# EXCAVATING L.A.: URBAN DESIGN FUTURES OF NEW TRANSIT

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# *EXCAVATING LA:*
## *Urban Design Futures of New Transit*

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# *ABSTRACT*

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ABSTRACT

After decades of planning, recent voter approved tax initiatives have enabled Los Angeles to expand its mass transit infrastructure. Fast tracked construction projects of subway and light rail lines will connect areas of the city for the first time since the early 20th century streetcar era. Increasing levels of population growth currently challenge LAs low density, horizontal, suburban form to fold inward and build upon itself in new ways and the city has embraced transit oriented development (TOD) as a strategy for accommodating this new growth at higher densities.

This moment provides a unique opportunity for architects, urban designers, and planners to rethink large scale urban design projects in LA and generate urban forms that reflect the identity of the city, as opposed to importing outside models. This thesis explores urban design futures through the lens of the TOD and aims to create an LA-specific model.

In a city that is defined by multiple layers of massive infrastructural systems, designers need to think about how projects fit into larger-scale systems in order to mediate these systems and find design opportunities within them. What are the LA-specific urban design goals that should guide new transit oriented development? How can this scale of urban design project leverage large-scale infrastructure systems and landscape elements to enhance the public realm, mediate the environment, and create an intermediate symbolic orienting structure for the city?

This thesis research explores these questions through three forms of inquiry: theory, mapping and design. Theory research aims to understand what is meant by “LA urbanism” and creates a framework by which to understand future project within. Mapping research generates a design agenda and attitude about the project. Design research tests this agenda through a new LA-specific TOD strategy through both site specific and prototypical design processes.

Thesis Advisor: Brent Ryan
Title: Associate Professor of Urban Design and Public Policy

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# 01 / *CONTEXT*

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# *INTRODUCTION*

Los Angeles faces a pivotal point in its evolution. Patterns of seemingly endless horizontal expansion have hit their physical and perceptual boundaries while population growth challenges the region to fold in on itself in new ways. Urban designers, architects and planners need to think creatively about generating new forms that reflect the city's contemporary urban condition rather than relying on generic outside models.

In a city defined by incremental development, what is the future identity of the urban scale project in LA? This thesis explores this larger conceptual question through the lens of recent transit investment and uses the transit oriented development (TOD) as a platform for design research.

As LA's largest infrastructural investment since post war freeway construction, recent mass transit development will dramatically alter movement throughout the city. Measure R, a voter approved sales tax passed in 2008, has given the city the necessary collateral to receive $40 billion in long term bonds and federal loans to enhance and add new public transit throughout the LA region.[1] Under Mayor Antonio Villarigosa's 30/10 initiative, all approved transit projects will be completed within the next ten years rather than the originally projected thirty. This makes LA the most aggressive city in the country in terms of their infrastructural investment. The entire project is estimate to create 160,000 new jobs and stimulate the local construction economy. Coupled with the desire to ease traffic congestion, LA has also taken the lead in the nation and committed to a reduction of greenhouse gas emissions to 35% lower than 1990 levels by 2030.[2]

It is clear that voters, politicians, and the real estate market are all eager to enable transit development and provide Angelenos with more transportation options, but what are the implications of this infrastructure on new urban form? While LA has been a laboratory for innovative and experimental architectural design at the single family residential scale, recent large scale projected have often manifested in generic retail centers and touristic entertainment venues.

In a city that is defined by multiple layers of monumental infrastructure, designers need to question how new projects fit into larger-scale systems in order to mediate these systems and find design opportunities within them. What are the urban design goals that should guide new transit oriented development in LA? How can this scale of urban design project leverage large-scale infrastructural systems and landscape elements to enhance the public realm, mediate the environment, and

*1 Metro Website, 2011*

*2 LA City 30/10 Transportation Initiative Website, 2013*












*Photos: Taiyo Watanabe*


*Photo: Taiyo Watanabe*

create an intermediate scale orienting device for the city?

This thesis explores these questions through three forms of research: theory, mapping and design. The theory research creates a framework by which to understand the project within. The mapping research generates a design agenda and attitude about the project. And the design research will test a design proposal in both a site specific and prototypical way.

**Thesis Structure:** The thesis is divided into five chapters (Context, Theory, Mapping, Design, and Application) which contain the following research and analysis.

*Context:* In order to understand the current climate of TODs in LA, the research begins with a brief overview of recent transit development and an assessment of recent large scale real estate developments. In order to gain a historical perspective on the relationship between settlement patterns and transportation methods, a time line of LA's urban footprint is compared in parallel with population growth and transportation technology.

*Theory:* The theory section provides a tool understanding popular understandings of LA urbanism, paradigmatic urban design projects centered on infrastructure systems and landscape, and cartographic design methodologies which will be the template for my own mapping investigations.

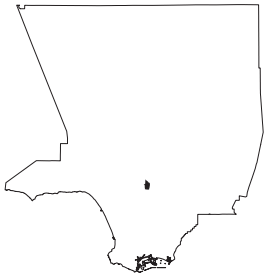
*Mapping:* The mapping section employs three cartographic methodologies at multiple scales. First, the region's infrastructural systems are overlaid in order to understand their relationships and possible design opportunities within their overlaps. This phase will be used to analyze eight potential TOD sites and choose one as the design project site. Second, in the critical mapping phase, systems are subtracted to reveal relationships between two or three layers of information. By distilling information, a design "problem" is revealed to react against. Third, the project site is mapped with contextual information of the past, present and future in order to provide an organizing principle for future design.

*Design:* The design section first creates LA-specific TOD typologies from design parameters which are directly influenced by the mapping investigations. Once a prototypical set of relationships is developed, this new TOD model is applied to the project site, where the design is developed to respond to local conditions.

*Application:* The design is then developed in more detail and compared to existing land use plans. The prototype is then simplified and reapplied to other potential TOD sites in LA to test its performance.

# *URBAN MORPHOLOGY*

**1850**



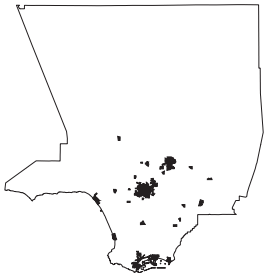

*(USC Historical Archive)*

**TRANSPORTATION:** Horse-drawn Carriage
**POPULATION:** 3,530

Los Angeles was founded by the Spanish along the banks of the LA River, near what is now LA's industrial district, as a small agricultural village to help sustain missionary efforts throughout California in the late 1700's. In the early 1800's, Los Angeles as the largest agricultural production center on the Pacific Coast and quickly transformed into a trading center after the Gold Rush of 1848. In 1850, it was incorporated as a city and shortly after, California was admitted into the Union.[1]

1 *Gumprecht, 2001, p.41*

**1893**



*(Metro Transportation Library and Archive)*

**TRANSPORTATION:** Horse-drawn Streetcars and Electric Streetcars
**POPULATION:** 122,106

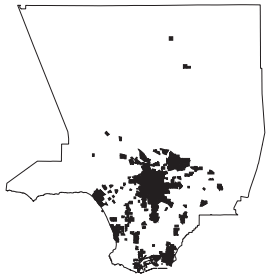
In 1887, the first transcontinental line operated by Santa Fe Rail, connected Los Angeles to the rest of the country. This connection brought a period of rapid industrial expansion and population growth. In 1892, oil was discovered in LA near the present day Dodger Stadium and by 1923 the LA region was producing one quarter of the worlds supply.[1]

At this time, development remained concentrated and horse drawn rail cars serviced the densifying downtown core and Pasadena. In the late 1880's a small number of independent electric rail companies began service in downtown, but it was not until industrialist Henry Huntington purchased the Los Angeles Railway (Yellowcars) and later founded the Pacific Electric Railway (Redcars), that satellite suburban growth patterns expanded the city's footprint significantly.[2]

1 *Soja, 1989, p.194*

2 *Metro LA Transit History Website, 2011*

## 1915



(DWP Archives)

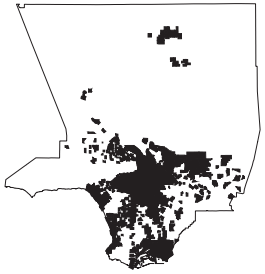
(USC Historical Archive)

**TRANSPORTATION:** Electric Streetcars
**POPULATION:** 815,000

"There it is - Take it!" These famous words of William Mullholland at the 1913 opening ceremony of the Los Angeles Aqueduct inaugurated a long and sustained period of urban growth.[1] While this aqueduct brought water from the northern Owens Valley, and supported growth, streetcars enabled new populations to spread across the region in low density suburbs. Unlike the traditional streetcar suburbs of Boston, these peripheral clusters operated with independent economies and industries and were less dependent on the central-city model. This was the birth of the polynodal, centerless Los Angeles. At its peak in the 1920's, the Pacific Electric Railway was the largest electrically operated interurban railway in the world. Over 1,000 miles tracks connected the downtown core with satellites such as Pasadena, Santa Monica, Pomona, San Bernardino, and Hollywood.

*1 Soja, 1989, p.190*

## 1930



(USC Historical Archive)

**TRANSPORTATION:** Automobiles & Boulevards
**POPULATION:** 2,208,492

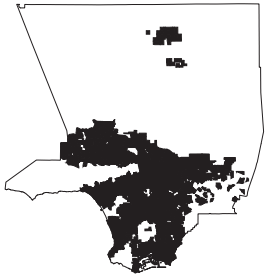
Automobiles were first introduced in 1900, but the city did not officially become auto-oriented until road infrastrcuture was enhanced by the 1916 Federal Road Act and the conspicuous consumption of the roaring 1920's. From 1920 - 1930 the number of gas stations grew from 170 to 1,500.[1]

As LA's footprint grew, new "linear downtown" developments such as Wilshire Blvd.'s "Miracle Mile" were tailored to fit dimensions of the automobile. New commercial typologies were developed to accommodate parking and boulevards became wider to ease congestion.[2]

*1 Novak, Smithsonian Website, 2013*

*2 Longstreth, 1997, p.104*

## 1950



*10 FWY Construction and 10-110 FWY Interchange (UCLA Historical Archive)*

**TRANSPORTATION:** Automobiles & Freeways
**POPULATION:** 4,151,687

Post-war 1950's growth expanded the city's footprint through rapid construction of suburban tract housing which spread outwards away from the historical core. The Federal Aid Highway Act of 1956 aided this outward expansion with funding for construction of some of LA's most iconic freeways such as the 10, 405, 110, and 101. The first four-level interchange in the world was built in LA in 1953 and many more monumental freeway projects would continue into the next three decades.[1]

Increased car ownership and low density suburban development patterns made the streetcar network that originally expanded the city's footprint obsolete and inconvenient when compared to new freeway infrastructure.

1 *California Dept. of Transportation Website, 2013*

## 1950's - 1970's

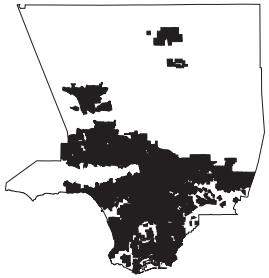

*Monorail Plan, 1954 and Center Concept Plan (Metro LA Archive)*

**TRANSPORTATION:** (Failed Mass Transit Plans)
**POPULATION:** -

In an attempt to centralize transportation planning, the city created the Los Angeles Metropolitan Transit Authority (MTA) in 1951. With the looming death of the streetcar and increasing auto congestion, planners were anxious to establish new regional mass transit system. In 1954, a futuristic monorail that connected LA and the San Fernando Valley was proposed, but never gained enough support or funding. More recently, in 1970, a networked TOD concept plan called "Centers" was incorporated into the 1974 General Plan, but was quickly forgotten about.[1]

1 *Metro LA Transit History Website, 2011*

## 1961



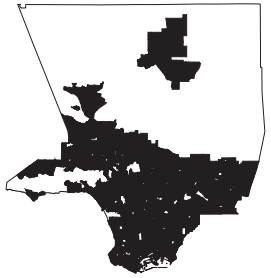
*Decommissioned Pacific Railcars (Water and Power Image Library)*

**TRANSPORTATION:** Buses replace streetcars
**POPULATION:** 6,143,000

The last of LA's streetcar rails were torn out in 1961 and replaced with bus routes. These routes began to be replaced with bus service as early as the 1930's and 40's when it became clear that streetcars would not be able to complete with new automobile ownership. In 1964, the Southern California Rapid Transit District was established and bus service was enhanced throughout multiple Southern California counties. These bus routes had little effect on development patterns in comparison with freeway construction but did later serve as a route template for the re-introduction of the subway and LRT projects of the early 1990's.[1]

1 *Metro LA Transit History Website, 2011*

## 1995




*Blue Line LRT and Measure A billboard (Metro LA Archive)*

**TRANSPORTATION:** Introduction of LRT & MRT
**POPULATION:** 9,327,300

In a 1980, the half cent sales tax Measure A passed and enabled the newly formed Los Angeles County Transportation Commission (LACTC) to move forward with planning new MRT and LRT lines: Metro Blue Line (1990), Metro Red Line (1993), and Metro Green Line (1995). Many of these projects, like current Measure R funded lines, run a long old decommissioned streetcar lines or industrial heavy rail lines.[1]

Between the 1990's and early 2000's, population growth and car dependence continued to push cheap suburban development farther to the north to areas as far as Lancaster / Palmdale and east into San Bernadino and Riverside Counties. While Metro lines have done little to substantively change settlement patters compared to the early streetcar era, the city's new growth strategy aims to intensity new population densities around new and existing transit.

1 *Metro LA Transit History Website, 2011*

# *TRANSIT & DEVELOPMENT*

In 2008, when LA county voters passed the Measure R tax increase, decades of transit planning finally became a reality. The funding not only covers new subway and light rail transit construction, but also includes upgrades to existing freeways, enhanced pedestrian streetscapes, road maintenance, increased bus lines, new bike lines, and modernizing traffic signal technology. It is a holistic, long term commitment to improve and innovate multi-modal transportation infrastructure in the entire LA region.

In 2010, when Mayor Antonio Villaragosa passed the 30/10 Initiative, 12 key Measure R transit projects were expedited to be completed in 10 years rather than the original 30. These twelve projects are almost entirely new subway and LRT construction. For the first time since the early 20th century streetcars, east and west LA will be connected by rapid transit. NIMBYism of wealthier westsider residential groups have been successful in stalling this development for over forty years.[1]

What effects has this massive infrastructure investment has on policy? Long before the New Urbanists hailed the "TOD" as a "redefining of the American Dream" in the 1990's[2], Los Angeles had laid the framework for a nodal population growth strategies centered around mass transit hubs. This 1970 "Centers" Concept Plan for Los Angeles later served as the basis for the 1974 General Plan, but was never carried out and quickly forgotten. [3]

During the early 90's Metro construction of new lines, a 1993 Land Use / Transportation Policy appendix revived an image of a transit-oriented Los Angeles and re-incorporated it back into the General Plan, but this too was also forgotten about. The Blue Line in particular runs through South LA which has consistently had the highest levels of poverty in the city. Unsurprisingly, these stations failed to attract private investment due to high crime rates and heavy environmental contamination leftover from past industry and historical heavy rail corridors.[4]

According to recent planning studies by the Mayor's new Transit Corridors Cabinet, the scale of the "transit oriented development" and "transit oriented district" is too small and disconnected to affect substantive change and "Transit Oriented Corridors" are a more appropriate urban design unit by which to design for LA's newest neighborhoods. The "stand-alone" strategy of past TOD models fail to include all the "desired

1 *LA City 30/10 Transportation Initiative Website, 2013*

2 *Calthorpe, 1993*

3 *Metro LA Transit History Website, 2011*

4 *Loukaitou-Sideris and Banerjee, 2000, p.14*

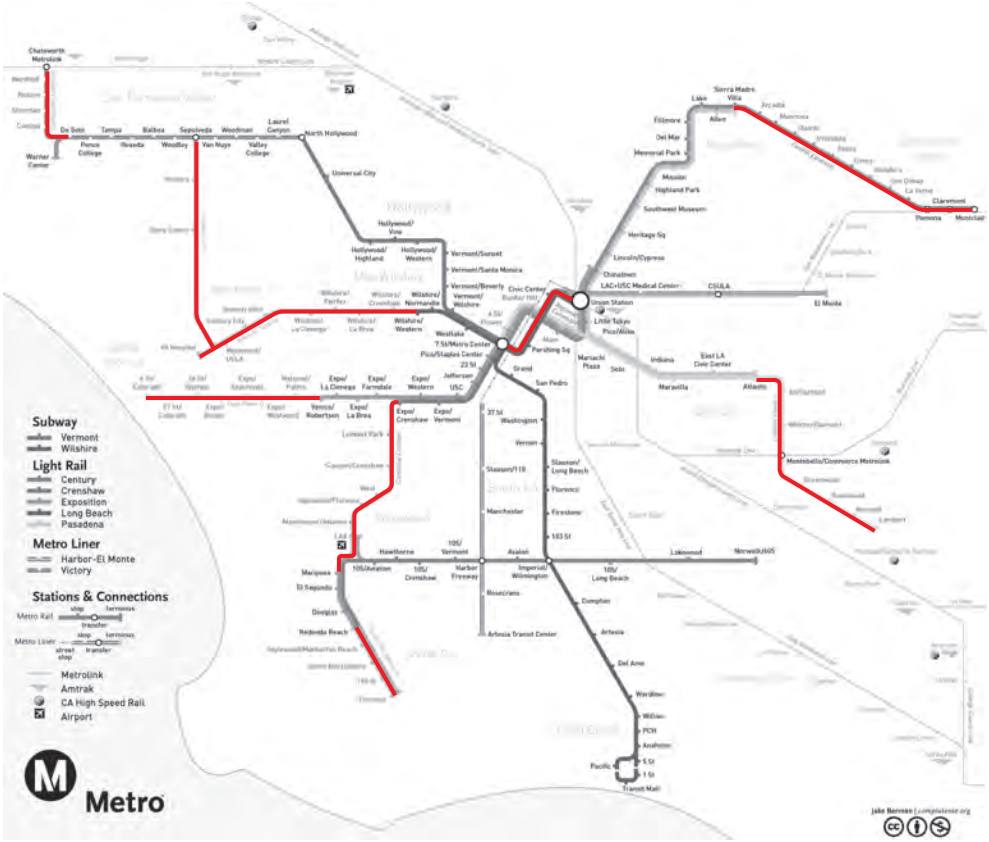
livability components of transit-oriented places (e.g., parks, public squares, fresh food outlets, affordable housing, etc.) within each station area."[5]

Recent 2012 additions to the 2035 County General Plan prioritize new TOD strategies that do not seem to reflect the recent "Transit Corridor" thinking. Instead, it outlines TOD goals in extremely general terms that "encourages in fill development, pedestrian-friendly and community-serving uses near transit stops." The General Plan also incorporates new "Mixed Use" (MU) zones with a maximum density of 150 units per acre and FAR of 3.0.[6]

While the city is looking towards more innovative, LA-specific models for densification around transit, current policy and market conditions are not encouraging anything different than the status quo. Current TODs under construction are comprised of stand alone large scale apartment and mixed use developments with little connection to the "corridor" scale, let alone larger systems of recreation, or landscape. As of now, public and private entities have failed to amass enough contiguous land parcels to create substantive change in LA's urban form around new transit.

5 *Developing and Implementing the City of Los Angeles' Transit Corridors Strategy, 2013, p.64*

6 *Los Angeles County General Plan 2035 Website, 2013*




*Planned projects & Projects under construction (Metro LA Website, 2012)*

## DEVELOPMENT CLIMATE

Many recent large scale development projects in LA have been the result of a select cast of characters and fall into a few major categories.

### Entertainment Centers / Venues

These developments have mostly occurred downtown and part of recent revitalization efforts and consist of large scale, corporate sponsored complexities. The LA LIVE-Nokia Theater Complex falls into this category. These environments are overstimulating, media heavy venues with corporate chain retailers and restaurants primary geared towards event-goers or tourists. Their spaces have the facade of high levels of inter activity and life, but are actually are a one dimensional simulation of street life and have little connection to the actual street life of downtown.

### Open Air Malls / Experience Centers

These developments such as "The Grove" or "Americana", are built by developer Rick Caruso, who recently ran for mayor. These are historical "town square" plazas with perimeter block retail space with apartments and condos above. These malls simulate a traditional Disneyland-esce experience with full trolley transport, bellhops, and musical rocks hidden in the landscaping. While surreal in their manufactured urban environment, these centers function as designed and offer some element of a semi privatized-public realm. Although, with the same chain retailers and restaurants at all major malls, offer an over all banal urban experience and isolated enclosed blocks with little connection to their surroundings. Most who frequent these are tourists and Angelenos running errands.

### Mega-Block Apartment "Resorts"

Developer Geoff Palmer is responsible for multiple downtown adjacent Tuscan Mega-Apartment buildings: The Orsini, Medici, Lorenzo and Piero. These "resort" style perimeter blocks are built to the envelope limit. Palmer has been successful in fighting the city on inclusive housing and mixed use ordinances, keeping these complexes private and closed off surrounding street life and neighborhoods.[1]

Where does this leave the future of large scale urban design projects and how can new transit oriented developments provide more authentic, accessible public spaces for Angelenos? One current project under development at the Bundy/ Sepulveda Expo Line stop, (see plan) is under scrutiny from the community and health groups for its close adjacency to the 405 freeway, increased congestion to the neighborhood and closed off site plan.

1 *LA Times, "Builder's Vision Divides," 2003*



*LA LIVE downtown entertainment plaza by AEG*
*The Grove by Rick Caruso (Caruso Affiliated)*

*Proposed Bundy & Sepulveda TOD by Casden*
*The Orsini by Geoff Palmer*

# 02 / *THEORY*

- *L.A. Urbanisms*
- *Paradigmatic Projects*
- *Cartography as Design Methodology*

# *L.A. URBANISMS*

*"Looking at Los Angeles from the inside, introspectively, one tends to see only fragments and immediacies, fixed sites of myopic understanding impulsively generated to represent the whole. To the more far-sighted outsider, the visible aggregate of the whole of Los Angeles churns so confusingly that it induces little more than illusionary stereotypes of self-serving caricatures – if its reality is ever seen at all."*[1]

*- Edward W. Soja*

Los Angeles defies conventional understandings of the city. As a collection of 88 incorporated cities and many more unincorporated areas, this county and vast region of southern California can all be understood as the "city." Because of the difficulty in containing the city and knowing its true boundaries, conventional urban planning vocabularies and tools have failed to explain its complexities. Comparative physical understandings have proved inaccurate and those who have succeeded at reading Los Angeles have done so by creating a vernacular language and metric by which to understand its form. The following are a collection of some of those understandings.

1 *Soja, 1989, p.222*

## THE IMMEASURABLE CITY

Reynard Banham, perhaps one of the first to appreciate Los Angeles' urban form on its own terms argued, "It is difficult to register the total artifact as a distinctive human construct because there is nothing else with which to compare it, and thus no class into which it may be pigeonholed."[2] Banham approached his study of LA by accepting the city's anomalies and set out to measure it with a new set of criteria. He suggested that the only genuine way to read LA urbanism was through learning the language of movement via the automobile.

In *Los Angeles: The Architecture of Four Ecologies*, Banham recognizes that conventional tools for understanding the city fall short of describing its physical and cultural geographies and the larger "ecologies" of Surfurbia, The Foothills, The Plains of Id, and Autotopia are more apt to describe its multi-scalar, overlapping landscapes. The latter "freeway-scape" is prioritized as the defining skeletal system, which serves as the region's conduit for daily life.

For Angelenos, the freeway is much more than an enlarged "path" or "edge"[3] but a ubiquitous part of daily life and where a large part of ones life is lived.[4] Banham even notices a pattern of women fixing their hair at freeway off ramp stoplights,

2 *Banham, 1971, p.5*

3 *Lynch, 1960, p.49, 62*

4 *Banham, 1971, p.196*

*Photo: Taiyo Watanabe*

and concluded, "that coming off the freeway is coming in from the outdoors. A domestic or social journey in Los Angeles does not end so much at the door of one's destination as at the off-ramp of the freeway, the mile or two of the ground-level streets counts as no more than the front drive of the house."[5]

This suggests that the relationship between time, space and technology has been primary in shaping the urban fabric of LA. By pushing daily destinations farther apart physically, communities almost become virtual and daily itineraries increasingly diffuse. Because of this, LA has developed in patterns that are less dependent on physical connective urban tissues because the interior of one's car has become that urban tissue and connects you to different pieces of the city directly.

Since Banhams, 1970 reading of Los Angeles, the city that has undergone relentless growth and transformation, and new readings are necessary to capture the complexities of the current day. Traffic congestion, pollution, and gas prices have left the public demanding more transit options and Banham's fascination with the freeways seem almost romantic in hindsight. Los Angeles is no longer as unique or controversial as it once was. In recent decades, many scholars have reinterpreted these "ecologies," and understands LA as less of an anomaly and more of a template for other cities that have followed its sprawling suburban trajectory. Sun belt cities such as Houston and Phoenix have undergone their own versions of "Californication" and are now finding themselves with similar urban forms and dealing with the same impacts of suburban sprawl.[6]

While Banham defined Los Angeles as a series of overlapping "ecologies", Kazys Varnelis's *Infrastructural Cities*, describes the city as a complex web of infrastructural systems.

*"Whereas New York's grid is for pedestrians and horses, Los Angeles is laid out according to the progressive ideals of the decongested metropolis, planned for the efficient movement of trolley…cars and, later, automobiles. If the West was dominated by the theology of infrastructure, Los Angeles was its Rome."*[7]

A sense of manifest destiny, faith in technology, and large amounts of private capital have created systems such as the California Aqueduct that are the lifeblood of more than 10 million people. Systems like this not only define the geographical landscape and footprint of the city, but also are ingrained in the

*5 Banham, 1971, p.195*

*6 Day, 2009, p.xvii*

*7 Varnelis, 2009, p.196*

psyche of Southern California and, whether or not it is justified or sustainable, have created an "anything is possible" attitude and culture of experimentation.

Varnelis argues that understanding Los Angeles through the lens of infrastructural systems or "networked ecologies" (to borrow from Banham's language) allows us, by extension to understand all contemporary cities. He defines the term by meaning, "a series of codependent systems of environmental mitigation, land-use organization, communication and service delivery systems."[8] He goes on to state that these hyper complex infrastructural systems are the basis of the "contemporary city" and cannot be compared to cities of the past. Varnelis remains value-neutral in his analysis of these systems, but suggests that in understanding the systems and their relationships we can begin to confront the problems that are presented by an "again modernity and a spreading sameness caused by capital seeking a profitable, homogenous field."[9]

Profitable it has been. LA has changed since Banham's time and infrastructure has proliferated beyond the individual highway experience. Instead, these systems have become the structure of a thriving regional, national, and international economy. Nearly $300 billion of goods travel through LAX, the port of Long Beach and Los Angeles annually.[10] Most of the goods that Asia produces enters the US through Los Angeles by sea, then travels by rail through LA's basin to logistics centers and then shipped off the rest of North America. Theorist and architect, Joe Day states, "The city's rapid shift from a theater of local consumption to a crucible of international exchange is altering LA's fabric and character as profoundly as did the interstate system that seduced Banham forty years ago."[11] But how has these economic and infrastructural systems changed the landscape and urban form of Los Angeles? How do the parts of the city relate to the whole in this contemporary "infrastructural city"?

*8 Varnelis, 2009, p.15*

*9 Varnelis, 2009, p.15*

*10 California Association of Port Authorities Website, 2013*

*11 Day, 2009, p.xvii*

*Photo: Taiyo Watanabe*

## THE HOMOGENOUS CITY

Many have argued that even with the monumental freeway infrastructure, LA's homogenous grid creates a disorienting visual environment. The added low rise horizontality makes it even more difficult to spatially locate oneself in relationship to the city. In *The Image of the City*, Kevin Lynch measures downtown Los Angeles and compares it with the centers of Boston and Jersey City and finds that it falls short in creating a successful "image." In a city that is 500 square miles, Lynch studies a 3.75 square miles of the downtown core, through his metrics of paths, edges, nodes, districts and landmarks, and concludes that the "imageability" of the city was relatively poor.[12]

Due to the Bunker Hill urban renewal project, downtown looks very different now than it did when Lynch observed it, although the success of this redevelopment is still contested. Large areas of Victorian residential neighborhoods have been replaced with post-modern skyscrapers, and would probably have an even harder time finding genuine "imageability" in this somewhat generic CBD. Even Pershing Square, the landmark which Lynch found the strongest downtown urban element, has been since redeveloped into a poorly received paved over postmodern plaza in the mid 1990's. Some argue that the necessary insertion of subterranean parking under the square

*12 Lynch, 1960, p.33*

has disrupted pedestrian flow around the park.

*"Pershing Square was the most sharply described element, with its immaculate central lawn, fringed first by banana trees, then by a ring of old people sitting in solid ranks on the stone walls, then by busy streets, and finally by the close files of downtown buildings."*[13]

Lynch recognized that by analyzing such a small percentage of this emptying downtown core his analysis offered an incomplete image of LA and is not comparable to his parallel Jersey City and Boston studies. His concluded that the city lacked a sense of orientation due to its homogenous wide street grid and even local residents reported feeling disoriented without the use of street signs. Lynch attributes some of this disorientation to the fact that LA's built environment seems to be in a constant state of change. Unlike traditional cities such as Boston, dominated by historical landmarks, LA's history is not reflected through its architecture. Critics such as Banham, would say this is a good thing, and is at the core what LA urbanism is: the ability to try new things and experiment without clinging to the symbols of the past.[14]

The image of Los Angeles, as Lynch sees it, succeeds at two extreme scales through its natural geography. Similar to Banham, Lynch finds that at the grand regional level, geographic elements such as the ocean, mountain ranges, and valleys become subliminal tools for orienting oneself through the experience of the automobile. At the smallest level of the pedestrian, residents reported that the differentiated vegetation and vernacular residential architecture is what defined their neighborhood image. Lynch found that as residents left their residential neighborhoods and entered the center of the city, their image became fuzzy, abstract and confused. This, according to Lynch was a failure of urban form to perform at the district scale. In his view, there was a need for an intermediate urban structure that was larger than architecture but smaller than geography to orient and find oneself in the chaos of the city.[15]

*13 Lynch, 1960, p.37*

*14 Banham, 1971, p.224*

*15 Lynch, 1960, p.41*

## THE PIXELATED CITY

The high level of mobility and migration supported by ample infrastructure has created a seemingly borderless, horizontal carpet of urban form in Los Angeles that is characterized by a lack of traditional hierarchies. Parts act independently to the whole, and a holistic understanding is difficult to grasp.

The ever-present freeway infrastructure has altered the conventional relationship between cores and peripheries. In his essay, "Cities without Centers of Edges", Michael Dear suggests that Los Angeles has turned conventional urban growth patterns upside down and thereby created a "polycentric, postmodern…patchwork, splintered, and posturban" form. Dear defines the "post urban" form as one where "…fragmentation (i.e. geographical nonadjacency) and decenterdness (polycentrism) are the primary urban dyanimcs…"[16] and argues that LA is the prime example of a "post urban" metropolis.

*"Peripheral urban developments in Southern California have long occurred without conventional downtowns, which are sometimes added later for aesthetic and identification/branding purposes or simply to augment consumption opportunities. In such cases, "downtowns" or "town centers" become, in effect, externalities of the urban process; they are no longer functionally constitutive of the city, but merely incidental side effects."* [17]

While a modernist city, such as 19th century Chicago, was defined by a core to periphery growth pattern, which diminished in density as the distance from the core grew, Los Angeles is post urban and free of typical planning hierarchies and brings into question the very definition of what a "city" is. Dear suggests that LA may not be unique in this sense, since many other metropolises that have developed in this manner in the last century, but serves as the most extreme example of patchwork development and is the "best current available counterfactuals to conventional urban theory and practice."[18]

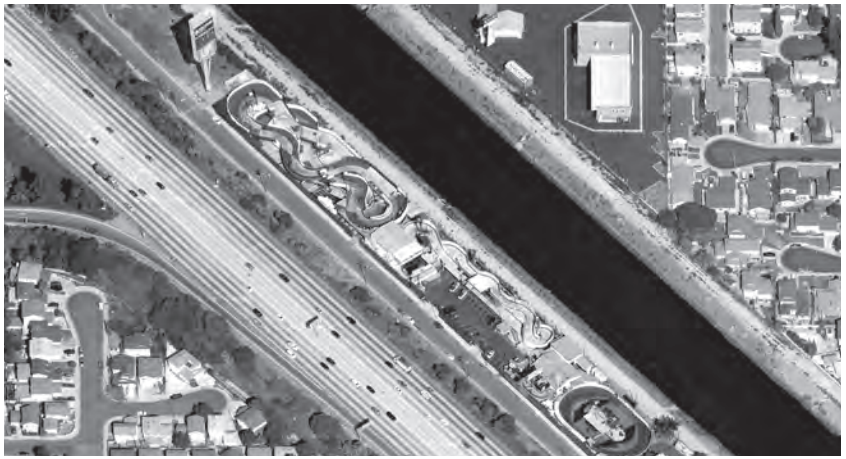
Edward Soja might argue that this peripheral urban development is the result of LA's youth. As a city that came of age after the industrial revolution, it was less dependent on economic and industrial adjacencies that the "core" provided traditional east coast cities. LA's economic and industrial development infrastructure was established with more modern technology and therefore freed the city to urbanize in patchworks all throughout the basin simultaneously with little detriment to parallel industrial development.[19]

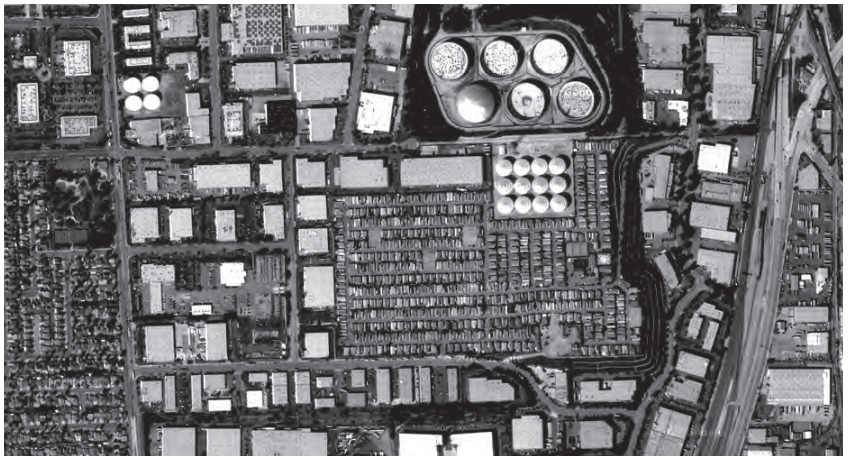
16 *Dear, 2011, p.231*

17 *Dear, 2011, p.226*

18 *Dear, 2011, p.228*

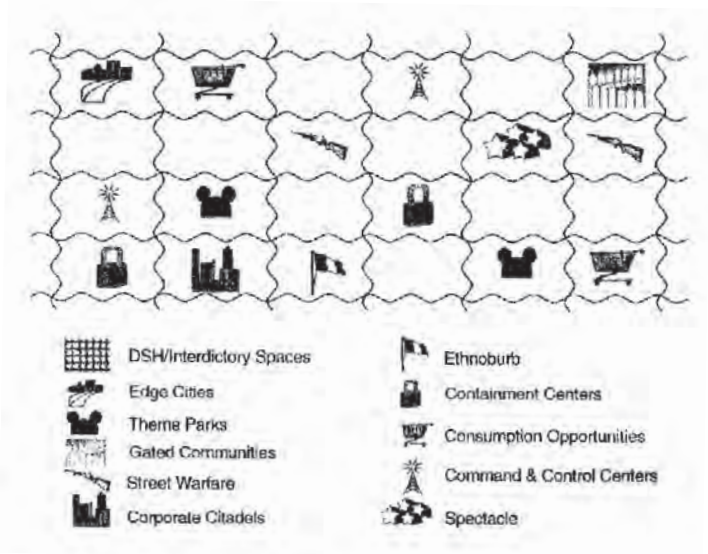
19 *Soja, 1989, p.215*





*Carson: Suburb, 405 FWY, Go-Cart Race Track, Dominguez Channel (Google Earth, 2013)*
*Long Beach: Suburb, Agriculture, Airport, Golf Club (Google Earth, 2013)*

*Compton: Suburban enclave inside industrial zone (Google Earth, 2013)*
*Norwalk: Suburbs bisected by 105 FWY & 605 FWY (Google Earth, 2013)*




*Keno Capitalism, or the georgraphy of postmodern urbanism (Fast Forward Urbanism)*

Dear also uses the concept of "Keno Capitalism" to symbolize the postmodern geography of Los Angeles development processes. He defines it as a process of urbanization in which development occurs randomly and without attention to adjacencies on an "undifferentiated grid of opportunities, where each land parcel is (in principle) equally available for development as a consequence of access to the information superhighway."[20] Urban growth in LA has operated under this assumption of endless horizontal expansion for the last century, which has resulted in a fragmented, piecemeal, ad hoc fabric where comprehensive master plans have had a track record of failure. LA's urban fabric is one where Keno Capitalism has played out and adjacencies of program have little or no relationship to each other. Yet, whether a residential property or an industrial park, each unit of property has access to a road, which then leads to a highway, and is connected to the greater system. This pixilated formation of the city has resulted in a pixeliated experience of the city. Parcels create destinations for fullfilling functions rather than creating a place which results in a loss of commitment to locality.[21]

While conventional urban planning operates in the intermediate scale of the neighborhood, Los Angeles urban design tends

*20 Dear, 2011, p.231*

*21 Brodsly, 1981, p.33*

to proliferate at the macro infrastructural city scale or the micro privatized parcel scale. According to the Keno Capitalist theory of Dear, Los Angeles can be seen as a grid of parcels and development of those parcels is wholly dependent on how capital settles on them. Rather than large master plans, neighborhood urban design and planning develops from a series of individual private stakeholders developing their individual parcels autonomously. Los Angeles operates as "a quasi-random collage of non-contiguous, functionally independent land parcels."[22]

Roger Sherman explores this notion further in *LA Under the Influence: The Hidden Logic of Urban Property.* Through a series of case studies in Los Angeles, he suggests that negotiations between land owners, rather than history or master planning, create the complexity and urban form of Los Angeles. When speaking about how design and planning practitioners must understand the city, Sherman argues that "Conventional methods of mapping such as the canonical figure-ground diagram are inadequate to describe late capitalist cities such as Los Angeles, which because only 25 percent of its land is covered by buildings, relies upon a myriad of other visual devices to make its complicated order legible."[23]

Building from the Keno Capitalist theory of Dear, Sherman sees the city as an "operating system" and designers and planners as using game theory techniques to find spatial logic at the individual parcel scale. Sherman plays out simulations between parcels in LA and finds the hidden (or not so hidden) logic behind real estate partnerships, and development decisions. Operating within the logic of these parcel negotiation strategies help to give designers and planners the tools needed to affect larger scale urban design initiatives / goals. Banham also seems to agree that while the framework for urban form must be top down, the new inventive urbanism that makes LA so unique is best left to individuals at the small scale to create their own visual urban language.

"*Conventional standards of planning do not work in Los Angeles and it feels more natural (I put it no stronger than that) to leave the effective planning of the are to the mechanisms that have already given the city its present character: the infrastructure to giant agencies like the Division of Highways and the Metropolitan Water District and their like; the intermediate levels of management to the subdivision and zoning ordinances; the detail decisions to local and private initiatives; with ad hoc interventions by city, State, and pressure-groups formed to agitate over matters of clear and present need."*[24]

22 *Dear, 2011, p.231*

23 *Sherman, 2010, p.31*

24 *Banham, 1971, p.121*

LA is seen by many as an example of the contemporary city in which a top-down infrastructural system was laid out and then was largely urbanized by small neighborhoods, private real estate investors and individuals rather than formed around large scale city-wide planning projects. Others would argue that this semi-laissez-faire system has given too much power to the individual to create LA's urban form and inherently favors the views of those with the most resources. In recent years, this practice has led to private community groups slowing down necessary infrastructural projects such as light rail and the expansion of the Los Angeles International Airport (LAX).

In his essay, "Democracy takes Command: The New Community Planning and the Challenge to Urban Design", John Kalinsky argues citizen activists have been given too much of a role in the participatory planning process and gridlocked major infrastructural projects that would benefit the whole city.[25] While citizen participation has been used to create a more democratic city, it has also has highlighted a "pay to play system" that has often ignored the cities most vulnerable populations: mainly the working class and new immigrant communities, many of whom are undocumented in LA.[26] Physically, this power imbalance in participatory planning has manifested in a landscape of poorly distributed public amenities, such as parks, and civic institutions.

**THE PRIVATE CITY**

LA was founded on a Broadacre, utopian vision where everyone could own a piece of the country while still staying connected to the modern day metropolis. The classic bungalow home with a front lawn and back yard continues to be the dream of most Angelenos. Because of the dominance of this vernacular, privatized lifestyle, the public realm has always been less prioritized that in other denser east coast cities. Cities such as New York, or Boston for example have historically prioritized the building of large-scale landscapes as oasis for residents could escape the congestion of city life. In Los Angeles, these large-scale public landscapes are the beach and the mountains. While these natural amenities serve the all of LA, they are physically less accessible to lower income communities to tend to live the farthest from them. Compared with other cities of its population, LA lacks public parks and landscape amenities, especially in the poorer communities of central, and south LA.

The Olmsted Brothers and Harland Bartholomew observed this back in 1930 in their proposal, Parks, Playgrounds and Beaches for the Los Angeles Region: *"Those of lower incomes generally live in small-lot, single family home districts, and have*

*25 Kalinsky, 2006, p.30*

*26 Davis, 1996, p.179*

*more children and less leisure time in which to go to distant parks and recreational areas. These families comprise 65% of the population and they should be given first consideration."*[27] In this comprehensive plan, they proposed a system of neighborhood-scaled playground parks and medium sized local parks that linked to a larger regional system of coastline and mountains. In the 1920's, Los Angeles experienced unprecedented growth and the population more than doubled (900,000 to 2,200,000).[28] The demand for developed residential, commercial and industrial land at this time was insatiable. The Olmsted-Bartholomew plan warned of the dangers of current land development and speculation into natural areas and the need for planners to systematically preserve natural amenities for future population growth. They argued that without planning a comprehensive park system, Angelenos risk destroying the very amenity they moved here to enjoy.

*"Continued prosperity will depend on providing needed parks, because, with the growth of a great metropolis here, the absence of parks will make living conditions less and less attractive…"*[29]


*Parks, Playgrounds, and Beaches for the Los Angeles Region, Olmsted-Bartholomew, 1930*

27 *Hise and Deverell, 2000, p.22*

28 *Hise and Deverell, 2000, p.8*

29 *Hise and Deverell, 2000, p.83*

The Olmsted-Bartholomew Los Angeles plan is unique because it was tasked with proposing a park system for a city that at the time had the highest rate of car ownership in the world. What future did parks have in a city when one could drive anywhere? How did the automobile change a city dweller's relationship to nature? The plan addressed these questions by creating parks at a series of scales for people and automobiles. The report proposes six types of public grounds: streets, boulevards, and parkways; city squares, commons, and public gardens; playgrounds for small, school age, and older children; small and neighborhood parks; large parks; and great outlying reservations. The goal was to create an egalitarian public realm for all residents to enjoy, a framework for the preservation of beauty and natural scenery, and a "lung" to temper increasing visual and air pollution.

While the Olmsted-Barthomew plan was not adopted, many of their recommendations have worked themselves into various local planning projects. Currently there is still a disproportionate shortage of park and playground space per capita. Views of Los Angeles with its sprinkled green patches can be quite deceiving because many of them are privately owned member access golf courses. TIn *City of Quartz*, Mike Davis attributes this lack of public space is due to the "privatization of the architectural public realm."[30] Economic forces have led to the decline of "urban liberalism" and the "death of what might be called the 'Olmstedian vision' of public space" where class mixing occurred.

*"In a city of several million yearning immigrants, public amenities are radically shrinking, parks are becoming derelict and beaches more segregated, libraries and playgrounds are closing, youth congregations of ordinary kinds are banned, and the streets are becoming more desolate and dangerous."*[31]

Davis suggests that local government is more motivated by security concerns and revenue generation than maintenance of a high quality public realm of recreational landscapes for its residents. Public parks and promenades have been replaced by shopping malls where crowds can be controlled and watched. He blames this shift on policy decisions to shift funding away from public works and towards private redevelopment projects, which support the increased spatial and social isolation of the middle-upper class.[32]

In the recent LA times article, "Los Angeles' Major Public Spaces Remain Broken Works In Progress", Christopher Hawthorne (LA Times Architectural Critic), observes that given

*30 Davis, 1996, p.226*

*31 Davis, 1996, p.227*

*32 Davis, 1996, p.231*

the current population growth, the city is still neglecting to invest in public space and civic projects. Ironically Hawthorne describes Pershing Square, (the park Kevin Lynch described as "consistently the strongest element" in the heart of downtown LA[33], as the symbol of LA's forgotten public realm.

"The square was once the most vibrant public space in Los Angeles. The decision to build a parking garage beneath it in the 1950s added entry and exit ramps that cut the square off from the sidewalks around it. A 1993 redesign somehow made that sense of disconnection worse."[34] Currently there are talks of AEG funding studies to re-imagine this historic park. Hawthorne warns, "Here's one thing that shouldn't be: AEG's direct involvement in the revamp, given its track record of sleekly generic architecture and design. The last thing we want to do is turn Pershing Square — not just the city's oldest park but the one with the richest history — into a miniature L.A. Live, ringed with video screens and scrubbed clean of any real sense of place."[35]

*33 Lynch, 1960, p.36*

*34 Hawthorne, LA Times, 2013*

*35 Hawthorne, LA Times, 2013*

*Case Study #22, Pierre Koenig (J.Shulman)*

*Alan-Voo House, Neil Denari (B.Chan)*

*Chemosphere, John Lautner (J.White)*

*Gehry Residence, Frank Gehry (netropolitan.org)*

*Case Study #8, Charles & Ray Eames (Eames Foundation)*

*Kappe Residence, Ray Kappe (J.Schmidt)*

*Hill House, JohnstonMarklee (J. Shulman)*

*Schindler House, Rudolf Schindler (unknown)*

*Pittman Dowell Residence, Michael Maltzan (I.Baan)*

## THE EXPERIMENTAL CITY

*"Unlike older cities back east – New York, Boston, London, Paris – where warring pressure groups cannot get out of one another's hair because they are pressed together in a sacred labyrinth of cultural monuments and real-estate values, Los Angeles has room to swing the proverbial cat, flatten a few card-houses in the process, and clear ground for improvements that the conventional type of metropolis can no longer contemplate."*[36]

The willingness for experimentation runs deep in the very culture and attitude of LA. Historically, the confluence of high tech manufacturing and material availability, a hospitable climate and industry clusters of artistic and creative professions have made Southern California a place design innovation. However, this level of experimentation is yet to be seen at the scale of the urban project, or even at the scale of large, civic architectural projects.

The mid-century Case Study House program is a prime example of this design innovation and experimental attitude of LA. Sponsored by Arts and Architecture magazine by John Entenza, the program commissioned major architects of the day to produce inexpensive, high quality, homes during the post war housing construction boom and re-think what residential living meant in the modern age. Renowned architects and designers such as Charles and Ray Eames, Rudolf Schindler, Pierre Koenig, Craig Ellwood, and Eero Saarinen, were commissioned to experiment with the single family home and create prototypical homes with off the shelf building materials such as plywood, aluminum and concrete block, which were often donated by major manufacturers.[37] This quest to innovate on the design of the everyday architecture, the single family home, produced some of most influential homes from the mid century period and continue and continued to be a template for defining "modern living" in architecture all over the world.

Lesser known projects, but perhaps more important given Los Angeles' current housing shortage, were a series of government sponsored, war time housing during the 1940's. The most notable projects from this experiment was Richard Neutra's Channel Heights project in San Pedro, which housed shipyard workers.[38] Neutra successfully designed dense, low cost units, yet maintained the sense of community and space for a comfortable Southern California outdoor lifestyle. Each apartment building was oriented to fit the landscape and the maximized outdoor amenities while also providing educational

36 *Banham, 1971, 225*

37 *McCoy, 1977*

38 *Hines, 1994, p. 187*

*MIchael Maltzan, Star Apartments & One Santa Fe*

facilities and small markets for its residents. Due to the scarcity of building materials, the structures were only zoned as temporary housing as torn down after the war. Since then, LA has not seen the same caliber of federally funded, large scale, progressive architecture for multi family living.

Where has this sense of experimentation at the urban project level gone and how can transit development re-instate that sense of innovation of urban form? While architects are free to experiment at the singular project scale with willing clients, it is obviously much harder for the city to experiment with taxpayer-funded projects such as the Measure R Transit Funding Initiative. Perhaps the in-between scale of urban design project and multifamily housing is where this next phase of LA-design innovation should be happening.

LA based architect Michael Maltzan is currently working on innovative multifamily and public housing projects in downtown LA. While they still remain at the architectural project scale, they start to speak to larger urban issues and provide micro-scaled public spaces and connections to their surroundings. The Carver Apartments, Inner City Arts, One Santa Fe and the Star Apartment projects are examples of these projects. Perhaps, the next evolution of the "Case Study" program should step forward to challenge innovative at the large-scale transit node scale.

# *PARADIGMATIC PROJECTS*

As many theorists in the last section have concluded, Los Angeles urbanism is both unique and banal. While the built environment is unique at the architectural, pixel scale, and the landscape defines the city at the regional scale, the intermediate scale lacks identity and structure. This is the scale where urban design projects matter. As the region grows inward and upward, how can LA's new large-scale urban projects think creatively about leveraging its infrastructural networks, natural systems and usage patterns of the city to mediate its unique yet, prototypical conditions? The following projects are design scheme precedents that mediate systems of rail, water, landscape, public space, and development.

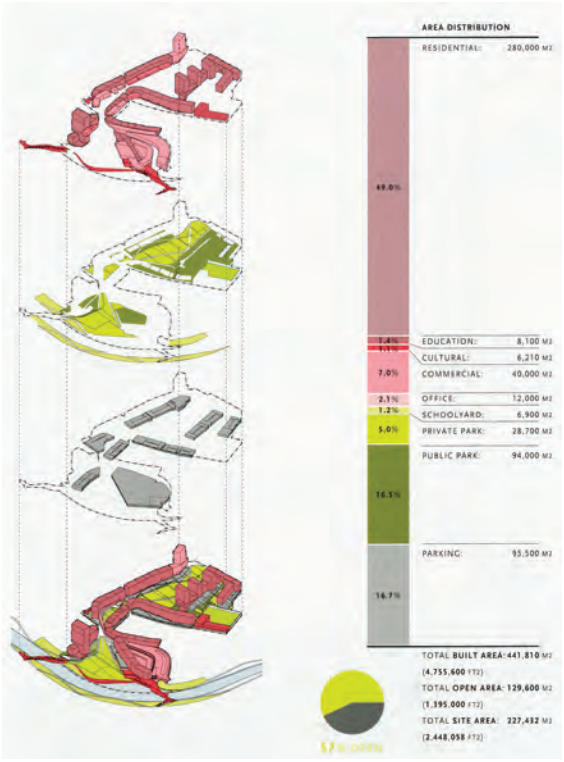
**Manzanares River Park Development, Madrid, Spain**
**Morphosis Architects, 2005**

- Part of larger city-wide park network
- Urban growth model that relives with "green pockets"
- Green space as connective tissue

This project proposes a combination of landscape systems coupled with development that capitalize and extend existing infrastructural systems. In an area that used to peripheral to Madrid's urbanized center, this site is one of the last open parcels of land in the city. The city has recently made efforts to reconnect the urban fabric to the Manzanares River through a €4 billion infrastructural project, which now enables this site to have river front access once again.[1]

The scheme amplifies this adjacency to the Manzares River and folds this linear landscape element into the city to create a large centralized park bordered by residential, commercial, cultural, and civic programs. This centralized park not only creates a central green plaza / public realm for residents and visors, but also acts as a tissue to connect pedestrians from the river walk to the city center. As a model for future growth, this project shows how to amplify the amenities of this linear

1 *Morphosis, 2011, p.215*


*Manzanas River Park Development, Madrid, Spain / Morphosis Architects, 2005*

landscape element by drawing it into the city as a "green pocket" and densifying around its edge. Different scales of green space are woven together throughout the interior to create a seamless integration of all types of program elements and create pedestrian paths connecting them.

**Sixth Street Viaduct, Los Angeles, CA**
**Michael Maltzan Architecture, 2012**

- Iconic infrastructure as pedestrian lookout apparatus
- Urban connectively and landscape as catalyst for growth

This project marks a changing attitude about the role of design in infrastructure development in LA. As the recent winner of the L.A.'s 2012 6th Street Bridge design competition, Maltzan's design suggests that a bridge is much more than an engineering project. Instead it can be the foundation for a new public realm. As part of a larger planning initiative in downtowns industrial district called the "Clean Tech Corridor"[2], this bridge is a symbol of increased connectivity between patches of residential, industrial and natural systems. Rather than a road that floats above the city, the scheme's concrete ribbons touch down to the ground creating an interweaving of public landscapes, pedestrian networks and bicycle paths. It spans between the historically working class Boyle Heights neighborhood, the Arts District, the industrial core, and the LA River, which is currently undergoing massive long-term revitalization efforts.

While the various paths and public spaces fuse different systems together, the bridge also acts as a stand-alone urban object and local landmark. Its form reads at the intermediate scale: smaller than geographic symbols of mountains and coastlines, yet larger than the individual architectural project. According to Lynch, this scale of landmark was essential for creating a successful image and intuitive way finding system at the district scale.[3]

Surrounding the base of the structure is a mixture of paved public spaces and parks that are connected by pedestrian and bicycle paths. The structure itself also serves as a concrete "Vertical Park" for recreation. Visitors are able to climb stairs on its undulating structural ribbons and view the city and river from an elevated lookout.

*2 Clean Tech Los Angeles Website, 2013*

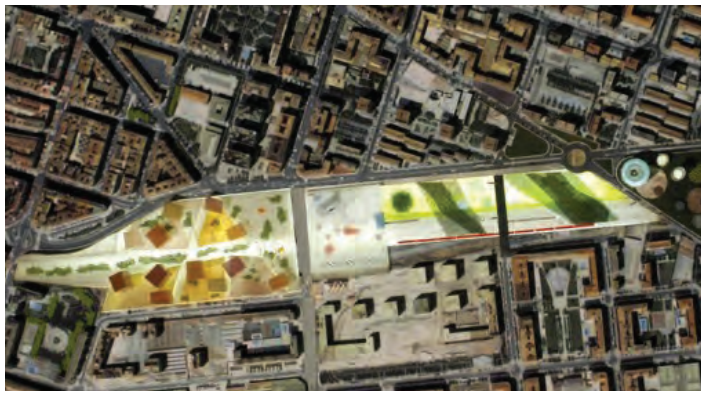
*3 Lynch, 1960, p.41*

**Logroño, Logroño, Spain**
**OMA, 2004**

- Rail as neighborhood connector rather than divider
- Station as visual orienting device

Paradoxically, the more connected a city is by infrastructure, the more divided it is. Linear connective elements such as rail and highway corridors connect regionally, but divide locally. Mid century highway development is a prime example of neighborhood division by infrastructure, but above ground light rail systems are also a barrier to pedestrian connectivity. In OMA's Logroño Station project, this is mediated by lowering the rail with a sunken public park so passengers are not disconnected from the city when they enter and exit the train. By doing this, the scheme transforms a dividing structure into a connecting device.

In addition to creating a public landscape, the scheme also proposes a dense modern city center around an iconic station. The large envelope structure of the station provides a covered, yet open, cool public space that is still connected with the outdoors and serves as an intermediate scaled landmark and orienting device. This large open-air structure acts as a mediating device between city, park, and infrastructure while framing views of the city.



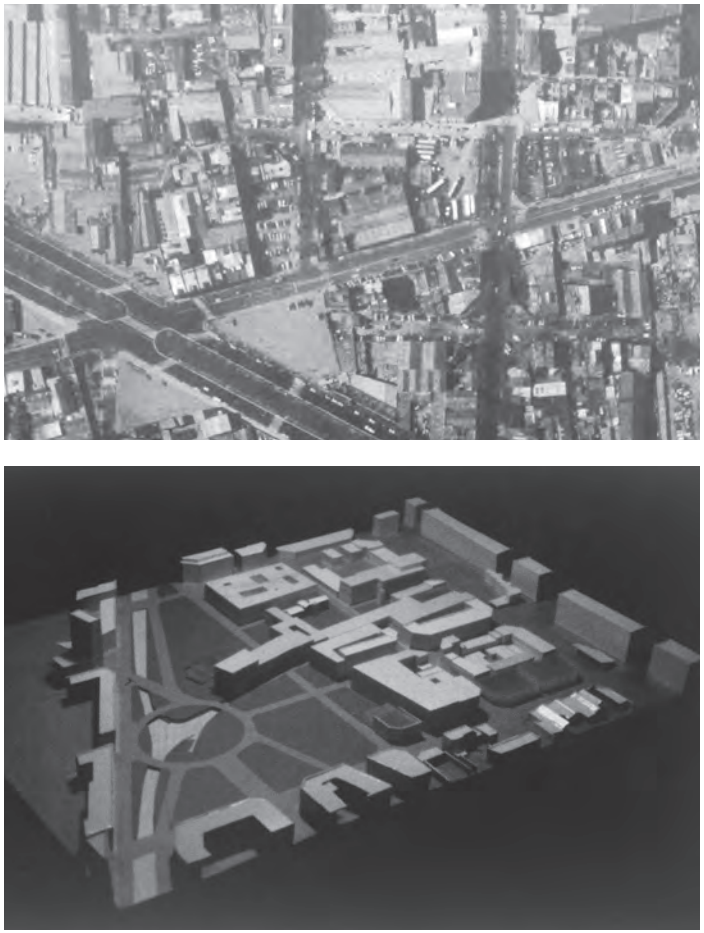
*Michael Maltzan, 6th Street Viaduct, Los Angeles, CA, 2012*
*OMA, Logrono, Spain, 2004*

**Poble Nou, Barcelona, Spain**
**Manuel de Sola Morales, 2001**

- Landscape as mediation between converging grids
- Autonomous plots and evolution over time

*"The city is not it's buildings, it's urban objects: [it] is the relationship between objects, between the experience of the urban objects." Manuel de Sola Morales* [4]

This project proposes the creation of a park as the mediation between conflicting street grids on Barcelona's diagonal and Cerda's square grid. There are two scales of intervention here: the large scale gesture of the triangular shaped landscape that fills the space between the two grids, and the smaller secondary structure of the public spaces that winds up through Cerda's grid to connect the fabric to the larger landscape. Through this plan, Sola Morales suggests that the design of the project lies in assigning values to the public realm that connects the buildings rather than designing the buildings or their programs. He argues for a flexible framework that allows for additions, subtractions and changes over time and the "autonomy of plots" around a "macro-plot" in order for the "evolutionary process" to happen.[5]



*Poble Nou, Barcelona, Spain, Manuel de Sola Morales, 2001*

*4 Sola Morales, 2008, p.139*

*5 Sola Morales, 2008, p.138*

# *CARTOGRAPHY AS DESIGN METHODOLOGY*

*"Maps are never value-free images; except in the narrowest Euclidean sense they are not in themselves either true or false. Both in the selectivity of their content and in their signs and styles of representation maps are a way of conceiving, articulating and the human world…"*

*- J.B. Harley* [1]

The act of mapping is a subjective practice. Cartographers have always had to decide what layers of information to map, what information to bring to the foreground, graphically highlight, or minimize. These graphic representations of data are powerful tools to uncover relationships between systems, find unseen spatial relationships, and communicate design agendas for a project. This thesis uses mapping as a generative tool for design. Through the act of mapping, designers can discover more substantive parameters to design within and limitations to design against in order to create responsive urban form.

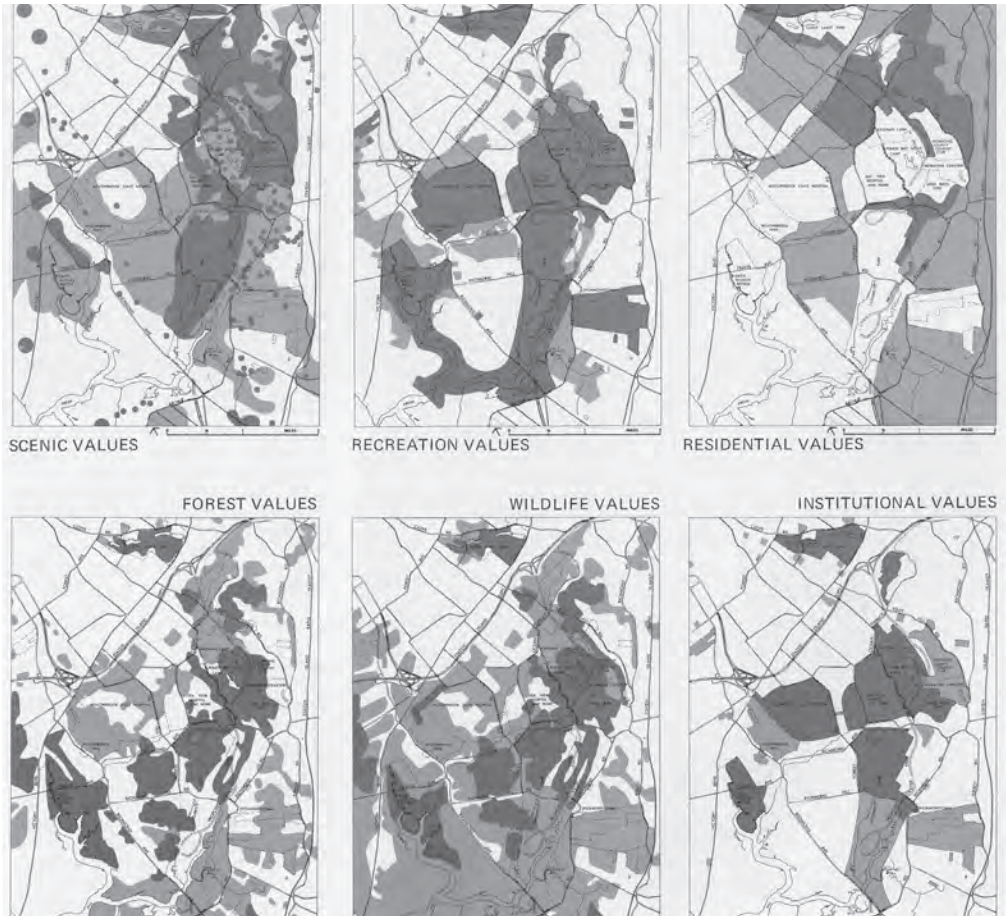
While architecture has more freedom to exist in a vacuum, large-scale urban design projects do not. When designing or re-designing large pieces of the urban fabric, design must be conscious of adjacent infrastructural systems, natural systems, socioeconomic demographics, and use patterns. In Los Angeles, this is even more important, considering its ubiquitous connection to infrastructure. How can mapping as a design methodology inform a more LA-specific design and development strategy around new transit?

With the overabundance of availability of digital data, designers must be even keener at deciphering what layers of information to isolate and how to craft a design agenda at the urban scale. This thesis proposes that through the act of mapping, a more substantive, grounded and creative project can emerge.

This thesis will explore three different mapping methodologies as a means for generating a spatial urban design agenda. The following mapping strategies will be deployed at three different scales for three different intentions. The following is a survey of the theory and history behind these methods.

- The Regional Overlay:
  Understanding Systemic Relationships
- Critical Projective Mapping:
  Revealing the Design Agenda
- Site Excavation:
  Uncovering the Past, Present and Future Context

1 *Harley, 1992, p.278*





*Richmond Parkway Project, Environmental and Social Factor Layers & Overlay with Highway Placement recommendation, Ian Mcharg (Design With Nature)*

## THE REGIONAL OVERLAY: UNDERSTANDING SYSTEMIC RELATIONSHIPS

Ian McHarg revolutionized mapping as a tool for environmentally and socially conscious urban planning. As a landscape architect and planner educated at Harvard, he went on later to found the landscape architecture program at the University of Pennsylvania, where his legacy of thinking innovatively about the relationship between nature and urbanism has lived on.

Due to the Federal-Aid Highway Act of 1956 and the post-war construction boom, the American landscape was being consumed at a faster rate than ever before. McHarg foresaw this rapid development of highway infrastructure, land speculation, and suburban sprawl as having negative, irreversible environmental effects on the landscape and aimed to propose a planning methodology and cost-benefit analysis that took a more holistic view of project analysis. Traditionally when planning large highway projects for example, planners and transportation engineers quantitatively calculated the costs and savings of factors such as travel times, traffic safety, construction costs, operating costs, and maintenance costs. In his book, *Design with Nature*, published in 1967, McHarg argued that this analysis was dangerously narrow-minded and did not take into account the invisible social and environmental costs of a given highway projects and proposed a new approach.[2]

*"The objective of an improved method should be to incorporate resource values, social values and aesthetic values in addition to the normal criteria of physiographic, traffic and engineering considerations. In short, the method should reveal the highway alignment having the maximum social benefit and the minimum social cost."*[3]

McHarg brought these ideas into practice in the highly controversial highway construction project in Staten Island, New York, known as the Richmond Parkway. In order to highlight areas on the map with the highest and lowest "social values" he mapped individual layers such as historic sites, waterways, forests, wildlife habitats, recreational zones, scenic values, residences, and land value. By mapping each layer with three values of grey: the darker the grey, the more value, the lighter the grey, the least value. Once these layers were overlaid it became clear that the darkest areas were of highest "social value" and the lightest would be the area least affected by highway construction.[4]

Using this overlay mapping method to visualize "value" (whatever the cartographer defines that as) continue to be a powerfully visual way to communicate combined systems. At the time McHarg made these maps, computer aided cartography

2 *McHarg, 1969, p.35*

3 *McHarg, 1969, p.40*

4 *McHarg, 1969, p.41*

tools such as GIS (Geographic Information Systems) or high-resolution satellite photography did not exist.

**Applicability of Methodology to Thesis**

For the macro mapping of Los Angeles, this thesis will be borrowing McHarg's method of laying large-scale systems as an exploratory exercise in infrastructural adjacencies for the purpose of project site selection. In the Richmond Parkway study, McHarg layered maps that indicated where the highest "social values" were in order to make the case that a highway should not be built in these zones.

In this thesis, the regional overlay mapping will treat existing highways and man made infrastructure as part of the LA landscape. The mappings instead will be used to indicate what opportunities exist for future development should be mediate these complex systems. The overlay layers in this mapping exercise will include: topography, highways and roads, existing and proposed Metro lines and stations, parks, waterways, industrial zones and rail lines, and socioeconomic demographics. Overlap typology sites will be determined and the next phase of intermediate-scale critical mapping will solidify a design intention through the discovery of a problem.

## CRITICAL MAPPING: REVEALING A DESIGN AGENDA

*"Beyond the physical extension or reconstruction of urban space, the map has both recorded and determined countless aspects of human life and citizenship."*

*- Denis Cosgrove* [5]

If large-scale regional scale overlay mapping methods reveal relationships between layers through adding information, critical mapping does so through the act of subtraction. In order to determine how a design project needs to respond to a site, (environmentally, culturally, or socioeconomically), an agenda must be made through the practice of isolating a series of mapping layers together that have not typically paired in order to reveal relationships.

One of the more famous examples of mapping by isolation of layers is found in Dr. John Snow's mapping of the cholera epidemic in London in 1854. During this time there was no knowledge of how the disease was communicated and residents were leaving or boarding up their homes for fear of airborne contamination and in less than one week, three quarters of the population of this neighborhood had left for fear of contamination. Through his research, he hypothesized that the disease was water borne and might be communicated at the point of consumption. By graphically marking the number of

*5 Cosgrove, 2008, p.148*

deaths in bars at each address in relationship with the location of the local water pumps, his map was able to visually convey the relationship. This graphic spoke volumes and instantly defined the problem and solidified his hypothesis. By isolating the two layers of death locations and water sources, new information was brought to light and decisions could be made in order to fix it.[6]

Other critical cartographers have focused on mapping the temporal phenomena and experiential data that is not found in conventional mappings. The French Situationist movement of the 1960's explored playful and subjective readings of urban environments through mapping the physcogeography of Paris. In Guy Debord's 1957, "Psychogeographic guide of Paris", he mapped the various neighborhoods of Paris and the perceived mental distance between them. By mapping the connections between these fragments as thick and thin arrows, the experience of distance is mapped rather than the calculable distance. Mappings such as this can begin to indicate an ephemeral emotional reading of a city and relate that experience to the physicality of the urban environment.

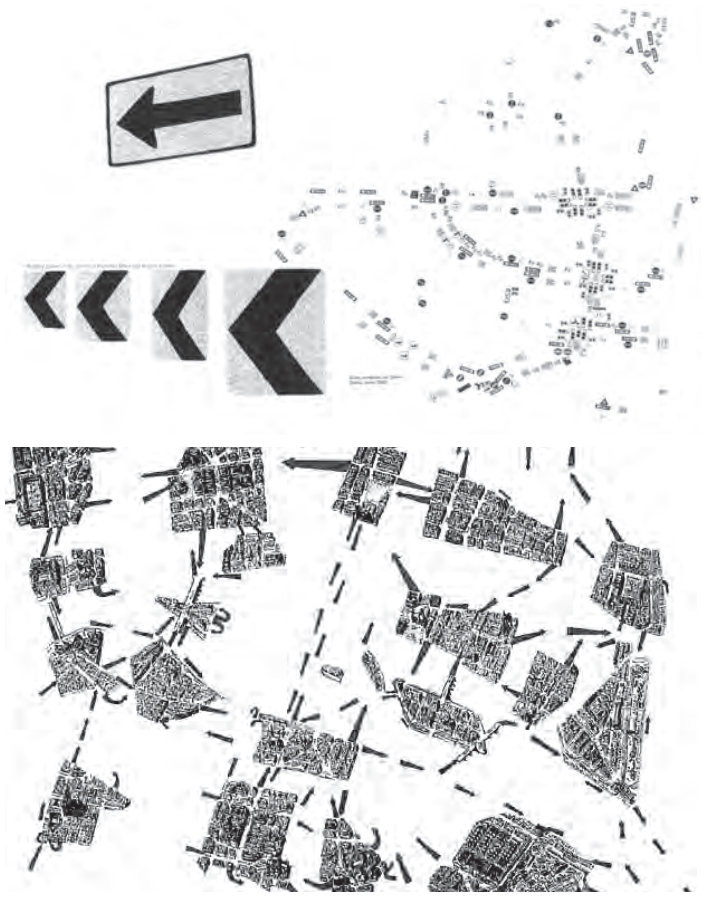
More recently in the 1970's, geographer and landscape architect, Denis Wood, most known for his book, *The Power of Maps* (1992), developed mapping curriculum for his studios at North Carolina State that were tied to mapping the unseen in order to fully read a site. Culminating into an atlas called, *Singing and Dancing: A Narrative Atlas of Boylan Heights*, his students isolated one layer of information at a time and read new meaning into those. These layers ranged from sewer systems, to star light, streetlights, jack-o-lanterns, and street signs. By mapping unconventional patterns, students were able to draw new conclusions about the site and therefore inform future projects with new layers of experiential and hidden information.[7]

Landscape architect James Corner uses critical mapping methods as a device to map describe temporal relationships as well as a projective tool for generating future design projects. Borrowing from the theory of Deleuze and Guattari that the world is a complex, non hierarchical set of relationships, a "rhizomatic mapping" can be employed to "structure new and open ended relationships."[8] In his own design work, his mappings of large-scale landscape issues layer multiple data sets of current site conditions as well as projective ones to suggest new futures for the site.

*6 Tufte, 1997, p.29*

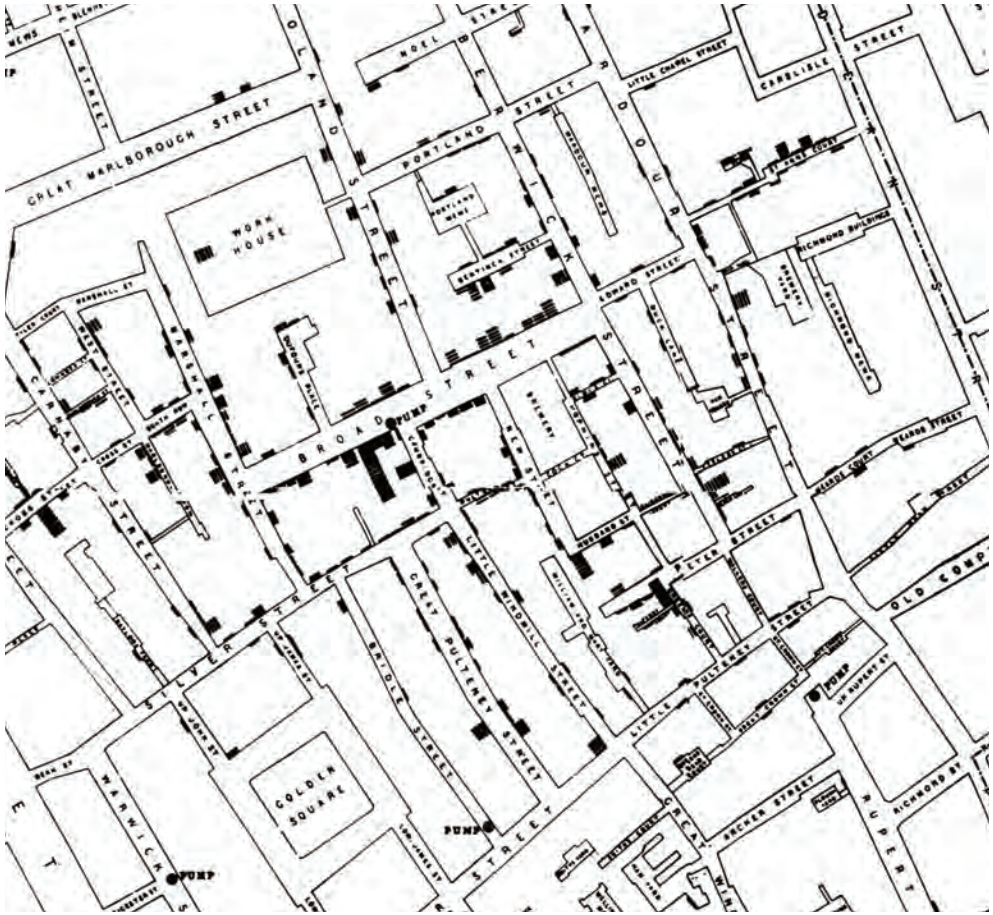
*7 Wood, 2010*

*8 Corner, 1999, p. 245*

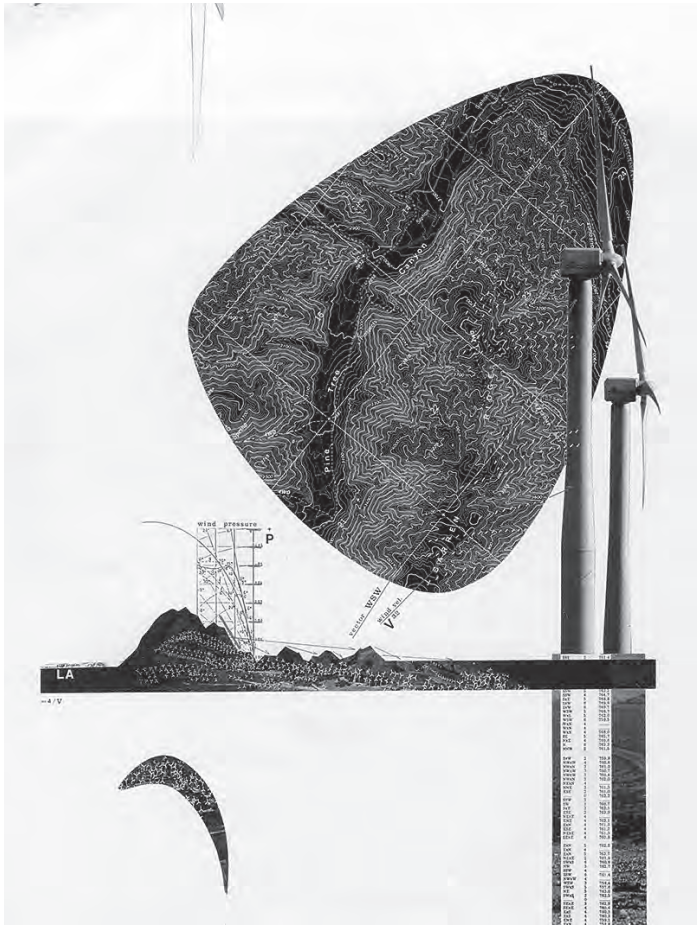


*Traffic sign Map, Denis Wood, 2010*

*Guide Pychogéographique de Paris, Guy Debord, 1957*




*On the Mode of Communication of Cholera, John Snow, 1885*




*Windmill Topography, James Corner, 1994*

An example of this work is the Windmill Topography, Los Angeles, 1994. In this map, Corner plotted various forms of site information on top of each other at different scales. These layers included topographic vectors (mountain ranges, air pressure, and wind readings), large scale agricultural geometries, mappings from radio telescopes, and the indigenous Hopi calendar. By mapping these multiples scales and types of data visually, Corner's maps verge on the poetic assemblages or lines and photo and "…suggestive of how temporal, systemic, performance networks can be rendered distinct from traditional cartographic concerns with static space."[9]

**Applicability of Methodology to Thesis**

In the "Mapping" chapter, this thesis will borrow critical cartographic methods by both isolating layers together to reveal relationships as well as map unseen, temporal elements in order to take a position of what the spatial parameters of designing LA's TODs should be. The layers I will be isolating and comparing will be topographic wind patters, traffic congestion patterns, pollution and health data, and political and market driven real estate development data.

9 *Corner, 1999, p.249*

## SITE EXCAVATION:
## UNCOVERING PAST, PRESENT AND FUTURE

While critical mapping may provide a design agenda and path for design projections, urban design projects should also react to contextual information from the site. At the scale of the project site, mapping methodologies of architects are useful. Two case studies that this thesis will borrow site-mapping methodology from Peter Eisenman's Artificial Excavation of his California State Long Beach Museum Project and OMA's Programmatic Layering of the Park Villette Competition. While Eisenman excavates past geometries and constructs narratives from the surrounding geography, Koolhaas maps future programmatic uses in overlapping strata. Both methods will be employed in the final design of this project.

Eisenman's museum proposal at the California State University at Long Beach (1985) is his most complete realization of a creative process he called "Artificial Excavations." Rather than simply designing a building to "symbolize the sheltering of art", he instead suggests that the "…program is an invention of a fiction about the building's own history."[10]

Eisenman constructs a series of line drawing overlays and manipulates the scale and rotation to create new figure ground shapes to either extrude or subtract from the site. His method can be described in four phases:

(1) Cartographic Figures: This phase sets up the basis of the site plan and is comprised of a series of superimposed macro-scale lines onto the site such as dominant land grids, the coast line of California, and the topographic lines of nearby mountains.

(2) Building Configurations: In this phase the architect begins to think about massing and how the given geometries in phase one can be carved out to create an form.

(3) Archaeological Cartography: In this phase different figures from historical maps are overlaid from four dates and layered to create a future scenario, which Eisenman calls, "Superimposition 2049."

(4) Inhabiting the Artificial: At the final phase, Eisenman works with the lines created in "Superimpostion 2049" and "inhabits" them with different mediums or colors and textures which then become detailed architectural plans of interior spaces.

Within this process, it seems that Eisenman strives to scale down the world and its complexities into a site, and its architecture. The mapping process aims to create a microcosm of the context and its history through the narrative of the design.

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*10 Balfour, 1994, p.160*

*"In a way, pieces of information become marks of intelligence, glimpses of the way culture organized itself. The combination of these maps shows how areas gradually became civilized and how man-made patterns came to supersede natural ones. The relationship of the natural to the man-made is symbolized in the constantly changing condition. One recognized in this project that architecture is about telling stories, and this stone text that is being written, this fiction, might tell a very different story about Long Beach than has ever been recorded before."*[11]

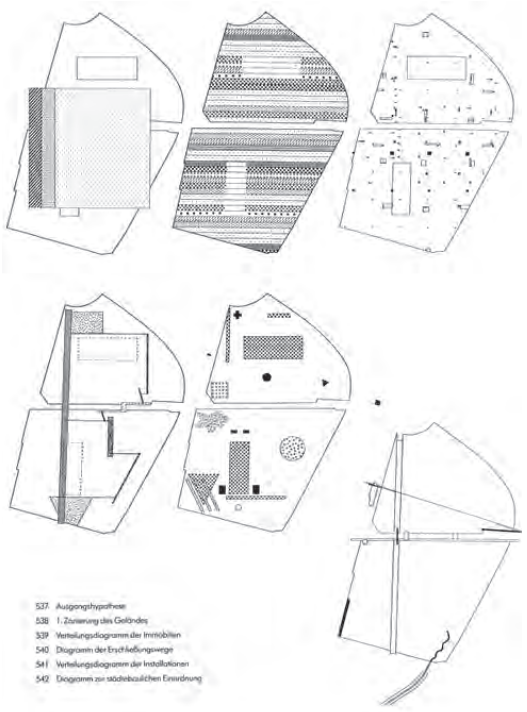
In the Parc de la Villette project, OMA also layers multiple mappings in order to tell a story. Rather than connecting to the larger systems of Eisenman's coastlines, land grids, and topographies, Koolhaas layers a series of internal logics on top of one another and composes a collection of overlapping fields. By layering future programmatic uses for the park across the site, striated bands emerge within the fabric. Unlike Eisenman's plan, there is no hierarchy here or nodal center in which to excavate and plan architecture. Instead, each layer's components are spread out across the landscape and together they make a center-less mosaic, much like the pixilated fabric of Los Angeles. This composite field has multiple destinations and nodes where users can create hybrid activities across the landscape's strata. Within the overlapping strata there is a sense of flexibility and indeterminacy so that users can activate different activities throughout time and nothing is too defined that it cannot be changed.

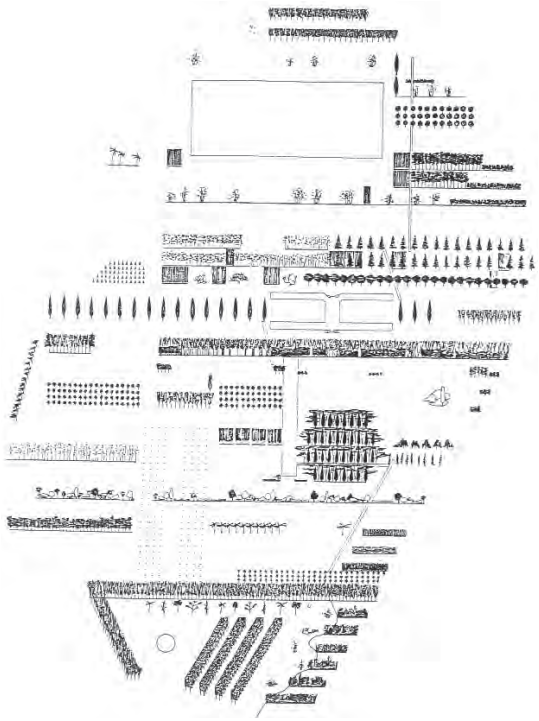
**Applicability of Methodology to Thesis**

Both of these approaches to site mapping are useful to carry forward into the project because they focus on different elements. While Eisenman's focus is creating a platform of overlapping geometries to generate figural architectural forms, Koolhaas creates a composite plan of field conditions where a multiplicity of programs can occur. For this thesis, both methods will be used in parallel to create a development strategy that has both figures (buildings) and fields (landscape / parks).

*11 Balfour, 1994, p. 169*

*California State University at Long Beach Museum,*
*Peter Eisenman, 1985*



*Park de la Villette, OMA, 1982*

# 03 / *MAPPING*

*A. The Regional Overlay:*
*Understanding Systemic Relationships*

*B. Critical Projective Mapping:*
*Discovering Design Parameters*

*C. Site Excavation:*
*Uncovering the Past, Present & Future Context*

# *A. REGIONAL SYSTEMS*

This section will examine LA through the regional overlay methods employed by landscape architect, Ian Mc Harg. As a city defined by its abundance of infrastructural systems, it is necessary to understand their spatial adjacencies with existing and proposed Metro stations. There is an opportunity for new development spurred by transit to address larger systemic relationships at the regional scale. What systems exist near new stations and how can the development enhance, mediate, downplay or feed off of those systems? The systems of freeways, waterways, major boulevards, population density, industry and heavy rail, and landscape will be mapped individually first and then overlaid. Once they are overlaid, eight overlap typologies will be identified and cataloged.

**FREEWAYS**

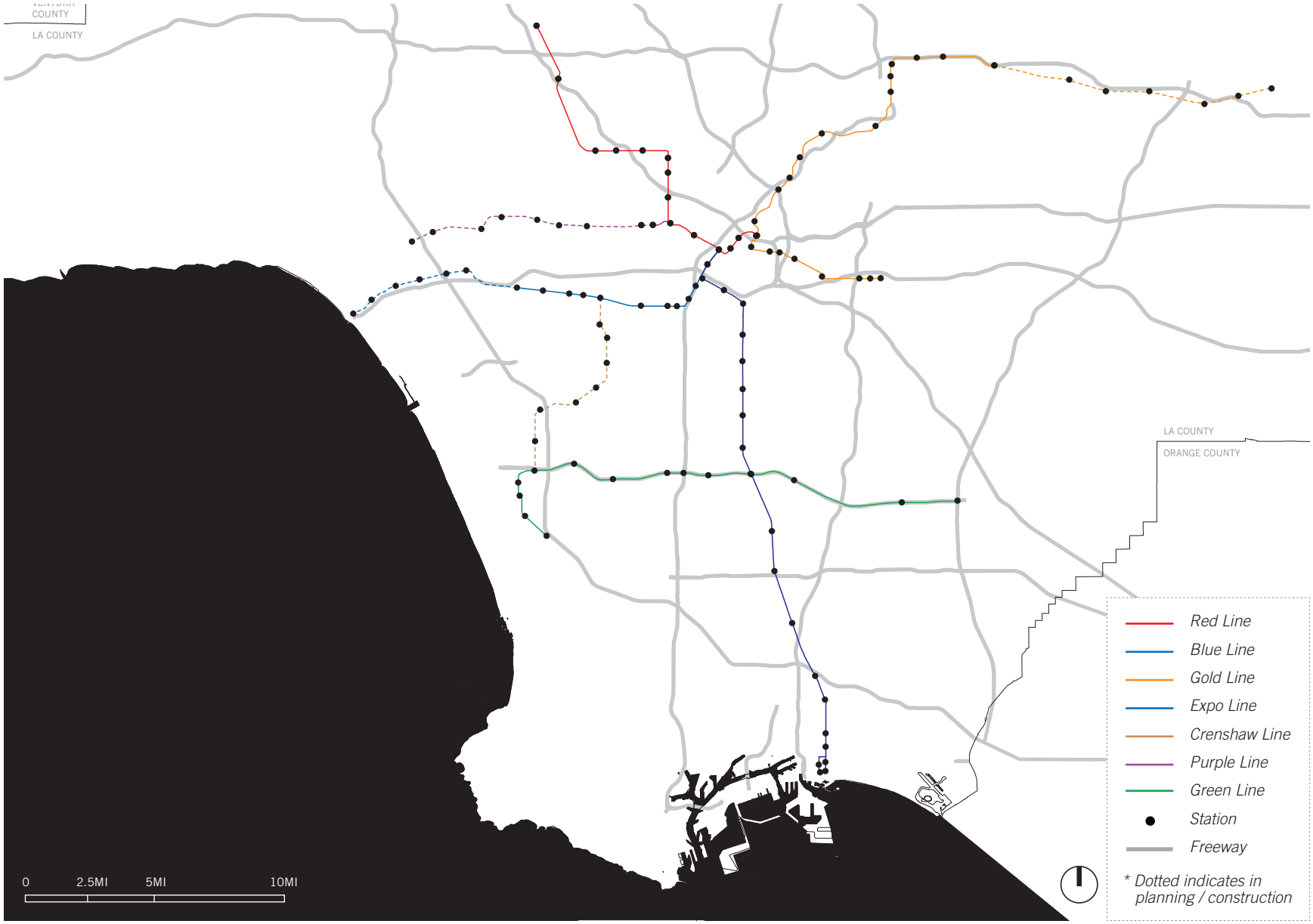
The symbol of the once progressive, decongested metropolis has become the negative stereotype of Los Angeles car dependence and sprawl. Defined by Banham as the Ecology of "Autotopia", the freeway system reads as less as one system and more as a continuous place.

"For the freeway, quite as much as the Beach, is where the Angeleno is most himself, most integrally identified with his great city."[1] In a region that preferences the periphery over the center, the freeway system is the strongest connective element and therefore becomes the central organizing figure.

New rail construction has follows many decommissioned streetcar paths, which are often adjacent to freeway routes. This in turn, has resulted in many of the new Metro stations and future TODs to be freeway adjacent.

What implications does this have for urban health if the city is promoting increased density near transit if this transit is also near poor air quality? What are the spatial and visual implications of designing large projects near freeways that are seen as part of a collection of intermediate landmarks?

*1 Banham, 1971, p.203*




*Planned and Existing Metro Transit and Highways*

## STREETS

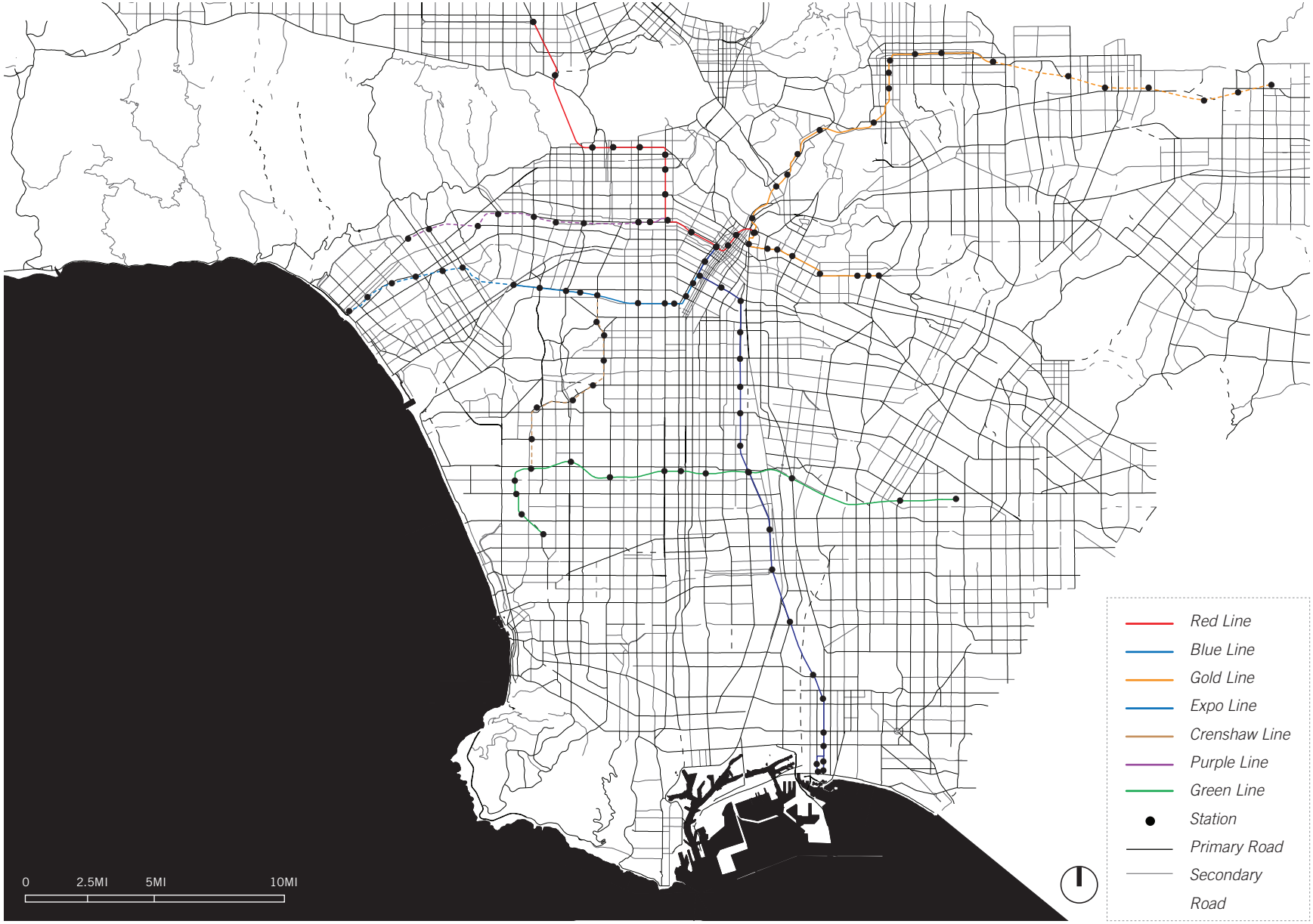
LA's large scale surface streets serve as a secondary highway. While the main arterial routes were established by early streetcar routes in the late 1800's, the substructure of the grid was planned to the dimension of the automobile. Except for disruptions for topography and a few historical grid patterns established by Mexican Rancho land holdings, the ortthogonal grid is homogenous.

In the 1920's, developer A. W. Ross saw potential for Wilshire Boulevard to be linear downtown and developed Miracle Mile as an alternative model to the congested traditional commercial core. He designed the streets and buildings to cater to the automobile rather than the pedestrian and required ample parking lots for all retail. Wilshire Boulevard. was the first in the country to use dedicated left hand turn lanes with turn arrows to ease traffic flow.[1]

This linear-core model was replicated all throughout the city and is the intermediate structure between the freeway system and single family suburban enclaves. The current challenge of increasing density in LA is the adverse effect of increased automobile's density and congestion on surface streets. New development is currently trying to calibrate new parking availability with market demands.


*Venice Boulevard*
*Miracle MIle Postcard, 1960 (Miracle Mile Residential Association, 2013)*

1 *Longstreth, 1997, p.127*




*Major Boulevards and Secondary Roads*

## WATER

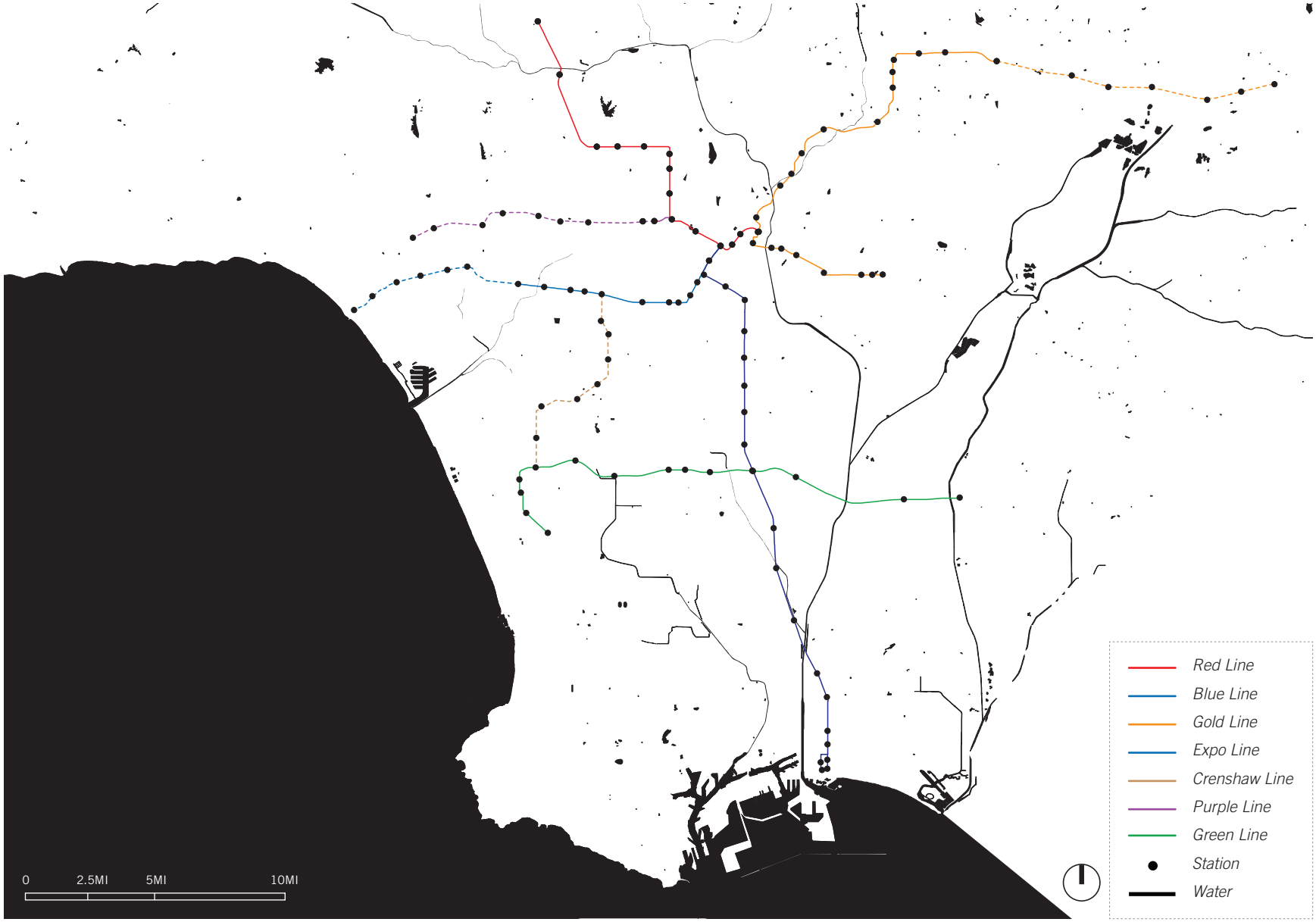
In the late 1800's, Spanish missionaries founded Los Angeles as an agricultural village on the fertile banks of the LA river, in what is now the industrial downtown core. As the population grew in the early 20th century and flooding became uncontrollable, and the U.S. Army Corps of Engineers paved the river and converted it into a 51 mile "water freeway" from the 1940's to late 1950's[1]. In recent years, momentum has built to take back the river and reconnect it with adjacent communities for civic use. The 2005 LA River Revitalization Master Plan, identify proposals that would make the Los Angeles River a "front door" to the City.[2] By demolishing parts of the concrete bottom and returning parts to it to its natural state, there is a seen potential to make this infrastructure a public landscape amenity once again.

The city has outgrown its local water sources and now imports 88% of its water from three major aqueducts that source water from Northern California and the Colorado River. As southern California's population continues to grow and water from these sources becomes increasingly scarce, municipalities have been forced to purchase water rights from Imperial Valley farmers to meet increasing demands.


*LA River, 1989 (USC Achieve Collection)*
*LA RIver, 2013 (Friends of the LA RIver website, 2013)*

*1 Gumprecht, 2001, p.41*

*2 LA CIty River Revitalization Project Website, 2013*




*Planned & Existing Metro Transit & Waterways (Metro LA, USGS)*

## INDUSTRY & HEAVY RAIL

Los Angeles is positioned at the crossroads of a major east-west and north-south trade axis. Its network of ports and heavy rail is the dominant economic infrastructure of the region.

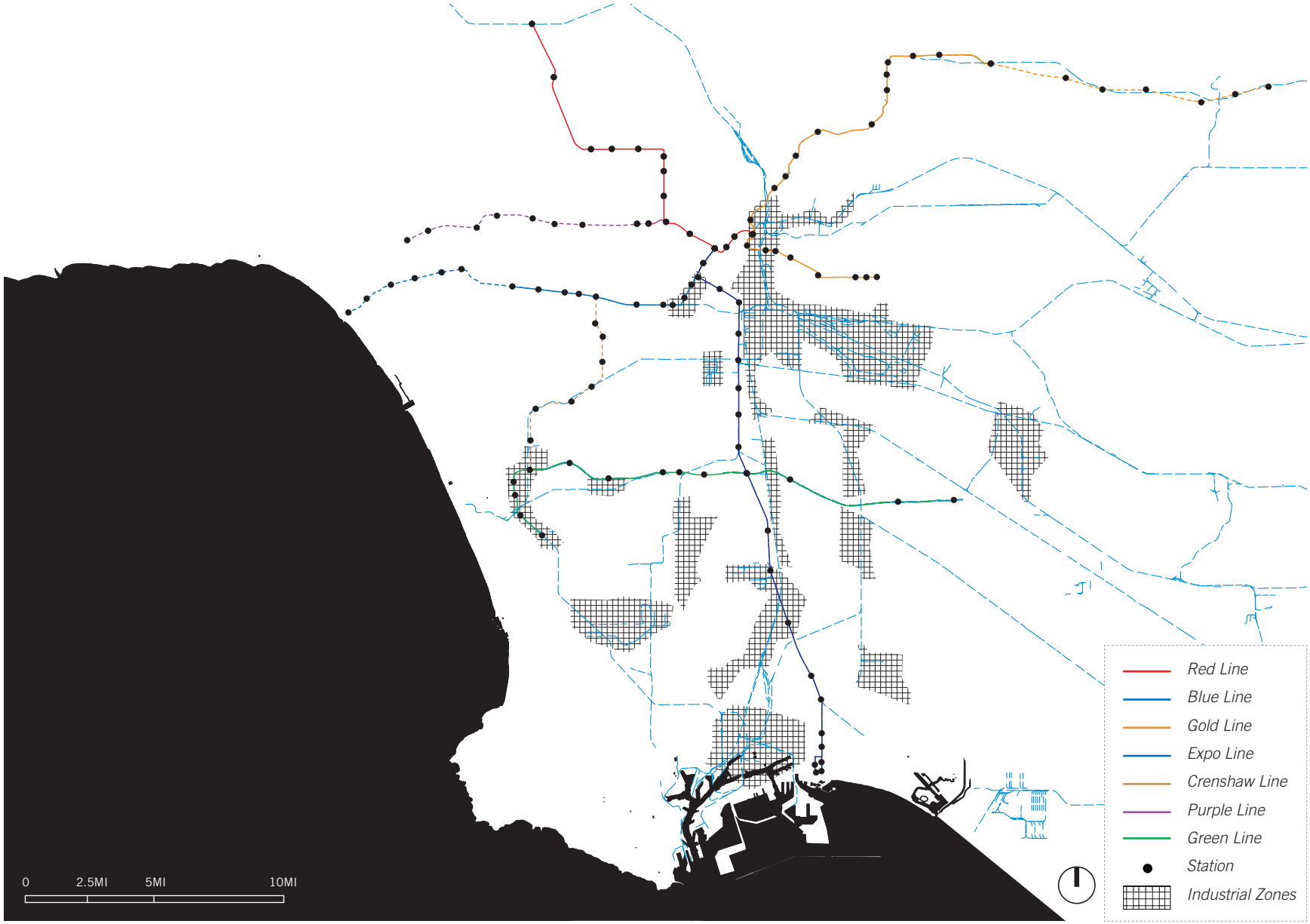
More than 40 percent of shipped containerized imports enter the US through the port of Los Angeles and Long Beach.[1] Free from surface level obstructions, the 4-lane underground Alameda Rail Corridor continuously carries goods north to multiple centralized distribution centers where they are travel to the rest of North America via truck and rail routes. This infrastructure was also well suited to meet the trade needs of the profitable 1990's NAFTA/WTO era and facilitates goods transfers from Mexico to the Interstate 5 and up north to Canada.[2]

Physically, this massive economic super structure has resulted in large swaths of anonymous warehouses and industrial parks woven throughout the city adjacent to suburban enclaves. New large scale urban design projects have an opportunity to mediate this edge between zones and possibly use some of these large, flat horizontal spaces for public landscapes.

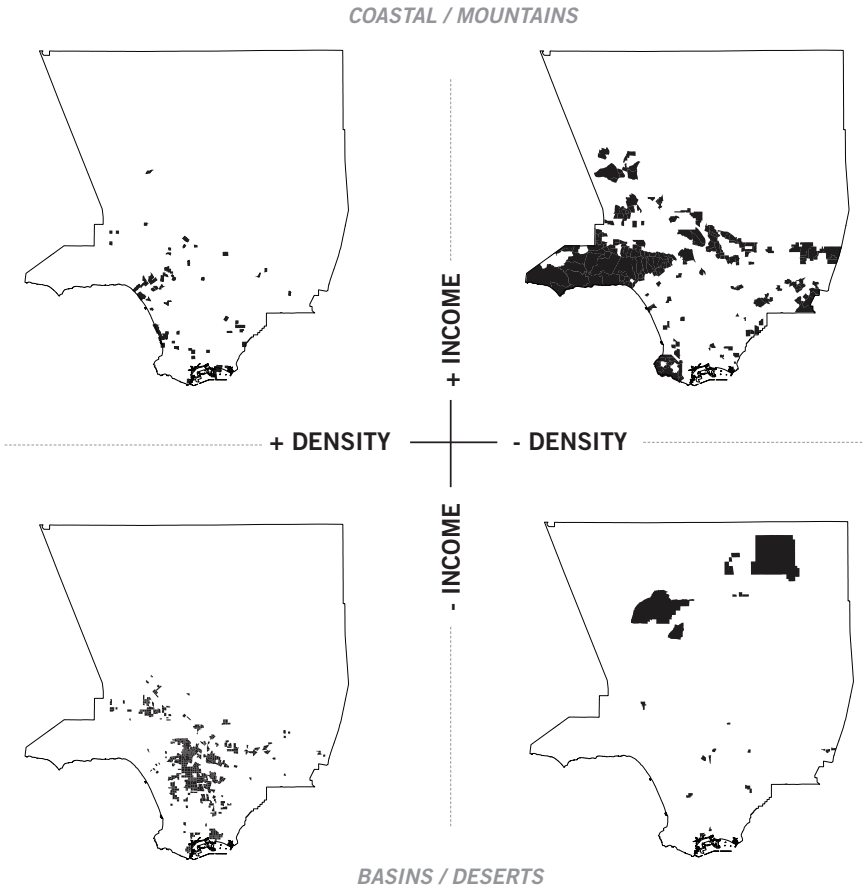
1 *Pacific Merchant Shipping Association (PMSA) Webiste, 2013*

2 *Day, 2009, p.xvii*

*Alameda Corridor "trench" (Photo by Lane Barden)*
*Port of LA (Photo by Noe Montes)*




*Planned & Existing Metro Transit, Heavy Rail and Industry: Distribution Centers, Manufacturing, Logistics Centers, Ports (US Census 2010, USGS)*




## POPULATION

Highest population densities are found in the central basin of the city. Current and proposed Metro lines are positioned to serve the outer regions of this central basin in the north-south direction but lack connectivity in the east-west direction.

When comparing density against median household income, this matrix indicates clear relationships between natural topography and demographics. Higher income populations generally tend to live near the coast (Santa Monica, Venice Beach, Manhattan Beach) and in the mountains (Hollywood Hills, Beverly Hills, Glendale). Within that demographic higher densities are found along the coast where land is scarce and plot sizes are smaller. Lower income populations tend to live in the flatter, central basin (South LA, East LA, Downtown) or extremely remote northern suburbs more than an hour drive north (Lancaster, Palmdale).[1]

* This matrix isolates and defines "high" and "low" densities and incomes relative to LA as the following:

- Low density = 0-5,281 People / sq.mi
- High density = 19,500-94,500 People / sq.mi
- Low income = $2,500-$30,000 Median Household Income
- High income = + $80,000 Median Household Income

*1 US Census, 2010*


*Planned & Existing Metro Transit, Population Density, Waterways, and Topography (MetroLA, US Census, 2010, USGS)*

## PARKS

As shown in the last population density map, the highest concentration of density is in the central basin, where the topography is the flattest. This map illustrates the lack of public park land in this central basin.

Due to the prevalence of the single family home which often includes both front and backyard space, a true reading of LA's lack of park space is often difficult to sense. In LA city alone, the backyards of residential properties equal more than 34,500 acres of green space, which is roughly the size of 41 Central Parks. However, the public green space only equals 15,600 areas of green space which is roughly the size of 18 Central Parks.[1]

While this may seem like a lot, these amenities are disproportionately located in higher income areas. Populations with the lowest income and highest densities often live in multi-family units with less private yard space and have less leisure time to travel to the beach or mountains.

The Olmsted-Barthalomew plan predicted this park shortage in their 1930, regional plan for LA, "Parks, Playgrounds and Beaches for the Los Angeles Region."[2] New transit projects once again offer an opportunity to think about LA planning in a systematic regional way. Many of these new transit projects will be located in dense parts of the city that are already "park-poor" and new urban design projects around transit should think about how they can provide high quality public landscapes or connect to exiting ones.

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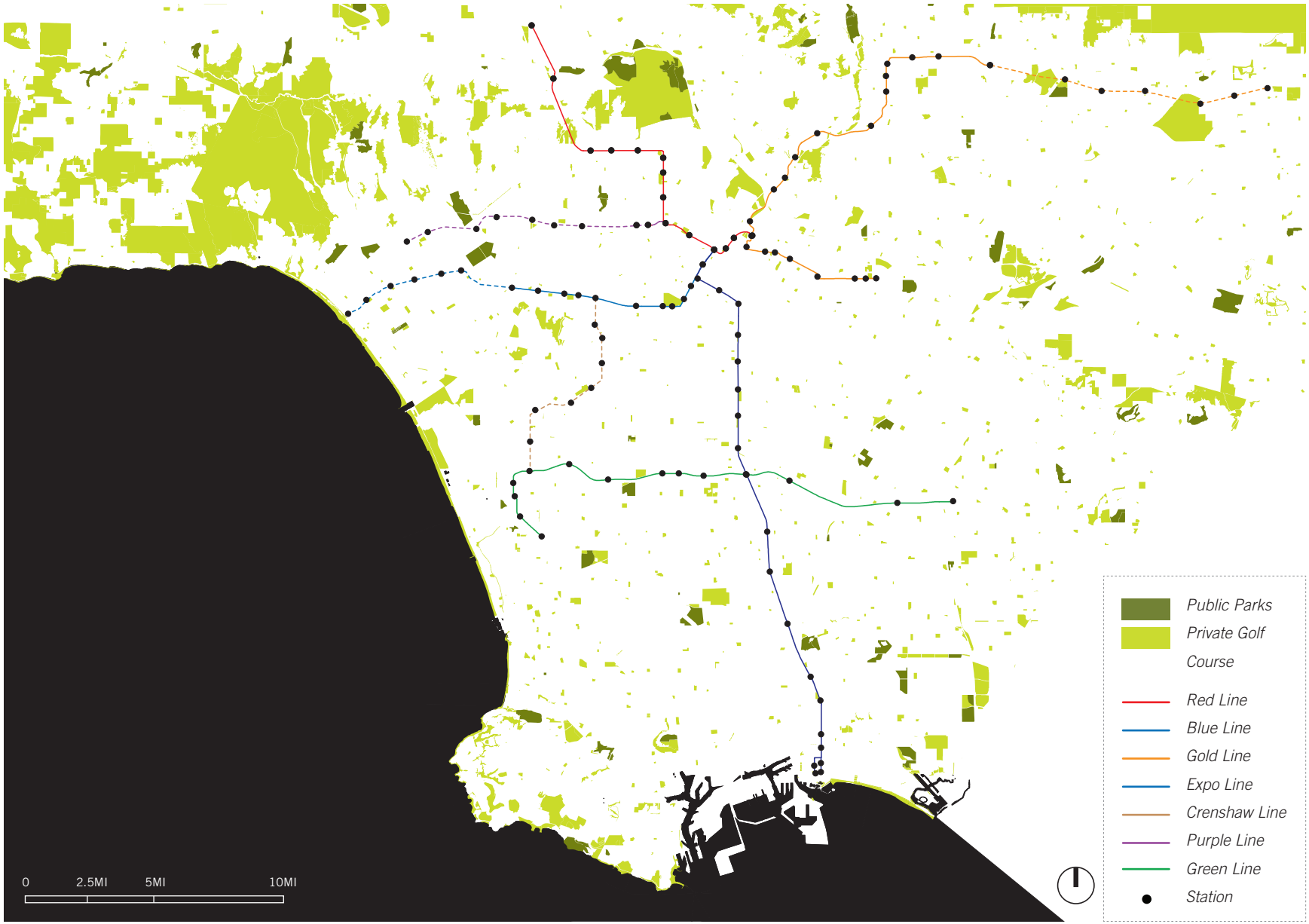
*1 Center for Law in Public Interest, 2007*

*2 Hise and Deverell, 2000, p.8*



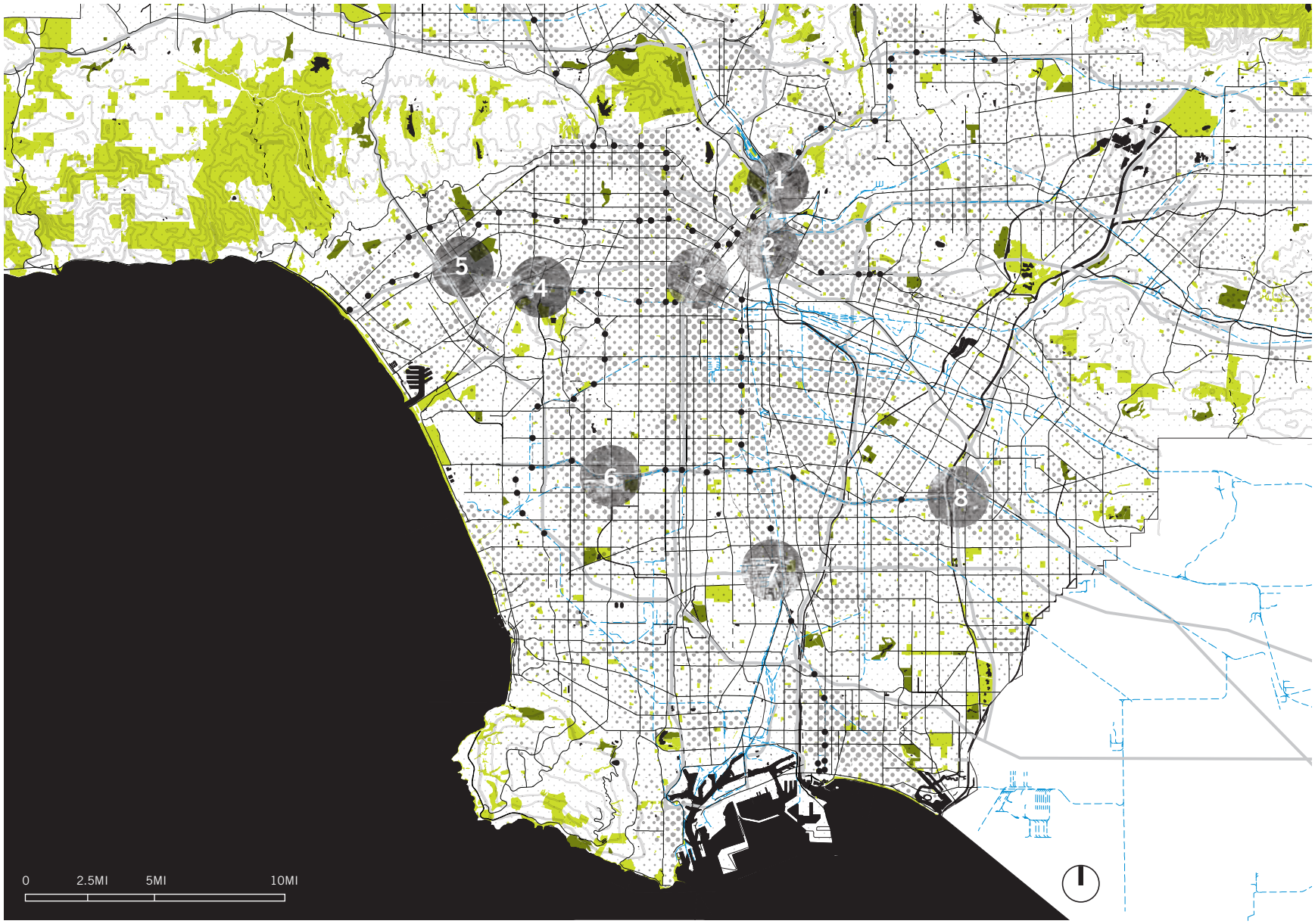

*Public Parks, Private Landscapes, Freeways, and Waterways (US Census, USGS)*

## POINTS OF OVERLAP

When layering the large scale regional infrastructural, natural and social systems in relationship to existing and upcoming transit projects, complex spatial relationships begin to emerge. In these overlaps, there are unique opportunities for urban design to take advantage of local conditions to connect future TOD's to recreational landscapes.

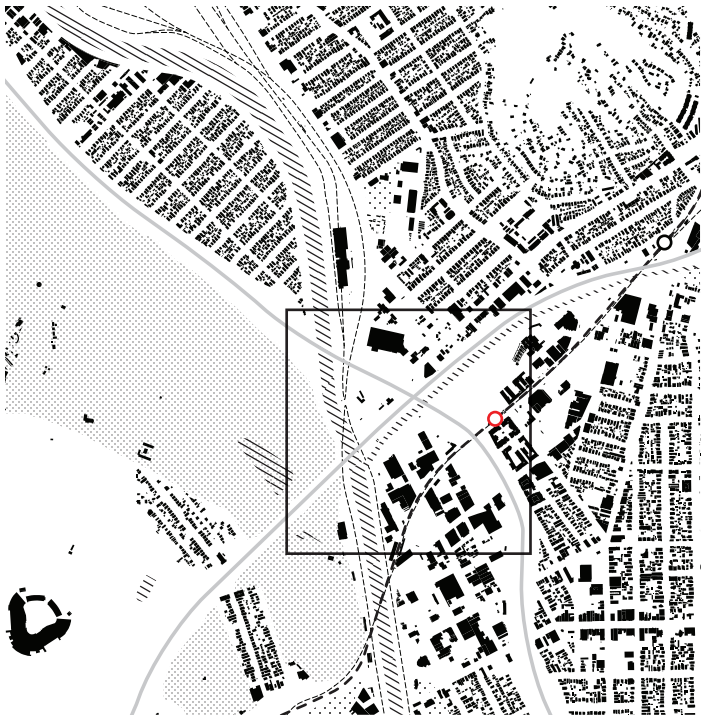
At the city scale, new rail stations and adjacent development can be reimagined as the conduit that connects the public to recreational landscapes. Olmsted-Bartholomew proposed a system of parks that were connected by auto-parkways. The contemporary LA park network has potential to be truly public and connected through mass transit. In this way, the actual transportation infrastructure becomes an extension of the networked park system much like Michael Maltzan's 6th Street Viaduct project.

The eight overlap points in this map typify some of the relationships between landscape, roads, waterways, highways and industry. The following pages are a catalog of the conditions in which potential urban infrastuctural landscape projects connected to rail have potential to create and enhance public destinations.




*All Regional Systems Maps Overlaid with 8 Overlap Typologies Highlighted*

# *OVERLAP TYPOLOGIES*



**Overlap #1: Elysian park**
Line: Gold / Stop: Lincoln Heights

- Landscape: Dodger Stadium & “Not a Cornfield”
- Freeways & Streets: Broadway and Spring bridges, 5 Fwy
- Water: LA river

***KEY:***

- *Water*
- *Landscape*
- *Heavy Rail*
- *Freeway*
- *Metro Line*
- *Station*

**Overlap #2: Boyle Heights**
Line: Gold / Stop: Mariachi Plaza

- Industry: Santa Fe Rail Yard
- Highway / Roads: 1St St. Bridge, 101 Frwy
- Water: LA River

**Overlap #3: Norwalk**
Line: Green / Stop: Norwalk

- Highway: 605 FWY, 105 FWY
- Water: San Gabriel River

***KEY:***

- *Water*
- *Landscape*
- *Heavy Rail*
- *Freeway*
- *Metro Line*
- *Station*

**Overlap #4: Carson / Lakewood**
Line: Blue / Stop: Del Amo

- Industry / Heavy Rail: Alameda Corridor
- Water: LA River
- Highway / Roads: 710 FWY

**Overlap #5: Crenshaw**
Line: Green / Stop: Crenshaw

- Industry / Heavy Rail: Alameda Corridor
- Water: Dominguez Channel
- Highway / Roads: 710 FWY
- Airport: Hawthorne Municipal Airport

***KEY:***

- *Water*
- *Landscape*
- *Heavy Rail*
- *Freeway*
- *Metro Line*
- *Station*

**Overlap #6: Culver City**
Line: Expo / Stop: Culver City

- Industry / Heavy Rail: Baldwin Hills Oil, Light Manufacturing
- Water: Ballona Creek
- Highway / Roads: 10 FWY, Venice Blvd.

**Overlap #7: Bundy / Sepulveda**
Line: Expo / Stop: Bundy

• Highway / Roads: 10 FWY, 405 FWY, Washington Blvd.

***KEY:***

- *Water*
- *Landscape*
- *Heavy Rail*
- *Freeway*
- *Metro Line*
- *Station*

**Overlap #8: South Downtown**
Line: Expo  / Stop: Grand Ave., 23rd St.

- Industry / Heavy Rail: Downtown Industrial Core
- Highway / Roads: 10 FWY, 110 FWY, Hoover St.
- Nearby Venues:  Staples Center

## SITE SELECTION: CULVER CITY STATION

Due to its multiple overlapping systems and position in the city, "Overlap #6: Culver City" has been chosen as the context of this thesis's future mapping and design investigations. This site is significant for a variety of reasons.

### Transit

Currently, the Culver City station is the terminus of the westward bound Expo Line, but construction for the Expo Expansion to Santa Monica will be complete in 2015.[1] This will make the Expo Line the first Metro line to cross the city and connect East and West LA. Running parallel to the 10 in the place of an old streetcar route, new Expo Line development will need to think about the environmental health implications of the adjacent air quality.

### Streets

Historically, the street grid in this area was guided by the dominant streetcar routes of Venice Blvd. and Washington Blvd. With the absence of the streetcars running down the middle of these boulevards, there is excess space here currently used up by concrete center dividers.

### Industry

The site sits at the north west base of the Baldwin Hills Oil Fields. The top of this mountain plateaued and developed into an oil field in the 1920's and is still a productive drilling site today. Sections of Culver City along Jefferson is also dominated by light manufacturing and custom fabrication shops.

### Public Landscapes

On the north most side the mountain there is a public park and hiking trail called the Baldwin Hills Scenic Overlook. This is adjacent to, but totally disconnected from the Ballona Creek, which has been paved over similar to the LA River. Within this sunken concrete channel is a bike path which connects to Marina Del Rey, but is barely used. At the moment there is no connection between these two landscapes. The aim of development projects around this Culver City station should better connect these landscapes to each other and to the Metro station.

### Changing Demographics

The 10 freeway has historically been a dividing line racially and socioeconomically, but that is also changing. South of the 10 has been predominantly working class African American neighborhoods, but this is currently changing and demographics are becoming more diverse.

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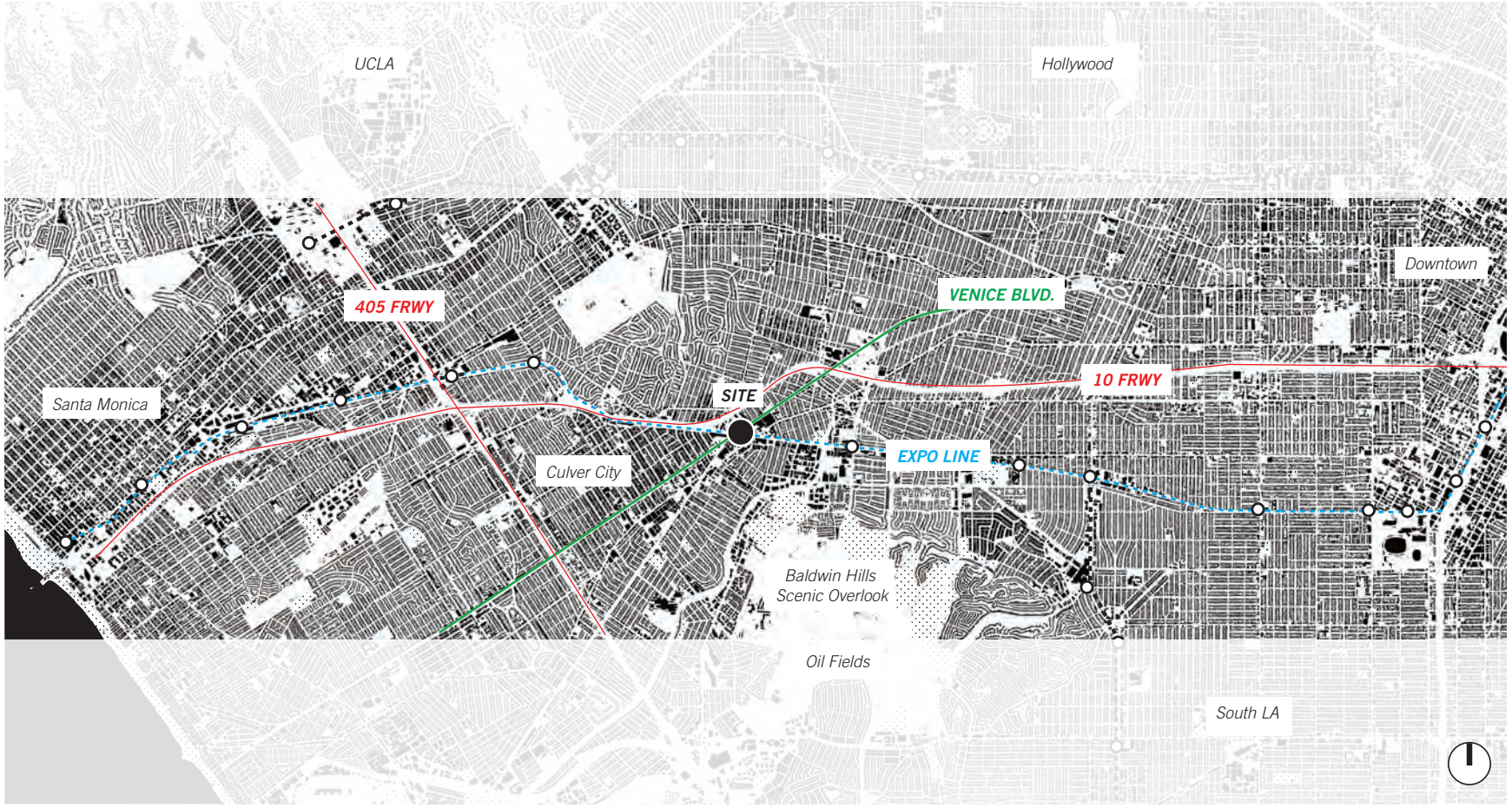
*1 Metro LA Website, 2013*




*Culver City site and context*

# *B. URBAN HEALTH PARAMETERS*

This phase of the mapping exercise will use critical mapping methods to isolate layers of information and combine them in order to reveal hidden relationships. Through this isolation of layers, a design "problem" is made apparent and the maps become projective tools to create an agenda for the design to react against. While the regional mapping series layered isolated systems on top of each other to find overlapping relationships between many systems, this series two of those systems will be isolated and further investigated.

These maps look at environmental health in relation to planned transit oriented development projects. As seen in the large scale regional overlays, many new transit lines are being constructed adjacent to freeways, and in turn will be developed at higher population densities. If TODs are part of LA's future growth strategy, what are the health implications of this freeway adjacent development? How can urban design mitigate the negative health effects of this poor air quality?

**AIR QUALITY IN LA**

While the 1970 Federal Clean Air Act and California's harsh emissions standards have improved air quality considerably, LA continues to have the worst air quality in the nation and four of the top ten worst congested freeway corridors in the country.[1] While California has some of the strictest emissions regulations in the country, levels of DPM (Diesel Particulate Matter) and PPM 2.5 (Ultra Fine Particulate Matter) are still more than four time over the national EPA standard. Both types of particulates have been linked to long term health effects such as reduced lung function and respiratory illness[2], heart disease, and aggravation of chronic conditions such as asthma and bronchitis. Recent long term health studies of children who live within 500M of freeways in LA have shown long term deficiencies in lung function and complications later in life.[3]

As seen in this map, locations of certain types of pollutants depend on their relationship with the two dominant features of the LA landscape: the mountains and the freeways. While DPM is heavier and tends to stay closer to the source, fine PPM 2.5 travels farther and are more dependant on wind patterns and tend to settle at the lowest point in the basin.

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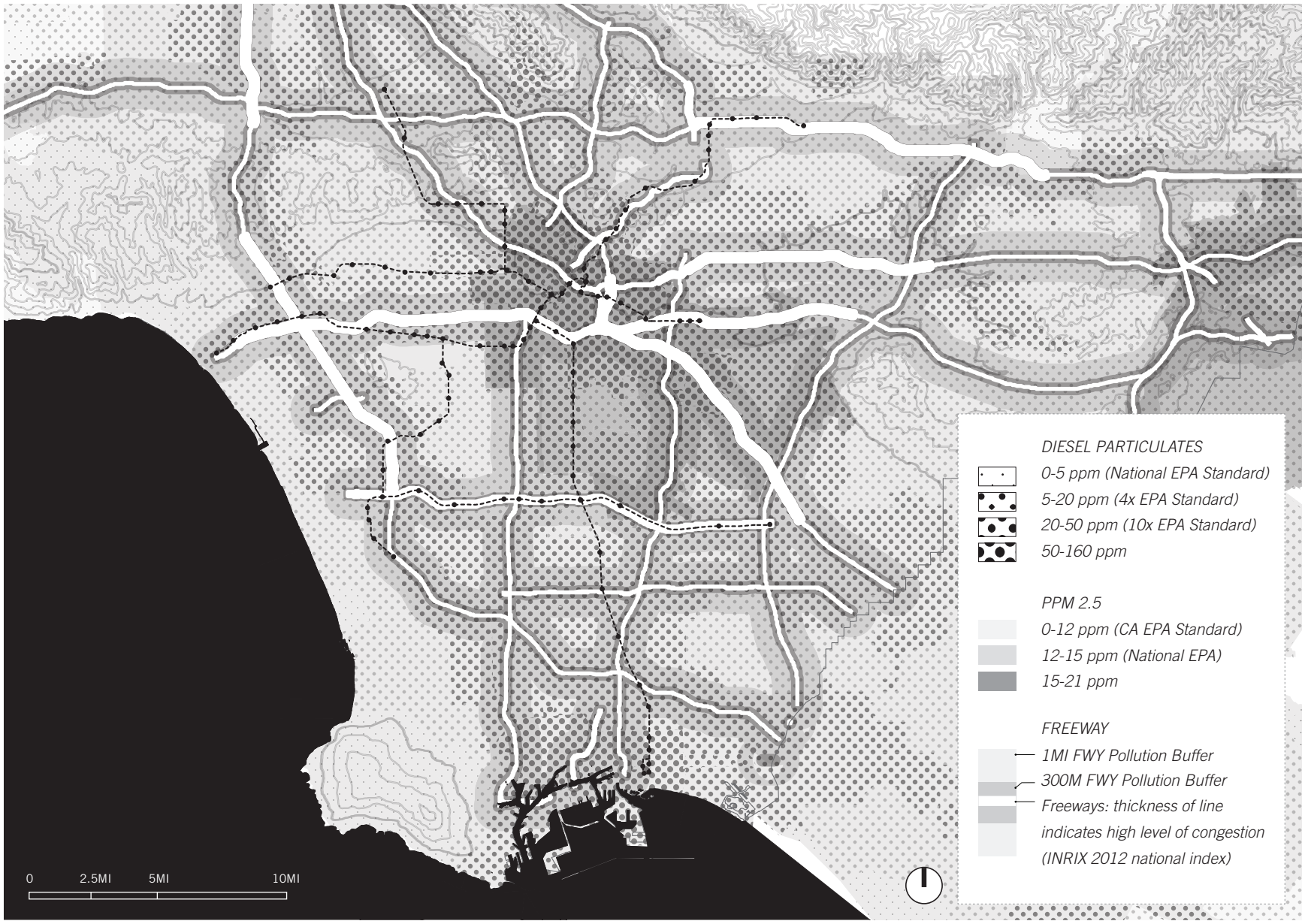
*1 INRIX Traffic Score Website, 2011*

*2 CA EPA Website, 2013*

*3 USC & Children's Health Study, 2007*




*Diesel Particulate Matter (DPM) & PPM 2.5 (Ultra Fine Particulate Matter), (California EPA / CalEnviro Screen Website, 2013)*

## FUTURE DEVELOPMENT + AIR QUALITY

Mayor Antonio Villaragosa's administration has been extremely active on the transit front and responsible for expediting many of the new transit projects under construction. In 2012 his office created the "Transit Corridor Cabinet (TCC)" in order to coordinate the city's department heads to better implement the transit oriented goals.[1]

However, LA may be so eager to be transit oriented, that it is rushing to build developments without properly weighing the environmental health risks of this building density in freeway adjacent zones. As this map indicates, there are three zones of new transit development happening on the Expo Line, the Crenshaw Line, and the Gold Line which are adjacent to three of the worst congested freeway corridors in the country.[2]

This map isolates the following layers of information:

- Sites of future Metro Stations with a 1/4 and 1/2 radius around it which is the typical 5 and 10 minute walking distance for the typical TOD model.
- Dangerous air quality buffer zones around all freeways in LA of 300M, 500M and 1mi (which is dangerous if located downwind).[3]

## WIND AND TRAFFIC

According to national congestions studies, the first, third and seventh worst congested corridors in the country are located in LA, and also adjacent to upcoming transit oriented development projects. Exposure zones to harmful particulates from idling car exhaust are enlarged
Generally, onshore wind flow moves east when land temperatures are warmer than ocean temperatures. When land area has cooled down more than sea surface temperatures in the evening, the wind moves back westward toward coastal areas.

This map indicates wind movement at 5pm in typical June weather, which is also the start of rush hour traffic. From this mapping, one can estimate that the Culver City site, as well as all the new Expo Line stops, will experience higher than average amounts of particulate movement into the site due to its position just east of the 405 and 10 interchange.

Just as architectural design responds and positions buildings in relation to sun and wind angles, urban design projects need to start thinking responsively about local pollution ecologies and design systems that aim to minimize negative health outcomes.

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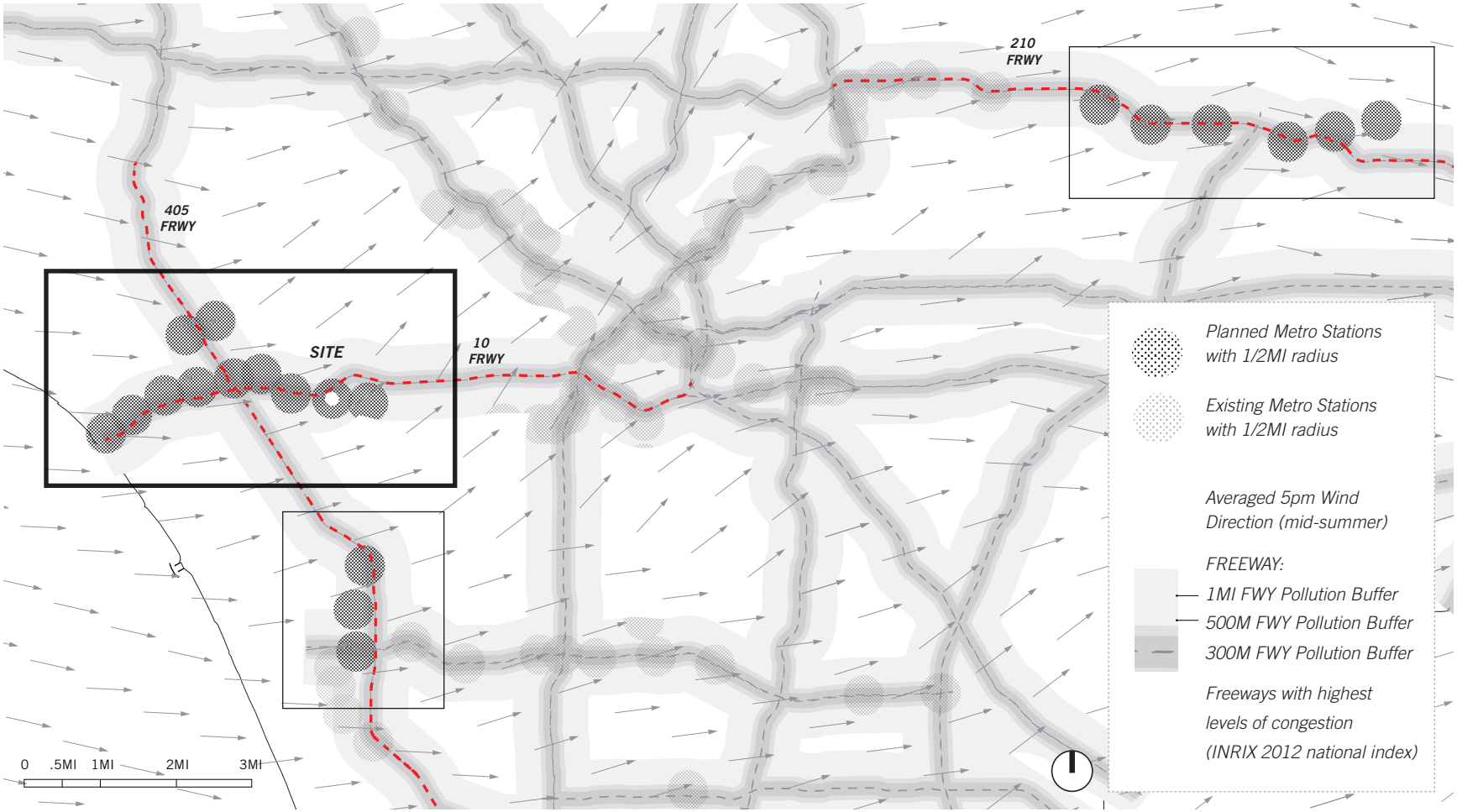
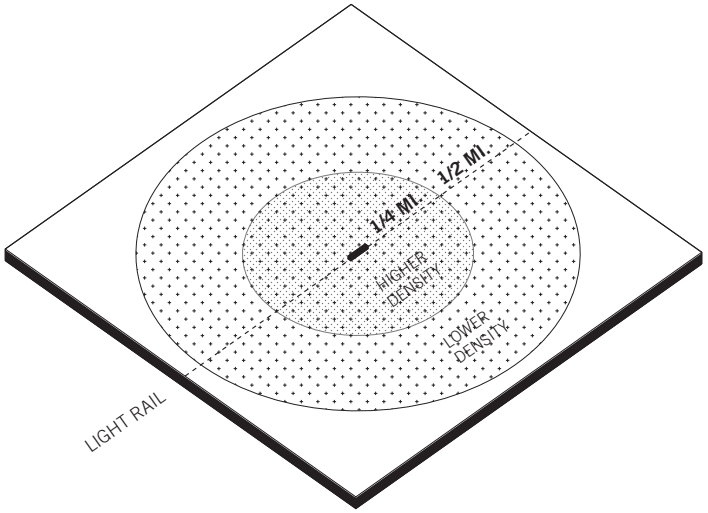
*1 City of Los Angeles Transit Corridors Cabinet Website, 2013*

*2 INRIX Traffic Score Website, 2011*

*3 USC & Children's Health Study, 2007*

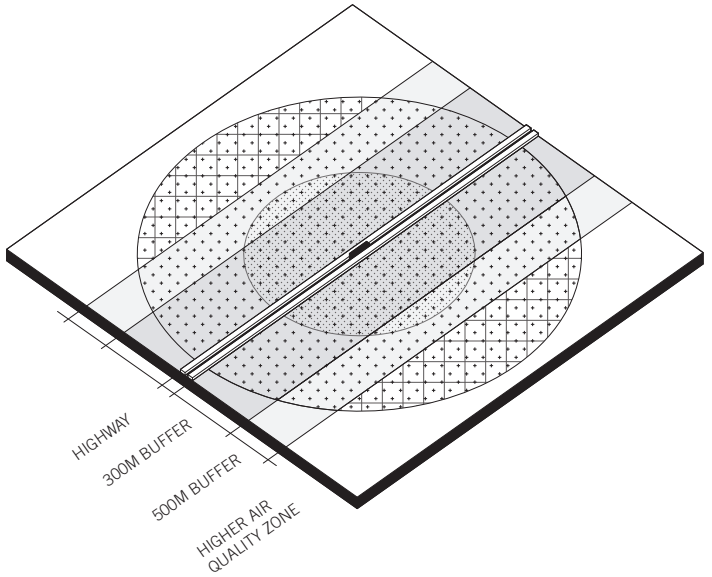

210
FRWY
405
FRWY
SITE
10
FRWY
0 .5MI 1MI 2MI 3MI
Planned Metro Stations
with 1/2MI radius
Existing Metro Stations
with 1/2MI radius
Averaged 5pm Wind
Direction (mid-summer)
FREEWAY:
1MI FWY Pollution Buffer
500M FWY Pollution Buffer
300M FWY Pollution Buffer
Freeways with highest
levels of congestion
(INRIX 2012 national index)

# *AIR QUALITY AS DESIGN PARAMETER*



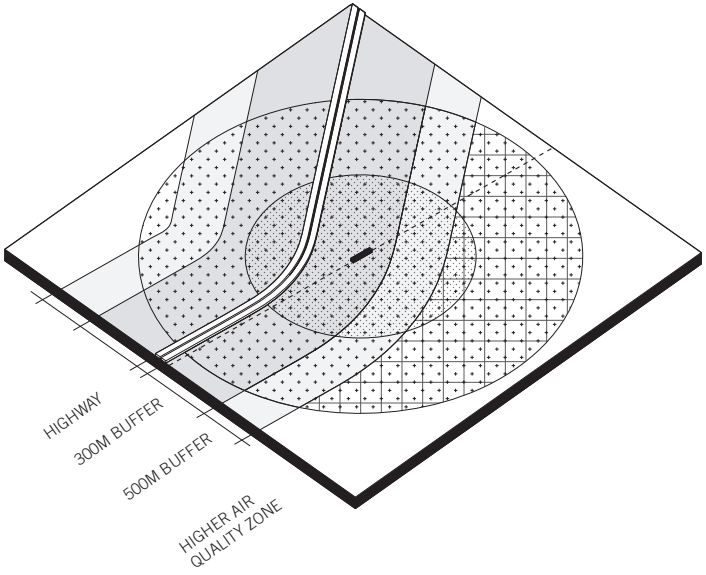

**Typical TOD Template Model**

The TOD model, introduced by Peter Calthorpe in the 1990s, is centered around building high-density development within a 5min walking distance (1/4mi) from a mass transit station and gradually reducing density and activity farther away from the station. Typically any development within a 1/2 mi radius (10min walk) is considered TOD.



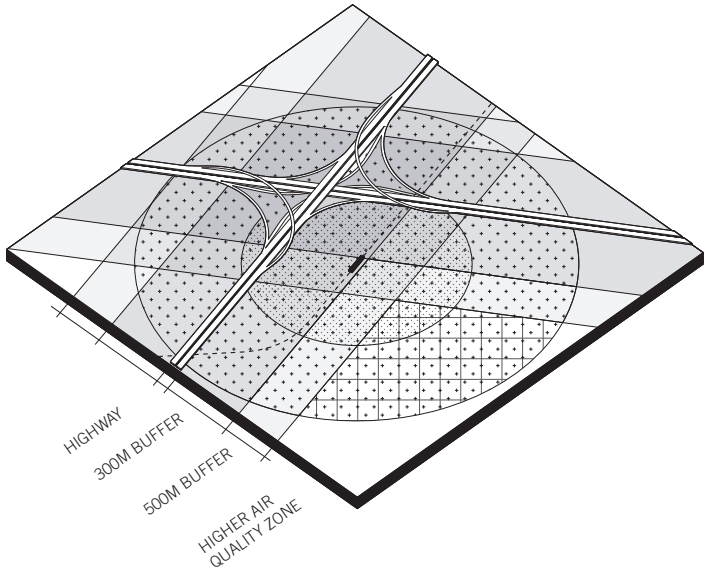

**LA Typology #1: Station in Middle of Frwy**

In this typology, the light rail station is elevated to the level of the freeway. When overlaying the 300M and 500M particulate buffer zones, the zones which have safer levels of particulates and are still within a 1/2MI walking radius are divided into two separate zones far away from each other and there are no safe developable real estate zones within the 1/4MI radius.




**LA Typology #2: Station Adjacent to Frwy**

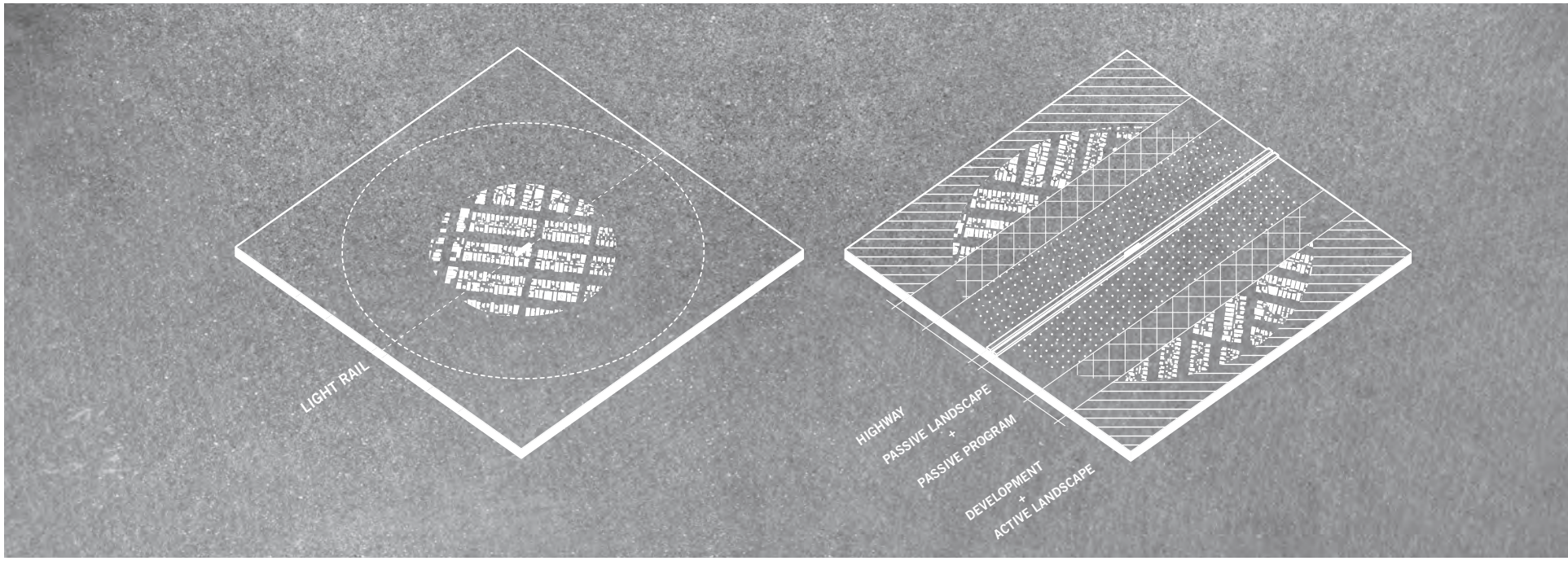
In this typology, the light rail station is pushed to one side of the freeway and in many cases runs parallel at varying distances. When overlaying the 300M and 500M particulate buffer zones, the safer developable TOD zone is pushed almost completely to one side of the circle. Depending on the distance of the rail station to the freeway, there is little to no developable land in the 1/4MI walking zones.




**LA Typology #3: Station Adjacent to Frwy Interchange**

This typology is the least ideal in terms of air quality and developable TOD space. When both freeway buffer zones of 300M and 500M are overlaid this leaves less than a quarter of the original TOD land area safe in terms of air quality. Similar to Typology #2, the area left for development within the 1/4MI and the 1/2MI walking zone is dependent on the distance from station to freeway.

# *PROGRAMMING THROUGH PARAMETERS*

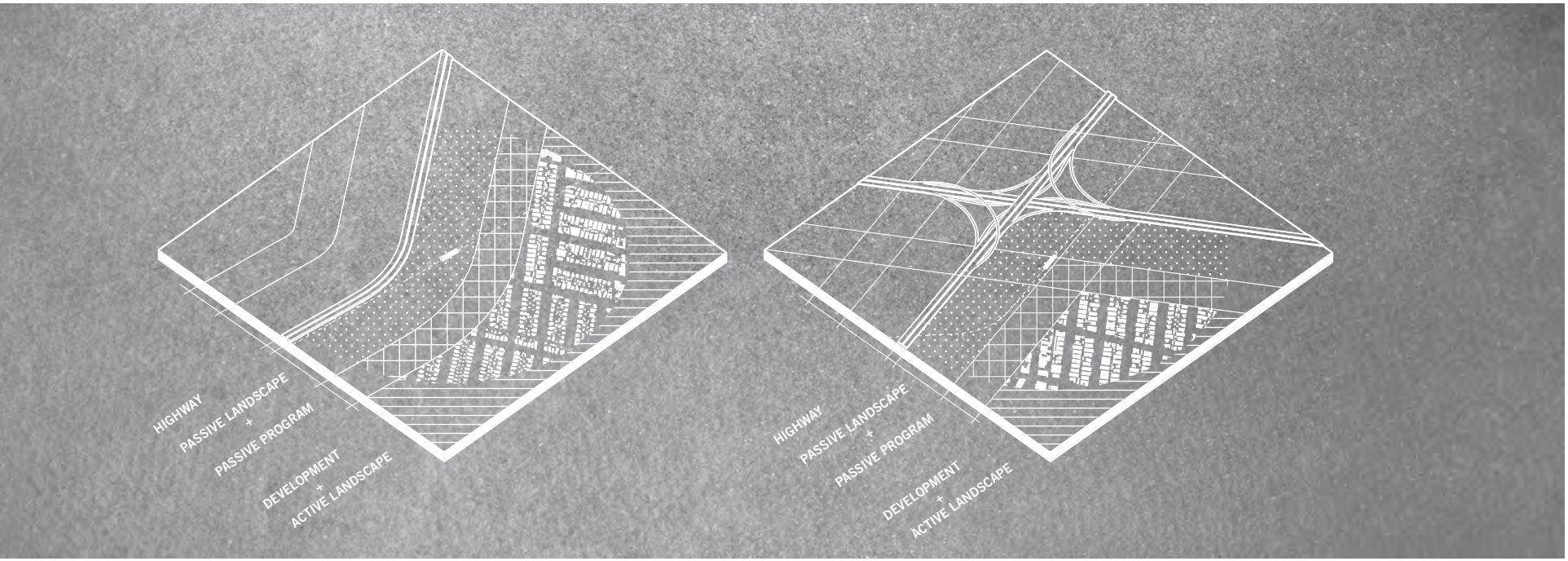



**Typical TOD Template Model**

Typically, TOD models cluster core commercial, residential, and employment around stations within the 1/4MI walking radius. In the zone between the 1/4MI radius and 1/2MI radius, or "secondary area," more residential and commercial are programmed at lower densities.

**LA Typology #1: Station in Middle of Frwy**

This typology inverts the typical TOD density model. Rather than dense residential or commercial development clustered directly around the station, it is pushed to the outside of the 1/2MI radius where air quality is safer. Passive Landscape (not for recreation) is within the 300M buffer zone is planted with trees suitable for filtering particulate matter from the freeway.




**LA Typology #2: Station Adjacent to Frwy**

Similar to typology #1, high density development and Active Landscape (for recreation) is pushed to one side of the TOD 1/2MI radius. In this way, residents and visitors are not clustered in high densities near freeways, but rather outside of the 300M and 500M particulate zones when spending time at public parks or residential developments.

**LA Typology #3: Station Adjacent to Frwy Interchange**

In this typology, the Passive Landscape strip takes an L-form to soak up harmful particulates and shield a smaller wedge of high density development from harmful air pollutants.

# *C. SITE EXCAVATION*

This phase of mapping geometrically maps the site in relation to its immediate context. This phase of mapping borrows from Peter Eisenman's methodology of "artificial excavation" used when designing the California State Long Beach Museum (1985). This step by step process that abstracts dominant site lines, grids, and natural patterns from the past and present and projects future geometries into the site.

The site of the Culver City station is notable not only for its abundance of overlapping systems, but also for its history. The site has historically been a combination of suburban, industrial and natural landscapes which remains the case today. The station sits on land that was once part of Rancho La Ballona, a Mexican Land Grant from the Spanish in 1819. The Machados and Talamanes families grazed cattle here until 1857, when it was sold to local politician, Benjamin Davis Wilson and re-parcelized.[1]

Later, developer Harry Culver bought 93 acres and established Culver City as one of Los Angeles' many all-white suburban communities. By 1917 it had expanded into 770 acres and incorporated into its own city. His first real estate ads read, "All roads lead to Culver City" because of its location at the intersection of Venice and Exposition Boulevards. Culver City remained largely rural barely fields and was an ideal location for film studios in the 1920's. Once MGM, Culver Studios, and Hal Roach Studios moved in, it became an epicenter for the film industry and movies such as e The Wizard of Oz, The Thin Man, Gone with the Wind, Citizen Kane were shot in Culver City.[2]

In 1924, oil was discovered in Baldwin Hills and soon developed by Standard Oil. At this time, Baldwin HIlls was still agricultural and grazing land relatively far from away from dense from residential development. Still active today, the oil field inhabits 1,000 acres and is currently the largest continuous urban oil field in the US.[3]

In the 1970's, most of the old movie studios were torn down and replaced with residential development and the area experienced a downturn until the late 1990's. At that time Culver City launched revitalization campaign to create a walkable entertainment and dining district in the heart of its historic downtown. The area is now an eclectic mix between middle-high end residential fabrics, a downtown commercial core, and large scale light manufacturing. Many of the city's custom fabrication shops are located along the base of Baldwin Hills

*1 Gumprecht, 2001, p.20*

*2 Culver CIty Historical Society Website, 2013*

*3 Fogelson, 1965, p.167*


*Site Aerial, 1948 (USGS Historical Archive)*


*Site Aerial, 2013 (Google Earth)*

## HISTORIC SITE PHOTOS

*Washington & Culver, 1963 (LA Times Photo Archive)*
*MGM Studios, Culver City, 1919 (C.C. Pierce Collection, USC Libraries)*

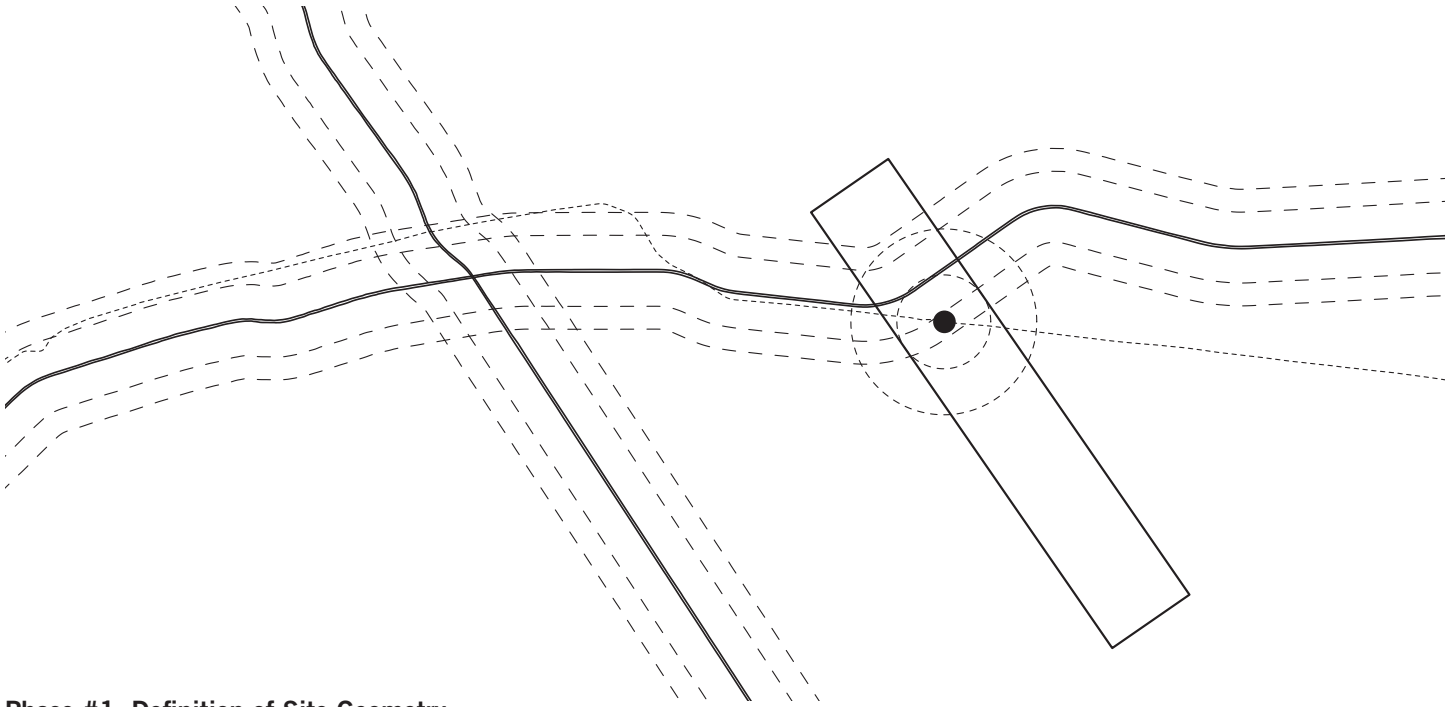
## PRESENT DAY SITE PHOTOS

*Baldwin Hills Scenic Overlook*
*View of Site from top of Baldwin Hills Scenic Overlook*

## PRESENT DAY SITE PHOTOS

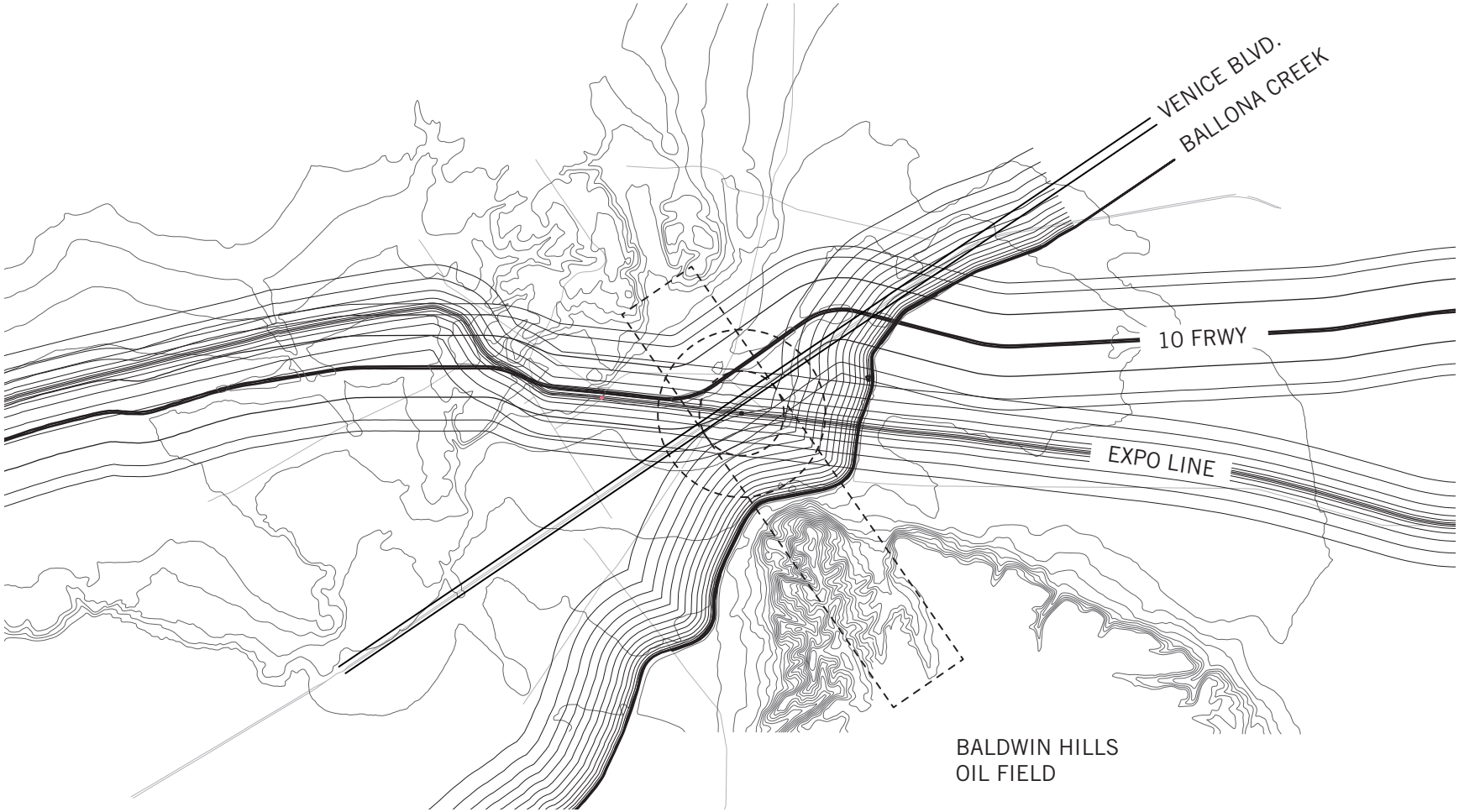

*Intersection of Venice Blvd. & National Blvd.*
*Elevated Expo Line running along Exposition Blvd., Culver City*

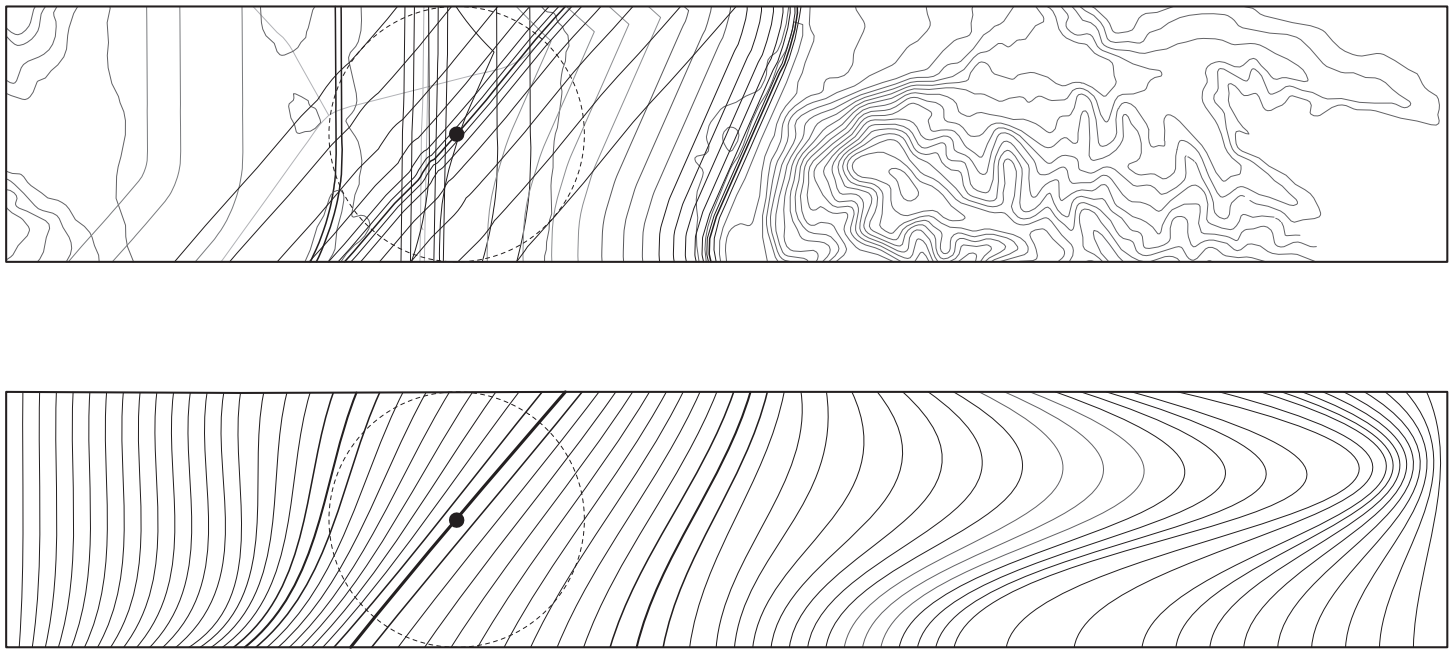
*Culver City residential neighborhood*
*Ballona Creek with Baldwin Hills Oil Field in background*



**Phase #1: Definition of Site Geometry**

The first phase of excavation begins with defining the dominant site geometries that define the project. In this case the standard TOD radius of 1/4MI and 1/2MI are used and overlaid on top of the 300m and 500m air pollution buffers. A third geometry of a 1/2MI wide bar has been overlaid to capture the dominant contextual systems, such as the Baldwin Hills Scenic Overlook and Ballona Creek. The mappings that follow will analyze the site geometries of the systems that fall within these areas and assign values to them accordingly.

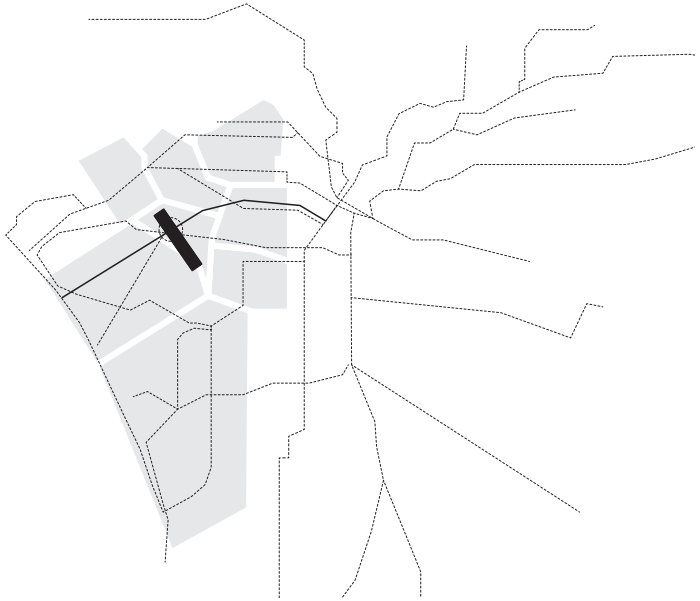

VENICE BLVD.
BALLONA CREEK
10 FRWY
EXPO LINE
BALDWIN HILLS
OIL FIELD



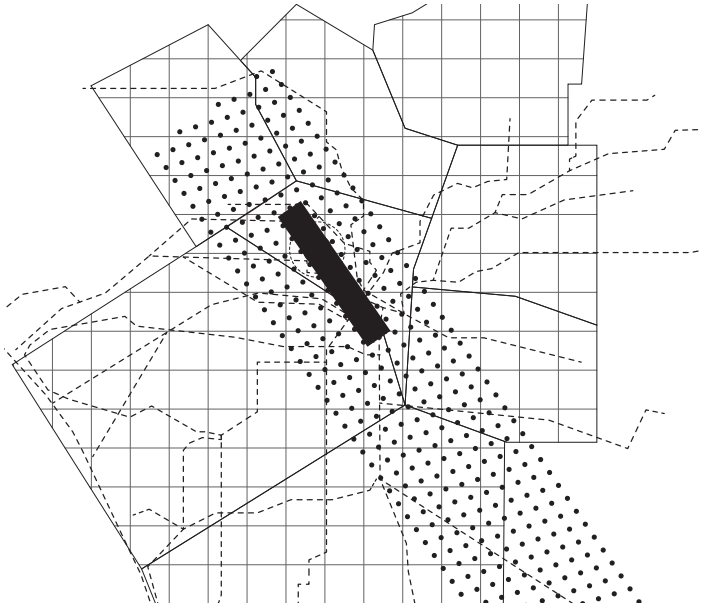
**Phase #2: Cartographic Figures & Abstraction**

In this phase, the dominant contextual site lines are overlaid, projected, offset, and then abstracted to create a cohesive site pattern and rhythm. This exercise diagrams the direction of the dominant flows through the site, and also weights their intensities.

Here, the lines of the 10 freeway, the Expo Line, Venice Boulevard, the Ballona Creek, and the topography of Baldwin Hills are overlaid. The abstracted site diagram shows the three most dominant site lines to be the 10 freeway, the Expo Line and the Ballona Creek.



*Site in context of 1898 Rancho map & streetcar network*



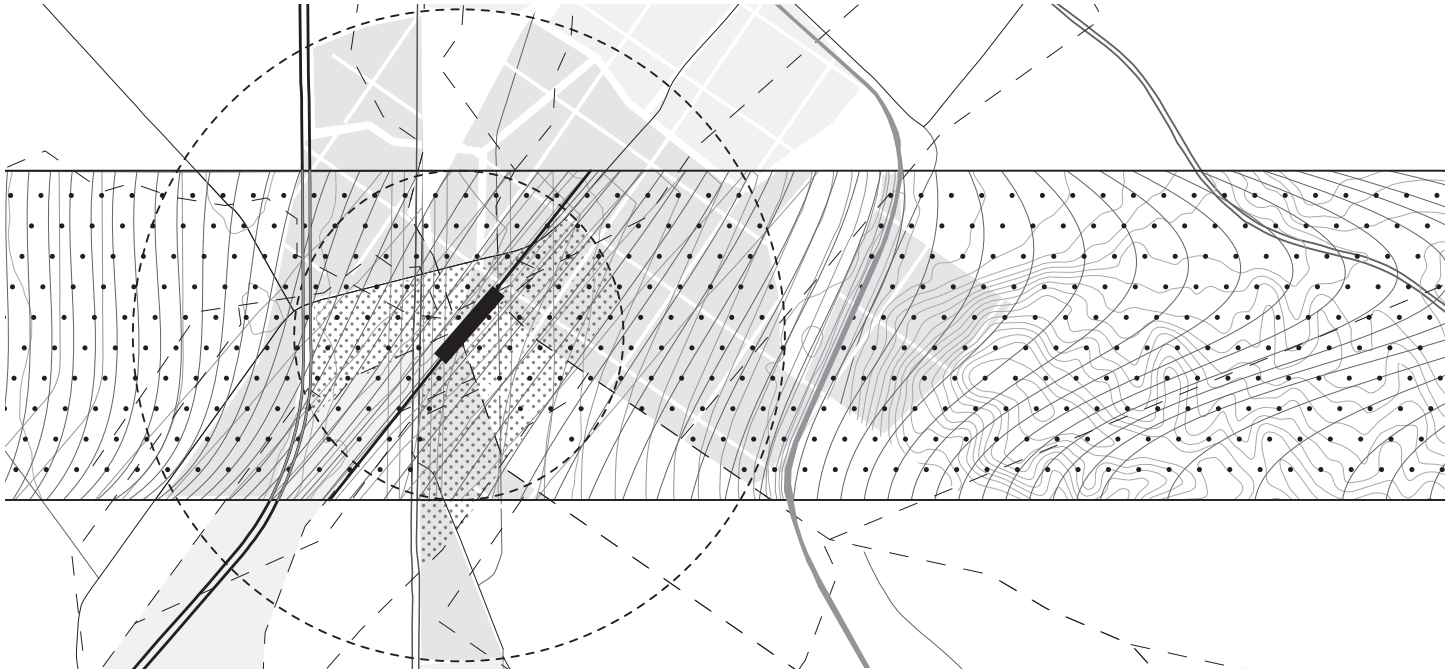
*Abstraction and addition of Baldwin Hills Oil Grid*

*Mexican Rancho Map of LA, 1898*
*(LA Library Archives)*

*Baldwin HIlls Oil Field, 1920's*
*(UCLA Historical Archive)*

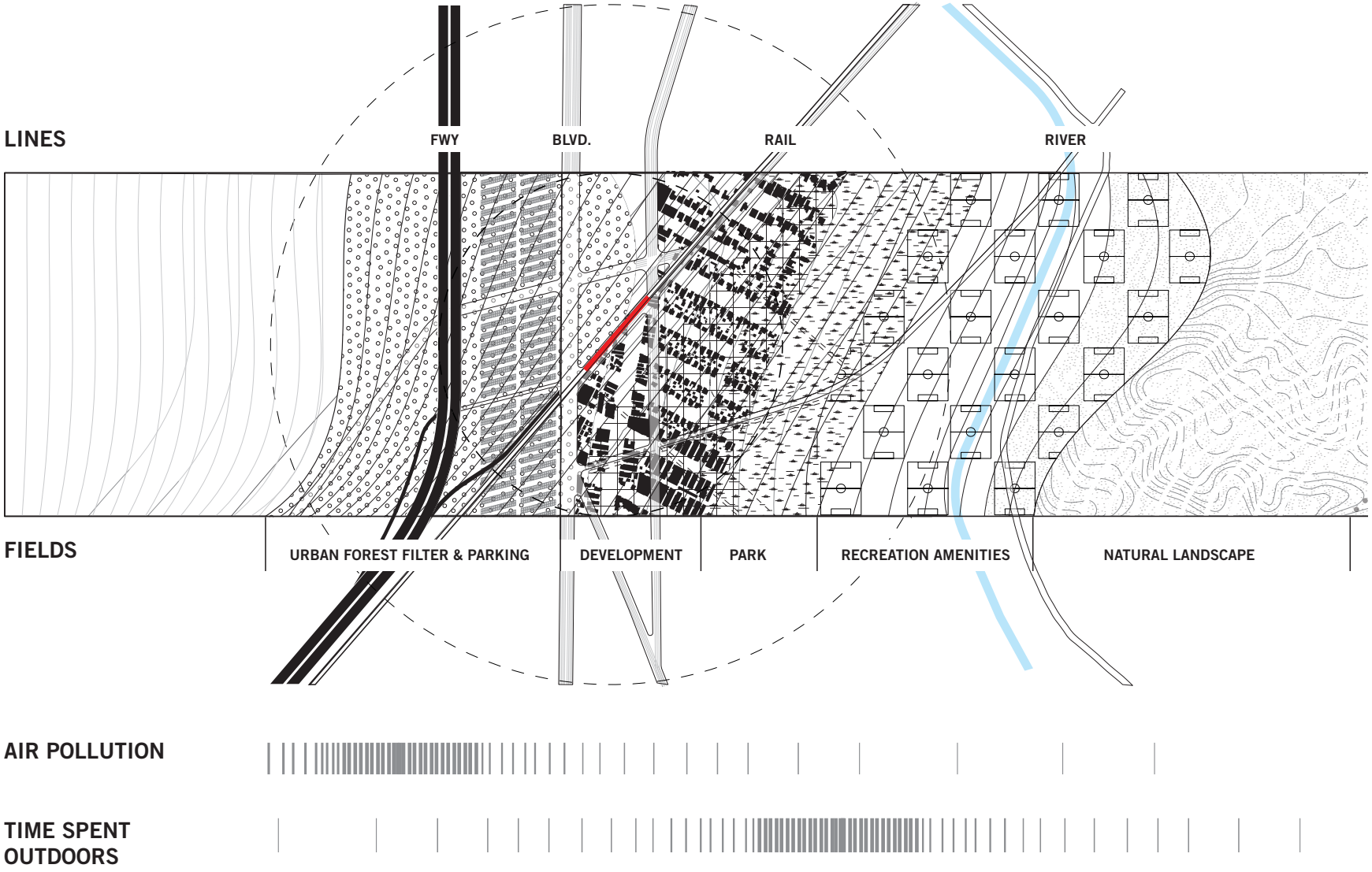
*Baldwin HIlls Oil Field, 1920's*
*(UCLA Historical Archive)*

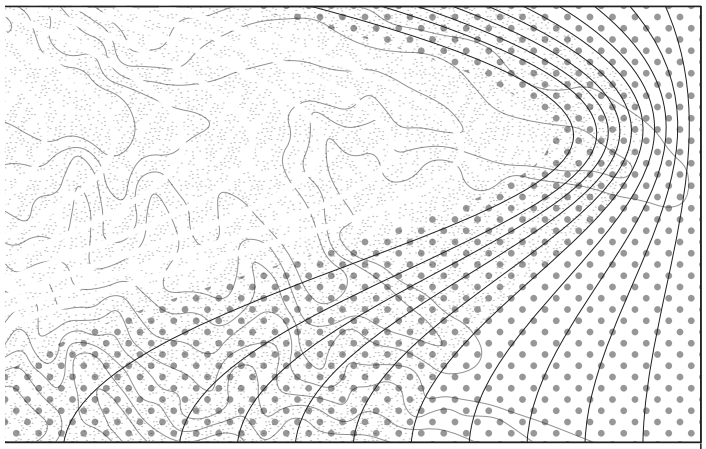
*Venice Blvd., Short Line Streetcar*
*1930 (Metro LA)*



**Phase #3: Historical Patterns & Subtractions**

This phase connects the site to geometries of the past and scales them down to create organizing lines for site planning. First, the Mexican Rancho land parcels of Rancho Ballona were scaled down and used to parcelize the project site. Second, the extensive street car rail network of the 1930's was overlaid to create pathways through the site. Third, the spacing of the Baldwin Hills Oil Drills were extended and used as a field and fine grain organizing grid dimension. Within this layered framework, decisions can be made about future programming.


LINES
FWY
BLVD.
RAIL
RIVER
FIELDS
URBAN FOREST FILTER & PARKING
DEVELOPMENT
PARK
RECREATION AMENITIES
NATURAL LANDSCAPE
AIR POLLUTION
TIME SPENT OUTDOORS



OIL DRILLING FIELDS

**Phase #4: Mapping Future Programs**

Based on conclusions about air quality and usage from the critical projective mapping exercise, this phase uses “line” of infrastructural systems as organizing device for overlapping “fields” of program. These stratified bands of program are positioned according to air quality parameters so that highest levels of outdoor activity is farthest from the highest levels of freeway air pollution and the highest density development still falls within a 5-10 minute walking distance from the station.

Through the Excavation Phases #1 - #3, lines and patterns were kept, abstracted or deleted as necessary. This diagrammatic arrangement of program, systems and environmental risk serves as the building blocks for future site design.

# 04 / *DESIGN*

- *Integrated Systems*
- *Environmental Mediation*
- *Networked Public Landscapes*
- *Pattern as Orientation Device*
- *Plan*

# *INTEGRATED SYSTEMS*

This section will propose a new spatial arrangement for an LA-specific TOD model derived from previous theory research and mapping exercises. The proposal is both site specific and prototypical and will first be tested and adapted in the Culver City site where an adaptable kit of parts are developed.

The goals of this prototype proposal are the following:

**(1.) Mediate the environment by filtering harmful air pollutants:** This goal was derived from mapping in the Critical Mapping phase where it was discovered that many new Metro stations are in a dangerously close proximity to some of the nations most congested corridors. It was discovered there, that to improve the health of residents, a 300M buffer should [1]be kept between high density development and the freeway. When these stations are adjacent to freeways, this leads one to question the conventional TOD planning model which prescribes the highest density near the station.

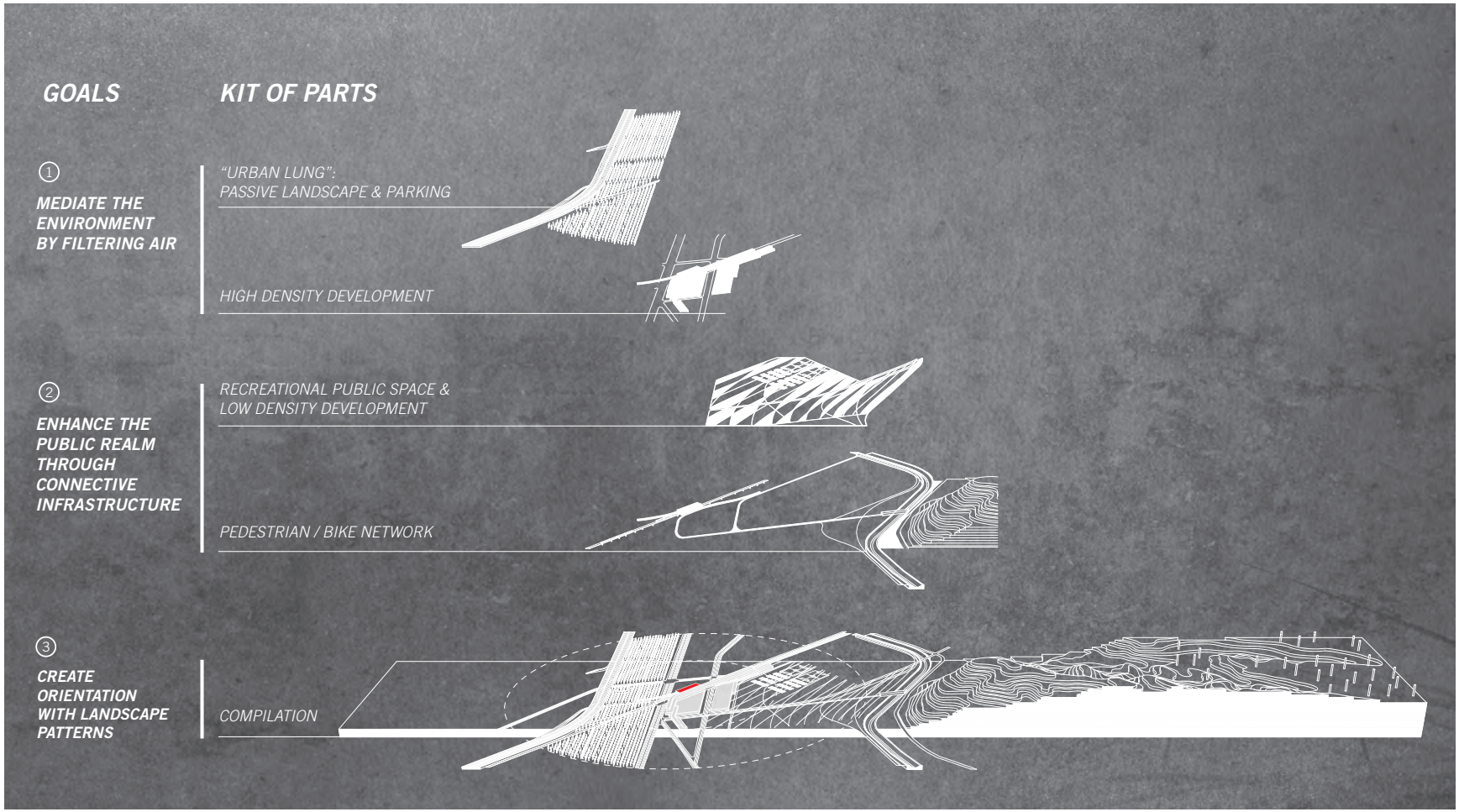
**(2.) Improve the public realm by providing new public park space and connect to existing public landscapes and amenities:** This goal was derived from both the Theory of LA Urbanisms research as well as the Regional Overlay Mapping exercises. In 1930, the Olmsted-Barthalomew plan claimed there was a poor distribution of public landscapes in the city, especially for lower income populations who tend to live in denser areas of the city, with less private outdoor space. Mike Davis reconfirms this in his writings in the 1990's.[2] This thesis, once again confirms these findings in the Regional Overlay Mapping exercises that overlay 2010 census population data and public park locations.

**(3.) Create an intermediate scale orientation device and way finding system throughout the city:** This goal was derived from the Theory of LA Urbanisms research. Lynch and Banham indicate that the experience of moving through the city is defined by both the monumentality of geographies and infrastructure, and also at fine grain vernacular architecture. What is missing is a sense of orientation in the intermediate scale between these two readings of the city.

The following sections will discuss how these goals are achieved with a corresponding kit of parts.

*1 USC Children's Health Study, 2007*

*2 Olmsted-Bartholomew, 1930, p.21 & Davis, 1994, p. 226*


GOALS
KIT OF PARTS
①
MEDIATE THE ENVIRONMENT BY FILTERING AIR
"URBAN LUNG": PASSIVE LANDSCAPE & PARKING
HIGH DENSITY DEVELOPMENT
②
ENHANCE THE PUBLIC REALM THROUGH CONNECTIVE INFRASTRUCTURE
RECREATIONAL PUBLIC SPACE & LOW DENSITY DEVELOPMENT
PEDESTRIAN / BIKE NETWORK
③
CREATE ORIENTATION WITH LANDSCAPE PATTERNS
COMPILATION

# *A. ENVIRONMENTAL MEDIATION*

As seen in the Critical Mapping study, most of the Expo Line stations and their 10 minute walking radius fall within harmful air quality zones of 300M and 500M from the freeway. Depending on wind direction, hazardous particulates from car exhaust can be dangerous up to one mile away. Studies have shown that living within this distance from the freeway can have long term negative effects health including increased levels of asthma, lung disease, bronchitis, heart disease.[1]

The Culver City TOD site is adjacent to the 10 FWY and falls within these zones. It is also adjacent to the 10 FWY and 405 FWY interchange which is one of the most congested interchanges in the country. This location is especially concerning when taking wind direction into account. Offshore winds move inland in a general eastern direction when the LA basin warms up, and back outward toward the west as the land cools in the evening.[2] This means that at some of the hottest times of day (afternoon rush hour traffic), wing is moving east and pushing exhaust from idling cars directly towards the Culver City TOD site.[3]

This scheme proposes an urban design strategy that filters incoming polluted air with landscape and the built environment in two ways. Both of these filters are oriented with wind and pollution patterns in mind and aim to shield any recreational park space where users are spending the most time outside engaging in physical activity.

The first filter is a passive landscape strip 300M wide directly adjacent to the freeway. Studies have shown that depending on plant species and planting arrangements, these vegetative screens can significantly reduce the concentration of roadside diesel particulate (DPM) that drifts into surrounding neighborhoods.[4]

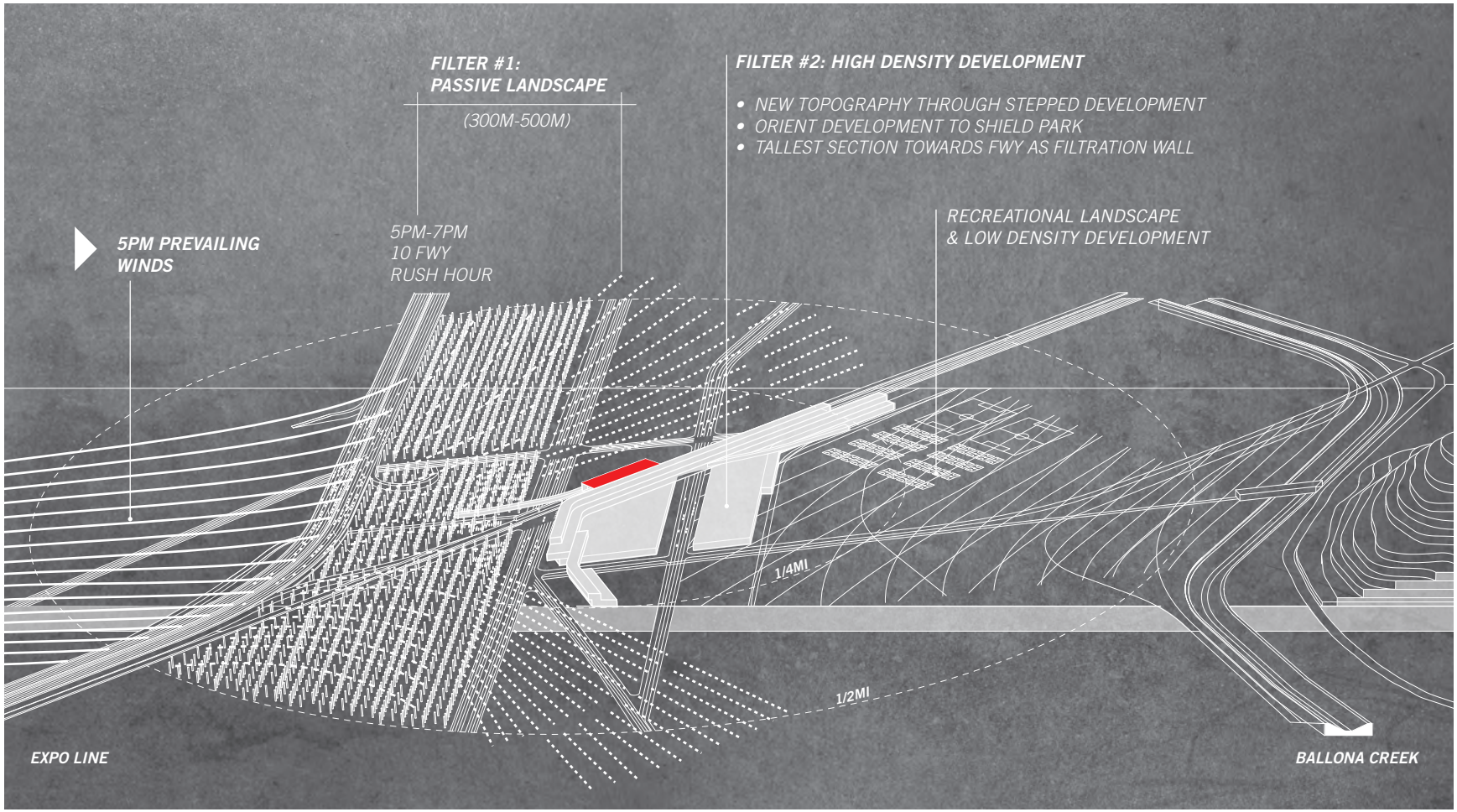
The second filter is created by orienting high density development to deflect incoming wind patterns with the highest built up areas facing the freeway and gradually stepping down to low density development zones and recreational landscapes. This stepped architectural form not only creates a wind and pollution barrier by forming an urban wall, but also creates an artificial mini-topography with ample elevated park and balcony space. Stepped housing typologies create more balcony space and outdoor living opportunities which characterize the LA lifestyle.

*1 USC Children's Health Study, 2007*

*2 UCLA Department of Atmospheric and Oceanic Sciences Website, 2013*

*3 INRIX Traffic Score Website, 2011*

*4 UC Davis Cal Trans Study, 2009*


FILTER #1:
PASSIVE LANDSCAPE
(300M-500M)
FILTER #2: HIGH DENSITY DEVELOPMENT
• NEW TOPOGRAPHY THROUGH STEPPED DEVELOPMENT
• ORIENT DEVELOPMENT TO SHIELD PARK
• TALLEST SECTION TOWARDS FWY AS FILTRATION WALL
5PM PREVAILING
WINDS
5PM-7PM
10 FWY
RUSH HOUR
RECREATIONAL LANDSCAPE
& LOW DENSITY DEVELOPMENT
1/4MI
1/2MI
EXPO LINE
BALLONA CREEK

# *B. NETWORKED PUBLIC LANDSCAPES*

Mike Davis argues that the "Olmstedian Vision" of public space in LA disappeared when the city failed to preserve the last remaining wild landscapes and sell them off to developers. [1]This appetite for land throughout the city's growth spurts have city park-poor, especially in its central basin where the highest population and lowest income residents live, as seen in earlier mapping exercises.

"...Los Angeles' inner-city neighborhoods and blue-collar suburbs, swollen with two million new immigrants, continue to suffer the long drought of recreational and green space."[2]

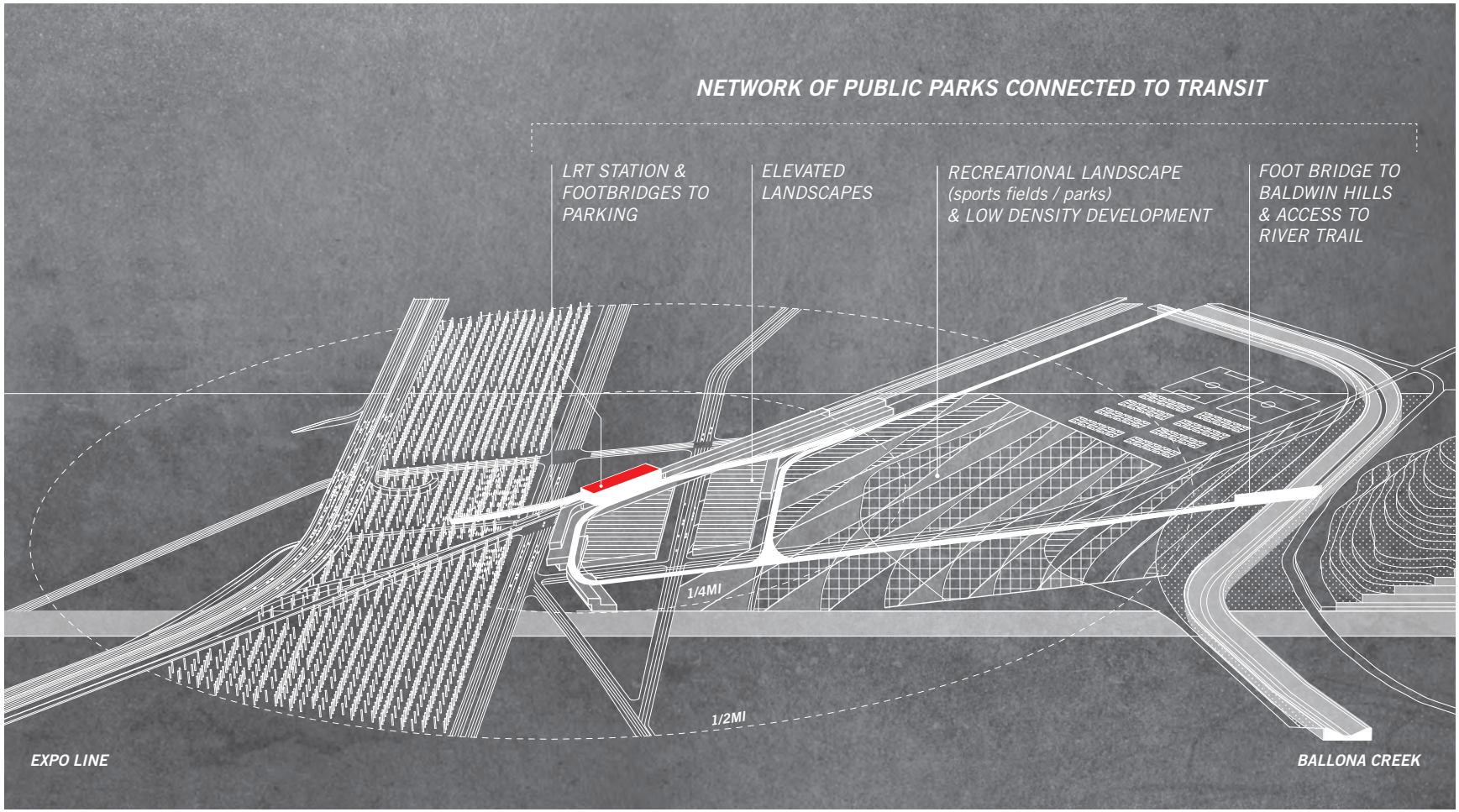
The Culver City prototype provides a recreational landscape as well as pedestrian infrastructure to connect the station to existing landscapes and ensure accessibility to residents and visitors. This creation of open park space is an especially crucial if the city intends to maintain the lifestyle of Southern California as the county's population is projected to increase by 4 million by 2025.[3]

Recreational landscapes such as athletic fields, sports centers and open green space are sandwiched between the station adjacent development and the Ballona Creek. The landscape and its pedestrian and bike paths also serve as a connector to existing amenities in the city such as the Ballona Creek Bike Path and the Baldwin Hills Scenic Overlook hiking trails. By building a path and footbridge across the creek, this physically connects the TOD to these existing landscapes and recreational infrastructure.

*1 Davis, 1996, p.231*

*2 Davis, 1996, p.178*

*3 Southern California Association of Governments Website, 2013*


NETWORK OF PUBLIC PARKS CONNECTED TO TRANSIT
LRT STATION & FOOTBRIDGES TO PARKING
ELEVATED LANDSCAPES
RECREATIONAL LANDSCAPE (sports fields / parks) & LOW DENSITY DEVELOPMENT
FOOT BRIDGE TO BALDWIN HILLS & ACCESS TO RIVER TRAIL
1/4MI
1/2MI
EXPO LINE
BALLONA CREEK

# *C. PATTERN AS ORIENTATION DEVICE*

*"Mobility outweighs monumentality..."*

*- Reynard Banham*[1]

Banham states that the only way to truly understand Los Angeles' "ecologies" is through the lens of the automobile. He recounts his experiences of the city through meandering drives traversing the urban landscape and discovering its parts through slowly shifting perspectives of mountains, coastlines and suburban patches. While the city can still be experienced from the horizon of the freeway, the future is a multi modal one, which means new visual narratives will be experienced through the windows of elevated LRT windows or the first views of day light when emerging from a subway. What is framed in those views are a crucial part in the current re-invention of the image of Los Angeles.

Playing off of the pixilated, fragmented patchwork fabric, a smaller scale urban pattern is made by interweaving of development and recreational landscapes. This prototype aims to create the intermediate orienting device and way finding structure that Lynch failed to find.[2] Somewhere between the scale of monumental landscape and the neighborhood architecture, this scale urban pattern will serve as a subconscious mnemonic device for Angelenos and will become second nature to regular riders. Similar to the tonal melodies of the Tokyo subway stops, these patterns and framed views at each stop will give an identity and "image" to each new TOD.

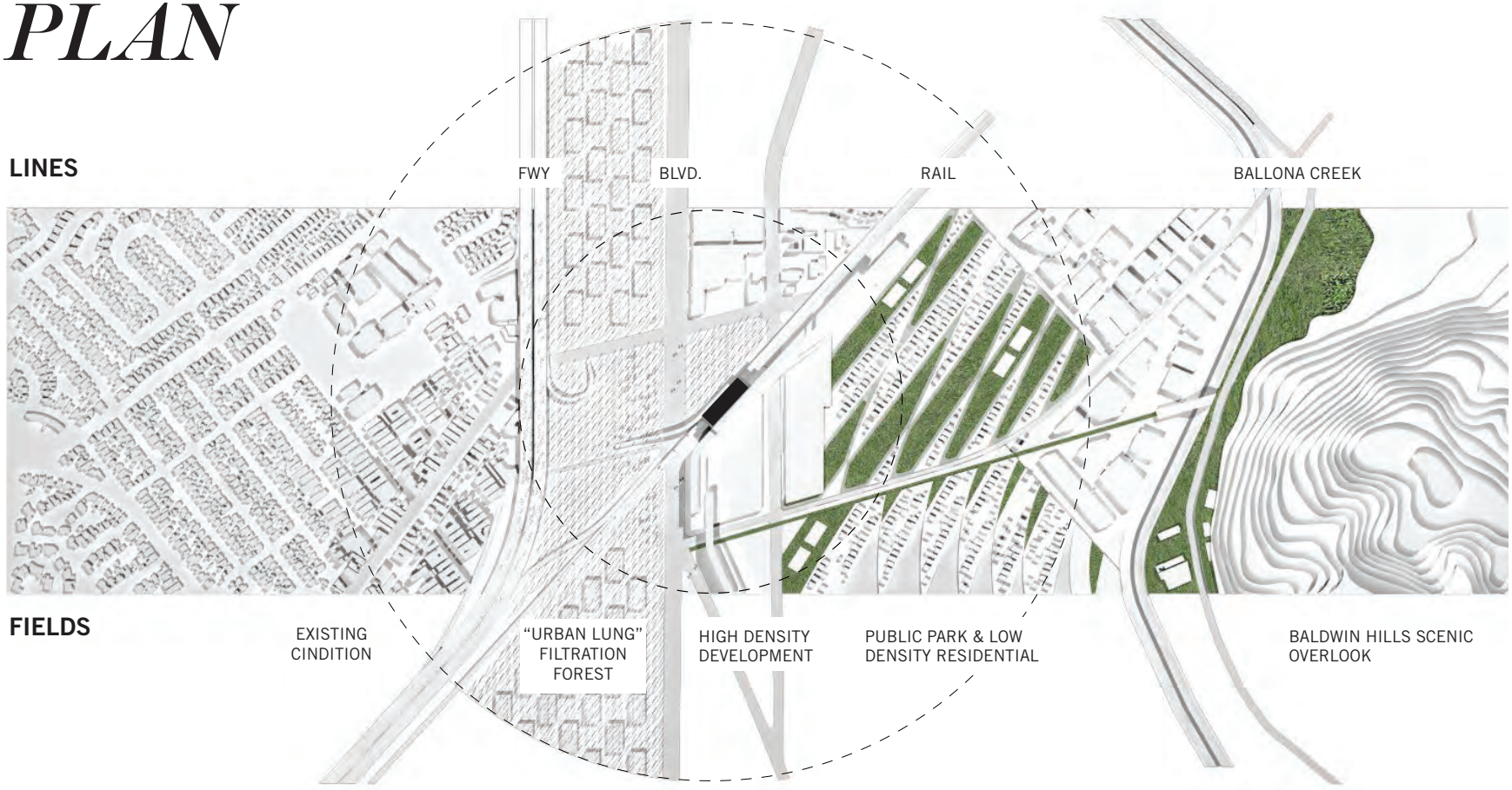
Physically, this pattern is achieved through a series of landscaping, hardscaping and small scale residential development that takes place in the Recreational Landcape portion of the prototype (indicated in diagrams on previous page.)

1 Banham, 1971, p.5

2 Lynch, 1960, p.41

*Hypothetical views of patterned landscapes through an LRT window*

# *PLAN*


LINES
FWY
BLVD.
RAIL
BALLONA CREEK
FIELDS
EXISTING CINDITION
"URBAN LUNG" FILTRATION FOREST
HIGH DENSITY DEVELOPMENT
PUBLIC PARK & LOW DENSITY RESIDENTIAL
BALDWIN HILLS SCENIC OVERLOOK
AIR POLLUTION
TIME SPENT OUTDOORS

OIL DRILLING FIELDS

# *DENSITY & PHASING*

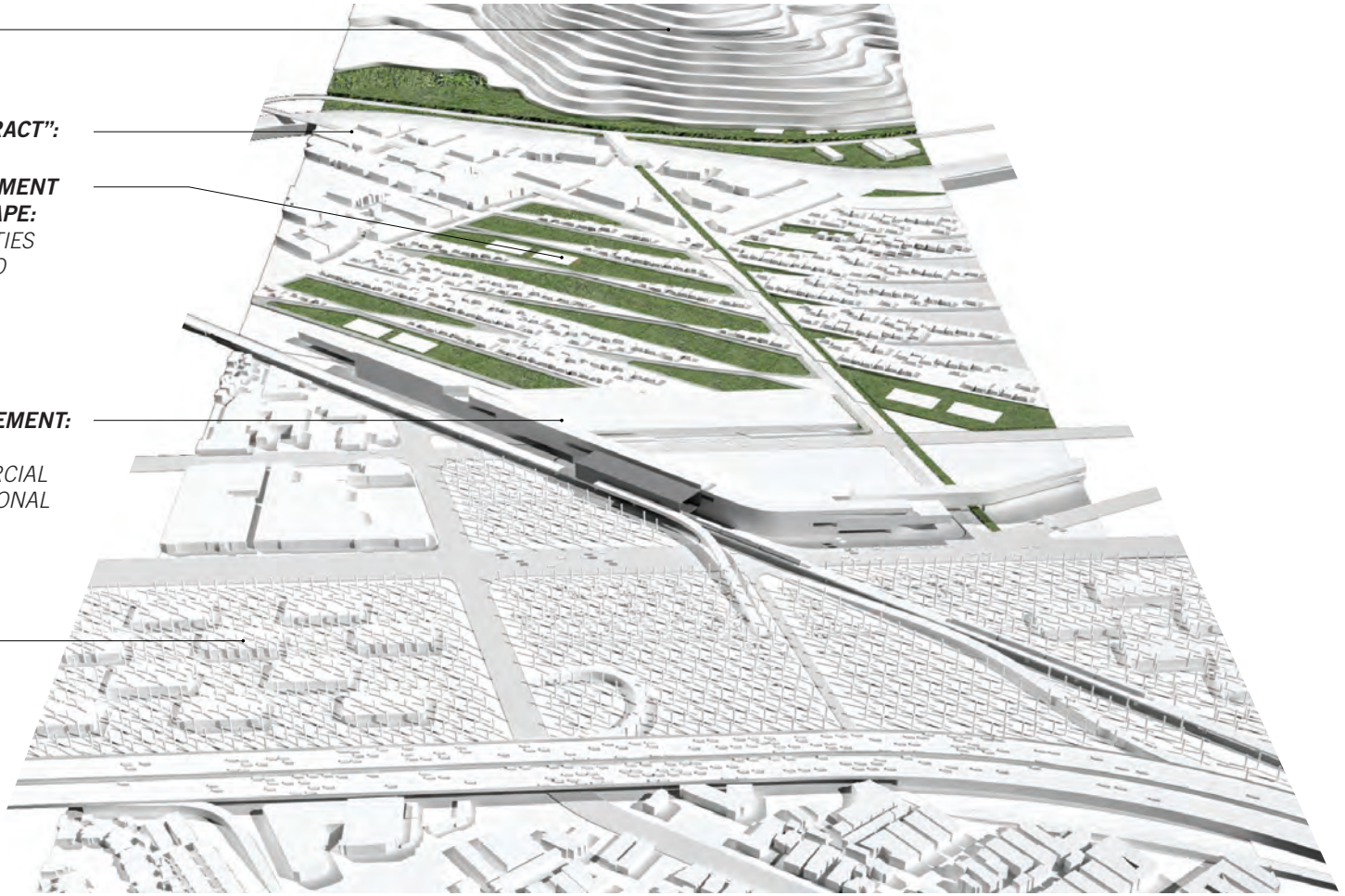
*EXISTING BALDWIN HILLS SCENIC OVERLOOK*

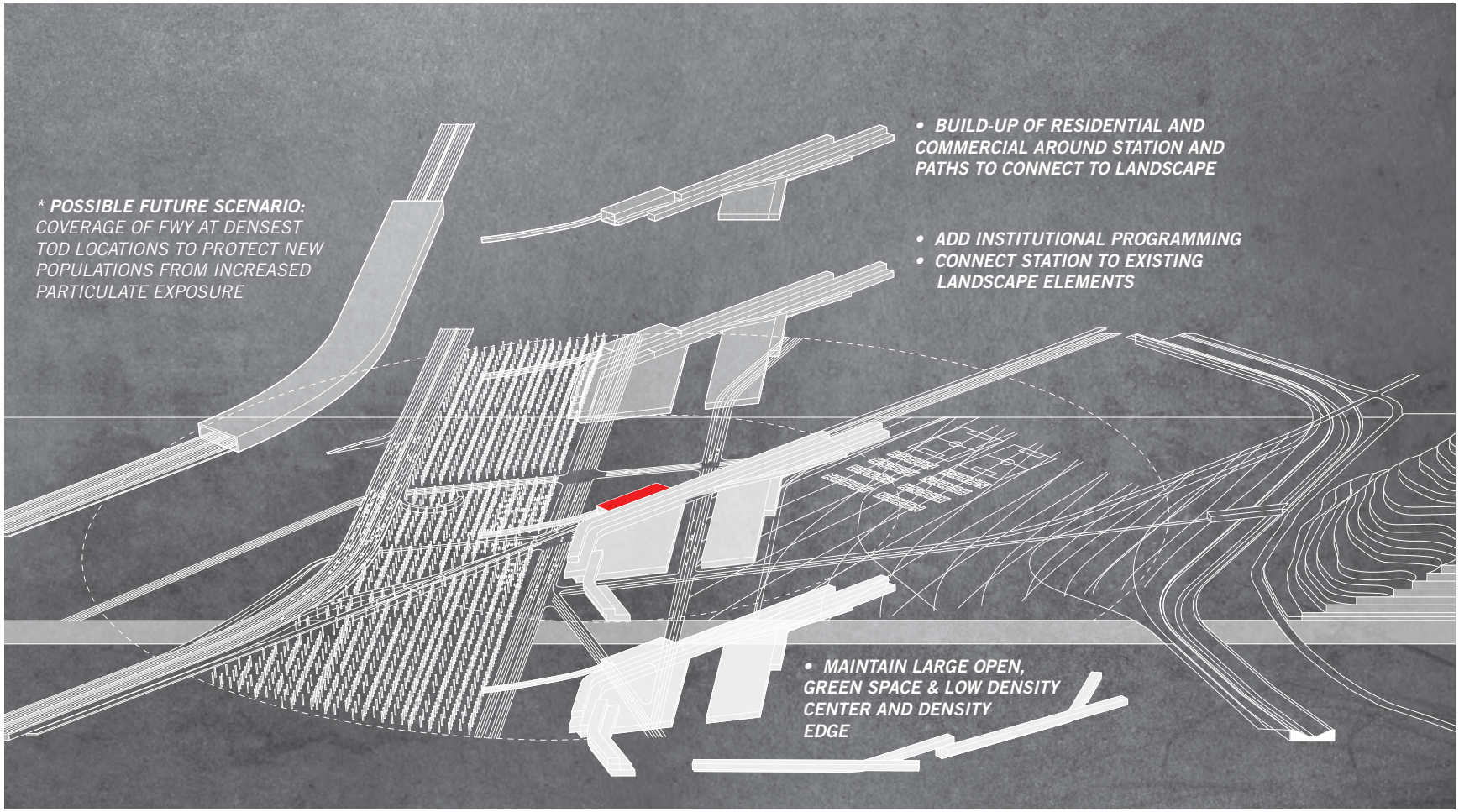
***EXISTING "HAYDEN INDUSTRIAL TRACT":***

***LOW DENSITY DEVELOPEMENT + NEW PUBLIC LANDSCAPE:***
- *PUBLIC SPORTS FACILITIES*
- *HIGHER PARKING RATIO*

***HIGH DENSITY DEVELOPEMENT:***
- *750-1000 UNITS*
- *250,000 SQFT. COMMERCIAL*
- *75,000 SQFT INSTITUTIONAL*
- *LOWER PARKING RATIO*

***"URBAN LUNG" & LOW INTENSITY PROGRAM:***
- *FILTERING TREES*
- *PARKING*
- *STORAGE FACILITIES*
- *DATA CENTERS*




* POSSIBLE FUTURE SCENARIO:
COVERAGE OF FWY AT DENSEST TOD LOCATIONS TO PROTECT NEW POPULATIONS FROM INCREASED PARTICULATE EXPOSURE
• BUILD-UP OF RESIDENTIAL AND COMMERCIAL AROUND STATION AND PATHS TO CONNECT TO LANDSCAPE
• ADD INSTITUTIONAL PROGRAMMING
• CONNECT STATION TO EXISTING LANDSCAPE ELEMENTS
• MAINTAIN LARGE OPEN, GREEN SPACE & LOW DENSITY CENTER AND DENSITY EDGE

# 05 / *APPLICATION*

- *Existing Land Use*
- *Testing the Prototype*
- *Lessons Learned*

# *EXISTING LAND USE*


***Low / Medium Residential***

***Light Manufacturing***

***HIgh / Medium Residential***
- *2 - 5 floor apartments*

***General Commercial***

***Low Residential***
- *Single Family*

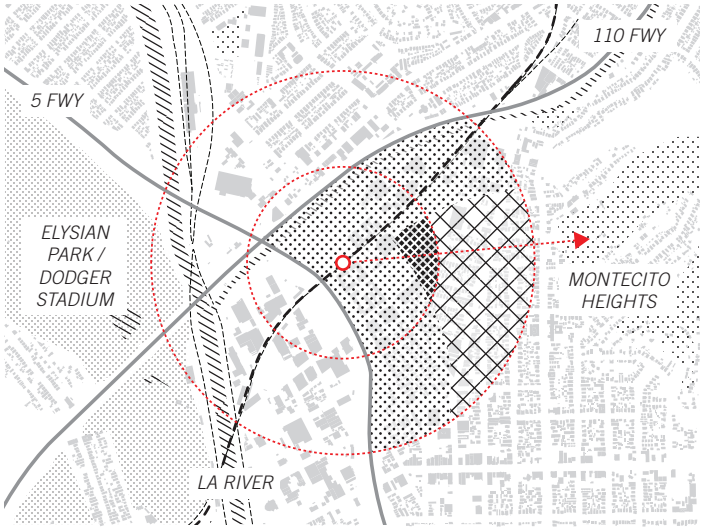
***Light Manufacturing / Commercial***
- *"Hayden Industrial Tract"*
- *Creative Offices*
- *Custom Fabrication*

# *TESTING THE PROTOTYPE*

Successful design prototypes allow for their component parts to be adaptable, yet relationships to remain in tact. In this section, the prototype developed in the Culver City site has been simplified and symbolically tested back into the seven remaining overlap typologies from the Regional Mapping research to test their applicability to local site conditions. These seven sites highlight LA's pixilated land use patterns and non-continuous fabric and most can not be purely categorized as residential, industrial or commercial.

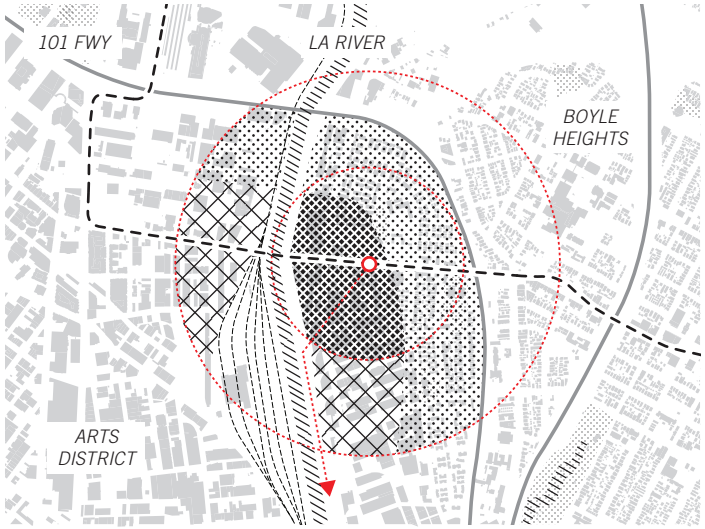
Originally, this thesis asked whether LA's abundant infrastructure could be physically leveraged and reimagined to create interesting spatial relationships and unique urban design conditions. The Culver City site was able to enhance and connect existing systems, not all future TOD sites have systems that afford similar opportunities.

New TOD projects to orient themselves to and connect with recreational systems (landscapes and waterways) and mediate environmentally harmful systems (freeways) through strategic uses of landscape and infrastructure. By using this as an organizing principle for new TOD's the city and make them more hospitable to new growth.



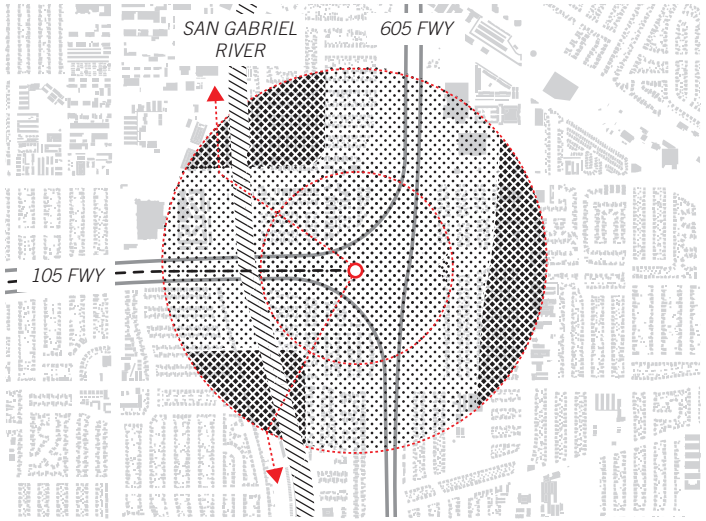

**Overlap #1: Elysian park** (Line: Gold, Stop: Lincoln Heights)

According to the 300M air quality buffer, there is very little space for high density development within a 5 minute walking radius. While the LA river is an adjacent amenity, the area of the river immediately adjacent to the station is within a high risk air buffer. Landscape recreation should be directed a river path directing pedestrians and bikers either north or south on the river away from this freeway interchange. The adjacent hiking trails in the Montecito Heights Hills should also be connected to the TOD via pedestrian and bike infrastructure.




**Overlap #2: Boyle Heights** (Line: Gold, Stop: Mariachi Plaza)

This site offers a much larger high density developable zone within the 5 minute walking radius and a close connection to recreation along the LA River. However, buildable zones along the river are obstructed by a rail switching yard and existing industrial zones, and connecting to the Arts District to the west or Boyle Heights in the east will be physically challenging.




**Overlap #3: Norwalk** (Line: Green, Stop: Norwalk)

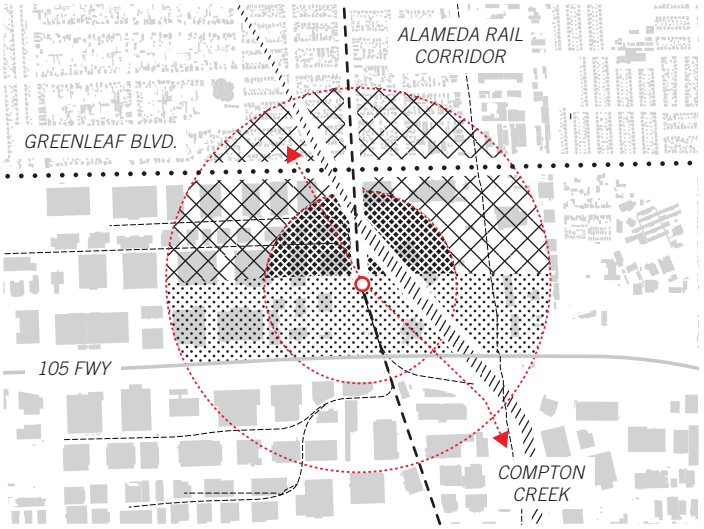
This station is not an ideal location for the build up of density. The overlay of the prototype shows there is no available safe air quality zone within the 5 minute walking radius around the station and development zones within the 10 minute radius are fragmented into three zones due to the freeway interchange. The San Gabriel River is a valuable adjacent amenity, but without further enhancement of filtering landscape elements adjacent to the freeway to absorb air particulates, the river is not yet an ideal location for heavy recreational usage.

***EXISTING:***

- *Water*
- *Landscape*
- *Heavy Rail*
- *Freeway*
- *Metro Line*
- *Station*

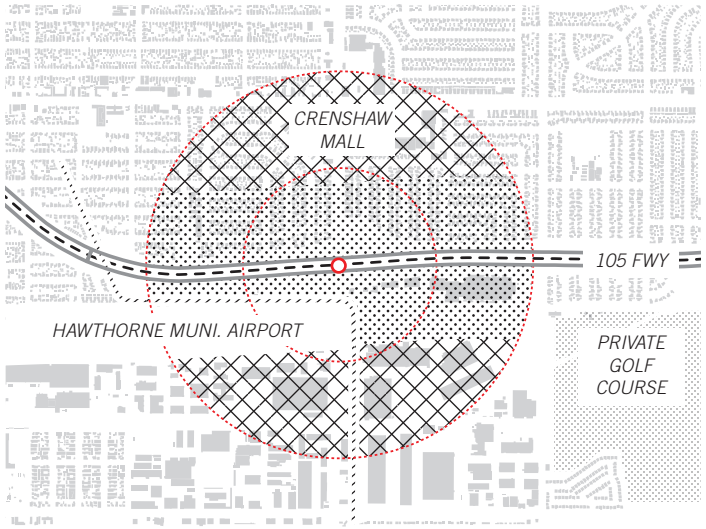
***PROTOTYPE:***

- *300M Filtering Landscape*
- *Density: High*
- *Low / Med*
- *5 &10 Min. Walking Radius*
- *Path to Existing Landscapes*
- *Transmission Lines*



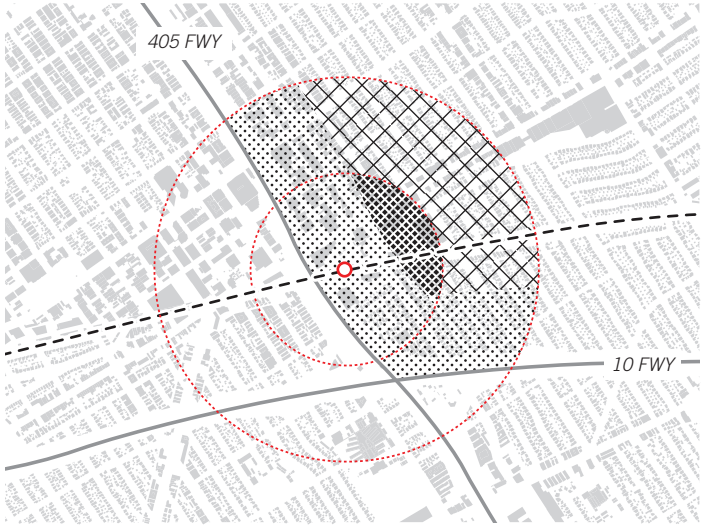

**Overlap #4: Carson / Lakewood** (Line: Blue, Stop: Del Amo)

This site falls on the border of a residential suburban fabric and large footprint logistics centers off of the north-south running Alameda Rail Corridor which delivers goods from the Los Angeles and Long Beach Ports. These two different fabrics are divided by a power transmission line and Greenleaf Blvd. Developable space within the 5 minute walking radius is in direct relationship with Compton Creek which could be a valuable recreation corridor if revitalized. If safe, the green space underneath the power transmission lines running along Greenleaf were open to the public, this could be transformed into a linear park.



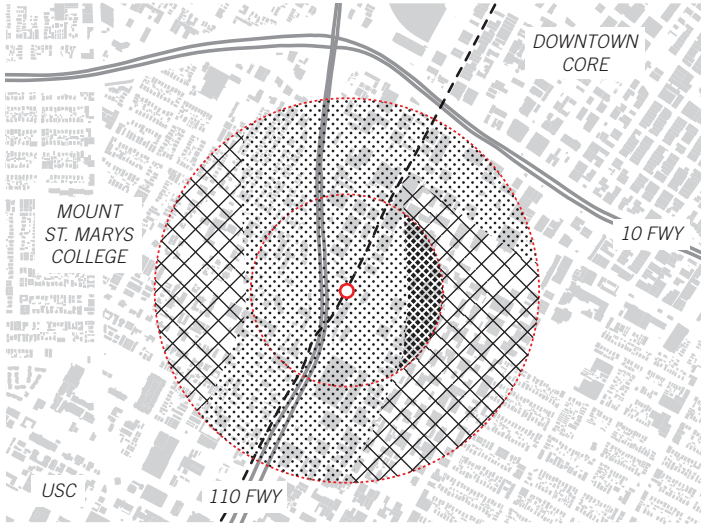

**Overlap #5: Crenshaw** (Line: Green, Stop: Crenshaw)

This station is located in the center of the freeway, and therefore all of the developable land within the 5 minute walking radius falls within the 300M poor air quality zone. The airport in the south makes development here difficult, so higher density development should be based to the north near Crenshaw's commercial center. This station area lacks existing public park spaces that are not in poor air quality zones, it would be crucial for increasing density here to build new park space. If the airfield was not directly adjacent to the freeway, this might be an interesting space for outdoor public events in off-times.




**Overlap #7: Bundy / Sepulveda** (Line: Expo, Stop: Bundy)

Out of all the overlap case studies, this TOD (sited between two of the worst congested freeway corridors in the country: 405 & 10) will have the biggest air quality challenge and may need to increase the width of it's filtering landscape more than 300M in order to safely build up density. This site also has a lack of nearby landscape elements and public amenities to connect to, so this station will need to build new public green space or public amenities as part of its site strategy.




**Overlap #8: South Downtown** (Line: Expo, Stop: Grand Ave.)

Similar to the Bundy / Sepulveda site, the stations location at the intersection of two freeways limit the developable space within the inner 5 minute walking radius of the typical TOD model. In this case, the best areas for development is within the relatively dense apartment fabric to the east and west of the 110 freeway. While the site is adjacent to two university campuses (Mount Saint Mary's & USC) with athletic fields, these are private and closed to the public. For this reason, it is crucial that new urban design project in this neighborhood add new green spaces or recreational facilities.

***EXISTING:***

- *Water*
- *Landscape*
- *Heavy Rail*
- *Freeway*
- *Metro Line*
- *Station*

***PROTOTYPE:***

- *300M Filtering Landscape*
- *Density: High*
- *Low / Med*
- *5 &10 Min. Walking Radius*
- *Path to Existing Landscapes*
- *Transmission Lines*

# *LESSONS LEARNED*

While this design scheme proposes that all new transit oriented development in LA should aim to mediate environmental pollution, create public green space and create a city-scale orientation device, these prototype site tests prove that some sites are better suited than others to fulfill these design goals. Existing station proximity to freeways comprise the health of future, denser populations. Testing this prototype in more station locations in further studies would help to identify those locations which have the greatest opportunity and greatest need for landscapes that both filter freeway pollution and provide more access to recreational public space.

At the regional scale, this research also brings into question the location of transit lines. In future transit planning, is impossible to locate stations farther away from congested freeway corridors so air pollution poses less of a health treat to areas with high projected growth? With a scarce amount continuous publicly owned land, the choice to develop new transit lines along older streetcar locations, makes sense from an economic and political perspective. However, by building future transit at least 500M away from heavily congested freeways, the city could potentially improve the health of its residents and be a model for other cities currently dealing with similar issues.

Ultimately, until transit is as ubiquitous as freeway infrastructure, LA will remain a heavily car oriented city and new urban design strategies around stations will need design for multi-modal lifestyles. LA planners are now embracing a larger scale linear approach through new "Transit Corridors" over the traditional small scale nodal TOD station approach, but as of yet, urban design projects have not reflected this and continue to think at the individual node scale which is disconnected from larger systems.

Thinking systematically about increasing urban landscapes and connecting to existing ones through new transit has the potential to create an integrated public park system in the spirit of the original Olmsted-Bartholomew proposal of 1930. In many ways, the Los Angeles of today faces many of the same issues that their plan addressed. With a projected 4 million new residents to the region by 2025, and a large percentage of those being new immigrants who are living in the densest areas of LA, the "park problem" is just as concerning, if not more, today than in 1930.

In the same way that the car and freeway has been an extension of ones personal space and home in LA, new transit systems has the opportunity to become the conduit that connects regional landscapes and itself become LA's new mobile public realm.


*Conceptual Regional Parks Diagram: Contemporary Olmsted-Barthalomew Network of parks through new transit*

# 06 / *SOURCES*

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