FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MAUI	HAW.	ER-25(001)	2023	24	34

General:

A. Workmanship and materials shall conform to the AASHTO LRFD bridge Design Specification, 9th edition (including most recent interims), AASHTO LRFD bridge construction specification, 4th edition (including most recent interims), and the Hawaii Standard Specifications for Road and Bridge Construction (2005 edition), and all applicable special provisions by the State of Hawaii Department of Transportation.
B. The contractor shall compare all the contract documents with each other and report in writing to the engineer all inconsistencies and omissions.
C. The contractor shall take field measurements and verify field conditions and shall compare such field measurements and conditions with the drawings before commencing work. Report in writing to the engineer all inconsistencies and omissions.
D. The contractor shall be responsible for coordinating the work of all trades.
E. The contractor shall be responsible for means and methods of construction, workmanship and job safety.
F. The contractor shall provide temporary shoring and bracing as required for stability of structural members and systems.
G. Construction loading shall not exceed design live load unless special shoring is provided. Permitted construction loads shall be properly reduced in areas where the structure has not attained full design strength.
H. The contractor shall be responsible for protection of the adjacent properties, structures, streets and utilities during the construction period. Any damaged or deteriorated property shall be restored to the condition prior to the beginning of work or better at no cost to the State.
I. Details noted as typical on the structural drawings shall apply in all conditions unless specifically shown or noted otherwise.
J. A licensed geotechnical engineer in the state of Hawaii, hired by the contractor, shall monitor all excavation and backfilling requirements.

Design Criteria:

A. Dead Load
Weight of all components of the structures, appurtenances attached thereto, and earth covers.
1. Unit Weight of Concrete ---------- 160 pcf
B. Live Load
1. Vehicular: HL-93
C. Seismic
0.2-second spectral response acceleration coefficient ---------- Ss = 0.587
1.0-second spectral response acceleration coefficient ---------- S_1 = 0.172
Horizontal peak ground acceleration coefficient ---------- PGA = 0.258
Site class ---------- C
Seismic design zone ---------- 2
D. Basic Wind Speed ---------- 105 MPH
E. Soil Properties
1. Bearing Pressure
a. Extreme Event Limit State ----------7,500 psf
b. Strength Limit State ----------3,750 psf
b. Service Limit State ---------- 2,500 psf
2. Coefficient of Friction
a. Extreme Event Limit State ----------0.46
b. Strength Limit State ---------- 0.39
3. Passive Earth Pressure
a. Extreme Event Limit State ---------- 360 pcf
b. Strength Limit State ----------180 pcf
4. Active (Level Backfill) Earth Pressure for Backfill
a. Walls Unrestrained Laterally---------- 40 pcf
b. Walls Restrained Laterally---------- 60 pcf

Design Criteria Continued:

5. Dynamic Lateral Earth Pressure
a. Walls ---------- 6.5 H^2
Where: H = Height of retained soil or backfill in feet

Geotechnical:

A. Foundation design is based on Geolabs Inc. Report Dated March 31, 2022.
B. Contractor shall provide design and installation of all cribbing, sheeting, and shoring necessary to preserve excavations and earth banks. Shoring shall conform to OSHA regulations.
C. Footings shall bear on undisturbed in-situ firm soils. Bottom of footings shall be compacted to provide a relatively firm and smooth bearing surface prior to placement of reinforcing steel and concrete. If soft and/or loose materials are encountered at the bottom of footing excavations, they shall be over-excavated to expose the underlying firm materials. The over-excavated area shall be backfilled with select granular material compacted to a minimum of 95% relative compaction per AASHTO T180 (ASTM D1557) or the footing bottom may be extended down to the underlying competent material. Contractor may substitute flowable concrete or the granular material upon approval from the engineer.
D. Excavations for structures and footings shall be approved by the licensed geotechnical engineer in State of Hawaii (provided by contractor) prior to placement of concrete and reinforcing.
E. Controlled low-strength material (CLSM) shall be in accordance with entire section 314 of the Hawaii Standard Specifications for Road and Bridge Construction, 2005 edition. The CLSM shall be placed as shown in the drawings or as approved by the engineer in writing.
F. Any unsuitable foundation material below the MSE wall volume, as determined by the engineer, shall be excavated and replaced with suitable material or otherwise stabilized as directed by the engineer.

Concrete:

A. Concrete construction shall conform to AASHTO bridge construction specifications.
B. Concrete shall be normal weight hard rock concrete and shall have 4000 psi minimum 28 day compressive strengths:
C. Concrete delivery tickets shall record all free water in the mix at batching plant, added for consistency by driver, and any additional request by contractor up to the maximum amount allowed by the mix design.
D. All inserts, anchor bolts, plates, and other items to be cast in the concrete shall be hot-dipped galvanized according to ASTM A153 unless otherwise noted.
E. Reinforcing bars, anchor bolts, inserts, and other items to be cast in the concrete shall be secured in position prior to placement of concrete.
F. Spacers shall be used to ensure minimum clearances and tolerances. If concrete spacer blocks are used they must be of the same strength of concrete used.

Reinforcing Steel:

A. Reinforcing steel shall be deformed bars conforming to ASTM A615, grade 60.
B. Reinforcing steel shall be spliced where indicated on plans. Provide lap splice length per AASHTO LRFD. Any longitudinal #4 bars in the slab that needs to be lapped for whatever reason should be lapped at least 18 inches or mechanically spliced.
C. Mechanical splice connectors shall develop in tension 125 percent of the specified minimum yield strength of reinforcing bars.
D. Minimum reinforcement bend diameters shall comply with AASHTO 5.10.2.3.

Wall Construction:

A. Retaining wall system shall be a MSE wall system with vertical concrete panel and steel strips connected to vertical concrete panels.
B. MSE wall system shall be designed and stamped by a license structural engineer in the State of Hawaii. Stamped drawings and calculations shall be reviewed and approved by the Engineer prior to construction. Calculations shall consider load transfer of guardrail to concrete panel wall.
C. Walls along curves will be achieved by a series of short chords to match the required radius.
D. For location and alignment of the MSE structures, see Civil.
E. Shop drawings shall show maximum applied bearing pressure at the foundation level.
F. Any operation equipment shall be kept a minimum distance of 3'-0" from the back face of the MSE wall panels.
G. CLSM backfill shall be placed not more than 2 feet thick layers. The MSE wall concrete panel shall be designed to resisted the loads for CLSM back fill.
H. The GRP in front of the wall shall be placed as soon as possible to prevent possible erosion and undermining of the leveling pad. Backfill shall be placed before wall construction exceeds a height of 20 feet.
I. It is the contractor's responsibility to determine the location of any guardrail posts behind the MSE wall panels. Prior to placement of the top layer of reinforcement, individual reinforcing may by skewed to avoid the post locations if authorized by the MSE wall company. Any damage done to the reinforcement shall be repaired by the contractor at the contractor's expense.
J. If existing or future structures, pipes, foundations, or guardrail posts whcih are within the MSE wall volume interfere with the normal placement of geostraps and specific direction has not been provided on the plans, the contractor shall notify the engineer to determine what course of action should be taken.
K. All detailing and checking of reinforcing steel for any cast in place concrete work is the responsibility of the contractor.
L. Top panels beneath cast-in-place coping shall have dowels protruding from their top edge.
M. The contractor is responsible for gradually deflecting upper reinforcement downward to avoid conflicts with paving and subgrade preparation. The contractor's shall be aware of situations where roadway superelevation and/or soil mixing are anticipated.
N. The contractor is responsible for controlling storm water drainage in the vicinity of the wall during construction. Storm water runoff is to be collected and discharged away from the wall and reinforced backfill.

Wall Construction Reinforcement:

The length of the reinforcement shown on the plans, measured from back face of panel, shall be determined by the MSE wall system engineer.

SAEID POURJALALI
LICENSED PROFESSIONAL ENGINEER
No. 11475-S
HAWAII, U.S.A.

LICENSE EXPIRES 4/30/24

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GENERAL NOTES

KEKAULIKE AVENUE, EMERGENCY REPAIRS
M.P. 8.2
FEDERAL-AID PROJECT NO. ER-25(001)
Scale: As Noted   Date: March 2023

SHEET No. 1 OF 1 SHEETS

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