



**CAL POLY**

SAN LUIS OBISPO

**Institute of  
Transportation  
Engineers**



# Meet the Speakers



## Kevin Williams, PE

*Professional Engineer*

- Cal Poly Alumni
- 4+ Years of Experience
- SLO Transportation Team

## Hernan Gutierrez

*Engineering Designer*

- California Long Beach Alumni
- 2+ Years of Experience
- Sacramento Transportation Team



**Our Headquarters**  
11017 Cobblersrock Drive, Suite 100  
Rancho Cordova, CA 95670



**Years in business**



**Offices in CA**

### Our Services

Roadway  
Bridge  
Construction Management  
Survey  
Water/Wastewater



**EMPLOYEES**

**1,500+**

# Our West Coast Offices



## California

San Luis Obispo  
Rancho Cordova  
Walnut Creek  
San Diego



## Oregon

Portland  
Salem  
Eugene  
Bend

## Washington

Seattle Tacoma  
Everett Spokane  
Bellevue Vancouver

## Other Office Locations

Idaho Hawaii  
Colorado Utah  
Arizona Texas



# THE SERVICES WE PROVIDE TO OUR COMMUNITIES

Roadway Design

Bridge Design

Emergency Storm Damage Repair

Construction Management

CAD/Microstation Design

Inspections

Water/Wastewater

Surveying

Pump Stations

Water Tank Construction

ITE

Vertical Buildings

80% of CA  
projects



**ITE**

**ITE**

**INSTITUTE OF TRANSPORTATION  
ENGINEERS**

**ITE**

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**ENGINEERS**

**ITE**

**INSTITUTE OF TRANSPORTATION**

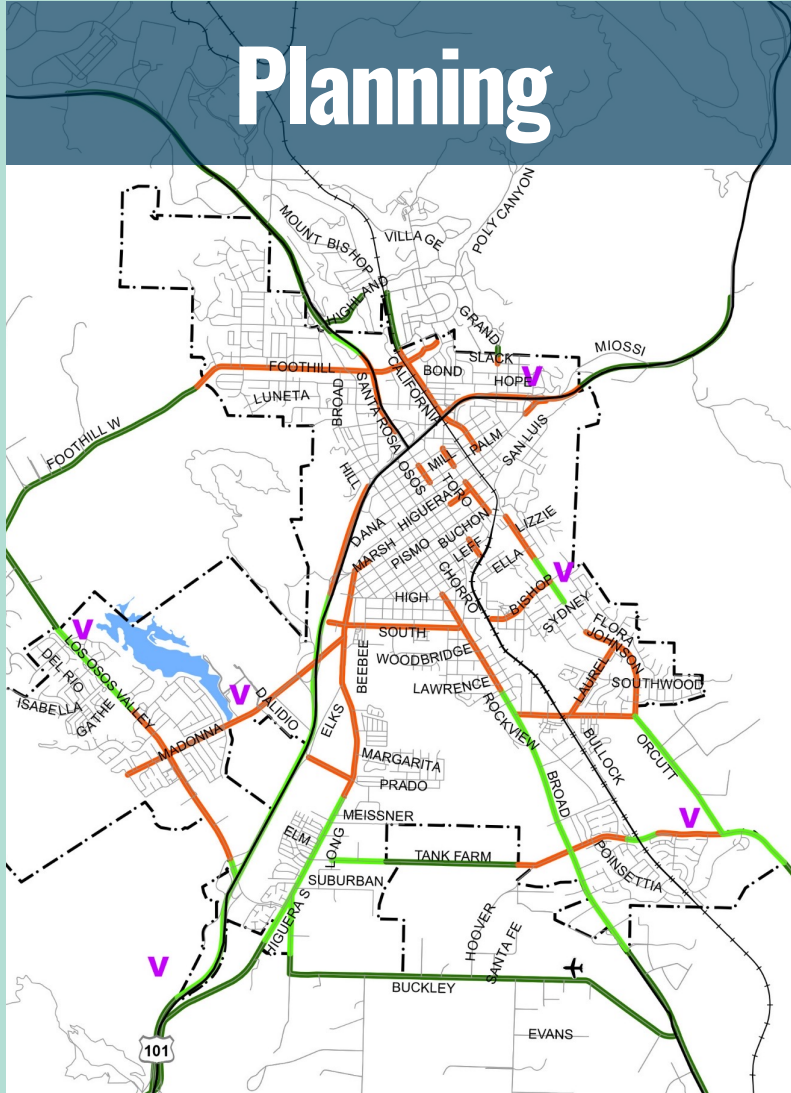
**ENGINEERS**

**What is a Transportation Engineer?**



# What is a Transportation Engineer?

## Planning



## Traffic Analysis



## Geometric Design



# Design Components

➤ **Alignment**

➤ **Profile**

➤ **Cross section**

➤ **Surface**

➤ *Utility Relocation*

➤ *Drainage*

➤ *Floodplain Mitigation*

➤ *Environmental Mitigation*

➤ *Right-of-way*

*Design Components*

*Additional Considerations*



# Design Components

➤ **Alignment**

➤ **Profile**

➤ **Cross section**

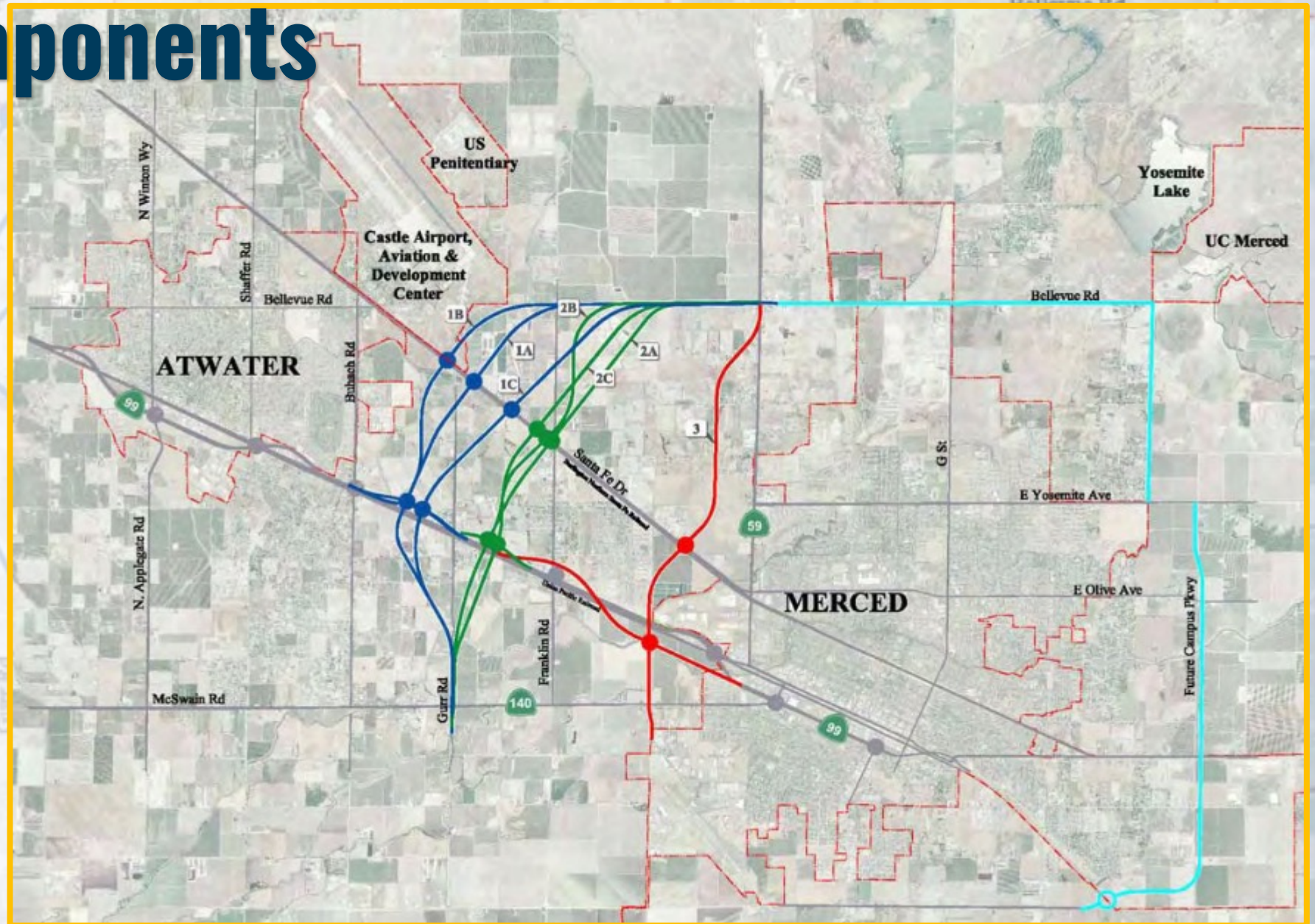
➤ **Surface**

*Design Components*



# Design Components

- **Alignment**
- **Profile**
- **Cross section**
- **Surface**



# Design Components

- *Alignment*
- *Profile*
- *Cross section*
- *Surface*

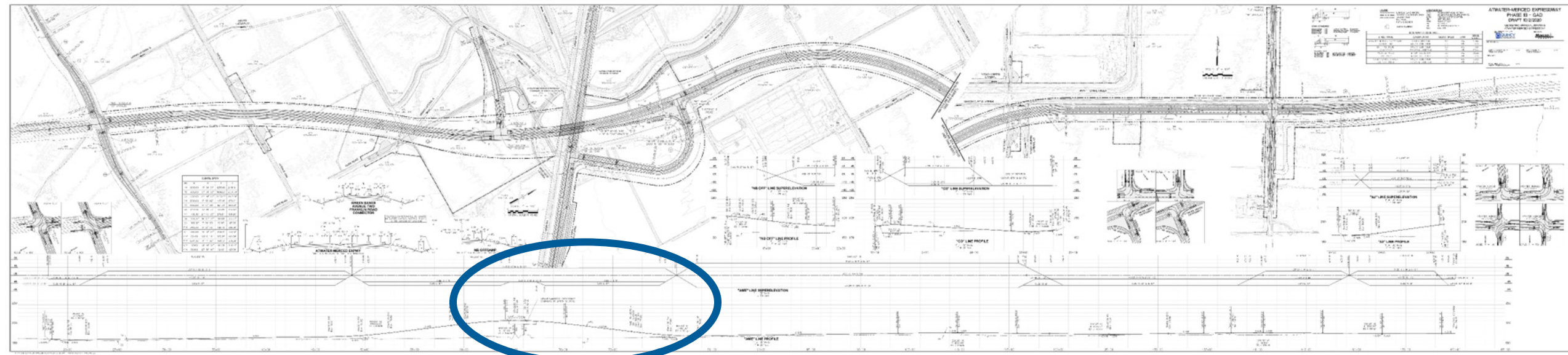
*Design Components*



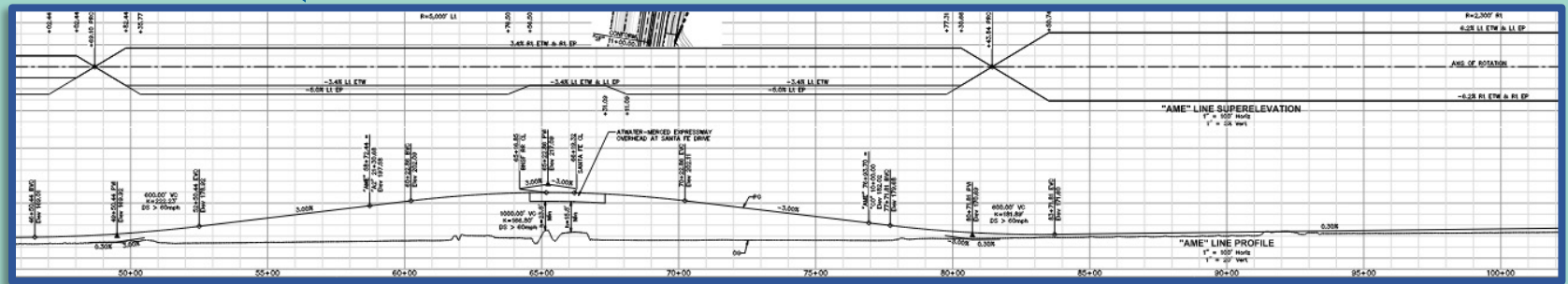


- **Alignment**
- **Profile**
- **Cross section**
- **Surface**





- Alignment
- Profile
- Cross section
- Surface



# Profile Considerations

- *Vertical Clearance*
  - *Rail/Vehicle/Hydraulics*
- *Drainage Cross Culverts*
- *Surrounding Topography*
- *Roadway Drainage*
  - *High/Low Points*





# Profile Considerations

## Superelevation



# Profile Considerations

## Superelevation

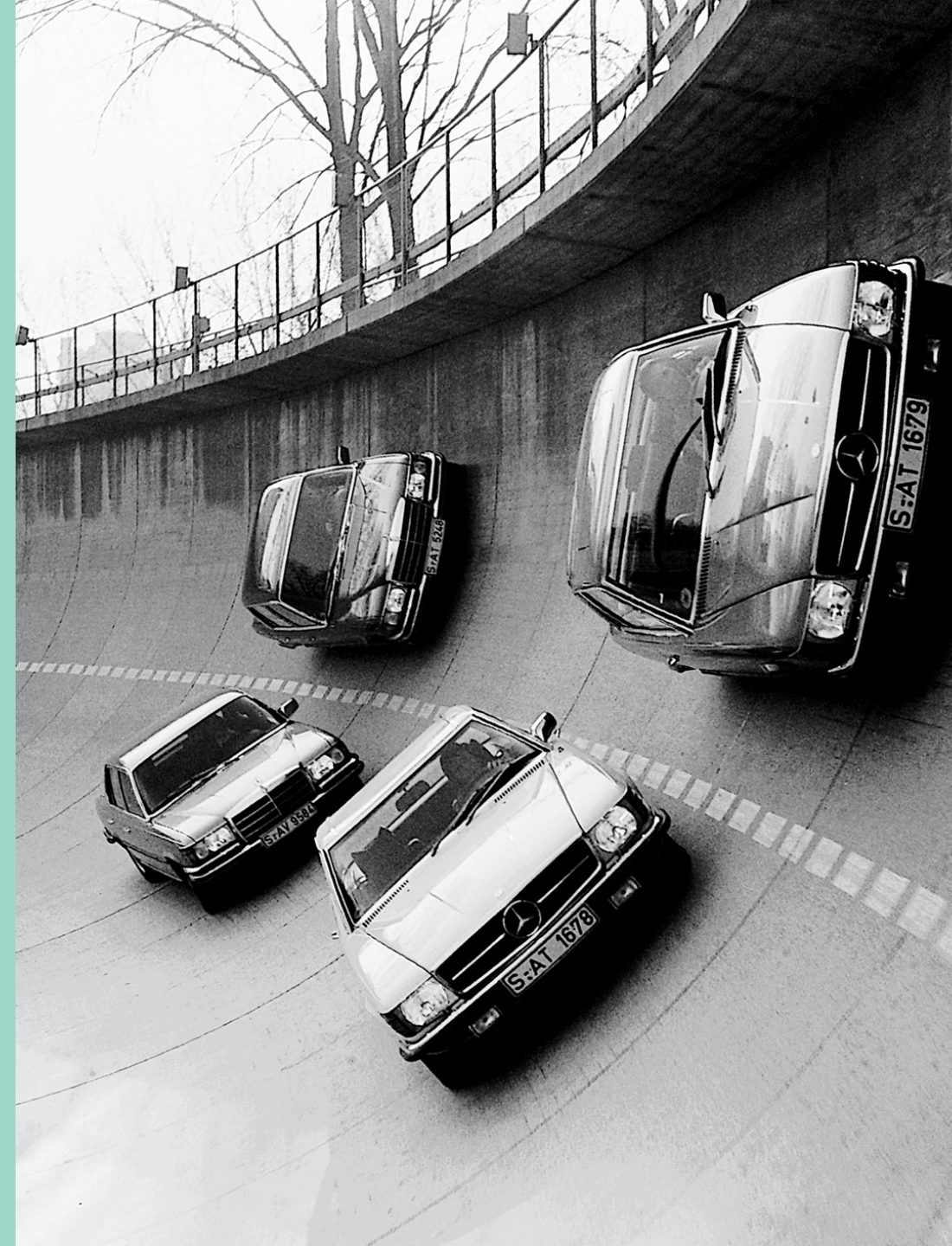
### ➤ *Roadway Banking*

- *Typically through a horizontal curve in order to offset centripetal forces*

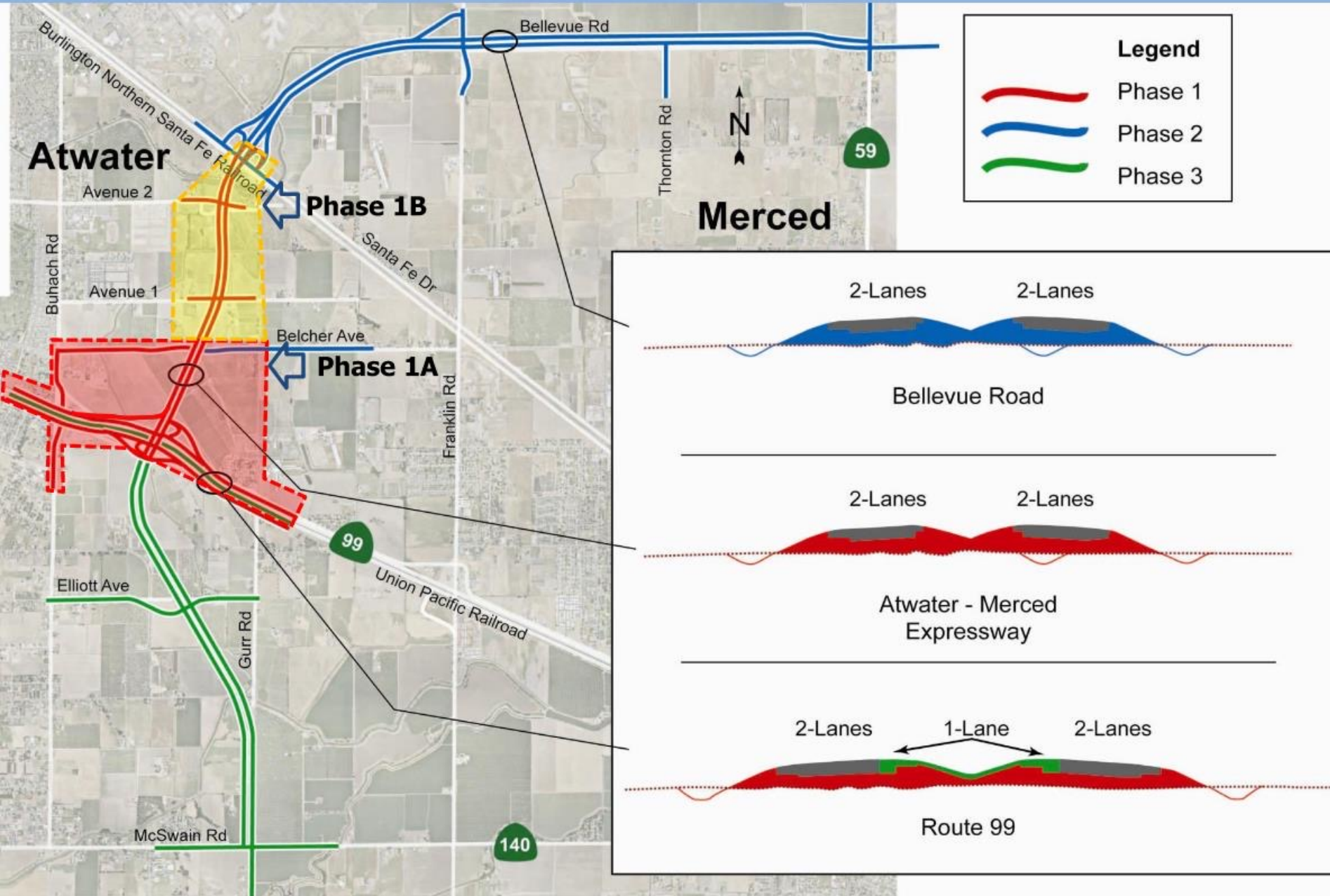
*Higher Speeds and/or tighter curves*

=

*Higher superelevation*



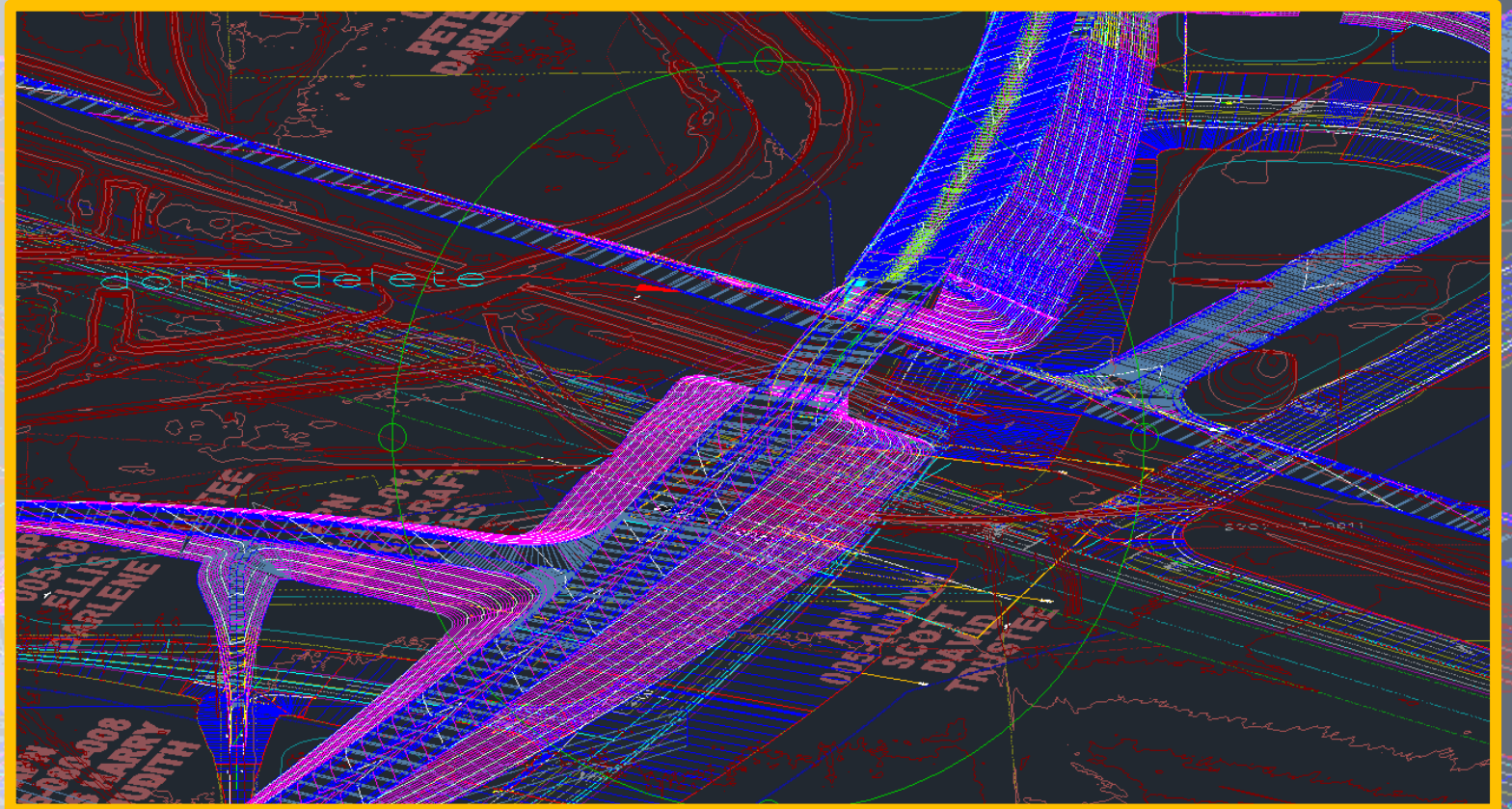
# Atwater-Merced Expressway Proposed Sub-Phasing




- **Alignment**
- **Profile**
- **Cross section**
- **Surface**

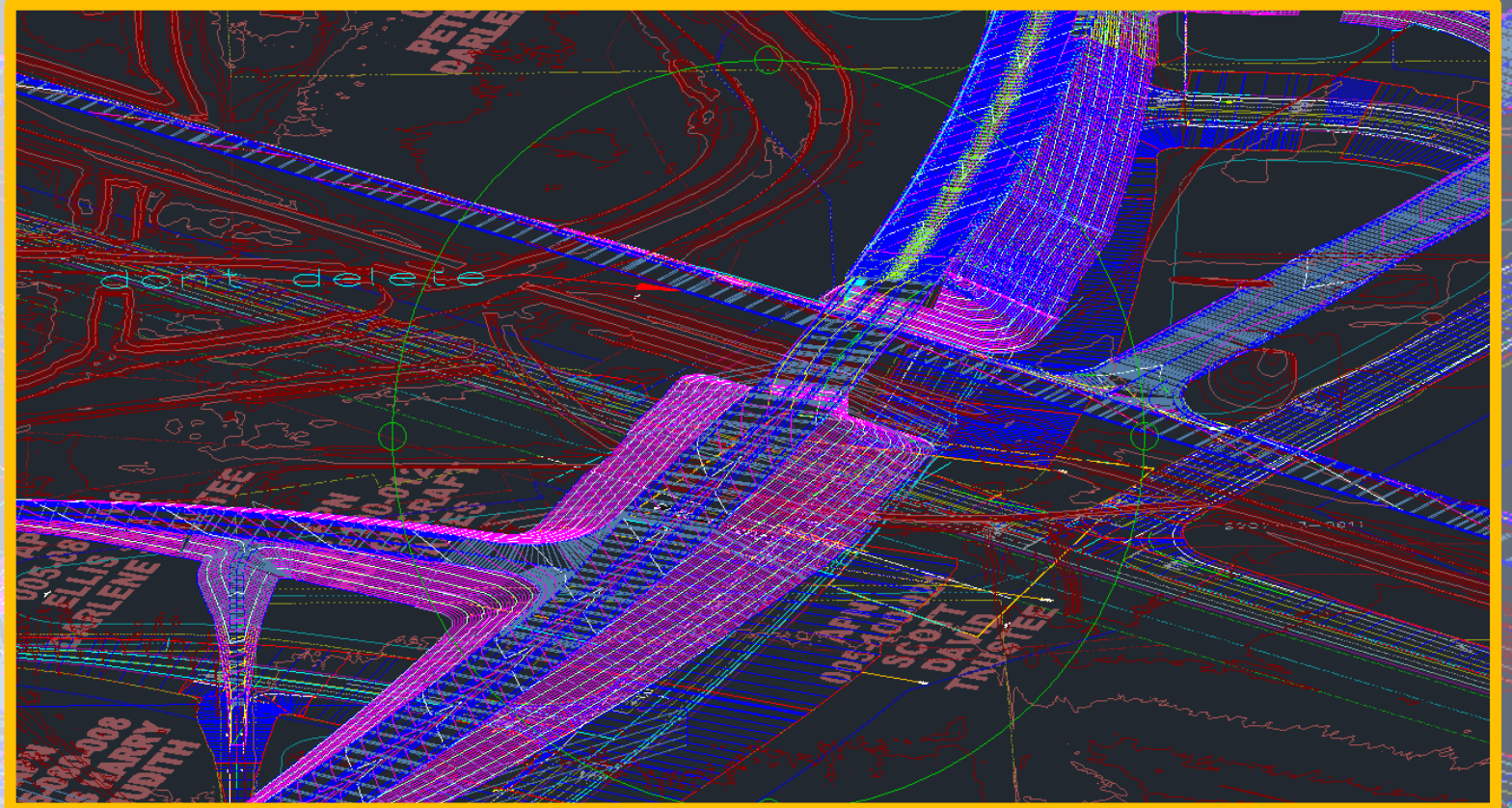
# 3-Dimensional Surface

- *Alignment*
- *Profile*
- *Cross section*
- *Surface*



# 3-Dimensional Surface

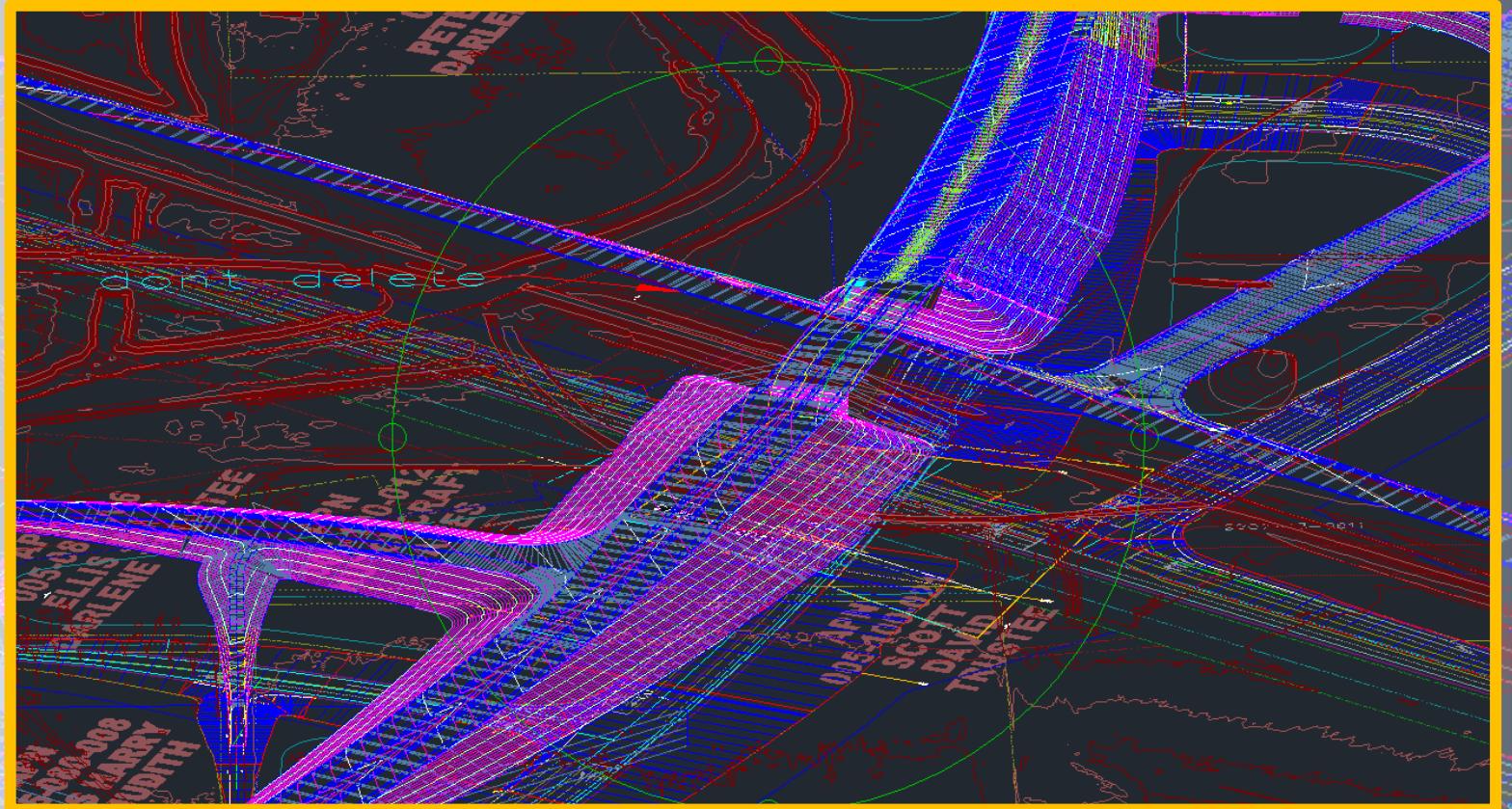
- 
- *Alignment*
  - *Profile*
  - *Cross section*
  - *Surface*



# 3-Dimensional Surface

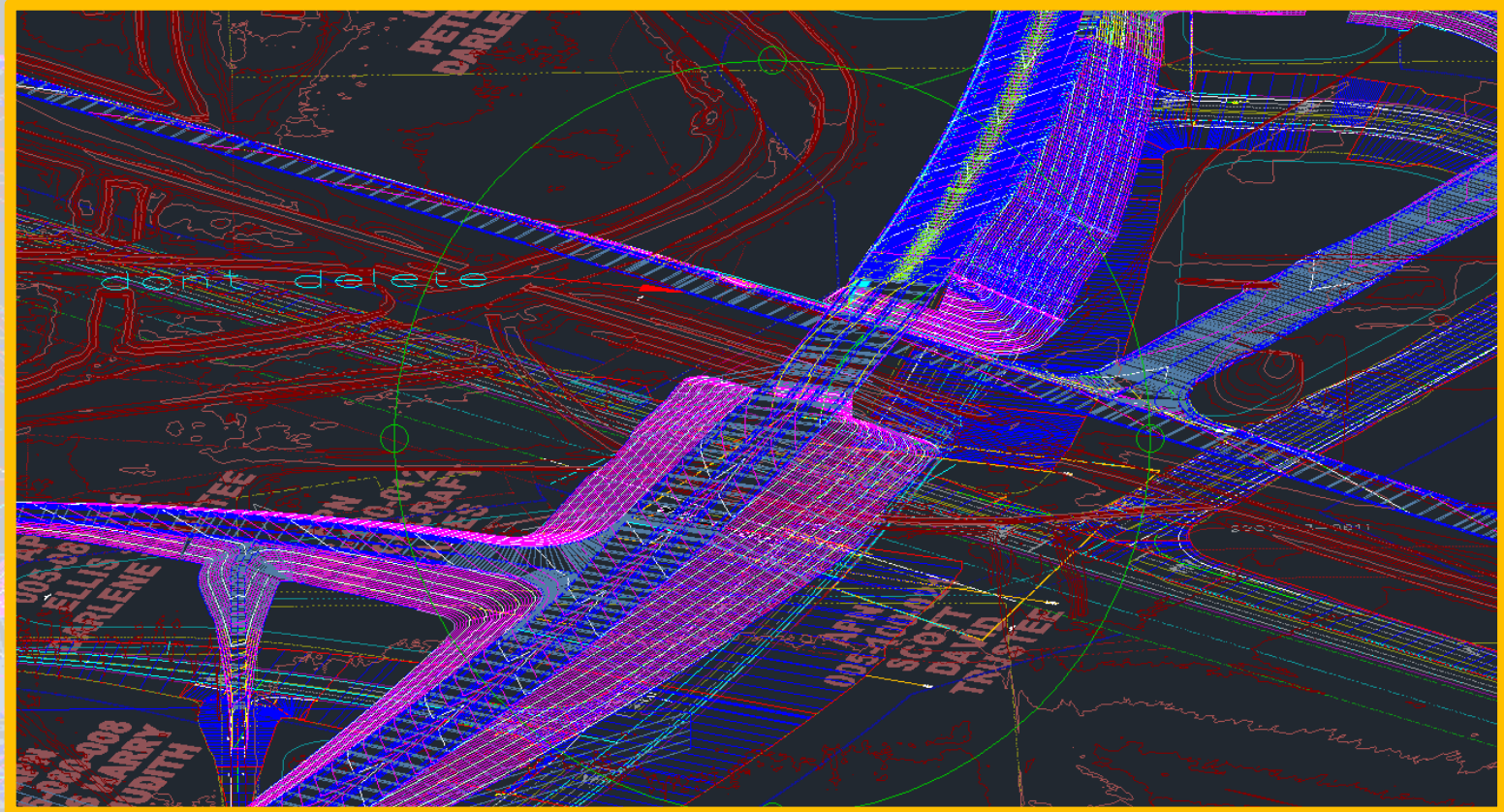
- *Alignment*
- *Profile*
- *Cross section*
- ***Surface***
- *Utility Relocation*
- *Drainage*
- *Floodplain Mitigation*
- *Environmental Mitigation*
- *Right-of-way*

*Considerations*

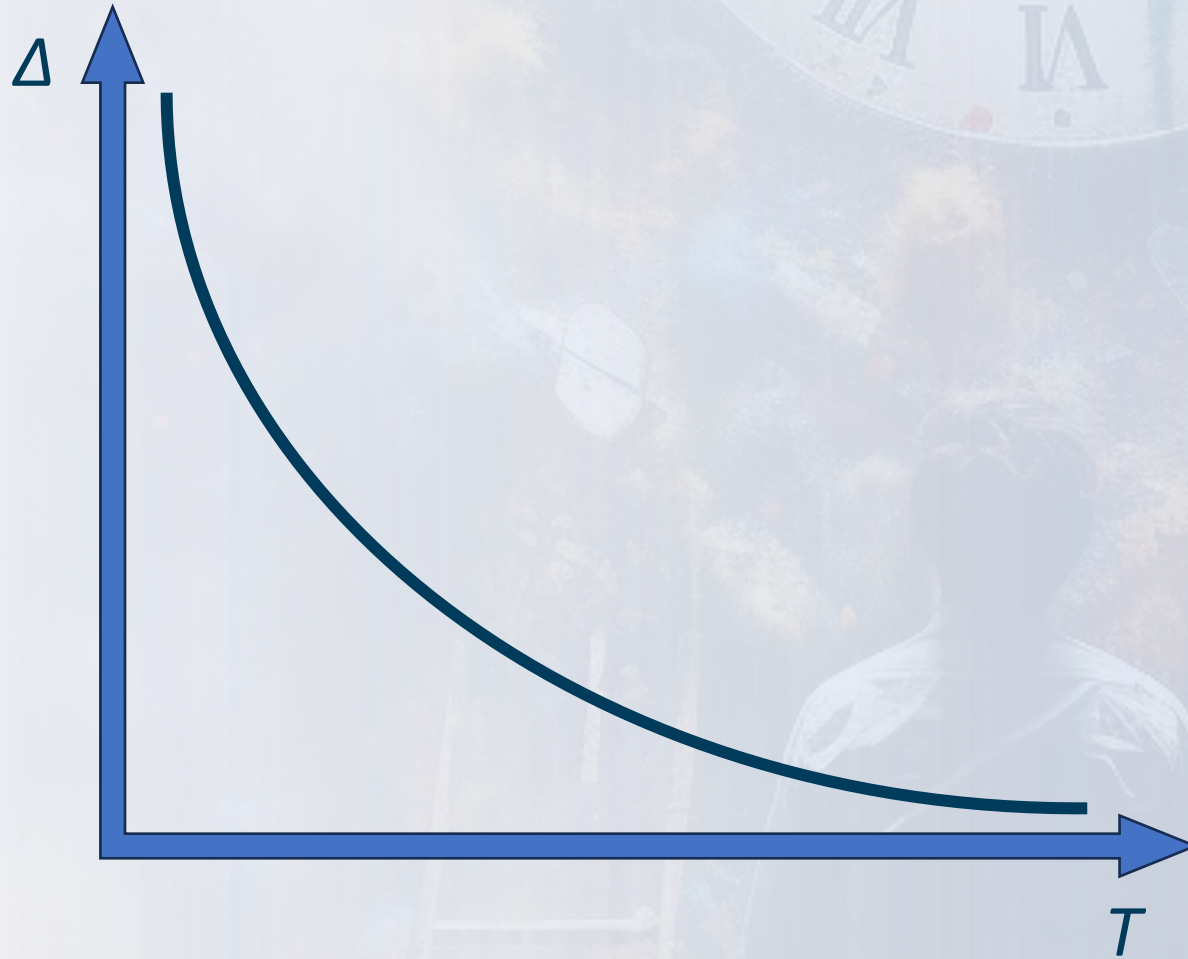


# 3-Dimensional Surface

- Considerations*
- Alignment
  - Profile
  - Cross section
  - **Surface**
  - Utility Relocation
  - Drainage
  - Floodplain Mitigation
  - Environmental Mitigation
  - Right-of-way

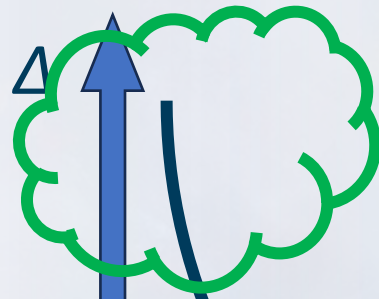


# Dynamic Considerations

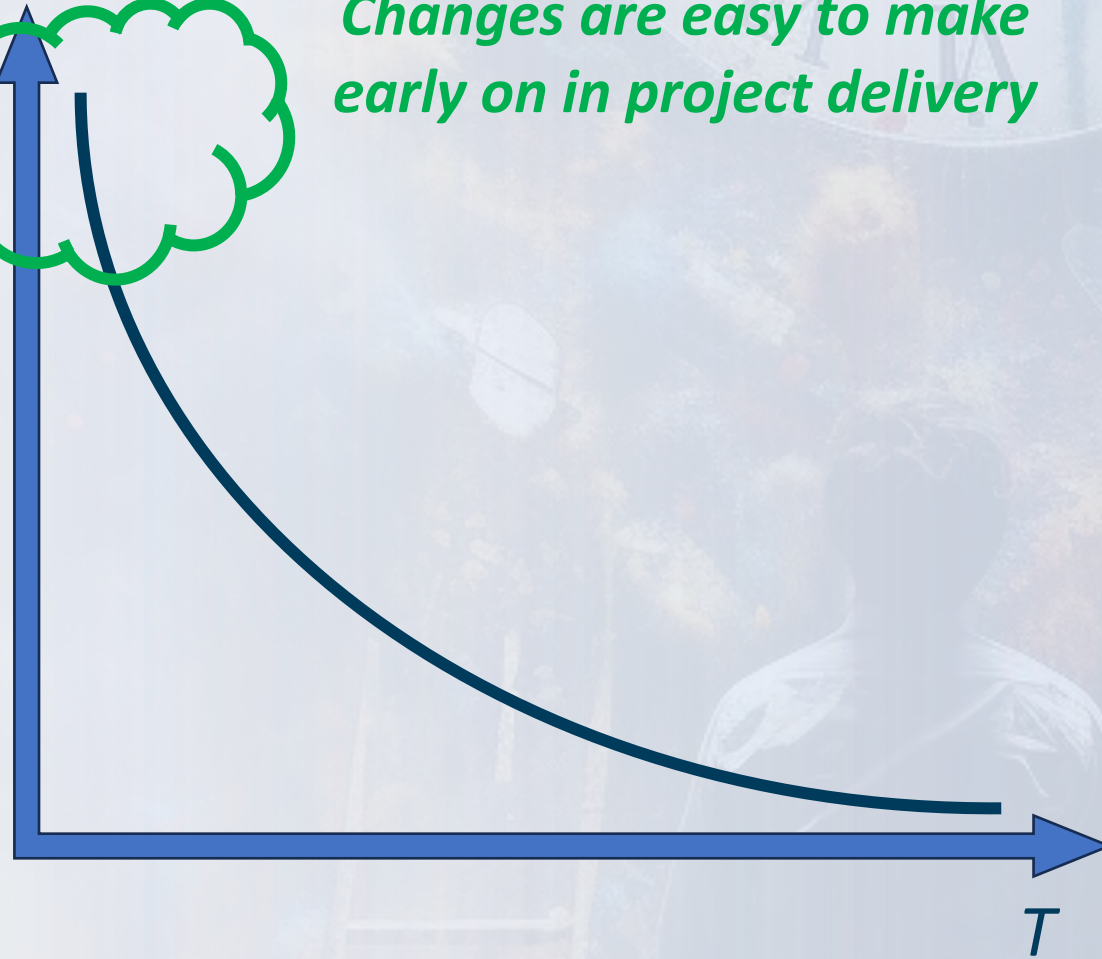




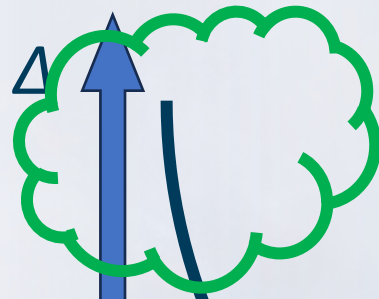
# Dynamic Considerations



*Changes are easy to make  
early on in project delivery*



# Dynamic Considerations



*Changes are easy to make early on in project delivery*

*Changes are more difficult to make later in project delivery*

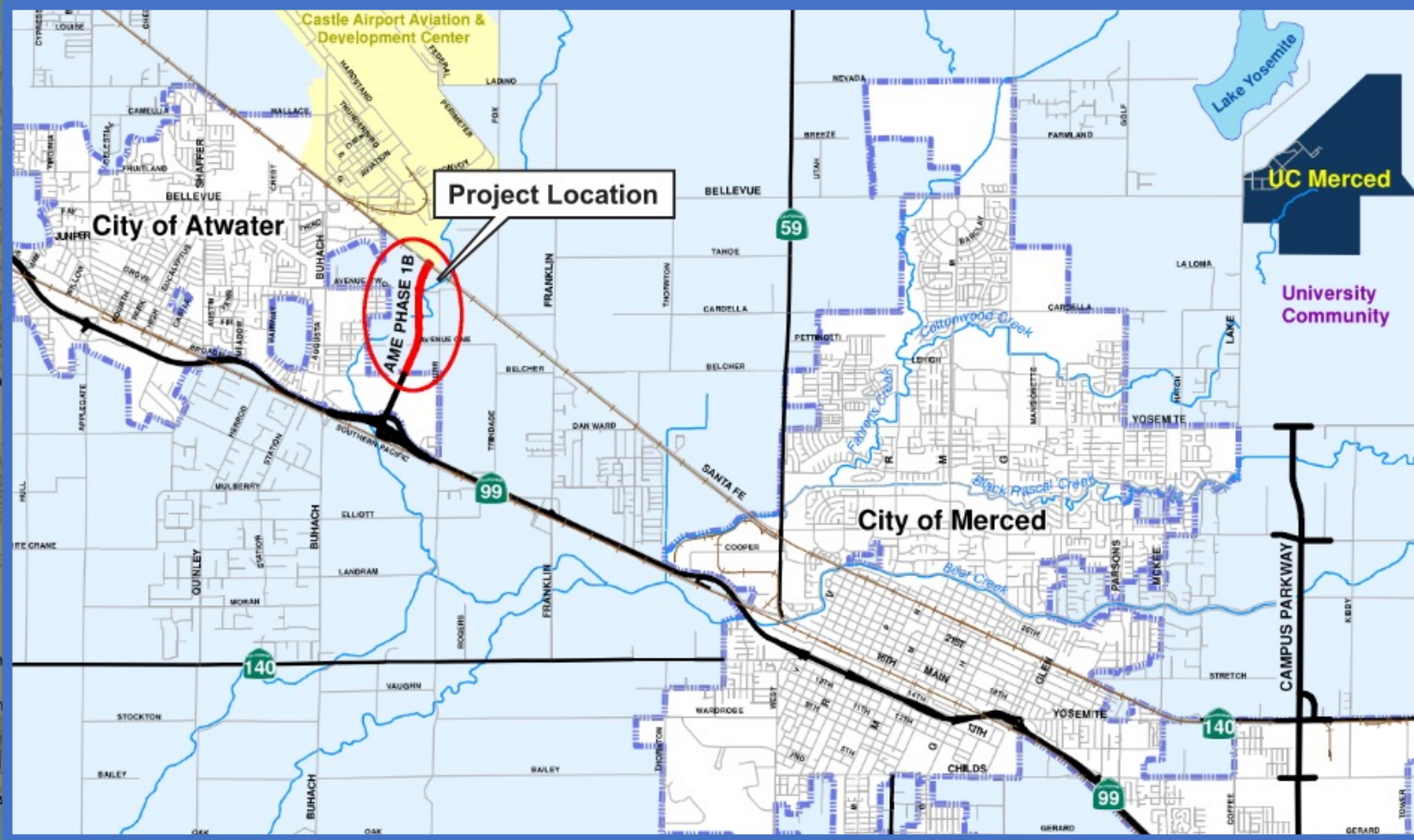


# Atwater-Merced Expressway

- *Initially identified in 1997 Major Investment Strategy*
  - *Population, housing, and employment growth*
- *7 Mile Corridor in Central California*
- *Accommodate future travel demand*
  - *City of Atwater and Merced*
  - *UC Merced*
- *Access to Mid California International Trade District*



# Project Location



# Project Limits

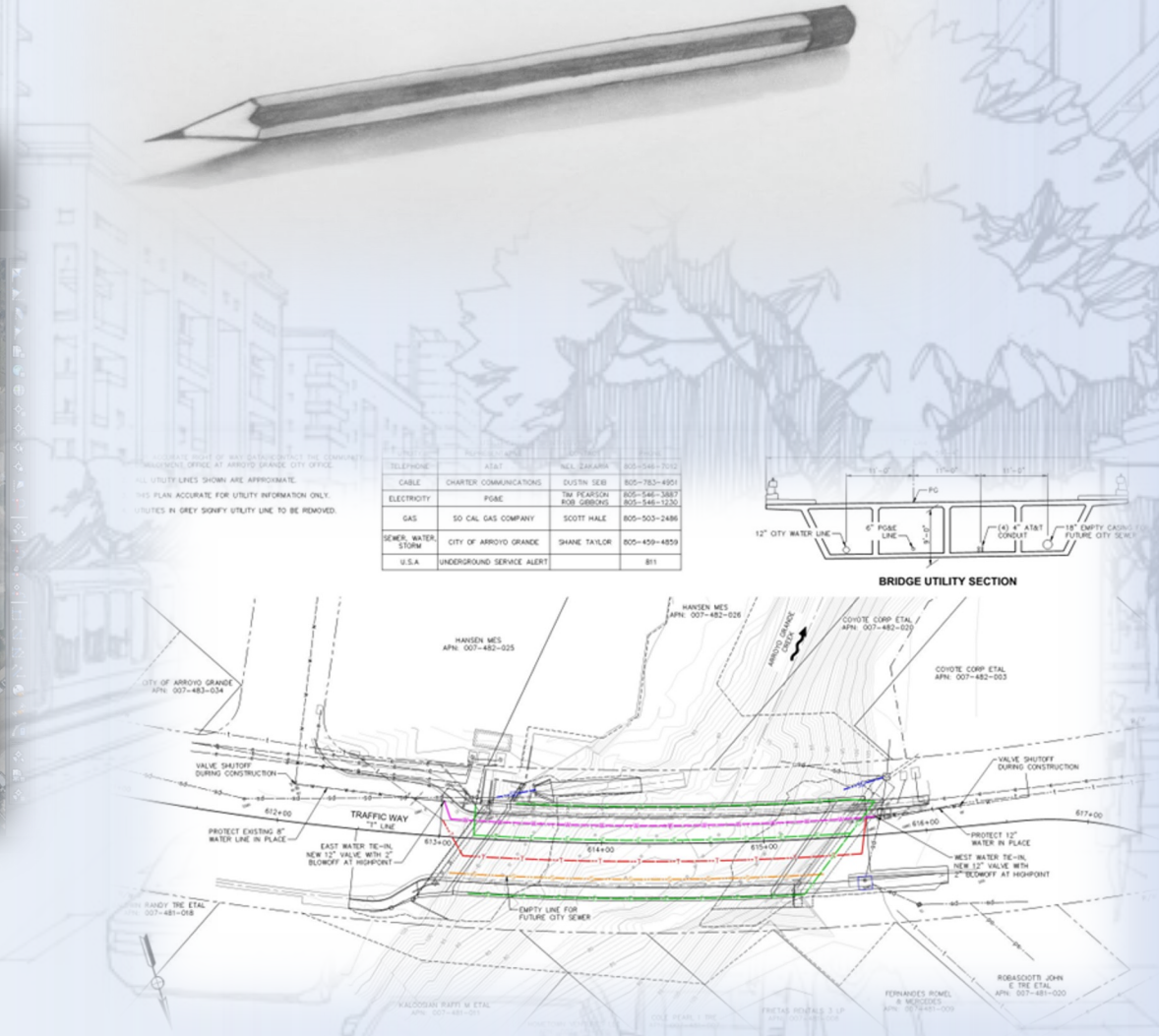


**Atwater-Merced Expressway**

**Campus Parkway**

**Potential Future Development**

# Roadway Geometrics – YOUR TURN





AVENUE 2

AVENUE 1

GREEN SANDS

Atwater-Merced  
Expressway

GURR RD.

ANTIA FE

FOX RD.

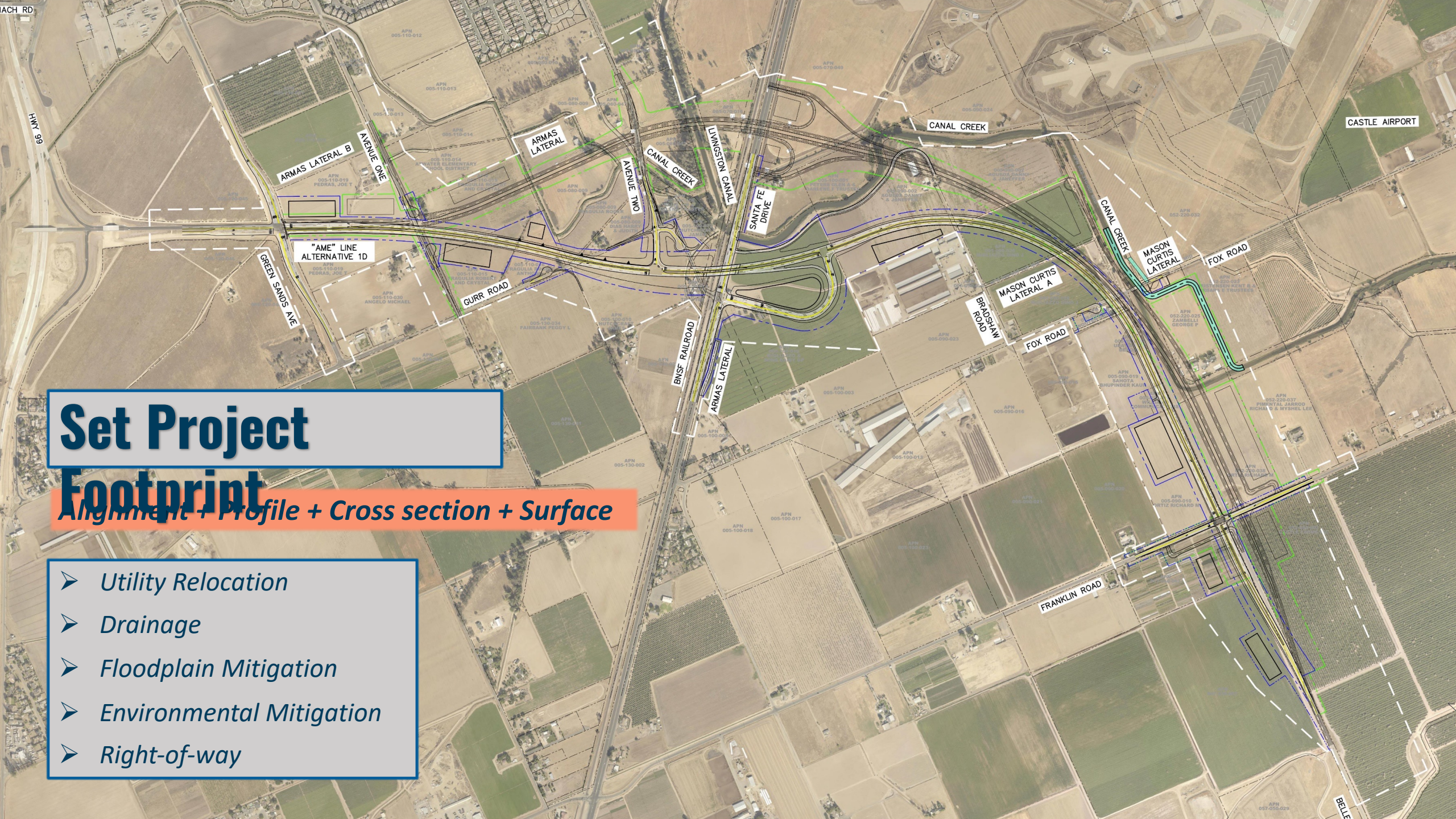
IN RD.

Canal Creek

BELLEVUE RD.



SCALE: 1" = 1000'

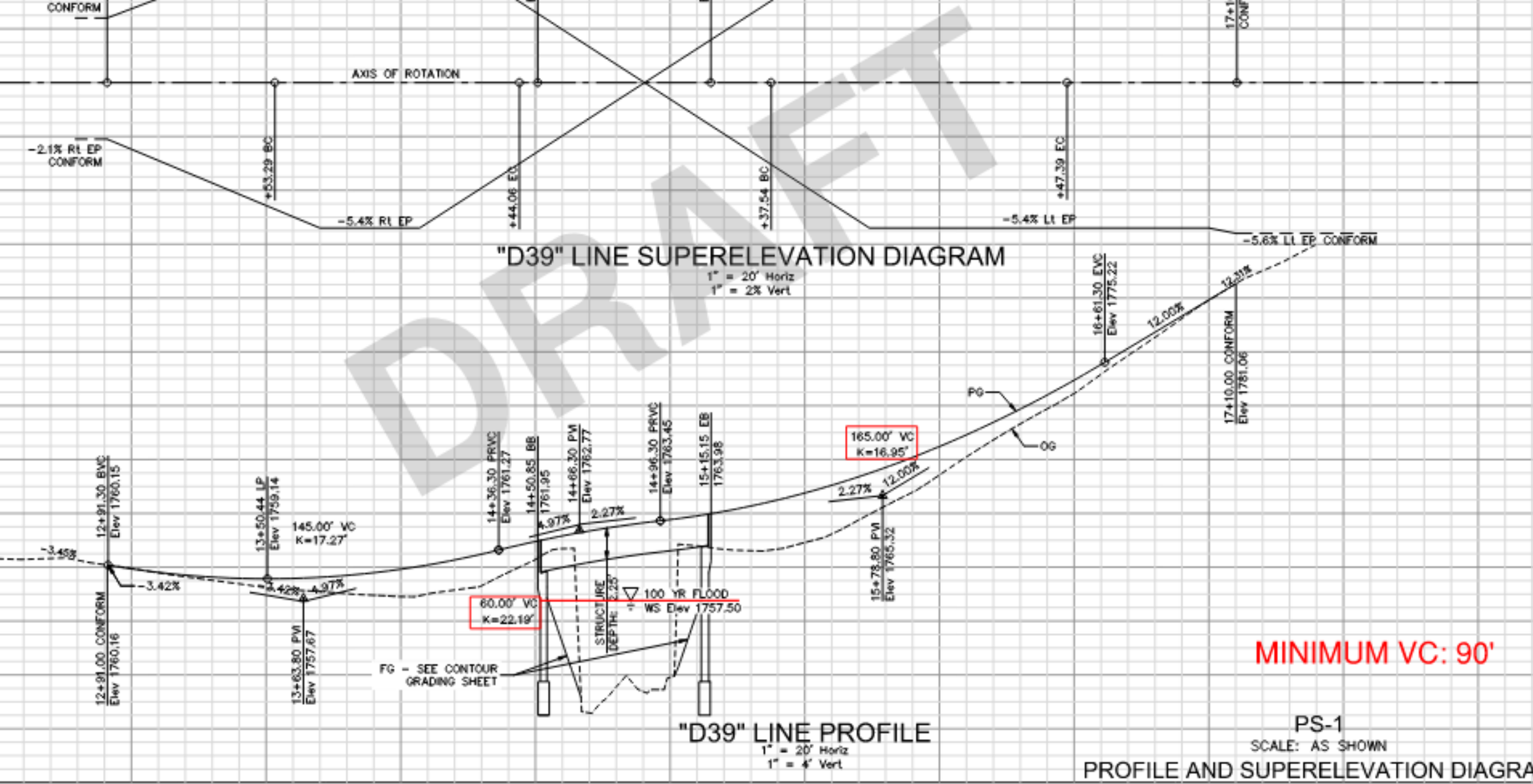


# Set Project Footprint

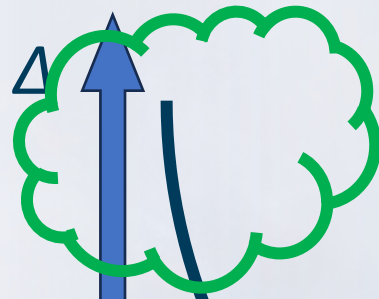
Alignment + Profile + Cross section + Surface

- Utility Relocation
- Drainage
- Floodplain Mitigation
- Environmental Mitigation
- Right-of-way



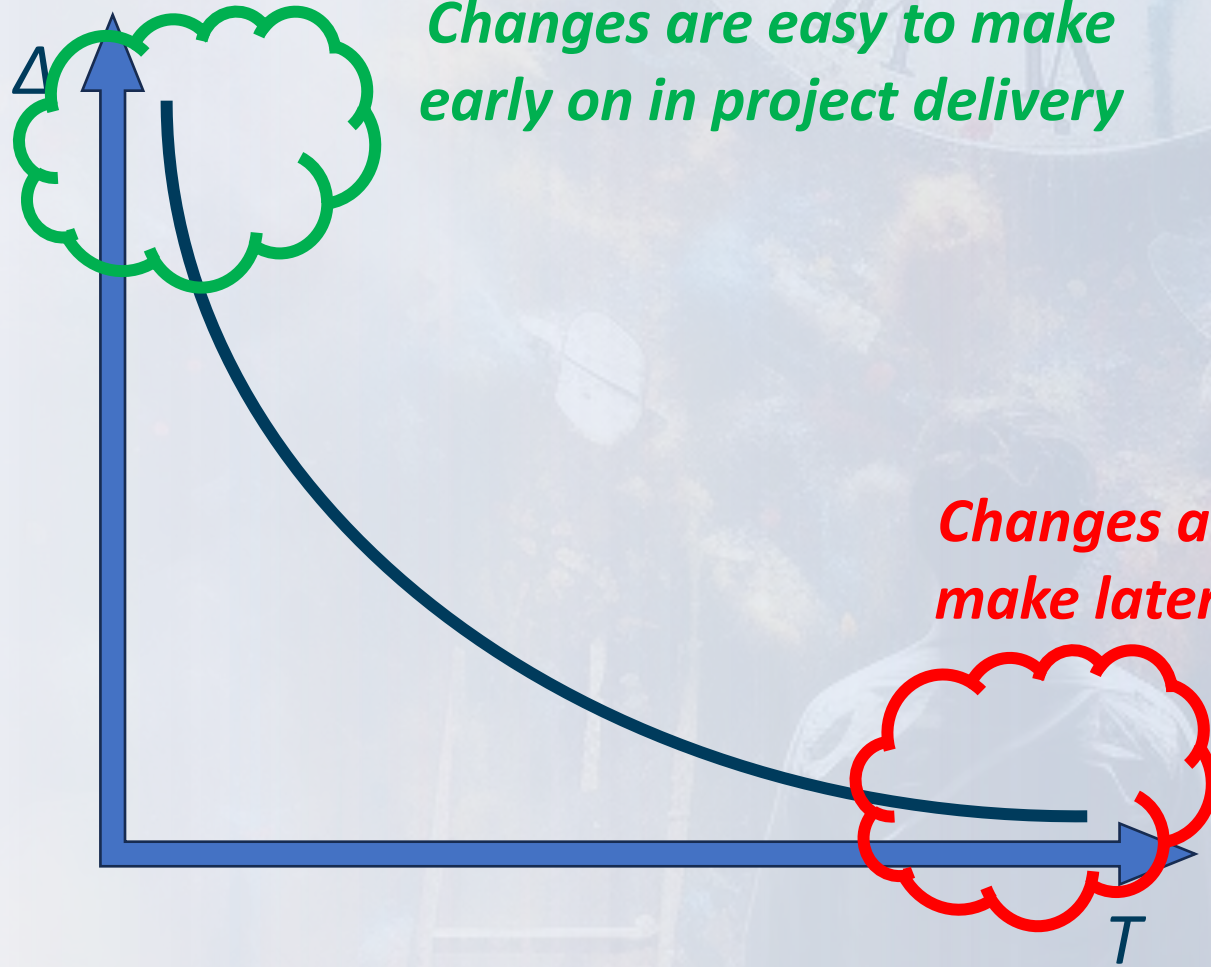


# Dynamic Considerations



*Changes are easy to make early on in project delivery*

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# Come See Us!

## Positions Available

### Internships in:

*San Luis Obispo*  
*Sacramento*





# Questions & Answers

