

SYMBOL	ABBREV	DESCRIPTION
---CD---	CD	CONDENSATE DRAIN
---	CW	DOMESTIC COLD WATER
---	HW	DOMESTIC HOT WATER
---CHWR---	CHWR	CHILLED WATER RETURN
---CHWS---	CHWS	CHILLED WATER SUPPLY
---HWR---	HWR	HEATING HOT WATER RETURN
---HWS---	HWS	HEATING HOT WATER SUPPLY
---RS/RL---	RS/RL	REFRIGERANT SUCTION / REFRIGERANT LIQUID *

* RS/RL LINES TYPICALLY TO BE SIZED PER EQUIPMENT MANUFACTURER'S RECOMMENDATIONS UNLESS NOTED OTHERWISE.

MECHANICAL SYMBOLS LEGEND											
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
[ATFP] -OR- [ATFP]	ATFP SHUTDOWN SWITCH	[A/B]	DUCTWORK - DIMENSIONS - FLAT OVAL (SIDE SHOWN / SIDE NOT SHOWN)	[Symbol]	DUCTWORK - FLEXIBLE CONNECTION	[Symbol]	PIPING - AIR VENT (MANUAL)	[Symbol]	PIPING - EXPANSION JOINT	[Symbol]	PIPING - TEE DOWN
[NOTE TAG CFM]	AIR DEVICE	[AØ]	DUCTWORK - DIMENSIONS - ROUND	[Symbol]	DUCTWORK - EXHAUST OR RETURN DUCT DOWN (SLASH MAY BE FLIPPED)	[Symbol]	PIPING - ANGLE GLOBE VALVE	[Symbol]	PIPING - UNION	[Symbol]	PIPING - TEE UP
[Symbol]	ACCESS PANEL	[DN]	DUCTWORK - DUCT ELEVATION DROP	[Symbol]	DUCTWORK - EXHAUST OR RETURN DUCT UP (SLASH MAY BE FLIPPED)	[Symbol]	PIPING - BALL VALVE	[Symbol]	PIPING - FLEXIBLE CONNECTION	[Symbol]	PIPING - TEMPERATURE SENSOR
[CO2]	CARBON DIOXIDE SENSOR	[UP]	DUCTWORK - DUCT ELEVATION RISE	[Symbol]	DUCTWORK - SUPPLY DUCT DOWN	[Symbol]	PIPING - BUTTERFLY VALVE	[Symbol]	PIPING - FLOWMETER - ORIFICE	[Symbol]	PIPING - THERMOMETER
[CO]	CARBON MONOXIDE SENSOR	[DN]	DUCTWORK - DUCT ELEVATION DROP (ROUND OR FLAT OVAL)	[Symbol]	DUCTWORK - SUPPLY DUCT UP	[Symbol]	PIPING - CALIBRATED BALANCE VALVE	[Symbol]	PIPING - FLOWMETER - VENTURI	[Symbol]	PIPING - PRESSURE GAUGE WITH GAUGE COCK
[Symbol]	CONNECT TO EXISTING	[UP]	DUCTWORK - DUCT ELEVATION RISE (ROUND OR FLAT OVAL)	[AxB AxB]	DUCTWORK - TRANSITION - RECTANGULAR	[Symbol]	PIPING - CAP	[Symbol]	PIPING - FLOW SWITCH	[Symbol]	PIPING - PT (PRESSURE & TEMPERATURE) TEST PORT
[L]	DOOR LOUVER	[DSD]	DUCTWORK - DUCT SMOKE DETECTOR	[AxB (AØ) (A/B)]	DUCTWORK - TRANSITION - RECTANGULAR TO ROUND / FLAT OVAL	[Symbol]	PIPING - CHECK VALVE (SPRING)	[Symbol]	PIPING - GATE VALVE	[Symbol]	PIPING - PUMP (ARROW IS DIRECTION OF FLOW)
[UC]	DOOR UNDERCUT	[Symbol]	DUCTWORK - ELBOW 90° UP	[Symbol]	EXHAUST FAN	[Symbol]	PIPING - CHECK VALVE (SWING GATE)	[Symbol]	PIPING - GLOBE VALVE	[Symbol]	PIPING - REDUCER
[DDCP]	DIRECT DIGITAL CONTROL PANEL	[Symbol]	DUCTWORK - ELBOW 90° DOWN	[H]	HUMIDISTAT	[Symbol]	PIPING - CONTROL VALVE (2-WAY)	[Symbol]	PIPING - PIPE ANCHOR	[Symbol]	RETURN OR EXHAUST AIR DEVICE (SLASH MAY BE FLIPPED)
[AFS]	DUCTWORK - AIRFLOW MEASUREMENT STATION	[FD]	DUCTWORK - FIRE DAMPER	[H2]	HYDROGEN SENSOR	[Symbol]	PIPING - CONTROL VALVE (3-WAY)	[Symbol]	PIPING - PIPE GUIDE	[Symbol]	REMOVE EXISTING TO
[BDD]	DUCTWORK - BACKDRAFT DAMPER	[DSD]	DUCTWORK - SMOKE DAMPER	[#]	KEYNOTE	[Symbol]	PIPING - DIRECTION OF WATER FLOW	[Symbol]	PIPING - PLUG VALVE	[Symbol]	REVISION
[Symbol]	DUCTWORK - DIRECTION OF AIRFLOW - RETURN	[DSD]	DUCTWORK - COMBINATION FIRE / SMOKE DAMPER	[Symbol]	LOUVER	[Symbol]	PIPING - ELBOW 90° DOWN	[Symbol]	PIPING - PRESSURE REDUCING VALVE	[Symbol]	STARTER (EQUIPMENT SERVED)
[Symbol]	DUCTWORK - DIRECTION OF AIRFLOW - SUPPLY	[Symbol]	DUCTWORK - MANUAL VOLUME DAMPER	[NOx]	NITROGEN OXIDE SENSOR	[Symbol]	PIPING - ELBOW 90° UP	[Symbol]	PIPING - PRESSURE RELIEF VALVE	[Symbol]	SWITCH
[DP]	DUCTWORK - DIFFERENTIAL PRESSURE	[Symbol]	DUCTWORK - MOTOR OPERATED DAMPER	[Symbol]	PHASE	[Symbol]	PIPING - ELBOW 90°	[Symbol]	PIPING - SOLENOID VALVE	[Symbol]	SQUARE SUPPLY AIR DIFFUSER
[AxB]	DUCTWORK - DIMENSIONS (SIDE SHOWN x SIDE NOT SHOWN)	[Symbol]	DUCTWORK - FLEXIBLE DUCT	[Symbol]	PIPING - AIR VENT (AUTOMATIC)	[Symbol]	PIPING - ELBOW 45°	[Symbol]	PIPING - STRAINER WITH VALVED AND CAPPED BLOW DOWN	[Symbol]	THERMOSTAT (DASHED LINE RUNS TO CONTROLLED DEVICE)

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

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
AF	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 / MFCR / 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	EAG	EXHAUST AIR GRILLE	HOA	HAND-OFF-AUTOMATIC	NIC	NOT IN CONTRACT	STRUC	STRUCTURAL
C	CELSIUS	EAR	EXHAUST AIR REGISTER	HP	HORSE POWER	NO	NORMALLY OPEN	TA	TRANSFER AIR
CAI	COMBUSTION AIR INTAKE	EAT	ENTERING AIR TEMPERATURE	HPU	HEAT PUMP UNIT	NTS	NOT TO SCALE	TEMP	TEMPERATURE
CAP	CAPACITY	EF	EXHAUST FAN	HTG	HEATING	OA	OUTSIDE AIR	TXV	THERMAL EXPANSION VALVE
CCFC	CLOSED CIRCUIT FLUID COOLER	ELEC	ELECTRIC(AL)	HTR	HEATER	OD	OUTSIDE DIAMETER	TYP	TYPICAL
CFM	CUBIC FEET PER MINUTE	ERU	ENERGY RECOVERY UNIT	HVAC	HEATING VENTILATION / AIR CONDITIONING	OED	OPEN END DUCT	UH	UNIT HEATER
CH	CHILLER	ERV	ENERGY RECOVERY VENTILATOR	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
								VERT	VERTICAL

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FILE NAME: BIM_360/HF PACKAGE 3P11527.LOG.COM.CSP-1639600.Mxd

UNCLASSIFIED


DATE

DESCRIPTION

SYMBOL



PRELIMINARY
NOT FOR CONSTRUCTION



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

FOR COMMANDER NAVFAC

ACTIVITY
MARINE CORPS BASE
CAMP LEJEUNE

SATISFACTORY TO DATE: DD/MM/YY

DES: EMB | DRW: AJK | CHK: DWH

PM

BRANCH HEAD

DESIGN DIRECTOR

FIRE PROTECTION

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
ATLANTIC DESIGN AND CONSTRUCTION
NAVFAC CAMP LEJEUNE
JACKSONVILLE, NC

LOGCOM CSP WAREHOUSE

MECHANICAL - SYMBOLS AND ABBREVIATIONS

SCALE: AS NOTED
EPROJCT NO.: 1639600
CONSTR. CONTR. NO.: N40085-20-C-0059
NAVFAC DRAWING NO.

SHEET OF

M-001

P-1527 PREFINAL SUBMISSION - 08/06/2021

GENERAL NOTES

1.0 GENERAL
1.1 CONTRACT DOCUMENT DRAWINGS FOR MECHANICAL WORK ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY. DO NOT SCALE DRAWINGS. CONTRACTOR MUST BE RESPONSIBLE TO FIELD SURVEY ACTUAL SITE CONDITIONS AND ACCOMMODATE ACTUAL SITE CONDITIONS AS PART OF SCOPE OF WORK AT NO ADDITIONAL COST TO GOVERNMENT.
1.2 PROVIDE WORK INDICATED OR IMPLIED ON THE DRAWINGS UNLESS SPECIFICALLY NOTED OTHERWISE.
1.3 PROVIDE MATERIALS, EQUIPMENT AND PERFORM LABOR REQUIRED TO PROVIDE COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED, AND AS REQUIRED BY CODE.
1.4 WORK SHOWN ON THE DRAWINGS MUST BE PERFORMED BY THE CONTRACTOR UNLESS SPECIFICALLY NOTED OTHERWISE.
1.5 EQUIPMENT SUBMITTALS AND SHOP DRAWINGS REQUIRED BY THE SPECIFICATIONS MUST BE APPROVED IN ACCORDANCE WITH CONTRACT REQUIREMENTS PRIOR TO PURCHASE, FABRICATION, AND INSTALLATION.
1.6 WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCTS OF A SINGLE MANUFACTURER MUST BE USED.
1.7 VERIFY EXISTING CONDITIONS AT THE SITE AND REPORT DISCREPANCIES TO THE CONTRACTING OFFICER BEFORE PROCEEDING WITH WORK.
1.8 LIMITS OF WORK ARE SHOWN FOR GENERAL REFERENCE AND DO NOT ESTABLISH PRECISE BOUNDARIES OF WORK FOR TRADES THAT MAY BE REQUIRED TO COMPLETE THE PROJECT.
1.9 THE VERBIAGE ON THE DRAWING INDICATING TYPES OF MATERIALS IS INTENDED TO AID THE CONTRACTOR IN UNDERSTANDING THE VARIOUS CONDITIONS LIKELY TO BE ENCOUNTERED.
1.10 THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING QUANTITIES OF MATERIALS REQUIRED TO COMPLETE THE PROJECT.
1.11 REFER TO DETAILS FOR ADDITIONAL REQUIREMENTS REGARDING SIZES AND ARRANGEMENTS.
1.12 PAINT COLORS AND OTHER FINISHES ARE SUBJECT TO CHANGE FROM THOSE LISTED IN THE CONTRACT DOCUMENTS WITHOUT NOTICE. CONTRACTOR TO SUBMIT SAMPLES OF COLORS AND FINISHES TO CONTRACTING OFFICER FOR REVIEW AND APPROVAL BEFORE THE INSTALLATION/FINISHING OF SURFACES.
1.13 IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE AND TO MAINTAIN THE BUILDING'S STRUCTURAL INTEGRITY DURING PHASES OF DEMOLITION AND NEW WORK. PROVIDE REQUIRED SUPPORT, SHORING, PINNING, ETC. TO ASSURE THIS REQUIREMENT.
1.14 MAINTAIN BUILDING IN WEATHERPROOF AND WATERTIGHT CONDITIONS THROUGHOUT THE DURATION OF CONSTRUCTION.
1.15 FIRE STOP FLOOR/CEILING PENETRATIONS AND PENETRATIONS THROUGH RATED PARTITIONS/WALLS.
1.16 LEGALLY DISPOSE OF DEMOLISHED MATERIALS OFF-SITE PER REGULATIONS OF AUTHORITIES HAVING JURISDICTION OVER THIS PROJECT.
1.17 WORK SHOWN ON DRAWINGS INVOLVES THE REMOVAL, REPLACEMENT, DEMOLITION, CUTTING, PATCHING AND PLASTERING OF EXISTING SURFACES IN ROOMS ABOVE AND BELOW THE CONSTRUCTION AREA. THE CONTRACTOR MUST RESTORE SURFACES AND FLOORS THAT ARE AFFECTED BY THEIR WORK. THE CONTRACTOR MUST COORDINATE THE PATCHING AND REPAIR OF THEIR WORK WITH THE WORK OF THE GENERAL CONTRACTOR'S FINAL FINISHES.
1.18 MAINTAIN A MINIMUM OF 6'-8" CLEARANCE TO UNDERSIDE OF PIPES, DUCTS, CONDUITS, SUSPENDED EQUIPMENT, SUPPORTS, ETC., THROUGHOUT ACCESS ROUTES IN MECHANICAL ROOMS.
1.19 COORDINATE FINAL EQUIPMENT CONNECTIONS WITH MANUFACTURERS' CERTIFIED DRAWINGS. COORDINATE AND PROVIDE DUCTWORK AND PIPING TRANSITIONS REQUIRED FOR FINAL EQUIPMENT CONNECTIONS. FIELD VERIFY AND COORDINATE DUCTWORK AND PIPING DIMENSIONS BEFORE FABRICATION.
1.20 PROVIDE MISCELLANEOUS STEEL REQUIRED TO ENSURE INSTALLATION AND SUPPORT OF MECHANICAL WORK AS SHOWN IN DETAILS FOR PIPING, DUCTWORK AND EQUIPMENT (UNLESS OTHERWISE NOTED) AT NO ADDITIONAL COST TO THE GOVERNMENT.
1.21 EQUIPMENT, PIPING, DUCTWORK, ETC., MUST BE SUPPORTED AS DETAILED AND SPECIFIED TO PROVIDE A VIBRATION FREE INSTALLATION.
1.22 PROVIDE FLEXIBLE CONNECTIONS IN DUCTWORK SYSTEMS CONNECTED TO FANS AND OTHER EQUIPMENT WHICH REQUIRE VIBRATION ISOLATION. FLEXIBLE CONNECTIONS MUST BE PROVIDED AT THE POINT OF CONNECTION TO THE EQUIPMENT UNLESS OTHERWISE INDICATED.
2.0 COORDINATION
2.1 SEVERAL PROJECTS MAY OCCUR AT THE SITE SIMULTANEOUSLY WITH THIS PROJECT. COORDINATE WORK REQUIREMENTS UNDER THIS CONTRACT WITH THESE PROJECTS.
2.2 THE CONTRACTOR MUST REVIEW DRAWINGS AND INCORPORATE PHASING REQUIREMENTS IN BID.
2.3 MECHANICAL CONTRACTOR MUST REFER TO AND COORDINATE WITH OTHER DISCIPLINE DRAWINGS (INCLUDING ARCHITECTURAL, INTERIORS, TELECOMMUNICATIONS, STRUCTURAL, CIVIL, PLUMBING, ELECTRICAL AND FIRE PROTECTION).
2.4 COORDINATE WITH THE ELECTRICAL CONTRACTOR:
2.4.1 LOCATION AND POWER REQUIREMENTS OF EQUIPMENT, CONTROL PANELS AND DEVICES.
2.4.2 MECHANICAL CONTRACTOR MUST FURNISH MOTOR CONTROL DEVICES TO ELECTRICAL CONTRACTOR FOR INSTALLATION. MOTOR CONTROL DEVICES INCLUDE BUT ARE NOT LIMITED TO FUSED DISCONNECTS, DISCONNECTS, MOTOR STARTING SWITCHES, PUSH BUTTON STATIONS, FRACTIONAL HORSEPOWER MANUAL MOTOR STARTERS WITH THERMAL OVERLOADS, 3 PHASE MOTOR CONTACTORS, COMBINATION MOTOR STARTERS, VARIABLE FREQUENCY DRIVES, SINGLE PHASE MOTOR SPEED ADJUSTMENT DEVICES.
2.4.3 COORDINATE ELECTRICAL REQUIREMENTS AND LOCATIONS OF EQUIPMENT WITH THE ELECTRICAL CONTRACTOR PRIOR TO ORDERING AND INSTALLATION.

2.4.4 LOCATIONS AND SIZES OF FLOOR, WALL AND ROOF OPENINGS MUST BE COORDINATED WITH OTHER TRADES INVOLVED.
2.4.5 PROVIDE CONTROL WIRING FROM REMOTE DISCONNECTS TO VFDs. PROVIDE FAST ACTING AUXILIARY CONTACT IN DISCONNECT CONNECTED TO LOGIC/DIGITAL INPUT ON VFD TO TRIGGER FREEWHEEL STOP.
3.0 WORK AREA
3.1 PROVIDE CONSTRUCTION AND DUST BARRICADES AS INDICATED AND AS DIRECTED BY THE CONTRACTING OFFICER TO ISOLATE WORK AREAS FROM OTHER PARTS OF THE BUILDING AND TO MAINTAIN EGRESS PATHWAYS. PROVIDE TEMPORARY EXIT SIGNAGE, WALK-OFF MATS AND DOORS.
3.2 BARRICADES MUST HAVE LOCKABLE DOOR TO PREVENT UNAUTHORIZED ENTRY. PROVIDE "WIPE OFF" MATS TO MINIMIZE TRACKING DUST AND DEBRIS.
3.3 DEVELOP, POST, AND IMPLEMENT NEW, SAFE PATHS OF EGRESS IF BARRICADES BLOCK NORMAL PATHS OF EGRESS.
3.4 PROVIDE TEMPORARY EXIT SIGNS.
3.5 DUST-PROOF PARTITIONS MUST HAVE LOCKABLE PRE-HUNG DOOR 3'-0" X 7'-0" TO PREVENT UNAUTHORIZED ENTRY, FIRE-PROOF OR METAL STUDS AND PLYWOOD. "WIPE OFF" MATS TO MINIMIZE TRACKING DUST AND DEBRIS TO ADJOINING SPACES, AND TEMPORARY EXIT SIGNS IF PARTITIONS INTERFERE WITH PATHS OF EGRESS.
3.6 IF DUST-PROOF PARTITIONS BLOCKS NORMAL PATHS OF EGRESS, THE CONTRACTOR MUST DEVELOP, POST, AND IMPLEMENT NEW, SAFE PATHS OF EGRESS.
3.7 RETURN ADJACENT AREAS DISTURBED BY THIS PROJECT'S CONSTRUCTION TO THE CONDITION PRIOR TO CONSTRUCTION.
4.0 HVAC WORK
4.1 COORDINATE THE LOCATIONS OF GRILLES, REGISTERS AND DIFFUSERS WITH THE CEILING GRID, LIGHTING, AUDIO VISUAL EQUIPMENT, AND SPRINKLER HEAD LAYOUTS.
4.2 HEATING DEVICES AND SURFACES WITH ELEVATED TEMPERATURES WHICH CAN BE ACCESSED OR COME IN CONTACT WITH BUILDING OCCUPANTS AND MAINTENANCE PERSONNEL MUST BE PROTECTED, INSULATED, OR CONTROLLED TO REMAIN BELOW 120°F.
4.3 PIPING AND DUCTWORK MUST CLEAR DOORS, WINDOWS, EQUIPMENT CLEARANCES, MAINTENANCE REQUIREMENTS, CODE SETBACKS, ETC. TO ASSURE OPERATION, INSPECTION, AND MAINTENANCE.
4.4 WELDING TO STRUCTURAL MEMBERS MUST NOT BE PERMITTED. ATTACHMENTS MUST BE MADE USING CLAMPS MEETING MSS STANDARDS AS SPECIFIED.
4.5 MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING MUST NOT BE SUPPORTED FROM ROOF OR DECK ASSEMBLY. SUPPORTS MUST ATTACH TO STRUCTURAL MEMBERS.
4.6 PROVIDE VIBRATION ISOLATION FOR MECHANICAL EQUIPMENT TO PREVENT VIBRATION TRANSMISSION TO BUILDING STRUCTURE.
4.7 PROVIDE ACCESS DOORS AT EVERY LOCATION THAT A VOLUME DAMPER, FIRE DAMPER, VALVE OR OTHER CONTROL/BALANCING ITEM WILL BE INSTALLED ABOVE AN INACCESSIBLE CEILING.
5.0 DUCTWORK
5.1 DUCT DIMENSIONS SHOWN ON PLANS ARE THE INSIDE CLEAR DESIGN DIMENSIONS. FLAT OVAL DIMENSIONS ARE FROM OUTSIDE RADIUS TO OUTSIDE RADIUS OF THE ROUNDED DIMENSION (NOT CENTERLINE TO CENTERLINE). INSTALLATION SHALL INCLUDE PROVISIONS FOR DUCT FLANGES, HANGERS, AND INSULATION IN ACCORDANCE WITH SMACNA REQUIREMENTS AS SPECIFIED.
5.2 PROVIDE RADIUS TYPE ELBOWS WITH A CENTERLINE RADIUS OF 1.5 TIMES THE WIDTH OR DIAMETER OF THE DUCT WHERE SPACE PERMITS. OTHERWISE, ELBOWS HAVING A MINIMUM RADIUS EQUAL TO THE WIDTH OR DIAMETER OF THE DUCT OR SQUARE ELBOWS WITH FACTORY FABRICATED SINGLE WIDTH TURNING VANES ARE ALLOWED PROPERLY INSTALLED AND SPACED PER SMACNA GUIDELINES. PROVIDE 90 DEGREE SQUARE DUCT ELBOWS WITH TURNING VANES UNLESS OTHERWISE INDICATED OR SPECIFIED. PROVIDE ACCESS DOORS UPSTREAM OF ELBOWS CONTAINING TURNING VANES.
5.3 DUCTS MUST BE GROUNDED ACROSS FLEXIBLE CONNECTIONS WITH FLEXIBLE COPPER GROUNDING STRAPS. GROUNDING STRAPS MUST BE BOLTED OR SOLDERED TO BOTH THE EQUIPMENT AND THE DUCT.
5.4 WHERE DUCT BRANCHES OR TERMINAL DEVICES ARE REMOVED FROM EXISTING DUCTS, THE CONTRACTOR MUST PATCH THE MAIN WITH LIKE THICKNESS SHEET METAL. EXTEND PATCH TO DUCT EDGES. PATCHES MUST BE MADE WITH HEMMED EDGES. PAINT PATCHES TO MATCH DUCTWORK.
5.5 COORDINATE DUCT ROUTING AND ELEVATION WITH LIGHTING, CEILING GRID, PIPING, CABLE TRAYS, CONDUIT, AND OTHER ITEMS REQUIRED FOR THE COMPLETION OF THIS PROJECT.
5.6 PROVIDE OFFSETS IN DUCTWORK AS REQUIRED TO COORDINATE WITH OTHER TRADES AND FIELD INSTALLED CONDITIONS. DUCTWORK OFFSETS MUST BE MADE WITH GRADUAL TRANSITIONS (NO GREATER THAN 30 DEGREES) AND MAINTAIN EQUIVALENT CROSS-SECTIONAL AREAS.
6.0 PIPING
6.1 PROVIDE PIPING SO THAT VALVES, STRAINERS, UNIONS, TRAPS, FLANGES, AND OTHER APPURTENANCES REQUIRING ACCESS ARE ACCESSIBLE.
6.2 ISOLATION VALVES MUST BE PROVIDED IN A LOCATION AND ELEVATION WHICH ALLOWS FOR EQUIPMENT AND BRANCH PIPING REMOVAL, WHILE MAINTAINING SERVICE UPSTREAM OF THE ISOLATION VALVE.
6.3 VALVES MUST BE ADJUSTED FOR SMOOTH AND EASY OPERATION.
6.4 BALANCING VALVES AND ISOLATION VALVES USED TO ADJUST FLOW RATES MUST BE PROVIDED WITH POSITION INDICATORS AND MAXIMUM ADJUSTABLE STOPS (MEMORY STOPS).

6.5 ISOLATION VALVES (EXCEPT CONTROL VALVES) AND PIPING SPECIALTIES AND STRAINERS MUST BE FULL LINE SIZE BEFORE REDUCING SIZE TO MAKE CONNECTIONS TO EQUIPMENT AND CONTROLS.
6.6 PROVIDE MECHANICAL JOINTS SUCH AS UNIONS, FLANGES, OR THREADED FITTINGS AT EACH EQUIPMENT CONNECTION, IN BYPASSES, AT FLOOR PENETRATIONS, AT CONTROL DEVICES, AND IN LONG PIPE RUNS (100 FEET OR MORE) TO PERMIT DISASSEMBLY FOR ALTERATION AND REPAIRS.
6.7 MEASURE, CUT, AND INSTALL PIPE LENGTH ACCURATELY TO MINIMIZE MISALIGNMENT. INSTALL PIPING WITHOUT FORCING OR SPRINGING.
7.0 EQUIPMENT
7.1 PROVIDE EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, APPLICABLE BUILDING, STATE, AND LOCAL CODES, ENERGY CODES, ASHRAE AND NFPA STANDARDS, AND INSURANCE UNDERWRITER REQUIREMENTS.
7.2 ALL MATERIAL AND EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR THE INTENDED PURPOSE. USE THE MORE STRINGENT METHODS WHEN MANUFACTURER'S RECOMMENDATIONS AND PLANS & SPECIFICATION REQUIREMENTS DIFFER. BRING ANY CONFLICTS BETWEEN MANUFACTURER'S RECOMMENDATIONS AND PLANS & SPECIFICATION REQUIREMENTS TO THE GOVERNMENT'S ATTENTION.
8.0 CONTROLS
8.1 COORDINATE AUXILIARY CONTACT AND RELAY REQUIREMENTS WITH SEQUENCES OF OPERATION.
8.2 COORDINATE MOTOR AND MOTOR CONTROL REQUIREMENTS WITH EQUIPMENT SCHEDULES AND SEQUENCES OF OPERATION.
8.3 HARDWIRE SAFETIES TO SHUTDOWN HVAC EQUIPMENT.
8.4 LOCATE TEMPERATURE, PRESSURE AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH A STRAIGHT SECTION OF PIPE OR DUCT UPSTREAM AND DOWNSTREAM, AS RECOMMENDED BY THE MANUFACTURER FOR ACCURACY.
8.5 CONTROL WIRE AND CONDUIT MUST COMPLY WITH THE NATIONAL ELECTRIC CODE, DIVISION 26 OF THE SPECIFICATIONS, AND LOCAL CODES.
8.6 UNLESS OTHERWISE SHOWN, LOCATE ROOM THERMOSTATS WITH CONTROLS BETWEEN 42"-48" ABOVE FINISHED FLOOR IN ACCORDANCE WITH ADA AND ABA REQUIREMENTS. NOTIFY THE CONTRACTING OFFICER OF ROOMS WHERE THE ABOVE LOCATION CANNOT BE MAINTAINED OR WHERE THERE IS A QUESTION ON LOCATION.
9.0 TEST AND INSPECTION
9.1 TESTING ADJUSTING AND BALANCING (TAB) AGENCY MUST BE A MEMBER OF THE ASSOCIATED AIR BALANCING COUNCIL (AABC), THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB), OR THE TESTING, ADJUSTING AND BALANCING BUREAU (TABB). THE TAB FIRM MUST BE A SUBCONTRACTOR HIRED DIRECTLY BY THE GENERAL CONTRACTOR. TAB FIRM MUST HAVE A MINIMUM OF 5 YEARS EXPERIENCE ON SIMILAR PROJECTS. PERFORM TAB IN ACCORDANCE WITH THE REQUIREMENTS OF THE TAB PROCEDURAL STANDARD RECOMMENDED BY THE TAB TRADE ASSOCIATION THAT APPROVED THE TAB FIRM'S QUALIFICATIONS. COMPLY WITH REQUIREMENTS OF AABC MN-1, NEBB PROCEDURAL STANDARDS, OR SMACNA HVAC TAB(TABB) AS SUPPLEMENTED AND MODIFIED BY SPECIFICATION SECTIONS.

MECHANICAL - HVAC REQUIRED CODES, STANDARDS, & REFERENCES

- INTERNATIONAL BUILDING CODE 2018
INTERNATIONAL MECHANICAL CODE 2018
ASHRAE 62.1-2016, VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY
ASHRAE 90.1-2013, ENERGY STANDARD FOR BUILDINGS EXCEPT LOW-RISE RESIDENTIAL BUILDINGS
ASHRAE HANDBOOKS: 2017 FUNDAMENTALS, 2018 REFRIGERATION, 2019 HVAC APPLICATIONS, 2020 HVAC SYSTEMS AND EQUIPMENT
ASHRAE 189.1-2014, STANDARD FOR THE DESIGN OF HIGH-PERFORMANCE GREEN BUILDINGS EXCEPT LOW-RISE RESIDENTIAL BUILDINGS
ASHRAE TC 9.9 / TIA-589-D
ALL OTHER APPLICABLE ASHRAE HANDBOOKS AND GUIDELINES.
EPACT 2005
ALL APPLICABLE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) CODES AND STANDARDS
SMACNA HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE
SMACNA, HVAC SYSTEMS - TESTING, ADJUSTING, AND BALANCING
CAMP LEJEUNE MECHANICAL DESIGN GUIDANCE
ASTM - AMERICAN SOCIETY FOR TESTING AND MATERIALS
UFC 1-200-01, DoD BUILDING CODE - (8 OCTOBER 2019)
UFC 1-200-02, HIGH PERFORMANCE AND SUSTAINABLE BUILDING REQUIREMENTS - (CHANGE 04, 01 OCTOBER 2019)
UFC 3-101-01, ARCHITECTURE - (CHANGE 5, 25 SEPTEMBER 2019)
UFC 3-400-02, DESIGN: ENGINEERING WEATHER DATA - (20 SEPTEMBER 2018)
UFC 3-410-01, HEATING, VENTILATING, AND AIR CONDITIONING SYSTEMS - (CHANGE 6, 30 MARCH 2020)
UFC 3-450-01, NOISE AND VIBRATION CONTROL - (15 MAY 2013)
UFC 3-580-01, TELECOMMUNICATIONS INTERIOR INFRASTRUCTURE PLANNING AND DESIGN - (CHANGE 1, 01 JUNE 2016)
UFC 3-600-01 FIRE PROTECTION ENGINEERING FOR FACILITIES - (CHANGE 4, 7 FEBRUARY 2020)
UFC 4-010-01, DoD MINIMUM ANTITERRORISM STANDARDS FOR BUILDINGS - (12 DECEMBER 2018)
UFC 4-010-06, CYBERSECURITY OF FACILITY-RELATED CONTROL SYSTEMS - (CHANGE 1, 18 JANUARY 2017)

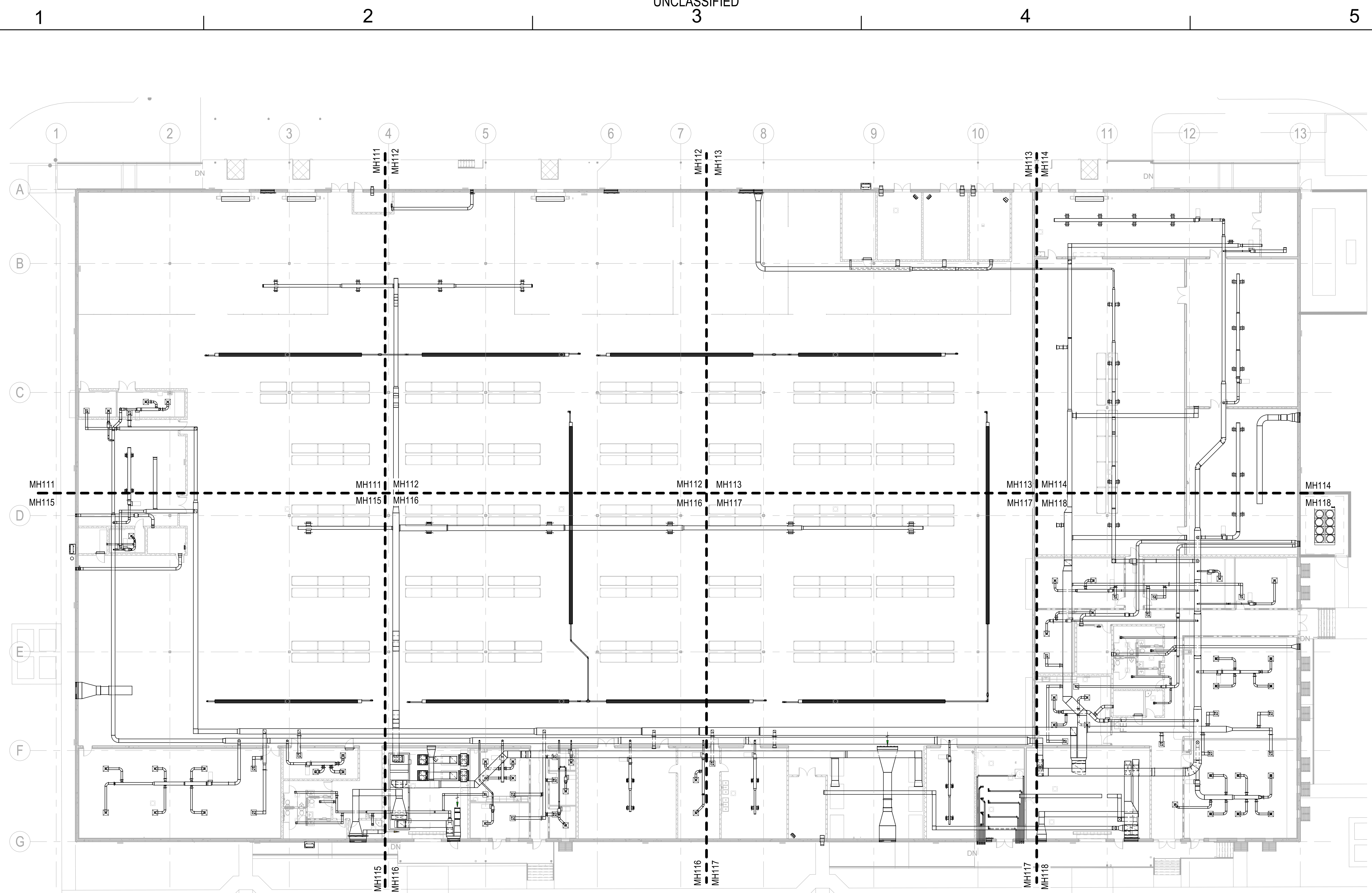
DESIGN CONDITIONS

CONDITIONS AS INDICATED IN THE RFP
OUTSIDE DESIGN CONDITIONS:
SUMMER: 91°F DB / 79°F MCWB
WINTER: 26°F DB
INSIDE CONDITIONS:
SUMMER: 78°F DB / 50% RH
WINTER: 68°F DB
OUTDOOR CONDITIONS FOR AIR-COOLED EQUIPMENT: 95°F DB
WAREHOUSE AND HEATING ONLY INSIDE CONDITIONS:
SUMMER: 10°F DB ABOVE AMBIENT
WINTER: 60°F DB
HEATING & VENTILATING INSIDE CONDITIONS (ELEC, MECH WITH HEAT PROCUDING EQUIPMENT):
SUMMER: 10°F DB ABOVE AMBIENT
WINTER: 55°F DB
COMMUNICATION, IT ROOMS AND ELECTRICAL ROOMS INSIDE CONDITIONS:
SUMMER: 78°F DB, 55°F DEWPOINT
WINTER: N/A
COLD MECHANICAL ROOMS INSIDE CONDITONS:
SUMMER: N/A DB, 55°F DEWPOINT
WINTER: 55°F DB
UNOCCUPIED MODE (NIGHT SETBACK):
SUMMER: 5°F DB HIGHER THAN INDOOR COOLING DESIGN CONDITIONS BUT NO HIGHER THAN 85°F DB.
WINTER: 10°F DB LOWER THAN INDOOR HEATING DESIGN CONDITIONS BUT NO LOWER THAN 55°F DB.
YEAR ROUND: 60% RH MAXIMUM

NAVAC logo, PRELIMINARY Not for construction, Michael Baker International logo, PROJECT INFORMATION, ACTIVITY: MARINE CORPS BASE CAMP LEJEUNE, JACKSONVILLE, NC, LOGCOM CSP WAREHOUSE, MECHANICAL - GENERAL NOTES, SCALE: AS NOTED, EPROJECT NO.: 1639600, CONSTR. CONTR. NO. N40085-20-C-0059, NAVFAC DRAWING NO., SHEET OF M-002

FILE NAME: BIM_360/HF PACKAGE 3P1527 LOG COM CSP-163960-M-01 PLOTTED: 8/4/2021 12:18:07 PM

P1527 PREFINAL SUBMISSION - 08/06/2021



HVAC - 1ST FLOOR PLAN - OVERALL
 SCALE: 1" = 20'-0"

FILE NAME: BIM 360/HF PACKAGE 3/PT1527 LOG COM CSP-1639600-M-04
 PLOTTED: 04/20/21 12:19:29 PM

KEYPLAN

A	B	C	D
E	F	G	H

0 10'-0" 20'-0" 40'-0"
 SCALE: 1" = 20'-0"

SYMBOL	DESCRIPTION	DATE	APPROVED
<p>PRELIMINARY NOT FOR CONSTRUCTION</p>			
<p>Michael Baker INTERNATIONAL 100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED</p>			
<p>FOR COMMANDER NAVFAC ACTIVITY MARINE CORPS BASE CAMP LEJEUNE</p>			
<p>SATISFACTORY TO DATE DD/MM/YYYY DES: EMB DRW: AJK CHK: DWH</p>			
<p>PM BRANCH HEAD DESIGN DIRECTOR FIRE PROTECTION</p>			
<p>DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC DESIGN AND CONSTRUCTION MCB CAMP LEJEUNE JACKSONVILLE, NC</p>			
<p>LOGCOM CSP WAREHOUSE HVAC - OVERALL - 1ST FLOOR PLAN</p>			
<p>SCALE: AS NOTED PROJECT NO.: 1639600 CONSTR. CONTR. NO.: N40085-20-C-0059 NAVFAC DRAWING NO.: SHEET OF</p>			
<p>MH110</p>			

1

2

3

4

5

D

C

B

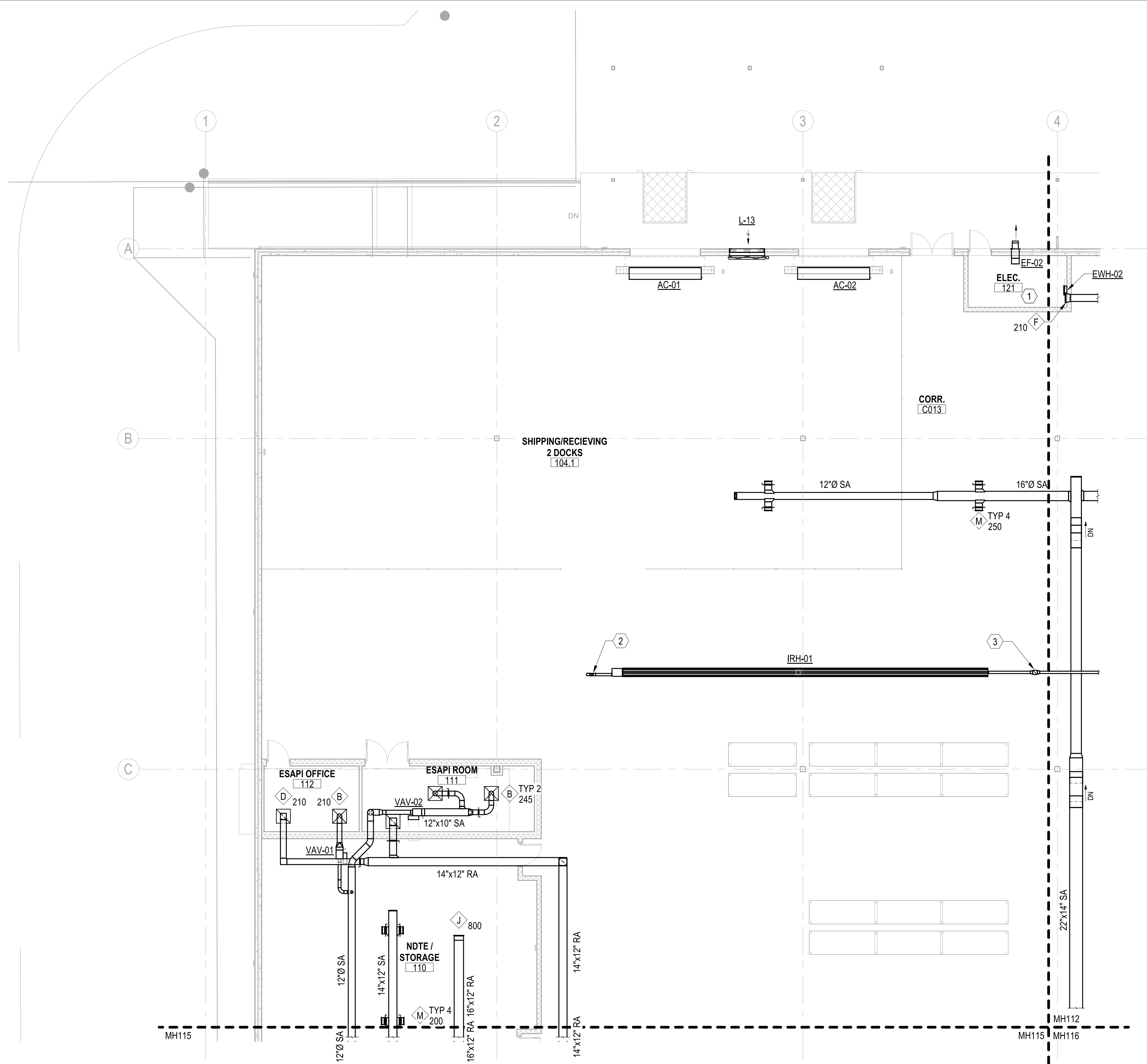
A

D

C

B

A



HVAC - 1ST FLOOR PLAN - AREA A
 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 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 0.05"/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 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.

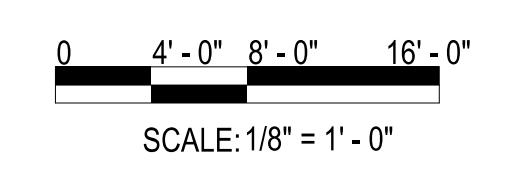
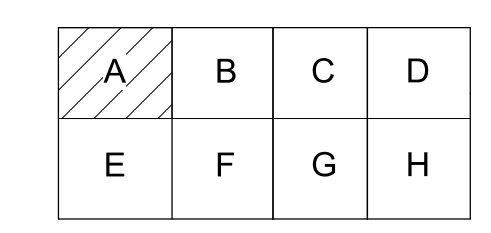
KEYNOTES

- 1 THERE SHALL NOT BE ANY EQUIPMENT (PIPING, DUCTWORK, MACHINERY, ETC.) THAT DOES NOT SERVE THIS SPACE INSTALLED ABOVE OR WITHIN THIS SPACE, NOR SHALL ANY EQUIPMENT NOT SERVING THIS SPACE PASS THROUGH OR ENTER THIS SPACE.
- 2 COMBUSTION AIR INTAKE UP THROUGH ROOF. REFER TO M-500 SERIES FOR ROOF PENETRATION DETAIL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.
- 3 COMBINE FLUES INTO SINGLE COMMON FLUE AND TERMINATE ON ROOF. REFER TO M-500 SERIES FOR ROOF PENETRATION DETAIL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.

DUCT CONSTRUCTION SCHEDULE

DUCT SYSTEM	MIN PRESS CLASS	MIN. SEAL CLASS	SMACNA DUCT LEAKAGE CLASS (CL)			DUCT TEST PRESS
			RECT	ROUND	FLAT OVAL	
CAV SUPPLY	2" W.C.	A	4	2	2	2" W.C.
VAV SUPPLY - UPSTREAM OF BOXES	3" W.C.	A	4	2	2	3" 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	±1" W.C.	A	4	2	2	1" 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

KEYPLAN



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

SYMBOL	DESCRIPTION	DATE	APPROVED



PRELIMINARY
 NOT FOR CONSTRUCTION

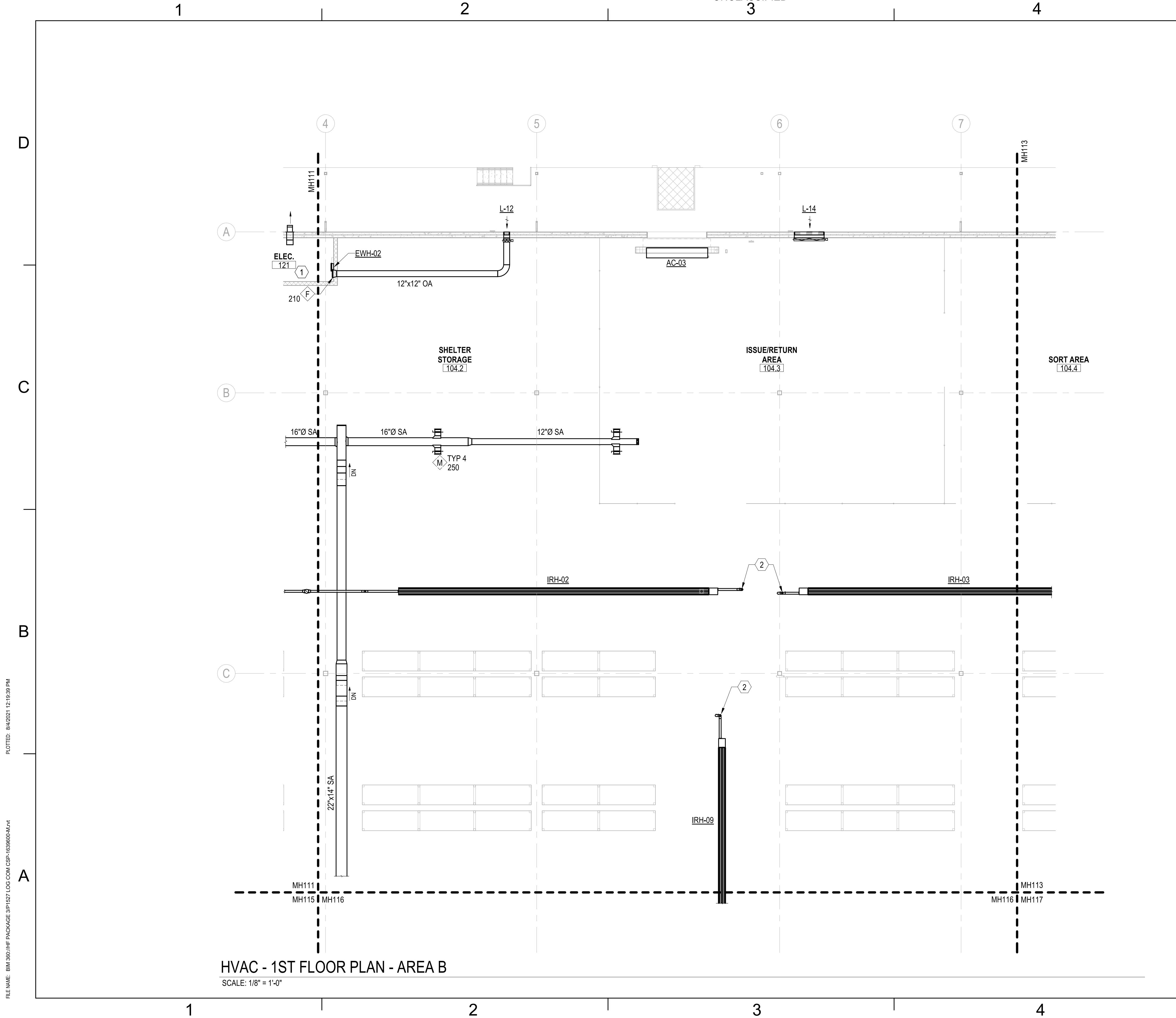


Michael Baker INTERNATIONAL
 100 AIRSIDE DRIVE
 MOON TOWNSHIP, PA 15108
 APPROVED

FOR COMMANDER NAVFAC
 ACTIVITY
 MARINE CORPS BASE
 CAMP LEJEUNE
 SATISFACTORY TO DATE DD/MM/YYYY
 DES: EMB DRW: AJK CHK: DWH
 PM
 BRANCH HEAD
 DESIGN DIRECTOR
 FIRE PROTECTION

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
 ATLANTIC DESIGN AND CONSTRUCTION
 MCB CAMP LEJEUNE
 JACKSONVILLE, NC
 LOGCOM CSP WAREHOUSE
 HVAC - 1ST FLOOR PLAN - AREA A

DEPARTMENT OF THE NAVY
 NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
 ATLANTIC DESIGN AND CONSTRUCTION
 MCB CAMP LEJEUNE
 JACKSONVILLE, NC
 SCALE: AS NOTED
 PROJECT NO.: 1639600
 CONSTR. CONTR. NO.: N40085-20-C-0059
 NAVFAC DRAWING NO.
 SHEET OF
MH111



FILE NAME: BIM 360/HF PACKAGE 3P1527.LOG.COM.CSP-1639600.MXD
 PLOTTED: 04/20/21 12:19:39 PM

HVAC - 1ST FLOOR PLAN - AREA B
 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 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 0.05"/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 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.

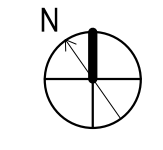
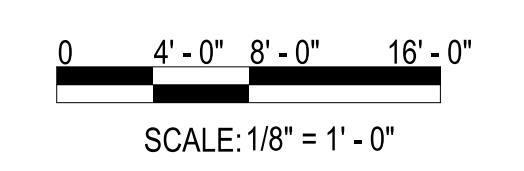
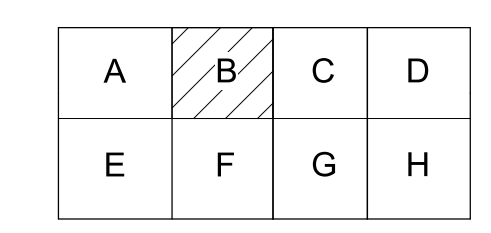
KEYNOTES

- 1 THERE SHALL NOT BE ANY EQUIPMENT (PIPING, DUCTWORK, MACHINERY, ETC.) THAT DOES NOT SERVE THIS SPACE INSTALLED ABOVE OR WITHIN THIS SPACE, NOR SHALL ANY EQUIPMENT NOT SERVING THIS SPACE PASS THROUGH OR ENTER THIS SPACE.
- 2 COMBUSTION AIR INTAKE UP THROUGH ROOF. REFER TO M-500 SERIES FOR ROOF PENETRATION DETAIL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.

DUCT CONSTRUCTION SCHEDULE

DUCT SYSTEM	MIN PRESS CLASS	MIN. SEAL CLASS	SMACNA DUCT LEAKAGE CLASS (CL)			DUCT TEST PRESS
			RECT	ROUND	FLAT OVAL	
CAV SUPPLY	2" W.C.	A	4	2	2	2" W.C.
VAV SUPPLY - UPSTREAM OF BOXES	3" W.C.	A	4	2	2	3" 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	±1" W.C.	A	4	2	2	1" 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

KEYPLAN



	APPR
	DATE
	DESCRIPTION
	SYM

PRELIMINARY
NOT FOR CONSTRUCTION

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

FOR COMMANDER NAVFAC

ACTIVITY
 MARINE CORPS BASE
 CAMP LEJEUNE

SATISFACTORY TO DATE DD/MM/YY

DES EMB | DRW AJK | CHK DWH

PM

BRANCH HEAD

DESIGN DIRECTOR

FIRE PROTECTION

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
 NORFOLK, VA

JACKSONVILLE, NC

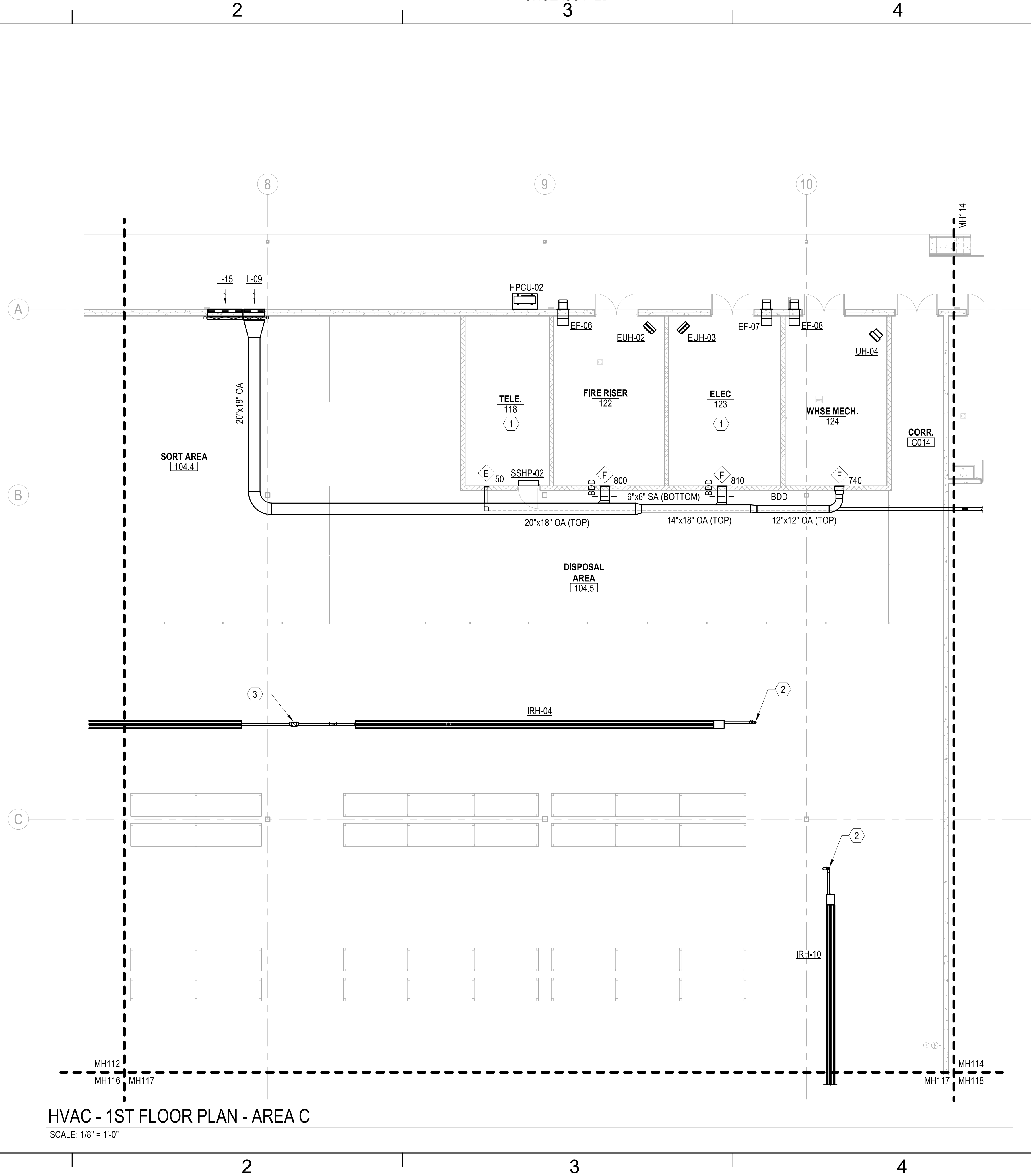
LOGCOM CSP WAREHOUSE

HVAC - 1ST FLOOR PLAN - AREA B

SCALE: AS NOTED	PROJECT NO.: 1639600
CONSTR. CONTR. NO. N40085-20-C-0059	NAVFAC DRAWING NO.
SHEET OF	
MH112	

P-1527 PRELIMINARY SUBMISSION - 08/06/2021

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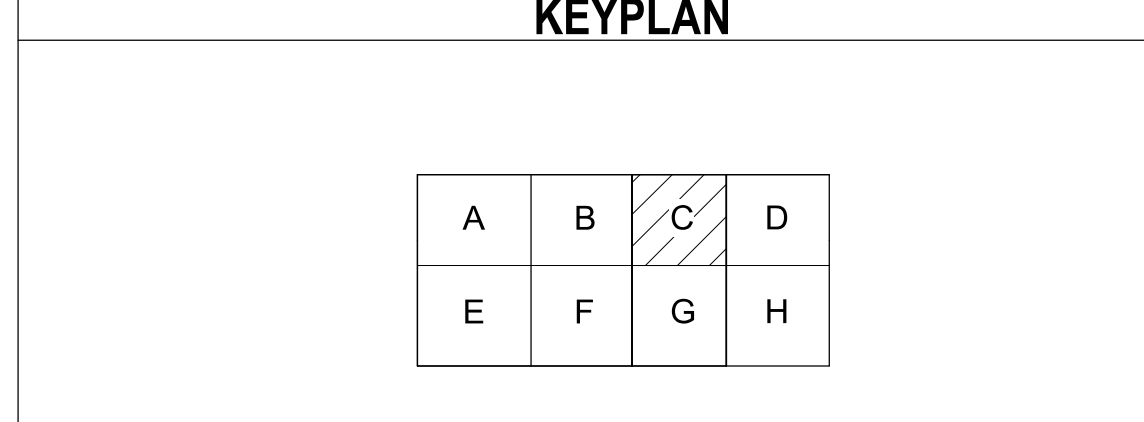
HVAC - 1ST FLOOR PLAN - AREA C
 SCALE: 1/8" = 1'-0"

- ### GENERAL NOTES
- 1 PROVIDE MANUAL VOLUME DAMPERS IN ALL RUN-OUTS TO DIFFUSERS, AT ALL BRANCH TAKE-OFFS FROM MAIN SUPPLY 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 0.05"/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 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.

- ### KEYNOTES
- 1 THERE SHALL NOT BE ANY EQUIPMENT (PIPING, DUCTWORK, MACHINERY, ETC.) THAT DOES NOT SERVE THIS SPACE INSTALLED ABOVE OR WITHIN THIS SPACE, NOR SHALL ANY EQUIPMENT NOT SERVING THIS SPACE PASS THROUGH OR ENTER THIS SPACE.
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 - 3 COMBINE FLUES INTO SINGLE COMMON FLUE AND TERMINATE ON ROOF. REFER TO M-500 SERIES FOR ROOF PENETRATION DETAIL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.

DUCT CONSTRUCTION SCHEDULE

DUCT SYSTEM	MIN PRESS CLASS	MIN. SEAL CLASS	SMACNA DUCT LEAKAGE CLASS (CL)			DUCT TEST PRESS
			RECT	ROUND	FLAT OVAL	
CAV SUPPLY	2" W.C.	A	4	2	2	2" W.C.
VAV SUPPLY - UPSTREAM OF BOXES	3" W.C.	A	4	2	2	3" 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	±1" W.C.	A	4	2	2	1" 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



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

SYMBOL	DESCRIPTION	DATE	APPROVED

PRELIMINARY
 NOT FOR CONSTRUCTION

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

FOR COMMANDER NAVFAC
 ACTIVITY
 MARINE CORPS BASE
 CAMP LEJEUNE

SATISFACTORY TO DATE DD/MM/YY
 DES EMB DRW AJK CHK DWH
 PM
 BRANCH HEAD
 DESIGN DIRECTOR
 FIRE PROTECTION

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
 NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC
 ATLANTIC DESIGN AND CONSTRUCTION
 MCB CAMP LEJEUNE
 JACKSONVILLE, NC

LOGCOM CSP WAREHOUSE
 HVAC - 1ST FLOOR PLAN - AREA C

SCALE: AS NOTED
 EPROJCT NO.: 1639600
 CONSTR. CONTR. NO. N40085-20-C-0059
 NAVFAC DRAWING NO.
 SHEET OF
MH113

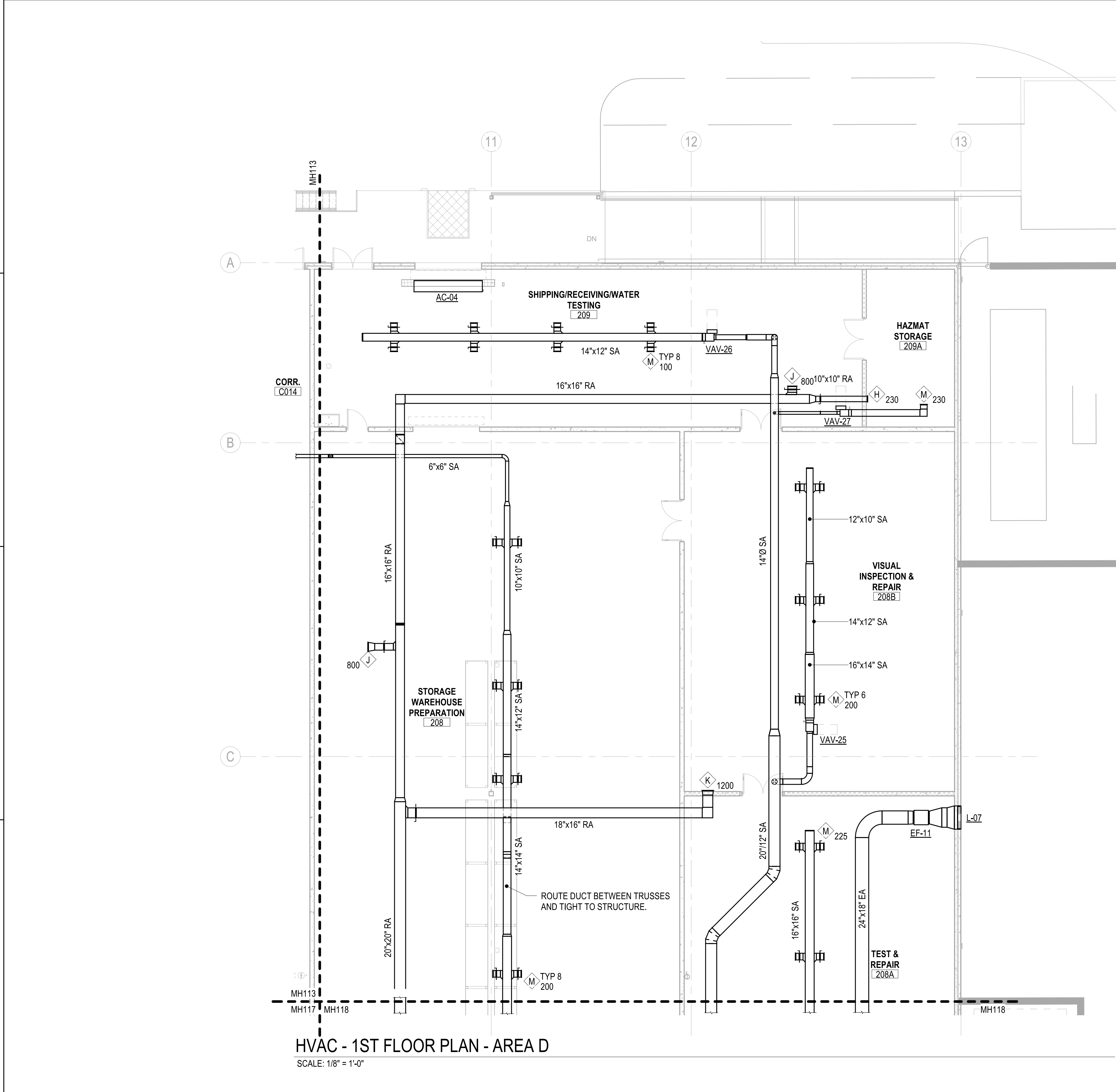
P-1527 PREFINAL SUBMISSION - 08/06/2021

UNCLASSIFIED

UNCLASSIFIED

UNCLASSIFIED

FILE NAME: BIM 360/HF PACKAGE 3P1527 LOG COM CSP-1639604.MXD
 PLOTTED: 04/20/21 12:19:50 PM



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 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 0.05"/100' OF DUCT RUN. ALL REVISIONS MUST BE COORDINATED WITH ALL OTHER TRADES AND ILLUSTRATED IN DUCTWORK SHOP DRAWINGS FOR APPROVAL.
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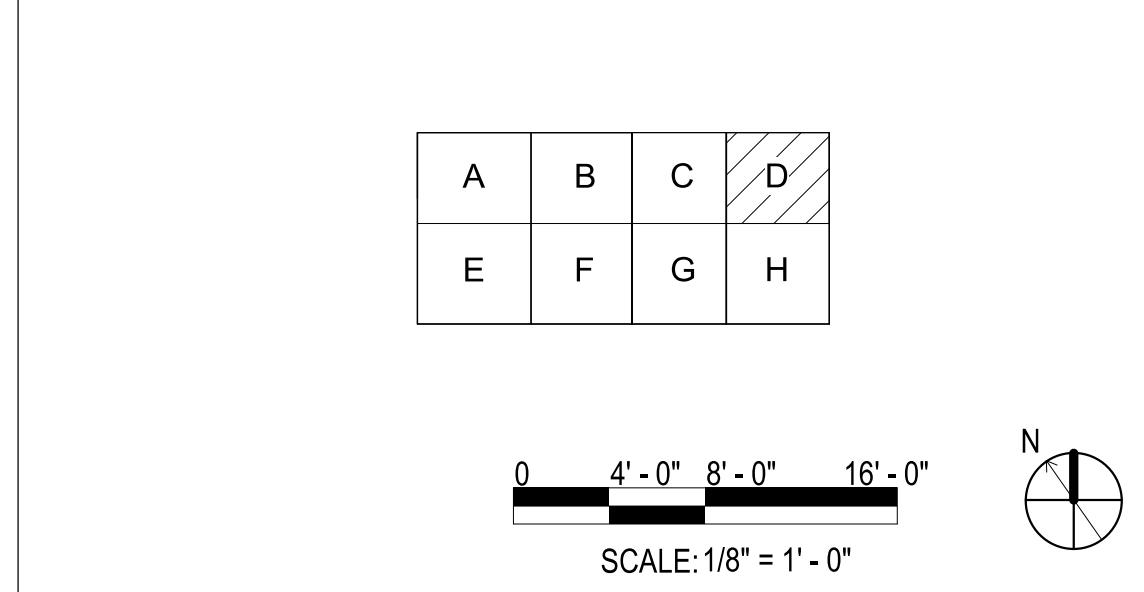
KEYNOTES

DUCT CONSTRUCTION SCHEDULE

DUCT SYSTEM	MIN PRESS CLASS	MIN. SEAL CLASS	SMACNA DUCT LEAKAGE CLASS (CL)			DUCT TEST PRESS
			RECT	ROUND	FLAT OVAL	
CAV SUPPLY	2" W.C.	A	4	2	2	2" W.C.
VAV SUPPLY - UPSTREAM OF BOXES	3" W.C.	A	4	2	2	3" 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	±1" W.C.	A	4	2	2	1" 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

KEYPLAN

A	B	C	D
E	F	G	H



UNCLASSIFIED

APPR DATE

SYN DESCRIPTION

PRELIMINARY
 NOT FOR CONSTRUCTION

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

FOR COMMANDER NAVFAC

ACTIVITY
 MARINE CORPS BASE
 CAMP LEJEUNE

SATISFACTORY TO DATE DD/MM/YY

DES EMB DRW AJK CHK DWH

PM

BRANCH HEAD

DESIGN DIRECTOR

FIRE PROTECTION

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

LOGCOM CSP WAREHOUSE

HVAC - 1ST FLOOR PLAN - AREA D

SCALE: AS NOTED
 EPROJCT NO.: 1639600
 CONSTR. CONTR. NO. N40085-20-C-0059
 NAVFAC DRAWING NO.

SHEET OF

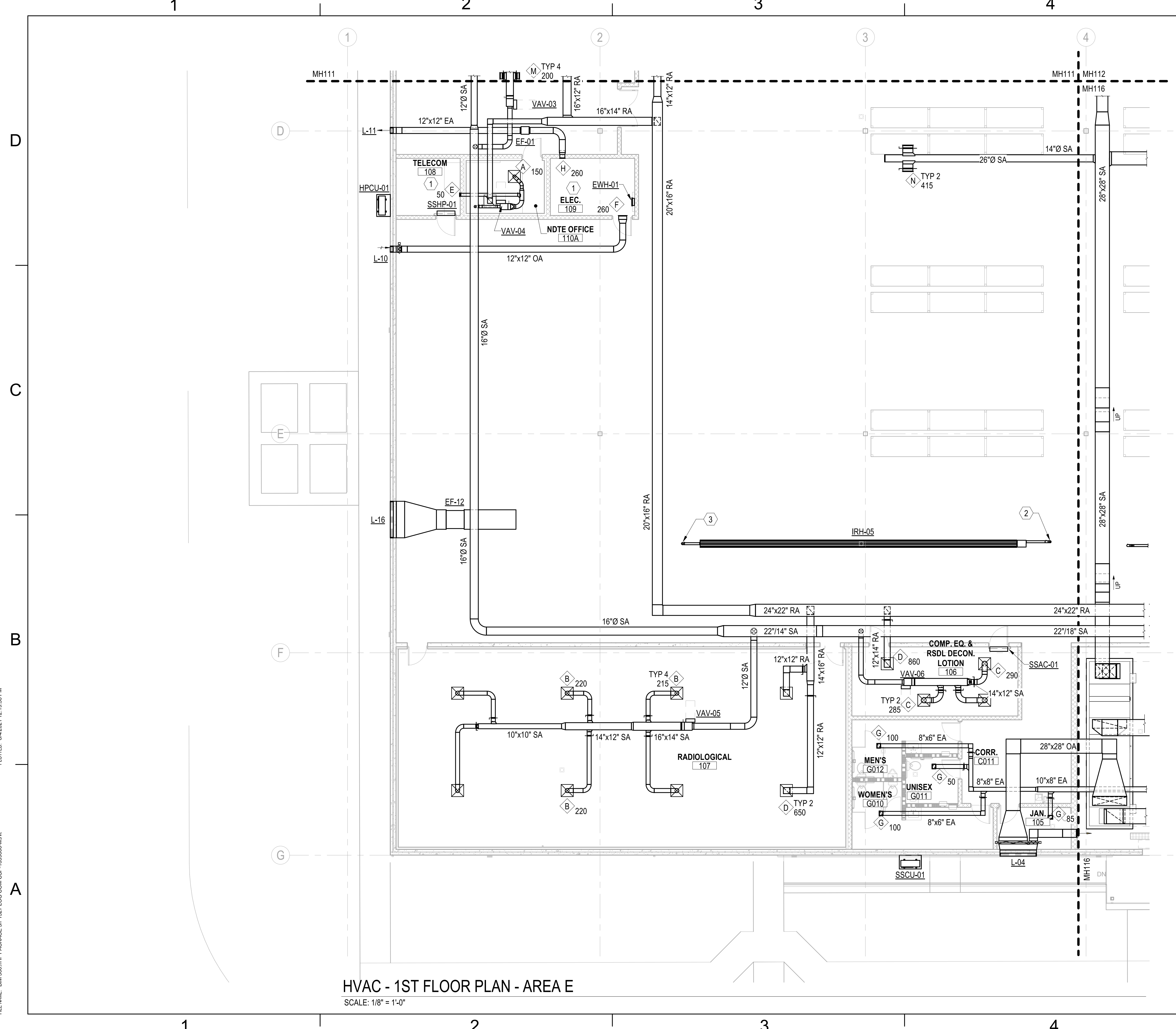
MH114

P-1527 PREFINAL SUBMISSION - 08/06/2021

UNCLASSIFIED

FILE NAME: BIM 360/HF PACKAGE 3PT1527.LOG.COM.CSP-1639604.MXD
PLOTTED: 04/20/21 12:19:56 PM

UNCLASSIFIED



HVAC - 1ST FLOOR PLAN - AREA E
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 DUCT, AND IN ALL OTHER AREAS AS REQUIRED TO PROVIDE PROPER SYSTEM BALANCING.
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- 4 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.
- 5 ALL EQUIPMENT SHALL BE INSTALLED WITH MANUFACTURER'S REQUIRED ACCESS SPACE BETWEEN UNIT AND FULL HEIGHT WALLS AND OTHER OBSTRUCTIONS.

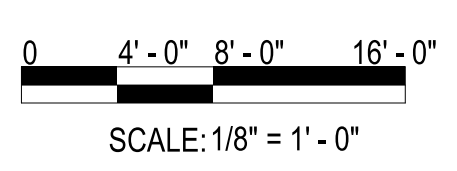
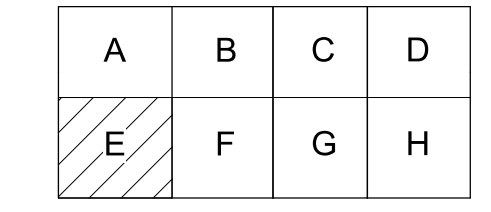
KEYNOTES

- 1 THERE SHALL NOT BE ANY EQUIPMENT (PIPING, DUCTWORK, MACHINERY, ETC.) THAT DOES NOT SERVE THIS SPACE INSTALLED ABOVE OR WITHIN THIS SPACE, NOR SHALL ANY EQUIPMENT NOT SERVING THIS SPACE PASS THROUGH OR ENTER THIS SPACE.
- 2 COMBUSTION AIR INTAKE UP THROUGH ROOF. REFER TO M-500 SERIES FOR ROOF PENETRATION DETAIL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.
- 3 FLUE UP TO TERMINATION ON ROOF. REFER TO M-500 SERIES FOR ROOF PENETRATION DETAIL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.

DUCT CONSTRUCTION SCHEDULE

DUCT SYSTEM	MIN PRESS CLASS	MIN. SEAL CLASS	SMACNA DUCT LEAKAGE CLASS (CL)			DUCT TEST PRESS
			RECT	ROUND	FLAT OVAL	
CAV SUPPLY	2" W.C.	A	4	2	2	2" W.C.
VAV SUPPLY - UPSTREAM OF BOXES	3" W.C.	A	4	2	2	3" 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	±1" W.C.	A	4	2	2	1" 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

KEYPLAN



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

LOGCOM CSP WAREHOUSE
HVAC - 1ST FLOOR PLAN - AREA E

FOR COMMANDER NAVFAC
ACTIVITY
MARINE CORPS BASE
CAMP LEJEUNE
SATISFACTORY TO DATE DD/MM/YYYY
DES EMB DRW AJK CHK DWH
PM
BRANCH HEAD
DESIGN DIRECTOR
FIRE PROTECTION

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

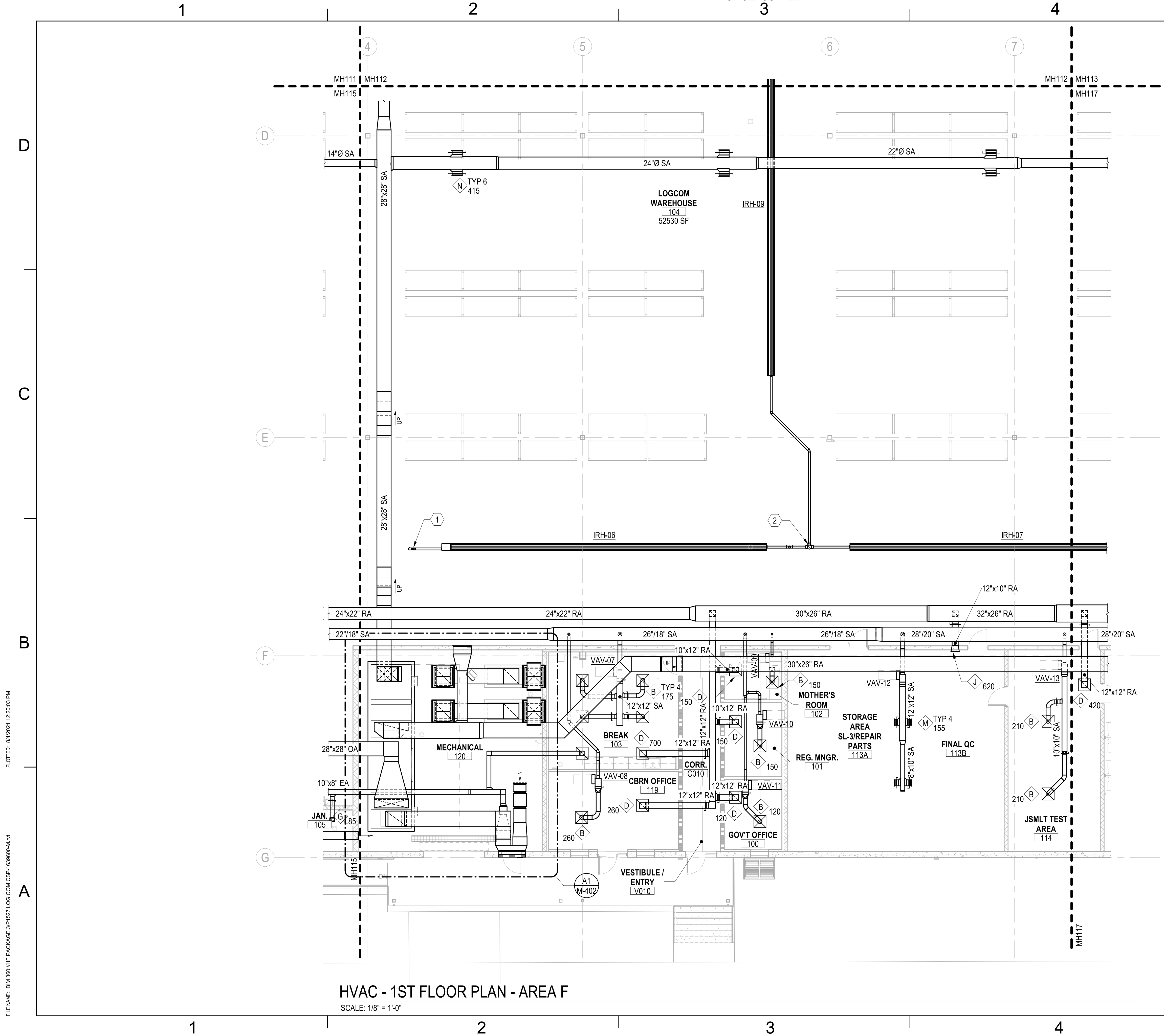
PRELIMINARY
NOT FOR CONSTRUCTION

NAVAC DRAWING NO.
PROJECT NO.: 1639600
CONSTR. CONTR. NO.
N40085-20-C-0059

SHEET OF
MH115

P-1527 PREFINAL SUBMISSION - 08/06/2021

UNCLASSIFIED



HVAC - 1ST FLOOR PLAN - AREA F
 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 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 0.05"/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 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.

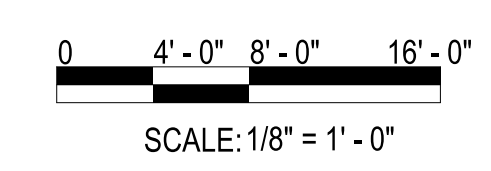
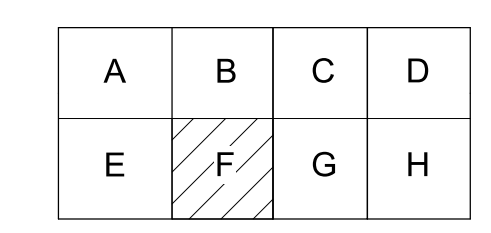
KEYNOTES

- 1 COMBUSTION AIR INTAKE UP THROUGH ROOF. REFER TO M-500 SERIES FOR ROOF PENETRATION DETAIL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.
- 2 COMBINE FLUES INTO SINGLE COMMON FLUE AND TERMINATE ON ROOF. REFER TO M-500 SERIES FOR ROOF PENETRATION DETAIL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.

DUCT CONSTRUCTION SCHEDULE

DUCT SYSTEM	MIN PRESS CLASS	MIN. SEAL CLASS	SMACNA DUCT LEAKAGE CLASS (CL)			DUCT TEST PRESS
			RECT	ROUND	FLAT OVAL	
CAV SUPPLY	2" W.C.	A	4	2	2	2" W.C.
VAV SUPPLY - UPSTREAM OF BOXES	3" W.C.	A	4	2	2	3" 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	±1" W.C.	A	4	2	2	1" 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

KEYPLAN



APPR DATE

SYN DESCRIPTION

PRELIMINARY
NOT FOR CONSTRUCTION

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

FOR COMMANDER NAVFAC

ACTIVITY
MARINE CORPS BASE
CAMP LEJEUNE

SATISFACTORY TO DATE DD/MM/YY

DES EMB DRW AJK CHK DWH

PM

BRANCH HEAD

DESIGN DIRECTOR

FIRE PROTECTION

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

LOGCOM CSP WAREHOUSE

HVAC - 1ST FLOOR PLAN - AREA F

SCALE: AS NOTED
EPROJECT NO.: 1639600
CONSTR. CONTR. NO. N40085-20-C-0059
NAVFAC DRAWING NO.

SHEET OF

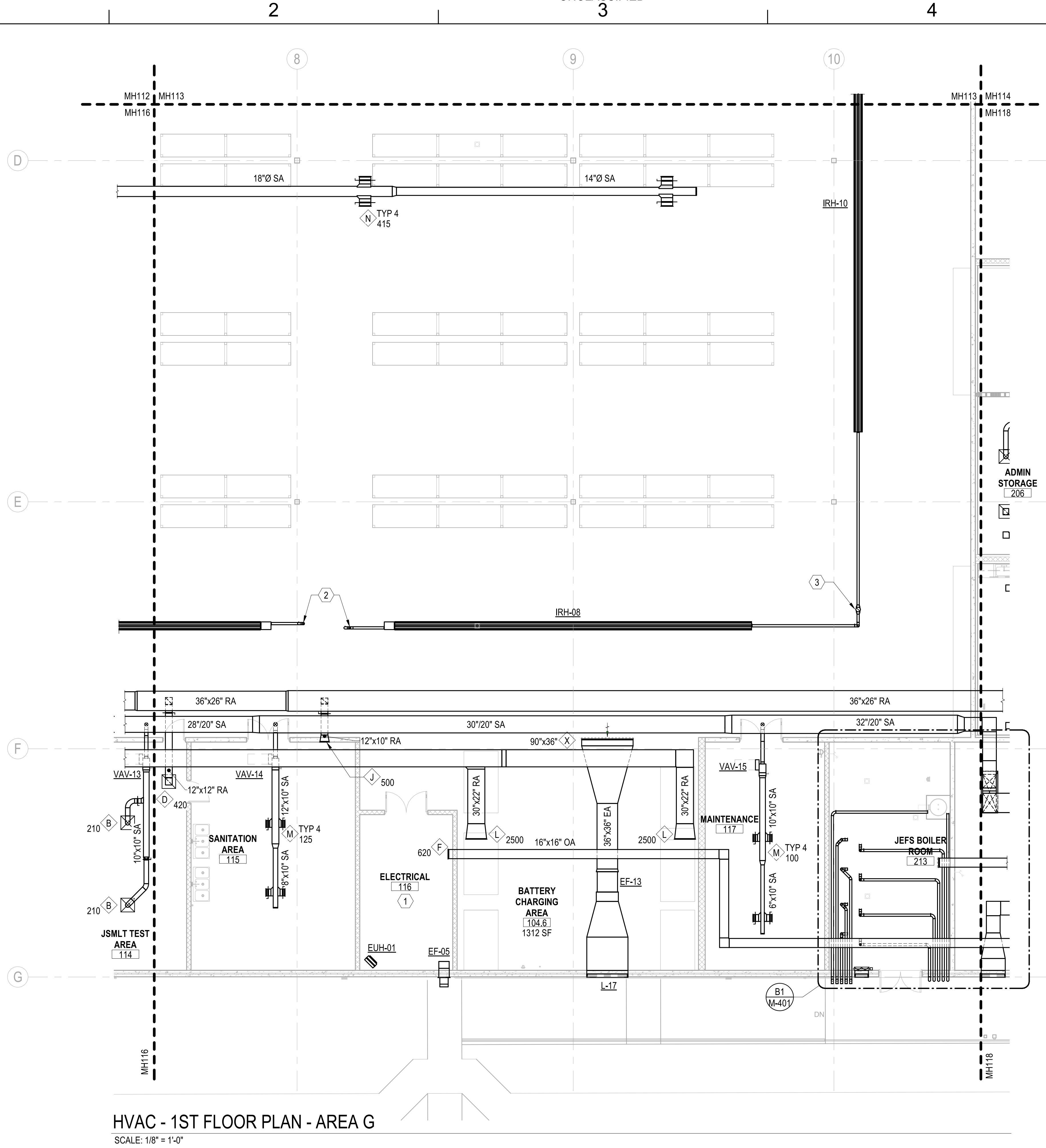
MH116

P-1527 PRELIM SUBMISSION - 08/06/2021

FILE NAME: BIM_360/HF PACKAGE 3P1527 LOG COM CSP-163960-M-04
 PLOTTED: 04/20/21 12:20:03 PM

UNCLASSIFIED

FILE NAME: BIM_360/HF PACKAGE 3P1527 LOG COM CSP - 163960-M-04
PLOTTED: 04/20/21 12:20:09 PM



HVAC - 1ST FLOOR PLAN - AREA G
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 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 0.05"/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 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.

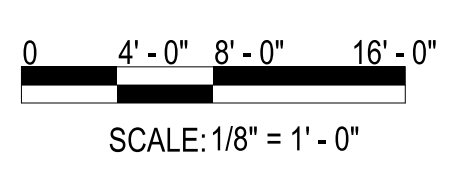
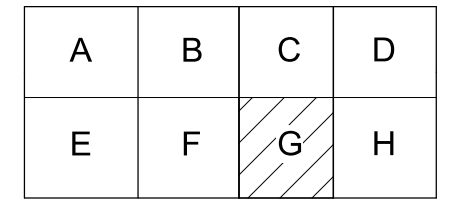
KEYNOTES

- 1 THERE SHALL NOT BE ANY EQUIPMENT (PIPING, DUCTWORK, MACHINERY, ETC.) THAT DOES NOT SERVE THIS SPACE INSTALLED ABOVE OR WITHIN THIS SPACE, NOR SHALL ANY EQUIPMENT NOT SERVING THIS SPACE PASS THROUGH OR ENTER THIS SPACE.
- 2 COMBUSTION AIR INTAKE UP THROUGH ROOF. REFER TO M-500 SERIES FOR ROOF PENETRATION DETAIL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.
- 3 COMBINE FLUES INTO SINGLE COMMON FLUE AND TERMINATE ON ROOF. REFER TO M-500 SERIES FOR ROOF PENETRATION DETAIL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.

DUCT CONSTRUCTION SCHEDULE

DUCT SYSTEM	MIN PRESS CLASS	MIN. SEAL CLASS	SMACNA DUCT LEAKAGE CLASS (CL)			DUCT TEST PRESS
			RECT	ROUND	FLAT OVAL	
CAV SUPPLY	2" W.C.	A	4	2	2	2" W.C.
VAV SUPPLY - UPSTREAM OF BOXES	3" W.C.	A	4	2	2	3" 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	±1" W.C.	A	4	2	2	1" 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

KEYPLAN



SYMBOL
DESCRIPTION
DATE
APPROVED

PRELIMINARY
NOT FOR CONSTRUCTION

Michael Baker INTERNATIONAL

100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108

FOR COMMANDER NAVFAC

ACTIVITY
MARINE CORPS BASE
CAMP LEJEUNE

SATISFACTORY TO DATE DD/MM/YYYY

DES EMB | DRW AJK | CHK DWH

PM

BRANCH HEAD

DESIGN DIRECTOR

FIRE PROTECTION

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

LOGCOM CSP WAREHOUSE

HVAC - 1ST FLOOR PLAN - AREA G

SCALE: AS NOTED

EPROJCT NO.: 1639600

CONSTR. CONTR. NO. N40085-20-C-0059

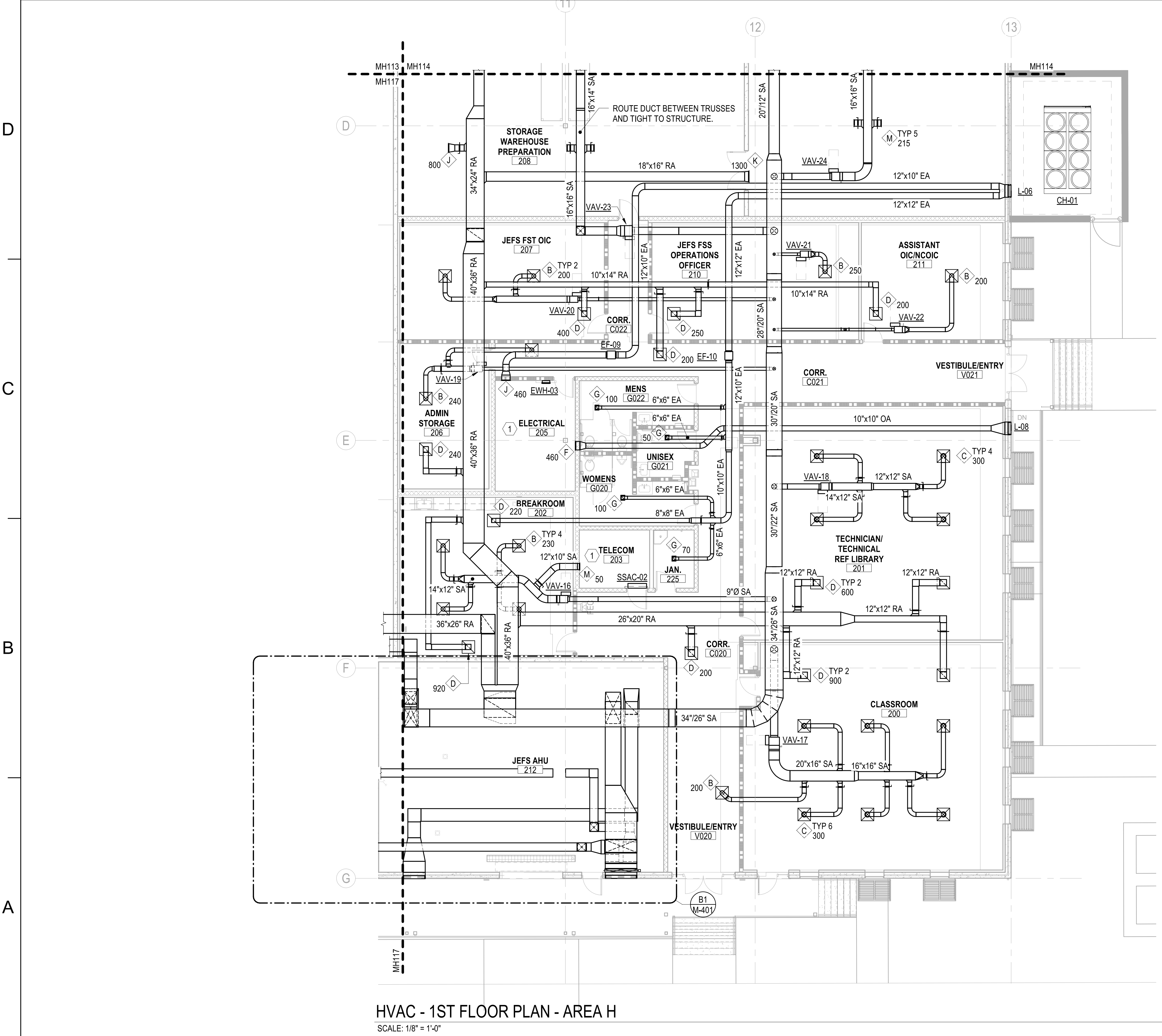
NAVFAC DRAWING NO.

SHEET OF

MH117

UNCLASSIFIED

FILE NAME: BIM 360/HF PACKAGE 3PT1527 LOG COM CSP-16396004.rvt
PLOTTED: 04/20/21 12:20:18 PM



HVAC - 1ST FLOOR PLAN - AREA H
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 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 0.05"/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 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.

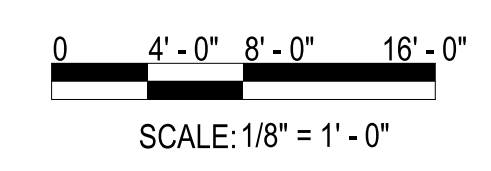
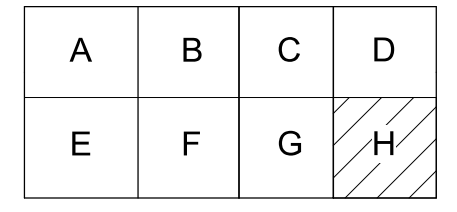
KEYNOTES

- 1 THERE SHALL NOT BE ANY EQUIPMENT (PIPING, DUCTWORK, MACHINERY, ETC.) THAT DOES NOT SERVE THIS SPACE INSTALLED ABOVE OR WITHIN THIS SPACE, NOR SHALL ANY EQUIPMENT NOT SERVING THIS SPACE PASS THROUGH OR ENTER THIS SPACE.

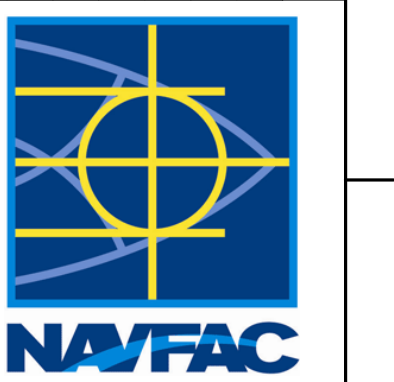
DUCT CONSTRUCTION SCHEDULE

DUCT SYSTEM	MIN PRESS CLASS	MIN. SEAL CLASS	SMACNA DUCT LEAKAGE CLASS (CL)			DUCT TEST PRESS
			RECT	ROUND	FLAT OVAL	
CAV SUPPLY	2" W.C.	A	4	2	2	2" W.C.
VAV SUPPLY - UPSTREAM OF BOXES	3" W.C.	A	4	2	2	3" 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	±1" W.C.	A	4	2	2	1" 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

KEYPLAN



SYMBOL	DESCRIPTION	DATE	APPROVED



PRELIMINARY
NOT FOR CONSTRUCTION



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

FOR COMMANDER NAVFAC
ACTIVITY
MARINE CORPS BASE
CAMP LEJEUNE
SATISFACTORY TO DATE DD/MM/YY
DES EMB DRW AJK CHK DWH
PM
BRANCH HEAD
DESIGN DIRECTOR
FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
ATLANTIC DESIGN AND CONSTRUCTION
MCB CAMP LEJEUNE
JACKSONVILLE, NC
LOGCOM CSP WAREHOUSE
HVAC - 1ST FLOOR PLAN - AREA H

SCALE: AS NOTED
EPROJECT NO.: 1639600
CONSTR. CONTR. NO.: N40085-20-C-0059
NAVFAC DRAWING NO.
SHEET OF
MH118

1

2

3

4

5

D

C

B

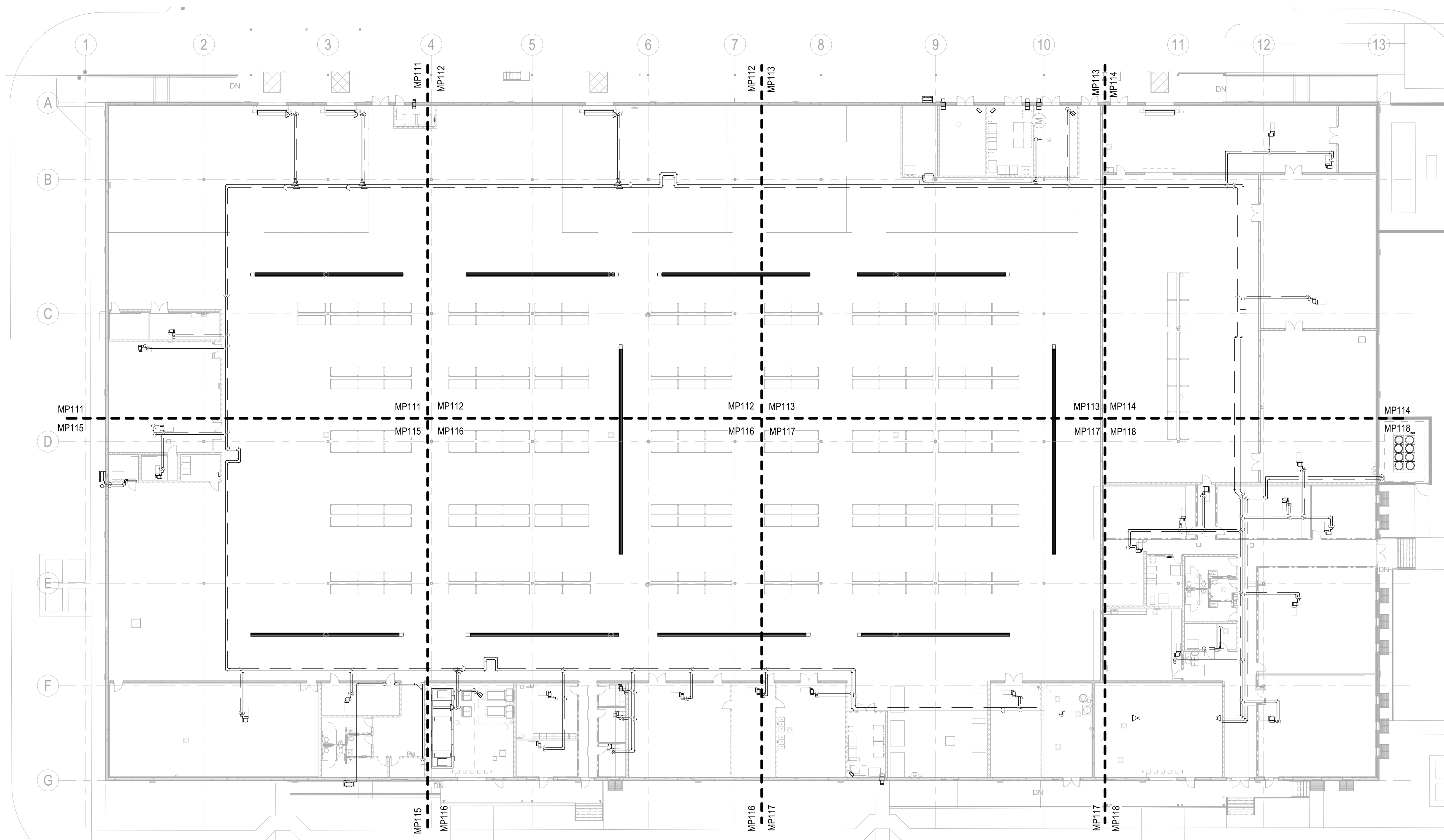
A

D

C

B

A



PIPING - 1ST FLOOR PLAN - OVERALL
 SCALE: 1" = 20'-0"

KEYPLAN

A	B	C	D
E	F	G	H

0 10'-0" 20'-0" 40'-0"

SCALE: 1" = 20'-0"

SYMBOL	DESCRIPTION	DATE	APPROVED
PRELIMINARY NOT FOR CONSTRUCTION			
Michael Baker INTERNATIONAL 100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED			
FOR COMMANDER NAVFAC			
ACTIVITY			
MARINE CORPS BASE CAMP LEJEUNE			
SATISFACTORY TO DATE DD/MM/YYYY			
DES EMB	DRW AJK	CHK DWH	
PM			
BRANCH HEAD			
DESIGN DIRECTOR			
FIRE PROTECTION			
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC DESIGN AND CONSTRUCTION MCB CAMP LEJEUNE JACKSONVILLE, NC			
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC JACKSONVILLE, NC LOGCOM CSP WAREHOUSE PIPING - OVERALL - 1ST FLOOR PLAN			
SCALE: AS NOTED		PROJECT NO.: 1639600	
CONSTR. CONTR. NO. N40085-20-C-0059		NAVFAC DRAWING NO.	
SHEET OF		MP110	

FILE NAME: BIM 360/HF PACKAGE 3/P1527 LOG COM CSP-163960-M-01

PLOTTED: 8/4/2021 12:20:29 PM

P1527 PRELIM SUBMISSION - 08/06/2021

1

2

3

4

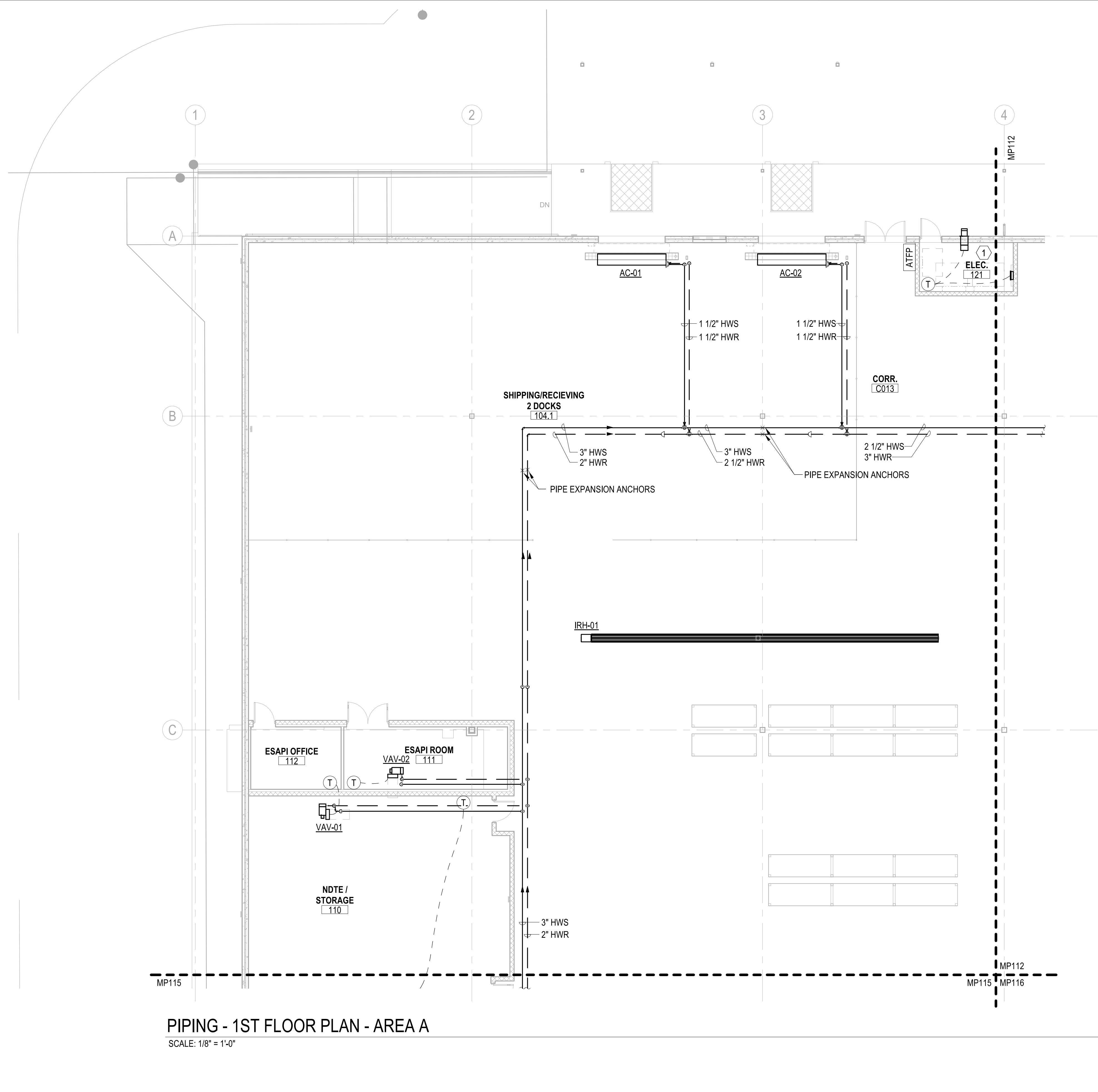
5

D

C

B

A



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

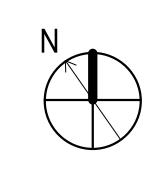
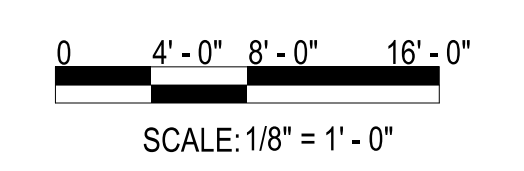
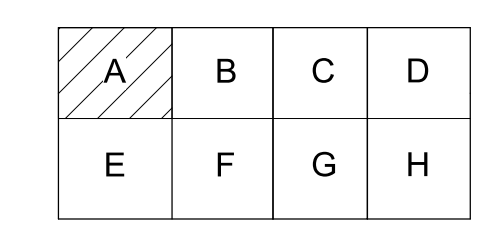
GENERAL NOTES

- 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 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

- 1 THERE SHALL NOT BE ANY EQUIPMENT (PIPING, DUCTWORK, MACHINERY, ETC.) THAT DOES NOT SERVE THIS SPACE INSTALLED ABOVE OR WITHIN THIS SPACE, NOR SHALL ANY EQUIPMENT NOT SERVING THIS SPACE PASS THROUGH OR ENTER THIS SPACE.

KEYPLAN



APPR	
DATE	
DESCRIPTION	
SYM	

PRELIMINARY
NOT FOR CONSTRUCTION

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

FOR COMMANDER NAVFAC

ACTIVITY
**MARINE CORPS BASE
 CAMP LEJEUNE**

SATISFACTORY TO DATE DD/MM/YYYY

DES: EMB | DRW: AJK | CHK: DWH

PM

BRANCH HEAD

DESIGN DIRECTOR

FIRE PROTECTION

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

LOGCOM CSP WAREHOUSE
 PIPING - 1ST FLOOR PLAN - AREA A

SCALE: AS NOTED
 EPROJCT NO.: 1639600
 CONSTR. CONTR. NO. N40085-20-C-0059
 NAVFAC DRAWING NO.

SHEET OF

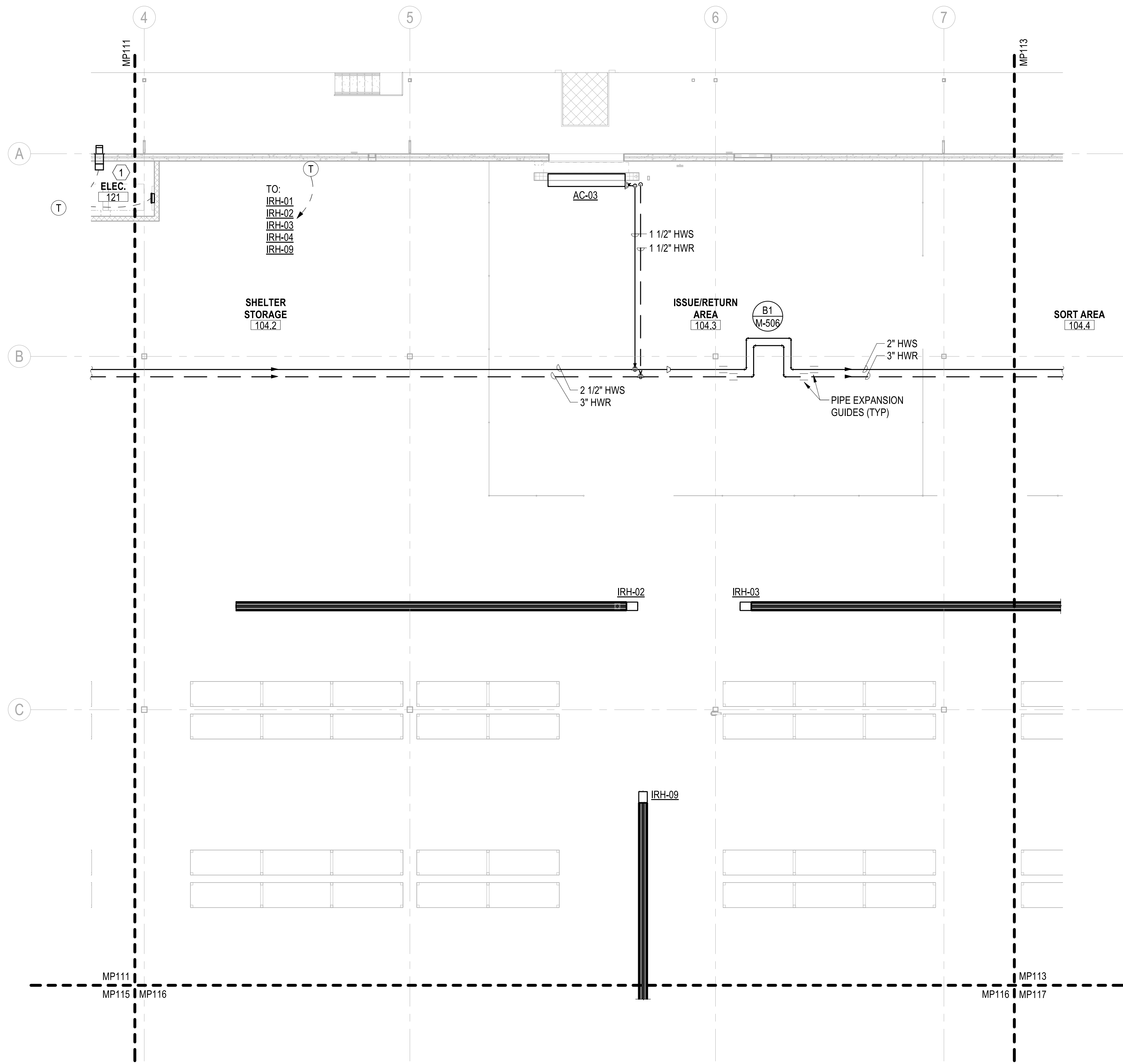
MP111

P-1527 PREFINAL SUBMISSION - 08/06/2021

FILE NAME: BIM 360/HF PACKAGE 3P1527 LOG COM CSP-1639600-M-01
PLOTTED: 8/4/2021 12:20:35 PM

UNCLASSIFIED


FILE NAME: BIM 360/HF PACKAGE 3P1527 LOG COM CSP-1639600-M-04
 PLOTTED: 8/4/2021 12:20:40 PM




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

- ### GENERAL NOTES
- ALL HWS & HWR BRANCHES ARE 3/4" UNLESS NOTED OTHERWISE.
 - 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.
 - 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.
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- ### KEYNOTES
- THERE SHALL NOT BE ANY EQUIPMENT (PIPING, DUCTWORK, MACHINERY, ETC.) THAT DOES NOT SERVE THIS SPACE INSTALLED ABOVE OR WITHIN THIS SPACE, NOR SHALL ANY EQUIPMENT NOT SERVING THIS SPACE PASS THROUGH OR ENTER THIS SPACE.



PRELIMINARY
NOT FOR CONSTRUCTION



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

FOR COMMANDER NAVFAC

ACTIVITY
MARINE CORPS BASE
CAMP LEJEUNE

SATISFACTORY TO DATE DD/MM/YY

DES: EMB | DRW: AJK | CHK: DWH


BRANCH HEAD
DESIGN DIRECTOR
FIRE PROTECTION

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

LOGCOM CSP WAREHOUSE
PIPING - 1ST FLOOR PLAN - AREA B

KEYPLAN

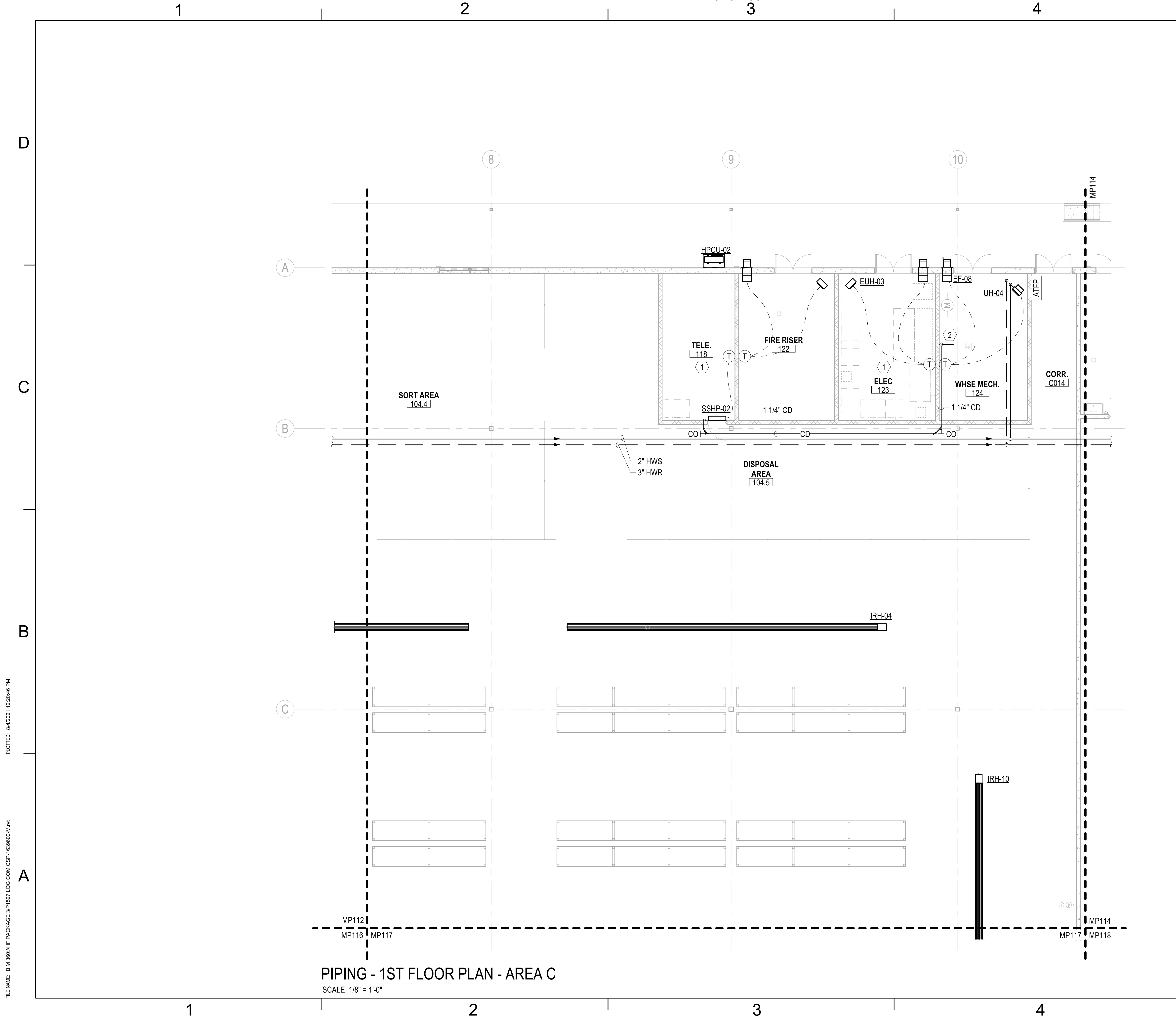
A	B	C	D
E	F	G	H



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

SYN	DESCRIPTION	DATE	APPR

FILE NAME: BIM 360/HF PACKAGE 3/PT1527 LOG COM CSP-1639600-M-04
 PLOTTED: 04/20/21 12:20:46 PM



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

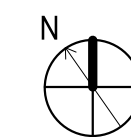
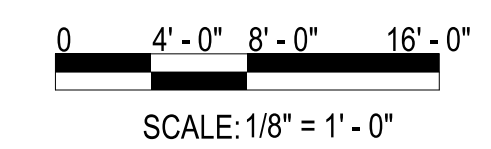
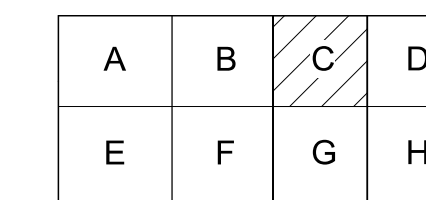
GENERAL NOTES

- ALL HWS & HWR BRANCHES ARE 3/4" UNLESS NOTED OTHERWISE.
- 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.
- 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.
- INSTALL PIPING WITHOUT FORCING OR SPRINGING.
- 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

- THERE SHALL NOT BE ANY EQUIPMENT (PIPING, DUCTWORK, MACHINERY, ETC.) THAT DOES NOT SERVE THIS SPACE INSTALLED ABOVE OR WITHIN THIS SPACE, NOR SHALL ANY EQUIPMENT NOT SERVING THIS SPACE PASS THROUGH OR ENTER THIS SPACE.
- TERMINATE CONDENSATE DRAIN AT FLOOR DRAIN. DO NOT ROUTE PIPING AS TO CREATE A TRIPPING HAZARD.

KEYPLAN



APPR	
DATE	
DESCRIPTION	
SYM	

PRELIMINARY
NOT FOR CONSTRUCTION

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

FOR COMMANDER NAVFAC
 ACTIVITY
 MARINE CORPS BASE
 CAMP LEJEUNE
 SATISFACTORY TO DATE DD/MM/YY
 DES EMB DRW AJK CHK DWH
 PM
 BRANCH HEAD
 DESIGN DIRECTOR
 FIRE PROTECTION

DEPARTMENT OF THE NAVY
 NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
 ATLANTIC DESIGN AND CONSTRUCTION
 MCB CAMP LEJEUNE
 JACKSONVILLE, NC
 LOGCOM CSP WAREHOUSE
 PIPING - 1ST FLOOR PLAN - AREA C

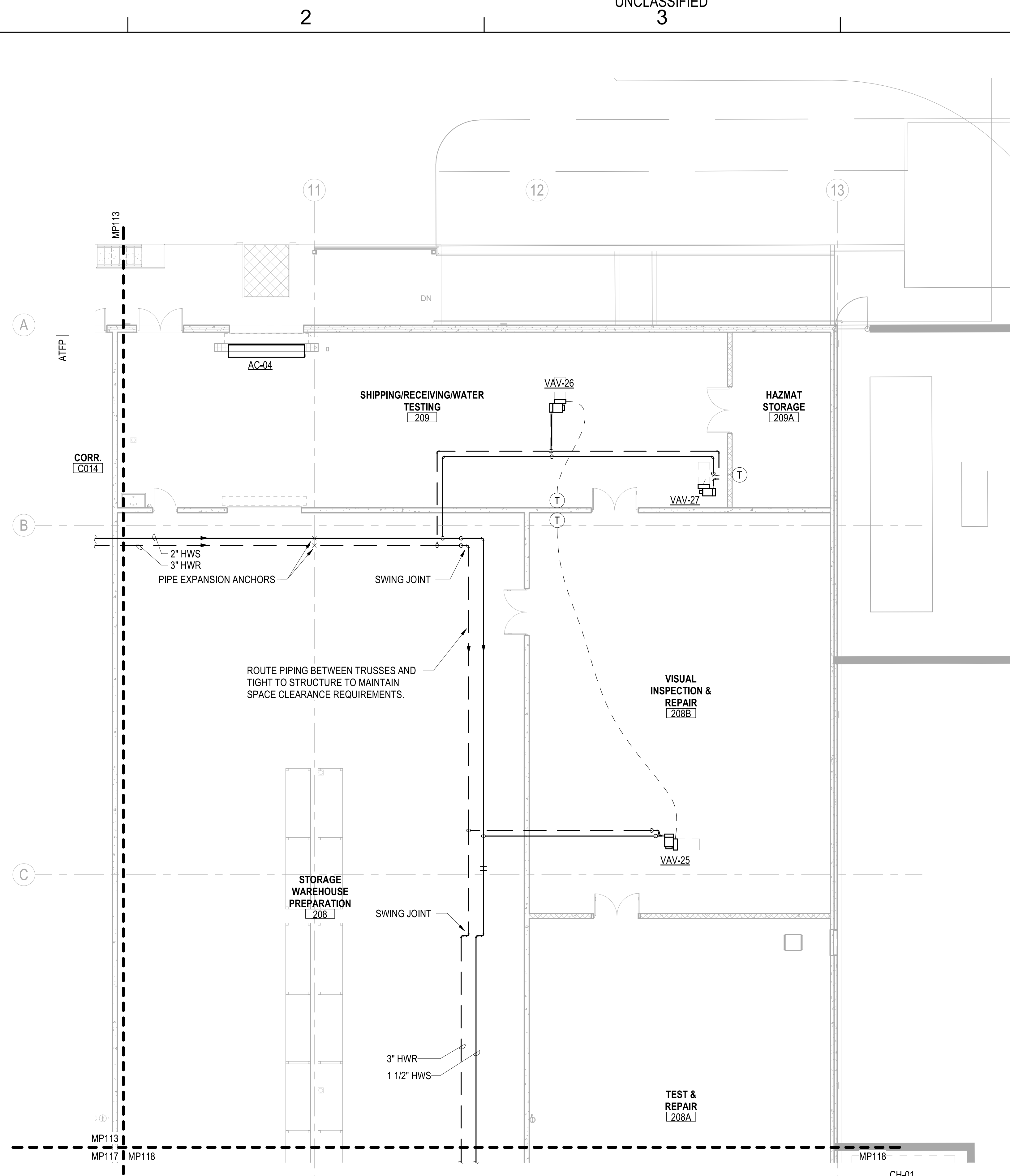
SCALE: AS NOTED
 EPROJECT NO.: 1639600
 CONSTR. CONTR. NO. N40085-20-C-0059
 NAVFAC DRAWING NO.
 SHEET OF
MP113

P1527 PREFINAL SUBMISSION - 08/06/2021

UNCLASSIFIED

UNCLASSIFIED

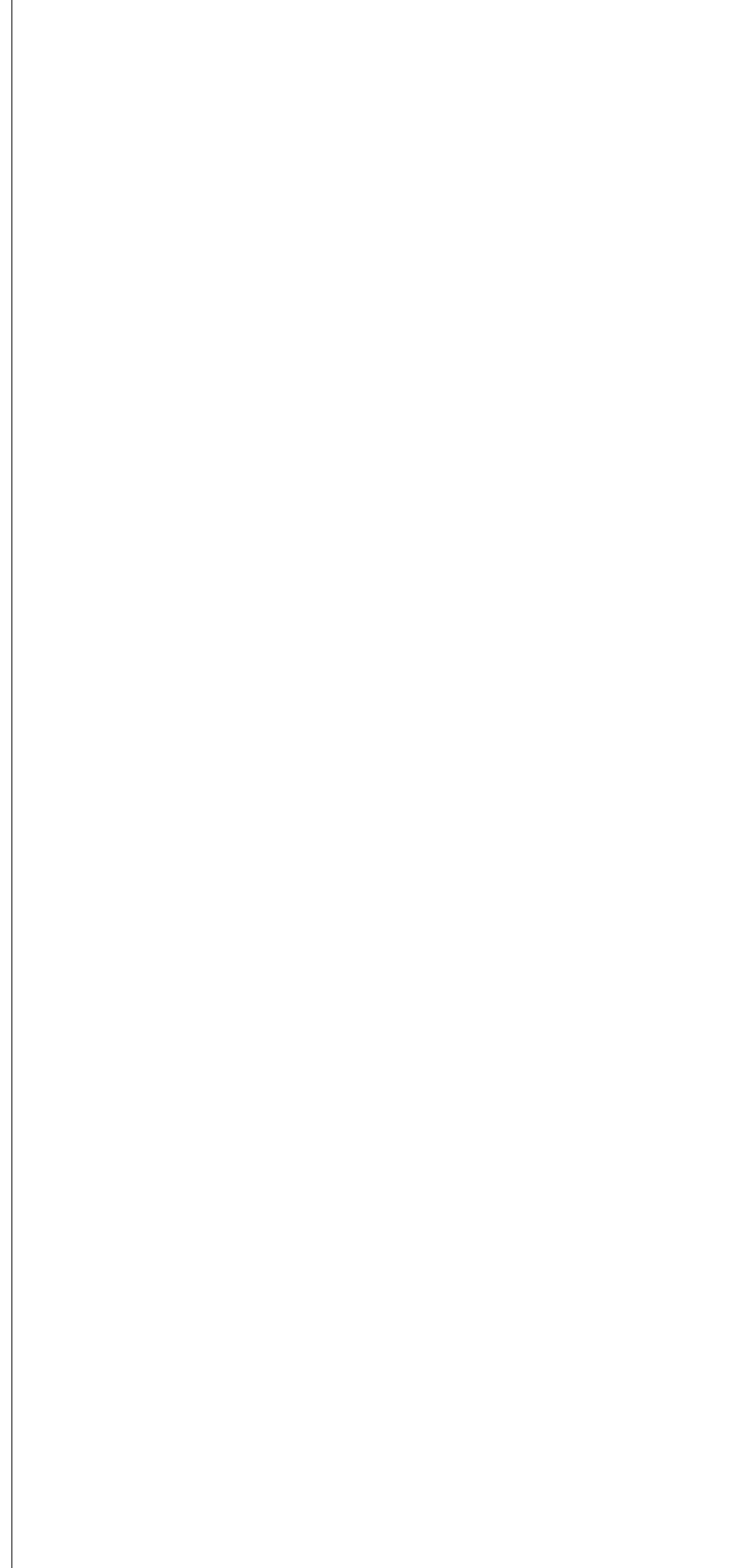
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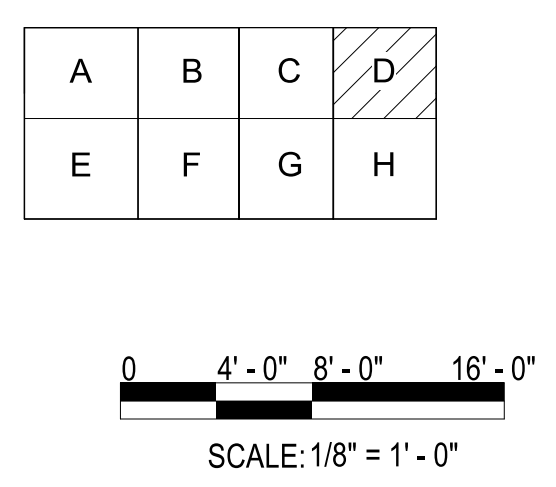
PIPING - 1ST FLOOR PLAN - AREA D
 SCALE: 1/8" = 1'-0"

- 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 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



KEYPLAN



SYMBOL	DESCRIPTION	DATE	APPROVED

NAVAC

PRELIMINARY
 NOT FOR CONSTRUCTION

RO Jordan COMPANY
 - A JOINT VENTURE -

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

FOR COMMANDER NAVFAC
 ACTIVITY: MARINE CORPS BASE CAMP LEJEUNE
 SATISFACTORY TO DATE: DD/MM/YYYY
 DES: EMB | DRW: AJK | CHK: DWH
 PM: []
 BRANCH HEAD: []
 DESIGN DIRECTOR: []
 FIRE PROTECTION: []

DEPARTMENT OF THE NAVY
 NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC
 ATLANTIC DESIGN AND CONSTRUCTION
 MCB CAMP LEJEUNE
 JACKSONVILLE, NC
 LOGCOM CSP WAREHOUSE
 PIPING - 1ST FLOOR PLAN - AREA D

SCALE: AS NOTED
 EPROJECT NO.: 1639600
 CONSTR. CONTR. NO. N40085-20-C-0059
 NAVFAC DRAWING NO. []
 SHEET [] OF []

MP114

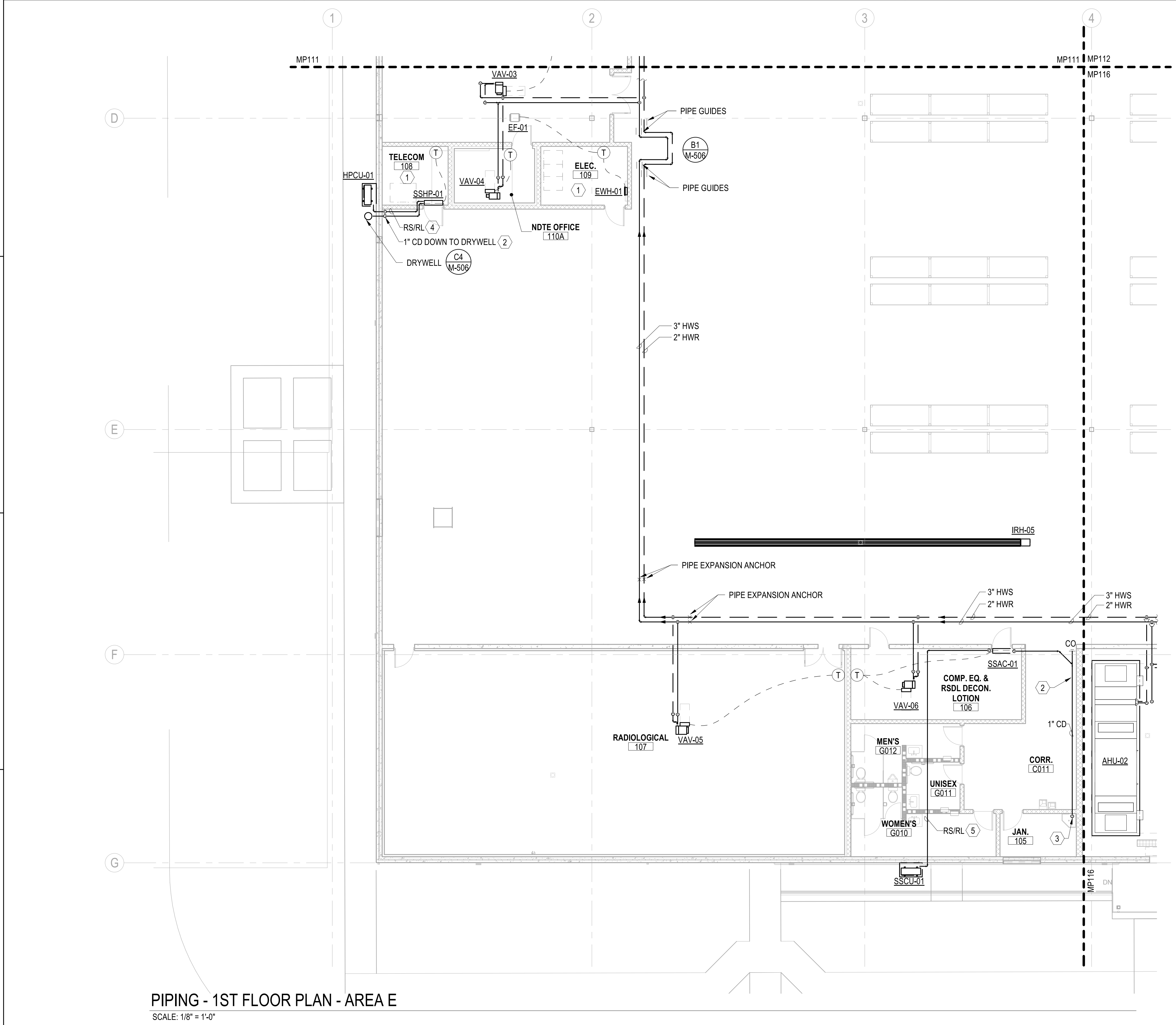
P-1527 PREFINAL SUBMISSION - 08/06/2021

UNCLASSIFIED

UNCLASSIFIED

UNCLASSIFIED

FILE NAME: BIM 360/HF PACKAGE 3/PT1527 LOG COM CSP-1639600-M-04
PLOTTED: 8/4/2021 12:20:57 PM



PIPING - 1ST FLOOR PLAN - AREA E
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.
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 - 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**
- 1 THERE SHALL NOT BE ANY EQUIPMENT (PIPING, DUCTWORK, MACHINERY, ETC.) THAT DOES NOT SERVE THIS SPACE INSTALLED ABOVE OR WITHIN THIS SPACE, NOR SHALL ANY 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" CD DOWN TO MOP RECEPTOR. TERMINATE PIPE OPEN ENDED APPROXIMATELY 3" ABOVE RECEPTOR.
 - 4 ROUTE PAIR OF REFRIGERANT LINES FROM INDOOR HEAT PUMP TO ASSOCIATED OUTDOOR CONDENSING UNIT. SIZE PER MANUFACTURER'S RECOMMENDATIONS.
 - 5 ROUTE PAIR OF REFRIGERANT LINES FROM INDOOR ACU TO ASSOCIATED OUTDOOR CONDENSING UNIT. SIZE PER MANUFACTURER'S RECOMMENDATIONS.

KEYPLAN

A	B	C	D
E	F	G	H

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

APPR DATE

DESCRIPTION

SYN

PRELIMINARY
NOT FOR CONSTRUCTION

SEAL

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

FOR COMMANDER NAVFAC

ACTIVITY
MARINE CORPS BASE
CAMP LEJEUNE

SATISFACTORY TO DATE DD/MM/YY
DES EMB DRW AJK CHK DWH

PM

BRANCH HEAD

DESIGN DIRECTOR

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
ATLANTIC DESIGN AND CONSTRUCTION
NAVFAC JACKSONVILLE, NC

LOGCOM CSP WAREHOUSE
PIPING - 1ST FLOOR PLAN - AREA E

SCALE: AS NOTED
EPROJECT NO.: 1639600
CONSTR. CONTR. NO. N40085-20-C-0059
NAVFAC DRAWING NO.

SHEET OF

MP115

P-1527 PRELIM SUBMISSION - 08/06/2021

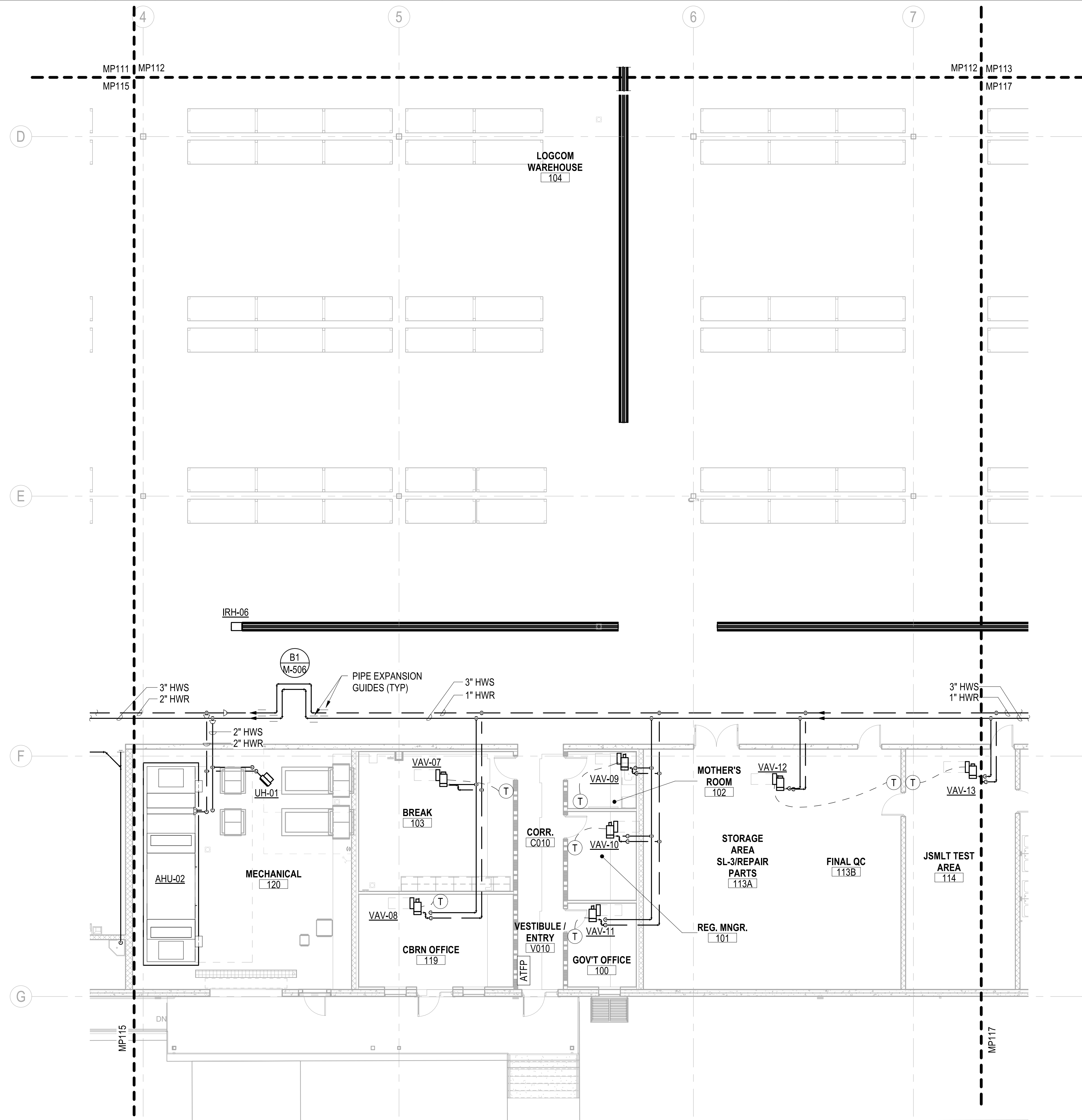
1

2

3

4


5




PIPING - 1ST FLOOR PLAN - AREA F
 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.
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 - 4 INSTALL PIPING WITHOUT FORCING OR SPRINGING.
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KEYNOTES



PRELIMINARY
NOT FOR CONSTRUCTION



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

FOR COMMANDER NAVFAC

ACTIVITY
 MARINE CORPS BASE
 CAMP LEJEUNE

SATISFACTORY TO DATE DD/MM/YYYY

DES EMB DRW AJK CHK DWH

PM

BRANCH HEAD

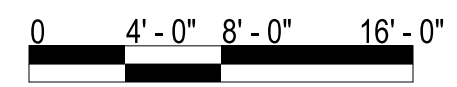
DESIGN DIRECTOR

FIRE PROTECTION


NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
 NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC
 ATLANTIC DESIGN AND CONSTRUCTION
 MCB CAMP LEJEUNE
 JACKSONVILLE, NC

KEYPLAN

A	B	C	D
E	F	G	H



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



APPR	
DATE	
DESCRIPTION	
SYM	

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

LOGCOM CSP WAREHOUSE

PIPING - 1ST FLOOR PLAN - AREA F

SCALE: AS NOTED

EPROJCT NO.: 1639600

CONSTR. CONTR. NO. N40085-20-C-0059

NAVFAC DRAWING NO.

SHEET OF

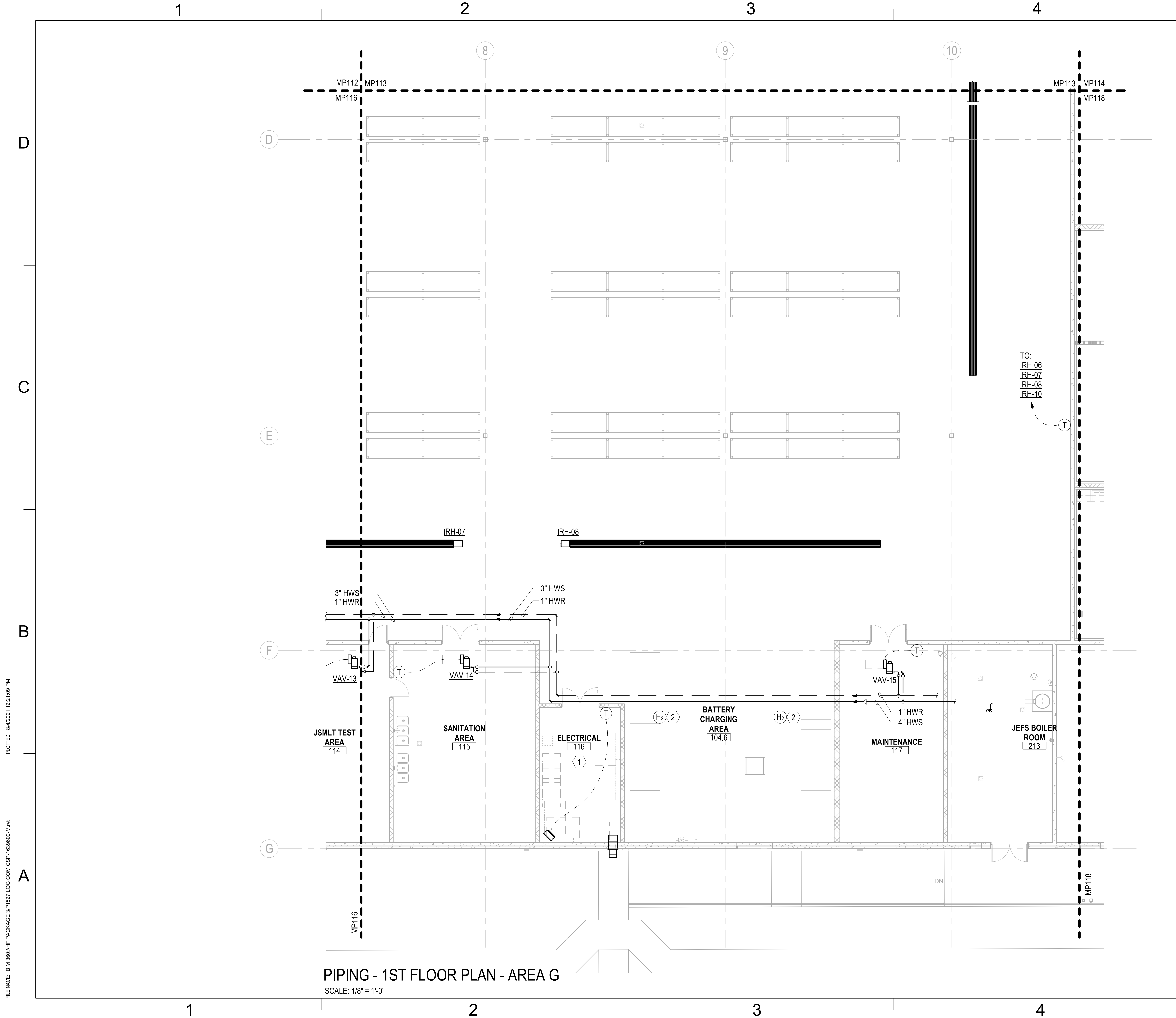
MP116

FILE NAME: BIM 360/HF PACKAGE 3P1527 LOG COM CSP-1639600-M-04
 PLOTTED: 8/4/2021 12:21:03 PM

P1527 PRELIM SUBMISSION - 08/06/2021

PLOTTED: 04/20/21 12:21:09 PM

FILE NAME: BIM 360/HF PACKAGE 3P1527 LOG COM CSP-1639600-M-01



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

- GENERAL NOTES**
- ALL HWS & HWR BRANCHES ARE 3/4" UNLESS NOTED OTHERWISE.
 - 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.
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 - INSTALL PIPING WITHOUT FORCING OR SPRINGING.
 - 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**
- THERE SHALL NOT BE ANY EQUIPMENT (PIPING, DUCTWORK, MACHINERY, ETC.) THAT DOES NOT SERVE THIS SPACE INSTALLED ABOVE OR WITHIN THIS SPACE, NOR SHALL ANY EQUIPMENT NOT SERVING THIS SPACE PASS THROUGH OR ENTER THIS SPACE.
 - HYDROGEN SENSOR(S) FOR FORKLIFT CHARGING OPERATIONS. SEE CONTROL SEQUENCE & SPECIFICATIONS.

KEYPLAN

A	B	C	D
E	F	G	H

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

DEPARTMENT OF THE NAVY
 NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
 ATLANTIC DESIGN AND CONSTRUCTION
 MCB CAMP LEJEUNE
 JACKSONVILLE, NC
 LOGCOM CSP WAREHOUSE
 PIPING - 1ST FLOOR PLAN - AREA G

FOR COMMANDER NAVFAC
 ACTIVITY
 MARINE CORPS BASE
 CAMP LEJEUNE
 SATISFACTORY TO DATE DD/MM/YY
 DES EMB | DRW AJK | CHK DWH
 PM
 BRANCH HEAD
 DESIGN DIRECTOR
 FIRE PROTECTION

GENERAL NOTES

- ALL HWS & HWR BRANCHES ARE 3/4" UNLESS NOTED OTHERWISE.
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KEYNOTES

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TO:
 IRH-06
 IRH-07
 IRH-08
 IRH-10

APPR	
DATE	
DESCRIPTION	
SYM	

PRELIMINARY
 NOT FOR CONSTRUCTION

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

FOR COMMANDER NAVFAC
 ACTIVITY
 MARINE CORPS BASE
 CAMP LEJEUNE
 SATISFACTORY TO DATE DD/MM/YY
 DES EMB | DRW AJK | CHK DWH
 PM
 BRANCH HEAD
 DESIGN DIRECTOR
 FIRE PROTECTION

DEPARTMENT OF THE NAVY
 NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
 ATLANTIC DESIGN AND CONSTRUCTION
 MCB CAMP LEJEUNE
 JACKSONVILLE, NC
 LOGCOM CSP WAREHOUSE
 PIPING - 1ST FLOOR PLAN - AREA G

SCALE: AS NOTED
 EPROJCT NO.: 1639600
 CONSTR. CONTR. NO. N40085-20-C-0059
 NAVFAC DRAWING NO.
 SHEET OF
MP117

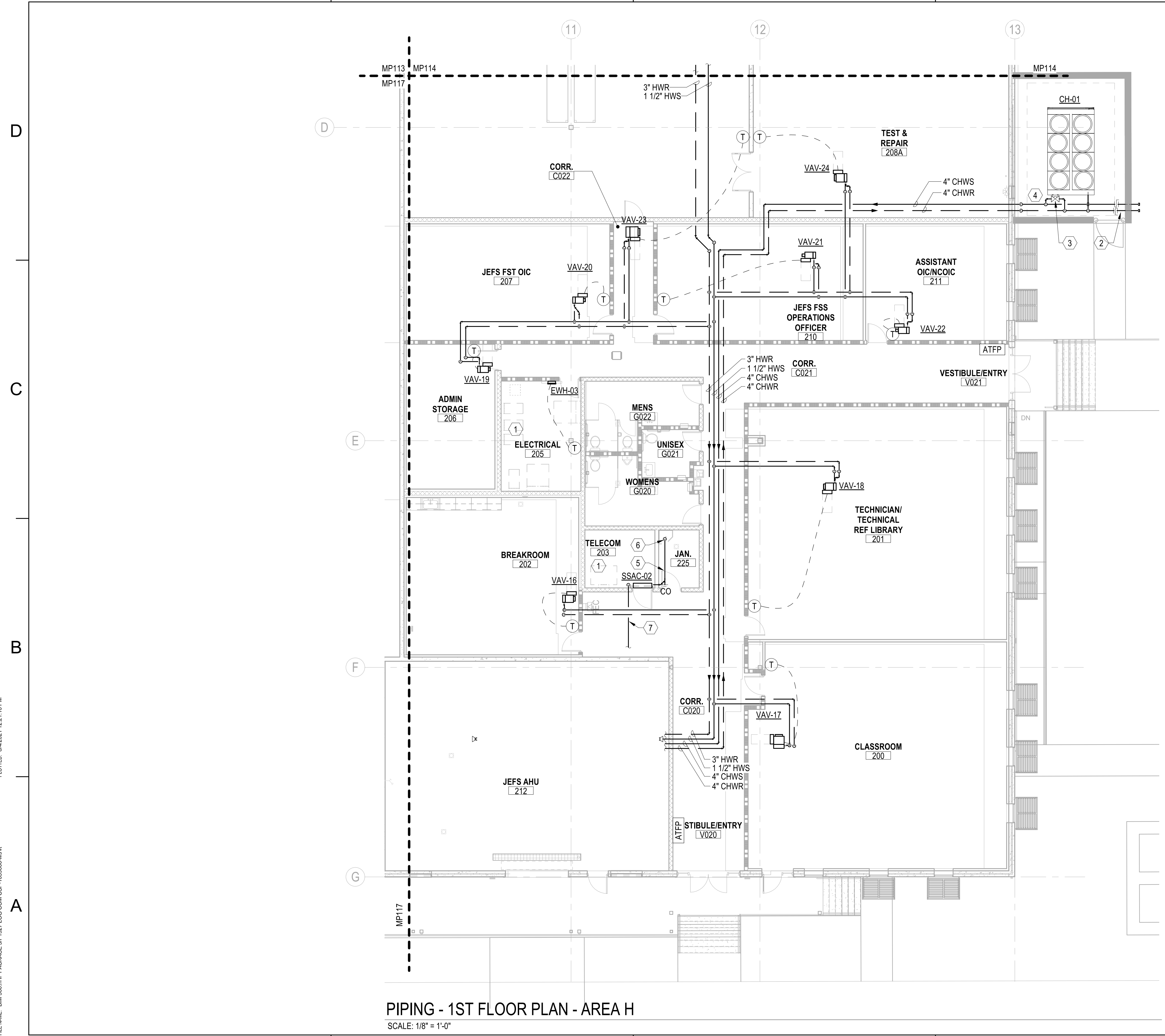
P-1527 PREFINAL SUBMISSION - 08/06/2021

UNCLASSIFIED

P-1527 PREFINAL SUBMISSION - 08/06/2021

PLOTTED: 04/20/21 12:21:16 PM

FILE NAME: BIM 360/HF PACKAGE 3P1527 LOG COM CSP-1639600-M.dwg



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

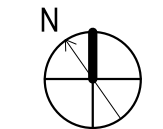
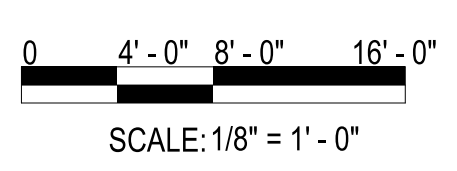
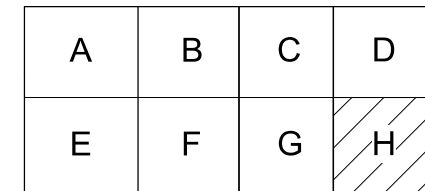
GENERAL NOTES


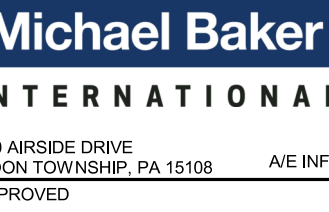
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KEYNOTES

- 1 THERE SHALL NOT BE ANY EQUIPMENT (PIPING, DUCTWORK, MACHINERY, ETC.) THAT DOES NOT SERVE THIS SPACE INSTALLED ABOVE OR WITHIN THIS SPACE, NOR SHALL ANY EQUIPMENT NOT SERVING THIS SPACE PASS THROUGH OR ENTER THIS SPACE.
- 2 VALVED BLIND FLANGES FOR TEMPORARY / EMERGENCY CHILLER CONNECTION.
- 3 4" CHILLER BYPASS / BALANCING VALVE
- 4 WRAP ALL EXTERIOR ABOVE GROUND PIPING IN HEAT TRACE TO MAINTAIN PROTECT PIPING DOWN TO 10 °F. SIZE HEAT TRACE PER SPECIFICATIONS. INSTALL AND JACKET PER MANUFACTURER'S RECOMMENDATIONS.
- 5 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°.
- 6 1" CD DOWN TO MOP RECEPTOR. TERMINATE PIPE OPEN ENDED APPROXIMATELY 3" ABOVE RECEPTOR.
- 7 ROUTE PAIR OF REFRIGERANT LINES FROM INDOOR ACU TO ASSOCIATED OUTDOOR CONDENSING UNIT. SIZE PER MANUFACTURER'S RECOMMENDATIONS.

KEYPLAN



APPROVED	DATE	APPR
DESCRIPTION	DATE	APPR
SYMBOL	DESCRIPTION	SYMBOL
 PRELIMINARY NOT FOR CONSTRUCTION		
 Michael Baker INTERNATIONAL 100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED		
FOR COMMANDER NAVFAC		
ACTIVITY		
MARINE CORPS BASE CAMP LEJEUNE		
SATISFACTORY TO DATE DD/MM/YY		
DES EMB	DRW AJK	CHK DWH
PM		
BRANCH HEAD		
DESIGN DIRECTOR		
FIRE PROTECTION		
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC DESIGN AND CONSTRUCTION MCB CAMP LEJEUNE JACKSONVILLE, NC LOGCOM CSP WAREHOUSE PIPING - 1ST FLOOR PLAN - AREA H		
SCALE: AS NOTED		
EPROJCT NO.: 1639600		
CONSTR. CONTR. NO. N40085-20-C-0059		
NAVFAC DRAWING NO.		
SHEET OF		
MP118		

P-1527 PREFINAL SUBMISSION - 08/06/2021

UNCLASSIFIED

1

2

3

4

5

D

C

B

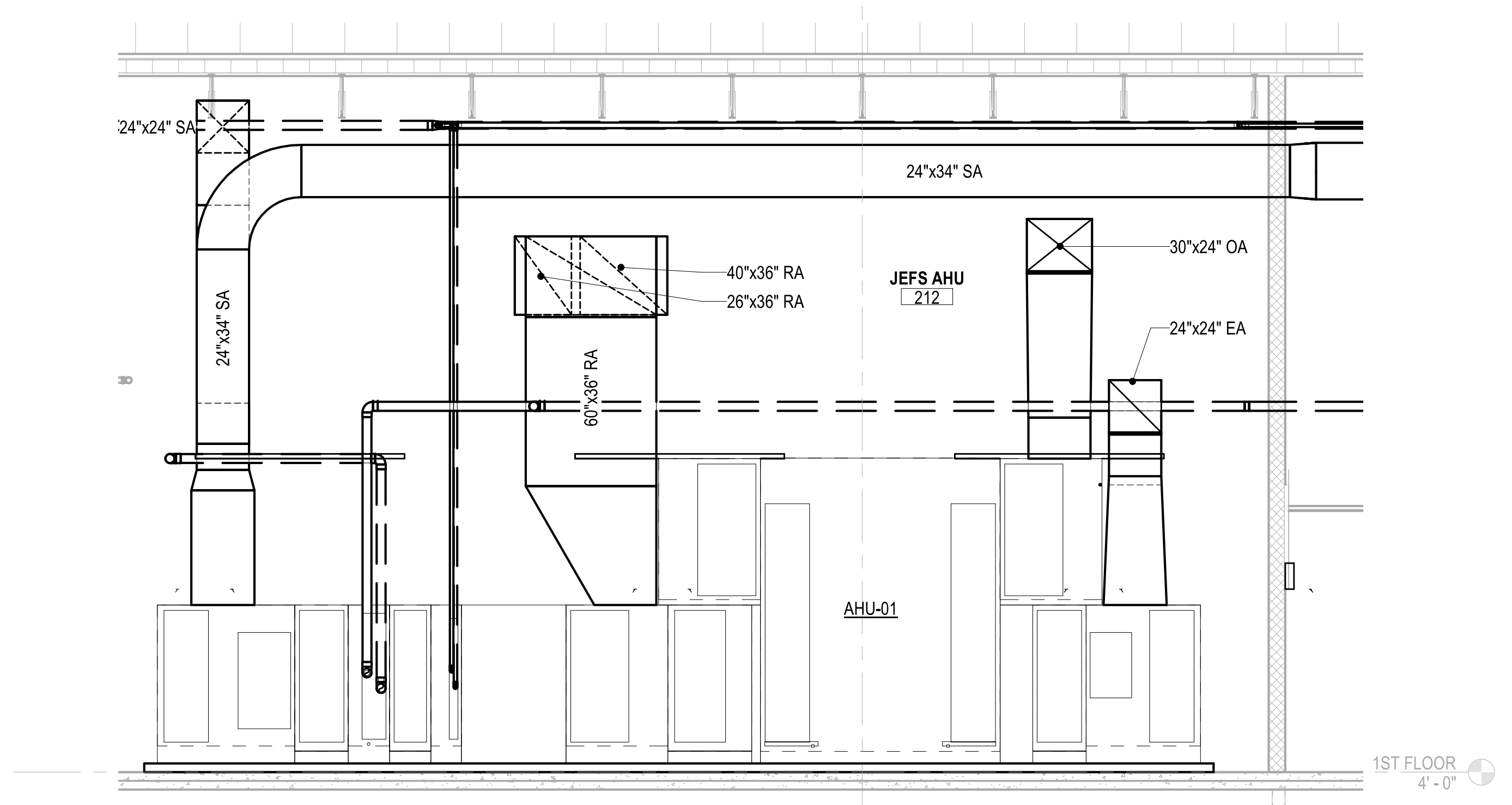
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D

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B

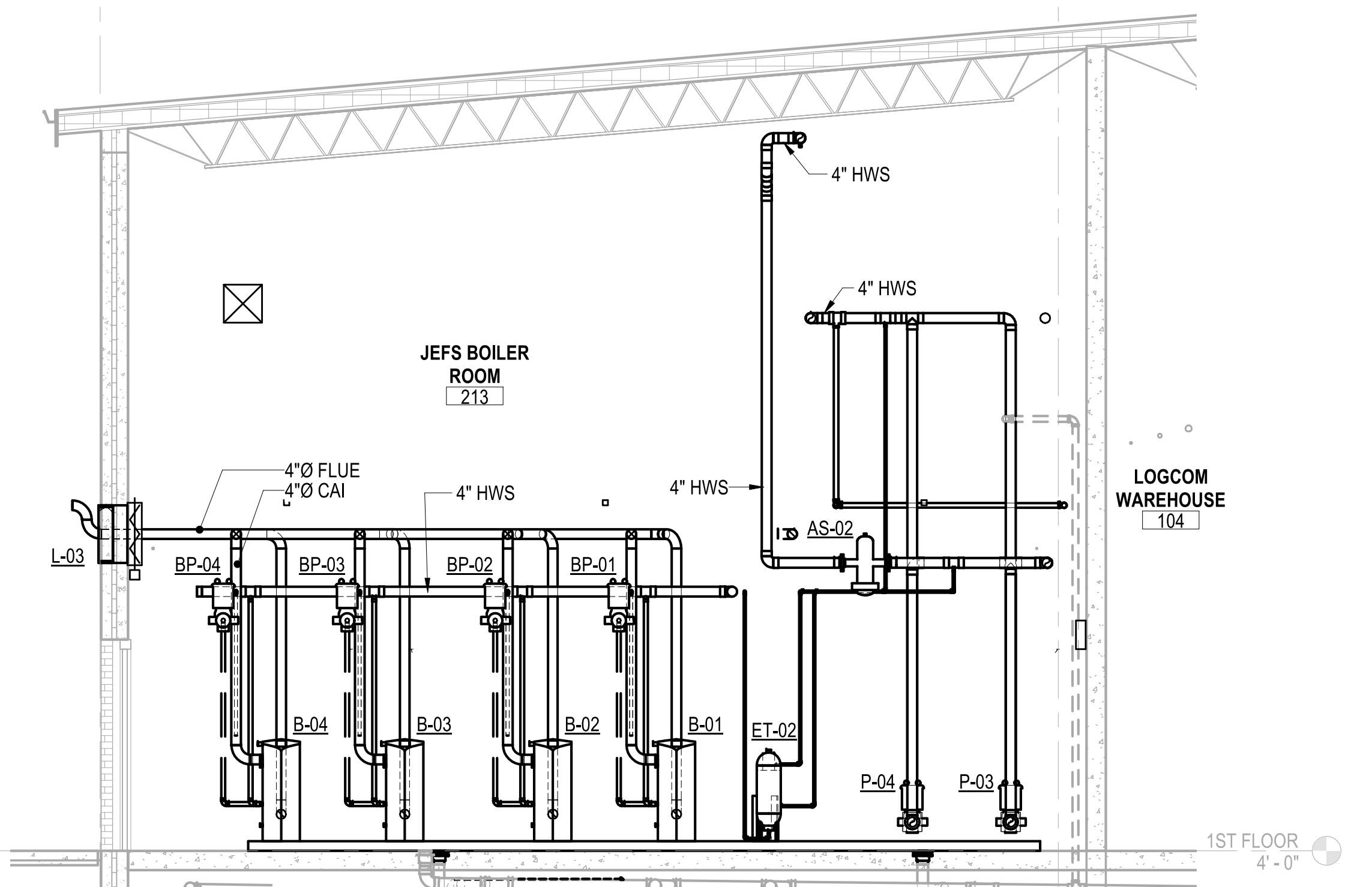
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SECTION - JEFS AHU
SCALE: 1/4" = 1'-0"

M-401

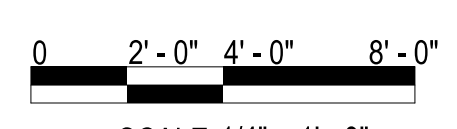
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SECTION - JEFS BOILER ROOM
SCALE: 1/4" = 1'-0"

M-401



B3



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

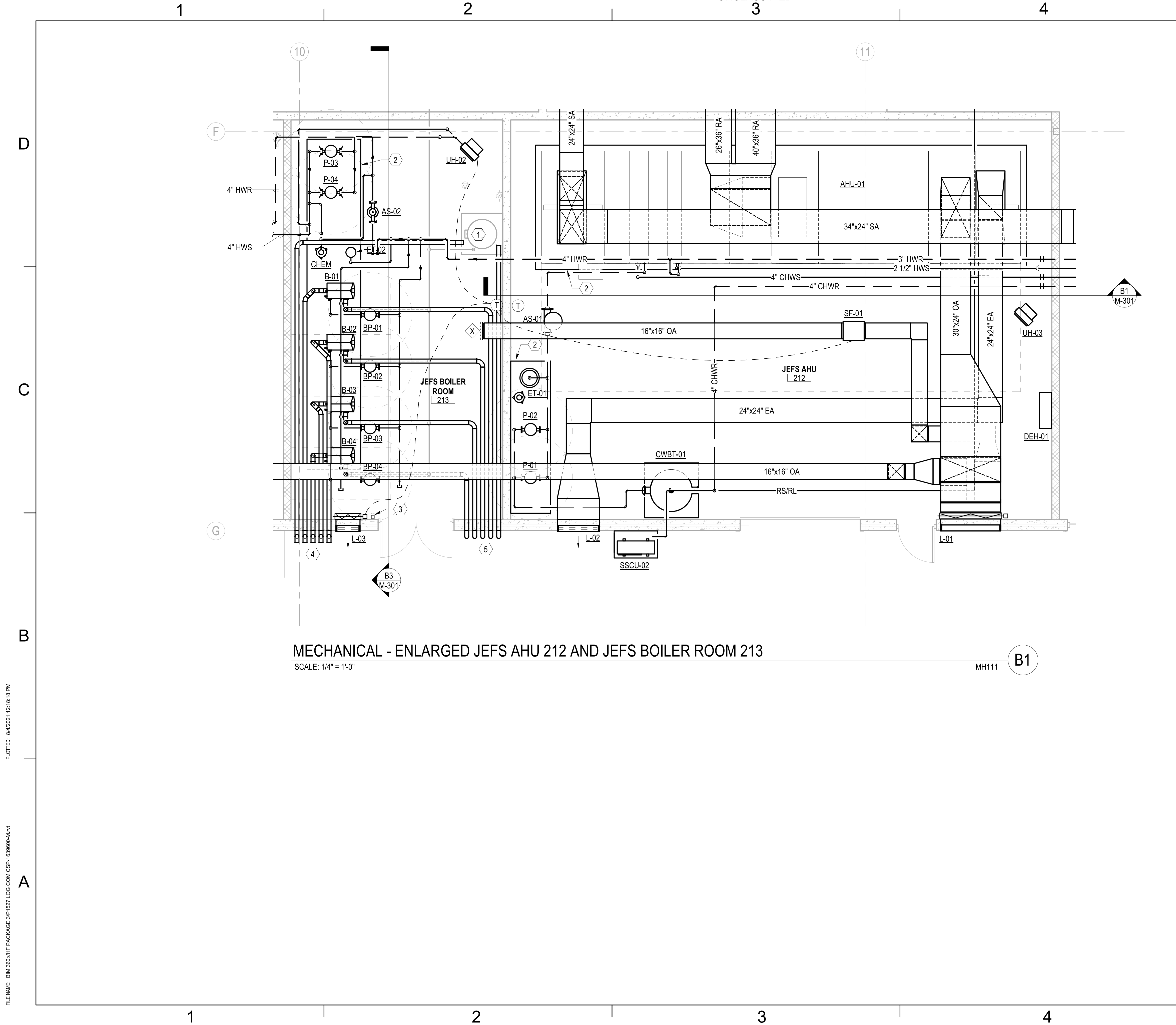
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NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC DESIGN AND CONSTRUCTION

SYMBOL	DESCRIPTION	DATE	APPROVED
			
<p>PRELIMINARY NOT FOR CONSTRUCTION</p>			
			
<p>Michael Baker INTERNATIONAL 100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED</p>			
FOR COMMANDER NAVFAC			
ACTIVITY			
MARINE CORPS BASE CAMP LEJEUNE			
SATISFACTORY TO DATE DD/MM/YYYY			
DES EMB	DRW AJK	CHK DWH	
PM			
BRANCH HEAD			
DESIGN DIRECTOR			
FIRE PROTECTION			
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC DESIGN AND CONSTRUCTION MCB CAMP LEJEUNE JACKSONVILLE, NC			
<p>LOGCOM CSP WAREHOUSE MECHANICAL - SECTIONS</p>			
SCALE: AS NOTED		PROJECT NO.: 1639600	
CONSTR. CONTR. NO. N40085-20-C-0059		NAVFAC DRAWING NO.	
SHEET		OF	
M-301			

P-1527 PREFINAL SUBMISSION - 08/06/2021

FILE NAME: BIM 360/HF PACKAGE 3PT1527 LOG COM CSP-1639600-M-01
 PLOTTED: 04/20/21 12:18:18 PM



MECHANICAL - ENLARGED JEFS AHU 212 AND JEFS BOILER ROOM 213
 SCALE: 1/4" = 1'-0"

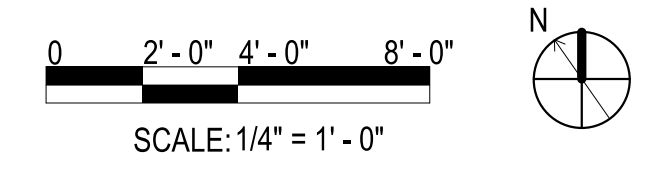
MH111 B1

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.
- 1 ALL HWS & HWR BRANCHES ARE 3/4" UNLESS NOTED OTHERWISE.
- 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.
- 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 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 0.05"/100' OF DUCT RUN. ALL REVISIONS MUST BE COORDINATED WITH ALL OTHER TRADES AND ILLUSTRATED IN DUCTWORK SHOP DRAWINGS FOR APPROVAL.
- 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 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 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.
- 5 ALL EQUIPMENT SHALL BE INSTALLED WITH MANUFACTURER'S REQUIRED ACCESS SPACE BETWEEN UNIT AND FULL HEIGHT WALLS AND OTHER OBSTRUCTIONS.
- 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 PROVIDE CSD-1 BOILER KILL SWITCH TO CUT POWER TO BOILERS - REFER TO ELECTRICAL DESIGN FOR DETAILS.
- 4 EXHAUST FLUE TERMINATION. INSTALL PER EQUIPMENT MANUFACTURER'S TERMINATION REQUIREMENTS AND RECOMMENDATIONS.
- 5 COMBUSTION AIR INLET TERMINATION. INSTALL PER EQUIPMENT MANUFACTURER'S TERMINATION REQUIREMENTS AND RECOMMENDATIONS.



APPROVED	DATE	APPR
DESCRIPTION	DATE	APPR
SYMBOL	DESCRIPTION	SYMBOL
<p>PRELIMINARY NOT FOR CONSTRUCTION</p>		
100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED		
FOR COMMANDER NAVFAC		
ACTIVITY MARINE CORPS BASE CAMP LEJEUNE		
SATISFACTORY TO DATE DD/MM/YYYY		
DES EMB	DRW AJK	CHK DWH
PM		
BRANCH HEAD		
DESIGN DIRECTOR		
FIRE PROTECTION		
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC DESIGN AND CONSTRUCTION MCB CAMP LEJEUNE JACKSONVILLE, NC		
LOGCOM CSP WAREHOUSE MECHANICAL - ENLARGED PLANS		
SCALE: AS NOTED EPROJCT NO.: 1639600 CONSTR. CONTR. NO.: N40085-20-C-0059 NAVFAC DRAWING NO.		
SHEET OF		
<p>M-401</p>		

P-1527 PREFINAL SUBMISSION - 08/06/2021

UNCLASSIFIED

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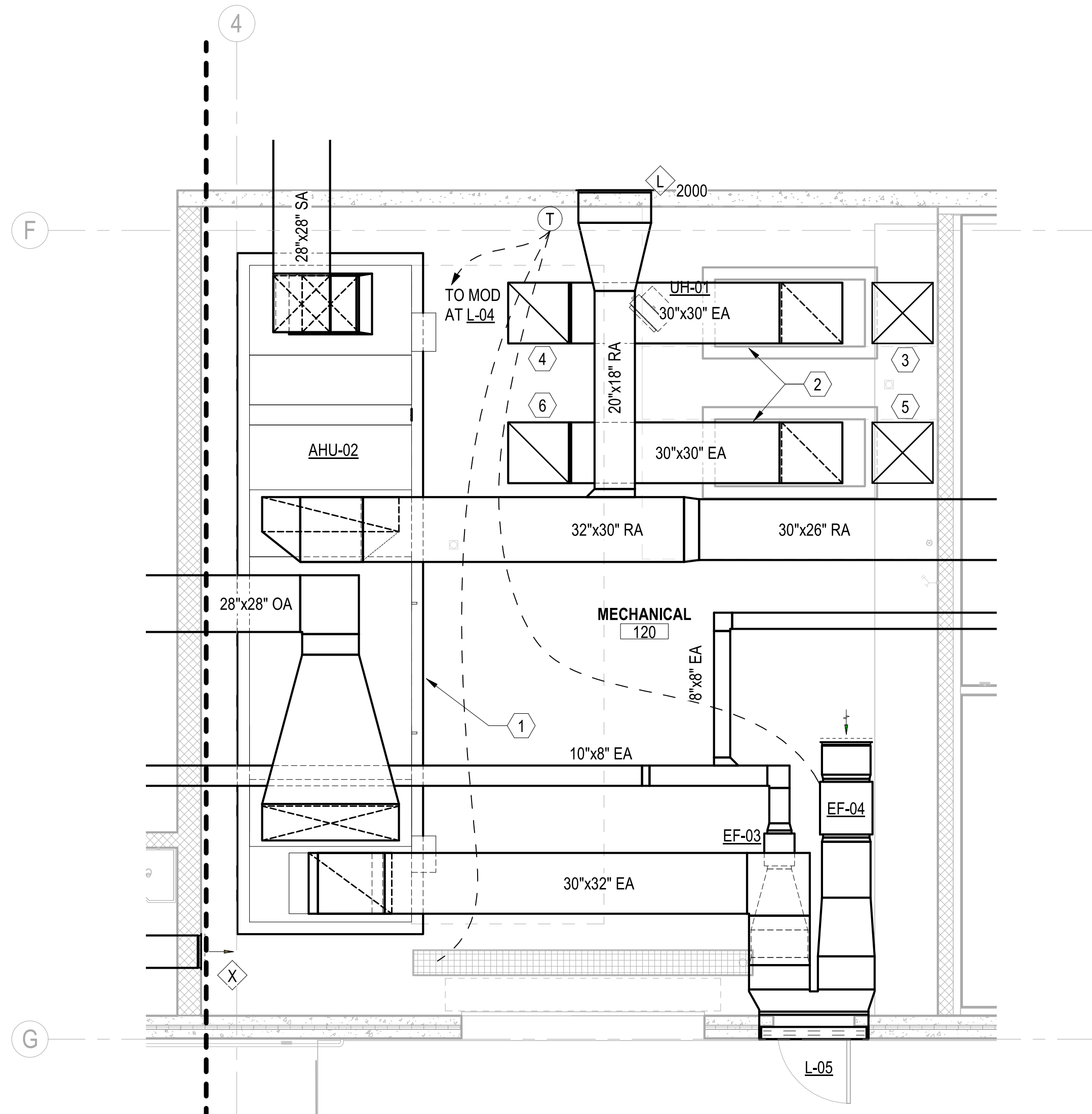
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MECHANICAL - ENLARGED MECHANICAL 120

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

MH116

A1

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.
- 1 ALL HWS & HWR BRANCHES ARE 3/4" UNLESS NOTED OTHERWISE.
- 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.
- 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 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 0.05"/100' OF DUCT RUN. ALL REVISIONS MUST BE COORDINATED WITH ALL OTHER TRADES AND ILLUSTRATED IN DUCTWORK SHOP DRAWINGS FOR APPROVAL.
- 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 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 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.
- 5 ALL EQUIPMENT SHALL BE INSTALLED WITH MANUFACTURER'S REQUIRED ACCESS SPACE BETWEEN UNIT AND FULL HEIGHT WALLS AND OTHER OBSTRUCTIONS.
- 9 INSTALL PIPING WITHOUT FORCING OR SPRINGING.

KEYNOTES

- 1 CONCRETE MECHANICAL EQUIPMENT PAD ON LEVEL SURFACE. EXTEND PAD 6" BEYOND THE EDGE OF THE EQUIPMENT IN ALL DIRECTIONS.
- 2 PLUMBING EQUIPMENT - REFER TO PLUMBING DRAWINGS.
- 3 OUTDOOR AIR DUCT UP TO GV-01 ON ROOF
- 4 EXHAUST AIR DUCT UP TO GV-02 ON ROOF
- 5 OUTDOOR AIR DUCT UP TO GV-03 ON ROOF
- 6 EXHAUST AIR DUCT UP TO GV-04 ON ROOF

SYN	DESCRIPTION	DATE	APPR



PRELIMINARY
NOT FOR CONSTRUCTION

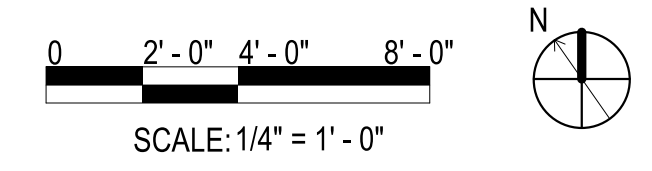


Michael Baker INTERNATIONAL
100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108
APPROVED

FOR COMMANDER NAVFAC
ACTIVITY
MARINE CORPS BASE
CAMP LEJEUNE
SATISFACTORY TO DATE DD/MM/YY
DES EMB DRW AJK CHK DWH
PM
BRANCH HEAD
DESIGN DIRECTOR
FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
ATLANTIC DESIGN AND CONSTRUCTION
NAVFAC JACKSONVILLE, NC
NAVFAC JACKSONVILLE, NC
LOGCOM CSP WAREHOUSE
MECHANICAL - ENLARGED PLANS

SCALE: AS NOTED
EPROJCT NO.: 1639600
CONSTR. CONTR. NO. N40085-20-C-0059
NAVFAC DRAWING NO.
SHEET OF
M-402



FILE NAME: BIM 360/HF PACKAGE 3P11527 LOG COM CSP-1639600-M-01 PLOTTED: 04/20/21 12:18:22 PM

UNCLASSIFIED

P-1527 PREFINAL SUBMISSION - 08/06/2021

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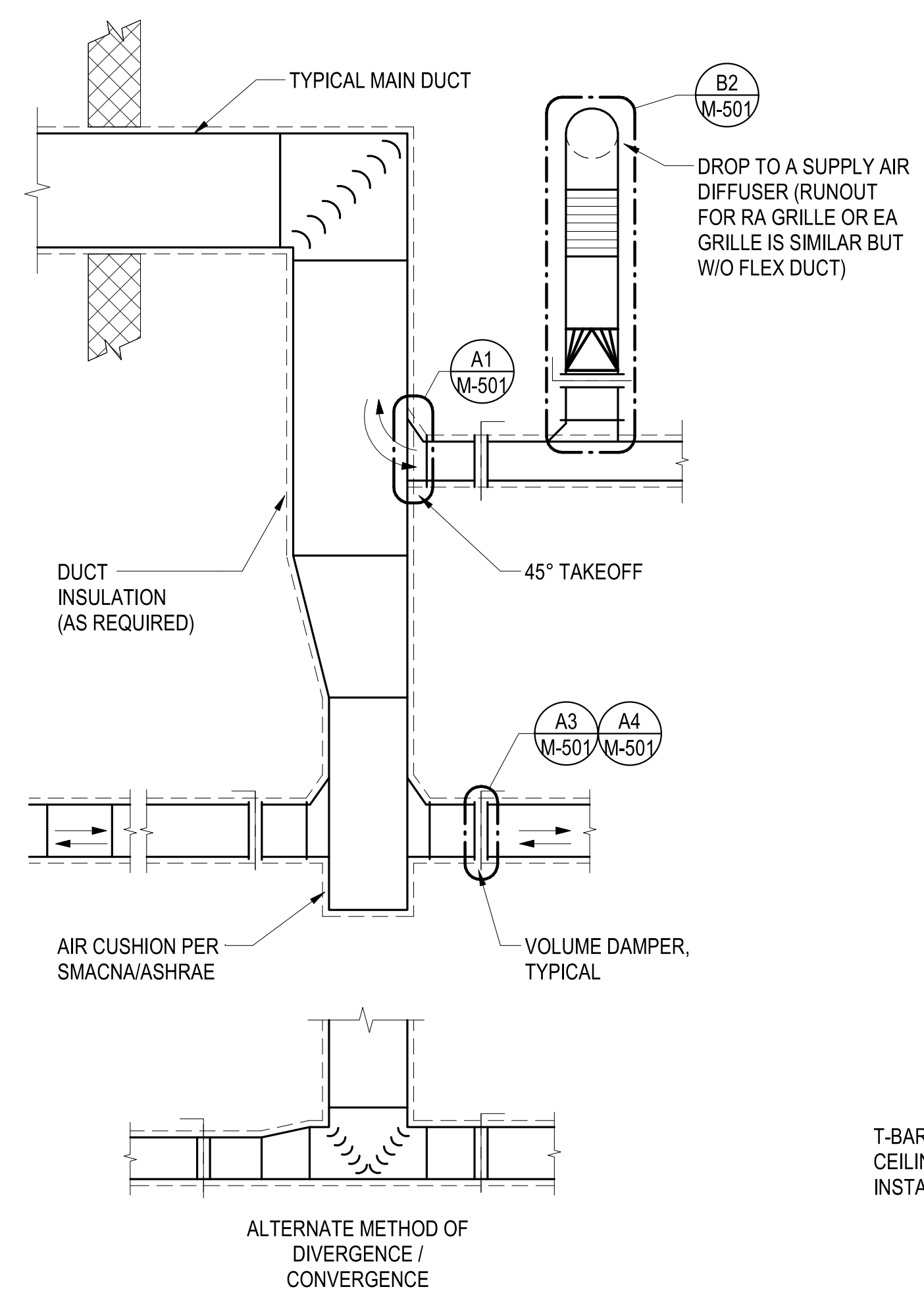
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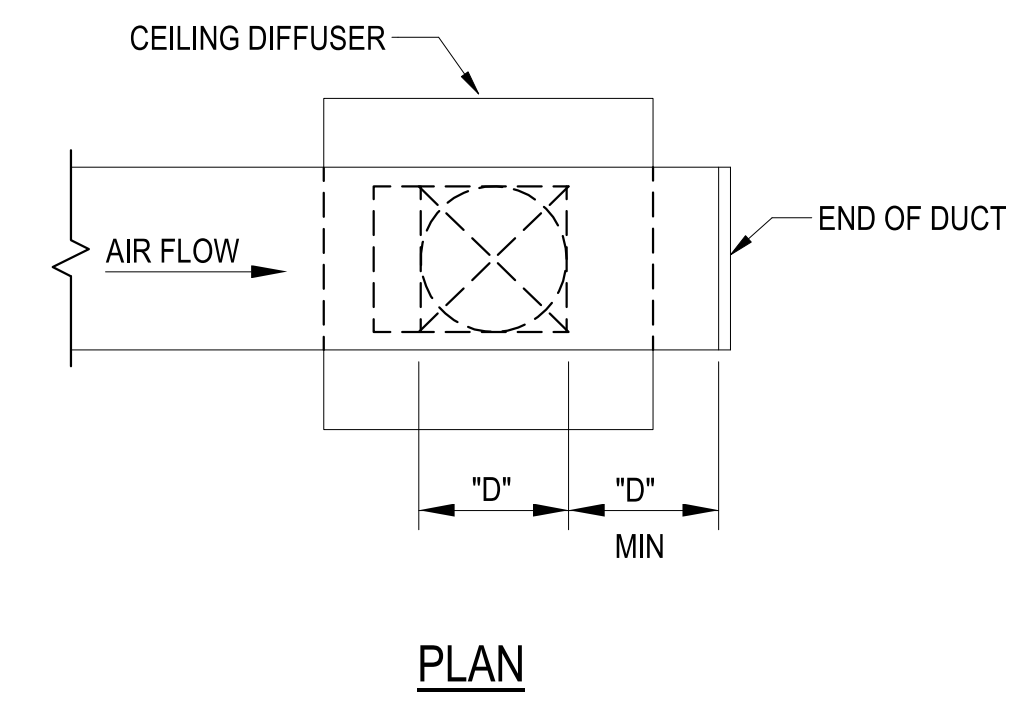
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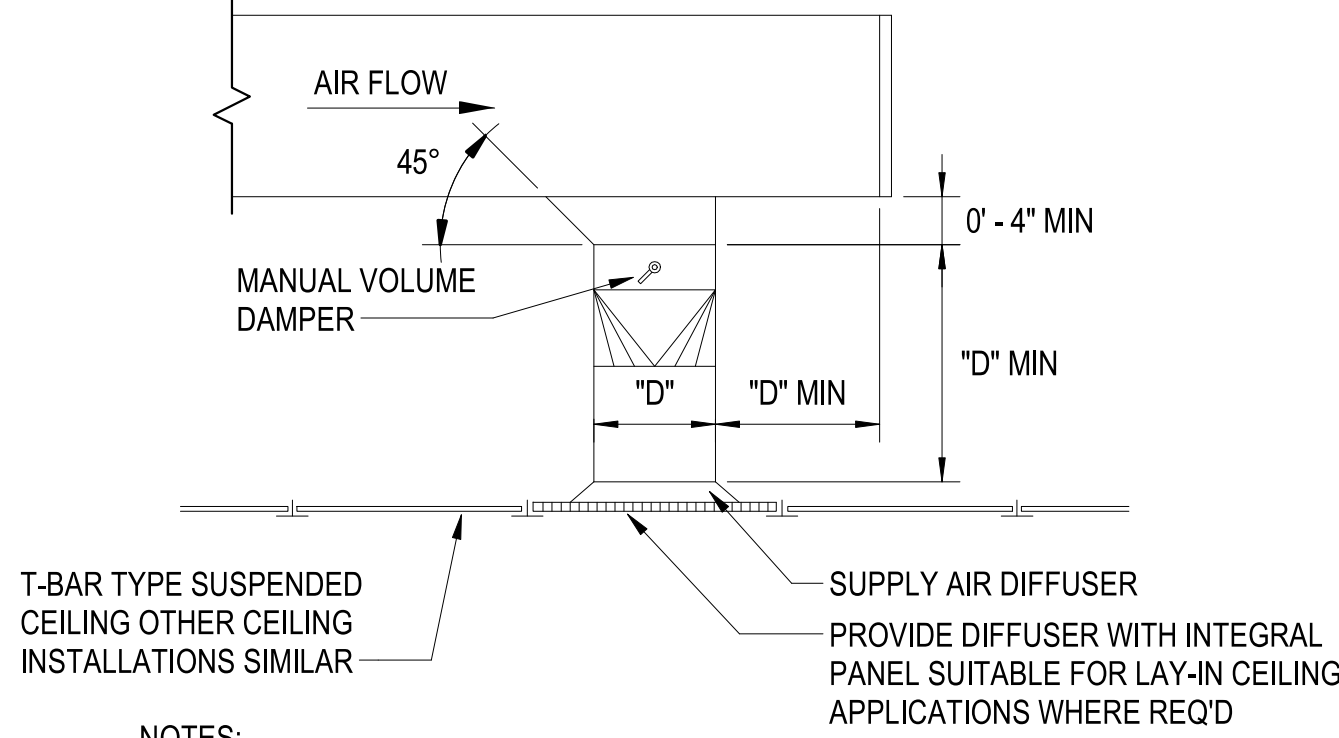
TYPICAL SUPPLY OR RETURN DUCT DETAIL

SCALE: NTS

B1.2



SECTION - SUPPLY, OUTDOOR, OR MAKEUP

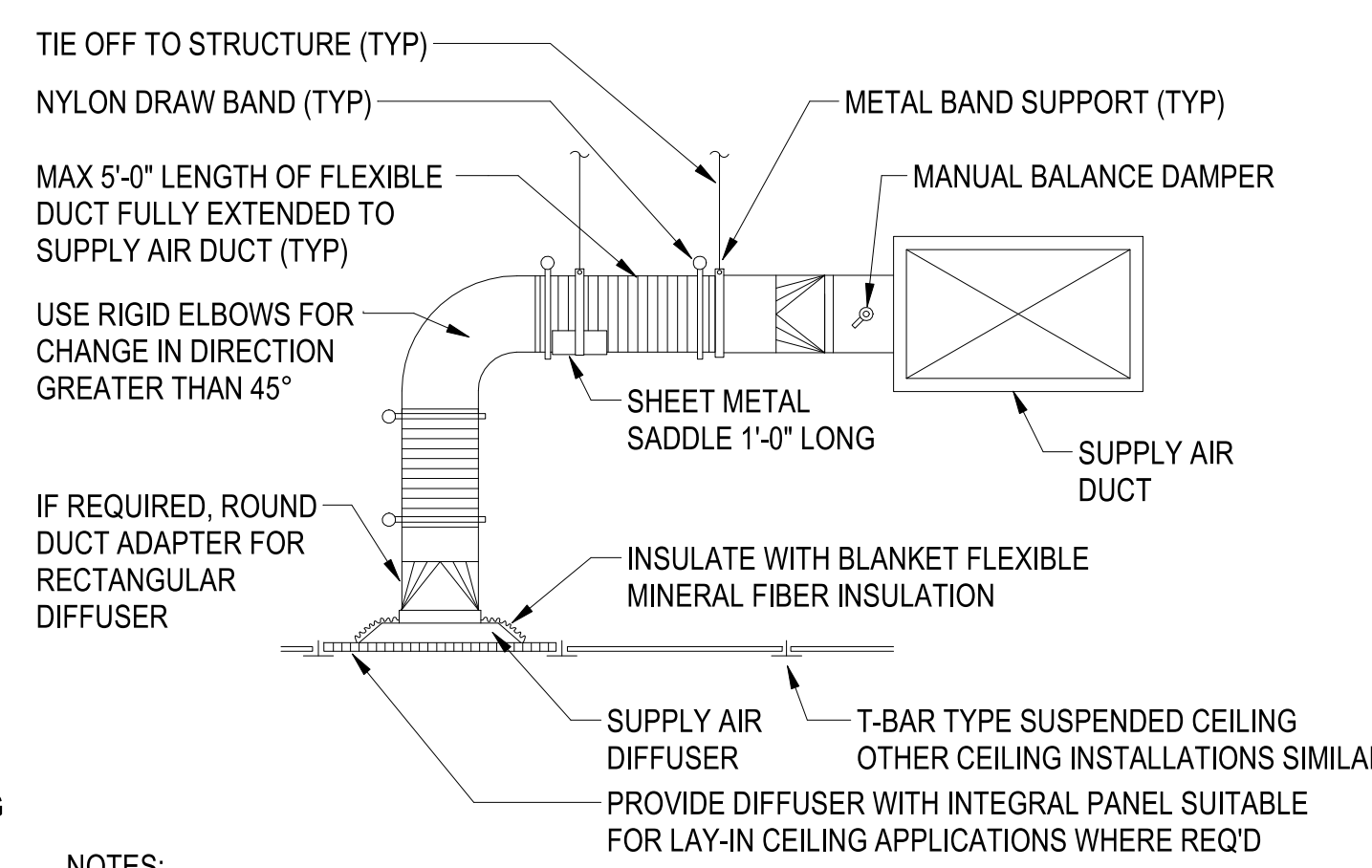
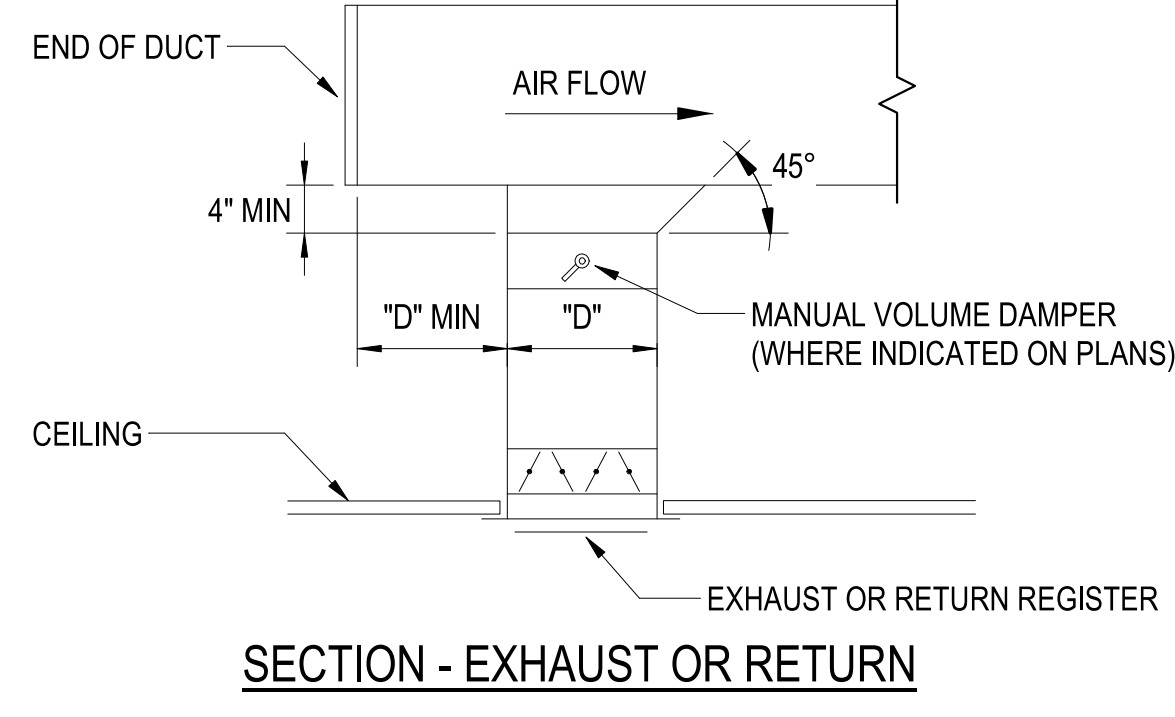


NOTES:

- "D" IS THROAT DIA OR SIDE DIM. OF SQUARE CONN.
- MIN LENGTH OF STRAIGHT DUCT ABOVE CD IS "D".
- ABOVE DETAILS ARE REPRESENTATIVE OF STANDARD DUCT CONNECTIONS. ONLY. THESE DETAILS ARE NOT INTENDED TO SHOW ALL POSSIBLE DUCT CONNECTIONS.

DUCT CONNECTION DETAILS

SCALE: NTS



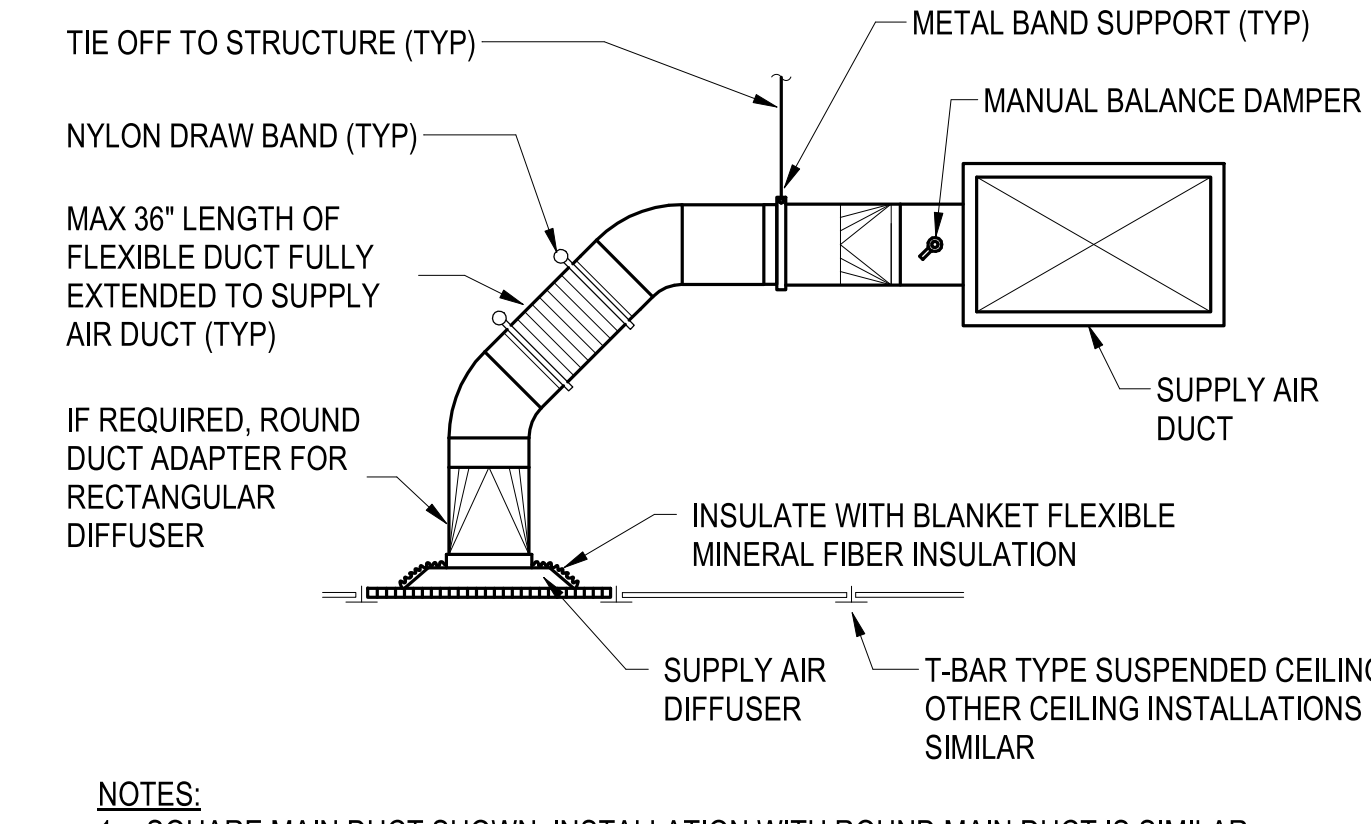
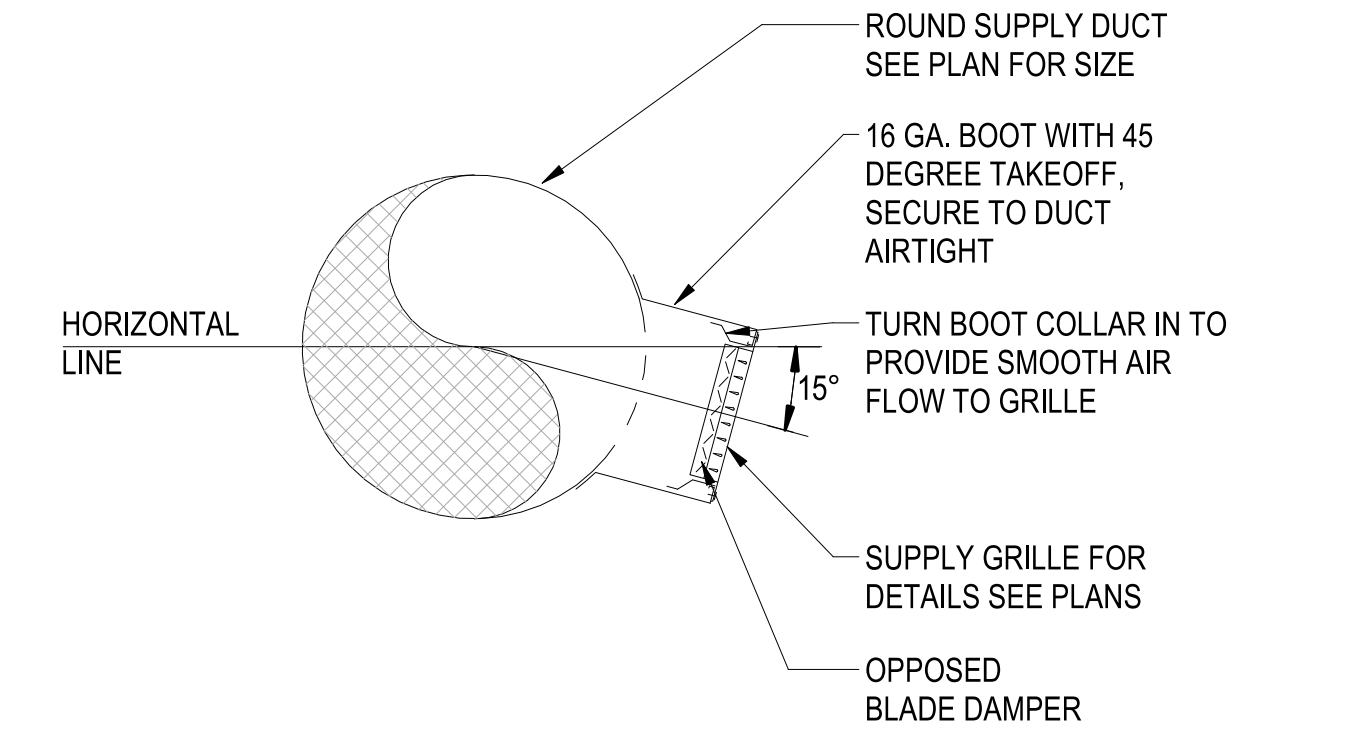
NOTES:

- SQUARE MAIN DUCT SHOWN. INSTALLATION WITH ROUND MAIN DUCT IS SIMILAR
- IF SPIN-IN TAKE-OFFS ARE NOT USED AND EXPANDED TAKE-OFFS ARE USED, INSTALL DAMPER AFTER TAKE-OFF PER SMACNA
- PROVIDE PROPER INSTALLATION OF RADIUS AND SUPPORT PER SMACNA AND FLEX DUCT PER MFGR'S RECOMMENDATIONS FOR NO KINKING OR SIGNIFICANT AREA REDUCTION

MANUAL VOLUME DAMPER DETAIL - 12" OR LESS

SCALE: NTS

A3



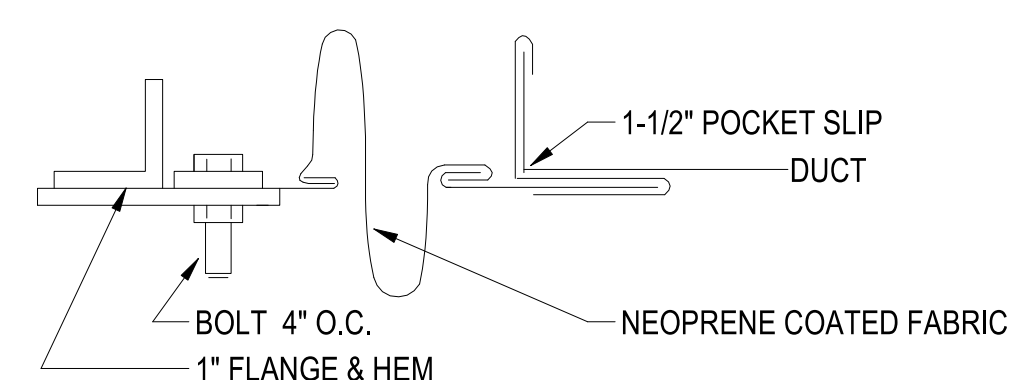
NOTES:

- SQUARE MAIN DUCT SHOWN. INSTALLATION WITH ROUND MAIN DUCT IS SIMILAR
- IF SPIN-IN TAKE-OFFS ARE NOT USED AND EXPANDED TAKE-OFFS ARE USED, INSTALL DAMPER AFTER TAKE-OFF PER SMACNA

MANUAL VOLUME DAMPER DETAIL - 12" OR MORE

SCALE: NTS

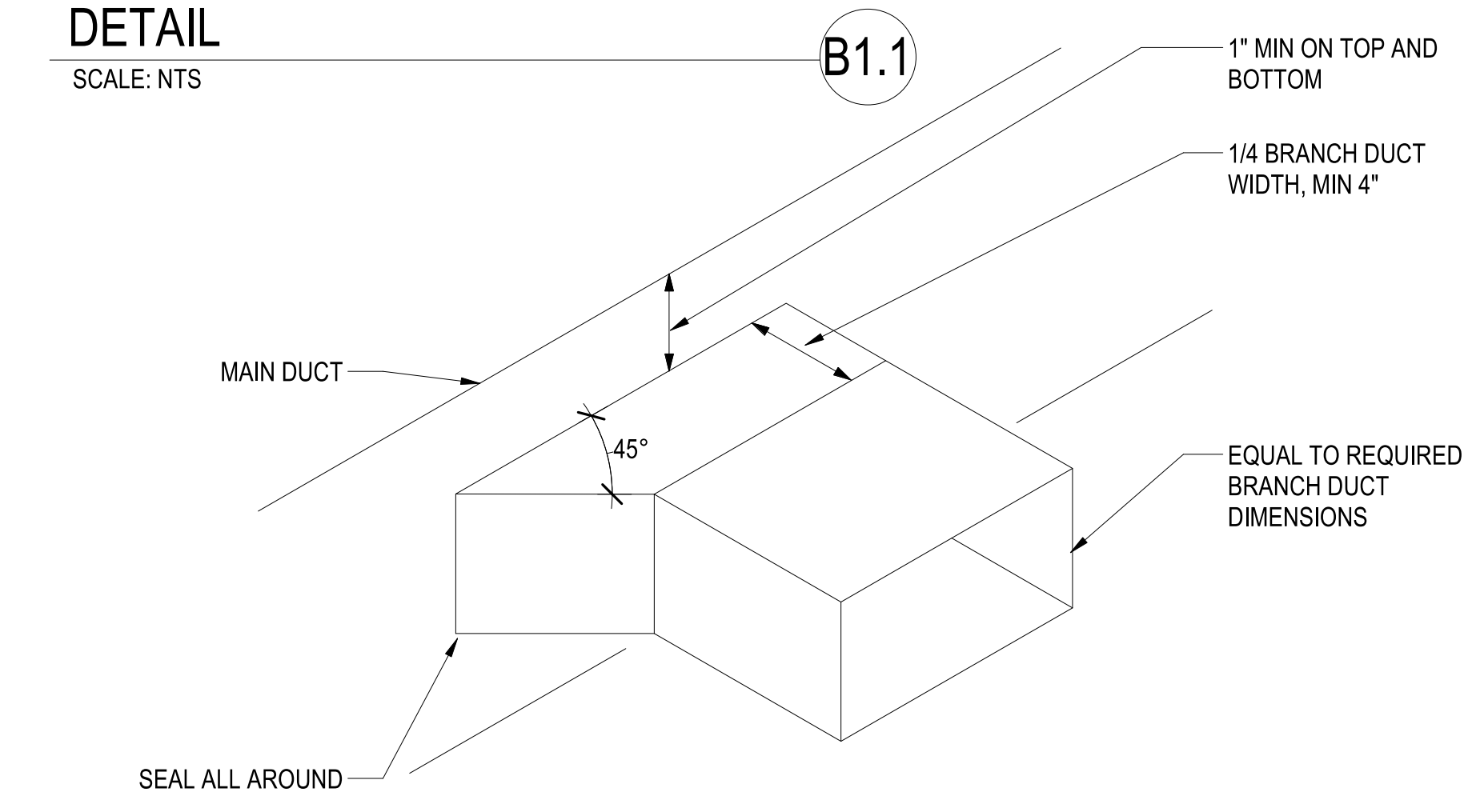
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FLEXIBLE CONNECTION DETAIL

SCALE: NTS

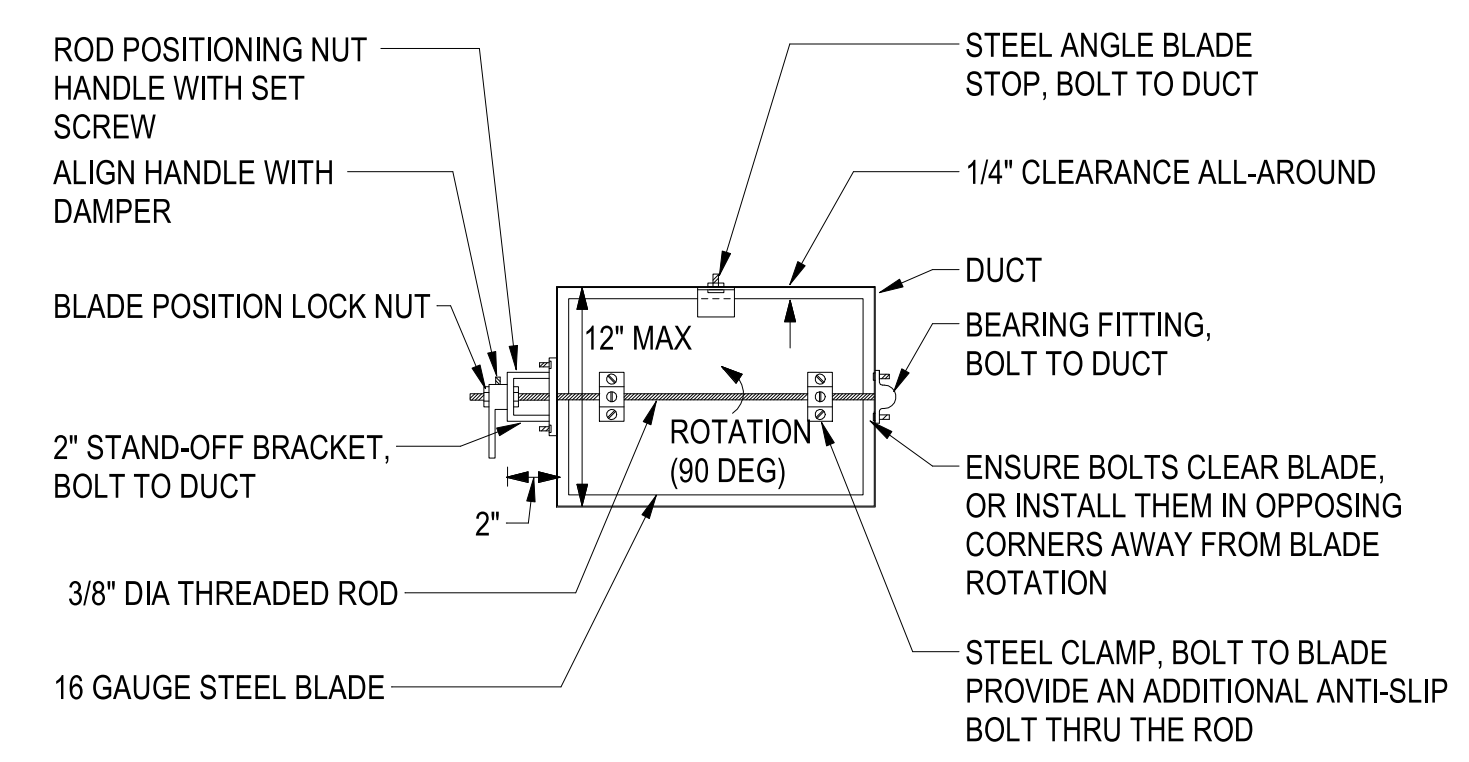
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TYPICAL BRANCH DUCT TAKEOFF FITTING DETAIL

SCALE: NTS

A1



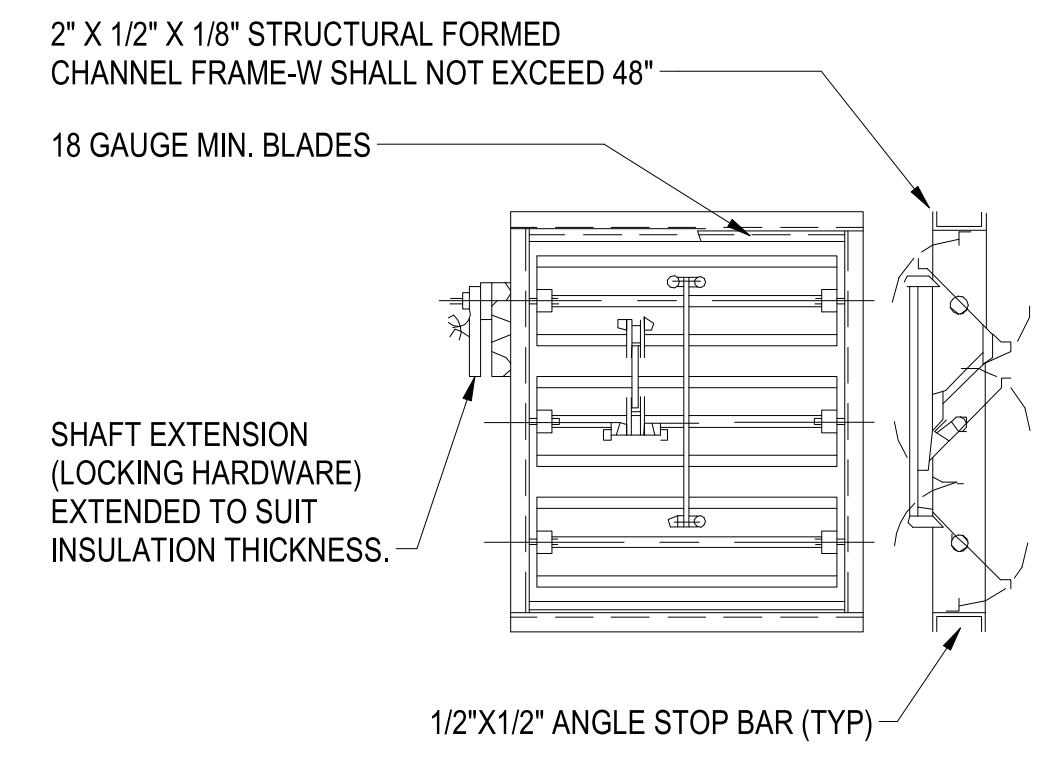
NOTES:

- DAMPERS FOR ROUND DUCTS SHALL BE SIMILAR TO THE DAMPER SHOWN ABOVE
- ENSURE THAT FULL 90 DEGREE DAMPER BLADE MOVEMENT IS UNOBSTRUCTED
- FOR DUCT HEIGHTS MORE THAN 12" PROVIDE FACTORY-FABRICATED OPPOSED BLADE DAMPERS

MANUAL VOLUME DAMPER DETAIL - 12" OR LESS

SCALE: NTS

A3



NOTE:

- ALL BRANCH DUCTS SHALL HAVE VOLUME DAMPERS

MANUAL VOLUME DAMPER DETAIL - 12" OR MORE

SCALE: NTS

A4

APPR	DATE
SYN	DESCRIPTION
<p>PRELIMINARY NOT FOR CONSTRUCTION</p>	
<p>Michael Baker INTERNATIONAL</p>	
<p>100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108</p>	
<p>FOR COMMANDER NAVFAC</p>	
<p>ACTIVITY MARINE CORPS BASE CAMP LEJEUNE</p>	
<p>SATISFACTORY TO DATE DD/MM/YY</p>	
<p>DES EMB DRW AJK CHK DWH</p>	
<p>PM</p>	
<p>BRANCH HEAD</p>	
<p>DESIGN DIRECTOR</p>	
<p>FIRE PROTECTION</p>	
<p>DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC DESIGN AND CONSTRUCTION MCFB CAMP LEJEUNE JACKSONVILLE, NC</p>	
<p>LOGCOM CSP WAREHOUSE MECHANICAL - DETAILS</p>	
SCALE:	AS NOTED
EPROJCT NO.:	1639600
CONSTR. CONTR. NO.:	N40085-20-C-0059
NAVFAC DRAWING NO.:	17250094
SHEET	240 OF
<p>M-501</p>	

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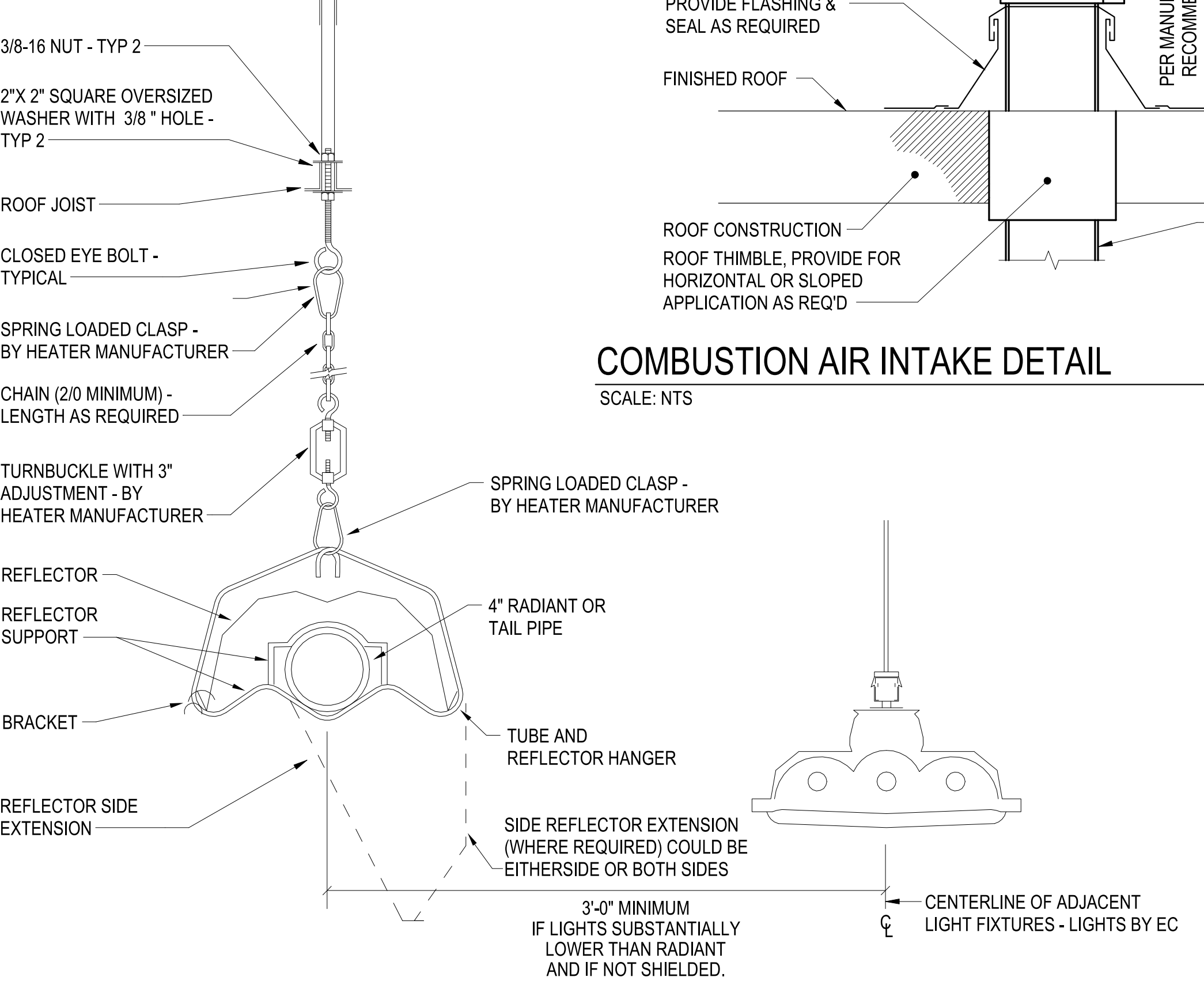
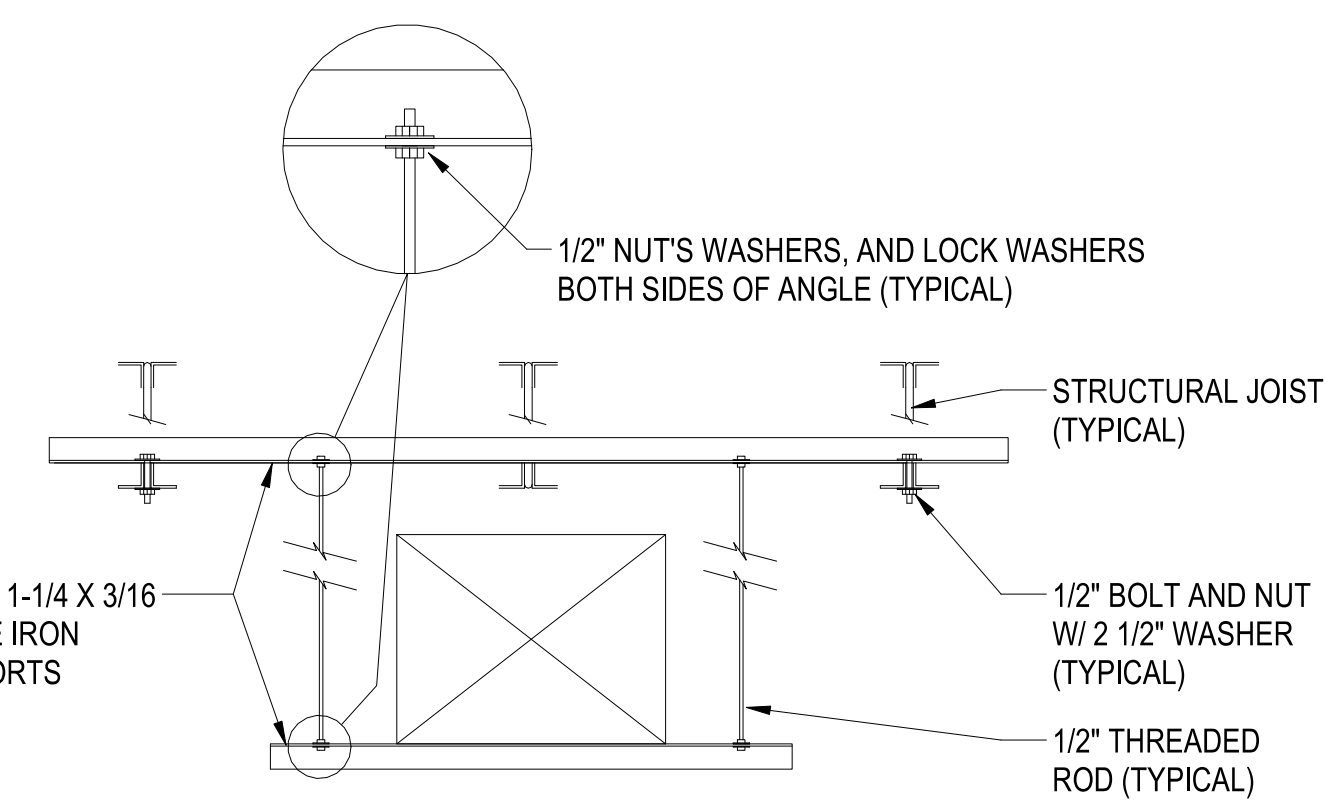
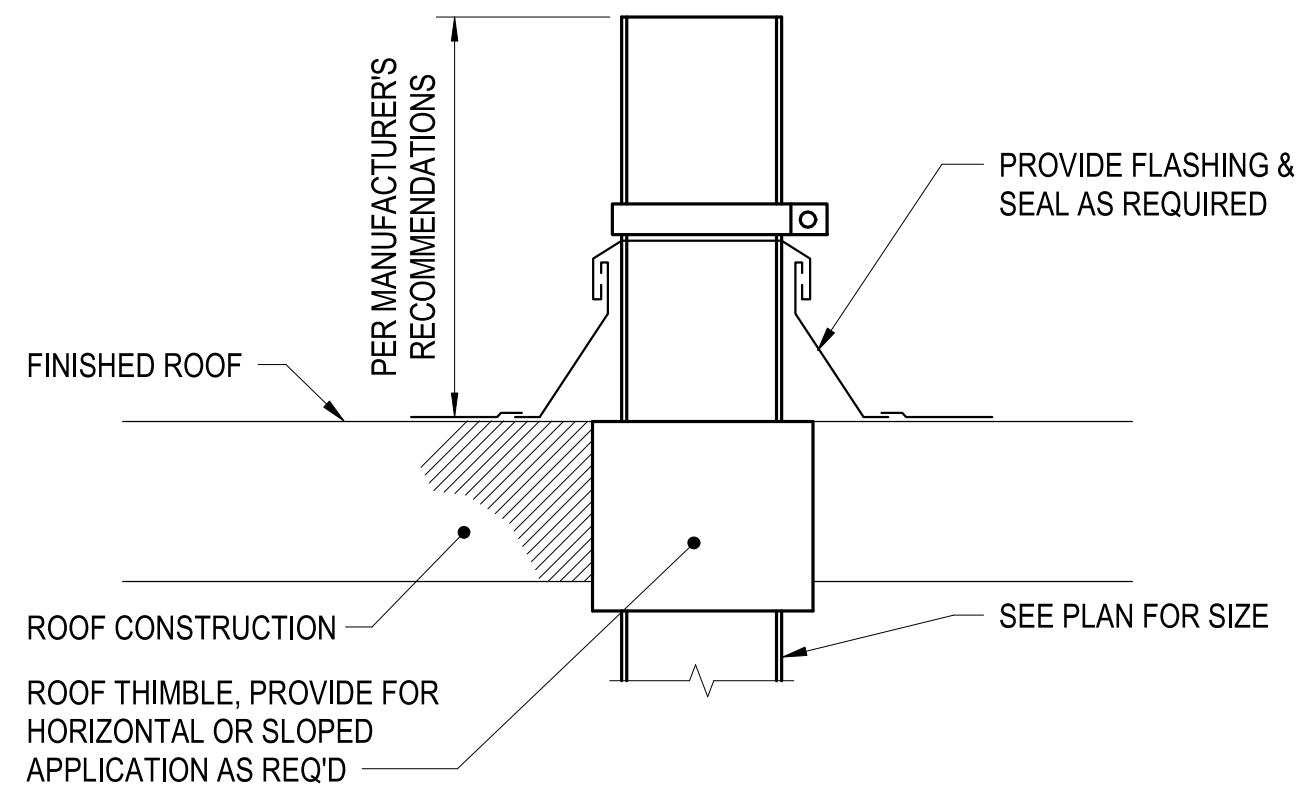
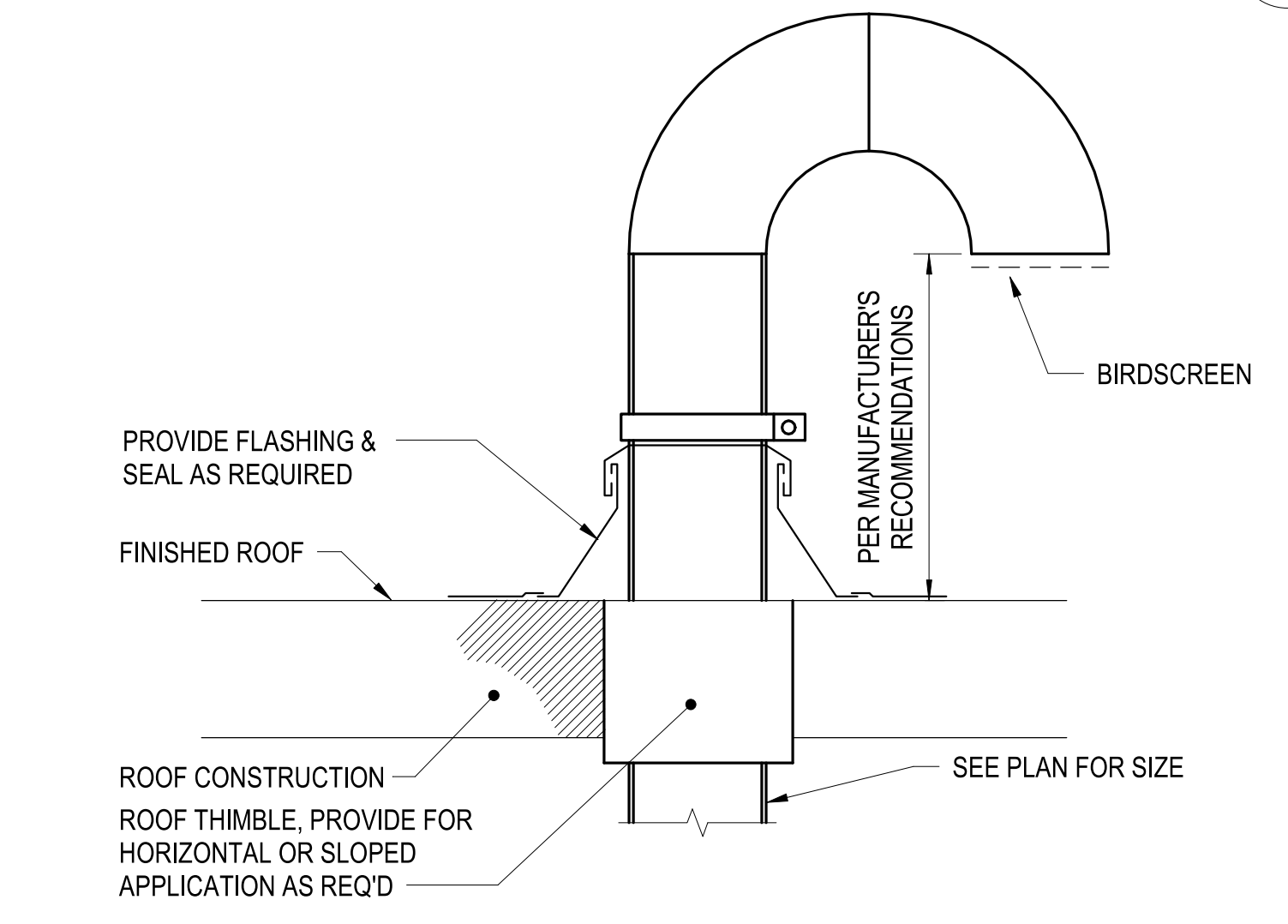
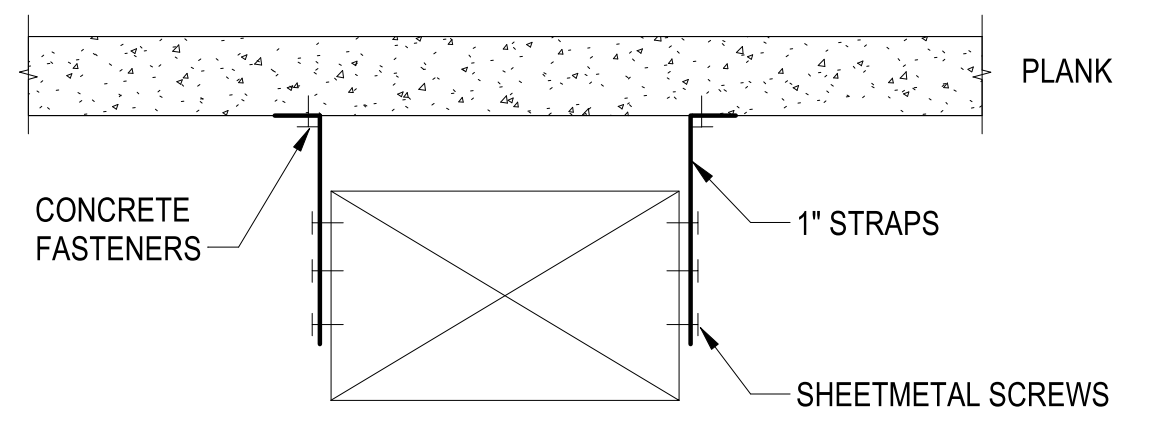
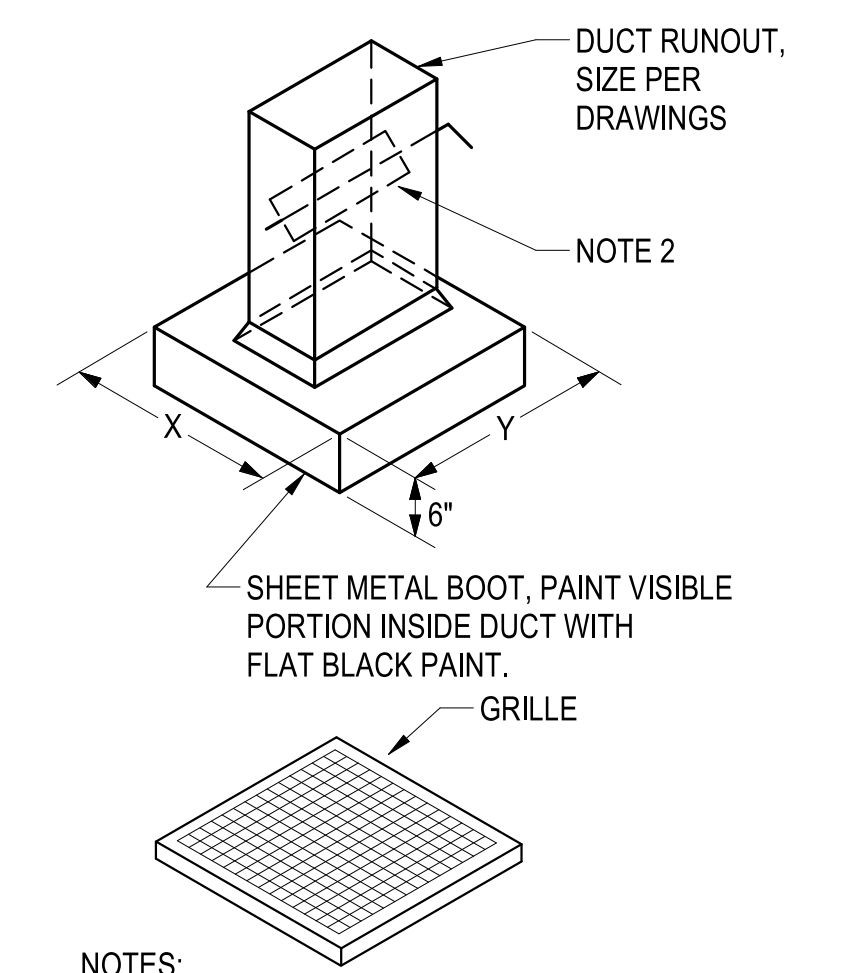
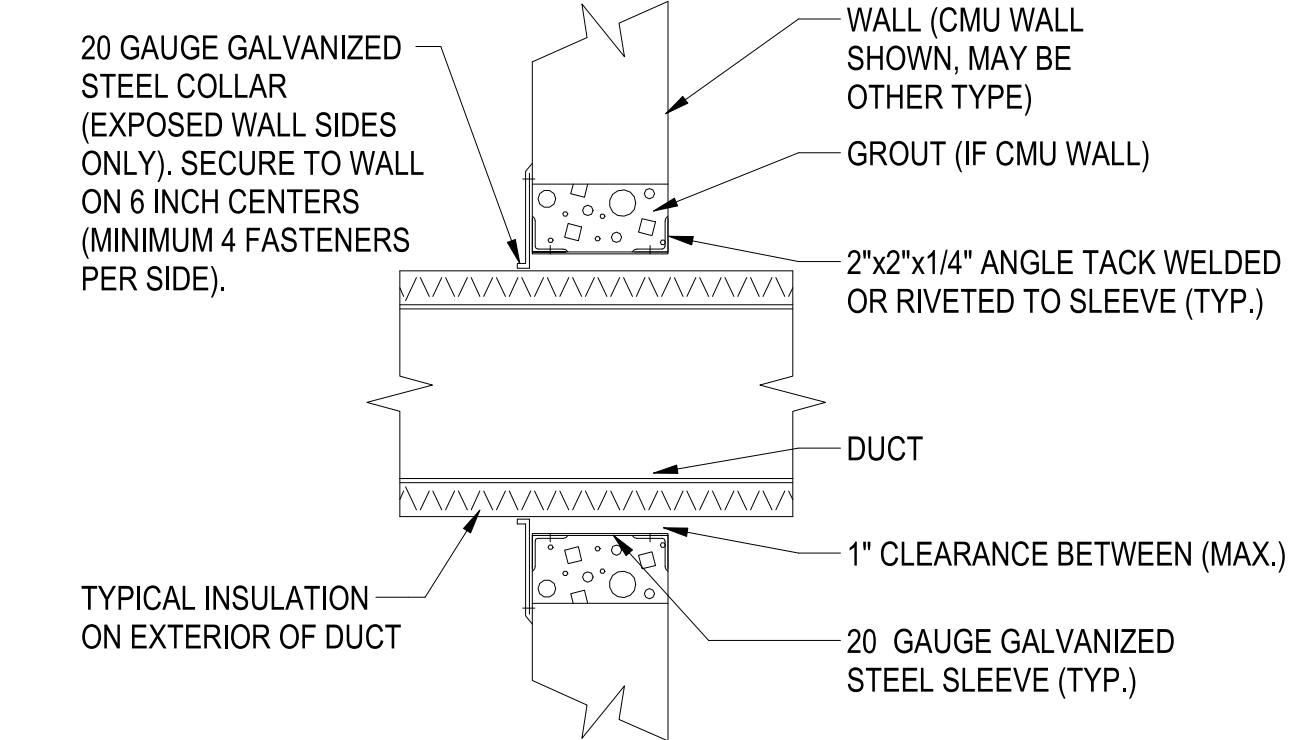
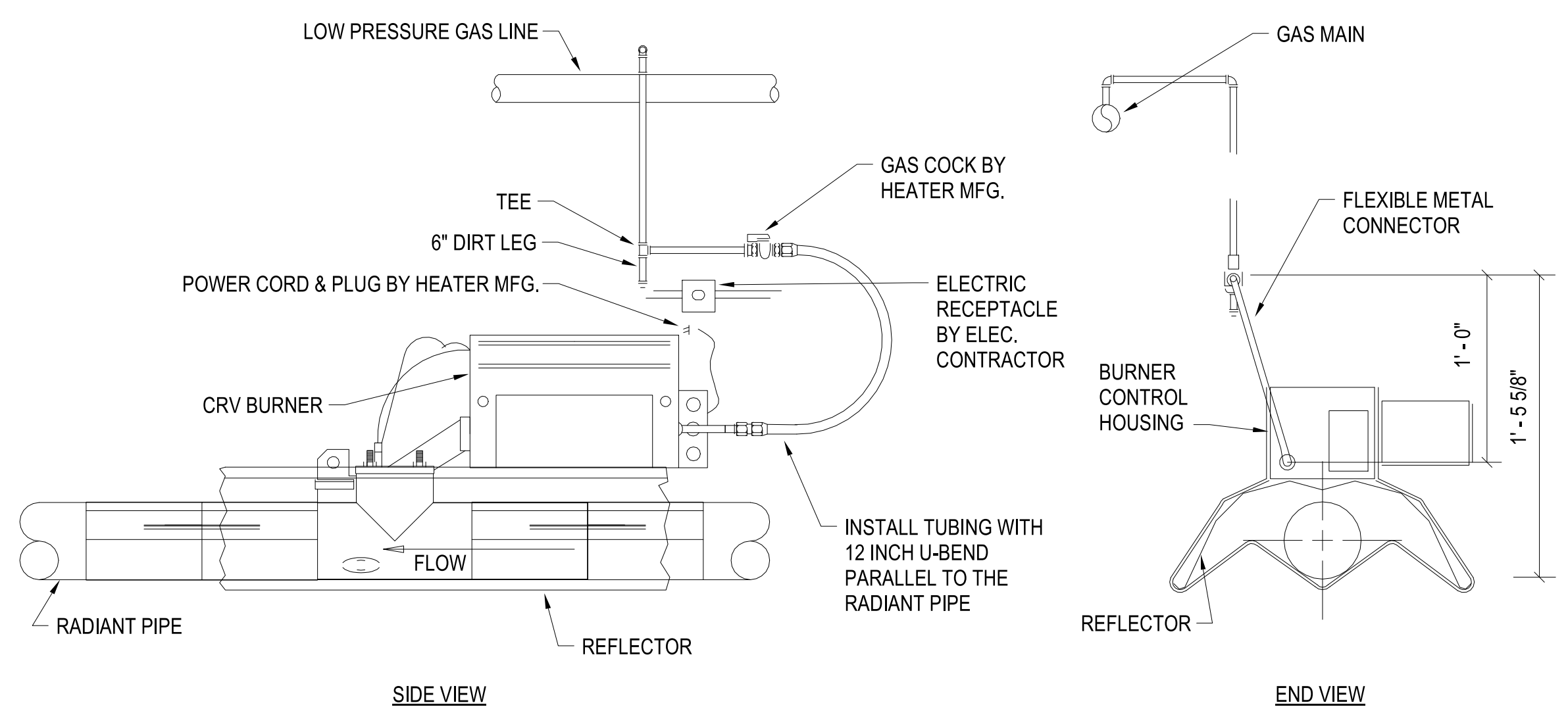
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APPR	
DATE	
DESCRIPTION	
SYM	
PRELIMINARY NOT FOR CONSTRUCTION	
Michael Baker INTERNATIONAL 100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED	
FOR COMMANDER NAVFAC ACTIVITY MARINE CORPS BASE CAMP LEJEUNE	
SATISFACTORY TO DATE DD/MM/YY DES EMB DRW AJK CHK DWH	
PM BRANCH HEAD DESIGN DIRECTOR FIRE PROTECTION	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC DESIGN AND CONSTRUCTION MCB CAMP LEJEUNE JACKSONVILLE, NC	
LOGCOM CSP WAREHOUSE MECHANICAL - DETAILS	
SCALE:	AS NOTED
EPROJCT NO.:	1639600
CONSTR. CONTR. NO.:	N40085-20-C-0059
NAVFAC DRAWING NO.:	17250095
SHEET	241 OF
M-502	

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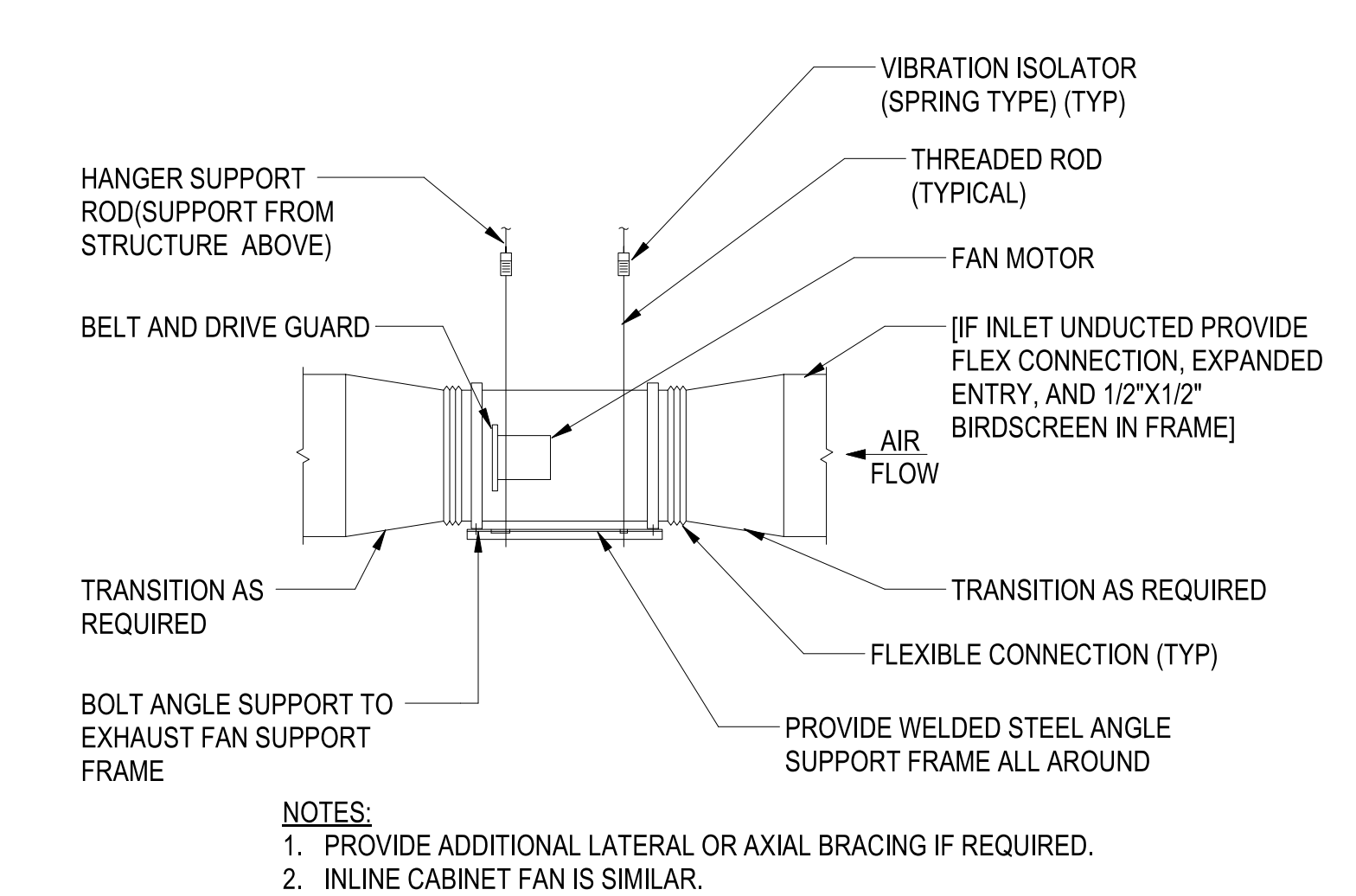
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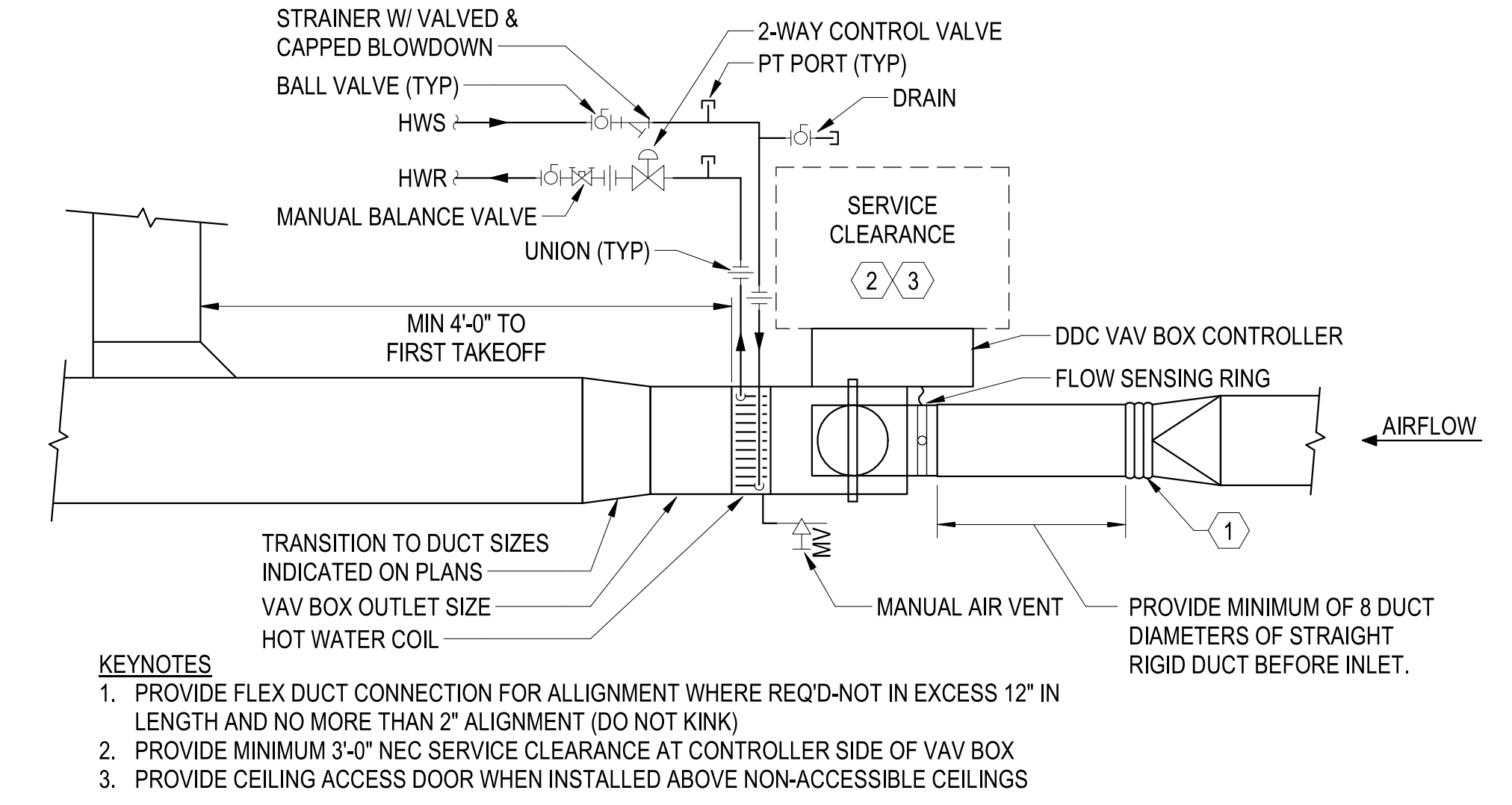
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INLINE FAN DETAIL

SCALE: NTS

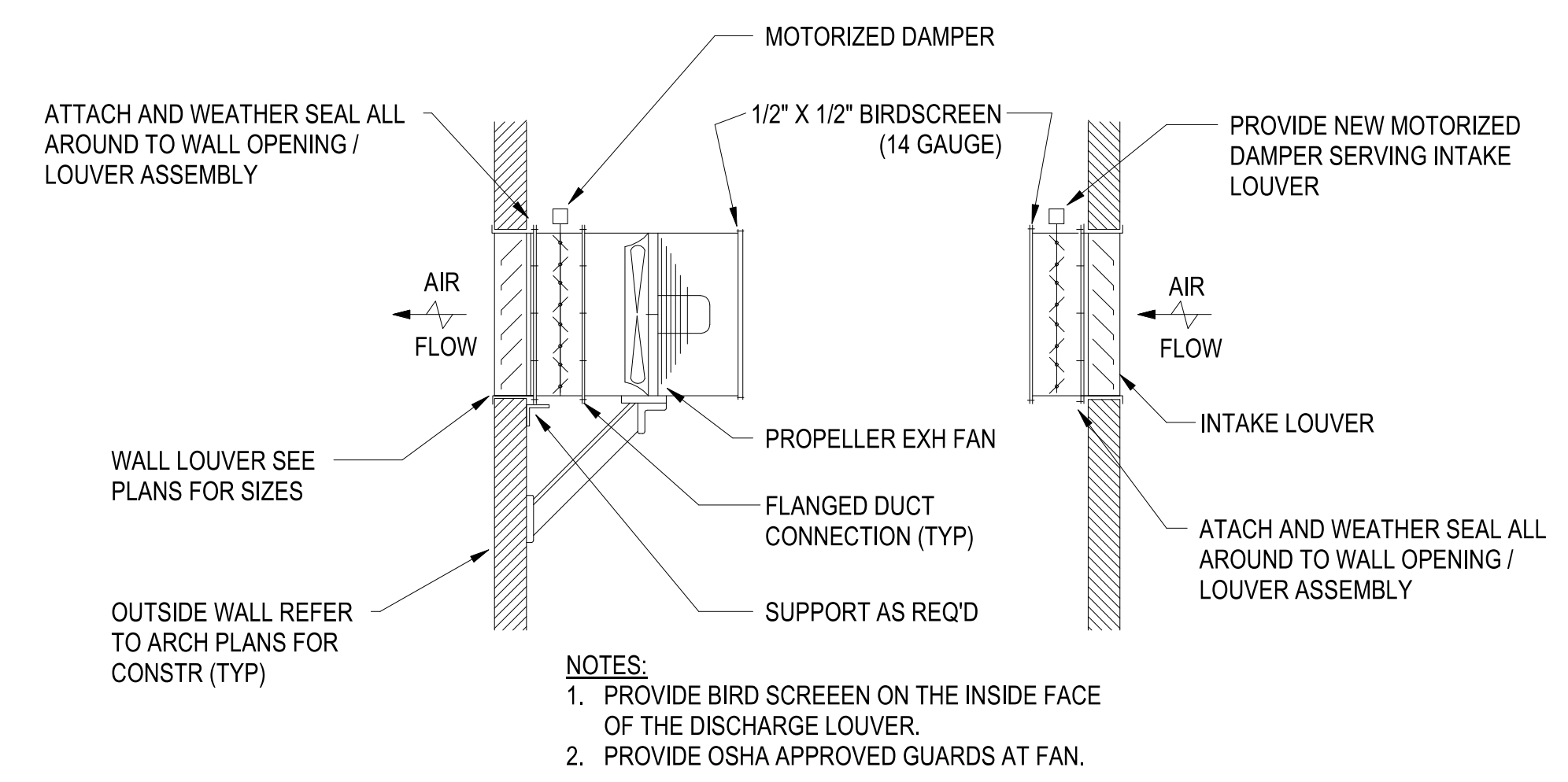
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VARIABLE AIR VOLUME (VAV) BOX DETAIL

SCALE: NTS

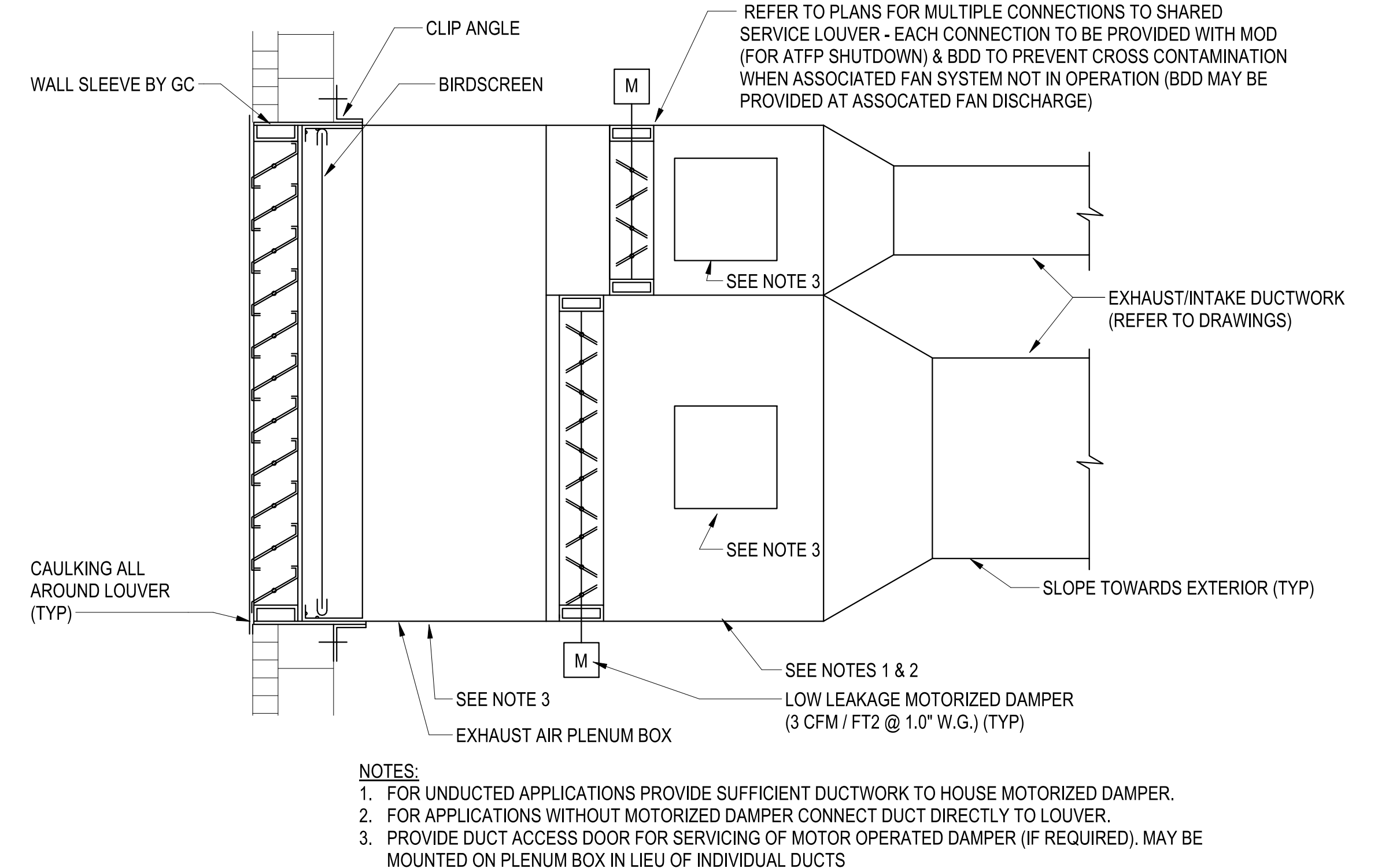
C4



WALL PROPELLER EXHAUST FAN AND ASSOCIATED INTAKE LOUVER/DAMPER ASSEMBLY DETAIL

SCALE: NTS

A1



SHARED SERVICE LOUVER W/ PLENUM BOX AND MOTORIZED DAMPER DETAIL

SCALE: NTS

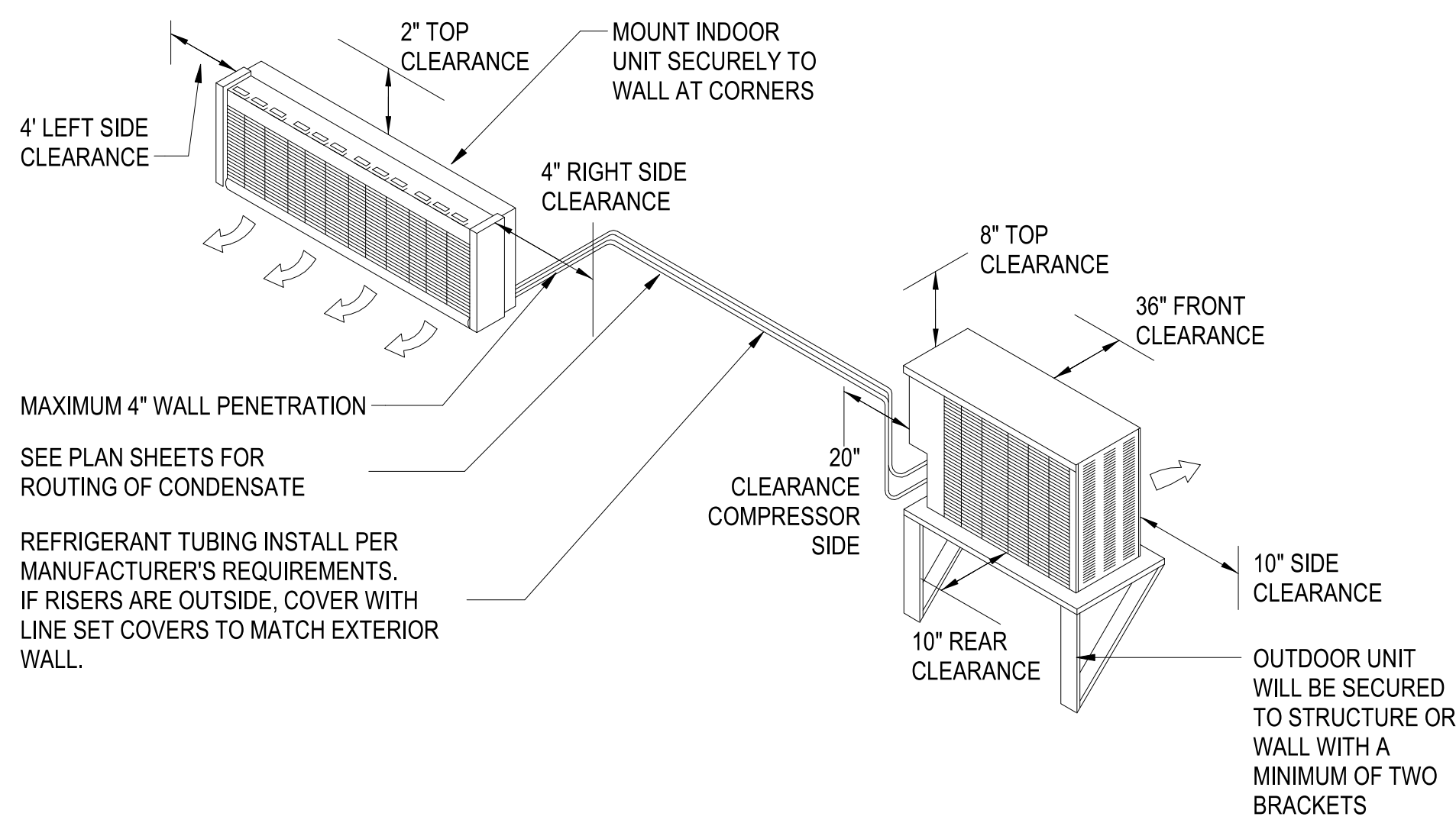
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DESCRIPTION	DATE
SYN	DATE
PRELIMINARY NOT FOR CONSTRUCTION	
Michael Baker INTERNATIONAL 100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED	
FOR COMMANDER NAVFAC	
ACTIVITY	
MARINE CORPS BASE CAMP LEJEUNE	
SATISFACTORY TO DATE DD/MM/YY	
DES EMB	DRW AJK CHK DWH
BRANCH HEAD	
DESIGN DIRECTOR	
FIRE PROTECTION	
DEPARTMENT OF THE NAVY	JACKSONVILLE, NC
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND	JACKSONVILLE, NC
ATLANTIC DESIGN AND CONSTRUCTION	JACKSONVILLE, NC
MCB CAMP LEJEUNE	JACKSONVILLE, NC
LOGCOM CSP WAREHOUSE	JACKSONVILLE, NC
MECHANICAL - DETAILS	
SCALE:	AS NOTED
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SHEET	242 OF
M-503	

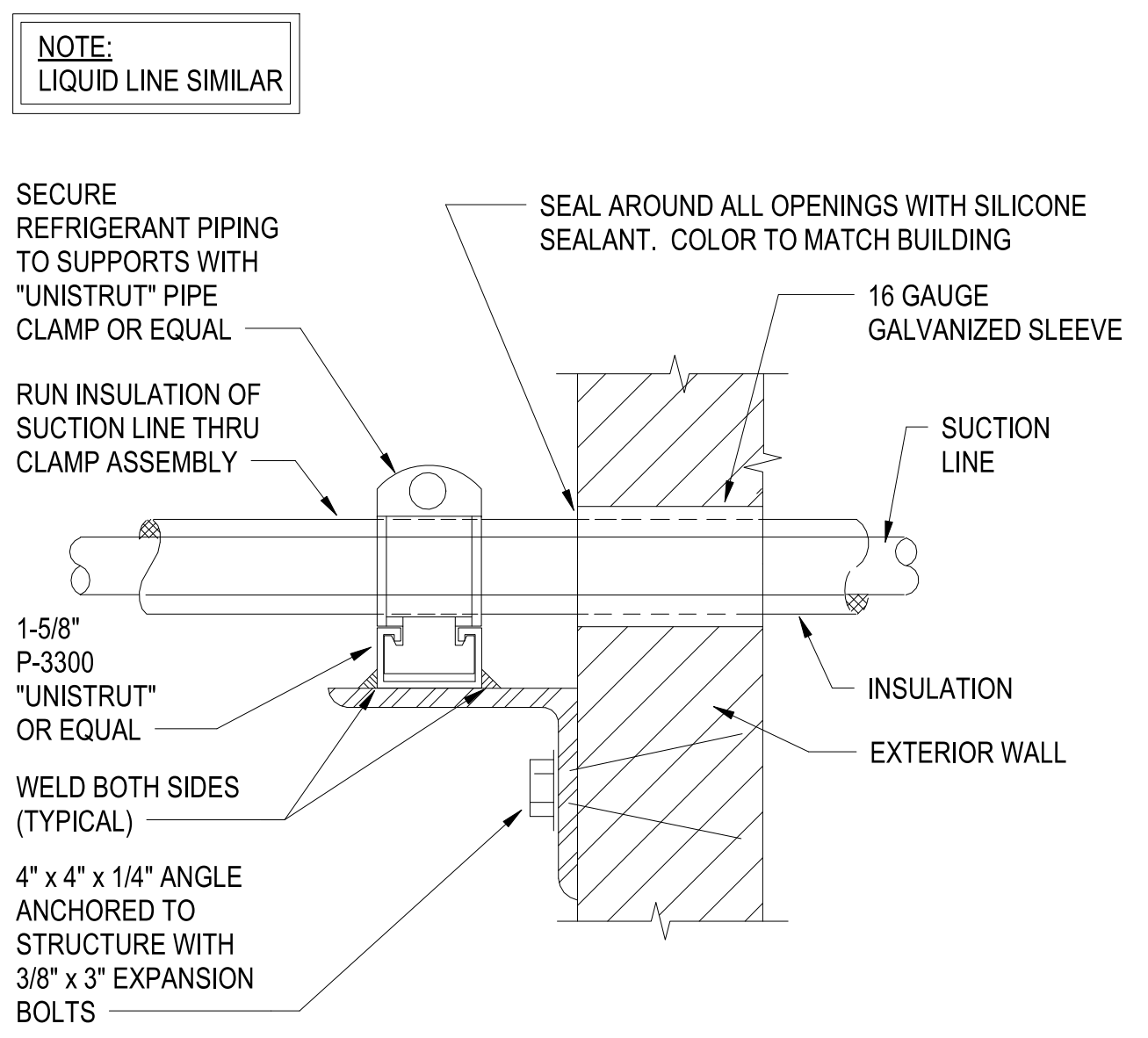
P-1527 PREFINAL SUBMISSION - 08/06/2021



SPLIT SYSTEM AIR CONDITIONING UNIT (DUCTLESS)

SCALE: NTS

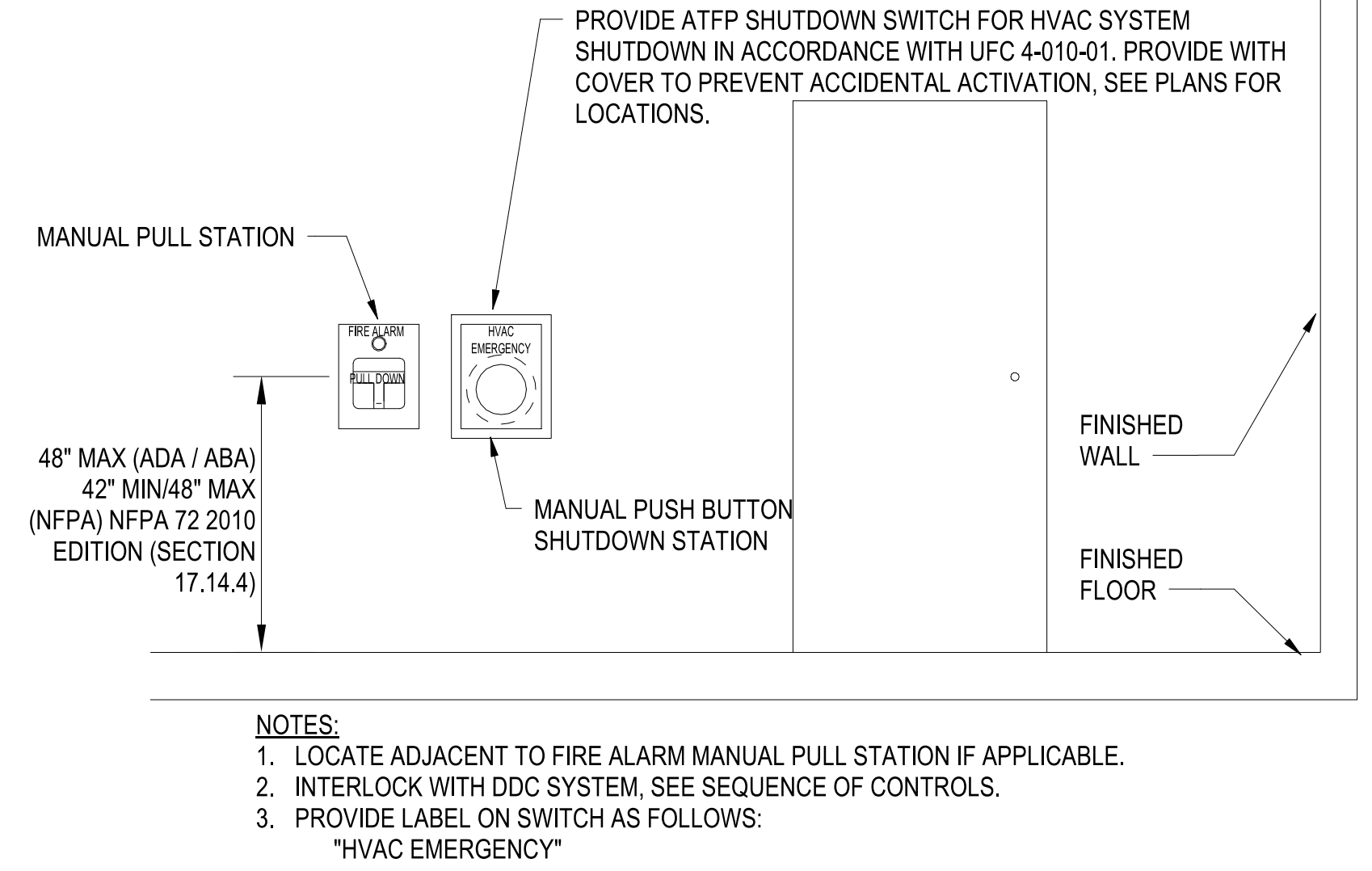
C1



EXTERIOR WALL PENETRATION DETAIL

SCALE: NTS

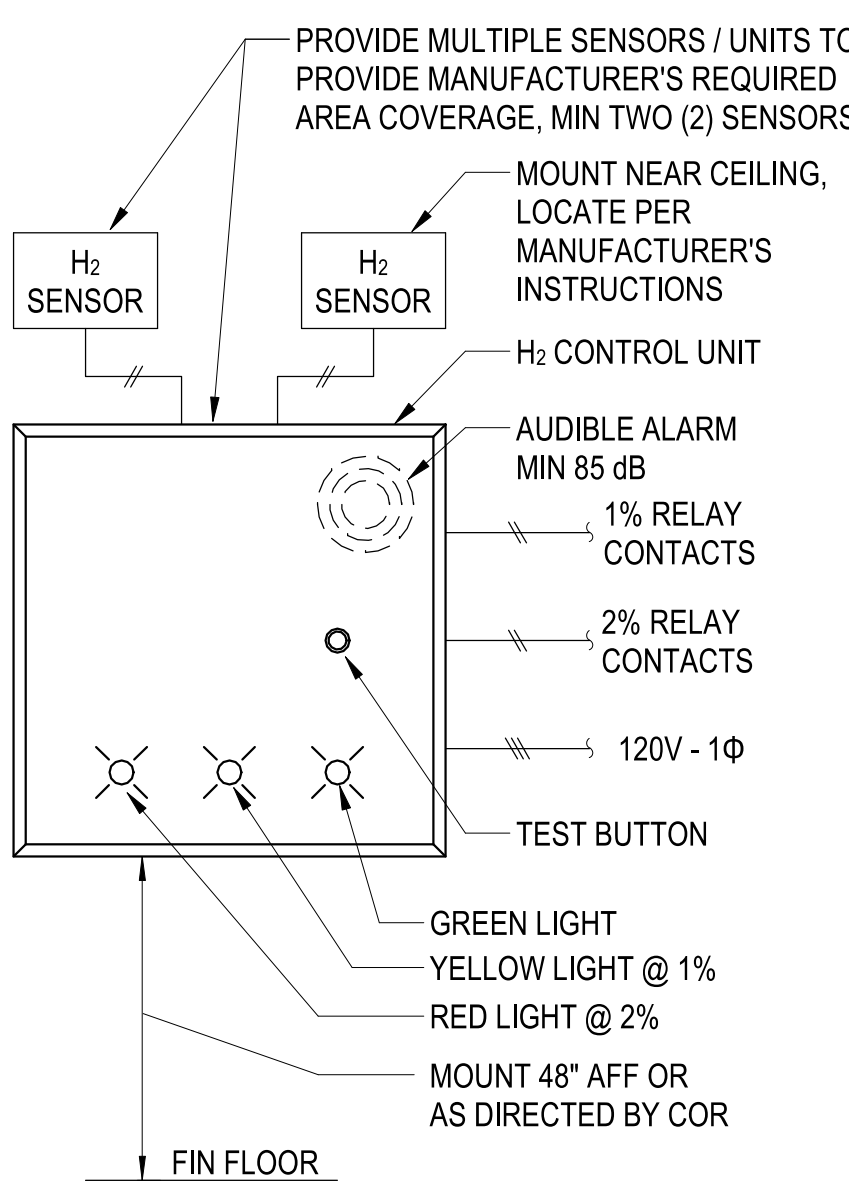
C3



HVAC SHUTDOWN STATION INSTALLATION DETAIL

SCALE: NTS

C4



HYDROGEN SENSOR DETAIL

SCALE: NTS

B1

SEQUENCE OF CONTROL

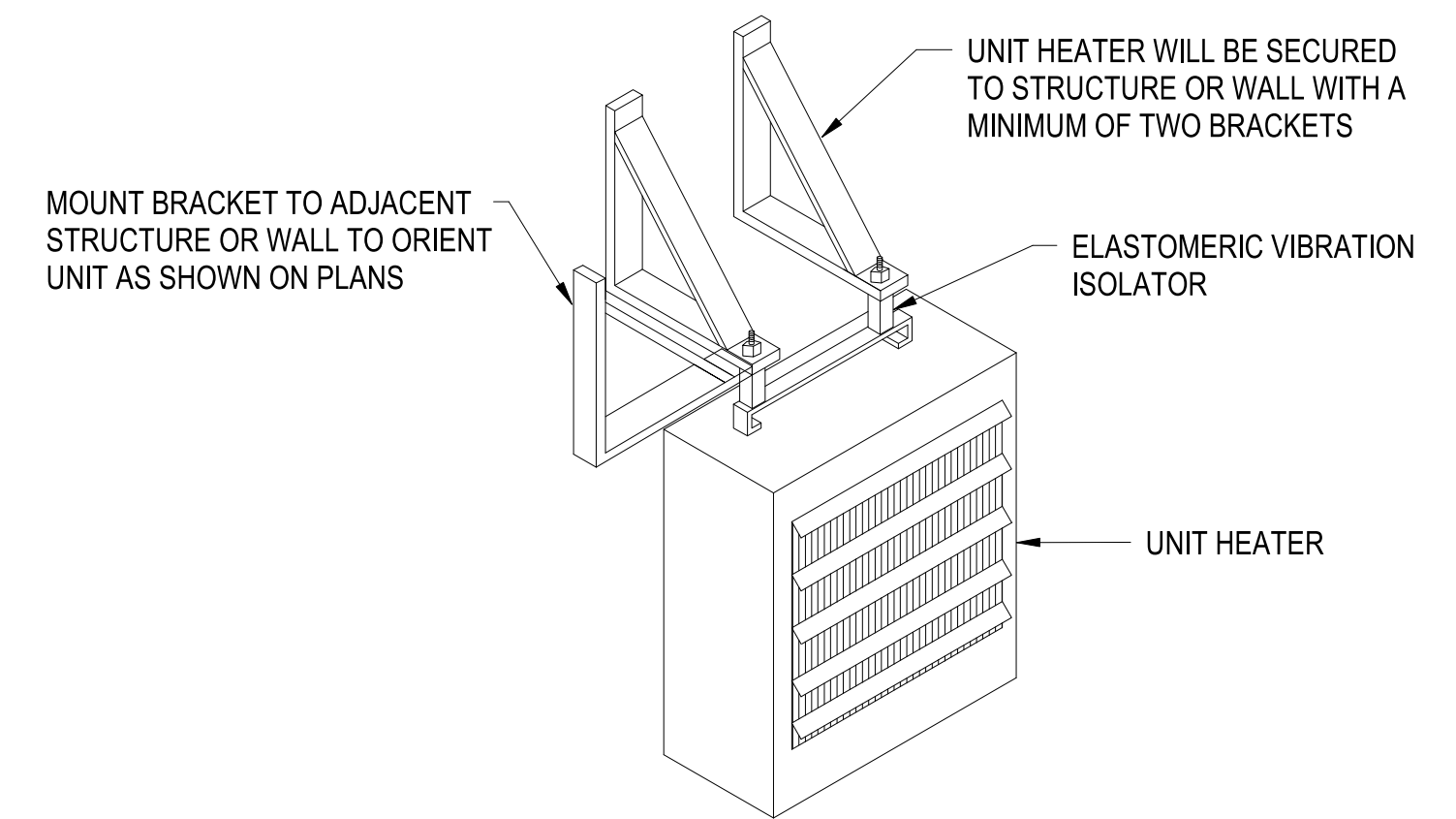
A HYDROGEN (H2) GAS DETECTION SYSTEM (STORAGE BATTERY SYSTEMS SBS-H2 HYDROGEN MONITORING SYSTEM OR EQUAL) SHALL BE INSTALLED IN THE BATTERY CHARGING AREA CONSISTING OF A WALL MOUNTED CENTRAL CONTROLLER WITH AUDIBLE AND VISIBLE ALARMS AND RELAYS FOR REMOTE ALARM AND SYSTEM CONTROL. THE HYDROGEN (H2) SENSOR(S) SHALL BE LOCATED AT THE ROOF LEVEL PER MANUFACTURER'S INSTRUCTIONS DIRECTLY ABOVE THE CHARGING STATION(S). PROVIDE MULTIPLE SENSORS/UNITS TO PROVIDE MANUFACTURER'S REQUIRED AREA COVERAGE MINIMUM OF 2 SENSORS.

GREEN LIGHT SHALL INDICATE UNIT IS POWERED AND FUNCTIONING CORRECTLY.

UPON DETECTION OF H2 LEVELS AT 1% LEVEL (WARNING LEVEL) THE CENTRAL H2 SYSTEM CONTROLLER SHALL INDICATE A YELLOW WARNING SIGNAL AND A WARNING RELAY SIGNAL SHALL BE SENT TO THE DDC SYSTEM TO INITIATE OPERATION OF THE HEATING AND VENTILATING SYSTEM (AHU-02) DURING UNOCCUPIED HOURS.

UPON DETECTION OF H2 LEVELS AT 2% LEVEL (ALARM LEVEL) THE CENTRAL H2 SYSTEM CONTROLLER SHALL INDICATE A RED WARNING SIGNAL COUPLED WITH AN AUDIBLE ALARM. AN ALARM RELAY SIGNAL SHALL DISABLE POWER TO THE BATTERY CHARGING SYSTEM, AND AN ALARM SIGNAL SHALL BE SENT TO THE FIRE ALARM SYSTEM. THE HEATING AND VENTILATING SYSTEM (AHU-02) SHALL CONTINUE TO OPERATE.

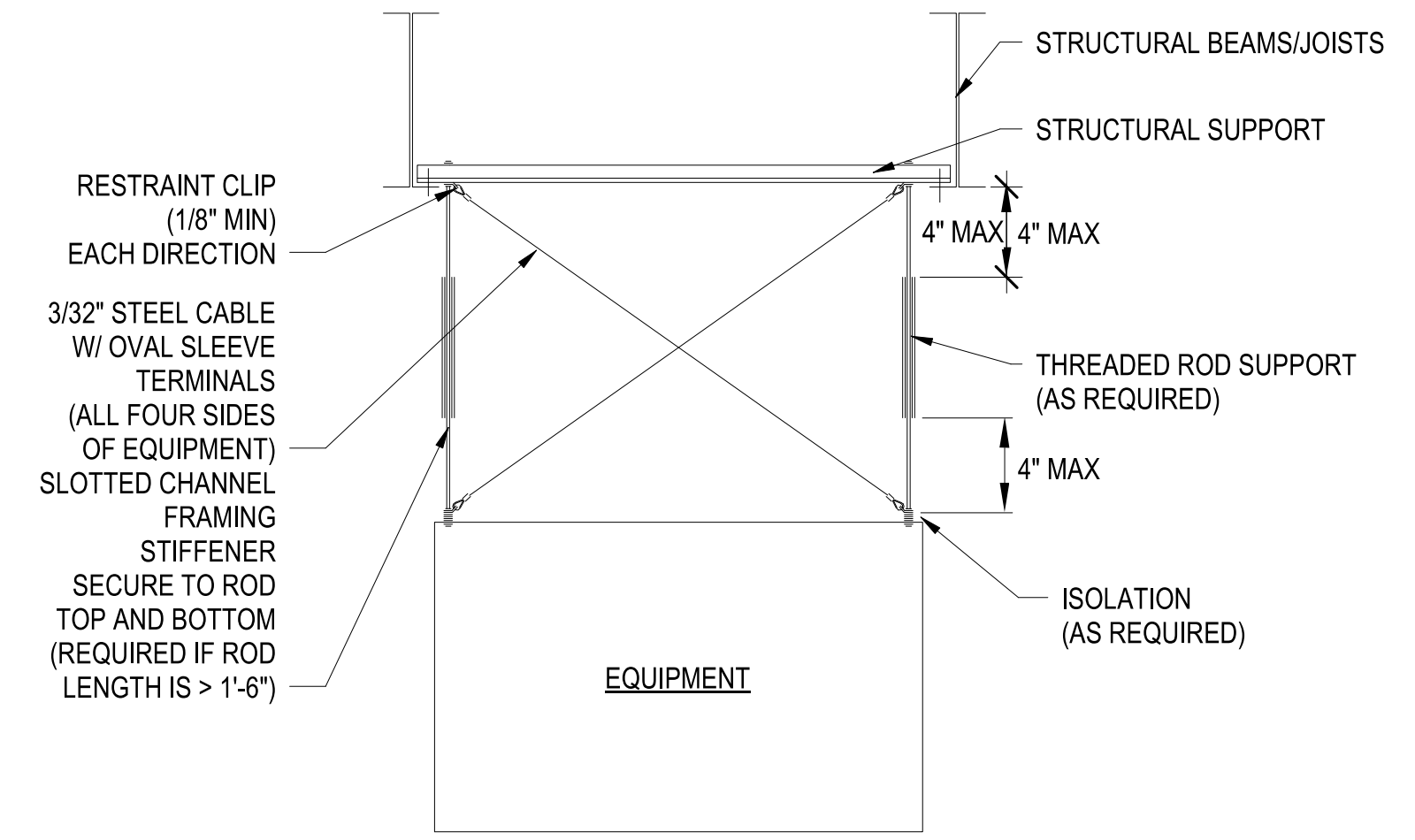
UPON LEVELS OF HYDROGEN LOWERING THE SEQUENCE SHALL REVERSE.



ELECTRIC UNIT HEATER DETAIL

SCALE: NTS

B3



** 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 EQUIPMENT BRACING DETAIL

SCALE: NTS

B4

FILE NAME: BIM 360/HF PACKAGE 3PT1527 LOG COM CSP-1639600-M.rvt

PLOTTED: 8/4/2021 12:18:28 PM

APPR	
DATE	
SYN	
DESCRIPTION	
PRELIMINARY NOT FOR CONSTRUCTION	
100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 A/E/IN/PD	
APPROVED	
FOR COMMANDER NAVFAC	
ACTIVITY	MARINE CORPS BASE CAMP LEJEUNE
SATISFACTORY TO DATE	DD/MM/YYYY
DES EMB	DRW KC CHK DWH
PM	
BRANCH HEAD	
DESIGN DIRECTOR	
FIRE PROTECTION	
DEPARTMENT OF THE NAVY	NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC	NORFOLK, VA
ATLANTIC DESIGN AND CONSTRUCTION	JACKSONVILLE, NC
MCB CAMP LEJEUNE	LOGCOM CSP WAREHOUSE
	MECHANICAL - DETAILS
SCALE:	AS NOTED
EPROJCT NO.:	1639600
CONSTR. CONTR. NO.	N40085-20-C-0059
NAVFAC DRAWING NO.	
SHEET	OF
M-504	

P-1527 PREFINAL SUBMISSION - 08/06/2021

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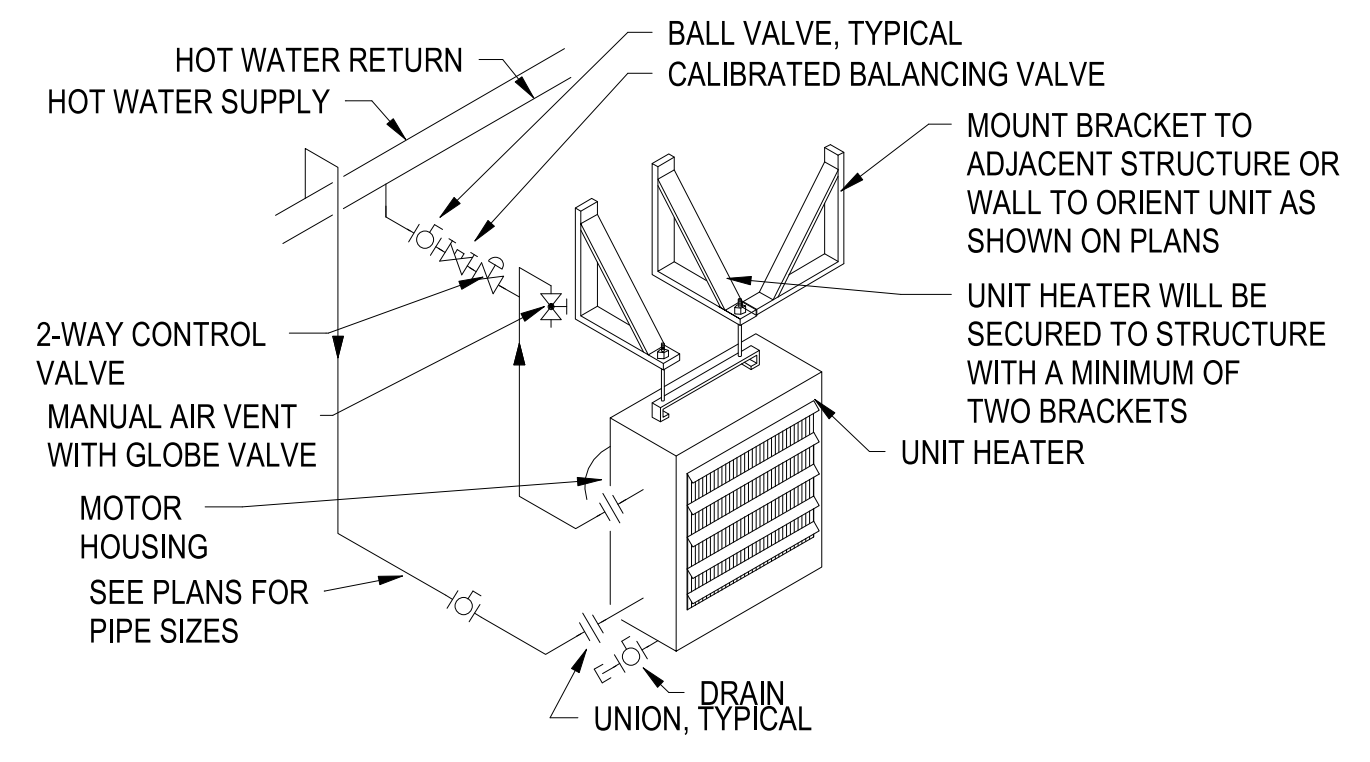
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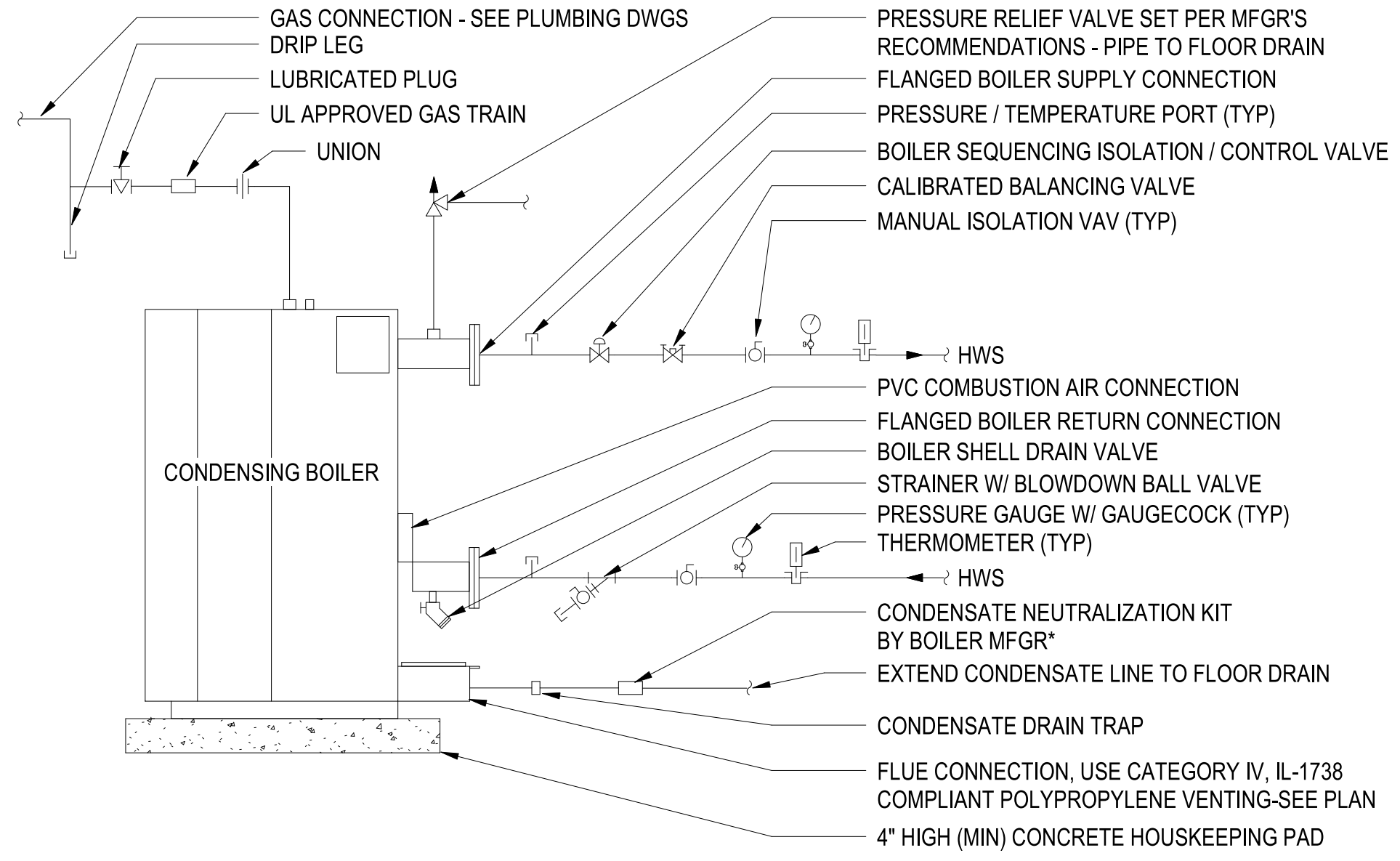
UNCLASSIFIED



HOT WATER UNIT HEATER DETAIL

SCALE: NTS

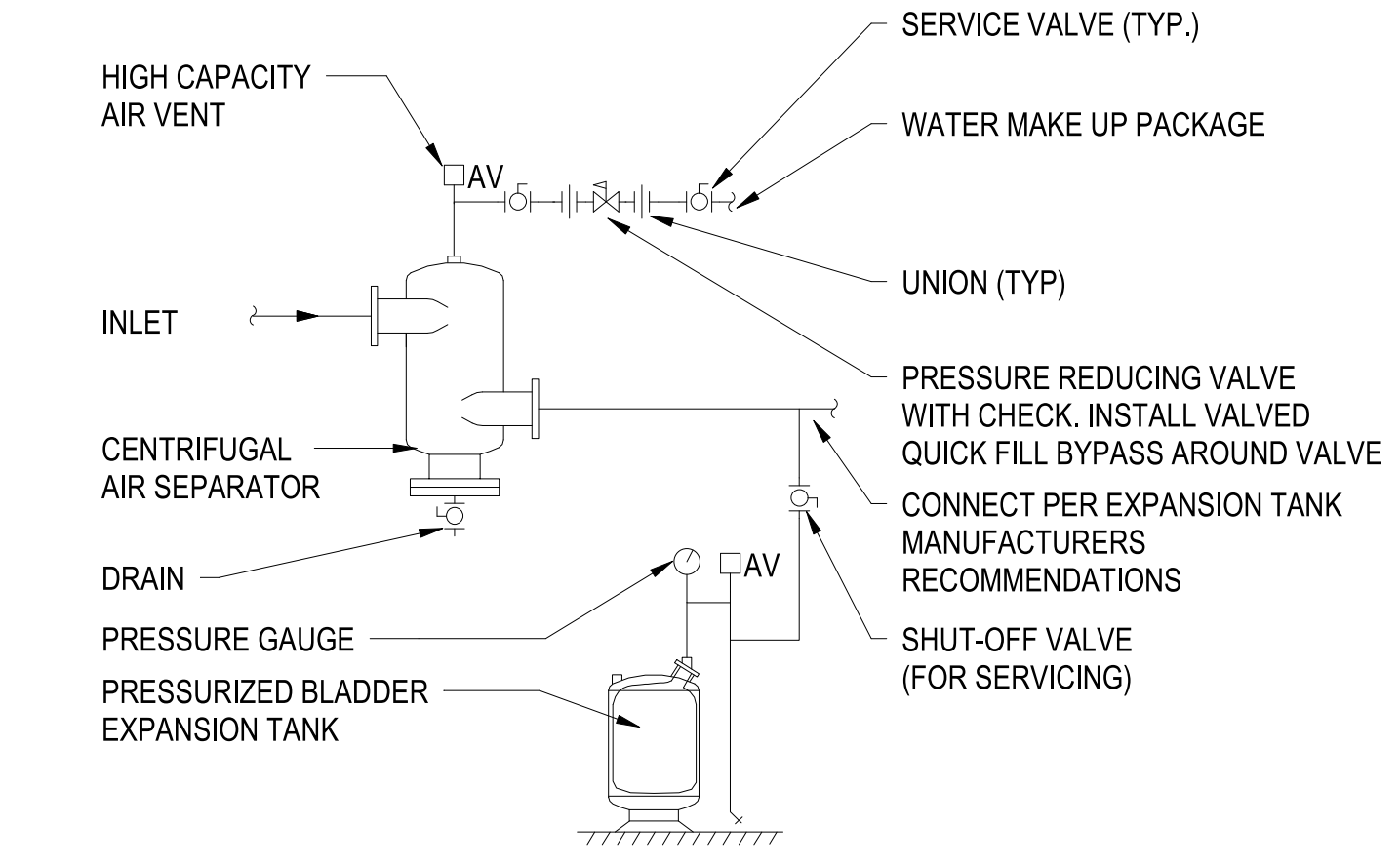
C1



BOILER PIPING DETAIL

SCALE: NTS

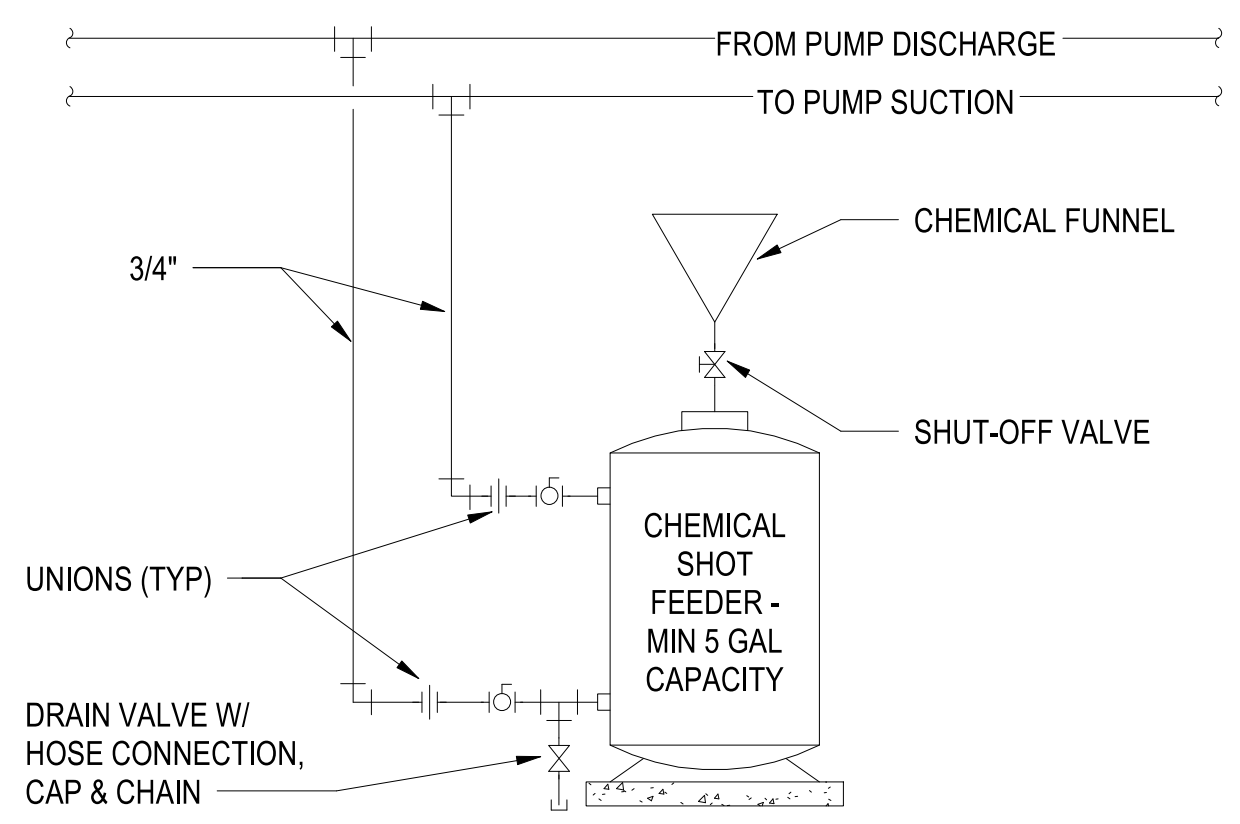
C4



HYDRONICS SYSTEM AIR SEPARATOR & EXPANSION TANK SYSTEM CONNECTION

SCALE: NTS

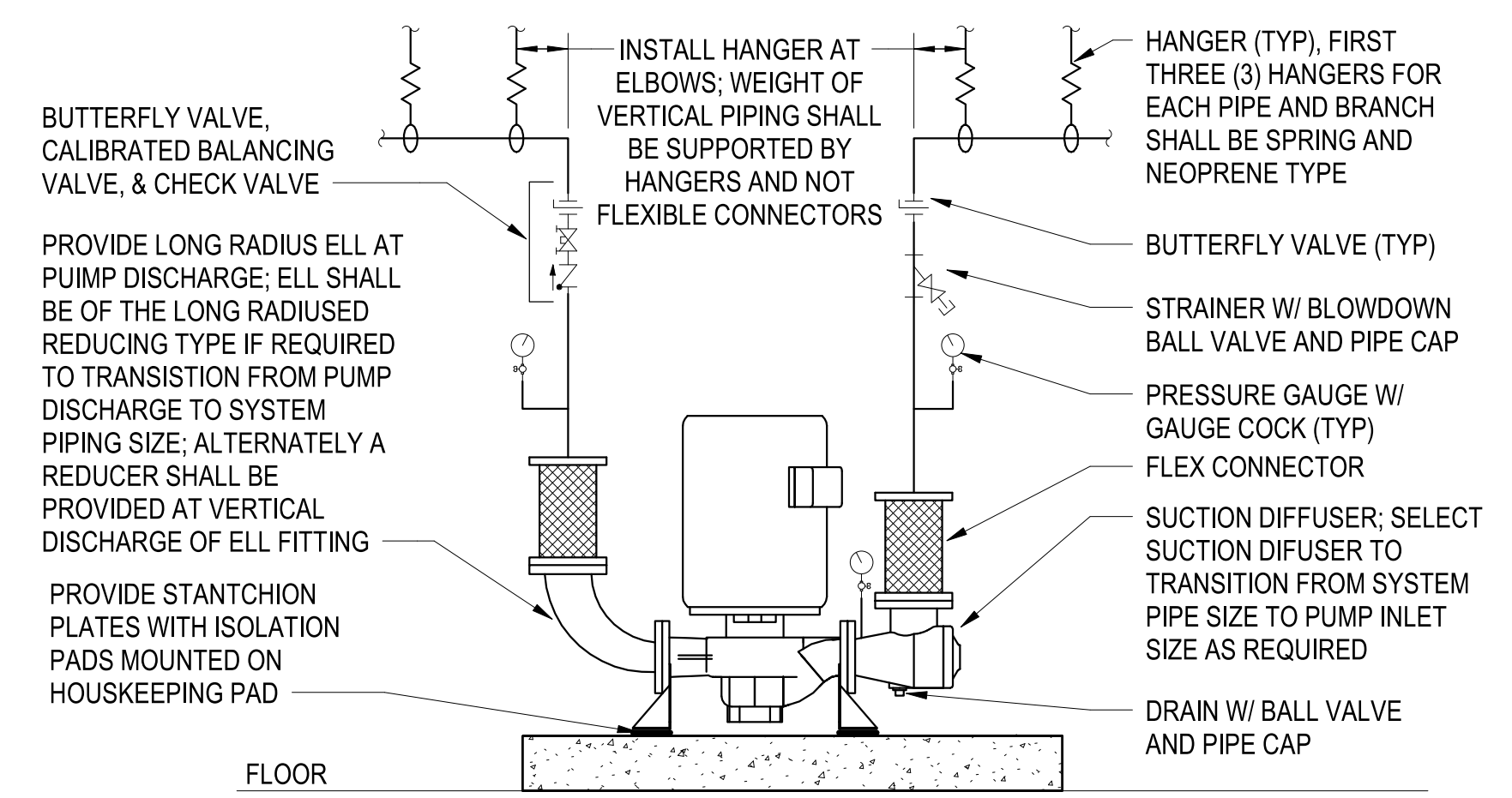
B1



CHEMICAL SHOT FEEDER DETAIL

SCALE: NTS

B2

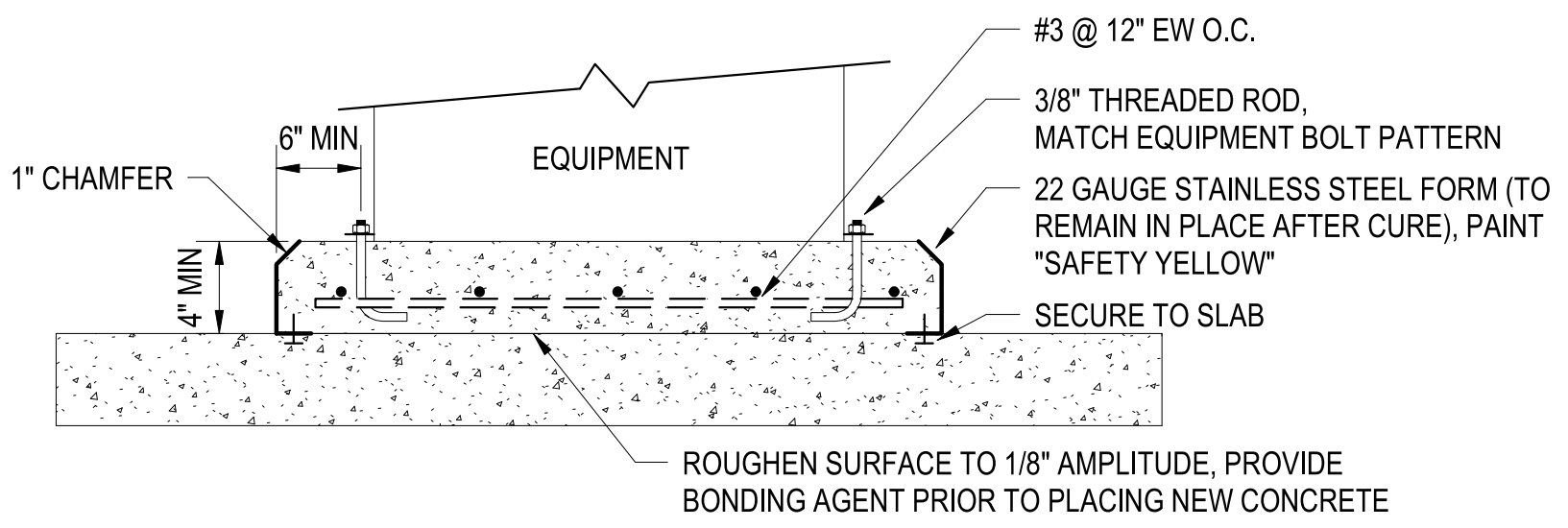


FLOOR SUPPORTED INLINE PUMP DETAIL

SCALE: NTS

M-702

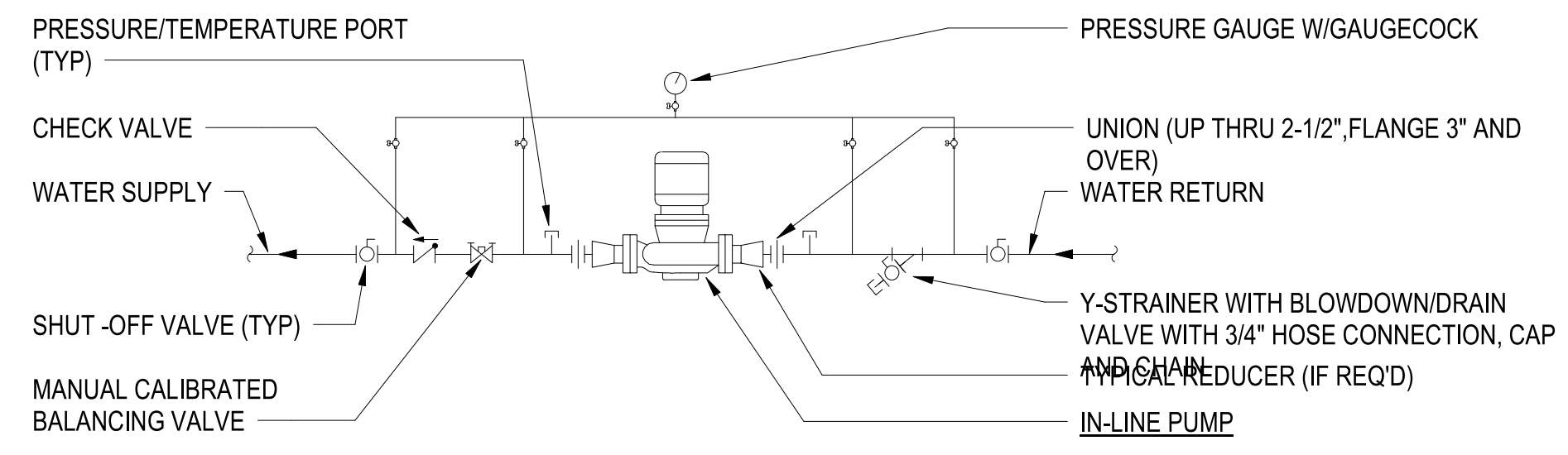
B4



EQUIPMENT PAD DETAIL

SCALE: NTS

A2



IN-LINE PUMP DETAIL

SCALE: NTS

M-703

A4

NOTE: SUPPORT PUMP FROM WALL, FLOOR, OR ROOF STEEL, DO NOT PIPE SUPPORT.

FILE NAME: BIM_360/HF_PACKAGE_3P1527.LOG.COM.CSP-1639604.MXD

PLOTTED: 8/4/2021 12:18:29 PM

DATE	APPR
DATE	APPR
SYN	DESCRIPTION
PRELIMINARY NOT FOR CONSTRUCTION	
Michael Baker INTERNATIONAL 100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED	
FOR COMMANDER NAVFAC	
ACTIVITY MARINE CORPS BASE CAMP LEJEUNE	
SATISFACTORY TO DATE: DD/MM/YY	
DES EMB	CHK DWH
PM	
BRANCH HEAD DESIGN DIRECTOR FIRE PROTECTION	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC DESIGN AND CONSTRUCTION MCB CAMP LEJEUNE JACKSONVILLE, NC	
LOGCOM CSP WAREHOUSE MECHANICAL - DETAILS	
SCALE:	AS NOTED
PROJECT NO.:	1639600
CONSTR. CONTR. NO.:	N40085-20-C-0059
NAVFAC DRAWING NO.:	
SHEET	OF
M-505	

P-1527 PRELIM SUBMISSION - 08/06/2021

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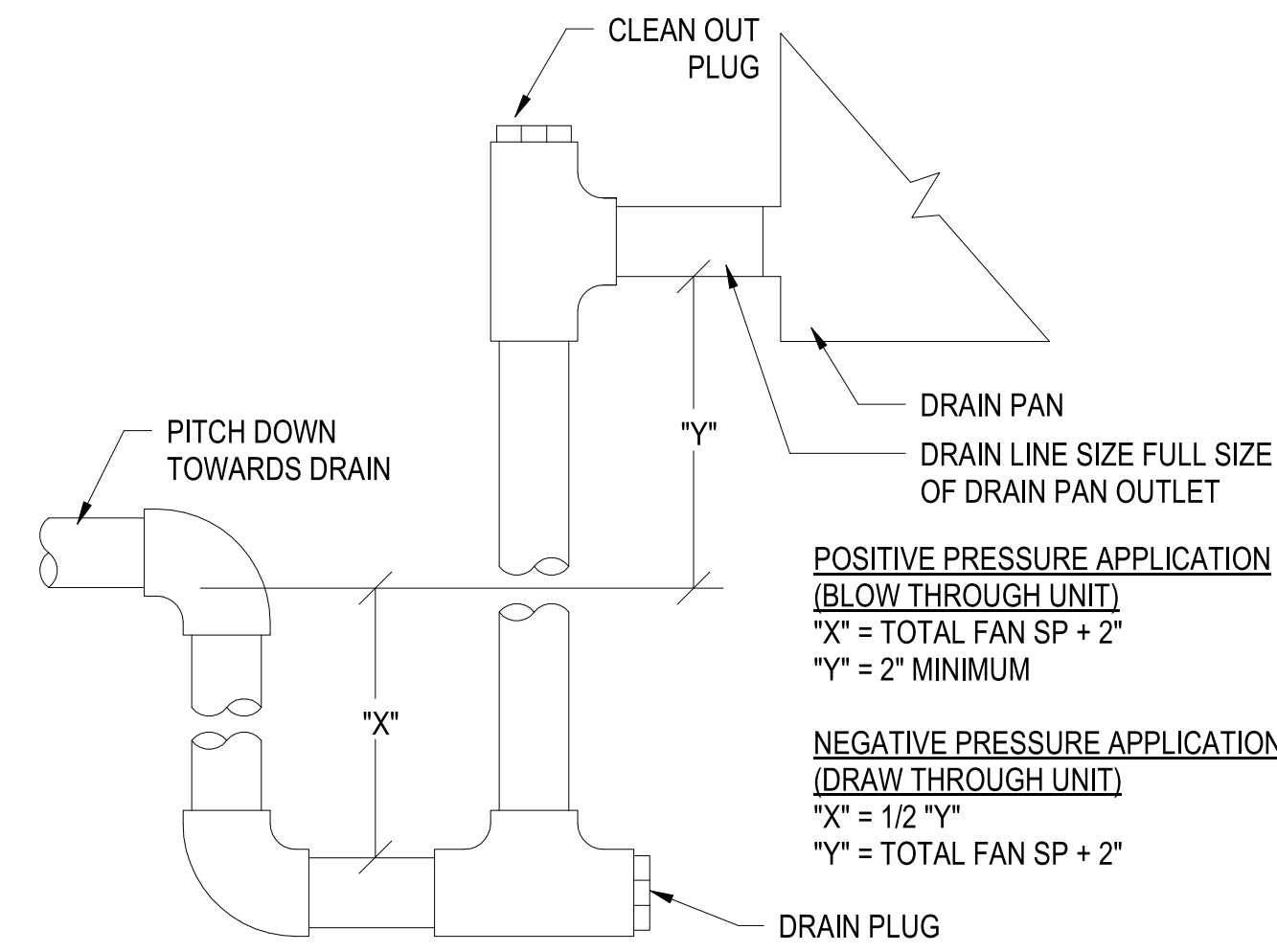
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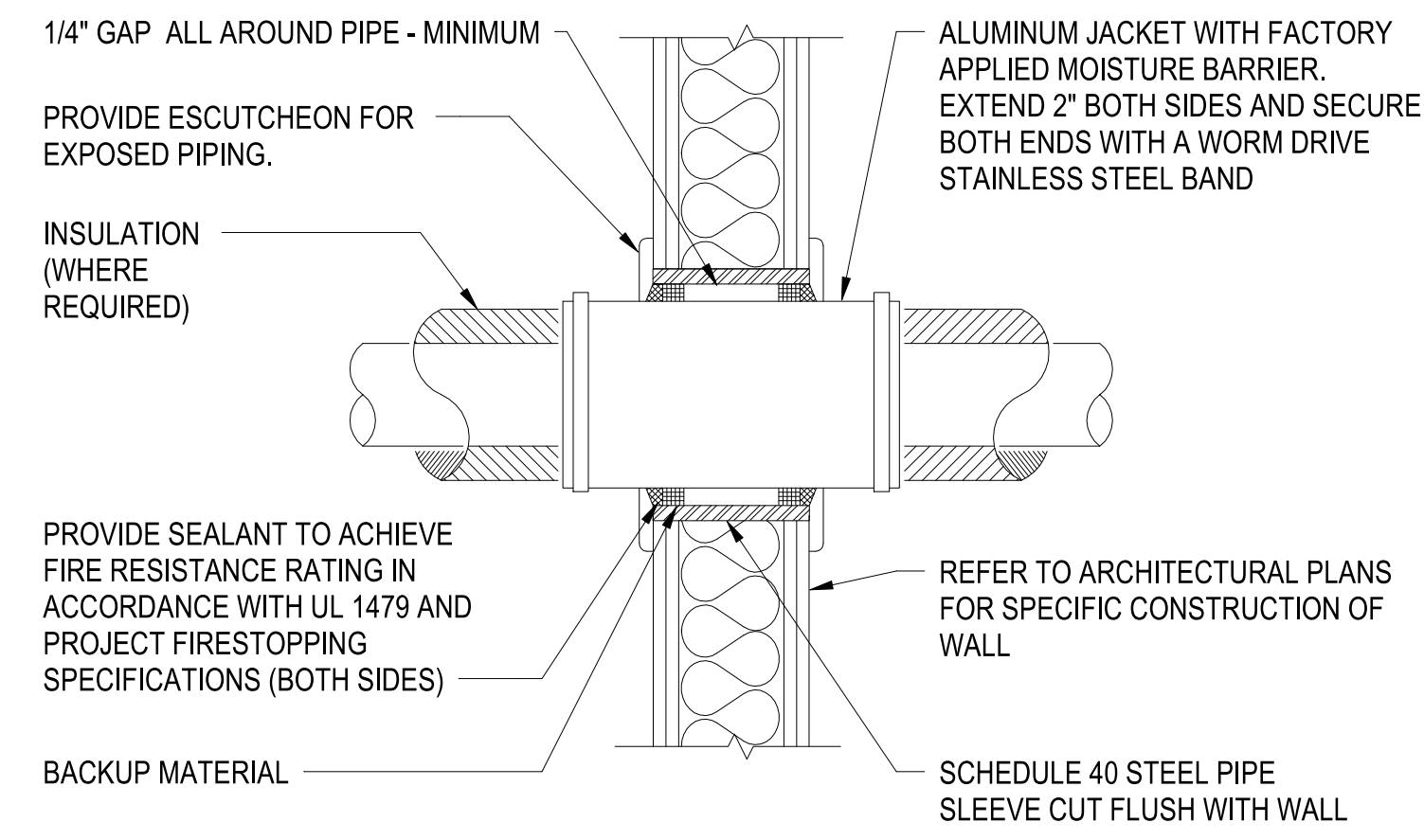
A



CONDENSATE TRAP/RAIN DETAIL

SCALE: NTS

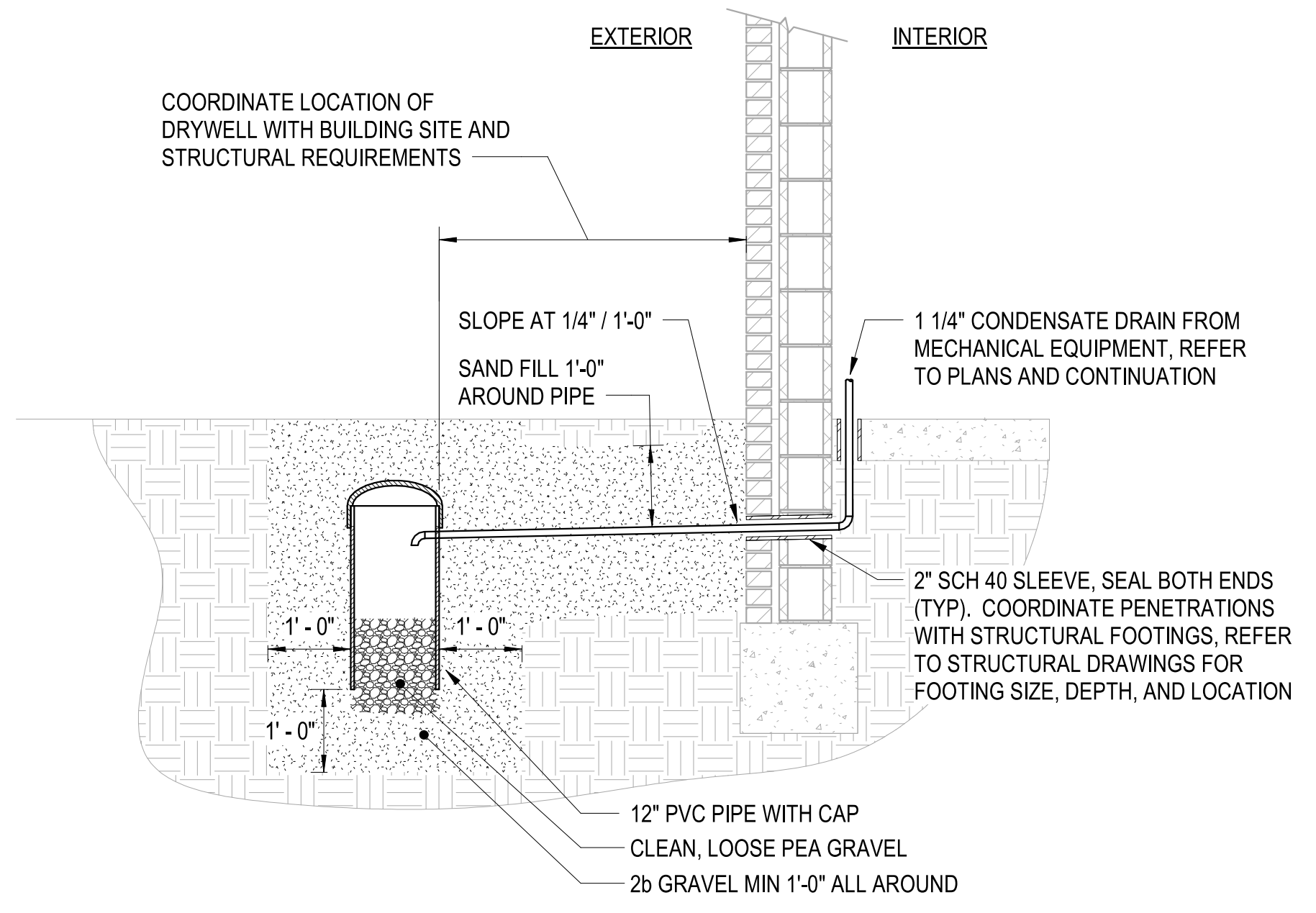
C1



WALL PENETRATION DETAIL

SCALE: NTS

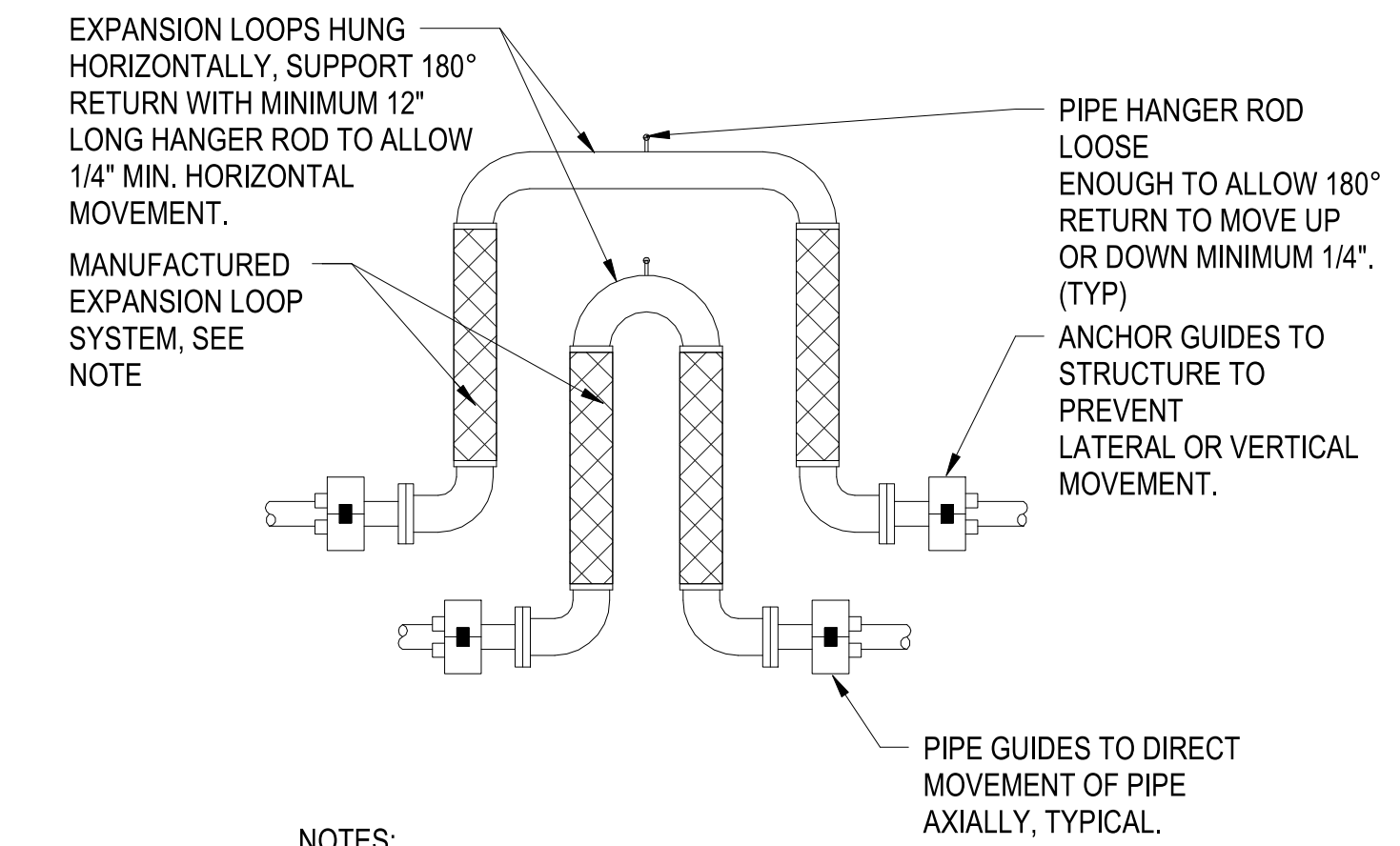
C2



DRYWELL DETAIL

SCALE: NTS

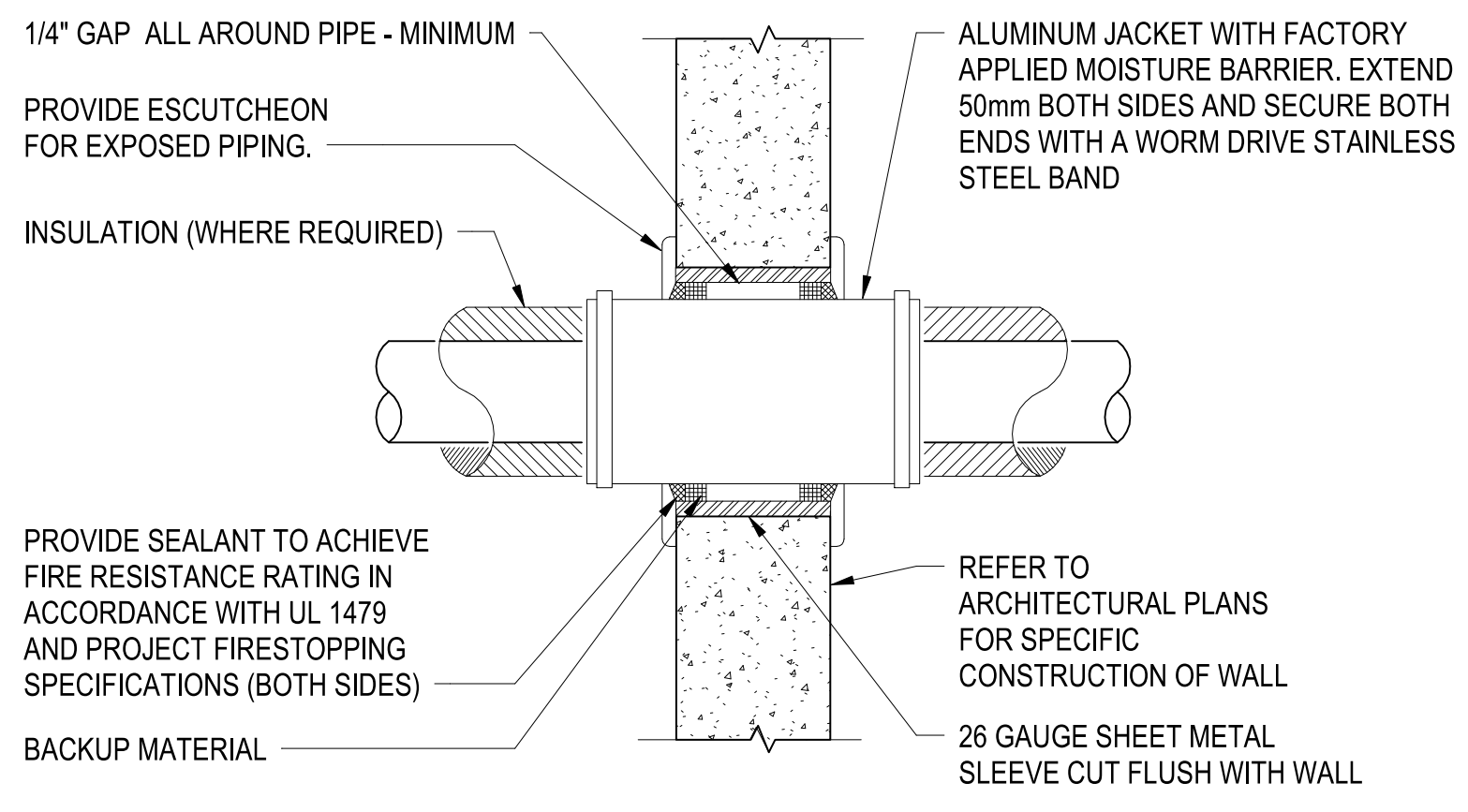
C4



HYDRONIC EXPANSION LOOP DETAIL

SCALE: NTS

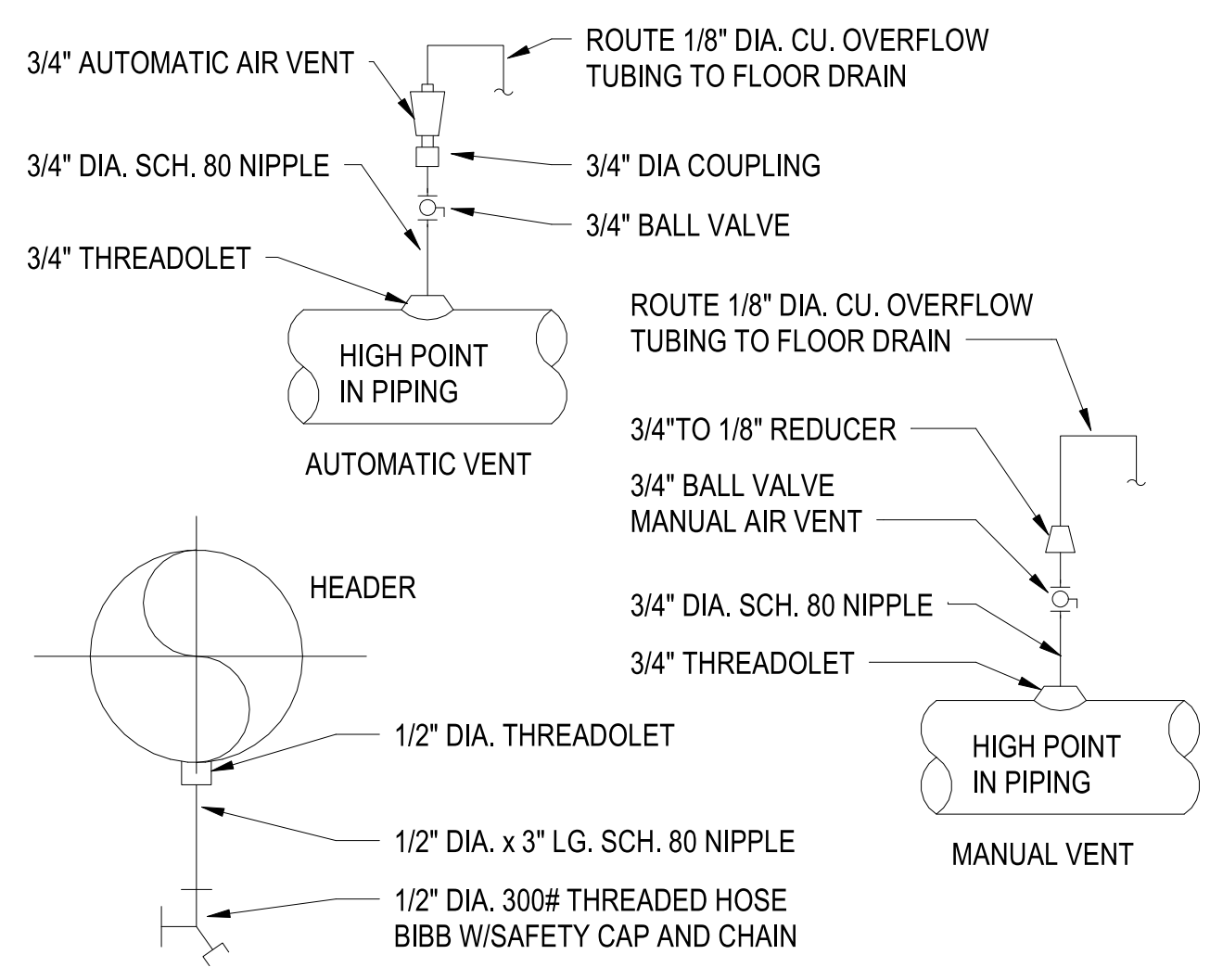
B1



PIPE WALL PENETRATION DETAIL

SCALE: NTS

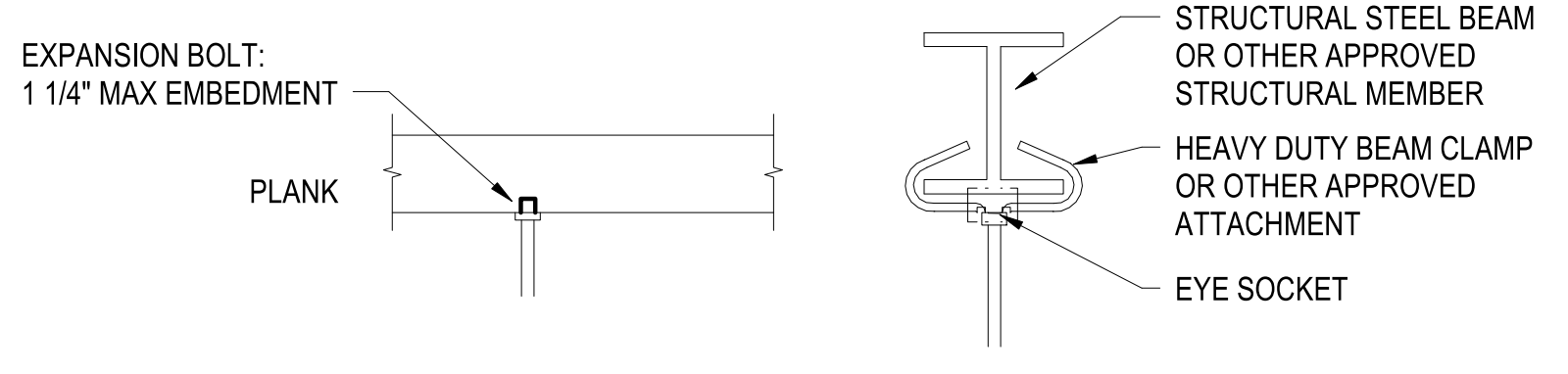
B2



VENT AND DRAIN DETAIL

SCALE: NTS

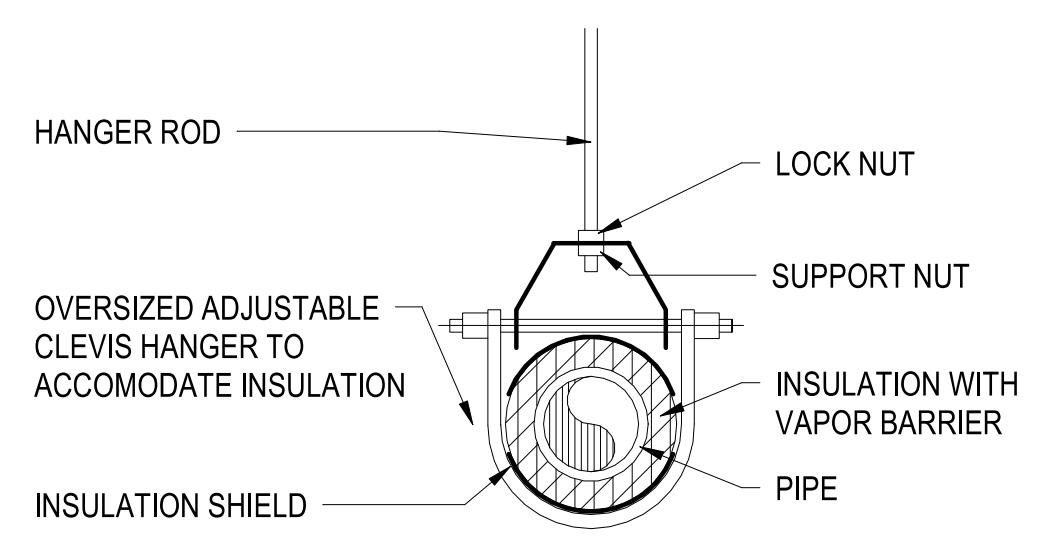
A1



PIPE HANGER DETAIL

SCALE: NTS

A4.2



TYPICAL PIPE SUPPORT DETAIL

SCALE: NTS

A4.1

FILE NAME: BIM_360/HF PACKAGE 3P1527 LOG COM CSP-163960-M-04

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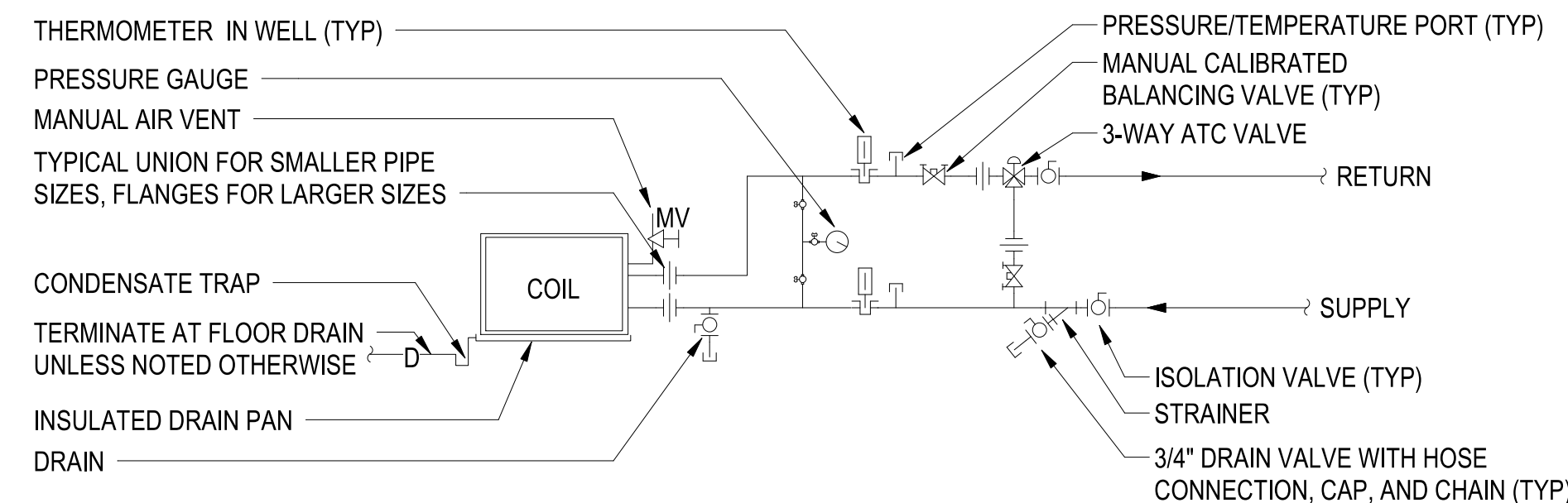
UNCLASSIFIED

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APPR	
DATE	
DESCRIPTION	
SYN	
PRELIMINARY NOT FOR CONSTRUCTION	
Michael Baker INTERNATIONAL 100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED	
FOR COMMANDER NAVFAC ACTIVITY MARINE CORPS BASE CAMP LEJEUNE	
SATISFACTORY TO DATE	DD/MM/YYYY
DES EMB	DRW KC CHK DWH
PM	
BRANCH HEAD	
DESIGN DIRECTOR	
FIRE PROTECTION	
DEPARTMENT OF THE NAVY	JACKSONVILLE, NC
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND	JACKSONVILLE, NC
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC	JACKSONVILLE, NC
ATLANTIC DESIGN AND CONSTRUCTION	JACKSONVILLE, NC
MCB CAMP LEJEUNE	JACKSONVILLE, NC
LOGCOM CSP WAREHOUSE	JACKSONVILLE, NC
MECHANICAL - DETAILS	
SCALE:	AS NOTED
EPROJCT NO.:	1639600
CONSTR. CONTR. NO.:	N40085-20-C-0059
NAVFAC DRAWING NO.:	
SHEET	OF
M-506	

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P1527 PREFINAL SUBMISSION - 08/06/2021

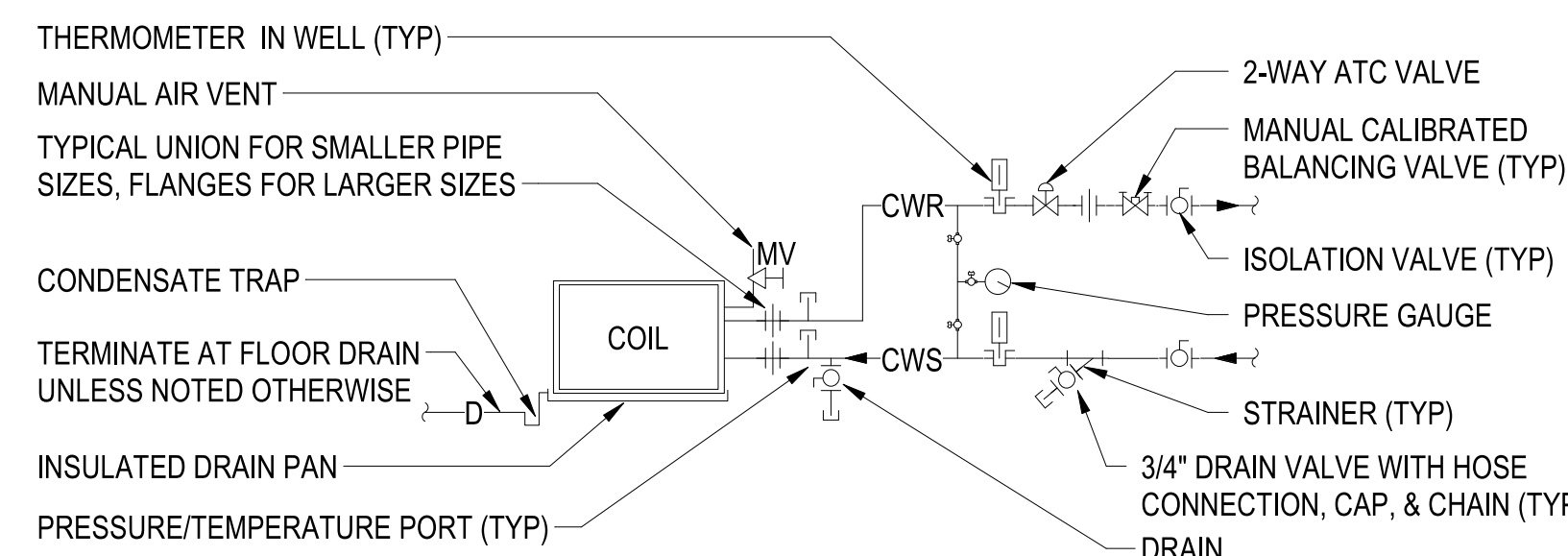


NOTE:
 1. INSTALL 3-WAY VALVES AT COILS/LOADS OUT IN SYSTEMS AS REQUIRED TO ALLOW SYSTEM MINIMUM FLOWS, AND TO ALLOW PIPING SYSTEM THROUGHOUT BUILDING TO STAY AT TEMPERATURE
 2. DRAIN PAN & TRAP REQUIRED ON HYDRONIC HEATING COILS UNLESS NOTED OTHERWISE

COIL PIPING W/ 3-WAY VALVES

SCALE: NTS

C4

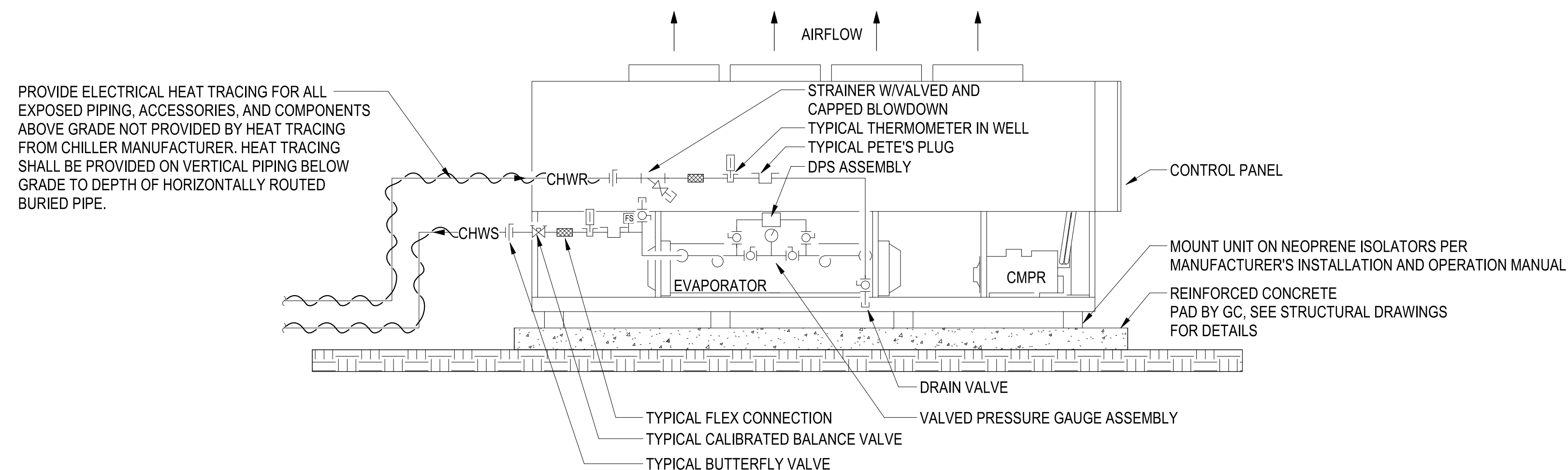


NOTE:
 DRAIN PAN & TRAP REQUIRED ON HYDRONIC HEATING COILS UNLESS NOTED OTHERWISE

COIL PIPING W/ 2-WAY VALVES DETAIL

SCALE: NTS

B4




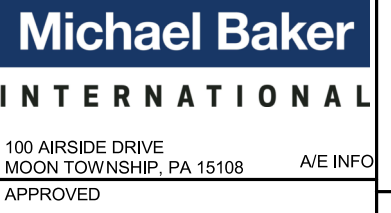


AIR COOLED CHILLER PIPING DETAIL

SCALE: NTS

M-702

A3

SYMBOL	DESCRIPTION	DATE	APPROVED
			
			
			
			
100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED			
FOR COMMANDER NAVFAC ACTIVITY MARINE CORPS BASE CAMP LEJEUNE			
SATISFACTORY TO DATE DD/MM/YY DES: EMB DRW: KC CHK: DWH			
BRANCH HEAD DESIGN DIRECTOR FIRE PROTECTION			
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC DESIGN AND CONSTRUCTION MCB CAMP LEJEUNE JACKSONVILLE, NC LOGCOM CSP WAREHOUSE MECHANICAL - DETAILS			
SCALE: AS NOTED EPROJECT NO.: 1639600 CONSTR. CONTR. NO. N40085-20-C-0059 NAVFAC DRAWING NO.		SHEET OF M-507	

FILE NAME: BIM_360/HF_PACKAGE_3P1527.LOG.COM CSP-163960-M-04 PLOTTED: 04/20/21 12:18:32 PM

P-1527 PREFINAL SUBMISSION - 08/06/2021

AIR HANDING UNIT (AHU) SCHEDULE...

Table with columns for TAG, UNIT AIRFLOWS, CHILLED WATER COOLING COIL, HOT WATER HEATING COIL, ENERGY RECOVERY SECTION, SUPPLY FAN DATA, RETURN/EXH FAN DATA, BASIS OF DESIGN, and NOTES.

NOTES: 1. PROVIDE FAN WALL CONFIGURATION AND FACTORY-INSTALLED VARIABLE FREQUENCY DRIVE AT FAN SECTION. 2. UNIT SHALL BE FACTORY WIRED BY MANUFACTURER...

VIBRATION ISOLATION SCHEDULE

Table with columns for EQUIPMENT TYPE, TAG, HP, BASE TYPE, ISOLATOR TYPE, MINIMUM LOADED STATIC DEFLECTION (INCHES), and NOTES.

NOTES: 1. REFER TO SPECIFICATION SECTION 22 05 48.00 20 MECHANICAL SOUND, VIBRATION AND SEISMIC CONTROL. 2. FANS, PUMPS, COMPRESSORS, ETC. WITHIN MANUFACTURER SUPPLIED EQUIPMENT SHALL BE PROVIDED WITH MANUFACTURER'S RECOMMENDED VIBRATION ISOLATION.

PACKAGED AIR COOLED CHILLER (CH) SCHEDULE

Table with columns for TAG, NOMINAL CAPACITY (TONS), NET CAPACITY @95° OAT (TONS), EFFICIENCY, EVAPORATOR, CONDENSER FANS, COMPRESSOR, ELECTRICAL, BASIS OF DESIGN, and NOTES.

NOTES: 1. UNIT PERFORMANCE INDICATED BASED ON 95° AMBIENT AIR TEMPERATURE. 2. CHILLER PHYSICAL DATA: LENGTH = 166"; WIDTH = 88"; HEIGHT = 93"; OPERATING WEIGHT = 6800 LBS.

CONTROL VALVE SCHEDULE (CV)

Table with columns for VALVE, MAX FLOW (GPM), DESIGN FLOW COEFFICIENT (Cv), CONFIGURATION, ACTION (MODULATING OR 2 POSITION), and NOTES.

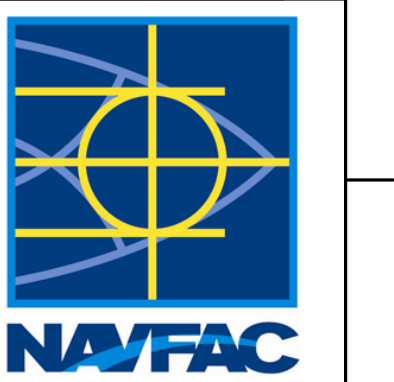
NOTES: 1. THE INFORMATION IN THIS SCHEDULE IS BASED ON EQUIPMENT SELECTIONS MADE DURING THE DESIGN. THE CONTRACTOR SHALL VERIFY THE VALVE REQUIREMENTS FOR THE ACTUAL EQUIPMENT PROVIDED.

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

Table with columns for TAG (INDOOR / OUTDOOR UNIT), SPACE SERVED, ARI COOLING CAPACITY, HEATING CAPACITY, ARI MATCHED PAIR EFFICIENCY, INDOOR UNIT, OUTDOOR UNIT, REFRIGERANT PIPING, BASIS OF DESIGN, and NOTES.

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

Vertical table with columns for SYM, DESCRIPTION, DATE, and APPR.



PRELIMINARY NOT FOR CONSTRUCTION



FOR COMMANDER NAVFAC ACTIVITY MARINE CORPS BASE CAMP LEJEUNE

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC NORFOLK, VA JACKSONVILLE, NC LOGCOM CSP WAREHOUSE MECHANICAL - SCHEDULES

Table with columns for SCALE, AS NOTED, EPROJECT NO., 1639600, CONSTR. CONTR. NO., N40085-20-C-0059, NAVFAC DRAWING NO., SHEET, OF

M-601

FILE NAME: BIM 360/HF PACKAGE 3PT1527 LOG COM CSP-163960-M-04

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P-1527 PREFINAL SUBMISSION - 08/06/2021

LOUVER (L) SCHEDULE

Table with columns: TAG, SERVING, SERVICE, SIZE WxH (IN), DESIGN AIRFLOW (CFM), FREE AREA (SQFT), MAX PRESSURE DROP (IN WG), BASIS OF DESIGN (MANUF, MODEL), NOTES. Includes notes on manufacturer standards and AMCA listing.

8/4/2021 10:43

DEHUMIDIFIER (DEH) SCHEDULE

Table with columns: TAG, AREA SERVED, AMBIENT TEMP. OPERATING RANGE, CAPACITY (PINTS PER DAY), ELECTRICAL (VOLT/PHASE/HERTZ, AMPS, CONNECTION), BASIS OF DESIGN (MANUF, MODEL), NOTES. Includes notes on refrigerant charge and unit weight.

8/4/2021 10:43

GRAVITY VENTILATOR (GV) SCHEDULE

Table with columns: TAG, AREA SERVED, SERVICE, DESIGN AIRFLOW (CFM), MAX P.D. @ DESIGN AIRFLOW..., MIN THROAT AREA (SQ. FT.), THROAT SIZE (IN x IN), BASIS OF DESIGN (MANUF., MODEL), NOTES. Includes notes on construction and wind resistance.

8/4/2021 10:44

EXHAUST FAN (EF) AND SUPPLY FAN (SF) SCHEDULE

Table with columns: TAG, SERVICE, LOCATION / SPACE SERVED, FAN TYPE, DRIVE TYPE, AIR FLOW (CFM), ESP (IN. WG.), MAX. FAN RPM, MAX SOUND (SONES), MOTOR DATA (APPROX. MOTOR SIZE (HP), VOLTS/PHASE/HERTZ), BASIS OF DESIGN (MANUF, MODEL), NOTES. Includes notes on disconnect switches and motor protection.

8/4/2021 10:43

DIFFUSER, REGISTER AND GRILLE SCHEDULE

Table with columns: TAG, MAX CFM, SERVICE, TYPE, SIZE (INCHES) (FACE, NECK), MAX NC, BASIS OF DESIGN (MANUF, MODEL), NOTES. Includes notes on air balance quantities and construction materials.

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PRELIMINARY NOT FOR CONSTRUCTION



Michael Baker INTERNATIONAL

FOR COMMANDER NAVFAC ACTIVITY MARINE CORPS BASE CAMP LEJEUNE

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC DESIGN AND CONSTRUCTION MCB CAMP LEJEUNE JACKSONVILLE, NC LOGCOM CSP WAREHOUSE MECHANICAL - SCHEDULES

SCALE: AS NOTED PROJECT NO.: 1639600 CONSTR. CONTR. NO. N40085-20-C-0059 NAVFAC DRAWING NO. SHEET OF M-603

PLOTTED: 8/4/2021 12:18:43 PM

FILE NAME: BIM_360/HF_PACKAGE_3PT1527_LOG_COM_CSP-163960-M-04

P-1527 PREFINAL SUBMISSION - 08/06/2021

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PUMP (P) SCHEDULE

TAG	PUMP TYPE	SERVICE	LOCATION	FLUID TYPE	FLUID TEMP (°F)	GPM	HEAD (FT H2O)	ELECTRICAL DATA			BASIS OF DESIGN		NOTES
								MTR HP	NOMINAL MOTOR RPM	VOLTS/ PHASE/ HERTZ	MANUF	MODEL	
P-01	FLOOR MTD, HORIZONTAL INLINE	CHW-PRIMARY (CH-1)	212 JEFBS AHU	WATER	56	140	50	7.5	1760	480 / 3 / 60	B & G	e-80	1, 2, 4
P-02	FLOOR MTD, HORIZONTAL INLINE	CHW-PRIMARY (CH-1)	212 JEFBS AHU	WATER	56	140	50	7.5	1760	480 / 3 / 60	B & G	e-80	1, 2, 4
P-03	FLOOR MTD, HORIZONTAL INLINE	HW - SECONDARY	213 JEFBS BOILER ROOM	WATER	140	160	65	7.5	1760	480 / 3 / 60	B & G	e-80	1, 2, 4
P-04	FLOOR MTD, HORIZONTAL INLINE	HW - SECONDARY	213 JEFBS BOILER ROOM	WATER	140	160	65	7.5	1760	480 / 3 / 60	B & G	e-80	1, 2, 4
BP-01, 02, 03, 04	INLINE, BOILER CIRC	HOT WATER	213 JEFBS BOILER ROOM	WATER	110	25.8	10	3/4	1760	480 / 3 / 60	B & G	e-80	1, 3

NOTES: 1. MOTORS SHALL BE PREMIUM EFFICIENCY TYPE.
 2. INLINE TYPE PUMP - PROVIDE WITH ACCESSORIES NECESSARY FOR FLOOR MOUNTING IN HORIZONTAL INLINE FASHION ; PROVIDE RIGGING POINTS FOR PUMPS 5HP AND GREATER.
 3. INLINE TYPE PUMP - TO BE MOUNTED ON PIPING / INLINE PUMP SUPPORT RACK AS INDICATED ON PLANS.
 4. PROVIDE WITH VARIABLE FREQUENCY DRIVE.

8/4/2021 10:43

HOT WATER BOILER (B) SCHEDULE

TAG	TYPE	MAX OUTPUT (MBH)	MAX GAS INPUT (MBH)	MIN GAS INPUT (MBH)	MIN GAS PRESS (IN WG)	WATER DATA				PUMP			BASIS OF DESIGN		NOTES
						EWT (°F)	LWT (°F)	GPM	WPD (FT H2O)	MOTOR (HP)	VOLT/ PHASE/ HERTZ	AMPS	MANUF	MODEL	
B-01	FIRETUBE / CONDENSING	387	399	39.9	4	110	140	25.8	6	BP-01, SEE PUMP SCHEDULE	LOCHINVAR	KBX0400N	1-7		
B-02	FIRETUBE / CONDENSING	387	399	39.9	4	110	140	25.8	6	BP-02, SEE PUMP SCHEDULE	LOCHINVAR	KBX0400N	1-7		
B-03	FIRETUBE / CONDENSING	387	399	39.9	4	110	140	25.8	6	BP-03, SEE PUMP SCHEDULE	LOCHINVAR	KBX0400N	1-7		
B-04	FIRETUBE / CONDENSING	387	399	39.9	4	110	140	25.8	6	BP-04, SEE PUMP SCHEDULE	LOCHINVAR	KBX0400N	1-7		

NOTES: 1. PROVIDE WITH MULTIPLE BOILER CONTROLLER AND INTERFACE TO BUILDING DDC SYSTEM (BACNET COMPATIBLE)
 2. PROVIDE WITH DIRECT SPARK IGNITION SYSTEM, MODULATING GAS VALVE AND BURNER CAPABLE OF 5:1 TURNDOWN.
 3. BOILER SHALL ACHIEVE 95% THERMAL EFFICIENCY & MEET ALL CURRENT LOW NOx REGULATIONS.
 4. BOILER TO BE SUPPLIED WITH FORCED COMBUSTION AIR DRAFT SYSTEM.
 5. PROVIDE CONCENTRIC STAINLESS STEEL FLUE AND THRU-WALL TERMINATIONS FOR VENTING AND COMBUSTION AIR INLET AS INDICATED ON PLANS.
 6. PROVIDE WITH MANUFACTURER'S CONDENSATE TRAP AND NEUTRALIZATION KIT FOR CONDENSATE DISCHARGE.
 7. UNIT SHALL COMPLY WITH ASME CSD-1 REQUIREMENTS FOR ELECTRICAL (PART CE) AND WATERSIDE CONTROL (PART CW); PROVIDE EPO (EMERGENCY POWER OFF) MUSHROOM TYPE SWITCH AT EXIT(S) OF MECHANICAL ROOMS HOUSING BOILERS.

8/4/2021 10:43

EXPANSION TANK (ET) SCHEDULE

TAG	LOCATION	SERVICE	TYPE	VOLUME (GALLON)		BASIS OF DESIGN		NOTES
				TANK	ACCEP-TANCE	MANUF	MODEL	
ET-01	212 JEFBS AHU	CHILLED WATER	VERTICAL - FLR MTD	50	25	B & G	B-LA	1, 2, 3
ET-02	213 JEFBS BOILER ROOM	HYDRONIC HOT WATER	VERTICAL - FLR MTD	50	25	B & G	B-LA	1, 2, 3

NOTES: 1. HEAVY DUTY BUTYL RUBBER DIAPHRAGM TYPE; PRE-CHARGED TO 10 PSI; 125 PSI RATED DESIGN PRESSURE.
 2. TANK ACCEPTANCE VOLUME SHALL BE NO GREATER THAN 50% OF TANK VOLUME REGARDLESS OF MANUFACTURER'S LITERATURE INDICATING BLADDER TANKS WITH 100% TANK VOLUME ACCEPTANCE CAPACITY.
 3. CONNECTION SIZE SHALL BE 1" NPT.

8/4/2021 10:43

AIR SEPARATION & SEDIMENT REMOVAL TANK (AS) SCHEDULE

TAG	LOCATION	SERVICE	TYPE	GPM	BASIS OF DESIGN		NOTES
					MANUF	MODEL	
AS-01	212 JEFBS AHU	CHILLED WATER	COALSESCING	140	B & G	CRS	1-3
AS-02	213 JEFBS BOILER ROOM	HYDRONIC HOT WATER	COALSESCING	160	B & G	CRS	1-3

NOTES: 1. REFER TO PIPING DIAGRAMS FOR INSTALLATION LOCATION IN HYDRONIC SYSTEM.
 2. PROVIDE WITH BLOW DOWN CONNECTION AND MANUAL BLOW DOWN VALVE.
 3. PROVIDE WITH AUTOMATIC AIR VENT FROM SAME MFG.

8/4/2021 10:43

CHILLED WATER BUFFER TANK (CWBT) SCHEDULE



TAG	TYPE	SERVICE	LOCATION	SIZE DIA x HT (IN)	CONN. SIZE (IN)	CAPACITY (GAL)	FACTORY HEAT TRACING		BASIS OF DESIGN		NOTES
							VOLT/ PHASE/ HERTZ	MCA/ MOP	MANUF	MODEL	
CWBT-01	VERTICAL	CHILLED WATER	212 JEFBS AHU	42 x 90	4" FLANGE	500	120 / 1 / 60	<12 / 15	CEMLINE	V500CWBT-F-C-2I	1-2

NOTES: 1. TANK TO BE PROVIDED WITH 2" FLEXIBLE ELASTOMERIC INSULATION; INTERNAL BAFFLE; 6" FLANGED CONNECTIONS & AIR VENT.
 2. UNIT SHALL BE ASME RATED PRESSURE VESSEL - RATED TO 125PSIG @ 375°F; BUILT TO ASME SECTION VIII, DIVISION 1.

8/4/2021 10:43

FILE NAME: BIM 360/HF PACKAGE 3PT1527 LOG COM CSP-163960-M.dwg

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	DATE
	APPR
	SYN
	DESCRIPTION
 PRELIMINARY NOT FOR CONSTRUCTION	
 Michael Baker INTERNATIONAL 100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED	
FOR COMMANDER NAVFAC ACTIVITY MARINE CORPS BASE CAMP LEJEUNE SATISFACTORY TO DATE DD/MM/YY DES: EMB DRW: AJK CHK: DWH PM BRANCH HEAD DESIGN DIRECTOR FIRE PROTECTION	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC ATLANTIC DESIGN AND CONSTRUCTION MCB CAMP LEJEUNE JACKSONVILLE, NC LOGCOM CSP WAREHOUSE MECHANICAL - SCHEDULES	
SCALE: AS NOTED EPROJECT NO.: 1639600 CONSTR. CONTR. NO.: N400085-20-C-0059 NAVFAC DRAWING NO.: SHEET OF M-604	

P-1527 PREFINAL SUBMISSION - 08/06/2021

VENTILATION SCHEDULE																
ROOM NUMBER	ROOM NAME	VENTILATION CRITERIA / CLASSIFICATION	AREA (FT2)	OCCUPANCY (# PEOPLE)	CFM/SF	CFM/ PERSON	CALCULATED REQUIRED...					EXHAUST AIR (EA)				NOTES
							CFM/SF	CFM/ PERSON	EZ	TOTAL (CFM)	DESIGN OA (CFM)	CFM/SF	FIXTURE COUNT	CFM/ FIXTURE	TOTAL EA REQ'D (CFM)	
100	GOVT OFFICE	ASHRAE 62.1-2016: OFFICE SPACE	104	3	0.06	5										
101	REG. MNGR.	ASHRAE 62.1-2016: OFFICE SPACE	113	3	0.06	5										
102	MOTHER'S ROOM	ASHRAE 62.1-2016: OFFICE SPACE	72	1	0.06	5										
103	BREAK	ASHRAE 62.1-2016: BREAK ROOM, KITCHENETTE (EXHAUST)	399	10	0.06	5					0.3			120	125	
105	JAN.	ASHRAE 62.1-2016: JANITOR CLOSET	84	-	-	-					1			84	85	
106	COMP. EQ. & RSDL DECON. LOTION	ASHRAE 62.1-2016: OCCUPIABLE STORAGE	307	2	0.06	5										
107	RADIOLOGICAL	ASHRAE 62.1-2016: OCCUPIABLE STORAGE	2,397	2	0.06	5										
108	TELECOM	ASHRAE 62.1-2016: COMPUTER (NOT PRINTING)	98	0	0.06	5										
110	NDTE / STORAGE	ASHRAE 62.1-2016: OCCUPIABLE STORAGE	1,480	3	0.06	5										
110A	NDTE OFFICE	ASHRAE 62.1-2016: OFFICE SPACE	110	3	0.06	5										
111	ESAPI ROOM	ASHRAE 62.1-2016: OFFICE SPACE	224	2	0.06	5										
112	ESAPI OFFICE	ASHRAE 62.1-2016: OFFICE SPACE	124	2	0.06	5										
113A	STORAGE AREA SL-3/REPAIR PARTS	ASHRAE 62.1-2016: OCCUPIABLE STORAGE	669	0	0.06	5										
113B	FINAL QC	ASHRAE 62.1-2016: OFFICE SPACE	509	2	0.06	5										
114	JSMLT TEST AREA	ASHRAE 62.1-2016: WOOD / METAL SHOP	502	3	0.18	10										
115	SANITATION AREA	ASHRAE 62.1-2016: WOOD / METAL SHOP	797	3	0.18	10										
117	MAINTENANCE	ASHRAE 62.1-2016: WOOD / METAL SHOP	579	3	0.18	10										
118	TELE.	ASHRAE 62.1-2016: COMPUTER (NOT PRINTING)	303	0	0.06	5										
119	CBRN OFFICE	ASHRAE 62.1-2016: OFFICE SPACE	269	3	0.06	5										
200	CLASSROOM	ASHRAE 62.1-2016: LECTURE CLASSROOM	1,452	51	0.06	7.5										
201	TECHNICIAN/ TECHNICAL REF LIBRARY	ASHRAE 62.1-2016: LIBRARIES	1,462	12	0.12	5										
202	BREAKROOM	ASHRAE 62.1-2016: BREAK ROOM, KITCHENETTE (EXHAUST)	693	12	0.06	5					0.3			208	220	
203	TELECOM	ASHRAE 62.1-2016: COMPUTER (NOT PRINTING)	102	0	0.06	5										
206	ADMIN STORAGE	ASHRAE 62.1-2016: OCCUPIABLE STORAGE	319	0	0.06	5										
207	JEFS FST OIC	ASHRAE 62.1-2016: OFFICE SPACE	579	6	0.06	5										
208	STORAGE WAREHOUSE PREPARATION	ASHRAE 62.1-2016: OCCUPIABLE STORAGE	5,941	3	0.06	5										
208A	TEST & REPAIR	ASHRAE 62.1-2016: WOOD / METAL SHOP	2163	6	0.18	10								4084	4100	1
208B	VISUAL INSPECTION & REPAIR	ASHRAE 62.1-2016: WOOD / METAL SHOP	2,193	4	0.18	10										
209	SHIPPING / RECEIVING / WATER TESTING	ASHRAE 62.1-2016: SHIPPING/RECEIVING	1,966	2	0.12	10										
209A	HAZMAT STORAGE	ASHRAE 62.1-2016: OCCUPIABLE STORAGE	317	0	0.06	5										
210	JEFS FSS OPERATIONS OFFICER	ASHRAE 62.1-2016: OFFICE SPACE	585	6	0.06	5										
211	ASSISTANT OIC/NOIC	ASHRAE 62.1-2016: OFFICE SPACE	407	3	0.06	5										
225	JAN.	ASHRAE 62.1-2016: JANITOR CLOSET	59	-	-	-					1			59	70	
C020	CORRIDOR	ASHRAE 62.1-2016: CORRIDOR	749	0	0.06	-										
C021	CORRIDOR	ASHRAE 62.1-2016: CORRIDOR	514	0	0.06	-										
C022	CORRIDOR	ASHRAE 62.1-2016: CORRIDOR	121	0	0.06	-										
G010	WOMENS	ASHRAE 62.1-2016: TOILETS (PUBLIC)	194	-	-	-						2	50	100	100	
G011	UNISEX	ASHRAE 62.1-2016: TOILETS (PUBLIC)	65	-	-	-						1	50	50	50	
G012	MENS	ASHRAE 62.1-2016: TOILETS (PUBLIC)	129	-	-	-						2	50	100	100	
G020	WOMENS	ASHRAE 62.1-2016: TOILETS (PUBLIC)	159	-	-	-						2	50	100	100	
G021	UNISEX	ASHRAE 62.1-2016: TOILETS (PUBLIC)	66	-	-	-						1	50	50	50	
G022	MENS	ASHRAE 62.1-2016: TOILETS (PUBLIC)	162	-	-	-						2	50	100	100	




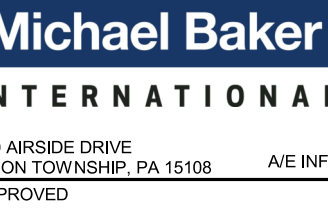
THE VENTILATION REQUIREMENT FOR THIS AIR HANDLING SYSTEM HAS BEEN DETERMINED BY UTILIZING THE ASHRAE 62.1 MULTI-ZONE CALCULATION SPREADSHEET THAT ACCOUNTS FOR INDIVIDUAL VAV ZONES AND THEIR RESPECTIVE AREA AND OCCUPANCY AND SPACE CLASSIFICATION IN ACCORDANCE WITH ASHRAE 62.1. THE VAV BOX SCHEDULE MINIMUM 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.

NOTES: 1. EXHAUST REQUIREMENT OF 1 AIR CHANGE EVERY 8 MINUTES. HEIGHT USED FOR CALCULATION IS 15 FEET.

8/4/2021 10:43

FILE NAME: BIM 360://HF PACKAGE 3/PT1527 LOG COM CSP-1639600-M-04

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100 ARSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED	
FOR COMMANDER NAVFAC ACTIVITY MARINE CORPS BASE CAMP LEJEUNE	
SATISFACTORY TO DATE DD/MM/YY DES EMB DRW AJK CHK DWH PM	
BRANCH HEAD DESIGN DIRECTOR FIRE PROTECTION	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC DESIGN AND CONSTRUCTION MCB CAMP LEJEUNE JACKSONVILLE, NC LOGCOM CSP WAREHOUSE MECHANICAL - SCHEDULES	
SCALE:	AS NOTED
EPROJECT NO.:	1639600
CONSTR. CONTR. NO.:	N40085-20-C-0059
NAVFAC DRAWING NO.:	
SHEET	OF
M-605	

VENTILATION SCHEDULE																	
ROOM NUMBER	ROOM NAME	VENTILATION CRITERIA / CLASSIFICATION	AREA (FT2)	OCCUPANCY (# PEOPLE)	CFM/SF	CFM/PERSON	CALCULATED REQUIRED...					EXHAUST AIR (EA)					NOTES
							CFM/SF	CFM/PERSON	EZ	TOTAL (CFM)	DESIGN OA (CFM)	CFM/SF	FIXTURE COUNT	CFM/FIXTURE	TOTAL EA REQ'D (CFM)	DESIGN EA (CFM)	
104	WAREHOUSE AREA	ASHRAE 62.1-2016: WAREHOUSES	52,538	0	0.06	10	3,152	0	0.8	3,940	4,000						
104.1	SHIPPING/RECEIVING 2 DOCKS	ASHRAE 62.1-2016: SHIPPING/RECEIVING	4,075	0	0.12	10	489	0	0.8	611	620						
104.2	SHELTER STORAGE	ASHRAE 62.1-2016: OCCUPIABLE STORAGE	2,532	0	0.06	5	152	0	0.8	190	200						
104.3	ISSUE/RETURN AREA	ASHRAE 62.1-2016: SORTING, PACKING, LIGHT ASSEMBLY	2,585	1	0.12	7.5	310	8	0.8	397	400						
104.4	SORT AREA	ASHRAE 62.1-2016: SORTING, PACKING, LIGHT ASSEMBLY	1,866	1	0.12	7.5	224	8	0.8	289	300						
104.5	DISPOSAL AREA	ASHRAE 62.1-2016: SORTING, PACKING, LIGHT ASSEMBLY	2,053	1	0.12	7.5	246	8	0.8	317	320						
104.6	BATTERY CHARGING AREA	ASHRAE 62.1-2016: WAREHOUSES	1,316	0	0.06	10	79	0	0.8	99	100						
C010	CORRIDOR	ASHRAE 62.1-2016: CORRIDOR	164	0	0.06	0	10	0	0.8	12	20						
C011	CORR	ASHRAE 62.1-2016: CORRIDOR	346	0	0.06	0	21	0	0.8	26	30						
C013	CORRIDOR	ASHRAE 62.1-2016: CORRIDOR	385	0	0.06	0	23	0	0.8	29	30						
C014	CORRIDOR	ASHRAE 62.1-2016: CORRIDOR	346	0	0.06	0	21	0	0.8	26	30						
											6,050						
109	ELEC.	NO REQUIREMENT	129	-	-	-											
116	ELECTRICAL	NO REQUIREMENT	303	-	-	-											
120	MECHANICAL	NO REQUIREMENT	1,009	-	-	-											
121	ELEC.	NO REQUIREMENT	103	-	-	-											
122	FIRE RISER	NO REQUIREMENT	398	-	-	-											
123	ELEC.	NO REQUIREMENT	403	-	-	-											
124	WHSE MECH.	NO REQUIREMENT	366	-	-	-											
205	ELECTRICAL	NO REQUIREMENT	227	-	-	-											
212	JEFS AHU	NO REQUIREMENT	1,486	-	-	-											
213	JEFS BOILER ROOM	NO REQUIREMENT	582	-	-	-											
V010	VESTIBULE/ENTRY	NO REQUIREMENT	46	-	-	-											
V020	VESTIBULE/ENTRY	NO REQUIREMENT	131	-	-	-											
V021	VESTIBULE/ENTRY	NO REQUIREMENT	110	-	-	-											

NOTES: 1. EXHAUST REQUIREMENT OF 1 AIR CHANGE EVERY 8 MINUTES. HEIGHT USED FOR CALCULATION IS 15 FEET.

8/4/2021 10:43

FILE NAME: BIM 360/HF PACKAGE 3PT1527 LOG COM CSP-1639600-M-04
PLOTTED: 8/4/2021 12:18:50 PM

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
ATLANTIC DESIGN AND CONSTRUCTION
MCB CAMP LEJEUNE



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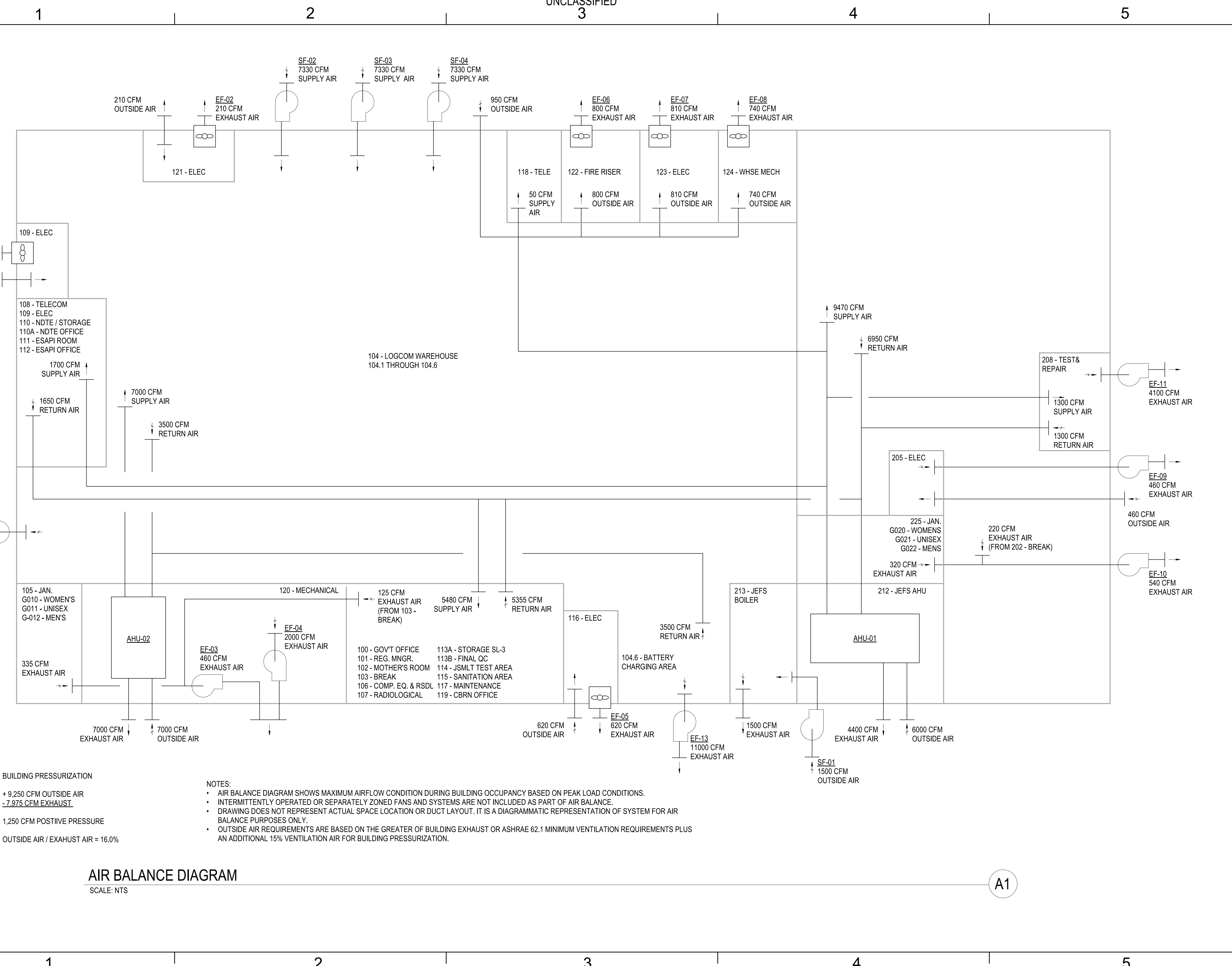
Michael Baker INTERNATIONAL
100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108
APPROVED

FOR COMMANDER NAVFAC
ACTIVITY
MARINE CORPS BASE
CAMP LEJEUNE
SATISFACTORY TO DATE DD/MM/YY
DES EMB | DRW AJK | CHK DWH
PM
BRANCH HEAD
DESIGN DIRECTOR
FIRE PROTECTION

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
NAVFAC
JACKSONVILLE, NC
LOGCOM CSP WAREHOUSE
MECHANICAL - SCHEDULES

SCALE: AS NOTED
EPROJECT NO.: 1639600
CONSTR. CONTR. NO. N40085-20-C-0059
NAVFAC DRAWING NO.
SHEET OF
M-606

P-1527 PREFINAL SUBMISSION - 08/06/2021





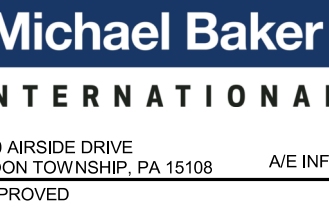
BUILDING PRESSURIZATION
 + 9,250 CFM OUTSIDE AIR
 - 7,975 CFM EXHAUST
 1,250 CFM POSITIVE PRESSURE
 OUTSIDE AIR / EXHAUST AIR = 16.0%

NOTES:

- AIR BALANCE DIAGRAM SHOWS MAXIMUM AIRFLOW CONDITION DURING BUILDING OCCUPANCY BASED ON PEAK LOAD CONDITIONS.
- INTERMITTENTLY OPERATED OR SEPARATELY ZONED FANS AND SYSTEMS ARE NOT INCLUDED AS PART OF AIR BALANCE.
- DRAWING DOES NOT REPRESENT ACTUAL SPACE LOCATION OR DUCT LAYOUT. IT IS A DIAGRAMMATIC REPRESENTATION OF SYSTEM FOR AIR BALANCE PURPOSES ONLY.
- OUTSIDE AIR REQUIREMENTS ARE BASED ON THE GREATER OF BUILDING EXHAUST OR ASHRAE 62.1 MINIMUM VENTILATION REQUIREMENTS PLUS AN ADDITIONAL 15% VENTILATION AIR FOR BUILDING PRESSURIZATION.

AIR BALANCE DIAGRAM
 SCALE: NTS

A1

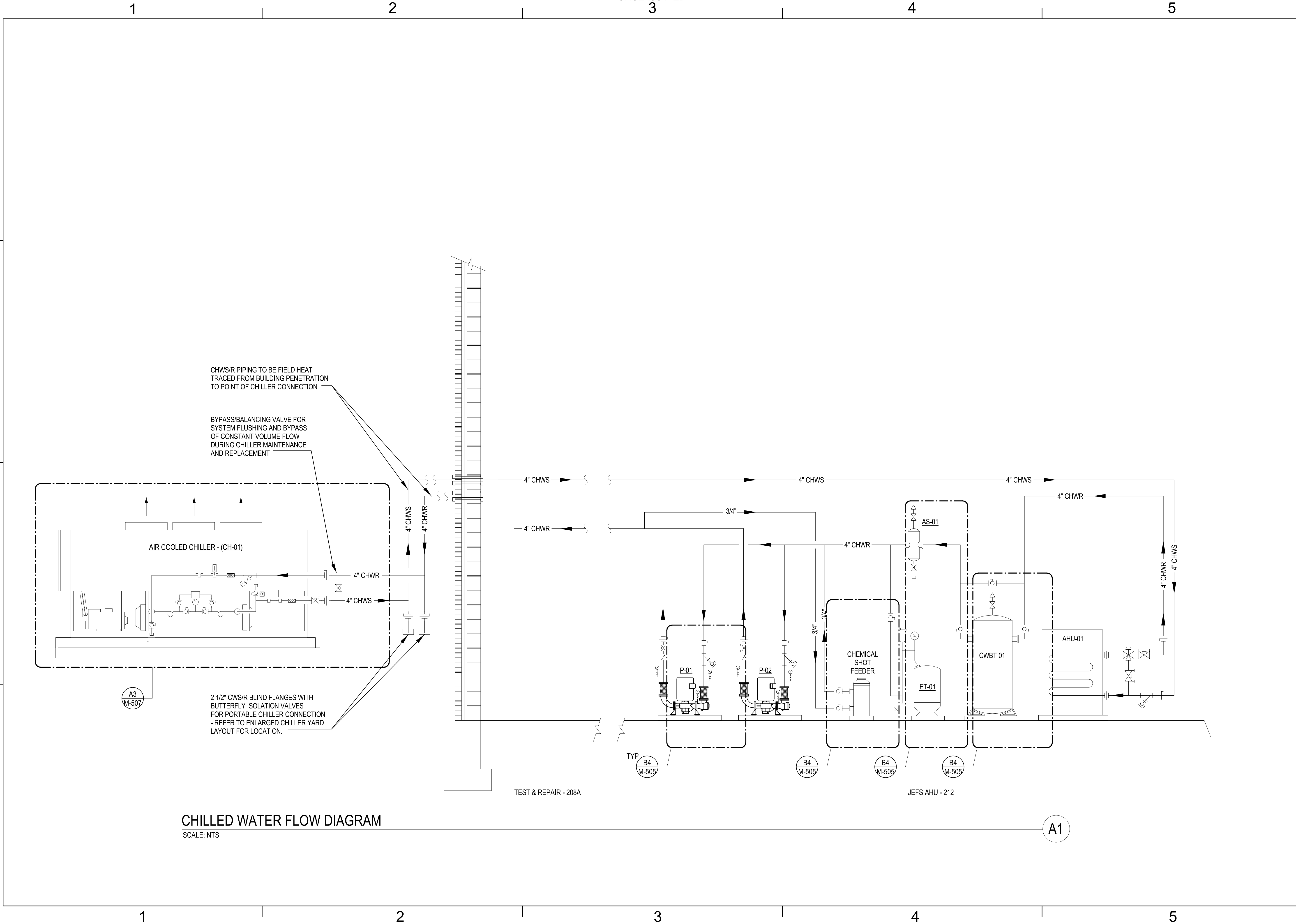
APPROVED	DATE	APPR
SYN	DESCRIPTION	Title Sheet Revision
		
PRELIMINARY NOT FOR CONSTRUCTION		
		
		
FOR COMMANDER NAVFAC ACTIVITY MARINE CORPS BASE CAMP LEJEUNE		
SATISFACTORY TO DATE DD/MM/YY DES EMB DRW AJK CHK DWH		
BRANCH HEAD DESIGN DIRECTOR FIRE PROTECTION		
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC DESIGN AND CONSTRUCTION MCB CAMP LEJEUNE JACKSONVILLE, NC LOGCOM CSP WAREHOUSE MECHANICAL - DIAGRAMS		
SCALE:	AS NOTED	
EPROJECT NO.:	1639600	
CONSTR. CONTR. NO.	N40085-20-C-0059	
NAVFAC DRAWING NO.		
SHEET	OF 130	
M-701		

PLOTTED: 04/20/21 12:18:51 PM

FILE NAME: BIM_360/HF_PACKAGE_3PT1527.LOG.COM.CSP-1639600.Mxd

P-1527 PREFINAL SUBMISSION - 08/06/2021

FILE NAME: BIM 360/HF PACKAGE 3/15/22 LOG COM CSP-1639600-M-01
 PLOTTED: 04/20/2021 12:18:52 PM





CHILLED WATER FLOW DIAGRAM
 SCALE: NTS

D
C
B
A

UNCLASSIFIED

UNCLASSIFIED

SYMBOL	DESCRIPTION	DATE	APPROVED
 PRELIMINARY NOT FOR CONSTRUCTION			
 Michael Baker International 100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED			
FOR COMMANDER NAVFAC ACTIVITY MARINE CORPS BASE CAMP LEJEUNE SATISFACTORY TO DATE DD/MM/YYYY DES EMB DRW AJK CHK DWH PM BRANCH HEAD DESIGN DIRECTOR FIRE PROTECTION			
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC ATLANTIC DESIGN AND CONSTRUCTION MCB CAMP LEJEUNE		JACKSONVILLE, NC LOGCOM CSP WAREHOUSE MECHANICAL - DIAGRAMS	
SCALE:	AS NOTED	SHEET OF 130	
EPROJCT NO.:	1639600	M-702	
CONSTR. CONTR. NO.:	N40085-20-C-0059	P-1527 PREFINAL SUBMISSION - 08/06/2021	
NAVFAC DRAWING NO.			

D
C
B
A

1

2

3

4

5

D

C

B

A

D

C

B

A

UNCLASSIFIED

UNCLASSIFIED

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, & B-4) 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.

SYN	DESCRIPTION	DATE	APPR



PRELIMINARY
NOT FOR CONSTRUCTION



Michael Baker INTERNATIONAL
100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108

FOR COMMANDER NAVFAC
ACTIVITY
MARINE CORPS BASE
CAMP LEJEUNE
SATISFACTORY TO DATE DD/MM/YY
DES EMB DRW AJK CHK DWH
PM
BRANCH HEAD
DESIGN DIRECTOR
FIRE PROTECTION

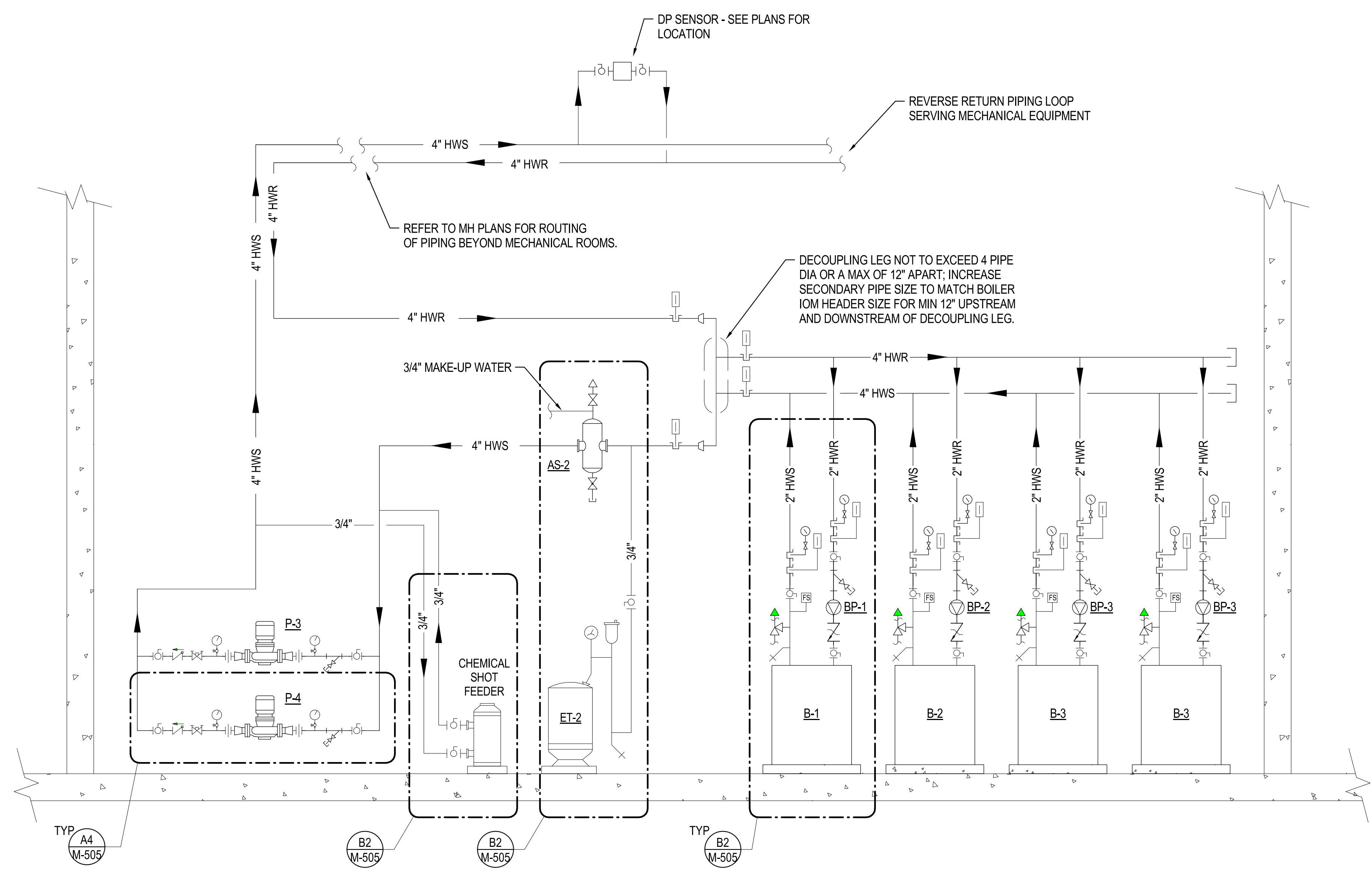
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
ATLANTIC DESIGN AND CONSTRUCTION
MCB CAMP LEJEUNE
JACKSONVILLE, NC
LOGCOM CSP WAREHOUSE
MECHANICAL - DIAGRAMS

SCALE: AS NOTED
EPROJECT NO.: 1639600
CONSTR. CONTR. NO. N40085-20-C-0059
NAVFAC DRAWING NO.
SHEET OF
M-703

P-1527 PREFINAL SUBMISSION - 08/06/2021

FILE NAME: BIM 360/HF PACKAGE 3/PT1527 LOG COM CSP-1639600-M-703

PLOTTED: 04/20/21 12:18:53 PM



HOT WATER FLOW DIAGRAM
SCALE: NTS

JEFS BOILER ROOM - 213

A2

CONTROLS - GENERAL NOTES

DIAGRAMMATIC INTENT OF CONTROLS DIAGRAMS AND POINTS LIST

CONTROL POINTS, SENSORS AND DEVICES INDICATED ON THE CONTROL DRAWINGS ARE DIAGRAMMATIC IN NATURE WITH INTENT TO FULLY ILLUSTRATE THE CONTROL SYSTEM FUNCTIONALITY AND DO NOT NECESSARILY REPRESENT THE INSTALLED LOCATION OF DEVICES OR PHYSICAL WIRING BETWEEN DEVICES.

IN ADDITION TO THESE DRAWING, REFER TO PROJECT SPECIFICATIONS 23 09 00 INSTRUMENTATION AND CONTROL FOR HVAC, 23 09 13 INSTRUMENTATION AND CONTROL DEVICES FOR HVAC AND 23 09 23 BACNET DIRECT DIGITAL CONTROL FOR HVAC AND OTHER BUILDING CONTROL SYSTEMS.

TERMS/ABBREVIATIONS USED WITHIN THE SEQUENCES OF OPERATION:

- ADJ.: ADJUSTABLE BY THE END USER, THROUGH THE SUPPLIED USER INTERFACE.
AI: ANALOG INPUT. A PHYSICAL INPUT TO THE CONTROL MODULE.
AO: ANALOG OUTPUT. A PHYSICAL OUTPUT FROM THE CONTROL MODULE.
AV: ANALOG VALUE. AN INTERMEDIATE (SOFTWARE) POINT.
BI: BINARY INPUT. A PHYSICAL INPUT TO THE CONTROL MODULE.
BO: BINARY OUTPUT. A PHYSICAL OUTPUT FROM THE CONTROL MODULE.
BV: BINARY VALUE. AN INTERMEDIATE (SOFTWARE) POINT.
LOOP: A CONTROL LOOP. MOST COMMONLY A PID (PROPORTIONAL-INTEGRAL-DERIVATIVE) CONTROL LOOP.
SCHED: SCHEDULE. THE CONTROL ALGORITHM FOR THIS EQUIPMENT SHALL INCLUDE A USER EDITABLE SCHEDULE.
TREND: THE CONTROL SYSTEM SHALL BE CONFIGURED TO COLLECT AND DISPLAY A TREND LOG OF THIS OBJECT.

OCCUPANT OVERRIDE SWITCH, OR TIMED LOCAL OVERRIDE:

A CONTROL OPTION THAT ALLOWS BUILDING OCCUPANTS TO OVERRIDE THE PROGRAMMED HVAC SCHEDULE FOR A LIMITED PERIOD OF TIME. WHEN THE OVERRIDE TIME EXPIRES, THE ZONE RETURNS TO ITS UNOCCUPIED STATE.

OCCUPANT SETPOINT ADJUSTMENT:

A CONTROL OPTION THAT ALLOWS BUILDING OCCUPANTS TO ADJUST - WITHIN LIMITS SET BY THE HVAC CONTROL SYSTEM - THE HEATING AND COOLING SETPOINTS OF SELECTED ZONES. TYPICALLY, THE USER INTERFACE FOR THIS FUNCTION IS BUILT INTO THE ZONE SENSOR.

OPTIMAL START-UP:

A CONTROL STRATEGY THAT AUTOMATICALLY STARTS AN HVAC SYSTEM AT THE LATEST POSSIBLE TIME YET ENSURES COMFORT CONDITIONS BY THE TIME THE BUILDING BECOMES OCCUPIED. IN A TYPICAL IMPLEMENTATION, A CONTROLLER MEASURES THE TEMPERATURE OF THE ZONE AND THE OUTSIDE AIR. THEN, USING DESIGN HEATING OR COOLING CAPACITY AT THE DESIGN OUTSIDE AIR TEMPERATURE, THE SYSTEM COMPUTES HOW LONG A UNIT MUST RUN AT MAXIMUM CAPACITY TO BRING THE ZONE TEMPERATURE TO ITS OCCUPIED SETPOINT.

REQUESTED, OR RUN ON REQUEST:

A CONTROL STRATEGY THAT OPTIMIZES THE RUNTIME OF A SOURCE PIECE OF EQUIPMENT THAT SUPPLIES ONE OR MORE RECEIVING UNITS - SUCH AS AN AIR HANDLER UNIT SUPPLYING ZONE TERMINAL UNITS WITH HEATING, COOLING, VENTILATION, OR SIMILAR SERVICE. SOURCE EQUIPMENT RUNS ONLY WHEN NEEDED, NOT ON A FIXED SCHEDULE.

FOR EXAMPLE, IF ALL THE ZONES IN A BUILDING ARE UNOCCUPIED AND THE ZONE TERMINAL UNITS DO NOT NEED HEATING OR COOLING, THE AHU WILL SHUT DOWN. HOWEVER, IF A ZONE BECOMES OCCUPIED OR NEEDS COOLING, THE TERMINAL UNIT WILL SEND A RUN REQUEST TO THE AHU TO INITIATE THE START-UP SEQUENCE.

TRIM AND RESPOND, OR SETPOINT OPTIMIZATION:

A CONTROL STRATEGY THAT OPTIMIZES THE SETPOINT OF A SOURCE PIECE OF EQUIPMENT THAT SUPPLIES ONE OR MORE RECEIVING UNITS - SUCH AS AN AIR HANDLER UNIT SUPPLYING ZONE TERMINAL UNITS WITH HEATING, COOLING, VENTILATION, OR SIMILAR SERVICE. THE SOURCE UNIT COMMUNICATES WITH RECEIVING UNITS TO DETERMINE HEATING, COOLING, AND OTHER REQUIREMENTS, AND THEN ADJUSTS ITS SETPOINT.

INTERFACE

THE PHYSICAL DEVICE REQUIRED TO PROVIDE INTEGRATION CAPABILITIES FROM AN EQUIPMENT VENDOR'S PRODUCT TO THE CONTROL SYSTEM. THE EQUIPMENT VENDOR MOST NORMALLY FURNISHES THE INTERFACE DEVICE. AN EXAMPLE OF AN INTERFACE IS THE CHILLED WATER TEMPERATURE RESET INTERFACE CARD PROVIDED BY THE CHILLER MANUFACTURER IN ORDER TO ALLOW THE CONTROL SYSTEM TO INTEGRATE THE CHILLED WATER TEMPERATURE RESET FUNCTION INTO THE CONTROL SYSTEM.

INTEGRATE

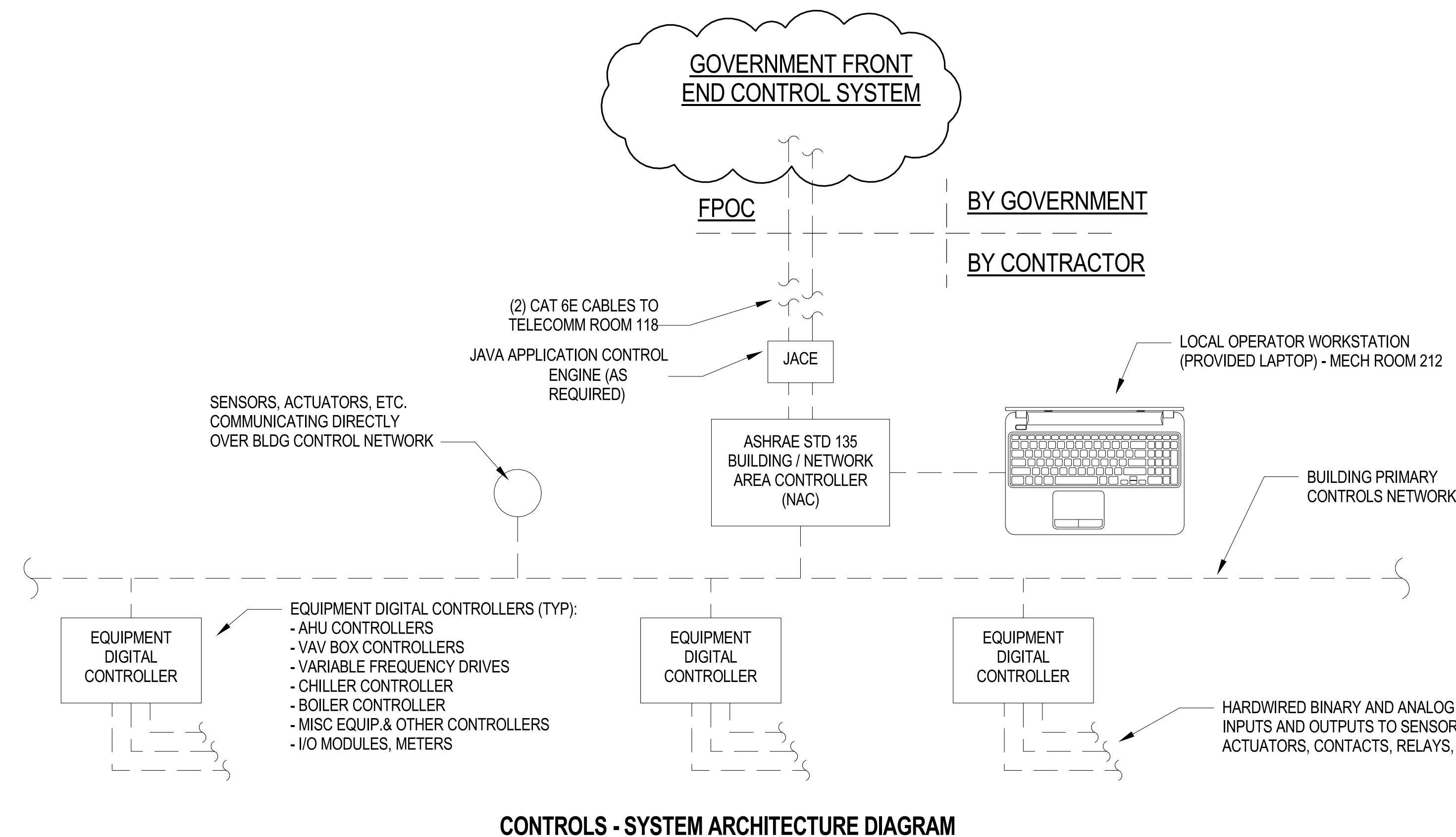
THE PHYSICAL CONNECTIONS FROM A CONTROL SYSTEM TO ALL SPECIFIED EQUIPMENT THROUGH AN INTERFACE AS REQUIRED TO ALLOW THE SPECIFIED CONTROL AND MONITORING FUNCTIONS OF THE EQUIPMENT TO BE PERFORMED VIA THE CONTROL SYSTEM.

CONTROL DIAGRAM SYMBOLS table with columns for symbol and description. Includes Motor, Current Transmitter, Motor Starter, Variable Frequency Drive, Silicon Controlled Rectifier, Airflow Measurement Station, Air Filter, Differential Pressure Sensor, Motorized Damper, Damper Status Switch, VAV / Terminal Box Damper, Backdraft Damper.

CONTROL DIAGRAM SYMBOLS (CONTINUED) table with columns for symbol and description. Includes Duct Freeze Stat, Duct Humidity Sensor, Duct Temperature Sensor, Duct Smoke Detector, Pump, Water Flow Direction, Water Flow Sensor, Water Flow Meter, Water Temperature Sensor, Control Valve with Motorized Operator (2-way and 3-way), Room Humidity Sensor, Room Temperature Sensor, Room Thermostat, Outdoor Air Temp Sensor.

ABBREVIATIONS / ACRONYMS table listing terms like ADJ, AI, AO, AV, BI, BO, BV, DX, EC, MC, NC, NO with their corresponding definitions.

BUILDING OCCUPANCY SCHEDULE: THE BUILDING OCCUPANCY SCHEDULE AS PROGRAMMED INTO THE DDC SYSTEM SHALL BE COORDINATED WITH THE USER/CONTRACTING OFFICER. IF A SPECIFIC OCCUPANCY SCHEDULE CANNOT BE DETERMINED, HOURS OF BUILDING OCCUPANCY SHALL BE MONDAY THRU FRIDAY FROM 6AM TO 6PM.



CONTROLS - SYSTEM ARCHITECTURE DIAGRAM

Vertical sidebar containing project information, logos (NAVAC, Jordan Company, Michael Baker International), and drawing title M-801.

PLOTTED: 04/20/21 12:18:54 PM

FILE NAME: BIM_360/HF_PACKAGE_3P1527_LOG_COM_CSP-1639600-M.dwg

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P-1527 PREFINAL SUBMISSION - 08/06/2021

FILE NAME: BIM_360/HF_PACKAGE_3P1527.LOG.COM.CSP-16396004.MXD
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ELECTRIC METER SEQUENCE OF OPERATION:

THE CONTROLLER SHALL MONITOR THE ELECTRIC METER FOR ELECTRIC CONSUMPTION ON A CONTINUAL BASIS. THESE VALUES SHALL BE MADE AVAILABLE TO THE SYSTEM AT ALL TIMES.

ALARM SHALL BE GENERATED AS FOLLOWS:

- METER FAILURE: SENSOR READING INDICATES A LOSS OF PULSE OUTPUT FROM THE ELECTRIC METER.

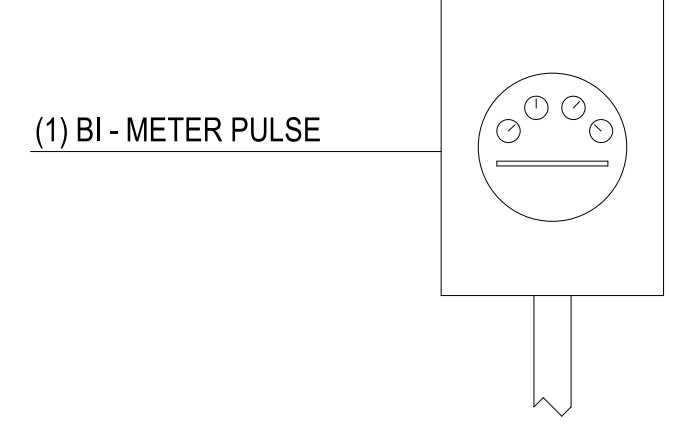
PEAK DEMAND HISTORY:

THE CONTROLLER SHALL MONITOR AND RECORD THE PEAK (HIGH AND LOW) DEMAND READINGS FROM THE ELECTRIC METER. PEAK READINGS SHALL BE RECORDED ON A DAILY, MONTH-TO-DATE, AND YEAR-TO-DATE BASIS.

USAGE HISTORY:

THE CONTROLLER SHALL MONITOR AND RECORD ELECTRIC METER READINGS SO AS TO PROVIDE A POWER CONSUMPTION HISTORY. USAGE READINGS SHALL BE RECORDED ON A DAILY, MONTH-TO-DATE, AND YEAR-TO-DATE BASIS.

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



ELECTRIC METER CONTROL DIAGRAM

SCALE: NTS

WATER FLOW METER SEQUENCE OF OPERATION:

WATER METER:

THE CONTROLLER SHALL MONITOR THE WATER METER FOR WATER CONSUMPTION ON A CONTINUAL BASIS. THESE VALUES SHALL BE MADE AVAILABLE TO THE SYSTEM AT ALL TIMES.

ALARM SHALL BE GENERATED AS FOLLOWS:

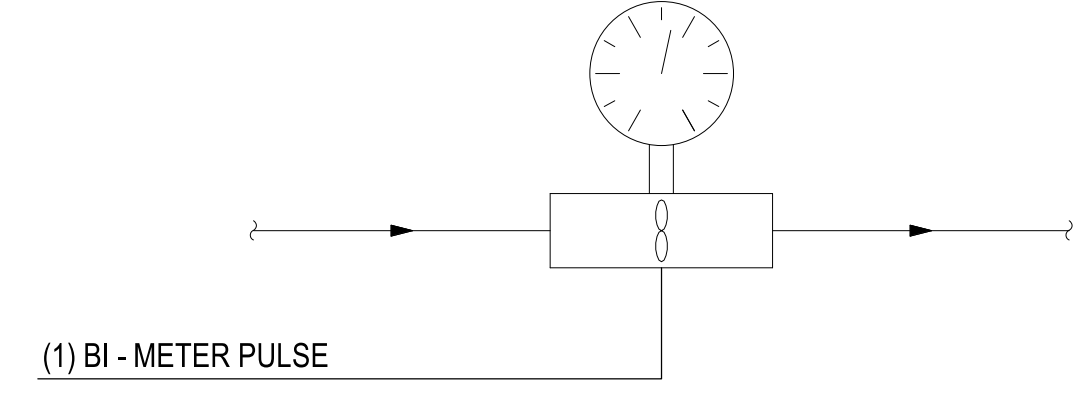
- METER FAILURE: SENSOR READING INDICATES A LOSS OF PULSE OUTPUT FROM THE WATER METER.

PEAK DEMAND HISTORY:

THE CONTROLLER SHALL MONITOR AND RECORD THE PEAK (HIGH AND LOW) DEMAND READINGS FROM THE WATER METER. THESE READINGS SHALL BE RECORDED ON A DAILY, MONTH-TO-DATE, AND YEAR-TO-DATE BASIS.

USAGE HISTORY:

THE CONTROLLER SHALL MONITOR AND RECORD WATER METER READINGS SO AS TO PROVIDE A WATER CONSUMPTION HISTORY. USAGE READINGS SHALL BE RECORDED ON A DAILY, MONTH-TO-DATE, AND YEAR-TO-DATE BASIS.



WATER FLOW METER CONTROL DIAGRAM

SCALE: NTS

GAS METER SEQUENCE OF OPERATION:

GAS METER:

THE CONTROLLER SHALL MONITOR THE GAS METER FOR GAS CONSUMPTION ON A CONTINUAL BASIS. THESE VALUES SHALL BE MADE AVAILABLE TO THE SYSTEM AT ALL TIMES.

ALARM SHALL BE GENERATED AS FOLLOWS:

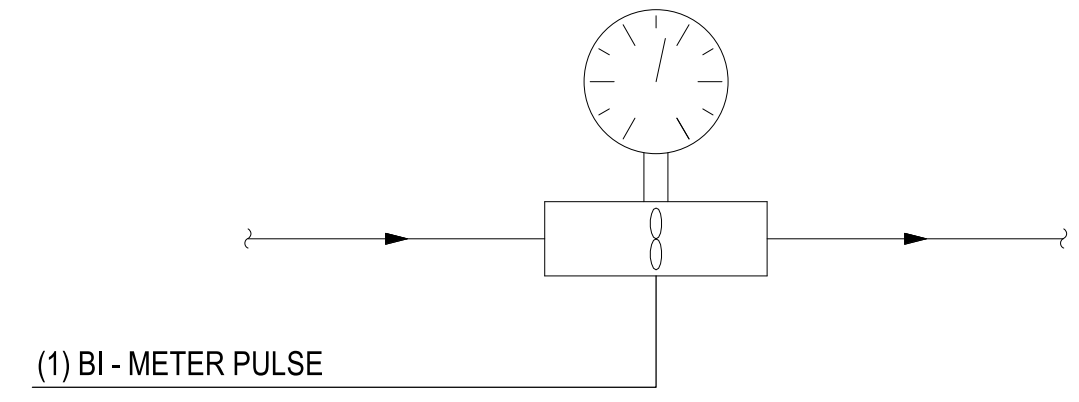
- METER FAILURE: SENSOR READING INDICATES A LOSS OF PULSE OUTPUT FROM THE GAS METER.

PEAK DEMAND HISTORY:

THE CONTROLLER SHALL MONITOR AND RECORD THE PEAK (HIGH AND LOW) DEMAND READINGS FROM THE GAS METER. PEAK READINGS SHALL BE RECORDED ON A DAILY, MONTH-TO-DATE, AND YEAR-TO-DATE BASIS.

USAGE HISTORY:

THE CONTROLLER SHALL MONITOR AND RECORD GAS METER READINGS SO AS TO PROVIDE A GAS CONSUMPTION HISTORY. USAGE READINGS SHALL BE RECORDED ON A DAILY, MONTH-TO-DATE, AND YEAR-TO-DATE BASIS.



GAS METER CONTROL DIAGRAM

SCALE: NTS

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)				
	ELECTRIC METER							(AV) ANALOG VALUE (BV) BINARY VALUE TREND	COMM. FAIL LEVEL EXCEEDED	
1	DDC CONTROL PANEL PULSE INPUT	●								
2	CURRENT DEMAND LEVEL	●								
3	KW DEMAND	●								
4	KW PEAK MONTH-TO-DATE	●								
5	KW PEAK TODAY	●								
6	KW PEAK YEAR-TO-DATE	●								
7	kWh TODAY	●								
8	MWh MONTH-TO-DATE	●								
9	MWh YEAR-TO-DATE	●								
10	DEMAND LEVEL 1	●								
11	DEMAND LEVEL 2	●								
12	DEMAND LEVEL 3	●								
13	METER FAILURE	●								
14	RESERVED FOR FUTURE									
15	RESERVED FOR FUTURE									

C1

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)				
	WATER METER							(AV) ANALOG VALUE (BV) BINARY VALUE TREND	COMM. FAIL	
1	DDC CONTROL PANEL PULSE INPUT	●								
2	CURRENT DEMAND LEVEL	●								
3	DEMAND	●								
4	PEAK MONTH-TO-DATE	●								
5	PEAK TODAY	●								
6	PEAK YEAR-TO-DATE	●								
7	USAGE TODAY	●								
8	USAGE MONTH-TO-DATE	●								
9	USAGE YEAR-TO-DATE	●								
10	METER FAILURE	●								
11	RESERVED FOR FUTURE									
12	RESERVED FOR FUTURE									

B1

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)				
	GAS METER							(AV) ANALOG VALUE (BV) BINARY VALUE TREND	COMM. FAIL	
1	DDC CONTROL PANEL PULSE INPUT	●								
2	CURRENT DEMAND LEVEL	●								
3	DEMAND	●								
4	PEAK MONTH-TO-DATE	●								
5	PEAK TODAY	●								
6	PEAK YEAR-TO-DATE	●								
7	USAGE TODAY	●								
8	USAGE MONTH-TO-DATE	●								
9	USAGE YEAR-TO-DATE	●								
10	METER FAILURE	●								
-										
##	RESERVED FOR FUTURE									

A1

APPR DATE

SYN DESCRIPTION

PRELIMINARY
NOT FOR CONSTRUCTION

SEAL

RO Jordan COMPANY
- A JOINT VENTURE -

Michael Baker INTERNATIONAL
100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108 A/E/IN/P/O APPROVED

FOR COMMANDER NAVFAC

ACTIVITY
MARINE CORPS BASE
CAMP LEJEUNE

SATISFACTORY TO DATE DD/MM/YY

DES DEM DRW JW CHK EMB

PM

BRANCH HEAD

DESIGN DIRECTOR

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
ATLANTIC DESIGN AND CONSTRUCTION
NORFOLK, VA

JACKSONVILLE, NC

LOGCOM CSP WAREHOUSE

MECHANICAL - CONTROLS

SCALE: AS NOTED

EPROJCT NO.: 1639600

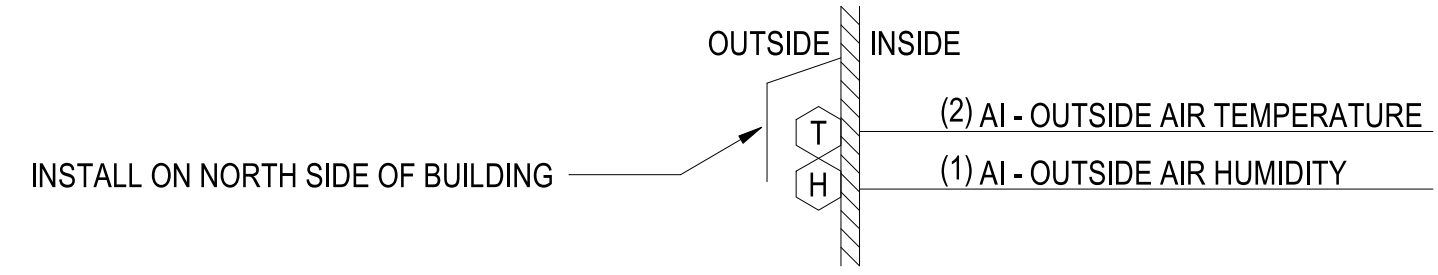
CONSTR. CONTR. NO. N40085-20-C-0059

NAVFAC DRAWING NO.

SHEET OF

M-802

P-1527 PREFINAL SUBMISSION - 08/06/2021



OUTDOOR AIR CONDITIONS SEQUENCE OF OPERATION:

THE CONTROLLER SHALL MONITOR THE OUTSIDE AIR TEMPERATURE AND HUMIDITY AND CALCULATE THE OUTSIDE AIR ENTHALPY ON A CONTINUAL BASIS. THESE VALUES SHALL BE MADE AVAILABLE TO THE SYSTEM AT ALL TIMES.

ALARM SHALL BE GENERATED AS FOLLOWS:

- SENSOR FAILURE: SENSOR READING INDICATES SHORTENED OR DISCONNECTED SENSOR. IN THE EVENT OF A SENSOR FAILURE, AN ALTERNATE OUTSIDE AIR CONDITIONS SENSOR (SUCH AS AHU OA SENSOR) SHALL BE MADE AVAILABLE TO THE SYSTEM WITHOUT INTERRUPTION IN SENSOR READINGS.

IF NO OA TEMP SENSOR CAN BE READ, A DEFAULT VALUE OF 65°F WILL BE USED.

IF NO OA HUMIDITY SENSOR CAN BE READ, A DEFAULT VALUE OF 50% WILL BE USED.

OUTSIDE AIR TEMPERATURE HISTORY:

THE CONTROLLER SHALL MONITOR AND RECORD THE HIGH AND LOW TEMPERATURE READINGS FOR THE OUTSIDE AIR. THESE READINGS SHALL BE RECORDED ON A DAILY, MONTH-TO-DATE, AND YEAR-TO-DATE BASIS.

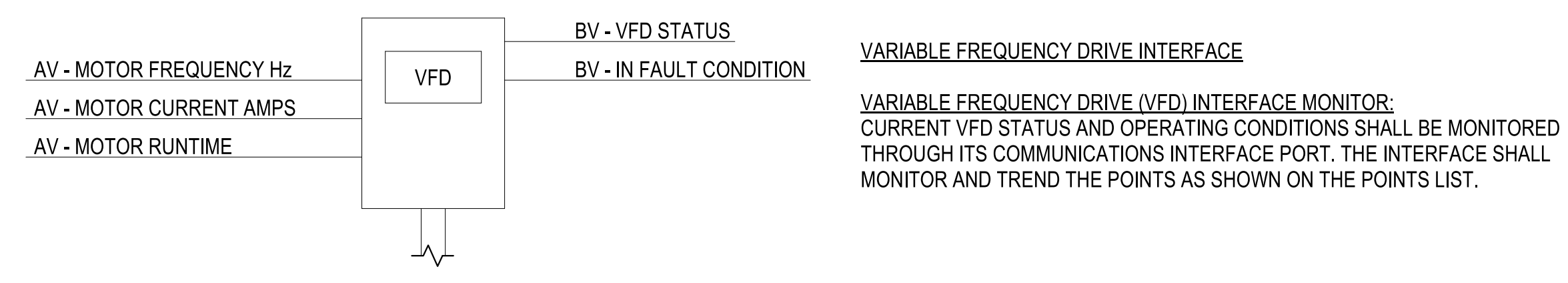
OUTDOOR AIR CONDITIONS POINT LIST

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)					
	OUTDOOR AIR CONDITIONS					(AV) ANALOG VALUE	(BV) BINARY VALUE	TREND	FAILURE	
1	OUTSIDE AIR HUMIDITY									
2	OUTSIDE AIR TEMP									
3	OUTSIDE AIR ENTHALPY									
4	HIGH TEMP MONTH-TO-DATE									
5	HIGH TEMP TODAY									
6	HIGH TEMP YEAR-TO-DATE									
7	LOW TEMP MONTH-TO-DATE									
8	LOW TEMP TODAY									
9	LOW TEMP YEAR-TO-DATE									
10	SENSOR FAILURE									
##	RESERVED FOR FUTURE									

OUTSIDE AIR CONDITIONS CONTROL DIAGRAM

SCALE: NTS

C1



VARIABLE FREQUENCY DRIVE 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)					
	VARIABLE FREQUENCY DRIVE					(AV) ANALOG VALUE	(BV) BINARY VALUE	TREND	GENERAL STATUS	
1	MOTOR CURRENT AMPS									
2	MOTOR FREQUENCY HERTZ									
3	MOTOR RUNTIME									
4	IN FAULT CONDITION									
5	VFD STATUS									
##	RESERVED FOR FUTURE									

VARIABLE FREQUENCY DRIVE (VFD)

SCALE: NTS

A1

(1) BI - ATFP SWITCH

ANTI-TERRORISM FORCE PROTECTION (ATFP) SHUTDOWN SEQUENCE OF OPERATION

PROVIDE ATFP SHUTDOWN STATIONS, SEE MP10# PLANS AND DETAIL C4/M-504. ATFP SHUTDOWN CONTROL SHALL BE HARDWIRED 120V CIRCUIT WITH KEYED RESET. ACTIVATION OF ANY SWITCH SHALL SHUTDOWN ALL HVAC SYSTEMS MOVING AIR THROUGH THE BUILDING (AS INDICATED IN INDIVIDUAL SEQUENCES) WITHIN 30 SECONDS. ALL DAMPERS TO THE OUTSIDE SHALL CLOSE. OPERATION SHALL BE REGARDLESS OF HAND/OFF/AUTO (HOA) POSITION OF EQUIPMENT. SYSTEM ACTIVATION SHALL GENERATE AN ALARM WITHIN THE HVAC SYSTEM

UPON ACTIVATION OF A SHUTDOWN SWITCH THE FOLLOWING SHALL OCCUR WITHIN 30 SECONDS (IN NORMAL OCCUPIED SPACES):

- ALL FANS SHALL SHUT DOWN (EXCEPT AS INDICATED)
- ALL OUTDOOR AIR DAMPERS SHALL CLOSE
- ALL EXHAUST DAMPERS SHALL CLOSE
- AN ALARM SHALL BE GENERATED

SYSTEMS EXCLUDED FROM ATFP SHUTDOWN

- COMPUTER ROOM AIR CONDITIONING UNITS (CRAC-01 THRU CRAC-03); SPLIT SYSTEM AIR CONDITIONERS AND HEAT PUMPS; DEHUMIDIFIER.

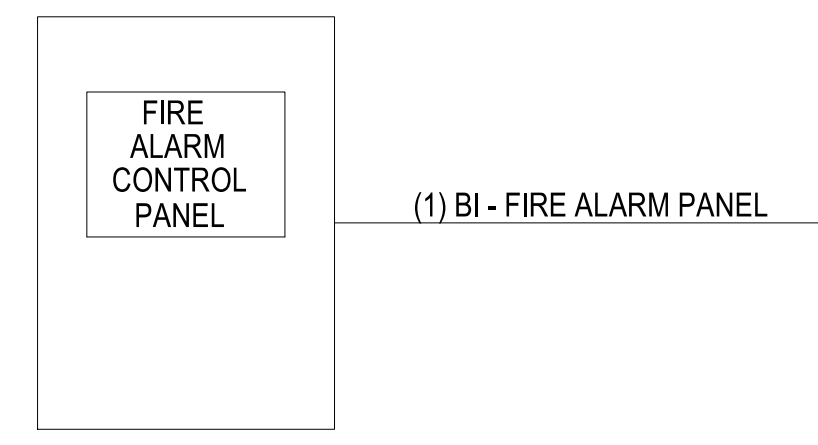
ATFP SHUTDOWN POINT LIST

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)					
	ATFP SHUTDOWN					(AV) ANALOG VALUE	(BV) BINARY VALUE	TREND	ACTIVATION	
1	ATFP SWITCH									
##	RESERVED FOR FUTURE									

ATFP SHUTDOWN CONTROL DIAGRAM

SCALE: NTS

C3



FIRE ALARM SEQUENCE OF OPERATION:

THE CONTROLLER SHALL MONITOR FIRE ALARM. CONNECT TO RELAY MODULE.

UPON ACTIVATION OF FIRE ALARM SYSTEM THE FOLLOWING SHALL OCCUR WITHIN 30 SECONDS:

- ALL FANS SHALL SHUTDOWN
- ALL OUTDOOR AIR DAMPERS SHALL CLOSE
- ALL EXHAUST DAMPERS SHALL CLOSE
- AN ALARM SHALL BE GENERATED

SYSTEM SHALL SHUTDOWN AND DAMPERS SHALL CLOSE REGARDLESS OF THE POSITION OF HAND-OFF-AUTO SWITCHES.

SYSTEMS EXCLUDED FROM FIRE ALARM SHUTDOWN:

- COMPUTER ROOM AIR CONDITIONING UNITS (CRAC-01 THRU CRAC-03)

FIRE ALARM SYSTEM DDC INTERFACE 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)					
	FIRE ALARM SYSTEM					(AV) ANALOG VALUE	(BV) BINARY VALUE	TREND	ACTIVATION	
1	FIRE ALARM PANEL									
##	RESERVED FOR FUTURE									

FIRE ALARM SYSTEM CONTROL DIAGRAM

SCALE: NTS

A4

APPR DATE

DESCRIPTION

SYN

PRELIMINARY
NOT FOR CONSTRUCTION

SEAL

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

FOR COMMANDER NAVFAC

ACTIVITY
MARINE CORPS BASE
CAMP LEJEUNE

SATISFACTORY TO DATE DD/MM/YY

DES DEM | DRW JW | CHK EMB

PM

BRANCH HEAD

DESIGN DIRECTOR

FIRE PROTECTION

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

JACKSONVILLE, NC

LOGCOM CSP WAREHOUSE

MECHANICAL - CONTROLS

SCALE: AS NOTED

EPROJCT NO.: 1639600

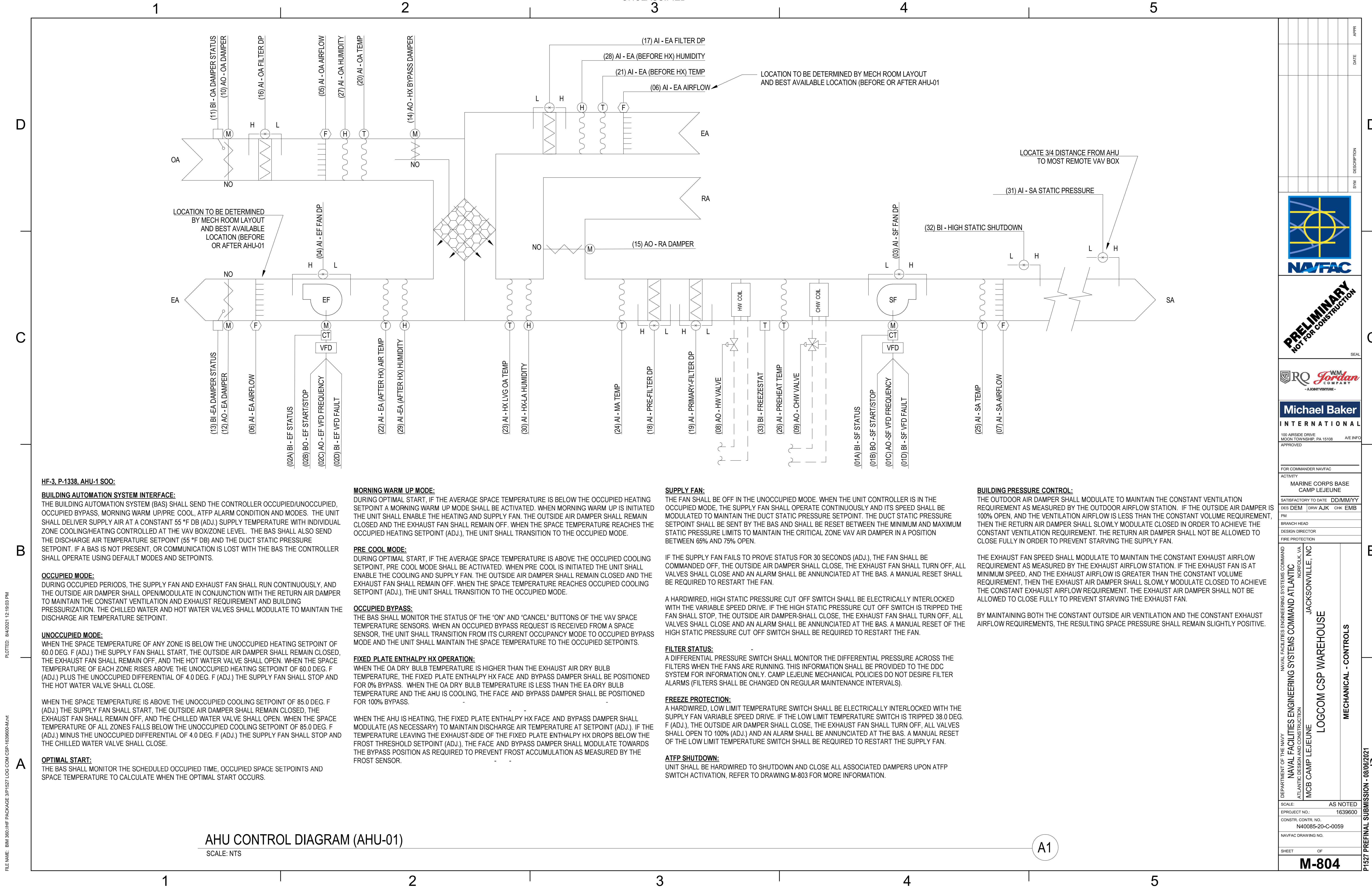
CONSTR. CONTR. NO.
N40085-20-C-0059

NAVFAC DRAWING NO.

SHEET OF

M-803

P-1527 PREFINAL SUBMISSION - 08/06/2021



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, ATPF 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 A BAS IS NOT PRESENT, OR 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, IF 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.

FIXED PLATE ENTHALPY HX OPERATION:
 WHEN THE OA DRY BULB TEMPERATURE IS HIGHER THAN THE EXHAUST AIR DRY BULB TEMPERATURE, THE FIXED PLATE ENTHALPY HX FACE AND BYPASS DAMPER SHALL BE POSITIONED FOR 0% BYPASS. WHEN THE OA DRY BULB TEMPERATURE IS LESS THAN THE EA DRY BULB TEMPERATURE AND THE AHU IS COOLING, THE FACE AND BYPASS DAMPER SHALL BE POSITIONED FOR 100% BYPASS.

WHEN THE AHU IS HEATING, THE FIXED PLATE ENTHALPY HX FACE AND BYPASS DAMPER SHALL MODULATE (AS NECESSARY) TO MAINTAIN DISCHARGE AIR TEMPERATURE AT SETPOINT (ADJ.). IF THE TEMPERATURE LEAVING THE EXHAUST-SIDE OF THE FIXED PLATE ENTHALPY HX DROPS BELOW THE FROST THRESHOLD SETPOINT (ADJ.), THE FACE AND BYPASS DAMPER SHALL MODULATE TOWARDS THE BYPASS POSITION AS REQUIRED TO PREVENT FROST ACCUMULATION AS MEASURED BY THE FROST SENSOR.

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 RESET BETWEEN THE MINIMUM AND MAXIMUM STATIC PRESSURE LIMITS TO MAINTAIN THE CRITICAL ZONE VAV AIR DAMPER IN A POSITION BETWEEN 65% AND 75% OPEN.

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.

ATPF 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.

AHU CONTROL DIAGRAM (AHU-01)

SCALE: NTS

A1

PLOTTED: 8/4/2021 12:19:03 PM

FILE NAME: BIM_360/HF PACKAGE_3PT1527_LOG COM CSP-163960-M-04

SYMBOL			DESCRIPTION	DATE	APPROVED
<small>100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108</small>					
<small>APPROVED</small>					
<small>FOR COMMANDER NAVFAC</small>					
<small>ACTIVITY</small> MARINE CORPS BASE CAMP LEJEUNE					
<small>SATISFACTORY TO DATE</small> DD/MM/YYYY					
<small>DES</small> DEM <small>DRW</small> AJK <small>CHK</small> EMB					
<small>PM</small>					
<small>BRANCH HEAD</small>					
<small>DESIGN DIRECTOR</small>					
<small>FIRE PROTECTION</small>					
<small>DEPARTMENT OF THE NAVY</small> NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC <small>ATLANTIC DESIGN AND CONSTRUCTION</small> MCB CAMP LEJEUNE					
<small>NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND</small> LOGCOM CSP WAREHOUSE					
<small>BRANCH HEAD</small> JACKSONVILLE, NC					
<small>MECHANICAL - CONTROLS</small>					
<small>SCALE:</small> AS NOTED <small>EPROJECT NO.:</small> 1639600 <small>CONSTR. CONTR. NO.:</small> N40085-20-C-0059 <small>NAVFAC DRAWING NO.:</small>					
<small>SHEET</small> OF					
M-804					

P-1527 PREFINAL SUBMISSION - 08/06/2021




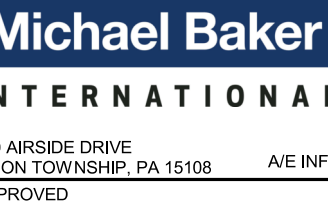
UNCLASSIFIED

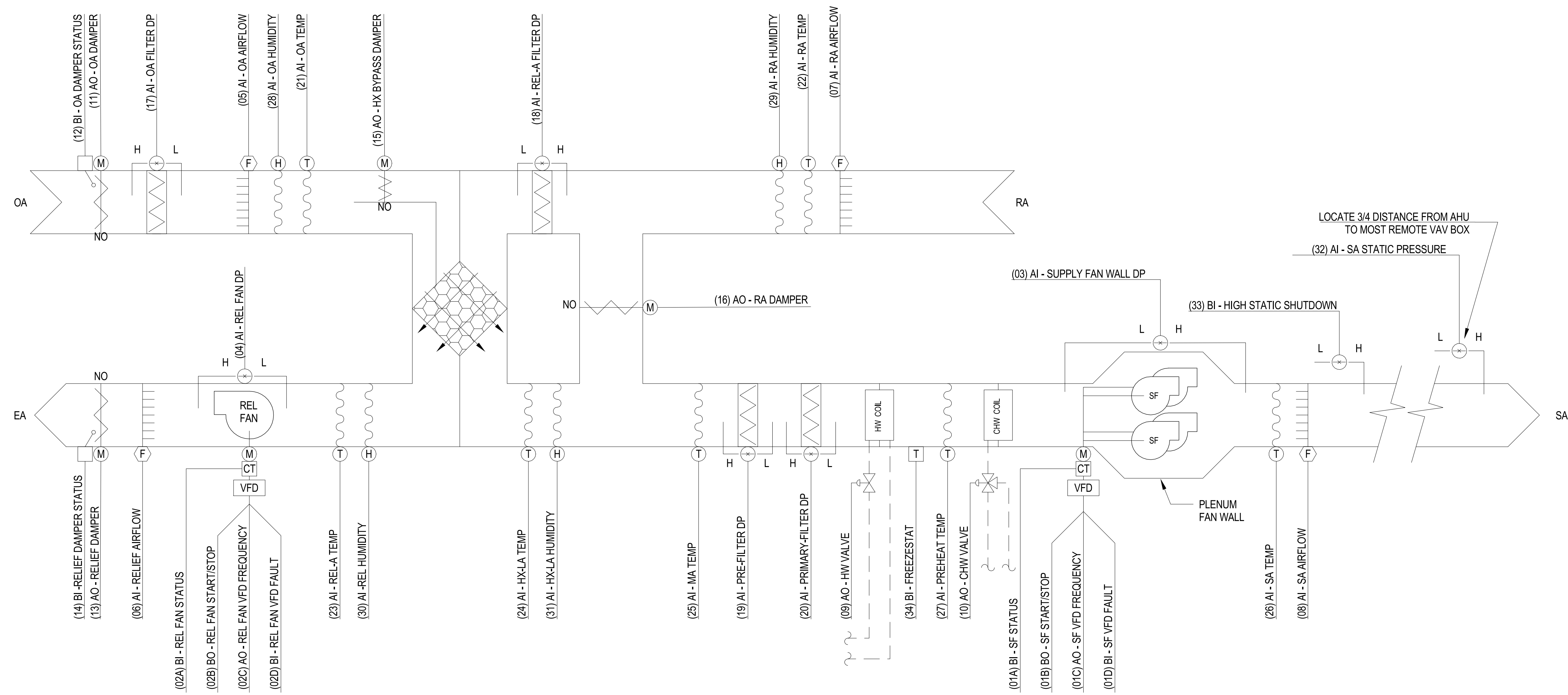
UNCLASSIFIED

FILE NAME: BIM 360/HF PACKAGE 3P1527.LOG.COM.CSP-1639600-M.rvt
 PLOTTED: 8/4/2021 12:19:04 PM

AHU-1 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)			PROGRAMS				ALARMS										
		SHOW ON DISPLAY	TEMPERATURE	PRESSURE	RELATIVE HUMIDITY	AIRFLOW (CFM)	% OPEN/FREQUENCY	% OPEN / CLOSE	% OPEN/FREQUENCY	STATUS ON/OFF	OPEN/CLOSE	SMOKE	STATUS (FAULT)	START / STOP		TREND	TIME SCHEDULING	OPT. START/STOP	EVENT	ALARM INSTRUCT	RUN TIME	AUTO RESTART	HIGH ANALOG	LOW ANALOG	SENSOR FAIL	FLOW FAIL
	DDC CONTROL PANEL																									
01A-D	SUPPLY FAN VFD																									1
02A-D	EXHAUST FAN VFD																									1
03	SUPPLY FAN DP																									
04	EXHAUST FAN DP																									
05	AFMS - OUTSIDE AIR (OA) AIRFLOW																									
06	AFMS - EXHAUST AIRFLOW																									
07	AFMS - SUPPLY AIR (SA) AIRFLOW																									
08	HOT WATER HEATING (HW) VALVE																									
09	CHILLED WATER COOLING (CHW) VALVE																									
10	OUTSIDE AIR (OA) DAMPER																									
11	OUTSIDE AIR (OA) DAMPER END SWITCH																									
12	EXHAUST AIR (EA) DAMPER																									
13	EXHAUST AIR (EA) DAMPER END SWITCH																									
14	HX BYPASS DAMPER																									
15	RETURN AIR DAMPER																									
16	OUTSIDE AIR (OA) FILTER DP																									
17	EXHAUST AIR (EA) FILTER DP																									
18	PRE-FILTER DP																									
19	PRIMARY FILTER DP																									
20	OUTSIDE AIR (OA) TEMPERATURE																									
21	EXHAUST AIR (EA) BEFORE HX TEMP																									
22	EXHAUST AIR (EA) AFTER HX TEMP																									
23	HX LEAVING (HX-LVG) OA TEMP																									
24	MIXED AIR (MA) TEMPERATURE																									
25	SUPPLY AIR (SA) TEMPERATURE																									
26	PREHEAT TEMPERATURE																									
27	OUTSIDE AIR (OA) HUMIDITY																									
28	EXHAUST AIR (EA) BEFORE HX HUMIDITY																									
29	EXHAUST AIR (EA) AFTER HX HUMIDITY																									
30	HX LEAVING (HX-LA) OA AIR HUMIDITY																									
31	SUPPLY AIR (SA) STATIC PRESSURE																									
32	HIGH STATIC SHUTDOWN SWITCH																									
33	FREEZE/STAT																									
##	RESERVED FOR FUTURE																									

NOTES: 1. SUPPLY AND EXHAUST 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.

DATE	APPR
DESCRIPTION	DATE
SYMBOL	DATE
	
	
	
	
100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED	
FOR COMMANDER NAVFAC ACTIVITY MARINE CORPS BASE CAMP LEJEUNE	
SATISFACTORY TO DATE DD/MM/YY DES: DEM DRW: AJK CHK: EMB	
BRANCH HEAD DESIGN DIRECTOR FIRE PROTECTION	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC ATLANTIC DESIGN AND CONSTRUCTION MCB CAMP LEJEUNE JACKSONVILLE, NC LOGCOM CSP WAREHOUSE MECHANICAL - CONTROLS	
SCALE:	AS NOTED
EPROJECT NO.:	1639600
CONSTR. CONTR. NO.	N40085-20-C-0059
NAVFAC DRAWING NO.	
SHEET	OF
M-805	



HF-3, P-1338, AHU-2 SOO:

BUILDING AUTOMATION SYSTEM INTERFACE:

THE BUILDING AUTOMATION SYSTEM (BAS) SHALL SEND THE CONTROLLER OCCUPIED/UNOCCUPIED, OCCUPIED BYPASS, MORNING WARM UP/PRE COOL, ATPF ALARM CONDITION AND MODES. THE UNIT SHALL DELIVER SUPPLY AIR AT A CONSTANT 55 °F DB (ADJ.) SUPPLY AIR 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 ADJ.) AND THE DUCT STATIC PRESSURE SETPOINT. IF A BAS IS NOT PRESENT, OR COMMUNICATION IS LOST WITH THE BAS THE CONTROLLER SHALL OPERATE USING DEFAULT MODES AND SETPOINTS.

OCCUPIED MODE:

DURING OCCUPIED PERIODS, THE SUPPLY FAN(S) AND RELIEF FAN SHALL RUN CONTINUOUSLY, AND THE OUTSIDE AIR DAMPER SHALL OPEN/MODULATE IN CONJUNCTION WITH THE RETURN AIR DAMPER TO MAINTAIN THE CONSTANT VENTILATION/RELIEF REQUIREMENTS 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 RELIEF 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 RELIEF 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, IF 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 RELIEF 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 RELIEF 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.

FIXED PLATE ENTHALPY HX OPERATION:

WHEN THE OA DRY BULB TEMPERATURE IS HIGHER THAN THE (RELIEF AIR DRY BULB TEMPERATURE, THE FIXED PLATE ENTHALPY HX FACE AND BYPASS DAMPER SHALL BE POSITIONED FOR 0% BYPASS. WHEN THE OA DRY-BULB TEMPERATURE IS LESS THAN THE EA DRY BULB TEMPERATURE AND THE AHU IS COOLING, THE FACE AND BYPASS DAMPER SHALL BE POSITIONED FOR 100% BYPASS.

WHEN THE AHU IS HEATING, THE FIXED PLATE ENTHALPY HX FACE AND BYPASS DAMPER SHALL MODULATE (AS NECESSARY) TO MAINTAIN DISCHARGE AIR TEMPERATURE AT SETPOINT (ADJ.). IF THE TEMPERATURE LEAVING THE RELIEF SIDE OF THE FIXED PLATE ENTHALPY HX DROPS BELOW THE FROST THRESHOLD SETPOINT (ADJ.), THE FACE AND BYPASS DAMPER SHALL MODULATE TOWARDS THE BYPASS POSITION AS REQUIRED TO PREVENT FROST ACCUMULATION AS MEASURED BY THE FROST SENSOR.

SUPPLY FAN (4-FAN "FANWALL"):

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 RESET BETWEEN THE MINIMUM AND MAXIMUM STATIC PRESSURE LIMITS TO MAINTAIN THE CRITICAL ZONE VAV AIR DAMPER IN A POSITION BETWEEN 65% AND 75% OPEN.

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

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



AHU CONTROL DIAGRAM (AHU-02)

SCALE: NTS

A1

PLOTTED: 04/20/21 12:19:07 PM

FILE NAME: BIM_360/HF PACKAGE 3P1527 LOG COM CSP-1639600-M-04

SYMBOL	DESCRIPTION	DATE	APPR
			
<p>PRELIMINARY NOT FOR CONSTRUCTION</p>			
			
<p>100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED</p>			
ACTIVITY			
<p>MARINE CORPS BASE CAMP LEJEUNE</p>			
SATISFACTORY TO DATE DD/MM/YY			
DES	DEM	DRW	AJK
CHK	EMB		
BRANCH HEAD			
DESIGN DIRECTOR			
FIRE PROTECTION			
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND			
ATLANTIC DESIGN AND CONSTRUCTION			
NORFOLK, VA			
JACKSONVILLE, NC			
LOGCOM CSP WAREHOUSE			
MECHANICAL - CONTROLS			
DEPARTMENT OF THE NAVY			
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND			
ATLANTIC DESIGN AND CONSTRUCTION			
NORFOLK, VA			
MCB CAMP LEJEUNE			
SCALE: AS NOTED			
EPROJECT NO.: 1639600			
CONSTR. CONTR. NO. N40085-20-C-0059			
NAVFAC DRAWING NO.			
SHEET OF			
M-806			

FILE NAME: BIM 360/HF PACKAGE 3P1527 LOG COM CSP-1639600-M-04
 PLOTTED: 8/4/2021 12:19:08 PM

AHU-2 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)																			
		TEMPERATURE	PRESSURE	RELATIVE HUMIDITY	AIRFLOW (CFM)	% OPEN/FREQUENCY	% OPEN / CLOSE	% OPEN/FREQUENCY	STATUS ON/OFF	OPEN/CLOSE	SMOKE	STATUS (FAULT)	START / STOP	TREND	TIME SCHEDULING	OPT. START/STOP	EVENT	ALARM INSTRUCT	RUN TIME	AUTO RESTART	HIGH ANALOG	LOW ANALOG	SENSOR FAIL	FLOW FAIL	COMM. FAIL	SMOKE DETECTOR	
	DDC CONTROL PANEL																										
01A-D	SUPPLY FAN (FANWALL) VFD																										1
02A-D	RELIEF FAN VFD																										1
03	SUPPLY FAN (FANWALL) WALL DP																										
04	RELIEF FAN DP																										
05	AFMS - OUTSIDE AIR (OA) AIRFLOW																										
06	AFMS - RELIEF AIR (REL-A) AIRFLOW																										
07	AFMS - RETURN AIR (RA) AIRFLOW																										
08	AFMS - SUPPLY AIR (SA) AIRFLOW																										
09	HOT WATER HEATING (HW) VALVE																										
10	CHILLED WATER COOLING (CHW) VALVE																										
11	OUTSIDE AIR (OA) DAMPER																										
12	OUTSIDE AIR (OA) DAMPER END SWITCH																										
13	RELIEF AIR (REL-A) DAMPER																										
14	RELIEF AIR (REL-A) DAMPER END SWITCH																										
15	HX BYPASS DAMPER																										
16	RETURN AIR (RA) DAMPER																										
17	OA FILTER DPS																										
18	REL-A FILTER DPS																										
19	PRE-FILTER DPS																										
20	PRIMARY FILTER DPS																										
21	OUTSIDE AIR (OA) TEMPERATURE																										
22	RETURN AIR (RA) TEMPERATURE																										
23	RELIEF AIR (REL-A) TEMPERATURE																										
24	HX LEAVING (HX-LA) AIR TEMPERATURE																										
25	MIXED AIR (MA) TEMPERATURE																										
26	SUPPLY AIR (SA) TEMPERATURE																										
27	PREHEAT TEMPERATURE																										
28	OUTSIDE AIR (OA) HUMIDITY																										
29	RETURN AIR (OA) HUMIDITY																										
30	RELIEF AIR (OA) HUMIDITY																										
31	HX LEAVING (HX-LA) AIR HUMIDITY																										
32	SUPPLY AIR (SA) STATIC PRESSURE																										
33	HIGH STATIC SHUTDOWN SWITCH																										
34	FREEZESTAT																										
##	RESERVED FOR FUTURE																										

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.



PRELIMINARY
 NOT FOR CONSTRUCTION



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

FOR COMMANDER NAVFAC
 ACTIVITY
 MARINE CORPS BASE
 CAMP LEJEUNE
 SATISFACTORY TO DATE DD/MM/YY
 DES: DEM | DRW: AJK | CHK: EMB
 PM
 BRANCH HEAD
 DESIGN DIRECTOR
 FIRE PROTECTION

DEPARTMENT OF THE NAVY
 NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
 NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC
 ATLANTIC DESIGN AND CONSTRUCTION
 MCB CAMP LEJEUNE
 JACKSONVILLE, NC
 LOGCOM CSP WAREHOUSE
 MECHANICAL - CONTROLS

SCALE: AS NOTED
 EPROJECT NO.: 1639600
 CONSTR. CONTR. NO. N40085-20-C-0059
 NAVFAC DRAWING NO.
 SHEET OF
M-807

POINT NUMBER	SYSTEM POINT DESCRIPTION	CHILLED WATER SYSTEM SYSTEM POINT LIST																NOTES						
		HARDWARE POINTS										SYSTEMS FEATURES / SOFTWARE POINTS												
		ANALOG					DIGITAL (BINARY)					PROGRAMS			ALARMS									
		INPUT (AI)		OUTPUT (AO)			INPUT (BI)		OUTPUT (BO)			TREND	(AV) ANALOG VALUE	TIME SCHEDULING	ALARM INSTRUCT	RUN TIME	AUTOMATIC RESTART		HIGH ANALOG	LOW ANALOG	SENSOR FAIL	FLOW FAIL	COMM. FAIL	CHILLER ALARM
	DDC CONTROL PANEL	SHOW ON DISPLAY	TEMPERATURE	PRESSURE	RELATIVE HUMIDITY	KW	PERCENT RLA	FLOW (GPM)	SETPOINT ADJ	FREQUENCY	STATUS ON/OFF	FILTER STATUS	STATUS OPEN/CLOSED	STATUS (FAULT)	START/STOP	OPEN/CLOSE								
01	CHILLED WATER SETPOINT																							
02.1-5	CHILLER CH-01																							
03	CHWS TEMP (CH-01) SENSOR T-1																							
04	CHWR TEMP (CH-01) SENSOR T-2																							
05	CH-01 FLOW SWITCH FS-1																							
06.1	PUMP P-1 START/STOP																							
06.2	PUMP P-1 VFD FREQUENCY																							
06.3	PUMP P-1 VFD FAULT																							
07	PUMP P-1 STATUS																							
08.1	PUMP P-1 START/STOP																							
08.2	PUMP P-1 VFD FREQUENCY																							
08.3	PUMP P-1 VFD FAULT																							
09	PUMP P-2 STATUS																							
10	PUMP P-1,2 DIFFERENTIAL PRESS																							
11	SYSTEM FLOW (TOTAL)																							
12	BTU'S EXTRACTED																							
-	RESERVED FOR FUTURE																							



PRELIMINARY
NOT FOR CONSTRUCTION



Michael Baker INTERNATIONAL

100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108 A/E IN/PD
APPROVED

FOR COMMANDER NAVFAC

ACTIVITY
MARINE CORPS BASE
CAMP LEJEUNE

SATISFACTORY TO DATE DD/MM/YY

DES DEM DRW AJK CHK EMB

PM

BRANCH HEAD

DESIGN DIRECTOR

FIRE PROTECTION

NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND

ATLANTIC DESIGN AND CONSTRUCTION

NAVY FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC

INDY, VA

NAVY FACILITIES ENGINEERING SYSTEMS COMMAND

JACKSONVILLE, NC

LOGCOM CSP WAREHOUSE

MECHANICAL - CONTROLS

SCALE: AS NOTED

EPROJCT NO.: 1639600

CONSTR. CONTR. NO.

N40085-20-C-0059

NAVFAC DRAWING NO.

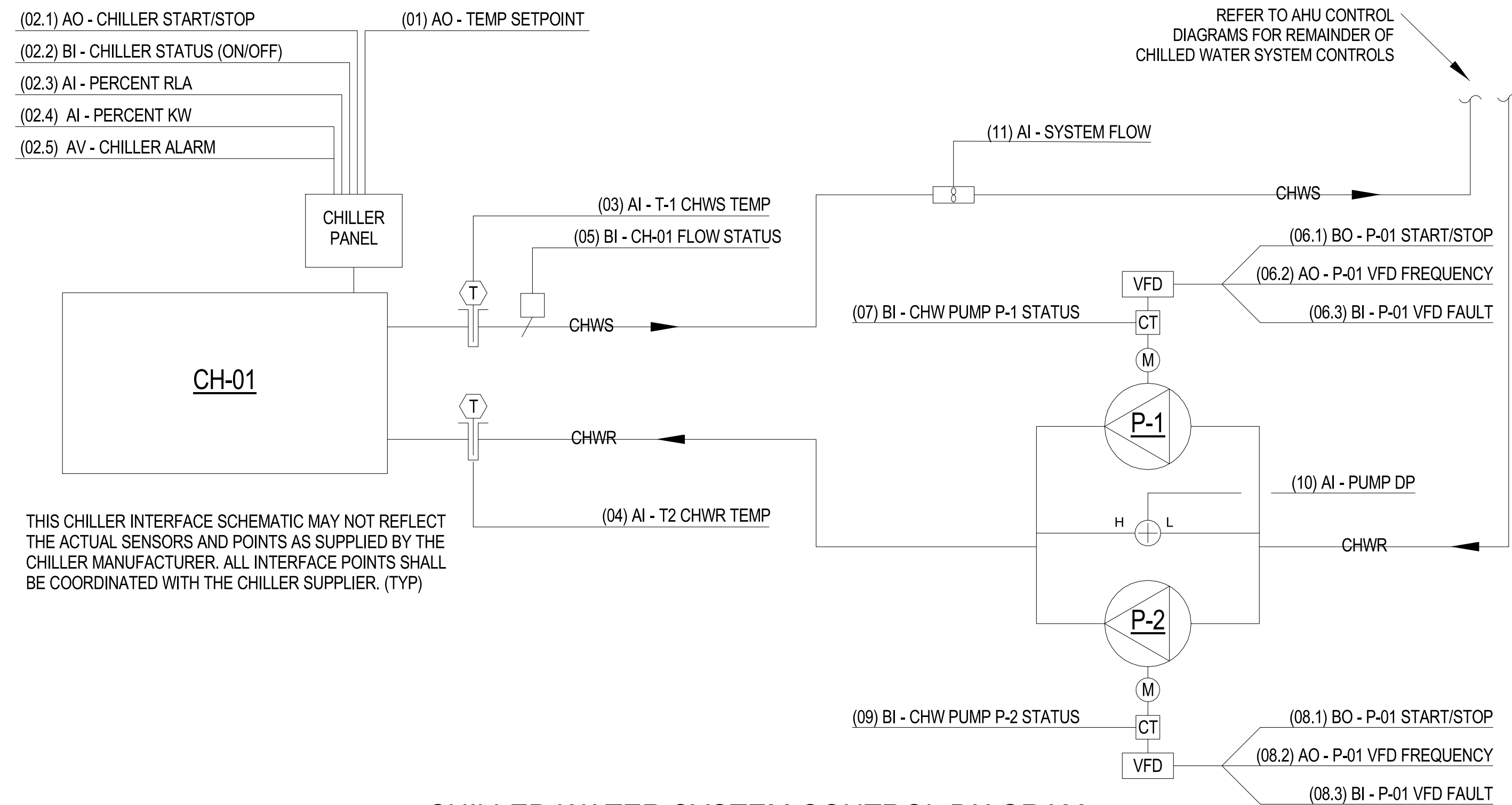
SHEET OF

M-808

P-1527 PREFINAL SUBMISSION - 08/06/2021

AIR COOLED CHILLED WATER SYSTEM SEQUENCE OF OPERATION

- CHILLED WATER CONTROL
 - UPON COMMAND FOR CHILLED WATER BY ANY EITHER AHU-01 OR 02; ENABLE LEAD CHILLED WATER PUMP AND CHILLED WATER PLANT.
 - THE COOLING PLANT WILL BE ENERGIZED BY FIRST ENERGIZING LEAD CHW PUMP (P-1 OR P-2) AT FULL SYSTEM CONSTANT VOLUME FLOWRATE.
 - CHILLER SHALL BE PROVIDED WITH AN INTEGRAL FLOW SWITCH TO ASSURE PROOF OF FLOW AND ENABLE CHILLER OPERATION.
 - MANUFACTURE'S CHILLER CONTROLLER SHALL OPERATE / STAGE / SEQUENCE CHILLER CAPACITIES TO DELIVER CHILLED WATER SUPPLY TEMPERATURE (42°F, ADJ.).
- 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 MASTER CONTROL PANEL SHALL SIGNAL AN ALARM CONDITION.
- 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 LEAVING WATER TEMPERATURE: MONITOR
 - CHILLER ENTERING WATER TEMPERATURE: MONITOR

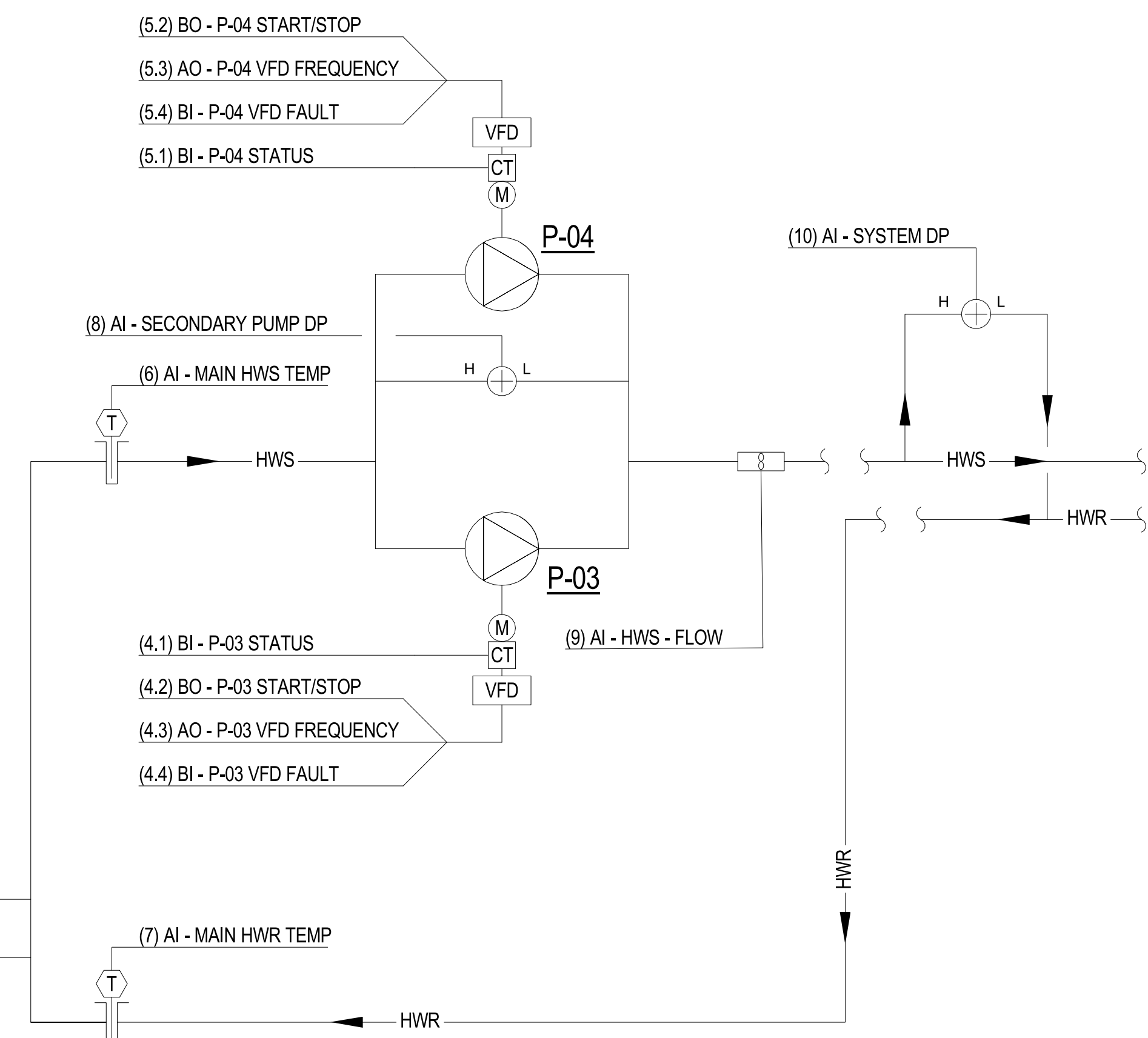
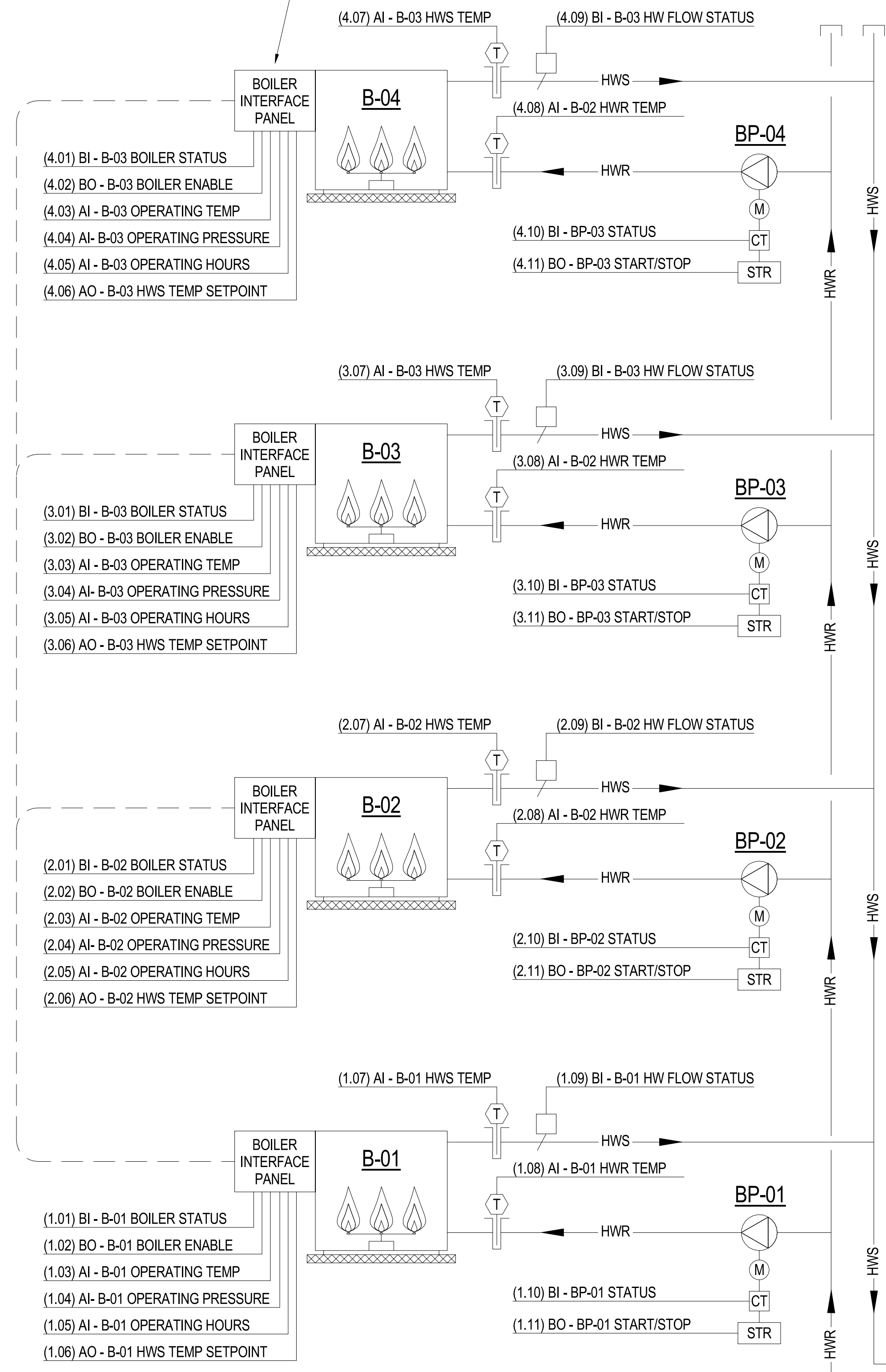
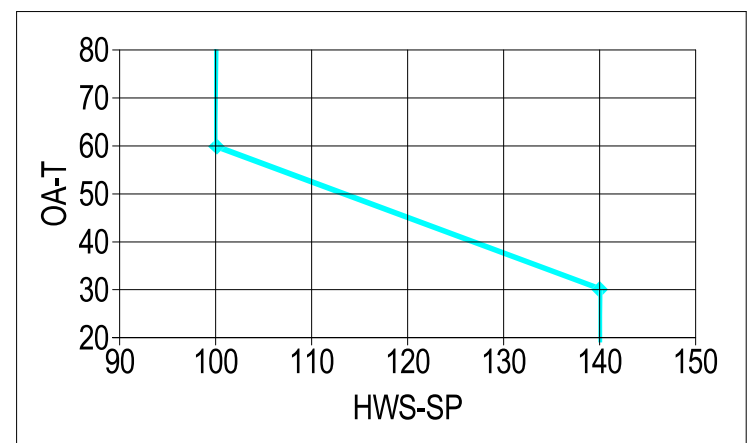


CHILLED WATER SYSTEM CONTROL DIAGRAM

SCALE: NTS

A1

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 HARDWIRED INTERLOCKED TO CLOSE ALL GAS VALVES IN MECHANICAL ROOM. REFER TO ELECTRICAL DRAWINGS FOR WIRING. PROVIDE CONTACTS TO REPORT SWITCH STATUS TO DDC SYSTEM.

HOT WATER SYSTEM CONTROL DIAGRAM
SCALE: NTS

APPR	DATE
SYN	DESCRIPTION
PRELIMINARY NOT FOR CONSTRUCTION	
Michael Baker INTERNATIONAL 100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED	
FOR COMMANDER NAVFAC	
ACTIVITY MARINE CORPS BASE CAMP LEJEUNE	
SATISFACTORY TO DATE DD/MM/YY	
DES DEM	DRW AJK CHK EMB
PM	
BRANCH HEAD	
DESIGN DIRECTOR	
FIRE PROTECTION	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC DESIGN AND CONSTRUCTION	JACKSONVILLE, NC
LOGCOM CSP WAREHOUSE	MECHANICAL - CONTROLS
SCALE: AS NOTED	EPROJCT NO.: 1639600
CONSTR. CONTR. NO. N40085-20-C-0059	NAVFAC DRAWING NO.
SHEET OF	
M-809	

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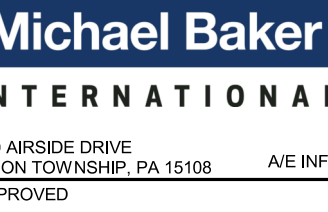
HOT WATER BOILER / HEATING SYSTEM POINT LIST

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)			TREND	ALARM INSTRUCT	RUN TIME	HIGH ANALOG	LOW ANALOG	SENSOR FAIL		FLOW FAIL	COMM. FAIL			
			TEMPERATURE	PRESSURE	FREQUENCY	FLOWRATE (GPM)	INFO	SETPOINT ADJ	% OPEN/CLOSE	FREQUENCY	TEMPERATURE	STATUS ON/OFF	FLOW STATUS	STATUS (FAULT)	OFF/ON (ENABLE)	START/ STOP	(AV) ANALOG VALUE	TIME SCHEDULING		ALARM INSTRUCT	RUN TIME	HIGH ANALOG	LOW ANALOG	SENSOR FAIL
[1,2,3,4],01	DDC CONTROL PANEL																							
[1,2,3,4],02	B-0[1,2,3,4], BOILER STATUS	●																						
[1,2,3,4],03	B-0[1,2,3,4], BOILER ENABLE																							
[1,2,3,4],04	B-0[1,2,3,4], OPERATING TEMP	●																						
[1,2,3,4],05	B-0[1,2,3,4], OPERATING PRESSURE	●	●																					
[1,2,3,4],06	B-0[1,2,3,4], OPERATING HOURS																							
[1,2,3,4],07	B-0[1,2,3,4], HWS TEMP SETPOINT																							
[1,2,3,4],08	B-0[1,2,3,4], HWS (LEAVING) TEMP	●	●																					
[1,2,3,4],09	B-0[1,2,3,4], HWR (ENTERING) TEMP	●	●																					
[1,2,3,4],10	B-0[1,2,3,4], HW FLOW STATUS																							
[1,2,3,4],11	BP-0[1,2,3,4], STATUS																							
[1,2,3,4],11	BP-0[1,2,3,4], 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																							
13	HW SUPPLY TEMP	●																						
14	BTU'S DELIVERED	●																						
##	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 MANUFACTURER 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 AVAILABLE 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

- HEATING HOT WATER CONTROL
 - 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).
 - THE 4-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.
 - TO PREVENT SHORT CYCLING; THE BOILER SYSTEM SHALL RUN FOR AND BE OFF FOR MINIMUM ADJUSTABLE TIMES (BOTH USER DEFINABLE), UNLESS SHUTDOWN ON SAFETIES.
 - THE BOILER(S) SHALL RUN SUBJECT TO THEIR OWN INTERNAL SAFETIES AND CONTROLS.
 - 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 A WEEKLY BASIS.
- SECONDARY PUMP DIFFERENTIAL PRESSURE CONTROL:
 - 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.
 - 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).
- ALARMS AND SYSTEM MONITORING:
 - 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.
 - 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.

APPR	
DATE	
DESCRIPTION	
SYM	
	
	
	
	
100 AIRSIDE DRIVE MOON TOWNSHIP, PA 15108 APPROVED	
FOR COMMANDER NAVFAC ACTIVITY MARINE CORPS BASE CAMP LEJEUNE	
SATISFACTORY TO DATE DD/MM/YY DES DEM DRW AJK CHK EMB PM	
BRANCH HEAD DESIGN DIRECTOR FIRE PROTECTION	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND ATLANTIC DESIGN AND CONSTRUCTION MCB CAMP LEJEUNE JACKSONVILLE, NC LOGCOM CSP WAREHOUSE MECHANICAL - CONTROLS	
SCALE:	AS NOTED
EPROJECT NO.:	1639600
CONSTR. CONTR. NO.:	N40085-20-C-0059
NAVFAC DRAWING NO.:	
SHEET	OF
M-810	

PLOTTED: 04/20/21 12:19:14 PM

FILE NAME: BIM_360/HF PACKAGE 3P1527 LOG COM CSP-1639600-M-01

VAV BOX WITH HW HEATING COIL - SEQUENCE OF OPERATION

1. OPERATING CONDITIONS

1.1. THE VAV BOX SHALL OPERATE ACCORDING TO PROGRAMED SCHEDULE TO MAINTAIN OCCUPIED SPACE TEMPERATURES IN ACCORDANCE WITH MCB CAMP LEJEUNE POLICY TO A GLOBALE SETPOINT. THE GLOBAL SETPOINT SHALL BE 70°F INDOOR SPACE TEMPERATURE WHEN OUTDOOR AMBIENT IS 50°F OR BELOW AND 76° INDOOR SPACE TEMPERATURE WHEN OUTDOOR AMBIENT IS 80°F OR ABOVE. BETWEEN OUTDOOR AMBIENT CONDITIONS OF 50-80° THE INDOOR GLOBAL SETPOINT SHALL RESET LINEARLY BETWEEN 70-76°F.

OCCUPANCY OVERRIDES:

- ZONE OCCUPANCY OVERRIDE AT THE ZONE TEMPERATURE SENSOR DURING OTHERWISE UNOCCUPIED PERIODS BY OCCUPANT CONTROL SHALL OVERRIDE THE SCHEDULE AND PLACE THE UNIT INTO AN OCCUPIED MODE FOR AN ADJUSTABLE PERIOD OF TIME (DEFAULT 60 MINUTES). AT THE EXPIRATION OF THIS OVERRIDE TIME PERIOD, CONTROL OF THE UNIT SHALL AUTOMATICALLY RETURN TO THE SCHEDULE.

1.2. ZONE SETPOINT ADJUST(MENT):

ROOM OCCUPANTS SHALL BE ABLE TO ADJUST THE ZONE SETPOINT AT THE ZONE CONTROLLER. USER SELECTED INPUTS SHALL BE LIMITED TO ± 3°F OF THE GLOBAL SETPOINT. SPACE HEATING AND COOLING SETPOINTS FOR EQUIPMENT CONTROL SHALL BE ± 1°F FROM THIS ZONE ADJUSTED GLOBAL SETPOINT.

1.3. ZONE OPTIMAL START:

THE SYSTEM SHALL UTILIZE AN OPTIMAL START ALGORITHM FOR MORNING START UP IN CONJUNCTION WITH THE ASSOCIATED AHU. THIS ALGORITHM SHALL MINIMIZE THE UNOCCUPIED WARM -UP OR COOL-DOWN PERIOD WHILE STILL ACHIEVING SPACE TEMPERATURE SETPOINT BY THE START OF THE SCHEDULED OCCUPIED PERIOD.

2. VARIABLE VOLUME TERMINAL UNIT – AIRFLOW / HW FLOW CONTROL

2.1. OCCUPIED MODE

- WHEN ZONE TEMPERATURE IS GREATER THAN ZONE COOLING SETPOINT, THE ZONE DAMPER SHALL MODULATE BETWEEN THE SCHEDULED MINIMUM AIRFLOW* AND THE SCHEDULED MAXIMUM COOLING AIRFLOW UNTIL ZONE IS SATISFIED.
- WHEN ZONE TEMPERATURE IS BETWEEN THE COOLING SETPOINT AND THE HEATING SETPOINT, THE ZONE DAMPER SHALL MAINTAIN THE MINIMUM REQUIRED ZONE VENTILATION BY MAINTAINING THE MINIMUM SCHEDULED AIRFLOW.
- WHEN ZONE TEMPERATURE IS LESS THAN ITS HEATING SETPOINT, THE CONTROLLER SHALL ENABLE HEATING TO MAINTAIN THE ZONE TEMPERATURE AT ITS HEATING SETPOINT (SEE "HEATING MODE" BELOW).

2.2. UNOCCUPIED MODE

- WHEN THE BUILDING IS SCHEDULED FOR UNOCCUPIED MODE THE ZONE DAMPER SHALL CLOSE.
- WHEN THE ZONE TEMPERATURE RISES TO THE UNOCCUPIED COOLING SETPOINT OF 85° (ADJUSTABLE), THE ZONE DAMPER SHALL MODULATE BETWEEN A FULLY CLOSED POSITION AND THE MAXIMUM SCHEDULED COOLING AIRFLOW UNTIL ZONE TEMPERATURE REACHES A TARGET TEMPERATURE OF THE UNOCCUPIED COOLING SETPOINT -5°F (80°F ADJ.).
- WHEN THE ZONE TEMPERATURE FALLS TO THE UNOCCUPIED HEATING SETPOINT (60°F), THE CONTROLLER SHALL ENABLE HEATING (SEE "HEATING MODE" BELOW) UNTIL ZONE TEMPERATURE REACHES A TARGET TEMPERATURE OF THE UNOCCUPIED HEATING SETPOINT +5°F (65°F ADJ.).

2.3. HEATING MODE

- VAV BOX SHALL BE SET UP TO PROVIDE A "DUAL MAXIMUM CONTROL" STRATEGY.
- WHEN THE SPACE TEMPERATURE DROPS BELOW THE COOLING SETPOINT, THE VAV BOX SHALL REMAIN AT MINIMUM REQUIRED FLOW (SCHEDULED MINIMUM FLOW) THROUGH THE DEADBAND ZONE TEMPERATURE RANGE BETWEEN THE COOLING SETPOINT AND HEATING SETPOINT.
- UPON FALL IN SPACE TEMPERATURE BELOW HEATING SETPOINT, HW VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE HEATING SETPOINT THROUGH RANGE OF DISCHARGE AIR TEMPERATURES RANGING FROM LOW (AS SUPPLIED FROM AHU), UP TO A HIGH DISCHARGE AIR (SA TO ZONE) TEMPERATURE OF 90°F.
- UPON FURTHER DEMAND FOR HEATING ONCE DISCHARGE AIR (SA TO ZONE) REACHES 90°F THE VAV BOX SHALL INCREASE AIRFLOW FROM THE COOLING MINIMUM AIR FLOWRATE AS SCHEDULED TO THE HEATING AIR FLOWRATE AS SCHEDULED, AND THE HW VALVE SHALL MODULATE TO MAINTAIN DISCHARGE AIR TEMPERATURE AT 90°F.

3. ALARMS AND SYSTEM MONITORING:

3.1. ALARMS SHALL BE PROVIDED AS INDICATED ON THE POINTS LIST AND AS FOLLOWS:

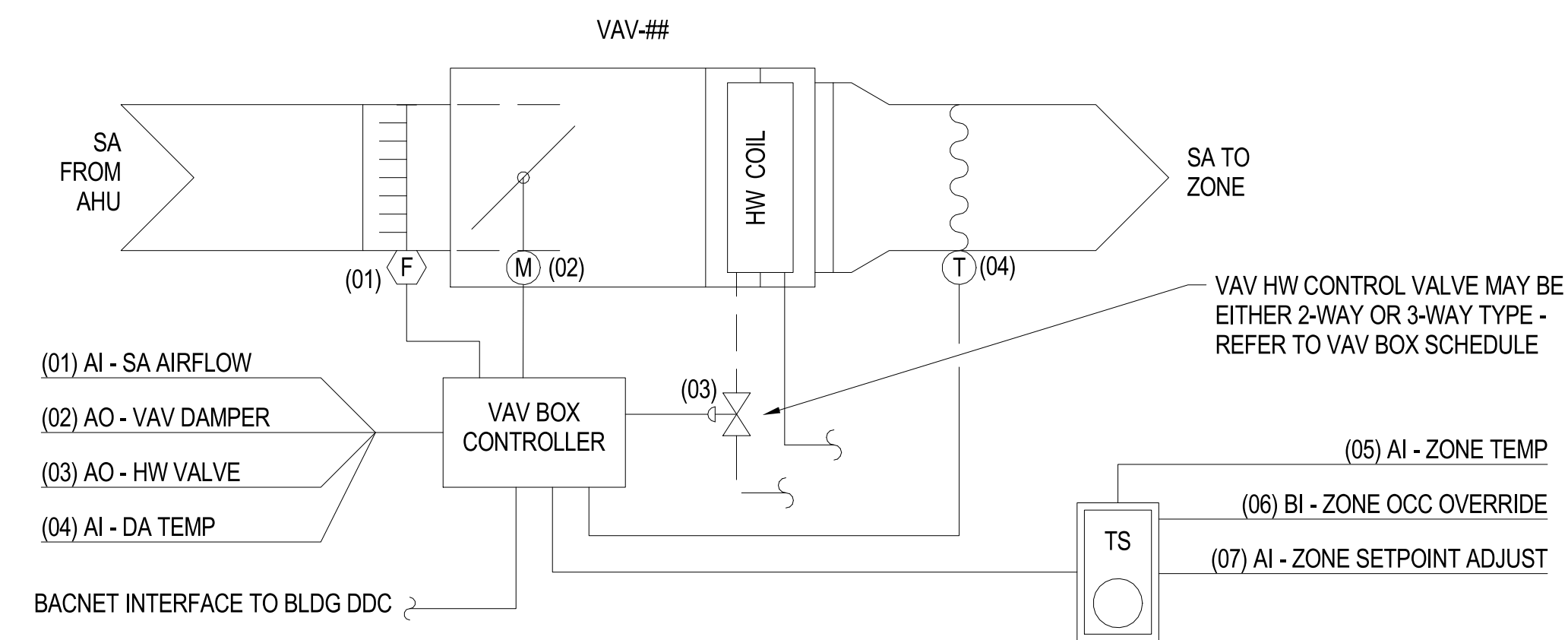
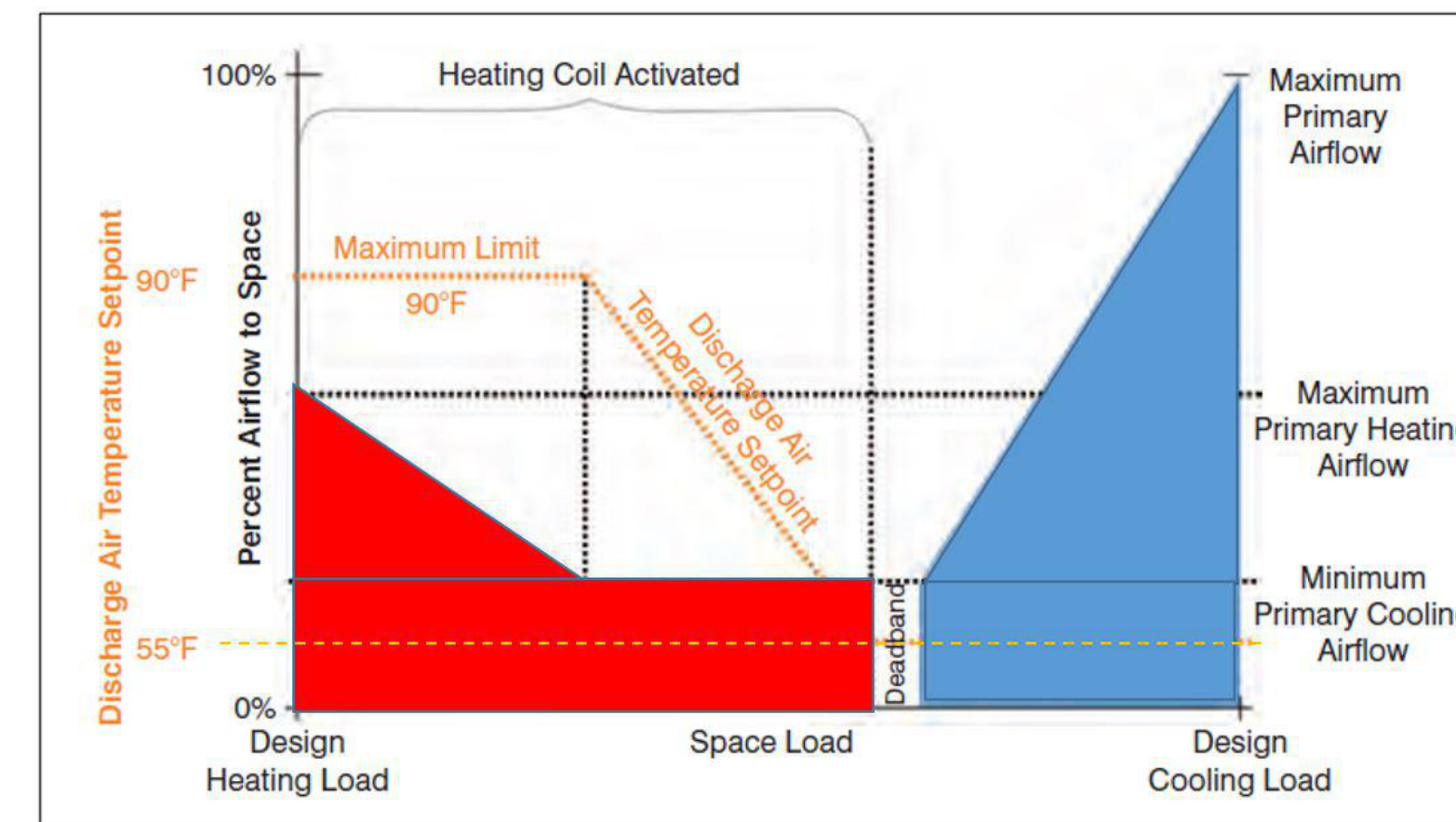
- COMMUNICATIONS FAILURE BETWEEN VAV BOX CONTROLLER AND DDC SYSTEM.
- FAILURE OF SA AIRFLOW SENSOR
- FAILURE OF DISCHARGE AIR TEMPERATURE SENSOR
- FAILURE OF ZONE TEMPERATURE (THERMOSTAT) SETPOINT/INTERFACE

3.2. SYSTEM MONITORING POINTS SHALL BE AS INDICATED ON THE POINTS LIST, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

- VAV BOX DISCHARGE AIR TEMPERATURE (UFC 3-410-01 REQUIRED POINT)

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)										
		SHOW ON DISPLAY	TEMPERATURE	FLOWRATE (CFM)	% OPEN/CLOSE	OCCUPANCY STATUS			TREND	TIME SCHEDULING	ALARM INSTRUCT	AUTOMATIC RESTART	SENSOR FAIL	COMM. FAIL	
01	VAV BOX CONTROLLER	●							●	●	●	●	●	●	1
02	SA AIRFLOW	●	●												
03	VAV DAMPER	●			●										
04	HW VALVE	●			●										
05	DISCHARGE AIR (DA) TEMP	●	●												2
06	ZONE TEMPERATURE	●													
07	ZONE OCCUPANCY OVERRIDE	●				●									
07	ZONE SETPOINT ADJUST	●	●						●						
##	RESERVED FOR FUTURE														

NOTES: 1. VAV BOX CONTROLLER SHALL BE CAPABLE OF ZONE CONTROL INDEPENDENT OF STATUS OF CONNECTION TO BUILDING DDC SYSTEM.
2. MONITORING POINT IN DISCHARGE AIR DUCT AS REQUIRED BY UFC 3-410-01 & FOR DUAL MAXIMUM REHEAT CONTROL.



VAV BOX WITH HW HEATING CONTROL DIAGRAM

SCALE: NTS

A1

APPR: _____ DATE: _____

SYN: _____ DESCRIPTION: _____

PRELIMINARY
NOT FOR CONSTRUCTION

SEAL

Michael Baker INTERNATIONAL
100 AIRSIDE DRIVE
MOON TOWNSHIP, PA 15108 A/E/IN/P/O

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY: MARINE CORPS BASE CAMP LEJEUNE

SATISFACTORY TO DATE: DD/MM/YY

DES: DEM | DRW: AJK | CHK: EMB

PM: _____

BRANCH HEAD: _____

DESIGN DIRECTOR: _____

FIRE PROTECTION: _____

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

LOGCOM CSP WAREHOUSE
MECHANICAL - CONTROLS

SCALE: AS NOTED
EPROJECT NO.: 1639600
CONSTR. CONTR. NO. N40085-20-C-0059
NAVFAC DRAWING NO. _____

SHEET _____ OF _____

M-811

P-1527 PREFINAL SUBMISSION - 08/06/2021

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5

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 80°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 55°F (ADJ.), THE REVERSE SHALL OCCUR. WHERE ELECTRIC HEATERS PROVIDED WITH INTEGRAL THERMOSTATIC CONTROL, SET SUC 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.

SPLIT DX HEAT PUMP - SEQUENCE OF OPERATION

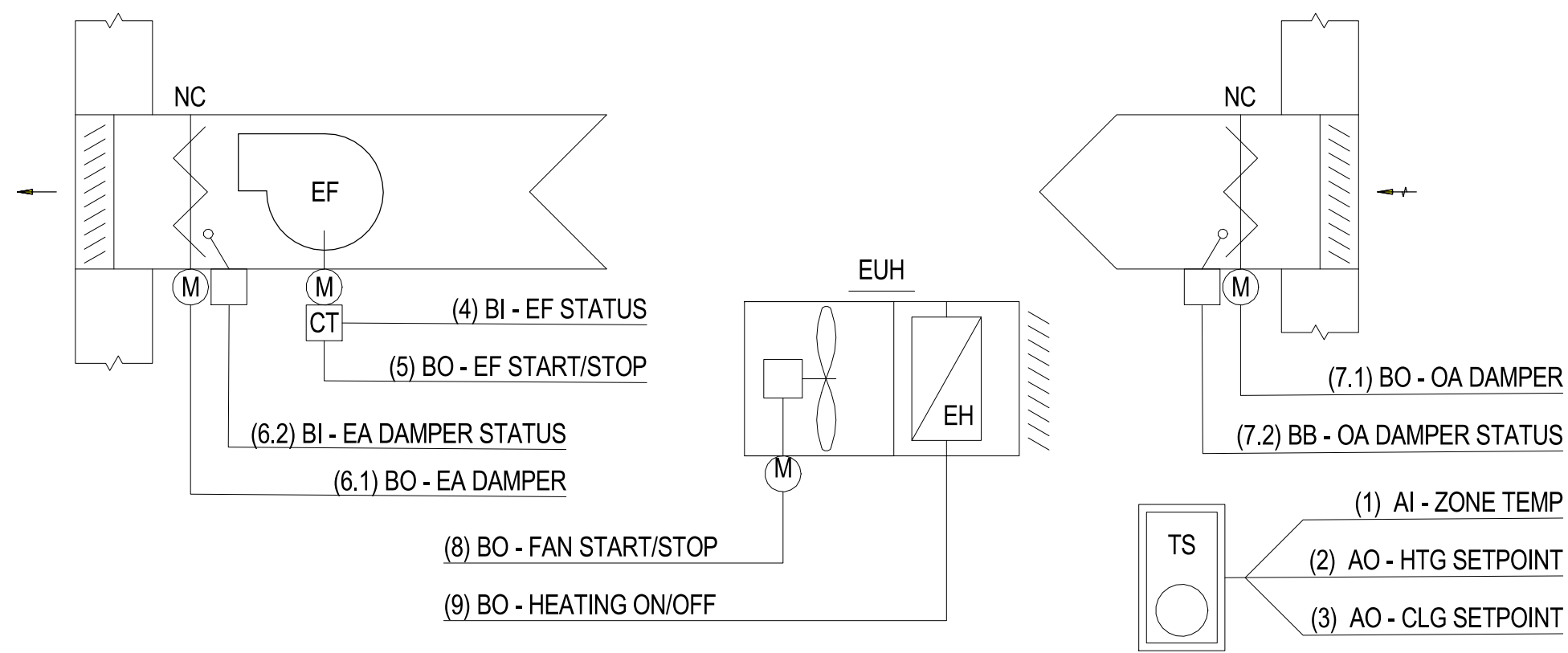
- REMOTE CONTROL PANEL BY UNIT/SYSTEM MANUFACTURER SHALL BE WALL MOUNTED AND CONTROL COOLING AND HEATING MODES OF OPERATION. TEMPERATURE AND HUMIDITY SENSORS SHALL BE INTEGRAL TO THE CONTROL PANEL (IF AVAILABLE FROM MANUFACTURER) OR MOUNTED SEPARATELY ADJACENT TO THE CONTROL PANEL BY THE CONTROLS CONTRACTOR.
- MANUFACTURER'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.

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	●	●															1
2	HEATING SETPOINT*			●														
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	UNIT HEATER FAN START/STOP*					●												1
9	UNIT HEATER ELECTRIC COIL*							●										1
-	-																	
##	RESERVED FOR FUTURE																	

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

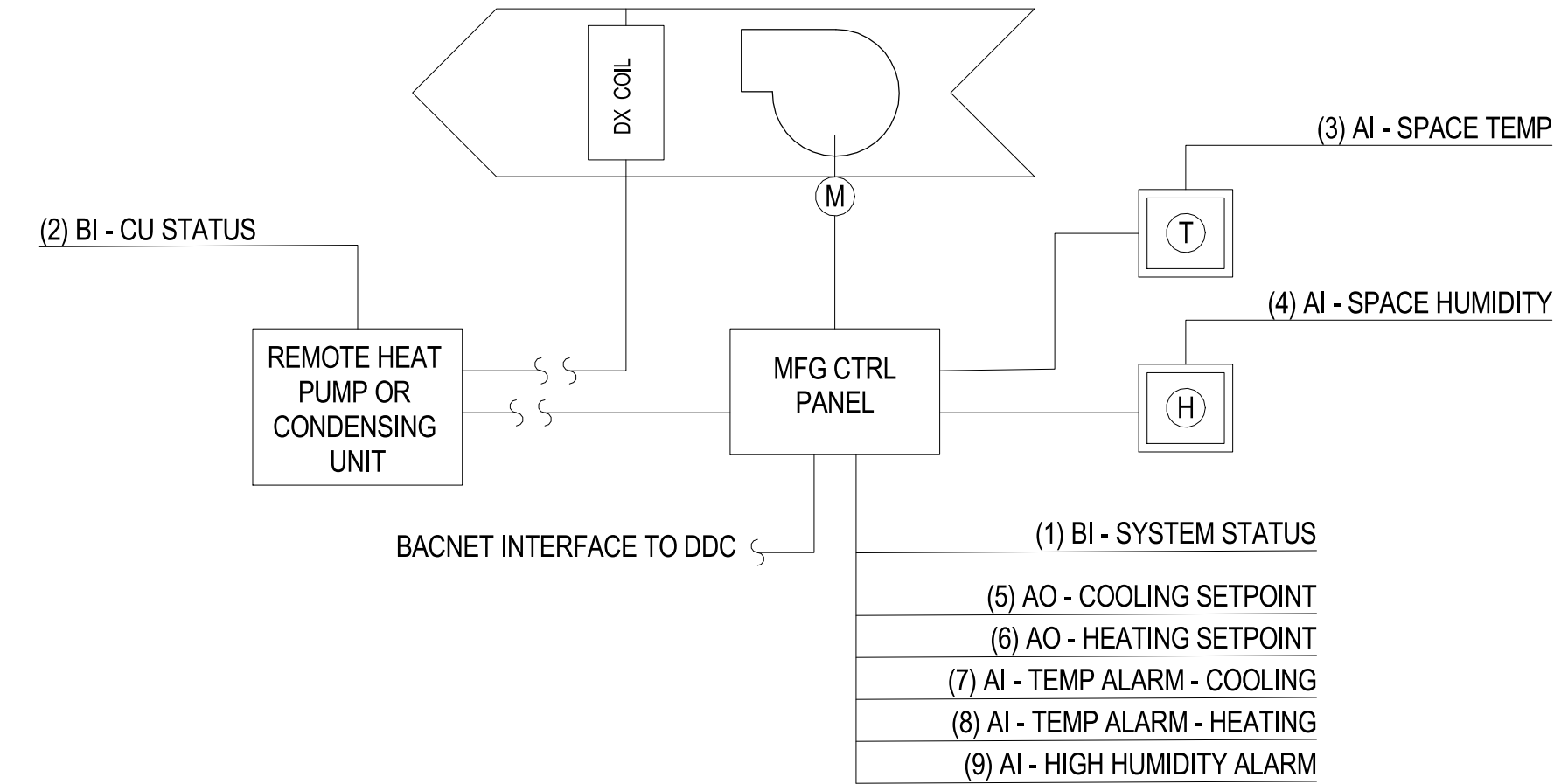
POINT NUMBER	SYSTEM POINT DESCRIPTION	HARDWARE POINTS				SYSTEM FEATURES /SOFTWARE POINTS		NOTES
		ANALOG		DIGITAL (BINARY)		PROGRAMS	ALARMS	
		INPUT (AI)	OUTPUT (AO)	INPUT (BI)	OUTPUT (BO)			
	SPLIT DX HEAT PUMP	SHOW ON DISPLAY	TEMPERATURE	RELATIVE HUMIDITY	TEMPERATURE	UNIT STATUS		
	DDC SYSTEM BACNET 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							



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

SCALE: NTS

A1



SPLIT DX HEAT PUMP - CONTROL DIAGRAM

SCALE: NTS

A3

APPR: _____ DATE: _____

SYN: _____ DESCRIPTION: _____

PRELIMINARY
NOT FOR CONSTRUCTION

SEAL

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

FOR COMMANDER NAVFAC

ACTIVITY: MARINE CORPS BASE CAMP LEJEUNE

SATISFACTORY TO DATE: DD/MM/YY

DES: DEM DRW: AJK CHK: EMB

PM: _____

BRANCH HEAD: _____

DESIGN DIRECTOR: _____

FIRE PROTECTION: _____

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

LOGCOM CSP WAREHOUSE
MECHANICAL - CONTROLS

SCALE: AS NOTED
EPROJCT NO.: 1639600
CONSTR. CONTR. NO.: N40085-20-C-0059
NAVFAC DRAWING NO.: _____

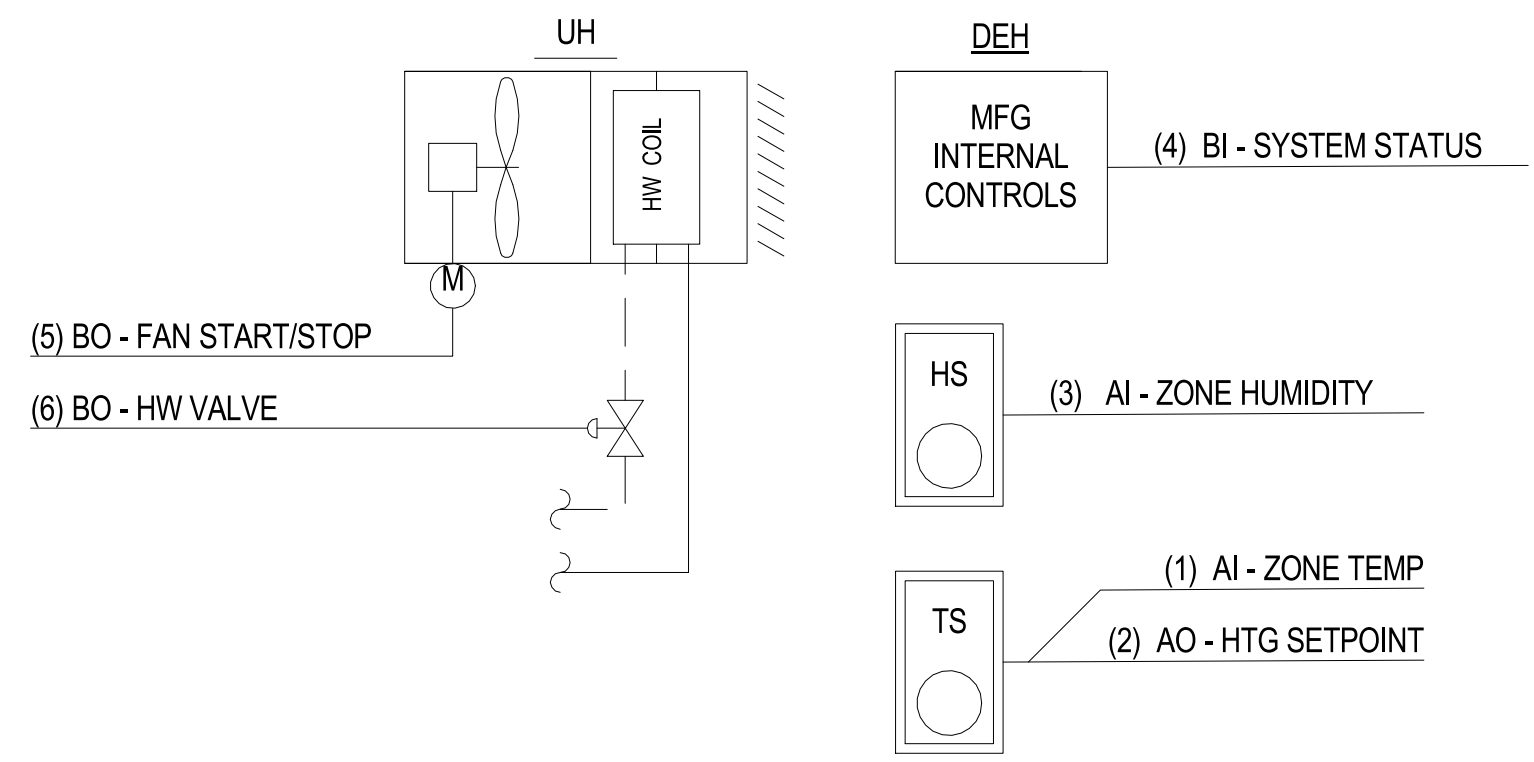
SHEET OF _____

M-812

P-1527 PREFINAL SUBMISSION - 08/06/2021

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 55°F (ADJ.), THE REVERSE SHALL OCCUR.



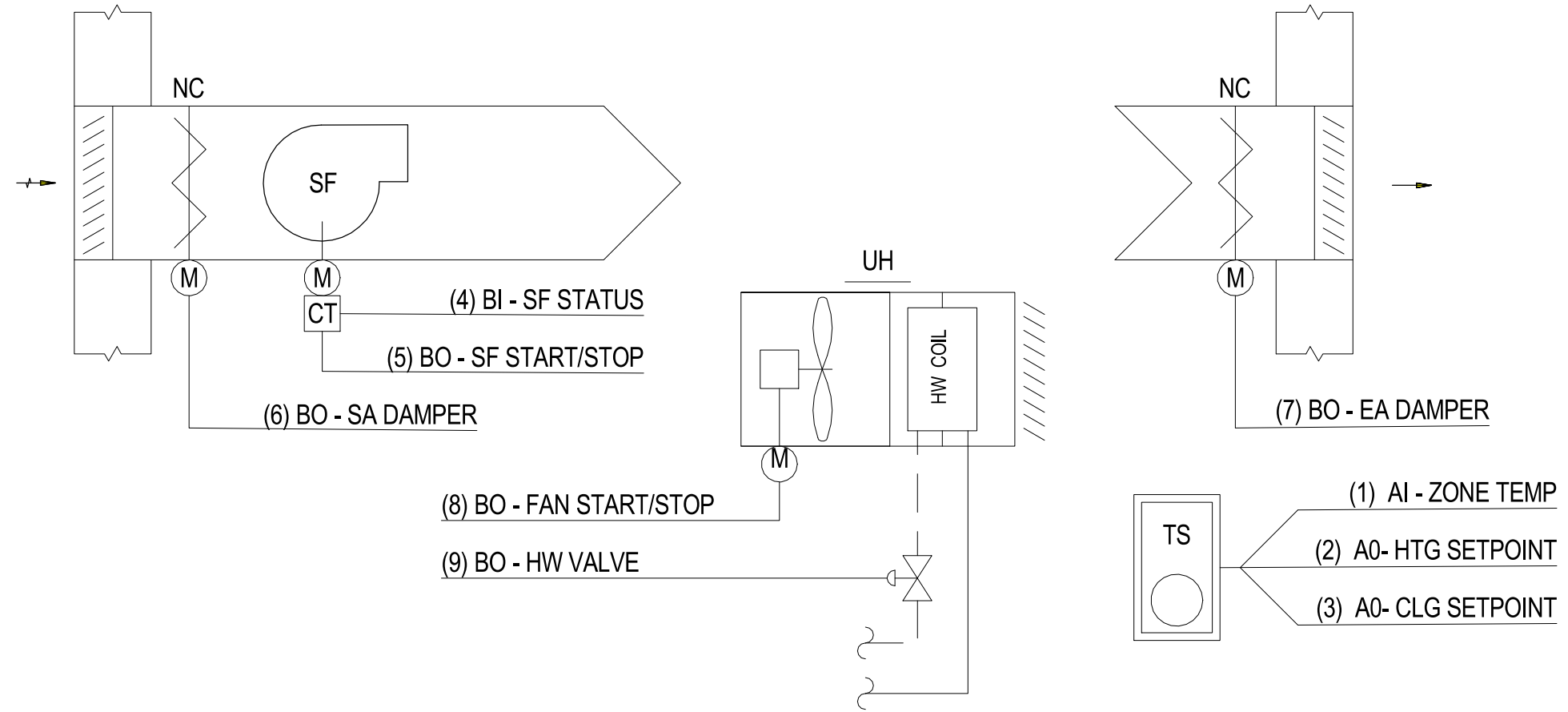
MECHANICAL ROOM 400 CONTROL DIAGRAM (UH-02, DEH-01)

SCALE: NTS

C1

MECHANICAL ROOM 401 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 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 SUPPLY FAN SHALL OPERATE CONTINUOUSLY. UPON FALL IN SPACE TEMPERATURE BELOW 80°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 OPENING HOT WATER VALVE TO MAINTAIN SPACE HEATING SETPOINT. UPON RISE IN TEMPERATURE ABOVE 55°F (ADJ.), THE REVERSE SHALL OCCUR.



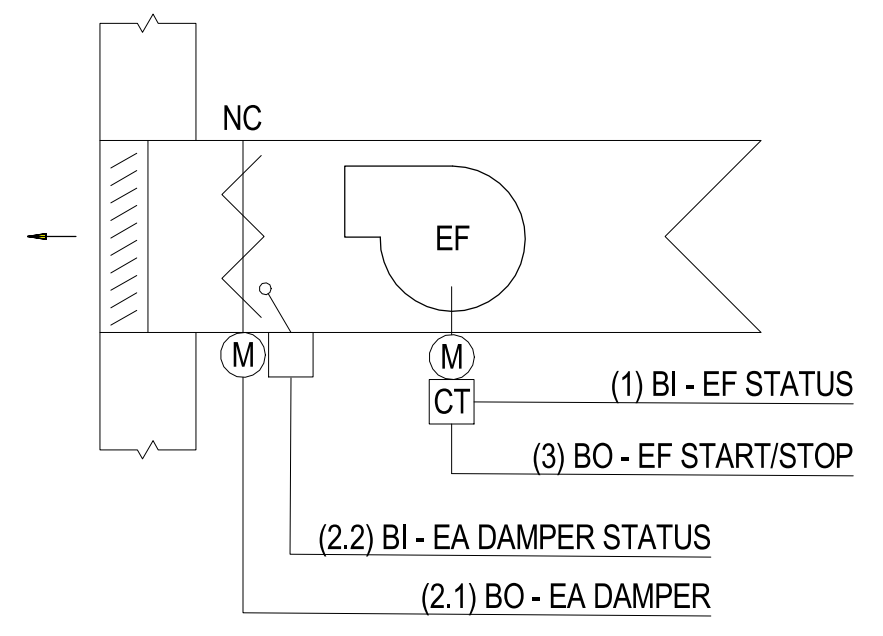
MECHANICAL ROOM 401 (HOT) CONTROL DIAGRAM (SF-01, UH-01)

SCALE: NTS

B1

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 ATFP SHUTDOWN SIGNAL.
- THE CONTROLLER SHALL MONITOR THE FAN STATUS.
- ALARMS SHALL BE PROVIDED AS FOLLOWS:
 - 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.).
- 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 EF-01 & DAMPER CONTROL DIAGRAM

SCALE: NTS

A1

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)	TREND - START/STOP	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	UNIT HEATER FAN START/STOP																						
6	UNIT HEATER HW VALVE																						
##	RESERVED FOR FUTURE																						

SUPPLY FAN / VENTILATION DAMPERS / 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)	TREND - START/STOP	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	UNIT HEATER FAN START/STOP																						
9	UNIT HEATER HW VALVE																						
##	RESERVED FOR FUTURE																						

EXHAUST FAN EF-01 & DAMPER 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)	TREND - START/STOP	TREND - STATUS	TREND - OPEN/CLOSED	FAILURE		IN HAND	RUNTIME EXCEEDED	LOW ANALOG										
1	EXHAUST FAN STATUS																						
2.1	EXHAUST DAMPER																						
2.2	EXHAUST DAMPER STATUS																						
3	EXHAUST FAN START/STOP																						
##	RESERVED FOR FUTURE																						

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FILE NAME: BIM_360/HF PACKAGE 3PT1527 LOG COM CSP-1639604-M-01

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NOT FOR CONSTRUCTION

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

FOR COMMANDER NAVFAC
ACTIVITY
MARINE CORPS BASE
CAMP LEJEUNE

SATISFACTORY TO DATE DD/MM/YY
DES DEM DRW KC CHK EMB
PM
BRANCH HEAD
DESIGN DIRECTOR
FIRE PROTECTION

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

LOGCOM CSP WAREHOUSE
MECHANICAL - CONTROLS

SCALE: AS NOTED
EPROJECT NO.: 1639600
CONSTR. CONTR. NO. N40085-20-C-0059
NAVFAC DRAWING NO.
SHEET OF
M-813

P-1527 PREFINAL SUBMISSION - 08/06/2021