CAPSTONE DESIGN PROJECT PROPOSAL

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UCLA Extension Landscape Architecture Program

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ACKNOWLEDGMENTS

A big THANK YOU to my classmates who were my biggest support and inspiration through the entire Program. I'm truly grateful for such a wonderful cohort. Thank you to all the instructors, our Program director Stephanie Landregan and the Program Manager Melissa McDonald.

A very special THANK YOU to my beloved mother, who is my number one supporter and to whom I own everything that I've conquered in my life. Thank you to my dear family Gouveia Araujo for all your love, support and patience. Thank you to all my family and friends for your love and for being by my side.

TABLE OF CONTENTS

PROJECT TITLE

Designing a High Quality Environment Near High Voltage Overhead Lines

PROJECT STATEMENT

This project intends to demystify the idea that areas under transmission lines can not be useful and beautiful. My design aims to decrease the environmental and aesthetics impacts of those transmission lines and towers by adding a **thoughtful landscape** design.

Increasing **physical activity**, psychological relaxation, community connectivity, **social inclusion** and other health benefits are key elements of this project, and will be addressed by an improved bike & jog trail and exercise stations.

Creating a **social impact** on the nearby neighborhoods and on the surrounding residence's value is also an important element of this design.

PROJECT JUSTIFICATION

Sites that are under transmission lines often brings up concerns to the public about being an unsafe place to transit due to the electromagnetic fields that emanates from it. People also simply see the transmission towers and lines as an unpleasant part of the landscape.

We are now living a very exceptional and critical situation of a global pandemic, which have resulted in a serious deterioration of people's mental health, and could continue long even after the pandemic has diminished. Being locked up at home and away from human interaction have certainly contribute to that. To be exposed to nature and green spaces is proven to provide mental, cognitive, and physical health benefits for people of all ages and abilities*.

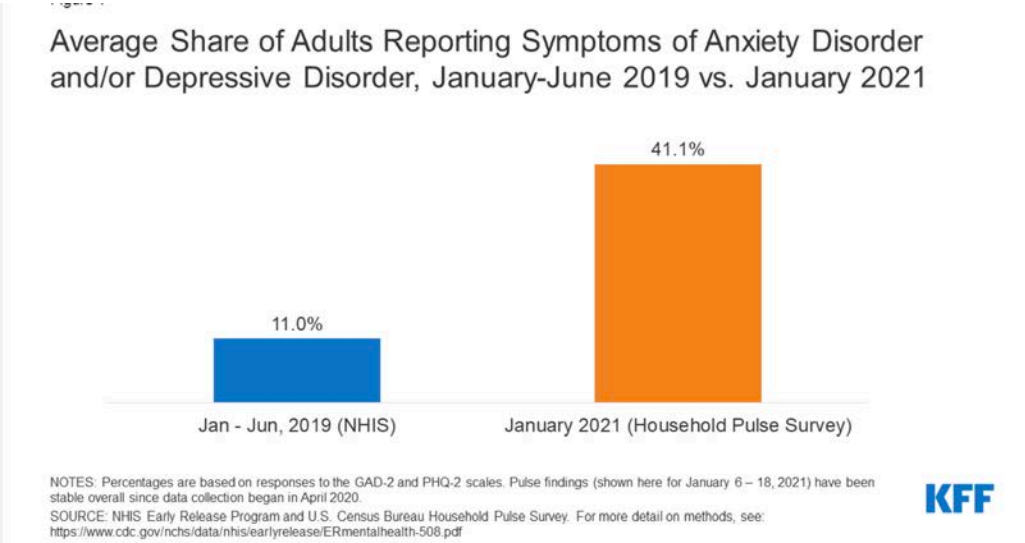


Figure 1: Average Share of Adults Reporting Symptoms of Anxiety Disorder and/or Depressive Disorder, January-June 2019 vs. January 2021

Access and linkages: Designing a more walkable and wheelchair-accessible project will contribute to a healthier and safer lifestyle also for those who have limited mobility. Improving the accesses, crosswalks, sidewalks, paths and bike trails would increase the safety of pedestrians, benefiting the whole community.

In 2019 the Redondo Beach City Council approved the development of the South Bay Galleria Project, which will transformed it into a mixed-used complex. The project is expected to be completed in 2023. This development site is a great opportunity to serve as a main connection/destination of my project's bike trail. It is important to have a bicycle trail that is safe and wide enough, but that it wouldn't interfere with pedestrian activity.

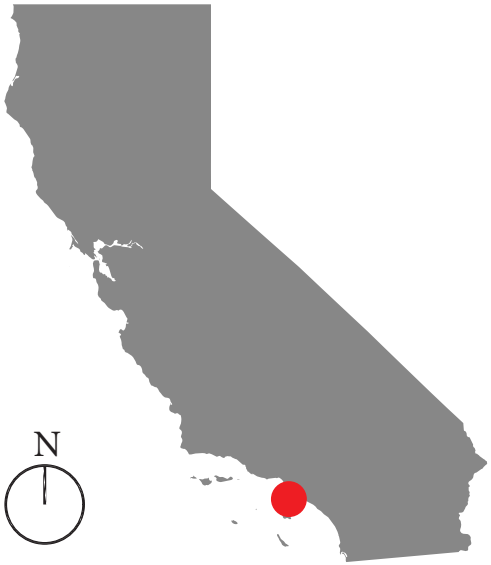
Creating additional parking in locations near commercial zones, such as Artesia Blvd, would help to support near by businesses. Most of the surrounding streets are narrow and the apartments and houses adjacent often do not have enough parking spots for its residents, making the street parking to be always full. So, having a few overload parking spots can be beneficial.

In the neighborhood there aren't spaces that could receive temporary activities such as small farmers markets, art installations, group meetings or even educational programs. I see this site as a great opportunity to have spaces for such activities due to its multiple extensive lots and large open spaces.

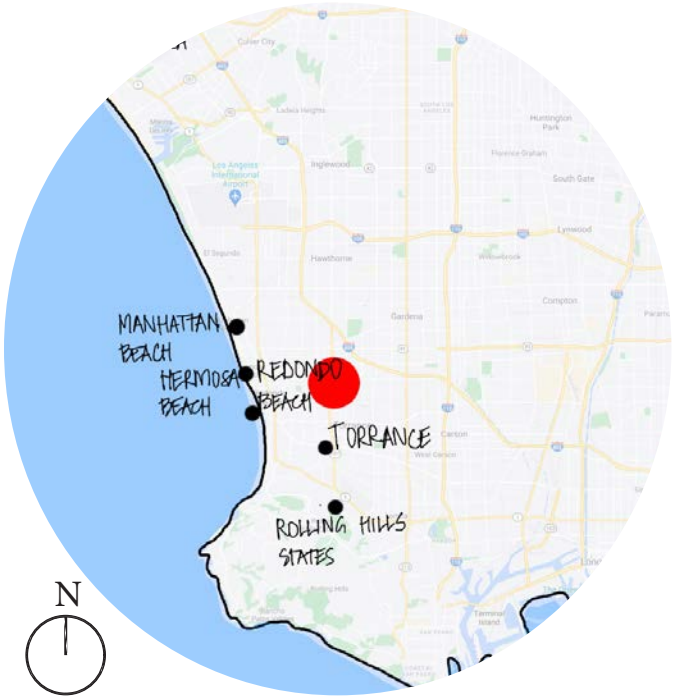
Source:

* NHIS: National Health Interview Survey - CDC. https://www.cdc.gov/nchs/nhis/index.htm

LOCATION MAPS



MAP 1: STATE MAP



MAP 2: REGIONAL MAP

PROJECT INFORMATION

LOCATION: N. Redondo Beach, CA

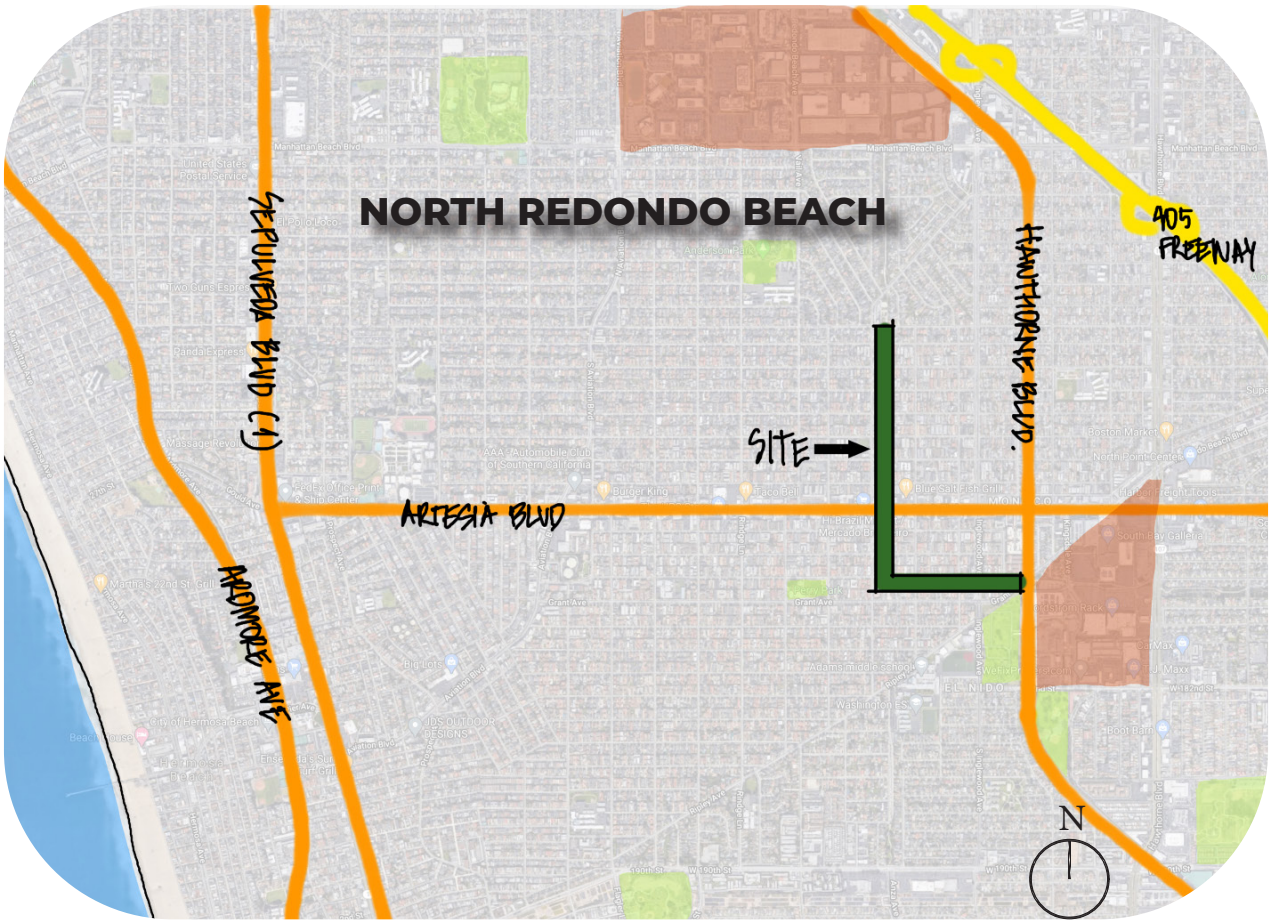
SIZE: 17 acres

OWNERSHIP: Southern California Edison & City of Redondo Beach

ZONING: P-ROW

DISTRICT: 4 & 5

WATERSHED: Dominguez channel



MAP 3: LOCAL MAP

SITE BOUNDARIES

NORTH SECTION

SOUTH SECTION

SCALE: NTS

SITE OVERVIEW

The whole area compasses 13 lots of 17 acres total - which 6 of those have the power towers - and has a .8 mile bike trail. There are currently no canopies and it is a full sun area.

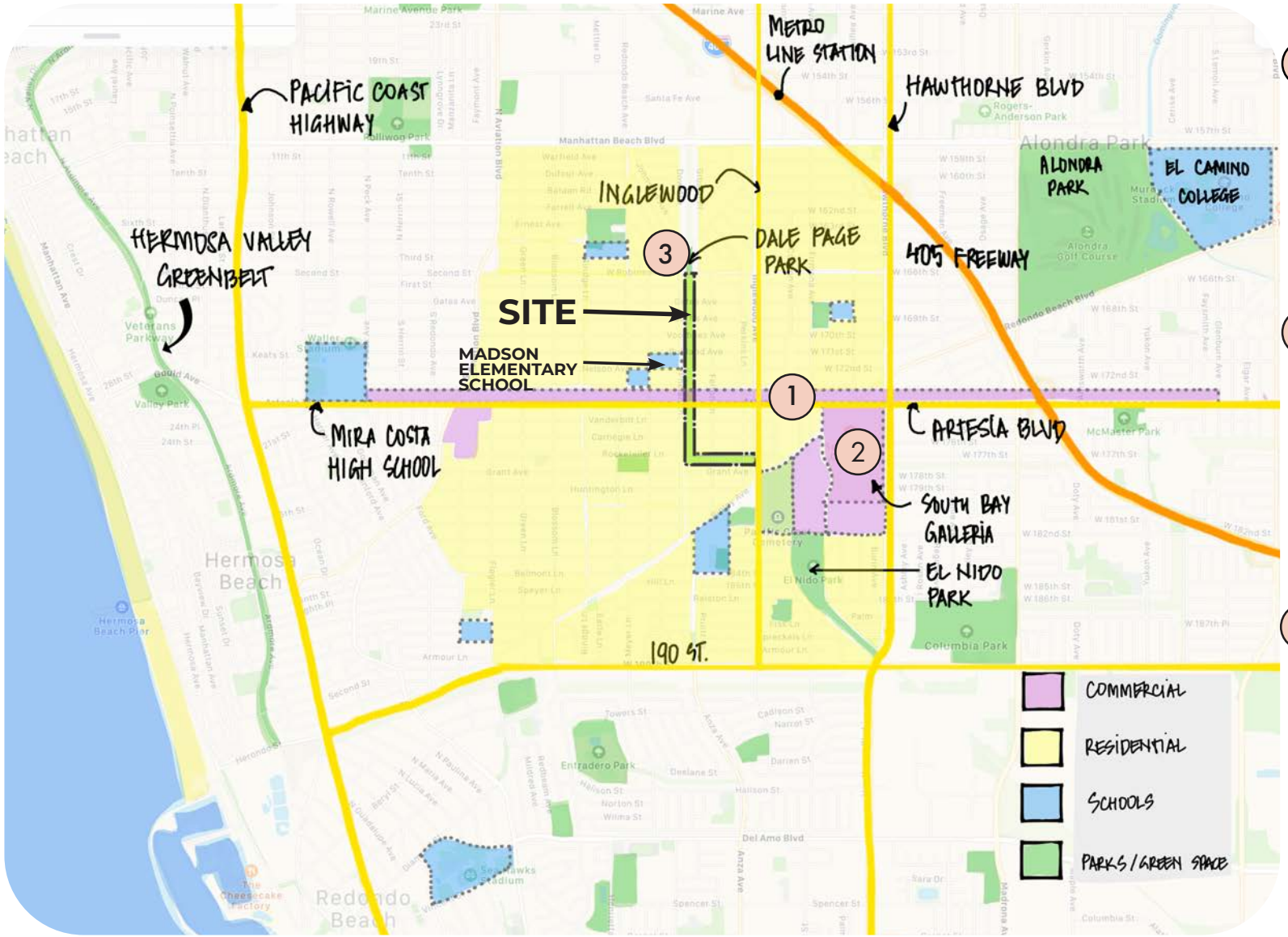
NORTH VIEW

WEST VIEW

SOUTHEAST VIEW

SOUTHEAST VIEW

CONTEXT MAP



1 ***ARTESIA BOULEVARD***

Artesia Blvd. is a primary commercial street with shopping centers and small commercial buildings.

2 ***SOUTH BAY GALLERIA MALL***

The Galleria is the largest mall in the area and an important connection to the site. Its revitalization will create a transit stop and destination.

3 ***DALE PAGE PARK***

The closest park with restrooms facilities.

ZONING MAP

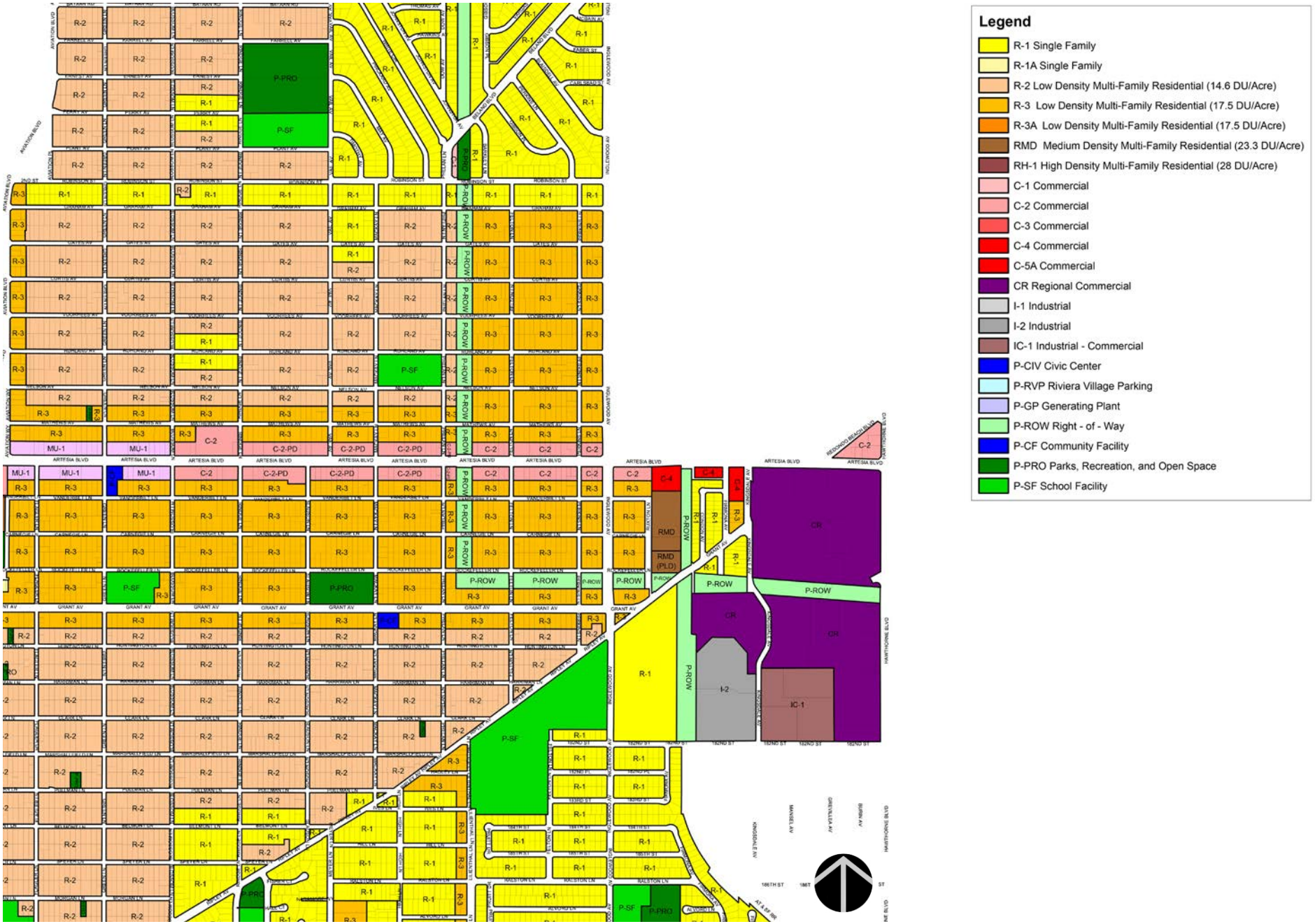


Fig 6. Zoning Map image from Redondo Beach city website.

PUBLIC TRANSPORTATION

Metro operates the Green Line Light Rail, which has one station in North Redondo Beach on Marine Avenue.

Passengers are allowed to bring bicycles on the Metro Rail.

The City of Redondo Beach operates Beach Cities Transit (BCT). It has three lines that connect Redondo Beach to El Segundo, Hermosa Beach, Manhattan Beach, and Torrance.

Destinations	Lines	Stops
Aviation Bl – Northbound	T8	G
Aviation Bl – Southbound	T8	F
Del Amo Fashion Center	T8	F
El Camino College	126	B
Hawthorne Federal Building	1/4-mile west on Marine Av	
Hawthorne – Inglewood Av	215	2 3
Hawthorne Municipal Airport	126	B
Howard Hughes Center	CE574	D G
Inglewood Civic Center	215	2 3
Lawndale – Civic Center	LWEX, LWRES	1 2
Lawndale – Manhattan Beach Bl	126	B
Lawndale – Hawthorne Bl	LWEX	1
LAX Airport	Metro Green Line to Aviation/LAX Station, Shuttle "G" to Terminals	
LAX City Bus Center	T8	G
Leuzinger High School	LWEX	1
Manhattan Beach Bl	126	A B C
Manhattan Beach Pier	126	A C
Northrop Grumman	1/4-mile west on Marine Av	
Norwalk Metro Rail Station	Metro Green Line	
Redondo Beach Civic Center	BCT102	2
Redondo Beach Perfoming Arts Center	126	A C
Redondo Beach Pier	BCT102	2
San Fernando Valley	CE574	D G
South Bay Galleria	BCT102, T8, LWEX, LWRES	1 2 F
Sylmar Metrolink Station (ML)	CE574	D G
Torrance – Hawthorne Bl	T8	F
Walteria	T8	F
Willowbrook/Rosa Parks Metro Rail Station	Metro Green Line	
Yukon Av	126	B
Municipal Bus Services		
LADOT Commuter Express		
CE574		D G
Beach Cities Transit		
BCT102		2
Lawndale Beat		
LWEX - Lawndale Beat Express		1
LWRES - Lawndale Beat Residential		1
Torrance Transit		
T8		G F

Fig 2. Public Transportation Map image from Redondo Beach city website.

TRAFFIC FLOW MAP

Metro operates the Green Line Light Rail, which has one station in North Redondo Beach on Marine Avenue.

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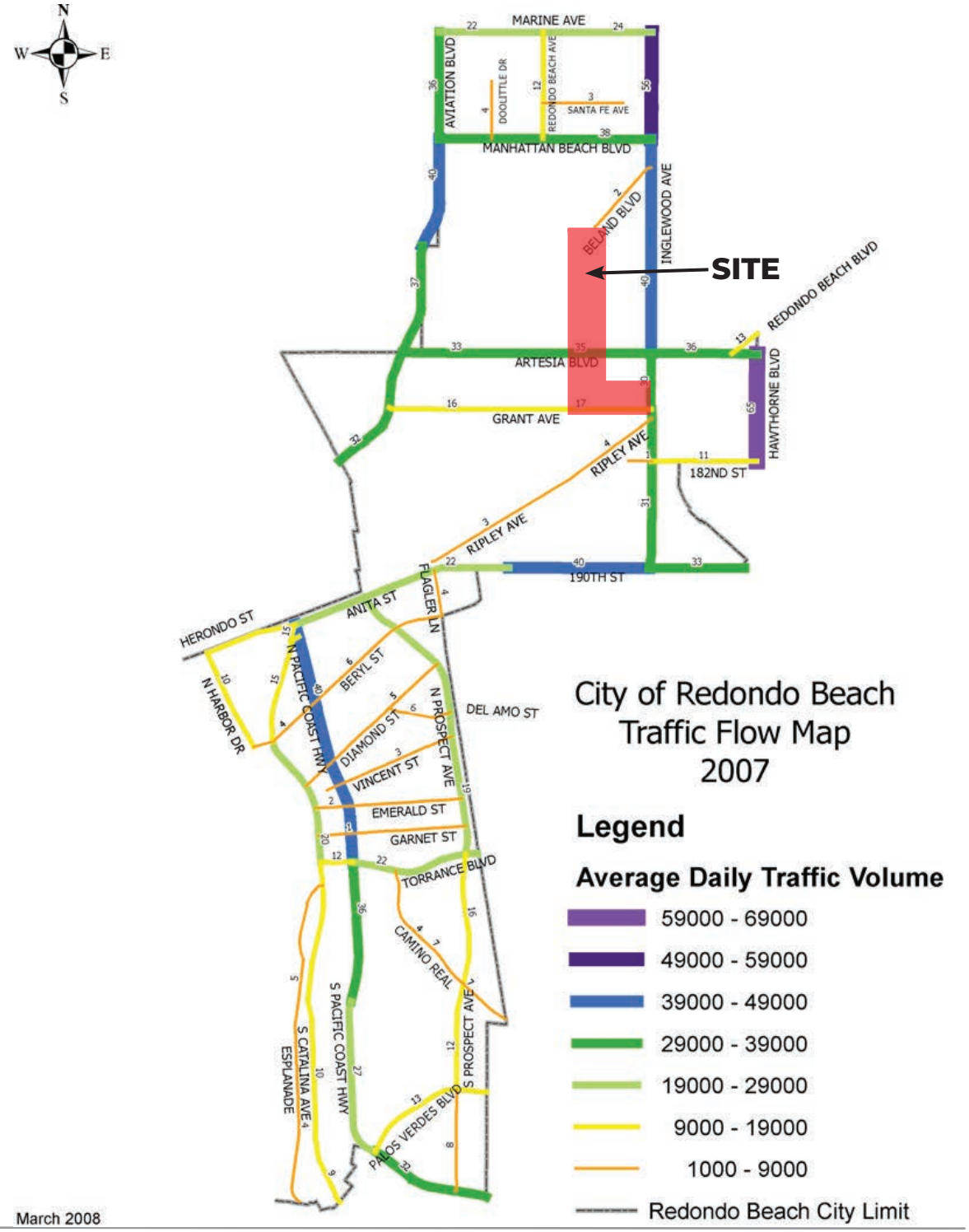


Fig 8. Traffic Flow Map image from Redondo Beach city website.

BIKEWAY MAP

- The existing bikeway path runs for about 3 miles, from Marine Ave on North until the 190th St South.
- The existing bike path in my project's site has 0.8 miles.

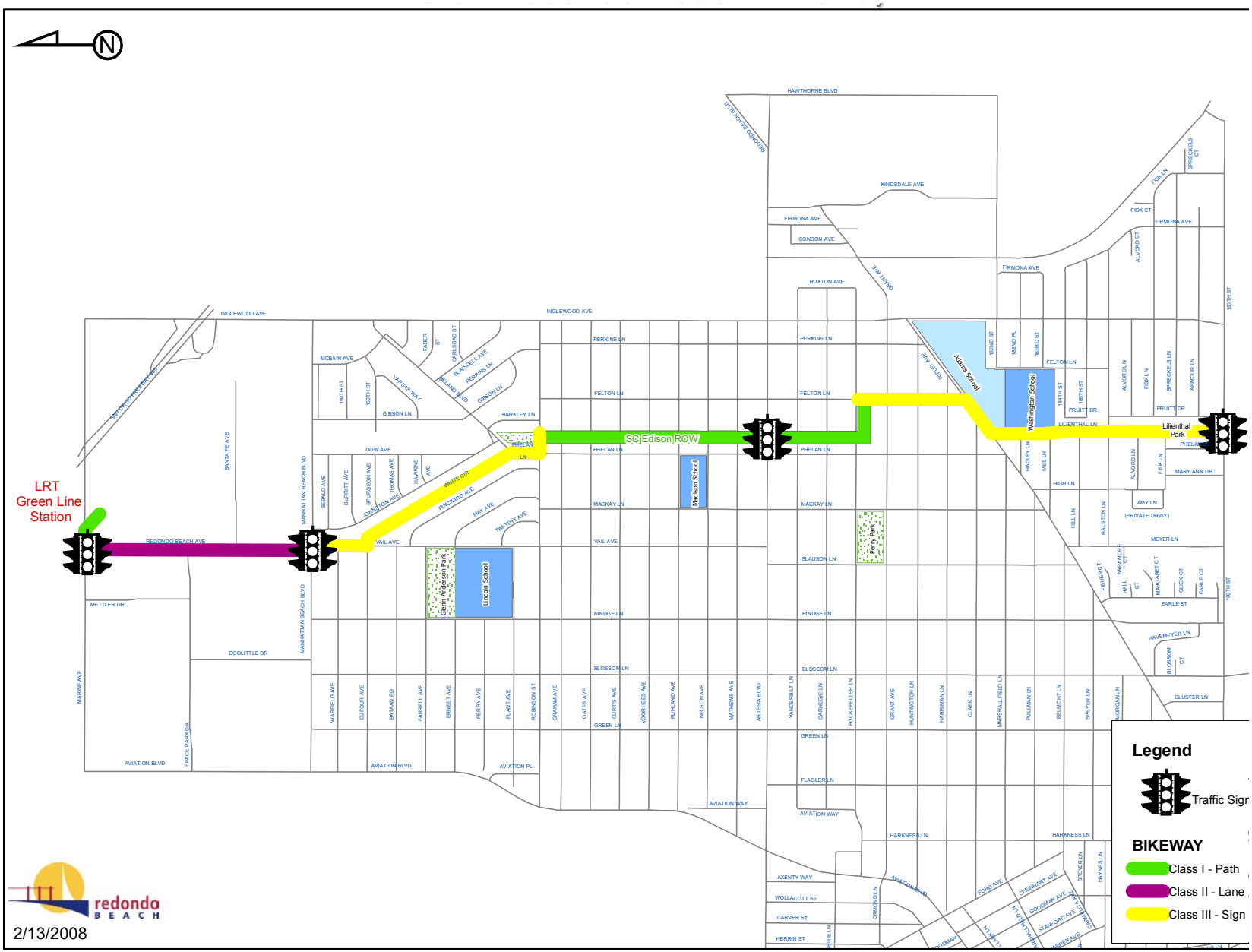
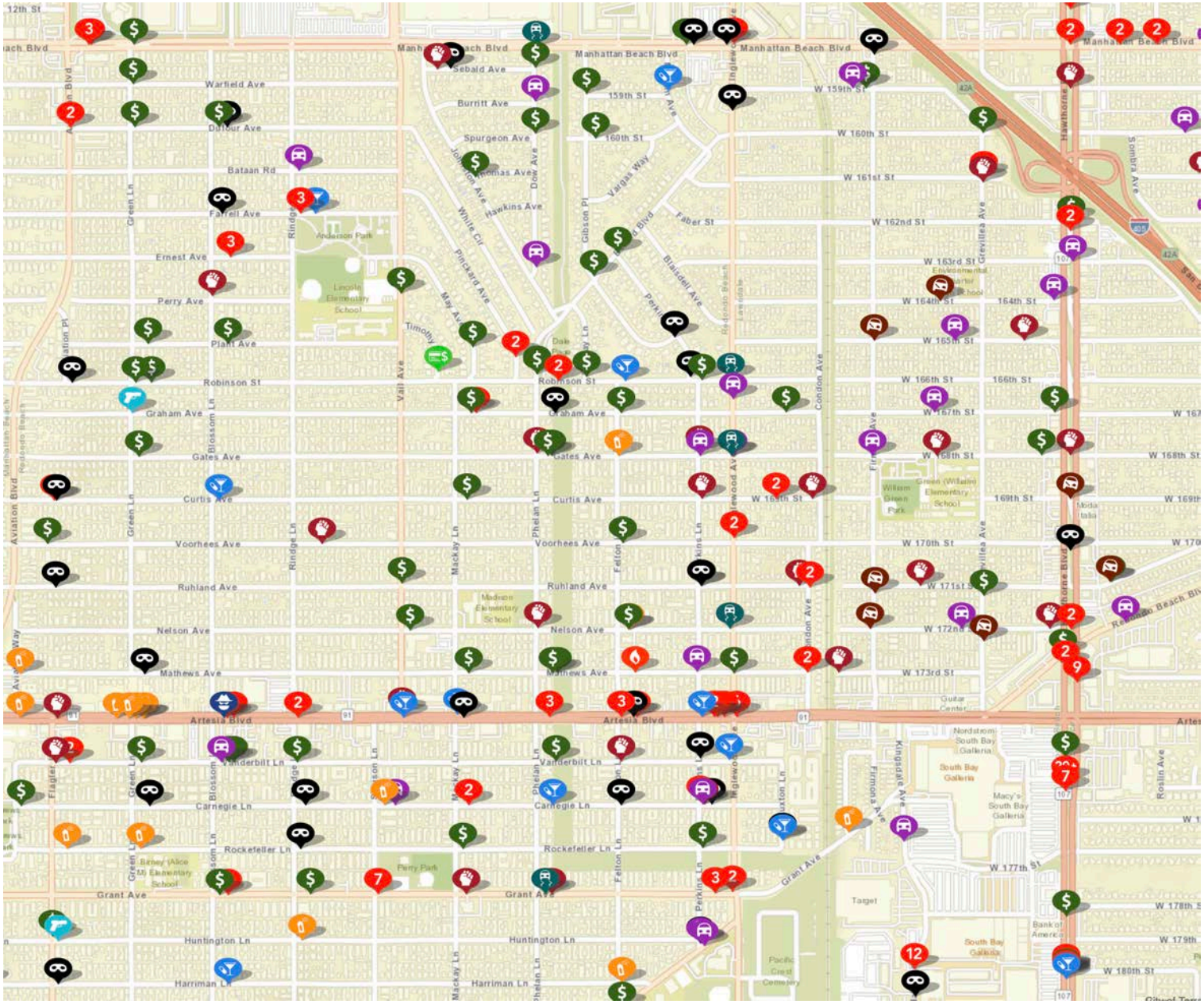


Fig 9. Bikeway Map image from Redondo Beach city website.

CRIME

From January 1 - May 16



The most common type crime in the region is theft, followed by vehicle theft .

- Arson
- Assault
- Burglary
- Disturbing the Peace
- Drugs / Alcohol Violations
- DUI
- Fraud
- Homicide
- Motor Vehicle Theft
- Robbery
- Sex Crimes
- Theft / Larceny
- Vandalism
- Vehicle Break-In / Theft
- Weapons

Fig 10. Map source: crimemapping.com

HISTORY

Originally marketed under the name Redondo Villa Tract, much of North Redondo Beach was laid out by W. H. Carlson and George Peck between 1906 and 1907. Most of the now-residential lots in the Redondo Villa Tract were sold as plots of land 150 feet deep by 50 feet wide, a lot size that continues to define many North Redondo neighborhoods today.

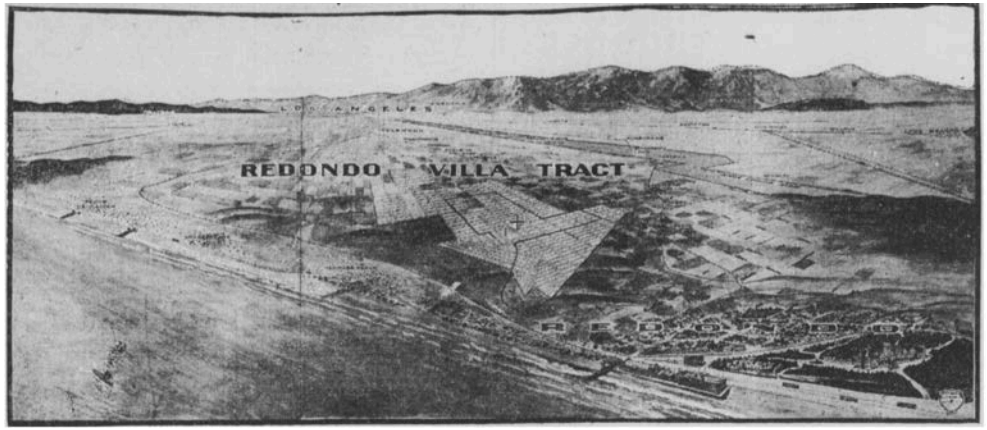


Fig.3: Illustration of the Redondo Villa Tract in relationship to South Redondo Beach and the Pacific Ocean. Published in the Los Angeles Herald, Volume 37, Number 261, June 19, 1910

The area surrounding the Corridors is primarily residential. Multi-family developments with a handful of single-family homes scattered throughout the adjacent neighborhoods.

Public/Institutional Facilities

Around the area are a few public facilities. The Redondo Beach North Library, Recreation and Community Services Department, and United States Post Office are along the Artesia Blvd. Two schools (Birney Elementary and Maddison Elementary) sit just beyond the area boundary.

SOUTHERN CALIFORNIA EDISON RIGHT-OF-WAY

The Southern California Edison (SCE) right-of-way consists of largely undeveloped parcels and stretches 1.75 miles from Manhattan Beach Boulevard to Rockefeller Lane, where it turns to the east and continues to the South Bay Galleria.

The right-of-way intersects Artesia Boulevard between Phelan and Felton Lanes. The City currently leases portions of the right-of-way to use as a park (Dale Page Park), a bike and pedestrian pathway, and landscaping. The City currently maintains the existing bike and pedestrian pathway that connects with Dale Page Park in the north and to residential neighborhoods in the south. South of the pathway currently terminates at the intersection of Rockefeller and Felton Lanes, but there are plans to extend the path to the Galleria in the future.

In May 2019, the City improved a part of this the right-of-way by approving construction of the North Redondo Beach Bikeway Improvements Project, which is part of the City's current capital improvement program. The project installed landscaping, pathway improvements, and lighting improvements to the two SCE right-of-way parcels adjacent to Artesia Boulevard. The project also included installation of a permeable-pavement, lighted parking area on the north parcel that is intended to support nearby businesses.

Fig.4: Photo of existing parking lot that supports nearby business. Photo by Nathalia Gouveia

1945-1959

Following World War II, the 1940s and 1950s saw significant housing development in the neighborhoods surrounding Artesia and Aviation Corridors, which in turn drove commercial development. Buildings in the from this era were generally small, with connected storefronts that directly abutted the sidewalk and housed local, neighborhood-serving businesses.

1960-1969

During the 1960s, the Space Park was established along the city's northern border, bringing with it additional housing development in North Redondo Beach. The buildings developed in the 1960s reflected the increasing importance of vehicles in daily life. Like those of the preceding decades, the buildings were small and directly abutted the sidewalk, but many were free-standing, included individual driveways with parking in the rear, and had an entrance on the side of the building.

1970-1989

In the 1970s and 1980s, the surrounding North Redondo neighborhoods area continued to grow. Development near Artesia Blvd brought strip malls and larger shopping centers, often with rows of parking in front or to the side.

1990-PRESENT

By 1990, housing development began to slow down, and only a few properties area have seen development in the last three decades. Projects built since 1990 include gas stations, food service with drive-thrus, modern strip centers (often with buildings fronting the sidewalk and parking to the side or rear), one mixed-use project, and one multifamily project.

COMMUNITY & USERS

The area serves two main group of users: residents who live nearby, which are from city of **Redondo Beach** and **Lawndale**, adjacent to the site; and pass-through people who use the trail to exercise or travel in and out from nearby neighborhoods.

PROPOSED USERS

The intended users are families and people within the ages rages of 2-65+. The majority will be of residents from North Redondo Beach and Lawndale. Toddlers, children, teenagers, adults and elderly with all type of mobilities.

In Redondo Beach, 18.8% of the population was under the age of 18; 6.1%, aged 18 to 24; 43.1%, aged 25 to 44; 23.6%, aged 45 to 64; and 8.5% aged 65 or older. The median age was 37 years.
In Lawndale, the age distribution was 31.9% under the age of 18, 10.2% from 18 to 24, 35.8% from 25 to 44, 16.4% from 45 to 64, and 5.6% 65 or older. The median age was 29 years.

JURISDICTION

Southern California Edison Property

The easement rights to properties which they use to operate the utility. While the primary purpose of these properties and easements is for utility purposes, from time to time they are able to allow the public and local governments to use them for purposes that are compatible with their primary utility purpose and with SCE guidelines for such uses.

City of Redondo Beach

DEMOGRAPHICS

Redondo Beach population: 66,748

Density: 10,751.1 people per sq. mile

Ethnicity map
74.6% White (65.2% Non-Hispanic White)
2.8% African American
12.0% Asian
25.8% Other

Lawndale population: 32,769

Density: 16,599

Ethnicity map
43.6% White (16.2% Non-Hispanic White)
10.1% African American
10.0% Asian
36.3% Other

INCOME

Redondo Beach population: 66,748

Income per capita **$62,528**
Median household income **$113,499**

Lawndale population: 32,769

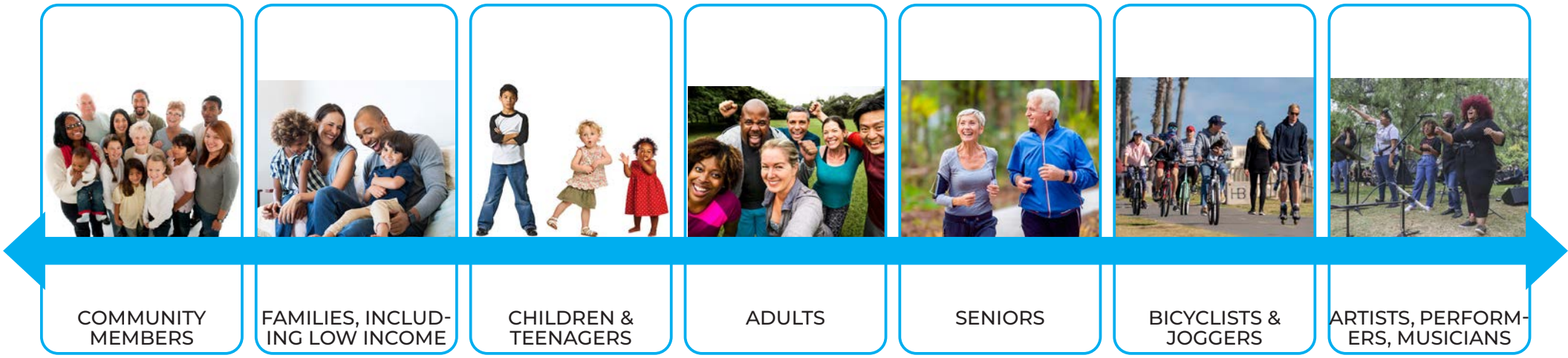
Income per Cap. **$22,034**
Median household Income **$54,862**

INTENDED USERS

- Community members of **Redondo Beach** and **Lawndale**
- Pass-through people from **nearby neighborhoods**
- **Families and people within the ages rages of 2-65+**.
- Toddlers, children, teenagers, adults and seniors with all type of mobilities

STAKEHOLDERS

- City of **Redondo Beach**
- **Southern California Edson Company**

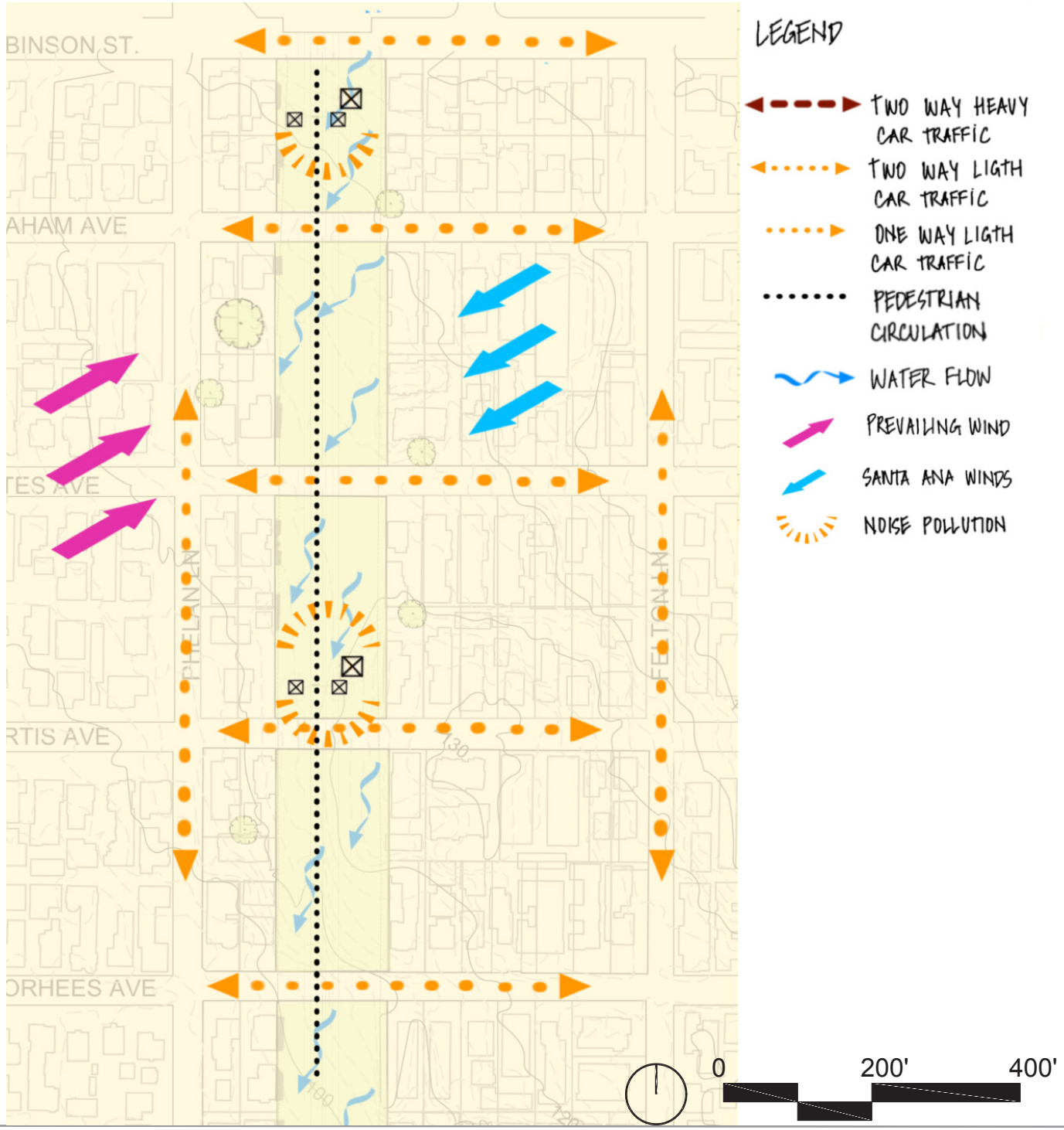


ANALYSIS INVENTORY

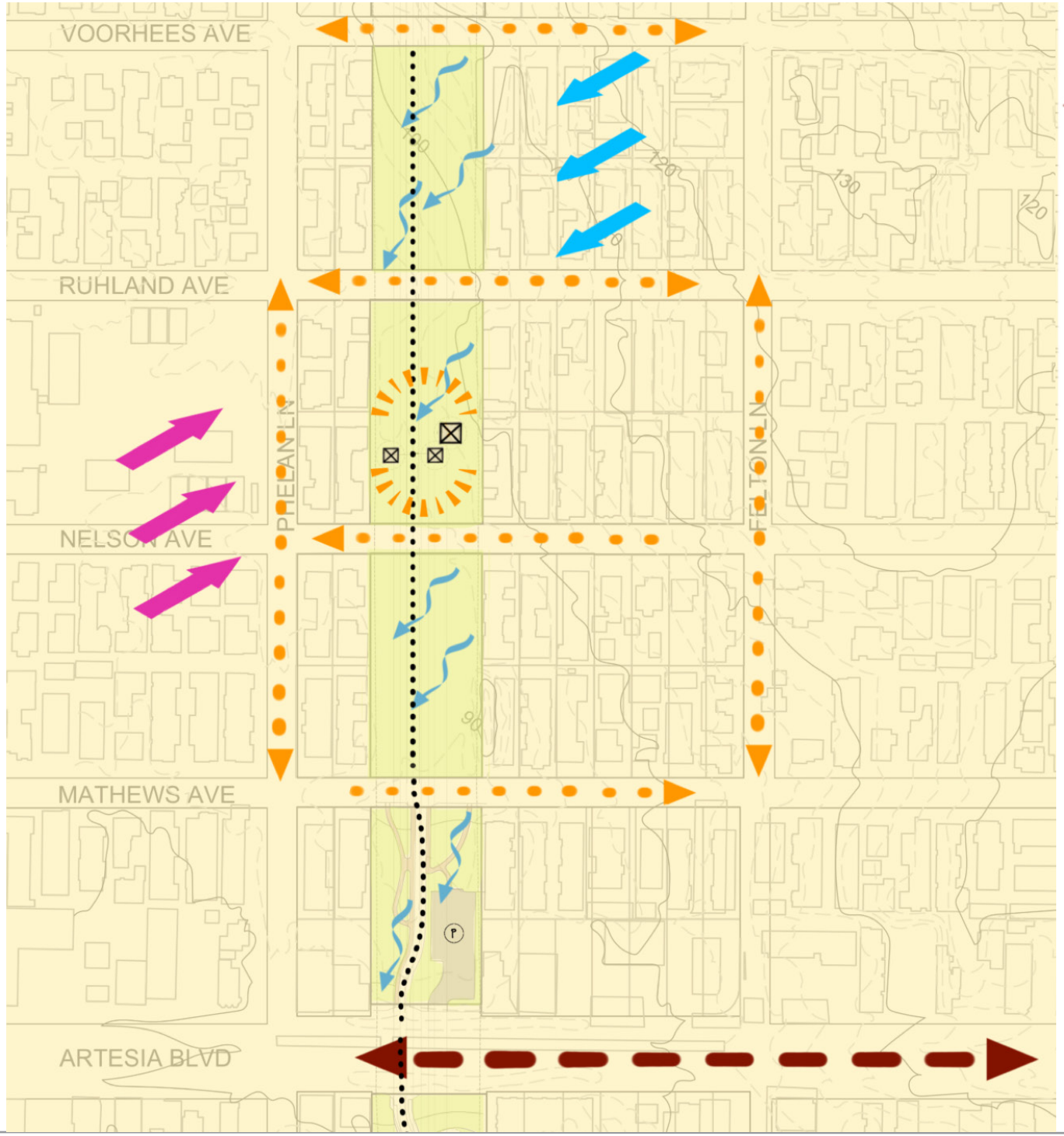
NORTH SECTION

I divided the site into three sections: North (District 5), Center (District 4 & 5) and South (District 4).

- *The current main activities are walking, bicycling, jogging, walking dogs, roller blading.*
- *After the pandemic, large outdoor spaces are in high demand for community use and this site is a good opportunity for that.*
- *The are a total of 13 lots intersected by 13 streets. The majority of the lots are of 150' x 300'.*
- *The metal transmission towers are present on 6 of those lots.*
- *With the exception of Artesia Blvd perimeters, the site is surrounded by single-family residences.*
- *The **South Bay Galleria Mall** is only a half mile away from the most south-east lot. **It is an important connection to the site.***



MIDDLE SECTION



LEGEND

- TWO WAY HEAVY CAR TRAFFIC
- TWO WAY LIGTH CAR TRAFFIC
- ONE WAY LIGTH CAR TRAFFIC
- PEDESTRIAN CIRCULATION
- WATER FLOW
- PREVAILING WIND
- SANTA ANA WINDS
- NOISE POLLUTION

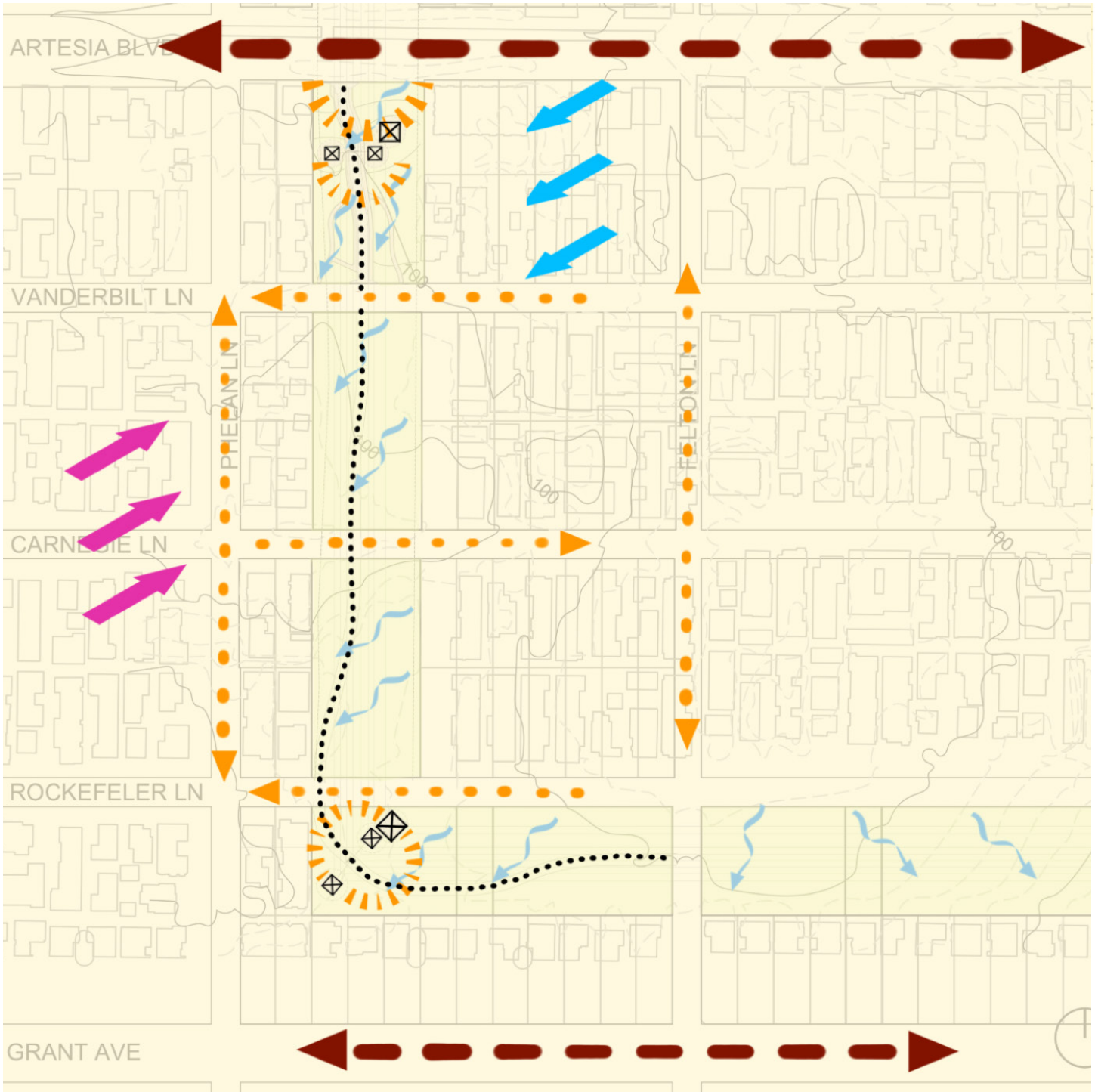
Sunset Zone : 24

Sun exposure: Full Sun

Barely No Tree Canopies

0 200' 400'

SOUTH SECTION



LEGEND

- TWO WAY HEAVY CAR TRAFFIC
- TWO WAY LIGTH CAR TRAFFIC
- ONE WAY LIGTH CAR TRAFFIC
- PEDESTRIAN CIRCULATION
- WATER FLOW
- PREVAILING WIND
- SANTA ANA WINDS
- NOISE POLLUTION

0 200' 400'

EXISTING AMENITIES

The amenities on the site are the power towers (6 in total). There is a utility house bellow one of the towers. There is a bench near the Artesia Blvd crosswalk and a few trash cans along the whole site.

The existing vegetation consists of weedy grass, a few recently planted trees and some trees on the adjacent residences.






Fig.5-10: Photos by Nathalia Gouveia

PHOTOS OF EXISTING CONDITIONS

Fig.11-19: Photos by Nathalia Gouveia

DESIGN METHODOLOGY

SCE GUIDELINES

Southern California Edison Company
Transmission Line Right of Way Constraints and Guidelines

The primary purpose of SCE's Transmission Rights of Way (ROW) and Substations is to house SCE's electrical system and related facilities. SCE is committed to ensuring it operates and maintains a safe and reliable electric system, both, now and in the future.

The use of SCE's ROW is guided by California Public Utilities Commission regulations (General Order No. 69-C), which define the need to protect utility system operations and provide guidance on overall uses of the ROW, the types of agreements allowed, and related approval processes.

If you are proposing uses within SCE's ROW, please ensure that you contact SCE prior to developing your plans. Any proposed uses must be compatible, low-intensity uses (i.e. green belts, bike and hiking trails, etc.) that do not impose additional constraints on SCE's ability to maintain and operate its current facilities and that do not interfere with any future operating facility needs.

The following are constraints and guidelines to assist in the development of your plans within SCE's transmission ROW.

1. All projects are unique and will be reviewed on a case by case basis.
2. Buildings and other permanent structures, both, above ground and underground, are prohibited within SCE's ROW. Examples of permanent structures are pipelines, concrete slabs, foundations, vaults, decks, detention basins, pools, and anything else that is not portable and easily movable.
3. No parallel or longitudinal encroachments will be permitted. All improvements crossing in the ROW must do so perpendicular to the centerline of the ROW.
4. Any proposed use(s) on SCE's ROW that are specifically prohibited in SCE's easement document will be denied.
5. SCE's access to its ROW and facilities must be maintained 24/7 and cannot be encumbered in order to ensure SCE's access for system operations, maintenance, and emergency response.
6. All proposed grading requires a clearance review. Costs for engineered conductor clearance reviews required by SCE are to be paid for by the requestor.
7. All users of SCE's land shall be responsible for compliance with all applicable federal, state, county, and local laws affecting use of SCE's land. The user must obtain all permits and other governmental approvals required for the proposed use.
8. No plant species protected by federal or state law shall be planted within SCE's ROW.
9. All new trees and shrubs proposed on SCE's ROW shall be slow growing and not exceed 15 feet in height.
10. No wetlands, other sensitive natural habitat, vegetation related natural plant areas, or environmental mitigation on SCE's ROW will be permitted as it creates interference with SCE's ability to access its facilities and to add future facilities.
11. Groundwater or storm water infiltration or recharge will not be allowed.
12. Flammable or combustible materials are not allowed to be used or stored on SCE's ROW.
13. SCE may require a third-party user to implement certain safety measures or mitigations as a condition to approval of the third-party use. Users of SCE's ROW must adhere to minimum grounding standards dictated by SCE.
14. Uses on SCE's ROW will not be approved if deemed unsafe. An example of an unsafe condition includes (but is not limited to) instances where the proposed use may create levels of induced voltage that are unsafe to SCE employees or the public that cannot be mitigated to safe levels.
15. Horizontal Clearances
    - ***Towers, Engineered Steel Poles & H-Frames*** — ***161kV to 500kV***
      - Lattice/Aesthetic & H-Frames (dead-end) — 100 ft.
      - Engineered Steel Poles (dead-end) — 100 ft.
      - Suspension Towers & H-Frames — 50 ft.
      - Suspension Steel Poles — 50 ft.
    - ***Wood or Light-Weight Steel Poles & H-Frames*** — ***66kV to 115kV***
      - Engineered Steel Poles w/ Found. (TSP) (dead-end) — 25 ft.
      - H-Frame — 25 ft.
      - Wood Poles — 25 ft.
      - Light-Weight Steel Poles — 25 ft.
      - Anchor Rods — 10 ft.
      - Guy Wires — 10 ft.
      - Guy Poles — 10 ft.
      - Lattice Anchor Towers (dead-end) — 100 ft.
      - Lattice Suspension Towers — 50 ft.
16. Vertical Clearances
    - ***Structure***
      - 500kV — 30 ft.
      - 220kV — 18 ft.
      - 66kV — 18 ft.
      - <66kV (distribution facilities) — 12 ft.
      - Telecom — 8 ft.
    - ***Vehicle Access***
      - 500kV — 36 ft.
      - 220kV — 30 ft.
      - 66kV — 30 ft.
      - <66kV (distribution facilities) — 25 ft.
      - Telecom — 18 ft.
    - ***Pedestrian Access***
      - 500kV — 31 ft.
      - 220kV — 25 ft.
      - 66kV — 25 ft.
      - <66kV (distribution facilities) — 17 ft.
      - Telecom — 10 ft.
17. Roads constructed on SCE ROW or where a third party's access road coincides with SCE's access to SCE ROW or facilities must comply with SCE's engineering standards.
    - The drivable road surface shall be constructed to provide a dense, smooth and uniform riding surface. The minimum drivable road surface shall be 14 feet wide with an additional 2 feet of swale/berm on each side as required.
    - The minimum centerline radius on all road curves shall be 50 feet measured at the centerline of the drivable road surface. The minimum drivable width of all roads shall be increased on curves by a distance equal to 400/Radius of curvature.
    - The road shall be sloped in a manner to prevent standing water or damage from undirected water flow. Maximum cross slope shall not exceed 2%, maximum grade not to exceed 12%.

Southern California Edison Company Transmission Line Right of Way Constraints and Guidelines

Proposed uses must be compatible, low-intensity uses (i.e. green belts, bike and hiking trails, etc.) that do not impose additional constraints on SCE's ability to maintain and operate its current facilities and that do not interfere with any future operating facility needs.

The following are constraints and guidelines to assist in the development of your plans within SCE's transmission ROW:

Buildings and other permanent structures, both, above ground and underground, **are prohibited within SCE's ROW**.

No parallel or longitudinal encroachments will be permitted. All improvements crossing in the ROW must do so perpendicular to the centerline of the ROW.

- **SCE's access to its ROW and facilities must be maintained 24/7 and cannot be encumbered in order to ensure SCE's access for system operations, maintenance, and emergency response.**
- **All proposed grading requires a clearance review**.
- **No plant species protected by federal or state law shall be planted within SCE's ROW**.
- **All new trees and shrubs proposed on SCE's ROW shall be slow growing and not exceed 15 feet in height**.
- **No wetlands, other sensitive natural habitat,vegetation related natural plant areas,or environmental mitigation on SCE's ROW will be permitted as it creates interference with SCE's ability to access its facilities and to add future facilities**.
- **Ground water or storm water infiltration or recharge will not be allowed.**

1. The drivable road surface shall be constructed to provide a dense, smooth and uniform riding surface. The minimum drivable road surface shall be 14 feet wide with an additional 2 feet of swale/berm on each side as required.

2. The minimum centerline radius on all road curves shall be 50 feet measured at the centerline of the drivable road surface. The minimum drivable width of all roads shall be increased on curves by a distance equal to 400/Radius of curvature.

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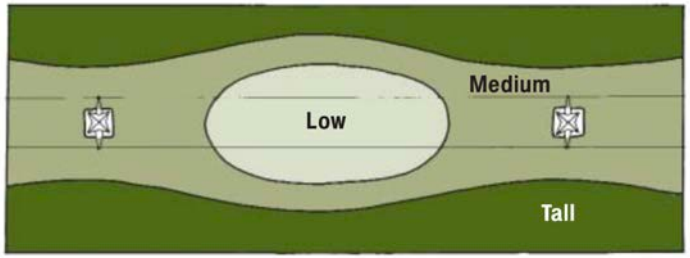


Fig.20: Illustration taken from hydroquebec.com

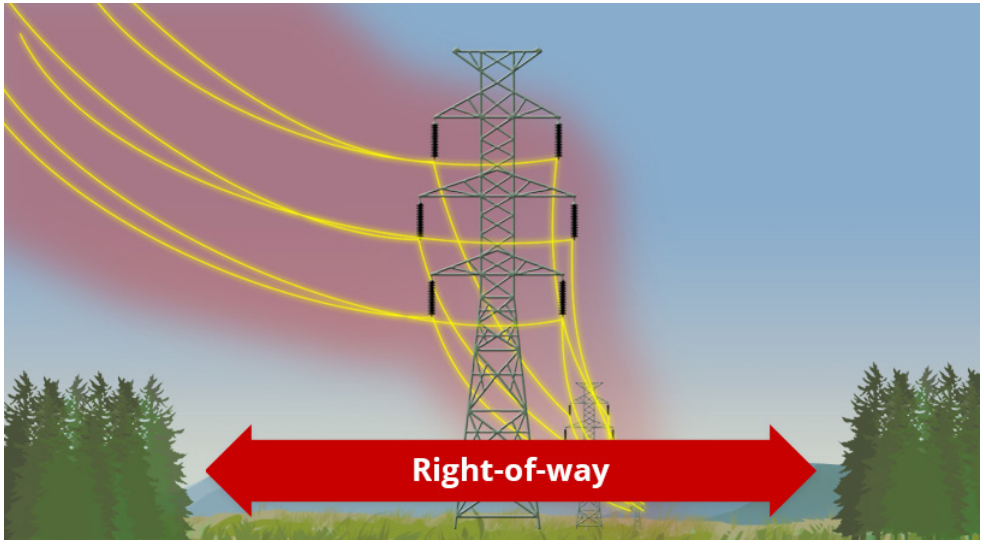


Fig.21: Illustration taken from hydroquebec.com

	Minimum Clearance	
Overhead Conductors	750-	Over
Nature of Vertical Clearance	*20,000 volts*	*20,000 volts*
1. Above tracks of railroads which		
transport freight cars where not operated		
by overhead		
contact wires	28 feet	34 feet
2. Above tracks of railroads operated by		
overhead contact wires	30 feet	34 feet
3. Above and along thoroughfares in urban areas		
and above thoroughfares in rural areas	25 feet	30 feet
4. Above areas (other than thoroughfares)		
where it is possible to drive vehicles	25 feet	30 feet
5. Above areas accessible to pedestrians		
only	17 feet	25 feet
6. Above structures	12 feet	12 feet
7. Vertical clearance above all signs upon		
which men can walk	12 feet	12 feet
8. Vertical clearance above all signs upon		
which men cannot walk	8 feet	8 feet
9. Vertical clearance under signs	Prohibited	Prohibited
10. Horizontal clearance from signs	6 feet	6 feet

(Title 24, Part 3, Section 3-710-85(a).)

UNIVERSAL DESIGN

The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. This project aims to use all principles when it can be used. I highlighted the most important and pertinents ones that relates this project.

1. PRINCIPLE ONE: Equitable Use
The design is useful and marketable to people with diverse abilities.

2. PRINCIPLE TWO: Flexibility in Use
The design accommodates a wide range of individual preferences and abilities.

3. PRINCIPLE THREE: Simple and Intuitive Use
Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

4. PRINCIPLE FOUR: Perceptible Information
The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

5. PRINCIPLE FIVE: Tolerance for Error
The design minimizes hazards and the adverse consequences of accidental or unintended actions.

6. PRINCIPLE SIX: Low Physical Effort
The design can be used efficiently and comfortably and with a minimum of fatigue.

7. PRINCIPLE SEVEN: Size and Space for Approach and Use
Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

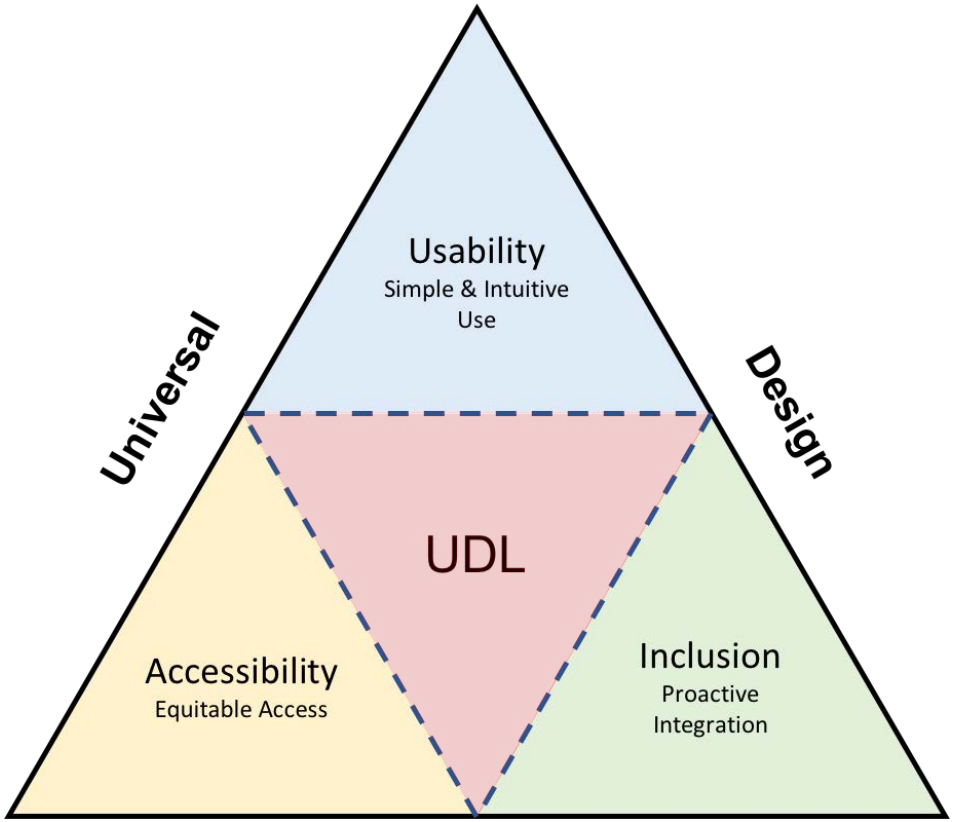


Fig.22: Illustration credit: https://sites.reading.ac.uk/tel/accessibility-and-inclusive-practice/accessible-blackboard/accessible-blackboard-courses/

PROJECT PRECEDENT 1

WHITNALL HIGHWAY PARK, BURBANK, CA

Located under high-voltages towers , the park has fitness equipment, jogging path and green grassy aand flowering trees. The park still provides access for SCE repair necessities 24/7.

LAND USE

The transmission route have multiple power towers and accommodates exercise equipments, seating, landscape screening and community connectivity.

VEGETATION

Low-growing established trees, shrubs and grasses. The surrounding is screened by the mature trees.

CIRCULATION AND ACCESSIBILITY

The park have two main circular decomposed granite pathways meandering the centered area.

SPATIAL

The power lines are still perceivable, but once you're in the park at a human scale perspective, the trees serve as screening.

Fig.23-26: Exercise equipment providing health benefits to residents. Photos by Nathalia Gouveia.

PROJECT PRECEDENT 2

HERMOSA VALLEY GREENBELT, HERMOSA BEACH, CA

3.5 miles stretch of green space area has been transformed from an unused stretch of railroad tracks into one of the environmental jogging park and a great green space of the beach cities residents.

EFFECTIVE SCREENING WITH LANDSCAPE

The dense vegetation creates a green strip of land that blocks the noise from the cars of the adjacent streets. It also creates a nice greenery secluded area.

NEIGHBORHOOD CONNECTIVITY

This public space is clearly used for social interaction for the community residents.

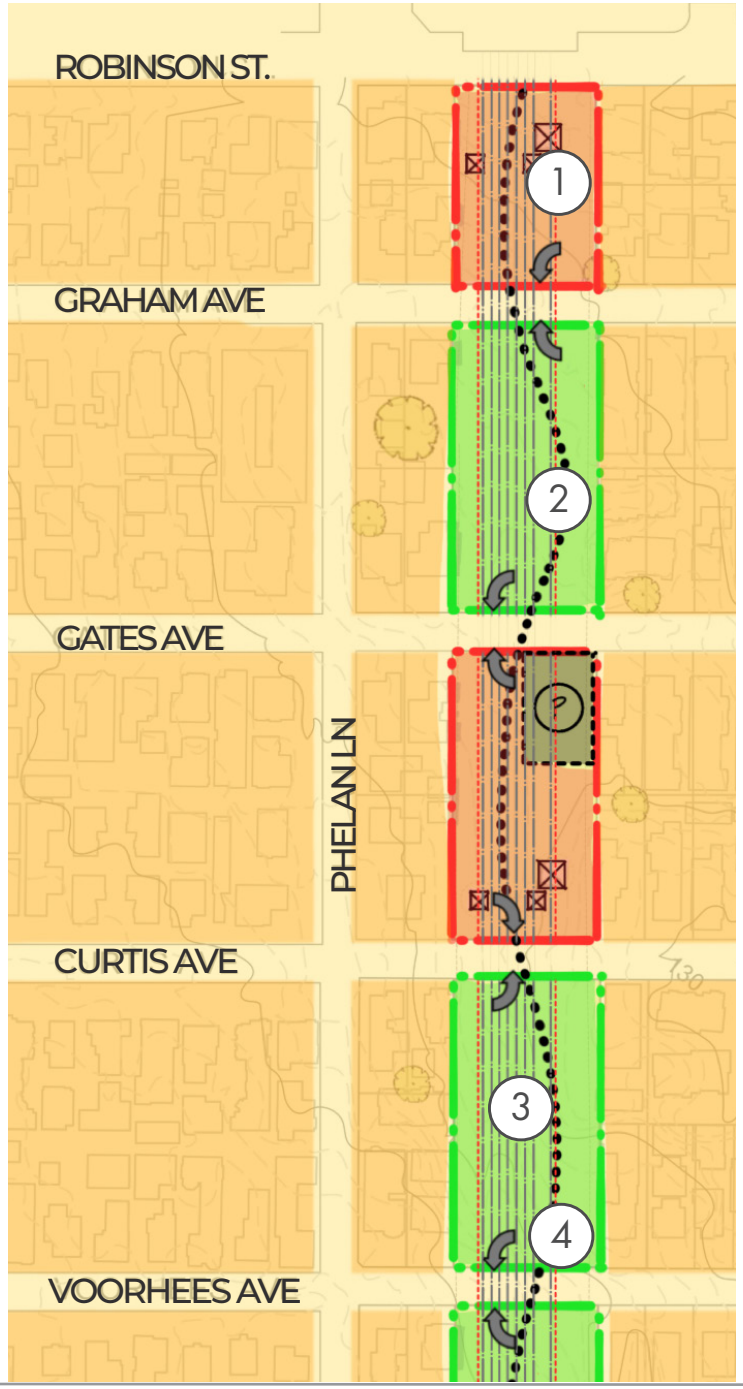
GREEN USABLE PUBLIC OPEN SPACE

The park is highly active and used by the local residents. It is used by the locals to have sports classes, community meetings, markets, etc.

Fig.27-30: Hermosa valley trails and exercise equipment. Photos by Sam Gerry

OPPORTUNITIES & CONSTRAINTS

NORTH SECTION



Big tower powers takes up space and have a huge visual impact

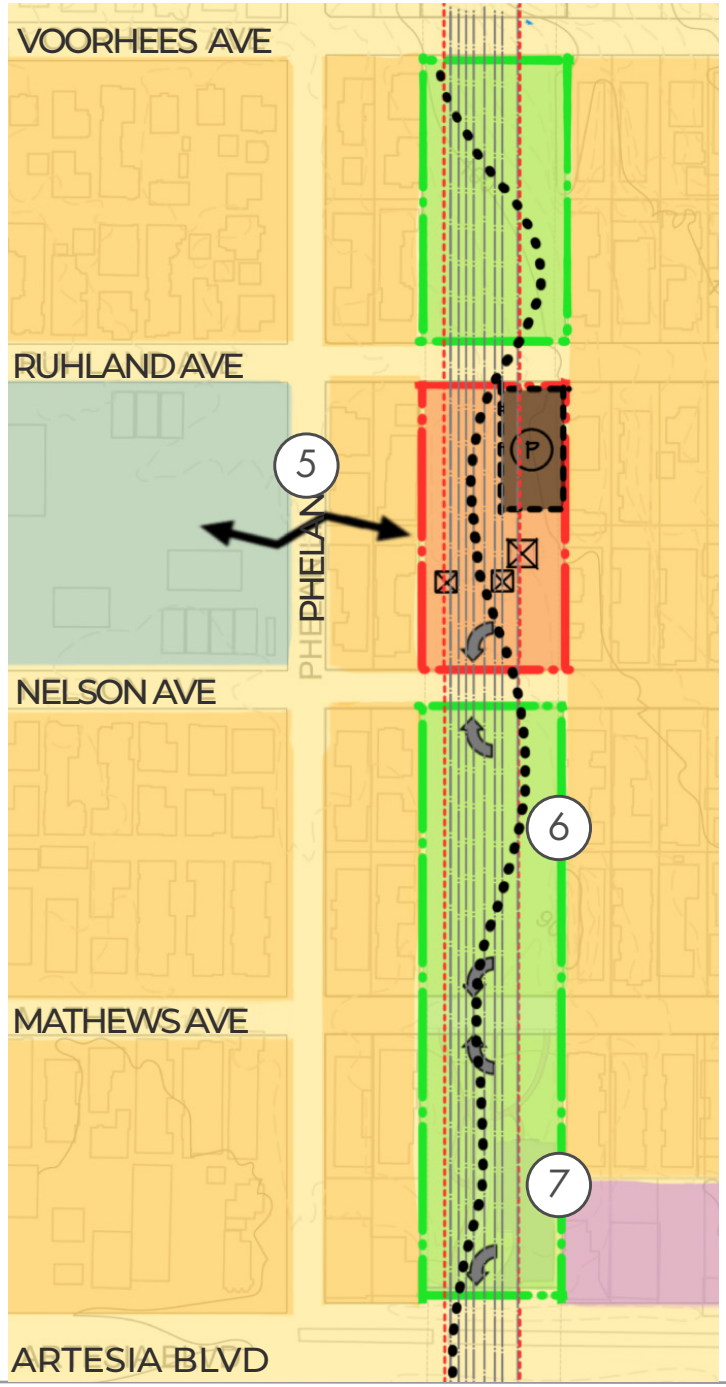
2 There's a 15' height limit below power lines.

Steepest lot: 10' difference, opportunity to create a view point

Most critical drainage issue. To be addressed with Sustainable Urban Drainage System

OPPORTUNITIES & CONSTRAINTS

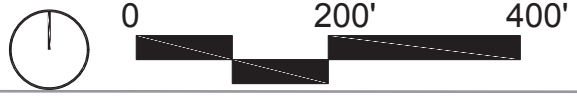
MIDDLE SECTION



Opportunity to create a safe connection with elementary school to the site

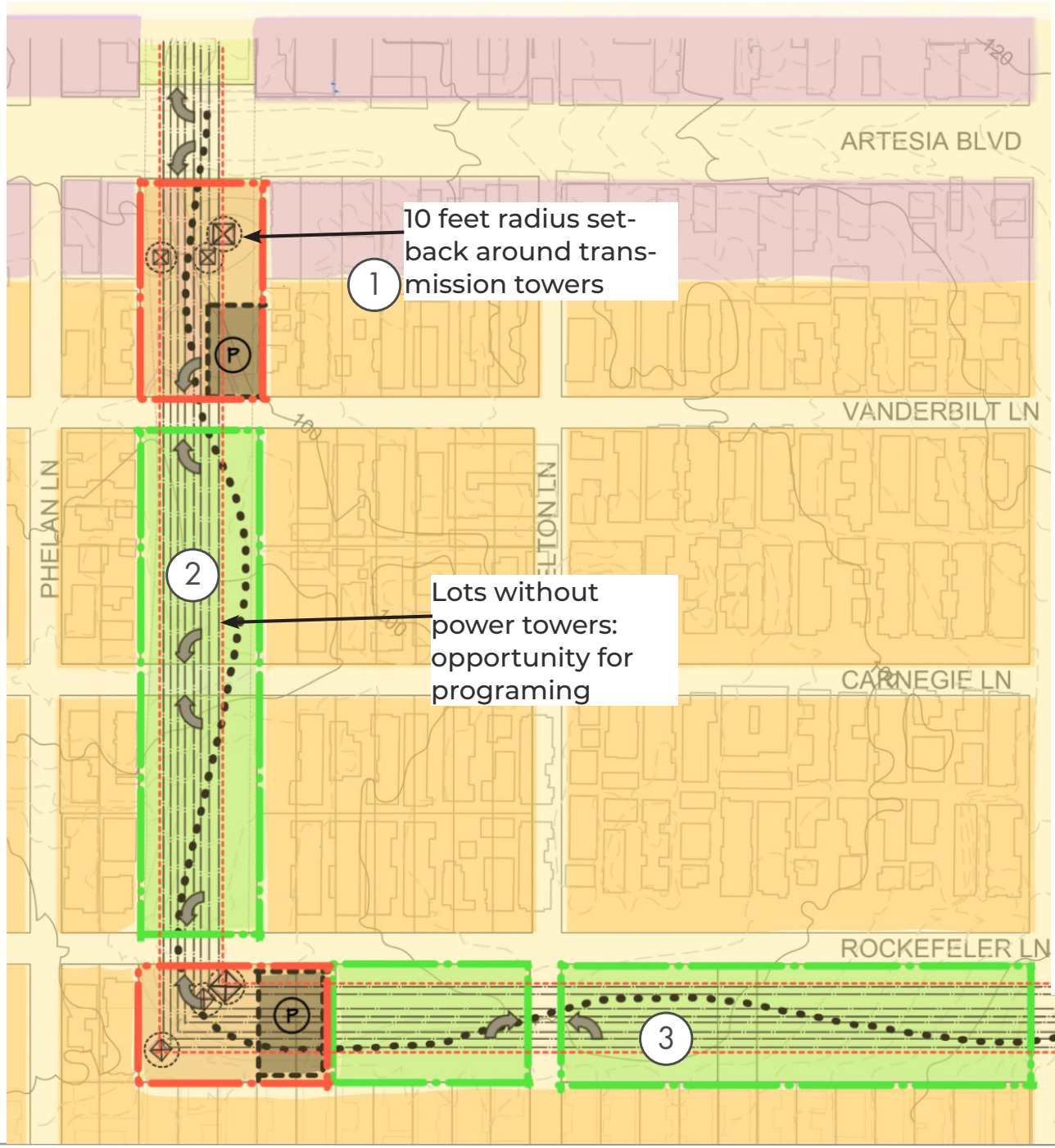
Adapt the trail to the site's topography and diminish the slope steepness.

Proximity with the only commercial section can suggest a parking lot



OPPORTUNITIES & CONSTRAINTS DIAGRAM

SOUTH SECTION



LEGEND

- POWER LINES
- TRANSMISSION TOWERS
- ACCESS POINTS
- LOTS WITH TOWERS
- POWER LINES LIMITS
- LOTS WITH NO TOWERS
- OPPORTUNITY OF CONNECTION
- BIKE TRAIL EXTENSION
- RESIDENTIAL AREA
- COMMERCIAL AREA

HIGH-VOLTAGE POWER LINES CONCERNS

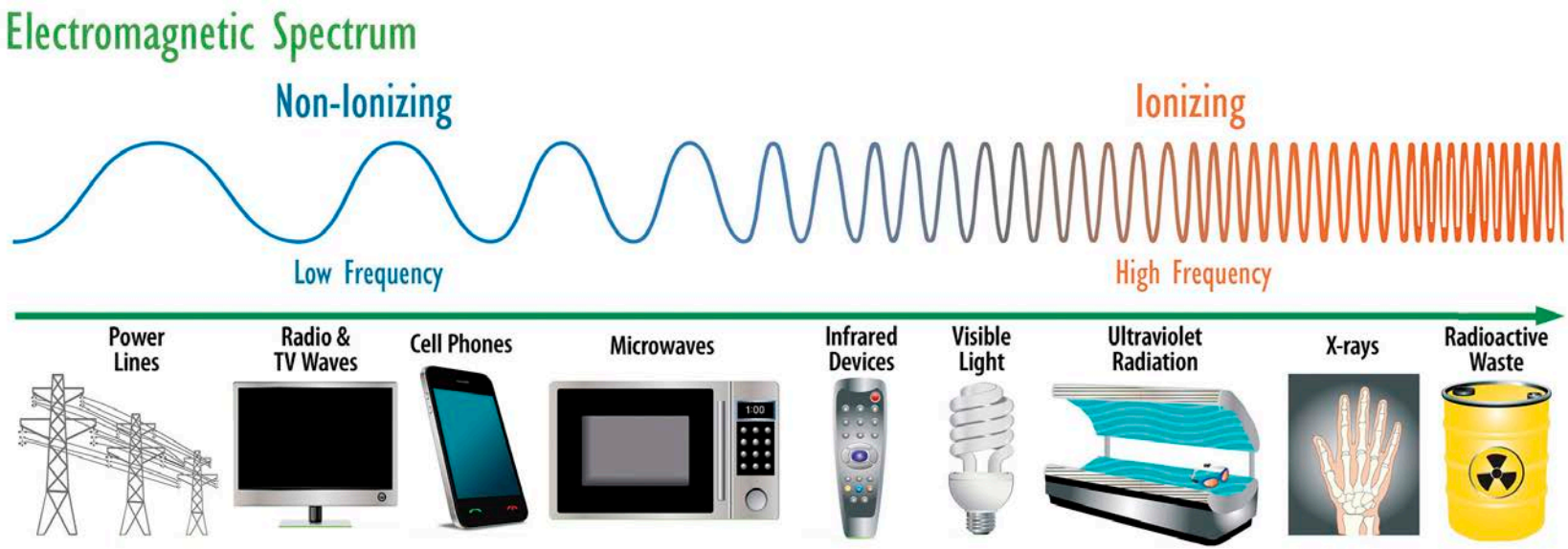


Fig.31: Diagram from NIEHS educational booklet, "EMF: Electric and Magnetic Fields Associated with the Use of Electric Power"

HEALTH CONCERNS

Are Electric and Magnetic Fields a Health Hazard?

Significant research has been conducted internationally over the last 40+ years to evaluate the potential health impacts of EMF exposure. There is no definitive answer as to whether EMF exposures cause adverse health effects.

- The USA has no Federal exposure limits for ELF EMFs.
- The health effect which has been most studied in relation to EMFs is childhood leukemia.
- An overall comment on health effects other than childhood leukemia comes from the WHO monograph:

"The scientific evidence supporting a linkage between ELF magnetic fields and any of these diseases is much weaker than for childhood leukemia and in some cases (for example, for cardiovascular disease or breast cancer) the evidence is sufficient to give confidence that magnetic fields do not cause the disease."

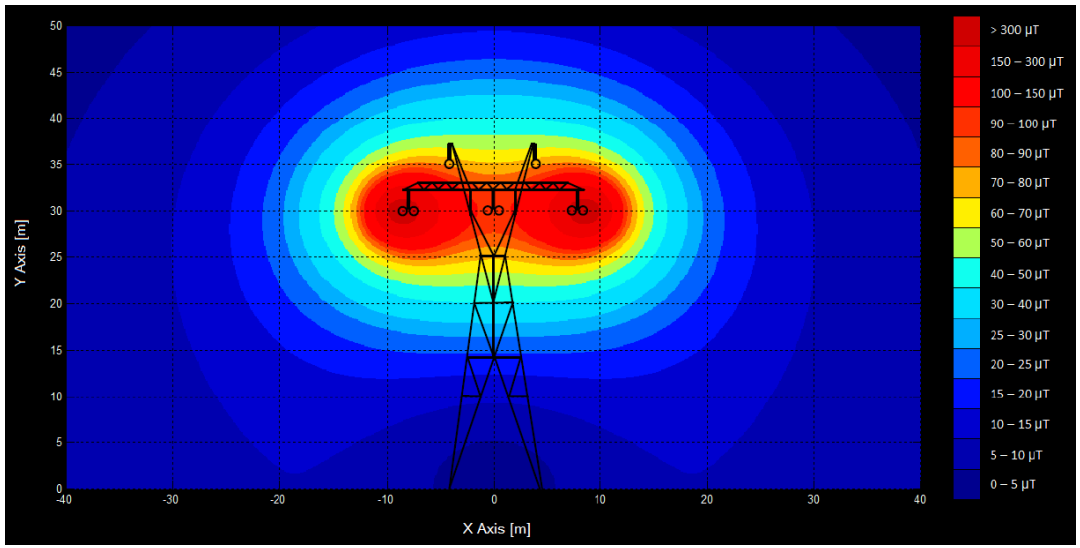


Fig.32: Diagram from NIEHS educational booklet, "EMF: Electric and Magnetic Fields Associated with the Use of Electric Power"

VISUAL IMPACT

Since towers are such large and dominant structures, the opportunity to mitigate their effect on new development adjacent to an existing line is restricted. Nevertheless the layout of residential and other types of development, the orientation of main views out of a building, and the location of structural site planning by the developer can assist in reducing the visual impact on residents.

Fig.33: Photo from Design guidelines for development near high voltage overhead lines, by National Grid.

PUBLIC'S CONCERNS

Residents are worried about the effects of the electromagnetic fields emanating from transmission lines on their health.
Scientific studies have not clearly shown whether exposure to EMF increases cancer risk. The studies so far are inconclusive. However, power lines release non-ionizing electromagnetic waves, that have low-level radiation which is generally perceived as harmless to humans.
Residents are also worried if power lines would decrease their property values, which is a pertinent issue and, in this case, an opportunity to address that as a project goal.

Fear of a loss of their money through devaluation of their house, or fear of not being able to sell their house, may be just as great or greater than fear of health effects

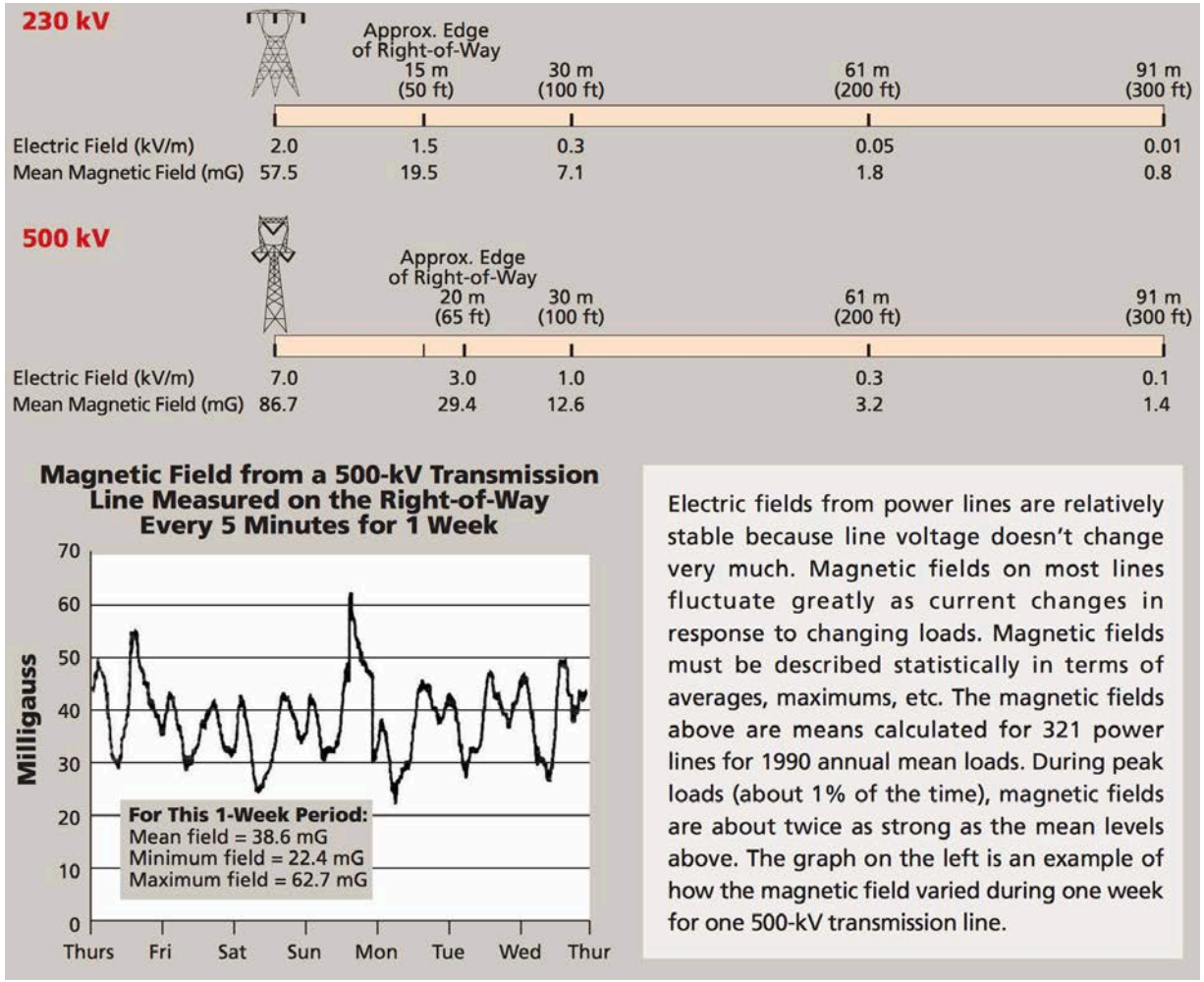


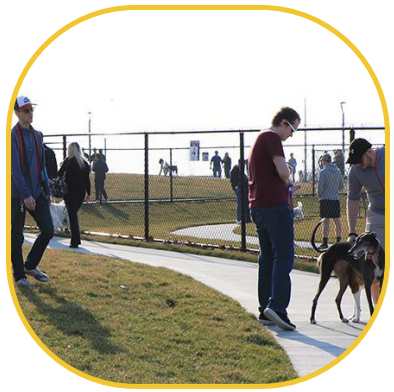
Fig.47: Diagram from NIEHS educational booklet, "EMF: Electric and Magnetic Fields Associated with the Use of Electric Power"

GOALS & OBJECTIVES

This project's big idea is to utilize a land close to power lines, prioritizing the community and inviting users to have a healthier lifestyle by being outdoors practicing exercises and, therefore, creating an environment quality that is beneficial to all.

SUSTAINABLE PRACTICES

Making use of sustainable practices to solve the site's problems



USE OF OUTDOORS GREEN SPACES

Re-utilizing green open spaces for community and encouraging social interaction by having multiple open areas with seating, some shade, activities spaces and flexible spaces for events. Providing to the neighborhood amenities such as dog parks will benefit the community

CONNECT THE COMMUNITY

Having multiple areas with gathering spaces designed to encourage people to be outdoors. Areas designed to host temporary events such as farmers market, movie nights, etc, aims to integrate and connect the community.

CHANGE THE PUBLIC PERCEPTION OF TRANSMISSION LINES

Breaking down linearity of paths to hide unpleasant views, creating series of pocket parks and other program elements. Also, educational programs about transmission lines can be held in the park.

ENCOURAGE A HEALTHY LIFESTYLE

Encouraging people to live a healthier lifestyle by practicing exercise and, consequently, providing an overall life quality for the community.

IMPROVE PEDESTRIAN SAFETY

Improve the orientation of streets & improving pedestrian with crossing with safety measures

DESIGN METAPHOR

ELECTROMAGNETIC WAVES

Electromagnetic waves are literally running through the site and it made sense to use it as my design inspiration.

*Electromagnetic waves carry energy through space without carrying matter. This type of wave is formed by electric and magnetic fields perpendicular to each other and it does not need a surface to propagate itself.**

Electromagnetic fields associated with power lines are a type of low frequency, non-ionizing radiation.

** Source: https://www.niehs.nih.gov/health/topics/agents/emf/index.cfm*

DESIGN METAPHOR EXPRESSIONS

√ *The main design metaphor using* ***curvilinear and wavy patterns***

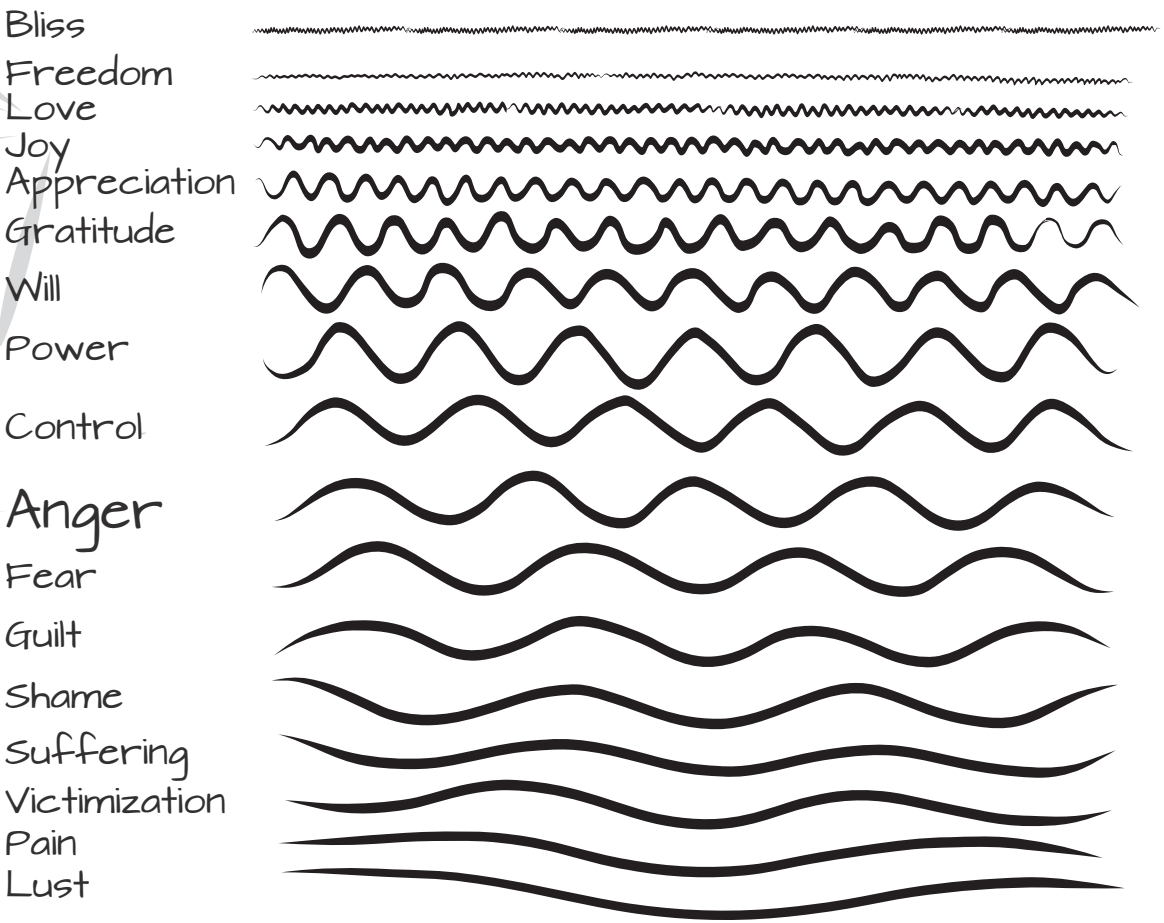
√ *A s****ense of constant movement*** *with the curved and* ***continuous trail***

√ *The* ***horizontal*** *wavy design is represented by the* ***paths*** *and the* ***vertical*** *by* ***elevation change***

ENERGY OF EMOTIONS

Similarly to the electromagnetic waves, emotions also are said to have a frequential vibrational scale and it is graphically identical to the pattern of the electromagnetic spectrum.

"Emotions are energy in motion. All energy is frequency and all frequency carries information. Based on our personal thoughts and feelings, we are always sending and receiving information." **



One key principle of this project is to create a design that evoke emotions which can result in positive and beneficial user experiences.

MAJOR PROJECT ELEMENTS

MAJOR ELEMENTS

- **Bike path & connectivity**: the bike path will be 18' wide and it will work with the main project's feature. There will be infiltration trenches besides the bike path to absorb runoff water. This bike lane will improve mobility along with the existing bikeway route and will improve the connection with the surroundings (specially South Bay Galleria Development site). The goal was also providing physical health benefits. 3 byicycle rack stations will also be placed on 3 site's lot. The bike lane will also be used for SCE maintenance access.
- **Exercise stations**: 5 exercise stations with approximately 10 equipments each will be install throughout the park. This is also a very important program element which aims to encourage the users to practice a healthier lifestyle in a free and safe outdoors space.
- **Playground areas**: Two playground stations with approximately 10 equipments each will be install on the north and south section of the site.
- **Dog parks**: There will be 3 dog parks, each separated by size (one for small and medium, one for large dogs and a 3rd one for mixed use), each with approximately 10,000 sq.ft each.
- **Temporary program spaces**: A series of open spaces will be thought to hold temporary events. Those area's sizes will vary between 0.2 acres to 0.5 acres. It will also serve as gathering spaces. Benches that could potentially be moved - because of SCE eventual accesses - will be placed in those spaces and also throughout the site.
- **Widen sidewalks & improve crosswalks**: the sidewalks will be widened to 10' in some lots, to improve mobility. Access points, ingress and egress, and transition of pedestrian. will be achieved by the improved crosswalks. The new crosswalks will have speed bump and efficient signage.
- **Parking lots**: Two parking lots for 34 cars each (including ADA) will be provided to support near by business, school and for event days overflow parking.
- **Safety:** the use of solar lights will help the security during night time. Signage will be present near the main project elements. Educational programs related to security, healthy lifestyle, impacts of transmission lines on people's health can also be a functional program. Some of the safety measure are also:
    - Light Actuated Crosswalk - Flashing pavement warning lights to advise drivers of pedestrians using the cross walk.
    - Flashing Lights - used to emphasize a hazardous or unusual condition.
    - Walk to School Routes & the Walking School Bus program

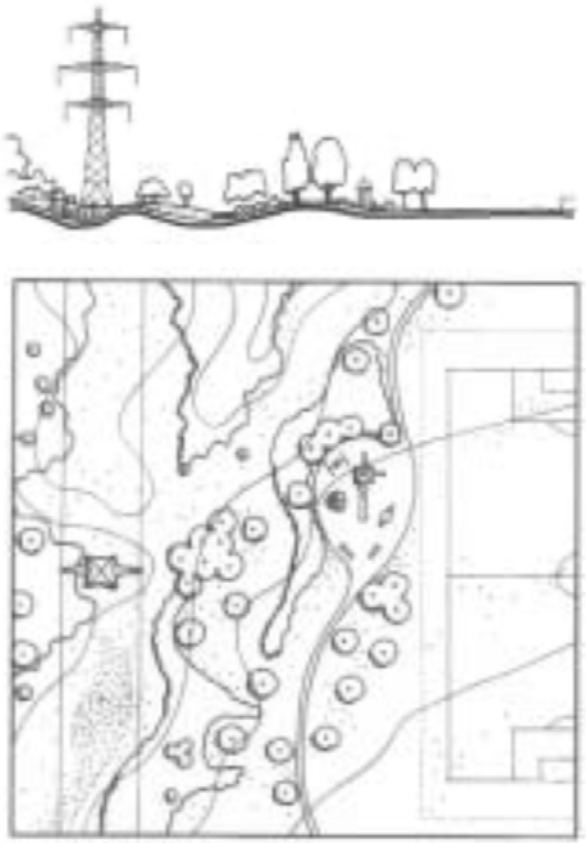
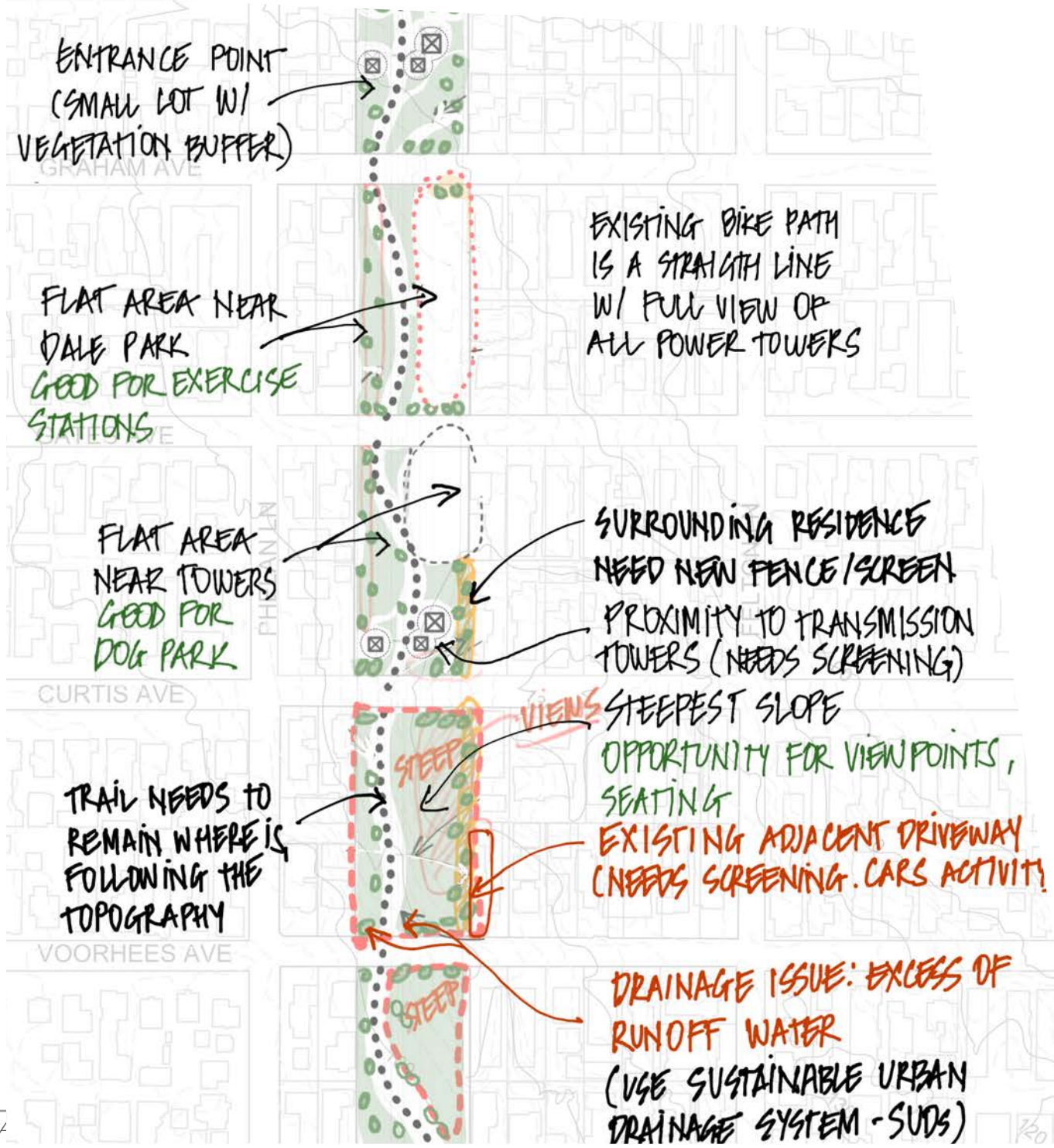
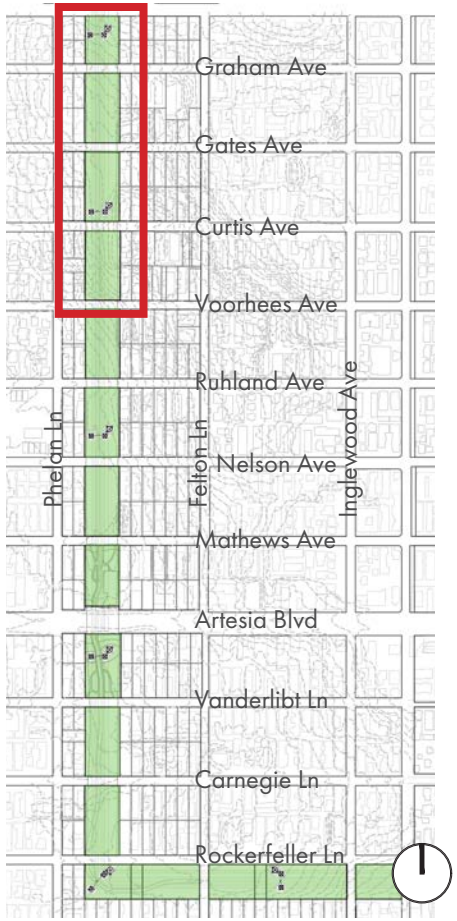


Fig.51: Illustration from Design guidelines for development near high voltage overhead lines, by National Grid.

SITE ANALYSIS
NORTH SECTION

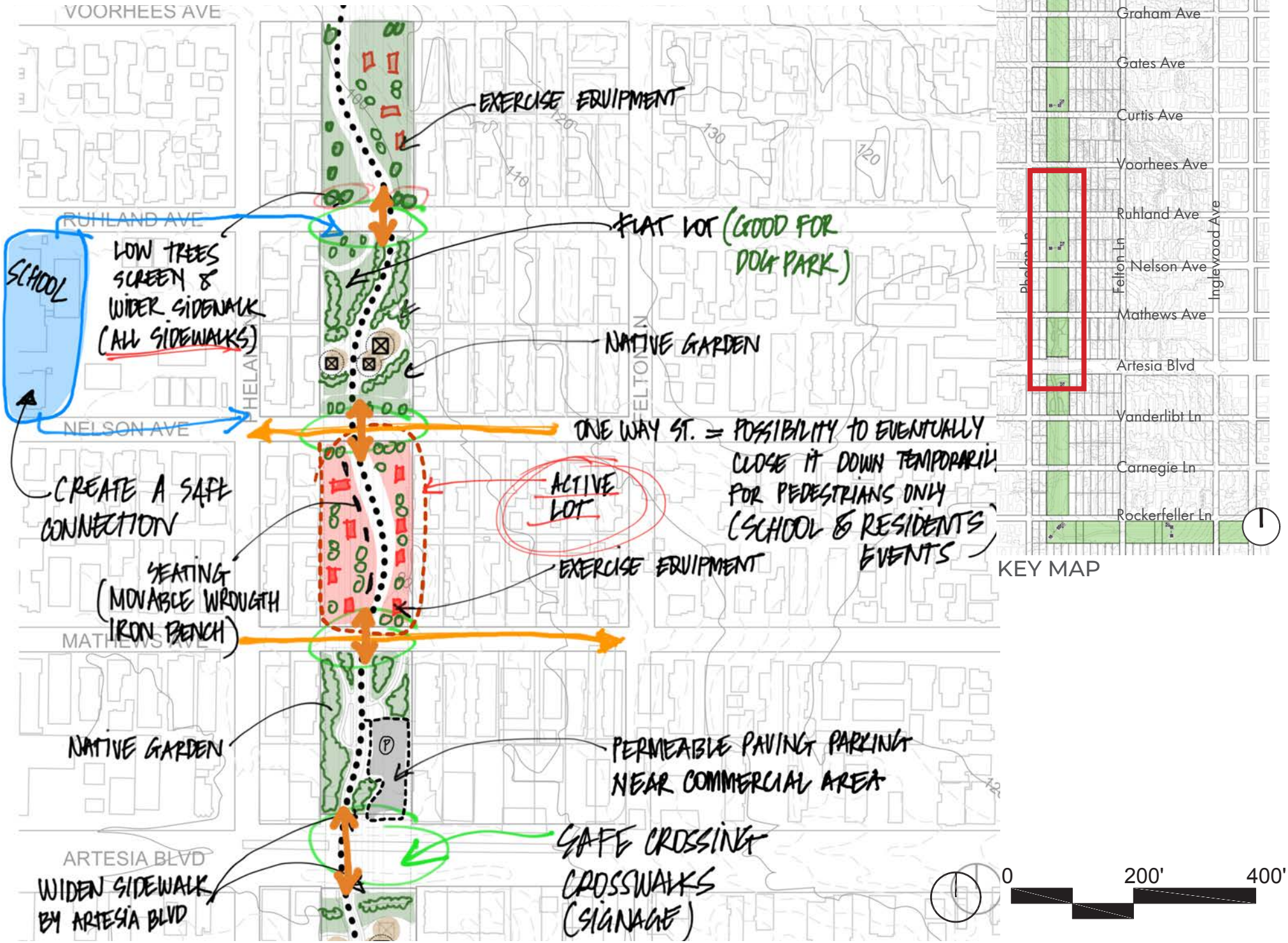




KEY MAP

0 200' 400'

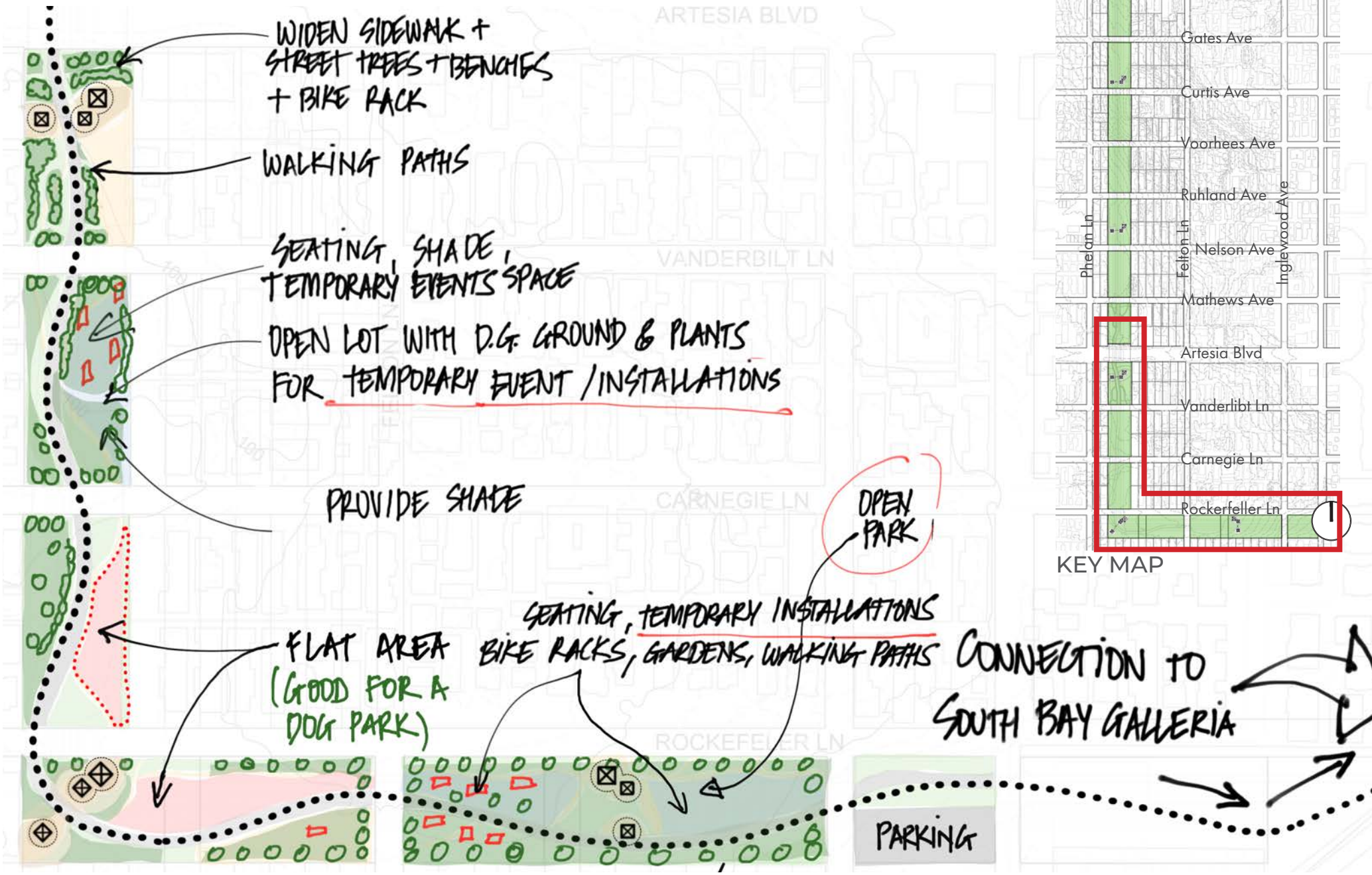
MIDDLE SECTION



KEY MAP

0 200' 400'

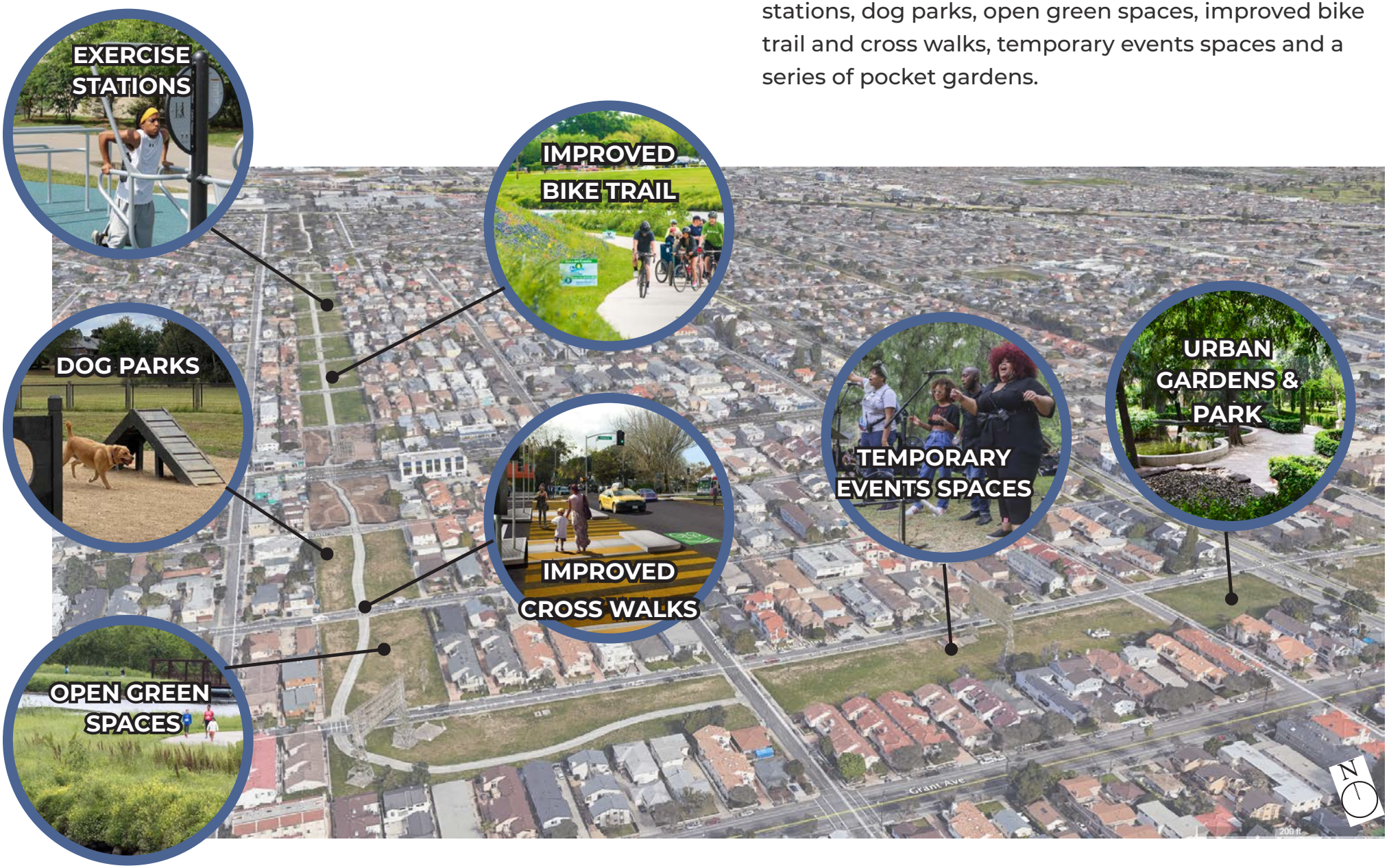
SOUTH SECTION



KEY MAP

INSPIRATION/PROGRAM

Based on my site analysis, some programing shown to be possible and some inspirational images of the programs I want to incorporate to my project. Exercise stations, dog parks, open green spaces, improved bike trail and cross walks, temporary events spaces and a series of pocket gardens.



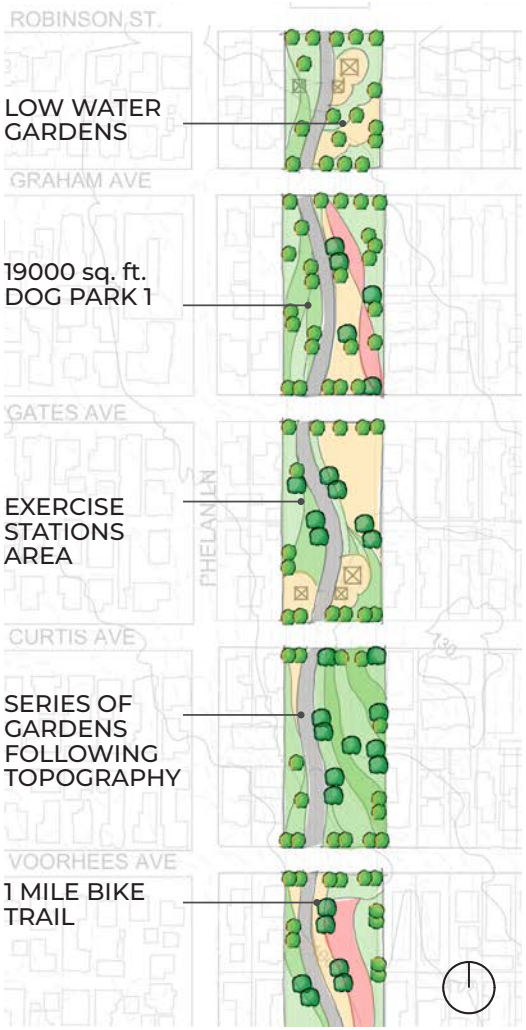
CONCEPT 1

TOPOGRAPHY

My first concept idea was to make use of the existing topography and adapt my design to it.

- Exercise stations area
- Decomposite granite
- Events area
- Vegetation/gardens
- Parking lot

NORTH SECTION



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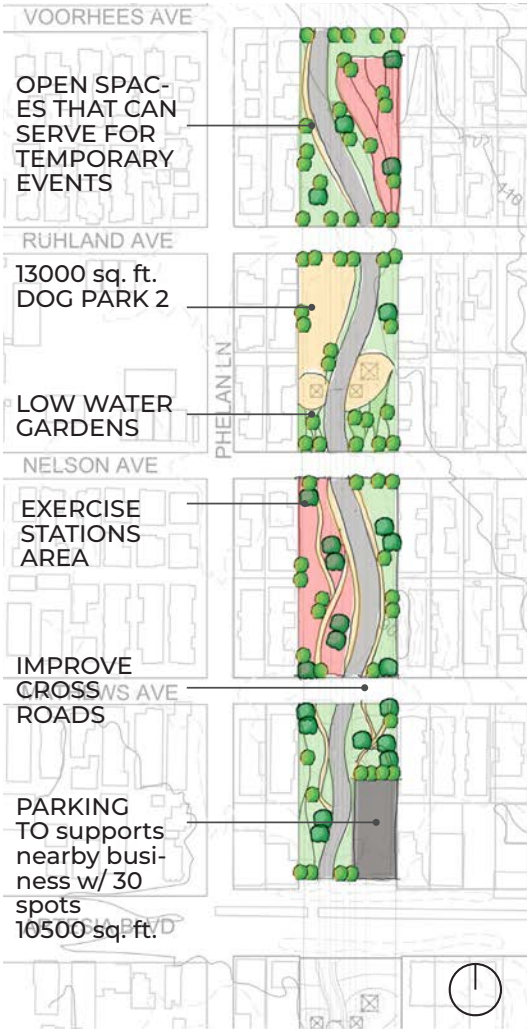
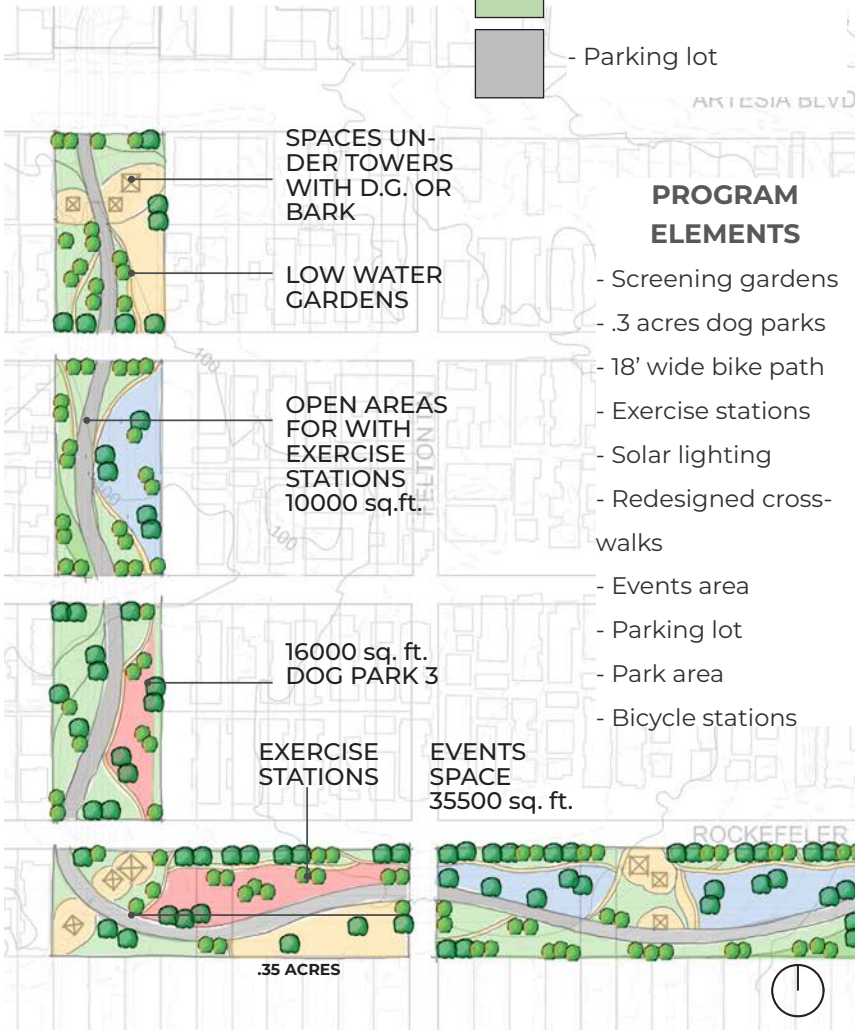


SOUTH SECTION



PROGRAM ELEMENTS

- Screening gardens
- .3 acres dog parks
- 18' wide bike path
- Exercise stations
- Solar lighting
- Redesigned cross-walks
- Events area
- Parking lot
- Park area
- Bicycle stations

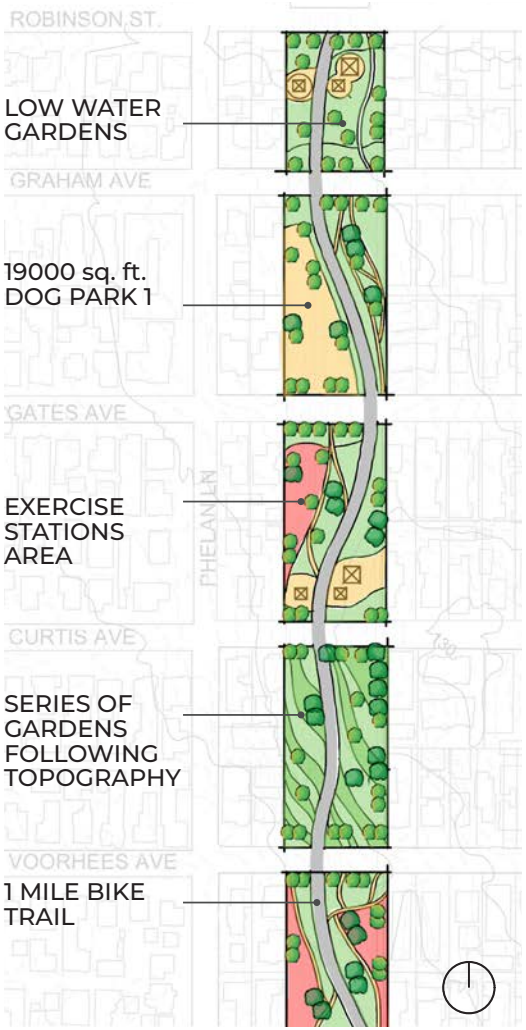
CONCEPT 2

WAVES

My second concept's big idea was WAVES. The idea was to have sinuous elements shown on the paths and flooring patterns. I created a bike trail that would have a more curvy shape to break down linearity of the park trying to hide the transmission towers and lines.

- Exercise stations area
- Decomposite granite
- Events area
- Vegetation/gardens
- Parking lot

NORTH SECTION



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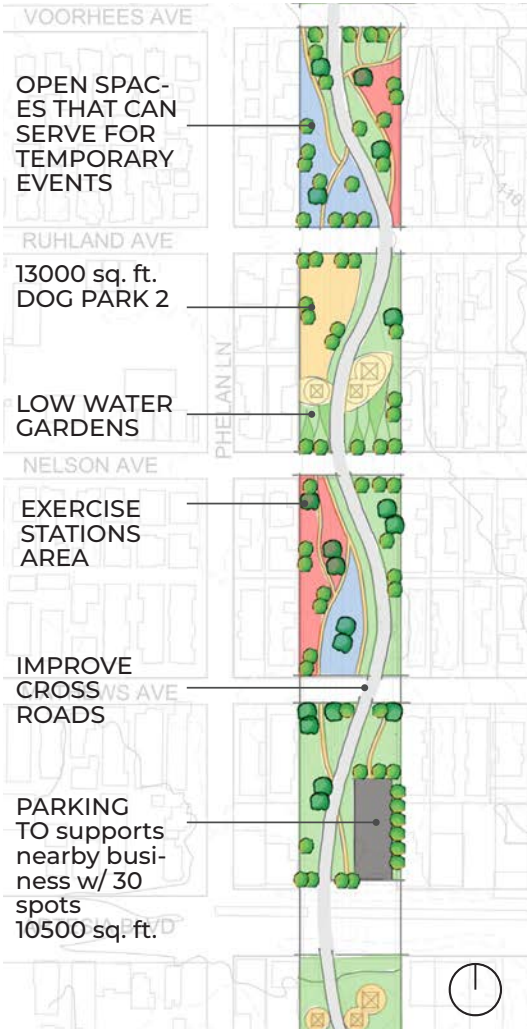

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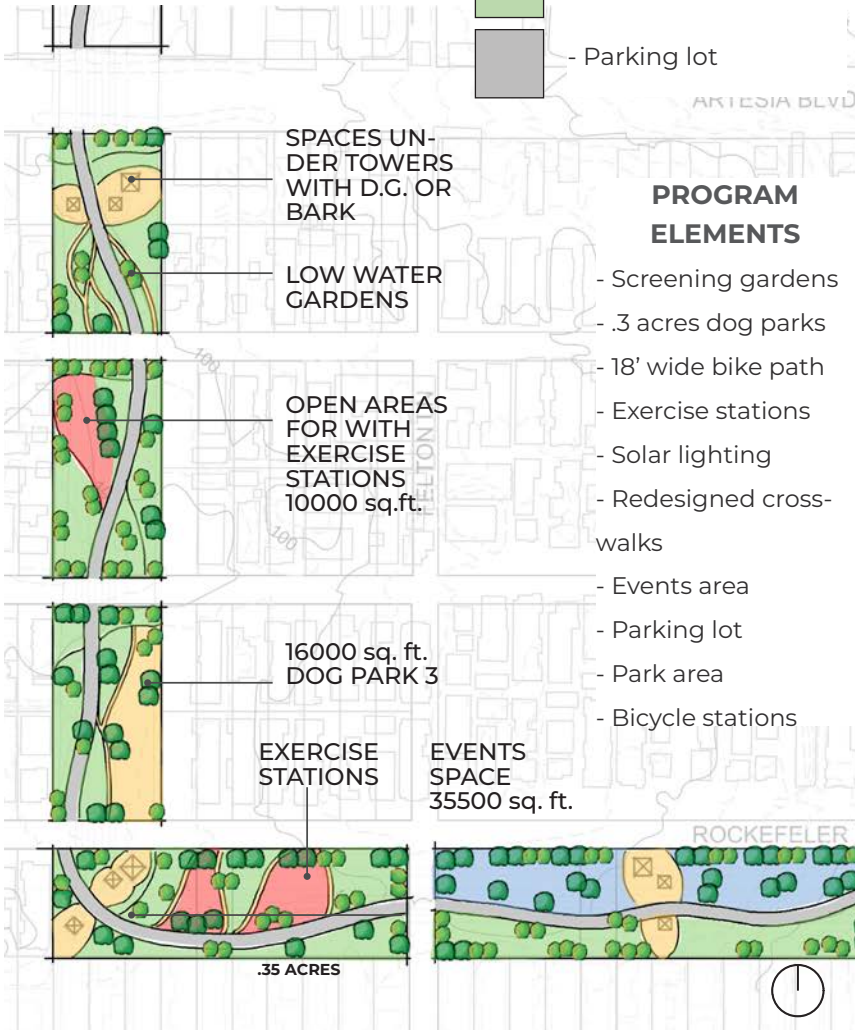


PROGRAM ELEMENTS

- Screening gardens
- .3 acres dog parks
- 18' wide bike path
- Exercise stations
- Solar lighting
- Redesigned cross-walks
- Events area
- Parking lot
- Park area
- Bicycle stations

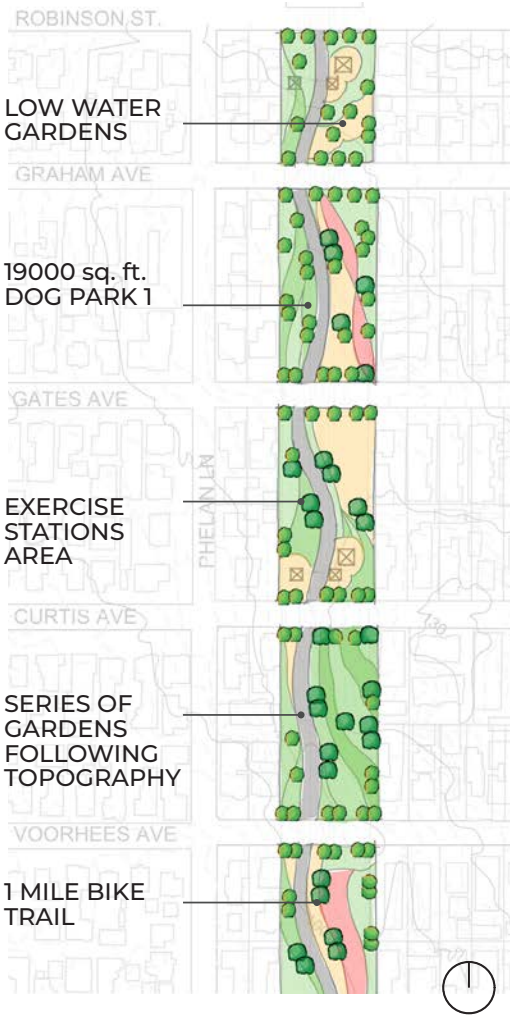
CONCEPT 3

PATHS

My third design concept focused on a series of secondary and tertiary pathways, mostly for pedestrians. The idea was to invite people in to walk around the entire perimeter of each lot and experience the pocket parks more deeply and not worrying about walking along with bicycles.

- Exercise stations area
- Decomposite granite
- Events area
- Vegetation/gardens
- Parking lot

NORTH SECTION



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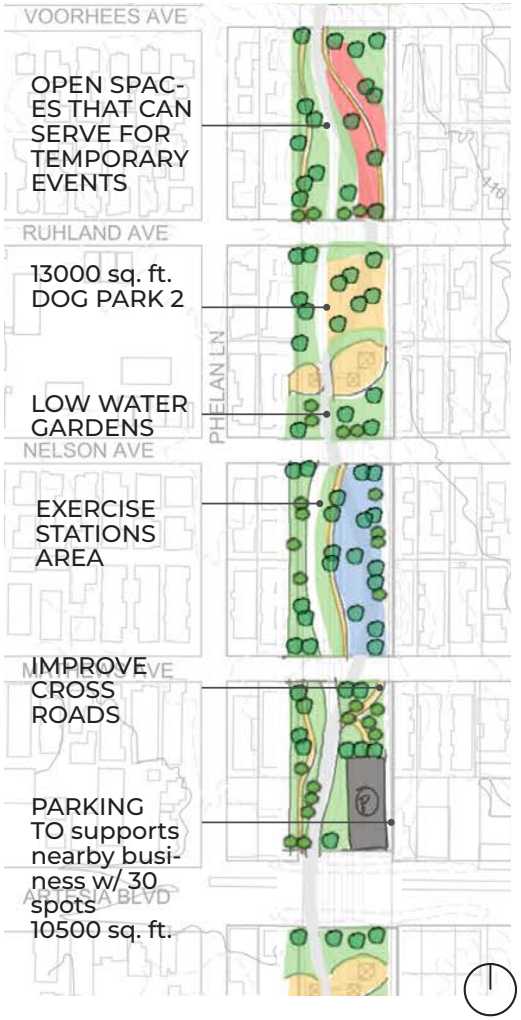


SOUTH SECTION

PROGRAM ELEMENTS

- Screening gardens
- .3 acres dog parks
- 18' wide bike path
- Exercise stations
- Solar lighting
- Redesigned cross-walks
- Events area
- Parking lot
- Park area
- Bicycle stations

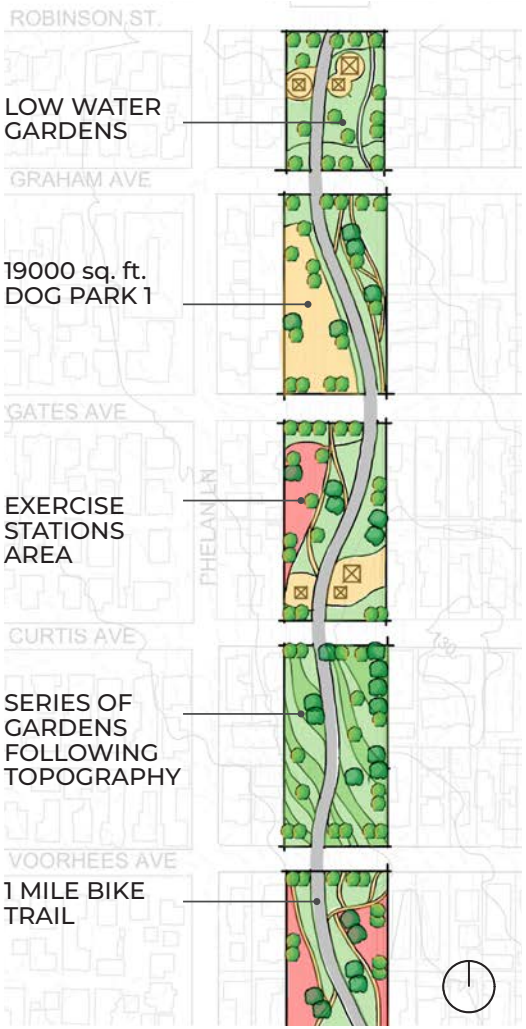
FINAL CONCEPT DIAGRAM

WAVY PATHS

On my final design concept I decided to incorporate the WAVES and PATHS into one idea. It has the sinuous elements on the trails and flooring shapes and secondary and tertiary pedestrian pathways throughout the lots, away from the bike trail.

- Exercise stations area
- Decomposite granite
- Events area
- Vegetation/gardens
- Parking lot

NORTH SECTION



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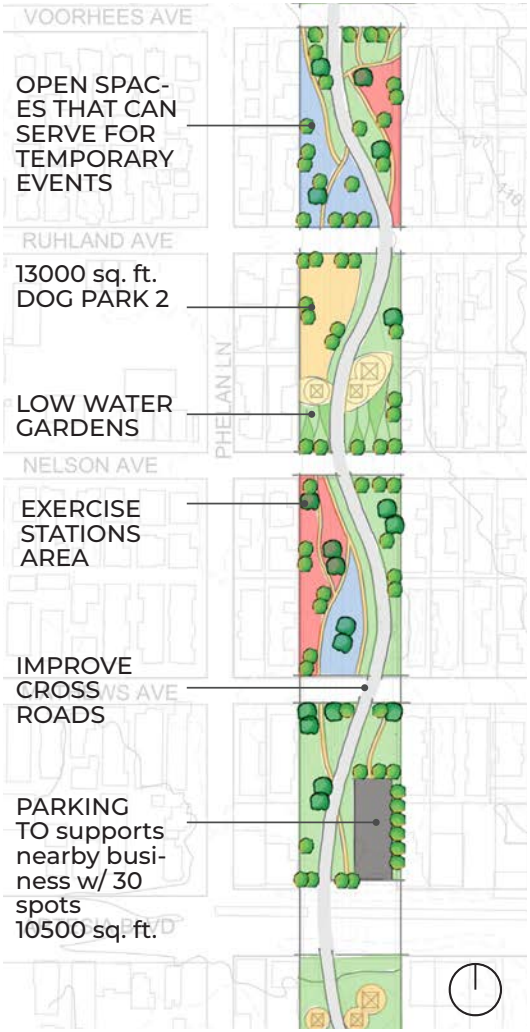
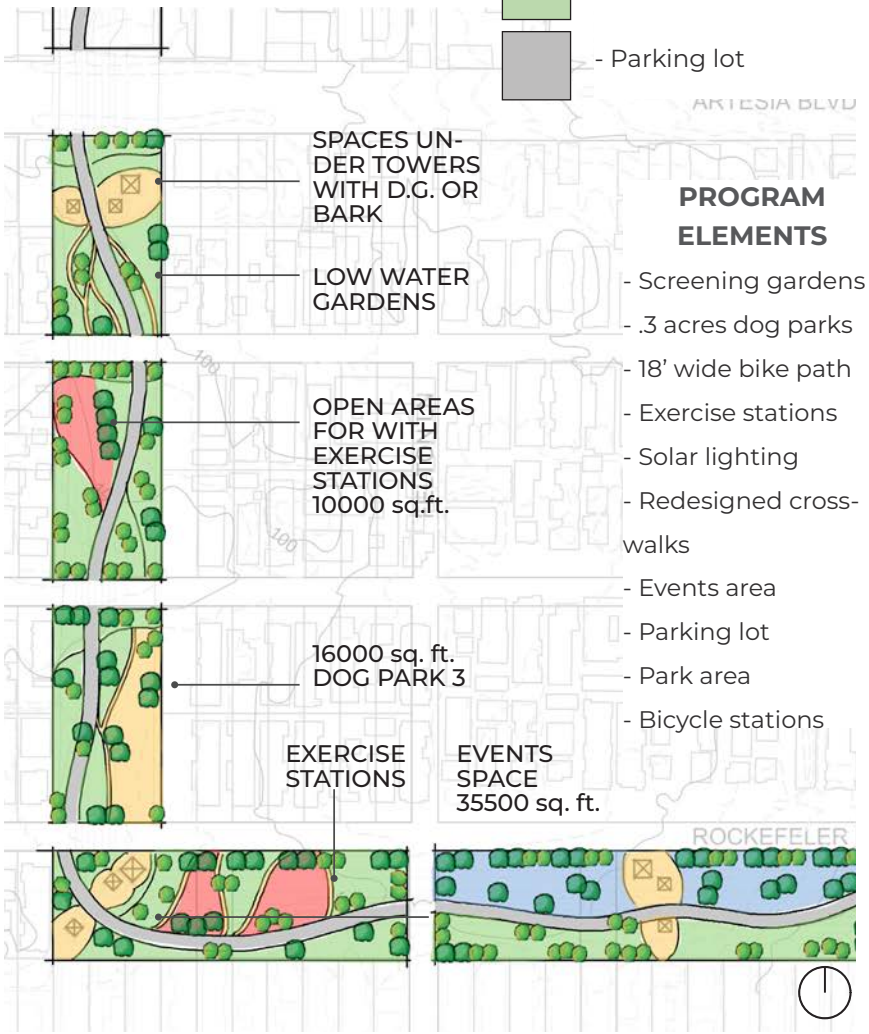


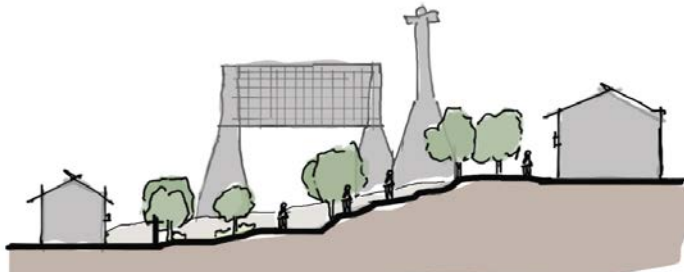
SOUTH SECTION



PROGRAM ELEMENTS

- Screening gardens
- .3 acres dog parks
- 18' wide bike path
- Exercise stations
- Solar lighting
- Redesigned cross-walks
- Events area
- Parking lot
- Park area
- Bicycle stations

#1 STUDY SKETCHES



SECTION A

1

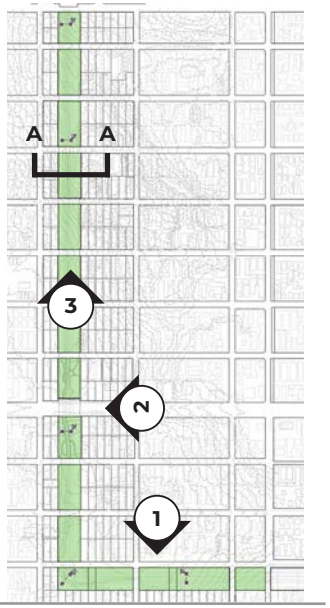
STUDY SKETCH OF THE SOUTH LOTS. THIS PORTION OF THE SITE WILL HOLD THE TEMPORARY EVENTS SPACES WITH SEATING, LAWN AREAS, A DOG PARK, AND THE BIKE TRAIL THAT WILL CONNECT WITH GALLERIA MALL.

2

LOTS ADJACENT TO ARTESIA BLVD, WITH A PARKING LOT TO SERVE THE COMMERCIAL STRIP AREA, D.G. PEDESTRIAN PATHS, GARDENS AND A DOG PARK.

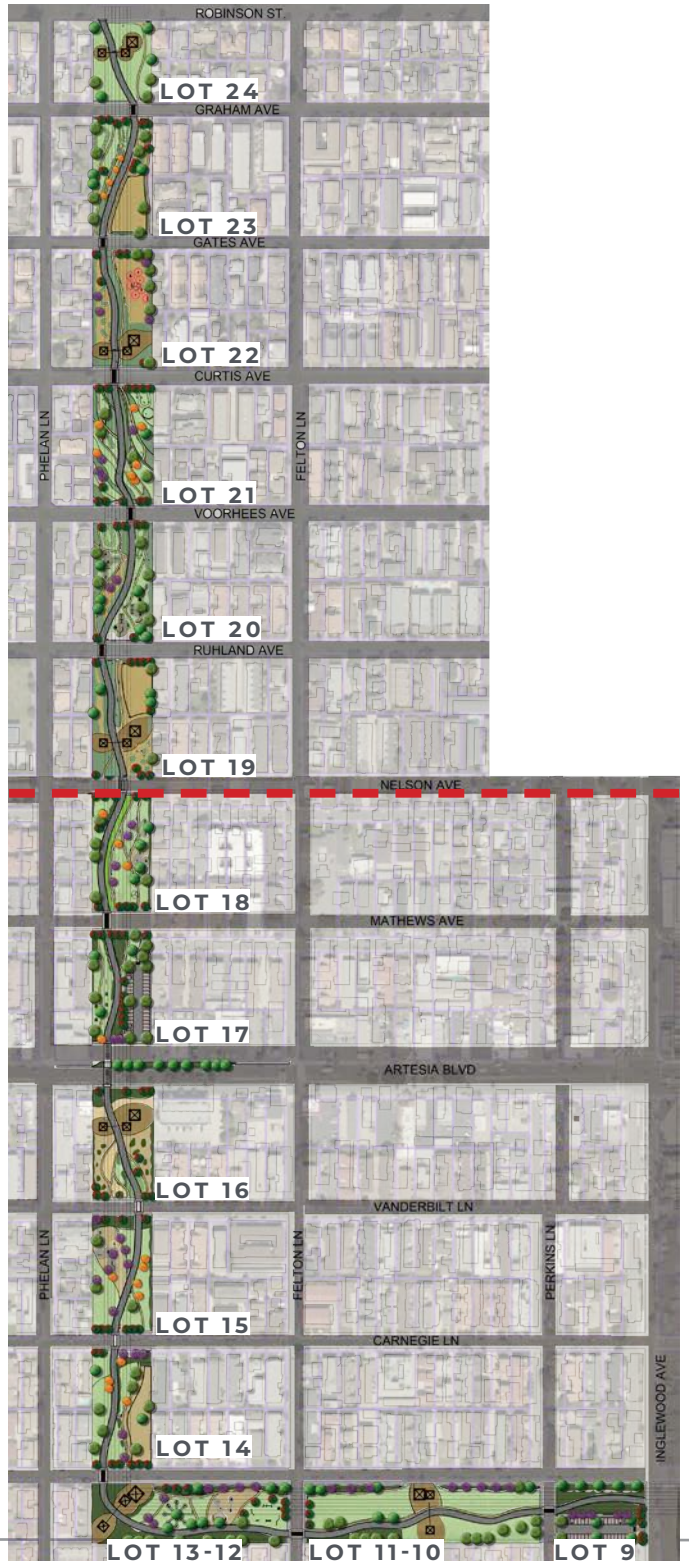
3

MIDDLE SECTION LOTS SHOWING THE STEEPEST AREA WHICH WILL ACT AS A VIEW POINT AND GARDENS.



KEY MAP

ILLUSTRATIVE PLAN

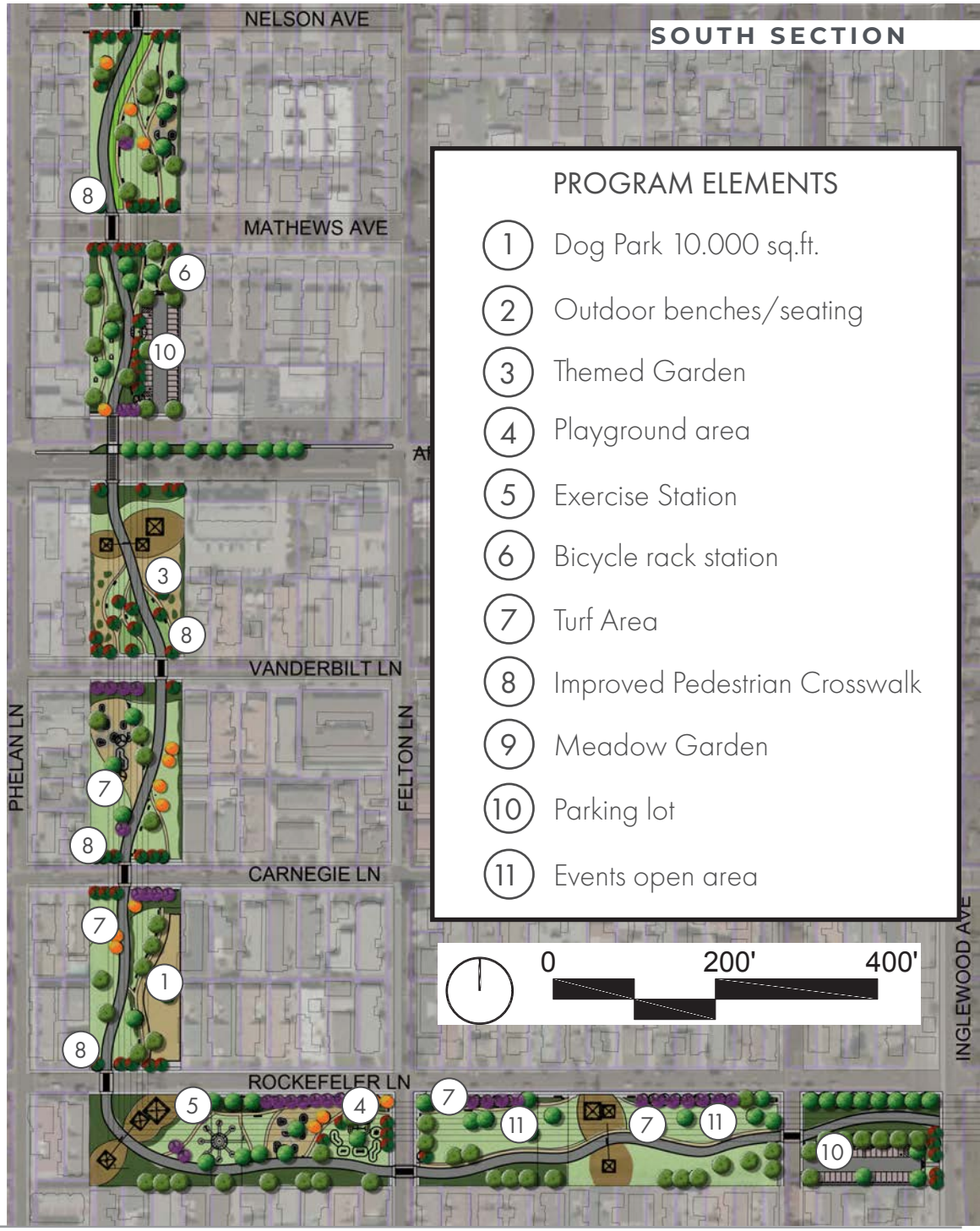


PROGRAM ELEMENTS

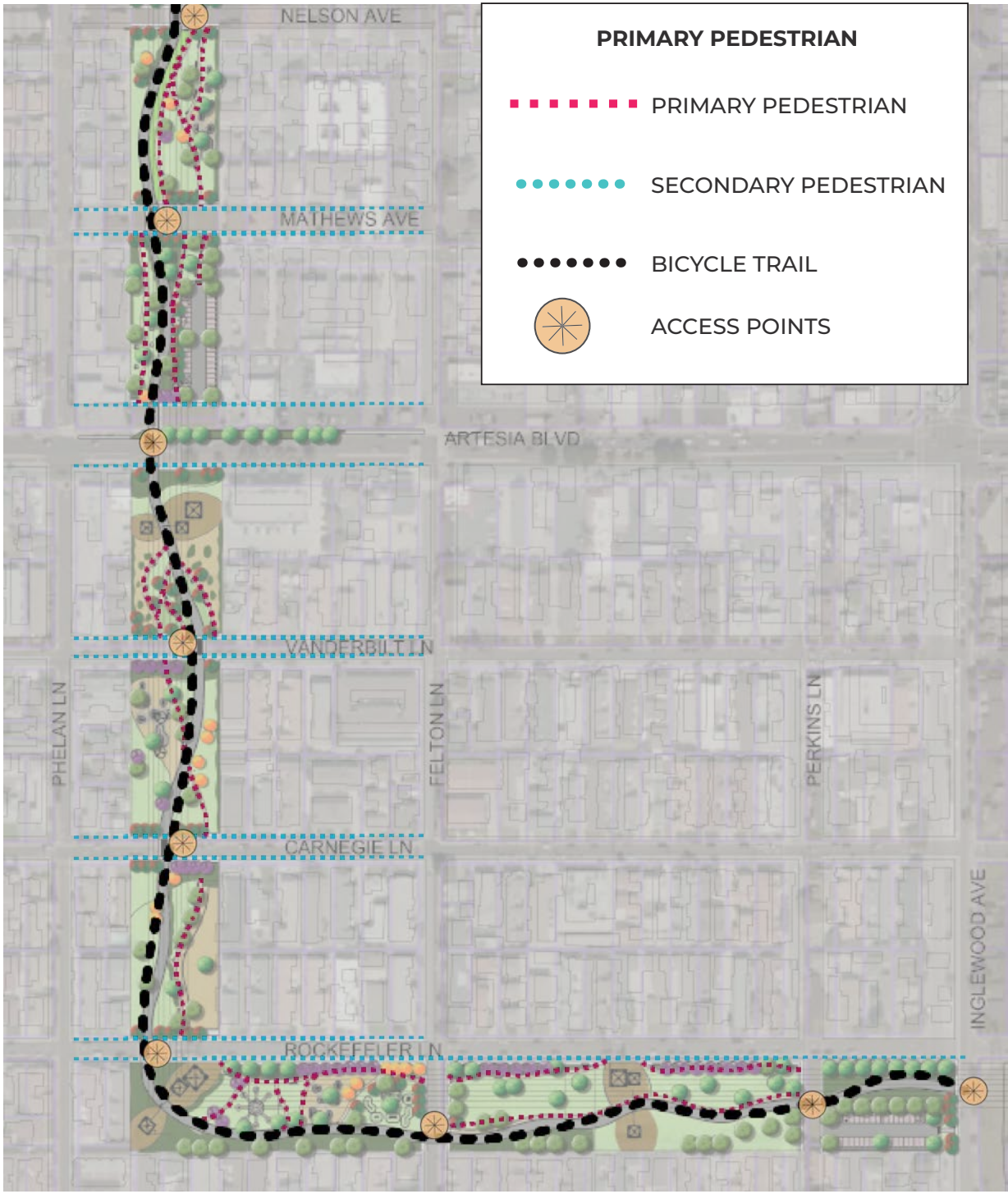
- Dog Park (approx. 10,000 sq.ft.)
- Outdoor benches/seating
- Themed Garden
- Playground area
- Exercise Stations
- Bicycle rack stations
- Turf Areas
- Improved Pedestrian Crosswalks
- Meadow Garden
- Parking lots
- Events open area

SCALE : N.T.S.

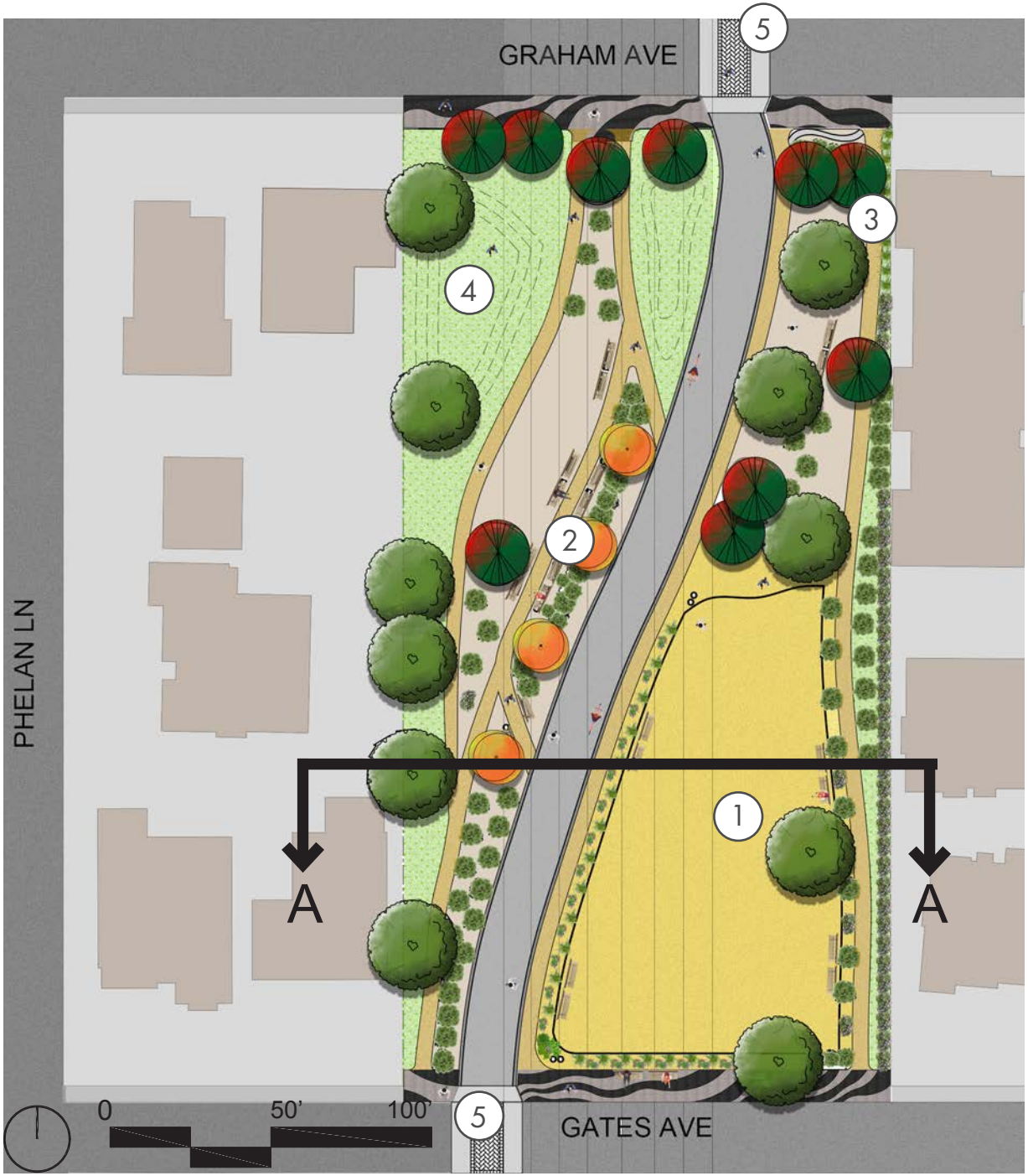
ILLUSTRATIVE PLAN



CIRCULATION & ACCESS



ENLARGEMENT - LOT 23 - GRAHAM & GATES AVE



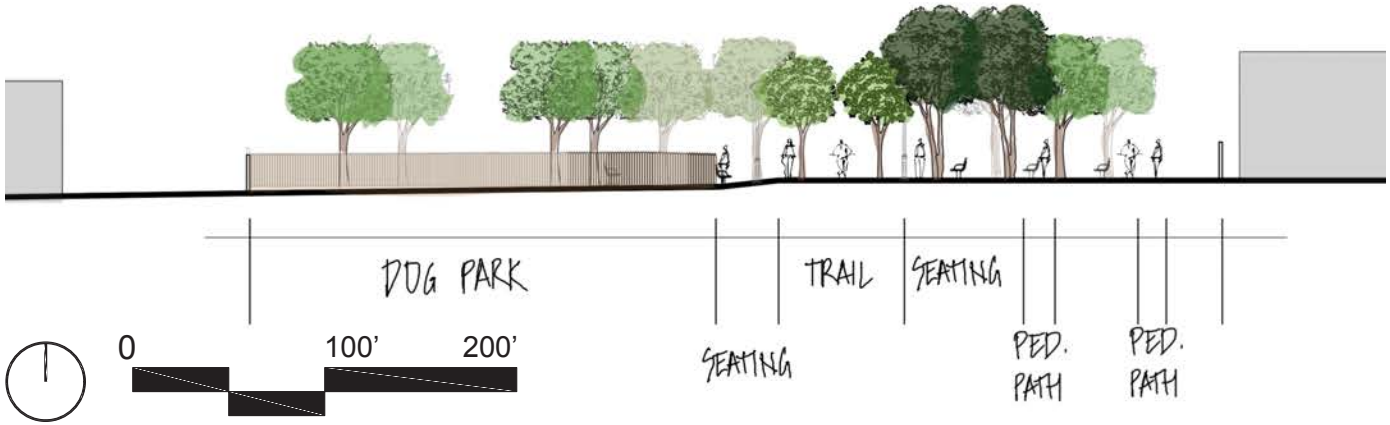
PROGRAM ELEMENTS

1. Dog Park 10.000 sq.ft.
2. Outdoor benches/seating
3. Bicycle rack station
4. Turf Area
5. Improved Pedestrian Crosswalk

This first lot is mostly a flat area that will have a 10,000 sq.ft. dog park enclosed by a fence, a series of benches throughout the lot, DG pedestrian pathways, a bicycle rack station, turf area and vegetation.

KEY MAP

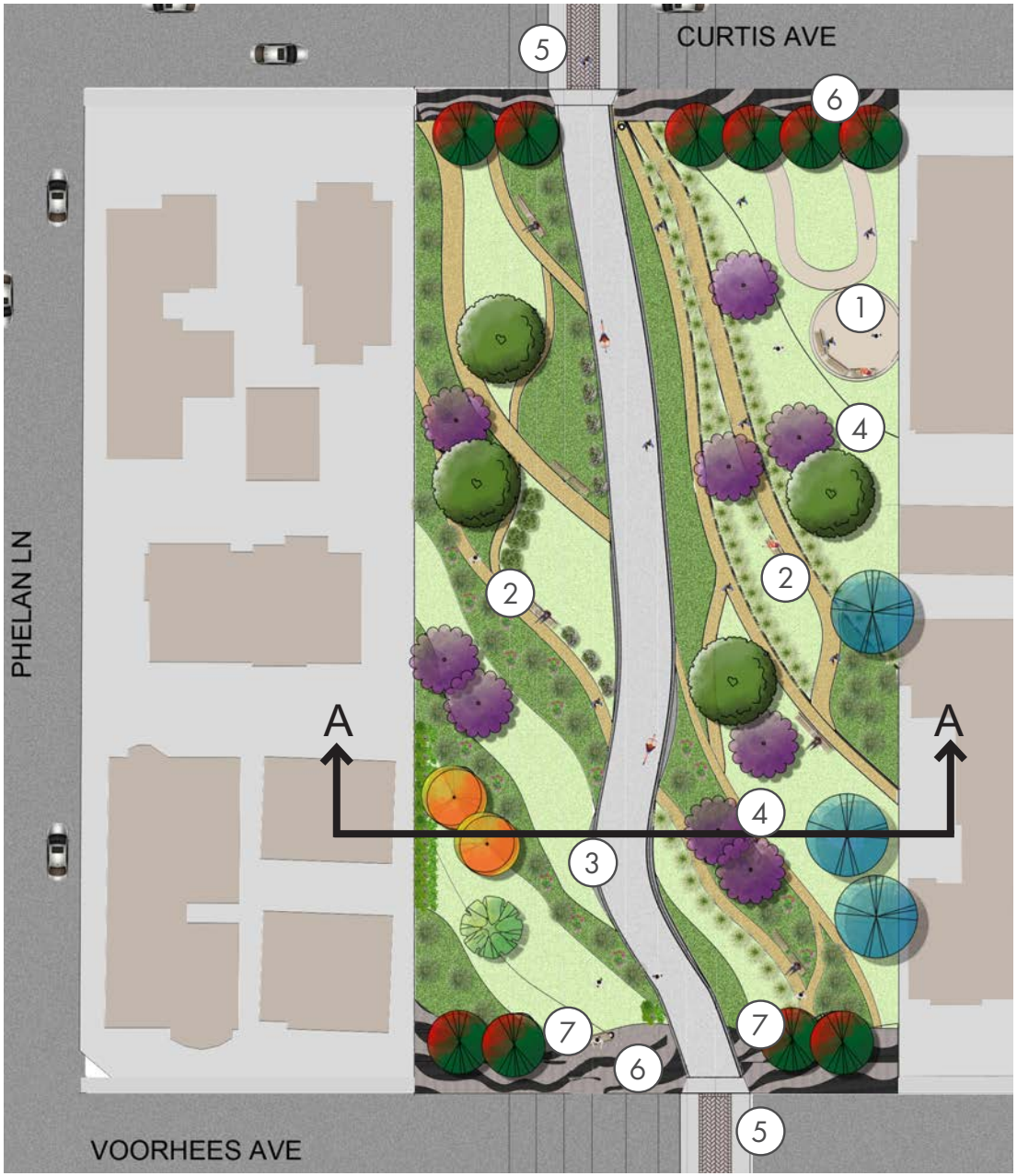
SECTION-ELEVATION



INSPIRATION IMAGES

PERSPECTIVES

ENLARGEMENT - LOT 21 - CURTIS & VOORHEES AVE



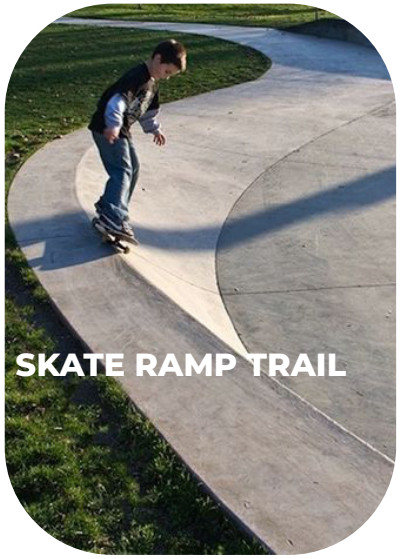
PROGRAM ELEMENTS

1. View point
2. Outdoor benches/seating
3. Skate Ramps
4. Turf Area
5. Improved Pedestrian Crosswalk
6. Improved Sidewalk
7. Infiltration basin

This lot is where the most elevation change is and also the highest point of the whole site, that’s why I chose to have the view point area. A series of pedestrian pathways runs among grassy vegetation.
Down by Voorhees Ave is where the drainage issues occur, so I incorporated infiltration basins and trenches. The stormwater runoff will run on the surface of it and infiltrate it gradually into the ground.

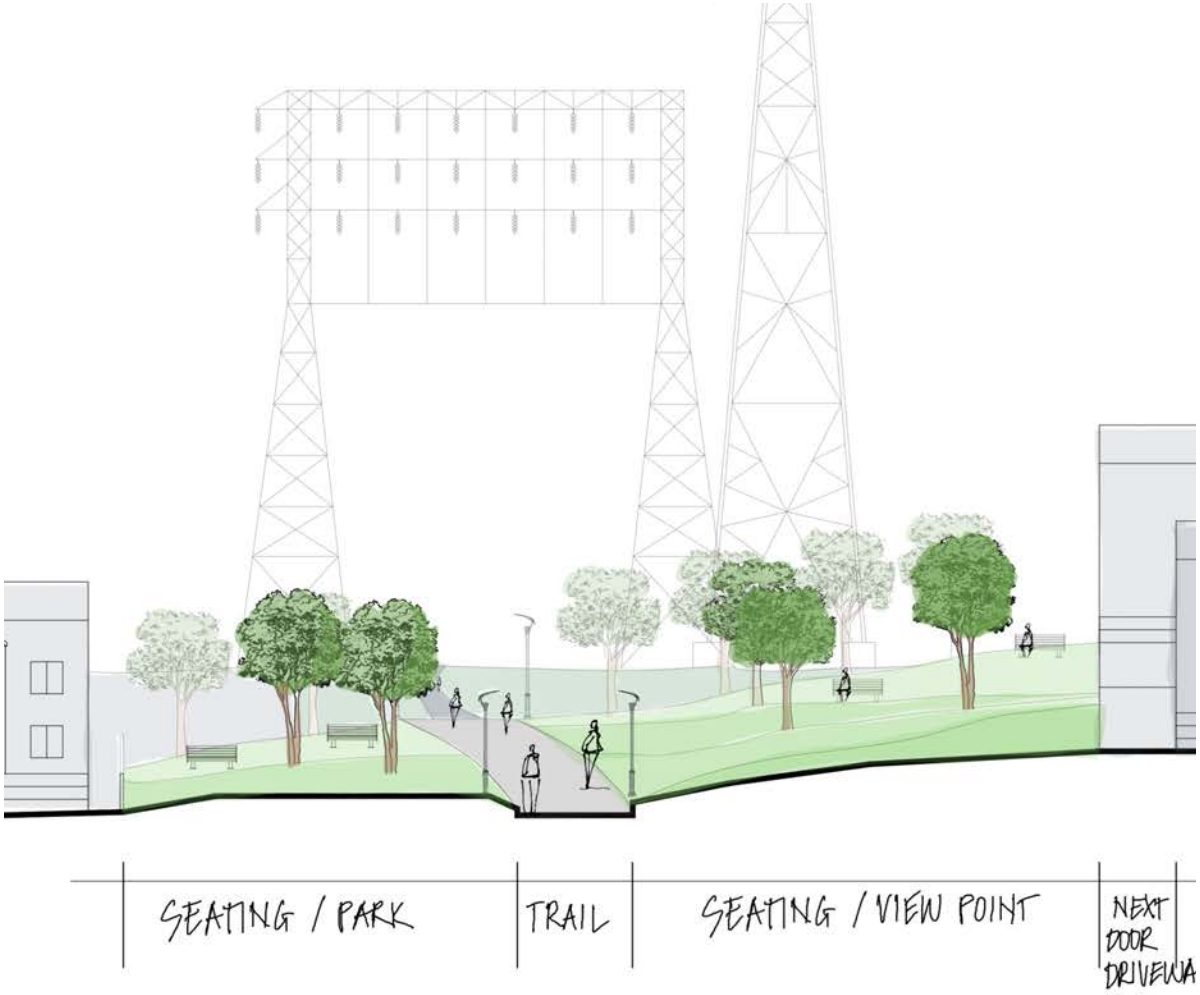
KEY MAP

INSPIRATION IMAGES



KEY MAP

SECTION-ELEVATION A



LOT 21 - PERSPECTIVES

KEY MAP

ENLARGEMENT - LOT 20 - VOORHEES & RUHLAND AVE

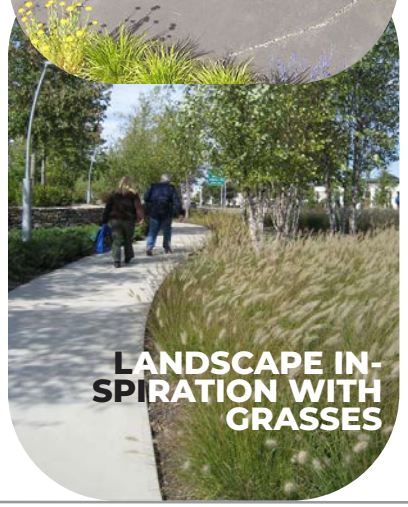
PROGRAM ELEMENTS

1. Exercise station
2. Playground area
3. Outdoor benches/seating
4. Turf Area
5. Improved Pedestrian Crosswalk
6. Secondary pedestrian pathways

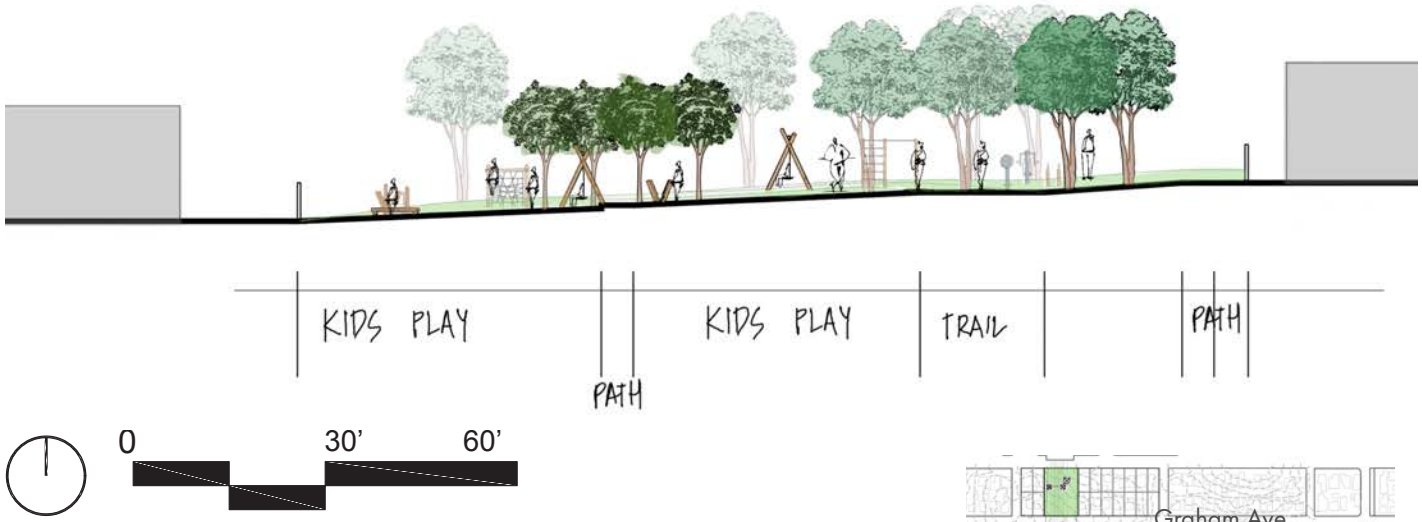
This lot located near the elementary school, which is why where the playground is located. On the west side of the lot, there will be a small fitness area. The playground will have rubber mulch as the floor material, surrounded by ku-rapia groundcover and grass in some areas. In between, there are benches for the adults to sit while they watch the children.

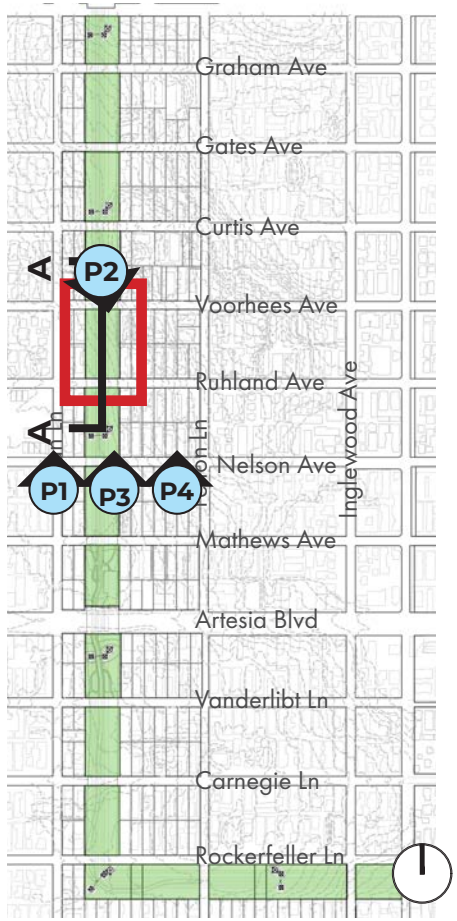
KEY MAP

MIDDLE LOT 20



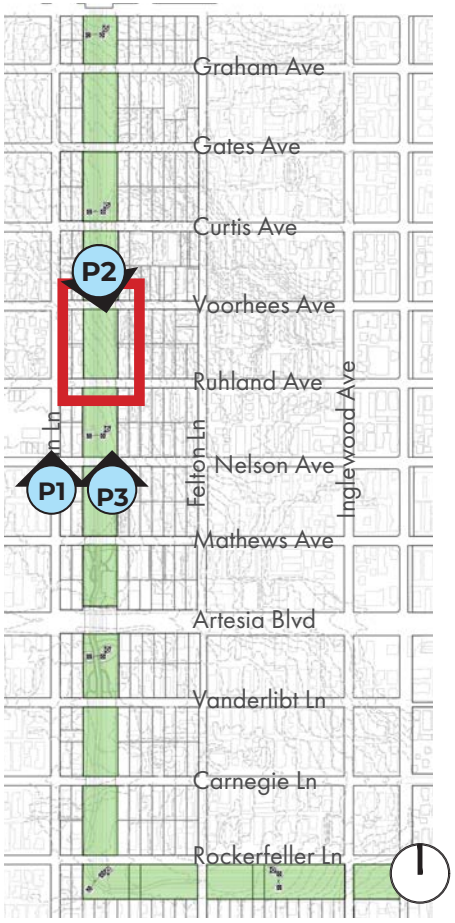
SECTION-ELEVATION





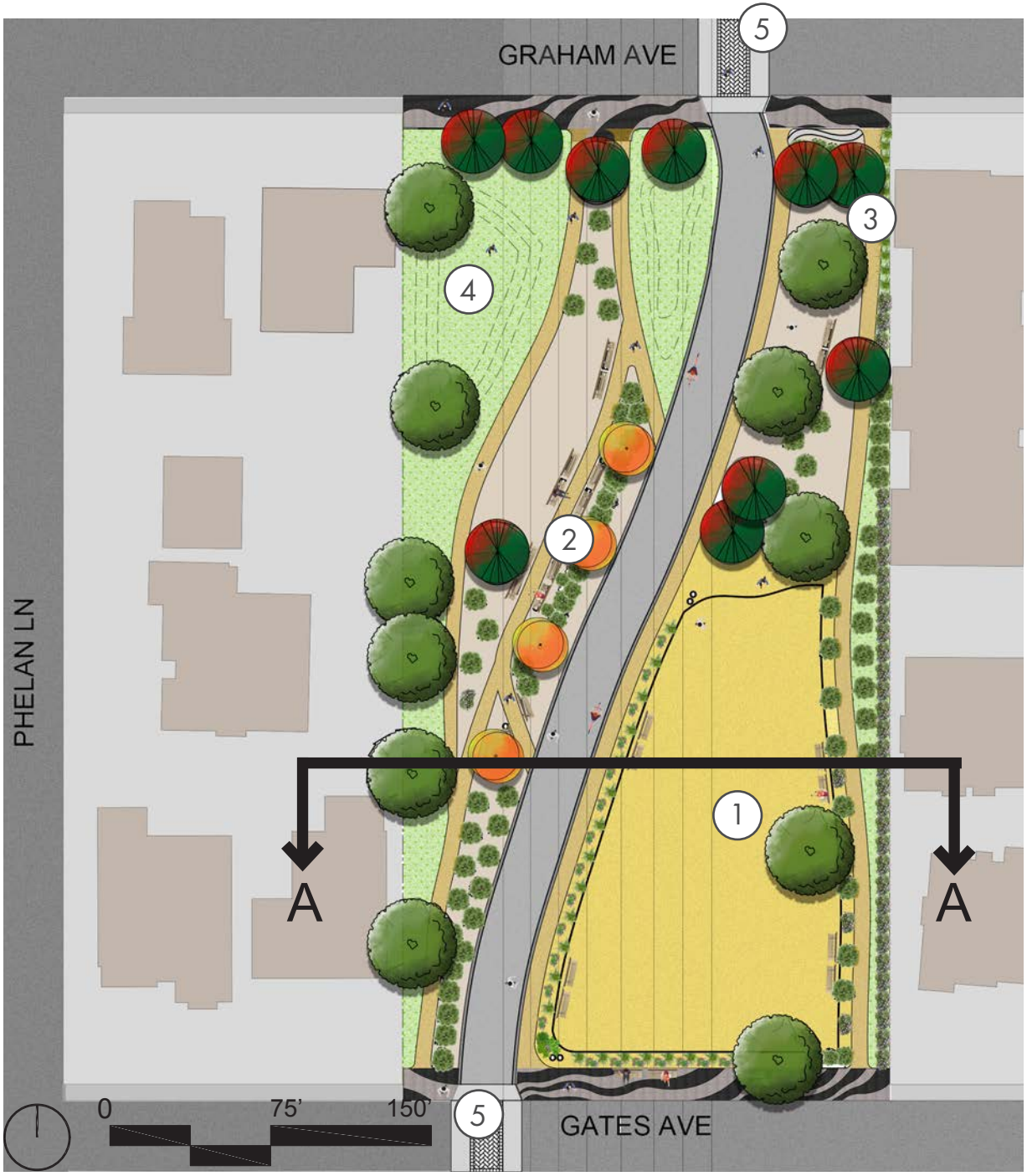
KEY MAP

PERSPECTIVES



KEY MAP

ENLARGEMENT - LOT 17 - ARTESIA BLVD & MATHEWS AVE



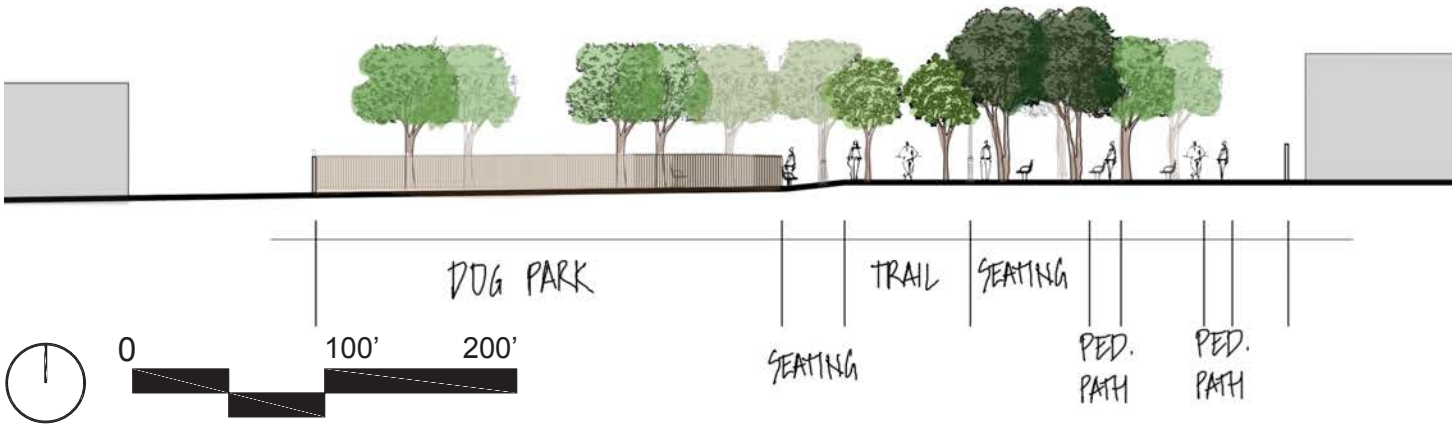
PROGRAM ELEMENTS

1. Dog Park 10.000 sq.ft.
2. Outdoor benches/seating
3. Bicycle rack station
4. Turf Area
5. Improved Pedestrian Crosswalk

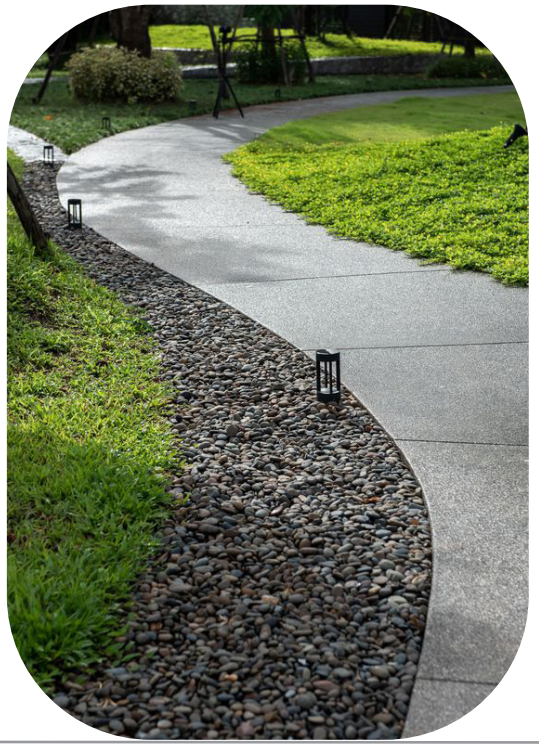
This is the lot by Artesia Blvd that will have a new parking lot with permeable paving, and it will serve for the surrounding commercial places. There will also be a series of seating and a few tables. My intention was to have a space for the nearby workers to perhaps go on their break time to relax and sit.

KEY MAP

SECTION-ELEVATION



INSPIRATION IMAGES



SOUTHERN LOT 17

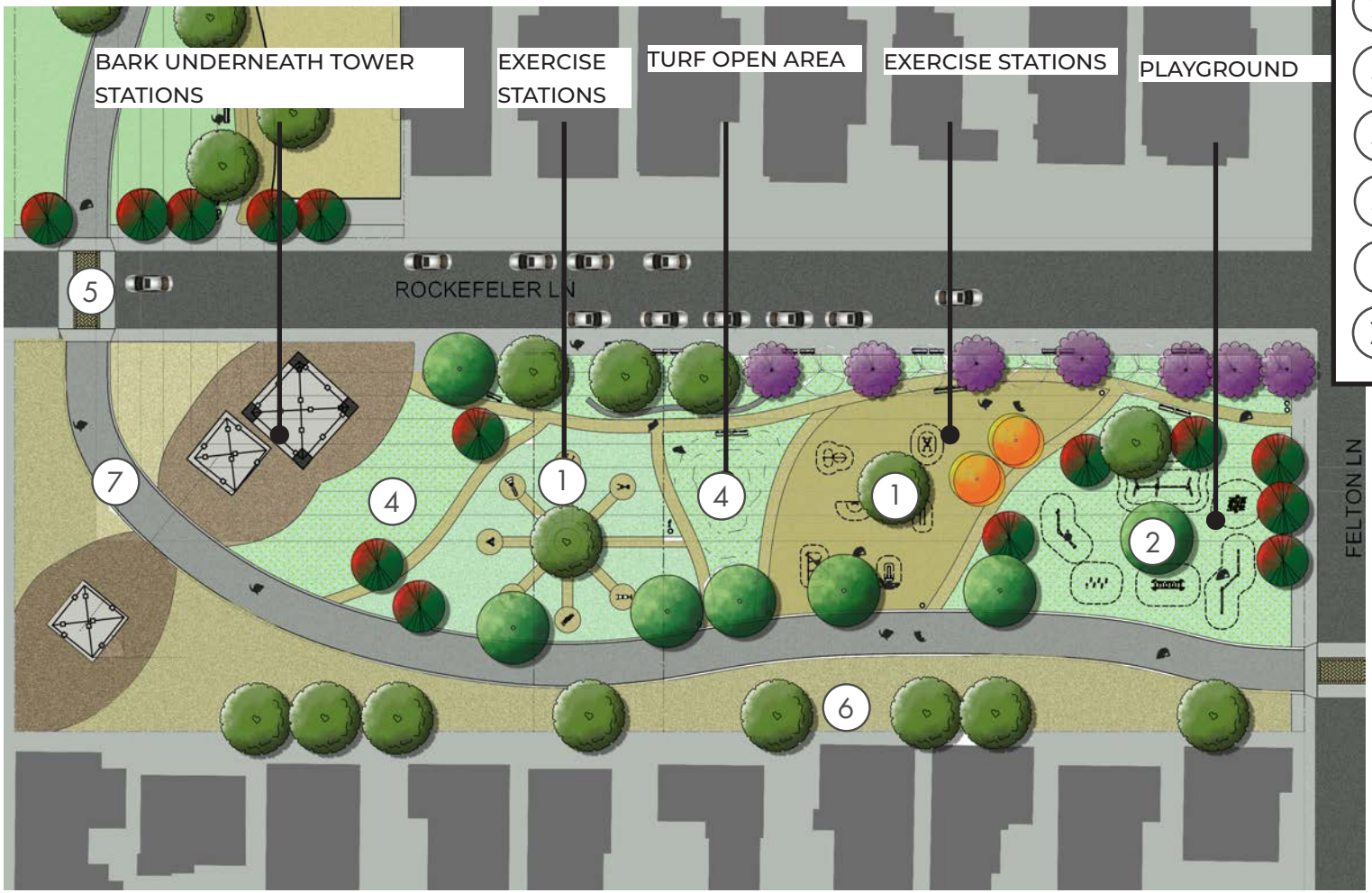
PERSPECTIVES

KEY MAP

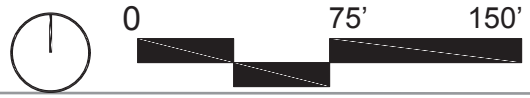
ENLARGEMENT - LOT 12-13 - ROCKEFELLER LN

PROGRAM ELEMENTS

1. Exercise Station
2. Playground area
3. Outdoor benches/seating
4. Turf Area
5. Improved Pedestrian Crosswalk
6. Gardens
7. Bike trail



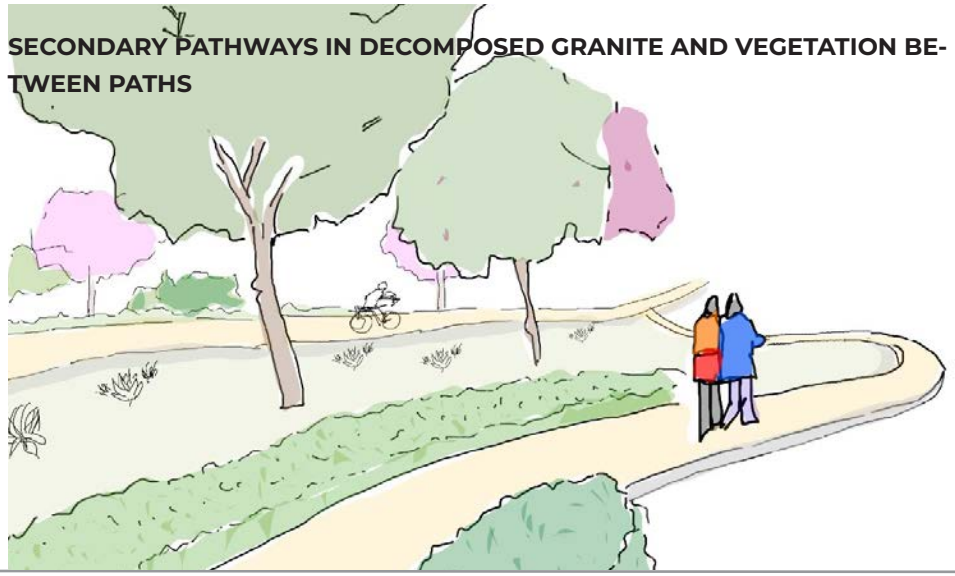
The southern lot that will have fitness equipment, playground, turf area, and seating. The two most south lots are the larger lots and where there will be more program elements. The next lot, which is not shown here, will have a flexible open area for events, such as farmers markets and other cultural events.



KEY MAP

ELEVATION

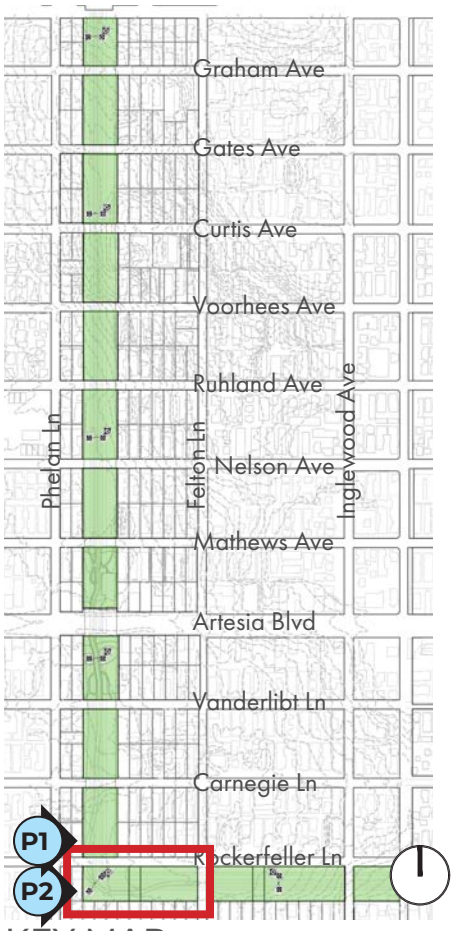
SECONDARY PATHWAYS IN DECOMPOSED GRANITE AND VEGETATION BETWEEN PATHS



EXERCISE EQUIPMENTS WILL HAVE COMPACTED DECOMPOSED GRANITE STATIONS


P1


P2

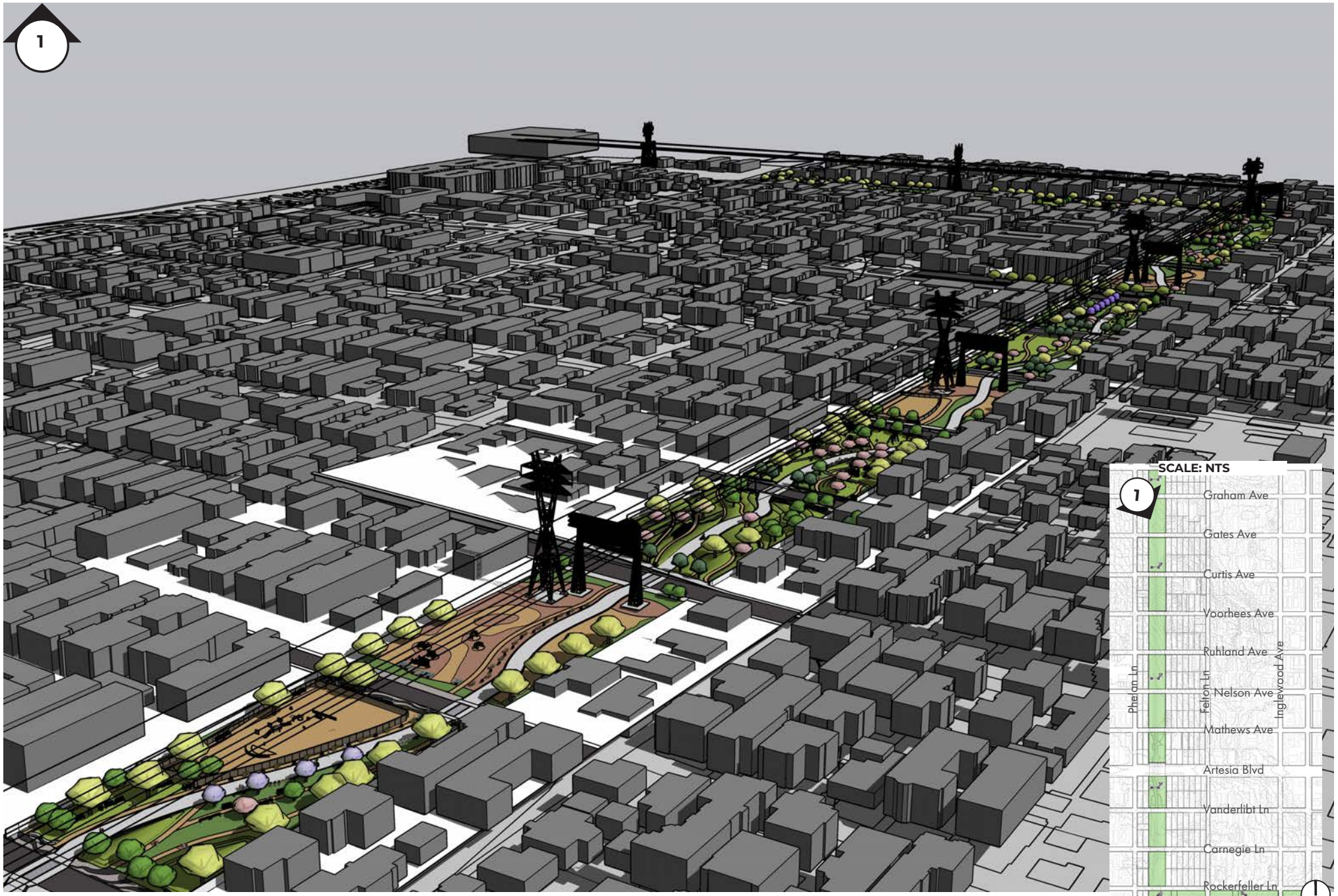

Graham Ave
Gates Ave
Curtis Ave
Voorhees Ave
Ruhland Ave
Nelson Ave
Mathews Ave
Artesia Blvd
Vanderlibt Ln
Carnegie Ln
Rockerfeller Ln
Phelan Ln
Felton Ln
Inglewood Ave
P1
P2

KEY MAP

DITIONAL PERSPECTIVES

KEY MAP

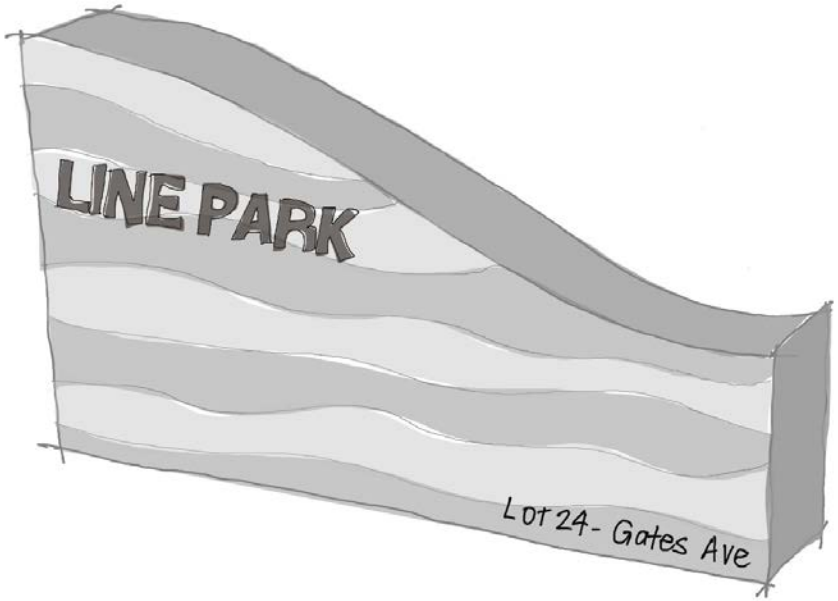
ADDITIONAL PERSPECTIVES



SCALE: NTS

KEY MAP

ACCESS GATEWAYS



GATEWAY STRUCTURE

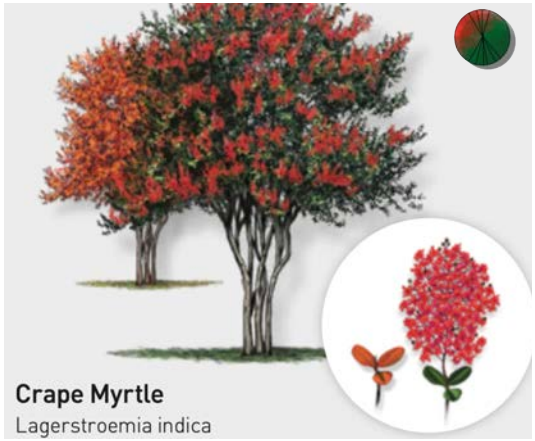
A gateway structure will be place by each lot's sidewalks identifying the name of the street. This will serve as an access guide for pedestrians. The structure will be in poured in place concrete with two different finishes.

SPEED HUMPS

- Each crosswalk will be “raised crosswalks” with brick paving patterns connected to the bike trails.
- Speed tables of 10 ft. plateau and 6 ft. approaches on both sides with slopes.
- Signage and in-road warning light system are also pedestrian safety items.

MATERIALS | VEGETATION PALETTE

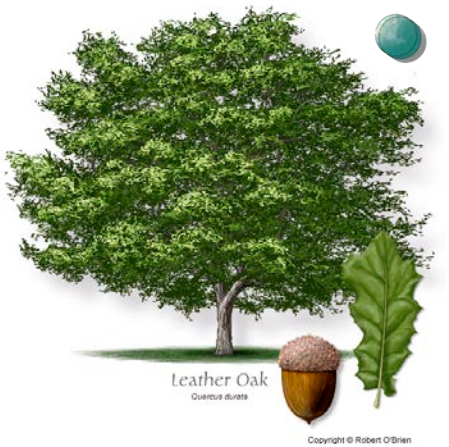
TREES



Lagerstroemia indica
Craple myrtle

Cercis ocidentalis
Western Redbud

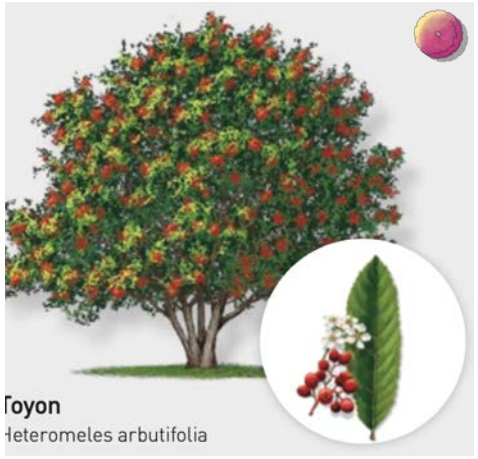
Juniperus californica
California Juniper
CA Native



Quercus durata
Leather Oak
CA Native

Eriobotrya deflexa
Bronze loquat

Aesculus californica
California Buckeye
CA Native



Heteromeles arbutifolia
Toyon
CA Native

Arctostaphylos manzanita
Manzanita
CA Native

MATERIALS | VEGETATION PALETTE

SHRUBS

Agave attenuata
Fox Tail Agave

Anigozanthos
Kangaroo Paw

Sage varieties
Salvia
CA Native

Artemisia californica
California sagebrush
CA Native

Achillea millefolium var.
Yarrow varieties
CA Native

Arctostaphylos edmundsii 'Carmel Sur'
Carmel Sur manzanita
CA Native

Ceanothus varieties
Lilac varieties
CA Native

Calliandra californica
Baja fairy duster
CA Native

MATERIALS | VEGETATION PALETTE

GRASSES

'UC Verde' Buffalograss

Lippia Nodiflora
'Kurapia'

Bouteloua gracilis
Mosquito grass
CA Native

Muhlenbergia capillaris
Pink muhly
N. America Native

Calamagrostis foliosa
Leafy reed grass
CA Native

Festuca californica
California fescue
CA Native

Carex praegracilis
Field sedge
CA Native

MATERIALS | GROUND MATERIALS

GrassPave2 grass paver
By Invisible Structures

To withstand heavy-weight vehicular traffic

Natracil™ stabilized decomposed granite from Gails Materials

Decomposed granite path - path to be ADA compliant

Concrete path

Leveling sand base, ADA compliant

Resilient rubber PebbleFlex 2.0 By Landscape Structures

Color Green Blend

Holland Permeable Pavers
By Belgard

Aqualine permeable pavers can eliminate stormwater runoff

Mulch

To be used around power towers's concrete slabs

Colored concrete

Colored concrete for sidewalk patterns

Colored concrete

Colored concrete for sidewalk patterns

KOMPAN®

FITNESS EQUIPMENT




PLAYGROUND




CONCLUSION

In my final analysis, I noted the relation between my project goals and my design. Diminishing the aesthetics impacts of the power towers and lines was the initial goal, and it was accomplished by the breakdown of linearity - by changing the bike trail shape and creating pedestrian pathways - and also by using trees and vegetation as screen. The use of sustainable practices such as the infiltration trenches and basin and using low water vegetation was an important choice.

Another important goal was to encourage the community to practice exercise in a space with safe distancing, so having the fitness and playground equipment throughout the site will accomplish that.

I believe that taking advantage of a large outdoor spaces for the community use is beneficial to society in general, as it provides spaces to practice healthy activities as well as having cultural events. This renovation will encourage the community to be outdoors connecting with one another and will also creating this sense of ownership for the residents nearby.

The pedestrian crosswalks improvement was an important and necessary feature of this project to obtain a better pedestrian safety.

I believe that all of those design choices will help changing the perception of people about transmission lines.

PHOTOS REFERENCES

Cover Page

Cover page is a screen shot from the handout “Transmission line rights-of-way and native pollinators: A WINNING COMBINATION!” 2019, by Hydro Quebec.

Page 2 - Project Statement

a. https://network.thehighline.org/content/uploads/sites/3/2017/03/Brays-Greenway-web-featured-2.jpg
b. https://media.segd.org/s3fs-public/styles/galleryformatter_slide/public/Dequindre.jpg?itok=9-_bhi4Z
c. https://youmatter.world/en/definition/definitions-circular-economy-meaning-definition-benefits-barriers/

Page 5 - Site overview

All images screen shot from Google Earth.

Page 6 - Users

a. https://awaa.org/content/uploads/2018/01/Your_Questions_Answered_Project_Hopeful.pdfb. https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.arbortracecanopy.com%2F&psig=AOvVaw2HtPsTs07jl1y8Vclg36xf&ust=1630818579244000&source=images&cd=vfe&ved=0CAsQjRxqFwoTCOinu-PG5PICFQAAAAAdAAAAABAI
c. https://www.thetimes.co.uk/article/do-they-make-you-happy-xp9mh20k3hk
d. https://assetfunders.org/wp-content/uploads/AFN_2020_HW_30-50_DigitalVersion_Final.pdf
e. Getty Images/iStockphoto
f. Photo by Leonard Ortiz, Orange County Register/SCNG
g. Eduardo Contreras / The San Diego Union-Tribune (https://www.sandiegouniontribune.com/news/public-safety/story/2020-06-19/artists-performers-celebrate-juneteenth-black-lives-at-balboa-park-sit-in)

Page 8 - Objectives

a. https://kinderfoundation.org/major-gifts/urban-green-space/bayou-greenways-2020/
b. https://www.waukee.org/929/Trailside-Dog-Park
c. Getty Images/iStockphoto
d. Same as cover page
e. Photo by Leonard Ortiz, Orange County Register/SCNG
f. http://njbikeped.org/helping-to-tame-multi-lane-crossings/

Page 9 - Are power lines safe to be around?

a. Diagram from NIEHS educational booklet, “EMF: Electric and Magnetic Fields Associated with the Use of Electric Power”
b. Diagram from NIEHS educational booklet, “EMF: Electric and Mag- netic Fields Associated with the Use of Electric Power”

Page 13 - Opportunity and constraints diagram

All photos taken by Nathalia Gouveia

Page 14 - Opportunity and constraints diagram

a. https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010007/EN010007-003939-National%20Grid-Response%20to%20SoS%20Consultation%202-Late.pdf

Page 15 - Programing inspiration

a. https://media.segd.org/s3fs-public/styles/galleryformatter_slide/public/Dequindre.jpg?itok=9-_bhi4Z
b. https://www.greaterdandenong.vic.gov.au/contact-us/news-and-media/dog-park-complete
c. https://network.thehighline.org/content/uploads/sites/3/2017/03/Brays-Greenway-web-featured-2.jpg
d. https://kinderfoundation.org/major-gifts/urban-green-space/bayou-greenways-2020/
e. https://www.sfmta.com/travel-updates/may-22-25-2020-pedestrian-bridge-removal-geary-and-steiner
f. Eduardo Contreras / The San Diego Union-Tribune (https://www.sandiegouniontribune.com/news/public-safety/story/2020-06-19/artists-performers-celebrate-juneteenth-black-lives-at-balboa-park-sit-in)
g. Toby Musgrave/Phaidon.com (https://www.cnn.com/travel/article/best-secret-urban-gardens/index.html)

Page 21 - Lot 23 enlargement

a. https://www.waukee.org/929/Trailside-Dog-Park
b. https://panoramicstudio.myportfolio.com/weereerut-residence

Page 23 - Lot 21

a. https://www.homedit.com/retaining-wall/
b. vertical-angle-corten-steel-retaining-wall

c. https://www.fatherly.com/play/why-some-playgrounds-are-amazing-most-are-lame-and-what-to-do-about-it/?epik=dj0yJnU9cHZQYm92MUlIS01wM-3dRS3BidmVfUzNaaklNRkhsZksmcD0wJm49SGxyVm1feUFBOEpRRmVE-WC1zZEdnZyZ0PUFBQUFBR0V6Q2gw#03dbd

Page 24 - Inspiration image

https://kinderfoundation.org/major-gifts/urban-green-space/bayou-green-ways-2020/

Page 25 - Lot 20

a. https://br.pinterest.com/pin/520939881892758313/

b. https://i.pinimg.com/originals/90/db/e8/90dbe8c159429dd-e8f17979a3de88629.png

c. http://landezine.com/index.php/2019/06/urban-space-of-esplanade-paul-grimault-by-agence-aps/

Page 27 - Lot 17

a. https://i.pinimg.com/originals/90/db/e8/90dbe8c159429dd-e8f17979a3de88629

b. https://landskapsarkitekt.tumblr.com/post/110561383258?is_related_post=1

Page 35 - Trees palette

All tree illustration & photo from https://selectree.calpoly.edu/

Page 36 - Shrubs palette

All images from https://inlandvalleygardenplanner.org

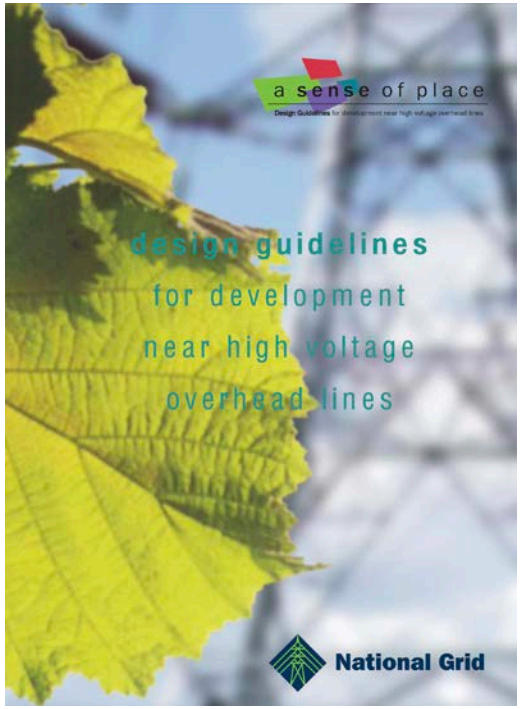
Page 39 - Equipment

All image from https://www.kompan.us/

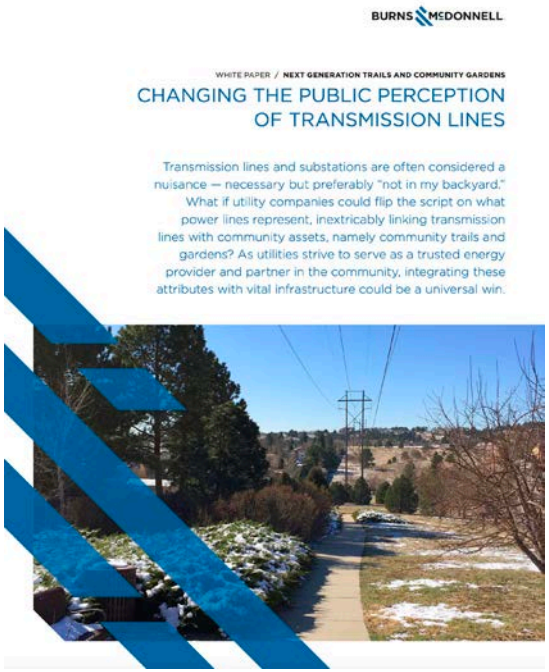
Page 40 - Conclusion

Same as cover page, with Photoshop alteration by Nathalia Gouveia.

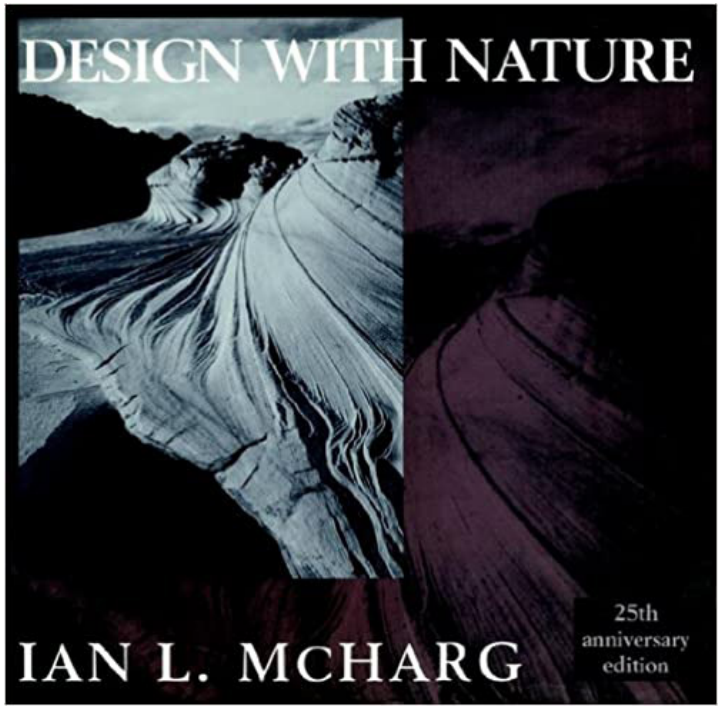
SOURCES & REFERENCES



Design guidelines for development near high voltage overhead lines, by Ordnance Survey National Grid . London, UK.



Changing public perception of transmission lines, Article by Burns McDonnell, USA, 2017.



McHard, Ian. Design with Nature. New York, Natural History Press, 1969.

SOURCES & REFERENCES

[1] De Sousa Ch. A., Unearthing the benefits of brownfield to green space projects: An examination of project use and quality of life impacts, Local Environment: The International Journal of Justice and Sustainability, Vol. 11(5) Special Issue: Sustainable Brownfields Redevel- opment, 2006, 577–600.

[2] Burns & McDowell, Changing public perception of transmission lines, Article by Burns McDonnell, USA, 2017. Pg. 2.

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