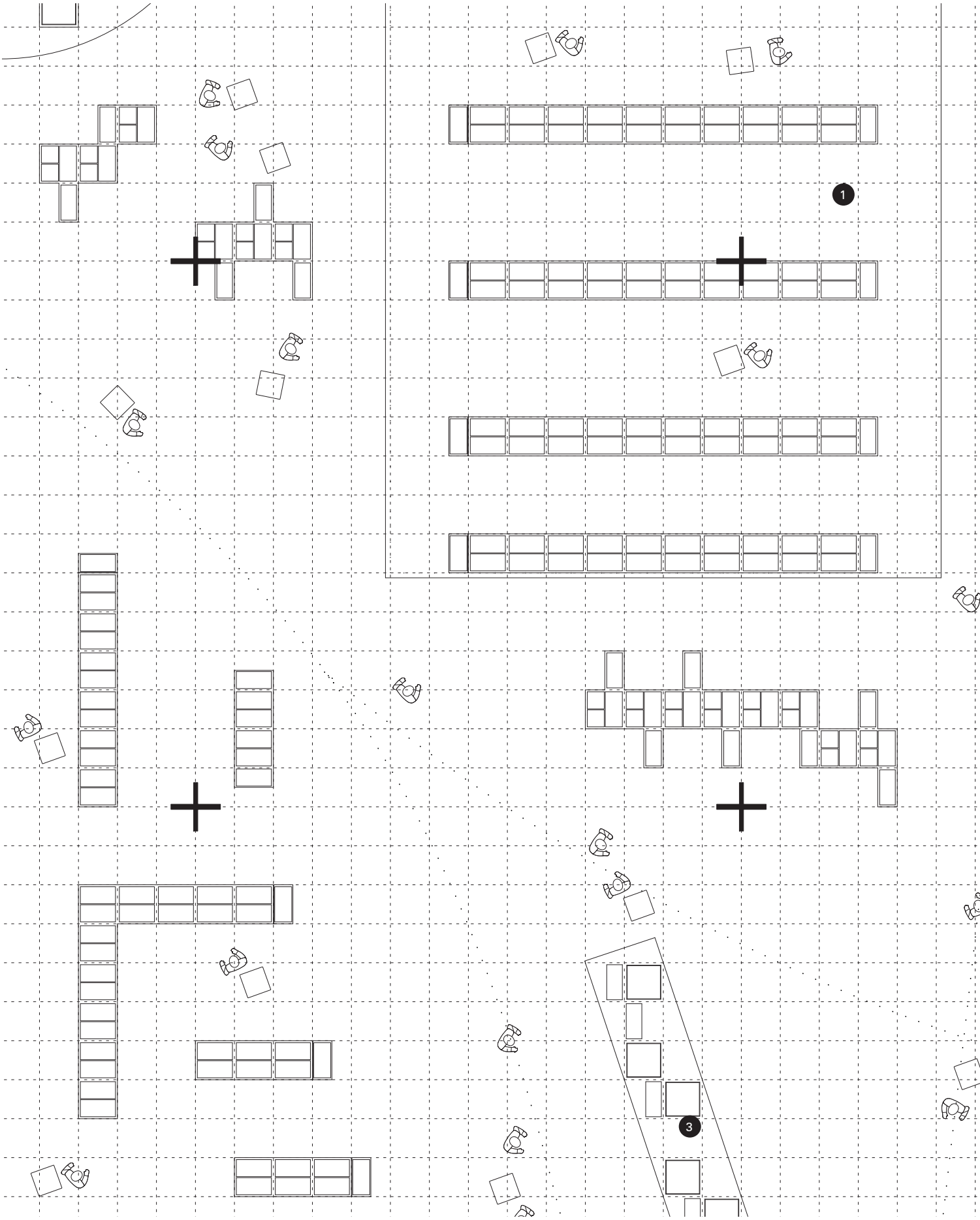

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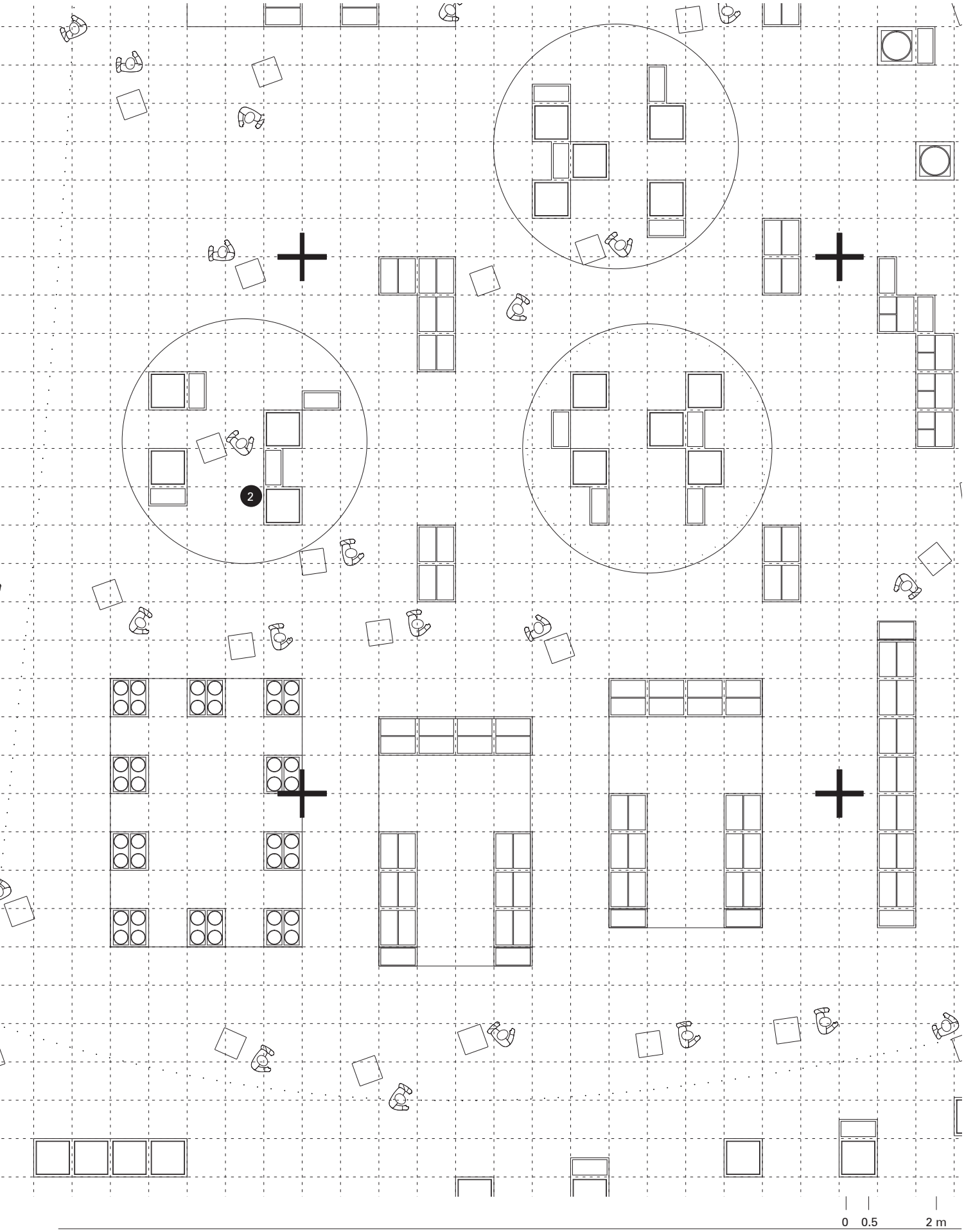
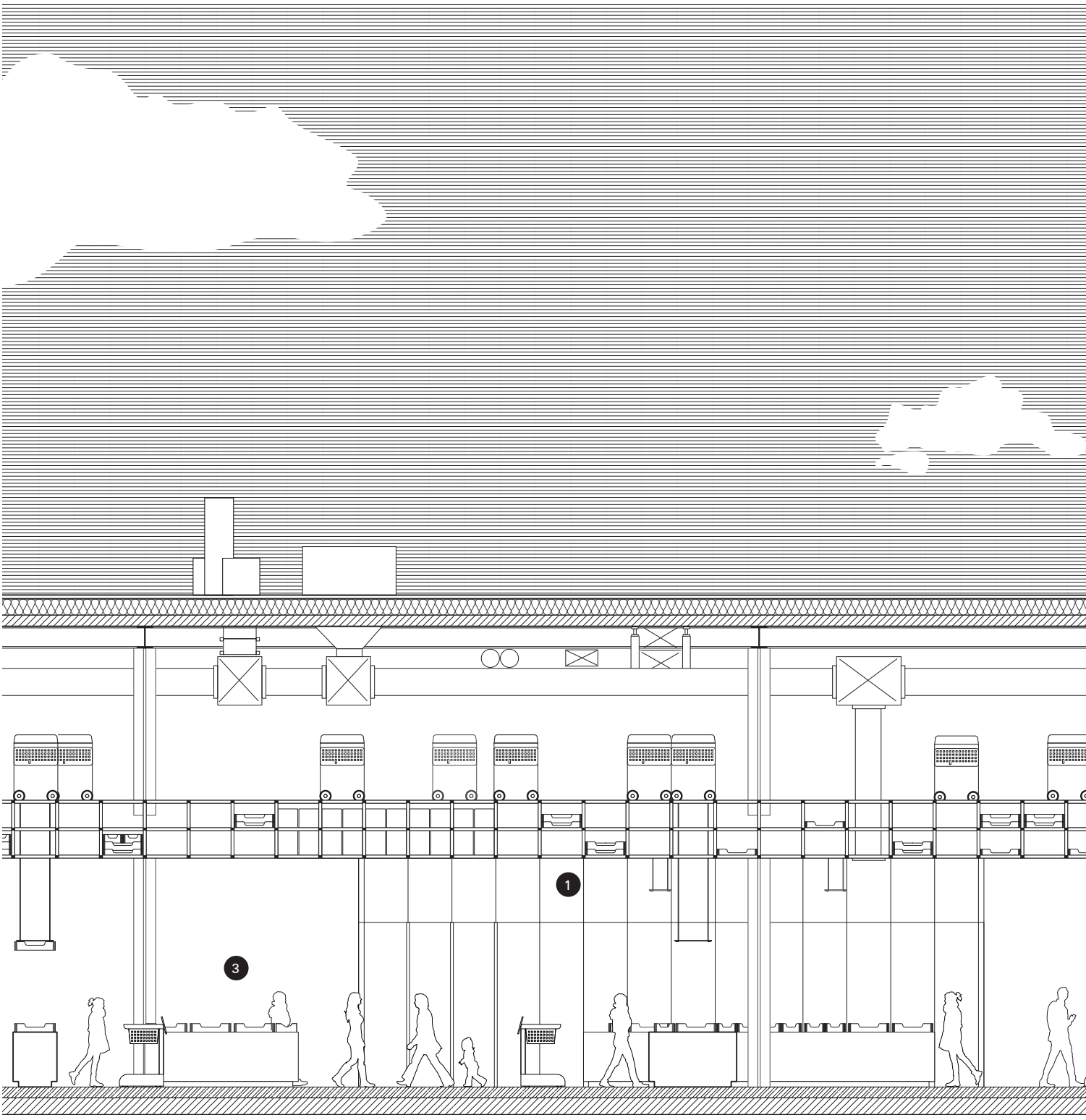


1 Refrigerated room
2 Sesonal products
3 Bonus



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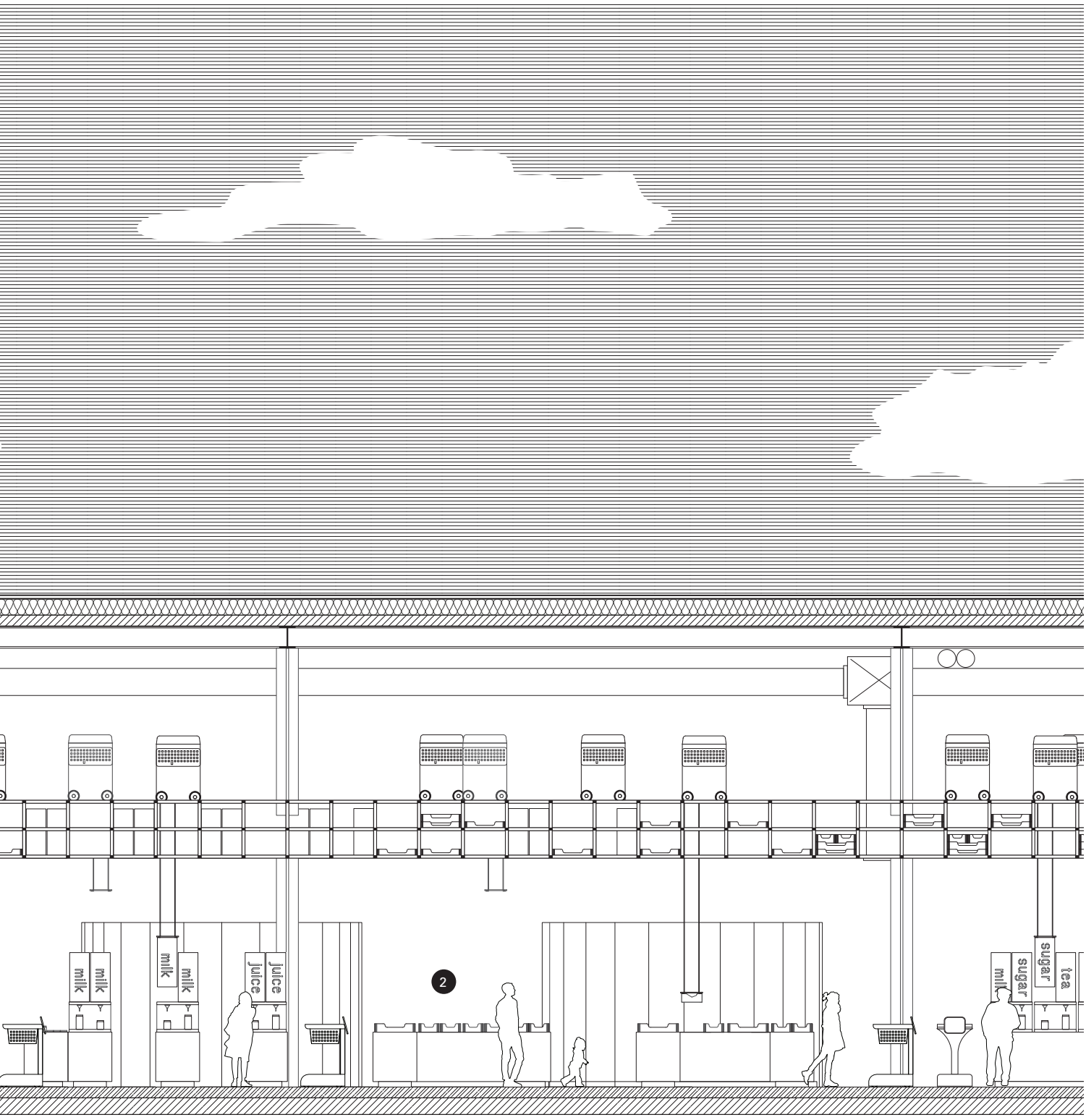

0 0.5 2 m

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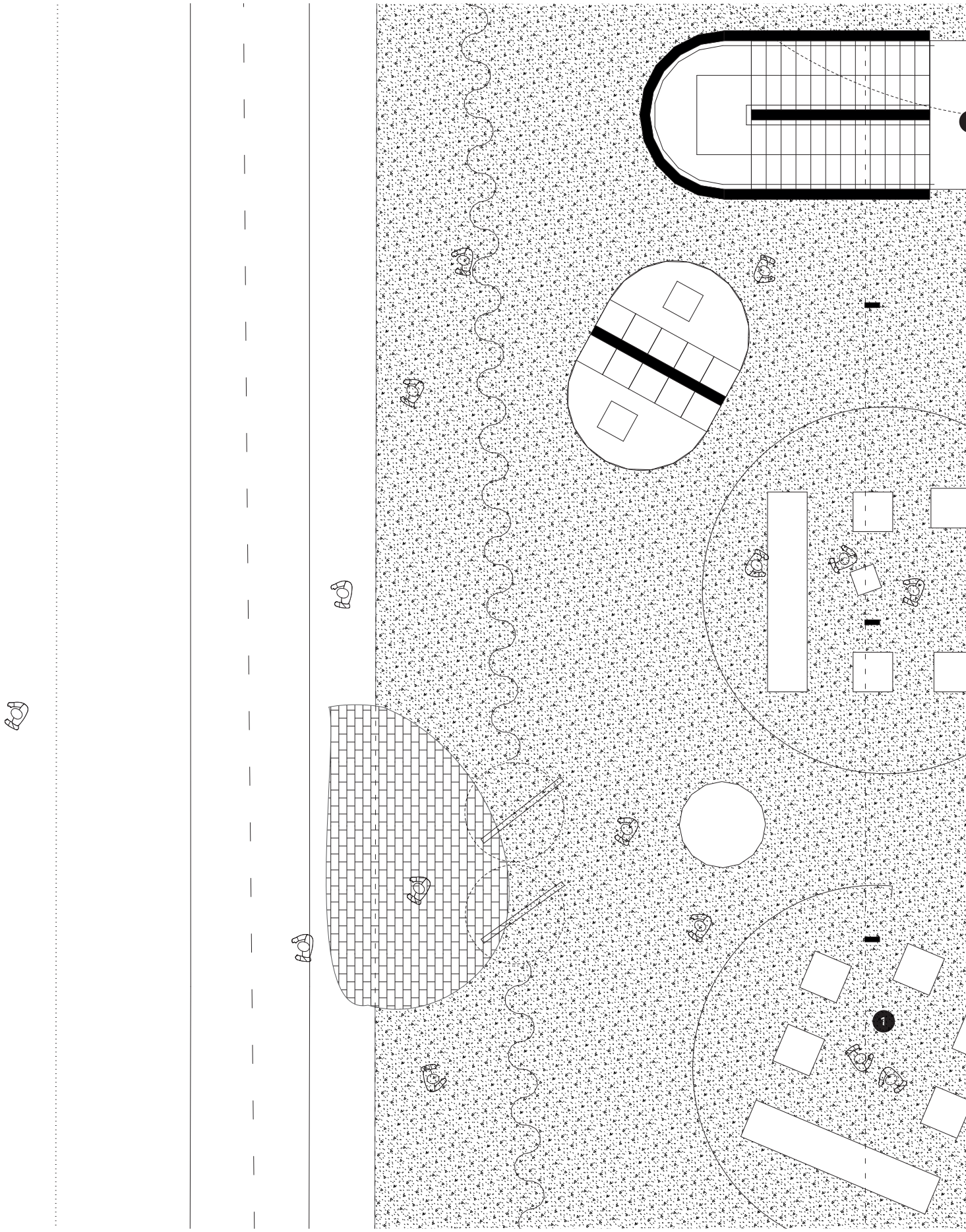
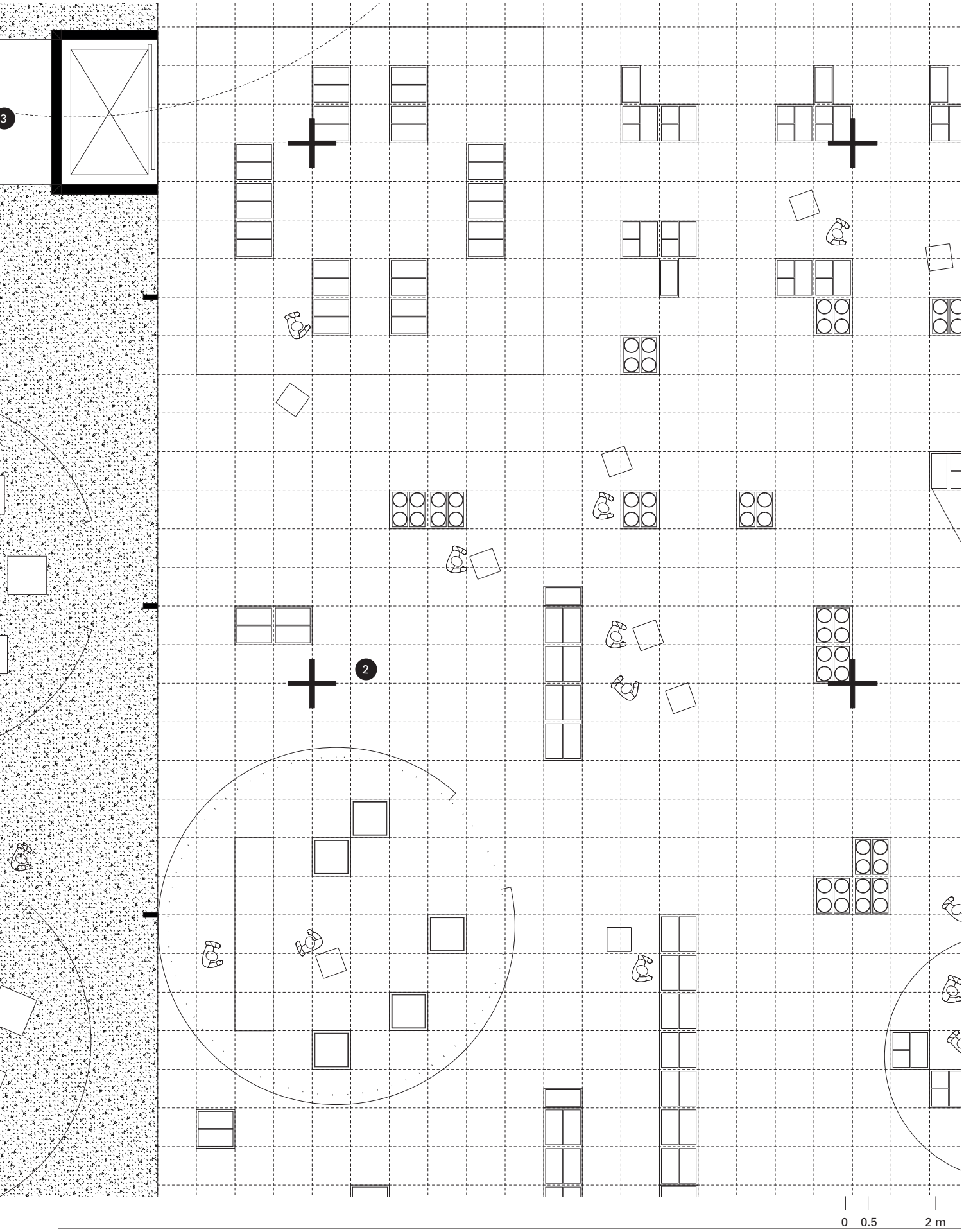
2 Sesonal products
3 Bonus



Independent areas are defined for peripheral store-in-stores, promoting collaborations with exclusive brands and local entrepreneurs.



1 Shop-in-shop
2 Sales floor
3 Vertical core
4 Loading dock

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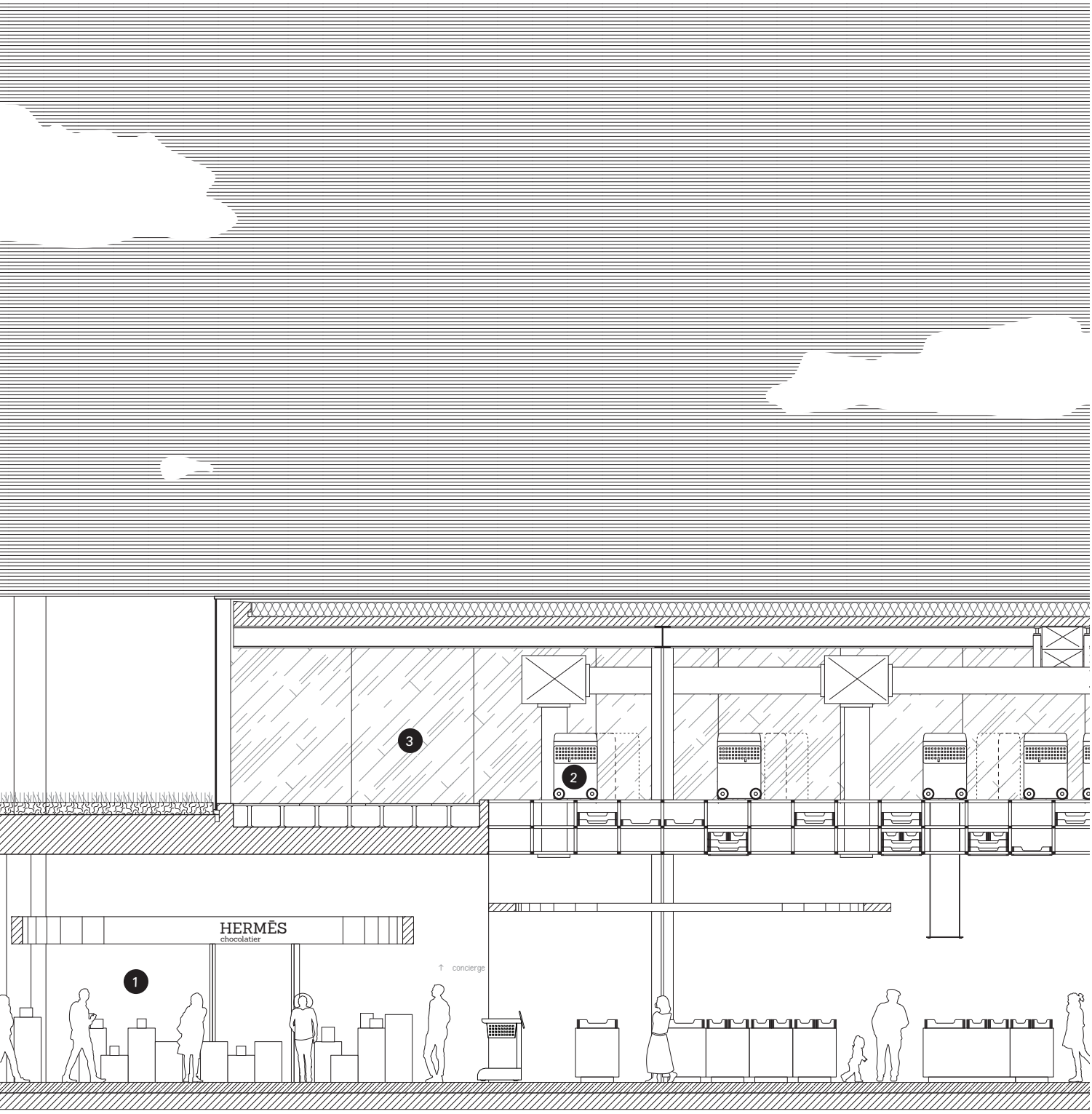
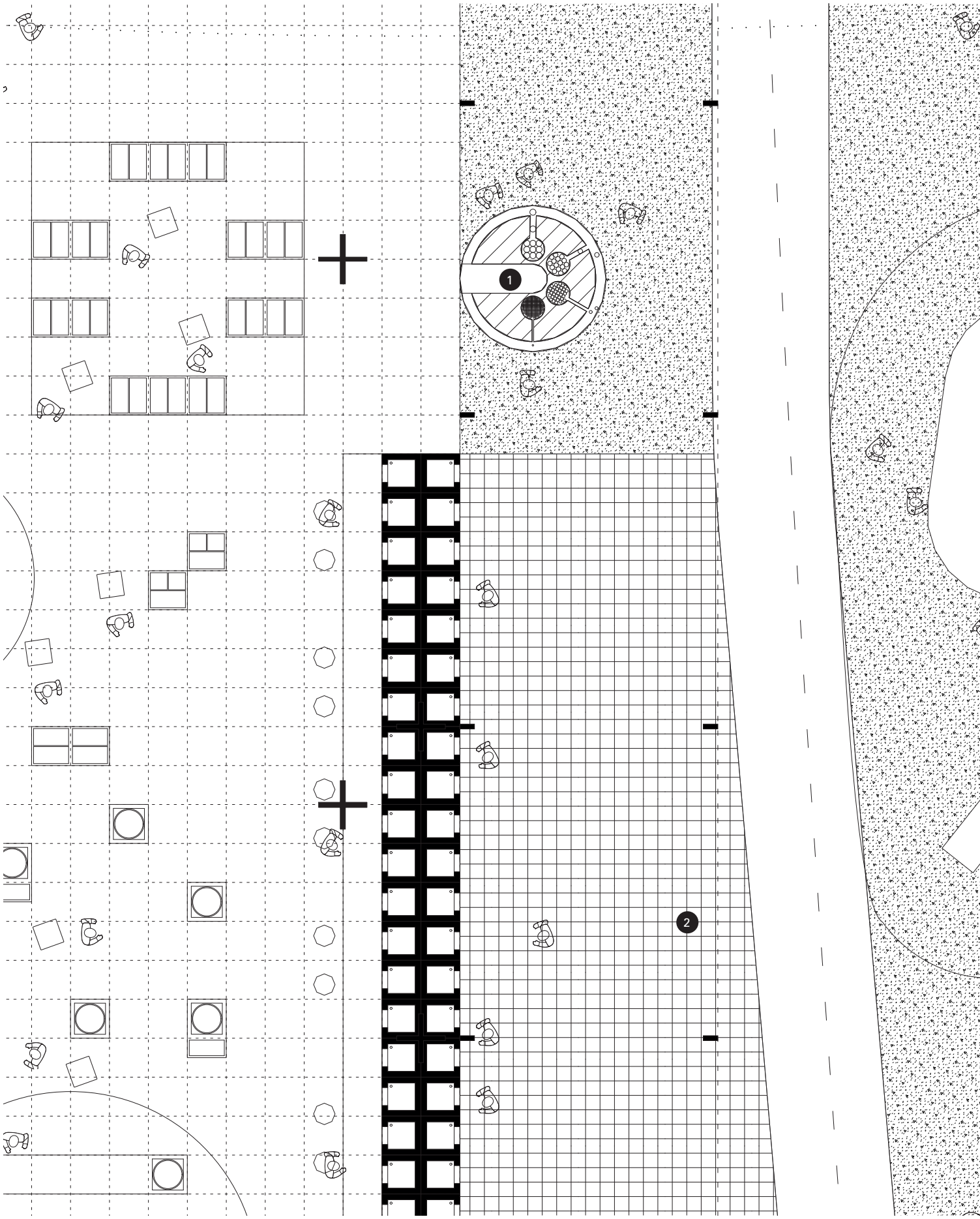
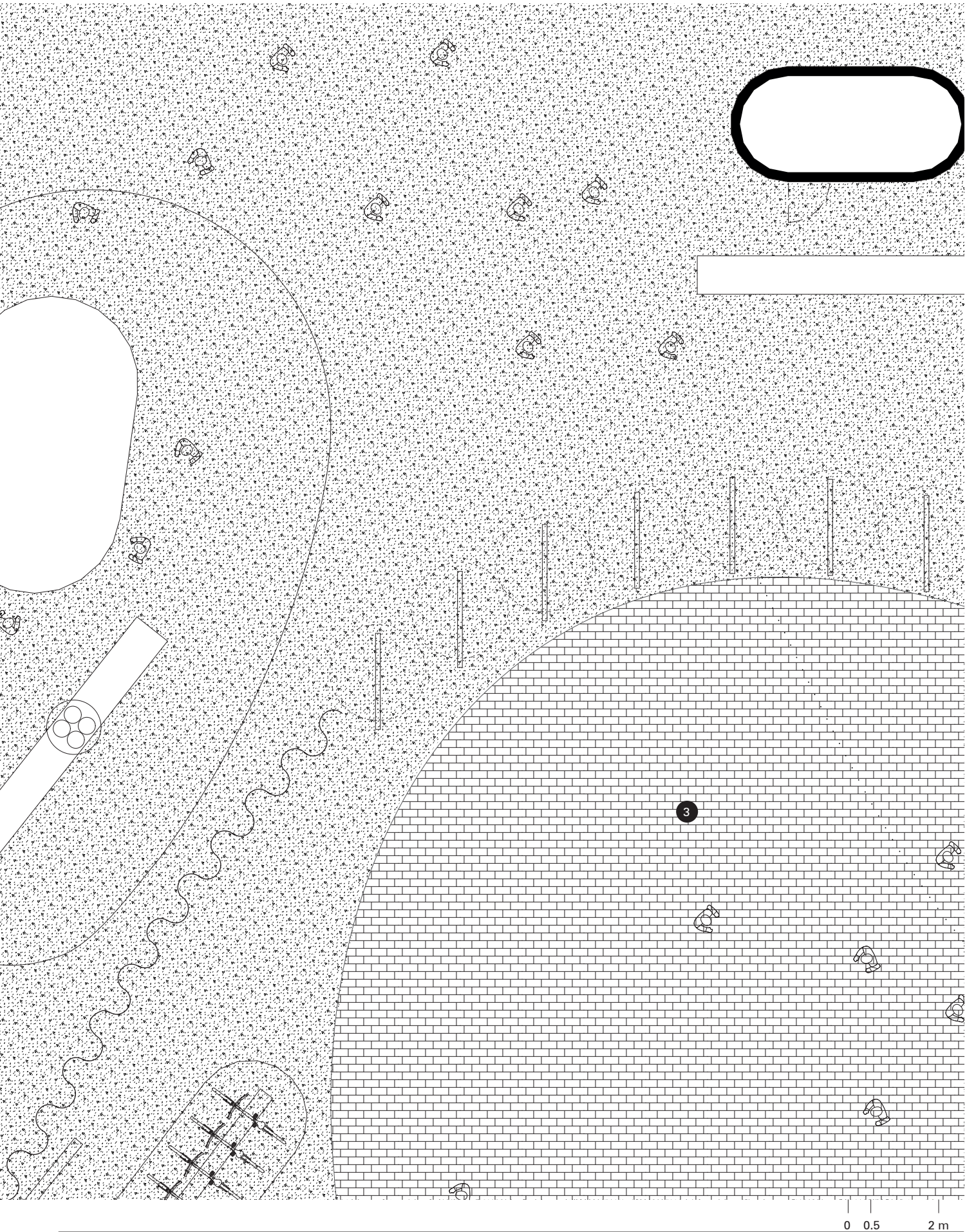


0 0.5 2 m

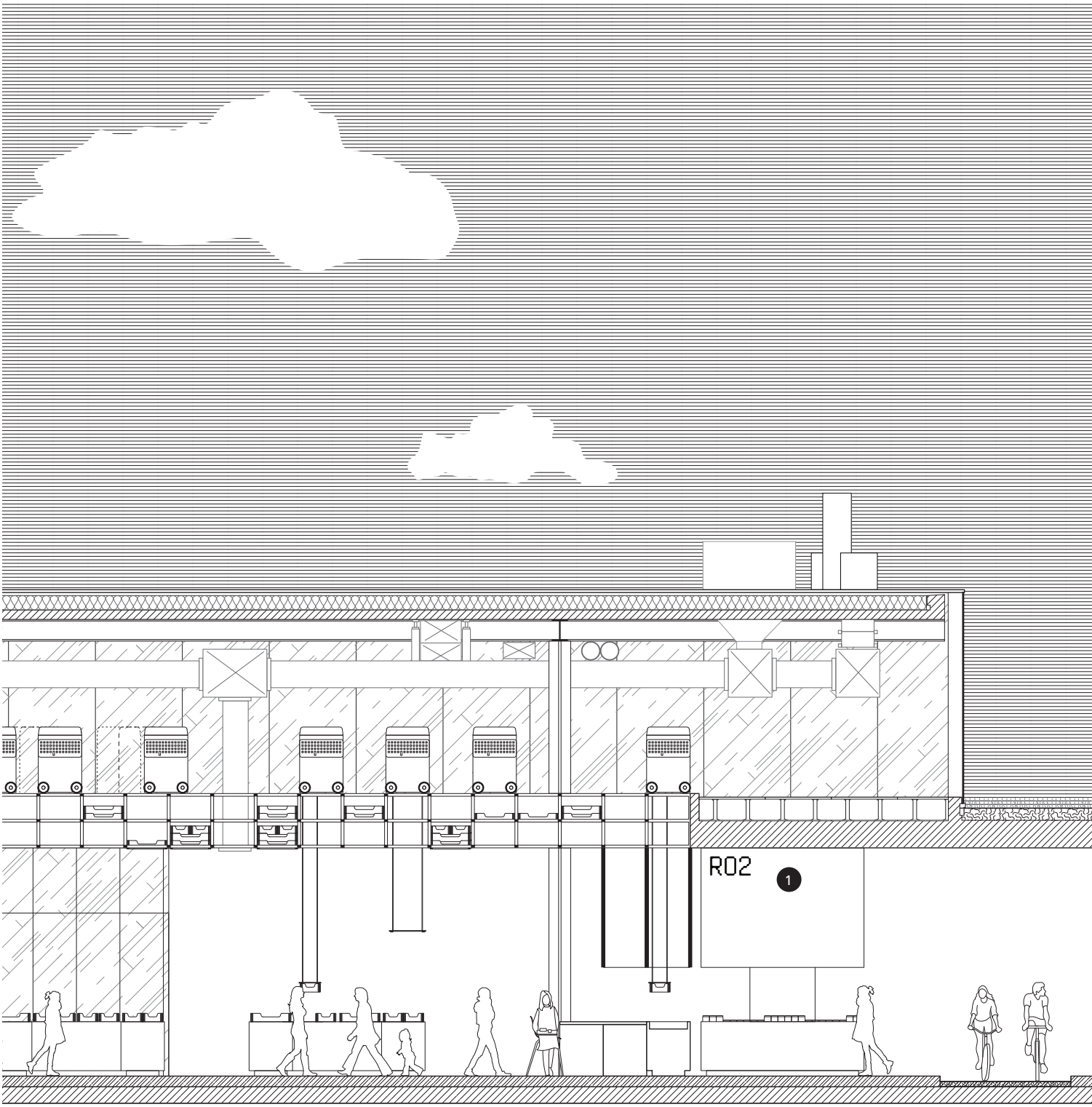
1 Shop-in-shop
2 Sales floor
3 Vertical core
4 Loading dock



Designated slow-paced zones with product demonstrations, workshops, and exclusive shops are developed around the periphery of the supermarket sales floor, in juxtaposition with fast-paced pick-up zones along the bike pathway to promote cyclists, delivery, and e-commerce.



1 Returning point
2 Automat
3 Entrance



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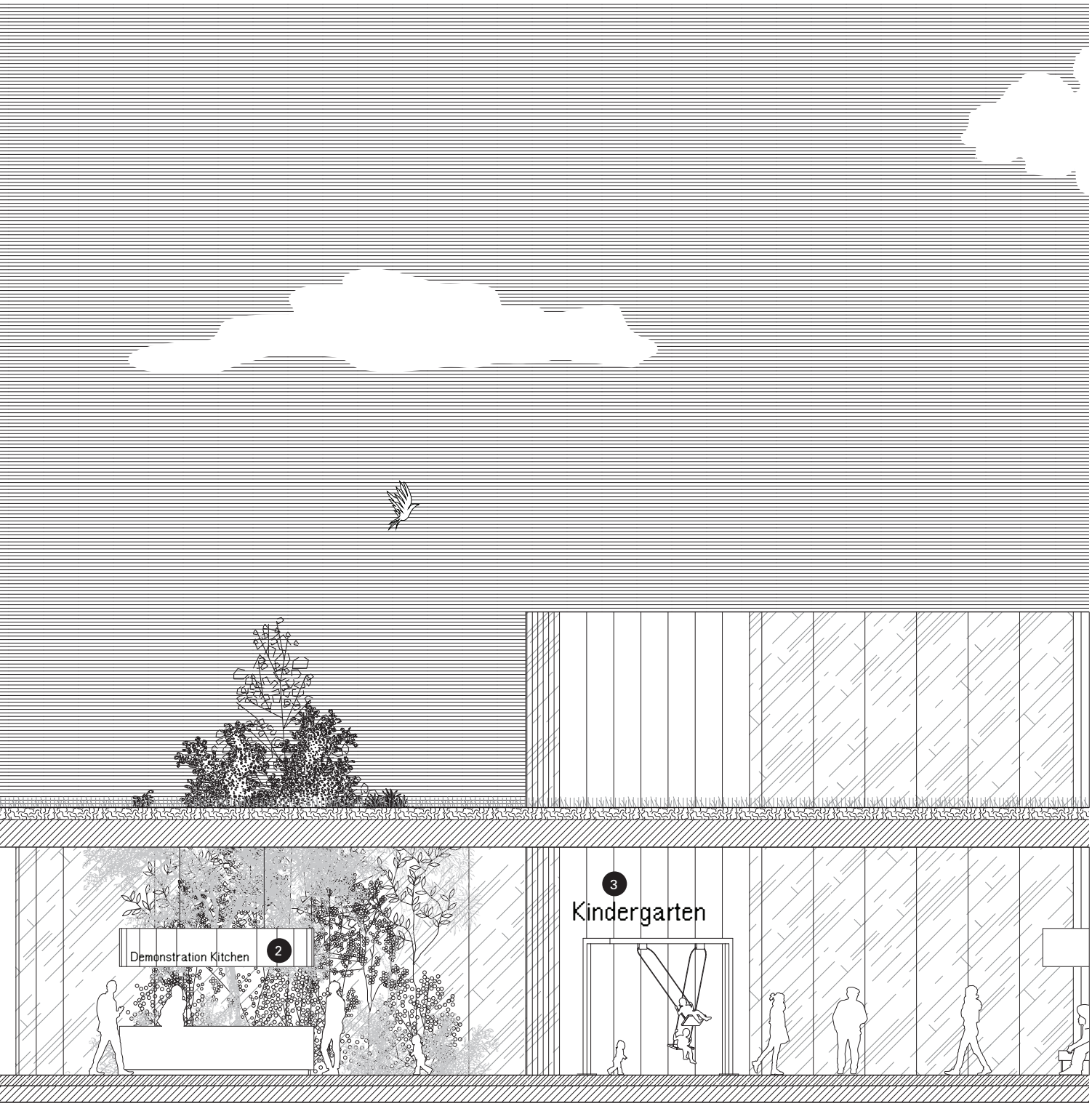
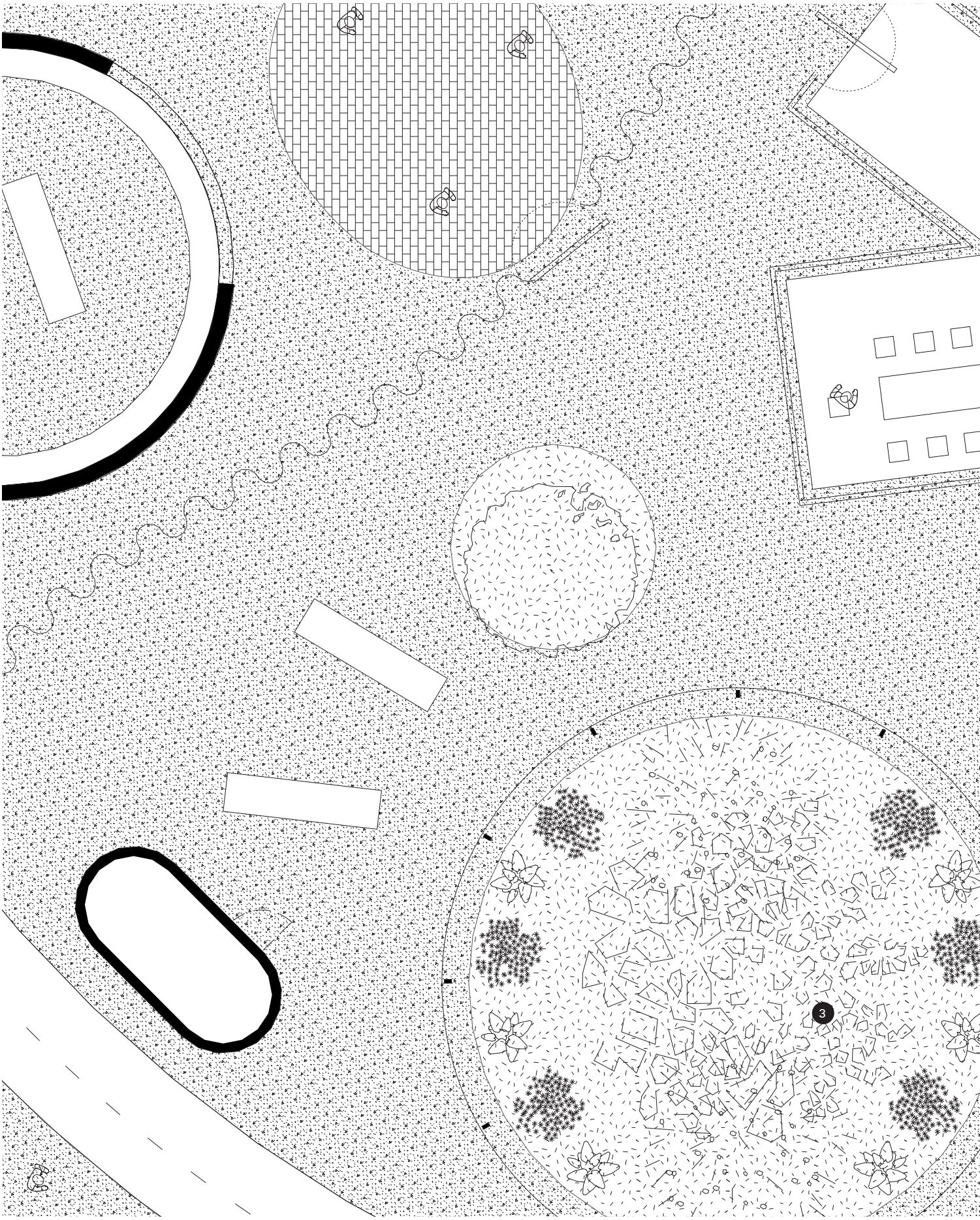
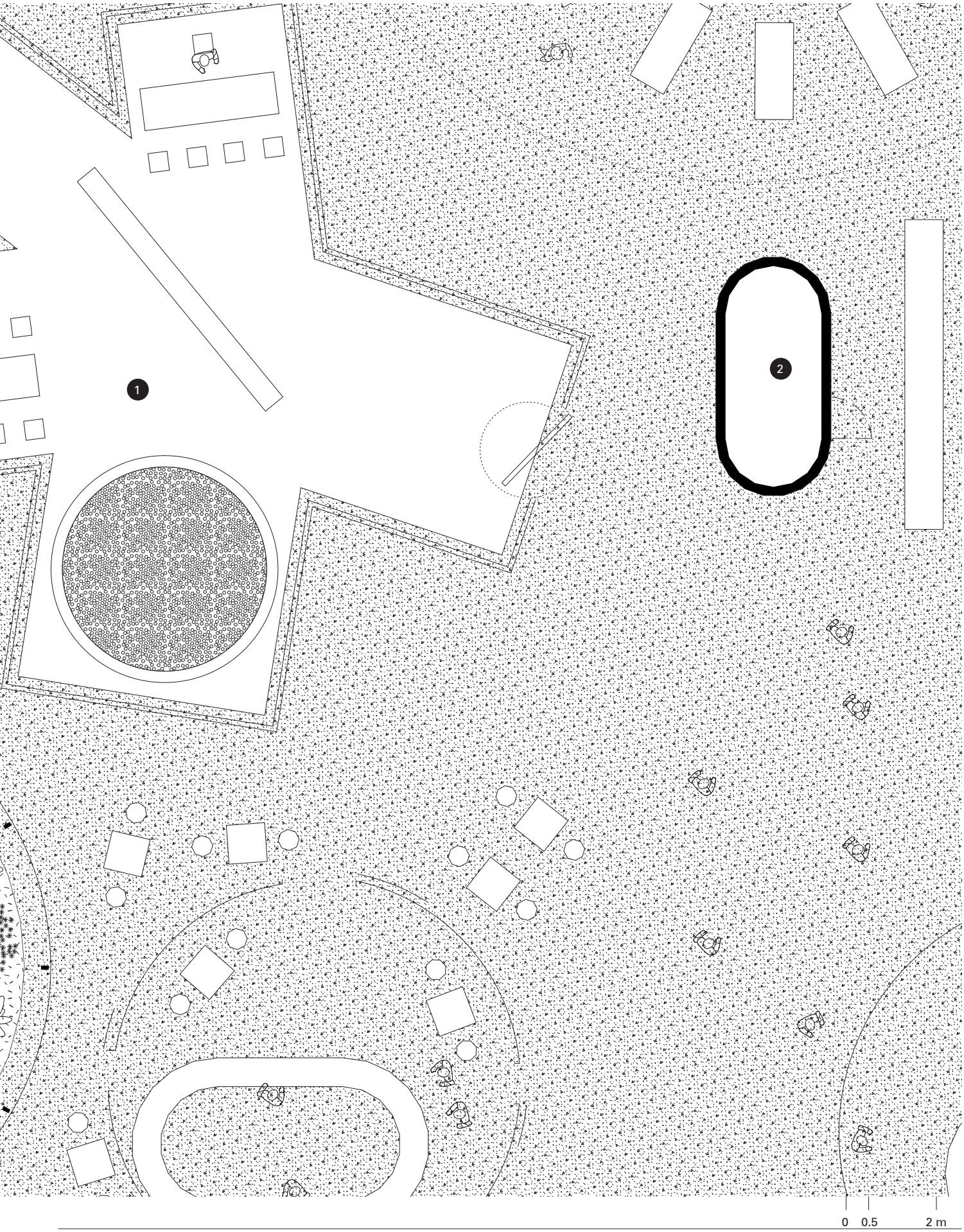


0 0.5 2 m

1 Returning point
2 Automat
3 Entrance



Public green zones are incorporated amidst the sales floor to entice the consumers to spend more time inside, while also providing a green roofscape for the neighborhood.



1 Kindergarten
2 Structural core, toiltes, HVAC
3 Public green areas

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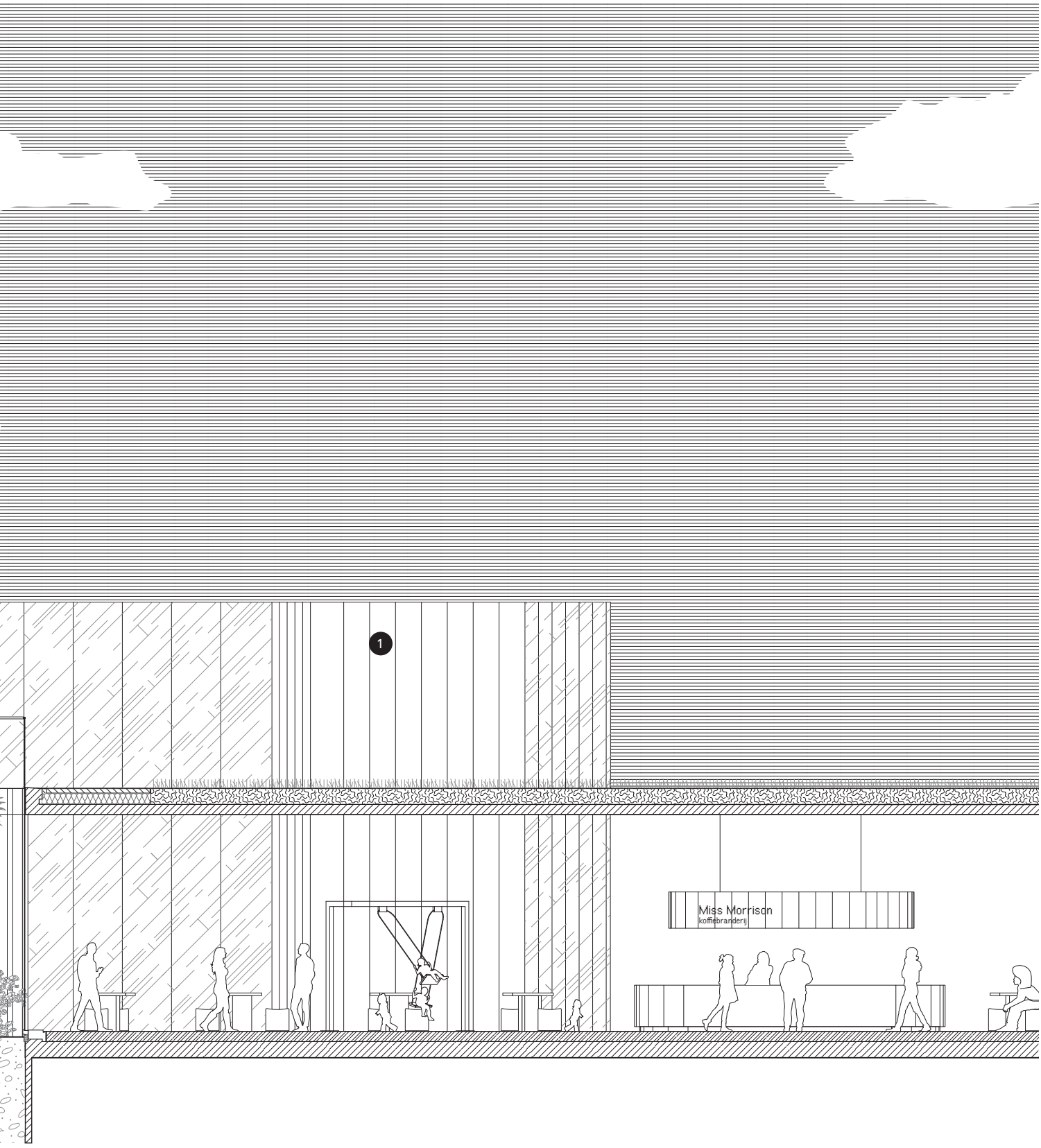
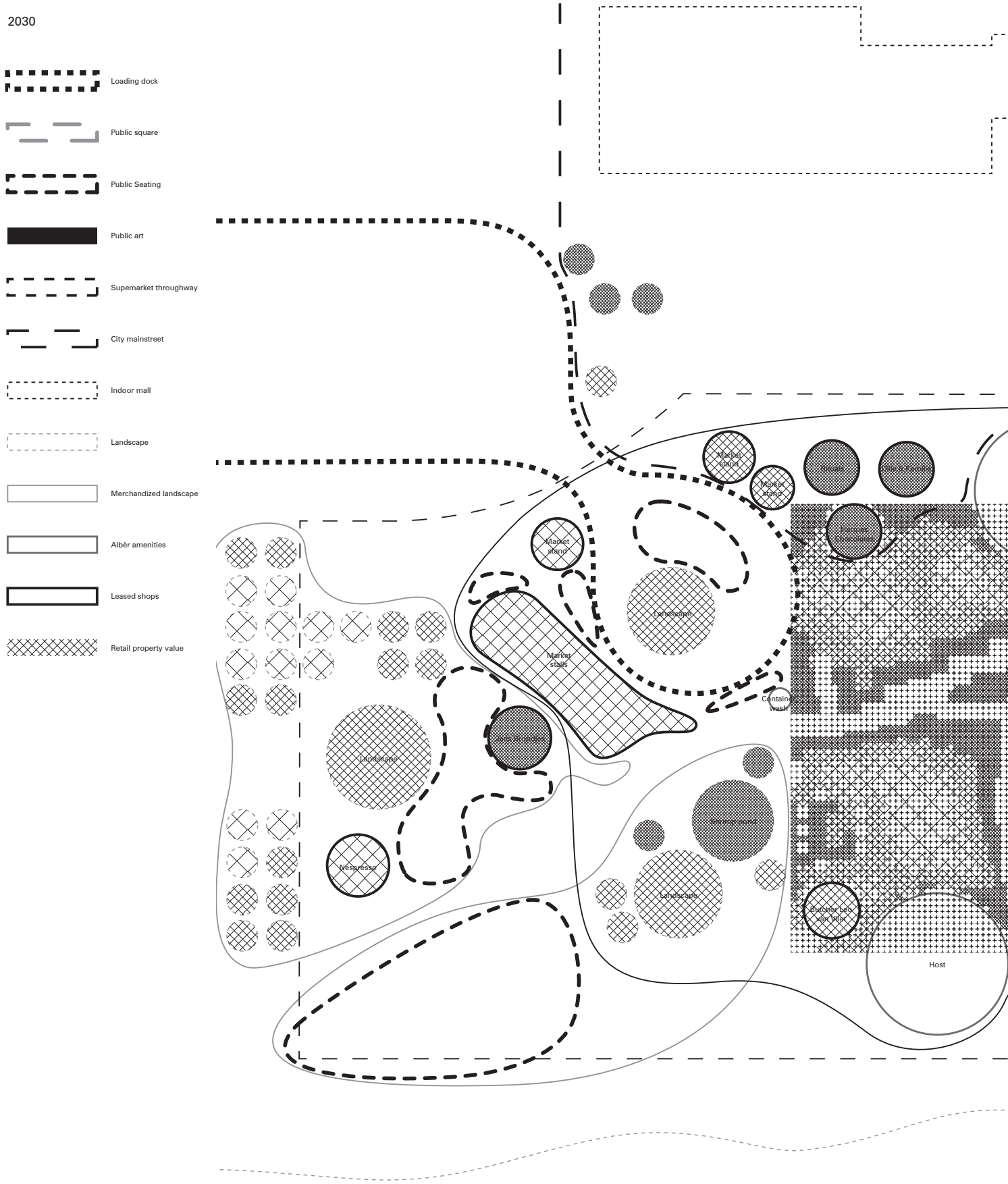
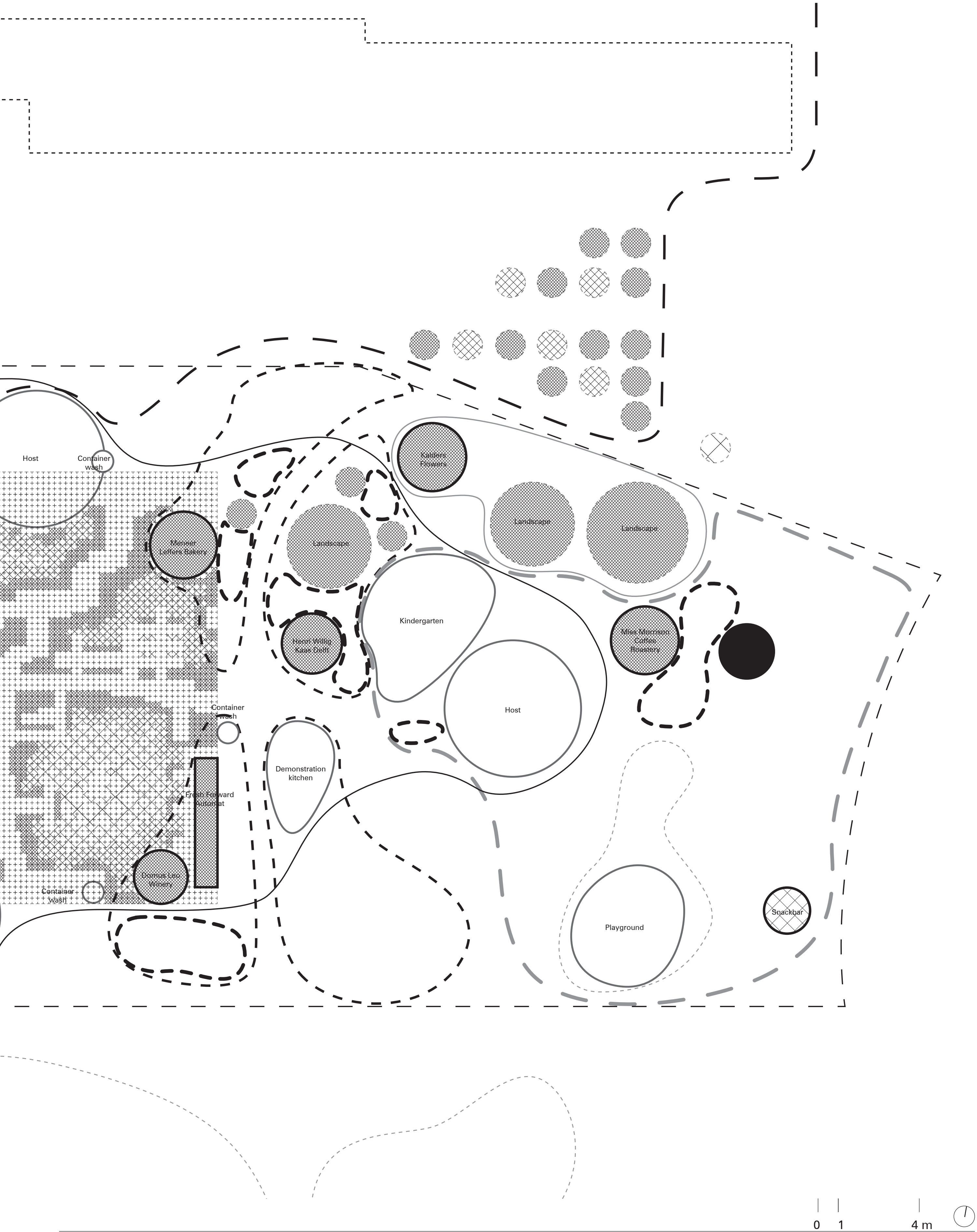


0 0.5 2 m

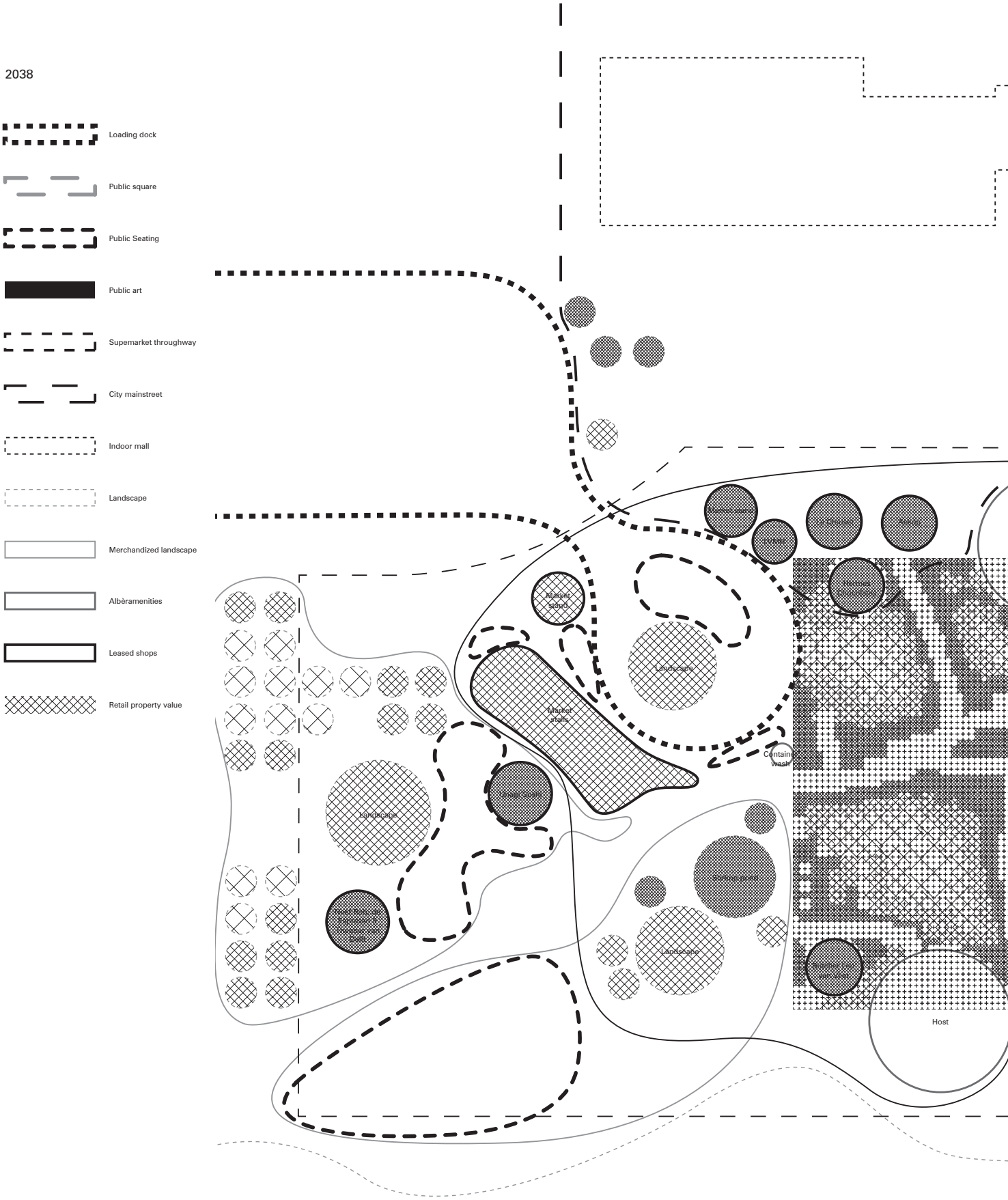
1 Kindergarten
2 Structural core, toiltes, HVAC
3 Public green areas



From bulks to fresh produce crates, standardized shelving systems within the open plan generate new episodic formats of planograms. No longer vertical and detached from each other, the new planograms dictate the dynamic floor plan.



Host
Container wash
Meneer Leffers Bakery
Landscape
Katders Flowers
Landscape
Landscape
Kindergarten
Henri Willig Kaas Delft
Miss Morrison Coffee Roastery
Host
Container wash
Demonstration kitchen
Fresh Forward Automat
Domus Leo Winery
Container wash
Playground
Snackbar
0
1
4 m



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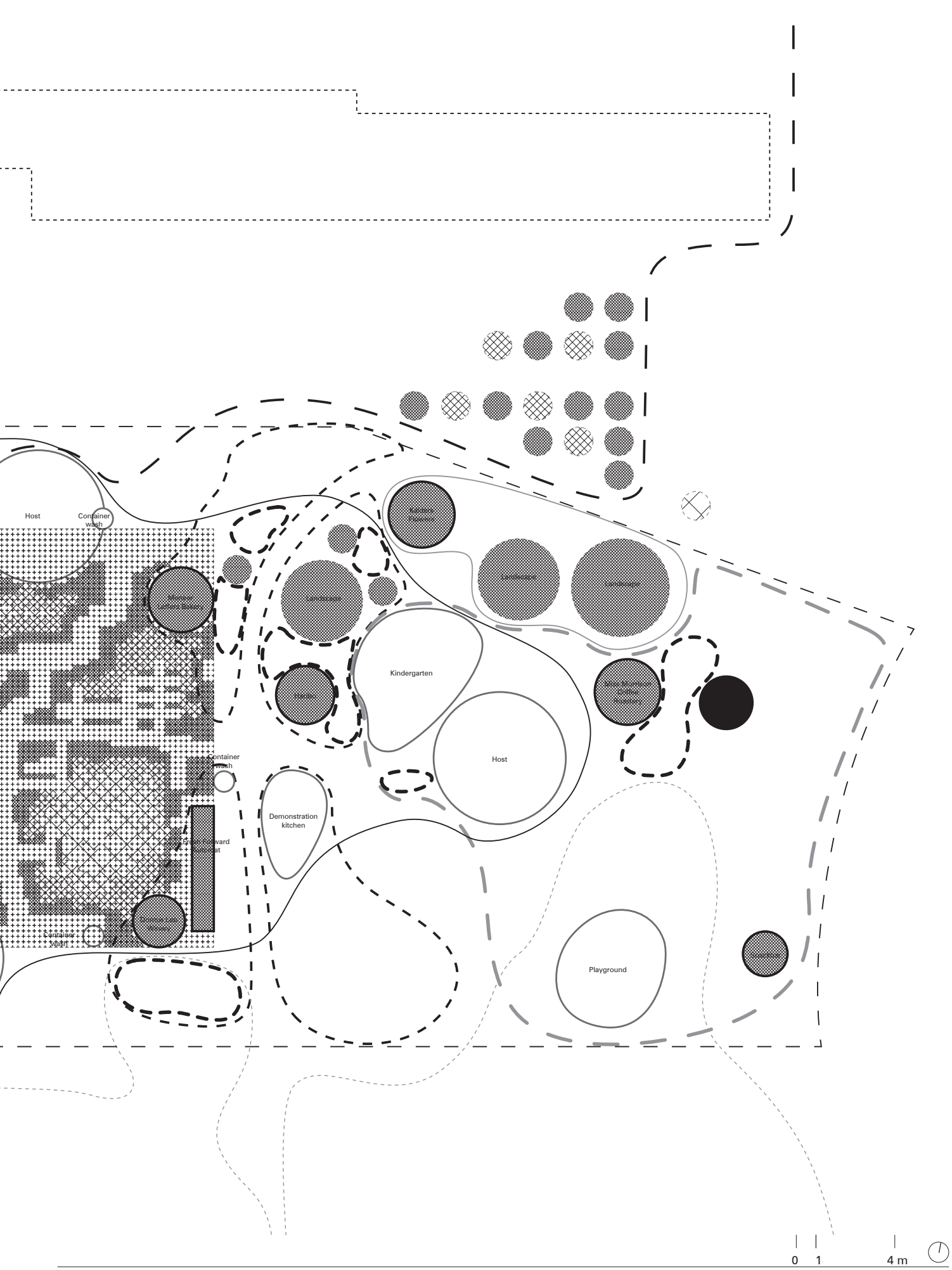
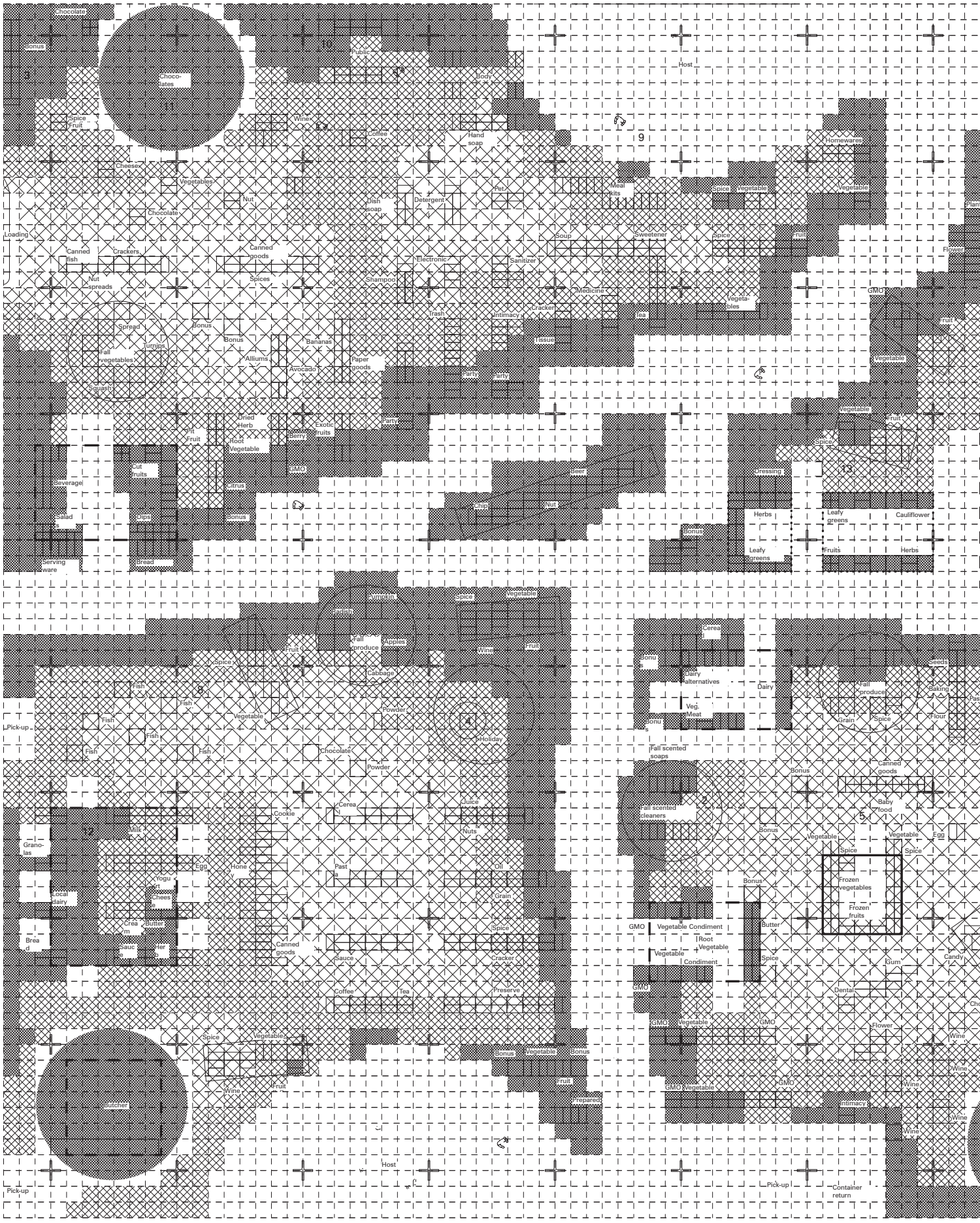
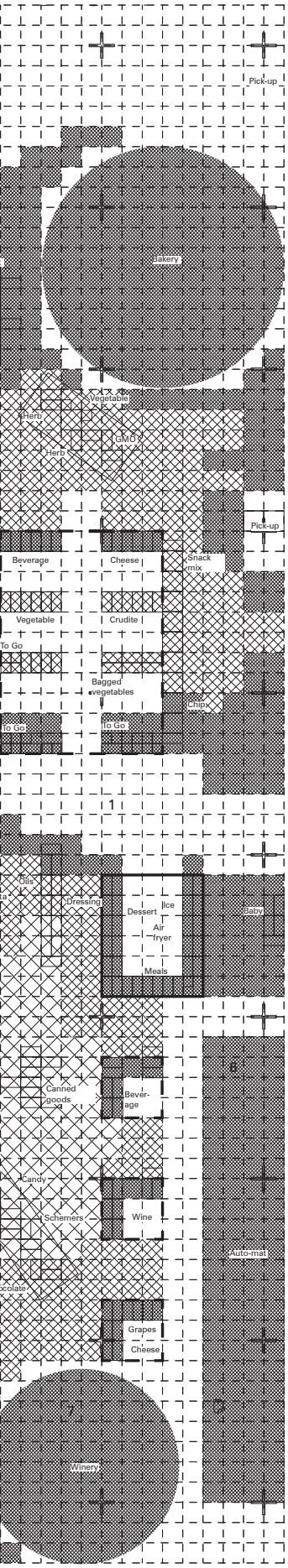

Host
Container wash
Kindergarten
Host
Demonstration kitchen
Container wash
Container wash
Playground
0
1
4 m



The supermarket sales floor as a real estate platform reveals business strategies in order to generate profit. Albèrt's business approach offers a wide range of products through a binary financial model that incorporates all Albèrt products within the efficient automated grid system, while real estate strategies—such as store-within-a-store—for branded products remain exclusively and independently staged.



Retail property value

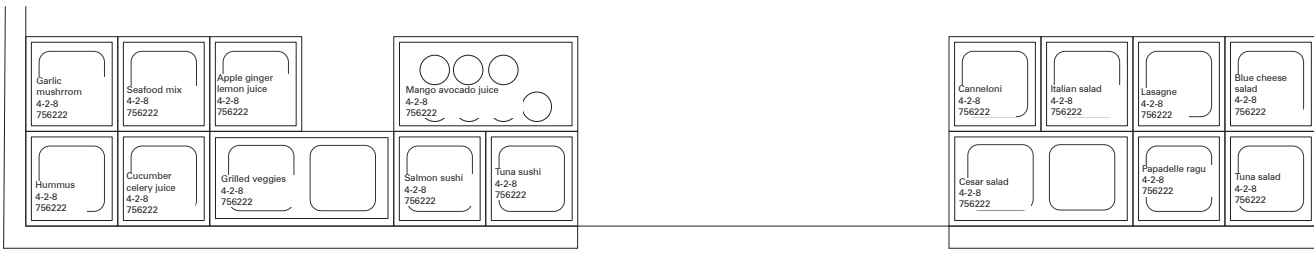
Walk-in refrigeration

Misted refrigeration

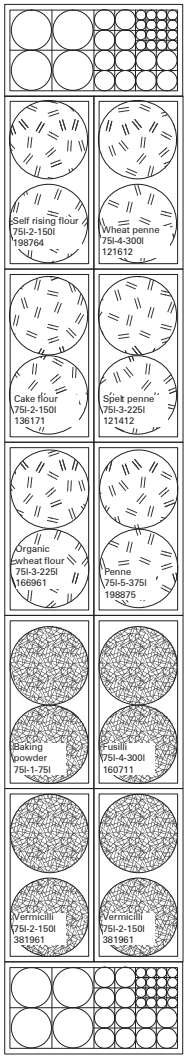
Freezer

PRODUCT NAME (XXXX)
UNITS IN CONTAINER - CONTAINERS IN STORE - UNITS IN STORE (#-#-#)
PRODUCT CODE (######)

0 1 4 m



Path

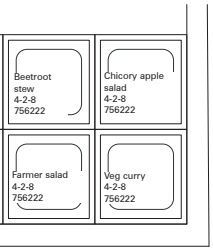


1

Holiday

Path

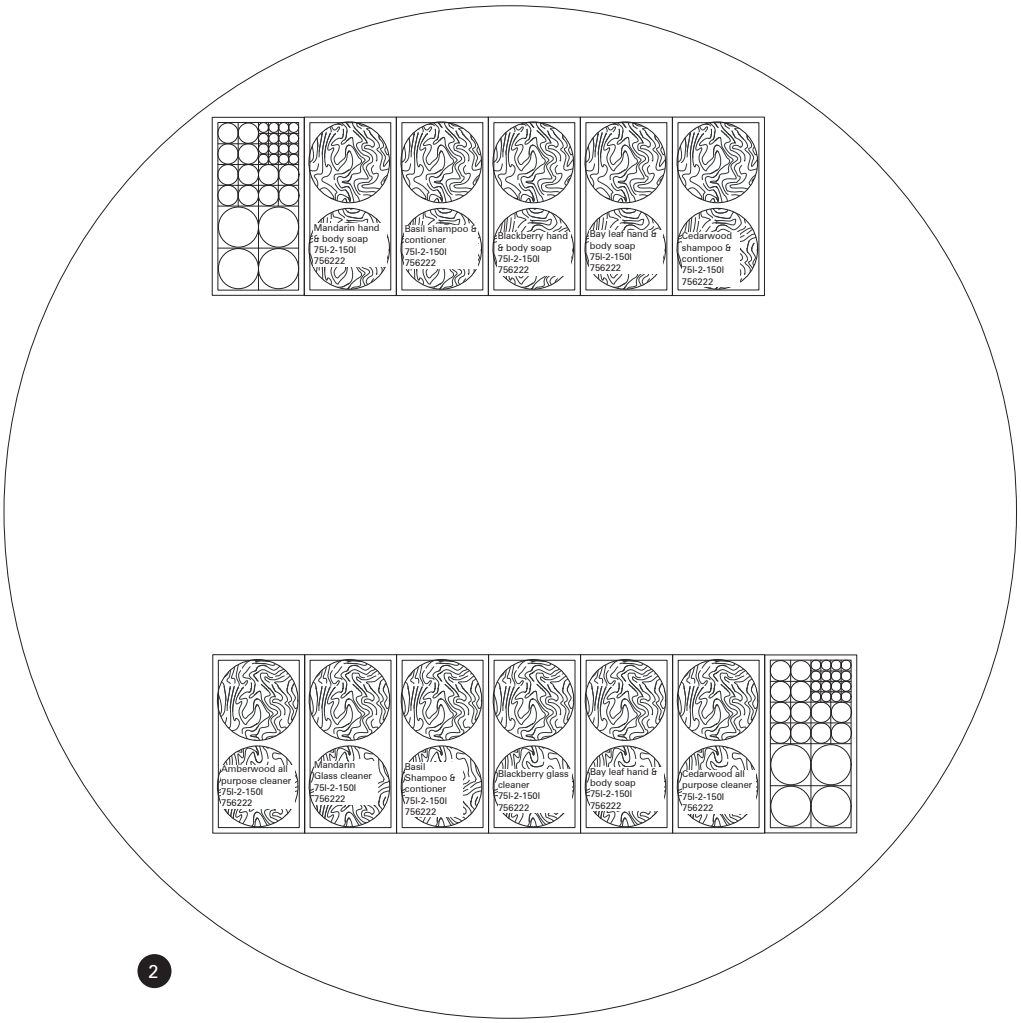
From bulks to fresh produce crates, standardized shelving systems within the open plan generate new episodic formats of planograms. No longer vertical and detached from each other, the new planograms dictate the dynamic floor plan.



Pick-up

Seating

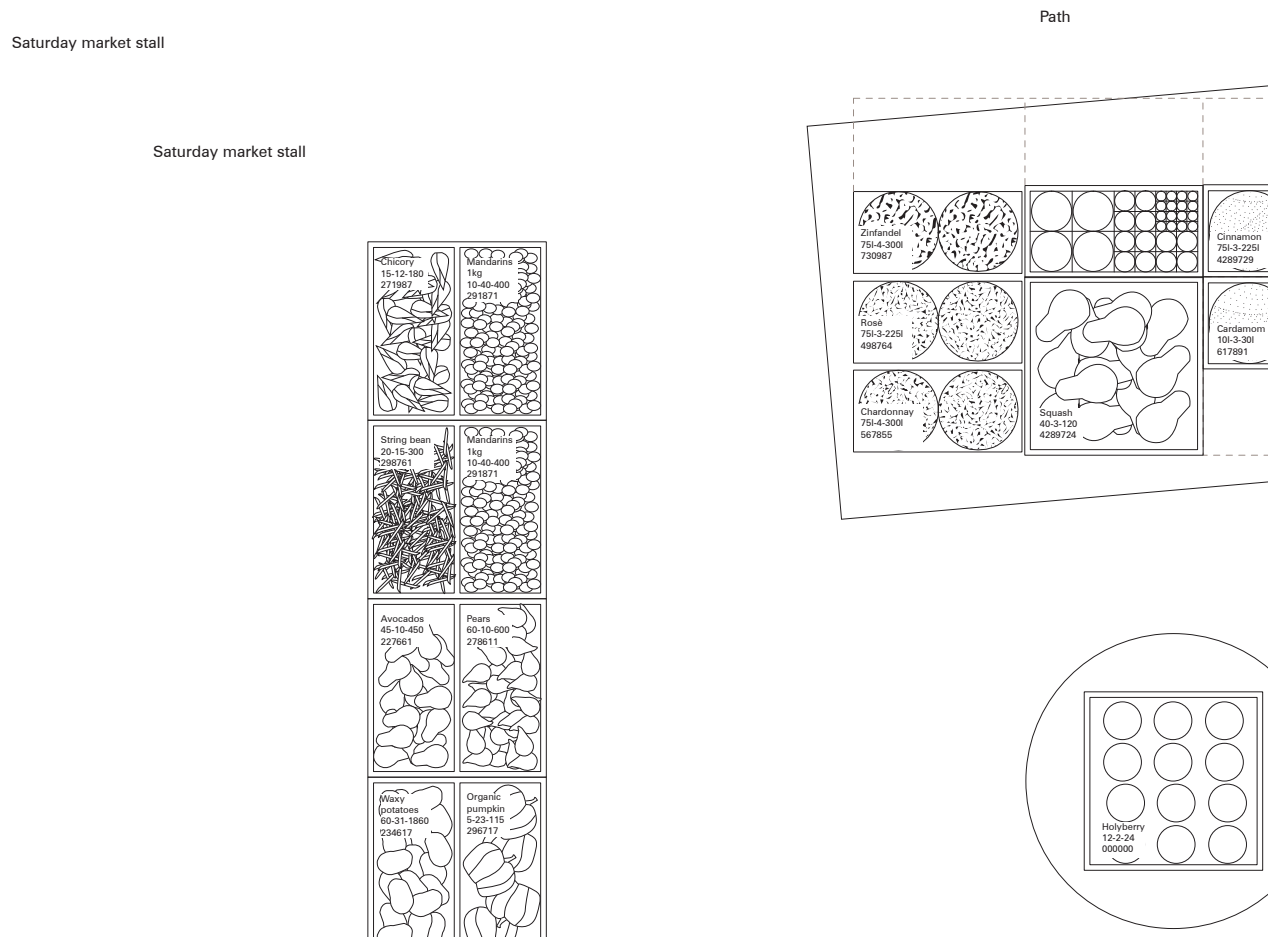
Bike path



2

0 200 1000 mm

1 Bike path convenience
2 Fall scented cleaners



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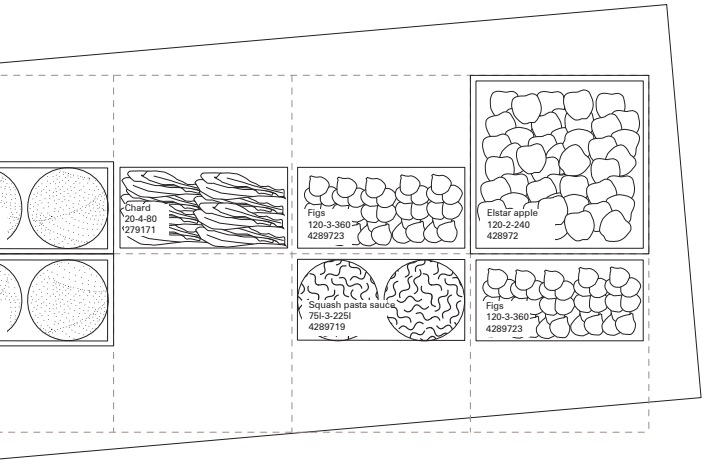
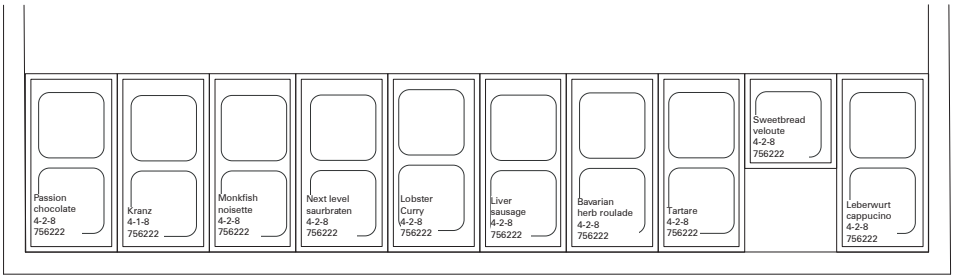
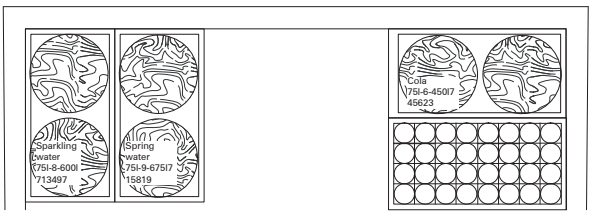


Path



Fresh forward automat

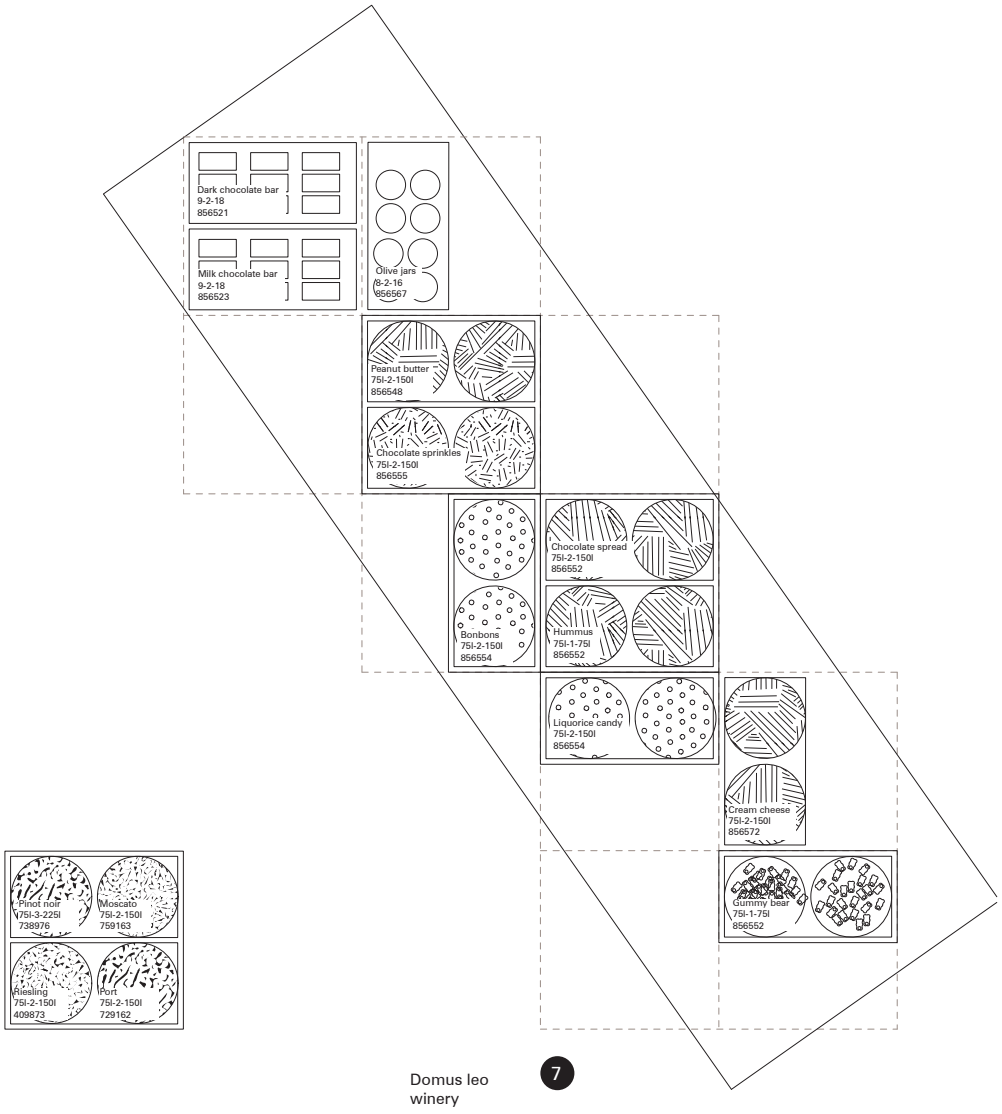


Seating

6

0 200 1000 mm

3 Saturday market aisles
4 Holyberry merchandising
5 Baby products and pantry
6 Automat merchandising



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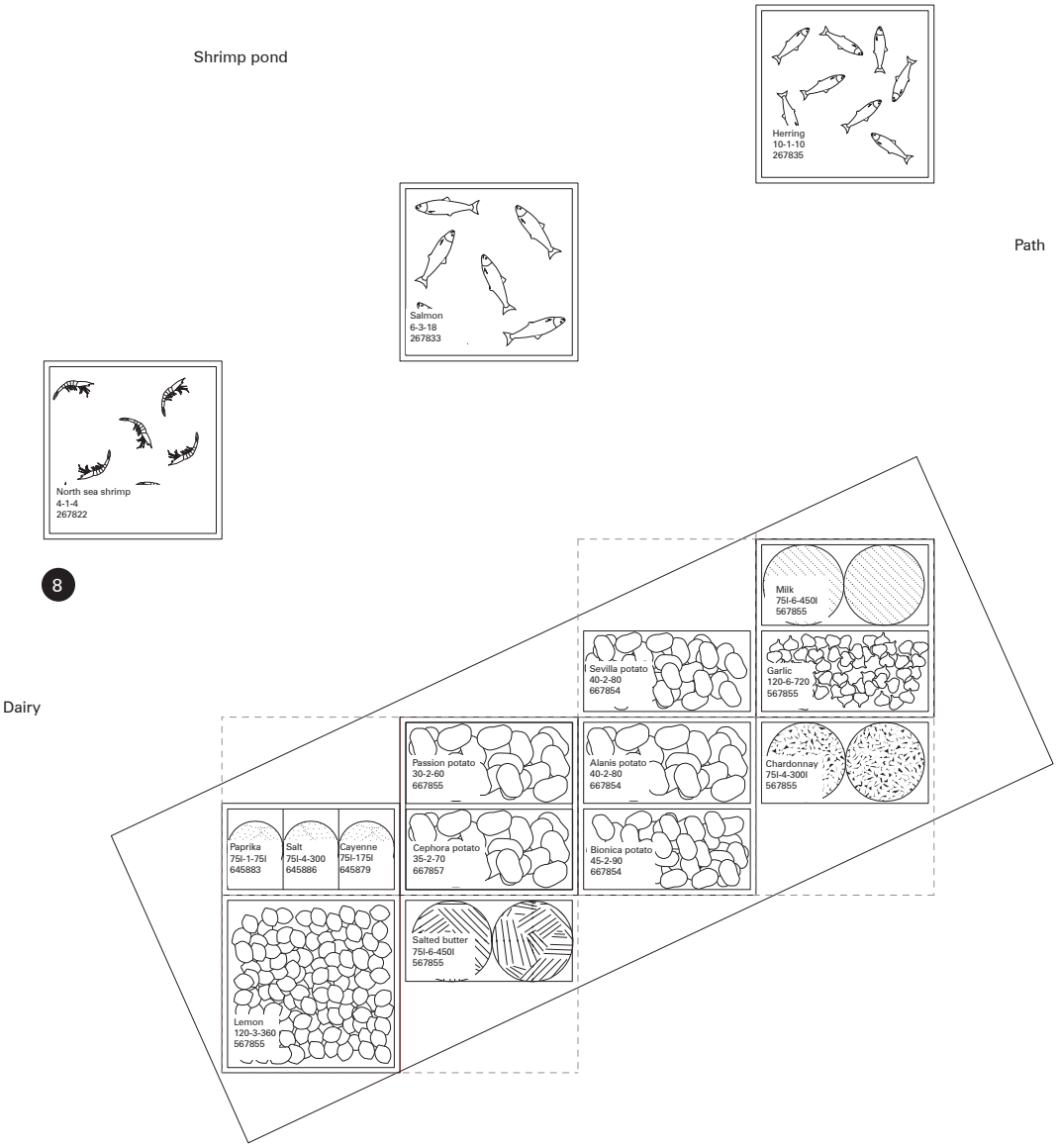
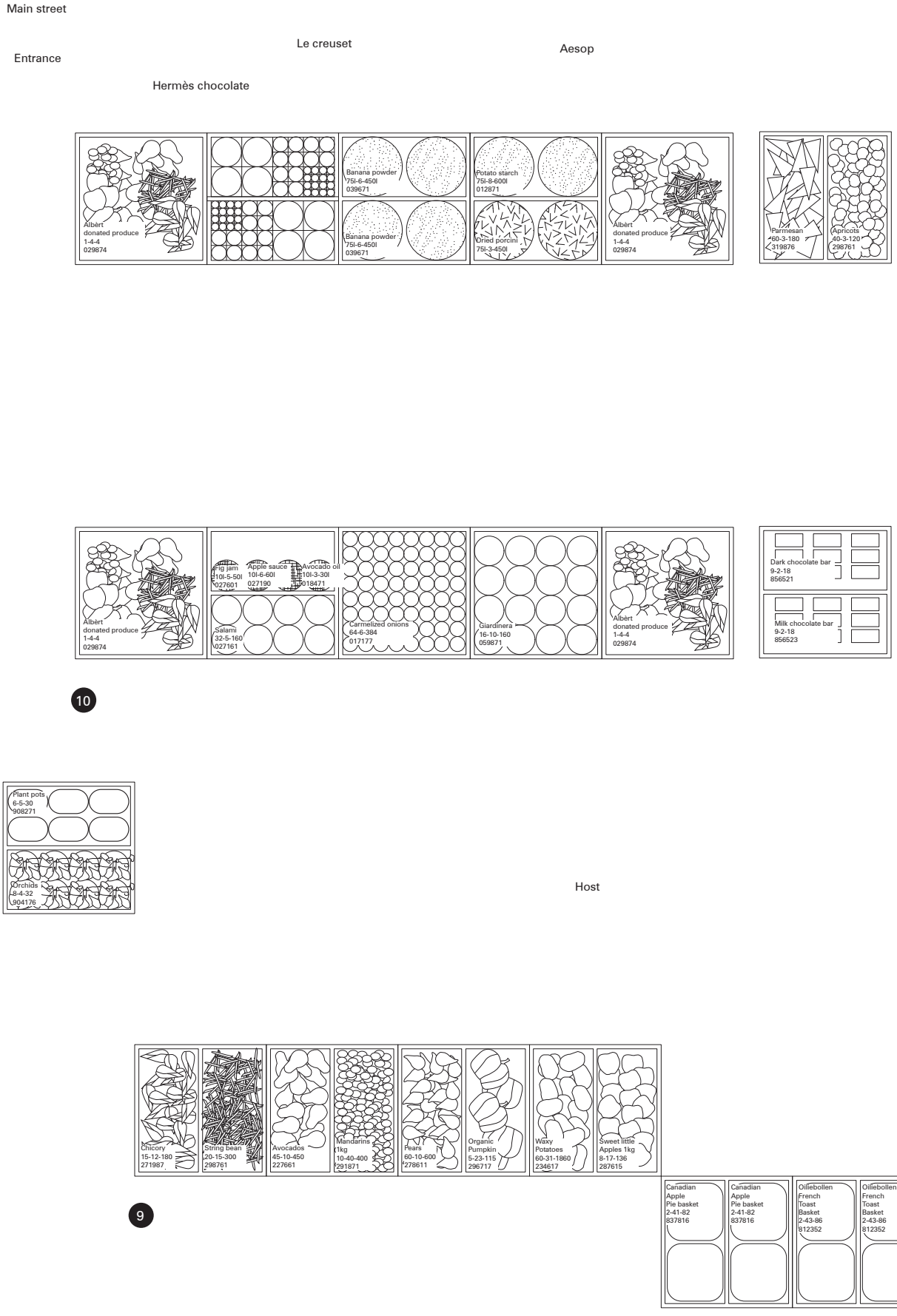


0 200 1000 mm

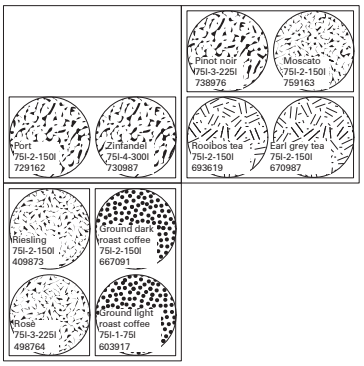
7 Wine merchandising
8 Fishmonger merchandising

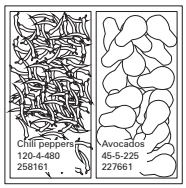


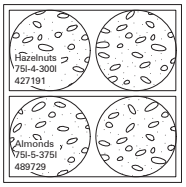
From bulks to fresh produce crates, standardized shelving systems within the open plan generate new episodic formats of planograms. No longer vertical and detached from each other, the new planograms dictate the dynamic floor plan.

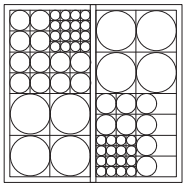
Main street

Hermès chocolate

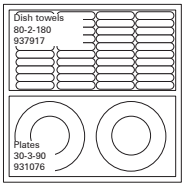


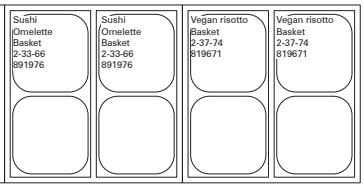






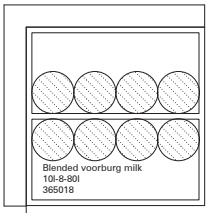
11

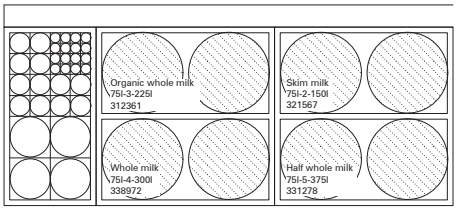




0 200 1000 mm

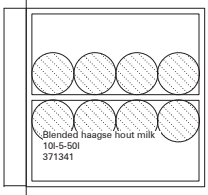
9 Albèrt lifestyling
10 Public products
11 Chocolate merchandising

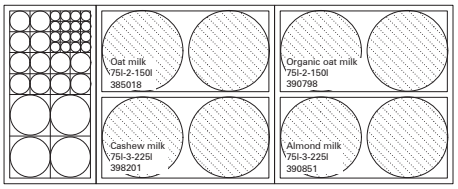




Shrimp pond

Landscape





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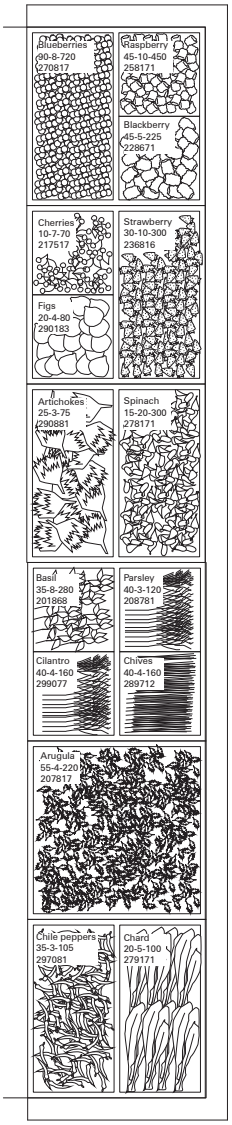
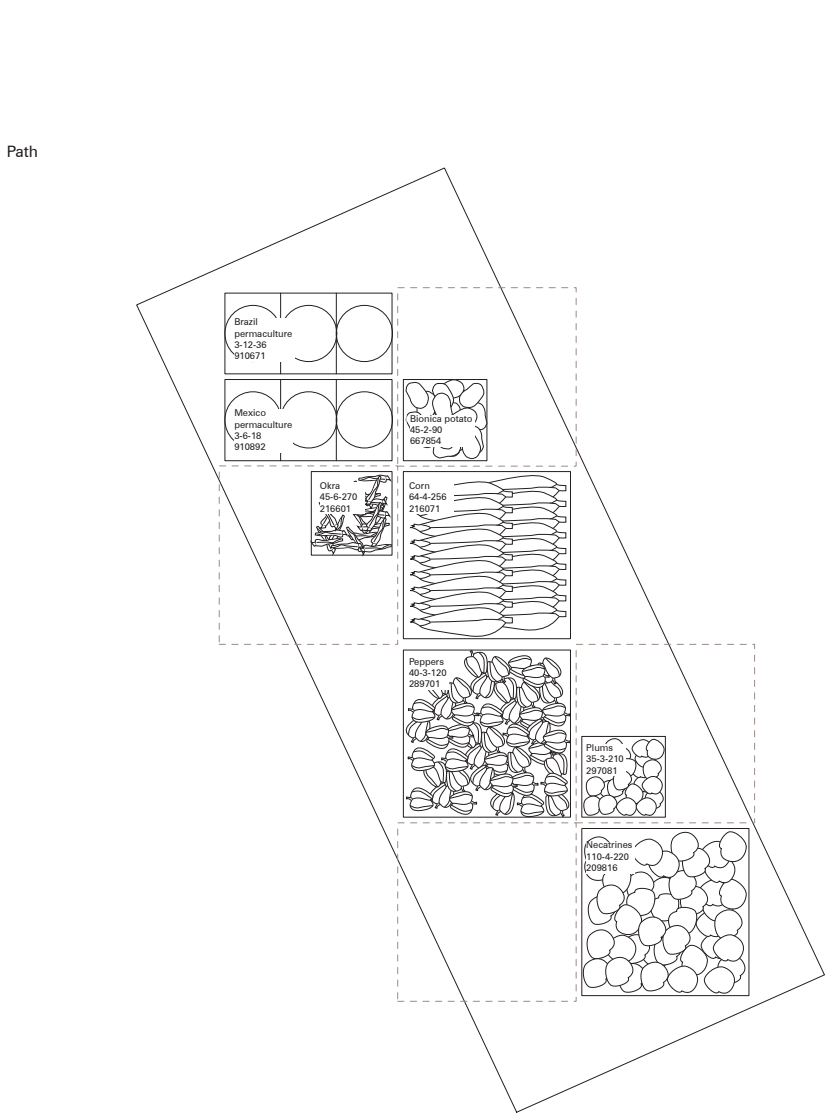


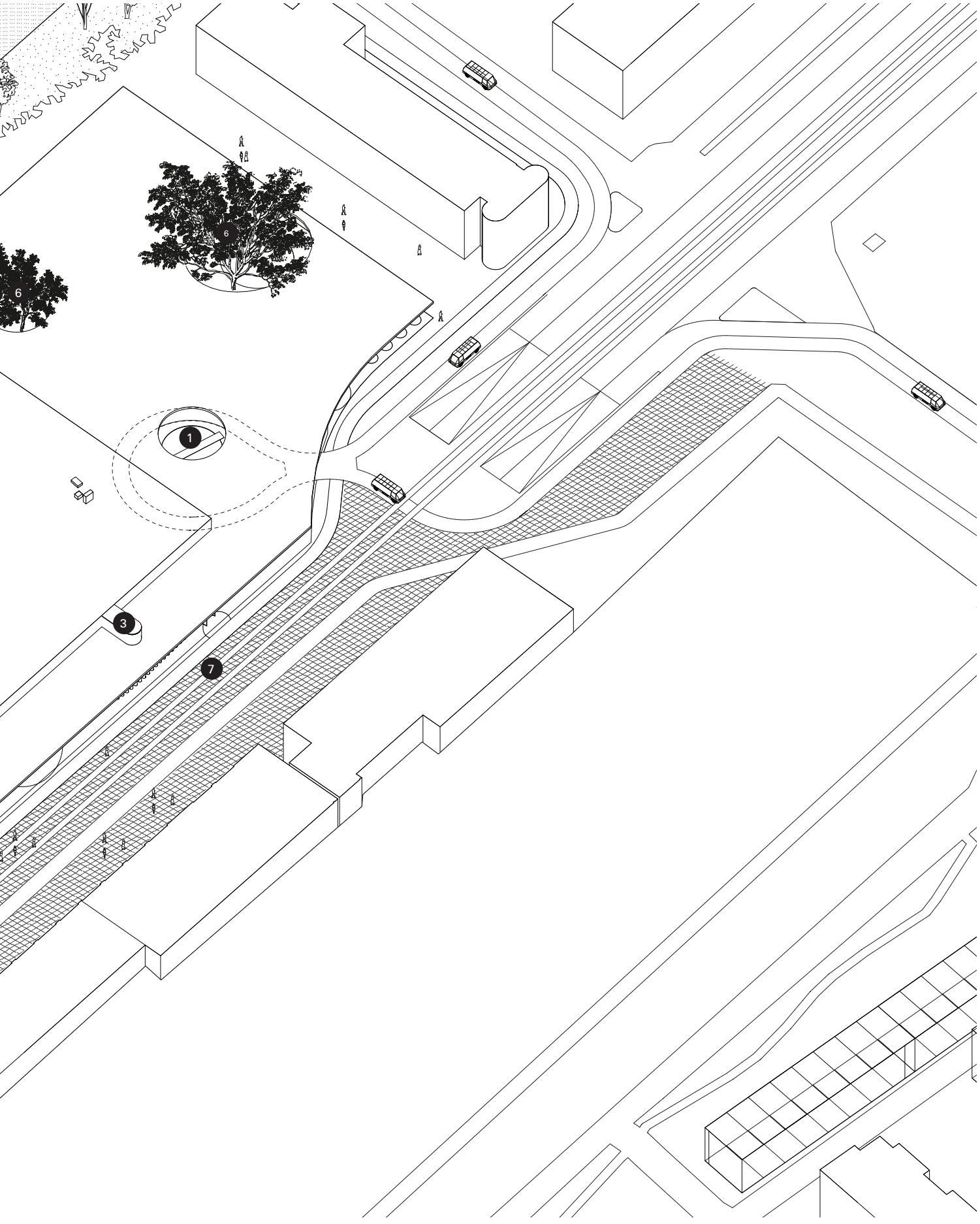
13

From bulks to fresh produce crates, standardized shelving systems within the open plan generate new episodic formats of planograms. No longer vertical and detached from each other, the new planograms dictate the dynamic floor plan.



12 Dairy walk-in
13 Fresh produce display

Amidst a transportation node and a public square, featuring a green roofscape, Albèrt extends its perimeter towards the city and its residents, establishing a new civic presence.



1 Loading
2 Automated ceiling
3 Vertical core
4 Kindergarten
5 Sculpture of Albèrt's mascot
6 Garden
7 Tram

Stills from the walk-through video on the reimagined supermarket of the future, Albèrt.


Albèrt

Stills from the walk-through video on the reimagined supermarket of the future, Albèrt.


Demonstration Kitchen

Stills from the walk-through video on the reimagined supermarket of the future, Albèrt.


Koffiebrander
R03
P01

Stills from the walk-through video on the reimagined supermarket of the future, Albèrt.

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1 From The Hague to Genoa, the supply chain of the future supermarket will span across the Blue Banana trade corridor, addressing multifaceted aspects of the food industry in the Netherlands and beyond, through the notions of scarcity, trade, inclusivity, sensorialism, tastemaking, craft, reshoring, protectionism, automation, and extinction.

2 The reimagined supermarket—Albèrt—displays both the product and its supply chain for the conscious consumers by integrating the distribution center with an automated Ocado grid system above the supermarket, rendering a completely open sales floor.

3 In an attempt to reduce waste and address sustainability goals, Albèrt operates within a just-in-time production system of non-disposable packaging and dynamic pricing, maintaining small batches of products in the integrated Distribution Center.

4 No longer an enclosed and controlled retail space, the supermarket uses various strategies—such as store-in-a-store rentals for exclusive brands and specialty displays for seasonal products—to create a flexible sales floor in order to maximize profit, operating as a real estate platform.

5 Novel tasting experiences and green public spaces—along with the dynamic robotic movement that diverts human labor towards hospitality and social interaction—blur the boundaries between the supermarket and the city, introducing a new civic presence.

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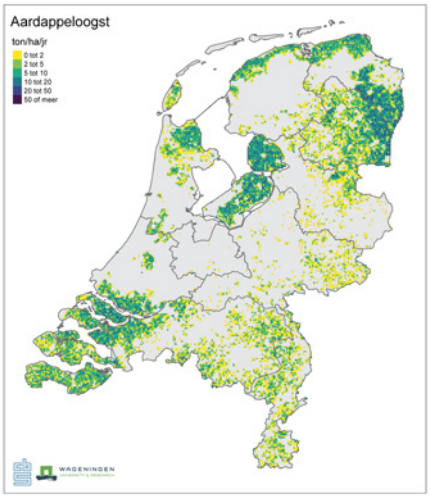
1 Site photo taken from northeast. Google Earth image.
2 Site photo taken from southeast. The town of Hank can be spotted on left. Google Earth image.
3 Photo of existing structure (a farm house with storage sheds behind) on site. Google Earth image.

Serving as a price regulating vessel, this contribution reintroduce the role of a wholesale market to the productive hinterland of the Netherlands.

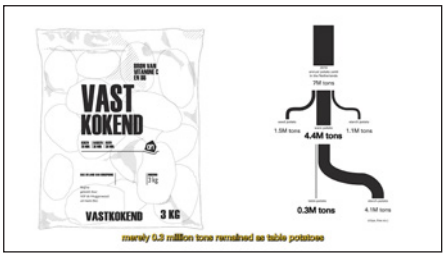
Vincent van Gogh's famous painting "the Potato Eaters," captured Dutch peasants eating potatoes. Source: Vincent van Gogh, "De Aardappeleters," Nuenen, 1885.

The angry potato farmer Astrid. She cannot sell her potato to the supermarket in a decent price, therefore decide to dump 6000 kiligrams of potato in front of the supermarket's office as a protest. Source: Baarends, Lauretta. "Aardappelboerin Astrid Is Boos En Wel Hierom": FavorFlav, May 15, 2020. https://favorflav.com/nl/new/foodnews/aardappelboerin-astrid-is-boos-en-wel-hierom/.

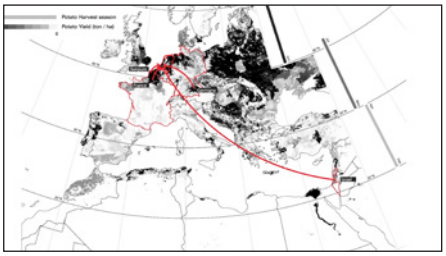


The Potato yield per metric ton per hectare.
Source: cbs.nl

Ballumer Mieden, the first land consolidation in the Netherlands.
Source: Schroor, Meindert. “Ballumer Mieden: De Eerste Ruilverkaveling in Nederland.” Noorderbreedte, December 1, 2000. https://web.archive.org/web/20190403203047/https://noorderbreedte.nl/2000/12/01/ballumer-mieden-de-eerste-ruilverkaveling-in-nederland/.

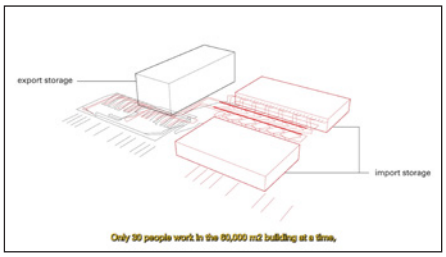


The potato production quantity. Video still.

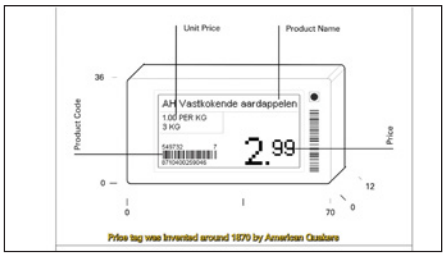


The European potato distribution map superimposed with harvest season and unit yield. Video still.

A section of typical potato farm with the storage facilities. Video still.



A diagram of a distribution center with separated export/import storage. Video still.



A diagram of an *electronic shelf label*. Video still.

The evolution of the price tag with the scale development of the supermarket in the Netherlands. Video still.

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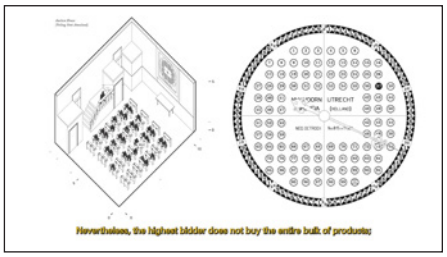
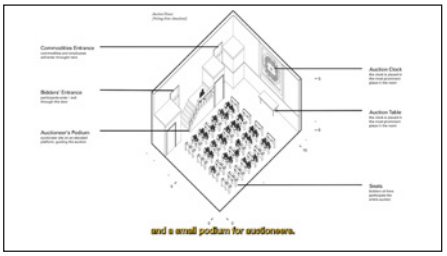
On Price Tag

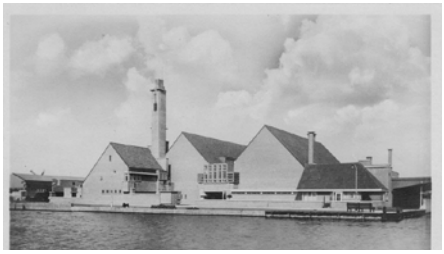


The Dutch auction house and the auction clock used.

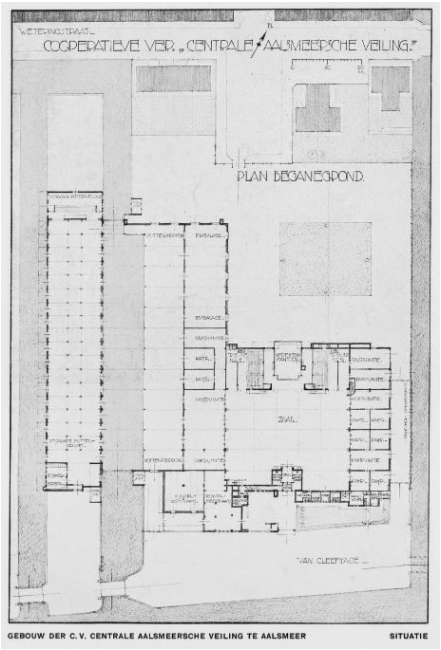


An annotative analysis of a Dutch auction house.

A size comparison of Dutch auction houses for fresh produce in the history.



The vegetable and flower auction market in Aalsmeer, the Netherlands.
Source: Verheij, Annemarieke. “Centrale Aalsmeersche Veiling (V.m.).” Amsterdamse-school.nl, 2015. https://items.amsterdamse-school.nl/details/objects/476.



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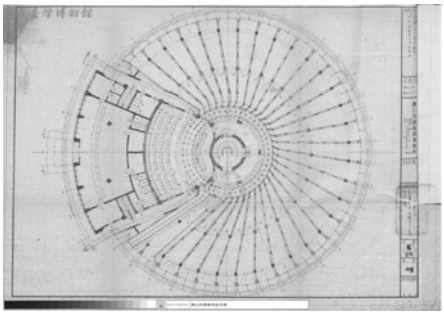
The live stock auction market in Kaohsiung, Taiwan. Pigs are guided by radical fences to the center part of the building, where an auditorium is located.
Source: Ren-he Chen, The Meat Market of Fongshan Municipal Farmer’s Association, permit drawing, 1976. Ground floor plan including main hall and live stocks entrance.



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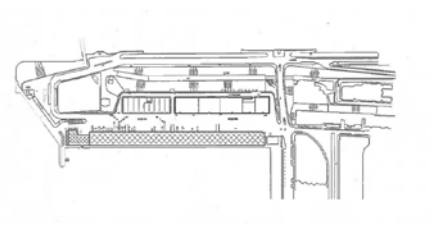
The fish wholesale market in Scheveningen, Den Haag. In order to process the seafood fast and efficiently, this building maximize its water-facing side.
Source: Hans van Dijk. *Sjoerd Schamhart : Architect in Den Haag* (Rotterdam: Uitg. 010, 1996), 50-55.



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The fish market in Tsukiji, Tokyo. On the circumference aligned to a railway track (dismantled and replaced by an open air loading yard for freight trucks in 1987) is a steel structured shed where seafood trans shipped from the Tokyo harbour auctioned directly to wholesalers. The second and the largest part, sitting right next to the auction space, is a wholesale market, in which marine products are further sorted, graded and sold to retailers and restaurants from the entire metropolitan area. At the center point of the market are 8 loading sheds that further distribute the fish to the city.
Source: Tokyo City. 1934. Aerial View of the Central Wholesale Market. Tokyo Central Wholesale Market Tsukiji Market - Architectural Drawings. https://ndlonline.ndl.go.jp/#!/detail/R300000001-I000000765120-00.

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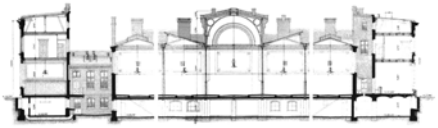
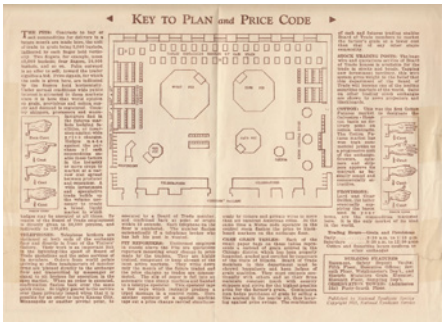
Photo of Markthalle IX (now Markthalle Neun).
As part of the schematic plan to build a new food supply chain that met the need for a modern metropolitan, the Markthalle IX followed the same architectural logic of a steel structure roof, efficient drainage system and natural lighting, providing Berliners a comfortable and hygienic food shopping place.
Source: markthalleneun.de/ueber-uns/geschichte/



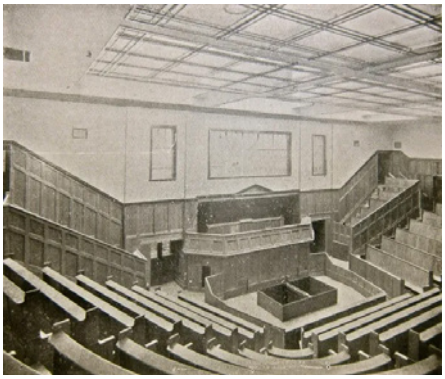
Section of Markthalle IX, Hermann Blankenstein, August Lindemann, 1886. One of the most advanced features in the Markthalle IX was the cooling chamber for perishable products in the basement.
Source: August Lindemann: Die Markthallen Berlins (The market halls in Berlin). 1899, Verlag Springer, Berlin.

Board of Trade directly after session, Chicago, Ill., Dry plate negatives, 1905.
Source: The Congress Library.



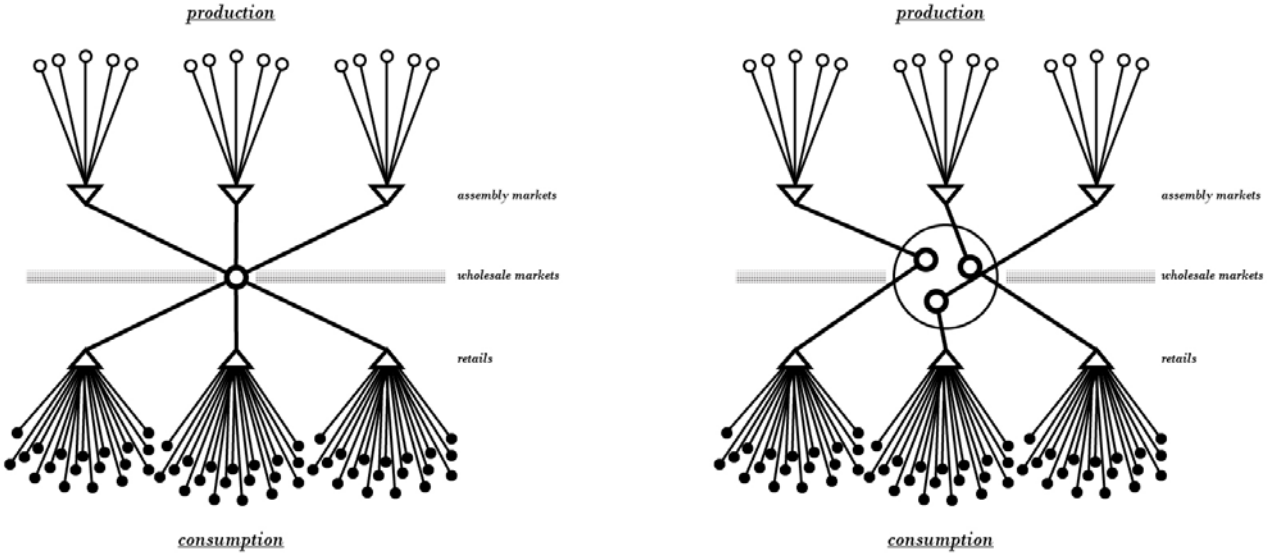
A floor plan of Chicago Board of Trade from 1930 after it was built. The size of trading pits were in direct relation to the market volume.
Source: tradingpitblog.com/2009/10/cbot-floor-map-1931.html

A trading pit under construction during the 1987 expansion of Chicago Mercantile Exchange. The trading pit was elevated to contain air ducts, which cooled of sweaty traders.
Source: tradingpitblog.com/2012/02/depth-of-market.html

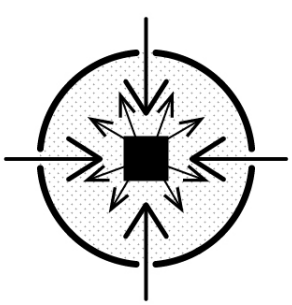


Auction room of the London Fruit and Wool Exchange in 1929, lit by a glass ceiling offering artificial daylight on foggy days.
Source: spitalfieldslife.com/2012/02/15/at-the-fruit-wool-exchange/

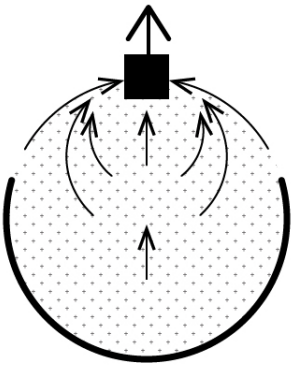
Product showroom of London Fruit and Wool Exchange. Everyday display samples would be placed here while bulk deliveries took place elsewhere in a depot station.
Source: peterberhoud.co.uk



Diagrams of two models of supply chains. The left one indicates the wholesale market as the only channel between the productive and consumptive sides, while the right one proposes a wholesale market with plural channels.

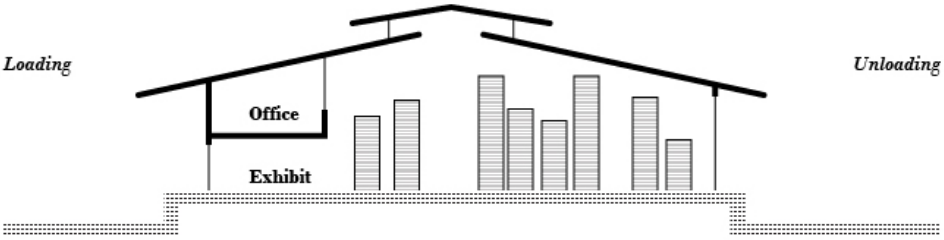


primary market

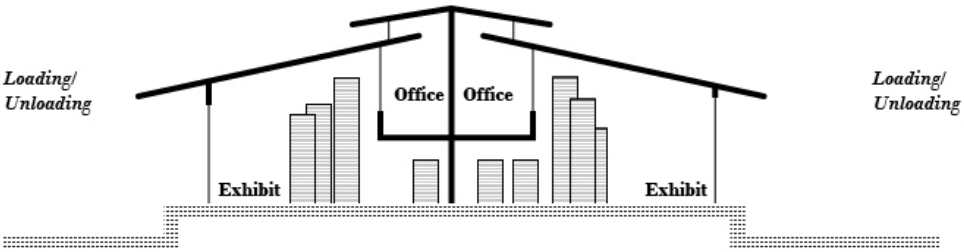


secondary market

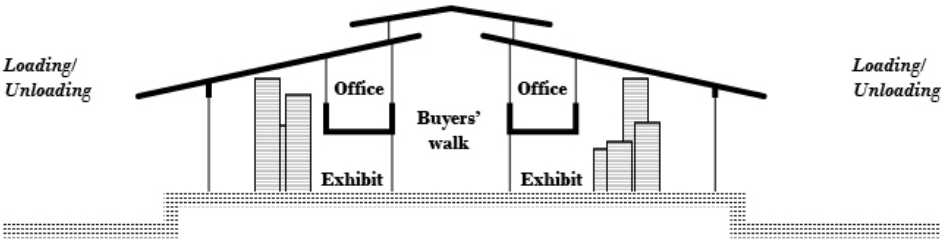
Diagrams illustrate the difference between a primary market and secondary market in relation to their catchment area. The former focuses on the redistribution of products, making it suitable for an urban setting. The latter, on the contrary, emphasizes on congregating products from a vast range before transporting to another wholesale market.



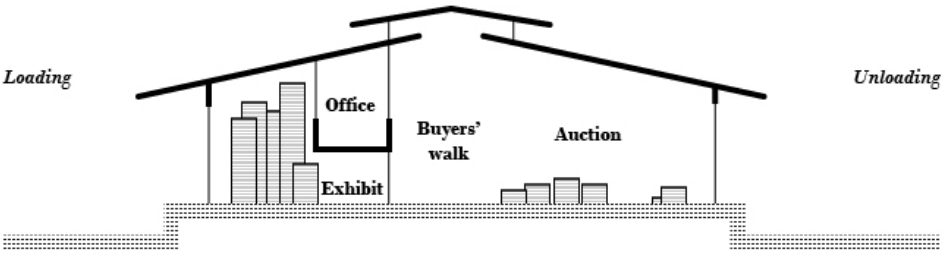
1. Garage type.



2. Back-to-back.

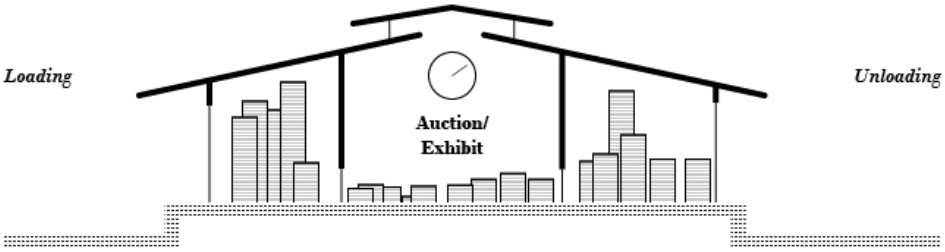


3. Central spine.



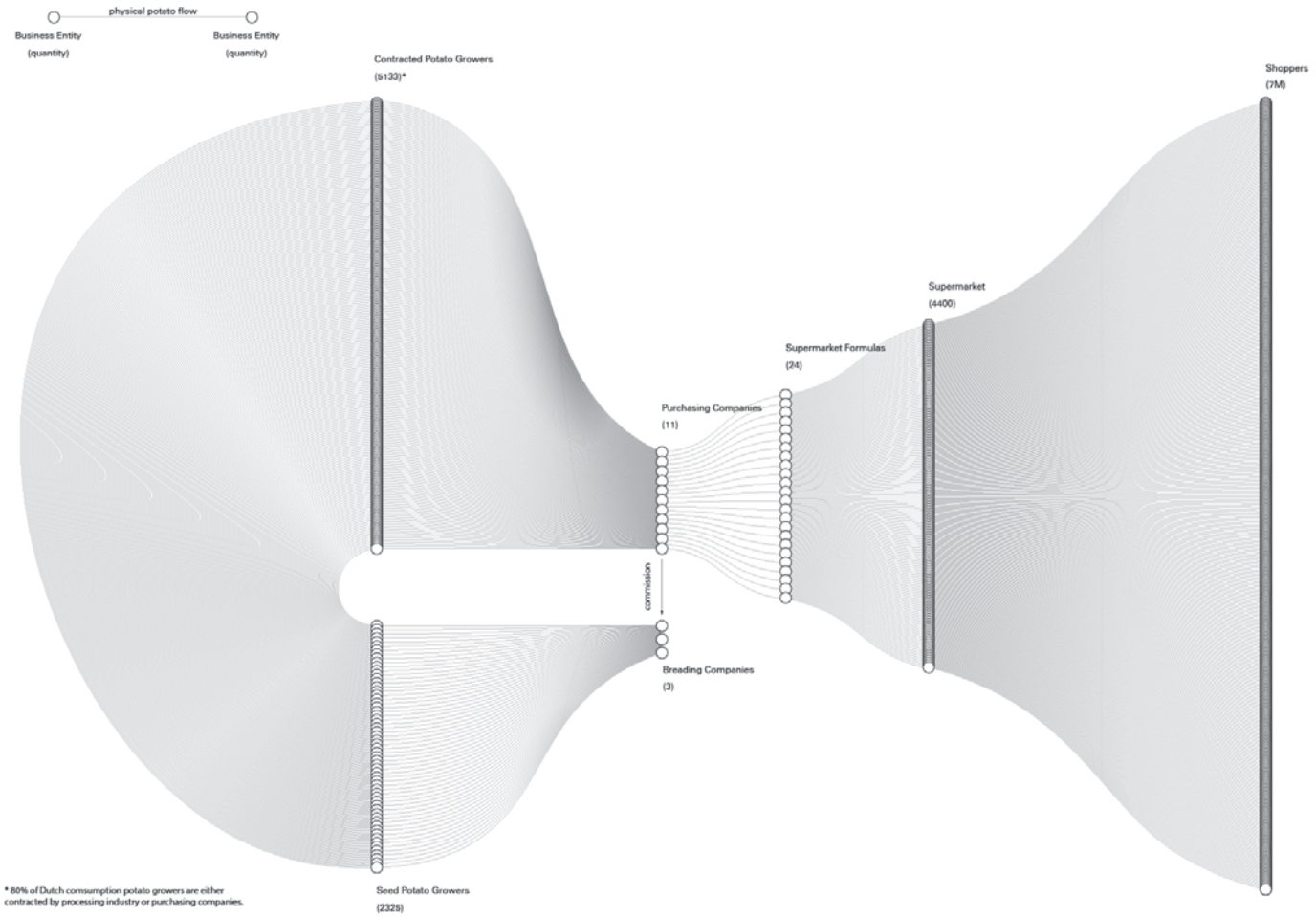
4. Central spine with auction hall.

The spatial study of 4 most common wholesale market typologies regarding positions and circulations of buyers, sellers and products.

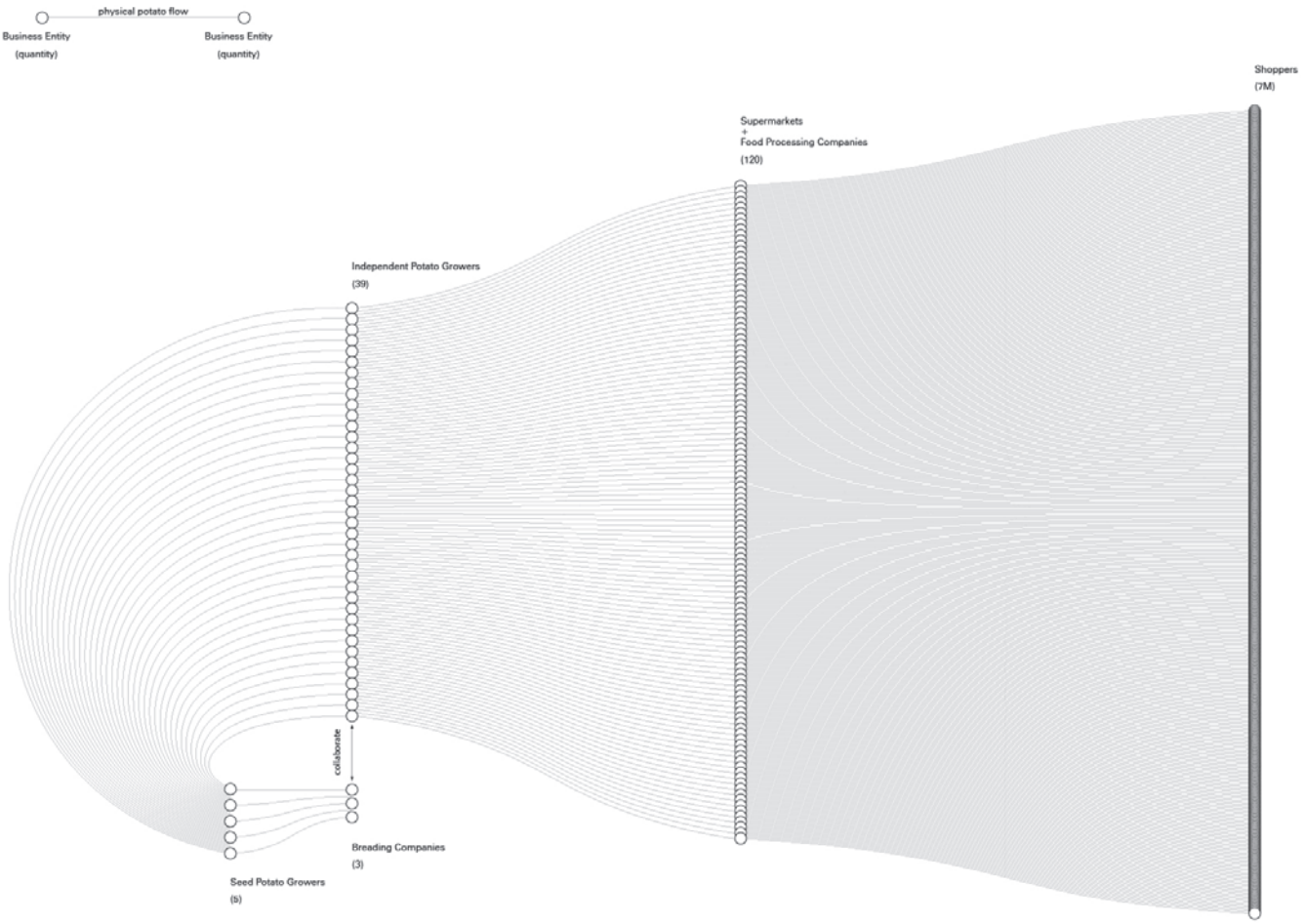


5. Dutch auction house.

The spatial study of the Dutch fresh produce auction market, where buyers and sellers pivot around the display of products and the auction clock.



The diagram of potato supply chain in the Netherlands represented in the amount of market participants. There is a strong concentration in purchasing companies and breeding companies, which gives procurement mangers great power to control both supply and demand.



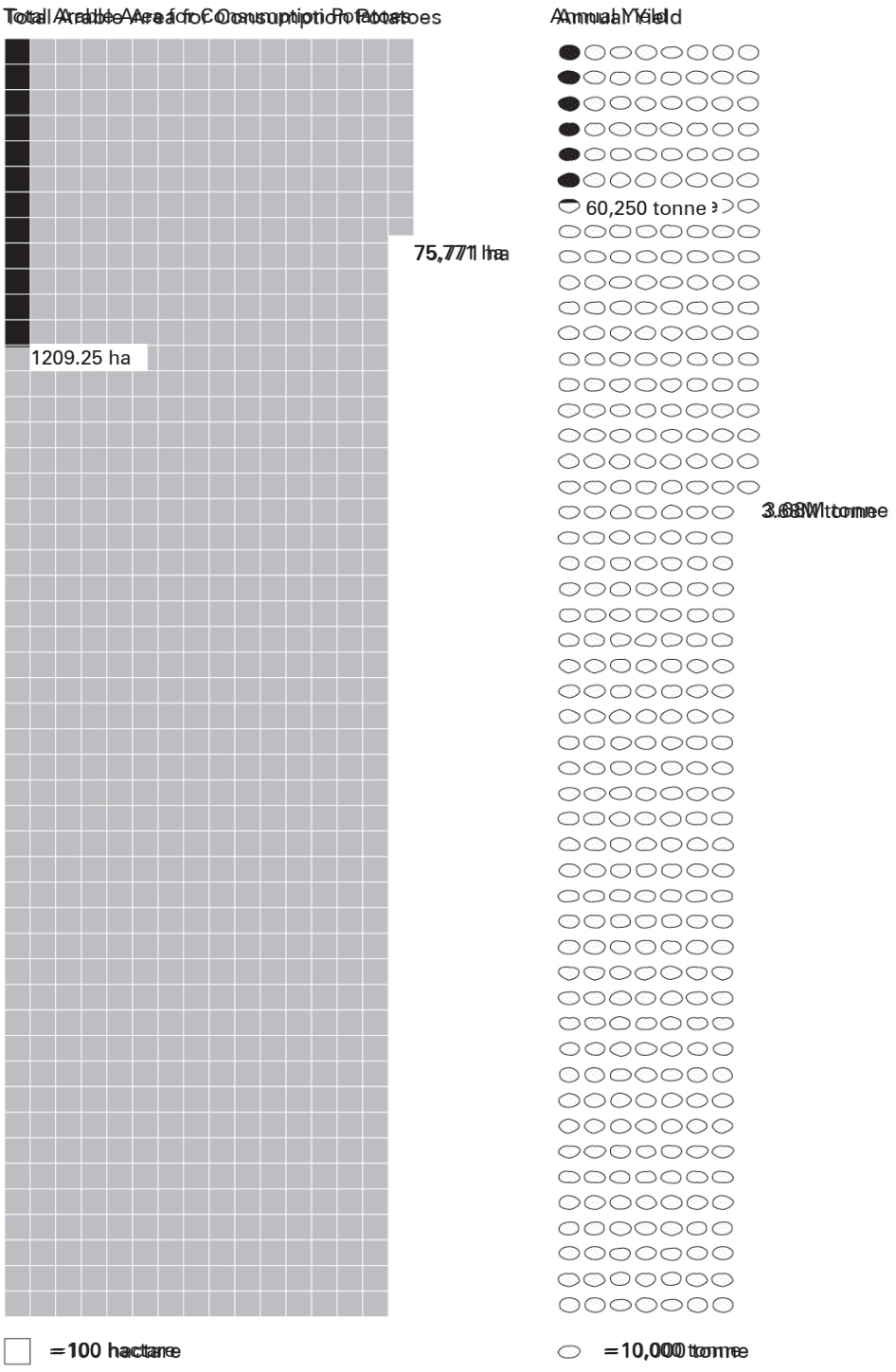
The diagram of a modified potato supply chain proposed by this contribution in Werkendam, the Netherlands. The role of a secondary wholesale market compensates individual potato growers to commission breeding companies for seeds and trade directly with supermarkets.

0 1 2 4 km

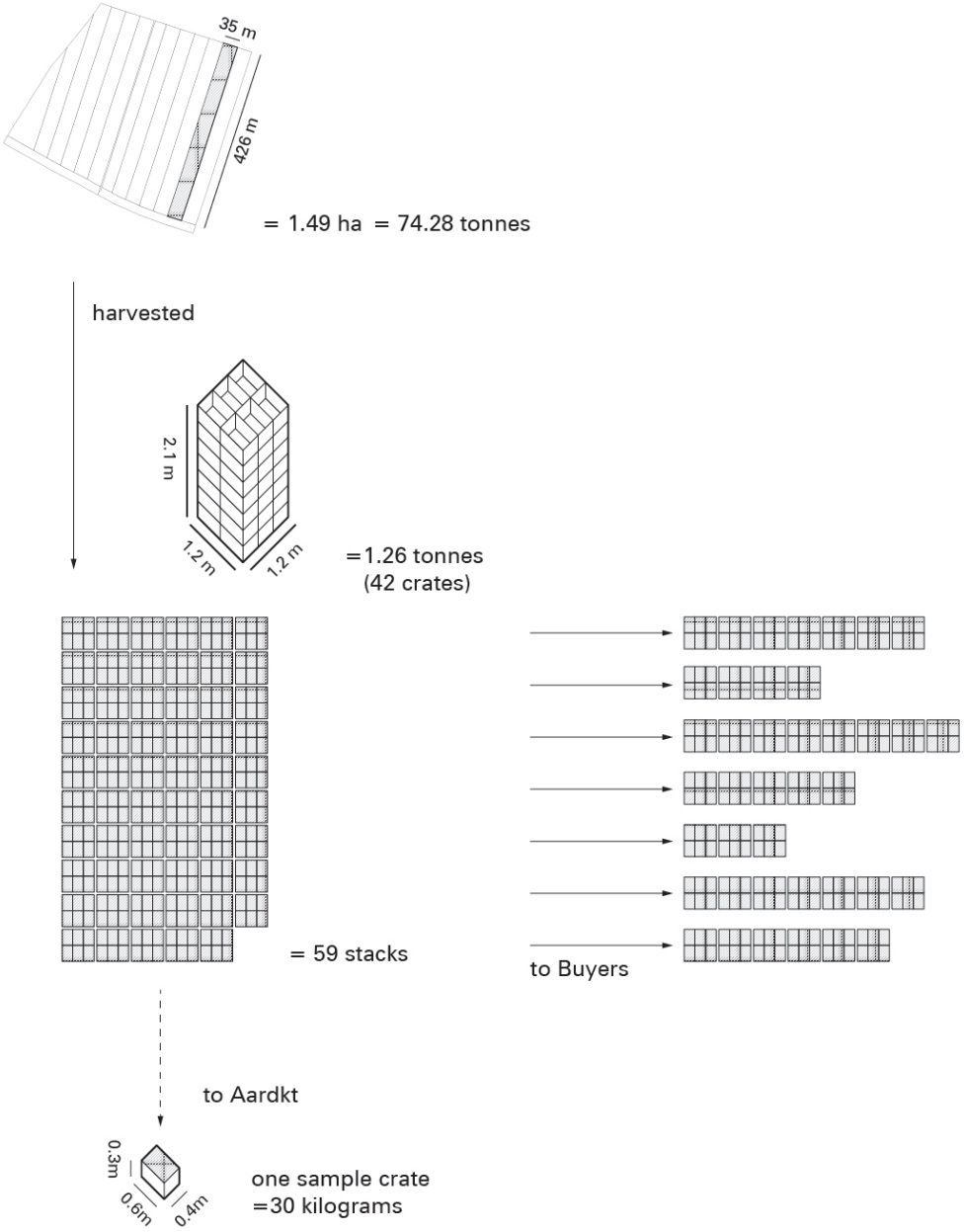
The Map of the catchment area of Aardkt showing the traditional production mode when only one or two varieties were planted at once.

0 1 2 4 km

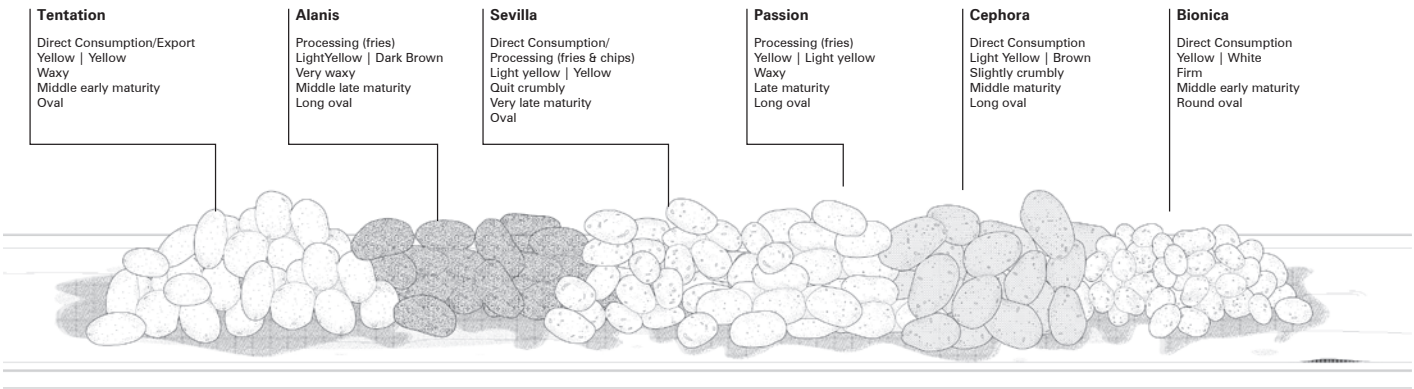
The map of the catchment area of Aardkt with a modified production mode is imposed, indicating multiple varieties is planted while the arable land area of each farm stays the same.



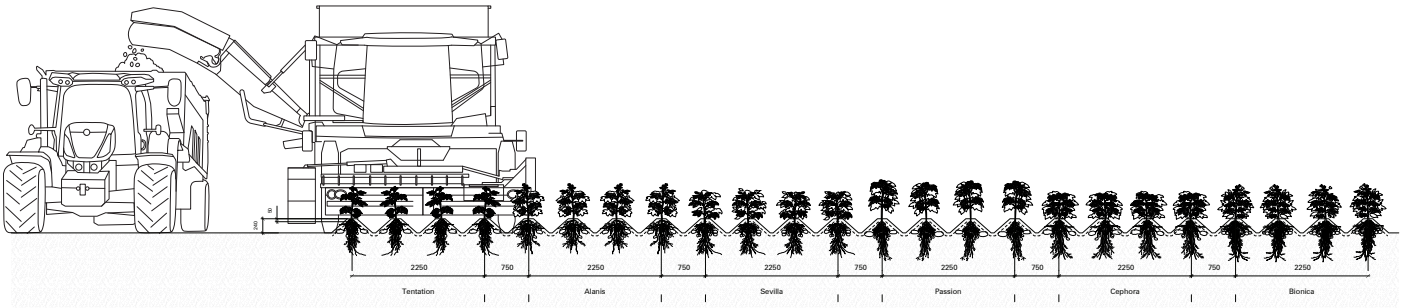
A comparison between national and regional potato field and yield.



The distribution flow of modified potato supply chain. Farmers bring sample crates to the wholesale market while the bulk products transshiped to buyers directly.



A selection of robust potato varieties
for Werkendam.



A sectional diagram of potato field with selected varieties planted simultaneously.

Can you briefly tell me something about Bionext? How you organize different applicants from different sectors to work together?

Yeah, so we are as a biological umbrella organization for the Dutch organic food and farming. We represent the farmers organization, divided organic farmers organization in that lens, and the organic trade and processing organization and organic supermarkets. So the big supermarkets in the Netherlands, like Ablert Heijn and Jumbo, they're not a member of ours. So just like the EkoPlaza the Aldi. You've heard of them. And independent stores that only sell organic products.

How about those companies who supply Albert Heijn and Jumbo potatoes? Are they also part of your organization?

Some of them are. The organic market isn't a big share. But it's something we see changing. There's more and more interests for also the bigger conventional organizations to be involved in the organic sector. So far, they're not all members, yet. For example, Aviko. They're like a big potato company in the Netherlands. For them organic market is also important. They're also a member of ours. So one part of what Bionext does is representing the interests of the organic sector in the Netherlands. We do this by lobbying in The Hague for national politics, but also in provincial level, and at European level. And we're the experts on regulations. Therefore we are like an in between practice. We hear from the fields about what the rules mean for the practice, while also having direct contacts with people making the new rules. We are making that bridge. And then the other important work we do–also mainly my task–is about project organization. So we work together with Wageningen(University & Research) or Lu Borg Institute or other organizations of the same kind on questions like areas of development that the organic sector wants to work on. And this Potato convenant is one of those projects.There was a big problem in organic potato growing. Mainly, you can't do anything against this phytophthora disease. And we hear about this, because we are working for them. And then we started this project to solve this problem.

Yes. So since we talk about the potato covenant, can you explain to me more explictly, what is a robust variety? And how does it contribute to the potato farming process?

The robust varieties are potato breeds that grow better than conventional ones. There are lots of inputs under different circumstances in growing potatoes. So when it's raining a lot, or super dry, or in the organic farming where no artificial fertilizer is used, we still have to make sure potatoes are able to grow properly. With less inputs, it also means pesticides, that has to do well without pesticides. And that's actually the critirias when we talk about robust varieties. In this convenant we made, we only use varieties like this. So, we take the resistance as the defining factor. But we acknowledged the other standards that I just mentioned are also very important to be actually robust, and to be used in organic farming. But this the resistance is really essential when speaking of robust varieties. Because when phytophthora comes into a potato field, you have to kill the plants immediately. And you can harvest whatever is like ended up planting at that point of time. It comes already in June or early July, when fair little potatoes are ready. And this, this instability for grower is like way too big of a risk. So without phytophthora resistance, it is almost impossible to grow organic potatoes.

What I also read on one of your brochure was that what counts as a robust variety variety is that it can resist the disease at a very early stage, before the breakout the disease. Does the robust varieties also include some of the varieties that will be harvest later in the harvest season, like in August? Or even September?

Yeah. So the goal is that even if phytophthora is found, those resistance(robust) varieties will still survive. And they can grow to their full potential, let's say. So they are actually potatoes in good size that you can harvest them in August. So the risk of crop failure, since phytophthora are found on leaves, but it can also go to the potatoes itself. And that's, of course, very tricky, because then you have like these molds potatoes. And they can inffect the others, if you put them all the big keep. This is a very important factor. That's the disease doesn't come in the leaf, especially doesn't go into the potatoes itself.

One very quick follow up questions. So say if I have 10 hectares of land, and so usually here in the Netherlands, do I harvest them all or by batches, like I have reached half first and like the other half the next day. What is the process here?

It depends on how big the field is, like, I think the growers would try to do it all at once, because it's probably a suitable day to harvest potatoes like not too wet, because on the fields now there are only big machinery. So, if the fields are very wet, you will harm the soil a lot. So you need a you need a dry day. So they will try to as much as possible. But if they have a lot of potatoes, they might need multiple days, but they will try to do it in a row. It's different varieties can also have different dates, like early varieties and late varieties. So yeah, if a farmer grows multiple varieties with different maturity dates, they also might have some different dates. Okay, it's actually a good aspects to maybe also tell about the, like, what is the request for it in the government last few years, very early Fridays are also included. And this is because maybe like my Phytophthora hits early July, this wouldn't be so big of a problem for them, because the potatoes are already big enough. So you can do this idea behind it. So like, still grow, you can still grow them without pesticides. Because if the disease comes in, you kill the plants. And you are what you get what you get is already enough.

Yeah. I see. So the next question is that I read about one of the major challenges in promoting these robust varieties is that not many customers know about this thing and they Yeah, and then supermarket use this as like an argument saying that the market performance is not so good. How so they don't want to purchase this kind of potatoes, how do you or bio next address this issue?

Yes, Ed organic markets sector. What happened is that the weed was very, very important to us to be can make the supermarket's very involved in this issue of like, okay, growing organic potatoes is so difficult if you have a non resistance for it. Because then, you know, like the disease can hit and you have a big problem. Yes. And actually there once they become became aware of that and saw that it's actually yeah, it's very important for for the organic

growers. They also agreed that they should also be part of the solution by selling actually those Fridays. Yeah, and then they and they agree to the to do this. And also like by bringing them all together. So like I can't Farmer explain the story. And who's actually dealing with it in the fields and breeders, what I'd like what it costs to develop those varieties that are resistant, to bring them all together and actually be like, Hey, we actually, we can solve this problem. If you do this together that's created, Cathy's environment that the supermarket's agreed to actually also sell as Fridays. And this gave the certainty for the growers to grow them, because they knew they could sell them, for the breeders to also breed for the Fridays because there was a market for especially those. And that's really made the process go pretty quick. That's, yeah, those resistant Fridays are grown and also sold by supermarkets.

And what role does biomass play in this? Are those organic potato growers still in contract with supermarket or purchasing companies?

Yes. So we are like, kind of facilitating this, this coming together if there's different parties. So we brought it together in the first place. And now we organize like, in December, the fields, we have a demonstration fields with all the different varieties. And we invite the supermarkets and the farmers. Yes. And now in the also the potatoes are harvested, we again, organize a meeting where we tell how the Friday's gonna be doing any field and what the quality is to show the supermarket's there's a lot of choice in this reverse Fridays, and they like not worse than the rice you used to sell. And for the farmers also like to see like how you can grow them. And there's a market for them. So that's it, we're all now. Okay, okay, I see Yeah, I think it's also it's a bit easier for the organic sector for supermarkets to make such an agreement because of course it's way smaller. And consumers if they chose to once organic potatoes they may be also willing to try something new.

So, so I read that the potato covenant, what was a success? And what is the next step in like putting the potato supply chain into a more organic and sustainable direction?

Yeah, so for within 40 organic potatoes export, we are now looking to sign a new covenant actually with the same parties to include supermarkets again. Also just focus on fries and chips. Because those are often I get from resistance Fridays, but same problems arise. And that's a really big market, especially the fries market. Yeah, it's really big. Yeah, luckily not so much yet. Yeah, in a conventional sector, that's a huge part.

Yeah, this because, um, so, yeah, based on my experience in the supermarket, I don't see like even some some fries or chips that's made out of organic potatoes or were they written on on their package? It's like this is

yeah, it's very limited. And that's partially because think consumers associate organic with healthy and frights knots with healthy avoid this contradiction. Yes, it makes it harder. And besides that there are not so many resistance for it so it's actually quite hard now to grow big scale especially for the factories they need a very steady stable stable supply of potatoes and that's a bit of a risk now for for the for the factories, organic been more unstable, especially if you don't use the resistance right. It's your boost.

Yeah, yeah, I see.

Another thing we want to work on is also include more the export countries and the imports potatoes. So now like for the farmers, especially, it's important that not like people are to say like, oh, yeah, we use the Ruby strategies. They come from the Netherlands, but they can also just Get other varieties if they buy it from a broth to make their say like, okay, let's also look abroad, it's also important to use robust varieties.

So yes, yes, speaking of seed potatoes. So right now where do these organic potato farmers and get their their seed potatoes? And similar? i Sorry, go ahead. Yes, I was just saying that's the same thing was trying to import seed potatoes from overseas. Right? And that's my question.

Yeah, it's like the seeds potato business in the Netherlands is really big. So we, the Netherlands exports a lot of seeds, potatoes, so there's not so much importing of them. And for the organic sector is the same. So also a lot of the seed potatoes are also grown in the Netherlands. So the big seed potato traders in the Netherlands like HepC, Africa, and yet I have a bunch of them. They also do organic seed potatoes. So it's a bit so ditch organic farmers, they get them in a very similar way is in it as dirty conventional farmers, so often like a member of one of those traders, and they give them seed potatoes.

Can Can farmers decide which one or yeah, basically which ones they want to grow this year? Or this is like actually commissioned by by the purchasing company or supermarket?

Yes, I know. So So farmers are like a god like free free farmers in that sense. That, yeah, feel free growers. We call them fight daters. And they just decide for themselves, but they also have to find a party to buy their potatoes when they are harvested themselves. That's a big risk. Because these are like more potatoes then versus expect this. It will Netherlands they get they don't have a contract. So they might be might have a problem. So most of the organic farmers, they are actually like a member or they are always going for one, one organization. And they get the CIF data for this organization. And they also sell to this organization for later via contracts. So you know, it's like more safe for them. But it also gives them less freedom. It's choose which rights they want.

Yes, yes. Yeah, actually, I was. I'm interesting in the potato supply chain, because I read a news earlier this year, that there was an angry potato farmer that dump, like, a lot of potatoes in front of the supermarket. So, so what I also like to know is that the so the price on their contract, or they like fix in, in their in an earlier stage, and later being being fulfilled? Or it's depends on the climbing condition or the the yield that year, and they they come up with a price.

Yeah, bits. I think it's a bit of a combination to have, like, you know, kind of what's going on that it still depends on it, as you say the climates delicious, like how many potatoes do we'll be in the end of the year. And the library is there, like part of a bigger, like a member of a bigger organization. It was kind of all the potatoes together. And it's like the different Fridays. So it's often it also minimize the risk bits because it Dallas's outs with the whole group of farmers. And they sell like those this data is all together kind of. But it's Yeah, so if you'd like that example of the farmer, not being able to sell his potatoes and throwing

it in there from the supermarket, he probably was like not a member of some organization and just try to sell them on the free market. And that's a risk.

Yeah, okay. I see. Okay, I think that's all all my all my questions. Yeah. Yeah. Yeah, so also thank you for answering some questions that really related to the rubber Most varieties but but just potato supply chain in general.

Yeah. Yeah, I'm not the expert on that. So if you want to warn already, like there are definitely people working in, like full time in potato business that know way more about that. So they should contact because these other people.

Yeah. Yeah. Yeah, but but I think that this way of moving to a sustainable projects is part of our, our argument. So that's mainly where my interest is in.

Yeah, yeah, maybe one fun. One more thing I want to want to add is that, so we're like using those risk Fridays now, you can expect her actually worked out quite well. So it's like a loss of getting potatoes grown. Or if that's Fridays, that's, we see also a lot of potential for conventional farmers to use up Fridays. And the urgency is, is a bit smaller, because they can actually spray pesticides when the disease hits. But actually happening, they did research and they see that you can probably reduce the use of pesticides by 75 to 90%, if you use as your base Fridays, so it would have huge environmental benefits. If also conventional farmers go in that direction. And then for the organic sector, it's also important because if your conventional farmers are so are moving towards reboost varieties, that readers will probably also put a lot more effort in creating European varieties.

Yeah. Last Last thing I wanted to say.

Yeah. Thank you. Thank you very much.

Horticultural products auction in the Netherlands was in 1887 in blue Koba catalog in the northern part of Holland and that was such a success, so that other garden producers and also an auction and an 8089 It started in western region and first it was because of the potato trade, the potato trade was declining, because England was a very large market for Ireland for potatoes. But the after several years, they delivered that product to England and England started to start then in the Channel Islands and on Malta to produce also potatoes for their own market. Then in 8089, the auction organization investment was started and was mainly started because they wanted a registered trademark for good potato potatoes. So, they had a trademark and every potato is dead trademark on game from the restaurant auction organization and goes also already controls invest long so, it was a good product they tried with quality to get back to market you understand okay, but the potato trade still went further down because other parts in the world are beginning also to produce potatoes at a much lower rate than it was possible in our region, it's more an farming product and a gardening product. So that the start from the auction organization was because of the decline of the potatoes right. But after a few years, they they saw that the oxygen organization was very good for other products like grapes, and vegetables and fruits and in in 1923 also for flowers. So, it started as an organization for the potato trade, but it after 10 years it quick change to other gardening products like fruits and vegetables. The first auction organization was the restaurant cafe in the villages is very small, but it was within a few years such a success that every organization in three or four years they had to build an own building and the first buildings started at the late 1890s and around 1900s All the every village in investment has an own auction organization and auction building investment region all the auction organizations from the different villages they work together in community. So it was one community but every village was independent had his own organization, but they were together and that was their power, because in the western region there is a there are produced a lot of vegetables and fruits. So, if it is one organization, you have a very large part of the vegetable and fruit straight in the Netherlands. You understand?

Yes. Just so one quick questions, what what were the what was the relationship between different auction organizations between different villages? Are they are they also working together in in a certain level?

The auction organization

Yeah. So So you said that each village had their own auction organizations. They and how what what was the relationship between all these auction organizations in different villages

it was very good it was also for publicity and for a contact this festival traders large traders it was all from the organization from the region. So, and it was also so, there were 12 auction auction organizations invest loans which festival and fruit and they had to auction at different times so that the the salesmen who want to buy the vegetables and fruits can go from auction house to auction house so they they make agreements lists each other so that they do not compete with each other. They are no there is no conference conference is that the right words?

Korea election like complete

they are working together but not against each other you understand they make Yes. They do make an agreement. Yes, just a bit for the whole organization and for each part of that organization in the different villages. I have some form of is my English I am sometimes I have to search for certain words cannot find them, you understand? Oh yeah,

it's okay. It's okay. Okay. Yes, so, yeah, and more. One thing I read was during the, the early 90s, there was also this vast land consolidation movement in the Netherlands. So basically governments and people work together to combine their lands, so they become bigger and bigger, so they can grow more agriculture products. And I learned that they also have some impact on on the auctions because they, they used to trading like relatively small quantities. But since the land or each farm become bigger and bigger, and the auction houses also had had to change

that's more for farming, I think and not for garden products. That's a very big difference in our country. You have garden growers and US farming. agricultural farming is on a much larger scale than garden growers because when you have a garden you can this say 5000 square meters, you can earn a good living because when you have a farm with agricultural products, you have to have a space of 10 1000s of square meters and in the agricultural farming there was this process of getting a better and larger farmland in the garden growing it started around 1970 that they are going to make the garden to garden lens more suitable for for that became became oak because of the mechanization because a larger garden lens and it's more square. That's easier to to enjoy it. You understand?

Yeah, yes. Okay, yes. Sorry, I don't have a phrase for it for a moment. My next question is, how did the process of auctions go? And especially after the auction how, how did the products distributed to the buyers

in the early Days of the oxygen organization they were seeking what is the best way to sell our products the first times they try to sell the product by increasing value. So, they started low and the auction master set every time and higher price the highest bidder got the product, but that took a very long time. So, at a very very quick after the organization was began they started otherwise, so, they made the price high and then they go lower and lower and when some buyer want wanted for the price the auction master spoke about he say yes, it's for me and in the first years it was by hand and after about 1015 years they started with an electric system the the auction clock Yes, you know the system the you start at a high price and it goes down and then a buyer say says at one price I want I wanted he pushes your button, but when another buyer is just before him and he he has no product so the next round he he's going to pay some more to get products that's a very good system for a market price to develop because it was very quick that all the buyers looked at each other and they saw how he wants that much and there is only that much trades because that fluctuated every day and after a few rounds they you had economic market price breached but it was for the first parts of the auction was a difficult because the first parts of the vegetables and fruit to a sold at auction has lower prices and to make that more the same for every garden grower they

had a system that you had to take you had to draw a lot every day you arrive at the auction house so that the do you then which one ad to sell sell his products first is by lots produced

sorry What do you mean by they have they had to draw a lot

the lottery

yeah okay did you event

the garden grow was game at the auction house the auction master had a baskets with balls in it and every ball I had to add a number the numbers from one to two hundreds as as many as the garden grows are and then you come at an auction house you have to draw a number and deadness the number when you get your products in the auction club. Okay, I see that nobody wants to go first or second to sell this product because the market mostly started low. And then after a few rounds, the price get higher and then got an even a point. But mostly the first the first parts which are sold at a lower price. So no one want to sell his products at the first time and that's why they made a lottery of it. And they change it by day because if you are today you add a low number or a first number. Then the next day you are in a second rounds so that you have your product sells, then loads of other garments than before. So they made it so almost as possible. You understand?

Yes yes. And one

two years before the Second World War

Yeah. So how how after okay yes. So, I also read that when when a buyer is placed their bid they can specific saying that they only want like like for example 5000 kilograms of the products and the others can can buy more or they always have to buy like all of the products from one grower Do you understand?

Yeah

it's all they always tell it before the auction starts every parts you can sell different parts but that's that's a difficult one you can you can buy smaller parts, but it's also it's all always been the auctions start they said we are now selling 100 kilos of this and 200 kilos of debt and if it is a large quantity then the buyer can afterwards try to a small bias bite then from a larger salesman you understand

okay, okay.

But it is possible to to buy small quantities and the current hours but it's for the auction clock that they make the difference he also always announced now we sell so much from this and it's too much they are lowering the quantities also smaller traders can buy something

okay. Oh okay. I see How about after the auction to the garden Gordo Cora also deliver the product or the trader has their like car or barge waiting for for them to take their their products.

Can you repeat the question?

Yes. So, I want to know after the auction, how how did the buyers bring their products back to their their warehouse or their market?

The auction house is responsible for the how do you say it put a delivery Okay, the most large traders had a space in the auction house where they can repack their products who they bought. So, you had in the early days you had an auction house where the products are going through the auction house on the ship till 1950 transport by ship was the most important transport way in our region and ships goods go inside the building and the products are on the ship and so the buyers are on the table they are on seats who are up and up and up.

Oh yeah like they Torian

and they buy it from and then the ship goes to another part of the auction house and then the goods are delivered and divided about over the buyers.

So yeah, just to

I think that are there no English books which explain this kind of. Maybe I have in our library. Maybe we have some English leash follows.

Ah, is it possible to visit the museum now? Or I have to book a time slot? I mean, because of course,

you can come to the museum. You have to occur. Corona QR code. Because on a 200 device?

Yeah, you have a QR code, you have to. We are from Tuesday to Sunday, every afternoon from one to five, you're open. I can look if I can find some English text about the auction system. And I can copy it and send it to you. He made enough for you. Okay. More questions?

Yes. So, you mentioned that the the early auction started in the village cafe? And can you explain more about the village cafe and why did they pick that place has like, like a first auction place.

And because when the auction organization started, they had no own buildings that was too expensive. And the village cafes, were always the places in a community or in a village where everyone came together. Tradesmen came there and people who want to sell something came, they're always in the villages you have every week you have a markets, and we're always one or more cafes, near the markets that were the normal places to, to meet each other and to trade.

So you mean, the village cafes, some already a place for people to trade before the auction even started?

Yeah, in the early days, it was because then you had also very little shops, you had people who are making stuff and they had a working place and there you can buy the stuff. There was a lot of ambulance three, because people who produced something, they go on the road and go from house to house to sell their things. But at some moment, that became too, too complicated. And and it was too slow, too slow to trace a lot of stuff. And because of in the late 19th century, you had the Industrial Revolution. And a lot of people from the countryside changed to the cities to work during the factories. And in the 60s, there was no space to produce foods. So they had to deliver the food from the countryside to the big cities. And that's the part where the trade organizations do exist. Yes,

yes, I see. I have one one more question. A lot of auction house that I studied. They have a bell tower. Can you explain the function of the bell tower? And what does it mean for the traders or garden goers

to have no function? The only function the Tower Set was to impress other people. It's it had no real function. When the auction starts they loud a bell

inside the building. Every trader knows at that time the auction started, but then it really started inside the building day. Bring a bell but the bell towers I think that is more an architectural item. Maybe because the architects made it designed it. I think it's possible that here in our region, you have 12 Auction Houses and some felids daughter David are better than another felids and they add more money and they built a much more luxurious auction house than the small fillets. It's more to impress other people than that it has a function.

I see. Yes. Yeah, I I remember the one in total, like, I don't know how to pronounce the village, but they have like a, like a very monumental auction clock out. Bell Tower

in which really trusted which fields should witchetty yet what does Yes.

It spelled P O E, L, D ij. K.

pullback? Yeah. Yeah, that's cool deck is the center of our garden region. It's also the place where in the 17th century, the first large gardens exist. And the people from Poolbeg always think still till today that they are the best gardeners from this region. They had also the largest auction organization for vegetable and fruits. So and then they express the power in in the luxury of the building and the height of the tower. But that's, that's only to impress.

Okay, I see,

I see pull back. They have also the church is the highest tower. So they express that they earn a lot of money, and that they can build a luxurious auction house and a luxurious church with the highest tower in the regions. Okay,

I see. It's Yes,

negative. situation, you all you only want to impress other people, and to show that you are better than another village. It's not okay to do. A second drill toward that that kind of behavior was over. After the Second World War, they only built buildings who are only for the purpose and no luxury at all. How do you say I cannot find the word.

Sorry. No, it's okay.

I think you understand me?

Yes, yes. Yes, I do. Okay, I think that's about all the topics I want to know about the tax and history.

So, you, you you send me some questions.

Yes.

Till 1950 It was very important because the the most important transport was free of water, though. The buildings and gardens had to be near waterways near canals. Then after the Second World War, then transport over roads became most important and then it was not necessary anymore. In the 1960s and 1970s, they began to build new auction houses in Davao not near the canals. Yeah. I looked at your questions. I think the most left answered.

Yes, yes.

Yeah. I think the most questions are answered. Yeah. You have. Yes. Today someone's questions. Necessary. Okay. I think the most questions are.

Yeah. So yeah. So thank you very much for Taking this interview.

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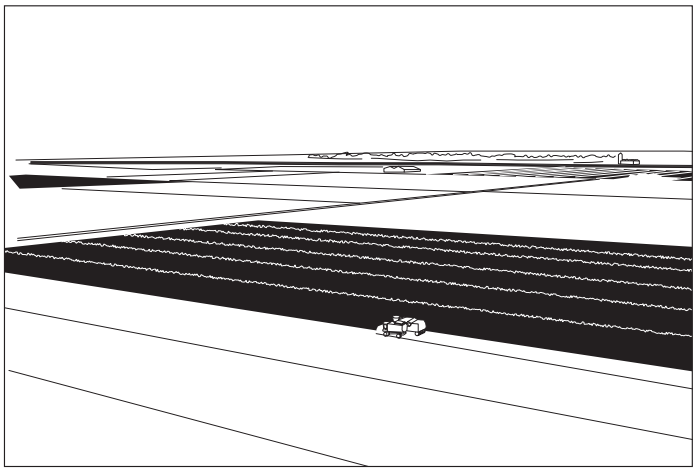
To maximize the profit from serving more than 100 million people within the Blue Banana–an European corridor that contains almost continuous urbanization–, food industry oligopsonists have developed a sophisticated supply chain, which requires heavily industrialized and monocultural agriculture practice. However, intense concentration gives procurement managers a great deal of power to control supply and demand. This contribution positions a regional wholesale market in Werkendam as a counter-proposal to the current production model and pricing mechanism. Aardkt catalyzes a paradigm shift in the Dutch potato production mode quantitatively and qualitatively by reintroducing face-to-face interaction within the trading process.

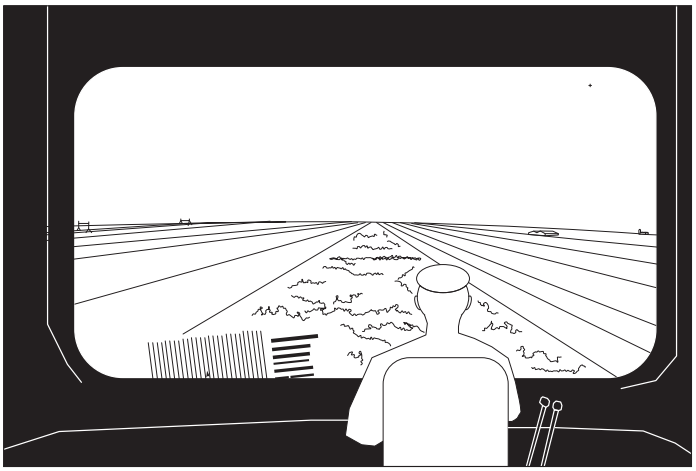
To disperse risk in market oligopoly and compensate the economic power of more minor market applicants against more significant ones, a pricing mechanism taking the physical form of the open-outcry descending-price auction enables supply and demand to influence each other quantitatively and qualitatively. An irregular matrix of partitions reflective of the increasingly dynamic potato supply divides the showroom on the ground floor, displaying sample potatoes in anticipation. Above, with the presence of commodities brought up by hydraulic elevators, five auction pits eliminate the possibility of speculation and secure the immediacy of fresh produce trading. Besides items, information flow produced during the trading process is published in real-time on the quotation boards to build trust among buyers and sellers.
By reintroducing the role of the wholesale market in the rural territory, this contribution not only opens the potato supply chain to more participants but alters how potatoes are cultivated and marketed. Farmers subdivide arable lands and plant diverse varieties according to climate conditions, market price, and customer preference, while retailers, food processors, and exporters make purchases likewise. This contribution trades potatoes daily in samples when bulk products are distributed directly between the buyers and sellers due to technological advancement. Drastically excluding the intermediates from the supply chain, this contribution provides the Netherlands an opportunity to move beyond the mega agro-complex sheds proliferated in the rural landscape.

To further foster trust beyond the exchange of products and information, this contribution functions as a social venue for market participants as well as its surrounding community with amenities such as a cafe, a gallery, and an archive. In addition, a watchtower is erected to conceptualize the transactional relationship with the wholesale market and the productive landscape. Visitors climb and overlook the shift in the landscape catalyzed by a dynamic pricing mechanism.

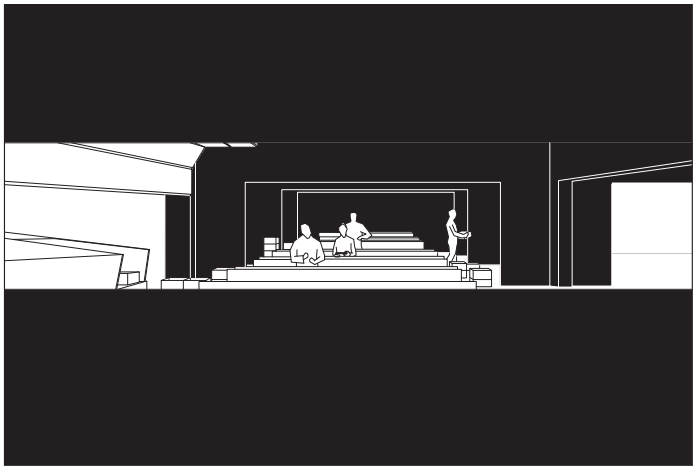
As the vulnerability of the corporate food trade network has been exposed, and a more sustainable supply chain in demand, the diverse production mode and the dynamic pricing mechanism embedded within this contribution provides leverage for Dutch potato growers to actively participate in the supply chain from selecting suitable seed potatoes to bringing them to production within a more flexible schedule. Its impacts, reflecting on the design of the future supermarket, are variable pricing and provenance of potatoes that instigate more applicants–including customers–to influence the food supply chain.



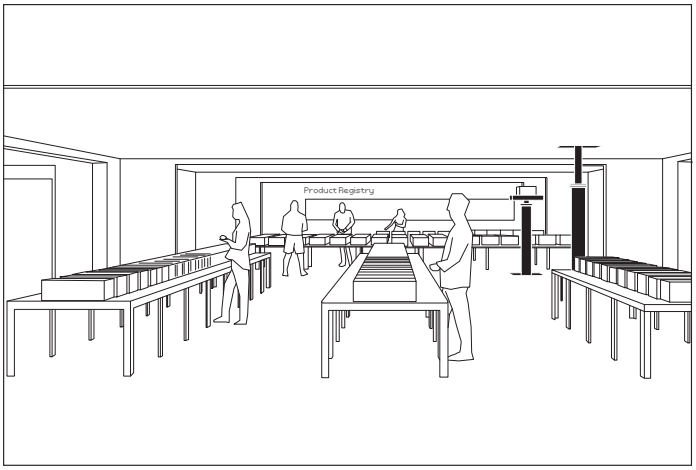
Extreme weather events and diseases are forcing the Dutch potato farmers to subdivide their plots to grow more private robust varieties as means to disperse risk and increase the margin. A new potato wholesale market is built responding to the new production mode.



Thanks to precise farming advancements, potato growers carefully plan their field, cultivating several varieties to reach the max profitable composition.

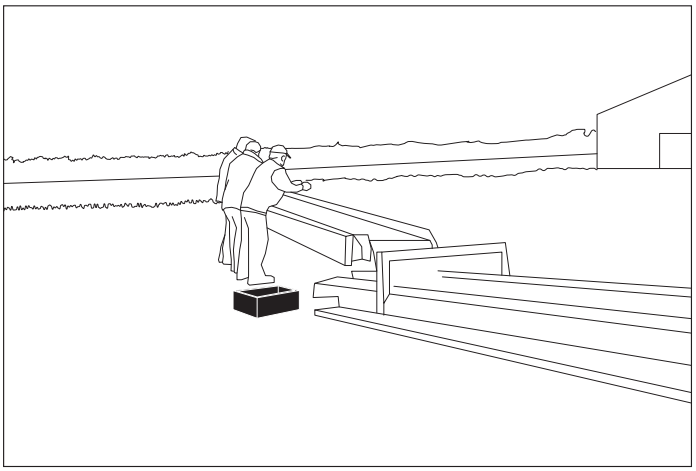


Before the crates are put on display, they are examined in a designated area to specify their varieties, qualities, and market channels. Potato Growers will receive a red trade card specifying where their products will be auctioned.

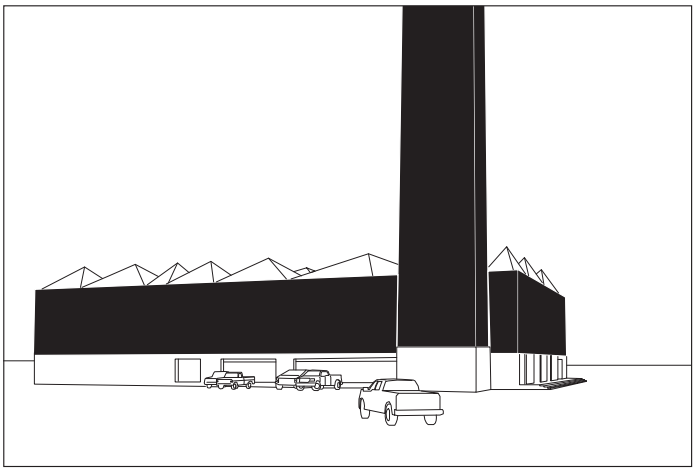


Sample crates are placed on the ground floor of the wholesale market, waiting to be lifted to the upper floor by hydraulic elevators.

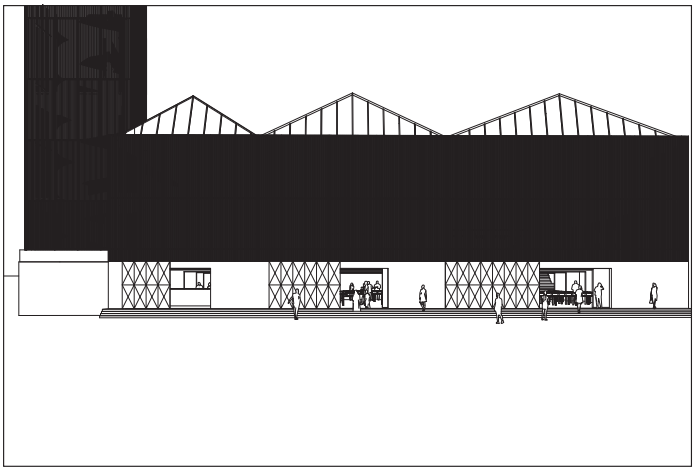
The spatial sequence unfolds the trading process of robust potato varieties, directly from the fields to the supermarket shelves.



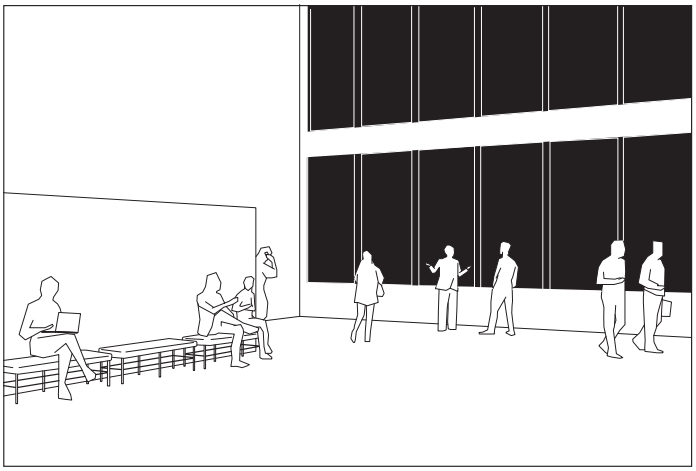
During the harvest season, farmers sort their fresh potatoes and prepare sample crates–representative crates of batches of varieties ready for sale–to bring to the wholesale market for auctions.



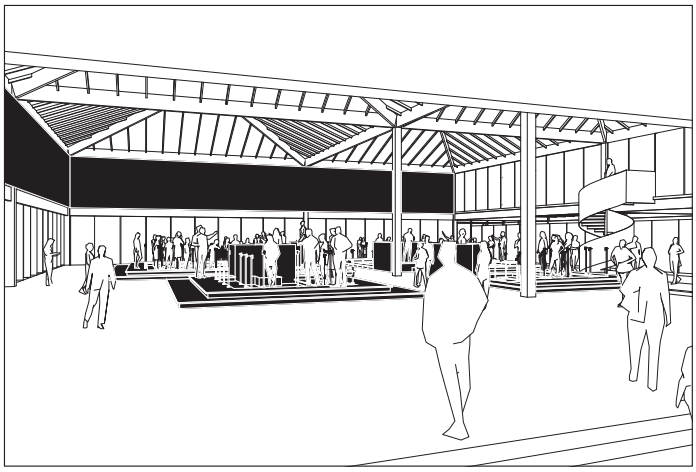
The potato grower's truck arrives at the wholesale market and parks at one of the loading docks.



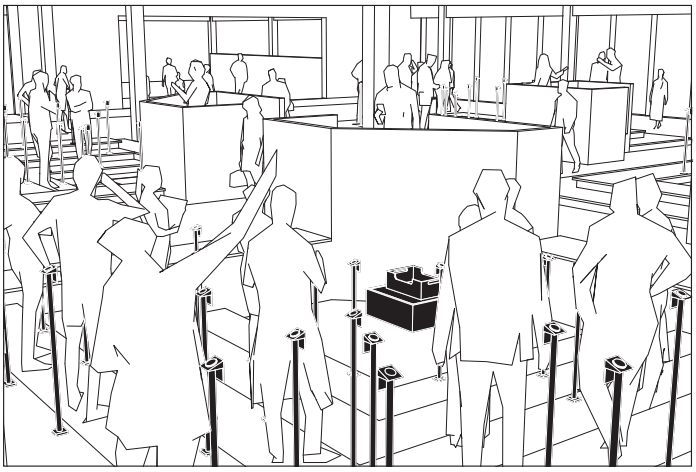
On the other hand, buyers enter the building from a perpendicular angle. They examine and test the quality of exhibit samples while updating their purchasing lists.



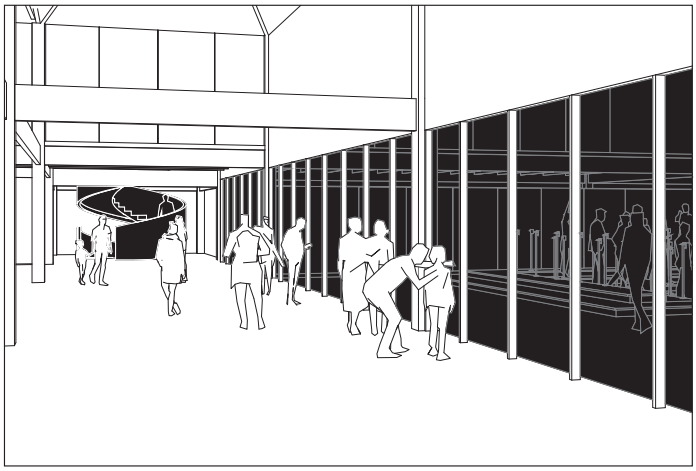
At the opposite end of the showroom, members ascend through stairs to the main lounge, where they further proceed to the trading floor.



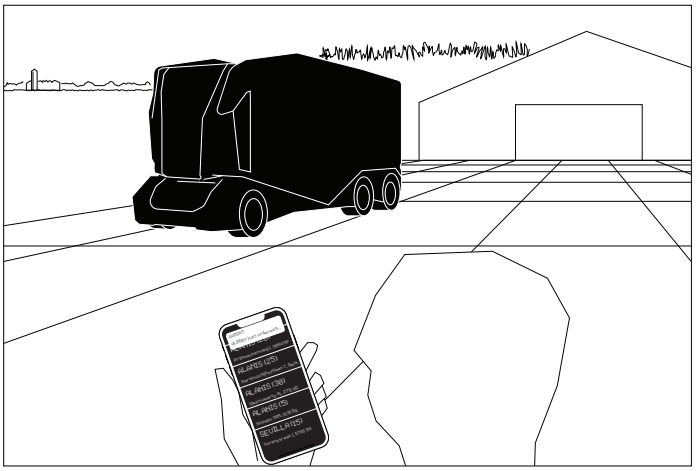
All auctions start at 5 o'clock sharp in the morning!



In the auction pit, a potato crate is brought up and placed in the center. An auctioneer stands by it, conducting the process of selling and buying. The auction clock in the front displays product's identity code, current price, and buyer who wins the bid.

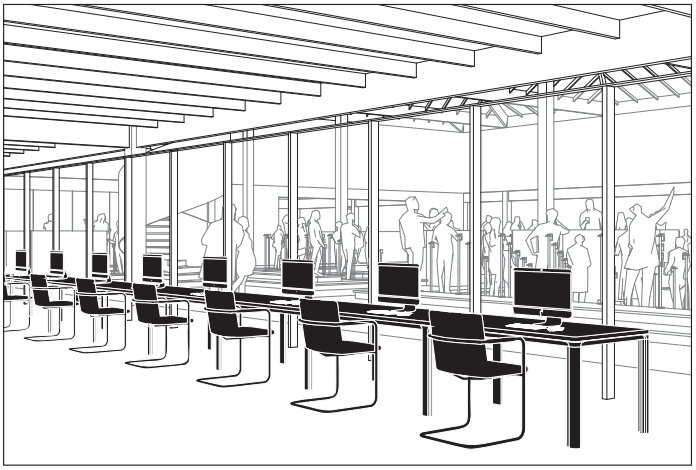


In contrast to an enclosed industrial shed, the wholesale market itself opens the trading floor to the public to further foster trust beyond the exchange of products.



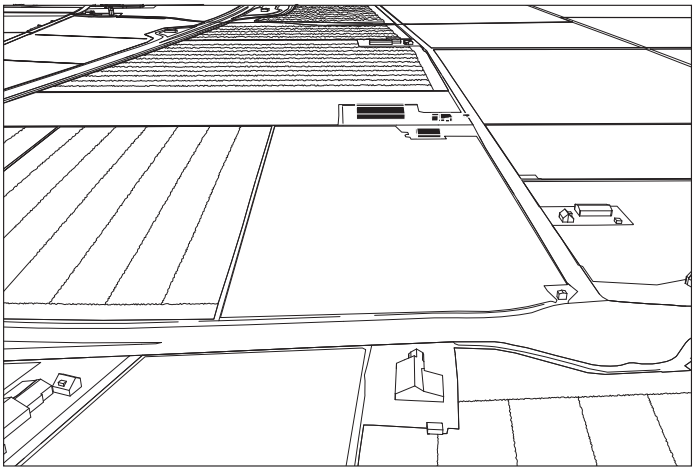
Meanwhile, on the farm, once the deal is settled, workers receive delivery details and start to load crates onto a waiting truck of the buyer.

The spatial sequence unfolds the trading process of robust potato varieties, directly from the fields to the supermarket shelves.

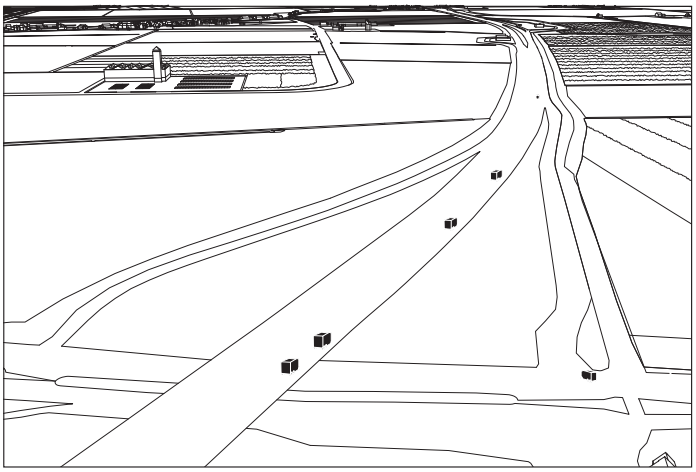


All the information produced on the trading floor are stored and published in real-time at the archive next to the trading floor. The transparency of data plays a crucial role in building trust in the market.

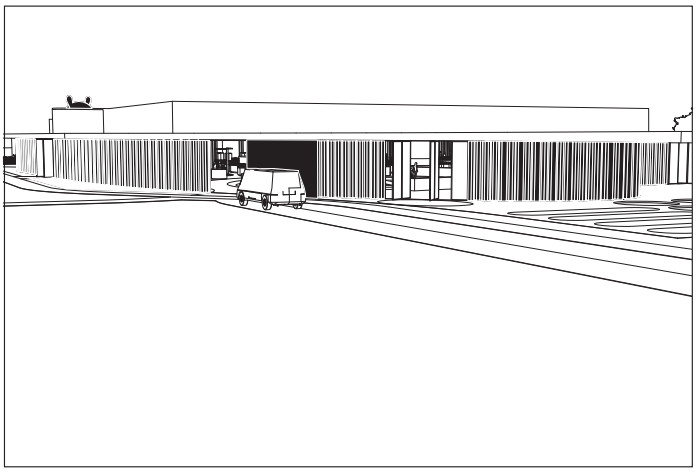
Above the trading floor, a cafe sits on the mezzanine level, where members can exchange information about potato supply chain with a clear sight of the giant quotation board surrounding the entire space. Members also come here to watch and study the market trend. Farmers predict certain varieties that will be popular next year and calculate the cost of growing and storing.



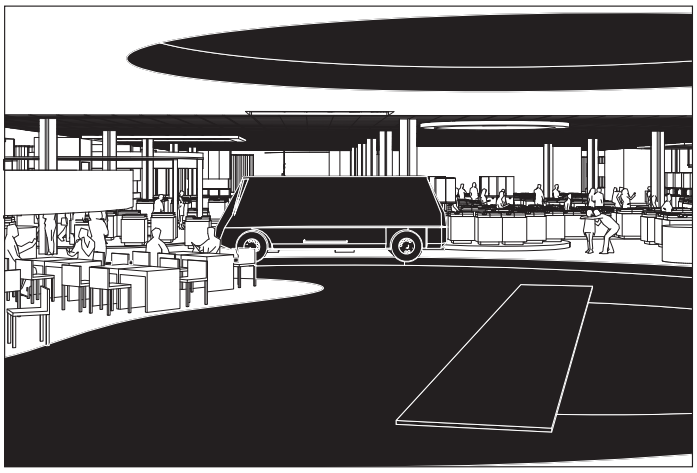
The truck leaves the farm and enters the highway system in the Dutch rural area.



Trucks, carrying potatoes bought by Albèr, go onto the motorway A27–the highway that runs through the entire region–and drive to Martinus Nijhofflaan.

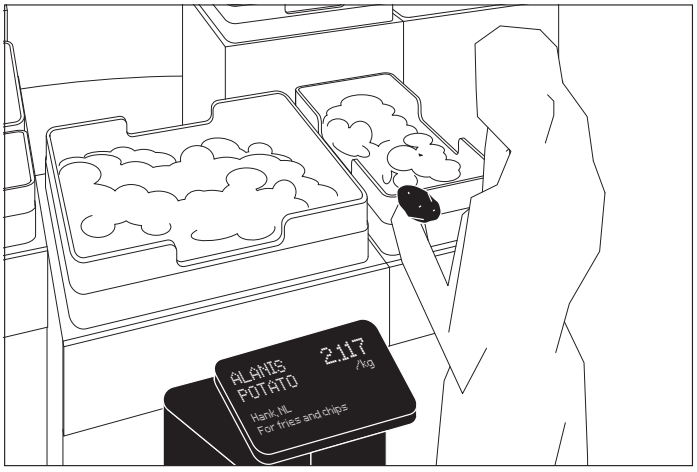


The destination of trucks is Martinus Nijhofflaan in Delft–a newly developed residential area of the historical town. The growing in population facilitates the need for a new supermarket that incorporates the food supply, local business, and community space.



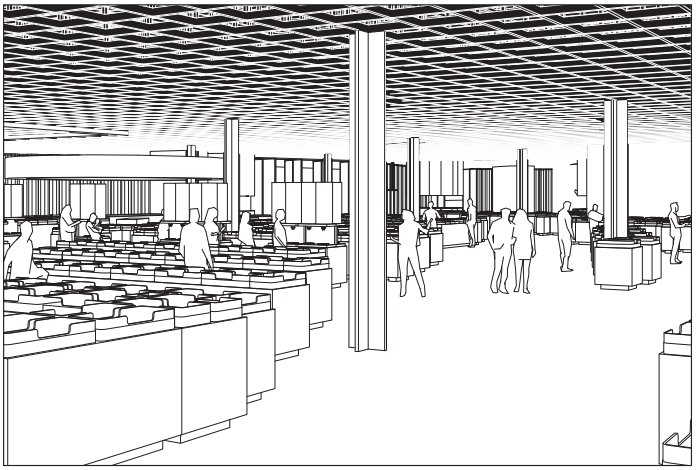
Truck with potatoes slowly drives onto the loading area of Albèrt next to the Ocado distribution system core. The Ocado robot unloads potato crates from the truck while calculating the price combination of the day and informing the customers in the supermarket.

Each day, Albèrt's potato specialists purchase different varieties and quantities of potatoes, hence, the price fluctuates. The dynamic pricing mechanism facilitates a rising awareness of the provenance of potatoes. Customers compare potatoes of different types, from different farms, and with different volumes.

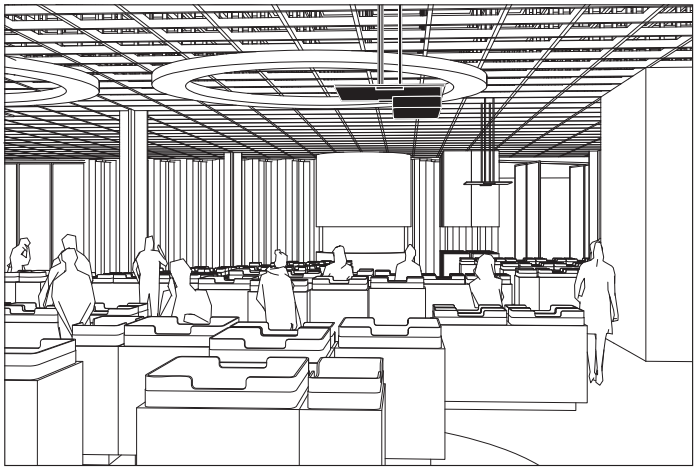


Customers–either searching in the smart cart interface or approaching the shelf–get the information of the potatoes. Owing to the check-out system built in the smart cart, customers scan and weigh their potatoes while putting them into the cart.

The spatial sequence unfolds the trading process of robust potato varieties, directly from the fields to the supermarket shelves.

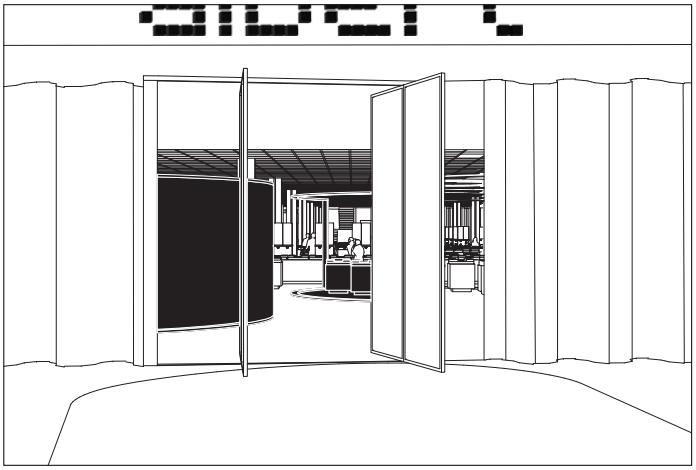


Potatoes are sent to different areas to be displayed by selections of Albèrt, based on their varieties, price, and quantities. While only some potato crates are displayed on supermarket shelves, the others are organized and stored on the ceiling. The Ocado system automatically determines the number of crates on the sales floor as means to control the price and maintain the flexibility of the floor plan.



Upon reaching the designated spot, the Ocado robot slowly drops down the crate. The rituality of distributing products within the supermarket arises the customers' attention.

With the application of non disposal packaging and pick-up service, the potatoes, with their original dirt coat, can have a longer shelf life and got to customers' hands faster than centralized distribution center.

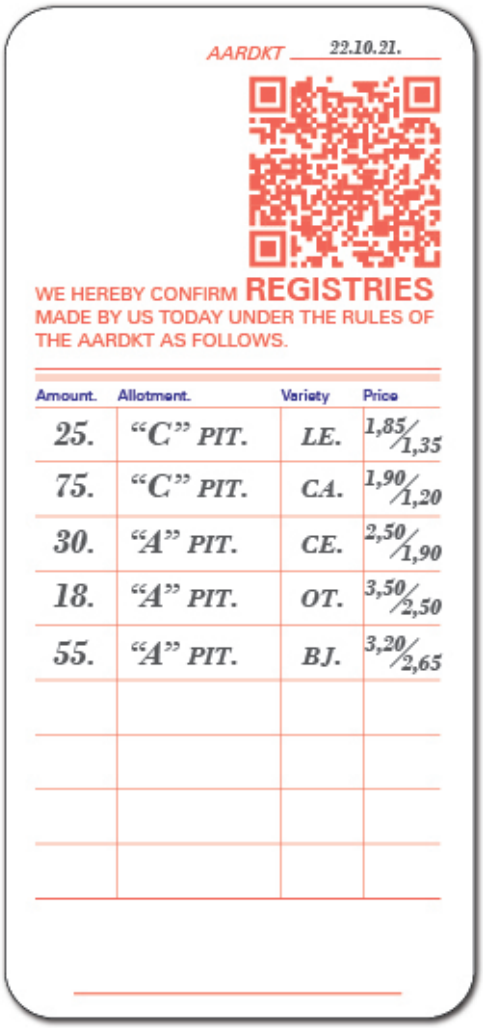


The dynamic supply system of Albèrt creates new product display combination–such as fresh produce with luxurious products–driven by customer experience and real estate strategies. The uncanny juxtaposition therefore gives the supermarket of the future a new civic presence.

AARDKT 22.10.21.

WE HEREBY CONFIRM **DELIVERIES**
MADE BY US TODAY UNDER THE RULES OF
THE AARDKT AS FOLLOWS.

Amount.	Delivery.	Variety	Price
07.	MAAS	CE.	2,23
07.	GEERTS	CE.	2,02
04.	GEERTS	CE.	1,95
14.	GEERTS	OT.	3,22
04.	MAAS	OT.	3,10
25.	IJSAK	BJ.	3,07



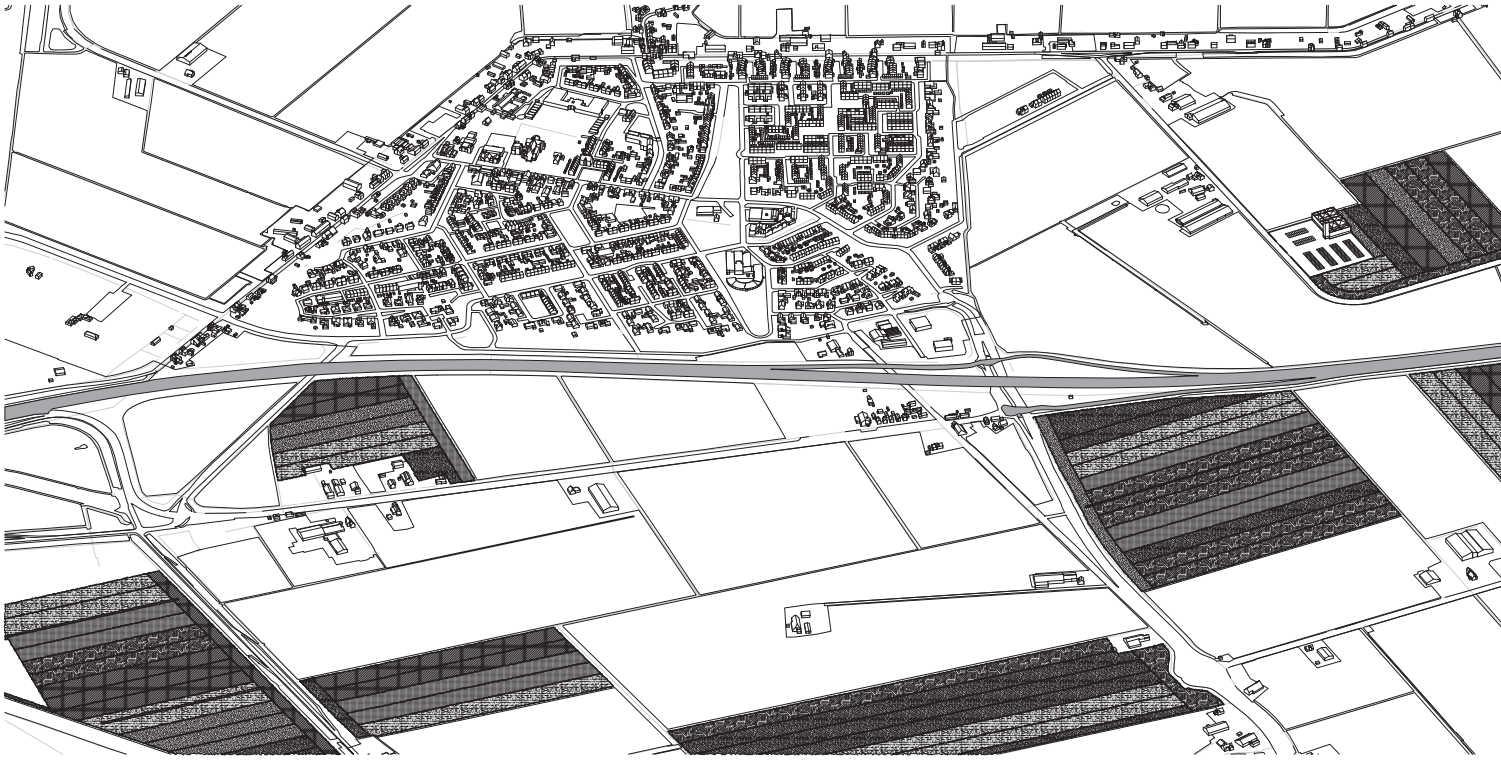
AARDKT 22.10.21.

WE HEREBY CONFIRM **REGISTRIES**
MADE BY US TODAY UNDER THE RULES OF
THE AARDKT AS FOLLOWS.

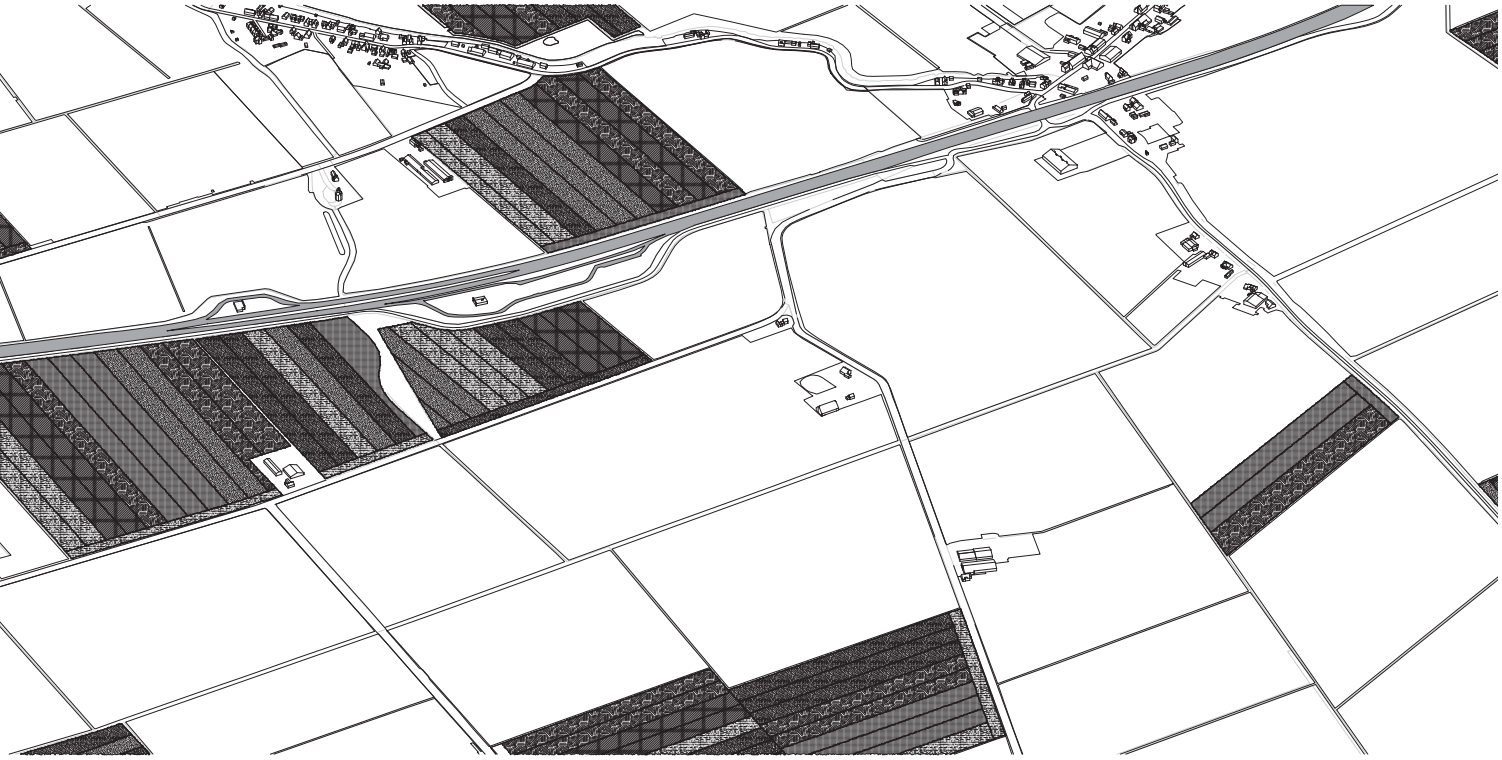
Amount.	Allotment.	Variety	Price
25.	"C" PIT.	LE.	1,85/1,35
75.	"C" PIT.	CA.	1,90/1,20
30.	"A" PIT.	CE.	2,50/1,90
18.	"A" PIT.	OT.	3,50/2,50
55.	"A" PIT.	BJ.	3,20/2,65

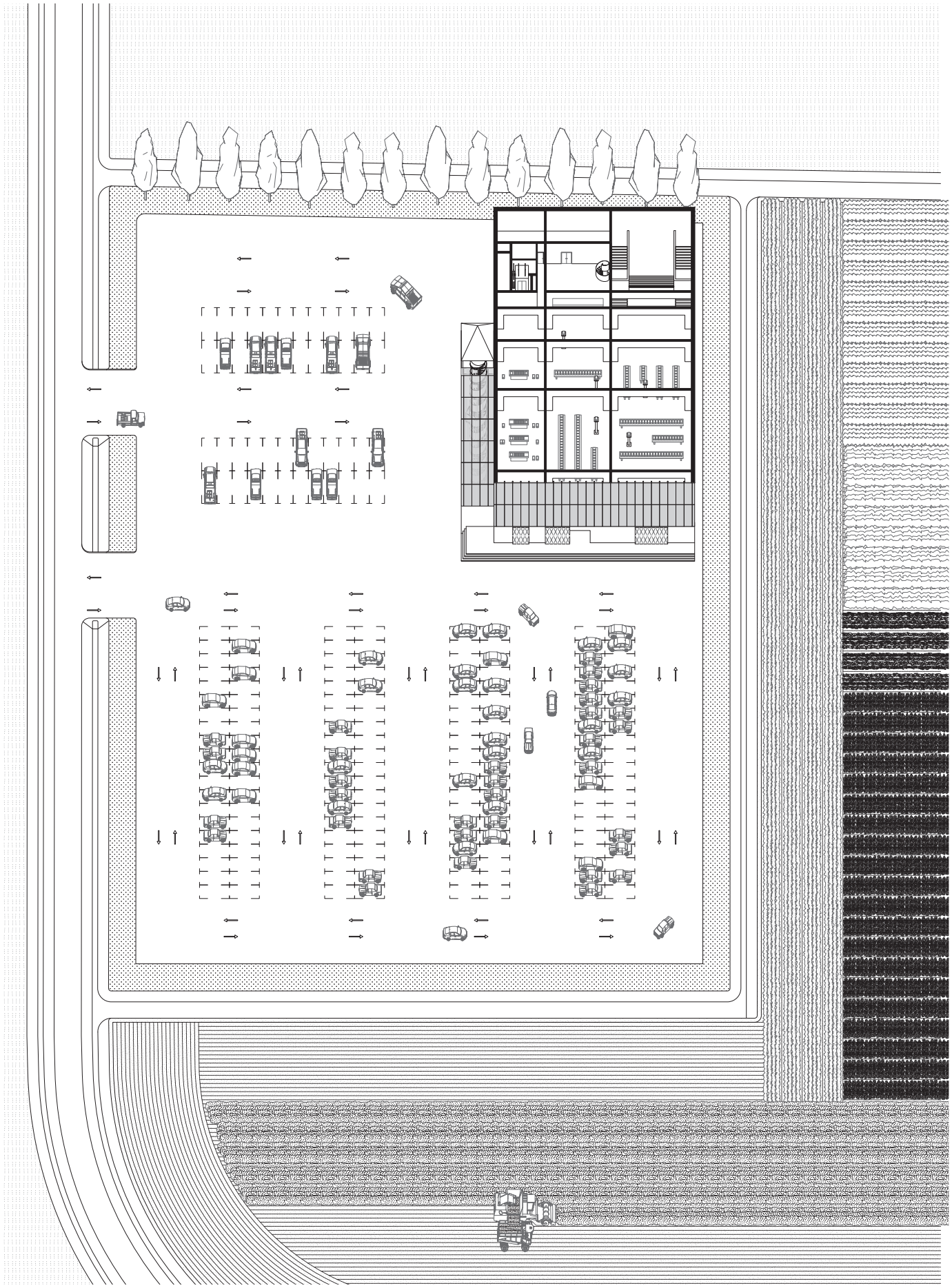
The trading card (front and back side) used by sellers in this contribution. The red card records the registries and delivery details of potato supply by one particular seller. The application of physical trading cards facilitates the market transparency and builds trust among participants.

The trading card (front and back side) used by buyers in this contribution. The blue card records the quantity and tax details of each purchase made by one particular buyer. The application of physical trading cards facilitates the market transparency and builds trust among participants.

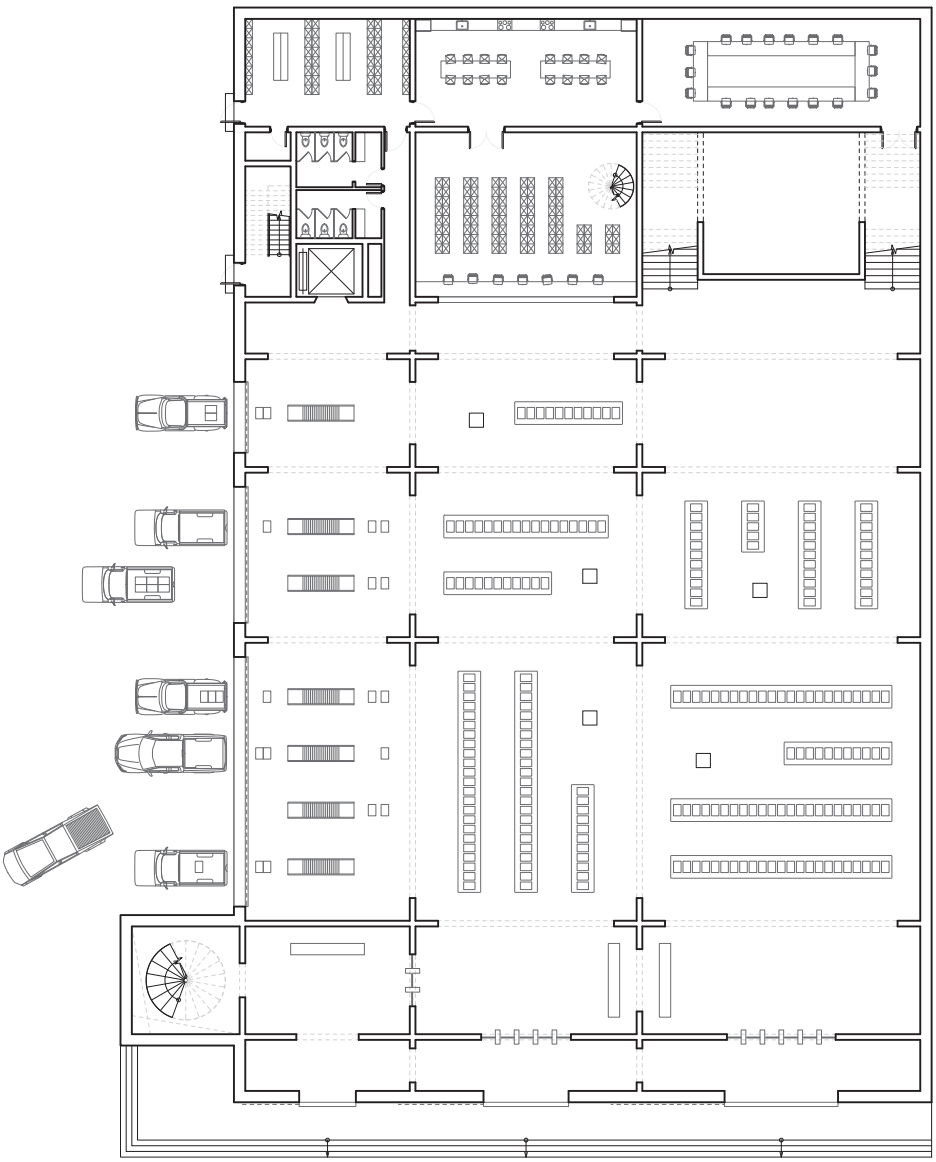


A panorama positions the contribution in the center point of its catchment area, representing a new type of architecture related to food trade with its watch tower and translucent facade.

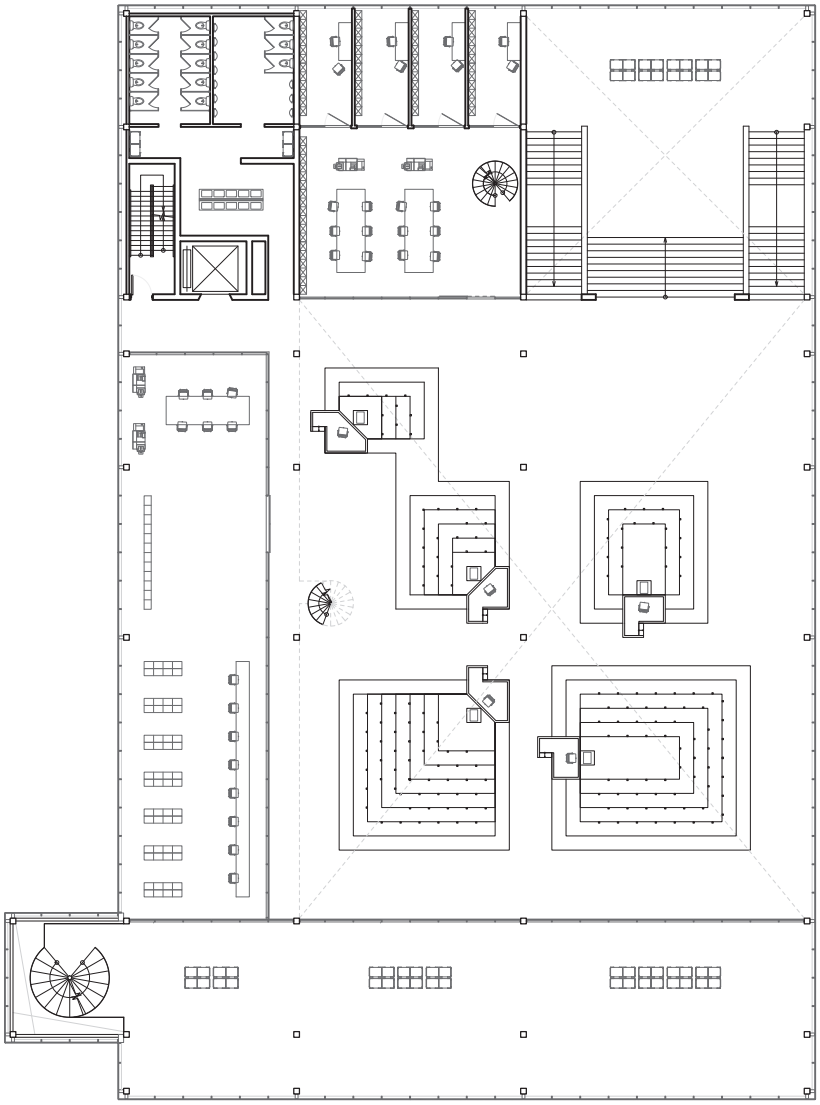




An axonometric drawing shows the front facade of the contribution in relation to its internal spatial structure. Flows of supply (potato sample crates) and demand (buyers) confront each other perpendicularly, and ascending to the trading floor.



The ground floor is a potato showroom divided into cells of different dimensions that differentiate the dynamic potato product combination brought to the market every day.



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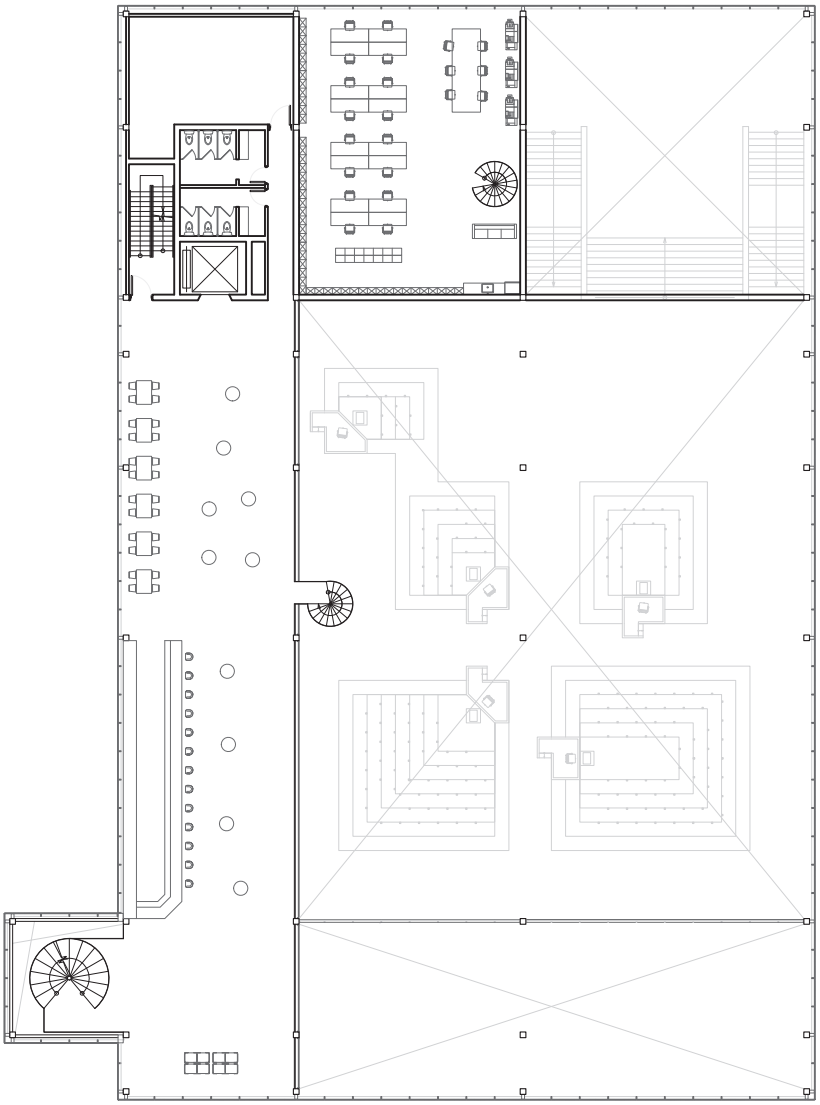

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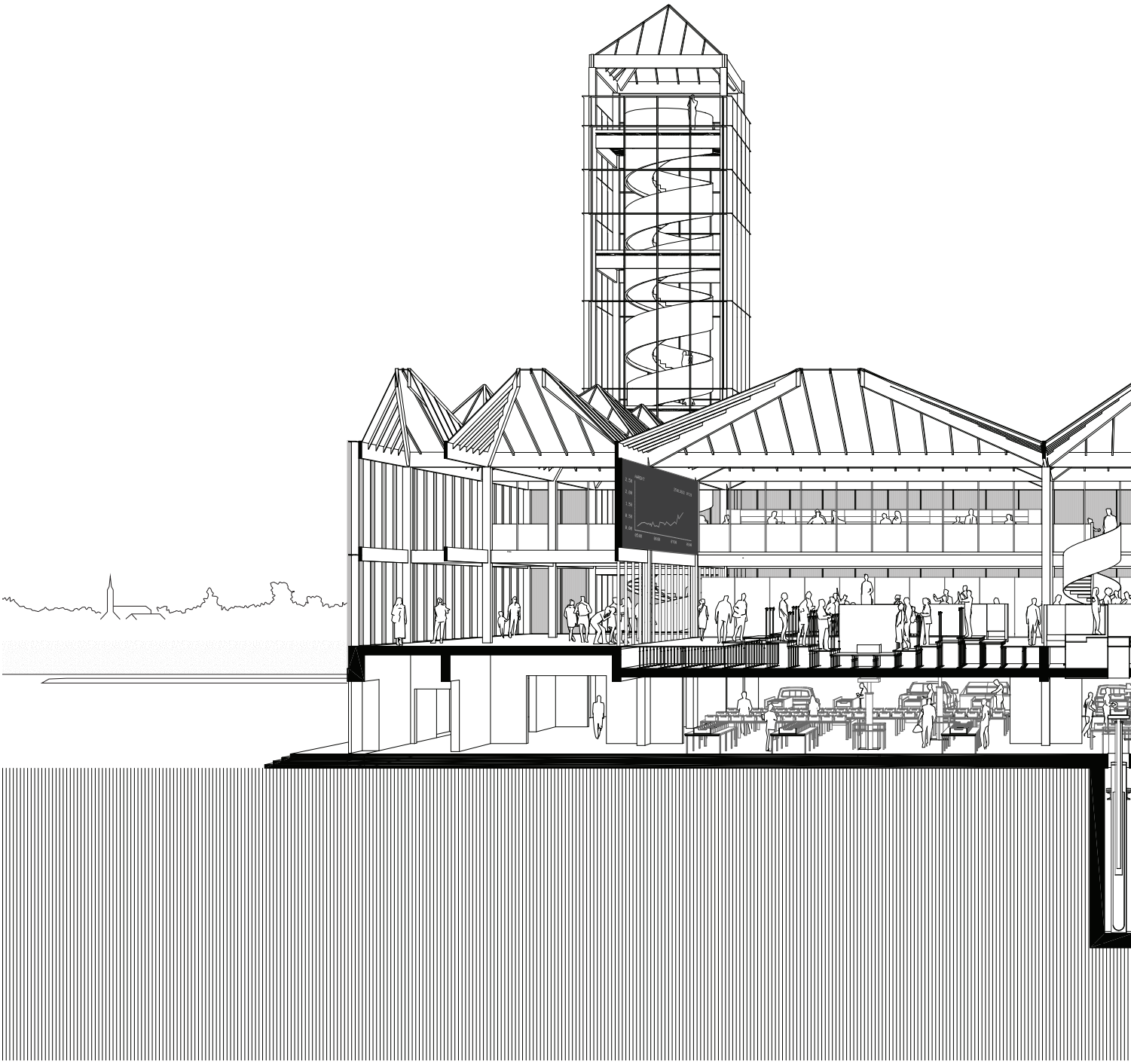
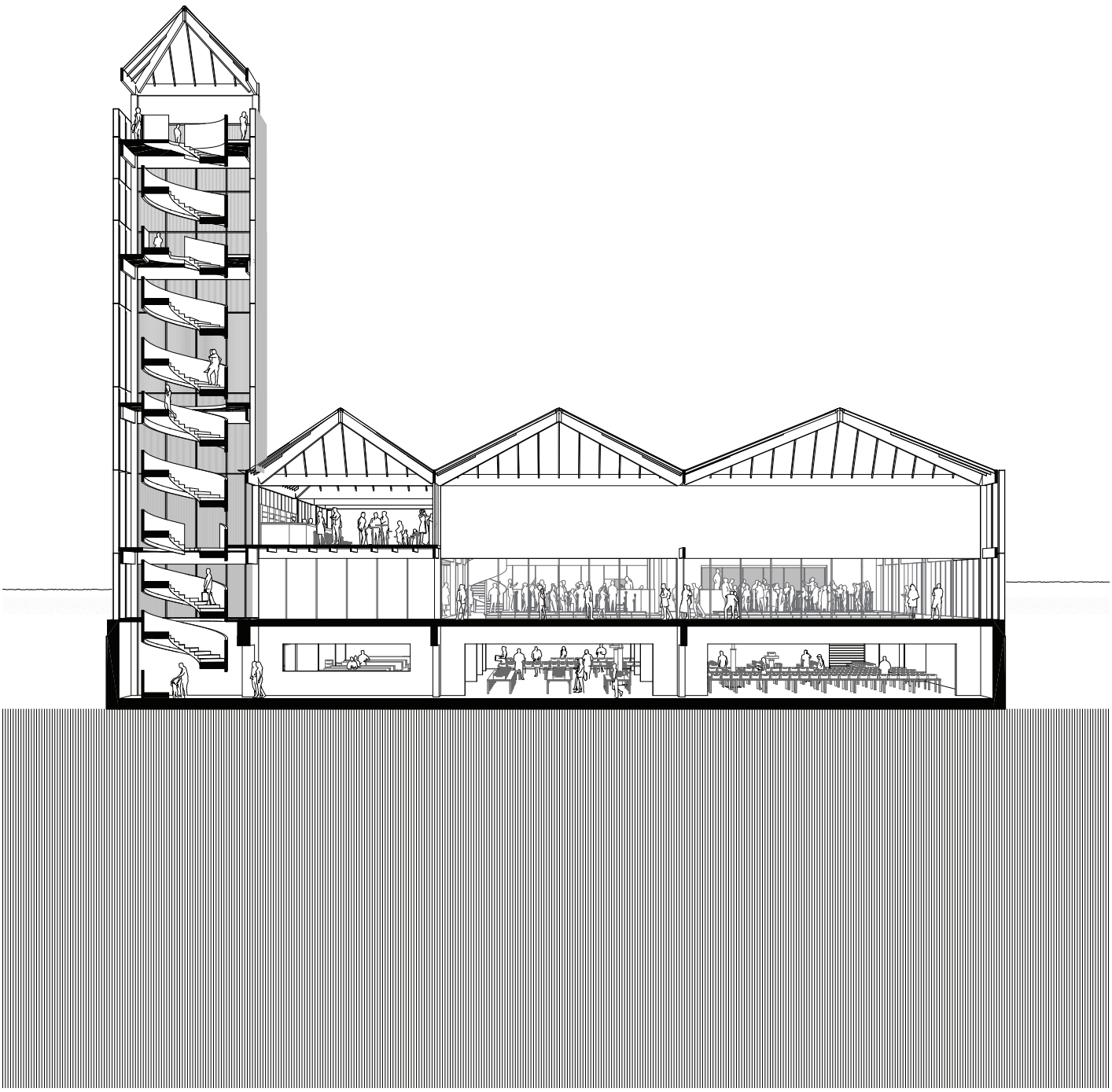
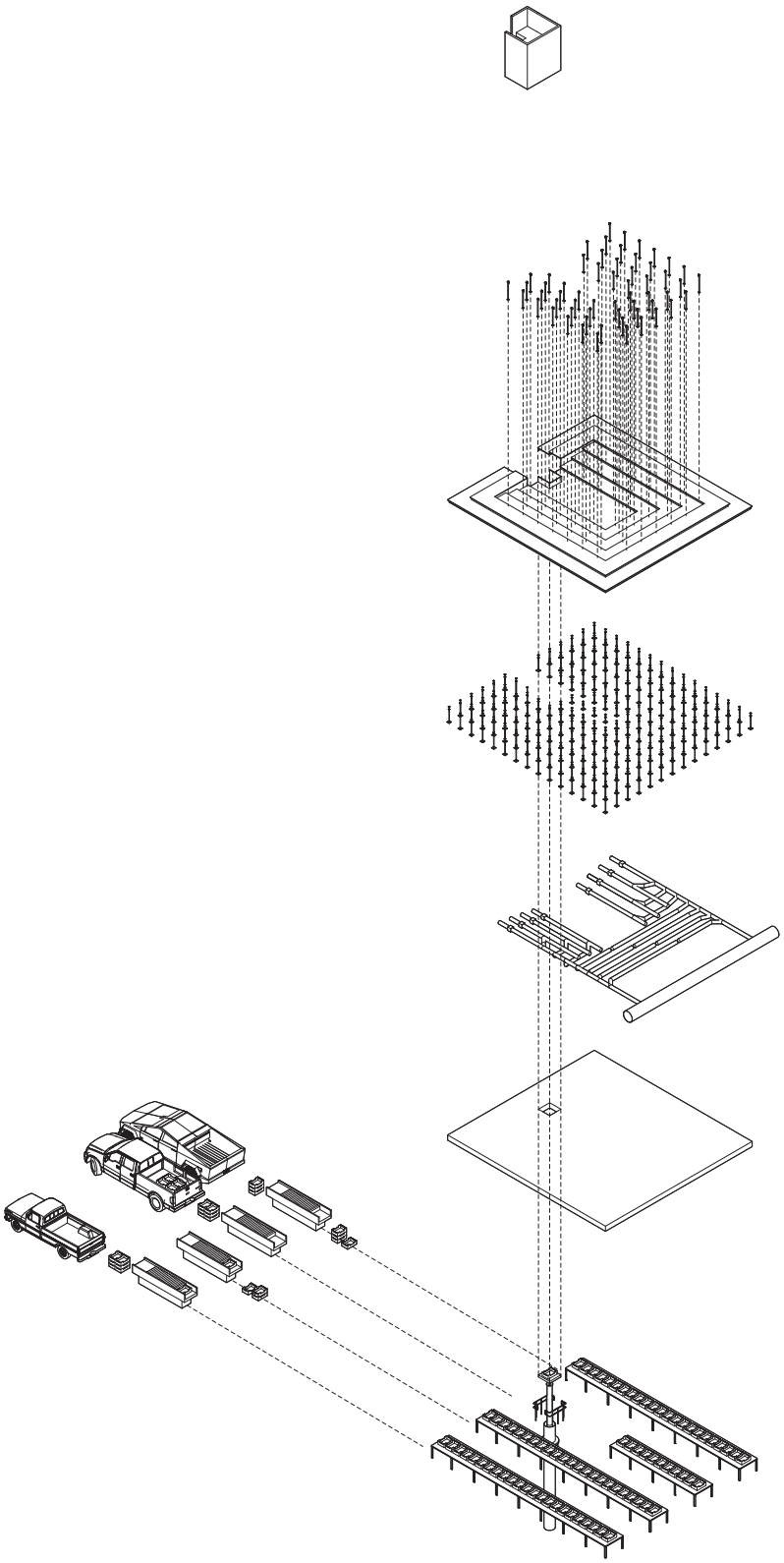


The sectional perspective cutting through the building renders the spatial sequence of trading potatoes, from examining samples to bidding in open outcry auctions.



The sectional perspective shows the watch tower, serving as a civic form within the territory and connecting all the public spaces around the trading event.



An isometric drawing illustrates the anatomy of the auction pit. The auction pit is a set of descending steps with product presence and the auction clock as main focal points. Every buyer uses the bottom on the pole to place their bid.

1 This contribution reintroduces the role of the wholesale market to the productive hinterlands in the Netherlands to balance the economic power of a more fragmented but sustainable production and therefore invites more participants to engage in the potato supply chain.

2 The application of an open outcry descending-price auction system invites buyers and sellers to meet face to face to discover the price of potatoes and further fosters trust beyond the exchange of products.

3 The qualitative and quantitative differentiation in potato supply instigates Dutch potato growers subdividing arable lands and planting diverse varieties according to climate condition, market price, and customer preference.

4 By distributing products directly between farms and stores while trading in person, this contribution alters the architecture of food trade from mega industrial shed to an open trading floor surrounded by social and public spaces.

5 A watchtower, serving as a civic form within the territory, transcends the trading activities to the new production model of which it catalyzed as the visitors climb up and overlook the landscape.

This contribution is part of *Supermarket*, a collective project on the spatial implications of the food industry in the Netherlands and beyond, redesigning the now considered essential architecture of a supermarket.

Aardkt is a wholesale market that reintroduces the face-to-face interaction within the trading process, catalyzing a paradigm shift in the Dutch potato production mode quantitatively and qualitatively.

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