



EL CAMINO REAL ROADWAY RENEWAL

Tree Workshop

February 9, 2023





INTRODUCTIONS

Your Caltrans Team

Purpose of the Workshop

- Review work completed
- Update on project status
- Gather input on project design of replacement trees

About This Meeting

- 6:30 – 7:00** Introductory presentation
- 7:00 – 8:00** "Project Roadway" design challenge
- 8:00 – 8:30** Closing remarks
- 8:30** Doors close



Your Presenters



Rommel Pardo
Senior Project Manager



Kimberly White
Senior Landscape Architect



Frances Schierenbeck
Senior Environmental Planner, Cultural Resources



Beck Lithander
Landscape Associate



Adrienne St. John
Senior Landscape Architect



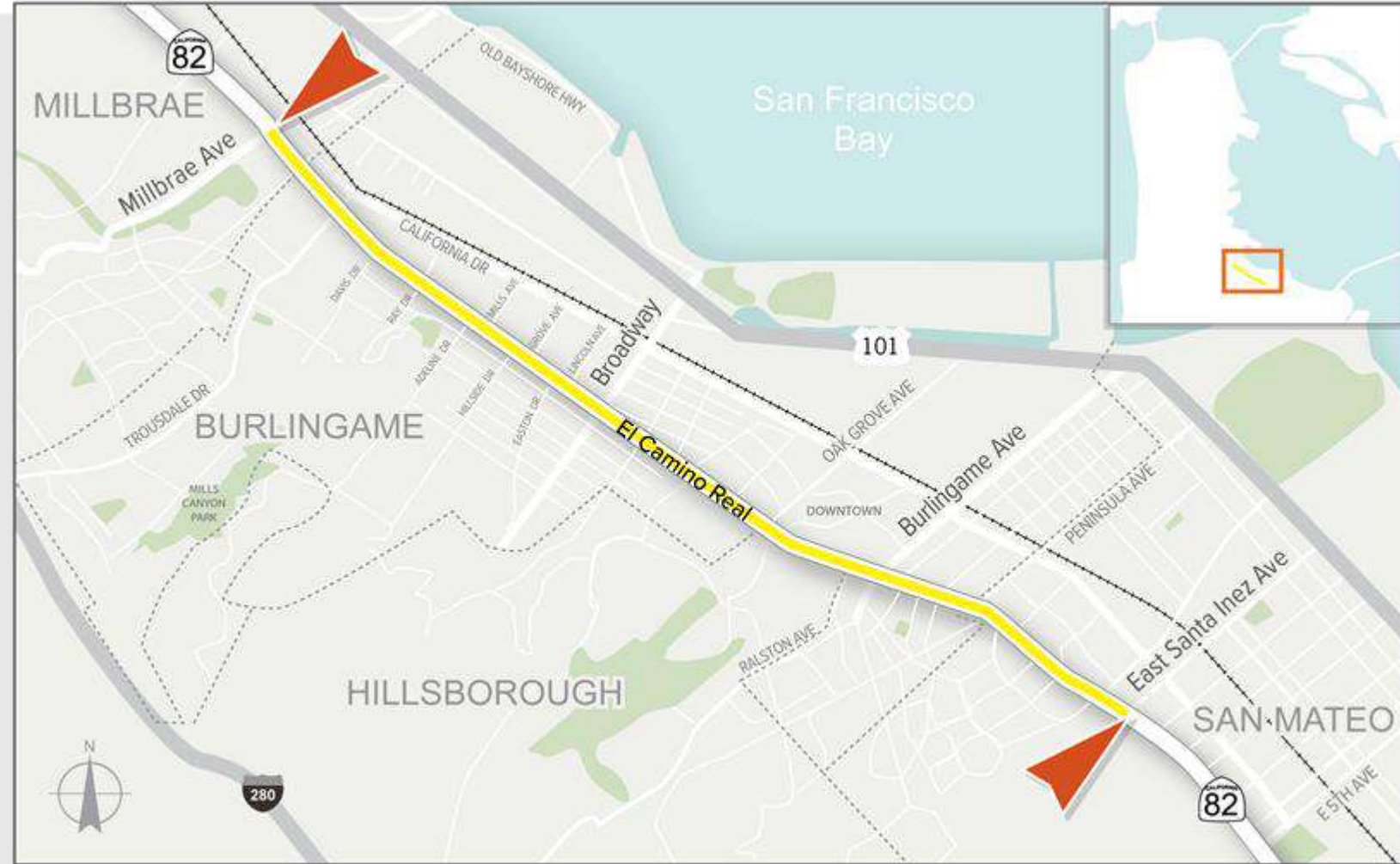
PROJECT OVERVIEW

Purpose & Overarching Goals

Overarching Goals

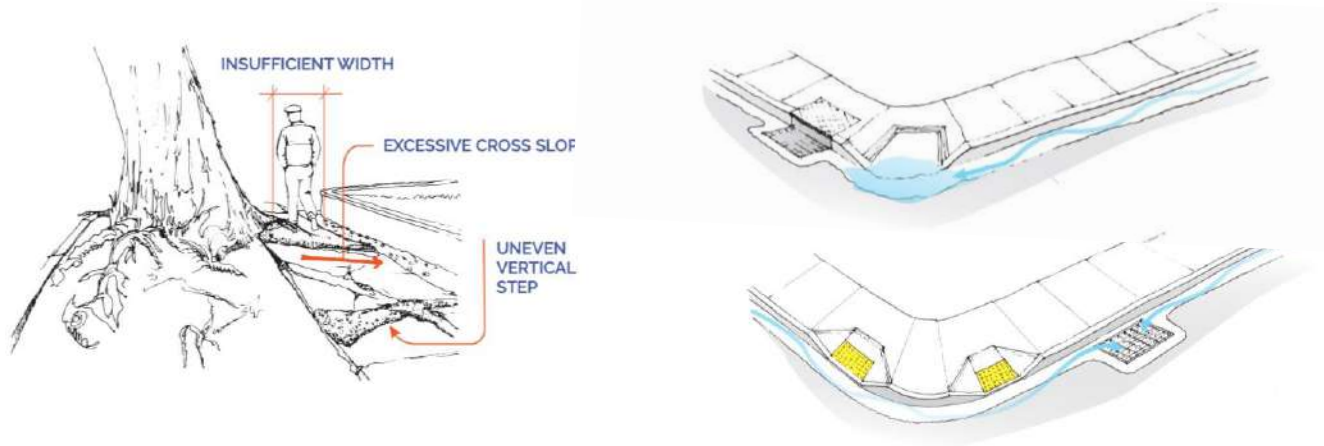
- Retain the character and health of the Grove.
- Improve the safety of the roadway and sidewalks.

Project Limits

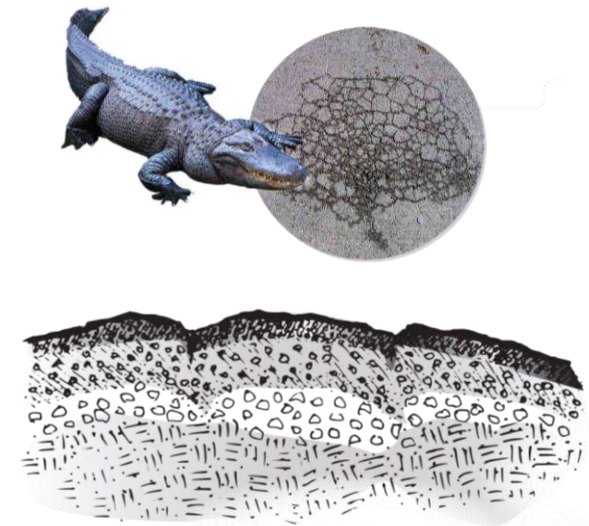


Drainage, Roadway, Sidewalks, ADA

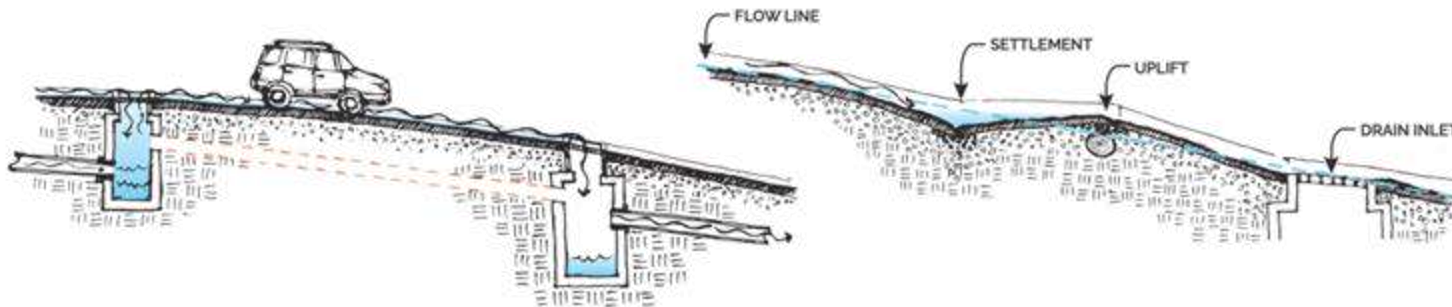
Damaged sidewalks and deficient curb ramps



Poor pavement condition with alligator cracking



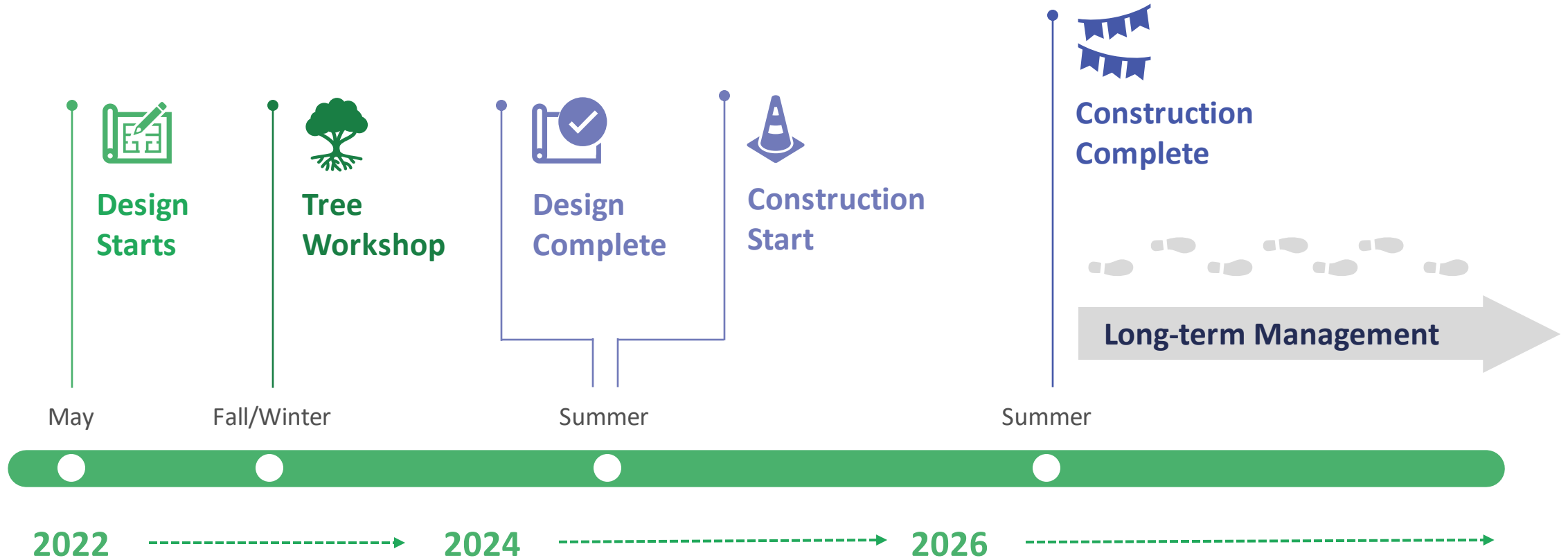
Poorly functioning drainage



What We've Done

- Community Task Force Study Complete *Spring 2017*
- Educational Meeting *January 2020*
- CA Environmental Quality Act (CEQA) Scoping Meeting *May 26-July 6, 2020*
- National Environmental Policy Act (NEPA) Scoping Meeting .. *Nov. 16, 2020-Jan. 8, 2021*
- Draft EIR/EIS with Individual 4(f) evaluation..... *June 10-August 2, 2021*
- Draft Environmental Document Meeting..... *July 14 and July 16, 2021*
- Final Environmental Document Release.....*April 2022*

What's Ahead





VISION FOR THE FUTURE

Rehabilitation of the Tree Rows

Designing the Tree Planting for ECR

- Historic Preservation of the Howard Ralston Eucalyptus Tree Rows
- Physical Constraints
- Other Considerations
- Design Opportunities

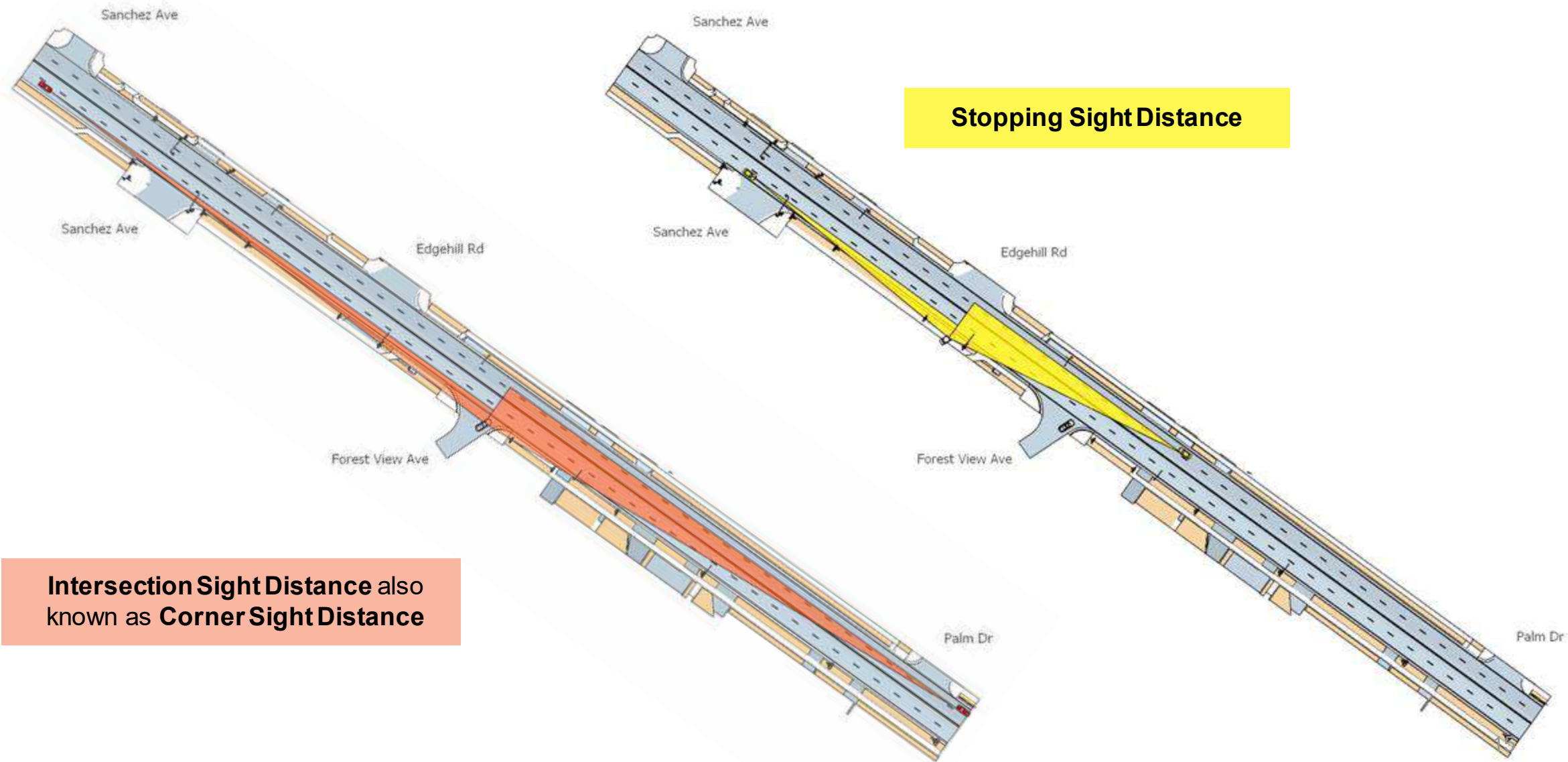




PHYSICAL CONSTRAINTS

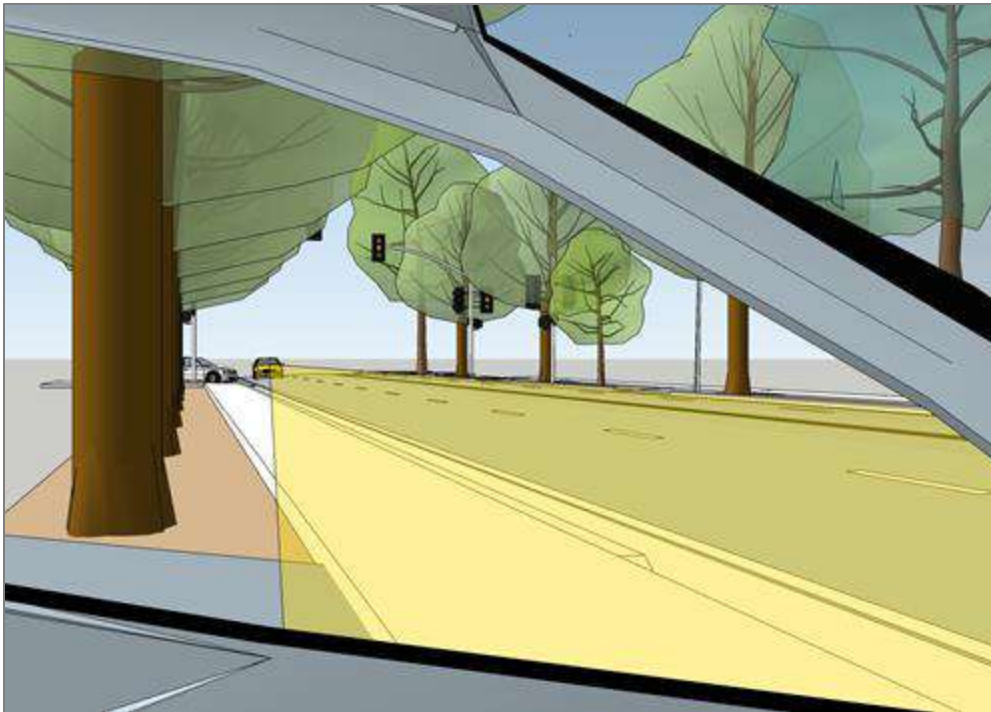
Street trees, sight distance, and safety

Sight Distance

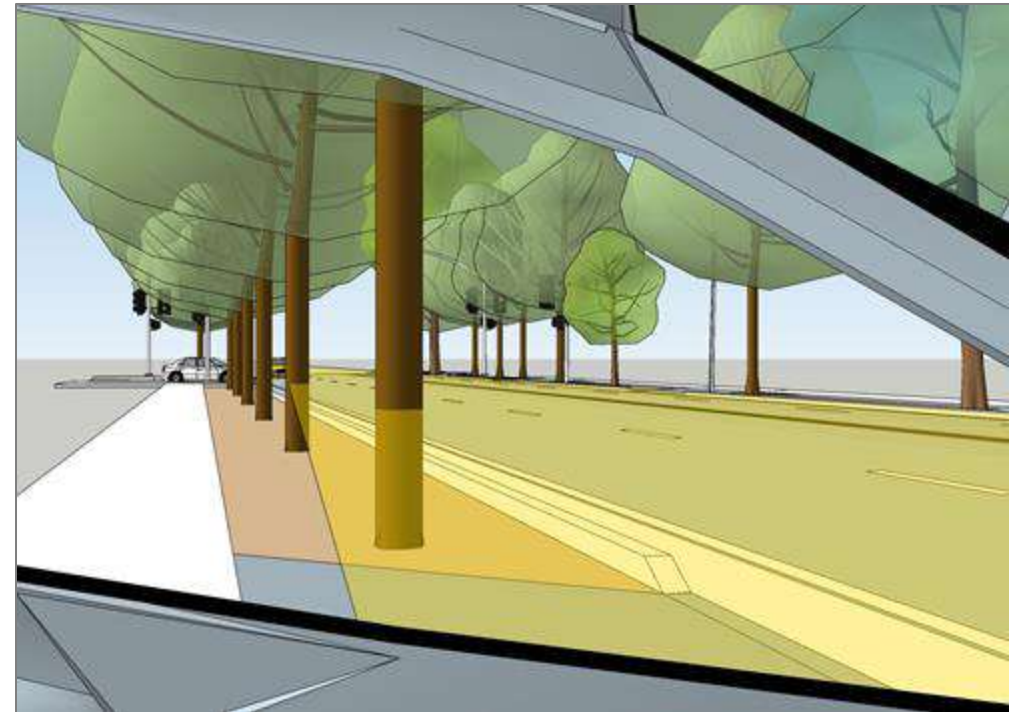


Tree Location and Spacing

HOW IT EFFECTS SIGHT DISTANCE



Trees located outside of the sight triangle can have larger trunks and be more closely spaced.



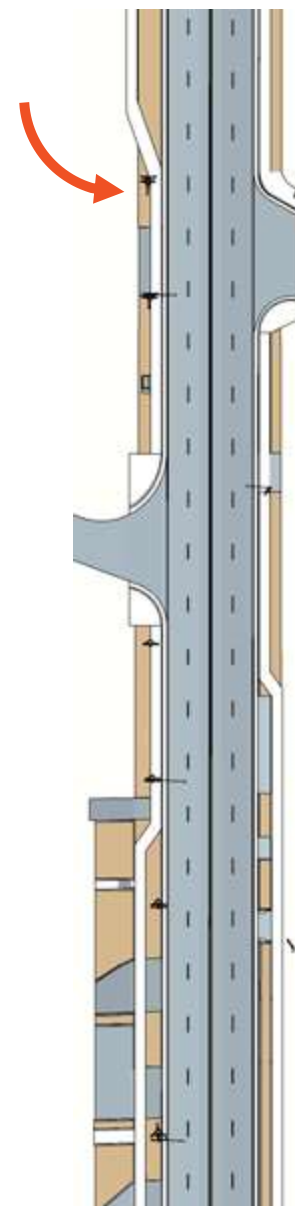
Trees closer to the curb need greater spacing and/or smaller trunks to maintain a clear view.

Tree Location and Spacing

SOLUTIONS

Meandering sidewalk design:

Away from the corner and out of the sight distance triangle, the sidewalk and trees can swap places to provide a buffer for pedestrians.

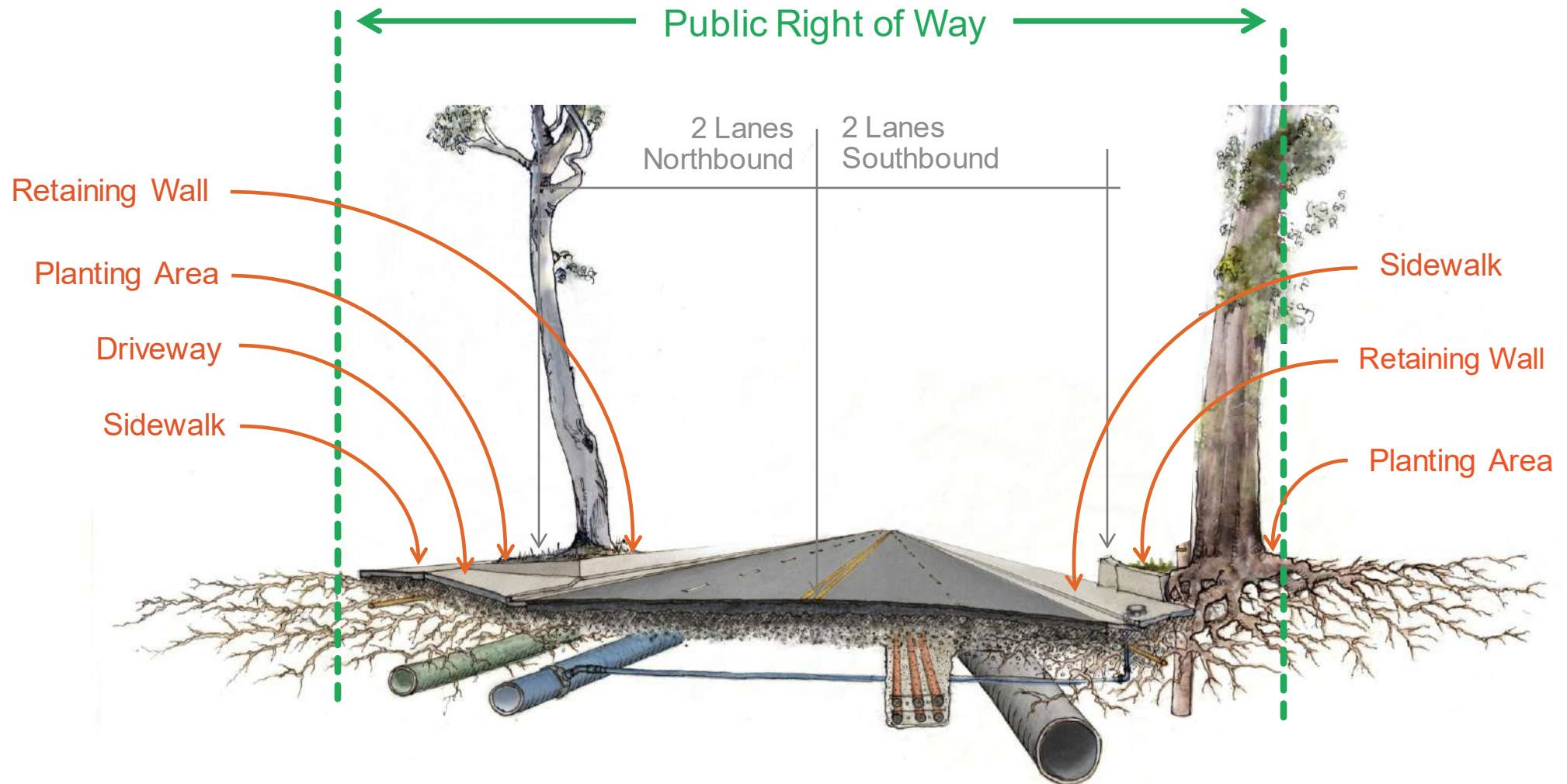




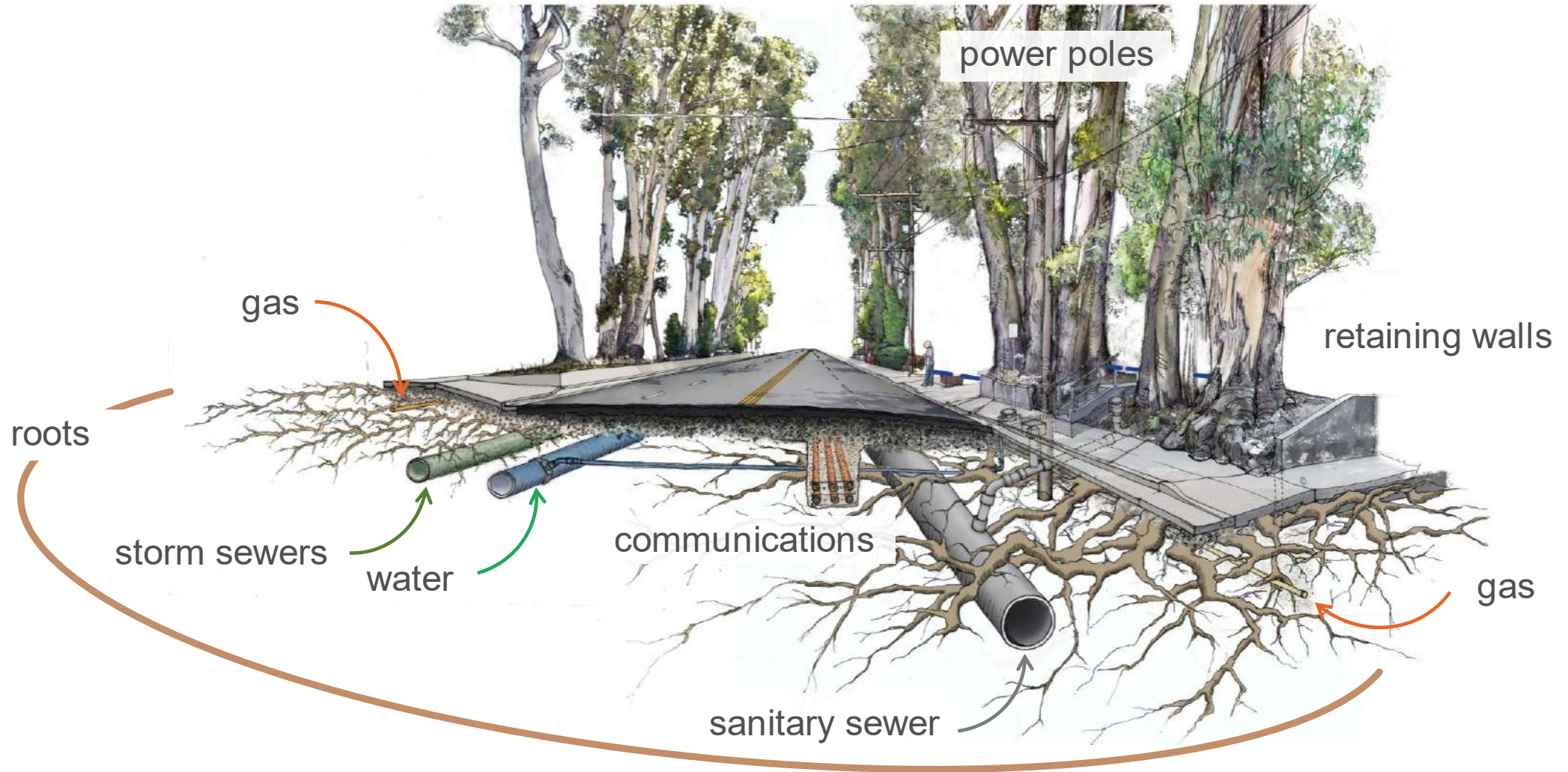
PHYSICAL CONSTRAINTS

Built infrastructure and street trees

Representative Right of Way

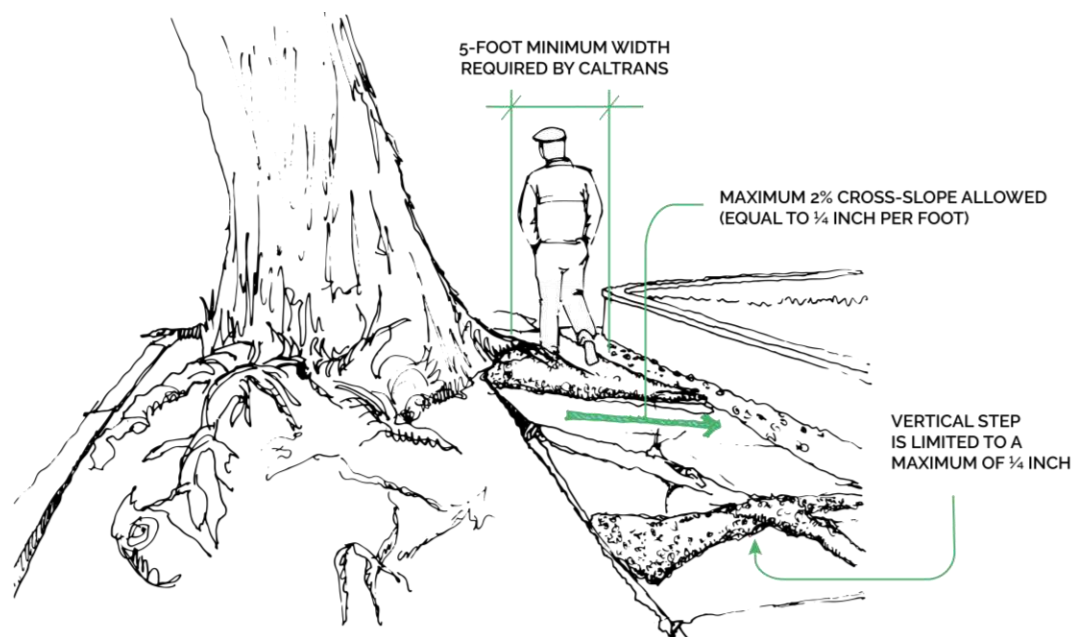


Representative Utility Infrastructure



Tree Roots and Sidewalks

MITIGATING AND AVOIDING CONFLICTS



Existing sidewalks need to be replaced, and in some cases, widened to meet ADA standards and Complete Streets goals.



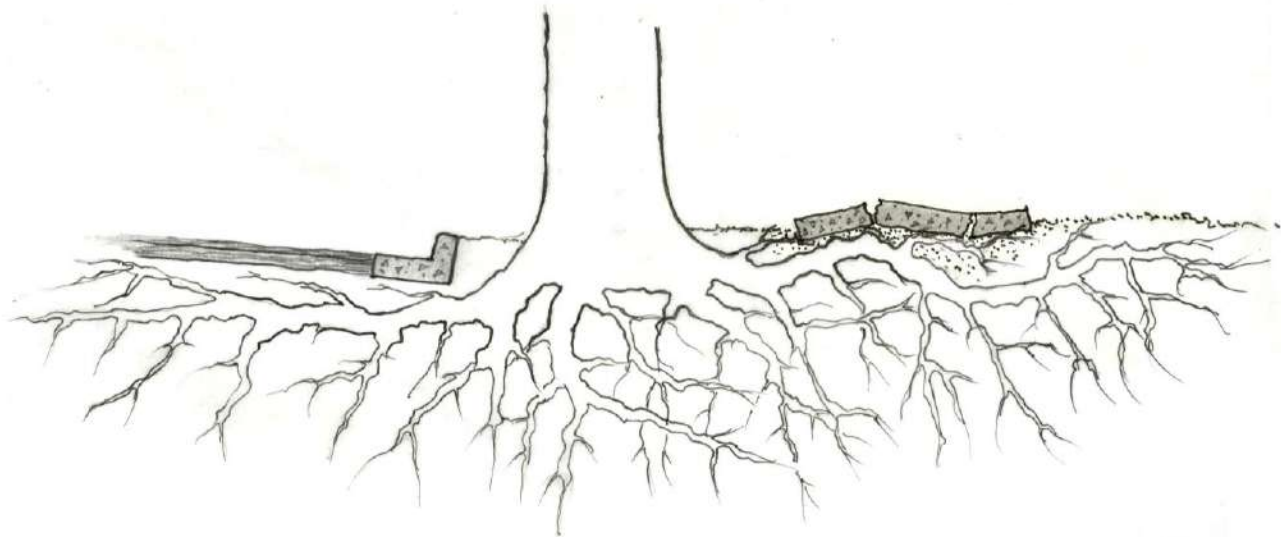
Narrow sidewalks



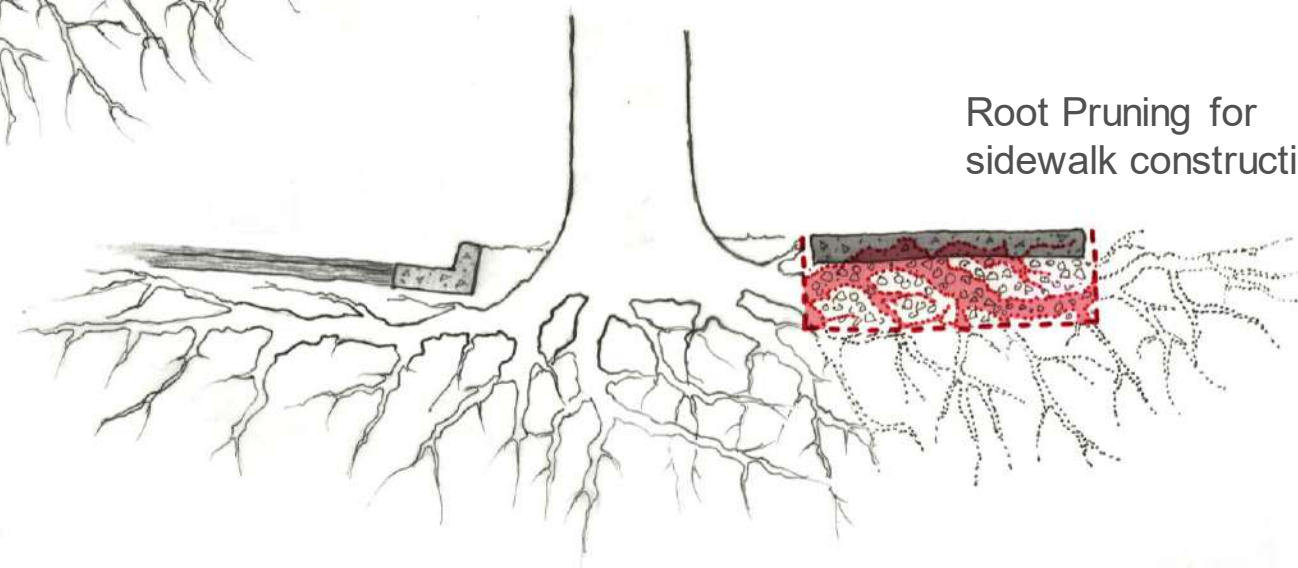
Non-compliant curb ramps

Tree Roots and Sidewalks

MITIGATING AND AVOIDING CONFLICTS



Working around existing tree roots and sidewalk conflicts and avoiding future ones



Root Pruning for sidewalk construction



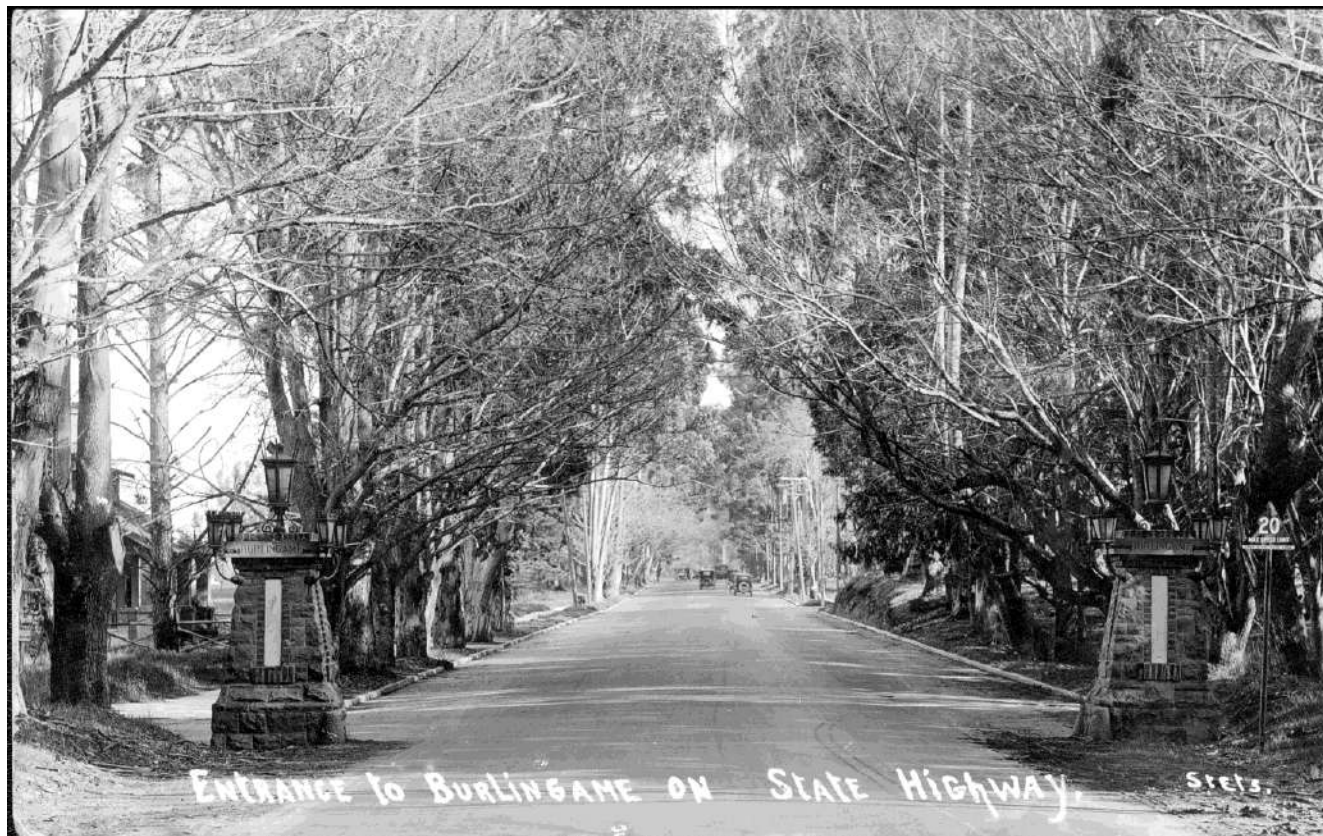
HISTORIC PRESERVATION

Howard-Ralston Eucalyptus Tree Rows

National Register of Historic Places

Listed in 2012

- Influence on the development and character of Burlingame
- Early zoning regulations
- Work of a Master Gardener, John McLaren



El Camino Real, 1915. Image courtesy of Burlingame Historical Society

National Historic Preservation Act

SECTION 106 AND ADVERSE EFFECTS



Mitigation



1
At least 70% of the total trees within the Tree Rows must contribute to the NRHP eligibility of the Tree Rows.



2
Any replacement trees must not detract from the NRHP eligibility.



3
The Tree Rows will be documented before, during, and after construction.



4
Trees will be tagged and GPS locations noted to track the health and number of trees.



5
A long-term management plan for the Tree Rows will be developed.



6
A self-guided history walk with plaques, a time capsule, and custom benches constructed of the wood from removed trees.



7
An El Camino Real Historic Resource Management Plan will be developed to assist the city of Burlingame in management of resources within the corridor.



OTHER CONSIDERATIONS

Changing Climate and Stormwater Capture

Changing Climate

HIGHLIGHTS FROM CALIFORNIA'S FOURTH CLIMATE CHANGE ASSESSMENT

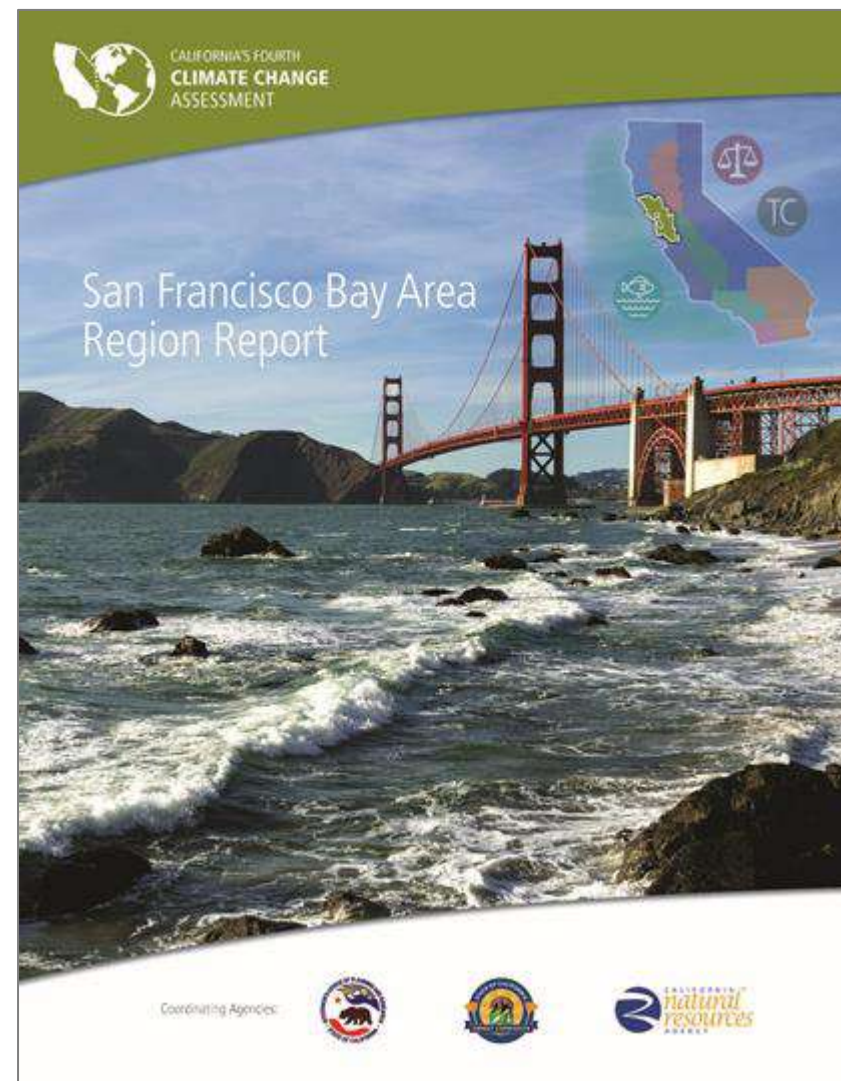


The Bay Area's average annual temperature maximum increased by 1.7°F from 1950-2005 and will likely increase significantly by mid-century.

Precipitation in the Bay Area will continue to exhibit high year-to-year variability—"booms and busts"—with very wet and very dry years.

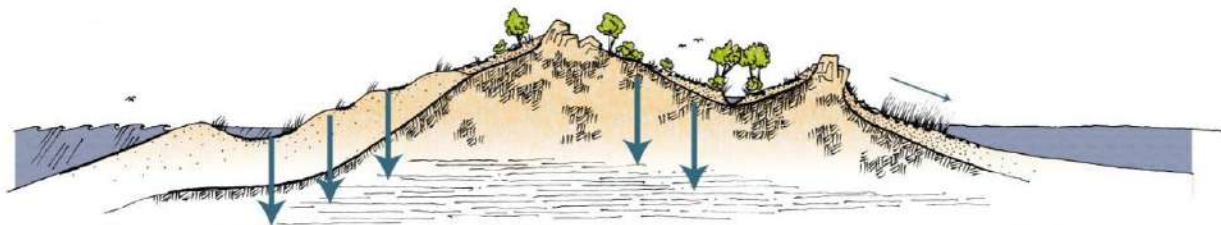
Decline in Sierra Nevada snowpack (water storage) has occurred over the last half-century and is very likely to continue given the physics of climate change.

Future increases in temperature, regardless of whether total precipitation goes up or down, will likely cause longer and deeper California droughts.

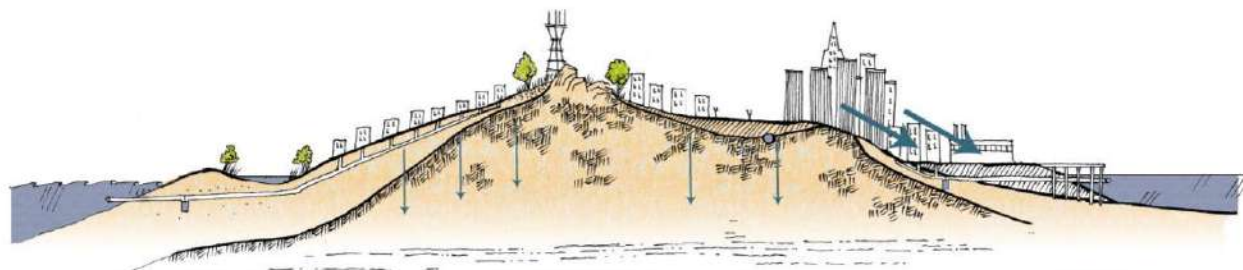


Stormwater Capture and Treatment

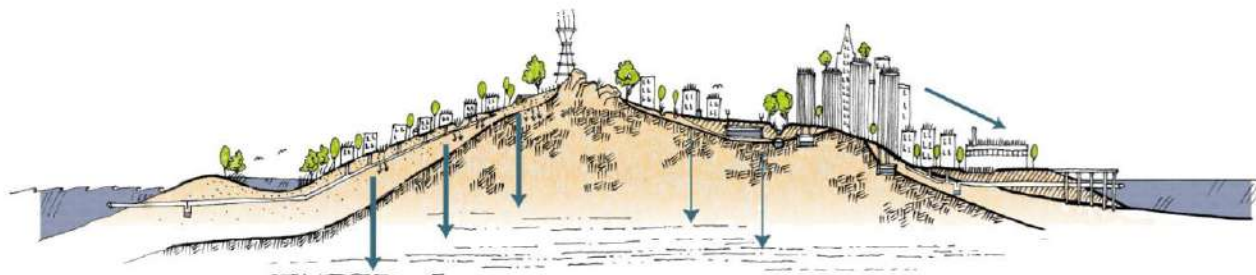
MIMICKING NATURE BY SLOWING AND CLEANING RUNOFF



A natural landscape with high infiltration and low runoff



A developed landscape with low infiltration and high runoff



A developed landscape with stormwater capture and treatment that lessens and cleans runoff

Stormwater Capture and Treatment

SIDEWALK BIORETENTION OPPORTUNITIES

- Sidewalk bioretention planters capture and treat stormwater runoff.
- Stormwater infiltration provides passive irrigation.
- Bioretention planting strips can provide a functional and aesthetic buffer to roadway traffic.





DESIGN OPPORTUNITIES

Ensuring Success of the Tree Rows

Soil Matters

PROVIDING ADEQUATE ROOM

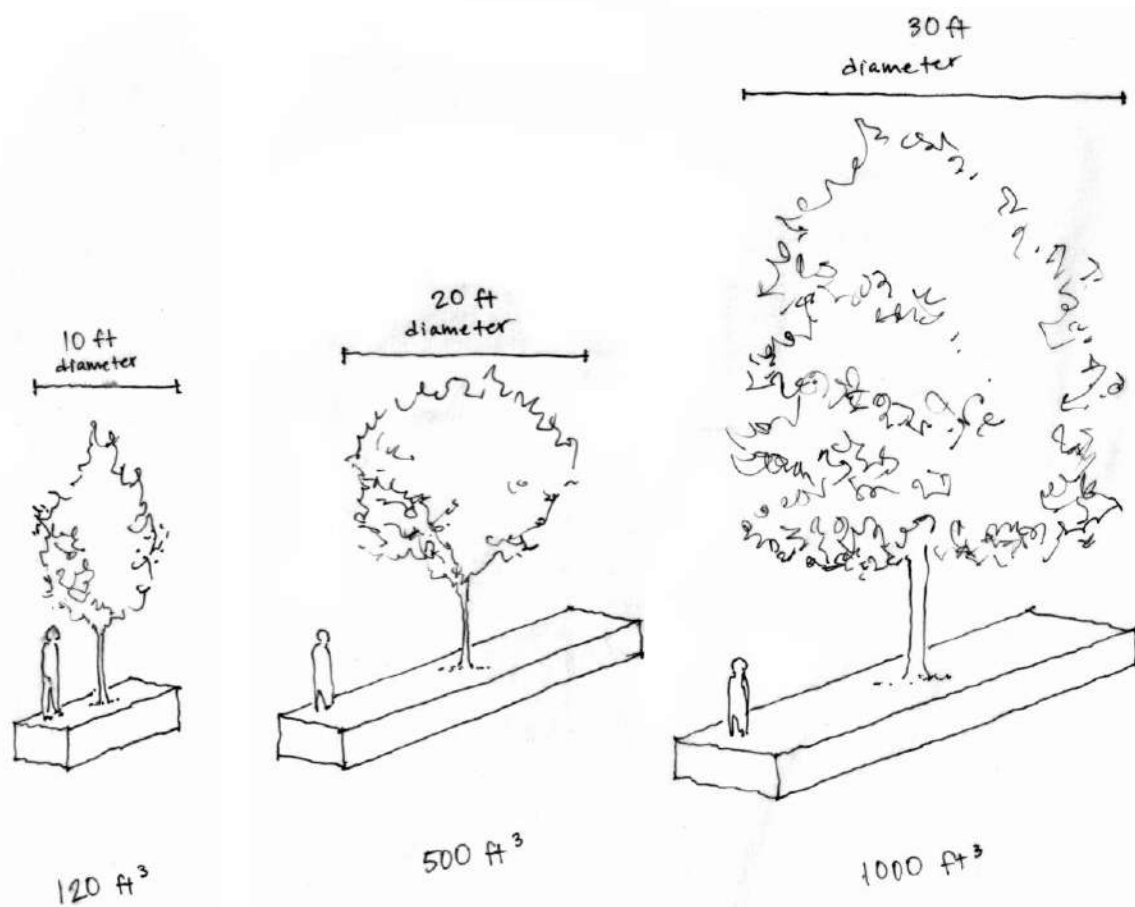


Image of street trees in planting strip

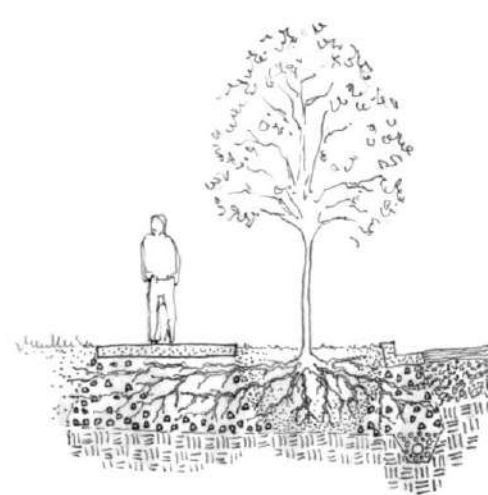
Soil Matters

PROVIDING ADEQUATE ROOM



SUSPENDED PAVEMENT

Pavement is supported by a modular cage-like structure underground. This keeps the pavement from settling but lets roots move through uncompacted soil.



STRUCTURAL SOIL

Coarse structural soils can be compacted to support pavement, while still retaining the oxygen roots need in the pore spaces between the aggregate.

Plant Establishment

PROVIDING IRRIGATION SYSTEMS AND STRUCTURAL PRUNING



Figure 3: Select the lowest permanent scaffold branches

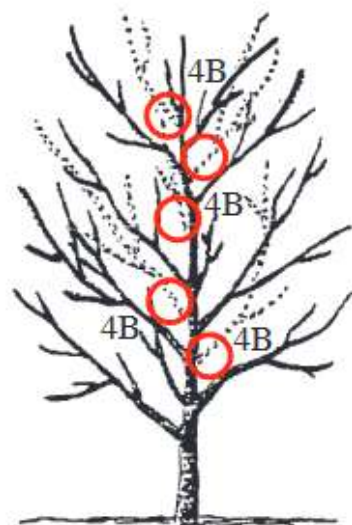


Figure 4: A: Select scaffold branches
B: Cut back or remove competing branches



PRUNING FOR STRUCTURE

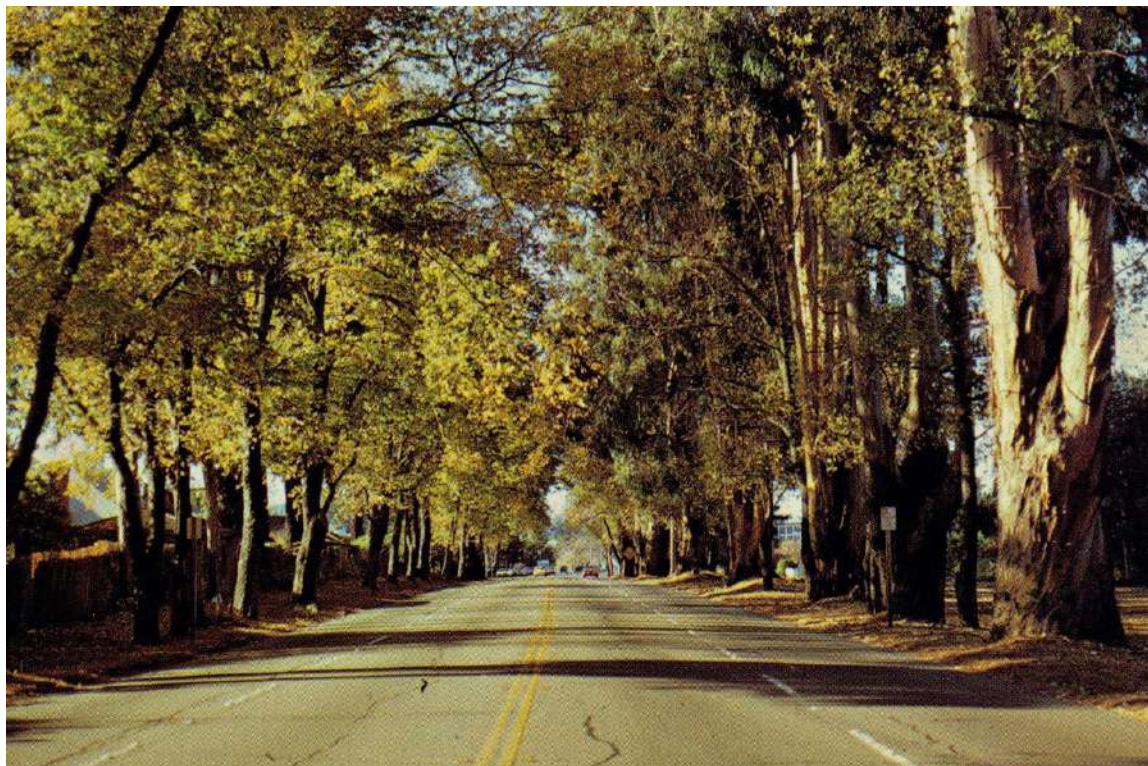
Early pruning should include selection of a leader and scaffolding branches. Competing branches should be removed.

IRRIGATION SYSTEMS

A young street tree needs 10-15 gallons of water every week – even more during dry, hot summers. An irrigation system provides consistent water when needed.

Choosing Trees

PRESERVATION OF HISTORIC CHARACTER



Tall, upright majestic evergreen trees (*predominantly eucalyptus*)
with deciduous trees (*predominantly elm*)



Narrow roadway lined with
tunnel-forming trees

Choosing Trees

STREETSCAPE COMPATIBILITY AND HORTICULTURAL CONSIDERATIONS

TREE COMPARISON CHART

Key Considerations:

- Size
- Aesthetics
- Climate adapted
- Water needs
- Growth rate
- Habitat value
- Salt tolerance
- Fire resistance
- Invasive?
- Recommended by Arborists?

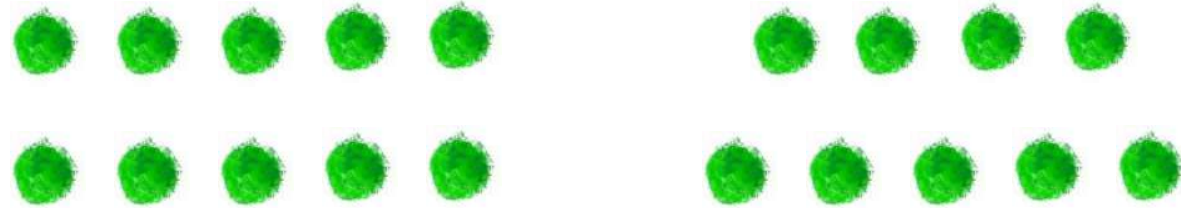
| Common Name | Height | | Spread | | Seasonal Interest | | Climate Adaptability | Water Usage | Growth Rate (inches/year) | Branch Strength | CA Native | Habitat Value | Invasive | Salt Tolerance | Fire Resistance | Root Damage Potential |
|-------------------------|--------|-----|--------|-----|----------------------|------------|----------------------|-------------|---------------------------|-----------------|-----------|---------------|-----------|----------------|-----------------|-----------------------|
| | Min | Max | Min | Max | Deciduous/ Evergreen | Fall Color | | | | | | | | | | |
| Trident Maple | 20 | 25 | 20 | 25 | 🌳 | 🍁 | Likely | M | M-F | M | | L | NotListed | No Data | Favorable | L |
| Sensation Box Elder | 40 | 50 | 35 | 40 | 🌳 | 🍁 | Yes | M | F | W | 🌳 | H | NotListed | No Data | Favorable | M |
| Armstrong Red Maple | 50 | 60 | 15 | 25 | 🌳 | 🍁 | Unlikely | M | F | MW | | M | NotListed | Moderate | Favorable | M |
| Sydney Red Gum | 50 | 65 | 30 | 50 | 🌳 | 🍁 | Likely | L | M | M | | M | NotListed | No Data | | M |
| European Hornbeam | 40 | 50 | 40 | 40 | 🌳 | 🍁 | Unlikely | M | M | S | | M | NotListed | Moderate | | L |
| American Hornbeam | 35 | 40 | 20 | 30 | 🌳 | 🍁 | Unlikely | M | S | S | | M | NotListed | No Data | | L |
| Ghost Gum | 30 | 50 | 20 | 35 | 🌳 | | Yes | N/A | F | M | | L | NotListed | No Data | | M |
| Lemon-scented Gum | 80 | 160 | 50 | 100 | 🌳 | | Yes | L | F | M | | M | NotListed | No Data | Favorable | M |
| Spotted Gum | 60 | 100 | 30 | 40 | 🌳 | | Yes | L | F | MS | | M | NotListed | No Data | | M |
| Southern Mahogany | 80 | 120 | 30 | 75 | 🌳 | | Yes | Unknown | F | S | | M | NotListed | Good | | M |
| Coolabah | 35 | 50 | 25 | 25 | 🌳 | | Yes | L | F | M | | L | NotListed | Good | | M |
| Mountain Gum | 50 | 100 | 25 | 50 | 🌳 | | Yes | L | F | M | | M | NotListed | No Data | | M |
| Karri | 80 | 200 | 20 | 50 | 🌳 | | Yes | L | F | M | | M | NotListed | Moderate | | M |
| Flooded Gum | 30 | 60 | 25 | 40 | 🌳 | | Yes | L | F | M | | M | NotListed | Good | Unfavorable | M |
| Sydney Blue Gum | 70 | 150 | 20 | 50 | 🌳 | | Yes | L | F | M | | M | NotListed | No Data | | M |
| Swamp Mallet | 20 | 40 | 20 | 20 | 🌳 | | Yes | L | M-F | M | | M | NotListed | Good | | L |
| Manna Gum | 30 | 150 | 25 | 50 | 🌳 | | Yes | L | F | M | | M | NotListed | No Data | Unfavorable | M |
| White Ash, American Ash | 60 | 80 | 40 | 50 | 🌳 | 🍁 | Unlikely | M | F | MS | | M | NotListed | No Data | Favorable | M |
| Foothill Ash | 20 | 25 | 15 | 20 | 🌳 | 🍁 | Yes | L | M | MS | 🌳 | H | NotListed | No Data | Favorable | L |
| Kentucky Coffee Tree | 60 | 100 | 40 | 50 | 🌳 | | Likely | L | M-F | S | | M | NotListed | No Data | Favorable | M |
| Sweet Bay | 30 | 45 | 15 | 30 | 🌳 | | Yes | L | S-M | M | | M | NotListed | Moderate | Favorable | M |
| Catalina Ironwood | 20 | 40 | 15 | 25 | 🌳 | | Yes | L | M | S | 🌳 | H | NotListed | Moderate | | M |
| Sour Gum, Tupelo | 30 | 50 | 20 | 30 | 🌳 | 🍁 | Likely | M | S-M | S | | M | NotListed | Moderate | | L |
| Chinese Pistache | 30 | 60 | 25 | 45 | 🌳 | 🍁 | Yes | L | M | S | | M | NotListed | No Data | Conflicting | L |

Planting Configurations

DECIDING WHAT GOES WHERE

UNIFORM PLANTING

Single species is planted along length of avenue. Typically, formal avenues are symmetric, informal avenues are asymmetric



PATTERNED PLANTING

Two or more species are planted in a repeating pattern or group.



FOCAL / LANDMARK AREAS

Contrasting species of tree is used to highlight the presence of an entry, change in land use, community focal point, etc.





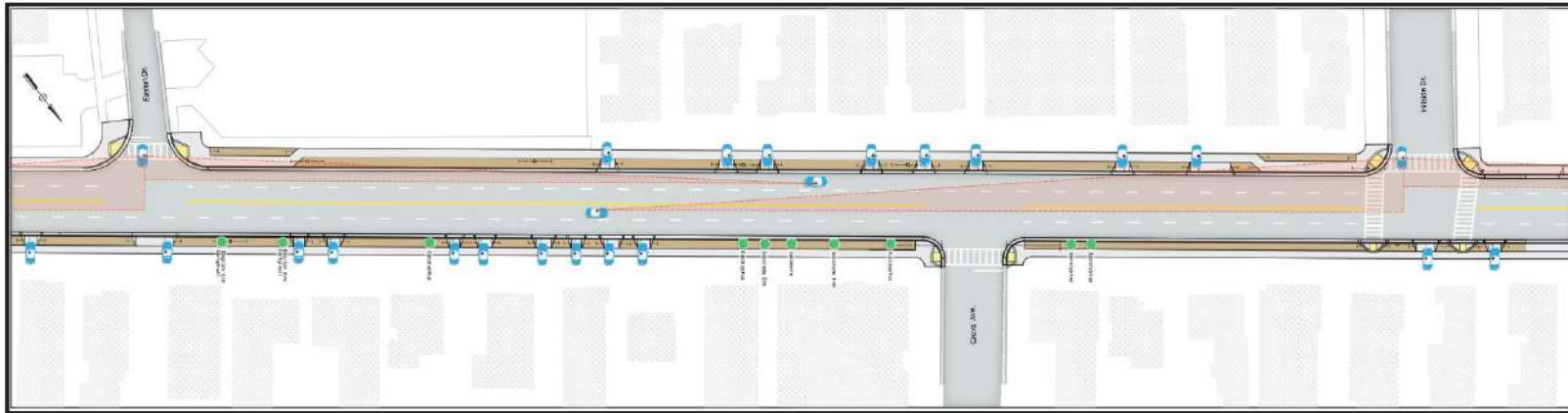
Questions?

EL CAMINO REAL ROADWAY RENEWAL

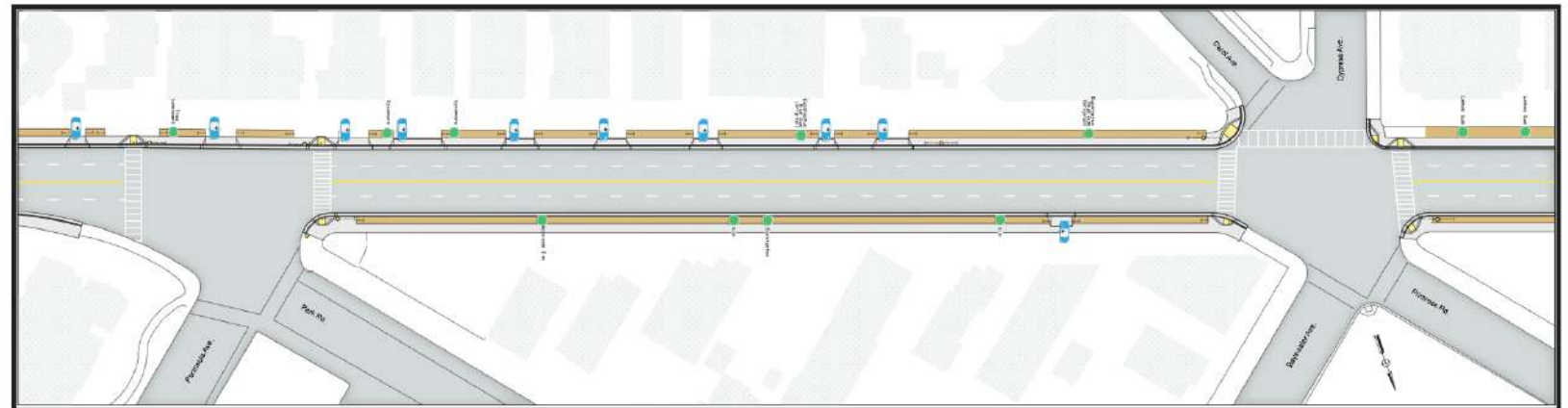
Design Challenge

Objective of The Game

Place desired trees along sample roadway section of El Camino Real, while following design, sight distance, and safety guidelines.



HILLSIDE DRIVE

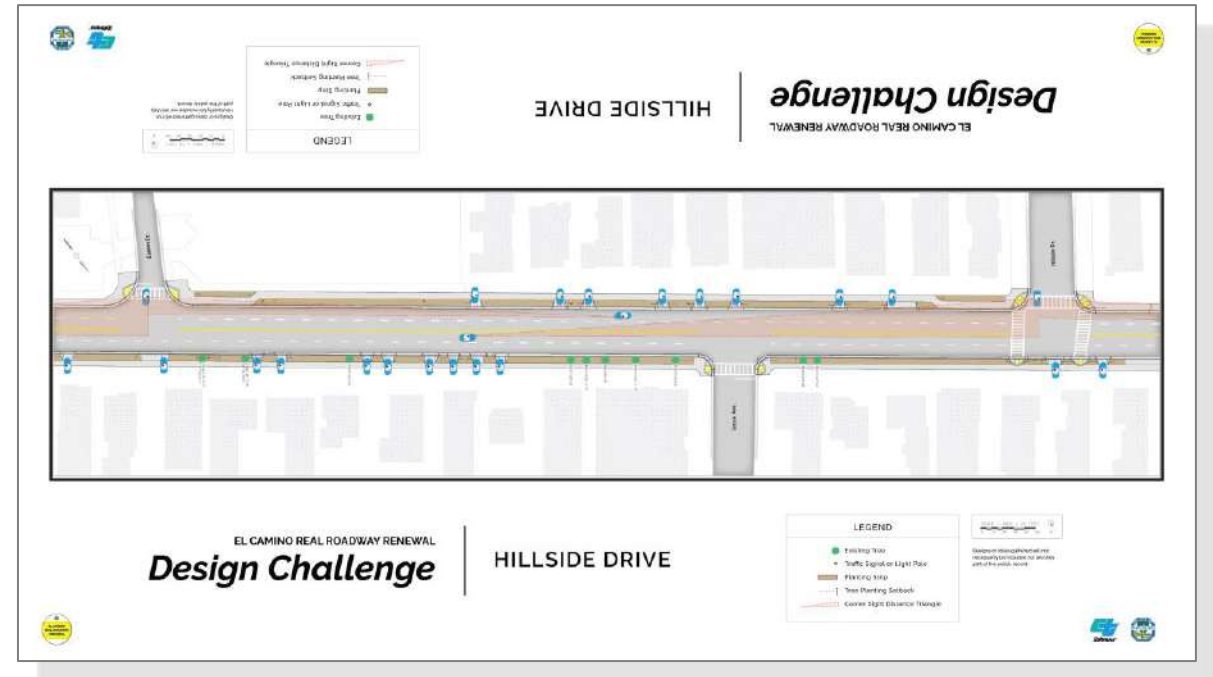


BAYSWATER

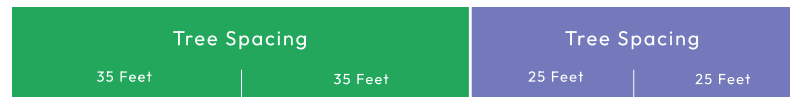
Supplies



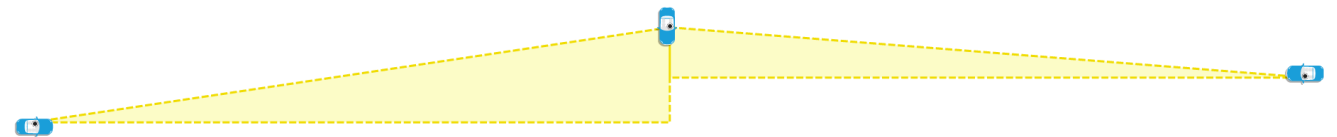
MODEL TREES



GAME BOARD & RULE SHEET



TREE SPACING RULER



YELLOW SIGHT TRIANGLE



Thank you