



X e change

thesis proposal for Jason Miskowiec
Master's of Architecture Student
Illinois Institute of Technology

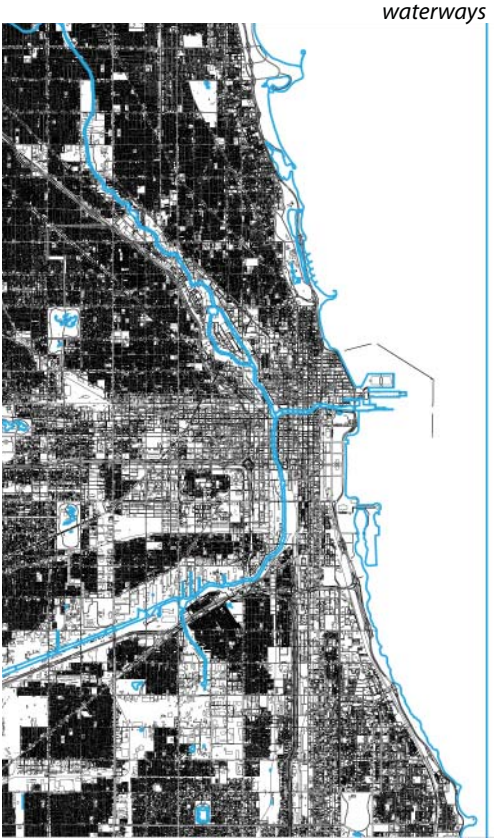
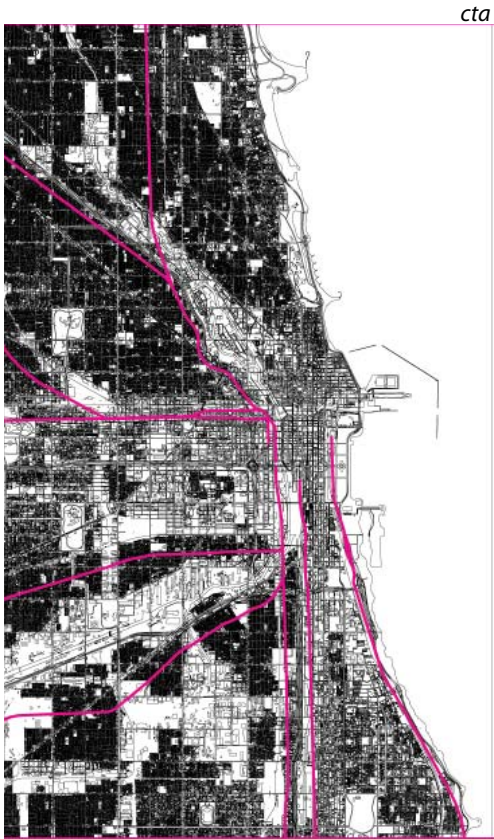
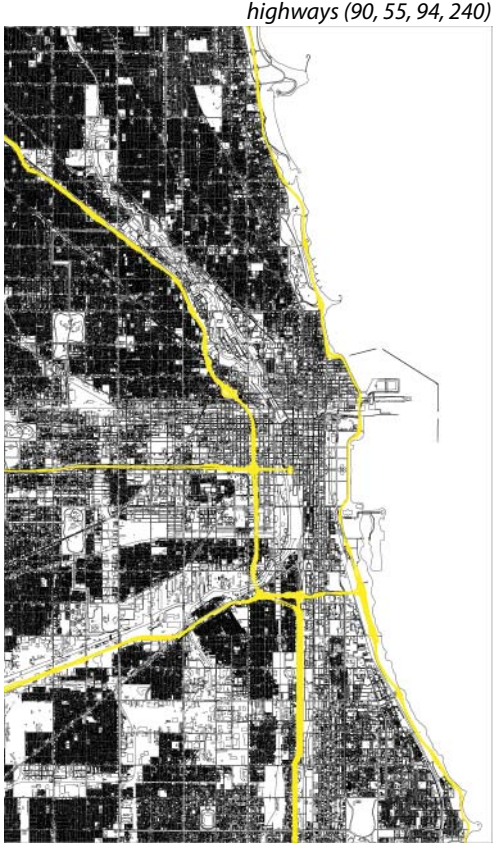
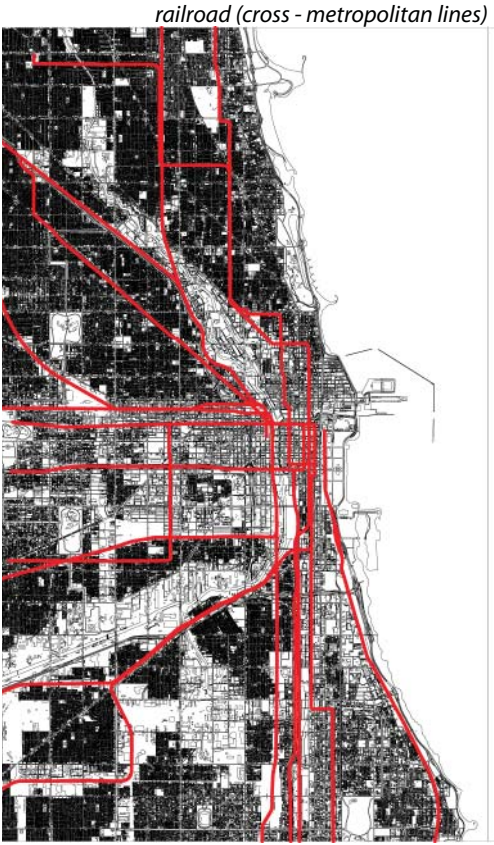
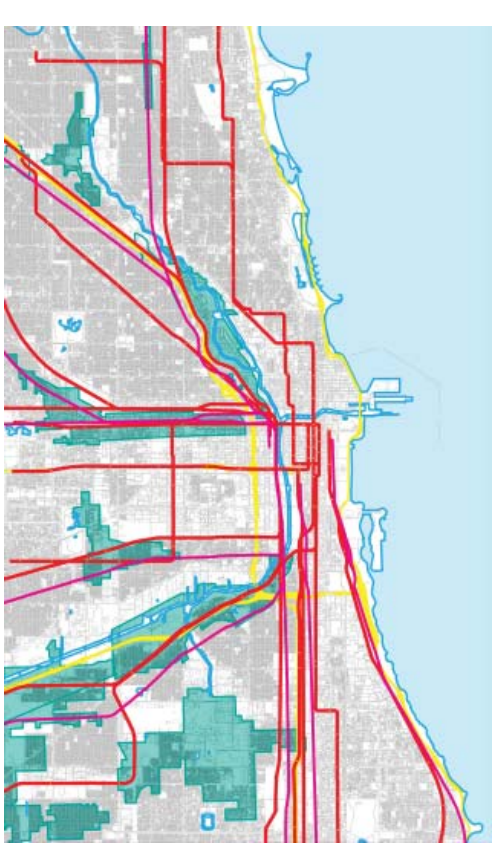
the exchange project - programming productive sites

chicago, the machine - chicago's network of movement

concept narratives

introduction
William McDonough writes in his paper, *The Living City: Nature, Design and the Greening of Chicago*, that the city and surrounding landscape are symbiotic, linked together by an exchanging of technological and agricultural "nutrients." McDonough's Chicago model countryside produces for the production of "biological" nutrients and the city reciprocates by producing so called "technical" nutrients. This pedagogy about the role of cities has been studied extensively for the last century, from Robert Berguson to Frank Lloyd Wright. Like McDonough, William Cronon's *Nature's Metropolis* also looks at this perspective of delineating the sets of nutrient flows coming in and out from the city as well as the countryside. Urban behaviors and tendencies like sprawl (as defined by Robert Berguson) and suburbia, and their link in decentralizing urban areas, poses many questions about the future city.

Recently, as of 2010, the world recorded for the first time in history that half of its population lives in cities. This has many implications. As that number continues to increase and simultaneous urban sprawl spreads more people over a greater breadth of land, resources like food and water become large scaled issues. Architects and urban theorists for years, such as Wener Hilberseimer and Frank Lloyd Wright have presented urban proposals and plans for a centralized city. Today academically the angst identity crisis between urb and suburbia is still present. The Exchange project's aim thus is dismantling the line between the ideas of the rural landscape and city. Blurring the identities of each and encouraging a more holistic approach to the idea of the very nutrient cycles within the city. The city, as my project will propose, can in many ways play the role of the countryside as well by looking at mutually benefitting cycles of production, economies and even cultural tendencies. The city using projects like Exchange can begin to foster and encourage ecology, energy and cultural remediation.



back of the yards, neighborhood in new city
“...the Union Stockyards ... at one point supported the meat needs for the entirety of the east coast.”

Network Relationships; Revealing the Gateway...

During the 1870s Chicago began building an industrial empire that would place it not only at the hub of the Midwest, but make it into a gateway between the western and the eastern parts of the country. Chicago's vast infrastructure of railroads and its connection to the Great Lakes made it a focal point for emerging entrepreneurs, while the city's steel manufacturing and livestock processing became the foundation of those emerging industries. The demand for such products today has exceeded the production capacity of places like the Union Stockyards, which at one point supported the meat needs for the entirety of the east coast. Today, the surrounding and supporting agriculture for such processes and economies now occupies more than a third of our country's real estate. As a result, de-centralized modes of production for food have caused a nutritional crisis as well as a questioning of the integrity of food itself. As post-industrial America looks into such sustainable experiments like LEED, green roofs and even vertical farming, the ability to use infrastructures and existing buildings will be looked at for redevelopment and reuse. Such experiments and movements have already begun, like John Edel's project in the old Union Stockyards known as the Plant.

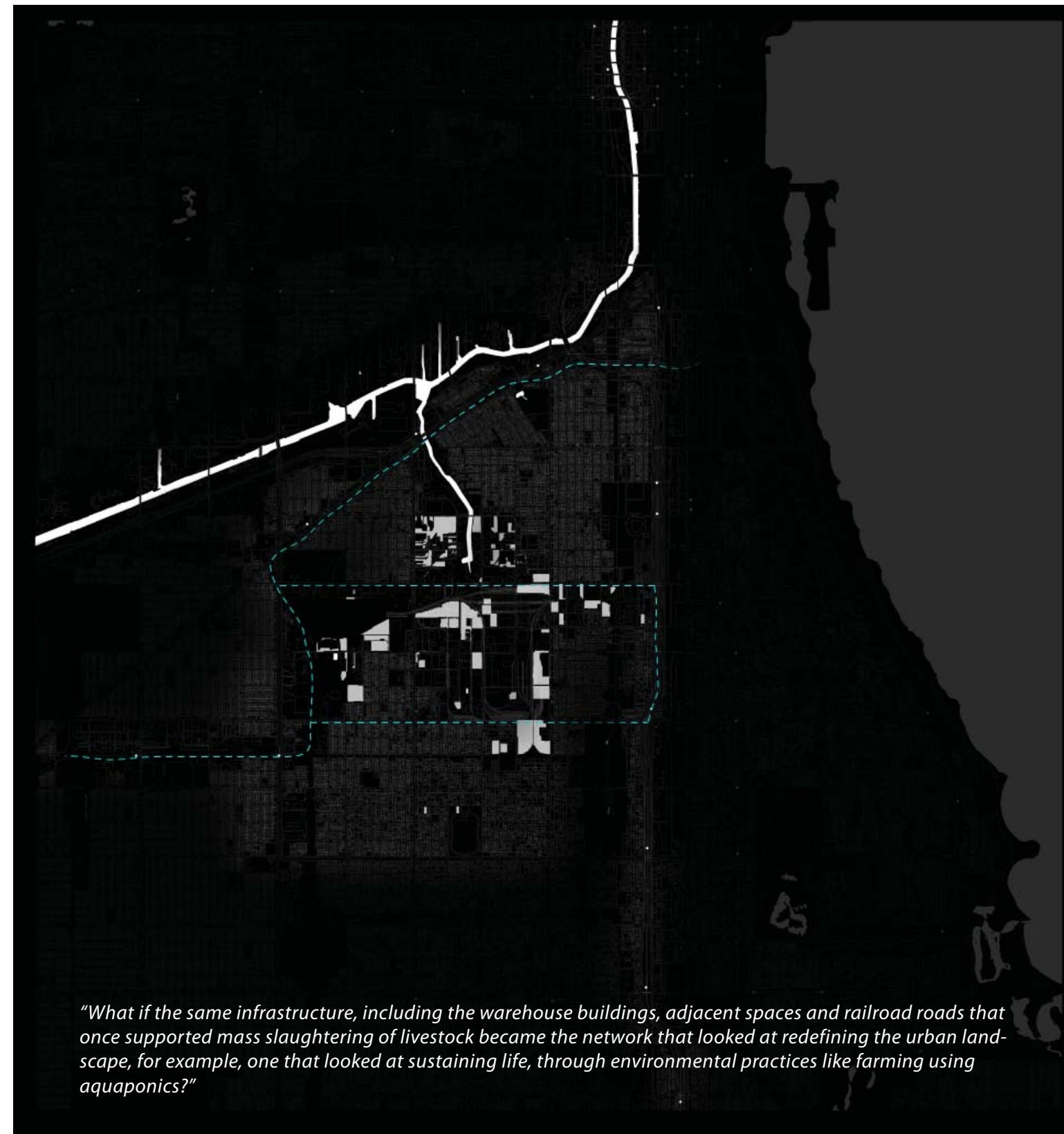
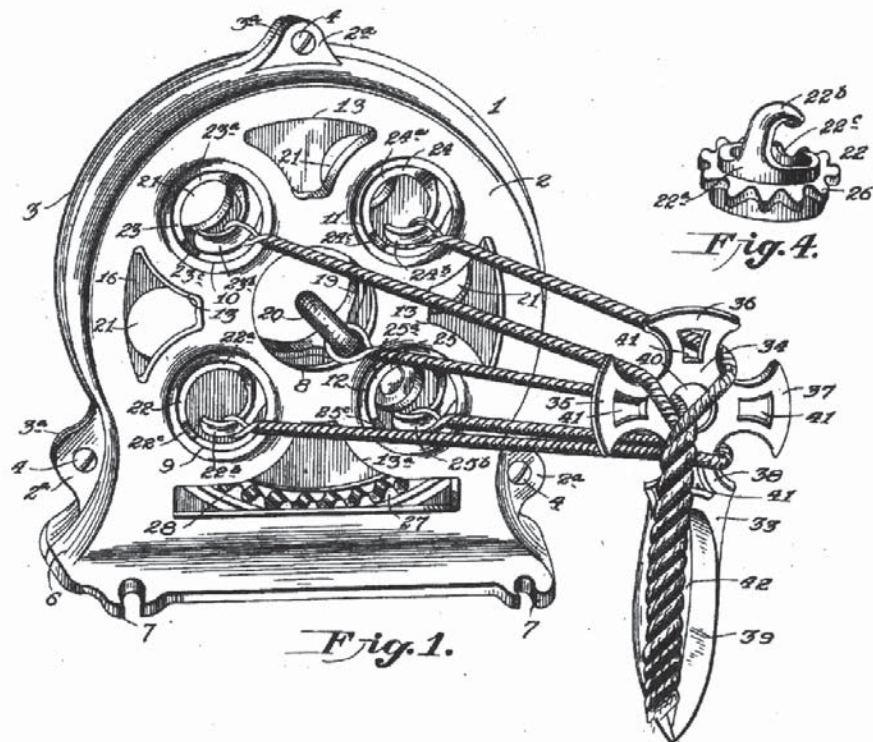
John Edel's project sits at the corner of what used to be the Union Stockyards. It is a vibrant yet desolate place. It is full of texture but washed over in grey at the same time. His project however brings up many questions about the condition of our industrial past and our prospective future. John's ambitious project of converting a processing plant into a center for urban agriculture is one of many seeds being planted in the city of Chicago in anticipation and hope for the need for food and food education. What if the same infrastructure, including those warehouse buildings, factories, processing plants and railroad roads that once supported mass slaughtering of livestock became the network that looked at redefining the urban landscape through environmental practices like aquaponics?

The architecture of the Exchange project ancillary sites will organize various programs in ways to produce agricultural products, be involved with processing in different ways, and participate in the local economy. The network of sites will collaborate and work within individual and systematic closed loop systems.



Could spaces and buildings, as well as rail yards and stock yards become hubs for these processes and projects to develop? Could we also look at the collaboration of networks throughout the city that would support such projects, such as temporary spaces to house markets, and other business and cultural programs? Keying the proliferation of goods and information are movement arteries that can take products and goods from one place to another efficiently. As proposed above, various arterial networks like existing stockyards and rails, the Chicago River and city streets could also serve as distribution corridors for these goods and services. Aside from networking of railroads and the Chicago River canals, could other arteries, like highways or even the 'El' serve these functions in transporting agricultural/ industrial products? Could we somehow become less dependent on natural resources such as petroleum in the distribution of goods? An alternative network looks at making use of possibly underutilized infrastructure.

Ultimately, the project of revolutionizing the way we produce food locally to serve more efficiently and directly our city of Chicago relates to production and economy. Production efficiency could directly relate to advantageously making use of existing networks of trains and freight transportation. Vacant buildings along these tracks could serve as places to begin production if they are suitable and have the necessary amenities for the development of such facilities as grow houses. Their utility will have to be assessed in a variety of ways, but what they certainly offer is space. More importantly, however, is not simply the manufacturing component of the larger cycle. Distribution is key and so program planning and architectural functions will coordinate with the distribution aspect of operations to look at being a more expansive entity, one that aims at bridging not so distant sites outside of the immediate stockyards. The proposed 'system of components' vision of the program looks at extending into other previously inaccessible places. These outwardly distributed components could be labs, grow spaces, or other vehicles that either distribute goods or offer education and information. The relationship of these temporal spaces and the path taken to get there could relate to the further developmental aspect of the project. Perhaps this is where the different levels of urban intervention happen. The mobility and scale of the vehicles can suggest a greater means of connecting people and program.



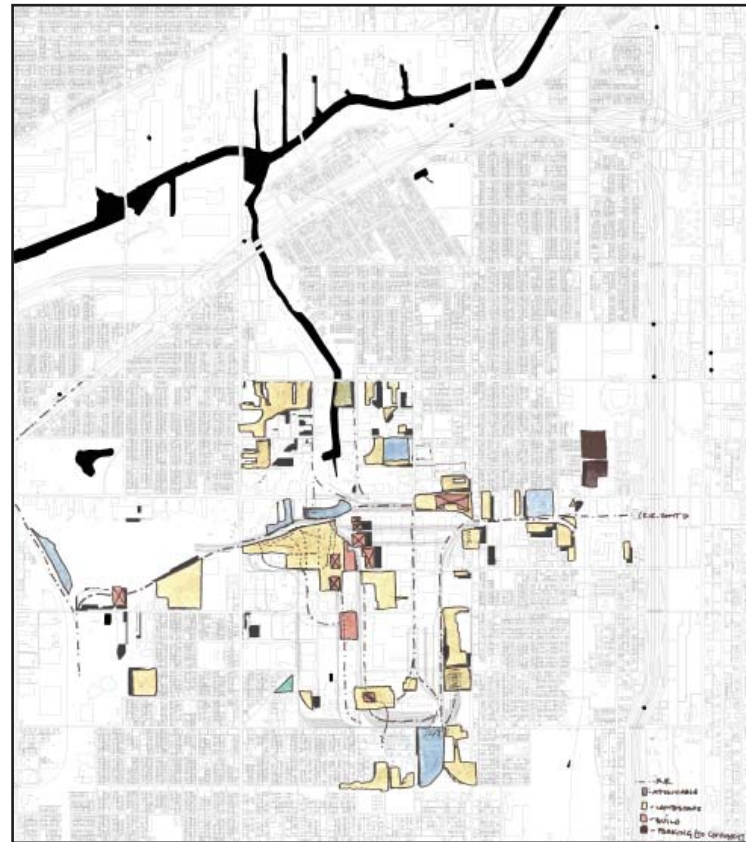
"What if the same infrastructure, including the warehouse buildings, adjacent spaces and railroad roads that once supported mass slaughtering of livestock became the network that looked at redefining the urban landscape, for example, one that looked at sustaining life, through environmental practices like farming using aquaponics?"

back of the yards - vacant space

vacant spaces & existing railroad lines in the Back of the Yards



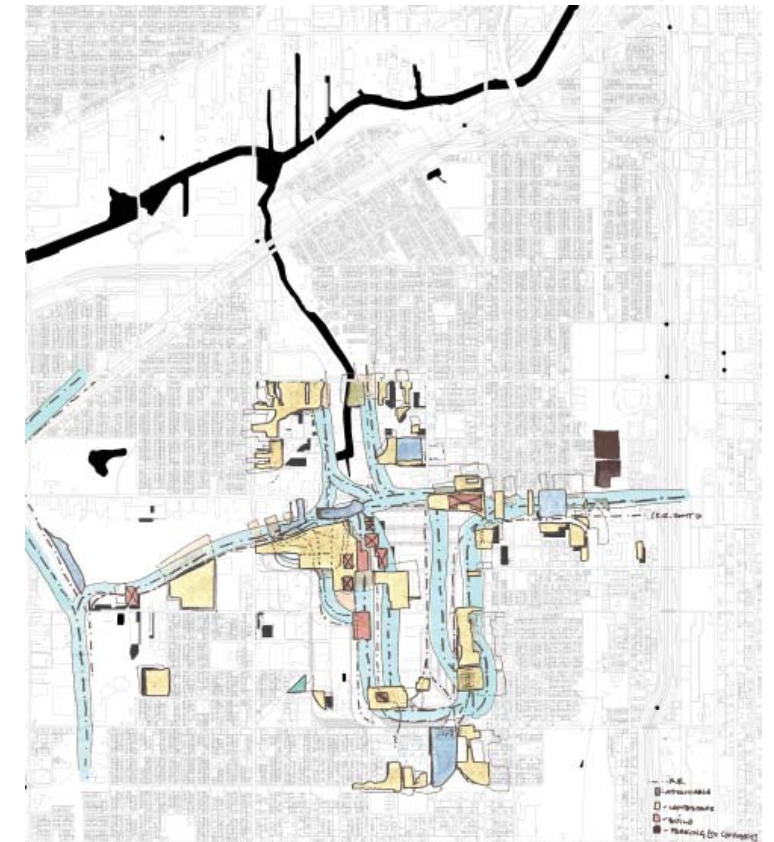
vacant spaces; buildings, landscapes & attainable spaces



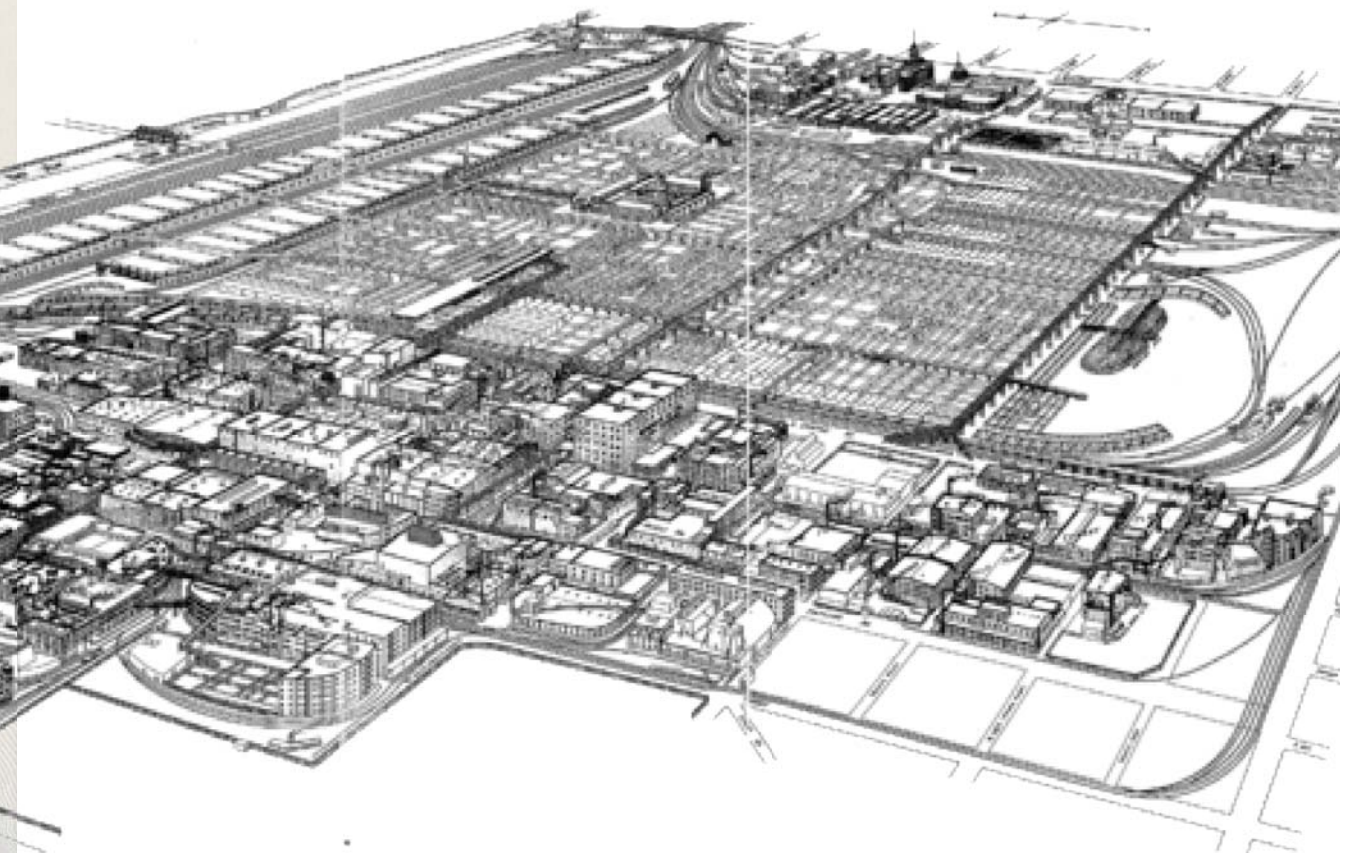
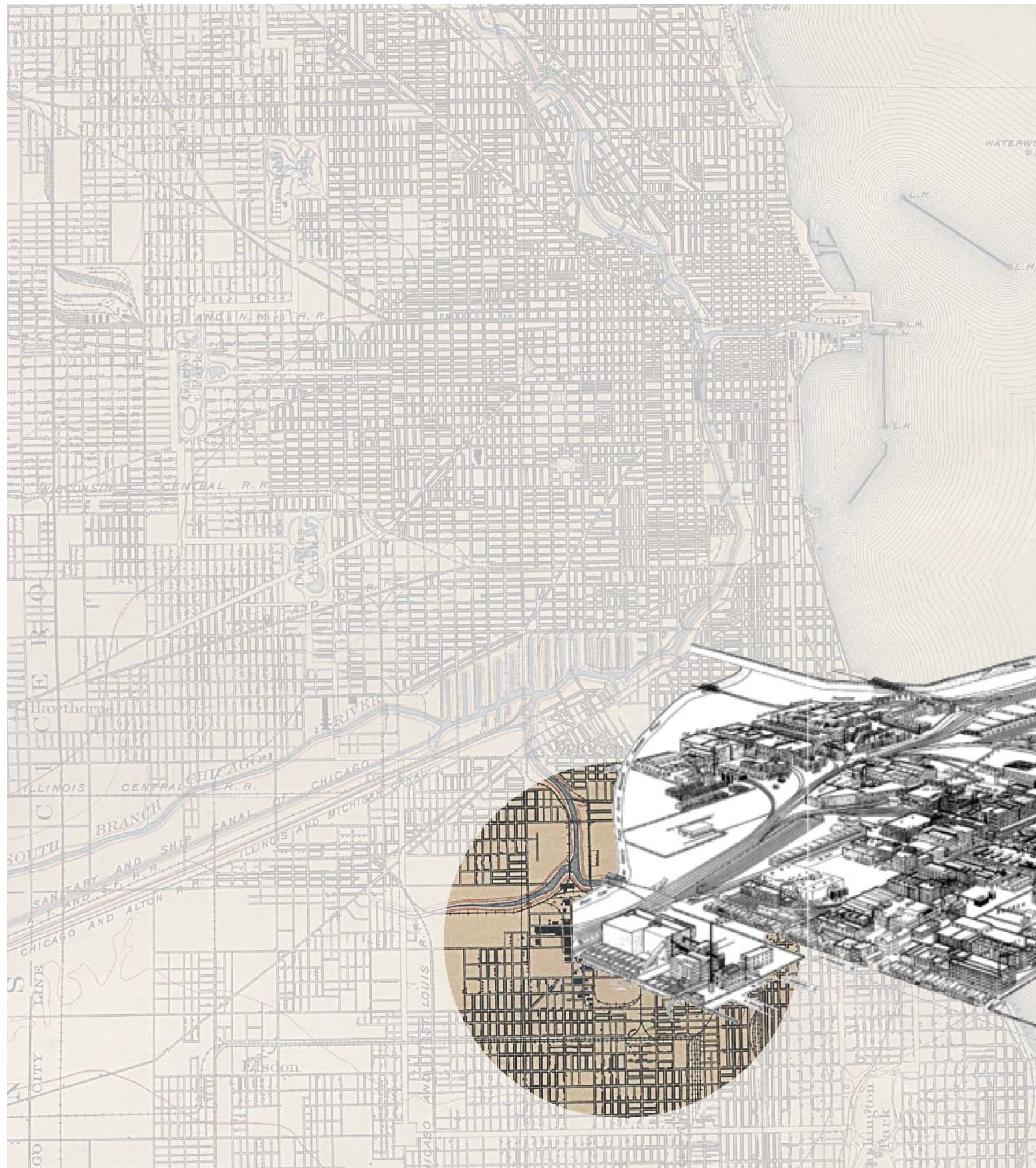
vacant spaces; pathways between



vacant spaces; overlay concepts

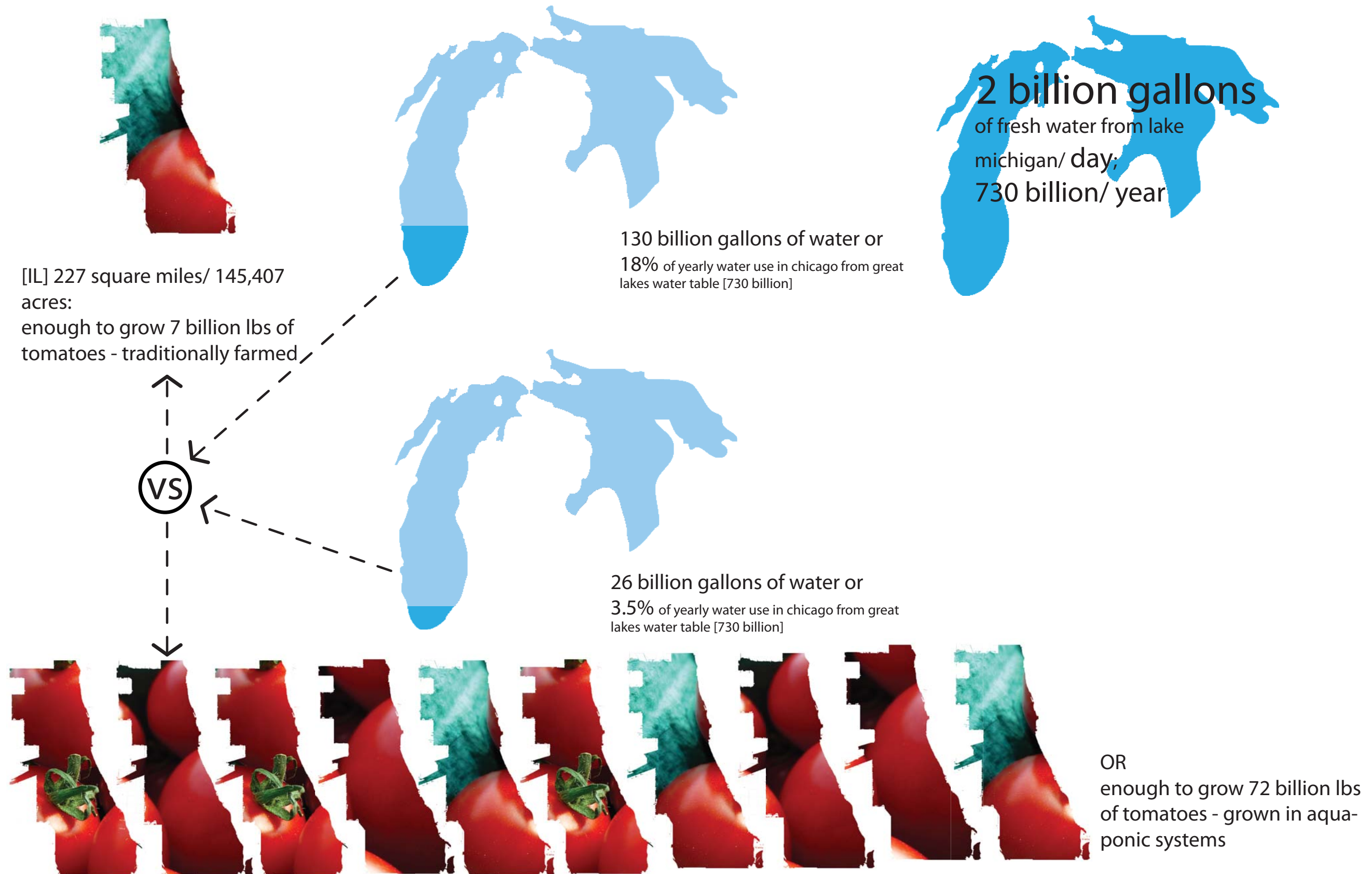


“Could various stopping points, such as rail yards, or stock yards become hubs for these processes and projects to develop? Could we also look at the collaboration of networks throughout the city that would support such projects, such as temporary spaces to house markets, and other business and cultural programs?”

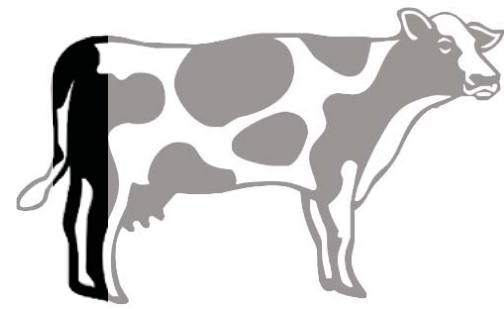


“The Union Stockyards is the ultimate symbol for such a project which looks at re-rooting the way we look at food, food production and food culture. Once a place and culture of mass meat production, the Union Stockyards becomes the physical and philosophical symbol of food production in a new era and time. This culture asserts itself architecturally by setting up future infrastructure primarily focused on agricultural production of goods but simultaneously looking at social and culturally supporting ancillary program.”

water usage conventional farming vs. aquaponics
[an example of poor water usage]



*what's beef? the cost of beef production
[an example of poor land usage]*



75.5 lbs. beef consumption per capita/ year,
~7% of the average slaughter cow:

211,400,000 lbs. of beef for chicao



241,600 acres needed or 1.6 Chicagos
[for growing]

3,382,400,000 lbs. of grain for feed

192,181 cows

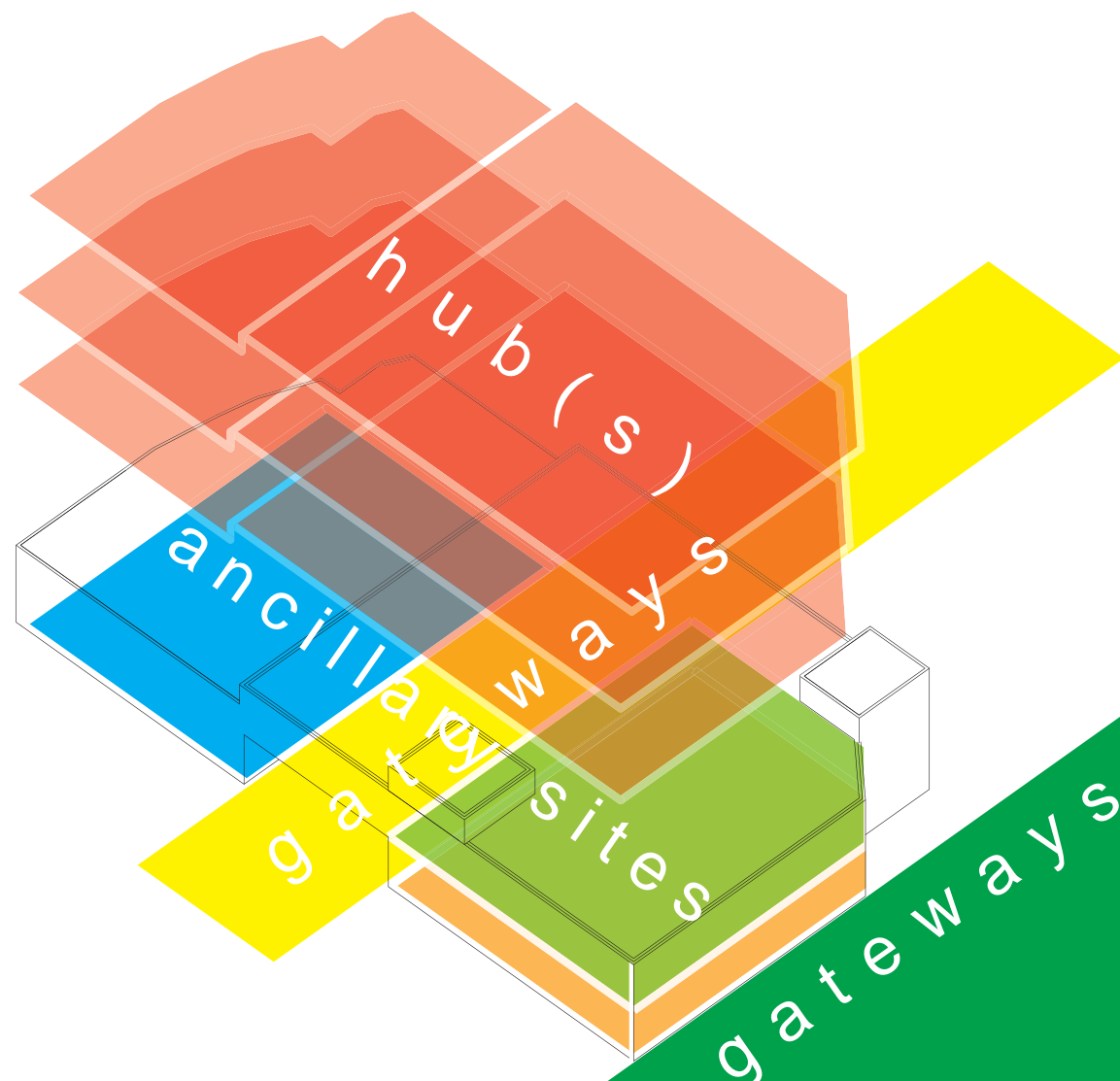
768,724 acres needed or 5.2 Chicagos
[for pasture]

507,360,000,000 gallons of water needed
69.5% of yearly water use in chicao from great
lakes water table [730 billion]



The processes of various grow facilities could also couple with other agricultural and environmental projects for water cleaning, harvesting and storage of water, energy production (i.e. corn to ethanol or even closed loop processing systems such as the one proposed by Eben Bayer in his TED talk about making plastic from Mycenae fibers grown from mushrooms). Simultaneously, vacant land sites and buildings could be looked at to support such agricultural operations, making use of otherwise unusable spaces, perhaps even providing ecologically and culturally enhancing spaces. More specifically, these spaces could become, ecological registers, as defined by Mohsen Mostafavi, that is, environmentally engaging and socially dynamic sites seen as and having a sense of 'place.'

In partnership with local communities, my project will look at developing innovative prototypes and programs to support distribution of locally grown produce and goods, integrated recycling, source reduction, and composting systems. Mobilized 'vehicles' will look at shortening the gap between grown food and the consumer, including the distribution of locally grown produce from vertical farms as part of an integrated network of agriculture and food. Additionally the development of several composter prototypes at various scales, including a year-round medium-scale composter that processes organic food scraps and other materials will be incorporated programmatically and systematically into these mobilized vehicles. The development of these prototypes and models will foster and educate future life-long ecologically-minded people. Architecturally, these vehicles will represent a response to the growing food crisis, health and dietary concerns and socially ecologically issues related to food in an effort to educate, re-direct and shape the new global citizen.

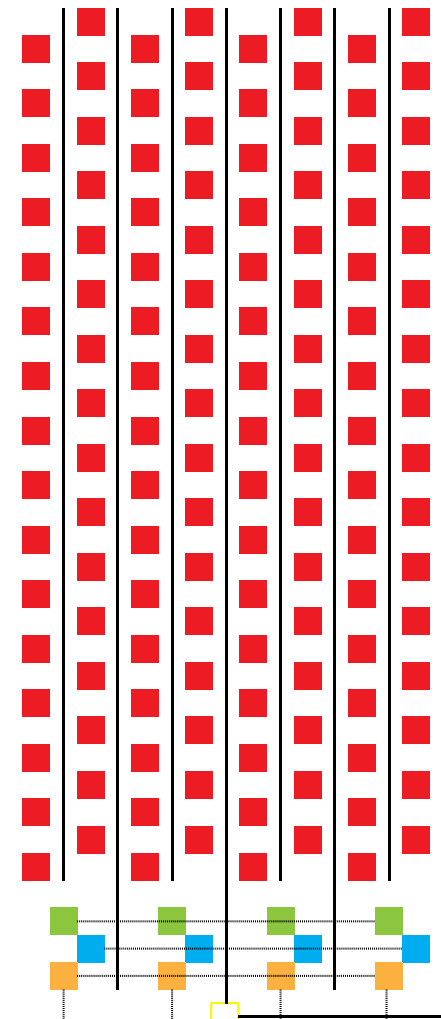


site A 'hubs' i.e. grow & production sites:

slightly defined

Hubs look at connecting (and organizing) the networks of production (growth), transportation, selling, eating, and disposing of food.

defined & attributes



Academically, vertical farms have long been a possible answer to feeding the city; an engine for production of agriculture. However, vertical farms and projects have seldom answered the needs out of production, specifically those related to distribution, transportation, consumption and disposal of produce. Choosing a site ultimately begins by asking two simple questions about the need for production. leads to further and previously unanswerable needs for distribution and disposal of agriculture. food, choosing a site ultimately begins by asking two simple questions about the need for production. First spatial requirements for production are substantial - a given neighborhood requires thousands of hectares/acres (ratio to be determined later) to grow enough food to be sustained. (Most cities' goal is to have 10% of their produce grown through sustainable agriculture methods like aquaponics.) These sites could include sites along the river at abandoned buildings with substantial square footage for grow operations (10,000 S.F. +?). Additionally, large buildings should be adjacent to channels for distribution, more specifically channels that support local networks for sale and consumption (hours? miles?). If sites without substantial existing buildings close to movement and distribution arteries exist, secondary criteria for selecting sites could be vacant space where light, quick, temporary grow houses are set up to serve immediately adjacent communities.

Hubs will work in conjunction with ancillary sites and gateways [see below] to involve full closed cycle food networking, more specifically looking at the production, transportation, purchasing and selling, eating, and disposal of food and agriculture related industry.

site B 'laboratories/ ancillary sites' i.e. sister sites/ networks that have symbiotic processes and intentions (as defined by design):

slightly defined

Laboratory/ ancillary sites look at using otherwise unused spaces as transformative opportunities for creating new infrastructure related to the production (growth), transportation, selling, eating, and disposing of food.

defined

More specifically, ancillary sites looks at these unused spaces as opportunities for extending my projects primary program in a temporary/ semi-temporary way using smaller scaled spaces. Siting temporary sites allows for an open dialogue for programmatic functions in transitional spaces like vacant plots. Specifically, these temporary spaces could be used to grow gardens, as distribution sites or education, scientific, social and even creative laboratories within communities. These laboratories can serve as transitional spaces for undeveloped open lots and space. With educational and social components attached to the larger program for food production and distribution, a more information endowed and ecologically responsible citizen will begin looking at and re-shaping his/her environment.

attributes

Open and vacant lots, either standard Chicago lots or other configured open spaced. Unused space in both vertical (underneath/ above 'EI') and horizontal that has existing infrastructure/ structure. Small transitional sites – otherwise neglected sites. Sites in need of environmental remediation/ intervening.

site C 'gateways' i.e. sites that contain the means for movement of goods:

broadly defined

Using vertical farms as a starting point for the idea of urban agriculture ultimately could provide the dialogue to begin the community engagement. In the larger scope, urban agriculture could support local communities by providing a means of economy by providing jobs while re-inventing the idea and identity, place, and ownership of these community places. Urban farming is ultimately about ecological responsiveness to a growing social problem of food shortage and hunger - retaking ownership and responsibility about diet and nutrition.

Gateways look at the expressing and identify the routes, roads and paths through the network of production and consumption. Additionally, gateways look at humanizing and greening the built environment in combination of making over desolate urban space – specifically, abandoned rail space, abandoned lots and other spaces that may contribute to incorporating nature as to help more betterly manage watershed run-off, capture and filter water for potable uses, cleanse and filter air, and create beautiful environments for public use(s). Specifically, the management and re-invention of these spaces looks at introducing long term places for more pragmatic ecological development, architecture, landscapes and designs. Gateways as a name was chosen to symbolize framing the past as a way to look into the future. It is a metaphorical bridge between past and present.

defined

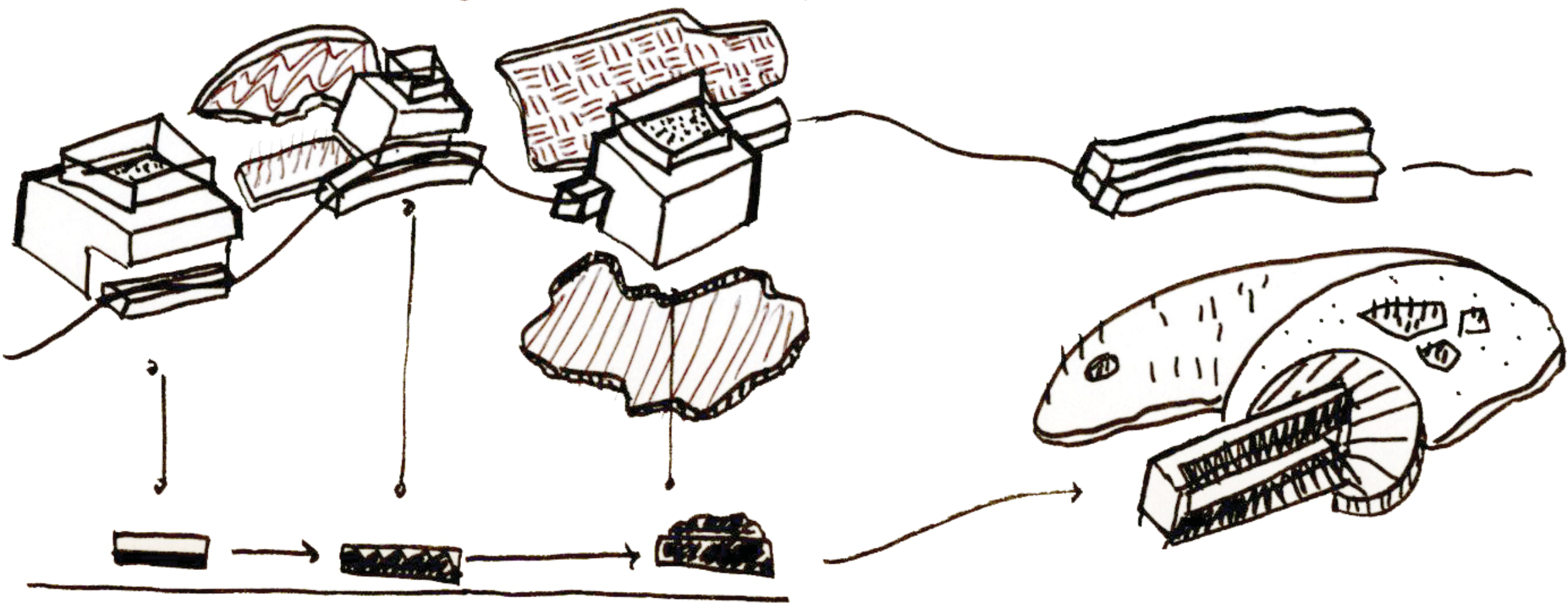
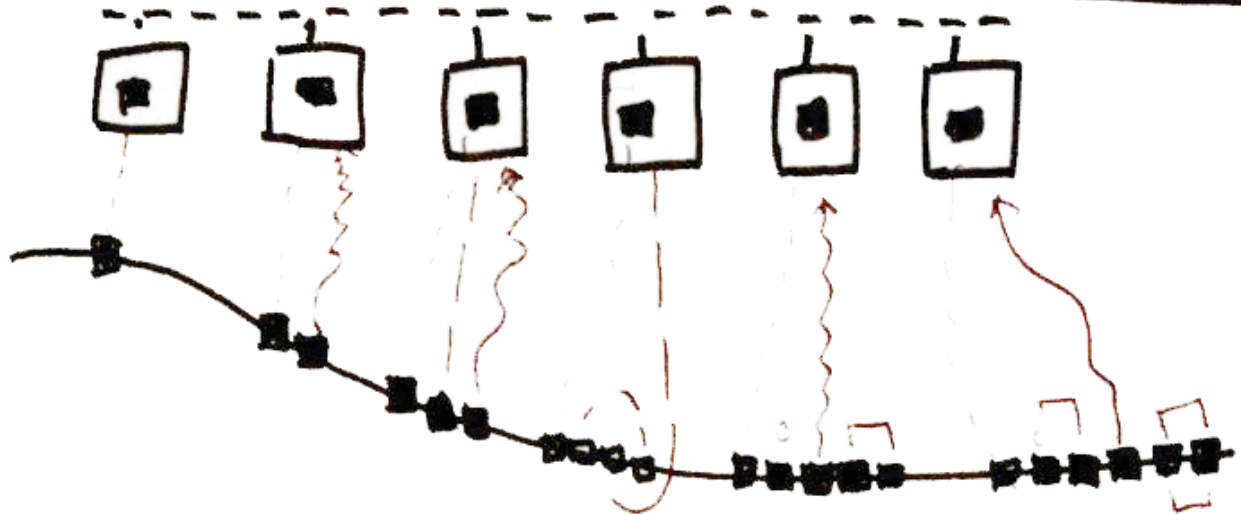
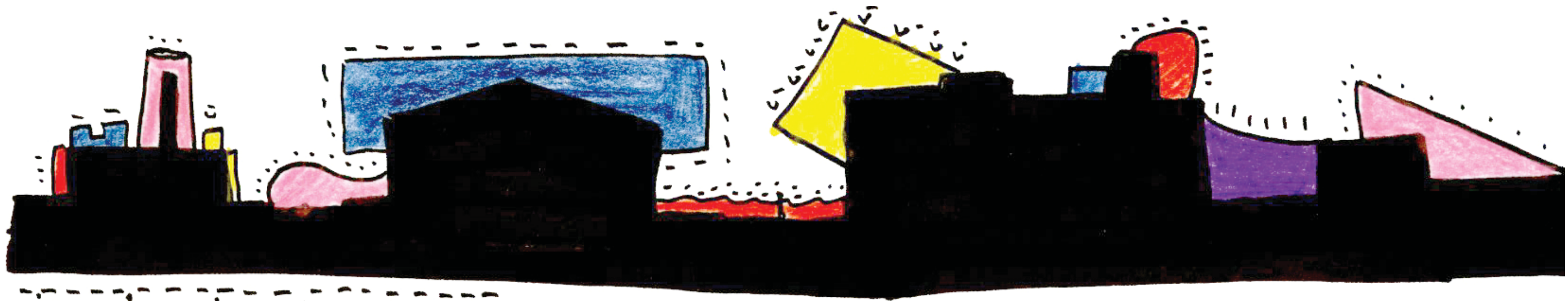
The Union Stockyards and surrounding rail infrastructure including the regionally and metropolitan area of Chicago. The Bloomington Trail. Various vacant spaces and lots along transportation or perspective/speculative transportation related avenues (physical). The scale of spaces that encompasses the idea of gateways is far reaching. It includes tight corridors between industrial buildings as well as large open rail yards riddled with or empty of operating rail networks.

attributes

Rail stockyards, much like a river, represent something that is always in a state of motion yet always in one place. The rail stockyards and their satellite spaces for storage represent intermodal pockets in the city. These spaces along with other left-over unused vacant spaces in the city, like the negative spaces created by the 'EI' rail structures, could become more useful and serve as temporary or semi-temporary interventions for food production. The placement of program in these spaces allows for interactive between the project and the city.

program scalar relations





Graphic Site Analysis

mitigating environmental impacts

supporting project goals

Sites along the Chicago River corridor at any number of possible various locations could serve both as a symbol for growth in Chicago and reference to Chicago's history as a principal slaughtering location of the U.S. in the early 20th century – notably locations close to the Union Stockyards. The siting becomes a starting point of a narrative that seeks to both remediate and re-identify itself within the context of the city moving into a more sustainable future.

Three main goals for the urban farm outreach project reflect the priorities of Growing Power's efforts nationwide:

1. Provide locally grown and affordable produce in urban neighborhoods that otherwise have inadequate sources of fresh food.
2. Offer job training for high school youth, teaching life-enriching skills and preparing them for the work force.
3. Foster community economic development with microenterprises in the neighborhood.

contributing to the success of your stakeholders

Project stakeholders for the reinvention of industrial corridors for urban agriculture consist of all neighborhoods which are part of food deserts as well as those who don't have access to fresh and natural produce. However, the greater population of Chicago could benefit from this project, as the production of food could serve all who fall within the metropolitan area. This project, through the democratization of food, could serve to unify Chicago symbolically while the Exchange project in the Union Stockyards will look at serving the immediate and adjacent Back of the Yards neighborhood. From an economic standpoint, supplying the Back of the Yards neighborhood would not only invigorate the the city, but it would also provide the employment opportunities. Such projects like Thanet Earth in Kent, Island of Thanet (U.K.) have created 500 jobs.



recognizing surroundings & context

Industrial corridors along the river, beside railroad tracks and rail yards and spaces adjacent to highways represent an existing infrastructure that provides spatial needs for this radical new project. Some of these spaces, like the Chicago River and the Stockyards represent a provocative platform because of their history. The great industrial machine that Chicago became was as a result of such infrastructures and spaces that allowed the movement of goods across the United States. In framing such spaces, and re-working such ideas like those presented by William Cronon in Nature's Metropolis notably "geographical determinism" – an opportunity arises to establish a foundation for a future that looks at a different set of priorities.

considering access and transportation

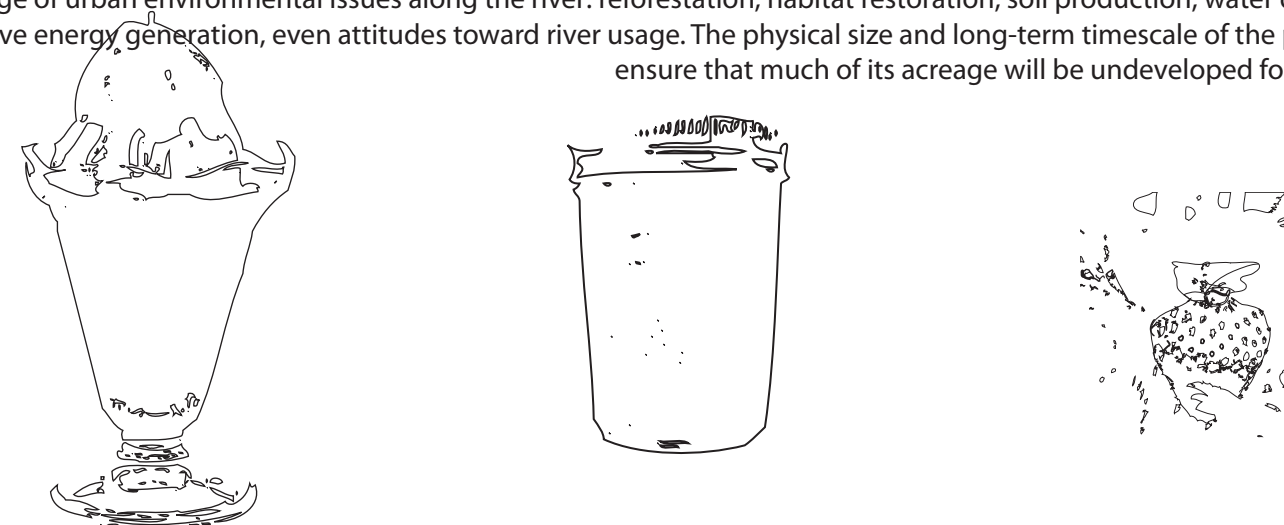
Access and transportation are fundamental aspects of this project. If the proliferation of urban agriculture is to become a viable source for food, access to it and its localized distribution is contingent on avenues and networks by which to distribute goods, in this case produce. The river and the existing railroads provide an opportunity to rethink what is a primarily automobile fueled distribution. Such spaces become vital to the usefulness of the project, while simultaneously energizing the image of this new project.

Larger project goals outside of agricultural production include reducing environmental impacts of the built and renovated spaces used for production. The re-use of existing industrial spaces, including buildings is an initial step in reducing the need for new construction. Other approaches such as anaerobic digesters and composting look at closing the loop on usable and valuable energy cycles in agriculture. These recycling energy systems may be look at involving surrounding communities around the redeveloped industrial zones. Additionally, large green house spaces collect great amounts of natural light and natural energy, which presumably could be plugged back into the grid.

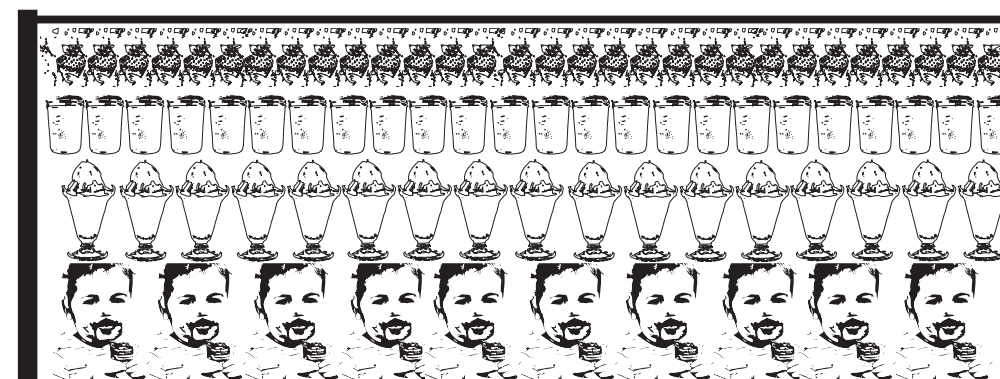
evaluating past present & future viability

Setting such up such projects for urban agriculture in existing industrial spaces is mostly about a working future for production. The viability of this project depends on many factors. Although the physical utilities of this project is largely in place, such sites that have been used for transporting lumber, steel and slaughtered meat are now polluted and littered with debris from over a century of passing and still existing industry. The viability of the urban agricultural project will largely depend on the ability to convert and manage such tainted and ecologically troubled sites in manageable places for housing farming systems (albeit raised hydroponic and aquaponics systems don't use soil).

Future viability will be generated by selling the project as a platform for generating knowledge applicable to a broad range of urban environmental issues along the river: reforestation, habitat restoration, soil production, water quality, alternative energy generation, even attitudes toward river usage. The physical size and long-term timescale of the project ensure that much of its acreage will be undeveloped for years.



"The Exchange project conceptualizes current industrial infrastructure as a framework for future growth. Existing industrial landscapes provided a foundation to create something monumental and groundbreaking. Integrating and connecting these various spaces and buildings to a greater ecological, agricultural and social purpose is key to the success of this project."



program exchange *a new trajectory*

enable your design intent

The Exchange project conceptualizes current industrial physical model as a framework for future growth. The stark industrial landscapes provided a backdrop to create something monumental and groundbreaking. Integrating and connecting these spaces and buildings to a greater ecological, agricultural and social purpose is key to the success of this project.

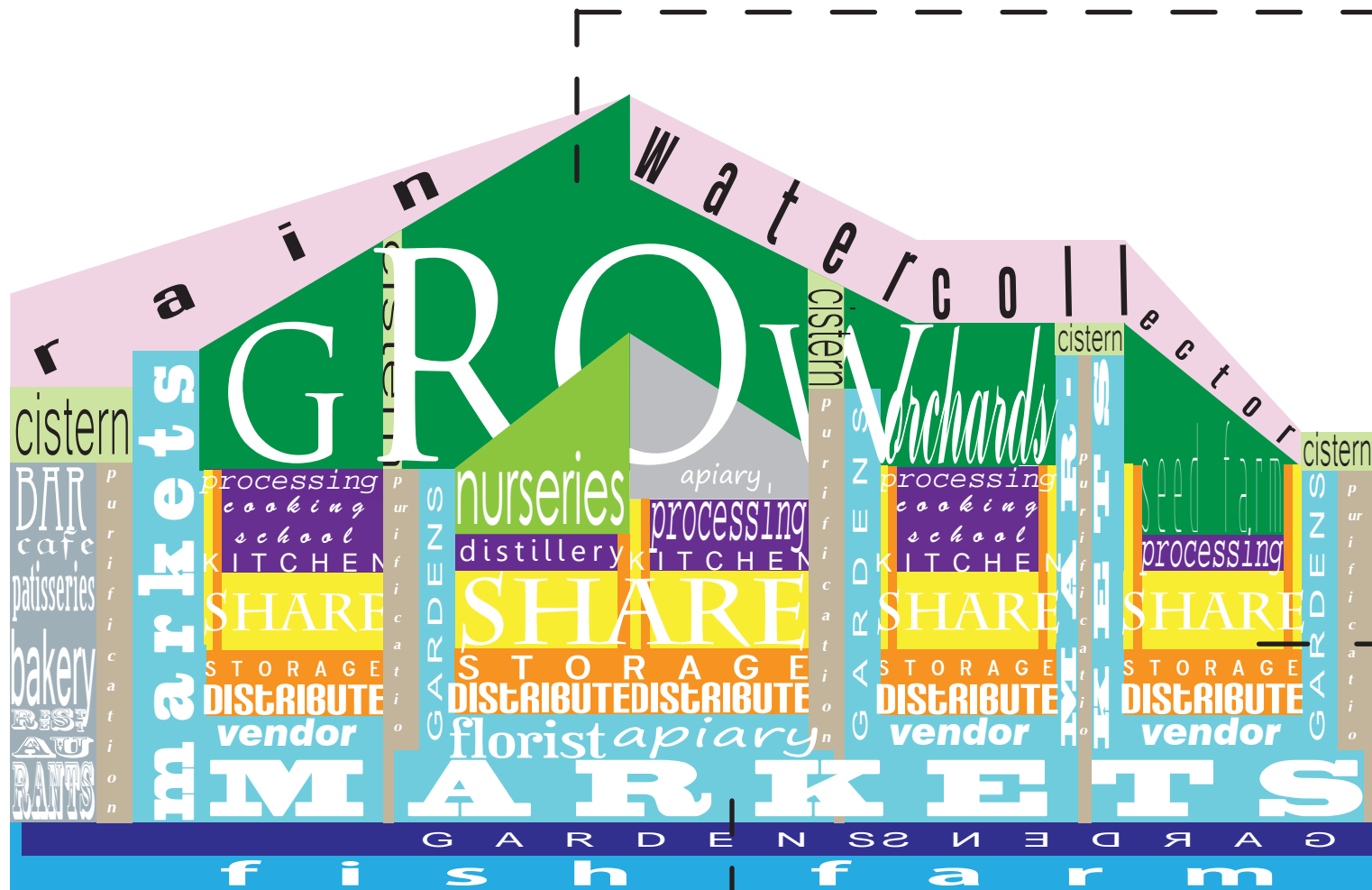
site characteristics

natural characteristics

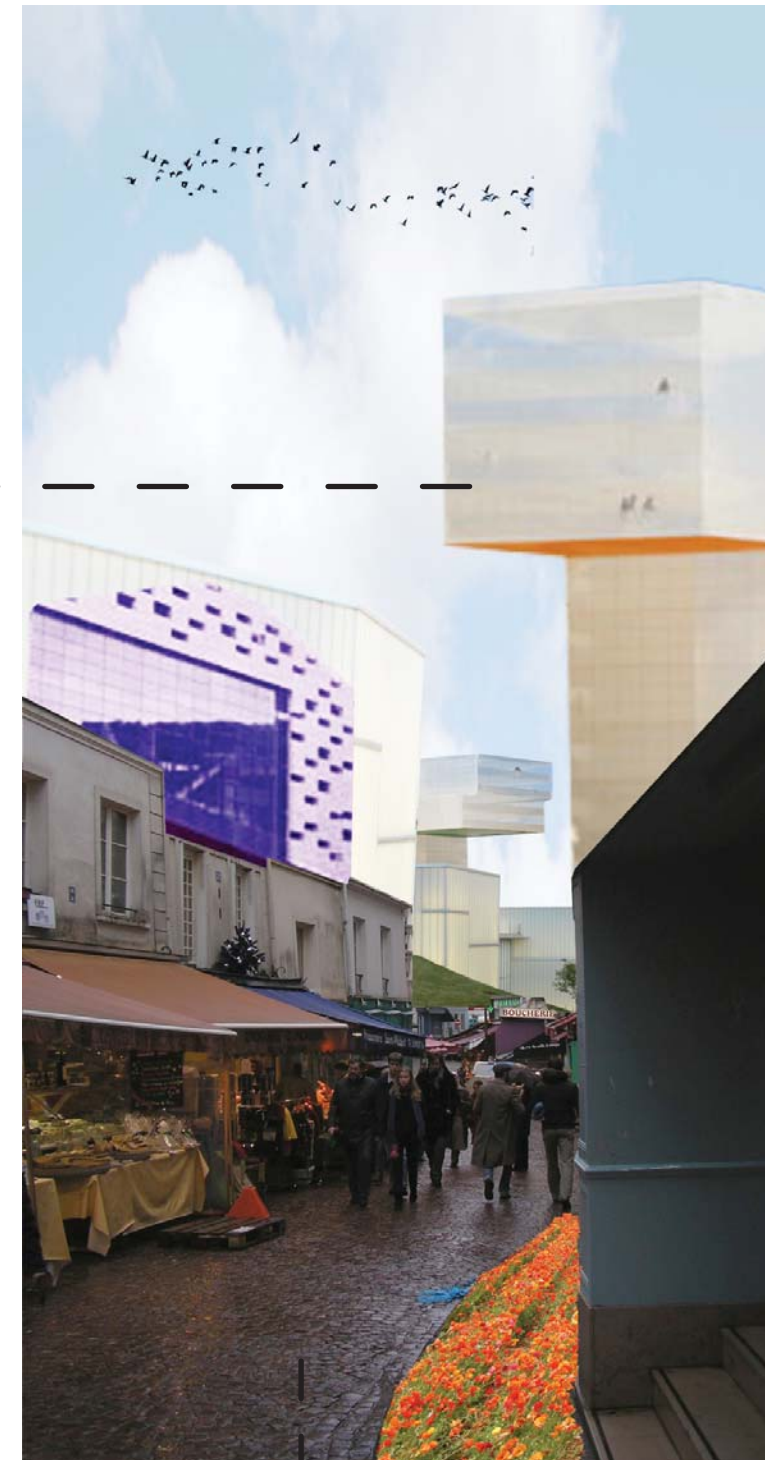
In focusing on the natural characteristics for this project, it is important to look at the propensity for natural sun light. Anchoring the production capabilities on natural energy systems, notably using natural light from the sun, both sites production facilities and prioritizes spatial organization in plan and section.

density and adjacent uses

One of the purposes of developing otherwise under used open spaces and industrial spaces in and around the Union Stockyards is identifying a place that has significant about of space to be devoted significant and substantial grow operations – whether it be un-built or already existing space.



“Hubs will work in conjunction with ancillary sites and gateways to involve full closed cycle food networking, more specifically looking at the production, transportation, purchasing and selling, eating, and disposal of food and food related industry.”



Situated around the Union Stockyard are the Back of the Yards neighborhood, Bridgeport, Pilsen, Englewood, Marquette Park, etc. These neighborhoods, making up a large requisite around south Chicago, represent a possible common social thread and workforce for the Exchange project. The exchange program is about production, processing, education and celebration and as a result, the dynamic and fluid aspects of these parts of the program represent places of ownership for adjacent communities and networks. Also, with possible operations existing in these different neighborhoods, a more complete and ambitious proposal could begin to make significant progress.

circulation

The Exchange project looks at using infrastructure for supporting the diverse intercomponent parts of the larger network that makes the totality of the project; including existing railroad freight tracks, the Chicago River and streets.

culture and history

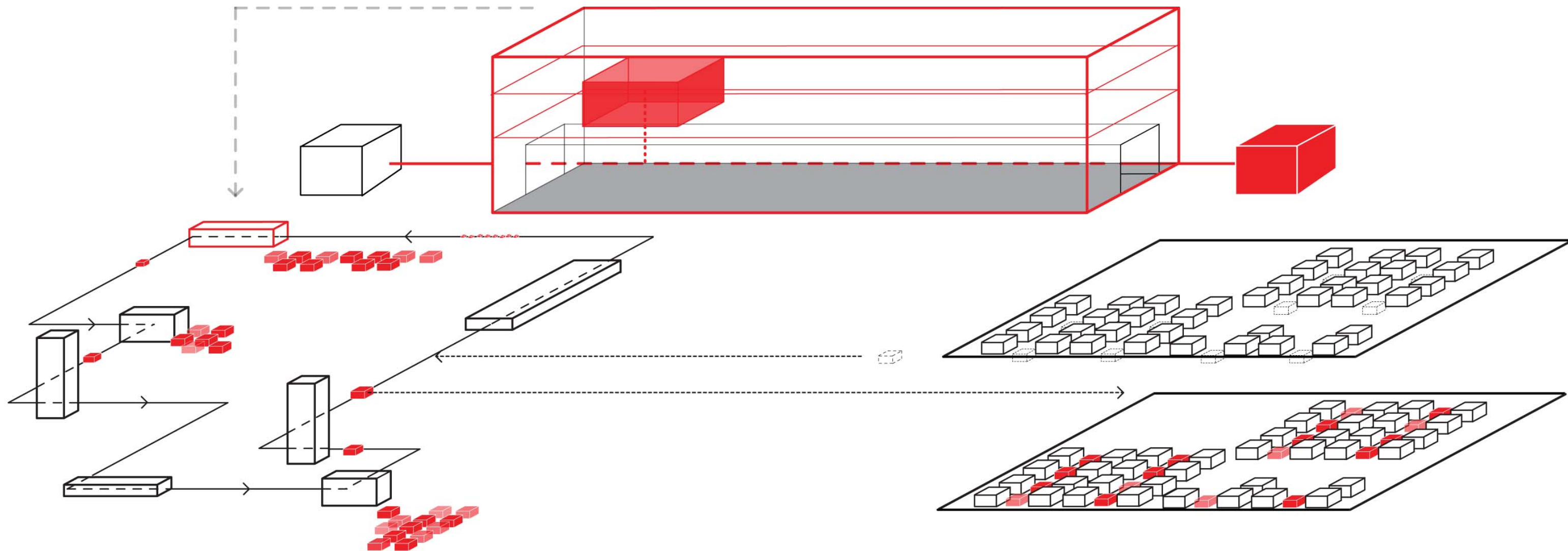
The Union Stockyards is the ultimate symbol for such a project which looks at re-rooting the way we look at food, food production and food culture. Once a place and culture of mass meat production, the Union Stockyards becomes the physical and philosophical symbol of food production in a new era and time. This culture asserts itself architecturally by setting up future infrastructure primarily focused on agricultural production of goods but simultaneously looking at social and culturally supporting ancillary program.

sensory opportunities & challenges

A defining and perhaps polarizing aspect of the project is the creation of new things out of that which is old. Using possible brownfield sites, contaminated spaces, and industrial buildings is an opportunity to use history as a framing tool for a new trajectory. What is dominantly a concrete, metal siding, gravel, grey landscape of materials in such industrial landscapes as the Union Stockyards, the opportunity to use these various palettes as primers for such embedded new programs and materials symbolizes once again a philosophical approach to the project and thus an evolving aesthetic. Moreover, some aspects of the program that are involved with grow operations could potentially associate themselves with both experiential and atmospheric spaces.

demographic & population

The predominant demographic around the immediate historic Union Stockyards was Polish and Polish American and now is almost 95% Mexican or Mexican American. This potentially has implications for both program and space. Some demographic tendencies gathered from both close observation on site around proposed and suggested sites include a propensity for high traffic market and gathering space. The grow operations aspect of the culture fits what is a primarily and historically an agrarian culture.



“The architecture of the Exchange project ancillary sites will organize various programs in ways to produce agricultural products, be involved with processing in various ways, and participate in the local economy. The network of sites will collaborate and work within individual and systematic closed loop systems.”

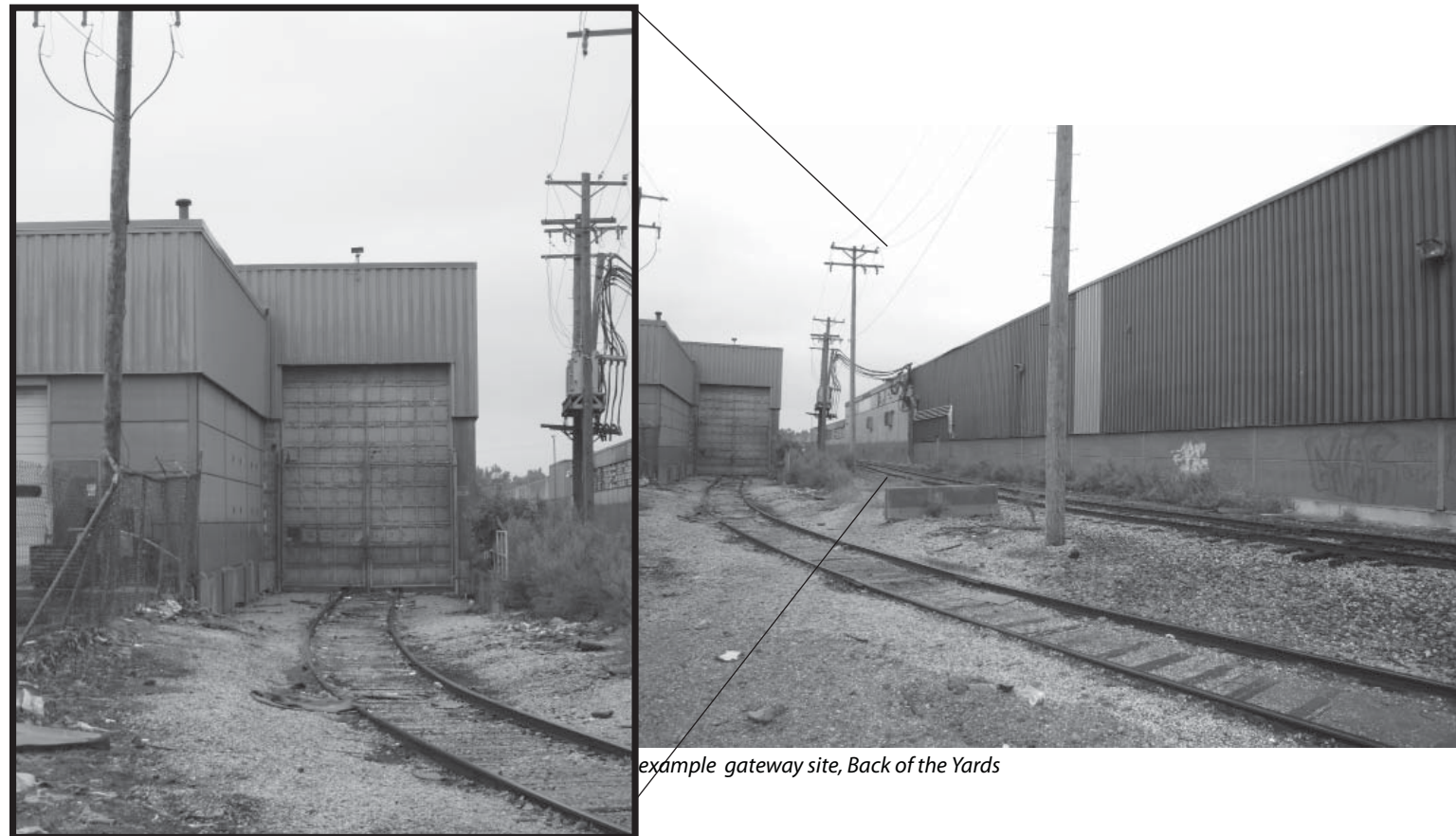
Program Strategies – looking at rules for approaching existing conditions

rules for choosing sites; physically

Physically, ideal sites for hubs revolve include having continuous spatial and building conditions. Space and buildings' adjacencies are important in establishing efficient working zones for large scale grow operations. More specifically, sites will work in conjunction with one another. Space will be appropriated based on what it could be best used for. For example, sites with best sun exposure will categorically assigned to the growth aspect of the program. Parts of the program not essential to natural light will be slotted to be used for other programs like storage for such things as the anaerobic digesters, fish farming, etc. Hubs as they work in conjunction with ancillary sites and gateways sites would ideally be located in proximity to them. As related to the conglomeration of forces driving this project from a neighborhood, community and network level, sites will be chosen that physically intersect and intercept them. From a practical standpoint, many of the proposed sites in the Back of the Yards neighborhood are not necessarily practical in relation to each other, sites should be chosen based on access to streets and railroads as they will influence the reach of the projects; the larger goal of exposure. Simultaneously, and at first appearance contradictory to goals of practicality, sites should be considered based on their need for remediation as to again have further reach into the projects larger goals and objectives. Ancillary sites, as described previously are chosen based on opportunity within the Back of the Yards neighborhood, like vacant building lots and other unused areas.

visually/ aesthetic strategies

The Exchange Project embraces the challenge of agricultural production as its primary prerogative, but this project is also about celebrating the process of food as well as regaining a perspective on nature's incredible power to sustain us. Nature, as it could be found and expressed in this plant project also has the power to also display along with its utility, its infiniteness and mystery. Intriguing within this same scope is the possible visual play of color that the programs' plantings could offer this grey and depressing area. As part of both a larger concept of remediation and production, plants could offer a visual reprieve from the concrete and steel skeleton of the stockyards. What could result from this intense juxtaposition could be evocative and energizing for the programs of the project and surrounding neighborhood.



example gateway site, Back of the Yards

“Gateways look at the expressing and identify the routes, infrastructures and environments that make up the network between production and consumption. Additionally, gateways look at humanizing and greening the built environment in combination of making over desolate urban space – specifically, abandoned rail space, abandoned lots and other spaces that may contribute to incorporating nature as to help more betterly manage watershed run-off, capture and filter water for potable uses, cleanse and filter air, and create beautiful environments for public use(s). ”



example ancillary site, Back of the Yards



example ancillary site, Back of the Yards

gateway sites pathways to change



example hub site, Back of the Yards



example hub site, Back of the Yards



example gateway site, Back of the Yards



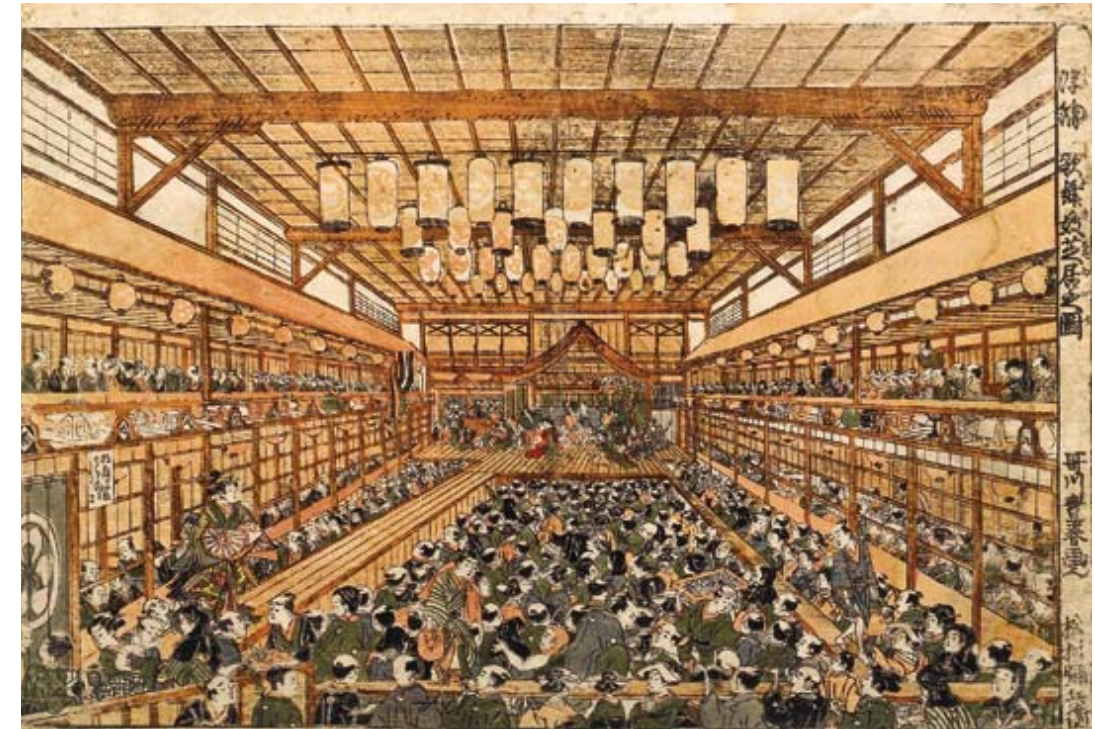
example gateway site, Back of the Yards

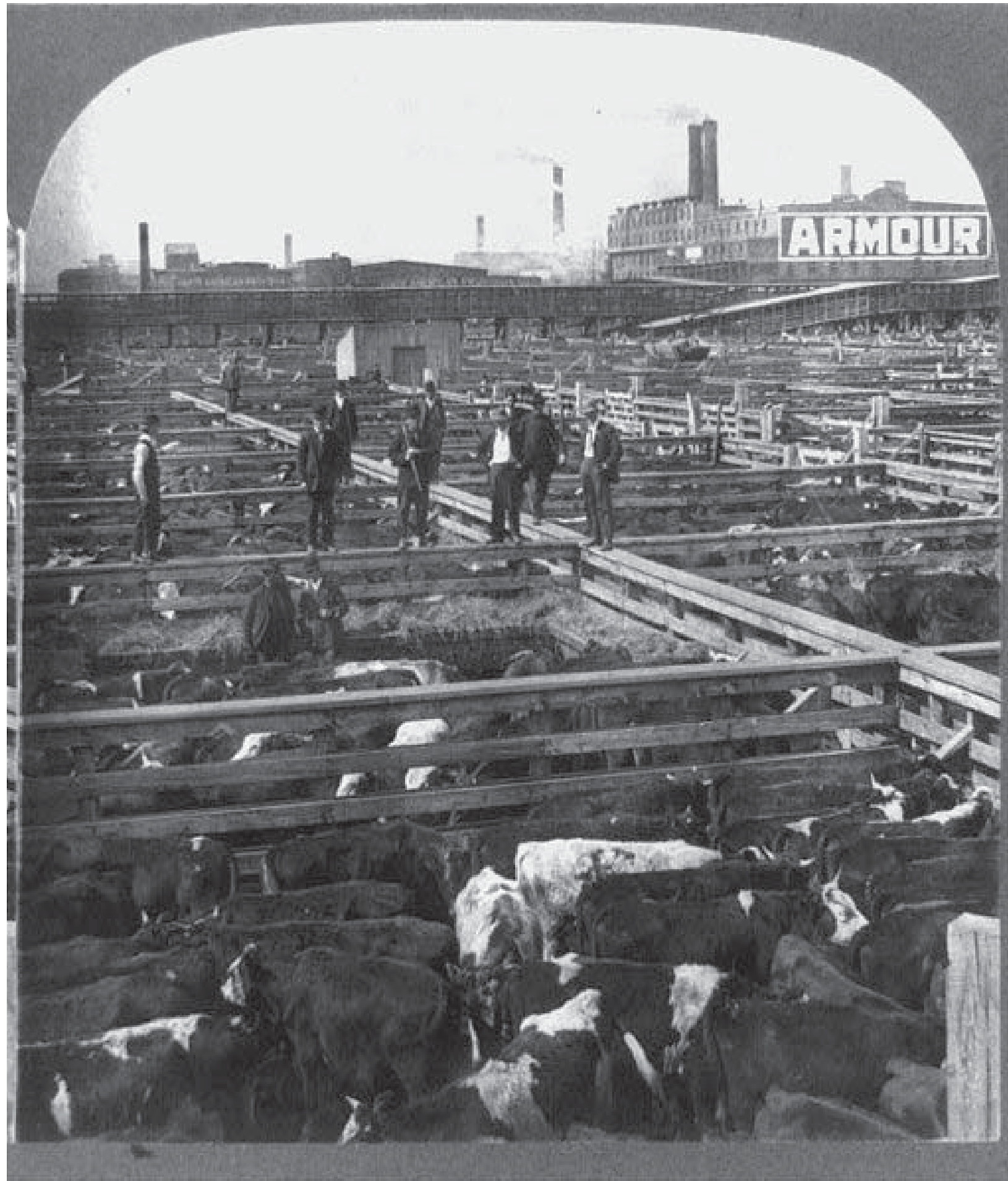


UNION STOCKYARDS



program a mix of monumental program





photograph; pens at Back of the Yards



landscape + building



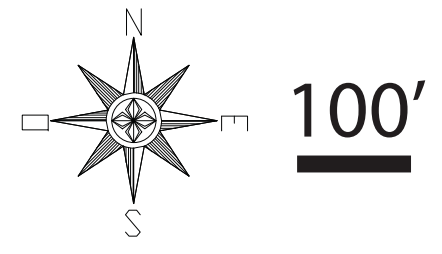
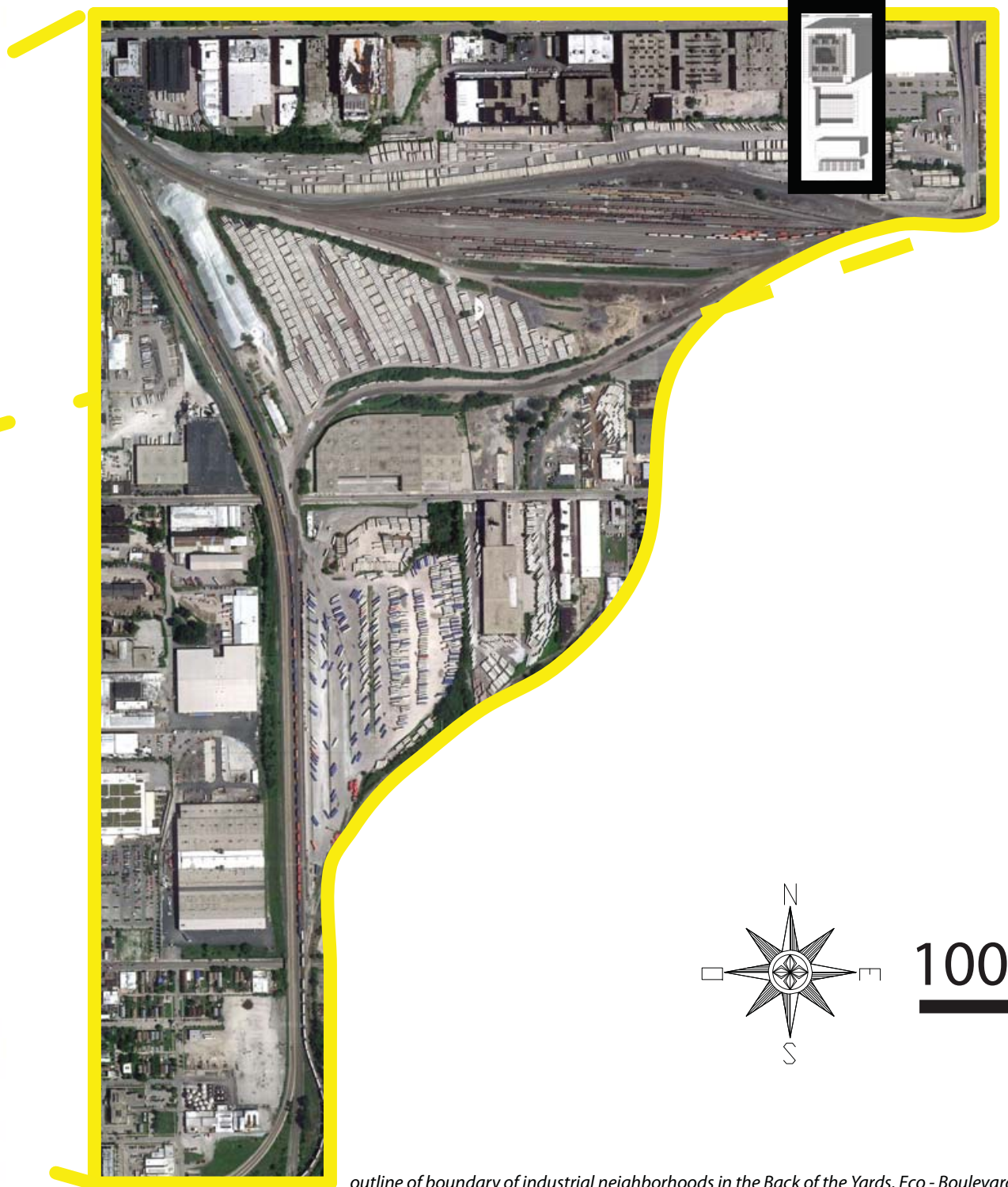
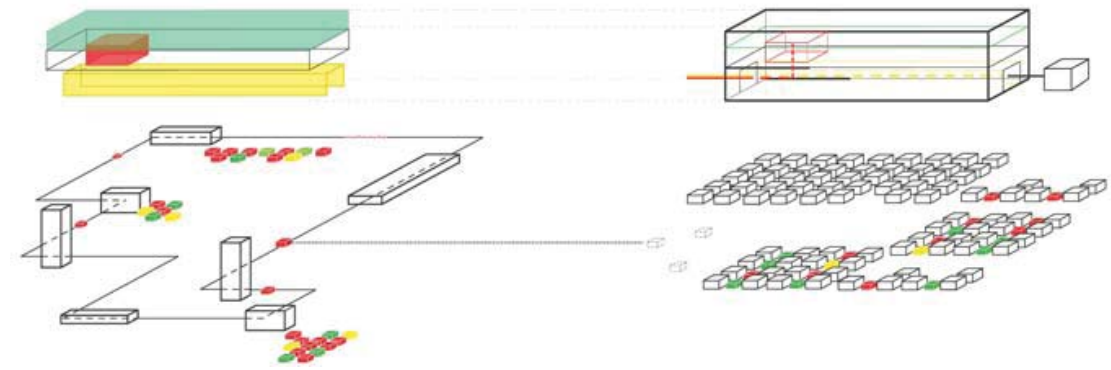
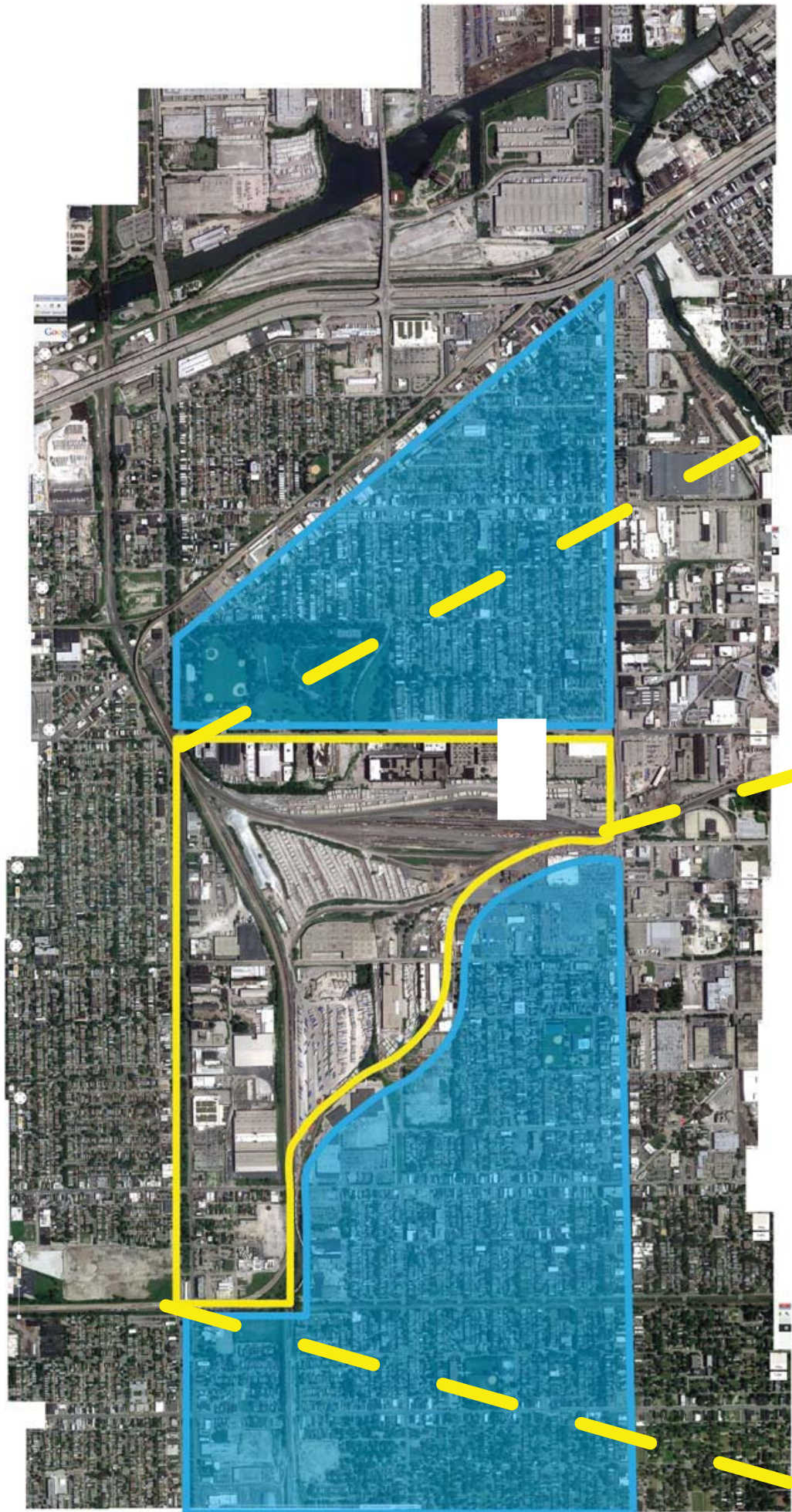
city (urban fabric) + building



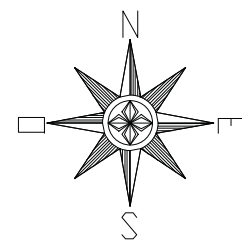
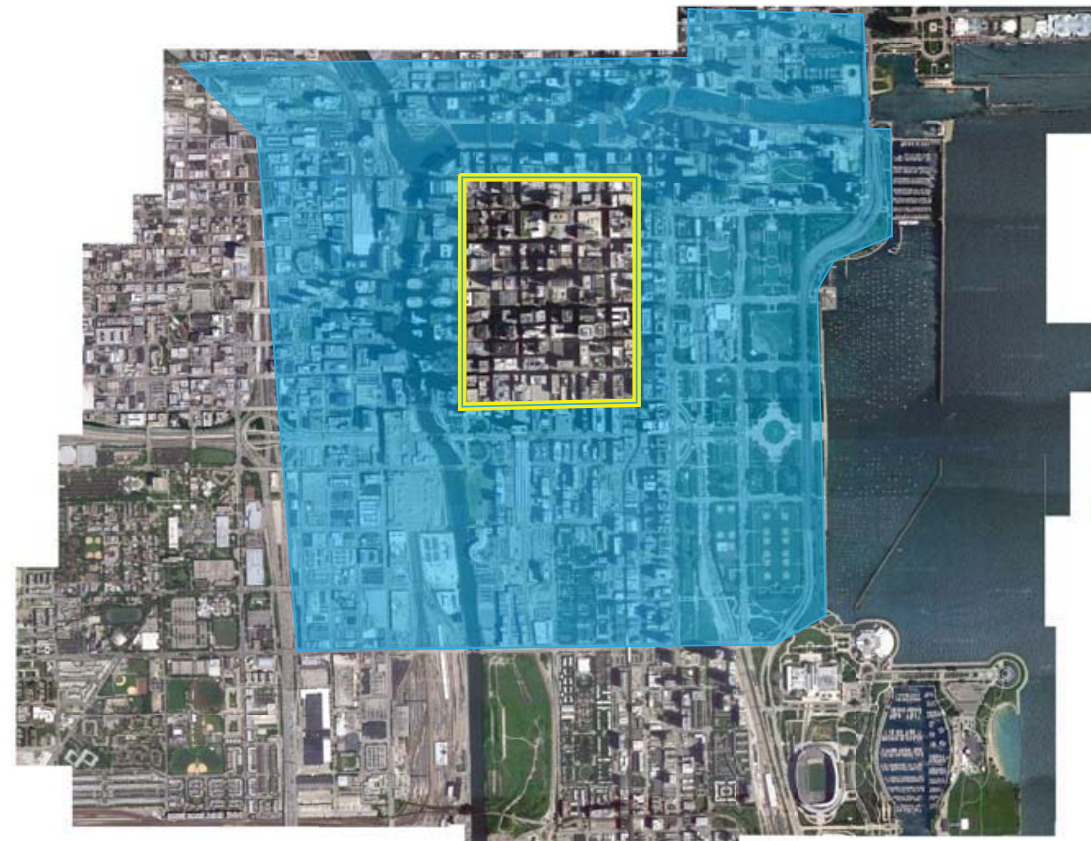
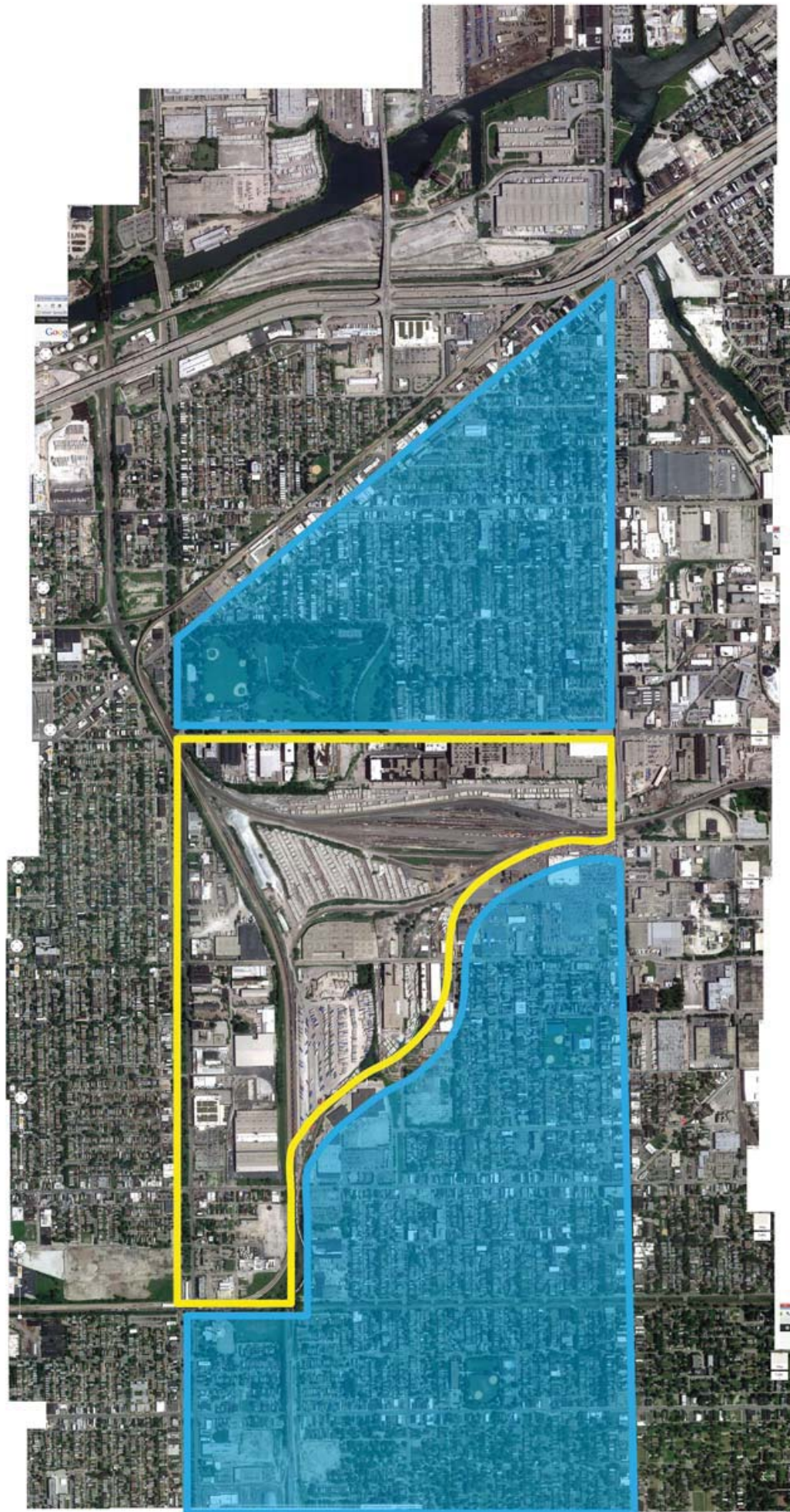
landscape; surface as program



photograph; Gordon Matta - Clark - experiments on buildings

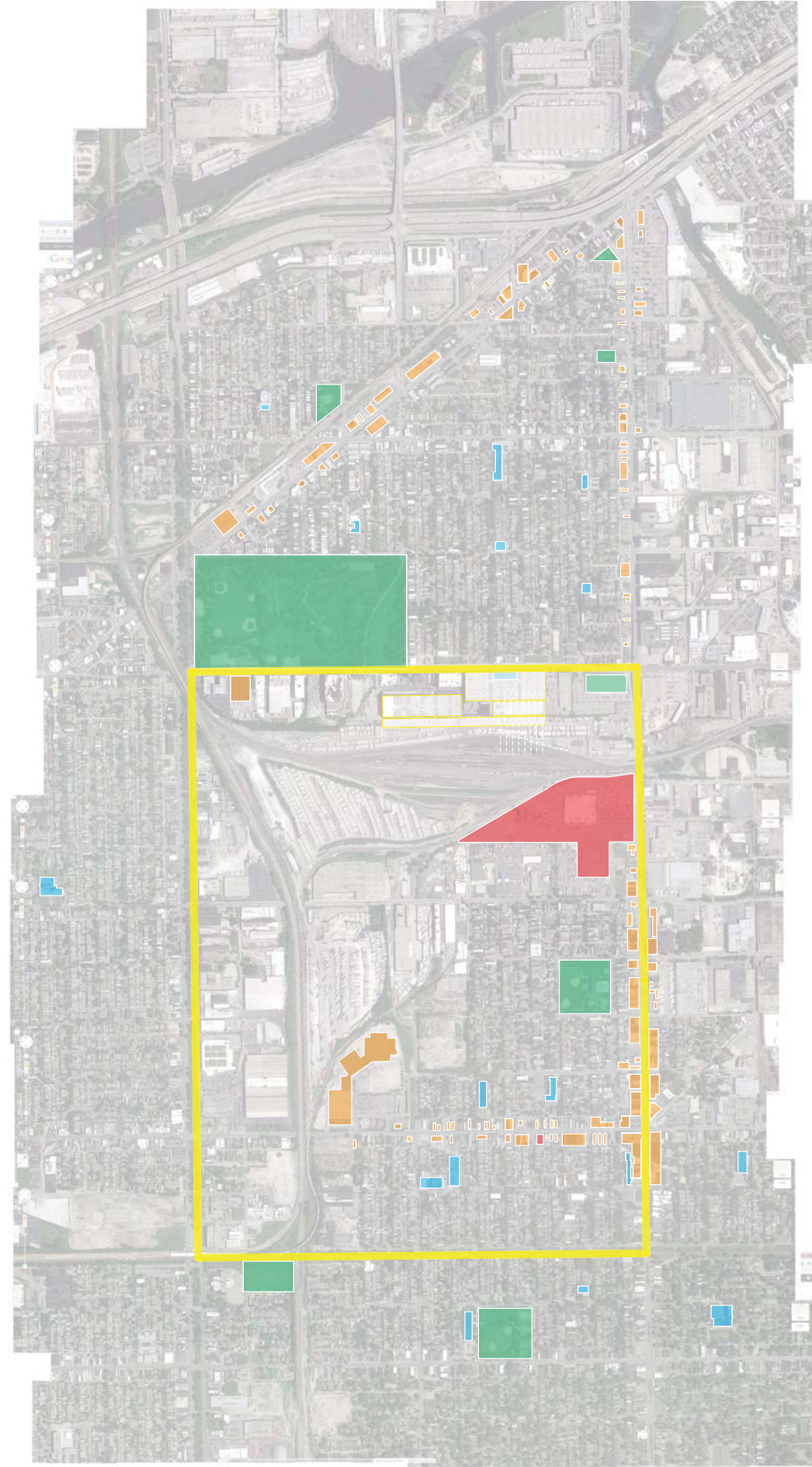


outline of boundary of industrial neighborhoods in the Back of the Yards, Eco - Boulevard



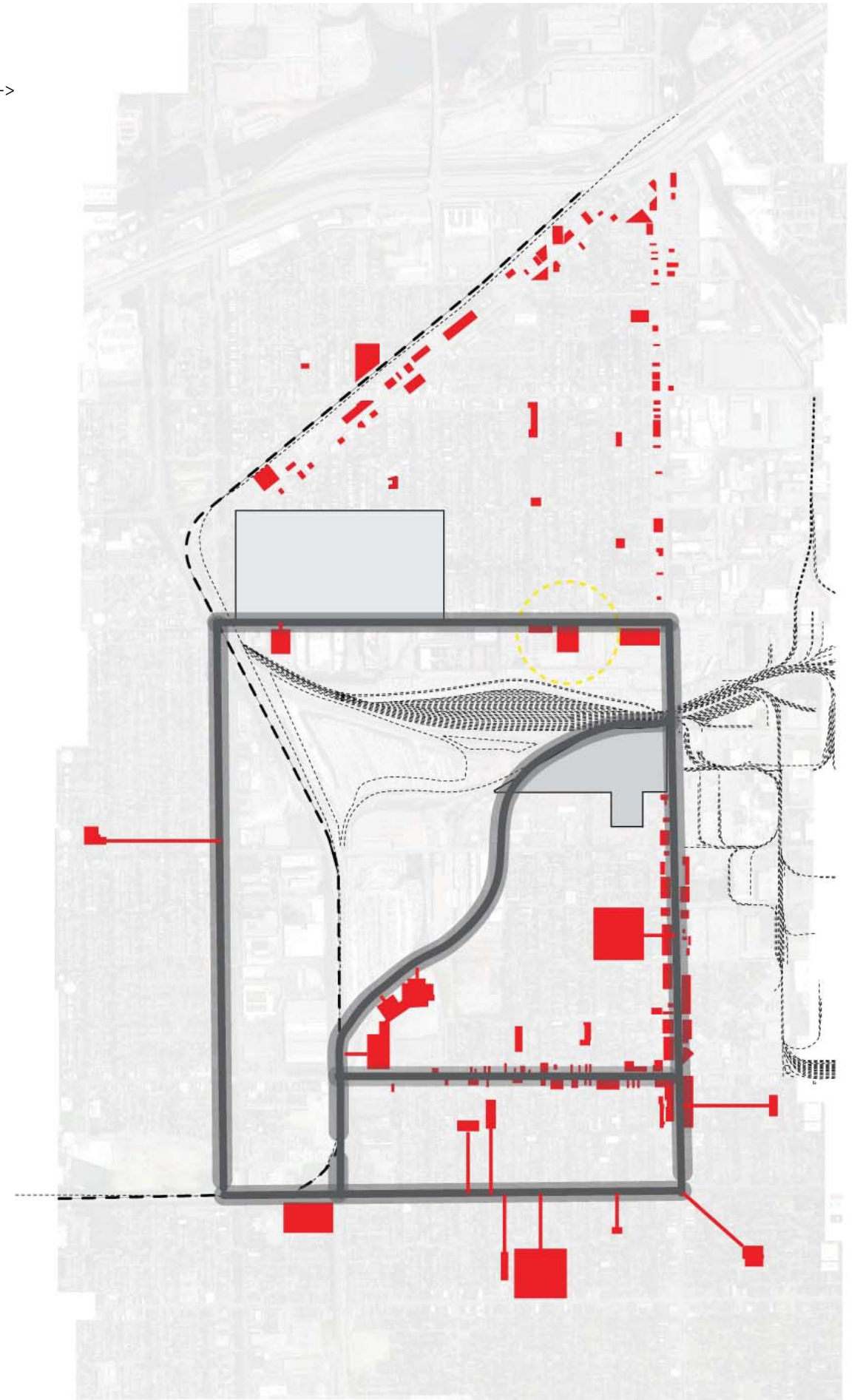
2 MILES

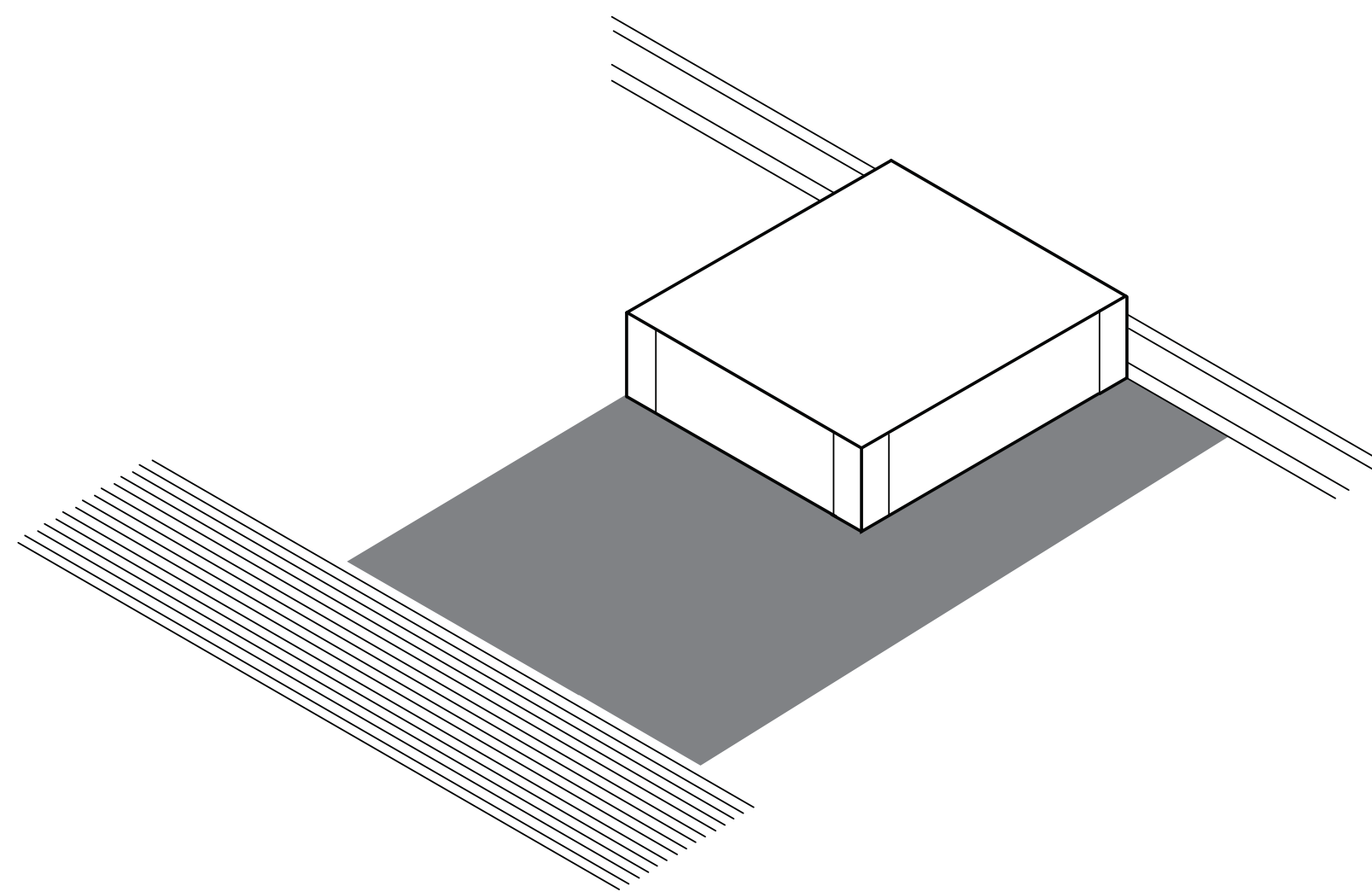
scalar comparison between boundary around Back of the Yards and the 'Loop'



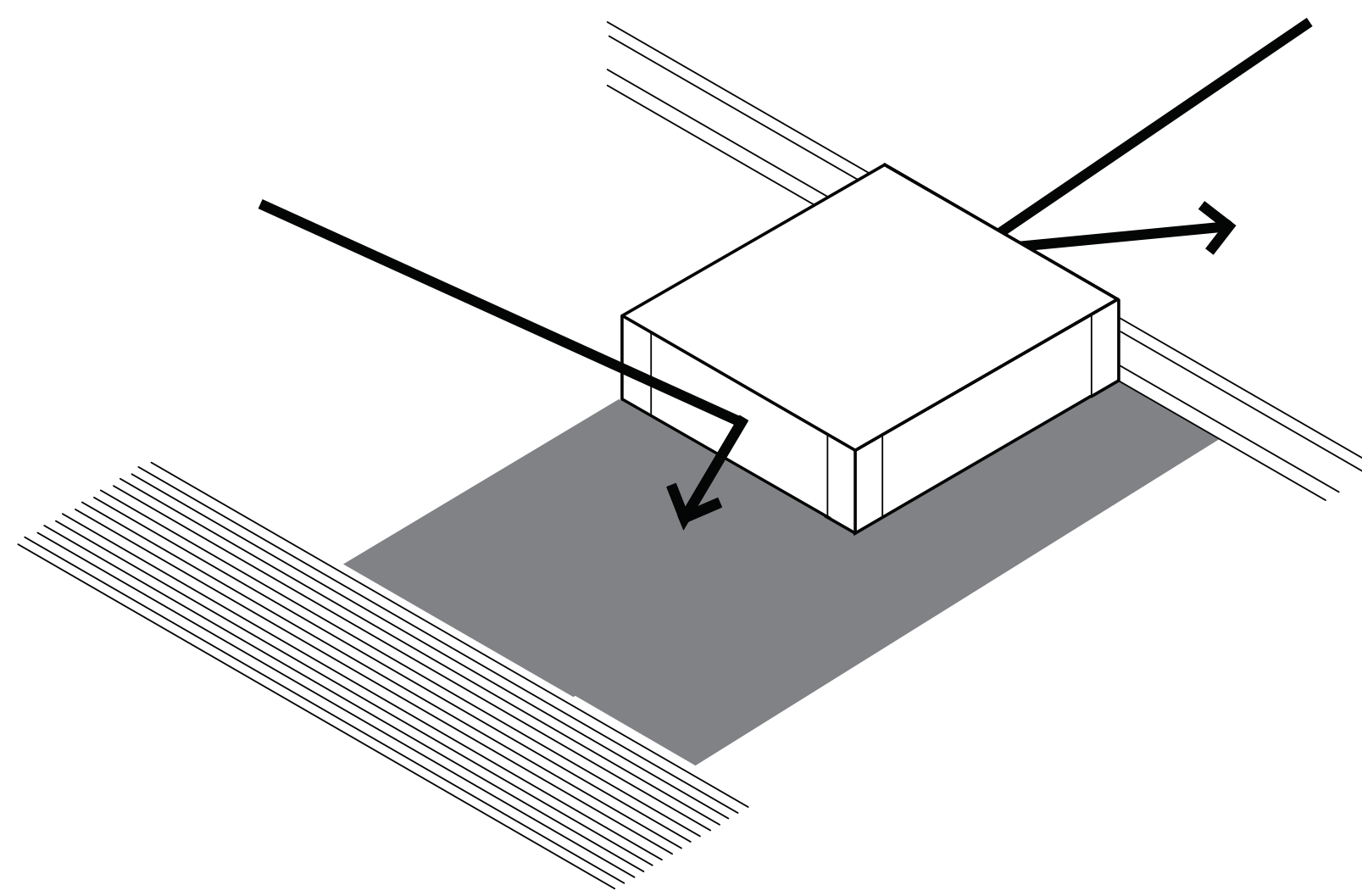
inventory of civic sites in the Back of the Yards
+
link

linking ->

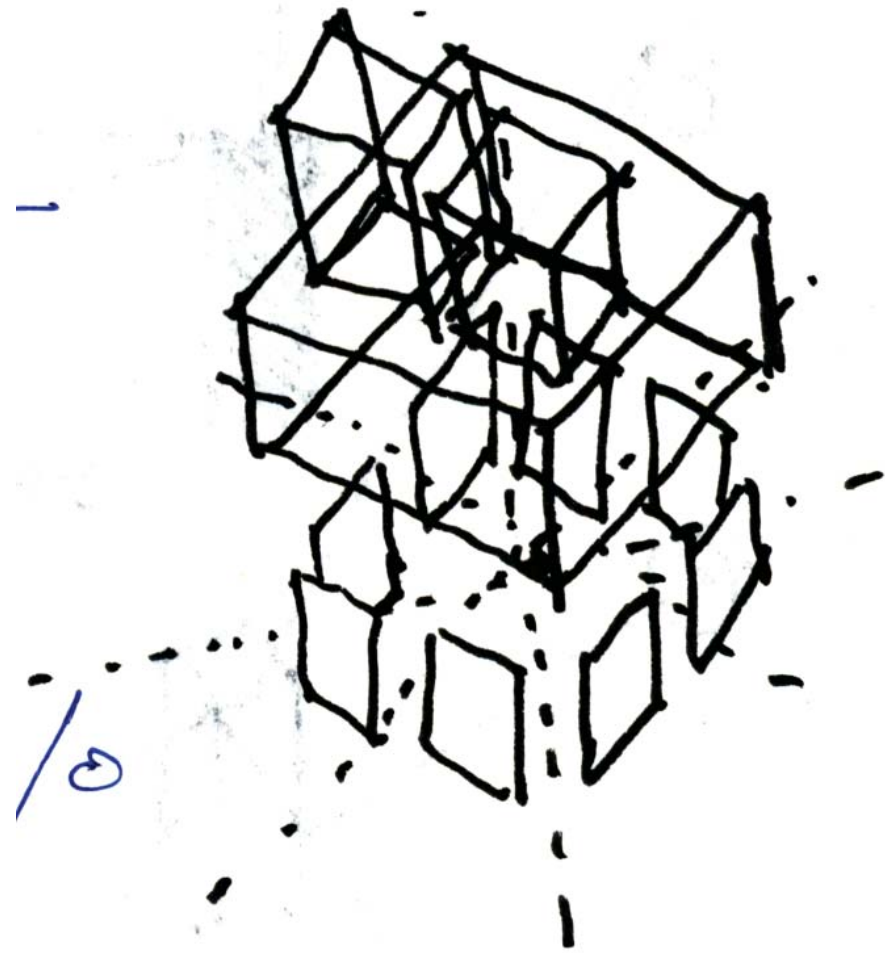




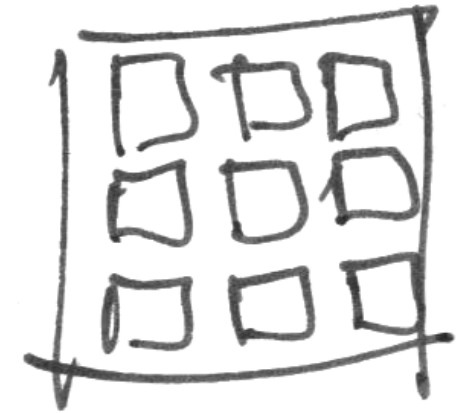
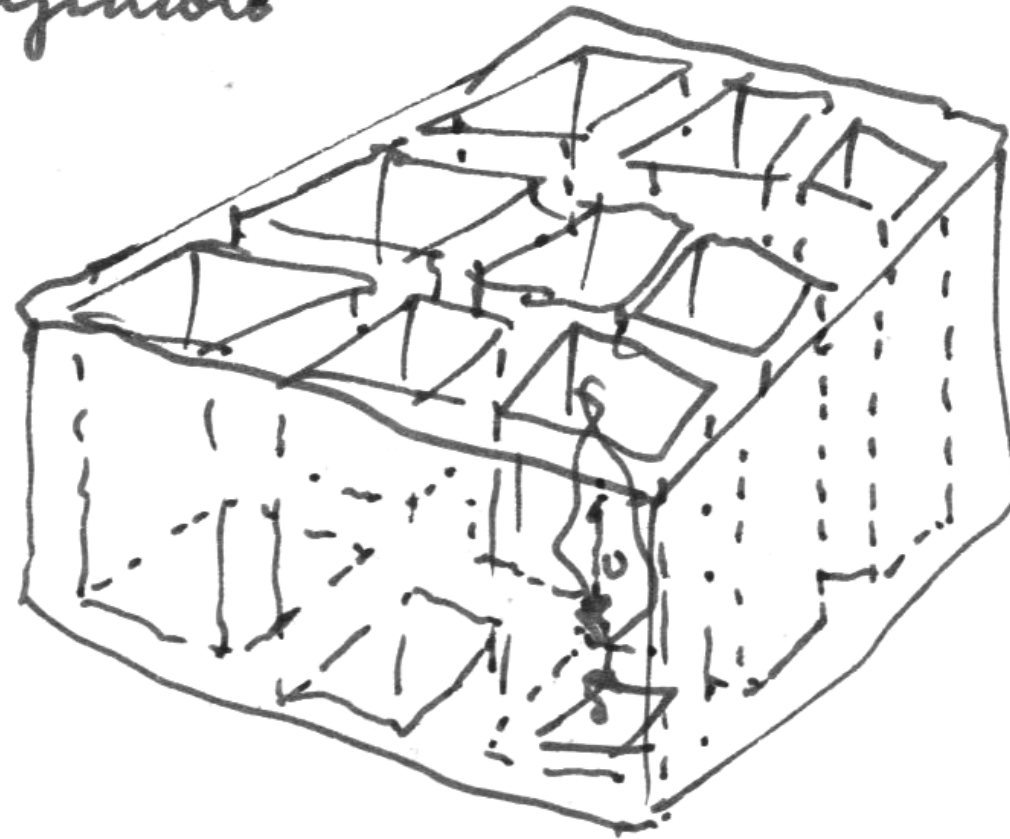
existing condition of building + infrastructure



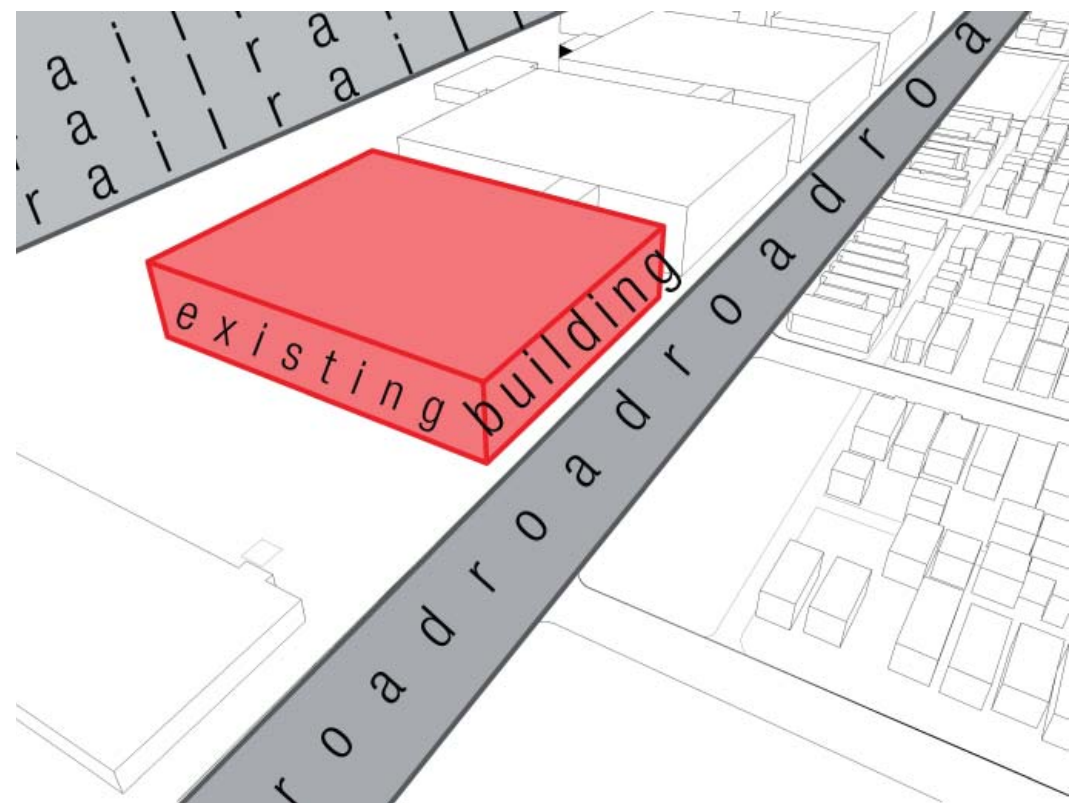
these things don't work; they don't let in light or are intelligently designed, they turn their back on their community by creating a boundary



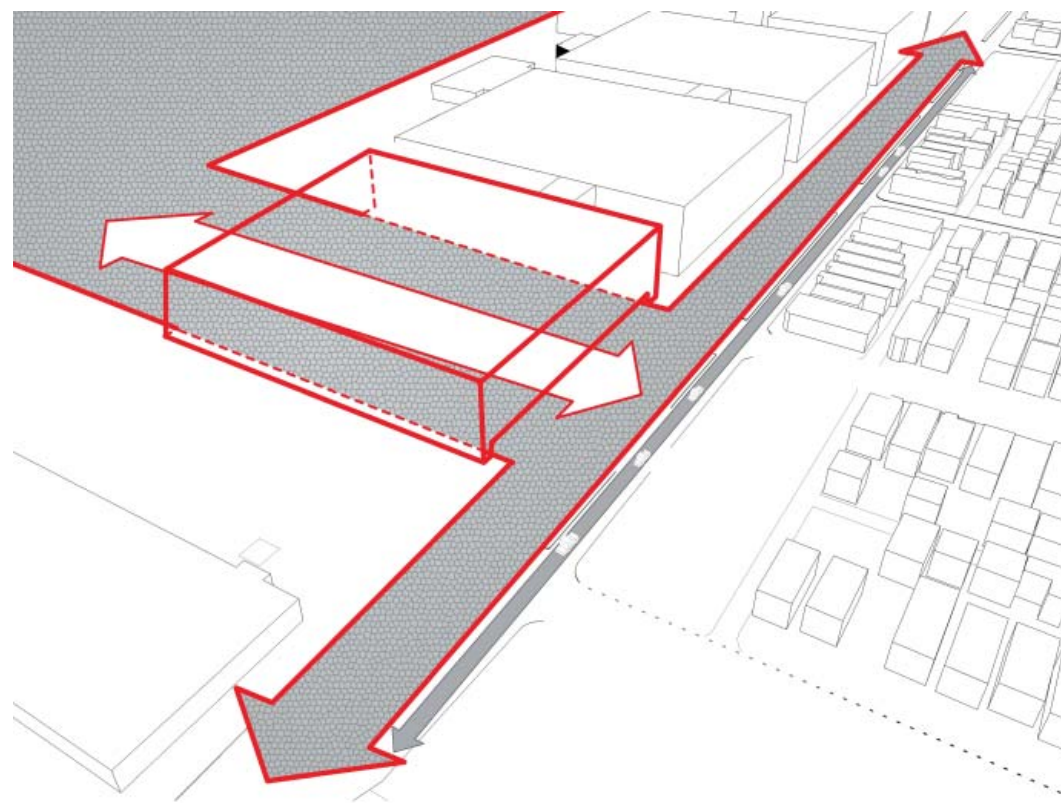
san fujiwara



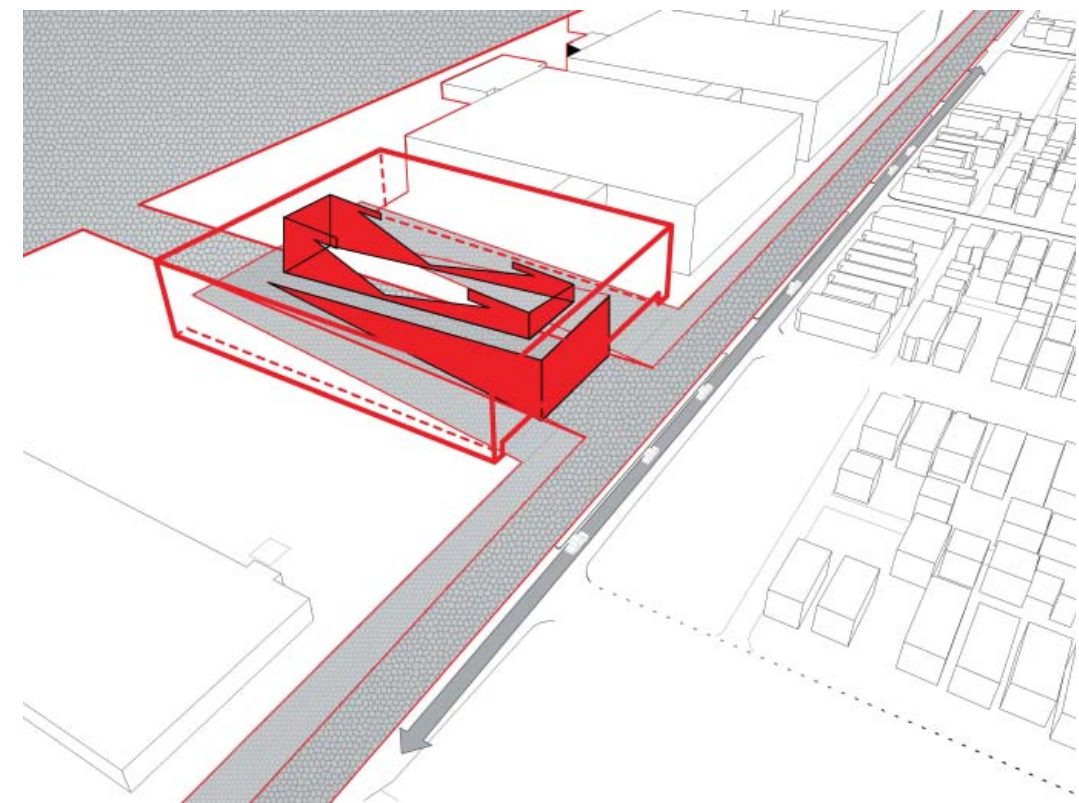
sketches; dismantling the faces of the building, recognizing voids



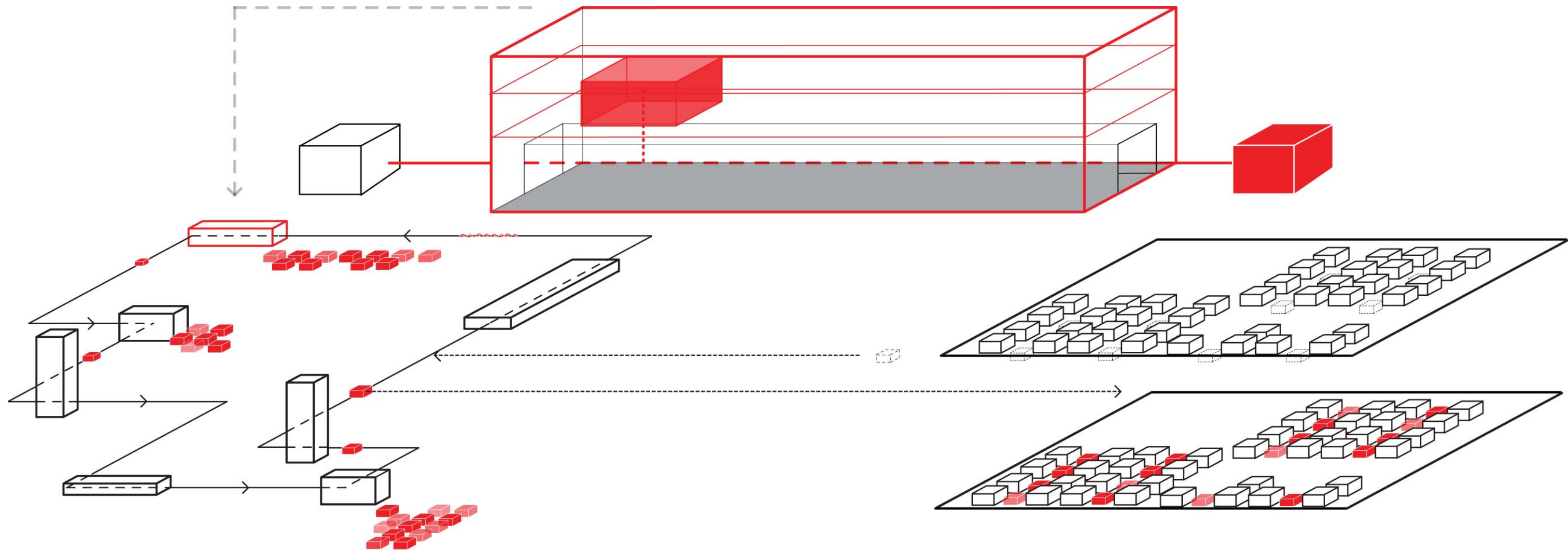
existing



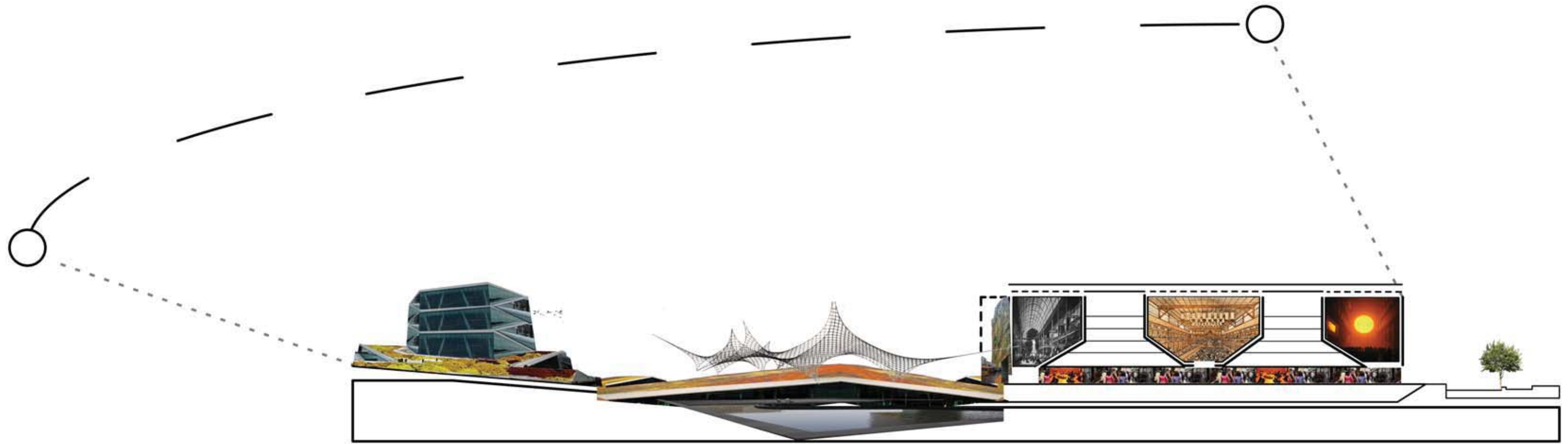
infrastructure + building; hybridization



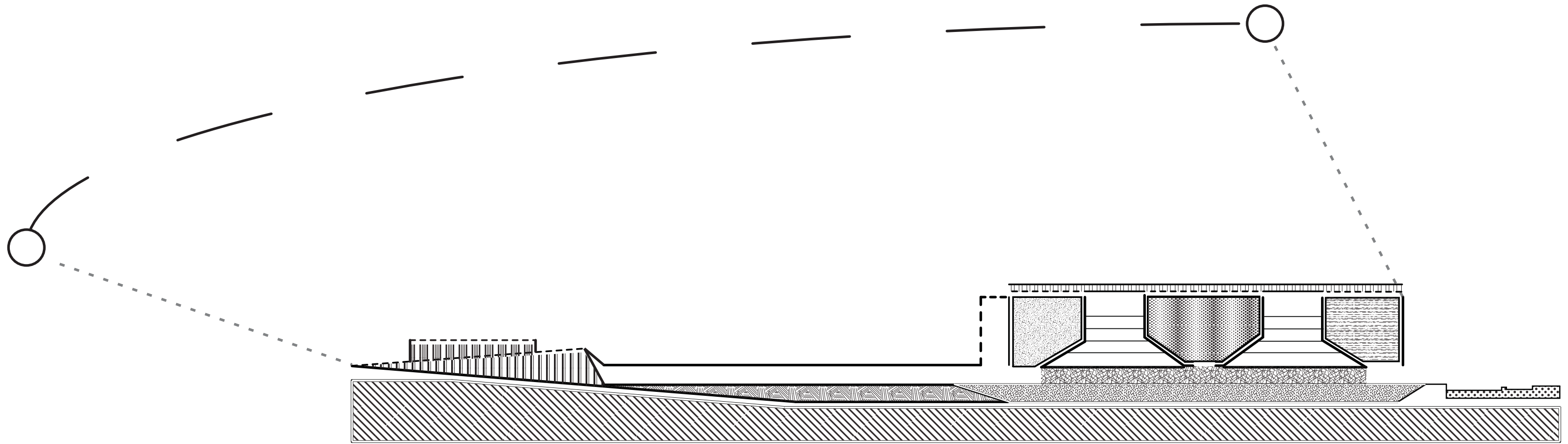
program mix



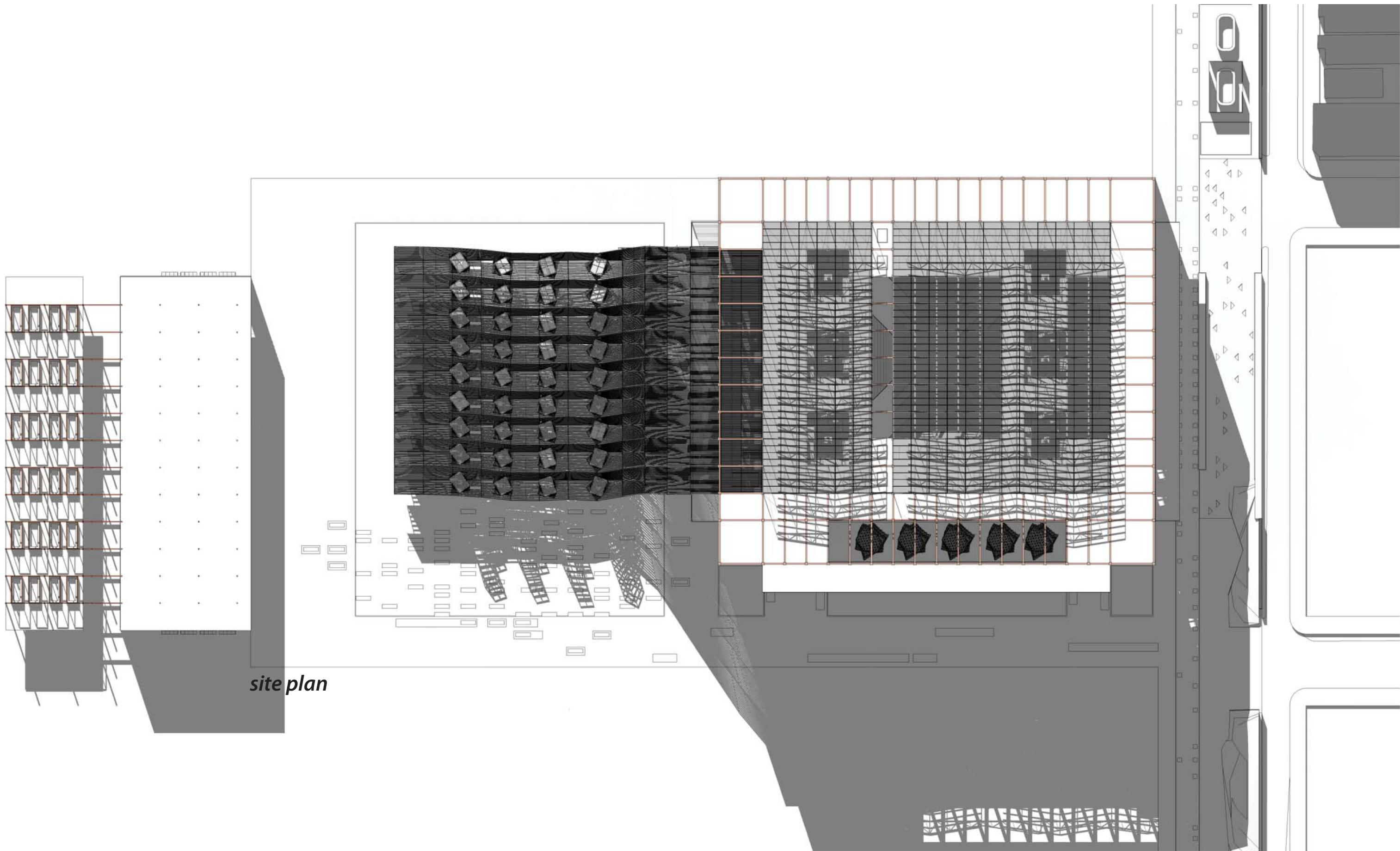
actuating infrastructure in surrounding communities



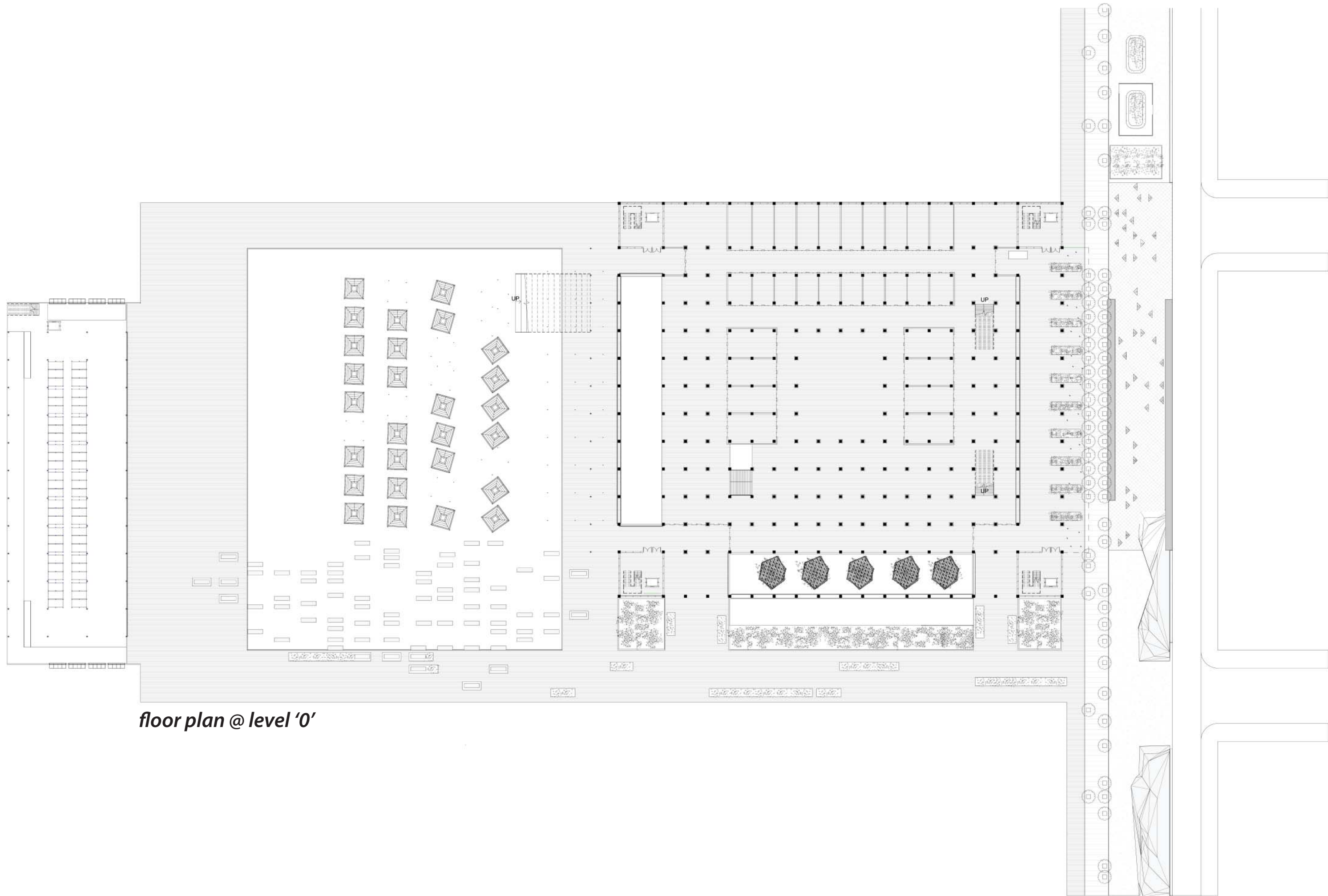
concept diagram; interactive cultural program



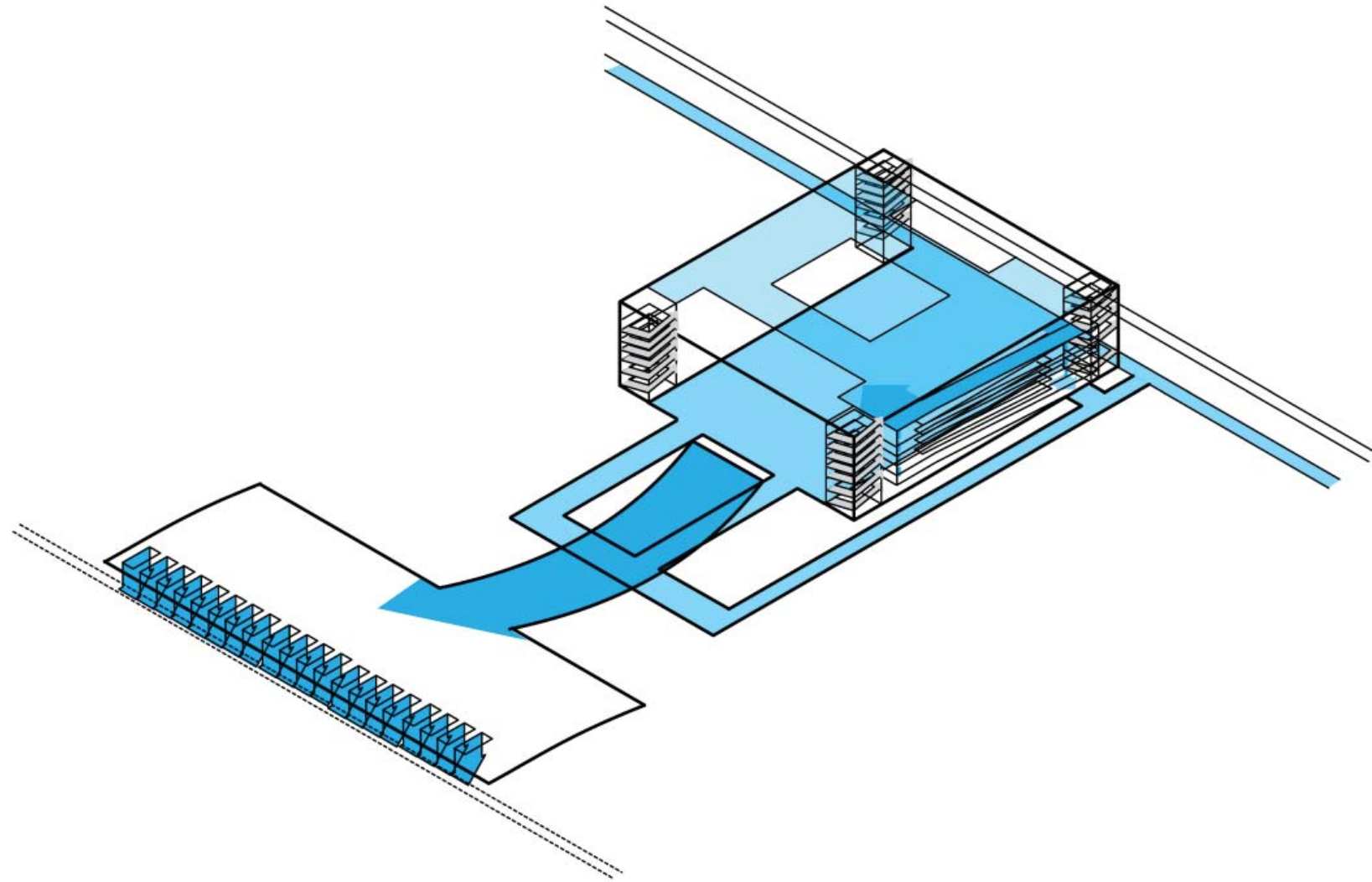
concept diagram; texture of program



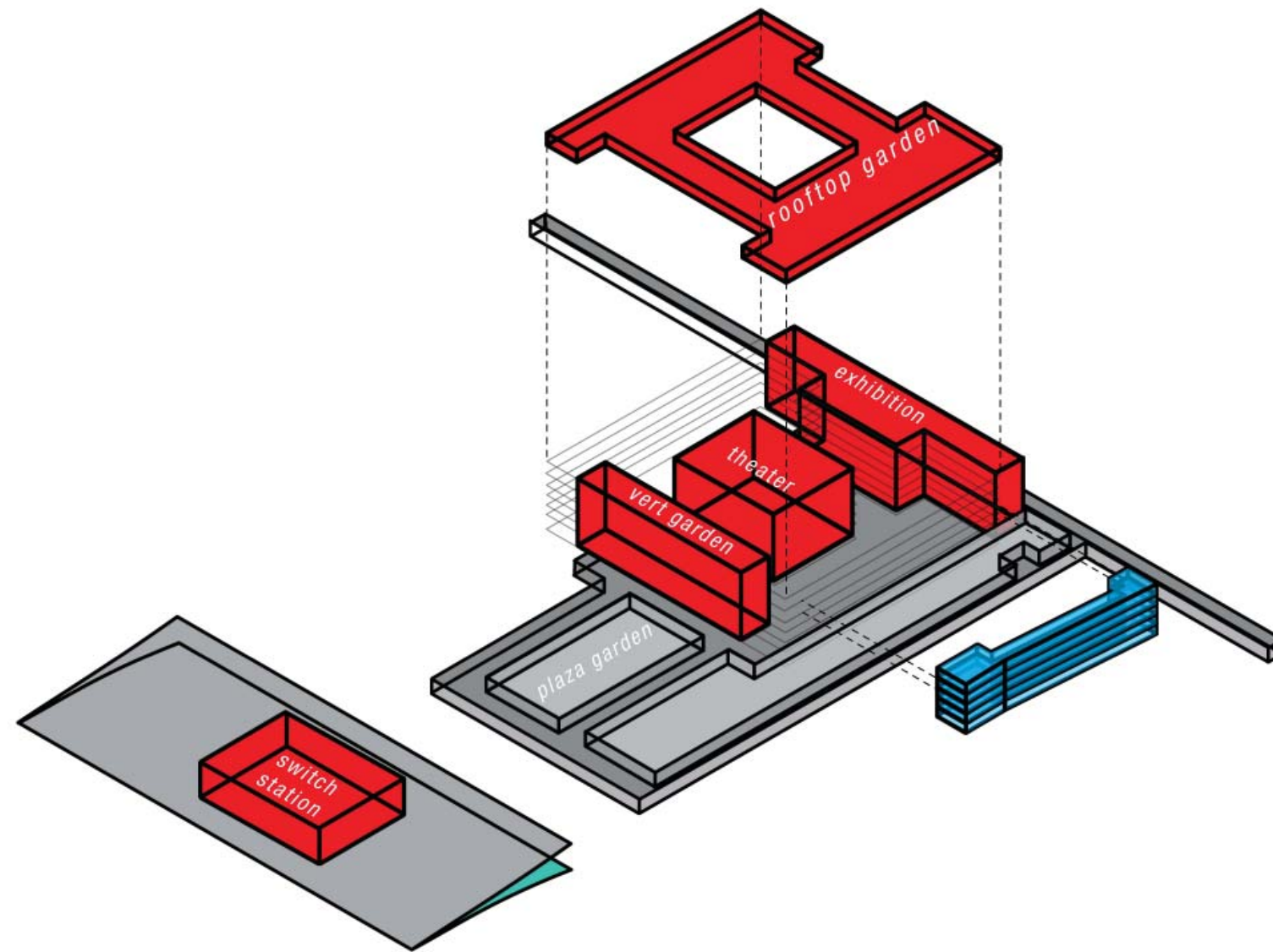
site plan



floor plan @ level '0'

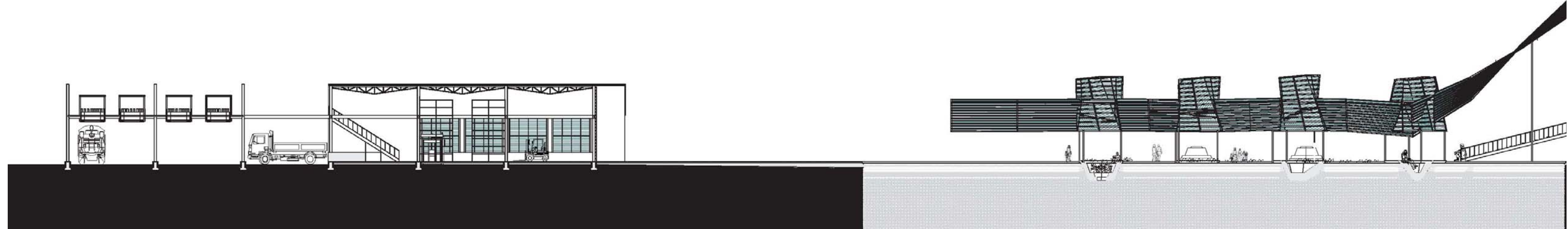


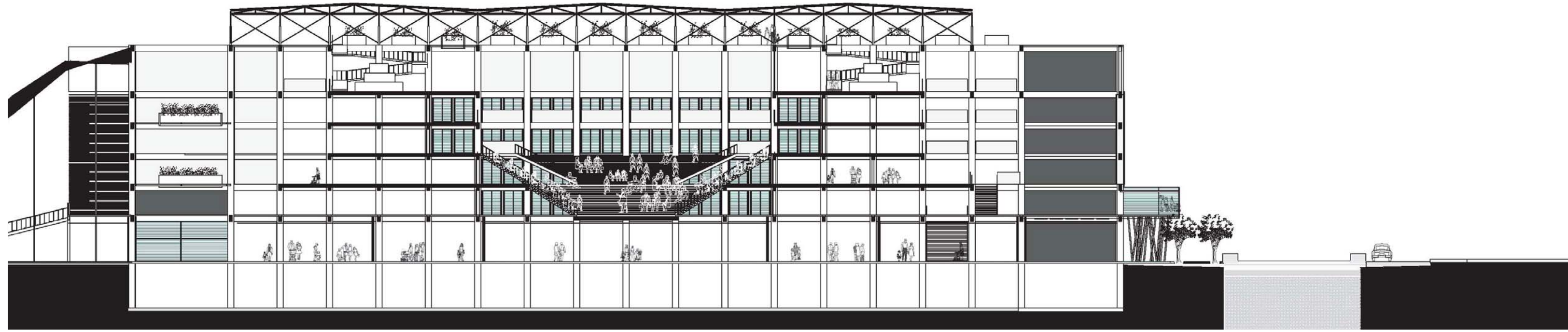
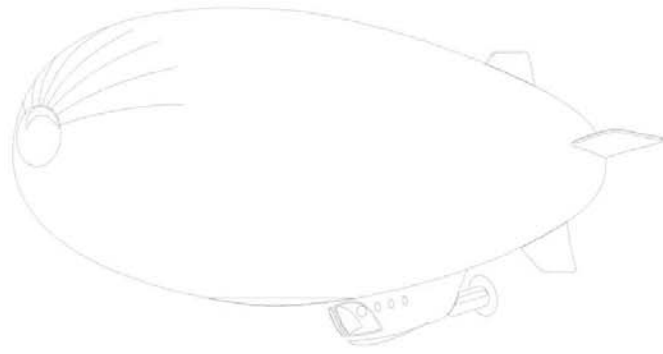
circulation diagram



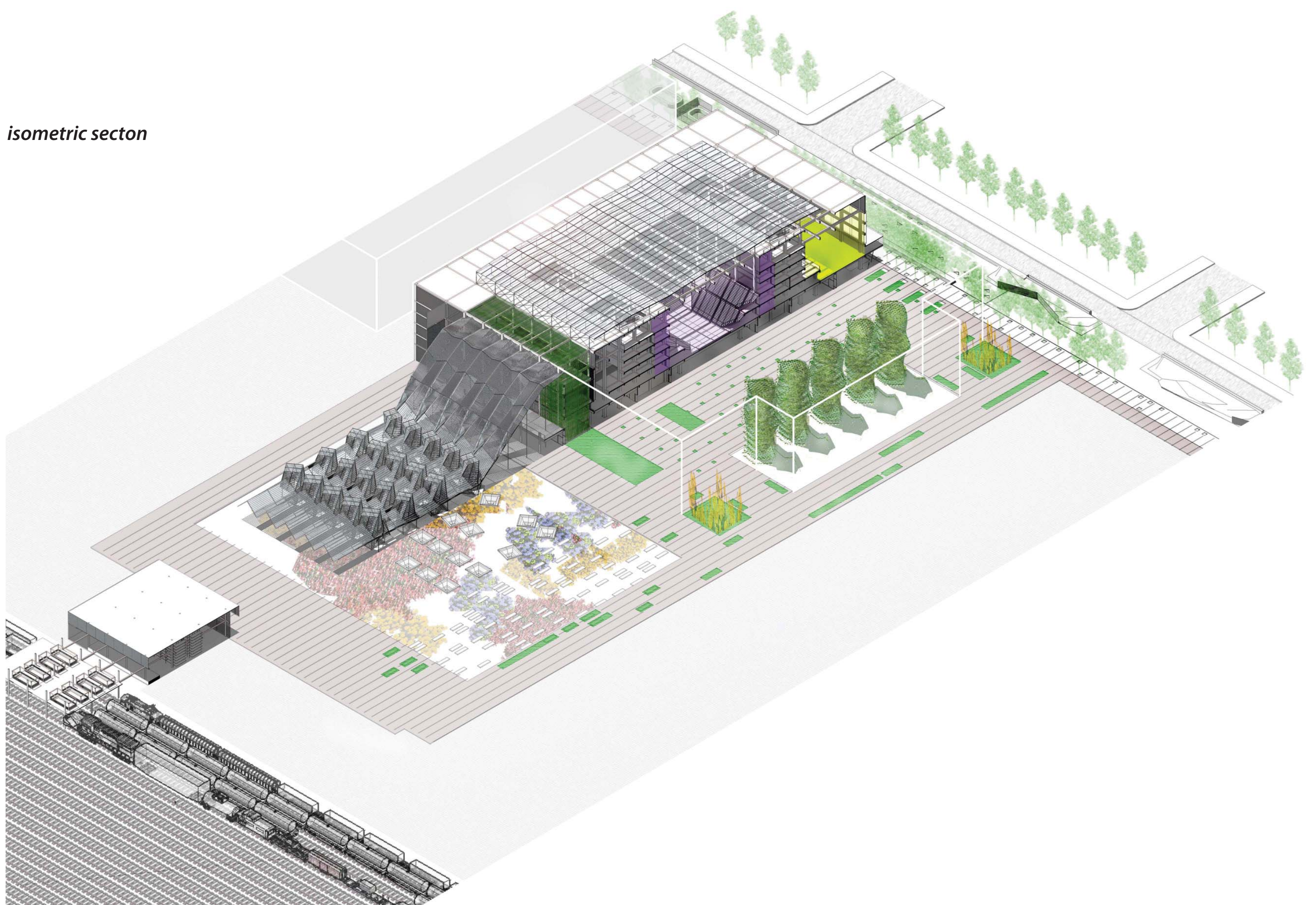
program diagram

section looking west



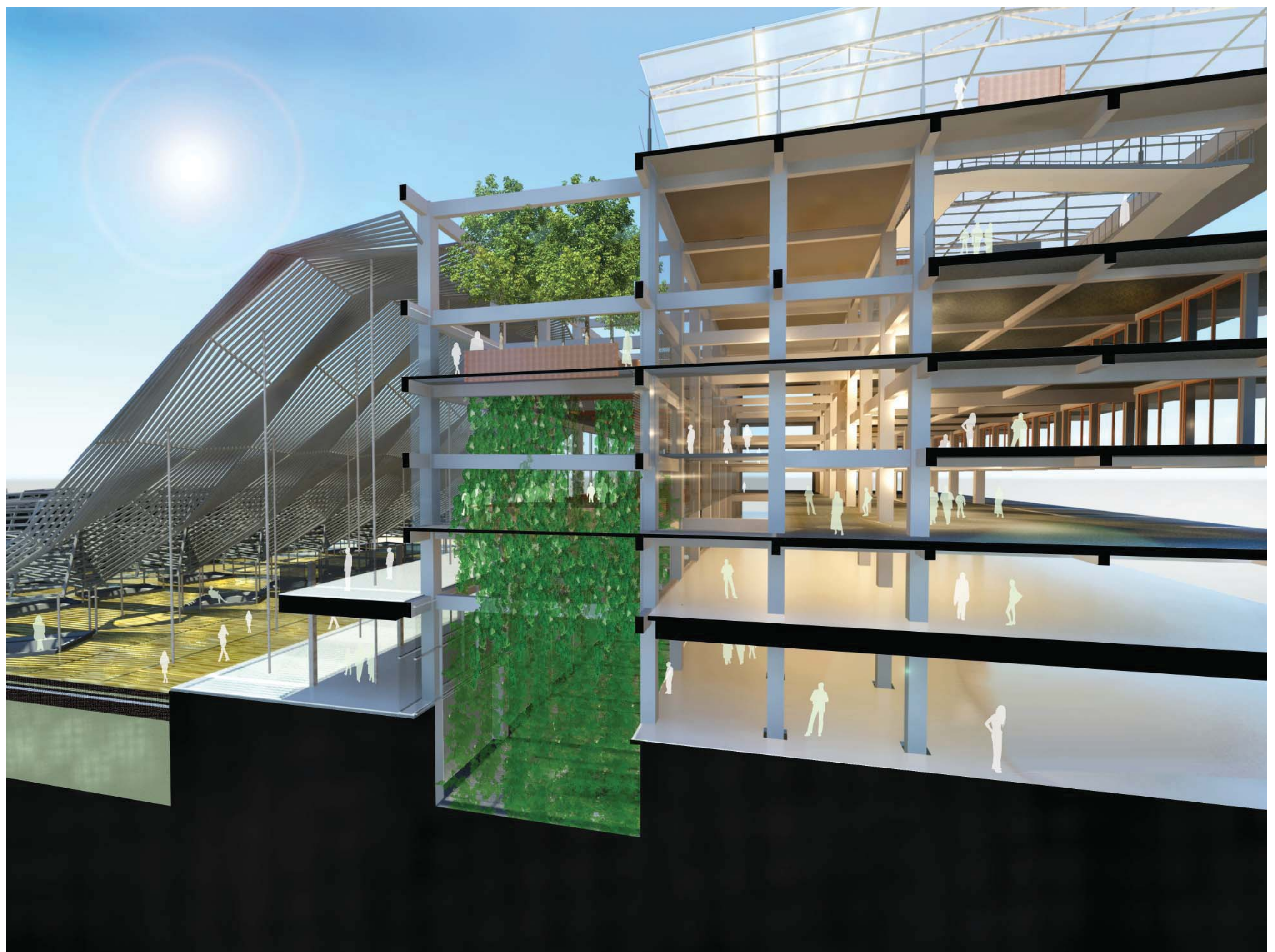


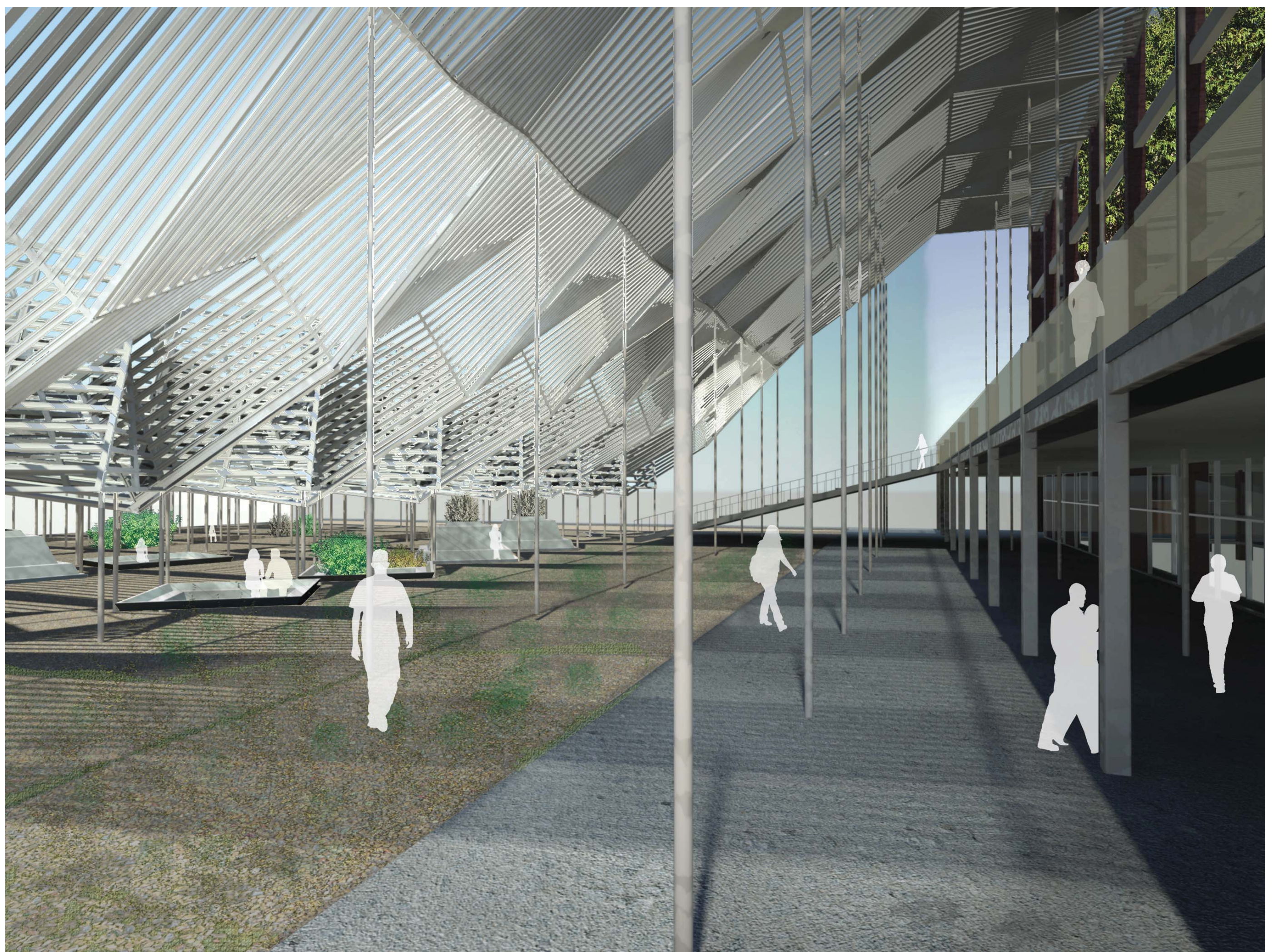
isometric section











drawn perspective

