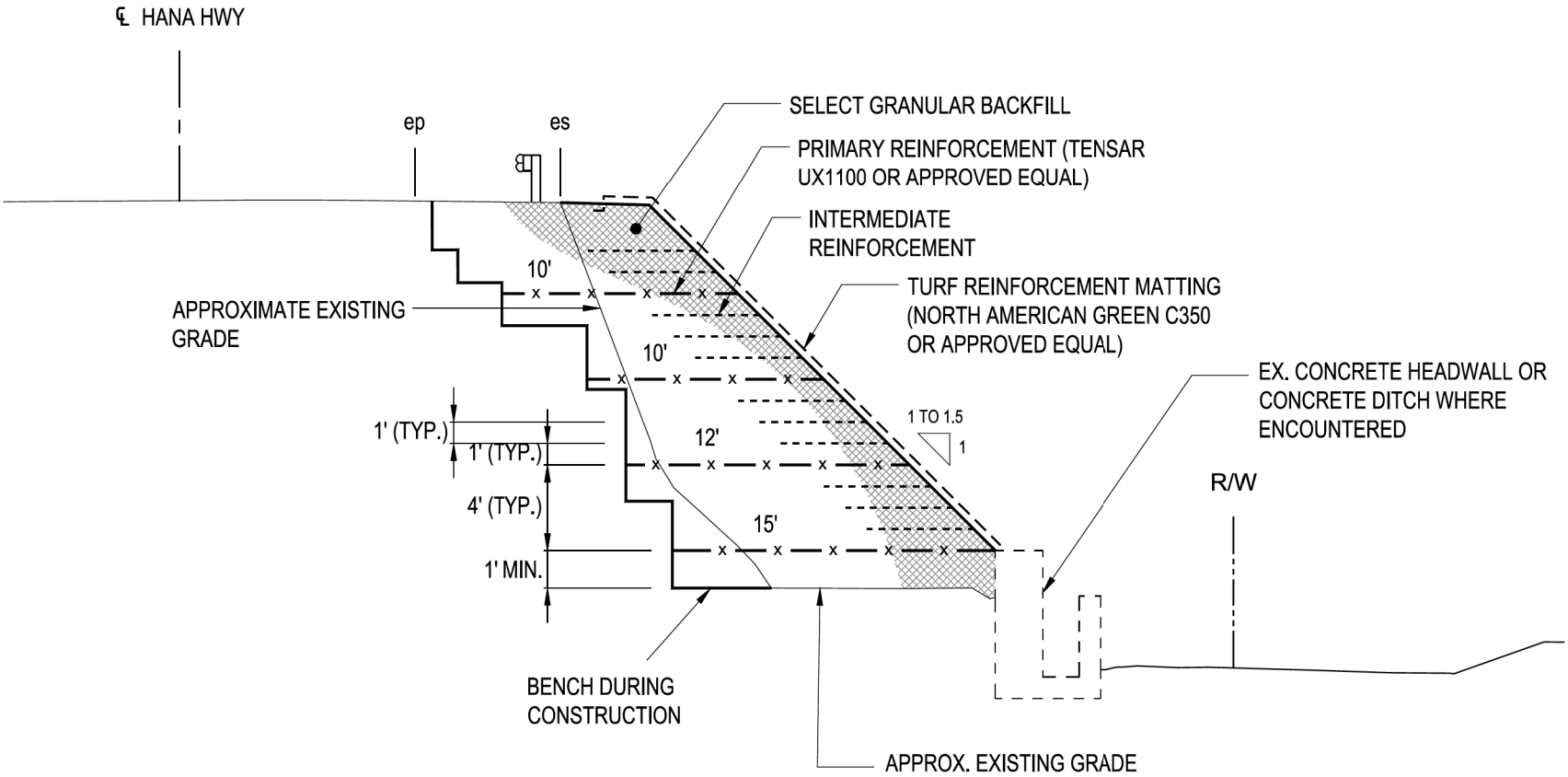


FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	36C-01-22M	2022	13	14

NOTES:

- Slope repair improvements shall be constructed according to the recommendations presented in the Geotechnical Engineering Exploration report (Geolabs, Inc; Aug. 12, 2022).
- The areas within the grading limits should be thoroughly cleared and grubbed. Vegetation, debris, deleterious materials, and other unsuitable materials should be removed and disposed of properly off-site. The soft/loose overcast materials in front and along the edges of the existing near-vertical slope should be removed to expose the firm in-situ soils.
- Existing irrigation lines extending under the highway are to remain in place, protect during construction (excavation, backfill and slope repair) operations.
- Prior to the placement of the embankment fills, the over-excavated subgrade should be scarified to a depth of at least 12 inches, moisture-conditioned to about 2 percent above the optimum moisture content, and recompacted to a minimum of 90 percent relative compaction.
- Soft and/or yielding areas encountered at the bottom of the over-excavation below areas designated to receive fill should be over-excavated to expose stiff and/or dense materials. The resulting excavation should be backfilled with well-compacted select granular fill materials. The excavated soft and/or organic soils should be disposed of properly off-site.
- Excavations for this project will generally consist of key and bench excavations for the new fills and proposed slope repairs. Care should be exercised not to over-excavate creating overhang and/or unsafe conditions. A support and shoring system should be used to adequately support the near vertical temporary key and bench excavations.
- Fill materials should consist of select granular fill or aggregate base course materials. Select granular fill materials should consist of non-expansive materials, such as crushed basalt or coral. The material should be well-graded from coarse to fine with particles no larger than 3 inches and contain between 10 and 30 percent particles passing the No. 200 sieve. Select granular fill materials should have an angle of internal friction of at least 36 degrees, when tested by the standard direct shear test (ASTM D3080).
- Geosynthetic reinforcement (Tensar UX1100 Geogrids or approved equal) shall be used for primary reinforcement to mechanically stabilize and reinforce the slope fill materials. Intermediate geogrid reinforcement (Tensar BX110 or approved equal) shall be placed between the primary reinforcement layers as shown (min. length of 5 feet and vertical spacing of 12 inches). As the slope is constructed, the horizontal layers of geogrids shall be placed in the compacted fill. Install the geosynthetic reinforcement according to the manufacturer's specifications and recommendations.
- Fills to be placed should be keyed into stiff natural material and benched into the existing slope to provide stability of the new fill materials against sliding. The filling operations should start at the lowest point and continue up in level horizontal compacted layers. Fill slopes should be constructed by overfilling and cutting back to the design slope ratio to obtain a well-compacted slope face. Fill materials should be placed in level lifts not exceeding 8 inches in loose thickness, moisture-conditioned to above the optimum moisture content and compacted to at least 90 percent relative compaction (ASTM D1557).
- Slope planting and turf reinforcement matting (North American Green C350 or approved equal) should be provided as soon as the fill slope is completed. The slope face should be properly graded and compacted prior to placing the matting. Anchor trenches should be installed to anchor matting ends. The anchor trenches should be properly backfilled and compacted to 90 percent relative compaction. The turf reinforcement matting may be anchored at the overlaps by metal staples. Wood anchors (pegs or stakes) extending above the ground surface should not be allowed.
- Refer to the Roadway & Pavement Marking Plan (Sheet 14) for the installation of roadway shoulder AC paving, striping, and new guardrails.



**TYPICAL SECTION -
REINFORCED SOIL SLOPE**
NOT TO SCALE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL REPAIR SECTION
HANA HIGHWAY
EMERGENCY SLOPE REPAIRS
Vicinity of West Kuiaha Road Intersection
Project No. 36C-01-22M
Date: October, 2022

SHEET No. 1 OF 1 SHEETS

Source:
Plate 3 (Typical Section - Reinforced Soil Slope) from the "Geotechnical Engineering Exploration Hana Highway Emergency Slope Repairs Vicinity of West Kuiaha Road Intersection" report (Aug. 12, 2022).

SURVEY PLOTTED BY	DATE
DRAWN BY	10/22
DESIGNED BY	
NOTED BY	
QUANTITIES BY	
CHECKED BY	

ORIGINAL PLAN	NOTE BOOK
mei,jay	mei,jay
mei,jay	mei,jay