Haley & Aldrich Geotech Repair Summary- Bolinas Highlands Roads

The Bottom Line

- Cliff Avenue is currently closed at the failure site — about 3 feet of pavement is gone, and only ~7 feet of road width remains, too narrow for normal traffic and a problem for emergency vehicles. There is mud and debris that slid under the pavement to the downhill property.
- Additionally, two spots on Altura Avenue are deeply cracked, though haven't collapsed yet. Engineers expect them to worsen without timely drainage fixes.
- Haley & Aldrich (H&A) recommends a specific repair for Cliff Avenue — a concrete pier and block retaining wall — estimated at roughly $556,700 including contingency, likely $592,000–$779,000 once other known costs are added (estimated breakdown below). This does not include design or permitting fees.
- **They want this built before winter storms arrive, since rain is what's driving the failures.**

Why This Is Happening

The roads sit on a steep hillside made of a rock type already known to be landslide-prone. On top of that:

- The roads were built on loose, unanchored "push-fill" dirt — material dug out during original construction and pushed over the downhill edge, seemingly not properly compacted.
- Water is the main trigger. Drainage from homes above often flows straight onto the slope. When the loose fill gets saturated, it loses strength.
- The whole hillside is slowly creeping downhill under gravity, even without a major storm.
- The site is about 0.6 km from the San Andreas Fault, so earthquake shaking is a long-term design factor, though liquefaction risk is low.

The Three Problem Areas

1. **Cliff Avenue (urgent)**
   A 30-foot-wide, 8–10-foot-deep landslide has taken out the outer 3 feet of pavement above 65 Brighton Avenue and dumped debris onto the property below. The road is currently closed at this spot.

2. **Altura Avenue near 66 Altura Avenue**
   An 18-inch scarp has eaten 6–8 inches off the pavement edge. Not blocking the road yet, but expected to keep getting worse.

3. **Altura Avenue below 28/30 Cresente Avenue (timely)**
   Cracking extends to the road centerline at two spots. Not a collapse yet, but flagged as a warning sign needing timely drainage work.

Recommended Repair for Cliff Avenue

H&A compared three wall-based repair options (an embankment repair was ruled out as too risky to attempt late in the year):

A. Soldier pile wall with lightweight backfill
Requires hauling material off-site and importing lightweight fill; may need a second row of piles. Costs can balloon.

B. Soldier pile wall with cable tiebacks
Needs a specialty contractor; anchor testing and curing adds 3–4 weeks.

C. Concrete pier wall + block wall — RECOMMENDED
Concrete piers into bedrock, topped with a beam, then a stacked block wall, backfilled with properly compacted fill. Uses common, readily available materials (no specialty subcontractor needed), and is more resistant to the corrosive coastal air.

Cost Breakdown — Cliff Avenue Repair (Option C)

Conceptual estimate based on a comparable 2023 repair — not a contractor bid.

7 concrete piles (30" diameter, 20 ft deep)	$140,000
Grade beam (40 ft)	$75,000
Segmental block wall facing (400 sf)	$84,000
Excavation and backfill	$96,300
Guard rail (40 ft)	$20,000
New pavement section	$44,900
Mobilization (10%)	$45,900
Construction subtotal	**$506,100**
+ 20% contingency (H&A-recommended)	$50,600
Construction total with contingency	**$556,700**

Additional costs the report flags but does not total into the estimate:

Access / protection of property below repair	$10,000 – $20,000
Construction oversight & testing (5–40% of $506,100)	$25,300 – $202,400
Final design, permitting, engineer's estimate	Not yet quantified

Realistic all-in range (excluding the unquantified design/permit fees): **roughly $592,000 – $779,000**

Timeline

All three repair options were designed to be buildable before the 2026 winter storm season, since rain is the main driver of the failures. Some approaches could be partially completed this year and finished in 2027 if needed. The two Altura Avenue spots are lower urgency than Cliff Avenue but still flagged "high priority — as soon as feasible."

Worth Flagging

This report is not an independent second opinion. Its design assumptions, materials, and cost estimate are built around H&A's own recommended approach, and the report anticipates H&A staying involved:

- Technical review of final construction plans by H&A
- Construction observation, billed time-and-expenses (est. 5–40% of construction cost)
- Final design, drawings, specs, and a detailed engineer's estimate all require a separate supplemental proposal from H&A — not yet scoped or priced

This is a common structure in geotechnical consulting — the firm that investigated the site is often best positioned to carry design forward. But the board should know explicitly: the next phase of work, and its cost, is not yet independently or competitively scoped.

Key Caveats (From the Report's Own Limitations Section)

- This is a preliminary report based on June 2026 field conditions — actual conditions could vary once construction starts.
- The cost estimate includes no design or permitting fees, and no contingency beyond the 20% H&A itself recommends.
- Hazardous materials at the site were not investigated — explicitly outside this report's scope.
- Corrosion testing was limited to two soil samples; H&A recommends a separate corrosion specialist before finalizing wall materials.