

STRUCTURAL NOTES:

GENERAL:

1. WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE HAWAII STATE BUILDING CODE (AMENDED IBC, 2018 EDITION). HOWEVER, WHERE REFERENCE IS MADE TO PERFORMANCE CONFORMING TO OTHER STANDARDS THE MORE STRINGENT SHALL APPLY.
2. THE CONTRACTOR SHALL COMPARE ALL THE CONTRACT DOCUMENTS WITH EACH OTHER AND REPORT IN WRITING TO THE HARBORS DIVISION CONSTRUCTION ENGINEER ALL INCONSISTENCIES AND OMISSIONS.
3. 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 HARBORS DIVISION CONSTRUCTION ENGINEER ALL INCONSISTENCIES AND OMISSIONS.
4. THE CONTRACTOR SHALL RESOLVE ANY DISCREPANCIES AND QUESTIONS PRIOR TO THE START OF WORK. NO EXTRA PAYMENT SHALL BE ALLOWED ON ACCOUNT OF WORK MADE NECESSARY BY CONTRACTOR'S FAILURE TO VISIT THE SITE AND/OR FAILURE TO RESOLVE DISCREPANCIES AND QUESTIONS.
5. THE CONTRACTOR SHALL PROTECT ALL UTILITIES AND STRUCTURES IN AND ADJACENT TO THE PROJECT SITE. ANY DAMAGE SHALL BE REPAIRED TO THE SATISFACTION OF THE HARBORS DIVISION CONSTRUCTION ENGINEER AND PAID FOR BY THE CONTRACTOR.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK OF ALL TRADES.
7. 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.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF THE ADJACENT PROPERTIES, STRUCTURES, STREETS AND UTILITIES DURING THE CONSTRUCTION PERIOD.
9. NOTES AND DETAILS ON THE STRUCTURAL PLANS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. SHOULD THERE BE CONFLICTS BETWEEN THE REQUIREMENTS OF THE PLANS OR SPECIFICATIONS, THE MORE STRINGENT SHALL APPLY.

DESIGN CRITERIA:

1. DESIGN LIVE LOADS
a. ROOF 20 PSF
2. WIND
a. BASIC WIND SPEED=120 MPH
b. RISK CATEGORY II
c. WIND EXPOSURE D
d. TOPOGRAPHIC FACTOR $K_{zt}=1.0$
e. DIRECTIONALITY FACTOR $K_d=0.85$
f. INTERNAL PRESSURE COEFFICIENT $G_{CPI} = \pm 0.00$
3. SEISMIC
a. $S_{se}=1.500$
b. $S_1=0.600$
c. RISK CATEGORY II
d. SITE CLASS D
e. SEISMIC IMPORTANCE FACTOR $I_e=1.0$
f. SEISMIC DESIGN CATEGORY D
g. SEISMIC FORCE RESISTING SYSTEM: STEEL ORDINARY CANTILEVERED COLUMN SYSTEMS

SPECIAL INSPECTION:

1. THE FOLLOWING STRUCTURAL WORK REQUIRES SPECIAL INSPECTION IN ACCORDANCE WITH CHAPTER 17 OF THE IBC:
a. CONCRETE
b. BOLTS INSTALLED IN CONCRETE
c. REINFORCING STEEL
d. STRUCTURAL WELDING
e. HIGH STRENGTH BOLTING
2. CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT SPECIAL INSPECTION OF PORTIONS OF THE WORK, AS REQUIRED BY THE HAWAII STATE BUILDING CODE, BE 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.
3. CONTRACTOR SHALL PROVIDE THE NAME AND LICENSE OR CERTIFICATION NUMBER OF THE SPECIAL INSPECTOR PRIOR TO START OF WORK. A COPY OF THE INSPECTOR'S REPORT SHALL BE SUBMITTED TO THE HARBORS DIVISION CONSTRUCTION ENGINEER WITHIN 3 DAYS OF THE WORK PERFORMED. COST OF SPECIAL INSPECTION SHALL BE BORNE BY THE CONTRACTOR.

FOUNDATION:

1. FOUNDATION DESIGN IS BASED ON CHAPTER 18 OF THE INTERNATIONAL BUILDING CODE.
2. CONTRACTOR SHALL PROVIDE FOR DE-WATERING OF EXCAVATION FROM SURFACE WATER, GROUND WATER OR SEEPAGE.
3. CONTRACTOR SHALL PROVIDE FOR DESIGN AND INSTALLATION OF ALL UNDERPINNING, CRIBBING, SHEETING, AND SHORING NECESSARY TO PRESERVE EXCAVATIONS AND EARTH BANKS.
4. 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-EXCAVATION SHALL BE BACKFILLED WITH SELECT GRANULAR MATERIAL COMPACTED TO A MINIMUM OF 95% RELATIVE COMPACTION OR THE FOOTING BOTTOM MAY BE EXTENDED DOWN TO THE UNDERLYING COMPETENT MATERIAL.
5. EXCAVATIONS FOR FOOTINGS SHALL BE APPROVED BY THE HARBORS DIVISION CONSTRUCTION ENGINEER PRIOR TO PLACEMENT OF CONCRETE AND REINFORCING.
6. EXCAVATIONS SHALL BE PROPERLY BACKFILLED.
a. BACKFILL MATERIAL SHALL CONSIST OF SOIL WHICH IS FREE OF ORGANICS, EXPANSIVE CLAY AND DEBRIS. BACKFILL MATERIAL SHALL BE LESS THAN 3 INCHES IN GREATEST DIMENSION.
b. BACKFILL MATERIAL SHALL BE PLACED IN LIFTS NOT EXCEEDING 8 INCHES IN LOOSE THICKNESS.
c. EACH LAYER OF BACKFILL MATERIAL SHALL BE THOROUGHLY COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE ASTM D1557 TEST PROCEDURE.
7. DURING CONSTRUCTION, DRAINAGE SHALL BE PROVIDED TO MINIMIZE PONDING OF WATER ADJACENT TO OR ON FOUNDATION AND PAVEMENT AREAS. PONDING AREAS SHALL BE DRAINED IMMEDIATELY. ANY SUBGRADE SOIL THAT HAS BECOME SOFT DUE TO PONDING SHALL BE REMOVED TO FIRM MATERIAL AND REPLACED WITH COMPACTED STRUCTURAL FILL.
8. CONTRACTOR SHALL BRACE OR PROTECT ALL WALLS FROM LATERAL LOADS UNTIL ATTACHING SLABS ARE COMPLETELY IN PLACE AND HAVE ATTAINED THEIR FULL DESIGN STRENGTH.

CONCRETE:

1. CONCRETE CONSTRUCTION SHALL CONFORM TO AMERICAN CONCRETE INSTITUTE ACI 318-14.
2. CONCRETE SHALL BE REGULAR WEIGHT HARD ROCK CONCRETE AND SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 5,000 PSI. MIX SHALL INCLUDE CORTEC MCI-2005 NS MIGRATING CORROSION INHIBITING ADMIXTURE, OR APPROVED EQUAL.
3. MAXIMUM WATER TO CEMENTITIOUS MATERIALS RATIO SHALL BE 0.40.
4. 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.
5. ALL INSERTS, ANCHOR BOLTS, PLATES, AND OTHER ITEMS TO BE CAST IN THE CONCRETE SHALL BE HOT-DIPPED GALVANIZED UNLESS OTHERWISE NOTED.
6. REINFORCING BARS, ANCHOR BOLTS, INSERTS, AND OTHER ITEMS TO BE CAST IN THE CONCRETE SHALL BE SECURED IN POSITION PRIOR TO PLACEMENT OF CONCRETE.
7. CONDUITS, PIPES, AND SLEEVES PASSING THROUGH A SLAB OR FOOTING AND NOT CONFORMING TO TYPICAL DETAILS SHALL BE LOCATED AND SUBMITTED TO THE HARBORS DIVISION CONSTRUCTION ENGINEER FOR APPROVAL.
8. 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 HARBORS DIVISION CONSTRUCTION ENGINEER FOR APPROVAL, UNLESS OTHERWISE NOTED.
9. SEE ARCHITECTURAL DRAWINGS FOR CHAMFERS, EDGE RADI, DRIPS, REGLETS, FINISHES AND OTHER NON-STRUCTURAL ITEMS NOT SHOWN OR SPECIFIED ON THE STRUCTURAL DRAWINGS.
10. 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.

REINFORCING STEEL:



1. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60.
2. CLEAR CONCRETE COVER FOR REINFORCING BARS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:
a. FOOTINGS, ETC. CAST AGAINST EARTH 3"
b. FOOTINGS, ETC. FORMED AND EXPOSED TO EARTH OR WEATHER 2"
c. PEDESTALS
PRIMARY REINFORCEMENT, STIRRUPS, AND TIES 2"
3. REINFORCING STEEL SHALL BE SPLICED WHERE INDICATED ON PLANS. PROVIDE LAP SPLICE LENGTH OF 48 BAR DIAMETERS, UNLESS OTHERWISE NOTED.
4. BAR BENDS AND HOOKS SHALL BE "STANDARD HOOKS" IN ACCORDANCE WITH ACI 318.
5. TIE WIRE SHALL BE PLASTIC-COATED, STAINLESS STEEL, OR MADE OF DIELECTRIC OR OTHER ACCEPTABLE MATERIAL. ALL LOOSE REINFORCING STEEL SHALL BE SECURED WITH TIES AT ALL INTERSECTIONS WITH ADJACENT REINFORCING STEEL.

STRUCTURAL STEEL:

1. FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL OF STEEL CONSTRUCTION, FIFTEENTH EDITION.
2. STRUCTURAL STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE NOTED.
3. STEEL WIDE FLANGE SECTIONS SHALL CONFORM TO ASTM A992.
4. HIGH-STRENGTH STEEL PLATES SHALL CONFORM TO ASTM A572, GRADE 50.
5. HIGH-STRENGTH BOLTS SHALL CONFORM TO ASTM F3125, GRADE A325N, TYPE 1.
6. TENSION-CONTROL, HIGH-STRENGTH, BOLT-NUT-WASHER ASSEMBLIES SHALL CONFORM TO ASTM F3125, GRADE F1852, TYPE 1.
7. HEADED ANCHOR BOLTS SHALL CONFORM TO ASTM F1554, GRADE 55, GALVANIZED.
8. WELDS AND WELDING PROCEDURES SHALL CONFORM TO THE STRUCTURAL WELDING CODE AWS D1.1 OF THE AMERICAN WELDING SOCIETY.
9. WELDING SHALL BE PERFORMED BY WELDERS PREQUALIFIED FOR WELDING PROCEDURES TO BE USED.
10. WELDING ELECTRODES SHALL BE E70XX.
11. ALL STEEL SHALL BE SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A123, ASTM A153, AND ASTM F2329.
12. GALVANIZING REPAIR PAINT SHALL CONFORM WITH ASTM A780.
13. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE HARBORS DIVISION CONSTRUCTION ENGINEER FOR APPROVAL PRIOR TO FABRICATION. SHOP DRAWINGS SHALL CONTAIN DETAILS OF FABRICATION AND ERECTION. SHOP DRAWINGS SHALL NOT BE REPRODUCTIONS OF THE CONTRACT DRAWINGS.

STEEL DECK:

1. STEEL DECK AND ACCESSORIES SHALL BE OF THE TYPE AND GAGE CALLED FOR ON THE DRAWINGS.
2. STEEL DECK AND ACCESSORIES SHALL BE FORMED FROM STEEL SHEETS CONFORMING TO ASTM A653 SS GRADE 50 WITH G90 GALVANIZED COATING.
3. DECK SHALL BE THREE SPAN CONTINUOUS WHERE POSSIBLE. DO NOT LOCATE SINGLE SPANS AT EDGES OR CORNERS.
4. MINIMUM BEARING OF DECKING ON SUPPORTS SHALL BE 2 INCHES.
5. DECK FASTENERS SHALL BE HILTI X-R STAINLESS STEEL POWDER ACTUATED DECK FASTENERS AS MANUFACTURED BY HILTI, INC. OR APPROVED EQUAL. INSTALL PER MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS.
6. SCREWS SHALL BE STAINLESS STEEL SELF-DRILLING NO. 12 SCREWS. MINIMUM EDGE DISTANCE AND CENTER TO CENTER SPACING SHALL BE 3/4 INCH.

 <p>THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION</p>  <p>WKE ASSOCIATES LLC APRIL 10, 2024 EXPIRATION DATE OF LICENSE</p>						
	REV	DATE	DESCRIPTION		BY	APPROVED
	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HARBORS DIVISION					
	JOB TITLE REPAIR GUARD SHACK HILO HARBOR, HAWAII					
	SHEET TITLE STRUCTURAL NOTES					
DESIGNED BY: LL		CHECKED BY: DL		SHEET S-1		
DATE: FEB, 2023		JOB NUMBER		H.C. 50173		
SCALE: AS NOTED				12 of 22 SHEETS		