

7 \$		ORAGE	ENGINEERING P A R T N E R S
4\L 750	DR	AWING INDEX	455 E. Lanikaula St. Hilo Hawai`i 96720 Main (808) 933-7900 www.epinc.pro Hawai`i Las Vegas
	DWG. NO. T-001 S-001 S-101 S-201 S-202 S-203 S-203 S-301 S-401 M-001 M-002 M-101	DESCRIPTION TITLE SHEET, DRAWING INDEX, PLOT PLAN, ISLAND MAP & VICINITY MAP BUILDING ABBREVIATIONS & SYMBOLS EXISTING SECOND LEVEL FLOOR PLAN – SURGERY STORAGE EXISTING/ DEMOLITION/ NEW WORK ROOF PLAN EXISTING/ DEMOLITION REFLECTED CEILING PLAN EXISTING/ NEW WORK REFLECTED CEILING PLAN EXISTING/ NEW WORK REFLECTED CEILING PLAN THRU-PENETRATION FIRESTOP SYSTEM DETAILS MECHANICAL SYMBOLS, ABBREVIATIONS, & SPECS MECHANICAL SCHEDULES AIR CONDITIONING & VENTILATION SITE PLAN	THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION, CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.
-010:001	M-201 M-202 M-301 M-401 FS-001 FS-002 FS-003 FS-101 E-101 E-201 E-202 E-301 PROJI PROJI OWNER NAME: HAW PHONE: (80) MAILING AD LOCATION A	DEMOLITION AR COND & VENTILATION PLAN – SURGERY STORAGE NEW AIR COND & VENTILATION PLAN – SURGERY STORAGE SEQ OF OPERATIONS, CONTROL AND ISOMETRIC DIAGRAMS MECHANICAL DETAILS FIRE SPRINKLER NOTES, SYMBOLS, & BRACING TABLES DETAILS DETAILS DETAILS DEMOLITION/NEW SECOND LEVEL FIRE PROTECTION PLAN – SURGERY STORAGE ELECTRICAL SYMBOLS, IECC & ABBREVIATIONS OVERALL ELECTRICAL SITE PLAN EXISTING/ DEMOLITION ELECTRICAL PLAN – SURGERY STORAGE EXISTING/ NEW POWER PLAN – SURGERY STORAGE EXISTING/ NEW POWER PLAN – SURGERY STORAGE EXISTING/ NEW LIGHTING STORE STORAGE EXISTING/ NEW STORAGE STORAGE EXISTING/ NEW LIGHTING STORAGE STORAGE EXISTING/ NEW LIGHTING STORE STORAGE STORAGE EXISTING/ STORAGE STORAGE STORAGE STORAGE EXISTING/ STORAGE STORA	TITLE SHEET, DRAWING INDEX, PLOT PLAN, ISLAND MAP & VICINITY MAP REV. REV. REV.
	ENGINES MECHANICA NAME: ENG PHONE: (80 ADDRESS: CODE TMK: DESIGN CR BUIL WINE SEIS ROOI FLOO ZONING PARCEL AR OCCUPANT TYPE OF C FIRE SPRIN HEIGHT (AL STORIES – AREA – AL NUMBER O ROOF COVE REQ. FIRE REQ. FIRE REQ. FIRE	ERING CONSULTANT L, ELECTRICAL INEERING PARTNERS, INC 38) 933–7900 455 E. LANIKAULA ST., HILO, HAWAII 96720 ESEARCH (3) 7–9–010:081 ITERIA: DING CODE	HVAC REPLACEMENT FOR SURGERY STORAGE HVAC REPLACEMENT FOR SURGERY STORAGE HVAC REPLACEMENT FOR SURGERY STORAGE KONA COMMUNITY KONA COMMUNITY HOSPITAL HOSPITAL TMK: (3) 7-9-010:081 TMK: (3) 7-9-010:081
	REQ. FIRE REQ. FIRE- REQ. SEPA I.E.C.C. CEI SPECIAL IN	RESISTANCE RATING FOR BUILDING ELEMENTS UNCHANGED -RESISTANCE-RATED SEPARATIONS UNCHANGED RATION OF OCCUPANCIES UNCHANGED RTIFICATION REFER TO SHTS-M-001, E-001 SPECTIONS REQUIRED NO	DWG. NO. T-001 Sheet NO. 01 of 24

BUILDING ABBREVIATIONS

38 and 0 at degree pound / number (E) Existing

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A	
A/C	Air Conditioning
AB	Anchor Bolt
ABV	Above
AC	Asphaltic Concrete
ACC	Accessible
ACOUST	Acoustical
AD	Area Drain / Access
ADD ADH ADJ ADJA AF	Door Addendum Adhesive Adjustable Adjacent Access Floor
AFF	Above Finished Floor
AGGR	Aggregate
AHU	Air Handling Unit
ALUM	Aluminum
ALT	Alter or Alternate
AP	Access Panel
APPROX	Approximate
ARCH	Architectural
ASPH	Asphalt
AT	Acoustic Tile
ATT	Attach / Attached /

BD BITUM	Board Bituminous
BLDG	Building
BLK	Block
BLKG	Blocking
BM	Beam
BOT	Bottom
BR	Bedroom
BRG	Bearing
BRKT	Brackeť
BRS	Brass
BS	Both Side
BSMT	Basement
BTMN	Between
BUR	Built-up Roofing

С

C CAB CBB CCJ CD CEM CER CFC CG CHAN CHWR CHWS CI CIP CJ CK	Chord / Compact Cabinet Cementitious Backer Board Crack Control Joint Ceiling Diffuser Cement Ceramic Contractor Furnished Contractor Installed Corner Guard Channel Chilled Water Return Chilled Water Supply Cast Iron Cast In Place Control Joint Caulking
CL CLG CLR CLS	Centerline / Clearance / Class / Closet Ceiling Clear Closure
CM CMU CNTR CO	Centimeter Concrete Masonry Unit Counter Cleanout / Cased Openina
COL COMP	Column Compacted /
CONC COND CONN CONSTR CONT CONTR COOR COP CORR	Concrete Condition Connection Construction Continuous Contractor Coordinate Cooper Corrugate
COTG CP CR	Clean Out to Grade Carpet Corrosion Resistance / Closet Rod / Curtain
CRM	Rod Concrete Rubble Masonry

Ceramic Tile Center / Counter Countersunk Custodian Cold Water Cold Water Return Cylinder

CT

CTR CTSK CUST

CW

CWR

CYL

D

D

DA DBL DD

DEPT

DET DF

DIA

DIAG

DIM DISP

DN

DO

DOJ

DR

DS DSP

DW

DWG

DWR

E

FA

ЕC

FF

EFS

EGCB

EGSB

EIFS

ELAS

ELEC

ELEV

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ENCL

ENG

EOS

FP

EQ

EQPT

EW

EWC

EXH

EXIST

EXP

EXPO

EXT

FA

FAB

FAM

FAST

FB

FCO

FD

FDN

FE

FEC

FF&E

FFS

FGL

FΗ

FHC

FIN

FIXT

FLASH

FLDG

FLG

Flr

FND

FNV

FO

FOC

FOF

FOM

FOS

EPDM

FJ

EAR

Drawer

- Penny (nails) / Deep / Depth / Dryer Double Acting Double Deck Drain Department Detail Drinking Fountain Diameter Diagonal Dimension Dispenser Down Door Opening Department of Justice Door / Drain / Dining Room Downspout Dry Standpipe Dishwasher Drawings
- East Each Exhaust Air Register Electrometric Coating Exposed Construction Exhaust Fan Exterior Finish System Exterior Gypsum Ceiling Board Exterior Gypsum Sheathing Board Exterior Insulation & Finish System Expansion Joint Elevation Elastomeric Electrical Elevator Emergency Enclosure Engineer / Engineering Edğe of Ślab Electric Panel Ethylene Propylene Diene Monomer Equal Equipment Each Way Electric Water Cooler Exhaust Existing Expansion Exposed Exterior

Female Fire Alarm Fabricate Fluid Applied Membrane Fastener Flat Bar Floor Clean Out Fire Damaged / Fire Damper / Floor Drain Foundation Fire Extinguisher Fire Extinguisher Cabinet Furniture, Fixture & Equipment Finish Floor Separation Fiberglass Flat Head / Fire Hose Fire Hose Cabinet Finish / Finished Fixture Flashing Folding Flooring Floor FLUOR Fluorescent Foundation / Feminine Napkin Disposal Feminine Napkin Vendor Face of ... Face of Concrete Face of Finish Face of Masonry Face of Slab / Face of Studs

Face of Wall
Frame / Front
Fiber Reinforced Gypsum
Framing Fiberalass Poinforced
Polyester
Fire Retardant Treated
Wood
Freezer
Floor Sink / Full Size
Foot / Feet
Facial Tissue Dispenser
Footing
Furring / Furred
Future

G

GFI

FOW

FRG

FRMG

FRP

FRT

FRZ

FS

FT

FTD

FTG

FURR

FUT

FR

G	Gas / Girder / Gutter
GA	Gage
GAL	Gallon
GALV	Galvanized
GB	Grab Bar
GC	General Contractor
GEN	Generator
GFI	Ground Fault Interrupter
GFRC	Glass Fiber Reinforced
	Concrete
GKT	Gasket / Gasketing
GL	Glass
GLU-LAM	Glued Laminated Wood
GND	Ground

Η

ΗB

НC

HCP

HD

HDR

HDWD

HDWE

HGR

HGT

ΗМ

ΗP

HS

HTR

HVAC

ΗW

HWR

HORIZ

Hose Bibb Hollow Core Handicapped Head Header Hardwood Hardware Hanger Height Hollow Metal Heat Pump Horizontal Hand Sink Heater Heating, Ventilation and Air Conditioning Hot Water Hot Water Return

ID

IN

INCL

INSUL

INT

INV

IRR

JAL

JAN

JB

JST

JT

Κ

КD

KIT

KO

Inside Diameter (dimension) Inch Included / Inclusive / Including Insulation Interior Invert Irrigation

Jalousie Janitor Junction Box Joist Joint

Knock Down Kitchen Knock Out

LAB

LAM

LAV

LB

LF

LIQ

LKR

LOC

LT LTG

LVR

LWC

Length / Long Laboratory Laminate / Laminated Lavatory Pound Lineal Foot Liquor Locker Location Laundry Tray Lighting Louver Light Weight Concrete

Μ	
M MATL MAX MB MBH MBS MC MECH MECH MECH MEZZ MFR MH MIN MIR MIN MIN MIN MIN MIN MIN MIN MIN MIN MIN	Male Material Maximum Machine Bolt Mop Broom Holder Metal Building System Medicine Cabinet Mechanical Membrane Metal Mezzanine Manufacture / Manufacturer Manufacturer Manufacturer Manhole Minimum Mirror Miscellaneous Molding / Moulding Millimeter Masonry Opening Modular Moisture Resistant Mounted Mounting
Ν	
N NIC NU NO NOM NP NS NTS	North Not in Contract Night Light Number Nominal Not Permitted No Scale Not To Scale
0	
O OC OCC OA OAG OBS OD OFIC OFIC OFF OFOI OPNG OPP OPQ OPR OVHD	Oven On Center Occupancy Overall Outside Air Grille Obscure Outside Diameter (dimension) Owner Furnished Contractor Installed Overflow Drain Office Owner Furnished Owner Installed Opening Opposite Opaque Operable Overhead
Р	
PASS PC PCA PD PERIM PH PIP PKG PL PLAM PLAS PLBG PLYWD PMB PNL PT PR PRBP PRDP PRDP PRCST PREFAB PREP PROP PRV PSF PT PTD PTD R PTD PTD R PTD PTD PTD PTD PTD PTD PTD PTD PTD PTD	Passage Piece / Post Contract Post Contract Architectural Planter Drain Perimeter Penthouse Poured In Place Parking Plan / Plate / Property Line Plastic Laminate Plaster Plumbing Plywood Pre-Engineered Metal Building Panel Pressure Preservative Treated Pair Pressure Reducing Back Flow Preventer Precast Prefabricate Preparation Property Pressure Relief Valve Pounds Per Square Foot Paint / Point Paper Towel Dispenser & Receptacle Partition Paper Towel Receptacle Polyvinyl Chloride Pavement
	Quarry Tile

Radius / Riser Resilient Base Reflected Ceiling Plan Roof Drain REBAR Reinforcing Bar RECEPT Receptionist Reference Reflected / Reflector REFR Refrigerator REINF Reinforced / Reinforcing REM REQ RESIL REST Remove / Removable Required Resilient Restroom Retaining / Return Revised / Revision Resilient Flooring / Roof Roofing RGTR Register Robe Hook / Round Head Railing Room Rough Opening Restroom Recessed Waste Receptacle RWD Redwood RWL Rain Water Leader South Single Acting Scale / Solid Core SCHED SCP Schedule Scupper SCR Screen / Shower Curtain Rod Smoke Detector / Soap Dispenser / Shower

TRAN

TRANS

TSCD

TS

TU

Transition

Transparent

Towel Shelf

Dispenser

Towel Unit

Toilet Seat Cover

R

RB

RCP RD

REF

REFL

RET

REV

RFG

RH

RLG

RM

RO

R/R

RŴC

S

SA

SC

SD

SECT SF

SH SHR SHT SHTG

SIM SL

SLDG SLNT

SM

SMS

SMH

SND

SNR

SP

SPC SPEC

SPKR

SPRK

SQ SSK SST ST

STA STD

STL STOR

STR

STRL STRUC SUSP SVC

SW

SYM

T&G

T/S

ΤB

TD

TEL

TEMP

TER

ΗK

THR

TLT

ΤO

TOC

TOF

TOP

TOS

TOW

TPB

TPD

TPH

TFMR

Telephone

Terrazzo

Threshold

Top of ...

Top of Curb

Top of Floor

Pavement

Top of Slab

Top of Wall

Toilet

Transformer

Tempered / Temporary

Top of Plate / Top of

Telephone Power Board

Toilet Paper Dispenser

Toilet Paper Holder

Thick / Thickness

RF

Drain Section Square Feet Shelf Shower Sheet Sheathing Similar Slope Sliding Sealant Square Meter Sheet Metal Screw Sewer Man Hole Sanitary Napkin Dispenser Sanitary Napkin Receptacle Solid Plastic Spacer Specification Speaker Sprinkler Square Service Dink Stainless Steel Stone Station Standard Steel Storage Straight / Strainer / Starter Structural Structure Suspended Service Switch Symmetrical Tinted / Tread Tongue and Groove Tub / Shower TÁCKBD Tackboard Tower Bar Trench Drain

U	
UC Undercut UL Underwriters Laboratories, Inc / Unlimited UNF Unfinished UON Unless Otherwise Noted UP Uuholstered Panels UR Urinal	
VALValanceVARVariesVARVapor BarrierVCTVinyl Composition TileVERTVerticalVESTVestibuleVLVValveVOLVolumeVPVeneer PlasterVTRVent Through Roof	
W Washer / West / Wide / Width W/' With W/O Without WC Wallcovering / Water Closet WD Wood WDP Wood Paneling WDW Window WGL Wire Glass WH Water Heater WO Where Occurs / Window Opening WP Waterproof WPM Waterproof WPM Waterproof WPM Waterproof WPM Water Resistant WR Water Resistant WRB Wordrobe WSCT Wainscot WSP Wet Stand Pipe WT Weight / Watertable / Watertight WWF Welded Wire Fabric	

BUILDING

EXTERIOR **ELEVATION** (INTERIOR ÈLEVATION OR PHOTO VIEW)

SECTIONS

DETAILS

DRAWING REVISION

PLAN NOTE (KEY NOTE)

COLUMN HEAD (LETTERS HORZ. NUMBERS VERT.)

DRAWING TITLE

NOTES



S-001

SHEET NO. 02 OF 24



NOTICES

- 1. PROTECT EXIST FINISHED FLOORING, WALLS AND CEILING IN PLACE FROM DAMAGE DURING DEMOLITION PHASE & NEW WORK PHASE
- 2. VERIFY ACCESS AND WORKING TIMES WITH HOSPITAL.
- PROTECT EXIST FIRE SPRINKLER (VIF) IN PLACE FROM DAMAGE DURING DEMOLITION PHASE & NEW WORK PHASE
- 4. PROVIDE BARRICADES, ISOLATION MEASURES AND VENTILATION AS REQUIRED BY HOSPITAL.

NOTE

NEW WORK THROUGH-PENTRATION FIRESTOP SYSTEM PIPING, SEE DETAIL DWG NO A-301

N2 NEW PIPING, SEE MECH DWGS

N3 REPLACE ACOUSTICAL TILE AS REQUIRED, SEE REFLECTED CEILING PLAN

FIRE RATED WALL



EXIST TWO HOUR FIRE RATING

EXIST SMOKE PARTITION

20	EXIST DOOR	20	MIN
45	EXIST DOOR	45	MIN
90	EXIST DOOR	90	MIN





KEYNOTES (FOR THIS SHEET ONLY)

EXISTING

E1 EXISTING CONCRETE PARAPET
E2 EXISTING ROOF DRAIN
E3 EXISTING 5 1/2" CONCRETE SLAB REINFORCED WITH #4 AT 12" ON CENTER TOP AND BOTTOM CONTINUOUS EACH WAYS (VERIFY IN THE FIELD)
E4 EXISTING CONCRETE BEAM (VERIFY IN THE FIELD)
E5 EXISTING CONCRETE PRESTRESSED JOIST (VERIFY IN THE FELID)

DEMOLITION D1 CUT AND REMOVE PORTION EXISTING CONCRETE CURB D2 CUT AND REMOVE PORTION EXISTING CONCRETE ROOF SLAB D3 DEMOLITION AND REMOVE EXISTING DUCT, FLASHING, WOOD NAILER, ETC





KEYNOTES:

EXISTING E1 EXISTING ACOUSTICAL TILE CEILING E2 EXISTING LIGHT FIXTURE (VERIFY IN FIELD) E3 EXISTING FIRE SPRINKLER, RELOCATE AS REQUIRED, SEE MECHANICAL DRAWINGS E4 EXISTING CONCRETE ROOF

E5 EXISTING DUCT, SEE MECHANICAL DRAWGINS

DEMOLITION DD REMOVE EXISTING MECHANICAL DUCT, AIR DIFFUSER, RETURN AIR/EXHAUST REGISTER, PIPING, ETC., SEE MECHANICAL DRAWINGS D2 REMOVE EXISTING GRID & ACOUSTICAL TILE PANEL D3 DRILL HOLES FOR NEW PIPING, SEE MECHANICAL DRAWINGS D4 SAW CUT AND REMOVE PORTION EXISTING CONCRETE ROOF SLAB FOR NEW DUCT PENETRATION, SEE DETAIL A/S-201 D5 REMOVE AND REPLACE EXISTING ACOUSTICAL TILE CEILING AND GRID TO FOR INSTALL NEW PIPING AS REQUIRED, SEE MECHANICAL DRAWINGS (D6) REMOVE EXISTING LIGHT FIXTURE, SEE ELECTRICAL DRAWINGS

CUT HOLE AND REMOVE EXISTING WALL FOR INSTALL NEW DUCT, CEE MECHANICAL DRAWINGS



EXIST TWO HOUR FIRE RATING

LEGEND

EXISTING EXISTING SUSPENDED ACOUSTICAL TILE CEILING _____



EXISTING LIGHT FIXTURES

EXISTING AIR HANDLING UNIT, EQUIPMENT, DUCT, PIPING, ETC., SEE MECHANICAL DRAWINGS

DEMOLITION





REMOVE EXISTING LIGHT FIXTURE, SEE ELECTRICAL DRAWINGS

ENGINEERING PARTNERS 455 E. Lanikaula St. Hilo Hawai`i 96720 Main (808) 933-7900 www.epinc.pro Hawai`i | Las Vegas UN WEN FAN LICENSED PROFESSIONAL ENGINEER Exp. 04/30/22 No. 9361-S MAWAII, U THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION, CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. Ha aler Tana SIGNATURE Z DEMOLITION CEILING PLA EXISTING , REFLECTINC 96750 HVAC REPLACEMENT FOR SURGERY STORAGE KONA COMMUNITY HOSPITAL IH AKEKUA, KEAL ST, 79-1019 HAUKAPILA [MK: (3) 7-9-010:081 RAWN BY: DESIGNED E Κ2 Κ2 CHECKED BY: QC'D BY: ΒF YF JOB NO. 12022-17-01 DWG. NO. S-202 SHEET NO. 05 OF 24



KEYNOTES:

EXISTING EXISTING

E1 EXISTING ACOUSTICAL TILE CEILING

E2 EXISTING LIGHT FIXTURE (VERIFY IN FIELD) E3 EXISTING FIRE SPRINKLER, **RELOCATE AS REQUIRED**

NEW WORK

NEW DUCT, AIR DIFFUSER OR RETURN AIR/EXHAUST REGISTER, PIPING, ETC. SEE MECHANICAL DRAWINGS
N2 NEW ACOUSTICAL TILE CEILING, SEE DETAIL DWG NO S-401
N3 THROUGH-PENTRATION FIRESTOP SYSTEM PIPE, SEE DETAIL A/S-301
N4 NEW ACOUSTICAL TILE PANEL TO MATCH EXISTING
N5 NEW DUCT UP TO ROOF, SEE DETAIL A/S-201
N6 NEW LIGHT FIXTURE, SEE ELECTRICAL DRAWINGS
N7 PATCH HOLE TO MATCH EXISTING ADJACENT SURFACE

N8 THROUGH-PENTRATION FIRESTOP SYSTEM DUCT, SEE DETAIL B/S-301

FIRE RATED WALL

EXIST ONE HOUR FIRE RATING

EXIST TWO HOUR FIRE RATING

LEGEND

EXISTING EXISTING SUSPENDED ACOUSTICAL TILE CEILING

 EXIST FIRE SPRINKLER RELOCATE AS REQUIRED

EXISTING LIGHT FIXTURES

NEW WORK

NEW SUSPENDED ACOUSTICAL TILE CEILING



NEW CEILING DIFFUSER OR RETURN AIR, SEE MECHANICAL DRAWINGS

NEW LIGHT FIXTURE, SEE ELECTRICAL DRAWINGS



ENGINEERING P A R T N E R S 455 E. Lanikaula St. Hilo Hawai`i 96720 Main (808) 933-7900 www.epinc.pro Hawai`i | Las Vegas UN WEN FAA LICENSED PROFESSIONAL ENGINEER Exp. 04/30/22 No. 9361-S MAWAII, II THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION, CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. Ha aver tang SIGNATURE Z / NEW WORK CEILING PLA EXISTING 96750 AGE STOR ΗI AKEKUA, LACEMENT FOR SURGERY COMMUNITY KEAL ST, 9-1019 HAUKAPILA MK: (3) 7-9-010:081 HVAC REPLA KONA C HOSPIT C REPL RAWN BY: DESIGNED E K2 Κ2 CHECKED BY: QC'D BY: ΒF YF JOB NO. 12022-17-01 DWG. NO.

S-203

SHEET NO. 06 OF 24



October 14 2015

ANSI/UL1479 (ASTM E814)	CAN/ULC S115	
F Ratings-1 & 2 Hr (See Items 1 & 3)	F Ratings-1 & 2 Hr (See Items 1 & 3)	
T Rating-0 Hr	FT Rating-0 Hr	
L Rating at Ambient -Less Than 1 CFM/sq	FH Ratings-1 & 2 Hr (See Items 1 & 3)	
L Rating at 400F -Less Than 1 CFM/sq	FTH Rating-0 Hr	
	L Rating at Ambient -Less Than 1 CFM/sq	
	L Rating at 400F -Less Than 1 CFM/sq	

 Wall Assembly — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing on all four sides.

B. Gypsum Board* — 5/8 in. (16 mm) thick, 4 ft (122 cm) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32-1/4 in. (819 mm) for steel stud walls. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls. The F and FH Ratings of the firestop system are equal to the fire rating of the wall assembly.

2. Through-Penetrants — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. (57 mm). Pipe may be installed with continuous point contact. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

A. Steel Pipe — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. Iron Pipe — Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.

C. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or 6 in. (152 mm) . diam steel conduit.

D. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.

E. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) regular (or heavier) copper pipe.

3. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe wall interface on both surfaces of wall. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada),

respectively

 (\mathbf{A})

Through-pentration firestop system Pipe - 1 or 2 Hr

UL System No. W - J - 7007



 Wall Assembly — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400 or V400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. Additional horizontal framing members installed to form a rectangular box around the steel duct (Item 2).

B. Gypsum Board* — Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. When wood studs are used, interior of through opening to be lined with sheets of gypsum board around entire periphery to a total thickness of 5/8 in. (16 mm) or 1-1/4 in. (32 mm) for 1 or 2 hr wall assemblies, respectively. Max area of opening is 952 sq in. (0.61 m2) with a max dim of 32 in. (813 mm).

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. Steel Duct — Max 24 by 30 in. (610 by 762 mm) No. 26 gauge (or heavier) galv steel duct installed eccentrically or concentrically within opening. Annular space between duct and periphery of opening to be min 0 in. (0 mm, point contact) to max 2 in. (51 mm). Duct to be rigidly supported on both sides of the wall assembly.

3. Firestop System — The firestop system shall consist of the following:

A. Packing Material — (Optional, Not Shown) Mineral wool batt insulation, foam backer rod or glass fiber insulation installed as a permanent form to facilitate installation of fill material (Item 3B).

B. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/4 in. (6 mm) diam bead of fill material applied at steel duct/gypsum board interface on both surfaces of wall.

SPECIFIED TECHNOLOGIES INC — SpecSeal LCI Sealant

C. Retaining Angles — Min 16 gauge galv steel angles sized to lap onto duct a min of 2 in. (51 mm) and to lap onto wall around periphery of opening a min of 1 in. (25 mm). Angles attached to all four sides of steel duct on both surfaces of wall with No. 10 (or larger) steel sheet metal screws located 1 in. (25 mm) from each end and spaced max 4 in. (102 mm) OC.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Through-pentration firestop system Duct - 1 or 2 Hr

UL System No. W - L - 1054

Β

- 1. CEILING PANELS SHALL NOT SUPPORT ANY LIGHT FIXTURES, AIR TERMINALS/GRILLS, OR OTHER DEVICES (REFERRED TO ALL BY COMMON TERM FIXTURES HERE AFTER).
- 2. ALL FIXTURES SHALL BE MOUNTED IN A MANNER THAT WILL NOT COMPROMISE CEILING PERFORMANCE.
- 3. ALL FIXTURES SHALL BE ATTACHED TO THE SUSPENDED CEILING SYSTEM BY MECHANICAL MEANS, UNLESS INDEPENDENTLY SUPPORTED. THE ATTACHMENT DEVICE SHALL HAVE THE CAPACITY OF 100% OF FIXTURE WEIGHT ACTING IN ANY DIRECTION. A MINIMUM OF FOUR ATTACHMENT DEVICES ARE REQUIRED FOR EACH FIXTURE.
- 4. SURFACE MOUNTED FIXTURES SHALL BE ATTACHED TO THE MAIN RUNNER WITH POSITIVE CLAMPING DEVICES MADE OF MATERIAL WITH A MINIMUM 14 GAGE. A NO.12 GAUGE SAFETY WIRES SHALL BE ATTACHED BETWEEN THE CLAMPING DEVICE AND TO THE IN NO CASE SHALL THE FIXTURES STRUCTURE ABOVE. IN NO CASE SHALL THE FIXTURES EXCEED THE DESIGN CAPACITY OF THE SUPPORTING MEMBERS.
- 5. ALL LIGHT FIXTURES WEIGHING LESS THAN OR EQUAL TO 10 LB. SHALL HAVE ONE NO. 12 GAUGE SAFETY WIRE CONNECTED FROM FIXTURE HOUSING TO STRUCTURE ABOVE. IT IS NOT NECESSARY FOR THESE SAFETY WIRES TO BE TAUT.
- 6. ALL FIXTURES WEIGHING GREATER THAN 10 LB BUT LESS THAN OR EQUAL TO 56 LB. SHALL HAVE TWO NO. 12 GAUGE SAFETY WIRE CONNECTED FROM FIXTURE HOUSING TO STRUCTURE ABOVE. IT IS NOT NECESSARY FOR THESE SAFETY WIRES TO BE TAUT.
- 7. ALL FIXTURES WEIGHING GREATER THAN 56 LB. SHALL BE SUPPORTED DIRECTLY FROM STRUCTURE ABOVE BY APPROVED HANGERS.
- 8. PENDENT-HUNG FIXTURES SHALL BE SUPPORTED DIRECTLY FROM THE STRUCTURE ABOVE USING NO LESS THAN NO. 9 GAUGE WIRE OR AN APPROVED ALTERNATE SUPPORT. THE CEILING SUSPENSION SYSTEM SHALL NOT PROVIDE ANY DIRECT SUPPORT.
- 9. IALL RECESSED OR DROP-IN FIXTURES SHALL BE SUPPORTED DIRECTLY FROM FIXTURE HOUSING TO THE STRUCTURE ABOVE WITH A MINIMUM OF TWO NO. 12 GAUGE WIRES LOCATED AT DIAGONALLY OPPOSITE CORNERS. LEVELING OR POSITIONING OF FIXTURES MAY BE PROVIDED BY CEILING GRID. FIXTURE SUPPORT WIRES MAY BE SLIGHTLY LOOSE TO ALLOW THE FIXTURE TO SEAT IN THE GRID SYSTEM. FIXTURES SHALL NOT BE SUPPORTED FROM MAIN RUNNERS OR CROSS RUNNERS IF THE WEIGHT OF THE FIXTURES CAUSES TOTAL DEAD LOAD TO EXCEED THE DEFLECTION CAPABILITY OF THE CEILING SUSPENSION SYSTEM.
- 10. SEISMIC DESIGN CATEGORY F INSTALLATION
- 11. INSTALL CEILINGS PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND RECOMMENDATIONS AND ANSI AND IBC STANDARDS AS REQUIRED TO MEET THE SPECIFIED SEISMIC ZONE

SUSPENDED ACOUSTICAL CEILING - LIGHT FIXTURES / AIR TERMINAL SUPPORT DETAIL

I CERTIFY THAT,	TO T
SUBSTANTIALLY COM	FORN
PERTAINING TO THE	СОММ
<u>C404, & C405)</u> O	F THE
,	
PLIANCE METHOD	

COMF	PLIANCE METHOD		
Х	2015 IECC AS AMENDED. MANDATORY AND PRESCRIPTIVE		
	2015 IECC AS AMENDED. MANDATORY AND TOTAL BUILDING PERFORMANCE		
	ASHRAE STANDARD 90.1-2013. MANDATORY AND PRESCRIPTIVE		
	ASHRAE STANDARD 90.1-2013. MANDATORY AND ENERGY COST BUDGET		
NFOF	RMATION IN CONSTRUCTION DOCUMENTS	YES	N/A
HVAC	SYSTEMS		,
	EQUIPMENT CAPACITY AND EFFICIENCY.	X	
	THERMOSTATIC CONTROLS.	X	
	GUEST ROOM DOOR SWITCHES.		X
	VENTILATION RATE.	X	
	DEMAND CONTROL VENTILATION CONTROLS.	X	
	ENCLOSED PARKING GARAGE VENTILATION CONTROL.		X
	ENERGY RECOVERY VENTILATION SYSTEM.		X
	KITCHEN EXHAUST SYSTEM.		Х
	DUCT AND PLENUM INSULATION THICKNESS/R-VALUE.	X	
	DUCT AND PLENUM SEALING REQUIREMENTS.	X	
	PIPE INSULATION THICKNESS/R-VALUE.	X	
	FAN MOTOR HORSEPOWER.	X	
	FAN EFFICIENCY.		X
	FAN MOTOR EFFICIENCY.		X
	PUMP MOTOR EFFICIENCY.		X
	VARIABLE-FLOW FAN CONTROL.	X	
	STATIC PRESSURE SENSOR LOCATION.		X
	STATIC PRESSURE RESET CONTROL.		X
	CHILLED WATER VARIABLE FLOW CONTROL.		X
	CHILLER ISOLATION.		X
	COOLING TOWER FAN CONTROL.		X
	TERMINAL UNIT MINIMUM AND MAXIMUM AIRFLOW.		Х
	COMMISSIONING REQUIREMENTS.		Х
REFR	IGERATION		
	REFRIGERATION EQUIPMENT EFFICIENCY.		Х
	WALK-IN COOLERS AND FREEZERS.		Х
	REFRIGERATED WAREHOUSES.		Х
	REFRIGERATED DISPLAY CASES.		Х
SERV	ICE WATER HEATING		
	HEAT RECOVERY FOR SERVICE WATER HEATING.		Х
	EQUIPMENT CAPACITY AND EFFICIENCY.		Х
	PIPE INSULATION.		Х
	HOT WATER PIPE LENGTH/VOLUME.		Х
	HOT WATER CIRCULATION CONTROLS.		Х
	HEATED POOL AND SPA COVERS.		Х
	COMMISSIONING REQUIREMENTS.		Х
IOTES	S:		
SIGI	NATURE:		
D 1 T			

SIGNATUR	E:/
DATE:	09/18/2020
NAME:	NIMŔ Y. TAMIMI
TITLE:	MECHANICAL ENGINE
LICENSE	NO.:7936-M

HAWAII COUNTY ENERGY CODE

2015 IECC, HAWAII REVISED STATUTES HRS 107-24 TO 28 & HAWAII ADMINISTRATIVE RULES CHAPTER HAR 3-181.1

COMMERCIAL BUILDING ENERGY EFFICIENCY STANDARDS

THE BEST OF KNOWLEDGE. THIS PROJECTS DESIGN MS TO THE BUILDING ENERGY EFFICIENCY STANDARDS MERCIAL PROVISIONS FOR MECHANICAL SYSTEMS (C403 E 2015 IECC WITH AMENDMENTS PER HAR 3-181.1:

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GENERAL MECHANICAL SPECIFICATIONS

- PROVIDE COMPLETE AND OPERATING SYSTEMS AS SPECIFIED AND INDICATED ON DRAWINGS. "PROVIDE" SHALL MEAN "FURNISH AND INSTALL" WHEN USED HEREIN.
- WORK SHALL COMPLY WITH ALL LOCAL CODES AND ORDINANCES INCLUDING: ANSI B9.1/ASHRAE 15 – SAFETY CODE FOR MECHANICAL REFRIGERATION; HAWAII DOH CHAPTER 39, TITLE 11 - AIR CONDITIONING AND VENTILATION; HAWAII COUNTY BUILDING CODE; ASHRAE 62-2016 - VENTILATION STANDARD; SMACNA HVAC DUCT CONSTRUCTION STANDARDS; 2006 INTERNATIONAL ENERGY CONSERVATION CODE.
- CONTRACTOR SHALL ARRANGE AND PAY FOR ALL PERMITS AND FEES.
- MATERIALS AND EQUIPMENT SHALL BE NEW AND GUARANTEED FOR ONE YEAR FROM THE DATE OF ACCEPTANCE. MATERIALS AND EQUIPMENT SHALL BE AS SCHEDULED OR EQUAL MEETING THE REQUIREMENTS OF THE SPECIFICATION. MATERIALS AND EQUIPMENT SHALL BE SUBMITTED TO THE WHFD AND/OR PROJECT MANAGER FOR APPROVAL PRIOR TO ORDER RELEASE. WORK SHALL BE GUARANTEED AGAINST DEFECTIVE WORKMANSHIP OR MATERIALS FOR A PERIOD OF ONE YEAR AFTER FINAL ACCEPTANCE OF THE PROJECT. WARRANTY WORK SHALL BE COMPLETED AT NO EXTRA CHARGE TO THE OWNERS. FURNISH MANUFACTURER'S PRODUCT WARRANTY CERTIFICATES IN A BINDER.
- PRIOR TO COMMENCEMENT OF WORK AND ORDERING OF EQUIPMENT, CONTRACTOR SHALL SUBMIT 6 BOUND SETS OF PROPOSED MATERIALS AND EQUIPMENT. RECORD DRAWINGS, OPERATION MANUALS AND MAINTENANCE MANUALS SHALL BE SUBMITTED AS REQUIRED B WHFD AND/OR PROJECT MANAGER UPON COMPLETION.
- DRAWINGS SHALL NOT BE SCALED.
- PENETRATIONS OF FIRE RATED WALLS OR FLOORS BY PIPES AND DUCTWORK SHALL BE SEALED BY A FIRESTOPPING SYSTEM UL LISTED FOR THE APPLICATION. INSTALL PENETRATION SEAL MATERIALS IN ACCORDANCE WITH PRINTED INSTRUCTIONS OF THE UL FIRE RESISTANCE DIRECTORY AND MANUFACTURERS INSTRUCTIONS. FIRESTOPPING SYSTEM SHALL BE EQUAL TO 3M FIRE BARRIER. FIRESTOPPING MATERIAL SHALL BE CAULK OR PUTTY TYPE. PROVIDE FIRE DAMPERS ON ALL DUCT PENETRATIONS THROUGH FIRE RATED WALLS AS REQUIRED TO PRESERVE THE FIRE RATING OF THE STRUCTURE.
- MECHANICAL EQUIPMENT SHALL BE SECURED AND INSTALLED PER MANUFACTURERS RECOMMENDATIONS AND APPLICABLE SECTIONS OF THE INTERNATIONAL BUILDING CODE AND INTERNATIONAL MECHANICAL CODE.
- DUCTWORK, PIPING AND EQUIPMENT SHALL BE PROVIDED WITH SEISMIC RESTRAINTS IN ACCORDANCE WITH THE SMACNA SEISMIC RESTRAINT MANUAL – GUIDELINES FOR MECHANICAL SYSTEMS.
- 10. ELECTRICAL CHARACTERISTICS OF MECHANICAL EQUIPMENT SHALL BE VERIFIED WITH ELECTRICAL DRAWINGS PRIOR TO ORDER RELEASE. ADDITIONAL ELECTRICAL WORK RESULTING FROM EQUIPMENT SUBSTITUTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- 11. ELECTRICAL: CONFORM TO THE REQUIREMENTS OF ANSI, CI, AND NATIONAL ELECTRICAL CODE. OBTAIN EQUIPMENT MANUFACTURER'S CONTROL WIRING DIAGRAMS FOR THE EQUIPMENT FURNISHED.
- 12. FIELD INVESTIGATIONS: VISIT THE WORK-SITE AND BECOME FULLY AWARE OF ALL EXISTING CONDITIONS. INVESTIGATE THE CONTRACT DOCUMENTS AND MAKE PROPER PROVISIONS TO AVOID INTERFERENCES OR CONSTRUCTION DELAYS. DETERMINE THE EXACT ROUTE OF EACH DUCT AND PIPE. ANY DISCREPANCY SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE WHFD AND/OR PROJECT MANAGER.
- 13. WORK CONDITIONS: FIELD VERIFY CONDITIONS AND DIMENSIONS FOR INTERFERENCES. INSTALLED WORK SHALL BE PROTECTED DURING CONSTRUCTION AND CLEANED FOR FINAL INSPECTION. TOUCH-UP PAINT ALL RAW EDGES OF METAL EXPOSED TO WEATHER. COORDINATE WITH OTHER TRADES FOR PIPE SLEEVES AND INSTALLATION OF EQUIPMENT SUPPORTS.
- 14. REQUIREMENTS: PERFORM WORK USING PERSONNEL SKILLED IN THE TRADE INVOLVED. PROVIDE COMPETENT SUPERVISION. FURNISH NEW EQUIPMENT, MATERIALS AND ACCESSORIES BEARING THE MANUFACTURER'S IDENTIFICATION AND CONFORMING TO THE RECOGNIZED COMMERCIAL STANDARDS.
- 15. EQUIPMENT INSTALLATION: INSTALL EQUIPMENT IN THE SPACE ALLOTTED WITH SUFFICIENT CLEARANCE FOR PROPER OPERATION AND MAINTENANCE AND WITH SUFFICIENT HEAD CLEARANCE ACCORDING TO THE BUILDING CODE. WHERE EQUIPMENT DIFFERS IN ARRANGEMENT OR CONNECTIONS FROM THOSE SHOWN, PROVIDE ALL REQUIRED CHANGES IN PIPING, SUPPORTS AND APPURTENANCES. PROVIDE ACCESS PANELS WHERE REQUIRED FOR MAINTENANCE ACCESS TO EQUIPMENT.

-	MECHANICAL	$\Delta \mathbf{R} \mathbf{R}$	REVIATIONS	
-				
(E)	EXISTING	FLEX	FLEXIBLE	
(D)	DEMO	FLR	FLOOR	
(N)		FPM	FEEL PER MINULE	
	AIR CONDITIONING			IENGI
ARV	AROVE	HIR UZ		PΔR
	ADJUSTABLE	ΠΖ KW	HERIZ KILOWATT	
AFF	ABOVE FINISHED FLOOR		I FAVING AIR TEMPERATURE	455 E.
ACCU	AIR COOLED CONDENSING UNIT	MAN	MANUFACTURER	Hilo H
AHU	AIR HANDLING UNIT	MAX	MAXIMUM	Мс
APPROX	APPROXIMATELY	MCA	MINIMUM CIRCUIT AMPS	97
ARCH	ARCHITECT	MECH	MECHANICAL	www
BLDG	BUILDING	MIN	MINIMUM	Нами
BHP	BRAKE HORSEPOWER	MOCP	MAXIMUM OVERCURRENT PROTECTION	TIGW
BTU	BRITISH THERMAL UNITS	MTD	MOUNTED	
BV	BALL VALVE	NOM	NOMINAL	
		NPSH	NET POSITIVE SUCTION HEAD	in
CD	CEILING DIFFUSER	0A DI	OUISIDE AIR	
CLG	CEILING	PH	PHASE	
	CUBIC FEEL PER MINUTE	PLMB	PLUMBING	
				X E
			REQUIRED REDUCING PRESSURE RACKELOW PREVENTOR	
	CONTINUATION CONDENSER WATER SUPPLY/RETURN	RM	ROOM	M/
	DRY BILLB	RA	RETURN AIR	
DN	DOWN	RAR	RETURN AIR REGISTER	
FA	FXHAUST AIR	RLA	RUNNING LOAD AMPS	THIS WO ME OR UN
EAT	ENTERING AIR TEMPERATURE	SA	SUPPLY AIR	CONSTRUC
EF	EXHAUST FAN	SQ	SQUARE	WILL BE UN
ELEC	ELECTRICAL	TDH	TOTAL DISCHARGE HEAD	
ER	EXHAUST REGISTER	TEMP	TEMPERATURE	
ESP	EXTERNAL STATIC PRESSURE	TYP	TYPICAL	
EXH	EXHAUST	VAV	VARIABLE AIR VOLUME	
EXIST	EXISTING	VD	MANUAL VOLUME DAMPER	
FC	FAN COIL	VIR	VENT TO ROOF	
IFD	FIRE DAMPER	W /	WITH	

ZONE DAMPER

MECHANICAL SYMBOLS

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RETURN AIR OR EXHAUST REGISTER VOLUME DAMPER FIRE DAMPER OR CEILING RADIATION DAMPER COMBINATION FIRE SMOKE DAMPER MOTORIZED DAMPER RELATIVE HUMIDITY SENSOR MOUNTED AT +48" A.F.F. TO TOP OF CONTROL DEVICE PLATE. ROOM PRESSURE SENSOR MOUNTED AT +48" A.F.F. TO TOP OF CONTROL DEVICE PLATE. THERMOSTAT MOUNTED AT +48" A.F.F. TO TOP OF CONTROL DEVICE PLATE. VAV THERMOSTAT ('XX' INDICATES CORRESPONDING AHU) MOUNTED AT +48" A.F.F. TO TOP OF CONTROL DEVICE PLATE. EXHAUST FAN THERMOSTAT MOUNTED @ +48" A.F.F. TO TOP OF CONTROL DEVICE PLATE. EQUIPMENT TAG CO2 SENSOR MOUNTED IN DUCT SMOKE DETECTOR MOUNTED IN DUCT DETAIL DESIGNATION 18"x18" CEILING ACCESS PANEL PIPE RISER TO UPPER LEVEL CAPPED LINE PIPE ELBOW UP/DOWN PIPE BRANCH TOP CONNECTION PIPE BRANCH BOTTOM CONNECTION PIPE UNION VAV BOX

POINT OF CONNECTION

POINT OF DISCONNECTION

f----í \mathbf{X} <u>ا</u> \searrow - -VD L____ F---FS---M ----RÐ RÐ (T)T-X# Τ -C02

FIA

FULL LOAD AMPS

SD # M#.# 0------C------_____U_____ _____||_____ \bullet

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													I	AIR H	ANDI	LER U	JNIT	SCHE	EDUL	ĿΕ								
UNIT NO.	AREA SERVED	CFM O/	A CFM	MIN OA CFM	TOTAL CAPACITY (BTUH)	SENS. CAPACITY (BTUH)	EXT. STATIC PRESSURE	ENT. DB	AIR TEMP °F WB	ERATURE LVG. ° DB	F WB	EWT. (°F)	(LWT (°F)	CHW COIL Flow GPM	DATA LAT DB	°F WB	СРҮ МВН	REHEAT CO EWT (°F)	DIL DATA FLOW (GPM)	LAT. °F DB	HP	FLA	MOTOR MCA	DATA MOP	V/HZ/PH	PRE-FILTER	UNIT WEIGHT (LB)	REMARKS
AH S5A	OR STERILE STORAGE	2335	330	330	61,700	47,800	1.5	73.1	61.7	53.0	52.0	45.0	55.0	15.0	53.0	52.0	26.1	140.0	2.61	63.9	1.5	2.4	3	15	460/60/3	2" MERV 8	277	BASIS OF DESIGN: MAGICAIRE HBB OR APPROVED EQUAL. PROVIDE W/ VFD AND UV LIGHT. SEE NOTES FOR ADDITIONAL DETAILS.
AH S5B	OR CLERK/WAITING RM (SM)	545	65	_	15,300	11,600	0.7	74.7	62.7	53.7	52.6	45.0	55.0	3.1	53.7	52.6	7.2	140.0	0.72	67.6	1	1.6	2	15	460/60/3	2" MERV 8	200	BASIS OF DESIGN: MAGICAIRE HBB OR APPROVED EQUAL. PROVIDE W/ VFD AND UV LIGHT. SEE NOTES FOR ADDITIONAL DETAILS.

FILTER HOUSING SCHEDULE

UNIT NO.	SERVICE	LENGTH/ WIDTH (IN.)	CFM	PREFILTER THICKNESS	MINIMUM PREFILTER EFFICIENCY	PREFILTER RATED PRESSURE DROP, ASSUMED FILTER FACE AREA 4 SQFT	MAIN FILTER THICKNESS	MAIN FILTER EFFICIENCY	MAIN FILTER RATED PRESSURE DROP, ASSUMED FILTER FACE AREA 4 SQFT	SEAL TYPE	MATERIAL	DIFFERENTIAL PRESSURE GAGE	LOCATION	ACCESS SIDE	REMARKS
FH S5A	AH-S5A	27"(1H) X 51" (2W)	2335	2"	MERV 8	0.2"WG @ 2000 CFM	12"	HEPA	1"WG @ 2000 CFM	GASKET	STAINLESS STEEL	BMS	INDOOR	SEE PLANS	BASIS OF DESIGN: TRIDIM TRI-LOCK GS/FS HEPA HOUSING OR APPROVED EQUAL.
FH S5B	AH-S5B	24"(1H) X 24" (1W)	545	_	_	_	4"	MERV 14	0.38"WG @ 2000 CFM	GASKET	STAINLESS STEEL	BMS	INDOOR	SEE PLANS	BASIS OF DESIGN: TRIDIM TML HOLDING FRAME OR APPROVED EQUAL.

TESTING, ADJUSTING, AND BALANCING NOTES

- 1. BALANCE, ADJUST, AND TEST: AN INDEPENDENT TEST AND BALANCE FIRM WHICH IS AABC OR NEBB CERTIFIED SHALL BE RETAINED FOR CHECK/TEST-START-UP AND TESTING AND BALANCING OF AIR AND WATER SYSTEMS. THE TEST REPORT SHALL BE IN A FORMAT APPROVED FOR SYSTEMS OF THIS TYPE AND COMPLEXITY. QUALIFICATIONS OF INDEPENDENT TEST AND BALANCE FIRM SHALL BE SUBMITTED FOR REVIEW. TAB WORK SHALL COMPLY WITH THE LATEST PROCEDURAL STANDARDS AND SMACNA'S TAB PROCEDURAL GUIDE.
- TAB CONTRACTOR SHALL COORDINATE WITH MECHANICAL CONTRACTOR AND CONTROLS CONTRACTOR TO PROVIDE THE CFM AND GPM AS SHOWN ON SCHEDULES FOR EACH EQUIPMENT.
- 3. CONTRACTOR SHALL BE RESPONSIBLE FOR BALANCING EXISTING SYSTEMS AS MAY BE NECESSARY TO ACHIEVE DESIGN AIRFLOW AND CHILLED WATER FLOW FOR NEW EQUIPMENT SPECIFIED ON THIS PROJECT. THE ADDITIONAL FLOW REQUIRED FOR THIS PROJECT WILL REQUIRE ADDITIONAL GPM IN THE LOOP SERVICING THE PROJECT. THIS SHALL BE ACHIEVED BY ADJUSTING THE EXISTING MAIN BRANCH BALANCING VALVES TO PROVIDE SUFFICIENT FLOW TO THE EQUIPMENT SPECIFIED.
- 4. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING LOCATION AND PROPER OPERATION OF ALL EXISTING AND NEW BALANCING VALVES AND VOLUME DAMPERS (1) WEEK MINIMUM PRIOR TO COMMENCEMENT OF TAB WORK, AND REPORT TO THE CONSTRUCTION MANAGER ANY DEFICIENCY WHICH MAY PROHIBIT OR OTHERWISE ADVERSELY AFFECT THE TEST AND BALANCE WORK. SHOULD LACK OF SUCH EXAMINATION RESULT IN ADDITIONAL TEST AND BALANCE WORK, THE COST FOR SUCH WORK SHALL BE BORNE BY THE CONTRACTOR.

5. SEE WRITTEN SPECIFICATIONS FOR ADDITIONAL TAB REQUIREMENTS.

ROOM NAME OR STERILE STOR/ OR CLERK OR WAITING (SM

<u>SUPPLY AIR</u>	[DESCF
$\langle A \rangle$	Д Т	ILL AI
<u>RETURN/EXHAUST AIR</u>] A T	<u>)escf</u> Ll Ai Itus
$ \xrightarrow{X/X} \xrightarrow{X/X} XX, X-W $	AIR	TERMI
	DIRE	ECTION
	AIR	FLOW
	AIR	TERMI

ROOM DESIGN SETPOINTS

	ROOM PRESSURE RELATIONSHIP	DESIGN ROOM TEMP	DESIGN ROOM RH%
RAGE	POSITIVE	70	50
	NO REQUIREMENT	72	50
M)	NO REQUIREMENT	72	50

AIR TERMI	N	AL SCHEDULE
<u>PTION</u> MINUM CONSTRUCTION, S DC-AA OR APPROVED EQI	URFA UAL.	ACE MOUNTED, OPPOSED BLADE VOLUME DAMPER.
<u>PTION</u> MINUM CONSTRUCTION, L 50FL OR APPROVED EQUA	AY—II AL.	N, ALUMINUM OPPOSED BLADE VOLUME DAMPER.
L SIZE (IN.)	A	IR TERMINAL NOTES
THROW (SUPPLY ONLY) FM) L SYMBOL	1.	ALL AIR DEVICES SHALL BE FULLY INSULATED SUCH THAT NO METAL PORTIONS OF THE DIFFUSER ARE EXPOSED IN UNCONDITIONED AREAS. PROVIDE MOLDED FIBERGLASS INSULATION DIFFUSER BLANKET FOR 24"X24" LAY-IN MODULES. DIFFUSER BLANKET SHALL HAVE FOIL BACK VAPOR BARRIER WITH 6.0 R-VALUE OR GREATER.
	2.	ALL AIR DEVICES SHALL BE UNIFORM IN COLOR. OWNER'S REPRESENTATIVE TO CONFIRM COLOR OF ALL AIR TERMINALS.

NOTES

- 1. PROVIDE FRANKLIN VFD P SERIES, EATON, OR APPROVED EQUAL. FRANKLIN Q-LINK SHALL NOT BE ACCEPTED.
- 2. PROVIDE AC LINE REACTOR TO REDUCE HARMONICS. PROVIDE DC FILTERS WHEN CABLE LENGTHS ARE GREATER THAN 20'.
- 3. PROVIDE TOTALINE UV LIGHTS.

DUCT AND PLENUM INSULATION NOTES

- 1. DUCT INSULATION THICKNESS SHALL BE GREATER THAN OR EQUAL TO R-6 FOR SUPPLY AND RETURN DUCTS AND PLENUMS LOCATED IN UNCONDITIONED SPACES.
- 2. DUCT INSULATION THICKNESS SHALL BE GREATER THAN OR EQUAL TO R-8 FOR SUPPLY AND RETURN DUCTS AND PLENUMS LOCATED OUTDOORS.
- DUCTS AND PLENUMS TO BE SEALED PER IMC 2015.
 PROVIDE RIGID INSULATION FOR DUCTWORK EXCEPT AT DUCT JOINTS
- 4.1. AT DUCT JOINTS, FLEXIBLE INSULATION SHALL BE USED.

PIPING INSULATION NOTES

1. PROVIDE PIPE INSULATION THICKNESSES PER IECC 2015 TABLE C403.2.10.

ENGINEERING P A R T N E R S 455 E. Lanikaula S Hilo Hawai'i 96720 Main (808) 933-7900 www.epinc.pro Hawai'i Las Velgas INR Y. TAMIA LICENSED PROFESSIONAL ENGINEER Exp. 04/30/22 No. 7936-M HAWAII, " THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION, CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. SIGNATURE VENT AGE AIR COND & ' RGERY STORA DEMOLITION A PLAN - SUR(RE RE RE 96750 AGE HVAC REPLACEMENT FOR SURGERY STOR KONA COMMUNITY HOSPITAL 79-1019 HAUKAPILA ST, KEALAKEKUA, HI TMK: (3) 7-9-010:081 DRAWN BY: DESIGNED E DН CHECKED BY: QC'D BY: NYT EW JOB NO. 12022-17-01 DWG. NO. M-201 SHEET NO. 12 OF 24

NOTICE

- 1. CONTRACTOR SHALL VERIFY EXISITING CONDITIONS PRIOR TO START OF WORK.
- 2. CAP AND SEAL UNUSED PORTIONS OF DUCTWORK AND OPENINGS.

NOTICE

- CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR 1. TO START OF WORK.
- 2. ALL THERMOSTATS SHALL BE MOUNTED AT +48" A.F.F. TO THE TOP OF CONTROL DEVICE PLATE. INSTALLATION AND MOUNTING HEIGHTS SHALL CONFORM TO ADAAG 2010.
- 3. PROVIDE AS MUCH CLEARANCE AS POSSIBLE TO THE EQUIPMENT. KEEP DUCTS AS HIGH AS POSSIBLE.
- COORDINATE WITH GC TO REROUTE PIPING, DATA, 4. CONDUIT, FIRE SPRINKLER LINES AS REQUIRED.
- AVOID CONFLICTS WITH CONCRETE BEAMS. 5.
- PROVIDE LIVE LINE TAP FOR NEW POINT OF CONNECTIONS. THE SHUT DOWN OF ZONES OUTSIDE THE SCOPE OF WORK WILL NOT BE ALLOWED.
- 7. ALL PIPE AND DUCT PENETRATIONS THROUGH FIRE RATED WALL SHALL BE FIRE STOPPED TO MAINTAIN FIRE RATING OF THE ASSEMBLY.
- SEE BLDG. DWGS FOR FIRE RATED WALL LOCATIONS. 8.
- NOT ALL VALVES, DAMPERS, AND SENSORS SHOWN FOR CLARITY. REFER TO CONTROL DIAGRAMS AND SHEET M-401 FOR ADDITIONAL INFO
- 10. PROVIDE MANUFACTURER RECOMMENDED CLEARANCES FOR EQUIPMENT.
- 11. MAINTAIN 36" CLEARANCE IN FRONT OF CONTROL/POWER ENCLOSURES PER NEC.
- 12. CHECK CLEARANCES BEFORE INSTALLING DUCTWORK.
- CONTRACTOR SHALL REQUEST FOR PREBID AND 13. PRECONSTRUCTION WALKTHROUGH OF PROJECT.

NOTES

- NEW 12/12 OA DUCT UP TO (N)ROOF JACK. WIDEN EXISTING PENETRATION AS REQUIRED. BOTTOM OF INTAKE SHALL BE A MIN. 3FT ABOVE ROOF. FURNISH WITH 4-PLY TRI-DEK MERV 8 FILTER AT INTAKE ON ROOF.
- PROVIDE WITH TOTALINE UV LIGHTS ON EACH SIDE OF AH TO PROVIDE FULL COVERAGE OF COOLING COIL.
- ③ PROVIDE DDC COMPATIBLE DIFFERENTIAL PRESSURE SENSOR TO SENSE WHEN TO CHANGE FILTER.
- (4) PROVIDE SECONDARY DRAIN PAN. PROVIDE MOISTURE SENSOR IN PAN, WIRE UNIT SUCH THAT FAN COIL SHUTS DOWN UPON DETECTION OF MOISTURE.
- 5 CONNECT NEW 1" CONDENSATE DRAIN LINES TO EXISTING 1" CONDENSATE DRAIN LINE.
- 6 CONNECT NEW 1½" CHILLED WATER SUPPLY AND RETURN LINES TO EXISTING 2" CHILLED WATER SUPPLY AND RETURN LINES. SUPPLY AND RETURN LINES ABOVE CEILING. CONTRACTOR TO VERIFY SIZE AND LOCATION IN FIELD.
- CONNECT NEW 1" REHEAT WATER SUPPLY AND RETURN LINES TO EXISTING 1" REHEAT WATER SUPPLY AND RETURN LINES. SUPPLY AND RETURN LINES ABOVE CEILING. CONTRACTOR TO VERIFY SIZE AND LOCATION IN FIELD.
- 8 VFD ABOVE CEILING. PROVIDE 36" MIN. CLEARANCE IN FRONT OF THE VFDS. PROVIDE FRANKLIN P-SERIES OR EATON. FRANKLIN Q-LINK SHALL NOT BE ACCEPTED.
- PROVIDE DDC ROOM CONTROLLER(S) TO VIEW TEMPERATURE, RELATIVE HUMIDITY, AND ROOM PRESSURE VALUES. PROVIDE ABILITY TO ADJUST TEMPERATURE SETPOINT +/-5 DEGREES F.

SEQUENCE OF OPERATION

- DRIVE (VFD) CONTROLLERS IN THE AUTOMATIC POSITION. THE AIR HANDLING UNIT RUNS CONTINUOUSLY. PROVIDE AUTOMATIC RESTART OF AIR-HANDLING UNITS AFTER A POWER FAILURE, STARTING AT THE LAST OPERATING CONDITION.
- 2. AHU SHALL RUN ON A 7-DAY PROGRAMMABLE TIME SCHEDULE, AS DICTATED BY THE EXISTING CENTRAL CONTROL SYSTEM, OR WHENEVER A SINGLE ZONE IS OCCUPIED.
- 3. DUCT SMOKE DETECTOR WILL PROVIDE AIR-HANDLING UNIT SHUT DOWN & FACP ALARM UPON SENSING SMOKE. WITH A SIGNAL TO START THE FANS AND EXCESS PRESSURE (> 4 IN. WG, ADJUSTABLE) AT THE HARDWIRED LOW OR HIGH LIMIT STATIC PRESSURE SENSORS, SHUT DOWN THE AIR-HANDLING UNIT AND ALARM THE BMS.
- 4. THE SUPPLY AIR FAN VFDS WILL BE CONTROLLED BY REMOTE DUCT STATIC PRESSURE SENSORS TO MAINTAIN A DUCT STATIC PRESSURE OF 2 IN WG (ADJUSTABLE). UPON DETECTING A REDUCTION IN DUCT STATIC PRESSURE BELOW SETPOINT, THE VFD WILL SPEED UP THE AHU FANS UNTIL DUCT STATIC PRESSURE SET POINT IS REACHED. PROVIDE A SUPPLY AIR STATIC PRESSURE RESET SEQUENCE TO REDUCE THE STATIC PRESSURE SET POINT WHILE MAINTAINING AIRFLOW. A SUPPLY FAN FAILURE WILL ALARM THE BMS.
- 5. THE BMS CONTINUALLY RECEIVES INPUTS FROM THE RELATIVE HUMIDITY SENSORS LOCATED IN THE RETURN AIR DUCTWORK AND CONTROLS SUPPLY AIR TEMPERATURE AND HOT WATER REHEAT TO PROVIDE THE LEAST AMOUNT OF DEHUMIDIFICATION REQUIRED. SETPOINTS FOR AHU SHALL BE 50% RH (ADJ.). PROVIDE A SUPPLY AIR TEMPERATURE RESET SEQUENCE TO RESET THE SUPPLY AIR TEMPERATURE WHILE MAINTAINING RELATIVE HUMIDITY SETPOINT. THE BMS WILL OPTIMIZE ENERGY USE IN ALL MODES WHILE MAINTAINING RELATIVE HUMIDITY LEVELS.
- 6. DEHUMIDIFICATION: THE CONTROLLER SHALL MEASURE THE RETURN AIR HUMIDITY VIA RELATIVE HUMIDITY SENSOR AND OVERRIDE THE COOLING SEQUENCE TO MAINTAIN RETURN AIR HUMIDITY AT OR BELOW 50%RH (ADJ.).

6.1. IF THE SPACE IS BELOW 48% (ADJ.), REDUCE THE CHW FLOW TO MAINTAIN THE ZONE TEMPERATURE SETPOINT, 70°F (ADJ.).

- 6.2. IF THE SPACE IS ABOVE 50% (ADJ.), DEHUMIDIFICATION SHALL START.
- COOLING SHALL BE PROVIDED TO REACH ZONE TEMPERATURE SETPOINT. 6.2.1. WHEN ZONE TEMPERATURE SETPOINT IS REACHED. INCREASE FLOW THROUGH REHEAT COIL TO MAINTAIN ZONE TEMPERATURE SETPOINT TO PREVENT OVER COOLING THE SPACE. 6.2.2.
- 7. THE MODULATING OUTSIDE AIR CONTROL DAMPER IS LINKED TO A RETURN AIR DAMPER (RETURN AIR DAMPER CLOSES AS THE OUTSIDE AIR DAMPER OPENS). OUTSIDE AIR DAMPERS WILL MODULATE AS REQUIRED TO MAINTAIN ROOM PRESSURE RELATIONSHIPS. OUTSIDE AIR FLOW WILL BE MONITORED TO ENSURE A SET MINIMUM OUTSIDE AIR EXCHANGE RATE IS MAINTAINED AS FAN SPEED VARIES.
- 8. THE BMS CONTINUALLY RECEIVES INPUTS FROM THE TERMINAL UNIT CONTROLLERS/SPACE TEMPERATURE SENSORS TO DETERMINE THE ROOM REQUIRING THE GREATEST AMOUNT OF COOLING. THE CHILLED WATER TWO-WAY MODULATING VALVE IS CONTROLLED TO MAINTAIN THE SUPPLY AIR TEMPERATURE SET POINT OF 55 DEG F LEAVING AIR TEMPERATURE. PROVIDE A SUPPLY AIR TEMPERATURE RESET SEQUENCE TO RESET THE TEMPERATURE WHILE MAINTAINING THE ROOM REQUIRING THE GREATEST AMOUNT OF COOLING.
- 9. PROVIDE MONITORING FOR OUTDOOR AIR & RETURN AIR CO2 SENSORS. PROVIDE AN ALARM TO THE BMS WHEN ANY RETURN AIR CO2 SENSOR > 500 PPM (ADJ.) ABOVE THE OUTDOOR AIR CO2 REFERENCE.
- 10. DIFFERENTIAL PRESSURE SWITCH(DPF) SHALL MONITOR THE CLEAN/DIRTY FILTER STATUS AND WILL ALARM IF THE STATIC PRESSURE EXCEEDS 0.3 IN. W.C.(ADJ.) FOR MERV 14 AND LOWER EFFICIENCIES. FOR HEPA FILTERS, ALARM IF THE STATIC PRESSURE EXCEEDS DOUBLE THE INITIAL/CLEAN DIFFERENTIAL STATIC PRESSURE (ADJ.).

<u>VAV DAMPERS</u>

1. VAV DAMPERS SHALL BE PRESSURE INDEPENDENT TYPE. THERMOSTATS SHALL BE LOCATED IN EACH ZONE AND PROVIDE AN INPUT TO THE VAV CONTROLLER. AS AN INCREASE IN TEMPERATURE IS MEASURED BY THE THERMOSTAT, THE VAV DAMPER WILL OPEN. AS A DECREASE IN COOLING DEMAND IS MEASURED, THE VAV DAMPER WILL CLOSE. AS TEMPERATURE SETPOINT IS REACHED, THE BMS WILL CONTROL THE HOT WATER REHEAT TO MAINTAIN SETPOINT TEMPERATURE WHILE MAINTAINING MINIMUM AIRFLOW.

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	DUCT STATIC PRESSURE	SUPPLY AIR IEMP Return air temp	RETURN AIR RH	COOILING COIL CONTROL VALVE	REHEAT COIL CONTROL VALVE	AIR FLOW	CHILLED WATER FLOW	REHEAT WATER FLOW	CHILLED WATER SUPPLY TEMP	CHILLED WATER RETURN TEMP	REHEAT WATER SUPPLY TEMP	REHEAT WATER RETURN TEMP	ROOM TEMPERATURE	ROOM RELATIVE HUMIDITY	ROOM PRESSURE	FILTER STATUS	AHU FILTER STATUS	FAN RUN STATUS	FAN SPEED CONTROL	RETURN AIR DAMPER POSITION	OUTSIDE AIR DAMPER POSITION	VAV DAMPER POSITION	START/STOP		VFD CONTROL	SCHEDULE	TREND	ALARM	Main (808) 933-7900 www.epinc.pro Hawai'i Las Velgas
EQUIPMENT LIST: AH-S5A AH-S5B ROOM STAT (TYP.)	X X X	X X X X	X X X	X X	X X X	X X	X X	X X	X X	X X	X X X	X X	X	X	X	X X	X X	X X	X X X	X X	X X		X X	X X	X X	X X X X	X X X	X X X X	LICENSED PROFESSIONAL ENGINEER Exp. 04/30/22 No. 7936-M - AMAII, U.S.P.
NOTES 1. ALL POINTS TO	o show (ON EXIS	ting e	DELTA	BMS (GRAPH	IICS.																						THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION, CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.
\S SPECIFIED (TYP). ALL SHALL BE IN		DULE		VS			LOCITY TRON PROVE DU PR SEI	(SENS ELF C ED EQI CT ST, ESSUR NSOR	SOR, DR UAL. ATIC																				SEQ OF OPERATIONS, CONTROL, AND ISOMETRIC DIAGRAM REV. REV. REV. REV.
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SHEET NO. 14 OF 24

EXIST. BUILT-UP ROOFING -

DUCT SIZE + 25% · 1/4" MESH BIRDSCREEN WITH MERV 8 FILTER

AN. AIR VENT
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/O-WAY MODULATING VALVE, EE NOTES)
DNCENTRIC
MPERATURE AND PRESSURE
CONDARY RAIN PAN
 VERIFY TWO-WAY MODULATING VAL TWO-WAY MODULATING VALVE SIZE PIPE SIZE. MAXIMIZE VALVE WHEN
 VALVE SHALL BE BELIMO OR APPR SEE M301 DDC POINT LIST FOR S
TYP. CHIL

- OTHER FIRE PROTECTION SYSTEMS FOR THE BLDG.
- 2. UNLESS DIRECTED OTHERWISE, EXISTING FIRE PROTECTION ITEMS/ELEMENTS THAT ARE IN USE/SERVICE/OPERATION PRIOR TO START OF WORK IN THIS CONTRACT ARE TO REMAIN IN USE/SERVICE/OPERATION UPON COMPLETION OF PROJECT, WHETHER THESE ITEMS/ ELEMENTS ARE SHOWN ON DRAWINGS OR NOT. WHERE THESE ITEMS/ELEMENTS OBSTRUCT NEW WORK AND/OR ARE IN EXPOSED LOCATIONS WHERE NEW CONCEALING/FINISH STRUCTURE IS BEING PROVIDED UNDER SEPARATE CONTRACT, THEY SHALL BE RELOCATED AND ASSOCIATED WORK REVISED TO BE OUTSIDE OF THE EXPOSED LOCATION, OR WITHIN NEW CONCEALING STRUCTURE PROVIDED.
- 3. COORD. ALL SPRINKLER DROPS FOR HEAD LOCATION WITH CLG. GRIDS, STRUCTURE AND WORK IN OTHER CONTRACTS IN SAME AREA. VERIFY LOCATION OF ALL ITEMS FROM ARCHITECTURAL AND OTHER CONTRACTS PLANS INCLUDED W/COMPLETE CONSTRUCTION DOCUMENTS.
- 4. FIRE PROTECTION CONTR. TO SECURE AND VERIFY ALL MEASUREMENTS AND CONDITIONS AT JOB BEFORE PROCEEDING WITH FABRICATION OF WORK.
- 5. ALL EXISTING SPRINKLER HEAD LOCATIONS ARE TO BE FIELD VERIFIED BY THE FIRE PROTECTION CONTRACTOR IN ADVANCE.
- 6. FIRE PROTECTION CONTRACTOR SHALL SIZE ALL SPRINKLER SYSTEM PIPING, WITH THE EXCEPTION OF PIPING SIZES INDICATED ON THESE PLANS AT SPECIFIC LOCATIONS.
- 7. FIRE PROTECTION CONTR. TO PROVIDE ALL ADDITIONAL STEEL, HANGER MATERIALS, RODS AND CLAMPS AS REQ'D. FOR COORD. AND APPROVED INSTALLATION.
- 8. FIRE PROTECTION CONTRACTOR TO PROVIDE ADDITIONAL SPRINKLER HEADS BELOW DUCTS OR EQUIPMENT IN EXCESS OF 4 FEET WIDE, OR WHERE MULTIPLE DUCTS AND/OR EQUIPMENT INSTALLATIONS OBSTRUCT AN AREA IN EXCESS OF 4 FEET WIDE IN MECHANICAL ROOMS OR OTHER AREAS WITH EXPOSED STRUCTURE AND UPRIGHT HEADS.
- 9. NO FIRE PROTECTION PIPING IS TO BE RUN THRU OR ABOVE ELECTRICAL SWITCHGEAR ROOMS, ELECTRICAL UTILITY CLOSETS/ROOMS, TELEPHONE/COMMUNICATIONS, CLOSETS/ROOMS, AND/OR DATA PROCESSING/STORAGE ROOMS EXCEPT PIPING LOCATED IN THESE SPACES SUPPLYING PROTECTION FOR THAT SPECIFIC AREA. BE CONFIRMED FROM ARCHITECTURAL DOCUMENTATION PRIOR TO LAYOUT OF F.P. WORK.
- A TAMPER SWITCH.
- 12. ALL PIPING SHOWN IS ABOVE CEILING IN AREAS WITH DROPPED CEILINGS, OR AT BOTTOM OF SUPPORT STRUCTURE FOR FLOOR OR ROOF ABOVE IN EXPOSED STRUCTURE AREAS, UNLESS INDICATED OTHERWISE.
- 13. PROVIDE SPRINKLERS AS REQUIRED AT SOFFITS, SKYLIGHTS, PARTIAL HEIGHT PARTITIONS, AND ANY OTHER SPECIFIC ARCHITECTURAL/STRUCTURAL CONDITIONS AND/OR FEATURES AFFECTING SPRINKLER COVERAGE. VERIFY CONDITIONS FROM STRUCTURAL DRAWINGS.
- 14. CUTTING/REMOVAL AND REPAIR/REPLACEMENT OF EXISTING STRUCTURES AND/OR SURFACES REQUIRED FOR REMOVAL OF EXISTING AND/OR INSTALLATION OF NEW WORK IS BY THIS CONTRACTOR, UNLESS INDICATED OTHERWISE. REPAIR/REPLACEMENT TO BE TO ORIGINAL CONDITION, TO MATCH ADJACENT STRUCTURES AND SURFACES IN TYPE & KIND. THIS INCLUDES CEILINGS, PARTITIONS, FLOORS, SOFFITS, ETC., BOTH WITHIN & OUTSIDE THE REVISED/REMODELED AREAS THAT ARE AFFECTED BY WORK REQUIRED FOR COMPLETION OF THIS PROJECT. NOT APPLICABLE IF EXISTING STRUCTURES AND/OR SURFACES ARE BEING REVISED/REMOVED/REPLACED UNDER SEPARATE CONTRACT.
- 15. THIS AUTOMATIC SPRINKLER SYSTEM DESIGN IS CONCEPTUAL AND IS SUBMITTED AS A BASIS FOR BIDDING. A MINIMUM OF SIX (6) SETS OF COMPLETE WORKING PLANS (SHOP DRAWINGS), HYDRAULIC CALCULATIONS AND MANUFACTURERS DATA, PREPARED IN ACCORDANCE WITH NFPA 13 SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER, AND HAWAII INSURANCE RATING BUREAU FOR APPROVAL BEFORE INSTALLATION. THREE (3) SETS OF COMPLETE WORKING PLANS AND HYDRAULIC CALCULATIONS, REVIEWED AND STAMPED BY A MECHANICAL ENGINEER LICENSED IN THE STATE OF HAWAII SHALL BE SUBMITTED TO THE FIRE AND BUILDING DEPARTMENTS FOR APPROVAL BEFORE INSTALLATION.
- 16. THE SPRINKLER SYSTEM DESIGN AND INSTALLATION SHALL BE IN ACCORDANCE WITH NFPA 13–2010. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL SPRINKLER SYSTEM COMPONENTS AND COORDINATE WITH THE VARIOUS TRADES.
- 17. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL SPRINKLER COMPONENTS RELATIVE TO PARTITIONS, LIGHT FIXTURES, MECHANICAL DUCT WORK, AND COORDINATE WITH VARIOUS TRADES.
- 18. ALL DEVICES AND EQUIPMENT SHALL BE UL LISTED OR FM APPROVED.
- 19. AUTOMATIC WET PIPE SPRINKLER PROTECTION SHALL BE PROVIDED THROUGHOUT THE ENTIRE

FIRE SPRINKLER SYSTEM NOTES

1. FIRE PROTECTION CONTR. SHALL PROVIDE ALL ADDITIONAL PIPING, EQUIP. AND ACCESSORIES WHETHER SHOWN ON DWG'S. OR NOT, WHICH IS REQ'D TO PROVIDE COMPLETE SPRINKLER AND

- 10. ALL VALVES CAPABLE OF INTERRUPTING FIRE PROTECTION SYSTEM FLOWS SHALL BE PROVIDED WITH
- 11. RUN ALL PIPING IN FINISHED AREAS CONCEALED WHEREVER POSSIBLE.

BUILDING INCLUDING COMBUSTIBLE EAVES AND ATTIC.

- 20. ALL SPRINKLERS SHALL BE UL LISTED AS FOLLOWS:
- QUICK RESPONSE PENDENT: CENTRAL, VIKING, STAR, WHITE FINISH WITH RECESSED ESCUTCHEON OR EQUAL.
- QUICK RESPONSE UPRIGHT: CENTRAL, VIKING, STAR OR EQUAL.
- NOTE: ALL SPRINKLERS SHALL BE A QUICK RESPONSE, ORDINARY TEMPERATURE UNLESS NOTED OTHERWISE.
- 21. SPRINKLER PIPING SHALL COMPLY WITH NFPA 13, EXCEPT THAT PLASTIC PIPE OR COPPER TUBING WILL NOT BE PERMITTED. ALL PIPING SHALL BE BLACK STEEL AND BLACK STEEL LESS THAN 2-1/2 INCHES SHALL BE SCHEDULE 40.
- 22. PIPING SHALL BE PROVIDED WITH EARTHQUAKE PROTECTION IN ACCORDANCE WITH NFPA 13, ZONE
- 23. PROVIDE INSPECTION, FLUSHING AND HYDROSTATIC TESTS IN ACCORDANCE WITH NFPA 13.
- 24. PROVIDE SPARE SPRINKLERS, WRENCH AND CABINET IN ACCORDANCE WITH NFPA 13.
- 25. ALL EXPOSED SPRINKLER PIPING AND ACCESSORIES SHALL BE PAINTED TO MATCH ADJACENT SURFACES. SPRINKLER HEADS SHALL NOT BE PAINTED.
- 26. SPRINKLERS IN CLOSETS SHALL BE PROVIDED WITH GUARDS.
- 27. FIRE PROTECTION CONTRACT WORK IS TO COMPLY WITH THE APPLICABLE NFPA STANDARDS REFERENCED IN THE BUILDING CODE (IBC) AS ADMINISTERED BY THE LOCAL REVIEW/INSPECTION/APPROVAL AUTHORITIES, THE INSURANCE UNDERWRITER'S GUIDELINES, THE LOCAL FIRE PREVENTION AUTHORITY (FIRE MARSHALL'S OFFICE/FIRE DEPT.), AND ANY OTHER AUTHORITIES HAVING JURISDICTION, AS CONFIRMED AND VERIFIED IN ADVANCE BY THE LICENSED F.P. CONTRACTOR.
- 28. UNLESS DIRECTED OTHERWISE, WHERE EXISTING STRUCTURE IS BEING REMOVED/RELOCATED/REMODELED OR OTHERWISE REVISED, THE FIRE PROTECTION CONTRACTOR SHALL REVISE THE EXISTING SPRINKLER INSTALLATION AND PROVIDE NEW FIRE PROTECTION ITEMS/ELEMENTS AS REQUIRED TO PROVIDE/MAINTAIN THE COVER SPECIFIED HEREIN. THIS INCLUDES SPACING AND LOCATION REQUIREMENTS (MINIMUM/MAXIMUM) BETWEEN SPRINKLER HEADS/PIPING, AND RELATIVE TO WALLS, SOFFITS, PARTITIONS AND ANY OTHER OBSTRUCTIONS TO SPRINKLER DISCHARGE.
- 29. ANY NEW FIRE PROTECTION ITEMS/ELEMENTS REQUIRED ARE TO MATCH EXISTING ADJACENT ITEMS/ELEMENTS BY TYPE, KIND AND MANUFACTURER AS VERIFIED BY THE FIRE PROTECTION CONTRACTOR IN FIELD, UNLESS INDICATED OTHERWISE.
- 30. NOTE THAT THE EXISTING BUILDING IS FULLY SPRINKLERED, AND WORK IN THIS CONTRACT INCLUDES ALL ITEMS NECESSARY TO MAINTAIN THE APPROPRIATE SPRINKLER PROTECTION IN THE REMODELED/REVISED PORTION OF THE STRUCTURE, AS WELL AS ADJACENT AREAS WHERE WORK ASSOCIATED WITH THIS PROJECT IS BEING DONE.
- 31. ONLY NEW SPRINKLER HEADS SHALL BE INSTALLED. THE REUSE OF EXISTING OR RECONDITIONED SPRINKLER HEADS SHALL NOT BE PERMITTED
- 32. PROVIDE NEW SPRINKLER HEADS IN ADDITION TO EXIST. HEADS AS REQ'D. BY INSTALLATION OF NEW LIGHT FIXTURES, DIFFUSERS, ETC. (PROVIDED AS PART OF WORK IN OTHER CONTRACTS INCLUDED IN THIS PROJECT), TO MAINTAIN THE SPECIFIED. SPRINKLER PROTECTION. VERIFY LOCATION OF ALL ITEMS FROM DOCUMENTATION PROVIDED WITH THE CONSTRUCTION PACKAGE, AND COORD. INSTALLATION W/ THE APPROPRIATE CONTRACTORS.
- 33. CONTRACTOR TO COORDINATE ANY SPRINKLER SYSTEM SHUT DOWN WITH THE WHFD AND/OR PROJECT MANAGER AND ALARM MONITORING COMPANY. CONTRACTOR TO PROVIDE A LINE WATCH FOR THE DURATION OF THE SYSTEM DOWN TIME.
- 34. THIS AUTOMATIC SPRINKLER SYSTEM SHALL BE SUPERVISED BY AN APPROVED CENTRAL, PROPRIETARY, OR REMOTE STATION SERVICE OR A LOCAL ALARM WHICH WILL GIVE AN AUDIBLE SIGNAL AT A CONSTANTLY ATTENDED LOCATION. THE SYSTEM SHALL BE CONNECTED TO THE BUILDING FIRE ALARM SYSTEM WHICH WILL BE MONITORED.
- 35. ALL PIPING IN CORRIDORS SHALL BE CONCEALED BY SOFFITS. ALL PIPING IN COMMON ROOMS SHALL FOLLOW CEILING SLOPES AND WALL SURFACES.

	FIRE SPRINKLER PIPE			
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//	CHECK VALVE			
FDC	FIRE DEPARTMENT CONNECTION		455 E. La	nikaulc
UP/DN (TS)	UP/DOWN VALVE TAMPER SWITCH		Hilo Hawa Main (808)	ai`i 967) 933-7
DIP	DUCTILE IRON PIPE, CLASS 521		www.ep Hawai`i ∣	, pinc.pr Tas Ve
FCV	FLOOR CONTROL VALVE			
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PS	ALARM PRESSURE SWITCH		LICEI PROFES	NSED SSIONAL
SV	SOLENOID FLOW CONTROL VALVE		Exp. 04 No. 7	4/30/22 936-M
	WET PIPE SPRINKLER RISER		HAWAI	I, U.S.P
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SYSTEM DES	IGN CRITERIA		INKLER BRACII	PTEMBER, 202
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FS-001 SHEET NO.16 OF 24

DWG. NO.

SEISMIC BRACING NOTES

1. INSTALL SEISMIC RESTRAINT OF THE MECHANICAL, ELECTRIC AND PLUMBING SYSTEMS UTILIZING TOLCO PRODUCTS AND IN ACCORDANCE WITH THE SEISMIC RESTRAINT SYSTEMS GUIDELINES.

APPROVED MANUFACTURER

1375 SAMPSON AVE CORONA, CA 93879 PH: 951-737-5599 FAX: 951-737-0330 WWW.TOLCO.COM

2. ALTERNATE RESTRAINT SYSTEMS MAY BE SUBMITTED TO THE MECHANICAL ENGINEER FOR REVIEW AND APPROVAL. LOWER CAPACITY OF ALTERNATE SYSTEMS AND/ OR LACK OF TEST DATA MAY RESULT IN EITHER THE MODIFICATION OF THE STRUCTURAL DESIGN OF THE CONNECTIONS, OR THE REJECTION OF THE ALTERNATE SYSTEM.

3. PROVIDE BRACING FOR ALL HUNG EQUIPMENT.

ANCHORAGE CONNECTION TO EXIST. SLAB

1. HANGERS: USE 1/2"Ø A307 THREADED ROD AT ALL NEW BRACING CONNECTIONS. INSTALL TOLSTRUT A-12 ROD STIFFENER AT ALL HANGER RODS. ATTACH TO THE UNDERSIDE OF THE EXISTING CONCRETE SLAB WITH SIMPSON THD50234RH TITEN HD ROD HANGER. PROVIDE INSTALLATION TORQUE AND SPECIAL INSPECTION PER ICC REPORT NO. ES R-2713.

2. WHERE AIRCRAFT CABLE IS SPECIFIED IN THE DETAILS, USE 3/16"Ø PRE-STRETCHED GALVANIZED WITH A 7X19 STRAND CORE.

3. WHERE WEDGE ANCHORS ARE SPECIFIED IN THESE DETAILS, USE 3/8"Ø MINIMUM HILTI KWIK BOLT TZ EMBEDDED 2" MINIMUM INTO THE UNDERSIDE OF THE EXISTING CONCRETE SLAB. PROVIDE INSTALLATION TORQUE AND SPECIAL INSPECTION PER ESR-1917.

GENERAL SEISMIC BRACING REQUIREMENTS

1. BRACING OF GENERAL PIPING SYSTEMS ARE TO COMPLY WITH ASCE 7-05 13.6.8. A. INSTALL SWAY BRACING FOR ALL PIPING (INCLUDING FIRE SPRINKLER PIPING) TO RESIST BOTH TRANSVERSE LATERAL AND LONGITUDINAL LOADS FOR:

- ALL FIRE PROTECTION SPRINKLER PIPING (REGARDLESS OF SIZE)
- ALL OTHER PIPING WITH A DIAMETER OF 1 1/4" DIAMETER OR LARGER. ALL TRAPEZE SUPPORTING PIPING THAT EXCEEDS 1 1/4" – DIAMETER OR SUPPORTS PIPING WITH A COMBINED WEIGHT OF 10 POUNDS PER LINEAR FOOT
- PROVIDE TRANSVERSE (PERPENDICULAR TO THE PIPING) SWAY BRACING (MINIMUM 2 SWAY BRACES PER RUN) SPACING BETWEEN LATERAL SWAY BRACES IS NOT TO EXCEED:
- a. 40-FEET ON CENTER UNLESS NOTED OTHERWISE BELOW.
- b. 20-FEET ON CENTER FOR PIPING THAT CONTAINS HAZARDOUS MATERIAL c. 20-FEET ON CENTER FOR CAST IRON OR OTHER NON-DUCTILE PIPING.
- C. LATERALLY BRACE LAST LENGTH OF PIPE AT THE END OF ALL FEED OR CROSS MAINS.
- D. PROVIDE LONGITUDINAL (PARALLEL TO THE PIPING) SWAY BRACING (MINIMUM 1 SWAY BRACE PER RUN) SPACING BETWEEN LONGITUDINAL SWAY BRACES IS PROVIDED FOR ALL MAIN, CROSS MAIN AND FEED PIPING AND TO NOT EXCEED:
- a. 80-FEET ON CENTER UNLESS NOTED OTHERWISE BELOW.
- b. 40-FEET ON CENTER FOR PIPING THAT CONTAINS HAZARDOUS MATERIAL

c. 40-FEET ON CENTER FOR CAST IRON OR OTHER NON-DUCTILE PIPING. ALL TRANSVERSE AND LONGITUDINAL BRACES ARE TO BE MADE WITHIN 4" OF A VERTICAL SUPPORT THAT IS CAPABLE OF RESISTING COMPRESSIVE LOADS. HANGER RODS MUST HAVE A ROD STIFFENER IF ROD EXCEEDS THE MAXIMUM ROD LENGTH WITHOUT STIFFENER AS DICTATED BY THE SCHEDULE ON DETAIL. F. PROVIDE LATERAL SUPPORT FOR RISERS AT EACH FLOOR.

2. IN ADDITION TO THE REQUIREMENTS ABOVE FOR PIPING, BRACE FIRE PROTECTION SPRINKLER SYSTEMS SHALL COMPLY WITH:

- A. ASCE 7–05 SECTION 13.6.8.3 (APPLICABLE TO SEISMIC DESIGN CATEGORY F)
- NFPA STANDARDS, LATEST EDITION. SECURE THE TOP OF THE FIRE SPRINKLER RISER AGAINST DRIFTING IN ANY DIRECTION. PROVIDE A FOUR WAY SPLAY BRACE.
- PROVIDE BRACING WITHIN 24 INCHES OF EACH BEND IN THE PIPING. GENERAL PIPING WEIGHTS MAY BE TAKEN FROM THE SCHEDULE. FOR USE IN CALCULATED REQUIRED
- ANCHORAGE. F. EXAMPLES OF PRE-APPROVED PIPING SINGLE AND/OR TRAPEZE ASSEMBLIES ARE SHOWN ON SHEETS
- LIMITATION OF TYP. BRACING

1. PIPES, CONDUITS AND DUCTS MAY BE INDIVIDUALLY BRACED, OR GROUPED AND ATTACHED TO A TRAPEZE

2. WHERE THE TOTAL SINGLE BRACED PIPE, CONDUIT OR DUCT WEIGHT ASSIGNED TO A BRACE EXCEEDS 35 POUNDS PER LINEAR FOOT, NOTIFY THE MECHANICAL ENGINEER FOR ADDITIONAL BRACING REQUIREMENTS. 3. WHERE A COMBINATION MULTIPLE PIPES, CONDUIT OR DUCTS, OR COMBINATION THEREOF, ARE ATTACHED TO A BRACED TRAPEZE, AND CUMULATIVE WEIGHT OF THE ELEMENTS EXCEEDS 35 POUNDS PER LINEAR FOOT, NOTIFY THE MECHANICAL ENGINEER FOR ADDITIONAL BRACING REQUIREMENTS. 4. SEE CHART ON FS-001 FOR REFERENCE PIPE AND CONDUIT WEIGHTS.

ENGIN PART 455 E. Lau Hilo Hawa Main (808) www.ep Hawai`i KINR Y. LICEI PROFES ENGI Exp. 04 No. 78 Sigure	EERING NERS nikaula St. ai`i 96720 933-7900 oinc.pro Las Vegas TAMMA NSED SSIONAL NEER 4/30/22 936-M 1, U.S.N. S PREPARED BY Y SUPERVISION, OF THIS PROJECT M OBSERVATION.
DETAILS	DATE: SEPTEMBER, 2020 REV. REV. REV. REV. REV. REV. REV. REV. REV.
HVAC REPLACEMENT FOR SURGERY STORAGE HVAC REPLACEMENT FOR SURGERY STORAGE MONNITY HOSPITAL	79-1019 HAUKAPILA ST, KEALAKEKUA, HI 96750 79-010:081 TMK: (3) 7-9-010:081

SHEET NO.14 OF 24

SHEET NO.18 OF 24

NOTICE

CONTRACTOR SHALL VERIFY EXISITING CONDITIONS PRIOR TO START OF WORK. 1.

	GENERAL ELECTRICAL SPECIFICATIONS
1.	THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC IN NATURE. INSTALL CONDUIT RUNS AS SPECIFIED WITH SCHEMATIC REPRESENTATION INDICATED ON THE DRAWINGS AND AS SPECIFIED.
2.	WHERE CONDUITS ARE SHOWN AS "HOME RUNS" ON THE CONTRACT DRAWIN OR STATED TO BE FURNISHED, BUT NOT EXPLICITLY SHOWN AS PART OF TH SCOPE OF WORK, THE CONTRACTOR SHALL PROVIDE ALL CONDUITS, FITTINGS BOXES, WIRING, CONDUIT SEALS, ETC., AS REQUIRED FOR COMPLETION OF T RACEWAY SYSTEM IN COMPLIANCE WITH THE NEC AND THE CONTRACT DOCUMENTS.
3.	MODIFY CONDUIT RUNS TO SUIT FIELD CONDITIONS, AS ACCEPTED BY THE OWNERS REPRESENTATIVE.
4.	FINAL CONNECTIONS & ROUGH-IN REQUIREMENTS TO EQUIPMENT SHALL BE PER MANUFACTURER'S APPROVED WIRING DIAGRAMS, DETAILS AND INSTRUCTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE MATERIALS AND EQUIPMENT COMPATIBLE WITH EQUIPMENT ACTUALLY SUPPLIE
5.	CONTRACTOR SHALL REVIEW ARCHITECTURAL, STRUCTURAL, MECHANICAL AND OTHER DRAWINGS PRIOR TO BID.
6.	CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND VERIFY THAT CONDITIONS ARE AS INDICATED. CONTRACTOR SHALL REPORT DISCREPANCIES TO THE ARCHITECT AND INCLUDE IN ITS BID ALL COSTS REQUIRED TO MAKE HIS WO MEET EXISTING CONDITIONS.
7.	PROPOSED SUBSTITUTIONS OF ELECTRICAL EQUIPMENT OR REQUEST FOR "OI EQUAL" OR "APPROVED EQUAL" LISTING SHALL BE SUBMITTED TO THE OWNE REPRESENTATIVE NOT LESS THAN TEN (10) WORKING DAYS PRIOR TO BID.
8.	WORK SHALL BE PERFORMED IN A WORKMANLIKE MANNER TO THE SATISFAC OF THE OWNERS REPRESENTATIVE.
9.	WORK, MATERIALS AND EQUIPMENT SHALL CONFORM TO THE LATEST EDITION OF LOCAL, STATE AND NATIONAL CODES AND ORDINANCES.
10.	ALL ELECTRICAL SYSTEMS COMPONENTS SHALL BE LISTED OR LABELED BY OR OTHER RECOGNIZED TESTING FACILITY.
11.	PROVIDE PERMITS AND INSPECTIONS REQUIRED.
12.	GUARANTEE THE INSTALLATION AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP WHICH MAY OCCUR UNDER NORMAL USAGE FOR A PERIOD O ONE YEAR AFTER OWNER'S ACCEPTANCE. DEFECTS SHALL BE PROMPTLY REMEDIED WITHOUT COST TO THE OWNER.
13.	PROVIDE RECORD DRAWINGS TO THE OWNERS REPRESENTATIVE. DRAWINGS SHALL INCLUDE ALL ADDENDUM ITEMS, CHANGE ORDERS, ALTERATIONS, REROUTINGS, ETC.
14.	VERIFY EXACT LOCATION OF EQUIPMENT TO BE FURNISHED BY OTHERS PRIC TO ROUGH-IN.
15.	SYSTEMS SHALL BE TESTED FOR PROPER OPERATION. IF TESTS SHOW THAT WORK IS DEFECTIVE, CONTRACTOR SHALL MAKE CORRECTIONS NECESSARY A NO COST TO OWNER.
16.	WHEN COMPLETE THE ELECTRICAL CONTRACTOR SHALL MEASURE THE STEAD STATE LOAD CURRENTS AT EACH PANEL BOARD FEEDER. SHOULD THE DIFFERENCE AT ANY PANEL BOARD BETWEEN PHASES EXCEED 20%, THE ELECTRICAL CONTRACTOR SHALL REARRANGE CURRENTS IN THE PANEL TO BALANCE PHASE LOADS. TESTING SHALL BE DONE IN THE PRESENCE OF A OWNERS REP AND RESULTS SUBMITTED IN WRITING.
17.	CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING EQUIPMENT WHICH IS DAMAGED DUE TO INCORRECT FIELD WIRING PROVIDED UNDER THIS SECTION FACTORY WIRING IN EQUIPMENT PROVIDED UNDER THIS SECTION.
18.	CONTRACTOR'S FAILURE TO ORDER OR RELEASE ORDER FOR MATERIALS AND/OR EQUIPMENT WILL NOT BE ACCEPTED AS A REASON TO SUBSTITUTE ALTERNATE MATERIALS OR EQUIPMENT.
19.	SYSTEMS SHALL BE COMPLETE, OPERABLE AND READY FOR CONTINUOUS OPERATION. LIGHTS, SWITCHES, RECEPTACLES, MOTORS, ETC., SHALL BE CONNECTED AND OPERABLE.
20.	PRESENT SHOP DRAWING SUBMITTAL DATA AT ONE TIME, BOUND IN THREE-RING BINDERS, INDEXED IN A NEAT AND ORDERLY MANNER. PARTIAL SUBMITTALS WILL NOT BE ACCEPTED. SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO: LIGHTING FIXTURES, SWITCHGEAR, PANELBOARDS, WIRING DEVICES SAFETY SWITCHES, FUSES, MOTOR STARTERS, LAMPS, CONDUIT, CONDUIT FITTINGS AND TRANSFORMERS.
21.	PENETRATIONS OF FIRE RATED WALLS OR FLOORS BY PIPE SHALL BE SEALE BY A FIRESTOPPING SYSTEM UL LISTED FOR THE APPLICATION. INSTALL PENETRATION SEAL MATERIALS IN ACCORDANCE WITH PRINTED INSTRUCTIONS THE UL FIRE RESISTANCE DIRECTORY AND MANUFACTURERS INSTRUCTIONS. FIRESTOPPING SYSTEM SHALL BE EQUAL TO 3M FIRE BARRIER. FIRESTOPPING MATERIAL SHALL BE CAULK OR PUTTY TYPE. FIRESTOP ALL PENETRATIONS THROUGH FIRE RATED WALLS AS REQUIRED TO PRESERVE THE FIRE RATING THE STRUCTURE.

ELECTRICAL SYMBOLS

SERVICE EQUIPMENT/ DISCONNECTS

FLUSH MOUNTED PANELBOARD
MAIN SWITCHBOARD, MOTOR CONTROL CENTER OR DISTRIBUTION BOARD
TRANSFORMER (SIZE AND CLEARANCES BASED ON KVA RATING) METER
NON-FUSED DISCONNECT SWITCH – 30A, 3P, UNLESS NOTED OTHERWISE
FUSED DISCONNECT SWITCH – 30A, 3P WITH 30A FUSES UNLESS NOTED OTHERWISE
RECESSED FIXTURE
RECESSED FIXTURE WITH EMERGENCY BATTERY BACKUP
DUCT DETECTOR

+18"	INDICATES MOUNTING HEIGHTS ARE TO CENT	ERLINE OF DEVICE AFF	OR AF	6							
AF AFF AHJ C CONT	AMP FOSE (FOR FOSES), AMP FRAME (FOR ABOVE FINISHED FLOOR LOCAL AUTHORITY HAVING JURISDICTION CONDUIT CONTINUATION	CIRCUIT DREAKERS)			ENGIN P A R T	EERING N E R S					
CU GFCI GFP GND HELCO IWP	COPPER GROUND FAULT CIRCUIT INTERRUPTER WITH GROUND FAULT PROTECTION GROUND ELECTRICAL UTILITY COMPANY IN-USE WEATHER-PROOF (NEMA 3R)	DEDICATED NEUTRAL			455 E. La Hilo Hawa Main (808) www.ej Hawai`i	nikaula St. ai`i 96720) 933-7900 pinc.pro Las Vegas					
LO MCB MLO NEC P PH	LUGS ONLY (SEE ALSO MLO) MAIN CIRCUIT BREAKER MAIN LUGS ONLY NATIONAL ELECTRICAL CODE, AS ADOPTED B` POLE PHASE	y the Ahj			LICE PROFES ENGI	WAL NSED SSIONAL NEER					
PNL S/N TYP UPS WP	INDICATES PANEL SOLID NEUTRAL TYPICAL UNINTERRUPTIBLE POWER SYSTEM WEATHER-PROOF (NEMA 3R)				THIS WORK WA	4/30/22 3572-E 1, U.S.A.					
XFMR UNO (D) (E) (N) (R)	TRANSFORMER UNLESS NOTED OTHERWISE DEMOLITION EXISTING NEW RELOCATE/RELOCATED										
	HAWAIL COUNTY ENERGY CO	DF			C &						
2	2015 IECC, HAWAII REVISED STATUTES HRS 10 ADMINISTRATIVE RULES CHAPTER HA COMMERCIAL BUILDING ENERGY EFFICIEN	7-24 TO 28 & HAWAI R 3-181.1 NCY STANDARDS			S, IEC						
I CE SUBS PERTAINI <u>(C4C</u>	I CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE, THIS PROJECTS DESIGN SUBSTANTIALLY CONFORMS TO THE BUILDING ENERGY EFFICIENCY STANDARDS PERTAINING TO THE <u>COMMERCIAL PROVISIONS FOR ELECTRICAL & LIGHTING SYSTEMS</u> <u>(C405, & C408)</u> OF THE 2015 IECC WITH AMENDMENTS PER HAR 3–181.1:										
X 2015 II 2015 II ASHRAE	COMPLIANCE METHOD X 2015 IECC AS AMENDED. MANDATORY AND PRESCRIPTIVE 2015 IECC AS AMENDED. MANDATORY AND TOTAL BUILDING PERFORMANCE ASHRAE STANDARD 90.1–2013. MANDATORY AND PRESCRIPTIVE										
INFORMATION	IN CONSTRUCTION DOCUMENTS		YES	N/A	AI	PTEM					
OCCUP/	ANT SENSOR CONTROLS	C405.2.1	Х			SEI					
TIME S	WITCH CONTROLS	C405.2.2		X	EC						
DATEIGI DAYLIGI GUEST INTERIO	TT ZONES ON PLANS C405 ROOM CONTROLS R LIGHTING FIXTURE SCHEDULE	.2.3.2 & C405.2.3.3 C405.2.4	X	× × ×	EL	DATE: REV. Z REV. Z					
INPUT INTERIO	POWER FOR INTERIOR LIGHTING FIXTURES	C405.4.1 C403.2.8	X X		Ш	750					
LIGHTIN	G CONTROL FUNCTIONAL PERFORMANCE	C108 3	Х		JRA	96 II					
EXTERIOR LIG	HTING	0400.3			STC	A, H					
EXTERIO EXTERIO INPUT EXTERIO	DR LIGHTING CONTROLS DR LIGHTING FIXTURE SCHEDULE POWER FOR EXTERIOR LIGHTING FIXTURES DR LIGHTING FIXTURE LOCATIONS	C405.2.5		X X X X	SURGERY	ALAKEKU					
ELECTRICAL	ICAL TRANSFORMER EFFICIENCY	C405.7		X	Nor	KE					
TENANT	SUBMETERING	C405.10		X	MITI	∧ ST,					
SIGNATURE: DATE: NAME: TITLE: LICENSE NO	09/18/2020 ELI B. WALTZ ELECTRICAL ENGINEER 0.:18572-E				HVAC REPLACEMEN KONA COMI HOSPITAI	79-1019 HAUKAPILA TMK: (3) 7-9-010:081					
					DRAWN BY: KD CHECKED BY: EW	DESIGNED BY: EW QC'D BY: KS					
					JOB 12022-	NO. -17-01					
					DWG.	NO.					

E-001

SHEET NO. 20 OF 24

NOTES

- 1 DEMOLISH EXISTING MECHANICAL EQUIPMENT AND ASSOCIATED DISCONNECT. REMOVE ALL ASSOCIATED CONDUIT AND WIRING BACK TO PANEL SOURCE. RETAIN CIRCUIT FOR CONNECTION TO NEW EQUIPMENT
- ② REMOVE AND REPLACE EXISTING LIGHT FIXTURE WITH NEW FIXTURE, RECONNECT NEW LIGHTS TO EXISTING CIRCUITS.

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																		CONNECTED VA (CODE N))	397	′5
. REM	OVE AND	REPLACE EXISTING CIRCUIT E	BREAKER, P	RO∖	IDE V	VITH	NEW BRE	AKER AS	INDICATE	ED.								CONNECTED VA (CODE L))	0	
1АТСН	EXISTIN	IG MFR AND AIC RATING.																CONNECTED VA (CODE R))	0	
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- NFPA 72.
- BE 3/4"
- BE 6'.
- REQUIREMENTS.
- CONDUIT, SEE MECHANICAL DRAWINGS.
- 7. HATCHED AREA'S NOT IN CONTRACT

NOTES

- DISCREPANCIES TO THE ENGINEER.
- MECHANICAL CONTRACTOR.
- CIRCUIT TO NEW DUCT DETECTOR.
- LOCATION AS REQUIRED.
- MANUFACTURERS DRAWINGS.

PROJECT DOES NOT INCLUDE ANY CHANGE TO FIRE ALARM NOTIFICATION. EXISTING CANDELA AND dB TO REMIAN PER

2. MINIMUM CONDUIT SIZE FOR ALL BRANCH CIRCUITS SHALL

3. ALL CONDUIT SHALL BE EMT UNLESS OTHERWISE NOTED.

4. MAXIMUM LENGTH FOR FLEXIBLE METALLIC CONDUIT SHALL

5. ALL COVER PLATES, JUNCTION BOXES, EQUIPMENT/ DISCONNECT ENCLOSURES SHALL BE IDENTIFIED WITH PANEL AND CIRCUIT NUMBER ON WHITE STICKER LABEL WITH BLACK LETTERING. SEE SPECIFICATIONS FOR ADDITIONAL

6. ALL DDC CONTROL WIRING SHALL BE ROUTED IN EMT

1 VFD FURNISHED BY MECHANICAL CONTRACTOR, INSTALLED BY ELECTRICAL CONTRACTOR. LOCATE AS INDICATED ON MECHANICAL DRAWINGS, MAINTAIN CLEARANCE PER NEC.

PROVIDE SWITCH FOR UV LIGHTS MOUNTED NEAR AHU.

3 UTILIZE EXISTING 480V/ 3PH CIRCUIT FROM PANEL 'MC' ON FIRST FLOOR. RECONNECT EXISTING CIRCUIT TO NEW AHU. VERIFY THAT CIRCUIT DOES NOT SERVE ANY OTHER LOADS PRIOR TO COMMENCING WORK, REPORT ANY

 PROVIDE CONNECTION TO MECHANICAL APPURTENANCES, INCLUDING DDC CONTROLLER AND MOTORIZED DAMPERS. COORDINATE POWER REQUIREMENTS WITH CONTROL AND

5 RECONNECT EXISTING FIRE ALARM INITIATING DEVICE

6 RELOCATE EXISTING SMOKE DETECTOR DOWN TO NEW CEILING, EXTEND EXISTING FIRE ALARM CIRCUIT TO NEW

(7) INTERCONNECT WITH EXISTING FIRE ALARM SYSTEM. PROVIDE CONNECTION TO EXISTING NOTIFICATION APPLIANCE CIRCUIT OR INITIATING DEVICE CIRCUIT PER

	LUMINAIRE SCHEDULE										
FIXTURE TYPE	MANUF NAME	FACTURER CATALOG NUMBER	VOLT AMPS	MOUNTING	LAMP TYPE	REMARKS					
A	E2 LIGHTING	E2-PLC-50W-2'X4'	50	GRID	LED	2'X4' COLOR TUNEABLE FLAT PANEL, 110 LPW, 80+ CRI.					
ছন্থ	LITHONIA	ELM2L-LED-SDRT	5	UNIVERSAL	LED	EMERGENCY BUGEYE FIXTURE WITH 90 MINUTE BATTERY BACKUP					
<u>r</u>	LITHONIA	LHQM-LED-R-SD	5	UNIVERSAL	LED	EXIT SIGN WITH LED HEAD COMBO AND EMERGENCY BATTERY BACKUP OPTION					

NOTICES

VOLT

120/277

120

120

- REQUIREMENTS.
- CONDUIT, SEE MECHANICAL DRAWINGS.
- ADJUST LIGHT LOCATIONS AS REQUIRED.

1. MINIMUM CONDUIT SIZE FOR ALL BRANCH CIRCUITS SHALL

2. ALL CONDUIT SHALL BE EMT UNLESS OTHERWISE NOTED.

3. MAXIMUM LENGTH FOR FLEXIBLE METALLIC CONDUIT SHALL

4. ALL COVER PLATES, JUNCTION BOXES, EQUIPMENT/ DISCONNECT ENCLOSURES SHALL BE IDENTIFIED WITH PANEL AND CIRCUIT NUMBER ON WHITE STICKER LABEL WITH BLACK LETTERING. SEE SPECIFICATIONS FOR ADDITIONAL

5. ALL DDC CONTROL WIRING SHALL BE ROUTED IN EMT

6. ALL LIGHT FIXTURE LOCATIONS SHALL BE COORDINATED WITH DUCTWORK AND NEW CEILINGS BASED ON FINAL LAYOUT.

RECONNECT NEW LIGHTS TO EXISTING CIRCUIT.

CONNECT EMERGENCY FIXTURE TO NEAREST UNSWITCHED PORTION OF LIGHTING CIRCUIT.

ENGIN PART 455 E. Lau Hilo Hawa Main (808) www.ep Hawai`i	EERING NERS NERS nikaula St. ai`i 96720 933-7900 pinc.pro Las Vegas
THIS WORK WA ME OR UNDER M CONSTRUCTION WILL BE UNDER M SIGNA	WA NSED SSIONAL NEER 4/30/22 572-E 1, U.S.P. 1, U.S.P. S PREPARED BY NY SUPERVISION, OF THIS PROJECT MY OBSERVATION.
G/ NEW LIGHTING PLAN - JRGERY STORAGE	TEMBER, 2020 REV. REV. REV. REV. REV.
EXISTIN	DATE: SEP REV. REV.
HVAC REPLACEMENT FOR SURGERY STORAGE KONA COMMUNITY HOSPITAL	79-1019 HAUKAPILA ST, KEALAKEKUA, HI 9675(TMK: (3) 7-9-010:081
DRAWN BY: KD CHECKED BY: FW	DESIGNED BY: EW QC'D BY: K.S
JOB 12022-	NO. -17-01
DWG.	NO. 301
SHEEL NO.	24 UF 24