

**CalMod**



# Caltrain Electrification Update

Palo Alto ARB/HRB

January 10, 2019



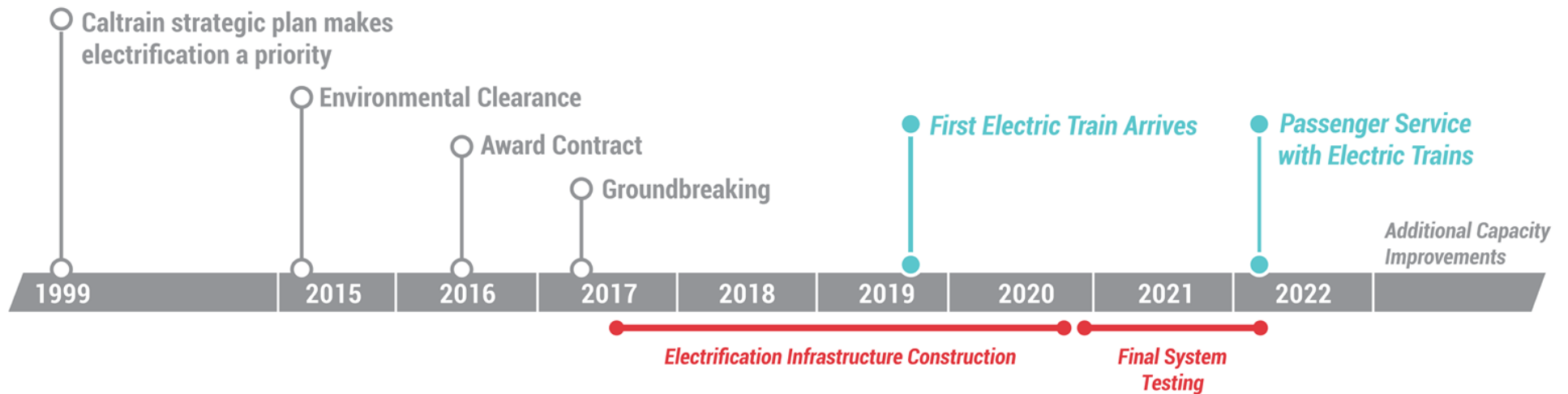
# Project Description

Area	Project	Service
51 miles  San Francisco to San Jose (Tamien Station)	Electrification: <ul style="list-style-type: none"><li>• Overhead Contact System (OCS)</li><li>• Traction Power Facilities</li></ul> Electric Trains <ul style="list-style-type: none"><li>• 75 percent of fleet</li></ul>	Up to 79 mph Service Increase <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> Mixed-fleet service (interim period) Continue tenant service <ul style="list-style-type: none"><li>• ACE, Capital Corridor, Amtrak, Freight</li></ul>



# 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

# Palo Alto Station



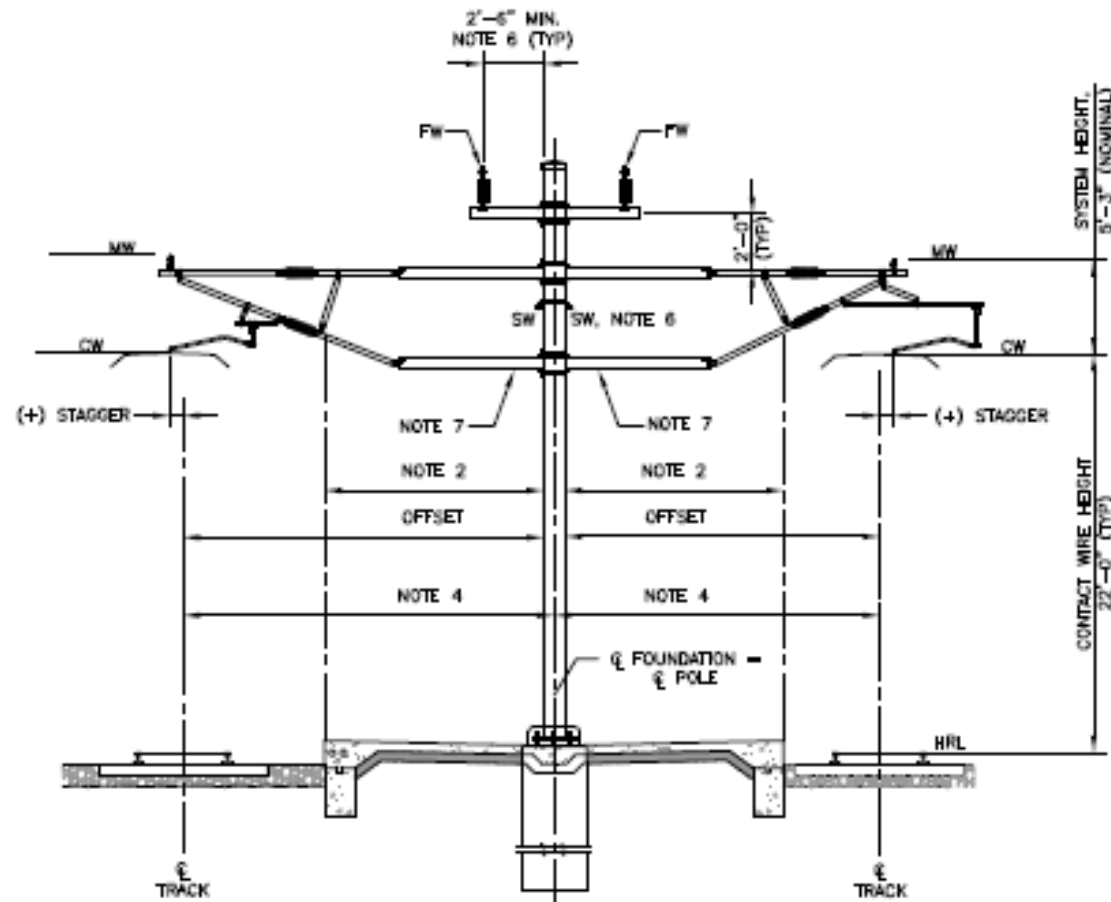
Photo simulation from east platform facing north.

# Palo Alto Station



Photo simulation from west platform facing south

# Center Poles Typical

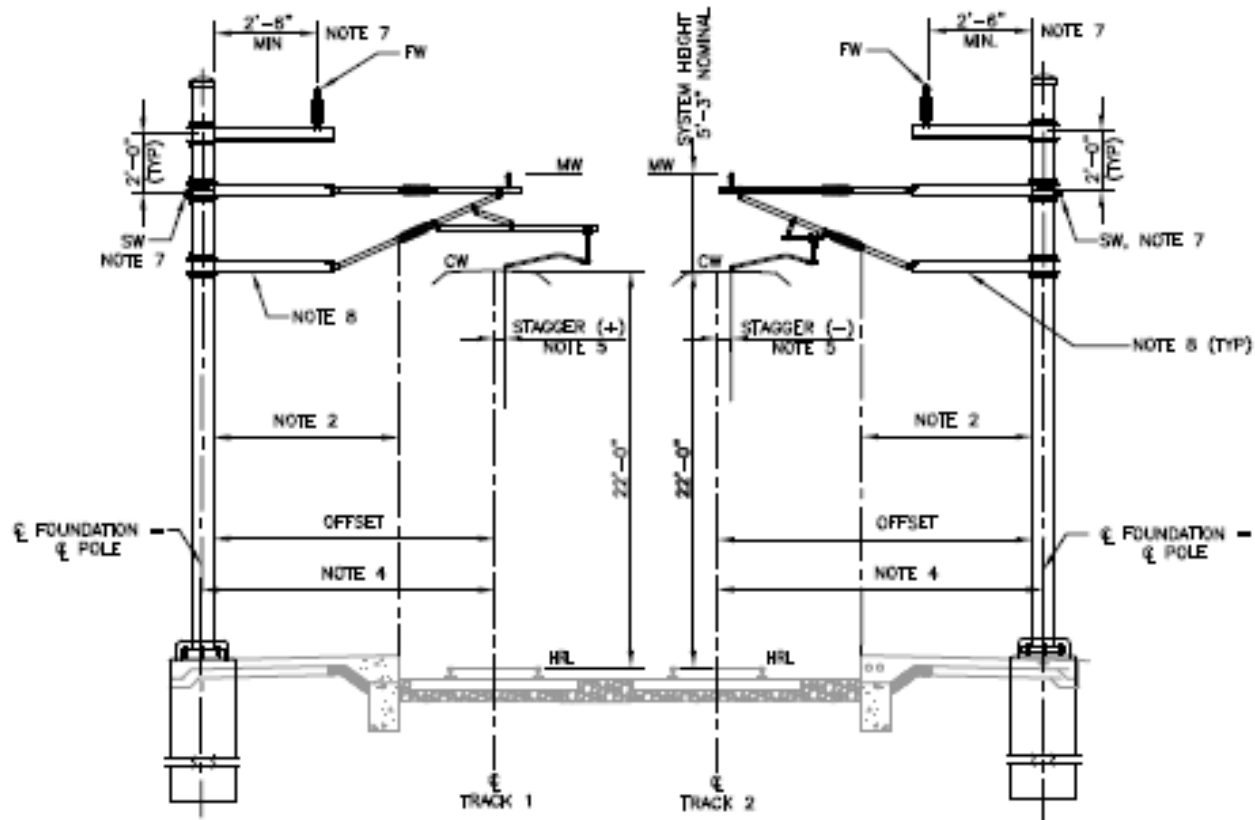


TYPICAL STATION CROSS SECTION  
CENTER PLATFORM POLE



Pole heights range from 30-45.5'

## Side Poles at Platform Typical



TYPICAL STATION CROSS SECTION  
SIDE POLES ON PLATFORM



Pole heights range from 30-45.5'

# Palo Alto Station

**NOTE:**

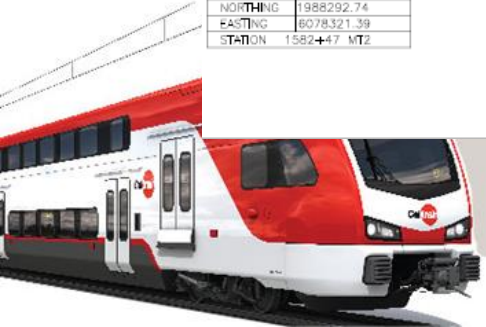
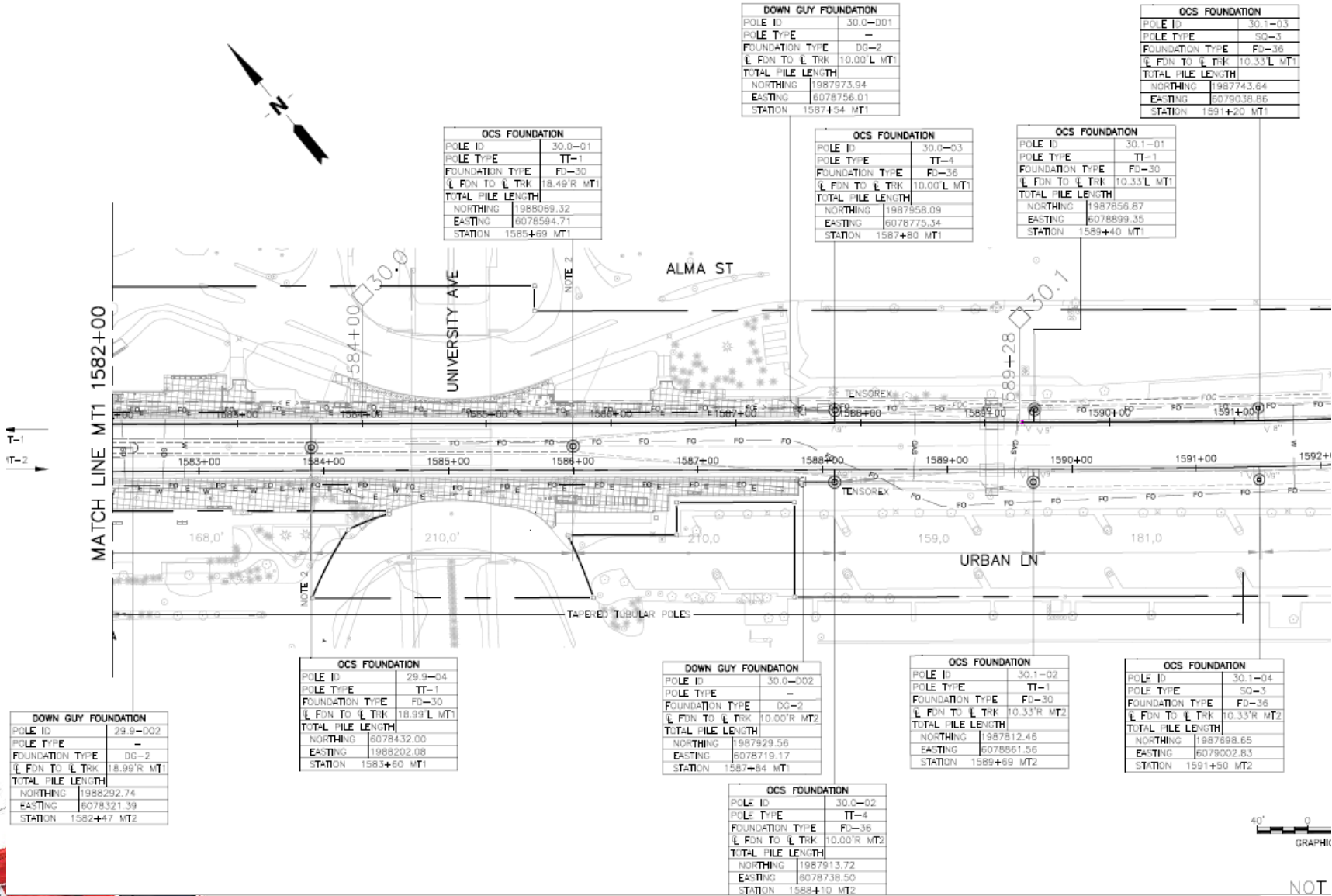
- FOR GENERAL NOTES, ABBREVIATIONS, AND SYMBOLS, SEE DRAWING W3026, W3027, AND W3028 RESPECTIVELY.
- CANTILEVERS GREATER THAN 18' REQUIRE JPB APPROVAL.



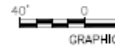
65% Design Drawings. Subject to change.



# Palo Alto Station



65% Design Drawings. Subject to change.



# Palo Alto Station Pole Color Recommendation

Notes: Option 1 is the visually dominant color; Option 2 is the secondary color; Option 3 is the least dominant color or defaults to FS 14052, the standard color for sensitive areas

	location	municipality	Mile Post	existing pole color	existing furniture color	existing shelter color	Option 1 color for poles	Option 2 color for poles	Option 3 color for poles	Notes
17	Palo Alto	Palo Alto	30.00-30.2	grey	brown	n/a	color FS 23522	color FS 36495	color FS 30032	Option 1 to match the color of the structure (historic RR Sta recomm.), 2 to match poles, 3 to match furniture
18	California	Palo Alto	31.80	black	black/brown	black	color FS 27040	color FS 30032	color FS 14052	Option 1 to match poles and shelters
xx	Stanford Stadium	Palo Alto					color FS 14052	color FS 14052	color FS 14052	Assumed Marine Green to match stated environmentally sensitive standard.

- Seeking ARB/HRB recommendation on Station Area Pole Color

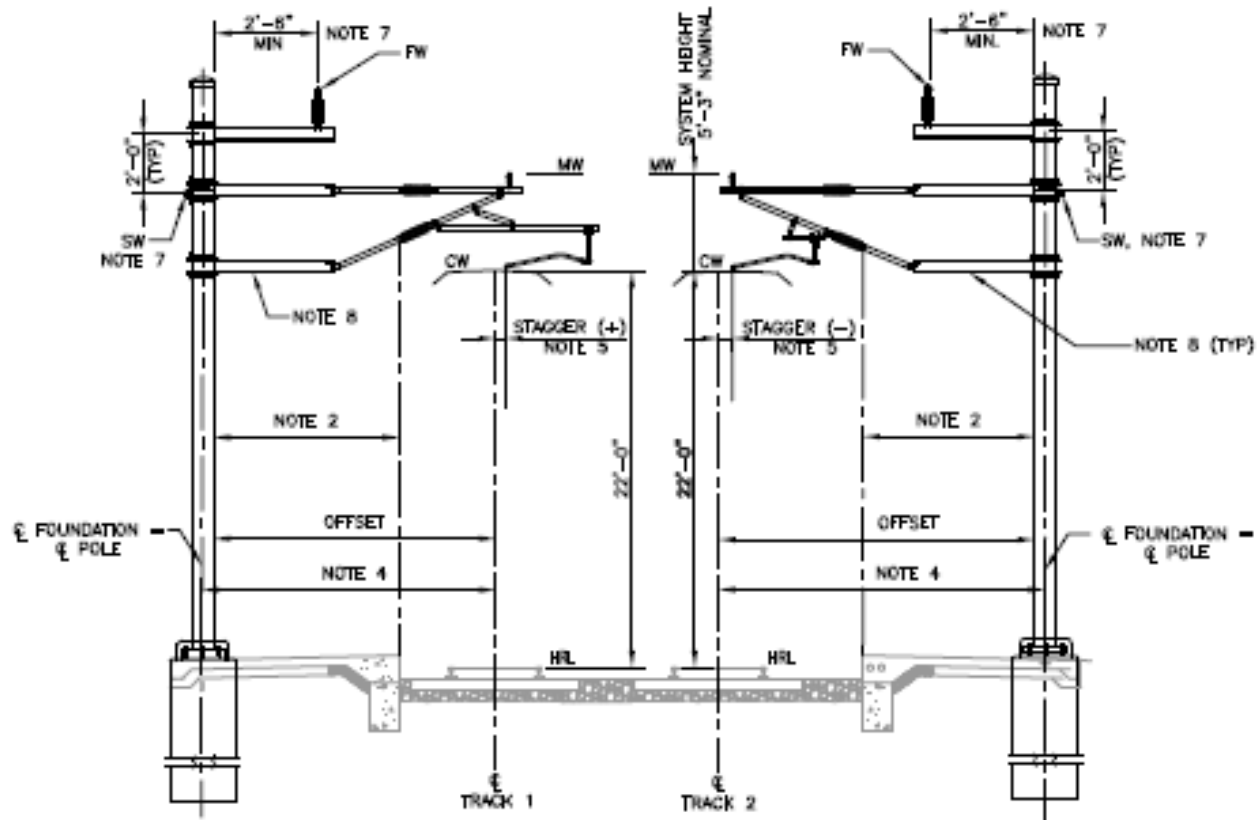


# Stanford Station



Photo simulation from Alma Street facing north

## Side Poles at Platform Typical



TYPICAL STATION CROSS SECTION  
SIDE POLES ON PLATFORM

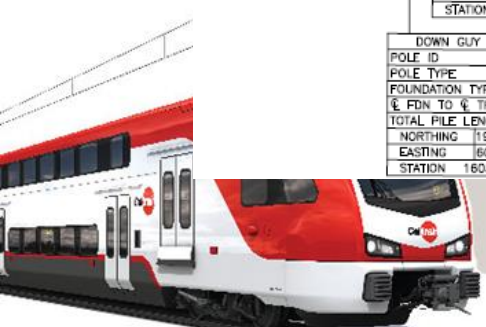
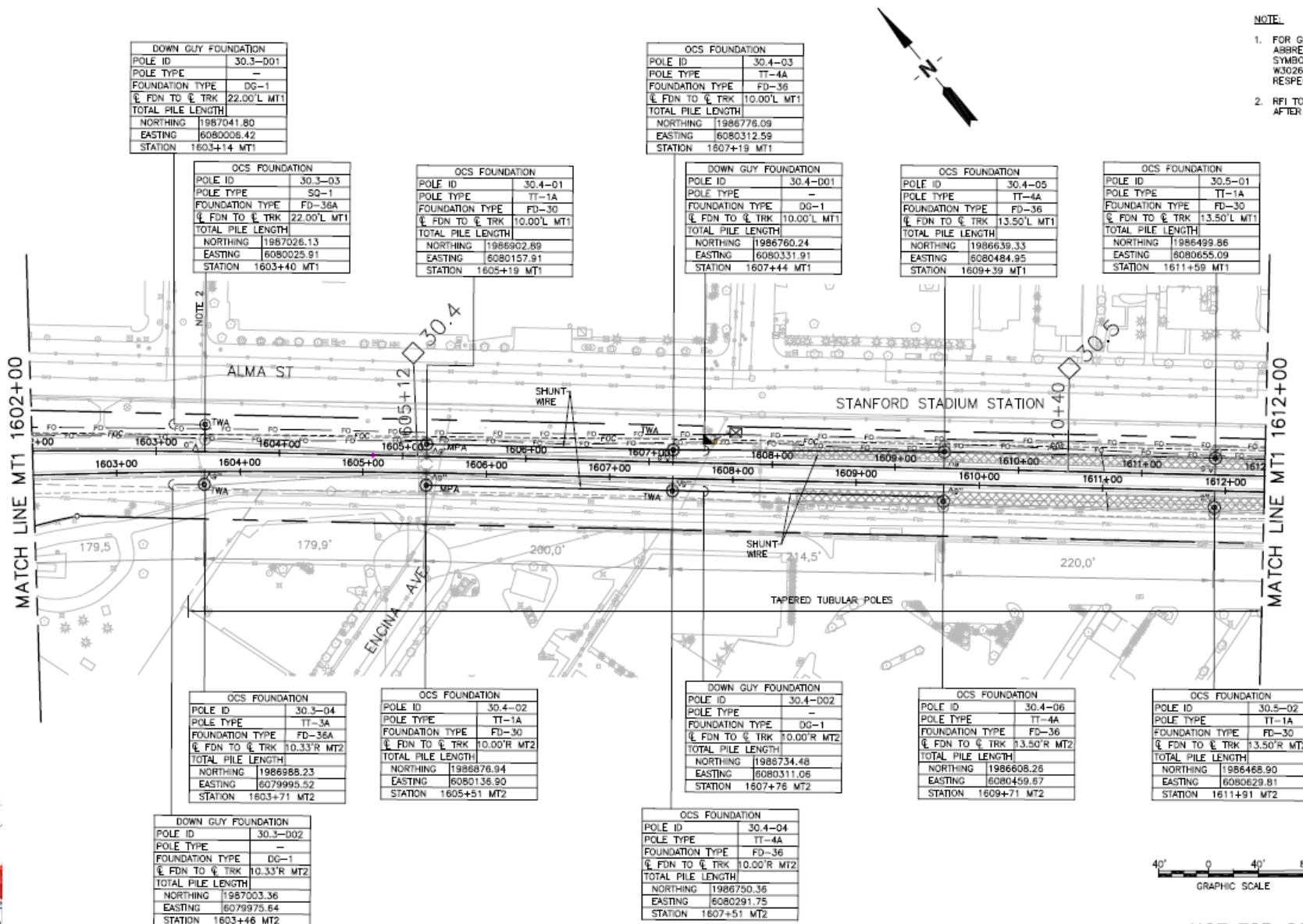


Pole heights range from 30-45.5'

# Stanford Station

**NOTE:**

- FOR GENERAL ABBREVIATIONS, SEE W3026, W301 RESPECTIVELY
- RFI TO BE D AFTER 65% :

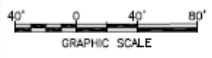
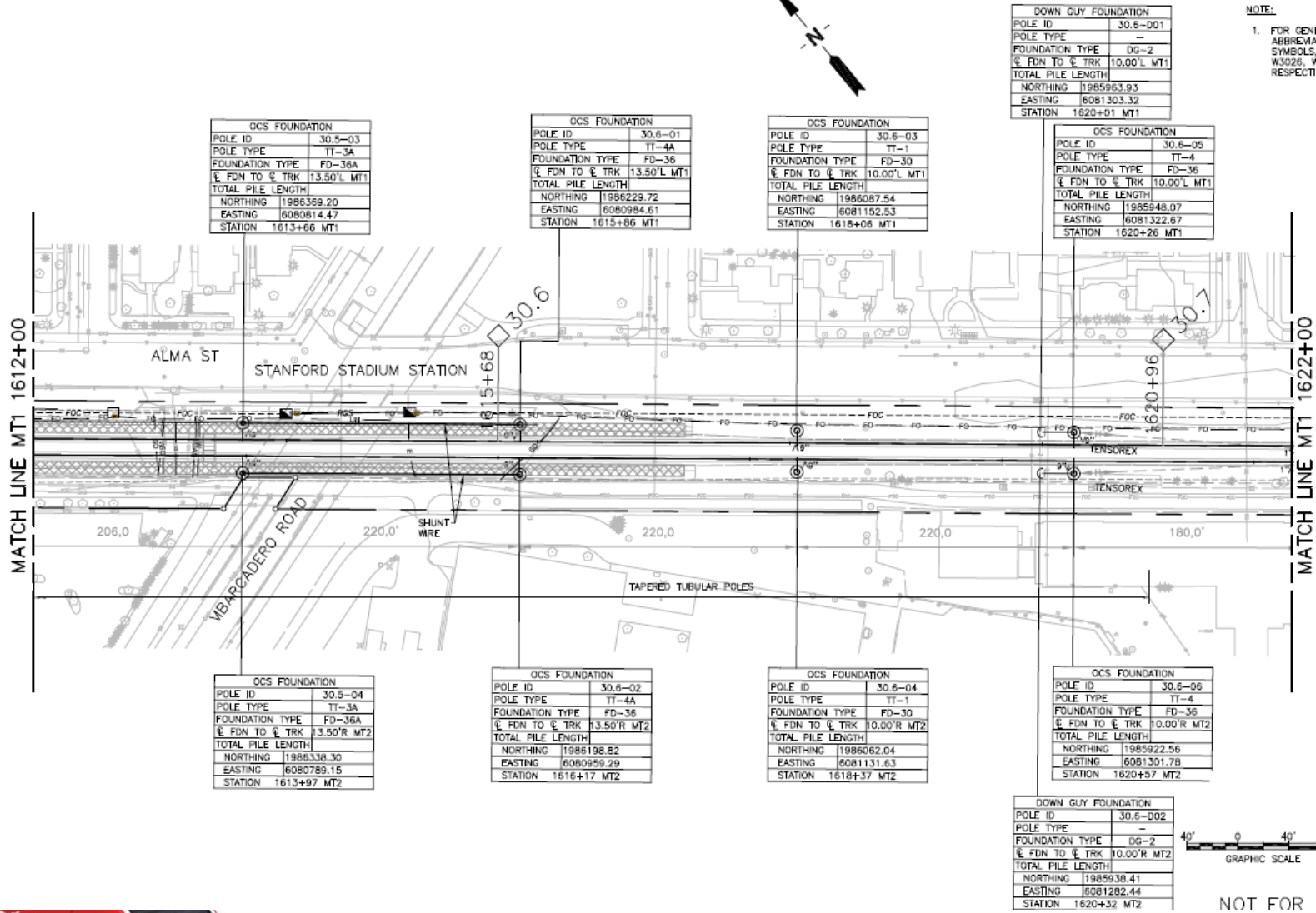


65% Design Drawings. Subject to change.

# Stanford Station



**NOTE:**  
1. FOR GENERAL NOTES, ABBREVIATIONS, AND SYMBOLS, SEE DRAWING W3026, W3027, AND W3028 RESPECTIVELY.



NOT FOR CONSTRUCTION



65% Design Drawings. Subject to change.



# Stanford Station Pole Color Recommendation

Notes: Option 1 is the visually dominant color; Option 2 is the secondary color; Option 3 is the least dominant color or defaults to FS 14052, the standard color for sensitive areas

	location	municipality	Mile Post	existing pole color	existing furniture color	existing color shelter	Option 1 color for Poles	Option 2 color for poles	Option 3 color for poles	Notes
17	Palo Alto	Palo Alto	30.00-30.2	grey	brown	n/a	color FS 23522	color FS 36495	color FS 30032	Option 1 to match the color of the structure (historic RR Sta recomm.), 2 to match poles, 3 to match furniture
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- Seeking ARB/HRB recommendation on Station Area Pole Color



**CalMod**

# California Avenue Station

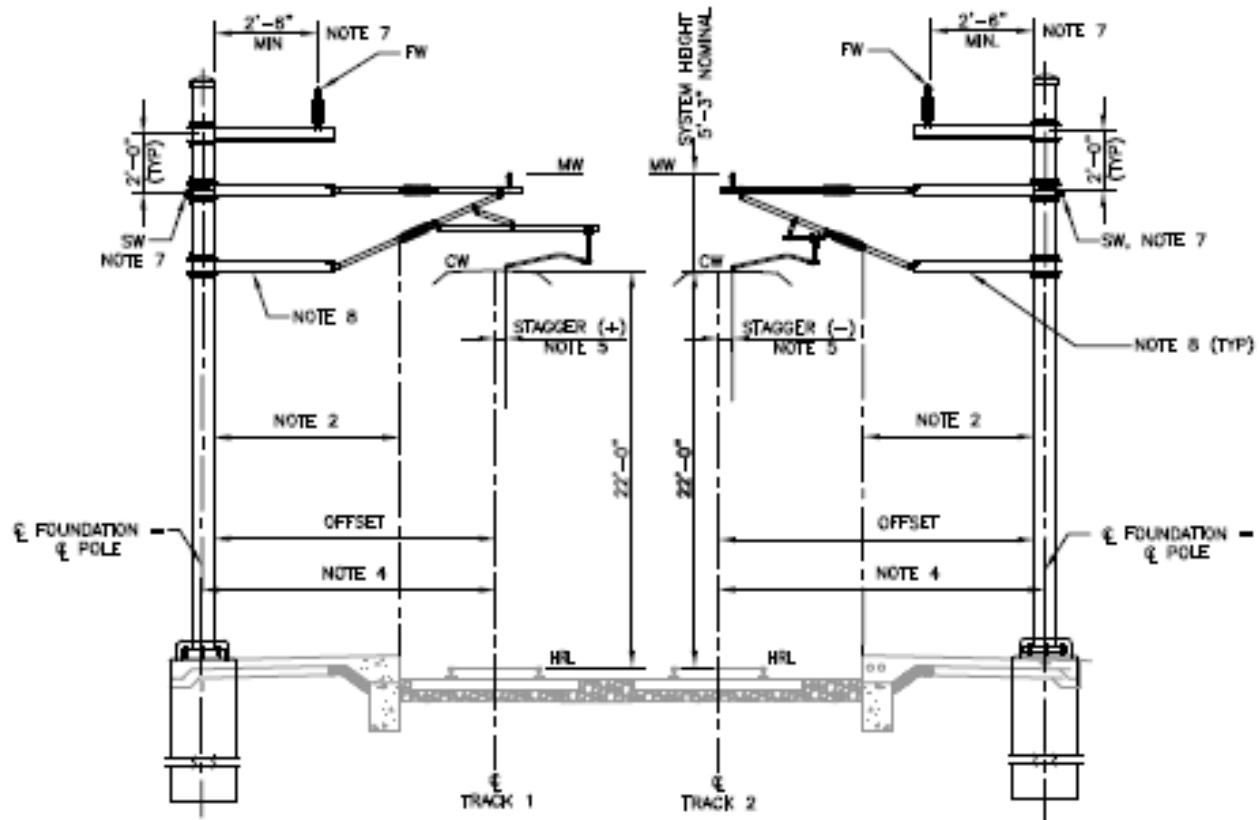


Photo simulation from west platform facing south





## Side Poles at Platform Typical

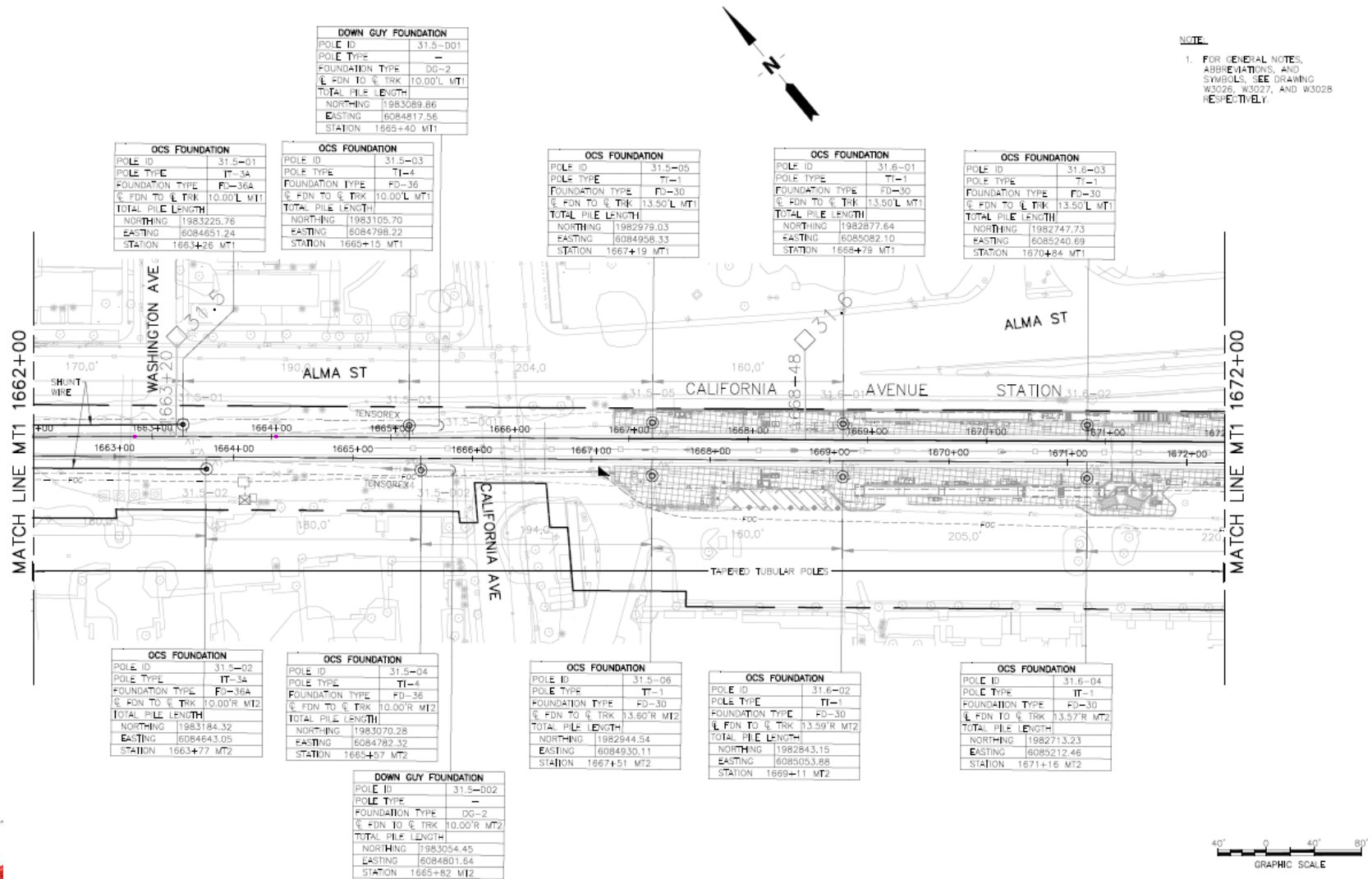


TYPICAL STATION CROSS SECTION  
SIDE POLES ON PLATFORM



Pole heights range from 30-45.5'

# California Avenue Station



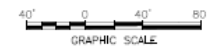
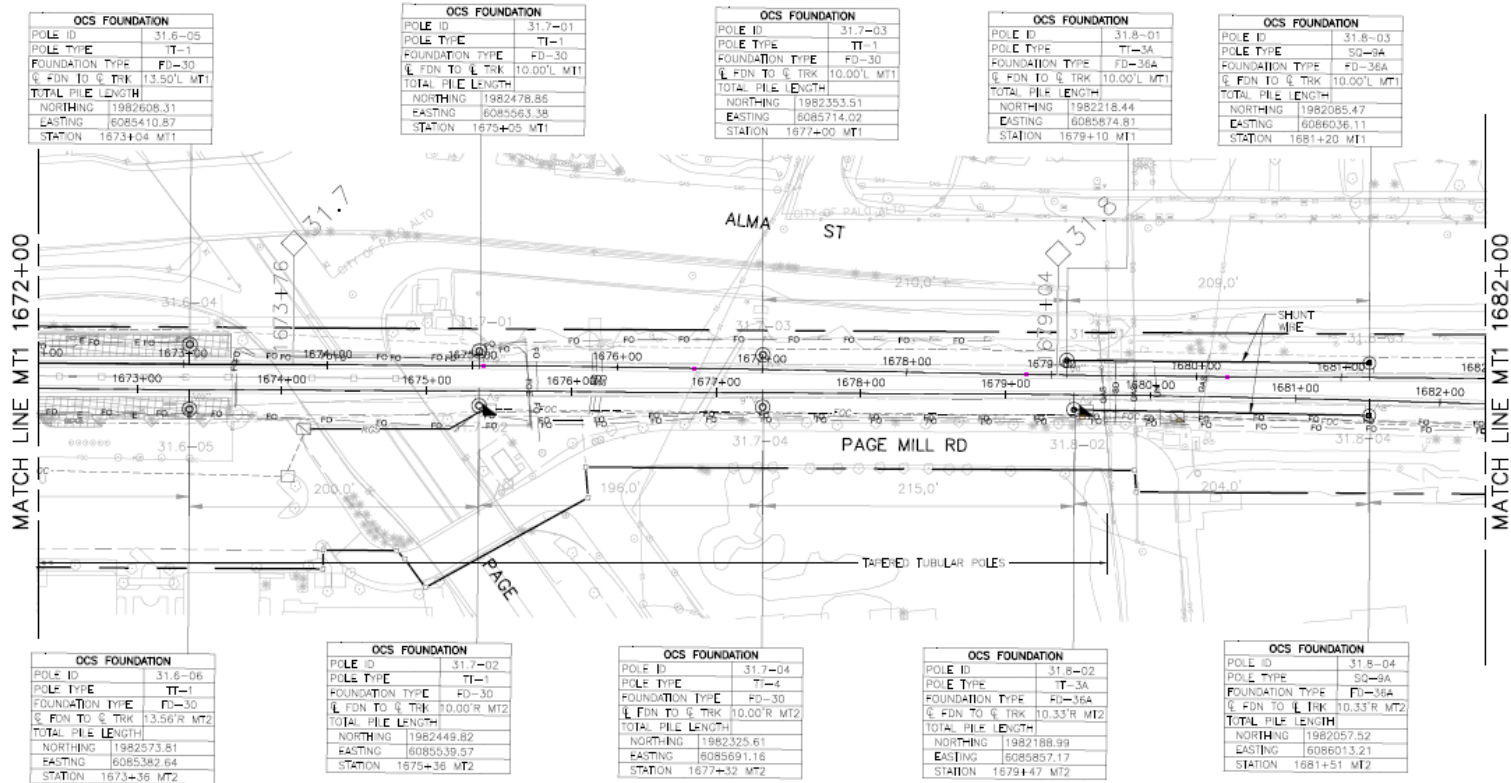
65% Design Drawings. Subject to change.



# California Avenue Station



**NOTE:**  
1. FOR GENERAL NOTES, ABBREVIATIONS, AND SYMBOLS, SEE DRAWING W3026, W3027, AND W3028 RESPECTIVELY.



65% Design Drawings. Subject to change.



# California Avenue Pole Color Recommendation

Notes: Option 1 is the visually dominant color; Option 2 is the secondary color; Option 3 is the least dominant color or defaults to FS 14052, the standard color for sensitive areas

	location	municipality	Mile Post	existing pole color	existing furniture color	existing color shelter	Option 1 color for Poles	Option 2 color for poles	Option 3 color for poles	Notes
17	Palo Alto	Palo Alto	30.00-30.2	grey	brown	n/a	color FS 23522	color FS 36495	color FS 30032	Option 1 to match the color of the structure (historic RR Sta recomm.), 2 to match poles, 3 to match furniture
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- Seeking ARB/HRB recommendation on Station Area Pole Color



## Additional Pole Types



Portals



Two Track Cantilever



Note: Poles outside station areas will be painted Marine Green in Palo Alto

# Traction Power Facilities

- 10 Traction Power Facilities Installed throughout Corridor
  - 1 Paralleling Station installed in Palo Alto
- Facility Components
  - Transformer
  - Gantries (up to 50')
  - Control House
- Provides electrical power to trains through the Overhead Contact System
- Unmanned, secure, lighted facility

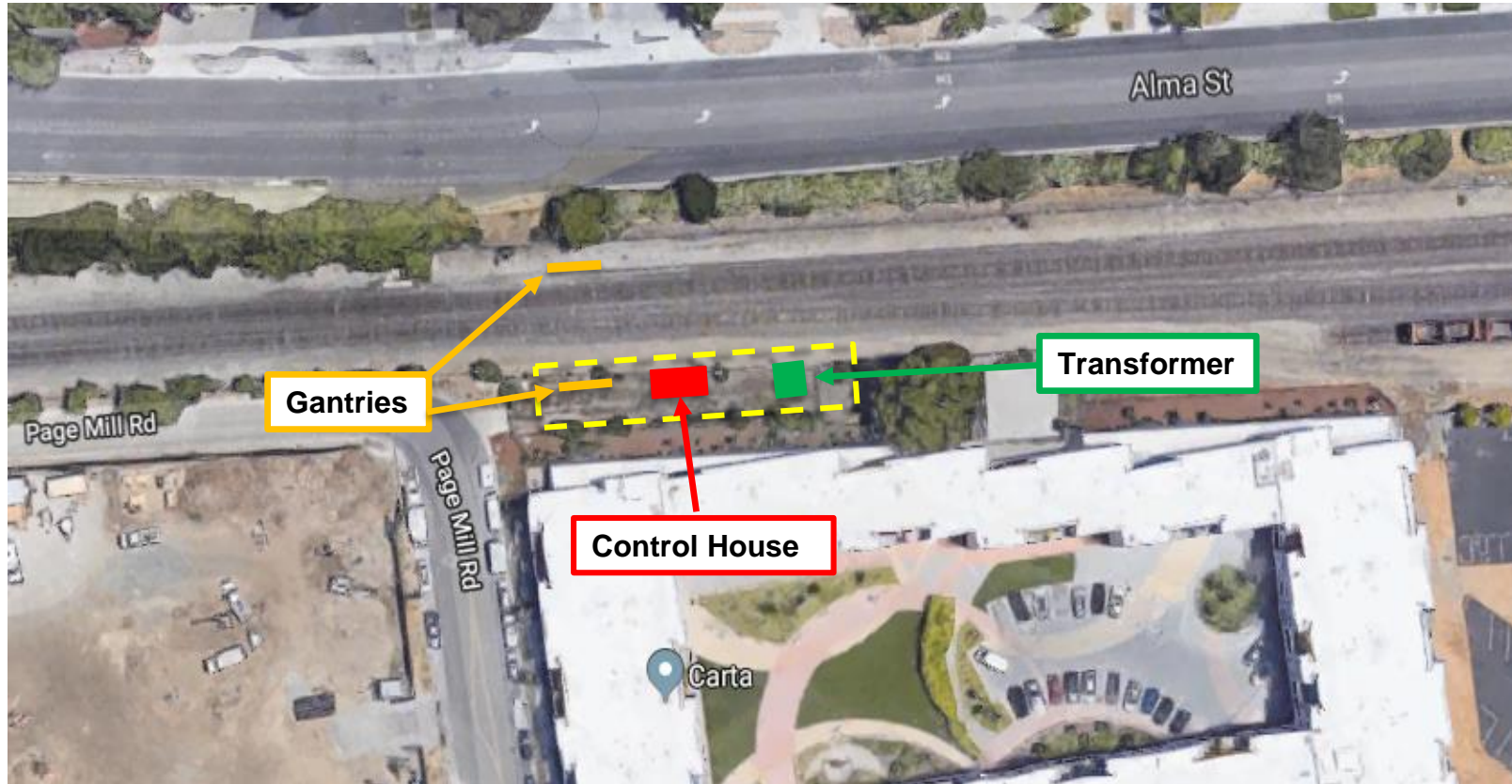


# Paralleling Station 5

- Located south of Page Mill Road on Caltrain Property
  - Coordination with City on location during EIR
- Vegetation Screening will be implemented with review and input from City Staff
- Control House Color to be selected by City



# **CalMod** Paralleling Station 5 Location

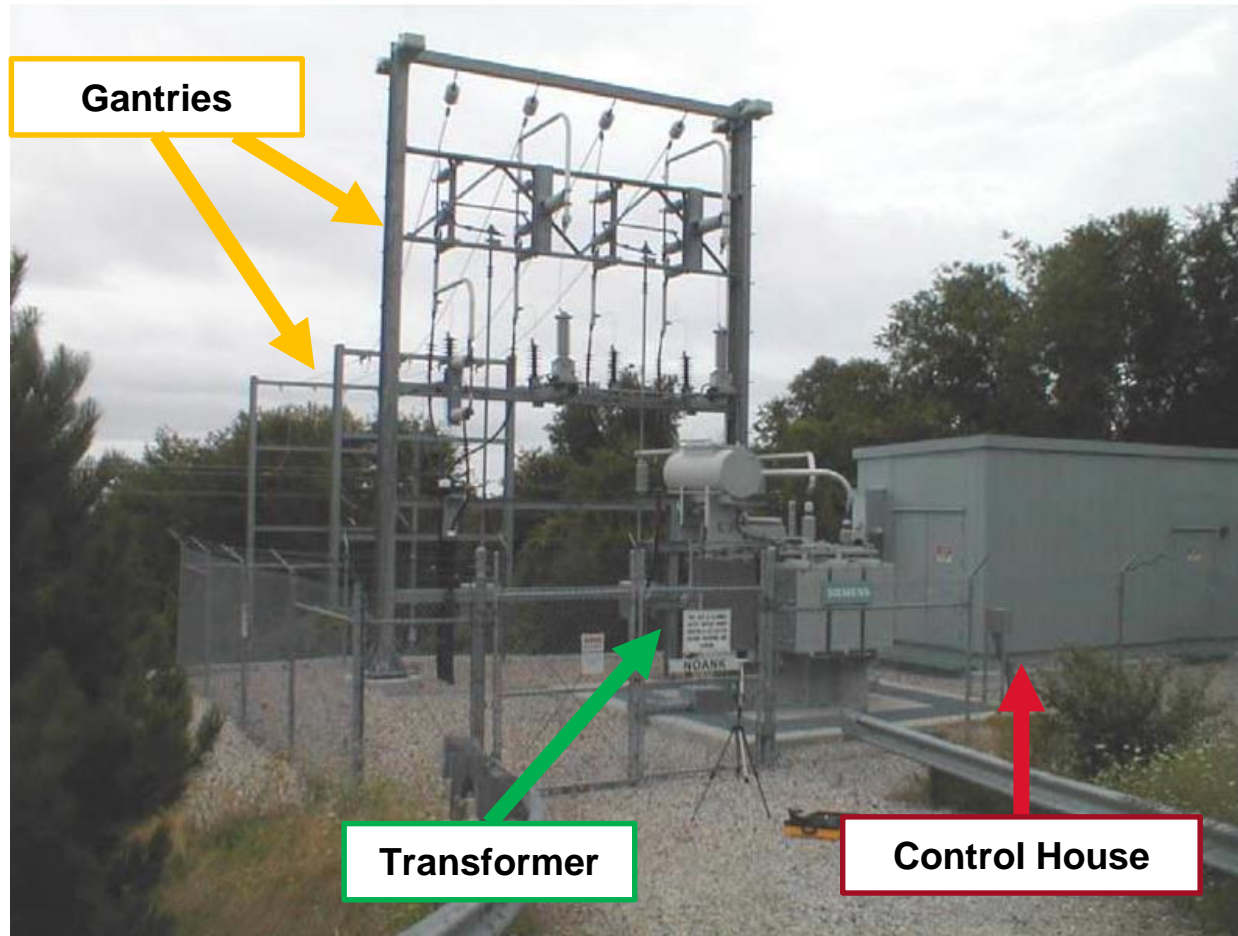


Based on 35% Drawings. Subject to Change.





# Example Parallelling Stations



Examples from Amtrak Northeast Corridor

# Transformer Example



Amtrak's North End Electrification



# PS-5 Control House Color Recommendations

municipality	Context			Screening			BLM color (three options)						notes			
	Residential context	Commercial context	Industrial context	Tree screening	Shrub screening	Vine screening	Carlsbad Canyon	Covert Green	Shadow Grey	Juniper Green	Shale Green	Sudan Brown		Beetle	Yuma Green	Carob Brown
Palo Alto	x	x		x	x	x				x			x			Adjacent to rear of commercial office

- Seeking ARB/HRB recommendation on Control House Color







## CALMOD CONTACT INFORMATION

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9 a.m. - 5 p.m. Monday - Friday

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

**TWITTER**  @caltrain

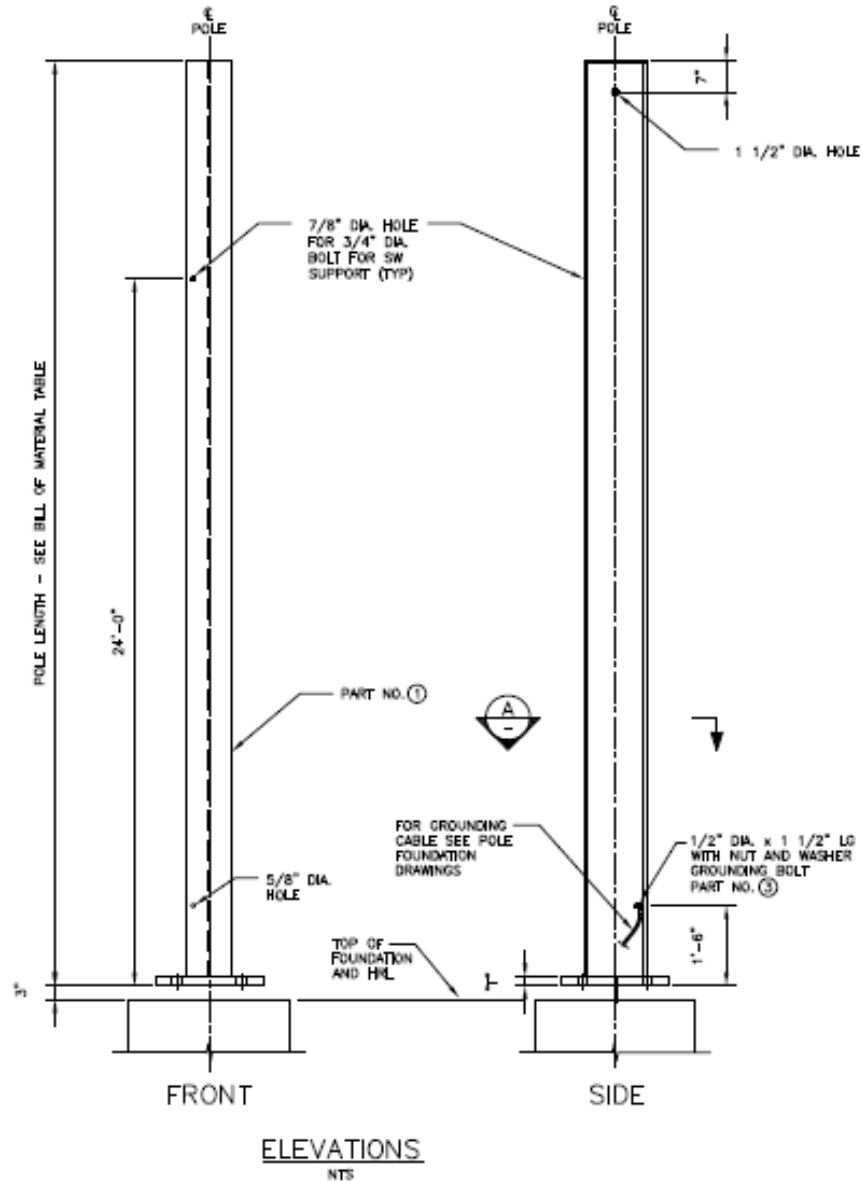


# Aesthetics Mitigation Measures

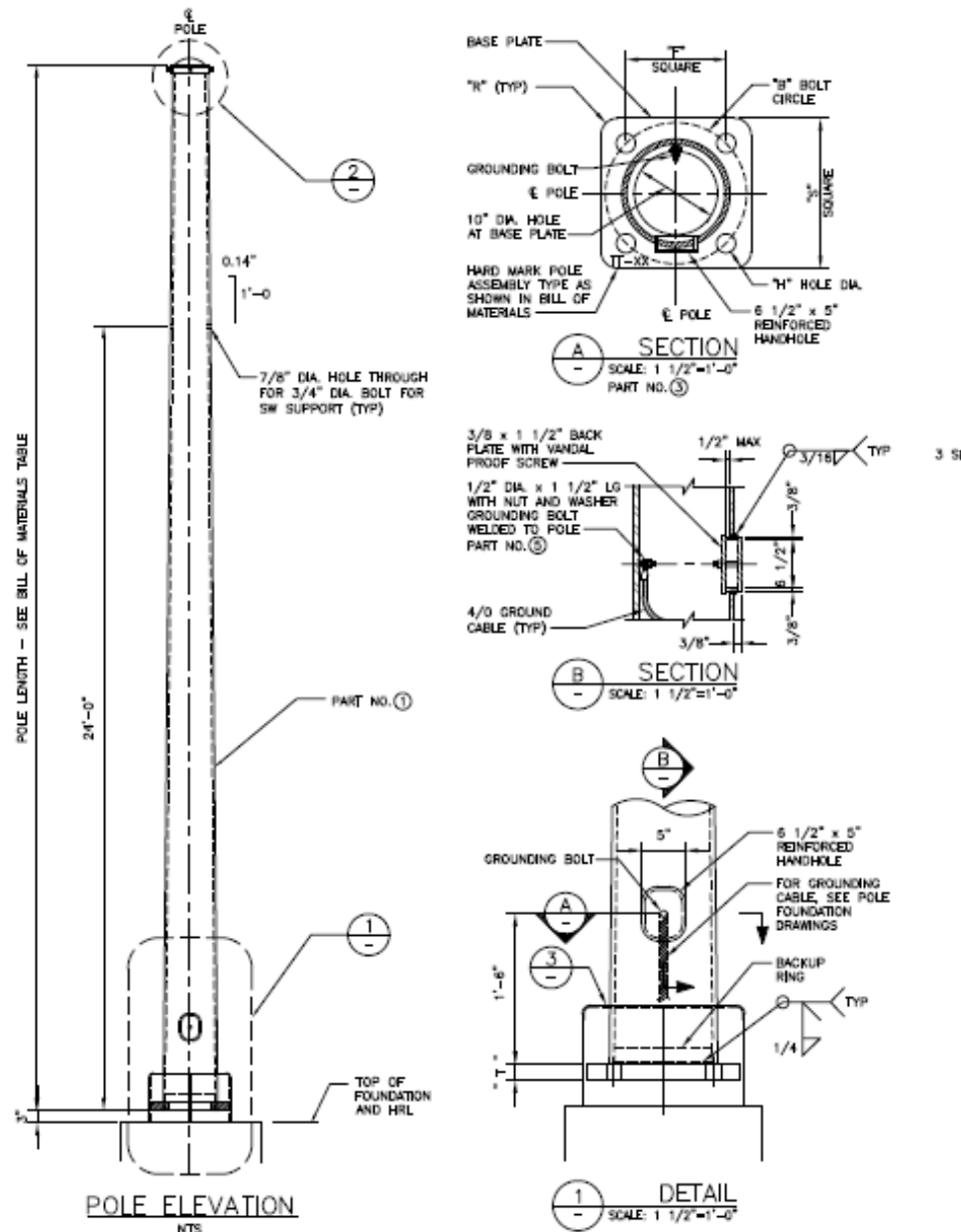
- AES-2b Goal: Help soften visual intrusion of project elements upon landscape, especially in areas of high use
  - Poles:
    - Coordinate with local jurisdiction on poles within station areas
    - No unpainted metal surfaces
  - Traction Power Facilities:
    - Coordinate with local jurisdiction on control house color and vegetation screening at sensitive TPF sites
    - Features to be colored or painted two to three shades darker than general surrounding area
    - Light or bright colors will be avoided



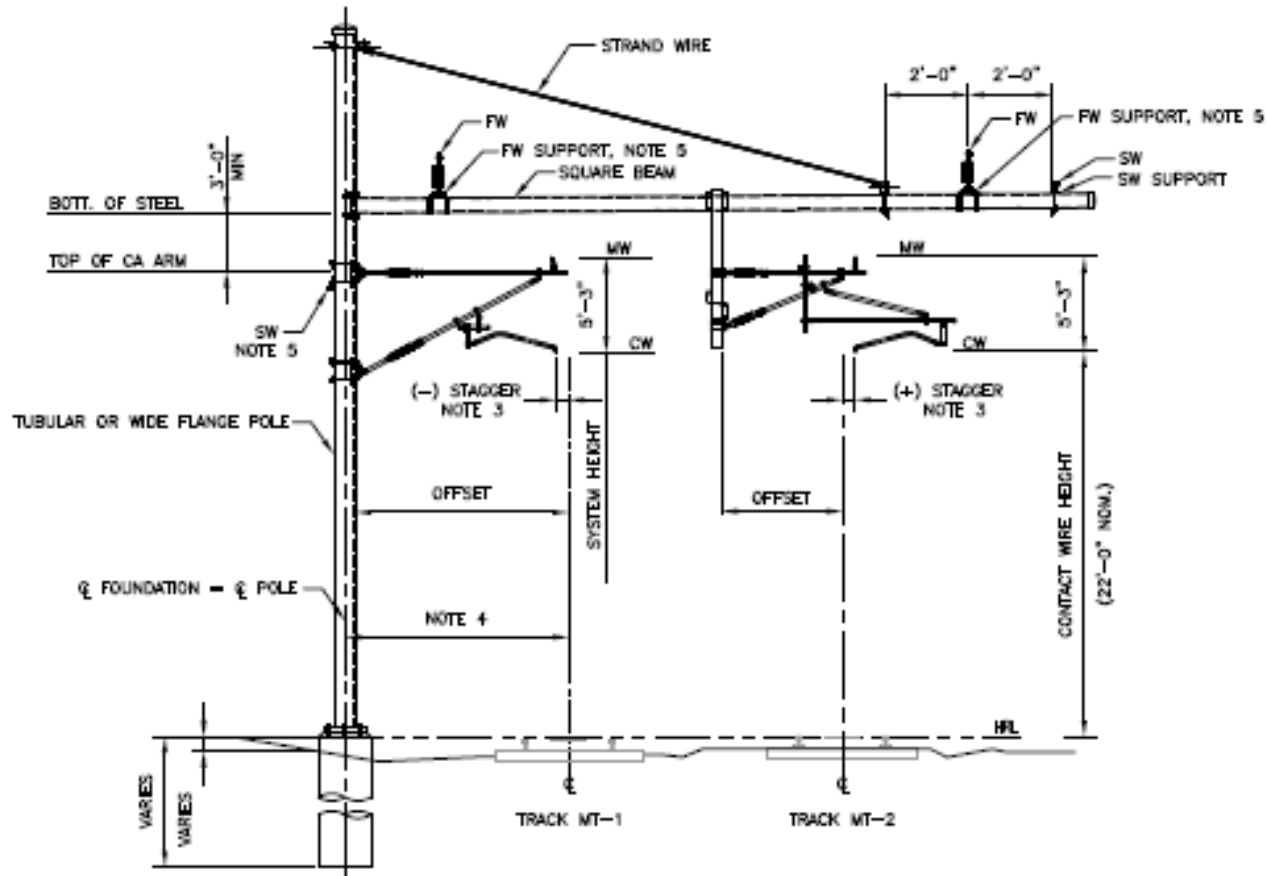
# Wide Flange Detail



# Taper Tubular Detail



# Two Track Detail

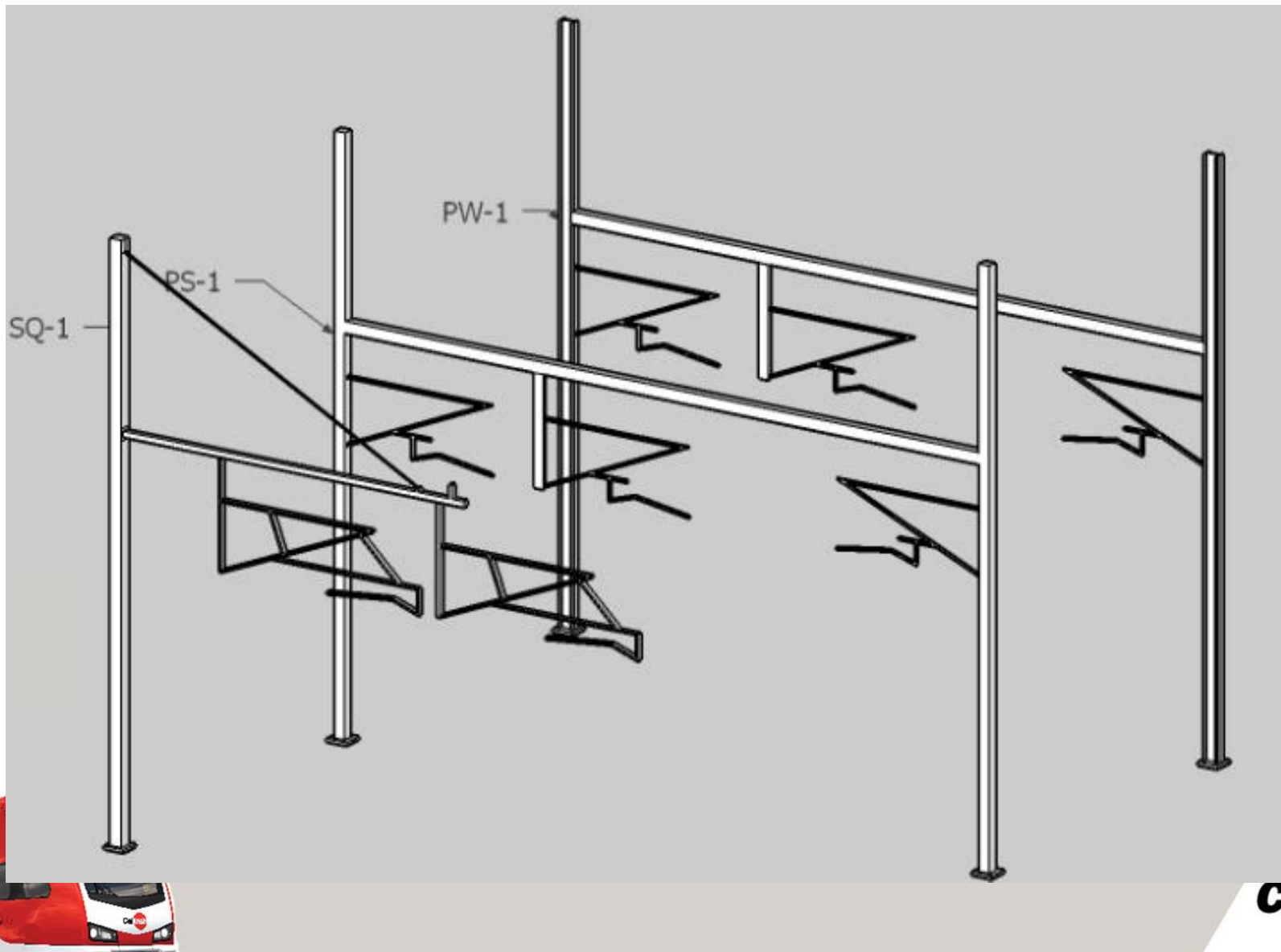


TWO-TRACK CANTILEVER STRUCTURE

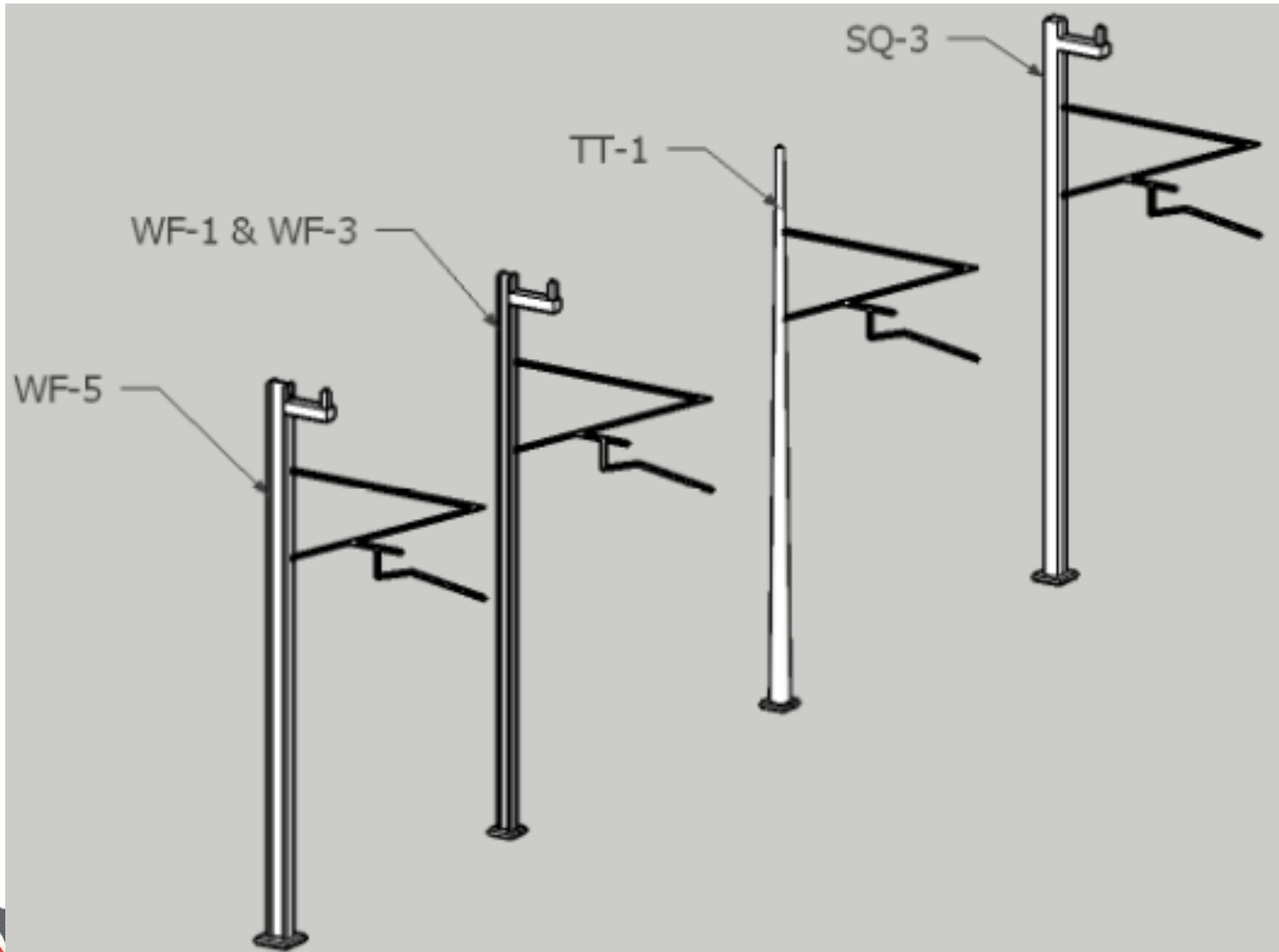




# Additional Pole Types

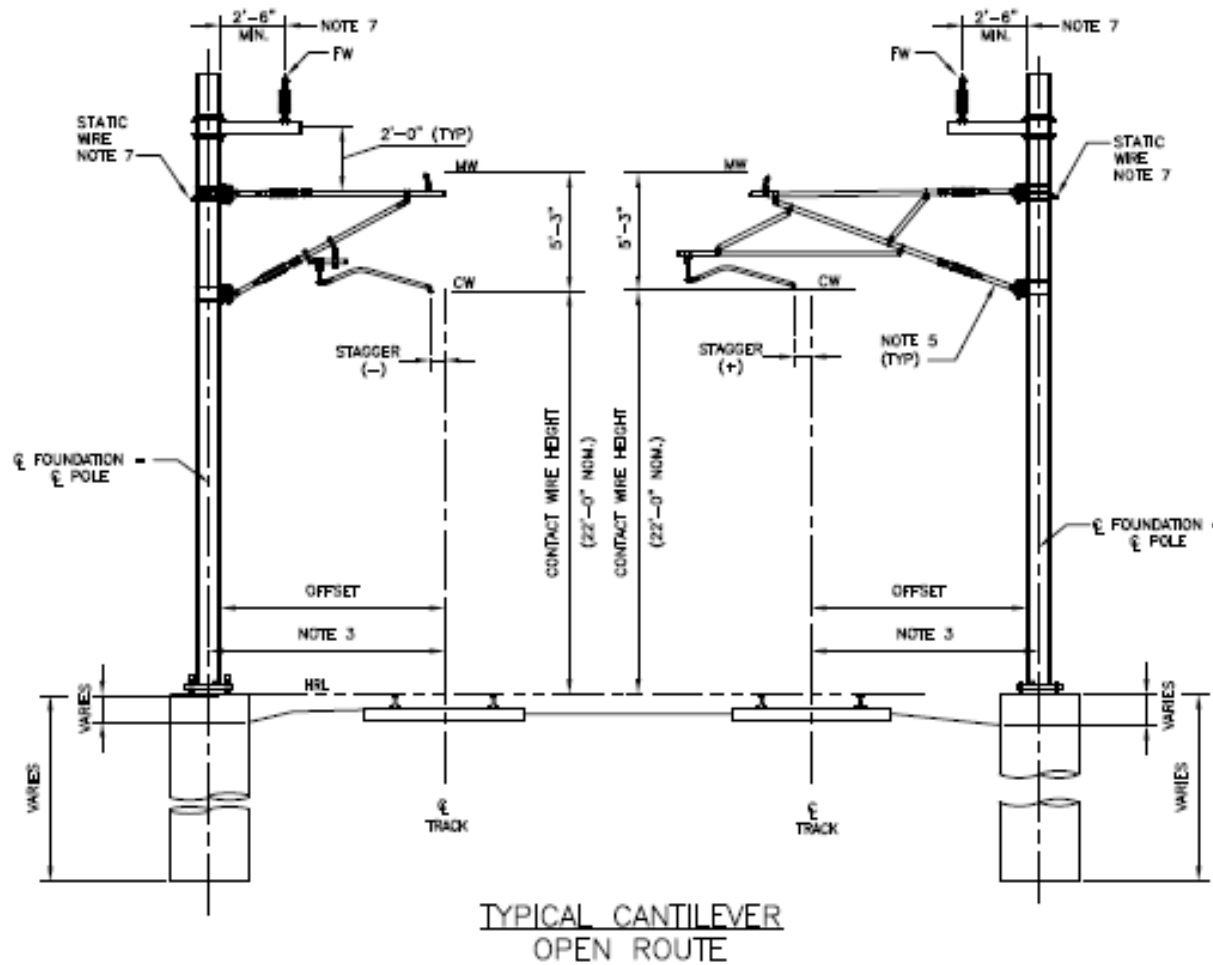


# Poles Types

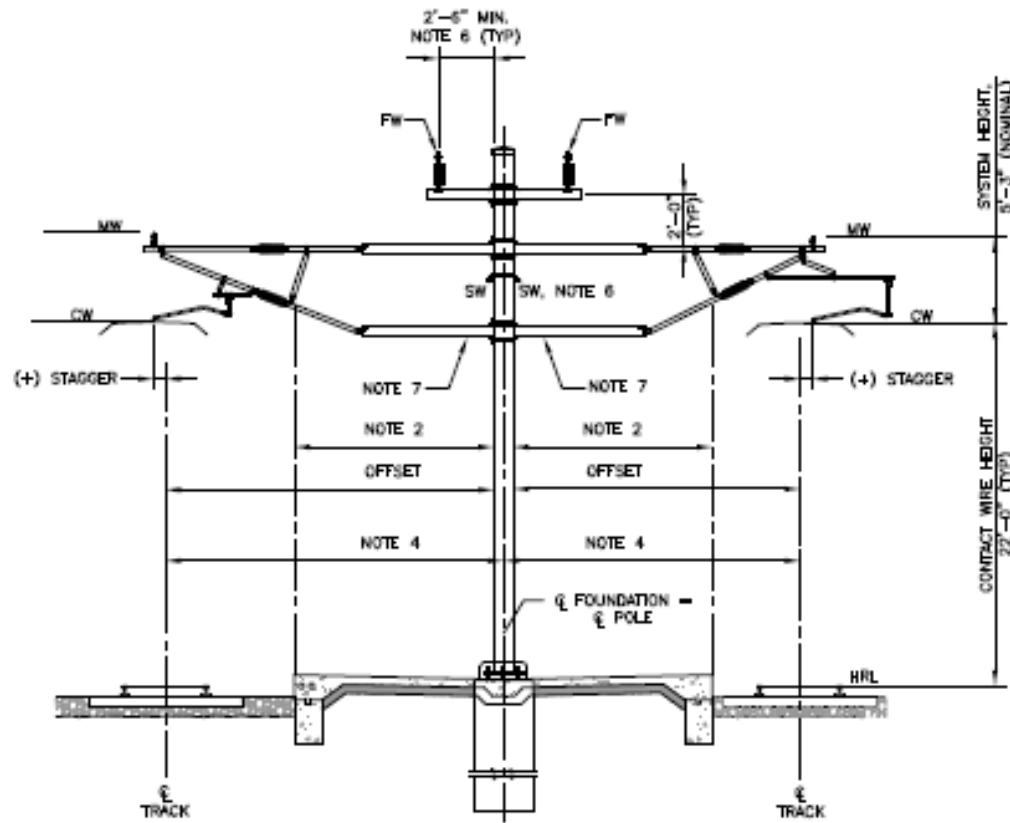


TT = Taper Tubular  
WF = Wide Flange  
SQ = Square

# Single Side Poles



# Center Poles at Station



TYPICAL STATION CROSS SECTION  
CENTER PLATFORM POLE



Center Taper Tubular Poles at Palo Alto Station