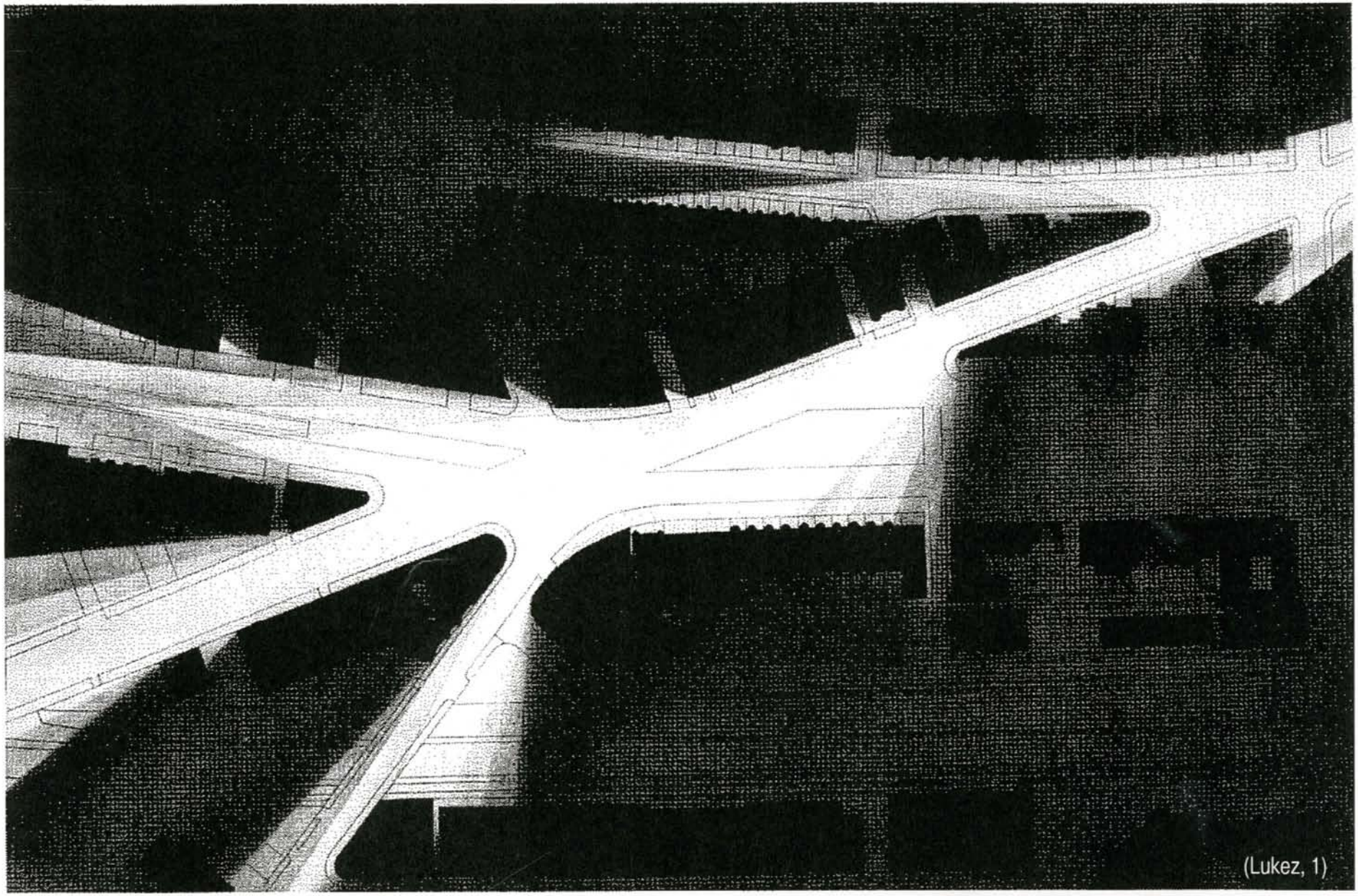
Fall 2009

# Activated Infrastructure

Joanna T. Myers
*Syracuse University*

# ACTIVATING INFRASTRUCTURE



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Joanna T. Myers

December 14, 2009

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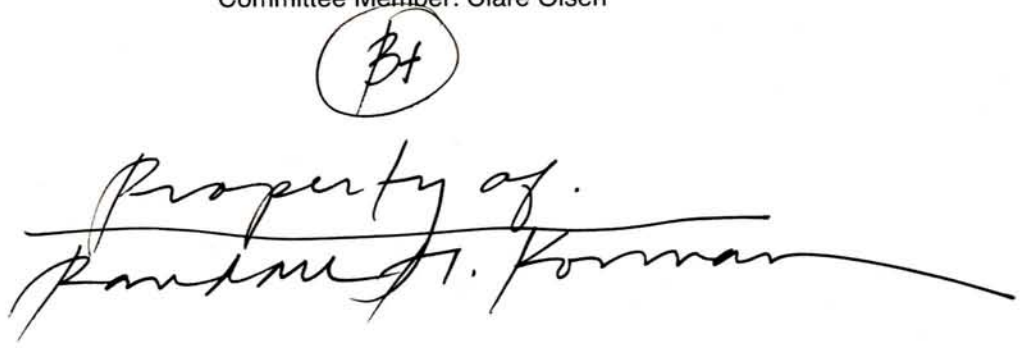

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# Thesis Statement

## Contention

Architecture has the potential to intervene (to be "implanted") within a set of pre-existing conditions that include large scale infrastructural elements, which represent obstacles to urban spatial development. In doing so, the new urban architectural condition has the capacity to foster the development of civic space and spatial sequence that was previously unrealized due to the barrier that such infrastructures pose.

*Infrastructure as obstacle*

1. The elevated highway and other such large, imposing infrastructures are common conditions in the country's identity as a landscape resulting in:
    a. spatial division of the city
    b. unsightly conditions
    c. limited urban growth
    d. negative impact on the immediate environment, i.e. uninhabitable or "frozen" space
2. The impact upon the community in which these infrastructures have been placed is adverse and results in the following problems:
    a. diminished opportunity for civic space
    b.diminished sense of identity
    c.inhibited economic development
    d. inhibited social activity
3. Any potential for urban sequences are interrupted by the infrastructure. Thus:
    a. vital connections between the towns and neighborhoods which these infrastructures "serve" and amenity is often broken
    b. landscape and green space cannot survive in infrastructural environments and thus are no longer a part of the urban experience in these areas
4. Infrastructural elements inhibit the development of urban/spatial hierarchy because:
    a. they dominate the landscape
    b. they operate at a larger than human scale

## What

An "Urban Implant" creates an urban center and includes such programs as a train station, a public square, housing strips, a community center, and a destination program. This has the purpose of giving a sense of center, density and place to an area devoid of these conditions. It is a retrofitting of architecture into previously undesirable space, and making it desirable and inhabitable. It provides for the infrastructural requirements of the place while also mediating between the elements that were previously disconnected due to the conditions inherent in typical American infrasture up to this time.

## Why

Countless American towns and cities are divided by major infrastructural elements that act as a barrier and create an inhospitable and undesirable environments for those that live there. The extent of these infrastructures is vast and expansive and instead of disgarding these areas, or taking expensive and unrealistic efforts to remove them, it is the role of architecture to find ways to deal with them and within them.

## How

This is done by creating an edge, face or surface for the neighborhood facing the infrastructural elements that at the same time connects it with vital programs previously disenfranchised or alienated from it. By providing a building that stitches together elements of the site, and multiplies their value because of their new relationship to one another.

# Abstract

*"The City Implant is an urban design project that can be used to strengthen an existing center or create a new one. It is a spatial and programmatic upgrade that gives an area the status of a center or increases the density of an existing center. Rather than intervening in undeveloped land, a City Implant should be a transformer of empty land and even under-exploited traffic junctions. A City Implant should describe the quality of centrality itself."* Alex Wall "Boomtown v. Regiocity: Thinking and designing or the Networked City Region." (Almy, 286)

Transportation infrastructures across the United States create issues with urban planning and design and the general operations of life that occur around them. As much as they sponsor movement and transport, they impede the ability to perceive cohesive identities of urban landscape.

Rusted, decaying, impassable walls of infrastructure are imbedded all across the nation's landscape. The availability and necessity of transportation and increased mobility in the times of planners such as Robert Moses, gave transportation infrastructure the title of progress and innovation.

In the wake of this progress, the impact that the infrastructure has on the landscape that supports it has often been ignored. This gives rise to divided and undesirable landscapes that too often are inhabited by un-mediating programs and wastelands of uninhabitable space. Communities outside thriving civic centers are often divided into regions of un-integrated commercial, residential and industrial land that has developed haphazardly around the large systems of infrastructure as opposed to around a thriving city center. Areas of "frozen-space" arise in "in-between" places, and it is the crucial role of architecture to re-connect and give value to these places through the creation of vital paths and public spaces.

Architecture has the potential to intervene (to be "implanted") within pre-existing infrastructural elements in such a way as to create valuable space.

In doing so, it can regenerate and strengthen an otherwise derelict urban environment by providing scalar mediation and new programming.

The resulting condition could support the creation of public space while allowing for future growth and development in creating vital links between public spaces and programs otherwise divided by the infrastructure.

In 1893, a railroad network was put in place in Massachusetts, stemming from the center of Boston and radiating to major metropolitan areas to the South and to the West. The Massachusetts government wanted to be at the forefront of those trying to take hold of the power and potential of the steam locomotive, harnessing it to allow for maximum travel and importation of goods. In 1950, the SouthEast Expressway was built. These two elements have had limitless impact upon the communities which they invade (Kennedy, 34).

Setting up a framework that mediates the edge where the city meets transportation fabric, creates possibilities of new opportunities, where once there was a barrier.

The site of Dorchester, Massachusetts is a place that is a manifestation of the divide that has been created by the infrastructure. On the one side of the train tracks and highway infrastructure is a dense neighborhood void of green space and significant identity. On the other, is a peninsula that juts out into the Atlantic called Harbor Point. Located on Harbor Point are the UMASS, Boston campus, the John F. Kennedy Memorial Library, a mixed use housing development with walkable amenities and a diverse coastline. As is typical with much of the Boston terrain, Harbor point was added as infill in 1930. Though physically connected to the mainland

of the Dorchester neighborhood, it maintains this identity of separate part and piece.

I want to attach onto that which has divided the area, the infrastructure. I want to use the idea of the train, the way in which it facilitates accessibility and mobility and use it to spur future growth of the area. The nature of the infrastructure that has created an environment for the train and automobile that is out of scale with the human body that utilizes it on a regular basis. I want to use this infrastructure to create an intervention that reclaims areas divided by impassable barriers.

# PART 1
# THE PROBLEM

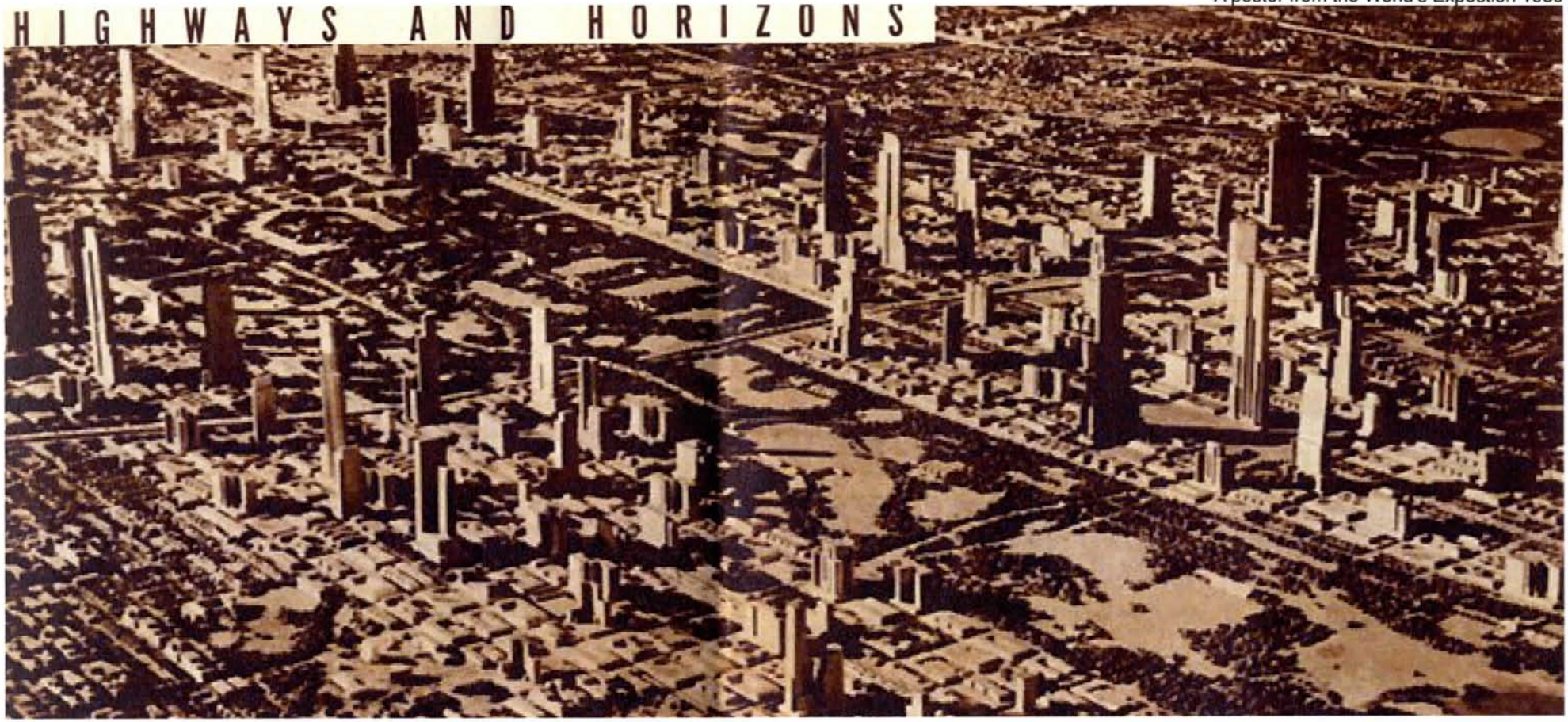
google maps

# AMERICAN HIGHWAY CULTURE
## VISIONS OF THE FUTURE


(Rose, 2)

"We are now approaching The Futurama" - this is the greeting that met millions of visitors to the 1939 World's Fair in New York. The exhibition was called The General Motor's Highway and Horizons exhibition and it was a representation of the United States' aim to be at the forefront of progress and mobility. Huge infrastructural systems were the focus of the exhibition - especially what designer Norman Bel Geddes dubbed the "Super-Highway". After the crushing effects of The Great Depression, General Motors and their affiliates promised the millions of visitors to the exhibition that the future offered two things: personal car ownership and a huge network of highway infrastructure to support mobility and the resurgence of the new economy. The visitors entered the exhibition hall to hear a booming voice say "Welcome...to the world of tomorrow!" Then they were ushered around a miniature model of the future city, a large sprawling highway network with scaled cities developed at their extents. This was one of the first documented manifestations of the American desire to create a car-dominated landscape.

A poster from the World's Expostion 1939




## A VISIT TO TOMORROW

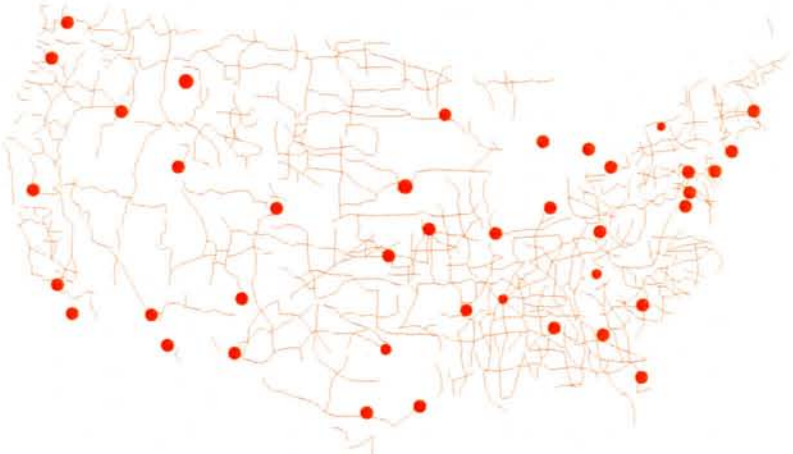
AN ENDLESS LINE of moving chairs glides silently through the Map Lobby of the General Motors Exhibit Building, Highways and Horizons. You descend a winding ramp, step on a moving platform and, sinking into the upholstered depths of your individual chair, move outward into sunlight—and a world of tomorrow!

a vacation paradise, brought nearer to all through these highways of 1960, built for speed with safety.

As dawn breaks you cross a towering range of snow-capped peaks. In the morning light the spires of a great metropolis glisten across a broad valley. A net work of feeder highways carry traffic to the smaller towns,

(Rose, 4)

## NATIONAL HIGHWAY SYSTEM



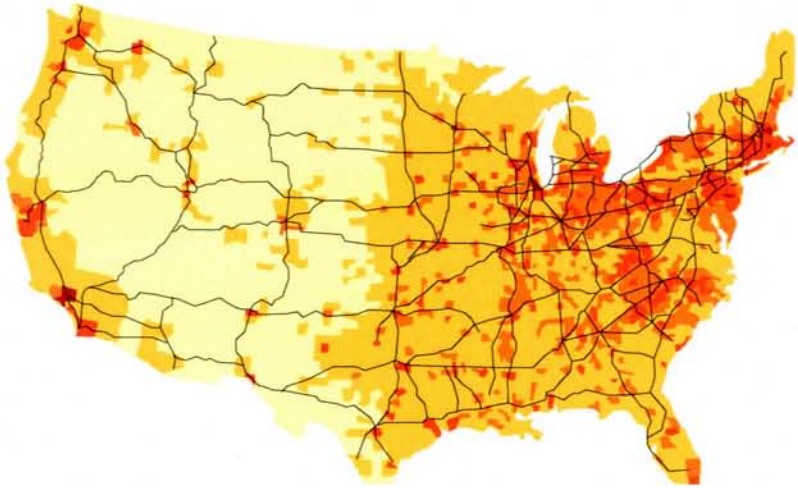
The U.S. before the 1950 National Highway System.

The National Highway System as implemented by the Eisenhower administration

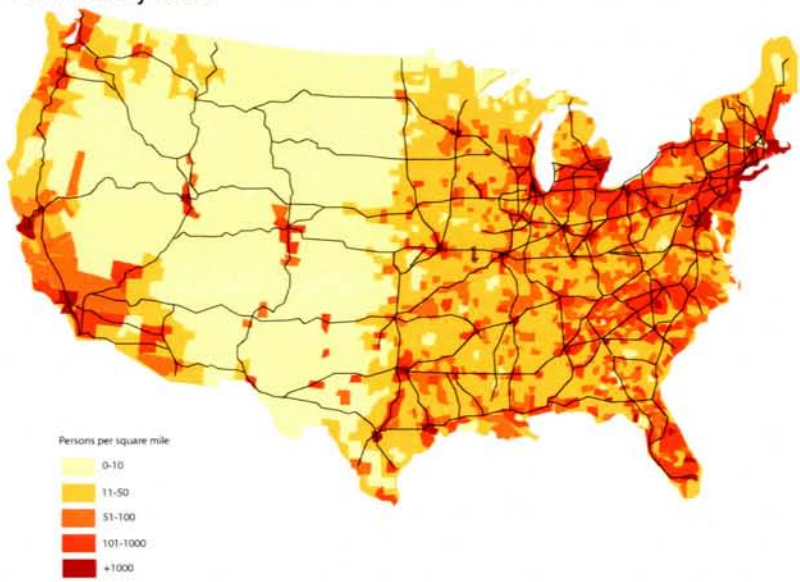
In June of 1956, President Dwight D. Eisenhower enacted legislation built off of the fervor that was begun at the World's Fair. The Federal Aid Highway Act, also known as Public Law 84-627, set into motion the building of more than fifty thousand miles of highway infrastructure. The bill appropriated twenty-five billion dollars for the construction of forty one thousand miles of interstate highway over a twenty year period. It was the largest public works project in American history to that point (Rose, 1).

The ideas behind the National Highway System (NHS) were the desire for a future federal program that would allow an interstate system to develop. This encouraged states to develop "corridors" that could then be added to the original network, and in return they would receive federal aid. The result was a system of increasingly longer stretches of highway that encouraged travel between major cities, but not to the destinations between. The on and off ramps of the highways in these "lesser areas" were less well thought out as increasingly private politicians and entities, took control of the highway planning away from the engineers (Rose, 3).

U.S. density 1950



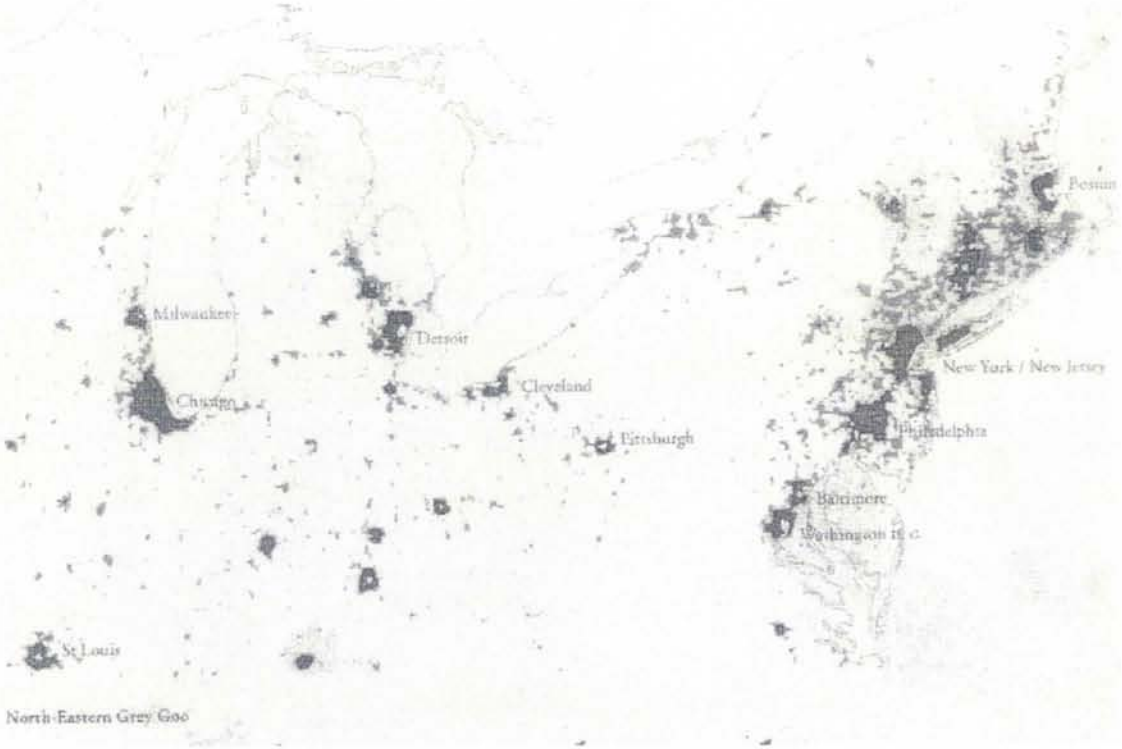
U.S. density 2000




The increased use of automobiles was also directly linked to highway development, as Eisenhower instated a tax on car and gasoline purchases that was put towards the federal and state highway fund. The system was developed to provide easy movement by car between major cities. Major cities were connected by the interstate and the infrastructure.

The U.S. contains 26 million individual road segments. The National Highway System is 46, 876 miles of highway infrastructure making it the largest highway system in the world. Approximately 40% of U.S. land is covered by highway. The result of this domination of our landscapes by infrastructure is enormous. Heaviest traveled: 390,000 vehicles per day: I-405 in Los Angeles, California (2006 estimate[50]). Least traveled: 1,800 vehicles per day: I-95 just north of ~~Least traveled~~: ~~1,800 vehicles per day: I-95 just north~~ of Houlton, Maine to the Canadian border (2001 estimate[51]). We cannot erase the impact that these systems have had on our landscapes. I propose a building that works with these infrstructures to both reconnect the pieces they have disjointed and works to "slow down" the increased large scale mobility that they have created. Approximately forty percent of the country is covered by highway infrastructure (National System, 3).

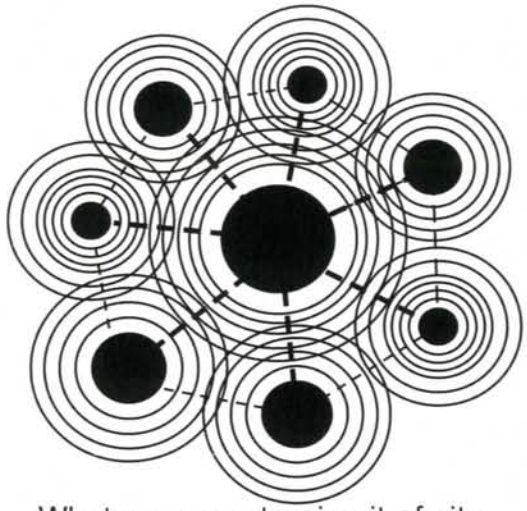
# Post-Urban Debris



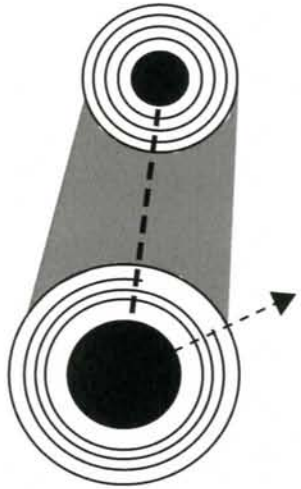

Bouman refers to these places that are prevalent along the Northeastern seaboard, a "quasi-endless continuum of post-urban debris." Bouman writes:

> This terrain we propose to call 'Grey Goo'. Grey because the Arcadian green was purged from it; Goo because it seems without clear structure and extends endlessly (29).

Small pockets of middle and upper class residences are located in clusters near the waterfront areas that are blocked off from the majority of the neighborhood, by the infrastructure. The bulk of the neighborhood is composed of apartment houses, three-storeys in height and with little to no back yard. Those within the vicinity of the train tracks or the expressway have their back yards truncated by a wall that does little to nothing to keep out the sound, but acts as a visual barrier to the constant stream of traffic (Bouman, 3).

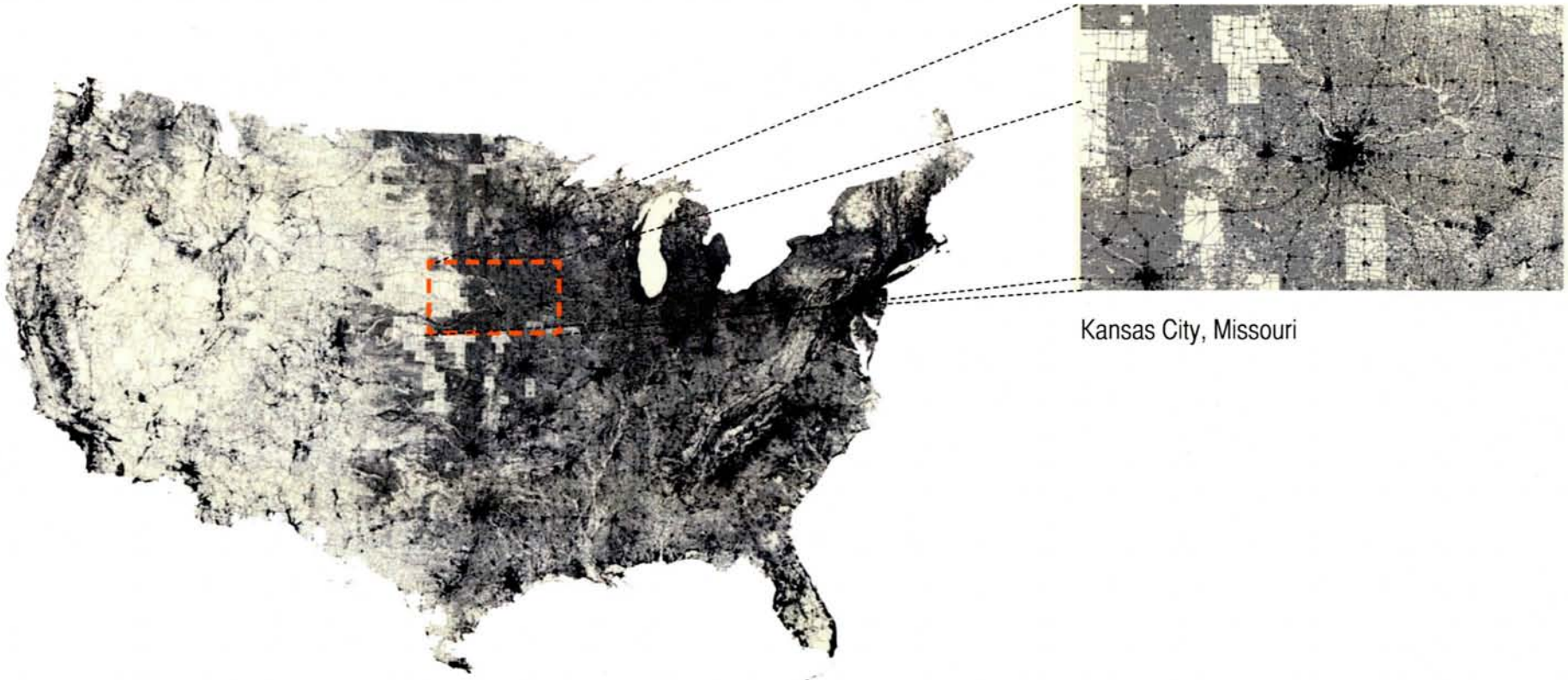


What we expect - circuit of city centers connected to a major city core with outlying suburbs related back to each center



Grey Goo reality-Distance between centers stretched to car travel and thus large of space lost in-between w connection back to a cente

# Transportation defined geography



Kansas City, Missouri

This is a map created by artist/cartographer Ben Fry shows the geographic makeup of the U.S. through only drawing the 26 million individual road segments that make up the country.

In the zoomed in view of Kansas the less populated rural zones can be seen through the lack of road density and the density of Kansas city can be seen through the intensity of road pattern, and differences in how adjacent counties identify streets. Thus, there is an intrinsic link between road placement and the development of our cities (Lima, 1).

"The study had determined from State Surveys that about 85% of all trips had trip lengths below 20 miles, with only about 5% greater than 50 miles. They also examined flow patterns of both passenger and truck traffic in a sample of states selected from each region and ascertained that **50% of traffic had both its origin and destination in cities**, about 37% had one or the other end in a city and only about 14% had neither origin nor destination in a city. Specifically, **75% of truck movements were intrastate in character,** with 20% crossing a state line, and less than 5% traversing a state (i.e. involving more than two states). The Inter-state and trans-state flows had the greatest orientation to cities at their ends. They constructed a 'zone of influence' around cities which varied from 35 miles for cities over 3 million to 6 miles for areas of 10,000 to 25,000 and then determined that 24% of the system was within these zones" (National System, 3).

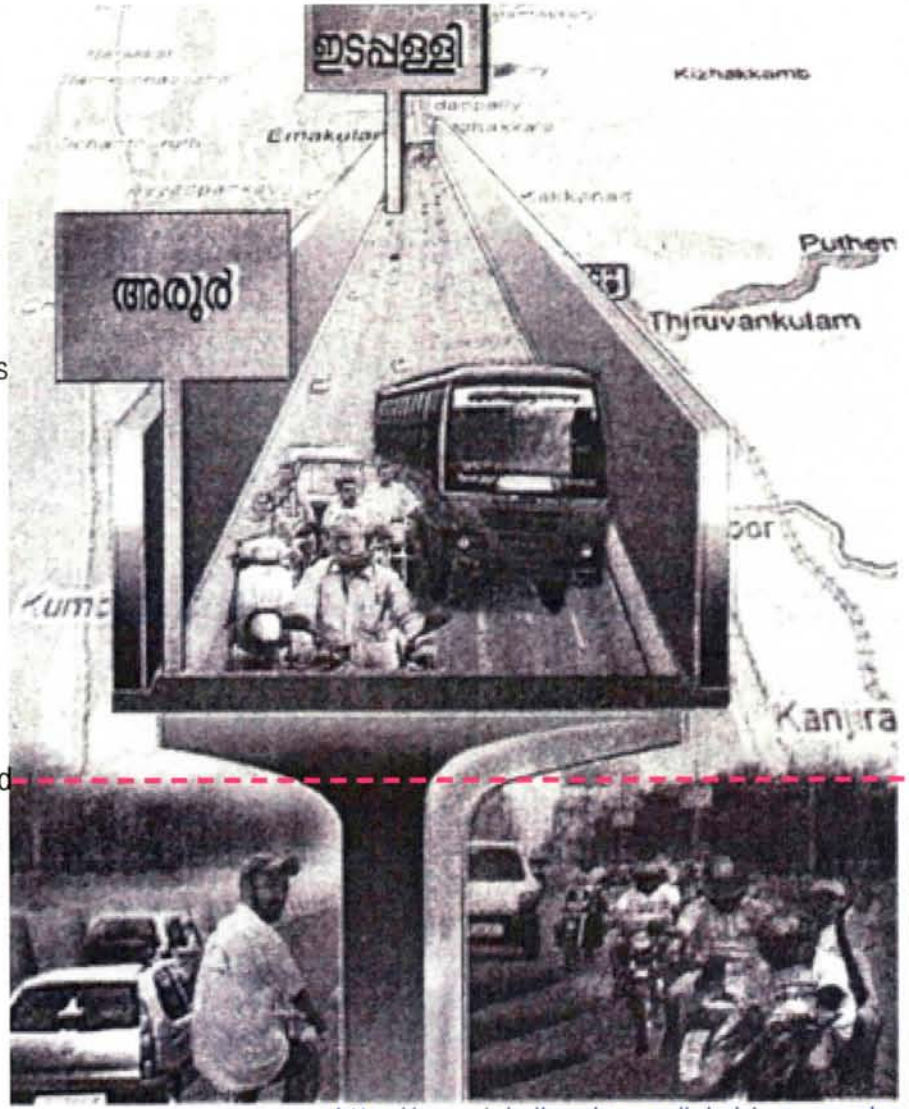
The above quote was used to determine the "area of influence" of the interstate highway. While the National Highway System was designed to link existing urban metropolises, the result has been that the highway system and the road networks branched off of its original outline, have defined the way cities, towns and neighborhoods have grown. The calculation that fifty percent of traffic has both its origin and destination in major cities, and that seventy-five percent of goods traveled are of intrastate scale, resulted in the creation of a megastructure of highways meant only to connect and mediate on a state-to-state, metropolis-to-metropolis scale. The in-between areas, the neighborhoods and towns outside of the metropolis now deal with the identity of passageway and haphazard permanence. People live in highway corridors, and their neighborhoods and walkable areas are dictated by infrastructures not meant to do this or perform this job, but only the job of moving one-hundred to two-hundred thousand vehicles per day, as is the average of the Southeast Expressway in Boston.

Tangles of highway on-ramp and off-ramp are negated from built consideration due to their "frozen-nature", the noise and danger of the systems they support and the lack of consideration with which they cut through the landscape.

the buildable

"Junkspace"/ unbuildable

Historically, there is an inherent hierarchy inherent in the highway itself, especially the elevated highway. From 1960 highway protestors who claimed that the highways seperated classes into the "Pavers and the Paved" to this poster for a new highway on the Indian Island of Kebala (Rose, 3). The elevated highway is seen as the way to the future and is tied hand in hand with progress and foreward looking and thinking societies. Below the highway is the past, left behind and unconsidered.



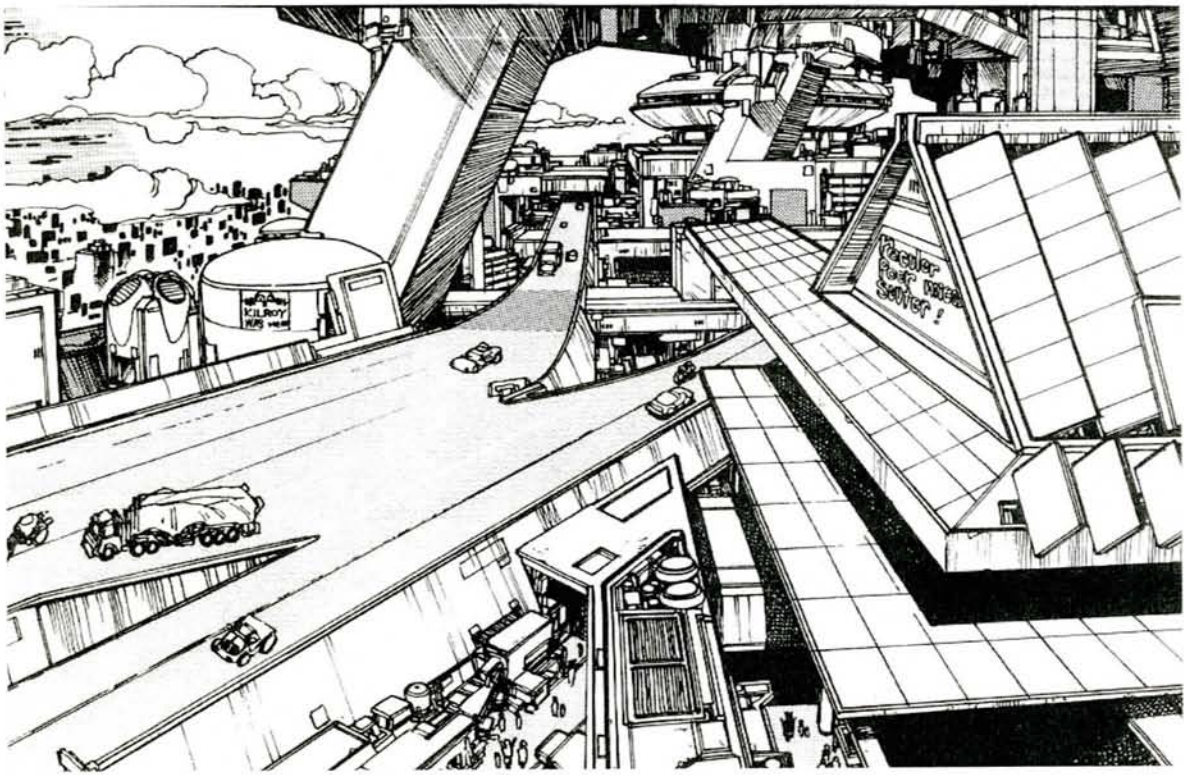

http://www.inkelkerala.com/inkel-in-news.php

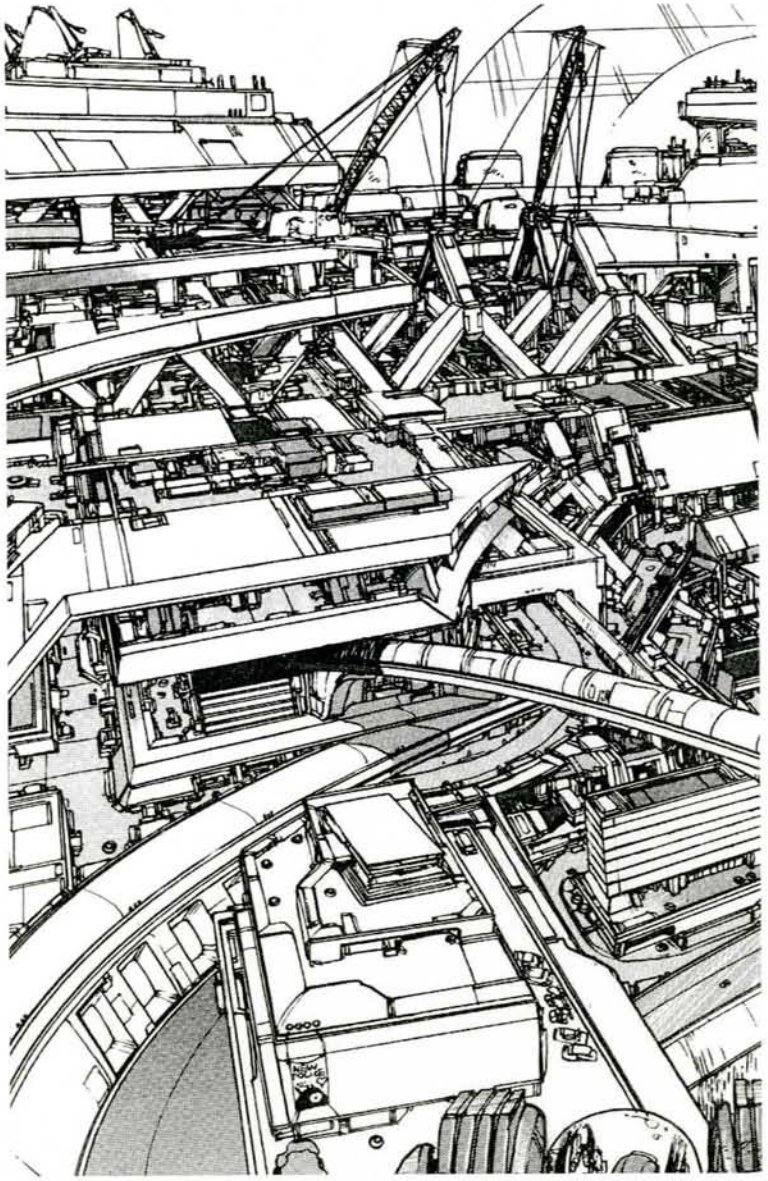
$ CARS

FOREIGN PLACES

TECHNOLOGY

# Infrastructure Potentials

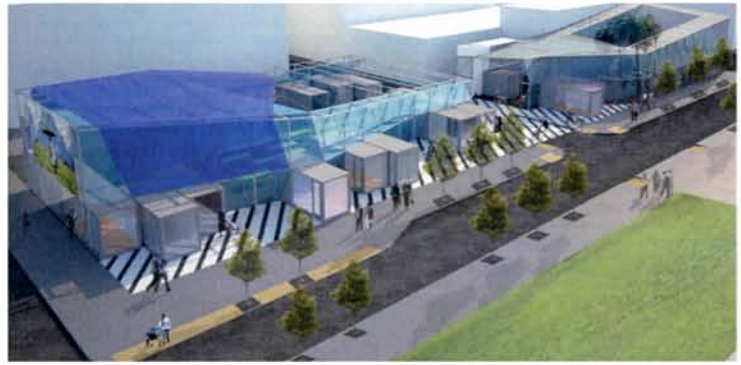




Manga Cities are cities the exemplify images of the future, they are manifestations of the intersection between infrastructure and architecture. Much can be derived from this interpretation of the future. Densities created in in between places between highway and suspended bridge. Huge cranes become structures from which to suspend housing structures. These cities are ideas of what can be found when superstructures and urban fabric are collided and/ or seamlessly intertwined ("Eden, 1).

## Recycling Junkspace

Koolhaas writes, *"'Identity' is the new junk food for the dispossessed, globalizaton's fodder for the disenfranchised space-junk is the human debris that litters the universe, Junk-Space is the mankind leaves on the planet.... Junkspace is what remains after modernization has run its course, or, more precisely, what coagulates while modernization is in progress, its fallout."* (Koolhaas,) More about this later in the discussion of site.



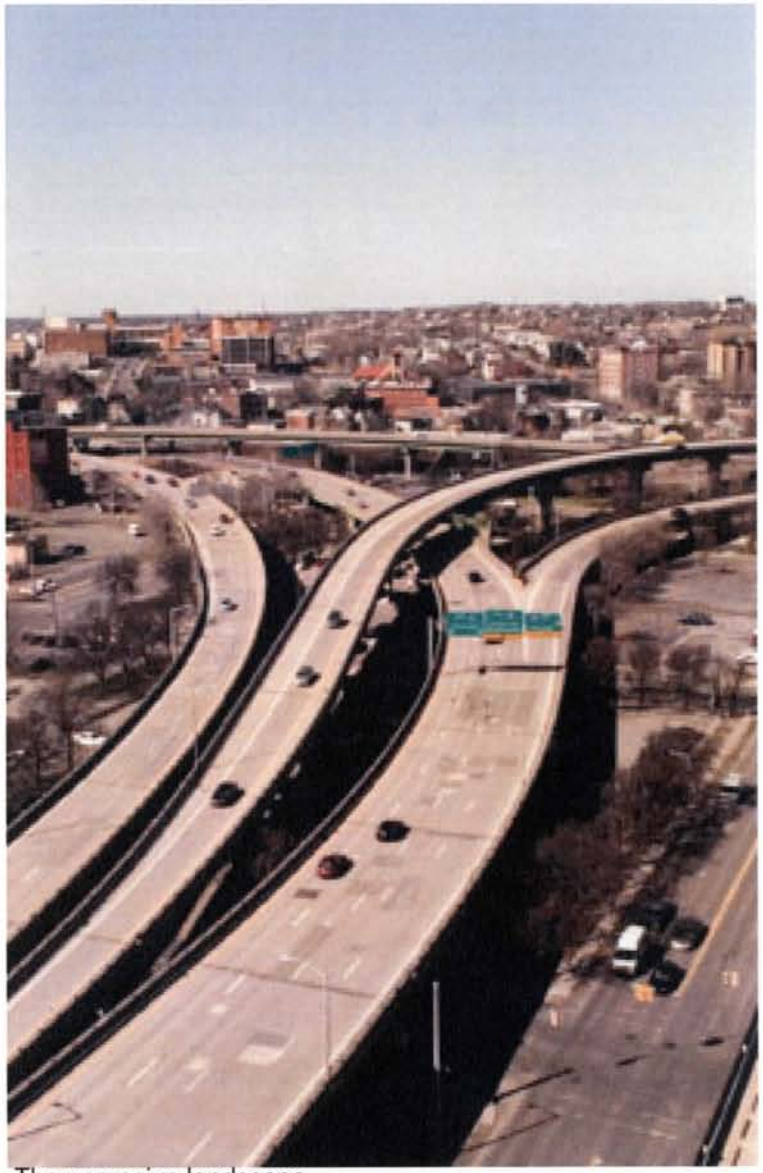
*Proxy Project, San Francisco, Octavia Lots K+L Architects*

The Proxy project is a study of the "potentials of impermanence", a study of "freeing junkspace". Built on the site of former Central Artery, the Proxy Project is a temporary structure for the community, while new infrastructure is being built. Constructed of frame, mesh, fabric, wall and volume, the project is expected to last two years. The idea is to temporarily re-establish the urban fabric, and create a place opposite of that offered by the infrastructure that used to be there, and hopefully leay the groundwork for how future infrastructure is conceived.

*Highline Project, Manhattan, Diller Scofidio & Renfro*

The much publicized Highline project in Manhattan is a mile and a half elevated park located on the abandoned infrastructure of elevated tracks that served Manhattan's elevated freight trains. Reverting a once alienating condition that divided the neighborhoods of Manhattan's Meatpacking District, West Chelsea, and Hell's Kitchen, the infrastructure now serves these communties with public infrastructure. The project combines natural plantings, concrete paths, movable seating, and lighting for night use.

Syracuse, New York Interstate 81



The pervasive landscape

# PART 2: SITE

"Our neighborhoods have become unhealthy places to live and work, islands of life isolated in wastelands of space."

Jan Wampler, "The Space Between"

Transportation defined urban geography

Connect only principle regions and cities of the country

"Grey-Goo = Metropolitan Area - (City Centers + Ex-Urbs)"

Infrastructure Scar: Problems caused by infrastructure on the urban fabric, or lack thereof


"Grey-Goo = Metropolitan Area - (City Centers + Ex-Urbs)"

The neighborhood of Dorchester, Massachusetts is what Ole Bouman would call "Grey-Goo". An area miles outside of the city center of Boston, it is located in the stretch of terrain between the Boston's center and the ex-urbs that make up the South-Shore suburban sprawl of Massachusetts. As immigration trends rise, immigrant groups seek the refuge of the outer neighborhood's lower real estate values. The large Chinese, Cape Verdean and Portuguese population of the area increases its density, as three story apartment buildings dot the landscape (Sammarco, 3) .

A township annexed by Boston in the mid nineteenth century, it has developed haphazardly around two main pieces of infrastructure that scar its center—the Southeast Expressway or Route 93 and a railroad line of the commuter rail system.

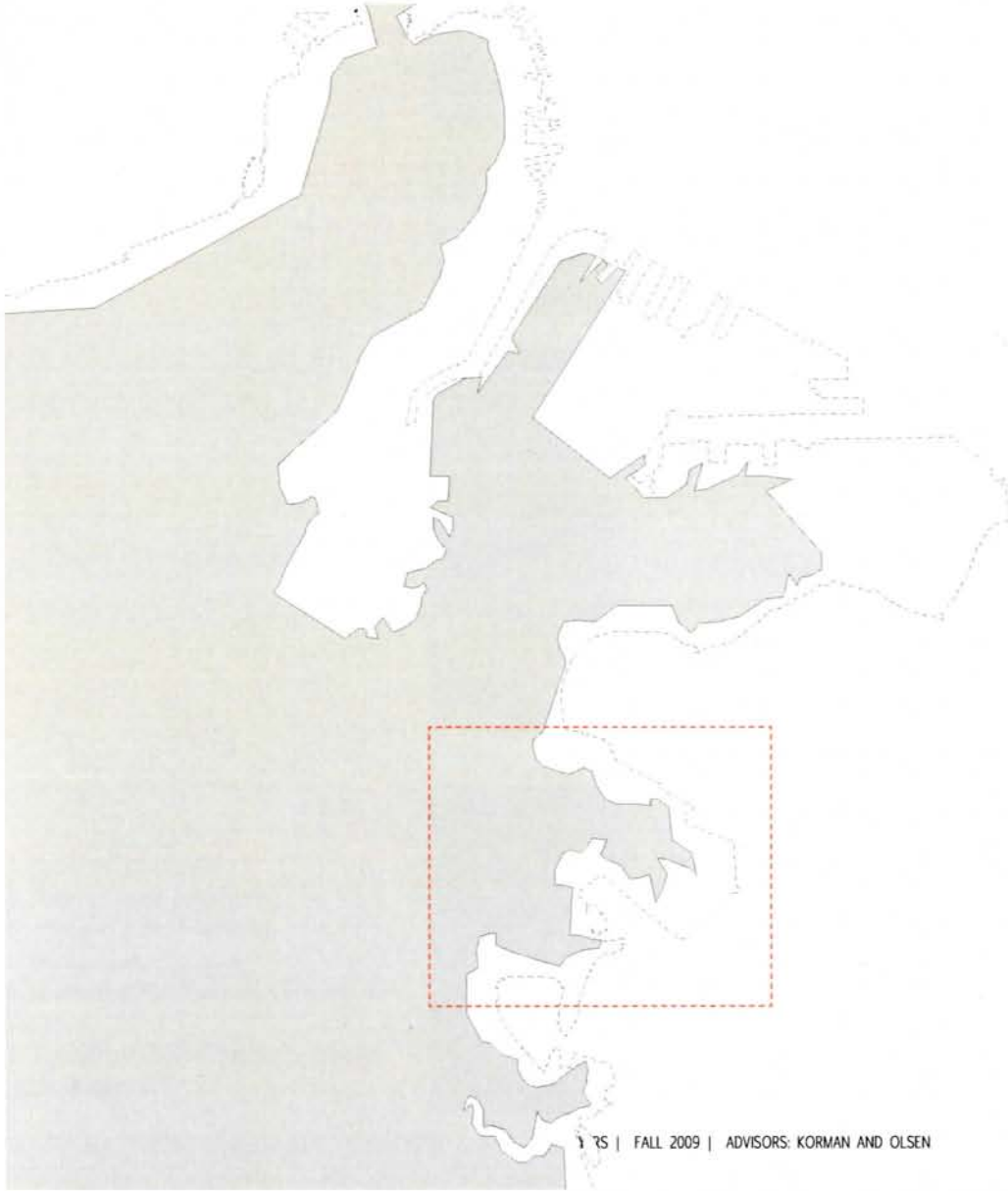
Both of these infrastructural elements are major links in passage from the core of Boston to nearly all points south.

Small pockets of middle and upper class residences are located in clusters near the waterfront areas that are blocked off

## The Neighborhood

from the majority of the neighborhood, by the infrastructure. The bulk of the neighborhood is composed of apartment houses, three-storeys in height and with little to no back yard. Those within the vicinity of the train tracks or the expressway have their back yards truncated by a wall that does little to nothing to keep out the sound, but acts as a visual barrier to the constant stream of traffic.

## Site History





Dorchester began as an agrarian community that supported the more dense population of the city of Boston, and a vacation area for people escaping the pollution and crowds of the inner city in the 1800s (Sammarco, 23).

The area subsisted as an agricultural area with farm lands providing for the residents and industries of Boston. Fishing was also a major commerce in the area with its access to the ocean and diverse coast line whose inlets proved hospitable for marinas and docks (Sammarco, 22).

The inlets and oceans also provided for beaches and recreational areas for the residents of the neighborhood to enjoy in good weather. Savin Hill Beach and the L Street BathHouse, further north provided residents with recreational escape from their homes in the summer, as well as a place of public meeting and interaction (Sammarco, 12).

In the early 1800s. the mill industries of Boston identified Dorchester's Neponset River, a tributary to the Atlantic Ocean, as an

## Historical Images


1. Savin Hill Train Depot
2. Savin Hill Beach, Dorchester
3. Neponset River, Dorchester
4. Mill Structure, Dorchester
5. Old FIshing Pier off the coast of Savin Hill Beach
6. Typical New England Fishing Pier in near-by Gloucester, MA

ideal place for industry and relocated major factories to the town. With the increased population of factory workers, many without cars a train system became necessary. The individual plots of land, quickly began to densify with workers and their families seeking jobs in the mills that began to pop up around the town's numerous rivers (Sammarco, 22).

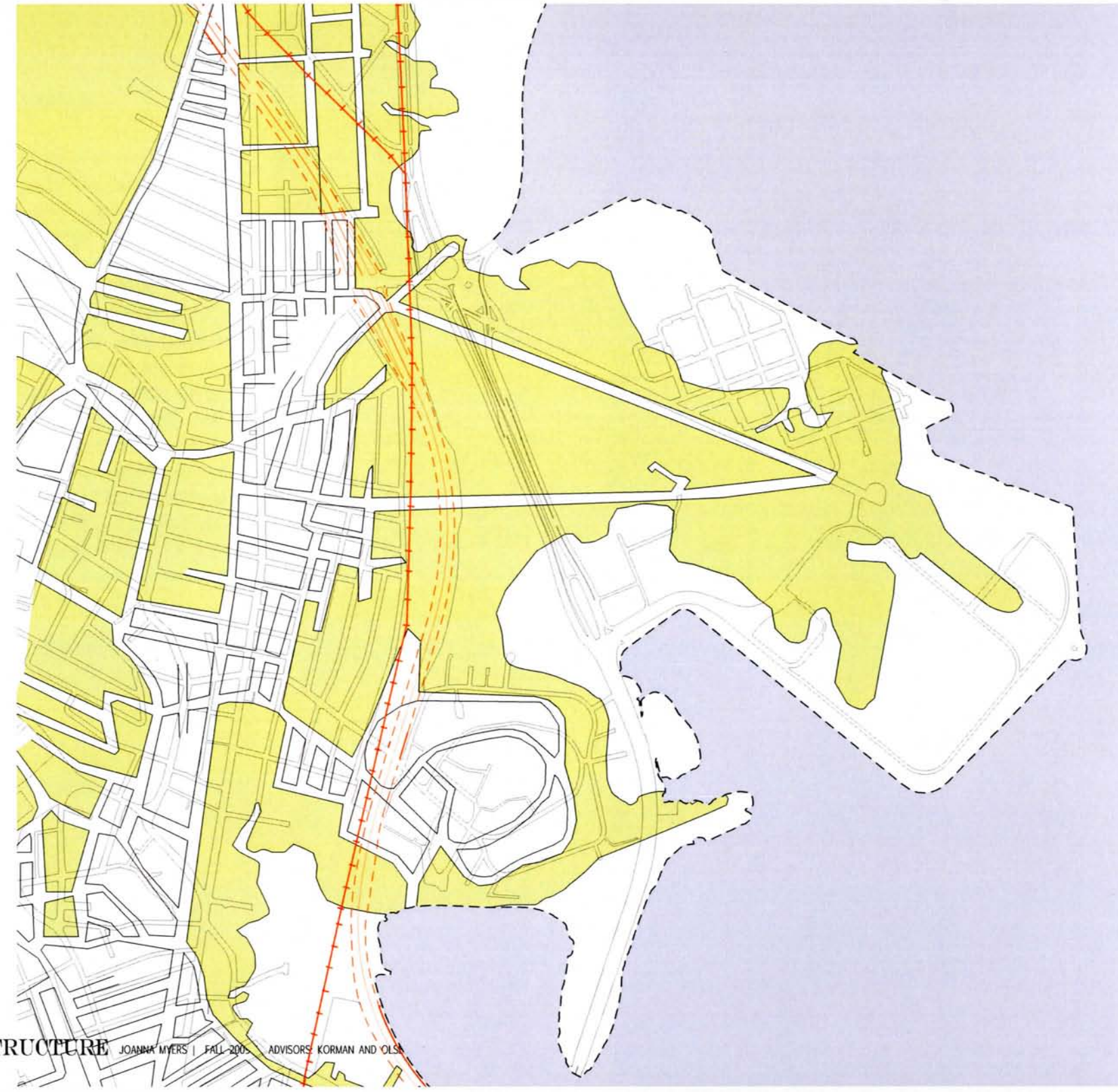
A major line of the Old Colony Railroad was placed through this area as a link to southern parts of the state - to Providence, Cape Cod and beyond. The train was placed in the area in the 1850s as part of a larger system of the Boston-Albany line to connect the raw materials created in more westerly areas to the factories of the east. From this system branched off a smaller system of connections between the suburbs of Boston and the core of the city itself. However, with the increasing use of the automobile, the onset of World War I, and the completion of the Southeast Expressway, the train system was abandoned. From about the 1950s until 1997 the tracks were abandoned seeing only infrequent travel from freight traffic (Kennedy, 3).

During this time the city developed around the abandoned infrastructure as well as at the scale of the automobile - commericial areas developed in long, driveable stretches, with little pedestrian accomodation. A large commercial strip stretches along Dorchester Avenue, an endless stretch of laundromats. convenience stores and restaurants with little connection to the fabric of the community that surrounds it.

1880 Dorchester, Massachusetts Farm Plots in the white spaces are presumed to be residential spaces

2009 Dorchester, Massachusetts very little of the original street grid is preserved. The Peninsula of Harbor Point was added as infill in the early 1900s to prevent its constant flooding.

composite of the 1880 agrarian
an and the present "edge city
evelopment.

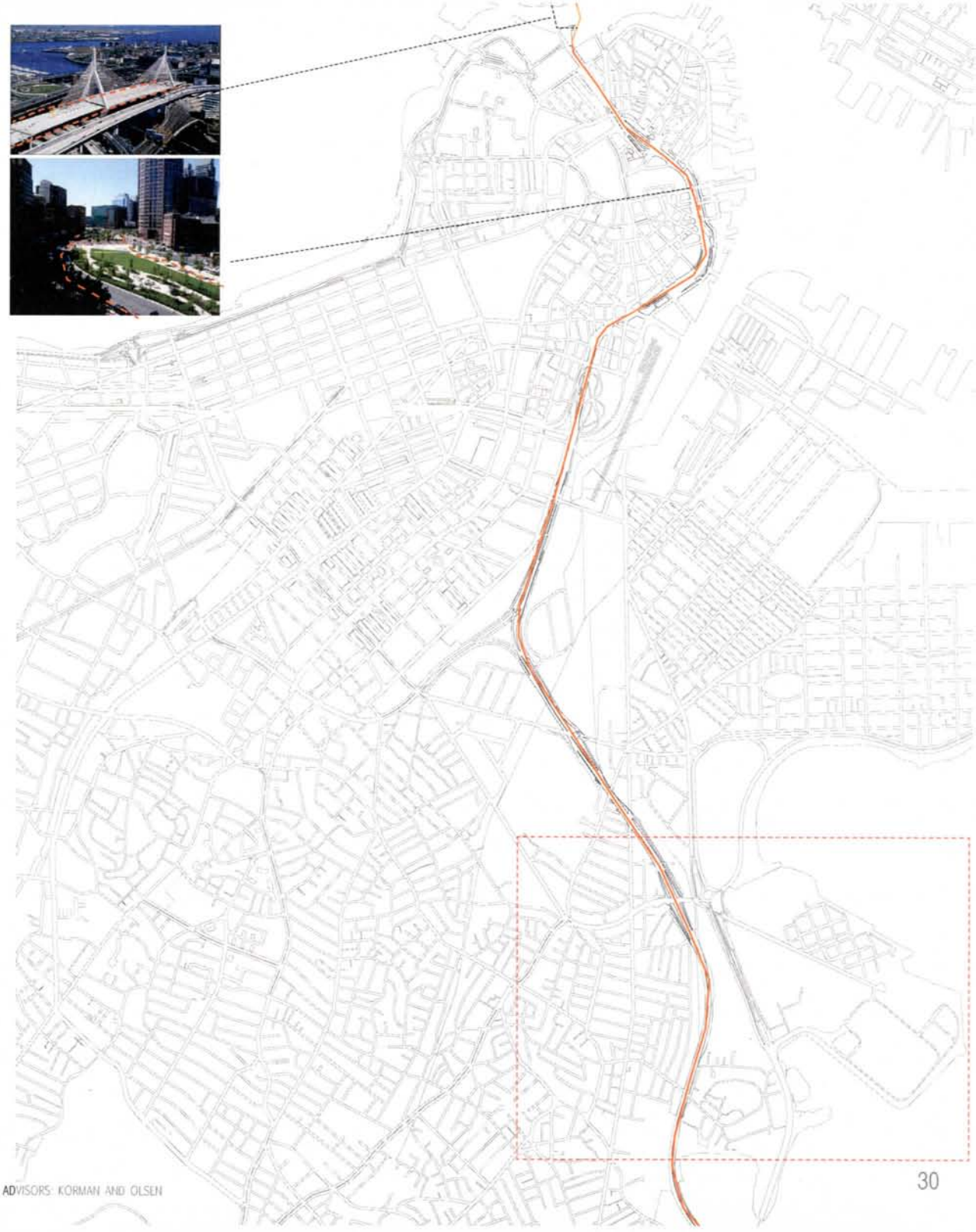


## Southeast Expressway

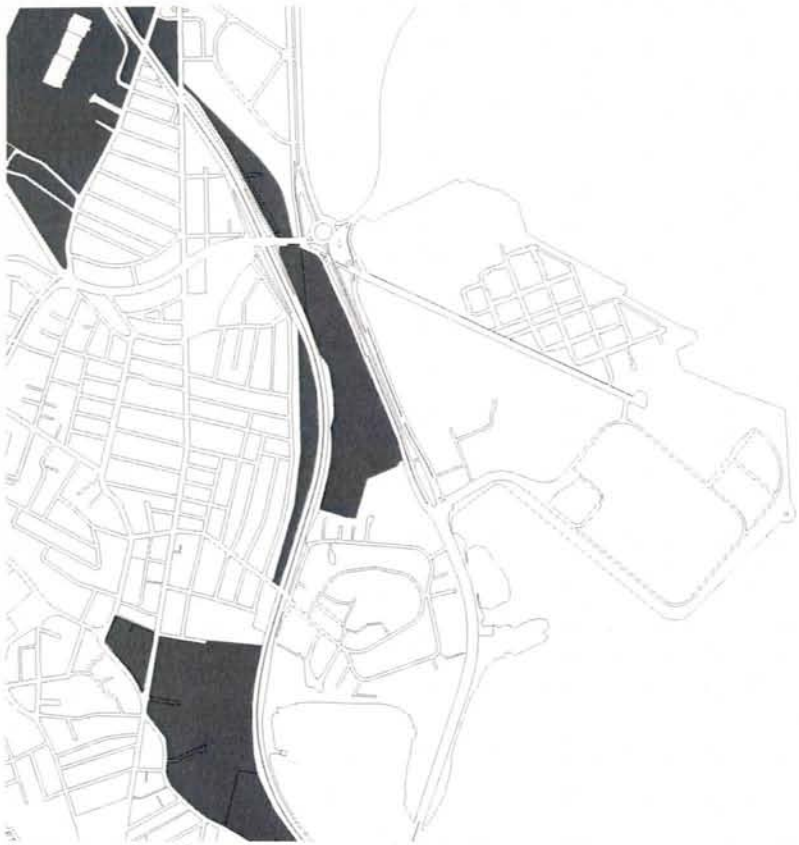
In accordance with President Eisenhower's plans for linking the progress of the U.S. with its infrastructural development, the Southeast Expressway was constructed on the eastern coast of Massachusetts between 1954 and 1959. Its northern terminus begins in St. Johnsbury, Vermont where it connects with I-91, and its southern terminus is in Canton, Massachusetts, where it connects with Interstate 95 and continues south to Providence, Rhode Island and southern New England. It is one of two interstates that enter the heart of downtown Boston directly (the other being I-90), and is considered the Central Artery, or main route into the city from points North and South. The Expressway has a diverse path as a part of the infamous Big Dig project that submerged it under the North End of Boston in order to put a green park in its place. Its prescense has significantly effected the growth of the communties through which it passes, Dorchester, Massachusetts, being one of these (Rose, 3).





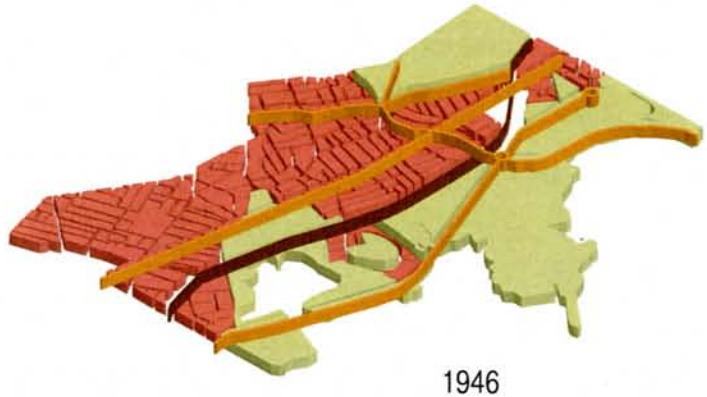


# Effects



As opposed to the green spaces that dominated the river front the highway has created several the development of industrial "waste spaces" due mostly to the fact that the infrastructure makes these areas inexcessible to pedestrians and creates large areas of inhospitable space. The diagrams to the right show the development of site as the scale of the infrastructure grows.

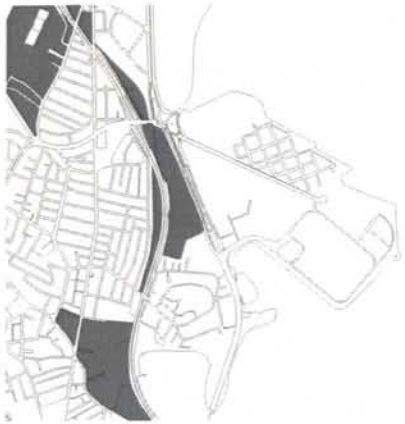

1880



1946

2009

# Junkspace



These places created by the infrastructure in Dorchester, Massachusetts are referred to by Rem Koolhaas as Junkspace. He writes Koolhaas writes,

"'Identity' is the new junk food for the dispossesed, globalizaton's fodder for the disenfranchised space-junk is the human debris that litters the universe, Junk-Space is the mankind leaves on the planet....Junkspace is what remains after modernization has run its course, or, more precisely, what coagulates while modernization is in progress, its fallout." (Koolhaas, 283)

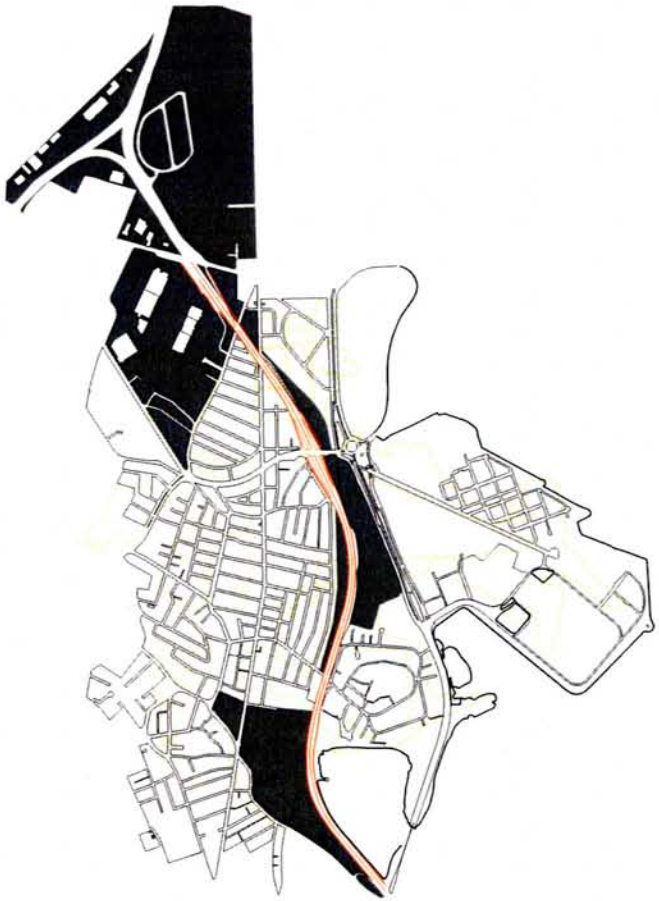
He talks about these types of spaces as being devoid of hierarchy. The "junkspace" between infrastructure they just accumulates in the area haphazardly, as more and more space becomes uninhabitable due to the problems that the infrastructure causes. The "space itself is invisible" because of the obsessive creation of things that do not contribute to spatial hierarchy, such as infrastructures. He discusses the way these "junkspaces" take on a mind of their own. This can be seen in the diagrams on the previous page, where as the infrastructural elements grow, so does the industrial "refuse" around them. The green spaces retreat to the perimeter of the area.

A workshop titled The Space Between was held at the MIT Department of Architecture in the summer of 1992. The purpose behind the workshop was to dissect and investigate the space between objects. The study included the study of existing "in-between" spaces as well as buildings that could produce relevant in-between spaces. In book published as a result of these investigations architect Jan Wampler wrote The Space Between. In this he writes:

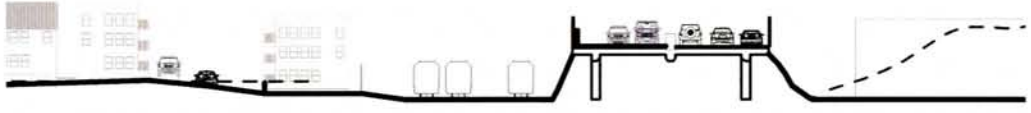
> The space between buildings, what I call 'frozen space,' also is becoming more important as our population increases and resources decrease. We no longer live in a world of unlimited land resources. Buildings without a relationship to the land or each other cannot continue to be the norm (Wampler, 2).

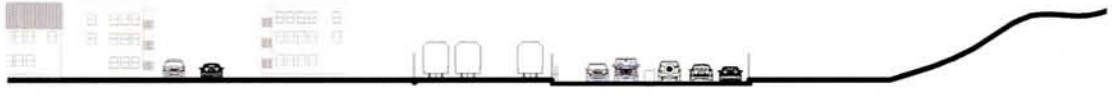
Wampler writes that the cause of these "frozen spaces" is buildings that are designed as autonomous objects, with more concern with being monuments to their owners or architects than with contributing to the public domain. He writes, "Our neighborhoods have become unhealthy places to live and work,

islands of life isolated in wastelands of space." The savior from these "frozen spaces" is an awareness and incorporation of public space. This problem is most urgent not only in dense city centers but particularly in the urban and suburban neighborhoods where space is becoming more important as densities in these neighborhoods increase. The incorporation of public space and connection to be used as functional passageways in neighborhoods, creating connection to other neighborhoods and to commercial enterprises that will further strengthen the economic resources within a community. A harmony and integration of paths and places is key to creating these places



# Sections




Legend
1 Family Residential
2 Family Residential
3 Family Residential
Apartments/Condos
Mixed Use (Res./Comm.)
Commercial
Institutional
Industrial
Open Space
Surface Parking
Main Streets District
MBTA Stations
MBTA Surface Subway Lines
MBTA Underground Subway Lines
Commuter Rail
Below Ground Commuter Rail
Water Transit Facilities
Water Transit Routes
Bus Routes
0
250
500
feet


1.
2.
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1.

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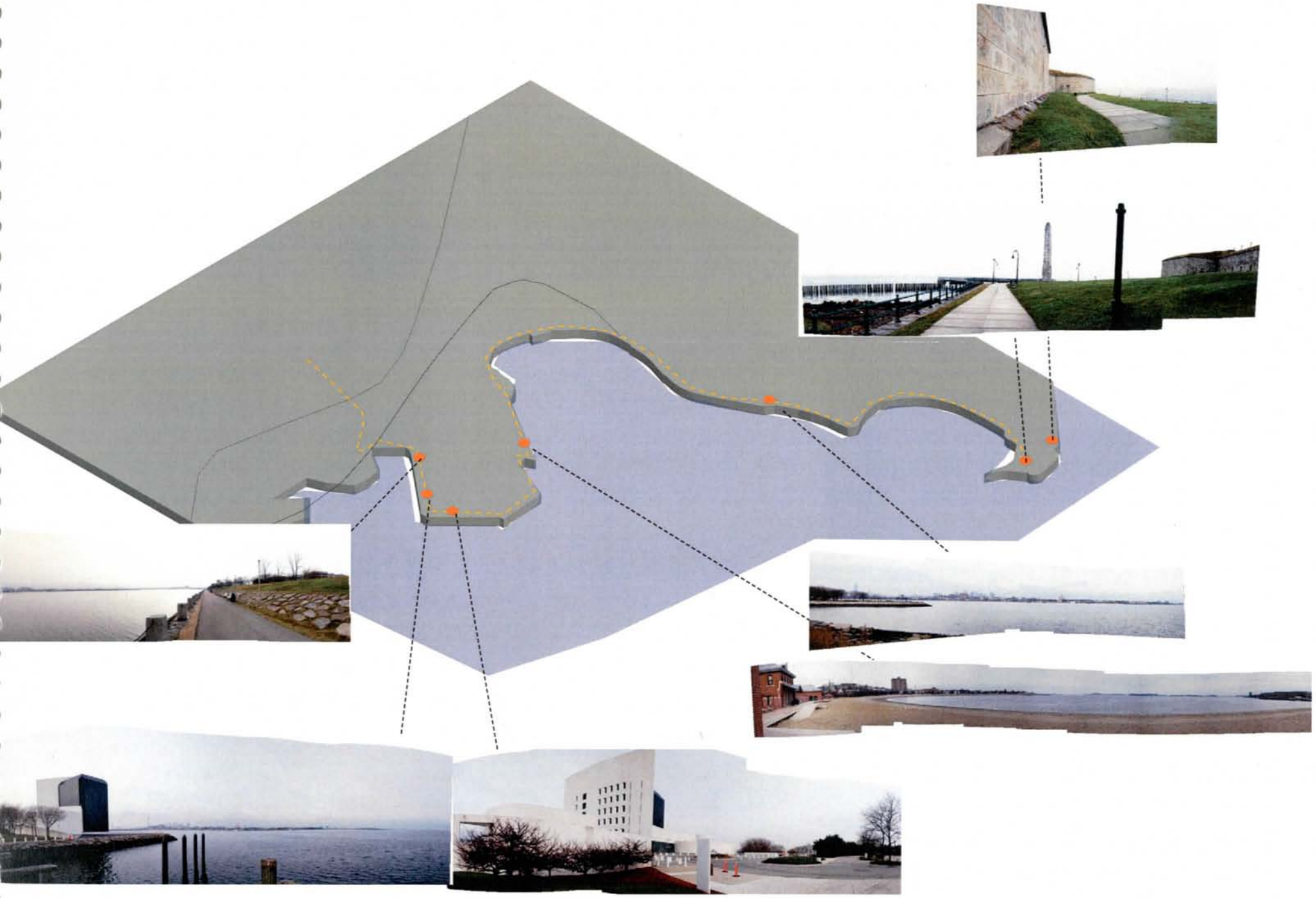
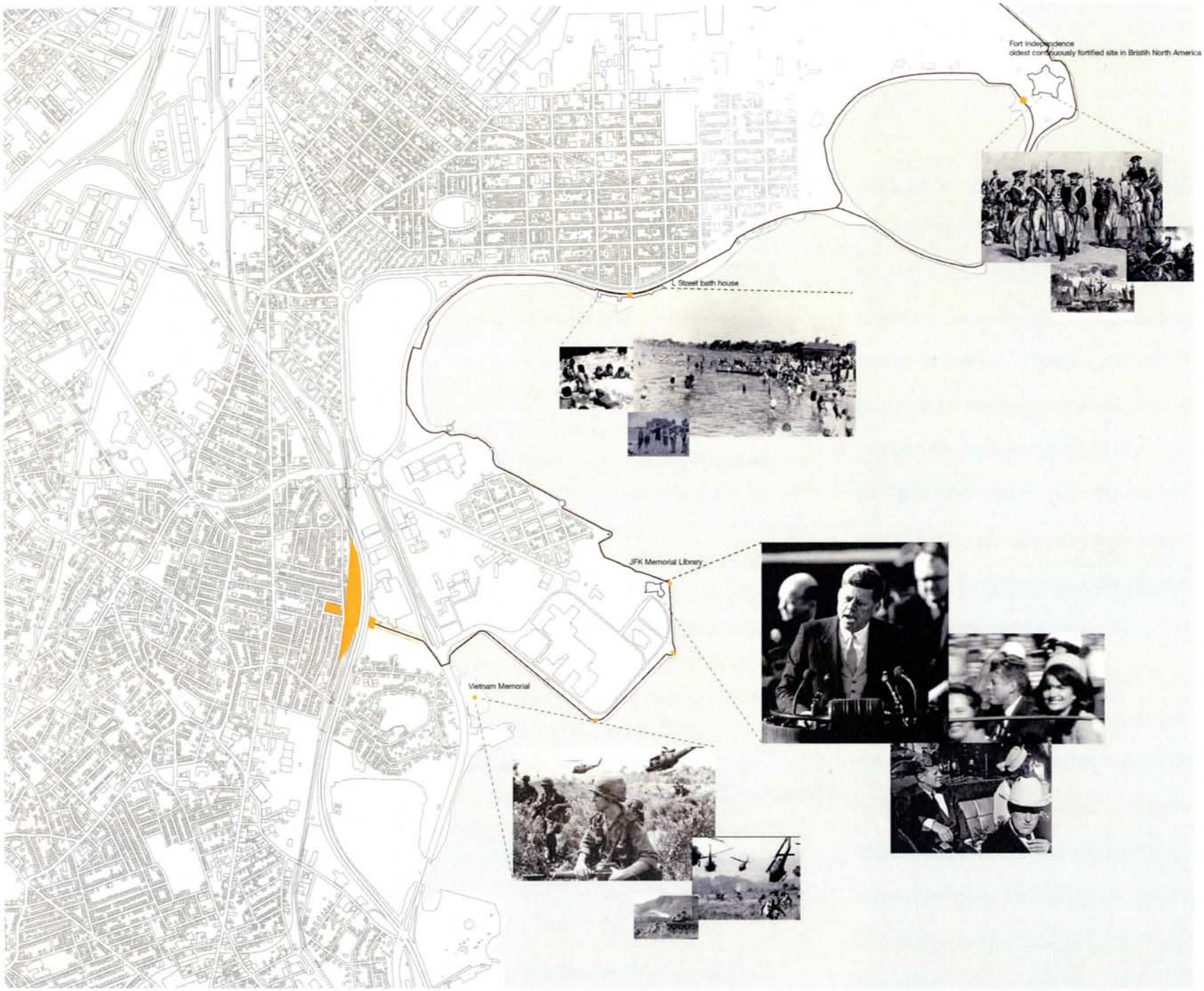



Fort Independence
oldest continuously fortified site in Bristih North America
L Street bath house
JFK Memorial Library
Vietnam Memorial

In the essay on Paths: The Nature of Linear Public Space—a piece from Portfolio: The Space Between, a publication of the magazine Places—author Lisa R. Findley discusses the idea of the path in architectural space. She writes:

> When we move from one place to another we do so along a path. In this sense a path is simply a route that we follow whatever its visual, kinesthetic or psychological character. However a "path" as either an idea or a physical space, can be a profound expericence of movement and place. Paths are full of deep mythological potential of seeking, adventure and transformation. Some paths are processional, leading to important civic or sacred destinations. Some are circumstantial, casually providing passage between two places. Still others are conceptual, drawing the mind where the body cannot go.
>
> Paths provide an opportunity in our destination-oriented world to engage our bodies and minds in the space between—both space between the edges of the path itself (2).

She describes the relationship in the hierarchy of paths, as is essential to the basic development of a train station. There is a relationship between the beginning of the path and the end. While one end of the path might be considered the entry point, anchor or origin, and the other the sacred destination. However, the path could also be between two relatively hierarchically equal parts, as in the connection between two public spaces in a city. This type of connection then acts as a scale in which the relationship between the spaces is then brought into play because of their connection to each other. Because of the path they are no longer seen as disparate pieces but as pieces of a whole.

Findley goes on to discuss the paths most of us encounter everyday: the undersigned path. The streets and sidewalks city residents travel everyday that are not arranged by hierarchy but by "event-filled" spaces that are occupied by "cafes, homeless people, newsstands, and mailboxes and are interrupted by the frequent streets that cut perpendicular across it." Even more devoid of design are the paths that modern commuters take from the car, across pavement to an office

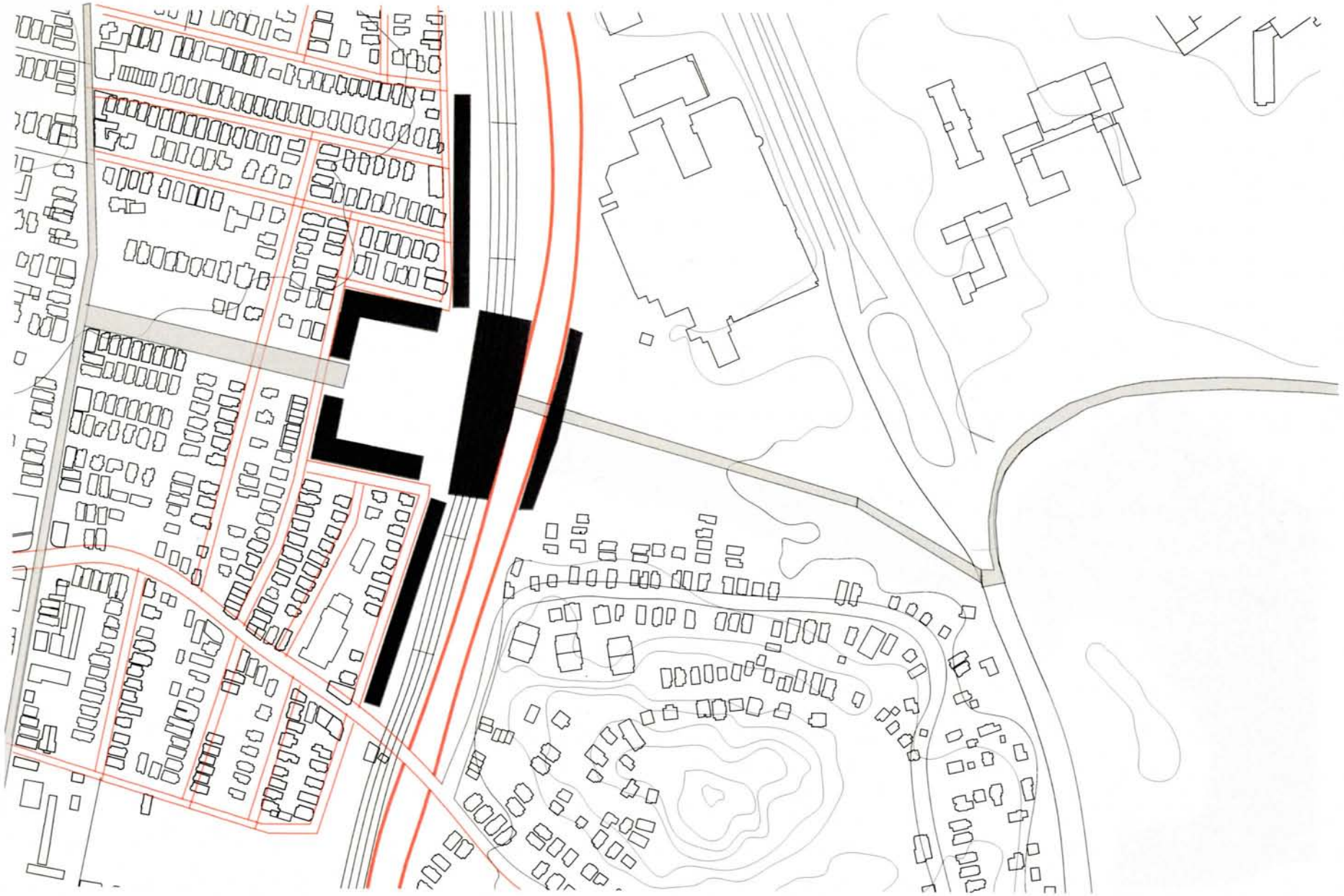
park or place of work. Findley's argument is that the paths of our daily lives, such as those found on the site in Dorchester, Massachusetts (EXPAND) are often disappointing, especially when compared to the richly designed and textured paths such as can be found in sacred places. Engagement and interaction are key elements to the well-designed path. The paths of our daily lives should be thought in context of the "space in-between".

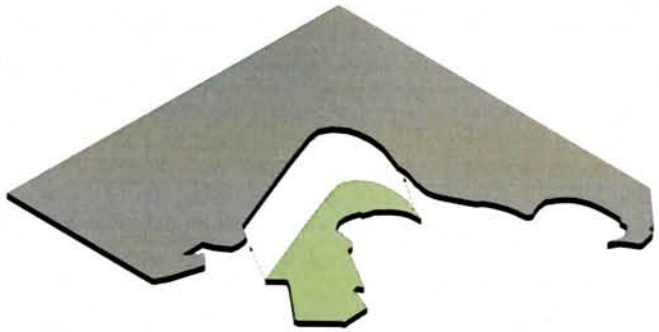
Another component of the path as it relates to railway stations is the gateway. The station becomes the gateway into the city in which it is located. City officials often expedite funds in order to make the best face to the people that come through the station because it in turn represents their businesses and investments. Findley describes the gate in its relation to the path. She says that in the history of the traditional path, gates are perpendicular to the path, and mark the beginning and end of a path segment. They present us with a depth to penetrate and "mark entry into another realm". They designate the path as a world or space within itself.

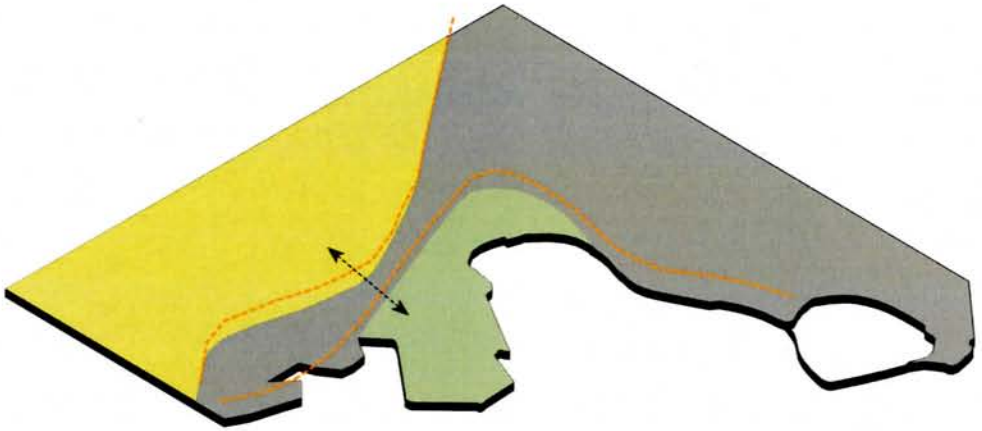
## Original Site Conditions

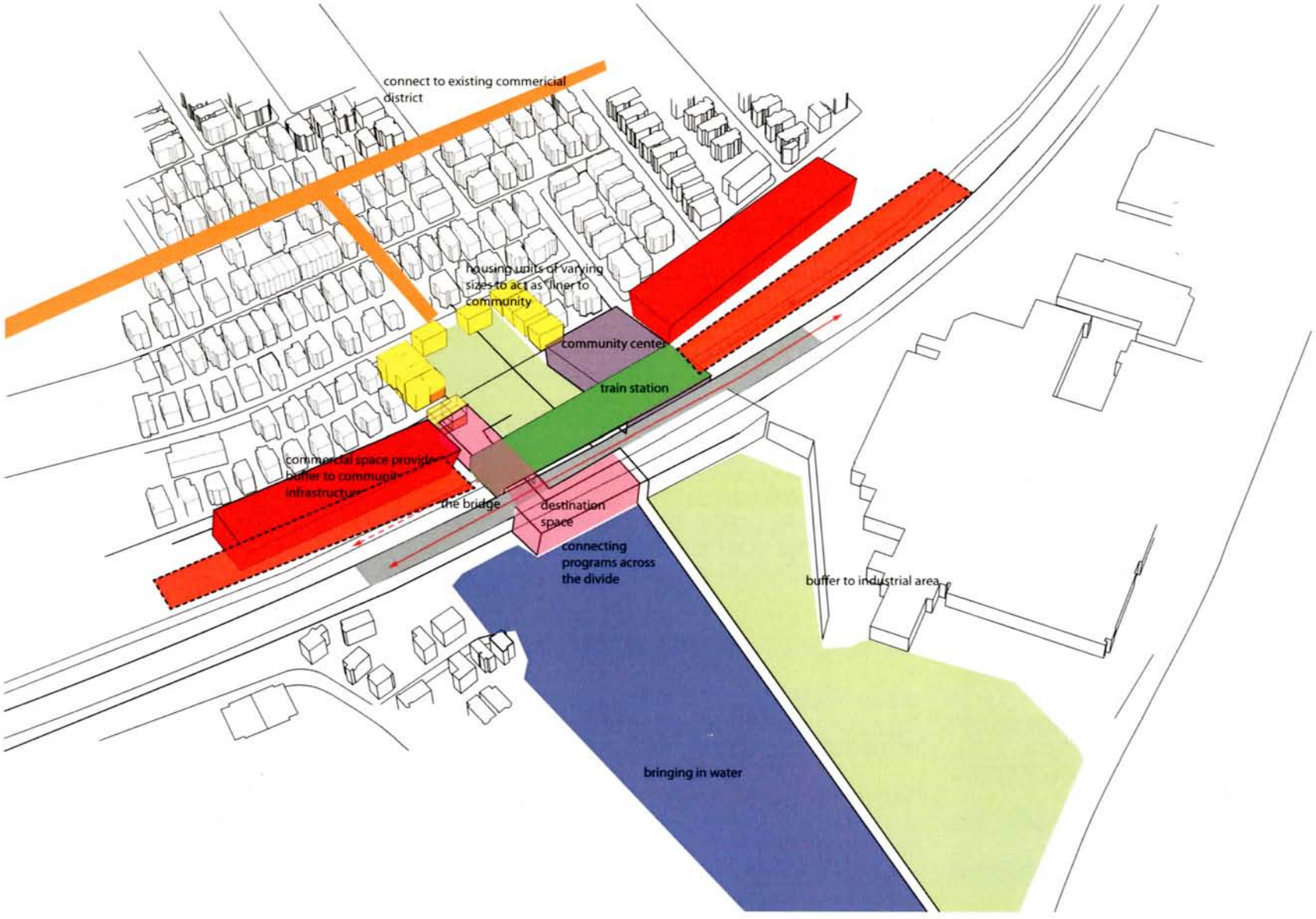



5 and 10 min walk diagram








connect to existing commericial district
housing units of varying sizes to act as "liner to community
community center
train station
commercial space provide buffer to commuter infrastructure
the bridge
destination space
connecting programs across the divide
buffer to industrial area
bringing in water

# PART 4: Program

The program that I want to incorporate in this area is what landscape urbanist Alex Wall refers to as a city or urban implant.

As quoted in the abstract:

*"The City Implant is an urban design project that can be used to strengthen an existing center or create a new one. It is a spatial and programmatic upgrade that gives an area the status of a center or increases the density of an existing center. Rather than intervening in undeveloped land, a City Implant should be a transformer of empty land and even under-exploited traffic junctions. A City Implant should describe the quality of centrality itself"* (Wall, 311).

The site in Dorchester, Massachusetts is a node of commerce, transportation, entertainment, history and higher education. While it is currently pieced and divided by the highway infrastructure there is potential in its "edge-citiness". The location of UMASS Boston, a commuter state college, the JFK Memorial Library, an exposition center, and a large permanent population, mades the site a node of different user groups from temporary, seasonal, permanent to occasional.

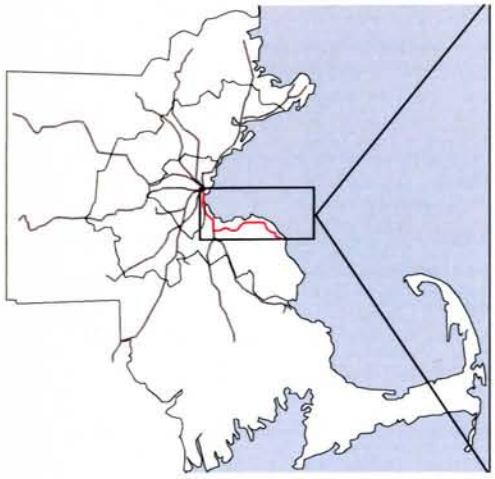
The idea of the urban implant is to bring a sense of center to the area, by introducing density and a collective space for gathering, connecting the community to the waterfront of Harbor Point and, more immediately the park on the otherside of the highway.

Steven Holl writes,

"On the fringe of the modern city, displaced fragments sprout without intrinsic relationship to existing organization, other than that of the camber and loops of the curvilinear freeway. Here the "thrown away" spreads itself outward like the nodal lines of a stone tossed into a pond. The edge of a city is a philosophical region, where city and natural landscape overlap, existing without choice or expectation (Holl, 43)."

He then goes on to discuss that in these areas the way integrating the little green space that is often disconnected from the urban fabric is a way to revitalize the area. In my scheme, I want to reintegrate the greenpath of the Harbor Point area, and extend the reach of the tidal waters on the far side of the highway. I want to play with the intersection of infrastructure and landscape.

The train, in my scheme, is the keystone program that will reintegrate urban sequence and a sense of identity in the



environment. For instance, in Calatrava's Zurich Station, he distinguishes the different functions of the building through changes in the elaboration of his expressive structure.

There is a relationship between pathway—non-destination space, and permanent space which speaks to a larger situation located on my site. (Diagram of relationship of temporary and permanent users and train map) (catalog relationship in precedents) Dorchester, Massachusetts is the location of a variety of user groups- the permanent residents of the area, the semi-permanent students who live in the area and attend school at the University campus located nearby, the daily commuters who go to the school, and the fluctuating destination visitors to the attractions located in Dorchester, such as the JFK Memorial Library and the Bayside Exposition Center, a community performance and meeting venue. These fluctuating groups are represented in the train station program.

Making railways part of the fabric of the cities, not appendages at the edge, gathering places, urban gateways,

The relationship between context and train station, and

area. represents movement and mobility. The infrastructure of the mass transit supports development and growth in the area in which they go because of the increased accessibility and the more guaranteed constituency of large quantites of people. Thus, many of the communities that emerged around the train station, are poorer communities. Common Ground busing Dorchester and south boston

Infrastructure is described as the underlying framework as of a system or organization. The system of public works of a country or state or region also the resources required for an activity. I contend that this infrastructure has become obsolete in many parts of the United States.

Infrastructures are the one type of building we all agree upon being truly public—common and shared....They also re-unite, with large infrastructural figures, the currently fragmented post-urban terrain (51).

As commercial pressures and city needs require, train station becomes more than a place to get on a train, more than a filter of people looking for another destination. They become city centers and expand to broader characteristics of a city. Important too is the mediation between context and the train station. Also integral to the idea of the train station, is the relationship of the train station to public space, and the way in which the public space becomes an integral part of the existing context, and/or creates a framework for future generation and growth within the city. The programs within the train station separate themselves from the needs of the journey traveled and thus become nested with the context of the city itself.

In areas prevalent in the United States, such as at my site, the station has the potential to become a mediation between inhospitable infrastructure and the context. In Dorchester, Massachusetts, as well as several locations across the nation, the opportunity becomes the ability to link disassociated parts of the site that the infrastructure that has supported the train has divided. One of the important distinctions in the creation of a train station is zonal division of landside versus trackside

thus the infrastructure and train station becomes complicated as one moves away from major metropolitan areas and areas without distinctive civic centers. Suburbs, particularly are often lack identity and significant public space, and the infrastructure that supports the train becomes out of scale with the architecture that surrounds it. It is often no longer integrated with the fabric of the place. While Dorchester, is not a suburb but has urban density and activity, it is what Joel Garreau refers to as an "edge city". A place without center, to define its growth, but a place that is has developed as overflow from civic activity and centrality of the major city near which it is located. In these environments, the relationship between pathway and destination programs becomes more complex. Railway stations become more "the station has to address the symmetry of the division imposed by railway tracks and the asymmetry of the function of a station."

The idea of asymmetry within the train station means the unbalanced mediation between scales such as that of pedestrian movement and the speed of trains. Also there is a balance in hierarchies of organization—the uninterrupted flow of passengers from car park to ticket office to platform, for instance and then the connection from parts of the town divided by the rail lines. Thus the idea of connection and bridges and tunnels becomes essential, and thus the idea of the train station becomes the play between path and destination.

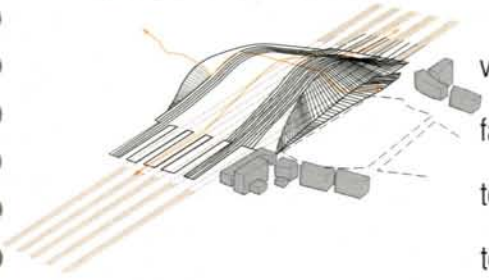
## TRAIN AS PUBLIC MEDIATOR STITCHING TOGETHER TRAVEL SPACE AND PERMANENT SPACE

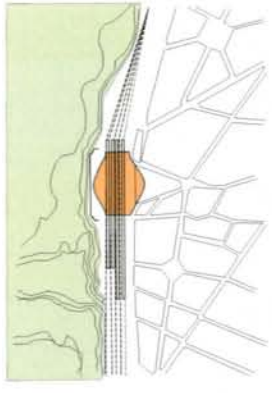
Within the past century travel infrastructure carried an increased burden. Fast efficient travel, once a luxury has become a necessity, an essential component of survival in the modern age. Larger distances traveled in smaller amounts of time has made transportation infrastructure a more and more vital part of the survival of our cities and towns

An example of this adaptation to demands on increased needs for transportation is the reconstruction of the main station in Stuttgart, Germany. With increased travel needs, Germany began an implementation of new high speed trains that would

require complete reconstruction of the existing infrastructure and existing stations. With these new infrastructural requirements the Stuttgart Station was transformed from a terminus or end of the line station into a through station (Glossary Through Station Terminus Station). In order to allow the new high-speed departing trains to attain higher velocities immediately after leaving the station. Part of the intervention included the burying of the tracks in order to free up space for development of significant public programming required for the new nodal point in the city. The winning proposal for the new station was designed by architects Ingenhoven, Overdiek, Kahlen and Partners. The design was chosen for its integration of monumental public programming and the creation of a landmark that responds to the existing station buildings and the surrounding context. The importance in the concept is that it responds to the future requirements of mobility as well as "not just blind faith in the future, but merging new achievements with old ones. The new station does not claim to mimic the old monumental one; its language of expression tries not to overwhelm, while using an entirely new vocabulary." The replacing the old programs as required by the high speed trains that are now traveling one hundred kilometers per hour as opposed to the previous forty, are the train shed (along with the high performance tracks) and platforms. These are submerged below grade and are covered with a concrete shell roof that becomes the generator for the project. The roof becomes a multivalient surface that is inhabitable and is a monumental public square. It is punctured by conical holes that allow light to penetrate into the submerge train shed.

Li□ge-Guillemins Station, Li□ge, Belgium is an example of a station that is a mediator in a divided context. The site is on the border between a hillside village and the retail and commercial district of Li□ge. The roof becomes a visual and symbolic bridge. It responds to and continues the topographic curve of the site on the one side, contains the train shed and then opens up again to a public square on the other end, nesting itself in the constructed context. It is curved in two directions allowing for the double





mediation between the hillside and the civic center as well as between the station and the expanse of rail infrastructure that continues out into the landscape.

Railines connect city center to city center, thus it is of vital importance for the rail line to become integrated with the city fabric, especially that which makes up a city's core. It is integral to connect the railway station into the core of the city, as opposed to being an appendage on the edge. Railways feed an economic resource into a city's business district and this flow must be smooth and seamless in order for it to be of value. In response to this issue, it is important that the train station integrate the programs of gateway, pathway and permanent collective space. The roof is an occupiable mediating surface.

The roof structure is a vital element in the development of the train station. It can be used in various practical and symbolic ways. As discussed above, in Calatrava□s Li□ge-Guillemins Station as well as the addition to the Stuttgart Station in Germany, it is used as a mediating device between the existing context and that of the

The mediating piece is the essential component of a train station that makes it an essential part in the civic workings of a town or city. This mediating piece in contemporary American neighborhoods is public programming, public space. When working within existing neighborhoods like that of Dorchester, Massachusetts where the infrastructure has created pedestrian barriers and the two existing train stations are not significant public spaces, but are covered platforms locked in in-between "no-mans-land" between highways and train tracks.

## Current Need

Boston and the Eastern coast of Massachusetts has the oldest rail system in the country. 1997 saw the reinstatement of the Old Colony Rail Line. While interest in rail travel is coming back to the country, it is nowhere near where rail infrastructure is at in European nations. Continued dependence on car travel has obvious and clear negative impacts on the environment, and the first and most important way to spur the use of mass transit is the design of systems to support it. Desirable stations that support the communities in which they are located is a vital step in reinvigorating interest, reestablishing the system, and making it a ominant contender to the luxuries of car travel.

Trains and rail systems are vital for the sustainment of our cities and towns. In the article Federal Organization for the Reactivation and Modernization of Mankind, published in Volume magazine, it is reported that:

> In typical conditions, a train utilizes 50-70% less energy to transport a given amount of freight and passengers. Also, a double-tracked rail line can carry more passengers or freight in a given amount of time than a four-lane road (Unum, 52).

Existing, in-line stations, in particular along the Massachusetts Old Colony Line, are wastelands of undesigned space, often just a platform with roof, or a large box that houses bathrooms, vending machines, ticket offices and some chairs for sitting.

While the U.S. boasts some of the most incredible terminus stations in the world, such as Grand Central Central Station, in New York or Union Station in Washington, D.C., the in-line or through stations are often un-considered or little considered.

European and Middle Eastern In-Line Stations


1


2


3

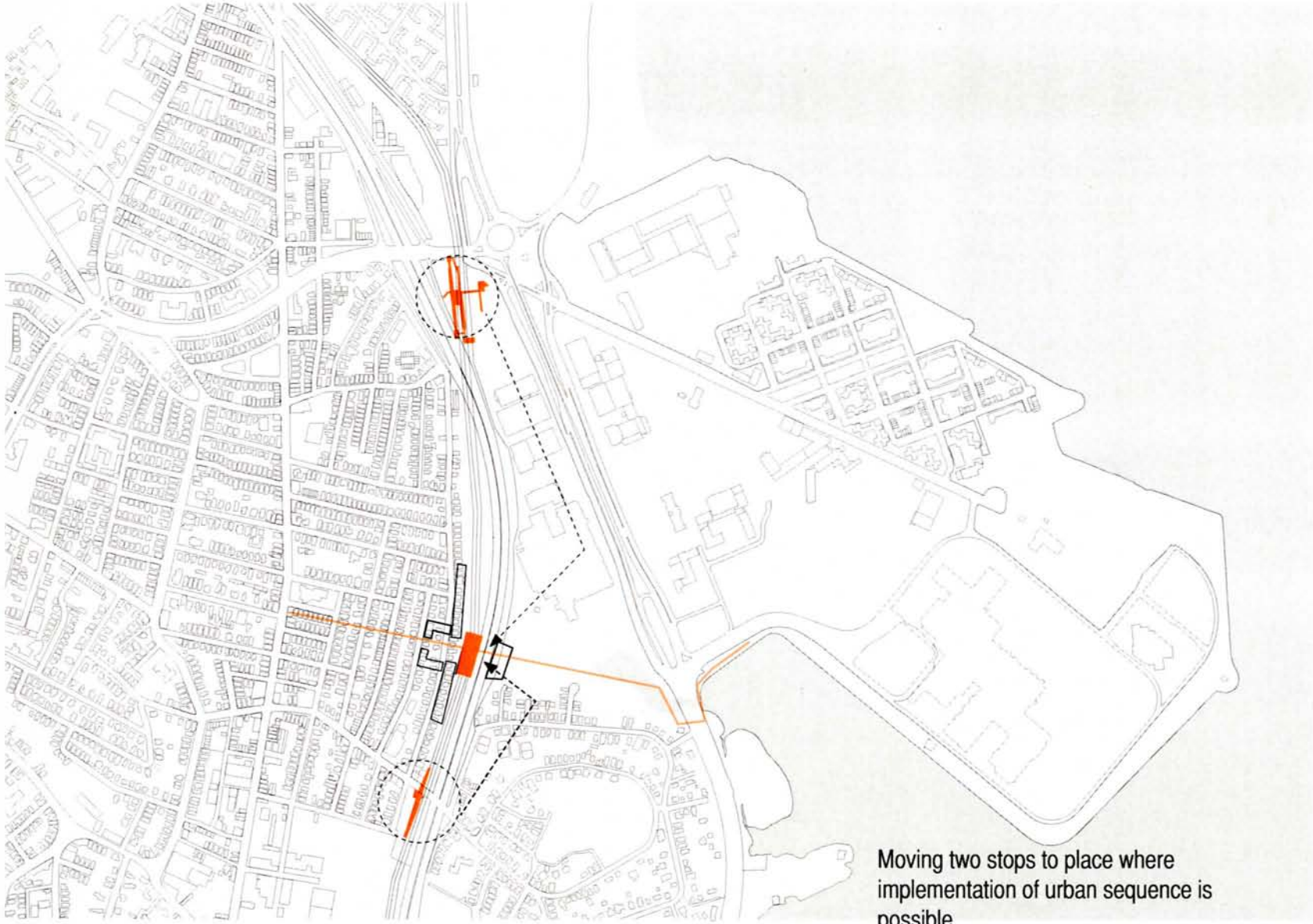
1.Dubai Metro Station
2.Stuttgart
3.Sweden Metro Station
4.JFK/UMass Stop, Massachusetts
5.Campello Station, Massachusetts,
6.JFK/UMass Station Aerial

U.S. In-Line Stations


4


5

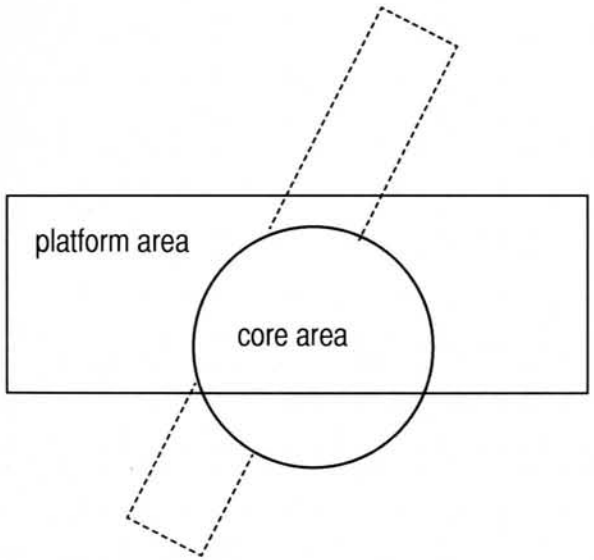

6



Moving two stops to place where implementation of urban sequence is possible

## Program Square Footages

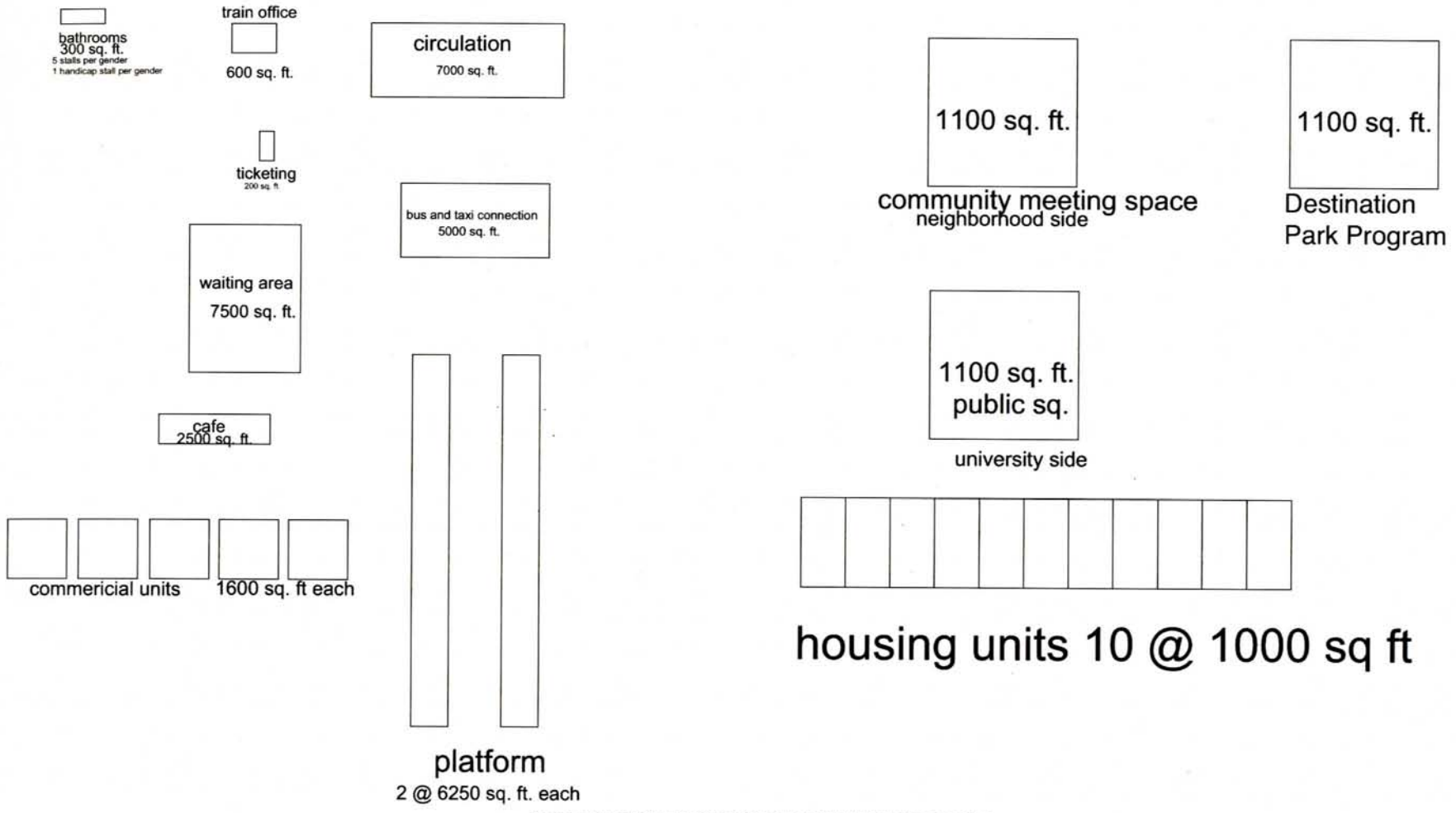
| Function | Area (sq. ft.) |
|---|---|
| *City Implant* | |
| Train Program | |
| Mezzanine | 7500 |
| Platforms | 12500 |
| Waiting | 7500 |
| Ticket | 200 |
| Circulation | 7000 |
| Other Community Programs | 1100 |
| Commercial Units | 1600 each |
| Public Artwork Gallery | 500 |
| Indoor/Outdoor Park Program/ Destination Space | 1100 |
| Minimal Housing Units | 1000 each |



## Program Square Footages continued

Ancillary Space Program

| Function | Location | Required Area (sq. ft) |
|---|---|---|
| *Communications* | | |
| Communication Room | Mezzanine | 800 |
| Public telephone equipment | Mezzanine | 100 |
| Commericial wireless telephone | Mezzanine | 100 |
| **Security and Control** | | |
| Station service center 1 | Mezzanine | 120 |
| Station service center 2 | Mezzanine | 120 |
| Station emergency panel | Mezzanine | 100 |
| *Traction Power* | | |
| Control room (electrical) | Mezzanine | |
| Power room 1 | Mezzanine | 2000 |
| Power room 2 | Mezzanine | 2600 |
| Power room 3 | Mezzanine | 4000 |
| *Plumbing and Fire Protection* | | |
| Pump room | Platform | 240 |
| Sprinkler Valve | Mezzanine | 120 |
| Toilet - unisex | Mezzanine | 2 x 40 |
| Toilet, public - men | Mezzanine | 90 |
| Toilet, public - women | Mezzanine | 90 |



## **Transit Station Areas and Qualities that Make them Successful** (Griffin, 54)

Mixed Use Development
-supports increased densities
-integrates with surrounding development and neighborhood
-incorporates public and civic space
-encourages walking and bicycling
-integrates mutually compatible land uses
-extends hours of activity
-enhances market and financial feasibility
-improves security
-balances ridership

Concentrated Development
-Supports increased densities and commercial traffic
-Consolidates trips
-Makes walking adn biking convenient options
-Allows land uses to support one another
-Enhances the pedestrian environment and increases transit

Complementary Land Uses
-Makes the transit trip more convenient
-Supports financial feasibility
-Promotes day-night activity and increases security
-Makes station area more interesting and lively
-Builds a community focal point through inclusion of civic components

Pleasant Pedestrian Environment
-Makes increased density more acceptable
-Encourage street activity and walking
-Ranks pedestrians over autos
-Includes sidewalks, paths, trees, benches, lighting and usable public open space
-Enhances flow toward transit
-Provides a safe and secure environment
-Supports mixed use development

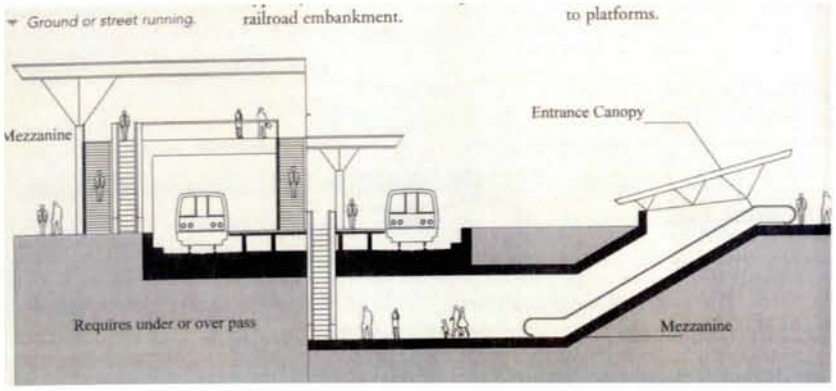
Pleasant Bicycle Environment
-Promotes an alternative to driving
-Helps achieve concentrated development
-Makes bicycling easy
-Provides a low-cost, nonpolluting alernative to auto

Good Station Access by All Modes of Transportation
-Improves transit accessibility and promotes use
-Emphasizes bicycling and walking over auto use
-Efficiently connects the station to surrounding areas
-Provides visual connections to the station
-Increases efficient transportation
-Links uses and activities
-Reduces development and operating costs

On-Street Parking
-Increase the safety of pedestrian sby establishing a buffer between cars and pedstrians
-Provides convenient parking
-Reduces parking lot requirements
-Enhances retail access

Structured Parking
-Decreases the amount of land required for parking, thus increasing concentration
-Makes parking more convenient, closer to the buildings
-Improves the pedestrian environment
-Allows for projec phasing through the conversion of surfaces lots to structured parking

# Possible Station Configurations for At-Grade Commuter Rail (Griffin, 54)




## At-Grade Ground or Street Running

**Design Elements:**

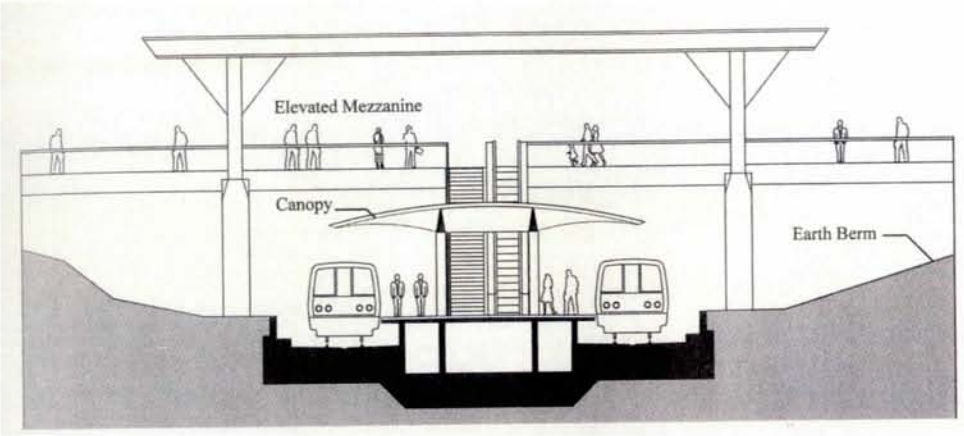
-Not dependent on vertical circulation, provided taht track crossings are permitted
-fare collection and entry at street level or requires mezzanine when track crossing not permitted
-fare collection and entry at street level or requites mezzanine when track crossing is not permitted
requires canopy over platform

**Application:**

-Consistent with highway median or railroad right-of-way
-requires pedestrian bridge or tunnel
-works best in low-volume passenger systems where track crossing is permitted

**Architectural Implications:**

-canopy and wind shelters help define form and image of station
-requires
passenger protection against vehicles and noise when running in a highway median




## Open Cut

**Design Elements**

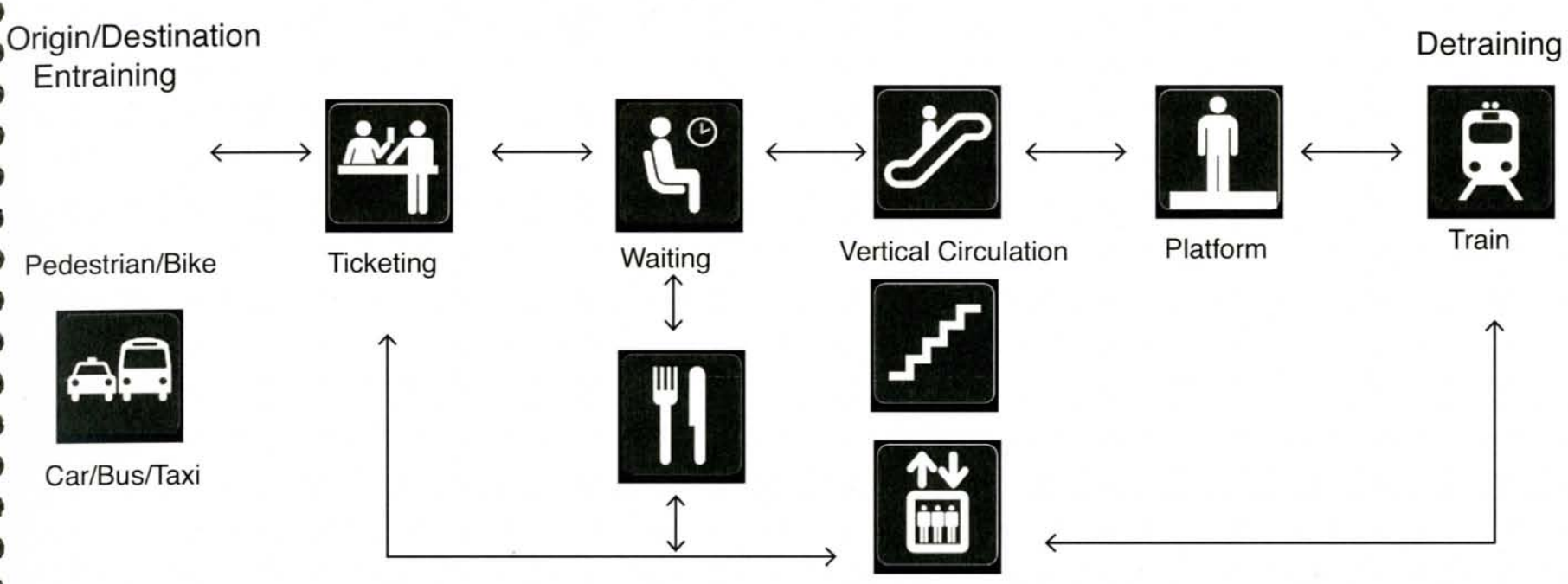
-Dependent on vertical circulation unless grade change permits ramp access to platforms
-Fare collection and entry at street level or mezzanine above platform
-Requires canopy over platform

**Application**

-Less costly than underground configurations
-Inappropriate for urban running (unless within existing right-of-way) because of large amount of land required and negative effect it create with the depressed setting

**Architectural Implications**

-Less conspicuous than at-grade or aerial structure
-sloped berm presents an opportunity for wall treatment or landscaped surfaces
-maintains a sense of openness, natural lighting, and implied feeling of security




**Efficient Passenger Movement (Griffin, 83):**

-Natural Orientation to the surrounding area
-Design of vertical circulation elements to meet demand and maintenance requirements
-Adequate queuing in front of all vertical circulation elements (stairs, elevators, escalators)
-No overlap of queues
-No reverse changes in direction whenever possible
-No cross flows
-An orderly hierarchy of decision points, so that procedures needed to be followed when using the station, such as purchasing a ticket or reaching the correct platform are readily apparent

# PART 4:
# Precedents

"Infrastructures are the one type of building we all agree upon being truly public—common and shared....They also re-unite, with large infrastructural figures, the currently fragmented post-urban terrain." (Unum,51)

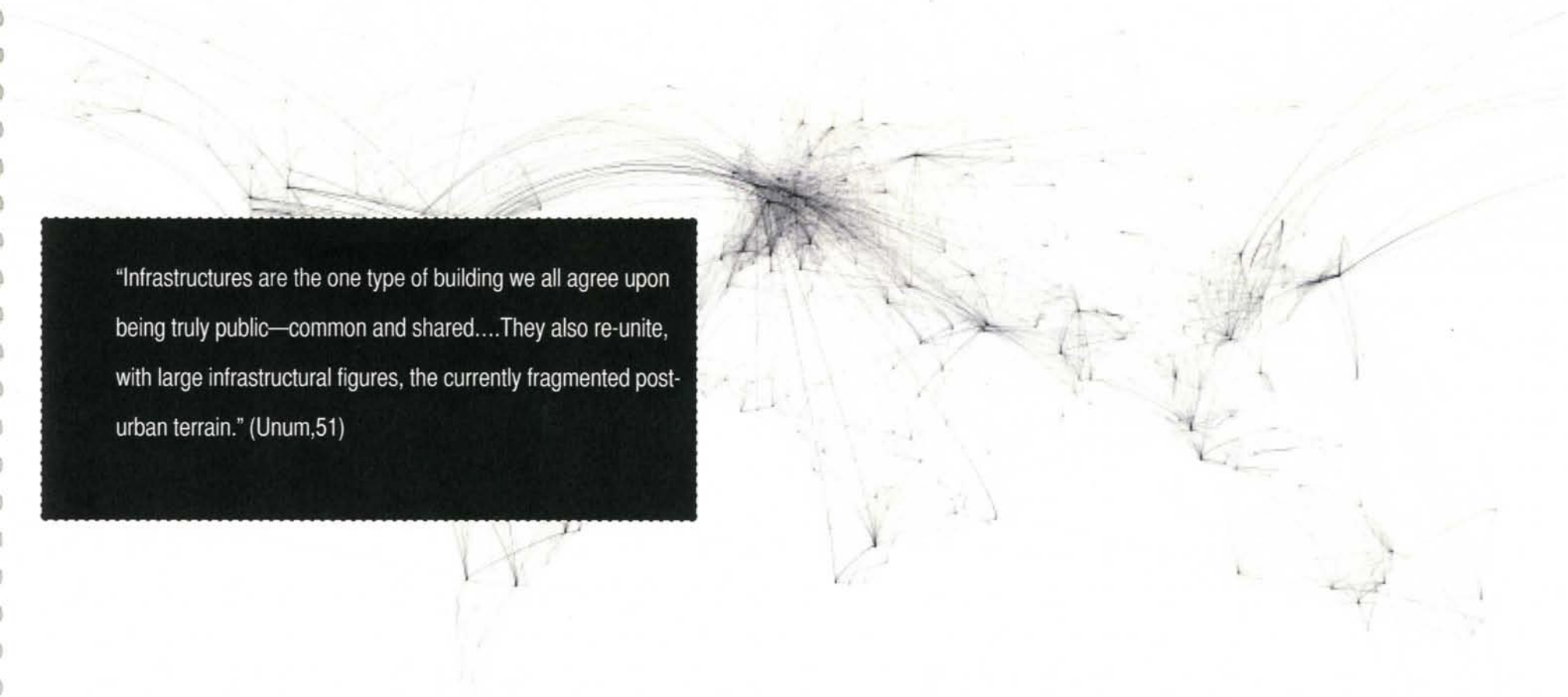


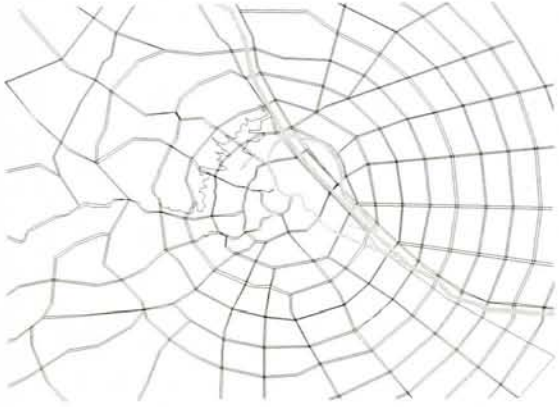
Image from (Lima, 1)

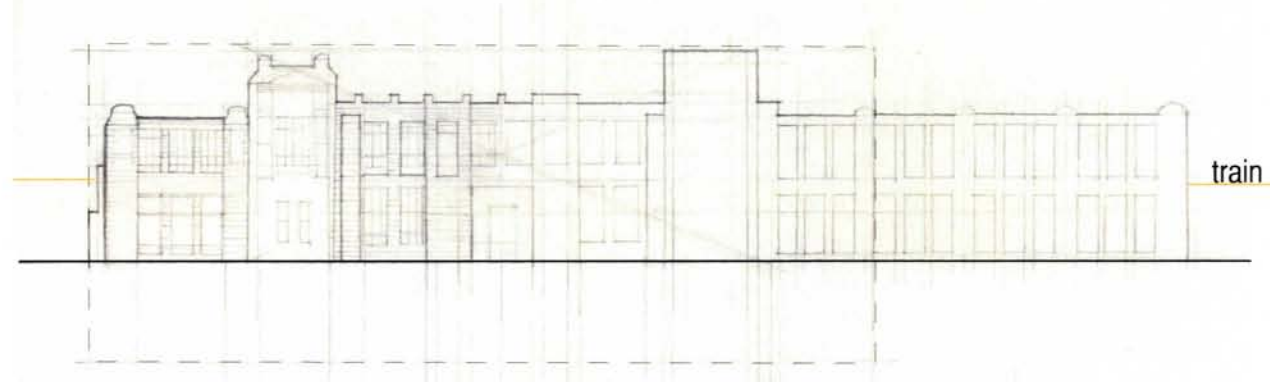
## Site Precedent I-195 Rhode Island- IWAY Project


I-195 essentially cuts the India Park neighborhood of Rhode Island off from the waterfront. In order to combat this, city planners focused on the space directly adjacent to the highway. Lot sizes are planned to be made smaller, lined with trees and buffers to the highway. A system of pedestrian bridges and walkways are also planned to give direct access to the pedestrians ("Relocating", 1).

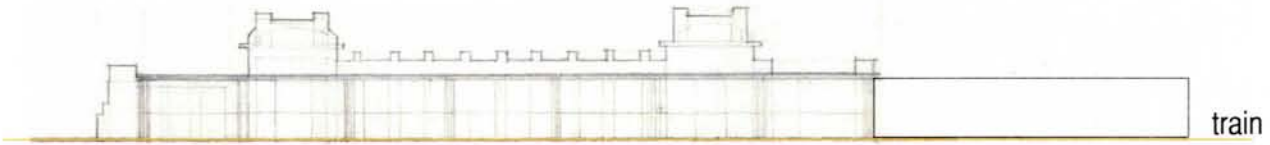
## PROGRAMMATIC PRECEDENTS

### Alser Strasse Station,
### Vienna, Austria
### Otto Wagner

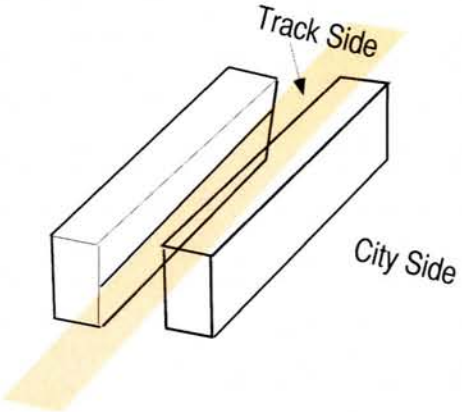




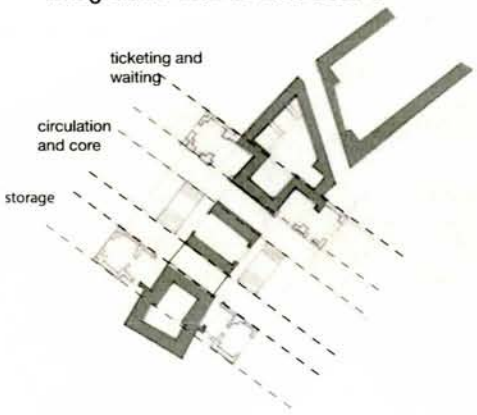

Surface City Side



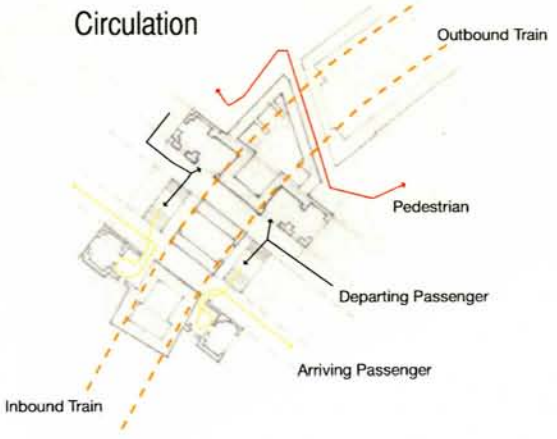

Surface Trackside

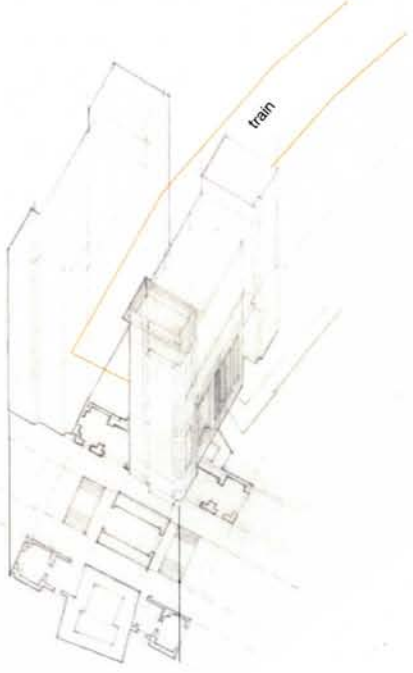


## Integration with Infrastructure

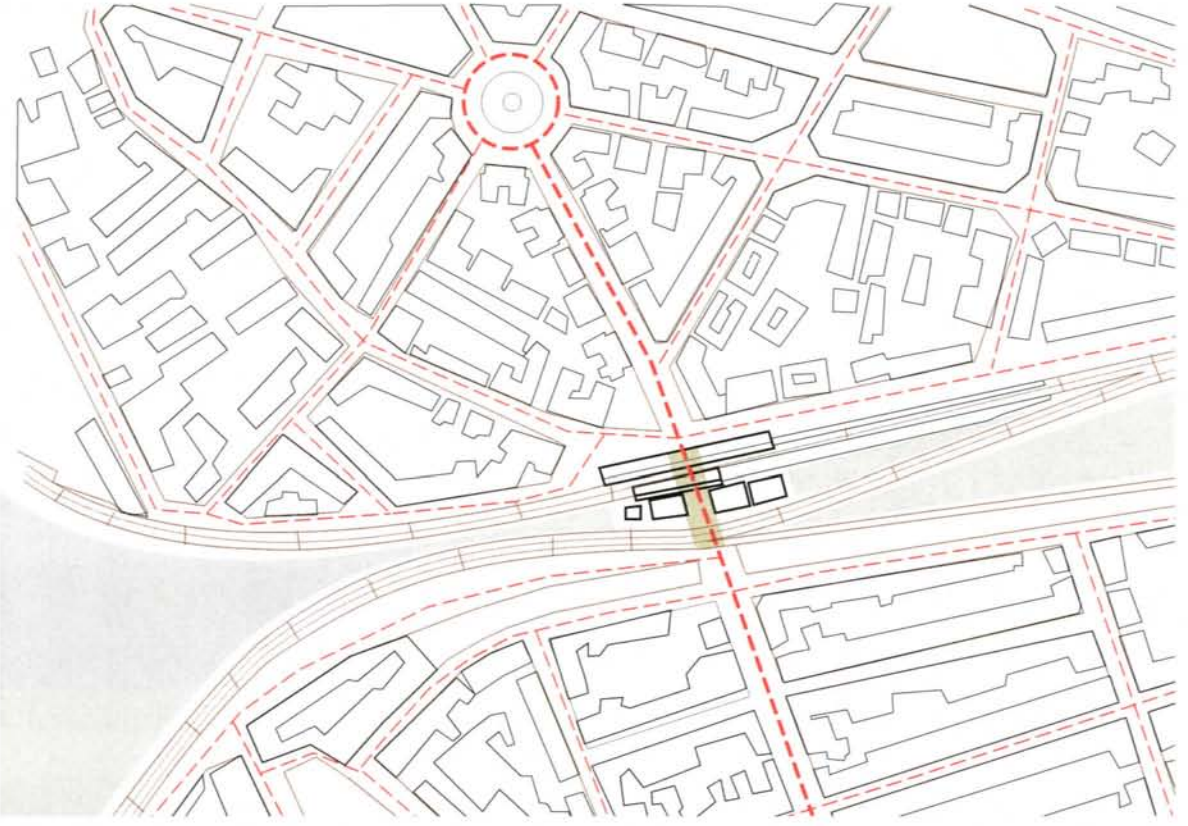



## Circulation



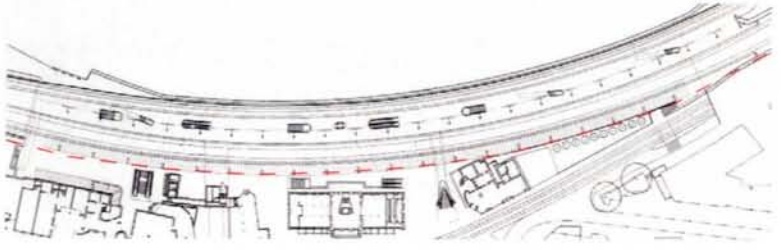
## Statuto Station, Florence, Italy
## station as passageway

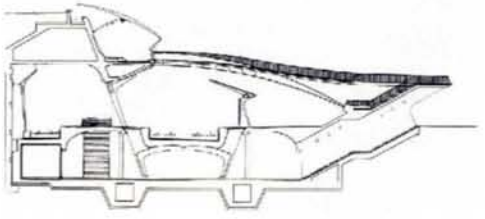


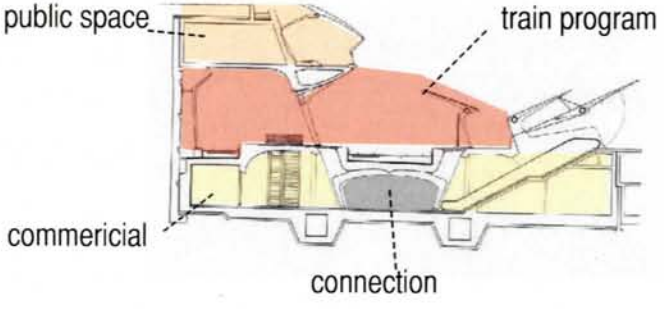
Statuto Station in Florence is a gateway through the train infrastructure that divides the outskirts of the city. The facade of the station acts as a gateway and an interfacing element between the fabric of the city and the edge of the infrastructure.

## Stadelhofen Station, Zurich, Switzerland Calatrava

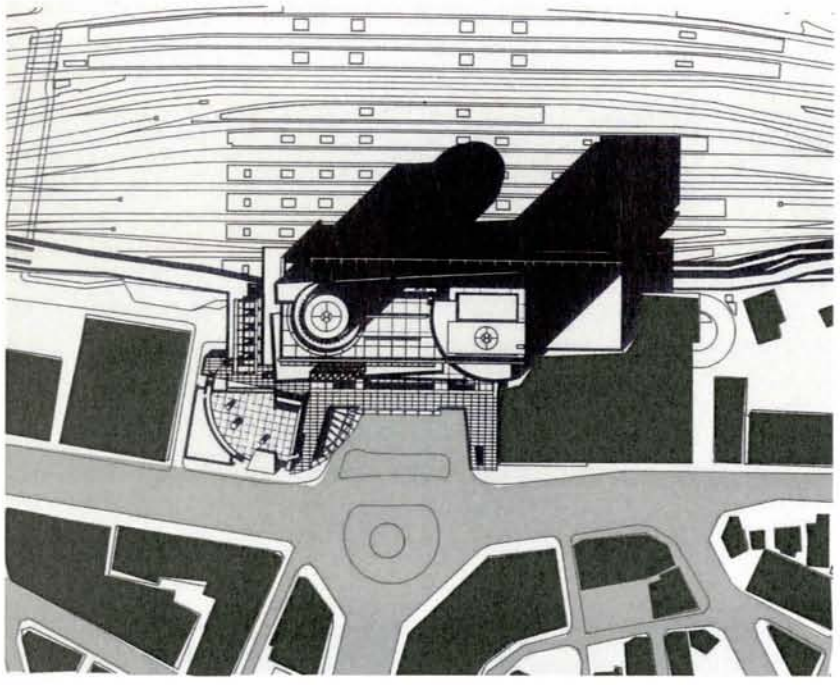
Calatrava's Stadelhofen Station in Zurich combines structural innovation with a concern for urban stitching and connection. The station is an example of manipulation and play with levels and cross-overs. The site is at the fort of the old city, and is located at the bottom of a picturesque hill. Thus, the train station becomes the edge between modern Zurich and the ancient city, nature and city. Calatrava allows one to fully experience that edge. A public walkway and viewing deck are located at the top. This gives views to the park and old city. The platforms and train programs are located in middle. Shops and a connector tunnel are located on the bottom floor.

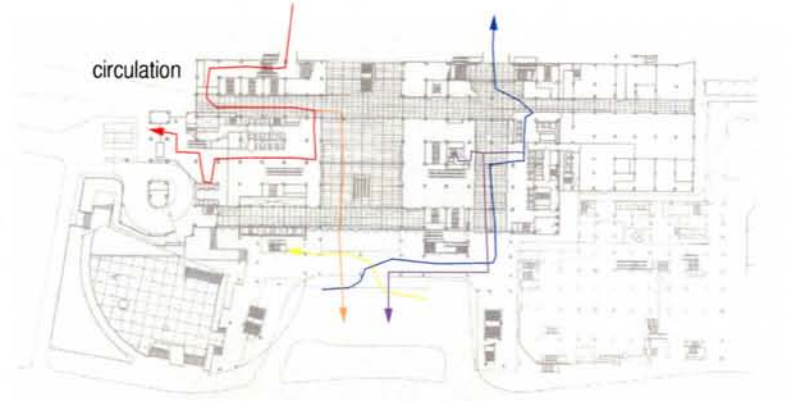






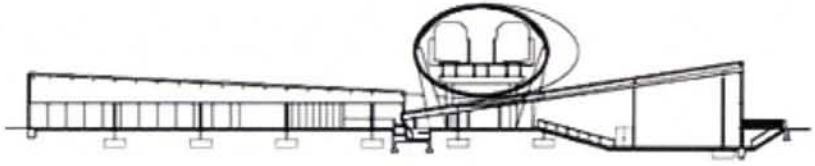
## JR Central
## Nagoya, Japan
## Kohn Pederson and Fox
## STATION AS MALL

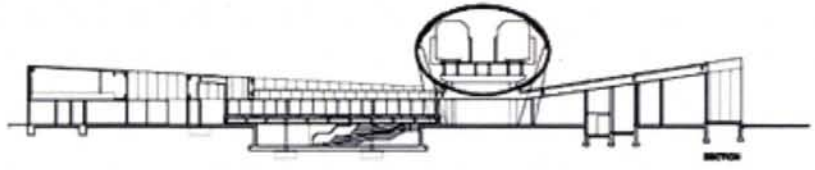


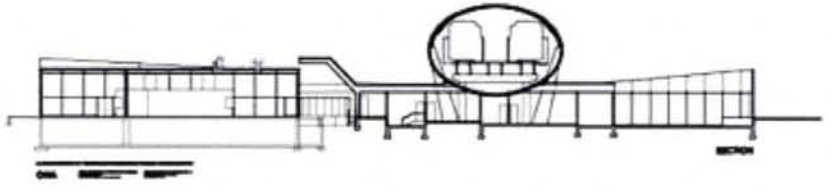




While not at the scale of the project that I am proposing, JR Central Station is an example of train station as public center. The main station terminal is linked with other programs such as hotel, bus terminal entertainment facilities and office buildings. In the low rise landscape of the town it is the city center and nodal point of activity.

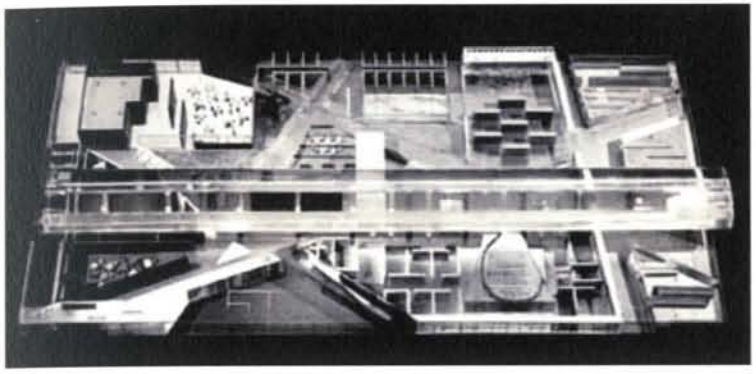
## McCormick Tribune Campus Center
## IIT Campus, Chicago Illinois
## Rem Koolhaas

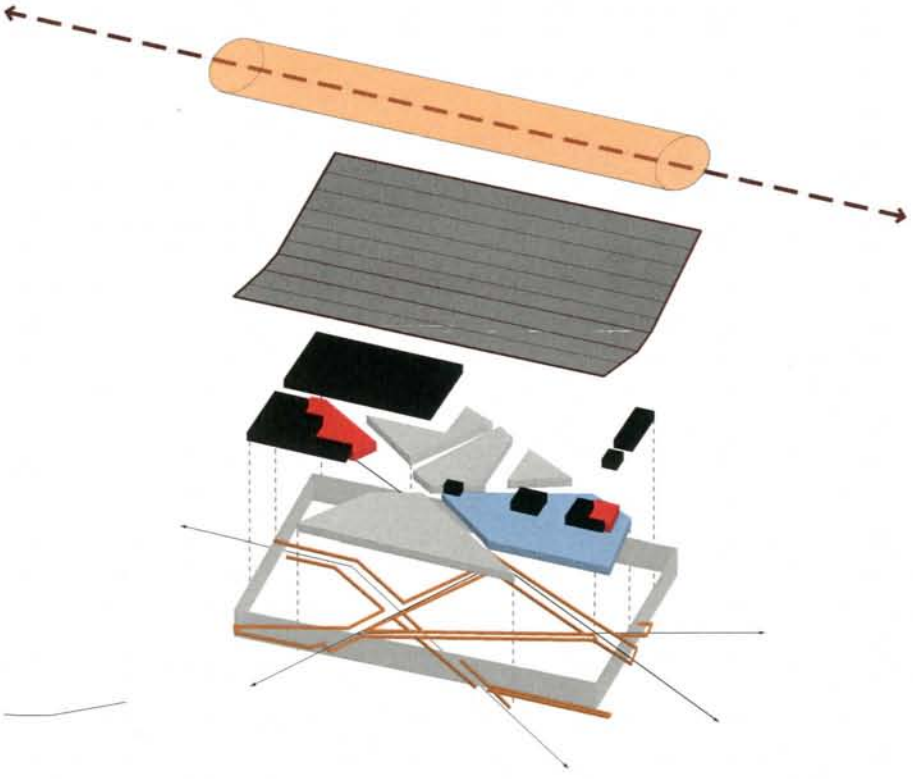


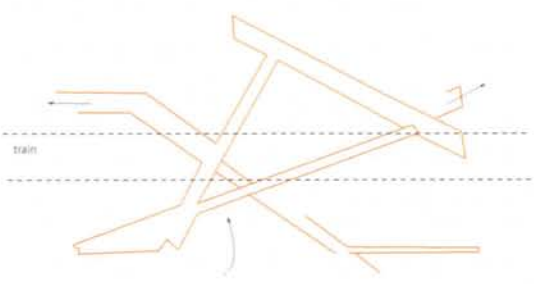




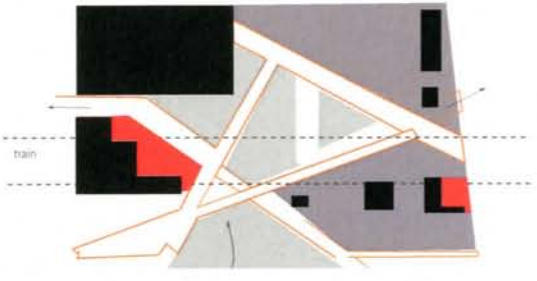
The McCormick Tribune Campus Center on the IIT Campus faced the challenge of mediating the train that bisected the campus and essentially divided the dorms on the east side of the campus from the main campus in the west. To do this Koolhaas started with the existing footpaths formed by students walking to class underneath the existing elevated train. Then the resulting, in-between, places were defined as "streets, plazas and urban islands", without sacrificing the composition of the building as a whole. Koolhaas categorized each programmatic piece in terms of its need and in order to create "neighborhoods". Path and program are combined to integrate the idea of building as mediator of infrastructure, connector and permanent place.








Paths




Programmatic Neighborhoods

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