

Emergency Railroad Track Stabilization

Mile Post 206.8 – San Clemente, CA

Overview of LOSSAN

(Los Angeles – San Diego – San Luis Obispo Rail Corridor)



- 351-mile rail corridor running through six counties
- Second busiest intercity passenger rail corridor in the U.S.
- More than 150 daily passenger trains
- Carries more than 8.3 million passengers annually (pre-COVID-19 pandemic)
- More than 70 freight trains per day in some areas
- Designated national defense rail corridor as part of the Strategic Rail Corridor Network by the Department of Defense
- Critical single-track section along the beach through the cities of Dana Point, San Clemente, and northern San Diego County

Overview of Project Area



Historical Beach Condition



2/5/2022 Near Low Tide



9/8/2022 Just Prior to Hurricane Kay – Near Low Tide

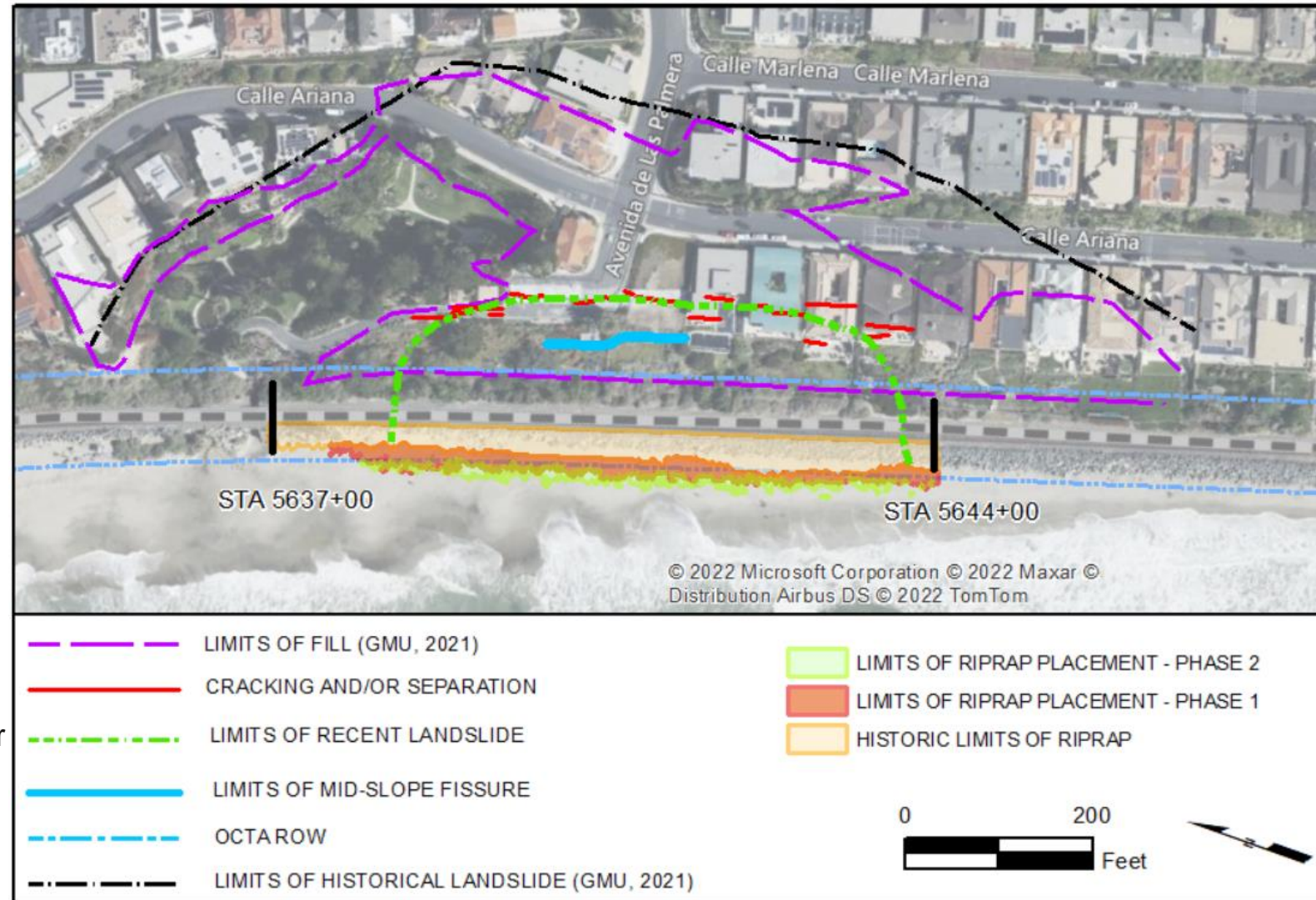
Landslide Background

- September 2021

- Significant beach erosion activated historical landslide
- Tracks moved +28-inches laterally toward ocean
- Train service suspended to stabilize tracks
- Placed +18,000 tons of riprap along 700 feet of track (counteracts mass of slide)
- Monitoring track and slope movement

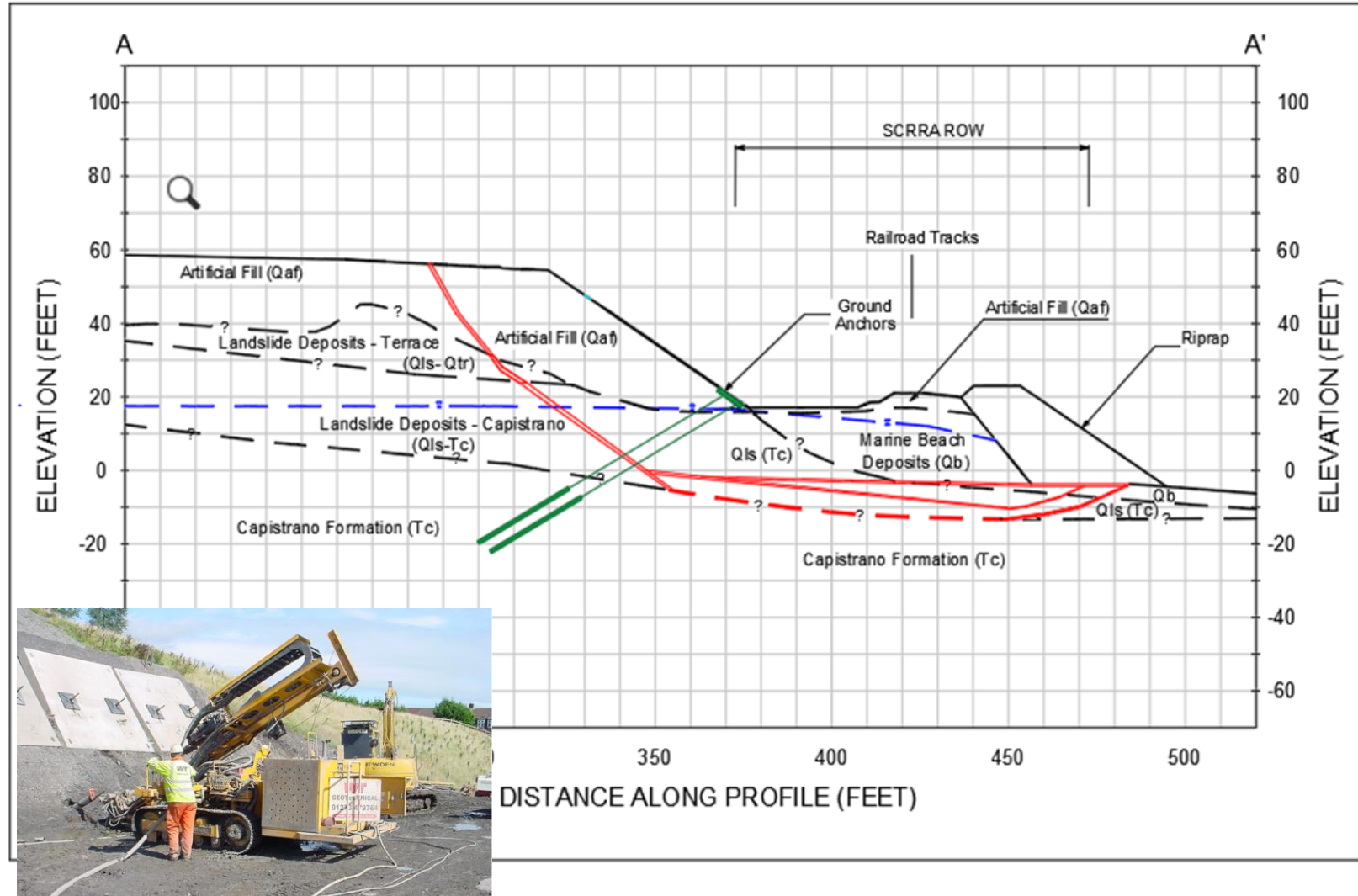
- September 2022

- Additional slope movement due to high tides, waves, and storm surge
- Placed more riprap
- Operating speed reductions
- Assessment of slope movement indicates larger mass of historic slide is beginning to move
- Train service suspended due to continued incremental movement
- Assessed alternatives to stop slide movement



Proposed Work

- Assessed slope flattening, ground improvement, sea wall, pile improvements, and ground anchors
- Ground anchors (green) placed into bedrock through the slide planes; designed to hold back the larger slide; will stabilize the movement and provide a satisfactory factor of safety
- Can be rapidly constructed with material available



Ground Anchor Area



Project Schedule

Milestone	Estimated *
Begin contractor mobilization	October 4, 2022
Design and review	October 6, 2022
Construct Phase 1 – corrodible ground anchors (readily available material)	October to early November 2022
Assess slope movement data – reopen for train service	Early to mid-November 2022
Construct Phase 2 – permanent corrosion-resistant ground anchors (material production and availability lead time required)	January 2023
Construction closeout	March to July 2023
Regulatory permitting	Ongoing

**Dates are preliminary and subject to change*

Cost

- Estimated cost is approximately \$12 million*
 - Construction
 - Construction contingency
 - Construction management
 - Railroad flagging
 - ROW support services
 - Public outreach effort
 - Environmental clearance and emergency permitting

**Costs are preliminary estimates based on 5% concept design, are subject to change, and do not include previously approved federal funds used toward engineering.*

Key Takeaways

- Constructing the ground anchors will arrest this inland rail slide movement and protect the immediate integrity of a critical transportation corridor that serves passengers, goods movement, and national security.
- Ocean intrusion into the railroad ROW along the cities of Dana Point and San Clemente will continue to be a threat to keeping the railroad moving.
- Long-term alternatives for protection of this railroad corridor need to be developed.

