Packard FARMS

Rekindling Industry from Derelict Landscapes

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Thesis Research + Analysis
AHST 5110
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Special Thanks:

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Thesis Document

Abstract

Between 1960 and 2000, Detroit experienced a 43% population drop. Factors such as unemployment, social strife, and increased mobility led to the movement of the more economically affluent to the outlying suburbs. Vacancy and blight have left a large amount of open land throughout the city. Of Detroit's 138 square miles, 40 are reported to be vacant. With so many ruptures in traditional density, designers have the opportunity to rethink what this land can become and how the city at large functions.

Planning proposals by Ebeneezer Howard and Ludwig Hilberseimer place a smaller, self-sufficient cities within a landscape. As landscape begins to infiltrate the city of Detroit through vacancy, these regional plans begin to be applicable at the city scale. Pockets of occupation can be strengthened by bringing in smaller scale, decentralized industry. Rather than speculating on consumer trends, vacant land can be used as a producer of food and energy. By producing food in close proximity to the home, energy is not expended in food transportation. Waste from farming, vacant lots, and homes can be used for sustainable energy production. Solar, wind, and biomass can be harnessed for clean electricity as an alternative to placing a traditional coal or natural gas burning electric plant in residential neighborhoods. While the current needs for food and energy are being met, vacant land and buildings offer the opportunity to explore more sustainable practices.

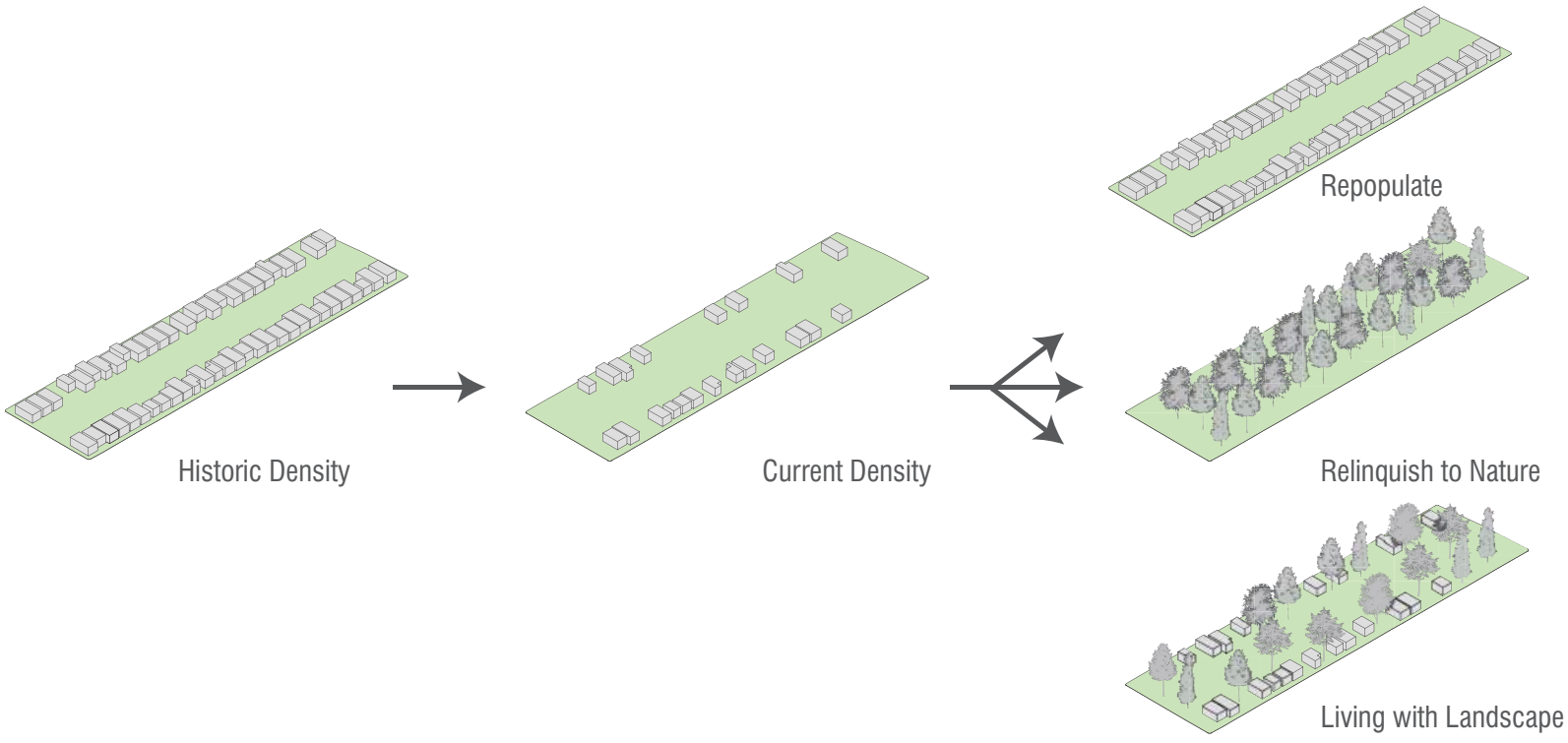


Fig. 1. Three approaches to depopulated neighborhoods

Essay

Shrinking Cities

The United States was once a global manufacturing center. Cities like Detroit, Pittsburgh, and Philadelphia provided the nation with steel and automobiles. In the 1960s, the country shifted away from manufacturing to service production. American manufactured exports dropped from 25% of the world share in 1960 to 17% in 1980.[1] Disinvestment in production meant disinvestment in America's industrial cities. The post-industrial city is marred by population loss, high vacancy rates, and abandoned industrial buildings. In no American city is this as evident as in Detroit. Issues that plague the post-industrial city are not unique to Detroit. Yet as the model city of American manufacturing, Detroit has historically been an early indicator of trends affecting other industrial cities. As such, it is now poised to be the model city of post-industrial urbanism.

The development of the modern city lies in the industrial revolution. Previous transportation limitations required resources to be near the settlement. Population also could not exceed that which the town could reasonably support with those nearby resources. The steamboat and locomotive changed the relationship between production and consumption. Cities could grow exponentially without having to increase production. Food and raw materials could be imported across great distances for consumption and manufacturing in the city. The poor and homeless flocked to the cities for employment in the new industrial sector.[2] Ludwig Hilberseimer notes, "[changes in] social forms generate both constructive and destructive powers." A changing city destroys the social form that came before it, only to give birth to a new form that will, in turn, destroy it. [3] In this logic, the industrial city (defined by density) led to suburbanization (defined by sprawl). Suburbanization rendered obsolete the industrial city. It is only a matter of time before a new form of urbanism, one that straddles the line between city and suburb, takes root. This will begin in areas where suburbanization has been the most successful and the most damaging. This will begin in cities like Detroit.

Fig. 2. 100 Years Ago: Large city with many smaller villages in the country

Fig. 3. Today: Large city with sparse rural population. Separation of industry and agriculture.

Changing Cities

In *The New Regional Pattern,* Hilberseimer outlines the changes cities and regions have undergone (Fig. 2-4). One hundred years ago, the countryside was occupied and the city modestly sized. Industrialization drove people into the city, developing the Megalopolis and abandoning the country. Hilberseimber proposes a decentralized region, with more equally sized centers of occupation. Hilberseimer conceived of the city no longer as the soaring industrial metropolis, but as a smaller and self-contained "settlement unit." "The city is in the landscape, as the landscape is in the city."[4] The settlement unit was both manufacturer and consumer. It produces as much as of its needs as possible with local raw materials. This becomes

Fig. 4. Possible Population Distribution: Smaller city and larger towns in country

1 John A. Jakle and David Wilson. *Derelict Landscapes: The Wasting of America's Built Environment* (Savage, MD: Rowman & Littlefield, 1992), 66

2 Hilberseimer, Ludwig. *The New Regional Pattern; Industries and Gardens, Workshops and Farms* (Chicago: P. Theobald, 1949), 48

3 Hilberseimer, 43

4 Hilberseimer, 86

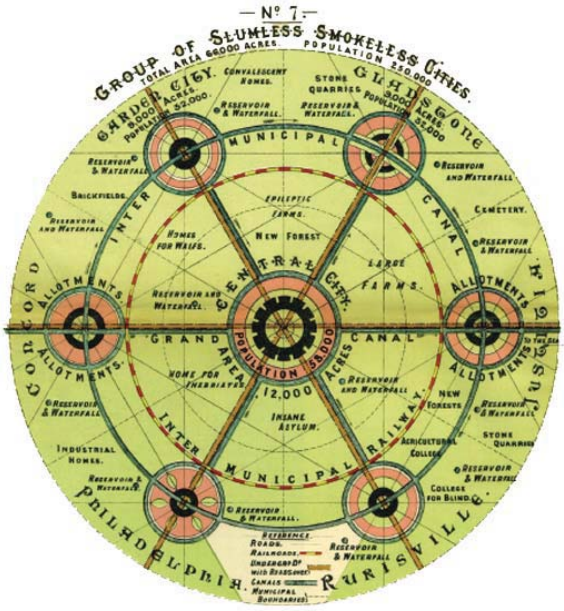


Fig. 5. Howard's Garden City

a sustainable practice as energy is not expended on transporting what could be found locally. "Although both industry and agriculture tend more and more to concentration and to the employment of fewer and fewer people, decentralization and integration of industry and agriculture is still possible and practical."[5] This integration would provide economic diversity and stability. Hilberseimer advocates for proximity of workplace and residence. "Workers must daily waste in travel valuable time for which no equivalent is offered […] For an everyday existence, the solution to traffic problems cannot be found in increasing transportation facilities […] It must be achieved rather by diminishing the need for such facilities." [6] By developing a settlement pattern where residences are located near employment, the pedestrian scale can return to the city. A worker can walk to work. The automobile is no longer a necessity, but a convenience.

This pattern can be applied to a city as large and with as much vacancy as Detroit. Erasure of dense urban fabric has already occurred at a large and unplanned scale. The revitalization of a post-industrial city will not occur with optimistic and speculative construction. This was demonstrated by the limited success of Detroit's casino and sports stadium developments. "These latest architectural attempts to proclaim Detroit 'back' have effectively committed the city to a future as a destination entertainment theme park for its wealthy suburban ex-patriots."[7] People come into the city for the length of a baseball game, then immediately leave for the safety of the suburbs. Yet, a city cannot continue to define itself by an industry that abandoned it. Manufacturing has decentralized and taken employment opportunities out of city limits. Many former sites of manufacturing lie vacant, as do the neighborhoods surrounding them. Rather than waiting for economy and industry to dictate a use for these properties, Detroit can give vacant land a productive purpose. By redefining the relationship between landscape and structure, the built environment has to opportunity to ameliorate ecological damage caused by previous urban practices. Job creation can occur through the productive use of landscape to provide for the needs of a city such as food, energy, and raw materials. Natural growth provides a service to the urban environment by providing thermal buffers, storm water management, and carbon sequestration among others. After industrialization and suburbanization, the new city has the opportunity to be sustainable and self-sufficient.

Detroit History: Boom City

Detroit's geographic position allowed it to become a trade center. It was connected via railroad to Ohio and Pennsylvania's coal and steel. Railroads and steamboats also connected Detroit to the East Coast. In 1827, manufacturing made its first foothold in Detroit through steamboat and railcar production. A number of small establishments in diverse sectors followed.[8] The rise of foundries and machine shops made Detroit a natural place for the automobile industry to develop. At its peak, Detroit boasted 272 different car and car parts manufacturers. Many of these were small craftsmen. The

5 Hilberseimer, 85
6 Hilberseimer, 134
7 Waldheim, Charles. "Detroit – Motor City' in *Shaping the City*, ed. by Edward Robbins and Rodolphe El-Khoury (New York: Routledge, 2004), 92
8 Galster, George C. *Driving Detroit: The Quest for Respect in the Motor City* (Philadelphia: University of Pennsylvania, 2012), 76

invention of Henry Ford's Model T in 1908 brought Detroit to the forefront of American Industry. The Model T stood out by being produced on an assembly line. This made the car affordable to middle class and to proliferation of the automobile commenced. By consolidating production to one site, Ford cut the price of the Model T by two thirds. GM furthered consumption with "planned obsolescence." Yearly model changes and hierarchy of styles fed into consumer desire to express status through the newest or best model. Through such practices, Detroit car manufacturers held 85% of the market share by 1925.[9]

Thousands of people moved to the city as employment was plentiful in car manufacturing. Assembly line production meant that anyone was capable of doing the work. Anyone could make a decent living, regardless of his skills. In 1920, only 25% of the city population was native to the state. Many of the others were immigrants or first-generation Americans. A great number of southern blacks moved to Detroit during the labor shortage caused by America entering World War I.[10] As the industry grew, so did the city, reaching a population of nearly 2 million people across 138 square miles.

Detroit History: Doomed City

While the car-manufacturing boom bolstered the city, it also led to an exodus. Ford began the process of decentralization by moving out of city limits to Dearborn and Highland Park. Ford famously exclaimed, "The city is doomed. We shall solve the city problem by abandoning the city." [11] Increased mobility, brought about by the proliferation of the car, allowed the middle class to settle the urban periphery. Beginning in the 1950s, the affluent moved to the suburbs, leaving those who could not afford to move as residents of the city center. "Not surprisingly, deindustrialization reflects a loss of comparative economic advantage. Disinvestment triggers decline that increasingly renders once viable landscapes derelict and nonviable."[12] Factories closed and employment was not as plentiful as it once was. Detroit's economy was based solely on the car. The popular saying, "As goes GM, so goes the nation" evidences the dependence on the success of these corporations. However, in a consumer driven economy, no one product or producer can dominate the market permanently. Detroit's lack of economic diversity rendered it unable to move forward when the car companies left. The largest employers are now in government, education, health care, and entertainment. George Galaster observes that these industries, "Are not powerful engines of growth [as] they are not amenable to great gains in productivity and do not primarily sell their services to customers located outside the region."[13]

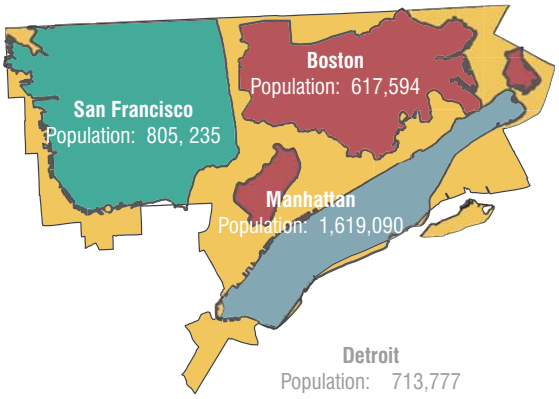


Fig. 6. Comparing Detroit to three other major cities

Deindustrialization and suburbanization were only made possible due to the success of the industrial city. "While flexibility, mobility and speed made Detroit an international model for industrial urbanism, those very qualities rendered the city disposable."[14] Transportation improvements first made it possible for a city to import its food from the country in order to expand. It

9 Galster, 77
10 Martelle, Scott. *Detroit: A Biography* (Chicago, IL: Chicago Review, 2012), 85
11 Herron, Jerry. "Real Estate: Buying into Lafayette Park" in *Case: Hilberseimer/Mies van der Rohe Lafayette Park Detroit*, ed. Charles Waldheim (New York: Prestel, 2004), 56
12 Jakle and Wilson, 58
13 Galster, 90
14 Waldheim, 78

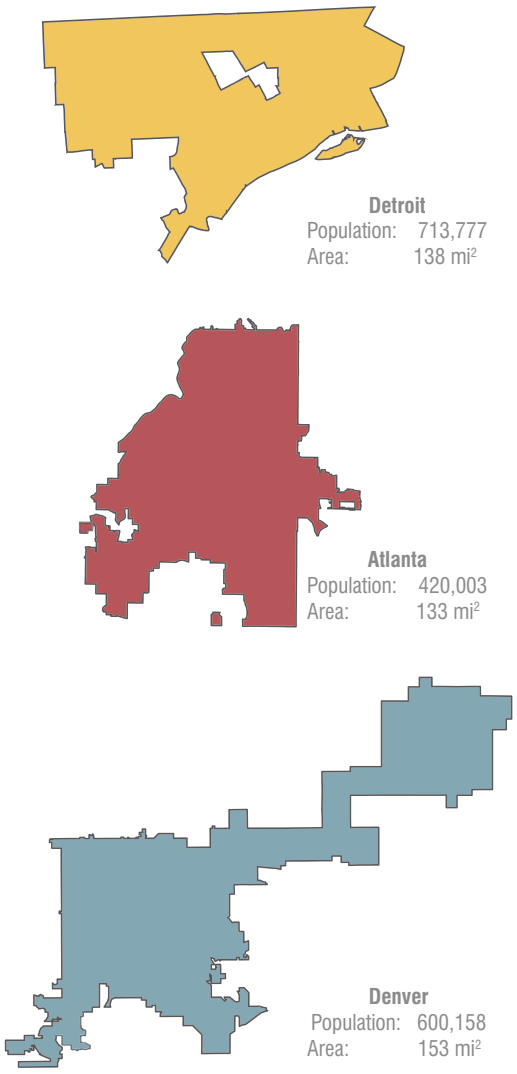


Fig. 7. Comparing Detroit to three other major cities

then made it possible for a city to export its residents to the new suburbs, resulting in shrinkage. The city that once housed 1.85 million now holds just over 700,000. Dan Pitera's 2010 map of Detroit (Figure 6) illustrates the both the physical scale of the city and the scale of its de-densification. Detroit is physically larger than Boston, Manhattan, and San Francisco combined with approximately one third of their combined populations. Yet the metro area has grown to 4.4 Million inhabitants.[15] This population shift translates to vacant and abandoned properties. A 2009 survey revealed that 27% of Detroit's residential parcels are vacant land. "Vast portions of Detroit were erased through this combination of unsanctioned burning and subsequently legitimized demolition."[16] This erasure creates the framework for new possibilities in urban development, changing from a focus on regrowth and re-densification to "right-sizing." Despite the population loss, Detroit is more populous and more dense than many other thriving American cities. This includes cities like Atlanta, Denver, Memphis, Nashville, and Portland (Fig. 7). Land-use strategies can be redefined to plan for and support Detroit's smaller, yet substantial, population.

Detroit History: Damned City

"The city is damned, but by no means doomed. Let's rebuild it."[17] Herbert Greenwald repeatedly proclaimed this as the developer for Lafayette Park. Located on the site of a historically African American neighborhood, Black Bottom, Lafayette Park originated as urban renewal slum clearance. Greenwald brought in Mies van der Rohe, Ludwig Hilberseimer, and Alfred Caldwell as the design team. The result was one of the few urban renewal projects that actually worked. As designed, Lafayette Park features three high-rises and a series of townhouses and row courtyard houses within a park. "That's what makes Lafayette Park interesting[...] it's not a city and it's not a suburb, but the thing that happens when both are over."[18]

Lafayette Park was an application of Hilberseimer's "Settlement Unit" as described in *The New Regional Pattern*. Following Fordist ideas of decentralization, the settlement unit utilizes "landscape as the primary medium for a horizontal and radically decentralized post-urban landscape…"[19] A strengthened relationship between landscape and city would also provide a better quality of life for residents. Among urban renewals failures was the creation of public housing that was designed as a temporary living situation. This concentrated poverty, as those who were able to afford market housing were unable to stay. By designing for temporality, public housing did not design for quality of life for those living in the housing units.[20] As seen in the Lafayette Park site plan, Hilberseimer's settlement unit made landscape the central amenity to the community. Hilberseimer claims the connection to green would provide a healthy contrast to the industrial worker's indoor employment. In the search for a new social form, one can look to the success of Lafayette Park and identify the possibilities of a "middle urbanism." The new city rejects the density of the industrial city and the sprawl of the suburbs by creating nodes of habitation based on Hilberseimer's "settlement unit."

15 Herron, 56
16 Waldheim, 83
17 Herron 57
18 Herron 61
19 Waldheim, 91
20 Jakle and Wilson, 122

Detroit Future: Greened City

Hilberseimer notes in 1949 that America is capable of being self-sufficient. States are located across all climate zones, allowing a large variety of local food choices and raw materials for consumer products. [21] "Concentration and specialization of production entail enormous costs for transportation and organization which is extremely wasteful. Such waste disappears in a region which achieves a balance between diversified farming and complementary industries." [22] The amount of vacant land within the city of Detroit provides ample opportunity to incorporate productive land use for a self-sustaining city. This includes, but is not limited to, urban farming.

A community based urban farming movement has already taken hold in Detroit. Largely informal community gardens, it is an effort by residents to clean up and use these derelict spaces. This is not the first time Detroit has history with urban farming. In 1894, Mayor Hazen Pingree urged Detroiters to establish family farms. The first year, 430 acres (.67 square miles) of land were used and produced a 400% profit. [23] In a city of 138 square miles, and approximately 40 square miles of vacancy,[24] this small-scale community and personal farming does not begin to provide a solution for vacancy. In this light, commercial farming ventures have been proposed. Hantz Farms is a large-scale commercial farming proposal by John Hantz. However, his plans to establish a multi-crop farming operation have been met with resistance by community farmers.[25] The community farm versus corporate farm tension is furthered by the difference in urban integration. A small community garden can be a part of the urban fabric. A large commercial farm juxtaposes the conflicting landscapes of urban and rural.

A drastic return to nature through wildlife restoration is also being considered. Relinquishing land to nature would not be economically productive. However, this would help with storm water management, air quality improvement, and correcting other damages of the hardscape city. Despite its benefits, it faces challenges similar to those of urban farming. Wildlife restoration on a large scale creates large areas of woodlands or wetlands in the middle of an urban context. To restore wildlife to the city also brings the hazards of cohabitation between man and animal. A middle ground is needed to mitigate the differences between city and unrestrained nature. Frequently, this middle ground is found in greenways and trails. These insertions make the city friendlier to pedestrians and cyclists, lowering the dependency on the car.

Looking to the future, these different land use options can be woven through the remaining urban fabric. The Detroit Works Project, in developing a master plan for the city, have documented and analyzed the potentials of various different neighborhoods. Their "Land Use Summary" proposes various ways that the built environment relates to the landscape. Notably missing are large commercial farms or other rural typologies. Detroit Works looks to create several different site-specific relationships between landscape, living, and industry. Productive and ecological landscapes are as a part of the urban landscape as the freeway. It is not a traditional urban or suburban model. Here, a middle urbanism is created.[26]

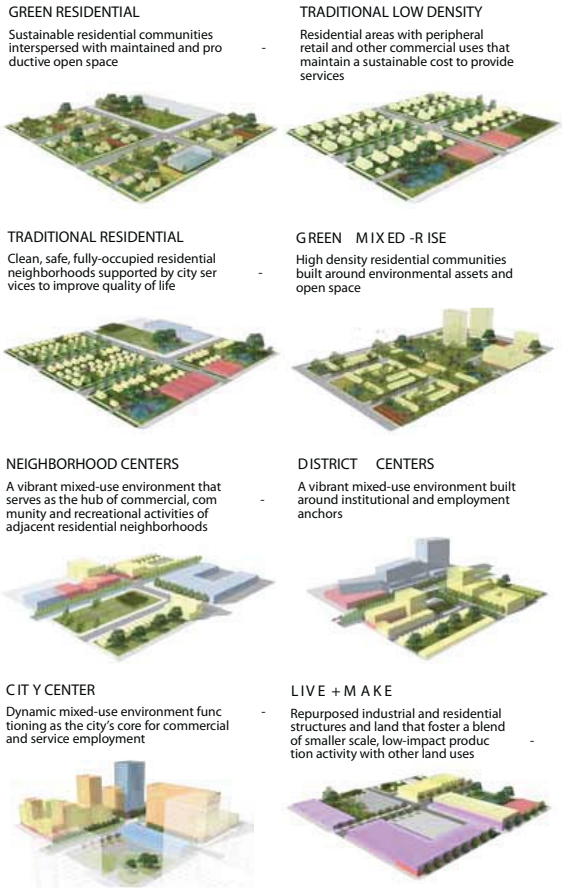


Fig. 8. Detroit Works Project Neighborhood Typologies

21 Hilberseimer, 78
22 Hilberseimer, 110
23 Gallagher, John. *Reimagining Detroit: Opportunities for Redefining an American City* (Detroit, MI: Wayne State University Press, 2010), 42
24 Gallager, 28
25 Gallagher, 60
26 Detroit Works Project, "Detroit Works Project: Long Term Planning." Detroit Works Project.

Detroit Works identifies different neighborhood typologies that can emerge. Two of these are the “Green Residential” and the “Live + Make” types. “Green Residential” intersperses housing with productive land use such as farming. “Live + Make” is a small-scale industrial type. The combination of the two closely resembles Hilberseimer’s settlement unit with productive landscape. A “Green Live + Make,” has the opportunity to create a self-sustaining “urban villages”.

Detroit Future: Productive City

Pockets of occupation can be strengthened with new industry and commerce. Rather than speculating on consumer trends, the industry of the urban village can explore more sustainable practices. Detroit’s vacant land can be used productively to grow food and fuel crops. Vacant industrial buildings can be rehabilitated for waste to energy processes.

Biomass can be harnessed for clean electricity as an alternative to placing a traditional coal or natural gas burning electric plant near homes. Nearby vacant lots can be stabilized and maintained with organic waste going to the biomass power plant. These lots can also be aggregated when possible to create large fields for fuel crops. Green energy generation would bring a sustainable industry to Detroit and much needed jobs. By re-using industrial land, the possibility of re-urbanization is maintained. New housing options can be seeded into the neighborhood as needed. These smaller “cities within a city” can be densified, at the pedestrian scale, and self-sufficient. The connective landscape between each urban village can be used productively to achieve self-sufficiency and sustainability. The symbiotic relationship between productive land, industry, and consumer can define the new city.

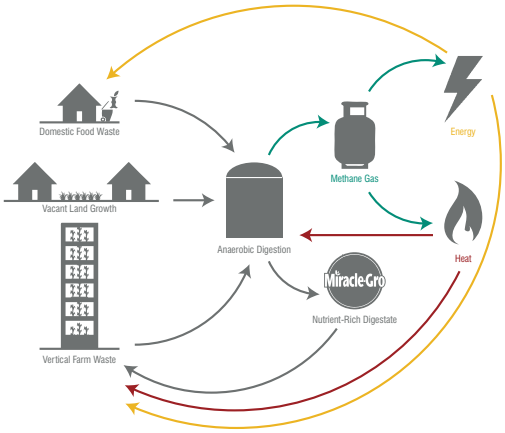


Fig. 9. Developing a new industrial process

Annotated Bibliography

Detroit Works Project, "Detroit Works Project: Long Term Planning." *Detroit Works Project*. http://detroitworksproject.com (accessed September 16, 2012).

Detroit Works Project is a master plan initiative to rethink the future of Detroit. The plan engages residents to come up with short and long term goals. The collaboration between the community and professionals in a variety of fields gives this project viability. In the short term plan, the city is exploring market-based approach to service delivery. This includes lighting, code enforcement, and beautification. Short term goals are being tested in three areas representative of steady, transitional, and distressed neighborhood market-types. Long term goals are being refined and draft copies are available for the community to examine and comment upon. While the long term goals are still being developed, this site is the most relevant resource to actual planning and development in Detroit.

Gallagher, John. *Reimagining Detroit: Opportunities for Redefining an American City*. Detroit, MI: Wayne State University Press, 2010.

Gallagher discusses different potentials for Detroit and their pros and cons. He draws parallels to other shrinking cities that have made progress, plans, or have made certain programs work. Turin, Italy reinvented itself from being a Fiat manufacturing city to a cinema city. Youngstown, Ohio is using strategic investing and permitting to strengthen the existing nodes and gradually transform itself into a smaller city. Such examples act as precedents for Detroit. Gallagher also discusses urban agriculture, "road diets," wildlife corridors, vacant lot use, and new economic drivers. Gallagher is a journalist for the Detroit Free Press on urban and economic development. Much of the research for the book comes from interviews or site visits. It is a helpful reference of the different ideas that are currently being considered for Detroit and other shrinking cities.

Galster, George C. *Driving Detroit: The Quest for Respect in the Motor City*. Philadelphia: University of Pennsylvania, 2012.

Herron, Jerry. "Real Estate: Buying into Lafayette Park" in Case: Hilberseimer/Mies van der Rohe Lafayette Park Detroit edited by Charles Waldheim, 55-61. New York: Prestel, 2004

Hilberseimer, Ludwig. *The New Regional Pattern; Industries and Gardens, Workshops and Farms*. Chicago: P. Theobald, 1949.

Hilberseimer's regional pattern decentralizes the city. Settlement units combine industrial and agricultural production with housing. They are smaller than the industrial metropolis and are connected to the landscape. The settlement unit promotes proximity between living and working.

Jakle, John A., and David Wilson. *Derelict Landscapes: The Wasting of America's Built Environment*. Savage, MD: Rowman & Littlefield, 1992.

Martelle, Scott. *Detroit: A Biography*. Chicago, IL: Chicago Review, 2012.

As the title suggests, this is a history of Detroit from its founding as a French settlement to present day. Martelle is a journalist rather than a historian or architect, yet the book is well researched with an extensive bibliography and first-hand interviews. Martelle discusses not only historical occurrences, but also social factors behind them. This provides a helpful overview and introduction to the city.

Rowe, Colin. *Collage City*. Cambridge, MA: MIT Press, 1983.

Waldheim, Charles. "Detroit – Motor City" in *Shaping the City* edited by Edward Robbins and Rodolphe El-Khoury, 77-97. New York: Routledge, 2004.

Precedent Research

Vertical Farming

The Plant

SHED Studio

Chicago, IL

Fig. 10. The Plant, Façade Rendering

Occupying a former meat packing plant, The Plant is a net-zero energy vertical farm and food business incubator. A Kombucha brewery, beer brewery, talapia farm, and hydroponic vegetable farm exchange resources such as water, carbon dioxide, and oxygen in a closed loop system. Waste is converted to biogas for energy and heating. The Plant brings fresh foods to and urban food desert and the use of an existing building allows greenfields to remain vegetated.

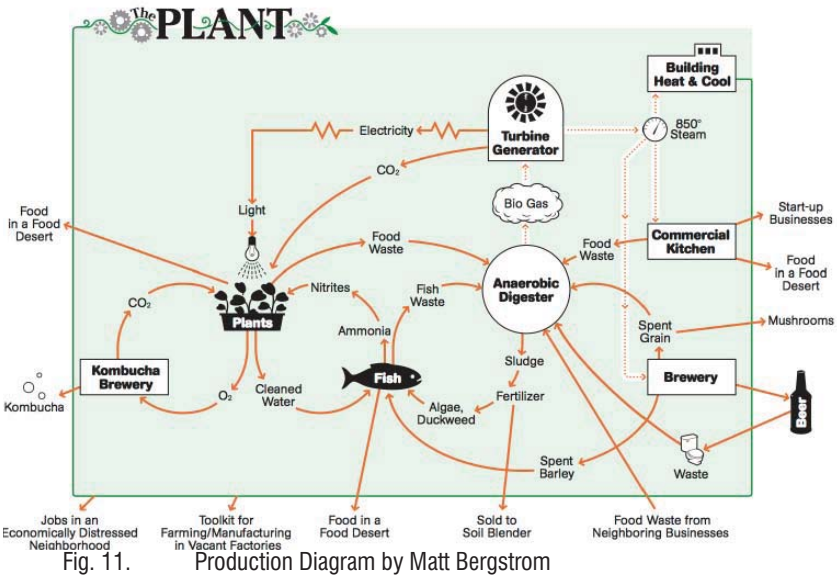


Fig. 11. Production Diagram by Matt Bergstrom

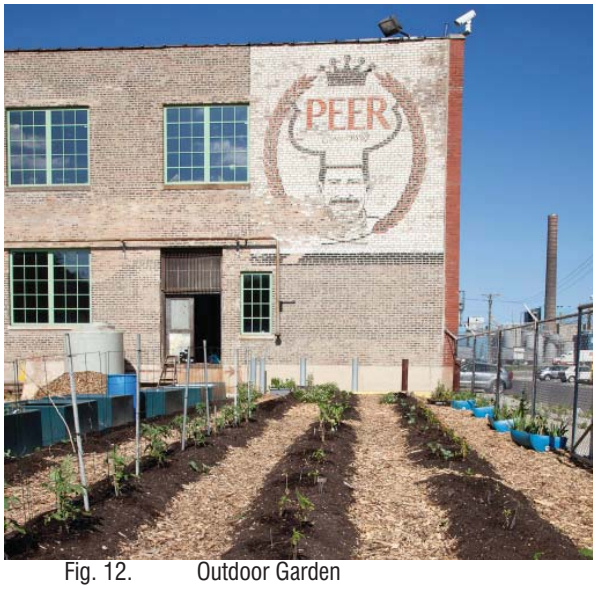


Fig. 12. Outdoor Garden

Sweet Water Organics
Unknown Designer
Milwaukee, WI

Fig. 13. Hydroponic Planting Beds

Sweet Water Organics converts a former crane factory into a tiered farming system. The farm utilizes an aquaponic system to produce lettuce and basil, watercress, tomatoes, peppers, chard, and spinach in conjunction with tilapia and perch.

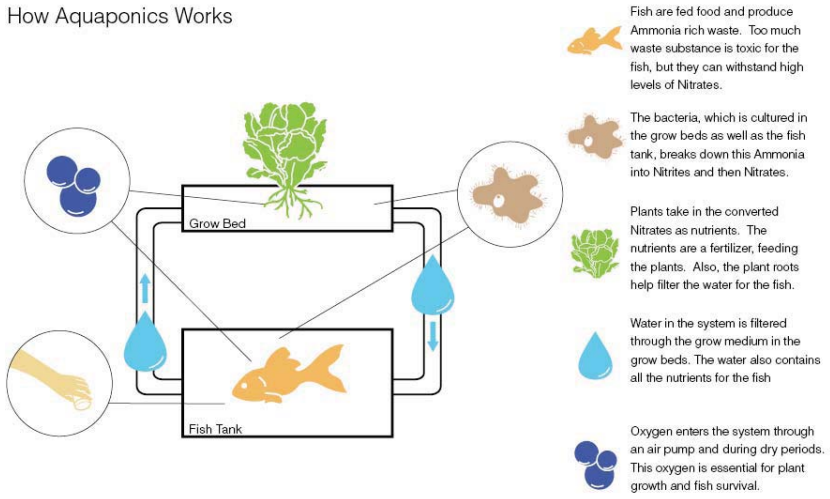


Fig. 14. Aquaponics diagram

Fig. 15. Stacked planting beds

Biomass Power

BEI-Teesside

Heatherwick Studio

Port Clarence, UK

Fig. 16. View from northern entrance to the site

The BEI-Teesside power plant is located on a vacant brownfield site. It is fueled by palm kernel shells, a waste product of palm oil production. The plant generates 49 megawatts of electricity, enough to power 50,000 homes and reduces carbon emissions by 93% in comparison to traditional coal-burning plants. The plant converts waste into a resource, keeping current land use undisturbed.

Fig. 17. Interior View

Waste-to-Energy Plant
BIG
Copenhagen, Denmark

Fig. 18. View of power plant from across river

BIG's proposal for a waste-to-energy plant makes the plant a destination by incorporating a ski slope on the roof. The plant incinerates household waste, keeping it out of landfills. An estimated 40% of the city's trash is converted to energy. 56% of waste is recycled sending only 3% to landfills.

Fig. 19. Plants as a facade

From Brownfield to Greenfield

Ford Rouge Center Landscape

William McDonough + Partners
Dearborn, MI

Fig. 20. View of water retention landscape

The Ford Rouge Landscape project manages toxic stormwater run-off. Wetlands, swales, and greenroofs naturally hold and clean stormwater across the site. This landscape system cost less than one third of traditional pipe-intensive methods and provides ecological amelioration.

Fig. 21. Portion of the 20 year plan implemented by 2003

Victor Civita Plaza – Open Museum of Sustainability

Levisky Arquitectos Associados & Anna Dietzsch

São Paulo, Brazil

Fig. 22. View of pavilion

At the site of a former garbage incinerator, the plaza uses water retention and remediation techniques. The public space is located on a deck of recycled local hardwood that floats above the contaminated soil through the use of steel structural supports.

Fig. 23. Deck is elevated with steel structure

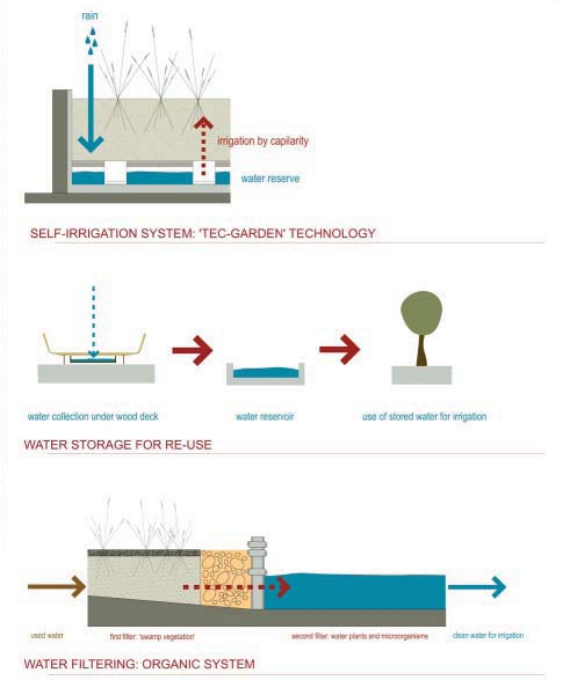


Fig. 24. Water recycling diagrams

Moritzburg Museum

Nieto Sobejano

Halle, Germany

Fig. 25. Facade. New sits behind old

An ancient castle now houses a current museum of modern art. The intervention is a new roof which folds down to create new gallery space. This allows the floor of the ancient ruin to be left completely free. The new intervention hovers above and sits behind the ruins.

Fig. 26. View of gallery. New hovers above old

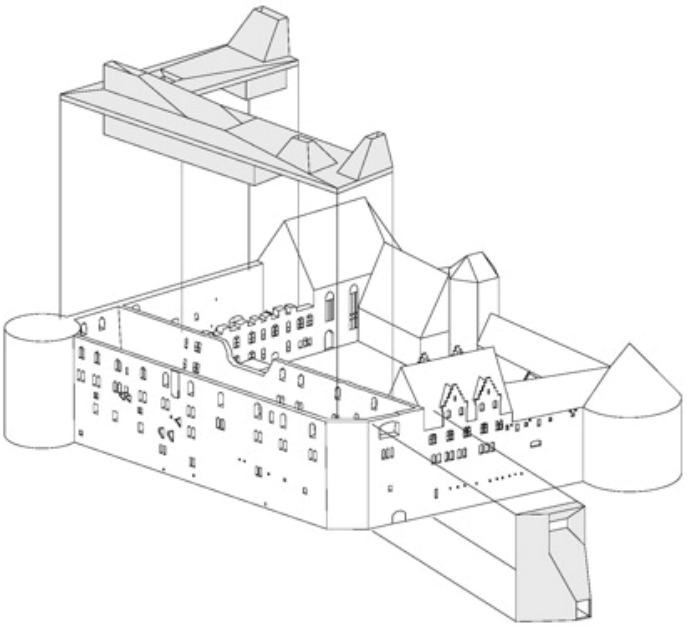


Fig. 27. Insertion of new above and into old

Kolumba Museum
Peter Zumthor
Cologne, Germany

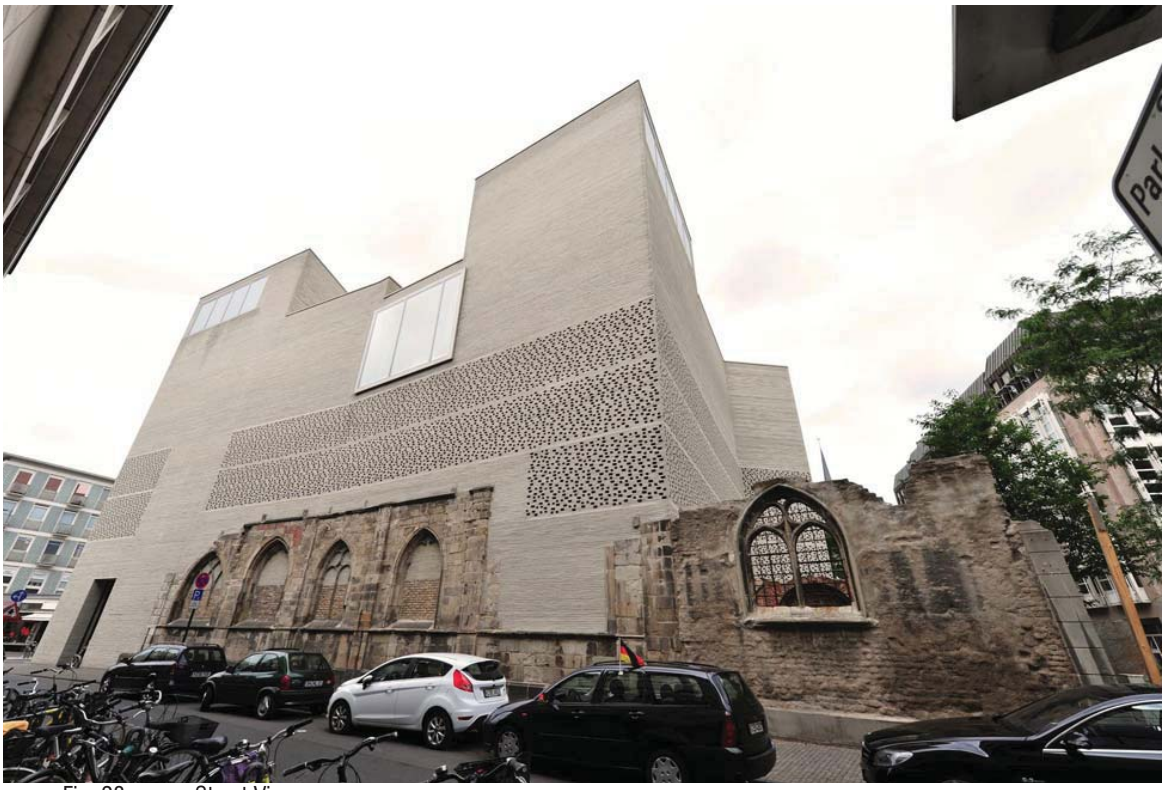


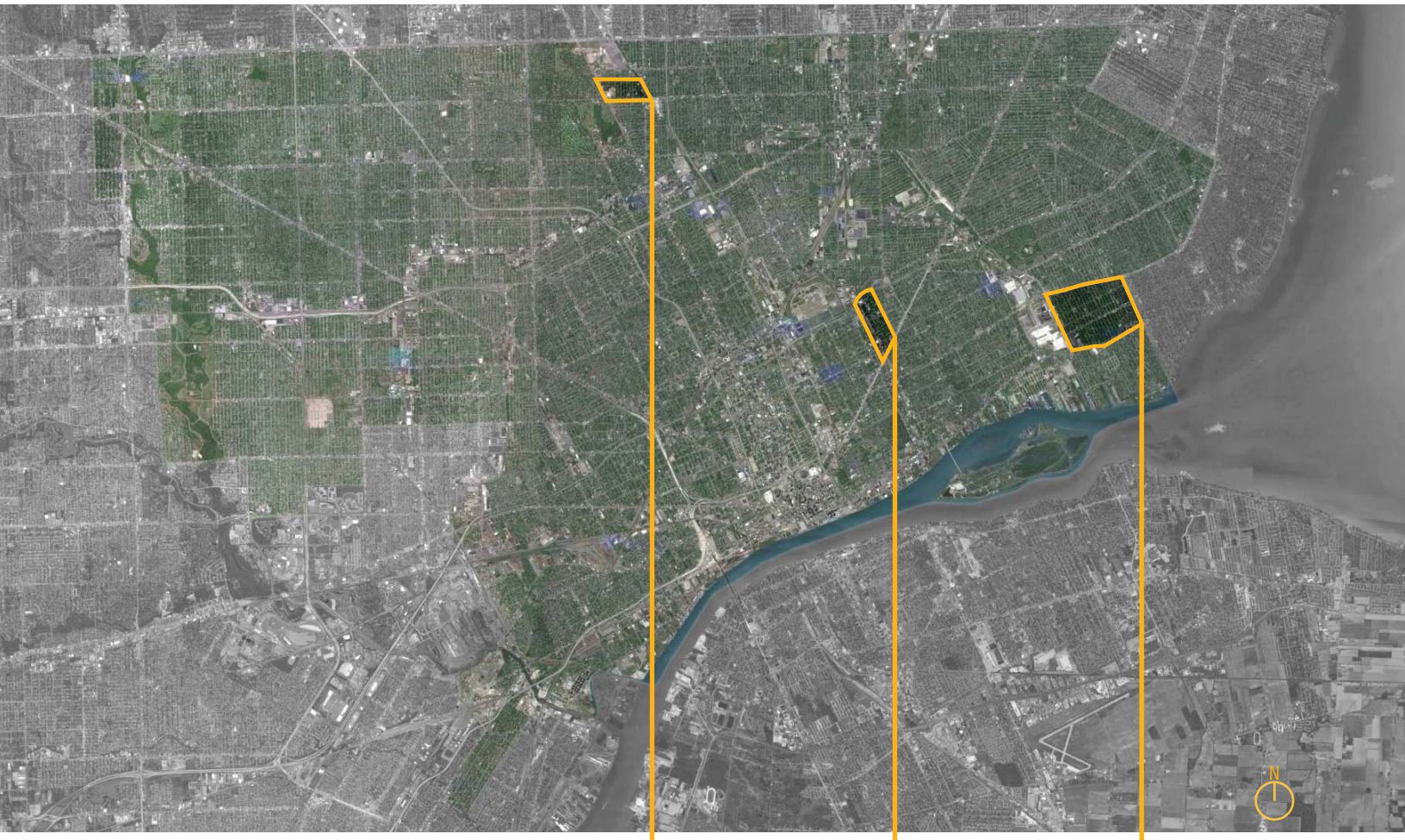
Fig. 28. Street View

The museum utilizes the ruins of a late Gothic church. Zumthor focused on materiality to unify the fragments of the building. The bricks were especially made to respond the existing colors and textures.

Fig. 29. Courtyard View

Site Research and Documentation

Site Selection

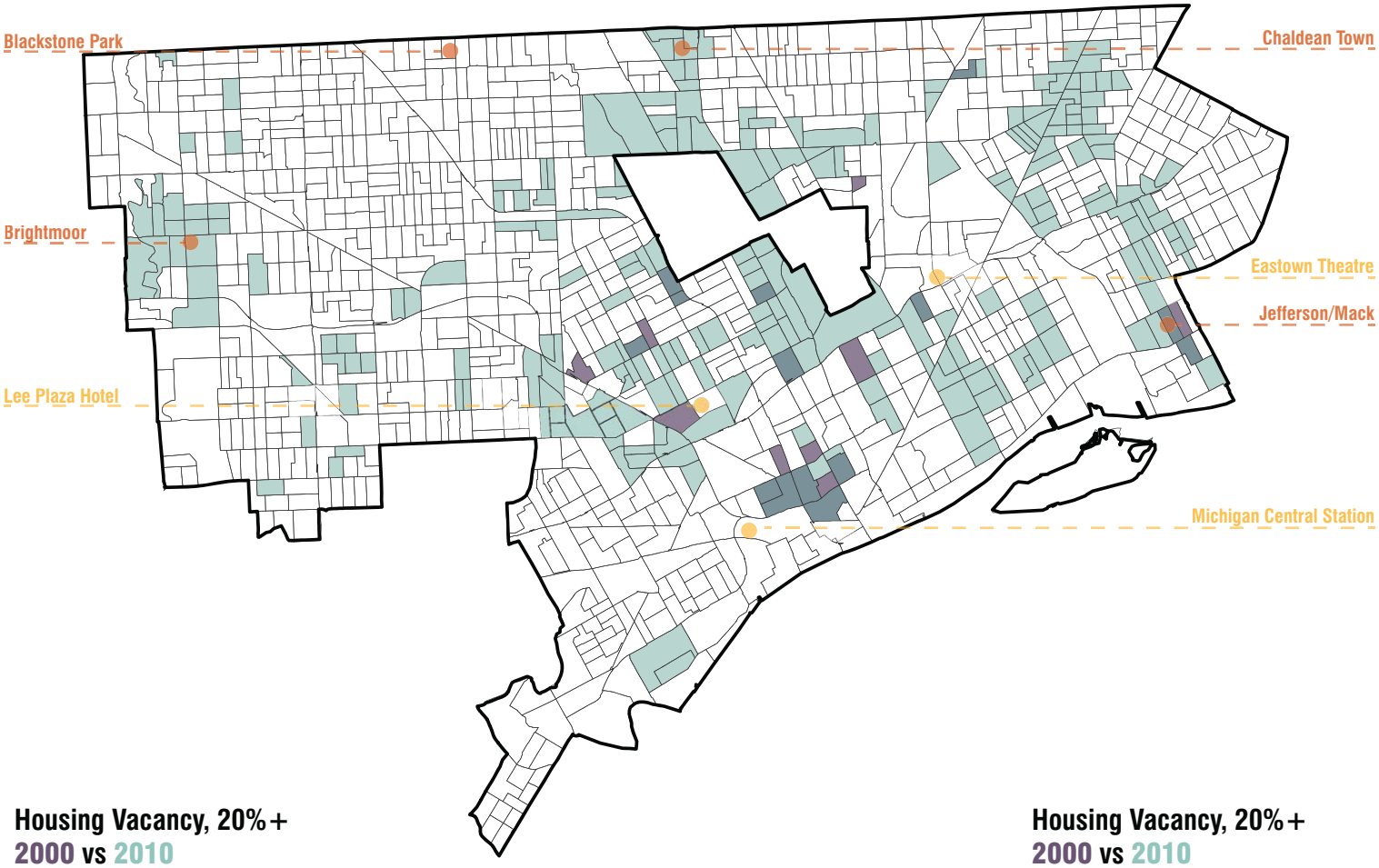


Chaldean Town

Packard Plant

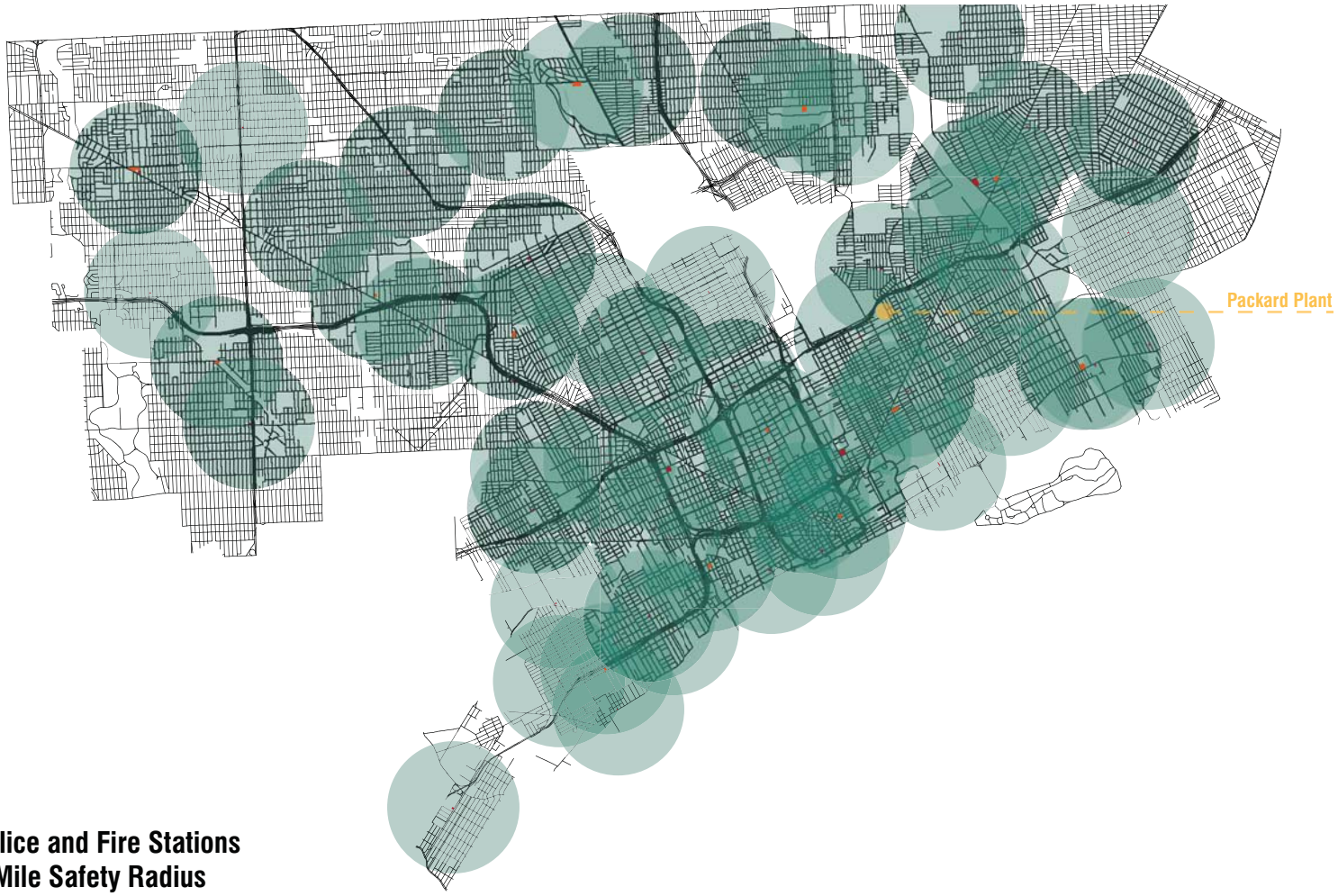
Jefferson/Mack

Sites were selected based on community indicators and high vacancy. Chaldean Town is a low-income, primarily first generation neighborhood. Jefferson/Mack borders the Connor Creek Industrial Zone and the affluent Grosse Pointe Park. The Packard Plat was ultimately chosen based on its high residential vacancy, abandoned industrial site, and historical relevance.

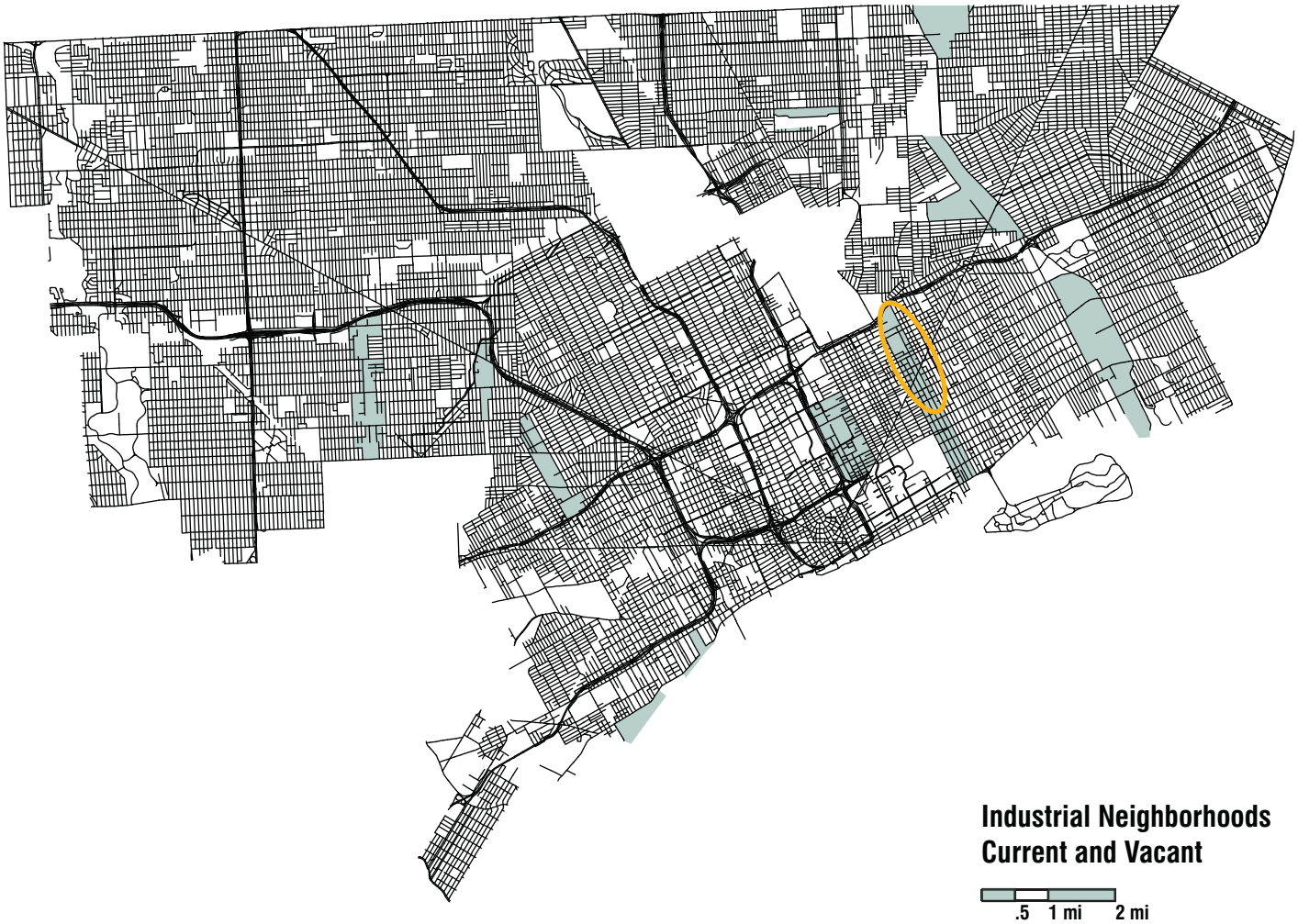


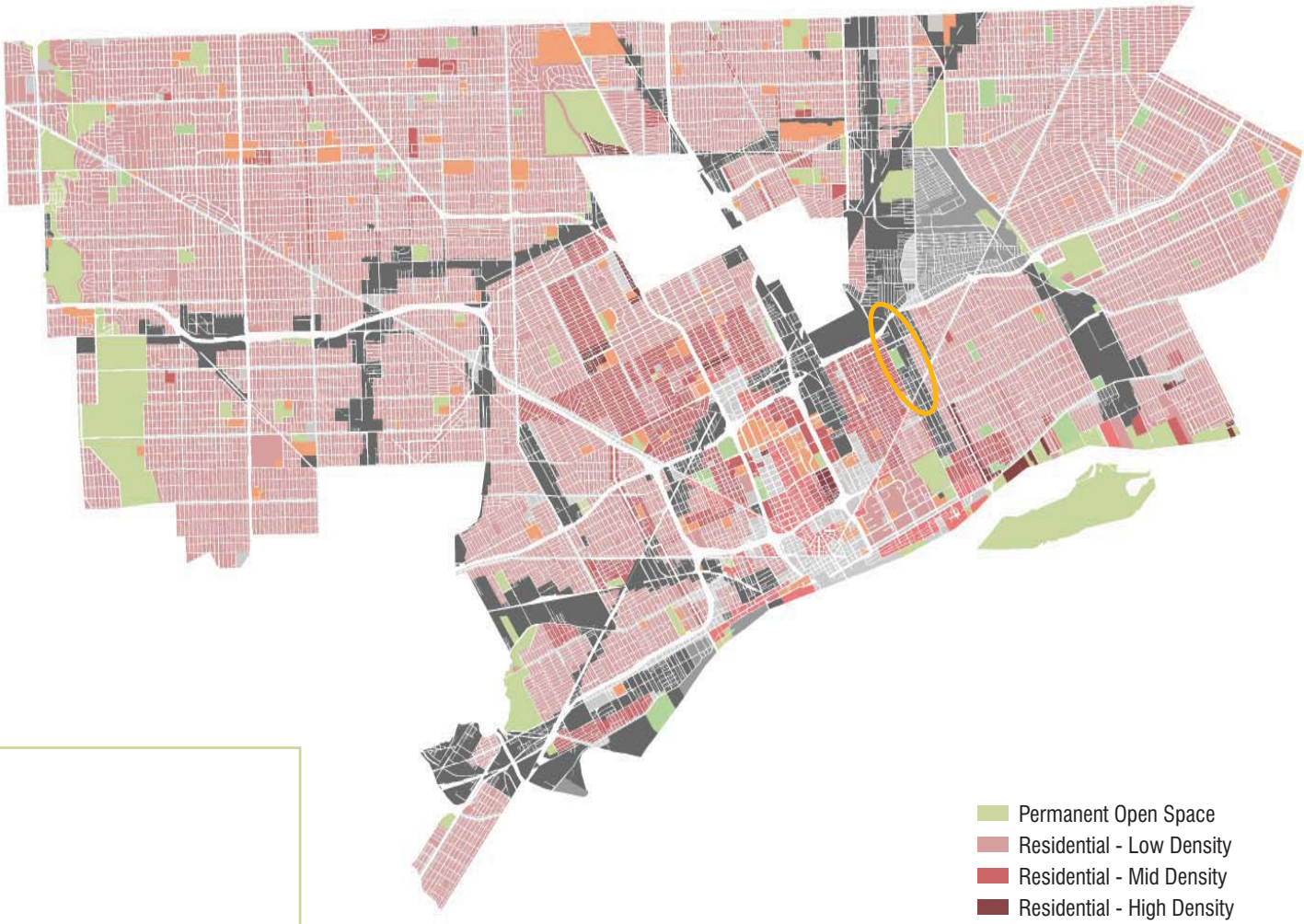
Housing Vacancy, 20%+
2000 vs 2010

Housing Vacancy, 20%+
2000 vs 2010

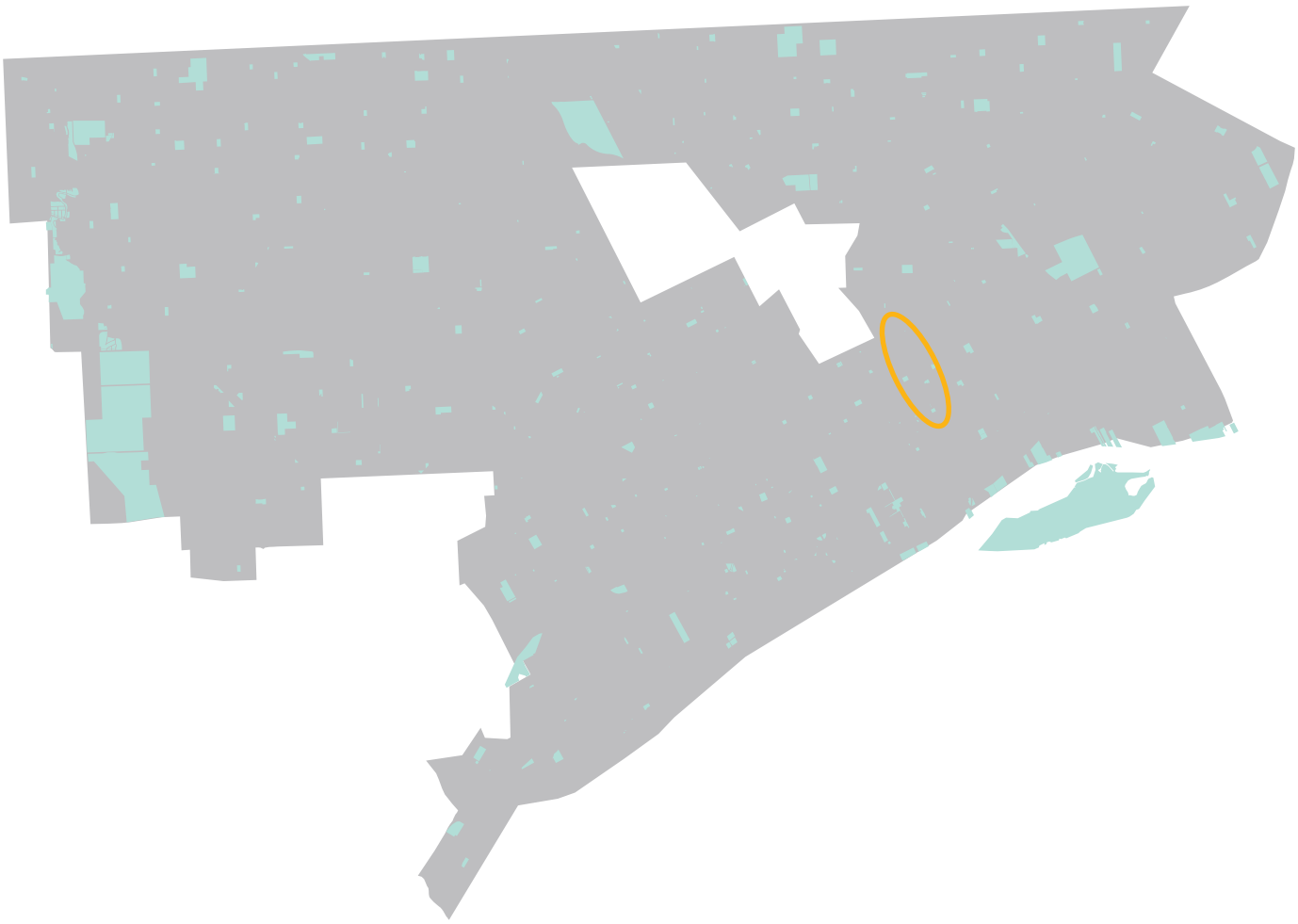


Police and Fire Stations
1 Mile Safety Radius


Industrial Neighborhoods
Current and Vacant
.5 1 mi 2 mi


Permanent Open Space
Residential - Low Density
Residential - Mid Density
Residential - High Density
Residential - Mixed Use
Commercial
Institutional
Industrial
Airports and Ports

Land Use



Parks in the City


N


N


N

Site History

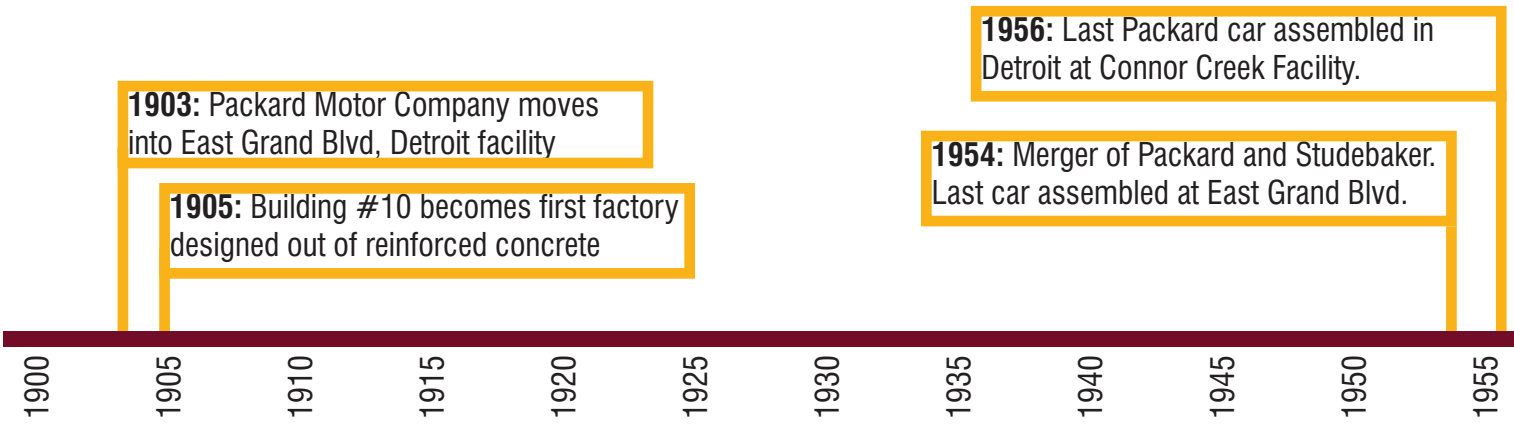
The Packard Plant has been a Detroit landmark for over 100 years, first, as a major automotive manufacturer and employment center. The designer of the Packard Plant, Albert Kahn, revolutionized American industrial design with Packard #10. Now, the plant is famous for being one of the world's largest ruins, a reminder of what happens when industries shut down.

In 1903, the Packard Plant moved to Detroit. The first building were traditional mill construction. In 1905, the design for Building #10 was completed using reinforced concrete, which allowed for spans of a then impressive 30'. Kahn also took daylighting into consideration, keeping the building width to 60' with windows on both sides. The windows were placed to maximize daylighting to deep within the room, with a 3' sill and reaching to the ceiling. When additional buildings were needed, the complex maintained each building's access to light and air by building in courtyard formations.

Albert Kahn, the architect, became well known for his industrial designs and had a prolific career in Detroit. Kahn designed numerous factories for Ford and army and naval bases around the world. Some of his more prominent buildings in Detroit include the Fisher Building, The General Motors Building, and The Detroit Free Press. Kahn also designed numerous buildings for the University of Michigan in Ann Arbor.

Packard maintained the revolutionary plant through the World Wars, transforming production to aircrafts, and into the post war boom years. The Packard Plant closed in 1954, after Packard Motor Company merged with Studabaker out of Indiana and the company left Detroit. Since then, the building has been subdivided and been home to many different enterprises and revitalization plans. In 1993, the City of Detroit foreclosed on the property.

The past 20 years in the life of the Packard Plant have been filled with legal battles over ownership and back taxes. The city evicted any remaining tenants in 1998 and began demolition the next year. However, that was halted as an owner came forward. The plant is currently owned by Bioresource. In December 2012, Detroit began foreclosure proceedings against the company for unpaid taxes.



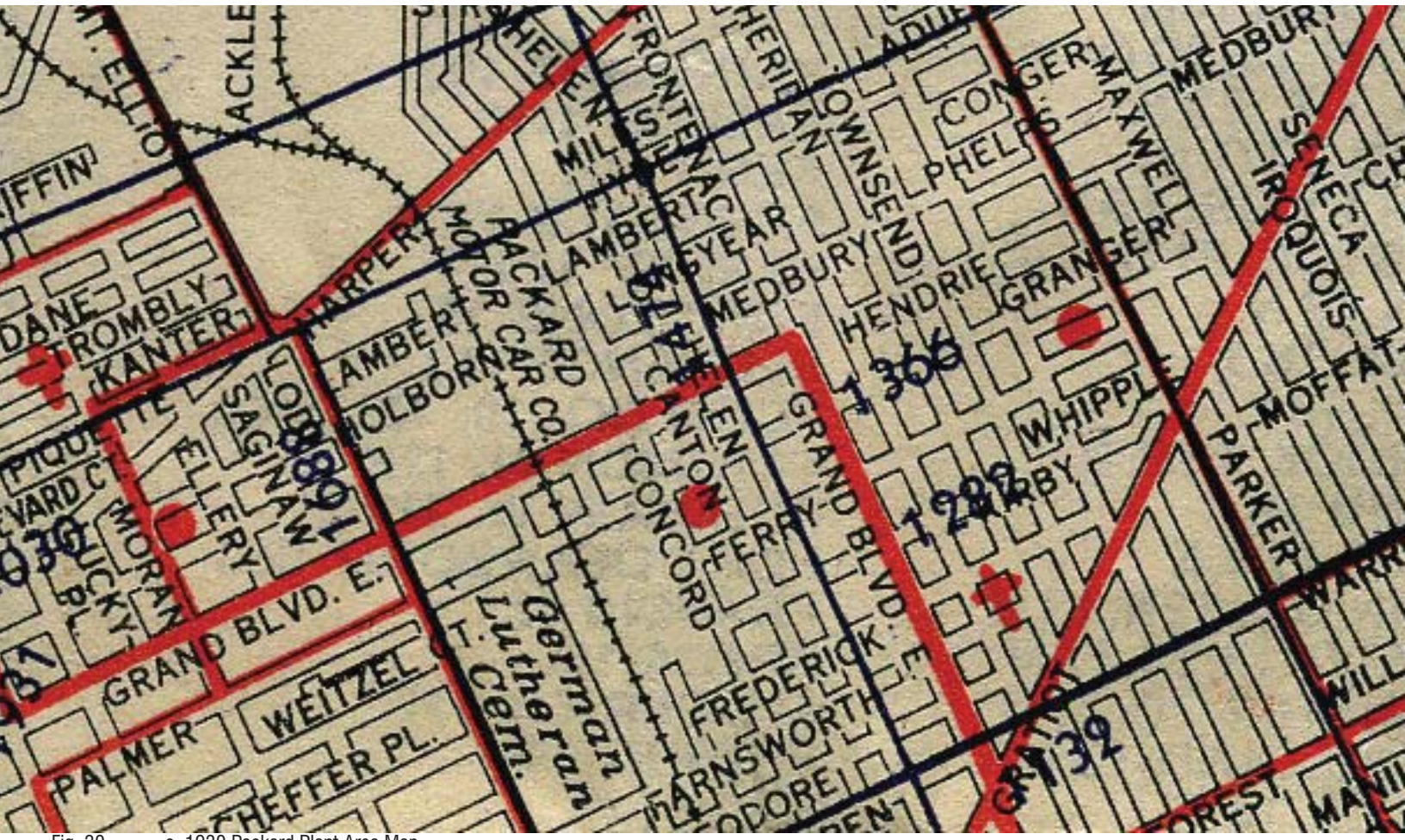


Fig. 30. c. 1930 Packard Plant Area Map

1958: Last Packard employee laid off. Plant is sectioned off and leased or sold.

1960: Building is mortgaged with Land and Norry Associates

1987: Plant sold to Bioresource. Bioresource does not pay property taxes.

1993: The City of Detroit and State of Michigan foreclose on the property.

1998: The city tells tenants they must be gone by Feb. 1, 1999.

1999: Demolition begins. Land and Norry's mortgage interests win a court order to halt demolition.

2000: New investors pay back taxes amid rumors of casino development.

2011: Detroit City Council approves demolition orders.

1960 1965 1970 1975 1980 1985 1990 1995 2000 2005 2010

Fig. 31. 1913 Postcard image

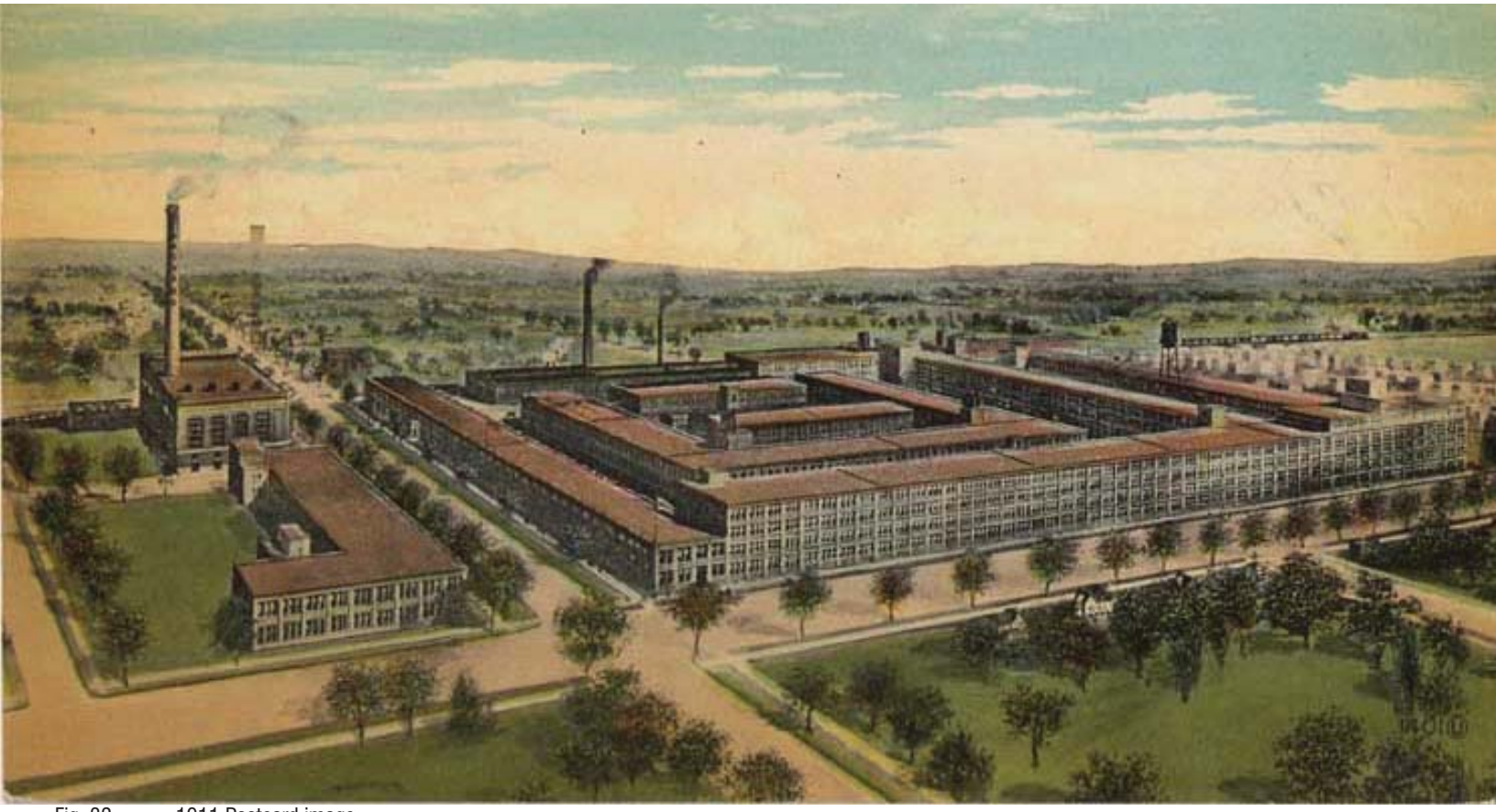


Fig. 32. 1911 Postcard image

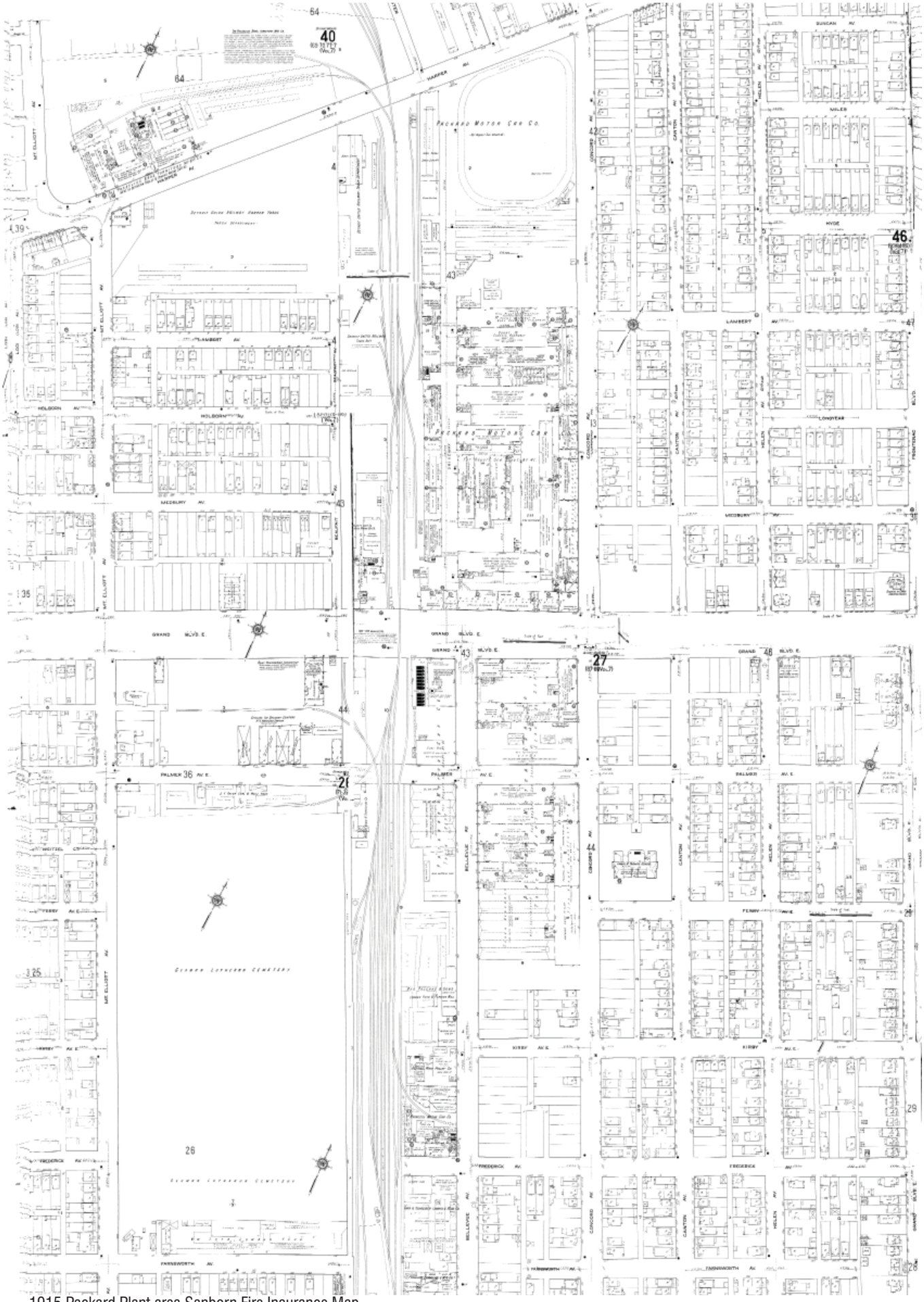


Fig. 33. 1915 Packard Plant area Sanborn Fire Insurance Map

Fig. 34. 1915 Photograph

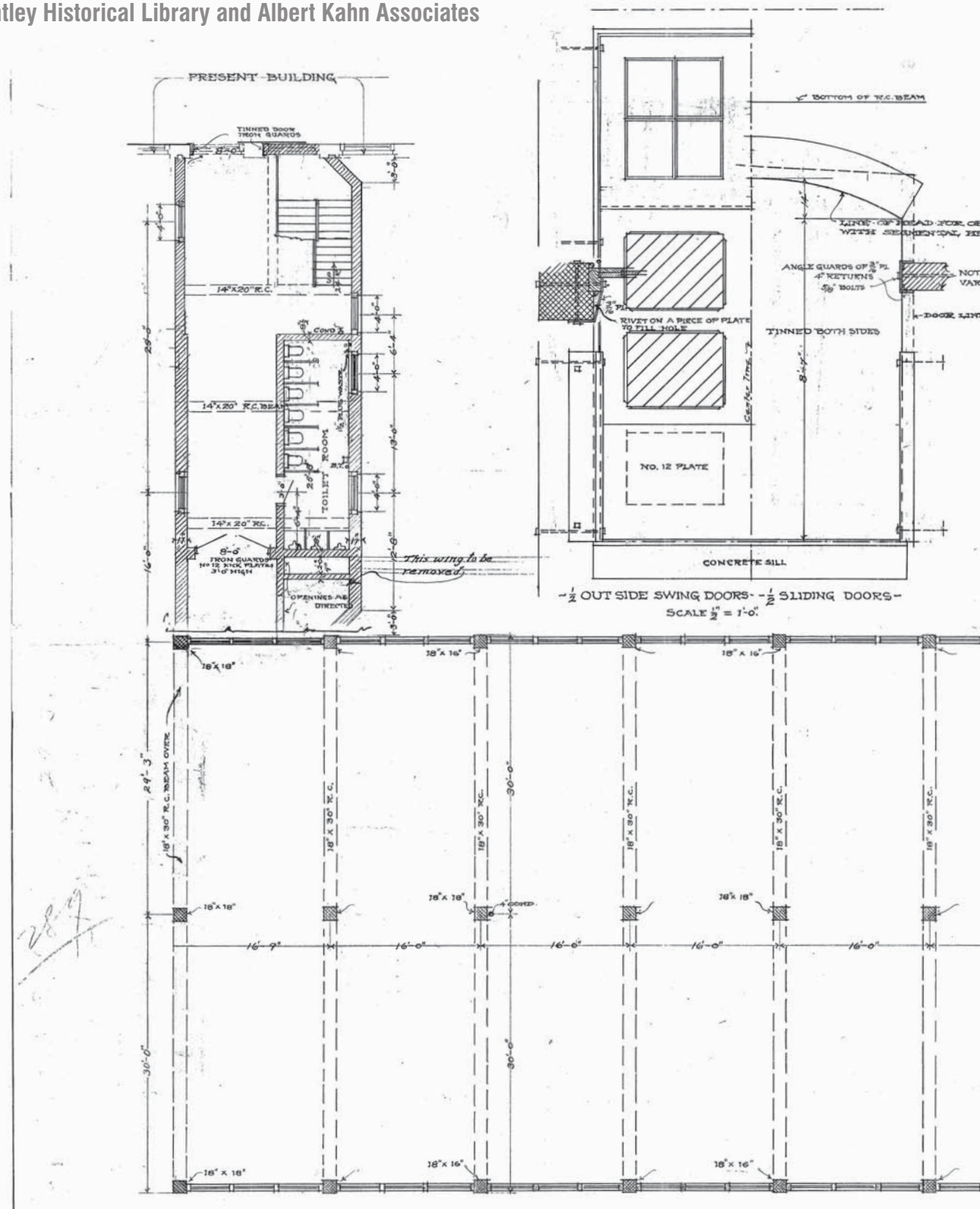
Fig. 35. 1925 Photograph of uphosterers at work

Fig. 36. 1910 Photograph of assembly room

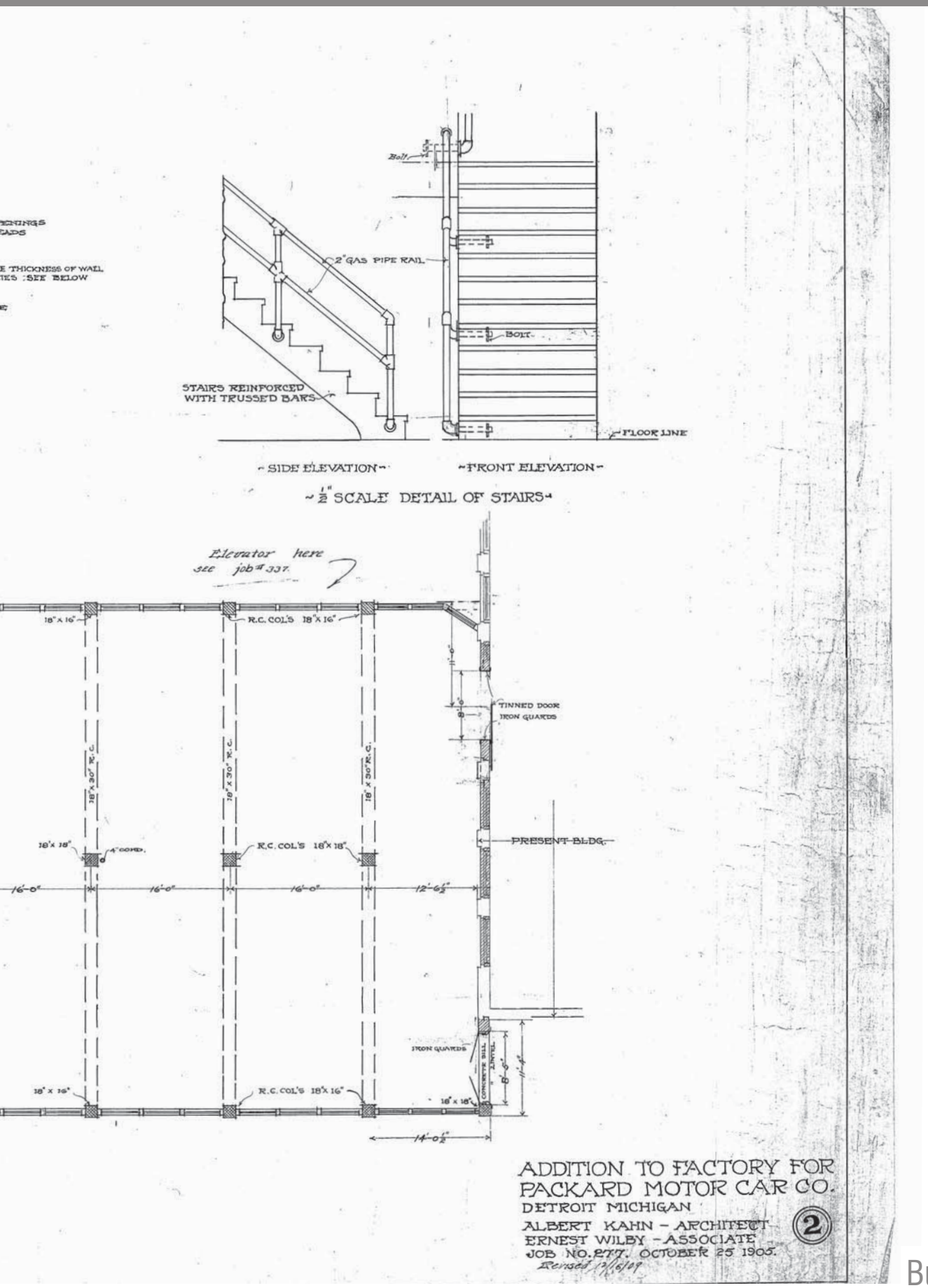
1910

Original Plans

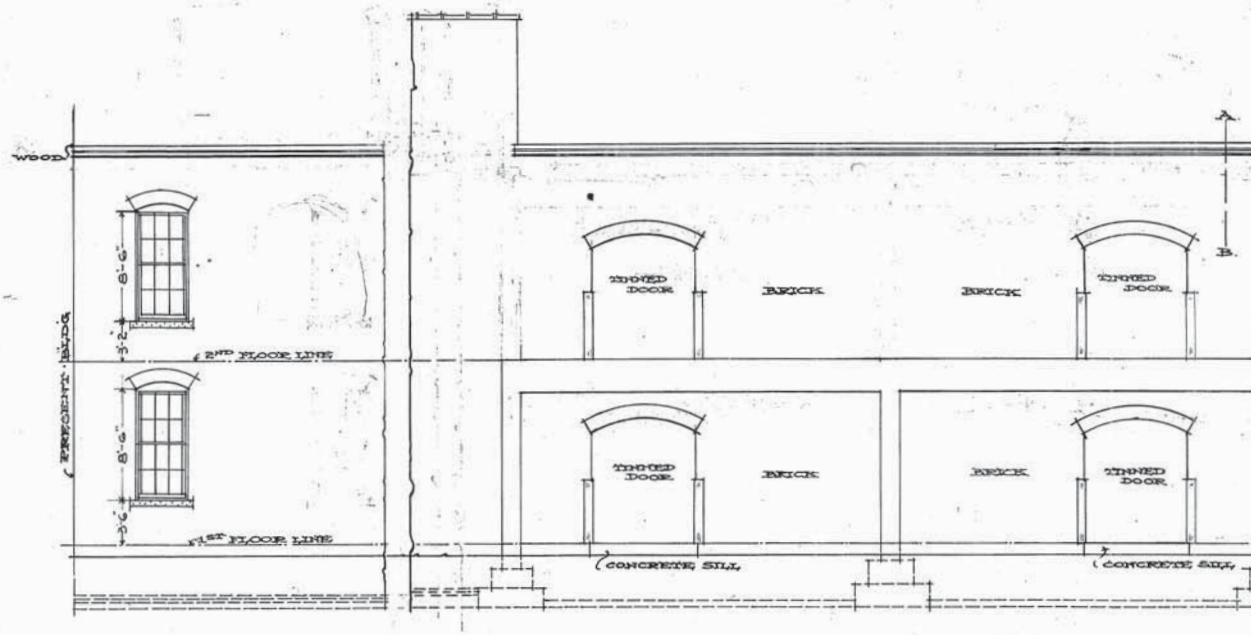
Courtesy of the Bentley Historical Library and Albert Kahn Associates



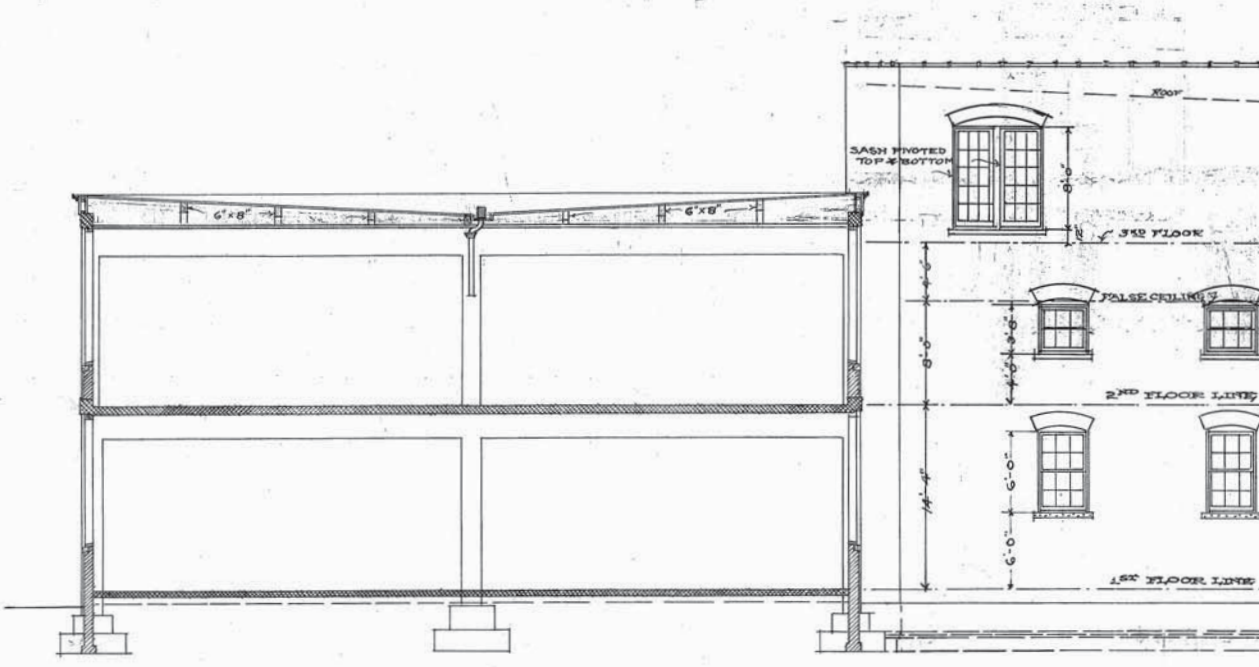
FIRST FLOOR PLAN
SCALE 1/8" = 1'-0"


Bolt
2" GAS PIPE RAIL
Bolt
STAIRS REINFORCED WITH TRUSSED BARS
FLOOR LINE
~SIDE ELEVATION~
~FRONT ELEVATION~
~½" SCALE DETAIL OF STAIRS~
Elevator here see job # 337.
18" X 16"
R.C. COL'S 18"X 16"
TINNED DOOR IRON GUARDS
18"X 30" R.C.
18"X 18"
4" CONC.
R.C. COL'S 18"X 18"
PRESENT BLDG.
16'-0"
16'-0"
16'-0"
12'-6½"
IRON GUARDS
CONCRETE SILL
LINTEL
8'-0"
11'-4"
18" X 16"
R.C. COL'S 18"X 16"
18" X 18"
14'-0½"
ADDITION TO FACTORY FOR
PACKARD MOTOR CAR CO.
DETROIT MICHIGAN
ALBERT KAHN - ARCHITECT
ERNEST WILBY - ASSOCIATE
JOB NO. 277. OCTOBER 25 1905.
Revised 12/6/09
2

Building #10



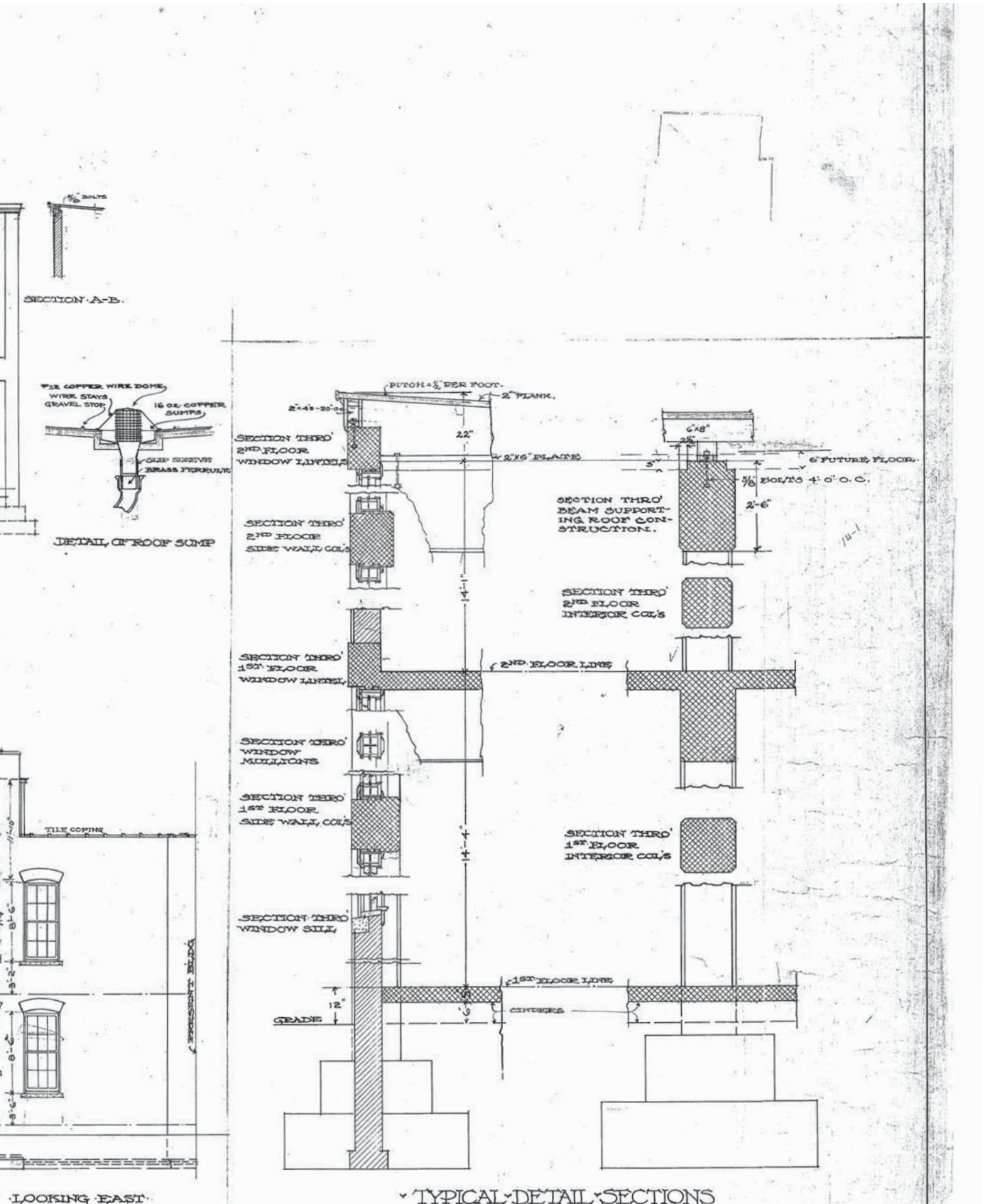
EAST ELEVATION



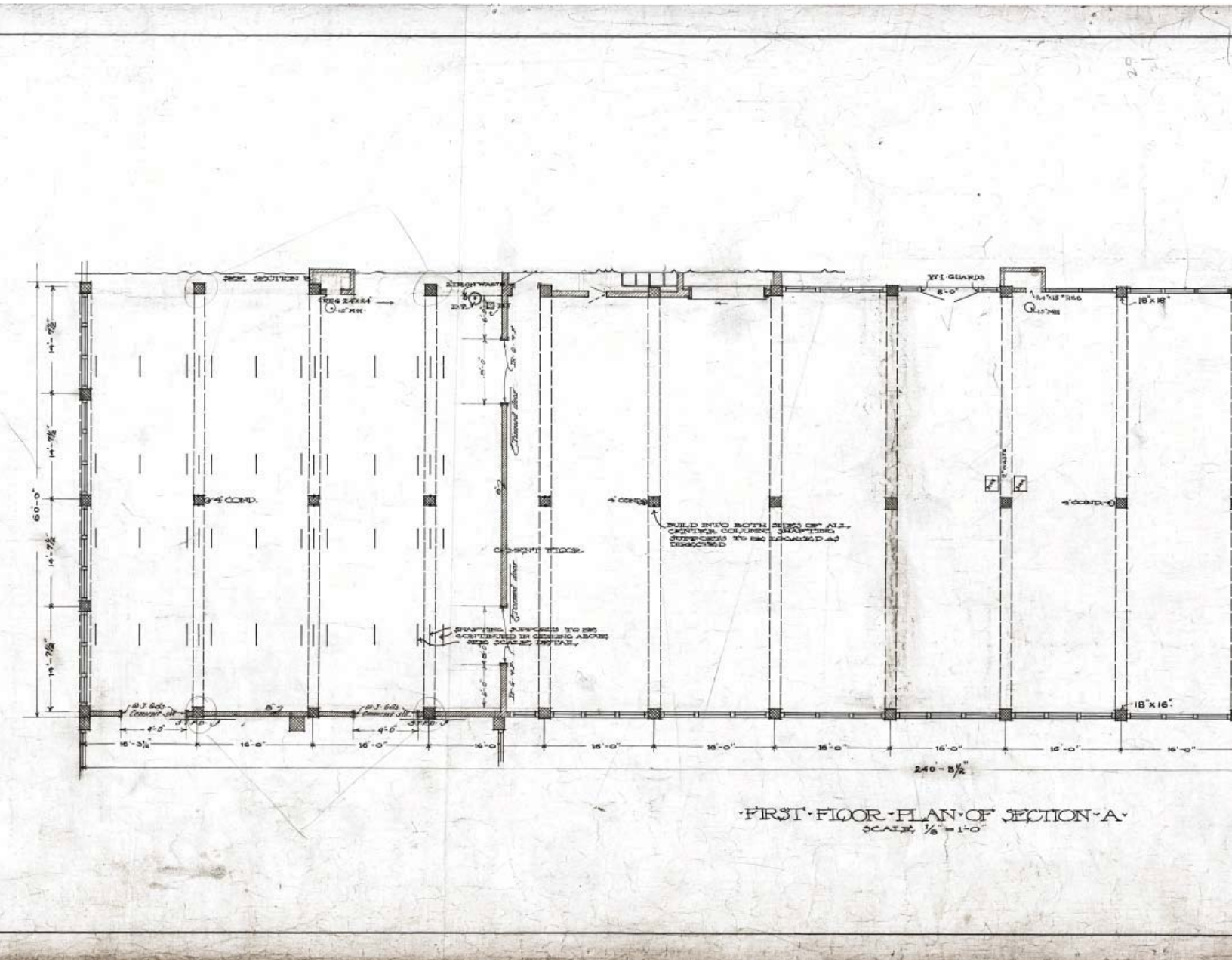
TRANSVERSE SECTION

COURT ELEVATION

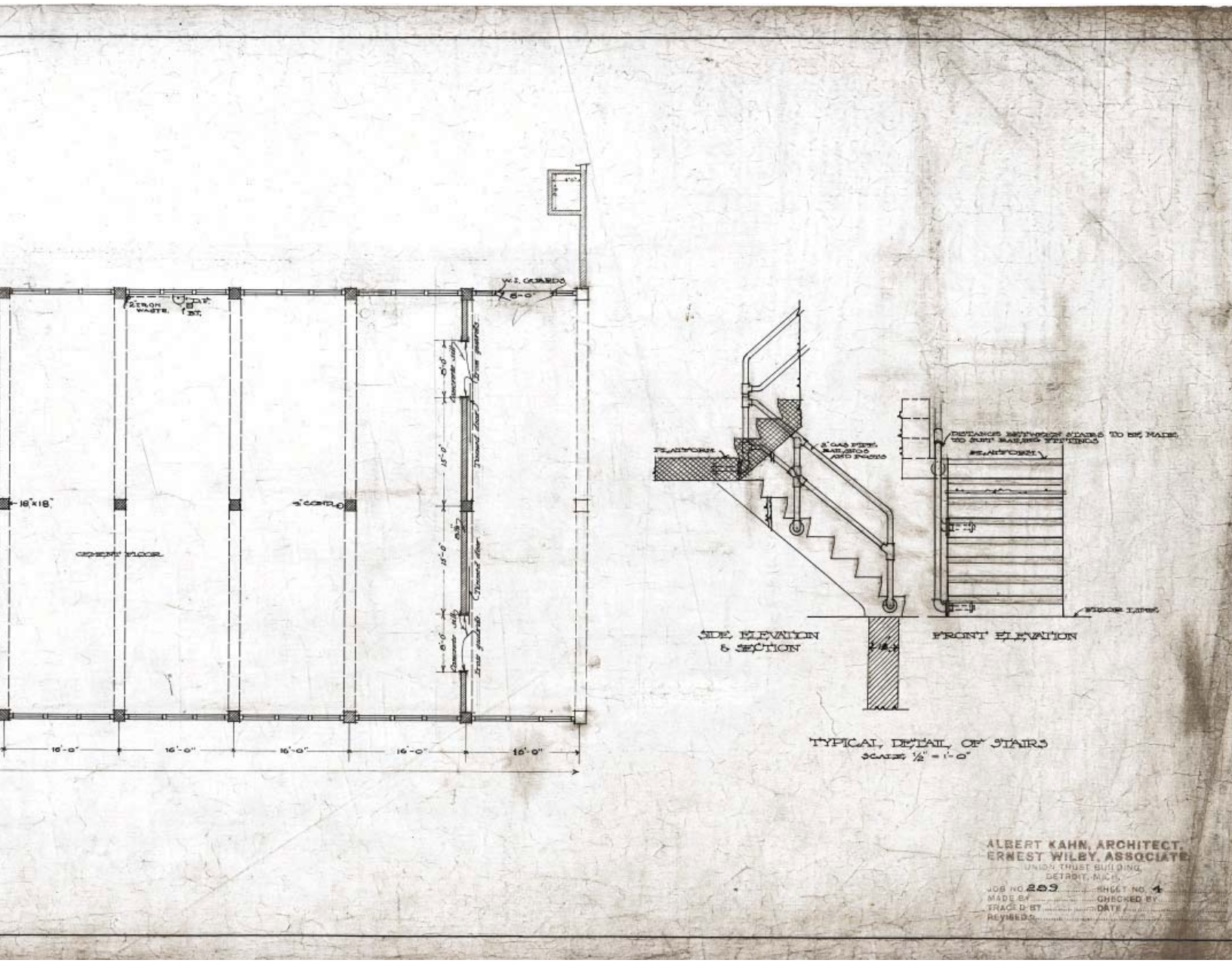
SCALE 1/8" = 1'-0"

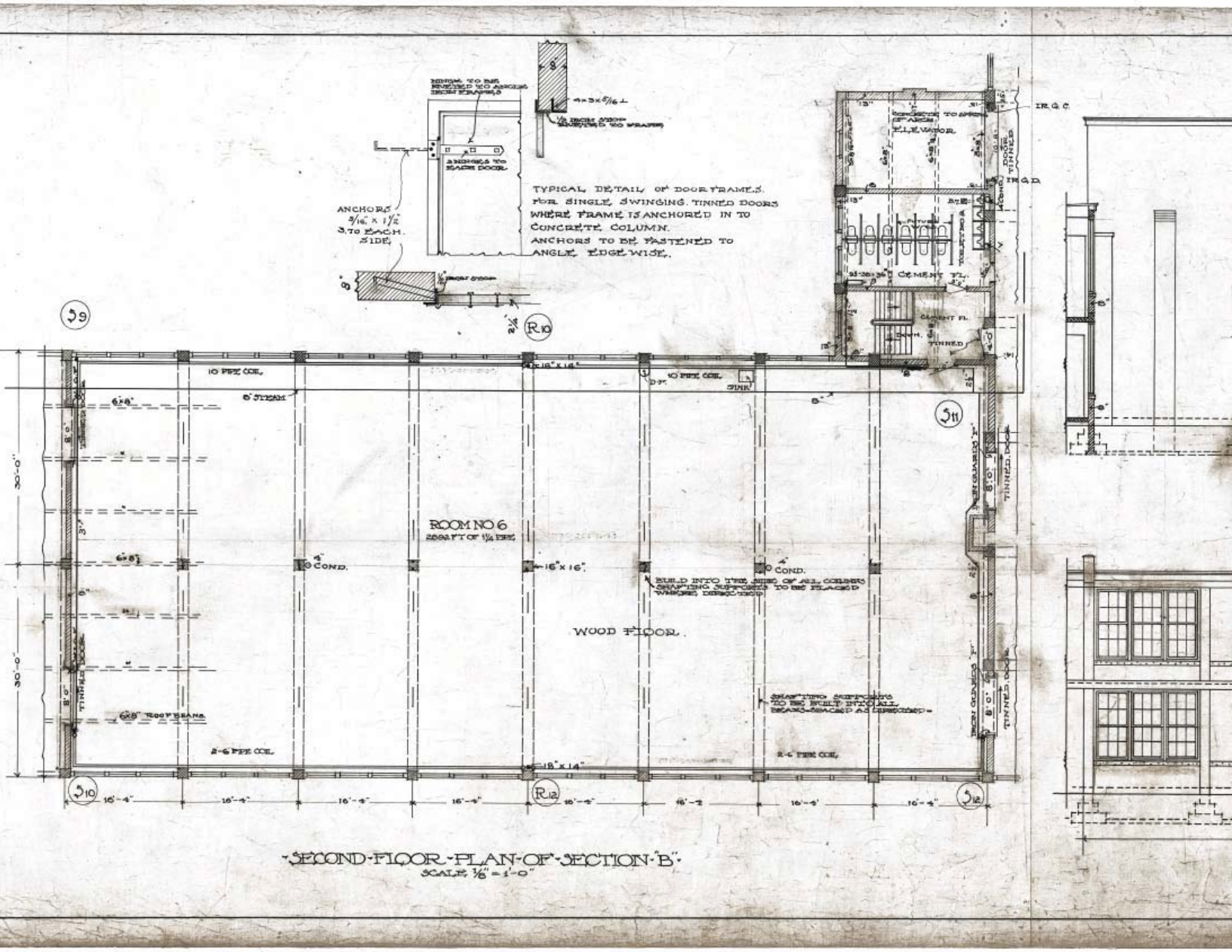

SECTION A-B.
#12 COPPER WIRE DOME
WIRE STAYS
GRAVEL STOP
16 OZ. COPPER
SUMPS
DRIP SLEEVE
BRASS FERRULE
DETAIL OF ROOF SUMP
PITCH = ¼" PER FOOT.
2" PLANK.
2"x4"s-24"
22"
SECTION THRO' 2ND FLOOR WINDOW LINTEL
2"X6" PLATE
6"x8"
6" FUTURE FLOOR.
5/8" BOLTS 4'-0" O.C.
SECTION THRO' BEAM SUPPORTING ROOF CONSTRUCTION.
2'-6"
SECTION THRO' 2ND FLOOR SIDE WALL COL'S
SECTION THRO' 2ND FLOOR INTERIOR COL'S
SECTION THRO' 1ST FLOOR WINDOW LINTEL
2ND FLOOR LINE
SECTION THRO' WINDOW MULLIONS
SECTION THRO' 1ST FLOOR SIDE WALL COL'S
SECTION THRO' 1ST FLOOR INTERIOR COL'S
SECTION THRO' WINDOW SILL
1ST FLOOR LINE
12"
GRADE
CINDERS
TILE COPING
LOOKING EAST
TYPICAL DETAIL SECTIONS
SCALE ½"=1'-0"
ADDITION TO FACTORY FOR
PACKARD MOTOR CAR CO
DETROIT MICHIGAN
ALBERT KAHN - ARCHITECT
ERNEST WILBY ASSOCIATE
JOB. NO. 277. OCTOBER 25, 1905
5

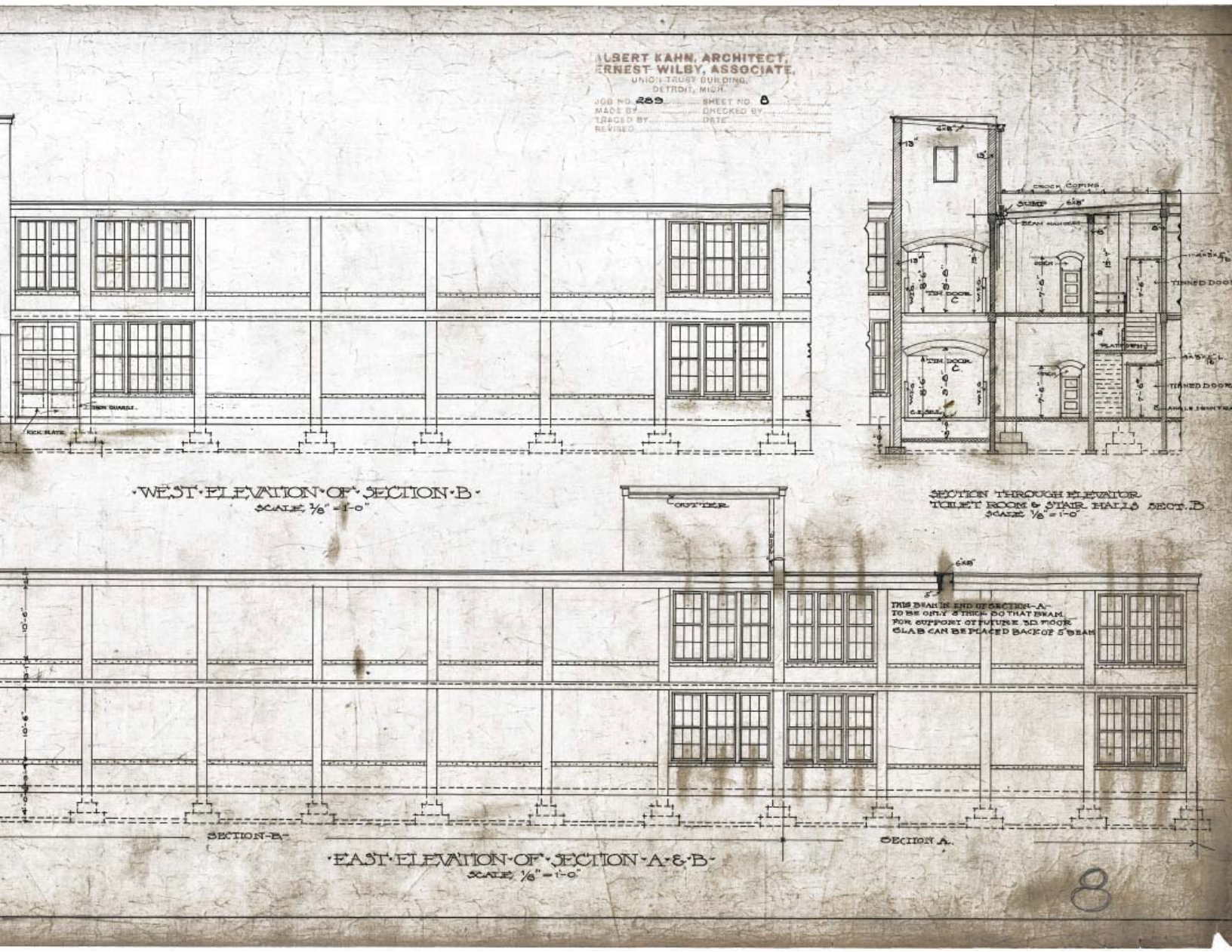
Building #10

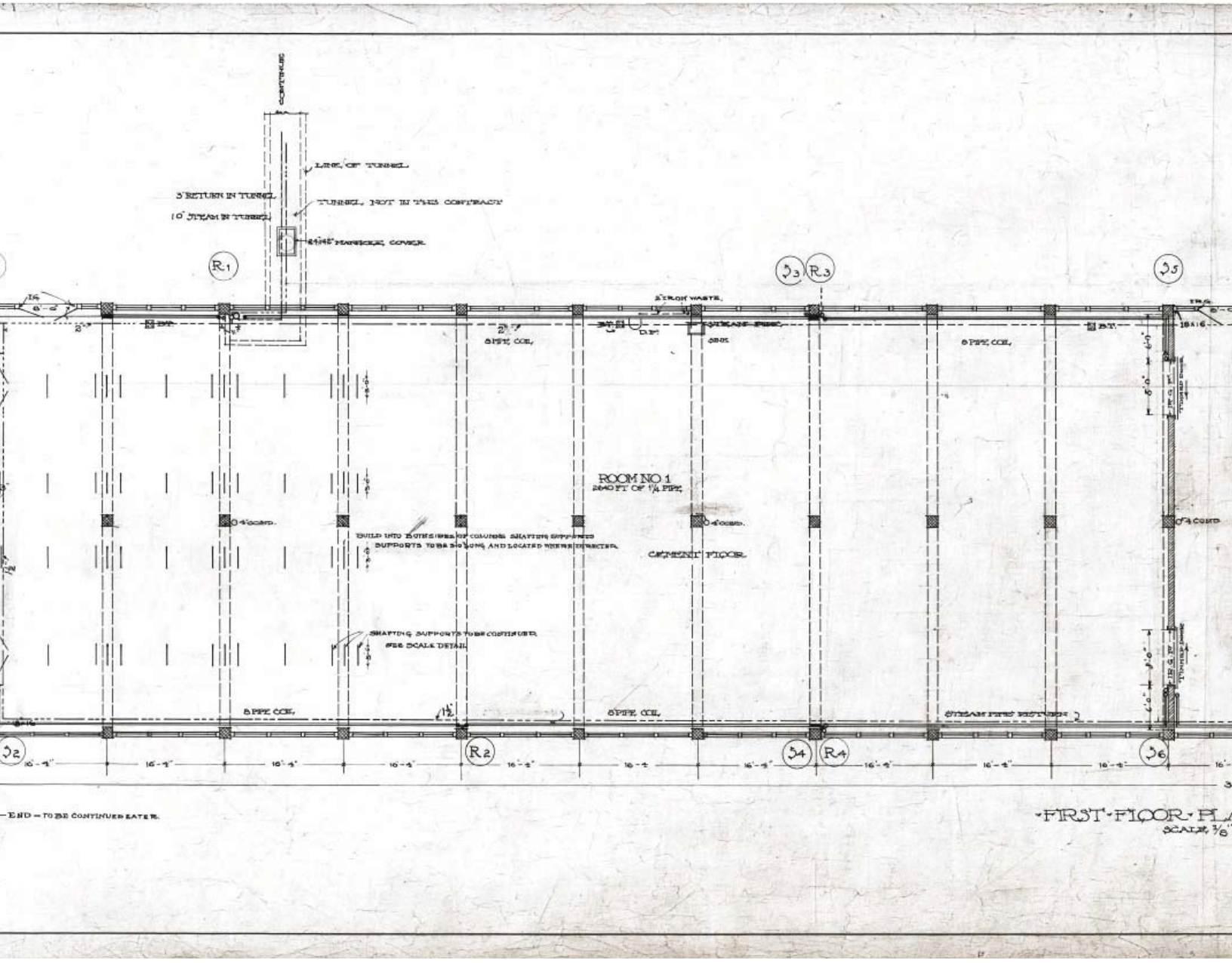


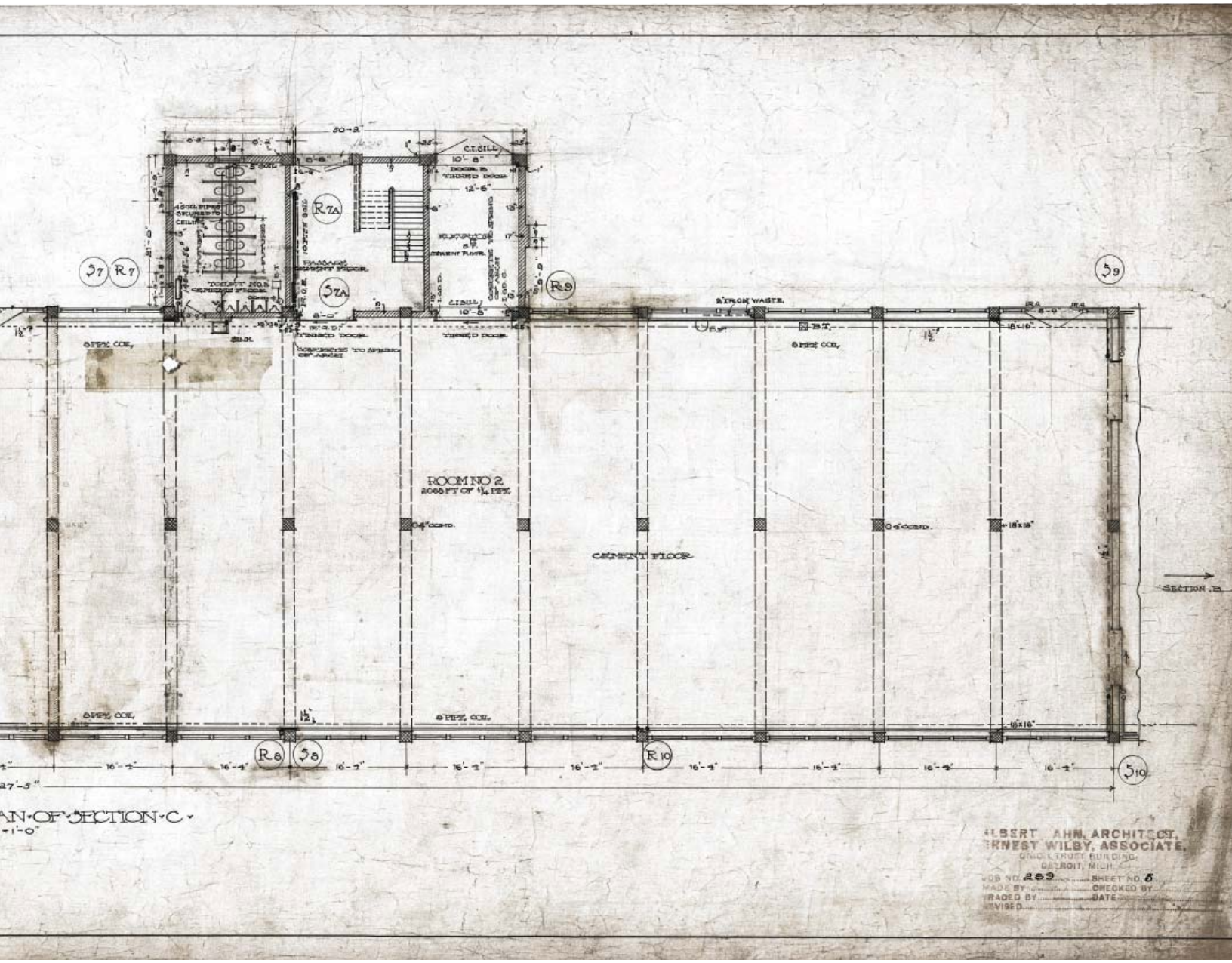
FIRST FLOOR PLAN OF SECTION A
SCALE: ⅛" = 1'-0"

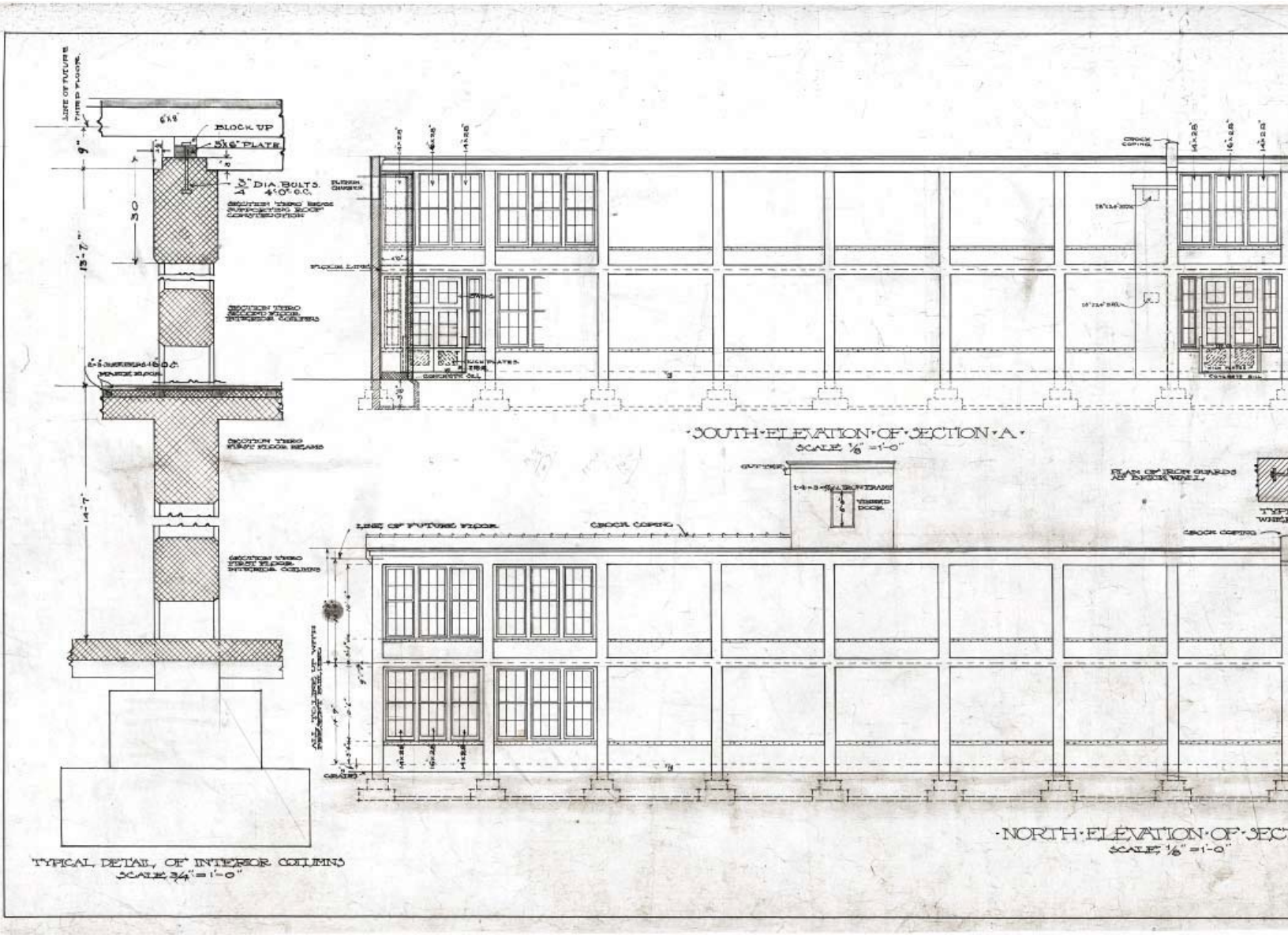

W.I. GUARDS
6'-0"
2" FROM WASTE
18"x18"
4" CONC.
CEMENT FLOOR
15'-0"
16'-0"
16'-0"
16'-0"
16'-0"
PLATFORM
DISTANCES BETWEEN STAIRS TO BE MADE TO SUIT BUILDING FITTINGS
SIDE ELEVATION & SECTION
FRONT ELEVATION
TYPICAL DETAIL OF STAIRS
SCALE: ½" = 1'-0"
ALBERT KAHN, ARCHITECT.
ERNEST WILBY, ASSOCIATE.
UNION TRUST BUILDING
DETROIT, MICH.
JOB NO. 289
SHEET NO. 4
MADE BY
CHECKED BY
TRACED BY
DATE
REVISED


TYPICAL DETAIL OF DOOR FRAMES.
FOR SINGLE SWINGING TINNED DOORS
WHERE FRAME IS ANCHORED IN TO
CONCRETE COLUMN.
ANCHORS TO BE FASTENED TO
ANGLE EDGE WISE.
ANCHORS 5/16" x 1 1/2" 3. TO EACH SIDE.
ANCHORS TO BACK DOOR.
ELEVATOR.
CEMENT FL.
TINNED
ROOM NO 6
2282 FT OF 1/4 PINE
WOOD FLOOR.
10 PIPE COL.
6" STEAM
16"x16"
10 COND.
6x8" ROOF BEAMS
2-6 PIPE COL.
16"x14"
16'-4"
SECOND-FLOOR-PLAN-OF-SECTION-"B"
SCALE 1/8" = 1'-0"

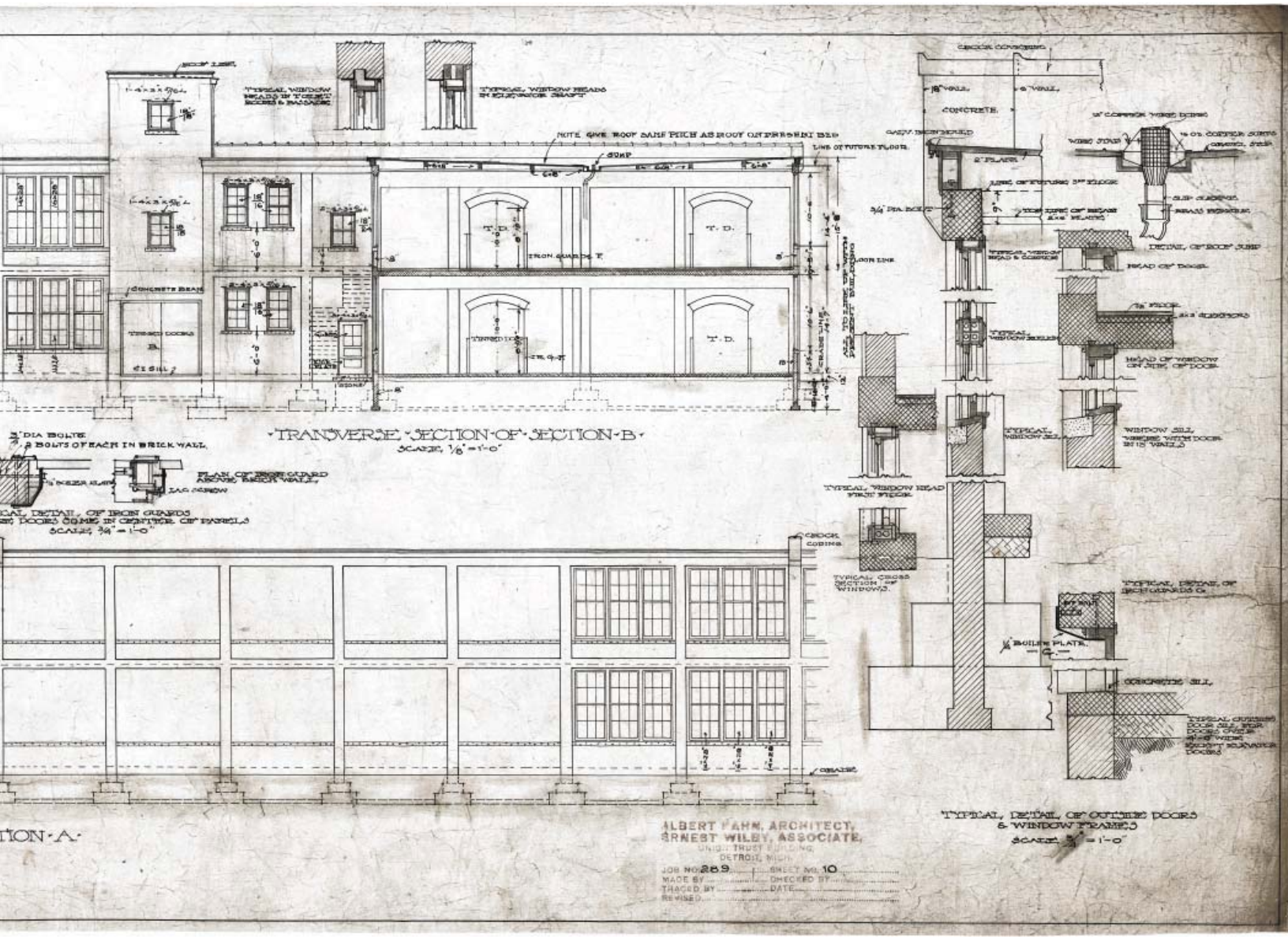

ALBERT KAHN, ARCHITECT,
ERNEST WILBY, ASSOCIATE,
UNION TRUST BUILDING,
DETROIT, MICH.
JOB NO. 289 SHEET NO. 8
MADE BY CHECKED BY
TRACED BY DATE
REVISED
WEST ELEVATION OF SECTION B
SCALE 1/8" = 1'-0"
SECTION THROUGH ELEVATOR
TOILET ROOM & STAIR HALLS SECT. B
SCALE 1/8" = 1'-0"
GUTTER
THIS BEAM IS END OF SECTION A
TO BE ONLY 8 THICK SO THAT BEAM
FOR SUPPORT OF FUTURE 3D FLOOR
SLAB CAN BE PLACED BACK OF 5" BEAM
SECTION B
SECTION A
EAST ELEVATION OF SECTION A & B
SCALE 1/8" = 1'-0"
8

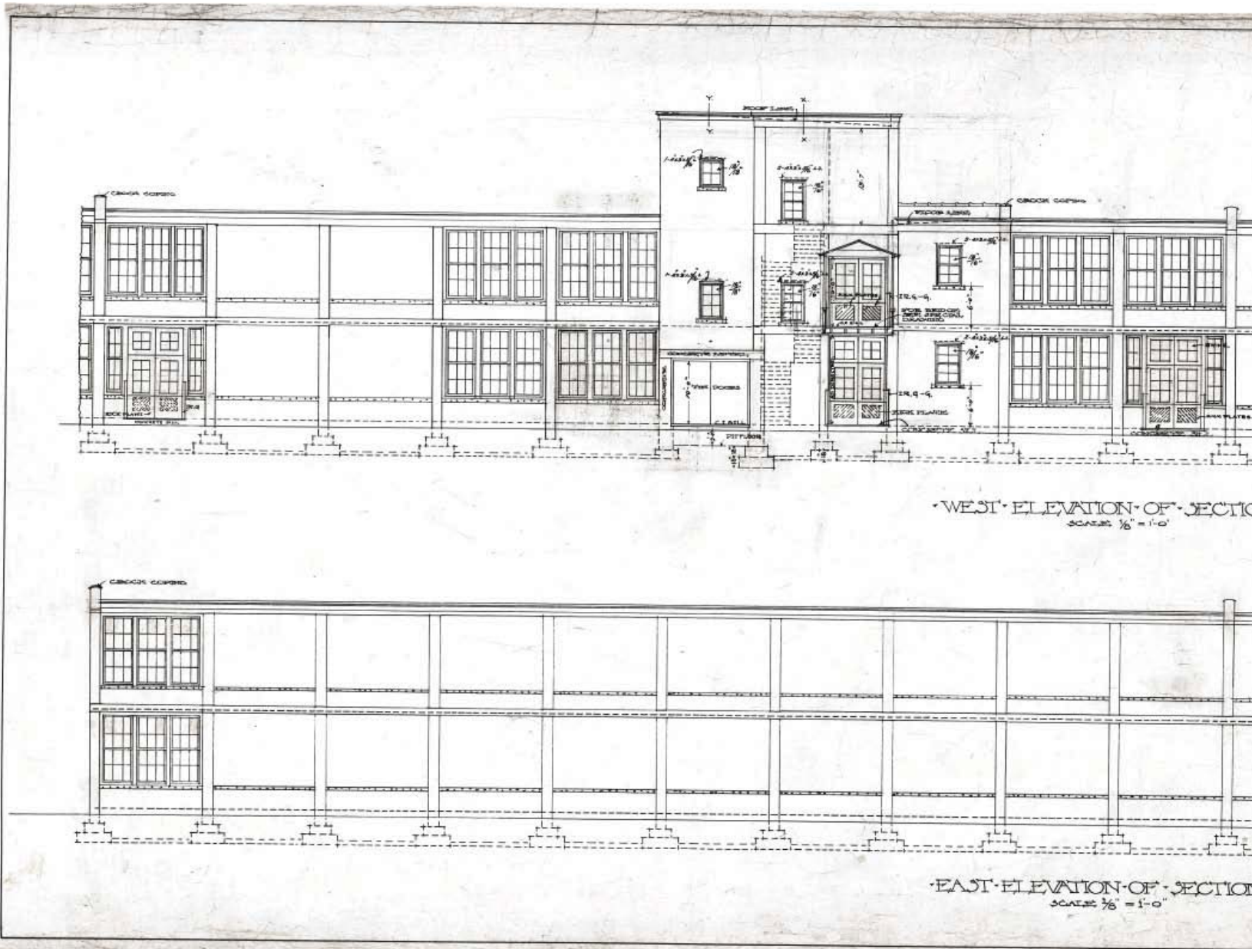

CENTER LINE
LINE OF TUNNEL
5' RETURN IN TUNNEL
10' STEAM IN TUNNEL
TUNNEL NOT IN THIS CONTRACT
R1
R2
R3
R4
J2
J3
J4
J5
J6
ROOM NO 1
2640 FT OF 1/4 PIPE
CEMENT FLOOR
8 PIPE COIL
END — TO BE CONTINUED LATER.
FIRST FLOOR PL


ROOM NO 2
CEMENT FLOOR
SECTION B
R7
R7A
R8
R9
R10
37
37A
38
39
310
AN OF SECTION C
ALBERT AHM, ARCHITECT
ERNEST WILBY, ASSOCIATE
DETROIT, MICH.
JOB NO. 289
SHEET NO. 8



TYPICAL DETAIL OF INTERIOR COLUMNS
SCALE 3/4" = 1'-0"


TRANSVERSE SECTION OF SECTION B
SCALE, 1/8" = 1'-0"
TYPICAL DETAIL OF IRON GUARDS
SCALE, 3/4" = 1'-0"
TYPICAL DETAIL OF OUTSIDE DOORS & WINDOW FRAMES
SCALE, 3/4" = 1'-0"
ALBERT KAHN, ARCHITECT,
ERNEST WILBY, ASSOCIATE,
DETROIT, MICH.
JOB NO. 289
SHEET NO. 10

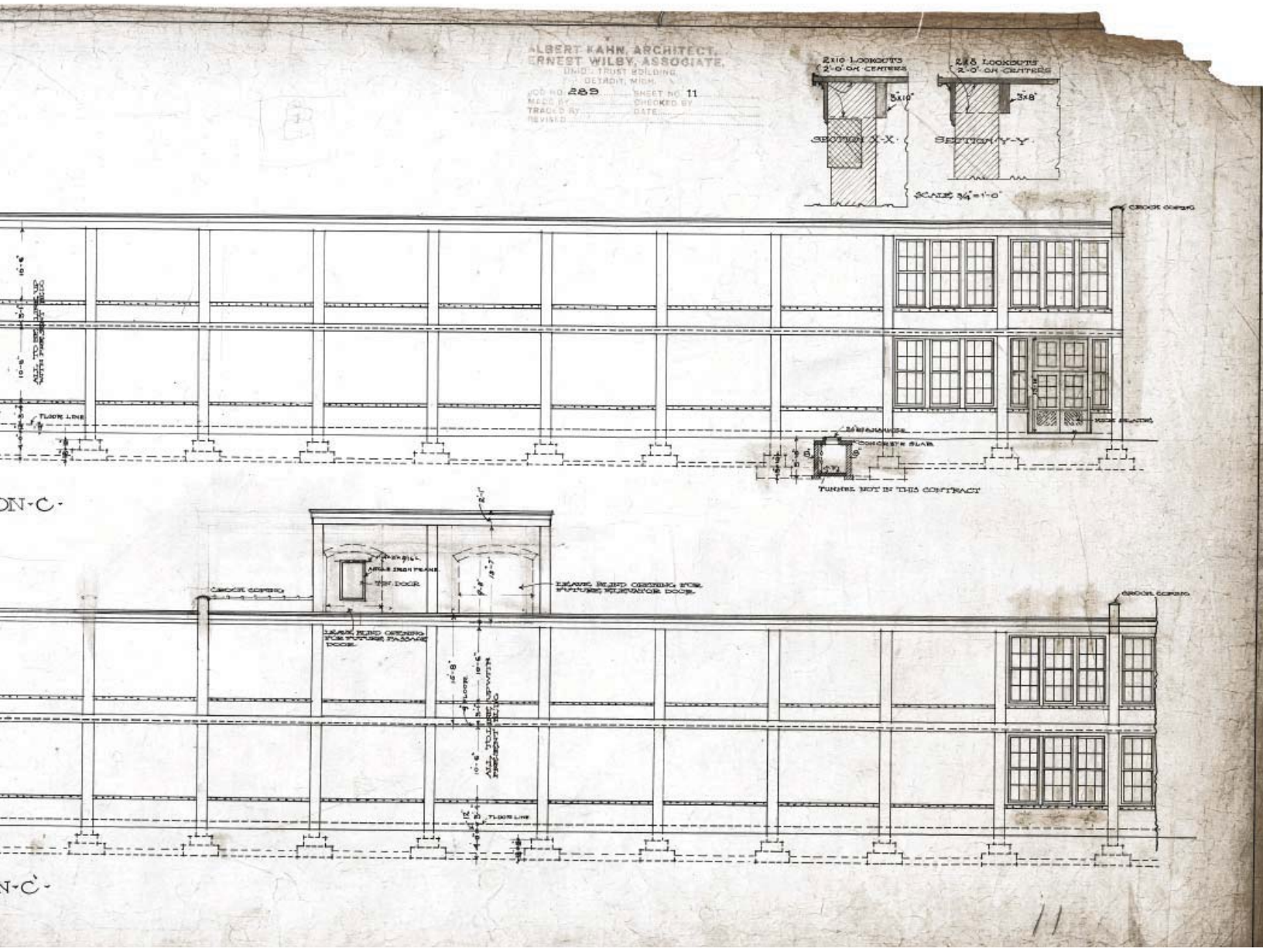


WEST ELEVATION OF SECTIO

SCALE 1/8" = 1'-0"

EAST ELEVATION OF SECTION

SCALE 1/8" = 1'-0"


ALBERT KAHN, ARCHITECT.
ERNEST WILBY, ASSOCIATE.
UNION TRUST BUILDING
DETROIT, MICH.
JOB NO. 289
SHEET NO. 11
MADE BY
CHECKED BY
TRACED BY
DATE
REVISED
2x10 LOOKOUTS 2'-0" ON CENTERS
3x10"
SECTION X-X
2x8 LOOKOUTS 2'-0" ON CENTERS
3x8"
SECTION Y-Y
SCALE 3/4"=1'-0"
CHOCK COPING
CONCRETE SLAB
TUNNEL NOT IN THIS CONTRACT
TRAP DOOR
CHOCK COPING
FLOOR LINE

“Packard Plant: Then and Now.” *Detroit Free Press*

Fig. 37. 1939 Aerial

These comparison images were assembled as a part of The Detroit Free Press’ series on the Packard Plant. Staff photographer Brian Kaufman recreated early 20th century photographs found in the National Automotive History Collection. All images are from the web publication of both Kaufman’s photos and the historic originals by The Detroit Free Press.

Fig. 38. 2012 Aerial

Fig. 39. 1919 View down East Grand Boulevard

Fig. 40. 2010 View down East Grand Boulevard

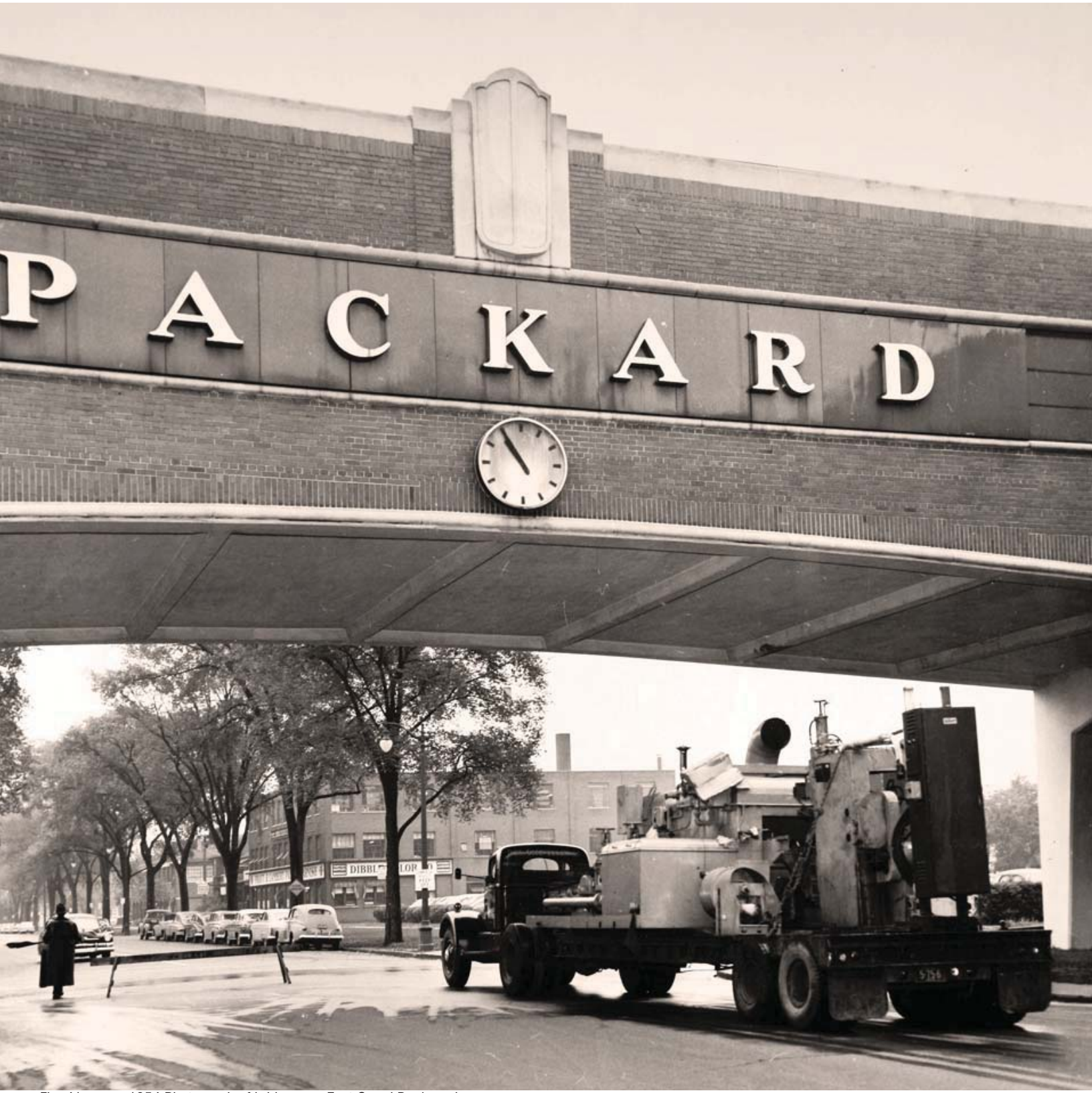


Fig. 41. 1954 Photograph of bridge over East Grand Boulevard

Fig. 42. 2010 Photograph of bridge over East Grand Boulevard

Fig. 43. Early 1900s view down Packard Avenue

Fig. 44. 2010 view down Packard Avenue

Fig. 45. 1923 view down Concord Avenue

Fig. 46. 2010 view down Concord Aveneue

Fig. 47. 1925 view of East Grand Boulevard and Packard avenue

Fig. 48. 2010 view of East Grand Boulevard and Packard Avenue

Site Documentation

Site Analysis

Major and Minor Roads

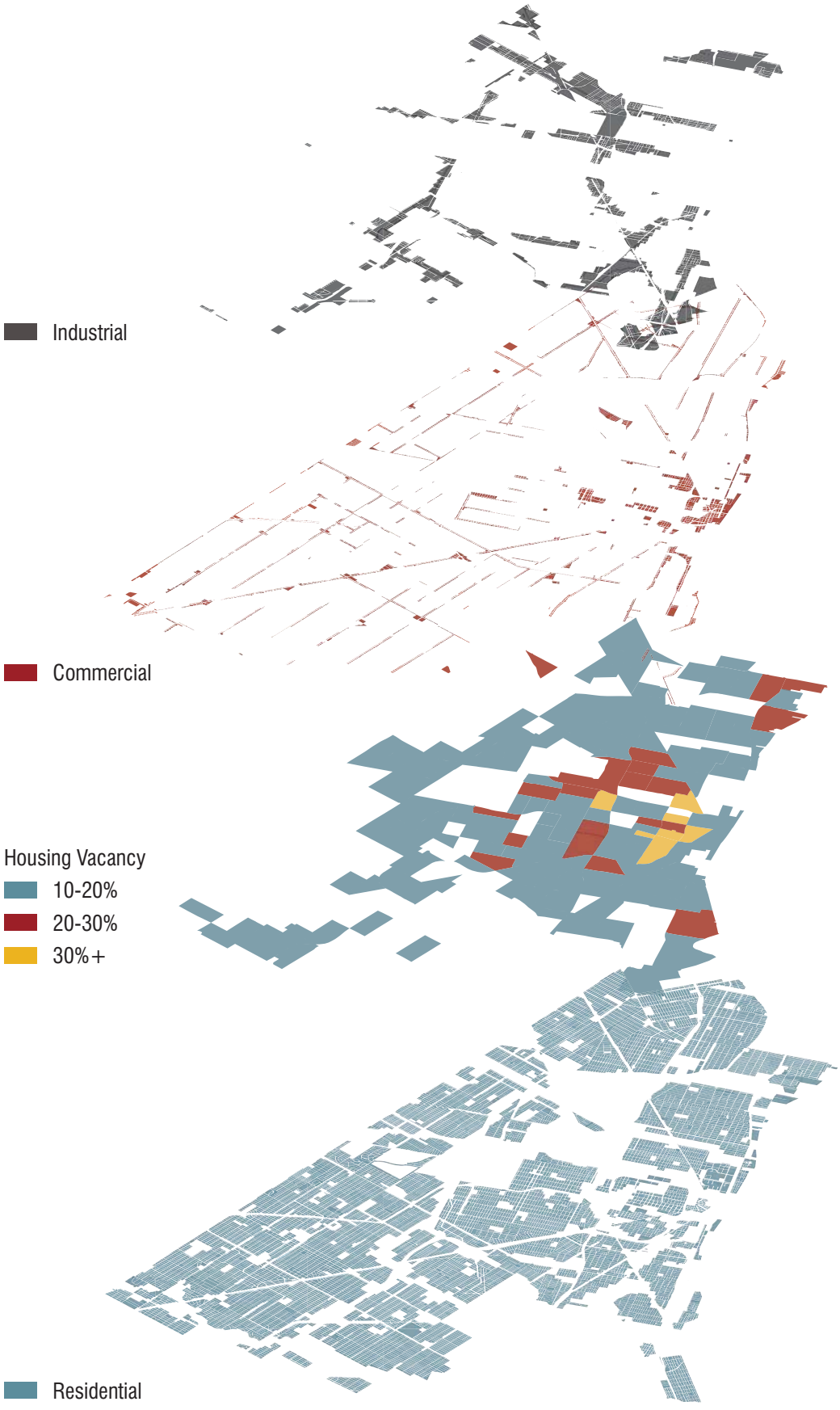
N

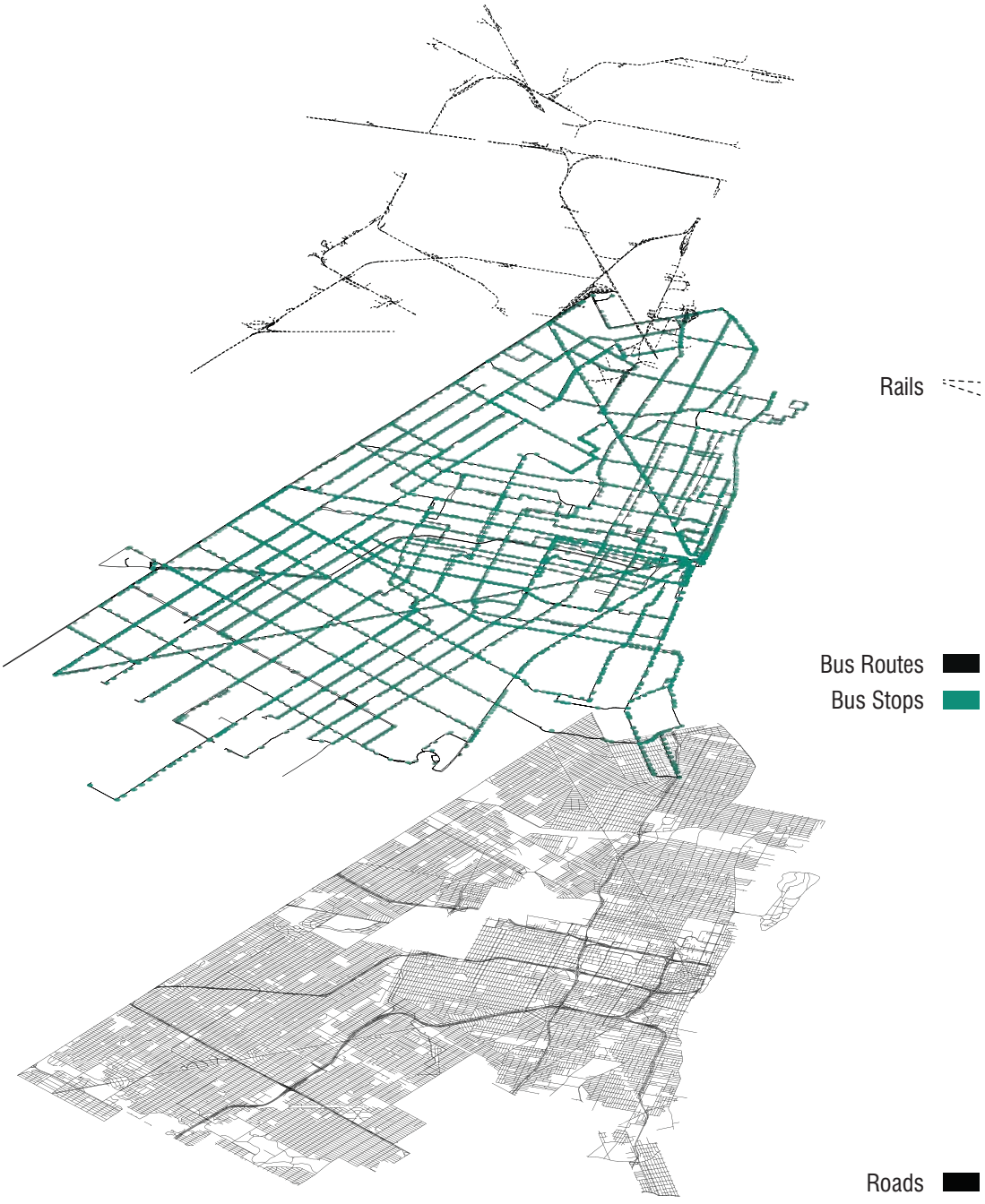
Interstate

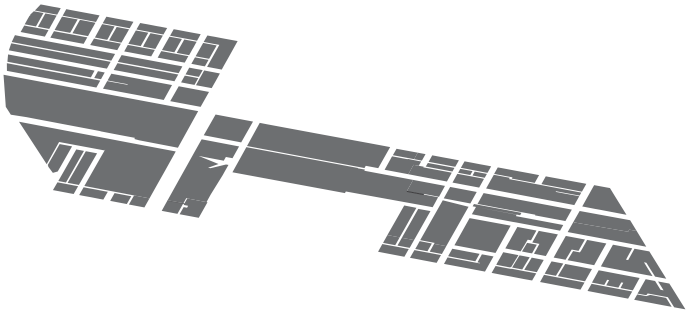
Primary Road

Secondary Road


Land Use
N
Residential
Industrial/Commercial
Community/Parks

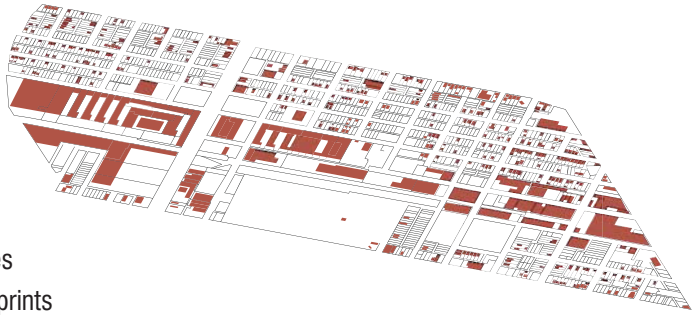

Industrial
Commercial
Housing Vacancy
10-20%
20-30%
30%+
Residential


Rails
Bus Routes
Bus Stops
Roads



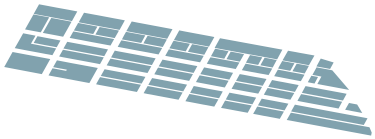
Industrial

Commercial

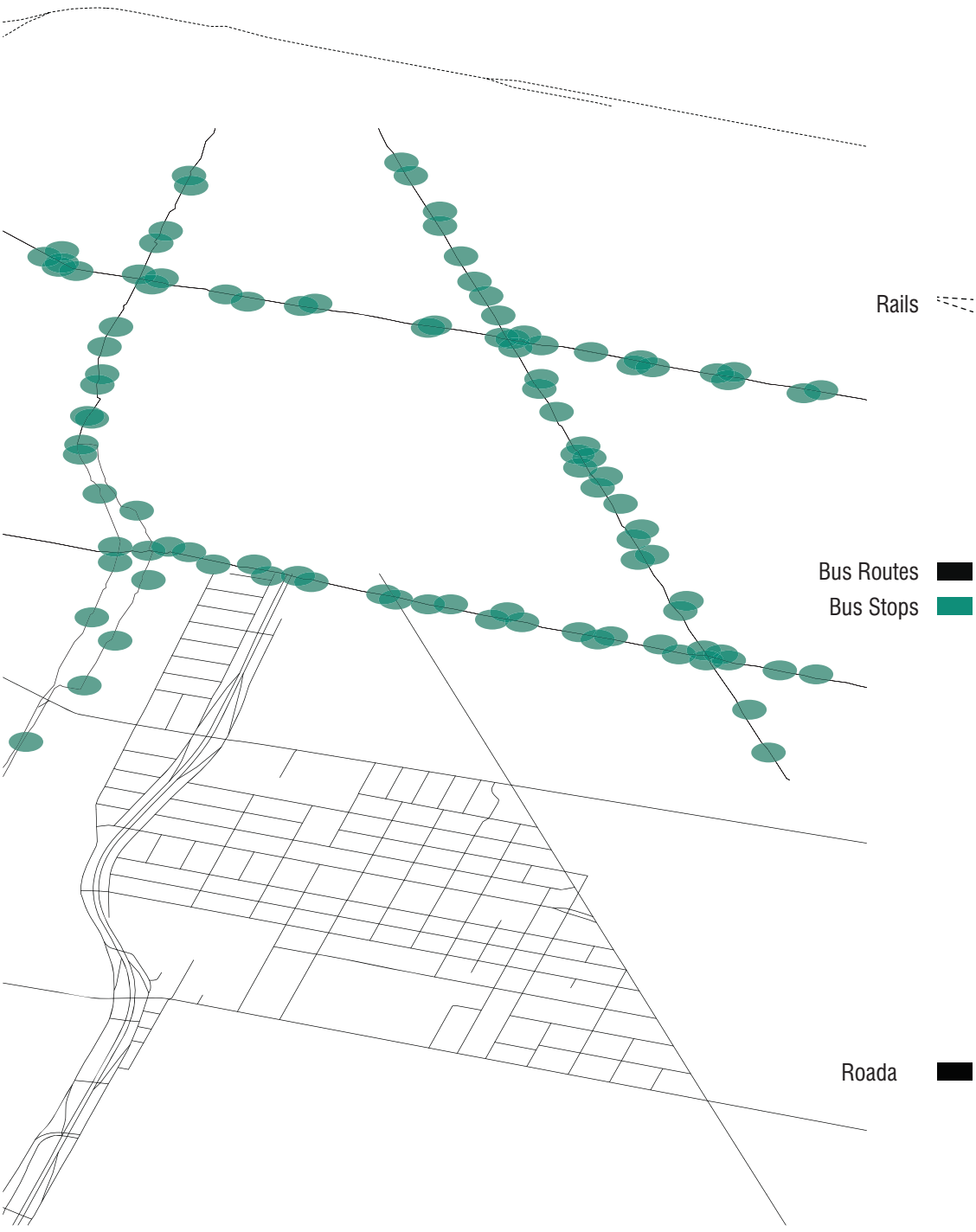


Property Lines

Building Footprints



Residential


Rails
Bus Routes
Bus Stops
Roada

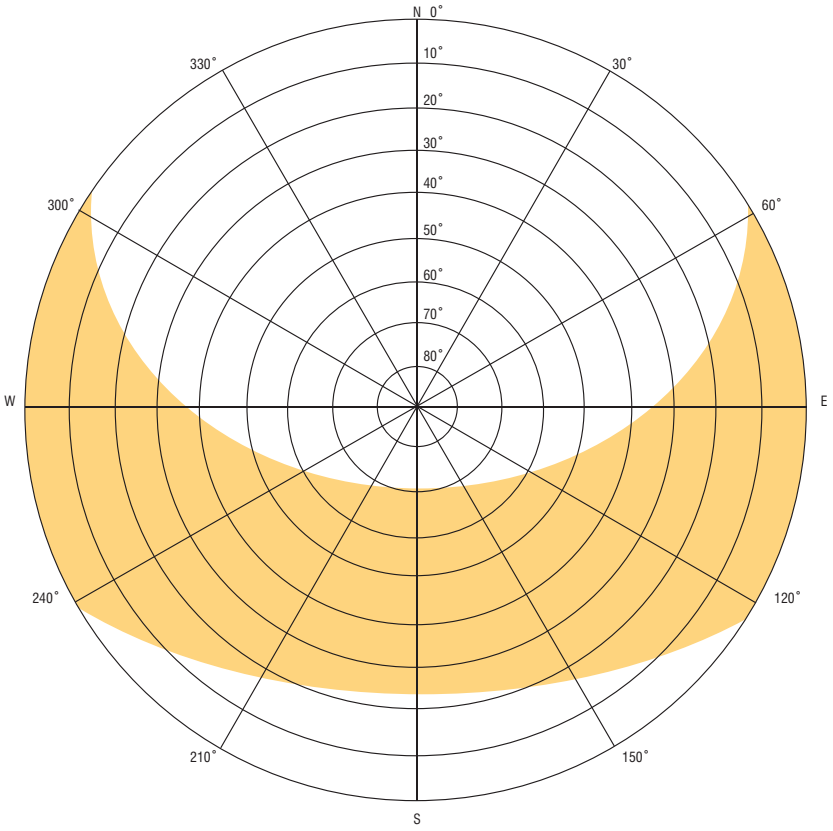
Building Figure Ground

Ground as Figure

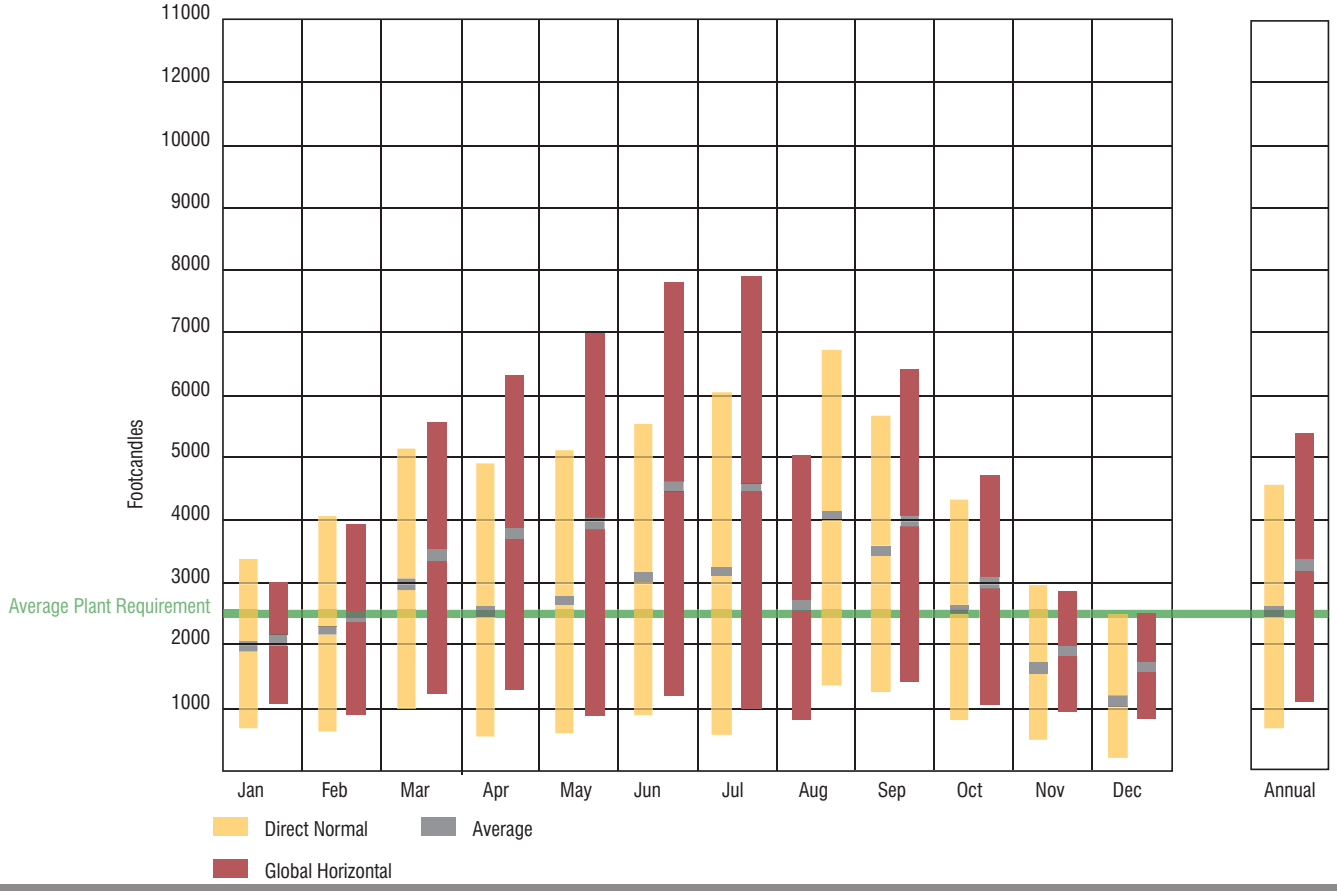
Sun Paths

42° N

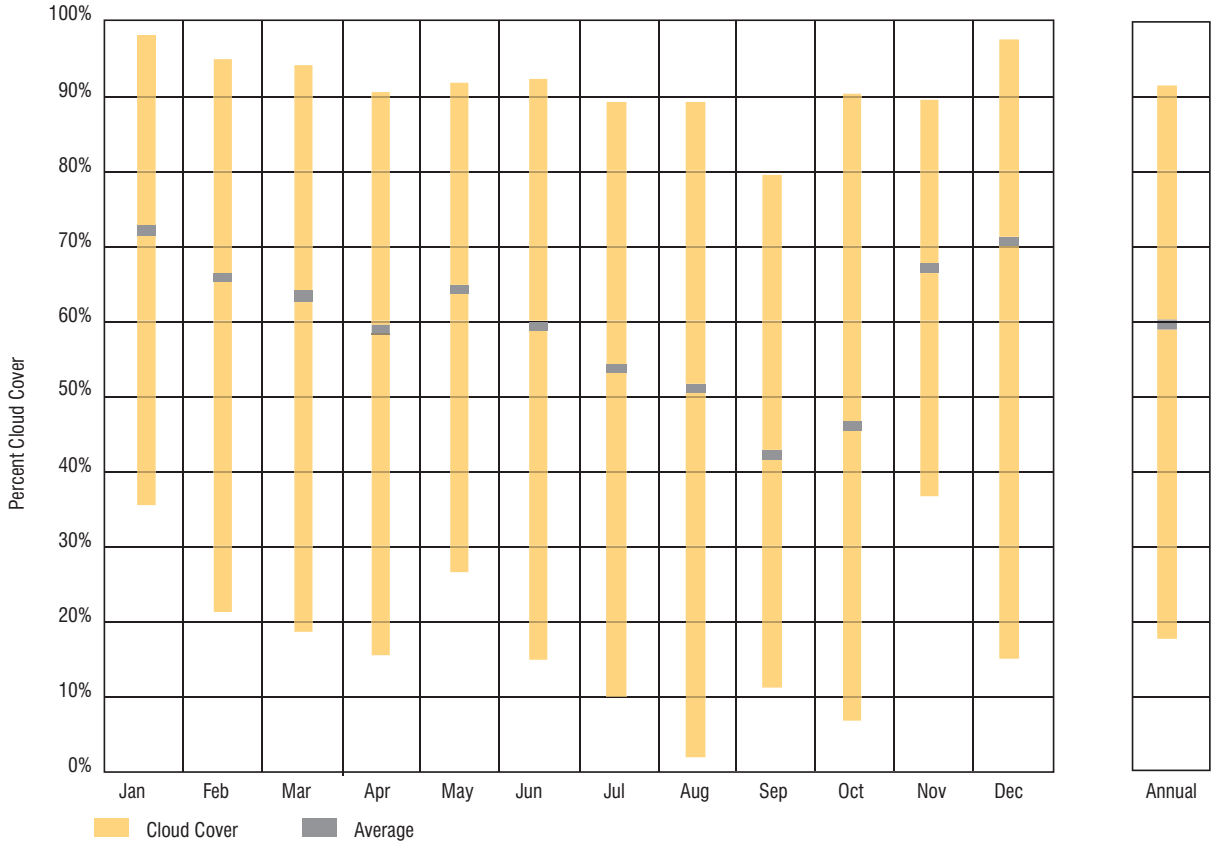
Heating Degree Days:	6449
Cooling Degree Days:	736
Annual Rainfall:	32.89”
Wind Speed:	10.1 mph



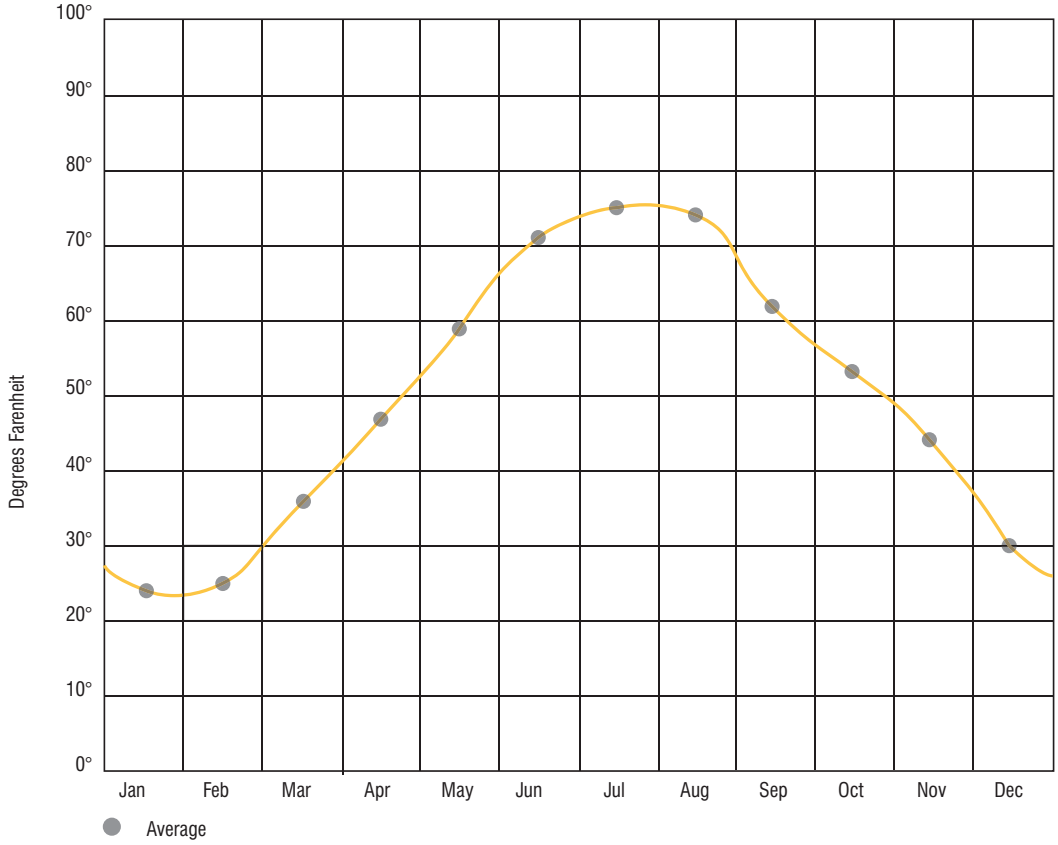
Hourly Illumination



Sky Cover



Sky Cover



Program Research

Program

Fig. 49. Common responses from "What Packard Plant's Neighbors Want to See Instead" in *Detroit Free Press*

The community responses to The Detroit Free Press' inquiry show that myriad of things that neighbors would like to see in the Packard Plant site. While there were some specifics - housing, shopping, manufacturing - the general theme was that something, anything had to take the place of the large abandoned structure. Another theme was job creation and commercial opportunities.

The Detroit Future City - Strategic Framework Plan categorizes the Packard Plant as an "Industrial Land Use Change" zone while the neighborhood around it is high vacancy. Suggested land use patterns for the area are Live Make, Innovative Productive, Innovative Ecological, and General/Light Industrial.

Keeping in mind the desire of residents for economic opportunities and the Framework Plan, the proposed re-use of the Packard Plant is a biomass power plant and urban/vertical farm. The plant and farm would offer employment opportunities in day-to-day operations and commercial opportunities in the form of a market. While the current caloric and power requirements of the neighborhood are being met, it is through outside sources. The establishment of a fresh food source and the creation of clean energy nearby keeps spending in the neighborhood and promotes healthier communities, both nutritionally and ecologically.

The most significant component of the program is the vertical farm. It not only produces for human consumption but also creates biofuels through agricultural waste and strategic crops. The interrelationship between the selected crops is critical to the creation of a closed loop system. Providing for the technical requirements of the farm within an existing building is a design challenge.

Precedents for vertical farming include The Plant in Chicago and Sweetwater Farms in Milwaukee, WI.

The Plant:

- 93,000 sq. ft. total
- 4,300 sq. ft. shared kitchen
- 10,000 tons food waste annually
- 400 kW of electricity

Packard:

- 3,500,00 sq ft. in 1940s

Lettuce

Tomato

Squash

Carrot

Soy Beans

Talapia

Perch

Canola

Extractor of Chromium, Mercury, Lead, Selenium, Zinc

Switchgrass

Extractor of Cadmium, Chromium, Mercury, Lead

Sunflowers

Extractor of Chromium, Copper, Manganese, Lead, Zinc

Biomass Power Plant:

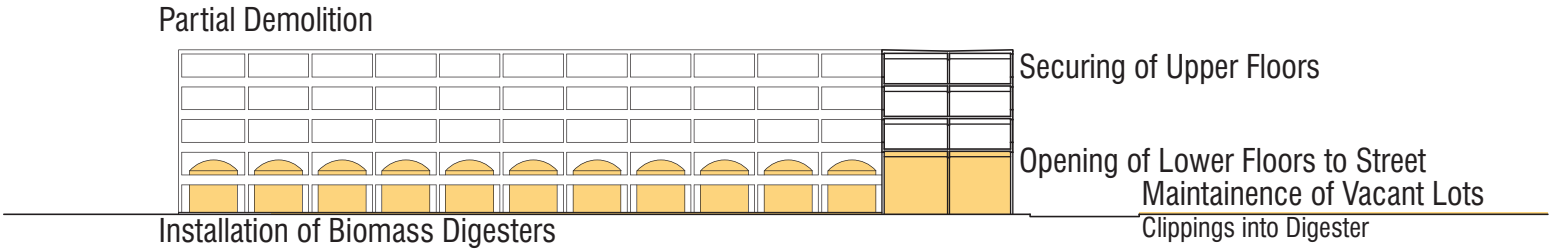
Administration:
- Offices
- Break Room

Bathrooms
Receiving
Storage
Digesters
Biogas Storage
Generating Station

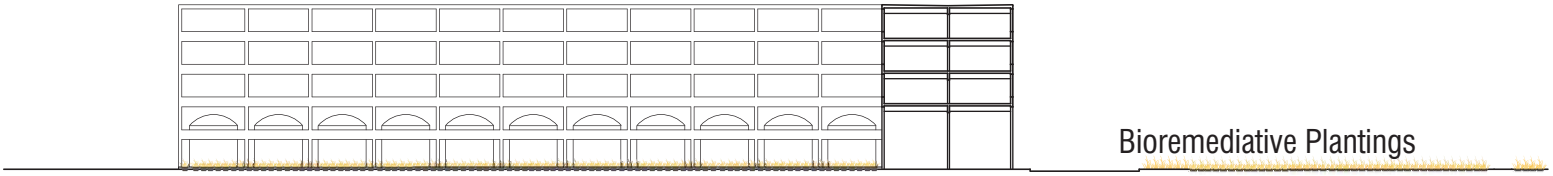
Design Proposal

Design Phasing

Current Conditions



Phase 1



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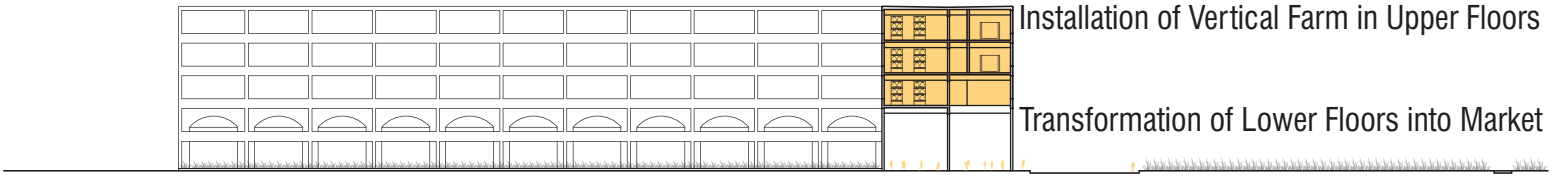

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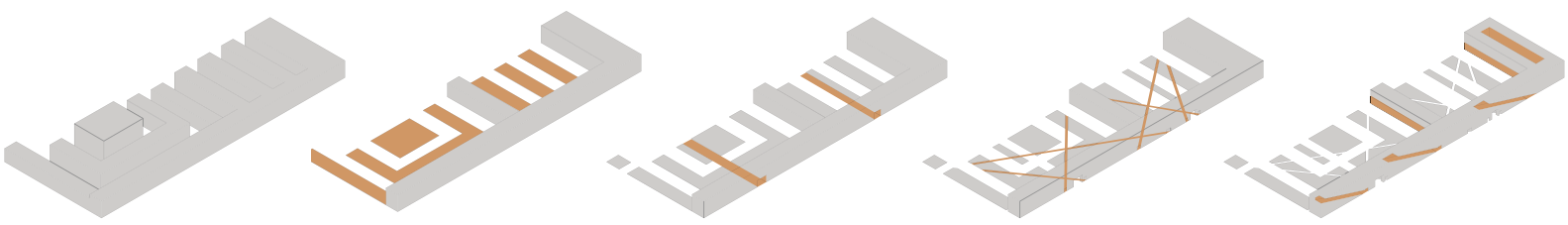
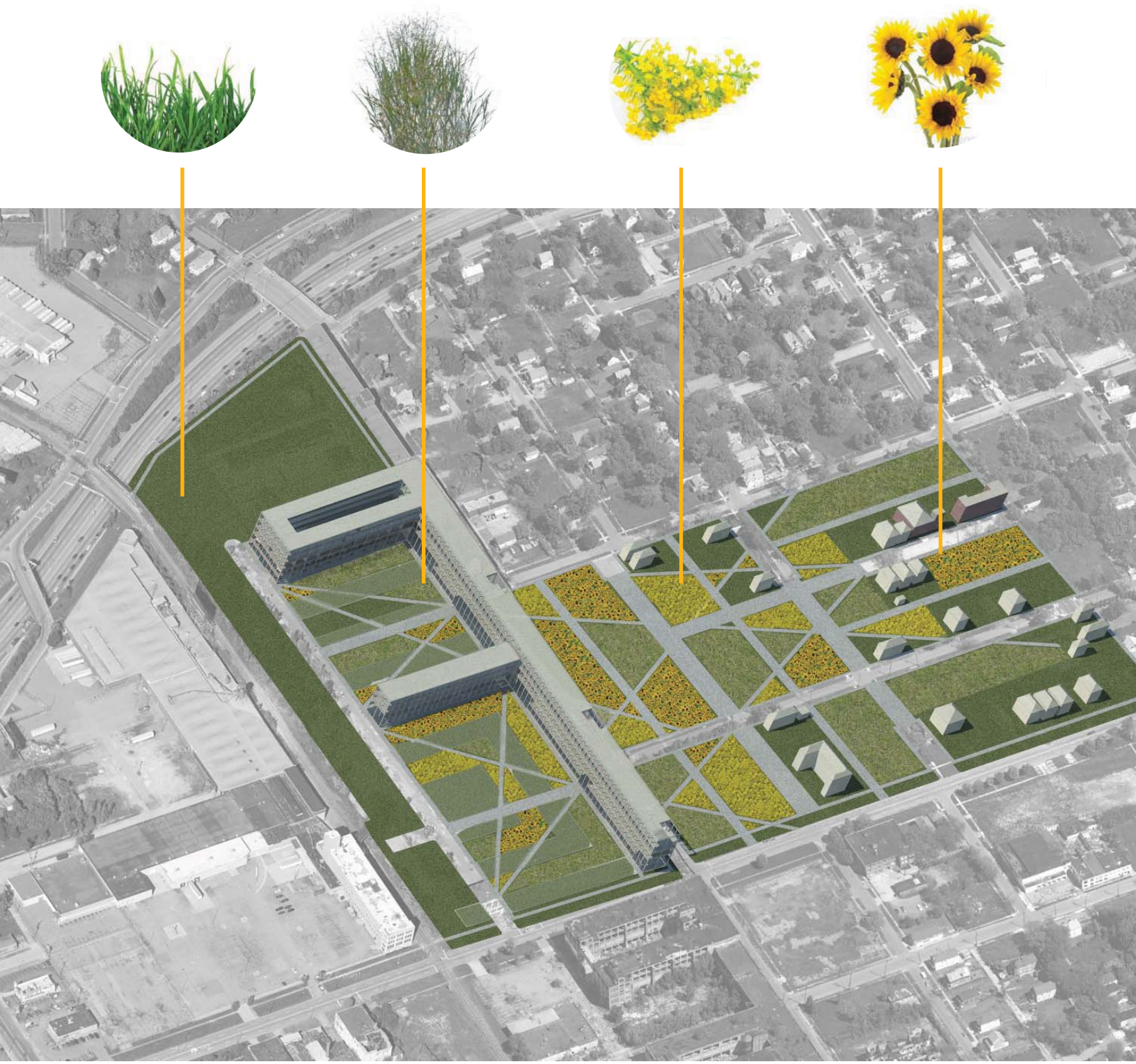
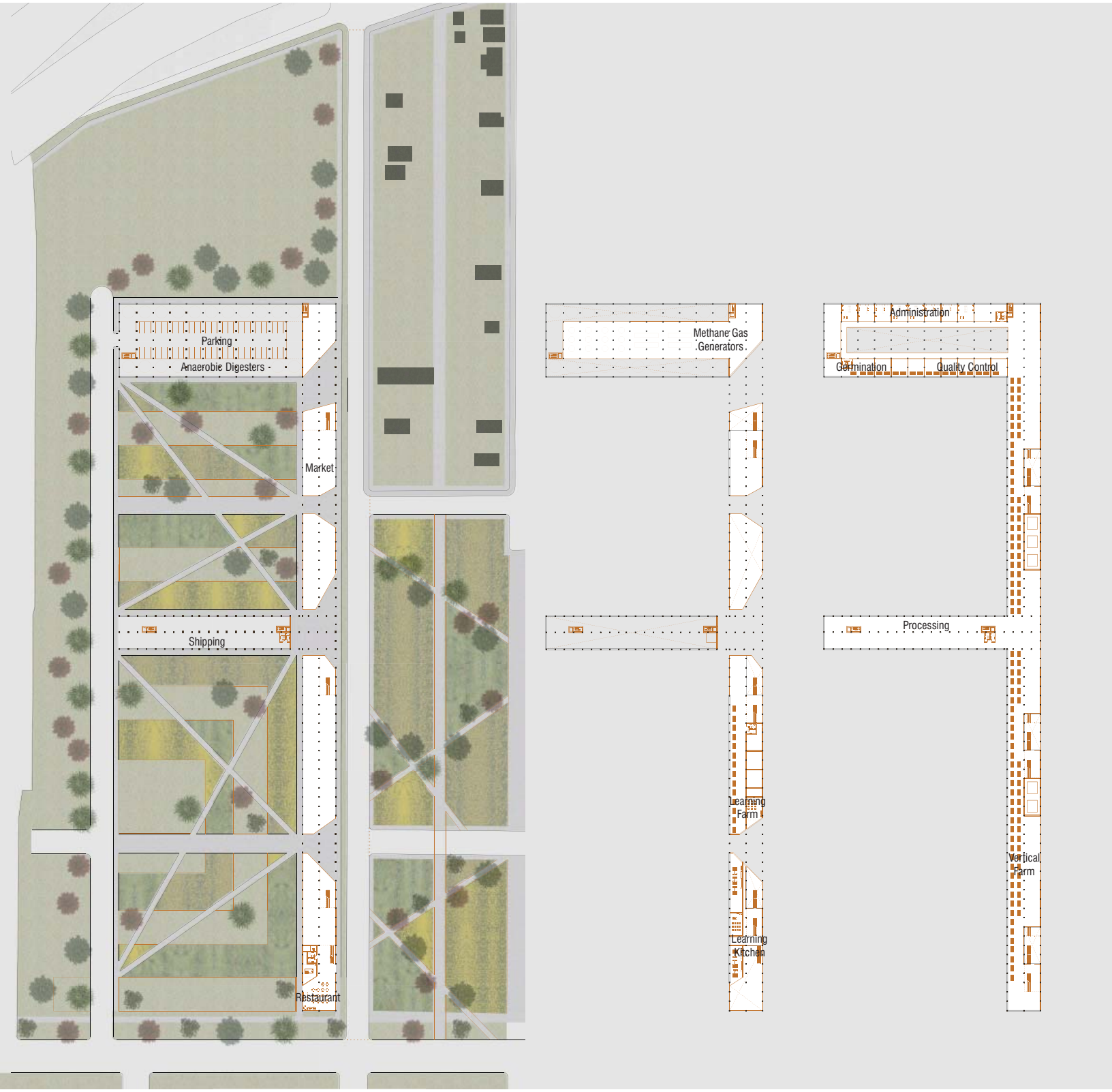


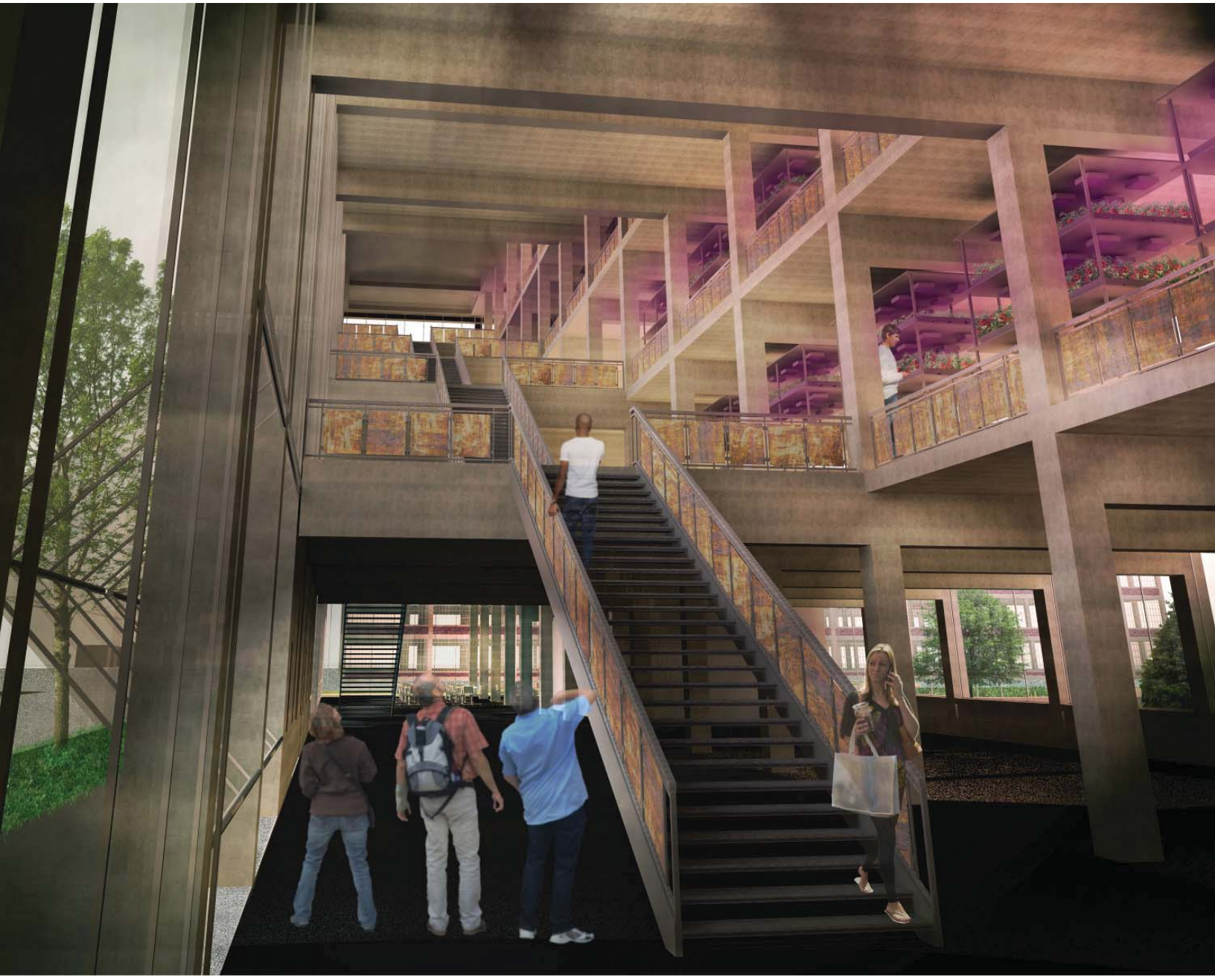
Current Conditions | Demolish and Stabalize | Continue Streets | Continue Paths | Carve for Occupation

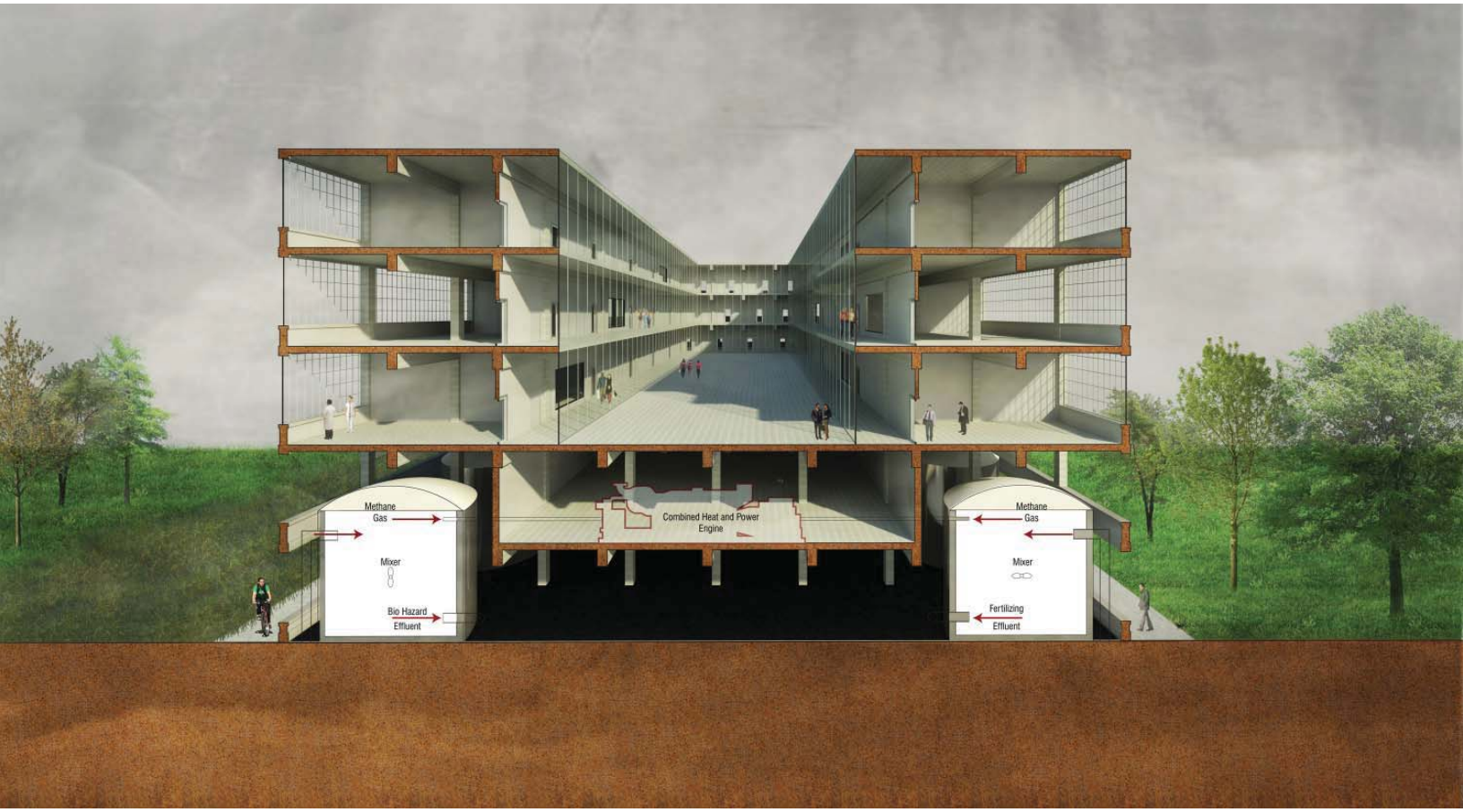


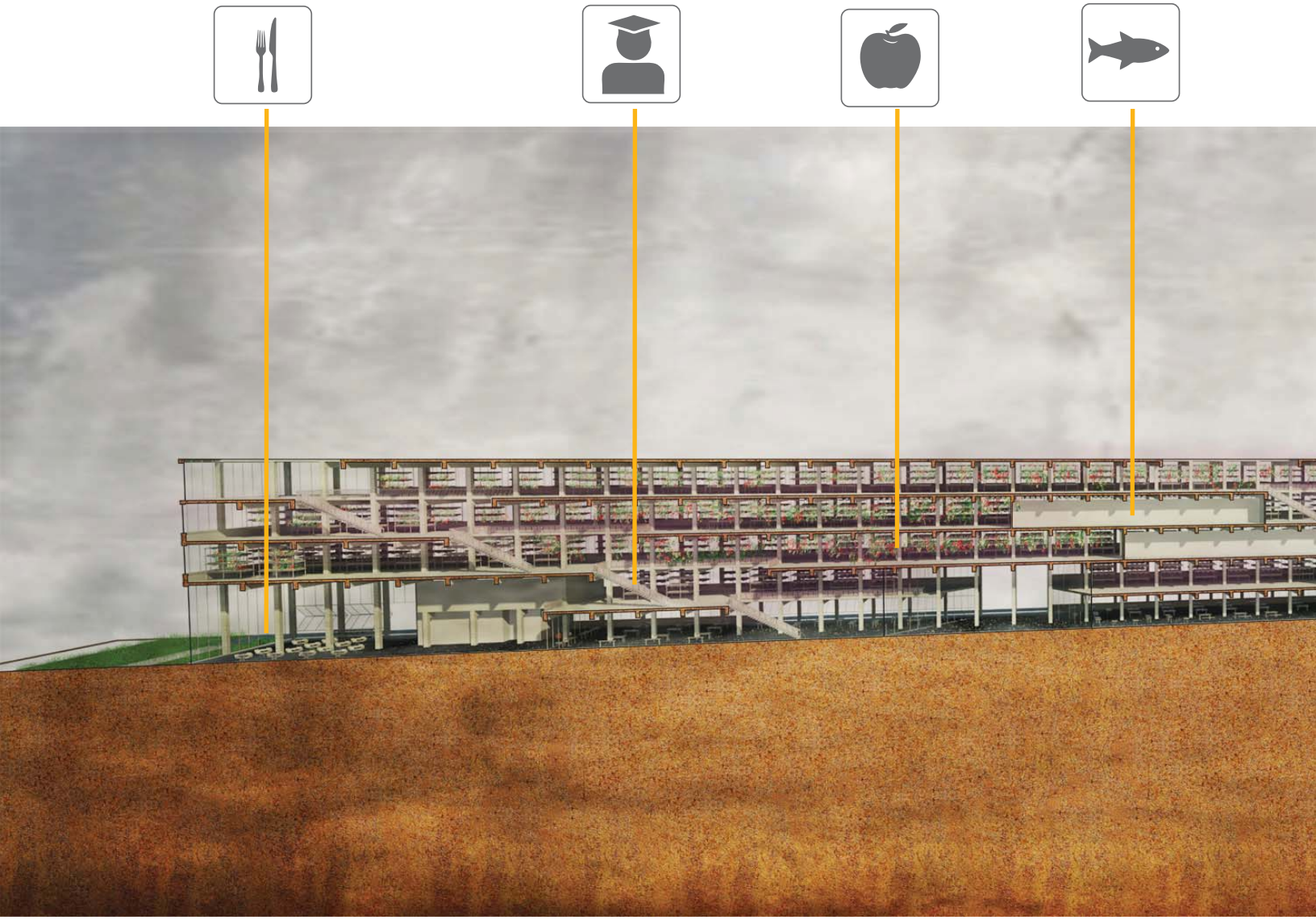


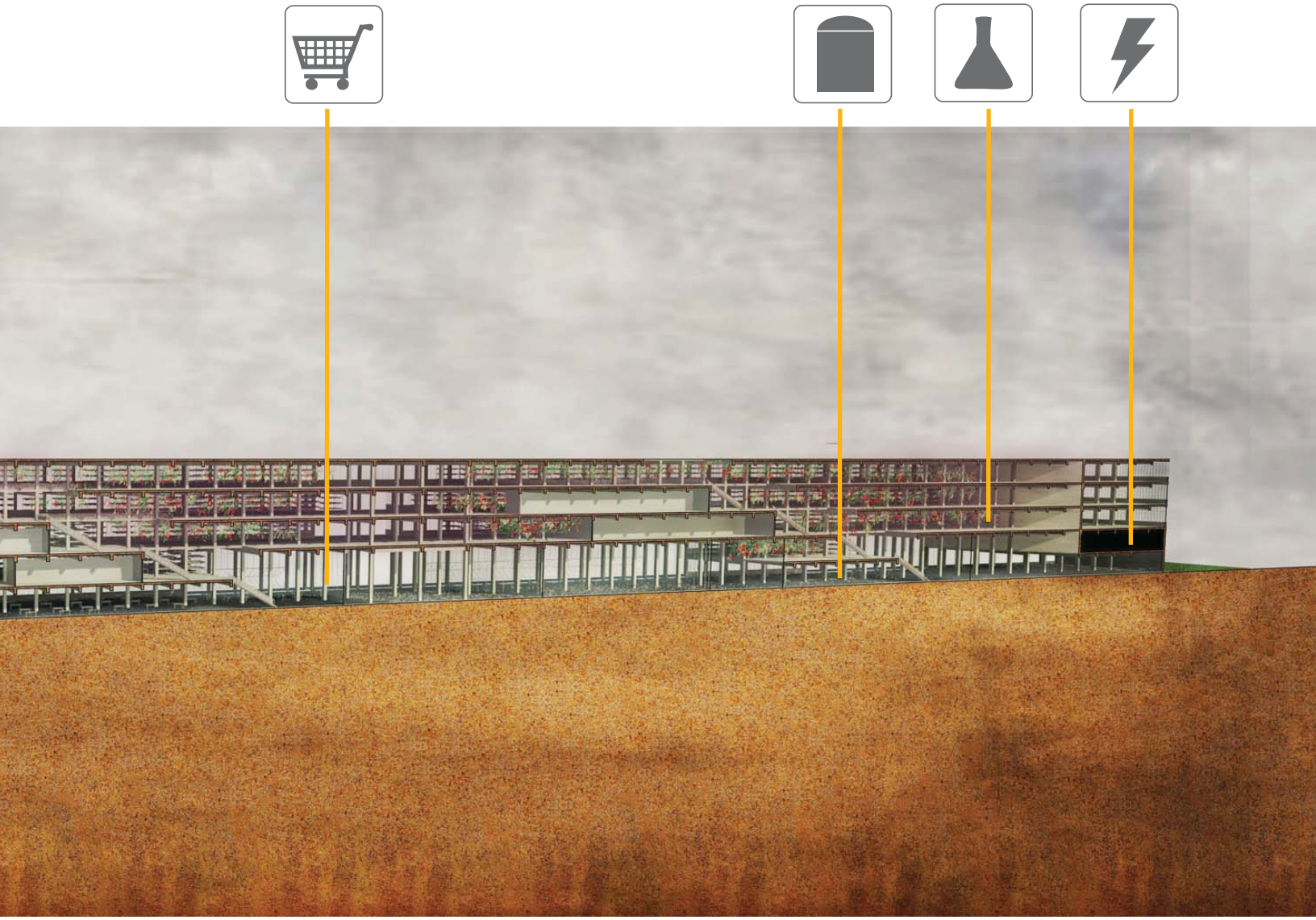
Level 1 Level 2 Level 3-5

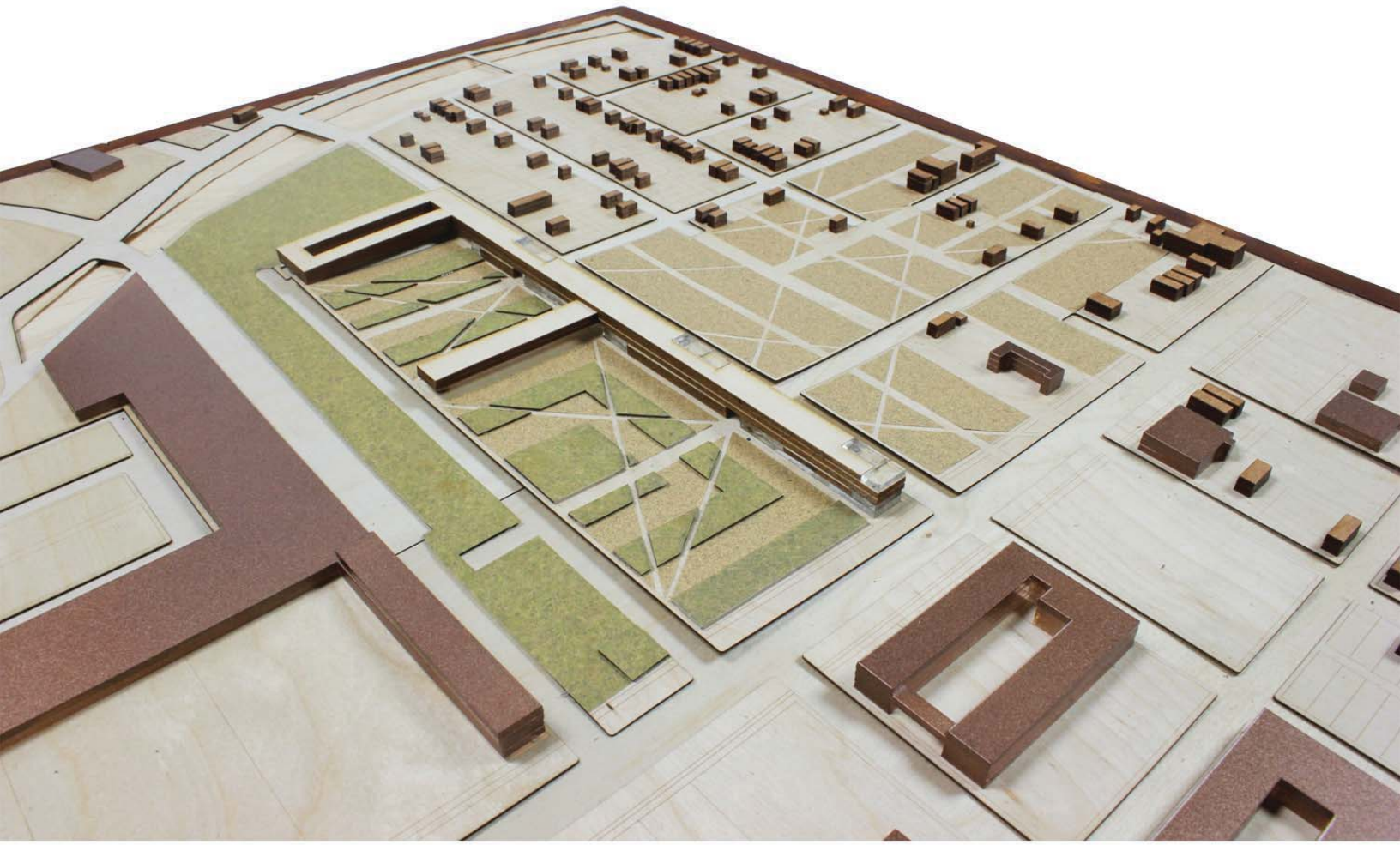

SAME DAY DELIVERY




Methane
Gas
Mixer
Bio Hazard
Effluent
Combined Heat and Power
Engine
Methane
Gas
Mixer
Fertilizing
Effluent







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