TRENDS IN HIGHWAY PLANTING AND IRRIGATION

Landscape Architecture at Caltrans

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Caltrans

Purpose of Highway Planting

- Functional

  (Shading of Roadway, Windbreaks, Erosion Control, Light Glare, Fire Supression)

- Mitigation

  (Biological , Visual)

- Aesthetic

  (Beautification, Limits Outdoor Advertising)

Types of Highway Planting

- New Highway Planting

  (New installation where warranted by policy)

- Replacement Highway Planting

  (Replacement of the investment which was damaged as the result of highway improvements)

- Highway Planting Restoration

  (Restoration of existing highway planting, on a 20 year cycle by policy)

- Required Mitigation Planting

  (Required planting necessary to mitigation environmental impacts due to roadway construction)

- Highway Planting Revegetation

  (Revegetation planting as mitigation for native vegetation removed due to roadway construction)

Past Trends
1920s

- Tree planting by Engineers
- Shade for pavement
- Truck watering to establish
- Maintenance not considered

Planting 1920s

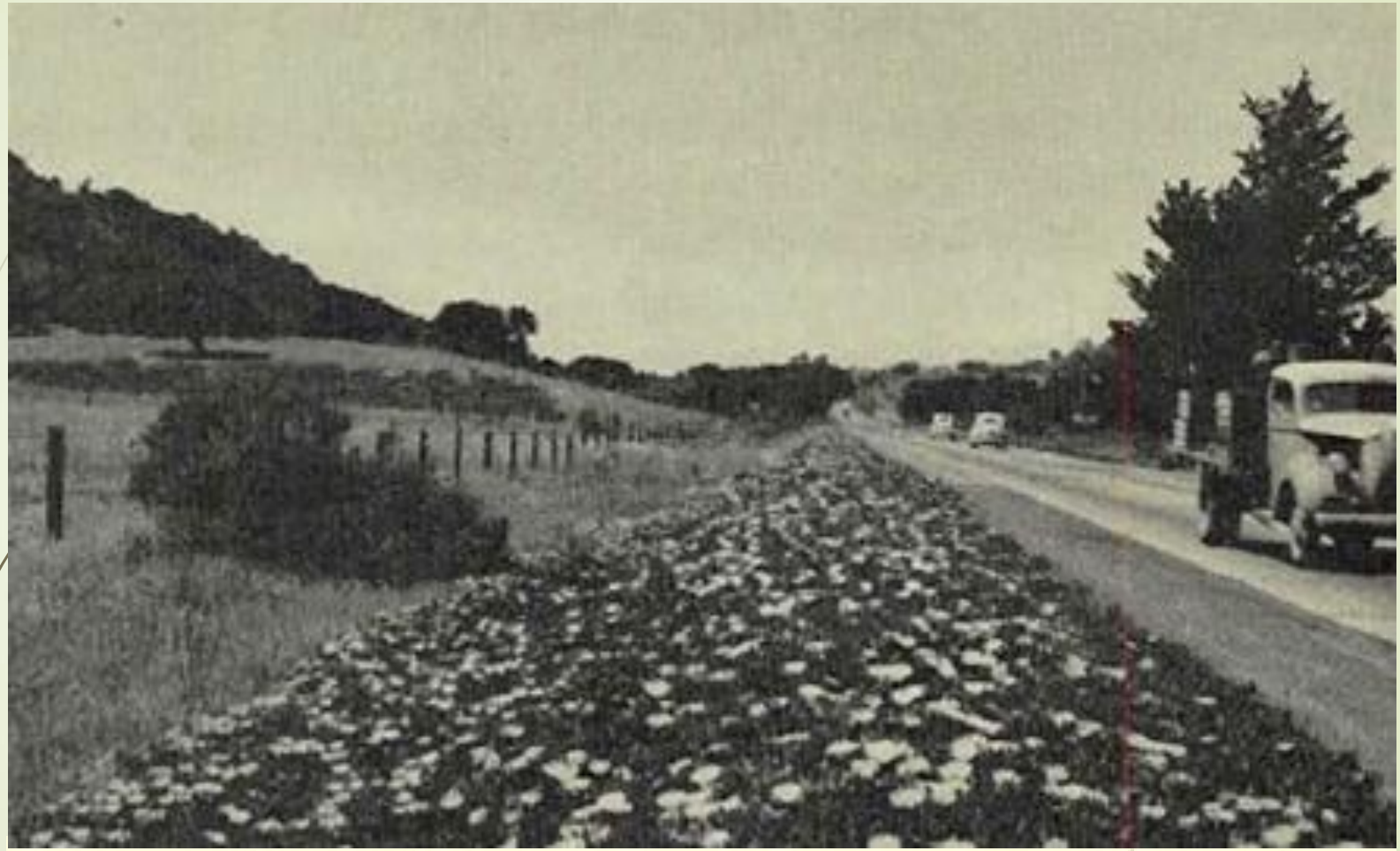
Past Trends

1930s

- Functional planting - erosion control, fast growth needed
- Cost constraints,
- Truck watering,
- Minimal maintenance,
- Exotic plant materials

Planting 1930s

Planting 1930s



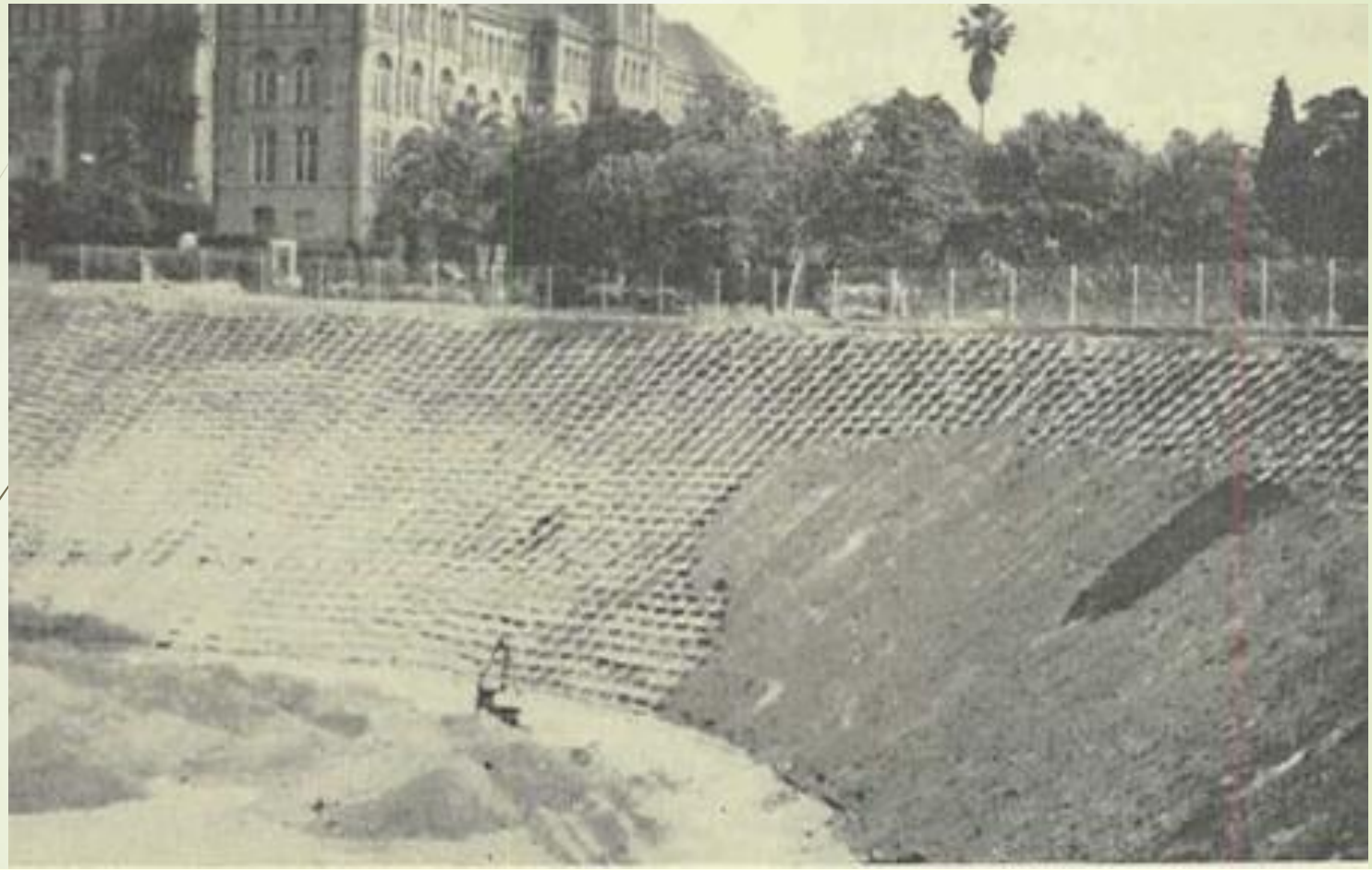
A roadside planting of Mesembryanthemum edule effectively controls weeds and reduces the fire hazard. (South of Santa Maria)

Past Trends

1940s

- Functional planting
- Cost constraints,
- Truck watering,
- Minimal maintenance,
- Erosion control plant materials
- R/W constraints - urban

Erosion Control 1940s



Type A stabilization during construction. Topsoil is cast on by dragline. (Seventh Street Interchange, Santa Ana Freeway, Los Angeles)

Arroyo Seco (1939)

Past Trends

1950s

- Interstate era - $ flows
- Few cost constraints
- Aesthetic considerations
- Simple rugged irrigation – metal pipe, skinner line, hand operation

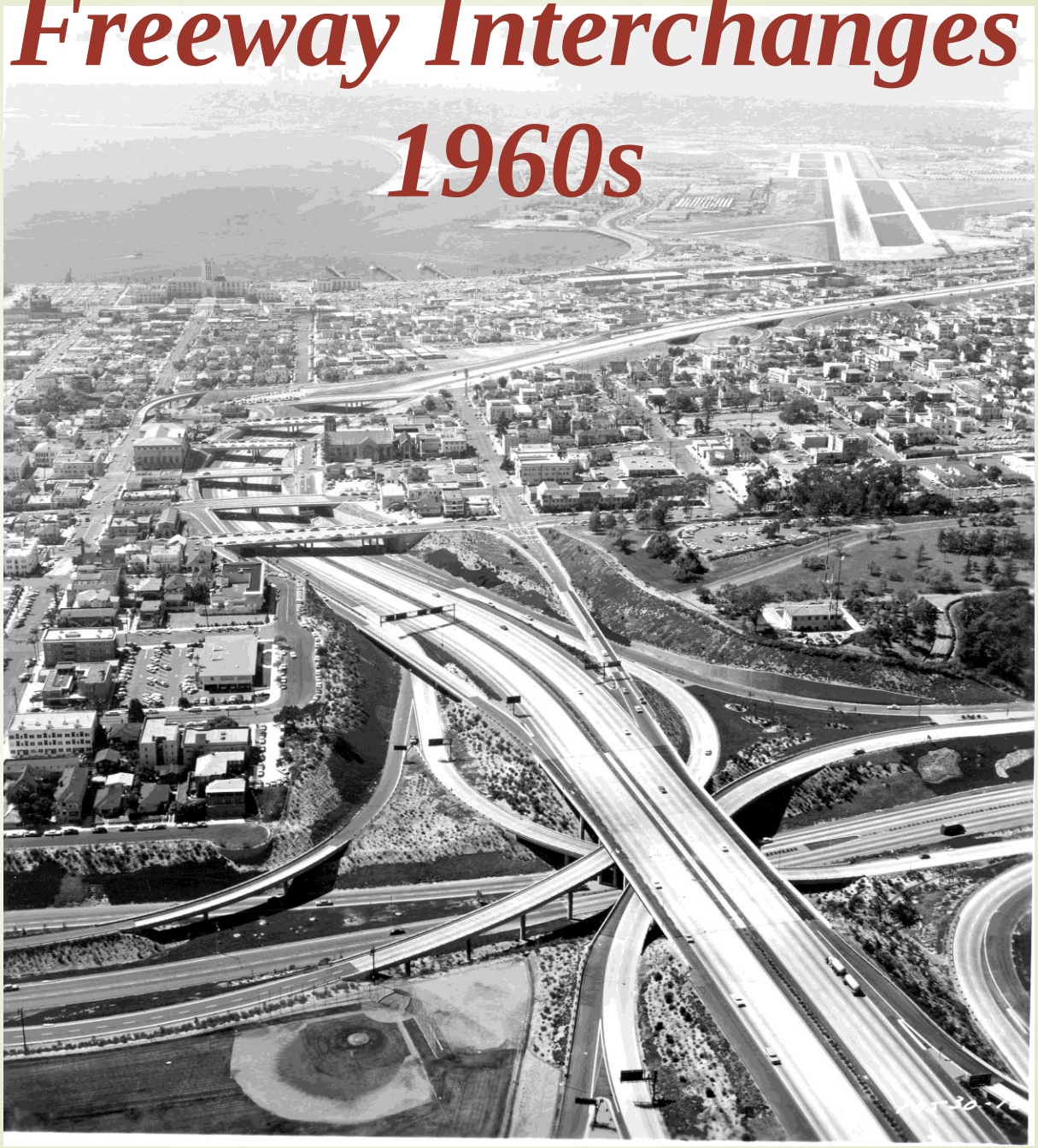
Parkways 1950s

Past Trends

1960s

- Interstate Era continues
- Highway Money flows,
- Simple aesthetics are routine
- Mixed shrub planting
- Eucalyptus & acacia trees
- Ice plant & ivy
- Large scale impact irrigation
- Routine maintenance.

Freeway Interchanges 1960s



Planting 1960s

Past Trends

1970s

- Environmental movement
- Human factors
- Aesthetics required
- Detailed planting design emerges
- Exotic species
- Spray irrigation
- Maintenance available.

Irrigation 1970s

Urbanism 1970s

Environmentalism 1970s

"World's Most Beautiful Freeway"

Past Trends
1980s

- CTC actions, Cost constraints
- Freeze & Drought
- Plantable right-of-way shrinks
- Aesthetics a routine consideration
- Detailed planting design + trees and weeds too
- Exotic species
- Drought again drip irrigation
- Maintenance reductions.

Planting 1980s

Planting 1980s

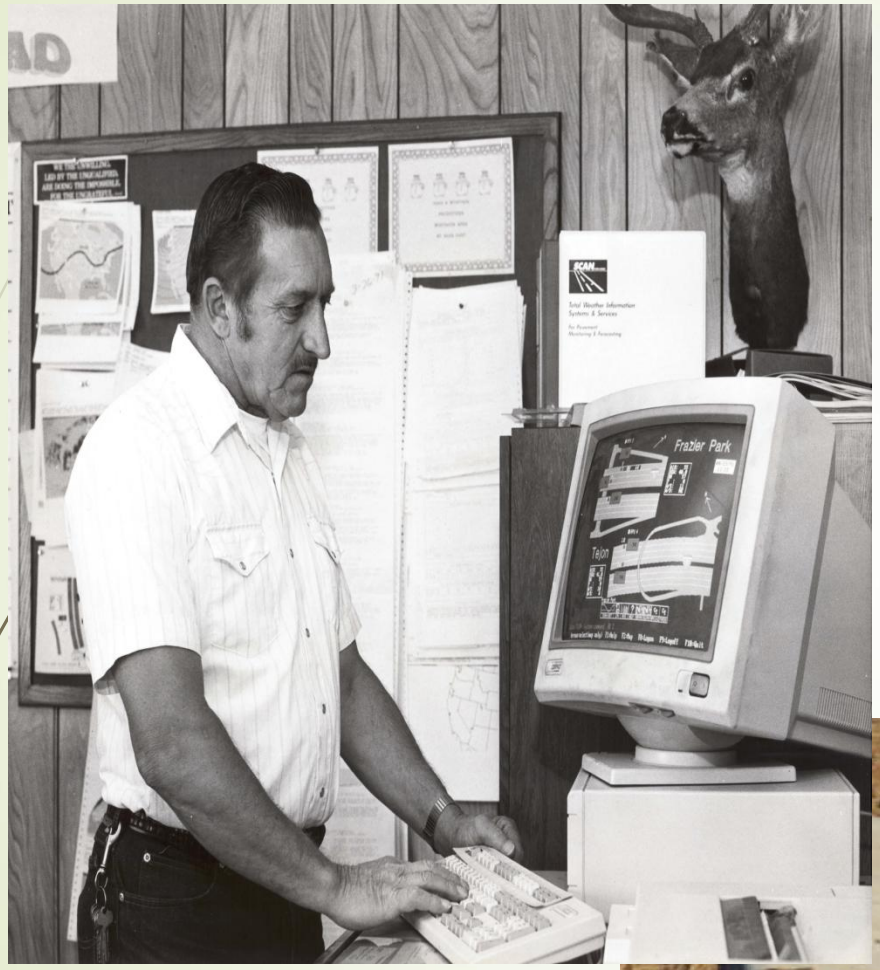
Deep Freeze 1980s

Past Trends

1990s

- Drought again,
- Aesthetics a routine consideration
- Detailed planting design emerges
- Inert ground cover materials,
- Exotic species + natives
- Bubbler irrigation
- Maintenance reductions
- Clear Recovery Zone (CRZ)

Irrigation 1990s



Planting 1990s

Maintenance 1990s

Past Trends

2000s

- Worker safety
- Stakeholder involvement
- Detailed planting design re-emerges
- Inert ground cover materials
- Natives
- Bubblers return
- Maintenance reductions.

Roadside 2000s

Current Trends

2010s

- Drought again (1976, 1988, 1998, 2014)
- Stakeholders as lead
- Simplified planting design re-emerges
- Site design on the roadside
- Inert ground cover materials
- Regionality
- Natives
- Bubblers and impact irrigation returns
- More maintenance reductions

Irrigation 2010s

Planting 2010s

After

Before

The Context


Stakeholders
Water availability
New Technology
Scenic Vistas
Farmland
Historic Districts
Residential Neighborhoods
Wildlife Habitat
Scenic Byways
Wildflowers
Endangered Species
Rivers
Parks
Business Districts
Pedestrian Route
Bikeways
Lakes
Inter-Regional Corridors
Wetlands
Mass Transit
"Main Streets"
Archaeological Sites
Local plans

Trends and Influences

What are the external factors that influence your design decisions?

Takeaway

- **Much of the local highway roadside was designed in the 1960's and has not been rehabilitated.**
- **Rehabilitation and new highway planting projects now consider local context, funding constraints, environmental considerations, and long term maintenance requirements.**
- **Plant materials must be placed in safe locations meeting standard setback requirements.**
- **Trees = 30' min. from edge of traveled way.**

Trends in Highway Planting and Irrigation

Thank You

Questions?