



1972

Grand Avenue Pathway

City Council

April 10, 2025

Grand Avenue Pathway

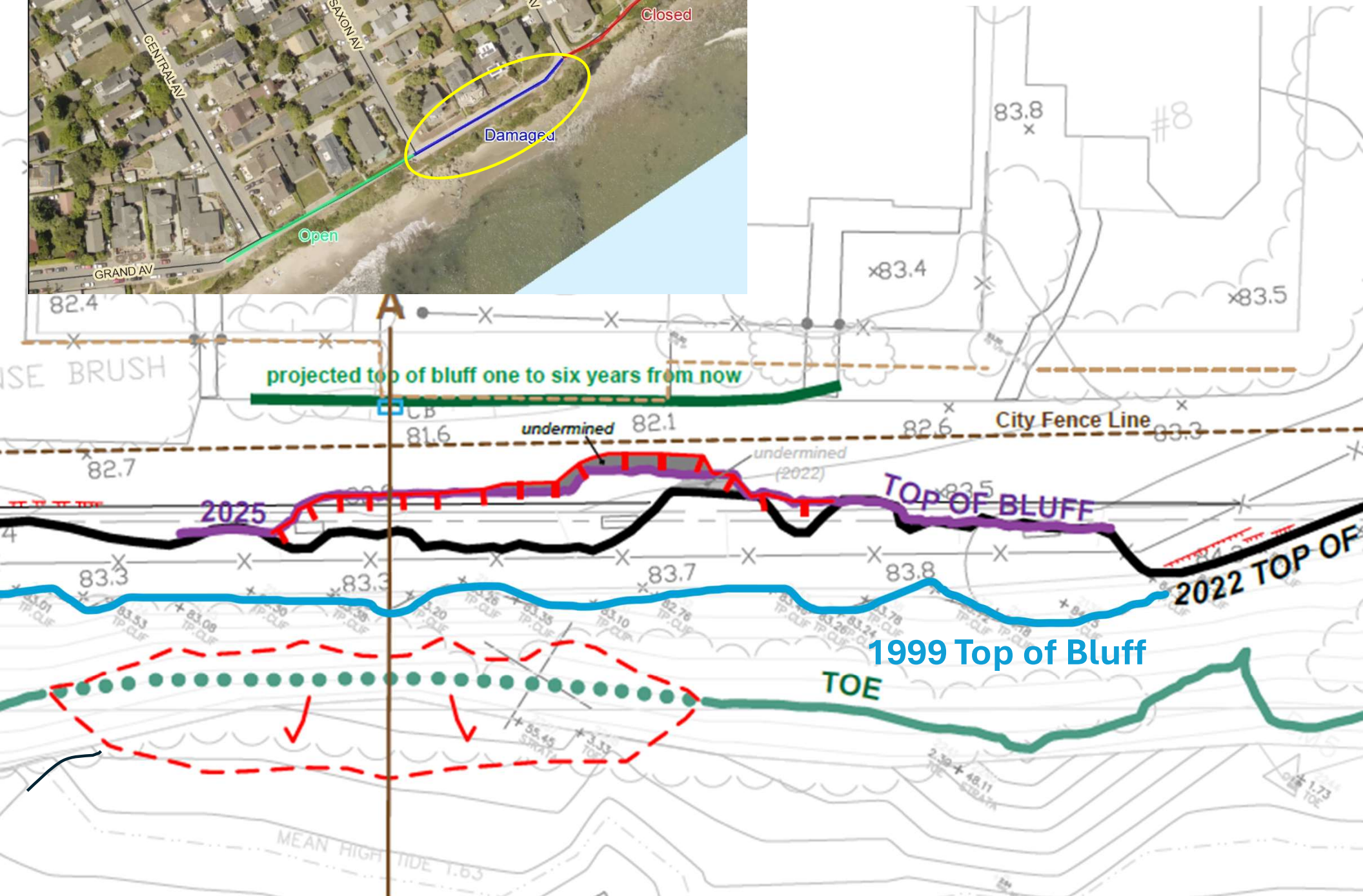
Bluff Erosion Process



Grand Avenue Pathway



- Current pedestrian path: Central Avenue to Oakland Avenue
- Due to erosion, has faced multiple closures and relocations since 1980's
- Part of California Coastal Trail
- Previous efforts, including proposed seawall, denied due to concerns about effectiveness and environmental impact



Grand Avenue Pathway

Bluff Erosion Process



Episodic Bluff Retreat

- Storms, wave action, earthquakes, and saturation of soil

Two-Part Failure Process:

1. Wave Erosion of Bedrock

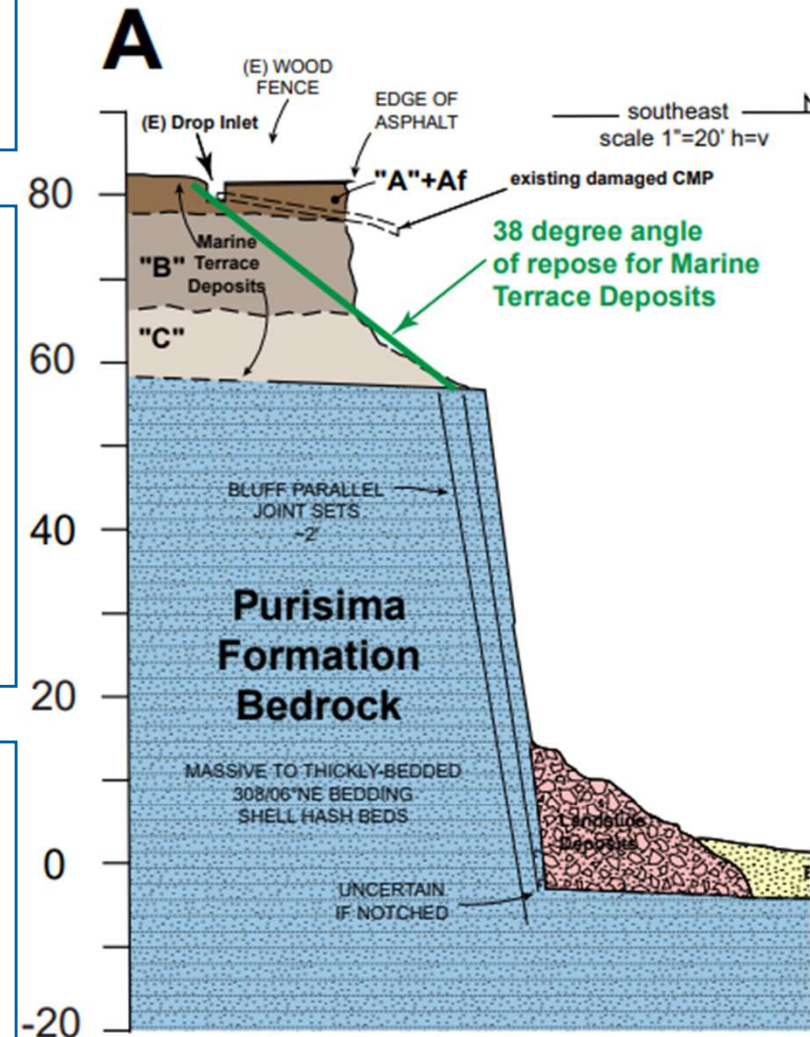
- Waves notch into **Purisima Formation bedrock** until slab topples

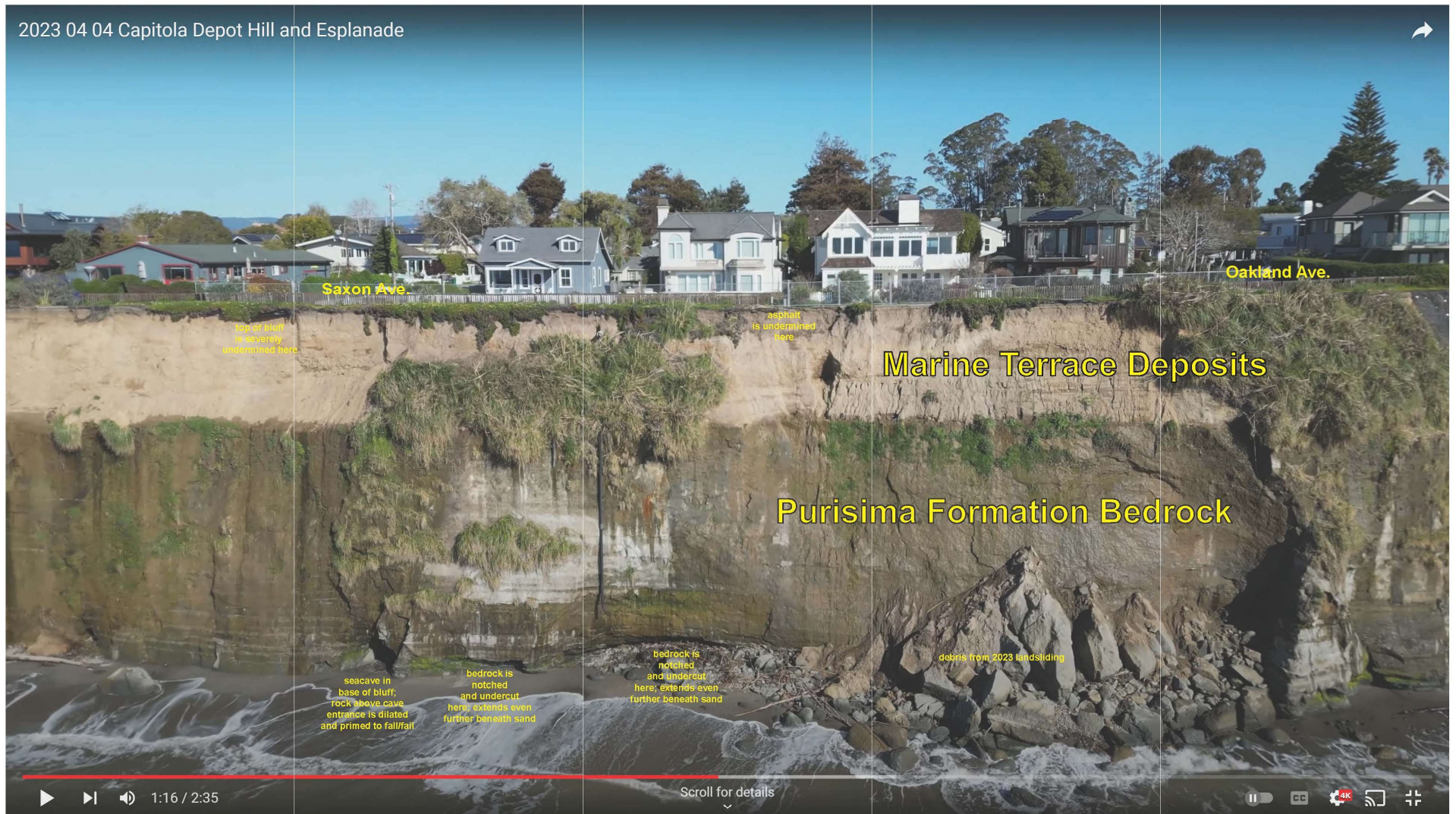
2. Collapse of Upper Bluff

- Overlying marine terrace soils collapse
- Leaves a steep bluff face

Why It Keeps Failing:

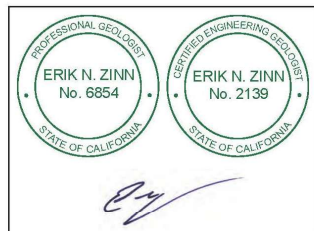
- Loose sand/gravel from marine terrace deposits erodes gradually
- Naturally settle toward a **38-degree slope**
- Wave action restarts the cycle: **erosion never fully stops**

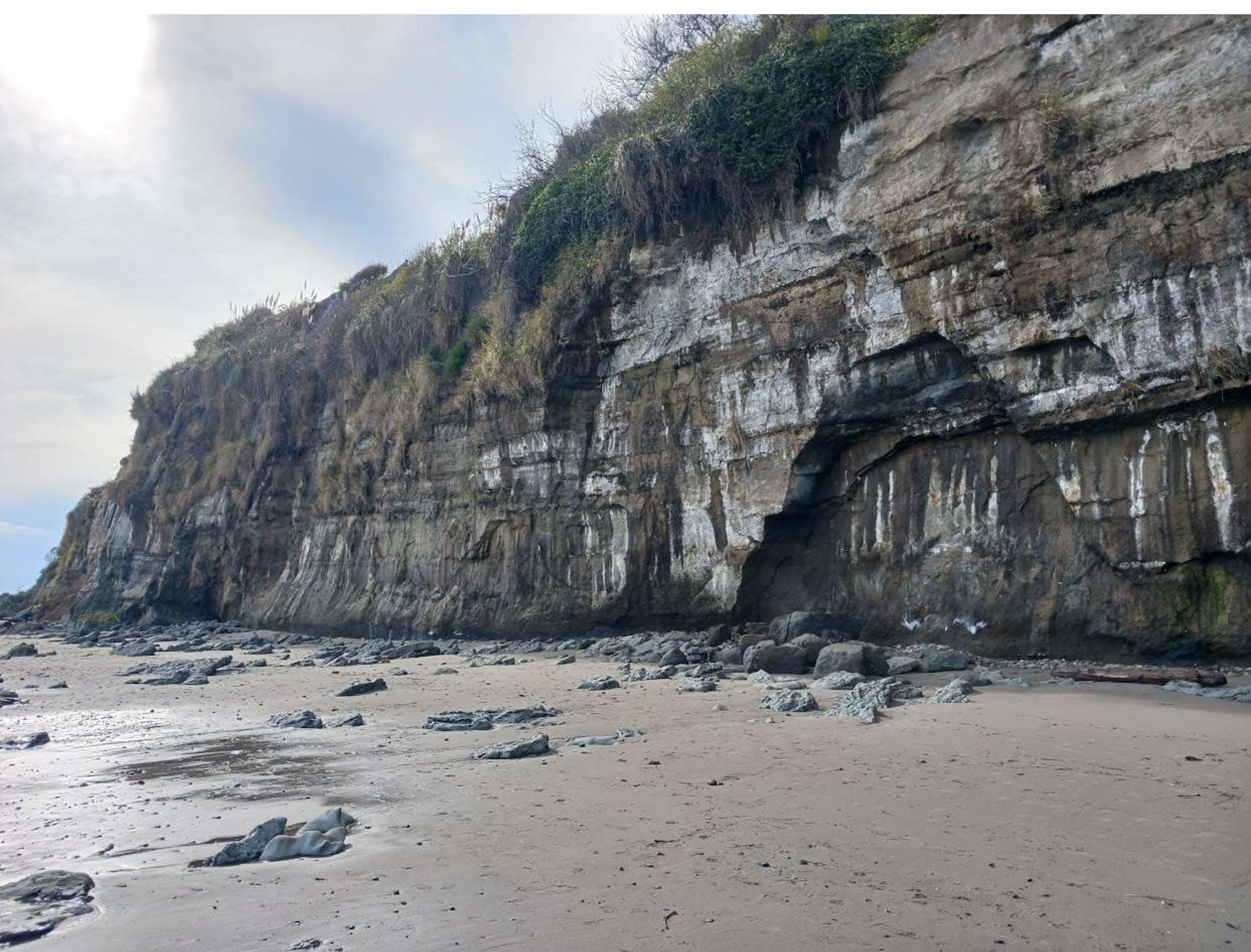




BASE PHOTO: Screen shot taken of "2023 04 04 Capitola Depot Hill and Explanade" by Misa Burich; drone video can be accessed at <https://www.youtube.com/watch?v=L15N3-GI5zM&t=1s>

 Pacific Crest ENGINEERING INC ANNOTATED APRIL 2023 SNAPSHOT OF COASTAL BLUFF City of Capitola Grand Avenue Footpath Between Saxon Ave. and Oakland Ave.	
Date: 8 June 2022	Revised:
Job #2381	
Scale: n/a	Plate 2
Drawn by: ENZ/enz	





Grand Avenue Pathway

Recent Developments



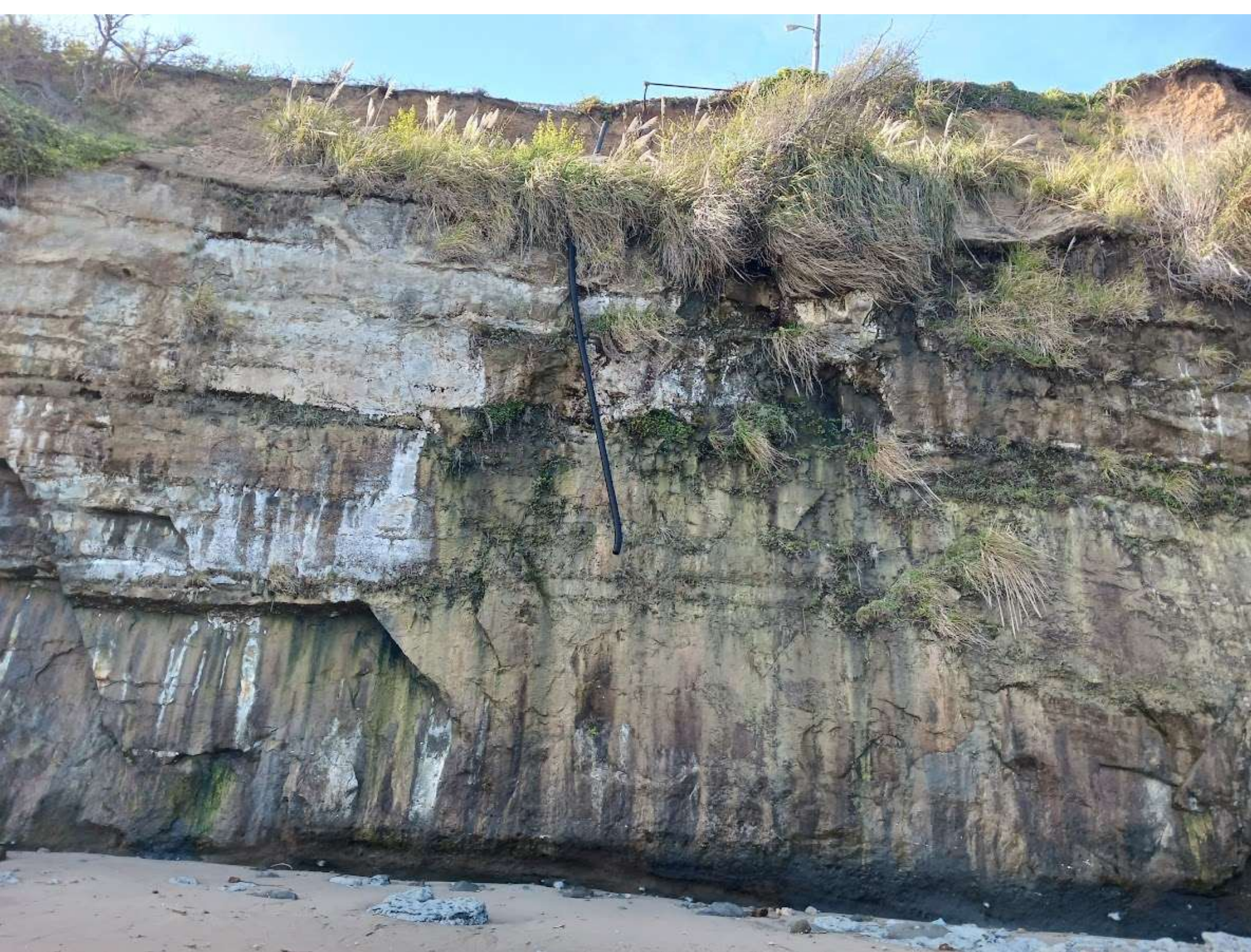
- February 2025: storms caused bluff failures between Saxon Avenue and Oakland Avenue.
- Undermined pedestrian path, damaged storm drain infrastructure
- Existing fencing, installed in 2023, remains but is no longer secure or safe

Grand Avenue Pathway

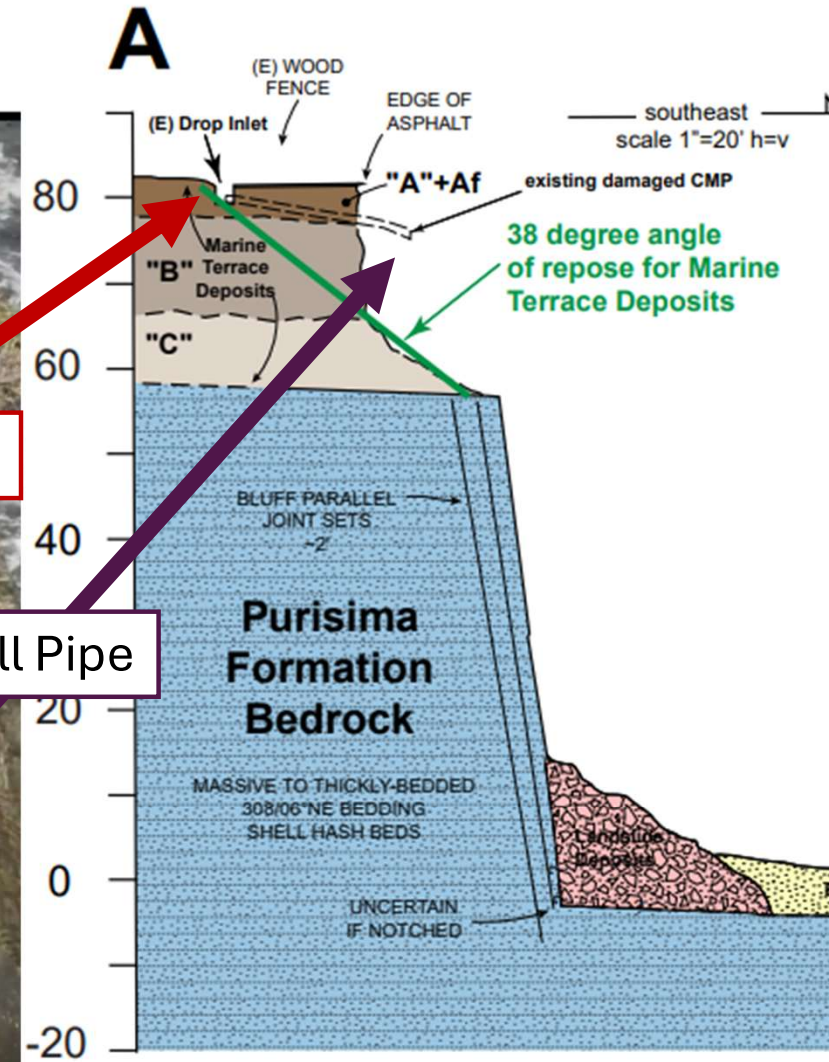
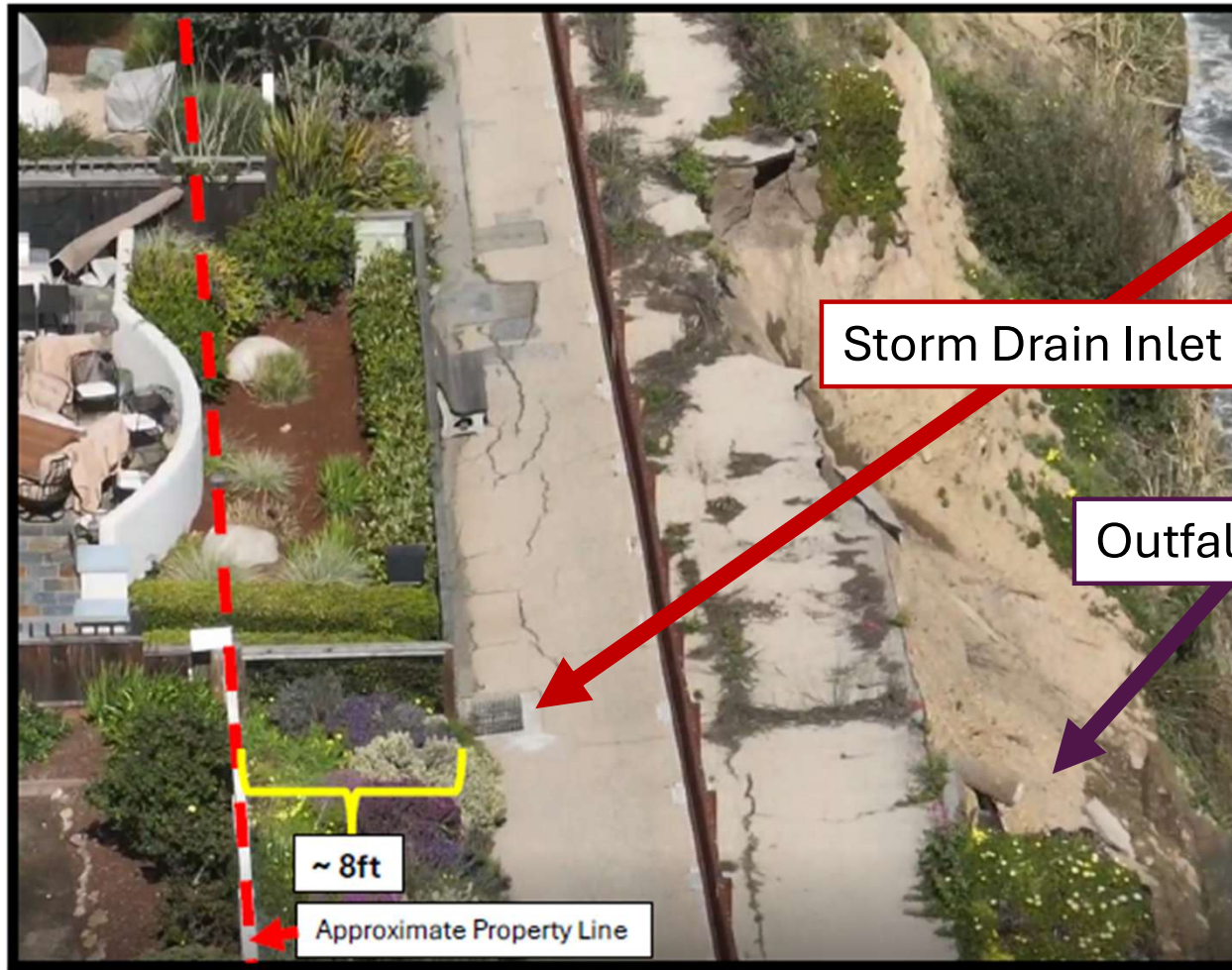
Constrained Spaces and Challenges



- Pathway is situated atop a narrow bluff (limited space for relocation)
- Encroachments from adjacent private properties further restrict available space



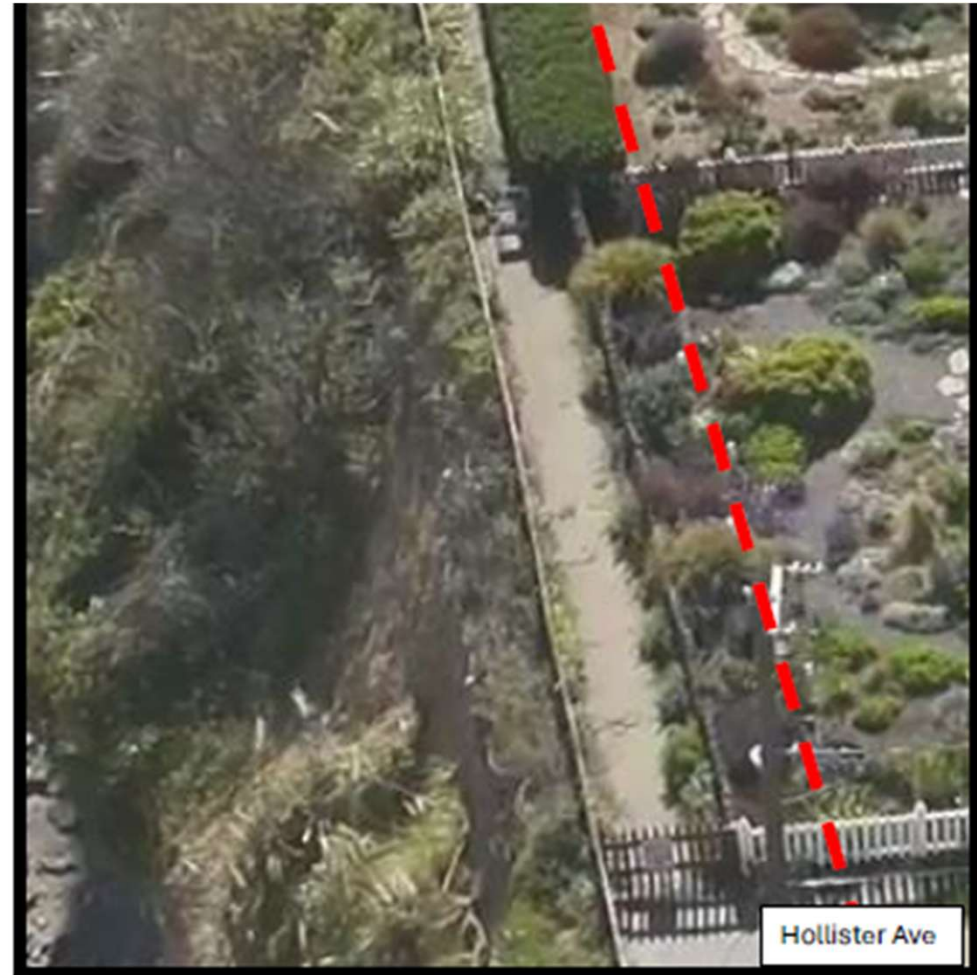
Grand Avenue Pathway Saxon Avenue to Oakland Avenue



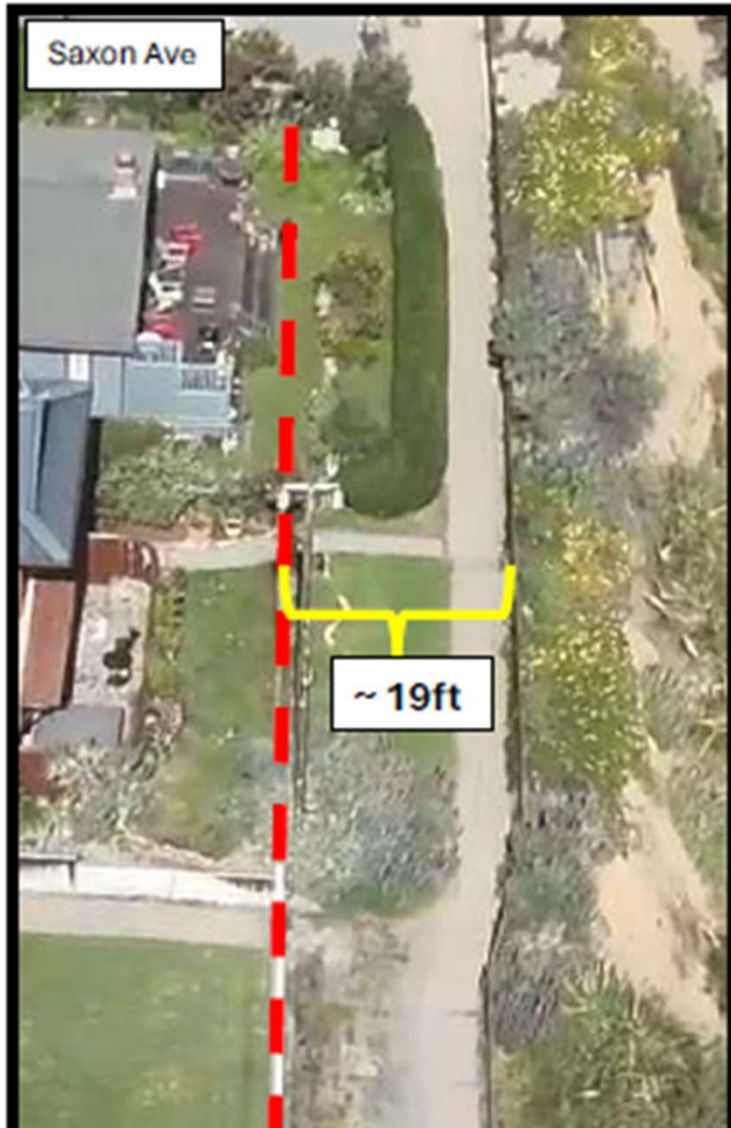
Expected failure 1-6 years

Grand Avenue Pathway

Oakland Avenue to Hollister Avenue



Grand Avenue Pathway Central Avenue to Saxon Avenue



Grand Avenue Pathway

Challenges with Relocating the Path Inland



Requires Engineering Design

- Drainage, slope stability, and safe pathway alignment.
- Engineering recommendations would include slope stabilization

Without Stabilization or Reinforcement

- 1 to ~6 year lifespan
- High failure risk
- Estimated Cost: hundreds of thousands
 - Drainage system reconstruction
 - Encroachment removal
 - Path grading
 - Extensive hand labor due to constrained site

Grand Avenue Pathway

Considerations for Engineered Pathway



Project Complexity

- Requires full engineering for drainage, slope, and safety
- Existing easements must be removed, presenting potential legal and logistical issues

Cost Estimate – Stabilization and Path

- Industry input indicates **multi-million-dollar** costs due to constrained site, specialized labor, and drainage design

Lifespan

- Even if built to current standards, the path may last only 10–20 years without full slope stabilization, due to ongoing natural bluff erosion

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Other Alternatives



Permanent Closure

- Close the pathway at Saxon Avenue (as done in 2017)
- Drainage improvements
- Would require a Coastal Development Permit
 - Potential mitigation
 - Could be appealed
- Costs in the \$100k range, depending on mitigation

Bluff Stabilization

- Revisit options like undercut filling, groins, or seawalls (e.g., 2018 Ad Hoc proposals)
- Potentially prohibitively high cost, permits, and environmental impacts

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Summary of Pathway Alternatives



Option	Estimated Cost	Lifespan	Key Challenges
Permanent Closure	Low - Moderate (staff time + permit + drainage/mitigation)	N/A	Loss of access, Coastal Development Permit (CDP) required, plaques
Relocate Without Engineering	Moderate (hundreds of thousands)	1 – ~6 years	High failure risk, CDP, no reinforcements, limited benefit
Relocate With Engineering	High (millions)	10–20 years	Requires design, CDP, drainage, easement removals, hand labor
Bluff Stabilization	Very High (many millions)	Long-term (if feasible)	Regulatory hurdles, environmental impacts, major permits (CDP+)