

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-03-21, Phase 2	2022	12	46

GENERAL:

- A. Workmanship and materials shall conform to the State Building Code of Hawaii (IBC, 2018 edition as amended by the State of Hawaii). However, where reference is made to performance conforming to other standards the more stringent shall apply.
- 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 methods of construction, workmanship and job safety. The contractor shall provide temporary shoring and bracing as required for stability of structural members and systems.
- E. Construction loading shall not exceed design live load unless special shoring is provided. Allowable loads shall be reduced in areas where the structure has not attained full design strength.
- F. The contractor shall be responsible for protection of the adjacent properties, structures, streets and utilities during the construction period.
- G. Details noted as typical on the structural drawings shall apply in all conditions unless specifically shown or noted.
- H. The general contractor and his subcontractors must submit in writing any requests for modifications to the plans and specifications.

DESIGN CRITERIA:

- A. Risk category _____ II
- B. Seismic
- A. Seismic importance factor: _____ 1.00
- B. Mapped spectral response accelerations:
- A. S_s _____ 0.987
- B. S_1 _____ 0.253
- C. Spectral response coefficients
- a. S_{ds} _____ 0.727
- b. S_{d1} _____ 0.319
- D. Seismic design category: _____ D
- E. Basic seismic force resisting system:
- C. Wind
- A. Basic wind speed - 3 second gust _____ 140 mph
- B. Wind exposure category _____ C
- C. Ground elevation factor, K_e _____ 1.0
- D. Wind topographic factor, K_{zt} _____ 1.0
- E. Wind directionality factor, K_d _____ 0.85
- F. Internal pressure coefficient _____ 0.00
- D. Allowable foundation bearing capacities
- A. Dead load + live load _____ 2500 psf
- B. Dead load + live load + lateral load _____ 3300 psf

FOUNDATION:

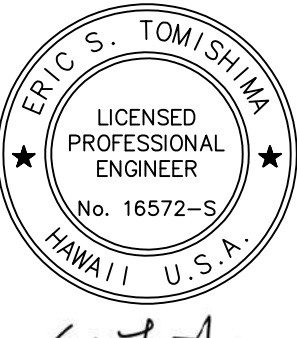
- A. Foundation design is based on geotechnical investigation by Kokua Geotech LLC and report dated August 7, 2020.
- B. Contractor shall provide for de-watering of excavation from surface water, ground water or seepage.
- C. Contractor shall provide for design and installation of all cribbing, sheeting, and shoring necessary to preserve excavations and earth banks.
- D. Footings shall bear on undisturbed in-situ firm soils or properly compacted structural fill. Structural fill shall consist of select granular material. Bottom of footings shall be compacted to provide a relatively firm and smooth bearing surface prior to placement of reinforcing steel and concrete. Bottom of footings shall be compacted to a minimum of 95% relative compaction.
- E. SITE AND SUBGRADE PREPARATION:
- A. At the on-set of earthwork, areas within the contact grading limits shall be cleared thoroughly. Surface vegetation, debris, deleterious materials, existing structures and pavements to be demolished, and other unsuitable materials shall be removed and disposed of properly off-site.
- B. After clearing and demolition, areas at grade or areas designated to receive fills shall be sacrificed to a depth of about 10 inches, moisture-conditioned to above the optimum moisture content, and compacted to a minimum of 90 percent relative compaction. Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density as determined by ASTM d1557. Optimum moisture is the water content (percentage by weight) corresponding to the maximum dry density.
- C. Soft and yielding areas encountered during clearing and subgrade preparation shall be over-excavated to expose firm material, and the resulting excavation shall be backfilled with well-compacted general fill. The excavated soft soils shall be properly disposed of off-site and/or used in landscape areas, where appropriate.

FOUNDATION (CONT'D):

- F. Excavations:
- A. All excavations shall be made in accordance with applicable occupational safety and health administration (OSHA) and state regulations. The contractor shall determine the method and equipment to be used for the excavations, subject to practical limits and safety considerations, in addition, the excavations shall comply with the applicable federal, state, and local safety requirements. the contractor shall be responsible for trench shoring design and installation.
- B. Based on the geotechnical engineer's report, excavations for the project will generally consist of excavations for foundation construction and utility installation. Based the borings, these excavations may encounter loose to medium sandy soils and stiff to very stiff sandy silt/clay. In addition, boulders and hard basalt rock formation bay be encountered in the planned excavations.
- C. It is anticipated that most of the material may be excavated with normal or heavy excavation equipment. However, deep excavations and excavations encountering boulders and hard basalt rock formation may require the use of hoerams. Contractors shall be encouraged to examine the site conditions and the subsurface data to make their own reasonable prudent interpretation.

SURVEY PLOTTED BY _____	DATE _____
DRAWN BY _____	DATE _____
DESIGNED BY _____	DATE _____
NOTED BY _____	DATE _____
CHECKED BY _____	DATE _____
IN CHARGE _____	DATE _____

SWMP: KAHULUI DISTRICT BASEYARD OFFICE EXPANSION # 6/22/2022 14467 PH



Eric S. Tomishima
LISCENSED PROFESSIONAL ENGINEER
No. 16572-S
HAWAII U.S.A.

Expiration date of License: 4/30/24

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**GENERAL NOTES-
STRUCTURAL**

MAUI DISTRICT BASEYARD OFFICE EXPANSION #

RENOVATION, PART 2

Project No. HWY-M-03-21, Phase 2

Scale: None Date: July 2022

FOUNDATIONS (CONT'D):

G. FILL/BACKFILL MATERIALS:

- A. In general, the excavated on-site soils may be re-used as a source for general fill provided they are free of vegetation, deleterious material, and rock fragments greater than 3 inches in maximum dimension.
- B. Imported fill materials, if requested, shall consist of non-expansive structural fill material, such as crushed coral or basalt. The structural fill shall be well-graded from coarse to fine with particles no larger than 3 inches in largest dimension. the material shall have a cbr value of 20 or higher and a swell potential of 1 percent or less when tested in accordance with ASTM D1883. The material shall also contain between 10 and 30 percent particles passing the no. 200 sieve.
- C. Aggregate base course and aggregate sub base materials shall consist of crushed basaltic aggregates and shall meet the requirements of sections 703.06 and 703.17, respectively, of the state of Hawaii, Standard Specifications for Road and Bridge Construction (2005). The geotechnical engineer shall test imported fill materials for conformance with these recommendations prior to delivery to the project site for the intended use.
- H. Fill/backfill compaction requirements:
- A. General fill and structural fill materials shall be moisture-conditioned to above the optimum moisture content, placed in level lifts not exceeding 8 inches in loose thickness, and compacted to a minimum of 90 percent relative compaction.
- B. Fills and backfills within 2 feet of the pavement grade elevation shall be compacted to a minimum of 95 percent relative compaction. Aggregate base and subbase course materials shall be placed in level lifts of about 8 inches in loose thickness, moisture-conditioned to above the optimum moisture, and compacted to at least 95 percent relative compaction.
- C. Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density of the same soil determined in accordance with ASTM D1557. Optimum moisture is the water content (percentage by dry weight) corresponding to the maximum dry density. Site grading operations shall be observed by a representative from the geotechnical engineer. It is important that a representative observe the site grading operations to evaluate whether undesirable materials are encountered during the subgrade preparation process and whether the exposed soil/rock conditions are similar to those encountered in the field exploration.
- D. The geotechnical engineer shall be retained to monitor the foundation excavations, site and subgrade preparation, fill and backfill placement, proof-rolling of pavement subgrade, aggregate base/subbase course placement and other aspects of earthwork construction to determine whether the recommendacons of the geotechnical report are followed. The recommendations provided in the geotechnical report are contingent upon such observations. If the actual exposed subsurface soil conditions encoutered during construction differ from those assumed or considred in this report, the geotechnical engineer shall be conacted to review and/or revise the recommendations of this section.

FOUNDATIONS (CONT'D):

CONCRETE:

- A. Concrete construction shall conform to American Concrete Institute ACI 318R-14.
- B. Concrete shall be regular weight hard rock concrete and shall have the following minimum 28 day compressive strengths:
- A. Mat foundation 4,000 psi
- B. Slabs on grade 4,000 psi
- C. All other concrete 3,000 psi
- C. Concrete delivery tickets shall record all free water in the mix: at batching by plant, for consistency by driver, and any additional request by contractor if permitted by the mix design.
- D. All inserts, anchor bolts, plates, and other items to be cast in the concrete shall be hot-dipped galvanized 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. Conduits, pipes, and sleeves passing through a slab or footing and not conforming to typical details shall be located and submitted to the engineer for approval.
- G. The contractor shall locate construction joints so as not to impair the strength of the structure and to minimize shrinkage stresses. submit location of construction joints to the engineer for approval, unless otherwise noted.
- H. See architectural drawings for chamfers, edge radii, drips, reglets, finishes and other non-structural items not shown or specified on the structural drawings.
- I. Non-shrink grout shall be a premixed non-metallic formula, capable of developing a minimum compressive strength of 3,000 psi in 1 day and 5,000 psi in 28 days.
- J. The engineer shall be notified at least 3 working days prior to any concrete pour. No concrete shall be poured prior to observation by the engineer or his representative.

FOUNDATIONS (CONT'D):

REINFORCING STEEL:

- A. Reinforcing steel (for normal use, not welded) shall be deformed bars conforming to ASTM A615, Grade 60.
- B. Welded wire fabric shall conform to ASTM A185, galvanized.
- C. Clear concrete cover for reinforcing bars shall be as follows, unless otherwise noted:
- A. Mat foundations, etc. cast against earth 3"
- B. Mat foundations, etc. formed and exposed to earth or weather 2"
- D. Clear distance between the surface of a bar and any surface of a masonry unit shall be not less than 1/2 inch, unless otherwise noted.
- E. Reinforcing steel shall be spliced where indicated on plans. provide lap splice length per typical details and schedule, unless otherwise noted.
- F. Bar laps shall be made away from points of maximum stress. unless noted otherwise, splices, laps, dowel extensions and embedments shall be 48 bar diameters, but not less than 24 inches. splices shall be staggered where possible.
- G. Unless otherwise noted, all horizontal reinforcing steel at wall and wall footing corners and intersections shall extend to the far face of the corner and hooked a length of 48 bar diameters, but not less than 24 inches, around the corner.
- H. Bar bends and hooks shall be "standard hooks" in accordance with ACI 318.
- I. Welding of reinforcing steel is not permitted.

EPOXIED ANCHOR INSTALLATIONS:

- A. Epoxy used for anchoring threaded rods and reinforcing steel into existing concrete shall be Hilti HIT-RE 500 V3 System, Simpson SET-3G System, Powers Pure 110+, or approved equal, and shall be installed per manufacturer's recommendations.
- B. Anchors shall be installed with the minimum embedment requirements as indicated on the drawings.

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ORIGINAL PLAN NOTE BOOK N.	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	DESIGNED BY	
	CHECKED BY	

SWMP 644HULLI DISTRICT HIGHWAY STRUCT LANE 6/22/2022 14467 FH

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GENERAL NOTES-
STRUCTURAL

MAUI DISTRICT BASEYARD OFFICE EXPANSION #

RENOVATION, PART 2

Project No. HWY-M-03-21, Phase 2

Scale: None Date: July 2022

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-M-03-21, Phase 2	2022	14	46

SPECIAL INSPECTION:

A. Contractor shall be responsible for ensuring that special inspection of portions of the work, as required by the building code of the State of Hawaii, is made at the appropriate time. The contractor shall give timely notice of when and where inspections are to be made and provide access for the inspector. The contractor shall correct defective work at no additional cost to the state and pay for re-inspection.

B. General: Where application is made for construction as described in this section, the contractor shall employ one or more special inspectors to provide inspections during construction on the types of work listed under IBC section 1704. The special inspector shall be a qualified person who shall demonstrate competence, to the satisfaction of the building official, for inspection of the particular type of construction or operation requiring special inspection. These inspections are in addition to the inspections specified in section 109.

1. Statement of special inspections. The permit applicant shall submit a statement of special inspections prepared by the registered design professional in responsible charge in accordance with section 106.I as a condition for permit issuance. this statement shall be in accordance with section 1705.
2. Report requirement. Special inspectors shall keep records of inspections. The special inspector shall furnish inspection reports to the building official, and to the registered design professional in responsible charge. Reports shall indicate that work inspected was done in conformance to approved construction documents. discrepancies shall be brought to the immediate attention of the contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the building official and to the registered design professional in responsible charge prior to the completion of that phase of the work. A final report documenting required special inspections and correction of any discrepancies noted in the inspections shall be submitted at a point in time agreed upon by the permit applicant and the building official prior to the start of work.
- C. CONCRETE CONSTRUCTION: The special inspections and verifications for concrete construction shall be as required by this section and IBC table 1705.3.
- D. Materials in the absence of sufficient data or documentation providing evidence of conformance to quality standards for materials in Chapter 3 of ACI 318, the building official shall require testing of materials in accordance with the appropriate standards and criteria for the material in chapter 3 of ACI 318. Weldability of reinforcement, except that which conforms to ASTM a 706, shall be determined in accordance with the requirements of section 3.5.2 of ACI 318.

- E. SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE:
Special inspections for seismic resistance are required for the following:
1. The seismic force-resisting systems in structures assigned to category c, d, e, or f as determined by IBC section 1613.
 2. Designated seismic systems in structures assigned to seismic category d, e, or f.
 3. Architectural, mechanical, and electrical components in structures assigned to seismic design category c, d, e, or f that are required in IBC sections 1707.7 and 1707.8.
 4. STRUCTURAL STEEL: continuous special inspection is required for structural welding in accordance with AISC 341 with the exception of the following:
 1. Single-pass fillet welds not exceeding 5/16 inch in size

F. SPECIAL CASES: Special inspections shall be required for proposed work that is, in the opinion of the Contracting Officer, unusual in its nature, such as, but not limited to, the following examples:

1. Construction materials and systems that are alternatives to materials and systems prescribed by this code.
2. Unusual design applications of materials described in this code.
3. Materials and systems required to be installed in accordance with additional manufacturer's instructions that prescribe requirements not contained in this code or in standards referenced by this code.

(Based on IBC Table 1705.3) Required Special Inspections and Tests of Concrete Construction				
Type	Continuous	Periodic	Referenced Standard	IBC Reference
1. Inspect reinforcement, including prestressing tendons, and verify placement	—	X	ACI 318: Ch. 20, 25.2, 25.3, 26.6.1-26.6.3	1908.4
2. Inspect anchors cast in concrete:	—	X	ACI 318: 17.8.2	—
3. Inspect anchors post-installed in hardened concrete members ^b A. Adhesive anchors in horizontally or upwardly inclined orientations to resist sustained tension loads B. Mechanical anchors and adhesive anchors not defined in 4.a	X	X	ACI 318: 17.8.2.4 ACI 318: 17.8.2	—
4. Verify use of required design mix	—	X	ACI 318: Ch.19, 26.4.3, 26.4.4	1904.1, 1904.2 1908.2, 1908.3
5. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of concrete	X	—	ASTM C172 ASTM C31 ACI 318: 26.5, 26.12	1908.10
6. Inspect concrete placement for proper application techniques	X	—	ACI 318: 26.5	1908.6, 1908.7, 1908.8
7. Verify maintenance of specified curing temperature and techniques	—	X	ACI 318: 26.5.3-26.5.5	1908.9
8. Inspect formwork for shape, location and dimensions of the concrete member being formed	—	X	ACI 318: 26.11.1.2 (b)	—
a. Where applicable, see section 1705.12, special inspections for seismic resistance b. Specific requirements for special inspection shall be included in the research report for the anchor issued by an approved source in accordance with 17.8.2 in ACI 318, or other qualification procedures. Where specific requirements are not provided, special inspection requirements shall be specified by the registered design professional and shall be approved by the building official prior to the commencement of the work				

Conc Special Inspection Legend:

X indicates required inspections frequency required

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MAUI DISTRICT BASEYARD OFFICE EXPANSION #

RENOVATION, PART 2

Project No. HWY-M-03-21, Phase 2

Scale: None

Date: July 2022

SHEET No. S003 OF 6 SHEETS

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

SWMP-KAHULUI-BASEYARD-STRUCT-ENG-8-22-2022-14607.PW