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Infinity Park: Transforming a Stormwater Sump Basin into a Recreational Park

UCLA Extension - Landscape Architecture Program

Capstone Project - Spring / Summer 2023

Instructor: Meg Rushing Coffee



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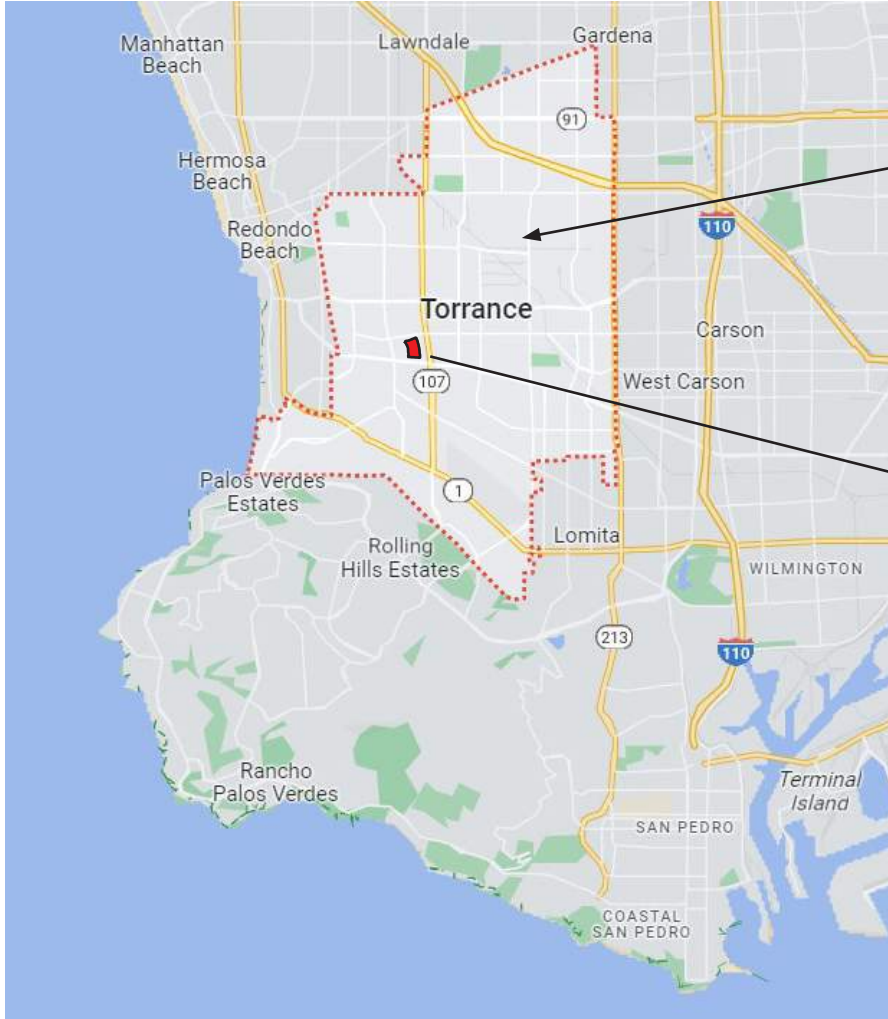
PROJECT STATEMENT:

This project will explore opportunities and provide solutions for an underutilized stormwater sump basin. The recreation park will be designed with the intention of enhancing urban livability while promoting stormwater management, the natural environment, social interactions, and human health through physical activity.



SITE LOCATION

The site is located in Torrance, Los Angeles County, California, on Ocean Ave, near the crossing between Hawthorne Blvd and Sepulveda Blvd.



OCEAN AVE SUMP BASIN - 11 acres



Torrance history



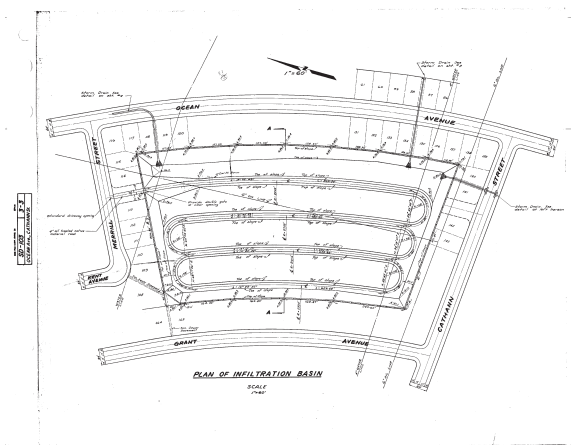
Before 1900 Torrance was an empty field.
Courtesy of the California Historical Society Collection, USC Libraries.



City of Torrance incorporated in 1921



Torrance was resolving a massive stormwater problem since the city was founded and the problem continued with new developments



Ocean Ave sump basin construction plans

Before 1900

1911

1921

1930

1932

1950

1956

Frederick Law Olmsted Jr, was hired to design planned city.
source: South Bay Daily Breeze



The City of Torrance was founded on May 31, 1911 by Jared Sidney Torrance and Associates after the purchase of 2,791 acres of land from the Dominguez Estate Company for \$976,850.

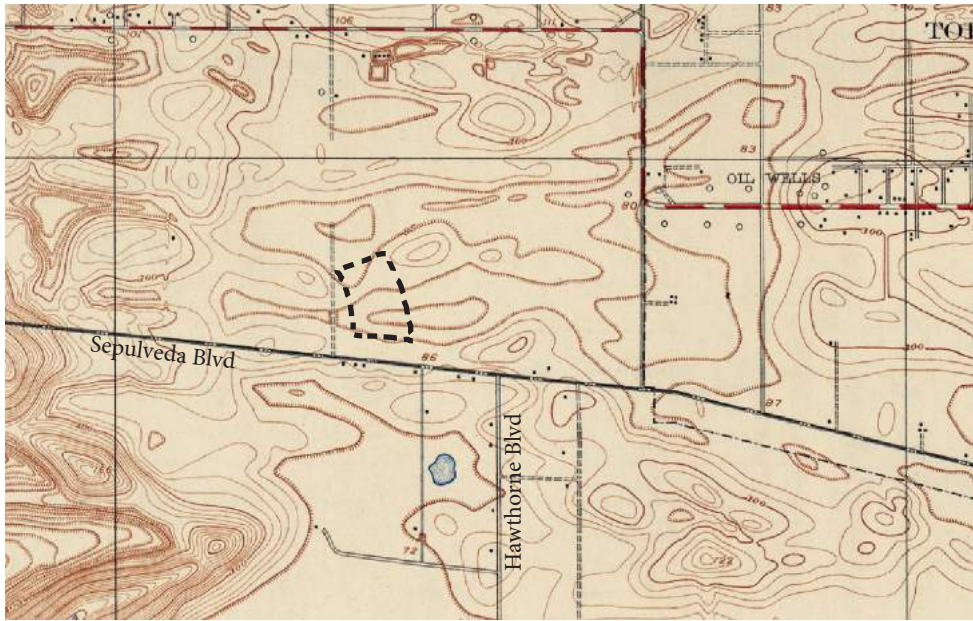


Oil production kept Torrance going during the Great Depression. source: City of Torrance

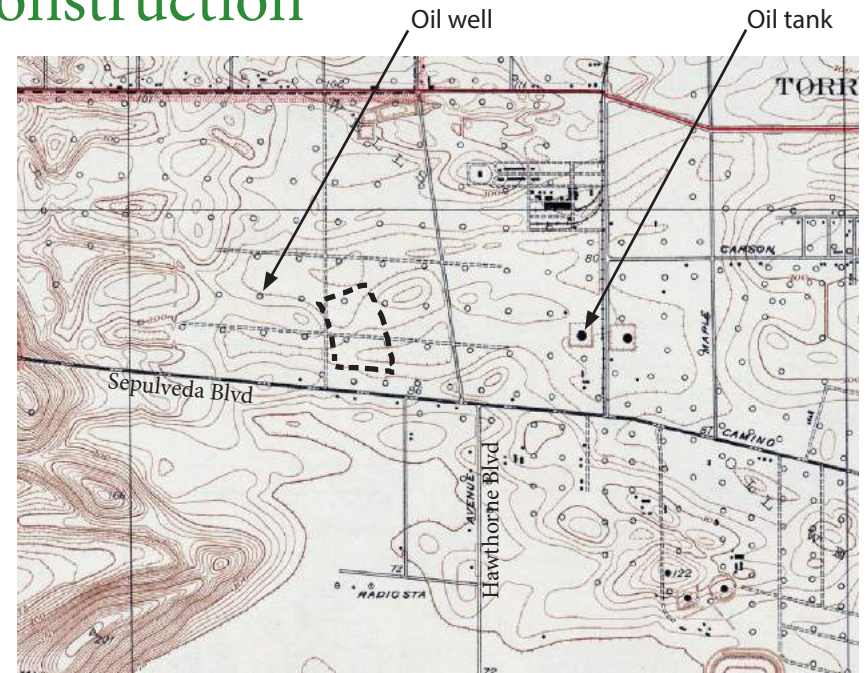


Developers were required to build sumps to mitigate the flooding problem.
(Credit: CSUDH, South Bay History Collection)

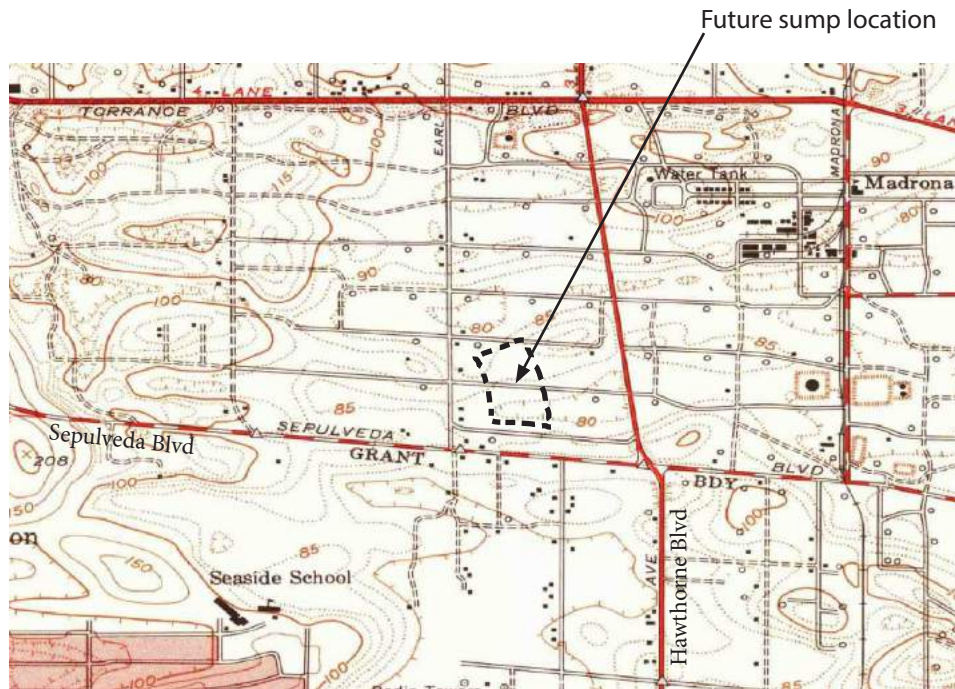
Land development before sump basin construction



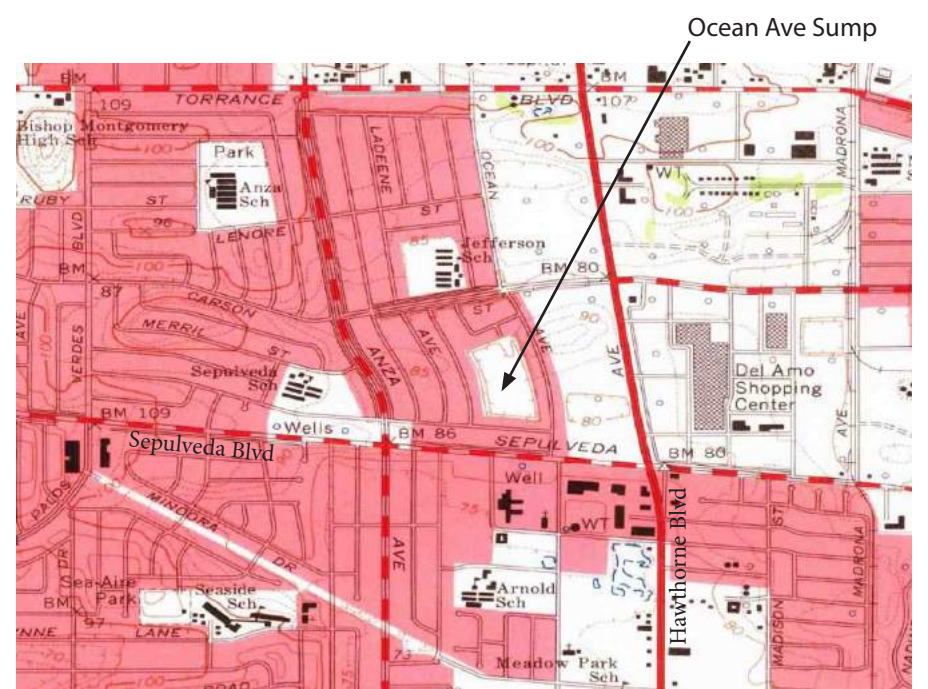
Torrance map 1923, source: <https://www.oldmapsonline.org/>



Torrance map 1934



Torrance map 1951



Torrance map 1964

Photos of existing conditions



① Entrance from north

② View from south



③ Site views from the entrance

PARCEL MAPS

From LA County Department of Regional Planning GIS-NET

Size of the site: 10.926 Acres

The site consists of two parcels:

AIN 7366009900
 Address not available
 No buildings
 8.723 AC
 Parcel Type: Government Owned
 Jurisdiction: City of Torrance
 Zoning: Drainage easement / Utility /
 Quasi-Public Space

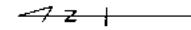
AIN 7366010900
 Address not available
 No buildings
 2.203 AC
 Parcel Type: Government Owned
 Jurisdiction: City of Torrance
 Zoning: Drainage easement / Utility /
 Quasi-Public Space

AGENCIES HAVING JURISDICTION OVER THE PROJECT

- State of California
- County of Los Angeles
- Los Angeles County Fire Department
- Los Angeles County Sheriff's Department
- City of Torrance
- Torrance Police Department
- Torrance Water Department
ann

7366 | 9
 SCALE 1" = 80'

TRACT NO. 21676
 M. B. 595-33-44



CODE 9340

FOR PREV. ASSM'T. SEE: 7366-9

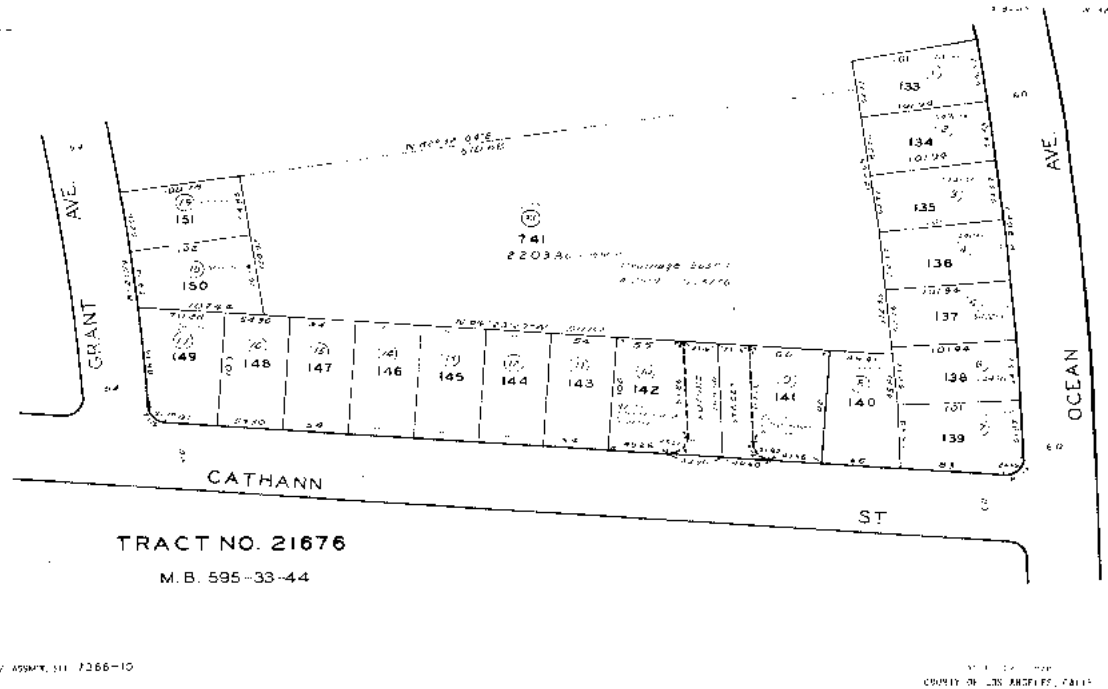
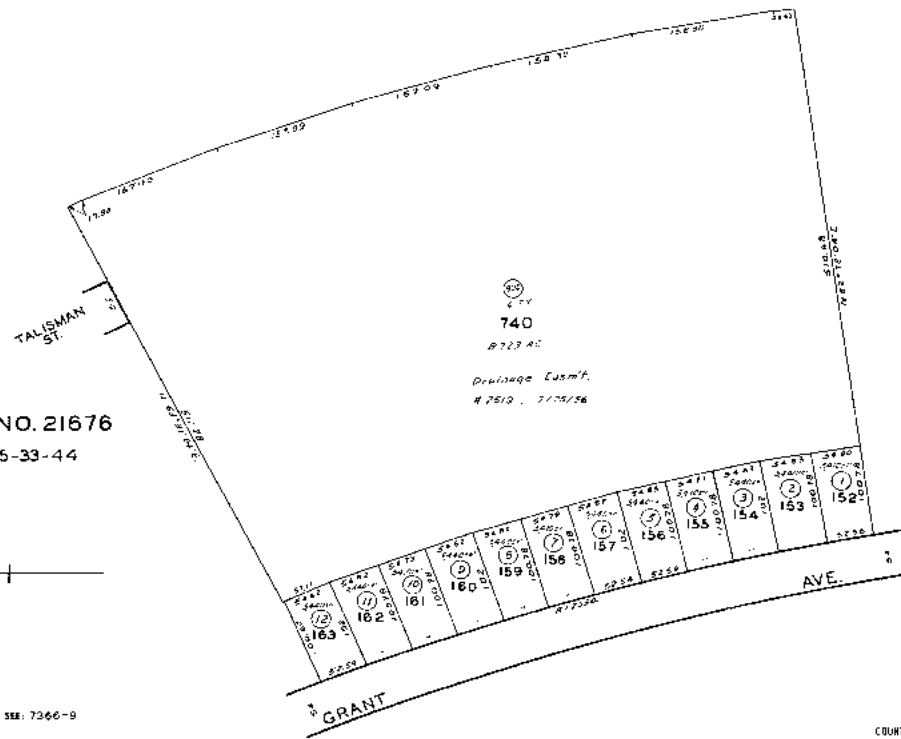
7366 | 10
 SCALE 1" = 80'

TRACT NO. 21676
 M. B. 595-33-44



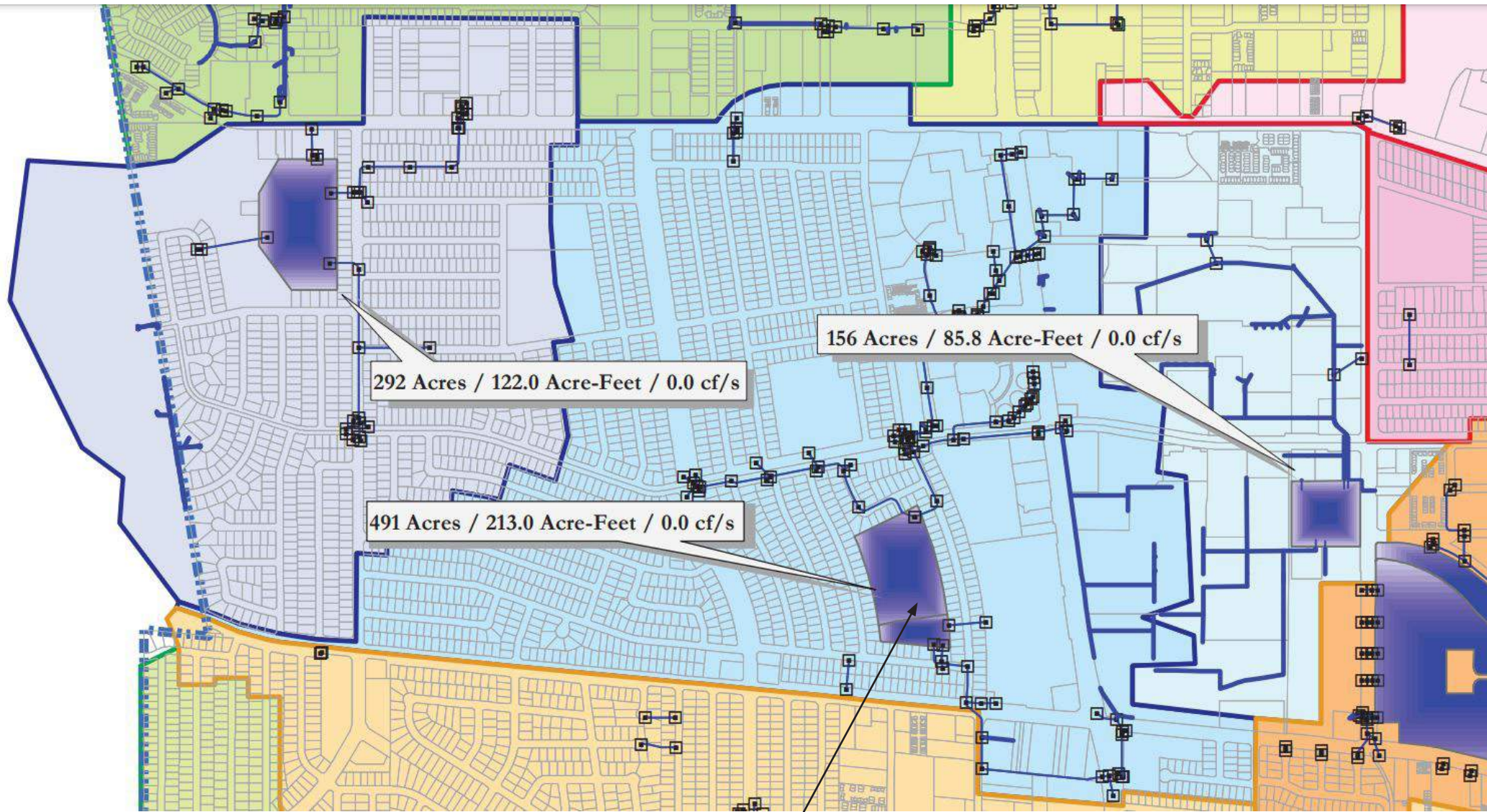
CODE 9340

FOR PREV. ASSM'T. SEE: 7366-10



Ocean Ave basin watershed

A stormwater basin, also known as a sump, is a reservoir that acts as a collection area for stormwater overflow.



1 GROUNDWATER REPLENISHMENT

- RETENTION BASINS
- Bishop Montgomery
- Del Amo
- Ocean
- Vista Del Parque

OCEAN AVE BASIN

- Watershed size: 491 acres
- Basin holding capacity: 213 acre-feet (69 million gallons)
- Independent basin

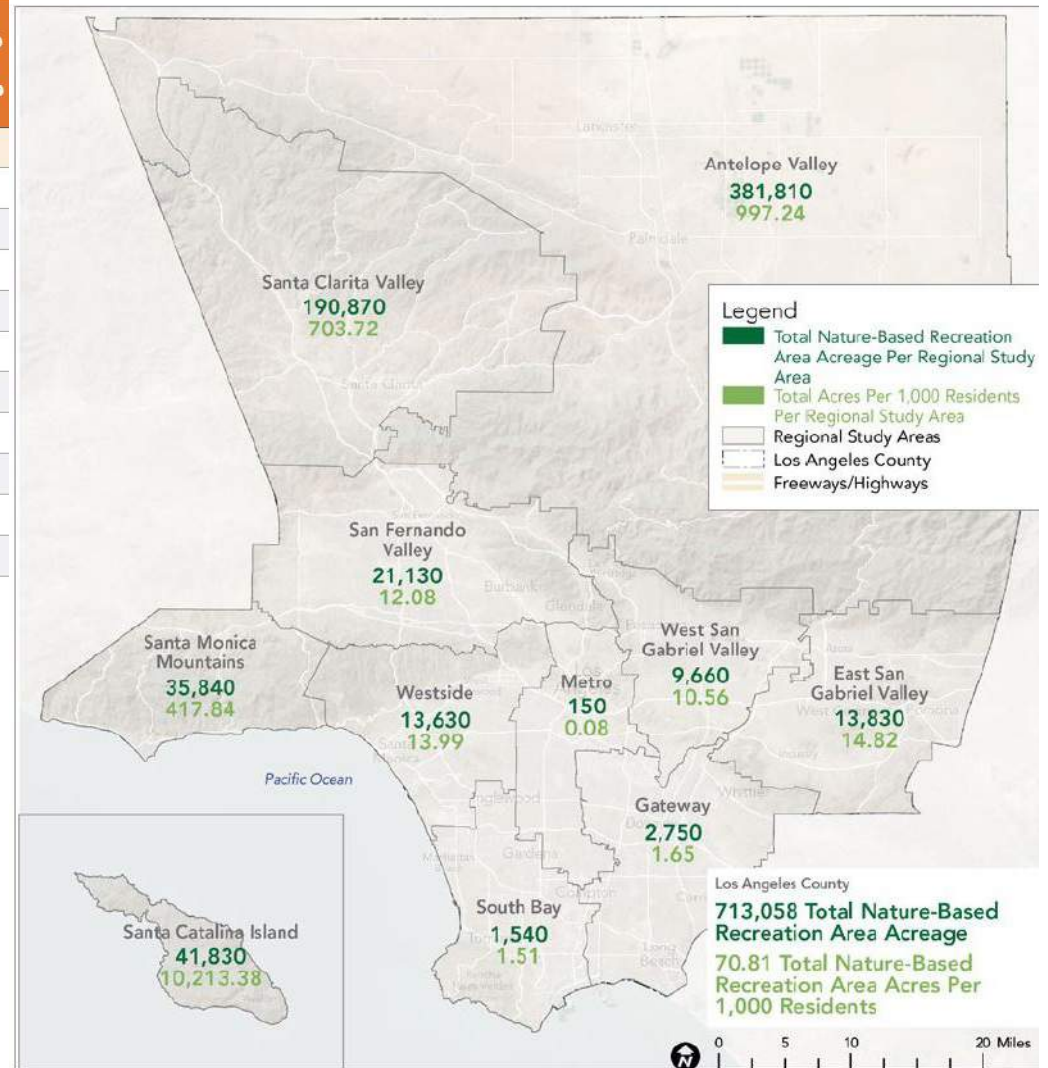
PROJECT JUSTIFICATION - Need for a recreational park

- **Low Nature-Based Recreation Area Acreage** (1,540 acres) - 1.51 acres per 1,000 residents.
- Every individual should have access to nature-based recreation areas within walking or cycling distance.
- **8% of South Bay residents have access within 0.5 miles of walking distance** and 56% within 2.5 miles of cycling distance.

Nature-Based Recreation Area Land and Access

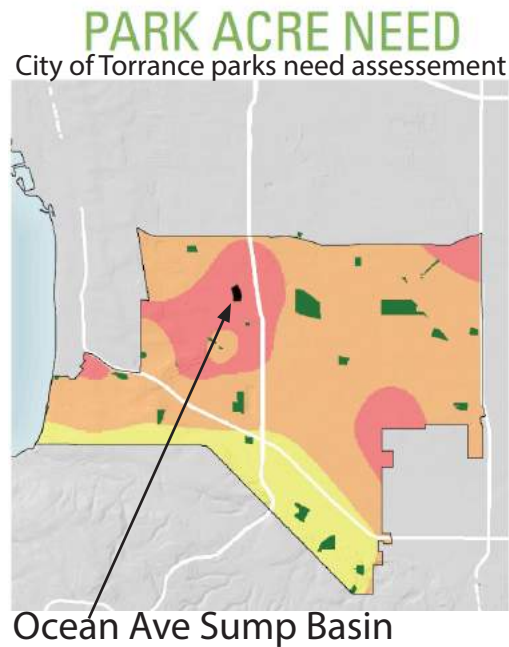
Study Area	Total Acres	Acres Per 1,000 Residents	% of Residents that Live Within	
			0.5 mile Walking Distance	2.5 mile Cycling Distance
Los Angeles County	713,058	70.81	6%	61%
1 Antelope Valley	381,810	997.24	1%	14%
2 Santa Clarita Valley	190,870	703.72	8%	85%
3 San Fernando Valley	21,130	12.08	5%	59%
4 Santa Monica Mountains	35,840	417.84	24%	86%
5 Westside	13,630	13.99	10%	100%
6 Metro	150	0.08	5%	54%
7 West San Gabriel Valley	9,660	10.56	7%	79%
8 East San Gabriel Valley	13,830	14.82	6%	59%
9 South Bay	1,540	1.51	8%	56%
10 Gateway	2,750	1.65	3%	40%

Figure 4-26: Nature-Based Recreation Area Metrics by Regional Study



PROJECT JUSTIFICATION - Parks improve health and well-being

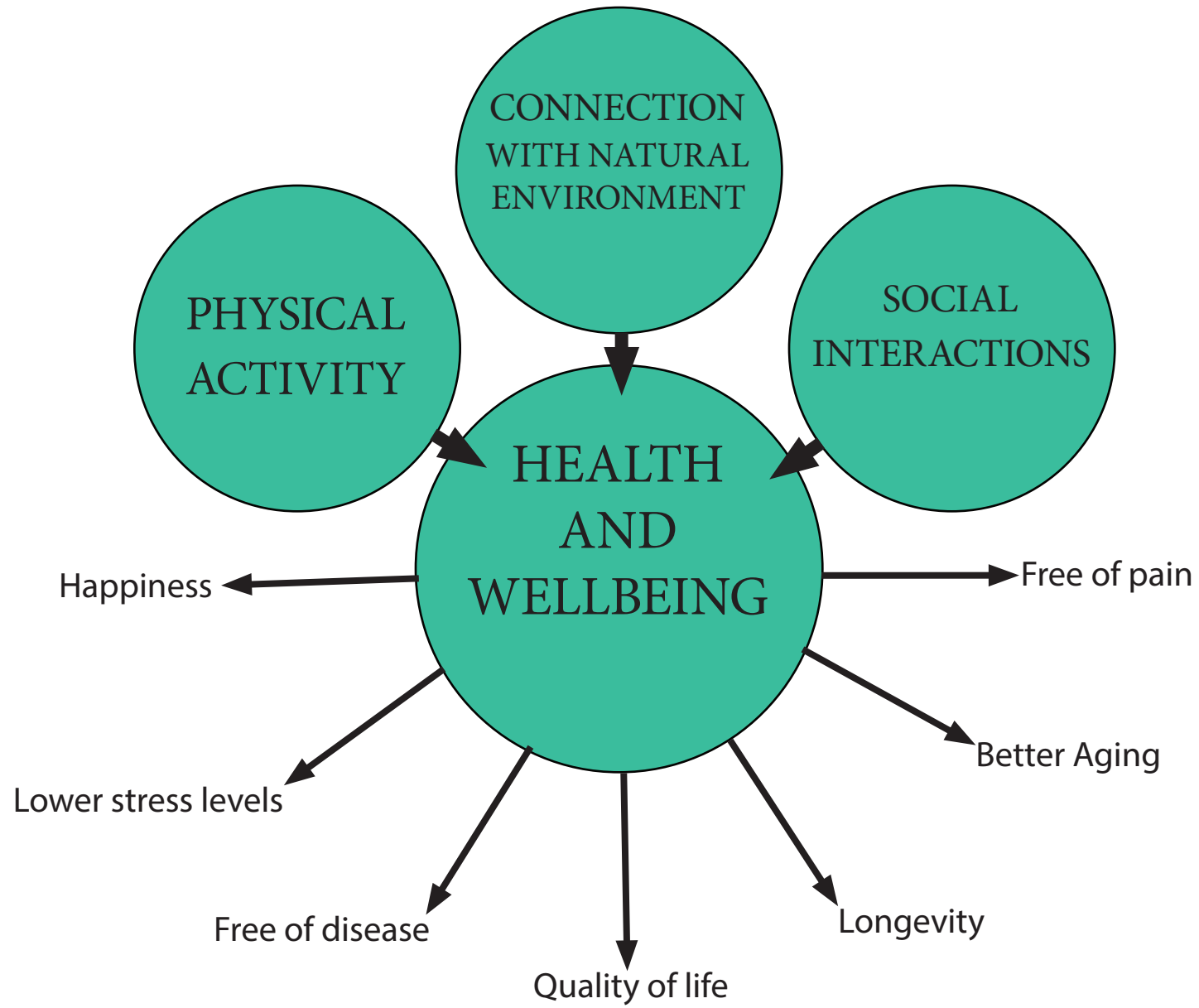
- People living in developed cities spend increasingly more time working on electronic devices and driving vehicles.
- New technologies increase work efficiency but negatively impact the health of every individual if overused.
- Prolonged sitting and excessive exposure to computer screens can weaken people physically and mentally.
- Living close to parks and other recreation facilities is consistently related to higher physical activity levels for residents.
- Regular visits to recreational parks are a great way to disconnect from technology and avoid health conditions including limited mobility, poor posture, sleep problems, eyestrain, depression, and anxiety.



This land can provide more benefits

- Ocean Ave sump basin in Torrance is an underutilized site of 11 acres and approximately 30 feet deep.
- After an intensive storm, the sump has a proportionally small amount of water collected compared to the size of the site.
- The main purpose of the sump is to mitigate local flooding and allow water to soak into the ground.
- Considering the high value of the land and limited open spaces within the densely developed Greater Area of Los Angeles, landscape designers should take advantage of any opportunity to connect local residents to the natural environment.

BIG IDEA



DESIGN METHODOLOGY

The methodologies to be used in developing the concept design for transforming the Ocean Ave sump basin into a recreational park will follow design standards to accomplish project statement goals:

1. Recreation Park Design

- Spatial organization
- Security and safety (CPTED)
- Pedestrian and bicycle circulation
- ADA compliance
- Sustainable design and energy efficiency

2. Health through physical activity

- Fitness zones for all ages and levels
- Kids play
- Elders' needs for open space and physical activity

3. Stormwater BMPs

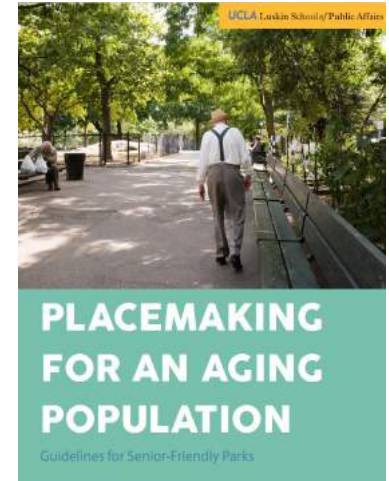
- Stormwater capture and recycling
- Biofiltration
- Vegetated swales
- Natural drainage

4. Community connection

- Everyday destination
- Open space
- Small gathering spaces

5. Green space

- Tree place
- Native plants
- Garden growing wild



PLANNING AND LAND DEVELOPMENT HANDBOOK
FOR LOW IMPACT DEVELOPMENT (LID)
PART B
PLANNING ACTIVITIES
5TH EDITION
May 9, 2016

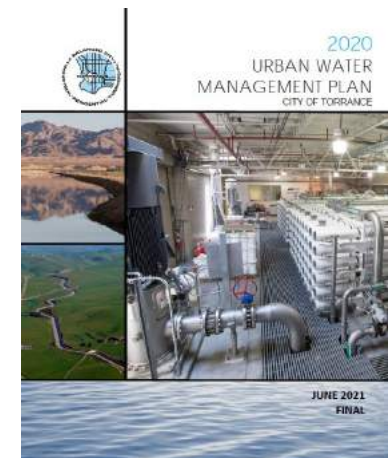
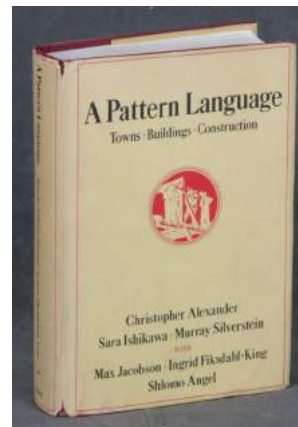


County of Los Angeles Department of Public Works

Stormwater Best Management Practice
Design and Maintenance Manual

For Publicly Maintained
Storm Drain Systems

May 2009



CASE STUDIES / PRECEDENTS: Boneyard Creek Restoration: Scott Park and the Second Street Detention Basin

Location: Second Street Basin, Champaign, Illinois 61820

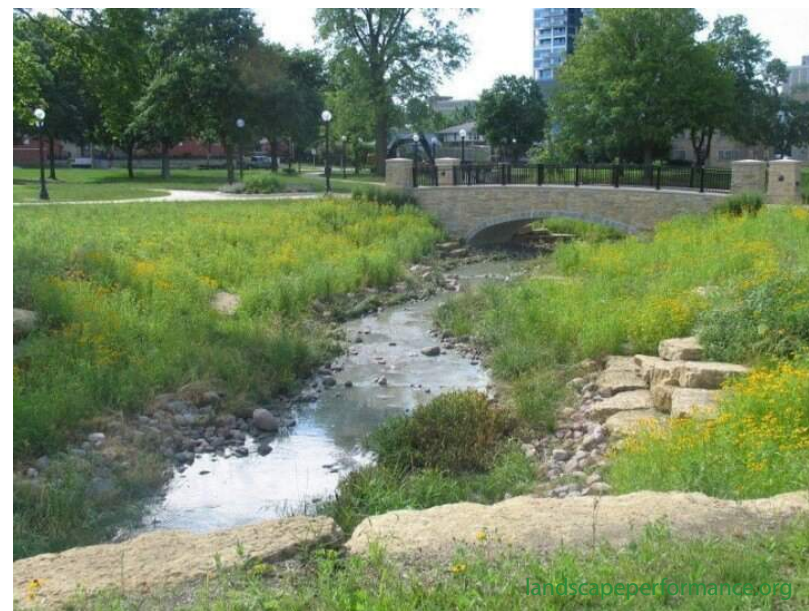
Designer: Hitchcock Design Group

Size: 10 acres

Completion Date: 2010

KEY TAKEAWAYS:

- The detention basin functions as a recreational open space.
- Water features enhance the attractiveness of the park.
- Soil erosion reduction through water BMPs.
- The design increased stormwater holding capacity and enhanced ecological function.
- The detention basin provides 100-year flood protection in the setting of an attractive park.
- 5 acres of open space for recreational use during non-flood conditions.
- Two distinct waterfalls, taking advantage of the 20-ft drop in elevation from the street level to the basin.
- 4,115 feet of paved pathways wind throughout the site and link to the surrounding neighborhood.
- The 500-ft main promenade was located 4 ft below the grade of the adjacent street and parking areas to create a more pleasant pedestrian experience by limiting visual and audio disturbance from cars.



CASE STUDIES / PRECEDENTS: Vista Hermosa Natural Park

Location: 100 N Toluca St, Los Angeles, CA 90026

Designer: Mia Lehrer + Associates

Size: 9.5 acres

Completion Date: 2008

KEY TAKEAWAYS:

- Excessive vegetation can create safety issues.
- DG paths do not work well on sloped paths.
- Water features design should account for functionality.

- 94% of the park's surfaces are permeable to allow stormwater to infiltrate and minimize runoff.
- Pollutants are removed as stormwater is filtered by vegetation, upland bioswales, and an artificial turf base material before entering the municipal stormwater system.
- A natural basin holds 100,000 gallons of rainwater and contributes to the retention of 95% of stormwater runoff on-site.
- A 20,000-gallon cistern collects stormwater runoff from a synthetic turf soccer field.
- The captured water is used to irrigate planted areas on the site.
- Sequesters an estimated 22 tons of atmospheric carbon annually in 800 trees on site, equivalent to the carbon emissions from the annual energy use of 2 homes.
- It serves approximately 1,500 to 2,000 athletes per week.
- The park is not safe - many hidden spaces and dead-end paths.



CASE STUDIES / PRECEDENTS: Cromwell Park

Location: 18030 Meridian Ave N, Shoreline, WA 98133

Designer: GAYNOR, Inc. / PACE An Engineering Service Company

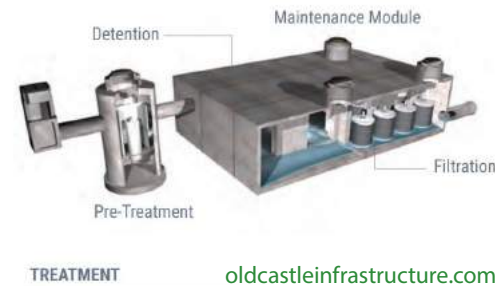
Size: 9.6 acres

Completion Date: 2010

- Urban park serves as a regional stormwater facility to relieve flooding and improve water quality.
- Stormwater options include: vegetated biofiltration channels for conveyance and treatment, rain gardens, and a constructed stormwater wetland with detention storage.
- Passive, active and cultural activities: baseball/softball, basketball, open space - natural area, paved trails, picnic areas, playground, public art, reservable field, reservable picnic, restroom, soccer field.
- Gracefully arching accessible pathways, and colorful native plantings unify and enliven the park site.
- Cromwell Park's diverse features are attracting park-goers of all ages and interests.
- The park's stormwater features are successfully eliminating local flooding.



CASE STUDIES / PRECEDENTS: Bolivar Park



Location: 3300 Del Amo Blvd, Lakewood, CA 90712

Designer: Tetra Tech

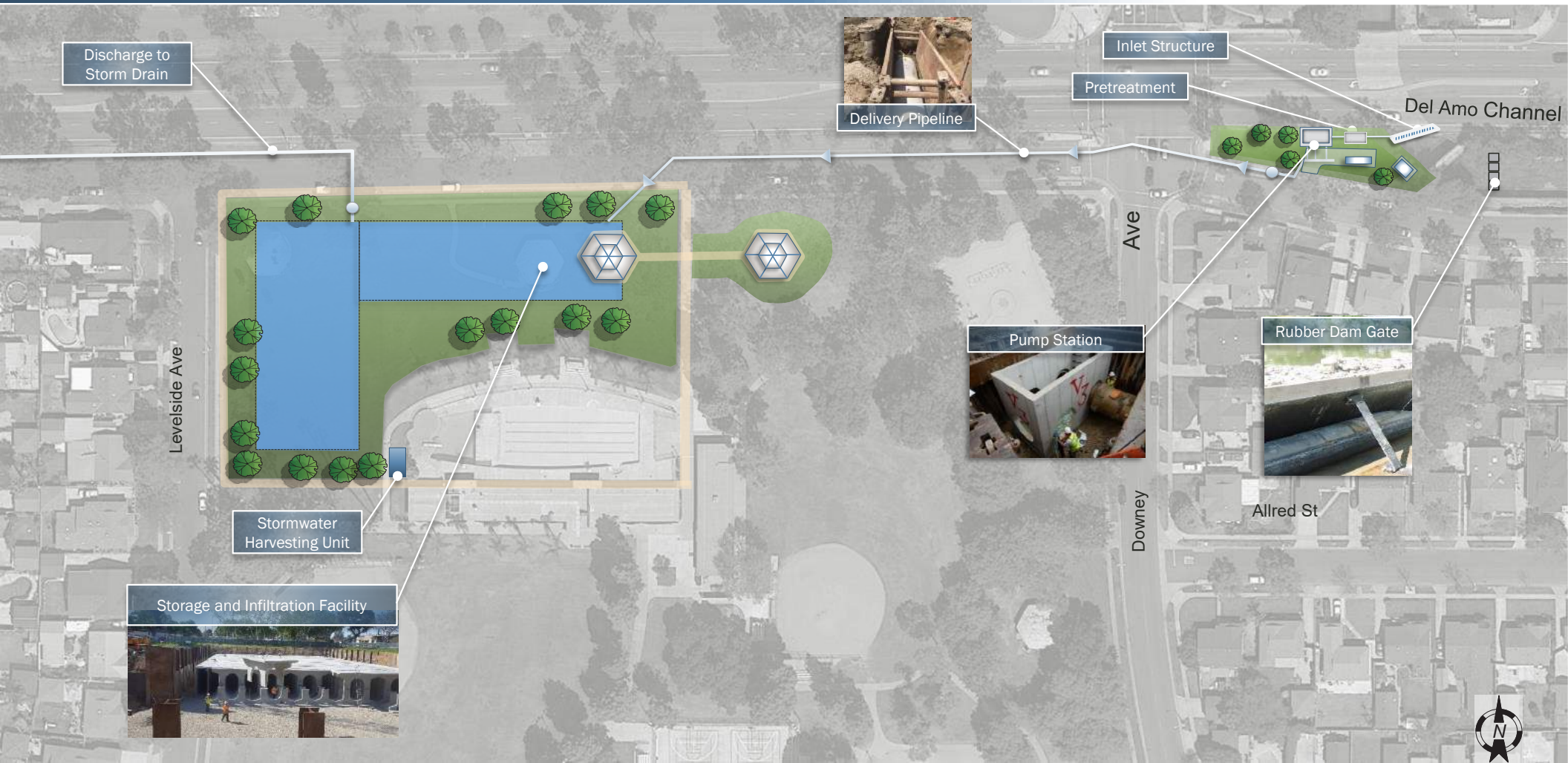
Size: 10 acres

Completion Date: 2016

- 2.9 million gallon, multi-chambered storage and infiltration facility beneath the park.
- Pretreated and collected stormwater satisfies 100% of the park's 9.5-million-gallons-per-year irrigation needs.
- Smart water technology by using real-time controls cloud-based system connected to National Weather Service data.
- Features: athletic fields, baseball and basketball court, BBQ, multi-purpose game court, picnic area, playground, restrooms, swimming pool, playground, water fountains.
- The stormwater enters the settlement section of the system, where pollutants can be settled out. Water then flows over the 2'-0" settlement weir and collects in a watertight section of the vault, storing runoff for on-site irrigation. During high flow events, the stormwater flows over a 5'-8" harvesting weir into another section of the system. In this section, precast openings in the base of the system provide an infiltration surface area that allows water to infiltrate into the ground and recharge the groundwater.

CASE STUDIES / PRECEDENTS: Bolivar Park

Bolivar Park - GENERAL PLAN



- KEY TAKEAWAYS:
- Pretreatment facility surface area requirement.
- Underground stormwater collector capacity.
- The collector is satisfying 100% of the park's irrigation needs.

POTENTIAL USERS



<https://a66.asmdc.org/>

LOCAL RESIDENTS



whereyoulivematters.org

AGING COMMUNITY RESIDENTS



ktla.com

TEACHERS AND STUDENTS
OF LOCAL SCHOOLS



salonicaview.com

PERSONAL TRAINERS
WITH STUDENTS



latimes.com

COMMERCIAL CENTER
EMPLOYEES AND VISITORS



coxblue.com

GUESTS OF LOCAL HOTELS

ETHNICITY

- Asian 35%
- White 34%
- Hispanic 19%
- Two or more races 7%
- Black 4%
- Other 1%

Torrance population - Census data 2022

- 61% of people are 13 to 63 years old
- 55.1% have a Bachelor's degree or higher
- Asian 35%
- White 34%
- Hispanic 19%
- Two or more races 7%
- Black 4%
- Other 1%
- The population is declining at 2.16% annually.
- density 6,699 people per square mile
- The average household income is \$118,289.
- Poverty rate of 8.18%
- About 30% of people in Torrance were born outside of the United States.
- About 15% of the population of Torrance has Japanese heritage.
- Torrance has a large Korean population.
- Torrance is expected to enjoy 34% job growth over the next decade.
- 4.8% Veterans

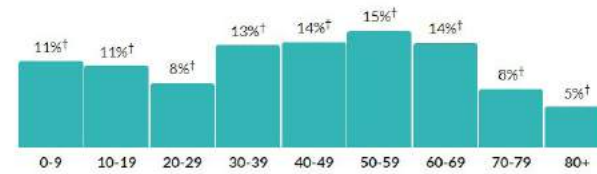
Age

44.1

Median age

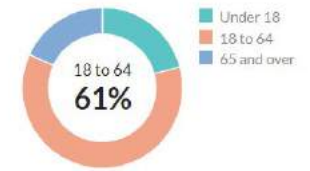
about 20 percent higher than the figure in the Los Angeles-Long Beach-Anaheim, CA Metro Area: 38.1
about 20 percent higher than the figure in California: 37.6

Population by age range



Show data / Embed

Population by age category



Show data / Embed

Educational attainment

94.8%

High school grad or higher

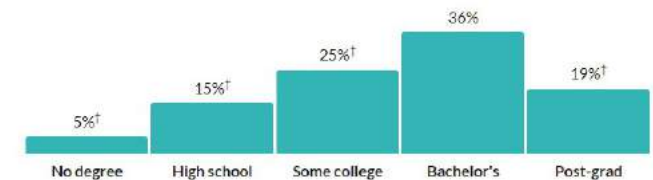
about 20 percent higher than the rate in the Los Angeles-Long Beach-Anaheim, CA Metro Area: 82.1%
about 10 percent higher than the rate in California: 84.5%

55.1%

Bachelor's degree or higher

about 1.5 times the rate in the Los Angeles-Long Beach-Anaheim, CA Metro Area: 37.1%
about 1.5 times the rate in California: 36.2%

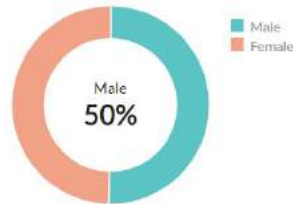
Population by highest level of education



* Universe: Population 25 years and over

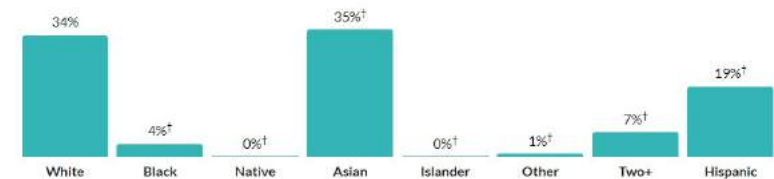
Show data / Embed

Sex



Show data / Embed

Race & Ethnicity



Show data / Embed

* Hispanic includes respondents of any race. Other categories are non-Hispanic.

Show data / Embed

Transportation to work

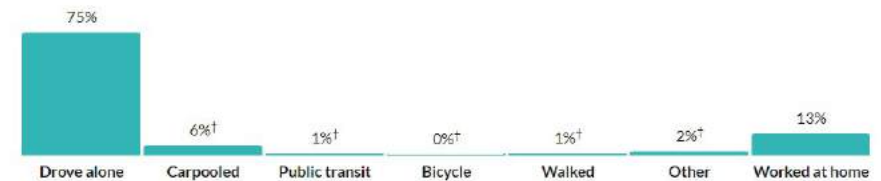
28.1 minutes

Mean travel time to work

* ACS 2021 5-year data

about 90 percent of the figure in the Los Angeles-Long Beach-Anaheim, CA Metro Area: 30.5
a little less than the figure in California: 29.6

Means of transportation to work



* Universe: Workers 16 years and over

Show data / Embed

CONTEXT & Distances



1. Southwood residential area



2. Jefferson Middle School - 0.2 mil



3. Hilton Hotel - 0.45 mil



4. Extended Stay America Hotel - 0.25 mil



5. Modern aging community - 0.3 mil



6. Commercial office buildings - 0.35 mil



11. Apartment buildings - 0.7 mil



10. Commercial buildings - 0.7 mil



9. Walmart / Staples - 0.45 mil

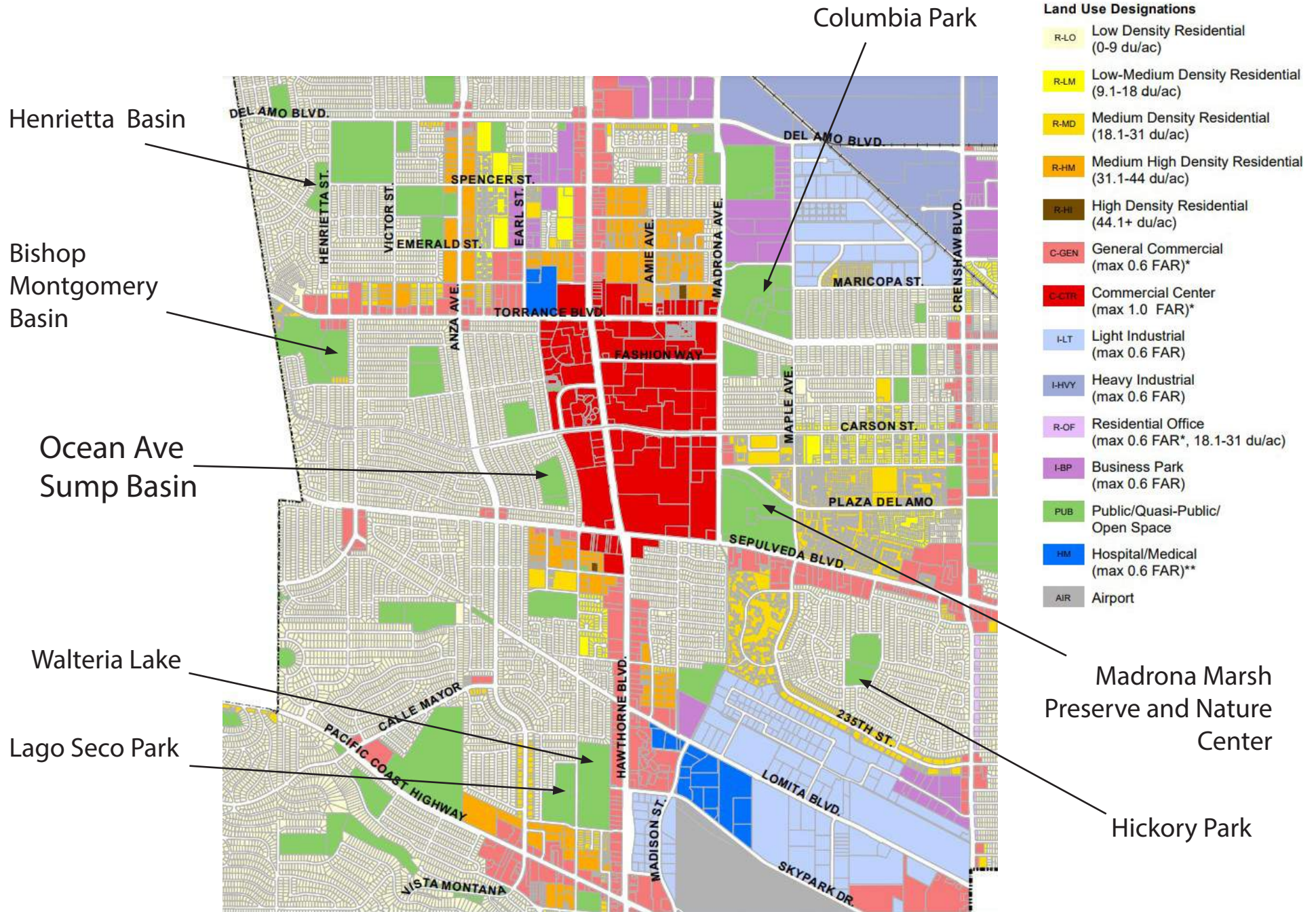


8. Torrance Executive Plaza - 0.3 mil



7. Del Amo Fashion Center 0.55 mil

ZONING MAP Parks & Basins



PROJECT GOALS, OBJECTIVES AND PROGRAM ELEMENTS

1. CAPTURE AND RECYCLE STORMWATER

- OBJECTIVES:**
- Maintain existing sump basin capacity
 - Use stormwater for irrigation
 - Filter out stormwater pollutants



Prefiltration facility (0.2 ac)



The underground stormwater collection reservoir (2 ac)



The overflow detention pond (1 ac)



Infiltration bioswale (0.3 ac)

PROJECT GOALS, OBJECTIVES AND PROGRAM ELEMENTS

2. PROVIDE NATURAL ENVIRONMENT

- OBJECTIVES:** • Create recreational green park • Reduce carbon footprint • Heal minds through connection to nature



Native plants garden (2 ac)



Rain garden (0.3 ac)



Dry creek with bridges (0.46 ac)



Contemplative garden (0.46 ac)

PROJECT GOALS, OBJECTIVES AND PROGRAM ELEMENTS

3. PROVIDE PHYSICAL ACTIVITY

OBJECTIVES:

- Provide a variety of activities for users of all ages
- Encourage walking, running and biking
- Provide shade to allow for exercise



Main pathway (0.6 ac)



Secondary pathway (0.6 ac)



Fitness zones for all ages and levels (0.6 ac)



Obstacle course for adults (0.4 ac)



Obstacle course for kids (0.4 ac)



Rehabilitation and injury prevention zone (0.2 ac)



Yoga space (0.1 ac)



Playground (0.3 ac)

PROJECT GOALS, OBJECTIVES AND PROGRAM ELEMENTS

4. ENHANCE SOCIAL INTERACTIONS

OBJECTIVES:

- Create a safe environment
- Reduce social isolation
- Integrate local community



Open green space (0.5 ac)

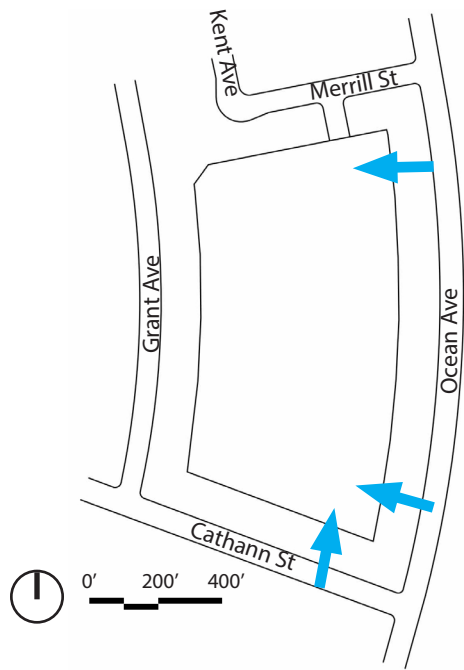


Shaded picnic grounds (0.2 ac)

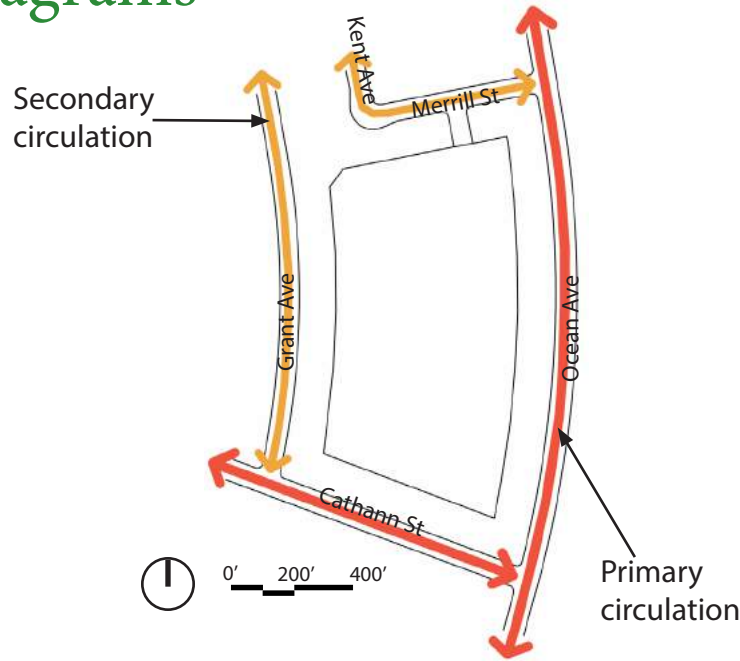


Chess tables area (0.1 ac)

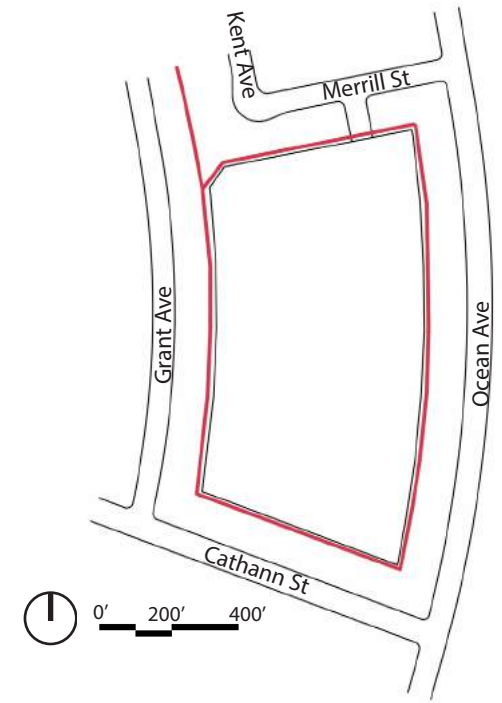
SITE ANALYSIS - Diagrams



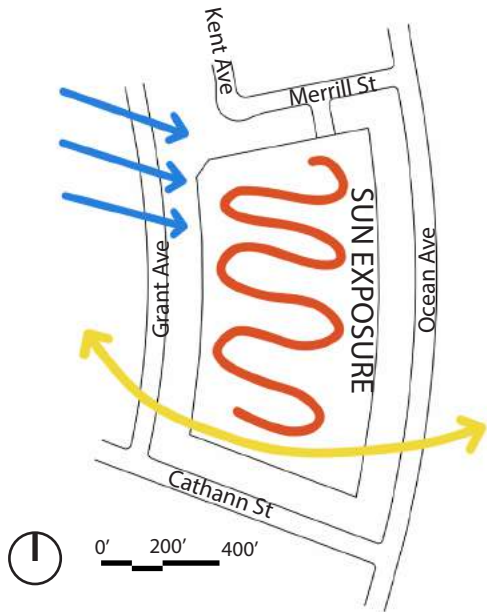
STORMWATER INLETS



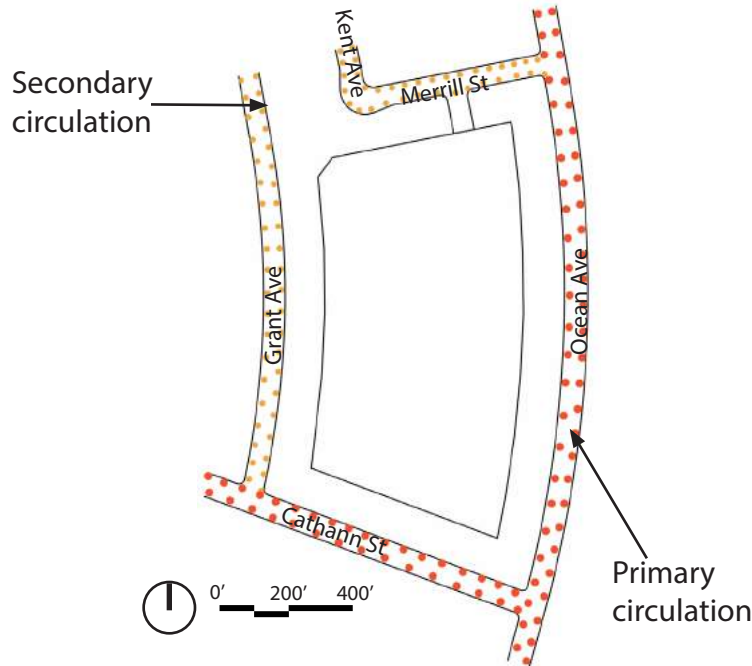
VEHICULAR CIRCULATION



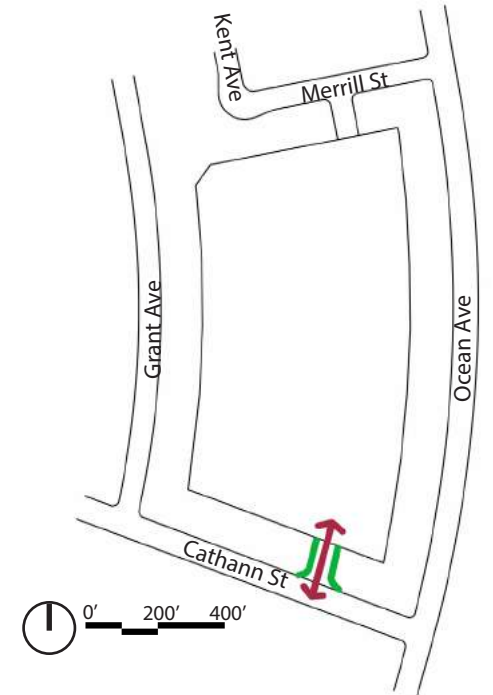
POWER LINES



PEVAILING WIND AND SUN PATTERN



PEDESTRIAN CIRCULATION



EASEMENT / FUTURE STREET

SITE ANALYSIS - Bike lanes / Parking / Bus stops



Carson Street



Ocean Ave



No restrictions on street parking

The design of the neighborhood park encourages walking and biking for local residents instead of using vehicles. Main streets provide dedicated bike lanes or bicycle-friendly roads. The Southwood neighborhood is quiet and there is always street parking available for further located visitors. There is a street cleaning parking restriction once-a-week for 3 hours.

SITE ANALYSIS - Sump basin condition after storms

March 1st

Next day after heaviest storm in 2023



March 15th

Next day after second strong storm in 2023

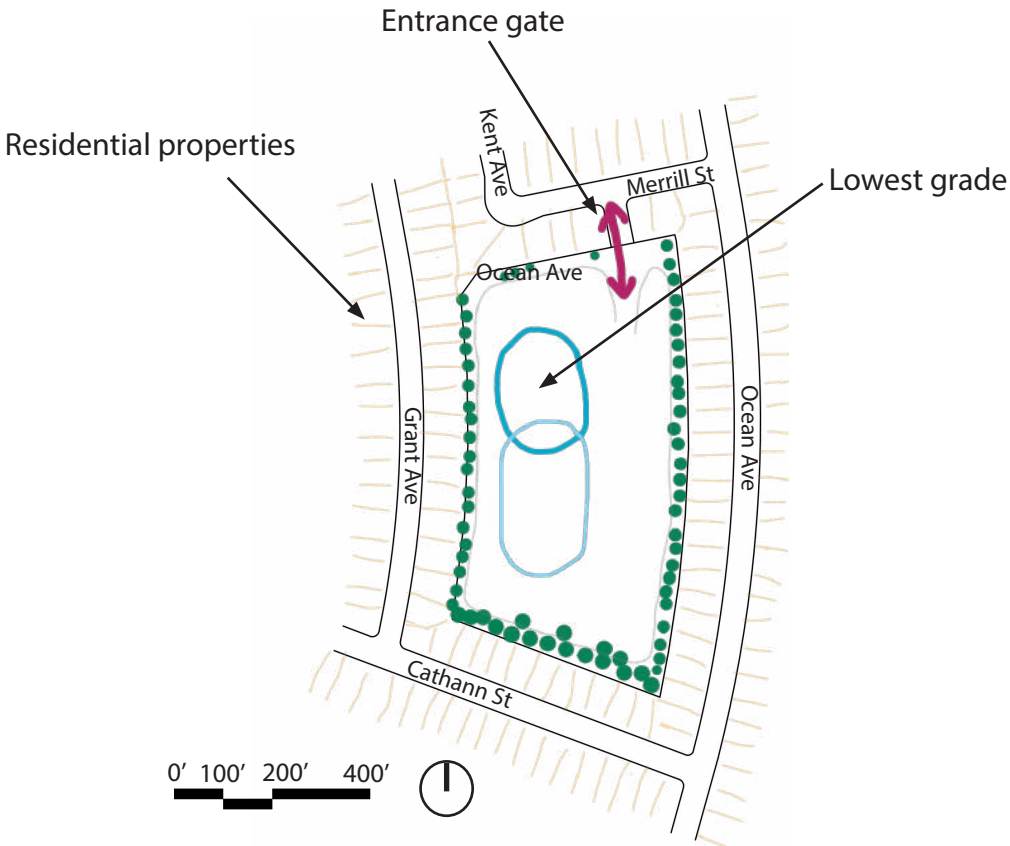


August 20th at 10pm

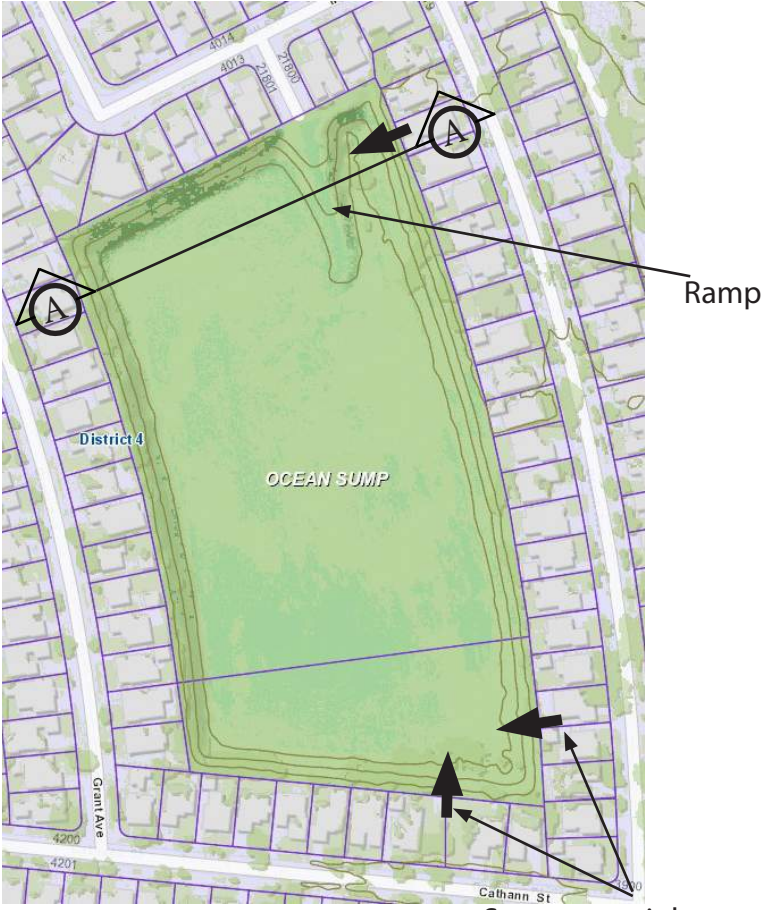
The day of Tropical Storm Hilary in 2023



SITE ANALYSIS - Topography / Section



ACCESS, GREEN BUFFER, TOPOGRAPHY



TOPOGRAPHY MAP



SECTION A

SITE ANALYSIS - OPPORTUNITIES



MANAGE STORMWATER

NATURAL ENVIRONMENT

PHYSICAL ACTIVITY

SOCIAL INTERACTIONS

SITE ANALYSIS - CONSTRAINTS



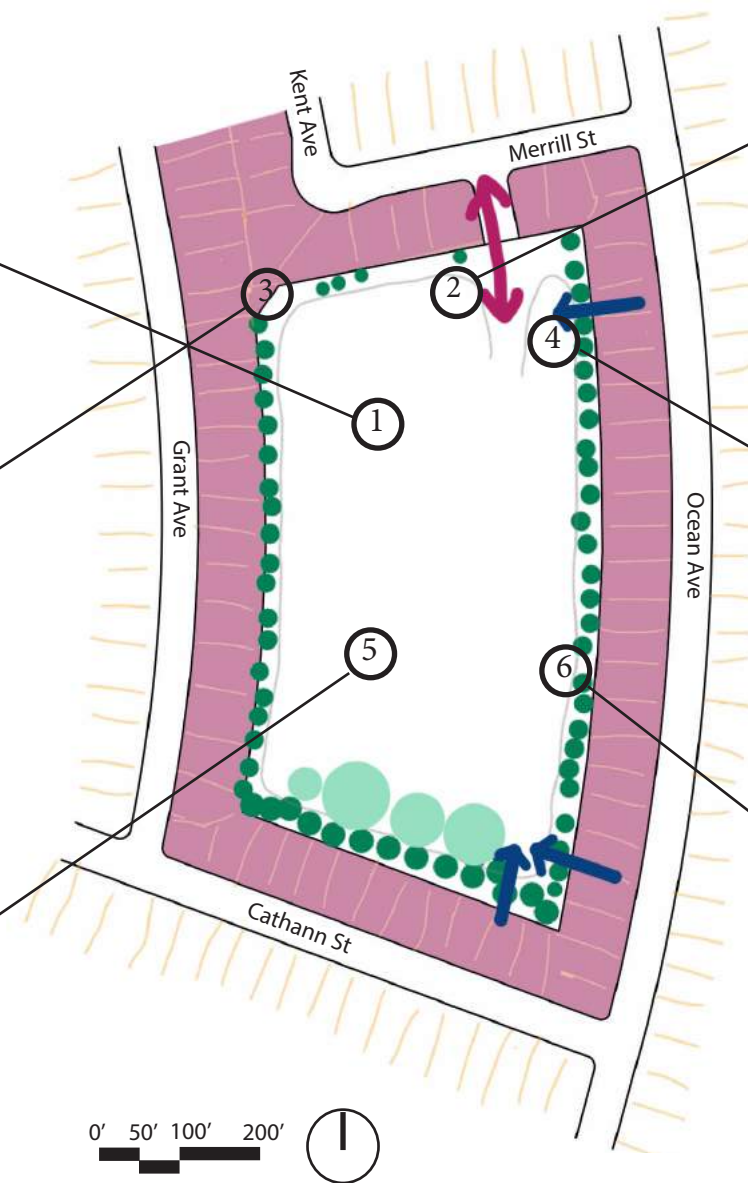
1. The site must function as a sump basin and maintain stormwater holding capacity



3. Residential properties disconnect the site



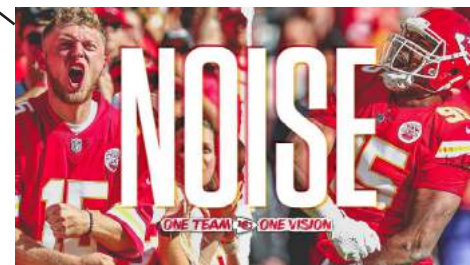
5. Mostly open space without a shade



2. Elevation difference limits access to the site



4. Stormwater can bring pollutants from the streets



6. Residents are concerned about the noise from the site



DESIGN METAPHOR



INFINITY - the concept of something that is unlimited, endless, and without bounds. Infinity can have a symbolic meaning for everything which we want to last in eternity: life, health, love, or humankind.



Bamboo Craft Village, Chengdu, China



Bamboo Craft Village, Chengdu, China

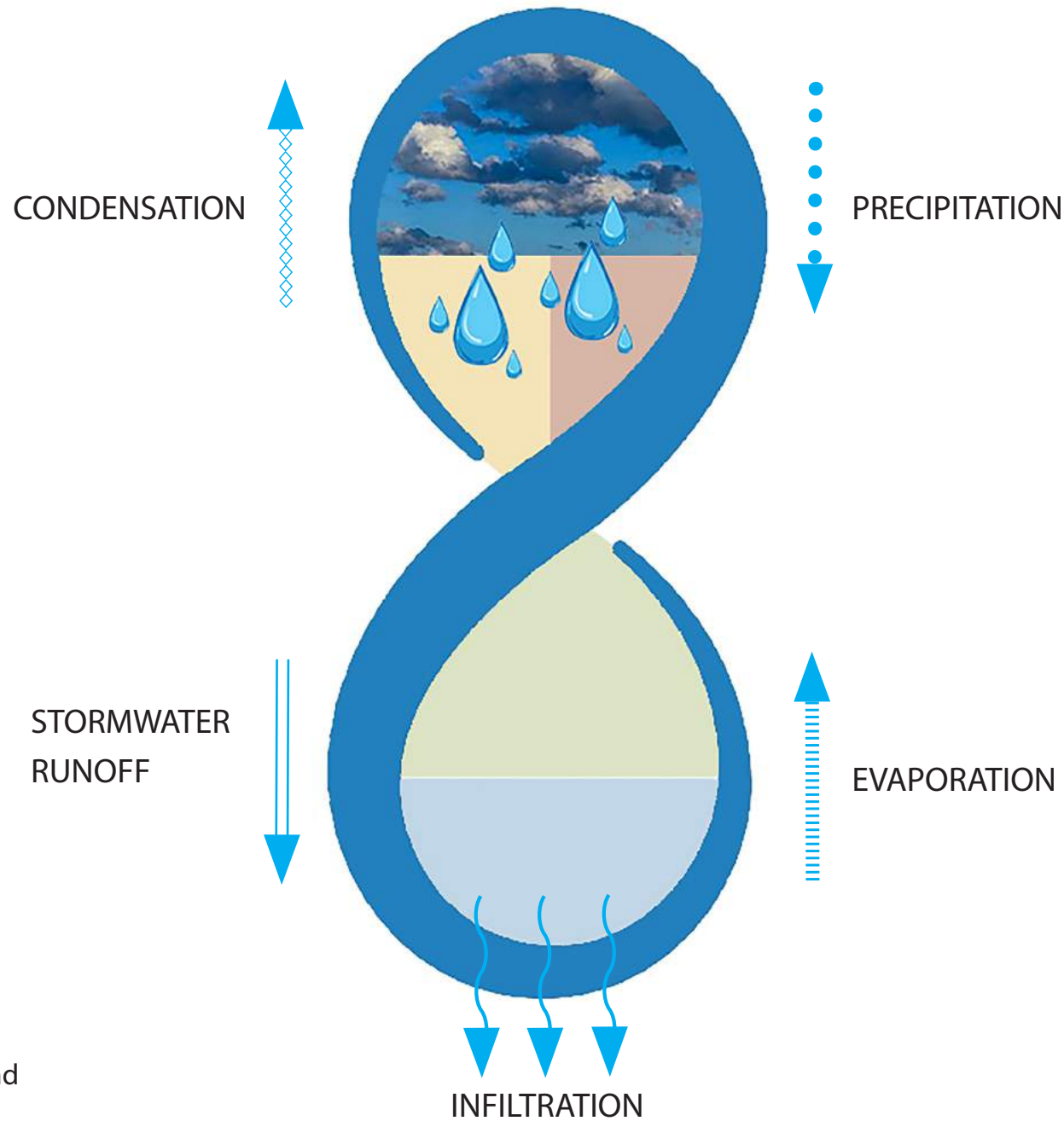


Nancy Holt sculpture, Finland



Giant Panda National Park, China

DESIGN METAPHOR - Infinity water cycle



Water management is a foundation of this project. It helps to create a natural environment, which attracts people to physical activity and social interactions.

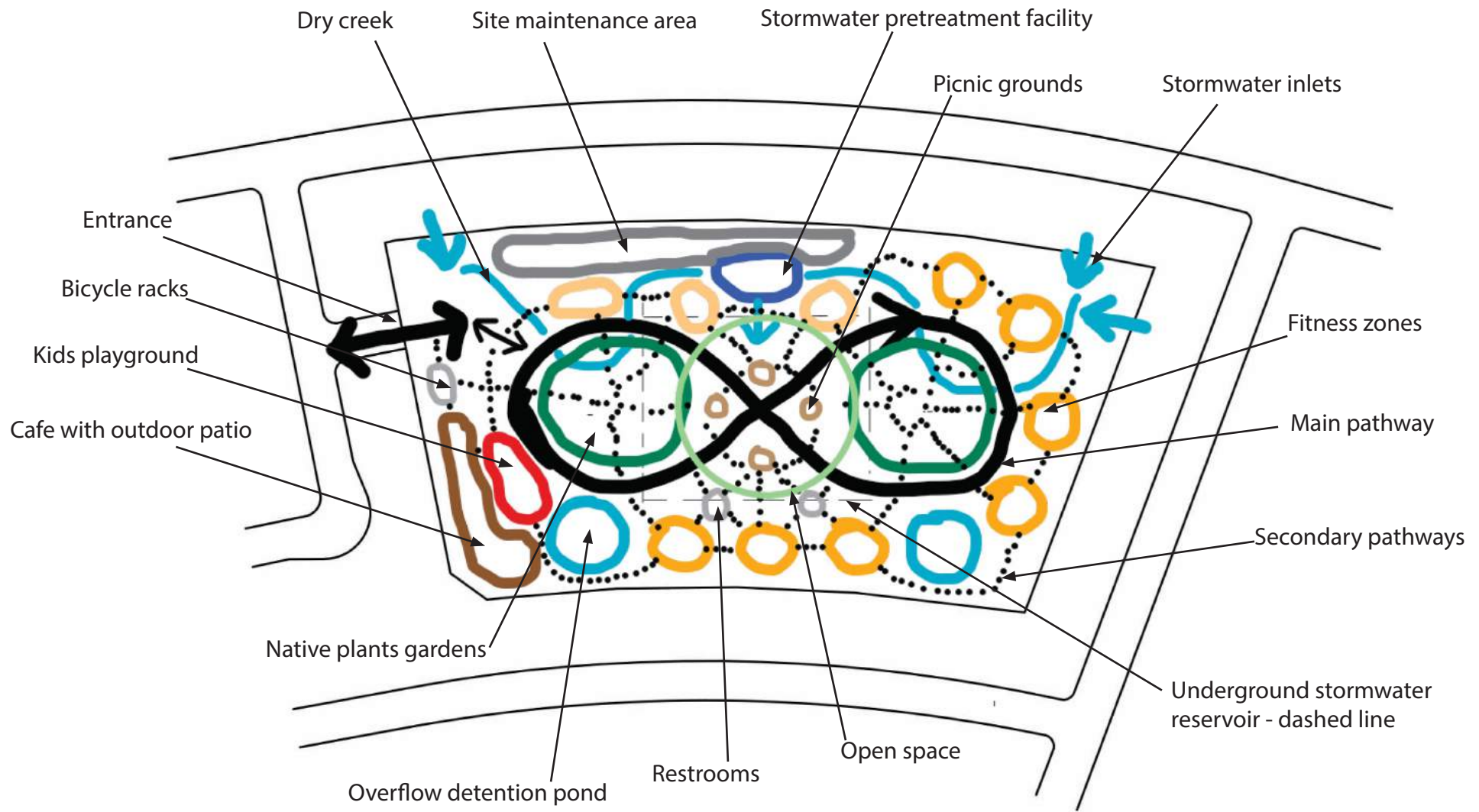
MANAGE STORMWATER

NATURAL ENVIRONMENT

PHYSICAL ACTIVITY

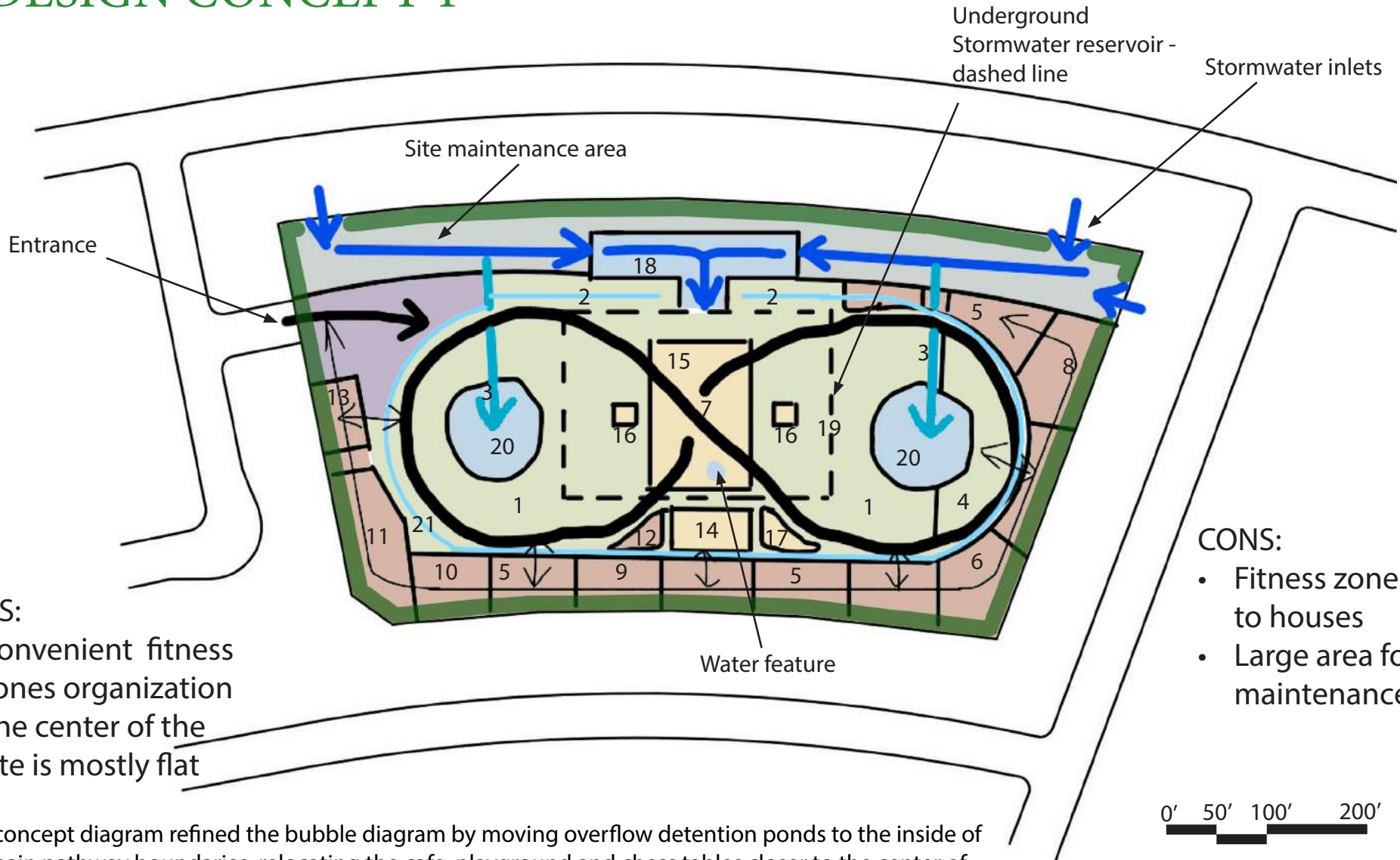
SOCIAL INTERACTIONS

DESIGN CONCEPT - Bubble diagram



The main pathway is in the shape of an infinity symbol. Fitness zones are located between the main pathway and the property line. Stormwater is directed through dry creeks to a pretreatment facility and then to an underground reservoir. There are two overflow detention ponds in case of heavy storms. A native plant garden is located inside of the main pathway boundaries. The rain garden collects the water in the center of the site. A cafe with outdoor patio, kids' playground and bicycle racks are located close to the entrance to the park. The net of secondary pathways connects all of the program elements together.

DESIGN CONCEPT 1



PROS:

- Convenient fitness zones organization
- The center of the site is mostly flat

CONS:

- Fitness zones close to houses
- Large area for site maintenance



This concept diagram refined the bubble diagram by moving overflow detention ponds to the inside of the main pathway boundaries, relocating the cafe, playground and chess tables closer to the center of the site. The site maintenance area is separated from the entire park by a fence.

NATURAL ENVIRONMENT

1. Native plants garden
2. Rain garden
3. Dry creek with bridges
4. Contemplative garden

PHYSICAL ACTIVITY

5. Fitness zones
6. Obstacle course
7. Main pathway
8. Secondary pathways
9. Obstacle course for kids
10. Rehabilitation
11. Yoga space
12. Playground
13. Steps

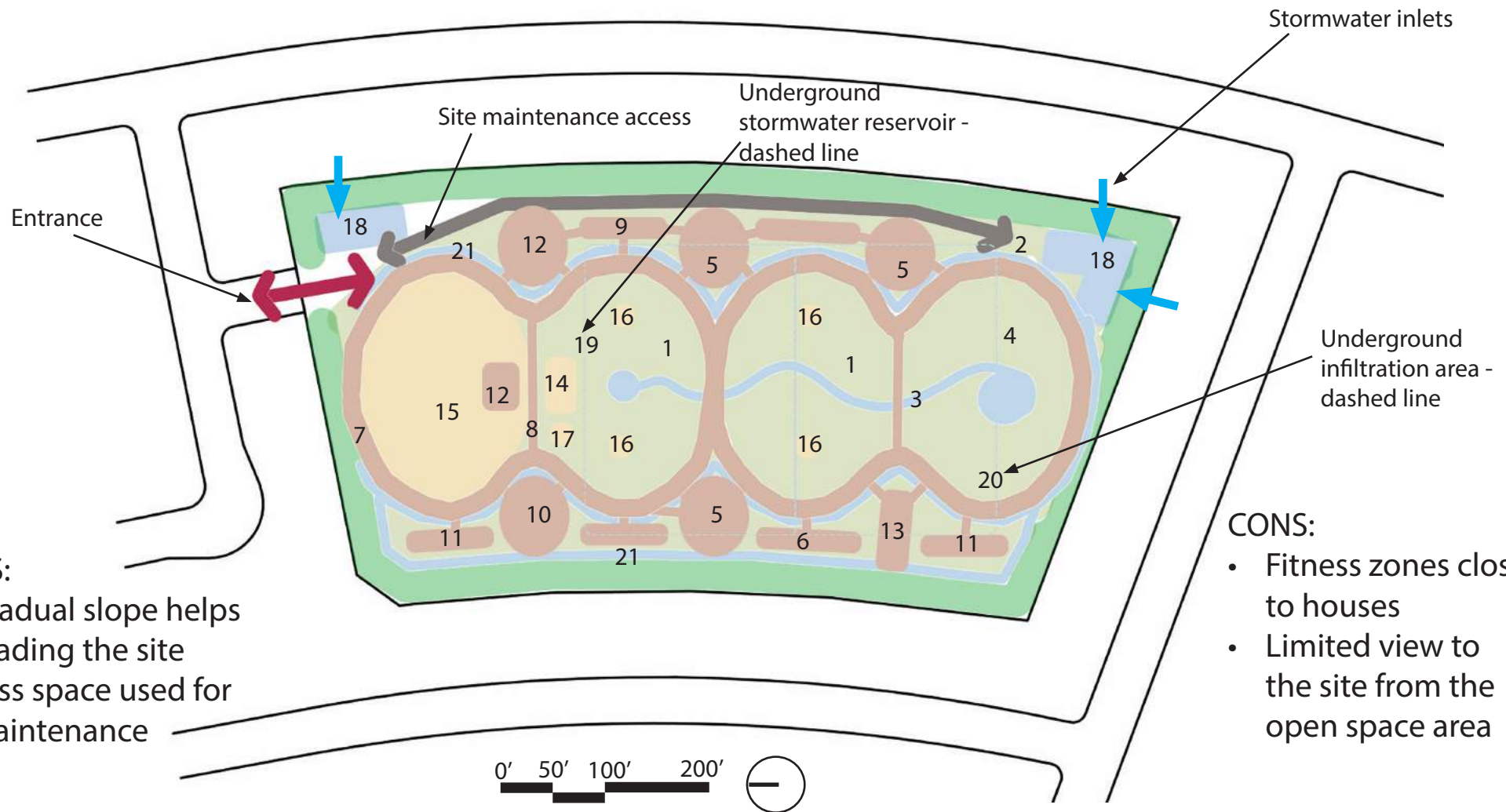
SOCIAL INTERACTIONS

14. Cafe with outdoor patio
15. Open space
16. Picnic grounds
17. Chess tables area

MANAGE STORMWATER

18. Pretreatment facility
19. Stormwater reservoir
20. Overflow detention pond
21. Bioswale

DESIGN CONCEPT 2



PROS:

- Gradual slope helps grading the site
- Less space used for maintenance

CONS:

- Fitness zones close to houses
- Limited view to the site from the open space area

This design concept has a completely different approach to the site grading. The open space at the north part of the site is at the street level and the rest of the site gradually slopes towards the south end of the property. The main pathway, previously in the shape of an infinity sign, is divided into two additional segments which define fitness zone spaces. The underground reservoir is expanded to an infiltration area, allowing stormwater to infiltrate into the ground. Most of the social interactions take place close to the entrance on a flat surface and native plant gardens with dry creek take a sloped portion of the site.

NATURAL ENVIRONMENT

1. Native plants garden
2. Rain garden
3. Dry creek with bridges
4. Contemplative garden

PHYSICAL ACTIVITY

5. Fitness zones
6. Obstacle course
7. Main pathway
8. Secondary pathways
9. Obstacle course for kids
10. Rehabilitation
11. Yoga space
12. Playground
13. Steps

SOCIAL INTERACTIONS

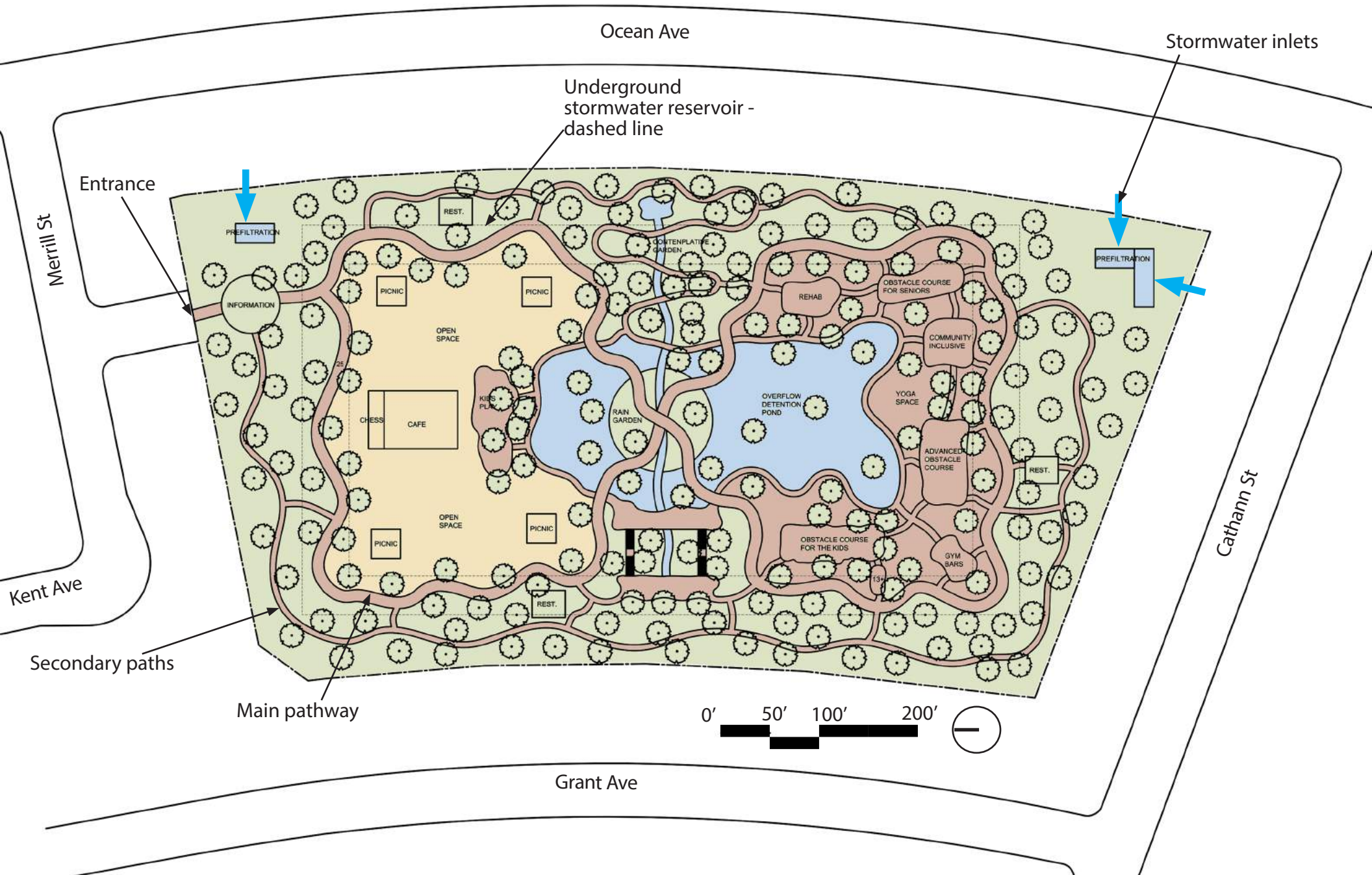
14. Cafe with outdoor patio
15. Open space
16. Picnic grounds
17. Chess tables area

MANAGE STORMWATER

18. Pretreatment facility
19. Stormwater reservoir
20. Underground infiltration area
21. Bioswale

DESIGN CONCEPT 3

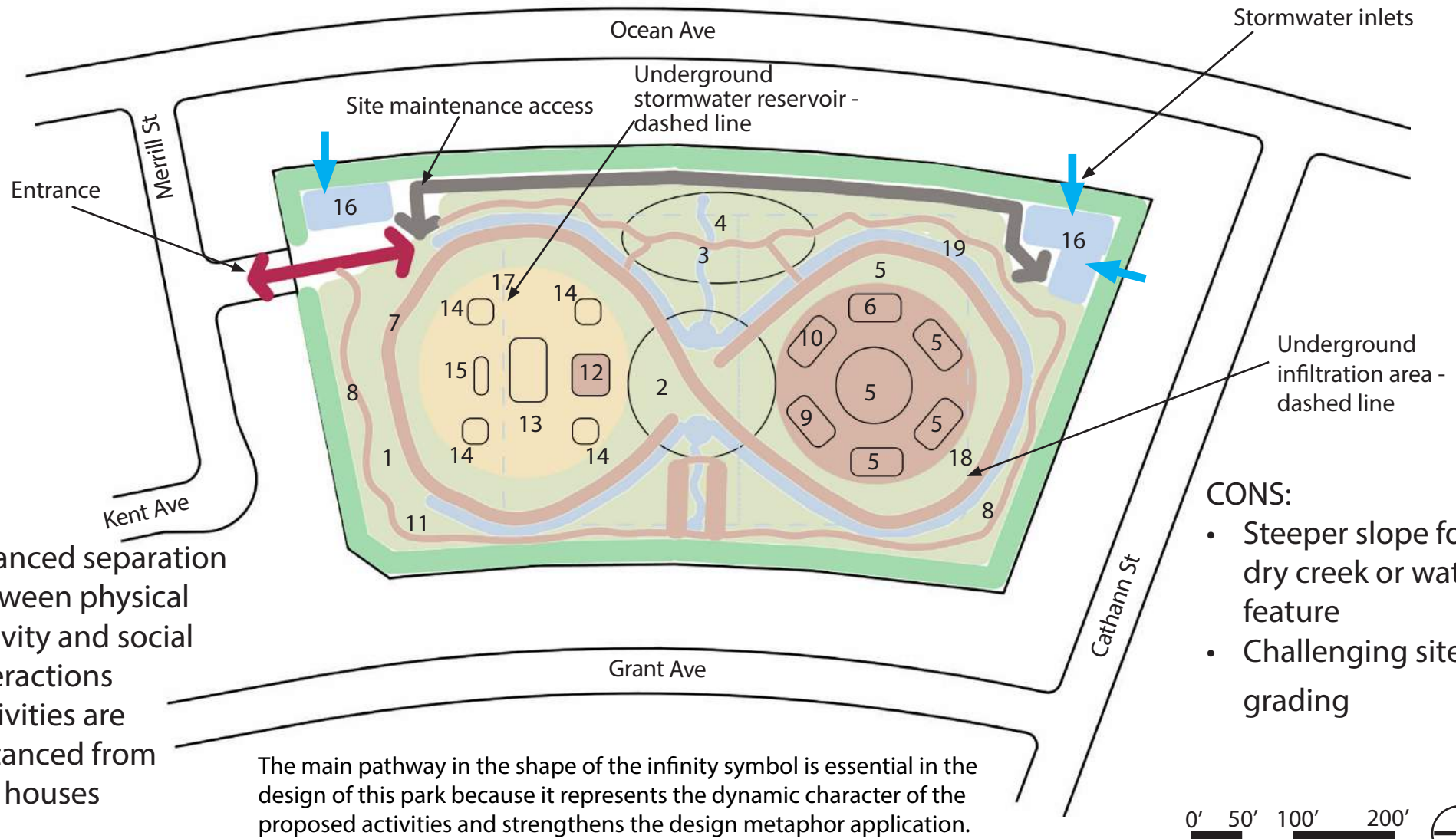
This design concept place native plant garden outside of the main pathway and brings social and physical activities inside in order to increase distance from park activities and residential properties. All pathways are transformed into more organic shapes.



MANAGE STORMWATER	NATURAL ENVIRONMENT	PHYSICAL ACTIVITY	SOCIAL INTERACTIONS
--------------------------	----------------------------	--------------------------	----------------------------

DESIGN CONCEPT - Final

Final design concept place native plant garden outside of the main pathway and brings social and physical activities inside in order to increase distance from park activities and residential properties.



PROS:

- Balanced separation between physical activity and social interactions
- Activities are distanced from the houses

CONS:

- Steeper slope for dry creek or water feature
- Challenging site grading



NATURAL ENVIRONMENT

1. Native plants garden
2. Rain garden
3. Dry creek with bridges
4. Contemplative garden

PHYSICAL ACTIVITY

5. Fitness zones
6. Obstacle course
7. Main pathway
8. Secondary pathways
9. Obstacle course for kids
10. Rehabilitation
11. Yoga space
12. Playground

SOCIAL INTERACTIONS

13. Open space
14. Picninc grounds
15. Chess tables area

MANAGE STORMWATER

16. Pretreatment facility
17. Stormwater reservoir
18. Underground infiltration
19. Bioswale

ILLUSTRATIVE PLAN



ENTRANCE

STORMWATER INLET

PLAYGROUND

CONTEMPLATIVE GARDEN

STORMWATER PRETREATMENT FACILITY

STORMWATER INLETS

ENTRANCE

Ocean Ave

Merrill St

Cathann St

Kent Ave

Grant Ave

PICNIC STRUCTURES

NATIVE PLANTS GARDEN

YOGA SPACE

FITNESS ZONES

0' 50' 100' 200'



INFINITY WATER CYCLE

Stormwater enters the site through storm drains to pretreatment facilities, then it is collected in the underground reservoir. Excess of stormwater can be pumped out down the streams to the rain garden. In case of heavy storms, water can overflow into the detention pond and infiltrate into the ground. Two bioswales collect and filtrate the water from the site and send it back to a pretreatment facility and underground reservoir.

1. STORMWATER PRETREATMENT

3. STREAM / DRY CREEK

2. UNDERGROUND RESERVOIR

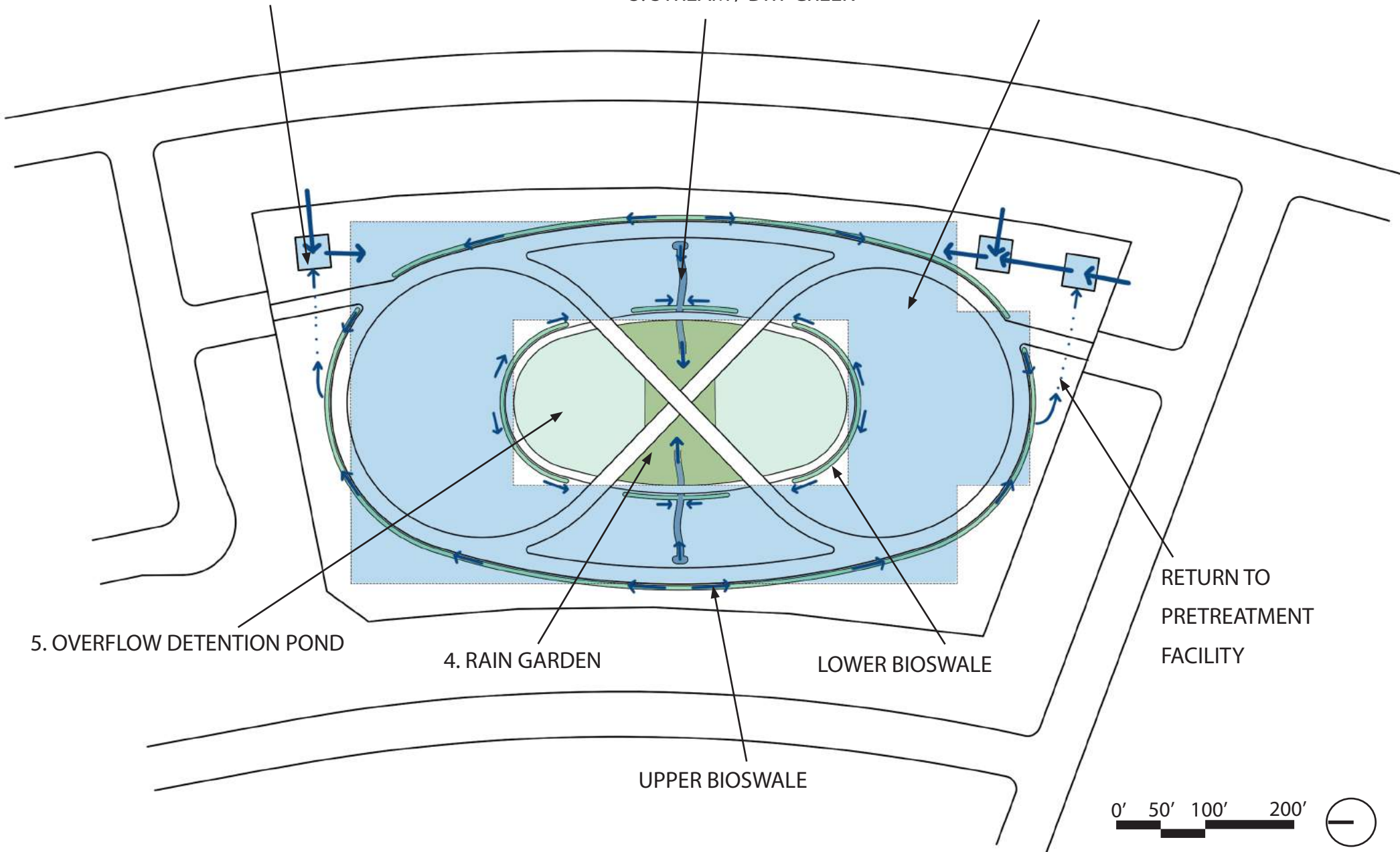
5. OVERFLOW DETENTION POND

4. RAIN GARDEN

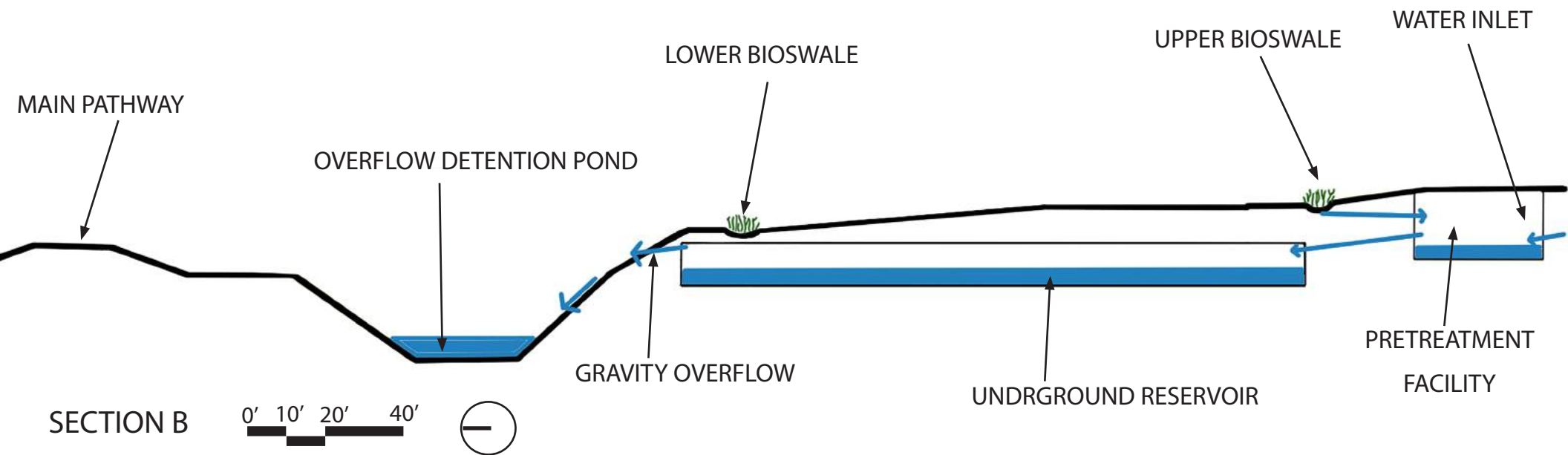
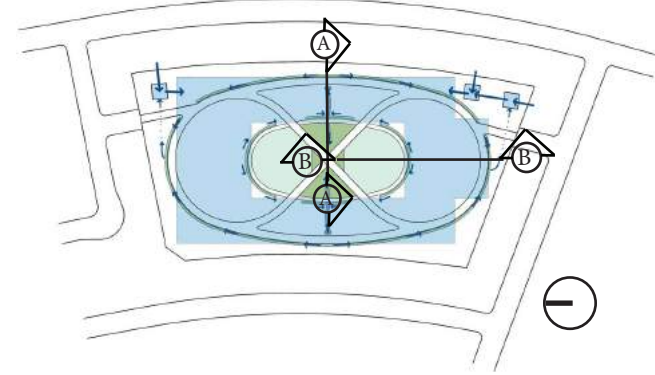
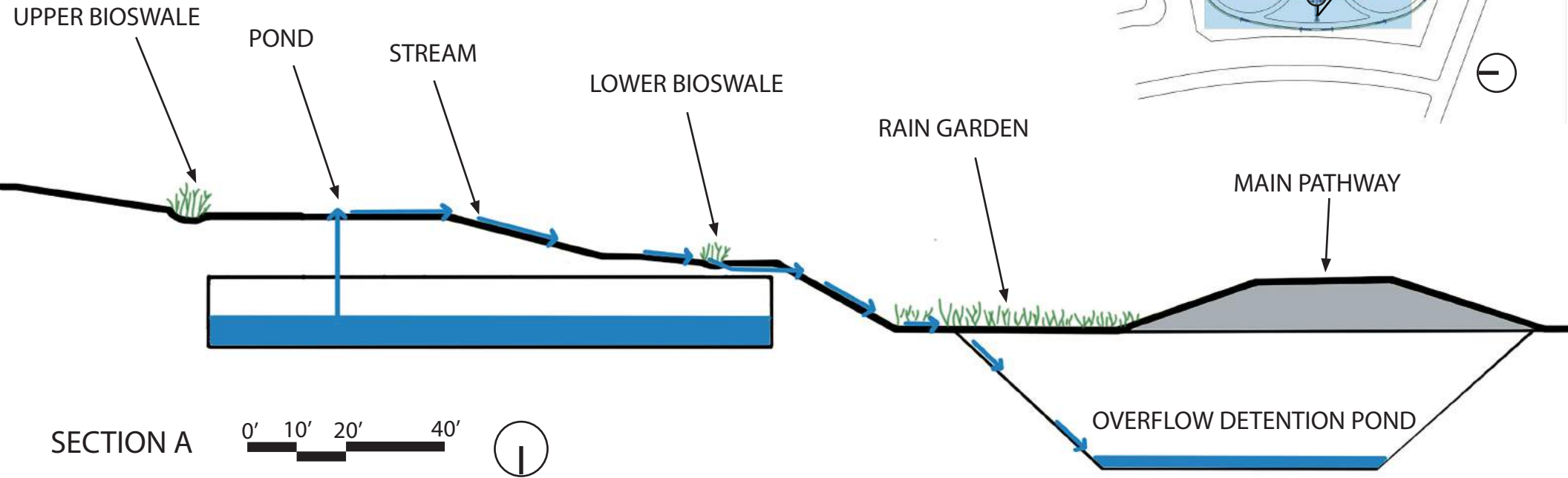
LOWER BIOSWALE

UPPER BIOSWALE

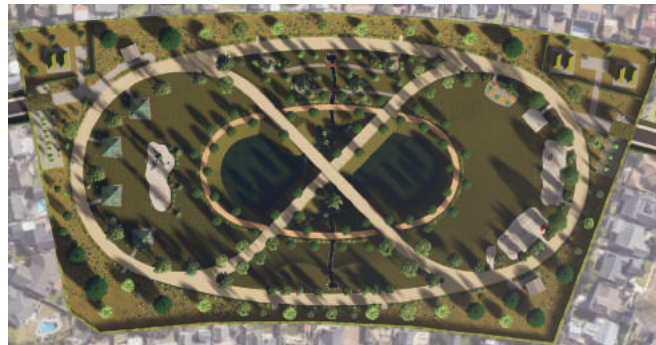
RETURN TO
PRETREATMENT
FACILITY



INFINITY WATER CYCLE



ENTRANCE - Perspective 1



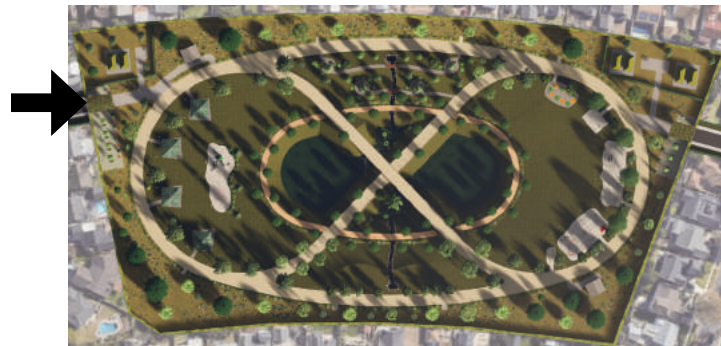
Both park entrances are modest with inviting, arched, planted pergola. The street is separated from residential properties by a solid hedge for privacy. Vehicular circulation is controlled by bollards, which can be removed in an emergency or for site maintenance purposes.



ENTRANCE - Perspective 2



concretenetwork.com
Broom concrete finish



Right at the entrance, visitors can find signs informing them about the park amenities, communicating the park rules, and educating them about stormwater management.

Concrete road under pergola leads straight to the main park pathway or turns east to stormwater pretreatment facilities.

ENTRANCE - Perspective 3

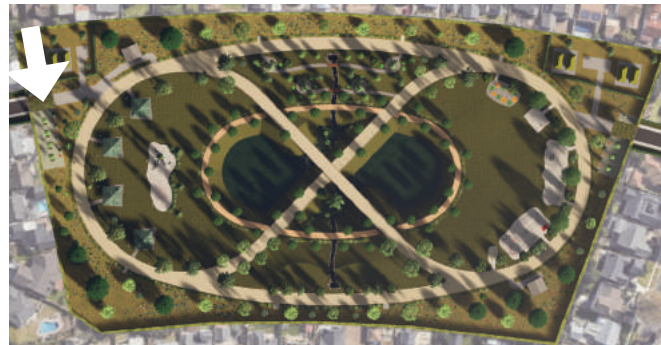
The entrance is a transitional space where visitors can park their bicycles near the main gate, meet friends at chess tables or go further into the native plant garden. There are permeable pavers on both sides of the concrete road.



angeluspavingstones.com

Permeable hollands paving stones

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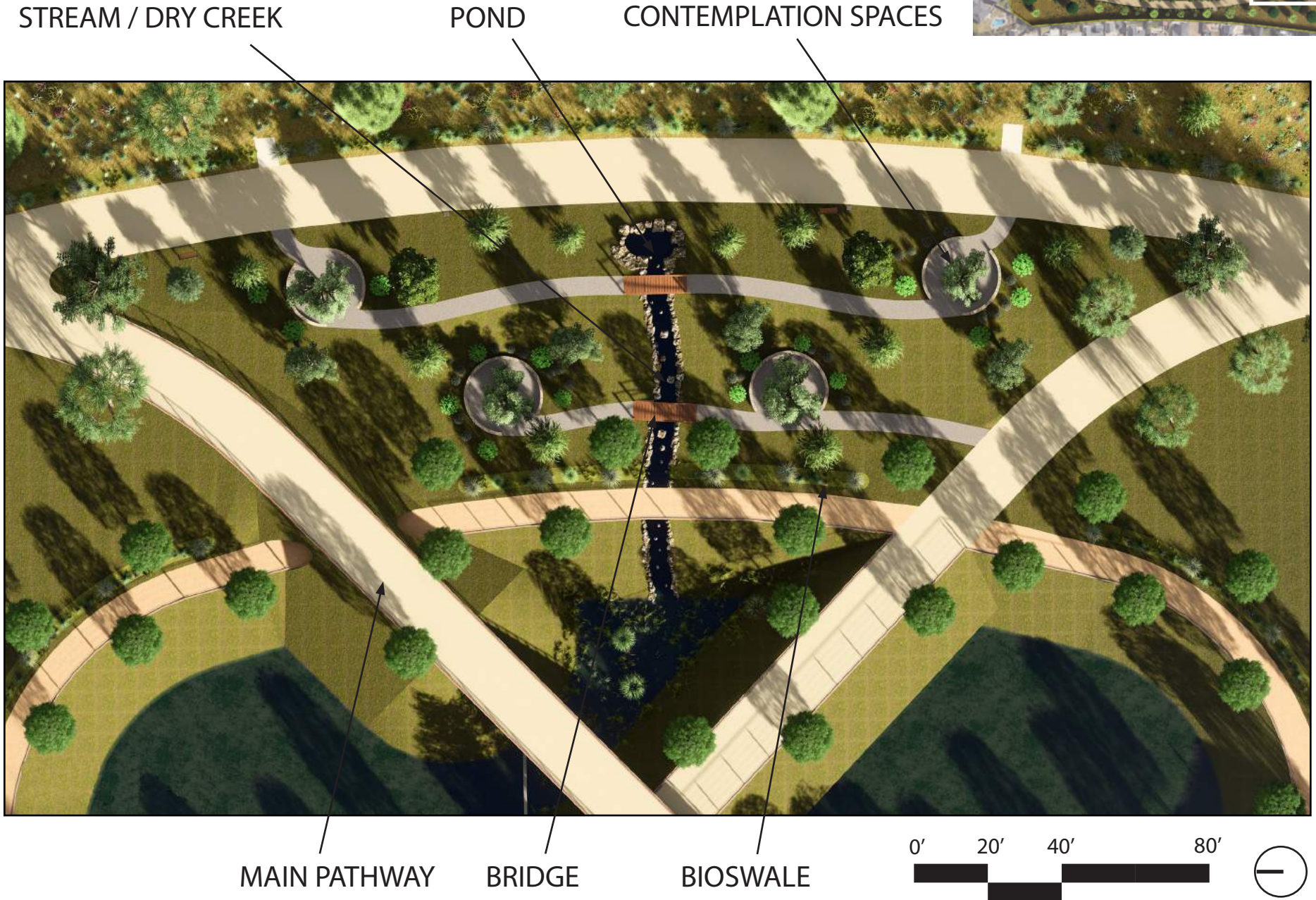
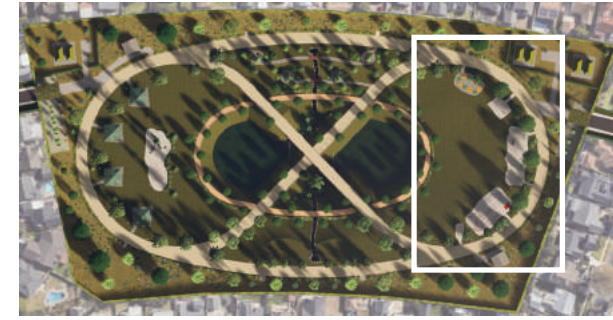
Magnolia Grandiflora
'Little Gem'

leafland.co.nz

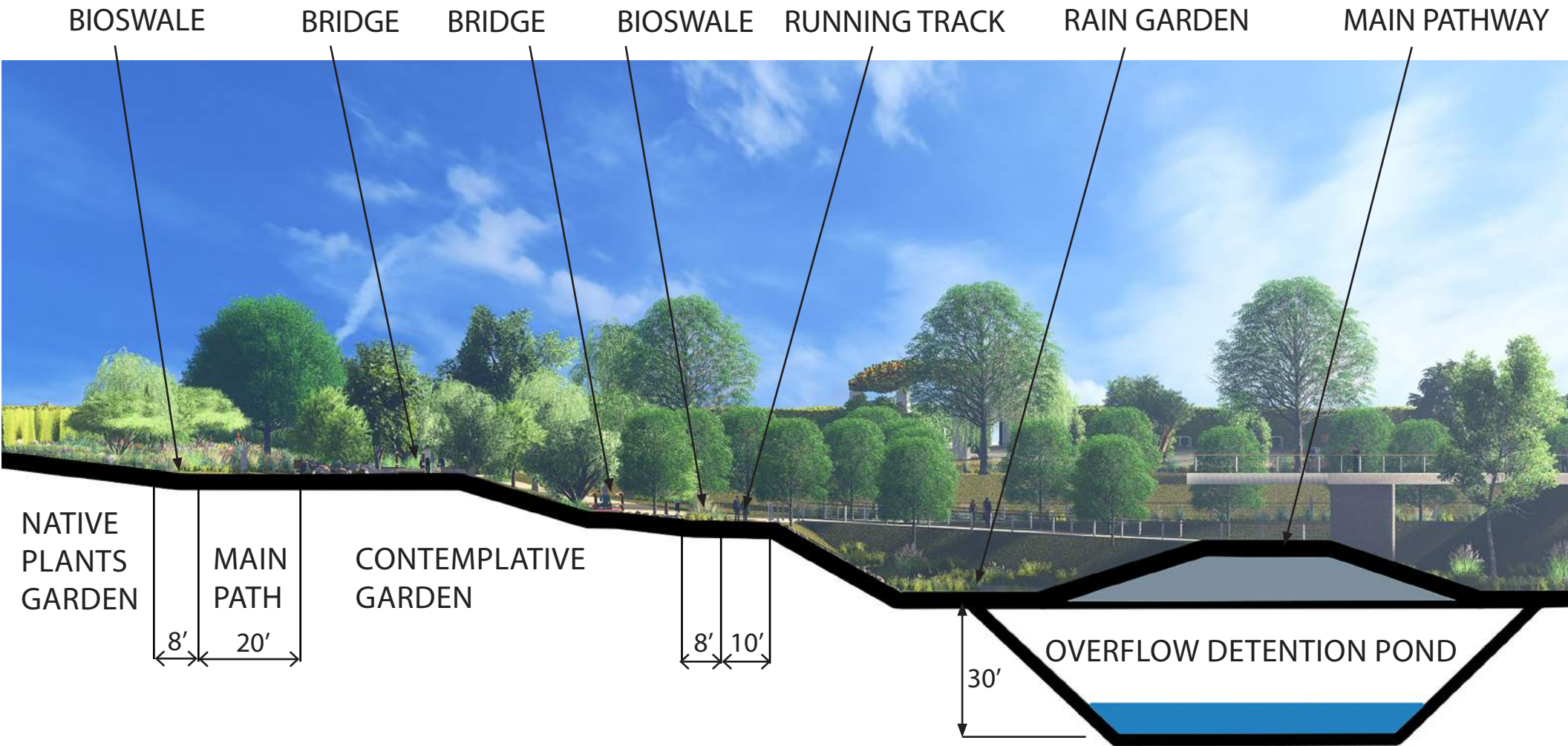
Dariusz Krasinski

CONTEMPLATIVE GARDEN - Enlargement

Contemplative garden design is dedicated to older users, who appreciate smaller and quiet spaces with close connections to nature. Six-foot wide pathways link contemplative spaces and allow users to enjoy the view of a stream or dry creek from the bridges above.



CONTEMPLATIVE GARDEN - Section



CONTEMPLATIVE GARDEN - Perspective 1



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Rosemary



Hummingbird Sage

CONTEMPLATIVE GARDEN - Perspective 2

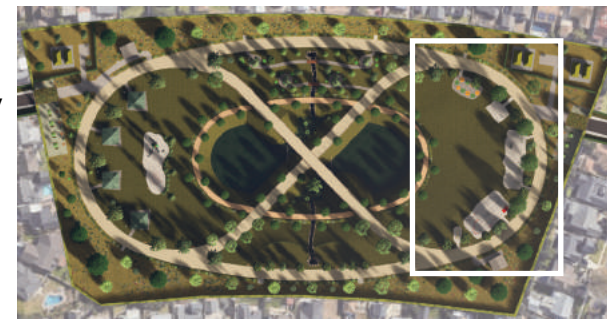


Exposed aggregate concrete pathways



FITNESS ZONES - Enlargement

Five different fitness zones give users of all ages and levels an opportunity for physical activity using stationary equipment on soft rubber-based flat surfaces. Sloped open space can be utilized for short runs up and down. The rehabilitation zone is located close to the contemplation garden, conveniently for older users.



PRETREATMENT FACILITY

GYMNASTIC

OBSTACLE COURSE FOR KIDS

ADVANCED OBSTACLE COURSE



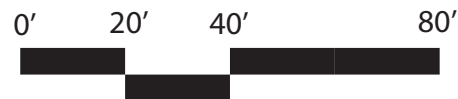
MAIN PATHWAY

REHABILITATION

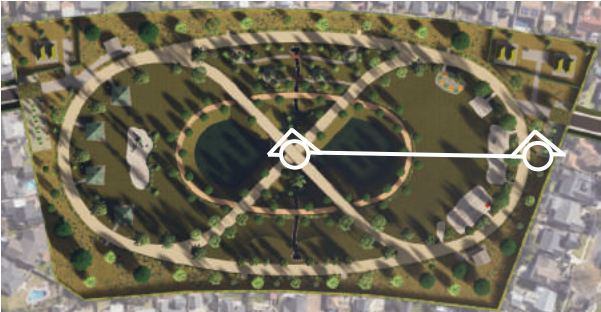
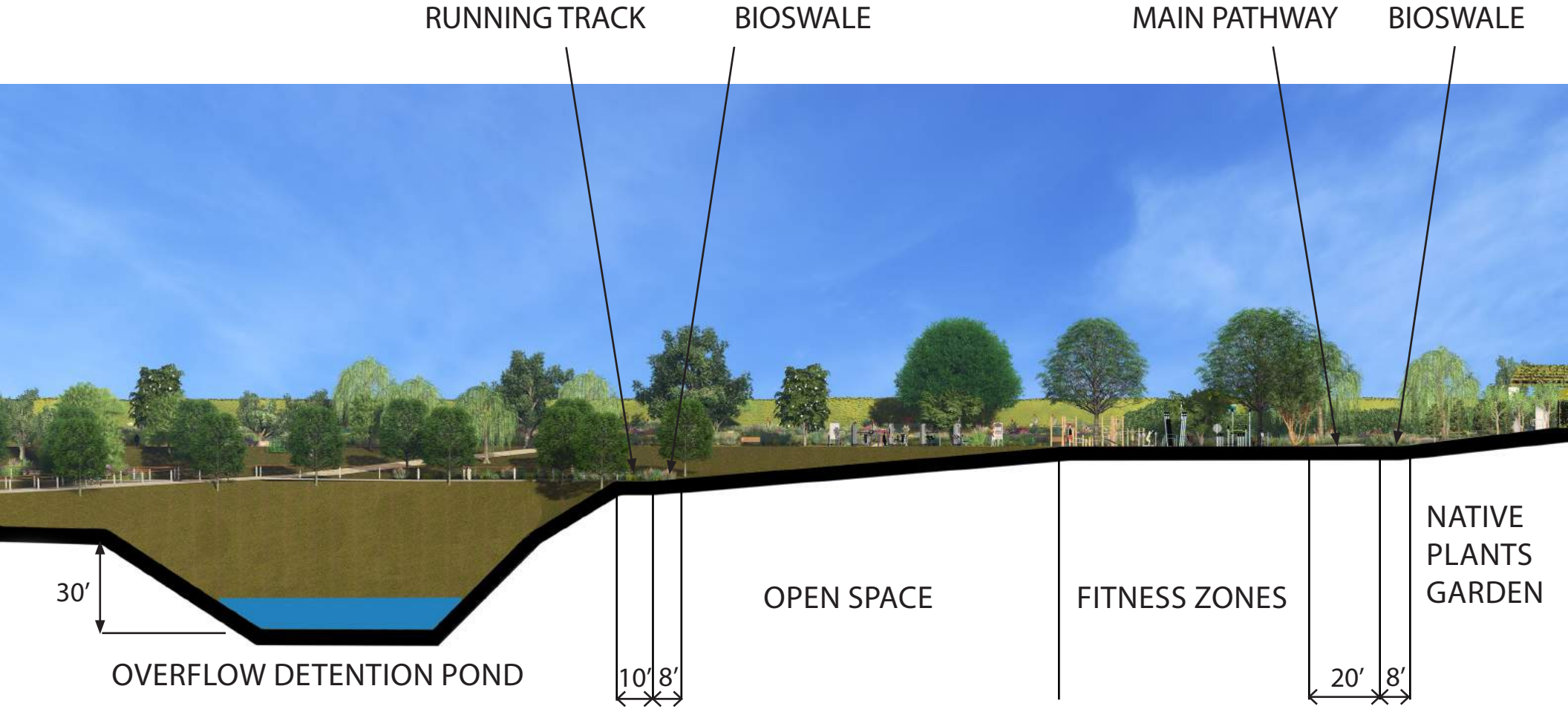
OPEN SPACE

INDIVIDUAL

RESTROOM



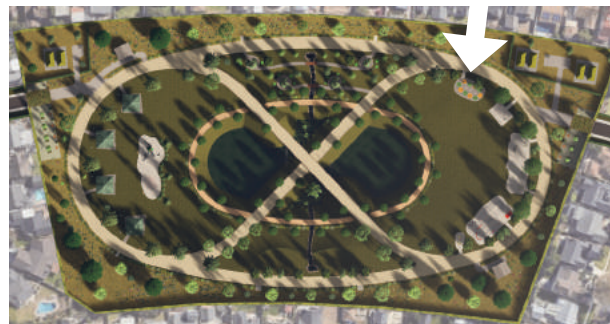
FITNESS ZONES - Section



FITNESS ZONES - Perspective 1



The rubber pathway is slip resistant, resilient, and flexible. It includes a 100% recycled rubber base.
Color: Earth yellow

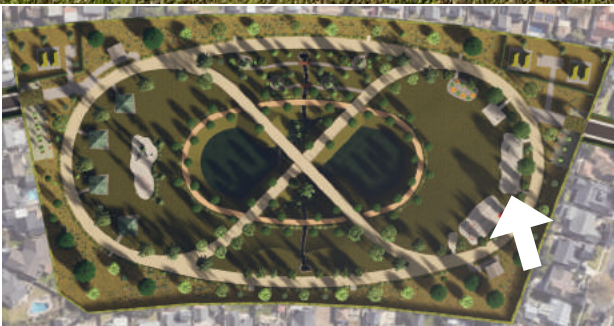


FITNESS ZONES - Perspective 2



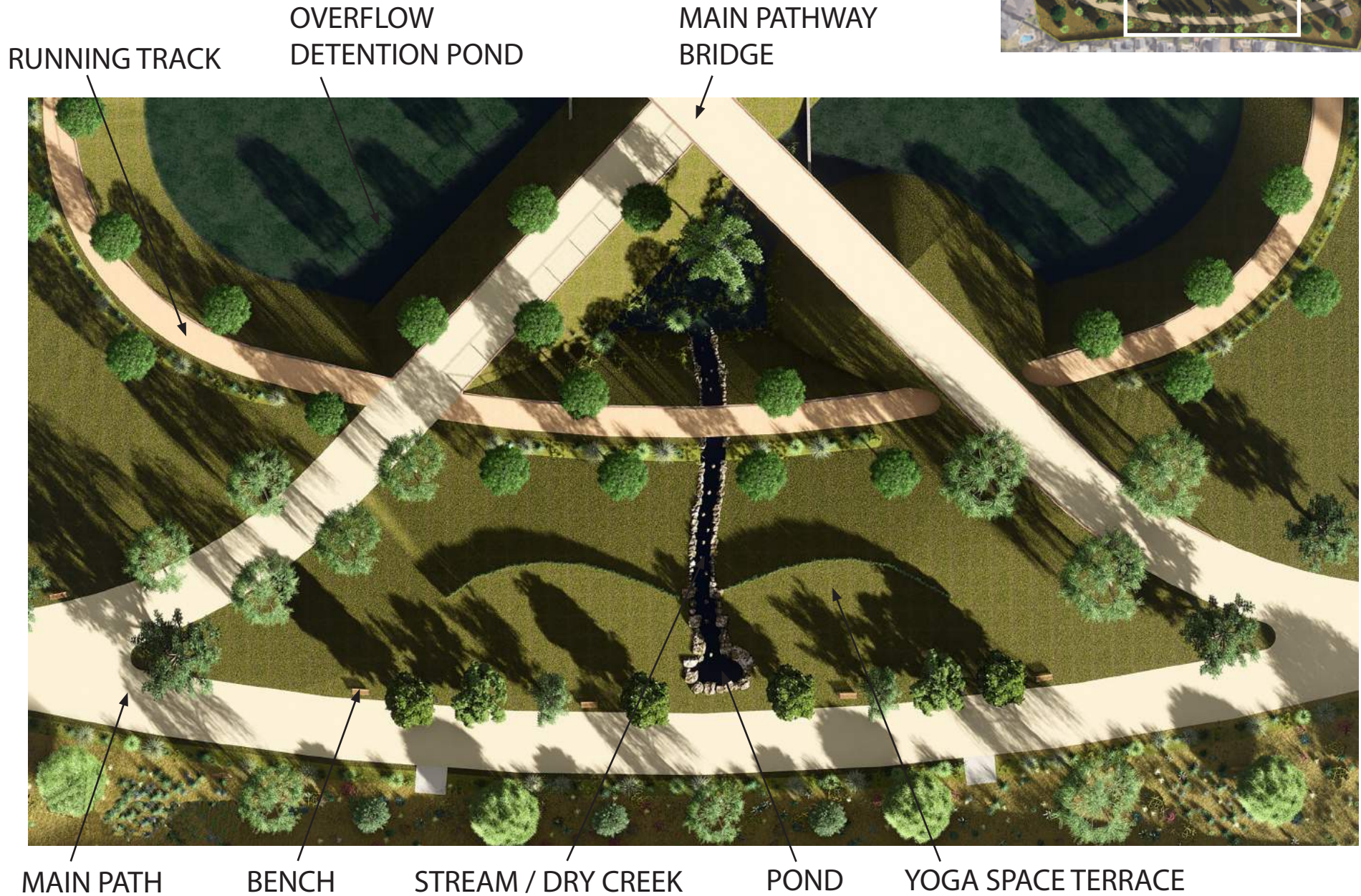
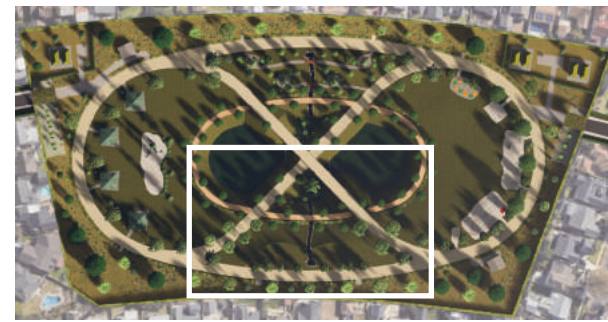
Poured in place, recycled rubber safety surfacing. Light grey color

marathonsurfaces.com



YOGA SPACE - Enlargement

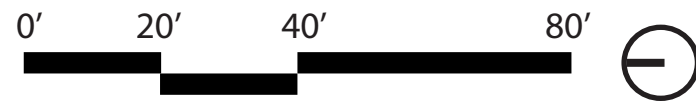
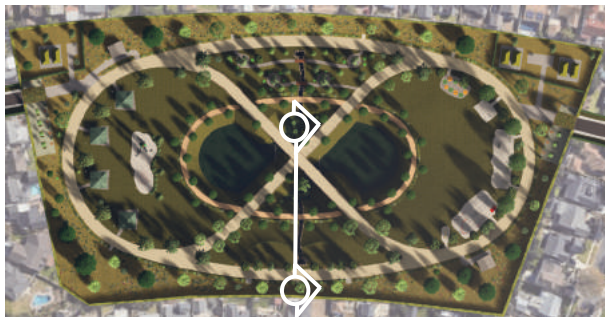
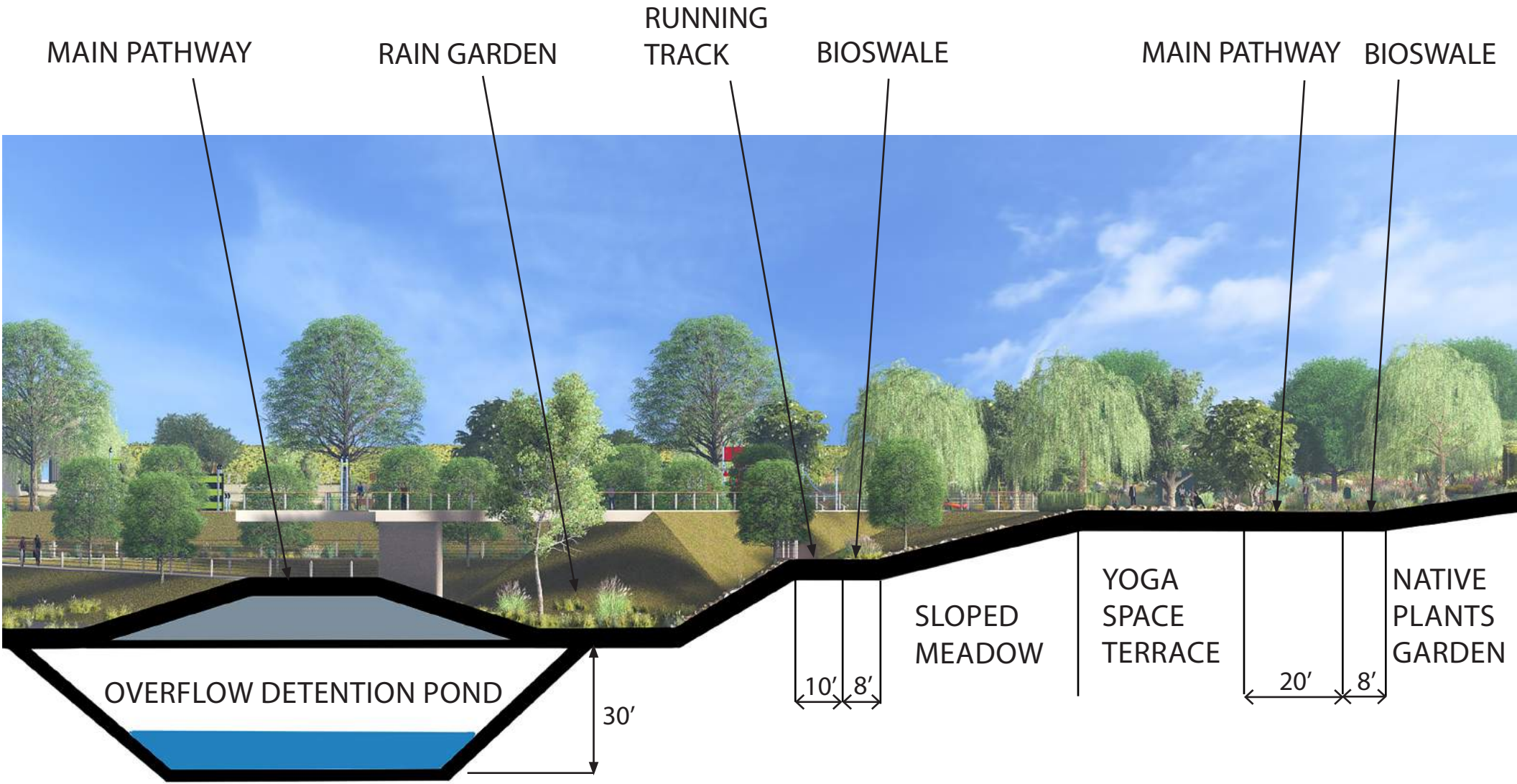
Yoga space terrace is a flat area with a pond and a stream running down the slope to the rain garden. The yoga terrace has a low hedge at elevation change for safety. While standing at the hedge, there is a good view to the center of the park where the overflow detention pond and main pathway bridge are located.



0' 20' 40' 80'



YOGA SPACE - Section



YOGA SPACE - Perspective 1

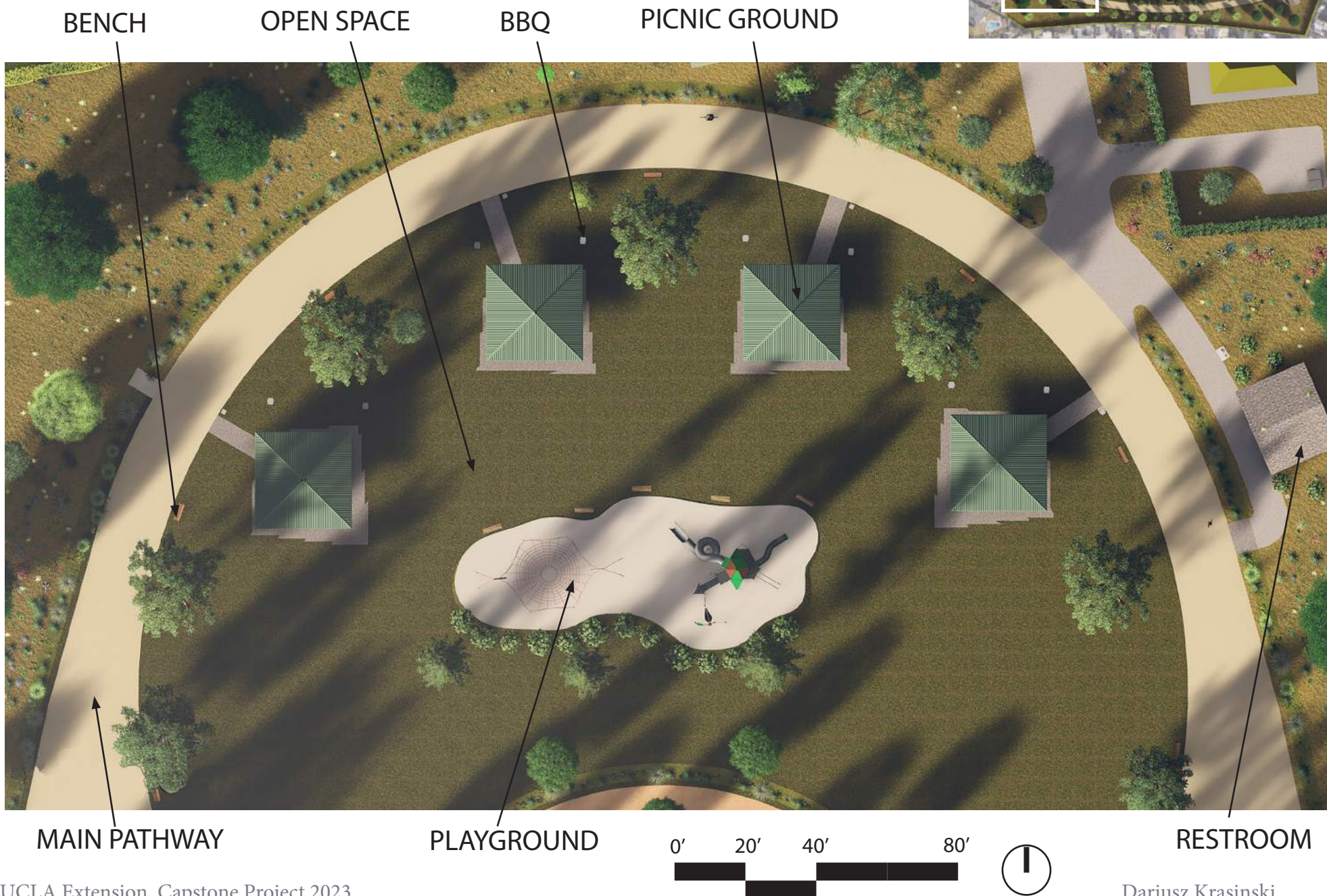
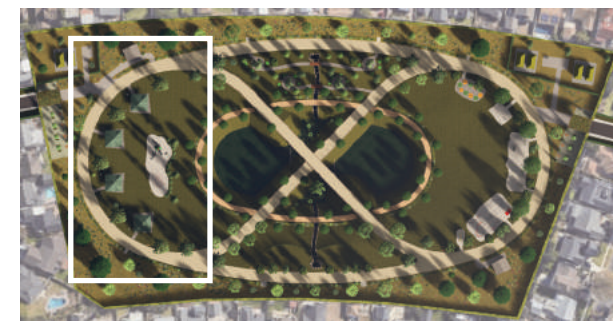


YOGA SPACE - Perspective 2

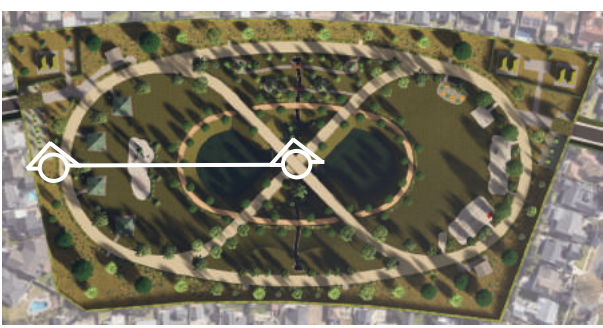
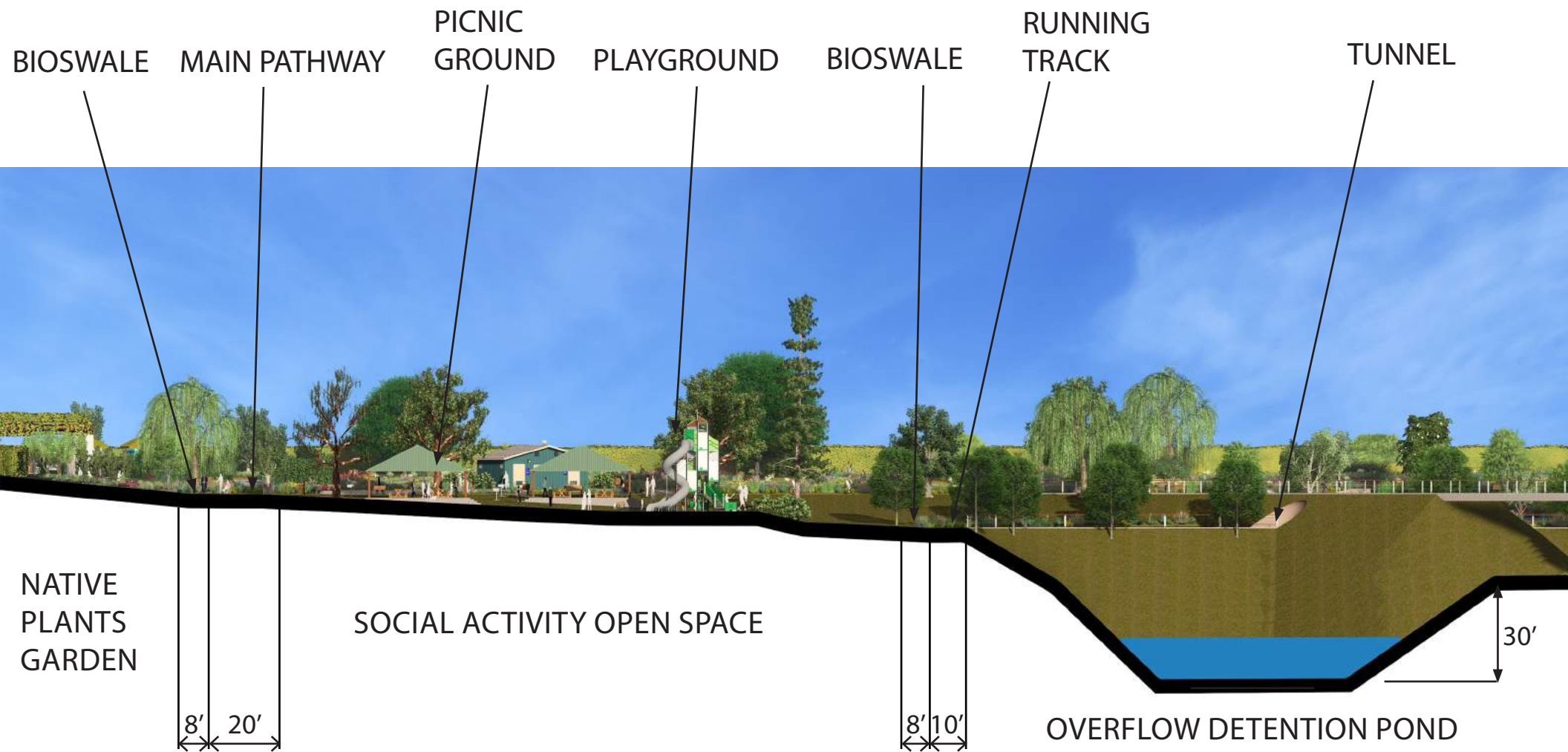


SOCIAL ACTIVITY - Enlargement

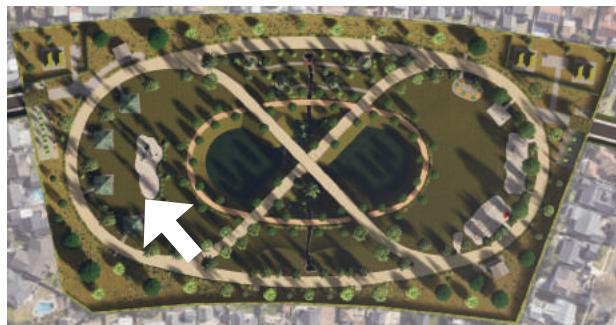
This part of the park is designed with the intention of engaging visitors in social interactions. There is a kids' playground in the center of the open space with a spider web climber and a tall tower structure for active fun. Parents can watch their kids from shaded picnic structures while enjoying company and barbeque at the same time.



SOCIAL ACTIVITY - Section

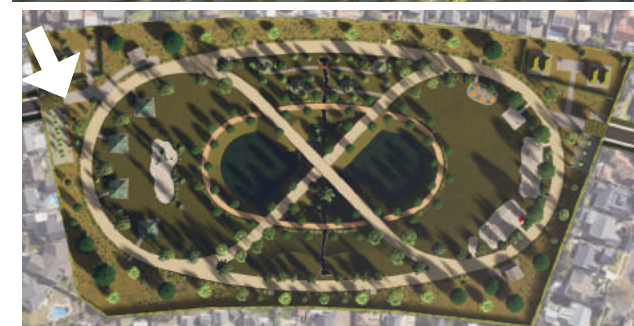


SOCIAL ACTIVITY - Perspective 1



Deodar Cedar

SOCIAL ACTIVITY - Perspective 2



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Palo Verde



Catalina Cherry



Canyon Prince Wild Rye
Dariusz Krasinski

RAIN GARDEN & BRIDGE - Perspective



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White Alder



California Sagebrush



Cattail

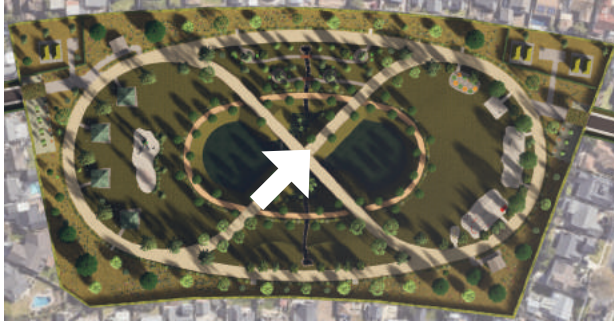
Dariusz Krasinski

VIEW FROM THE BRIDGE - Perspective



Carex pensa - (Pacific Dune Sedge) stabilizes sloped areas. Drought tolerant and low maintenance sedge.

baynatives.com



The main pathway bridge eliminates the risk of collision at the pathway crossing and creates nice views of the entire park.



RAIN GARDEN & BIOSWALE - Perspective



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California Gray Rush



Western Meadow Sedge



Santa Barbara Sedge

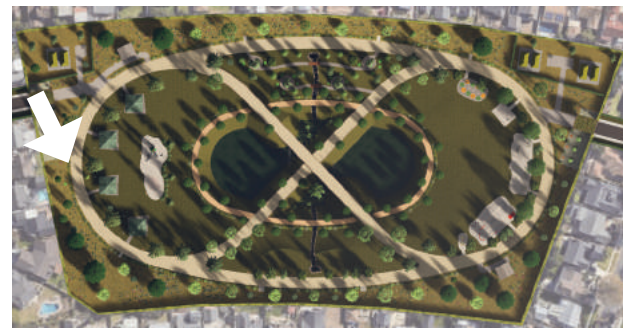
RUNNING TRACK TUNNEL - Perspective



Dual layer rubber running tracks consist of a base layer made from 100% recycled post-consumer rubber topped with a 1/2" colored wear layer.



NATIVE PLANTS GARDEN - Perspective 1



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Deer Grass



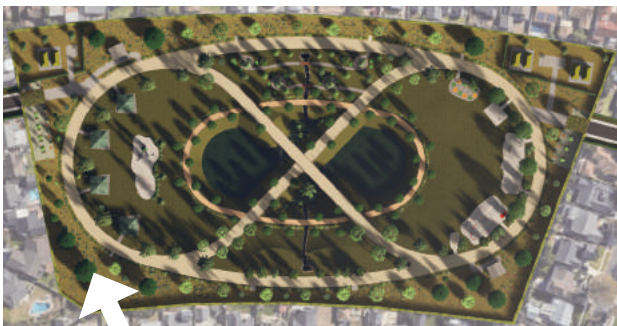
Woodland Sage



Red-flowered Buckwheat

Dariusz Krasinski

NATIVE PLANTS GARDEN - Perspective 2



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Valley Oak



Golden Currant



Aloe Vera

CONCLUSION



PROJECT BENEFITS:

- 11 acres of Nature-Based Recreational Park
- The underground reservoir will satisfy 100% park irrigation needs
- 0.8 mil of recreational pathways
- Reduced carbon footprint by growing many trees.
- The park can become a center of social interactions for the local community
 - Improved residents' health and well-being

NTS 

REFERENCE LIST

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