

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

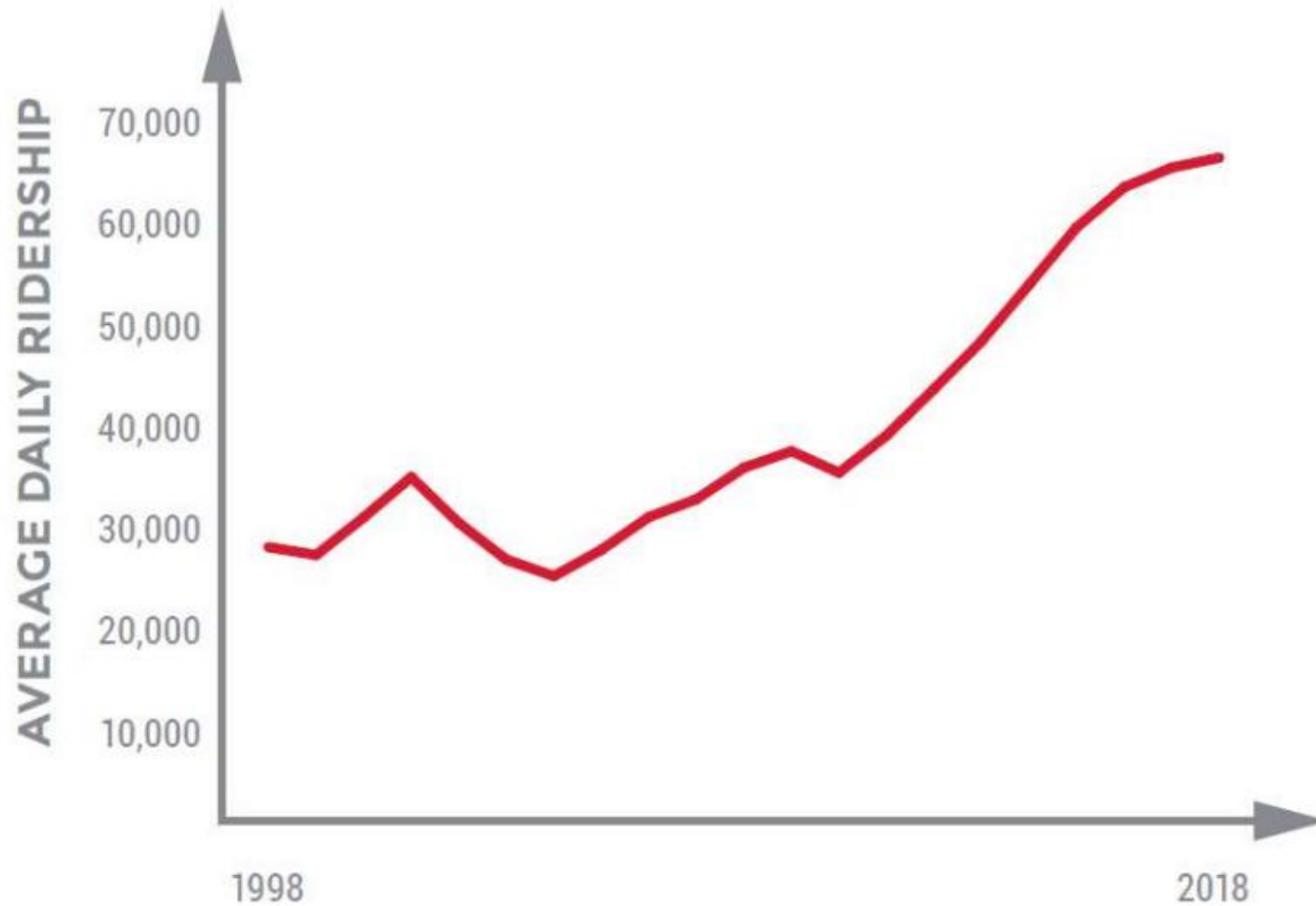


- 32 Stations Gilroy to San Francisco
- 92 Weekday Trains
- At-Grade Crossings, viaducts, and bridges
- Intermodal Connections
- Bike Commuters

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
Locomotives					
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
Passenger Cars					
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)	Electrification: • Overhead Contact System (OCS) • Traction Power Facilities Electric Trains • 75 percent of fleet	Up to 79 mph Service Increase • 6 trains / hour / direction • More station stops / reduced travel time • Restore Atherton & Broadway service Mixed-fleet service (interim period) Continue tenant service • ACE, Capital Corridor, Amtrak, Freight



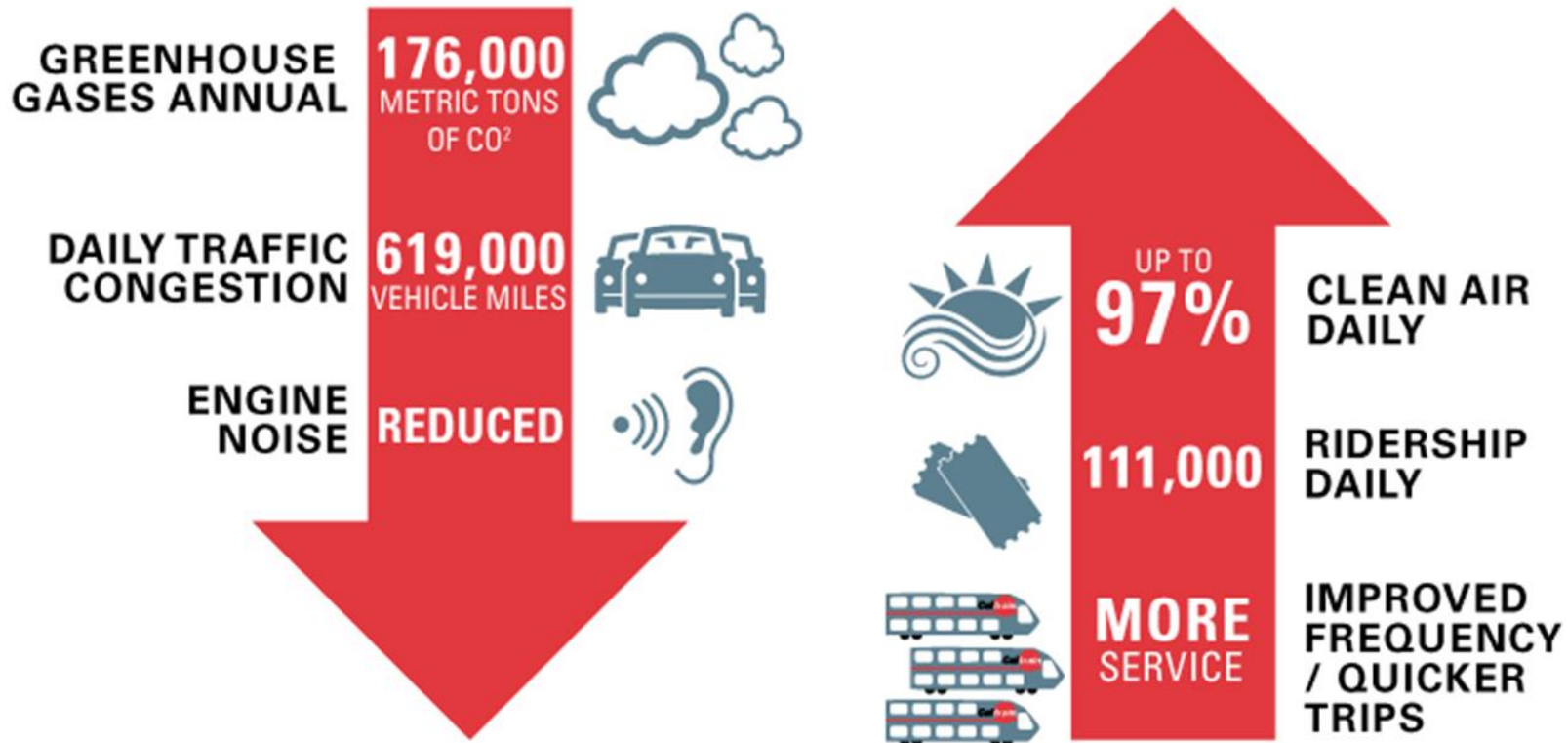
Service Benefits

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

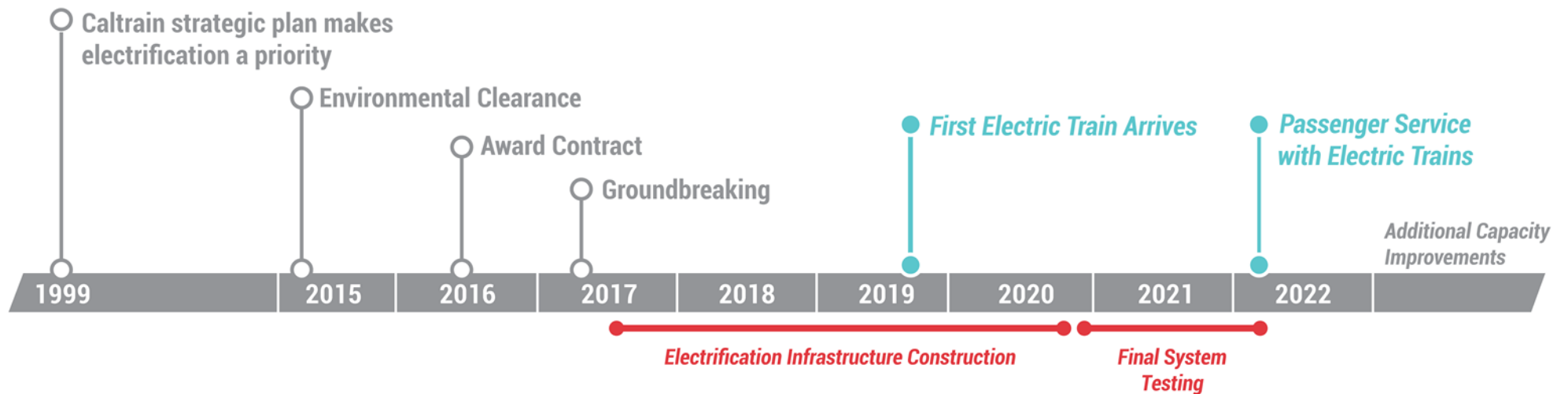
Key Regional Benefits (2040)



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

Schedule

MILESTONES



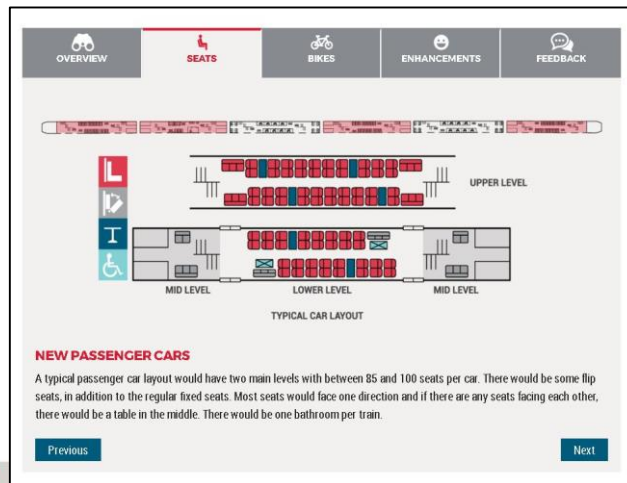
*Please keep in mind that testing and construction will overlap as each Segment will be tested individually, prior to final system testing.



Note: Schedule Subject to Change

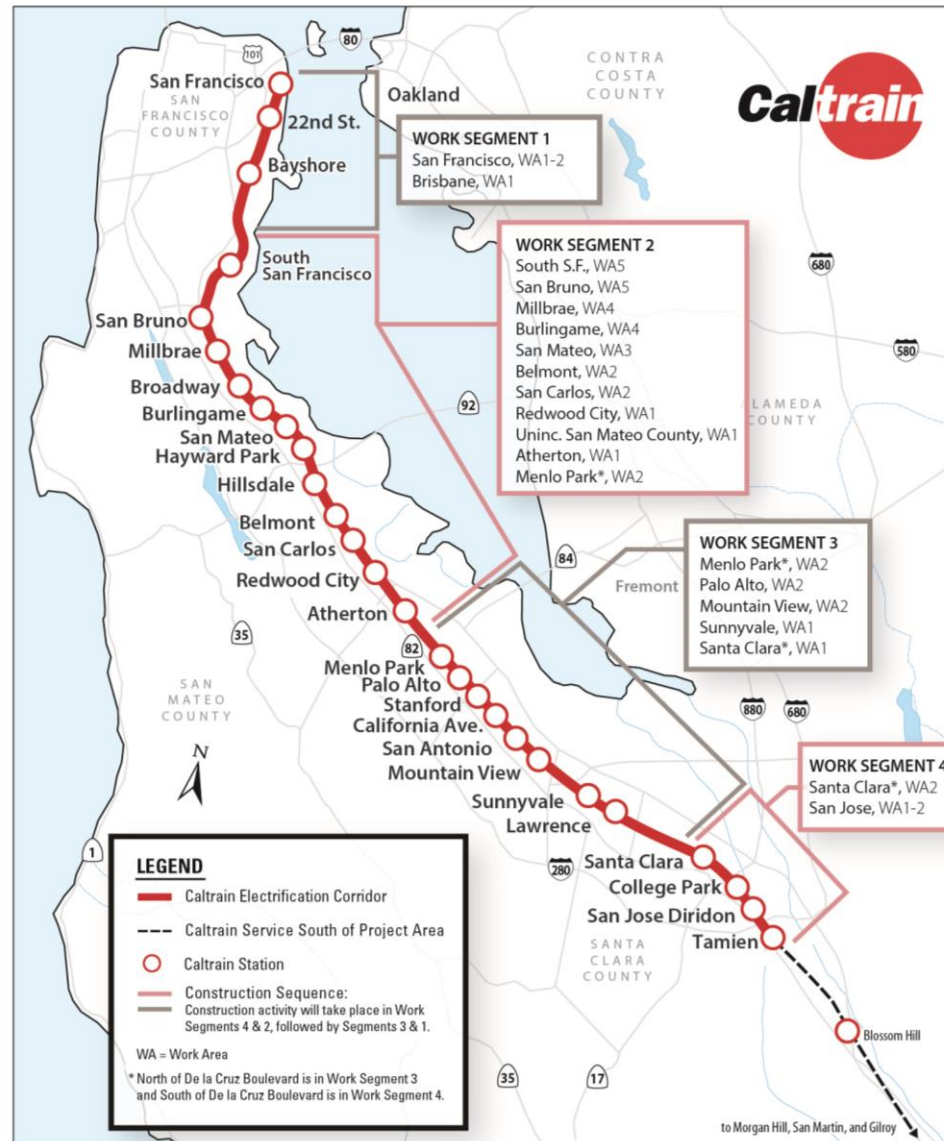
Electric Train

- 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

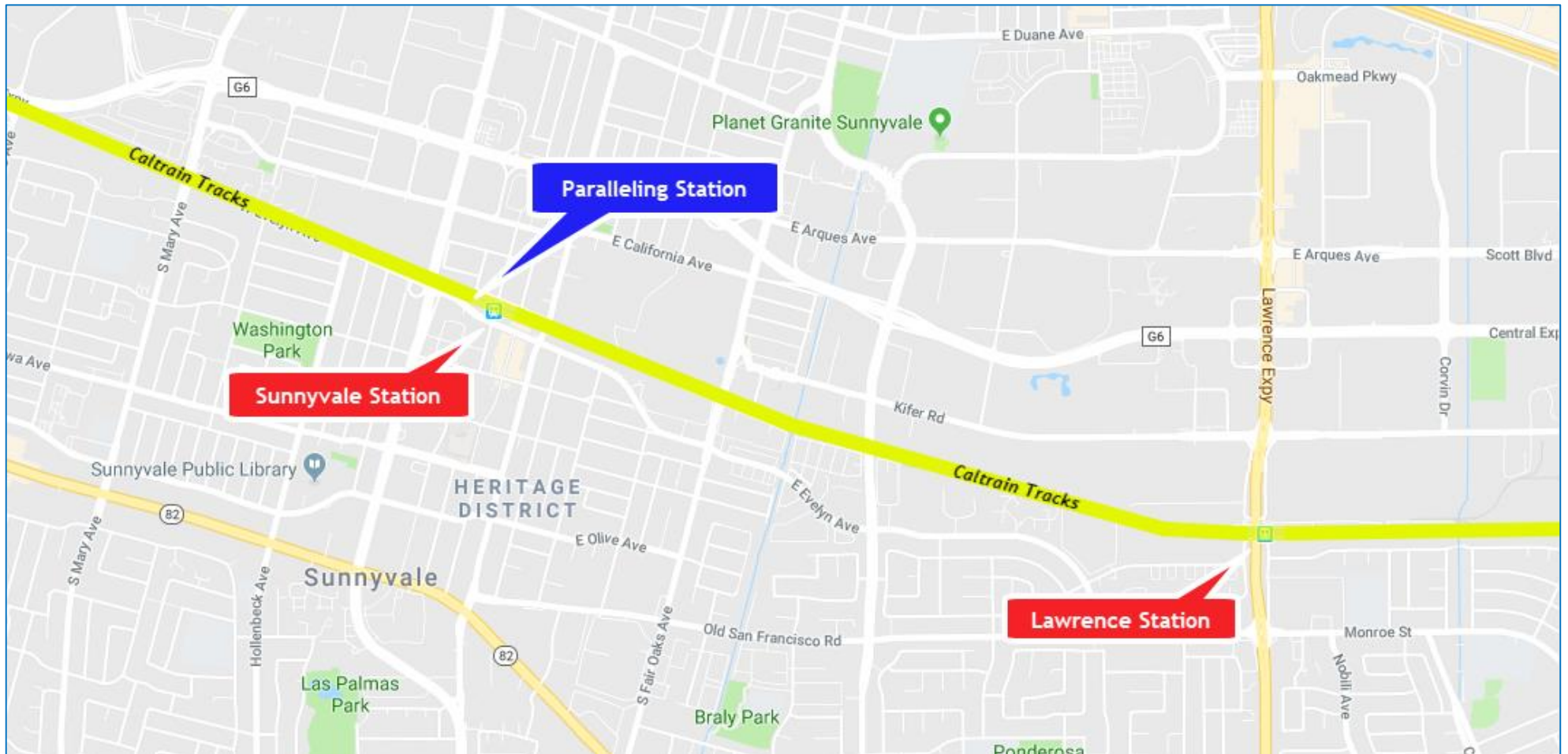


CalMod Construction Phasing

- 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	• Utility Survey • Geotechnical Investigations • Disposal of Soil from Geotechnical Investigations • Soil Resistivity Testing • Site Surveys • Signal Cable Inspections
Pre-Construction Work In Progress	• Foundation Potholing • Tree Pruning and Removal
Future Work	• Foundation Installation • Overhead Contact System Pole Installation • Overhead Contact System Wire Installation • Paralleling Station



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



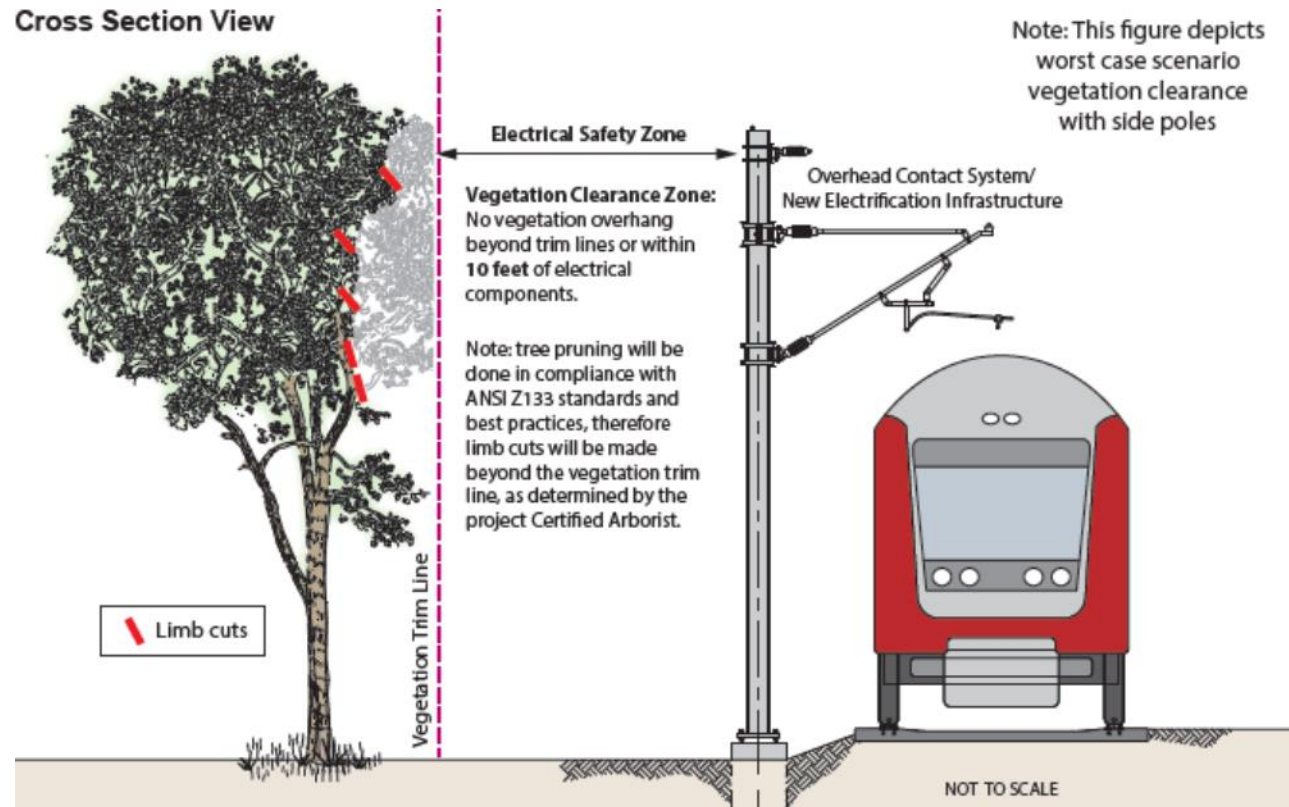
*Expected duration indicates first and last day of activity.
Number of actual work days will be fewer.

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



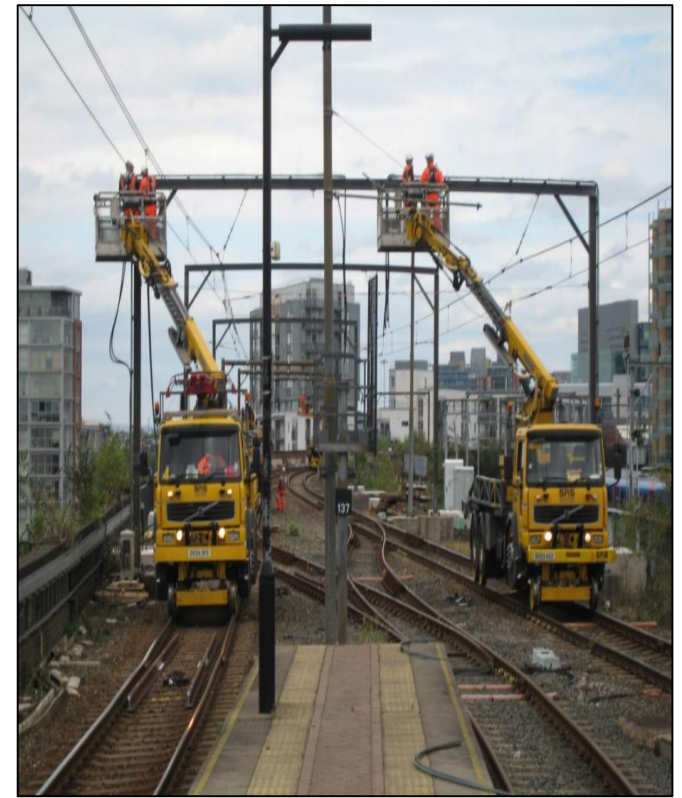
Example Pole Types



Single Track Cantilever



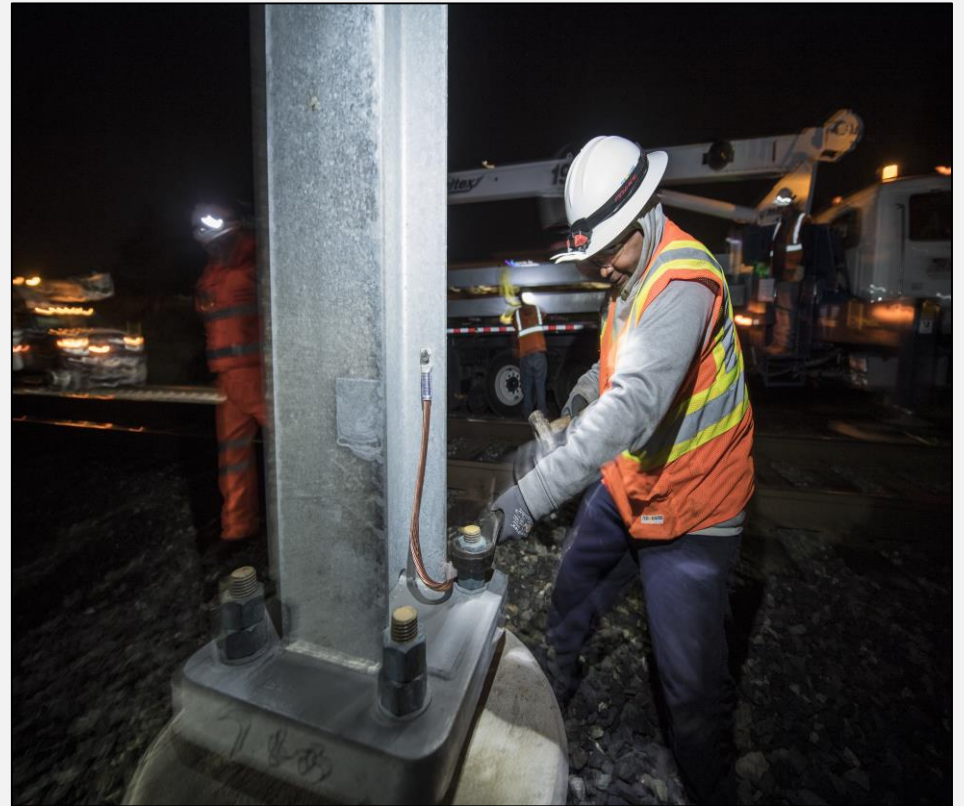
Two Track Cantilever



Portals

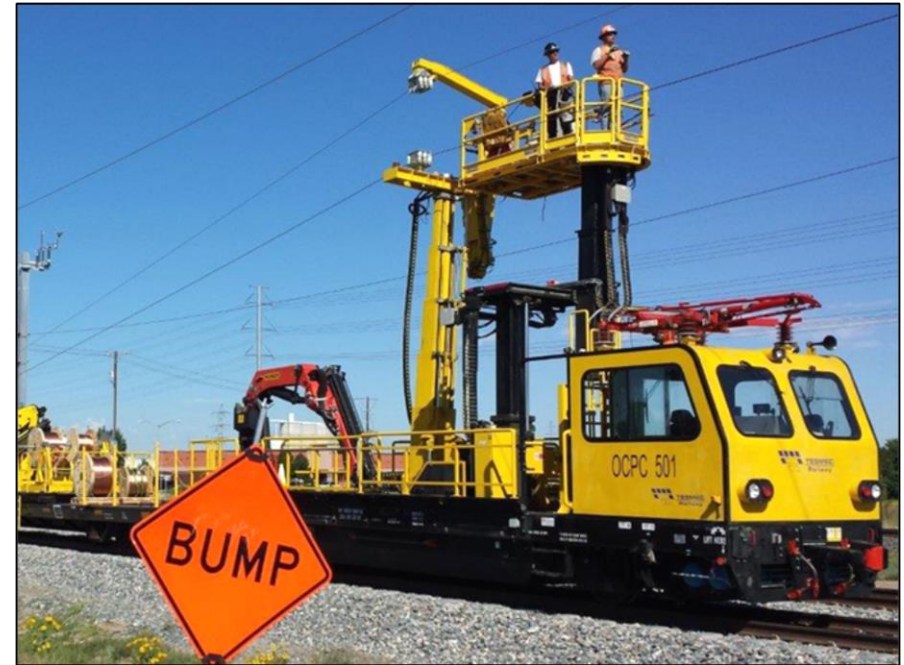


Pole Installation



Current Pole Installation

Stringing Wire



On-track Equipment

Traction Power Facilities

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

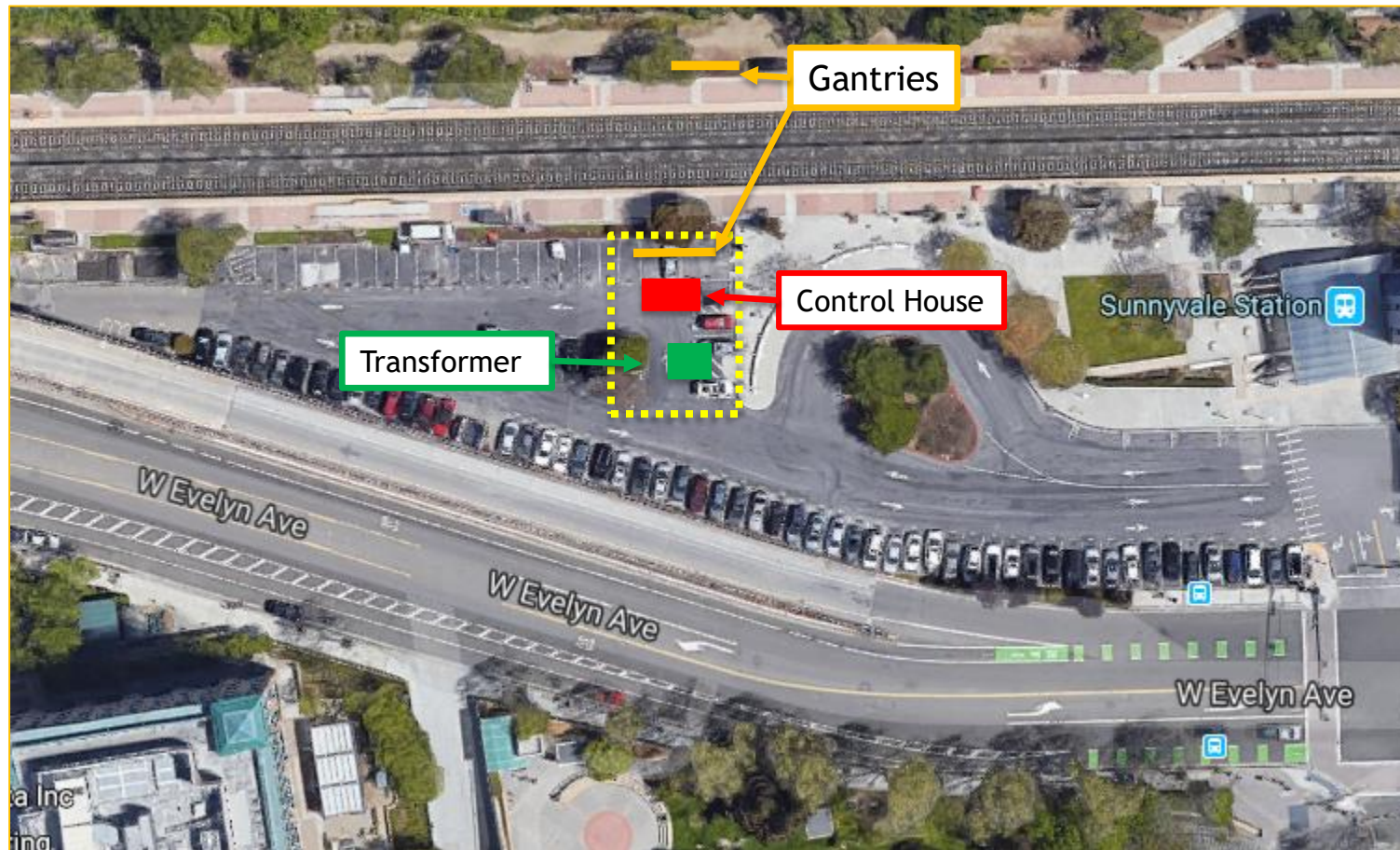


Paralleling Station 6

- 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 4th and King and 22nd Street stations
- Weekday service will remain unchanged
- Caltrain service south of Bayshore will remain unchanged
- Bus schedule available at caltrain.com



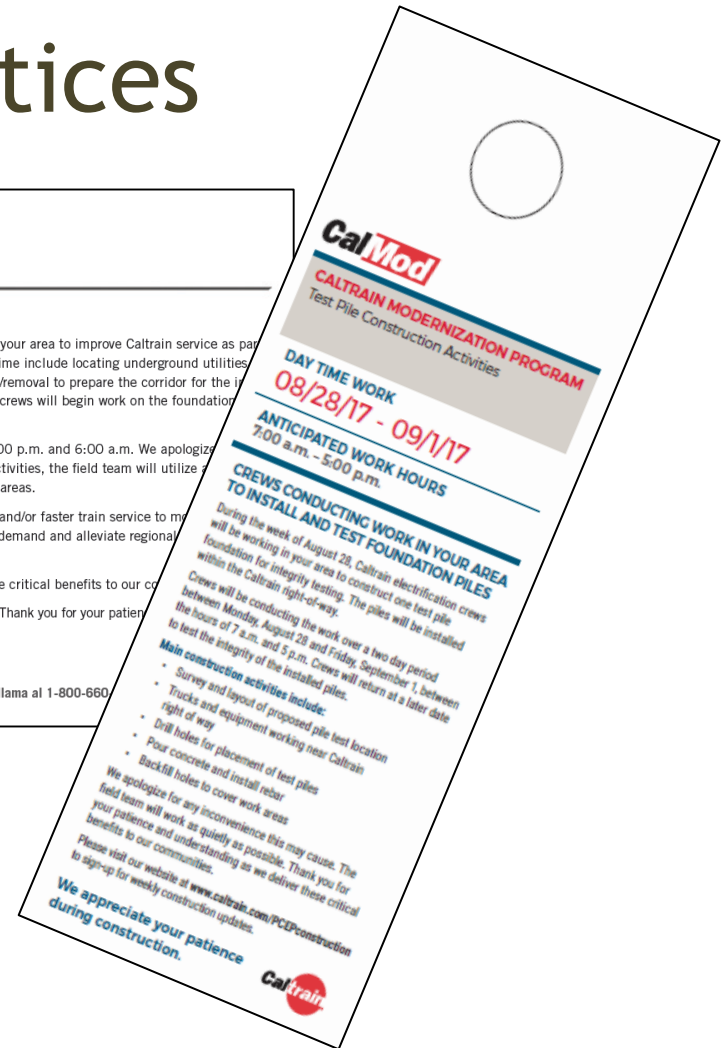
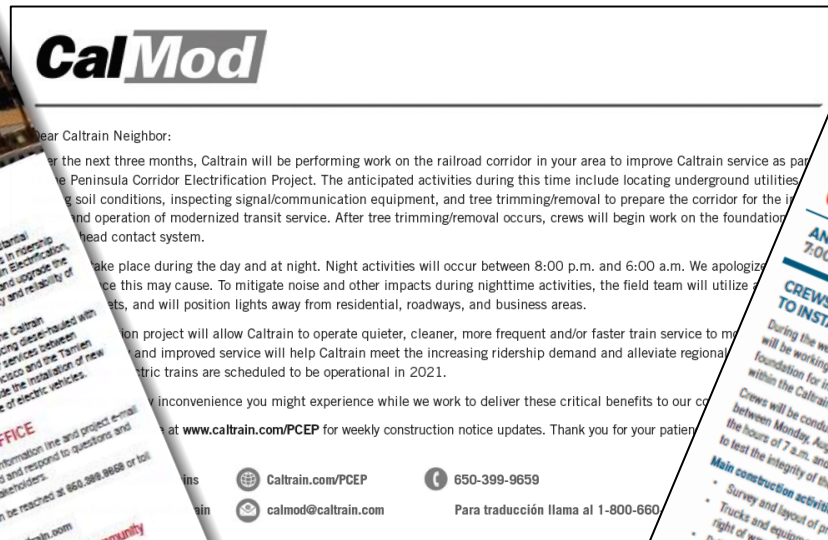
Public Outreach

- Subscribe to Weekly Updates
 - Visit 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

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