

ELECTRICAL GENERAL NOTES

1.

ALL EQUIPMENT, LIGHTING FIXTURES, CABLING AND MATERIAL SHALL CONFORM TO THE LATEST FAA REGULATIONS AND ADVISORY CIRCULARS.
2.

CONTRACTOR SHALL FIELD VERIFY THE DEPTH AND LOCATION OF ALL EXISTING UNDERGROUND UTILITIES, POWER, TELEPHONE, DRAINAGE PIPE LINES, FUEL LINES, ETC. PRIOR TO START OF WORK. ANY DAMAGE TO UTILITIES DUE TO CONTRACTORS ACTIVITIES SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE. CONTRACTOR SHALL CONTACT UTILITY COMPANIES TO LOCATE AND MARK LOCATIONS OF UTILITIES.
3.

EXISTING FAA DUCTS, CONDUITS OR UNDERGROUND CABLES NOT AFFECTED BY THE SCOPE OF THIS PROJECT, SHALL REMAIN IN SERVICE. FAA CABLE AND/OR CONDUIT DAMAGED AS A RESULT OF WORK BY THIS CONTRACTOR SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. ANY EXISTING AIRFIELD LIGHTING FIXTURE WHICH IS TO REMAIN, AND IS DAMAGED BY THE CONTRACTOR, SHALL BE REPLACED AT CONTRACTOR'S EXPENSE
4.

EXISTING EQUIPMENT IS SHOWN AT APPROXIMATE LOCATIONS. VERIFY EXACT LOCATIONS IN FIELD.
5.

THE LIMITS OF CONSTRUCTION AREA SHALL BE MARKED BY TEMPORARY LIGHTING IN ACCORDANCE WITH FAA STANDARDS TO DETER AIRCRAFT FROM ENTERING THE CONSTRUCTION AREA.
6.

NUMBERS ADJACENT TO EXISTING FIELD FIXTURES ON THE DRAWINGS ARE AIRPORT IDENTIFICATION NUMBERS FOR EACH FIXTURE. ALL NEW AND EXISTING AIRFIELD LIGHTING FIXTURES ALTERED BY THIS CONTRACT SHALL HAVE AN IDENTIFICATION NUMBER AS INDICATED ON THE DRAWINGS AND AS SPECIFIED.
7.

AIRFIELD LIGHTING IDENTIFIED FOR REPLACEMENT SHALL BE LED TO MATCH FAA FIXTURE TYPE AND COLOR OF REMOVED FIXTURE. FIXTURES SHALL BE INSTALLED WITH ISOLATION TRANSFORMER, SIZED PER MANUFACTURER'S RECOMMENDATION.
8.

SERIES AIRFIELD LIGHTING CIRCUITS AND ALL POWER CIRCUITS SHALL BE DE-ENERGIZED WHEN THEY ARE BEING ALTERED. SCHEDULE ALL DOWN-TIME WITH AIRPORT MAINTENANCE AND AIRPORT OPERATIONS. THE CONTRACTOR SHALL BE PREPARED TO ENERGIZE LIGHTS AND POWER AT THE REQUEST OF THE CONTROL TOWER AT ANY TIME.
9.

ALL CABLES FOR AIRFIELD LIGHTING, UNLESS OTHERWISE NOTED, SHALL BE PER FAA SPECIFICATION L-824, 5KV, #8 TYPE C CABLE. CONNECTORS SHALL BE PER FAA SPECIFICATION L-823.
10.

ALLOW FOR CABLE SLACK IN LIGHT BASES TO FACILITATE MAKING ALL CONNECTIONS ABOVE GRADE. 5' MINIMUM FOR 24" DEEP BASE CANS, 6' MINIMUM FOR 30" DEEP BASE CANS AND 8' MINIMUM FOR 36" DEEP BASE CANS.
11.

COORDINATE CONDUIT AND DUCT TRENCHING WITH NEW PCC CONSTRUCTION AND SHOULDER PAVING. CONTRACTOR SHALL NOT LEAVE EXCAVATIONS UNFILLED OR UNPROTECTED AFTER THE COMPLETION OF EACH WORK SHIFT.
12.

EXISTING PULLBOX, MANHOLE AND DUCT BANK INFORMATION SHOWN ON THESE DRAWINGS IS BASED UPON RECORD DRAWINGS AND SHALL BE VERIFIED PRIOR TO CONSTRUCTION.
13.

THE CONTRACTOR SHALL RESTORE ALL AIRFIELD LIGHTING SYSTEMS TO FULL OPERATION, OR TEMPORARY STATE, AT THE END OF EACH WORK SHIFT.
14.

ALL CONDUITS ENTERING PULL BOXES OR JUNCTION CANS SHALL BE TERMINATED IN END BELLS.
15.

CONTRACTOR SHALL CAREFULLY REMOVE EXISTING AIRFIELD LIGHTS AND GUIDANCE SIGNS AS INDICATED ON DEMOLITION DRAWINGS. ALL AIRFIELD LIGHTS AND SIGNS SHALL BE DELIVERED TO AIRPORT STORAGE YARD AS DIRECTED BY THE ENGINEER.
16.

ALL UNUSED OR SPARE CONDUITS/DUCTS SHALL BE PLUGGED AND TAGGED INSIDE PULL BOXES OR JUNCTION CANS, UNLESS OTHERWISE NOTED.
17.

IN CASE THE CONTRACTOR SELECTS TO FURNISH AND INSTALL AIRPORT LIGHTING EQUIPMENT REQUIRING ADDITIONAL WIRING, TRANSFORMERS, ADAPTERS, MOUNTINGS, ETC., TO THOSE SHOWN ON THE DRAWINGS AND/OR LISTED IN THE SPECIFICATIONS, ANY COST FOR THESE ITEMS MUST BE INCIDENTAL TO THE EQUIPMENT COST.
18.

THE CONTRACTOR-INSTALLED EQUIPMENT (INCLUDING FAA APPROVED) MUST NOT GENERATE ANY ELECTROMAGNETIC INTERFERENCE IN THE EXISTING AND/OR NEW COMMUNICATIONS, WEATHER, AIR NAVIGATION, AND AIR TRAFFIC CONTROL EQUIPMENT. ANY EQUIPMENT GENERATING SUCH INTERFERENCE MUST BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST WITH EQUIPMENT MEETING THE APPLICABLE SPECIFICATIONS AND NOT GENERATING ANY INTERFERENCE.
19.

ALL POWER AND CONTROL CIRCUIT CONDUCTORS MUST BE COPPER; ALUMINUM WILL NOT BE ACCEPTED. THIS INCLUDES WIRE, CABLE, BUSSES, TERMINALS, SWITCH/PANEL COMPONENTS, ETC.
20.

LOW VOLTAGE (600 V.) AND MEDIUM VOLTAGE (5000 V.) CONDUCTORS MUST BE INSTALLED IN SEPARATE WIREWAYS, EXCEPT WHERE 600V WIRE IS USED AS GROUND.
21.

NEATLY LACE WIRING IN DISTRIBUTION PANELS, WIREWAYS, SWITCHES AND PULL/JUNCTION BOXES.
22.

ALL STEEL CONDUITS, FITTINGS, NUTS, BOLTS, ETC., SHALL BE GALVANIZED.
23.

WRAP ALL PRIMARY AND SECONDARY POWER TRANSFORMER CONNECTIONS WITH SUFFICIENT LAYERS OF INSULATING TAPE FOR FULL VALUE OF CABLE INSULATION VOLTAGE.
24.

THE JOINTS OF ALL L-823 PRIMARY CONNECTORS MUST BE WRAPPED WITH TAPE AND COVERED WITH HEAT SHRINK TUBING AS DETAILED IN THE PLANS.
25.

THE CABLE ENTRANCE INTO THE FIELD ATTACHED L-823 CONNECTORS MUST BE ENCLOSED BY A HEAT-SHRINKABLE TUBING WITH CONTINUOUS INTERNAL ADHESIVE.
26.

THE ID OF THE PRIMARY L-823 FIELD ATTACHED CONNECTORS MUST MATCH THE CABLE ID TO PROVIDE A WATERTIGHT CABLE ENTRANCE. THIS ENTRANCE MUST BE ENCAPSULATED IN AND ELECTRICAL TAPE.
27.

L-823 TYPE 11, TWO-CONDUCTOR SECONDARY CONNECTOR MUST BE CLASS "A" (FACTORY MOLDED).
28.

THERE MUST BE NO SPLICES IN THE SECONDARY CABLE(S) WITHIN THE STEMS OF ELEVATED RUNWAY OR TAXIWAY EDGE LIGHTING FIXTURES, INCLUDING THE WIREWAYS LEADING TO TAXIWAY SIGNS.
29.

ELECTRICAL INSULATING GREASE MUST BE APPLIED WITHIN THE L-823, SECONDARY, TWO CONDUCTOR CONNECTORS TO PREVENT WATER ENTRANCE. THESE CONNECTORS MUST NOT BE TAPED.

30.

LOCATIONS OF ENDS OF ALL UNDERGROUND DUCTS MUST BE IDENTIFIED BY DUCT MARKERS.
31.

EACH NEW AIRFIELD LIGHTING CABLE SHALL BE TAGGED IN EACH PULLBOX, JUNCTION CAN, OR LIGHT BASE. EACH EXISTING AIRFIELD LIGHTING CABLE AFFECTED BY THE CURRENT PROJECT CONSTRUCTION SHALL BE TAGGED IN EACH PULLBOX, JUNCTION CAN OR LIGHT BASE. EACH TAG SHALL BE CLEARLY STAMPED WITH ¼-INCH HIGH LETTER TO INDICATE THE CIRCUIT NUMBER ON IT. THE TAGS SHALL BE SECURELY ATTACHED TO THE CABLE WITH MINIMUM NO. 14 AWG TW WIRE.
32.

THERE MUST BE NO SPLICES BETWEEN THE ISOLATION TRANSFORMERS. L-823 CONNECTORS ARE ALLOWED AT TRANSFORMER CONNECTIONS ONLY, UNLESS OTHERWISE SHOWN.
33.

GROUNDING CONDUCTORS SHALL BE INSTALLED IN ALL CONDUITS, RACEWAYS, UNDERGROUND PULL BOXES, JUNCTION CANS, LIGHT BASES AND TRANSFORMER HOUSINGS. SIZE OF CONDUCTOR SHALL BE IN ACCORDANCE WITH NEC ARTICLE 250 AND INSTALLED PER ARTICLE 250 EXCEPT FOR GROUND CONDUCTOR IN AIRFIELD LIGHTING CIRCUITS WHICH SHALL BE 1 #6 GREEN "THWN" INSULATED THROUGHOUT LIGHTING SYSTEM. IN THE EVENT THERE IS NO GROUND LUG IN ANY EXISTING BASE CAN AFFECTED BY WORK OF THIS CONTRACT, CONTRACTOR SHALL INSTALL NEW GROUND LUG AND CONNECT #6 GROUND CONDUCTOR.
34.

ALL GROUND CONNECTIONS TO GROUND RODS SHALL BE MADE WITH PRESSURE TYPE SOLDERLESS LUGS AND GROUND CLAMPS. SOLDERED OR BOLT AND WASHER TYPE CONNECTIONS ARE NOT ACCEPTABLE. CLEAN ALL METAL SURFACES BEFORE MAKING GROUND CONNECTIONS.
35.

TOPS OF GROUND RODS MUST BE 12 INCHES BELOW GRADE, EXCEPT IN PULLBOXES AND GROUND WELLS.
36.

ALL EXISTING ELEVATED AND IN-PAVEMENT RUNWAY GUARD LIGHTS AND FLASHER SENSING DEVICES WHICH ARE REMOVED DURING DEMOLITION WORK UNDER THIS PROJECT SHALL BE DELIVERED TO AIRPORT C&M.
37.

ALL BASE CANS FOR IN-PAVEMENT LIGHTS SHALL BE L868, CLASS 1, STEEL 12" DIA. ALL BASE CANS SHALL HAVE LOAD RINGS ON EXTERIOR. ALL BASE CANS FOR ELEVATED LIGHTS AND SIGNS SHALL BE L-867, CLASS 1, STEEL 12" DIA. BASE CAN DEPTHS VARY DEPENDING ON PAVING SECTION. SEE DETAILS AND PAVING PLANS.
38.

CONTRACTOR SHALL CLOSELY COORDINATE ALL NAVAID WORK WITH AIRPORT AND THE FAA.
39.

COUNTERPOISE SYSTEM SHALL BE INSTALLED ABOVE ALL NEW UNDERGROUND AIRFIELD LIGHTING CONDUITS AS SHOWN ON THE DRAWINGS.
40.

ALL CONDUITS VACATED OF EXISTING CABLES/ CONDUCTORS SHALL BE PROVIDED WITH PULL ROPE.
41.

CONTRACTOR SHALL INCLUDE LIMITS IDENTIFIED AS PART OF FIELD INVESTIGATION TO VERIFY THE PRESENCE OF CABLES IN EXISTING BASE CANS. THE LIMITS SHOWN ARE APPROXIMATE AND DIAGRAMMATIC. ACTUAL LIMITS SHALL BE AS DIRECTED BY THE AIRPORT. WHERE CABLE IS FOUND, THE CONTRACTOR SHALL REMOVE EXISTING CABLES AND REPLACE WITH PULL ROPE UNDER BID ITEM P-101-2.

GENERAL DEMOLITION NOTES

1.

DISCONNECT AND REMOVE EXISTING LIGHTING FIXTURES, GUIDANCE SIGNS, ISOLATION TRANSFORMERS AND SENSING DEVICES INDICATED TO BE REMOVED FROM EXISTING BASE OR JUNCTION CANS. DELIVER REMOVED ITEMS TO THE AIRPORT WITH LABELS DATED 2022 AND NEWER. ALL OTHER ITEMS SHALL BE DISPOSED OFF AIRPORT PROPERTY BY THE CONTRACTOR. REMOVE EXISTING CABLE FROM ALL CONDUITS INDICATED TO BE REMOVED. EXISTING BASE OR JUNCTION CANS TO BE REMOVED WITH DEMOLITION OPERATIONS. (TYP. FOR ALL LIGHTING FIXTURES MARKED WITH AN "X"; SIGN REMOVAL IS NOTED ON DRAWINGS).
2.

SPECIAL CARE SHALL BE TAKEN NOT TO DISTURB EXISTING SERVICE OR JEOPARDIZE INTEGRITY OF EXISTING FAA OR UTILITY CABLES FOUND IN THE WORK AREA. ALTHOUGH SOME CABLES AND THEIR ASSOCIATED INFRASTRUCTURES AND EQUIPMENT ARE SHOWN ON THIS PLAN, OTHERS MAY EXIST AND IF THEY INTERFERE WITH NEW WORK, THEY MUST BE REROUTED/RELOCATED IN CONSULTATION WITH THE ENGINEER AND FAA.
3.

CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING CONTINUITY OF CIRCUITS FOR EQUIPMENT REMAINING OPERATIONAL DURING THE CONSTRUCTION PERIOD IN DEMOLITION AREA.
4.

FIELD VERIFY THE EXACT LOCATION AND DEPTH OF ELECTRICAL INFRASTRUCTURES, EQUIPMENT, LIGHT FIXTURES, SIGNS, ETC.
5.

REMOVAL, RELOCATION AND DEMOLITION WORK SHALL BE PERFORMED AT LOCATIONS SHOWN ON THE DRAWING. ALL OTHER EXISTING FACILITIES SUCH AS: EQUIPMENT, SYSTEMS, CONDUITS, MANHOLES, PULL BOXES, SIGNS AND LIGHTS SHALL BE PROTECTED IN PLACE. REFER TO CIVIL DRAWINGS FOR REFERENCE TO; CONSTRUCTION SEQUENCING, EXISTING UTILITIES AND CIVIL DEMOLITION AND REMOVAL.
6.

NOT ALL ELECTRICAL DEMOLITION CALL OUT NOTES ARE USED ON EACH SHEET.
7.

ALL CONDUIT AND DUCTBANK TO BE REMOVED ARE CONCRETE ENCASED.
8.

CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL STRUCTURES TO BE PROTECTED IN PLACE WITH THE PROPOSED GRADING PLANS AND ADJUSTING ALL STRUCTURES, TO BE PROTECTED IN PLACE, TO FINAL FINISH GRADE.
9.

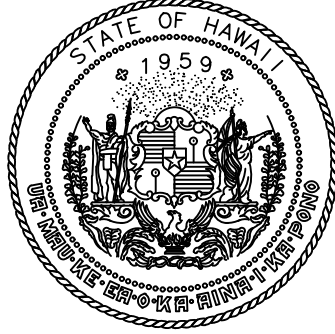
ALL CABLE REMOVED SHALL BE TURNED OVER TO THE AIRPORT, CONTRACTOR SHALL COORDINATE DELIVERY WITH THE AIRPORT.
10.

CONTRACTOR SHALL SALVAGE AND DELIVER TO AIRPORT TWY EDGE LIGHT FIXTURES IDENTIFIED TO HAVE BEEN INSTALLED IN YEAR 2022 OR EARLIER. CONTRACTOR SHALL COORDINATE DELIVERY LOCATION WITH THE AIRPORT.
11.

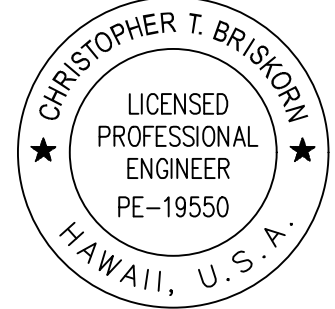
CONTRACTOR SHALL SET ASIDE SIGNS FOR AIRPORT TO SALVAGE EXISTING SIGN PANELS AND LED RETROFIT KITS, PRIOR TO DISPOSAL OF OFFSITE. CONTRACTOR SHALL COORDINATE A SALVAGE SITE WITH THE AIRPORT.

ABBREVIATIONS

A, AMP	AMPERE
AF	AMPERE FRAME, AMPERE FUSE
ALCMS	AIRFIELD LIGHTING CONTROL AND MONITORING SYSTEM
AOA	AIR OPERATIONS AREA
AT	AMPERE TRIP
ATCT	AIR TRAFFIC CONTROL TOWER
ATS	AUTOMATIC TRANSFER SWITCH
BLDG	BUILDING
BLNK	BLANK
C, COND	CONDUIT
CB, C/B	CIRCUIT BREAKER
CCR	CONSTANT CURRENT REGULATOR
CKT	CIRCUIT
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CU	COPPER
DWG	DRAWING
(E), E	EXISTING
EMERG	EMERGENCY
ELEC	ELECTRIC
ELECT	ELECTRICAL
EP	EDGE OF PAVEMENT
ES	EDGE OF SHOULDER
(F)	FUTURE
FAA	FEDERAL AVIATION ADMINISTRATION
FDR	FEEDER
FIXT	FIXTURE
FLEX	FLEXIBLE
G	GREEN
GND	GROUND
HH	HAND HOLE
HV	HIGH VOLTAGE
JB	JUNCTION BOX
JC	JUNCTION CAN
KVA	KILOVOLT AMPERES
KW	KILOWATT
LHU	LAMP HOUSING UNIT
LTS	LIGHTS
LTG	LIGHTING
MFR	MANUFACTURER
MTD	MOUNTED
(N), N	NEW
NEC	NATIONAL ELECTRICAL CODE
NF	NON FUSED
NO.	NUMBER
NTS	NOT TO SCALE
OD	OUTER DIAMETER
P	POLE
(P)	PROPOSED
PAPI	PRECISION APPROACH PATH INDICATOR
PB	PULL BOX
PCC	PORTLAND CEMENT CONCRETE
PE	POLYETHYLENE CABLE JACKET
Ø, PH	PHASE
PNL	PANEL
PWR	POWER
PVMT	PAVEMENT
R	RED
RDR	RUNWAY DISTANCE REMAINING SIGN
REF	REFERENCE, REFER
RELOC	RELOCATE
REIL	RUNWAY END IDENTIFIER LIGHTS
REQ'D	REQUIRED
RGS	RIGID GALVANIZED STEEL
RGSC	RIGID GALVANIZED STEEL CONDUIT
Ri	REMOVE AND RE-INSTALL
RR	REMOVE AND REPLACE W/NEW
RWY	RUNWAY
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TEL	TELEPHONE
TWY	TAXIWAY
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
UND	UNDERGROUND
UL	UNDERWRITERS LABORATORIES
V	VOLTAGE, VOLTS
VA	VOLT-AMPERES
W	WIRE, WATTS, WHITE
WH	WHITE
W/	WITH
WP	WEATHER PROOF
XFMR	TRANSFORMER
XLPE	CROSS-LINKED POLYTHYLENE
Y	YELLOW



Airports Division  
DEPARTMENT OF TRANSPORTATION  
STATE OF HAWAII



CHRIS BRISKORN, PE  
ELECTRICAL ENGINEER

4/30/24  
Expiration Date

DSGN.	DRWN.	CHKD.	APPD.
HF	HT	JB	DY

KEY PLAN / NOTES:

NO.	DATE	REVISIONS
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CONSTRUCTION DOCUMENTS

JULY 2022

DATE

PROJECT TITLE :

RELOCATE RUNWAY 3-21

AT LIHUE AIRPORT  
LIHUE, KAUAI, HAWAII

PROJECT NO.:

AK1031-14

SHEET TITLE:

AIRFIELD ELECT. GENERAL NOTES AND ABBREVIATIONS

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SHEET :	
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