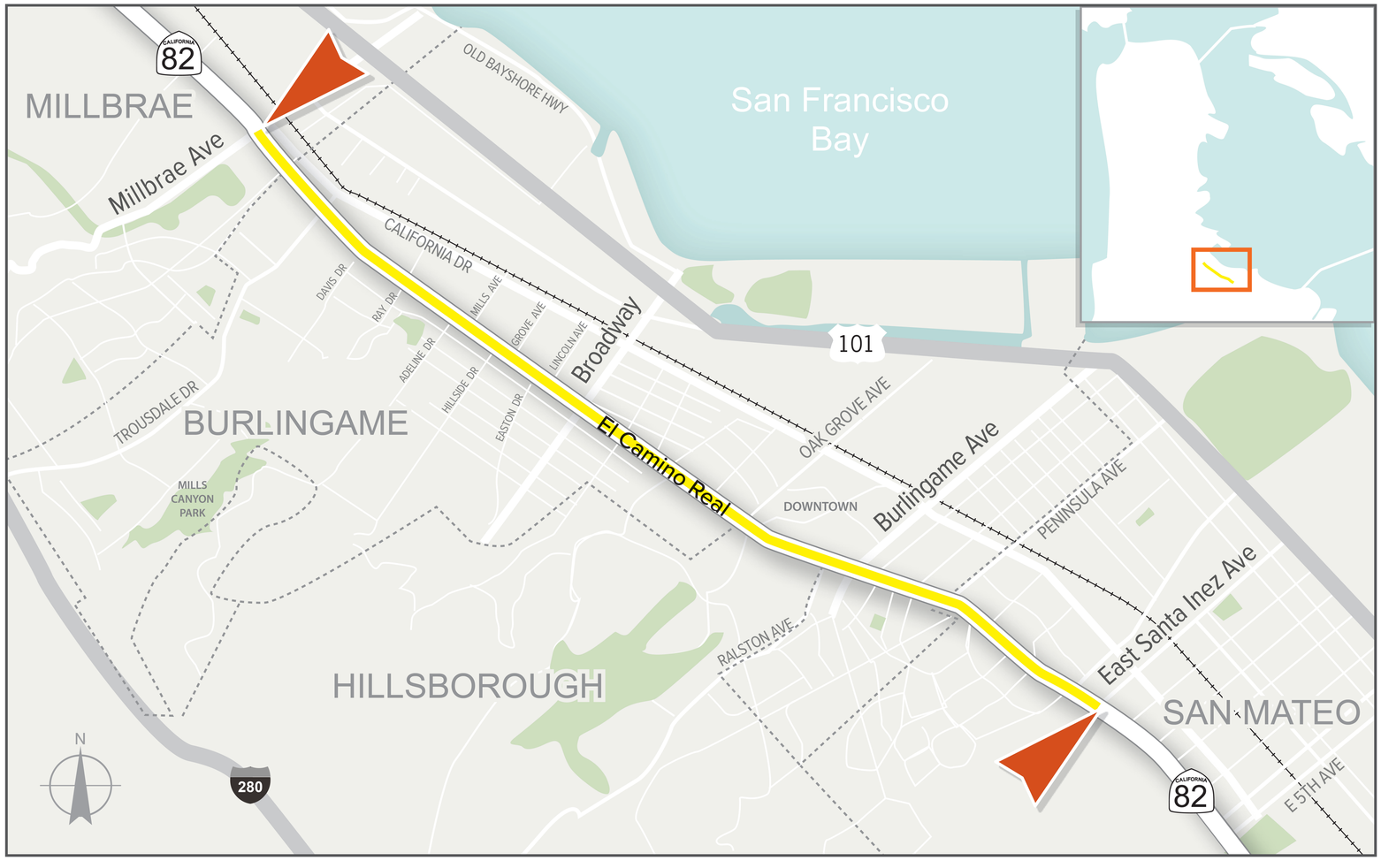
PROJECT AREA

3-Mile Section of El Camino Real

The project area stretches 3 miles, between East Santa Inez Avenue and Millbrae Avenue. This section of El Camino Real is lined with heritage tree rows that are listed on the National Register of Historic Places.



PROJECT OVERVIEW

Objectives and Considerations

KEY OBJECTIVES FOR MODERNIZING AND UPGRADING THIS CRITICAL CORRIDOR

FUNCTION
Repair roadway, fix sidewalks, and improve drainage

SAFETY
Improve visibility for pedestrians and motorists

ACCESS
Provide equal access and ensure that people of all abilities can traverse the road and sidewalks safely

CHARACTER
Preserve El Camino Real's unique character

KEY CONSIDERATIONS AS WE MOVE THROUGH PROJECT DEVELOPMENT

ROADWAY CONDITIONS
To properly repair existing conditions, base material must be replaced.

SIDEWALK CONDITIONS
2.3 miles of sidewalk and 82 curb ramps must be replaced and brought up to standard.

DRAINAGE CONDITIONS
Flooding is a regular occurrence on the corridor.

TREES
A detailed assessment is needed to determine condition of each tree.

HISTORIC RESOURCES
Protecting historic resources is important to retaining the character of the corridor.

EL CAMINO REAL HISTORY

Howard-Ralston Tree Rows

The El Camino Real tree rows, which consist of English elms and eucalyptus, were designed by John McLaren to beautify and promote land development of large estates such as those owned by George H. Howard and William C. Ralston, for whom the tree rows are named.

1770s

Spanish expeditions establish El Camino Real (ECR) along routes used by Native Americans, linking missions, presidios, and pueblos from San Diego to San Francisco

1874

Local landowners hire **John McLaren**, famed gardener of Golden Gate Park, to plant trees to line ECR: elms for shade and fast-growing eucalyptus to shelter the slower-growing elms

Cable cars celebrate one-year anniversary of operating in San Francisco[1]

1912

Paving of ECR begins; one year later, Burlingame declares the tree rows to be historically significant

1930

Burlingame enacts the nation's first zoning ordinances to protect tree rows on ECR from development

San Mateo County population reaches 77,405[3]

Average building lots in Burlingame cost between $50 and $550[2]

1770 1800 1830 1860 1900 1930

John McLaren photograph used by permission of San Francisco History Center, San Francisco Public Library

Caltrans **EL CAMINO REAL ROADWAY RENEWAL** CALIFORNIA 82

SOURCES
[1]SFMTA.com
[2]The San Francisco Call (newspaper)
[3]Bay Area Census, 1930

EL CAMINO REAL HISTORY

Howard-Ralston Tree Rows

1985
Caltrans begins replacing historic trees lost to damage/disease

2008
Caltrans documents the Howard-Ralston Eucalyptus Tree Rows, including size, type and location of each tree

Caltrain service to Burlingame continues, 5 years after taking over from Southern Pacific[4]

2012
The Howard-Ralston Eucalyptus Tree Rows are listed on the National Register of Historic Places

Burlingame celebrates centennial[5]

2017
ECR Task Force is formed and recommends options to address challenges along the roadway while preserving the tree rows. Today's work is a continuation of the effort.

2019
Caltrans advances ADA upgrades and roadway improvements for preliminary design and environmental approval

1930 1960 2000 2030

EL CAMINO REAL ROADWAY RENEWAL

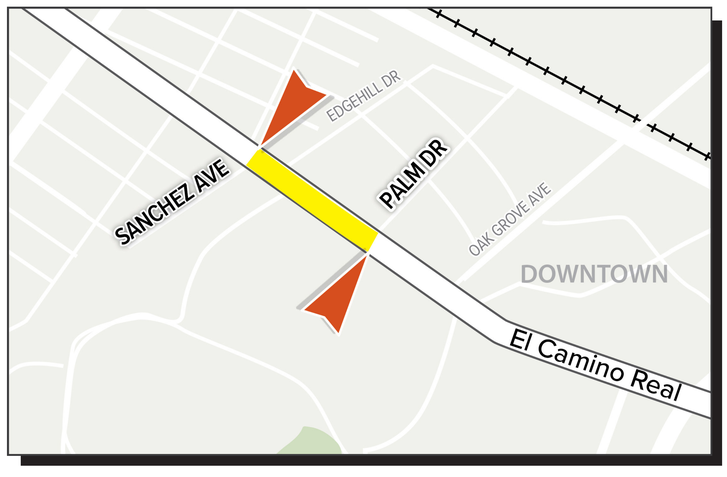
SOURCES
[4]caltrain.com/about/History.html?PageMode
[5]Burlingame Voice, 2008

COMMUNITY TASK FORCE

Overview and Summary

The El Camino Real (ECR) Task Force was formed in 2017 to reach a consensus about the future of El Camino Real in Burlingame. Two primary goals of the Task Force were to improve safety of roadway and sidewalks, and to retain the character of the corridor.

PILOT STUDY AREA



EL CAMINO REAL TASK FORCE BY THE NUMBERS

4

Number of technical members on Task Force, including a consultant planner, Caltrans project manager, City Engineer, City Arborist

10

Number of nontechnical members on Task Force, including two city council members, local historian(s), and residents

18

Number of months the Task Force was in effect between 2017-2018

2

Number of city blocks studied by the Task Force to determine its list of recommendations

TASK FORCE WORK

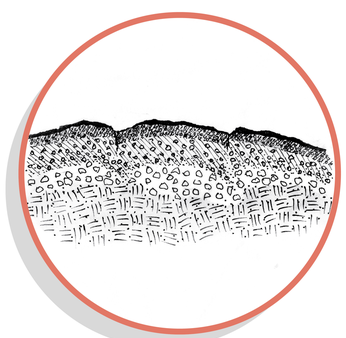
Recommendations

TREES

- Preserve and rehabilitate The Grove
- Develop a maintenance and monitoring plan
- Phase the replanting of trees
- Replant trees using 25-foot spacing
- Explore undergrounding utilities

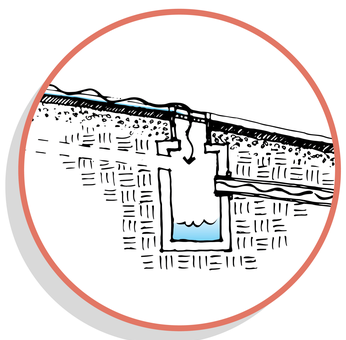
SIDEWALKS

- Improve safety for pedestrians
- Make sidewalks and ramps ADA compliant
- Plant trees between roadway and sidewalk to create buffer where possible
- Install new lighting
- Meander sidewalk for tree wells, where needed



ROADWAY

- Retain existing width of roadway
- Improve crosswalk safety
- Create clear sight lines at intersections and driveways
- Make road surfaces smooth



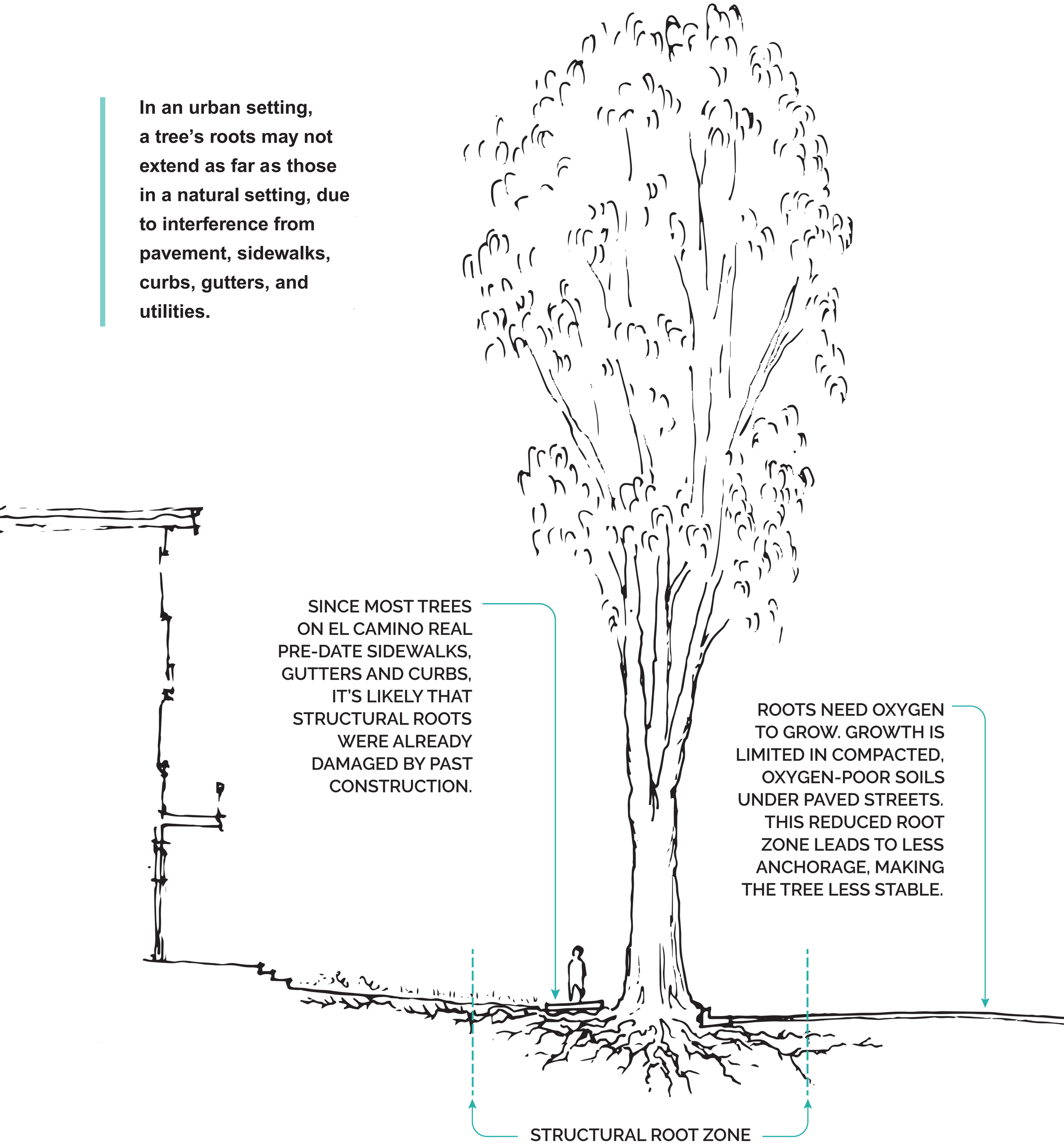
DRAINAGE

- Eliminate standing water/flooding on roadway
- Protect adjacent properties from flooding

HOW TREES GROW

Root Zones in Urban Setting

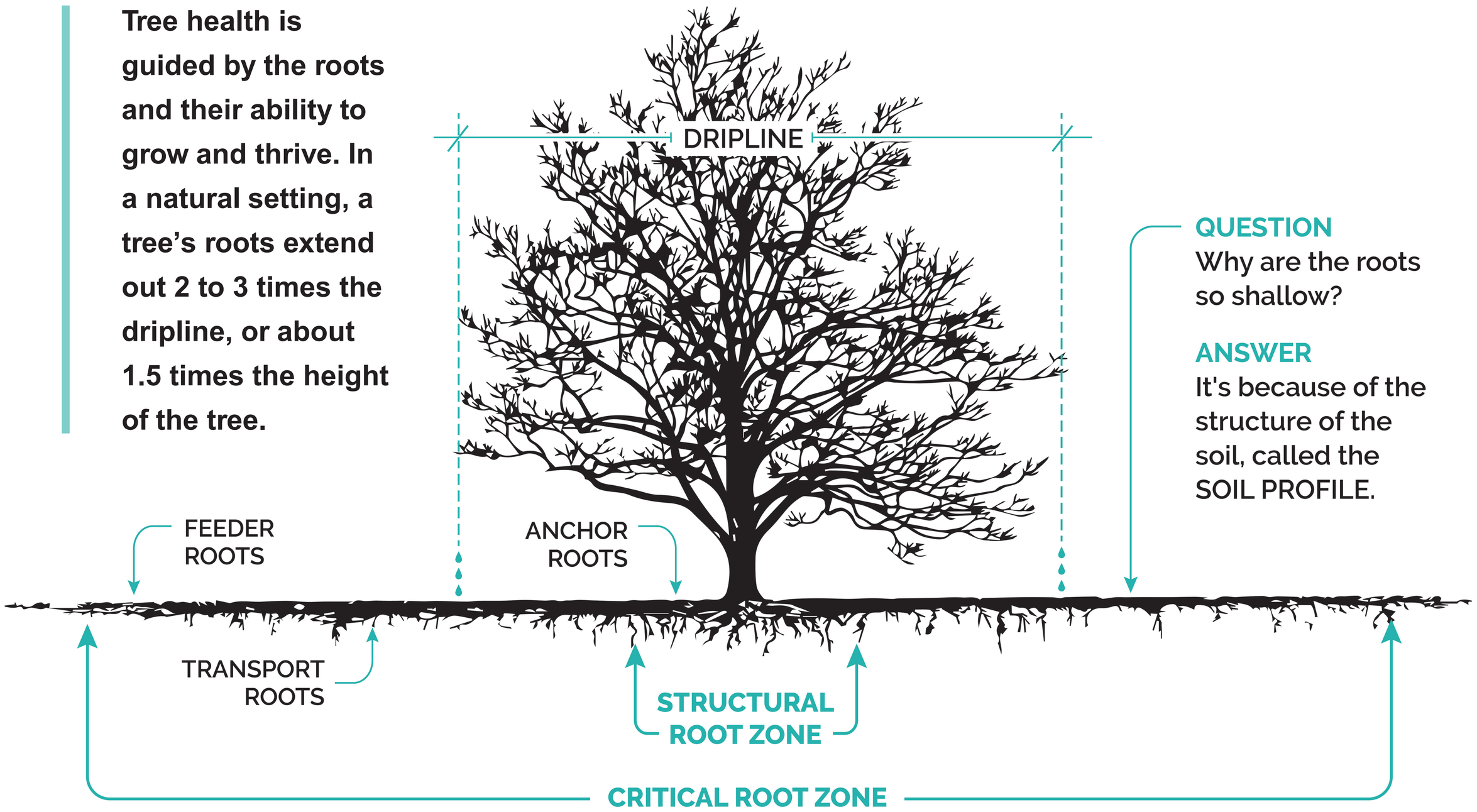
In an urban setting, a tree's roots may not extend as far as those in a natural setting, due to interference from pavement, sidewalks, curbs, gutters, and utilities.



HOW TREES GROW

Roots in a Natural Setting

Tree health is guided by the roots and their ability to grow and thrive. In a natural setting, a tree's roots extend out 2 to 3 times the dripline, or about 1.5 times the height of the tree.

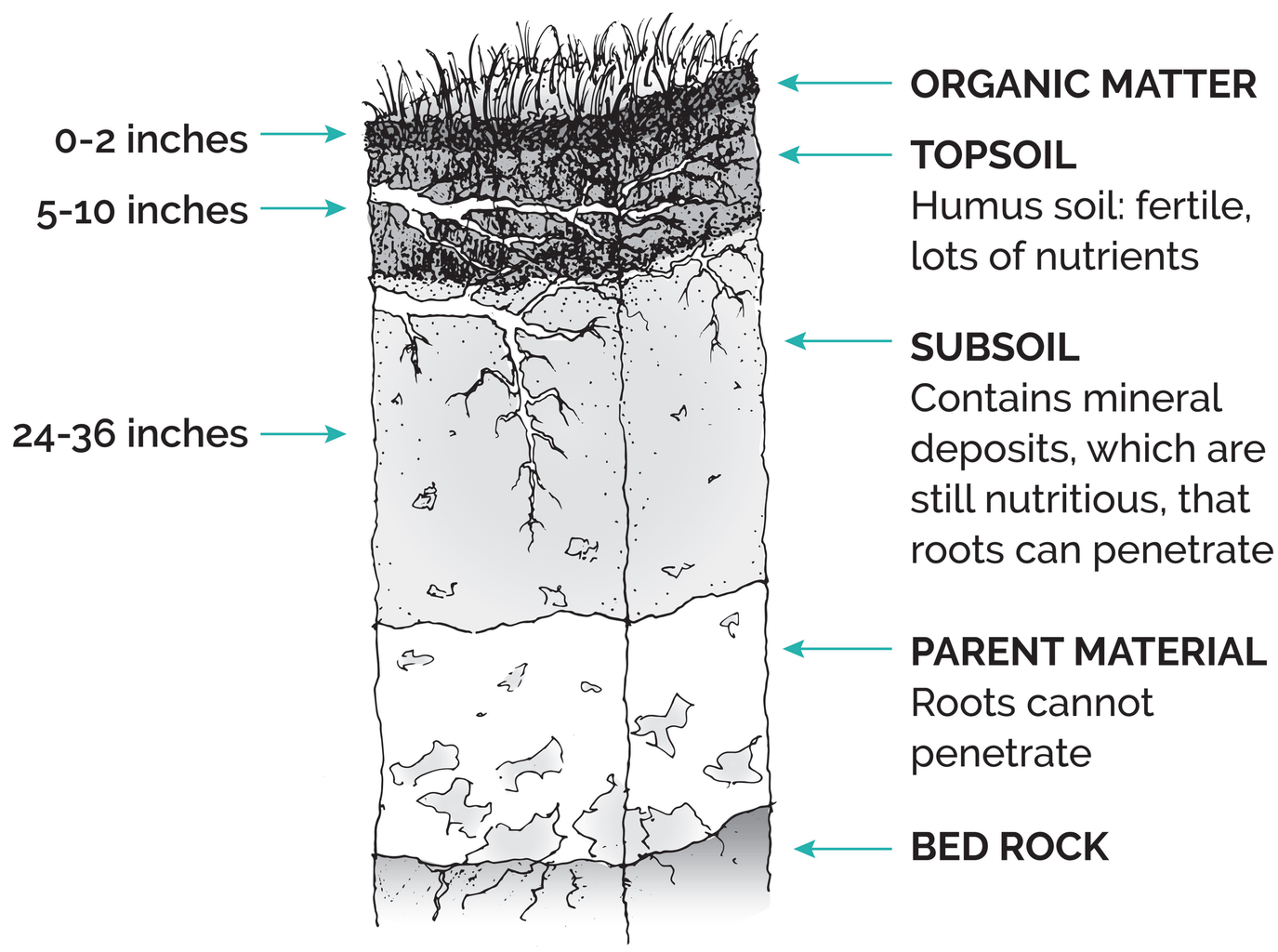


QUESTION
Why are the roots so shallow?

ANSWER
It's because of the structure of the soil, called the SOIL PROFILE.

CRITICAL ROOT ZONE
The area in which loss, disturbance, or damage to any roots will adversely affect the tree's LONG-TERM health and stability.

STRUCTURAL ROOT ZONE
The minimum distance any disruption should occur during construction. There is significant risk of catastrophic tree failure in the SHORT TERM if structural roots are destroyed or severely damaged.



TYPICAL SOIL PROFILE

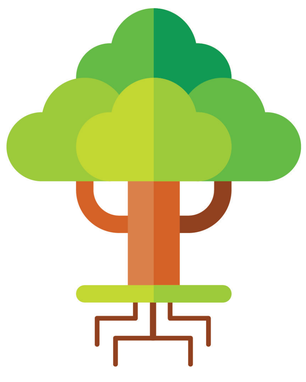
Nearly all of a tree's roots are found in the top 3 feet of soil, and most of those are in the top 1 foot!

TREES

Examination Criteria

The rows of mature trees are what make this stretch of El Camino Real special. To determine the proper path for this project, Caltrans landscape professionals, engineers, historians, and arborists will carefully examine each tree and will be considering important questions:

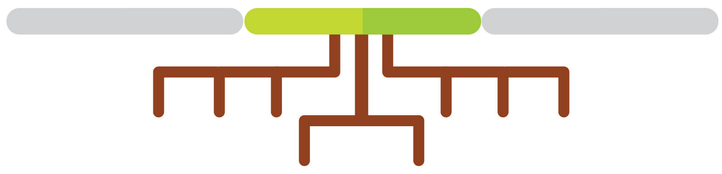
Is the tree healthy overall?



Is the tree structurally sound?

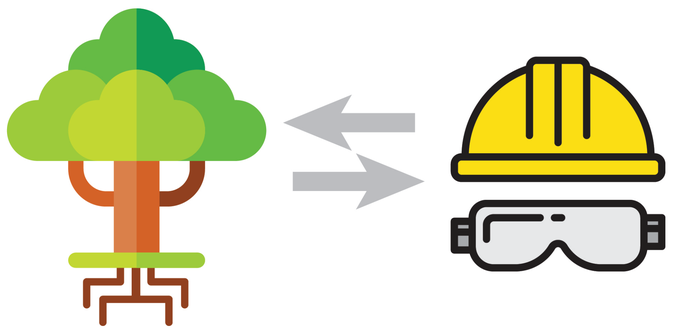
Does the tree obscure drivers' visibility

Can sidewalks go around the tree?



Can the roots be protected from necessary drainage and pavement repairs?

What measures can be taken to protect each tree during construction?

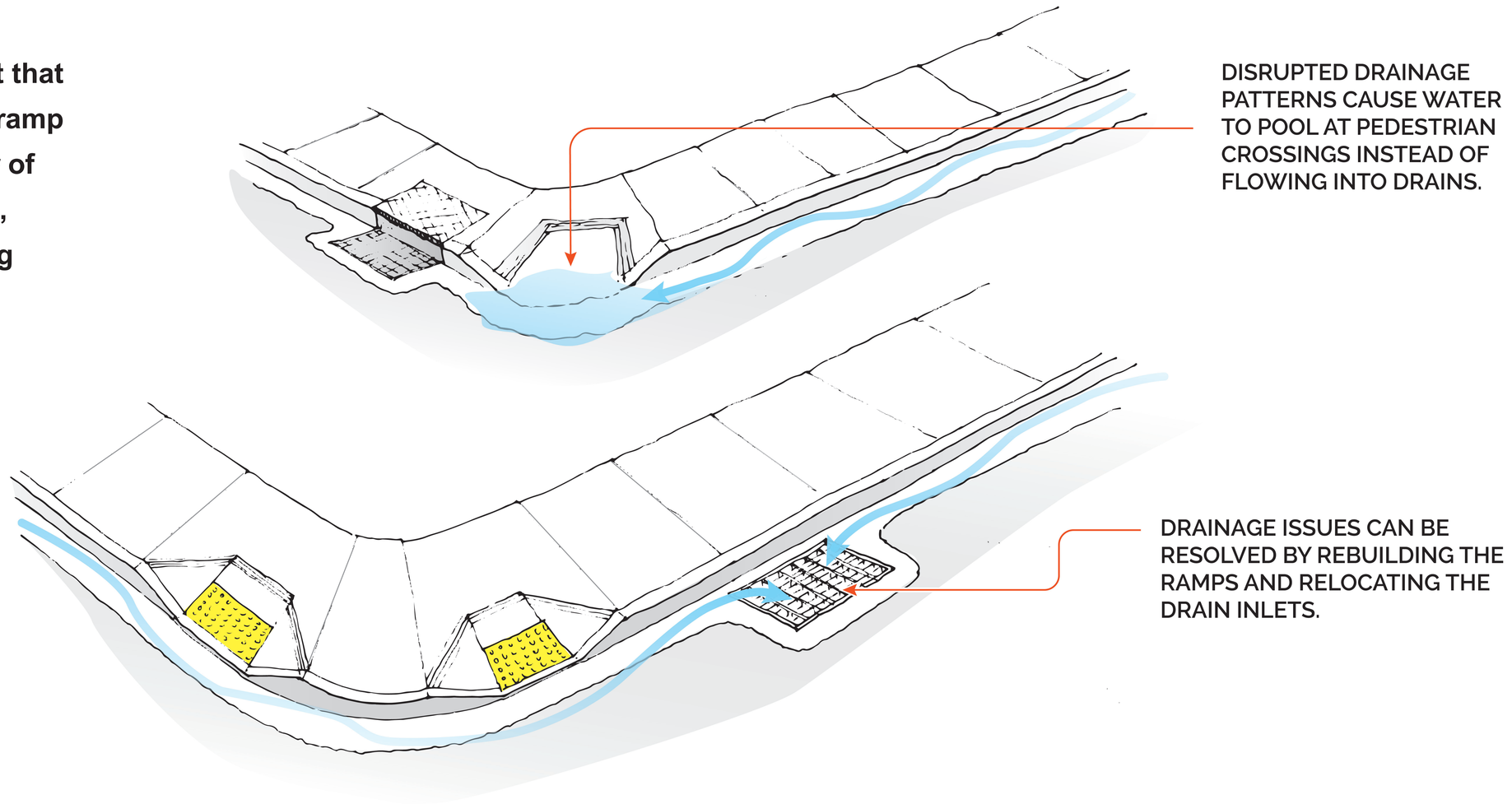


Are the tree's roots compatible with construction activities?

SIDEWALK CONDITIONS

Curb Ramps and Drainage

Sidewalk settlement that occurs near a curb ramp can disrupt the flow of water to drain inlets, resulting in puddling and flooding.



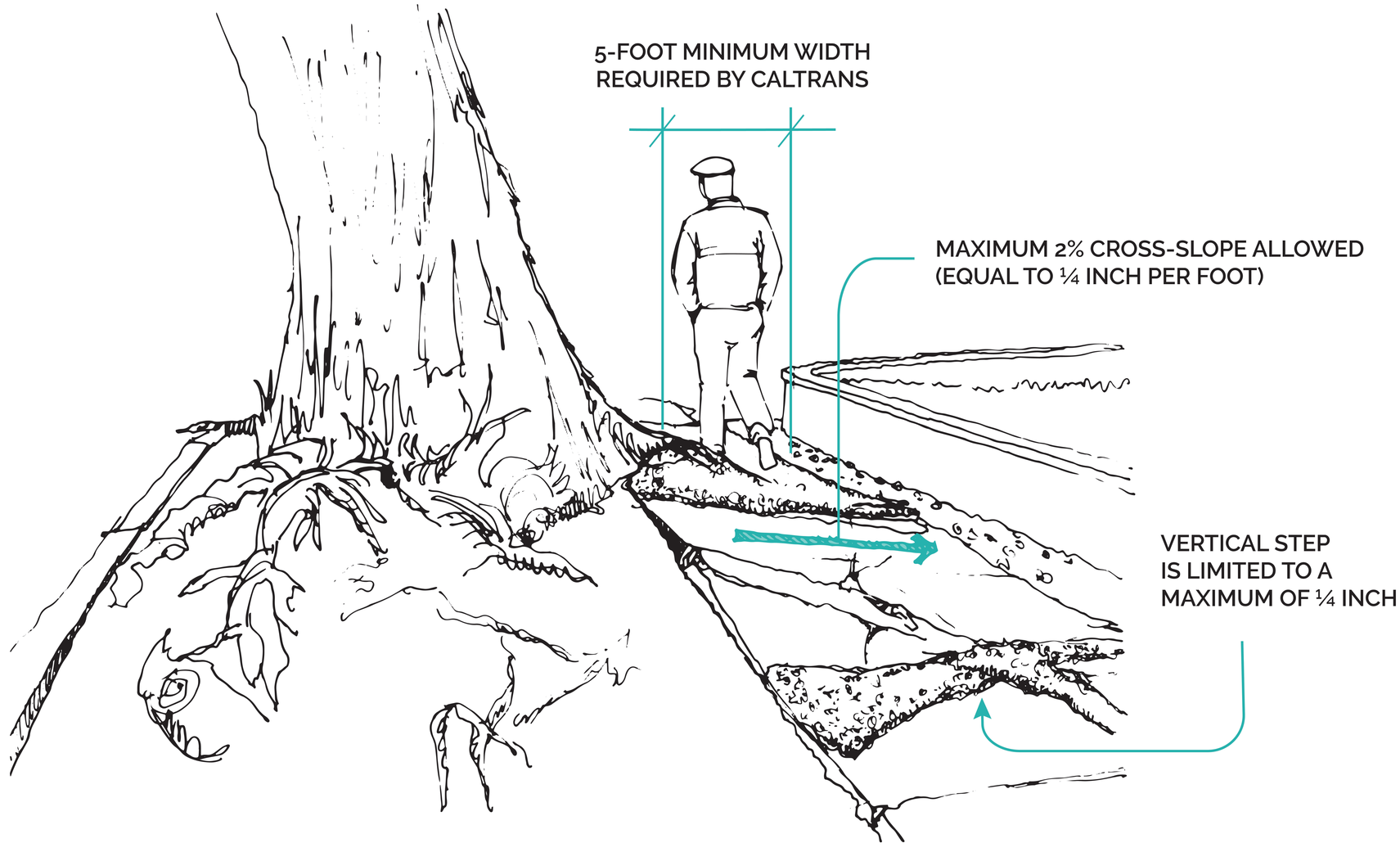
DISRUPTED DRAINAGE PATTERNS CAUSE WATER TO POOL AT PEDESTRIAN CROSSINGS INSTEAD OF FLOWING INTO DRAINS.

DRAINAGE ISSUES CAN BE RESOLVED BY REBUILDING THE RAMPS AND RELOCATING THE DRAIN INLETS.

SIDEWALK CONDITIONS

Safety and ADA Compliance

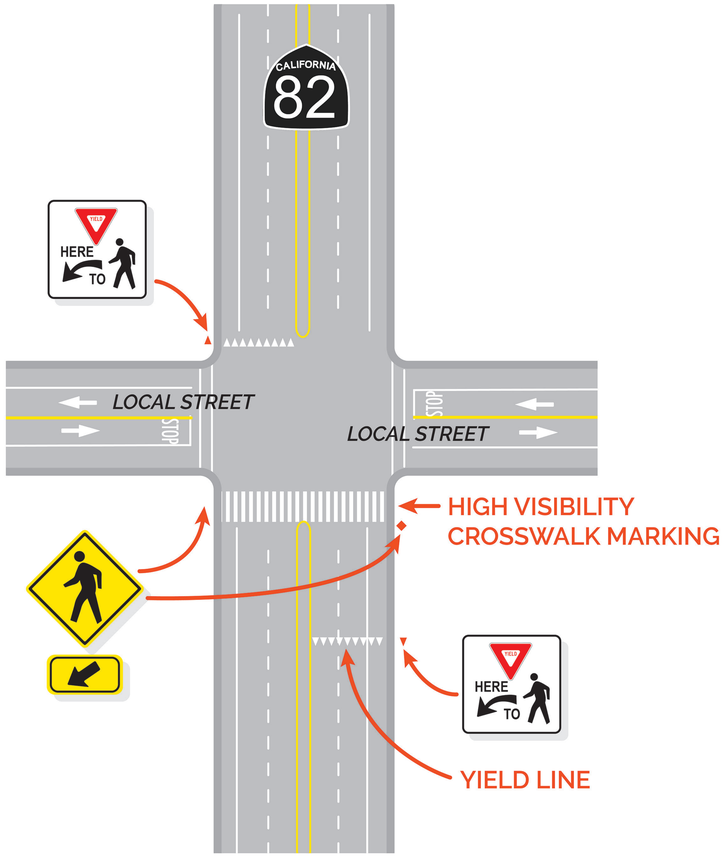
Livable, safe streets contribute to the character of a community and enable residents to thrive. El Camino Real is an important community route and it is critical that safe access be provided for all travelers. Universal access considers all sidewalk users, including those in wheelchairs, pushing strollers, with visual impairments, or with other mobility limitations. Guidelines for providing this access are prescribed by the Americans with Disabilities Act (ADA), the California Government Code (CGC), and Caltrans standards.



SIDEWALK CONDITIONS

Pedestrian Crossings

A total of 16 intersections in the project area of El Camino Real need pedestrian crossing improvements. Typical crosswalks should have highly visible pavement markings and yield signage.



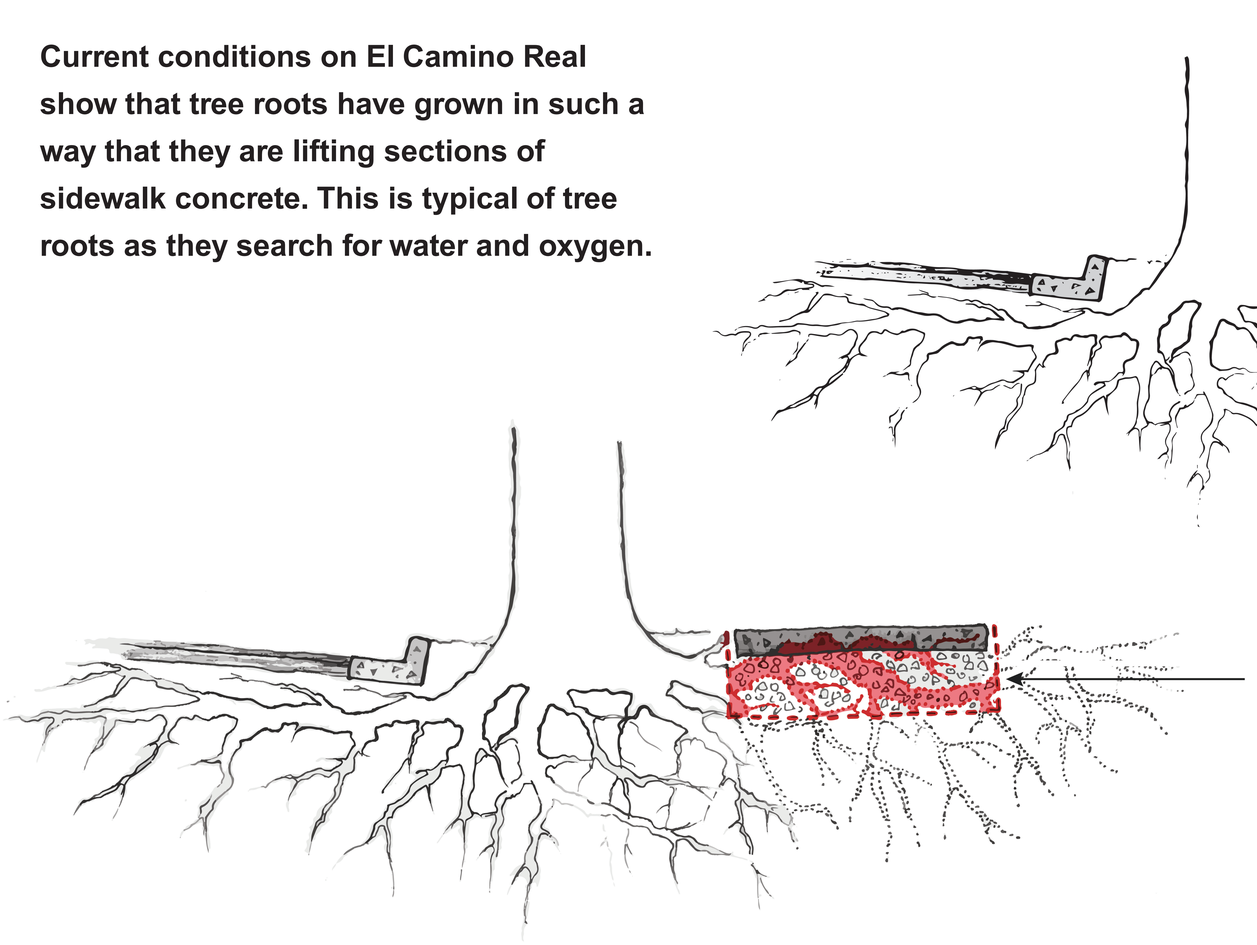
Typical Layout

Crosswalks, like the one shown in this image from the 1500 block of Carmelita, have worn or absent crosswalk markings and no signage.

SIDEWALK CONDITIONS

Root Growth

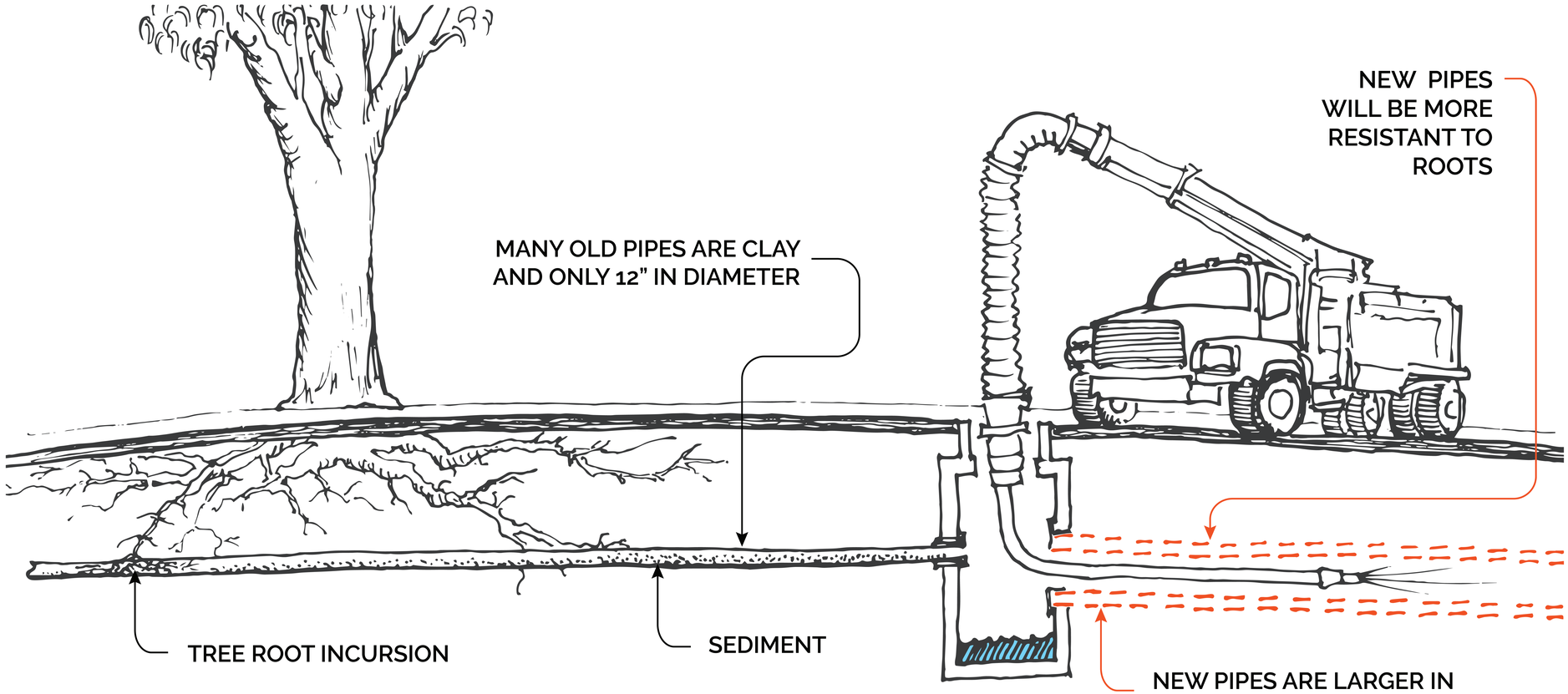
Current conditions on El Camino Real show that tree roots have grown in such a way that they are lifting sections of sidewalk concrete. This is typical of tree roots as they search for water and oxygen.



DRAINAGE CONDITIONS

Root Incursion and Old Pipes

A new, modern drainage system is needed for El Camino Real. The small clay pipes that currently exist in many locations, are prone to damage from nearby trees because roots easily penetrate the pipe shell in search of water. The pipes are also difficult to clear because the 12-inch diameter does not provide enough clearance for modern equipment.

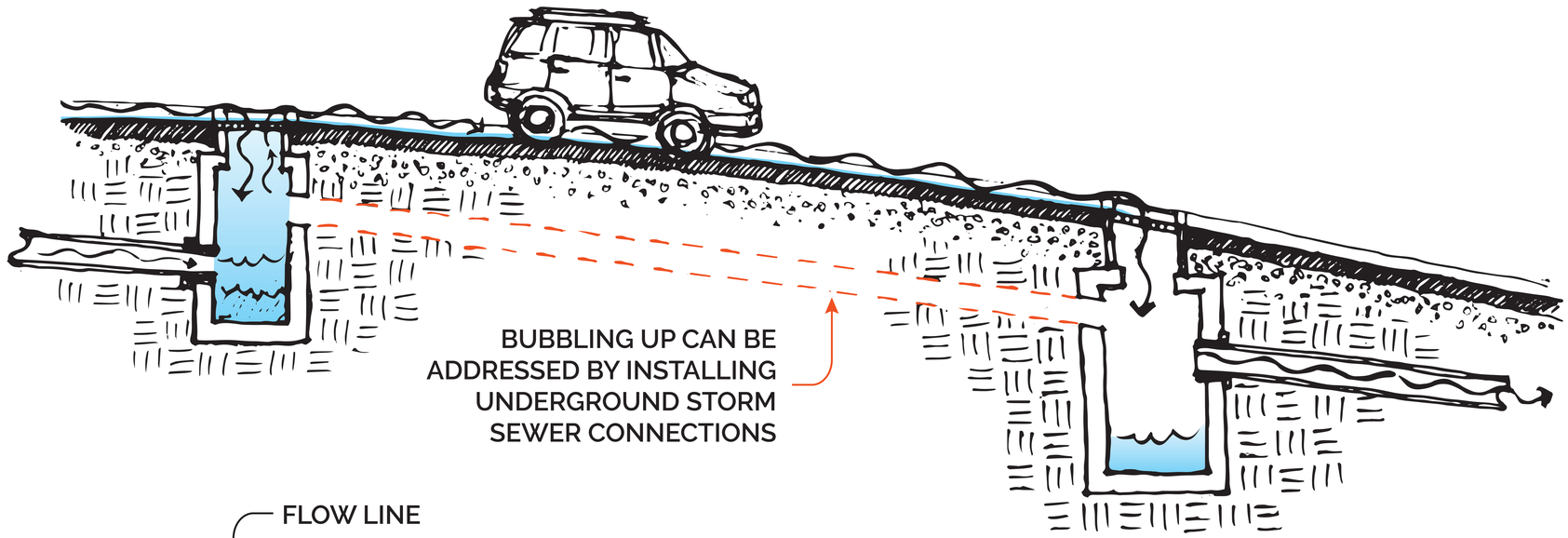


DRAINAGE CONDITIONS

Bubbling Up and Flow Line Disruption

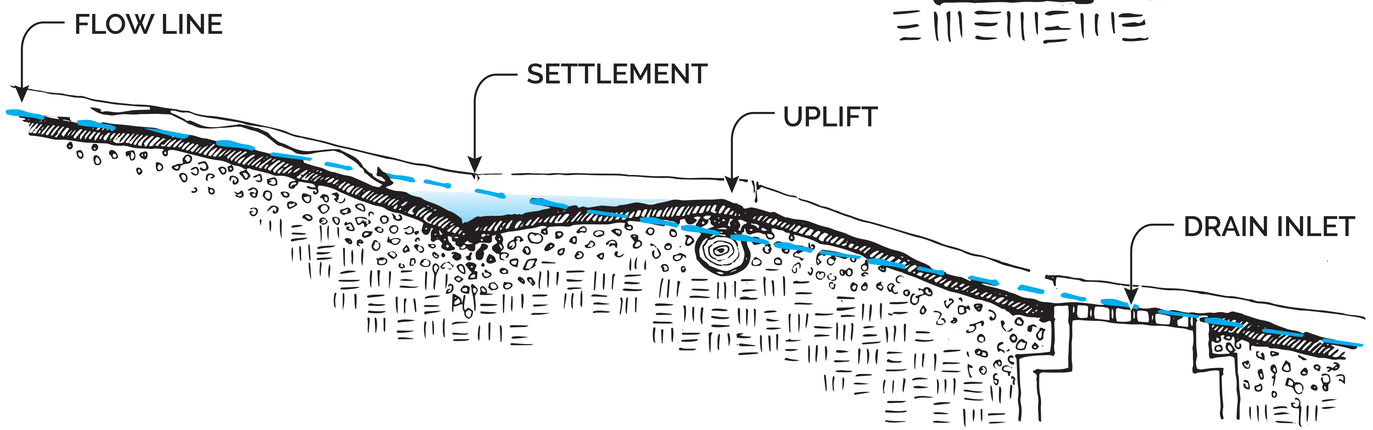
BUBBLING UP

When drain inlets are not connected underground and a storm hits, an inlet will fill and cause the water to "bubble up" out of the drain, run over the street, and flow downhill to the next inlet.



FLOW LINE DISRUPTION

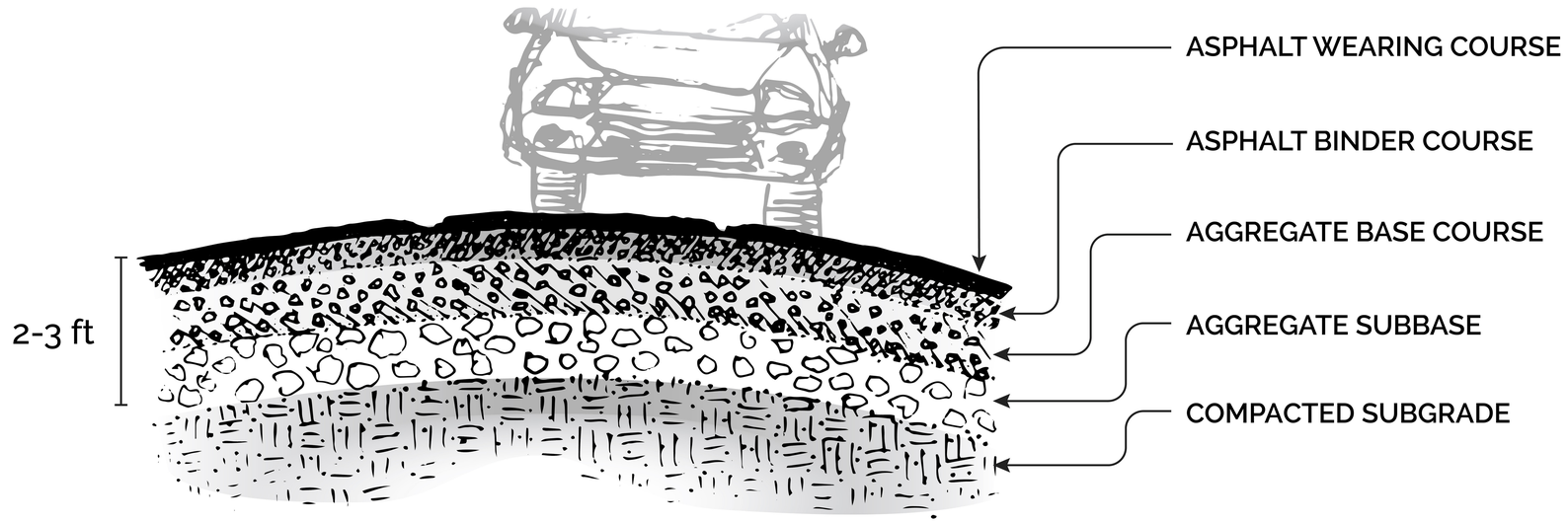
The flow line is the line in the gutter that water is intended to flow along. When ground settles or tree roots lift the pavement, it can disrupt the flow, creating dams and puddling. This can be addressed by rebuilding the gutter and restoring the flow line.



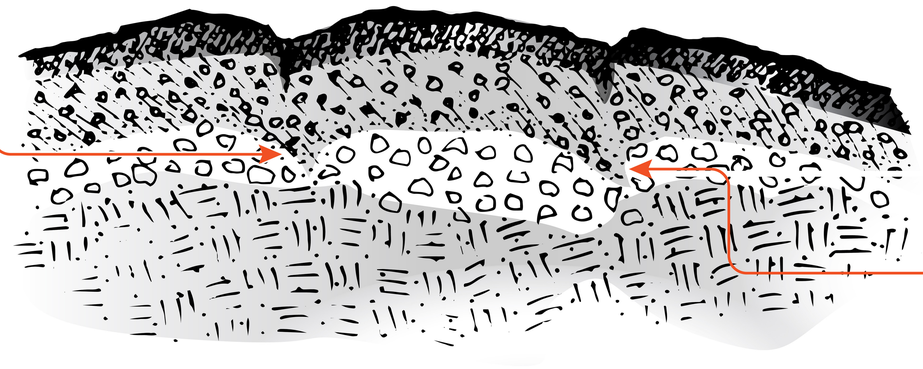
ROADWAY CONDITIONS

Settlement, Cracking, and Heaving

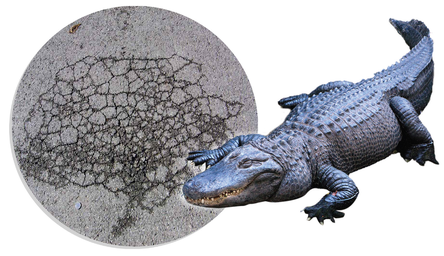
A roadway is constructed of several carefully compacted layers. Minor cracking in the top layer is usually simple to repair by overlaying new asphalt on the surface.



WHEN SETTLEMENT AND HEAVING COMPROMISE THE ROAD BASE, REPAIR BECOMES MORE COMPLEX. LAYERS MUST BE DUG UP AND RECOMPACTED.



ALLIGATOR CRACKING IS AN INDICATION OF COMPROMISED SUBGRADE



IN CASES WHERE THE ROAD BASE HAS BEEN COMPROMISED AND ONLY THE SURFACE IS PATCHED, CRACKS WILL QUICKLY PROPAGATE UP FROM THE UNSTABLE FOUNDATION.

ROADWAY CONDITIONS

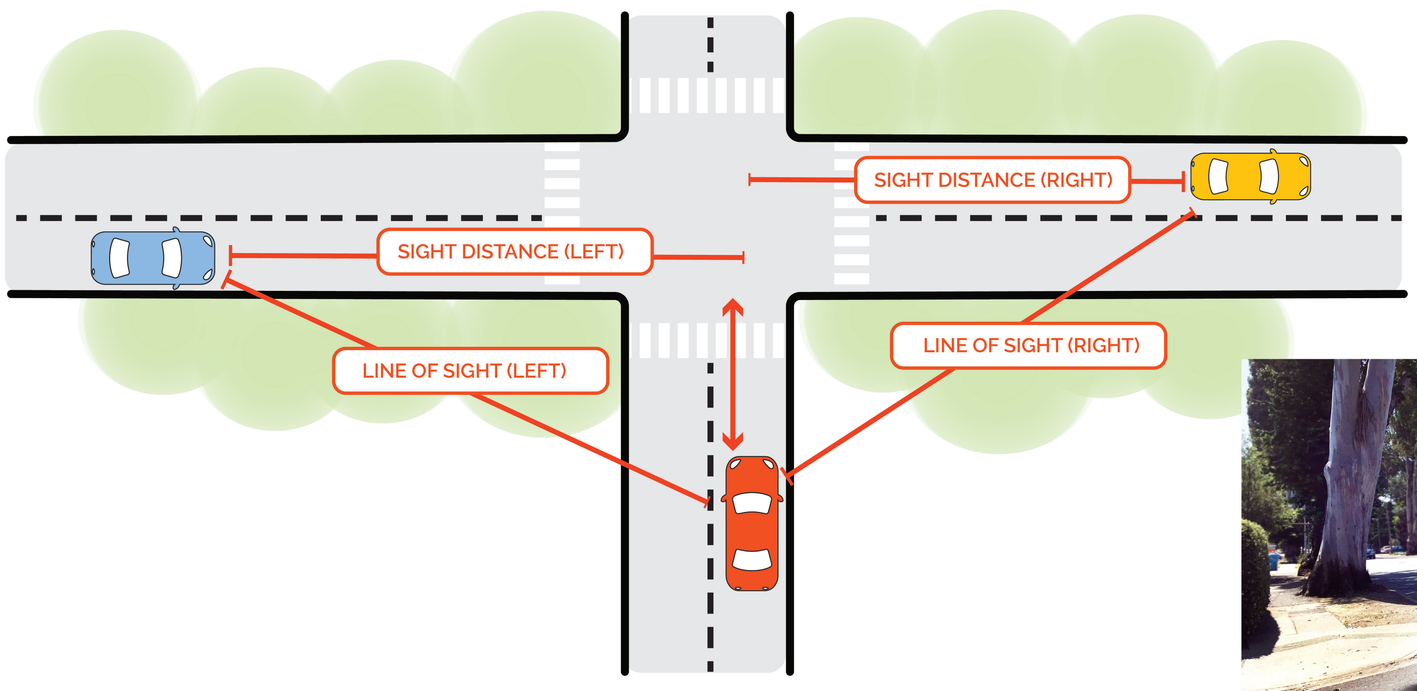
Visibility

SIGHT DISTANCE

SUFFICIENT SIGHT DISTANCE

- Allows drivers at cross-streets to see oncoming traffic in order to safely enter or cross the highway
- Provides drivers with a clear view of other vehicles and pedestrians, allowing time to slow or stop to avoid a collision

Required sight distances are determined by the speed of traffic and the type of vehicle.

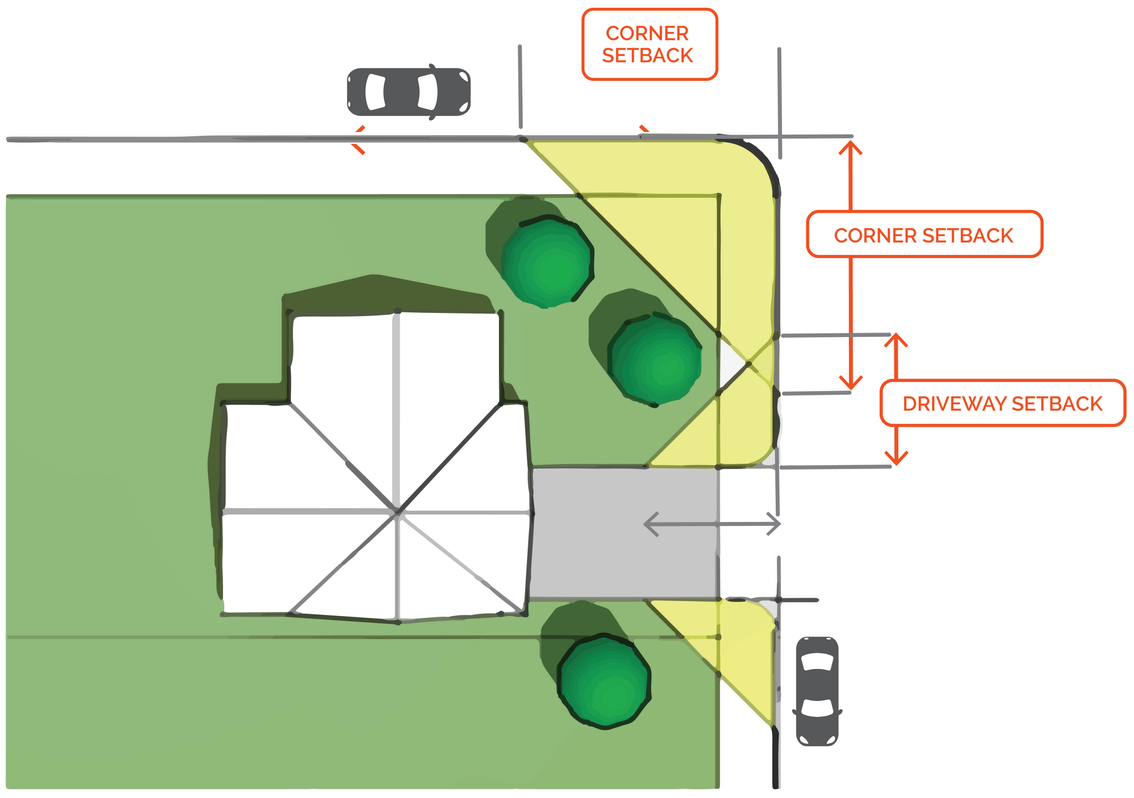


A large tree trunk obscures oncoming traffic

SETBACKS

Keeping setbacks from corners and driveways clear of obstructions allows pedestrians and motorists to see oncoming traffic. The size of setback needed varies based on the real-world conditions at a given location.

Residents have mounted a mirror to compensate for poor visibility at a driveway



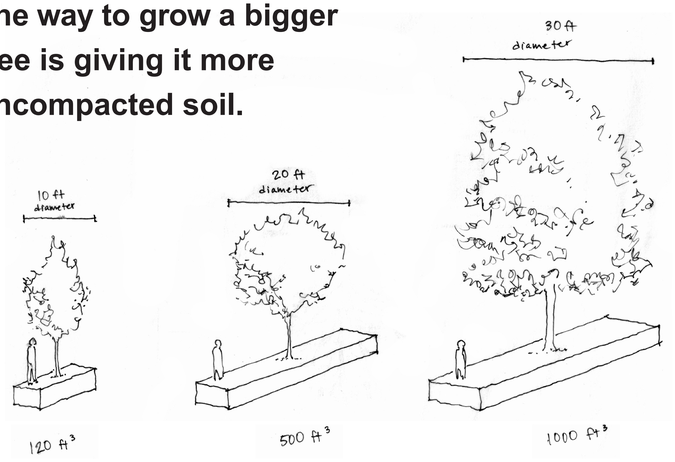
Caltrans engineers will be studying El Camino Real and will use State and Federal guidelines to determine appropriate sight distances and setbacks to improve safety.

LANDSCAPE IMPROVEMENT TOOLS

Invest in the Soil

THE KEY

The way to grow a bigger tree is giving it more uncompacted soil.

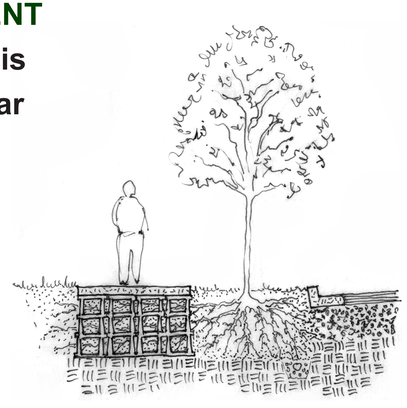


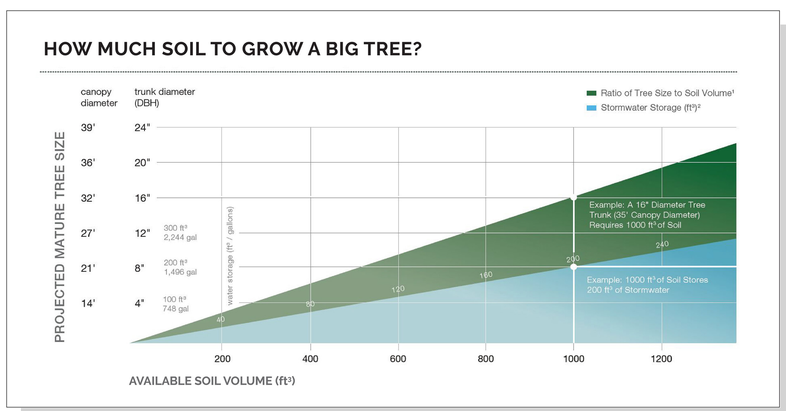
Put a $5 tree in a $500 hole.

Advice from a Landscape Architect

SUSPENDED PAVEMENT

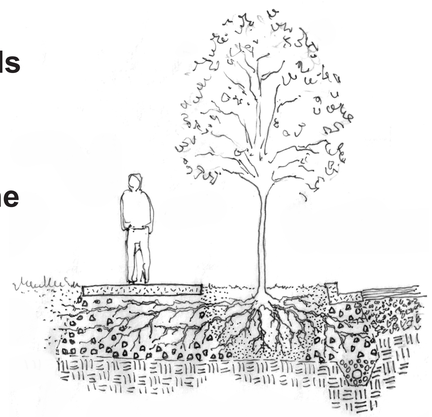
Suspended pavement is supported by a modular cagelike structure underground. This keeps the pavement from settling, but lets roots move through uncompacted soil.

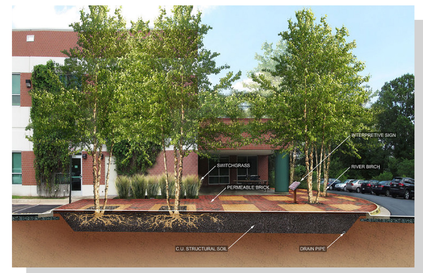




STRUCTURAL SOIL

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





Caltrans

EL CAMINO REAL ROADWAY RENEWAL

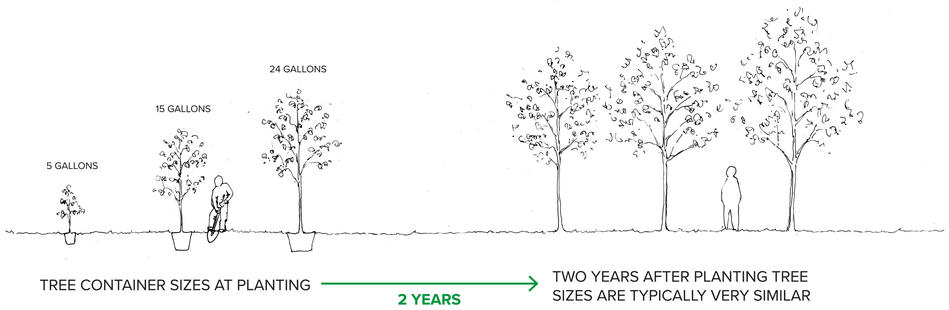
CALIFORNIA 82

LANDSCAPE IMPROVEMENT TOOLS

Right-sizing New Trees

Zelkovas were planted on Burlingame Avenue in 2014.

Today their canopy contributes to the street's inviting feel.

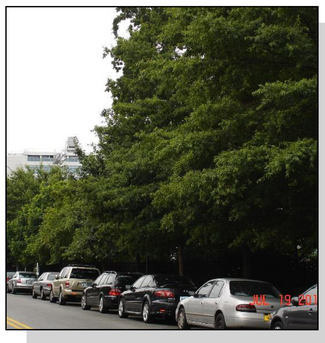


Younger trees often adapt better to their new surroundings when they are planted. You'll often find that within a couple of years, small-container trees have caught up with large-container trees that were planted at the same time.

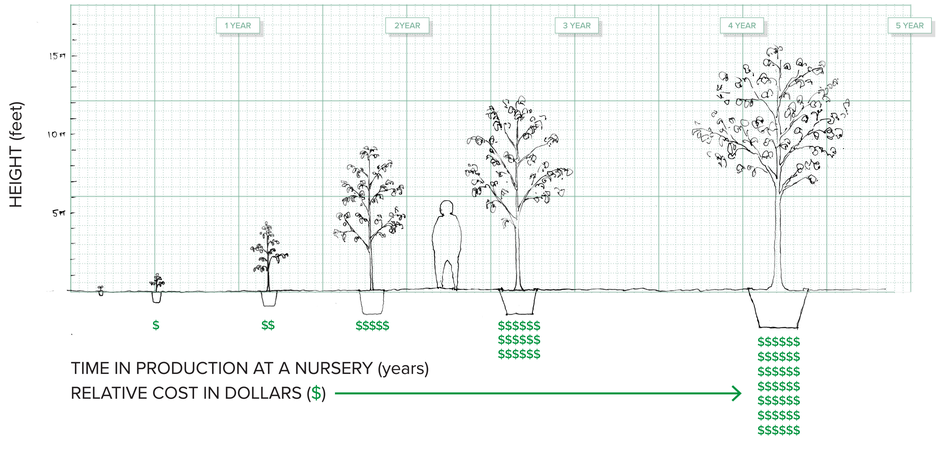
Street trees planted in structural soil in Brooklyn, New York in 1997.

3 years
after planting

10 years
after planting



15 years
after planting



The longer a nursery cares for a tree, the more expensive it will be to buy.

VISION FOR EL CAMINO REAL

Options Involving New Trees

In some locations, the project improvements may not allow for retention of mature trees. Below are an artitst's renderings of what the street may look like in the future.

In the event power lines are not relocated underground, fewer replacement trees could be planted.

VISION FOR EL CAMINO REAL

New Trees with Old Trees

Wherever possible, existing mature trees will be retained, and new trees will be planted alongside them.

CALTRANS PROJECT DEVELOPMENT

Vision and Process

Caltrans envisions an El Camino Real that is safe and beautiful for all who travel on it. Stakeholder involvement has played an important role in getting this project to its current stage of being funded and ready to go through the Caltrans project development process.

Project Initiation Document (PID)

Project Approval and Environmental Document (PAED)

Plans, Specifications and Estimates (PS&E)

Ready to List (RTL)

Construction