

**CalMod**



# Caltrain Electrification Update

Sunnyvale Council Meeting  
November 13, 2018



# Agenda

- Caltrain System Overview
- Project Overview
- Electric Train Design
- Sunnyvale Construction Activities
- Questions



# Caltrain System

JPB owns  
right-of-way  
from SF to  
San Jose



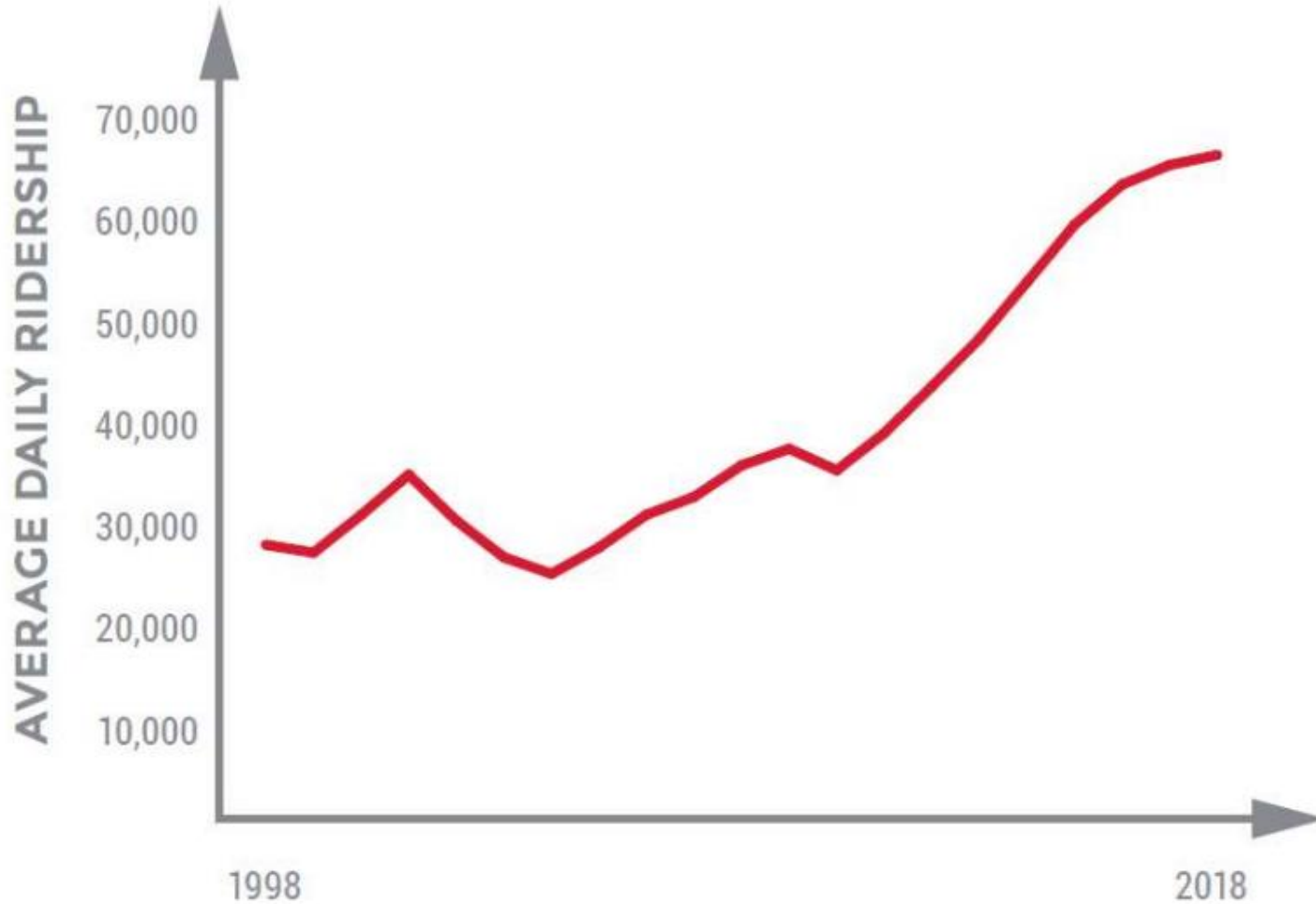
- 32 Stations Gilroy to San Francisco
- 92 Weekday Trains
- At-Grade Crossings, viaducts, and bridges
- Intermodal Connections
- Bike Commuters

Union Pacific  
owns





## Ridership



## At Capacity Today



Bi-directional commute with riders standing on trains going southbound and northbound

# Aging Fleet

**Table 1.2: Caltrain Fleet Inventory**

SERIES	QUANTITY	NUMBER OF SEATS	YEAR OF MANUFACTURE	MAKE	RETIRE DATE
<b>Locomotives</b>					
F40 PH-2	5	na	1985	GM - EMD	2015
F40PH-2-CAT	15	na	1985-1987	GM - EMD	2015-2017
F40 PH-2C	3	na	1998	Boise Locomotive	2028
MP36PH-3C	6	na	2003	Motive Power	2033
<b>Passenger Cars</b>					
Gallery Trailer	26	142	1985-1987	Nippon Sharyo	2015-2017
Gallery Trailer	16	148	1985-1987	Nippon Sharyo	2015-2017
Gallery Trailer	14	120	1999-2000	Nippon Sharyo	2030
Gallery Cab (Bike)	10	108	1985-1987	Nippon Sharyo	2015-2017
Gallery Cab (Bike)	6	78	1999-2000	Nippon Sharyo	2030
Gallery Cab (Bike)	21	97	1985	Nippon Sharyo	2015
Bi-Level Trailer*	16	149	1997	Bombardier	2027
Bi-Level Trailer	9	144	2002	Bombardier	2032
Bi-level Trailer (Bike)	2	114	2002	Bombardier	2032
Bi-level Trailer (Bike)	5	114	2001-2002	Bombardier	2031-2032
Bi-level Trailer (Bike)	2	114	2008	Bombardier	2038
Bi-level Trailer (Bike)	1	127	2002	Bombardier	2032
Bi-Level Trailer	6	140	2008	Bombardier	2038

\*Trailers recently acquired from Metrolink with refurbishment ongoing.



At Retirement Age: 20/29 loco; 73/134 cars



## Regional Transportation Needs

- US 101 and Interstate 280 Congested
- Corridor supports growing economy
- 75% Caltrain riders commute to work
- 60% are choice riders



# Project Description

Area	Project	Service
51 miles  San Francisco to San Jose (Tamien Station)	<b>Electrification:</b> <ul style="list-style-type: none"><li>• Overhead Contact System (OCS)</li><li>• Traction Power Facilities</li></ul> <b>Electric Trains</b> <ul style="list-style-type: none"><li>• 75 percent of fleet</li></ul>	Up to 79 mph <b>Service Increase</b> <ul style="list-style-type: none"><li>• 6 trains / hour / direction</li><li>• More station stops / reduced travel time</li><li>• Restore Atherton &amp; Broadway service</li></ul> <b>Mixed-fleet service (interim period)</b> <b>Continue tenant service</b> <ul style="list-style-type: none"><li>• ACE, Capital Corridor, Amtrak, Freight</li></ul>





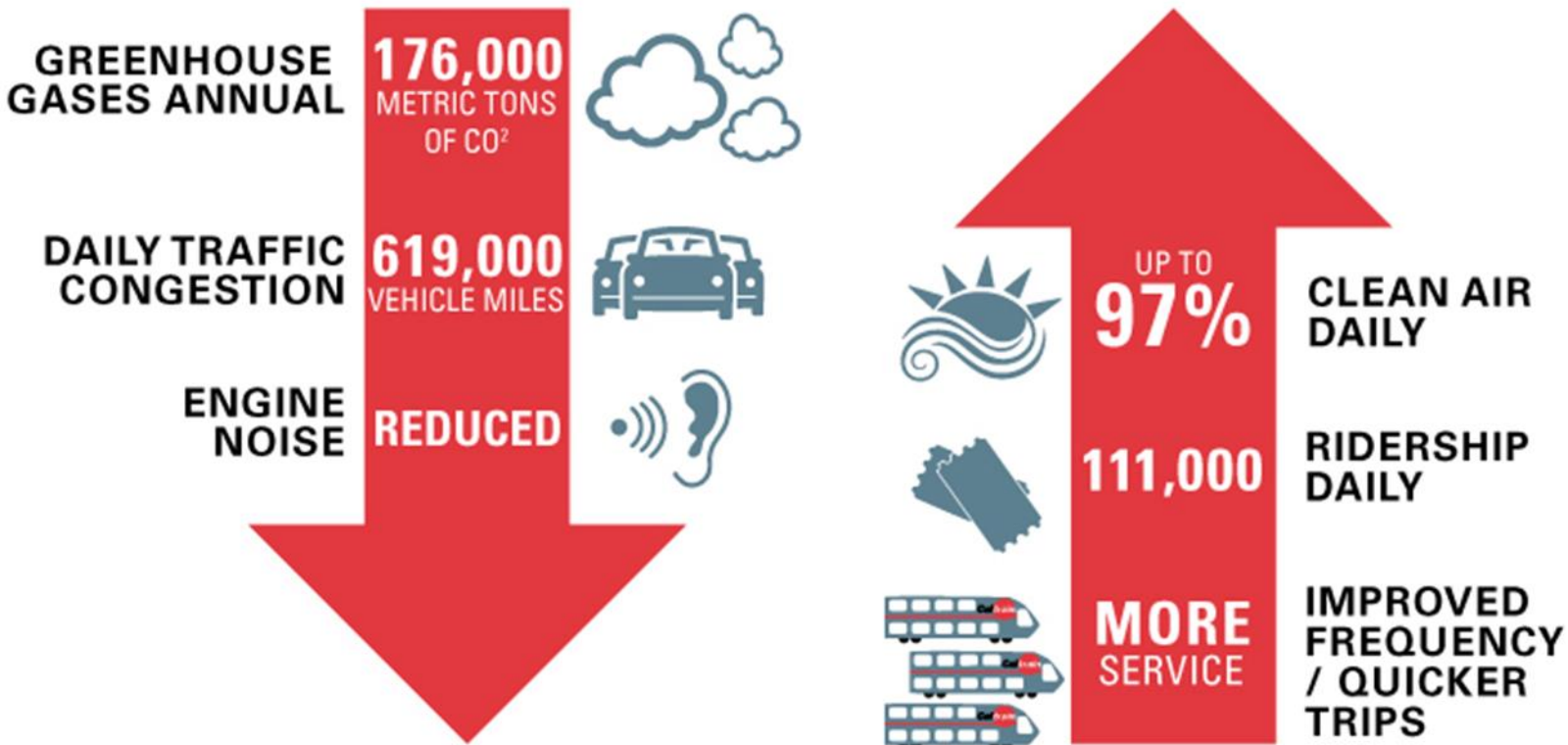
# Service Benefits

Metric	Today	PCEP
Example Baby Bullet Train		
Retain 5-6 stops	60 minutes	45 minutes
Retain SF to SJ 60 minutes	6 stops	13 stops
Example Redwood City Station		
Train stops / peak hour	3	5



Note: Prototypical Train and Schedule

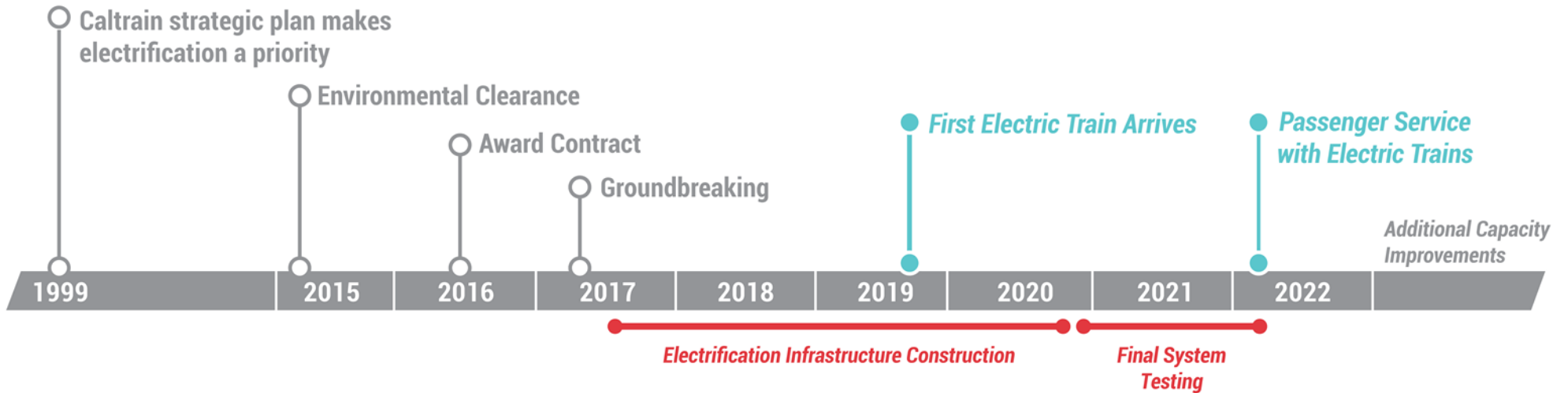
## Key Regional Benefits (2040)



Note: 2013 BAC Report, generates \$2.5B economic activity and 9,600 jobs

# Schedule

## MILESTONES



\*Please keep in mind that testing and construction will overlap as each Segment will be tested individually, prior to final system testing.

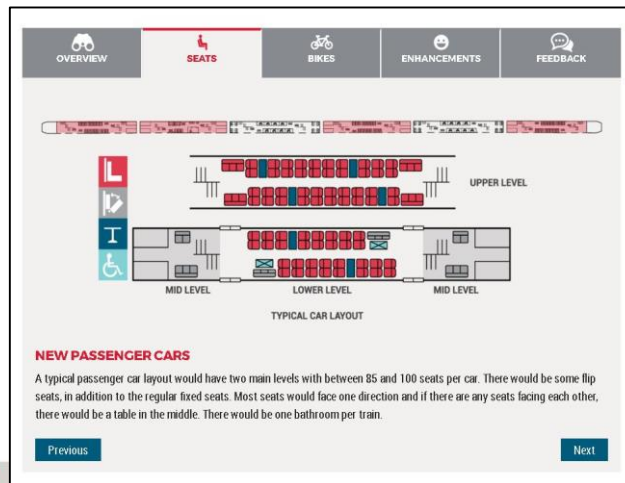


Note: Schedule Subject to Change



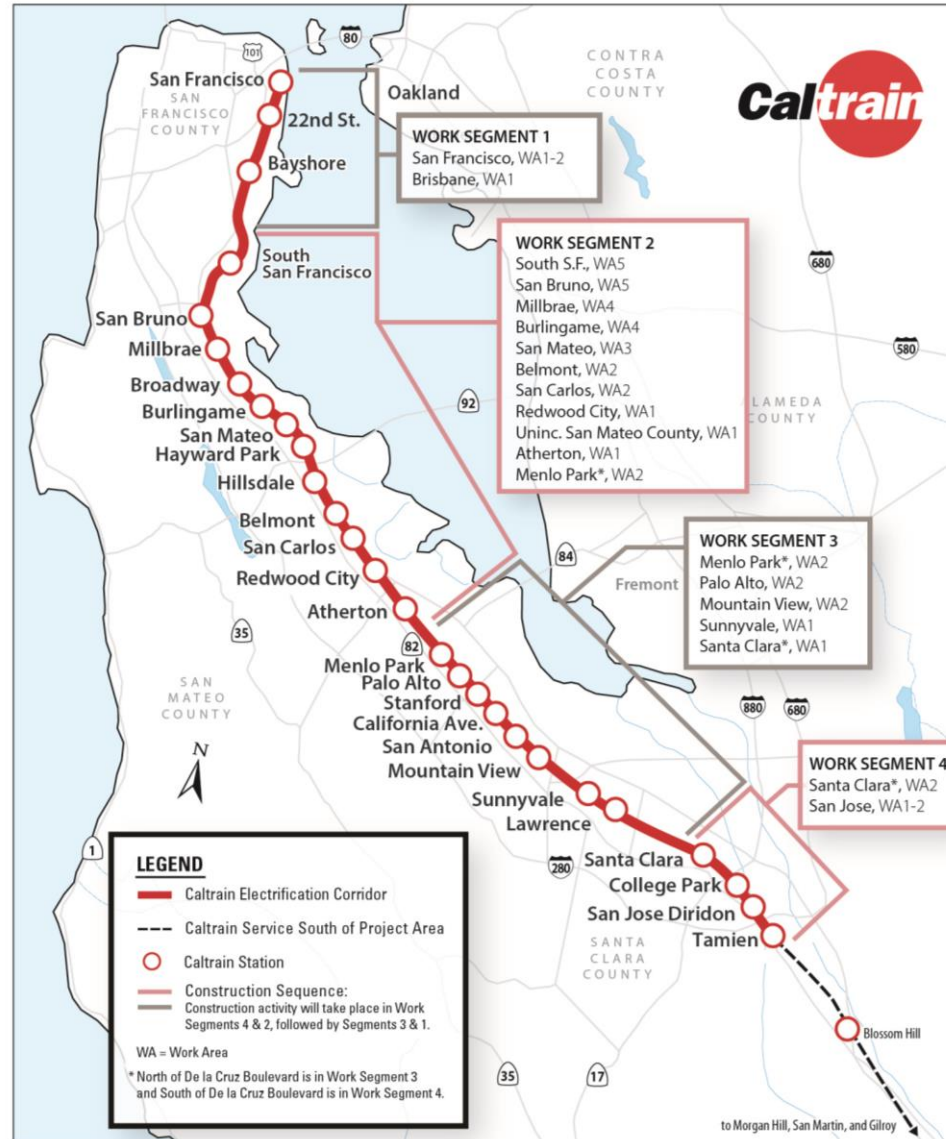
## Electric Train

- 2016 Capacity Board Decision (bike to seat ratio, onboard bathrooms, upper doors ‘not precluded’)
- 2017 Design Progressing w/ Additional Public Input
  - Completed: Exterior design, Seat colors, Bike Storage, ADA restroom
- 2019 Virtual Reality 360 Tour

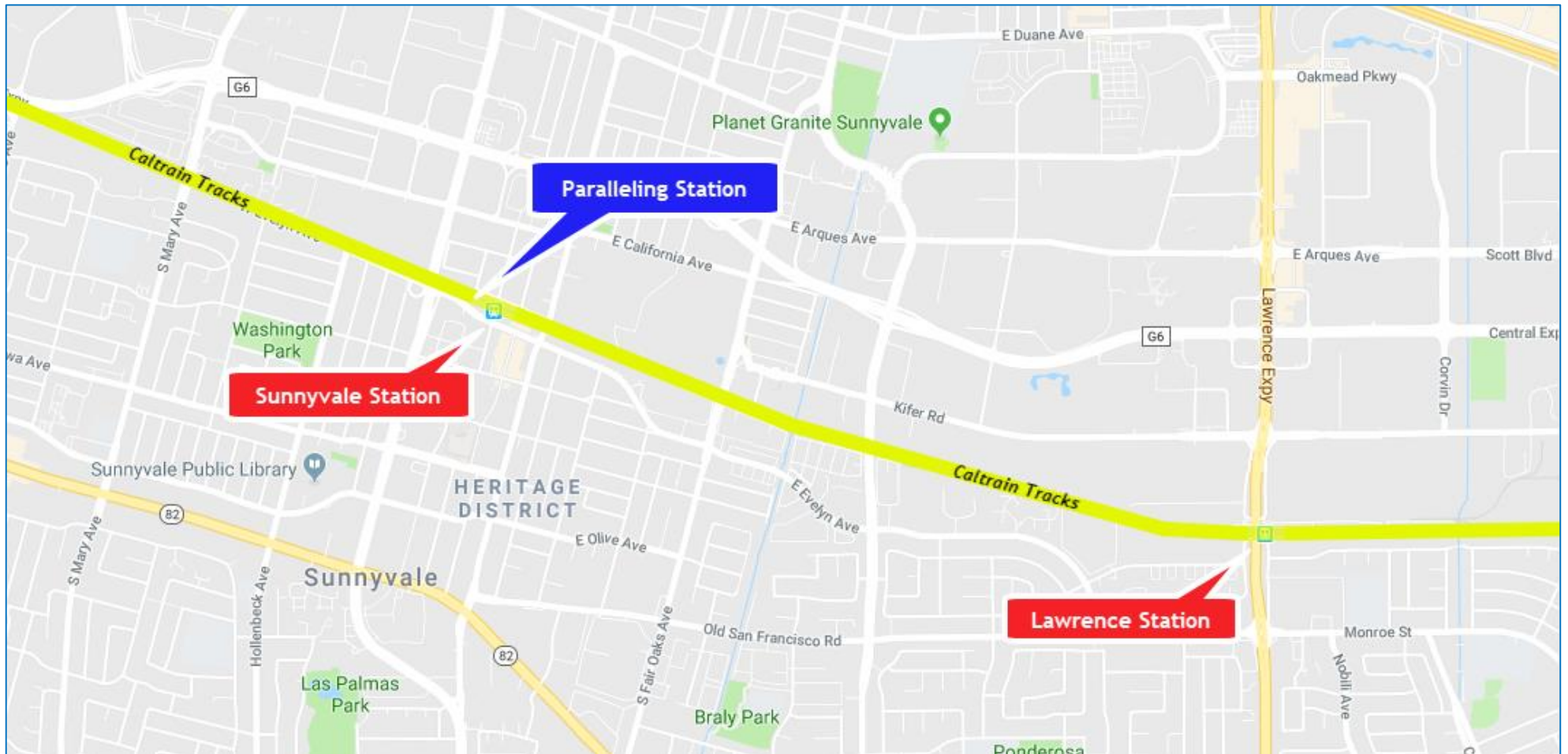


# CalMod Construction Phasing

- 51 Miles Corridor
- 4 Work Segments
- 3,000 Poles
- 10 Traction Power Facilities



## Sunnyvale – Work Segment 3



Sunnyvale Work Area 4 miles



# Field Work Status

Pre-Construction Work Completed	<ul style="list-style-type: none"><li>• Utility Survey</li><li>• Geotechnical Investigations</li><li>• Disposal of Soil from Geotechnical Investigations</li><li>• Soil Resistivity Testing</li><li>• Site Surveys</li><li>• Signal Cable Inspections</li></ul>
Pre-Construction Work In Progress	<ul style="list-style-type: none"><li>• Foundation Potholing</li><li>• Tree Pruning and Removal</li></ul>
Future Work	<ul style="list-style-type: none"><li>• Foundation Installation</li><li>• Overhead Contact System Pole Installation</li><li>• Overhead Contact System Wire Installation</li><li>• Paralleling Station</li></ul>





# Future Construction Activities

## Sunnyvale

Date	Work Activity	Expected Duration*
Summer/Fall 2018	Potholing	2-3 months
Fall 2018	Tree Pruning/Removal	2-3 months
Early 2019	Paralleling Station Construction	4-6 months
Summer/Fall 2019	Pole/Wire Installation	4-5 months
Summer/Fall 2019	Foundation Installation	2-4 months



\*Expected duration indicates first and last day of activity. Number of actual work days will be fewer.



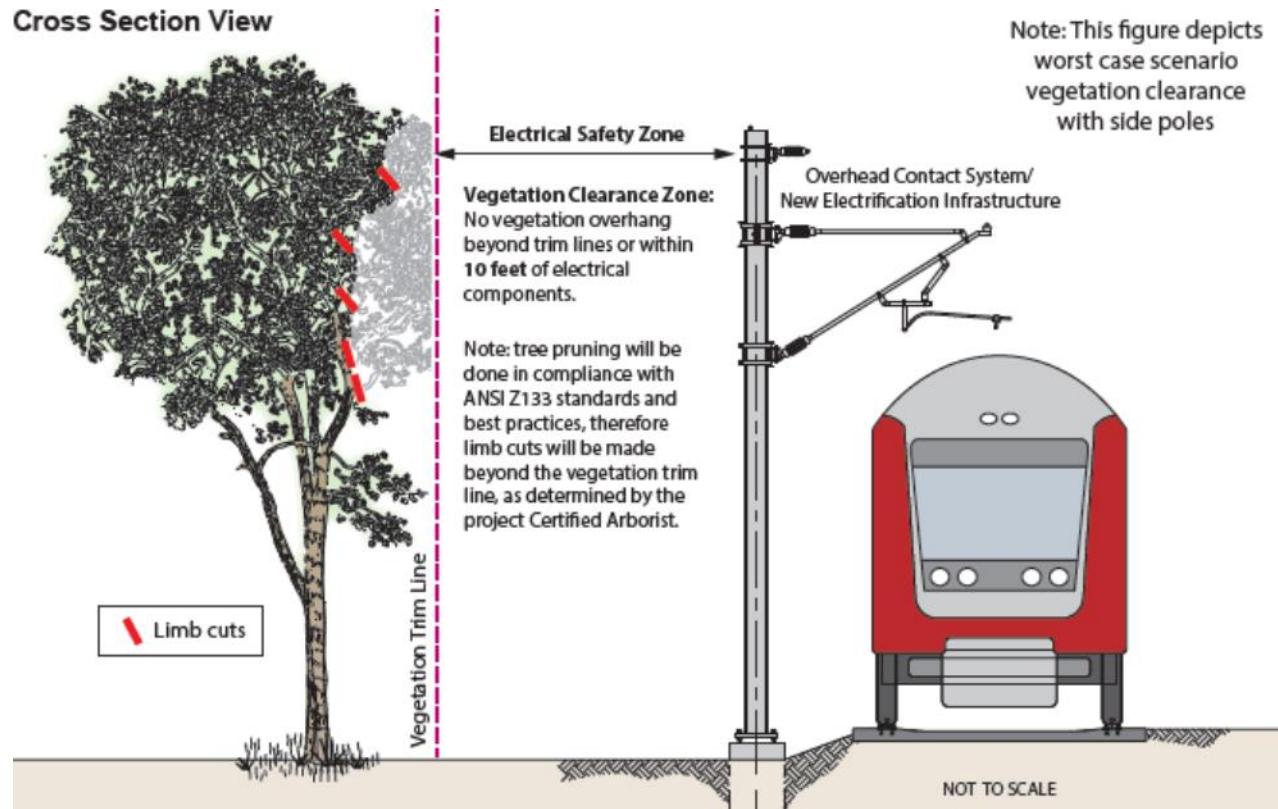
## Potholing



Approx. 325 Potholes Sunnyvale



## Tree Pruning and Replacement



Vegetation cleared for Electrical Safety Zone

## City of Sunnyvale: Tree Pruning and Replacement Plan

City of Sunnyvale			
	Caltrain Right of Way	Public Property	Private Property
Trees Removed	85	1	45
Trees Pruned >25%	133	2	38
Trees Pruned <25%	148	5	101

304 Trees will be replaced per the Sunnyvale Tree Replacement Plan



Note: Information may change as the design progresses

# Foundation Construction

- Excavation
- Rebar and Anchor Installation
- Electrical Grounding
- Concrete Fill



## Foundation Installation



On Track Equipment



# Pole Installation

- 3,000 Installed throughout Corridor
  - Approx. 250 Poles in Sunnyvale
- Pole Height: 30-45.5'
- Pole Spacing: ~180' apart



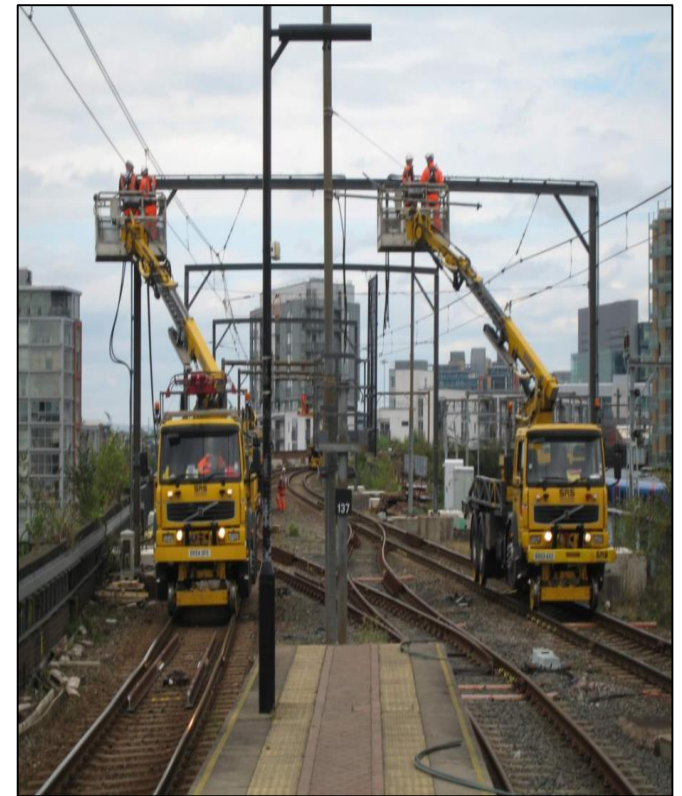
# Example Pole Types



Single Track Cantilever



Two Track Cantilever

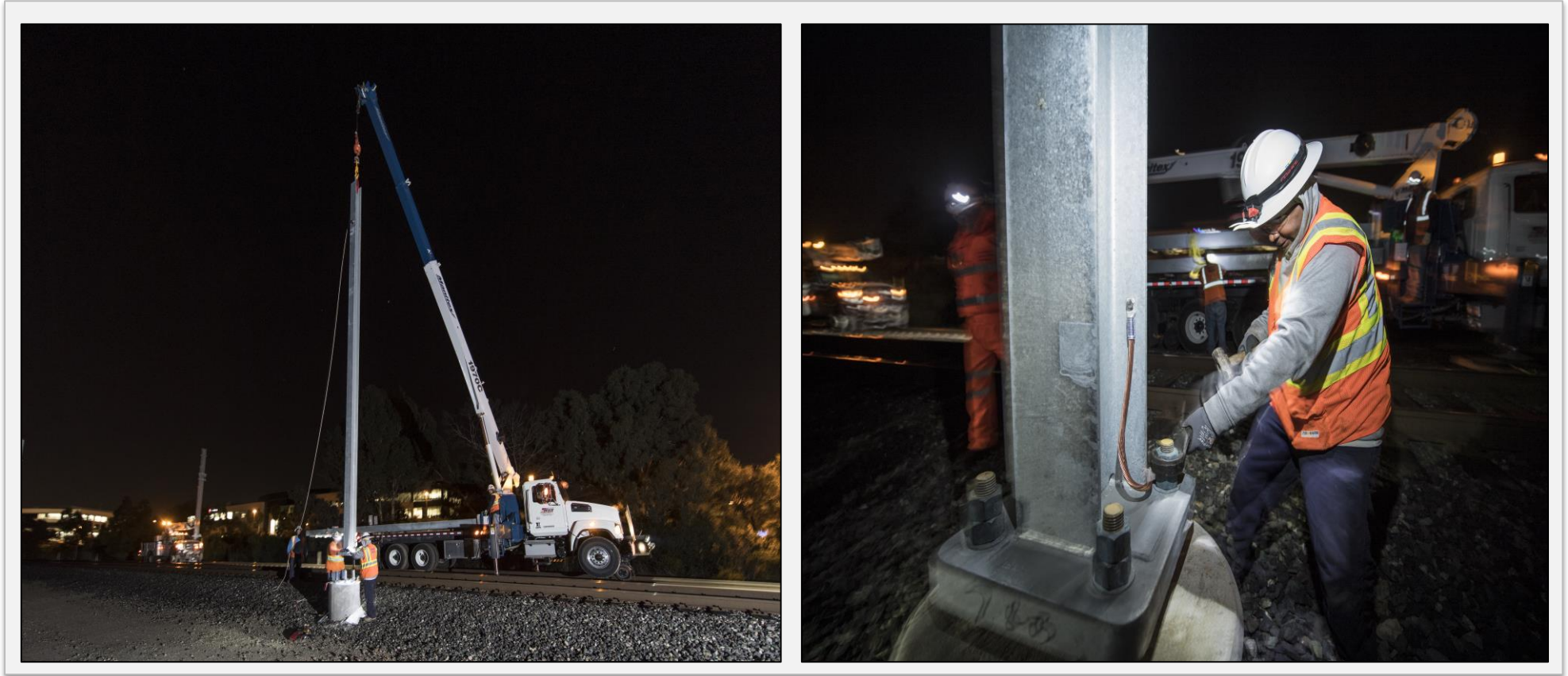


Portals



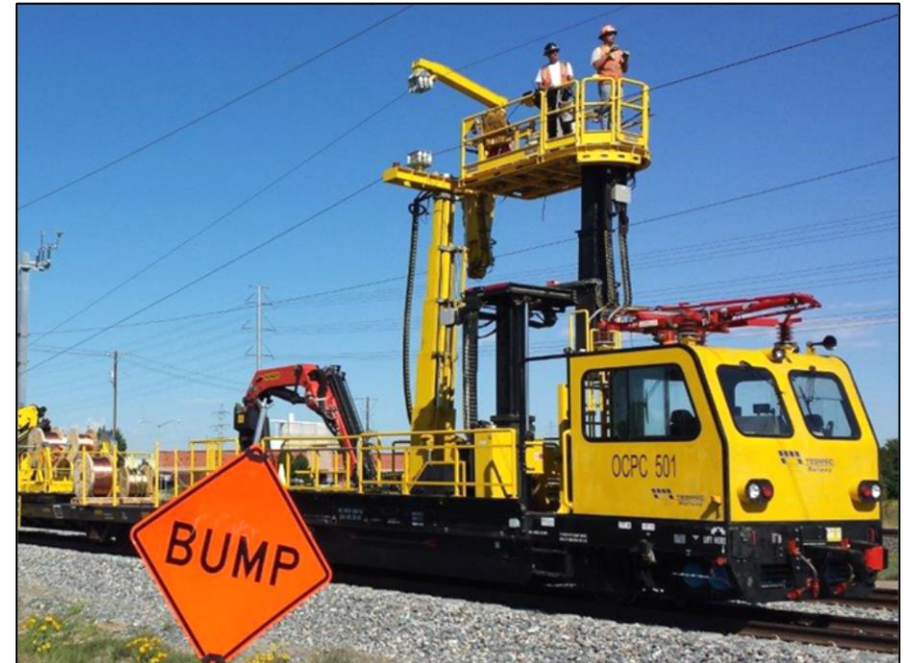


# Pole Installation



Current Pole Installation

## Stringing Wire



On-track Equipment



# Traction Power Facilities

- 10 Traction Power Facilities Installed throughout Corridor
- Facility Components
  - Transformer
  - Gantries (up to 50')
  - Control House
- Provides electrical power to trains through the Overhead Contact System
- Unmanned secure station

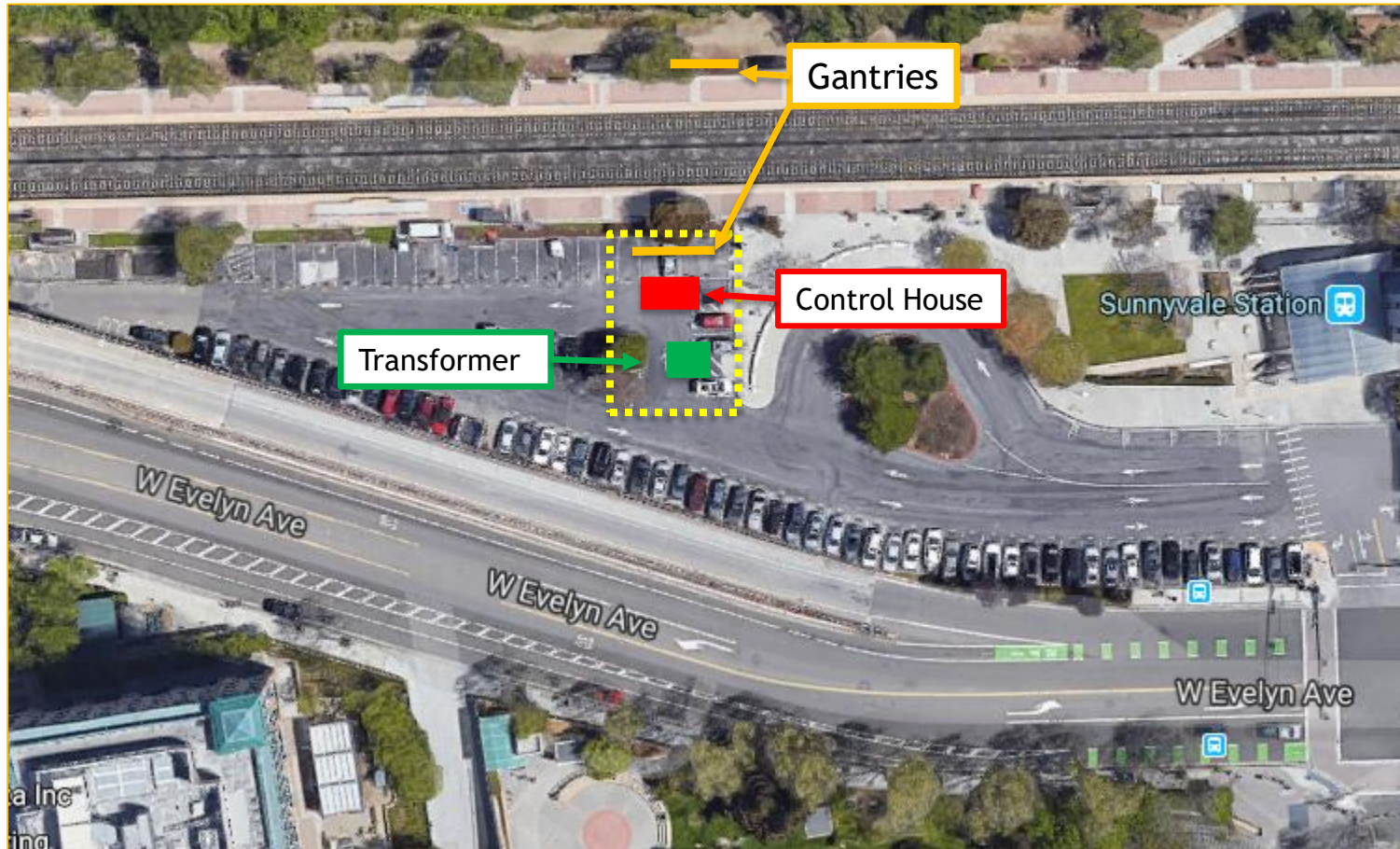


# Paralleling Station 6

- Located at the Sunnyvale Caltrain Station Parking Lot
  - Coordination with City on location during EIR
  - Approx. 21 parking spots permanently taken
- Vegetation Screening will be implemented with review and input from City Staff
- Additional parking spaces needed during construction
- Majority of work done during the day



# Paralleling Station 6 Location



Layout subject to change as design progresses



# Example Paralleling Station



Example from Amtrak Northeast Corridor





# Overall Construction Information

- Work will occur during day and night
- Some 24 hour weekend work
- Crews will utilize acoustical barrier blankets and position lights away from homes
- Dedicated hotline for construction complaints



## SF Weekend Caltrain Closures

- Weekends - Oct 6, 2018 to Late Spring 2019
  - Caltrain service north of the Bayshore Station will be suspended on the weekends
  - Bus service will be provided from Bayshore to 4<sup>th</sup> and King and 22<sup>nd</sup> Street stations
- Weekday service will remain unchanged
- Caltrain service south of Bayshore will remain unchanged
- Bus schedule available at [caltrain.com](http://caltrain.com)



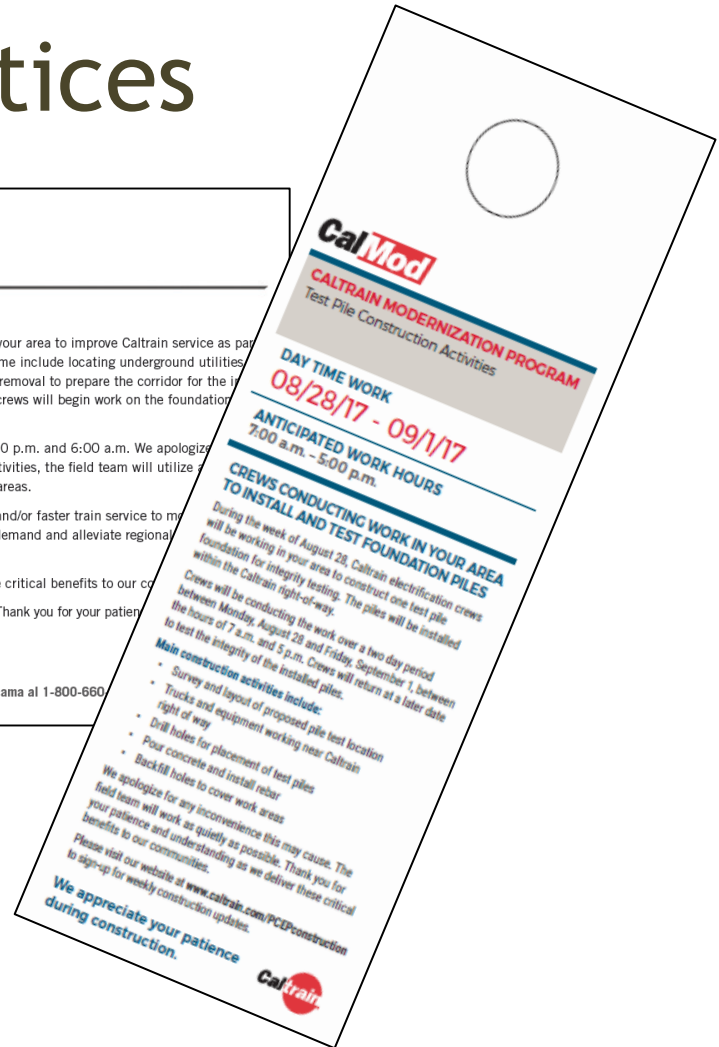
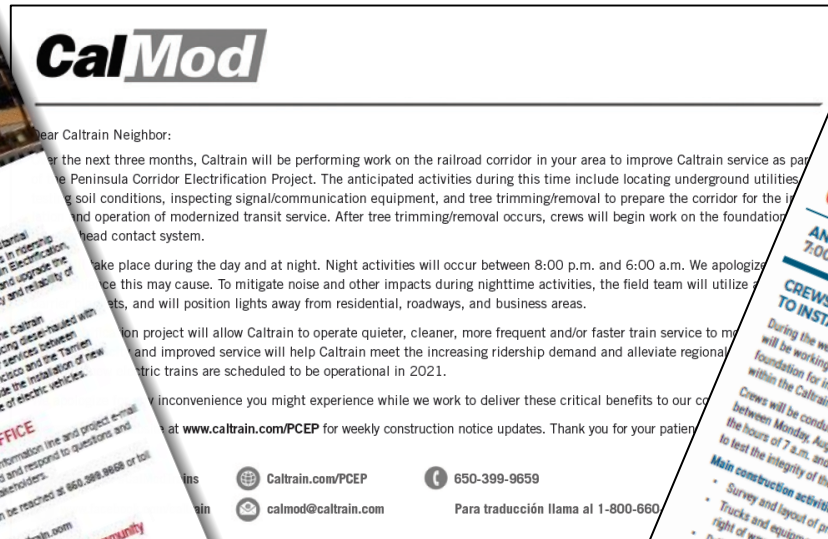
# Public Outreach

- Subscribe to Weekly Updates
  - Visit [www.calmod.org/get-involved](http://www.calmod.org/get-involved)
- Additional Community Meetings
  - Pole and Wire Installation
  - Paralleling Station Construction
- Social Media
- Construction Outreach Office



# Public Outreach

## Physical Notices









## CALMOD CONTACT INFORMATION

**WEBSITE**  CalMod.org

**EMAIL**  CalMod@caltrain.com

**PHONE**  650-399-9659  
800-660-4287 (Toll Free)

**OFFICE**  2121 S. El Camino, Suite A-100  
San Mateo, CA 94403  
9 a.m. - 5 p.m. Monday - Friday

**FACEBOOK**  [www.facebook.com/caltrain](http://www.facebook.com/caltrain)

**TWITTER**  @caltrain

