



December 6, 2017

AOAO Launani Valley Community Association  
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**RE: Geotechnical Report Summary for Hillside Stabilization at Streamside**

Trinity | ERD was retained by Associa Hawaii, on behalf of its client, Launani Valley Community Association (LVCA), to provide inspection, observation, analysis and design/construction services for the hillside stabilization at the Streamside Condominiums. The LVCA is a master association comprised of six individual condominium developments: Ridge, Gardens, Terraces, Woodcreek Crossing, Woodcreek and Streamside. The Streamside development is located furthest into the Launani Valley and adjacent to Waikakalaua Stream.

The soil nail testing was reported as complete by the contractor, Prometheus Builders, on October 04, 2017 and the field test data of the soil nail testing was forwarded to JPB Engineering for analysis. JPB Engineering provided a geotechnical report to LVCA and Trinity ERD on November 13, 2017.

The geotechnical report provides two recommendations to remedy the soil erosion on the hillside at the Streamside development. Both recommended systems are viable options for the AOAO to consider. Trinity | ERD has provide a summary description and a "rough" estimate on both systems below.

- I. The Geobrigg TECCO System combined with Geobrigg TECMAT utilizes a multi-system approach to aid in the erosion control of hillsides. Initially, the TECMAT is draped over the slope to protect from erosion and will aid in the re-vegetation of the hillside. Then the TECCO G45/2 high tensile steel wire is draped over the TECMAT. The entire system is held in place with the soil nails installed per the project specifications developed by JPB Engineering. The rough cost estimate to install the Geobrigg TECCO System is \$3,900,000. The Geobrigg TECCO system does not provide any warranties or specific life cycle time lines; however, it is reasonable to expect a 30 year service life as long as the slope remains stable.



Photograph 1 – Example of Geobrugg TECCO slope stabilization system in place

2. The “Concrete Face” method uses a reinforced gunite or shotcrete concrete system. A #10 galvanized steel mesh is installed against the hillside that is to be stabilized to minimize soil erosion from occurring behind the concrete face. Then a drainage system will be installed in horizontal lines along the midpoints of the soil nails to alleviate water from building up behind the concrete face. The concrete face will have a minimum compressive strength of 3,000 psi and reinforced with a 6”x6” welded galvanized steel mesh. The rough cost estimate to install the concrete face method is \$2,200,000. The concrete face method does not provide any warranties or specific life cycle time lines; however, it is reasonable to expect a 30 year service life as long as the slope remains stable.



Photograph 2 – Example of Concrete Face Hillside Stabilization



Although the TECCO Mesh method is more expensive in comparison with the Concrete Face method, re-vegetating the hillside in conjunction with the high-tension steel mesh would be the most effective method to stabilize the hillsides long term. The board would need to budget in landscaping of the vegetation on the hillside, but the regularly scheduled landscaping maintenance can also be used as a method of regular inspection of the stabilization system. The aesthetic appearance of the TECCO Mesh may also be more appealing to the unit owners in the long term.

Should you have any questions, please do not hesitate to call.

Sincerely,

TRINITY | ERD  
BUILDING SCIENCE RESEARCH | DESIGN | CONSULTATION

*Kevin Agliam*

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Associate Project Manager  
For the firm