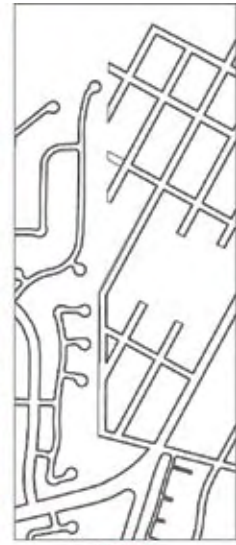


Andrea Gaffney
MLA & MCP Graduate Work
2006 - 2009
Urban Design & Infrastructure



For additional professional and academic projects
1994-2006, please download my short portfolio at
<http://aeg7.com/assets/shortfolio.pdf>

Diffusing the Political Boundary: the Hercules-Rodeo Greenway
 Ecological Factors in Urban Landscape Design Studio
 Fall 2006



2006



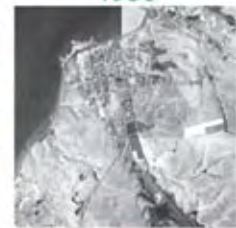
2004



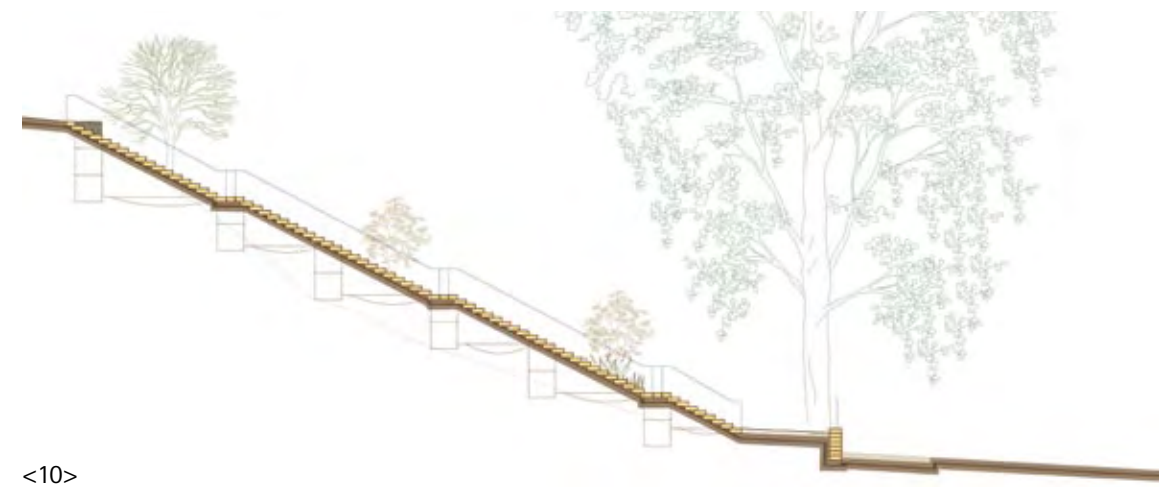
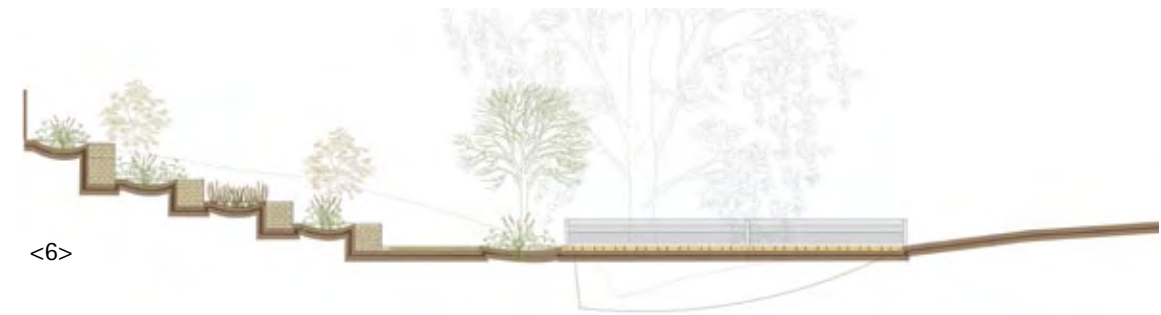
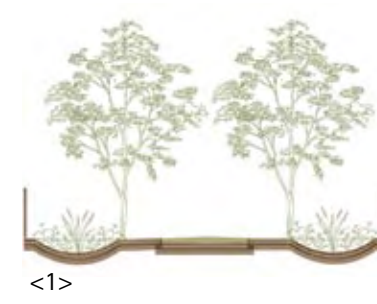
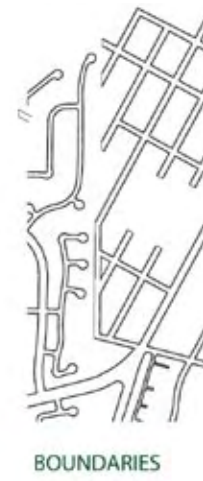
1977



1950



1939



"Diffusing the Political Boundary" is a recreation trail along the political border of Rodeo and Hercules, connecting the two areas through multiple human and natural ecological layers. As the site is a steep slope, the integration of terraced swales manages erosion and storm water impacts. The design also strengthens a habitat connection between two larger open space patches and links up pieces of the Bay Trail.

LA201 Fall 2006 & 2007
 Ecological Factors in Urban Landscape Design
 Alternative Energy Production in Rodeo, Refugio & Pinole Watersheds
 Planning Report & Poster

I designed and produced the publication for this group planning project. Three of us worked on the content, helping each other with research and graphics production, but my main contribution to the planning aspects consisted of the wind and hydro-turbine energy generation research and design.

The poster on the far right was presented at the Berkeley Renewable Energy Symposium in Spring 2008 and is based on my work from LA201 in Fall 2006 and my student and colleague Tim Mollette-Park's work from LA201 in Fall 2007. (I was the Graduate Student Instructor for LA201 for Fall 2007 and worked closely with the Alternative Energy group.) My contribution to the poster is the idea of linking excess energy-generation revenues and municipal revenues through municipal utilities to offset Proposition 13 fiscalization of land use issues. I used the solar generation information from my group report to generate the typology studies for the residential development. We also presented the poster as guest lecturers in a city planning course on infrastructure and land use planning taught by Fred Etzel in Spring 2009 at UC Berkeley.

California Proposition 13, passed by 65% of voters in 1978, is a constitutional amendment that reduced property tax rates by 57% and resulted in a dramatic reduction in the amount of local property tax revenue available for cities, counties, and especially for schools (PBS Merrow Report <http://www.pbs.org/merrow/tv/ftw/prop13.html>).

MAKING THE CONNECTION

HOW MUNICIPAL RENEWABLE ENERGY UTILITIES CAN TRANSFORM LAND USE POLICIES

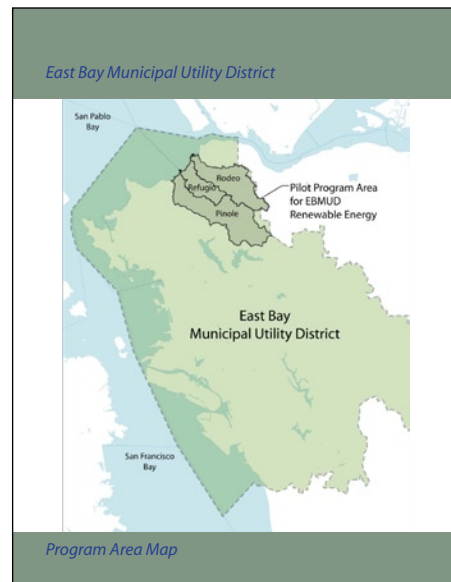
MUNICIPAL RENEWABLE ENERGY UTILITIES
 Local utility districts that produce their own power through renewable energy infrastructures

REVENUE GENERATION
 Once renewable power production exceeds demand, excess power can be sold back to the grid.

FLEXIBILITY FOR LAND USE DECISIONS
 With new profits flowing into local general funds, California municipalities can reduce their dependence on sales tax revenue from large footprint retail developments.

East Bay Renewable Energy Municipal Utility District

Citizens for Renewable Energy



Executive Summary

Citizens for Renewable Energy is a non-profit organization dedicated to promoting renewable energy as a replacement for fossil fuels and providing education and support for energy conservation. The organization is led by Andrea Gaffney, Maya Baranova and Erin Cubbin.

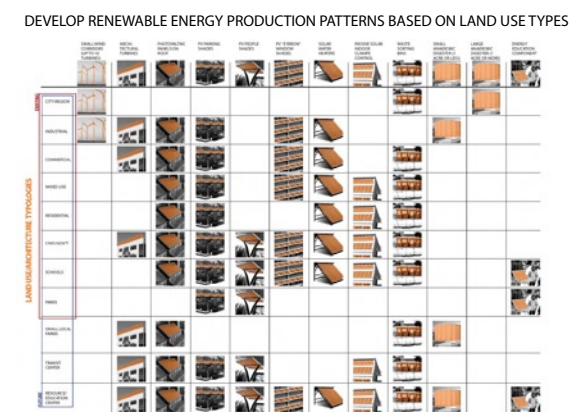
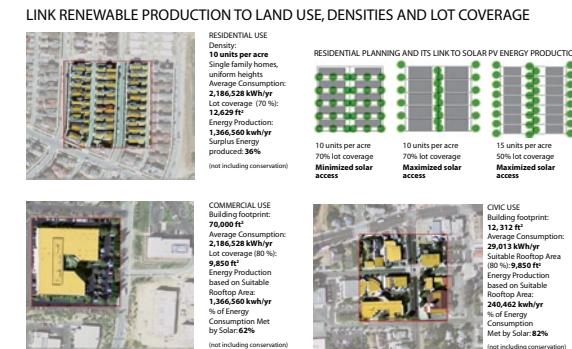
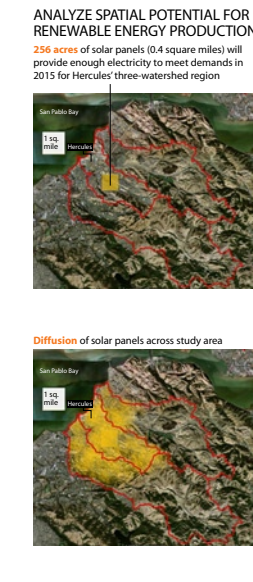
Our current initiative is the creation of an energy vision plan, which proposes that East Bay Municipal Utility District (EBMUD) become a renewable energy municipal utility district.

Our goal is to transform the district into an energy-producing region by leveraging fossil fuels with local and diverse sources of renewable energy. We are using the Rodeo, Refugio, and Pinole Watersheds as a Pilot Program Area for this initiative.

We believe EBMUD to be a prime candidate for leading the race to zero emissions. The vision plan proposes that EBMUD expand its scope and assume management of gas and electric utilities. Currently, it manages drinking water supply and wastewater treatment. When CRE identified the opportunity for wastewater treatment to produce fuel, it targeted EBMUD as a potential player in the management of renewable energy, contributing to a holistic energy plan for the region. Not only could EBMUD capitalize on the fact that it is already producing in its wastewater treatment plants, but also expand (due to additional sources of energy). EBMUD is a candidate for this initiative because of its progressive outlook and organizational efficacy.

Local methane production and distribution further reduces fossil fuel consumption by reducing natural gas, a petroleum-refined product. Local energy production (not only) replaces fossil fuel consumption, it leads to less-expensive, renewable energy and more efficient uses of waste; this is why CRE promotes both renewable energy production and energy conservation.

The twenty-five year vision plan identifies opportunities within the Pilot Program Area for three types of renewable energy: solar, wind, and biomass. Optimal sites for each type of energy will be identified on a map of the watersheds. Along with environmentally specific considerations for each type of energy source, the vision plan will also consider an urban and rural context for each energy source. Guiding principles will accompany the vision plan, identifying existing incentives and subsidy programs that can be used to fund the appropriation and installation of the required technologies. Implicit to the vision plan is continuing progress in creating energy efficient communities, the advancement of renewable energy technologies and the use of passive energy systems.



LAND-USE TRANSFORMATIONS

With new monies in municipal funds, cities gain flexibility to implement policies that are not beholden to generating sales tax revenues from large footprint land uses.

NEGOTIATION

REDEVELOPMENT

INFRASTRUCTURE

CONSERVATION

Additional revenues can stabilize municipal budgets and allow greater leverage in land use negotiations, enabling more compact, sustainable development.

Additional revenues can help initiate funding for projects that contribute to the reinvestment in low impact, energy-producing development.

Additional revenues can fund infrastructure improvements that will enhance the municipality's sustainable efforts by reducing its ecological impacts.

Additional revenues can fund conservation efforts. Land use negotiations leveraged by fund stability can create a greater presence for conservation at the planning level.

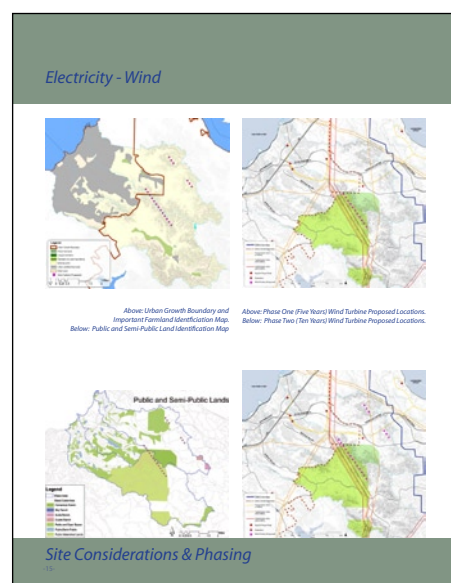
Sources: Research conducted as part of studio course (LA 201: Ecological Factors in Landscape Architecture) by Andrea Gaffney, Tim Mollette-Park, Maya Baranova, Erin O'Mahoney Cubbin, Nicholas Curtis, Robert D. Lemon, Francesca Francia, Chris Fullmer

Electricity

In 1996 California de-regulated its electric utilities. By 1999, when the California Public Utilities Commission had sorted out the majority of the rules and regulations, the city of Hercules began investigating the possibility of creating its own utility. In 2001, the California energy crisis ensued and Hercules continued to study the feasibility of a municipal electric utility, albeit at a delayed pace. The primary argument the city staff presented to convince city council to approve the Hercules Municipal Utility (HMU) was the following: independence, rate stabilization or reduction, improved service to Hercules residents, potential and significant sources of revenue, and the ability to augment the General Fund. (<http://www.ci.hercules.ca.us/News/HMU/Review.pdf>) HMU's service went online in 2003 with a projected net positive income by 2007, providing electricity to 350 customers as of August 2005. HMU provides net metering opportunities and has progressive renewable energy policy incentives; however, they still rely primarily on fossil-fuel-generated energy. HMU is also regulated by the city council, making the daily decision-making of the utility a bureaucratic nightmare. Anytime there is a change-order or purchase-order, HMU has to present the matter at a city council meeting for approval. While it appears that HMU has carte blanche with its accounts, the process still entails a significant drain on time. EBMUD would employ the staff of HMU to take advantage of their local knowledge and expertise, while presenting the residents of Hercules with a greater opportunity for expanded services, lower rates, and larger revenues, all while reducing fossil fuel consumption. EBMUD strives to expand the goals of HMU by creating a renewable-energy-producing region.

CRE used the Energy Atlas to identify the viability of different types of renewable energy. Of the four options: wind, solar, geothermal, and biomass, the only one that was not suitable for the area was geothermal. Point Richmond essentially shades the three watersheds from daily fossil-fuel-generated energy has a huge potential in the region. The Contra Costa County Urban Growth Boundary is essentially set at the elevation +500 feet above sea level, protecting the higher elevations from dense development. This leaves the higher ridges of the watersheds, where the wind speeds are the fastest, undeveloped and available for wind energy capture. The majority of biomass will be dedicated to methane production as a replacement for natural gas, however, the Hercules-Pinole Wastewater Treatment Facility will burn its own methane for electricity production, reducing its demand on the grid.

Both wind turbines and solar photovoltaic cells (PV) will be grid-connected systems tied into the existing infrastructure. Wind turbines will run on co-metering technology while PV systems will employ net-metering to account for energy usage and generation.



Electricity - Wind

Policy W01: EBMUD shall either lease or buy land owners market value of land within easement (where wind turbines shall be erected).

A majority of the wind turbine sites are located on EBMUD property. Three of the turbines are located on the Fernandez Ranch property, which is owned by the Multi Heritage Land Trust. It is recommended that EBMUD purchase easements for these turbines as they are situated along the same ridge as the ten turbines located on the EBMUD property. The remaining six turbines are located on private property. It is recommended that EBMUD lease easements on these properties, paying the landowner an assessed amount fee.

Policy W02: Aesthetics and visual alignment of turbines should be considered during design. The Danish group Windpower.org suggests turbines be of uniform design, height and spacing. There is an entire chapter in Wind Power in View dedicated to design aesthetic guidelines. With the numerous trails planned for the area, it is recommended that the foundations for the turbines be placed underground so that the turbines sit in as natural a setting as possible. Generator buildings should be designed to reflect the context. Generator buildings could also be used as educational points for the trail system. (Wind Power in View: Energy Landscapes in a Crowded World by M.Pasqualetti, P.O'Gea, R.Richter)

Policy W03: EBMUD shall be responsible for site impact studies that demonstrate locations to be in optimal, low-impact sites.

All local, state and federal Environmental Impact Reports (EIR) and public meetings will be required before approval of installation.

Enlarged aerial with proposed turbines, image delineates spacing and notes proximity to residential development and power lines.

Policies

CONSERVATION STRATEGIES FACILITATE LOCAL ELECTRICITY PRODUCTION SURPLUS, WHICH CAN BE SOLD BACK TO THE GRID

Year	Production with Conservation	Reduction
2015	66.9 mill kWh/year	30% reduction
2025	58.01 mill kWh/year	40% reduction
2035	53.7 mill kWh/year	50% reduction

LOCAL RENEWABLES MEETING AND SURPASSING DEMAND

Year	Solar Production	Wind Production	Meeting Demand
2015	21 mill kWh/year	40 million kWh/year	100%
2025	49 million kWh/year	40 million kWh/year	150%
2035	70 million kWh/year	40 million kWh/year	250%

EMPHASIZE RENEWABLES TO CUSTOMERS (SAMPLE BILL)

HERCULES MUNICIPAL UTILITY
 INDEPENDENT, RENEWABLE

Conservation: Where You Stand
 HMU customers have met 80% of their potential energy conservation. You have met 85% of your efficiency potential, resulting in a \$20 savings this month.

Renewable Energy Incentives
 HMU continues to provide incentives for customers who wish to install renewable energy production at their home or business. Visit the resource center this Saturday for a how-to session on photo-voltaic panel installation.

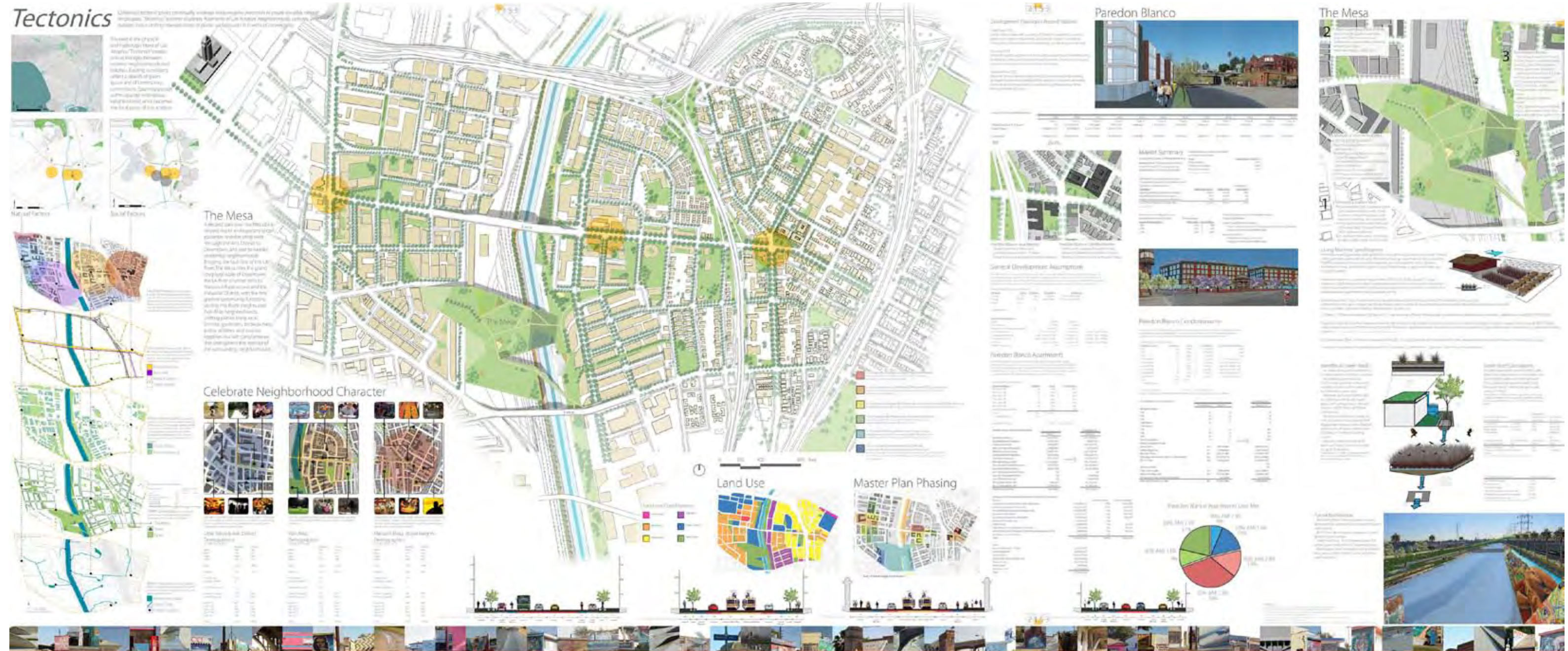
Hercules Leading the Way on Renewables

STATEMENT FOR PERIOD ENDING 1/31/2025

MEMBER	DATE	AMOUNT DUE
MEMBER 1204837 JANE REDDY	ELECTRIC SERVICE 1/1/2025 - 1/31/2025	\$12.25
124 REDWOOD WAY HERCULES, CA 94547		
PREVIOUS BALANCE		\$34.52
		PAYMENT RECEIVED THANK YOU!

Urban Land Institute
 Gerald D. Hines Student Urban Design Competition
 Phase 1 Winning Entry
 Spring 2007

First Street at the LA River, Downtown Los Angeles



Phase 1 Submission:
 An Urban Design Scheme for the First Street Corridor and the Los Angeles River,
 including a site-specific design and development pro-forma for the Mariachi
 Plaza metro station area.

Team Members:
 Andrea Gaffney, Chris Lollini, Robert McCracken, Aditi Rao, Brooke Ray Smith



Phase 2
 Submission: Elaboration of Urban Design Scheme and a site-specific design and development pro-forma for the Mangrove site station area at corner of First and Alameda.

Personal Contribution awarded for the Eisner Prize in Urban Design from UC Berkeley in 2008.

My main responsibilities consisted of site analysis, analyzing and setting up a framework for consistent representation, diagramming, architectural and urban design, conceptual formulation for the project, land use decision-making, and site and building-integrated sustainable designs. I also worked closely with the financial person on the team to develop the appropriate mix and size of housing and commercial/retail space so that the numbers produced a net profit.

CP208 Spring 2007 Multi-disciplinary Urban Design Studio with Tongji University: Mixed-use Neighborhood District along a Transit Corridor in Jiaxing, China

Related publication: *Green Jiaxing: Sustainable Design Principles for a Harmonious City* 2008 (publication designer and co-author).

"Mixed-use Neighborhood District in a Transit Corridor in Jiaxing, China" presents a piece of a collective effort by an entire studio to design an ecologically sensitive, self-sustaining transit corridor in a city faced with rapid urbanization. I worked with an inter-disciplinary team on the Mixed-use Neighborhood District to develop principles for development. Other students followed my framework and design principles to design both a district transit node and a neighborhood node within the district. (These projects are not included on this page.) I directed another student on the production of the density, land use and node diagrams which are presented on this page. I am responsible for completing all of the other work shown here with the exception of the precedent study, which is properly cited.

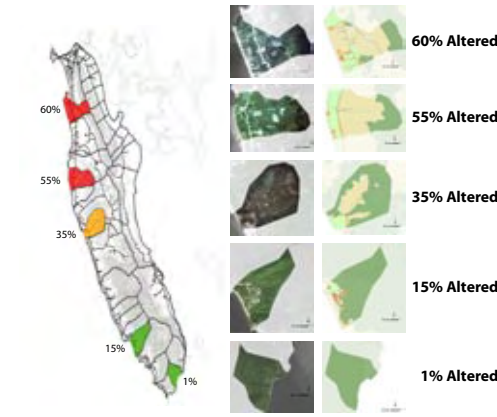


Sustainable Development Masterplan for a Tourism-based Economy in Koh Lanta Yai, Krabi, Thailand
 University of California, Berkeley & Chulalongkorn Joint Environmental Planning Studio
 Summer 2007

FLOOD DIAGRAMS & LAND ALTERATION

These diagrams reinforce the immediacy of need for better land planning and management practices. Continuing the current rate and type of development practices would threaten the tourism economy of the island by directly damaging the environment they are marketing.

Land alteration percentages presented by watershed and land use.



Mapping of stream channel alterations leading to flooding in resort areas.



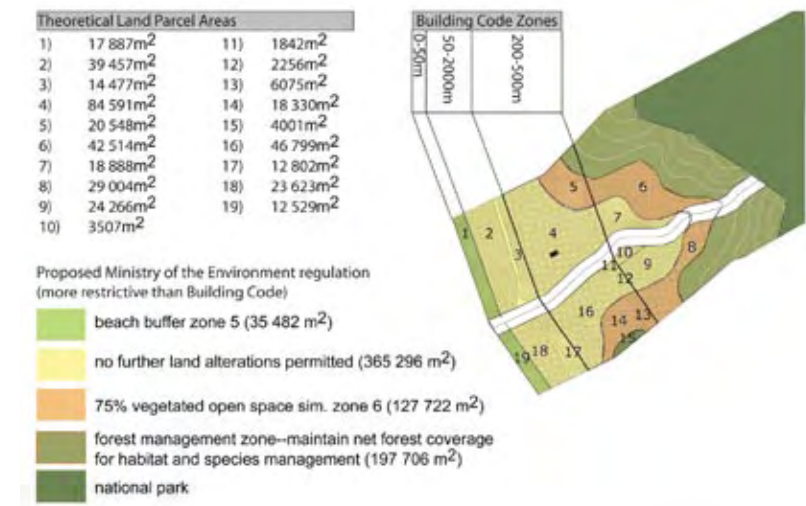
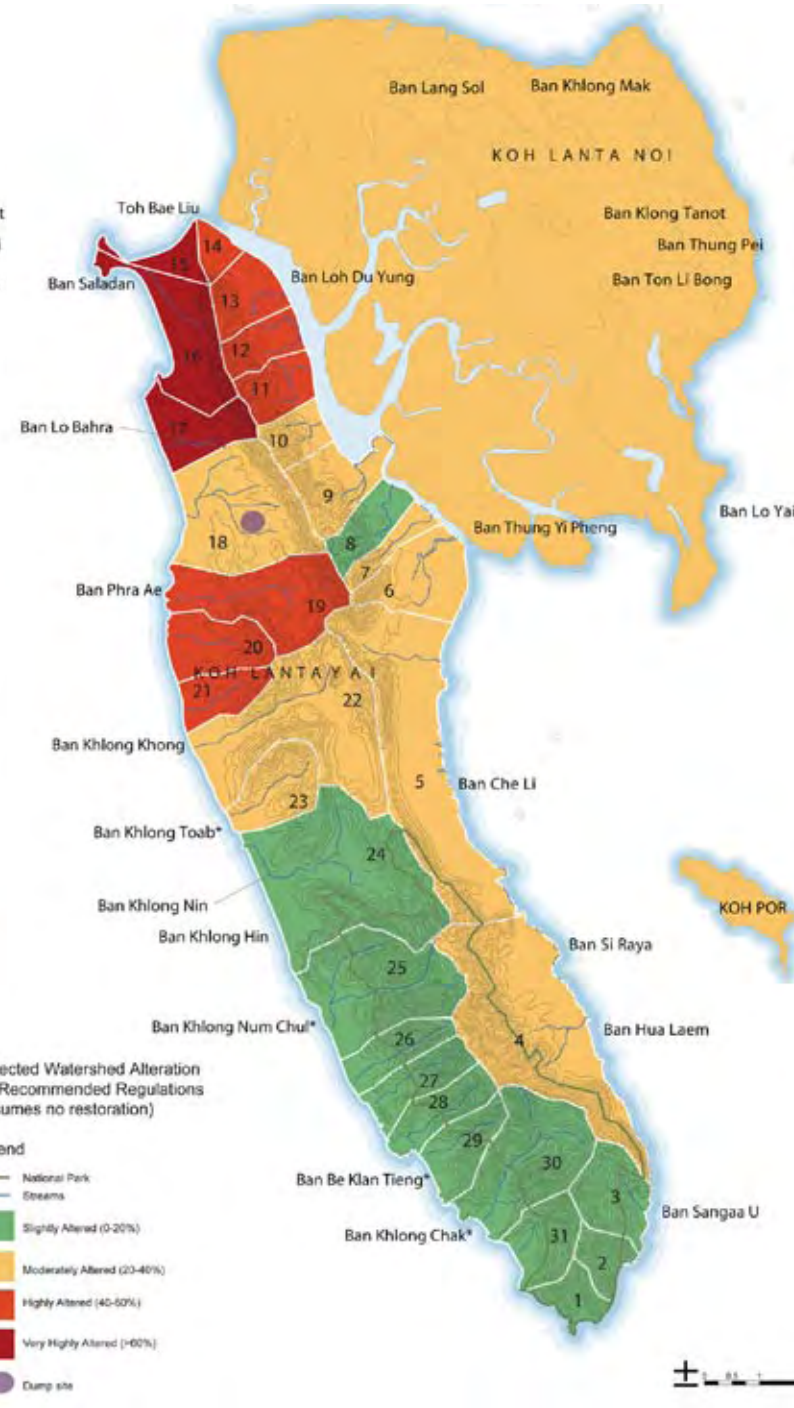
MAPS

I generated these maps based on a synthesis of information from the group work. The maps were presented to the Thai Public Policy Foundation and various levels of government officials to demonstrate the gaps in their current planning process, and suggestions for how to address issues relating to sustainable tourism development.



LAND VALUATION FOR TRANSFER OF DEVELOPMENT RIGHTS

I worked with another planner to estimate the cost of trading development rights to focus development on the island, in order to minimize associated impacts.

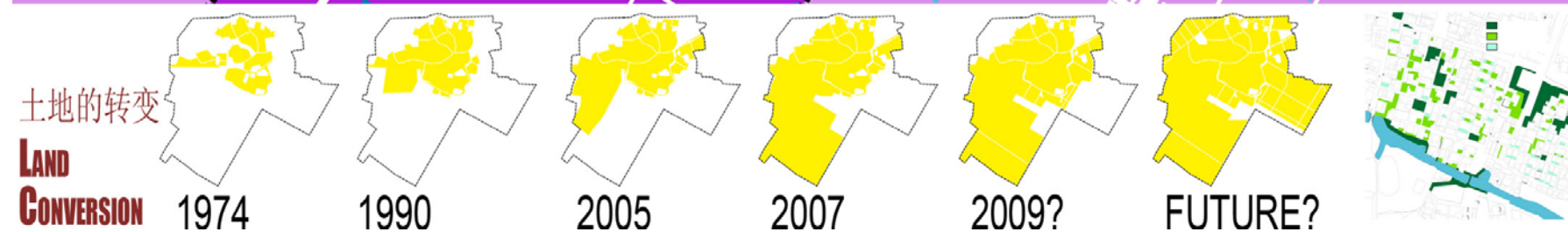
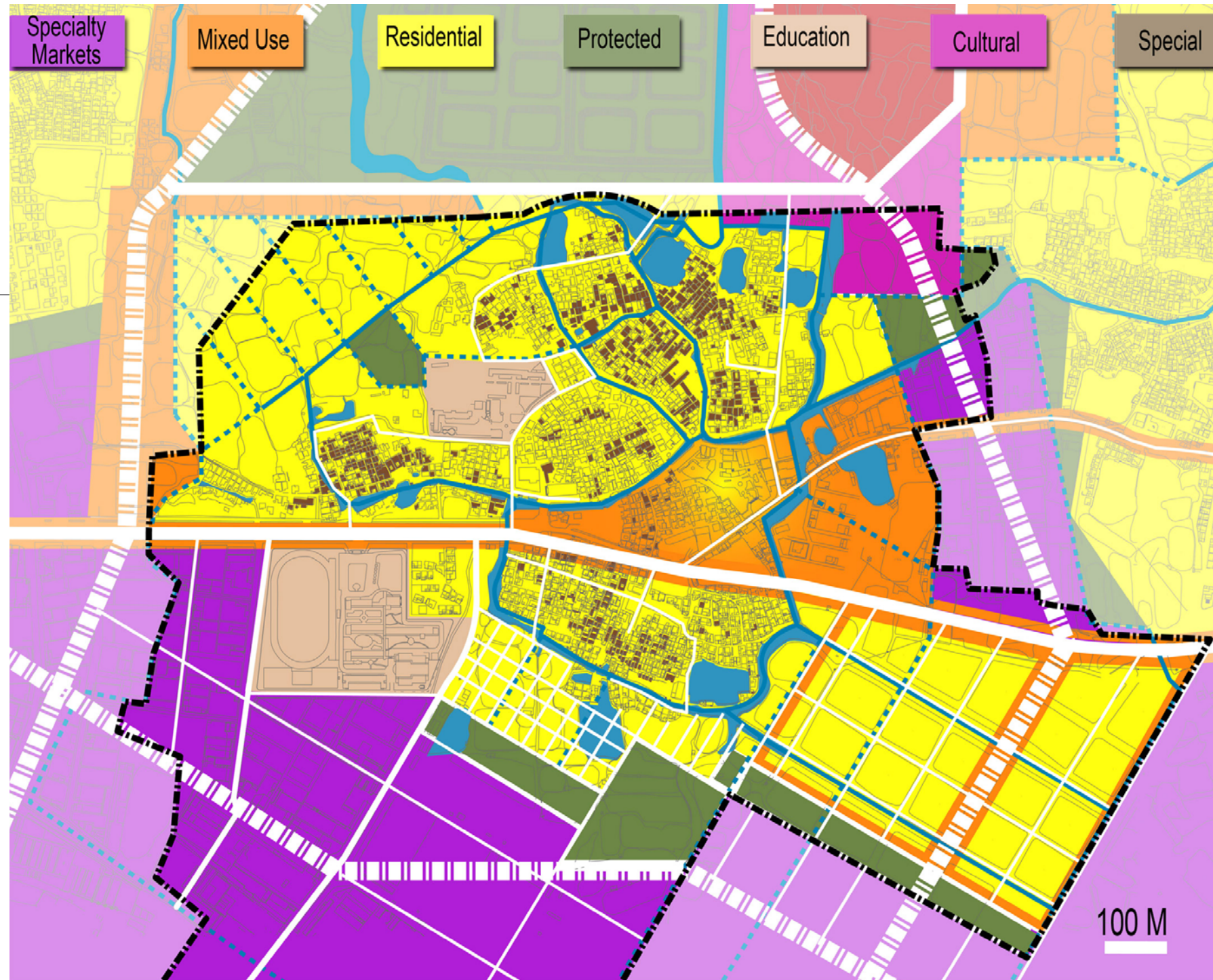


UC Berkeley Workshop with South China University of Technology January 2008

Dadun, a village in the Pearl River Delta facing rapid urbanization.

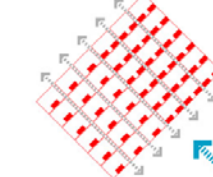
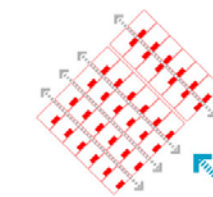
Related Publication: *Foshan: Dadun Village Workshop*, contributing author, UC Berkeley 2008

The land use plan and building development typologies set the framework and identified the locations for the site-specific designs executed by my colleagues.



宏观气候与 微观气候导引

MACRO-CLIMATE & MICRO-CLIMATE GUIDELINES



引导私人空间朝向水、风、太阳
Orient private open spaces to-
wards water, wind & sun.
如巷道宽度小于2米, 房屋构件不得伸
出巷道。

No building projections allowed
into lanes that are less than 2
meters wide.

开放空间应至少占空地面积的25%

Open space should be a
minimum 25% of lot area.

保持两旁的房屋有通道通向巷道

Maintain access to both sides of
property opening onto lanes.

楼房第三和第四层的阳台需后退1.5米

Set back balconies 1.5 meters
on the 3rd and 4th floors.

从开放空间到私人空间的转变指示着
公共领域的转换, 聚集空间的营造对
文化遗产的保存是必需的。

Conversion of open space
from public to private indicates a
transformation of the public realm.

Fortification of
gathering spaces is necessary
to maintain cultural heritage.

开放空间的10%

10% open space

开放空间的25%

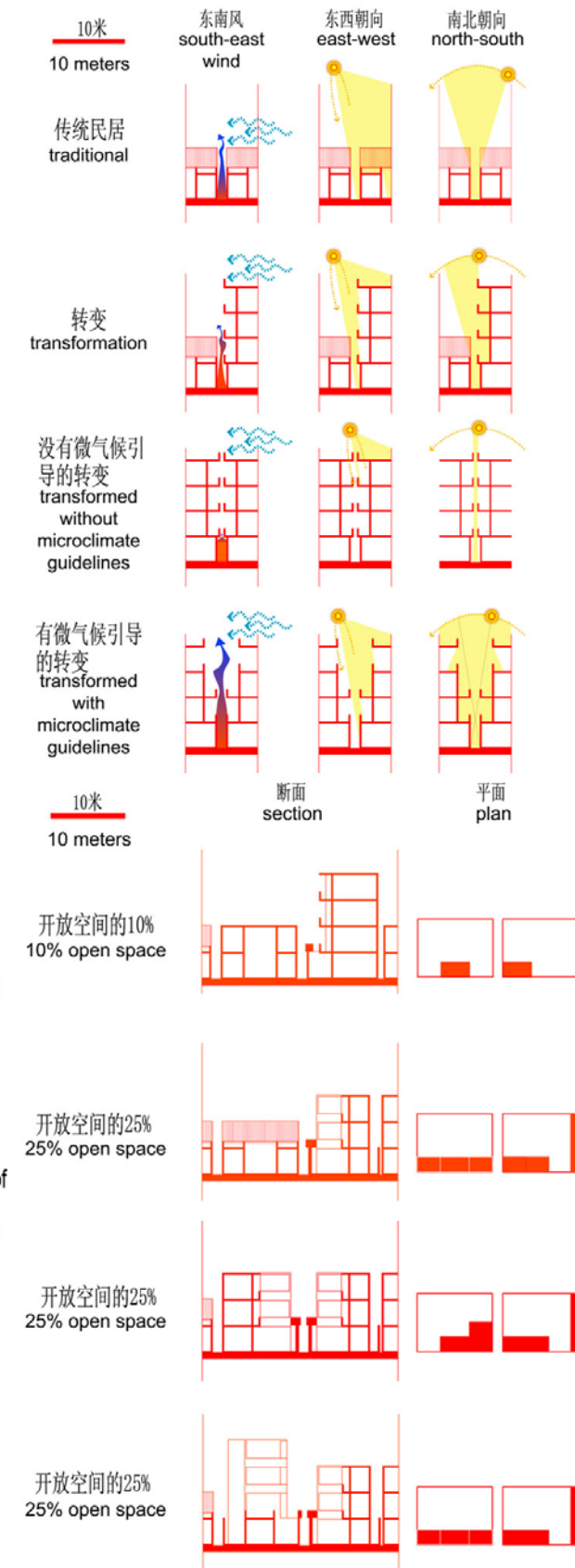
25% open space

开放空间的25%

25% open space

开放空间的25%

25% open space



Infill the Court, Keep the Yard
 Thomas Church
 Memorial Design
 Competition
 Winning Entry
 January 2008



INFILL THE COURT KEEP THE YARD

Building and Landscape as One



Infill Building typologies create dynamic spaces by responding to existing topography. (The plan looks flat but the section reveals the character.)



INFILL TYPOLOGIES

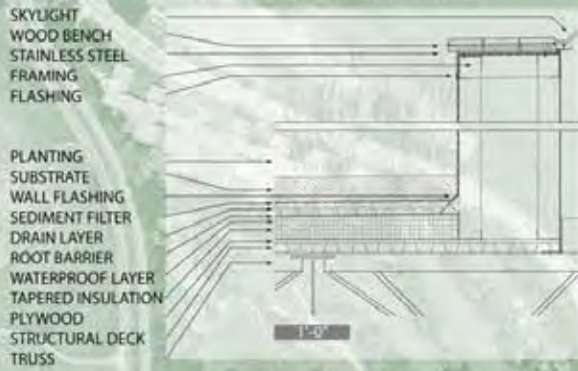
Maintain Park Merced as a Rental Community

Type 1 - Housing over Laundry Court Brezeway
 5 storeys max
 Ground floor Bicycle parking/laundry/storage/mechanical/communal space
 Reconstruction allows for reconfiguration of laundry water systems (see diagram)
 Oscillating facade maintains rhythm and scale of existing built fabric

Type 2 - Housing over Parking Court
 2 storeys max
 Individual entrances
 14' wide buffer between existing + new construction
 Rooftop gardens for individual and communal uses
 Planting setback incorporates space for skylight down to parking area
 Raised planting beds for gardens and trees. (increases soil depth, defines spaces)

Towers
 Limited to elevation of highest tower on site (13 to 20 storeys)
 Single loaded corridor - thin profile, energy efficient construction
 Incremental infill that respects both landscape and residents, while allowing for growth

PARKING SKYLIGHT DETAIL



Courtyards to be preserved and enhanced through the addition of architectural lighting, screening, and application of vertical green plane devices. Maintain integrity of original design intent.

Creation of additional garden space through the block infill housing types allowing views to, within and extending out to the surrounding landscape context.

Renovation of avenue greenways and central lawn with native plant species to conserve water, support habitat, retain stormwater and create a more interesting pedestrian experience.

Laundry gray water goes into a holding tank to cool, then gravity drains to a filter and then trickles into a mulch pit around a tree. Once saturated, the sub-surface water disperses down across the lawn. (The holding tank should have an overflow.)

IMAGES OF TOC FROM:
 Stone Trellis editor, Thomas Church Landscape Architect, Designing a Modern California Landscape, San Francisco, William Stout, 2003.

HARDING PARK GOLF COURSE

LAKE MERCED

OLYMPIC CLUB GOLF COURSE



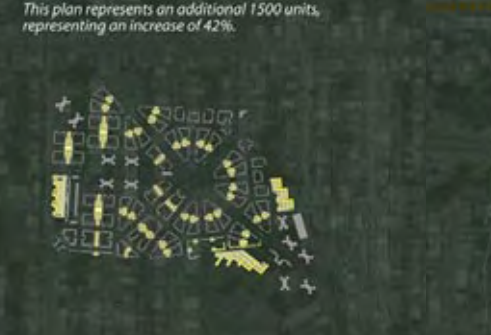
- COURTYARD
- OPEN SPACE
- COURTYARD
- EXTENSIVE ROOF
- DECK PARKING GARDEN
- STORMWATER PLANTING

OPEN SPACE NETWORK



INFILL

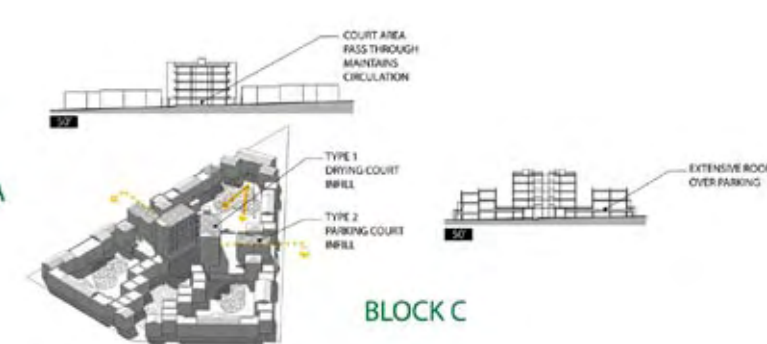
This plan represents an additional 1500 units, representing an increase of 42%.



TRANSIT



BLOCK A



BLOCK C

Park Merced neighborhood densification and green infrastructure proposal in San Francisco, CA.

Urban Design Studio
Part 1:
Natural Factors Analysis
Spring 2008



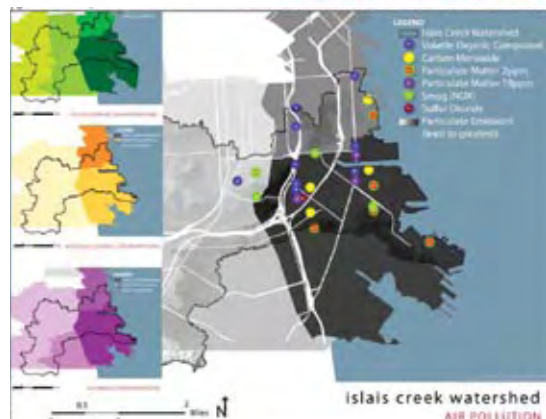
Islais creek watershed
CURRENT & HISTORIC WATER CONDITIONS



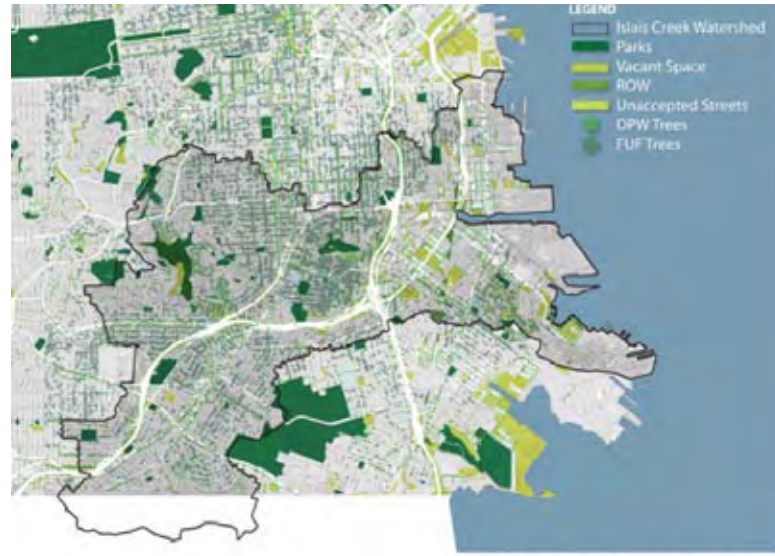
Islais creek watershed
SEISMIC CONDITIONS



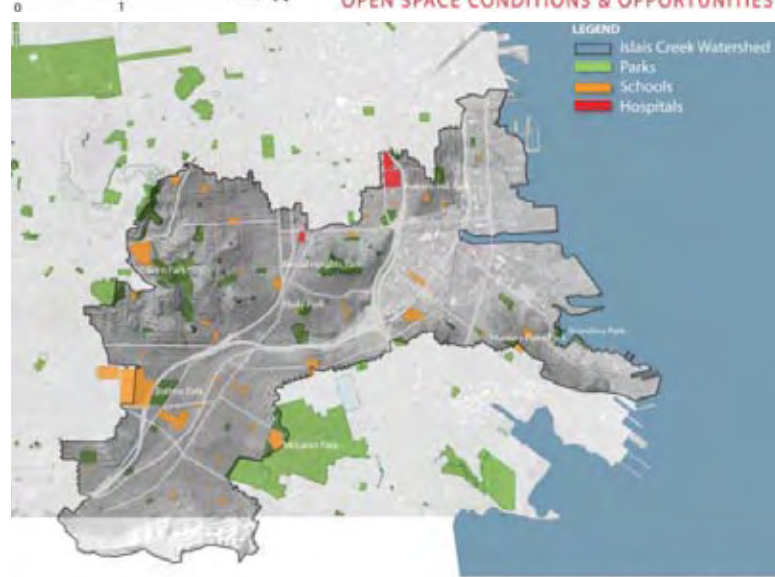
Islais creek watershed
SEWER & STORMWATER CONDITIONS



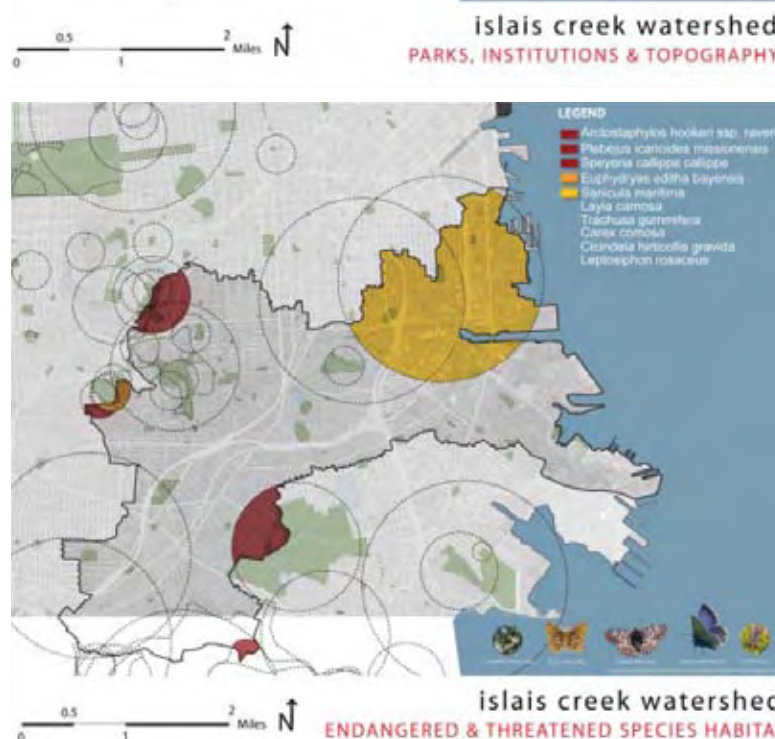
Islais creek watershed
AIR POLLUTION



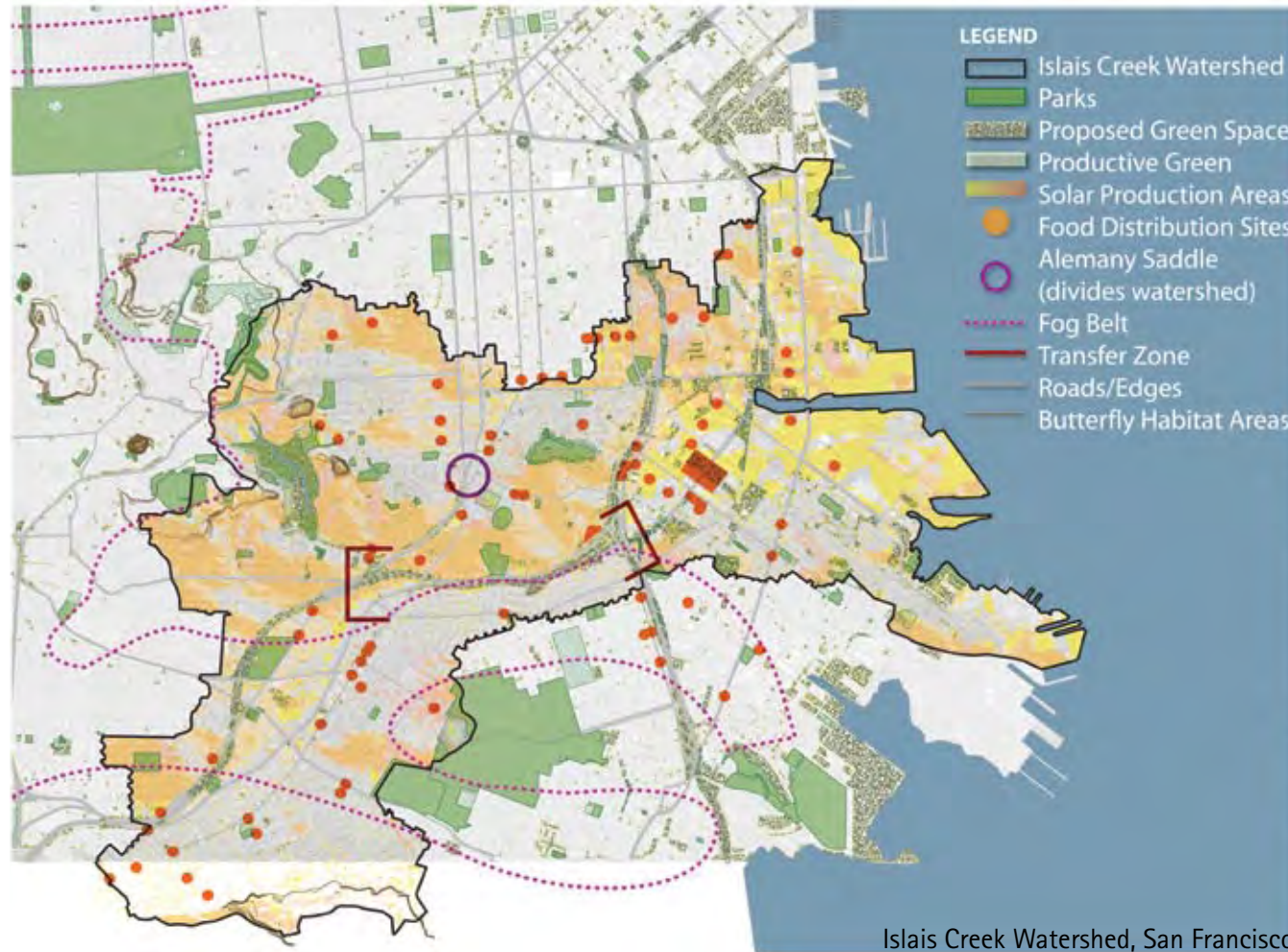
Islais creek watershed
OPEN SPACE CONDITIONS & OPPORTUNITIES



Islais creek watershed
PARKS, INSTITUTIONS & TOPOGRAPHY



Islais creek watershed
ENDANGERED & THREATENED SPECIES HABITAT



Islais Creek Watershed, San Francisco

PRODUCTION ZONE

Slopes that are considered seismically hazardous for structures can serve as urban agriculture sites, creating multi-functional connections between areas of different elevations. High solar aspects are good for photovoltaic energy production as well as food energy production. The watershed map locates points of food distribution, so why not create a similar landscape of food production? These areas can also provide habitat for the endangered butterflies of the region.

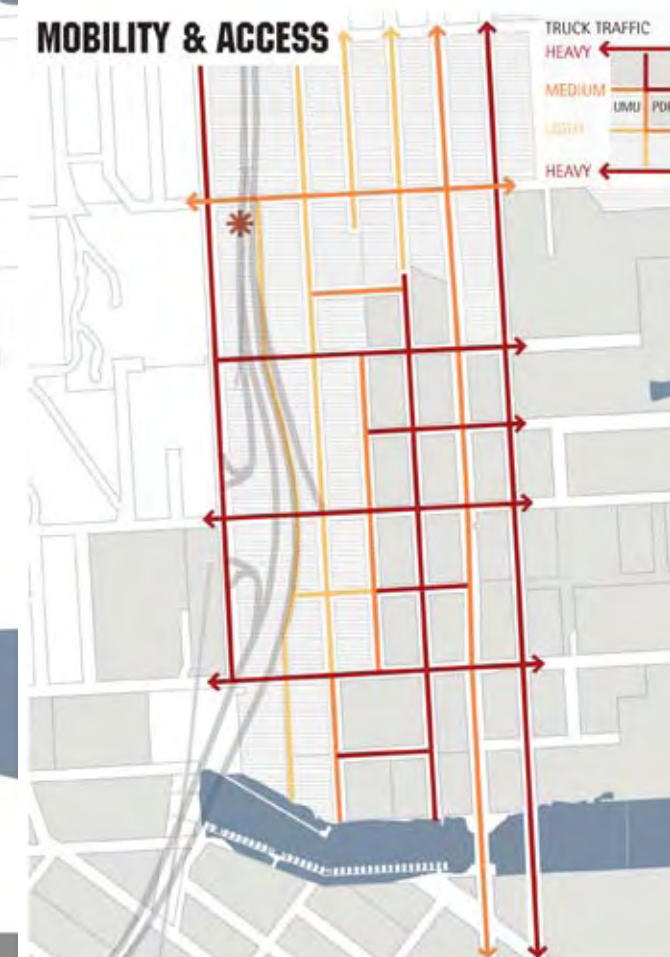
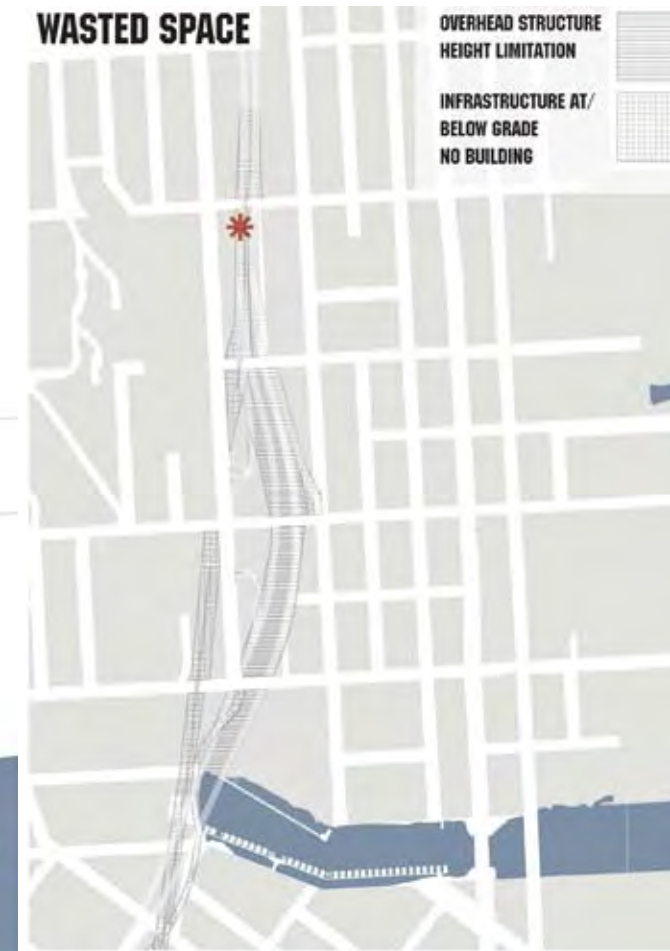
TRANSFER ZONE

This area facilitates the movement of people, animals, food and water along and across the gap. The final point of the transfer is the Alemany Farmers Market.

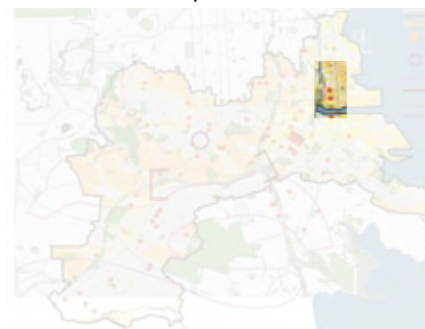
DEPOSITION ZONE

Elements settle, mix and rejuvenate the landscape

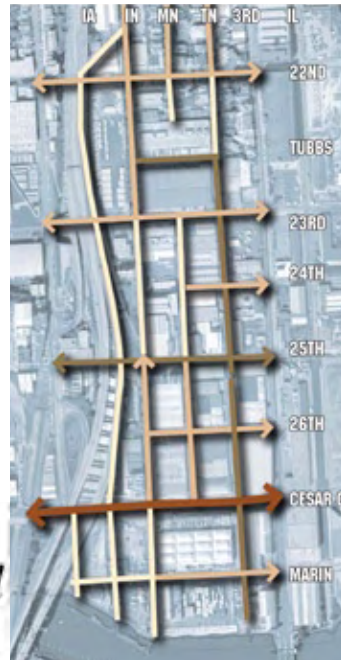




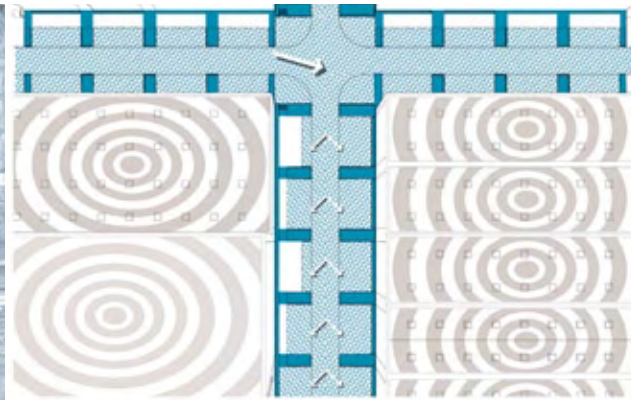
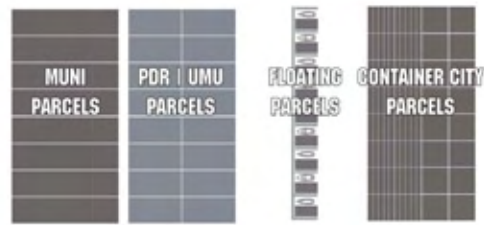
Dogpatch Neighborhood & Mixed-use Industrial Neighborhood in San Francisco, CA



**STREET
 TYPOLOGY
 NETWORK**



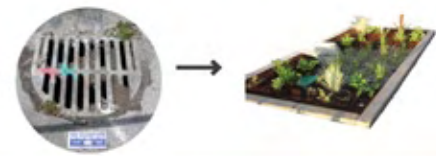
PARCELS ON 50 FOOT INCREMENTS
 ALIGNS WITH OPEN SPACE TYPOLOGIES
 CREATES FLEXIBILITY IN BUILDING SIZE



TREE TIRES



**FLOW &
 INFILTRATION**



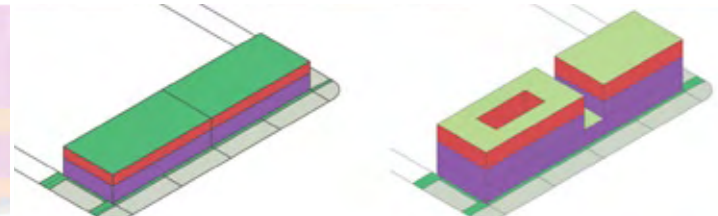
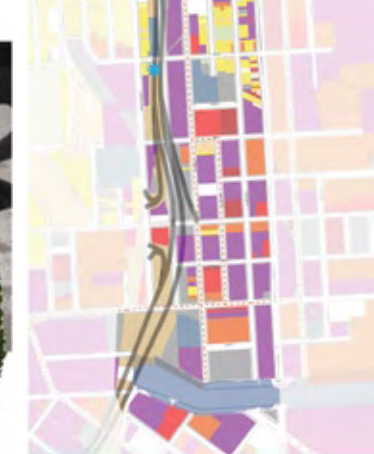
CAN INFRASTRUCTURE
 FRAGMENTATION RESTORE
 ECOLOGICAL STRUCTURE?

VARIATIONS ON THE STREET TYPOLOGY

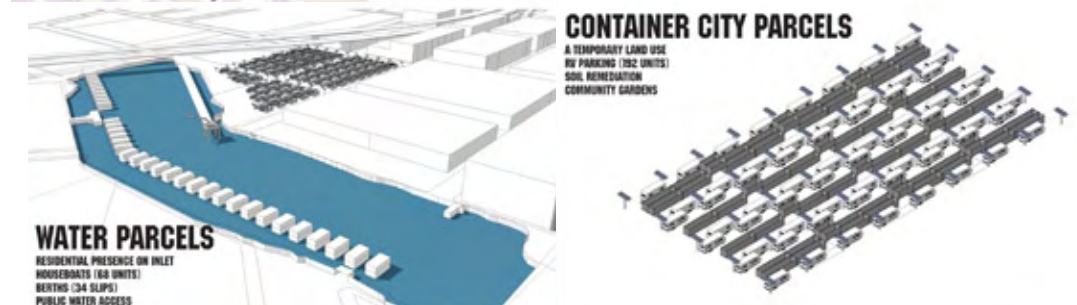
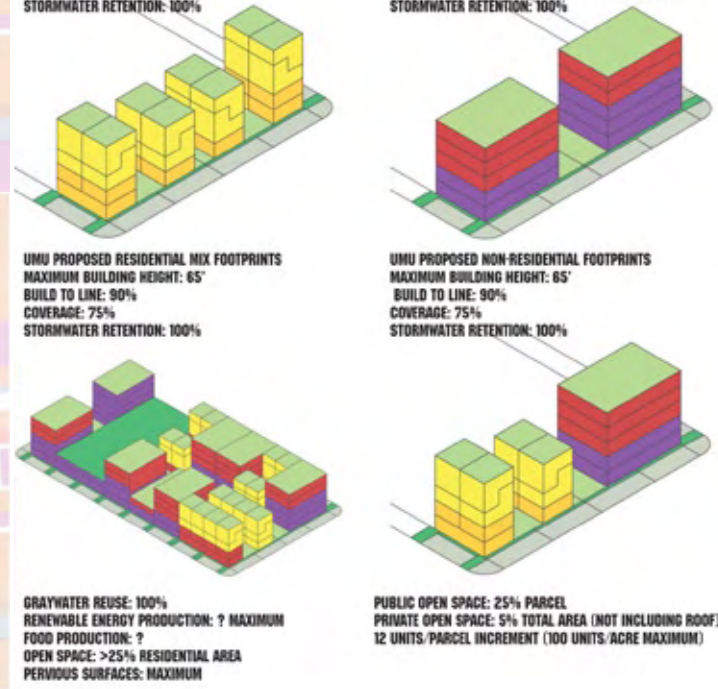
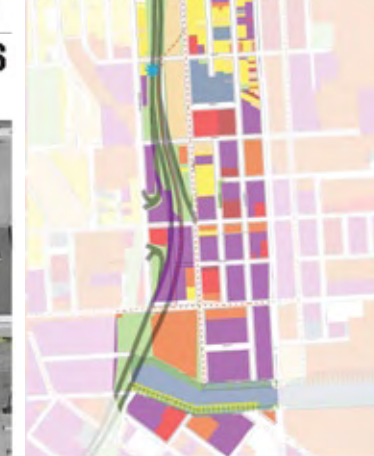
STORMWATER PLANTING SPACING & ENTRANCES



LAND USE - EXISTING



LAND USE - PROPOSED



International Ateliers of Urban Design & Planning Cergy-Pontoise, France Workshop 2008: "A Reconsideration of Infrastructure"

Original project presentation in oral/digital format. Transcript available on website.



TAKE THE GAS OUT OF THE CAR CITY

Project Team:
 Andrea Gaffney
 Sophie Bolzinger
 Nikolas Rogge
 Claire Vige Helie
 Pongpol Thongsomchit
 Anjing Tang

How do you transform a conurbation with a history urban experimentation into a fossil-fuel free city?



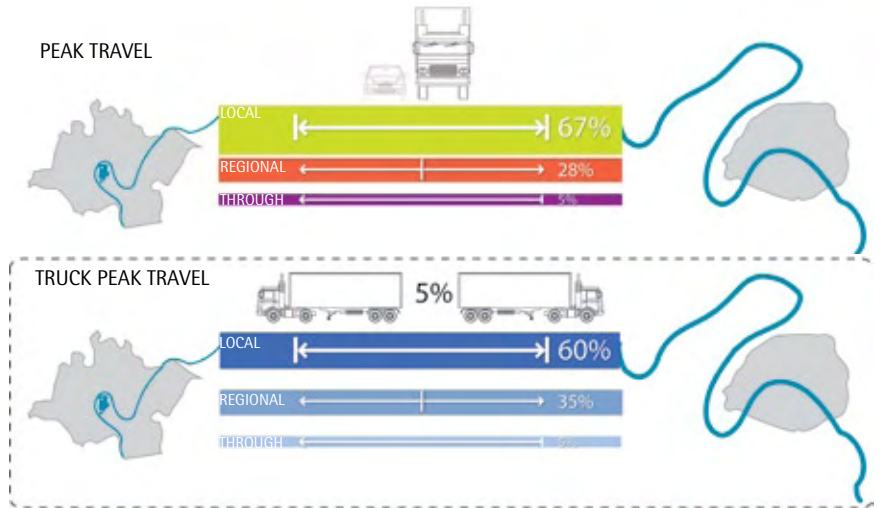
Stop and reverse automobile dependent development.
 Remediate existing auto-dependent land uses to allow for a multi-modal system.
 Localize food and energy production.
 Create economies that reduce fossil fuel dependency in the region.
 Create demand for carbon-free products.



FAR AWAY SO CLOSE: CERGY-PONTOISE & PARIS
 Cergy-Pontoise falls under the economic mega-region of Paris, but is too far away to be included in the debate about the Grand Paris. For this reason, C-P needs to reassert itself, and find a unique purpose for that contributes to the regional identity.



A15 + A104 = BOULEVARD VEXIN
 The A104 completion between Cergy-Pontoise and St-Germain-en Laye removes the need for a limited access single-use road in Cergy-Pontoise : there is no plan to turn the N14 into a highway leading to Normandy, so with the completed A104, traffic will divert to the preferred A13 highway.



Historic Pontoise



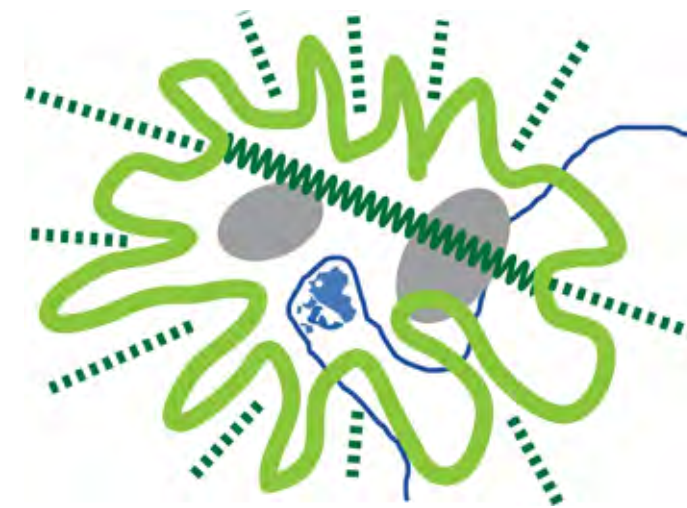
Ville Nouvelle Cergy-Pontoise



The A15 & Cergy-Pontoise



Boulevard Vexin & Cergy-Pontoise



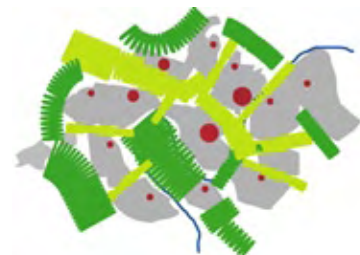
Fossil-Fuel-Free Cergy-Pontoise



Municipalities & their Centers



Increase Connections



Define Edges to Focus on Centers



Polycentric Con-Urbation



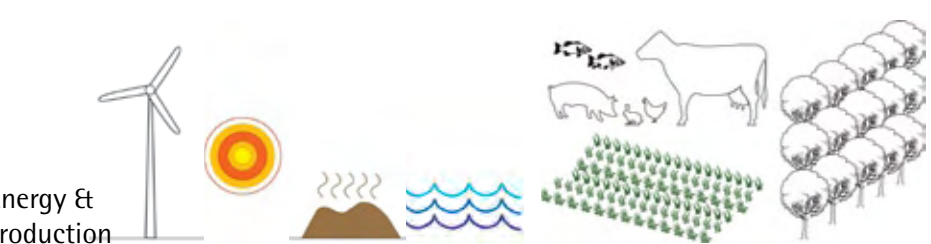
Focus Density at Transit Nodes



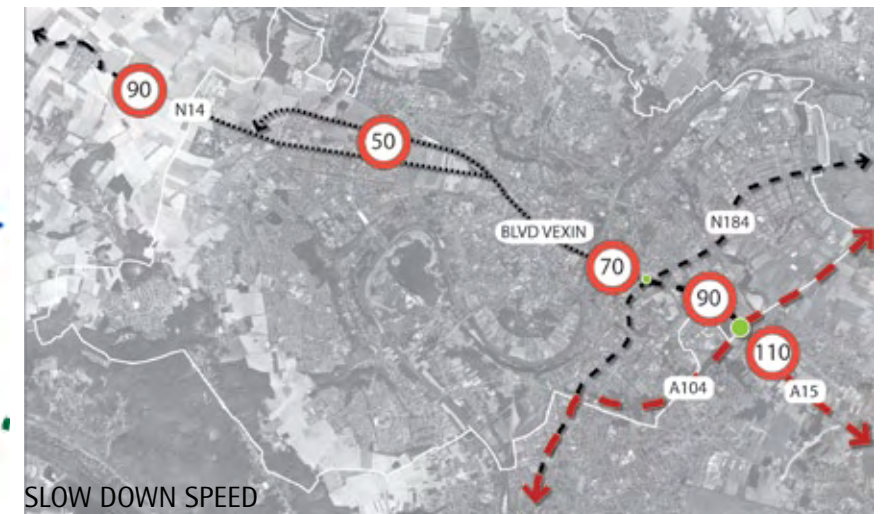
Redefine Centers with Transit Links



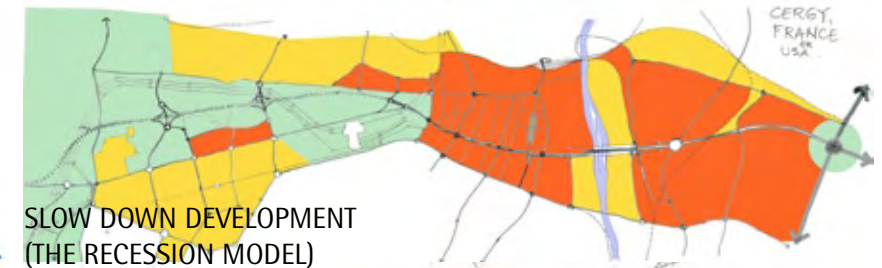
Local Energy & Food Production



Mix Land Uses



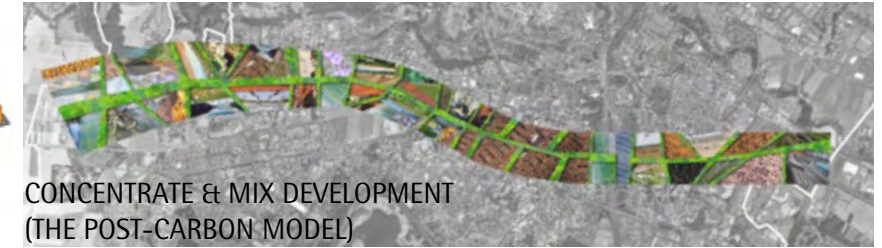
SLOW DOWN SPEED



SLOW DOWN DEVELOPMENT (THE RECESSION MODEL)



SPEED UP DEVELOPMENT (THE WILD GROWTH MODEL)



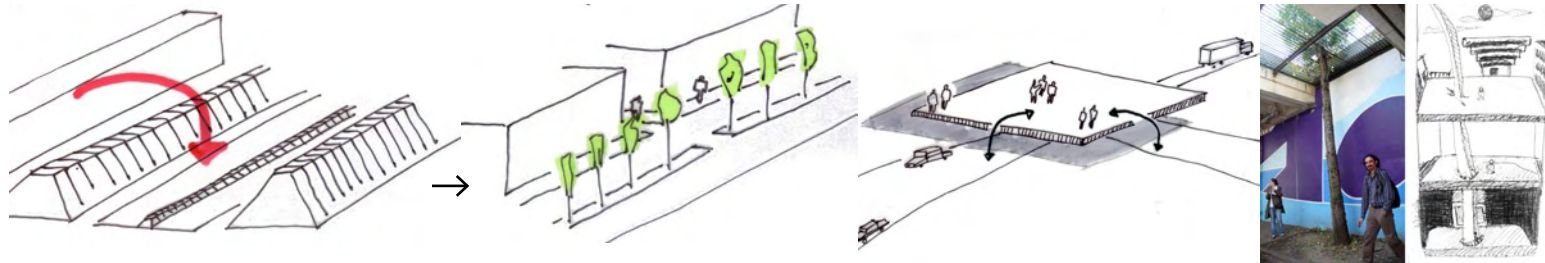
CONCENTRATE & MIX DEVELOPMENT (THE POST-CARBON MODEL)

International Ateliers of Urban Design & Planning Cergy-Pontoise, France Workshop 2008: "A Reconsideration of Infrastructure"



TAKE THE GAS OUT OF THE CAR CITY

Separated, single-use systems are the paradigms of modern planning and infrastructure, therefore re-configuring these systems into multi-valent and multi-functional networks becomes a method for reconsidering the landscape.

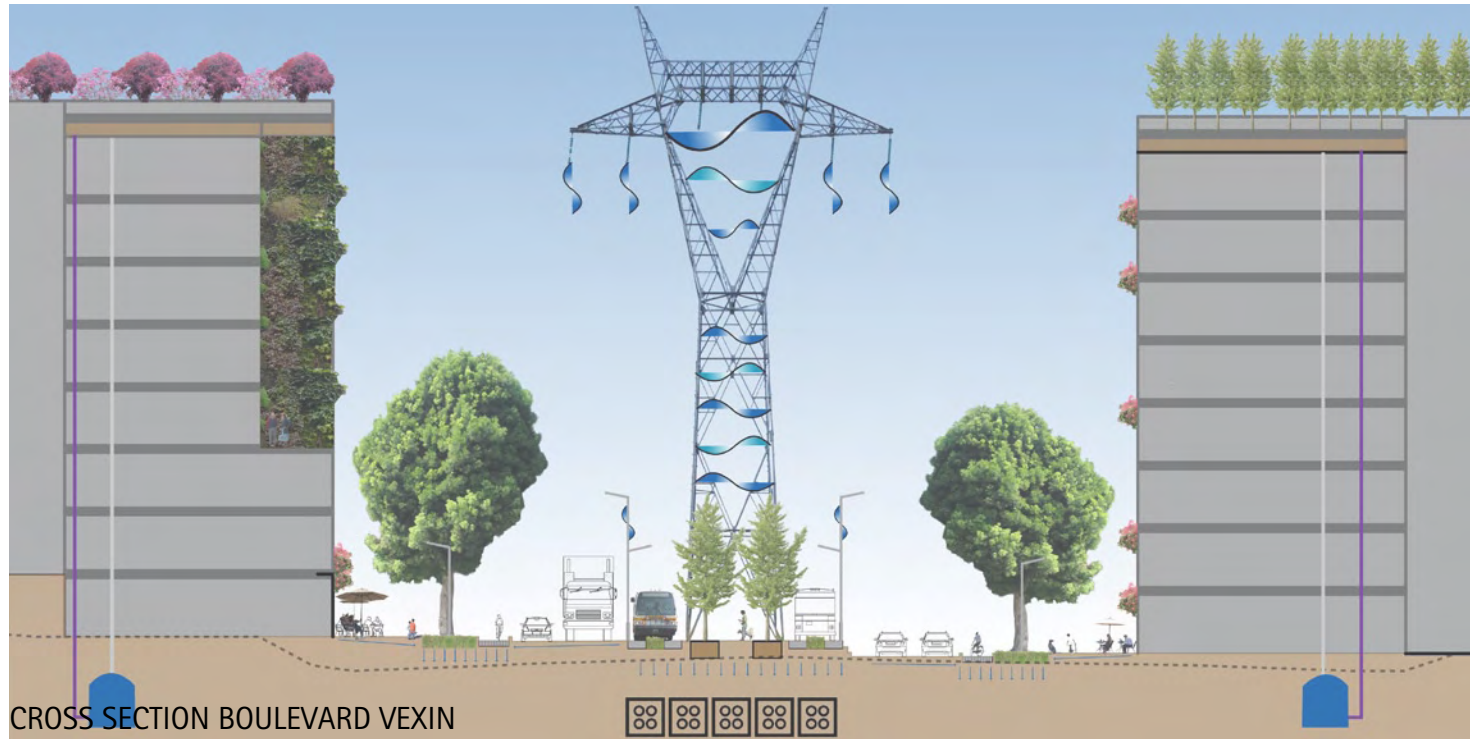


The RIFT: Highway A15

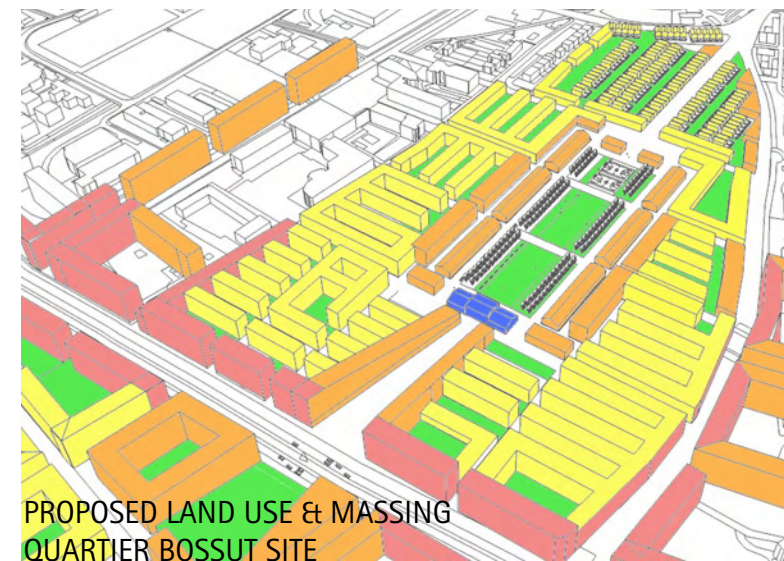
In terms of regional traffic, the A15 west of the planned A104 ring road is a local road with minimal through-traffic. The completion of the A104 will completely short-circuit this function of the A15 in Cergy-Pontoise. The following project presents an opportunity for reconsidering this infrastructural rift and how it could transform to reinforce multi-valent connections with the rest of the conurbation: Boulevard Vexin. a re-interpretation of a culturally significant street type into a high performance infrastructure.

The SLAB: Cergy-Pontoise Prefecture

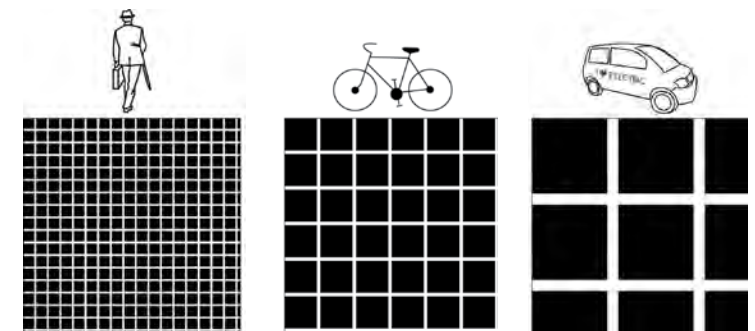
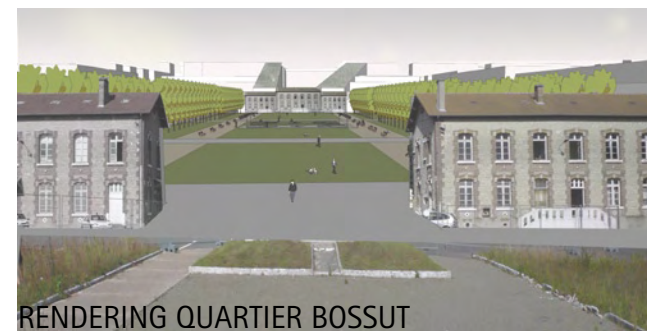
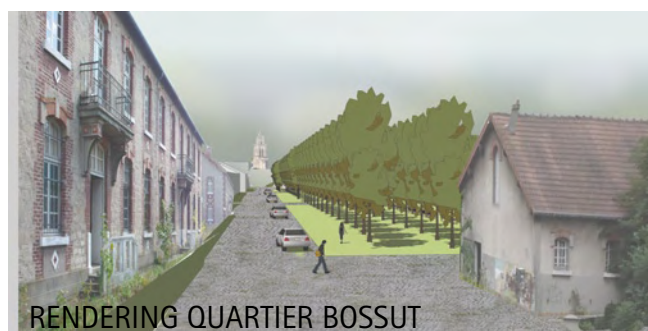
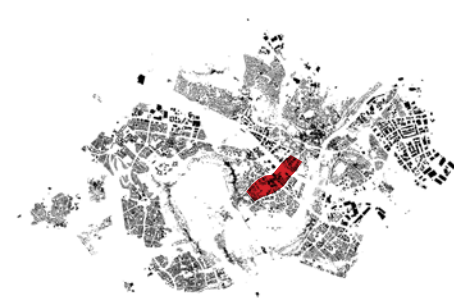
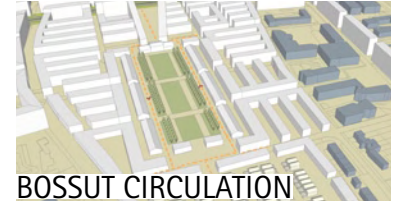
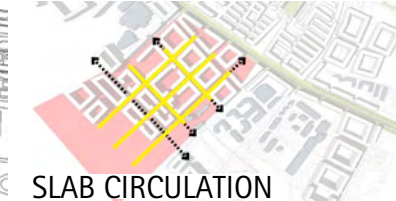
The historical vestige of modernism which celebrates the speed of the automobile by separating pedestrian and vehicular traffic interface with its surrounding, at-grade context in a relatively hostile manner. We propose to CRACK THE SLAB. This proposal provides access to both vehicles and people above and below the slab through a network of streets and stairs. The buildings along Bd. Vexin address the grade change between the slab and the rift.



EXISTING SITE PLAN

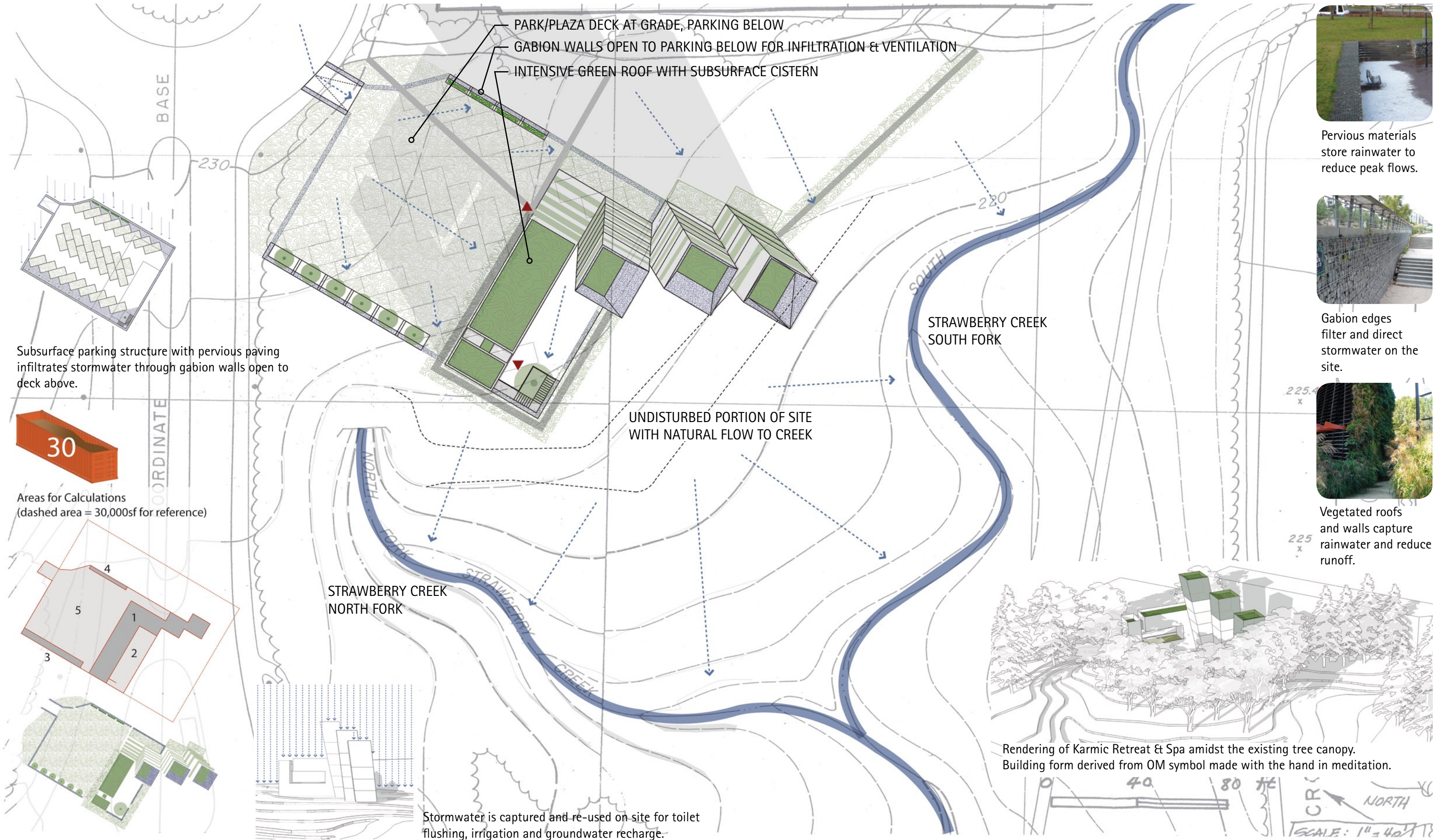


PROPOSED SITE PLAN



LA222 Hydrology for Planners Spring 2009 Exercise 4: Karmic Retreat & Spa for Faculty & Staff at UC Berkeley

The assignment required retention and treatment of all stormwater runoff on-site. Albeit a kitsch, po-mo building form (a flippanant 5-minute design,) the site performs significant infrastructure feats while minimizing site impacts.



Pervious materials store rainwater to reduce peak flows.



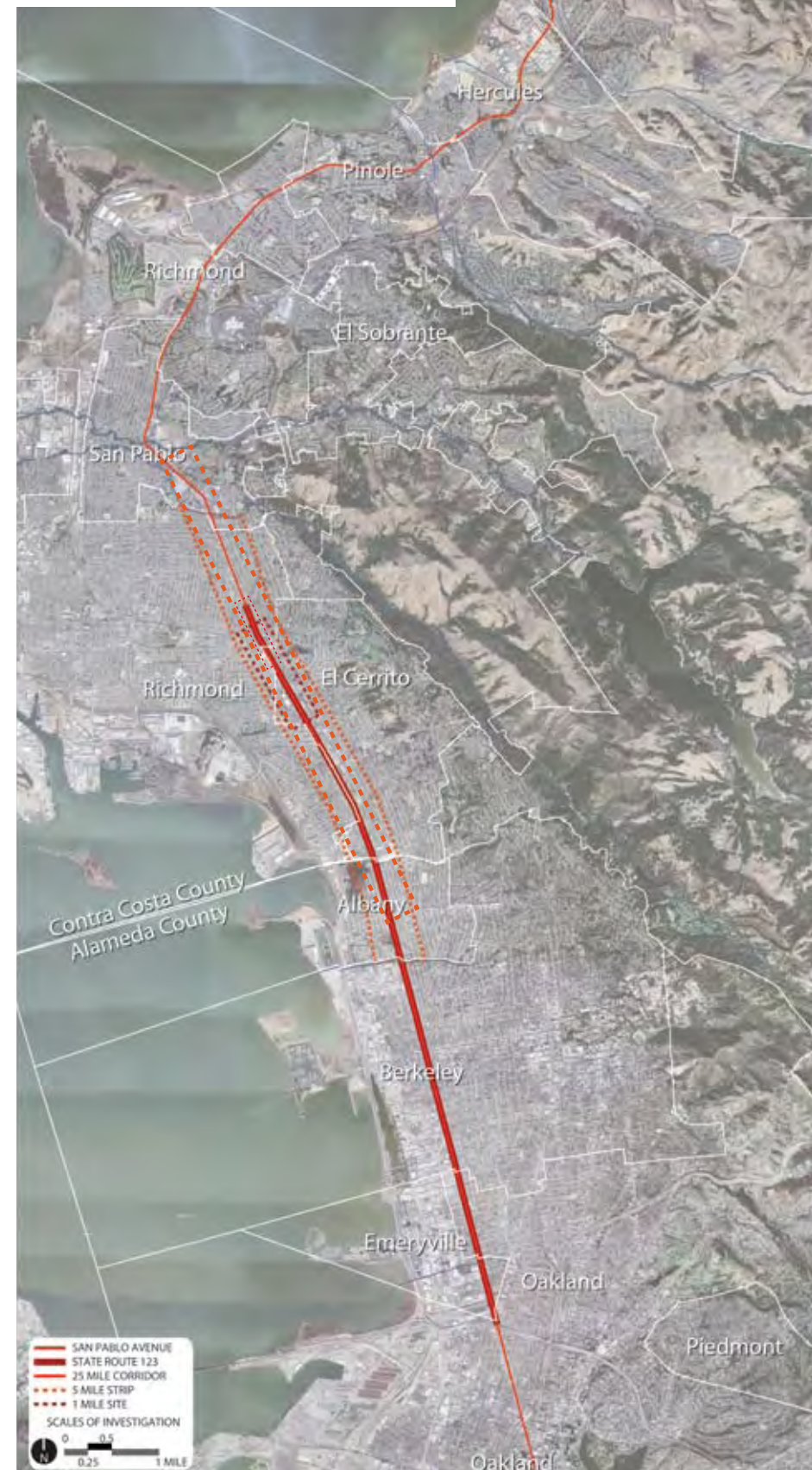
Gabion edges filter and direct stormwater on the site.



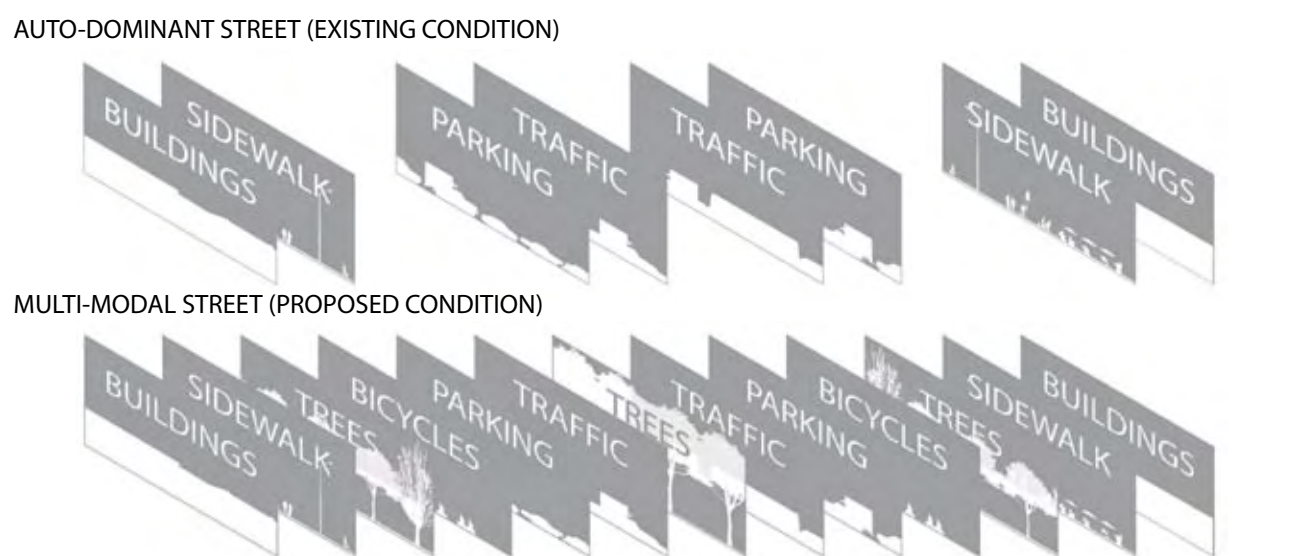
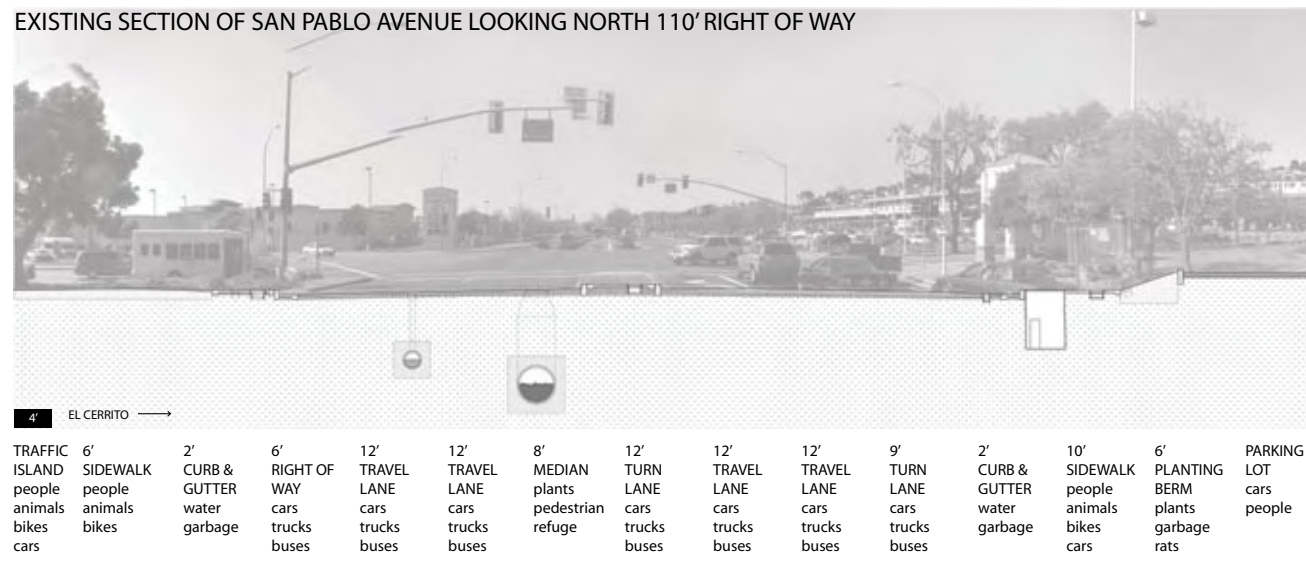
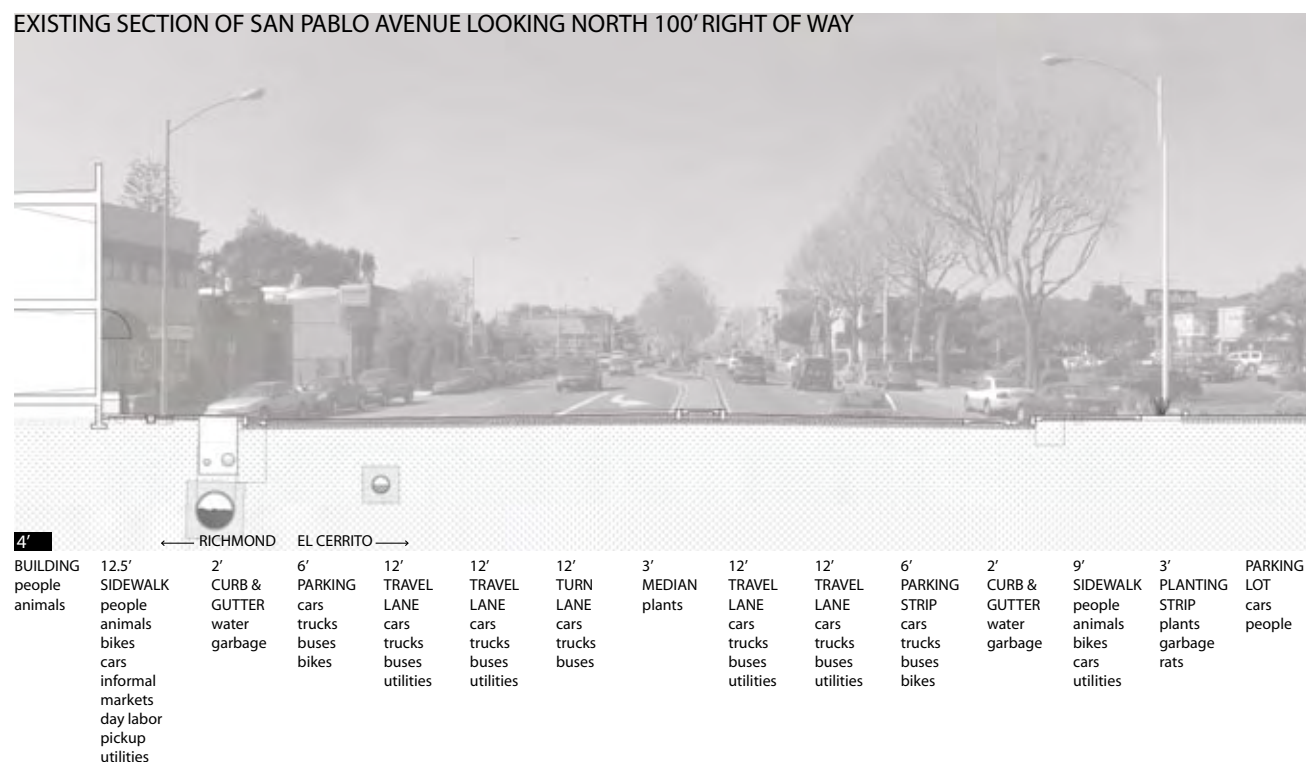
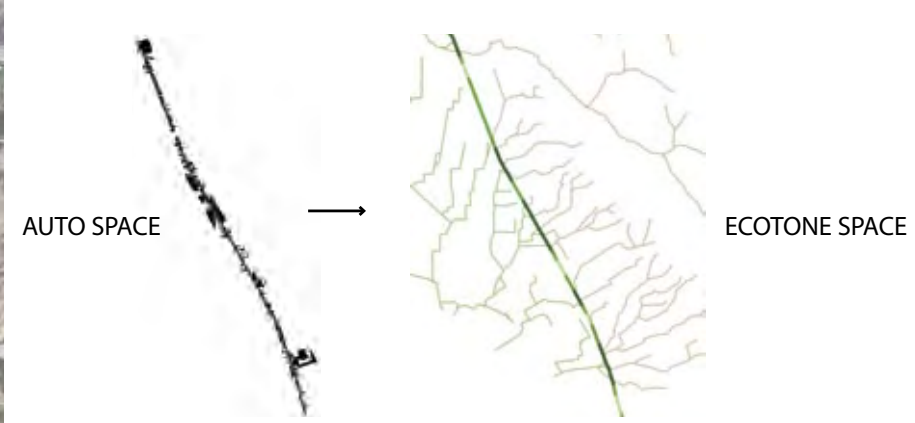
Vegetated roofs and walls capture rainwater and reduce runoff.

San Pablo Avenue: Coding an Urban Ecotone
Masters Thesis 2009

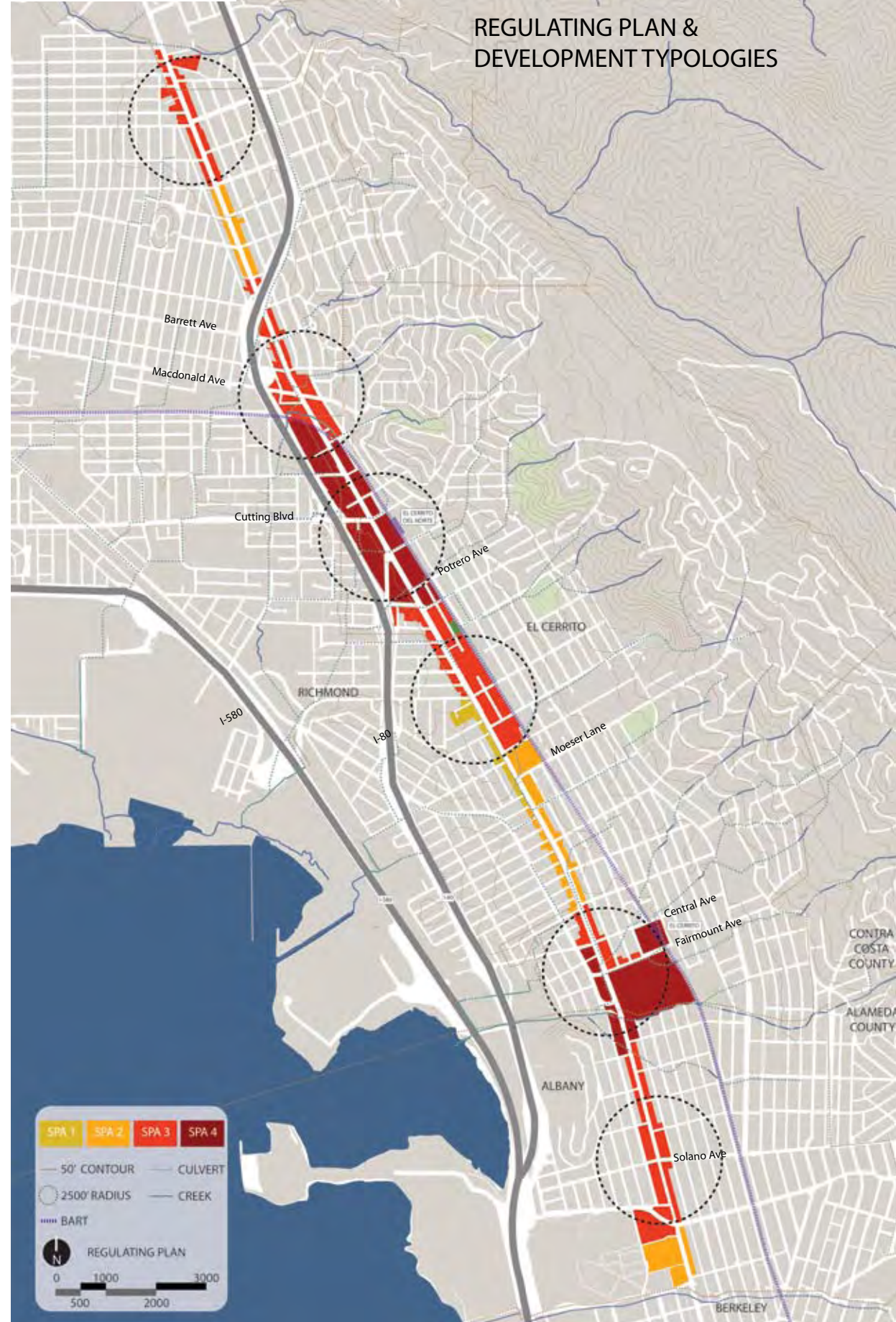
How to plan and design for a sustainable urban arterial that is 'emergent from place.'
Can a code frame this transformation?
(Download entire thesis at www.aeg7.com)



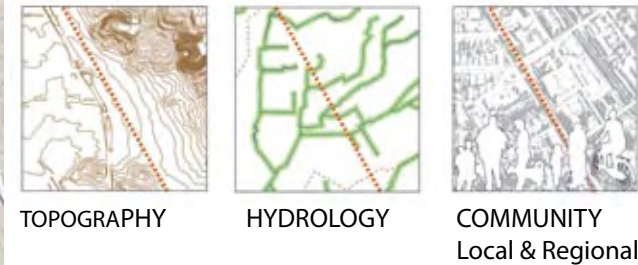
Urban arterials, the oft-neglected spaces of cities where there is a convergence of a multitude of land uses and vast systems of infrastructure and mobility, can become significant sites of sustainable transformation. A hybrid form/performance-based code can negotiate these complex, multi-jurisdictional spaces towards an ecologically-, equitably- and economically-balanced future. A significant portion of the transformation can occur through a reconsideration of infrastructure that is located within the space of the corridor by taking single-use systems and retooling them for multi-functional benefits (Gaffney 2009, 3).



San Pablo Avenue: Coding an Urban Ecotone
Masters Thesis 2009



THE DEVELOPMENT CODE
This masters thesis formulates and tests the Urban Ecotone Code on San Pablo Avenue, a 25-mile urban arterial in the San Francisco Bay Area. The code incorporates both the public and private realms of the corridor, and employs local and regional topography, hydrology and community for its fundamental framework. After significant analysis, I designed a code for a representative 5-mile section of the avenue. Within this section, nine design professionals tested the code on a variety of sites which were then used to refine the code. I produced a tenth code test design for a transit district to represent SPA4, the most intensive development typology assigned to the corridor.

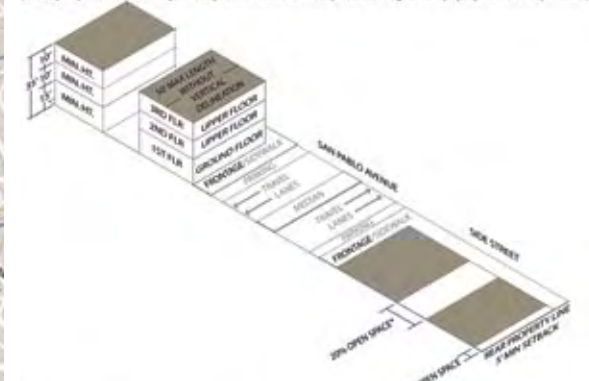


BLOCK LAYOUT
1000' perimeter maximum for new blocks. The size limit intends to create a bicycle and pedestrian-scaled environment adjacent to mass transit. UM streets must connect to surrounding network. Layout must provide pedestrian and bicycle access around and/or through blocks.

PARCEL LAYOUT
20,000sf parcel maximum (parcels up to 45,000sf do not need to be subdivided, but must reflect vertical delineation requirements.)
35' height & 3' floor minimum

FRONTAGE
Primary entrance on San Pablo Avenue or other principle streets when parcel is not located on SPA (refer to SPA 4).
Facade Length: vertical delineation (significant distinction from adjacent structures) for every 50' of frontage (maximum length).
Facade Openings: design for daylighting and ventilation (minimum 20%).
Build-to-Line: 80% (minimum) of parcel frontage length built at property line.
Plantings along frontage can extend in front of property line by 2' maximum.
Balconies and other overhanging projections are permitted to extend 4' beyond property line.
Temporary daily use of sidewalk is permitted as long as 4' path of sidewalk remains open to passing pedestrian traffic.
No parking permitted along property frontage. Parking must be located on the interior of the parcel.

MINIMUM REQUIREMENTS PARCEL DIAGRAM
(Notes: open space can be located anywhere on parcel such that location complies with frontage and rear property line setback requirements.)

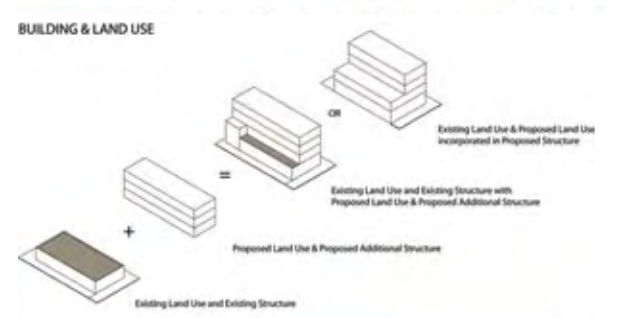
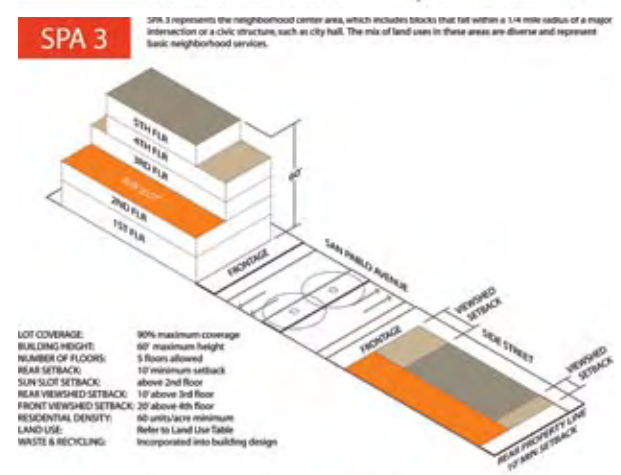
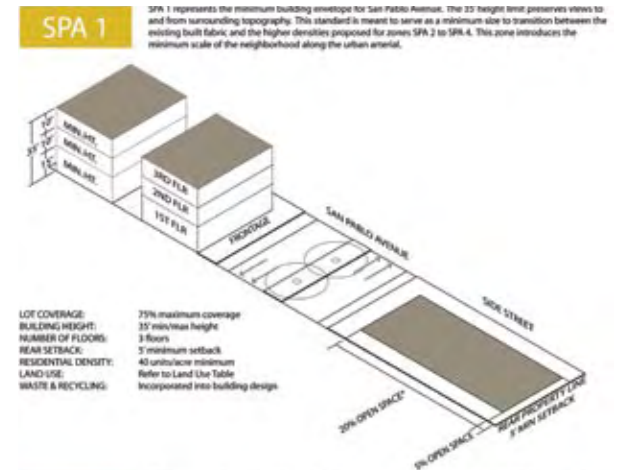


SUSTAINABLE DESIGN
All projects should strive to LEED Silver certification or higher, as well as meet the minimum requirements of the Sustainable Sites Initiative. (refer to www.sustainable.sites.org for more information)

ON-SITE ENERGY PRODUCTION
All projects should maximize their on-site energy production potential and incorporate the production methods into the construction. Examples of on-site energy production include, but are not limited to: photo-voltaic panels, solar hot water heaters, small scale wind turbines, small scale hydro turbines, geo-thermal co-generation, bio-mass co-generation, food crop production and human power.

HOUSE THE PEOPLE
All housing units should be through-floor units or have a minimum of two exposures to promote passive ventilation.

FEED THE PEOPLE
For parcels with residential uses, food crop space should be identified within the open space/vegetated area. For example, to provide food for 10% of the daily diet of an adult for 1 year requires 100 sf.



STACKED PARKING
Residential Parking (max. 40 min)
1 space = 3 cars
= 4 housing units
(Spaces are in separate units as those not prohibited by residential use or by other codes that may require additional design. Assessor's map is not responsible for this.)
On-street parking is factored into ratios for users other than residential.

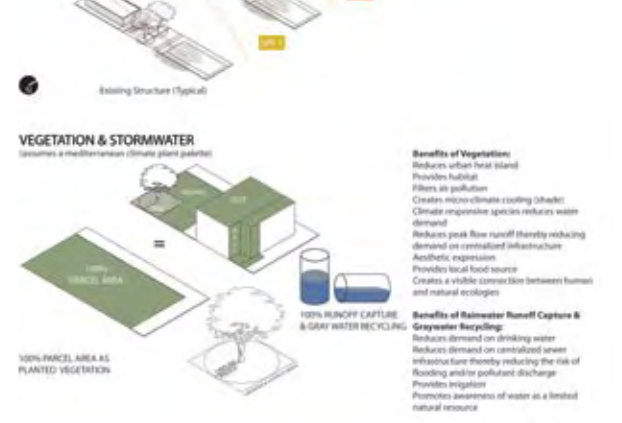
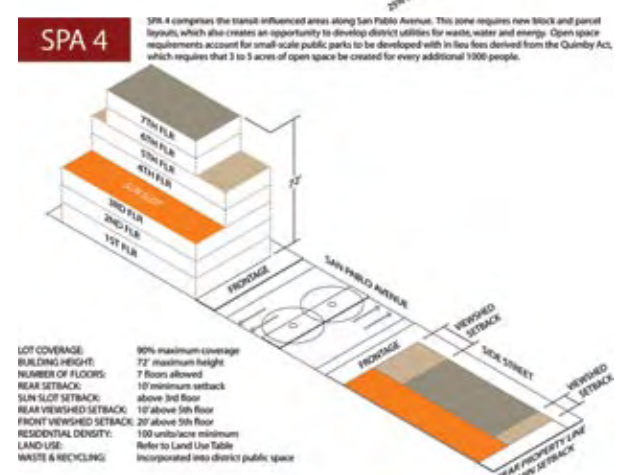
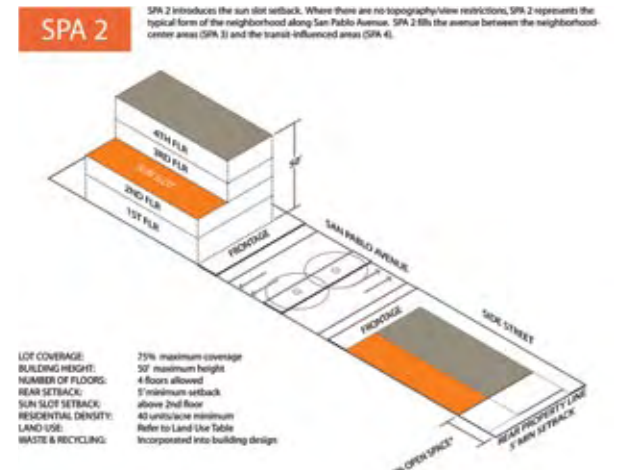
STRUCTURED PARKING
District Shared Parking
1 space / 1000 sf for Commercial/retail
Allowed Types:
each under or podium parking
sub-surface parking structures
structured parking internal to block

OPEN LOT PARKING
Surface parking should only be used when no other parking scheme is feasible. 100% of surface must be incorporated into a stormwater management plan. If parking lots are not used everyday, then an alternative use must be designed as a public open space when there is no parking demand. This requirement also applies to loading areas.

LAND USE

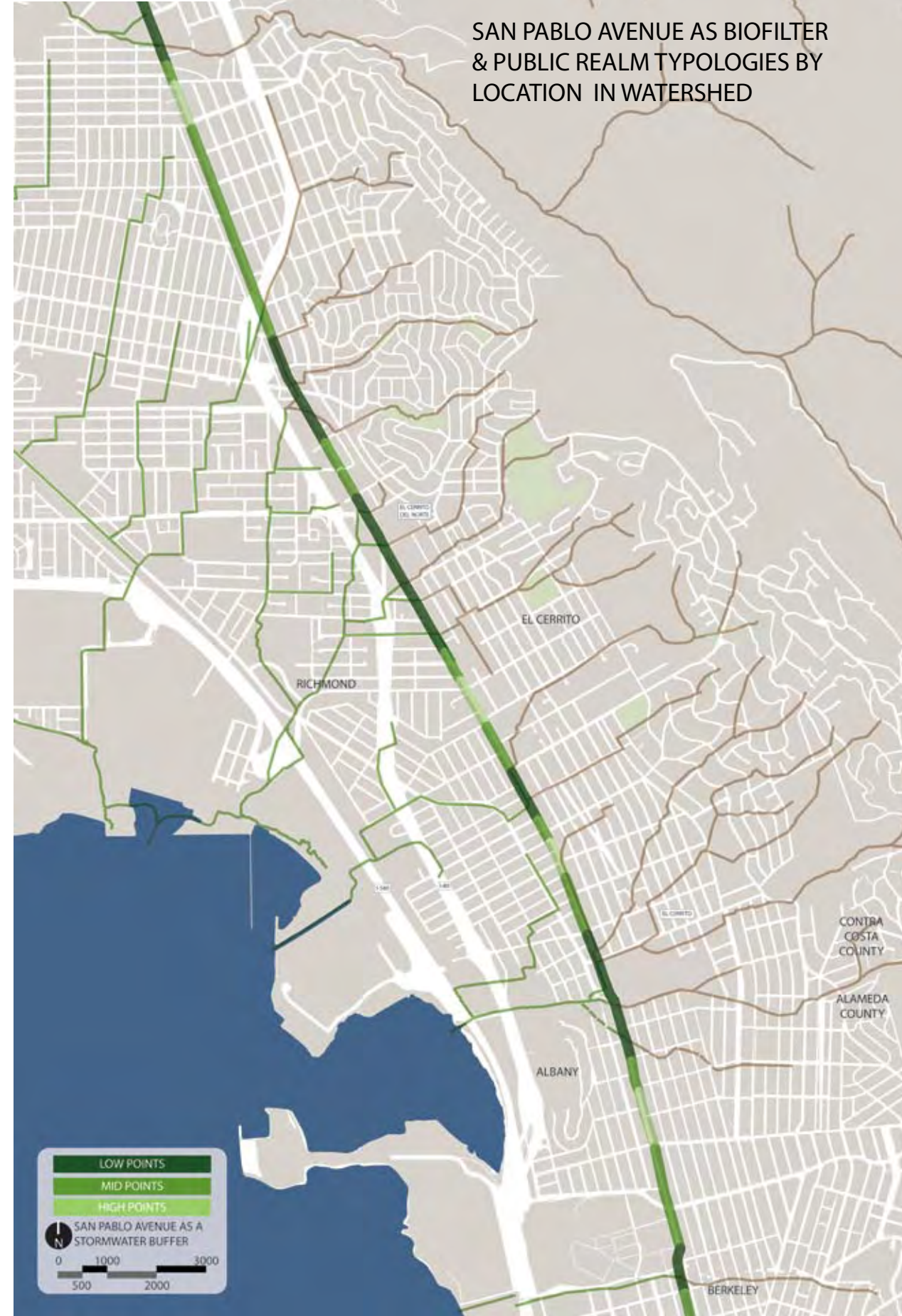
Permitted Use	Secondary Use	Allowed	Prohibited
RESIDENTIAL			
Dwelling Units (100% 2BR, 10% 3BR)		■	■
Hotels & Motels		■	■
Single Resident Occupancy (SRO) (refer to regulating plan for details)		■	■
RELIGIOUS, EDUCATIONAL, CULTURAL, COMMUNITY			
Religious Facilities		■	■
Schools & Libraries		■	■
Child Care		■	■
RETAIL			
All Retail Uses 10,000sf per parcel; more requires 2sf of another permitted use for 1sf of retail. (No Drive-thru permitted)		■	■
OFFICE & PROFESSIONAL			
Nighttime Entertainment		■	■
Adult Entertainment		■	■
Theater		■	■
Movie Theater (3 screens max)		■	■
Galleries and other arts activities		■	■
OFFICE			
Office		■	■
Medical Office (including International)		■	■
INDUSTRIAL			
Light Manufacturing (includes Green Tech, Laboratory (for Green Tech only))		■	■
Home and Business Service		■	■
Wholesale Sales		■	■
Motor Vehicle Repair		■	■
Recycling Facilities		■	■
Commercial Storage and Distribution (Self-storage not permitted)		■	■

RIPARIAN & DRAINAGE AREAS
Open space buffers of a minimum of 100' will surround creeks and drainage infrastructure. Every creek and drainage in the East Bay, north of Oakland) crosses San Pablo Avenue. The goal of this code is to enhance the urban and natural ecotone along the corridor, and to achieve this, the avenue will function literally and figuratively like a giant bio-filtering weir for all water passing across it. Development should use this open space requirement as a public, amenity incorporating projects into this system. The wide buffer facilitates water retention, filtration and infiltration during peak storm events, and otherwise functions as a riparian and bicycle/pedestrian area. The area not designated as sensitive habitat can be included in the Quality Act open space calculations. (3-9 acres/1000 people)

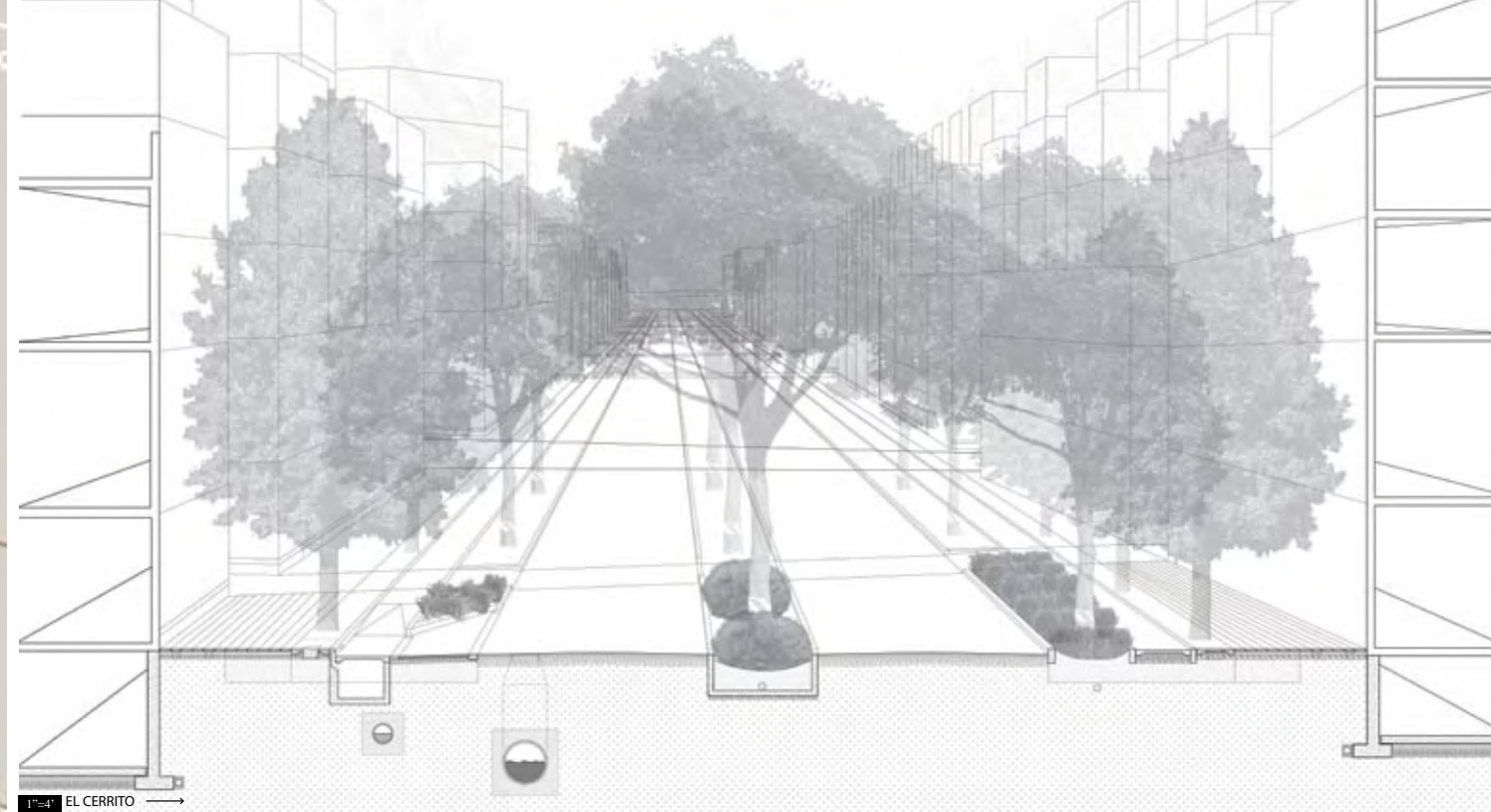


An increase in building density and population has been traditionally associated with an increased demand on centralized water storm water infrastructure systems. By integrating decentralized infrastructure into development projects, the demand on the centralized systems could potentially be reduced, thus reversing the traditional association between growth and capacity. (The relationship inversion can only occur in urbanized areas where infrastructure systems are already present and at capacity.)

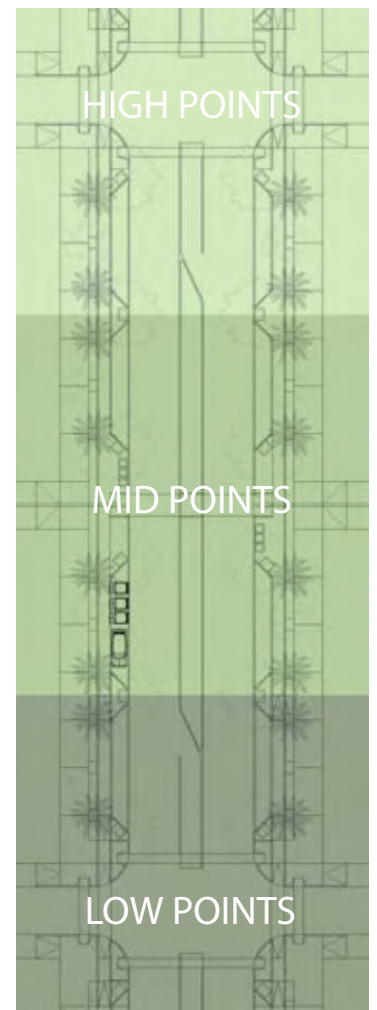
OPEN SPACE BY LAND USE
Lot coverage dictates 10-25% of parcel area to be open (if podium parking is included, coverage calculation is taken above podium). Open space requirements are determined by land use, which includes roof access, by the following calculations:
Residential: 100 sf of open space per dwelling unit (public, semi-public or private)
All other uses: 1 sf of open space per 100 sf of use (public)
If coverage > land use, then apply the coverage area.
If land use > coverage, then apply the land use area.



CODE TEST SECTION SAN PABLO AVENUE LOOKING NORTH 110'-100' RIGHT OF WAY IN SPA4 AT WATERSHED LOW POINT



BUILDING people animals bikes cars	8'-12" SIDEWALK people animals cafes other retail spill	4' TREE & UTILITY STRIP people animals	5' BIKE LANE bicycles rollerblades skaters stormwater	8' INFRASTRIP parking garbage recycling compost trees stormwater solar lights	11' TRAVEL LANE cars trucks buses utilities	10' TRAVEL LANE cars trucks buses utilities	10' MEDIAN/ TURN LANE plants pedestrians animals stormwater	10' TRAVEL LANE cars trucks buses utilities	11' TRAVEL LANE cars trucks buses utilities	8' INFRASTRIP parking garbage recycling compost trees stormwater solar lights	5' BIKE LANE bicycles rollerblades skaters stormwater	4' TREE & UTILITY STRIP people animals	8'-12" SIDEWALK people animals cafes other retail spill	BUILDING people animals bikes cars
--	--	---	--	---	---	---	---	---	---	---	--	---	--	--



THE INFRASTRIP:

Multi-functional Spaces & Infrastructures: A bike lane becomes a stormwater filter and cistern; a parking lane stormwater filter becomes a market stand area. Rain garden planters provide habitat and successional planting areas within the streetscape. Street lights generate their own power, indicate air quality, and provide shade while trees mature...

MOBILITY | WATER | ENERGY | FOOD | WASTE | COMMUNICATION | HABITAT

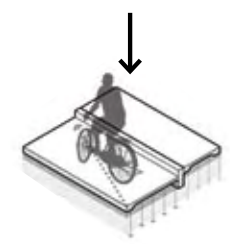


THE CURB & GUTTER

A mono-functional, standardised infrastructure used to convey stormwater away from the driving surface as fast as possible.



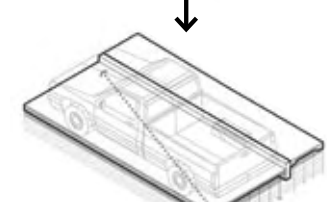
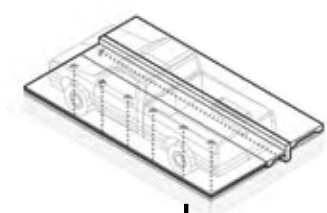
USER CONFLICT



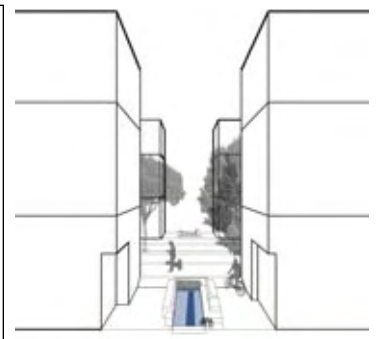
**ALONG SPA:
EXTEND THE
CURB & GUTTER**



NO LANE/STREET DEFINITION



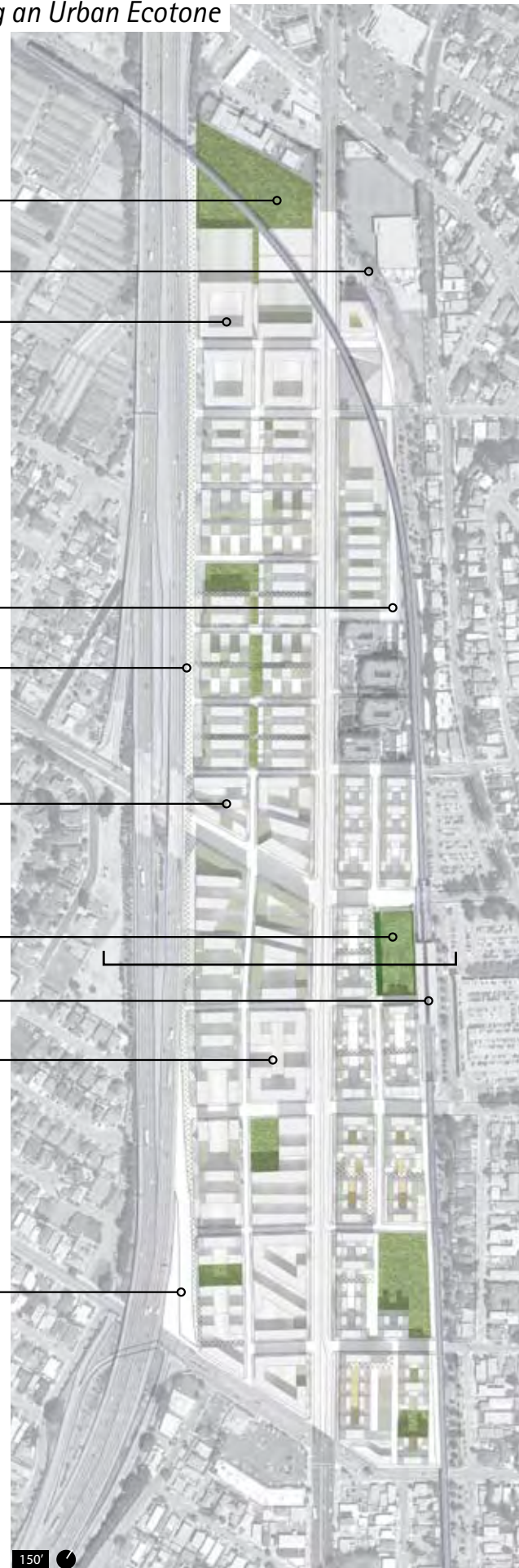
THE HIGH PERFORMANCE INFRASTRUCTURE CURB & GUTTER REBALANCES MOBILITY AND CREATES A SPECIFIC PLACE.



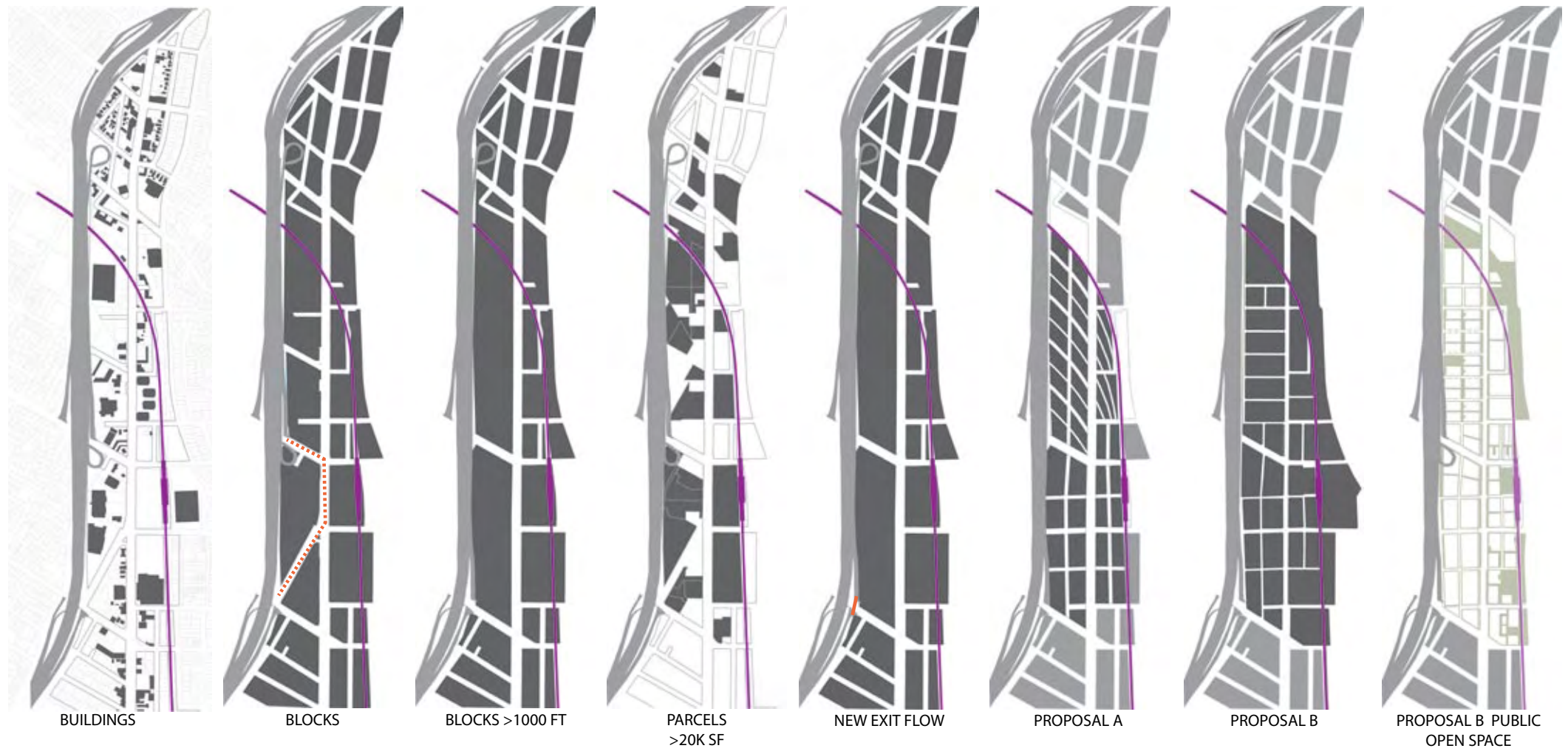
ACROSS SPA: DROP THE CURB & EXTEND THE GUTTER

San Pablo Avenue: Coding an Urban Ecotone
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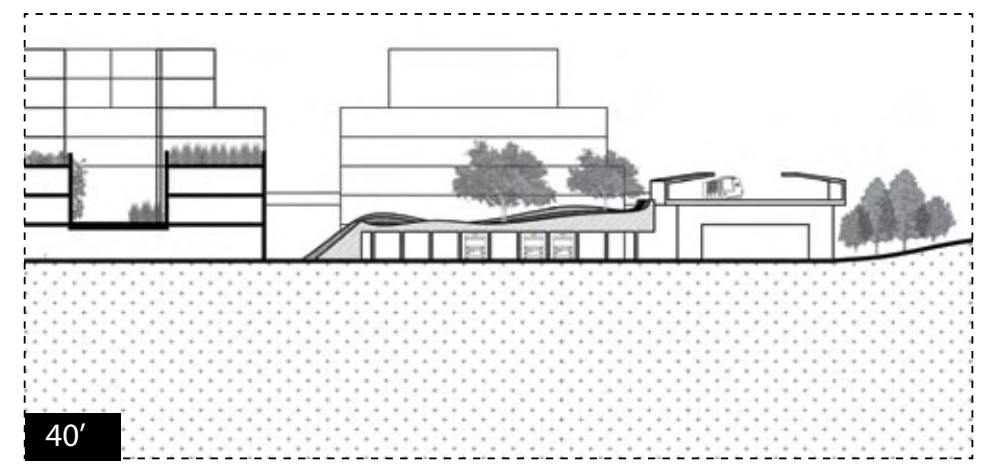
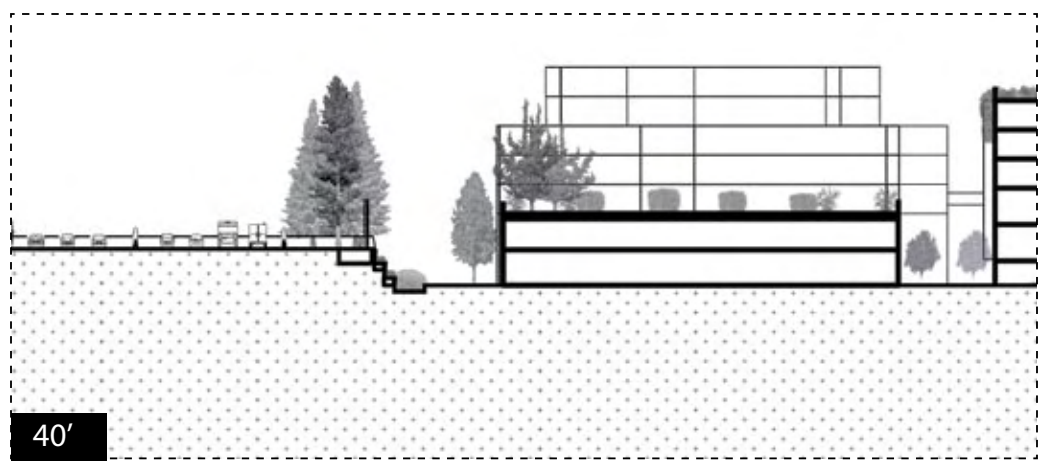
- JORNALERO PARK/
DAY LABOR PICK UP AREA
(FLOOD CONTROL PARK)
- BAXTER CREEK GREENWAY
- HOME DEPOT
WITH HOUSING ABOVE
(BROWNFIELD SITE)
- OHLONE GREENWAY
EXTENSION PARKS
- INTERSTATE AIR FILTER
TERRACES & GREENWAY
STORMWATER FILTER PARK
- HONDA DEALERSHIP
WITH HOUSING ABOVE
- BUS TERMINAL PARK
- EL CERRITO DEL NORTE
BART STATION
- TARGET STORE
WITH HOUSING ABOVE
- RELOCATED INTERSTATE
I-80 EXIT



SPA 4 CODE TEST #10
TRANSIT CENTER &
MIXED USE NEIGHBORHOOD
(24 hour code test)



CODE TEST ANALYSIS



CROSS SECTION OF DISTRICT

