### **GENERAL NOTES**

- CONFORM TO ALL REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE (IBC), UNIFORM PLUMBING CODE, UNIFORM FIRE CODE, NATIONAL ELECTRIC CODE, ENERGY CONSERVATION CODE, THE LATEST COUNTY OF KAUAI AMENDMENTS AND ORDINANCES, AND ALL OTHER AGENCIES HAVING JURISDICTION. THE AIR CONDITIONING AND VENTILATION SYSTEMS SHALL COMPLY WITH TITLE 11. ADMINISTRATIVE RULES DEPT. OF HEALTH. CHAPTER 39 - AIR CONDITIONING AND VENTILATION REQUIREMENTS. COMPLY WITH ALL EQUIPMENT MANUFACTURER'S RECOMMENDATIONS AND OTHER APPLICABLE REGULATIONS.
- WORK SHALL CONFORM TO ALL APPLICABLE CODES AND STANDARDS UNLESS CONTRACT DOCUMENTS ARE MORE STRINGENT.
- ALL WORK SHOWN ON THESE DRAWINGS ARE NEW UNLESS OTHERWISE NOTED.
- EXISTING CONDITIONS AND DIMENSIONS SHOWN ON THESE DRAWINGS ARE APPROXIMATE. BIDDERS SHALL VISIT THE PREMISES AND THOROUGHLY FAMILIARIZE THEMSELVES WITH ALL DETAILS OF WORK AND WORKING CONDITIONS BEFORE SUBMITTING THEIR BID. REASONABLE MODIFICATIONS IN LOCATION AND ARRANGEMENTS TO SUIT JOB CONDITIONS SHALL NOT CONSTITUTE BASIS FOR REQUESTING OF ADDITIONAL FUNDS FROM THE OWNER.
- PRIOR TO ORDERING MATERIALS AND PROCURING EQUIPMENT, SUCCESSFUL BIDDER (CONTRACTOR) SHALL BE REQUIRED TO VERIFY ALL CONDITIONS, INCLUDING BUT NOT LIMITED TO EQUIPMENT, MATERIALS, SIZES, DIMENSIONS, INVERTS, AND VOLTAGES THAT AFFECT HIS WORK. SUBMIT A LETTER TO THE ENGINEER CONFIRMING THAT THIS WAS DONE. IF WRITTEN CONFIRMATION IS NOT RECEIVED BY THE ENGINEER, SHOP DRAWINGS AND OTHER SUBMITTALS WILL BE RETURNED WITHOUT REVIEW. SHOW ALL DISCREPANCIES ON SHOP DRAWINGS AND NOTIFY THE ENGINEER IN WRITING OF SUCH DISCREPANCIES PRIOR TO PROCUREMENT
- REMOVE ALL UNUSED PIPING AND DUCTWORK UNLESS SPECIFICALLY INDICATED AS "ABANDON IN PLACE." ALL ABANDONED PIPING AND DUCTWORK SHALL BE CAPPED AT BOTH ENDS.
- ALL UTILITIES AND APPURTENANCES SHALL BE PROTECTED AT ALL TIMES DURING CONSTRUCTION, AND IF DAMAGED, SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO
- . ALL FASTENERS, SUPPORTS, HANGERS, SPRING ISOLATORS, AND MISCELLANEOUS STEEL ITEMS INCLUDING BUT NOT LIMITED TO BOLTS. NUTS. SCREWS. RODS. PLATES. AND ANGLES. ETC. SHALL BE GALVANIZED UNLESS OTHERWISE NOTED OR SPECIFIED
- REFER TO PROJECT MANUAL (SPECIFICATIONS) FOR ADDITIONAL REQUIREMENTS. PLANS AND SPECIFICATIONS SHALL BE TAKEN TOGETHER. PROVIDE ALL WORK CALLED FOR IN EITHER.
- 10. FURNISH ALL EQUIPMENT, MATERIALS, LABOR, TOOLS, ETC., REQUIRED FOR THE INSTALLATION OF THE COMPLETE AND OPERATING SYSTEM. ALL EQUIPMENT AND MATERIALS SHALL BE NEW UNLESS OTHERWISE NOTED.
- 1. DO NOT ALLOW ANY WORK TO BE COVERED UP OR ENCLOSED UNTIL INSPECTED, TESTED AND APPROVED BY OWNER'S REPRESENTATIVE OR AUTHORITY HAVING JURISDICTION
- 12. THIS CONTRACT REQUIRES THE PLUMBING, FIRE PROTECTION, AND MECHANICAL SUBCONTRACTORS TO CAREFULLY COORDINATE THEIR WORK WITH EACH OTHER, THE GENERAL

CONTRACTOR AND OTHER TRADES. PRIORITY SHALL BE GIVEN IN THE FOLLOWING ORDER:

A. GRAVITY FLOW: SEWER. STORM DRAIN. DOWNSPOUT AND CONDENSATE DRAIN PIPING.

#### B. EQUIPMENT AND DUCTWORK.

C. FORCED AND PRESSURE PIPING SUCH AS WATER. AND FIRE SPRINKLER PIPING.

- 13. PROVIDE ACCESS PANELS FOR ALL TRAP PRIMERS, WATER HAMMER ARRESTORS AND WATER ISOLATION VALVES THAT ARE CONCEALED IN WALL CAVITY OR CEILING SPACE.
- 14. PROVIDE ACCESS PANELS IN NON-ACCESSIBLE CEILINGS FOR MECHANICAL ITEMS REQUIRING SERVICING AND MAINTENANCE SUCH AS, BUT NOT LIMITED TO VOLUME DAMPERS, FIRE/SMOKE DAMPERS, FIRE DAMPERS, CONDENSATE DRAINS, VALVES, ETC. PROVIDE FIRE-RATED ACCESS PANELS WHERE REQUIRED. COORDINATE TYPE OF ACCESS PANEL WITH WALL OR CEILING CONTRACTOR. ACCESS PANELS SHALL BE 30"x30" MINIMUM UNLESS OTHERWISE NOTED. 15. CONTRACTOR SHALL PROVIDE DIELECTRIC UNIONS. NIPPLES OR FLANGES AT CONNECTION
- POINTS FOR ALL DISSIMILAR METALS.
- 6. DRAWINGS ARE DIAGRAMMATIC AND MAY NOT SHOW ALL OFFSETS IN PIPING. COORDINATE THIS WORK WITH THE WORK OF OTHER TRADES AND PROVIDE ALL NECESSARY OFFSETS.
- 17. ALL PENETRATIONS OF REQUIRED FIRE-RATED WALLS, PARTITIONS, AND FLOORS SHALL BE PROVIDED WITH FIRE STOPPING MATERIAL PER IBC.
- 18. NO CUTTING OR DRILLING OF ANY STRUCTURAL MEMBERS WILL BE PERMITTED WITHOUT THE APPROVAL OF THE ARCHITECT.
- 19. INSTALL ALL PIPING AS HIGH AS POSSIBLE IN CEILING PLENUM TO ALLOW FOR FUTURE WORK.
- 20. PAINT ALL EXPOSED PIPING AND/OR DUCTWORK TO MATCH SURROUNDING COLOR. PROVIDE ESCUTCHEONS WHERE EXPOSED PIPING PENETRATES FINISHED WALLS AND CEILINGS. PROVIDE PAINTED TRIM WHERE EXPOSED DUCTWORK PENETRATES FINISHED WALLS AND CEILINGS.
- 21. INSTALLATION SHALL BE GUARANTEED TO BE FREE OF DEFECTS FOR ONE (1) YEAR FROM FINAL DATE OF ACCEPTANCE OF THE PROJECT AS A WHOLE.

# APPLICABLE CODES & STANDARDS

- BUILDING CODE OF THE COUNTY OF KAUAI (INTERNATIONAL BUILDING CODE 2018 AS AMENDED\*)
- BUILDING ENERGY CONSERVATION CODE OF THE COUNTY OF KAUAI (INTERNATIONAL ENERGY CONSERVATION CODE 2018 AS AMENDED\*)
- ASHRAE 170-2021, VENTILATION OF HEALTH CARE FACILITIES
- HAWAII ADMINISTRATIVE RULES
- CHAPTER 39 OF TITLE 11 AIR CONDITIONING AND VENTILATING, 1983
- NFPA 13, 2010 EDITION, INSTALLATION OF SPRINKLER SYSTEMS
- NFPA 99 HEALTH CARE FACILITIES
- FIRE CODE OF THE COUNTY OF KAUAI (NFPA 1, 2018 EDITION AS AMENDED\*)
- \* including all amendments adopted by the State of Hawaii and the County of Hawaii

## **ENERGY CODE COMPLIANCE**

COUNTY OF KAUA'I CHAPTER 12, KAUA'I COUNTY BUILDING CODE KAUA'I COUNTY CODE 1987, AS AMENDED ARTICLE 6 - ENERGY CONSERVATION CODE

TO THE BEST OF MY KNOWLEDGE, THIS PROJECT'S DESIGN SUBSTANTIALLY CONFORMS TO: SECTION 12-6.3 ADOPTION OF THE INTERNATIONAL ENERGY CONSERVATION CODE (IECC) SECTION 12-6.4 LOCAL AMENDMENTS TO THE IECC FOR MECHANICAL SYSTEMS (SECTION C403, C404 AND C408).

#### COMPLIANCE METHOD

2018 IECC AS AMENDED. MANDATORY & PRESCRIPTIVE 2018 IECC AS AMENDED. MANDATORY & TOTAL BUILDING PERFORMANCE ASHRAE STANDARD 90.1-2013. MANDATORY & PRESCRIPTIVE ASHRAE STANDARD 90.1-2013. MANDATORY & TOTAL BUILDING PERFORMANCE

### INFORMATION IN CONSTRUCTION DOCUMENTS

**HVAC SYSTEMS** EQUIPMENT CAPACITY AND EFFICIENCY. C403.2.3 THERMOSTATIC CONTROLS C403.2.4 GUEST ROOM DOOR SWITCHES. C403.2.4.2.4 **VENTILATION RATE C403.2.6** DEMAND CONTROL VENTILATION CONTROLS C403.2.6.1 ENCLOSED PARKING GARAGE VENTILATION CONTROL. C403.2.6.2 ENERGY RECOVERY VENTILATION SYSTEM. C403.2.7 KITCHEN EXHAUST SYSTEMS. C403.2.8 DUCT AND PLENUM INSULATION THICKNESS/R-VALUE. C403.2.9

DUCT AND PLENUM SEALING REQUIREMENTS. C403.2.9 PIPE INSULATION THICKNESS/R-VALUE. C403.2.10 FAN MOTOR HORSEPOWER. C403.2.12

FAN EFFICIENCY. C403.2.12 FAN MOTOR EFFICIENCY. C405.8 PUMP MOTOR EFFICIENCY. C405.8 VARIABLE-FLOW FAN CONTROL. C403.4.1 STATIC PRESSURE SENSOR LOCATION. C403.4.1.2

STATIC PRESSURE RESET CONTROL. C403.4.1.3 CHILLED WATER VARIABLE FLOW CONTROL. C403.4.2.4 CHILLER ISOLATION. C403.4.2.6 COOLING TOWER FAN CONTROL. C403.4.3

TERMINAL UNIT MINIMUM AND MAXIMUM AIRFLOW. C403.4.4 COMMISSIONING REQUIREMENTS. C408.2

REFRIGERATION REFRIGERATION EQUIPMENT EFFICIENCY. C403.2.14

WALK-IN COOLERS AND FREEZERS. C403.2.15, C403.2.16 & C403.5 REFRIGERATED WAREHOUSES. C403.2.15 & C403.5 REFRIGERATED DISPLAY CASES. C403.2.17 & C403.5

SERVICE WATER HEATING HEAT RECOVERY FOR SERVICE WATER HEATING, C403.4.5 **EQUIPMENT CAPACITY AND EFFICIENCY. C404.2** 

PIPE INSULATION. C404.4 HOT WATER PIPE LENGTH/VOLUME. C404.5 HOT WATER CIRCULATION CONTROLS. C404.6 HEATED POOL AND SPA COVERS. C404.9.3

COMMISSIONING REQUIREMENTS C408.2 C408.2 MECHANICAL SYSTEM AND SERVICE WATER-HEATING SYSTEMS COMMISSIONING AND COMPLETION REQUIREMENTS. PRIOR TO THE FINAL MECHANICAL AND PLUMBING INSPECTIONS, THE REGISTERED DESIGN PROFESSIONAL OR APPROVED AGENCY SHALL PROVIDE EVIDENCE OF MECHANICAL SYSTEMS COMMISSIONING AND COMPLETION REQUIREMENTS IN ACCORDANCE WITH THIS SECTION AND ARE PERMITTED TO REFER TO SPECIFICATIONS FOR FURTHER REQUIREMENTS. COPIES OF ALL DOCUMENTATION SHALL BE GIVEN TO THE OWNER OR OWNER'S AUTHORIZED AGENT AND MADE AVAILABLE TO THE CODE OFFICIAL UPON REQUEST IN ACCORDANCE WITH SECTIONS

SIGNATURE:	he May
DATE:	01/31/2024
NAME:	NICHOLAS J. ALLDAY
TITLE:	PRINCIPAL ENGINEER

C408.2.4 AND C408.2.5.

LICENSE NO.: 10018-M

# PLUMBING NOTES

- SUPPORT HORIZONTAL LINES OF COPPER TUBING WITH HANGERS SPACE NOT MORE THAN 6 FEET, CENTER TO CENTER FOR ALL PIPE SIZES. ALL PIPES SHALL BE SUPPORTED AT ELBOWS. BRANCHES AND RISERS.
- SUPPORT HORIZONTAL CAST IRON SOIL PIPE WITH HANGER, OR PIER, TWO FOR EACH 5 FOOT PIPE LENGTH. LOCATE SUPPORT CLOSE TO JOINTS EXCEPT, PIPE EXCEEDING 5 FEET IN LENGTH SHALL BE SUPPORTED AT NO MORE THAN 5 FOOT INTERVALS. SUPPORTS SHALL BE LOCATED ON BOTH SIDES OF ALL JOINTS AND WITHIN 6" OF THE JOINT.
- 3. DISINFECT NEW WATER PIPING PER UPC 609.9.
- . EACH STATION OUTLET FOR MEDICAL GASES SHALL BE GAS-SPECIFIC, WHETHER THE OUTLET IS THREADED OR IS A NON-INTERCHANGEABLE QUICK COUPLER TO PREVENT CROSS CONNECTIONS OF MEDICAL GASES.
- THE CONTRACTOR SHALL CONFIRM THERE IS NO OBJECTIONABLE ODOR OBSERVED IN THE POSITIVE PRESSURE MEDICAL GAS TUBING PRIOR TO ACCEPTANCE FROM THE SUPPLIER.

# MEDICAL GAS NOTES

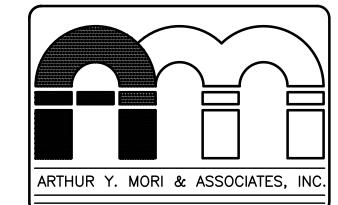
- EACH STATION OUTLET FOR MEDICAL GASES SHALL BE GAS-SPECIFIC, WHETHER THE OUTLET IS THREADED OR IS A NON-INTERCHANGEABLE QUICK COUPLER TO PREVENT CROSS CONNECTIONS OF MEDICAL GASES.
- THE CONTRACTOR SHALL CONFIRM THERE IS NO OBJECTIONABLE ODOR OBSERVED IN THE POSITIVE PRESSURE MEDICAL GAS TUBING PRIOR TO ACCEPTANCE FROM THE SUPPLIER.

## FIRE SAFETY NOTES

- 10.8.1.1 AS NECESSARY DURING EMERGENCIES, MAINTENANCE, DRILLS, PRESCRIBED TESTING. ALTERATIONS, OR RENOVATIONS, PORTABLE OR FIXED FIRE EXTINGUISHING SYSTEM OR DEVICE OR ANY FIRE-WARNING SYSTEMS SHALL BE PERMITTED TO BE MADE INOPERATIVE OR INACCESSIBLE. A FIRE WATCH SHALL BE REQUIRED AS SPECIFIED IN SECTIONS 13.3.4.3.5.2(3), 13.7.1.4.4, 16.5.4, 20.2.3.6, 34.6.3.3, 41.2.2.5, 41.2.2.6, 41.2.4, 41.3.4, 41.4.1, 34.5.4.3, AND 25.1.8 AT NO COST TO THE AUTHORITY HAVING JURISDICTION.
- GENERAL REQUIREMENTS.
- STRUCTURES UNDERGOING CONSTRUCTION, ALTERATION, OR DEMOLITION OPERATIONS, INCLUDING THOSE IN UNDERGROUND LOCATIONS, SHALL COMPLY WITH NFPA 241, STANDARD FOR SAFEGUARDING CONSTRUCTION, ALTERATION, AND DEMOLITION OPERATIONS, AND THIS CHAPTER, NFPA 1, 2018 EDITION AS AMENDED.
  - A FIRE PROTECTION PLAN SHALL BE ESTABLISHED WHERE REQUIRED BY THE AHJ.
- IN BUILDINGS UNDER CONSTRUCTION, ADEQUATE ESCAPE FACILITIES SHALL BE MAINTAINED AT ALL TIMES FOR THE USE OF CONSTRUCTION WORKERS. ESCAPE FACILITIES SHALL CONSIST OF DOORS, WALKWAYS, STAIRS, RAMPS, FIRE ESCAPES, LADDERS, OR OTHER APPROVED MEANS OR DEVICES ARRANGED IN ACCORDANCE WITH THE GENERAL PRINCIPLES OF CHAPTER 14 AND NFPA 101, LIFE SAFETY CODE, INSOFAR AS THEY CAN REASONABLY BE APPLIED TO BUILDINGS UNDER CONSTRUCTION. [101:4.6.10.2]
- FIRE DEPARTMENT ACCESS ROADS PROVIDED IN ACCORDANCE WITH 18.2.3 SHALL BE PROVIDED AT THE START OF A PROJECT AND SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
- FIRE PROTECTION DURING CONSTRUCTION
- 16.4.3.1 WATER SUPPLY
- 16.4.3.1.1 A WATER SUPPLY FOR FIRE PROTECTION, EITHER TEMPORARY OR PERMANENT, SHALL BE MADE AVAILABLE AS SOON AS COMBUSTIBLE MATERIAL ACCUMULATES AND BE MAINTAINED OPERATIONAL AT ALL TIMES DURING ALTERATION.
- 16.4.4.1 WHERE BUILDING IS PROTECTED BY FIRE-PROTECTION SYSTEMS, SUCH SYSTEMS SHALL BE MAINTAINED OPERATIONAL AT ALL TIMES DURING ALTERATION.
- 16.4.4.2 WHERE ALTERATION REQUIRES MODIFICATION OF A PORTION OF A FIRE PROTECTION SYSTEM, THE REMAINDER OF THE SYSTEM SHALL BE KEPT IN SERVICE AND THE FIRE DEPARTMENT SHALL BE NOTIFIED.
- 16.4.4.3 WHEN IT IS NECESSARY TO SHUT DOWN THE SYSTEM, THE AUTHORITY HAVING JURISDICTION SHALL HAVE THE AUTHORITY TO REQUIRE ALTERNATE MEASURES OF PROTECTION UNTIL THE SYSTEM IS RETURNED TO SERVICE.
- 16.4.4.4 THE FIRE DEPARTMENT SHALL BE NOTIFIED WHEN THE SYSTEM IS SHUT DOWN AND WHEN THE SYSTEM IS RETURNED TO SERVICE.

### **AC&V NOTES**

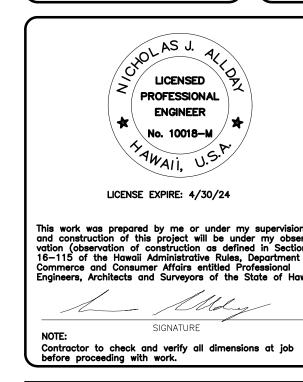
- EQUIPMENT, DUCTWORK AND PIPING SHOWN INDICATES GENERAL LAYOUT REQUIREMENTS. SHOP DRAWINGS SHALL INDICATE SERVICE/ ACCESS SPACE REQUIREMENTS. ADDITIONAL OFFSETS, DROPS, RISES, ETC., REQUIRED TO FIT AVAILABLE SPACE AND AVOID LOCAL OBSTRUCTIONS. MECHANICAL CONTRACTOR SHALL COORDINATE WITH PLUMBING CONTRACTOR. FIRE SPRINKLER CONTRACTOR, AND ELECTRICAL CONTRACTOR AND OFFSET HIS DUCTWORK AND PIPING TO FIT WORK FROM ALL DISCIPLINES IN SPACE AVAILABLE.
- FLEXIBLE CONNECTION SHALL BE PROVIDED BETWEEN DUCTWORK AND AIR HANDLING UNITS, FAN COIL UNITS. SUPPLY AND EXHAUST FANS. AND OTHER SIMILAR AIR MOVING EQUIPMENT.
- LARGE DUCTS (OVER 30" IN ONE DIMENSION) SHALL BE REINFORCED WITH GALVANIZED ANGLE IRONS ON ALL SIDES TO PREVENT LOW RUMBLE VIBRATION PER SMACNA "DUCT CONSTRUCTION STANDARDS."
- ALL DUCT DIMENSIONS ARE INSIDE DIMENSIONS: LAYOUTS AND INSTALLATION SHALL ACCOUNT FOR DUCT WRAP THICKNESS OR LINER INSULATION THICKNESS, SEE SPECS.
- TURNING VANES AND EXTRACTORS SHALL BE INSTALLED IN ALL CHANGES IN DIRECTION OF AIR
- SPLITTER DAMPERS SHALL BE INSTALLED IN DUCT TEES WHERE BRANCH DUCTS DO NOT HAVE THE SAME AIR FLOW CAPACITIES. VOLUME DAMPERS SHALL BE PROVIDED TO BALANCE AIR IN ALL DUCT BRANCHES IN ACCORDANCE WITH ENERGY CONSERVATION CODE.
- PROVIDE FIRE DAMPERS AND/OR FIRE/SMOKE DAMPERS FOR ALL FLOOR PENETRATIONS OR PENETRATIONS THROUGH FIRE-RATED WALLS PER INTERNATIONAL BUILDING CODE REQUIREMENTS. FIRE DAMPERS SHALL BE 90% OUT OF AIR STREAM. PROVIDE DUCT ACCESS PANELS FOR FIRE DAMPERS AND FIRE/SMOKE DAMPERS WHERE REQUIRED.
- FIRE DAMPERS SHALL BE INSULATED WHEN LOCATED IN INSULATED SUPPLY AND RETURN AIR DUCTS. INSULATION SHALL BE IN ACCORDANCE WITH SMACNA. FIRE DAMPERS SHALL NOT BE INSULATED WHEN INSTALLED IN NON-INSULATED DUCTWORK.
- PROVIDE DUCTWORK REDUCER FITTINGS AT AIR DEVICE CONNECTIONS AS REQUIRED.
- 10. ENTIRE HVAC SYSTEM SHALL HAVE SEISMIC RESTRAINTS INCLUDING HANGERS, VIBRATION ISOLATION, AND FLEXIBLE CONNECTIONS. REFER TO VIBRATION ISOLATION SCHEDULES AND DETAILS.
- 1. ALL CONTROL WIRING SHALL BE PLACED IN CONDUIT AND SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE. NO EMT ALLOWED FOR CONDUIT EXPOSED TO WEATHER.
- 12. WHERE AIRFLOWS ARE INDICATED TO EXISTING AND/OR NEW AIR DEVICES ON THE PLANS, THEY SHALL BE BALANCED TO THE AIRFLOWS INDICATED.
- 13. AIR CONDITIONING CONTRACTOR SHALL INSULATE ALL PIPING THAT COLLECTS CONDENSATE INCLUDING WASTE PIPE, ETC., FROM POINT OF CONNECTION TO TOP OF CONCRETE FLOOR SLAB ON GRADE. INSULATE FLOOR DRAIN, FLOOR SINK, AND/OR ROOF DRAIN BODIES EXPOSED TO AIR BELOW THE SLAB.
- 14. ALL AIR CONDITIONING SUPPLY AND RETURN AIR DUCTS SHALL BE INSULATED WITH 1-1/2" THICK FIBERGLASS INSULATION WITH VAPOR BARRIER JACKET
- 15. SUPPLY AIR DIFFUSERS SHALL BE LAY-IN TYPE, 24"x24" LOUVERED FACE WITH NECK SIZE SHOWN ON PLAN UNLESS OTHERWISE NOTED, TITUS TDC OR APPROVED EQUAL
- 16. RETURN AIR REGISTERS SHALL BE SURFACE MOUNTED, TITUS 310/350 FL OR APPROVED EQUAL.
- 7. ALL REFRIGERANT SHALL BE RECLAIMED AND RECYCLED AS PER CURRENT EPA LAWS AND REGULATIONS.



1314 SOUTH KING / SUITE 955 HONOLULU, HAWAII 96814

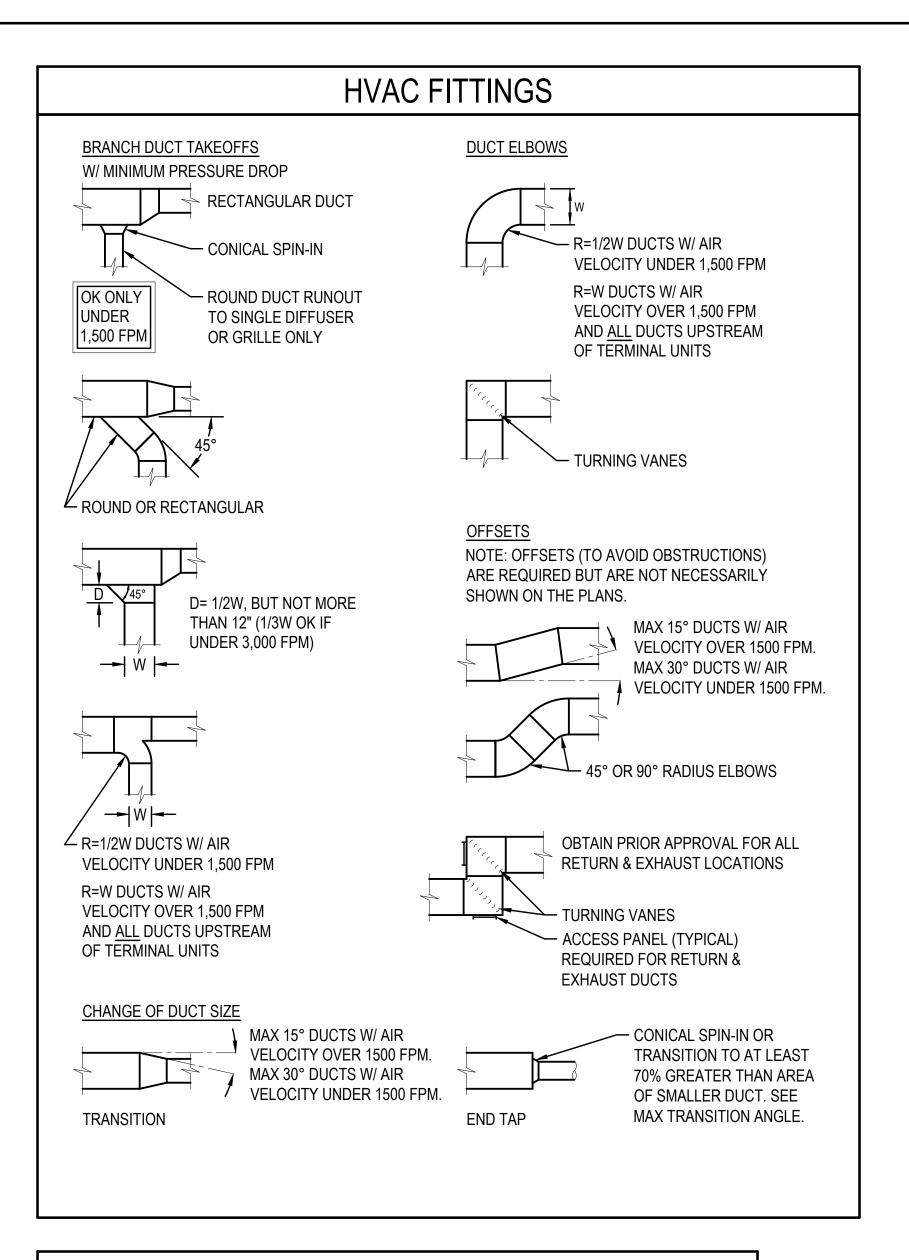
**ADDITION** 

**PHARMACY** MAHELONA 4800 K KAPA RO PATIENT



NO.		REVISION
JOE	3 NO.	_

DATE January 31, 2024 25 OF 58 SHTS



# DUCTWORK NOTES AND INFORMATION

- THE INSTALLATION OF THE DUCTWORK (CONSTRUCTION, BRACING, REINFORCEMENT, SUPPORTS, SEALED, ETC.) SHALL BE PER INTERNATIONAL MECHANICAL CODE AND SMACNA DESIGN STANDARDS.
- 2. COORDINATE WITH THE TEST AND BALANCING CONTRACTOR FOR THE LOCATIONS OF ALL VOLUME DAMPERS FOR PROPER BALANCING OF THE AIR SYSTEM. PROVIDE VOLUME DAMPERS WHETHER OR NOT SHOWN ON THESE DRAWINGS.
- 3. COORDINATE WITH THE TEST AND BALANCING CONTRACTOR FOR THE LOCATIONS OF AIR FLOW TEST PORTS. PROVIDE TEST PORTS WHETHER OR NOT SHOWN ON THESE DRAWINGS.
- 4. 6-FT OF FLEXIBLE DUCTWORK IS ALLOWED FOR DUCT RUN OUTS TO AIR DEVICES IN AREAS WITH CEILINGS. FLEXIBLE DUCTWORK IS NOT ALLOWED IN AREAS WITHOUT CEILING.
- 5. ALL DUCT DIMENSIONS ARE NET SIZES AND DO NOT INCLUDE THICKNESS OF DUCT INSULATION AND DUCT REINFORCEMENTS.
- 6. PROVIDE 1-IN THICK ACOUSTICAL DUCT LINER FOR ALL TRANSFER DUCTS.
- 7. SEAL ALL SUPPLY AIR, RETURN AIR AND EXHAUST AIR DUCTWORK ACCORDING TO THE PRESSURE CLASS LISTED ON THESE DRAWINGS.

GENERAL LEGEND				
SYMBOL	DESCRIPTION			
A B	DETAIL SYMBOL:	A = IDENTIFYING NUMBER B = SHEET WHERE DETAIL IS SHOWN		
1 OR (1)	KEYED REFERENCE	E NOTE OR SHEET NOTE		
•	POINT OF CONNEC	TION (POC) SYMBOL		
ACU-1	EQUIPMENT IDENTI EQUIPMENT SCHED	FICATION (REFER TO DULE)		
	REVISION CLOUD A	ND REVISION NUMBER		

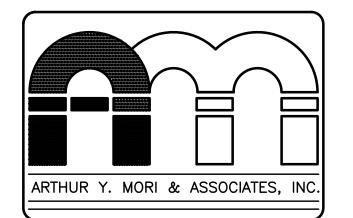
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<u>-</u>	ABBREVIATIONS			
ABBREVIATIO ACCU	ON DESCRIPTION  AIR-COOLED CONDENSING UNIT			
AFF	ABOVE FINISH FLOOR			
AP ARCH	ACCESS PANEL ARCHITECT/ARCHITECTURAL			
BLDG	BUILDING			
CFM	CUBIC FEET PER MINUTE			
CF CLG	CIRCULATION FAN CEILING			
CO	CLEANOUT			
CONC	CONCRETE			
CONN CONT	CONNECT OR CONNECTION CONTINUATION			
CONT	COLD WATER			
Ø	DIAMETER OR PHASE			
DDC DEMO	DIRECT DIGITAL CONTROL DEMOLISH			
DEMO	DOWN			
DT	DUCT			
DWG (F)	DRAWING			
(E) EA	EXISTING EXHAUST AIR			
EAR	EXHAUST AIR REGISTER			
EAT	ENTERING AIR TEMPERATURE			
EF ELEV	EXHAUST FAN ELEVATION			
EQUIP	EQUIPMENT			
ESP	EXTERNAL STATIC PRESSURE			
FCO FCU	FLOOR CLEANOUT FAN COIL UNIT			
FD	FLOOR DRAIN			
FLR	FLOOR			
FT GAL	FEET GALLONS			
GALV	GALVANIZED			
GPH	GALLONS PER HOUR			
GPM HB	GALLONS PER MINUTE HOSE BIBB			
нь НС	HEPA CARE FILTRATION SYSTEM			
HOAS	HIGH OUTSIDE AIR SYSTEM			
HP	HORSEPOWER			
HWRP HW	HOT WATER RECIRCULATING PUMP HOT WATER			
HZ	HERTZ			
IM	ICE MAKER			
LAV	LAVATORY  LAMINAR FLOW DIFFUSER WITH HEPA			
LFD	FILTER			
MGA	MEDICAL GAS ALARM			
MS MZV	MOP SINK MEDICAL GAS ZONE VALVE			
NTS	NOT TO SCALE			
OA	OUTSIDE AIR			
PLBG POC	PLUMBING POINT OF CONNECTION			
POR	POINT OF REMOVAL			
RA RAC	RETURN AIR			
RAG REQD	RETURN AIR GRILLE REQUIRED			
REV	REVISION(S)			
RPM	REVOLUTION PER MINUTE			
SA SF	SUPPLY AIR SUPPLY FAN			
SHO	SHOWER			
SK	SINK, CLINIC			
SS TAB	STAINLESS STEEL TEST, ADJUST & BALANCE			
TP	TRAP PRIMER			
TSP	TOTAL STATIC PRESSURE			
TSTAT TYP	THERMOSTAT TYPICAL			
U/C	UNDERCUT			
V	VENT OR VOLTS			
VAV VD	VARIABLE AIR VOLUME VOLUME DAMPER			
VFD	VARIABLE FREQUENCY DRIVE			
VTR	VENT THRU ROOF			
W W/	WASTE WITH			
WC	WATER CLOSET			
WCO	WALL CLEANOUT			
WHA	WATER HAMMER ARRESTER			

MECH	HANICAL LEGEND
SYMBOL	DESCRIPTION
<del>////</del>	DEMOLITION
	EXISTING
	COLD WATER, CW
	HOT WATER, HW
	HOT WATER CIRCULATION, HWC
—CA—	MEDICAL COMPRESSED AIR
— O2 —	MEDICAL OXYGEN
— VAC —	MEDICAL VACUUM
	VENT, V
e—	PIPE DOWN
0	PIPE UP
	DOWN IN PIPE
<b>-</b> ⋈	VALVE
<u></u>	END CAP WALL CLEANOUT
⊩ ⊕	FLOOR CLEANOUT
Ψ— ⊠	FLOOR SINK
<b>△</b>	FLOOR DRAIN
<b>⊕</b>	FIRE SPRINKLER HEAD
①	THERMOSTAT
<b>→</b>	AIR FLOW (RETURN/EXHAUST)
<b></b> →	AIR FLOW (SUPPLY)
—SD	DUCT SMOKE DETECTOR
	BACKDRAFT DAMPER
—[M]	MOTORIZED DAMPER
<b>─</b> ◀	FIRE DAMPER
-	FIRE/SMOKE DAMPER
	SMOKE DAMPER
	VOLUME DAMPER
18x12	DUCT SIZE IN INCHES FIRST SIZE LISTED IS SIDE SHOWN
	SUPPLY DUCT TURNED UP
<u> </u>	RETURN DUCT TURNED UP
	EXHAUST DUCT TURNED UP
<b>X</b>	SUPPLY DUCT TURNED DOWN
<b>\</b>	RETURN DUCT TURNED DOWN
	EXHAUST DUCT TURNED DOWN
~~	FLEXIBLE DUCT
$\boxtimes$	CEILING DIFFUSER, FOUR WAY OR AS SHOWN (OPEN QUADRANT INDICATES THROW PATTERN)
	CEILING RETURN/EXHAUST
	WALL GRILLE/REGISTER
P.M.	ROOM PRESSURE MONITOR

FXIST	TING METER NUMBER: 08066001		
27(10)	EXISTING METER SIZ	'E: 6"	
A. PROPO	OSED DOMESTIC:		61.33 GPN
B. PROPO	OSED IRRIGATION:	- F.U.	- GPI
	OSED OTHER:	- F.U.	
D. TOTAL	PROPOSED:	80 F.U.	61.33 GPI
E. DEMOL	LITION:	31 F.U.	42.4 GPI
	DEMO PERMIT #:		
	DATE:		
F. NET CH	HANGE:	— 49 F.U.	49.6 GPI
G. EXISTI	NG TO REMAIN:	- F.U.	- GPI
GRAND T	OTAL:	- F.U.	- GPI
NOTES:			
1. THE	EXISTING NUMBER OF FIXTURE UNITS IS	S NOT KNOWN.	
	<b>DEMO FIXTURE UNI</b>	T COLINIT	1
	DEIMOTIVIONE OIM	I COUNT	
QUANTITY	DESCRIPTION	F.U.	TOTAL
QUANTITY 4			ı
-	DESCRIPTION	F.U.	TOTAL
4	DESCRIPTION LAVATORY	F.U. 1.0	TOTAL 4
4	DESCRIPTION  LAVATORY  SINK	F.U. 1.0 3.0	TOTAL 4 3
4 1 4	DESCRIPTION  LAVATORY  SINK  WATER CLOSET	F.U. 1.0 3.0 5.0	TOTAL 4 3 20 4
4 1 4	DESCRIPTION  LAVATORY  SINK  WATER CLOSET	F.U. 1.0 3.0 5.0 2.0	TOTAL 4 3 20 4
4 1 4	DESCRIPTION  LAVATORY  SINK  WATER CLOSET  SHOWER	F.U. 1.0 3.0 5.0 2.0	TOTAL 4 3 20 4
4 1 4 2	DESCRIPTION LAVATORY SINK WATER CLOSET SHOWER  NEW FIXTURE UNIT	F.U. 1.0 3.0 5.0 2.0  TOTAL NEW	TOTAL 4 3 20 4 31 F.U
4 1 4 2	DESCRIPTION  LAVATORY SINK WATER CLOSET SHOWER  NEW FIXTURE UNIT DESCRIPTION	F.U. 1.0 3.0 5.0 2.0  TOTAL NEW  COUNT F.U.	TOTAL  4 3 20 4 31 F.U
4 1 4 2 QUANTITY 6	DESCRIPTION  LAVATORY  SINK  WATER CLOSET  SHOWER   NEW FIXTURE UNIT  DESCRIPTION  LAVATORY (LAV)	F.U. 1.0 3.0 5.0 2.0  TOTAL NEW  F.U. 1.0	TOTAL  4  3  20  4  31 F.U  TOTAL  6
4 1 4 2 2 QUANTITY 6 6	DESCRIPTION  LAVATORY  SINK  WATER CLOSET  SHOWER   NEW FIXTURE UNIT  DESCRIPTION  LAVATORY (LAV)  WATER CLOSET (WC)	F.U. 1.0 3.0 5.0 2.0  TOTAL NEW  F.U. 1.0 5.0 5.0	TOTAL  4 3 20 4 31 F.U  TOTAL 6 30
4 1 4 2 2 QUANTITY 6 6 6	DESCRIPTION  LAVATORY  SINK  WATER CLOSET  SHOWER   NEW FIXTURE UNIT  DESCRIPTION  LAVATORY (LAV)  WATER CLOSET (WC)  CLINIC SINK (SK)	F.U. 1.0 3.0 5.0 2.0  TOTAL NEW  F.U. 1.0 5.0 3.0	TOTAL  4 3 20 4 31 F.U  TOTAL 6 30 30

DUCT LEAKAGE CLASSIFICATION AND ALLOWABLE LEAKAGE					
DUCT PRESSURE	SEAL	APPLICABLE	SMACNA L	EAKAGE CLASS	
CLASS, IN-WG	CLASS	SEALING	RECTANGULAR DUCT	ROUND DUCT	
0.5, 1, 2	Α	TRANSVERSE JOINTS ONLY	24	12	
3 AND ABOVE A JOINTS, SEAMS AND ALL WALL PENETRATIONS		6	3		

DUCT PRESSURE CLASS				
FAN TYPE	DUCT INVOLVED NEMA EFF (%)	POSITIVE (P) OR NEGATIVE (N) PRESSURE	MINIMUM PRESSURE CLASS IN-WG	
HOAS	FROM RETURN AIR REGISTER TO COOLING COIL	N	1	
SUPPLY FAN	FROM AFTER FAN TO TERMINAL VAV BOXES	Р	3	
33 21 17.11	FROM TERMINAL VAV BOXES TO ROOM OUTLETS	Р	1	
EXHAUST FAN	ALL EXHAUST	N	3	



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8 8

PATIENT ROOM & PHARMACY

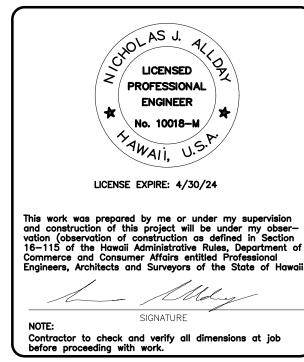
MAHELONA MEDICAL CENTER

4800 KAWAIHAU ROAD

KAPAA, HI 96746

ADDITION

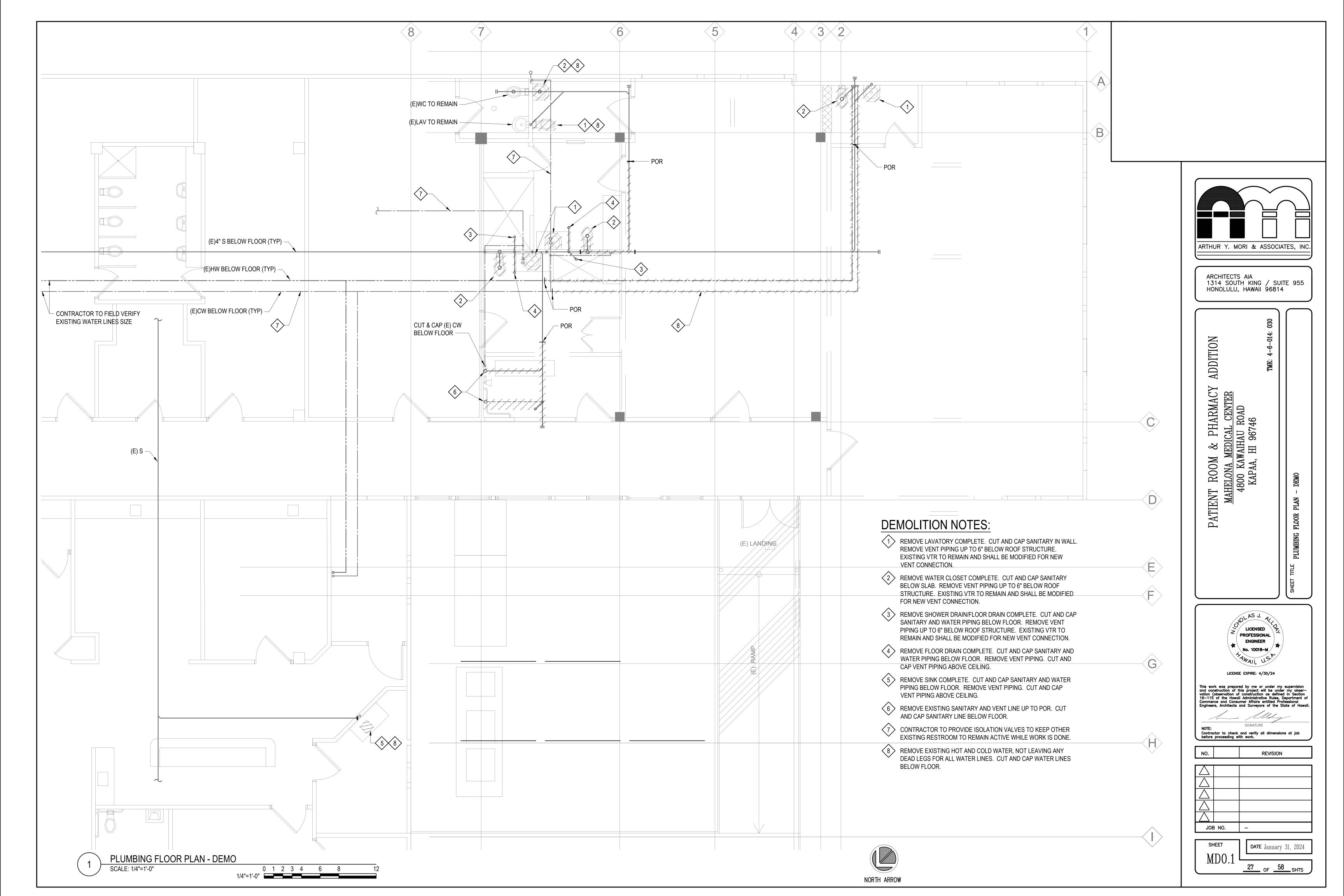
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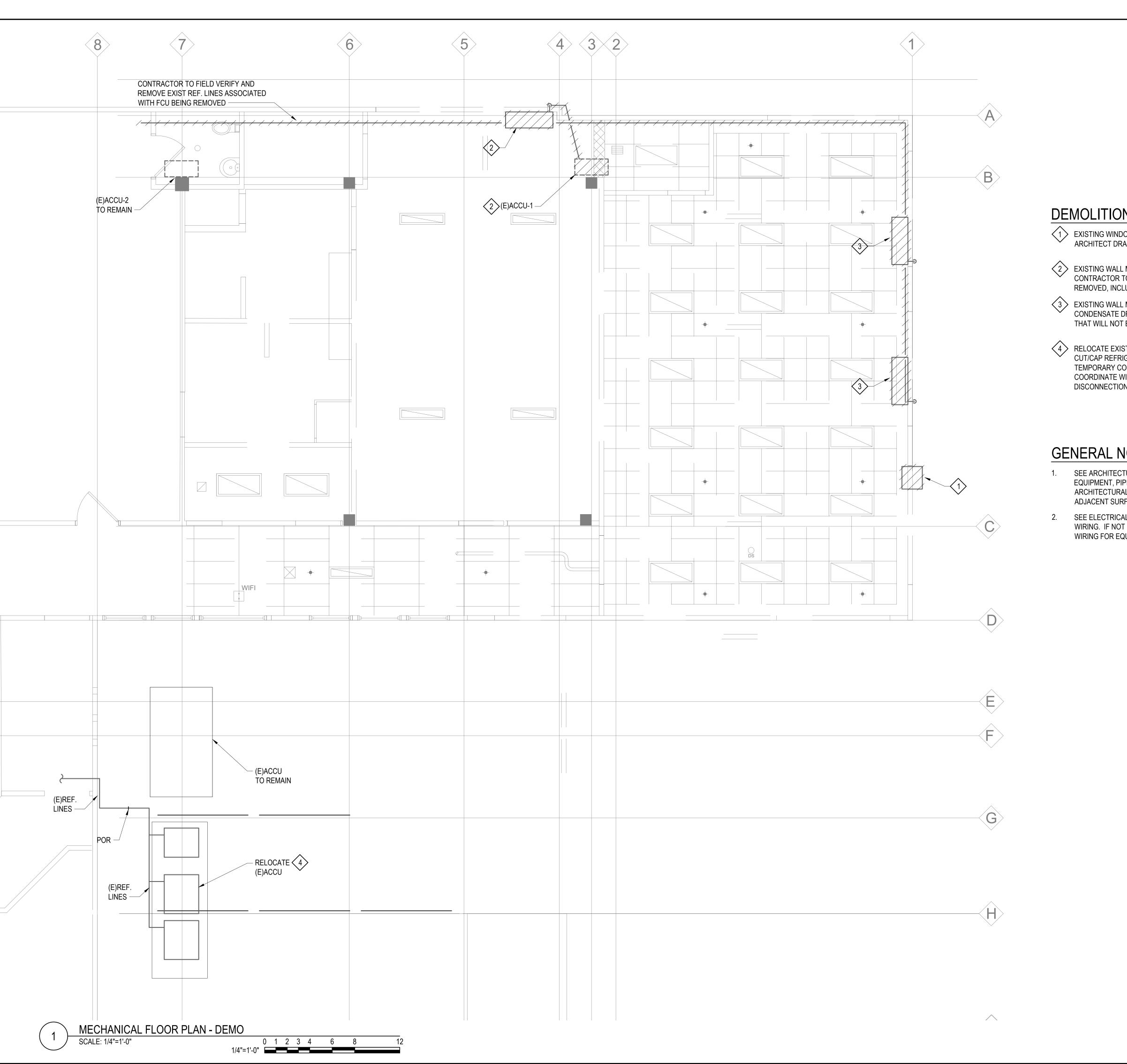


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DATE January 31, 2024

26 OF 58 SHTS



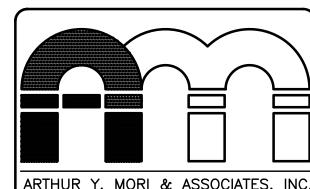




- EXISTING WINDOW AC AND ASSOCIATED COMPONENTS TO BE DEMOLISHED. SEE ARCHITECT DRAWINGS FOR PATCH OF THE OPENINGS.
- EXISTING WALL MOUNT FCU AND ASSOCIATED COMPONENTS TO BE DEMOLISHED. CONTRACTOR TO FIELD VERIFY AND REMOVE ACCU ASSOCIATED WITH FCU BEING REMOVED, INCLUDING REF. PIPING, CONTROL WIRING, SUPPORTS, ETC.
- EXISTING WALL MOUNT FCU AND ASSOCIATED COMPONENTS (REFRIGERANT LINES, CONDENSATE DRAIN) TO BE DEMOLISHED. REMOVE ALL EXISTING REFRIGERANT LINES THAT WILL NOT BE USED.
- RELOCATE EXISTING ACCU TO NEW LOCATION (SEE SHEET M1.2). TEMPORARY CUT/CAP REFRIGERANT LINES FOR NEW CONNECTION. CONTRACTOR TO PROVIDE TEMPORARY COOLING DURING CONSTRUCTION PERIOD. CONTRACTOR TO COORDINATE WITH OTHER TRADES FOR POWER AND CONTROL WIRING DISCONNECTION AND RECONNECTION.

# GENERAL NOTES:

- SEE ARCHITECTURAL DRAWINGS FOR PATCHING OF ALL OPENINGS AND WALL WHERE EQUIPMENT, PIPING AND SUPPORTS HAVE BEEN REMOVED. IF NOT NOTED ON THE ARCHITECTURAL DRAWINGS, PATCH AND FINISHED WALLS AND FLOORS TO MATCH THE ADJACENT SURFACE.
- SEE ELECTRICAL DRAWINGS FOR REMOVAL OF ELECTRICAL DISCONNECTS AND WIRING. IF NOT NOTED ON THE ELECTRICAL DRAWINGS, REMOVE DISCONNECTS AND WIRING FOR EQUIPMENT BEING REMOVED.



ARTHUR Y. MORI & ASSOCIATES, INC

ARCHITECTS AIA 1314 SOUTH KING / SUITE 955 HONOLULU, HAWAII 96814

ADDITION

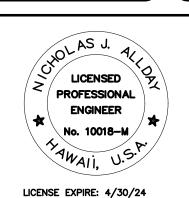
OM & PHARMACY
A MEDICAL CENTER
KAWAIHAU ROAD
AA, HI 96746

PATIENT ROOM

MAHELONA M

4800 KAWA

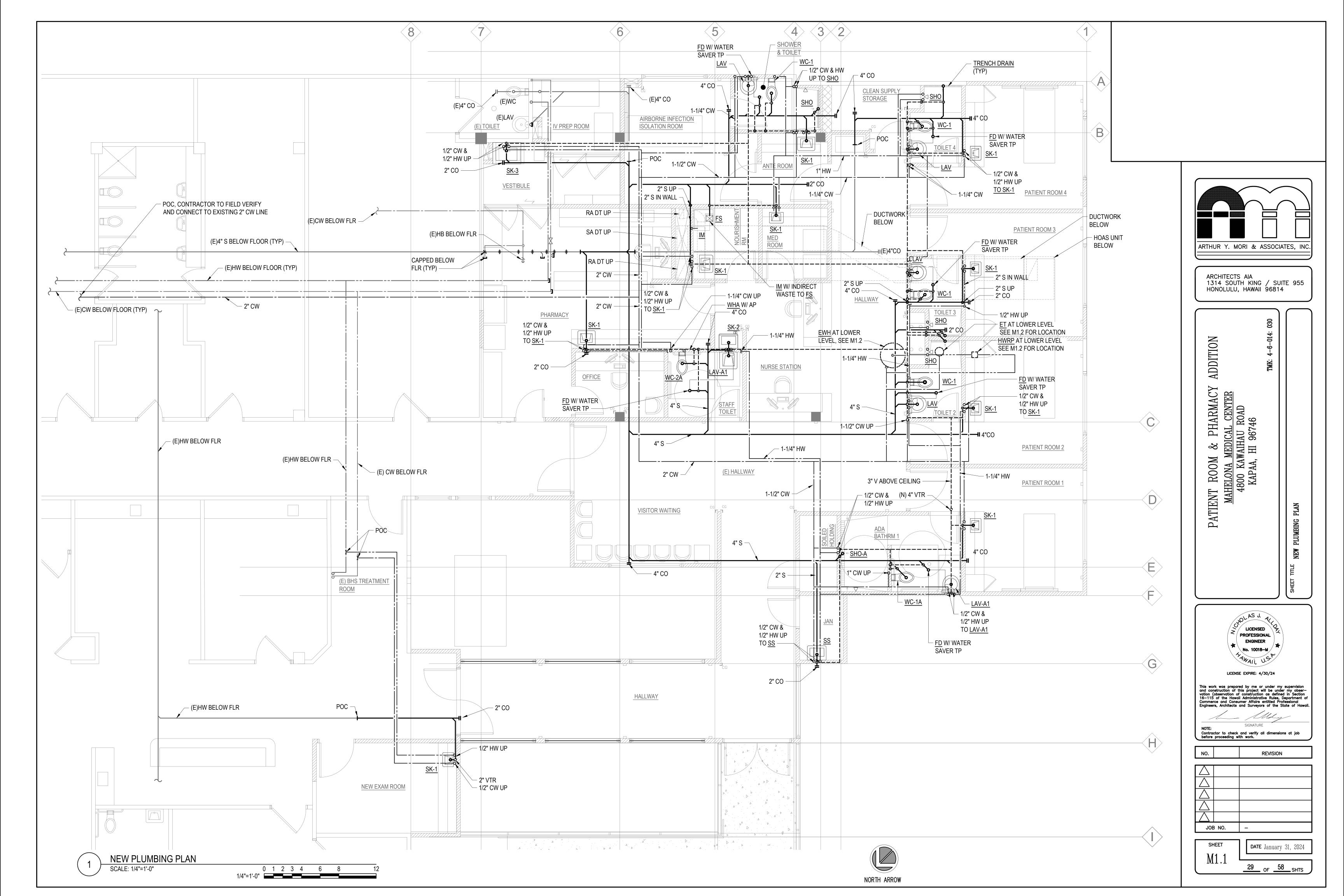
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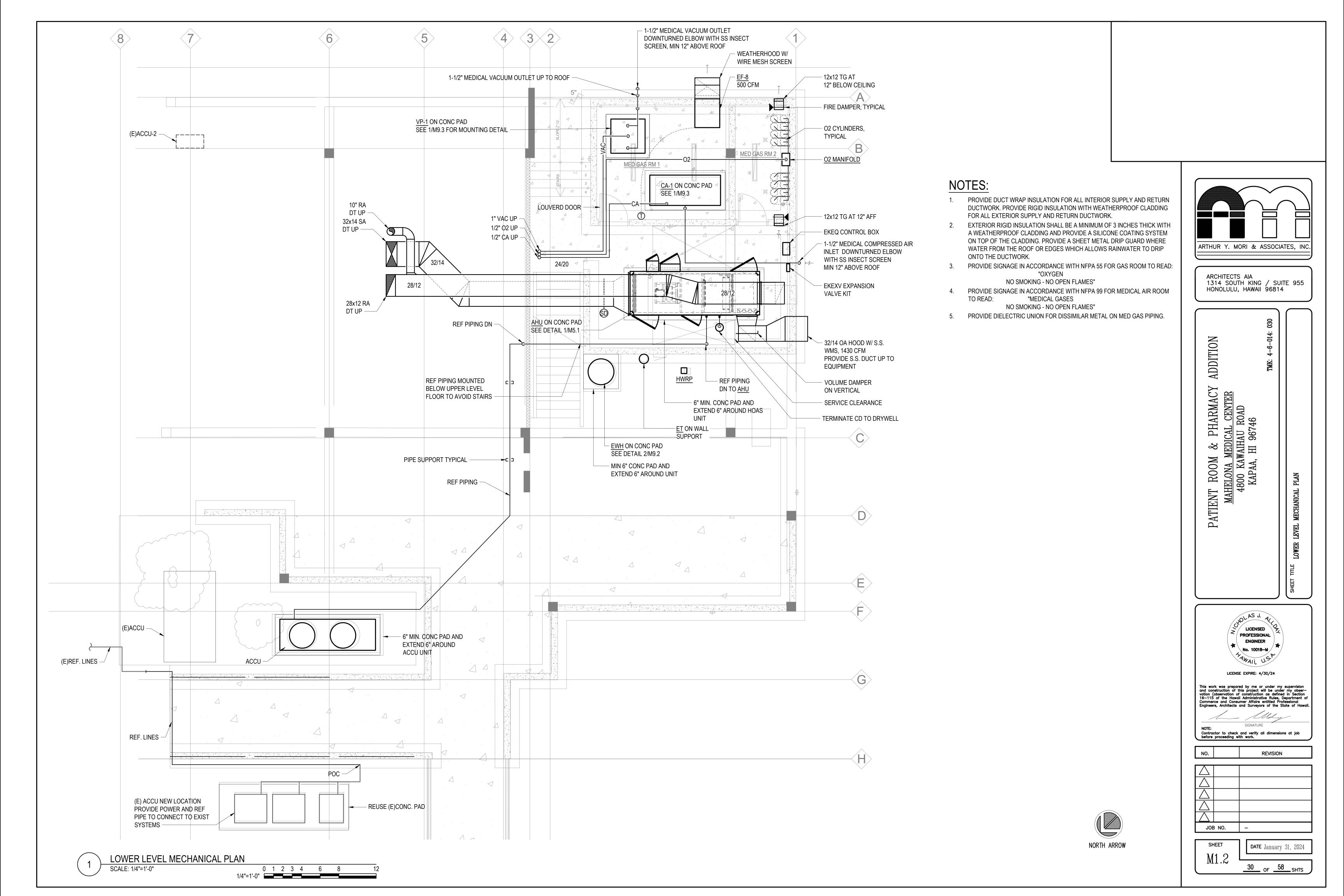


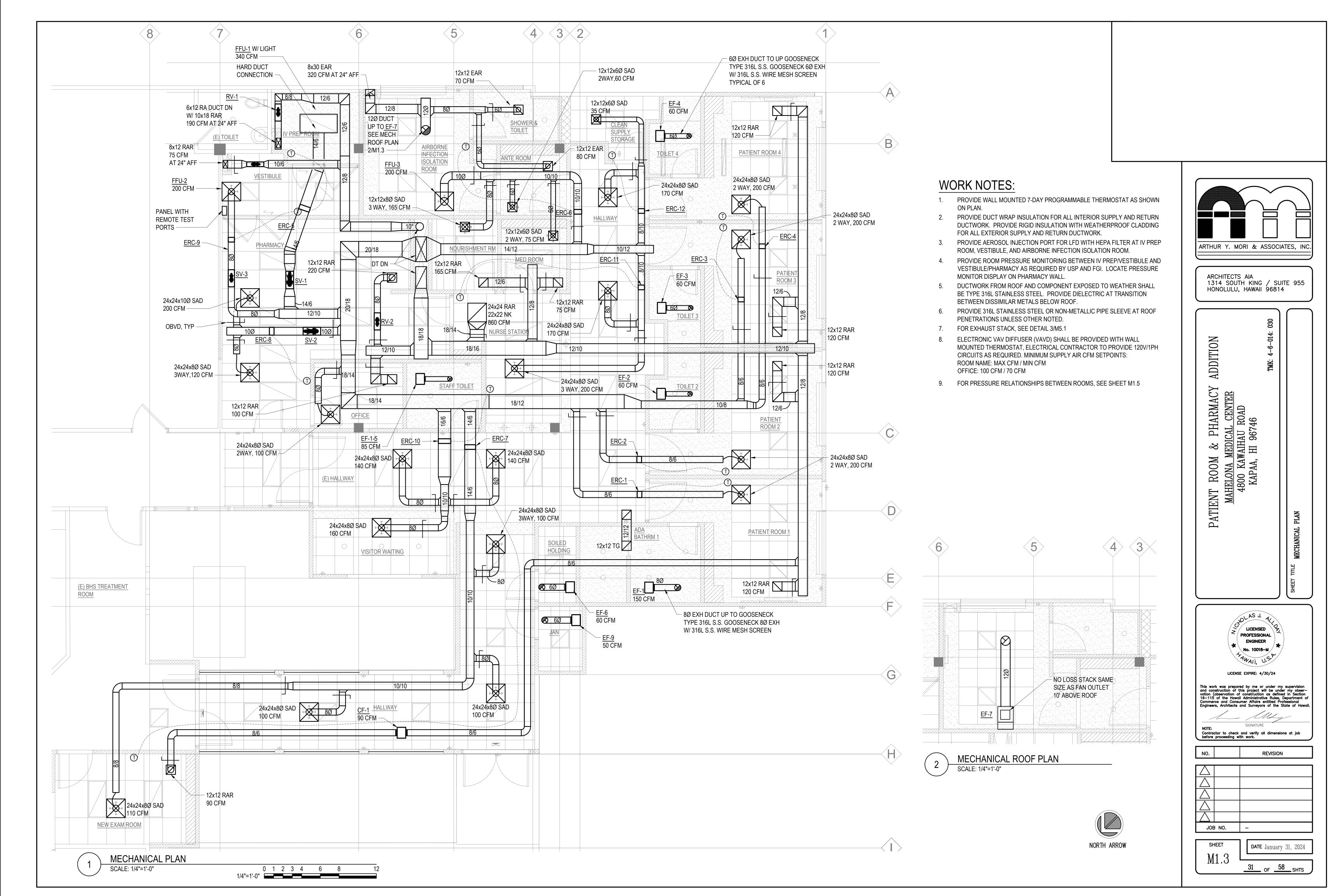
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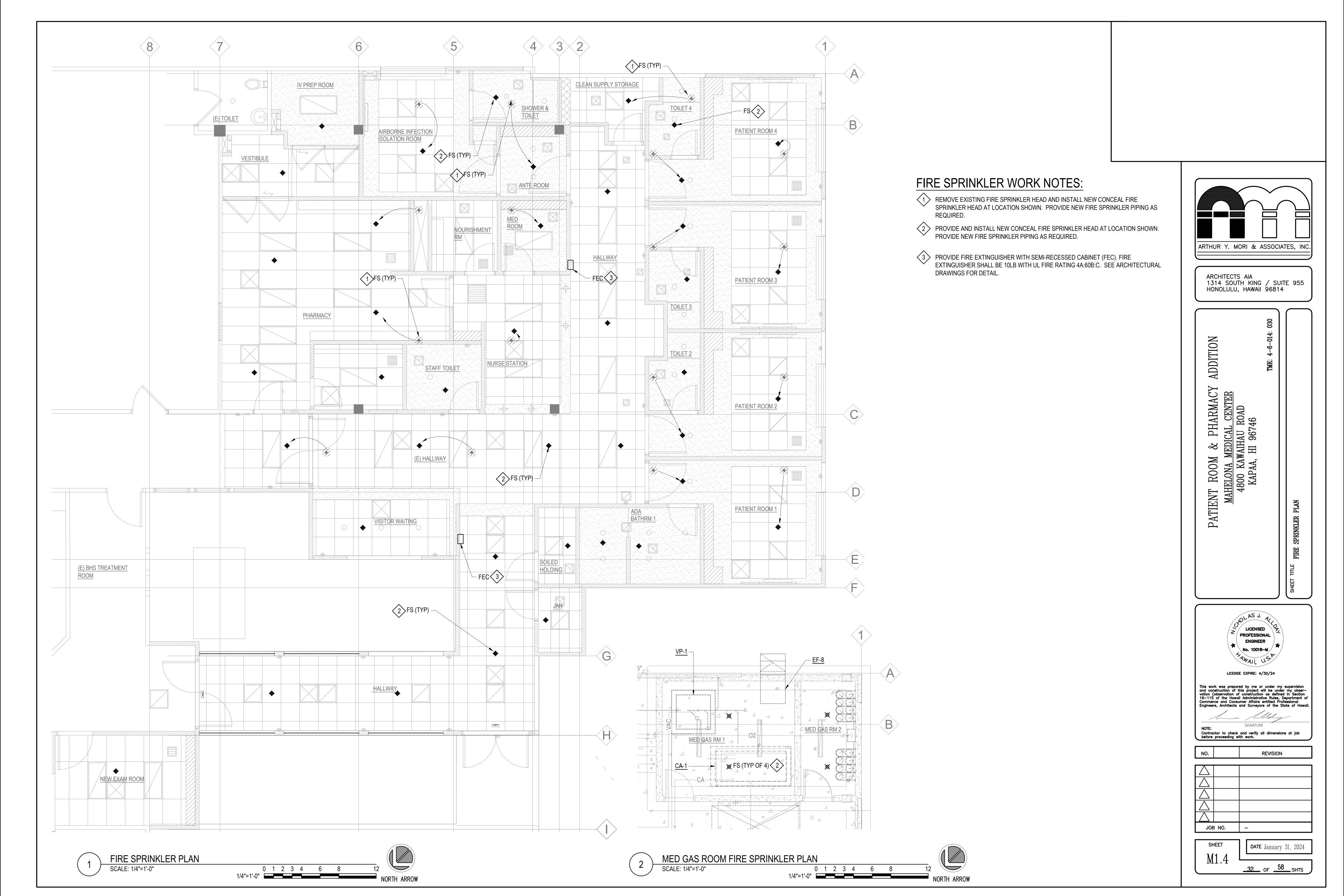
NORTH ARROW

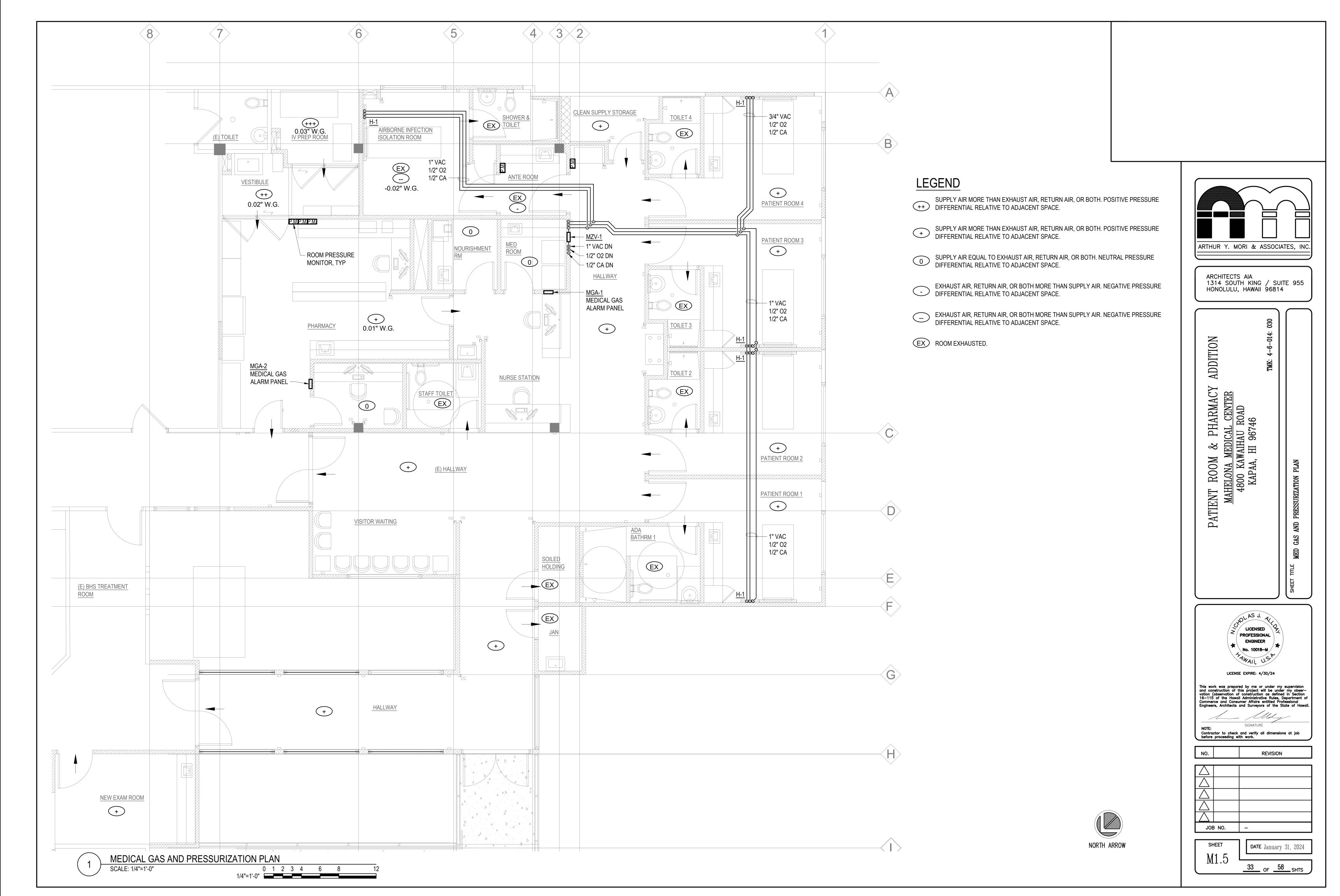
DATE January 31, 2024

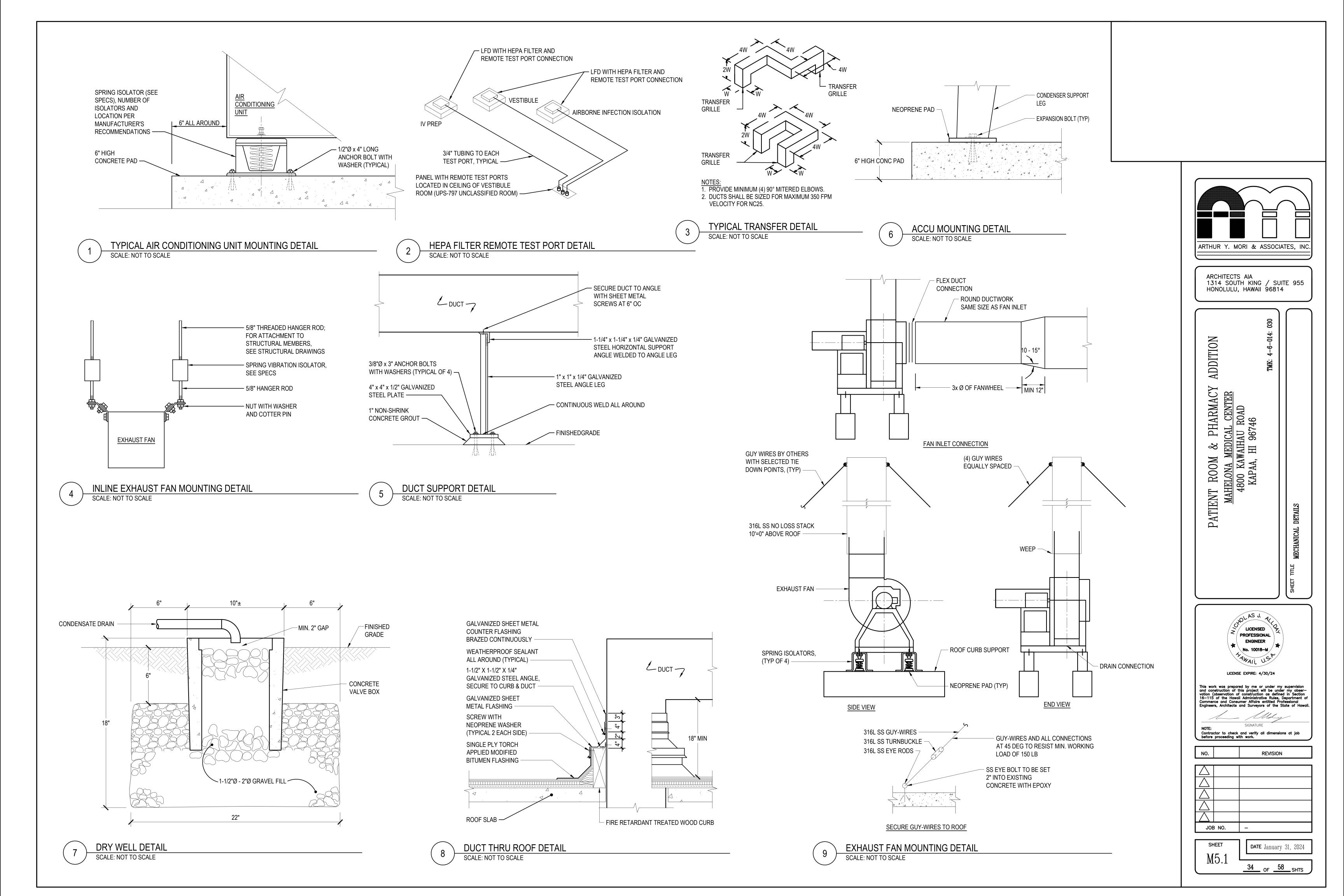


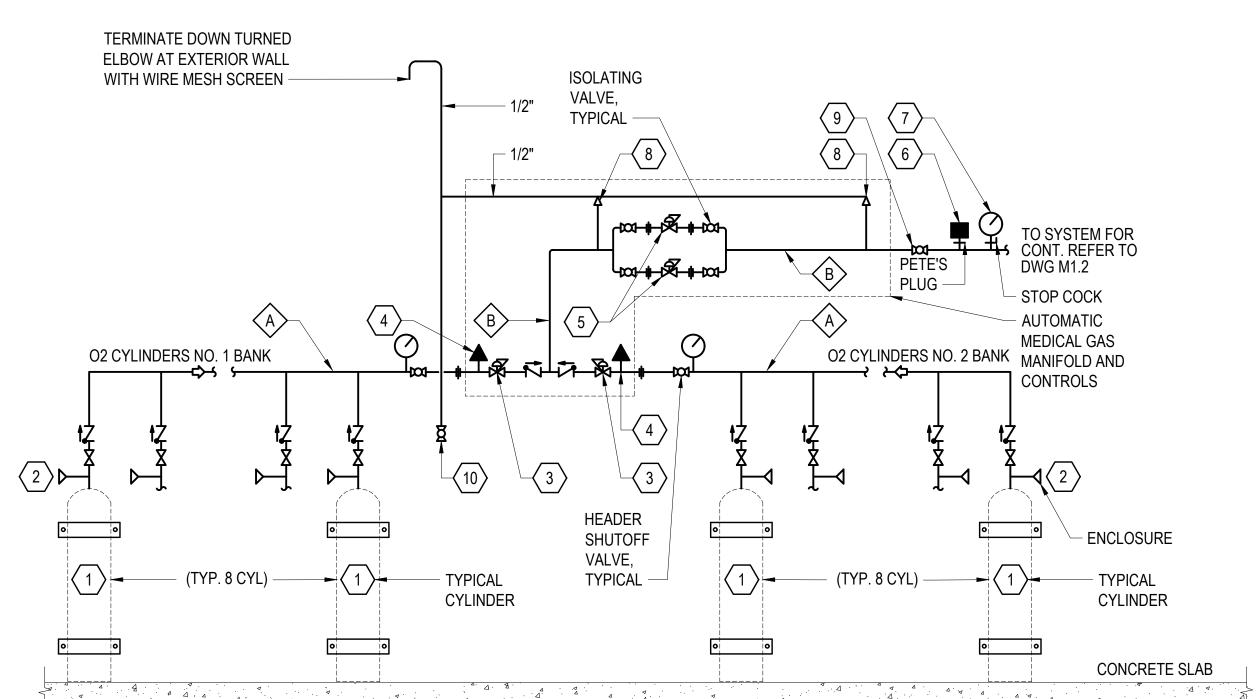












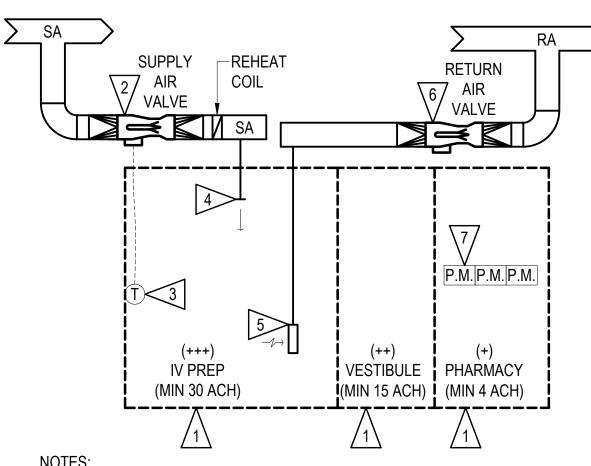
PROVIDE 02 MANIFOLDS AND CONTROLS MEETING NFPA 99 REQUIREMENTS TO AUTOMATICALLY SWITCH BETWEEN PRIMARY AND SECONDARY CYLINDER BANKS, 115V/1PH, 60HZ, 1 AMP

	KEY NOTES					
ITEM	DESCRIPTION					
1	TYPICAL HIGH PRESSURE CYLINDERS: 02, N2O					
2	CYLINDER RELIEF VALVE					
3	DOME LOADED PRESSURE REGULATOR W/ FILTER					
4	PRESSURE TRANSDUCER: CONNECT TO MGA-1					
$\left\langle 5\right\rangle$	LINE PRESSURE REGULATOR SET AT 55 PSI MAX					
$\left\langle 6\right\rangle$	MASTER ALARM PRESSURE SENSOR: CONNECT TO MGA-1					
$\overline{7}$	7 PRESSURE GAUGE					
8	PRESSURE RELIEF VALVE					
9	MAIN SHUT-OFF VALVE					
$\langle 10 \rangle$	PROVIDE 24" DIRT LEG WITH BALL VALVE					

PIPE SIZING SCHEDULE			
MED. GAS	A	B	
OAO	MANIFOLD	TO SYSTEM	
O2	1/2"	1/2"	

	MEDICAL GAS ALARM PANEL SCHEDULE							
			TYPE OF PANEL	O2	MA	MV		
MARK	LOCATION	QTY	AREA LINE PRESS. ALARM	LINE PRESS. HIGH/LOW	LINE PRESS. HIGH/LOW	LINE VACUUM LOW	REMARKS	
MGA-1 MGA-2	NURSE STATION PHARMACY	2	•	•	•	•	ALARM INDICATIONS: BEFORE O2 CHANGEOVER TO THE RESERVE SUPPLY OCCURS, WHEN THE CONTENTS OF THE RESERVE SUPPLY IS REDUCED BELOW ONE AVERAGE DAY'S SUPPLY, WHEN ANY MEDICAL GAS SYSTEM MAIN LINE PRESSURE INCREASES 20% OR DECREASES 20% FROM NORMAL OPERATING PRESSURE, WHEN THE MEDICAL VACUUM MAIN LINE PRESSURE DROPS BELOW 12 IN HG, WHEN MEDICAL AIR DEW POINT IS GREATER THAN 35°F, SOURCE EQUIPMENT LOCAL ALARM SIGNAL, 115V/1PH/60HZ, 1AMP.	

**OXYGEN GAS MANIFOLD PIPING** SCALE: NOT TO SCALE



NOTES:

1> ROOM ENVELOPE, DOORS, AND PENETRATIONS SHOULD BE SEALED TO LIMIT AIR LEAKAGE (SEE ARCH REQUIREMENTS). SEAL ALL PIPE WALL PENETRATIONS AT ROOM WITH NO OR LOW VOC WATER-BASED CAULKING. PROVIDE AT LEAST THREE APPLICATIONS TO ASSURE AIR TIGHT CLOSURE.

2 SUPPLY AIR VALVE <u>SV-1</u> WITH ELECTRIC REHEAT COIL <u>ERC-5</u>: VARIABLE SA CFM SETPOINT TO MEET MINIMUM REQUIRED AIR CHANGE PER HOUR 315 AND MAXIMUM COOLING LOAD 340 CFM. SA CFM SETPOINT TO BE SET TO MAXIMUM 340 CFM

THERMOSTAT SETPOINT 68°F-75°F (ADJ).

4 LAMINAR FLOW DIFFUSERS.

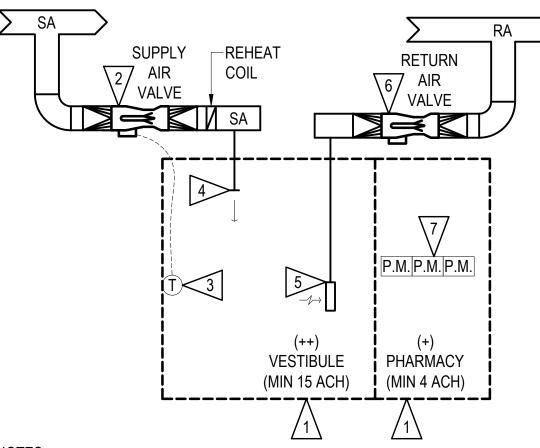
5 RETURN AIR 190 CFM. RAR LOCATED ON WALL AT 24" AFF.

6 RETURN AIR VALVE RV-1:

RETURN CFM SETPOINT CONTROLLED BY SUPPLY AIRFLOW MINUS ADJUSTABLE ROOM VOLUMETRIC OFFSET SETPOINT TO KEEP IV PREP AT POSITIVE 0.02" WG (ADJ). ORIGINAL SETPOINT TO BE DETERMINED AT INITIAL TAB.

7 PRESSURE MONITOR SHALL ALARM IF THE PRESSURE IS NOT MAINTAINED FOR A PERIOD EXCEEDING 30 SECONDS. MINIMUM 0.03" WG PRESSURE DIFFERENTIAL.

IV PREP CONTROL DIAGRAM SCALE: NOT TO SCALE



NOTES:

1>> ROOM ENVELOPE, DOORS, AND PENETRATIONS SHOULD BE SEALED TO LIMIT AIR LEAKAGE (SEE ARCH REQUIREMENTS). SEAL ALL PIPE WALL PENETRATIONS AT ROOM WITH NO OR LOW VOC WATER-BASED CAULKING. PROVIDE AT LEAST THREE APPLICATIONS TO ASSURE AIR TIGHT CLOSURE.

2 > SUPPLY AIR VALVE SV-3 WITH ELECTRIC REHEAT COIL ERC-9:VARIABLE SA CFM SETPOINT TO MEET MINIMUM REQUIRED AIR CHANGE PER HOUR 200 CFM AND COOLING LOAD 70 CFM. SA CFM SETPOINT TO BE SET TO MEET ACH 200 CFM.

THERMOSTAT SETPOINT 68°F-75°F (ADJ).

DETERMINED AT INITIAL TAB.

4 LAMINAR FLOW DIFFUSERS.

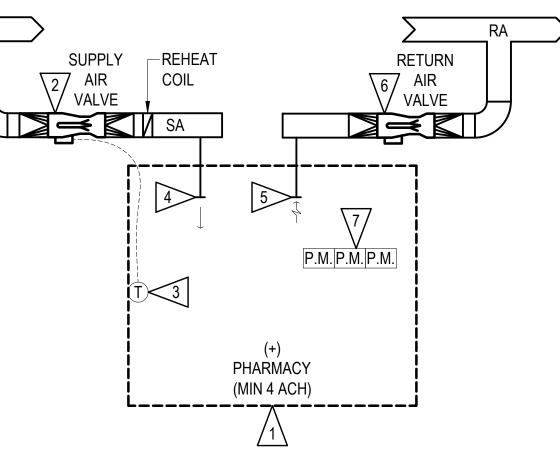
5 RETURN AIR 75 CFM. RAR LOCATED ON WALL AT 24" AFF.

6 RETURN AIR VALVE RV-3: RETURN CFM SETPOINT CONTROLLED BY SUPPLY AIRFLOW MINUS ADJUSTABLE ROOM VOLUMETRIC OFFSET SETPOINT TO KEEP

7 PRESSURE MONITOR SHALL ALARM IF THE PRESSURE IS NOT MAINTAINED FOR A PERIOD EXCEEDING 30 SECONDS.

VESTIBULE AT POSITIVE 0.015" WG (ADJ). ORIGINAL SETPOINT TO BE

VESTIBULE CONTROL DIAGRAM SCALE: NOT TO SCALE



NOTES:

1> ROOM ENVELOPE, DOORS, AND PENETRATIONS SHOULD BE SEALED TO LIMIT AIR LEAKAGE (SEE ARCH REQUIREMENTS). SEAL ALL PIPE WALL PENETRATIONS AT ROOM WITH NO OR LOW VOC WATER-BASED CAULKING. PROVIDE AT LEAST THREE APPLICATIONS TO ASSURE AIR TIGHT CLOSURE.

2> SUPPLY AIR VALVE <u>SV-2</u> WITH ELECTRIC REHEAT COIL <u>ERC-8</u>: VARIABLE SA CFM SETPOINT TO MEET MINIMUM REQUIRED AIR CHANGE PER HOUR 245 CFM AND MAXIMUM COOLING LOAD 320 CFM SA CFM SETPOINT TO BE SET AT MAX COOLING LOAD 320 CFM

3 THERMOSTAT SETPOINT 68°F-75°F (ADJ).

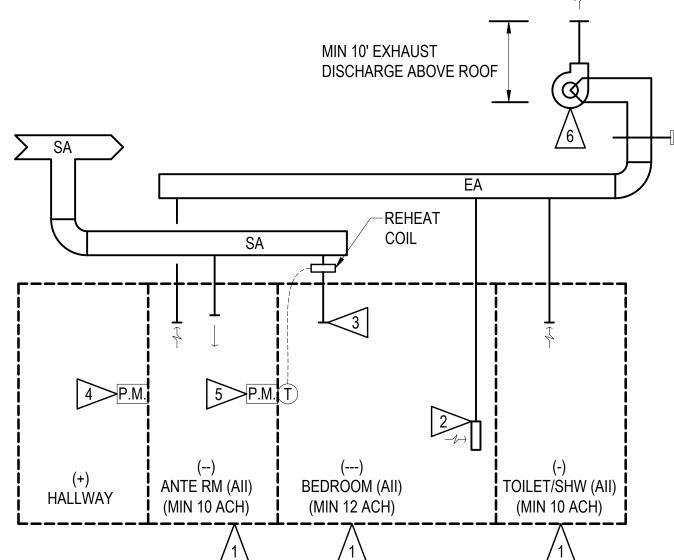
4 DIFFUSERS.

5 RETURN AIR 220 CFM

6 RETURN AIR VALVE RV-2: RETURN CFM SETPOINT CONTROLLED BY SUPPLY AIRFLOW MINUS ADJUSTABLE ROOM VOLUMETRIC OFFSET SETPOINT TO KEEP PHARMACY AT POSITIVE 0.01" WG (ADJ). ORIGINAL SETPOINT TO BE DETERMINED AT INITIAL TAB.

7 PRESSURE MONITOR SHALL ALARM IF THE PRESSURE IS NOT MAINTAINED FOR A PERIOD EXCEEDING 30 SECONDS.

PHARMACY CONTROL DIAGRAM SCALE: NOT TO SCALE



NOTES:

1> ROOM ENVELOPE, DOORS, AND PENETRATIONS SHOULD BE SEALED TO LIMIT AIR LEAKAGE (SEE ARCH REQUIREMENTS) SEAL ALL PIPE WALL PENETRATIONS AT ROOM WITH NO OR LOW VOC WATER-BASED CAULKING. PROVIDE AT LEAST THREE APPLICATIONS TO ASSURE AIR TIGHT CLOSURE.

2 EXHAUST REGISTER PLACED ON WALL NEAR THE HEAD OF THE PATIENT BED. EXHAUST REGISTER IS AT 24" AFF.

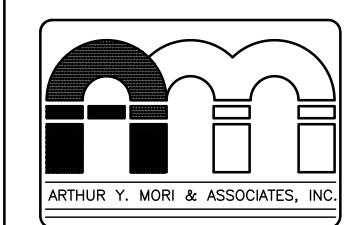
3 HEPA FILTER AT AIR DEVICE

4 ROOM PRESSURE MONITOR SHALL ALARM IF PRESSURE IS NOT MAINTAINED FOR A PERIOD EXCEEDING 30 SECONDS. MINIMUM NEGATIVE 0.01" WG PRESSURE DIFFERENTIAL FOR ANTE ROOM.

5 ROOM PRESSURE MONITOR SHALL ALARM IF PRESSURE IS NOT MAINTAINED FOR A PERIOD EXCEEDING 30 SECONDS. MINIMUM NEGATIVE 0.02" WG PRESSURE DIFFERENTIAL FOR BEDROOM AII.

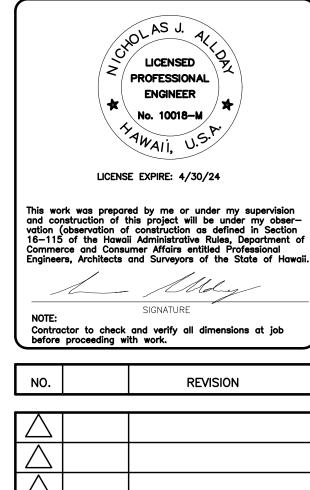
6 EXHAUST FAN SET TO MAINTAIN MINIMUM EXH ACH, INTERLOCK WITH MOTORIZED DAMPER.

All ROOM CONTROL DIAGRAM SCALE: NOT TO SCALE



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ADDITION PHARMACY ROOM MAHELONA 4800 K KAPA PATIENT



JOB NO. SHEET DATE January 31, 2024

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#### AIR HANDLING UNIT SCHEDULE ENT AIR LVG AIR REFRIGERANT TEMP °F TEMP °F PIPE (IN) DRAIN SENSIBLE TOTAL COOLING **UNIT WEIGHT** MANUFACTURER LOCATION TYPE REMARKS (BTUH) CAP. (BTUH) RA OA ESP (CFM) (IN WG) AND MODEL LBS. SA LIQUID GAS V/Ø/HZ FLA MCA MOP DB WB DB WB (CFM) LOWER LEVEL 2255 1.0 | 460/3/60 | 4.1 | 5.2 | 15 | 79.7 | 67.8 | 56.4 | 54.5 5/8 1-1/8 82,400 129,800 UV LAMPS, PREMIUM EFFICIENCY MOTOR, E-COAT COIL COATING PLENUM 3685 1430 PAHHC 40 X6

	AIR COOLED CONDENSING UNIT SCHEDULE												
TAG	MODEL	LOCATION	CONNECT TO	CAPACITY (BTUH)	REF. TYPE	ENT. AMBIENT AIR TEMP (°F)	FAN NO. F	FLA MCA	MOTOR MOP	V / Ø / HZ	EER UNIT WEI	-tT	REMARKS
ACCU	DSPH 15	OUTSIDE	HOAS	160,200	R-454B	95	2	26 31.8	50	460/3/60	11.2 3000	PROVIDE WI	TH DISCONNECT, SPRING ISOLATORS, ALUMINUM PIGMENTED POLYURETHANE OR APPROVED EQUAL CORROSION INHIBITING COATING.

T. 0	MANUFACTURER	LOCATION	ADEA 050/50	T) (D.E.	DD1) /5	F/	λN		MOT	OR	UNIT WEIGHT	DEMARKS.
TAG	AND MODEL	LOCATION	AREA SERVED	TYPE	DRIVE	CFM	ESP	WATT	FLA	V / Ø / HZ	LBS.	REMARKS
EF-1	GREENHECK SP-A200	ADA BATHROOM	ADA BATHROOM	CEILING EXH FAN	DIRECT DRIVE	150	0.25	26	0.46	115/1/60	27	SEE NOTE [1].
EF-2	GREENHECK SP-A90	TOILET 2	TOILET 2	CEILING EXH FAN	DIRECT DRIVE	60	0.25	11	0.17	115/1/60	15	SEE NOTE [1].
EF-3	GREENHECK SP-A90	TOILET 3	TOILET 3	CEILING EXH FAN	DIRECT DRIVE	60	0.25	11	0.17	115/1/60	15	SEE NOTE [1].
EF-4	GREENHECK SP-A90	TOILET 4	TOILET 4	CEILING EXH FAN	DIRECT DRIVE	60	0.25	11	0.17	115/1/60	15	SEE NOTE [1].
EF-5	GREENHECK SP-A110	TOILET RM 120	TOILET RM 120	CEILING EXH FAN	DIRECT DRIVE	85	0.25	15	0.19	115/1/60	20	SEE NOTE [1].
EF-6	GREENHECK SP-A90	SOILDED HOLDING	SOILDED HOLDING	CEILING EXH FAN	DIRECT DRIVE	60	0.25	11	0.17	115/1/60	15	SEE NOTE [1].
EF-7	GREENHECK FJI-10-BI	ROOF	VARIOUS	CENTRIFUGAL FUME EXH FAN	DIRECT DRIVE	470	1.0	1HP	-	460/3/60	250	INTEGRAL 10 FT NO LOSS STACK, VFD.
EF-8	GREENHECK AER-24-03-0610-VG	MED GAS 1	MED GAS 1	SIDEWALL DIRECT DRIVE PROPELLER	DIRECT DRIVE	500	0.25	1/4HP	3.8	115/1/60	63	BACKDRAFT DAMPER, WA HOUSING, T-STAT 85°F (A
EF-9	GREENHECK SP-A90	JANITOR	JANITOR	CEILING EXH FAN	DIRECT DRIVE	50	0.25	11	0.17	115/1/60	15	SEE NOTE [1].
CF-1	GREENHECK CSP-A125	HALLWAY	EXAM RM 123	INLINE	DIRECT DRIVE	90	0.25	53	0.18	115/1/60	18	SEE NOTE [1].

	AIR CONTROL VALVE												
MARK	MAKE & MODEL		DESIGN	LOCATION	AREA(S) SERVED	AIR INLET	TYPE	REMARKS					
SV-1	ACCUTROL AVR4000	315	340	PHARMACY	IV PREP	10"	SUPPLY	PROVIDE STEP DOWN TRANSFORMER, 24V LOW VOLTAGE POWER TO AIR VALVE. TIE ROOM TEMPERATURE SENSOR TO AVR CONTROLLER.					
SV-2	ACCUTROL AVR4000	245	320	PHARMACY	PHARMACY	10"	SUPPLY	PROVIDE STEP DOWN TRANSFORMER, 24V LOW VOLTAGE POWER TO AIR VALVE. TIE ROOM TEMPERATURE SENSOR TO AVR CONTROLLER.					
SV-3	ACCUTROL AVR4000	70	200	PHARMACY	VESTIBULE	8"	SUPPLY	PROVIDE STEP DOWN TRANSFORMER, 24V LOW VOLTAGE POWER TO AIR VALVE. TIE ROOM TEMPERATURE SENSOR TO AVR CONTROLLER.					
RV-1	ACCUTROL AVT4000	165	190	IV PREP	IV PREP	8"	RETURN	PROVIDE STEP DOWN TRANSFORMER, 24V LOW VOLTAGE POWER TO AIR VALVE.					
RV-2	ACCUTROL AVT4000	145	220	PHARMACY	PHARMACY	8"	RETURN	PROVIDE STEP DOWN TRANSFORMER, 24V LOW VOLTAGE POWER TO AIR VALVE.					
RV-3	ACCUTROL AVT4000	30	75	VESTIBULE	VESTIBULE	6"	RETURN	PROVIDE STEP DOWN TRANSFORMER, 24V LOW VOLTAGE POWER TO AIR VALVE.					

	ELECTRIC VALATER LIEATER										
HWI	RP GR	UNFOS		LOWER LEVEL	RETURN CIRCULATING	2		10	25	5	PROVIDE HIGH EFFICIENCY EC MOTOR, LED DISPLAY WITH FLOW INDICATOR IN GPM.
TA	G MANUF AND	ACTUR MODE		LOCATION	SERVICE	FLOW RA		DYN. HEAD T H2O)	POWER (W)	UNIT WEIGHT	REMARKS
					НО	T WAT	ER CIF	RCULA	TING	PUMF	<b>D</b>
RV-3	ACCUTROL AVT4000	30	75	VESTIBULE	VESTIBULE	6"	RETURN	PROVIDE ST	EP DOWN 1	TRANSFOR	MER, 24V LOW VOLTAGE POWER TO AIR VALVE.

	ELECTRIC WATER HEATER											
TAG	MANUFACTURER AND MODEL	LOCATION	SERVICE	VOLUME (GAL)	TEMP. RISE (°F)		ELECTRIC ELEMENT	CAL V/Ø/HZ	DIMENSIONS (H" x D")	UNIT WEIGHT	REMARKS	
EWH	BRADFORD WHITE CEHD120A483CF	LOWER LEVEL	HOT WATER	119	140	13.5	3	480/3/60	66" x 30-1/4"	485	PROVIDE WITH SEISMIC TRAPS.	

				E	XPANSIO	N TANK		EXPANSION TANK												
TAG	MANUFACTURER AND MODEL	LOCATION	SERVICE	VOLUME (GAL)	PRESSURE RATING (PSIG)	DIAMETER (IN)	UNIT WEIGHT	REMARKS												
ET	AO SMITH PMET 5	LOWER LEVEL	HOT WATER	5	100	12	9	DESIGN FOR OPEN TYPE DOMESTIC HOT WATER SYSTEM.												

THERMOSTATIC MIXING VALVE SCHEDULE												
TAG	MANUFACTURER AND MODEL	LOCATION	SERVICE	MIN FLOW GPM	CONTINUOUS FLOW (GPM)	TEMPERA IN	TURE (°F)		PIPE SIZE	MIX OUTLET	DIMENSIONS (L" x H" x D")	REMARKS
TMV	CONTROLS MV17	LOWER LEVEL	HOT WATER	2	23	140	120	1"	1"	1-1/4"	14" x 6" x 6"	5 PSI PRESSURE DROP.

						T
MARK	CFM	LOCATION	AREA(S) SERVED	DUCT SIZE	ELECTRIC	REMARKS
	MIN	200/111011	( )	200.0.22	V / Ø / HZ	
ERC-1	200	HALLWAY 122	PATIENT ROOM 1	8/6	120 / 1 /60	ELECTRIC REHEAT 1.2 KW, 3 STAGES. PROVIDE ROOM THERMOSTAT. SEE NOTE [1].
ERC-2	200	HALLWAY 122	PATIENT ROOM 2	8/6	120 / 1 /60	ELECTRIC REHEAT 1.2 KW, 3 STAGES. PROVIDE ROOM THERMOSTAT. SEE NOTE [1].
ERC-3	200	PATIENT ROOM 3	PATIENT ROOM 3	8/6	120 / 1 /60	ELECTRIC REHEAT 1.2 KW, 3 STAGES. PROVIDE ROOM THERMOSTAT. SEE NOTE [1].
ERC-4	200	PATIENT ROOM 3	PATIENT ROOM 4	8/6	120 / 1 /60	ELECTRIC REHEAT 1.2 KW, 3 STAGES. PROVIDE ROOM THERMOSTAT. SEE NOTE [1].
ERC-5	340	IV PREP ROOM	IV PREP ROOM	14/6	120 / 1 /60	ELECTRIC REHEAT 2.0 KW, 3 STAGES. PROVIDE ROOM THERMOSTAT. SEE NOTE [1].
ERC-6	500	HALLWAY	VARIOUS	10/10	120 / 1 /60	ELECTRIC REHEAT 3.0 KW, 3 STAGES. PROVIDE ROOM THERMOSTAT. SEE NOTE [1].
ERC-7	410	(E) HALLWAY	VARIOUS	14/6	120 / 1 /60	ELECTRIC REHEAT 2.5 KW, 3 STAGES. PROVIDE ROOM THERMOSTAT. SEE NOTE [1].
ERC-8	320	PHARMACY	PHARMACY	10Ø	120 / 1 /60	ELECTRIC REHEAT 2.0 KW, 3 STAGES. PROVIDE ROOM THERMOSTAT. SEE NOTE [1].
ERC-9	200	PHARMACY	VESTIBULE	8Ø	120 / 1 /60	ELECTRIC REHEAT 1.2 KW, 3 STAGES. PROVIDE ROOM THERMOSTAT. SEE NOTE [1].
ERC-10	440	(E) HALLWAY	VARIOUS	16/6	120 / 1 /60	ELECTRIC REHEAT 2.8 KW, 3 STAGES. PROVIDE ROOM THERMOSTAT. SEE NOTE [1].
ERC-11	370	HALLWAY	VARIOUS	8/10	120 / 1 /60	ELECTRIC REHEAT 2.3 KW, 3 STAGES. PROVIDE ROOM THERMOSTAT. SEE NOTE [1].
ERC-12	205	HALLWAY	VARIOUS	8/10	120 / 1 /60	ELECTRIC REHEAT 1.2 KW, 3 STAGES. PROVIDE ROOM THERMOSTAT. SEE NOTE [1].

	PLUMBING FIXTURE LOCAL CONNECTION SCHEDULE											
SYMBOL	FIXTURE	WASTE	VENT	COLD WATER	HOT WATER	MAXIMUM CONSUMPTION	REMARKS					
<u>WC-1</u>	WATER CLOSET	4"	2"	1"	-	1.28 GPF	FLOOR MOUNTED, FLUSH VALVE. SEE NOTE [1].					
WC-1A WC-2A	WATER CLOSET ACCESSIBLE	4"	2"	1"	-	1.28 GPF	FLOOR MOUNTED, FLUSH VALVE, ACCESSIBLE. SEE NOTE [1].					
LAV	LAVATORY	1-1/2"	1-1/2"	1/2"	1/2"	0.5 GPM	WALL HUNG/OVAL COUNTERTOP. SEE NOTE [2], [3].					
LAV-1A	LAVATORY ACCESSIBLE	1-1/2"	1-1/2"	1/2"	1/2"	0.5 GPM	WALL HUNG/OVAL COUNTERTOP, ACCESSIBLE. SEE NOTE [2], [3].					
<u>SHO</u>	SHOWER	2"	2"	1/2"	1/2"	1.5 GPM	-					
<u>IM</u>	ICE MACHINE	2"	1-1/2"	1/2"	-	0.5 GPM	COUNTERTOP ICE MACHINE					
<u>SK-1</u>	CLINIC SINK	1-1/2"	1-1/2"	1/2"	1/2"	1.5 GPM	UNDERMOUNT					
<u>SK-2</u>	CLINIC SINK	1-1/2"	1-1/2"	1/2"	1/2"	1.5 GPM	WALL HUNG					
<u>SK-3</u>	CLINIC SINK	1-1/2"	1-1/2"	1/2"	1/2"	1.5 GPM	WALL HUNG					
MS	MOP SINK	2"	2"	1/2"	1/2"	-	WALL MOUNT					
<u>FD</u>	FLOOR DRAIN	2"	2"	-	-	-	* SIZE AS INDICATED ON PLAN					
<u>FS</u>	FLOOR SINK	2	2"	-	-	-	* SIZE AS INDICATED ON PLAN, INSTALL TOP FLUSH TO FINISHED FLOOR					
NOTES:		1										

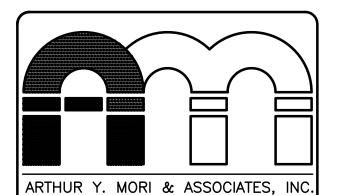
	FAN FILTER UNIT SCHEDULE												
TAG	MANUFACTURER AND MODEL	LOCATION	AIRFLOW	FAN		MO	ΓOR	SOUND PRESSURE	FILTER	UNIT DIMI	ENSIONS	UNIT WEIGHT	REMARKS
	AND MODEL		DESIGN		QTY	ECM	V / Ø / HZ	LEVEL (dBA)	TYPE	LENGTH	WIDTH	WEIGITI	
FFU-1	PRICE RSR	IV PREP	340 CFM	FC	1	1	115/1/60	46	HEPA	24"	36"		SEE NOTES [1], [2], [3].
FFU-2	PRICE RSR	VESTIBULE	200 CFM	FC	1	1	115/1/60	46	HEPA	24"	24"		SEE NOTES [1], [2].
FFU-3	PRICE RSR	AIRBORNE INFECTION	200 CFM	FC	1	1	115/1/60	46	HEPA	24"	24"		SEE NOTES [1], [2].
NOTES:													

1] - FILTER TO BE ROOM-SIDE REMOVABLE. HEPA FILTER TO BE 99.99% EFFICIENT.
2] - PROVIDE AEROSOL INJECTION PORT, LED FILTER STATUS INDICATOR, AND STANDARD ECM SPEED CONTROLLER, EMERGENCY POWER.
3] - PROVIDE WITH INTEGRATED LIGHT AND OVAL INLET.

1. WATER CLOSET AND URINAL WATER CONSUMPTION IS IN GALLONS PER FLUSH, ALL OTHERS FIXTURES ARE IN GALLONS PER MINUTE FLOW RATE.

3. ACCESSIBLE LAVATORIES AND SINKS EXPOSED WASTE AND WATER PIPING BELOW COUNTER AND ABOVE FINISHED FLOOR SHALL BE INSULATED.

2. SEE ARCHITECTURAL DRAWING FOR REGULAR AND ACCESSIBLE FIXTURE HEIGHTS AND LOCATION.



ARCHITECTS AIA 1314 SOUTH KING / SUITE 955 HONOLULU, HAWAII 96814

PATIENT ROOM & PHARMACY ADDITION

MAHELONA MEDICAL CENTER

4800 KAWAIHAU ROAD

KAPAA, HI 96746

LICENSED PROFESSIONAL ENGINEER
No. 10018-M

LICENSE EXPIRE: 4/30/24

This work was prepared by me or under my supervision and construction of this project will be under my observation (observation of construction as defined in Section 16-115 of the Hawaii Administrative Rules, Department Commerce and Consumer Affairs entitled Professional Engineers, Architects and Surveyors of the State of Hawaii Engineers, Architects and Surveyors of the State of H

DATE January 31, 2024

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## **MECHANICAL SPECIFICATION:**

- THE INSTALLATION SHALL COMPLY WITH THE PLUMBING CODE OF KAUAI COUNTY, THE FIRE MARSHAL'S REGULATIONS OF THE STATE OF HAWAII, THE REGULATIONS OF THE DEPARTMENT OF HEALTH OF THE STATE OF HAWAII, THE REQUIREMENTS OF THE NATIONAL FIRE PROTECTION ASSOCIATION, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), AND OTHER APPLICABLE CODES.
- 2. CHECK ALL DIMENSIONS AT THE SITE AND ESTABLISH ALL APPROPRIATE EXISTING CONDITIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCURACY OF ALL DIMENSIONS AND FITTING OF ALL EQUIPMENT AND MATERIALS INTO THE AVAILABLE SPACE. WHERE NEW WORK CONNECTS TO EXISTING WORK, VERIFY THE EXACT LOCATION OF EXISTING WORK PRIOR TO ANY PREFABRICATION OF NEW CONNECTING WORK.
- THE CONTRACTOR SHALL GUARANTEE ALL NEW EQUIPMENT FURNISHED BY HIM AND THE INSTALLATION FOR A PERIOD OF 12 MONTHS FROM THE DATE OF FINAL WRITTEN ACCEPTANCE. WHICH PERIOD SHALL START FOLLOWING 30 DAYS OF TROUBLE-FREE OPERATION, AGAINST DEFECTS IN MATERIALS, DESIGN, PERFORMANCE, AND WORKMANSHIP, GUARANTEES SHALL BE SUPPORTED BY MANUFACTURER'S WRITTEN WARRANTIES.
- 4. ALL WORK REQUIRING SHUTDOWN OF THE EXISTING AIR CONDITIONING SYSTEMS SHALL BE DONE ONLY UPON APPROVAL BY THE FACILITY ENGINEER. PROVIDE FIVE (5) DAYS ADVANCE NOTICE PRIOR TO ANY SHUTDOWN.
- 5. SUBMITTALS: SUBMIT THE FOLLOWING IN ACCORDANCE WITH REQUIREMENTS SPECIFIED HEREIN.
  - A. SHOP DRAWINGS: PROVIDE FOUR (4) SETS OF SHOP DRAWINGS FOR AIR CONDITIONING AND VENTILATION SYSTEMS FOR REVIEW AND APPROVAL. VERIFY ALL CONSTRUCTION DIMENSIONS (INCLUDING BUT NOT LIMITED TO STRUCTURAL CONDITIONS, MECHANICAL CONNECTION POINTS WITH EXISTING UTILITY SYSTEMS, AND OBSTRUCTIONS TO INSTALLATION) THE SHOP DRAWINGS SHALL INDICATE CONSTRUCTION SIZE, ARRANGEMENT, OPERATING CLEARANCES, PERFORMANCE CHARACTERISTICS AND CAPACITY OF EACH ITEM OF EQUIPMENT INSTALLED. THE SHOP DRAWINGS SHALL BE COORDINATED WITH ALL TRADES AFFECTING AND AFFECTED BY THE AIR CONDITIONING, VENTILATION AND PLUMBING INSTALLATION. PARTICULAR CARE SHALL BE GIVEN TO COORDINATION OF DUCTWORK WITH LIGHT FIXTURES, CABLE TRAYS (IF PROVIDED) AND STRUCTURAL ELEMENTS. INDICATE ALL ELEMENTS ON THE SHOP DRAWINGS FOR PROPER COORDINATION OF ALL WORK, MECHANICAL FLOOR PLANS AT 1/4" PER FOOT SCALE (MINIMUM) AND DIAGRAMS SHALL BE PROVIDED. SHOP DRAWINGS SHALL BE NEAT AND LEGIBLE. FAILURE TO COMPLY WITH THE ABOVE REQUIREMENTS MAY BE GROUNDS FOR REJECTION AND DELAY SHOP DRAWING APPROVAL: ANY DELAYS DUE TO THIS REASON SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

APPROVAL RENDERED ON SHOP DRAWINGS SHALL NOT BE CONSIDERED AS A GUARANTEE OF MEASUREMENTS OR BUILDING CONDITIONS. WHERE DRAWINGS ARE APPROVED. SAID APPROVAL DOES NOT IN ANY WAY RELIEVE THE CONTRACTOR FROM HIS RESPONSIBILITY OF FURNISHING MATERIALS OR PERFORMING WORK AS REQUIRED BY THE CONTRACT DRAWINGS AND SPECIFICATIONS. ANY DEVIATION FROM SHOP DRAWINGS SHALL REQUIRE PRIOR APPROVAL FROM THE ENGINEER, AND SHALL BE CLEARLY INDICATED BY CLOUDS ON THE REVISED SHOP DRAWINGS.

B. ACCOMPANYING THE SHOP DRAWINGS, SUBMIT FOUR (4) SETS OF A COMPLETE LIST OF MATERIALS AND EQUIPMENT PROPOSED TO BE FURNISHED AND INSTALLED UNDER THIS PORTION OF THE WORK, GIVING MANUFACTURER'S NAME, CATALOG NUMBER AND CATALOG CUT FOR EACH ITEM WHERE APPLICABLE. COMPLETELY DESCRIBING THE PHYSICAL CHARACTERISTICS, OPERATING CAPACITIES AND DIMENSIONS OF EACH PIECE OF EQUIPMENT TO BE INSTALLED

PROPERLY LABEL EACH ITEM INDICATING SPECIFIC SERVICE FOR WHICH MATERIAL OR EQUIPMENT IS TO BE USED, PARAGRAPH NUMBER OF SPECIFICATIONS GOVERNING. CONTRACTOR'S NAME. AND NAME OF PROJECT. CATALOGS. PAMPHLETS OR OTHER DOCUMENTS SUBMITTED TO DESCRIBE ITEMS ON WHICH APPROVAL IS BEING REQUESTED SHALL BE SPECIFIC AND IDENTIFICATION IN CATALOG, PAMPHLET, ETC., OF ITEM SUBMITTED SHALL BE CLEARLY MADE IN INK. DATA OF A GENERAL NATURE WILL NOT BE ACCEPTED.

C. PROVIDE SITE-MAINTAINED RECORD DRAWINGS.

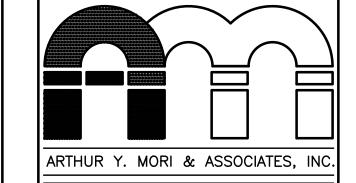
INDICATE LOCATION OF ISOLATING VALVES AND ITEMS REQUIRING MAINTENANCE OR INSPECTION. INDICATE INVERT AND SLOPE OF DRAINAGE PIPING AT LOCATIONS SO THAT THE INVERT CAN BE CALCULATED FOR ANY POINT IN THE SYSTEM. SUBMIT AS-BUILT DRAWINGS FOR REVIEW PRIOR TO FINAL INSPECTION. INDICATE LOCATION AND SIZES OF AIR CONDITIONING DUCTWORK AND PIPING AND EQUIPMENT.

- D. OPERATING AND MAINTENANCE MANUALS: FURNISH OPERATING AND MAINTENANCE MANUALS ON ALL EQUIPMENT FURNISHED, BOUND BETWEEN HARD COVERS. INCLUDE FOR ALL EQUIPMENT THE MANUFACTURER'S NAME, MODEL AND SERIAL NUMBER, INCLUDING CONTROL DIAGRAMS AND SOURCE OF SERVICE AND REPLACEMENT PARTS.
- WORK WHICH DISTURBS ANYBODY, E.G. CORING OF ROOF SLAB. SHALL BE DONE AFTER NORMAL WORKING HOURS. OBTAIN APPROVAL BY THE FACILITY ENGINEER PRIOR TO SUCH WORK.
- EXISTING BEAM AND STRUCTURAL MEMBERS SHALL NOT BE CORED OR PENETRATED UNLESS APPROVED BY THE STRUCTURAL ENGINEER.

### AIR CONDITIONING AND VENTILATION SYSTEMS:

- AIR COOLED CONDENSER UNIT (ACCU) SHALL BE A FACTORY ASSEMBLED VERTICAL DISCHARGE UNIT HOUSED IN A STURDY WEATHERPROOF CASING CONSTRUCTED FROM G90 GALVANIZED STEEL CABINET. THE COIL SHALL BE CONSTRUCTED OF COPPER TUBING AND ALUMINUM FINS. COILS SHALL BE FACTORY LEAK-TESTED AND SEALED WITH CAPS. THE FAN MOTORS SHALL BE HEAVY DUTY PSC OR THREE PHASE WITH PERMANENTLY LUBRICATED BALL BEARINGS AND BUILT-IN OVERLOAD PROTECTION. ALL MOTORS SHALL BE FACTORY WIRED WITH LEADS TERMINATING IN A WEATHERPROOF JUNCTION BOX LOCATED ON THE OUTSIDE OF THE UNIT CABINET. FAN GUARDS SHALL BE HEAVY-GAUGE, CLOSED MESH STEEL WIRE WITH VINYL COATING.
- AIR HANDLING UNIT
- A. UNIT SHALL BE CONSTRUCTED WITH HEAVY GAUGE CHANNEL POSTS AND PANELS SECURED WITH MECHANICAL FASTENERS. ALL PANELS. ACCESS DOORS. AND SHIP SECTIONS SHALL BE SEALED WITH PERMANENTLY APPLY BULB-TYPE GASKET. THE UNIT SHALL HAVE PRE-FILTERS. COOLING COILS. UV-C LIGHTS. FAN SECTION AND POST FILTERS. PRE-FILTERS SHALL BE MERV 8 AND FINAL FILTERS SHALL BE MERV 14. UNIT SHALL BE DESIGNED TO BE INSTALLED OUTSIDE.
- B. PANELS AND ACCESS DOORS SHALL BE CONSTRUCTED A MINIMUM OF 2-5/8 INCH NOMINAL THICK: THERMAL BREAK DOUBLE WALL ASSEMBLY. INJECTED WITH FOAM INSULATION WITH AN R-VALUE OF NOT LESS THAN R-13. THE OUTER PANEL SHALL BE CONSTRUCTED OF G60 PAINTED GALVANIZED STEEL AND THE INNER LINER SHALL BE CONSTRUCTED OF G90 GALVANIZED STEEL. UNIT SHALL BE FURNISHED WITH SOLID INNER LINERS. MIDPOINT PANEL DEFLECTION SHALL NOT EXCEED L/240 RATIO AT 125% OF DESIGN STATIC PRESSURE. MAXIMUM 10 INCHES OF POSITIVE OR 6 INCHES OF NEGATIVE STATIC PRESSURE. THE CASING LEAKAGE RATE SHALL NOT EXCEED 0.5 CFM PER SQUARE FOOT OF CABINET AREA AT 10 INCHES OF POSITIVE OR 6 INCHES OF NEGATIVE STATIC PRESSURE.
- C. MODULE TO MODULE FIELD ASSEMBLY SHALL BE ACCOMPLISHED WITH AN OVERLAPPING, FULL PERIMETER INTERNAL SPLICE JOINT THAT IS SEALED WITH GASKETING ON BOTH MATING MODULES. ACCESS DOORS SHALL BE FLUSH MOUNTED TO CABINETRY, WITH MINIMUM OF TWO SIX INCH LONG STAINLESS STEEL HINGES. LATCH AND FULL SIZE HANDLE ASSEMBLY. ACCESS DOORS SHALL SWING OUTWARD FOR UNIT SECTIONS UNDER NEGATIVE PRESSURE. ACCESS DOORS ON POSITIVE PRESSURE SECTIONS. SHALL HAVE A SECONDARY LATCH TO RELIEVE PRESSURE AND PREVENT INJURY UPON ACCESS
- D. FAN ASSEMBLIES
- E. THE AIR HANDLER HANDLERS SHALL BE ETL LISTED BY INTERTEK TESTING SERVICES, INC. UNITS SHALL CONFORM TO BI-NATIONAL STANDARD ANSI/UL STANDARD 1995/CSA STANDARD C22.2 NO. 236. FAN MOTORS SHALL BE MANUFACTURER PROVIDED AND INSTALLED, OPEN DRIP PROOF, PREMIUM EFFICIENCY (MEETS OR EXCEEDS EPACT REQUIREMENTS), SINGLE SPEED, 460V / 60HZ / 3P. PROVIDE TERMINAL LUGS TO MATCH BRANCH CIRCUIT CONDUCTOR QUANTITIES, SIZES, AND MATERIALS INDICATED. ENCLOSED TERMINAL LUGS IN TERMINAL BOX SIZED TO NFPA 70.
- CORROSION PROTECTION: PROVIDE FACTORY APPLIED WEATHER PROTECTIVE COATING FOR COASTAL/SALT ENVIRONMENTS OR APPROVED EQUIVALENT 10,000 HOUR SALT SPAY MINIMUM COATING REQUIREMENTS.
- REFRIGERANT PIPING SYSTEM:
- A. REFRIGERANT PIPING, VALVES, FITTINGS AND ACCESSORIES SHALL CONFORM TO ASHRAE 15 AND ASHRAE B31.5. PROVIDE DEOXIDIZED PHOSPHOROUS SEAMLESS COPPER TUBING, HARD DRAWN, TYPE K, CONFORMING TO ASTM B88, EXCEPT THAT TUBING WITH OUTSIDE DIAMETERS OF 1/4 INCH AND 3/8 INCH SHALL HAVE NOMINAL WALL THICKNESS OF NOT LESS THAN 0.30 INCH AND 0.032 INCH, RESPECTIVELY. SOFT ANNEALED COPPER TUBING CONFORMING TO ASTM B280 MAY BE USED WHERE FLARE CONNECTIONS TO EQUIPMENT ARE REQUIRED ONLY IN NOMINAL SIZES LESS THAN ONE INCH OUTSIDE DIAMETER.
- B. PROVIDE FILTER-DRIER, SIGHT GLASS AND ISOLATION VALVES WHERE RECOMMENDED BY EQUIPMENT MANUFACTURER.
- CONDENSATE DRAIN PIPING SHALL BE POLYVINYL CHLORIDE (PVC). SCHEDULE 80. WITH SOCKET-WELD FITTINGS. PROVIDE INSULATION AS SPECIFIED.
- DUCTWORK COMPONENTS
- A. ALL METAL DUCTWORK CONSTRUCTION EITHER GALVANIZED STEEL OR TYPE 304 STAINLESS STEEL, INCLUDING ALL FITTINGS AND COMPONENTS, SHALL COMPLY WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS UNLESS OTHERWISE SPECIFIED. DUCTWORK SHALL MEET THE REQUIREMENTS FOR SEAL CLASS A. SEALANTS SHALL BE SUITABLE FOR THE PRESSURE RANGE AND AMBIENT TEMPERATURES OF THE SYSTEM. PRESSURE SENSITIVE TAPE SHALL NOT BE USED AS A SEALANT
- ELEVIDLE DUCT CHALL NOT EYCEED SIY (6) EEET IN LENCTH AND DOO/IDED TO CONNECT DETWEEN DICID DUCTS AND OLITLETS ELIDNISH AND INSTALL ELEVIDLE CONNECTIONS OF NEODDE

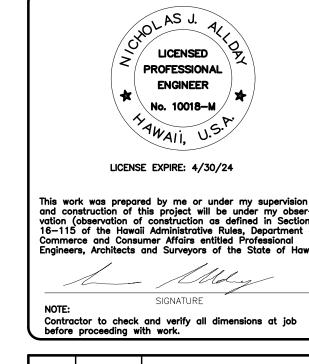
- 7. DIFFUSERS, REGISTERS, AND GRILLES: CONSTRUCTION OF DIFFUSERS, REGISTERS AND GRILLES SHALL BE EXTRUDED ALUMINUM. ALL SUPPLY AIR OUTLETS SHALL BE SUPPLIED WITH GASKETS TO PREVENT SMUDGING. FINISH SHALL BE WHITE ENAMEL. GRILLES SHALL BE AS MANUFACTURED BY TITUS OR APPROVED EQUAL
  - A. CEILING DIFFUSERS: DIFFUSER SHALL BE LOUVERED FACE AND SYMMETRICAL IN DESIGN WITH 1" NOMINAL FLANGE TYPE FRAME, REMOVABLE CORE, AND AIR DISTRIBUTION PATTERN AS SHOWN ON DRAWINGS. PROVIDE FACTORY FABRICATED, SINGLE KEY OPERATED, OPPOSED BLADE VOLUME DAMPER. DAMPERS MUST BE EITHER FACE OR CABLE OPERATED.
- B. RETURN, EXHAUST, OUTSIDE AIR AND TRANSFER REGISTERS: REGISTER SHALL MATCH SUPPLY REGISTER EXCEPT WITHOUT DOUBLE DEFLECTION.
- 8. FAN FILTER UNIT
  - A. FAN FILTER UNIT SHALL BE SUPPLIED TO PROVIDE UNIDIRECTIONAL SUPPLY AIR, SHALL INCLUDE A HIGH EFFICIENCY HEPA FILTER AND AEROSOL PORT. FILTER SHALL BE ROOM SIDE REMOVABLE AND REPLACEABLE. STANDARD INLET
  - B. PROVIDE FAN FILTER UNIT WITH INTEGRATED LIGHT AT IV PREP, OVAL INLET.
- VOLUME DAMPERS SHALL BE INSTALLED AS SHOWN AND AS REQUIRED FOR AIR BALANCING OF THE SYSTEM. VOLUME DAMPERS SHALL BE TWO GAUGES HEAVIER THAN THE DUCT IN WHICH THEY ARE INSTALLED AND SHALL BE REINFORCED TO PREVENT VIBRATION AND NOISE
- 9. PIPE SUPPORTS AND HANGERS:
- A. DESIGN SUPPORTS FOR STRENGTH AND RIGIDITY TO SUIT LOADING, SERVICE AND IN A MANNER, WHICH WILL NOT UNDULY STRESS THE BUILDING
- B. SUPPORT HORIZONTAL OVERHEAD PIPES WITH CLEVIS OR ROLL, SINGLE OR MULTIPLE TYPE HANGERS, RODS, INSERTS, CLAMPS OR OTHER APPROVED METHODS OF SUSPENSION SUITABLE FOR TYPE OF EXISTING BUILDING CONSTRUCTION.
- 10. DUCTWORK INSULATION:
  - A. DUCT WRAP INSULATION SHALL BE MINERAL FIBER BLANKET, CONFORMING TO ASTM C553, 1.5 POUND PER CUBIC FOOT NOMINAL DENSITY, 2 INCH THICK. INSULATION SHALL MEET THE FLAME SPREAD AND SMOKE-DEVELOPED RATING OF 25/50.
- B. PROVIDE A FACTORY APPLIED ALL PURPOSE JACKET WITH INTEGRAL VAPOR BARRIER CONFORMING TO ASTM C 1136, AS REQUIRED BY THE SERVICE. ALL PURPOSE JACKET SHALL HAVE A MAXIMUM WATER VAPOR PERMEANCE OF 0.05 PERM PER ASTM E96, PUNCTURE RESISTANCE OF NOT LESS THAN 50 BEECH UNITS AND A TENSILE STRENGTH OF NOT LESS THAN 35 POUNDS-FORCE PER INCH OF WIDTH IN ACCORDANCE WITH ASTM D 828
- 11. FURNISH AND INSTALL FLEXIBLE CONNECTIONS OF NEOPRENE IMPREGNATED FIBERGLASS AT LOCATIONS SHOWN ON THE DRAWINGS, IN ACCORDANCE WITH APPLICABLE SMACNA STANDARDS. MINIMUM WORKING PRESSURE FOR FLEXIBLE CONNECTIONS SHALL BE 4 INCHES W.G POSITIVE AND 1-1/2 INCHES W.G. NEGATIVE.
- 12. PIPE INSULATION
- A. INSULATE ALL PIPES WITH OPERATING TEMPERATURES BELOW 60°F AND ABOVE 105°F, AND WHERE OTHERWISE SPECIFIED AND/OR INDICATED ON DRAWINGS.
- B. CONDENSATE AND REFRIGERANT: PIPE SHALL BE INSULATED WITH FLEXIBLE ELASTOMERIC WITH ALL SERVICE VAPOR BARRIER JACKET. INSULATION AND JACKET SYSTEM SHALL HAVE A FLAME SPREAD RATING OF 25 AND SMOKE DEVELOP RATING OF 50 WHEN TESTED IN ACCORDANCE WITH ASTM E-84, NFPA 255 OR UL 723. INSULATION SHALL BE 1" THICK FOR PIPE SIZE 2 INCHES AND SMALLER (EXCEPT OUTDOOR), PROVIDE GALVANIZED SADDLES AT ALL PIPE SUPPORTS.
- 13. VIBRATION ISOLATORS: AIR COOLED CONDENSING UNITS SHALL BE PROVIDED WITH MOLDED NEOPRENE ISOLATORS. 5/16 INCH MINIMUM THICKNESS. WAFFLED OR RIBBED TYPE NEOPRENE PADS.
- 14. ROOM PRESSURE MONITOR: PROVIDE SETRA DIGITAL ROOM PRESSURE MONITOR MODEL SRPM FOR IV PREP. VESTIBULE. PHARMACY, ANTE ROOM. AND AIRBORNE ISOLATION ROOM.
- 15. EXHAUST FAN:
- A. EXHAUST FAN SHALL BE CENTRIFUGAL TYPE. THE FAN HOUSING SHALL BE CONSTRUCTED OF HEAVY GAUGE ALUMINUM WITH RIGID INTERNAL SUPPORT STRUCTURE, EXHAUST FAN SHALL BE COATED WITH HI-PRO POLYESTER COATING OR SIMILAR TYPE OF COATING SYSTEM.
- B. THE FAN WHEEL SHALL BE OF THE NON-OVERLOADING BACKWARD INCLINED, CENTRIFUGAL FAN TYPE AND CONSTRUCTED OF HEAVY GAUGE ALUMINUM. WHEELS SHALL BE STATICALLY AND DYNAMICALLY BALANCED. THE WHEEL CONE AND FAN INLET CONE SHALL BE CAREFULLY MATCHED FOR MAXIMUM PERFORMANCE AND OPERATING EFFICIENCY.
- C. MOTOR SHALL BE HEAVY DUTY BALL BEARING TYPE. CAREFULLY MATCHED TO THE FAN LOAD, AND FURNISHED AT THE SPECIFIED VOLTAGE, PHASE AND ENCLOSURE. MOTORS AND DRIVES SHALL BE MOUNTED ON VIBRATION ISOLATORS, OUT OF THE AIRSTREAM.
- D. FAN PERFORMANCE SHALL BE BASED ON TESTS CONDUCTED IN ACCORDANCE WITH AMCA STANDARD 210 FOR AIR MOVING DEVICES, AND FANS SHALL BE LICENSED TO BEAR THE AMCA CERTIFIED RATINGS SEAL FOR AIR PERFORMANCE.
- E. DRIVE FRAME ASSEMBLIES SHALL BE CONSTRUCTED OF HEAVY GAUGE STEEL AND MOUNTED ON RUBBER VIBRATION ISOLATORS
- F. DISCONNECT SWITCH SHALL BE NEMA RATED 4X WITH POSITIVE ELECTRICAL SHUT OFF AND WIRED FROM FAN MOTOR TO JUNCTION BOX INSTALLED WITHIN MOTOR COMPARTMENT.
- G. GREENHECK MODEL SEE EXHAUST FAN SCHEDULE OR AN APPROVED EQUIVALENT



1314 SOUTH KING / SUITE 955 HONOLULU, HAWAII 96814

**ADDITION** 

**PHARMACY**  $\approx$ HELONA 4800 F KAPA R0( PATIENT



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JOE	3 NO.	1

DATE January 31, 2024 37 OF 58 SHTS

# AIR CONDITIONING SYSTEMS (CONT'D):

- 17. CLEANING AND ADJUSTING: INSIDE OF EQUIPMENT, DUCTS, AND CASING SHALL BE THOROUGHLY CLEANED OF DEBRIS AND BLOWN FREE OF SMALL PARTICLES OF RUBBISH AND DUST AND THEN SHALL BE VACUUM CLEANED BEFORE INSTALLING OUTLET FACES. EQUIPMENT SHALL BE WIPED CLEAN, WITH TRACES OF OIL, DUST, DIRT, OR PAINT SPOTS REMOVED. SYSTEM SHALL BE MAINTAINED IN THIS CLEAN CONDITION UNTIL FINAL ACCEPTANCE. BEARINGS SHALL BE PROPERLY LUBRICATED WITH OIL OR GREASE AS RECOMMENDED BY THE MANUFACTURER. BELTS SHALL BE TIGHTENED TO PROPER TENSION. CONTROL VALVES AND OTHER MISCELLANEOUS EQUIPMENT REQUIRING ADJUSTMENT SHALL BE ADJUSTED TO SETTING INDICATED OR DIRECTED. FANS SHALL BE ADJUSTED TO THE SPEED INDICATED BY THE MANUFACTURER TO MEET SPECIFIED CONDITIONS.
- 18. EXISTING ACCU:
- A. REMOVE ACCU INDICATED ON MECHANICAL DEMO PLAN FOR RELOCATION. FOLLOW ACCU MANUFACTURER'S RECOMMENDATIONS FOR REMOVAL.
- B. CLEAN AND STORE ACCU. ACCU SHALL BE STORED IN AN APPROPRIATE LOCATION TO PREVENT IT FROM BEING DAMAGED.
- C. REINSTALL ACCU TO LOCATION INDICATED ON NEW MECHANICAL PLAN. FOLLOW ACCU MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION. RECONNECT TO VRF PIPING, MODIFY AND PROVIDE NEW REFRIGERANT PIPING AS NEEDED FOR NEW LOCATION.
- D. RETEST REINSTALLED ACCU TO ENSURE PROPER OPERATION AND TEST FOR REFRIGERANT LEAKS. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR TESTING.
- 19. BALANCING AND TESTING OF MECHANICAL SYSTEM: AT THE COMPLETION OF THE INSTALLATION WORK, THE AIR CONDITIONING AND VENTILATION SYSTEMS SHALL BE ADJUSTED, BALANCED AND TESTED.
- 20. TEST AND BALANCE REPORT: UPON COMPLETION OF ALL BALANCING WORK, THE CONTRACTOR SHALL SUBMIT FOUR (4) COPIES OF A TEST AND BALANCING REPORT WHICH SHALL INCLUDE ALL DATA SPECIFIED HEREIN.
- A. AIR SYSTEM DATA
- HIGH OUTSIDE AIR SYSTEM, EXHAUST FAN
- INSTALLATION DATA:
- MANUFACTURER AND MODEL
- MOTOR H.P., VOLTAGE, PHASE, CYCLES AND FULL LOAD AMPS

DESIGN DATA: DATA LISTED IN SCHEDULES ON DRAWINGS AND SPECIFICATIONS.

### RECORDED DATA:

- AIR QUANTITIES, CFM
- STATIC PRESSURE, INCHES WATER GAGE
- R.P.M.
- MOTOR OPERATING AMPS
- ENTERING AND LEAVING AIR CONDITIONS, °F (DB AND WB)
- VFD INITIAL SETPOINT

#### DUCT SYSTEMS:

DUCT AIR QUANTITIES - MAIN, SUBMAINS, BRANCHES, OUTDOOR AIR, TOTAL AIR, AND RETURN AIR

- DUCT SIZES
- AVERAGE VELOCITY, FPM
- RECORDED AIR QUANTITIES, CFM
- DESIGN AIR QUANTITIES, CFM

### INDIVIDUAL AIR TERMINALS:

- TERMINAL IDENTIFICATION (SUPPLY, RETURN OR EXHAUST, LOCATION AND NUMBER DESIGNATION)
- DESIGN AND RECORDED AIRFLOW QUANTITIES CFM
- APPLICABLE FACTOR FOR APPLICATION, VELOCITY, AREA, ETC.
- DESIGN AND RECORDED VELOCITIES FPM (STATE "CORE", "INLET", ETC., AS APPLICABLE)

### ELECTRICAL REHEAT COIL:

- RECORDED AIR QUANTITIES, CFM
- DESIGN AIR QUANTITIES, CFM

### SUPPLY AND RETURN AIR VALVE:

- RECORDED AIR QUANTITIES, CFM
- DESIGN AIR QUANTITIES, CFM

# FIRE PROTECTION SYSTEMS:

- . THE HE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH THE EXISTING FIRE SPRINKLER LAYOUT AND PIPE SIZE.
- 2. FIRE SPRINKLERS
- A. TYCO CONCEALED OR APPROVED EQUIVALENT.
- B. SPRINKLER HEADS SHALL BE ORDINARY HAZARD GROUP 1 CLASSIFICATION AND SHALL BE OF CONCEALED PENDENT WITH WHITE COVER PLATE
- 2. PIPING AND FITTINGS
- A. PROVIDE FIRE SPRINKLER PIPING AND FITTINGS IN ACCORDANCE WITH NFPA 13. PIPE MATERIAL SHALL MATCH EXISTING.
- B. FITTINGS INTO WHICH SPRINKLER HEADS, SPRINKLER HEAD RISERS NIPPLES, THREADED, OR GROOVED-END TYPE. USE OF PLAIN-END FITTINGS WITH MECHANICAL COUPLING WHICH UTILIZE STEEL GRIPPING DEVICES TO BITE INTO PIPE WHEN PRESSURE IS APPLIED WILL NOT BE PERMITTED. FITTINGS MUST BE UL LISTED OR FM APPROVED FOR USE IN SPRINKLER SYSTEM.
- 3. PIPE HANGERS AND SUPPORTS: PROVIDE IN ACCORDANCE WITH NFPA 13. PROVIDE RETAINING STRAPS ON BEAM CLAMPS. PROVIDE BRANCH LINE SEISMIC RESTRAINT.

### PLUMBING:

- 1. DOMESTIC WATER PIPING:
  - A. UNDERGROUND PIPES SHALL BE TYPE "K" SEAMLESS RIGID COPPER TUBING CONFORMING TO ASTM B88 WITH WROUGHT COPPER SOLDER TYPE FITTINGS CONFORMING TO ANSI B16.22 OR ANSI B16.18. JOINTS SHALL BE BRAZED WITH SILVER ALLOY FILLER METAL.
  - B. ABOVE GROUND PIPING SHALL BE TYPE "L" SEAMLESS RIGID COPPER TUBING CONFORMING TO ASTM B88 WITH WROUGHT COPPER OR CAST COPPER ALLOY SOLDER TYPE FITTINGS CONFORMING TO ANSI B16.22 OR ANSI B16.18. SOLDER SHALL BE 95-5 TIN-ANTIMONY LEAD FREE.
  - C. T-DRILL JOINTS AND PROPRESS AND/OR PRESS TYPE FITTINGS ARE NOT ALLOWED.
- SOIL. WASTE. AND VENT PIPING:
  - A. SOLID CORE SCHEDULE 40 POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS CONFORMING TO ASTM D 1785 AND ASTM D 2665 JOINED WITH SOLVENT CEMENT CONFORMING TO ASTM D 2564 FOR ALL INSTALLATION. PROVIDE HANGERS EVERY 4 FT FOR PVC PIPING.
  - B. AT THE CONTRACTOR'S OPTION, VENT PIPING 2-1/2 INCH SIZE AND SMALLER MAY BE DWV COPPER PIPE MADE UP WITH DWV DRAINAGE FITTINGS AND 50-50 JOLDER JOINTS IN LIEU OF THOSE SPECIFIED FOR ABOVE GROUND INSTALLATION.
- 3. FIXTURES: PROVIDE CHROME PLATED ANGLE STOPS, SUPPLY RISER, CHROME PLATED P-TRAPS, ESCUTCHEONS AND COVER PLATES. ALL PIPING OUTSIDE OF THE WALL SHALL BE CHROME PLATED. PROVIDE CONNECTING FITTINGS, BRAIDED SUPPLY LINES, CHINA BOLT CAPS, WALL SUPPORT BRACKETS AS REQUIRED. FURNISH MASONRY AND CONCRETE CONTRACTOR WITH WALL SLEEVES AND INSERTS REQUIRED FOR FIXTURE INSTALLATION. PROVIDE WATER FLOW RESTRICTORS FOR ALL LAVATORIES.
  - A. SCRUB SINK (SK-3):

ELKAY MODEL EWSF13026SACC, WALL HUNG SINGLE BOWL SURGEON SCRUB SINK, STAINLESS STEEL WITH A BUFFED SATIN FINISH, REAR CENTER DRAIN. SPEAKMAN FAUCET MODEL SEF-18207-8. 1.5 GPM FAUCET, INTEGRATED SENSOR EYEWASH WITH 8 INCH SPOUT.

BRASS-CRAFT SCR3912A OR EASTMAN C-512, 1/2 INCH ANGLE COMPRESSION STOPS.

CS&B NO. 19GJ OR FROST NO. 4008GJ 1-1/4" X 1-1/2" CHROME PLATED 17 GAUGE TUBULAR TRAP.

BLOCK BASES OR CANTILEVER WEB FEET SECURELY ANCHORED TO FLOOR TO SUIT INSTALLATION.

#### B. SINK (SK-1)

ELKAY LÚSTERTONE MODEL ELUHAD141455, UNDERMOUNT, STAINLESS STEEL SINGLE BOWL, ADA SINK, REAR CENTER DRAIN. T&S BRASS AND BRONZE WORKS MODEL B-2741, 0.5 GPM FAUCET WITH 5-3/4" SWIVEL GOOSENECK, AERATOR. BRASS-CRAFT SCR3912A OR EASTMAN C-512, 1/2 INCH ANGLE COMPRESSION STOPS. CS&B NO. 19GJ OR FROST NO. 4008GJ 1-1/4" X 1-1/2" CHROME PLATED 17 GAUGE TUBULAR TRAP.

#### C. SINK (SK-2)

AMERICAN STANDARD MODEL MURRO UNIVERSAL DESIGN, WALL HUNG LAVATORY WITH EVERCLEAN, ACRYLIC SHROUD CONTACT GUARD 0062.00 CHICAGO FAUCET FOOT OPERATED MODEL 834-EPABCP WITH DOUBLE LONG PEDALS, POLISHED CHROME FINISH.

T&S BRASS AND BRONZE WORKS MODEL B-2741, 0.5 GPM FAUCET WITH 5-3/4" SWIVEL GOOSENECK, AERATOR.

BRASS-CRAFT SCR3912A OR EASTMAN C-512, 1/2 INCH ANGLE COMPRESSION STOPS.

PROVIDE SINK CARRIER WITH CONCEALED ARMS, LEVELING AND SECURITY SCREWS, EXTRA HEAVY STEEL UPRIGHTS WITH

BLOCK BASES OR CANTILEVER WEB FEET SECURELY ANCHORED TO FLOOR TO SUIT INSTALLATION.

#### D. LAVATORY

AMERICAN STANDARD MODEL MURRO UNIVERSAL DESIGN, WALL HUNG LAVATORY WITH EVERCLEAN, ACRYLIC SHROUD CONTACT GUARD 0062.000
T&S BRASS AND BRONZE WORKS MODEL B-2741, 0.5 GPM FAUCET WITH 5-3/4" SWIVEL GOOSENECK, AERATOR.
BRASS-CRAFT SCR3912A OR EASTMAN C-512, 1/2 INCH ANGLE COMPRESSION STOPS.
CS&B NO. 19GJ OR FROST NO. 4008GJ 1-1/4" X 1-1/2" CHROME PLATED 17 GAUGE TUBULAR TRAP.
SMITH FIG. 700 M31, EXTRA HEAVY DUTY LAVATORY CARRIER WITH CONCEALED ARMS, LEVELING AND SECURITY SCREWS, EXTRA HEAVY STEEL UPRIGHTS WITH

### E. WATER CLOSET

KOHLER HIGHCLIFF ULTRA MODEL K-96057 WATER CLOSET, FLOOR MOUNTED FLOOR OUT, FLUSH VALVE, ELONGATED BOWL, VITREOUS CHINA, 1-1/2" TOP SPUD.
PROVIDE WHITE PLASTIC OPEN FRONT SEAT.
SLOAN MODEL ROYAL BPW 1150-1.28, MANUAL WATER CLOSET BEDPAN WASHER FLUSHOMETER FOR WC-1 AND WC-1A.
SLOAN MODEL 111, 1,28 GPF MANUAL FLUSHOMETER FOR WC-2A

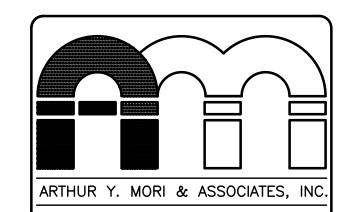
### F. SERVICE SINK

KOHLER BANNON MODEL K-6714, 22-1/4" WALL MOUNT SERVICE SINK, RECTANGULAR BASIN WITHOUT OVERFLOW, ENAMELED CAST IRON, STAINLESS STEEL RIM GUARD AND PROVIDE MOUNTED TRAP. KOHLER FAUCET MODEL K-13625 WITH 7" SWING SPOUT THREADED HOSE CONNECTION, VACUUM BREAKER, POLISHED CHROME FINISH.

### G. SHOWER AND ADA SHOWER:

SHOWER AND ADA SHOWER SHALL BE LIGATURE RESISTANT, STAINLESS STEEL PANEL WITH POWDER COATING, CONICAL SHOWER HEAD, CHROME PLATED ADA COMPLIANT LIGATURE RESISTANCE HANDLE, FURNISH WITH VANDAL RESISTANT FASTENERS, SHOWER ASSEMBLY WITH 60 INCH DOUBLE SPIRAL METAL HOSE, 24 INCH SLIDE BAR, ADA ADJUSTABLE SLIDE, VACUUM BREAKER, AND WALL SUPPLY ELBOW.

- 4. VALVES: BALL VALVES; CRANE 930-TF OR APPROVED EQUIVALENT.
- 5. MIXING VALVE: MIXING VALVE SHALL FEATURE PARAFFIN-BASED, THERMAL ACTUATION TECHNOLOGY FOR PRECISE TEMPERATURE CONTROL. VALVE SHALL BE LISTED TO ASSE 1017 AND CUPC AND SHALL BE APPROVED TO ASSE 1017 & CSA B125.3 STANDARDS. MIXING VALVE SHALL HAVE AN APPROACH TEMPERATURE OF 5°F (3°C). VALVE SHALL HAVE AN OUTLET TEMPERATURE RANGE FROM 90 180°F WITH A LOCKABLE TEMPERATURE SETTING FEATURE. VALVE SHALL HAVE A LEAD FREE BRASS BODY AND FEATURE A SINGLE-SEAT DESIGN FOR POSITIVE SHUTOFF. MIXING VALVE SHALL BE OF WATTS SERIES LFN170-M3 OR APPROVED EQUIVALENT.
- 6. PLUMBING CONTRACTOR SHALL COORDINATE WITH THE GENERAL CONTRACTOR TO INSURE THAT THE GENERAL CONTRACTOR IS AWARE OF ANY REQUIREMENTS FOR PATCHING/RESTORATION WORK WHICH AFFECT THE GENERAL CONTRACTOR'S WORK RESULTING FROM THE MECHANICAL WORK, PRIOR TO SUBMISSION OF BID PRICES. OMISSION OF WORK/COST DUE TO LACK OF COORDINATION WILL NOT BE ACCEPTABLE AS A BASIS FOR ADDITIONAL COST TO THE OWNER.
- 7. INSTALLATION AND REQUIREMENTS: PERFORM WORK USING PERSONNEL SKILLED IN THE TRADE INVOLVED. PROVIDE COMPETENT SUPERVISION. FURNISH NEW EQUIPMENT, FIXTURES, MATERIALS AND ACCESSORIES BEARING THE MANUFACTURER'S IDENTIFICATION AND CONFORMING TO RECOGNIZED COMMERCIAL STANDARDS. PROVIDE ACCESS PANELS FOR CONCEALED ITEMS PROVIDED UNDER THIS SECTION THAT REQUIRE MAINTENANCE, ADJUSTMENT OR INSPECTION. PROVIDE ALL EXTRA MATERIALS AND LABOR FOR A COMPLETE OPERABLE SYSTEM AT NO EXTRA COST TO THE OWNER.
- 8. PIPING INSTALLATION: CONFORM TO THE REQUIREMENTS OF THE UNIFORM PLUMBING CODE. TOOL MARKINGS ON POLISHED FITTINGS ARE NOT ACCEPTABLE. INSTALL PIPES PARALLEL TO THE WALL OF THE STRUCTURE AND PLUMB. INSTALL VALVES WITH STEMS ABOVE HORIZONTAL. PROVIDE PROPER SUPPORT AND ADEQUATE PROVISIONS FOR EXPANSION, CONTRACTION, SLOPE AND ANCHORAGE. PROVIDE DIELECTRIC UNIONS WHERE COPPER TUBING CONNECTS TO STEEL PIPE. WRAP PIPE OR TUBING WITH 1/4-INCH THICK FELT, SECURED WITH TAPE, WHERE THEY CONTACT OTHER MATERIALS. CAULK WATERTIGHT AROUND PIPES PASSING THROUGH FLOOR PENETRATION. WRAP PIPE WITH POLYETHYLENE TAPE WHERE IT PASSES THROUGH FLOOR PENETRATION AND WHEN IT CONTACTS CONCRETE OR MASONRY. GROUT WITH FIRE PROOF MATERIAL AROUND ALL PIPE PENETRATIONS THROUGH SLABS AND WALLS FULL LENGTH OF PENETRATIONS. PROVIDE CHROME PLATED BRASS ESCUTCHEONS, SET TIGHT ON THE PIPE AND TO THE WALL WHERE PIPES ARE EXPOSED IN FINISHED AREAS. PROVIDE CLAMPING COLLAR OR MEMBRANE FLANGE WHERE PIPE OR DRAINS PENETRATE WATERPROOF MEMBRANE.
- 9. PAINTING: ALL EXPOSED PIPING SYSTEMS INCLUDING, BUT NOT LIMITED TO PIPES FITTINGS, VALVES, INSULATION AND SUPPORTS SHALL BE PAINTED IN ACCORDANCE WITH PAINTING SECTION. COLOR SHALL BE SELECTED BY THE ARCHITECT.
- 10. FIELD QUALITY CONTROL: TEST PLUMBING SYSTEMS IN ACCORDANCE WITH THE UNIFORM PLUMBING CODE. PERFORM TESTS IN THE PRESENCE OF, AND TO THE SATISFACTION OF INSPECTORS HAVING JURISDICTION OVER THE WORK. ASK FOR FINAL-INSPECTION BY THE ENGINEER AFTER ALL TESTS, ADJUSTMENTS AND BALANCING HAVE BEEN PERFORMED.



ARCHITECTS AIA 1314 SOUTH KING / SUITE 955 HONOLULU, HAWAII 96814

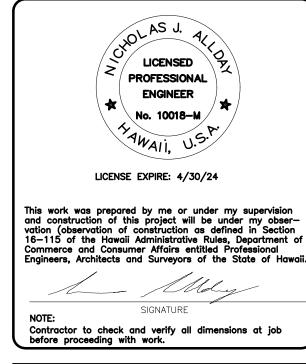
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ADDITION

ROOM & PHARMACY
ELONA MEDICAL CENTER
300 KAWAIHAU ROAD

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7.2 DATE January 31, 2024

### MEDICAL GAS

- 1. MEDICAL GAS SYSTEM:
  - A. PROVIDE PROVIDE COMPLETE MEDICAL GAS SYSTEMS AS SHOWN ON DRAWINGS. TEST AND GUARANTEE ALL ITEMS INDICATED ON THE DRAWINGS AND SPECIFICATIONS.
  - B. MEDICAL OXYGEN, AIR, AND VACUUM SYSTEMS.
  - C. MEDICAL GAS OUTLETS SHALL CONFORM TO NFPA 99 AND CGA Z-305 STANDARDS. MEDICAL GAS IDENTIFICATION SHALL BE PROVIDED BY COLOR CODE FOR RESPECTIVE GAS SERVICE IN ACCORDANCE WITH NFPA AND CGA. PROVIDE CROSS CONNECTION SAFETY CHECKS OF OUTLETS AND PIPELINES AFTER INSTALLATION.
  - D. MECHANICAL/PLUMBING CONTRACTOR SHALL COORDINATE WITH THE GENERAL CONTRACTOR TO ENSURE THAT THE GENERAL CONTRACTOR IS AWARE OF ANY REQUIREMENTS FOR PATCHING/RESTORATION WORK WHICH AFFECT THE GENERAL CONTRACTOR'S WORK RESULTING FROM THE MECHANICAL/PLUMBING WORK, PRIOR TO SUBMISSION OF BID PRICES. OMISSION OF WORK/COST DUE TO LACK OF COORDINATION WILL NOT BE ACCEPTABLE AS A BASIS FOR ADDITIONAL COST TO THE OWNER.
  - E. PERFORM WORK USING PERSONNEL SKILLED IN THE TRADE INVOLVED. PROVIDE COMPETENT SUPERVISION. FURNISH NEW EQUIPMENT, FIXTURES, MATERIALS AND ACCESSORIES BEARING THE MANUFACTURER'S IDENTIFICATION AND CONFORMING TO RECOGNIZED COMMERCIAL STANDARDS.
- 2. MEDICAL GAS PIPING AND FITTINGS:
- A. COPPER TUBING TYPE "K", ASTM B819, HARD DRAWN TEMPER WITH WROUGHT COPPER FITTINGS CONFORMING TO ANSI B16.22 OR BRAZING FITTINGS COMPLYING WITH MSS SP-73. PIPING SHALL BE CLEANED, PURGED, AND SEALED FOR MEDICAL GAS SERVICE OR ACCORDING TO CGA G-4.1 FOR OXYGEN SERVICE. SIZE DESIGNED REFLECTING NOMINAL INSIDE DIAMETER.
- B. BRAZING ALLOY: AWS A5.8, CLASSIFICATION BCUP, GREATER THAN 537 DEGREES C (1000 DEGREES F) MELTING TEMPERATURE. FLUX IS STRICTLY PROHIBITED FOR COPPER-TO-COPPER CONNECTIONS.
- C. SCREW JOINTS: DEGREASED POLYTETRAFLUOROETHYLENE (TEFLON) TAPE.
- D. APPLY PIPING IDENTIFICATION IN ACCORDANCE WITH NFPA 99. SUPPLEMENTARY COLOR IDENTIFICATION SHALL BE IN ACCORDANCE WITH CGA PAMPHLET C-9.
- MEDICAL GAS ZONE VALVE CABINET: BRASS OR BRONZE BODY, DOUBLE SEAL UNION BALL VALVE WITH REPLACEABLE BUNA-N OR TEFLON SEAT SEALS, TEFLON STEM SEAL; 400 PSI, WORKING PRESSURE, CLEANED FOR OXYGEN SERVICE, BLOWOUT STEM, ONE QUARTER OF A TURN TO COMPLETELY OPEN OR CLOSE. OPERATING PARTS OF VALVE SHALL BE REMOVABLE WITHOUT REMOVING VALVE FROM LINE. PROVIDE TUBING EXTENSIONS FACTORY BRAZED, PRESSURE TESTED, CLEANED FOR OXYGEN SERVICE. PROVIDE 1/8 INCH NPT GAUGE PORT FOR A 1-1/2" INCH DIAMETER MONITORING GAUGE DOWNSTREAM OF SHUT-OFF-VALVE. ZONE VALVES SHALL BE PRODUCTS OF ONE MANUFACTURER, AND UNIFORM THROUGHOUT IN PATTERN, OVERALL SIZE AND APPEARANCE. TRIM WITH COLOR CODED PLASTIC INSERTS OR COLOR CODED STICK-ON LABELS. INSTALL VALVES IN CABINETS SUCH THAT COVER WINDOW CANNOT BE IN PLACE WHEN ANY VALVE IS IN CLOSED POSITION. COLOR CODING FOR IDENTIFICATION PLATES AND LABELS AS FOLLOWS:

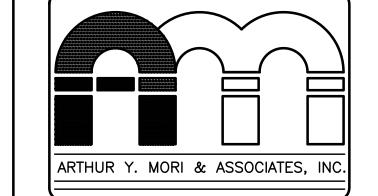
SERVICE LAB	IDENTIFICATION COLOR	MFG. STD. CLF
OXYGEN	WHITE LETTERS ON GREEN BACKGROUND	GREEN
MEDICAL AIR	BLACK LETTERS ON YELLOW BACKGROUND	YELLOW
MEDICAL VACUUM	BLACK LETTERS ON WHITE BACKGROUND	WHITE

- 4. MEDICAL GAS PIPING INSTALLATION
- A. MEDICAL GAS PIPING SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 99 AND OSHPD. ALL MEDICAL GAS PIPING AND EQUIPMENT SHALL BE SEISMICALLY RESTRAINING IN ACCORDANCE WITH THE IBC AND OSHPD.
- B. KEEP OPEN ENDS OF MEDICAL GAS PIPING CAPPED OR PLUGGED AT ALL TIME OR OTHERWISE SEALED UNTIL FINAL ASSEMBLY.
- C. CUT MEDICAL GAS PIPING ACCURATELY WITH PIPE/TUBE CUTTER (SAWING NOT PERMITTED) TO MEASUREMENTS DETERMINED AT PLACE OF INSTALLATION. REAM PIPE TO REMOVE BURRS, BEING CAREFUL NOT TO EXPAND PIPE, AND SO NO CHIPS OF COPPER REMAIN IN THE PIPE. WORK INTO PLACE WITHOUT SPRINGING OR FORCING. BOTTOM MEDICAL GAS PIPING IN SOCKET SO THERE ARE NO GAPS BETWEEN PIPING AND FITTING. EXERCISE CARE IN HANDLING EQUIPMENT AND TOOLS USED IN CUTTING AND REAMING OF PIPE TO PREVENT OIL OR GREASE BEING INTRODUCED INTO TUBING. WHERE CONTAMINATION HAS OCCURRED, MATERIAL IS NO LONGER SUITABLE FOR MEDICAL GAS SERVICE.
- D. SPACING OF HANGERS: NFPA 99 AND OSHPD.
- E. RIGIDLY SUPPORT VALVES AND OTHER EQUIPMENT TO PREVENT STRAIN ON PIPING OR JOINTS. DO NOT BEND OR SPRING PIPING. USE FITTINGS.
- F. APPLY MEDICAL GAS PIPE LABELING DURING INSTALLATION PROCESS AND NOT AFTER INSTALLATION IS COMPLETED. SIZE OF LEGEND LETTERS SHALL BE IN ACCORDANCE WITH ANSI A13.1 AND NFPA 99.
- G. INDEPENDENT MEDICAL GAS SYSTEM TESTING ORGANIZATION:
- G.A. TESTING AGENCY THAT IS FINANCIALLY INDEPENDENT OF MEDICAL GAS EQUIPMENT MANUFACTURER, SUPPLIER, AND INSTALLER.
- G.B. PROVIDE NAMES OF THREE PROJECTS WHERE TESTING OF MEDICAL GASES AND SYSTEMS HAS BEEN PERFORMED BY THE TESTING AGENCY. INCLUDE NAME OF THE PROJECT, NAMES OF SUCH PERSONS AT THAT PROJECT WHO SUPERVISED THE WORK FOR THE PROJECT OWNER, OR WHO ACCEPTED THE REPORT FOR THE PROJECT OWNER, AND WRITTEN STATEMENT THAT PROJECTS LISTED REQUIRED WORK OF SIMILAR SCOPE TO SET FORTH IN HIS SPECIFICATION.
- G.C. SUBMIT THE TESTING AGENCY'S DETAILED PROCEDURE WHICH WILL BE FOLLOWED IN THE TESTING OF THIS PROJECT. INCLUDE DETAILS OF THE TESTING SEQUENCE, PROCEDURES FOR CROSS CONNECTION TESTS, OUTLET FUNCTION TESTS, CEILING COLUMN FUNCTION TESTS, ALARM TESTS, PURITY TESTS AS REQUIRED.
- H. AFTER INITIAL LEAKAGE TESTING OF MEDICAL GAS PIPING IS COMPLETED, ALLOW PIPING TO REMAIN PRESSURIZED WITH TESTING GAS UNTIL TESTING AGENCY PERFORMS FINAL TESTS
- 5. MEDICAL GAS TESTING AND ADJUSTING:
- A. MEDICAL GAS INITIAL TESTS: BLOWDOWN, AND HIGH AND LOW PRESSURE LEAKAGE TESTS AS REQUIRED BY NFPA, WITH DOCUMENT.
- B. PERFORMANCE AND DOCUMENT ALL CROSS CONNECTION TEST, LABELING VERIFICATION, SUPPLY SYSTEM OPERATION, AND VALVE AND ALARM OPERATION TESTS AS REQUIRED BY, AND IN ACCORDANCE WITH, NFPA 99 AND THE PROCEDURES SET FORTH IN PREQUALIFICATION DOCUMENTATION.
- C. VERIFY THAT THE SYSTEMS, AS INSTALLED, MEET OR EXCEED THE REQUIREMENTS OF NFPA 99 AND THIS SPECIFICATION, AND THAT THE SYSTEMS OPERATE AS REQUIRED.
- D. MEDICAL GAS PIPING PURGE TEST: FOR EACH POSITIVE PRESSURE GAS SYSTEM, VERIFY CLEANLINESS OF PIPING SYSTEM. FILTER A MINIMUM OF 35 CUBIC FEET OF GAS THROUGH A CLEAN WHITE 0.45 MICRON FILTER AT A MINIMUM VELOCITY OF 3.5 SCFM. FILTER SHALL SHALL NO DISCOLORATION, AND SHALL ACCRUE NO MORE THAN 0.1 MG OF MATTER. TEST EACH ZONE AT THE OUTLET MOST REMOTE FROM SOURCE. PERFORM TEST WITH THE USE OF AN INERT GAS AS DESCRIBED IN CGA P-9.
- E. MEDICAL GAS PIPING PURITY TEST: FOR EACH POSITIVE PRESSURE SYSTEM, VERIFY PURITY OF PIPING SYSTEM. TEST EACH ZONE AT THE MOST REMOTE OUTLET FOR DEW POINT, CARBON MONOXIDE, TOTAL HYDROCARBONS (AS METHANE), AND HALOGENATED HYDROCARBONS, AND COMPARE WITH SOURCE GAS. THE TWO TESTS MUST IN NO ALLOWABLE VARIATION. PERFORM TEST WITH THE USE OF AN INERT GAS AS DESCRIBED IN CGA P-9.
- F. OUTLET AND INLET FLOW TEST:
- F.A. TEST ALL MEDICAL GAS OUTLETS FOR FLOW.
- F.B. OXYGEN AND AIR OUTLETS MUST DELIVER 3.5 SCFM WITH A PRESSURE DROP OF NO MORE THAN 5 PSIG, AND STATIC PRESSURE OF 50 PSIG.

- F.C. VACUUM INLETS MUST DRAW NO LESS THAN 3.0 SCFM WITH ADJACENT INLET FLOWING AT A DYNAMIC INLET PRESSURE OF 12-INCHES HG, AND A STATIC VACUUM OF 15-INCHES HG.
- G. ANALYSIS TEST:
- G.A. ANALYZE EACH OUTLET FOR CONCENTRATION OF MEDICAL GAS, BY VOLUME.
- G.B. MAKE ANALYSIS WITH INSTRUMENTS DESIGNED TO MEASURE THE SPECIFIC MEDICAL DISPENSED.
- H. MAXIMUM ALLOWABLE VARIATION: VARIATION BETWEEN THE SOURCE GAS AND ALL OUTLETS SHALL NOT EXCEED THE FOLLOWING:

PRESSURE DEW POINT	4 DEGREES F
CARBON MONOXIDE	2 PPM
CARBON DIOXIDE	500 PPM
TOTAL HYDROCARBON AS METHANE	25 PPM
HALOGENATED HYDROCARBONS	2 PPM

- 6. MEDICAL AIR COMPRESSOR: PROVIDE COMPLETED FACTORY-PACKAGED THAT MEETS NFPA 99 REQUIREMENTS. PACKAGE CONTAINS OIL LESS SCROLL AIR COMPRESSOR, ASSOCIATED EQUIPMENT, ONE ASME AIR RECEIVER, DESICCANT AIR DRYER PACKAGE AND ONE CONTROL PANEL. SYSTEM SHALL INCLUDE INDIVIDUAL COMPRESSOR INLINE INTAKE FILTERS, DISCHARGE CHECK VALVES, SAFETY RELIEF VALVES, STAINLESS STEEL INTAKE AND DISCHARGE FLEXIBLE CONNECTORS, ISOLATION VALVES, AIR COOLED AFTERCOOLERS FOR EACH COMPRESSOR, HIGH DISCHARGE TEMPERATURE SHUT DOWN SWITCHES, PRESSURE CONTROL SWITCHES AS WELL AS POLY TUBING FOR GAUGE AND SWITCHES. AMICO OR APPROVED EQUAL.
- A. AIR COMPRESSOR SHALL BE BELT DRIVEN OIL LESS SCROLL SINGLE STAGE, AIR COOLED CONSTRUCTION WITH ABSOLUTELY NO OIL NEEDED FOR OPERATION. EACH COMPRESSOR SHALL BE EQUIPPED WITH ISOLATION VALVE, CHECK VALVE, SAFETY VALVE, ELECTRIC MOTOR, BELTS, BELT GUARD, AFTERCOOLER WITH SEPARATOR AND THERMAL MALFUNCTION PROTECTION DEVICE. PROVIDE CONTINUOUS DUTY NEMA RATED. OPEN DRIPPROOF MOTOR WITH 1.15 SERVICE FACTOR AND MAXIMUM 3600 RPM.
- B. AIR RECEIVER: INSIDE OF THE TANK SHALL BE DOUBLE EPOXY COATED FOR RUST PROTECTION. RECEIVER IS DESIGNED FOR 150 PSI MINIMUM WORKING PRESSURE, FACTORY AIR TESTED TO 1.5 TIMES THE WORKING PRESSURE, MEETING AMSE CONSTRUCTION. AIR RECEIVER IS EQUIPPED WITH PRESSURE GAUGE, SAFETY RELIEF VALVE, THREE WAY BYPASS FOR SERVICING, SIGHT GLASS AND AUTOMATIC ELECTRONIC TANK DRAIN WITH MANUAL OVERRIDE.
- C. NFPA 99 COMPLIANT DUAL DESICCANT AIR DRYERS WITH AN INTEGRAL, DEMAND BASED, PURGE SAVING CONTROL SYSTEM. EQUIPPED WITH TWO PRE-FILTERS, TWO AFTER FILTERS. TWO PRESSURE REGULATOR VALVES. AND DEW POINT MONITOR. ONE CO MONITOR AND MULTIPLE SYSTEM SAFETY VALVES.
- D. THERE SHALL BE TWO IDENTICAL BANKS OF AIR TREATMENT EQUIPMENT, PIPED IN PARALLEL AND PROVIDED WITH VALVES TO BYPASS EITHER FILTER SET FOR ELEMENT REPLACEMENT, MAINTENANCE AND REPAIR WORK WHILE STILL TREATING MEDICAL COMPRESSED AIR THROUGH THE OTHER SET.
- E. PROVIDE UL LISTED AND LABELED CONTROL PANEL IN NEMA 12 ENCLOSURE. PROVIDE HAND-OFF-AUTO SWITCHES INDICATES WHICH PUMP IS RUNNING. PROVIDE AUTOMATIC ALTERNATION OF COMPRESSORS BASED ON A FIRST ON / FIRST OFF PRINCIPLE WITH PROVISIONS FOR SIMULTANEOUS OPERATION. THE LAG COMPRESSOR SHALL BE ABLE TO START AUTOMATICALLY IF THE LEAD COMPRESSOR FAILS TO OPERATE. PROVIDE MANUAL RESET FOR THERMAL MALFUNCTION SHUTDOWN. ALL CONTROL AND ALARM FUNCTIONS SHALL REMAIN ENERGIZED WHILE ANY COMPRESSOR IN THE SYSTEM REMAINS ELECTRICALLY ONLINE. PROVIDE MAGNETIC MOTOR STARTERS WITH INTEGRAL OVERLOAD AND SHORT CIRCUIT PROTECTION, WITH LOCKABLE DISCONNECTING MEANS. PROVIDE PRESSURE CONTROL SWITCHES OR PRESSURE TRANSDUCER. PROVIDE INTEGRAL PLC CONTROLLER FOR AUTOMATICALLY SWITCHING OPERATING SEQUENCE OF COMPRESSORS. PROVIDE DIGITAL DISPLAY INTERFACE. USER INTERFACE SHALL DISPLAY ALL ALARM CONDITIONS, PUMP MAINTENANCE INTERVALS, COMPRESSOR PERFORMANCE WARNINGS, AVERAGE SYSTEM AIR DEMAND, AVERAGE DEWPOINT AND CO LEVELS ON SYSTEM, COMPRESSOR ON/OFF STATUS, SYSTEM MODEL NUMBER AND SERIAL NUMBER AND PHONE NUMBER TO CALL FOR SERVICE. PROVIDE AUDIBLE AND VISUAL LOCAL ALARMS WITH SILENCE BUTTON, REMOTE ALARM CONNECTIONS, AND SAFETY DEVICES AS REQUIRED BY NFPA 99. LOCAL ALARMS SHALL HAVE CONTACTS TO ALLOW INDICATION OF FAULT CONDITION AT THE MASTER ALARM PANEL IF ONE OR MORE LOCAL ALARMS ARE ACTIVATED.
- 7. MEDICAL VACUUM: PROVIDE COMPLETE FACTORY PACKAGED, FACTORY TESTED, CONTINUOUS DUTY SOURCE. EACH SOURCE SHALL CONTAIN VACUUM PUMPS, RECEIVER, CONTROL PANEL, SOURCE SHUTOFF, PUMP ISOLATION VALVES AND OTHER COMPONENTS AS INDICATED, REQUIRED BY NFPA 99, AND NECESSARY TO PROVIDE COMPLETE PERFORMANCE. EACH SOURCE SHALL REQUIRE SINGLE POINT CONNECTIONS TO POWER WIRING, WARNING SYSTEM WIRING, AND PIPING SYSTEM.
- A. VACUUM PUMPS: PROVIDE NON-LUBRICATED ROTARY VACUUM PUMPS. MOUNT EACH PUMP AND ITS MOTOR ON MODULAR SKIDS IN A HORIZONTAL OR VERTICAL CONFIGURATION WITH COUPLING AND GUARD. PROVIDE HIGH EFFICIENCY MOTORS. PROVIDE SHUTOFF VALVE ON EACH PUMP INLET. PROVIDE VACUUM GAUGE AT EACH PUMP INLET. PROVIDE PUMPS EQUIPPED WITH SELF-LUBRICATING CARBON/GRAPHITE VANES. BEARINGS SHALL BE LUBRICATED AND SEALED. NO OIL IS PERMITTED IN ANY PUMP. EACH PUMP SHALL BE COMPLETED AIR-COOLED AND HAVE ABSOLUTELY NO WATER REQUIREMENT. EACH PUMP SHALL BE FITTED WITH AN INLET FILTER PER NFPA 99 PARAGRAPH 5.1.37.4 (1) THRU (10) AND BE EQUIPPED WITH A VACUUM RELIEF VALVE, CHECK VALVE TO PREVENT BACKFLOW THROUGH OFF CYCLE UNITS, FLEXIBLE CONNECTOR, ISOLATION VALVE, AND VIBRATION ISOLATORS AT EACH MOUNTING LOCATION. PROVIDE CONTINUOUS DUTY NEMA RATED, OPEN DRIPPROOF MOTOR WITH 1.15 SERVICE FACTOR, AND MAXIMUM OF 1800 RPM.
- B. PROVIDE VACUUM RECEIVER DESIGNED FOR 150 PSI MINIMUM WORKING PRESSURE, FACTORY AIR TESTED TO 1.5 TIMES THE WORKING PRESSURE, MEETING ASME. PROVIDE RECEIVER WITH SAFETY RELIEF VALVES AND ACCESSORIES, INCLUDING BUT NOT LIMITED TO VACUUM GAUGE, SIGHT GLASS, AND AUTOMATIC AND MANUAL DRAINS. THE OUTSIDE OF RECEIVER SHALL BE GALVANIZED OR SUPPLY WITH FACTORY APPLIED COMMERCIAL ENAMEL FINISH. THE INTERIOR OF THE RECEIVER SHALL BE A FACTORY APPLIED VINYL LINING. PROVIDE RECEIVER WITH A 3 VALVE BYPASS FOR SERVICING.
- C. PROVIDE UL LISTED AND LABELED CONTROL PANEL IN NEMA 12 ENCLOSURE. PROVIDE HAND-OFF-AUTO SWITCH FOR EACH FOR EACH VACUUM PUMP FOR SELECTION OF NORMAL OPERATION (AUTOMATIC ALTERNATION) OR MANUAL SELECTION OF LEAD AND LAG VACUUM PUMP. THE LAG VACUUM PUMP SHALL BE ABLE TO START AUTOMATICALLY IF THE LEAD VACUUM PUMP FAILS TO OPERATE. PROVIDE MANUAL RESET FOR THERMAL MALFUNCTION SHUTDOWN. PROVIDE 120 VAC CONTROL CIRCUIT TRANSFORMER WITH FUSED PRIMARY AND SECONDARY. PROVIDE VACUUM CONTROL SWITCHES, INTEGRAL PLC CONTROLLER FOR AUTOMATICALLY SWITCHING OPERATING SEQUENCE OF VACUUM PUMPS. PROVIDE DIGITAL DISPLACE INTERFACE. USER INTERFACE SHALL DISPLAY ALL ALARM CONDITIONS, VACUUM PUMP MAINTENANCE INTERVALS, VACUUM PUMP PERFORMANCE WARNINGS, ON/OFF STATUS. PROVIDE AUDIBLE AND VISUAL LOCAL ALARMS WITH SILENCE BUTTON, REMOTE ALARM CONNECTIONS, AND SAFETY DEVICES AS REQUIRED BY NFPA 99. LOCAL ALARMS SHALL HAVE CONTACTS TO ALLOW INDICATION OF A FAULT CONDITION AT THE MASTER ALARM PANEL IF ONE OR MORE LOCAL ALARMS ARE ACTIVATED.
- CYLINDER MANIFOLD OXYGEN GAS SUPPLY SOURCE: PROVIDE COMPLETE FACTORY-PACKAGED, FACTORY TESTED, CONTINUOUS DUTY SOURCE. EACH SOURCE SHALL CONTAIN CONTROL PANEL, SOURCE SHUTOFF, ISOLATION VALVES AND OTHER COMPONENTS REQUIRED BY NFPA 99, AND NECESSARY TO PROVIDE COMPLETE PERFORMANCE. EACH SOURCE SHALL REQUIRE SINGLE POINT CONNECTIONS TO POWER WIRING, WARNING SYSTEM WIRING, AND PIPING SYSTEM. EACH SOURCE SHALL HAVE A MINIMUM OF 2 CYLINDERS ON EACH SIDE. DESIGN THE CYLINDER SUPPLY SOURCE SO THAT WHEN THE SWITCHOVER FROM THE PRIMARY CYLINDERS TO THE SECONDARY CYLINDERS OCCURS, THERE WILL BE NO DROP OR FLUCTUATION IN THE LINE PRESSURE. THE CONTROL CABINET SHALL HAVE A VISUAL SIGNAL TO INDICATED SWITCHOVER FROM THE PRIMARY TO THE SECONDARY SUPPLY. RESETTING OF THE CONTROL UNIT SHALL BE ACCOMPLISHED AUTOMATICALLY. PROVIDE WITH A BRONZE BODIED POPPET TYPE PRESSURE RELIEF ADJUSTED TO RELIEVE AT 50 PERCENT ABOVE MAXIMUM WORKING PRESSURE. EQUIP WITH AN APPROVED PRESSURE SWITCH FOR ACTUATING A WARNING SIGNAL WHEN, OR BEFORE, THE SECONDARY BANK GOES INTO OPERATION. THE CONTROL VALVE SHALL BE CONTAINED WITHIN A CABINET DESIGNED TO PREVENT TEMPERING BY UNAUTHORIZED PERSONNEL. ONE BANK OF CYLINDERS SHALL BE IN SERVICE WHILE THE OTHER BANK IS IN RESERVE. EACH BANK SHALL BE EQUIPPED WITH A MASTER REGULATOR AND A GAUGE FOR 4,000 PSI OR GREATER CYLINDER CONTENTS PRESSURE. SWITCHING FROM THE EMPTY BANK OF CYLINDERS TO THE FULL BANK OF CYLINDERS SHALL BE FULLY AUTOMATIC AND SHALL NOT REQUIRED RESETTING OF THE REGULATORS. PROVIDE FOR 8 PRIMARY AND 8 SECONDARY CYLINDERS.
- 9. WARRANTY
  - A. ALL WORK SHALL BE UNDER WARRANTY FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE OF THE WORK AS A WHOLE BY THE ENGINEER. SHOULD ANY EQUIPMENT OR MATERIAL FAIL WITHIN THIS PERIOD, THE CONTRACTOR SHALL REPLACE/REPAIR THAT ITEM AT NO COST TO THE OWNER FOR MATERIAL AND/OR SERVICES, IF SUCH IS DUE TO FAULTY WORKMANSHIP OR QUALITY OF MATERIAL FURNISHED.
  - B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE TO ANY PART OF THE PREMISES CAUSED BY FAILURE IN THE EQUIPMENT UNDER THIS SECTION FOR A PERIOD OF ONE (1) YEAR AFTER THE FINAL ACCEPTANCE OF THE WORK AS A WHOLE.



ARCHITECTS AIA 1314 SOUTH KING / SUITE 955 HONOLULU, HAWAII 96814

/ ADDITION
TMR: 4-6-014: 030

PATIENT ROOM & PHARMACY

MAHELONA MEDICAL CENTER

4800 KAWAIHAU ROAD

KAPAA HI 96746

LICENSED
PROFESSIONAL
ENGINEER
No. 10018-M

AWAII, U.S.P.

This work was prepared by me or under my supervision and construction of this project will be under my obstation (observation of construction as defined in Section 16–115 of the Hawaii Administrative Rules, Department Commerce and Consumer Affairs entitled Professional Engineers, Architects and Surveyors of the State of Hamada Signature

Signature

Note:

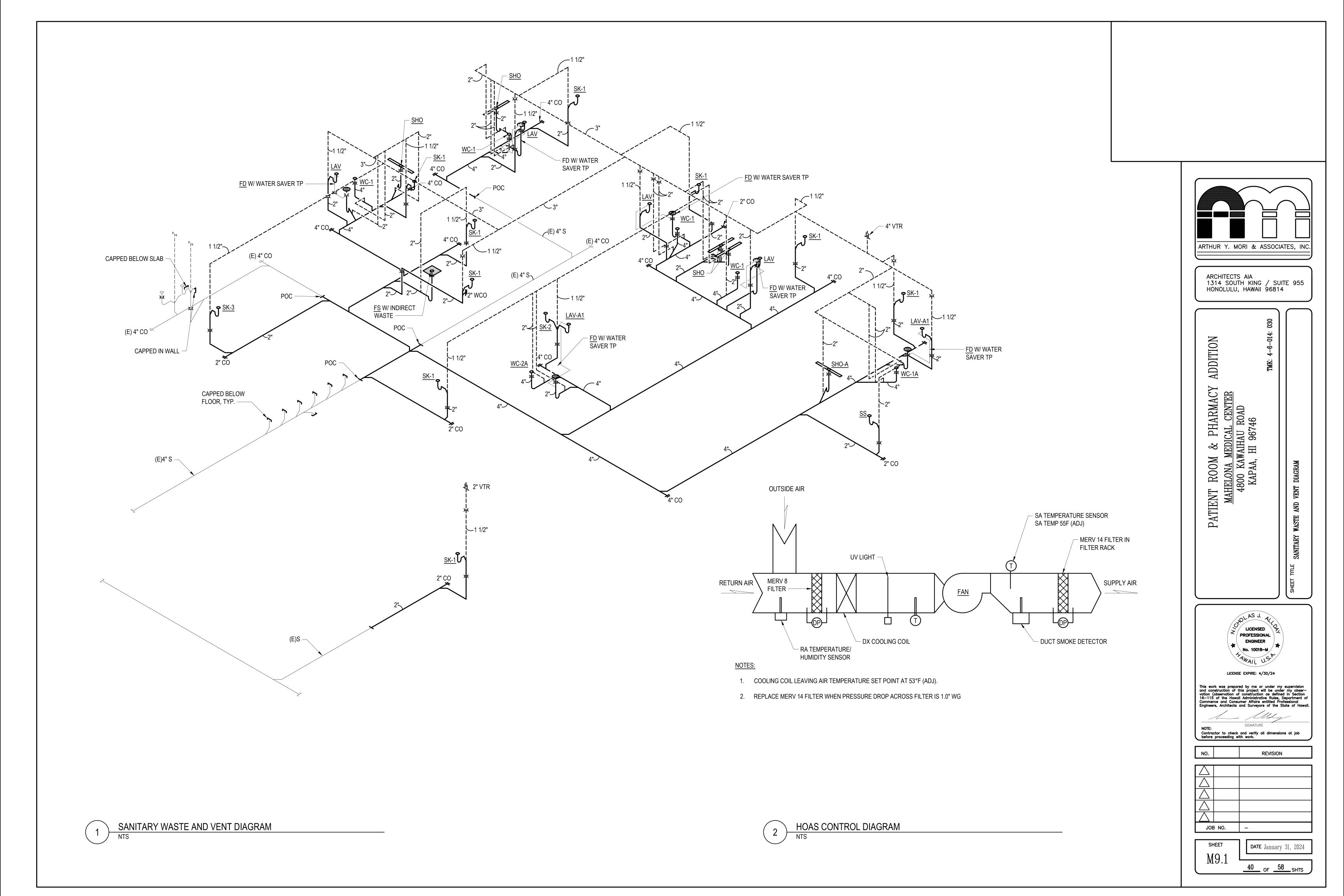
Contractor to check and verify all dimensions at job before proceeding with work.

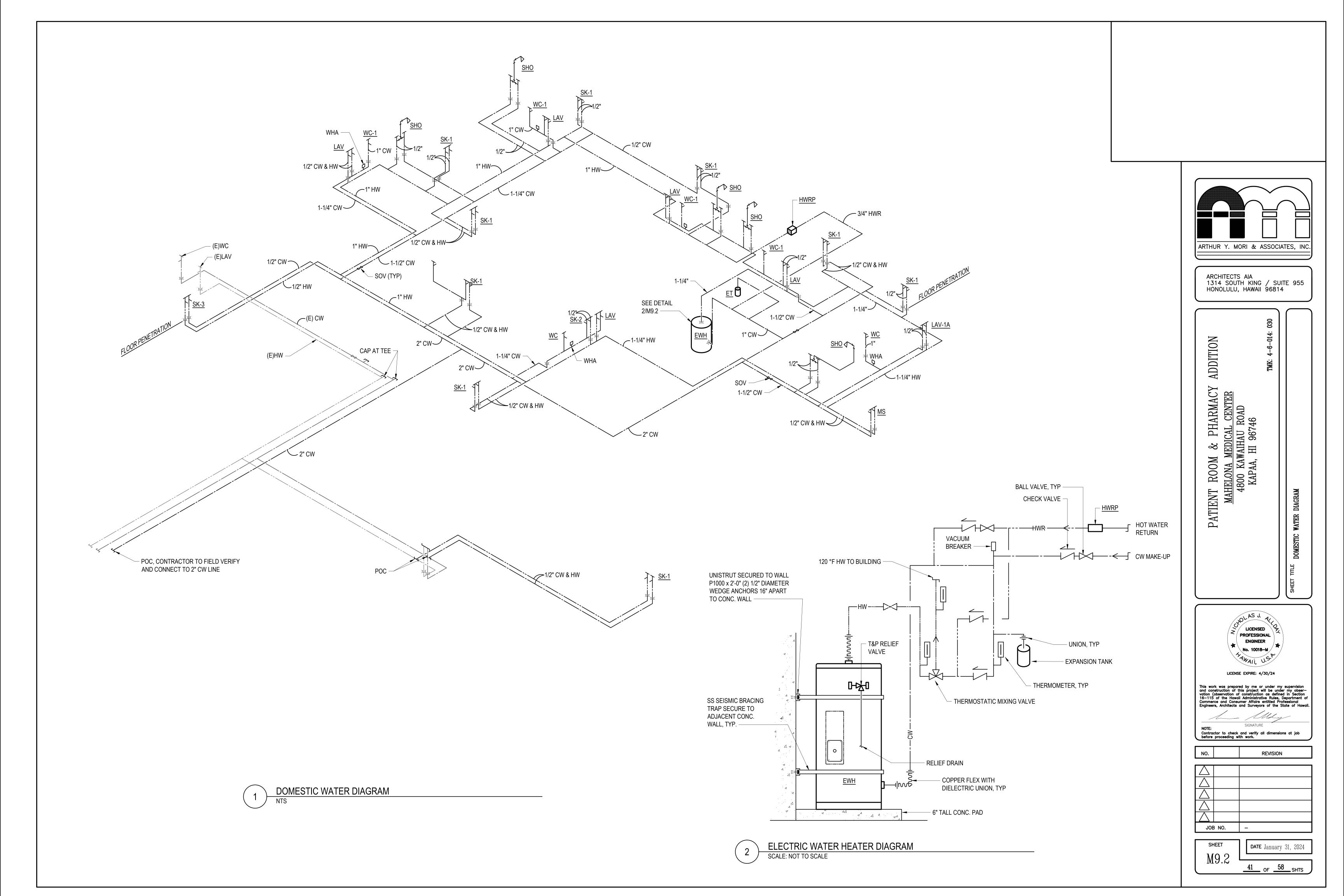
NO. REVISION

A DOB NO. —

M7.3

DATE January 31, 2024





	MEDICAL GAS CEILING COLUMNS, HEADWALLS AND WALL OUTLETS SCHEDULE										
	MARK TOTAL TYPE OUTLET OFFICE AREA			PIPE S	SIZE - N	O. OF Ol	JTLET, EA				
MARK	QTY	TYPE	TYPE TYPE	SERVICE AREA	02	MA	MV	VACUUM	REMARKS		
					1/2"	1/2"	3/4"	SLIDE			
H-1	5	HEADWALL	MEDAES	PATIENT ROOMS	1	1	1	1	PREFABRICATED HEADWALL, SEE ARCHITECTURAL SPECS.		

	AIR COMPRESSOR AND DESSICANT AIR DRYER SCHEDULE										
MARK	LOCATION	SERVICE	TYPE	SCFM AT PSI		AIR RECEIVER (GALLONS)	I ID	LECTRICA V / Ø / HZ		OPR. WEIGHT (POUNDS)	REMARKS
CA-1	LOWER LEVEL MED GAS	MEDICAL COMPRESSED AIR	OIL-LESS SCROLL SINGLE STAGE DUPLEX	0.4 (50 PSI)	50	80	2	460/3/60	7	1435	SEE NOTE [1].

NOTES:

[1]. PROVIDE COMPLETE WORKING SYSTEM WITH INTAKE FILTERS, MUFFLERS, AUTO DRAIN, CONTROL PANEL AND ALL RELATED ACCESSORIES. COMPRESSED AIR TO BE DRIED TO MAX PRESSURE DEW POINT OF -40°F. PROVIDE FILTER WITH PARTICLE REMOVAL DOWN TO 1 MICRON AFTER THE DRYER, ONE COMPRESSOR STANDBY.

	VACUUM PUMP SCHEDULE											
MARK	LOCATION	SERVICE	TYPE	SCFM	OPERATING VACUUM PRESSURE	(CALLONS)	NO. OF VACUUM PUMPS	HP EACH	ELECTRIC V/Ø/HZ	FLA TOTAL	OPR. WEIGHT (POUNDS)	REMARKS
VP-1	LOWER LEVEL MED GAS	MEDICAL SURGICAL VACUUM	VERTICAL ROTARY VANE DRY DUPLEX	3.25	19" HG	80	2	1.2	460/3/60	8	721	SEE NOTE [1].

[1]. PROVIDE COMPLETE WORKING SYSTEM WITH PREMIUM EFFICIENT MOTOR, INTAKE FILTERS, MUFFLER, AUTO DRAIN, CONTROL PANEL AND ALL RELATED ACCESSORIES, ONE COMPRESSOR STANDBY.

	MEDICAL GAS ZONE VALVE BOX SCHEDULE											
MARK	NO. OF VALVE	LOCATION	SERVICE AREA	QTY	O2	MA	MV	REMARKS				
MZV-1	3	HALLWAY	MEDICAL GAS SYSTEM	1	•	•	•	PROVIDE WITH AREA ALARM PANEL, ALARM SHALL INDICATE WHEN ANY MEDICAL GAS SYSTEM LINE PRESSURE INCREASES 20% OR DECREASES 20% FROM NORMAL OPERATING PRESSURE OR WHEN THE MEDICAL VACUUM LINE PRESSURE DROPS BELOW 12 IN HG. 115V/1PH/60HZ, 1AMP. PROVIDE WITH SENSORS TO BE CONNECTED TO MEDICAL GAS ALARM PANEL.				

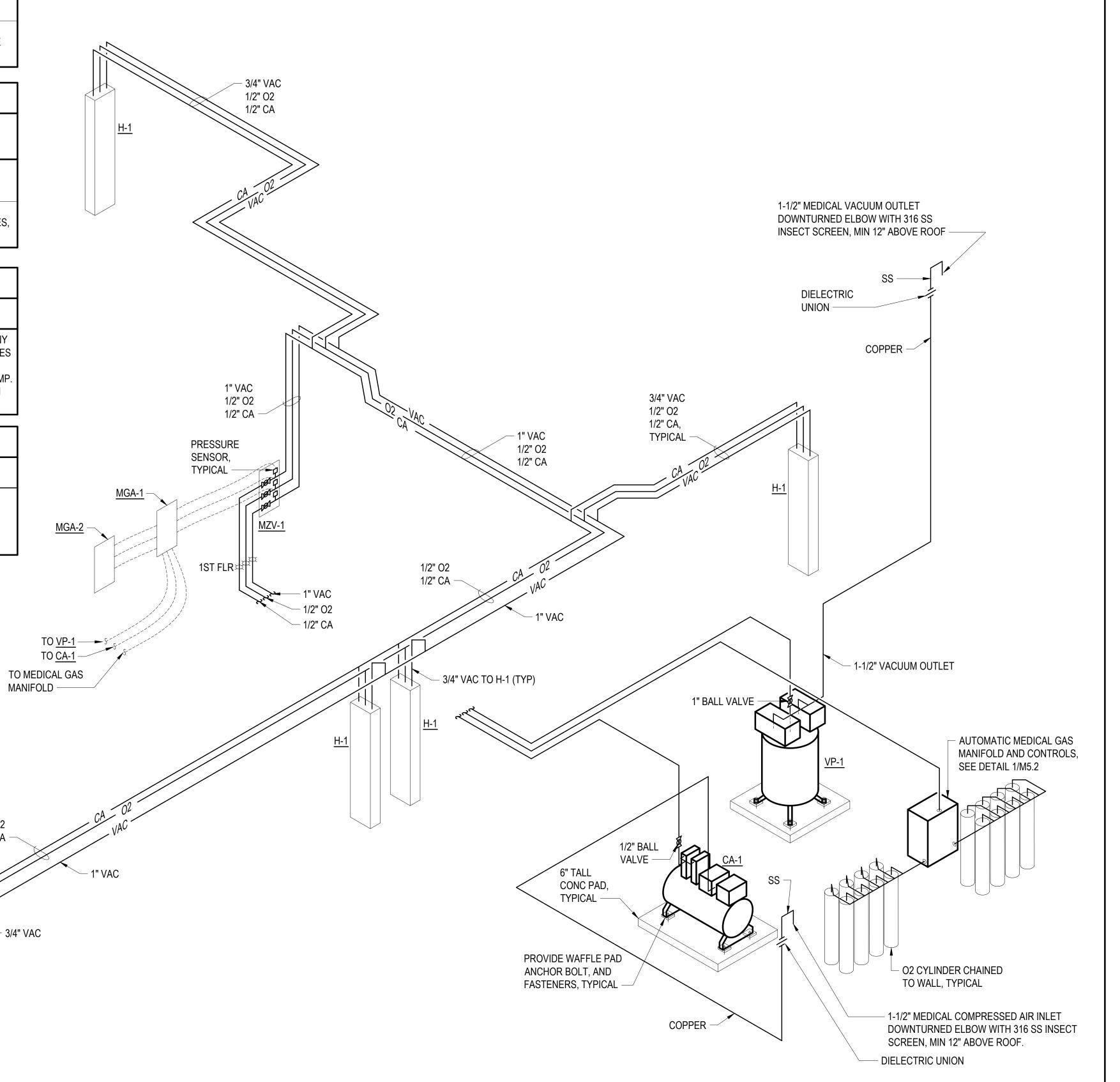
	ROOM PRESSURE MONITOR										
MARK	ELECTRIC VAC / Ø / HZ	SERVICE	LOCATION	REMARKS							
P.M.	85-265 / 1 /60	IV PREP VESTIBULE PHARMACY ANTE ROOM AIRBORNE INFECTION ISOLATION	PHARMACY PHARMACY PHARMACY HALLWAY ANTE ROOM	PROVIDE ALL ALL ACCESSORIES FOR PROPER OPERATION.							

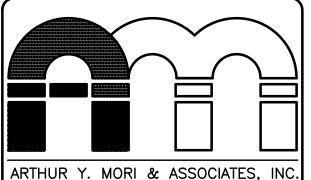
# NOTES:

- PIPE SIZING CRITERIA:
- OXYGEN AND MEDICAL COMPRESSED AIR BASED ON 55 PSI SYSTEM PRESSURE, MAX 5 PSI PRESSURE DROP FOR PIPING AND FITTINGS. MEDICAL VACUUM BASED ON 19 IN HG SYSTEM VACUUM, MAX 3 IN HG PRESSURE DROP FOR PIPING AND FITTINGS.
- OXYGEN AND MEDICAL COMPRESSED AIR SIZING CALCULATION: 116 FT TO FURTHEST OUTLET MULTIPLIED BY 2 FOR FITTINGS AND FUTURE = 232 FT FOR SIZING, USE 500 FT OR 1 PSI/100 FT MAX PRESSURE DROP. 1/2" = 9.6 SCFM MAX
- MEDICAL VACUUM SIZING CALCULATION: 103 FT TO FURTHEST OUTLET MULTIPLIED BY 2 FOR FITTINGS AND FUTURE = 206 FT FOR SIZING, USE 500 FT OR 0.6 IN HG/100 FT MAX PRESSURE DROP.

1" = 6 SCFM MAX

3/4" = 24.3 SCFM MAX





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LICENSED PROFESSIONAL

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DATE January 31, 2024

MEDICAL GAS DIAGRAM