

PLOTTED: 11/22/2021 4:20:33 PM

FILE NAME: BIM 360/HF PACKAGE 3P1133 - MEF SIM CTR-159082-M.rvt

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HVAC PIPE LEGEND		
SYMBOL	ABBREV	DESCRIPTION
	CD	CONDENSATE DRAIN
	CW	DOMESTIC COLD WATER
	HW	DOMESTIC HOT WATER
	CHWR	CHILLED WATER RETURN
	CHWS	CHILLED WATER SUPPLY
	HWR	HEATING HOT WATER RETURN
	HWS	HEATING HOT WATER SUPPLY
	RS/RL	REFRIGERANT SUCTION / REFRIGERANT LIQUID *
* RS/RL LINES TYPICALLY TO BE SIZED PER EQUIPMENT MANUFACTURER'S RECOMMENDATIONS UNLESS NOTED OTHERWISE.		

NOTE: LEGEND AND ABBREVIATIONS ARE ALL INCLUSIVE, SOME SYMBOLS OR ABBREVIATIONS SHOWN MAY NOT BE INCLUDED IN THIS PROJECT

MECHANICAL SYMBOLS LEGEND											
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	ATFP SHUTDOWN SWITCH		DUCTWORK - DIMENSIONS - FLAT OVAL (SIDE SHOWN / SIDE NOT SHOWN)		DUCTWORK - FLEXIBLE CONNECTION		PIPING - AIR VENT (MANUAL)		PIPING - EXPANSION JOINT		PIPING - TEE DOWN
	AIR DEVICE		DUCTWORK - DIMENSIONS - ROUND		DUCTWORK - EXHAUST OR RETURN DUCT DOWN (SLASH MAY BE FLIPPED)		PIPING - ANGLE GLOBE VALVE		PIPING - UNION		PIPING - TEE UP
	ACCESS PANEL		DUCTWORK - DUCT ELEVATION DROP		DUCTWORK - EXHAUST OR RETURN DUCT UP (SLASH MAY BE FLIPPED)		PIPING - BALL VALVE		PIPING - FLEXIBLE CONNECTION		PIPING - TEMPERATURE SENSOR
	CARBON DIOXIDE SENSOR		DUCTWORK - DUCT ELEVATION RISE		DUCTWORK - SUPPLY DUCT DOWN		PIPING - BUTTERFLY VALVE		PIPING - FLOWMETER - ORIFICE		PIPING - THERMOMETER
	CARBON MONOXIDE SENSOR		DUCTWORK - DUCT ELEVATION DROP (ROUND OR FLAT OVAL)		DUCTWORK - SUPPLY DUCT UP		PIPING - CALIBRATED BALANCE VALVE		PIPING - FLOWMETER - VENTURI		PIPING - PRESSURE GAUGE WITH GAUGE COCK
	CONNECT TO EXISTING		DUCTWORK - DUCT ELEVATION RISE (ROUND OR FLAT OVAL)		DUCTWORK - TRANSITION - RECTANGULAR		PIPING - CAP		PIPING - FLOW SWITCH		PIPING - PT (PRESSURE & TEMPERATURE) TEST PORT
	DOOR LOUVER		DUCTWORK - DUCT SMOKE DETECTOR		DUCTWORK - TRANSITION - RECTANGULAR TO ROUND / FLAT OVAL		PIPING - CHECK VALVE (SPRING)		PIPING - GATE VALVE		PIPING - PUMP (ARROW IS DIRECTION OF FLOW)
	DOOR UNDERCUT		DUCTWORK - ELBOW 90° UP		EXHAUST FAN		PIPING - CHECK VALVE (SWING GATE)		PIPING - GLOBE VALVE		PIPING - REDUCER
	DIRECT DIGITAL CONTROL PANEL		DUCTWORK - ELBOW 90° DOWN		HUMIDISTAT		PIPING - CONTROL VALVE (2-WAY)		PIPING - PIPE ANCHOR		RETURN OR EXHAUST AIR DEVICE (SLASH MAY BE FLIPPED)
	DUCTWORK - AIRFLOW MEASUREMENT STATION		DUCTWORK - FIRE DAMPER		HYDROGEN SENSOR		PIPING - CONTROL VALVE (3-WAY)		PIPING - PIPE GUIDE		REMOVE EXISTING TO
	DUCTWORK - BACKDRAFT DAMPER		DUCTWORK - SMOKE DAMPER		KEYNOTE		PIPING - DIRECTION OF WATER FLOW		PIPING - PLUG VALVE		REVISION
	DUCTWORK - DIRECTION OF AIRFLOW - RETURN		DUCTWORK - COMBINATION FIRE / SMOKE DAMPER		LOUVER		PIPING - ELBOW 90° DOWN		PIPING - PRESSURE REDUCING VALVE		STARTER (EQUIPMENT SERVED)
	DUCTWORK - DIRECTION OF AIRFLOW - SUPPLY		DUCTWORK - MANUAL VOLUME DAMPER		NITROGEN OXIDE SENSOR		PIPING - ELBOW 90° UP		PIPING - PRESSURE RELIEF VALVE		SWITCH
	DUCTWORK - DIFFERENTIAL PRESSURE		DUCTWORK - MOTOR OPERATED DAMPER		PHASE		PIPING - ELBOW 90°		PIPING - SOLENOID VALVE		SQUARE SUPPLY AIR DIFFUSER
	DUCTWORK - DIMENSIONS (SIDE SHOWN x SIDE NOT SHOWN)		DUCTWORK - FLEXIBLE DUCT		PIPING - AIR VENT (AUTOMATIC)		PIPING - ELBOW 45°		PIPING - STRAINER WITH VALVED AND CAPPED BLOW DOWN		THERMOSTAT (DASHED LINE RUNS TO CONTROLLED DEVICE)

MECHANICAL ABBREVIATIONS									
ABBREV	DESCRIPTION	ABBREV	DESCRIPTION	ABBREV	DESCRIPTION	ABBREV	DESCRIPTION	ABBREV	DESCRIPTION
AC	AIR CONDITIONER, AIR CURTAIN	CONT	CONTINUOUS, CONTINUATION	EXIST, EX	EXISTING	KW	KILOWATTS	PSIG	PSI GAUGE
ACCU	AIR COOLED CONDENSING UNIT	CONTR	CONTRACTOR	(F)	FUTURE	L	LOUVER	PTAC	PACKAGED TERMINAL AIR CONDITIONER
ACU	AIR CONDITIONING UNIT	CONV	CONVECTOR	F	FAHRENHEIT	L/s	LITERS PER SECOND	QTY	QUANTITY
AD	ACCESS DOOR	CU FT	CUBIC FEET	FAI	FRESH AIR INTAKE	LAT	LEAVING AIR TEMPERATURE	RA	RETURN AIR
AFF	ABOVE FINISHED FLOOR	CUH	CABINET UNIT HEATER	FCU	FAN COIL UNIT	LBS	POUNDS	REQ'D	REQUIRED
AHU	AIR HANDLING UNIT	CWBT	CHILLED WATER BUFFER TANK	FDB	DEGREES FAHRENHEIT DRY BULB	LWT	LEAVING WATER TEMPERATURE	RF	RETURN FAN
AP	ACCESS PANEL	CWP	CONDENSER WATER PUMP	FIN FLR	FINISHED FLOOR	m	METERS	RH	RELATIVE HUMIDITY
APD	AIR PRESSURE DROP	CWR	CONDENSER WATER RETURN	FLEX	FLEXIBLE	MAG	MAGNETIC	RM	ROOM
APPROX	APPROXIMATE(LY)	CWS	CONDENSER WATER SUPPLY	FPM	FEET PER MINUTE	MAINT	MAINTENANCE	RPM	REVOLUTIONS PER MINUTE
ARCH	ARCHITECT OR ARCHITECTURAL	DB	DRY BULB	FT	FOOT, FEET	MAU	MAKE-UP AIR UNIT	RTU	ROOFTOP AIR HANDLING UNIT
AS	AIR SEPARATOR	DDC	DIRECT DIGITAL CONTROL	FWB	DEGREES FAHRENHEIT WET BULB	MAX	MAXIMUM	SA	SUPPLY AIR
ASD	ADJUSTABLE SPEED DRIVE (VFD / VSD SIMILAR)	DEG	DEGREE(S)	GA	GAUGE	MBH	1,000 BTUH	SAR	SUPPLY AIR REGISTER
B	BOILER	DEH	DEHUMIDIFIER	GC	GENERAL CONTRACTOR	MECH	MECHANICAL	SF	SUPPLY FAN
BCU	BLOWER COIL UNIT	DIA	DIAMETER	GMU	GLYCOL MAKEUP UNIT	MFR / MFGFR / MANUF	MANUFACTURER	SOV	SHUT-OFF VALVE
BHP	BREAK HORSEPOWER	DIFF	DIFFUSER	GPM	GALLONS PER MINUTE	MIN	MINIMUM	SP	STATIC PRESSURE (INCHES OF WATER)
BI	BINARY INPUT	DISC	DISCONNECT	GV	GRAVITY VENTILATOR	MISC	MISCELLANEOUS	SPECS	SPECIFICATIONS
BLDG	BUILDING	DOAS	DEDICATED OUTDOOR AIR SYSTEM	GWR	GLYCOL WATER RETURN	mm	MILLIMETERS	SQ	SQUARE
BOT	BOTTOM	DWG	DRAWING	GWS	GLYCOL WATER SUPPLY	MUA	MAKE-UP AIR	SSCU	SPLIT SYSTEM CONDENSING UNIT
BTU	BRITISH THERMAL UNIT	DWH	DOMESTIC WATER HEATER	HC	HEATING COIL	NC	NORMALLY CLOSED	SSHP	SPLIT SYSTEM HEAT PUMP
BTUH	BRITISH THERMAL UNIT PER HOUR	EA	EXHAUST AIR	HOA	HAND-OFF-AUTOMATIC	NIC	NOT IN CONTRACT	STRUC	STRUCTURAL
C	CELSIUS	EAG	EXHAUST AIR GRILLE	HP	HORSE POWER	NO	NORMALLY OPEN	TA	TRANSFER AIR
CAI	COMBUSTION AIR INTAKE	EAR	EXHAUST AIR REGISTER	HPU	HEAT PUMP UNIT	NTS	NOT TO SCALE	TEMP	TEMPERATURE
CAP	CAPACITY	EAT	ENTERING AIR TEMPERATURE	HTG	HEATING	OA	OUTSIDE AIR	TXV	THERMAL EXPANSION VALVE
CCFC	CLOSED CIRCUIT FLUID COOLER	EF	EXHAUST FAN	HTR	HEATER	OD	OUTSIDE DIAMETER	TYP	TYPICAL
CFM	CUBIC FEET PER MINUTE	ELEC	ELECTRIC(AL)	HVAC	HEATING VENTILATION / AIR CONDITIONING	OED	OPEN END DUCT	UH	UNIT HEATER
CH	CHILLER	ERV	ENERGY RECOVERY UNIT	HWR	HEATING HOT WATER RETURN	P	PUMP	UNO	UNLESS NOTED OTHERWISE
CHWR	CHILLED WATER RETURN	ERW	ENERGY RECOVERY WHEEL	HWS	HEATING HOT WATER SUPPLY	PLBG	PLUMBING	VAV	VARIABLE AIR VOLUME
CHWS	CHILLED WATER SUPPLY	ESP	EXTERNAL STATIC PRESSURE	ID	INSIDE DIAMETER	POC	POINT OF CONNECTION	VEF	VEHICLE EXHAUST FAN
CLG	CEILING, COOLING	ET	EXPANSION TANK	IN	INCH(ES)	PRESS	PRESSURE	VEL	VELOCITY
CON	CONNECTION	EWT	ENTERING WATER TEMPERATURE	INSUL	INSULATE(D), INSULATION	PRV	PRESSURE RELIEVING VALVE	VENT	VENTILATION, VENTILATOR
CONC	CONCRETE	EXH	EXHAUST	Kg	KILOGRAM(S)	PSI	POUNDS PER SQUARE INCH	VER	VEHICLE EXHAUST REEL

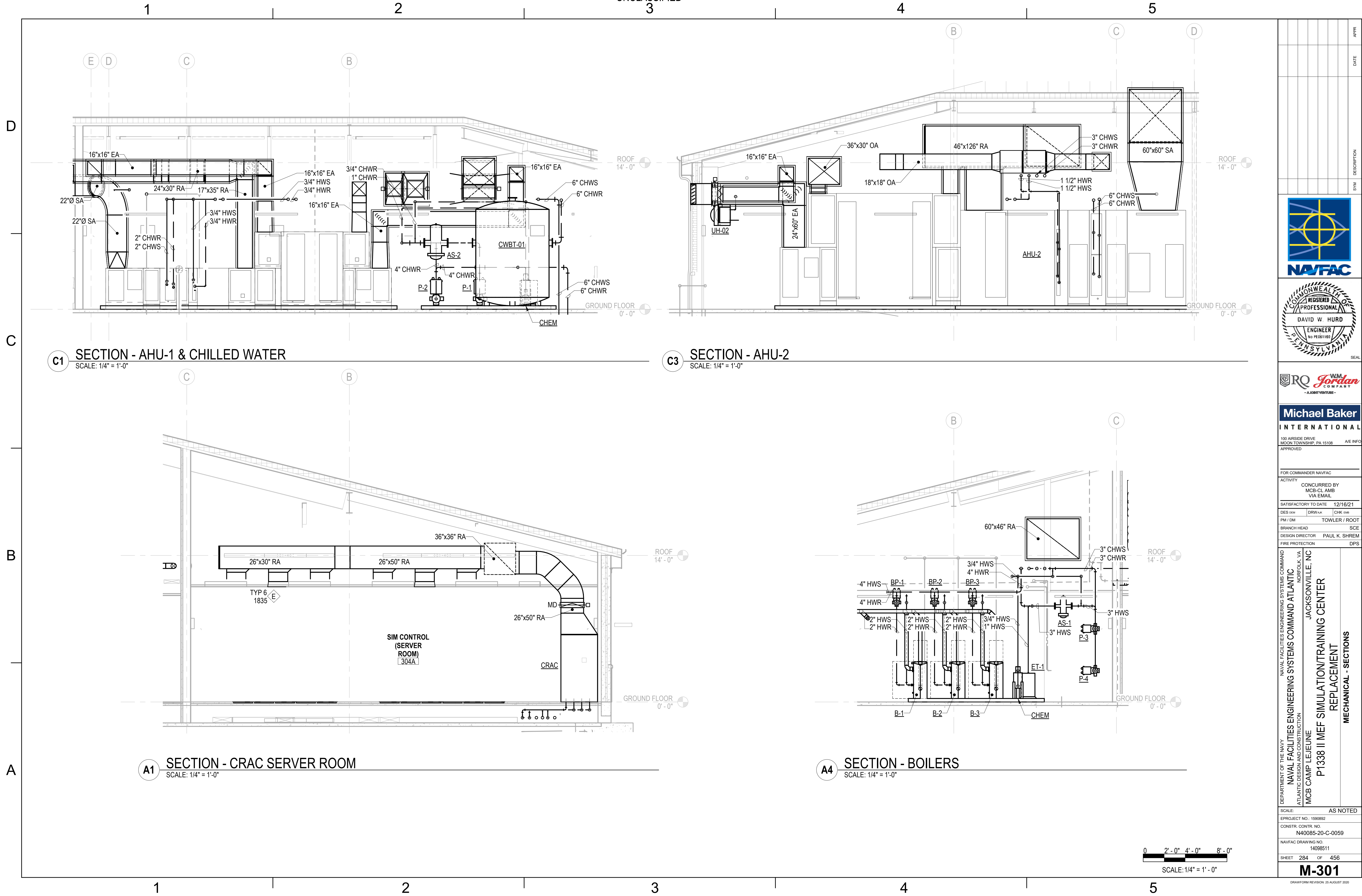
DATE	APPR
SYN	DESCRIPTION
Michael Baker INTERNATIONAL 100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED	
FOR COMMANDER NAVFAC ACTIVITY CONCURRED BY MCB-CL AMB VIA EMAIL SATISFACTORY TO DATE 12/16/21	
DESIGN	CHK
PM / DM	TOWLER / ROOT
BRANCH HEAD	SCE
DESIGN DIRECTOR	PAUL K. SHREM
FIRE PROTECTION	DPS
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC ATLANTIC DESIGN AND CONSTRUCTION MCB CAMP LEJEUNE JACKSONVILLE, NC P1338 II MEF SIMULATION/TRAINING CENTER REPLACEMENT MECHANICAL - SYMBOLS AND ABBREVIATIONS	
SCALE: AS NOTED EPROJECT NO.: 159082 CONSTR. CONTR. NO. N40085-20-C-0059 NAVFAC DRAWING NO. 14098498 SHEET 271 OF 456 M-001 DRAWING REVISION: 25 AUGUST 2020	




ISSUED FOR CONSTRUCTION - 16 DEC 21

UNCLASSIFIED

PLOTTED: 11/22/2021 4:20:42 PM

FILE NAME: BIM 360/HF PACKAGE 3P1333_MEF SIM CTR-1590892-M.rvt



APPROVED	DATE	APPR
DESCRIPTION	DATE	APPR
 		
 Michael Baker International 100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED		
FOR COMMANDER NAVFAC		
ACTIVITY CONCURRED BY MCB-CL AMB VIA EMAIL		
SATISFACTORY TO DATE 12/16/21		
DESIGN	DRW	CHK
PM / DM	TOWLER / ROOT	
BRANCH HEAD	SCE	
DESIGN DIRECTOR	PAUL K. SHREM	
FIRE PROTECTION	DPS	
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC DESIGN AND CONSTRUCTION NAVFAC DRAWING NO. 14098511 SHEET 284 OF 456 M-301 ISSUED FOR CONSTRUCTION - 16 DEC 21		

FILE NAME: BIM 360/HF PACKAGE 3P1338 - MEF SIM CTR-1590892-M.rvt
PLOTTED: 11/22/2021 4:20:47 PM

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC
ATLANTIC DESIGN AND CONSTRUCTION
MCB CAMP LEJEUNE
P1338 II MEF SIMULATION/TRAINING CENTER
REPLACEMENT
MECHANICAL - ENLARGED PLANS
ISSUED FOR CONSTRUCTION - 16 DEC 21

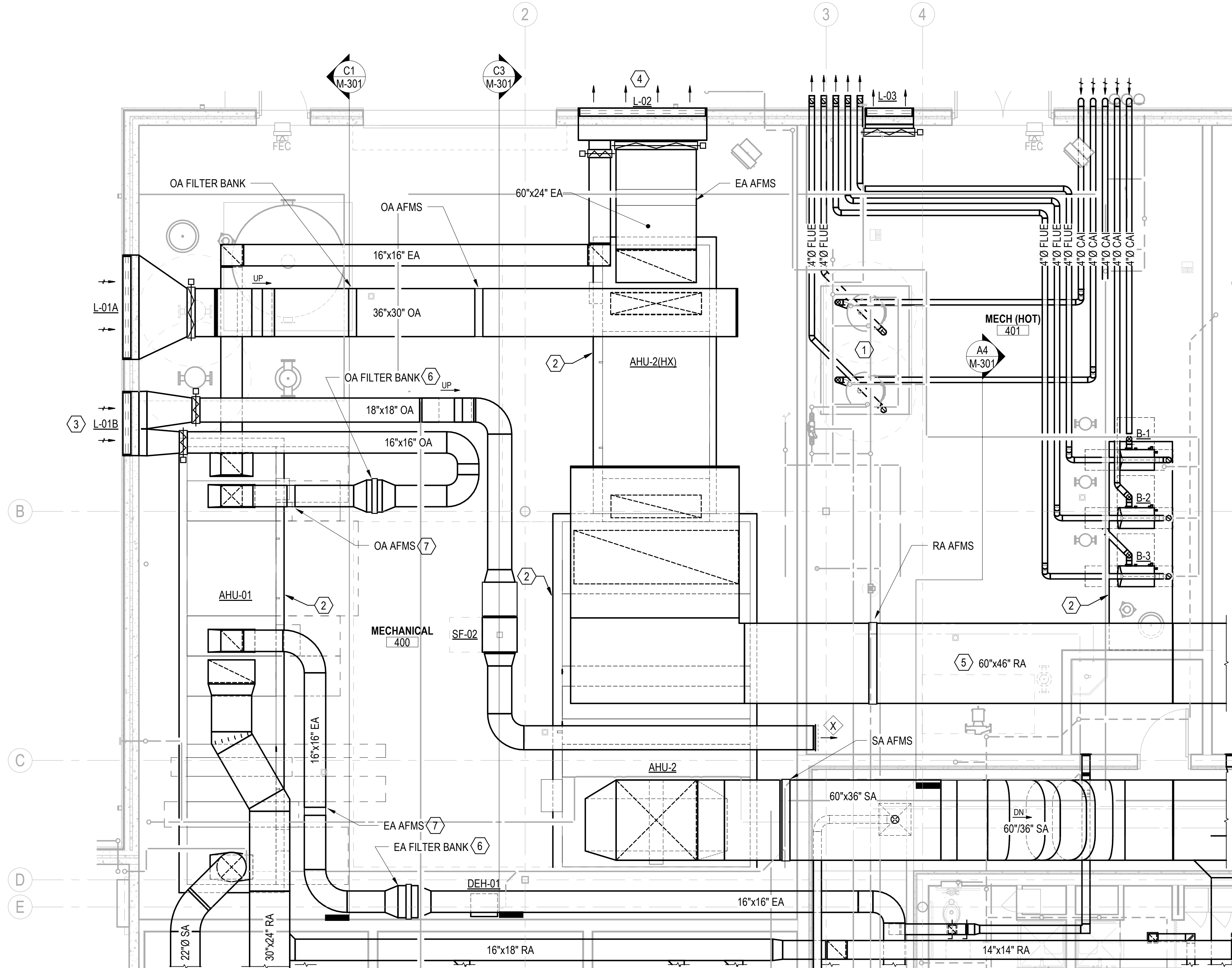
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A1 ENLARGED HVAC MECHANICAL ROOM DUCTWORK
SCALE: 1/4" = 1'-0"



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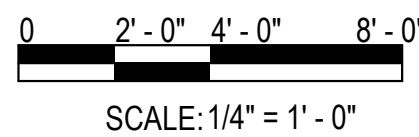
UNCLASSIFIED

GENERAL NOTES

- 1 PROVIDE MANUAL VOLUME DAMPERS IN ALL RUN-OUTS TO DIFFUSERS, AT ALL BRANCH TAKE-OFFS FROM MAIN SUPPLY DUCTS, AND WHERE DEEMED NECESSARY BY TAB SUB-CONTRACTOR TO ACHIEVE PROPER SYSTEM BALANCING.
- 2 ALL DUCT RUN-OUTS TO DIFFUSERS, REGISTERS AND GRILLES NOT INDICATED ON THE PLANS SHALL BE SIZED TO MATCH THE NECK SIZE INDICATED ON THE DIFFUSER, REGISTER AND GRILLE SCHEDULE.
- 3 ALL SUPPLY DUCT RUN-OUTS TO VAV BOXES NOT INDICATED ON THE PLANS SHALL BE SIZED TO MATCH THE VAV BOX INLET SIZE INDICATED ON THE VARIABLE AIR VOLUME (VAV) BOX SCHEDULE.
- 4 SHEET METAL FABRICATOR MAY SUBSTITUTE EQUIVALENT ROUND OR FLAT OVAL DUCTWORK FOR RECTANGULAR SIZES INDICATED. DUCTWORK BETWEEN AHU AND VAV BOXES SHALL BE SIZED TO 0.2" STATIC PRESSURE LOSS PER 100' OF DUCT RUN. DUCTWORK DOWNSTREAM OF VAV BOXES SHALL BE SIZED TO 0.08" STATIC PRESSURE LOSS PER 100' OF DUCT RUN. RETURN, EXHAUST AND TRANSFER AIR DUCTS SHALL BE SIZED TO 0.05"/100' OF DUCT RUN. ALL REVISIONS MUST BE COORDINATED WITH ALL OTHER TRADES AND ILLUSTRATED IN DUCTWORK SHOP DRAWINGS FOR APPROVAL.
- 5 PLAN DRAWINGS ARE DIAGRAMMATIC IN NATURE AND DO NOT ILLUSTRATE ALL SPECIFIC DUCT TAKE-OFF CONFIGURATIONS, TAPS, ETC. REFER TO PROJECT SPECIFICATIONS AND DUCTWORK DETAILS FOR SPECIFIC REQUIREMENTS.
- 6 ALL EQUIPMENT SHALL BE INSTALLED WITH MANUFACTURER'S REQUIRED ACCESS SPACE BETWEEN UNIT AND FULL HEIGHT WALLS AND OTHER OBSTRUCTIONS.

KEYNOTES

- 1 PLUMBING EQUIPMENT - REFER TO PLUMBING DRAWINGS.
- 2 CONCRETE MECHANICAL EQUIPMENT PAD ON LEVEL SURFACE. EXTEND PAD 6" BEYOND THE EDGE OF THE EQUIPMENT IN ALL DIRECTIONS.
- 3 CONNECTION TO LOUVER TO BE SPLIT TO SERVE AHU-1 AND SF-1. RIGHT CONNECTION: 28x36 TRANSITION TO 18x18 TO SERVE SF-1. LEFT CONNECTION: 20x36 CONNECTION, TRANSITION TO 16x16 TO SERVE AHU-1.
- 4 CONNECTION TO LOUVER TO BE SPLIT TO SERVE AHU-1 AND AHU-2. LEFT CONNECTION: 20x24 CONNECTION, TRANSITION TO 16x16 TO EXHAUST AHU-1. RIGHT CONNECTION: 76x24 CONNECTION, TRANSITION TO 60x24 TO EXHAUST AHU-2.
- 5 DUCTWORK TRAVERSING 401 MECH (HOT), SHALL BE PROVIDED WITH PROVIDED WITH VAPOR BARRIER IN ACCORDANCE WITH SPECIFICATIONS FOR "DUCTS EXPOSED TO WEATHER".
- 6 TRANSITION DUCT TO/FROM FILTER BANK; FILTER BANK TO HOLD NOMINAL 24"x24" MERV 8 & MERV 13 DISPOSABLE FILTERS.
- 7 LOCATE AIRFLOW MEASUREMENTS STATION DOWNSTREAM OF FILTER BANK AND UPSTREAM OF DOWNWARD ELBOW WITH UNOBSTRUCTED DUCT DISTANCES IN ACCORDANCE WITH AFMS MANUFACTURER'S REQUIREMENTS.



SCALE: AS NOTED
EPROJECT NO.: 1590892
CONSTR. CONTR. NO.: N40085-20-C-0059
NAVFAC DRAWING NO.: 14098512
SHEET 285 OF 456
M-401
DRAWING REVISION: 25 AUGUST 2020

FOR COMMANDER NAVFAC
ACTIVITY: CONCURRED BY MCB-CL AMB VIA EMAIL
SATISFACTORY TO DATE: 12/16/21
DESIGN: DESIGNED BY: TOWLER / ROOT
BRANCH HEAD: SCE
DESIGN DIRECTOR: PAUL K. SHREM
FIRE PROTECTION: DPS



ISSUED FOR CONSTRUCTION - 16 DEC 21

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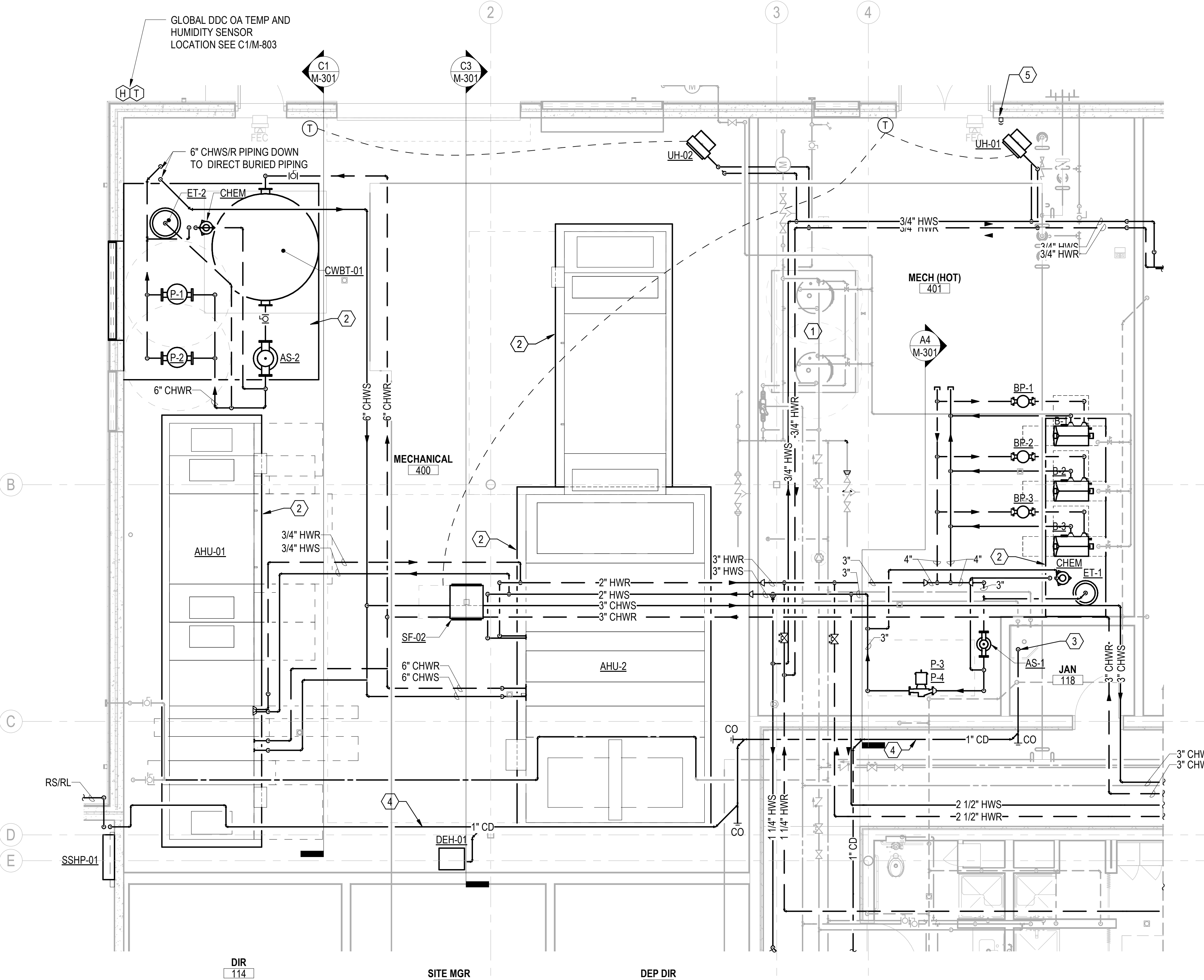
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FILE NAME: BIM 360/HF PACKAGE 3P1333 - MEF SIM CTR-1590892-M.rvt
PLOTTED: 11/22/2021 4:20:52 PM

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
ATLANTIC DESIGN AND CONSTRUCTION
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC
MOB CAMP LEJEUNE
P1338 II MEF SIMULATION/TRAINING CENTER
REPLACEMENT
MECHANICAL - ENLARGED PLANS
JACKSONVILLE, NC
NORFOLK, VA
AS NOTED
1590892
N40085-20-C-0059
14098513
286 OF 456
M-402
DRAWING REVISION: 25 AUGUST 2020



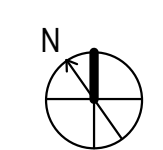
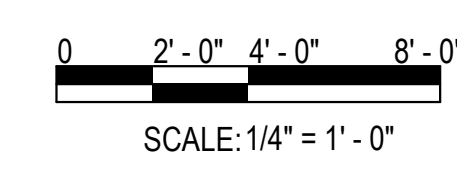
A1 ENLARGED HVAC MECHANICAL ROOM PIPING
SCALE: 1/4" = 1'-0"

GENERAL NOTES

- 1 PROVIDE MANUAL VOLUME DAMPERS IN ALL RUN-OUTS TO DIFFUSERS, AT ALL BRANCH TAKE-OFFS FROM MAIN SUPPLY DUCT, AND IN ALL OTHER AREAS AS REQUIRED TO PROVIDE PROPER SYSTEM BALANCING.
- 2 ALL SUPPLY AIR DUCT RUN-OUTS TO DIFFUSERS AND VAV BOXES SHALL BE SIZED TO MATCH DIFFUSER NECK SIZE OR VAV BOX INLET SIZE UNLESS OTHERWISE INDICATED.
- 3 SHEET METAL FABRICATOR MAY SUBSTITUTE EQUIVALENT ROUND OR FLAT OVAL DUCTWORK FOR RECTANGULAR SIZES INDICATED. DUCTWORK BETWEEN AHU AND VAV BOXES SHALL BE SIZED TO 0.2" STATIC PRESSURE LOSS PER 100' OF DUCT RUN. DUCTWORK DOWNSTREAM OF VAV BOXES, RETURN, EXHAUST AND TRANSFER AIR DUCTS SHALL BE SIZED TO 0.08"/100' OF DUCT RUN. ALL REVISIONS MUST BE COORDINATED WITH ALL OTHER TRADES AND ILLUSTRATED IN DUCTWORK SHOP DRAWINGS FOR APPROVAL.
- 4 PLAN DRAWINGS ARE DIAGRAMMATIC IN NATURE AND DO NOT ILLUSTRATE ALL SPECIFIC DUCT TAKE-OFF CONFIGURATIONS, TAPS, ETC. REFER TO PROJECT SPECIFICATIONS AND DETAILS FOR SPECIFIC REQUIREMENTS.
- 5 ALL EQUIPMENT SHALL BE INSTALLED WITH MANUFACTURER'S REQUIRED ACCESS SPACE BETWEEN UNIT AND FULL HEIGHT WALLS AND OTHER OBSTRUCTIONS.
- 6 ALL HWS & HWR BRANCHES ARE 3/4" UNLESS NOTED OTHERWISE.
- 7 PROVIDE AN AIR VENT AT THE HIGH POINT OF EACH DROP IN THE HEATING AND CHILLED WATER PIPING SYSTEMS. ALL PIPING SHALL GRADE TO THE LOW POINTS. PROVIDE HOSE END DRAIN VALVES AT THE BOTTOM OF ALL RISERS AND LOW POINTS.
- 8 INSTALL PIPING SO THAT ALL VALVES, STRAINERS, UNIONS, TRAPS, FLANGES AND OTHER APPURTENANCES REQUIRING ACCESS ARE EASILY ACCESSIBLE. ALL VALVES SHALL BE INSTALLED SO THAT THE REMAINS IN SERVICE WHEN EQUIPMENT OR PIPING ON EQUIPMENT SIDE OF VALVE IS REMOVED. ALL BALANCING VALVES AND BUTTERFLY VALVES SHALL BE PROVIDED WITH POSITION INDICATORS AND MAXIMUM ADJUSTABLE STOPS (AKA "MEMORY STOPS"). ALL VALVES (EXCEPT CONTROL VALVES) AND STRAINERS SHALL BE FULL SIZE OF PIPE BEFORE REDUCING SIZE TO MAKE CONNECTIONS TO EQUIPMENT AND CONTROLS.
- 9 INSTALL PIPING WITHOUT FORCING OR SPRINGING.

KEYNOTES

- 1 PLUMBING EQUIPMENT - REFER TO PLUMBING DRAWINGS.
- 2 CONCRETE MECHANICAL EQUIPMENT PAD ON LEVEL SURFACE. EXTEND PAD 6" BEYOND THE EDGE OF THE EQUIPMENT IN ALL DIRECTIONS.
- 3 1" CD DOWN TO MOP RECEPTOR. TERMINATE PIPE OPEN ENDED APPROXIMATELY 3" ABOVE RECEPTOR.
- 4 ROUTE ALL CONDENSATE PIPING AT 1/8" PER 1'-0" SLOPE TOWARD POINT OF TERMINATION. PROVIDE CLEANOUT AT ALL CHANGES OF DIRECTION GREATER THAN 45°.
- 5 PROVIDE CSD-1 BOILER KILL SWITCH TO CUT POWER TO BOILERS - REFER TO ELECTRICAL DESIGN FOR DETAILS.



APPR	DATE	DESCRIPTION	SYM
Michael Baker International 100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED			
FOR COMMANDER NAVFAC			
ACTIVITY		CONCURRED BY MCB-CL AMB VIA EMAIL	
SATISFACTORY TO DATE		12/16/21	
DESIGN	DRWING	CHK	ENG
PM / DM	TOWLER / ROOT		
BRANCH HEAD	SCE		
DESIGN DIRECTOR	PAUL K. SHREM		
FIRE PROTECTION	DPS		
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC DESIGN AND CONSTRUCTION MOB CAMP LEJEUNE P1338 II MEF SIMULATION/TRAINING CENTER REPLACEMENT MECHANICAL - ENLARGED PLANS JACKSONVILLE, NC NORFOLK, VA			
SCALE:		AS NOTED	
EPROJCT NO.		1590892	
CONSTR. CONTR. NO.		N40085-20-C-0059	
NAVFAC DRAWING NO.		14098513	
SHEET		286 OF 456	
M-402			
DRAWING REVISION: 25 AUGUST 2020			

ISSUED FOR CONSTRUCTION - 16 DEC 21

FILE NAME: BIM 360/HF PACKAGE 3P1338 MEF SIM CTR-1500892-M.rvt
PLOTTED: 11/22/2021 4:20:56 PM

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC
ATLANTIC DESIGN AND CONSTRUCTION
MCB CAMP LEJEUNE
P1338 II MEF SIMULATION/TRAINING CENTER
REPLACEMENT
MECHANICAL - ENLARGED PLANS

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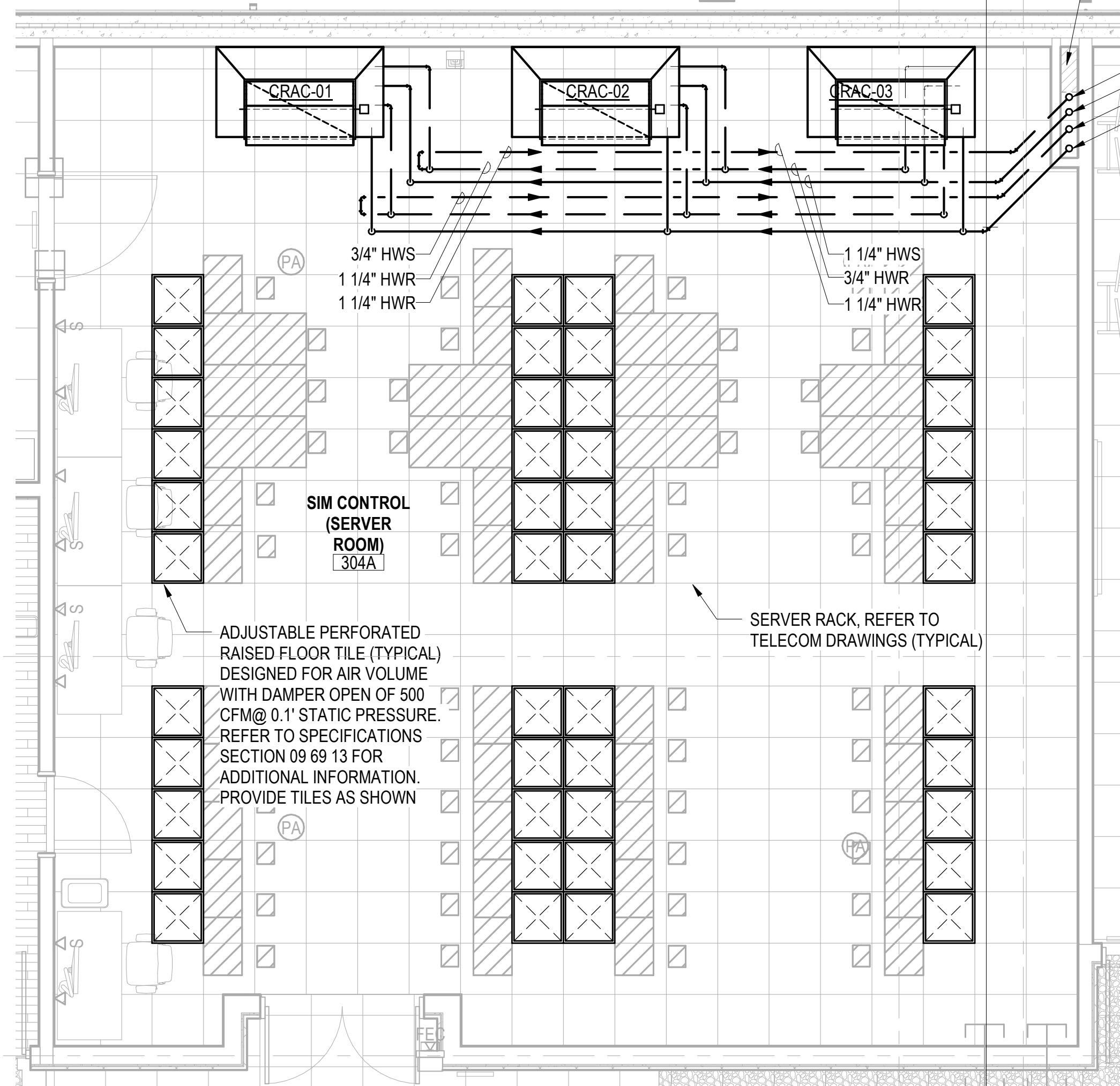
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NOTE:
ALL PIPING SHOWN IN THIS PLAN IS BELOW RAISED FLOOR SYSTEM.
PIPING SHALL BE ROUTED IN A SINGLE PLANE OR IN A MANNER NOT TO
RESULT IN AIRFLOW BLOCKAGE BEYOND RESTRICTING THE FLOOR
PLENUM AREA BY MORE THAN A SINGLE INSULATED PIPE.

REFER TO CHILLED WATER FLOW DIAGRAM ON SHEET M-702 FOR PIPE
SIZING AND REVERSE RETURN CONFIGURATION SERVING CRAC UNITS.

SEE P-113; MECHANICAL HWS/R AND
CHWS/R SHALL BE COORDINATED
WITHIN CHASE ALONG WITH DOMESTIC
PLUMBING LINE (CRAC HUMIDIFIER
MAKE UP WATER) TO ALLOW
INSTALLATION OF REQUIRED
BACKFLOW PREVENTER IN THIS
LOCATION

1 1/4" HWR UP
1 1/4" HWS UP
3" CHWR UP
3" CHWS UP



ADJUSTABLE PERFORATED
RAISED FLOOR TILE (TYPICAL)
DESIGNED FOR AIR VOLUME
WITH DAMPER OPEN OF 500
CFM @ 0.1' STATIC PRESSURE.
REFER TO SPECIFICATIONS
SECTION 09 69 13 FOR
ADDITIONAL INFORMATION.
PROVIDE TILES AS SHOWN

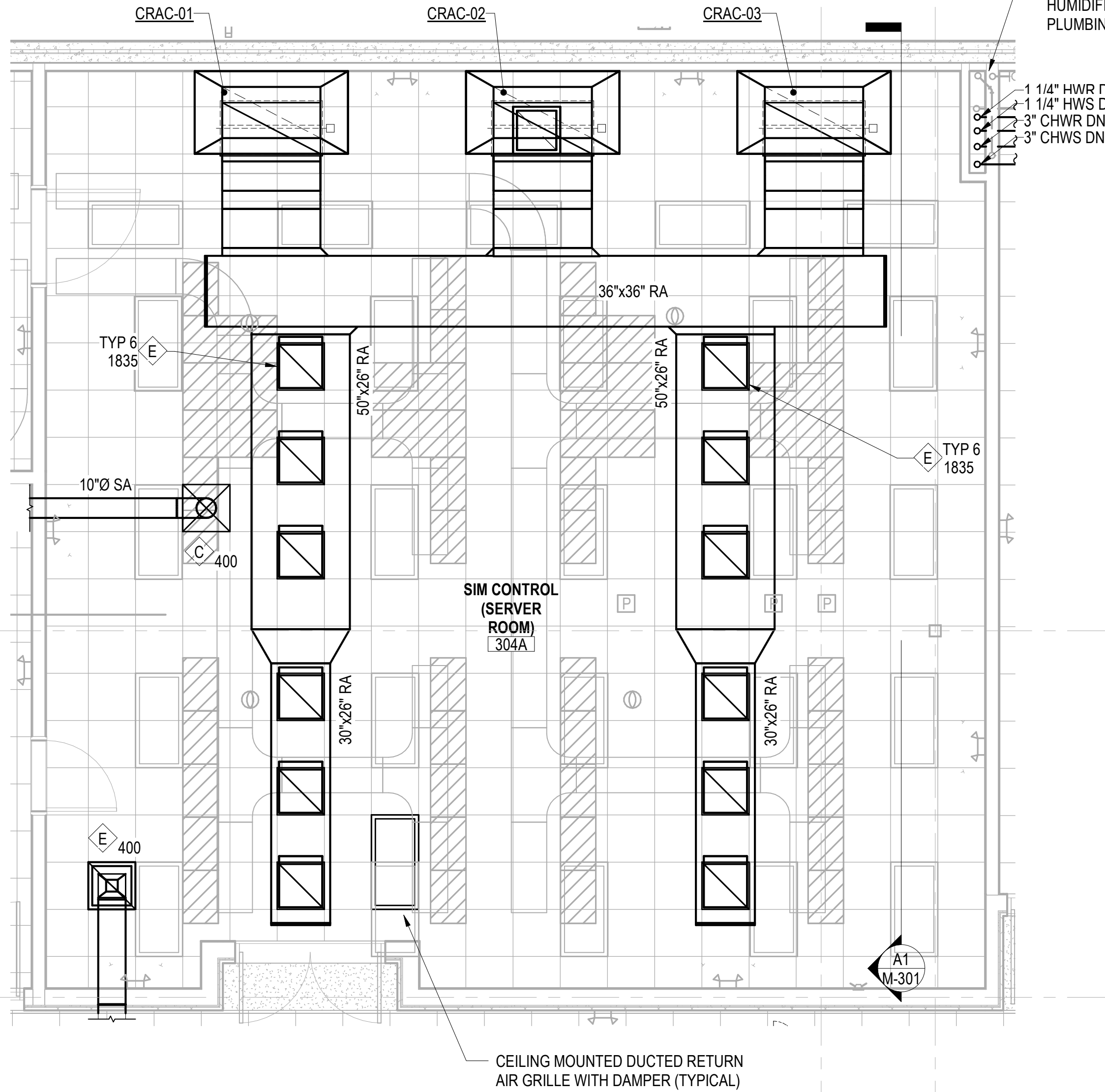
SERVER RACK, REFER TO
TELECOM DRAWINGS (TYPICAL)

A1 ENLARGED SIM CONTROL (SERVER ROOM) ROOM 304A FLOOR PLAN

SCALE: 1/4" = 1'-0"

A3 ENLARGED SIM CONTROL (SERVER ROOM) ROOM 304A REFLECTED CEILING PLAN

SCALE: 1/4" = 1'-0"



CEILING MOUNTED DUCTED RETURN
AIR GRILLE WITH DAMPER (TYPICAL)

DOMESTIC WATER FOR CRAC
HUMIDIFICATION, REFER TO
PLUMBING DRAWINGS

1 1/4" HWR DN
1 1/4" HWS DN
3" CHWR DN
3" CHWS DN

0 2'-0" 4'-0" 8'-0"
SCALE: 1/4" = 1'-0"

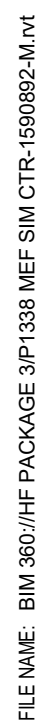


SYN	DESCRIPTION	DATE	APPR
Michael Baker INTERNATIONAL 100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED			
FOR COMMANDER NAVFAC			
ACTIVITY CONCURRED BY MCB-CL AMB VIA EMAIL			
SATISFACTORY TO DATE 12/16/21			
DES. DEM	DRWING	CHK. DEM	
PM / DM	TOWLER / ROOT		
BRANCH HEAD	SCE		
DESIGN DIRECTOR	PAUL K. SHREM		
FIRE PROTECTION	DPS		
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC DESIGN AND CONSTRUCTION MCB CAMP LEJEUNE JACKSONVILLE, NC			
P1338 II MEF SIMULATION/TRAINING CENTER REPLACEMENT MECHANICAL - ENLARGED PLANS			
SCALE: AS NOTED			
EPROJCT NO.: 1590892			
CONSTR. CONTR. NO. N40085-20-C-0059			
NAVFAC DRAWING NO. 14098514			
SHEET 287 OF 456			
M-403			
DRAWING REVISION: 25 AUGUST 2020			

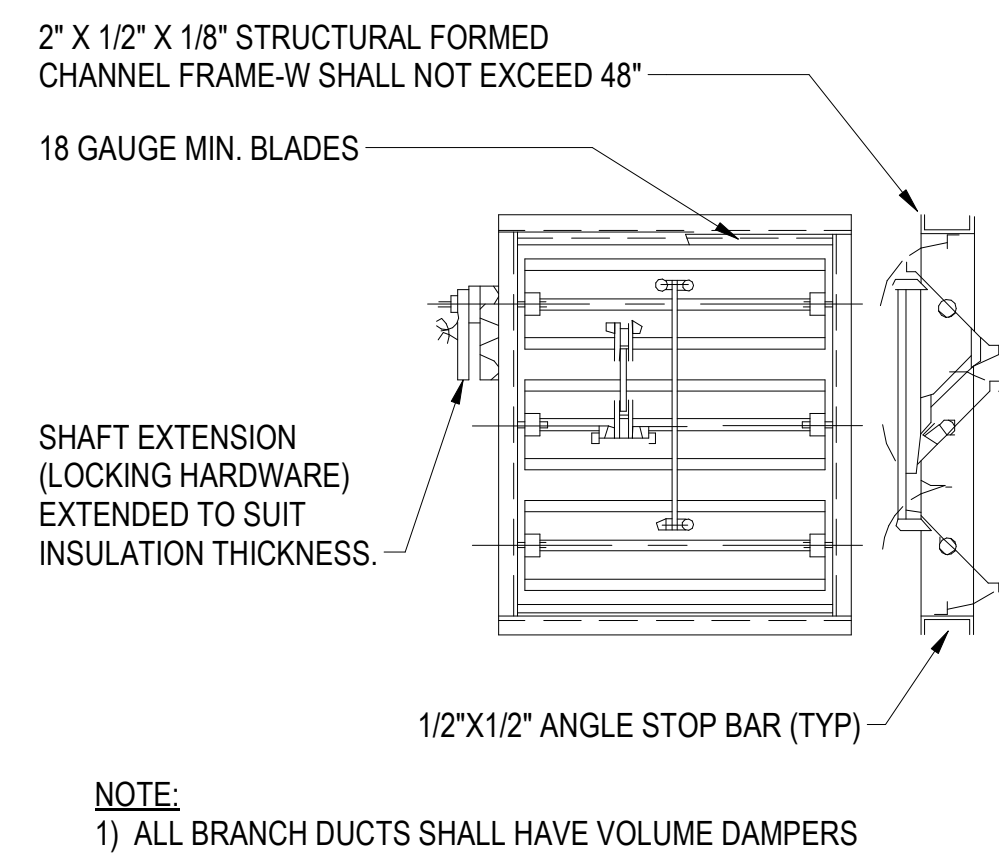
ISSUED FOR CONSTRUCTION - 16 DEC 21

UNCLASSIFIED

UNCLASSIFIED



A4 **MANUAL VOLUME DAMPER DETAIL - 12" OR MORE**
SCALE: NTS

[illegible]

FILE NAME: BIM 360/HF PACKAGE 3P1338 - MEF SIM CTR-1590892-M.rvt
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GENERAL NOTES:

1. ANCHORAGE TO CONCRETE WALL OR SOLID BLOCK, USE HILTI KWIK BOLT 3 EXPANSION ANCHORS 3/8" Ø @ 3" OC (MIN)
2. ANCHORAGE TO HOLLOW CONCRETE BLOCK, USE HILTI HLC SLEEVE ANCHOR 3/8" Ø @ 3" OC (MIN)
3. ANCHORAGE TO METAL STUDS & GYP BOARD WALLS, USE CARBON STEEL THROUGH BOLT 3/8" (MIN). STUD WALL CONDITION NOT SHOWN BUT SIMILAR.
4. PROVIDE CARBON STEEL STRUCTURAL STEEL ANGLES, BARS AND SHEET PER ASTM A36.
5. WELD PER AMERICAN WELDING SOCIETY D1.1, STRUCTURAL STEEL.
6. GALVANIZED ANGLES AND ANCHORS MUST BE USED ON THE EXTERIOR SIDE OF EXTERIOR WALLS.

WALL (CONC OR BLOCK)

SECURE SIDE

NON-SECURE SIDE

HINGED ACCESS DOOR
12" x 12" (MIN). INSTALL IN
POSITION TO ALLOW FOR
INSPECTION OF INTRUSION
PREVENTION BARS

NOTES:

1. INTRUSION PREVENTION BARS SHALL BE PROVIDED FOR ANY PENETRATION LARGER THAN 96 in² OF ANY SECURE AREA BOUNDARY WALLS OR ROOFS IN SECURE AREA.

B1

SECURE AREA DUCT WALL PENETRATION DETAIL

SCALE: NTS

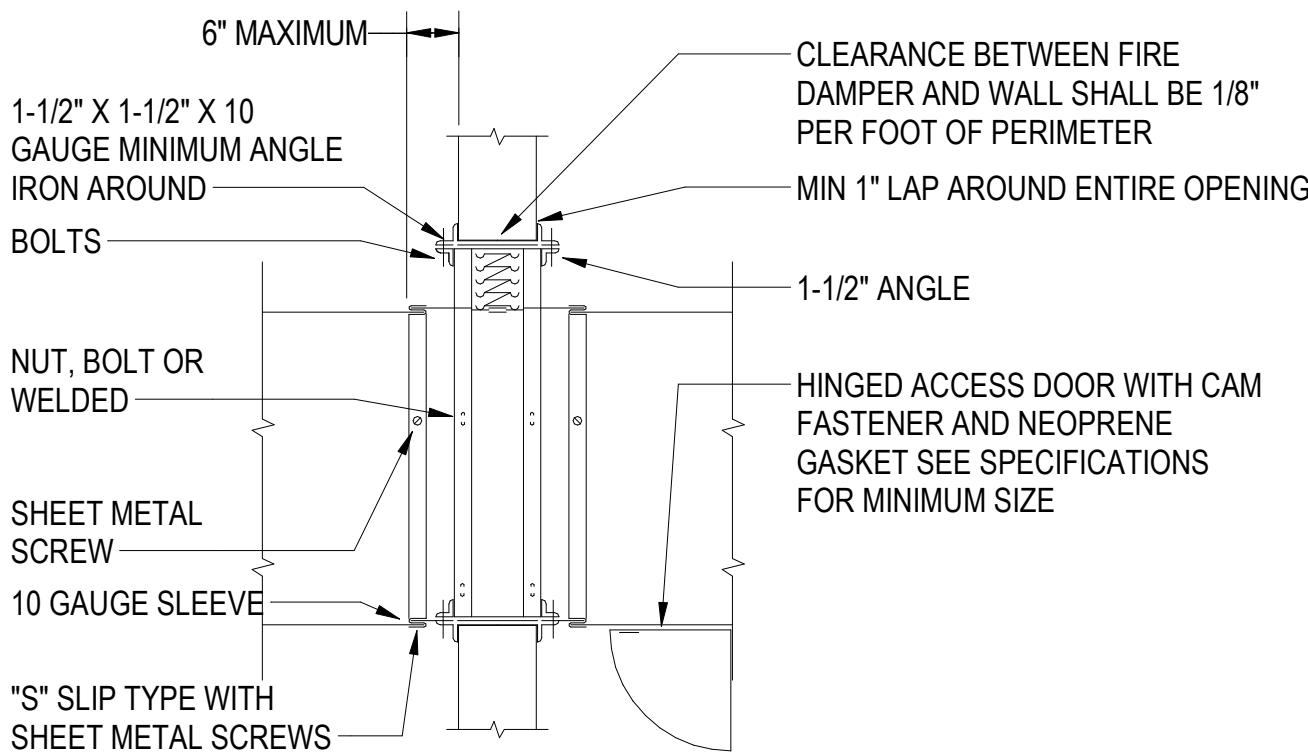
NOTES:

1. THIS DETAIL IS NOT APPLICABLE TO FIRE OR SMOKE RATED WALLS, REFER TO LIFE SAFETY DRAWINGS FOR LOCATION OF ALL FIRE/SMOKE RATED WALLS.
2. DUCTWORK PENETRATING FIRE RATED WALLS SHALL BE MIN 16 GAUGE THICK.
3. WALL PENETRATIONS OF RATED WALLS NOT INDICATED AS REQUIRING DAMPERS ON THE PLANS SHALL BE PROVIDED WITH FIRESTOPPING IN ACCORDANCE WITH SPECIFICATION SECTION 07 84 00 FIRESTOPPING.
4. STEEL COLLAR IS REQUIRED ONLY IN LOCATIONS WHERE THE WALL IS VISIBLE FROM THE SPACE, NOT REQUIRED WHERE PENETRATING WALLS ABOVE FINISHED CEILINGS.

C3

DUCT PENETRATION THRU WALL DETAIL

SCALE: NTS



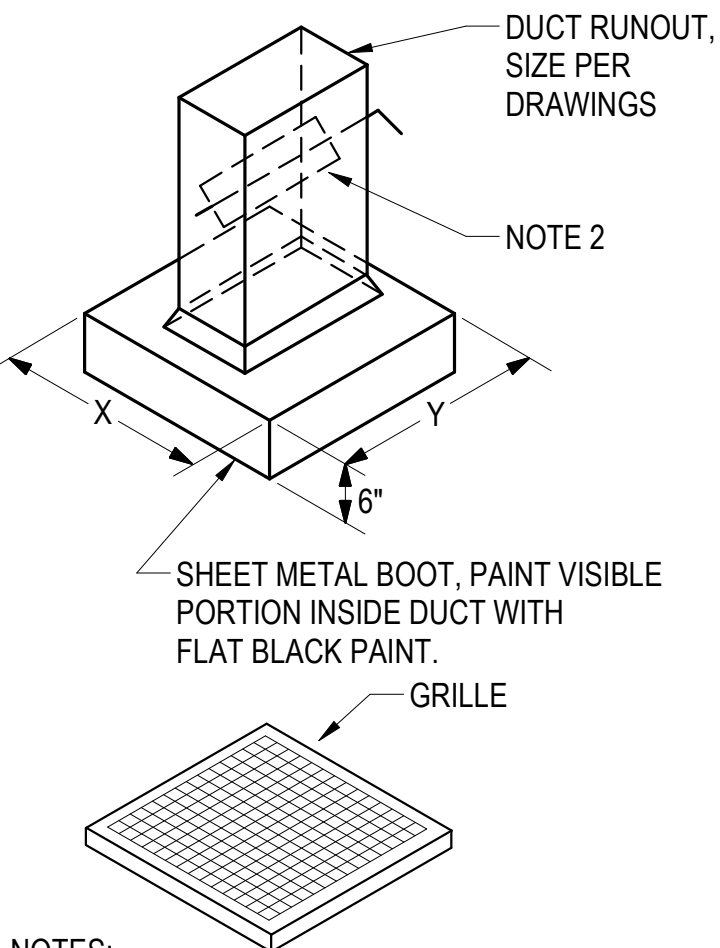
NOTE:

1. PROVIDE FIRE DAMPER FOR ROUND DUCT OR USE TRANSITION FOR ROUND TO SQUARE DUCT.

B3

FIRE DAMPER DETAIL

SCALE: NTS



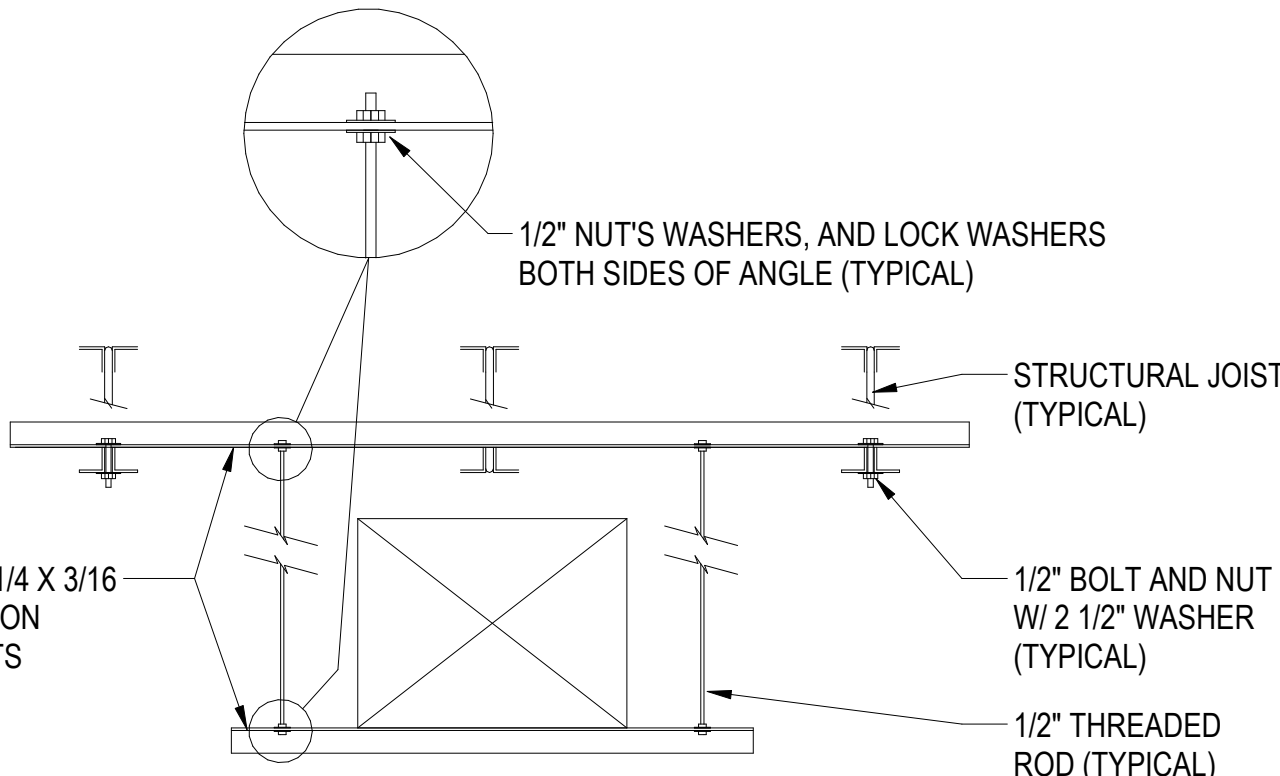
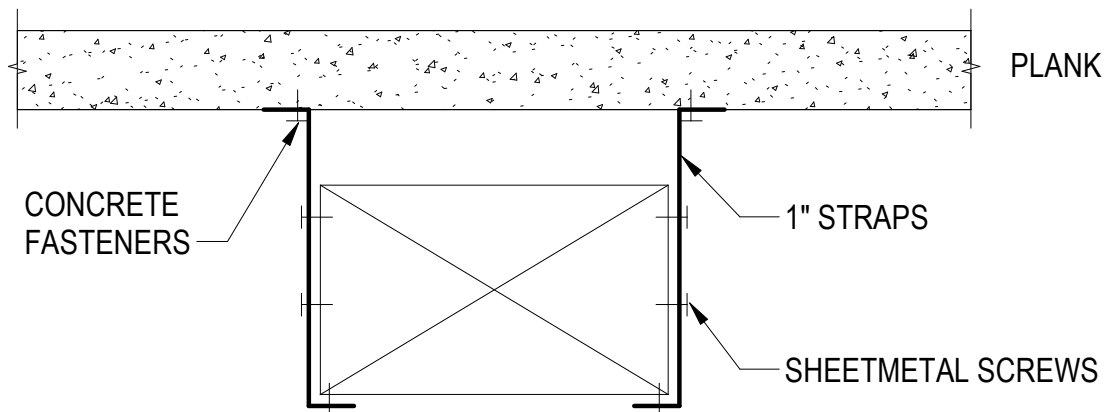
NOTES:

1. REFER TO GRILL, REGISTER AND DIFFUSER SCHEDULE FOR X & Y DUCT NECK SIZE CONNECTION TO RETURN GRILLE/REGISTER.
2. WHERE CFM IS SHOWN ON PLANS, DAMPER SHALL BE PLACED IN RETURN/EXHAUST DUCTWORK IN LOCATION SHOWN ON PLANS

C4

DUCTED RETURN AIR CONNECTION DETAIL

SCALE: NTS



NOTE:

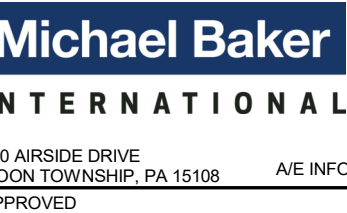
ALL DUCT SUPPORTS PER SMACNA.

A4

DUCT HANGER DETAIL

SCALE: NTS

DATE	APPR
SYN	DESCRIPTION



FOR COMMANDER NAVFAC		
ACTIVITY		
CONCURRED BY MCB-CL AMB VIA EMAIL		
SATISFACTORY TO DATE		12/16/21
DES. DEM.	DRW. A/R	CHK. ENB.
A / DM	TOWLER / ROOT	
BRANCH HEAD	SCE	
DESIGN DIRECTOR	PAUL K. SHREM	
FIRE PROTECTION	DPS	

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND	JACKSONVILLE, NC
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC	NORFOLK, VA
ATLANTIC DESIGN AND CONSTRUCTION	
MCB CAMP LEJEUNE	
P1338 II MEF SIMULATION/TRAINING CENTER REPLACEMENT	
MECHANICAL - DETAILS	

SCALE:	AS NOTED
EPROJECT NO.:	1590892
CONSTR. CONTR. NO.	N400085-20-C-0059
NAVFAC DRAWING NO.	14098516
SHEET	289 OF 456

M-502

DRAWING REVISION: 25 AUGUST 2020

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FILE NAME: BIM 360/HF PACKAGE 3P1338 - MEF SIM CTR-1590892-M.rvt

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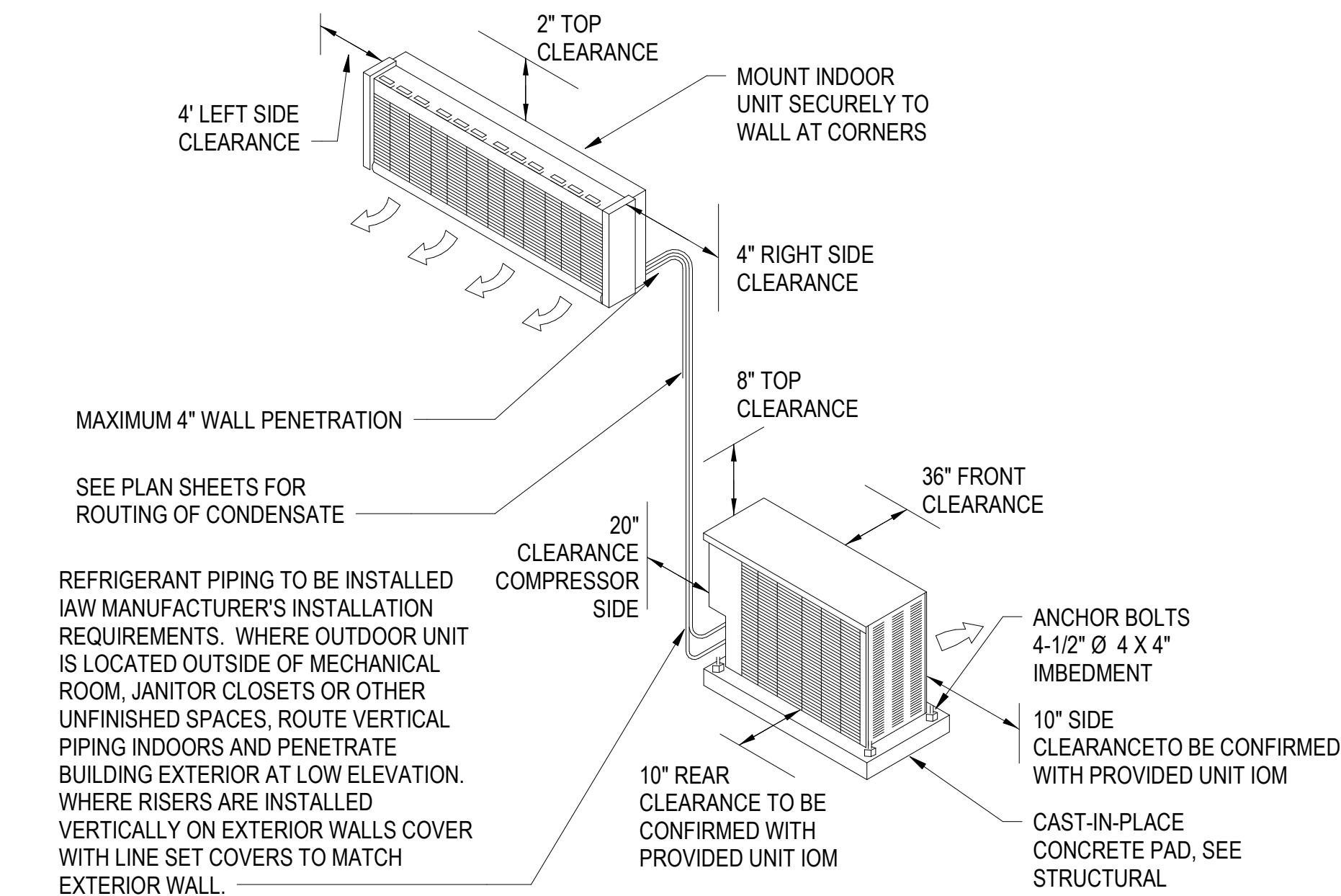
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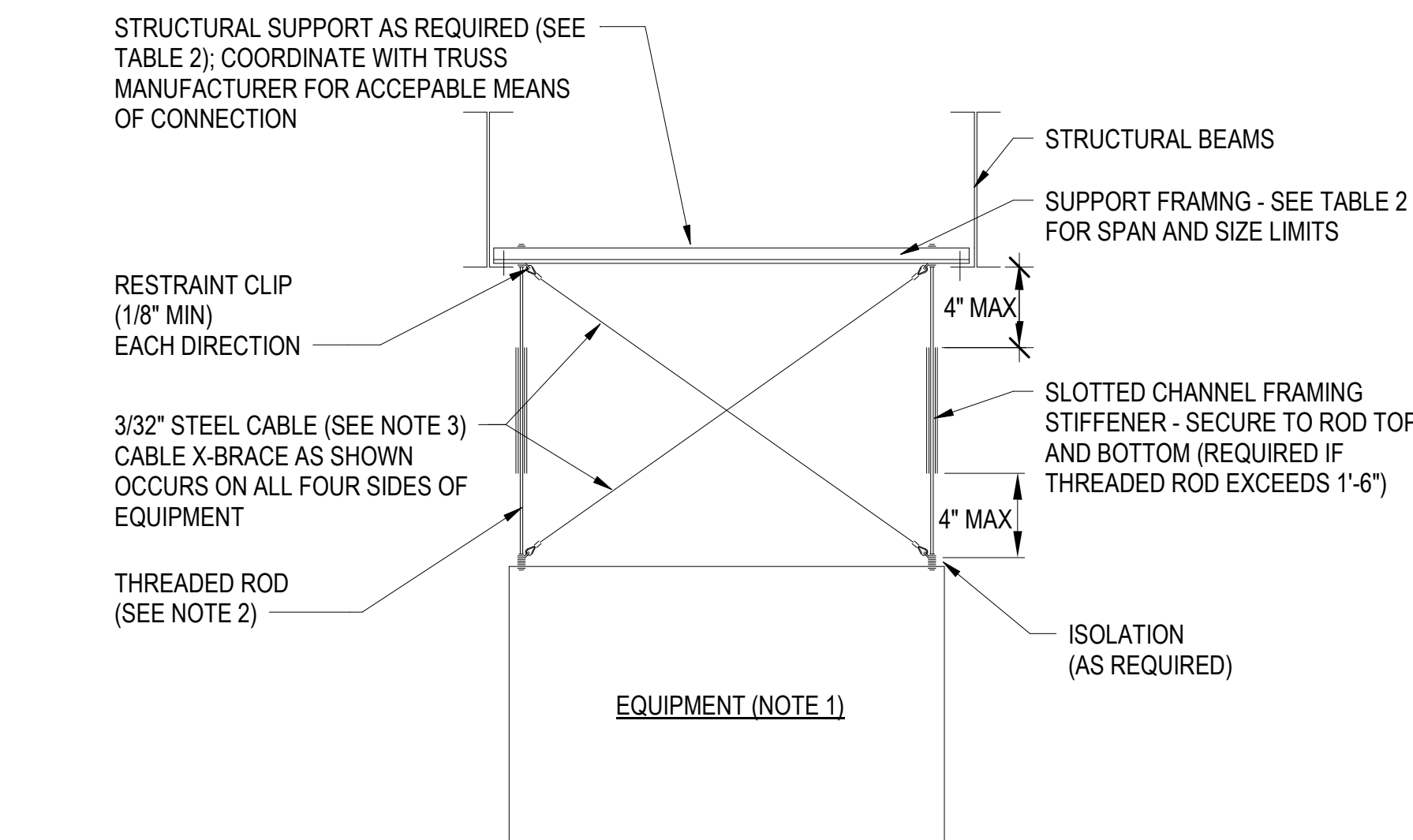
C

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C1 SPLIT SYSTEM AIR CONDITIONING OR HEAT PUMP UNIT (DUCTLESS)
SCALE:NTS



NOTES:
1. THIS DETAIL APPLIES TO ALL OVERHEAD MECHANICAL EQUIPMENT WEIGHING 31 LBS OR MORE. (DOES NOT APPLY TO DISTRIBUTION SYSTEMS SUCH AS PIPING AND DUCTWORK). ATFP BRACING SYSTEM, INCLUDING BUT NOT LIMITED TO FITTED COMPONENTS, RODS, ANGLES, CABLE AND HARDWARE, MUST BE FURNISHED THROUGH A SINGLE MANUFACTURER, TAILORED TO EACH APPLICATION.

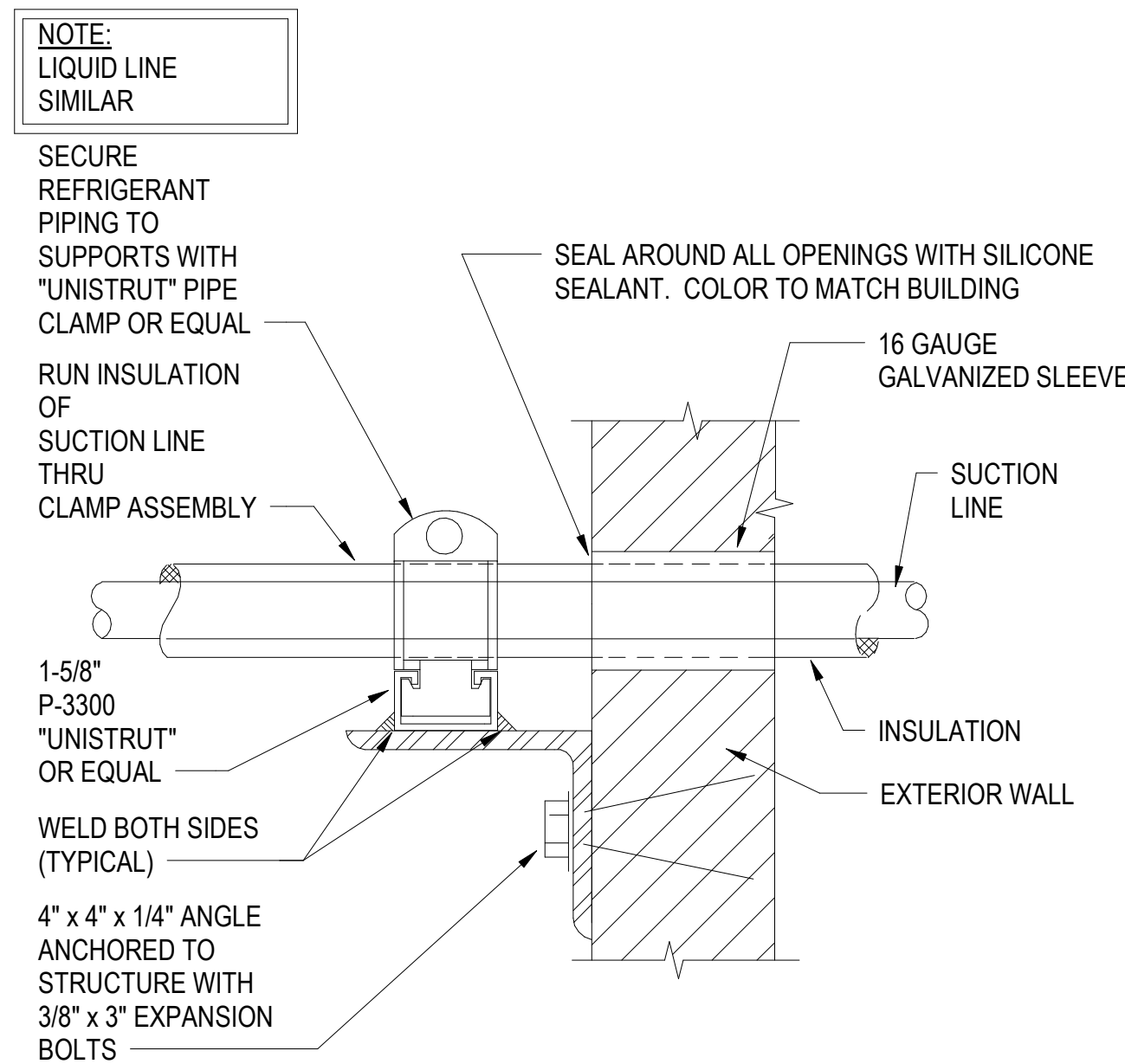
2. THREADED ROD DIAMETER MUST BE SELECTED TO SUPPORT 1.5X THE EQUIPMENT TOTAL INSTALLED WEIGHT BASED ON TABLE 1 BELOW.

3. WIRE ROPE/CABLE TO BE INSTALLED WITH TWO CABLES ON EACH CORNER OF EQUIPMENT TO PREVENT LATERAL SWAY RESISTANCE AT A MINIMUM OF 0.5X THE EQUIPMENT WEIGHT. CABLE MUST BE ASTM A603 PRE-STRETCHED, CLASS C GALV COATING. A MINIMUM OF TWO FERRULE CLAMPS ARE REQUIRED ON EACH END OF CABLE. INSTALL CABLE AT 45-DEGREE SLOPE. WHERE INTERFERENCE IS PRESENT, THE SLOPE MAY BE A MINIMUM OF 30 DEGREES OR A MAXIMUM OF 60 DEGREES PER VISCMA 412.

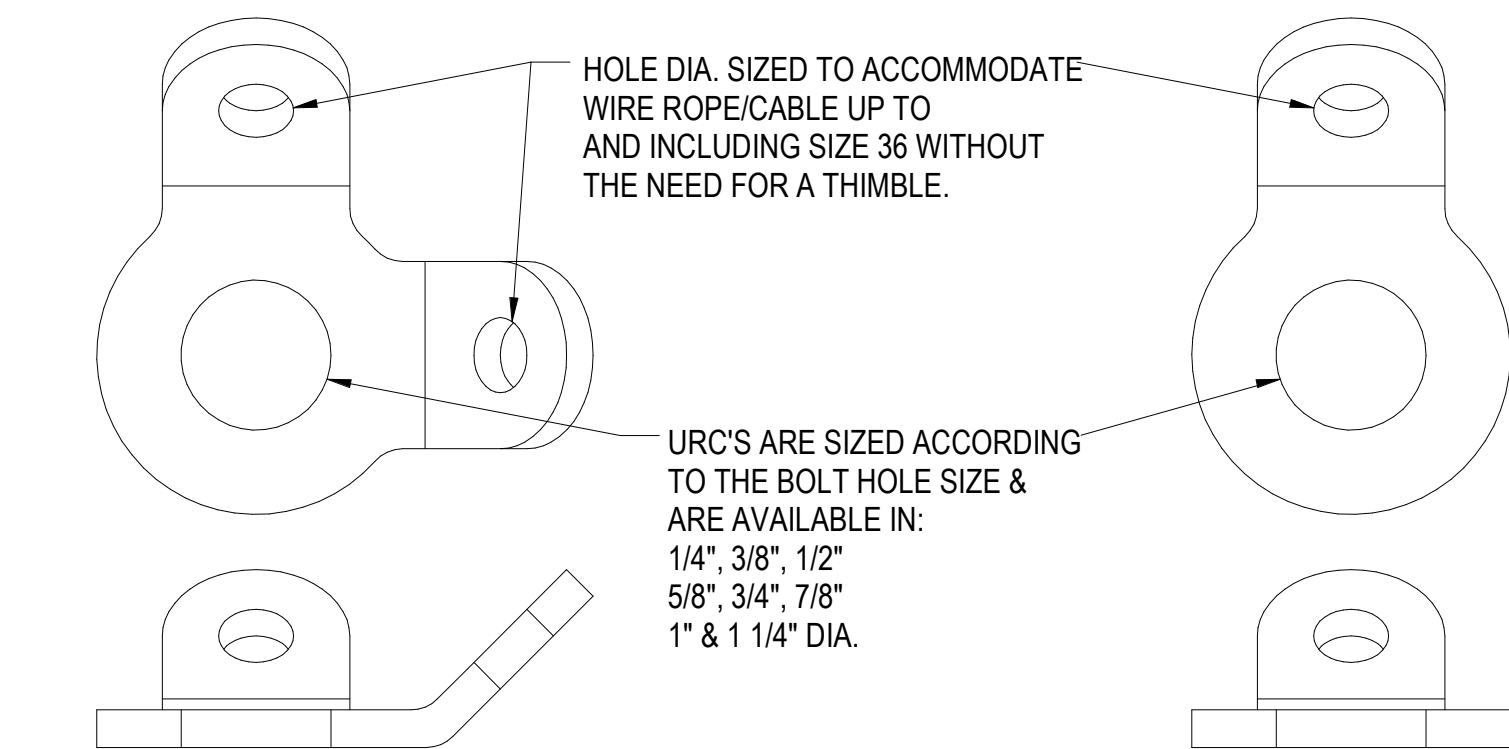
TABLE 1 THREADED ROD	
ROD DIA. (IN)	MAX LOAD (LBS)
3/8	600
1/2	1100
5/8	1800
3/4	2700
7/8	3750
1	4950

TABLE 2 SUPPORT ANGLE MAX LOADING (LBS)		
SPAN LENGTH (FT)	2x2x1/4 ANGLE	2.5x2.5x1/4 ANGLE
3'	1200	1940
4'	1150	1850
5'	1050	1750
6'	900	1640
7'	650	1400
8'	300	1050

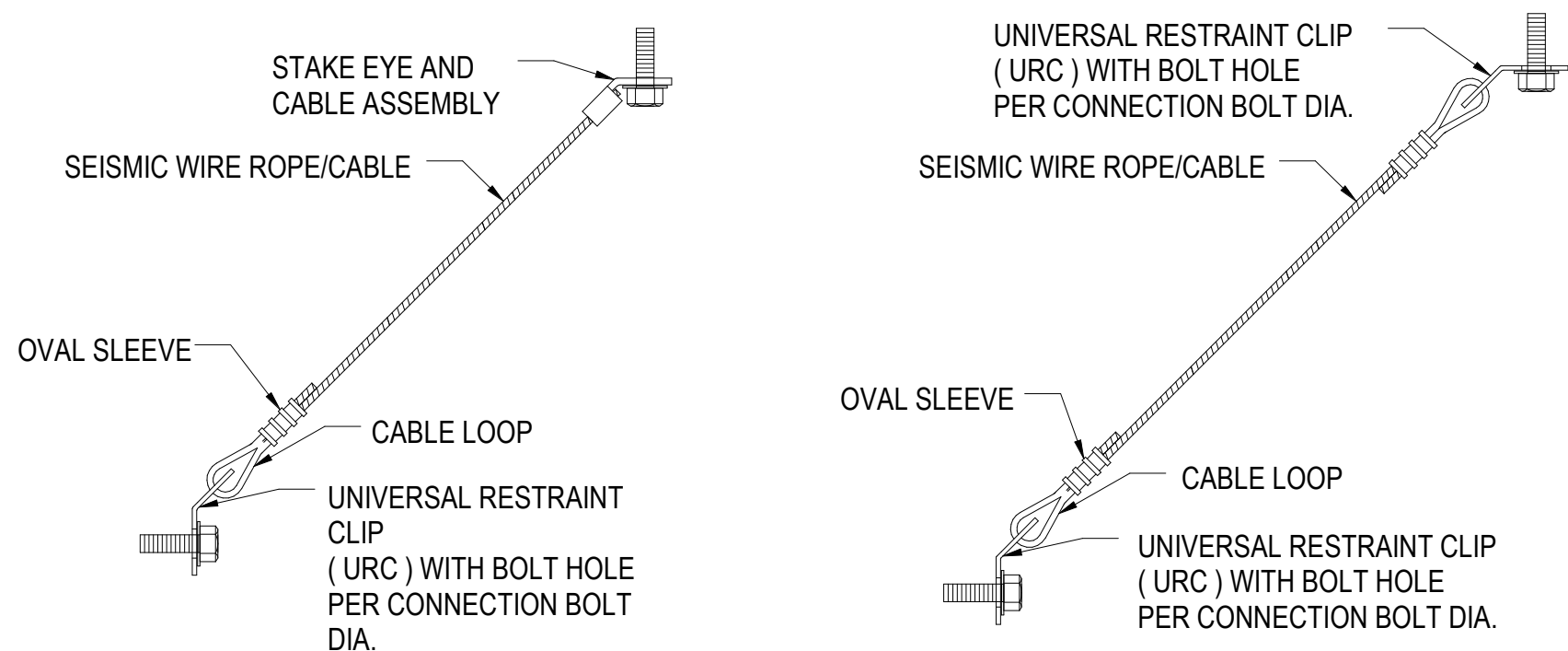
A1 ATFP EQUIPMENT BRACING DETAIL
SCALE:NTS



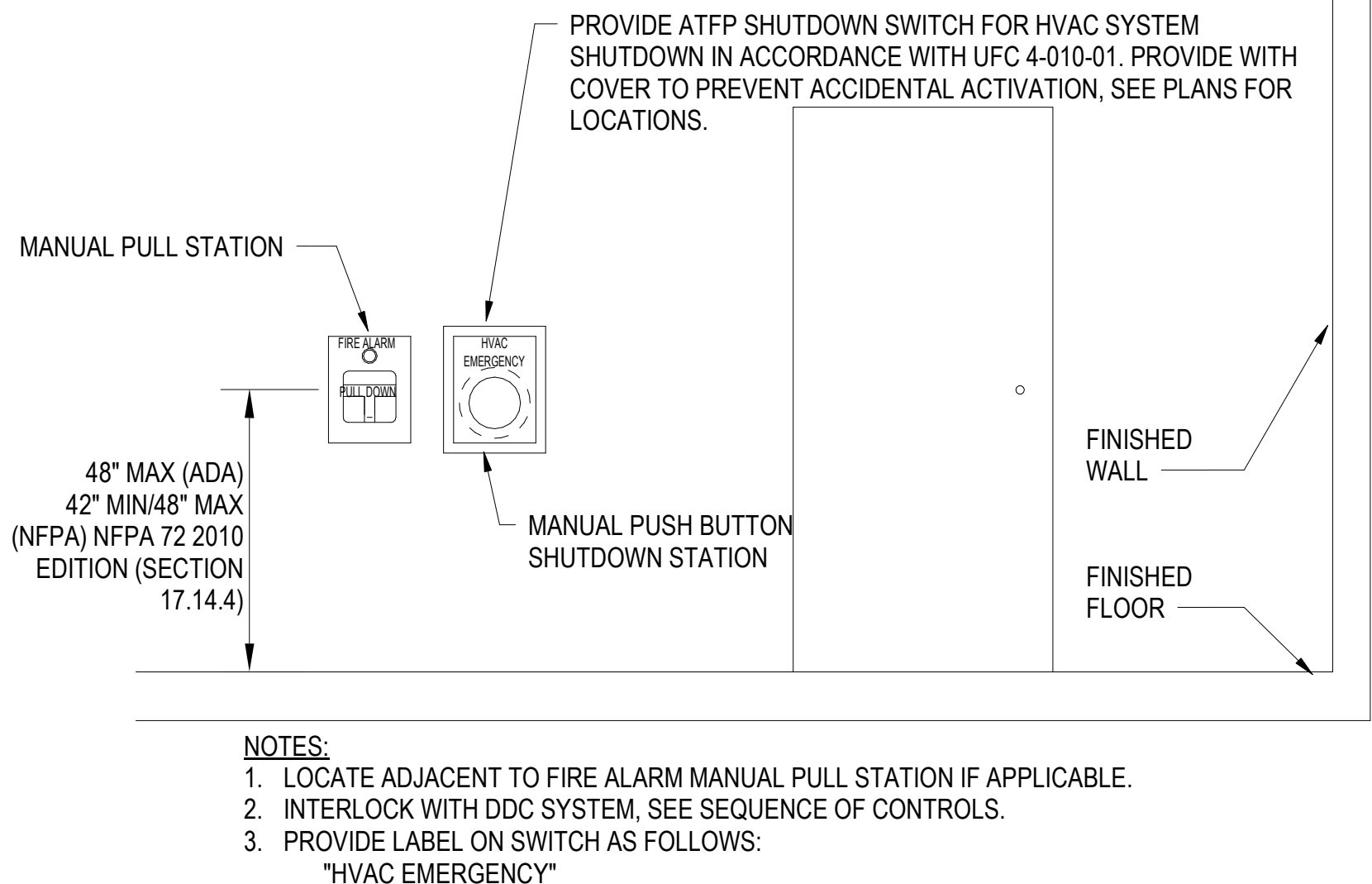
C2 EXTERIOR WALL PENETRATION DETAIL
SCALE:NTS



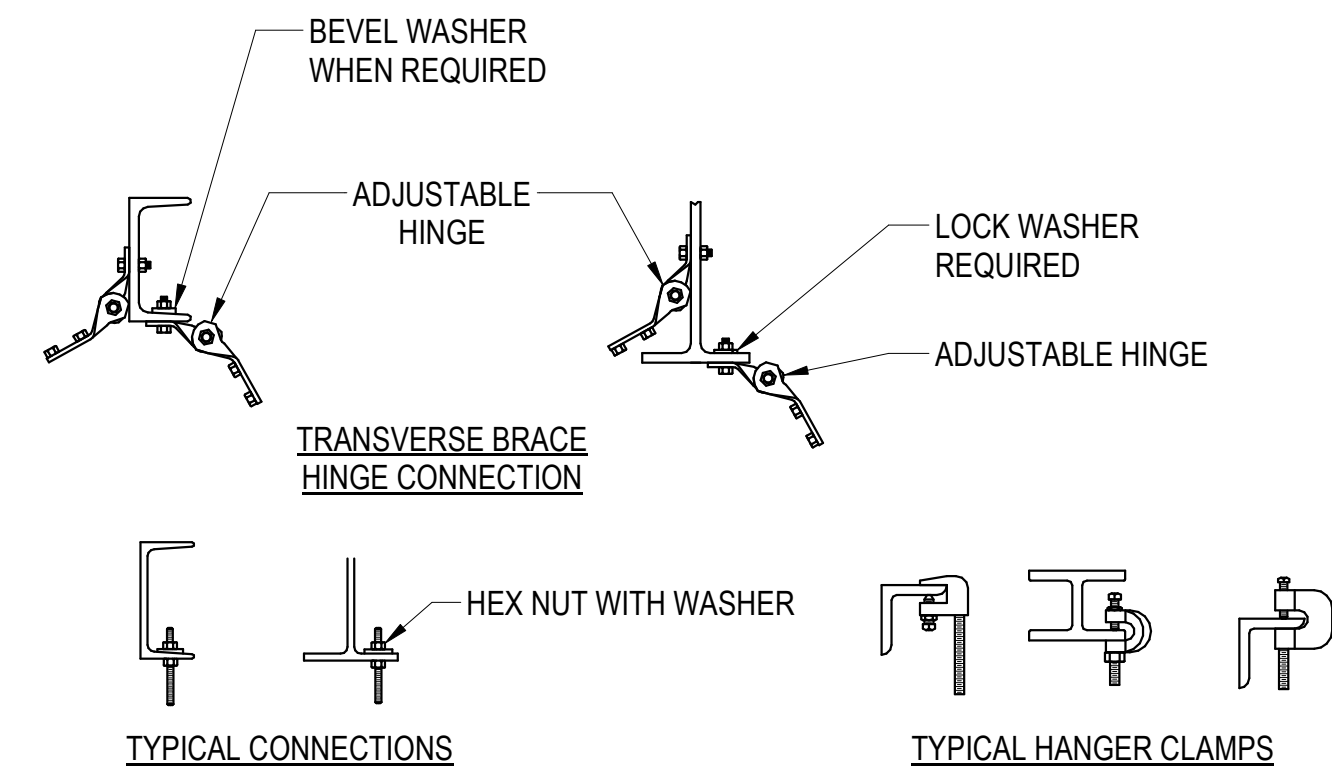
B2 UNIVERSAL RESTRAINT CLIP (URC)
SCALE:NTS



A2 TYPICAL CABLE ASSEMBLY
SCALE:NTS



C4 HVAC SHUTDOWN STATION INSTALLATION DETAIL
SCALE:NTS



B4 TYPICAL SUPPORT CONNECTION
SCALE:NTS

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DATE	APPR
SYN	DESCRIPTION



Michael Baker International
100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108
A/E INFO
APPROVED

FOR COMMANDER NAVFAC			
ACTIVITY			
CONCURRED BY MCB-CL AMB VIA EMAIL			
SATISFACTORY TO DATE 12/16/21			
DESIGN	DRWING	CHK	DATE
PM / DM	TOWLER / ROOT		
BRANCH HEAD	SCE		
DESIGN DIRECTOR	PAUL K. SHREM		
FIRE PROTECTION	DPS		

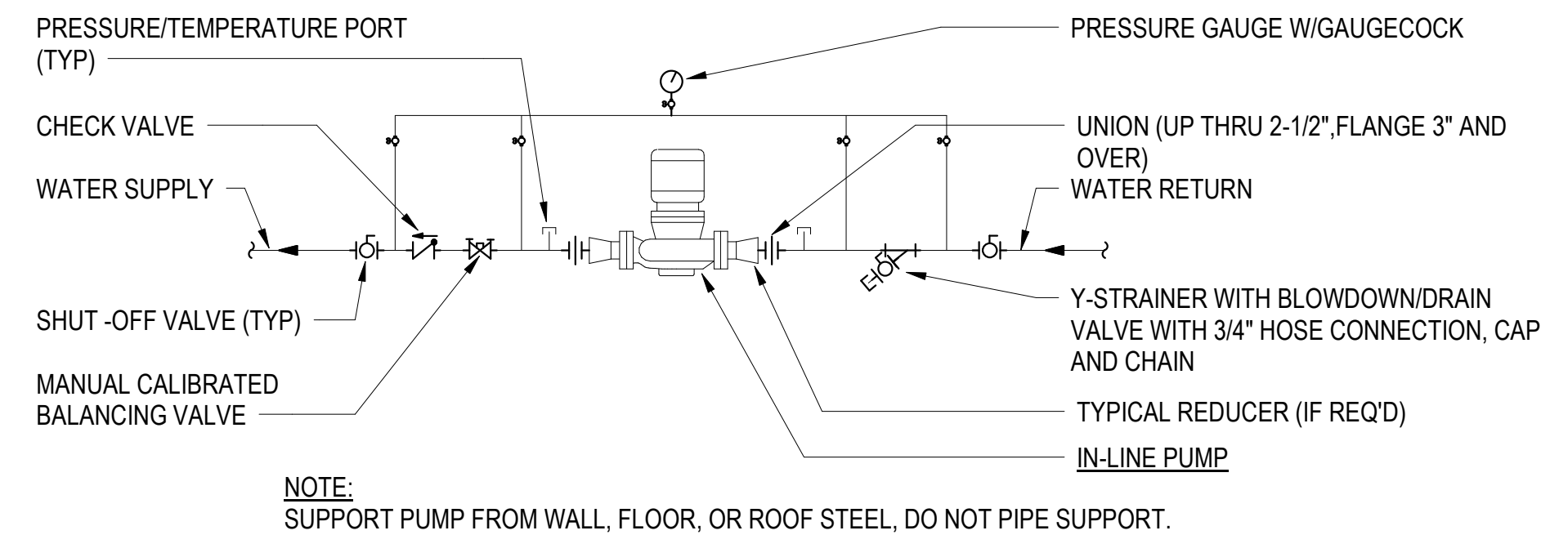
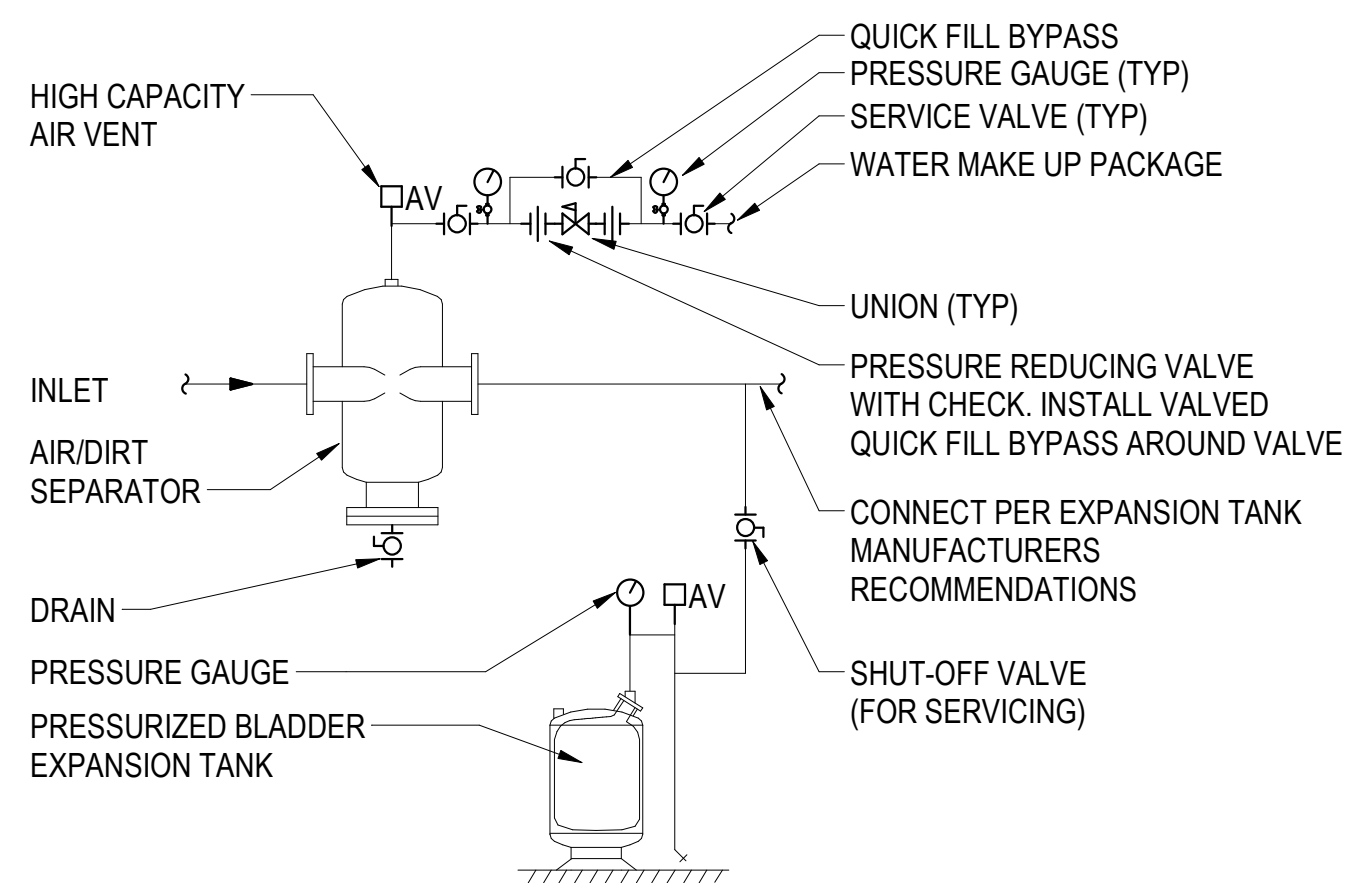
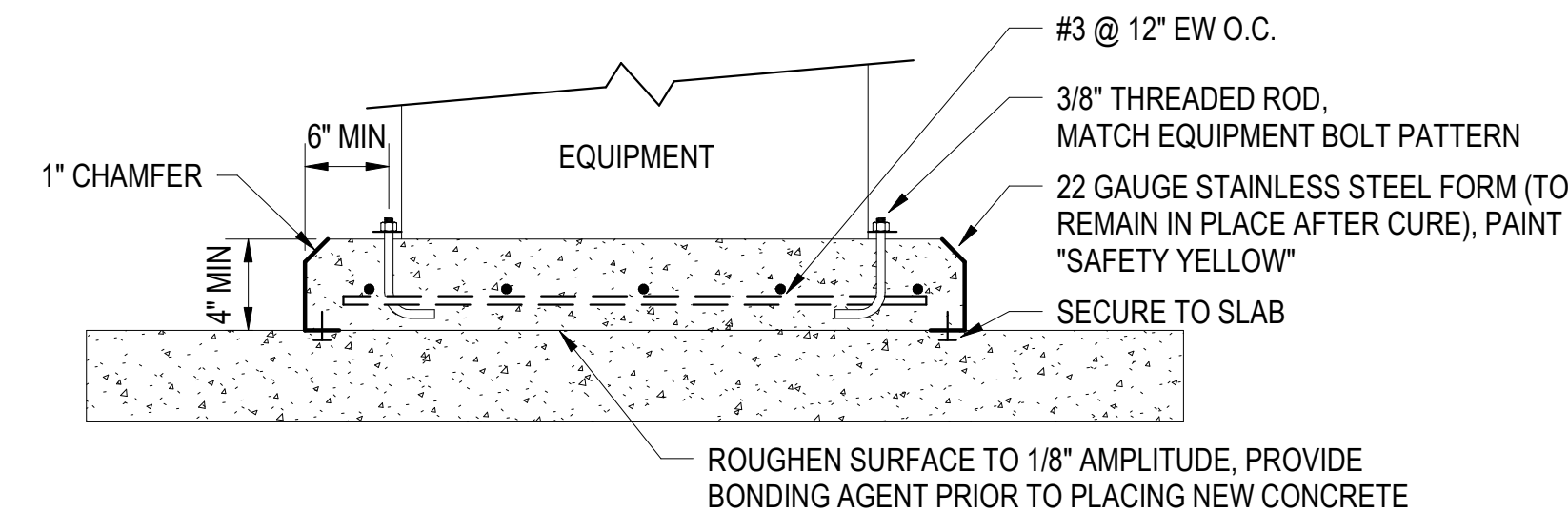
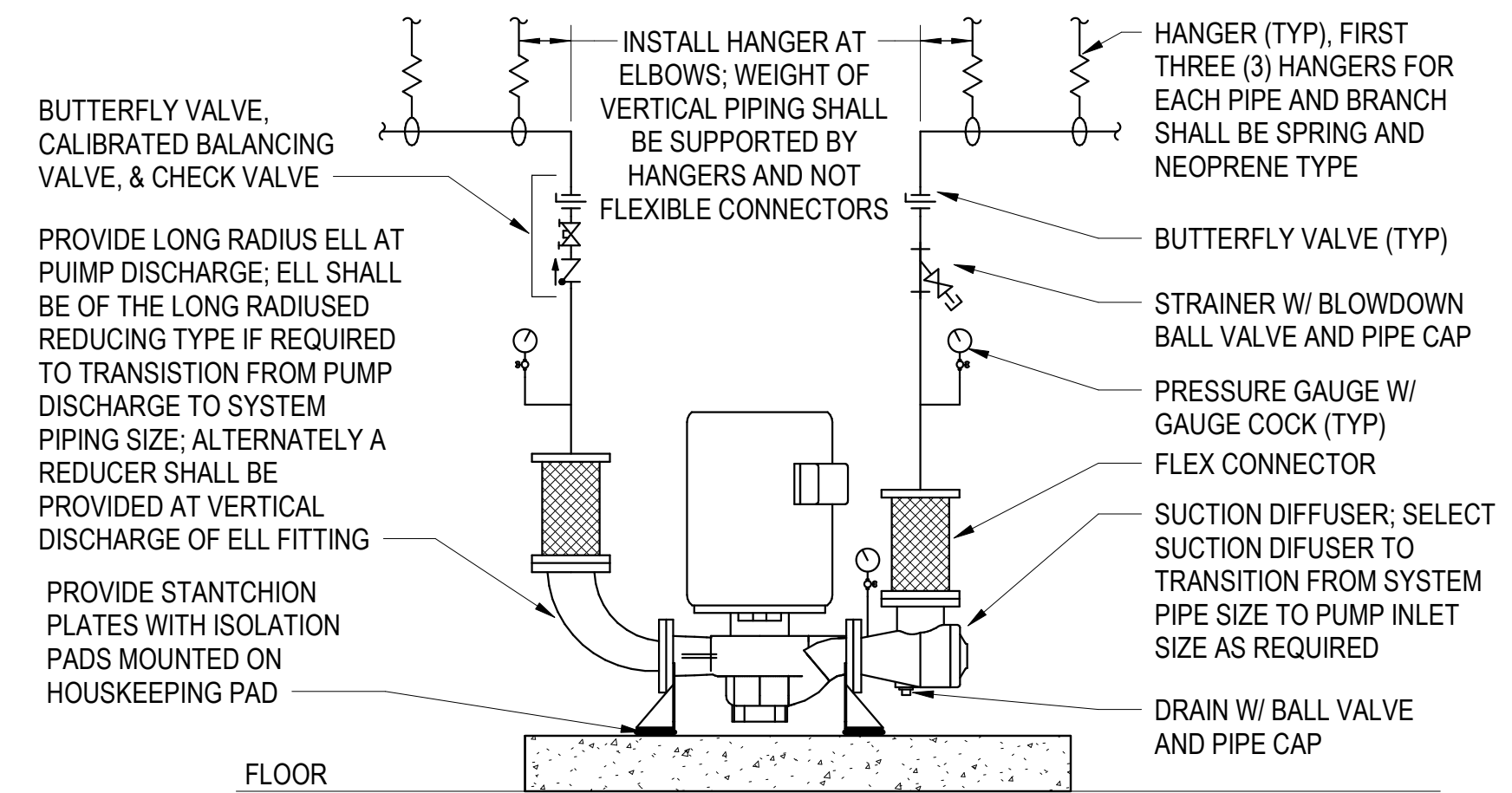
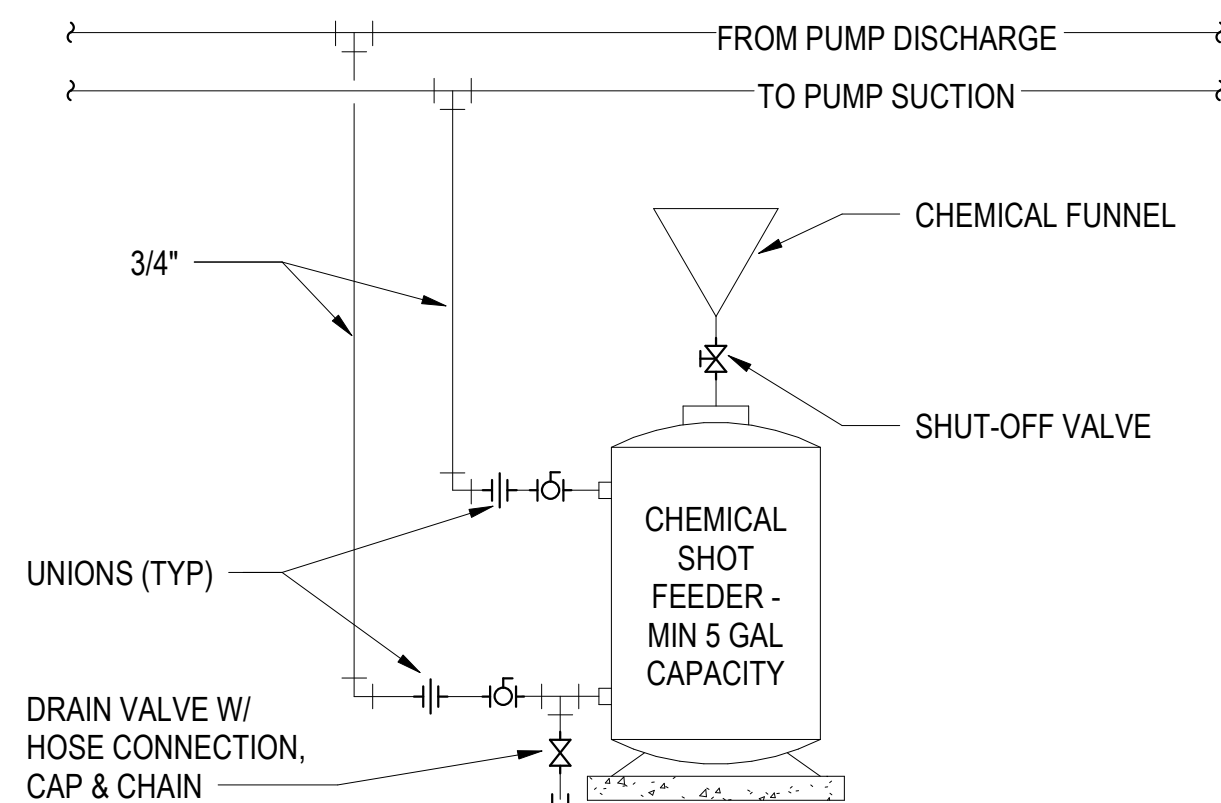
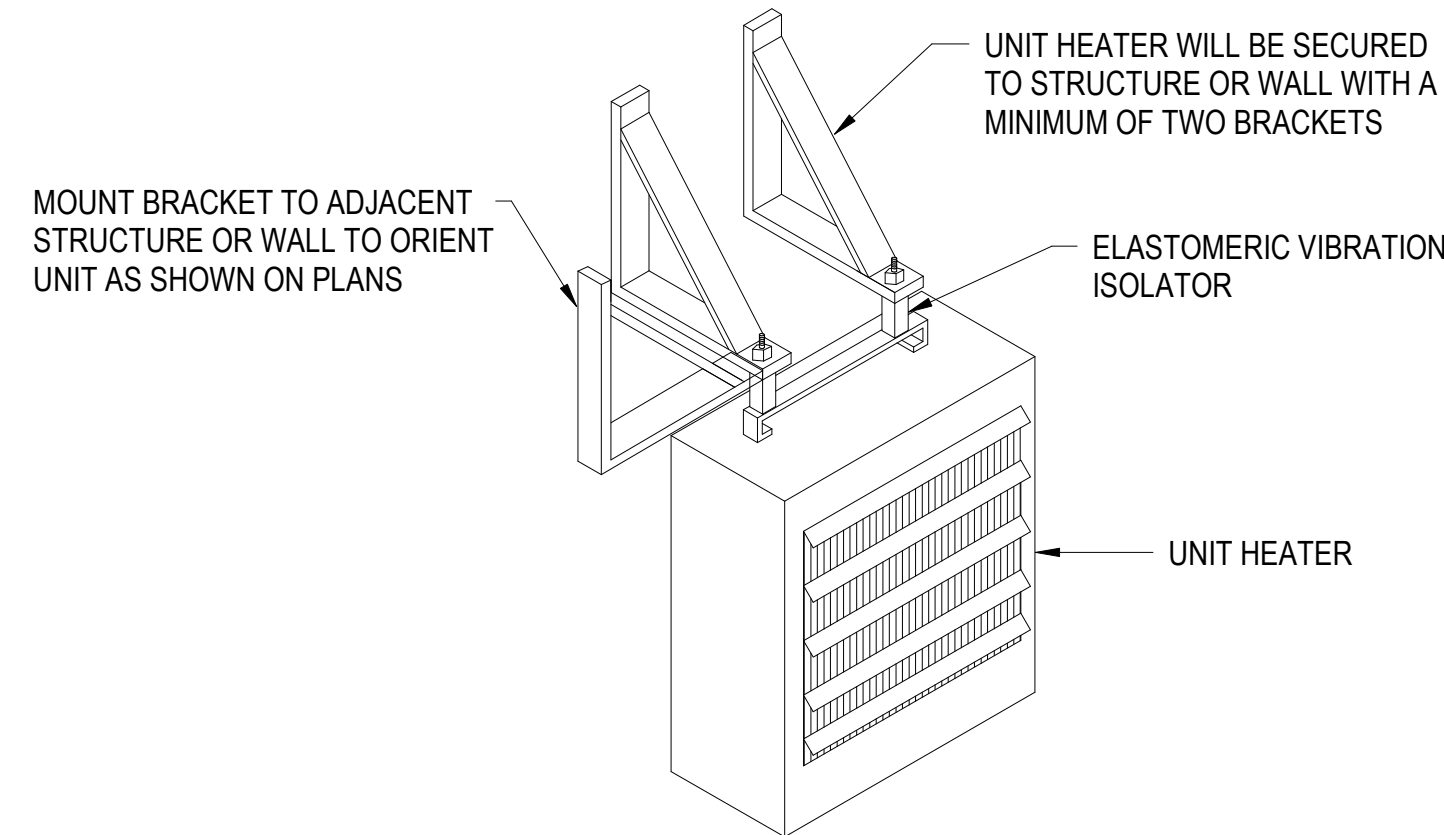
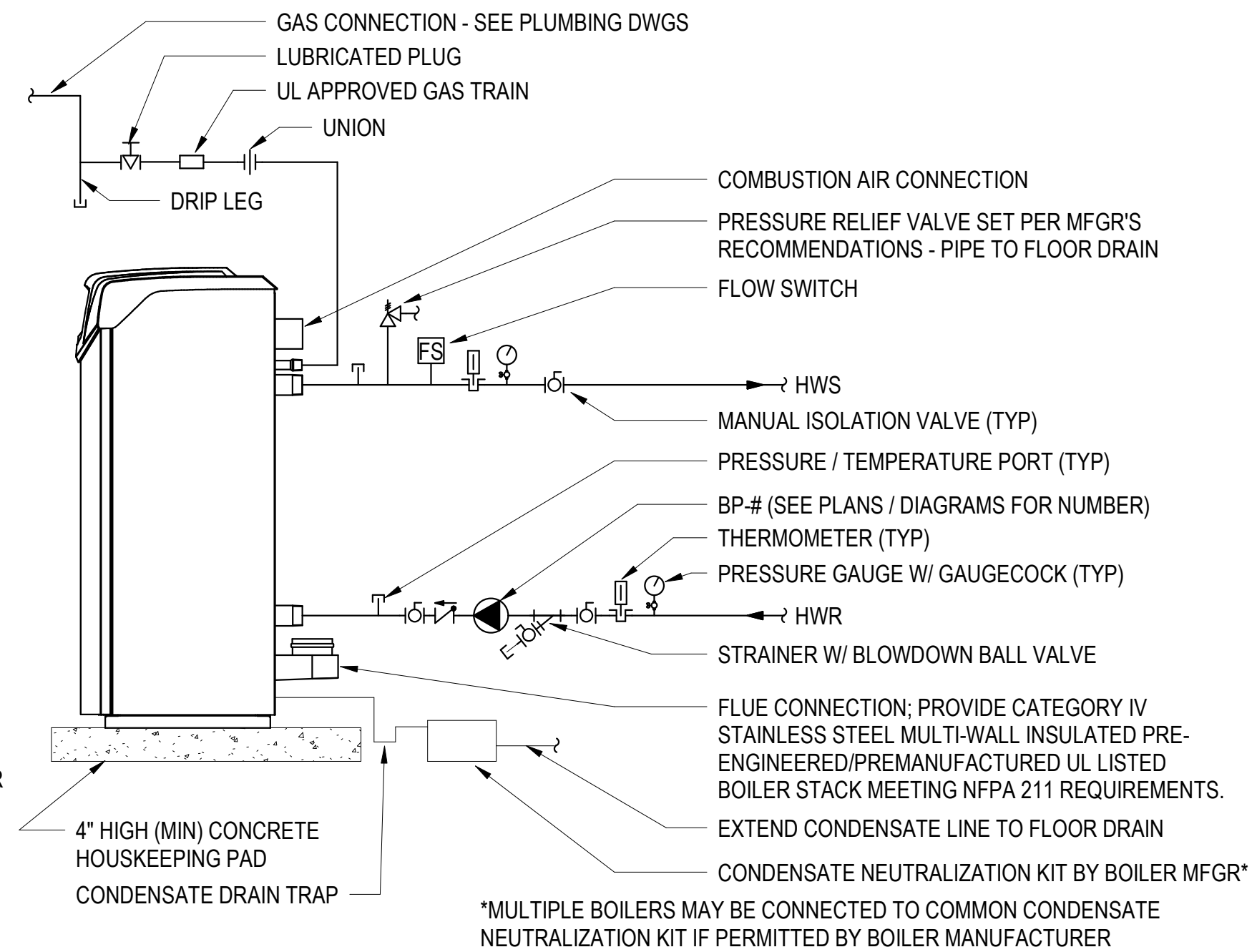
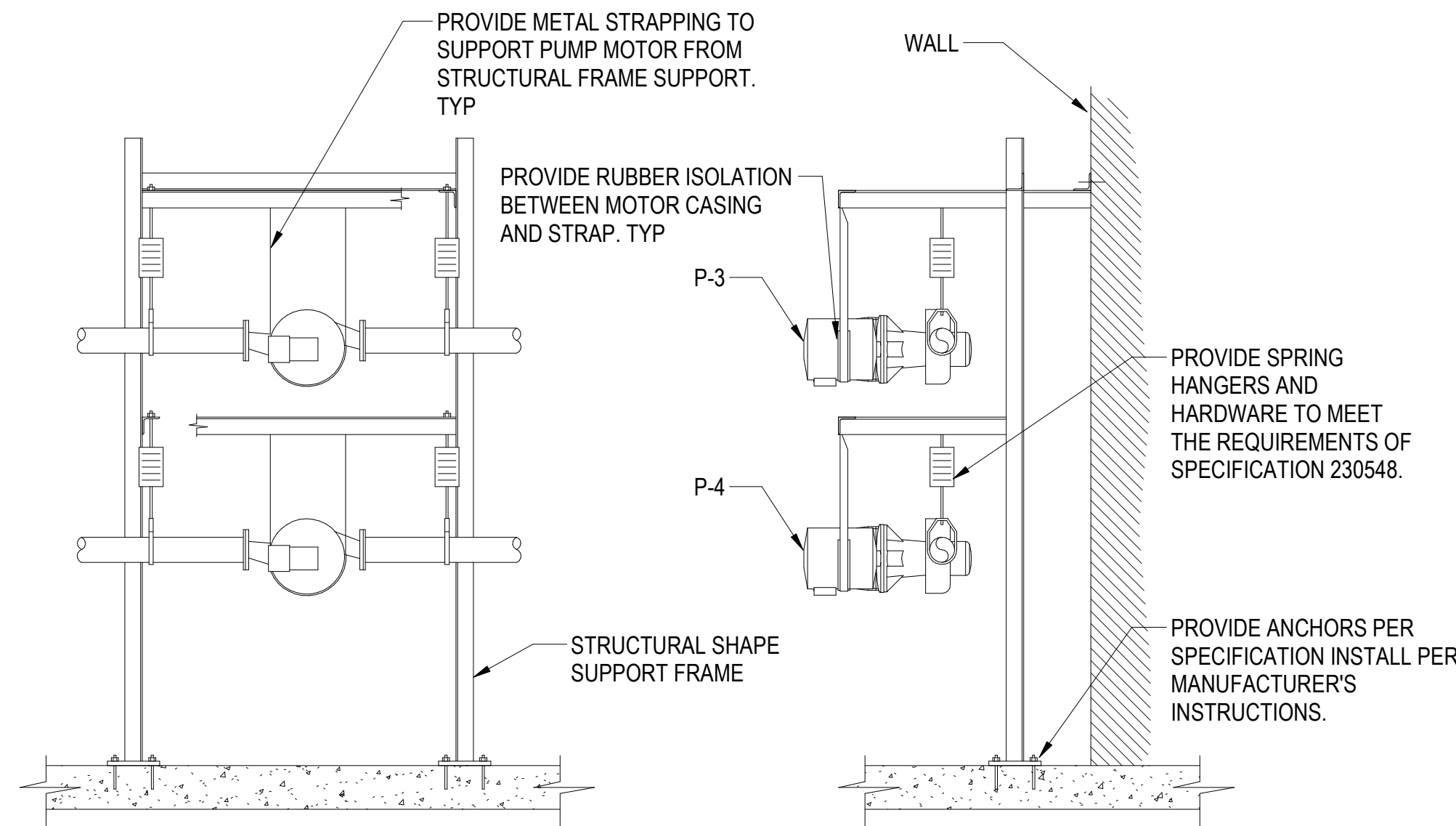
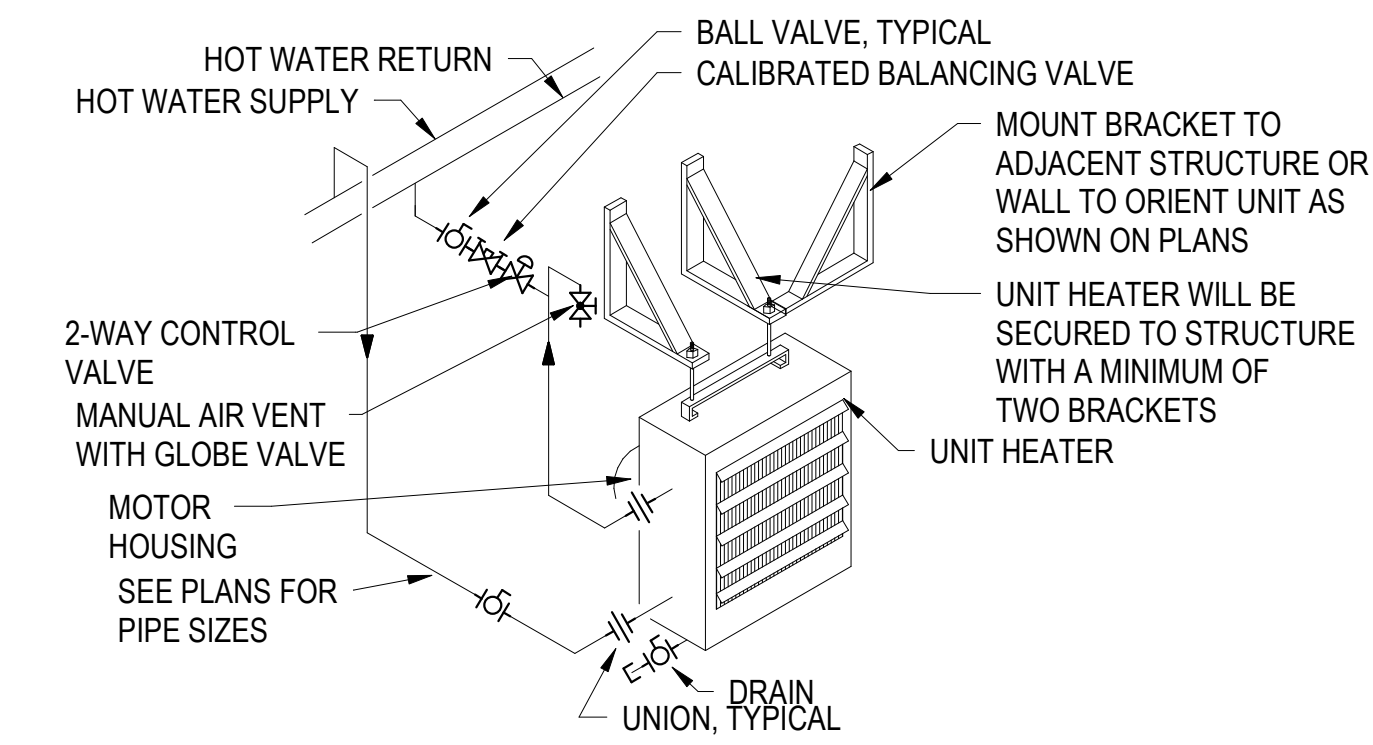
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC
ATLANTIC DESIGN AND CONSTRUCTION
MCB CAMP LEJEUNE
JACKSONVILLE, NC
P1338 II MEF SIMULATION/TRAINING CENTER
REPLACEMENT
MECHANICAL - DETAILS

SCALE:	AS NOTED
PROJECT NO.:	1590892
CONSTR. CONTR. NO.	N40085-20-C-0059
NAVFAC DRAWING NO.	14098518
SHEET	291 OF 456

M-504

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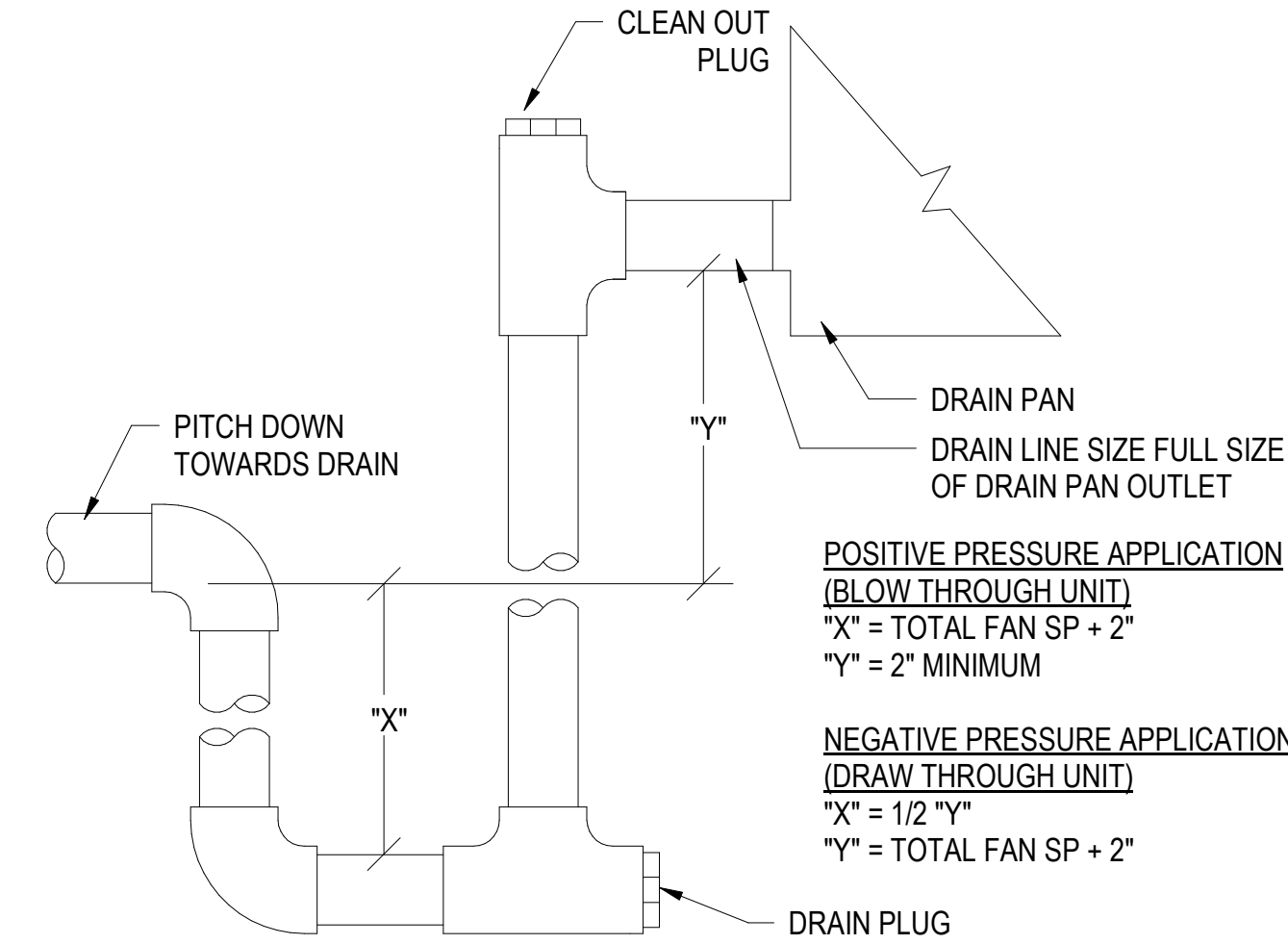
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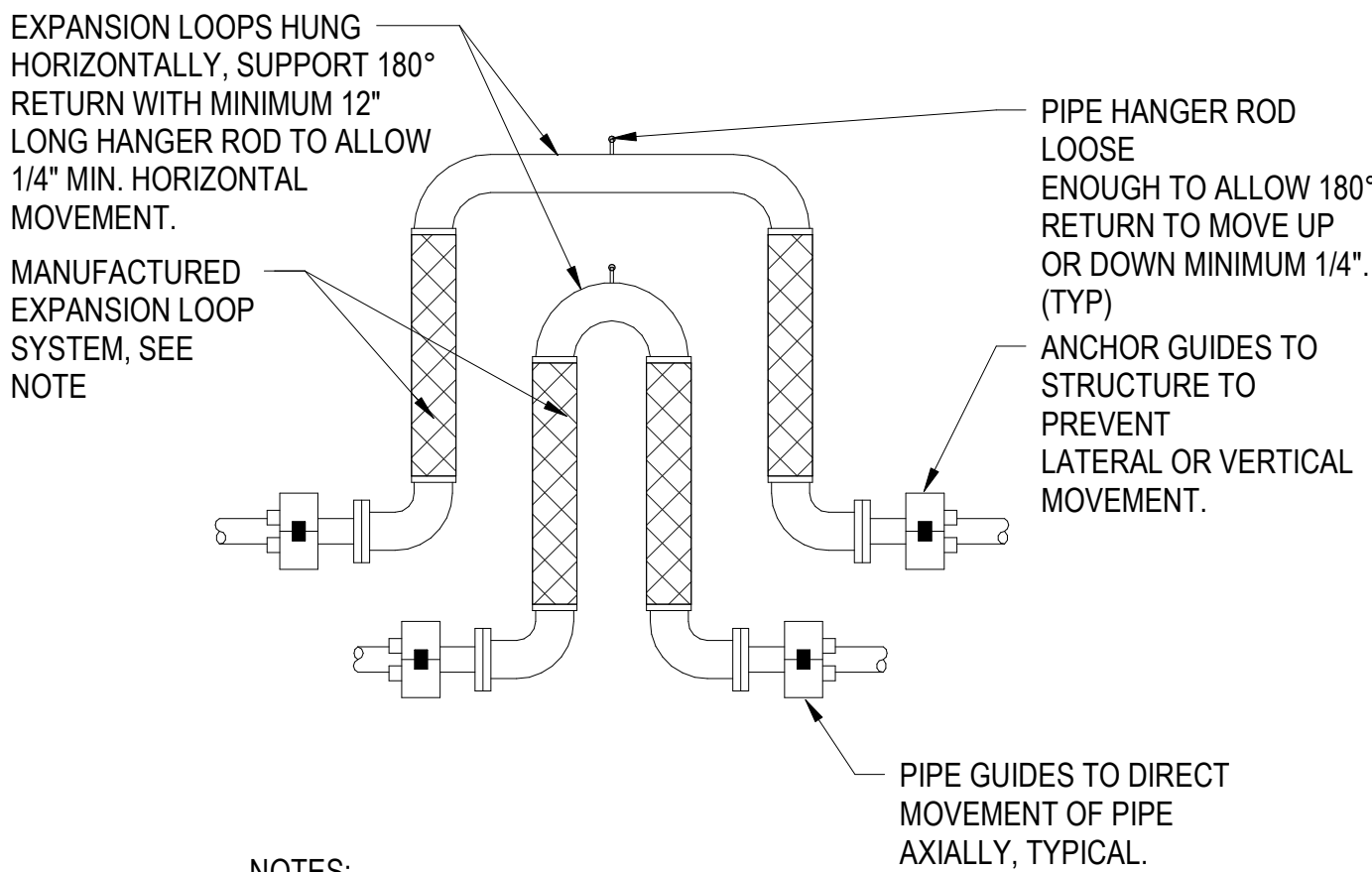
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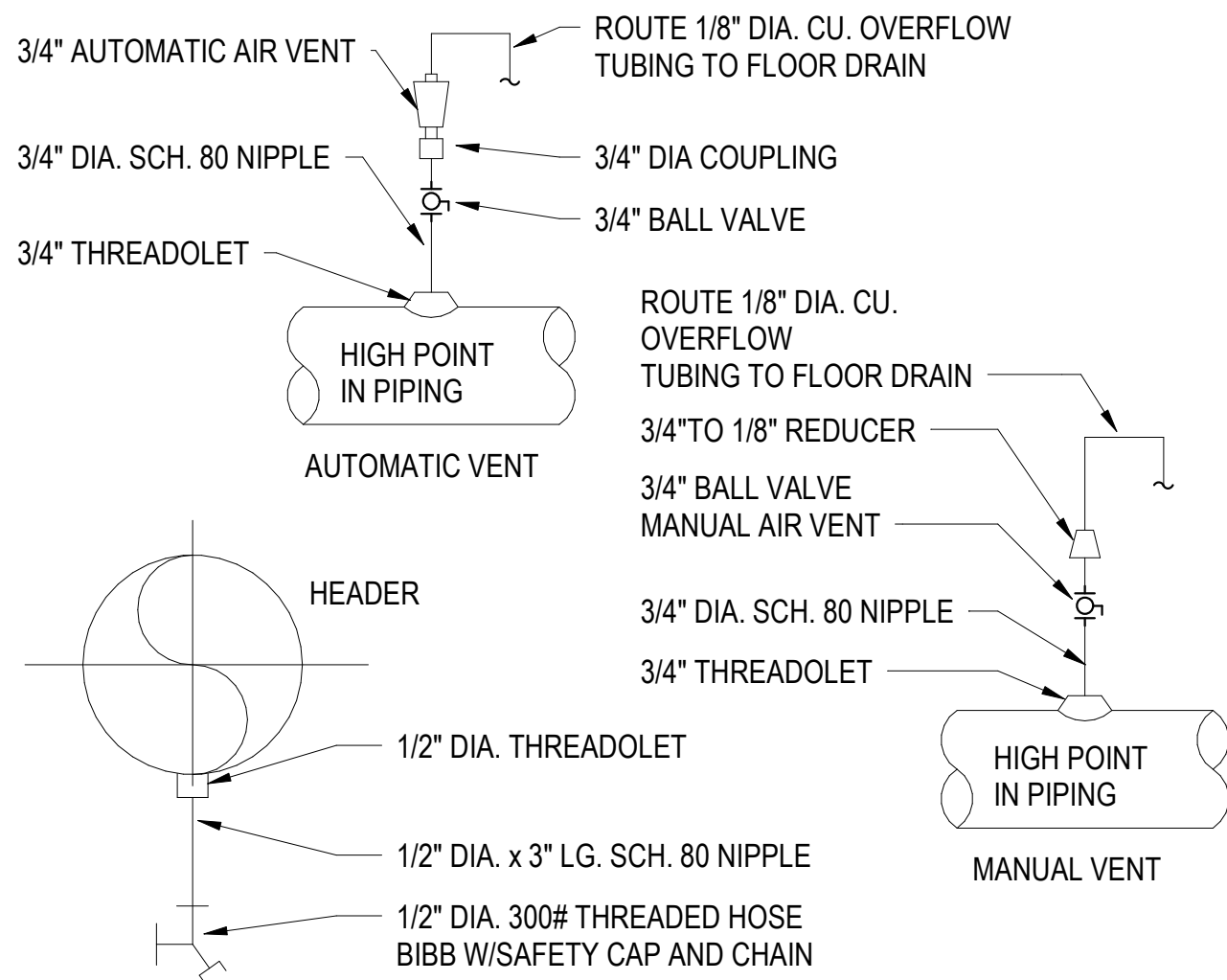
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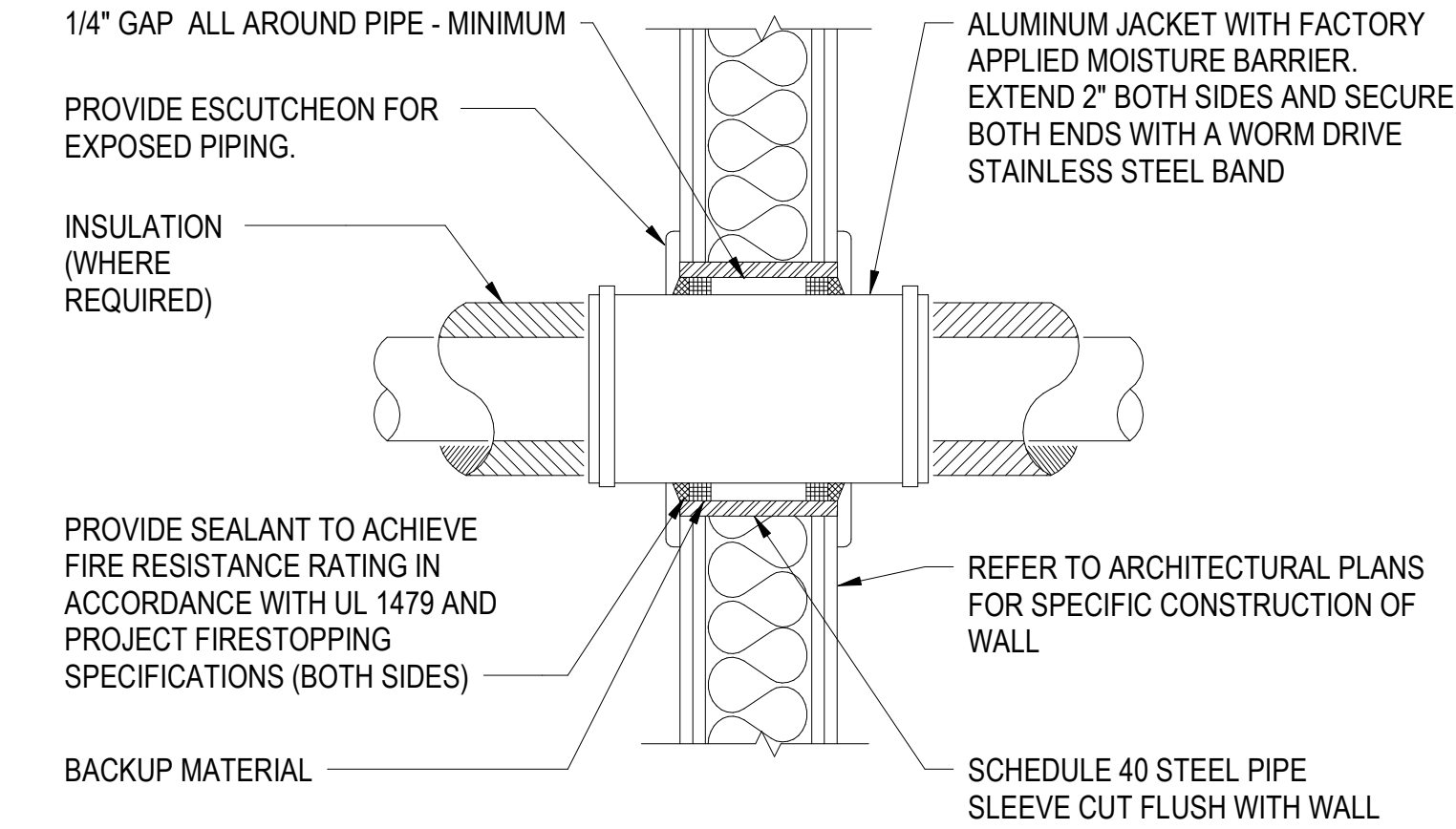
C1 CONDENSATE TRAP/DRAIN DETAIL
SCALE:NTS



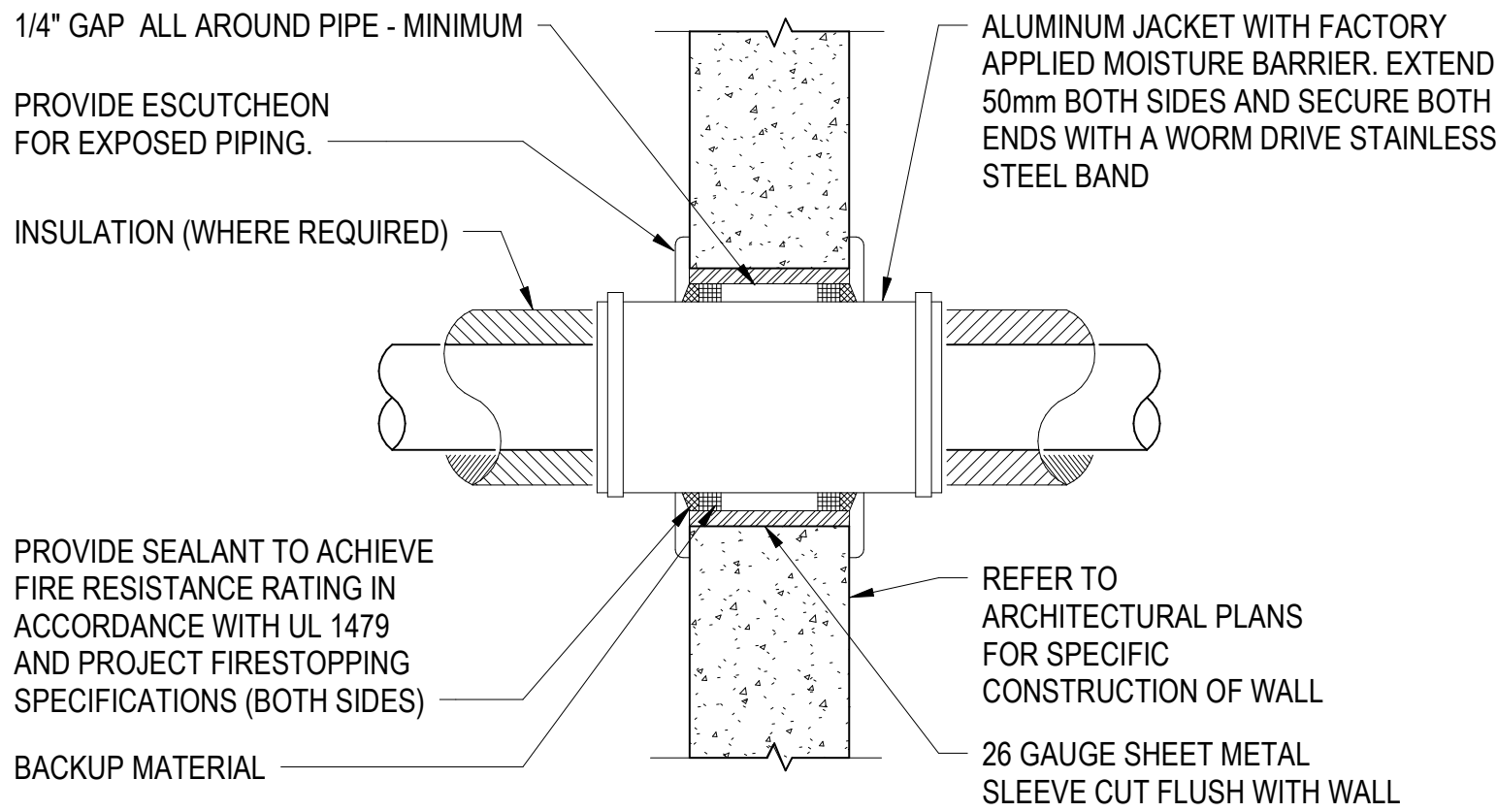
B1 HYDRONIC EXPANSION LOOP DETAIL
SCALE:NTS



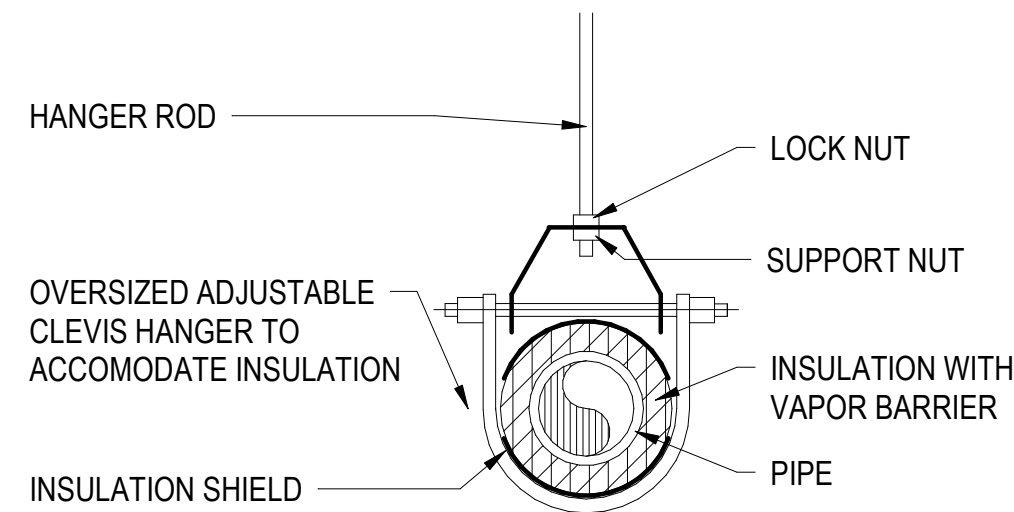
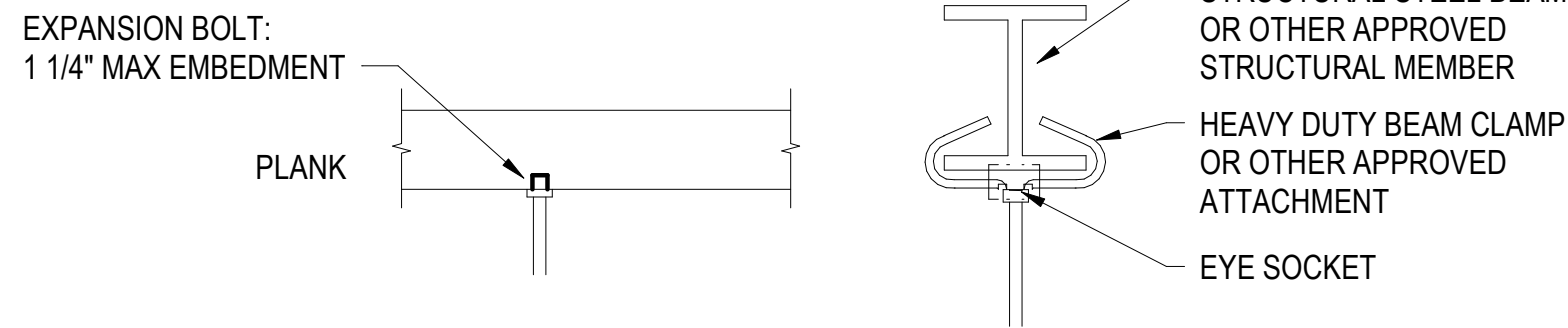
A1 VENT AND DRAIN DETAIL
SCALE:NTS



C2 WALL PENETRATON DETAIL
SCALE:NTS

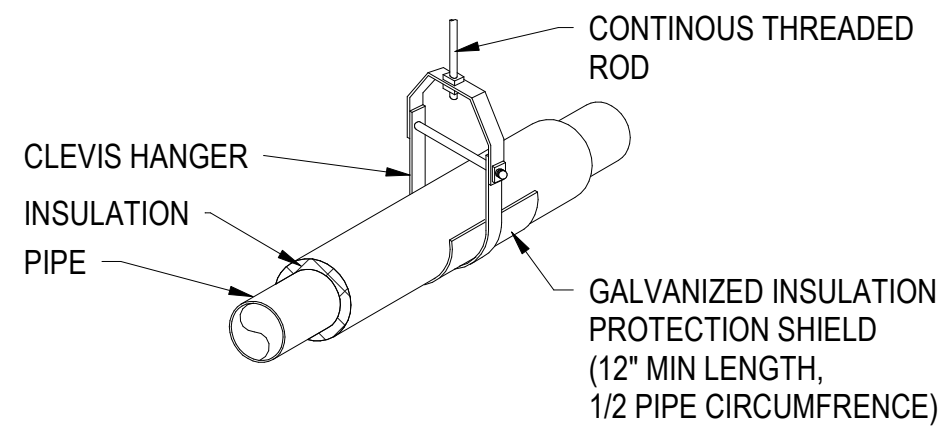


B2 PIPE WALL PENETRATION DETAIL
SCALE:NTS



NOTES:
1. REFER TO SPECIFICATIONS FOR HANGER ROD SIZES AND SPACING. THE SPACING SHOWN IN SPECIFICATION IS MAXIMUM SPACING PIPE WILL SPAN. THE HANGER SUPPORTS AND STRUCTURAL ELEMENTS OF THE BUILDING SHOULD BE CHECKED FOR LOAD SUPPORT. SPACING MAY HAVE TO BE REDUCED TO LIGHTEN LOAD ON CERTAIN HANGER SUPPORTS. DERATE EXP. SHIELDS BY 50%.

B4 PIPE HANGER DETAIL
SCALE:NTS



A4 TYPICAL PIPE SUPPORT DETAIL
SCALE:NTS

DATE	SYN	DESCRIPTION	APPR



Michael Baker INTERNATIONAL

100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108

APPROVED

A/E INFO

FOR COMMANDER NAVFAC
ACTIVITY
CONCURRED BY MCB-CL AMB VIA EMAIL
SATISFACTORY TO DATE 12/16/21
DES. SEM. DRWING. CHK. ENG.
PM / DM TOWLER / ROOT
BRANCH HEAD SCE
DESIGN DIRECTOR PAUL K. SHREM
FIRE PROTECTION DPS

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
ATLANTIC DESIGN AND CONSTRUCTION
NAVFAC P1338 II MEF SIMULATION/TRAINING CENTER REPLACEMENT MECHANICAL - DETAILS
JACKSONVILLE, NC
NORFOLK, VA

SCALE: AS NOTED
EPROJECT NO.: 1590892
CONSTR. CONTR. NO. N40085-20-C-0059
NAVFAC DRAWING NO. 14098520
SHEET 293 OF 456

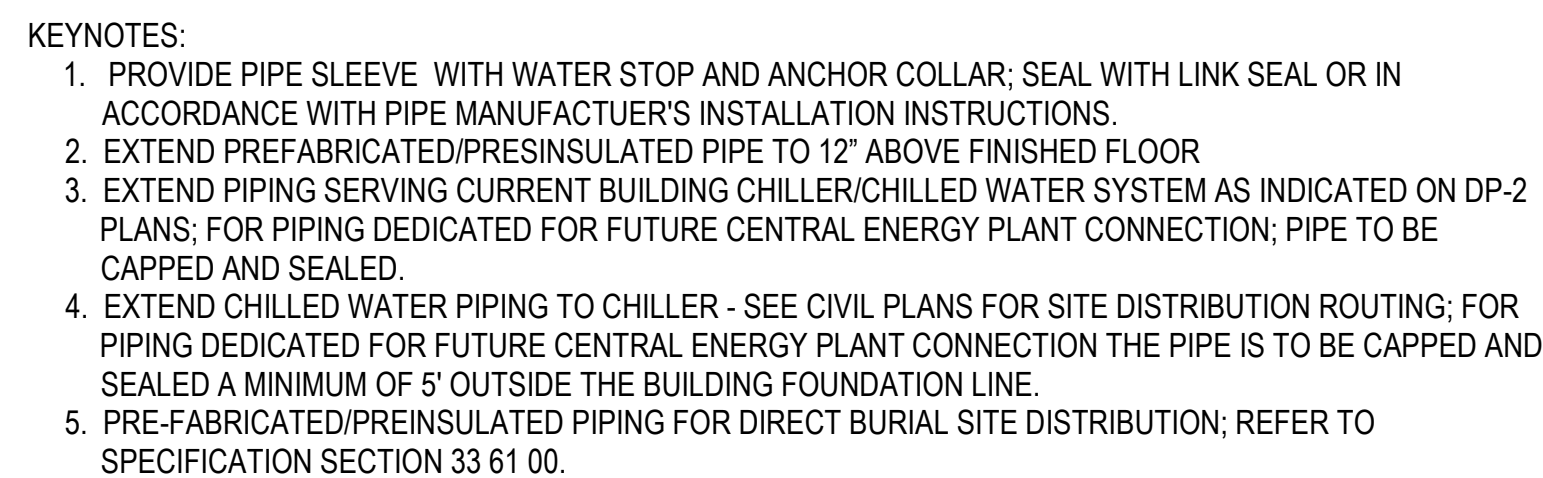
M-506

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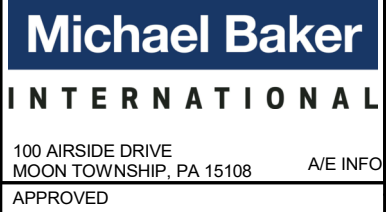
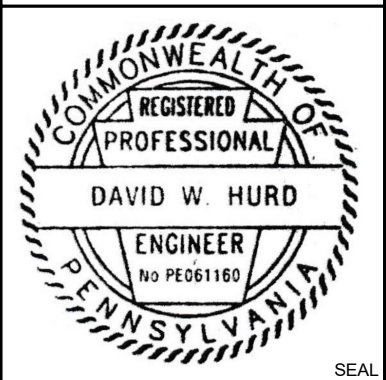
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DRAWFORM REVISION: 25 AUGUST 2020

ISSUED FOR CONSTRUCTION - 16 DEC 21

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FIRE PROTECTION		DFS
A	1	()

SCALE:		AS NOTED	
EPROJECT NO.: 1590892			
CONSTR. CONTR. NO. N40085-20-C-0059			
NAVFAC DRAWING NO. 14098522			
SHEET 295		OF 456	
M-601			

DRAWFORM REVISION: 25 AUGUST

Michael Baker
INTERNATIONAL
100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108 A/E INFO
APPROVED

DESIGN DIRECTOR	PAUL K. SHREM
FIRE PROTECTION	DBS

SCALE:		AS NOTED	
EPROJECT NO.: 1590892			
CONSTR. CONTR. NO. N40085-20-C-0059			
NAVFAC DRAWING NO. 14098522			
SHEET 295		OF 456	
M-601			

DRAWFORM REVISION: 25 AUGUST

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DIFFUSER, REGISTER AND GRILLE SCHEDULE - P1338									
TAG	MAX CFM	SERVICE	TYPE	SIZE (INCHES)		MAX NC	BASIS OF DESIGN		NOTES
				FACE	NECK		MANUF	MODEL	
A	190	SUPPLY	DIFFUSER	24 x 24	6" DIA	<25	TITUS	TMS-AA	1 - 3, 4
B	290	SUPPLY	DIFFUSER	24 x 24	8" DIA	<25	TITUS	TMS-AA	1 - 3, 4
C	410	SUPPLY	DIFFUSER	24 x 24	10" DIA	<25	TITUS	TMS-AA	1 - 3, 4
D	630	SUPPLY	DIFFUSER	24 x 24	12" DIA	<25	TITUS	TMS-AA	1 - 3, 4
E	2000	RETURN / EXHAUST / TRANSFER	GRILLE	24 x 24	22 x 22	<20	TITUS	PXP-AA	1 - 3
F	115	RETURN / EXHAUST / TRANSFER	GRILLE	8 x 8	6 x 6	<20	TITUS	355FL	1 - 3
G	345	RETURN / EXHAUST / TRANSFER	GRILLE	12 x 12	10 x 10	<20	TITUS	355FL	1 - 3
H	910	RETURN / EXHAUST / TRANSFER	GRILLE	26 x 14	24 x 12	<20	TITUS	355FL	1 - 3
I	125	SIDEWALL / CEILING SUPPLY	GRILLE	8 x 8	6 x 6	<20	TITUS	301FL	1-3
J	330	SUPPLY	DRUM LOUVER	20 x 10	18 x 8	<20	TITUS	DL	1 - 3
-	-	-	-	-	-	-	-	-	-
X	THIS TAG "X" USED TO DESIGNATE BALANCED CFM OF OPEN ENDED DUCT TERMINATIONS.								5
NOTES: 1. REFER TO DRAWINGS FOR ACTUAL AIR BALANCE QUANTITIES IN SPECIFIC LOCATIONS.									
2. CONTRACTOR TO VERIFY CEILING/WALL TYPE AND PROVIDE PROPER FRAME AND BORDER TYPE FOR MOUNTING CONFIGURATION.									
3. ALL DIFFUSERS, REGISTERS AND GRILLES ARE TO BE OF ALUMINUM CONSTRUCTION AND PROVIDED WITH MANUFACTURER'S STANDARD ENAMEL PAINT FINISH. REFER TO DIVISION 09 90 00 PAINTS AND COATINGS, AND ARCHITECTURAL DRAWINGS FOR FINISH SCHEDULES TO DETERMINE REQUIRED COLOR/FINISH FOR DIFFUSERS/REGISTERS/GRILLES.									
4. NC LEVELS ARE BASED ON DIFFUSER BLADES SET FOR HORIZONTAL AIRFLOW.									
5. PROVIDE 1/2" HARDWARE CLOTH IN REMOVEABLE "U" FRAME OVER BELMOUTH AT OPEN END OF DUCT.									
11/15/2021 10:0									

11/15/2021 10:05

LOUVER (L-) SCHEDULE - P1338									
TAG	SERVING	SERVICE	SIZE WxH (IN)	DESIGN CFM	FREE AREA (SQFT)	MAX PRESSURE DROP (IN WG)	BASIS OF DESIGN		NOTES
							MANUF	MODEL	
L-01A	AHU-02 OA INTAKE	INTAKE	78 x 36	7500	>10.9	0.10	RUSKIN	ELF6375DXD	1 - 4
L-01B	AHU-01 INTAKE & SF-1 INTAKE	INTAKE	48 x 36	3500	>6.6	0.10	RUSKIN	ELF6375DXD	1 - 5
L-02	AHU-1 EXH; AHU-2	EXHAUST	96 x 24	6250	>8.4	0.10	RUSKIN	ELF6375DXD	1 - 5
L-03	SF-01 RELIEF	RELIEF	36 x 24	2000	>3.6	0.10	RUSKIN	ELF6375DXD	1 - 4
L-04	EF-2 INTAKE	INTAKE	48 x 24	3000	>4	0.10	RUSKIN	ELF6375DXD	1 - 4
L-05	EF-1 & 2 EXHAUST	EXHAUST	78 x 24	4650	>6.2	0.10	RUSKIN	ELF6375DXD	1 - 5
L-06	EF-3 INTAKE	INTAKE	18 x 18	300	>0.5	0.10	RUSKIN	ELF6375DXD	1 - 4
L-07	EF-3 EXHAUST	EXHAUST	24 x 24	300	>0.5	0.10	RUSKIN	ELF6375DXD	1 - 4
L-08	EF-4 INTAKE	INTAKE	18 x 18	750	>1	0.10	RUSKIN	ELF6375DXD	1 - 4
L-09	EF-3 EXHAUST	EXHAUST	24 x 24	750	>1	0.10	RUSKIN	ELF6375DXD	1 - 4
NOTES: 1. PROVIDE MANUFACTURER'S STANDARD COLOR AND FINISH CHART WITH SUBMITTAL FOR SELECTION BY ARCHITECT. 2. LOUVER SHALL BE AMCA LISTED TO MEET AMCA 550 (HIGH VELOCITY WIND DRIVEN RAIN RESISTANT) AND MIAMI-DADE COUNTY APPROVED. 3. PROVIDE WITH LOW LEAKAGE MOTORIZED DAMPER(S) FOR ATFP COMPLIANCE (3 CFM/SQFT AGAINST 1" DIFFERENTIAL PRESSURE) INTERNAL OR EXTERNAL TO LOUVER. SEE DRAWINGS FOR LOCATION OF MOTORIZED DAMPERS. 4. PROVIDE CORROSION RESISTANT COATINGS AND MATERIALS; PROVIDE WITH ALUMINUM BIRDSCREEN. 5. LOUVER SELECTED FOR SHARED SERVICE OF MULTIPLE DEVICES; INSULATED PLENUM BOX SHALL BE PROVIDED BEHIND LOUVER WITH DUCTED CONNECTION TO EACH DEVICE (COMPLETE WITH BACKDRAFT DAMPERS TO PREVENT CROSS FLOW IN ADDITION TO MOTORIZED DAMPERS FOR CONTROL AND ATFP SHUTDOWN).									

11/15/2021 10:05

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VARIABLE AIR VOLUME (VAV) BOX SCHEDULE - P1338																
TAG	SPACE SERVED	COOLING CFM		INLET DUCT SIZE (DIA)	REHEAT COIL DATA								BASIS OF DESIGN		NOTES	
					HTG AIRFLOW (CFM)	MBH	GPM	COIL ROWS	HW TEMP (°F)		MAX. WPD (FT H2O)	LAT (°F)	MANUF	MODEL		
		EWT	LWT													
VAV-1.01	402 - STORAGE / SHIPPING / RECEIVING	900	450	10	450	19.4	1.5	2	140	114	0.4	94	TRANE	VCWF	1 - 4	
VAV-1.02	114, 113, 112, C014, C016 - OFFICES & CORRIDOR; 115 COMM	625	315	8	315	11.2	1.0	2	140	117	0.10	88	TRANE	VCWF	1 - 4	
VAV-1.03	109 - SIM ANALYST	1,500	750	12	750	27.3	2.0	2	140	112	0.30	88	TRANE	VCWF	1 - 4	
VAV-1.04	111 - OIC OFFICE	125	65	4	65	3.4	0.5	1	140	126	0.52	103	TRANE	VCWF	1 - 4	
VAV-1.05	108 - ADMIN BREAK ROOM & C011 CORRIDOR	450	300	6	300	11.8	1.0	2	140	116	0.70	91	TRANE	VCWF	1 - 4	
VAV-1.06	107 - SIM OPERATOR	1,000	500	10	500	20.3	1.5	2	140	112	0.40	92	TRANE	VCWF	1 - 4	
VAV-1.07	106 - NCOIC / SUPPLY CLERK	200	100	5	100	4.1	0.5	1	140	123	0.60	93	TRANE	VCWF	1 - 4	
VAV-1.08	105 - LIBRARY / FILE STORAGE	600	300	8	300	11.1	1.0	2	140	118	0.10	89	TRANE	VCWF	1 - 5	
VAV-1.09	C012 - CORRIDOR	350	200	6	200	7.8	0.5	2	140	109	0.75	91	TRANE	VCWF	1 - 4	
VAV-2.01	207 - EXERCISE CONTROL, 208 COMM	650	325	8	325	11.3	1.0	2	140	117	0.10	87	TRANE	VCWF	1 - 4	
VAV-2.02	206 - BREAK ROOM; C023 - COR	800	450	10	450	19.4	1.5	2	140	114	0.40	94	TRANE	VCWF	1 - 4	
VAV-2.03	209 - BRIEF / DEBRIEF	350	175	6	175	7.4	0.5	2	140	110	0.20	94	TRANE	VCWF	1 - 4	
VAV-2.04	303B - SECURE VTC	450	225	6	225	8.1	0.5	2	140	107	0.20	88	TRANE	VCWF	1 - 4	
VAV-2.05	303A - SECURE WS	200	100	5	100	4.1	0.5	1	140	123	0.60	93	TRANE	VCWF	1 - 4	
VAV-2.06	302 - SERVER ADMIN	250	125	5	125	4.5	0.5	1	140	121	0.60	88	TRANE	VCWF	1 - 4	
VAV-2.07	304B/304A/C034 - SIM CONTROL (SERVER/VAULT); CORR	850	600	10	600	21.8	1.5	2	140	111	0.40	88	TRANE	VCWF	1 - 4	
VAV-2.08	203/C021/C022 - STORAGE AND CORRIDOR	600	600	8	600	21.9	1.5	3	140	110	0.30	89	TRANE	VCWF	1 - 4	
VAV-2.09	200B - CLASSIFIED SIMULATION CLASSROOM	1,800	900	14	900	35.3	2.5	2	140	112	0.30	91	TRANE	VCWF	1 - 4	
VAV-2.10	200A - CLASSIFIED SIMULATION CLASSROOM	1,800	900	14	900	35.3	2.5	2	140	112	0.30	91	TRANE	VCWF	1 - 4	
VAV-2.11	200C - SIMULATION CLASSROOM	1,200	600	10	600	21.8	1.5	2	140	110	0.40	89	TRANE	VCWF	1 - 4	
VAV-2.12	202 - EXERCISE CONTROL	1,800	900	14	900	35.3	2.5	2	140	112	0.30	91	TRANE	VCWF	1 - 4	
VAV-2.13A	201 - AUDITORIUM/READY RM (WEST)	1,250	700	12	700	32.3	2.0	3	140	107	0.35	97	TRANE	VCWF	1 - 4	
VAV-2.13B	201 - AUDITORIUM/READY RM (EAST)	1,250	700	12	700	32.3	2.0	3	140	107	0.35	97	TRANE	VCWF	1 - 4	
VAV-2.14	300X - SIMULATION CLASSROOM	1,800	900	14	900	35.3	2.5	2	140	112	0.30	91	TRANE	VCWF	1 - 4	
VAV-2.15	300A - SIMULATION CLASSROOM	1,800	900	14	900	35.3	2.5	2	140	112	0.30	91	TRANE	VCWF	1 - 4	
VAV-2.16	300Y - SIMULATION CLASSROOM	1,800	900	14	900	35.3	2.5	2	140	112	0.30	91	TRANE	VCWF	1 - 4	
VAV-2.17	300B - SIMULATION CLASSROOM	1,800	900	14	900	35.3	2.5	2	140	112	0.30	91	TRANE	VCWF	1 - 4	
VAV-2.18	301A - SIMULATION CLASSROOM	1,800	900	14	900	35.3	2.5	2	140	112	0.30	91	TRANE	VCWF	1 - 4	
VAV-2.19	301B - SIMULATION CLASSROOM	1,800	900	14	900	35.3	2.5	2	140	112	0.30	91	TRANE	VCWF	1 - 4	
VAV-2.20	300Z - SIMULATION CLASSROOM	1,800	900	14	900	35.3	2.5	2	140	112	0.30	91	TRANE	VCWF	1 - 4	
VAV-2.21	300C - SIMULATION CLASSROOM	1,800	900	14	900	35.3	2.5	2	140	112	0.30	91	TRANE	VCWF	1 - 4	
VAV-2.22	C031 - COR, 305 COMM	250	200	5	200	7.8	0.5	2	140	108	0.20	91	TRANE	VCWF	1 - 4	
VAV-2.23	C030 -CORRIDOR	600	450	8	450	16.2	1.0	3	140	107	0.20	88	TRANE	VCWF	1 - 5	
VAV-2.24	C020 - CORRIDOR (EAST)	250	200	5	200	7.8	0.5	2	140	108	0.20	91	TRANE	VCWF	1 - 5	
VAV-2.25	101 - BRIEF/DEBRIEF	750	375	8	375	14.2	1.5	2	140	121	0.20	90	TRANE	VCWF	1 - 5	
VAV-2.26	102 - BRIEF/DEBRIEF	750	375	8	375	14.2	1.5	2	140	121	0.20	90	TRANE	VCWF	1 - 5	
VAV-2.27	100 - ENTRY WS	125	65	4	65	3.4	0.5	1	140	126	0.52	103	TRANE	VCWF	1 - 5	
VAV-2.28	L010 - MAIN ENTRY LOBBY	1,250	625	12	625	22.1	1.5	2	140	110	0.20	88	TRANE	VCWF	1 - 5	
VAV-2.29	103A - FIRE STORAGE & CORRIDOR C013	350	350	6	350	12.6	1.0	2	140	115	0.65	88	TRANE	VCWF	1 - 5	
VAV-2.30	104A - FIRE ROOM	450	225	6	225	8.1	0.5	2	140	107	0.20	88	TRANE	VCWF	1 - 5	
VAV-2.31	104B - FIRE ROOM	450	225	6	225	8.1	0.5	2	140	107	0.20	88	TRANE	VCWF	1 - 5	
VAV-2.32	104C - FIRE ROOM	450	225	6	225	8.1	0.5	2	140	107	0.20	88	TRANE	VCWF	1 - 5	
VAV-2.33	C020 - CORRIDOR (WEST)	175	90	4	90	3.9	0.5	1	140	124	0.60	95	TRANE	VCWF	1 - 5	
NOTES: 1. MAXIMUM ALLOWABLE STATIC PRESSURE LOSS ACROSS THE BOX = 0.5 INCHES WATER GAUGE.																
2. MAXIMUM DISCHARGE STATIC PRESSURE DOWNSTREAM = 0.5 INCHES WATER GAUGE.																
3. MAXIMUM ALLOWABLE DISCHARGE OR RADIATED NOISE CRITERIA (NC) = 30.																
4. HOT WATER COIL PERFORMANCE DATA IS BASED ON A 140 DEGREE EWT - MFG TO PROVIDE SPECIFIC COIL PARAMETERS (FPI, ETC.) TO MEET ALL REQUIRED PERFORMANCE CRITERIA (MBH @ 140° INPUT; TOTAL APD ACROSS BOX & COIL)																
5. VAV BOX HEATING COIL TO BE PROVIDED WITH 3-WAY VALVE FOR TO ALLOW MINIMUM FLOW BYPASS AND CONTINUOUS HOT WATER DISTRIBUTION TO END OF REVERSE RETURN LOOPS.																
11/15/2021 10:00																

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DUCTLESS MINI-SPLIT AIR CONDITIONER (SSAC/SSCU) & HEAT PUMP (SSHP/HPCU) SYSTEM SCHEDULE - P1338

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NOTES: 1. INDOOR UNIT SHALL BE POWERED BY THE OUTDOOR UNIT. POWER AND CONTROL WIRING BETWEEN INDOOR AND OUTDOOR UNITS PROVIDED BY MECHANICAL CONTRACTOR.

2. PROVIDE WITH LOCAL DISCONNECT, OVERCURRENT PROTECTION, AND STARTER.

3. ARI COOLING RATED CAPACITIES ARE BASED ON 80°F DB/67°F WB INDOOR TEMPERATURES AND 95°F DB/75°F WB OUTDOOR TEMPERATURES.

4. ARI HEATING RATED CAPACITIES ARE BASED ON 70°F DB/60°F WB INDOOR TEMPERATURES AND 47°F DB/43°F WB OUTDOOR TEMPERATURES.

5. PROVIDE UNIT WITH LOW AMBIENT COOLING CAPABILITY DOWN TO 15°F OR LESS.

6. PROVIDE WITH CONDENSATE PUMP AS REQUIRED TO PROVIDE NECESSARY LIFT TO ACCOMMODATE GRAVITY CONDENSATE DRAINAGE TO POINT OF TERMINATION AS INDICATED ON PLANS.

7. PROVIDE WITH COMPONENTS FULLY CHARGED WITH R-410A REFRIGERANT AND INTERCONNECTING REFRIGERANT PIPING FOR FIELD INSTALLATION.

8. PROVIDE WITH MANUFACTURER'S STANDARD WASHABLE AIR FILTER/FILTRATION SYSTEM.

9. UNIT TO BE PROVIDED WITH BACNET CONTROLLER FOR CONNECTION AND CONTROL FROM BUILDING DDC SYSTEM

10. OUTDOOR UNIT TO BE PROVIDED WITH MANUFACTURER'S STANDARD SEACOAST PROTECTION SYTEM FOR CORROSION RESISTANCE WHEN INSTALLED IN A COASTAL ENVIRONMENT.

11/15/2021 10:05

EXHAUST (EF-) & SUPPLY (SF-) FAN SCHEDULE - P1338

TAG	SERVICE	LOCATION / SPACE SERVED	FAN TYPE	WHEEL TYPE	DRIVE TYPE	AIR FLOW (CFM)	ESP (IN. WG.)	FAN RPM	MAX SOUND (SONES)	MOTOR DATA			BASIS OF DESIGN		NOTES
										MOTOR SIZE (HP)	MOTOR RPM	VOLTS/ PHASE/ HERTZ	MANUF	MODEL	
SF-1	SUPPLY	401 - MECHANICAL (HOT)	INLINE	BI	DIRECT	2,000	0.5	1011	8.8	1/2	1140	115 / 1 / 60	GREENHECK	SQ-160-B	1 - 3, 6
EF-1	EXHAUST	101 - CLASSIFIED AREA RR, ETC.	INLINE	BI	DIRECT	1,650	0.5	870	6.7	1/2	1140	115 / 1 / 60	GREENHECK	SQ-160-B	1,2,4
EF-2	EXHAUST	403 - ELECTRICAL ROOM	INLINE	BI	DIRECT	3,000	0.5	1616	18	2	1725	460 / 3 / 60	GREENHECK	SQ-160HP-VG	1 - 3
EF-3	EXHAUST	116 - ELECTRICAL ROOM	WALL PROP	PROP	DIRECT	300	0.25	979	4.0	1/4	1725	115 / 1 / 60	GREENHECK	SE1-12-432 VG	1 - 3, 5
EF-4	EXHAUST	306 - ELECTRICAL ROOM	WALL PROP	PROP	DIRECT	750	0.25	1308	7.2	1/4	1725	115 / 1 / 60	GREENHECK	SE1-12-432 VG	1 - 3, 5

NOTES:

1. PROVIDE WITH LOCAL DISCONNECT SWITCH FOR FIELD MOUNTING AND INSTALLATION. PROVIDE WITH MOTOR STARTER AND OVERCURRENT PROTECTION.
2. PROVIDE UNIT WITH SOLID STATE SPEED CONTROLLER TO BE MOUNTED ON UNIT (SF 1, EF-1) OR ECM WITH DIAL (EF 2, 3,4) - FIELD ADJUSTABLE TO SCHEDULED AIRFLOW.
3. CONTROL: CONTROL SHALL BE BY SPACE MOUNTED THERMOSTAT FOR VENTILATION ROOM COOLING - SEE CONTROL DRAWINGS; PROVIDE LOW LEAKAGE MOTORIZED DAMPER AT EXHAUST LOUVER AND ASSOCIATED INTAKE LOUVER.
4. CONTROL: INTERLOCK TO OPERATE CONTINUOUSLY IN CONJUNCTION WITH ASSOCIATED AHU-2 (SECURE AREA) OCCUPATION - SEE CONTROL DRAWINGS; PROVIDE WITH LOW LEAKAGE DAMPER AT EXHAUST LOUVER.
5. PROVIDE WITH LOW LEAKAGE INSULATED DAMPER.
6. PROVIDE WITH FILTER SECTION UTILIZING 1" PLEATED MERV 8 FILTERS (SIZE 20x20x1).

11/15/2021 10:05

FILE NAME: BIM 360//HF PACKAGE 3P1338 - MEF SIM CTR-1590892-M.rvt
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VENTILATION SCHEDULE - AHU-1														
ROOM NUMBER	ROOM NAME	AREA (FT2)	OCCUPANCY (# PEOPLE)	CALCULATED REQUIRED OUTSIDE AIR (OA)					EXHAUST AIR (EA)					NOTES
				ASHRAE 62.1 2016 VENTILATION CRITERIA / CLASSIFICATION	CFM/SF	CFM/ PERSON	EZ	TOTAL (CFM)	CFM/SF	FIXTURE COUNT	CFM/ FIXTURE	TOTAL EA REQ'D (CFM)	SPECIFIED EA (CFM)	
105	LIBRARY / FILE STORAGE	930	2	PUBLIC ASSEMBLY/LIBRARIES	THE VENTILATION REQUIREMENT FOR THIS AIR HANDLING SYSTEM HAS BEEN DETERMINED BY UTILIZING THE ASHRAE 62.1 MULTI-ZONE CALCULATION SPREADSHEET THAT ACCOUNTS FOR INDIVIDUAL VAV ZONES AND THEIR RESPECTIVE AREA AND OCCUPANCY AND SPACE CLASSIFICATION IN ACCORDANCE WITH ASHRAE 62.1. THE VAV BOX SCHEDULE MINIMUM AIRFLOWS PER BOX HAVE BEEN ADJUSTED USING THIS SPREADSHEET TO PROVIDE THE REQUIRED VENTILATION TO THEIR ASSOCIATED AHU. THE ASHRAE 62.1 MULTI-ZONE CALCULATIONS ARE INCLUDED IN THE MECHANICAL CALCULATIONS.									
106	NCIOC/SUPPLY CLERK	343	4	OFF BLDG / OFFICE SPACE										
107	SIM OPERATOR	991	16	OFF BLDG / OFFICE SPACE										
108	ADMIN/BREAK ROOM	365	16	OFFICE BLDG / BREAKROOM										
109	SIM ANALYST	1,265	20	OFF BLDG / OFFICE SPACE										
110	MOTHER'S ROOM	71	-	TOILET - PUBLIC						1	50	50	50	
111	PRIVATE OFFICE - OIC	159	2	OFF BLDG / OFFICE SPACE										
112	PRIVATE OFFICE - DEP DIRECTOR	150	2	OFF BLDG / OFFICE SPACE										
113	PRIVATE OFFICE - SITE MANAGER	148	2	OFF BLDG / OFFICE SPACE										
114	PRIVATE OFFICE - DIRECTOR	161	2	OFF BLDG / OFFICE SPACE										
115	COMM ROOM, WEST EXTERIOR	140	0	MISC / TELEPHONE CLOSETS										
116	ELEC	125	-	NO REQUIREMENT										
118	JANITOR - NOT CLASSIFIED AREA	45	0	EXH 1 CFM/SQFT						1		45	50	
306	ELEC	152	-	NO REQUIREMENT										
400	STORAGE/SHIPPING/RECEIVING	2,039	4	MISC / SHIPPING-RECEIVING										
401	MECHANICAL - (GAS FIRED EQUIPMENT)	657	-	NO REQUIREMENT										
402	MECHANICAL (AIR HANDLING SYSTEMS)	2,277	-	NO REQUIREMENT										
C011	CORRIDOR	536	0	GENERAL / CORRIDORS										
C012	CORRIDOR	347	0	GENERAL / CORRIDORS										
C014	CORRIDOR	383	0	GENERAL / CORRIDORS										
C016	CORRIDOR	198	0	GENERAL / CORRIDORS										
G010	MENS LOCKER/TOILET	285	-	TOILET - PUBLIC							7	50	350	350
G011	WOMENS LOCKER/TOILET	312	-	TOILET - PUBLIC							7	50	350	250
G012	UNISEX TOILET	67	-	TOILET - PUBLIC							1	50	50	50
NOTES:														

7/28/2021 12:08

7/28/2021 12:08

VENTILATION SCHEDULE - AHU-2														
ROOM NUMBER	ROOM NAME	AREA (FT2)	OCCUPANCY (# PEOPLE)	CALCULATED REQUIRED OUTSIDE AIR (OA)					EXHAUST AIR (EA)					NOTES
				ASHRAE 62.1 2016 VENTILATION CRITERIA / CLASSIFICATION	CFM/SF	CFM/ PERSON	EZ	TOTAL (CFM)	CFM/SF	FIXTURE COUNT	CFM/ FIXTURE	TOTAL EA REQ'D (CFM)	SPECIFIED EA (CFM)	
100	ENTRY WS	100	2	OFF BLDG / OFFICE SPACE	THE VENTILATION REQUIREMENT FOR THIS AIR HANDLING SYSTEM HAS BEEN DETERMINED BY UTILIZING THE ASHRAE 62.1 MULTI-ZONE CALCULATION SPREADSHEET THAT ACCOUNTS FOR INDIVIDIAL VAV ZONES AND THEIR RESPECTIVE AREA AND OCCUPANCY AND SPACE CLASSIFICATION IN ACCORDANCE WITH ASHRAE 62.1. THE VAV BOX SCHEDULE MINIMUM AIRFLOWS PER BOX HAVE BEEN ADJUSTED USING THIS SPREADSHEET TO PROVIDE THE REQUIRED VENTILATION TO THEIR ASSOCIATED AHU. THE ASHRAE 62.1 MULTI-ZONE CALCULATIONS ARE INCLUDED IN THE MECHANICAL CALCULATIONS.									
101	BRIEF / DEBRIEF	591	14	GENERAL / CONFERENCE-MEETING										
102	BRIEF / DEBRIEF	590	14	GENERAL / CONFERENCE-MEETING										
103A	FIRE STORAGE ROOM	781	1	STORAGE ROOM FOR DRY MAT										
104A	FIRE ROOM	410	8	OFF BLDG / OFFICE SPACE										
104B	FIRE ROOM	417	8	OFF BLDG / OFFICE SPACE										
104C	FIRE ROOM	402	8	OFF BLDG / OFFICE SPACE										
110A	FIRE SERVER RACK ROOM	63	0	MISC / TELEPHONE CLOSETS										
200A	CLASSIFIED SIMULATION CLASSROOM	1,533	32	GENERAL / CONFERENCE-MEETING										
200B	CLASSIFIED SIMULATION CLASSROOM	1,517	32	GENERAL / CONFERENCE-MEETING										
200C	SIMULATION CLASSROOM	1,018	18	GENERAL / CONFERENCE-MEETING										
201	AUDITORIUM / READY ROOM	1,616	130	PUBLIC / AUDITORIUM SEATING										
202	EXERCISE CONTROL	1,599	32	GENERAL / CONFERENCE-MEETING										
203	STORAGE	1,031	2	STORAGE ROOM FOR DRY MAT										
205	PLOTTER/LAMINATOR	138	-	COPY, PRINTING ROOMS					0.5			69	70	
206	BREAK ROOM	679	32	OFFICE BLDG / BREAKROOM										
207	EXERCISE CONTROL	299	14	GENERAL / CONFERENCE-MEETING										
208	COMM	184	0	MISC / TELEPHONE CLOSETS										
209	BRIEF/DEBRIEF	294	8	GENERAL / CONFERENCE-MEETING										
300A	SIMULATION CLASSROOM	1,488	40	GENERAL / CONFERENCE-MEETING										
300B	SIMULATION CLASSROOM	1,499	40	GENERAL / CONFERENCE-MEETING										
300C	SIMULATION CLASSROOM	1,497	40	GENERAL / CONFERENCE-MEETING										
300V	SIMULATION CLASSROOM	1,507	40	GENERAL / CONFERENCE-MEETING										
300X	SIMULATION CLASSROOM	1,499	40	GENERAL / CONFERENCE-MEETING										
300Z	SIMULATION CLASSROOM	1,504	40	GENERAL / CONFERENCE-MEETING										
301A	SIMULATION CLASSROOM	1,507	40	GENERAL / CONFERENCE-MEETING										
301B	SIMULATION CLASSROOM	1,497	40	GENERAL / CONFERENCE-MEETING										
302	SERVER ADMIN	458	4	OFF BLDG / OFFICE SPACE										
303A	SECURE WS	175	4	OFF BLDG / OFFICE SPACE										
303B	SECURE VTC	418	12	GENERAL / CONFERENCE-MEETING										
304A	SIM CONTROL (SERVER ROOM)	1,550	4	MISC / COMPUTER (NOT PRINTING)										
304B	SIM CONTROL SECURE COMM (VAULT)	356	1	MISC / COMPUTER (NOT PRINTING)										
305	COMM	151	0	MISC / TELEPHONE CLOSETS										
403	JANITOR -CLASSIFIED AREA	58	-	EXH 1 CFM/SQFT					1			58	60	
403	ELEC ROOM, NORTH CENTRAL	440	0	MISC / TELEPHONE CLOSETS										
C010	CORRIDOR	236	0	GENERAL / CORRIDORS										
C013	CORRIDOR	550	0	GENERAL / CORRIDORS										
C018	CORRIDOR	283	0	GENERAL / CORRIDORS										
C020	CORRIDOR	1,030	0	GENERAL / CORRIDORS										
C021	COR	550	0	GENERAL / CORRIDORS										
C022	CORRIDOR	530	0	GENERAL / CORRIDORS										
C023	CORRIDOR TO BREAKROOM	235	0	GENERAL / CORRIDORS										
C030	CORRIDOR	875	0	GENERAL / CORRIDORS										
C031	COR	563	0	GENERAL / CORRIDORS										
C034	CORRIDOR	1,355	0	GENERAL / CORRIDORS										
G020	UNI	64	0	TOILET - PUBLIC							2	50	100	
G021	MUD	214	0	LOCKER ROOMS					0.5			50	107	
G022	W. SHWR	72	0	TOILET - PUBLIC							2	50	100	
G023	M. SHWR	72	0	TOILET - PUBLIC							2	50	100	
G024	WOMEN	212	0	TOILET - PUBLIC							4	50	200	
G025	MEN	232	0	TOILET - PUBLIC							8	50	400	
L010	LOBBY/VESTIBULE	1,024	10	LOBBIES / PREFUNCTION										
NOTES:														

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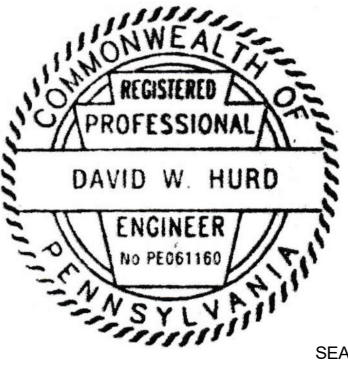

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APPR

DATE

DESCRIPTION

SYM



Michael Baker INTERNATIONAL

100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108
APPROVED

A/E INFO

FOR COMMANDER NAVFAC

ACTIVITY
CONCURRED BY
MCB-CL AMB
VIA EMAIL

SATISFACTORY TO DATE 12/16/21

DES DESIGNED BY
DRW DRAWN BY
CHK CHECKED BY

PM / DM TOWLER / ROOT

BRANCH HEAD SCE

DESIGN DIRECTOR PAUL K. SHREM

FIRE PROTECTION DPS

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC
ATLANTIC DESIGN AND CONSTRUCTION
MCB CAMP LEJEUNE
JACKSONVILLE, NC
P1338 II MEF SIMULATION/TRAINING CENTER REPLACEMENT
MECHANICAL - SCHEDULES

SCALE: AS NOTED
EPROJECT NO.: 1590892
CONSTR. CONTR. NO. N400085-20-C-0059
NAVFAC DRAWING NO. 14098527
SHEET 300 OF 456
M-606

ISSUED FOR CONSTRUCTION - 16 DEC 21

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A

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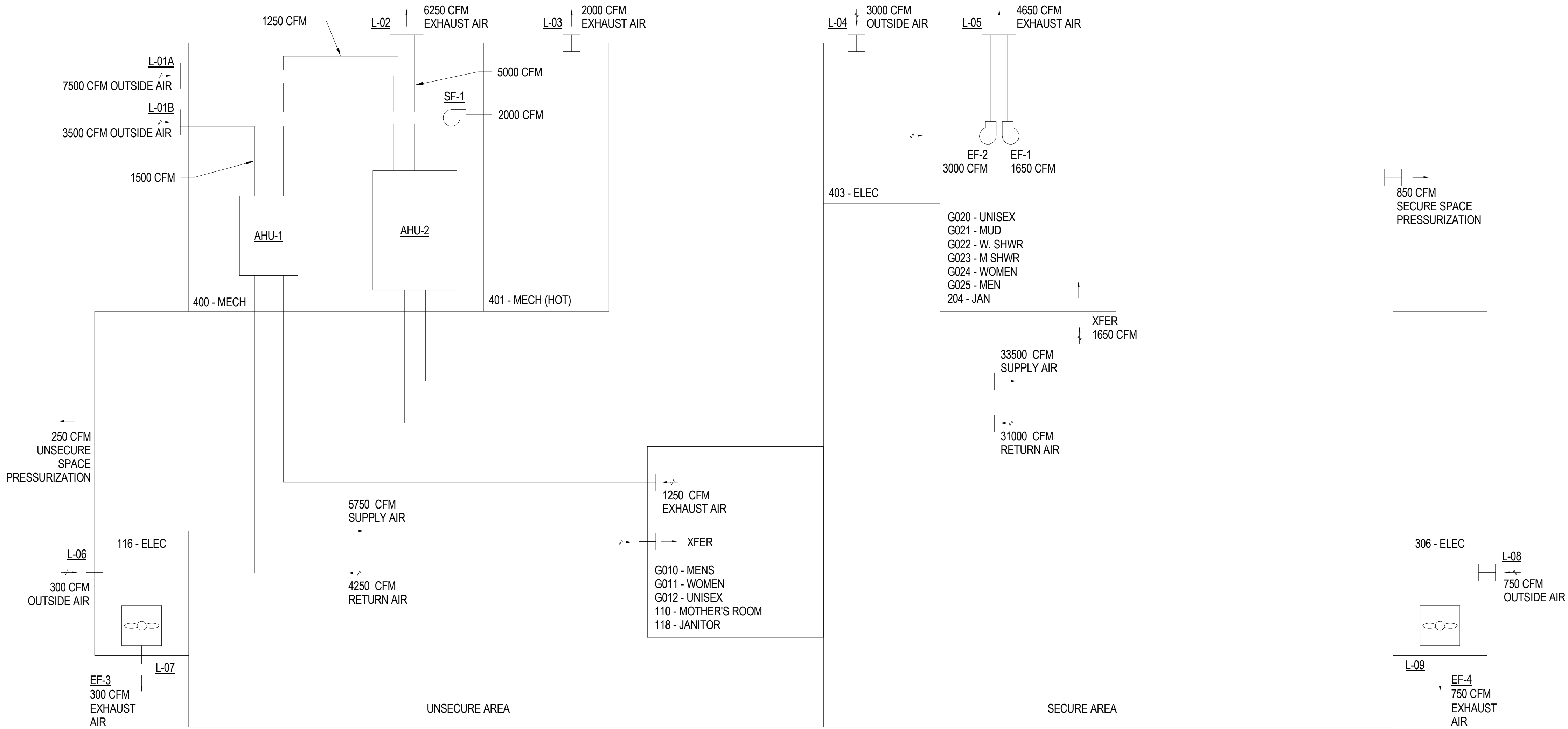
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A1 AIR BALANCE DIAGRAM
SCALE: NTS



AIR BALANCE CALCULATION - P1338																
DEVICE	ROOM OR AREA SERVED	SECURE AREA AIRFLOWS (CFM)						NON-SECURE AREA AIRFLOWS					MECH & ELEC AREAS (EXCLUDED FROM AIR BARRIER)			NOTES
		SA (VARIABLE)	RA (RECIRC) (VARIABLE)	AHU HX			+/- PRESS	SA (VARIABLE)	RA (RECIRC) (VARIABLE)	AHU HX		+/- PRESS	SA	EA	+/- PRESS	
				RA (EXH) (CONST)	OA (CONST)	EA (CONST)				OA (CONST)	EA (CONST T)					
AHU-01	NON-SECURE BUILDING AREA							5750	(4250)	1500	(1250)					
AHU-02	SECURE BUILDING AREA	33500	(26000)	(5000)	7500											
SF-01	401 - MECHANICAL ROOM (HEATING EQUIPMENT)												2000		POS	1, 2
EF-01	CLASSIFIED AREA RESTROOMS, ETC.					(1650)										
EF-02	403 - MAIN ELECTRICAL ROOM													(3000)	NEG	1
EF-03	116 - ELECTRICAL ROOM (WEST)													(300)	NEG	1
EF-04	306 - ELECTRICAL ROOM (EAST)													(750)	NEG	1
AREA TOTALS:		33500	(26000)	(5000)	7500	(1650)	850	5750	(4250)	1500	(1250)	250				
NOTES		1) EF/SF SHALL OPERATE INTERMITTENTLY BY THERMOSTATIC CONTROL (TSTAT SET AT 85°F - ADJ.) TO PROVIDE VENTILATION BASED COOLING/AIR CHANGES TO MAINTAIN SPACE WITHIN +10°F OF OUTDOOR AMBIENT. 2) SF-01 SHALL PUSH AIR THROUGH MECHANICAL ROOM WITH GAS FIRED EQUIPMENT TO MAINTAIN SPACE POSITIVE PRESSURE IAW RFP.														
DEFINITIONS		SA: SUPPLY AIR, CONDITIONED AND DELIVERED THROUGH VAV FOR SPACE CONDITIONING AND VENTILATION RA (RECIRC): RETURN AIR, RETURNED TO AHU FOR RE-MIXING WITH OA AND REDISTRIBUTION RA (EXH): RETURN AIR, RETURNED TO AHU FROM SPACE; THEN EXHAUSTED-RELIEVED AT/FROM AHU (USED FOR HX ENERGY RECOVERY) OA: OUTSIDE AIR, FRESH OUTSIDE AIR FILTERED / PRECONDITIONED BY HX & DELIVERED AS COMPONENT OF SUPPLY AIR TO SPACES SERVED. EA: EXHAUST AIR, AIR REMOVED FROM BLDG IN BALANCED CONSTANT QTY BY FAN ON NORMAL BASIS DURING OCCUPIED HRS EA(I): EXHAUST AIR (INTERMITTENT), AIR REMOVED FROM BUILDING BY EXHAUST FAN NOT REGULARLY IN USE, NOT INCLUDED IN AIR BALANCE DETERMINATION														

UNCLASSIFIED



Michael Baker INTERNATIONAL
100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108
APPROVED

FOR COMMANDER NAVFAC
ACTIVITY
CONCURRED BY
MCB-CL AMB
VIA EMAIL
SATISFACTORY TO DATE 12/16/21
DES DESIGNED BY
DRWING
CHK CHECKED BY
PM / DM TOWLER / ROOT
BRANCH HEAD SCE
DESIGN DIRECTOR PAUL K. SHREM
FIRE PROTECTION DPS

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC
ATLANTIC DESIGN AND CONSTRUCTION
NAVFAC DRAWING NO. 14098528
SHEET 301 OF 456
M-701
ISSUED FOR CONSTRUCTION - 16 DEC 21

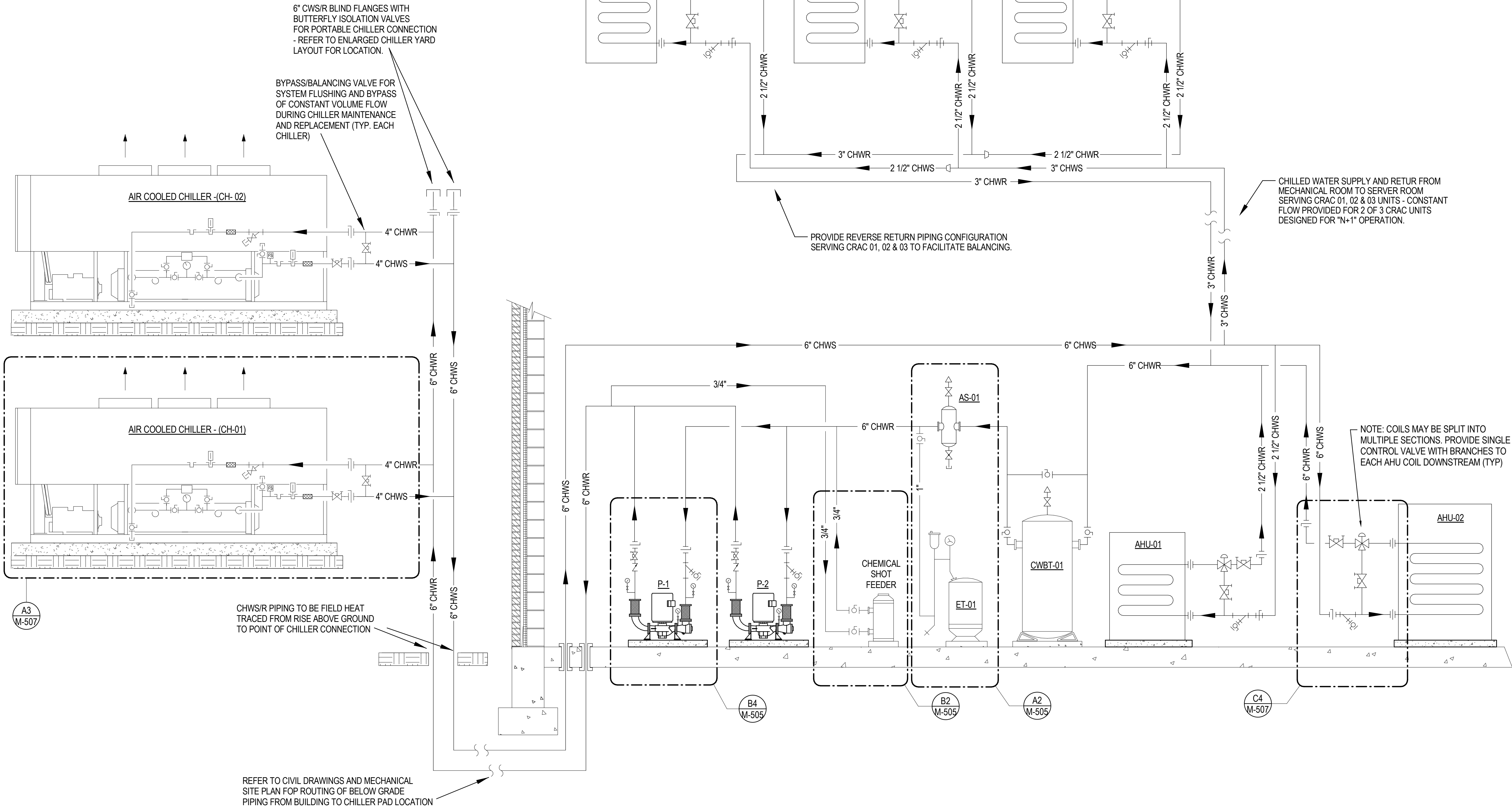
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EPROJECT NO.: 1590892
CONSTR. CONTR. NO. N400085-20-C-0059
NAVFAC DRAWING NO. 14098528
SHEET 301 OF 456
M-701
ISSUED FOR CONSTRUCTION - 16 DEC 21

DRAWING REVISION: 25 AUGUST 2020

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FILE NAME

A1 CHILLED WATER FLOW DIAGRAM
SCALE: NTS



GENERAL NOTES

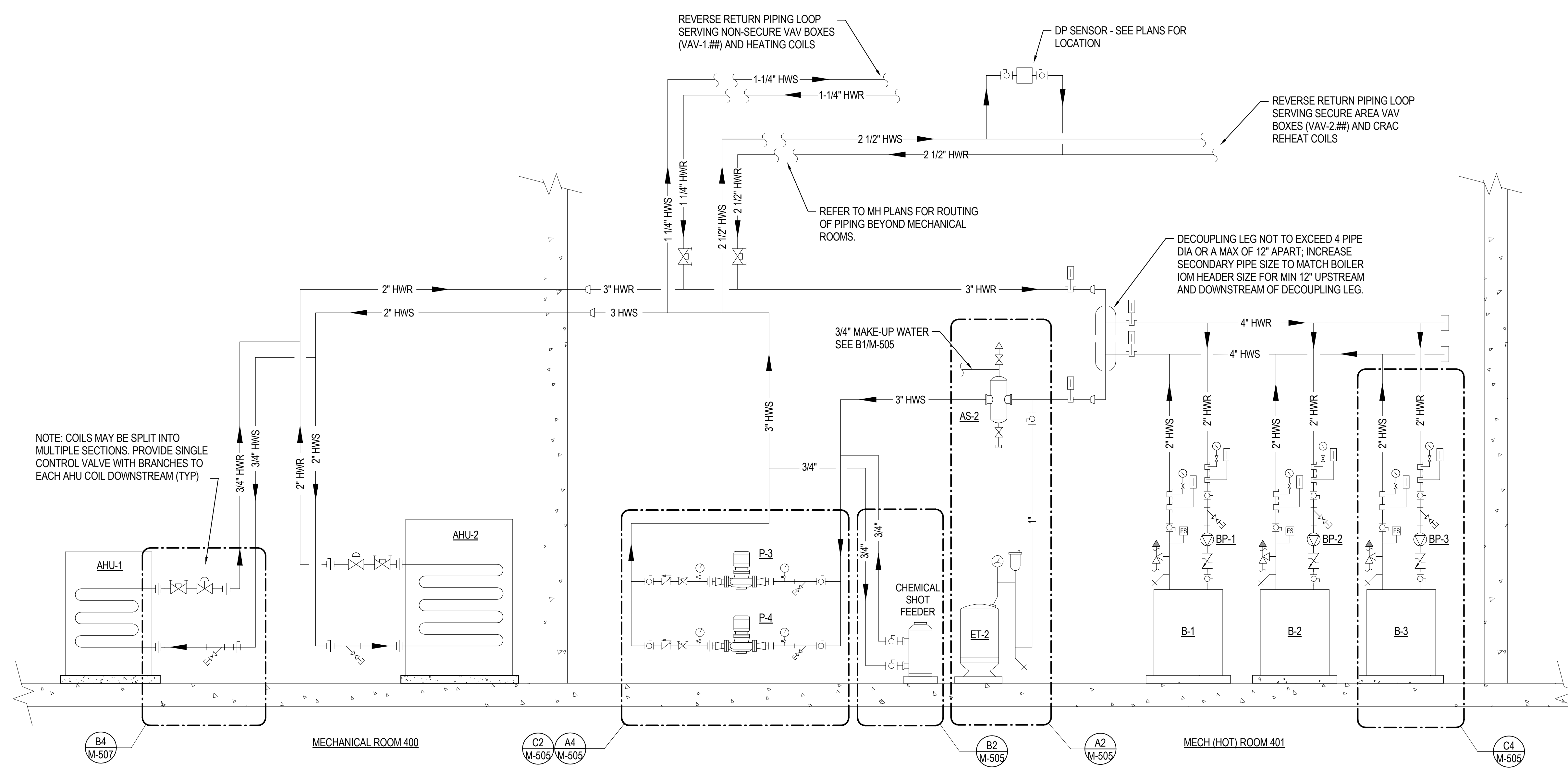
- HOT WATER PIPING DIAGRAMS INDICATED ON THIS DRAWING SHEET ARE DIAGRAMMATIC IN NATURE AND DO NOT NECESSARILY INDICATE ALL REQUIRED PIPING APPURTENANCES. REFER TO EQUIPMENT DETAILS ON M-500 SERIES OF DRAWINGS AS WELL AS MANUFACTURER'S INSTALLATION INSTRUCTIONS AND PROVIDE ALL NECESSARY PIPING APPURTENANCES REQUIRED FOR A COMPLETE INSTALLATION.
- INSTALL VALVED DRAINS AT ALL SYSTEM HIGH POINTS.

APPR	DATE	DESCRIPTION	SYM
Michael Baker INTERNATIONAL 100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED			
FOR COMMANDER NAVFAC			
ACTIVITY CONCURRED BY MCB-CL AMB VIA EMAIL			
SATISFACTORY TO DATE 12/16/21			
DESIGN	DRW	CHK	DATE
PM / DM	TOWLER / ROOT		
BRANCH HEAD SCE			
DESIGN DIRECTOR PAUL K. SHREM			
FIRE PROTECTION DPS			
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC ATLANTIC DESIGN AND CONSTRUCTION MCB CAMP LEJEUNE JACKSONVILLE, NC			
P1338 II MEF SIMULATION/TRAINING CENTER REPLACEMENT MECHANICAL - DIAGRAMS			
SCALE: AS NOTED			
EPROJCT NO.: 1590892			
CONSTR. CONTR. NO. N40085-20-C-0059			
NAVFAC DRAWING NO. 14098529			
SHEET 302 OF 456			
M-702			
DRAWING REVISION: 25 AUGUST 2020			

ISSUED FOR CONSTRUCTION - 16 DEC 21

FILE NAME: BIM 360/HF PACKAGE 3P1338_MEF SIM CTR-1590892-M.rvt
PLOTTED: 11/22/2021 4:21:19 PM

A1 HOT WATER FLOW DIAGRAM
SCALE: NTS



- GENERAL NOTES**
- HOT WATER PIPING DIAGRAMS INDICATED ON THIS DRAWING SHEET ARE DIAGRAMMATIC IN NATURE AND DO NOT NECESSARILY INDICATE ALL REQUIRED PIPING APPURTENANCES. REFER TO EQUIPMENT DETAILS ON M-500 SERIES OF DRAWINGS AS WELL AS MANUFACTURER'S INSTALLATION INSTRUCTIONS AND PROVIDE ALL NECESSARY PIPING APPURTENANCES REQUIRED FOR A COMPLETE INSTALLATION.
 - INSTALL VALVED DRAINS AT ALL SYSTEM HIGH POINTS.
 - BOILERS (B-1, B-2 & B-3) SHALL FUNCTION VIA THEIR FACTORY CONTROLS. BOILER CONTROLS SHALL HAVE LEAD-LAG SEQUENCES TO PROVIDE BOILER STAGING MODULATION AND EQUAL RUN TIME FOR EACH BOILER. P-3, AND P-4 SHALL BE DUTY/STAND-BY OPERATION. IF DUTY PUMP FAILS BASED ON CURRENT SWITCH MONITORING IT'S OPERATION, THE STAND-BY PUMP SHALL BE ENABLED.

APPROVED		DATE	APPR
SYN		DESCRIPTION	

Michael Baker International
100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108
A/E INFO
APPROVED

FOR COMMANDER NAVFAC		
ACTIVITY	CONCURRED BY MCB-CL AMB VIA EMAIL	
SATISFACTORY TO DATE	12/16/21	
DES. SEM	DRW. JMK	CHK. EMB
PM / DM	TOWLER / ROOT	
BRANCH HEAD	SCE	
DESIGN DIRECTOR	PAUL K. SHREM	
FIRE PROTECTION	DPS	

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
ATLANTIC DESIGN AND CONSTRUCTION
NAVFAC P1338 II MEF SIMULATION/TRAINING CENTER REPLACEMENT
MECHANICAL - DIAGRAMS
JACKSONVILLE, NC
MCB CAMP LEJEUNE

SCALE:	AS NOTED
EPROJECT NO.:	1590892
CONSTR. CONTR. NO.	N40085-20-C-0059
NAVFAC DRAWING NO.	14098530
SHEET	303 OF 456

M-703
DRAWING REVISION: 25 AUGUST 2020

ISSUED FOR CONSTRUCTION - 16 DEC 21

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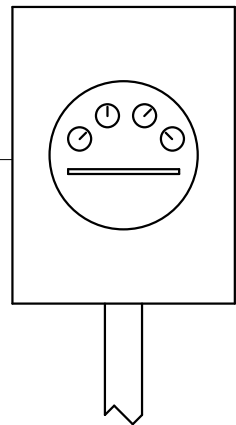
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ELECTRIC METER SEQUENCE OF OPERATION:

ENHANCED POWER AND ENERGY ELECTRIC METER SHALL MONITOR AND TREND POINTS AS INDICATED ON THE PONT'S LIST, WITH ONBOARD DATA LOGGING AS WELL AS OUTPUT TO THE BUILDING DDC SYSTEM

NOTE: THIS METER IS SEPARATE AND DISTINCT FROM THE METER INDICATED ON THE ELECTRICAL DRAWINGS. ATC SUB-CONTRACTOR TO PROVIDE.

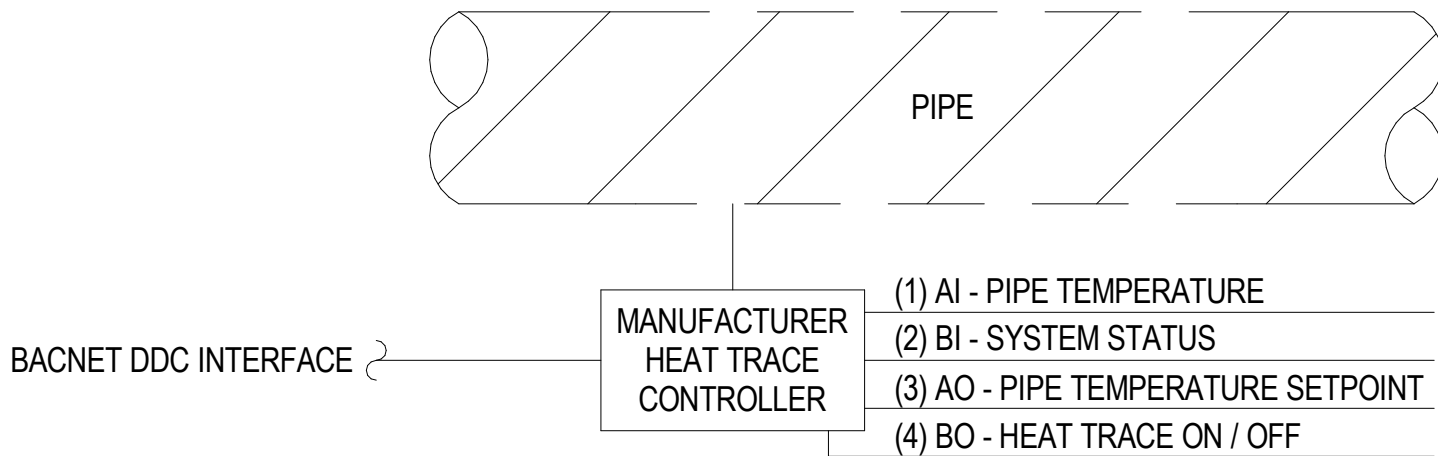
(1) AV - BACNET INTERFACE



B1

ELECTRIC METER CONTROL DIAGRAM

SCALE: NTS



HEAT TRACE - SEQUENCE OF OPERATION

- UPON DROP IN PIPE SURFACE TEMPERATURE TO 35°F (ADJ.), HEAT TRACE TO ACTIVATE. UPON RISE IN PIPE SURFACE TEMPERATURE ABOVE 38°F (ADJ.), HEAT TRACE TO DEACTIVATE. HEAT TRACE CABLE TO BE SELF-REGULATING TYPE, MODULATING OUTPUT TO KEEP PIPE SURFACE TEMPERATURE ABOVE 35°F (ADJ.).
- HEAT TRACE CONTROLLER TO MONITOR SYSTEM STATUS AND SEND TO DDC SYSTEM. UPON LOSS OF POWER TO HEAT TRACE CABLE, ALARM TO BE SENT TO HEAT TRACE CONTROLLER AND DDC SYSTEM.

A1

ELECTRIC HEAT TRACING

SCALE: NTS

ELECTRIC (ENHANCED POWER AND ENERGY) METER - SYSTEM POINT LIST

POINT NUMBER	SYSTEM POINT DESCRIPTION	SHOW ON DISPLAY	HARDWARE POINTS				SYSTEM FEATURES /SOFTWARE POINTS				NOTES
			ANALOG		DIGITAL (BINARY)						
			INPUT (AI)	OUTPUT (AO)	INPUT (BI)	OUTPUT (BO)	PROGRAMS	ALARMS			
	ELECTRIC METER							TREND (AV) ANALOG VALUE		COMM. FAIL	
	DDC CONTROL PANEL										
1	BACNET COMMUNICATIONS INTERFACE	●								●	
2	POWER (REAL, KW) - 3-PHASE TOTAL	●						●	●		
3	POWER (REAL, KW) -PER PHASE	●						●	●		
4	POWER (REACTIVE, KVAR) - 3-PHASE TOTAL	●						●	●		
5	POWER (REACTIVE, KVAR) - PER PHASE	●						●	●		
6	POWER (APPARENT, kVA) - 3-PHASE TOTAL	●						●	●		
7	POWER (APPARENT, kVA) - PER PHASE	●						●	●		
8	POWER FACTOR (3-PHASE AVERAGE)	●						●	●		
9	POWER FACTOR (PER PHASE)	●						●	●		
10	PRESENT POWER DEMAND (REAL, KW) - 3-PHASE TOTAL	●						●	●		
11	PRESENT POWER DEMAND (REAL, KW) -PER PHASE	●						●	●		
12	PRESENT POWER DEMAND (REACTIVE, KVAR) - 3-PHASE TOTAL	●						●	●		
13	PRESENT POWER DEMAND (REACTIVE, KVAR) - PER PHASE	●						●	●		
14	PRESENT POWER DEMAND (APPARENT, kVA) - 3-PHASE TOTAL	●						●	●		
15	PRESENT POWER DEMAND (APPARENT, kVA) - PER PHASE	●						●	●		
16	PEAK POWER DEMAND (REAL, KW) - 3-PHASE TOTAL	●						●	●		
17	PEAK POWER DEMAND (REAL, KW) -PER PHASE	●						●	●		
18	PEAK POWER DEMAND (REACTIVE, KVAR) - 3-PHASE TOTAL	●						●	●		
19	PEAK POWER DEMAND (REACTIVE, KVAR) - PER PHASE	●						●	●		
20	PEAK POWER DEMAND (APPARENT, kVA) - 3-PHASE TOTAL	●						●	●		
21	PEAK POWER DEMAND (APPARENT, kVA) - PER PHASE	●						●	●		
22	CURRENT - 3-PHASE AVERAGE	●						●	●		
23	CURRENT - PER PHASE	●						●	●		
24	VOLTAGE - LINE-LINE	●						●	●		
25	VOLTAGE - LINE-NEUTRAL	●						●	●		
26	FREQUENCY - Hz	●						●	●		
27	ACCUMULATED NET ENERGY - REAL kWh	●						●	●		
28	ACCUMULATED NET ENERGY - REACTIVE kVARh	●						●	●		
29	ACCUMULATED NET ENERGY - APPARENT kVAh	●						●	●		
30	ACCUMULATED REAL ENERGY BY PHASE (kWh)	●						●	●		

HEAT TRACE SYSTEM POINT LIST

POINT NUMBER	SYSTEM POINT DESCRIPTION	SHOW ON DISPLAY	ANALOG		DIGITAL (BINARY)		SYSTEM FEATURES		NOTES
			INPUT (AI)	OUTPUT(AO)	INPUT (BI)	OUTPUT (BO)	ALARMS	PROGRAMS	
1	PIPE TEMPERATURE	●							
2	SYSTEM STATUS	●							
3	PIPE TEMPERATURE SETPOINT	●							
4	HEAT TRACE ON / OFF	●							
##	RESERVED FOR FUTURE								

APPR

DATE

SYN

DESCRIPTION

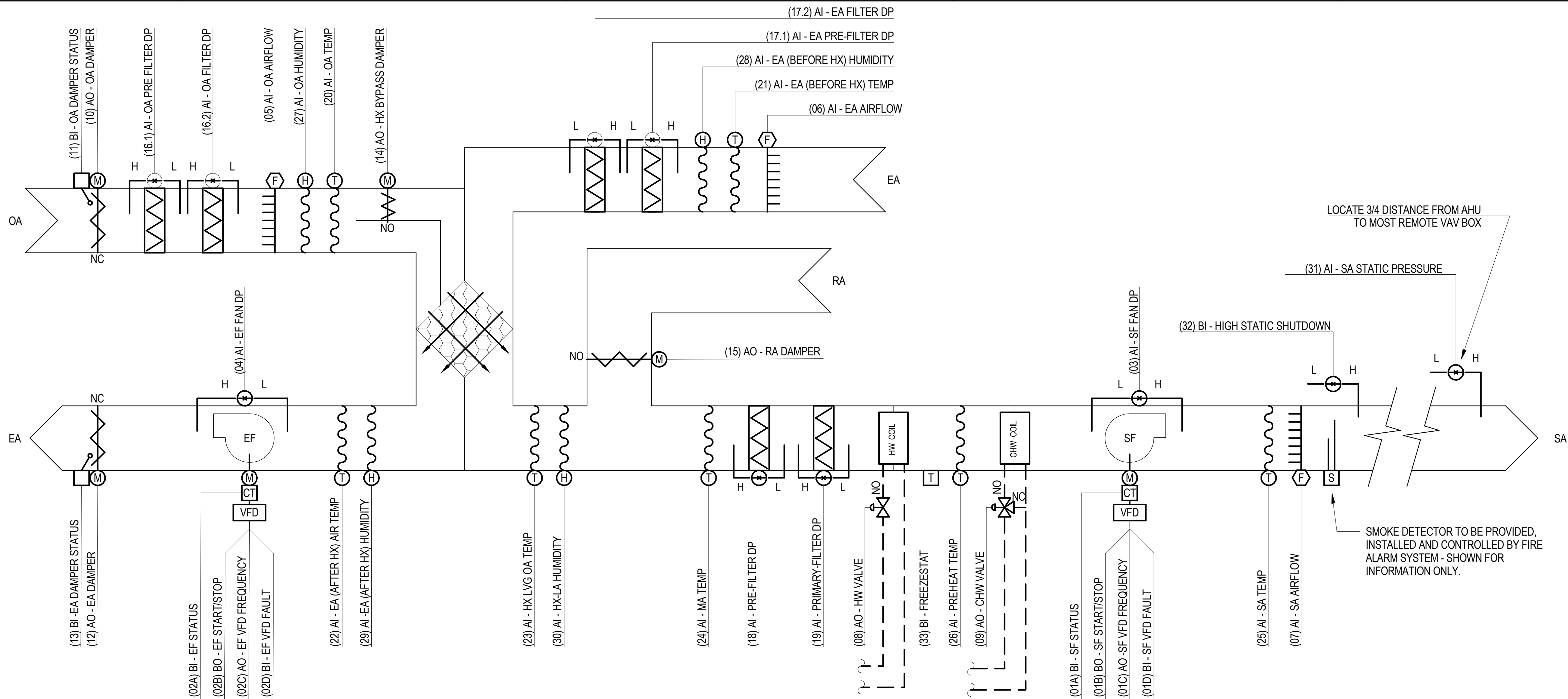
Michael Baker INTERNATIONAL
100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108
APPROVED

FOR COMMANDER NAVFAC
ACTIVITY
CONCURRED BY
MCB-CL AMB
VIA EMAIL
SATISFACTORY TO DATE 12/16/21
DES DESIGNED BY
DRW DRAWN BY
CHK CHECKED BY
PM / DM TOWLER / ROOT
BRANCH HEAD SCE
DESIGN DIRECTOR PAUL K. SHREM
FIRE PROTECTION DPS

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
ATLANTIC DESIGN AND CONSTRUCTION
NAVFAC DRAWING NO. 14098532
SHEET 305 OF 456
M-802
DRAWING REVISION: 25 AUGUST 2020

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC
ATLANTIC DESIGN AND CONSTRUCTION
MCB CAMP LEJEUNE
JACKSONVILLE, NC
P1338 II MEF SIMULATION/TRAINING CENTER
REPLACEMENT
MECHANICAL - CONTROLS

ISSUED FOR CONSTRUCTION - 16 DEC 21



HF-3, P-1338, AHU-1 SOO:

BUILDING AUTOMATION SYSTEM INTERFACE:

THE BUILDING AUTOMATION SYSTEM (BAS) SHALL SEND THE CONTROLLER OCCUPIED/UNOCCUPIED, OCCUPIED BYPASS, MORNING WARM UP/PRE COOL, ATFP ALARM CONDITION AND MODES. THE UNIT SHALL DELIVER SUPPLY AIR AT A CONSTANT 55 °F DB (ADJ.) SUPPLY TEMPERATURE WITH INDIVIDUAL ZONE COOLING/HEATING CONTROLLED AT THE VAV BOX/ZONE LEVEL. THE BAS SHALL ALSO SEND THE DISCHARGE AIR TEMPERATURE SETPOINT (55 °F DB) AND THE DUCT STATIC PRESSURE SETPOINT. IF COMMUNICATION IS LOST WITH THE BAS, THE CONTROLLER SHALL OPERATE USING DEFAULT MODES AND SETPOINTS.

OCCUPIED MODE:

DURING OCCUPIED PERIODS, THE SUPPLY FAN AND EXHAUST FAN SHALL RUN CONTINUOUSLY, AND THE OUTSIDE AIR DAMPER SHALL OPEN/MODULATE IN CONJUNCTION WITH THE RETURN AIR DAMPER TO MAINTAIN THE CONSTANT VENTILATION AND EXHAUST REQUIREMENT AND BUILDING PRESSURIZATION. THE CHILLED WATER AND HOT WATER VALVES SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT.

UNOCCUPIED MODE:

WHEN THE SPACE TEMPERATURE OF ANY ZONE IS BELOW THE UNOCCUPIED HEATING SETPOINT OF 60.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL START, THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED, THE EXHAUST FAN SHALL REMAIN OFF, AND THE HOT WATER VALVE SHALL OPEN. WHEN THE SPACE TEMPERATURE OF EACH ZONE RISES ABOVE THE UNOCCUPIED HEATING SETPOINT OF 60.0 DEG. F (ADJ.) PLUS THE UNOCCUPIED DIFFERENTIAL OF 4.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL STOP AND THE HOT WATER VALVE SHALL CLOSE.

WHEN THE SPACE TEMPERATURE IS ABOVE THE UNOCCUPIED COOLING SETPOINT OF 85.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL START, THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED, THE EXHAUST FAN SHALL REMAIN OFF, AND THE CHILLED WATER VALVE SHALL OPEN. WHEN THE SPACE TEMPERATURE OF ALL ZONES FALLS BELOW THE UNOCCUPIED COOLING SETPOINT OF 85.0 DEG. F (ADJ.) MINUS THE UNOCCUPIED DIFFERENTIAL OF 4.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL STOP AND THE CHILLED WATER VALVE SHALL CLOSE.

OPTIMAL START:

THE BAS SHALL MONITOR THE SCHEDULED OCCUPIED TIME, OCCUPIED SPACE SETPOINTS AND SPACE TEMPERATURE TO CALCULATE WHEN THE OPTIMAL START OCCURS.

MORNING WARM UP MODE:

DURING OPTIMAL START, THE AVERAGE SPACE TEMPERATURE IS BELOW THE OCCUPIED HEATING SETPOINT A MORNING WARM UP MODE SHALL BE ACTIVATED. WHEN MORNING WARM UP IS INITIATED THE UNIT SHALL ENABLE THE HEATING AND SUPPLY FAN. THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED AND THE EXHAUST FAN SHALL REMAIN OFF. WHEN THE SPACE TEMPERATURE REACHES THE OCCUPIED HEATING SETPOINT (ADJ.), THE UNIT SHALL TRANSITION TO THE OCCUPIED MODE.

PRE COOL MODE:

DURING OPTIMAL START, IF THE AVERAGE SPACE TEMPERATURE IS ABOVE THE OCCUPIED COOLING SETPOINT, PRE COOL MODE SHALL BE ACTIVATED. WHEN PRE COOL IS INITIATED THE UNIT SHALL ENABLE THE COOLING AND SUPPLY FAN. THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED AND THE EXHAUST FAN SHALL REMAIN OFF. WHEN THE SPACE TEMPERATURE REACHES OCCUPIED COOLING SETPOINT (ADJ.), THE UNIT SHALL TRANSITION TO THE OCCUPIED MODE.

OCCUPIED BYPASS:

THE BAS SHALL MONITOR THE STATUS OF THE "ON" AND "CANCEL" BUTTONS OF THE VAV SPACE TEMPERATURE SENSORS. WHEN AN OCCUPIED BYPASS REQUEST IS RECEIVED FROM A SPACE SENSOR, THE UNIT SHALL TRANSITION FROM ITS CURRENT OCCUPANCY MODE TO OCCUPIED BYPASS MODE AND THE UNIT SHALL MAINTAIN THE SPACE TEMPERATURE TO THE OCCUPIED SETPOINTS FOR A PERIOD OF 2 HOURS (ADJ).

FIXED PLATE ENTHALPY HX OPERATION:

UNDER ALL CONDITIONS, THE MIXED AIR TEMPERATURE (MEASURED BY POINT (24)-MA_TEMP) IS DESIGNED TO PROVIDE TEMPERATURE ENTERING THE COOLING AND HEATING COILS AS CLOSE TO SUPPLY AIR SETPOINT (55°F ADJ) AS POSSIBLE.

- 1) WHEN UNIT IS IN COOLING MODE ((24)-MA_TEMP ENTERING COILS \geq SA SETPOINT (55°ADJ.)):
- A) IF (20)-OA_TEMP IS HIGHER THAN (21)-EA_TEMP: (14)-HX_BYPASS_DAMPER SHALL BE POSITIONED FOR 0% BYPASS (ALL OA FLOW THROUGH THE EXCHANGER).
 - B) IF (20)-OA_TEMP IS LESS THAN (21)-EA_TEMP: (14)-HX_BYPASS DAMPER SHALL BE POSITIONED FOR 100% BYPASS (NO DETRIMENTAL ENERGY RECOVERY ADDING HEAT TO THE OA AIRSTREAM).

- 2) WHEN UNIT IS IN HEATING MODE ((24)-MA_TEMP ENTERING COILS < SA SETPOINT (55° ADJ.):
A) WHEN CONDITION 1.B ABOVE RESULTS IN (24)-MA_TEMP DROPPING BELOW SA SETPOINT, (14)-HX_BYPASS_DAMPER SHALL MODULATE A PERCENTAGE OF OA THROUGH THE HX TO RECOVER HEAT FROM THE EXHAUST AIRSTREAM TO MAINTAIN THE UNIT SETPOINT WITHOUT NEED FOR ACTIVATION OF THE HEATING COIL UP TO A POINT OF FULL MODULATION OF OA THROUGH THE HX FOR MAXIMUM AVAILABLE HEAT RECOVERY.
B) (14)-HX_BYPASS DAMPER MODULATION SHALL BE LIMITED TO PREVENT (22)-EA_(AFTER_HX) AIR_TEMP FROM FALLING BELOW THE FROST THRESHOLD SETPOINT AS REQUIRED BY HX MANUFACTURER (39°F ADJ.).

SUPPLY FAN:

THE FAN SHALL BE OFF IN THE UNOCCUPIED MODE. WHEN THE UNIT CONTROLLER IS IN THE OCCUPIED MODE, THE SUPPLY FAN SHALL OPERATE CONTINUOUSLY AND ITS SPEED SHALL BE MODULATED TO MAINTAIN THE DUCT STATIC PRESSURE SETPOINT. THE DUCT STATIC PRESSURE SETPOINT SHALL BE SENT BY THE BAS AND SHALL BE CONSTANT.

IF THE SUPPLY FAN FAILS TO PROVE STATUS FOR 30 SECONDS (ADJ.), THE FAN SHALL BE
 COMMANDED OFF, THE OUTSIDE AIR DAMPER SHALL CLOSE, THE EXHAUST FAN SHALL TURN OFF, ALL
 VALVES SHALL CLOSE AND AN ALARM SHALL BE ANNUNCIATED AT THE BAS. A MANUAL RESET SHALL
 BE REQUIRED TO RESTART THE FAN.

A HARDWIRED, HIGH STATIC PRESSURE CUT OFF SWITCH SHALL BE ELECTRICALLY INTERLOCKED WITH THE VARIABLE SPEED DRIVE. IF THE HIGH STATIC PRESSURE CUT OFF SWITCH IS TRIPPED THE FAN SHALL STOP. THE OUTSIDE AIR DAMPER SHALL CLOSE, THE EXHAUST FAN SHALL TURN OFF, ALL VALVES SHALL CLOSE AND AN ALARM SHALL BE ANNUNCIATED AT THE BAS. A MANUAL RESET OF THE HIGH STATIC PRESSURE CUT OFF SWITCH SHALL BE REQUIRED TO RESTART THE FAN.

FILTER STATUS:

A DIFFERENTIAL PRESSURE SWITCH SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FILTERS WHEN THE FANS ARE RUNNING. THIS INFORMATION SHALL BE PROVIDED TO THE DDC SYSTEM FOR INFORMATION ONLY. CAMP LEJEUNE MECHANICAL POLICIES DO NOT DESIRE FILTER ALARMS (FILTERS SHALL BE CHANGED ON REGULAR MAINTENANCE INTERVALS).

FREEZE PROTECTION:

A HARDWIRED, LOW LIMIT TEMPERATURE SWITCH SHALL BE ELECTRICALLY INTERLOCKED WITH THE SUPPLY FAN VARIABLE SPEED DRIVE. IF THE LOW LIMIT TEMPERATURE SWITCH IS TRIPPED 38.0 DEG. F (ADJ.), THE OUTSIDE AIR DAMPER SHALL CLOSE, THE EXHAUST FAN SHALL TURN OFF, ALL VALVES SHALL OPEN TO 100% (ADJ.) AND AN ALARM SHALL BE ANNUNCIATED AT THE BAS. A MANUAL RESET OF THE LOW LIMIT TEMPERATURE SWITCH SHALL BE REQUIRED TO RESTART THE SUPPLY FAN.

ATFP SHUTDOWN:

UNIT SHALL BE HARDWIRED TO SHUTDOWN AND CLOSE ALL ASSOCIATED DAMPERS UPON ATPF SWITCH ACTIVATION, REFER TO DRAWING M-803 FOR MORE INFORMATION.

BUILDING PRESSURE CONTROL:

THE OUTDOOR AIR DAMPER SHALL MODULATE TO MAINTAIN THE CONSTANT VENTILATION REQUIREMENT AS MEASURED BY THE OUTDOOR AIRFLOW STATION. IF THE OUTSIDE AIR DAMPER IS 100% OPEN, AND THE VENTILATION AIRFLOW IS LESS THAN THE CONSTANT VOLUME REQUIREMENT, THEN THE RETURN AIR DAMPER SHALL SLOWLY MODULATE CLOSED IN ORDER TO ACHIEVE THE CONSTANT VENTILATION REQUIREMENT. THE RETURN AIR DAMPER SHALL NOT BE ALLOWED TO CLOSE FULLY IN ORDER TO PREVENT STARVING THE SUPPLY FAN.

THE EXHAUST FAN SPEED SHALL MODULATE TO MAINTAIN THE CONSTANT EXHAUST AIRFLOW REQUIREMENT AS MEASURED BY THE EXHAUST AIRFLOW STATION. IF THE EXHAUST FAN IS AT MINIMUM SPEED, AND THE EXHAUST AIRFLOW IS GREATER THAN THE CONSTANT VOLUME REQUIREMENT, THEN THE EXHAUST AIR DAMPER SHALL SLOWLY MODULATE CLOSED TO ACHIEVE THE CONSTANT EXHAUST AIRFLOW REQUIREMENT. THE EXHAUST AIR DAMPER SHALL NOT BE ALLOWED TO CLOSE FULLY TO PREVENT STARVING THE EXHAUST FAN.

BY MAINTAINING BOTH THE CONSTANT OUTSIDE AIR VENTILATION AND THE CONSTANT EXHAUST AIRFLOW REQUIREMENTS, THE RESULTING SPACE PRESSURE SHALL REMAIN SLIGHTLY POSITIVE.

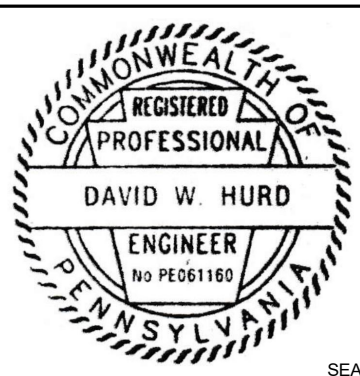
A1 AHU CONTROL DIAGRAM (AHU-01)
SCALE: NTS

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[illegible]

NOTES: 1. SUPPLY AND RELIEF FAN & VFD'S AS INDICATED ON THESE DRAWINGS MAY REFER TO FAN-WALL ARRAYS CONSISTING OF MULTIPLE FANS AND VFD'S; FAN WALL SHALL MODULATE PER MANUFACTURER'S PROVIDED CONTROLS FOR OPTIMUM PERFORMANCE AND EFFICIENCY BASED ON COMMON ANALOG OUTPUT SIGNAL.



Michael Baker
INTERNATIONAL
100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108 A/E INF
APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

CONCURRED BY
MCB-CL AMB
VIA EMAIL

Satisfactory to Date 12/16/21

DES DEM	DRW AJK	CHK EMB
PM / DM	TOWLER / ROOT	

BRANCH HEAD	SCENARIO
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DESIGN DIRECTOR	PAUL K. SHREMP
FIRE PROTECTION	DPS

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<p>DEPARTMENT OF THE NAVY</p> <p>NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND</p> <p>NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC</p> <p>ATLANTIC DESIGN AND CONSTRUCTION</p> <p>MCB CAMP LEJEUNE</p> <p>JACKSONVILLE, NC</p> <p>P1338 II MEF SIMULATION/TRAINING CENTER</p> <p>REPLACEMENT</p> <p>MECHANICAL - CONTROLS</p>

SCALE:	AS NOTED
EPROJECT NO.:	1590892
CONSTR. CONTR. NO.	N40085-20-C-0059
NAVFAC DRAWING NO.	14098537
SHEET	310 OF 456

M-807

FILE NAME: BIM 360/HF PACKAGE 3P1338 - MEF SIM CTR-1590892-M.rvt
PLOTTED: 11/22/2021 4:21:30 PM

A1 CHILLED WATER SYSTEM CONTROL DIAGRAM

SCALE: NTS

THIS CHILLER INTERFACE SCHEMATIC MAY NOT REFLECT THE ACTUAL SENSORS AND POINTS AS SUPPLIED BY THE CHILLER MANUFACTURER. ALL INTERFACE POINTS SHALL BE COORDINATED WITH THE CHILLER SUPPLIER. (TYP)

- (03.1) BO - CHILLER START/STOP
(03.2) BI - CHILLER STATUS (ON/OFF)
(03.3) AI - PERCENT RLA
(03.4) AI - PERCENT KW
(03.5) AV - CHILLER ALARM

- (02.1) BO - CHILLER START/STOP
(02.2) BI - CHILLER STATUS (ON/OFF)
(02.3) AI - PERCENT RLA
(02.4) AI - PERCENT KW
(02.5) AV - CHILLER ALARM

(01) AO - TEMP SETPOINT

CHILLERS 01 & 02 SHALL BE CONTROLLED BY THE DDC SYSTEM TO OPERATE/FUNCTION AS A COMMON CHILLER TO OPTIMALLY PROVIDE THE REQUIRED COMMON SUPPLY WATER TEMPERATURE.

- (04) AI - T-2 CHWS TEMP
(09) BI - CH-01 FLOW STATUS
(17) AI - CH-01 FLOW

- (05) AI - T-3 CHWS TEMP
(10) BI - CH-02 FLOW STATUS
(18) AI - CH-02 FLOW

- (08) AI - T-6 CHWR TEMP

- (03) AI - T-1 CHWS TEMP

- (16) AI - SYSTEM FLOW

- (11) BI - CHW PUMP P-1 STATUS

- (06) AI - T-4 CHWR TEMP

- (14) BI - CHW PUMP P-2 STATUS

REFER TO AHU-01, 02 & CRAC CONTROL DIAGRAMS FOR REMAINDER OF CHILLED WATER SYSTEM CONTROLS.

CHILLED WATER SYSTEM POINT LIST																															
POINT NUMBER	SYSTEM POINT DESCRIPTION	SHOW ON DISPLAY	HARDWARE POINTS												SYSTEM FEATURES / SOFTWARE POINTS										NOTES						
			ANALOG						DIGITAL (BINARY)						PROGRAMS					ALARMS											
			INPUT (AI)		OUTPUT (AO)				INPUT (BI)		OUTPUT (BO)																				
			TEMPERATURE	PRESSURE	KW	PERCENT RLA	FLOW (GPM)	SETPOINT ADJ	FREQUENCY			STATUS ON/OFF	FILTER STATUS	STATUS OPEN CLOSE	STATUS (FAULT)	START/STOP				TREND	(AV) ANALOG VALUE	TIME SCHEDULING	ALARM INSTRUCT	RUN TIME			HIGH ANALOG	LOW ANALOG	SENSOR FAIL	FLOW FAIL	COMM. FAIL
	DDC CONTROL PANEL																														
01	CHILLED WATER SETPOINT																														
02.1-5	CHILLER CH-01																														
03.1-5	CHILLER CH-02																														
03	CHWS TEMP (MAIN) SENSOR T-1																														
04	CHWS TEMP (CH-01) SENSOR T-1																														
05	CHWS TEMP (CH-02) SENSOR T-2																														
06	CHWR TEMP (MAIN) SENSOR T-4																														
07	CHWR TEMP (CH-01) SENSOR T-5																														
08	CHWR TEMP (CH-02) SENSOR T-6																														
09	CH-01 FLOW SWITCH FS-1																														
10	CH-02 FLOW SWITCH FS-2																														
11	PUMP P-1 STATUS																														
12.1	PUMP P-1 START/STOP																														
12.2	PUMP P-1 VFD FREQUENCY																														
12.3	PUMP P-1 VFD FAULT																														
13	PUMP P-2 STATUS																														
14.1	PUMP P-2 START/STOP																														
14.2	PUMP P-2 VFD FREQUENCY																														
14.3	PUMP P-2 VFD FAULT																														
15	PUMP P-1,2 DIFFERENTIAL PRESS																														
16	SYSTEM FLOW (TOTAL)																														
17	CH-01 FLOW																														
18	CH-02 FLOW																														
19	BTU'S EXTRACTED																														
-	RESERVED FOR FUTURE																														
NOTES: 1. BTU'S EXTRACTED SHALL BE CALCULATED BY THE DDC SYSTEM BASED ON SYSTEM SUPPLY/RETURN WATER TEMPERATURES AND SYSTEM FLOW.																															

NOTES: 1. BTU'S EXTRACTED SHALL BE CALCULATED BY THE DDC SYSTEM BASED ON SYSTEM SUPPLY/RETURN WATER TEMPERATURES AND SYSTEM FLOW.

AIR COOLED CHILLED WATER SYSTEM SEQUENCE OF OPERATION

1. CHILLED WATER CONTROL

- UPON COMMAND FOR CHILLED WATER BY ANY SERVED AHU/CRAC UNIT; ENABLE DUTY CHILLED WATER PUMP AND CHILLED WATER PLANT.
- PUMPS P-1 & P-2 ARE EACH SIZED FOR FULL SYSTEM FLOW AND OPERATE ON A DUTY/STANDBY BASIS. STANDBY PUMP SHALL BE ENABLED UPON A FAILURE OF THE DUTY PUMP. THE DUTY PUMP SHALL BE THE PUMP WITH THE LEAST RUNTIME HOURS; PUMPS SHALL CYCLE BETWEEN DUTY/STANDBY SERVICE ON THE 1ST AND 15TH OF THE MONTH.
- THE COOLING PLANT WILL BE ENERGIZED BY FIRST ENERGIZING DUTY CHW PUMP (P-1 OR P-2) AT FULL SYSTEM CONSTANT VOLUME FLOWRATE. FLOW SHALL BE EQUALLY BALANCED (VIA MANUAL BALANCING VALVES) FOR EQUAL CONSTANT VOLUME FLOWRATE (50% OF SYSTEM FLOW) THROUGH EACH CHILLER.
- EACH CHILLER SHALL BE PROVIDED WITH AN INTEGRAL FLOW SWITCH TO ASSURE PROOF OF FLOW AND ENABLE CHILLER OPERATION.
- MANUFACTURER'S CHILLER CONTROLLERS SHALL BE INTERFACED TO THE BUILDING AUTOMATION (DDC) SYSTEM) WHICH SHALL BE PROGRAMMED TO ALLOW THE DUAL CHILLER PLANT TO OPERATE / STAGE / SEQUENCE INDIVIDUAL CHILLER CAPACITIES FROM A SINGLE STAGE/SINGLE CHILLER (MINIMUM COOLING CAPACITY) OPERATION TO ALL STAGES/BOTH CHILLERS (MAXIMUM COOLING CAPACITY). CHILLERS SHALL OPERATE IN TANDEM TO DELIVER CHILLED WATER SUPPLY TEMPERATURE (42°F, ADJ.) IN MOST ENERGY EFFICIENT COMBINATION OF CHILLERS/CHILLER STAGING.
- A SIGNAL FROM EITHER CHILLER SHALL ENABLE PUMP OPERATION AS REQUIRED FOR CHILLER FREEZE PROTECTION AS REQUIRED BY THE CHILLER MANUFACTURER (IN ADDITION TO CHILLERS INTERNAL HEAT TRACE FREEZE PROTECTION).

2. CHILLED WATER SYSTEM ALARM




- A LOW TEMPERATURE (36°F ADJUSTABLE) OR HIGH TEMPERATURE (48°F ADJUSTABLE) SENSED AT T-1 SHALL SIGNAL AN ALARM AT DDC.
- AN ALARM CONDITION AT THE CHILLER CONTROL PANEL SHALL SIGNAL AN ALARM CONDITION.

3. ADDITIONAL MONITORING AND ALARMS:

- PUMP (P-1, P-2) STATUS: ON/OFF/FAULT
- CHILLER STATUS: ENABLED/DISABLED/FAULT
- BUILDING CHILLED WATER SUPPLY TEMPERATURE: MONITOR/LOW ALARM (38°F, ADJ.)/HIGH ALARM (46°F, ADJ.)
- BUILDING CHILLED WATER RETURN TEMPERATURE: MONITOR/LOW ALARM (44°F, ADJ.)/HIGH ALARM (60°F, ADJ.)
- CHILLER (CH-1, CH-2) LEAVING WATER TEMPERATURE: MONITOR

APPR
DATE

SYN
DESCRIPTION



Michael Baker International
100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108
APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
CONCURRED BY
MCB-CL AMB
VIA EMAIL
SATISFACTORY TO DATE
12/16/21
DES. REV. DRW. CHK. ENG.
PM / DM TOWLER / ROOT
BRANCH HEAD SCE
DESIGN DIRECTOR PAUL K. SHREM
FIRE PROTECTION DPS

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC
ATLANTIC DESIGN AND CONSTRUCTION
NAVFAC
JACKSONVILLE, NC
P1338 II MEF SIMULATION/TRAINING CENTER
REPLACEMENT
MECHANICAL - CONTROLS

SCALE: AS NOTED
EPROJECT NO.: 1590892
CONSTR. CONTR. NO. N40085-20-C-0059
NAVFAC DRAWING NO. 14098538
SHEET 311 OF 456
M-808
DRAWING REVISION: 25 AUGUST 2020

ISSUED FOR CONSTRUCTION - 16 DEC 21

11/22/2021 4:21:30 PM
PLOTED

BIM 360://HF PACKAGE 3P1333 - MEF SIM CTR-1590892-M.rvt

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B

C

D

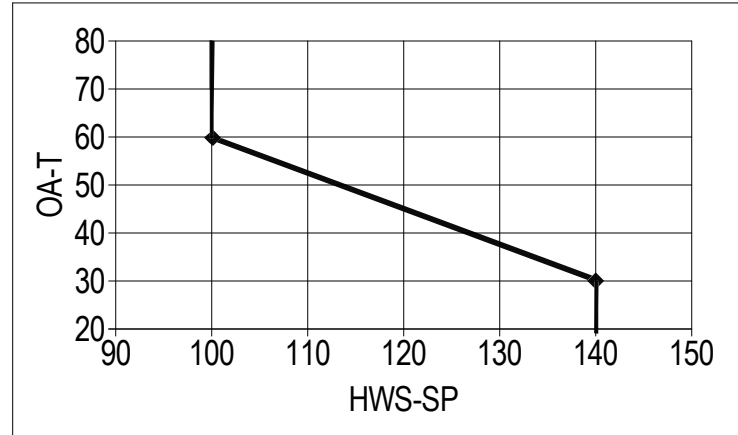
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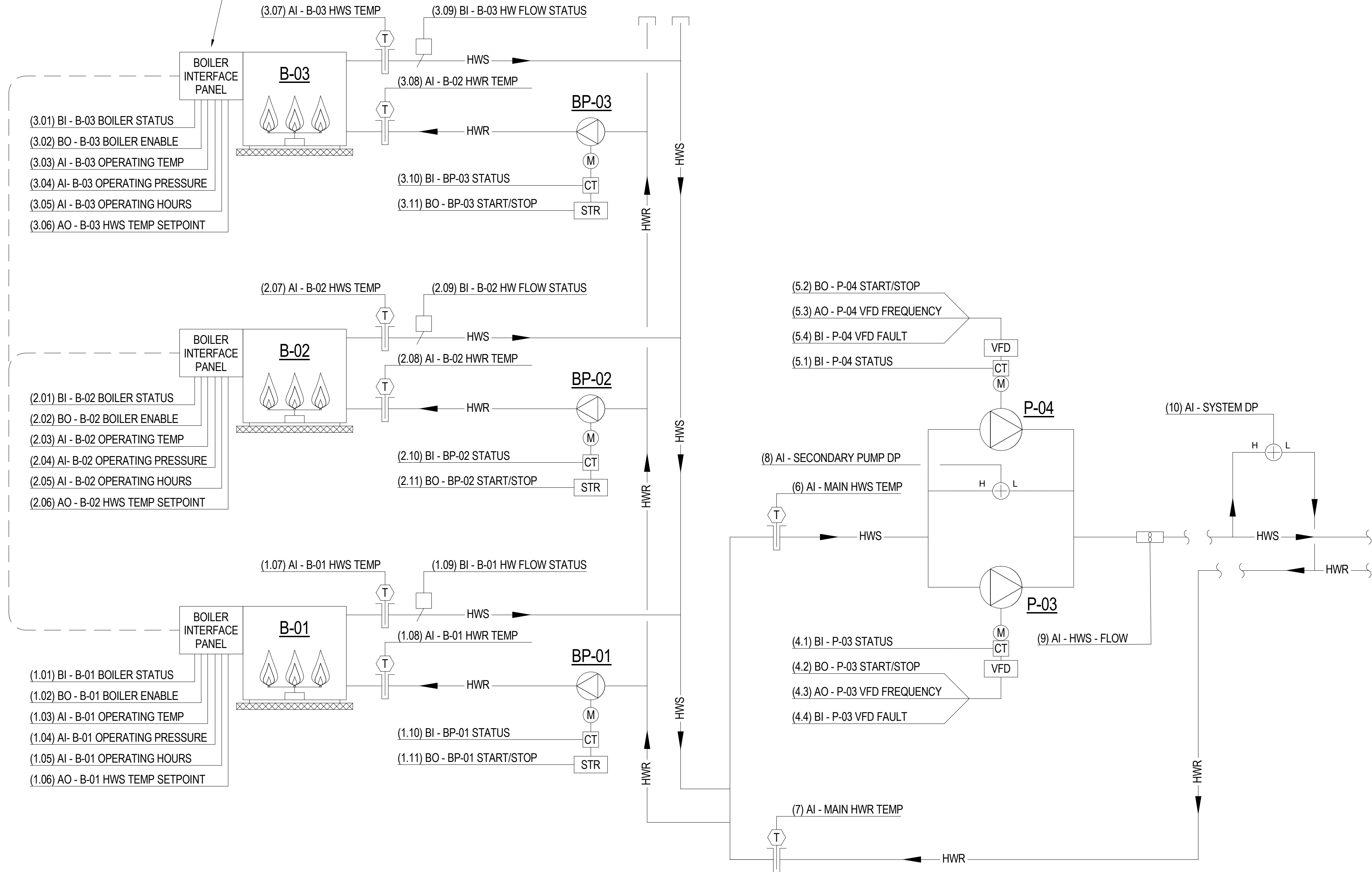
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HEATING HW OA RESET
SCHEDULE

THIS TYPICAL BOILER INTERFACE SCHEMATIC MAY NOT REFLECT THE ACTUAL SENSORS AND POINTS AS SUPPLIED BY THE BOILER MANUFACTURER. ALL INTERFACE POINTS SHALL BE COORDINATED WITH THE BOILER SUPPLIER. BOILER CONTROL PANELS SHALL BE INTERFACED AND CONTROLLED AS A SINGLE OPERATING BOILER PLANT



BOILER EMERGENCY SHUTDOWN SWITCH. SWITCH SHALL BE HARDWIRE INTERLOCKED TO CLOSE ALL GAS VALVES IN MECHANICAL ROOM. REFER TO ELECTRICAL DRAWINGS FOR WIRING. PROVIDE CONTACTS TO REPORT SWITCH STATUS TO DDC SYSTEM.

(11) BI - ES-01

A1 HOT WATER SYSTEM CONTROL DIAGRAM
SCALE: NTS

1

2

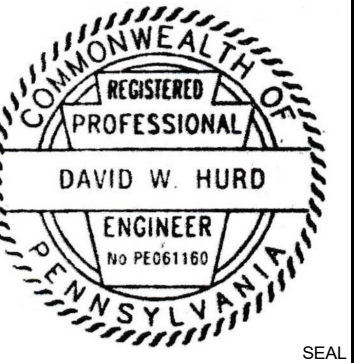
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4

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UNCLASSIFIED

SYN	DESCRIPTION	DATE	APPR



Michael Baker International
100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108
APPROVED

FOR COMMANDER NAVFAC			
ACTIVITY			
CONCURRED BY			
MCB-CL AMB			
VIA EMAIL			
SATISFACTORY TO DATE			
12/16/21			
DES	SEM	DRW	CHK
PM / DM	TOWLER / ROOT		
BRANCH HEAD	SCE		
DESIGN DIRECTOR	PAUL K. SHREM		
FIRE PROTECTION	DPS		

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC
ATLANTIC DESIGN AND CONSTRUCTION
NAVFAC DRAWING NO. 14098539
SHEET 312 OF 456
M-809
ISSUED FOR CONSTRUCTION - 16 DEC 21

SCALE:	AS NOTED
EPROJECT NO.:	1590892
CONSTR. CONTR. NO.	N40085-20-C-0059
NAVFAC DRAWING NO.	14098539
SHEET	312 OF 456
M-809	
DRAWING REVISION: 25 AUGUST 2020	

UNCLASSIFIED

ISSUED FOR CONSTRUCTION - 16 DEC 21

D

C

B

A

HOT WATER BOILER / HEATING SYSTEM POINT LIST																												
POINT NUMBER	SYSTEM POINT DESCRIPTION	SHOW ON DISPLAY	HARDWARE POINTS (SEE NOTE 4)												SYSTEM FEATURES /SOFTWARE POINTS								NOTES					
			ANALOG						DIGITAL (BINARY)						PROGRAMS				ALARMS									
			INPUT (AI)			OUTPUT (AO)			INPUT (BI)			OUTPUT (BO)																
			TEMPERATURE	PRESSURE	FREQUENCY	FLOWRATE (GPM)	INFO	SETPOINT ADJ	% OPEN/CLOSE	FREQUENCY	TEMPERATURE	STATUS ON/OFF	FLOW STATUS	STATUS (FAULT)	OFF/ON (ENABLE)	START / STOP			TREND	(AV) ANALOG VALUE	TIME SCHEDULING	ALARM INSTRUCT		RUN TIME		HIGH ANALOG	LOW ANALOG	SENSOR FAIL
	DDC CONTROL PANEL																											
[1,2,3].01	B-0[1,2,3], BOILER STATUS	●								●								●		●	●							●
[1,2,3].02	B-0[1,2,3], BOILER ENABLE												●															
[1,2,3].03	B-0[1,2,3], OPERATING TEMP	●																●						●	●			
[1,2,3].04	B-0[1,2,3], OPERATING PRESSURE		●																					●				
[1,2,3].05	B-0[1,2,3], OPERATING HOURS						●											●										
[1,2,3].06	B-0[1,2,3], HWS TEMP SETPOINT							●										●										
[1,2,3].07	B-0[1,2,3], HWS (LEAVING) TEMP	●																●							●			
[1,2,3].08	B-0[1,2,3], HWR (ENTERING) TEMP	●																						●	●			
[1,2,3].09	B-0[1,2,3], HW FLOW STATUS										●							●							●			
[1,2,3].10	BP-0[1,2,3], STATUS									●								●			●							
[1,2,3].11	BP-0[1,2,3], START/STOP (ENABLE)												●					●										
4.1	P-03, STATUS	●								●								●			●					●		
4.2	P-03, START/STOP													●														
4.3	P-03, VFD FREQUENCY	●							●									●										
4.4	P-03, VFD FAULT											●																
5.1	P-04, STATUS	●								●								●			●				●			
5.2	P-04, START/STOP													●														
5.3	P-04, VFD FREQUENCY	●								●								●										
5.4	P-04, VFD FAULT											●						●										
6	SECONDARY MAIN HWS TEMP	●	●															●										
7	SECONDARY MAIN HWR TEMP	●	●															●										
8	SECONDARY PUMPING PRESS	●		●																				●	●	●		
9	SECONDARY PUMPING FLOW	●				●												●										
10	REMOTE SYSTEM DP	●		●														●										
11	BOILER EMERGENCY STOP										●							●										
12	OUTSIDE AIR TEMPERATURE									●																		1, 3
13	HW SUPPLY TEMP	●								●								●										2, 3
14	BTU'S DELIVERED	●																●	●									5
##	RESERVED FOR FUTURE																											
NOTES: 1. OUTSIDE AIR TEMPERATURE TO BE PROVIDED TO DDC SYSTEM FROM COMMON OAT TEMPERATURE SENSOR (GENERAL CONTROL DIAGRAMS PAGE) 2. SUPPLY WATER TEMPERATURE SHALL RESET LINEARLY FROM A SUPPLY TEMPERATURE OF 140° AT OAT < 30° (ADJ.) TO 100° AT OAT > 60°F (ADJ.) 3. THESE POINTS MAY BE PROVIDED BY THE BOILER MANUFACTUER AND DIRECTLY INTEGRATED TO THE BOILER CONTROLLER, IF DONE THIS WAY, BOILER CONTROLLER SHALL SEND THESE POINTS AS ANALOG INPUTS (AI) TO THE DDC SYSTEM FOR REMOTE OBSERVATION & TROUBLESHOOTING PURPOSES. 4. HARDWARE POINTS MAY BE INTEGRAL TO THE PROVIDED BOILER AND AVAILBLE FROM BOILER BACNET INTERFACE. 5. BTU'S DELIVERED SHALL BE CALCULATED BY THE DDC SYSTEM BASED ON SECONDARY SUPPLY/RETURN WATER TEMPERATURES AND SYSTEM FLOW.																												

BOILER & HEATING HOT WATER PRIMARY/SECONDARY SYSTEM SEQUENCE OF OPERATION

1. HEATING HOT WATER CONTROL
- 1.1. UPON COMMAND FOR HOT WATER BY ANY SERVED DEVICE; ENABLE DUTY SECONDARY HEATING HOT WATER PUMP AND BOILER PLANT (SECONDARY PUMPS ARE FULLY REDUNDANT DUTY/STANDBY).
- 1.2. THE 3-BOILER PLANT SHALL STAGE AND MODULATE THE BOILERS IN THE MOST ENERGY EFFICIENCY COMBINATION OF ACTIVE BOILERS AND FIRING RATES AS DETERMINED BY THE BOILER MANUFACTURER'S INTEGRAL CONTROL SEQUENCE TO MAINTAIN THE MAIN HWS TEMPERATURE AT THE HW SUPPLY TEMPERATURE SETPOINT COMMANDED BY THE DDC SYSTEM IN RESPONSE TO THE OUTDOOR AIR CONDITIONS PER THE HEATING HW OA RESET SCHEDULE. BOILER MASTER CONTROLLER SHALL ALTERNATE LEAD BOILER TO PROVIDE EQUALIZED RUN TIME.
- 1.3. TO PREVENT SHORT CYCLING; THE BOILER SYSTEM SHALL RUN FOR AND BE OFF FOR MINIMUM ADJUSTABLE TIMES (BOTH USER DEFINABLE), UNLESS SHUTDOWN ON SAFETIES.
- 1.4. THE BOILER(S) SHALL RUN SUBJECT TO THEIR OWN INTERNAL SAFETIES AND CONTROLS.
- 1.5. STANDBY SECONDARY HW PUMP SHALL BE ENABLED UPON A FAILURE OF THE DUTY PUMP. THE DUTY PUMP SHALL BE THE PUMP WITH THE LEAST RUNTIME HOURS; SECONDARY PUMPS SHALL CYCLE BETWEEN DUTY/STANDBY ON THE 1st and 15th OF THE MONTH.
2. SECONDARY PUMP DIFFERENTIAL PRESSURE CONTROL:
- 2.1. THE OPERATING (DUTY) SECONDARY PUMP VFD SHALL MODULATE THE PUMP SPEED TO MAINTAIN THE DIFFERENTIAL PRESSURE (DP) AS MEASURED AT THE REMOTE SYSTEM DP SENSOR. DP SETPOINT SHALL BE AS DETERMINED/RECOMMENDED BY TAB AGENT TO ACHIEVE SYSTEM BALANCING.
- 2.2. MINIMUM SYSTEM FLOW SHALL BE BASED UPON MINIMUM PERMISSIBLE VFD SPEED AS INDICATED BY THE VFD MANUFACTURER'S IOM. MINIMUM FLOW PROVISIONS SHALL BE ACHIEVED BY THE 3-WAY VALVES INSTALLED IN THE SECONDARY PIPING SYSTEM VAV BOXES (REFER TO EQUIPMENT SCHEDULES AND CONTROL VALVE SCHEDULE).
3. ALARMS AND SYSTEM MONITORING:
- 3.1. ALARMS SHALL BE PROVIDED AS INDICATED ON THE POINTS LIST AND AS FOLLOWS:
- SECONDARY HW PUMP FAILURE: COMMANDED ON, BUT STATUS IS OFF.

SECONDARY HW PUMP RUNNING IN HAND; COMMANDED OFF, BUT STATUS IS ON.

SECONDARY HW PUMP RUNTIME EXCEEDED; STATUS RUNTIME EXCEEDS 168 HOURS (ADJ.)

HIGH SECONDARY HW SUPPLY TEMP; IF GREATER THAN 160°F (ADJ.)

LOW SECONDARY HW RETURN TEMP; IF LESS THAN 100° OR 15° BELOW SUPPLY WATER TEMPERATURE (WHICHEVER IS LOWER TO ACCOUNT FOR HW RESET)

HIGH SYSTEM PRESSURE IF REMOTE DP SENSOR IS 25% (ADJ.) ABOVE SETPOINT.

LOW SYSTEM PRESSURE IF REMOTE DP SENSOR IS 25% (ADJ.) BELOW SETPOINT.
- 3.2. SYSTEM MONITORING POINTS SHALL BE AS INDICATED ON THE POINTS LIST, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
- SECONDARY HWS FLOWRATE (UFC 3-410-01 REQUIRED POINT)

SECONDARY HWS/R TEMPERATURES

DIFFERENTIAL PRESSURE ACROSS SECONDARY PUMPS (UFC 3-410-01 REQUIRED POINT)

BOILER FAILURE ALARMS NOT OTHERWISE INDICATED BUT PROVIDED WITH BOILER CONTROLLER / BOILER BACNET INTERFACE.

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APPR

DATE

SYN

DESCRIPTION



Michael Baker International
100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108
APPROVED

FOR COMMANDER NAVFAC

ACTIVITY
CONCURRED BY
MCB-CL AMB
VIA EMAIL

SATISFACTORY TO DATE
12/16/21

DES: SEM
DRW: JAK
CHK: EMB

PM / DM
TOWLER / ROOT

BRANCH HEAD
SCE

DESIGN DIRECTOR
PAUL K. SHREM

FIRE PROTECTION
DPS

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
ATLANTIC DESIGN AND CONSTRUCTION
MCB CAMP LEJEUNE
JACKSONVILLE, NC
P1338 II MEF SIMULATION/TRAINING CENTER
REPLACEMENT
MECHANICAL - CONTROLS

SCALE: AS NOTED
EPROJECT NO.: 1590892
CONSTR. CONTR. NO.
N40085-20-C-0059
NAVFAC DRAWING NO.
14098540
SHEET 313 OF 456
M-810
DRAWING REVISION: 25 AUGUST 2020

ISSUED FOR CONSTRUCTION - 16 DEC 21

ISSUED FOR CONSTRUCTION - 16 DEC 21

FILE NAME: BIM 360/HF PACKAGE 3P1338 - MEF SIM CTR-1590892-M.rvt
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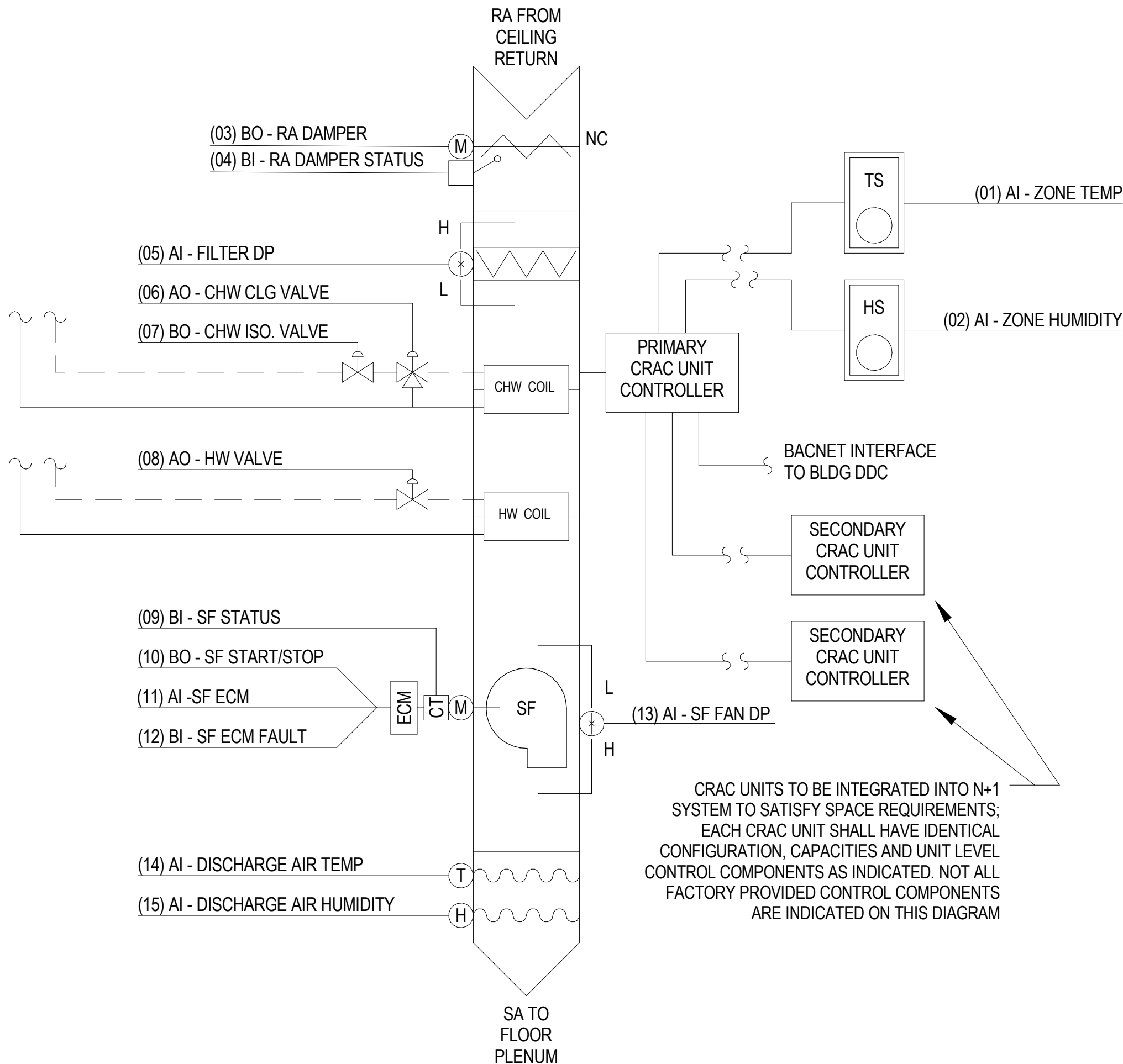
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COMPUTER ROOM AIR CONDITIONER (CRAC) SYSTEM - SEQUENCE OF OPERATION

1. **GENERAL:**
THE SYSTEM SERVING THE SIM CONTROL SERVER ROOM SHALL CONSIST OF 3 CRAC UNITS OPERATING IN AN N+1 FASHION, WITH NO MORE THAN 2 CRAC UNITS OPERATING AT ANY GIVEN TIME. CRAC UNIT CONTROLLERS SHALL BE INTERCONNECTED AND CONTROLLED BY THE CRAC MANUFACTURER'S INTEGRAL CONTROL SEQUENCE TO MODULATE AND STAGE 2 ACTIVE UNITS TO MEET ROOM TEMPERATURE AND HUMIDITY REQUIRMENTS WHILE THE THIRD UNIT IS IN STANDBY MODE. MANUFACTURER'S CONTROLS SHALL ROTATE ACTIVE / STANDBY UNIT STATUS BETWEEN THE THREE UNITS ON A WEEKLY (ADJUSTABLE) BASIS TO MAINTAIN EQUAL RUNTIMES.
2. **RUN CONDITIONS:**
THE CRAC SYSTEM SHALL OPERATE CONTINUOUSLY AND SHALL MAINTAIN THE SPACE AT A MAXIMUM 78°F TEMPERATURE AND MAXIMUM HUMIDITY LEVEL (55°F DEWPOINT).
PROVIDE ALARMS AS FOLLOWS:
- HIGH ZONE TEMPERATURE: IF THE ZONE TEMPERATURE IS GREATER THAN THE SPACE SETPOINT BY 5°F (ADJ.)
 - LOW ZONE TEMPERATURE: IF THE ZONE TEMPERATURE IS LESS THAN 65° (ADJ.)
 - HIGH ZONE HUMIDITY: IF THE ZONE DEWPOINT EXCEEDS 59°F
 - LOW ZONE HUMIDITY: IF THE ZONE DEWPOINT FALLS BELOW 42°F
 - HIGH UNIT DISCHARGE AIR TEMPERATURE: IF THE DISCHARGE AIR TEMPERATURE EXCEEDS 120°F (ADJ.)
 - LOW UNIT DISCHARGE AIR TEMPERATURE: IF THE DISCHARGE AIR TEMPERATURE IS LESS THAN 40°F (ADJ.)
3. **ATFP / SMOKE DETECTION SHUTDOWN:**
UNITS SERVING INFORMATION TECHNOLOGY AND COMMUNICATIONS EQUIPMENT SHALL CONTINUE TO OPERATE UPON A BUILDING WIDE FIRE ALARM OR ATFP HVAC SHUTDOWN INITIATION.
4. **FAN / FAN STATUS:**
THE ACTIVE CRAC UNIT RETURN AIR DAMPERS SHALL OPEN AND FANS SHALL OPERATE CONTINUOUSLY WHEN THE UNIT IS COMMANDED TO RUN, UNLESS SHUTDOWN ON INTERNAL SAFETIES.
THE UNIT CONTROLLER SHALL MONITOR THE FAN STATUS AND PROVIDE ALARMS AS FOLLOWS:
- FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF
 - FAN IN HAND: COMMANDED OFF, BUT THE FAN IS ON
 - FAN RUNTIME EXCEEDED: FAN STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.)
5. **RETURN AIR DAMPERS**
THE ACTIVE CRAC UNITS SHALL POWER OPEN NORMALLY CLOSED RETURN AIR DAMPERS (INACTIVE CRAC RETURN AIR DAMPER SHALL REMAIN CLOSED) TO PREVENT BACKDRAFT THROUGH INACTIVE UNIT.
6. **FILTER DIFFERENTIAL PRESSURE MONITOR:**
THE CRAC UNIT CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FILTER; THIS INFORMATION SHALL BE AVAILABLE ON THE UNIT CONTROLLER INTERFACE AND PROVIDED TO THE DDC SYSTEM FOR INFORMATIONAL PURPOSES ONLY. CAMP LEJEUNE MECHANICAL POLICIES DO NOT DESIRE FILTER ALARMS (FILTER SHALL BE CHANGED ON REGULAR MAINTENANCE INTERVALS).
7. **COOLING COIL ISOLATION (2-WAY) AND MODULATING FLOW (3-WAY) CONTROL VALVES; 2-WAY UNIT ISOLATION VALVES:** THE TWO ACTIVE CRAC UNITS SHALL HAVE THEIR CHILLED WATER SYSTEM COIL ISOLATION VALVES OPEN TO FLOW FROM THE CONSTANT VOLUME CHILLED WATER PUMPING SYSTEM, WHILE THE STANDBY (N+1 REDUNDANT) UNIT'S ISOLATION VALVE SHALL BE CLOSED IN ORDER TO MAINTAIN THE CONSTANT CHILLED WATER FLOW SYSTEM BALANCE (SERVICE TO TWO ACTIVE CRAC UNITS).
- 3-WAY MODULATING CHILLED WATER CONTROL VALVES:** THE TWO ACTIVE CRAC UNIT'S FACTORY INSTALLED 3-WAY CONTROL VALVES SHALL MODULATE TO CONTROL CHILLED WATER FLOW TO THE CRAC UNIT COOLING COILS AS REQUIRED FOR COOLING AND HUMIDITY CONTROL; REMAINDER OF FLOW SHALL BYPASS THE CHILLED WATER COIL.
8. **HEATING COIL CONTROL VALVES (REHEAT/DEHUMIDIFICATION):**
THE FACTORY INSTALLED 2-WAY CONTROL VALVE SHALL MODULATE THE FLOW OF HOT WATER FOR AUTOMATIC SENSIBLE REHEATING MODE DURING THE DEHUMIDIFICATION CYCLE AND AUTOMATIC HEATING MODE AS REQUIRED THROUGH THE CRAC UNIT FACTORY CONTROLLER.
9. **HUMIDITY CONTROL:**
THE CRAC UNIT'S INTERNAL MICROPROCESSOR/CONTROLLER SHALL DETERMINE THE MOISUTRE CONTENT OF THE ROOM AIR AND PREVENT UNNESSARY HUMIDIFICATION AND DEHUMIDIFICATION CYCLES BY RESPONDING TO CHANGES IN DEWPOINT TEMPERATURE. ON A RISE IN SPACE HUMIDITY ABOVE UPPER LIMIT SETPOINT OF 55°F DEWPOINT THE DEHUMIDIFICATION CYCLE SHALL BE ENABLED, UPON A FALL IN SPACE HUMIDITY BELOW 55° DEWPOINT THE DEHUMIDIFICATION CYCLE SHALL BE DISABLED. ON A FALL IN SPACE HUMIDITY BELOW LOWER LIMIT SETPOINT OF 42°F DEWPOINT, THE HUMIDIFICATION CYCLE SHALL BE ENABLED UNTIL SPACE REACHES SETPOINT.
10. **DEHUMIDIFICATION CYCLE:**
EACH CRAC UNIT SHALL BE PROVIDED WITH A CHILLED WATER / HOT WATER BASED DEHUMIDIFICATION CYCLE TO CONDENSE EXCESS MOISTURE ON THE COOLING COIL TO DISCHARGE THROUGH THE CONDENSATE DRAIN, WITH HOT WATER REHEATING PROVIDED TO OFFSET EXCESS SENSIBLE COOLING INCURRED DURING THE DEHUMIDIFICATION CYCLE TO PREVENT SUBCOOLING OF THE SPACE BEYOND 5°F (ADJUSTABLE) BELOW THE ROOM TEMPERATURE SETPOINT. CRAC SYSTEM CONTROLLER SHALL ENABLE/MODULATE DEHUMIDIFICATION CYCLE AS REQUIRED TO MAINTAIN SPACE HUMIDITY LEVELS AT OR BELOW 55°F DEWPOINT.
11. **HUMIDIFICATION CYCLE:**
EACH CRAC UNIT SHALL BE PROVIDED WITH A FACTORY INSTALLED SELF-CONTAINED ATMOSPHERIC STEAM GENERATOR UTILIZING BUILDING POTABLE WATER. CRAC SYSTEM CONTROLLER SHALL ENABLE/MODULATE STEAM SUPPLY TO MAINTAIN SPACE HUMIDITY LEVELS ABOVE 42°F DEWPOINT PER TIA-569.

A2 CRAC SYSTEM - CONTROL DIAGRAM
SCALE: NTS

CRAC (COMPUTER ROOM AIR CONDITIONER) - POINT LIST																									
POINT NUMBER	SYSTEM POINT DESCRIPTION	SHOW ON DISPLAY	HARDWARE POINTS						SYSTEM FEATURES /SOFTWARE POINTS						NOTES										
			ANALOG			DIGITAL (BINARY)			PROGRAMS			ALARMS													
			INPUT (AI)	OUTPUT (AO)		INPUT (BI)	OUTPUT (BO)																		
			TEMPERATURE	RELATIVE HUMIDITY	PRESSURE	% OPEN/CLOSE	% OPEN/CLOSE		STATUS ON/OFF	STATUS OPEN/CLOSED	OFF/ON (ENABLE)	OPEN/CLOSE	START/STOP		TREND	TIME SCHEDULING	ALARM INSTRUCT	AUTOMATIC RESTART		HIGH ANALOG	LOW ANALOG	SENSOR FAIL	COMM. FAIL		
	CRAC UNIT CONTROLLER(S)	●														●	●	●							1
01	ZONE TEMPERATURE	●	●												●	●									
02	ZONE HUMIDITY			●											●						●	●	●		
03	RETURN AIR DAMPER											●			●						●	●	●		
04	RETURN AIR DAMPER STATUS								●				●		●										
05	FILTER DIFFERENTIAL PRESSURE				●										●										
06	CHW COOLING VALVE (3-WAY)						●								●										
07	CHW ISOLATION VALVE (2-WAY)										●				●										
08	HW REHEAT VALVE						●								●										
09	SUPPLY FAN STATUS								●						●										
10	SUPPLY FAN START/STOP												●												
11	SUPPLY FAN ECM SETPOINT				●										●										
12	SUPPLY FAN ECM FAULT								●																
13	SUPPLY FAN PRESSURE			●											●										
14	DISCHARGE AIR TEMPERATURE		●												●						●	●			
15	DISCHARGE AIR HUMIDITY			●											●										
##	RESERVED FOR FUTURE																								
1. NOT ALL FACTORY PROVIDED CONTROL POINTS INDICATED - REFER TO CRAC UNIT IOM AND PROJECT SPECIFICATIONS FOR COMPLETE INTERNAL UNIT CONTROL DEVICES AND SEQUENCES INCLUDING INTEGRAL HUMIDIFIER CONTROL; SUBFLOOR WATER DETECTION, ETC.																									



FILE NAME: BIM 360/HF PACKAGE 3P1333 MEF SIM CTR-159082-M.rvt
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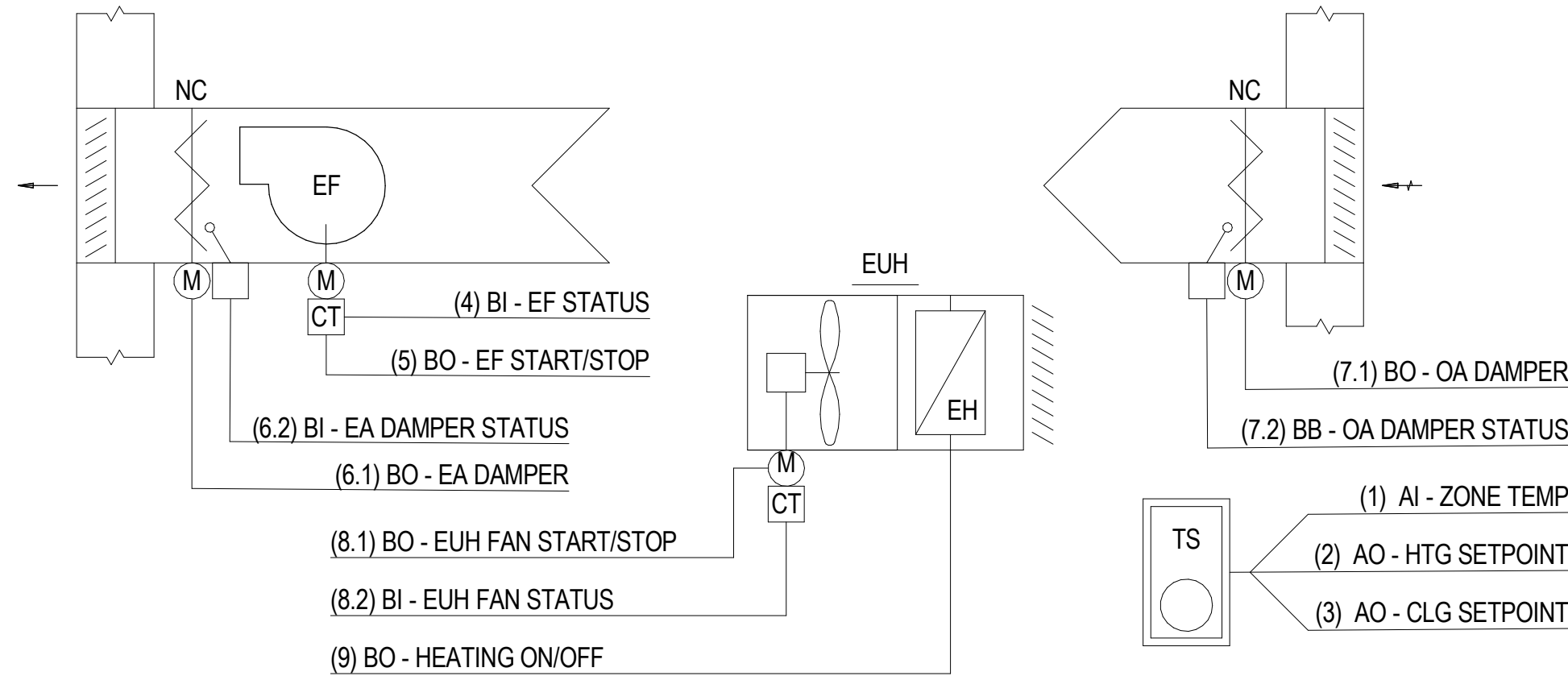
ELECTRICAL ROOM FAN FORCED VENTILATION COOLING / ELECTRIC HEATING - SEQUENCE OF OPERATION

- ROOM TO BE THERMOSTATICALLY CONTROLLED BY COMMON THERMOSTAT CONNECTED TO THE DDC SYSTEM FOR SPACE HEATING AND EXHAUST BASED FORCED OUTSIDE AIR VENTILATION COOLING TO MAINTAIN TEMPERATURES WITH 10°F OF AMBIENT OUTDOOR CONDITIONS.
- ON RISE IN SPACE TEMPERATURE ABOVE 80°F (ADJ.) DAMPERS ASSOCIATED WITH THE ROOM INTAKE AND EXHAUST LOUVERS SHALL OPEN AND THE EXHAUST FAN SHALL OPERATE CONTINUOUSLY. UPON FALL IN SPACE TEMPERATURE BELOW 75°F (ADJ.) THE REVERSE SHALL OCCUR.
- UPON FALL IN SPACE TEMPERATURE BELOW HEATING SETPOINT OF 55°F (ADJ.), ELECTRIC UNIT/WALL HEATER SERVING SPACE SHALL ENERGIZE BY STARTING FAN AND ELECTRIC HEATING COIL TO MAINTAIN SPACE HEATING SETPOINT. UPON RISE IN TEMPERATURE ABOVE 60°F (ADJ.), THE REVERSE SHALL OCCUR. WHERE ELECTRIC HEATERS PROVIDED WITH INTEGRAL THERMOSTATIC CONTROL, SET SUCH CONTROL AT 55°; PROVIDE ALARM TO DDC SYSTEM OF SPACE TEMPERATURE FALLS BELOW 50°.
- ATFP SHUTDOWN: VENTILATION SYSTEM (FAN AND DAMPERS) SHALL BE HARDWIRED TO SHUTDOWN UPON ATFP SWITCH ACTIVATION, REFER TO M-803 FOR MORE INFORMATION.

EXHAUST FAN / VENTILATION DAMPERS / ELECTRIC UNIT HEATER SYSTEM POINT LIST

POINT NUMBER	SYSTEM POINT DESCRIPTION	HARDWARE POINTS										SYSTEM FEATURES /SOFTWARE POINTS						NOTES			
		ANALOG					DIGITAL (BINARY)					PROGRAMS			ALARMS						
		INPUT (AI)			OUTPUT(AO)		INPUT (BI)			OUTPUT (BO)											
	EXHAUST FAN / VENTILATION COOLING & ASSOCIATED LOUVERS / ELECTRIC HEATERS	SHOW ON DISPLAY	TEMPERATURE		SETPOINT ADJ			STATUS		START/STOP	OPEN/CLOSED	ON/OFF	TREND - START/STOP	TREND - STATUS	TREND - OPEN/CLOSED	TREND - HEATER	FAILURE	IN HAND	RUNTIME EXCEEDED	LOW ANALOG	
1	ZONE TEMP	●	●																	●	
2	HEATING SETPOINT*	●			●															●	1
3	COOLING (VENTILATION) SETPOINT	●			●																
4	EXHAUST FAN STATUS	●						●									●	●	●		
5	EXHAUST FAN START/STOP	●								●					●						
6.1	EXHAUST DAMPER	●									●					●					
6.2	EXHAUST DAMPER STATUS	●						●													
7.1	OUTDOOR AIR DAMPER	●									●					●					
7.2	OUTDOOR AIR DAMPER STATUS	●						●													
8.1	EUH FAN START/STOP*	●								●											1
8.2	EUH FAN STATUS	●						●													
9	UNIT HEATER ELECTRIC COIL*	●										●				●					1
-	-	●																			
##	RESERVED FOR FUTURE																				

NOTES: 1. *ELECTRIC HEATERS MAY OPERATE OFF UNIT CONTROLLER / CONTROLLED INTEGRAL THERMOSTATS WHERE PROVIDED WITH EQUIPMENT; DDC SYSTEM TO MONITOR SPACE TEMPERATURE AND SIGNAL ALARM IF SPACE TEMP FALLS 5° BELOW SPACE HEATING SETPOINT OF 55°



A1 ELECTRICAL ROOM CONTROL DIAGRAM (EF-02, 03, & 04, EWH-01, 02 / EUH-01)
SCALE: NTS

UNCLASSIFIED

UNCLASSIFIED

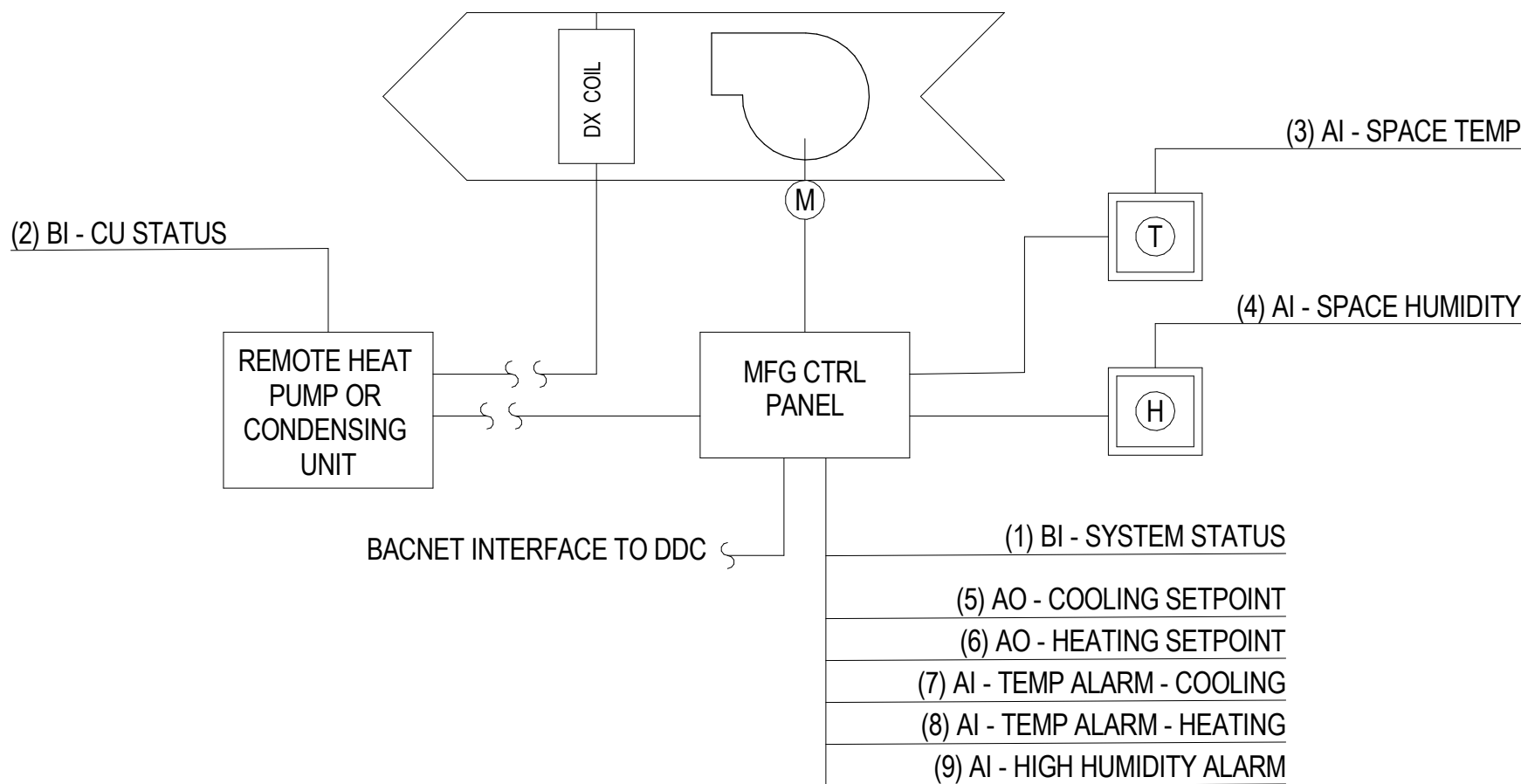
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SPLIT DX HEAT PUMP - SEQUENCE OF OPERATION

- REMOTE CONTROL PANEL BY UNIT/SYSTEM MANUFACTURER SHALL BE WALL MOUNTED AND CONTROL COOLING AND HEATING MODES OF OPERATION. TEMPERATURE AND HUMIDITY SENSORS SHALL BE INTEGRAL TO THE CONTROL PANEL (IF AVAILABLE FROM MANUFACTURER) OR MOUNTED SEPARATELY ADJACENT TO THE CONTROL PANEL BY THE CONTROLS CONTRACTOR.
- MANUFACTUER'S CONTROL PANEL SHALL INCLUDE AUTOMATIC UNIT SWITCHING OPERATIONS (HEATING / COOLING) AND DISPLAY NORMAL FUNCTIONS, MALFUNCTIONS AND SERVICE DIAGNOSTICS ON AN INTEGRAL LCD DISPLAY. BACNET INTERFACE MODULE SHALL BE PROVIDED (IF AVAILABLE FROM MANUFACTURER) TO INTEGRATE INTO BUILDING DDC SYSTEM.
- ALARM CONDITIONS, IN ADDITION TO BEING DISPLAYED ON THE LOCAL LCD CONTROL PANEL SHALL BE RELAYED TO THE DDC SYSTEM. IF BACNET INTERFACE IS AVAILABLE, ALARM SPECIFICS SHALL BE SENT TO THE DDC SYSTEM, OTHERWISE A BASIC ALARM RELAY SHALL BE PROVIDED TO SIGNAL AN ALARM CONDITION TO THE DDC TO ALERT BUILDING OPERATOR OF CONDITION.
- THE UNIT SHALL OPERATE CONTINUOUSLY. THE HEATING TEMPERATURE SETPOINT (HEAT PUMPS) IS 68° F DB (ADJ). THE COOLING TEMPERATURE SETPOINT IS 78°F DB (ADJ). ALARMS SHALL BE PROVIDED WHEN SPACE TEMPERATURE CONDITIONS FALL OUTSIDE THE HEATING (HEAT PUMPS ONLY) AND COOLING SETPOINTS BY 5°F OR WHEN SPACE HUMIDITY EXCEEDS 65%. ALL ALARM POINTS SHALL BE ADJUSTABLE.
- CONTROL CONTRACTOR SHALL PROVIDE ALL INTERCONNECTING WIRING, RELAYS AND CONNECTIONS BETWEEN MANUFACTURER'S CONTROL PANEL, INDOOR UNIT AND OUTDOOR CONDENSING UNIT AND INTERFACE TO BUILDING DDC SYSTEM.

DUCTLESS MINI-SPLIT COOLING/ HEAT PUMP SYSTEMS (SSAC / SSCU & SSHP / HPCU) POINT LIST

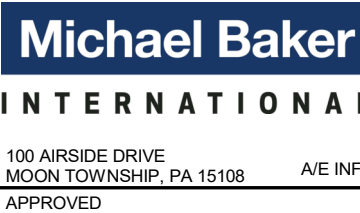
POINT NUMBER	SYSTEM POINT DESCRIPTION	SHOW ON DISPLAY	HARDWARE POINTS										SYSTEM FEATURES /SOFTWARE POINTS				NOTES				
			ANALOG					DIGITAL (BINARY)					PROGRAMS		ALARMS						
			INPUT (AI)	OUTPUT (AO)		INPUT (BI)		OUTPUT (BO)													
	SPLIT DX HEAT PUMP	TEMPERATURE	RELATIVE HUMIDITY			TEMPERATURE			UNIT STATUS						TREND			HIGH ANALOG	LOW ANALOG		
	DDC SYSTEM BACNET INTERFACE	●																			
1	SYSTEM STATUS	●							●						●						1
2	CONDENSING UNIT STATUS	●							●						●						1
3	SPACE TEMPERATURE	●	●						●						●						
4	SPACE HUMIDITY	●		●					●												
5	COOLING SETPOINT	●				●															
6	HEATING SETPOINT	●				●															
7	ZONE TEMP ALARM - COOLING																	●			2
8	ZONE TEMP ALARM - HEATING																		●		2
9	ZONE HIGH HUMIDITY ALARM																	●			
##	RESERVED FOR FUTURE																				
NOTES:																					
1. POINT MAY BE ACQUIRED THROUGH SYSTEM BACNET INTERFACE																					
2. APPLICABLE TO HEAT PUMP SYSTEMS ONLY.																					



A3 SPLIT DX AIR CONDITIONER / HEAT PUMP - CONTROL DIAGRAM
SCALE: NTS

4

5



100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108
APPROVED

FOR COMMANDER NAVFAC

ACTIVITY CONCURRED BY
MCB-CL AMB
VIA EMAIL

SATISFACTORY TO DATE 12/16/21

DES SEM DRW-JK CHK-EM

PM / DM TOWLER / ROOT

BRANCH HEAD SCE

DESIGN DIRECTOR PAUL K. SHREM

FIRE PROTECTION DPS

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND

ATLANTIC DESIGN AND CONSTRUCTION

MCB CAMP LEJEUNE

JACKSONVILLE, NC

P1338 II MEF SIMULATION/TRAINING CENTER

REPLACEMENT

MECHANICAL - CONTROLS

ISSUED FOR CONSTRUCTION - 16 DEC 21

SCALE: AS NOTED

EPROJECT NO.: 159082

CONSTR. CONTR. NO.

N40085-20-C-0059

NAVFAC DRAWING NO.

14098543

SHEET 316 OF 456

M-813

DRAWFORM REVISION: 25 AUGUST 2020

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ISSUED FOR CONSTRUCTION - 16 DEC 21

FILE NAME: BIM 360/HF PACKAGE 3P1333-MEF SM CTR-1590892-M.rvt
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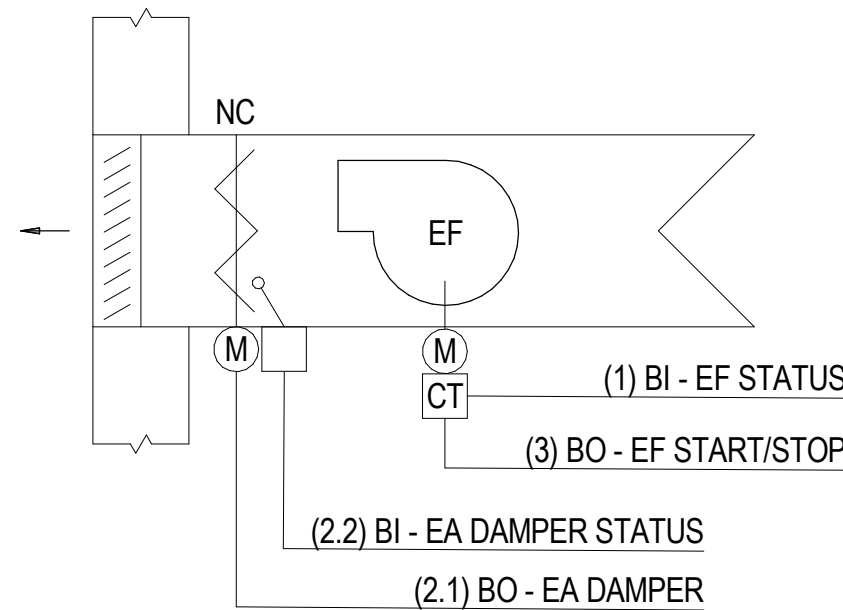
A1

EXHAUST FAN EF-01 & DAMPER CONTROL DIAGRAM

SCALE: NTS

EXHAUST FAN (EF-01) - SEQUENCE OF OPERATION

- THE FAN SHALL RUN DURING OCCUPIED HOURS IN IN CONJUNCTION WITH AHU-02, UNLESS SHUTDOWN ON SAFETIES.
- THE FAN SHALL SHUTDOWN, THE ASSOCIATED EXHAUST DAMPER SHALL CLOSE, AND AN ALARM SHALL BE GENERATED UPON RECEIVING AN ATPF SHUTDOWN SIGNAL.
- THE CONTROLLER SHALL MONITOR THE FAN STATUS.
 - FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
 - FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
 - FAN RUNTIME EXCEEDED: FAN STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).
- ATPF SHUTDOWN: VENTILATION SYSTEM (FAN AND DAMPERS) SHALL BE HARDWIRED TO SHUTDOWN UPON ATPF SWITCH ACTIVATION, REFER TO M-803 FOR MORE INFORMATION.



EXHAUST FAN EF-01 & DAMPER POINT LIST																
POINT NUMBER	SYSTEM POINT DESCRIPTION	SHOW ON DISPLAY	HARDWARE POINTS								SYSTEM FEATURES / SOFTWARE POINTS				NOTES	
			ANALOG				DIGITAL (BINARY)				PROGRAMS	ALARMS				
			INPUT (AI)		OUTPUT (AO)		INPUT (BI)		OUTPUT (BO)							
	EXHAUST FAN / ASSOCIATED LOUVER															
1	EXHAUST FAN STATUS	●						●					●	TREND - START/STOP		
2.1	EXHAUST DAMPER	●											●	TREND - STATUS		
2.2	EXHAUST DAMPER STATUS	●												●	TREND - OPEN/CLOSED	
3	EXHAUST FAN START/STOP	●													FAILURE	
-	-														IN HAND	
															RUNTIME EXCEEDED	
															LOW ANALOG	
##	RESERVED FOR FUTURE															

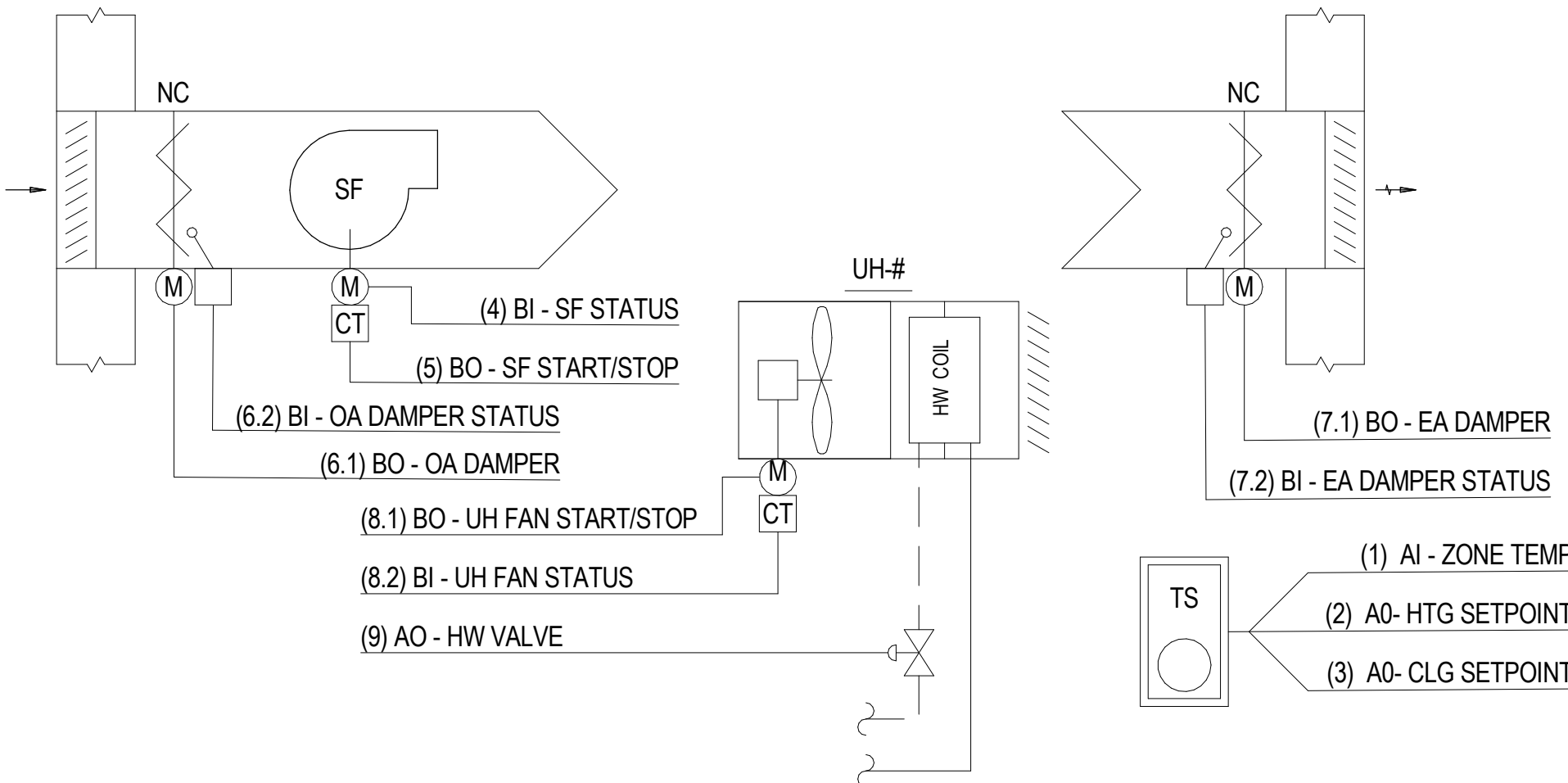
B1

MECHANICAL ROOM 401 (HOT) CONTROL DIAGRAM (SF-01, UH-01)

SCALE: NTS

MECHANICAL/ELECTRICAL ROOM FAN FORCED VENTILATION COOLING/HYDRONIC HEATING - SEQUENCE OF OPERATION

- ROOM TO BE THERMOSTATICALLY CONTROLLED BY COMMON THERMOSTAT CONNECTED TO THE DDC SYSTEM FOR SPACE HEATING AND EXHAUST [OR SUPPLY] BASED FORCED OUTSIDE AIR VENTILATION COOLING TO MAINTAIN TEMPERATURES WITH 10°F OF AMBIENT OUTDOOR CONDITIONS.
- ON RISE IN SPACE TEMPERATURE ABOVE 80°F (ADJ.) DAMPERS ASSOCIATED WITH THE ROOM INTAKE AND EXHAUST LOUVERS SHALL OPEN AND THE EXHAUST [OR SUPPLY] FAN SHALL OPERATE CONTINUOUSLY. UPON FALL IN SPACE TEMPERATURE BELOW 75°F (ADJ.) THE REVERSE SHALL OCCUR.
- UPON FALL IN SPACE TEMPERATURE BELOW HEATING SETPOINT OF 55°F (ADJ.), HYDRONIC UNIT HEATER SERVING SPACE SHALL ENERGIZE BY STARTING FAN AND MODULATING HOT WATER VALVE TO MAINTAIN SPACE HEATING SETPOINT. UPON RISE IN TEMPERATURE ABOVE 60°F (ADJ.) THE REVERSE SHALL OCCUR.
- ATPF SHUTDOWN: VENTILATION SYSTEM (FAN AND DAMPERS) SHALL BE HARDWIRED TO SHUTDOWN UPON ATPF SWITCH ACTIVATION, REFER TO M-803 FOR MORE INFORMATION.



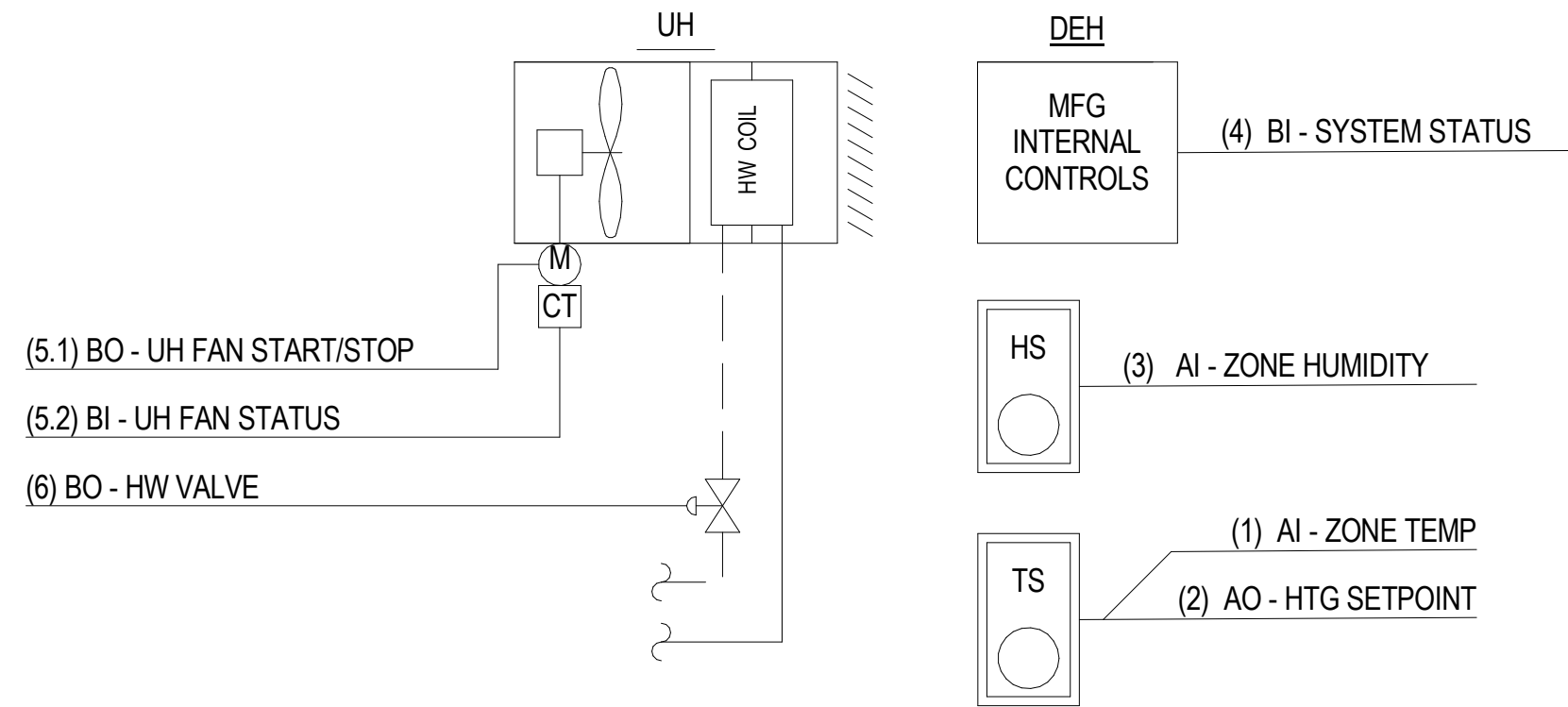
C1

MECHANICAL ROOM 400 CONTROL DIAGRAM (UH-02, DEH-01)

SCALE: NTS

COLD MECHANICAL ROOM HYDRONIC HEATING AND DEHUMIDIFICATION - SEQUENCE OF OPERATION

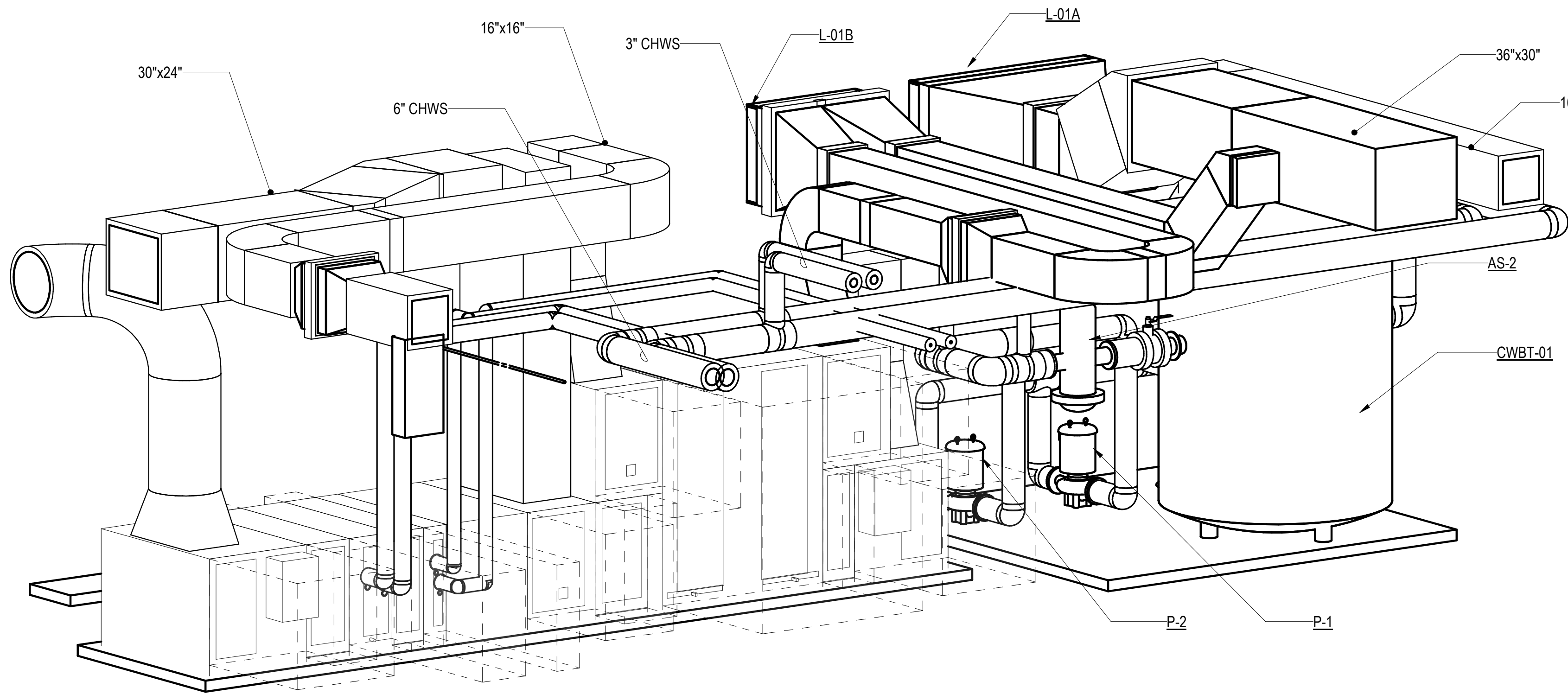
- ROOM TO BE DEHUMIDIFIED BY DEHUMIDIFIER INTERNAL CONTROLS. UPON RISE IN RELATIVE HUMIDITY ABOVE 55°F DEWPOINT (ADJ.), DEHUMIDIFIER TO TURN ON AND OPERATE CONTINUOUSLY. UPON FALL IN DEWPOINT BELOW 55°F DEWPOINT (ADJ.), THE REVERSE SHALL OCCUR.
- ZONE HUMIDITY SENSOR TO SEND ROOM HUMIDITY LEVEL TO DDC SYSTEM. UPON RISE IN HUMIDITY LEVEL ABOVE 65°F DEWPOINT (ADJ.), ALARM SHALL BE GENERATED.
- UPON FALL IN SPACE TEMPERATURE BELOW HEATING SETPOINT OF 55°F (ADJ.), HYDRONIC UNIT HEATER SERVING SPACE SHALL ENERGIZE BY STARTING FAN AND FULLY OPENING HOT WATER VALVE TO MAINTAIN SPACE HEATING SETPOINT. UPON RISE IN TEMPERATURE ABOVE 60°F (ADJ.), THE REVERSE SHALL OCCUR.



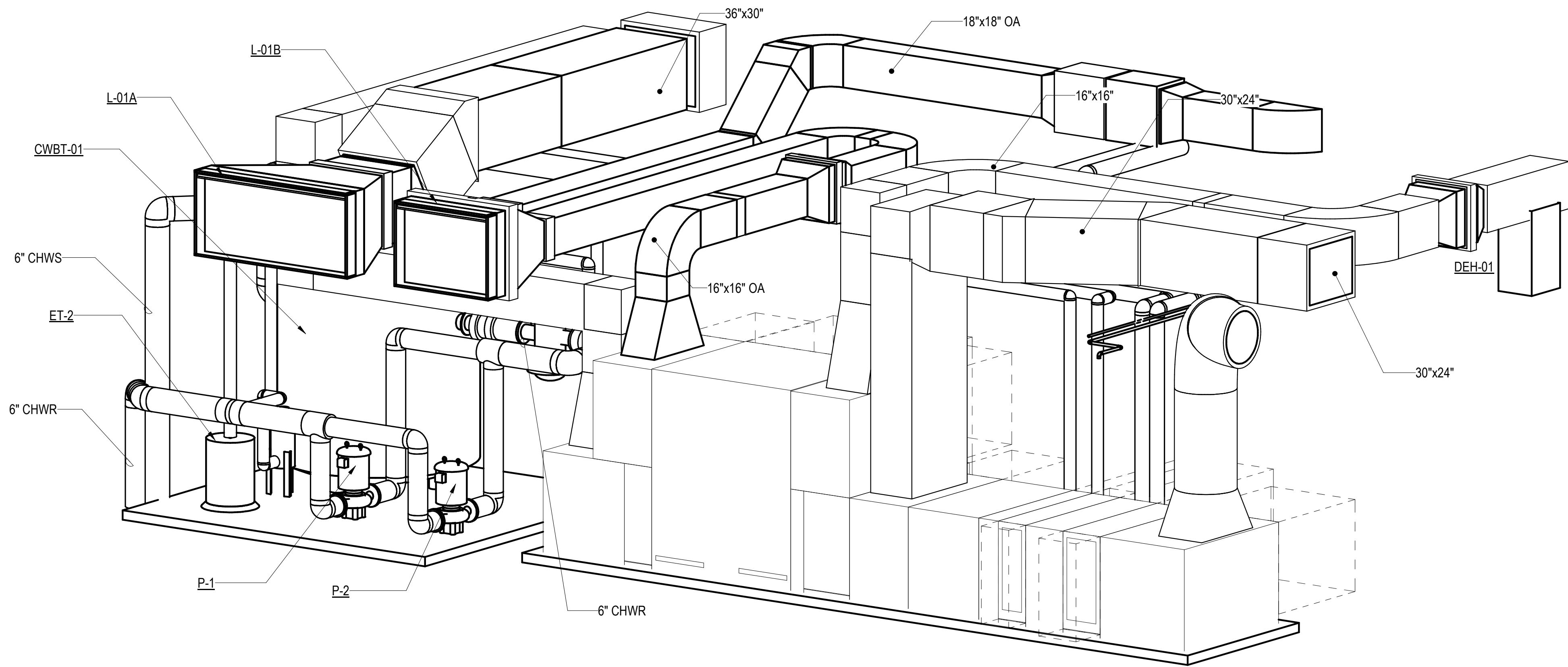
SUPPLY FAN / VENTILATION DAMPERS / UNIT HEATER SYSTEM POINT LIST																						
POINT NUMBER	SYSTEM POINT DESCRIPTION	SHOW ON GRAPHIC	HARDWARE POINTS								SYSTEM FEATURES /SOFTWARE POINTS				NOTES							
			ANALOG				DIGITAL (BINARY)				PROGRAMS	ALARMS										
			INPUT (AI)		OUTPUT(AO)		INPUT (BI)		OUTPUT (BO)													
	EXHAUST FAN / VENTILATION COOLING & ASSOCIATED LOUVERS / HYDRONIC HEATERS	TEMPERATURE			SETPOINT ADJ	POSITION / % OPEN			STATUS			START/STOP	OPEN/CLOSED	ON/OFF	TREND	TREND - STATUS	TREND - OPEN/CLOSED	TREND - HEATER	FAILURE	IN HAND	RUNTIME EXCEEDED	LOW ANALOG
1	ZONE TEMP	●	●												●							●
2	HEATING SETPOINT	●			●																	
3	COOLING (VENTILATION) SETPOINT	●			●																	
4	SUPPLY FAN STATUS	●							●							●	●		●	●		
5	SUPPLY FAN START/STOP	●											●									
6.1	INTAKE (OA) DAMPER	●											●			●						
6.2	INTAKE (OA) DAMPER STATUS	●							●													
7.1	EXHAUST AIR DAMPER	●											●									
7.2	EXHAUST AIR DAMPER STATUS	●							●					●								
8.1	UNIT HEATER FAN START/STOP	●											●					●				
8.2	UNIT HEATER FAN STATUS	●							●							●						
9	UNIT HEATER HW VALVE	●			●										●	●						
-	-																					
##	RESERVED FOR FUTURE																					

HYDRONIC UNIT HEATER / DEHUMIDIFIER (UH / DEH) POINTS LIST																								
POINT NUMBER	SYSTEM POINT DESCRIPTION		HARDWARE POINTS								SYSTEM FEATURES /SOFTWARE POINTS				NOTES									
			ANALOG				DIGITAL (BINARY)				PROGRAMS	ALARMS												
			INPUT (AI)		OUTPUT(AO)		INPUT (BI)		OUTPUT (BO)															
	HYDRONIC UNIT HEATERS AND DEHUMIDIFIER	COLOR GRAPHIC	TEMPERATURE	HUMIDITY	SETPOINT ADJ					STATUS			START/STOP	POSITION			TREND	TREND - STATUS	TREND - HEATER	FAILURE	IN HAND	RUNTIME EXCEEDED	LOW ANALOG	
1	ZONE TEMP	●	●														●							●
2	HEATING SETPOINT	●			●																			
3	AI - ZONE HUMIDITY	●		●													●							
4	BI - SYSTEM STATUS	●								●								●			●	●		
5.1	UNIT HEATER FAN START/STOP	●											●											
5.2	UNIT HEATER FAN STATUS	●								●								●						
6	UNIT HEATER HW VALVE	●												●			●							
-	-																							
##	RESERVED FOR FUTURE																							

FILE NAME: BIM 360/HF PACKAGE 3/P1338_MEF SIM CTR-1590892-M.rvt
PLOTTED: 11/22/2021 4:21:44 PM



C1 AHU-01 ISOMETRIC
SCALE: NTS



A1 AHU-01 ISOMETRIC
SCALE: NTS

SYN	DESCRIPTION	DATE	APPR



Michael Baker INTERNATIONAL
100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108
APPROVED

FOR COMMANDER NAVFAC
ACTIVITY
CONCURRED BY
MCB-CL AMB
VIA EMAIL
SATISFACTORY TO DATE 12/16/21
DES SEM DRW/CHK
PM / DM TOWLER / ROOT
BRANCH HEAD SCE
DESIGN DIRECTOR PAUL K. SHREM
FIRE PROTECTION DPS

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
ATLANTIC DESIGN AND CONSTRUCTION
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC
NORFOLK, VA
JACKSONVILLE, NC
MCB CAMP LEJEUNE
P1338 II MEF SIMULATION/TRAINING CENTER
REPLACEMENT
MECHANICAL ISOMETRIC VIEWS

SCALE: AS NOTED
EPROJECT NO.: 1590892
CONSTR. CONTR. NO. N40085-20-C-0059
NAVFAC DRAWING NO. 14098545
SHEET 318 OF 456

M-901
DRAWING REVISION: 25 AUGUST 2020

ISSUED FOR CONSTRUCTION - 16 DEC 21

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11/22/2021 4:21:43 PM
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BIM 360//HF PACKAGE 3P1338_MEF SIM CTR-1590892-M.rvt

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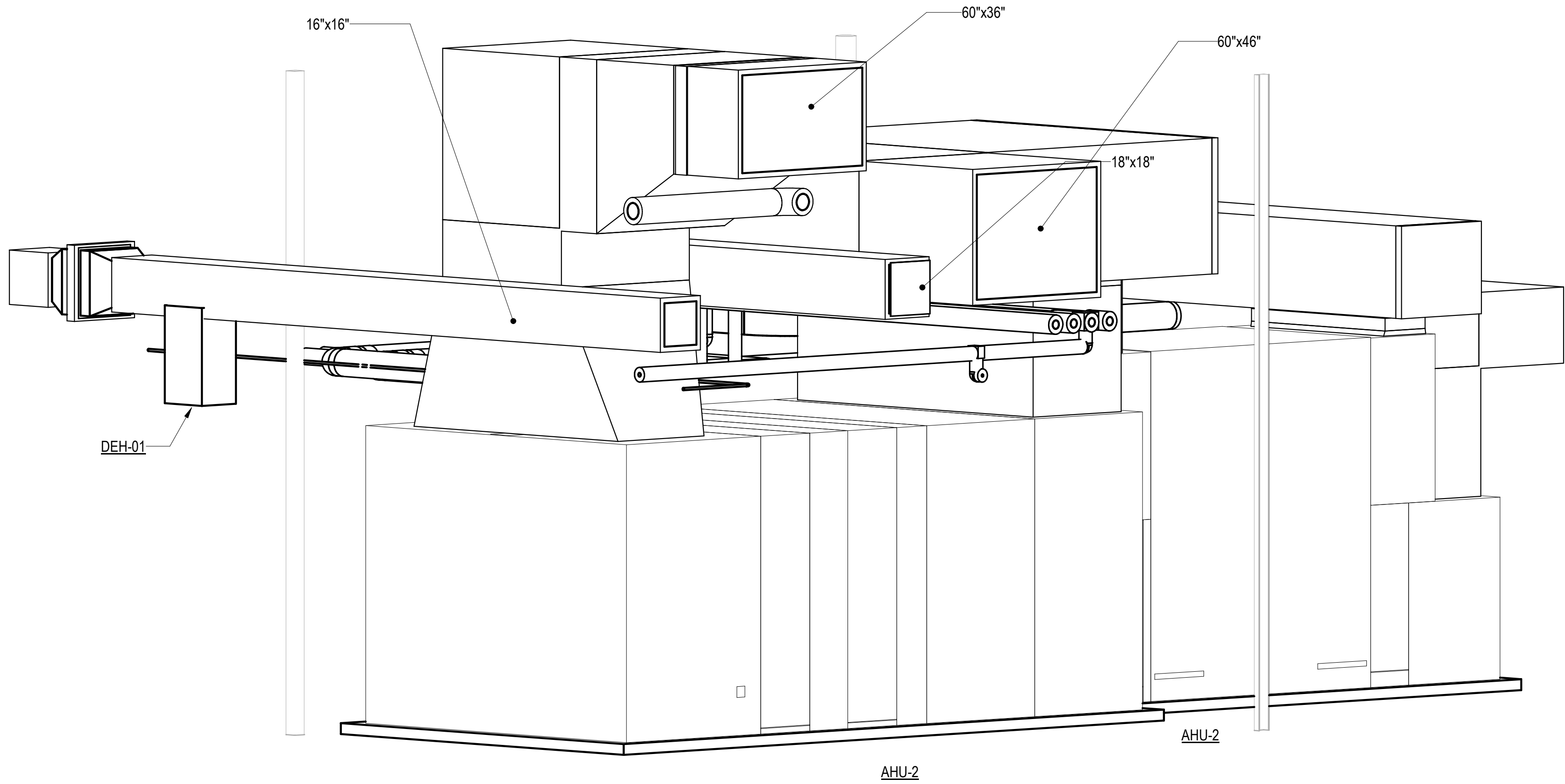
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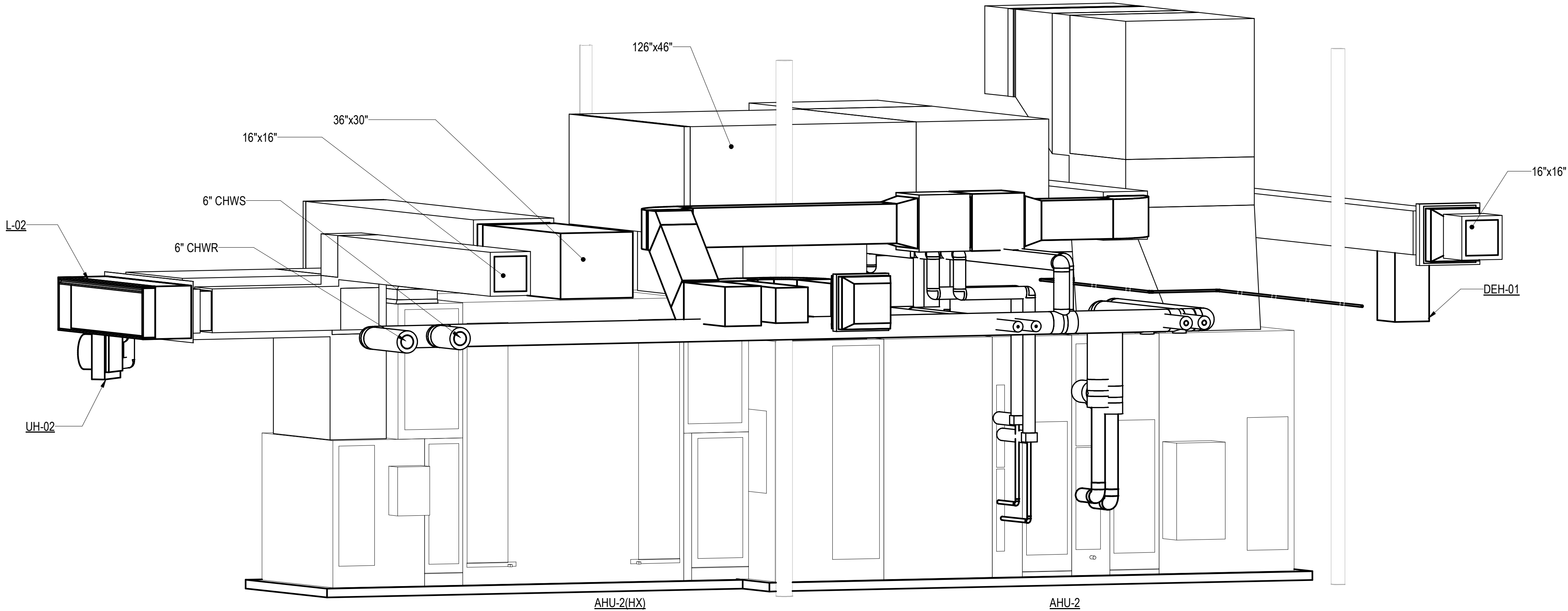
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C1 AHU-02 ISOMETRIC
SCALE:NTS



A1 AHU-02 ISOMETRIC
SCALE:NTS

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UNCLASSIFIED



Michael Baker
INTERNATIONAL
100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108
APPROVED

FOR COMMANDER NAVFAC		
ACTIVITY		
CONCURRED BY		
MCB-CL AMB		
VIA EMAIL		
SATISFACTORY TO DATE		
DES	DRW	CHK
SEM	12/16/21	12/16/21
PM / DM	TOWLER / ROOT	
BRANCH HEAD	SCE	
DESIGN DIRECTOR	PAUL K. SHREM	
FIRE PROTECTION	DPS	

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
ATLANTIC DESIGN AND CONSTRUCTION
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC
NORFOLK, VA
JACKSONVILLE, NC
P1338 II MEF SIMULATION/TRAINING CENTER
REPLACEMENT
MECHANICAL ISOMETRIC VIEWS

SCALE:	AS NOTED
PROJECT NO.:	1590892
CONSTR. CONTR. NO.	N40085-20-C-0059
NAVFAC DRAWING NO.	14098546
SHEET	319 OF 456

M-902

DRAWING REVISION: 25 AUGUST 2020

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16 DEC 21

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DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC
ATLANTIC DESIGN AND CONSTRUCTION
MOB CAMP LEJEUNE
JACKSONVILLE, NC
P1338 II MEF SIMULATION/TRAINING CENTER
REPLACEMENT
MECHANICAL ISOMETRIC VIEWS

A

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C

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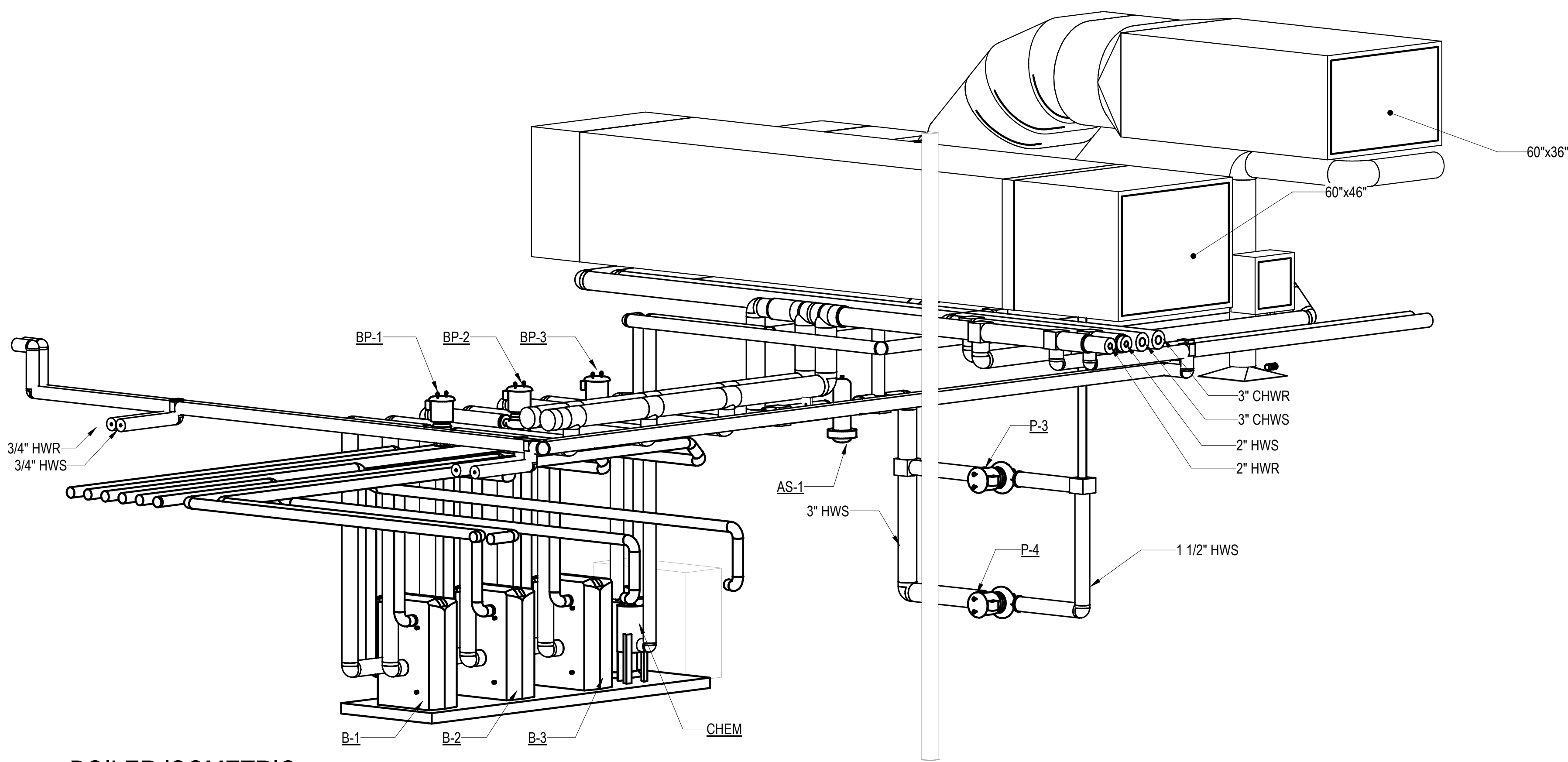
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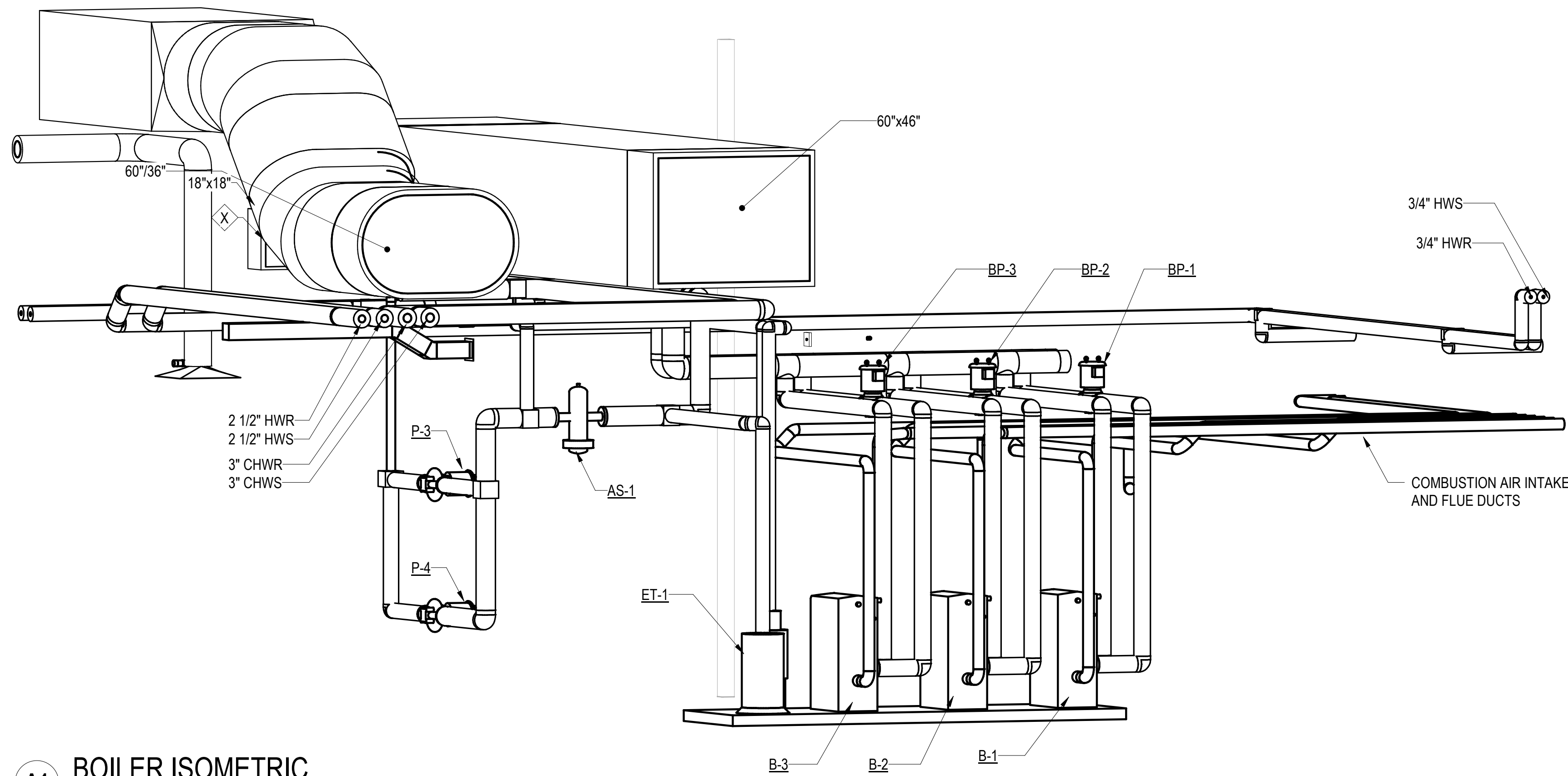
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UNCLASSIFIED



C1 BOILER ISOMETRIC
SCALE:NTS



A1 BOILER ISOMETRIC
SCALE:NTS

SYN	DESCRIPTION	DATE	APPR

Michael Baker International
100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108
APPROVED

FOR COMMANDER NAVFAC
ACTIVITY
CONCURRED BY
MCB-CL AMB
VIA EMAIL
SATISFACTORY TO DATE 12/16/21
DES SEM DRW JAK CHK EMB
PM / DM TOWLER / ROOT
BRANCH HEAD SCE
DESIGN DIRECTOR PAUL K. SHREM
FIRE PROTECTION DPS

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
ATLANTIC DESIGN AND CONSTRUCTION
MOB CAMP LEJEUNE
JACKSONVILLE, NC
P1338 II MEF SIMULATION/TRAINING CENTER
REPLACEMENT
MECHANICAL ISOMETRIC VIEWS

SCALE: AS NOTED
EPROJECT NO.: 1590892
CONSTR. CONTR. NO. N40085-20-C-0059
NAVFAC DRAWING NO. 14098547
SHEET 320 OF 456
M-903
DRAWING REVISION: 25 AUGUST 2020

ISSUED FOR CONSTRUCTION - 16 DEC 21

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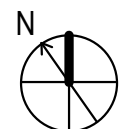
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SCALE: 1/8" = 1' - 0"



ISSUED FOR CONSTRUCTION - 16 DEC 2017

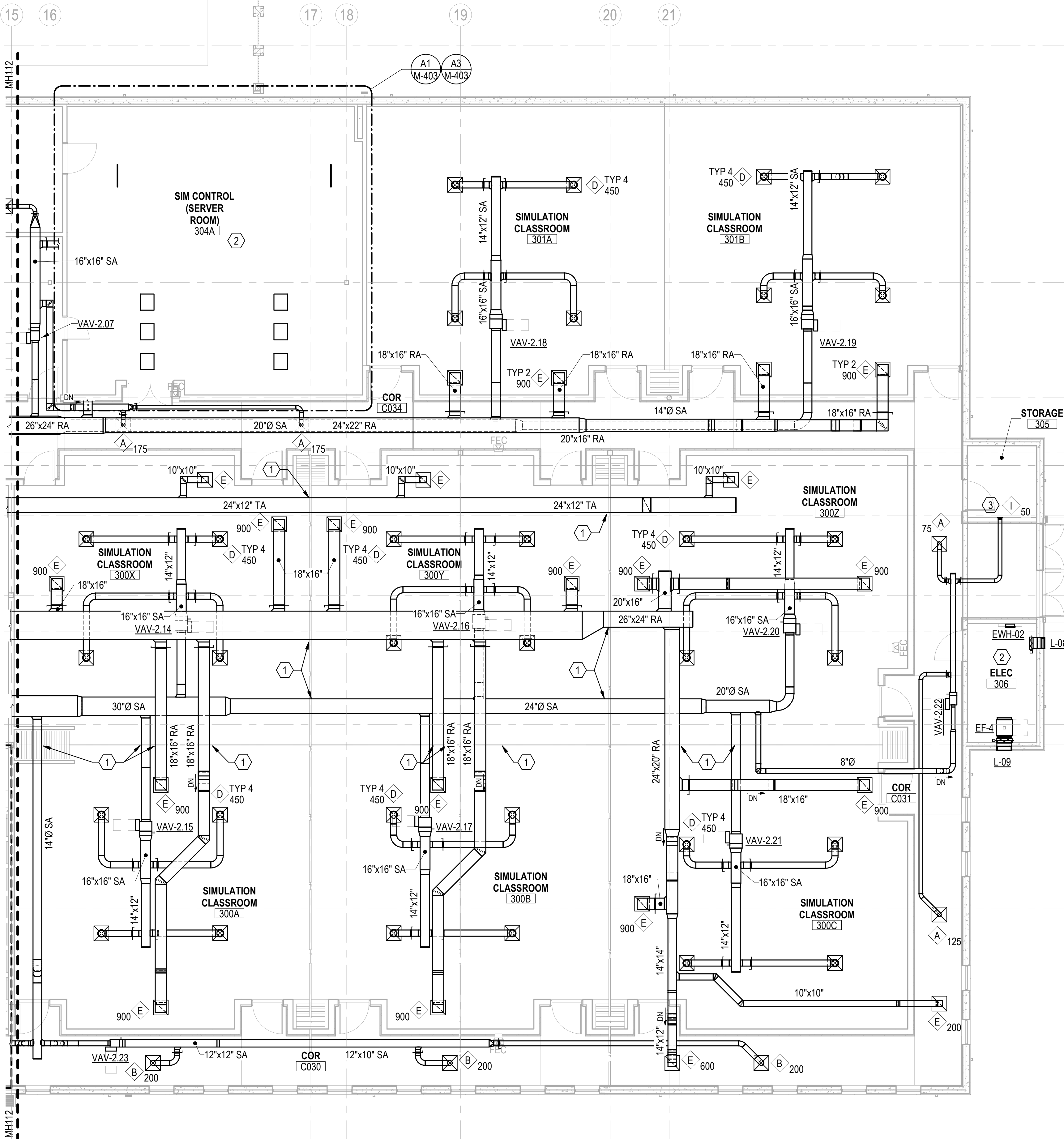
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PLOTTED: 11/22/2021 4:22:17 PM

UNCLASSIFIED

A1

HVAC - 1ST FLOOR PLAN - AREA C

SCALE: 1/8" = 1'-0"



GENERAL NOTES

- 1 PROVIDE MANUAL VOLUME DAMPERS IN ALL RUN-OUTS TO DIFFUSERS, AT ALL BRANCH TAKE-OFFS FROM MAIN SUPPLY DUCTS, AND WHERE DEEMED NECESSARY BY TAB SUB-CONTRACTOR TO ACHIEVE PROPER SYSTEM BALANCING.
- 2 ALL DUCT RUN-OUTS TO DIFFUSERS, REGISTERS AND GRILLES NOT INDICATED ON THE PLANS SHALL BE SIZED TO MATCH THE NECK SIZE INDICATED ON THE DIFFUSER, REGISTER AND GRILLE SCHEDULE.
- 3 ALL SUPPLY DUCT RUN-OUTS TO VAV BOXES NOT INDICATED ON THE PLANS SHALL BE SIZED TO MATCH THE VAV BOX INLET SIZE INDICATED ON THE VARIABLE AIR VOLUME (VAV) BOX SCHEDULE.
- 4 SHEET METAL FABRICATOR MAY SUBSTITUTE EQUIVALENT ROUND OR FLAT OVAL DUCTWORK FOR RECTANGULAR SIZES INDICATED. DUCTWORK BETWEEN AHU AND VAV BOXES SHALL BE SIZED TO 0.2" STATIC PRESSURE LOSS PER 100' OF DUCT RUN. DUCTWORK DOWNSTREAM OF VAV BOXES SHALL BE SIZED TO 0.08" STATIC PRESSURE LOSS PER 100' OF DUCT RUN. RETURN, EXHAUST AND TRANSFER AIR DUCTS SHALL BE SIZED TO 0.05"/100' OF DUCT RUN. ALL REVISIONS MUST BE COORDINATED WITH ALL OTHER TRADES AND ILLUSTRATED IN DUCTWORK SHOP DRAWINGS FOR APPROVAL.
- 5 PLAN DRAWINGS ARE DIAGRAMMATIC IN NATURE AND DO NOT ILLUSTRATE ALL SPECIFIC DUCT TAKE-OFF CONFIGURATIONS, TAPS, ETC. REFER TO PROJECT SPECIFICATIONS AND DUCTWORK DETAILS FOR SPECIFIC REQUIREMENTS.
- 6 ALL EQUIPMENT SHALL BE INSTALLED WITH MANUFACTURER'S REQUIRED ACCESS SPACE BETWEEN UNIT AND FULL HEIGHT WALLS AND OTHER OBSTRUCTIONS.

KEYNOTES

- 1 COORDINATE DUCT LOCATION WITH STRUCTURAL MEMBERS SUPPORTING FOLDING PARTITION. REFER TO STRUCTURAL AND ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
- 2 THERE SHALL NOT BE ANY EQUIPMENT (PIPING, DUCTWORK, MACHINERY, ETC.) THAT DOES NOT SERVE THIS SPACE INSTALLED ABOVE OR WITHIN THIS SPACE, NOR SHALL EQUIPMENT NOT SERVING THIS SPACE PASS THROUGH OR ENTER THIS SPACE.
- 3 MOUNTING HEIGHT TO BE 11' AFF.

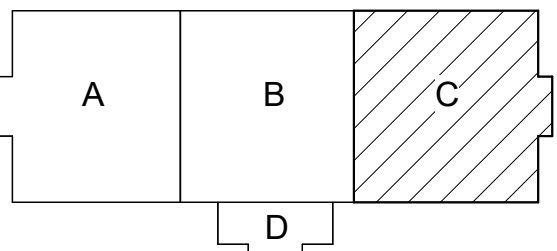
DUCT CONSTRUCTION SCHEDULE

DUCT SYSTEM	MIN PRESS CLASS	MIN. SEAL CLASS	SMACNA DUCT LEAKAGE CLASS (CL)			DUCT TEST PRESS
			RECT	ROUND	FLAT OVAL	
VAV SUPPLY - UPSTREAM OF BOXES	4" W.C.	A	4	2	2	4" W.C.
VAV SUPPLY - DOWNSTREAM OF BOXES	2" W.C.	A	4	2	2	2" W.C.
EXHAUST DUCTS	±1" W.C.	A	4	2	2	1" W.C.
RETURN DUCTS	±2" W.C.	A	4	2	2	2" W.C.
OUTSIDE AIR DUCTS	-1" W.C.	A	4	2	2	1" W.C.
TRANSFER AIR DUCTS	1" W.C.	A	NA	NA	NA	NA

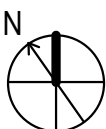
LEGEND

----- SECURE AREA BOUNDARY

KEYPLAN



0 4'-0" 8'-0" 16'-0"
SCALE: 1/8" = 1' - 0"



APPR
DATE
SYN
DESCRIPTION

DAVID W. HURD
REGISTERED PROFESSIONAL ENGINEER
NO. PEG61160
PENNSYLVANIA

100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108
APPROVED

FOR COMMANDER NAVFAC
ACTIVITY
CONCURRED BY
MCB-CL AMB
VIA EMAIL
SATISFACTORY TO DATE 12/16/21
DESIGNER
DRAWING
CHECKER
PM / CM
TOWLER / ROOT
BRANCH HEAD
SCE
DESIGN DIRECTOR
PAUL K. SHREM
FIRE PROTECTION
DPS

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
ATLANTIC DESIGN AND CONSTRUCTION
NAVFAC DRAWING NO. 14098504
SHEET 277 OF 456
MH113
DRAWING REVISION: 25 AUGUST 2020

JACKSONVILLE, NC
P1338 II MEF SIMULATION/TRAINING CENTER
REPLACEMENT
HVAC - 1ST FLOOR PLAN - AREA C
ISSUED FOR CONSTRUCTION - 16 DEC 21

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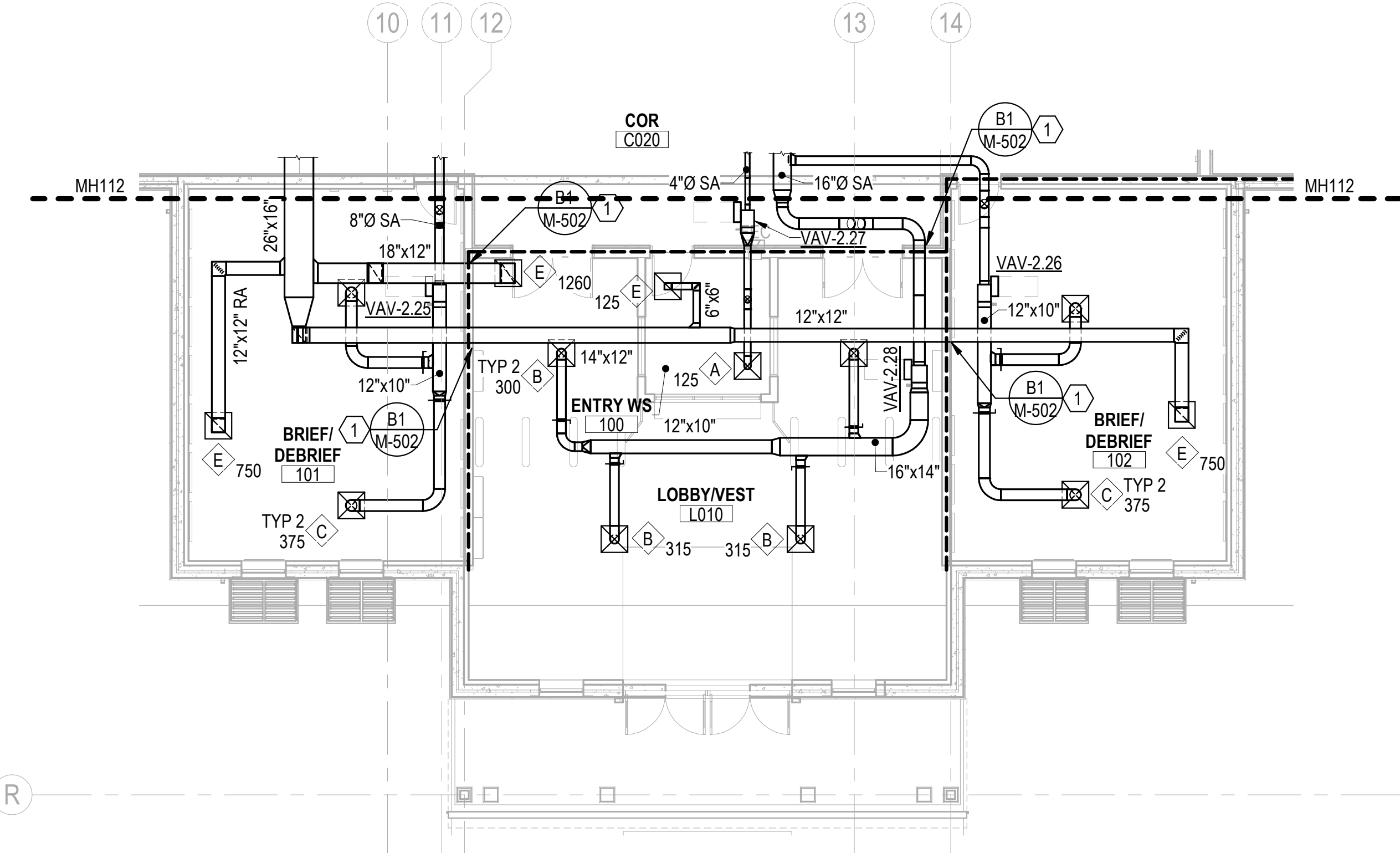
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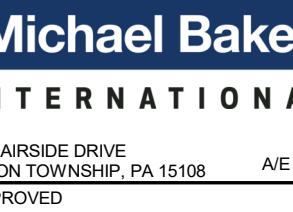
B2 HVAC - 1ST FLOOR PLAN - AREA D
SCALE: 1/8" = 1'-0"

GENERAL NOTES

- 1 PROVIDE MANUAL VOLUME DAMPERS IN ALL RUN-OUTS TO DIFFUSERS, AT ALL BRANCH TAKE-OFFS FROM MAIN SUPPLY DUCTS, AND WHERE DEEMED NECESSARY BY TAB SUB-CONTRACTOR TO ACHIEVE PROPER SYSTEM BALANCING.
- 2 ALL DUCT RUN-OUTS TO DIFFUSERS, REGISTERS AND GRILLES NOT INDICATED ON THE PLANS SHALL BE SIZED TO MATCH THE NECK SIZE INDICATED ON THE DIFFUSER, REGISTER AND GRILLE SCHEDULE.
- 3 ALL SUPPLY DUCT RUN-OUTS TO VAV BOXES NOT INDICATED ON THE PLANS SHALL BE SIZED TO MATCH THE VAV BOX INLET SIZE INDICATED ON THE VARIABLE AIR VOLUME (VAV) BOX SCHEDULE.
- 4 SHEET METAL FABRICATOR MAY SUBSTITUTE EQUIVALENT ROUND OR FLAT OVAL DUCTWORK FOR RECTANGULAR SIZES INDICATED. DUCTWORK BETWEEN AHU AND VAV BOXES SHALL BE SIZED TO 0.2" STATIC PRESSURE LOSS PER 100' OF DUCT RUN. DUCTWORK DOWNSTREAM OF VAV BOXES SHALL BE SIZED TO 0.08" STATIC PRESSURE LOSS PER 100' OF DUCT RUN. RETURN, EXHAUST AND TRANSFER AIR DUCTS SHALL BE SIZED TO 0.05"/100' OF DUCT RUN. ALL REVISIONS MUST BE COORDINATED WITH ALL OTHER TRADES AND ILLUSTRATED IN DUCTWORK SHOP DRAWINGS FOR APPROVAL.
- 5 PLAN DRAWINGS ARE DIAGRAMMATIC IN NATURE AND DO NOT ILLUSTRATE ALL SPECIFIC DUCT TAKE-OFF CONFIGURATIONS, TAPS, ETC. REFER TO PROJECT SPECIFICATIONS AND DUCTWORK DETAILS FOR SPECIFIC REQUIREMENTS.
- 6 ALL EQUIPMENT SHALL BE INSTALLED WITH MANUFACTURER'S REQUIRED ACCESS SPACE BETWEEN UNIT AND FULL HEIGHT WALLS AND OTHER OBSTRUCTIONS.

KEYNOTES

- 1 SECURE AREA PENETRATION. PROVIDE INTRUSION PREVENTION BARS IN ALL DUCTWORK WITH OPENINGS GREATER THAN 96 SQ IN, REFER TO DETAILS.



FOR COMMANDER NAVFAC		
ACTIVITY	CONCURRED BY MCB-CL AMB VIA EMAIL	
SATISFACTORY TO DATE	12/16/21	
DES. SEM	DRWING	CHK. SEM
PM / DM	TOWLER / ROOT	
BRANCH HEAD	SCE	
DESIGN DIRECTOR	PAUL K. SHREM	
FIRE PROTECTION	DPS	

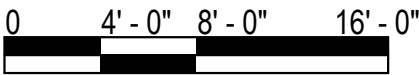
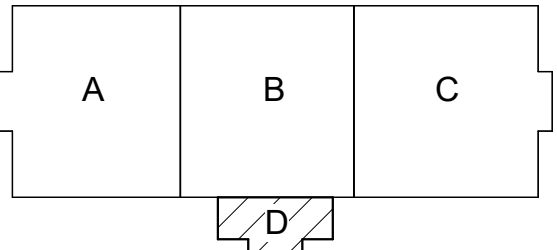
DUCT CONSTRUCTION SCHEDULE

DUCT SYSTEM	MIN PRESS CLASS	MIN. SEAL CLASS	SMACNA DUCT LEAKAGE CLASS (CL)			DUCT TEST PRESS
			RECT	ROUND	FLAT OVAL	
VAV SUPPLY - UPSTREAM OF BOXES	4" W.C.	A	4	2	2	4" W.C.
VAV SUPPLY - DOWNSTREAM OF BOXES	2" W.C.	A	4	2	2	2" W.C.
EXHAUST DUCTS	±1" W.C.	A	4	2	2	1" W.C.
RETURN DUCTS	±2" W.C.	A	4	2	2	2" W.C.
OUTSIDE AIR DUCTS	-1" W.C.	A	4	2	2	1" W.C.
TRANSFER AIR DUCTS	1" W.C.	A	NA	NA	NA	NA

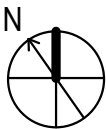
LEGEND

----- SECURE AREA BOUNDARY

KEYPLAN



SCALE: 1/8" = 1' - 0"



SCALE:	AS NOTED
EPROJECT NO.:	1590892
CONSTR. CONTR. NO.	N40085-20-C-0059
NAVFAC DRAWING NO.	14098505
SHEET	278 OF 456

MH114

DRAWING REVISION: 25 AUGUST 2020

ISSUED FOR CONSTRUCTION - 16 DEC 21

UNCLASSIFIED

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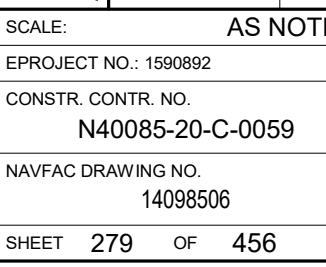
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FILE NAME: BIM 360://HF PACKAGE 3/P1338 MEF SIM CTR-1590892-M.M

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MP110

ISSUED FOR CONSTRUCTION - 16 DEC 21

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EC 21



SCALE: 1/8" = 1'-0"

- 1 THERE SHALL NOT BE ANY EQUIPMENT (PIPING, DUCT WORK, MACHINERY, ETC.) THAT DOES NOT SERVE THIS SPACE INSTALLED ABOVE OR WITHIN THIS SPACE, NOR SHALL EQUIPMENT NOT SERVING THIS SPACE PASS THROUGH OR ENTER THIS SPACE.
- 2 ROUTE ALL CONDENSATE PIPING AT 1/8" PER 1'-0" SLOPE TOWARD POINT OF TERMINATION. PROVIDE CLEANOUT AT ALL CHANGES OF DIRECTION GREATER THAN 45°
- 3 1-1/4" CD DOWN TO MOP RECEPTOR. TERMINATE PIPE OPEN ENDED APPROXIMATELY 3" ABOVE RECEPTOR.
- 4 ROUTE PAIR OF REFRIGERANT LINES FROM INDOOR UNIT TO ASSOCIATED OUTDOOR CONDENSING UNIT. SIZE PER MANUFACTURER'S RECOMMENDATIONS.

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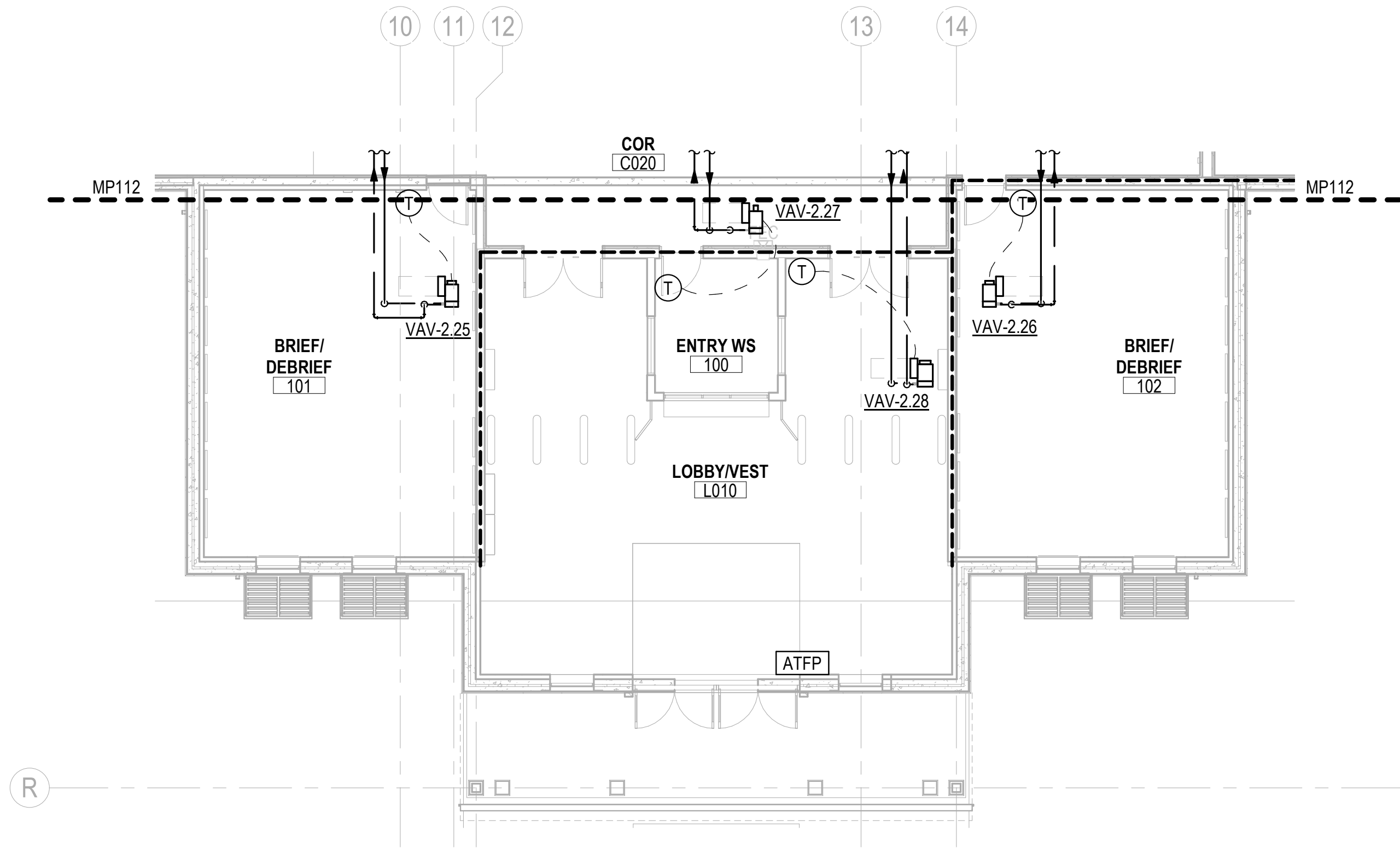


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PLOTTED: 11/22/2021 4:22:51 PM

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC
ATLANTIC DESIGN AND CONSTRUCTION
MOB CAMP LEJEUNE
P1338 II MEF SIMULATION/TRAINING CENTER
REPLACEMENT
PIPING - 1ST FLOOR PLAN - AREA D

B2

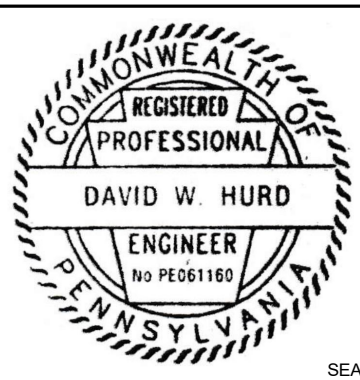
PIPING - 1ST FLOOR PLAN - AREA D
SCALE: 1/8" = 1'-0"



GENERAL NOTES

- 1 ALL HWS & HWR BRANCHES ARE 3/4" UNLESS NOTED OTHERWISE.
- 2 PROVIDE AN AIR VENT AT THE HIGH POINT OF EACH DROP IN THE HEATING AND CHILLED WATER PIPING SYSTEMS. ALL PIPING SHALL GRADE TO THE LOW POINTS. PROVIDE HOSE END DRAIN VALVES AT THE BOTTOM OF ALL RISERS AND LOW POINTS.
- 3 INSTALL PIPING SO THAT ALL VALVES, STRAINERS, UNIONS, TRAPS, FLANGES AND OTHER APPURTENANCES REQUIRING ACCESS ARE EASILY ACCESSIBLE. ALL VALVES SHALL BE INSTALLED SO THAT THE VALVE REMAINS IN SERVICE WHEN EQUIPMENT OR PIPING ON EQUIPMENT SIDE OF VALVE IS REMOVED. ALL BALANCING VALVES AND BUTTERFLY VALVES SHALL BE PROVIDED WITH POSITION INDICATORS AND MAXIMUM ADJUSTABLE STOPS (AKA "MEMORY STOPS"). ALL VALVES (EXCEPT CONTROL VALVES) AND STRAINERS SHALL BE FULL SIZE OF PIPE BEFORE REDUCING SIZE TO MAKE CONNECTIONS TO EQUIPMENT AND CONTROLS.
- 4 INSTALL PIPING WITHOUT FORCING OR SPRINGING.
- 5 PLAN DRAWINGS ARE DIAGRAMMATIC IN NATURE AND NOT ILLUSTRATE ALL SPECIFIC DUCT TAKE-OFF CONFIGURATIONS, TAPS, ETC. REFER TO PROJECT SPECIFICATIONS AND DETAILS FOR SPECIFIC REQUIREMENTS.

KEYNOTES



Michael Baker
INTERNATIONAL
100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108
APPROVED

FOR COMMANDER NAVFAC
ACTIVITY
CONCURRED BY
MCB-CL AMB
VIA EMAIL
SATISFACTORY TO DATE 12/16/21
DES SEM DRW MC CHK EMB
PM / DM TOWLER / ROOT
BRANCH HEAD SCE
DESIGN DIRECTOR PAUL K. SHREM
FIRE PROTECTION DPS

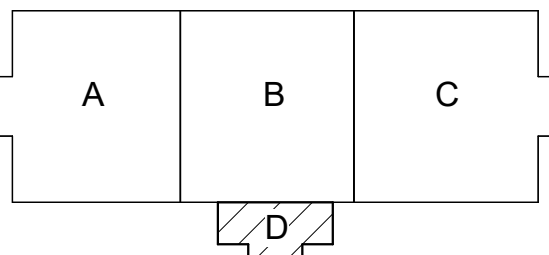
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
ATLANTIC DESIGN AND CONSTRUCTION
MOB CAMP LEJEUNE
JACKSONVILLE, NC
P1338 II MEF SIMULATION/TRAINING CENTER
REPLACEMENT
PIPING - 1ST FLOOR PLAN - AREA D

SCALE: AS NOTED
EPROJECT NO.: 1590892
CONSTR. CONTR. NO.
N40085-20-C-0059
NAVFAC DRAWING NO.
14098510
SHEET 283 OF 456
MP114
DRAWING REVISION: 25 AUGUST 2020

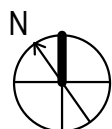
LEGEND

----- SECURE AREA BOUNDARY

KEYPLAN



0 4' - 0" 8' - 0" 16' - 0"
SCALE: 1/8" = 1' - 0"



ISSUED FOR CONSTRUCTION - 16 DEC 21

UNCLASSIFIED

1

2

3

4

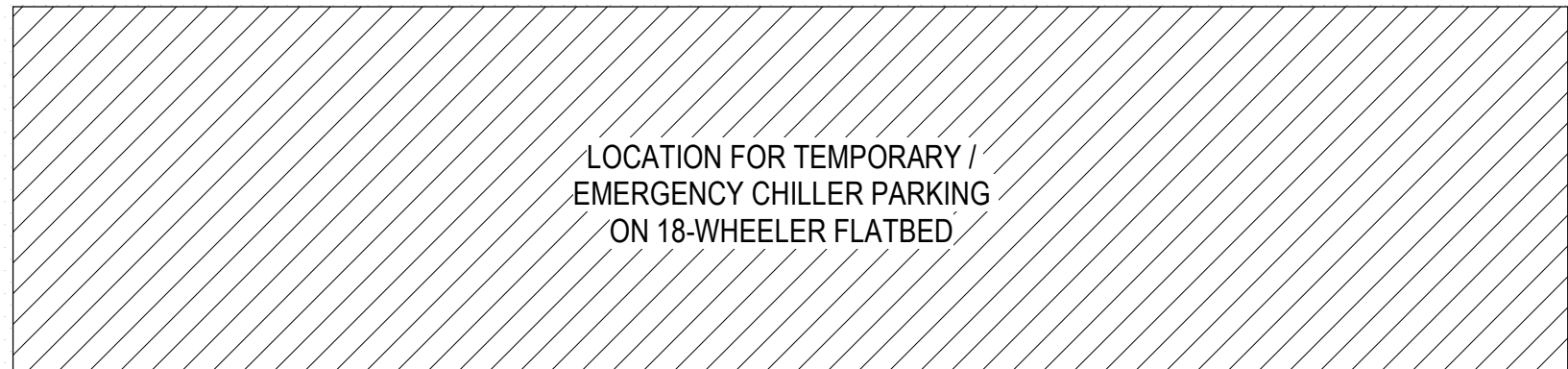
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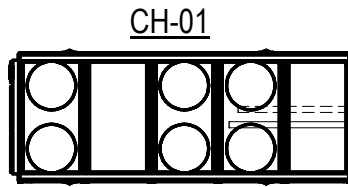
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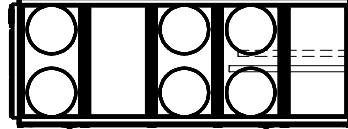
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VALVED BLIND FLANGES FOR
TEMPORARY / EMERGENCY
CHILLER CONNECTION
MOUNT HEAT TRACE
CONTROL PANEL ON
BRICK MASONRY PIER



CH-02



8' - 0"

PROVIDE HEAT TRACE ON ALL
ABOVE GROUND PIPING TO CHILLER

PREFABRICATED/PRE-INSULATED DIRECT
BURIED CHILLED WATER SUPPLY AND
RETURN PIPING. REFER TO CIVIL DRAWINGS
FOR ADDITIONAL INFORMATION. REFER TO
M-700 SERIES FOR PIPING DIAGRAMS.

REFER TO CIVIL DRAWINGS FOR CHILLER PAD
DETAILS; REFER TO ARCHITECTURAL DRAWING
AS103 FOR CHILLER ENCLOSURE DETAILS
YH-1 - YARD HYDRANT -
REFER TO CIVIL AND
PLUMBING DRAWINGS

PROVIDE 8'-0" SPACING BETWEEN
CHILLERS TO MEET MANUFACTURER'S
REQUIREMENT FOR NO
PERFORMANCE DERATING

B1
M-507
PREFABRICATED/PRE-INSULATED DIRECT
BURIED CHILLED WATER SUPPLY AND
RETURN PIPING TO BELOW GRADE

6" CHWR
6" CHWS

A1
M-402

A

2

3

4

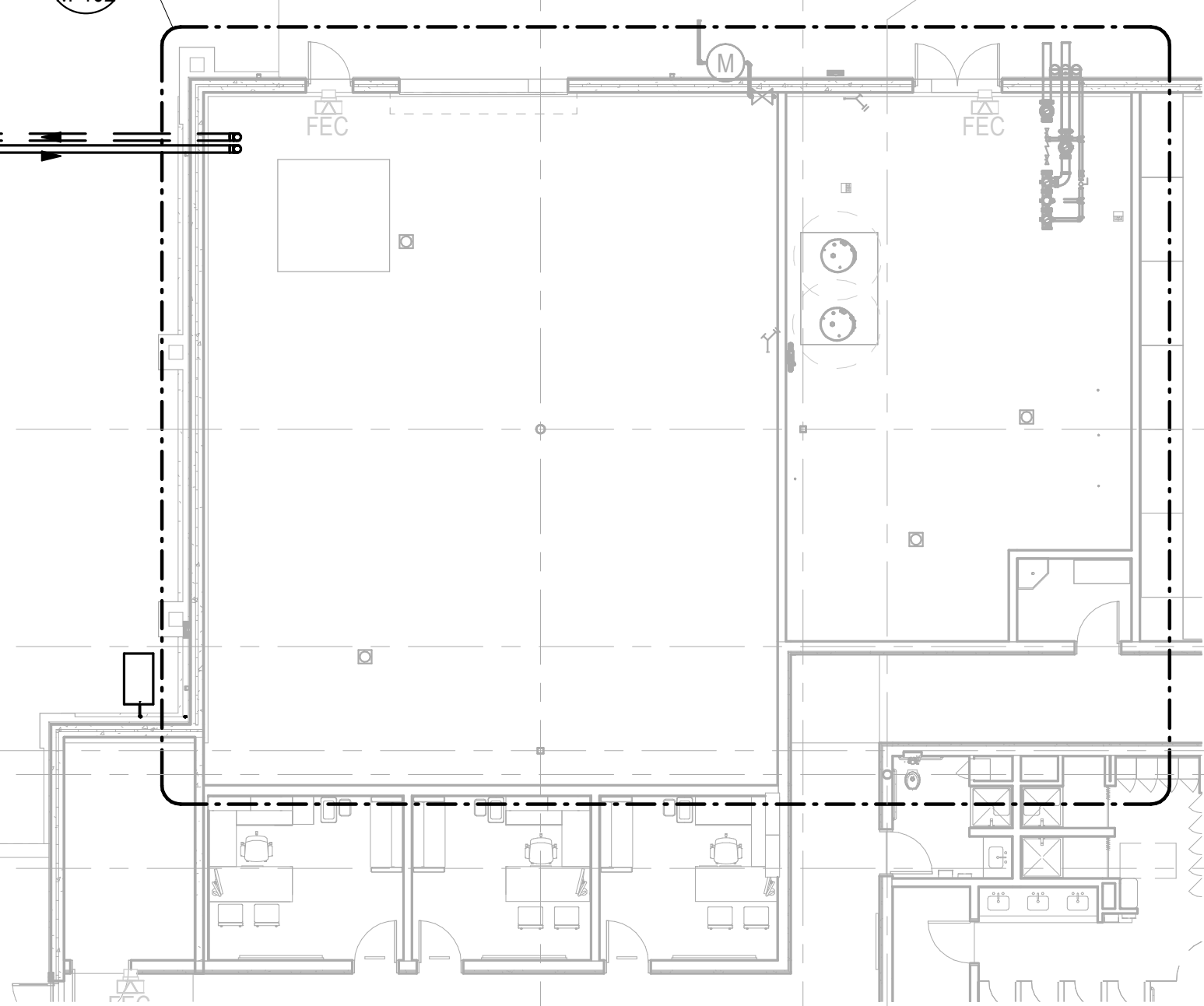
B

C

D

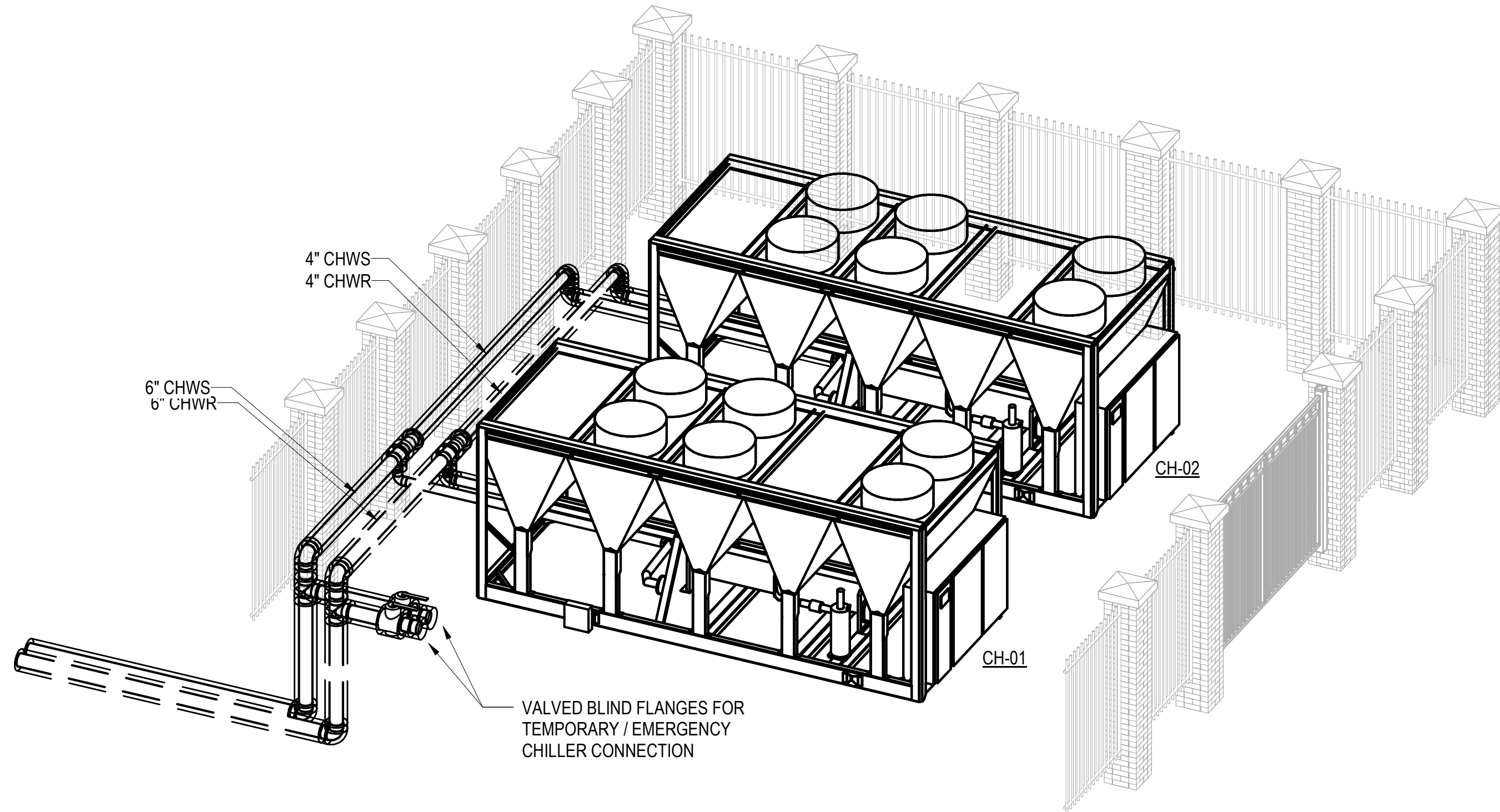
E

F



C1 MECHANICAL - SITE PLAN

SCALE: 3/32" = 1'-0"



4" CHWS
4" CHWR

6" CHWS
6" CHWR

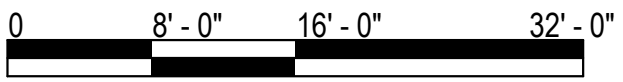
CH-02

CH-01

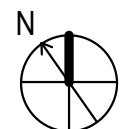
VALVED BLIND FLANGES FOR
TEMPORARY / EMERGENCY
CHILLER CONNECTION

A2 CHILLERS AND PIPING ISOMETRIC

SCALE: NTS



SCALE: 3/32" = 1' - 0"



1

2

3

4

5

UNCLASSIFIED

UNCLASSIFIED

A

FILE NAME: BIM 360//HF PACKAGE 3P1338.MEF SIM CTR-1590892-M.mxd
PLOTTED: 11/22/2021 4:22:57 PM

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC
ATLANTIC DESIGN AND CONSTRUCTION
MCB CAMP LEJEUNE
JACKSONVILLE, NC
NORFOLK, VA

APPR	DATE	SYN	DESCRIPTION
Michael Baker INTERNATIONAL 100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED			
FOR COMMANDER NAVFAC			
ACTIVITY CONCURRED BY MCB-CL AMB VIA EMAIL			
SATISFACTORY TO DATE 12/16/21			
DES SEM	DRW JJK	CHK EMB	
PM / DM	TOWLER / ROOT		
BRANCH HEAD	SCE		
DESIGN DIRECTOR	PAUL K. SHREM		
FIRE PROTECTION	DPS		
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC ATLANTIC DESIGN AND CONSTRUCTION MCB CAMP LEJEUNE JACKSONVILLE, NC NORFOLK, VA			
P1338 II MEF SIMULATION/TRAINING CENTER REPLACEMENT MECHANICAL - SITE PLAN			
SCALE: AS NOTED			
EPROJCT NO.: 1590892			
CONSTR. CONTR. NO. N40085-20-C-0059			
NAVFAC DRAWING NO. 14098500			
SHEET 273 OF 456			
MS101			
DRAWFORM REVISION: 25 AUGUST 2020			

ISSUED FOR CONSTRUCTION - 16 DEC 21