

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-02-98, Phase I	2004	5	28

Slope Scaling Notes

1. The Contractor shall be responsible for protecting the highway and all appurtenances from damage resulting from the Contractor's activities. The Contractor shall be solely responsible for repairing any damage resulting from the clearing and/or other construction activities.
2. The Contractor shall protect the traffic on the highway from any rockfall hazards at all times during the Contractor's activities.
3. Prior to drilling the soil/rock anchors for the anchored wire mesh, the slope face shall be trimmed of vegetation and trees down to near the slope surface for proper installation of the anchored wire mesh system.
4. The slope face to receive the anchored wire mesh shall be hand scaled to remove loose and/or excess materials to expose a firm substrate on the slope face to the Engineer's satisfaction.
5. Protruding rock overhangs shall be trimmed to provide a smooth face to receive the anchored wire mesh to the Engineer's satisfaction.
6. The tops of all slopes shall be rounded to the specifications on the plans.
7. The Contractor shall exercise extra care in the hand scaling work and shall avoid over-steepening the slope face that may cause instability of the slope face. If during the slope scaling work, the Contractor encounters unstable slope conditions that may constitute a potential slide, immediately notify the Engineer.
8. Blocks of rock or debris that hang up on the slope during the slope scaling operations shall be removed upon completion of the first pass of slope scaling. The Contractor shall continue scaling of the slopes until the slope scaling has been completed to the satisfaction of the Engineer.
9. The Contractor shall sweep the highway clean of all debris at the end of each slope scaling shift before allowing traffic to pass. The Engineer will inspect the "cleaned up" highway prior to opening of the highway to the public on a daily basis.
10. The Contractor shall maintain equipment on-site at all times to remove debris from the highway to allow the passage of emergency vehicles in the event that emergency vehicles require passage through the project area along the highway during the lane closure times. The slope scaling activities shall be temporarily suspended to allow the passage of the emergency vehicles through the project area along the highway.

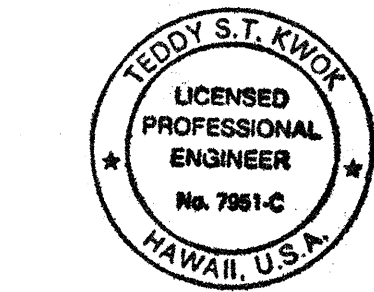
Anchored Wire Mesh System Materials

1. The anchored wire mesh system and all associated hardware, such as the high strength steel wire mesh, compression claws, and spike plates shall be powder coated with a black pigment or other color as directed by the Engineer. Boundary wire ropes shall be PVC coated (color shall be black unless directed otherwise by the Engineer). All other exposed steel elements shall be painted with a black colored rubberized paint.
2. The high strength steel wire mesh shall be galvanized with a 95% Zinc/5% Aluminum coating. Boundary wire rope, and grouted soil and/or rock anchors (including the steel reinforcing bar for the grouted anchor, wire rope, heavy duty wire rope thimbles, wire rope clips (cable clamps), etc.) shall be hot dipped galvanized in accordance with Subsection 712.10 - Zinc Coating of the Standard Specifications.
3. The saddle of the wire rope clip shall be placed on the live end of the wire rope cable and the U-Bolt shall be placed on the dead end of the wire rope cable.
4. The Contractor shall follow the boundary wire rope manufacturer's recommendation for the spacing of the wire rope clips and torque for the U-Bolts.
5. The torque on 10 % of the wire rope clips shall be checked after loading in the presence of the Engineer.
6. The grouted soil and/or rock anchors shall have an ultimate pullout capacity of 5 tons (10 kips). The Contractor shall test a minimum of 10 soil and/or rock anchors for pullout to ultimate pullout capacity in accordance with the specifications.
7. The steel wire mesh for the anchored wire mesh system shall be manufactured from 3 mm diameter high-tensile steel wire. The high-tensile steel wire shall have a minimum tensile strength of 256,000 psi.
8. The grouted soil and/or rock anchors shall consist of a 1.25-inch diameter (32-mm diameter) high-strength reinforcing bar installed in a minimum 3.5-inch diameter drilled hole filled with grout and/or epoxy resin. The grout and/or epoxy resin shall be non-shrink and shall have a minimum unconfined compressive strength of 4,000 psi or greater.
9. Reinforcing bar shall be positioned in the center of drilled hole with equal grout cover around bar.
10. The Contractor shall submit shop drawings, technical data, catalog cuts, and other information for the Anchored Wire Mesh System to the Engineer within one week after contract award. Submittal shall be in accordance with Special Provision 672.03.

Anchored Wire Mesh Construction Sequence

1. Trim slope face of vegetation, loose materials and protruding rock outcrops.
2. Stake out grouted soil and/or rock anchors in general accordance with the project spacing requirements taking into account the low spots.
3. Excavation of the dell for pre-tensioning of the anchored wire mesh before drilling the grouted soil and/or rock anchors.
4. Installation of the grouted soil and/or rock anchors (anchor heads shall not project above the terrain line or predominant slope line).
5. Lay the steel wire mesh panels on the slope.
6. Joining or seaming the steel wire mesh panels together.
7. Fitting the boundary wire ropes around the perimeter of the anchored wire mesh system.
8. Installation of the spike plates and pre-tensioning with torque wrench or hydraulic press to the specified forces.
9. Hydromulch all exposed cut slope areas after mesh installation.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
No.	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	



THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION.

Teddy S.T. Kwok

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
GEOTECHNICAL NOTES
ROUTE 360 HANA HIGHWAY ROCKFALL MITIGATION, PHASE-I MILE POST 11.05 TO 11.31 Project No. 360AB-02-98, Phase I
Scale: Date: May 2004
SHEET No. 5 OF 28 SHEETS