

Sept 5, 2016

SMC Harbor Commission (via email)

Re: Pillar Point Harbor West Trail Erosion Protection Design Alternatives, 9/7/16 Item #6

GHD Sept 2016 West Trail Repair Reports reference and rely on previous work under GHD contract for the Harbor District, specifically: *Geotechnical Assessment, Pillar Point Harbor West Trail Erosion Repair by Fisher Geotechnical, April 2012.*

The 2012 Fisher Geotechnical Report includes lists of advantages and disadvantages of alternatives for erosion protection. Attached are the excerpted alternatives evaluation lists for riprap/rock slope protection (**RSP**) and for sculpted shotcrete soil-nail wall (**SNW**). Please note the long list of RSP disadvantages and the long list of SNW advantages. Many of these issues are not considered in the 2016 alternatives report, which relies instead on a deeply flawed evaluation matrix containing arbitrary numerical ratings that overlook or contradict the evaluation by Fisher Geotechnical.

- **Cost** differential between RSP and SNW may be exaggerated due to omission of damage caused by repeated heavy loads of boulders and equipment accessing the trail and the shoreline. Also, Midcoast Community Council recommends that *“beach nourishment and public access be given highest priority in the strategic plan, and that in weighing project cost effectiveness, consideration be given to the public fund of property taxes which is the source of over half of District revenues.”* (9/10/2013 letter to Harbor Commission)
- **Environmental impacts** are not considered, such as the life thriving in the intertidal area along the trail that will be obliterated during trenching and placement of RSP.
- **Aesthetic appearance** of RSP is drastically over-rated in the evaluation. The report includes no rendering or photo examples of colored/sculpted shotcrete wall. The public is familiar with and expects this aesthetic effort along our scenic highways. There are examples of it as shoreline protection in Pacifica and Santa Cruz. There is no way that a long beefy pile of imported quarried boulders on the beach rates as aesthetically equal to a sculpted wall conforming to the existing shoreline and colored/sculpted to blend with the natural bedrock of the site. There is no way that an untried effort to grow plants in the RSP rates 25% higher aesthetically than SNW or beach nourishment.
- **Schedule:** Considering the District first contracted with GHD on this project in early 2012, why is the potential for project acceptance within a year given as much weight as aesthetics? A little more time for a better project would be worthwhile at this point.
- **Permitting & Technical Feasibility** evaluations appear contrary to the 2012 Fisher report. Consider also that public preference of SNW over RSP may avoid delays in permit approval.
- **Accessibility** (ADA & public safety impacts) category is duplicative and just another opportunity to award 100% to RSP for no apparent reason.

Midcoast Community Council 8/24/2016 letter to Harbor Commission: *“If beach nourishment is determined to be infeasible for West Shoreline Trail erosion protection, and hard armoring is deemed necessary, the Midcoast community prefers the contoured/colored shotcrete soil-nail wall alternative in this location.”*

Sincerely,
Lisa Ketcham
Moss Beach, CA

Geotechnical Assessment, Pillar Point Harbor West Trail Erosion Repair
Fisher Geotechnical (April 2012)
(excerpt from pp. 6-8)

Riprap (rock slope protection)

Advantages

- Aesthetically neutral, similar to existing breakwater.
- Potentially aesthetically pleasing, if voids are filled with soil and planted with vegetation, providing it is allowed by permits.

Disadvantages

- Excavation of the bedrock outcrop at 6+85 to 7+ 15 may be required to provide a stable revetment (open ends are more susceptible to movement by wave action).
- Access for excavation and hauling equipment will be most likely from the shoreline because the trail will not support the repeated heavy loads of hauling equipment. Equipment access from the trail to the shore will require damaging existing vegetation and the small bank. Existing trail segment from parking area to shore will sustain more damage from this alternative than from other alternatives. Protective measures such as cribbing could be undertaken to reduce or prevent trail damage; however, subgrade repair and reconstruction of the trail surface may be more cost effective.
- Culvert at 6+00 will require extension to provide an outlet beyond the riprap.
- Pipeline at 7+80 to 8+00 will require protection prior to placing riprap over it.
- Riprap will extend horizontally as much as 15 to 18 feet east of the top of bank (for the highest bank sections), will require excavation and rock placement within the tidal zone, and may be subject to permit restrictions.
- Riprap is subject to movement under storm wave impact and future maintenance of riprap and backfill may be required.
- High level of disturbance to adjacent areas.

Shotcrete and soil nail wall

Advantages

- Aesthetically pleasing, wide variety of options for wall surfaces including smooth, textured, or sculpted patterns, such as mimicking on-site bedrock.
- Alignment conforms to existing bank easily.
- Can be designed and constructed to span over the existing pipeline, if desired.
- Wall ends conform well with existing bank.
- Relatively small equipment can be used and can operate from existing trail.
- Very quick construction time.
- No backfill required.
- Least disruptive to shoreline and adjacent areas.
- Less future backfill maintenance after storm wave impact.
- Repaired with less difficulty than other alternatives.
- Low to moderate cost depending on surface sculpting, texturing, and coloring.

Disadvantages

- Wall is slightly more costly if constructed away from the bank (using formwork) to avoid the existing pipeline (7+80 to 8+00). Some backfill would also be required.
- Shotcrete placement in a marine environment could be subject to permit restrictions.



Natural bedrock at West Shoreline Trail –
a model for sculpted shotcrete soil-nail wall

Sculpted shotcrete soil-nail wall (outlined by black dashed line)
mimics shape and color of natural cliff.
Cowell Beach, Santa Cruz, 2004



Contoured concrete tie-back seawall with beach access stairs
Pleasure Point, Santa Cruz, 2011

