



# R65 Interlocking Replacement







# R65 Interlocking Replacement

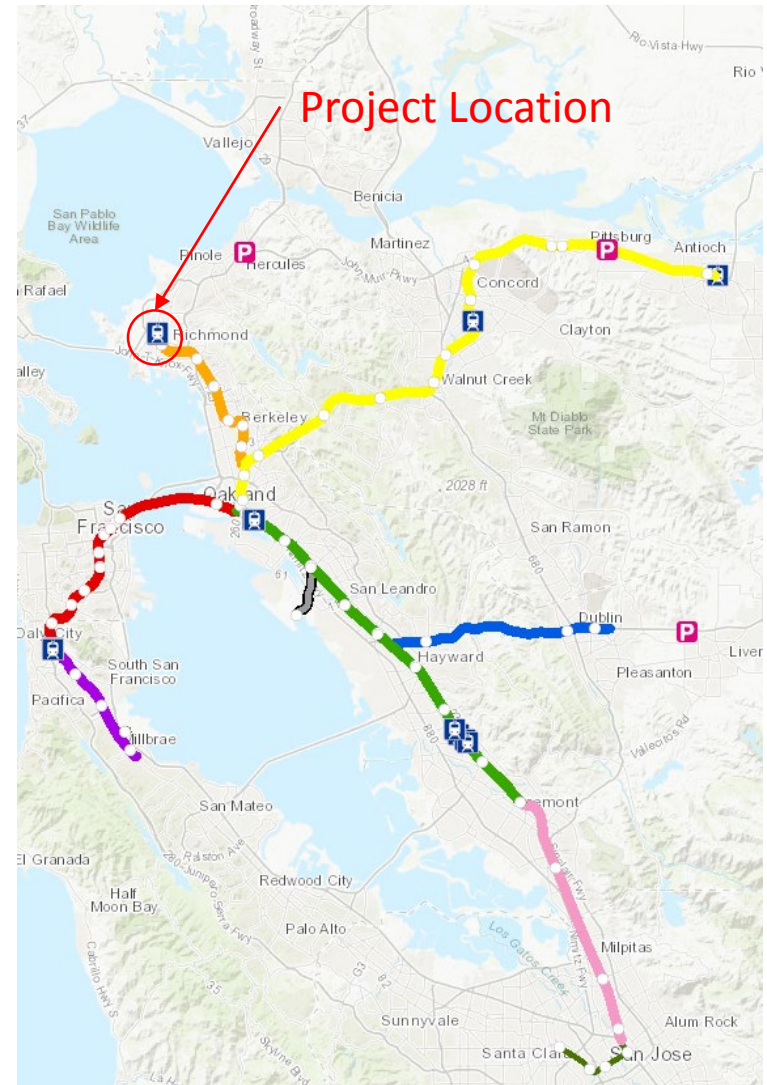
An interlocking provides a route for train traffic to crossover to another track or remain on its existing track by locking the route in place.

## Location

- North of Richmond Station/Entrance of Richmond Yard
- Movement of Trains from Mainline to Transfer Tracks
- End of Line Interlocking (Trains Turnaround to return to Oakland)

## Background

- Interlocking in Service Since 1972
- Location Difficult to Maintain
- 270 Trains Move Through Interlocking Daily
- Caused Delays and Large Number of False Occupancies
- Major Reasons for Delays to On-Time Performance in the System
- Maximum Speed 27 mph
- Integral to Operations





# R65 Interlocking Replacement

## Purpose and Scope

- Replace Wood Ties with Concrete Ties
- Increase turnout curve radius to improve train traffic flow
- Reduce Maintenance and Repairs
- Reduce Impacts to BART's revenue service
- Improve On-Time Performance

## Project Challenges and Constraints

- Performed Completely by In-House Forces
- Coordination with Richmond Yard and Train Operations
- Potential COVID-19 Impacts
- Location within Residential Neighborhood
- Limited Crane Staging Area
- Proximity to UPRR train tracks
- Coordination with Other Projects
  - Richmond Yard Fence Project
  - CBTC
  - R Line 34.5 kV Project
  - Traction Power Substation





# R65 Interlocking Replacement

	FY2018				FY2019				FY2020				FY2021			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Planning																
Design																
Procurement																
Construction																
Closeout																

## Schedule

- 6/2018 – Project Initiation
- 7/2018 – Procurement
- 12/2019 - Design
- 6/2020 – Construction
- 4/2021 - Closeout

## Total Estimated Project Costs - \$12 M

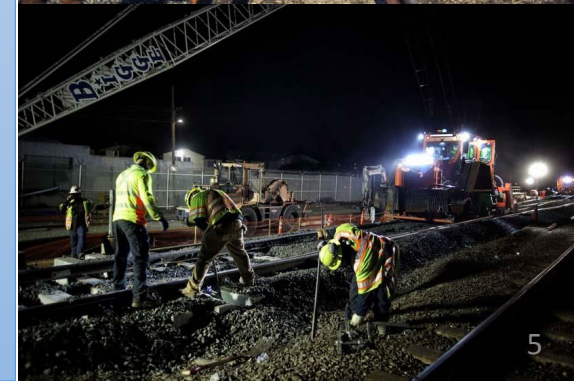
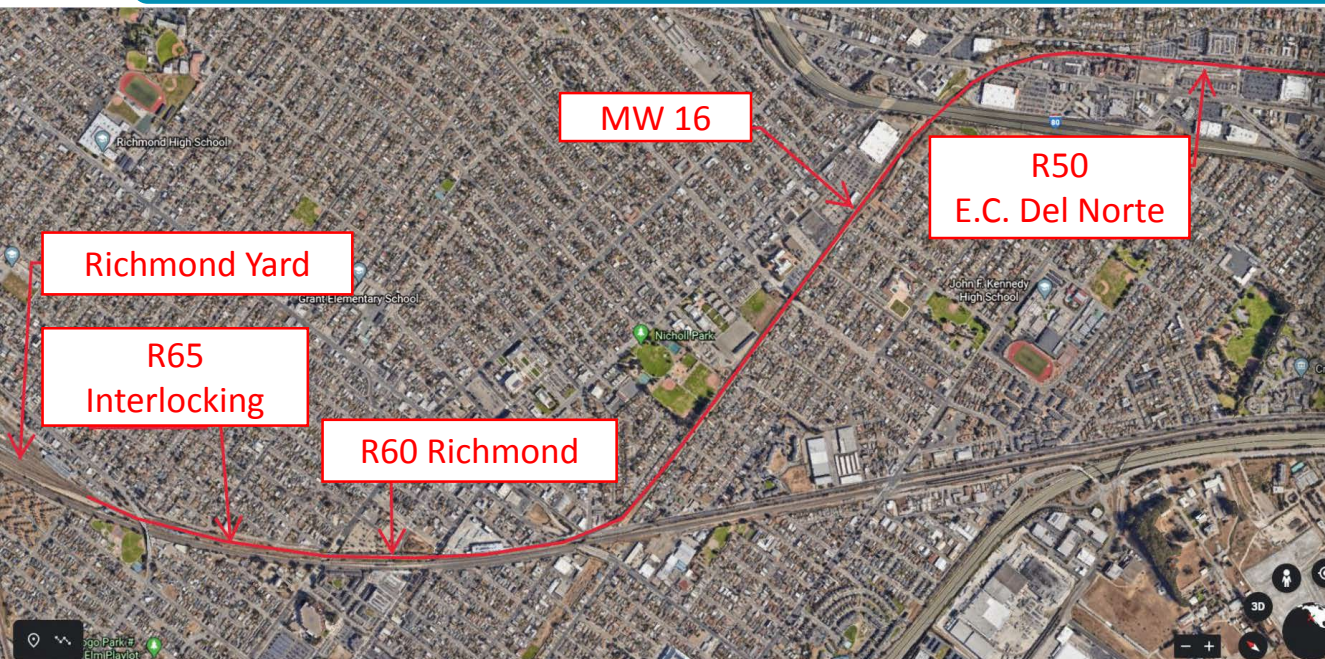
- Engineering (Track/ Civil/ Structures/ Systems/ Traction Power)
- Construction Management Division
- Maintenance (Track/ Wayside/ Grounds/ Structures/ Traction Power/ Train Control/ ROW Capital/ NRVE)
- Track Allocation (Ops Liaisons, PM Planning and Scheduling, Ops Planning & Analysis)
- Government & Community Affairs/Marketing
- Bus Bridge (OCC, Systems Services, Station Agents)
- BART Police
- AC Transit
- Seconded Consultant Support







# R65 Interlocking Replacement



## Overcoming Site Challenges

- ✓ Richmond station shutdown
  - ✓ Bus bridge between El Cerrito del Norte and Richmond stations
- ✓ Saturday shutdowns for turnout installations
  - ✓ All trains dispatched from the yard in the morning and return in the evening
  - ✓ 10-hour shutdown window between morning and evening train movement for positioning turnouts
- ✓ End of Line Transfer from #1 track to #2 track in and out of Oakland





# R65 Interlocking Replacement



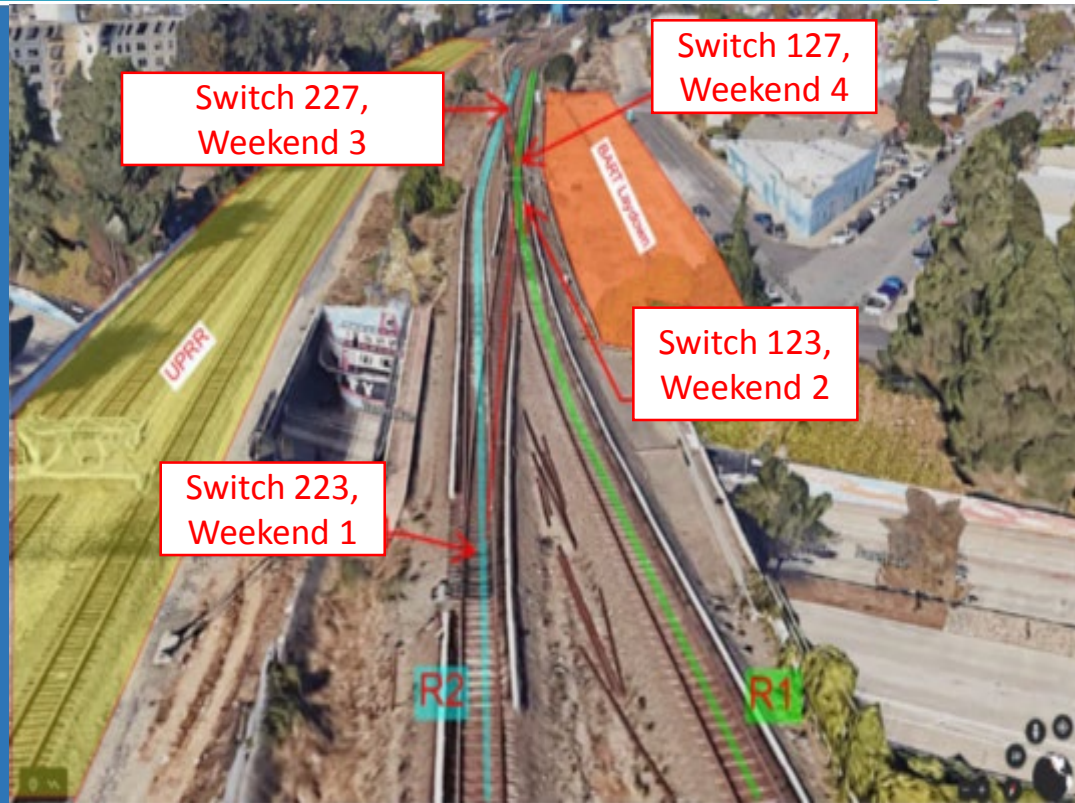
- 350-ton crane used to move turnouts – Largest Crane ever erected and used on BART property
  - Crane pick distance up to 150 ft
  - Each turnout piece weighs 87 tons (two pieces per turnout)
  - Each turnout piece is lifted into place separately
- All other work (i.e. ballast installation, 3<sup>rd</sup> rail replacement, switch point alignment, etc.) occurs while trains single track to and from the yard through the work site



# R65 Interlocking Replacement

## Accomplishments

- Replaced four turnouts and associated traction power and train control equipment
  - Replaced 2000ft of 3<sup>rd</sup> rail, insulators, and coverboard
  - Replaced train control coils, loops, and junction boxes
  - Replaced all traction power and train control infrastructure (i.e. duct banks and cabling)
  - Maintenance Way access improvements
- Increased turnout curve radius to improve train traffic flow
- No accidents or COVID-related incidences
- Use of BART manpower to load shed from operating forces



## Project Team

BART ROW Capital Construction, Engineering, Traction Power, Systems Engineering, Train Control, Track Maintenance, Grounds Maintenance, Structures Maintenance, PM Planning and Scheduling, Operations Planning & Analysis, Marketing, Safety, etc.



# R65 Construction Time Lapse Video

[R65 Track Interlocking Replacement Time Lapse Video](#) (link)