PENINSULA CORRIDOR ELECTRIFICATION PROJECT (PCEP)

JPB Citizens Advisory Committee

October 21, 2020

Agenda Item #9

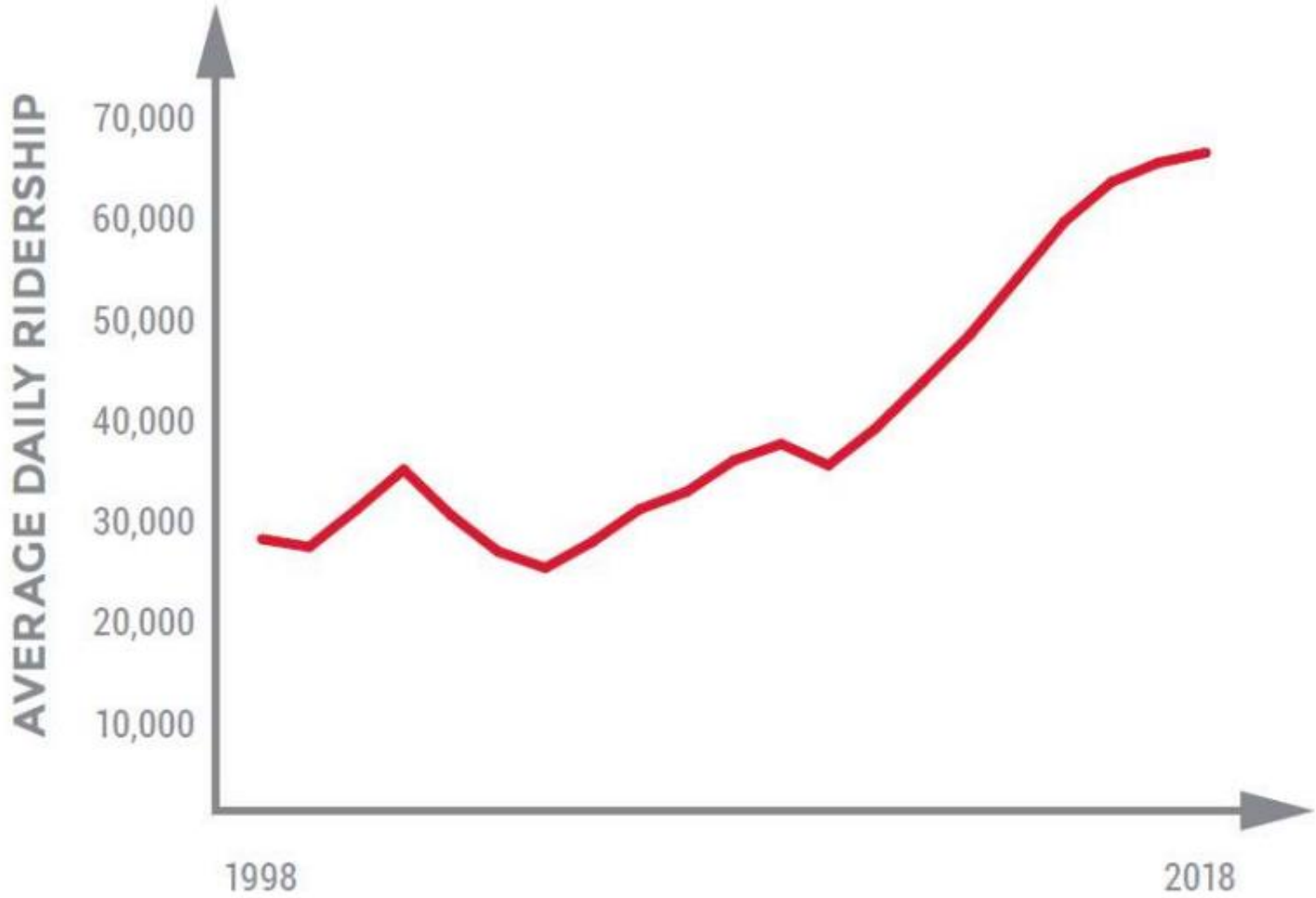
CALTRAIN SYSTEM

Caltrain owns
(SF to SJ)

- 77 Miles, 32 Stations
- 92 Weekday Trains
- Tenants (ACE, CC, Amtrak, Freight)

Union Pacific owns
(SJ to Gilroy)

RIDERSHIP


AVERAGE DAILY RIDERSHIP
70,000
60,000
50,000
40,000
30,000
20,000
10,000
1998
2018

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
Locamotives					
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

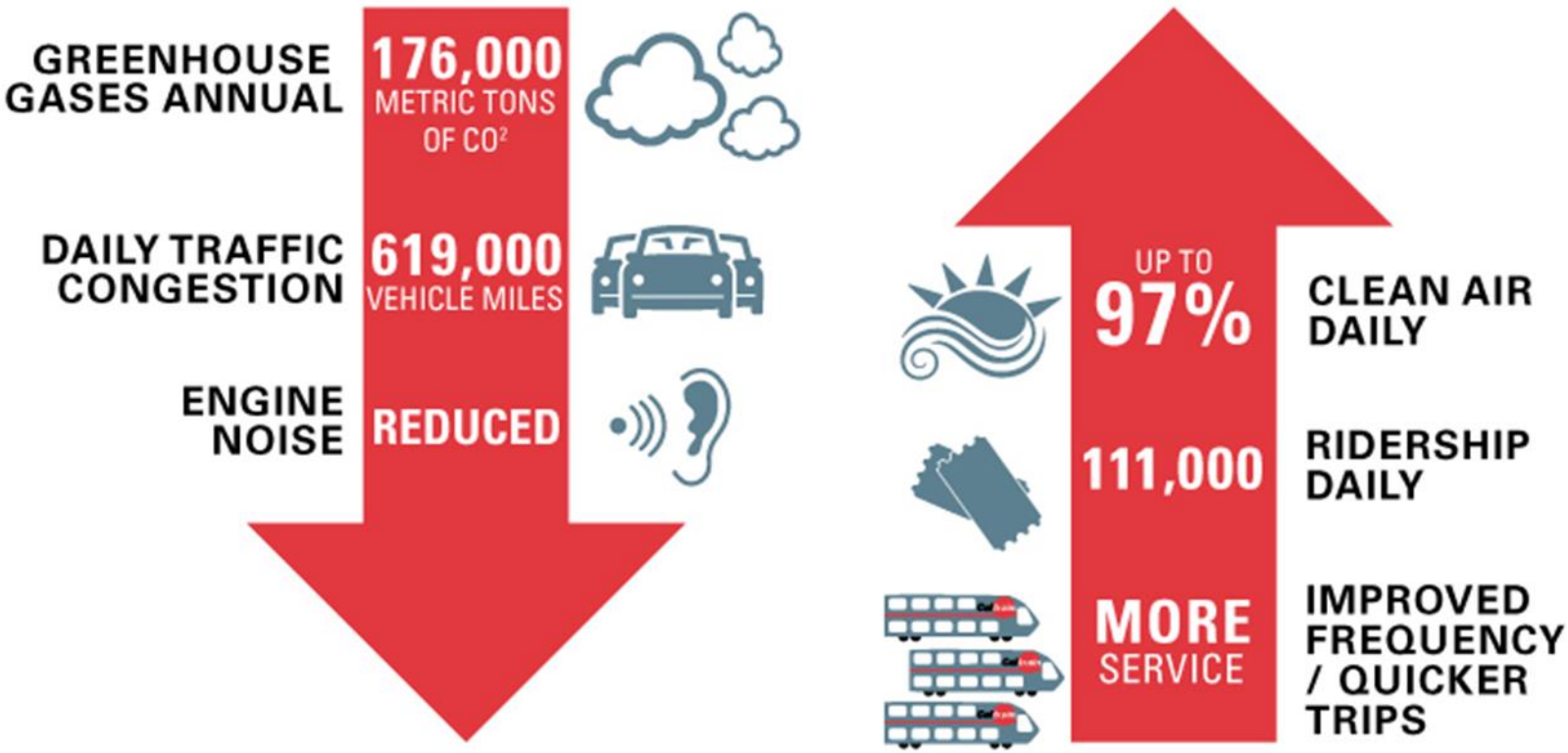
REGIONAL TRANSPORTATION NEEDS

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

PROJECT DESCRIPTION

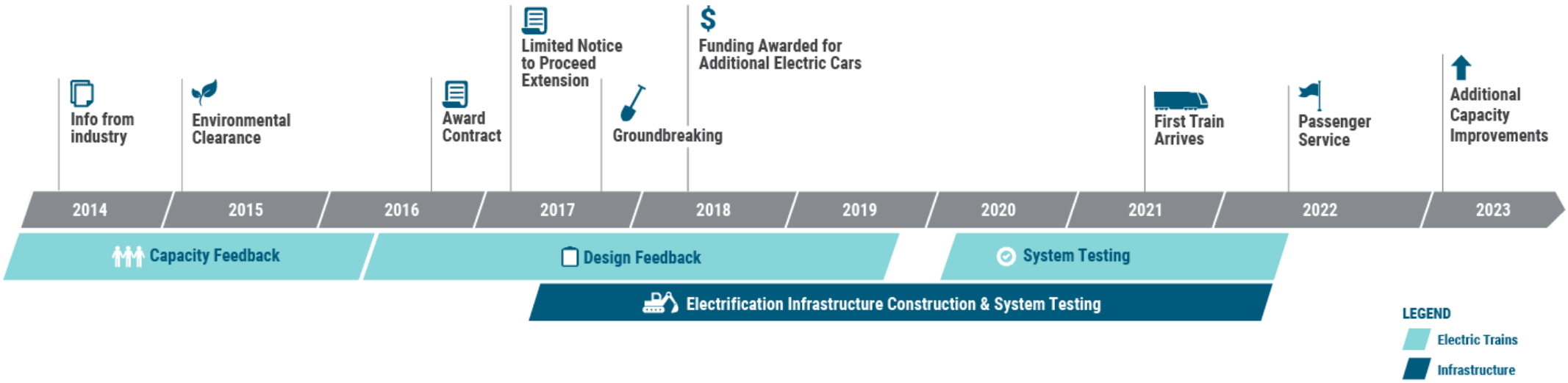
Area	Project	Service
51 miles San Francisco to San Jose (Tamien Station)	Electrification: • Overhead Contact System (OCS) • Traction Power Facilities Electric Trains • 75 percent of fleet	Up to 79 mph Service Increase • 6 trains / hour / direction • More station stops / reduced travel time • Restore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

KEY REGIONAL BENEFITS (2040)



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

SCHEDULE



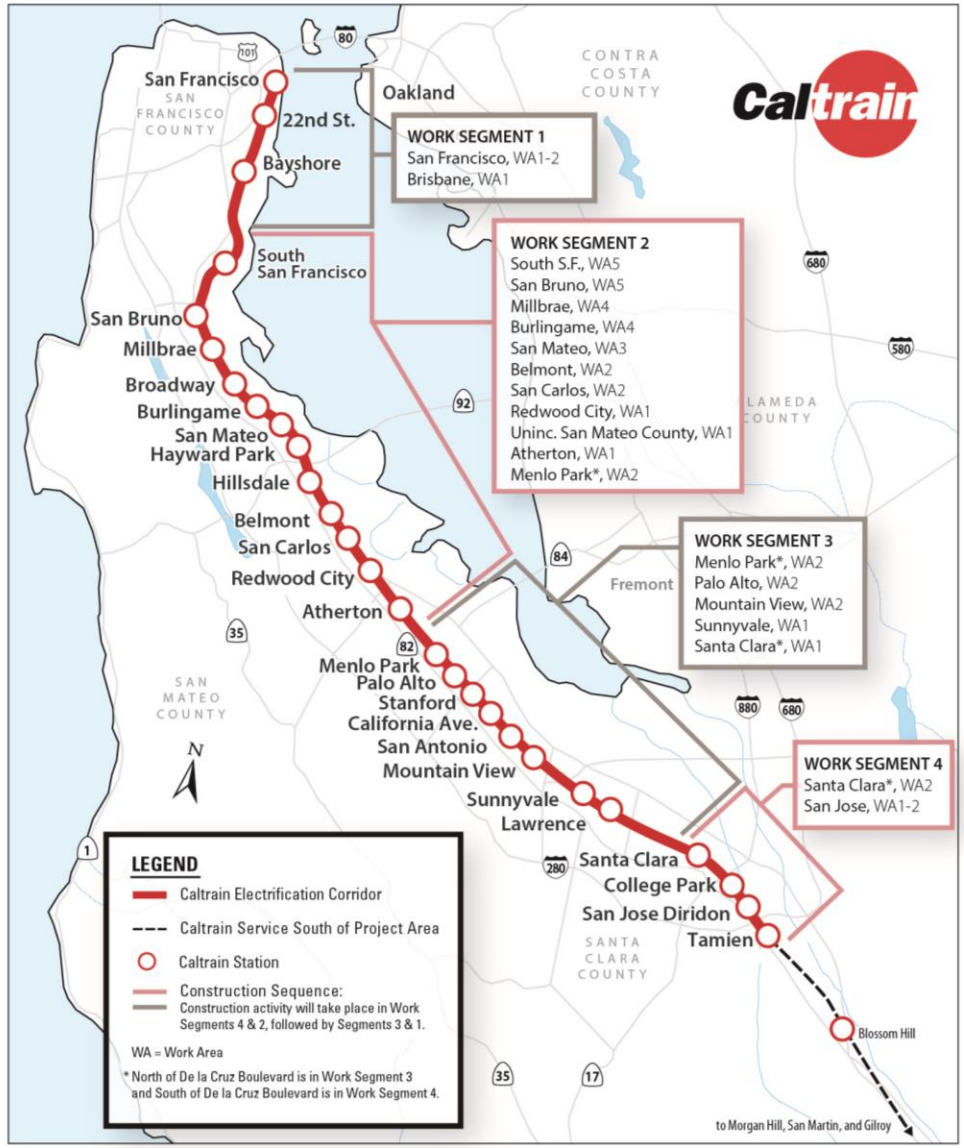
Note: Schedule Subject to Change

COVID-19 Impacts

- EMU design inspections and troubleshooting and testing delayed due to travel restrictions – non critical path issue
- Parts shortages caused by manufacturer shutdowns – mitigation measures implemented – non critical path issue
- Staff and crew safety measures implemented

CONSTRUCTION PHASING

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



PRE-CONSTRUCTION WORK

- Utility Survey
- Geotechnical Investigations
- Disposal of Soil from Geotechnical Investigations
- Soil Resistivity Testing
- Site Surveys
- Signal Cable Inspections
- Foundation Potholing
- Tree Pruning and Removal

CONSTRUCTION INFORMATION

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

CONSTRUCTION ACTIVITIES

OCS Progress

Segment	Work Area	Foundations		Poles	
		Required[a]	Total Completed	Required[a]	Total Completed
1	Tunnels	32	32	32	32
	A	309	0	259	0
	B	237	36	177	0
2	5	236	199	209	160
	4	314	238	254	190
	3	176	129	141	36
	2	247	78	205	60
	1	207	79	154	33
3	2	510	501	441	398
	1	387	374	310	264
4	A	241	206	177	112
	B	128	110	123	86
	CEMOF	96	0	81	0
Total:		**3,120**	**1,982**	**2,563**	**1,371**

Note:

a. Foundations required do not match poles required as guy foundations are needed in some locations for extra support.

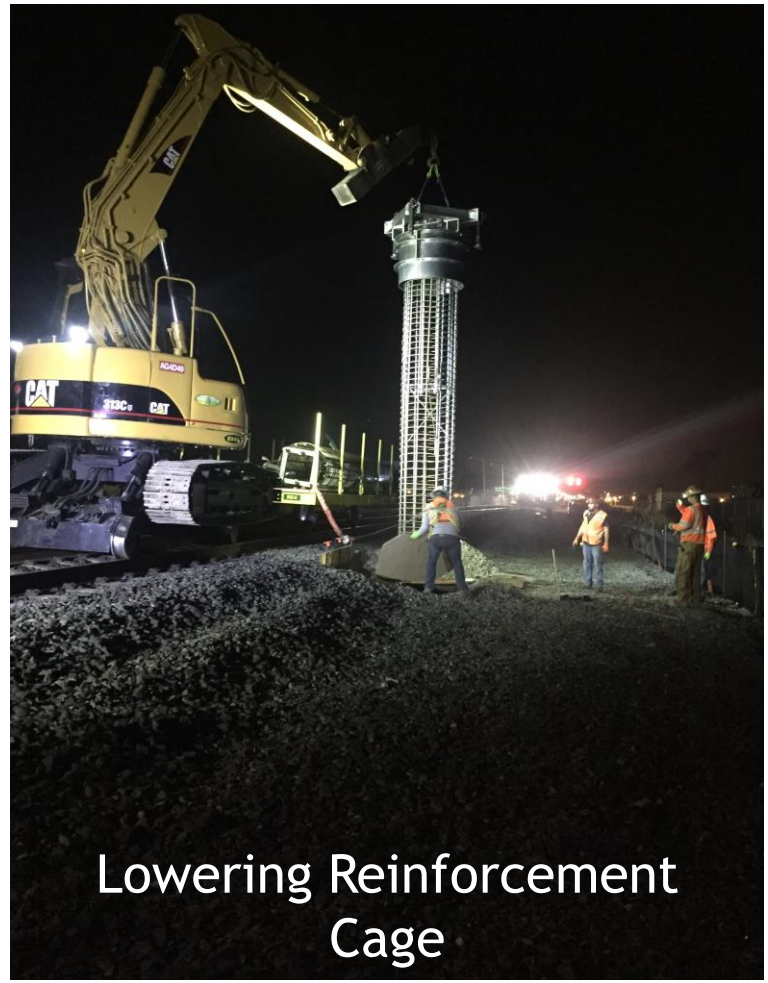
b. Reported number of required poles and foundations fluctuate due to Design changes.

c. To-date, 20/30 foundations have been installed by the South San Francisco and 66 have been installed by the 25th Ave projects.

Note: Data as of September 30, 2020

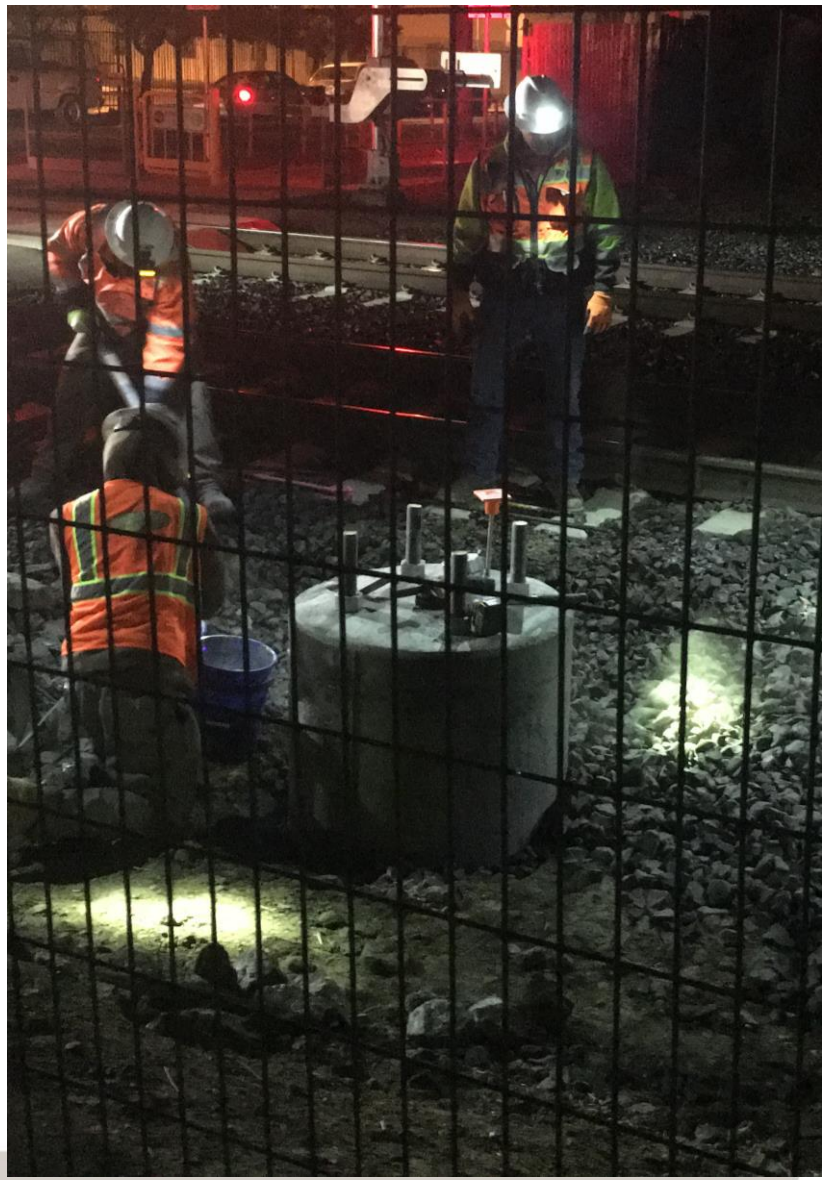
CONSTRUCTION ACTIVITIES

Drilling of Foundations



Lowering Reinforcement Cage

CONSTRUCTION ACTIVITIES



CONSTRUCTION ACTIVITIES

OCS pole on flatbed truck

CONSTRUCTION ACTIVITIES

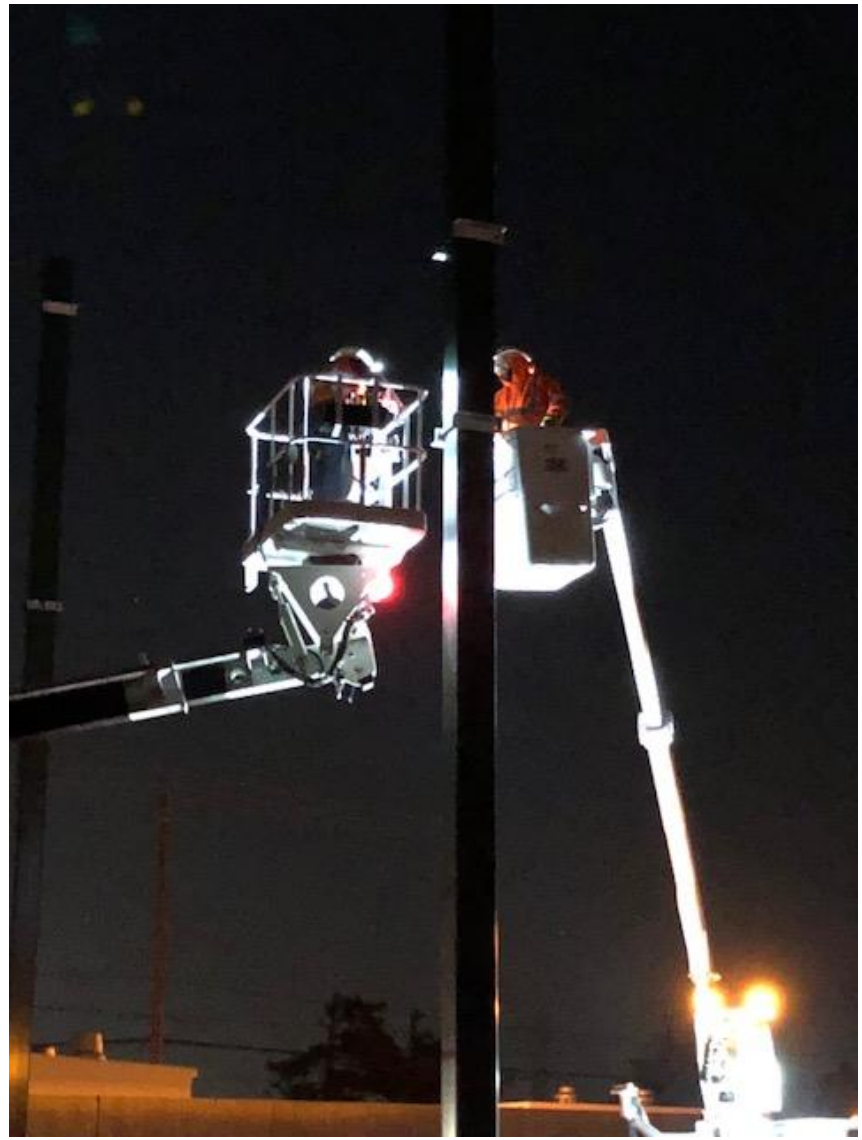
OCS pole lifted off flatbed truck

CONSTRUCTION ACTIVITIES

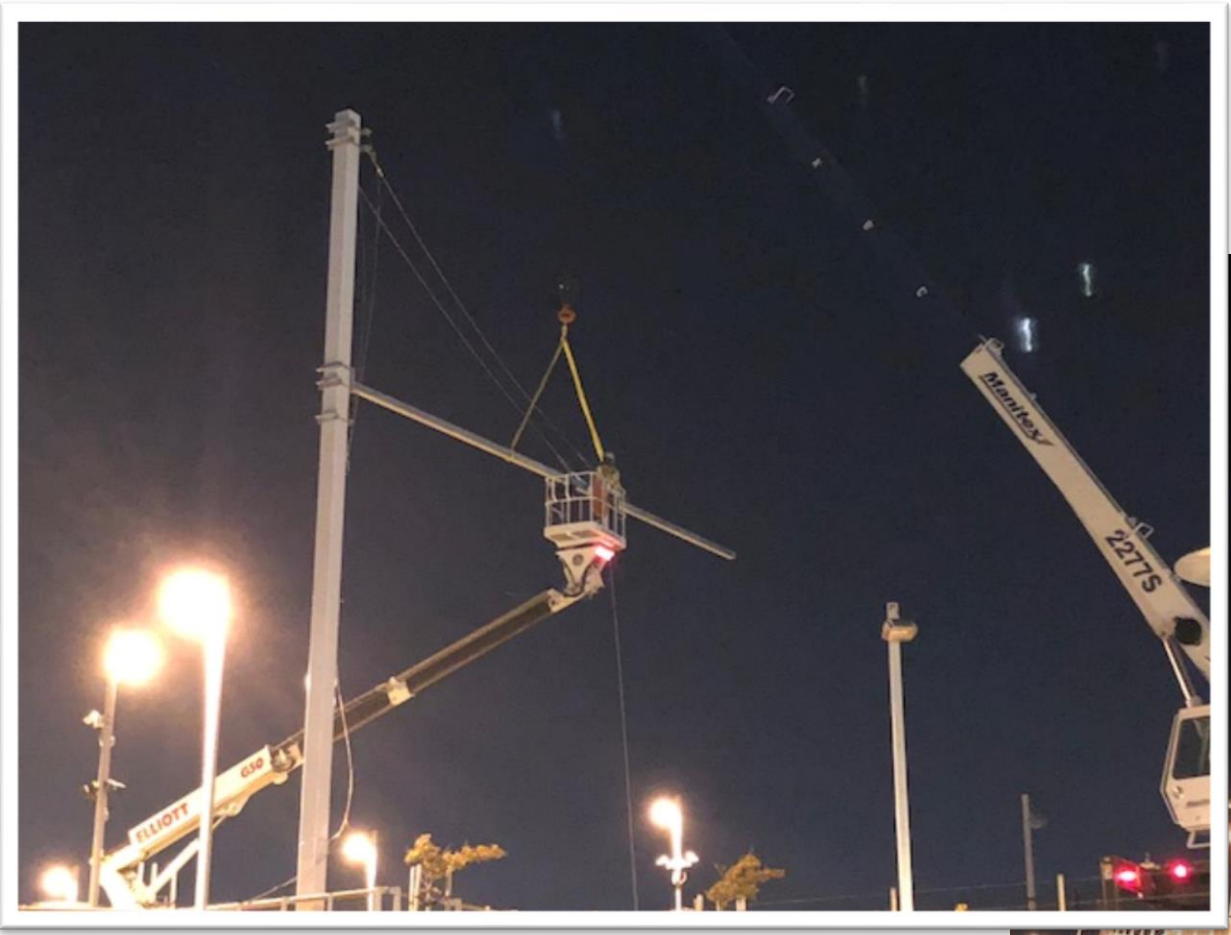
Crew placing OCS pole on foundation

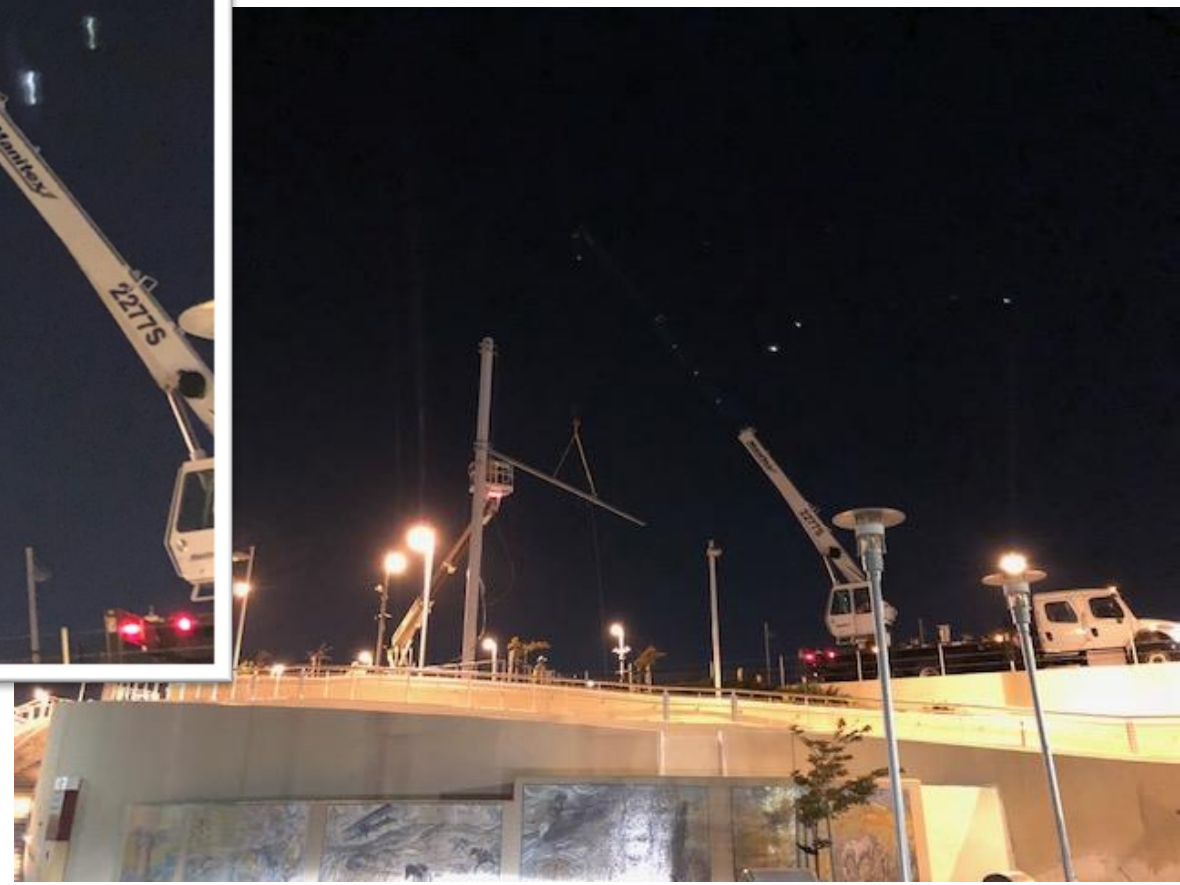
CONSTRUCTION ACTIVITIES

Bracket Setting



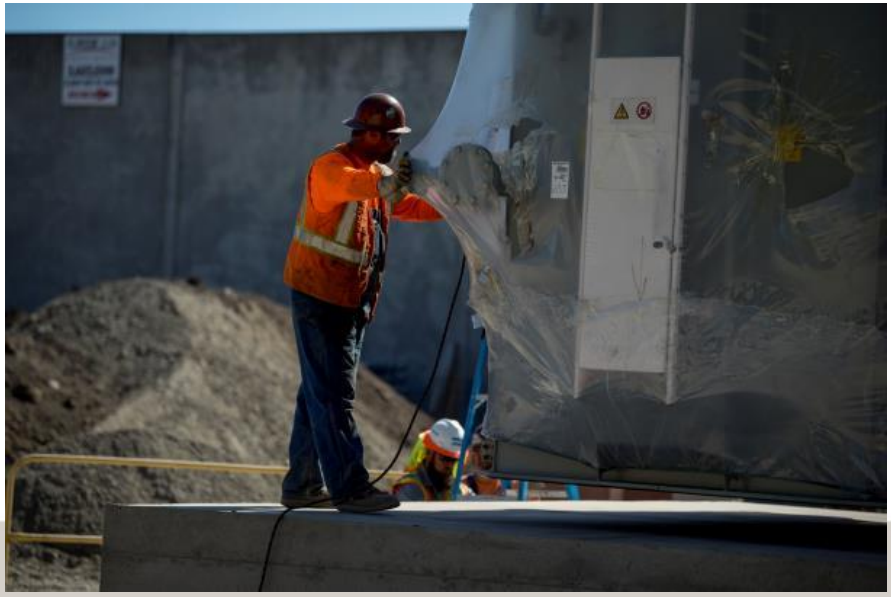
Cantilever Installation





CONSTRUCTION ACTIVITIES

TPS-2 Transformer Installation



TRACTION POWER FACILITIES

Facility	Sitework			Substation Building			Low / High Voltage Equipment			Transformer			Gantry		
	Last Period	This Period	To Date	Last Period	This Period	To Date	Last Period	This Period	To Date	Last Period	This Period	To Date	Last Period	This Period	To Date
TPS-1	0%	0%	84%	0%	0%	84%	0%	0%	91%	0%	0%	100%	0%	0%	86%
TPS-2	0%	0%	86%	0%	0%	84%	0%	0%	87%	0%	0%	100%	0%	0%	88%
SWS-1	0%	0%	87%	0%	0%	78%	0%	0%	86%	0%	0%	100%	0%	0%	76%
PS-1	0%	0%	10%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%	0%
PS-2	0%	0%	12%	0%	0%	3%	0%	0%	0%	0%	0%	50%	0%	0%	15%
PS-3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
PS-4	0%	0%	55%	0%	0%	50%	0%	0%	0%	0%	0%	100%	0%	0%	15%
PS-5	0%	0%	46%	0%	0%	70%	0%	0%	0%	0%	0%	50%	0%	0%	20%
PS-6	0%	0%	75%	0%	0%	70%	0%	0%	86%	0%	0%	100%	0%	0%	78%
PS-7	0%	0%	78%	0%	0%	84%	0%	0%	86%	0%	0%	100%	0%	0%	97%

Scope of Work
Sitework: Mobilize, Clear and grub, Lighting/Equip CIDH Foundations, Duct Bank, Drainage, Subgrade, Fence/CMU, Finished Grade
Substation Building: Earthwork (Excavation/Bedding), Foundation (form, rebar, pour), Set House, Pull Wire
Low/High Voltage Equipment: Yard Equipment, ATS& AUX, Power Drop
Transformer: Earthwork (Excavation/Bedding), Foundation (form, rebar, pour), Set Transformer, ABB Fit Up
Gantry: Foundations (pothole, drill, pour), Set Gantry, Cables/Pipes/Wires, Gantry Equipment

TRACTION POWER SUBSTATIONS

PG&E Interconnection Update

- TPS-2 Interconnection
  - PGE/TRC selected Ferreira after PAR withdrawn their proposal
  - IFC 100% Design completed
  - Potholing completed
  - Construction will start by Beginning of November at The TPS-2 site
  - Anchors to be delivered on site by 10/21/20
  - Caltrans permit on 11/25/20
  - Testing and Commissioning start on Feb 2021
- TPS-1 Interconnection
  - IFC -Rev01 100% design forecast approval by mid November
  - JPB submitted an offer to Britannia, and initiated a condemnation procedure in parallel
  - OH contractor selected Michel's on Aug 28, 2020
  - Construction for the OH will start by beginning of April 2021
  - TSPs to be delivered on site around February 2021
  - Underground utility bidding contractor will start on 2/8/2021
  - Testing and commissioning start on September 2021

SIGNAL UPDATE

Signal Circuit Design Submittals Received as of September 30, 2020							
Work Area	Total Locations	65% Design		95% Design		IFC Design	
		Total # Submitted/ Planned*	% Complete	Total # Submitted/ Planned*	% Complete	Total # Submitted/ Planned*	% Complete
Segment 1	26	26/ 26	100%	16/ 17	64%	0/ 16	0%
Segment 2	99	88/ 89	88%	57/ 78	56%	3/ 67	3%
Segment 3	66	53/ 53	80%	8/ 8	12%	0/ 8	0%
Segment 4	21	21/ 21	100%	19/ 19	90%	15/ 20	71%
Total	212	188/ 189	88%	100/ 122	47%	18/118	8%

Signal Locations	95% Design Percent Complete	Anticipated Design Completion of 95% per JPB Requested Schedule*	Installation Percent Complete	Anticipated Installation Complete per JPB Requested Schedule*	Testing Percent Complete	Anticipated Testing Completion per JPB Requested Schedule
Segment 1	64%	10/3/2021	21%	11/6/2021	0%	12/29/2021***
Segment 2	56%	4/17/2021	23%	9/12/2021	0%	1/28/2022***
Segment 3	12%	10/15/2021	21%	2/4/2022	0%	TBD***
Segment 4	90%	8/31/2020	33%	3/15/2021	0%	4/17/2021**

* JPB requested schedule includes installation after 95% design

**Updated Segment 4 cutover testing completion schedule based on Contractor provided signal/communication cutover planning schedule provided on July 13, 2020.

***JPB projected dates for completion of signal/communication cutover based on Contractor signal/communication cutover planning schedule.

TUNNEL MODIFICATION WORK

Tunnel Construction has been Completed

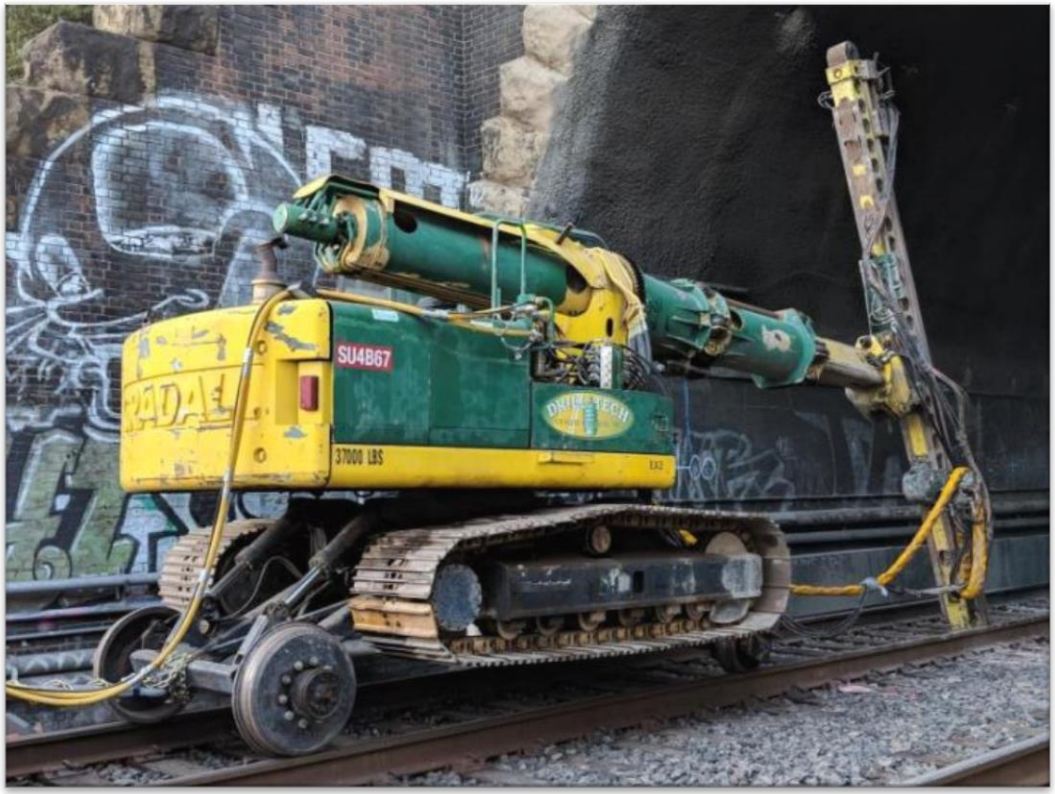
- Tunnel modifications required on the four tunnels to accommodate required clearance for OCS to support electrification
- Scope:
  - Increase tunnel clearances in four 100+ year old tunnels
  - Install OCS
  - Drainage improvements and track rehabilitation
- Work included:
  - Grouting
  - Notching
  - Rebar and rock bolt installation
  - Shotcrete
  - Tunnel and OCS location survey
  - Install drop tubes
  - Install conductor rail and contact wire
  - OCS termination structure foundations

TUNNEL WORK

Dry Fix Pin Installation

Grouting Operation

TUNNEL WORK



On-Track Drill
(for Rock Bolts and Grout Holes)

Rock Bolt Installation (foreground)
Grout Hole Drilling (background)

TUNNEL WORK

Tunnel 1 Template Truck

Helps determine envelope for tunnel notching

Tunnel 4: Grouting Train

TUNNEL WORK

Tunnel 4

South Portal MT1 Potholing
for OCS Termination Structure Piles

Grouting

Tunnel 4 Grouting

TUNNEL WORK

Notching

Fan used to maintain airflow during notching

Roadheader Notching Operation

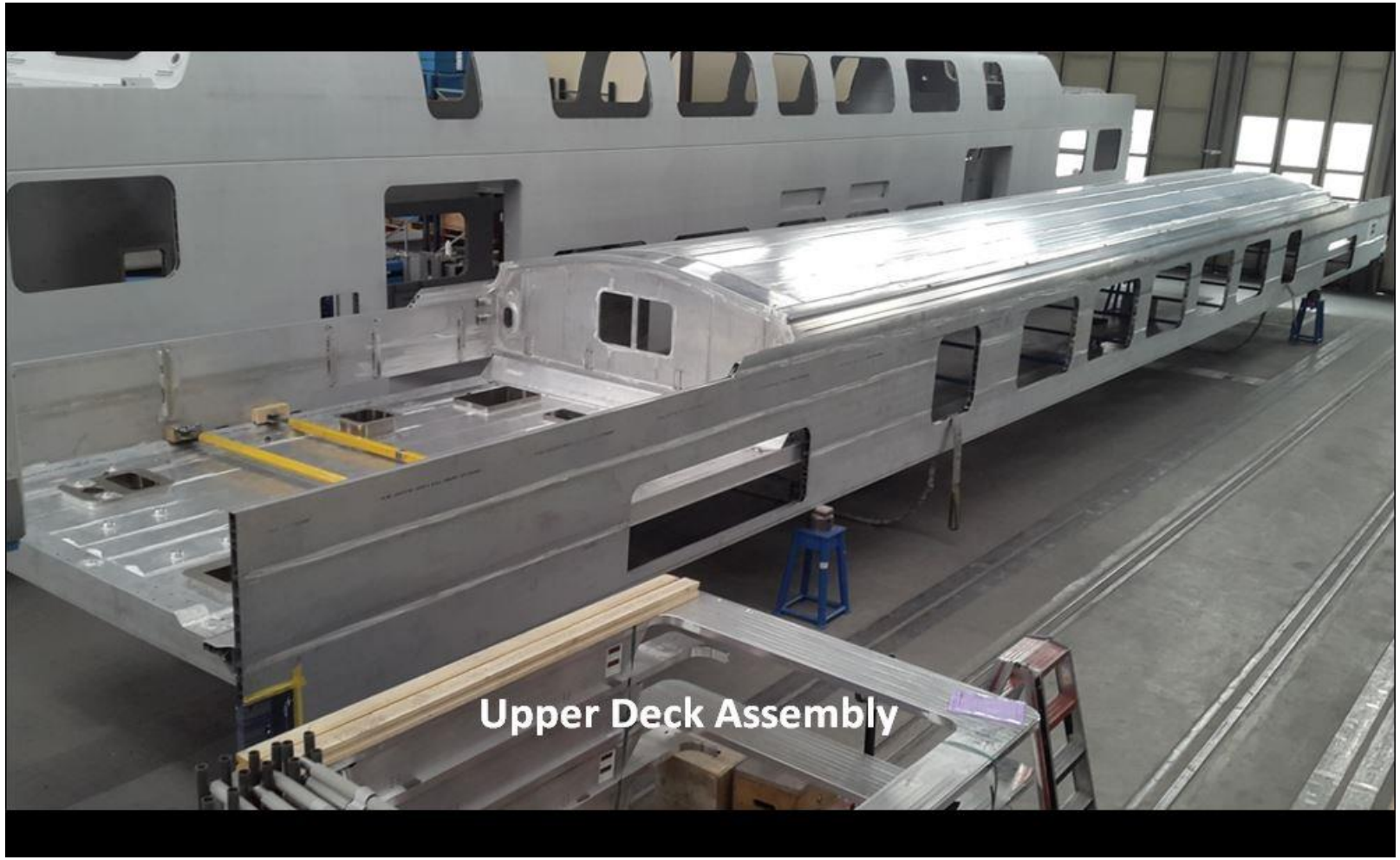
Exposed Brick in Notch

EMU VEHICLES

EMUs – Design & Manufacturing

- **Procurement**
  - Stadler is providing 133 rail cars configured in 19 seven-car trainsets
  - 43 car shells received in Salt Lake City
  - Each trainset includes: operating cab car at each end, 2 bike cars, 1 accessible toilet car, 2 passenger coaches
  - Trainsets will be electrically powered by the overhead electrical system
- **Design**
  - Final Design Reviews (FDRs) are complete on 14 of 17 major subsystems (e.g. propulsion, brake
  - Remaining 3 are software based
  - First Article Inspections (FAIs) ongoing of components designed specifically for Caltrain

EMU VEHICLES



EMU VEHICLES

Upper Carbody and Lower Carbody Subassemblies Coming Together

EMU VEHICLES

First Painted Shell – A-Cab Car

EMU VEHICLES

Engineer’s console and seat within the cab

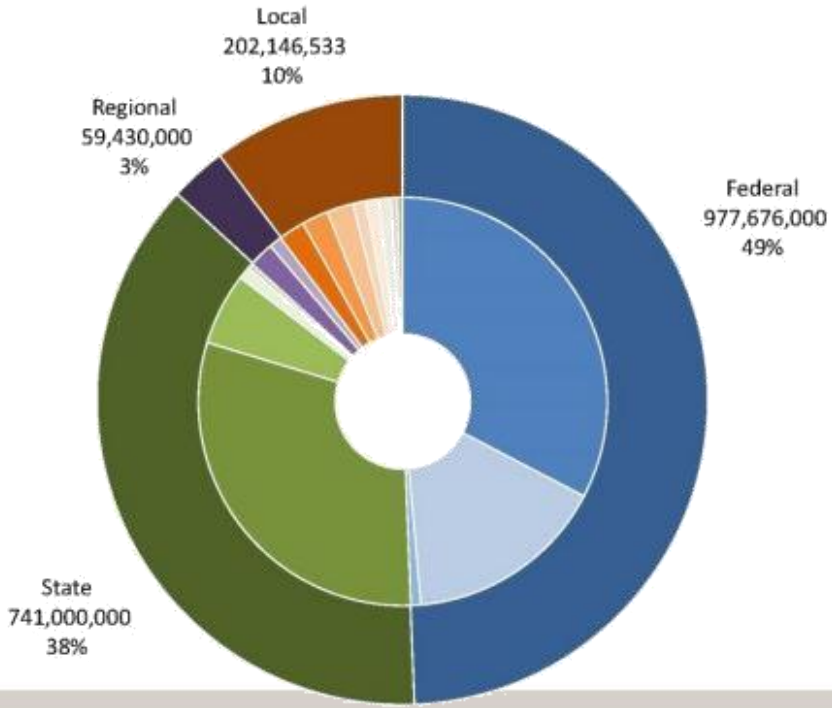
EMU VEHICLES

EMU Interior

BUDGET AND EXPENDITURES

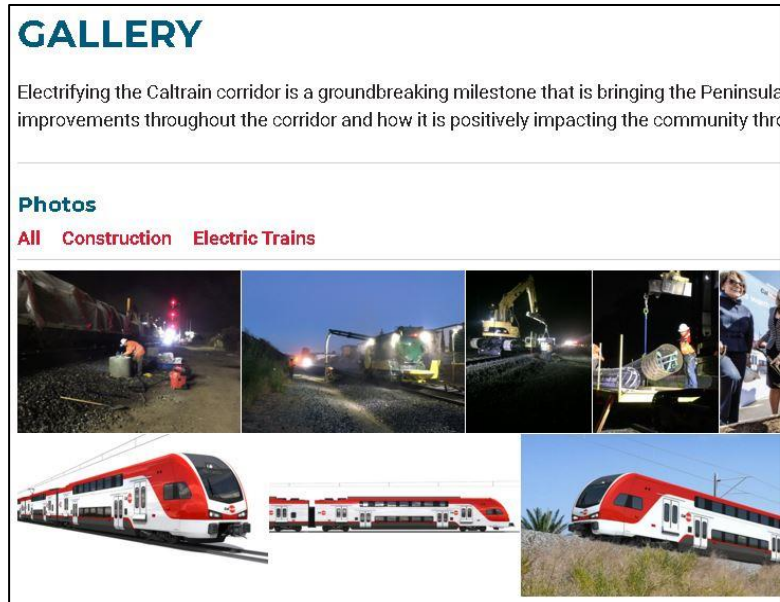
	Budget	Current Budget*	Costs to Date	Estimate at Completion
Electrification Subtotal	$1,316,125,208	$1,316,125,208	$776,203,876	$1,316,125,208
EMU Subtotal	$664,127,325	$664,127,325	$239,758,580	$664,127,325
PCEP TOTAL	**$1,980,252,533**	**$1,980,252,533**	**$1,015,962,456**	**$1,980,252,533**

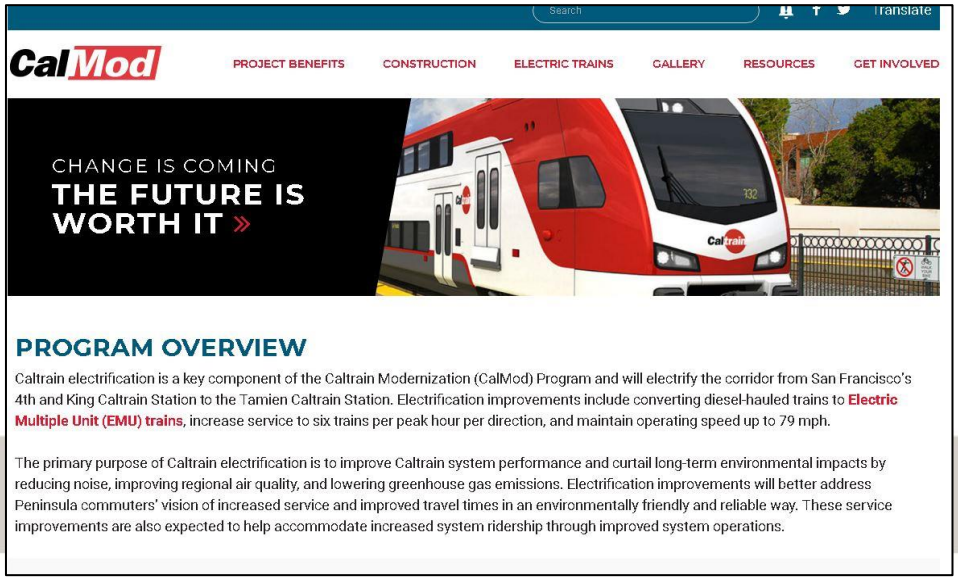
Includes executed change orders and awarded contracts



PUBLIC OUTREACH

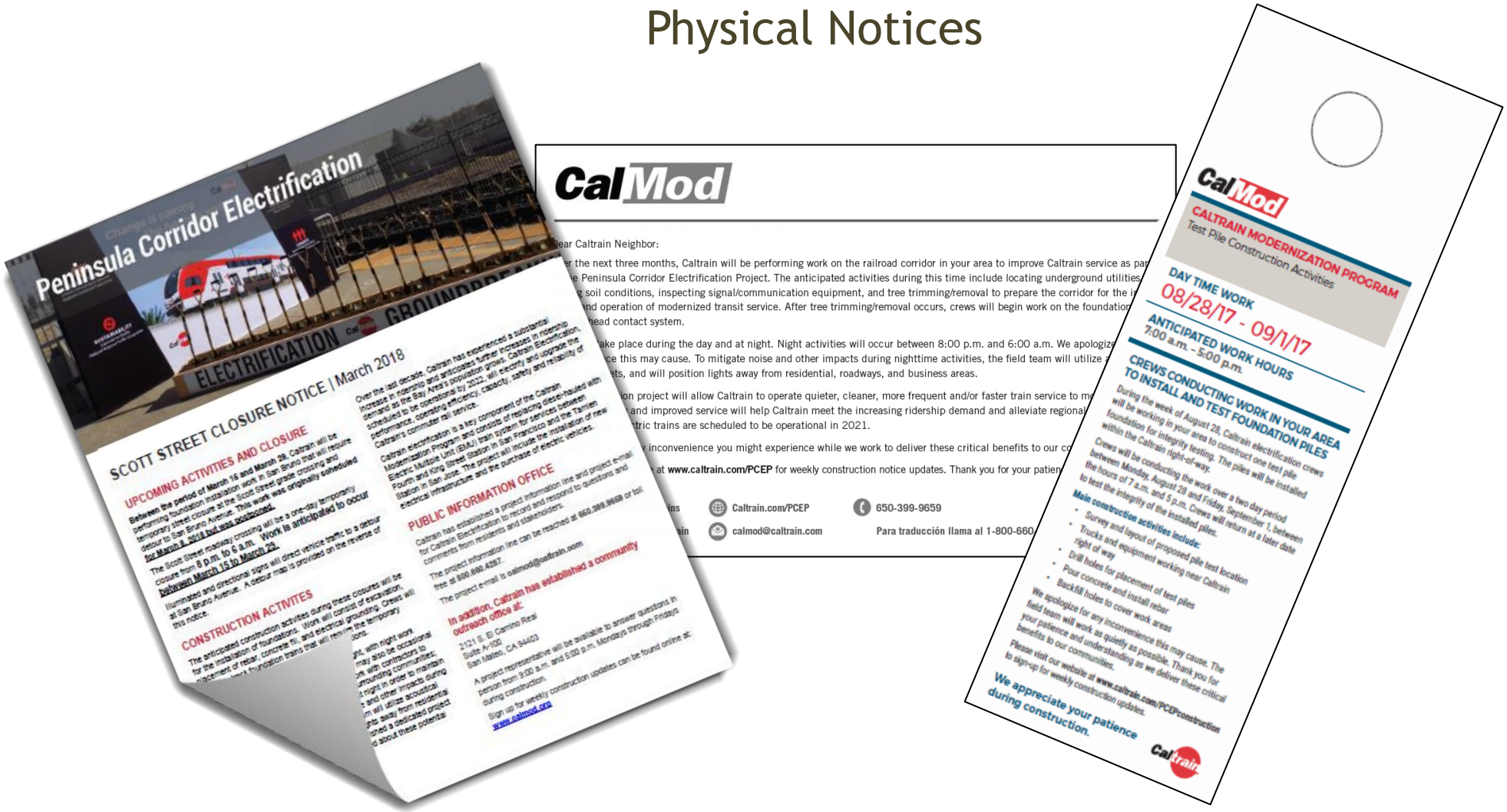
- Tools: Community meetings, direct mailers, door hangers, weekly website / email update, social media, project phone &email, outreach office
- Project Website: calmod.org
- Subscribe to Weekly Updates
  - Visit www.calmod.org/get-involved
- Additional Community Meetings
  - Pole and Wire Installation
- Social Media
- Construction Outreach Office





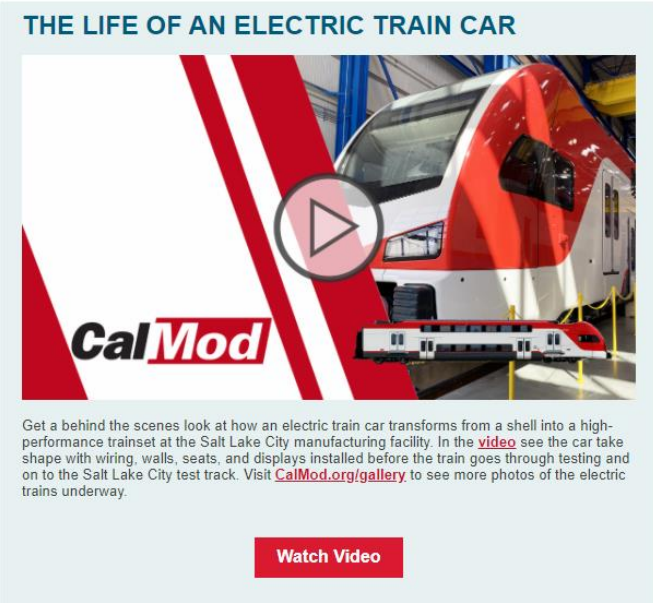
PUBLIC OUTREACH

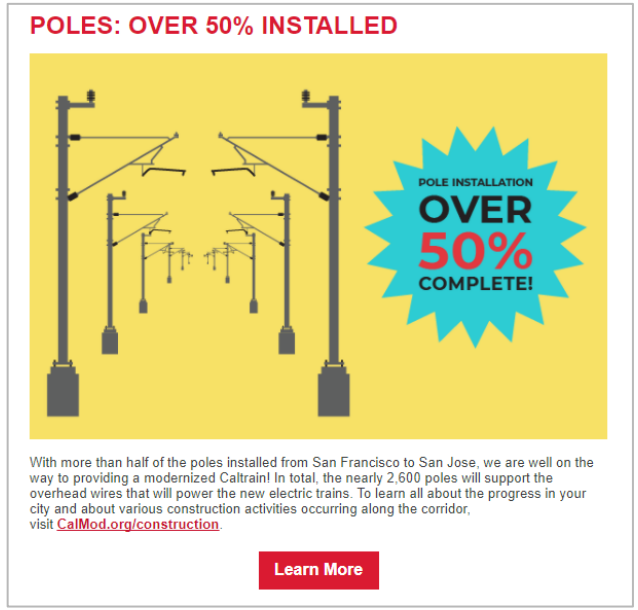
Physical Notices



PUBLIC OUTREACH

- 10,000 direct mailers / door hangers from July-Sept
- 4,093 subscribers to the monthly enewsletter
  - 400 new sign-ups between July-Sept
- 2,418 subscribers to the weekly construction updates





Virtual Reality Experience

www.CalMod.org/VR

CALMOD CONTACT INFORMATION

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