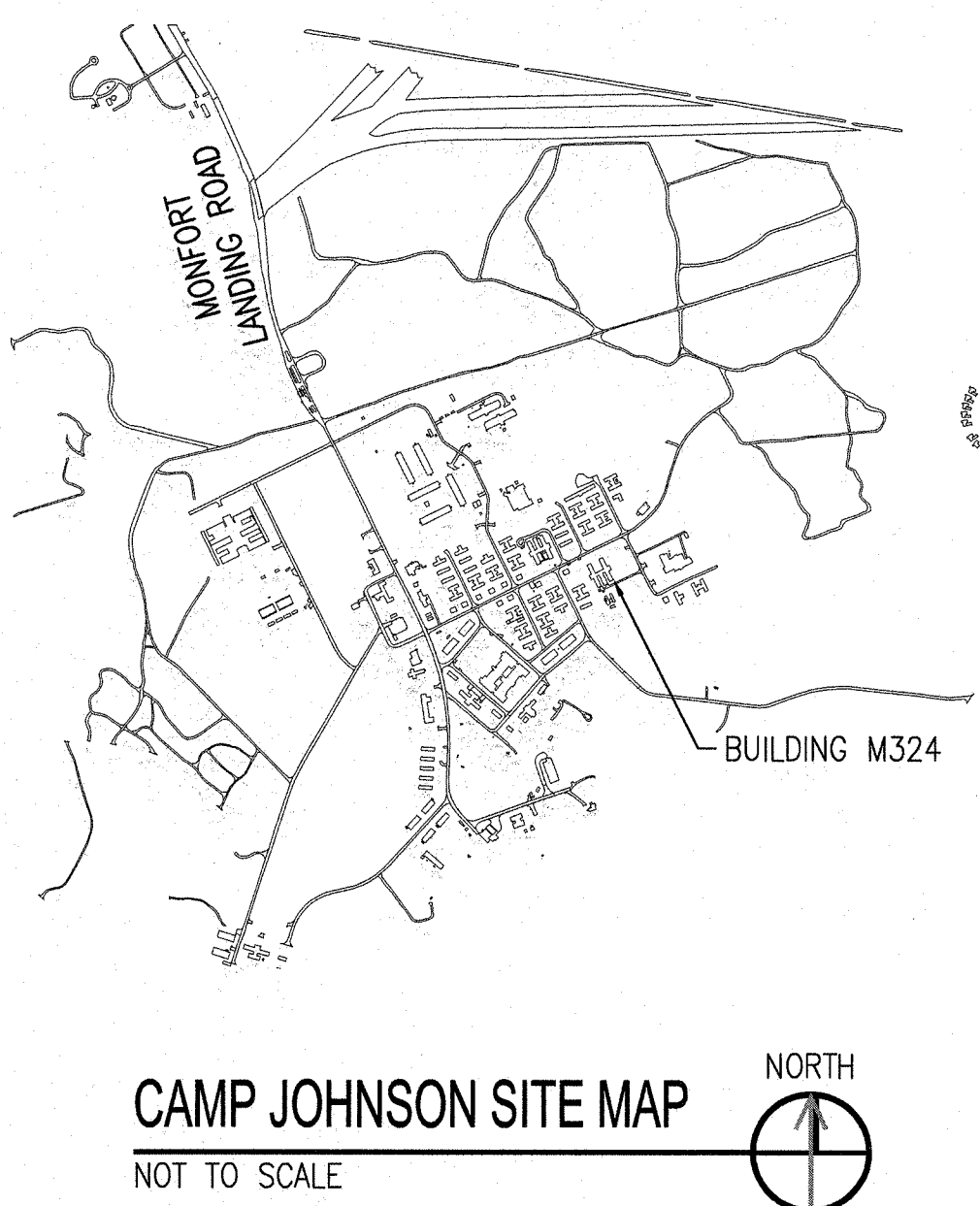
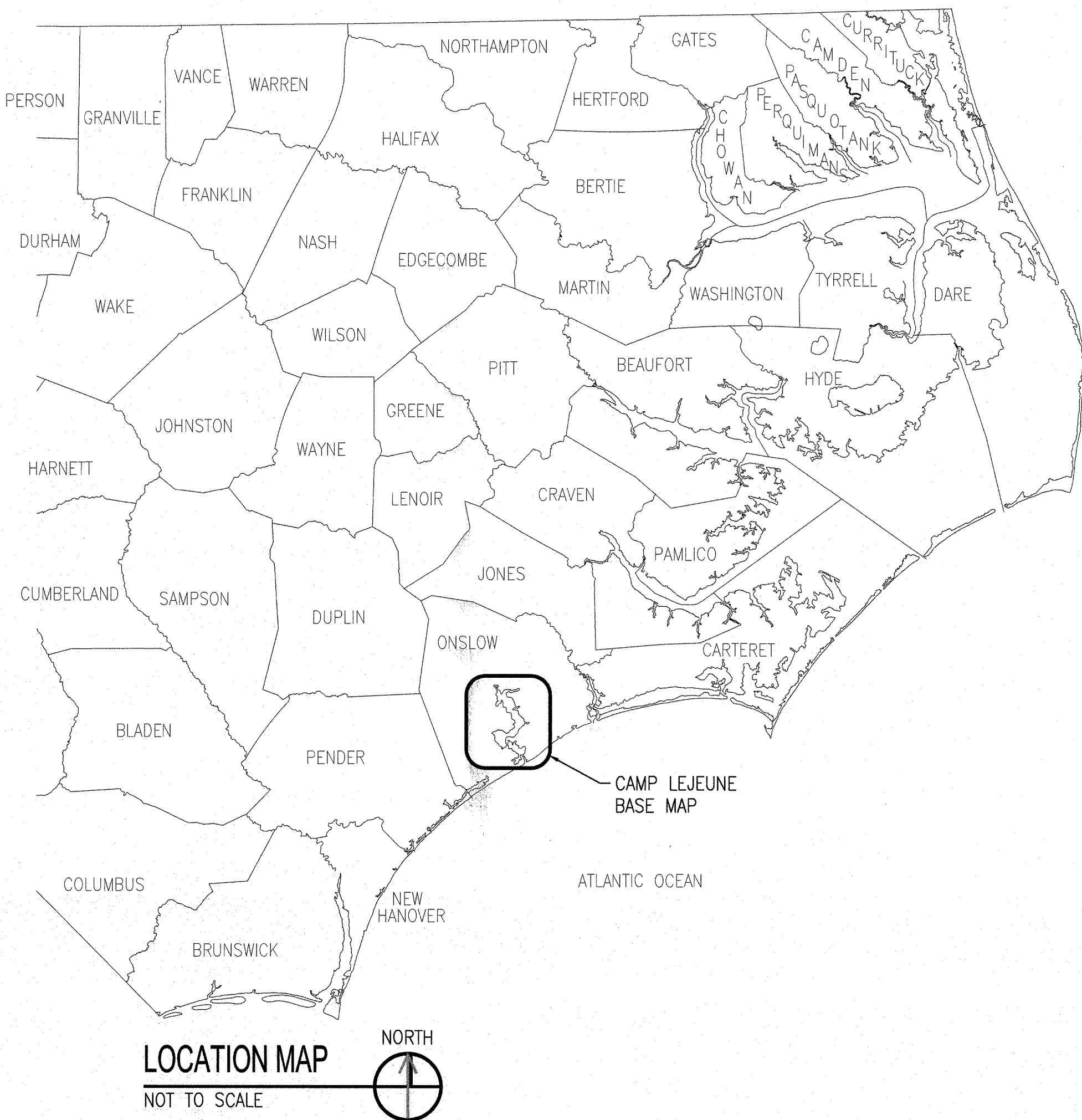


REVISIONS			
SYM		DATE	APPROVED

REPLACE AHU's AT M324

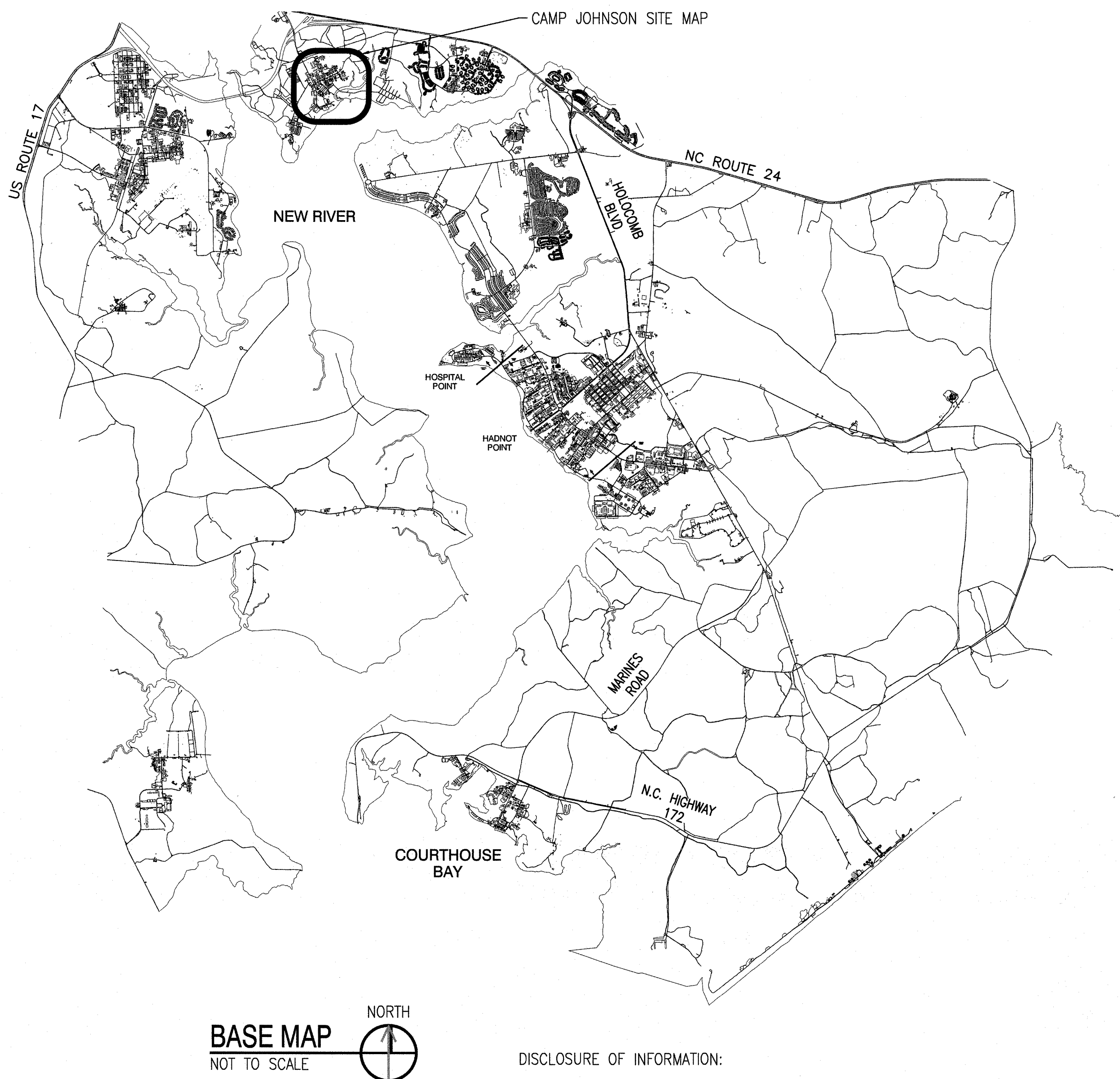
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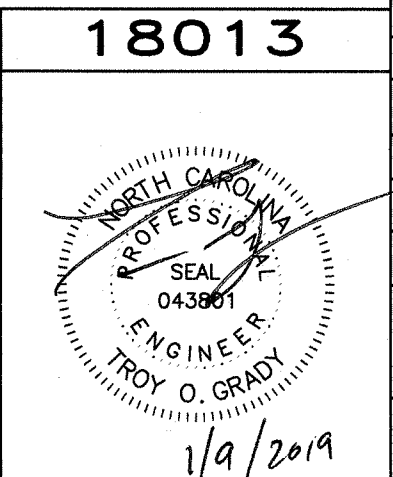
INDEX OF DRAWINGS			
NAVFAC DWG NO.	CONTRACT NO.	SHT NO.	SHEET TITLE
60023547	17-0003	G-001	COVER SHEET AND DRAWING INDEX
60023548	17-0003	M-001	MECHANICAL ABBREVIATIONS, LEGEND AND NOTES
60023549	17-0003	MD101	MECHANICAL DEMOLITION FLOOR PLAN
60023550	17-0003	MD401	MECHANICAL DEMOLITION ENLARGED FLOOR PLANS
60023551	17-0003	M-101	MECHANICAL FLOOR PLAN
60023552	17-0003	MP101	MECHANICAL PIPING PLAN
60023553	17-0003	M-401	MECHANICAL ENLARGED FLOOR PLAN
60023554	17-0003	MP401	MECHANICAL ENLARGED PIPING PLAN
60023555	17-0003	M-501	MECHANICAL DETAILS
60023556	17-0003	M-502	MECHANICAL DETAILS
60023557	17-0003	M-601	MECHANICAL FLOW DIAGRAM
60023558	17-0003	M-602	MECHANICAL SCHEDULES
60023559	17-0003	M-603	MECHANICAL CONTROL SEQUENCE
60023560	17-0003	M-604	MECHANICAL CONTROL SEQUENCES
60023561	17-0003	M-605	MECHANICAL CONTROL SEQUENCE
60023562	17-0003	M-606	MECHANICAL CONTROL SEQUENCE
60023563	17-0003	E-001	ELECTRICAL LEGEND, ABBREVIATIONS, & DETAILS
60023564	17-0003	E-002	ELECTRICAL GENERAL NOTES
60023565	17-0003	E-003	ELECTRICAL GENERAL NOTES & DEMO NOTES
60023566	17-0003	ED101	ELECTRICAL DEMOLITION FLOOR PLAN
60023567	17-0003	ED401	ELECTRICAL DEMOLITION ENLARGED FLOOR PLANS
60023568	17-0003	E-101	ELECTRICAL FLOOR PLAN
60023569	17-0003	E-401	ELECTRICAL ENLARGED FLOOR PLANS
60023570	17-0003	E-501	ELECTRICAL RISER DIAGRAM & DETAILS
60023571	17-0003	E-601	ELECTRICAL PANEL SCHEDULES
60023572	17-0003	E-602	ELECTRICAL PANEL SCHEDULES
60023573	17-0003	FA001	FIRE ALARM LEGEND AND NOTES
60023574	17-0003	FD101	FIRE ALARM DEMOLITION ENLARGED FLOOR PLANS
60023575	17-0003	FA101	FIRE ALARM ENLARGED PLANS
60023576	17-0003	FP001	FIRE PROTECTION LEGEND AND NOTES
60023577	17-0003	FPD101	FIRE PROTECTION DEMOLITION ENLARGED FLOOR PLANS
60023578	17-0003	FP101	FIRE PROTECTION ENLARGED FLOOR PLANS

PHASING NOTES

- THIS PROJECT SHALL BE COMPLETED IN PHASES.
- CHILLER/CHILLED WATER SYSTEM SHALL BE REPLACED PRIOR TO REPLACING AIR HANDLING UNITS. CONTRACTOR SHALL COORDINATE WORK SUCH THAT THE CHILLER/CHILLED WATER SYSTEM IS ONLY DOWN FOR (3) THREE DAYS MAX (FRIDAY THRU SUNDAY). CHILLER/CHILLED WATER SYSTEM SHALL BE REPLACED DURING THE SEASON OF WINTER.
- CONTRACTOR SHALL COORDINATE WORK SUCH THAT ONLY (1) ONE AIR HANDLING UNIT IS INOPERABLE AT A TIME. CONTRACTOR SHALL HAVE (3) THREE WEEKS PER AIR HANDLING UNIT TO REPLACE AIR HANDLING UNIT INCLUDING DUCT CLEANING AND RETURN BACK TO OPERATION.



- DISCLOSURE OF INFORMATION:
- CONTRACTOR SHALL COMPLY AS FOLLOWS:
- A. THE CONTRACTOR SHALL NOT RELEASE TO ANYONE OUTSIDE THE CONTRACTOR'S ORGANIZATION ANY UNCLASSIFIED INFORMATION, REGARDLESS OF MEDIUM (E.G. FILM, TAPE, DOCUMENT), PERTAINING TO ANY PART OF THIS CONTRACT OR ANY PROGRAM RELATED TO THIS CONTRACT, UNLESS-
1. THE CONTRACTING OFFICER HAS GIVEN PRIOR WRITTEN APPROVAL; OR
2. THE INFORMATION IS OTHERWISE IN THE PUBLIC DOMAIN BEFORE THE DATE OF THE RELEASE.
- B. REQUESTS FOR APPROVAL SHALL IDENTIFY THE SPECIFIC INFORMATION TO BE RELEASED, THE MEDIUM TO BE USED, AND THE PURPOSE FOR THE RELEASE. THE CONTRACTOR SHALL SUBMIT ITS REQUEST TO THE CONTRACTING OFFICER AT LEAST 45 DAYS BEFORE THE PROPOSED DATE FOR RELEASE.
- C. THE CONTRACTOR AGREES TO INCLUDE A SIMILAR REQUIREMENT IN EACH SUBCONTRACT UNDER THIS CONTRACT. SUBCONTRACTORS SHALL SUBMIT REQUESTS FOR AUTHORIZATION TO RELEASE THROUGH THE PRIME CONTRACTOR TO THE CONTRACTING OFFICER.




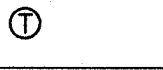

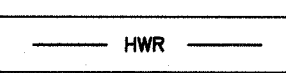
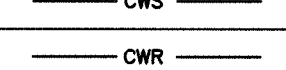
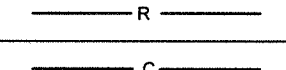
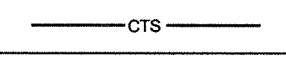
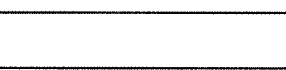





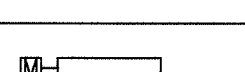


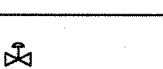

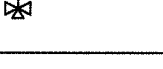
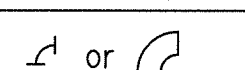
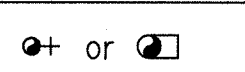
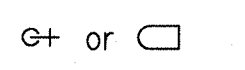
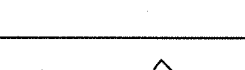
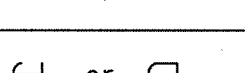
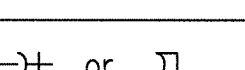

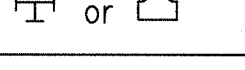
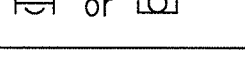
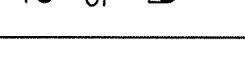
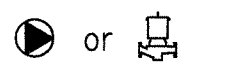
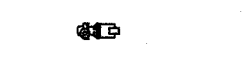
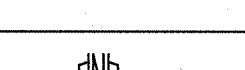
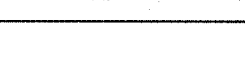

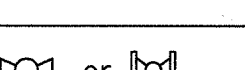


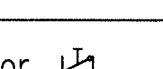
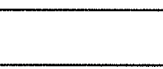
FINAL		G-001	
DEPARTMENT OF THE NAVY MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA			
17-0003 REPLACE AHU'S AT M324 COVER SHEET AND DRAWING INDEX			
DES. WTB		NAVFAC DRAWING NO. 60023547	
DR. WTB		CONST. CONTR.	
CHK. TOG		SCALE: -	
SUBMITTED BY: TOG		SPEC. 05-17-0003	
DESIGN DIR. T H BURTON, PE		SHEET 1 OF 32	
APPROVED: PWO OR OICC		DATE	
SATISFACTORY TO:		DATE	

ABBREVIATIONS

TERM	ABBREVIATION	TERM	ABBREVIATION
ABOVE FINISHED FLOOR	AFF	INDOOR UNIT	IDU
ABOVE GROUND	AG	IRON PIPE SIZE	IPS
ABOVE SEA LEVEL	ASL	KILOVOLT-AMP	KVA
ACROSS THE LINE	ACL	KILOWATT	KW
AIR ADMITTANCE VALVE	AAV	KILOWATT HOUR	KWH
AIR CONDITION(-ING, -ED)	AIR COND	LEAVING AIR TEMPERATURE	LAT
AIR-HANDLING UNIT	AHU OH AH	LEAVING WATER TEMPERATURE	LWT
AIR FLOW MEASURING STATION	AFMA	LENGTH	LG
AMBIENT	AMB	LINEAR FEET	LF
AMERICAN NATIONAL STANDARDS INSTITUTE	ANSI	LOW-PRESSURE STEAM	LPS
AMPERE (AMP, AMPS)	AMP	MAXIMUM	MAX
ANALOG INPUT	AI	MAXIMUM OVERCURRENT PROTECTION	MOCP
ANALOG OUTPUT	AO	MEDIUM-PRESSURE STEAM	MPS
AND	&	MILES PER HOUR	MPH
APPARATUS DEW POINT	ADP	MINIMUM	MIN.
APPROXIMATE	APPROX	MINIMUM CIRCUIT AMPERES	MCA
ARCHITECT	ARCH	MINUTE	MIN
ATMOSPHERE	ATM	MANUFACTURER	MFR
AVERAGE	AVG	MOTOR CONTROL CENTER	MCC
BRAKE HORSEPOWER	BHP	NOISE CRITERIA	NC
BROWN & SHARPE WIRE GAGE	B&S	NON-STANDARD PART LOAD	NPLV
BRITISH THERMAL UNIT	BTU	NORMALLY OPEN	NO
BRITISH THERMAL UNIT PER HOUR	BTUH	NORMALLY CLOSED	NC
1000 BRITISH THERMAL UNIT	MBH	NOT APPLICABLE	N/A
BUILDING	BLDG	NOT IN CONTRACT	N I C
BUILDING AUTOMATION SYSTEM	BAS	NOT TO SCALE	NTS
CELSIUS	°C	NUMBER	NO
CHILLED WATER RETURN	CHWR	ON CENTER	OC
CHILLED WATER SUPPLY	CHWS	OUNCE	OZ
COEFFICIENT, VALVE FLOW	CV	OUTDOOR UNIT	ODU
COEFFICIENT OF PERFORMANCE FACTOR	COP	OUTSIDE AIR	OA
COMPRESSOR	COMP	PACKAGE UNIT	PU
CONCRETE	CONC	PACKAGE TERMINAL AIR CONDITIONER	PTAC
CONDENS(-ER, -ING, -ATION)	COND	PARTS PER MILLION	PPM
CONNECTION	CONN	PERCENT	%
CONTINUATION	CONT	PHASE	PH
COOLING LOAD	CLG LOAD	POUNDS	LBS
CUBIC FEET	CU FT	POUNDS PER SQUARE FOOT	PSF
CUBIC INCH	CU IN	POWER VENTILATOR	PV
CUBIC FEET PER MINUTE	CFM	PRESSURE	PRESS
CFM, STANDARD CONDITIONS	SCFM	PRESSURE REDUCING VALVE	PRV
DECIBEL	DB	PRESSURE SAFETY VALVE	PSV
DEGREE	DEG OR °	QUANTITY	QTY
DEDICATED OUTDOOR AIR SYSTEM	DOAS	RATED LOAD AMPS	RLA
DEGREES FAHRENHEIT	DEG. F	RECIRCULATE	RECIRC
DETAIL	DET	REDUCED PRESSURE BACKFLOW PREVENTER	RPZ
DEW-POINT TEMPERATURE	DPT	REFRIGERANT (12, 22, ETC.)	R22, R410
DIAMETER	DIA	REFRIGERANT LIQUID	RL
DIAMETER, INSIDE	ID	REFRIGERANT SUCTION	RS
DIAMETER, OUTSIDE	OD	REQUIRED	REQD OR REQ'D
DIFFERENCE OR DELTA	DIFF	RELATIVE HUMIDITY	RH
DIGITAL INPUT	DI	RETURN AIR	RA
DIGITAL OUTPUT	DO	REVOLUTIONS PER MINUTE	RPM
DOMESTIC HOT WATER	DHW	REVOLUTIONS PER SECOND	RPS
DOMESTIC HOT WATER RECIRCULATION	DHWR	ROOF VENTILATOR	RV
DRY-BULB TEMPERATURE	DBT	ROOF TOP UNIT	RTU
DUCTLESS SPLIT SYSTEM AIR HANDLER	DAH	SAFETY FACTOR	SF
DUCTLESS SPLIT SYSTEM HEAT PUMP	DHP	SEASONAL ENERGY EFFICIENCY RATIO	SEER
ENERGY EFFICIENCY RATING	ERR	SECOND	S
EFFICIENCY	EFF	SHADING COEFFICIENT	SC
ELECTRIC UNIT HEATER	EUH	SPECIFICATION	SPEC
ELEVATION	EL	SQUARE	SQ
ENTERING	ENT	STANDARD	STD
ENTERING WATER TEMPERATURE	EWI	STATIC PRESSURE	SP
ENTERING AIR TEMPERATURE	EAT	SUPPLY	SPLY
EXISTING	(X)	SUPPLY AIR	SA
EXTERNAL AMBIENT TEMPERATURE	EAT	TEMPERATURE	TEMP
EXTERNAL STATIC PRESSURE	ESP	TEMPERATURE DIFFERENCE	TD
EXHAUST AIR	EA	THERMOSTAT	T STAT
FACE VELOCITY	FVEL	TONS OF REFRIGERATION	TONS
FAHRENHEIT	°F	TO BE DETERMINED	TBD
FEET PER MINUTE	FPM	TOP OF STEEL	TOS
FEET PER SECOND	FPS	TOTAL DYNAMIC HEAD	TDH
FLOOR	FLR	TYPICAL	TYP
FOOT OR FEET	FT	U-FACTOR	U
FULL LOAD AMPS	FLA	UNDER GROUND	UG
GAGE OR GAUGE	GA	UNLESS OTHERWISE NOTED	UON
GALLONS	GAL	UNIT HEATER - ELECTRIC	UH
GALLONS PER HOUR	GPH	VARIABLE AIR VOLUME	VAV
GALLONS PER MINUTE	GPM	VARIABLE FREQUENCY DRIVE	VFD
GALLONS PER DAY	GPD	VELOCITY	VEL
GAS UNIT HEATER	GUH	VENTILATION, VENT	VENT
GRAINS	GR	VENT THRU ROOF	VTR
HEAD	HD	VERTICAL	VERT
HEAT EXCHANGER	HX	VOLT	V
HEATING AND VENTILATION UNIT	HV	VOLT AMPERE	VA
HEATING, VENTILATION AND AIR CONDITIONING	HVAC	VOLUME	VOL
HEIGHT	HGT	WATER PRESSURE DROP	WPD
HERTZ	HZ	WATER GAUGE	WG
HIGH DENSITY POLYPROPYLENE	HDPE	WATT	W
HIGH-PRESSURE STEAM	HPS	WATT-HOUR	WH
HORSEPOWER, HEAT PUMP	HP	WITH	W/
HOT WATER COIL	HWC	WEIGHT	WT
HOURL(S)	HR	WET BULB	WB
HUMIDITY, RELATIVE	RH	YARD	YD
INTEGRATED PART LOAD VALUES	IPLV	YEAR	YR
INCH	IN.		
INCH OF WATER GAUGE	INWG		

NOTE: ALL ABBREVIATIONS MAY NOT BE USED IN PROJECT.

MECHANICAL LEGEND

	EMERGENCY GAS SHUT OFF
	THERMOSTAT/TEMP SENSOR
	DUCT SMOKE DETECTOR
	HEATING HOT WATER SUPPLY
	HEATING HOT WATER RETURN
	CHILLED WATER SUPPLY
	CHILLED WATER RETURN
	REFRIGERANT PIPING
	CONDENSATE PIPING
	CHEMICAL FEED SUPPLY
	CHEMICAL FEED RETURN
	EXISTING 1-HR RATED WALL
	FIRE DAMPER
	COMBINATION FIRE SMOKE DAMPER
	VOLUME DAMPER
	MOTORIZED DAMPER
	CIRCUIT SETTER
	2-WAY CONTROL VALVE
	3-WAY CONTROL VALVE
	ELBOW SIDE
	ELBOW UP
	ELBOW DOWN
	45 DEGREE ELBOW SIDE
	45 DEGREE ELBOW DOWN
	45 DEGREE ELBOW UP
	TEE SIDE
	TEE BRANCH DOWN
	TEE END UP
	PUMP SIDE
	PUMP END
	BUTTERFLY VALVE SIDE
	GATE VALVE SIDE
	BALL VALVE SIDE
	CHECK VALVE SIDE
	TRIPLE DUTY VAVLE
	WELD NECK FLANGE SIDE
	WELD NECK FLANGE END
	SLIP ON FLANGE SIDE
	SLIP ON FLANGE END

MECHANICAL DEMOLITION NOTES

1. THE MECHANICAL CONTRACTOR SHALL REVIEW THE DRAWINGS AND SPECIFICATIONS FOR DEMOLITION REQUIREMENTS AND LAYOUT HIS WORK IN A COMPATIBLE AND COMPLEMENTARY MANNER. REMOVE ALL EQUIPMENT, DUCTWORK, SUPPORTS, CONTROLS, ACCESSORIES, ETC., AND MECHANICAL ITEMS MADE OBSOLETE BY THESE ALTERATIONS AS SHOWN IN THE MECHANICAL DRAWINGS. ALL ITEMS TO BE REMOVED OR MODIFIED MAY NOT BE SHOWN, HOWEVER, THIS CONTRACTOR SHALL REMOVE ANY MECHANICAL WORK AS REQUIRED BY THE CONSTRUCTION.
2. PREPARE A DEMOLITION PLAN AND SUBMIT PROPOSED DEMOLITION, AND REMOVAL PROCEDURES FOR APPROVAL BEFORE WORK IS STARTED. PLAN SHALL BE APPROVED BY CONTRACTING OFFICER PRIOR TO WORK BEGINNING. DO NOT BEGIN DEMOLITION UNTIL AUTHORIZATION IS RECEIVED FROM THE CONTRACTING OFFICER.
3. BEFORE BEGINNING ANY DEMOLITION WORK, SURVEY THE SITE AND EXAMINE THE DRAWINGS AND SPECIFICATIONS TO DETERMINE THE EXTENT OF THE WORK. RECORD EXISTING CONDITIONS IN THE PRESENCE OF THE CONTRACTING OFFICER SHOWING THE CONDITION OF STRUCTURES AND OTHER FACILITIES ADJACENT TO AREAS OF ALTERATION OR REMOVAL. PHOTOGRAPHS SIZED 4 INCH WILL BE ACCEPTABLE AS A RECORD OF EXISTING CONDITIONS. INCLUDE IN THE RECORD THE ELEVATION OF THE TOP OF FOUNDATION WALLS, FINISH FLOOR ELEVATIONS, POSSIBLE CONFLICTING ELECTRICAL CONDUITS, PLUMBING LINES, ALARMS SYSTEMS, THE LOCATION AND EXTENT OF EXISTING CRACKS AND OTHER DAMAGE AND DESCRIPTION OF SURFACE CONDITIONS THAT EXIST PRIOR TO BEFORE STARTING WORK. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY AND DOCUMENT ALL REQUIRED OUTAGES WHICH WILL BE REQUIRED DURING THE COURSE OF WORK, AND TO NOTE THESE OUTAGES ON THE RECORD DOCUMENT. SUBMIT SURVEY RESULTS.
4. EXCEPT FOR SALVAGED ITEMS, AND FOR MATERIALS OR EQUIPMENT SCHEDULED FOR SALVAGE, ALL MATERIALS AND EQUIPMENT REMOVED AND NOT REUSED OR SALVAGED, SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM GOVERNMENT PROPERTY. TITLE TO MATERIALS RESULTING FROM DEMOLITION AND DECONSTRUCTION, AND MATERIALS AND EQUIPMENT TO BE REMOVED, IS VESTED IN THE CONTRACTOR UPON APPROVAL BY THE CONTRACTING OFFICER OF THE CONTRACTOR'S DEMOLITION, DECONSTRUCTION, AND REMOVAL PROCEDURES, AND AUTHORIZATION BY THE CONTRACTING OFFICER TO BEGIN DEMOLITION AND DECONSTRUCTION. THE GOVERNMENT WILL NOT BE RESPONSIBLE FOR THE CONDITION OR LOSS OF, OR DAMAGE TO, SUCH PROPERTY AFTER CONTRACT AWARD. SHOWING FOR SALE OR SELLING MATERIALS AND EQUIPMENT ON SITE IS PROHIBITED.
5. THESE DRAWINGS ARE COMPILED BY THE ENGINEER FROM THE OWNER'S RECORD DRAWINGS AND LIMITED FIELD VERIFICATION OF EXISTING CONDITIONS FOR THE PURPOSE OF INDICATING THE WORK REQUIRED AND ARE BELIEVED TO BE CORRECT. NOTWITHSTANDING, THE CONTRACTOR SHALL VERIFY ALL DUCTWORK, EQUIPMENT LOCATIONS, DIMENSIONS AND ALL FIELD CONDITIONS AFFECTING HIS WORK.
6. WHERE MECHANICAL SYSTEMS PASS THROUGH THE DEMOLITION AREAS TO SERVE OTHER PORTIONS OF THE PREMISES, THEY SHALL REMAIN OR BE SUITABLY RELOCATED AND THE SYSTEM RESTORED TO NORMAL OPERATION. ADVISE THE CONTRACTING OFFICER IMMEDIATELY IF SUCH CONDITIONS ARE UNCOVERED BEFORE PROCEEDING WITH ADDITIONAL WORK.
7. DO NOT INTERRUPT EXISTING UTILITIES SERVING OCCUPIED OR USED FACILITIES, EXCEPT WHEN AUTHORIZED IN WRITING BY THE CONTRACTING OFFICER. DO NOT INTERRUPT EXISTING UTILITIES SERVING FACILITIES OCCUPIED AND USED BY THE GOVERNMENT EXCEPT WHEN APPROVED IN WRITING AND THEN ONLY AFTER TEMPORARY UTILITY SERVICES HAVE BEEN APPROVED AND PROVIDED. DO NOT BEGIN DEMOLITION OR DECONSTRUCTION WORK UNTIL ALL UTILITY DISCONNECTIONS HAVE BEEN MADE. SHUT OFF AND CAP UTILITIES FOR FUTURE USE, AS INDICATED. TEMPORARY SERVICES INCLUDING BUILDING HEAT AND HEATING OF DOMESTIC WATER SHALL BE REQUIRED WHEN ANY INTERRUPTION OF SUCH SERVICES EXCEEDS 12 HOURS EXCEPT WHEN AUTHORIZED IN WRITING BY THE CONTRACTOR OFFICER.

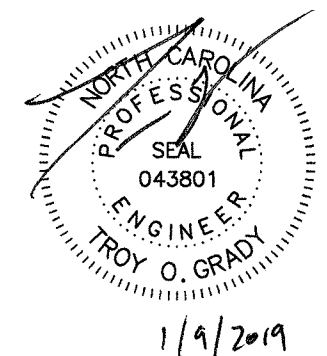
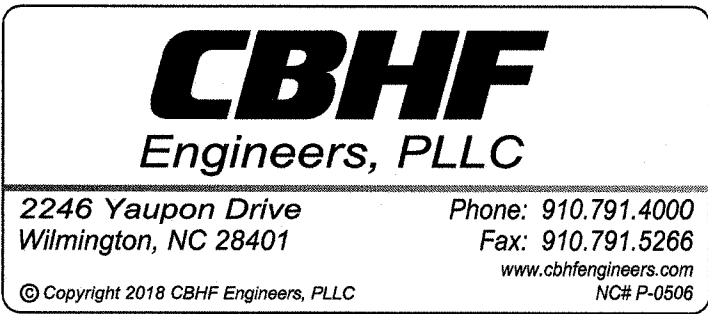
MECHANICAL GENERAL NOTES

1. SCOPE OF WORK: THESE DRAWINGS AND ACCOMPANYING SPECIFICATIONS DESCRIBE THE SCOPE OF WORK REQUIRED FOR PROJECT MECHANICAL HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS. CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIAL REQUIRED FOR COMPLETE, FULLY FUNCTIONING MECHANICAL SYSTEMS COMPLYING WITH THE INTENT OF THE DRAWINGS AND SPECIFICATIONS.
2. DRAWINGS: DRAWINGS ARE DIAGRAMMATIC AND MAY NOT COMPLETELY DESCRIBE EVERY DETAIL OF THE INSTALLATION. HOWEVER, CONTRACTOR IS RESPONSIBLE FOR FURNISHING COMPLETE SYSTEMS INCLUDING ALL REQUIRED EQUIPMENT AND ACCESSORIES TO OBTAIN FULLY FUNCTIONING HVAC SYSTEMS.
3. MANUFACTURER'S RECOMMENDATIONS - INSTALL ALL EQUIPMENT IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
4. WORKMANSHIP - UTILIZE SKILLED MECHANICS TO OBTAIN A HIGH QUALITY PROFESSIONAL FINISH INSTALLATION WHEN COMPLETED. WORK OF UNACCEPTABLE QUALITY SHALL BE REMOVED AND REWORKED AT NO ADDITIONAL COST. CONTRACTING OFFICER SHALL BE THE JUDGE OF WORKMANSHIP AND THEIR OPINION WILL BE FINAL. IN ADDITION, ANY EXISTING CONSTRUCTION DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE CONTRACTING OFFICER BY THE CONTRACTOR AT NO ADDITIONAL COST.
5. SUPERVISION: PROVIDE SKILLED SUPERINTENDENTS TO SUPERVISE THE WORK FROM THE BEGINNING TO COMPLETION AND FINAL INSPECTION.
6. PROGRESS OF WORK: PERFORM WORK IN ACCORDANCE WITH SCHEDULE AND REQUIREMENTS OF THE OWNER. UNDER NO CIRCUMSTANCES SHALL THIS CONTRACTOR DELAY THE OVERALL PROJECT SCHEDULE.
7. COORDINATION: COORDINATE MECHANICAL WORK WITH THE WORK OF OTHER TRADES. LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE UNLESS SPECIFICALLY DIMENSIONED. LAYOUT MECHANICAL WORK SO AS NOT TO INTERFERE WITH THE WORK OF OTHER TRADES. VERIFY ACTUAL BUILDING STRUCTURE PRIOR TO DUCT FABRICATION AND ADJUST ARRANGEMENT AS REQUIRED. INCLUDE ALL OFFSETS IN DUCTS, FITTINGS, PIPING, ETC. AS REQUIRED TO PROPERLY INSTALL EQUIPMENT.
8. EQUIPMENT LOCATIONS: DETERMINE EXACT EQUIPMENT AND MATERIALS LOCATIONS TO PROVIDE BEST ARRANGEMENT AND TO FACILITATE PROPER MAINTENANCE AND SERVICING OF EQUIPMENT.
9. LISTING AND LABELING: ALL EQUIPMENT SHALL BE LABELED OR LISTED BY UL OR OTHER APPROVED TESTING AGENCY WHERE REQUIRED.
10. CLEANUP: REMOVE ALL DEBRIS GENERATED IN THE ACCOMPLISHMENT OF WORK UNDER THIS PROJECT. CLEAN, REPLACE OR REPAIR ALL SURFACES SOILED OR DAMAGED DURING THE COURSE OF THE WORK. REMOVE DEBRIS DAILY SO TO MAINTAIN SAFE WORKING CONDITIONS.
11. DEMOLISH EXISTING EQUIPMENT PADS AS REQUIRED TO ACCOMMODATE NEW EQUIPMENT LAYOUT.

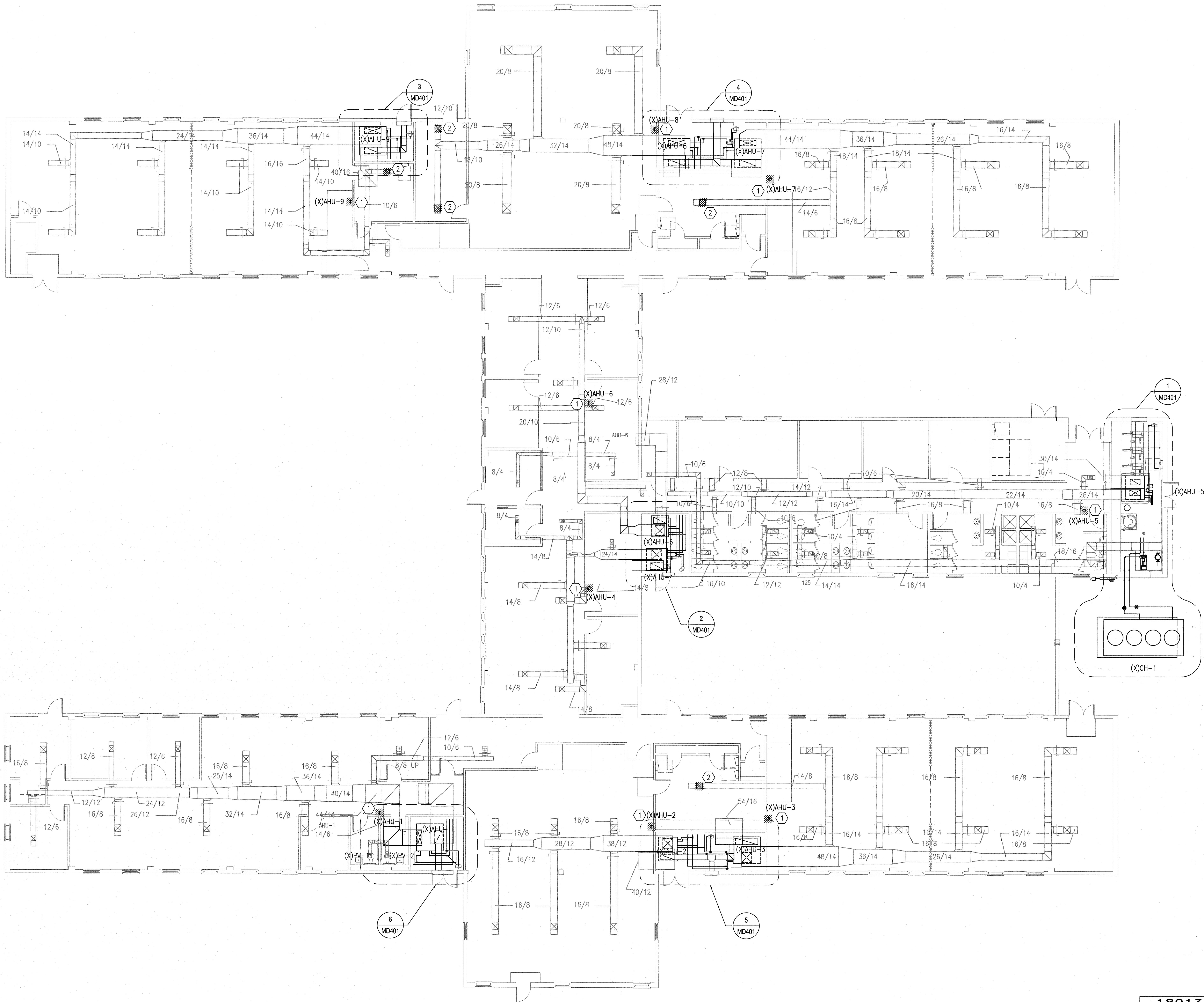
DISCLOSURE OF INFORMATION:

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 2. THE INFORMATION IS OTHERWISE IN THE PUBLIC DOMAIN BEFORE THE DATE OF THE RELEASE.
- B. REQUESTS FOR APPROVAL SHALL IDENTIFY THE SPECIFIC INFORMATION TO BE RELEASED, THE MEDIUM TO BE USED, AND THE PURPOSE FOR THE RELEASE. THE CONTRACTOR SHALL SUBMIT ITS REQUEST TO THE CONTRACTING OFFICER AT LEAST 45 DAYS BEFORE THE PROPOSED DATE FOR RELEASE.
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FINAL		M-001	
DEPARTMENT OF THE NAVY		NAVAL FACILITIES ENGINEERING COMMAND	
MARINE CORPS BASE		CAMP LEJEUNE, NORTH CAROLINA	
17-0003		REPLACE AHU'S AT	
M324		MECHANICAL	
ABBREVIATIONS, LEGENDS		AND NOTES	
DESIGN DIR. T. H. BURTON, PE		NAVFAC DRAWING NO. 60023548	
APPROVED: PWO OR OICC		DATE	
SATISFACTORY TO:		DATE	
SCALE: -		SPEC. 05-17-0003	
SHEET 2		OF 32	



REVISIONS			
SYM		DATE	APPROVED

DEMOLITION KEYED NOTES

1

DEMOLISH EXISTING THERMOSTATS. REPAIR AND PAINT WALL TO PRE-CONSTRUCTION CONDITION OR BETTER.

2

DEMOLISH EXISTING DIFFUSER. PROTECT DUCT FOR ATTACHMENT OF NEW DIFFUSER.

DEMOLITION GENERAL NOTES

CONTRACTOR SHALL DEMOLISH EXISTING DDC/BAS CONTROL SYSTEM.

DISCLOSURE OF INFORMATION:

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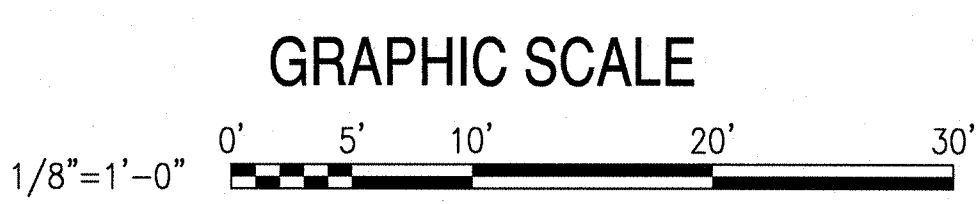
2. THE INFORMATION IS OTHERWISE IN THE PUBLIC DOMAIN BEFORE THE DATE OF THE RELEASE.

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MECHANICAL DEMOLITION FLOOR PLAN
1/8"=1'-0"

PLAN NORTH



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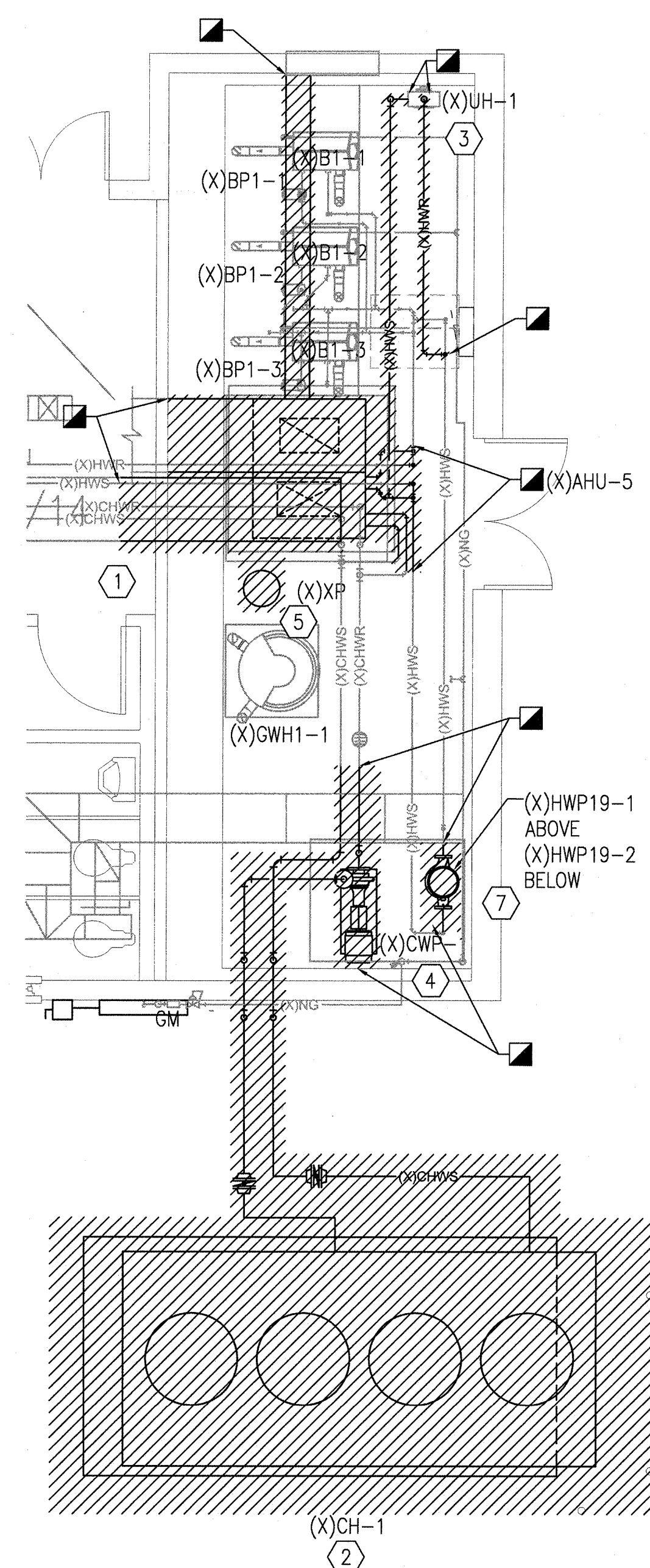
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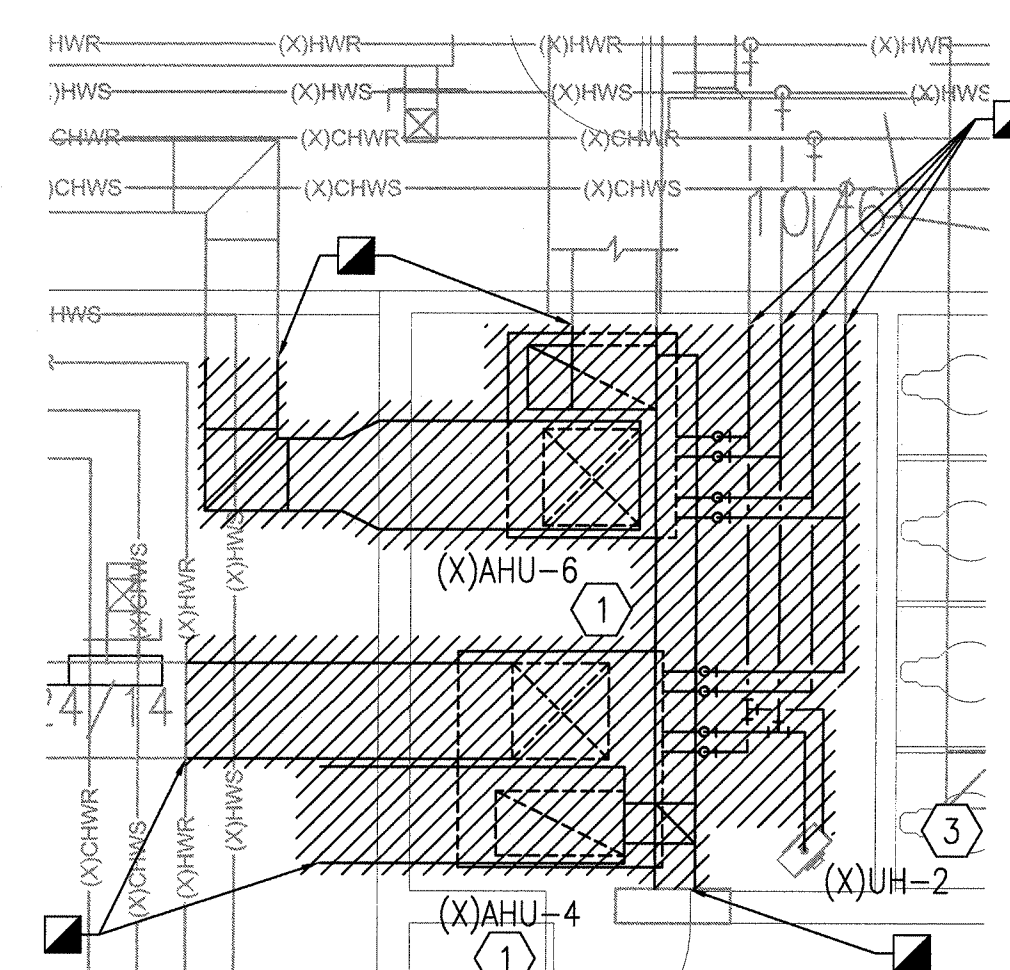
FINAL		MD101	
		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND	
		MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA	
DES. WTB		17-0003	
DR. WTB		REPLACE AHU'S AT	
CHK. TOG		M324	
SUBMITTED BY: TOG		MECHANICAL DEMOLITION	
DESIGN DIR. T H BURTON, PE		FLOOR PLAN	
APPROVED: PWO OR OICC		DATE	SIZE CODE IDENT. NO
			NAVFAC DRAWING NO.
			60023549
SATISFACTORY TO:		DATE	CONST. CONTR.
		SCALE: -	SPEC. 05-17-0003
			SHEET 3 OF 32

REVISIONS			
SYM		DATE	APPROVED

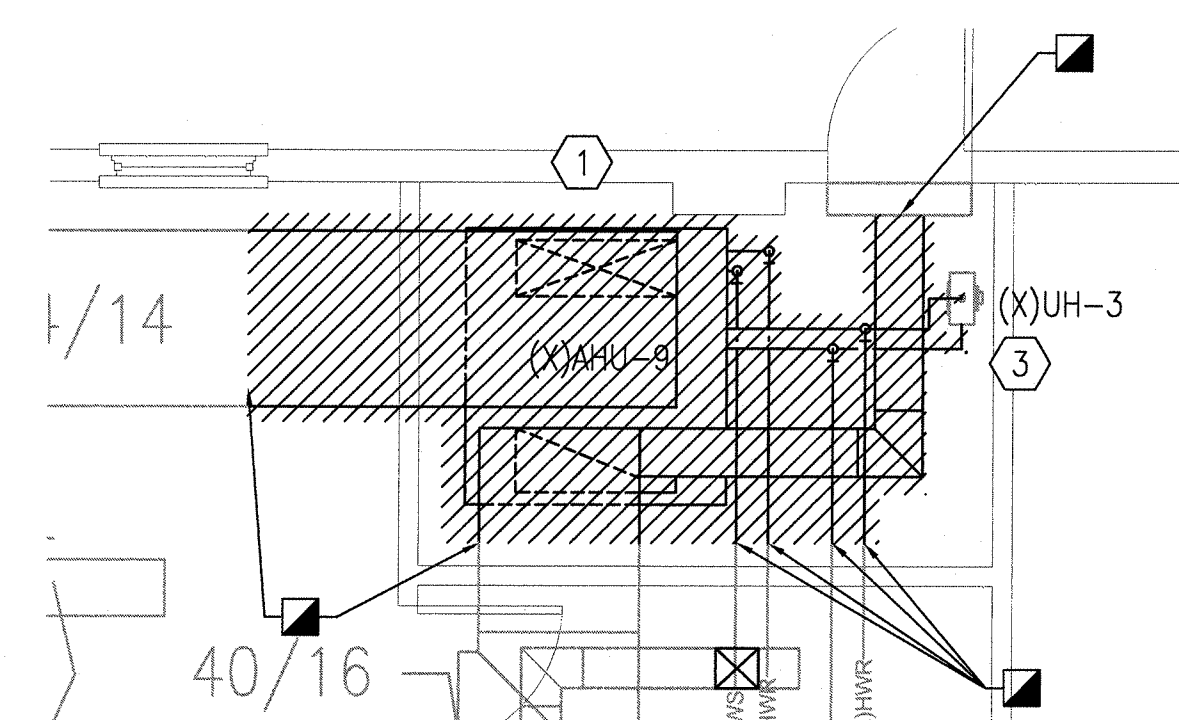
- DEMOLITION KEYED NOTES**
- DEMOLISH EXISTING AHU, AND ASSOCIATED DUCTWORK, CHWS,CHWR,HWS,HWR PIPING, HANGERS, AND CONTROLS TO EXTENT SHOWN.
 - DEMOLISH AND DISPOSE OF CHILLER PAD, PIPING, INSULATION, SUPPORTS AND CONTROLS TO EXTENT SHOWN. EXISTING CHILLER SHALL BE REMOVED AND RETURNED TO GOVERNMENT. CHILLER SHALL BE DELIVERED TO STORAGE LOT OFF ASH STREET. CONTRACTOR SHALL COORDINATE WITH ROIC.
 - UNIT HEATER TO REMAIN.
 - DEMOLISH AND DISPOSE OF EXISTING CHILLED WATER PUMP, AND CONTROLS.
 - REMOVE AND PROTECT EXISTING XP FOR RE-USE.
 - DEMOLISH EXISTING EXHAUST FANS. PROTECT DUCTWORK FOR RECONNECTION.
 - DEMOLISH AND DISPOSE OF EXISTING HEATING HOT WATER PUMPS.



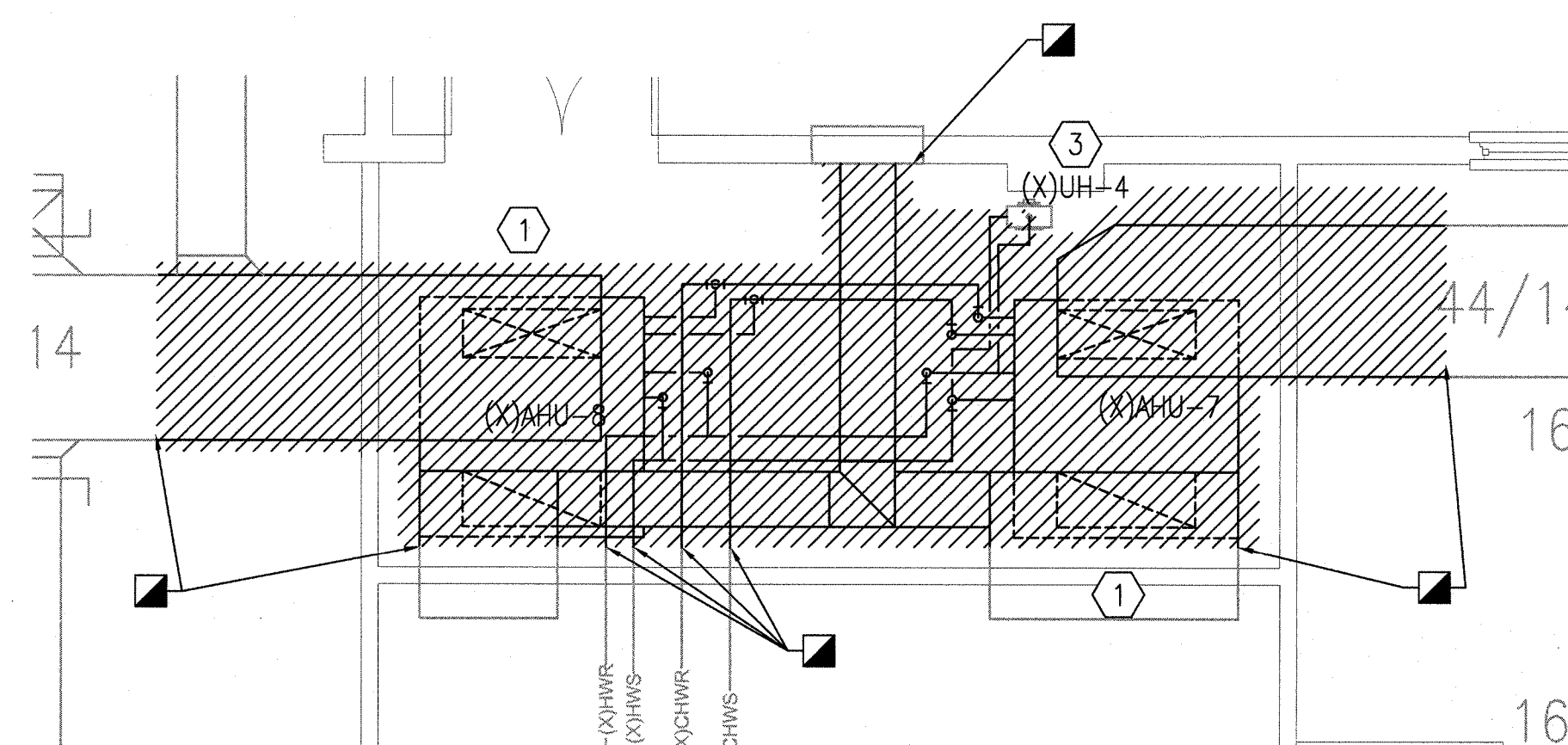
MECHANICAL ROOM 1 DEMOLITION PLAN
1/4"=1'-0"



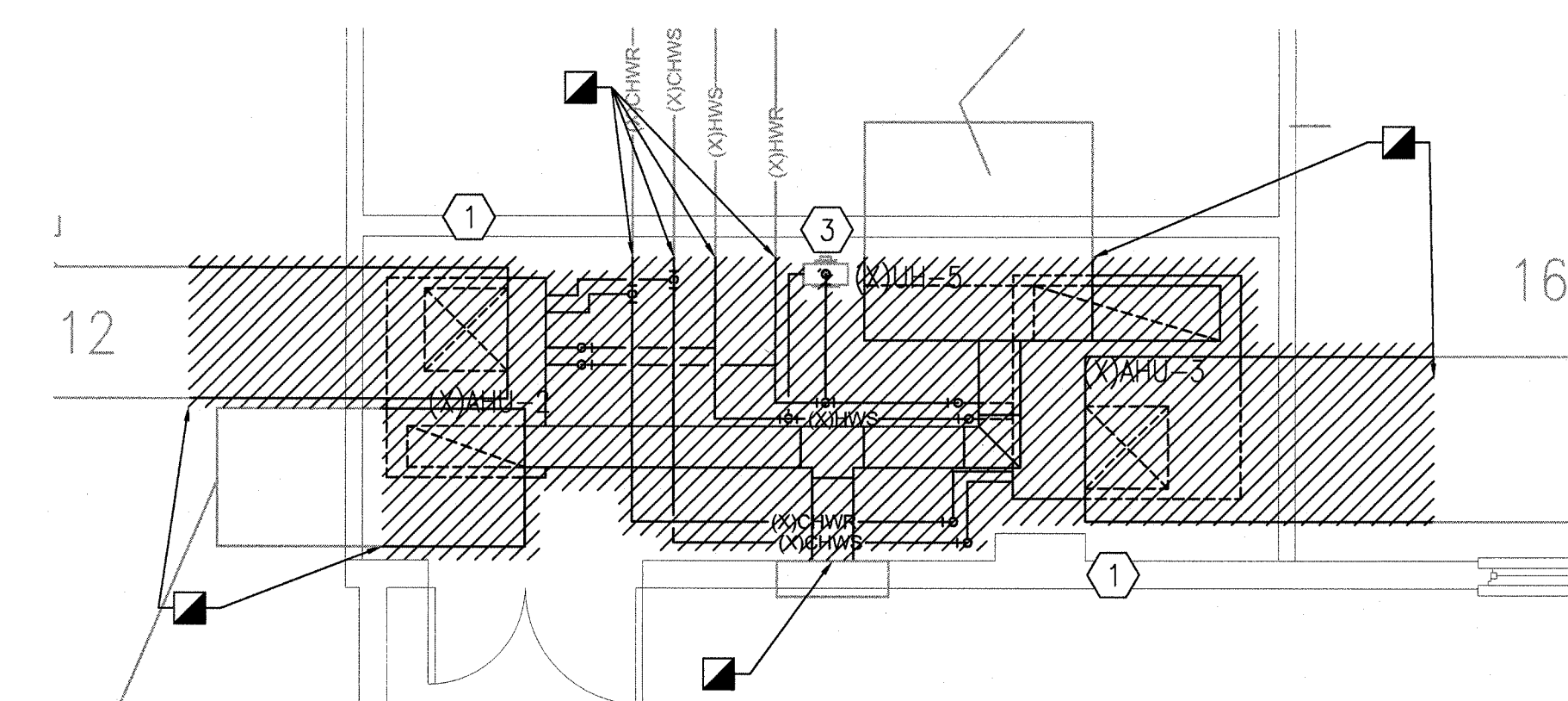
MECHANICAL ROOM 2 DEMOLITION PLAN
1/4"=1'-0"



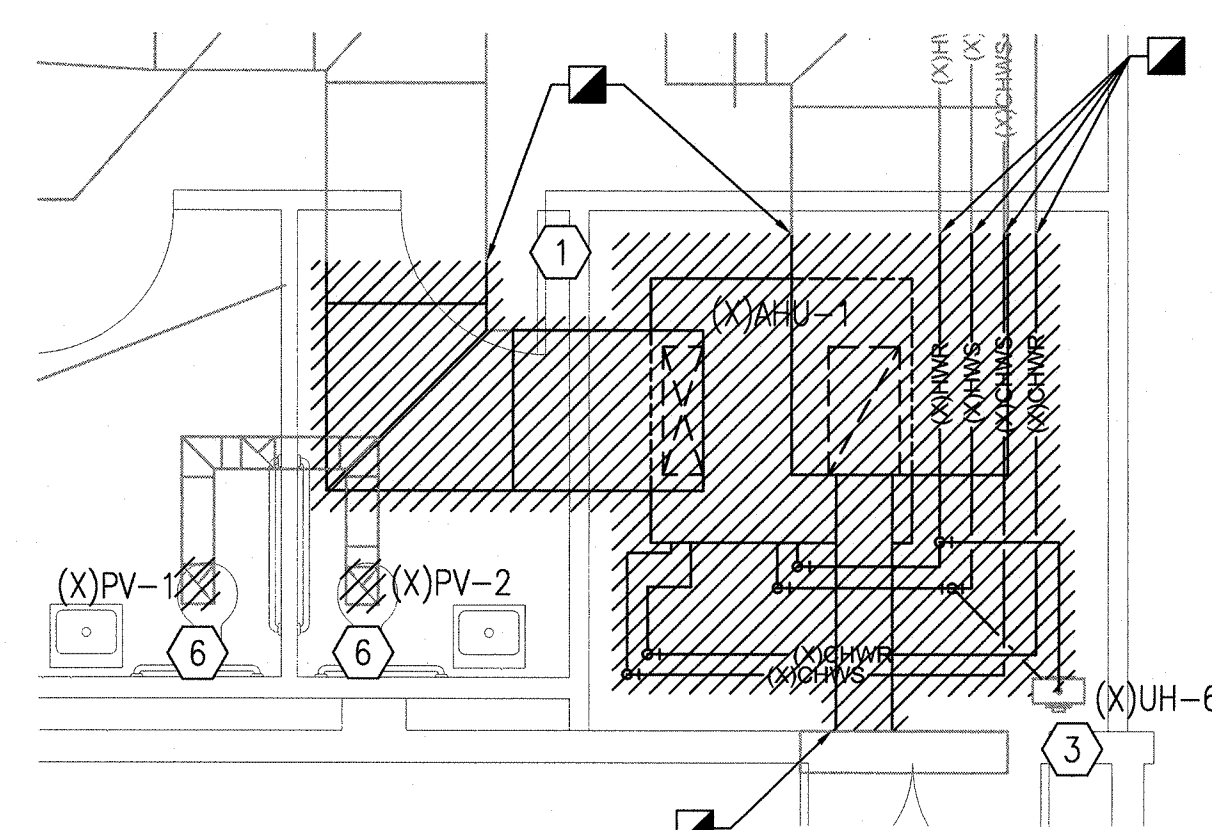
MECHANICAL ROOM 3 DEMOLITION PLAN
1/4"=1'-0"



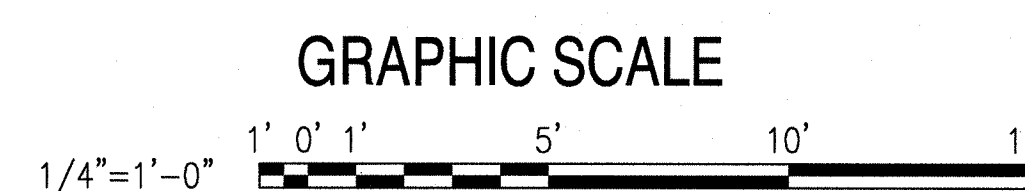
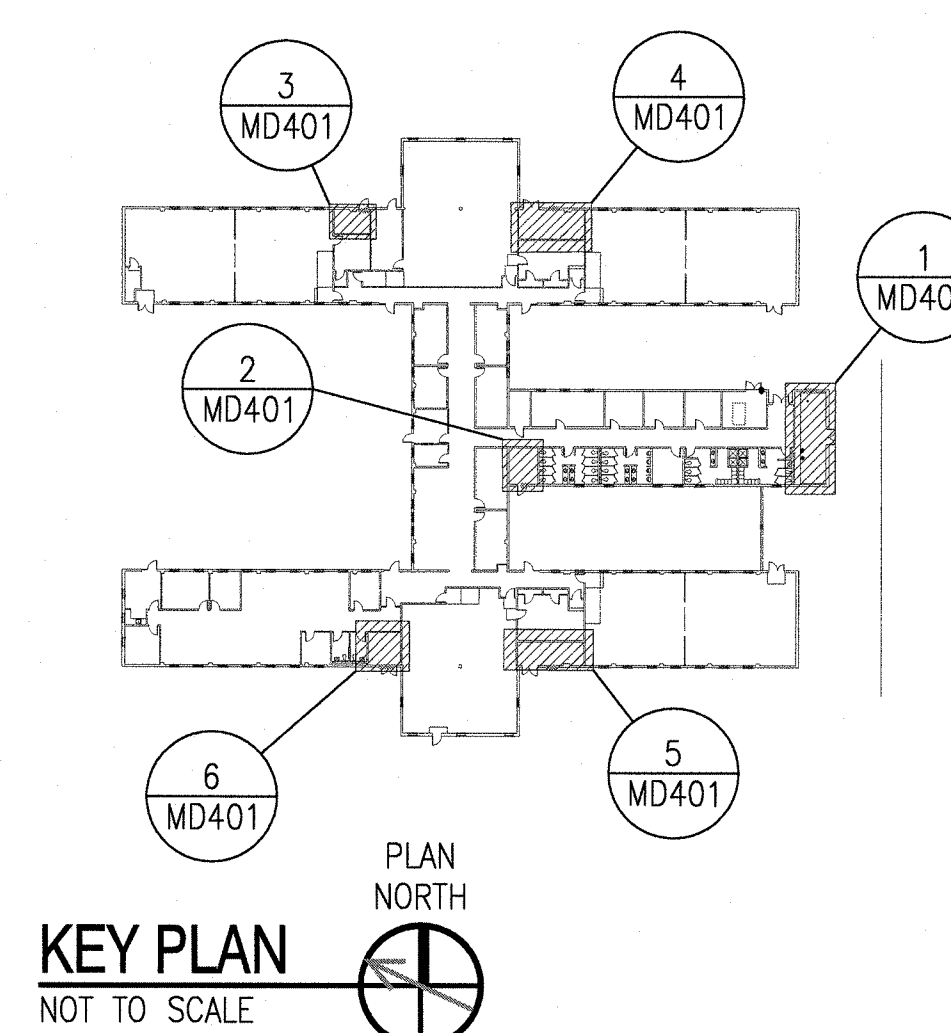
MECHANICAL ROOM 4 DEMOLITION PLAN
1/4"=1'-0"



MECHANICAL ROOM 5 DEMOLITION PLAN
1/4"=1'-0"



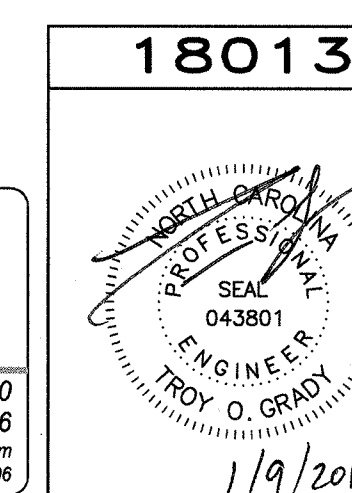
MECHANICAL ROOM 6 DEMOLITION PLAN
1/4"=1'-0"



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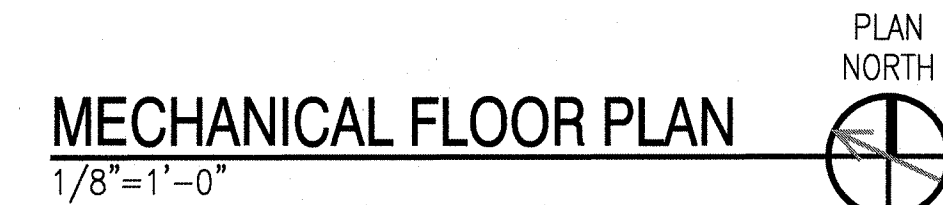


FINAL		MD401	
DEPARTMENT OF THE NAVY		NAVAL FACILITIES ENGINEERING COMMAND	
MARINE CORPS BASE		CAMP LEJEUNE, NORTH CAROLINA	
17-0003		REPLACE AHU'S AT	
M324		MECHANICAL DEMOLITION	
ENLARGED FLOOR		PLANS	
DESIGN DIR. T. H. BURTON, PE		NAVFAC DRAWING NO. 60023550	
APPROVED: PWO OR OICC		CONST. CONTR.	
SATISFACTORY TO:		SCALE: - SPEC. 05-17-0003 SHEET 4 OF 32	

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CONSTRUCTION NOTES	
1.	CONTRACTOR SHALL PROVIDE NEW DDC/BAS CONTROL SYSTEM.
2.	ALL EXISTING SUPPLY, RETURN, OUTSIDE AIR AND EXHAUST DUCTWORK TO BE CLEANED AND SEALED UTILIZING AUTOMATED AEROSOLIZED SEALANT INJECTION.
3.	CONTRACTOR SHALL RE-BALANCE ALL THREE EXISTING BOILER PUMPS TO 30 GPM EACH.

1	INSTALL NEW DIFFUSER. CONNECT TO EXISTING DUCTWORK. INSTALL ASSOCIATED THERMOSTAT NEAR OFFICE DOOR.
2	INSTALL NEW RETURN DIFFUSER IN EXISTING CEILING GRID.



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FINAL	M-101
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DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

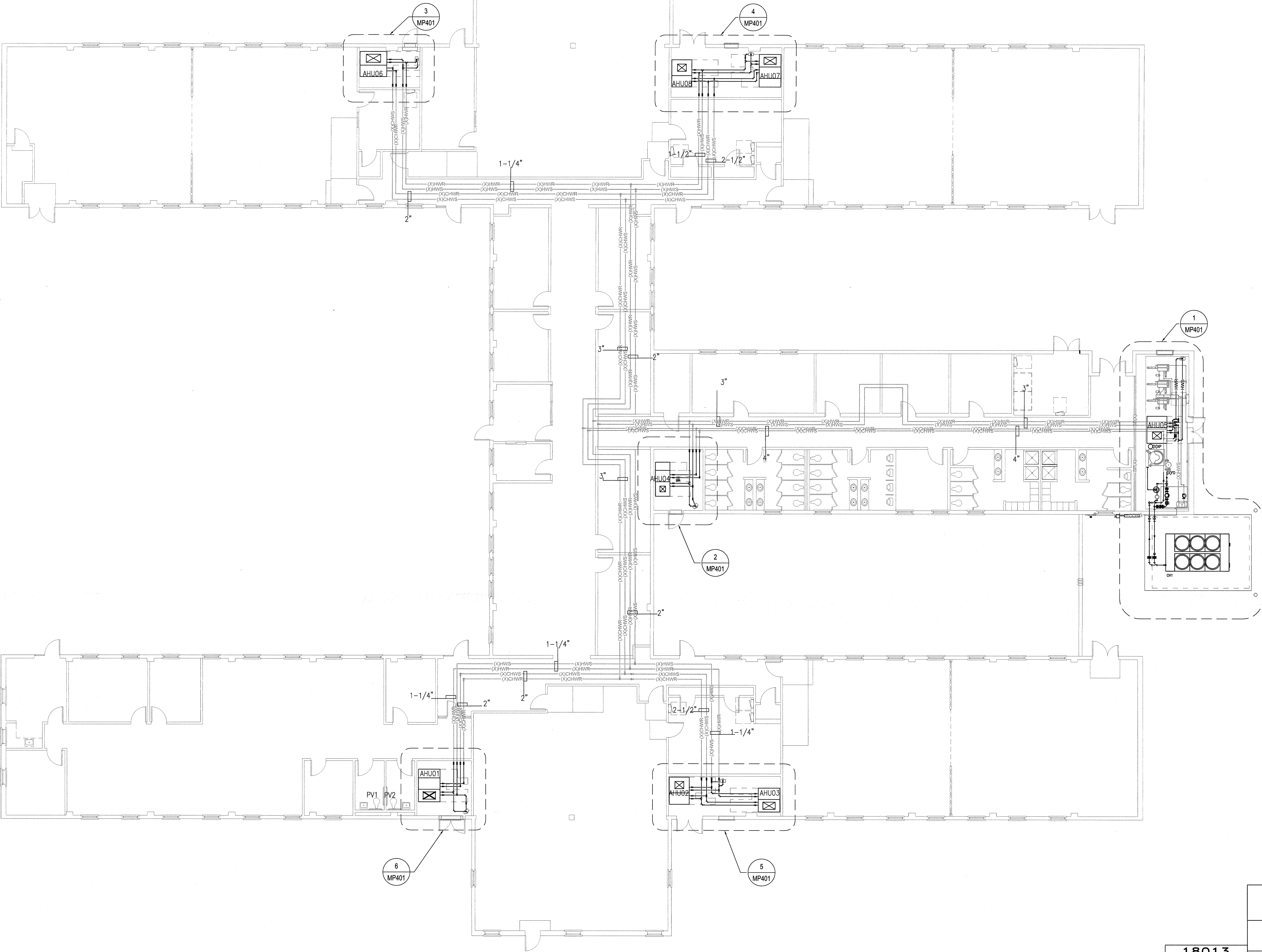
17-0003
REPLACE AHU'S AT
M324
MECHANICAL
FLOOR PLAN

NO.	NAVFAC DRAWING NO.
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60023551

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REVISIONS			
SYM		DATE	APPROVED



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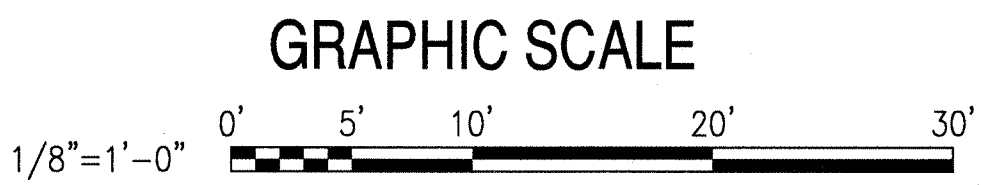
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MECHANICAL PIPING PLAN
1/8"=1'-0"

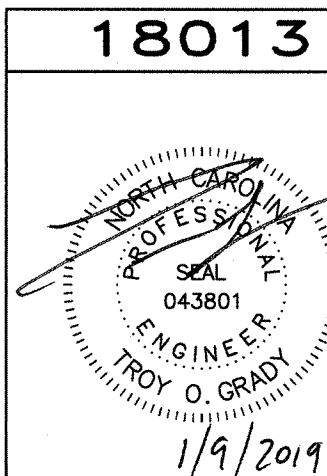
PLAN NORTH



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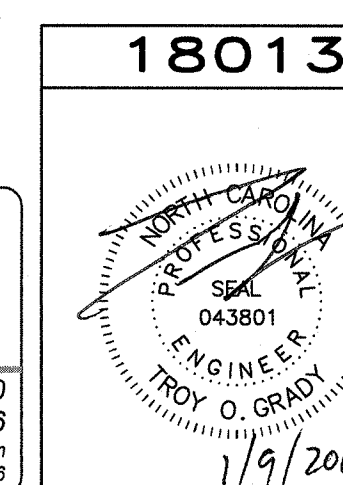
FINAL		MP101	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND			
MARINE CORPS BASE			
CAMP LEJEUNE, NORTH CAROLINA			
17-0003			
REPLACE AHU'S AT			
M324			
MECHANICAL PIPING PLAN			
DES. WTB	DR. WTB	CHK. TOG	SUBMITTED BY: TOG
DESIGN DIR. T H BURTON, PE	APPROVED: PWO OR OICC	DATE	SIZE CODE IDENT. NO
SATISFACTORY TO:	DATE	F 80091	NAVFAC DRAWING NO. 60023552
CONST. CONTR.		SCALE: -	SPEC. 05-17-0003
SHEET 6		OF 32	

CONSTRUCTION NOTES	
1.	CONTRACTOR SHALL PROVIDE NEW DDC/BAS CONTROL SYSTEM.
2.	CONTRACTOR SHALL MODIFY CONTROL SEQUENCES OF EXISTING EQUIPMENT TO MATCH SEQUENCES SHOWN ON DRAWING M-603 THRU M-606.

- 1 REUSE EXISTING XP-1 FROM DEMOLITION PHASE.
- 2 ENLARGE EQUIPMENT PAD TO ACCOMMODATE NEW AHUOS.
- 3 INSTALL NEW EXHAUST FANS. CONNECT TO EXISTING DUCTWORK. REPAIR AND PAINT CEILING TO PRE-CONSTRUCTION CONDITION OR BETTER.
- 4 PLACE NEW AHU ON ENLARGED HOUSE KEEPING PAD (REFER TO DETAIL 2&3/M-501). ROUTE CONDENSATE TO EXISTING FLOOR DRAIN. ROUTE SUPPLY AND RETURN DUCTWORK TO EXISTING DUCTWORK.
- 5 PLACE NEW AHU ON NEW HOUSE KEEPING PAD (REFER TO DETAIL 1&3/M-501). ROUTE CONDENSATE TO EXISTING FLOOR DRAIN. ROUTE SUPPLY AND RETURN DUCTWORK TO EXISTING DUCTWORK.
- 6 PLACE NEW AHU ON NEW HOUSE KEEPING PAD (REFER TO DETAIL 2&3/M-501). ROUTE CONDENSATE THROUGH EXISTING WALL PENETRATION AND SPILL TO GRADE. ROUTE SUPPLY AND RETURN DUCTWORK TO EXISTING DUCTWORK.
- 7 CONNECT NEW SUPPLY AIR DUCT TO EXISTING SUPPLY AIR DUCT.
- 8 CONNECT NEW RETURN AIR DUCT TO EXISTING AIR DUCT. ROUTE OUTSIDE AIR DUCT TO EXISTING LOUVRE.



1/4"=1'-0" 



FINAL		M-401	
		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND MARINE CORPS BASE CAMP LEJUNE, NORTH CAROLINA	
DES. WTB	17-0003 REPLACE AHU'S AT M324 MECHANICAL ENLARGED FLOOR PLAN		
DR. WTB			
CHK. TOG			
SUBMITTED BY: TOG			
DESIGN DIR. T H BURTON, PE			
APPROVED: PWO OR OICC	DATE	SIZE CODE IDENT. NO. F 80091	NAVFAC DRAWING NO. 60023553
SATISFACTORY TO:	DATE	CONST. CONTR.	
		SCALE: -	SPEC. 05-17-0003 SHEET 7 OF 32

REVISIONS			
SYM		DATE	APPROVED

CONSTRUCTION KEYED NOTES

1

REINSTALL (X)XP IN NEW LOCATION.

2

USE EXISTING WALL PENETRATION FOR CHILLED WATER PIPING.

3

EXISTING CHEMICAL FEED TANK, RECONNECT AS SHOWN.

4

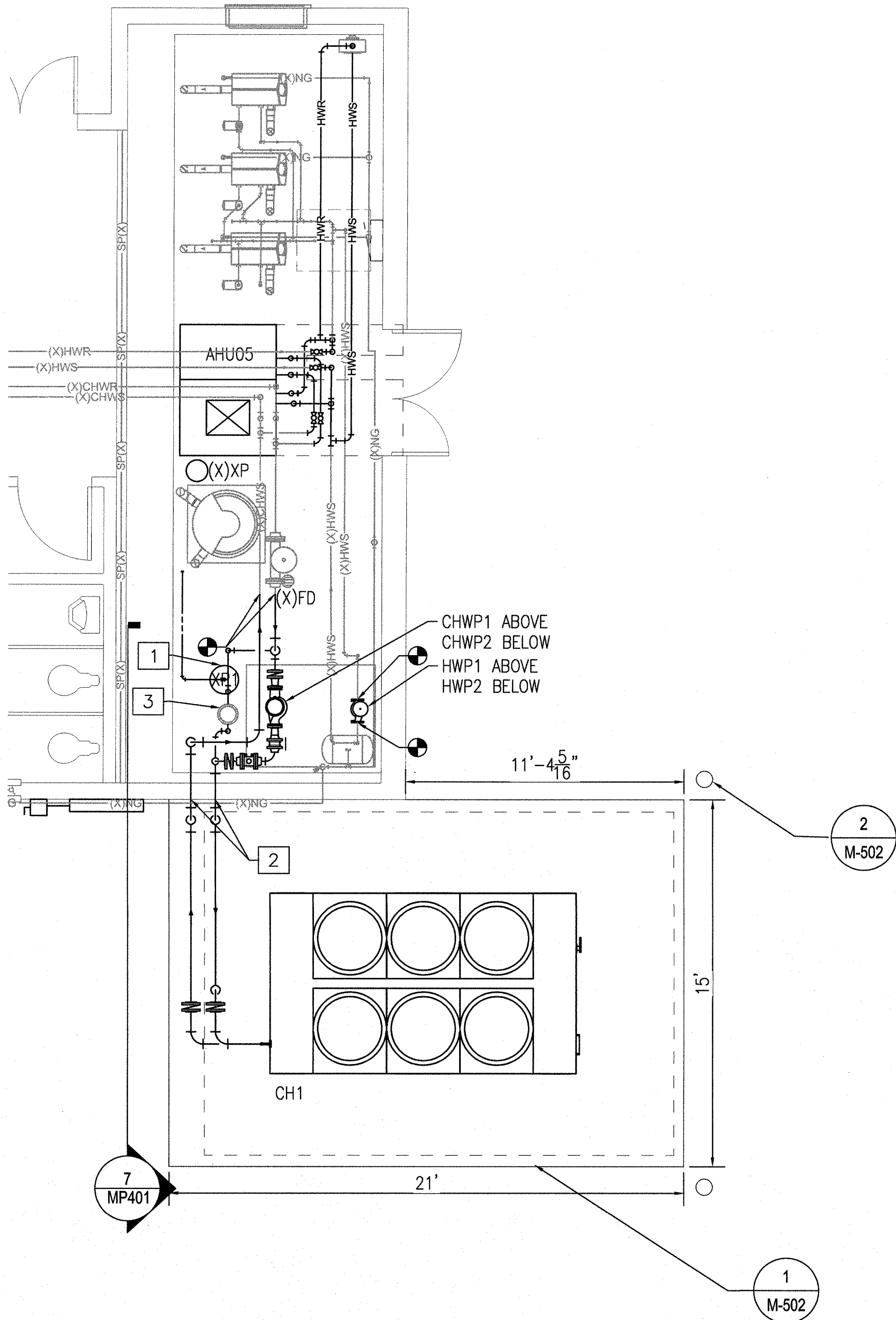
INSTALL ISOLATION VALVES IN EACH MECHANICAL ROOM.

5

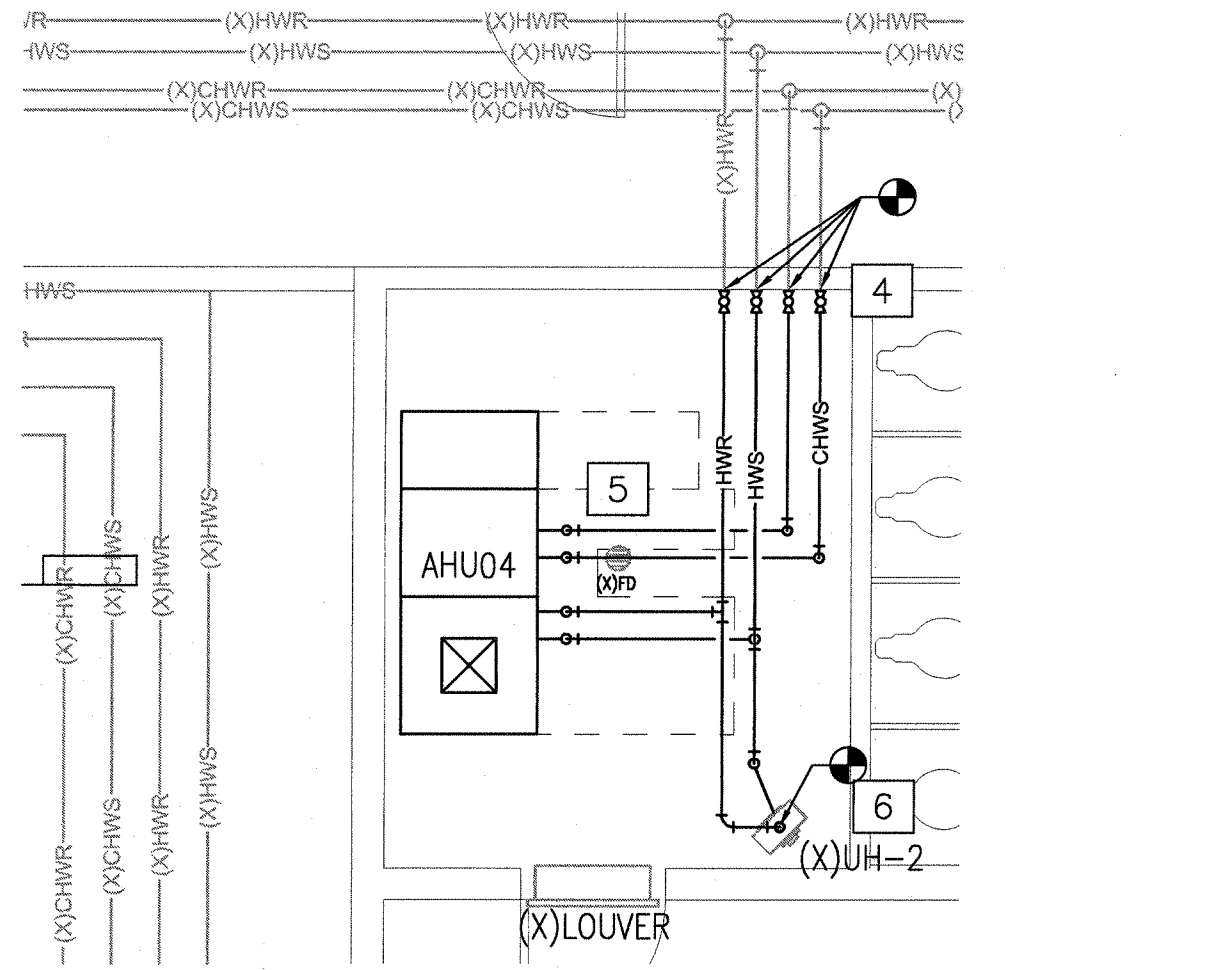
CONNECT CHILLED WATER AND HEATING HOT WATER PIPING TO NEW AIR HANDLING UNIT. REFER TO DETAIL 5/M-501.

6

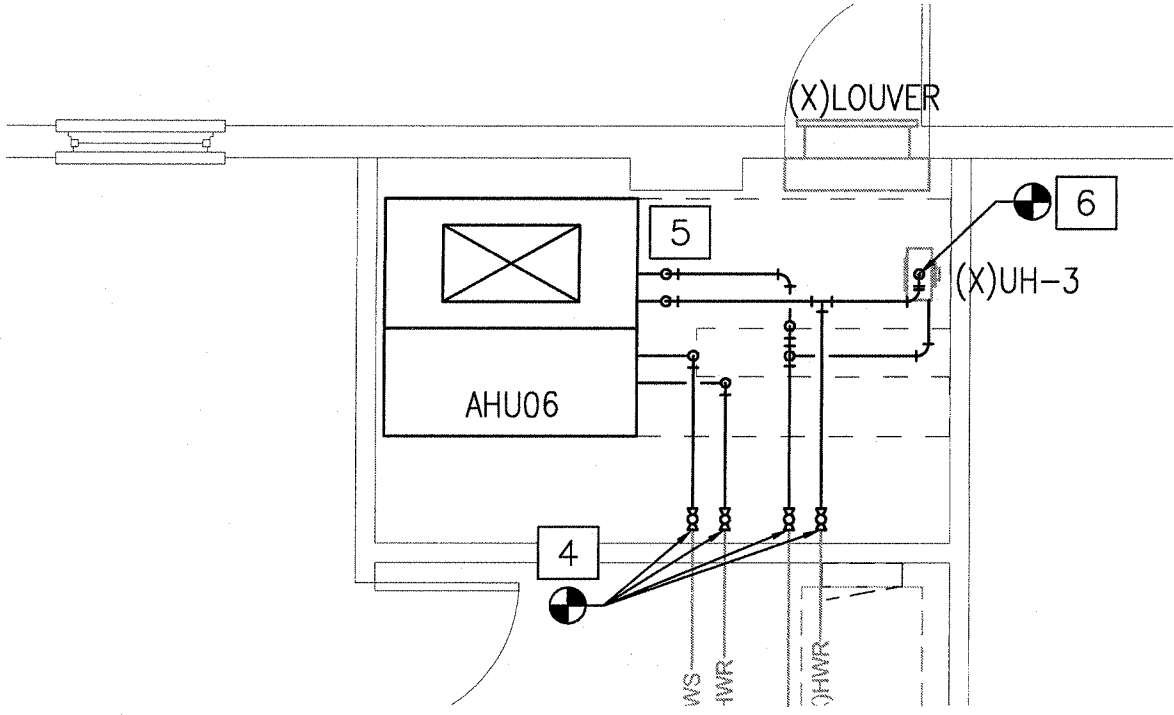
CONNECT HOT WATER PIPING TO EXISTING UNIT HEATER.



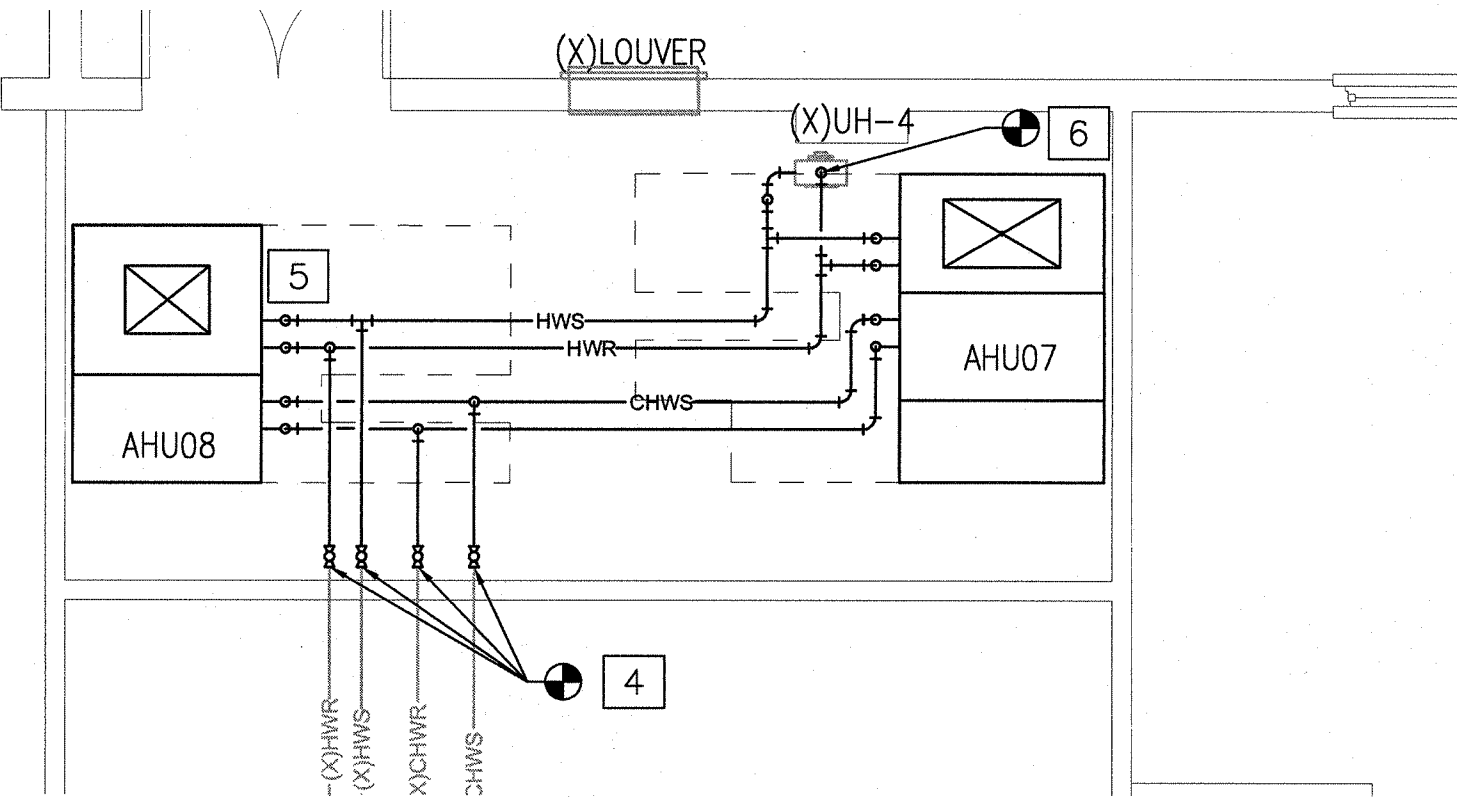
MECHANICAL ROOM 1 PIPING PLAN
1/4"=1'-0"



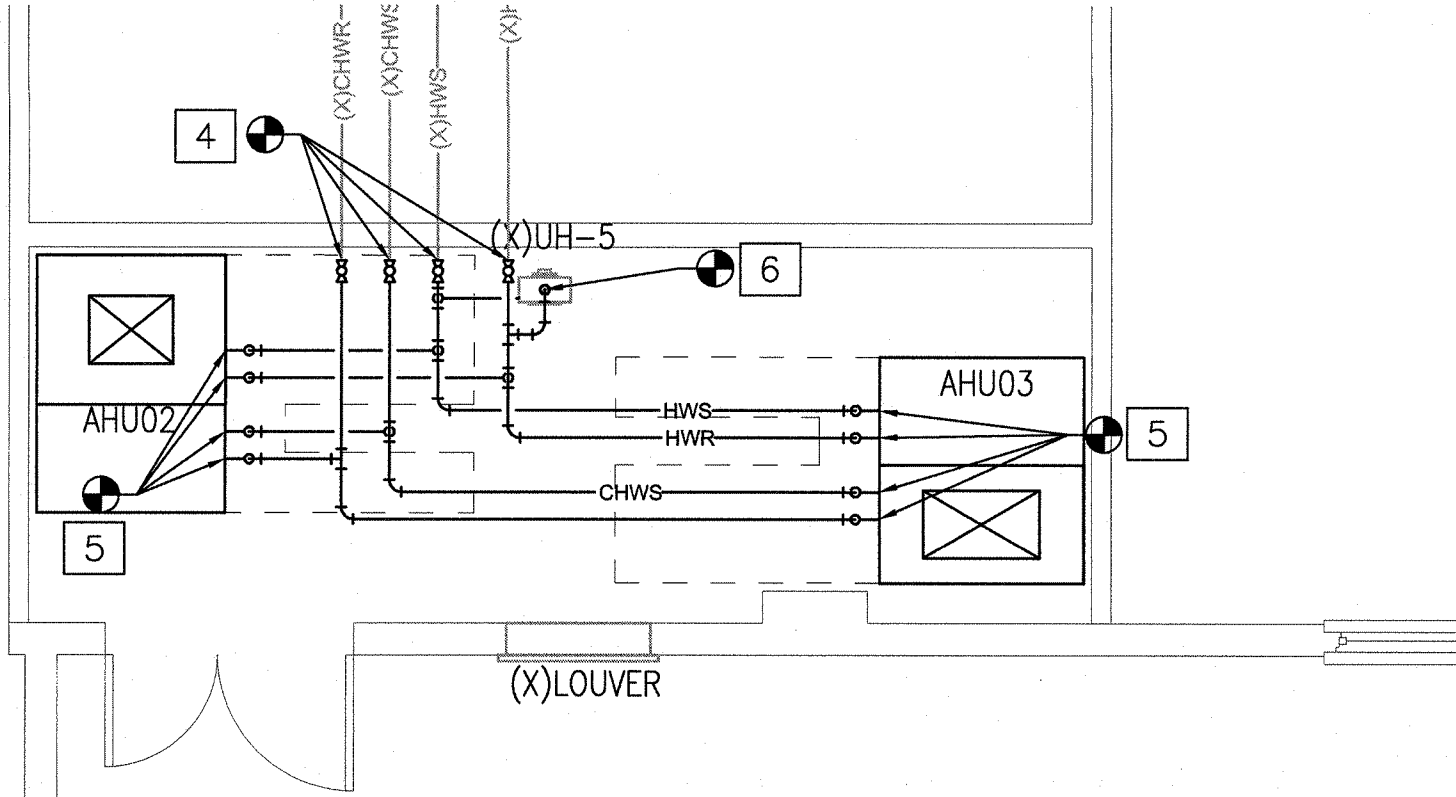
MECHANICAL ROOM 2 PIPING PLAN
1/4"=1'-0"



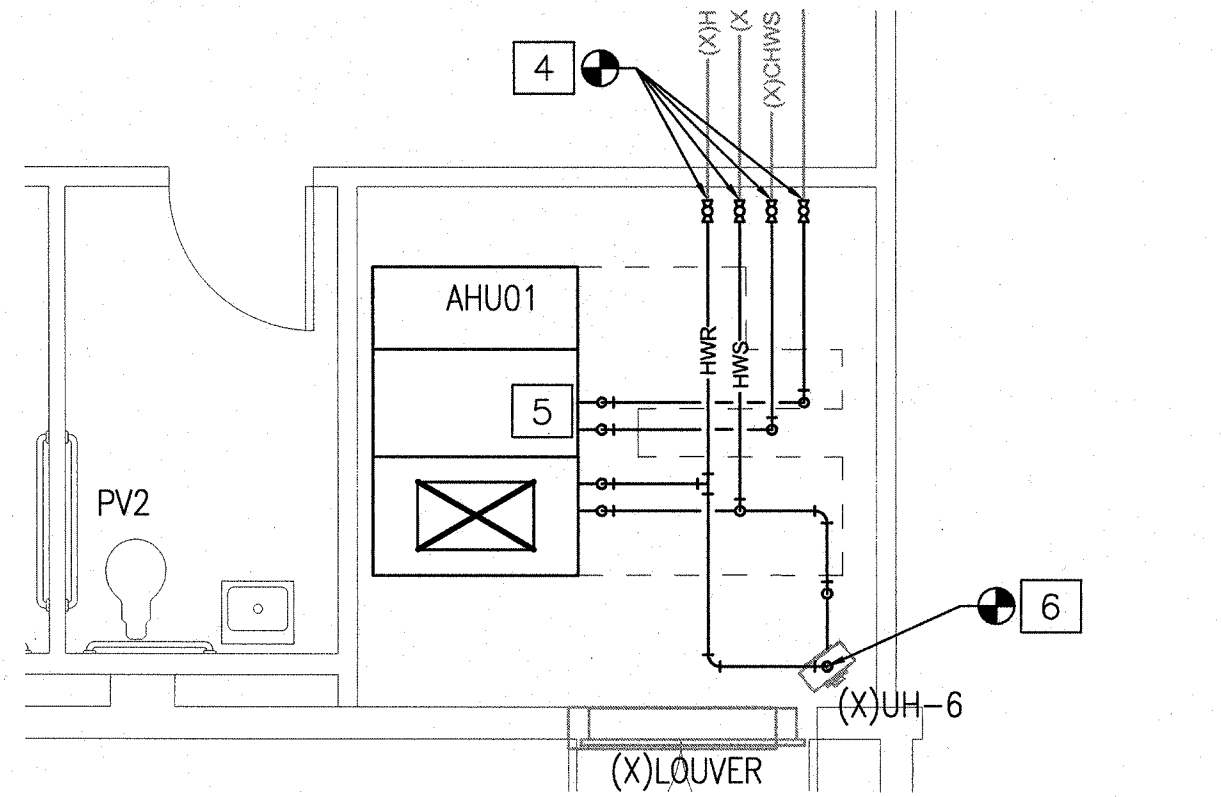
MECHANICAL ROOM 3 PIPING PLAN
1/4"=1'-0"



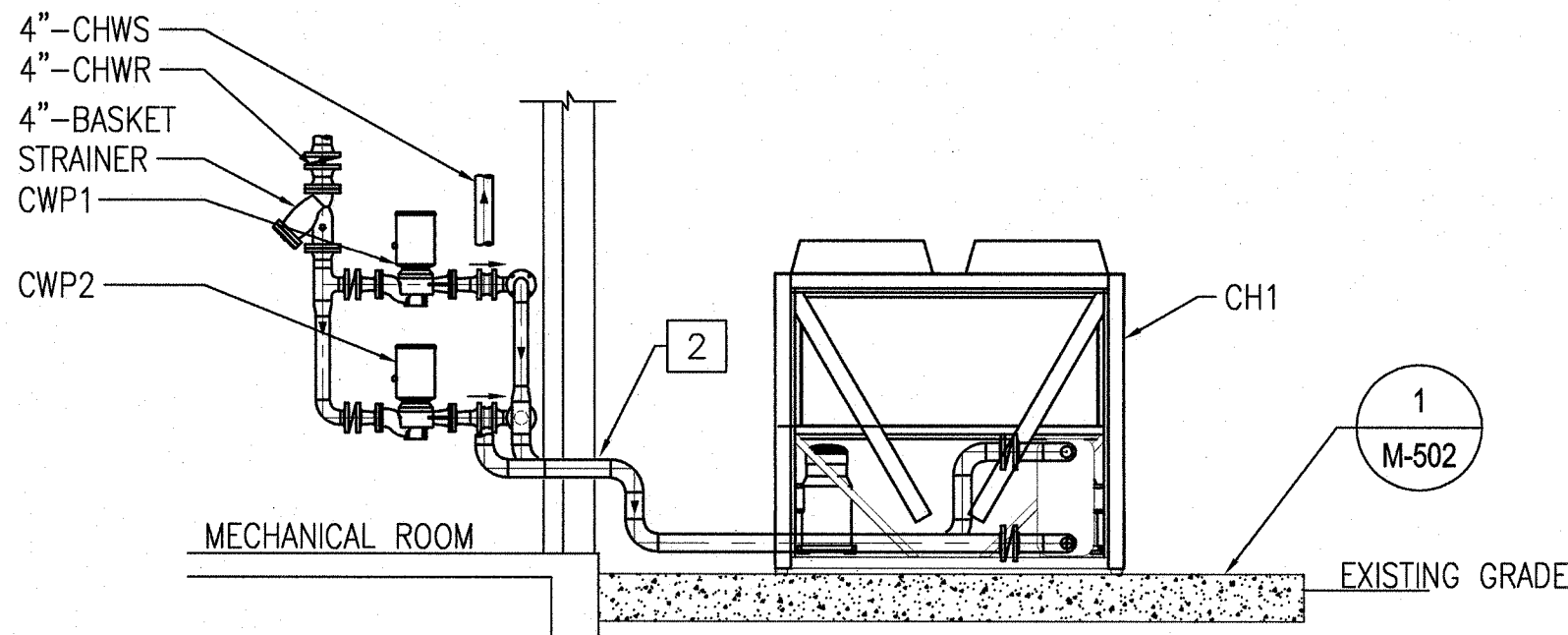
MECHANICAL ROOM 4 PIPING PLAN
1/4"=1'-0"



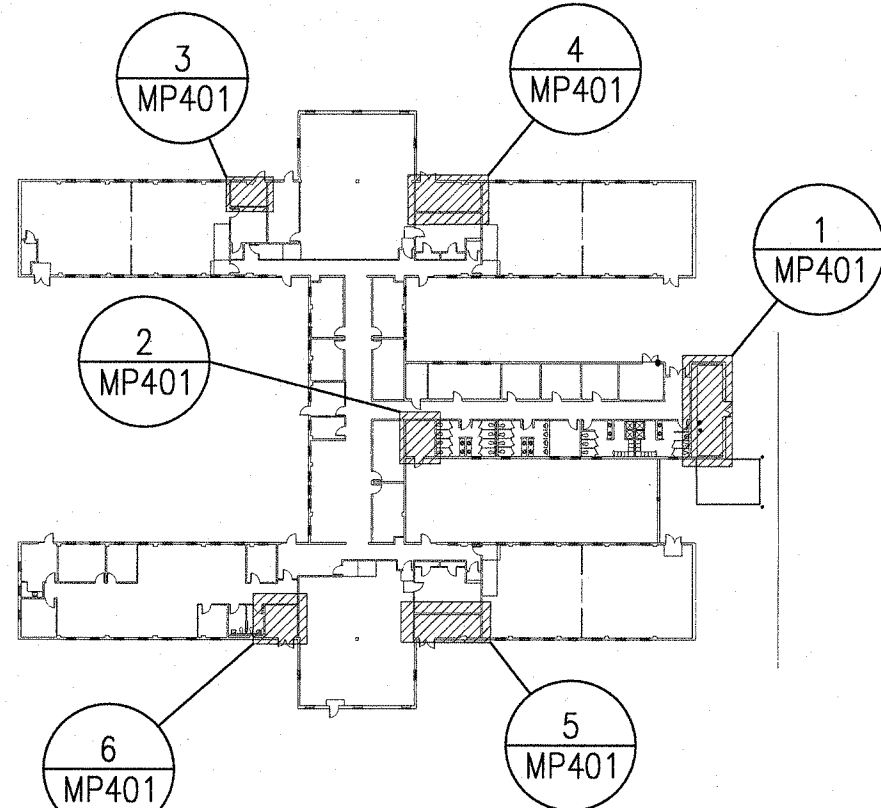
MECHANICAL ROOM 5 PIPING PLAN
1/4"=1'-0"



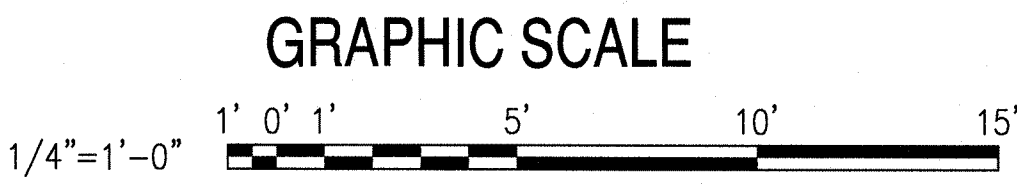
MECHANICAL ROOM 6 PIPING PLAN
1/4"=1'-0"



CHILLER PIPING SECTION
1/4"=1'-0"



KEY PLAN
NOT TO SCALE



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SEAL

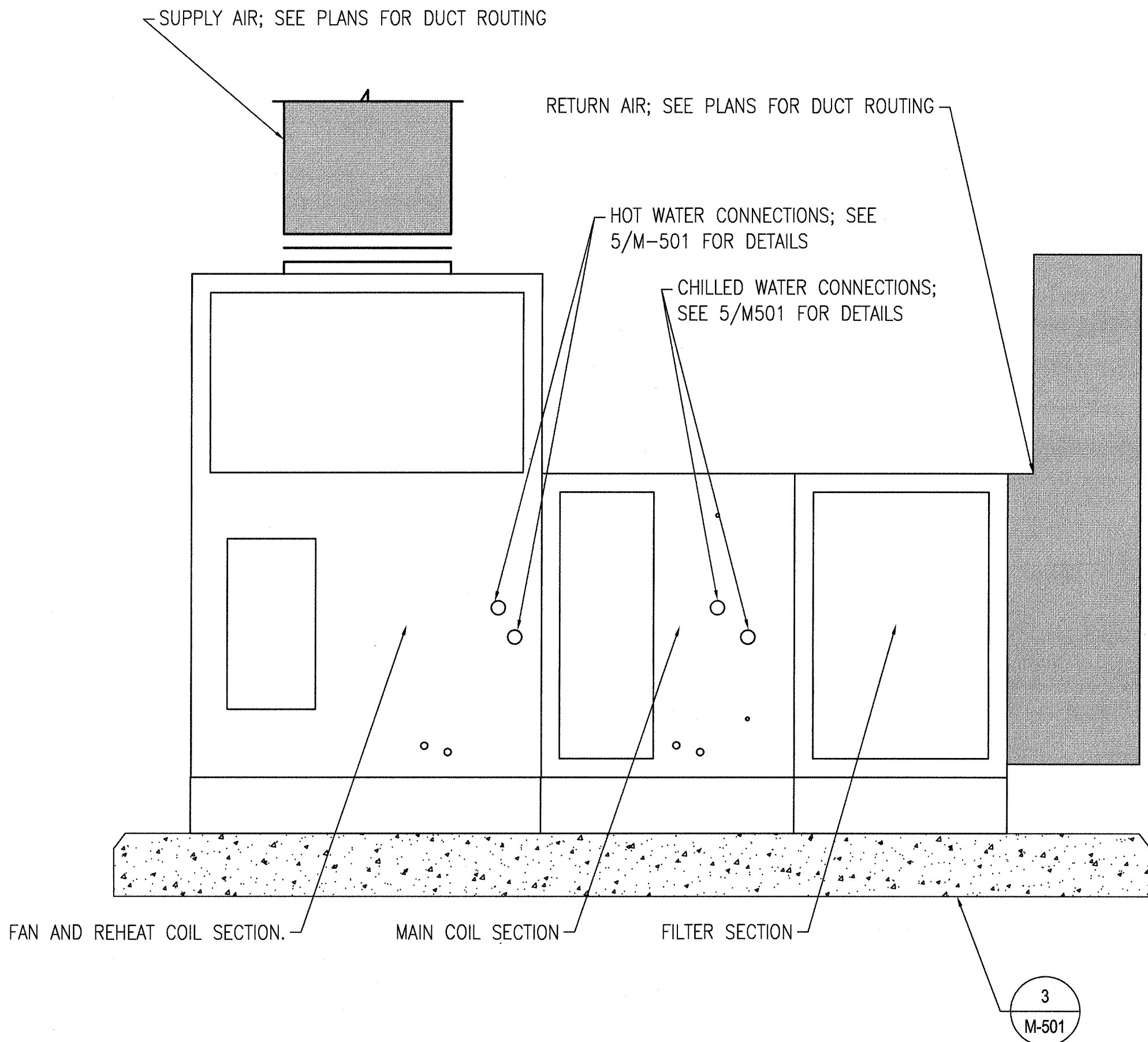
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PROF. O. GRADY

1/1/2019

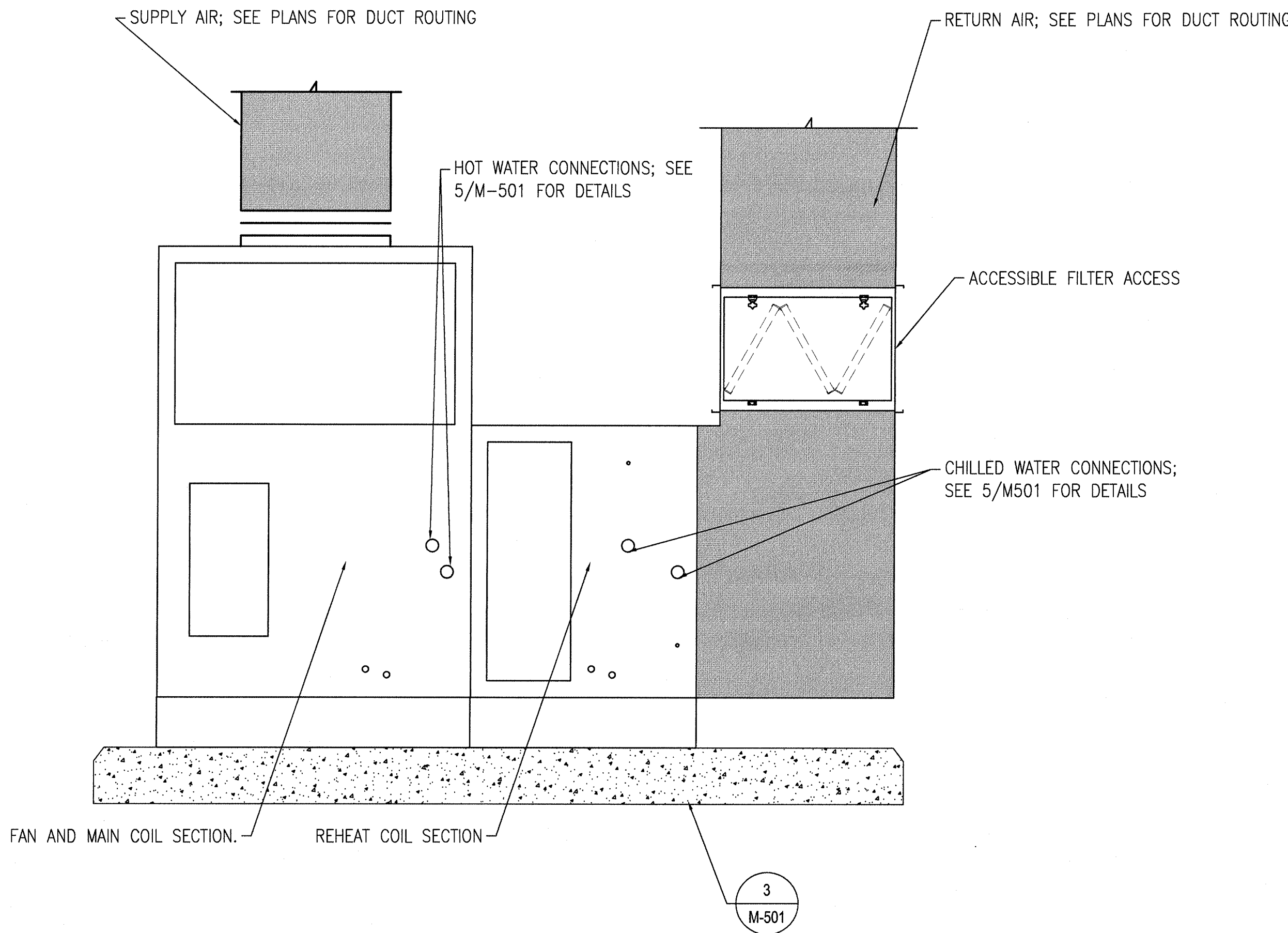
FINAL		MP401	
DEPARTMENT OF THE NAVY		NAVAL FACILITIES ENGINEERING COMMAND	
MARINE CORPS BASE		CAMP LEJEUNE, NORTH CAROLINA	
17-0003		REPLACE AHU'S AT	
M324		MECHANICAL	
ENLARGED PIPING		PLAN	
DES. WTB		NAVFAC DRAWING NO.	
DR. WTB		60023554	
CHK. TOG		CONST. CONTR.	
SUBMITTED BY: TOG			
DESIGN DIR. T. H. BURTON, PE			
APPROVED: PWO OR OICC			
SATISFACTORY TO:			
DATE			
SIZE			
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IDENT. NO.			
SCALE: -			
SPEC. 05-17-0003			
SHEET 8		OF 32	

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SYM		DATE	APPROVED



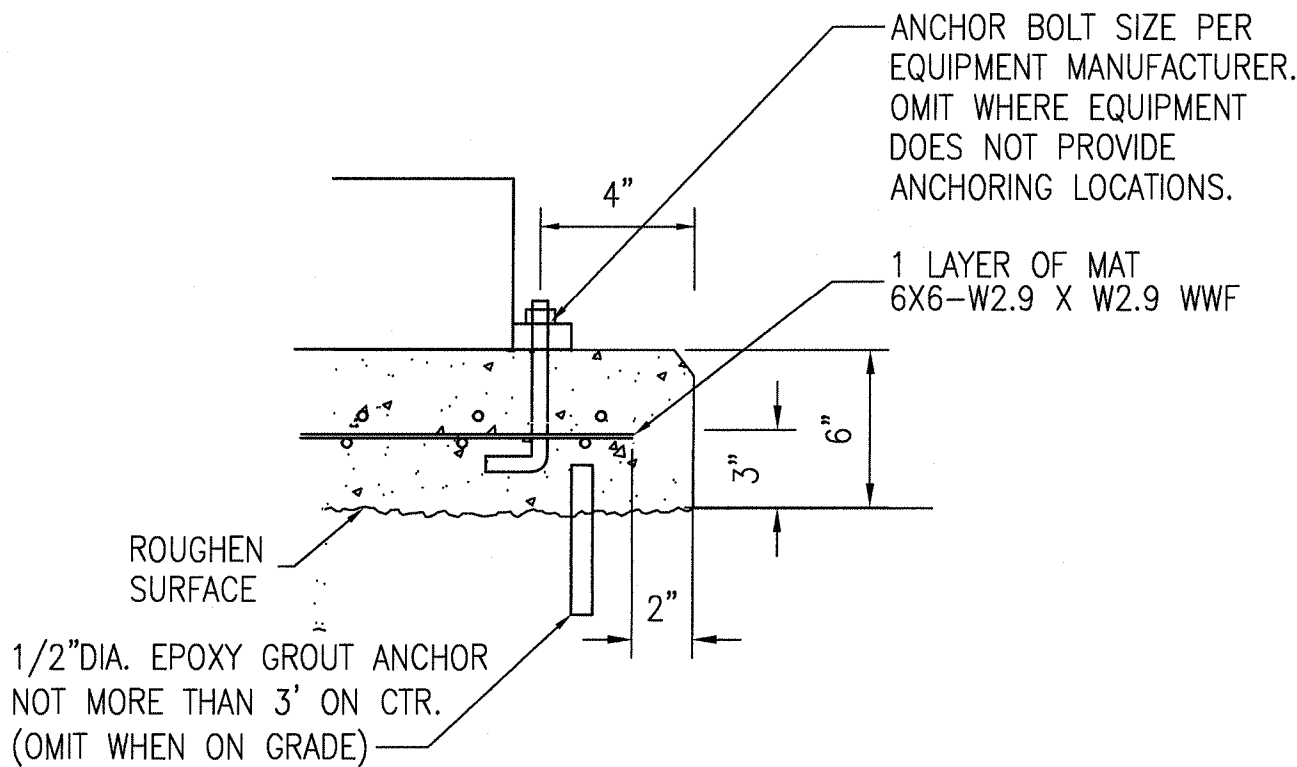
AIR HANDLER DETAIL
NOT TO SCALE

1



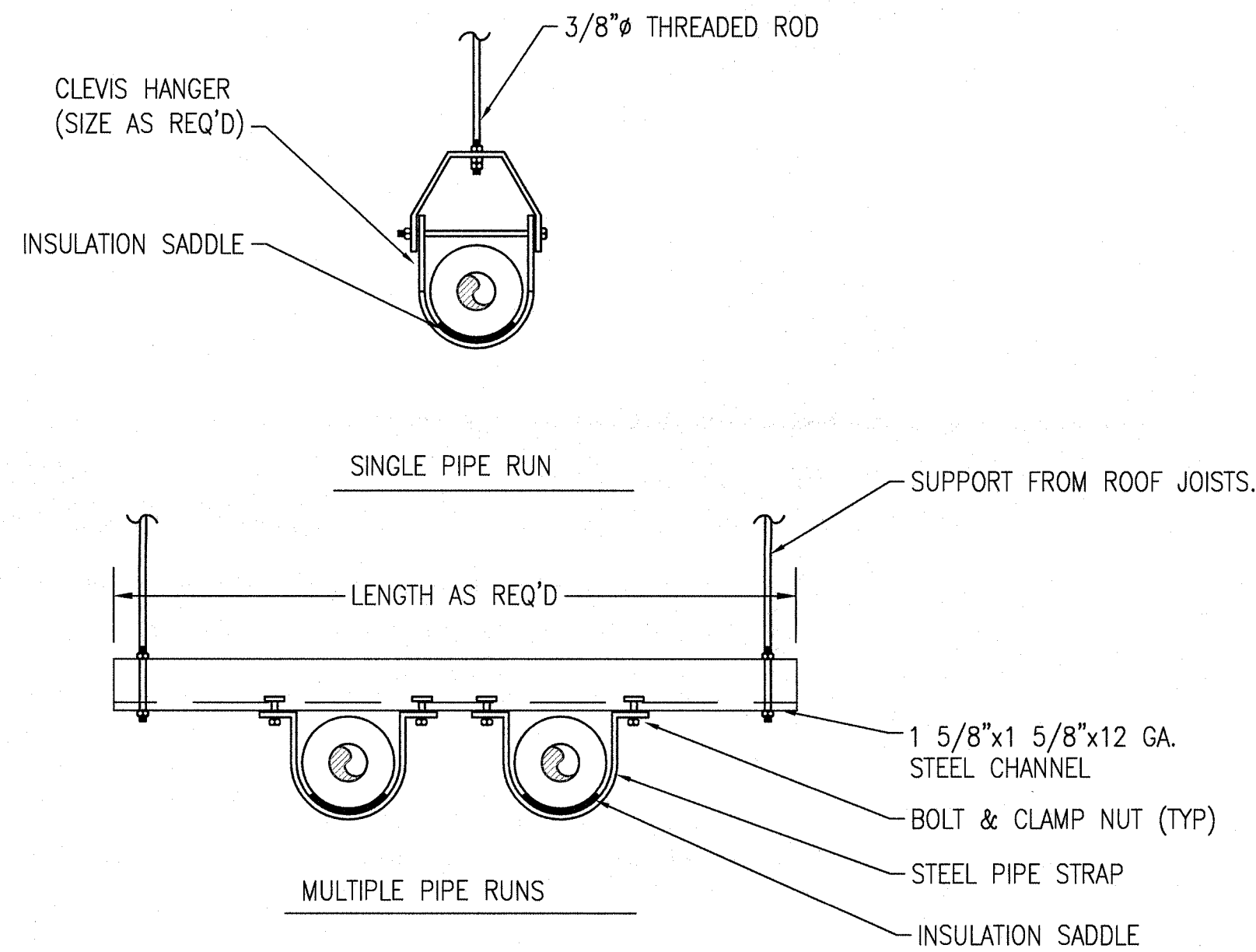
AIR HANDLER DETAIL
NOT TO SCALE

2



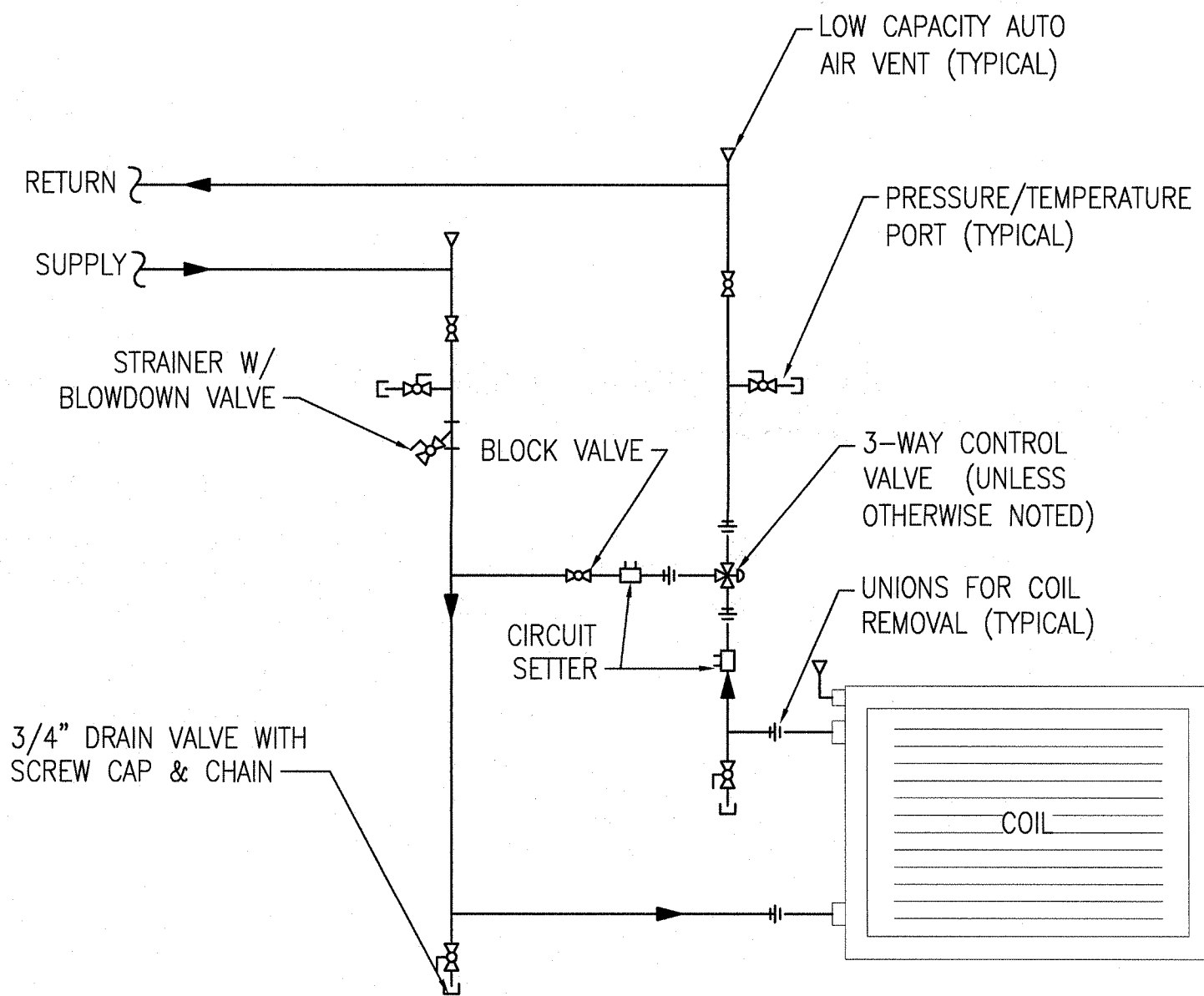
CONCRETE PAD DETAIL - INTERIOR
NOT TO SCALE

3



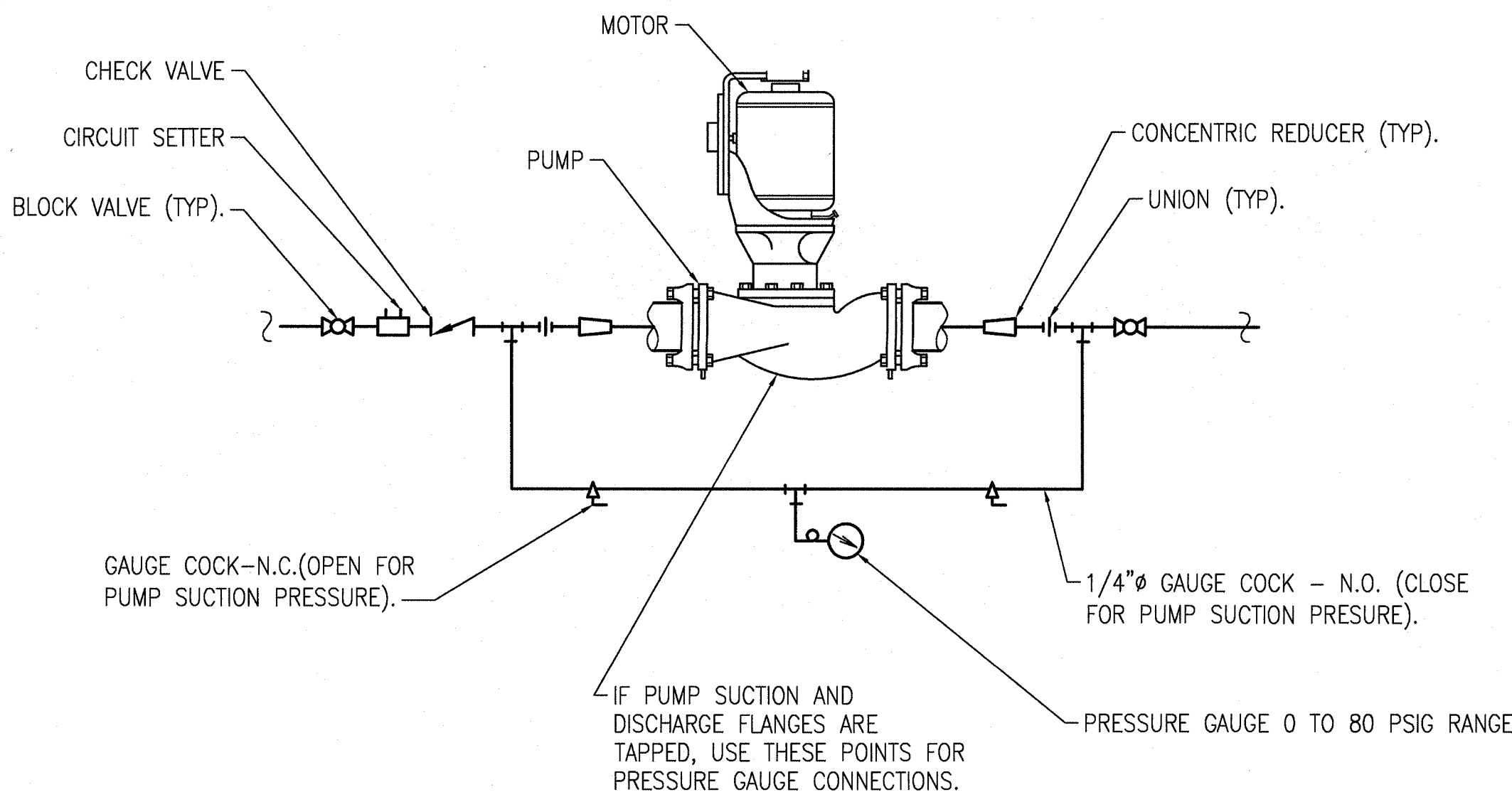
PIPE SUPPORT DETAIL
NOT TO SCALE

4



WATER COIL 3-WAY PIPING DETAIL
NOT TO SCALE

5

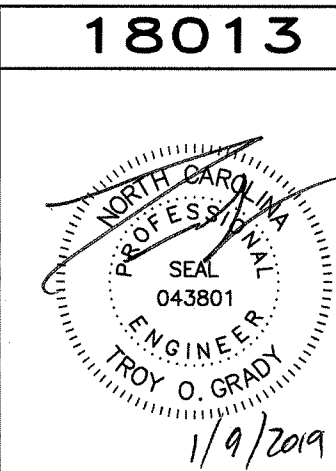
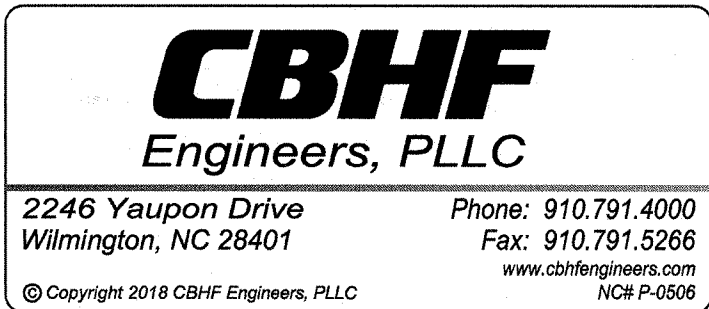


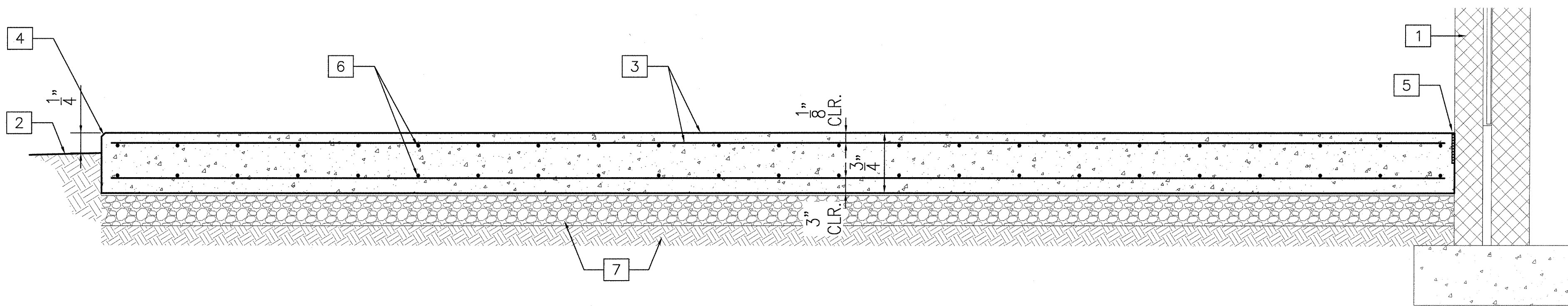
INLINE SYSTEM PUMP DETAIL
NOT TO SCALE

6

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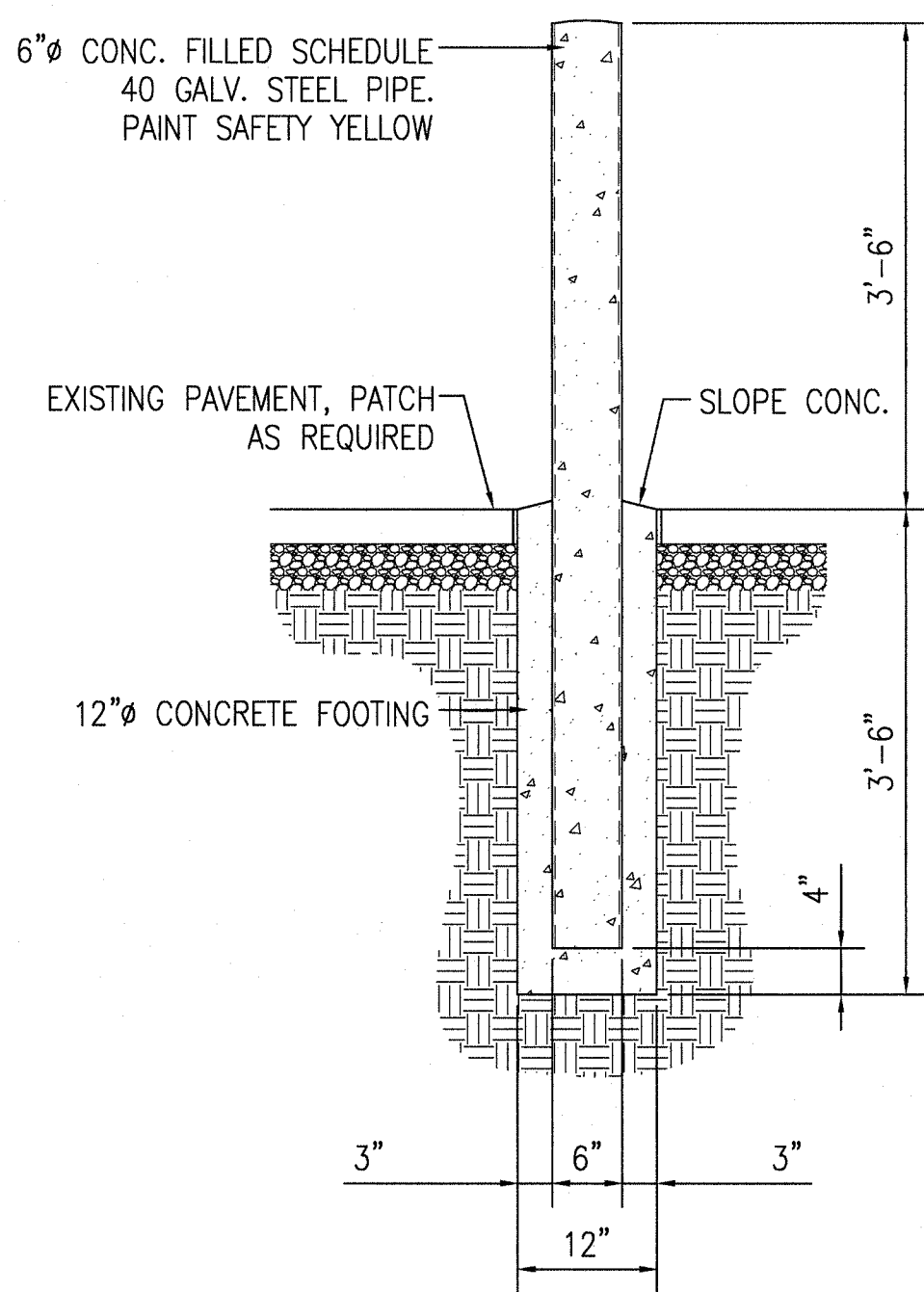
FINAL		M-501	
DEPARTMENT OF THE NAVY		NAVAL FACILITIES ENGINEERING COMMAND	
MARINE CORPS BASE		CAMP LEJEUNE, NORTH CAROLINA	
DES. WTB		17-0003	
DR. WTB		REPLACE AHU'S AT	
CHK. TOG		M324	
SUBMITTED BY: TOG		MECHANICAL	
DESIGN DIR. T H BURTON, PE		DETAILS	
APPROVED: PWO OR OICC	DATE	SIZE	CODE IDENT. NO
		F	80091
SATISFACTORY TO:	DATE	SCALE: -	SPEC. 05-17-0003
			SHEET 9 OF 32





CHILLER PAD DETAIL
NOT TO SCALE

1



PIPE BOLLARD DETAIL
NOT TO SCALE

2

REVISIONS			
SYM		DATE	APPROVED

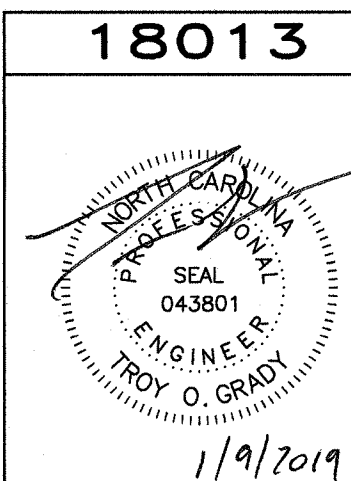
CONSTRUCTION KEYED NOTES

- 1 EXISTING BUILDING.
- 2 APPROXIMATE FINISHED GRADE (SLOPES).
- 3 NEW REINFORCED CONCRETE PAD.
- 4 3/4" CHAMFER (TYP).
- 5 1/2" EXPANSION JOINT MATERIAL AND JOINT SEALANT.
- 6 #5 REBAR CONTINUOUS T & B.
- 7 6" OF #57 STONE ON COMPACTED SUBGRADE.

DISCLOSURE OF INFORMATION:

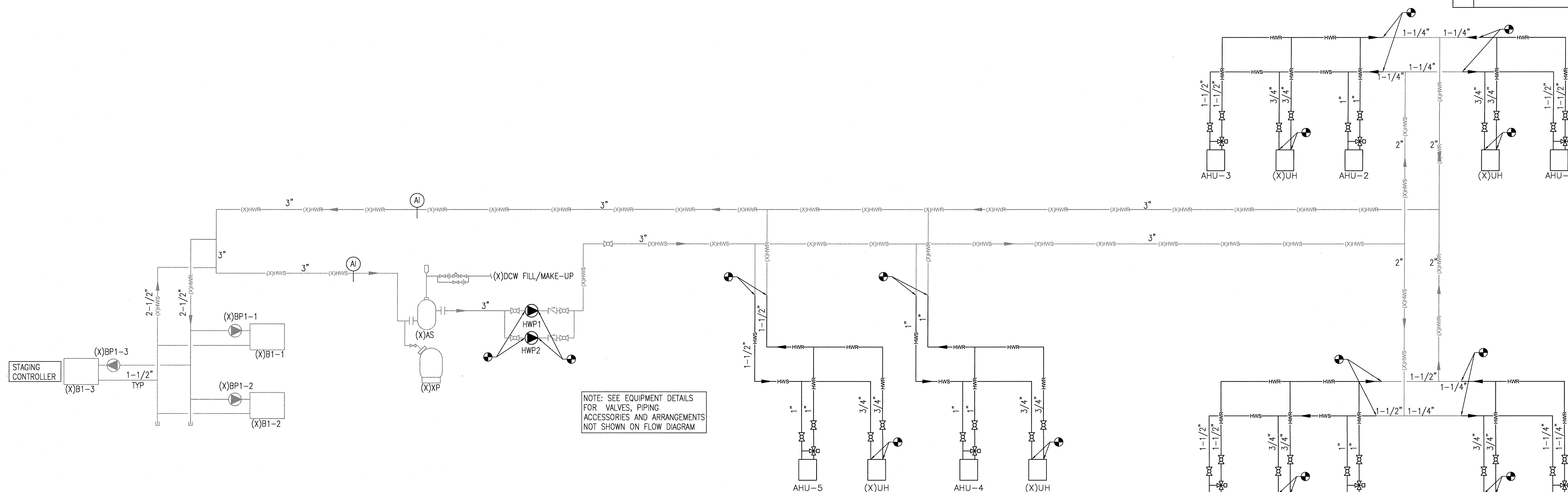
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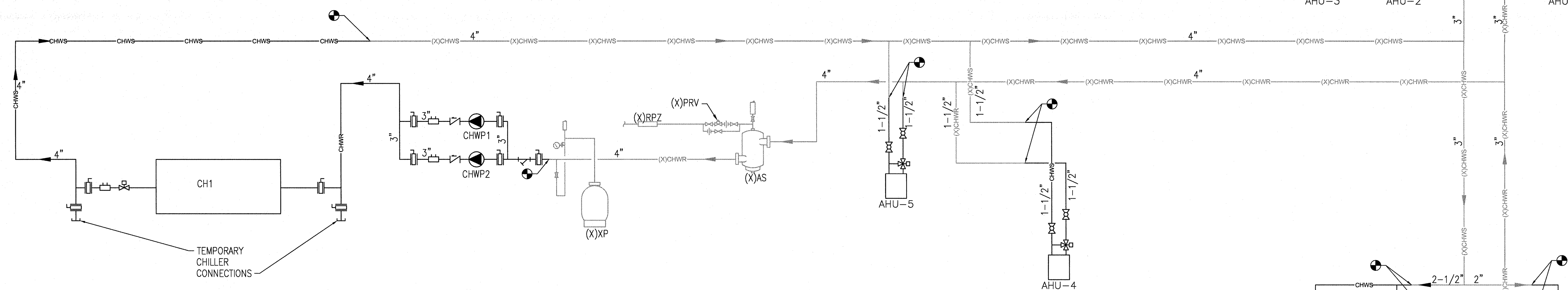


FINAL		M-502	
		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA	
		17-0003 REPLACE AHU'S AT M324 MECHANICAL DETAILS	
DES. WTb		SIZE CODE IDENT. NO	NAVFAC DRAWING NO.
DR. WTb			60023556
CHK. TOG			
SUBMITTED BY: TOG			
DESIGN DIR. T. H. BURTON, PE			
APPROVED: PWO OR OICC	DATE	F 80091	CONST. CONTR.
SATISFACTORY TO:	DATE	SCALE: -	SPEC. 05-17-0003
		SHEET 10 OF 32	

REVISIONS			DATE	APPROVED
SYM				

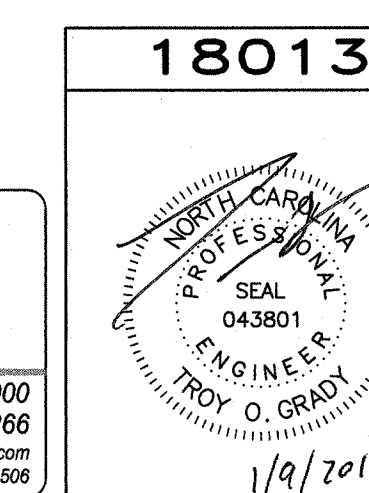


HEATING HOT WATER FLOW DIAGRAM 1
NOT TO SCALE



CHILLED WATER FLOW DIAGRAM 2
NOT TO SCALE

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FINAL		M-601	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA			
DES. TOG		17-0003 REPLACE AHU'S AT M324 MECHANICAL FLOW DIAGRAM	
DR. TOG		NAVFAC DRAWING NO. 60023557	
CHK. TOG		CONST. CONTR.	
SUBMITTED BY: TOG		SIZE CODE IDENT. NO. 80091	
DESIGN DIR. T. H. BURTON, PE		F 80091	
APPROVED: PWO OR OICC		DATE	
SATISFACTORY TO:		DATE	
SCALE: -		SPEC. 05-17-0003	
		SHEET 11 OF 32	

AIR COOLED CHILLER SCHEDULE

DRAWING CODE	QTY	MIN CAP	MAX POWER INPUT	MIN EER	MIN NPLV	UNLOADING CAPABILITY (%)	REFRIGERANT		COMPRESSOR	EVAPORATOR						CONDENSER			ELECTRICAL			WEIGHT (LBS)	NOTES	ACCESSORIES	
		(TONS)	(KW)				TYPE	CIRCUITS QTY	TYPE	FLUID	EW T (°F)	LWT (°F)	FLOW RATE (GPM)	WPD (FT. H2O)	FOULING FACTOR	PIPE CONN. SIZE (IN.)	EAT (°F)	ALTITUDE (FT. ASL)	AIRFLOW (CFM)	VOLTAGE (V/PH/HZ)	MCA (AMPS)				MOCP (AMPS)
CH1	1	72	86.88	9.168	13.64	25%	R410A	2	SCROLL	WATER	56	42	115.0	7.4	0.00010	4.0	95.0	0	52,416	208/3/60	357.6	400	4899	1,2	A – 1
NOTES:		1. REFER TO SPECIFICATION SECTION 23 73 33 – HEATING, VENTILATING, AND COOLING SYSTEM FOR FURTHER INFORMATION. 2. INSTALL CHILLERS ON NEW CONCRETE PADS.																							
ACCESSORIES:		A. CHILLER TO BE PROVIDED WITH EVAPORATOR FREEZE PROTECTION WIRE/TERMINATED BY MECHANICAL CONTRACTOR. FREEZE PROTECTION SHALL BE POWERED BY A DEDICATED 20A 120V CIRCUIT PROVIDED/INSTALLED BY ELECTRICAL CONTRACTOR. B. COILS TO BE COATED FOR EXPOSURE TO ASTM B117-90 5,000 HOUR SALT SPRAY RESISTANCE TEST WITH NO DEGRADATION. C. BACNET MS/TP CONTROL INTERFACE. D. ARCHITECTURAL LOUVERED PANELS COMPLETELY COVERING CONDENSING COIL AND SERVICE AREA BENEATH THE CONDENSER. E. MANUFACTURERS LOW SOUND FAN OPTION. F. MOLDED ELASTOMERIC ISOLATORS. G. FACTORY INSTALLED WATER STRAINER. H. FACTORY INSTALLED FLOW SWITCH. I. AMBIENT CONTROL FOR OPERATION FROM 0 TO 125 DEG F.																							

VAV AIR HANDLER SCHEDULE

DRAWING CODE (DU/ODU)	SYSTEM TYPE	CONFIGURATION	INDOOR UNIT			COOLING COIL											REHEAT COIL											ELECTRICAL			WEIGHT (LBS)	NOTES	ACCESSORIES	
			SUPPLY AIRFLOW (CFM)	OUTSIDE AIRFLOW (CFM)	ESP (IN.WG.)	AIRFLOW MAX (CFM)	AIRFLOW MIN (CFM)	VELOCITY (FPM)	TOTAL CAP (MBH)	SENSIBLE CAP (MBH)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	FLOW (GPM)	WPD (FT. H2O)	PIPE CONN. (IN)	AIRFLOW (CFM)	VELOCITY (FPM)	TOTAL CAP (MBH)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	FLOW (GPM)	WPD (FT. H2O)	PIPE CONN. (IN)	POWER SUPPLY (V/PH/HZ)	INDOOR UNIT (MCA)	(MOC/P)				
AHU01	FOUR PIPE	VERT/TOP FRONT MTR IMPELLER HI STATIC	3,400	270	1.5	3,400	1,020	445.0	97.0	82.1	76.1	54.1	42.0	56.0	13.8	1.69	1-1/2"	1,915	251.0	79.9	53.3	91.8	130.0	110.0	8.0	0.23	1-1/2"	208/3/60	21.3	35	1126	1,2,3,5	A – H	
AHU02	FOUR PIPE	VERT/TOP FRONT MTR IMPELLER HI STATIC	1,975	240	1.5	1,975	590	351.0	65.4	49.3	76.8	54.1	42.0	56.0	9.3	1.11	1-1/2"	1,100	200.0	49.9	54.6	96.4	130.0	110.0	5.0	0.13	1-1/2"	208/3/60	12.1	20	1009	1,2,3,5	A – H	
AHU03	FOUR PIPE	VERT/TOP FRONT MTR IMPELLER HI STATIC	3,800	500	1.5	3,800	1,140	445.0	137.5	100.3	77.2	53.2	42.0	56.0	19.6	3.80	1-1/2"	1,500	200.0	72.6	53.8	98.5	130.0	110.0	7.3	0.19	1-1/2"	208/3/60	21.3	35	1156	1,2,3,5	A – H	
AHU04	FOUR PIPE	VERT/TOP FRONT MTR IMPELLER HI STATIC	2,700	300	1.5	2,700	810	480.0	77.2	63.1	77.2	55.2	42.0	56.0	11.0	1.40	1-1/2"	1,230	219.0	49.2	53.0	89.9	130.0	110.0	4.9	0.10	1-1/2"	208/3/60	12.1	20	1012	1,2,3,4	A – I	
AHU05	FOUR PIPE	VERT/TOP FRONT MTR IMPELLER HI STATIC	3,000	200	1.5	3,000	900	533.0	77.3	68.7	75.9	55.1	42.0	56.0	11.0	1.41	1-1/2"	1,525	200.0	59.9	53.0	89.2	130.0	110.0	6.0	0.15	1-1/2"	208/3/60	12.1	20	1012	1,2,3,5	A – H	
AHU06	FOUR PIPE	VERT/TOP FRONT MTR IMPELLER HI STATIC	4,000	500	1.5	4,000	1,200	403.0	134.9	103.4	77.1	53.6	42.0	56.0	19.2	3.32	1-1/2"	2,000	201.0	93.6	54.8	98.0	130.0	110.0	9.4	0.33	1-1/2"	208/3/60	20.0	35	1325	1,2,3,5	A – H	
AHU07	FOUR PIPE	VERT/TOP FRONT MTR IMPELLER HI STATIC	3,700	470	1.5	3,700	1,110	484.0	133.4	98.1	77.1	53.0	42.0	56.0	19.0	3.62	1-1/2"	1,500	200.0	72.4	53.9	98.4	130.0	110.0	7.3	0.18	1-1/2"	208/3/60	21.3	35	1156	1,2,3,5	A – H	
AHU08	FOUR PIPE	VERT/TOP FRONT MTR IMPELLER HI STATIC	2,100	365	1.5	2,100	630	533.0	74.2	53.4	77.9	54.8	42.0	56.0	11.6	1.33	1-1/2"	1,100	200.0	52.4	52.5	96.4	130.0	110.0	5.3	0.14	1-1/2"	208/3/60	12.1	20	1009	1,2,3,5	A – H	
NOTES:		1. REFER TO SPECIFICATION SECTION 23 73 33 – HEATING, VENTILATING, AND COOLING SYSTEM FOR FURTHER INFORMATION. 2. COIL, DRAIN AND MOTOR SIDE ACCESS TO BE FIELD CONFIRMED PRIOR TO SUBMITTING FOR APPROVAL. 3. MAXIMUM COIL FACE VELOCITY SHALL NOT EXCEED SCHEDULED VALUES. 4. ALL CONTROLS SENSORS, ACTUATORS AND WIRING PROVIDED AND INSTALLED BY DDC CONTRACTOR. 5. CONTRACTOR SHALL PROVIDE DUCT INLINE FILTER BOX WITH MAXIMUM FACE VELOCITY OF 350 FPM .																																
ACCESSORIES:		A. COOLING COIL SECTIONS SHALL BE PROVIDED WITH AN INSULATED, DOUBLE WALL, 201 STAINLESS STEEL DRAIN PAN WITH POSITIVE DRAINAGE MEETING INDOOR AIR QUALITY (IAQ) IN ACCORDANCE WITH ASHRAE 62.1. B. COPPER COIL, ALUMINUM FIN, GALVANIZED STEEL COIL CASING. C. UNIT PANELS SHALL BE MINIMUM 2" DOUBLE WALL FOAM R-13 CONSTRUCTION WITH ASHRAE 111 CLASS 6 CASING LEAKAGE. D. AHU PANELS SHALL BE PROVIDED WITH A MID-SPAN, NO-THRU-METAL, INTERNAL THERMAL BREAK. ENTIRE UNIT SHALL BE MADE OF GALVANIZED STEEL. E. PROVIDE 2" MERV 8 PLEATED MEDIA FILTERS, THREE SETS OF EACH TYPE. PROVIDE ONE SET IN UNIT, PROVIDE ONE SET FOR INSTALLATION AFTER SYSTEM IS BALANCED AND BUILDING IS CLEANED, AND ONE SET FOR TURN OVER TO OWNER. F. PROVIDE OUTDOOR AIR DAMPERS. DAMPERS SHALL BE MANUFACTURED BY RUSKIN (CD60) OR APPROVED EQUAL. G. HINGED ACCESS DOORS, MOTOR SIDE ONLY. H. FAN SHALL BE DIRECT DRIVE ECM TYPE. SEE EQUIPMENT SCHEDULE FOR SIZES AND QUANTITIES. I. PROVIDE UNIT WITH FACTORY PROVIDED 2 INCH ANGLE FILTER MIXING BOX..																																

PUMP SCHEDULE

DRAWING CODE	PUMP TYPE	SERVICE	FLUID	CAPACITY (GPM)	TOTAL DYNAMIC HEAD (FT)	INLET AND OUTLET SIZE (IN.)	MOTOR ENCLOSURE		SPEED (RPM)	HP	ELECTRICAL V/PH/HZ	NOTES	ACCESSORIES
							TYPE	MATERIALS					
CWP1	INLINE	CHILLED SUPPLY	WATER	115	37	2 1/2	ODP	CAST IRON	1800	2.0	208–230/3/60	1	A,B,C
CWP2	INLINE	CHILLED SUPPLY	WATER	115	37	2 1/2	ODP	CAST IRON	1800	2.0	208–230/3/60	1	A,B,C
HWP1	INLINE	HEATING SUPPLY	WATER	60	34	2	ODP	CAST IRON	1800	1.5	208–230/3/60	1	A,B,C
HWP2	INLINE	HEATING SUPPLY	WATER	60	34	2	ODP	CAST IRON	1800	1.5	208–230/3/60	1	A,B,C
NOTES:		1. REFER TO SPECIFICATION SECTION 23 73 33 – HEATING, VENTILATING, AND COOLING SYSTEM FOR FURTHER INFORMATION.											
ACCESSORIES:		A. PREMIUM EFFICIENT MOTOR. B. BRONZE FITTED. C. BUNA/CARBON–CERAMIC SEAL.											

POWER VENTILATOR SCHEDULE

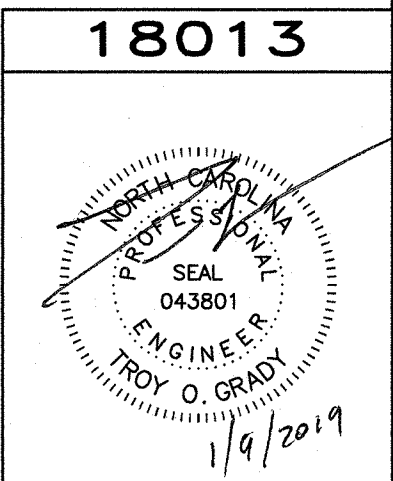
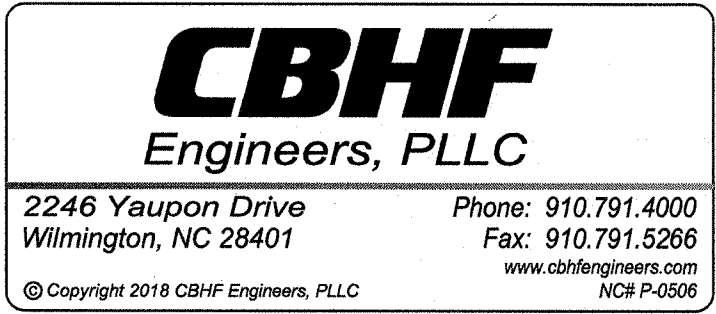
DRAWING CODE	FAN TYPE	SERVICE	CAPACITIES				ELECTRICAL					SONES	WEIGHT (LBS.)	NOTES	ACCESSORIES
			AIRFLOW (CFM)	ESP (IN. WG.)	DRIVE ARRANGEMENT	FAN RPM	MOTOR RPM	MOTOR TYPE	MOTOR SIZE (HP)	V/PH/HZ	MCA	MOC P			
PV01	CEILING–MOUNTED VENTILATORS	EXHAUST	70	0.25	DIRECT	838	838	ECM	0.1	115/60/1	–	–	0.9	1	A
PV02	CEILING–MOUNTED VENTILATORS	EXHAUST	70	0.25	DIRECT	838	838	ECM	0.1	115/60/1			0.9	1	A
NOTES:		1. REFER TO SPECIFICATION SECTION 233423 – HVAC POWER VENTILATORS FOR FURTHER INFORMATION.													
ACCESSORIES:		A. BACKDRAFT DAMPER													

DIFFUSERS, REGISTERS AND GRILLES SCHEDULE

DRAWING CODE	TYPE	SERVICE	NECK SIZE (IN.)	MODULE SIZE (IN.)	MATERIAL	FINISH	MOUNTING	NOTES	ACCESSORIES
S1	VARIABLE COOLING AND HEATING DIFFUSER	SUPPLY	10ø	24 X 24	ALUMINUM	WHITE	T–BAR	1,2,3	–
S2	VARIABLE COOLING AND HEATING DIFFUSER	SUPPLY	8ø	24 X 24	ALUMINUM	WHITE	T–BAR	1,2,3	–
R1	PERFORATED DIFFUSER	RETURN	–	24 X 24	ALUMINUM	WHITE	T–BAR	1	–
NOTES:		1. REFER TO SPECIFICATION SECTION 23 73 33 – HEATING, VENTILATING, AND COOLING SYSTEM FOR FURTHER INFORMATION. 2. DUCT BRANCH CONNECTION SIZE TO BE EQUAL TO THE NECK SIZE OF DIFFUSER UNLESS NOTED OTHERWISE ON PLANS. 3. CONTRACTOR SHALL PROVIDE AND INSTALL 24v TRANSFORMER TO POWER DIFFUSER.							
ACCESSORIES:		N/A							

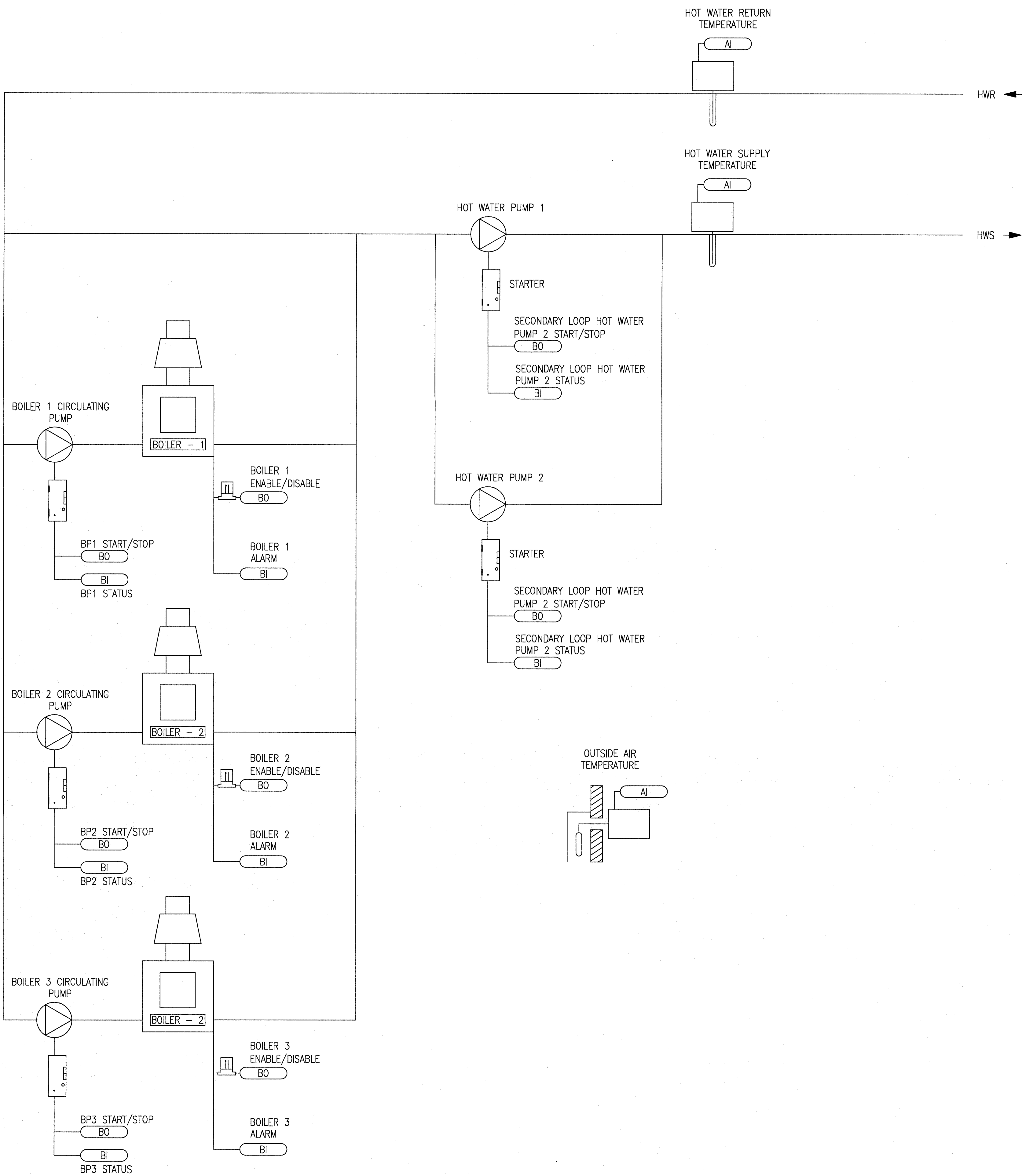
REVISIONS			
SYM		DATE	APPROVED

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FINAL		M–602	
DEPARTMENT OF THE NAVY		NAVAL FACILITIES ENGINEERING COMMAND	
MARINE CORPS BASE		CAMP LEJEUNE, NORTH CAROLINA	
17–0003		REPLACE AHU'S AT	
M324		MECHANICAL SCHEDULES	
DES. WTB	DR. WTB	CHK. TOG	SUBMITTED BY: TOG
DESIGN DIR. T H BURTON, PE	APPROVED: PWO OR OICC	DATE	SIZE CODE IDENT. NO
SATISFACTORY TO:		DATE	F 80091
SCALE: –		SPEC. 05–17–0003	NAVFAC DRAWING NO. 60023558
			CONSTR. CONTR.
			SHEET 12 OF 32

REVISIONS			
SYM		DATE	APPROVED



BOILER PLANT SEQUENCE OF OPERATION

PRIMARY-SECONDARY LOOP CONSTANT FLOW BOILER PLANT

GENERAL DESCRIPTION:

THE HOT WATER SYSTEM CONSISTS OF (3) BOILERS AND ASSOCIATED PUMPS. THE BUILDING AUTOMATION SYSTEM (BAS) CONTROLLER SHALL PROVIDE STAND-ALONE CONTROL OR BAS WORKSTATION CONTROL OF THE SUPPLY HEATING WATER TEMPERATURE SETPOINT (ADJ.) BY CONTROLLING THE BOILER'S ENABLE/DISABLE BOILER SIGNAL. ONLY (2) BOILERS, THEIR CIRCULATION PUMPS AND (1) SECONDARY PUMP SHALL RUN AT A TIME.

HEATING SYSTEM ENABLE/DISABLE:

THE HEATING SYSTEM SHALL BE ENABLED WHEN A DEFINABLE NUMBER OF HOT WATER COILS NEED HEATING AND THE OUTSIDE AIR TEMPERATURE FALLS BELOW 60.0 DEG. F (ADJ.) OR ON A COMMAND FOR DEHUMIDIFICATION. WHEN ENABLED, THE BAS CONTROLLER SHALL START THE LEAD HOT WATER DISTRIBUTION PUMP, THE LEAD BOILER CIRCULATING PUMP, AND ENABLE THE LEAD BOILER. THE BOILER FACTORY CONTROL SHALL OPERATE THE BOILER TO MAINTAIN ITS LOCAL SUPPLY SETPOINT. (130°F ADJ.)

THE BOILER SHALL RUN SUBJECT TO ITS OWN INTERNAL SAFETIES AND CONTROLS.

THE BOILER SYSTEM SHALL ALSO RUN FOR FREEZE PROTECTION WHENEVER THE OUTSIDE AIR TEMPERATURE IS LESS THAN 38°F (ADJ.).

HEATING SHALL BE DISABLED WHEN THE OUTDOOR AIR TEMPERATURE IS ABOVE 65.0 DEG. F (ADJ.) AND THERE IS NO COMMAND FOR DEHUMIDIFICATION. WHEN HEATING IS DISABLED, THE HOT WATER PUMPS AND BOILERS SHALL BE COMMANDED TO OFF.

BOILER CONTROL:

THE TWO BOILERS SHALL OPERATE IN A LEAD/STANDBY FASHION WHEN CALLED TO RUN AND FLOW IS PROVEN. THE BOILER SHALL CONTROL ITS CIRCULATION PUMP.

- THE LEAD BOILER SHALL RUN FIRST.
- ON FAILURE OF THE LEAD BOILER, THE STANDBY BOILER SHALL RUN AND THE LEAD BOILER SHALL TURN OFF.

IF THE HOT WATER DISTRIBUTION SYSTEM SUPPLY TEMPERATURE FALLS MORE THAN 25.0 DEG. F (ADJ.) BELOW SETPOINT FOR A PERIOD LONGER THAN 15 MINUTES (ADJ.), OR IF AN ACTIVE BOILER SIGNALS A FAILURE ALARM, THE BAS CONTROLLER SHALL ENABLE THE LAG BOILER. IN ADDITION, THE BAS CONTROLLER SHALL SEND AN ALARM TO THE BAS WORKSTATION. WHEN A BOILER FAILURE EXISTS, LEAD/LAG AUTOMATION SHALL BE DISABLED AND THE CURRENTLY RUNNING BOILER SHALL BECOME THE LEAD BOILER. ONCE THE PROBLEM IS CORRECTED, THE OPERATOR SHALL BE ABLE TO CLEAR THE ALARM FAILURE FROM THE BAS CONTROLLER OR BAS WORKSTATION. THIS SHALL RE-ENABLE THE LEAD/LAG SEQUENCE.

THE BOILER LEAD/LAG SEQUENCE SHALL BE BASED ON A WEEKLY SCHEDULE. FROM THE BAS CONTROLLER.

BOILER ALARMS SHALL BE PROVIDED AS FOLLOWS:

- FAILURE: COMMANDED ON BUT THE STATUS IS OFF.
- RUNNING IN HAND: COMMANDED OFF BUT THE STATUS IS ON.
- RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.

SECONDARY HOT WATER DISTRIBUTION PUMP PRIMARY/STANDBY OPERATION:

THE TWO HOT WATER PUMPS SHALL OPERATE IN A PRIMARY/STANDBY FASHION. THE PRIMARY PUMP SHALL RUN FIRST. ON FAILURE OF THE PRIMARY PUMP, THE STANDBY PUMP SHALL RUN AND THE PRIMARY PUMP SHALL TURN OFF. THE PRIMARY PUMP DESIGNATION SHALL BE ROTATED WEEKLY (ADJ.) FROM THE BAS.

SECONDARY HOT WATER DISTRIBUTION PUMP ALARMS SHALL BE PROVIDED AS FOLLOWS:

- FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.

CIRCULATION PUMP 1:

THE CIRCULATION PUMP 1 SHALL RUN ANYTIME BOILER 1 IS CALLED TO RUN AND SHALL HAVE A USER DEFINABLE DELAY (ADJ.) ON STOP.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- CIRCULATION PUMP 1 FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- CIRCULATION PUMP 1 RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- CIRCULATION PUMP 1 RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER-DEFINABLE LIMIT.

CIRCULATION PUMP 2:

THE CIRCULATION PUMP 2 SHALL RUN ANYTIME BOILER 2 IS CALLED TO RUN AND SHALL HAVE A USER DEFINABLE DELAY (ADJ.) ON STOP.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- CIRCULATION PUMP 2 FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- CIRCULATION PUMP 2 RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- CIRCULATION PUMP 2 RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER-DEFINABLE LIMIT.

CIRCULATION PUMP 3:

THE CIRCULATION PUMP 3 SHALL RUN ANYTIME BOILER 3 IS CALLED TO RUN AND SHALL HAVE A USER DEFINABLE DELAY (ADJ.) ON STOP.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- CIRCULATION PUMP 3 FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- CIRCULATION PUMP 3 RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- CIRCULATION PUMP 3 RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER-DEFINABLE LIMIT.

HOT WATER SUPPLY TEMPERATURE MONITORING:

- HOT WATER SUPPLY.
- HOT WATER RETURN.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

HIGH HOT WATER SUPPLY TEMP: IF GREATER THAN 160°F (ADJ.).
LOW HOT WATER SUPPLY TEMP: IF LESS THAN 80°F (ADJ.).

FREEZE PROTECTION:

WHEN THE OUTDOOR AIR TEMPERATURE FALLS BELOW 35.0 DEG. F (ADJ.), THE HOT WATER DISTRIBUTION PUMP SHALL OPERATE CONTINUOUSLY TO PROVIDE HOT WATER CIRCULATION TO ALL ASSOCIATED HOT WATER COILS.

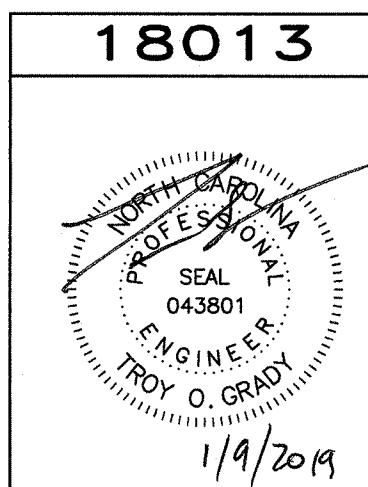
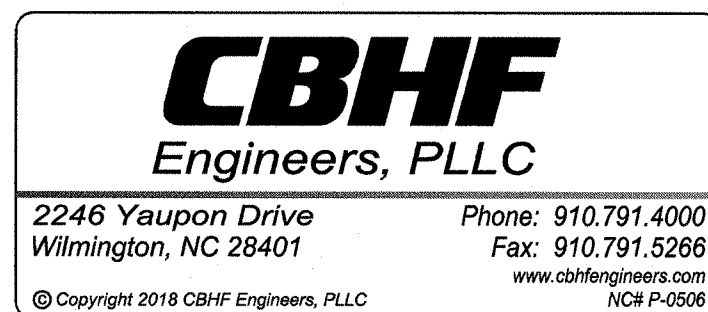
DISCLOSURE OF INFORMATION:

CONTRACTOR SHALL COMPLY AS FOLLOWS:

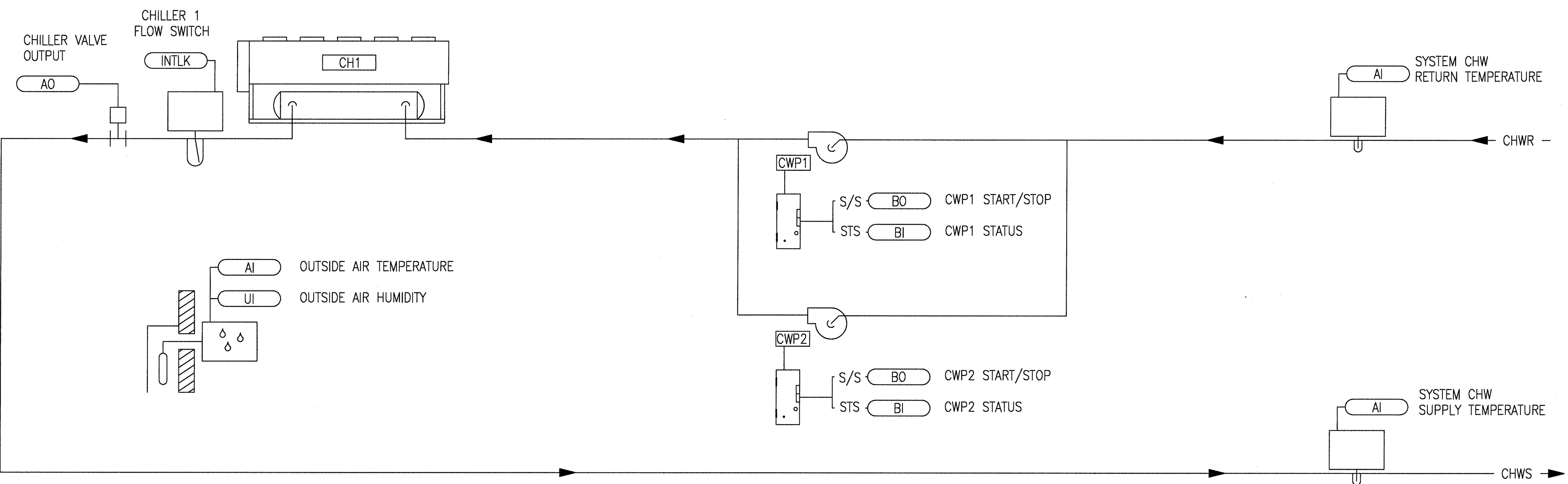
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 - THE INFORMATION IS OTHERWISE IN THE PUBLIC DOMAIN BEFORE THE DATE OF THE RELEASE.
- REQUESTS FOR APPROVAL SHALL IDENTIFY THE SPECIFIC INFORMATION TO BE RELEASED, THE MEDIUM TO BE USED, AND THE PURPOSE FOR THE RELEASE. THE CONTRACTOR SHALL SUBMIT ITS REQUEST TO THE CONTRACTING OFFICER AT LEAST 45 DAYS BEFORE THE PROPOSED DATE FOR RELEASE.
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BOILER PLANT CONTROLS
NOT TO SCALE

1



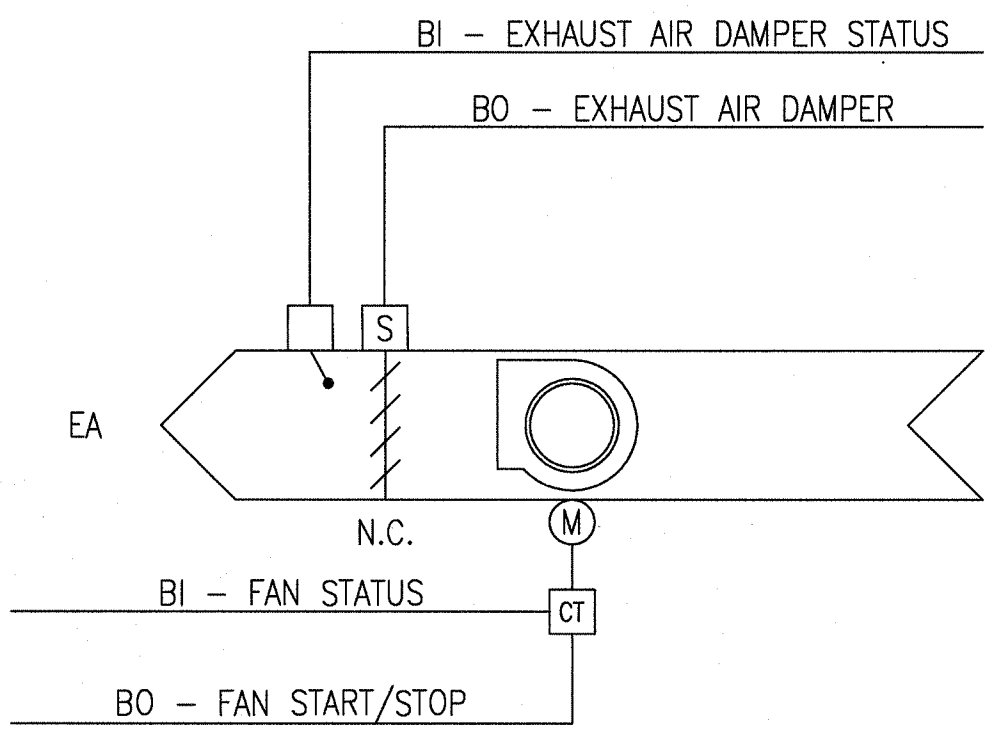
FINAL		M-603	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA			
17-0003 REPLACE AHU'S AT M324 MECHANICAL CONTROL SEQUENCE			
DES. WTB	DR. WTB	CHK. TOG	SUBMITTED BY: TOG
DESIGN DIR. T. H. BURTON, PE	APPROVED: PWO OR OICC	DATE	SIZE CODE IDENT. NO
SATISFACTORY TO:	DATE	F 80091	NAVFAC DRAWING NO. 60023559
SCALE: -	SPEC. 05-17-0003	SHEET 13 OF 32	



CHILLER PLANT CONTROLS

1

NOT TO SCALE



POWER VENTILATOR POINTS LIST

	HARDWARE POINTS				SOFTWARE POINTS						
POINT NAME	AI	AO	BI	BO	AV	BV	LOOP	SCHED	TREND	ALARM	SHOW ON GRAPHIC
EXHAUST AIR DAMPER STATUS			X						X		X
FAN STATUS			X						X		X
EXHAUST AIR DAMPER				X					X		X
FAN START/STOP				X					X		X
SCHEDULE								X			
EXHAUST AIR DAMPER FAILURE										X	
EXHAUST AIR DAMPER IN HAND										X	
FAN FAILURE										X	
FAN IN HAND										X	
FAN RUNTIME EXCEEDED										X	

POWER VENTILATOR SEQUENCE OF OPERATION

POWER VENTILATOR – ON/OFF

RUN CONDITIONS – SCHEDULED:
THE FAN SHALL RUN ACCORDING TO A USER DEFINABLE SCHEDULE.

FAN:
THE FAN SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.

EXHAUST AIR DAMPER:
THE EXHAUST AIR DAMPER SHALL OPEN ANYTIME THE UNIT RUNS AND SHALL CLOSE ANYTIME THE UNIT STOPS. THE EXHAUST AIR DAMPER SHALL CLOSE 30 SEC (ADJ.) AFTER THE FAN STOPS.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- DAMPER FAILURE: COMMANDED OPEN, BUT THE STATUS IS CLOSED.
- DAMPER IN HAND: COMMANDED CLOSED, BUT THE STATUS IS OPEN.

DAMPER STATUS:
THE FAN SHALL BE ENABLED AFTER THE DAMPER STATUS HAS PROVEN.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- DAMPER FAILURE: COMMANDED OPEN, BUT THE STATUS IS CLOSED.
- DAMPER IN HAND: COMMANDED CLOSED, BUT THE STATUS IS OPEN.

FAN STATUS:
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.).

EXHAUST FAN CONTROLS

1

NOT TO SCALE

CHILLER PLANT SEQUENCE OF OPERATION

SEQUENCE OF OPERATIONS

SYSTEM GENERAL DESCRIPTION:
THE CHILLED WATER SYSTEM CONSISTS OF THE FOLLOWING: ONE (1) CHILLER WITH TWO (2) CONSTANT FLOW CHILLED WATER PUMPS (ONE PRIMARY AND ONE REDUNDANT). CHILLED WATER PUMPS SHALL ROTATE CONFIGURATION EVERY 14 DAYS.

THE BUILDING AUTOMATION SYSTEM (BAS) CONTROLLER PROVIDES STAND-ALONE CONTROL OR CONTROL FROM A HIGHER LEVEL BAS AND PROVIDES START/STOP CONTROL FOR THE CHILLED WATER PUMP AND ENABLES THE CHILLER.

CHILLED WATER SYSTEM ENABLE/DISABLE:
THE CHILLED WATER SYSTEM SHALL BE ENABLED ON A CONTACT CLOSURE FROM CHILLER. WHEN ENABLED, THE BAS CONTROLLER SHALL START ONE (1) CHILLED WATER PUMP.

WHEN THE CHILLED WATER SYSTEM IS DISABLED, THE CHILLED WATER PUMP SHALL BE OFF UNLESS REQUESTED BY THE CHILLER.

CHILLED WATER PUMP START/STOP:
THE BAS CONTROLLER SHALL START THE PRIMARY CHILLED WATER PUMP THROUGH A CONTACT CLOSURE OF THE PUMPS STARTER RUN-ENABLE CONTACTS. ON FAILURE OF THE PRIMARY PUMP, THE STANDBY PUMP SHALL RUN AND THE PRIMARY PUMP SHALL TURN OFF

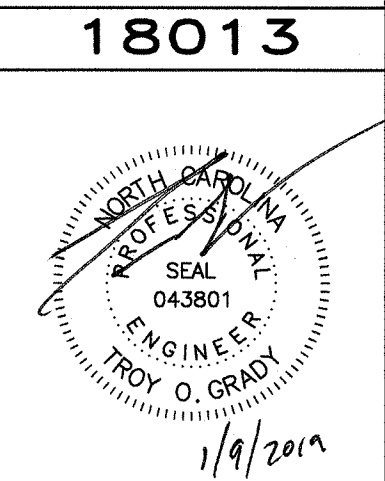
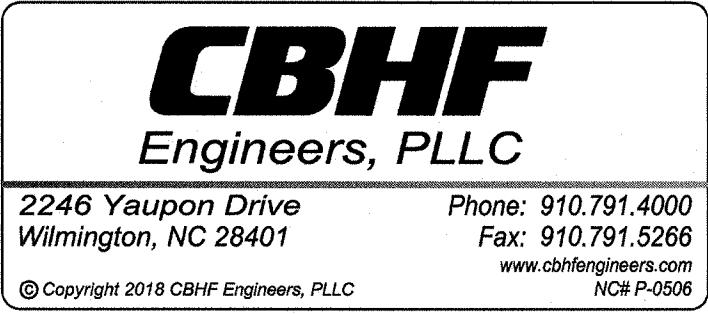
CHILLED WATER PUMP STATUS:
THE BAS CONTROLLER SHALL DETECT CHILLED WATER PUMP RUN STATUS BY A STARTER CURRENT SWITCH.

CHILLED WATER PUMP FAILURE:
IF THE PUMP START/STOP RELAY IS ENABLED AND THE CURRENT SWITCH STATUS IS OFF FOR MORE THAN 30 SECONDS (ADJ.), THE BAS CONTROLLER SHALL ANNUNCIATE A CHILLED WATER PUMP FAILURE ALARM TO THE BAS. ONCE THE PROBLEM HAS BEEN CORRECTED, THE OPERATOR SHALL BE ABLE TO CLEAR THE ALARM FAILURE FROM THE BAS CONTROLLER, FROM A BAS OR BY MANUALLY OVERRIDING THE PUMP ON MOMENTARILY.

FREEZE PROTECTION:
IF THE OUTSIDE AIR TEMPERATURE DROPS BELOW 36°F (ADJ.), THE BAS SHALL ENABLE ONE CHILLED WATER PUMP TO CIRCULATE WATER THRU CHILLERS.

REVISIONS			
SYM		DATE	APPROVED

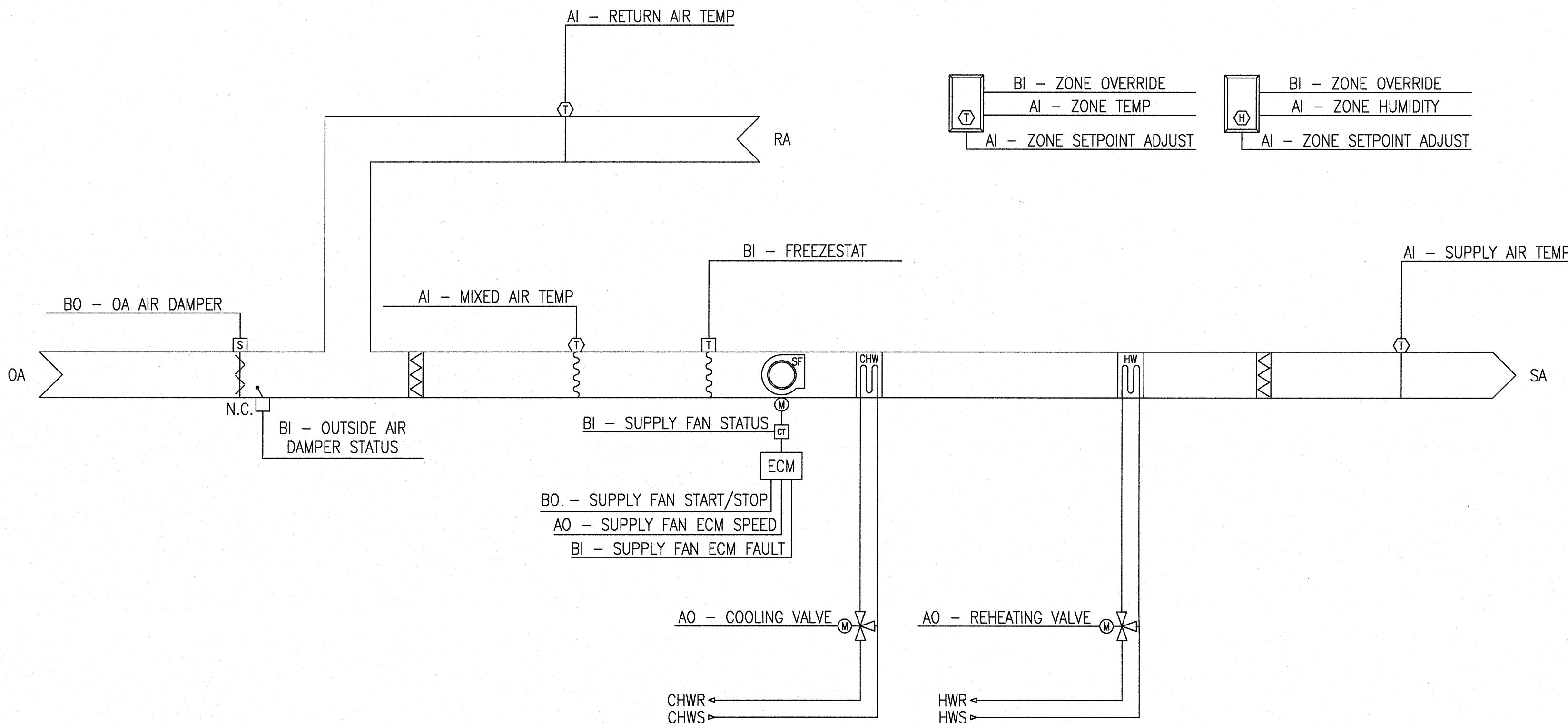
- DISCLOSURE OF INFORMATION:
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FINAL		M-604	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA		17-0003 REPLACE AHU'S AT M324 MECHANICAL CONTROL SEQUENCES	
DES. TOG	DR. TOG	CHK. TOG	SUBMITTED BY: TOG
DESIGN DIR. T. H. BURTON, PE	APPROVED: PWO OR OICC	DATE	SIZE CODE IDENT. NO
SATISFACTORY TO:	DATE	F 80091	NAVFAC DRAWING NO. 60023560 CONST. CONTR.
SCALE: -	SPEC. 05-17-0003	SHEET 14 OF 32	

1-11/13/18

REVISIONS			
SYM		DATE	APPROVED



AHU SEQUENCE OF OPERATION

SINGLE ZONE VAV SEQUENCE OF OPERATION

BUILDING AUTOMATION SYSTEM INTERFACE:
THE BUILDING AUTOMATION SYSTEM (BAS) SHALL SEND THE CONTROLLER OCCUPIED BYPASS, MORNING WARM-UP/PRE-COOL, OCCUPIED/UNOCCUPIED AND HEAT/COOL MODES.

RUN CONDITIONS – SCHEDULED:
THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME SCHEDULE IN THE FOLLOWING

OCCUPIED MODE: THE UNIT SHALL MAINTAIN:

- A 75°F (ADJ.) SETPOINT WHEN OUTSIDE AIR TEMPERATURE IS GREATER THAN 80°F.
- A 70°F (ADJ.) SETPOINT WHEN OUTSIDE AIR TEMPERATURE IS LESS THAN 50°F.
- SETPOINT SHALL RESET LINEARLY WHEN OUTSIDE AIR TEMPERATURE IS BETWEEN 50°F AND 80°F.

UNOCCUPIED MODE (NIGHT SETBACK): THE UNIT SHALL MAINTAIN:

- A 80°F (ADJ.) COOLING SETPOINT.
- A 60°F (ADJ.) HEATING SETPOINT.

OCCUPIED:

DURING OCCUPIED PERIODS, THE SUPPLY FAN SHALL RUN CONTINUOUSLY AND THE OUTSIDE AIR DAMPER SHALL OPEN TO MAINTAIN MINIMUM VENTILATION REQUIREMENTS. THE CHILLED WATER AND HOT WATER VALVES SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT.

- WHEN ZONE TEMPERATURE IS MORE THAN 1°F ABOVE ITS SETPOINT, THE SUPPLY FAN SHALL MODULATE BETWEEN THE MINIMUM AIRFLOW (ADJ.) AND THE MAXIMUM AIRFLOW(ADJ.) AND ENABLE COOLING UNTIL THE ZONE IS SATISFIED.
- WHEN THE ZONE TEMPERATURE IS BETWEEN 1°F BELOW AND 1°F ABOVE ITS SETPOINT, THE SUPPLY FAN SHALL MAINTAIN THE MINIMUM REQUIRED ZONE VENTILATION (ADJ.).
- WHEN ZONE TEMPERATURE IS MORE THAN 1°F BELOW ITS SETPOINT, THE SUPPLY FAN SHALL ADJUST TO HEATING AIRFLOW AND ENABLE HEATING TO MAINTAIN THE ZONE TEMPERATURE AT ITS SETPOINT.

IF THE DISCHARGE AIR TEMPERATURE SENSOR FAILS THE CHILLED WATER AND HOT WATER VALVES SHALL MODULATE TO MAINTAIN THE ACTIVE ZONE TEMPERATURE SETPOINT AND AN ALARM SHALL BE ANNUNCIATED AT THE BAS. IF THE DISCHARGE AIR TEMPERATURE SENSOR AND THE ZONE TEMPERATURE SENSOR FAIL THE CHILLED WATER AND HOT WATER VALVES SHALL CLOSE AND AN ALARM SHALL BE ANNUNCIATED AT THE BAS.

UNOCCUPIED:

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

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

OPTIMAL START:

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

MORNING WARM-UP MODE:

DURING OPTIMAL START, IF THE ZONE 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. WHEN THE ZONE TEMPERATURE REACHES THE OCCUPIED HEATING SETPOINT (ADJ.), THE UNIT SHALL TRANSITION TO THE OCCUPIED MODE.

PRE-COOL MODE:

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

OPTIMAL STOP:

THE BAS SHALL MONITOR THE SCHEDULED UNOCCUPIED TIME, OCCUPIED SETPOINTS AND ZONE TEMPERATURE TO CALCULATE WHEN THE OPTIMAL STOP OCCURS. WHEN THE OPTIMAL STOP MODE IS ACTIVE THE UNIT CONTROLLER SHALL MAINTAIN THE ZONE TEMPERATURE TO THE ZONE TEMPERATURE OFFSET SETPOINT. OUTSIDE AIR DAMPER SHALL REMAIN ENABLED TO PROVIDE VENTILATION.

OCCUPIED BYPASS:

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

HEAT/COOL MODE:

WHEN THE ZONE TEMPERATURE RISES ABOVE THE OCCUPIED SETPOINT THE MODE SHALL TRANSITION TO COOLING. WHEN THE ZONE TEMPERATURE FALLS BELOW THE OCCUPIED HEATING SETPOINT THE MODE SHALL TRANSITION TO HEATING. IF THE ZONE TEMPERATURE SENSOR FAILS THE MODE SHALL REMAIN IN ITS LAST STATE AND AN ALARM SHALL BE ANNUNCIATED AT THE BAS. IF THE LOCAL AND COMMUNICATED SETPOINTS FAIL THE CONTROLLER SHALL DISABLE THE SUPPLY FAN AND AN ALARM SHALL BE ANNUNCIATED AT THE BAS.

OCCUPIED HUMIDITY CONTROL:

IF THE ZONE RELATIVE HUMIDITY IS GREATER THAN 55% (ADJ.), THE CHILLED WATER VALVE SHALL MODULATE TO MAINTAIN ZONE RELATIVE HUMIDITY SETPOINT OF 55% (ADJ.) AND THE REHEAT VALVE SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT. MODE SHALL TERMINATE WHEN THE ZONE RELATIVE HUMIDITY FALLS BELOW THE RELATIVE HUMIDITY SETPOINT OF 55% (ADJ.) MINUS 3% (ADJ.). IF THE ZONE RELATIVE HUMIDITY SENSOR FAILS THE DEHUMIDIFICATION SEQUENCE SHALL BE TERMINATED AND AN ALARM SHALL BE ANNUNCIATED AT THE BAS.

SUPPLY FAN:

THE SUPPLY FAN SHALL BE ENABLED WHILE IN THE OCCUPIED MODE AND CYCLED ON DURING THE UNOCCUPIED MODE. THE UNIT CONTROLLER SHALL VARY THE SUPPLY FAN SPEED TO OPTIMIZE MINIMUM FAN SPEED IN ALL COOLING AND HEATING MODES. A DIFFERENTIAL PRESSURE SWITCH SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FAN. IF THE SWITCH DOES NOT OPEN WITHIN 40 SECONDS AFTER A REQUEST FOR FAN OPERATION A FAN FAILURE ALARM SHALL BE ANNUNCIATED, THE UNIT SHALL STOP, REQUIRING A MANUAL RESET.

VENTILATION:

DURING OCCUPIED MODE, THE OUTDOOR AIR DAMPER SHALL OPEN TO THE DESIGN OUTDOOR AIR DAMPER SETPOINT. DURING UNOCCUPIED MODE, THE OUTSIDE AIR DAMPER SHALL BE CLOSED.

FREEZE PROTECTION:

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

FILTER STATUS:

A DIFFERENTIAL PRESSURE SWITCH SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FILTER WHEN THE FAN IS RUNNING. IF THE SWITCH CLOSSES DURING NORMAL OPERATION A DIRTY FILTER ALARM SHALL BE ANNUNCIATED AT THE BAS.

AHU POINTS LIST

POINT NAME	HARDWARE POINTS				SOFTWARE POINTS						
	AI	AO	BI	BO	AV	BV	LOOP	SCHED	TREND	ALARM	SHOW ON GRAPHIC
MIXED AIR TEMP	X								X		X
ZONE TEMPERATURE	X								X		X
ZONE HUMIDITY	X								X		X
RETURN AIR TEMP	X								X		X
SUPPLY AIR TEMP	X								X		X
COOLING VALVE		X							X		X
HEATING VALVE		X							X		X
SUPPLY FAN ECM SPEED		X							X		X
FREEZESTAT			X						X	X	X
HIGH STATIC SHUTDOWN			X						X	X	X
OUTSIDE AIR DAMPER STATUS			X						X		X
SUPPLY FAN STATUS			X						X		X
SUPPLY FAN ECM FAULT			X							X	X
OUTSIDE AIR DAMPER				X							X
SUPPLY FAN START/STOP				X					X		X
SUPPLY AIR TEMP SETPOINT					X				X		X
EMERGENCY SHUTDOWN						X			X	X	X
SCHEDULE								X			
FINAL FILTER CHANGE REQUIRED										X	X
HIGH MIXED AIR TEMP										X	
HIGH ZONE HUMIDITY										X	
HIGH RETURN AIR TEMP										X	
HIGH SUPPLY AIR TEMP										X	
LOW MIXED AIR TEMP										X	
LOW ZONE HUMIDITY										X	
LOW RETURN AIR TEMP										X	
LOW SUPPLY AIR TEMP										X	
OUTSIDE AIR DAMPER FAILURE										X	
OUTSIDE AIR DAMPER IN HAND										X	
PREFILTER CHANGE REQUIRED										X	X
SUPPLY FAN FAILURE										X	
SUPPLY FAN IN HAND										X	
SUPPLY FAN RUNTIME EXCEEDED										X	

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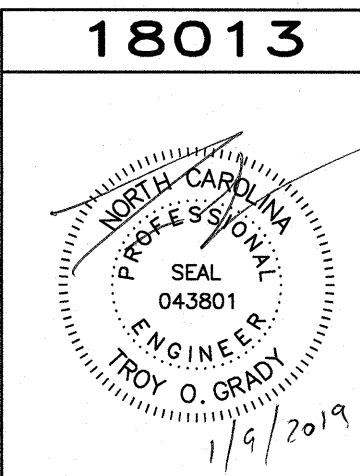
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AHU CONTROLS (AHU-1, AHU-4, AHU-5)

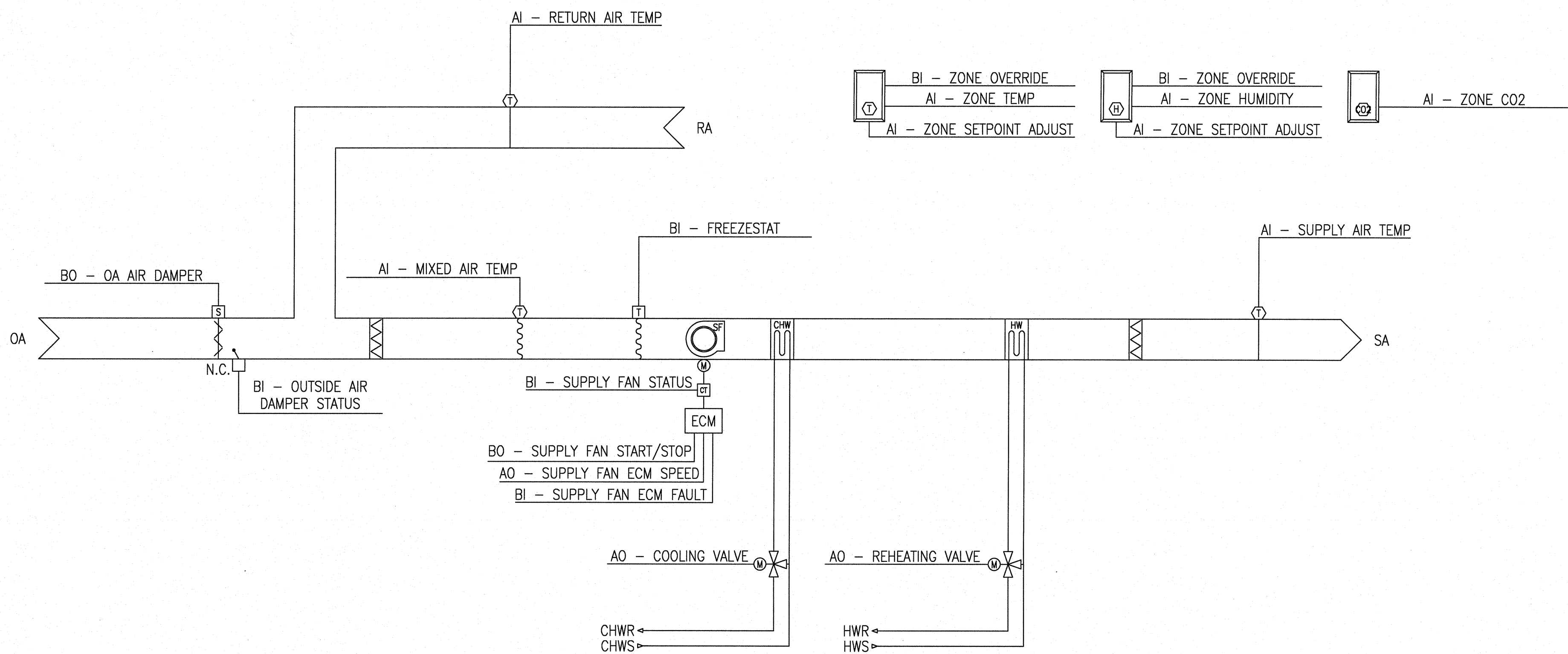
NOT TO SCALE

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FINAL		M-605	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND			
MARINE CORPS BASE			
CAMP LEJEUNE, NORTH CAROLINA			
17-0003			
REPLACE AHU'S AT			
M324			
MECHANICAL			
CONTROL SEQUENCE			
DES. WTB	DATE	SIZE CODE IDENT. NO	NAVFAC DRAWING NO.
DR. WTB		F 80091	60023561
CHK. TOG			CONST. CONTR.
SUBMITTED BY: TOG			
DESIGN DIR. T H BURTON, PE			
APPROVED: PWO OR OICC	DATE		
SATISFACTORY TO:	DATE		
SCALE: -		SPEC. 05-17-0003	SHEET 15 OF 32

REVISIONS			
SYM		DATE	APPROVED



AHU SEQUENCE OF OPERATION

SINGLE ZONE VAV SEQUENCE OF OPERATION

BUILDING AUTOMATION SYSTEM INTERFACE:

THE BUILDING AUTOMATION SYSTEM (BAS) SHALL SEND THE CONTROLLER OCCUPIED BYPASS, MORNING WARM-UP/PRE-COOL, OCCUPIED/UNOCCUPIED AND HEAT/COOL MODES.

RUN CONDITIONS – SCHEDULED:

THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME SCHEDULE IN THE FOLLOWING

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- SETPOINT SHALL RESET LINEARLY WHEN OUTSIDE AIR TEMPERATURE IS BETWEEN 50°F AND 80°F.

UNOCCUPIED MODE (NIGHT SETBACK): THE UNIT SHALL MAINTAIN:

- A 80°F (ADJ.) COOLING SETPOINT.
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OCCUPIED:

DURING OCCUPIED PERIODS, THE SUPPLY FAN SHALL RUN CONTINUOUSLY AND THE OUTSIDE AIR DAMPER SHALL OPEN TO MAINTAIN MINIMUM VENTILATION REQUIREMENTS. THE CHILLED WATER AND HOT WATER VALVES SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT.

- WHEN ZONE TEMPERATURE IS MORE THAN 1°F ABOVE ITS SETPOINT, THE SUPPLY FAN SHALL MODULATE BETWEEN THE MINIMUM AIRFLOW (ADJ.) AND THE MAXIMUM AIRFLOW (ADJ.) AND ENABLE COOLING UNTIL THE ZONE IS SATISFIED.
- WHEN THE ZONE TEMPERATURE IS BETWEEN 1°F BELOW AND 1°F ABOVE ITS SETPOINT, THE SUPPLY FAN SHALL MAINTAIN THE MINIMUM REQUIRED ZONE VENTILATION (ADJ.).
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IF THE DISCHARGE AIR TEMPERATURE SENSOR FAILS THE CHILLED WATER AND HOT WATER VALVES SHALL MODULATE TO MAINTAIN THE ACTIVE ZONE TEMPERATURE SETPOINT AND AN ALARM SHALL BE ANNUNCIATED AT THE BAS. IF THE DISCHARGE AIR TEMPERATURE SENSOR AND THE ZONE TEMPERATURE SENSOR FAIL THE CHILLED WATER AND HOT WATER VALVES SHALL CLOSE AND AN ALARM SHALL BE ANNUNCIATED AT THE BAS.

UNOCCUPIED:

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

OPTIMAL START:

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

MORNING WARM-UP MODE:

DURING OPTIMAL START, IF THE ZONE 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. WHEN THE ZONE TEMPERATURE REACHES THE OCCUPIED HEATING SETPOINT (ADJ.), THE UNIT SHALL TRANSITION TO THE OCCUPIED MODE.

PRE-COOL MODE:

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

OPTIMAL STOP:

THE BAS SHALL MONITOR THE SCHEDULED UNOCCUPIED TIME, OCCUPIED SETPOINTS AND ZONE TEMPERATURE TO CALCULATE WHEN THE OPTIMAL STOP OCCURS. WHEN THE OPTIMAL STOP MODE IS ACTIVE THE UNIT CONTROLLER SHALL MAINTAIN THE ZONE TEMPERATURE TO THE ZONE TEMPERATURE OFFSET SETPOINT. OUTSIDE AIR DAMPER SHALL REMAIN ENABLED TO PROVIDE VENTILATION.

OCCUPIED BYPASS:

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

HEAT/COOL MODE:

WHEN THE ZONE TEMPERATURE RISES ABOVE THE OCCUPIED SETPOINT THE MODE SHALL TRANSITION TO COOLING. WHEN THE ZONE TEMPERATURE FALLS BELOW THE OCCUPIED HEATING SETPOINT THE MODE SHALL TRANSITION TO HEATING. IF THE ZONE TEMPERATURE SENSOR FAILS THE MODE SHALL REMAIN IN ITS LAST STATE AND AN ALARM SHALL BE ANNUNCIATED AT THE BAS. IF THE LOCAL AND COMMUNICATED SETPOINTS FAIL THE CONTROLLER SHALL DISABLE THE SUPPLY FAN AND AN ALARM SHALL BE ANNUNCIATED AT THE BAS.

OCCUPIED HUMIDITY CONTROL:

IF THE ZONE RELATIVE HUMIDITY IS GREATER THAN 55% (ADJ.), THE CHILLED WATER VALVE SHALL MODULATE TO MAINTAIN ZONE RELATIVE HUMIDITY SETPOINT OF 55% (ADJ.) AND THE REHEAT VALVE SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT. MODE SHALL TERMINATE WHEN THE ZONE RELATIVE HUMIDITY FALLS BELOW THE RELATIVE HUMIDITY SETPOINT OF 55% (ADJ.) MINUS 3% (ADJ.). IF THE ZONE RELATIVE HUMIDITY SENSOR FAILS THE DEHUMIDIFICATION SEQUENCE SHALL BE TERMINATED AND AN ALARM SHALL BE ANNUNCIATED AT THE BAS.

SUPPLY FAN:

THE SUPPLY FAN SHALL BE ENABLED WHILE IN THE OCCUPIED MODE AND CYCLED ON DURING THE UNOCCUPIED MODE. THE UNIT CONTROLLER SHALL VARY THE SUPPLY FAN SPEED TO OPTIMIZE MINIMUM FAN SPEED IN ALL COOLING AND HEATING MODES. A DIFFERENTIAL PRESSURE SWITCH SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FAN. IF THE SWITCH DOES NOT OPEN WITHIN 40 SECONDS AFTER A REQUEST FOR FAN OPERATION A FAN FAILURE ALARM SHALL BE ANNUNCIATED, THE UNIT SHALL STOP, REQUIRING A MANUAL RESET.

VENTILATION:

DURING OCCUPIED MODE, WHEN ANY CO2 LEVEL FROM AND CO2 SENSOR ASSOCIATED WITH THE RTU IS GREATER THAN OR EQUAL TO THE DESIGN MINIMUM CO2 SETPOINT, THE OUTDOOR AIR DAMPER SHALL OPEN TO THE DESIGN OUTDOOR AIR DAMPER SETPOINT. WHEN THE RETURN AIR CO2 LEVEL IS LESS THAN OR EQUAL TO THE DCV MINIMUM CO2 SETPOINT, THE OUTDOOR AIR DAMPER SHALL CLOSE TO THE DCV MINIMUM OUTDOOR AIR DAMPER SETPOINT. DURING UNOCCUPIED MODE THE OUTSIDE AIR DAMPER SHALL BE CLOSED.

FREEZE PROTECTION:

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

FILTER STATUS:

A DIFFERENTIAL PRESSURE SWITCH SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FILTER WHEN THE FAN IS RUNNING. IF THE SWITCH CLOSURES DURING NORMAL OPERATION A DIRTY FILTER ALARM SHALL BE ANNUNCIATED AT THE BAS.

AHU POINTS LIST

POINT NAME	HARDWARE POINTS				SOFTWARE POINTS						SHOW ON GRAPHIC
	AI	AO	BI	BO	AV	BV	LOOP	SCHED	TREND	ALARM	
MIXED AIR TEMP	X								X		X
ZONE TEMPERATURE	X								X		X
ZONE HUMIDITY	X								X		X
ZONE CO2	X								X		X
RETURN AIR TEMP	X								X		X
SUPPLY AIR TEMP	X								X		X
COOLING VALVE		X							X		X
HEATING VALVE		X							X		X
SUPPLY FAN ECM SPEED		X							X		X
FREEZESTAT			X						X	X	X
HIGH STATIC SHUTDOWN			X						X	X	X
OUTSIDE AIR DAMPER STATUS			X						X		X
SUPPLY FAN STATUS			X						X		X
SUPPLY FAN ECM FAULT			X							X	X
OUTSIDE AIR DAMPER				X							X
SUPPLY FAN START/STOP				X					X		X
SUPPLY AIR TEMP SETPOINT					X				X		X
EMERGENCY SHUTDOWN						X			X	X	X
SCHEDULE								X			
FINAL FILTER CHANGE REQUIRED										X	X
HIGH MIXED AIR TEMP										X	
HIGH ZONE HUMIDITY										X	
HIGH RETURN AIR TEMP										X	
HIGH SUPPLY AIR TEMP										X	
LOW MIXED AIR TEMP										X	
LOW ZONE HUMIDITY										X	
LOW RETURN AIR TEMP										X	
LOW SUPPLY AIR TEMP										X	
OUTSIDE AIR DAMPER FAILURE										X	
OUTSIDE AIR DAMPER IN HAND										X	
PREFILTER CHANGE REQUIRED										X	X
SUPPLY FAN FAILURE										X	
SUPPLY FAN IN HAND										X	
SUPPLY FAN RUNTIME EXCEEDED										X	

DISCLOSURE OF INFORMATION:

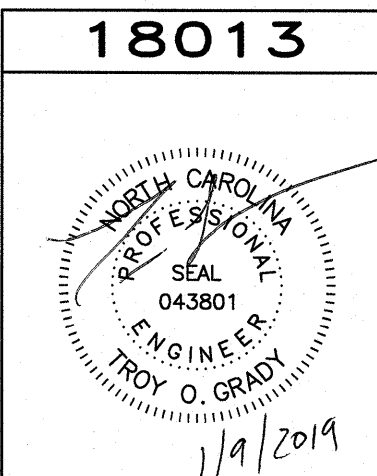
CONTRACTOR SHALL COMPLY AS FOLLOWS:

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 - THE CONTRACTING OFFICER HAS GIVEN PRIOR WRITTEN APPROVAL; OR
 - THE INFORMATION IS OTHERWISE IN THE PUBLIC DOMAIN BEFORE THE DATE OF THE RELEASE.
- REQUESTS FOR APPROVAL SHALL IDENTIFY THE SPECIFIC INFORMATION TO BE RELEASED, THE MEDIUM TO BE USED, AND THE PURPOSE FOR THE RELEASE. THE CONTRACTOR SHALL SUBMIT ITS REQUEST TO THE CONTRACTING OFFICER AT LEAST 45 DAYS BEFORE THE PROPOSED DATE FOR RELEASE.
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AHU CONTROLS (AHU-2, AHU-3, AHU-6, AHU-7, AHU-8)






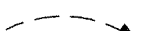
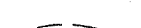




NOT TO SCALE

1



FINAL		M-606	
DEPARTMENT OF THE NAVY		NAVAL FACILITIES ENGINEERING COMMAND	
MARINE CORPS BASE		CAMP LEJEUNE, NORTH CAROLINA	
DES. TOG		17-0003	
DR. TOG		REPLACE AHU'S AT	
CHK. TOG		M324	
SUBMITTED BY: TOG		MECHANICAL	
DESIGN DIR. T H BURTON, PE		CONTROL SEQUENCE	
APPROVED: PWO OR OICC	DATE	SIZE	CODE IDENT. NO
		F	80091
SATISFACTORY TO:	DATE	NAVJAC DRAWING NO.	60023562
		CONST. CONTR.	
SCALE: -	SPEC. 05-17-0003	SHEET 16 OF 32	

TYPICAL ABBREVIATIONS	
A, AMP	AMPERE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BOF	BOTTOM OF FIXTURE
BRKR	BREAKER
C, CND	CONDUIT
CAB	CABINET
CAT	CATALOG
CL	CHLORINE
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
CLG	CEILING
CP	CONTROL PANEL
CR	CONTROL RELAY, CORROSION RESISTANT
CS	CONTROL SWITCH
CV	CONTROL VALVE
CT	CURRENT TRANSFORMER
CU	COPPER
EF	EXHAUST FAN
EMER	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EQUIP	EQUIPMENT
EWG	ELECTRIC WATER COOLER
EWB	ELECTRIC WATER HEATER
EPRF	EXPLOSION PROOF
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FBO	FURNISHED BY OTHERS
FLA	FULL LOAD AMPS
FLUOR	FLUORESCENT
FLR	FLOOR
FWE	FURNISHED WITH EQUIPMENT
GEN	GENERATOR
G, GND	GROUND
GFCI	GROUND FAULT CURRENT INTERRUPTER
HH	HANDHOLE
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTO
HP	HORSE POWER
HPF	HIGH POWER FACTOR
HPS	HIGH PRESSURE SODIUM
HTR	HEATER
HV	HIGH VOLTAGE
HZ	HERTZ
IMC	INTERMEDIATE METALLIC CONDUIT
INCAND	INCANDESCENT
JB	JUNCTION BOX
K	THOUSAND
KCMIL	THOUSAND CIRCULAR MILLS
KVA	KILOVOLT AMPERE
KW	KILOWATTS
KWH	KILOWATT-HOURS
LP	LIGHTING PANEL, LIGHT POLE
LTO	LIGHTING
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MH	MANHOLE
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE
N, NEUT	NEUTRAL
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
P	POLE
PA	PUBLIC ADDRESS
PB	PULL BOX, PUSH-BUTTON
PF	POWER FACTOR
PH, Ø	PHASE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PNL	PANEL
PP	POWER PANEL, POWER POLE
PT	POTENTIAL TRANSFORMER
PWR	POWER
RECPT, RCP	RECEPTACLE
REQ'D	REQUIRED
RGS	RIGID GALVANIZED STEEL CONDUIT
RM	ROOM
RTU	REMOTE TELEMETRY UNIT
DCM	DC MOTOR DRIVE
SH	SHEET
SM	SURFACE MOUNT
SPEC	SPECIFICATION
SS	SELECTOR SWITCH
SST	STAINLESS STEEL
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCH GEAR
TEL	TELEPHONE
TPS	TWISTED PAIR SHIELDED
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSER
TYP	TYPICAL
UGND	UNDERGROUND
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
UTIL	UTILITY
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE, WATT
WH	WATT-HOUR
WP	WEATHERPROOF
(X)	EXISTING DEVICE
XFMR	TRANSFORMER

ELECTRICAL LEGEND	
SYMBOL	DESCRIPTION
208/120 	(X) PANEL BOARD, SIZE and RATINGS AS INDICATED ON PLANS & PANEL SCHEDULE
30A/3/N4X 30AF 	DISCONNECT SWITCH, FUSED, HEAVY DUTY, SIZE AS INDICATED ON DRAWINGS (SIZE AS INDICATED IN THE EQUIPMENT CONNECTION SCHEDULE) ##A = DISCONNECT SIZE / # = NUMBER OF POLES / # = NEMA RATING, ##AF = FUSE SIZE
	MORTOR STARTER FULL VOLTAGE, NON-REVERSING, 600V, 3P, NEMA 1 SIZE AS INDICATED ON DRAWINGS
	CONDUIT, HOME RUN TO PANEL BOARD
	CIRCUIT POWER & SWITCH LEG
	EXISTING CONDUIT, HOME RUN TO PANEL BOARD
	EXISTING CIRCUIT POWER & SWITCH LEG
 WP, GFCI	RECEPTACLE, DUPLEX, 120VAC, 20A, SURFACE MOUNTED 16" AFF, UNLESS OTHERWISE NOTED. (SEE ELECTRICAL MOUNTING HEIGHT DETAIL THIS SHEET) WP - LISTED WEATHER-RESISTANT TYPE DEVICE WITH WEATHERPROOF IN USE COVER GFI - GROUND FAULT CIRCUIT INTERRUPTER TYPE, 120VAC, 20A
	JUNCTION BOX - CEILING/ABOVE CEILING MOUNTED
	HATCHING INDICATES EXISTING ITEMS TO BE DEMOLISHED. REMOVE DEVICE, EQUIPMENT, FIXTURE INDICATED, CIRCUIT, AND CONDUIT BACK TO SOURCE UNLESS OTHERWISE NOTED.
	COMBINATION DATA/TELEPHONE OUTLET, PROVIDE 1 1/4" CONDUIT FROM TELE/COMM. ROOM. CONDUIT ROUTED ABOVE GRID/GYP CEILINGS, PROVIDE 4 CAT6 CABLES COMPLETE FROM EACH DROP TO TELE/COMM. ROOM.

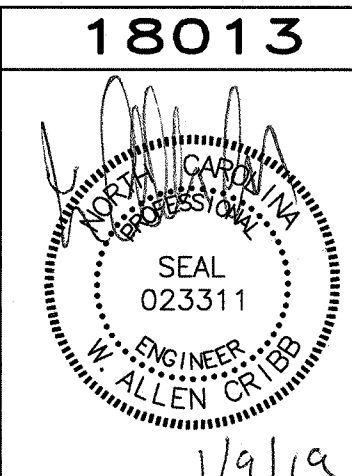
LOAD SUMMARY	
VOLTAGE	PHASE
208	3
LOADS REMOVED THIS PROJECT	
HVAC EQUIPMENT	
AHU UNITS (9)	34,100 VA
CHILLER	195,985 VA
PUMPS (3)	13,515 VA
TOTAL HVAC EQUIPMENT REMOVED THIS PROJECT	243,600 VA
TOTAL HVAC EQUIPMENT REMOVED THIS PROJECT	676 AMPS
TOTAL LOAD REMOVED THIS PROJECT	676 AMPS
TOTAL LOAD REMOVED THIS PROJECT	243,533 VA
LOAD ADDED THIS PROJECT	
HVAC	
AHU-1	6,125 VA
AHU-2	3,496 VA
AHU-3	6,125 VA
AHU-4	3,496 VA
AHU-5	3,496 VA
AHU-6	5,764 VA
AHU-7	6,125 VA
AHU-8	3,496 VA
CHILLER	103,068 VA
CWP1 & CWP2	5,404 VA
HWP1 & HWP2	4,756 VA
VAV DIFFUSER	500 VA
SUB-TOTAL HVAC DEMAND	151,851 VA
SUB-TOTAL HVAC DEMAND	422 AMPS
EQUIPMENT	
HEAT TRACE	1,200 VA
SUB-TOTAL EQUIPMENT DEMAND	1,200 VA
SUB-TOTAL EQUIPMENT DEMAND	3 AMPS
TOTAL LOAD ADDED THIS PROJECT	425 AMPS
TOTAL LOAD ADDED THIS PROJECT	153,051 VA
NET LOAD CHANGED THIS PROJECT	-260 AMPS

REVISIONS			
SYM		DATE	APPROVED

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FINAL		E-001	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA		17-0003 REPLACE AHU'S AT M324 ELECTRICAL LEGEND, ABBREVIATIONS AND NOTES NAVFAC DRAWING NO. 60023563	
DES. JLG	DR. JLG	CHK. WAC	SUBMITTED BY: WAC
DESIGN DIR. T. H. BURTON, PE	APPROVED: PWO OR OICC	DATE	SIZE CODE IDENT. NO. F 80091
SATISFACTORY TO:	DATE	SCALE: -	SPEC. 05-17-0003
		SHEET 17 OF 32	

REVISIONS			
SYM		DATE	APPROVED

GENERAL NOTES

1. ALL ELECTRICAL WORK SHALL BE IN FULL COMPLIANCE WITH NFPA 70 THE NORTH CAROLINA STATE BUILDING CODE, ALL LOCAL CODES AND ORDINANCES AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.

2. ALL EQUIPMENT PROVIDED BY THE CONTRACTOR SHALL BE LISTED AND LABELED BY A NATIONALLY-RECOGNIZED TESTING AGENCY, ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION, FOR THE CONDITIONS OF INSTALLATION. ALL MATERIAL, EQUIPMENT AND DEVICES SHALL BE NEW CURRENT PRODUCTS OF MANUFACTURERS REGULARLY ENGAGED IN THE PRODUCTION OF SUCH PRODUCTS. EQUIPMENT SHALL BE SUITABLE FOR ITS APPLICATION (E.G. WHEN INSTALLED OUTDOORS, IT SHALL BE WEATHERPROOF, ETC.)

3. THE CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS FOR WORK REQUIREMENTS, THE AMOUNT OF SPACE AVAILABLE FOR ELECTRICAL EQUIPMENT, AND LAYOUT HIS WORK IN A COMPATIBLE AND COMPLEMENTARY MANNER.

4. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THOROUGHLY FAMILIARIZING HIMSELF WITH ANY CONTRACTUAL REQUIREMENTS AS MAY BE SET FORTH IN THE OTHER DIVISIONS OF THE PROJECT SPECIFICATIONS.

5. UNLESS SPECIFICALLY NOTED OTHERWISE, SYSTEMS PROVIDED OR INSTALLED BY THE ELECTRICAL CONTRACTOR SHALL BE COMPLETE AND FULLY--FUNCTIONING AFTER INSTALLATION. INCIDENTAL COMPONENTS MAY NOT BE SHOWN, AND ALL WORK WHICH MAY BE REASONABLY IMPLIED AS BEING INCIDENTAL TO THIS WORK, BUT REQUIRED FOR THE PROPER OPERATION OF THE EQUIPMENT OR SYSTEM, SHALL BE PROVIDED BY THE CONTRACTOR AND INCLUDED IN THE BID. ADDITIONAL CIRCUITS SHALL BE INSTALLED WHEREVER NEEDED TO CONFORM TO THE SPECIFIC REQUIREMENTS OF EQUIPMENT.

6. TEMPORARY POWER CONNECTIONS AS REQUIRED SHALL BE PROVIDED BY THE CONTRACTOR AND INCLUDED IN THE BID. ALL TEMPORARY EQUIPMENT WIRING SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. THE CONTRACTOR SHALL PROVIDE DETAILS, METHODS, MATERIALS, ETC. FOR REVIEW PRIOR TO MAKING TEMPORARY CONNECTIONS. FURNISH AND INSTALL ALL EQUIPMENT AND MATERIALS INCLUDING CONTROL EQUIPMENT, MOTOR STARTERS, BRANCH AND FEEDER CIRCUIT BREAKERS, PANELBOARDS, TRANSFORMERS, ETC. FOR TEMPORARY POWER. COORDINATE WITH THE ELECTRICAL UTILITY COMPANY AS REQUIRED.

7. THE WORK SHALL INCLUDE COMPLETE TESTING OF ALL EQUIPMENT AND WIRING AT THE COMPLETION OF WORK AND ANY MINOR CORRECTIONS, CHANGES OR ADJUSTMENTS NECESSARY FOR THE PROPER FUNCTIONING OF THE SYSTEM AND EQUIPMENT.

8. ALL EQUIPMENT SHOWN DOTTED OR DASHED IS BY OTHERS OR IS EXISTING, AS NOTED.

9. ALL ELECTRICAL EQUIPMENT SHALL, AT ALL TIMES DURING CONSTRUCTION, BE ADEQUATELY PROTECTED AGAINST MECHANICAL INJURY, OR DAMAGE BY WATER AND/OR THE ELEMENTS. ELECTRICAL EQUIPMENT SHALL NOT BE STORED OUT OF DOORS, BUT SHALL BE STORED IN DRY PERMANENT SHELTERS. IF AN APPARATUS HAS BEEN DAMAGED, OR HAS BEEN SUBJECT TO POSSIBLE INJURY BY WATER OR THE ELEMENTS, SUCH DAMAGE SHALL BE REPLACED AT NO ADDITIONAL COST.

10. DO NOT SCALE ELECTRICAL DRAWINGS. FIELD VERIFY ALL DIMENSIONS.

11. CIRCUIT LAYOUTS ARE NOT INTENDED TO SHOW THE NUMBER OF FITTINGS, OR OTHER INSTALLATION DETAILS. UNLESS NOTED OTHERWISE, THE EXACT ROUTING OF FEEDER AND BRANCH CIRCUIT RACEWAYS AND CABLES IS THE RESPONSIBILITY OF THE CONTRACTOR. RISER AND GENERAL CIRCUIT ARRANGEMENTS ARE SHOWN SCHEMATICALLY/DIAGRAMMATICALLY ONLY. THE CONTRACTOR SHALL ROUTE CONDUITS AS REQUIRED BY THE CONDITIONS OF THE INSTALLATION.

12. UNLESS DIMENSIONED, DEVICE LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE. ADJUST EXACT LOCATIONS AS REQUIRED TO SERVE THE INTENDED PURPOSE AND TO AVOID CONFLICTS AND INTERFERENCES WITH OTHER TRADES. EXACT DEVICE LOCATIONS SHALL BE AS INDICATED ON THE ARCHITECTURAL DRAWINGS OR AS DIMENSIONED. IF NOT SHOWN ON THE ARCHITECTURAL DRAWINGS OR DIMENSIONED ON THE ELECTRICAL DRAWINGS, VERIFY EXACT LOCATION WITH THE ARCHITECT/ENGINEER PRIOR TO ROUGH-IN.

13. CONDUIT TERMINATING IN PRESSED STEEL BOXES SHALL HAVE DOUBLE LOCKNUTS AND INSULATED BUSHINGS. CONDUITS TERMINATING IN GASKETED ENCLOSURES SHALL BE TERMINATED WITH GROUNDING TYPE CONDUIT HUBS.

14. BRANCH CIRCUIT HOMERUNS SHOWN ON DRAWINGS INDICATE PHASE CONDUCTORS, NEUTRAL, EQUIPMENT GROUND CONDUCTORS AS REQUIRED. ADDITIONAL CONDUCTORS REQUIRED FOR CONTROL SHALL BE INCLUDED EVEN IF NOT EXPLICITLY SHOWN.

15. SEAL ALL CONDUIT OPENINGS THROUGH EXTERIOR BUILDING WALLS WATERTIGHT.

16. IN WET LOCATIONS AND EXTERIOR, ALL WIRING DEVICES SHALL BE WEATHER-RESISTANT LISTED WITH WEATHERPROOF WHILE IN USE COVER.

17. RACEWAYS PENETRATING FLOORS, CEILINGS OR WALLS SHALL BE PROPERLY SEALED SMOKE-TIGHT.

18. RACEWAYS PENETRATING RATED FLOOR, CEILING OR WALL ASSEMBLIES SHALL BE PROPERLY SEALED IN ACCORDANCE WITH THE CORRESPONDING UNDERWRITERS LABORATORIES (OR OTHER APPROVED THIRD PARTY TESTING AGENCY) APPROVED AND LISTED FIRESTOPPING MATERIALS AND MANUFACTURER APPROVED INSTALLATION TECHNIQUES COMPLYING WITH ALL APPLICABLE CODES. SEE ARCHITECTURAL DRAWINGS FOR IDENTIFICATION OF RATED WALLS AND CEILINGS.

19. ALL RACEWAYS SHALL BE CONCEALED WHERE POSSIBLE IF APPLICABLE, MATCH EXISTING RACEWAY INSTALLATION METHODS AND ROUTINGS AT OR NEAR EXISTING FACILITIES.

20. INSTALL EXPOSED RACEWAYS PARALLEL TO OR AT RIGHT ANGLES TO NEARBY SURFACES OR STRUCTURAL MEMBERS, AND FOLLOW THE SURFACE CONTOURS AS MUCH AS POSSIBLE. NO DIAGONAL RUNS WILL BE ALLOWED. ALL CONDUITS SHALL BE RUN STRAIGHT AND TRUE. RUN PARALLEL OR BANKED RACEWAYS TOGETHER ON COMMON SUPPORTS WHERE PRACTICAL. MAKE BENDS IN PARALLEL OR BANKED RUNS FROM SAME CENTERLINE TO MAKE BENDS PARALLEL.

21. PATCHING OF WATERPROOFED SURFACES SHALL RENDER THE AREA OF THE PATCHING COMPLETELY WATERPROOF.

22. ALL MOTORS AND OTHER VIBRATING EQUIPMENT SHALL BE CONNECTED TO THE CONDUIT SYSTEM BY MEANS OF A SHORT SECTION (18 INCH MINIMUM) OF FLEXIBLE CONDUIT UNLESS OTHERWISE INDICATED. AN EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED INSIDE THE FLEXIBLE CONDUIT AND TERMINATE AT THE LOAD END WITH AN APPROVED GROUNDING CLAMP OR LUG.

23. SURFACE MOUNTED JUNCTION, OUTLET AND PULL BOXES, RACEWAYS, ETC., INSTALLED ON EXTERIOR SURFACES OR INSIDE ON EXTERIOR WALLS SHALL BE SUPPORTED BY SPACERS TO PROVIDE A 1/4" MINIMUM CLEARANCE BETWEEN THE WALL AND EQUIPMENT.
24. CEILING MOUNTED DEVICES INSTALLED IN ACOUSTICAL TILE CEILING AREAS SHALL BE SUPPORTED FROM THE STRUCTURE ABOVE WITH RODS OF SUFFICIENT SIZE TO PREVENT VERTICAL MOVEMENT OF THE OUTLET BOX. BRIDGES ALONE ARE NOT ADEQUATE UNLESS SPECIFICALLY APPROVED. CEILING MOUNTED EXIT LIGHT FIXTURES SHALL BE INSTALLED LEVEL. DO NOT SUPPORT DEVICES FROM ACOUSTICAL CEILING TILE.

25. PROVIDE ADHESIVE BACKED RECEPTACLE DEVICE PLATE LABELS IDENTIFYING THE CIRCUIT FEEDING THE DEVICE. LABELS SHALL INDICATE PANEL AND CIRCUIT NUMBER. ALSO PROVIDE IDENTIFICATION FOR MULTI-WIRE BRANCH CIRCUIT PHASE CONDUCTORS IN PANELBOARD.

26. FINAL TYPED PANELBOARD DIRECTORIES INSTALLED IN THE PANELBOARD DOOR POCKET SHALL INCLUDE FINAL ACTUAL ROOM NAMES AND NUMBERS IN ADDITION TO THE GENERAL DESCRIPTION SHOWN ON THE PANEL SCHEDULES ON THE DRAWINGS.

27. CONDUCTOR SIZING IS BASED ON 75 DEGREE C. COPPER NEC RATINGS, UNLESS NOTED OTHERWISE. THE CONTRACTOR SHALL VERIFY, PRIOR TO INSTALLATION OF CONDUCTORS OR CONDUIT FEEDING ANY EQUIPMENT, THE ELECTRICAL EQUIPMENT IS RATED FOR USE WITH 75 DEGREE C. WIRING. IF ANY EQUIPMENT IS RATED FOR USE WITH LESS THAN 75 DEGREE C. CONDUCTORS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER IMMEDIATELY FOR EVALUATION/CORRECTION.

28. DO NOT PULL CONDUCTORS UNTIL THE CONDUIT SYSTEM IS COMPLETE IN EVERY DETAIL. IN THE CASE OF CONCEALED WORK, "COMPLETE" MEANS UNTIL ALL ROUGH PLASTERING OR MASONRY HAS BEEN COMPLETED.

29. WHERE SIZE IS NOT SHOWN ON THE DRAWINGS, BRANCH CIRCUITS SHALL CONSIST OF #12 OR #10 AWG MINIMUM PHASE, NEUTRAL AND EQUIPMENT GROUND CONDUCTORS IN 3/4" MINIMUM RACEWAY.

30. USE #10 AWG CONDUCTORS FOR 20 AMPERE, 120 VOLT BRANCH CIRCUITS WITH A TOTAL INSTALLED LENGTH GREATER THAN 75 FEET AND/OR BRANCH CIRCUIT HOMERUNS LONGER THAN 50 FEET, I.E.; #12 AWG INCREASED TO #10 AWG FOR RECEPTACLE BRANCH CIRCUITS OVER 75 FEET TOTAL LENGTH (INCLUDING THE HOMERUN SEGMENT) AND HOMERUNS OVER 50 FEET.

31. KEEP CONDUCTOR SPLICES TO A MINIMUM. INSTALL SPLICES AND TAPES THAT POSSESS EQUIVALENT OR BETTER MECHANICAL STRENGTH AND INSULATION RATINGS THAN CONDUCTORS BEING SPLICED. USE SPLICE AND TAP CONNECTORS COMPATIBLE WITH CONDUCTOR MATERIAL. INSTALL CONDUCTORS AT EACH OUTLET WITH AT LEAST 6 INCHES OF SLACK. CONNECT OUTLETS AND COMPONENTS TO WIRING AND TO GROUND AS INDICATED AND INSTRUCTED BY THE MANUFACTURER.

32. DO NOT SPLICE BRANCH CIRCUIT HOMERUNS WITHOUT THE PERMISSION OF THE ENGINEER. HOMERUNS SHALL BE CONTINUOUS FROM THE LAST OUTLET BOX TO THE SERVING PANELBOARD.

33. DO NOT COMBINE BRANCH CIRCUIT HOMERUNS UNLESS SPECIFICALLY INDICATED ON THE DRAWINGS.

34. DO NOT CHANGE CIRCUITING SHOWN WITHOUT PERMISSION OF THE ENGINEER.

35. COORDINATE LOCATIONS OF PLUMBING, MECHANICAL, DATA AND TELEPHONE AND AUDIO/VISUAL EQUIPMENT AND OF GOVERNMENT-PROVIDED EQUIPMENT. TELECOMMUNICATIONS AND DATA CABLES WILL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. LEAVE PULL WIRES OR ROPES OF ADEQUATE TENSILE STRENGTH IN ALL EMPTY CONDUITS.

36. PROTECT ALL EXISTING POWER, COMMUNICATIONS, DATA, LIFE SAFETY SYSTEMS, FIRE ALARM AND PUBLIC ADDRESS SYSTEMS AND MAINTAIN THEM IN OPERATION THROUGHOUT THE PROGRESS OF THE WORK. NOTIFY THE GOVERNMENT AND ARCHITECT/ENGINEER IF SHUTDOWNS ARE REQUIRED PRIOR TO ANY OUTAGE OF SERVICE. WHERE THE DURATION OF A PROPOSED OUTAGE CANNOT BE TOLERATED BY THE GOVERNMENT, PROVIDE TEMPORARY CONNECTIONS AS REQUIRED TO MAINTAIN SERVICE.

37. THE CONTRACT REQUIRES SEVERAL NEW CIRCUITS BE ADDED TO EXISTING PANELBOARDS AND NUMEROUS EXISTING CIRCUITS' LOADING WILL CHANGE AS A RESULT OF THIS WORK. THE CONTRACTOR SHALL ENDEAVOR TO MAINTAIN PHASE BALANCE ON ALL PANELBOARDS AFFECTED BY THIS WORK. RECONNECT/MODIFY/EXTEND EXISTING CIRCUITING AS REQUIRED TO MAINTAIN SAFE CIRCUIT LOADING AND PHASE BALANCE. COORDINATE CONNECTIONS TO THE EXISTING ELECTRICAL DISTRIBUTION SYSTEM WITH THE GOVERNMENT AND ENGINEER. PROVIDE ACCURATE, UPDATED, TYPED PANEL SCHEDULES FOR ALL AFFECTED PANELS. NOTE ALL FINAL CIRCUIT CONFIGURATIONS ON AS-BUILT DRAWINGS.

38. THE CONTRACTOR SHALL PERFORM ALL CUTTING AND PATCHING NECESSARY TO INSTALL ALL EQUIPMENT AS REQUIRED AND SHALL REESTABLISH ALL FINISHES TO THEIR ORIGINAL CONDITION WHERE CUTTING AND PATCHING OCCUR. ALL CUTTING AND PATCHING SHALL BE DONE IN A THOROUGHLY WORKMANSHIP MANNER. SAW CUT CONCRETE AND MASONRY PRIOR TO BREAKING OUT SECTIONS. ALL PATCHING MATERIALS AND WORKMANSHIP SHALL BE PERFORMED BY TRADESMEN EXPERIENCED IN THAT WORK. ALL WORK SHALL BE SUBJECT TO THE APPROVAL OF THE ARCHITECT/ENGINEER. EQUIPMENT WITH THE RESPECTIVE SUPPLIERS AND VENDORS AND THE GOVERNMENT BEFORE ROUGH-IN. ADJUST LIGHTING FIXTURES, RECEPTACLES AND ELECTRICAL EQUIPMENT TO ACCOMMODATE THIS EQUIPMENT. ADVISE THE ENGINEER OF CONFLICTS BEFORE ROUGH-IN.

39. BEFORE COMMENCING WORK OR ORDERING MATERIALS, THE CONTRACTOR SHALL COORDINATE WITH OTHER TRADES AND VERIFY THE NAMEPLATE RATINGS OF ALL EQUIPMENT (MOTORS, HEATERS, COMPRESSORS, ETC.) AND ADJUST THE RATINGS OF THE ELECTRICAL EQUIPMENT (SWITCHES, FUSES, CIRCUIT BREAKERS, FEEDERS, ETC.) AS APPROPRIATE TO SERVE THIS EQUIPMENT.

40. ENERGIZE EQUIPMENT ONLY AFTER OBTAINING PERMISSION FROM THE CONTRACTOR PROVIDING THE EQUIPMENT.

41. UNLESS SPECIFICALLY NOTED OTHERWISE, THE CONTRACTOR SHALL MAKE FINAL CONNECTIONS TO ALL UTILIZATION EQUIPMENT SHOWN ON THE DRAWINGS. VERIFY THE TYPE OF FINAL CONNECTION AND PROVIDE APPROPRIATE WIRING METHOD. THE CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL AND PLUMBING EQUIPMENT, PRIOR TO ORDERING OR INSTALLATION OF ANY EQUIPMENT, TO VERIFY MECHANICAL AND PLUMBING EQUIPMENT REQUIREMENTS ARE PROVIDED IN THE ELECTRICAL DESIGN. THE CONTRACTOR WILL NOT BE COMPENSATED FOR COSTS ASSOCIATED WITH CHANGING THE ELECTRICAL SYSTEMS TO MATCH UTILIZATION EQUIPMENT, EVEN IF THE ELECTRICAL WORK IS INSTALLED PER THE ELECTRICAL DRAWINGS.

42. THE CONTRACTORS SHALL FURNISH ALL STARTERS AND CONTROLS FOR THEIR EQUIPMENT. THE CONTRACTOR SHALL PROVIDE ALL SAFETY SWITCHES, SHALL MOUNT STARTERS AND PROVIDE WIRING AND CONNECTIONS TO LINE SIDE OF STARTERS. THE CONTRACTOR SHALL PROVIDE LOAD SIDE WIRING AND CONNECTIONS TO MECHANICAL AND PLUMBING EQUIPMENT. FOR RESISTANCE TYPE LOADS WHERE STARTERS OR CONTRACTORS ARE NOT REQUIRED, THE CONTRACTOR SHALL PROVIDE ALL POWER WIRING AND CONNECTIONS COMPLETE TO EQUIPMENT. THE MECHANICAL AND PLUMBING CONTRACTORS SHALL PROVIDE ALL CONTROL WIRING AND CONNECTIONS AND DEVICES FOR THEIR EQUIPMENT.

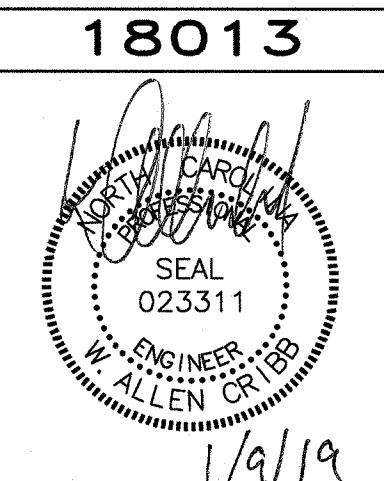
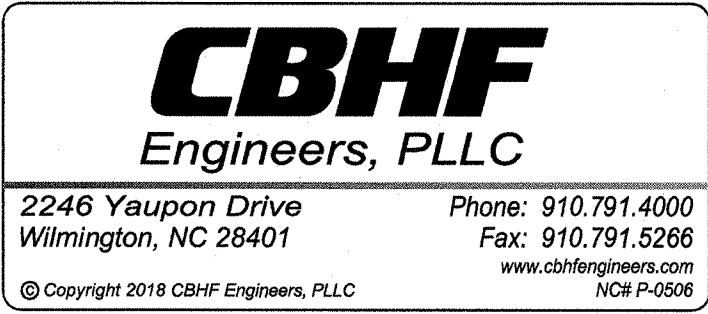
- DISCLOSURE OF INFORMATION:
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1. THE CONTRACTING OFFICER HAS GIVEN PRIOR WRITTEN APPROVAL; OR

2. THE INFORMATION IS OTHERWISE IN THE PUBLIC DOMAIN BEFORE THE DATE OF THE RELEASE.

B. REQUESTS FOR APPROVAL SHALL IDENTIFY THE SPECIFIC INFORMATION TO BE RELEASED, THE MEDIUM TO BE USED, AND THE PURPOSE FOR THE RELEASE. THE CONTRACTOR SHALL SUBMIT ITS REQUEST TO THE CONTRACTING OFFICER AT LEAST 45 DAYS BEFORE THE PROPOSED DATE FOR RELEASE.

C. THE CONTRACTOR AGREES TO INCLUDE A SIMILAR REQUIREMENT IN EACH SUBCONTRACT UNDER THIS CONTRACT. SUBCONTRACTORS SHALL SUBMIT REQUESTS FOR AUTHORIZATION TO RELEASE THROUGH THE PRIME CONTRACTOR TO THE CONTRACTING OFFICER.



FINAL		E-002	
DEPARTMENT OF THE NAVY MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA		17-0003 REPLACE AHU'S AT M324 ELECTRICAL GENERAL NOTES	
DES. JLG	DR. JLG	CHK. WAC	SUBMITTED BY: WAC
DESIGN DIR. T H BURTON, PE	APPROVED: PWO OR OICC	DATE	SIZE CODE IDENT. NO
	F	80091	NAVFAC DRAWING NO. 60023564
SATISFACTORY TO:	DATE	CONST. CONTR.	
SCALE: -	SPEC. 05-17-0003	SHEET 18 OF 32	

REVISIONS			
SYM		DATE	APPROVED

GENERAL NOTES CONT'D

43. CORE DRILL HOLES IN EXISTING CONCRETE WALLS AS REQUIRED.
44. INSTALL WORK AT SUCH TIME AS TO REQUIRE THE MINIMUM AMOUNT TO CUTTING AND PATCHING.
45. CORE DRILL HOLES IN EXISTING CONCRETE WALLS AS REQUIRED.
46. CUT OPENINGS ONLY LARGE ENOUGH TO ALLOW EASY INSTALLATION OF THE CONDUIT.
47. WHEN INDICATED, CONNECT NEW LOADS TO EXISTING ABANDONED CIRCUITS SERVING THE SAME AREA AND NOTE CIRCUITS ON AS-BUILT DRAWINGS.
48. EXISTING CIRCUITING WHERE SHOWN IS FOR CONVENIENCE PURPOSES ONLY. VERIFICATION OF EXISTING WIRING DESTINATION, TERMINATION AND ADDITIONS OF NEW LOADS IS THE RESPONSIBILITY OF THE CONTRACTOR.
49. MAINTAIN CONTINUITY OF ALL EXISTING CIRCUITS TO REMAIN OR PORTIONS THEREOF AFFECTED BY THIS WORK.
50. ABANDONED POWER WIRING, RACEWAYS AND CONDUCTORS, SHALL BE REMOVED BACK TO THEIR SOURCE. THE ACCESSIBLE PORTIONS OF ABANDONED CABLES (VOICE, DATA, VIDEO, ALARM, ETC.) SHALL BE REMOVED.
51. TRACE OUT EXISTING WIRING THAT IS TO BE RELOCATED, OR REMOVED AND PERFORM THE RELOCATION OR REMOVAL WORK AS REQUIRED FOR A COMPLETE OPERATING AND SAFE SYSTEM.
52. INSOFAR AS POSSIBLE, MATCH EXISTING EXPOSED DEVICES IN FINISHED AREAS IN TYPE, COLOR AND FINISH.
53. THE EXISTING ELECTRICAL SYSTEMS DEPICTED ON THESE DRAWINGS HAVE BEEN COMPILED BY THE ENGINEER FROM THE GOVERNMENT'S RECORD DRAWINGS AND LIMITED FIELD VERIFICATION OF THE EXISTING CONDITIONS FOR THE PURPOSE OF INDICATING THE WORK REQUIRED AND ARE BELIEVED TO BE CORRECT. NOTWITHSTANDING, THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, POINTS OF ACCESS AND FIELD CONDITIONS AFFECTING HIS WORK.
54. THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH THE EXISTING ELECTRICAL SYSTEMS AND THE EXISTING BUILDING. THE SUBMISSION OF THE PROPOSAL BY THE CONTRACTOR SHALL BE CONSIDERED EVIDENCE THAT HE OR HIS REPRESENTATIVE HAS VISITED THE SITE AND BUILDINGS AND NOTED THE LOCATION AND CONDITIONS UNDER WHICH THE WORK WILL BE PERFORMED AND THAT HE TAKES FULL RESPONSIBILITY OF ALL FACTORS GOVERNING HIS WORK. NO EXTRAS WILL BE CONSIDERED BECAUSE OF ADDITIONAL WORK NECESSITATED BY EXISTING JOB CONDITIONS THAT ARE NOT INDICATED ON THE DRAWINGS.
55. SOME EXISTING RECEPTACLE, LIGHTING OR OTHER LOADS MAY BE SERVED BY CIRCUITS INDICATED TO BE REMOVED. IF SUCH CONDITIONS ARE DISCOVERED, REQUEST THE ENGINEER PROVIDE NEW CIRCUIT NUMBER FOR THE LOAD. DO NOT INDISCRIMINATELY CONNECT TO THE NEAREST CIRCUIT.
56. ALL UNUSED OUTLET BOXES SHALL BE REMOVED OR, WITH SPECIFIC APPROVAL OF THE ARCHITECT/ENGINEER, SHALL BE BLANKED WITH STAINLESS STEEL PLATES. ALL OPENINGS IN EXISTING WALLS AND CEILINGS MADE BY THIS CONTRACTOR SHALL BE REPAIRED TO AN EQUAL FINISH AS ADJACENT SURFACES.
57. PROVIDE ALL ELECTRICAL RELOCATION WORK ASSOCIATED WITH THE RELOCATING OF EQUIPMENT FOR THE EXISTING FACILITIES, INCLUDING DISCONNECTING ALL EXISTING WIRING AND CONDUITS AND PROVIDING NEW WIRING AND CONDUITS TO THE RELOCATED EQUIPMENT.
58. THE EXISTING FACILITIES WILL REMAIN OCCUPIED BY THE STAFF THROUGHOUT THE PROJECT. AS SUCH, WORK WILL BE DONE IN PHASES AND WILL REQUIRE SPECIAL EFFORT BY THIS CONTRACTOR TO ALLOW THE WORK TO PROCEED IN A TIMELY MANNER. ALL ELECTRICAL WORK SHALL BE COORDINATED WITH THE GOVERNMENT SO AS TO MINIMIZE DISRUPTION OF THE GOVERNMENT'S USE OF THE FACILITIES AND MAINTAIN THE CONSTRUCTION SEQUENCE OF THE GENERAL CONTRACTOR. SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL INSTRUCTIONS CONCERNING PHASING AND SEQUENCE OF WORK. ALSO SEE SPECIFICATIONS SECTION TITLED "EXISTING BUILDINGS AND CONSTRUCTION" FOR ADDITIONAL REQUIREMENTS.
59. SEE "GENERAL DEMOLITION NOTES" FOR ADDITIONAL REQUIREMENTS.
60. SAFETY
- A. COMPLY WITH OSHA AND NEC ARC FLASH PROTECTION REQUIREMENTS.
- B. FOR EQUIPMENT BEING REMOVED AND REPLACED, THE CONTRACTOR SHALL DE-ENERGIZE THE EQUIPMENT AND MAKE IT SAFE PRIOR TO REMOVAL AND COMPLY WITH OSHA REQUIREMENTS FOR LOCKING-OUT AND TAGGING EQUIPMENT TO PREVENT INADVERTENT RE-ENERGIZING.
- C. WHERE EQUIPMENT IS BEING REMOVED, BUT NOT REPLACED, REMOVE THE CONDUCTORS FEEDING THE EQUIPMENT BACK TO THE POINT WHERE THEY RECEIVE POWER. REMOVE ACCESSIBLE CONDUITS. ABANDON IN PLACE INACCESSIBLE CONDUITS. AFTER REMOVAL OF EQUIPMENT, REPAIR ANY OPENING LEFT TO MATCH SURROUNDING WALLS, CEILINGS, OR FLOORS TO THE ARCHITECT/ENGINEER'S SATISFACTION.
- D. COORDINATE WITH THE OTHER TRADES, PRIOR TO BID, AND INCLUDE IN THE BASE BID THE ELECTRICAL DISCONNECTION OF ANY EQUIPMENT BEING DEMOLISHED, EVEN IF NOT EXPLICITLY SHOWN. UNLESS NOTED OTHERWISE, REMOVE ALL DEMOLISHED EQUIPMENT FROM THE PROPERTY.

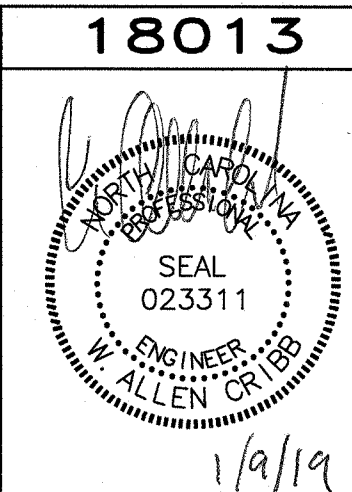
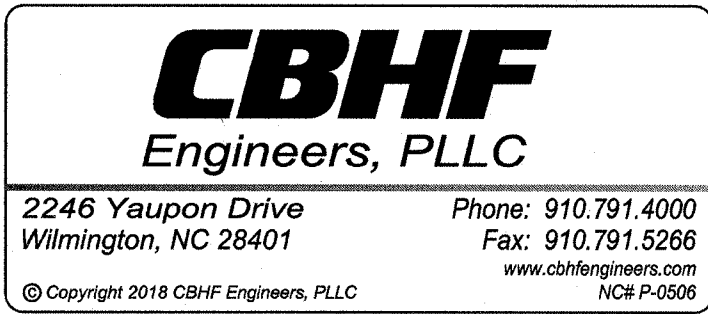
GENERAL DEMOLITION NOTES

1. SELECTIVE ELECTRICAL DEMOLITION SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR AS DESCRIBED HEREIN AND AS SHOWN ON THE CONTRACT DRAWINGS. GROSS DEMOLITION WILL BE PROVIDED BY THE GENERAL CONTRACTOR. IDENTIFY ACTIVE UTILITIES, AND AT THE APPROPRIATE TIME, DISCONNECT AND CAP OFF SUCH UTILITIES AND PROVIDE EXPERIENCED PERSONNEL ON SITE DURING GENERAL CONTRACTOR DEMOLITION OPERATIONS TO PERFORM SUCH OPERATIONS AND RESOLVE ISSUES. REMOVE MATERIALS NOTED FOR SALVAGE AND REUSE. IDENTIFY AND MARK WIRING AND DEVICES TO REMAIN FOR THE GENERAL CONTRACTOR.
2. THE ELECTRICAL CONTRACTOR SHALL REVIEW THE MECHANICAL AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR DEMOLITION REQUIREMENTS AND CARRY OUT HIS WORK IN A COMPATIBLE AND COMPLEMENTARY MANNER. REMOVE ALL WIRING DEVICES, BOXES, FIXTURES, EXPOSED ABANDONED RACEWAYS, HANGARS, ETC., AND THOSE MADE OBSOLETE BY THESE ALTERATIONS AND AS SHOWN ON THE ELECTRICAL DRAWINGS. ALL ITEMS TO BE REMOVED OR MODIFIED MAY NOT BE SHOWN, HOWEVER, THIS CONTRACTOR SHALL REMOVE ANY ELECTRICAL WORK AS REQUIRED BY THE CONSTRUCTION OR AS DIRECTED BY THE GOVERNMENT OR ARCHITECT/ENGINEER. SURVEY THE AFFECTED AREAS BEFORE SUBMITTING A BID AS ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DEPICTED ON THE DRAWINGS AND SOME UNUSUAL CONDITIONS MAY EXIST.
3. REMOVE, RELOCATE, AND EXTEND EXISTING INSTALLATIONS TO ACCOMMODATE NEW CONSTRUCTION.
4. ALL EXISTING ELECTRICAL EQUIPMENT AND DEVICES SHALL REMAIN UNLESS SPECIFICALLY NOTED TO BE REMOVED.
5. VERIFY FIELD MEASUREMENTS AND CIRCUITING ARRANGEMENTS ARE AS SHOWN ON DRAWINGS.
6. VERIFY THAT ABANDONED WIRING AND EQUIPMENT SERVE ONLY ABANDONED FACILITIES.
7. DISCONNECT AND/OR DE-ENERGIZE ELECTRICAL SYSTEMS IN WALLS, FLOORS, AND CEILINGS SCHEDULED FOR REMOVAL.
8. PROVIDE TEMPORARY AND/OR PERMANENT WIRING AND CONNECTIONS AS SHOWN AND/OR AS REQUIRED BY CONDITIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. WHEN WORK MUST BE PERFORMED ON ENERGIZED EQUIPMENT OR CIRCUITS, AND WHEN SUCH WORK IS SPECIFICALLY APPROVED BY THE GOVERNMENT AND PERMITTED BY REGULATORY AUTHORITIES, USE PERSONNEL EXPERIENCED IN SUCH OPERATIONS.
9. EXISTING ELECTRICAL SERVICE: COORDINATE POWER OUTAGES WITH THE GOVERNMENT AND UTILITY COMPANY. MAINTAIN EXISTING SYSTEMS IN SERVICE. DISABLE SYSTEMS ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN PERMISSION FROM THE GOVERNMENT AT LEAST 14 DAYS BEFORE PARTIALLY OR COMPLETELY DISABLING SYSTEM. MINIMIZE OUTAGE DURATION. MAKE TEMPORARY CONNECTIONS TO MAINTAIN SERVICE IN AREAS ADJACENT TO WORK AREA.
10. CONTINUOUS SERVICE IS REQUIRED ON ALL CIRCUITS AND OUTLETS AFFECTED BY THESE CHANGES, EXCEPT WHERE THE GOVERNMENT WILL PERMIT AN OUTAGE FOR A SPECIFIC TIME. OBTAIN GOVERNMENT'S CONSENT BEFORE REMOVING ANY CIRCUIT FROM CONTINUOUS SERVICE.
11. PROTECT ALL EXISTING TELEPHONE, DATA, LIFE SAFETY SYSTEMS, FIRE ALARM, SECURITY, ACCESS CONTROL AND PUBLIC ADDRESS SYSTEMS AND MAINTAIN THEM IN OPERATION THROUGHOUT THE PROGRESS OF THE WORK. NOTIFY THE GOVERNMENT AND ARCHITECT/ENGINEER IN WRITING IF SHUTDOWNS ARE REQUIRED PRIOR TO ANY OUTAGE OF SERVICE. WHERE THE DURATION OF A PROPOSED OUTAGE CANNOT BE TOLERATED BY THE GOVERNMENT, PROVIDE TEMPORARY CONNECTIONS AS REQUIRED TO MAINTAIN SERVICE.
12. WHERE ELECTRICAL SYSTEMS PASS THROUGH THE DEMOLITION AREAS TO SERVE OTHER PORTIONS OF THE PREMISES, THEY SHALL BE PROTECTED FROM DAMAGE AND REMAIN OR BE SUITABLY RELOCATED UTILIZING MATCHING SIZE AND TYPE MATERIALS AND THE SYSTEM RESTORED TO NORMAL OPERATION. ADVISE THE ARCHITECT/ENGINEER IMMEDIATELY IF SUCH CONDITIONS ARE UNCOVERED BEFORE PROCEEDING WITH ADDITIONAL WORK.
13. MAINTAIN ACCESS TO EXISTING ELECTRICAL INSTALLATIONS WHICH REMAIN ACTIVE. MODIFY INSTALLATION OR PROVIDE ACCESS PANEL AS APPROPRIATE.
14. ENDS OF ALL CONDUITS TO REMAIN SHALL BE TIGHTLY PLUGGED TO EXCLUDE DUST AND MOISTURE WHILE THE BUILDING IS UNDER RENOVATION.
15. PROTECT EXISTING CIRCUITS TO REMAIN AND EXTEND AS REQUIRED UTILIZING MATCHING CONDUCTORS AND CONDUIT SIZE AND TYPE.
16. SECURE ALL CIRCUITS, RACEWAYS, CABLE AND CONDUCTORS THAT, AS A RESULT FROM THIS CONSTRUCTION, ARE ABANDONED OR UNUSED. REMOVE UNUSED EXPOSED CONDUIT AND WIRING BACK TO POINT OF CONCEALMENT INCLUDING ABANDONED CONDUIT ABOVE ACCESSIBLE CEILINGS. REMOVE UNUSED WIRING IN CONCEALED CONDUITS BACK TO SOURCE OR NEAREST POINT OF USAGE. BLANK ABANDONED KNOCKOUTS IN REMAINING BOXES. INSTALL BLANK PLATES FOR ALL UNUSED OUTLETS THAT WILL REMAIN AS A RESULT OF THIS CONSTRUCTION. ALL SUCH WORK SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES AND ORDINANCES.
17. TRACE OUT EXISTING WIRING THAT IS TO BE RELOCATED OR REMOVED AND PERFORM THE RELOCATION OR REMOVAL WORK AS REQUIRED FOR A COMPLETE OPERATING AND SAFE SYSTEM.
18. RECONNECT EXISTING CIRCUITS SEPARATED AS A RESULT OF THIS CONSTRUCTION.
19. DELIVER ALL REMOVED AND SALVAGED LIGHTING FIXTURES, WIRING DEVICES, FIRE ALARM DEVICES, SPEAKERS, ETC., TO THE GOVERNMENT, OR AT THE GOVERNMENT'S OPTION, DISPOSE OF PROPERLY OFF SITE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL ENVIRONMENTAL REGULATIONS. FEES ASSOCIATED WITH DISPOSAL SHALL BE INCLUDED IN THE CONTRACTOR'S BASE BID.
20. COORDINATE WITH THE OTHER TRADES, PRIOR TO BID, AND INCLUDE IN THE BASE BID THE ELECTRICAL DISCONNECTION OF ANY EQUIPMENT BEING DEMOLISHED, EVEN IF NOT EXPLICITLY SHOWN. UNLESS NOTED OTHERWISE, REMOVE ALL DEMOLISHED EQUIPMENT FROM THE PROPERTY AND IDENTIFIED IN THE ELECTRICAL DRAWINGS.
21. THESE DRAWINGS ARE COMPILED BY THE ENGINEER FROM THE GOVERNMENT'S RECORD DRAWINGS AND LIMITED FIELD VERIFICATION OF EXISTING CONDITIONS FOR THE PURPOSE OF INDICATING THE WORK REQUIRED AND ARE BELIEVED TO BE CORRECT. NOTWITHSTANDING, THE CONTRACTOR SHALL VERIFY ALL CIRCUITS, WIRING, CONDUIT, DIMENSIONS, POINTS OF ACCESS AND ALL FIELD CONDITIONS AFFECTING HIS WORK. BEGINNING OF DEMOLITION MEANS THE CONTRACTOR ACCEPTS EXISTING CONDITIONS.
22. SEE GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.

DISCLOSURE OF INFORMATION:

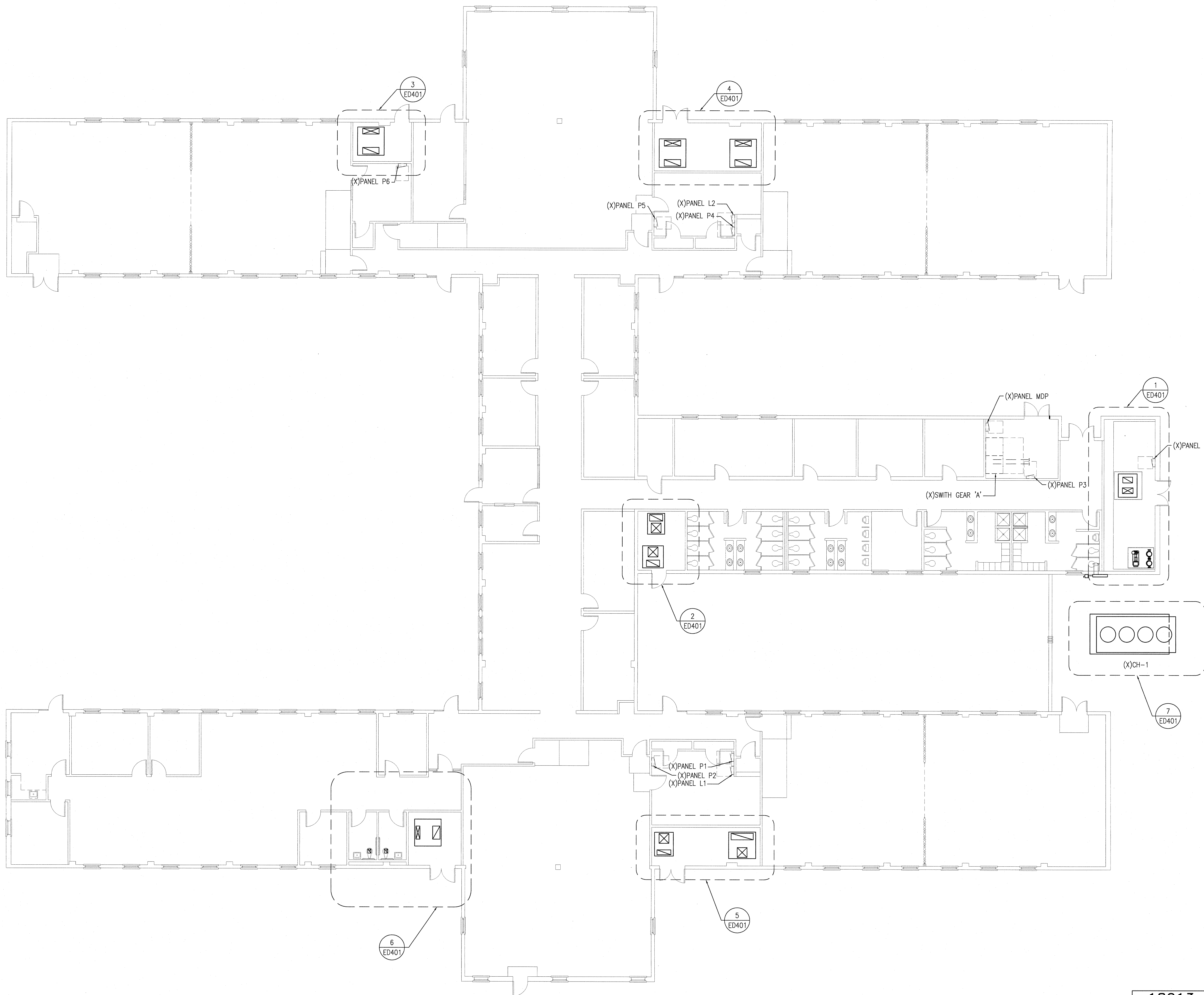
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1. THE CONTRACTING OFFICER HAS GIVEN PRIOR WRITTEN APPROVAL; OR
2. THE INFORMATION IS OTHERWISE IN THE PUBLIC DOMAIN BEFORE THE DATE OF THE RELEASE.
- B. REQUESTS FOR APPROVAL SHALL IDENTIFY THE SPECIFIC INFORMATION TO BE RELEASED, THE MEDIUM TO BE USED, AND THE PURPOSE FOR THE RELEASE. THE CONTRACTOR SHALL SUBMIT ITS REQUEST TO THE CONTRACTING OFFICER AT LEAST 45 DAYS BEFORE THE PROPOSED DATE FOR RELEASE.
- C. THE CONTRACTOR AGREES TO INCLUDE A SIMILAR REQUIREMENT IN EACH SUBCONTRACT UNDER THIS CONTRACT. SUBCONTRACTORS SHALL SUBMIT REQUESTS FOR AUTHORIZATION TO RELEASE THROUGH THE PRIME CONTRACTOR TO THE CONTRACTING OFFICER.



FINAL		E-003	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA		17-0003 REPLACE AHU'S AT M324 ELECTRICAL GENERAL NOTES AND DEMOLITION NOTES NAVFAC DRAWING NO. 60023565 CONST. CONTR.	
DES. JLG	DR. JLG	CHK. WAC	SUBMITTED BY: WAC
DESIGN DIR. T. H. BURTON, PE	APPROVED: PWO OR OICC	DATE	SIZE CODE IDENT. NO. F 80091
SATISFACTORY TO:		DATE	SCALE: - SPEC. 05-17-0003 SHEET 19 OF 32

REVISIONS		
SYM	DATE	APPROVED



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PLAN NORTH

ELECTRICAL DEMOLITION FLOOR PLAN

1/8"=1'-0"

GRAPHIC SCALE

0'

5'

10'

20'

30'

1/8"=1'-0"

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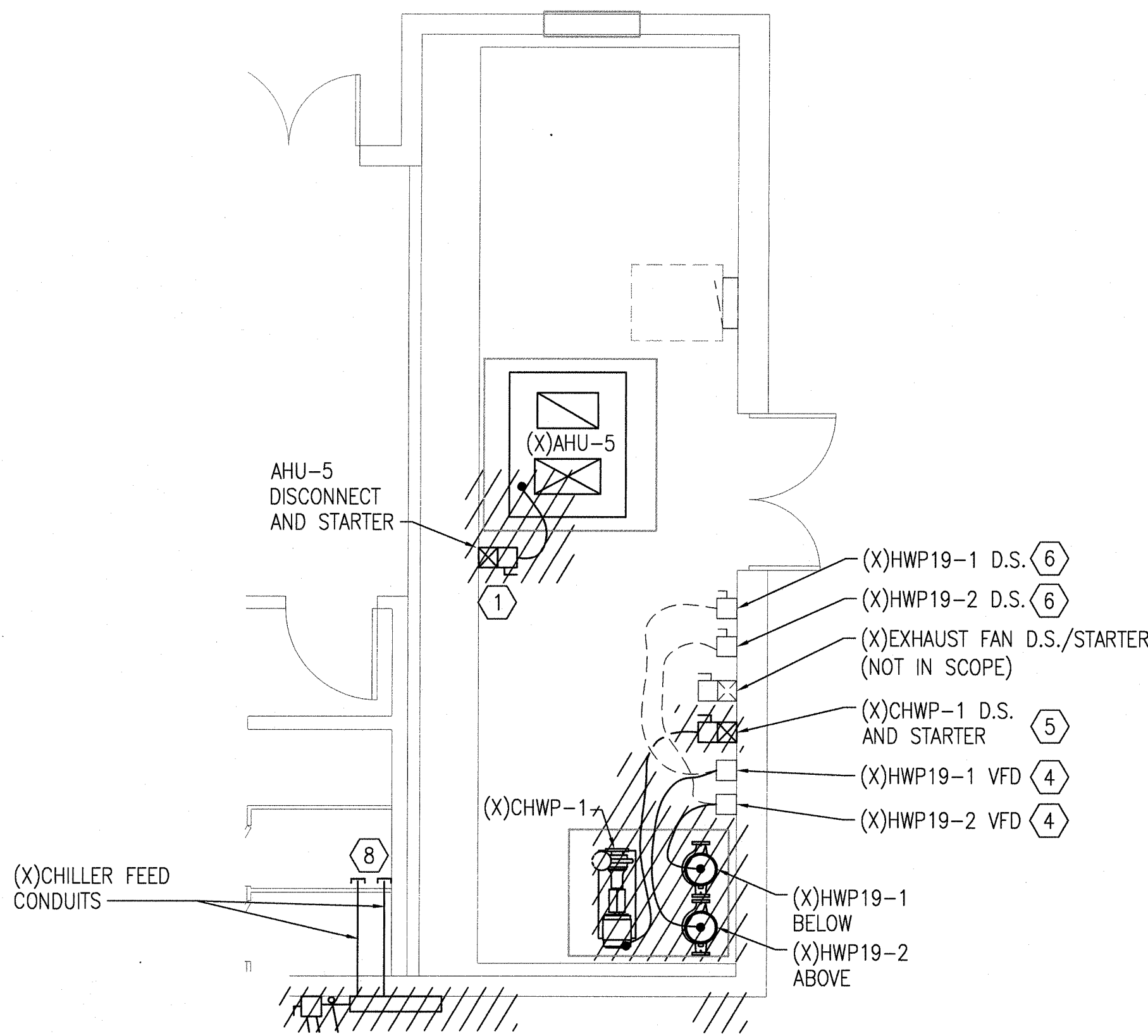
1/9/19

FINAL		ED101	
DEPARTMENT OF THE NAVY		NAVAL FACILITIES ENGINEERING COMMAND	
MARINE CORPS BASE		CAMP LEJEUNE, NORTH CAROLINA	
DES. JLG		17-0003	
DR. JLG		REPLACE AHU'S AT	
CHK. WAC		M324	
SUBMITTED BY: WAC		ELECTRICAL DEMOLITION	
DESIGN DIR. T. H. BURTON, PE		FLOOR PLAN	
APPROVED: PWO OR OICC	DATE	SIZE CODE IDENT. NO.	NAVFAC DRAWING NO.
		F 80091	60023566
SATISFACTORY TO:	DATE	CONSTR. CONTR.	
		SCALE: -	SPEC. 05-17-0003
			SHEET 20 OF 32

REVISIONS			
SYM		DATE	APPROVED

DEMOLITION KEYED NOTES

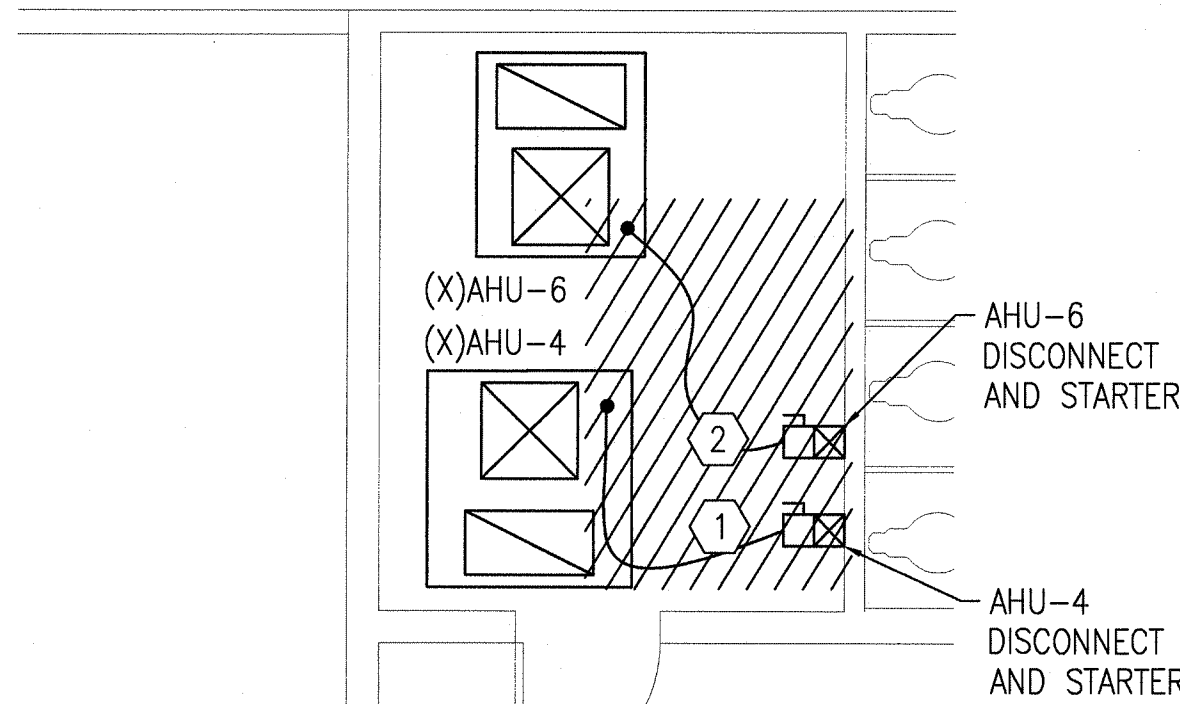
- ① AHU DISCONNECT, STARTER, CONTROLS: CONTRACTOR SHALL PROTECT FEED CONDUIT AND CONDUCTORS FROM PANEL TO DISCONNECT FOR RE-USE. CONTRACTOR SHALL REMOVE DISCONNECT, STARTER, CONTROLS, CONDUITS AND CONDUCTORS FROM DISCONNECT LOCATION TO AHU.
- ② AHU DISCONNECT, STARTER, CONTROLS, CONDUIT AND CONDUCTORS: CONTRACTOR SHALL REMOVE DISCONNECT, STARTER, CONTROLS, CONDUIT AND CONDUCTORS IN ENTIRETY FROM SOURCE TO AHU.
- ③ POWER VENTILATORS IN BATHROOM: FAN SHALL BE REMOVED. FEED/SWITCH LEG SHALL BE PROTECTED FOR RE-USE.
- ④ HOT WATER PUMP VFD: CONTRACTOR SHALL PROTECT VFD, CONDUIT AND CONDUCTORS FEEDING THE VFD FROM (X)DISCONNECT. CONTRACTOR SHALL REMOVE CONDUIT AND CONDUCTORS FROM VFD TO PUMP IN ENTIRETY.
- ⑤ CHWP1 DISCONNECT, STARTER, CONTROLS, CONDUIT AND CONDUCTORS: CONTRACTOR SHALL REMOVE DISCONNECT, STARTER, CONTROLS, CONDUIT AND CONDUCTORS IN ENTIRETY FROM SOURCE TO PUMP.
- ⑥ HOT WATER PUMP DISCONNECT: CONTRACTOR SHALL PROTECT DISCONNECT, CONDUIT AND WIRING DURING DEMOLITION AND CONSTRUCTION. CONTRACTOR SHALL REMOVE FUSES.
- ⑦ CHILLER HEAT TRACE BOX, CONDUIT AND CONDUCTORS: CONTRACTOR SHALL REMOVE ALL HEAT TRACE, BOXES, CONDUIT AND CONDUCTORS IN ENTIRETY. WALL PENETRATION IOS TO BE SEALED AND PATCHED.
- ⑧ CHILLER FEED CONDUITS: CONTRACTOR SHALL PROTECT AND RE-USE CONDUIT FROM EXTERIOR WIREWAY TO SWITCH GEAR 'A'. CONDUCTORS ARE TO BE REMOVED FROM CHILLER TO SOURCE IN ENTIRETY.
- ⑨ CHILLER FEED WIREWAY: CONTRACTOR SHALL REMOVE WIREWAY, CONDUITS AND CONDUCTORS TO CHILLER DISCONNECT.
- ⑩ CHILLER DISCONNECT, CONDUIT AND CONDUCTORS: CONTRACTOR SHALL REMOVE DISCONNECT, CONDUITS AND CONDUCTORS IN ENTIRETY TO CHILLER.
- ⑪ WP GFCI RECEPTACLE: REMOVE COVER, DEVICE AND BOX. CONTRACTOR SHALL PROTECT CONDUIT AND CONDUCTORS FOR RE-USE.



ELECTRICAL ROOM 1 DEMOLITION PLAN

1/4"=1'-0"

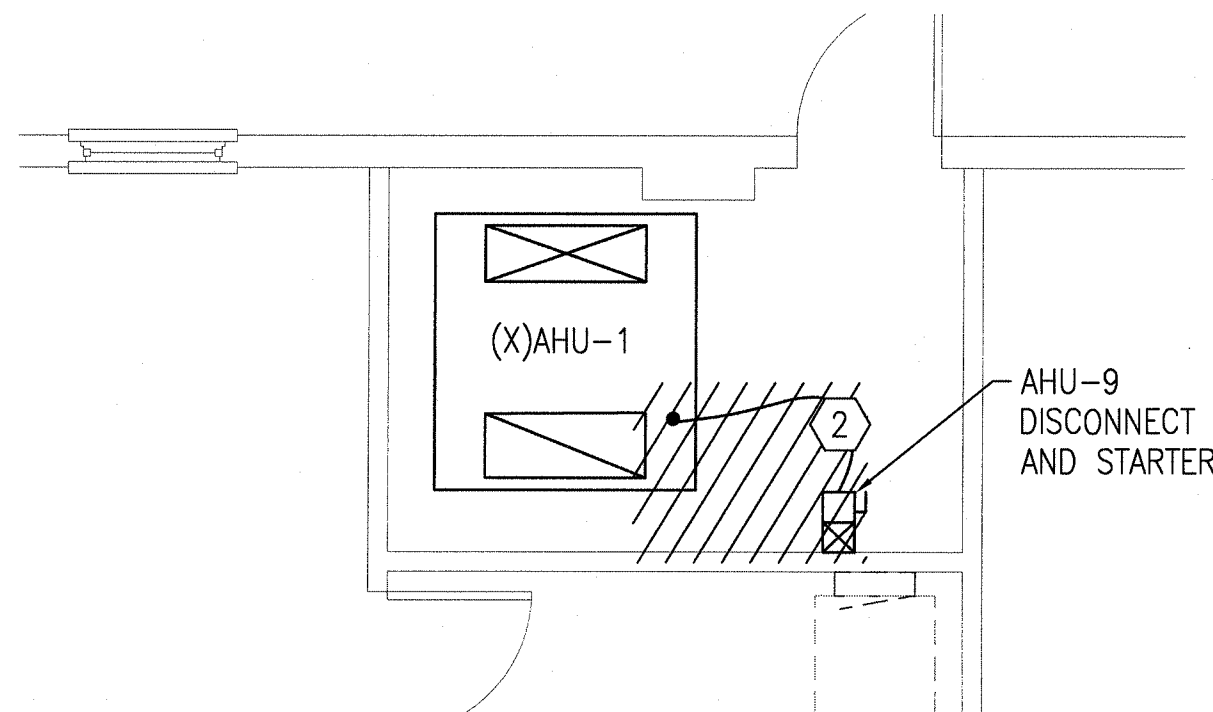
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ELECTRICAL ROOM 2 DEMOLITION PLAN

1/4"=1'-0"

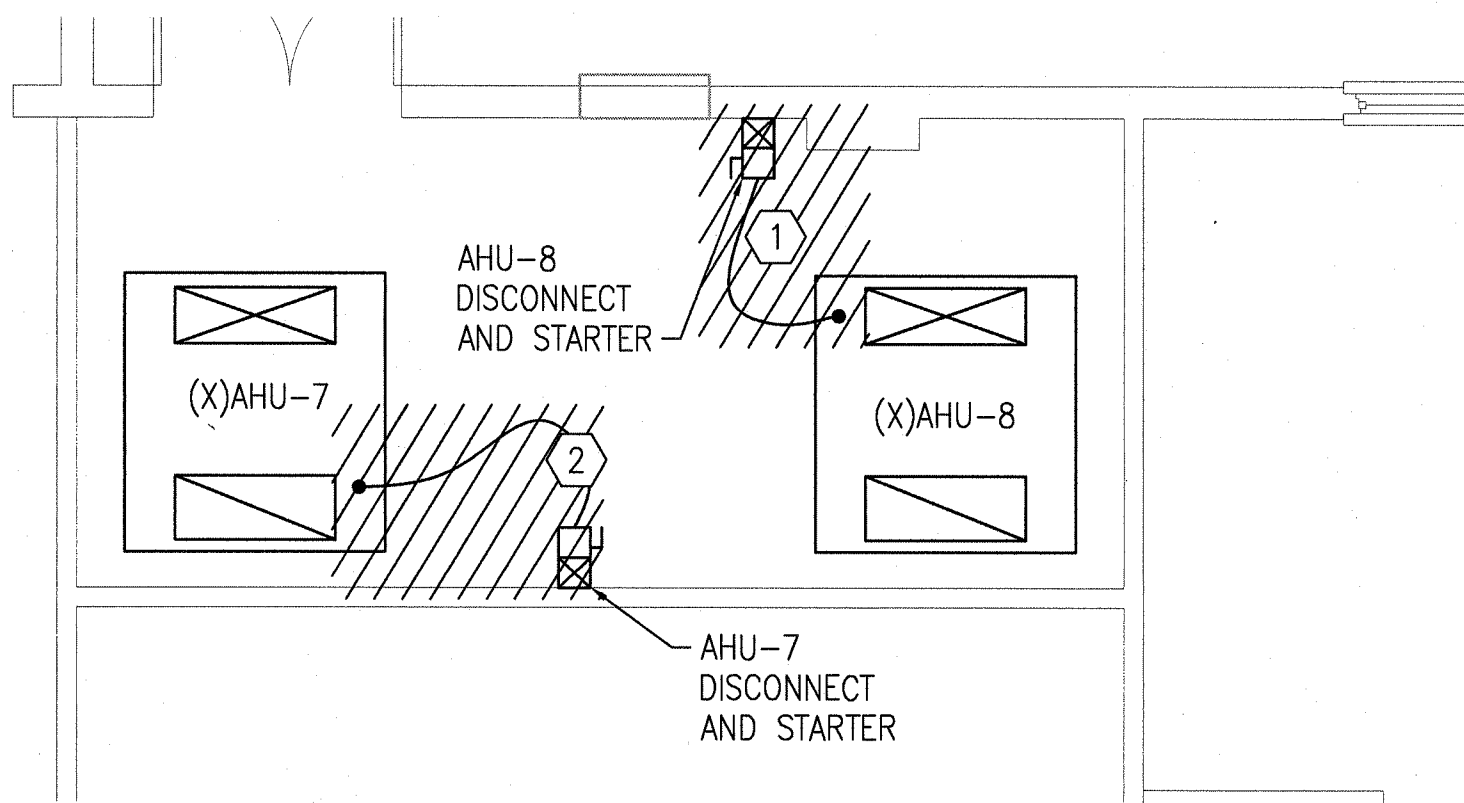
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ELECTRICAL ROOM 3 DEMOLITION PLAN

1/4"=1'-0"

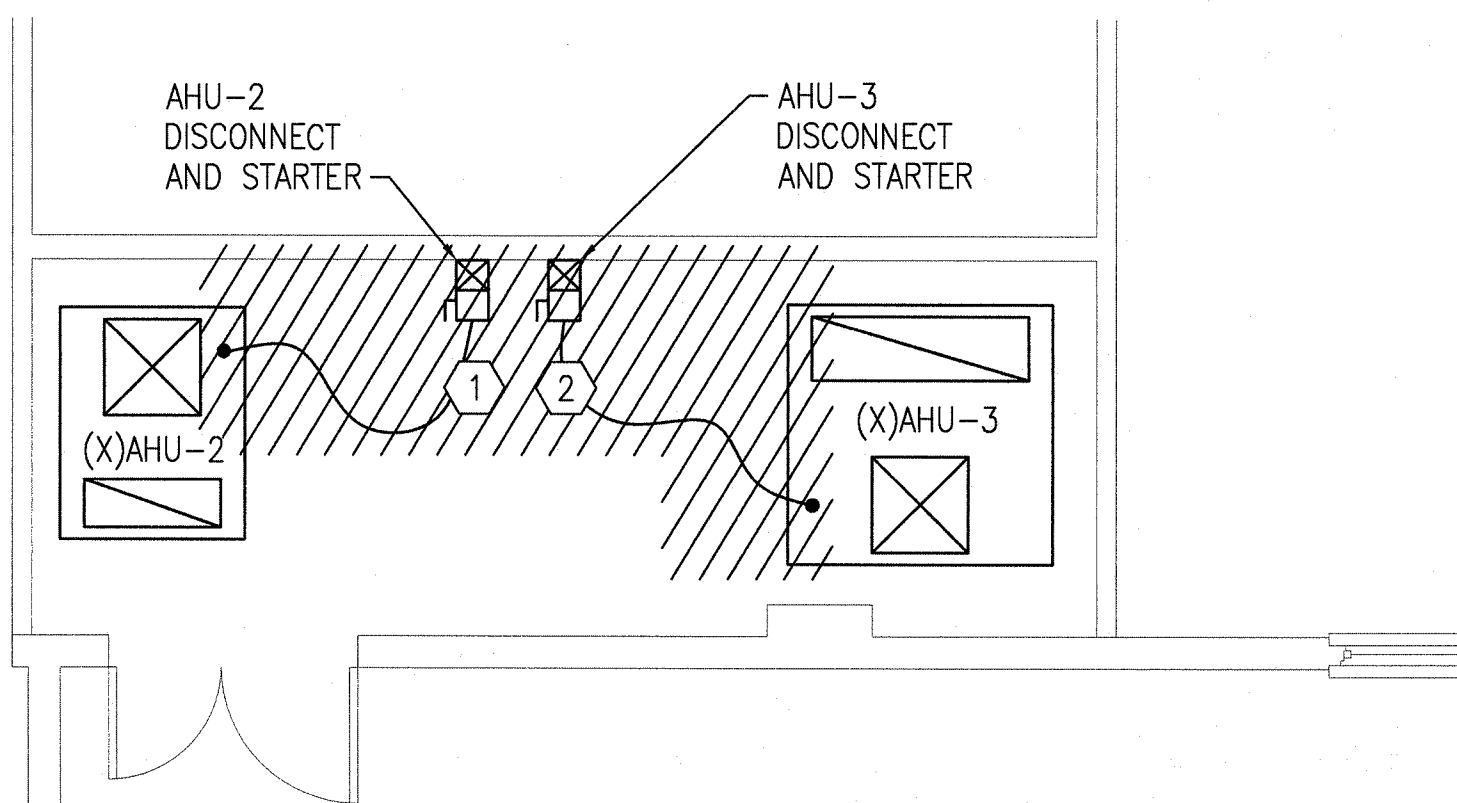
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ELECTRICAL ROOM 4 DEMOLITION PLAN

1/4"=1'-0"

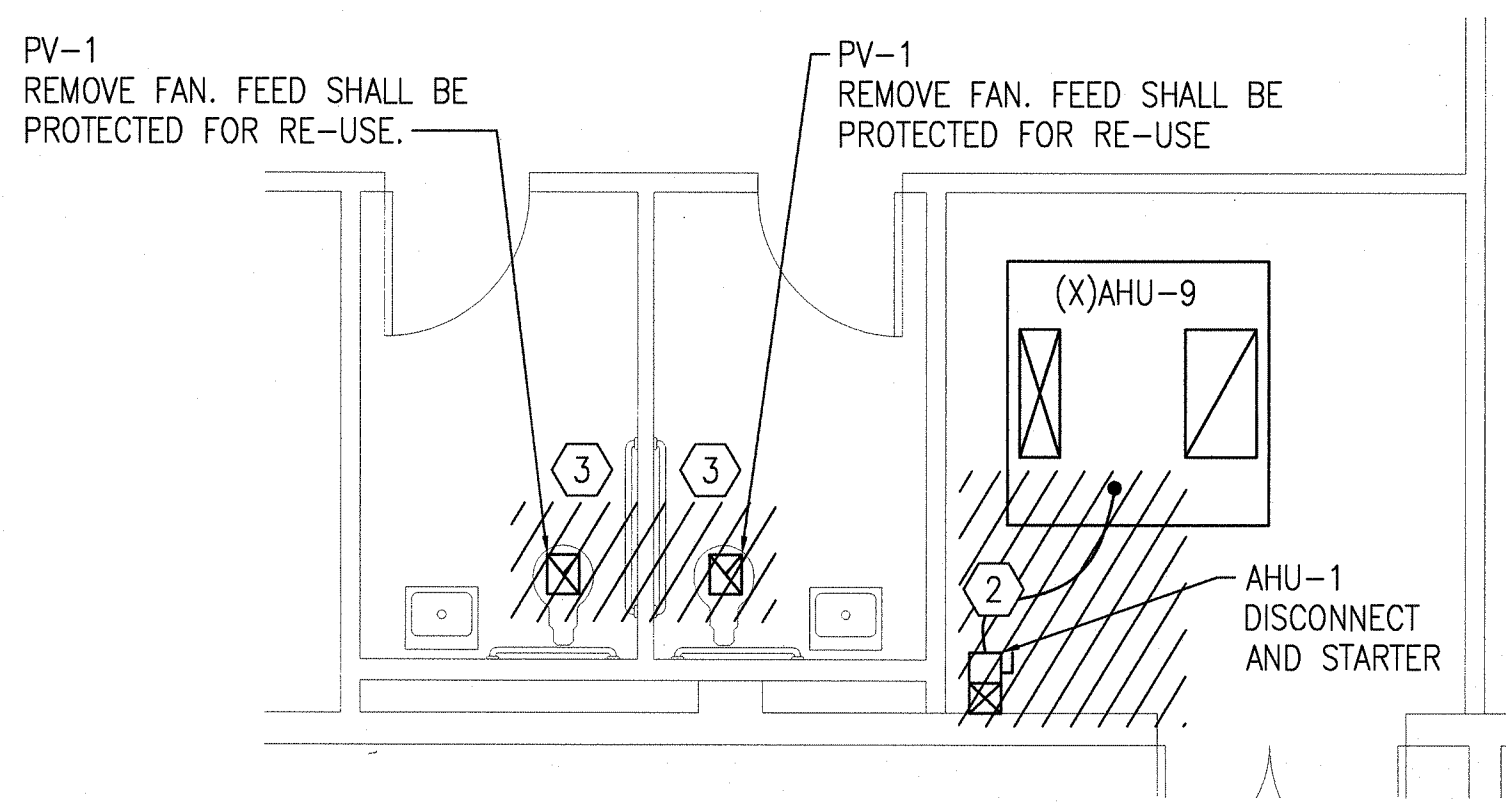
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ELECTRICAL ROOM 5 DEMOLITION PLAN

1/4"=1'-0"

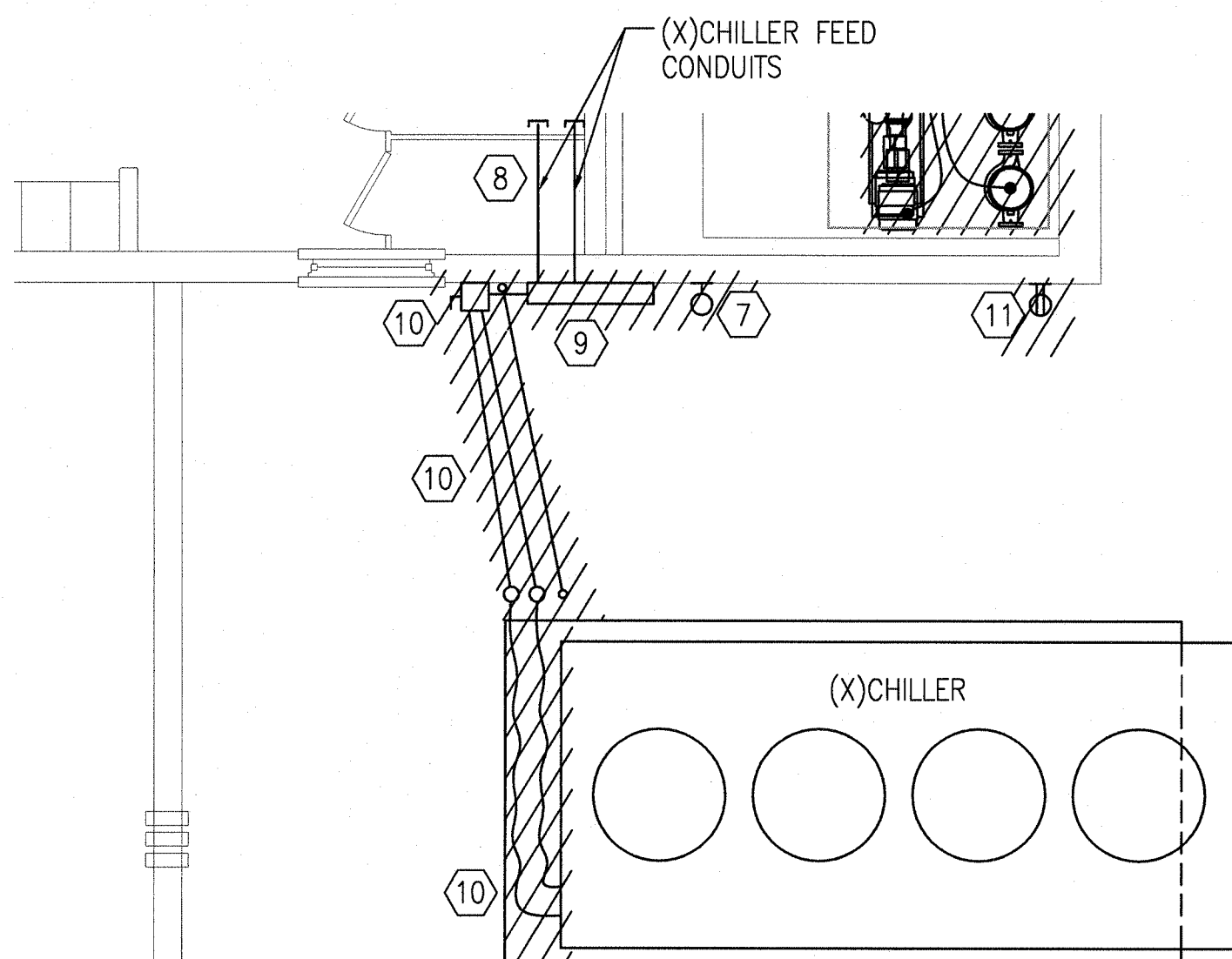
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ELECTRICAL ROOM 6 DEMOLITION PLAN

1/4"=1'-0"

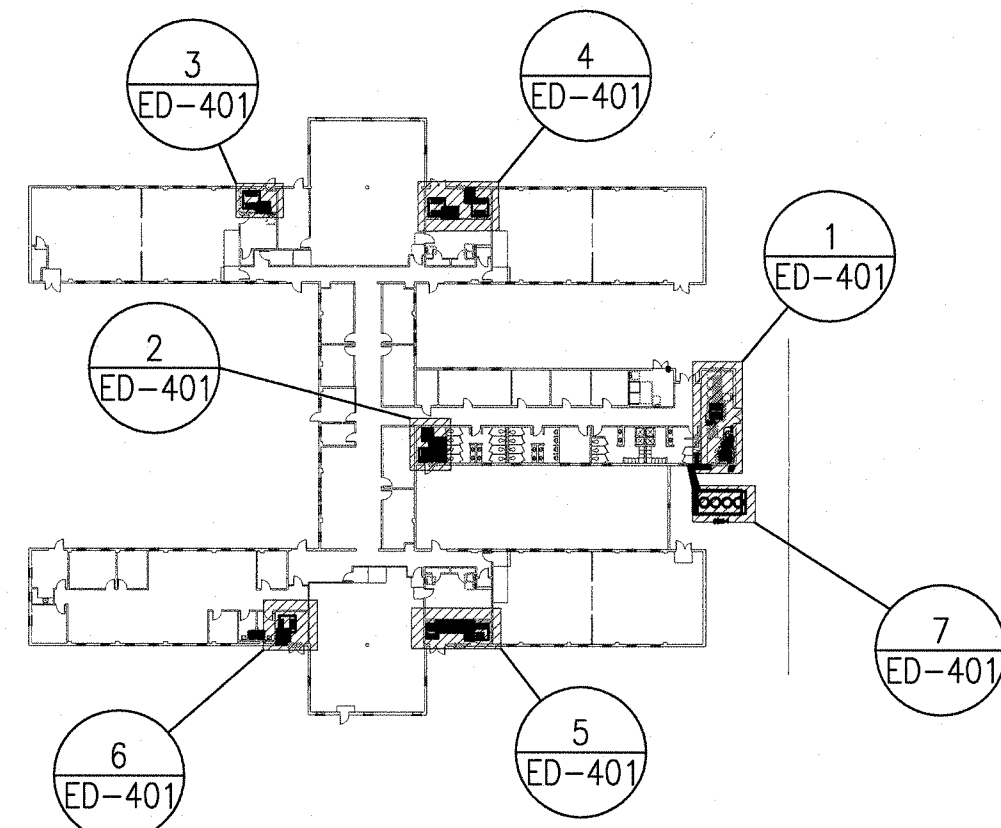
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ELECTRICAL CHILLER DEMOLITION PLAN

1/4"=1'-0"

7

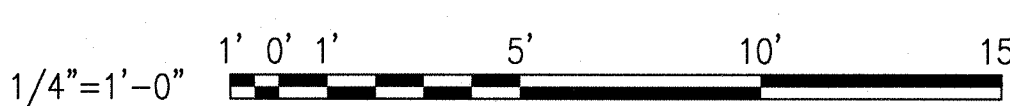


KEY PLAN
NOT TO SCALE

PLAN
NORTH



GRAPHIC SCALE



CBHF
Engineers, PLLC

2246 Yaupon Drive
Wilmington, NC 28401

Phone: 910.791.4000
Fax: 910.791.5266
www.cbhfengineers.com

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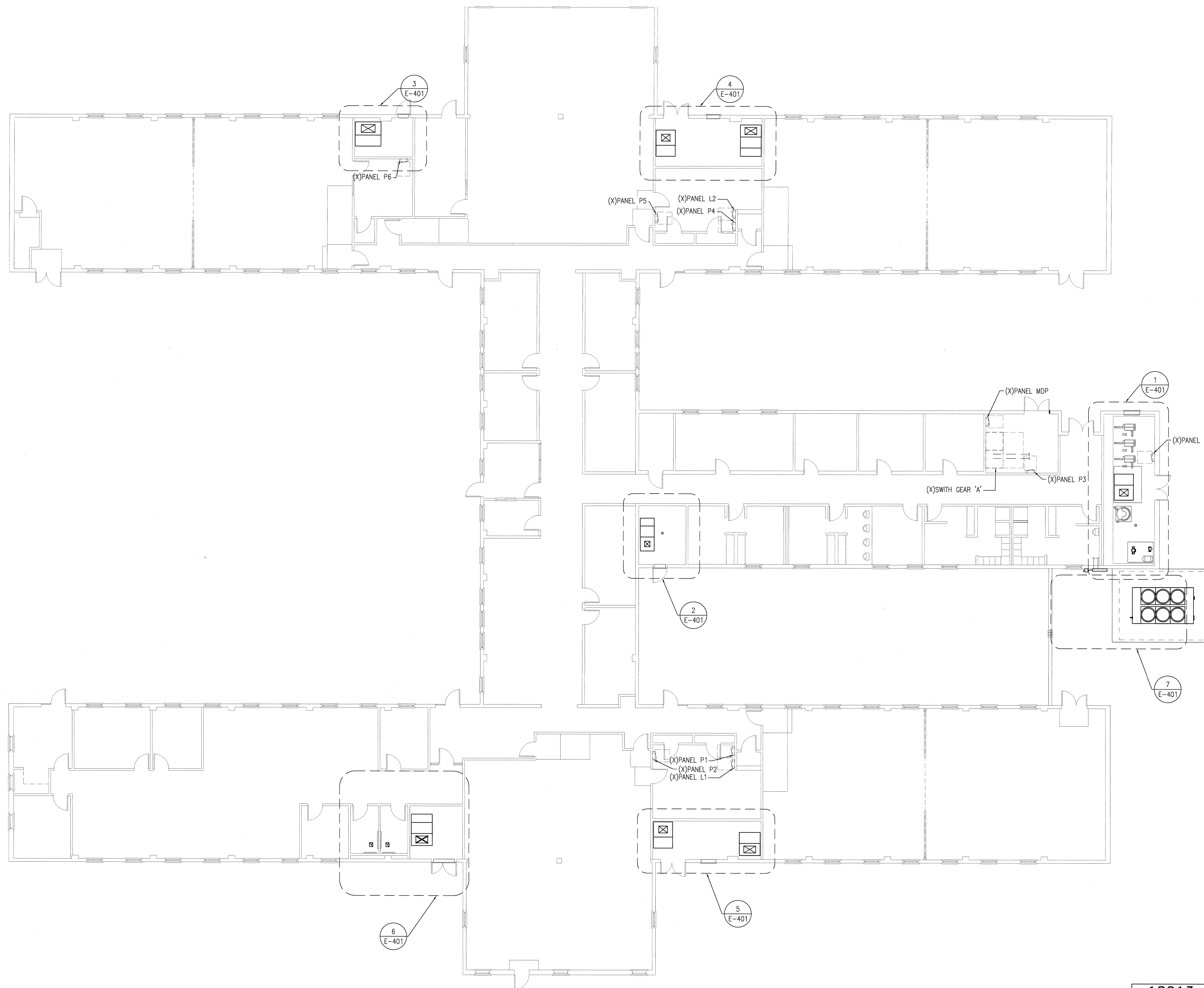
18013

SEAL
023311

1/9/19

FINAL		ED401	
		DEPARTMENT OF THE NAVY	
		NAVAL FACILITIES ENGINEERING COMMAND	
		MARINE CORPS BASE	
		CAMP LEJEUNE, NORTH CAROLINA	
		17-0003	
		REPLACE AHU'S AT	
		M324	
		ELECTRICAL DEMOLITION	
		ENLARGED FLOOR	
		PLANS	
DES.	JLG		
DR.	JLG		
CHK.	WAC		
SUBMITTED BY: WAC			
DESIGN DIR.	T H BURTON, PE		
APPROVED: PWO OR OICC	DATE	SIZE	CODE IDENT. NO
		F	80091
SATISFACTORY TO:		NAVFAC DRAWING NO.	
		60023567	
		CONST. CONTR.	
SCALE: -		SPEC. 05-17-0003	
		SHEET 21 OF 32	

REVISIONS			
SYM		DATE	APPROVED



DISCLOSURE OF INFORMATION:

CONTRACTOR SHALL COMPLY AS FOLLOWS:

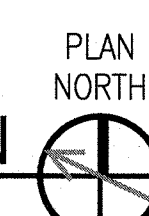
A. THE CONTRACTOR SHALL NOT RELEASE TO ANYONE OUTSIDE THE CONTRACTOR'S ORGANIZATION ANY UNCLASSIFIED INFORMATION, REGARDLESS OF MEDIUM (E.G. FILM, TAPE, DOCUMENT), PERTAINING TO ANY PART OF THIS CONTRACT OR ANY PROGRAM RELATED TO THIS CONTRACT, UNLESS--

1. THE CONTRACTING OFFICER HAS GIVEN PRIOR WRITTEN APPROVAL;
- OR
2. THE INFORMATION IS OTHERWISE IN THE PUBLIC DOMAIN BEFORE THE DATE OF THE RELEASE.

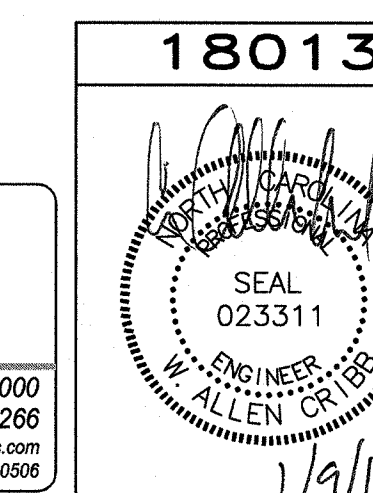
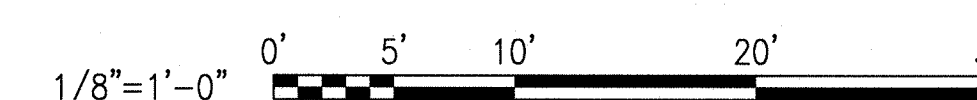
B. REQUESTS FOR APPROVAL SHALL IDENTIFY THE SPECIFIC INFORMATION TO BE RELEASED, THE MEDIUM TO BE USED, AND THE PURPOSE FOR THE RELEASE. THE CONTRACTOR SHALL SUBMIT ITS REQUEST TO THE CONTRACTING OFFICER AT LEAST 45 DAYS BEFORE THE PROPOSED DATE FOR RELEASE.

C. THE CONTRACTOR AGREES TO INCLUDE A SIMILAR REQUIREMENT IN EACH SUBCONTRACT UNDER THIS CONTRACT. SUBCONTRACTORS SHALL SUBMIT REQUESTS FOR AUTHORIZATION TO RELEASE THROUGH THE PRIME CONTRACTOR TO THE CONTRACTING OFFICER.

ELECTRICAL FLOOR PLAN
1/8"=1'-0"



GRAPHIC SCALE

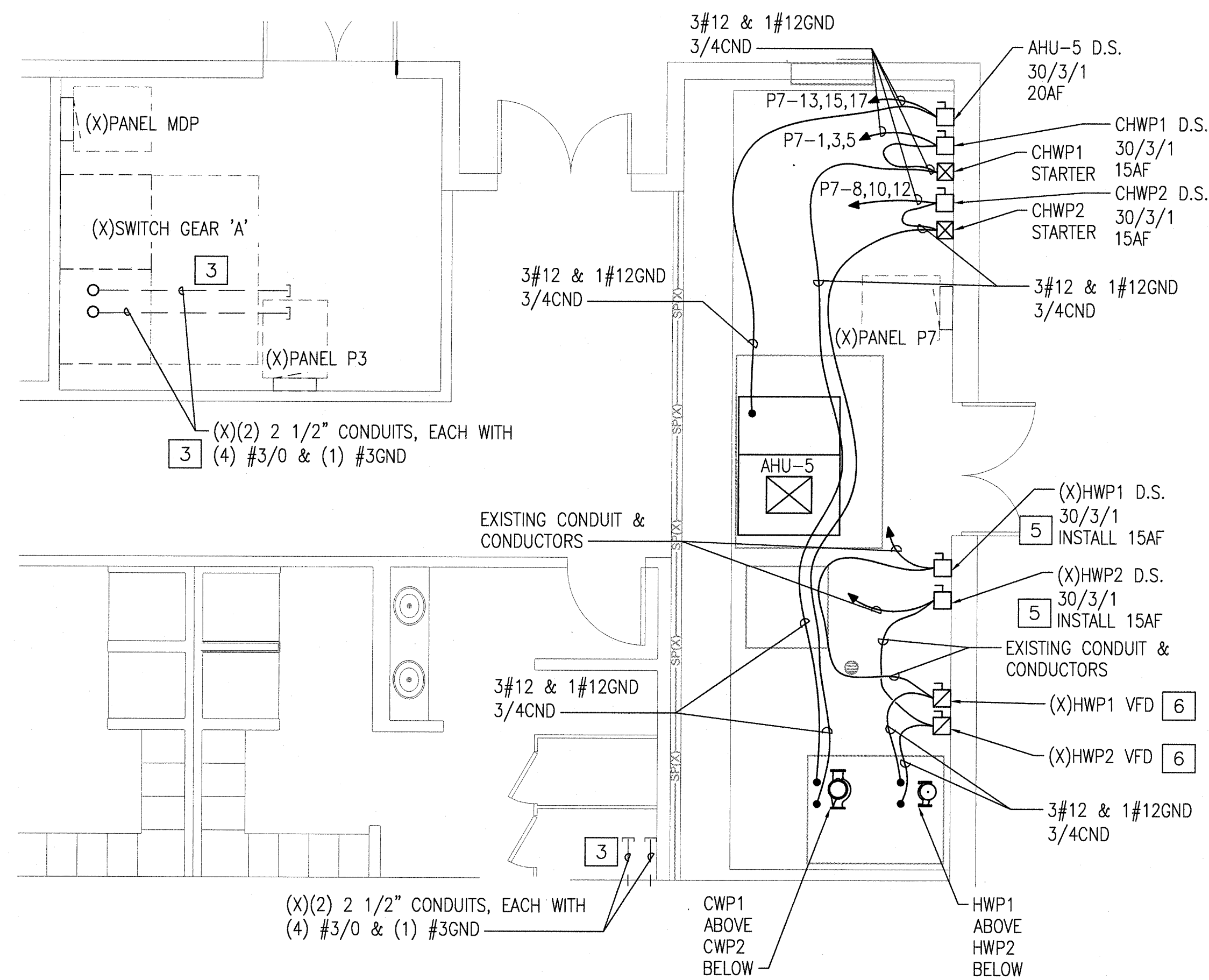


FINAL		E-101	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA			
17-0003 REPLACE AHU'S AT M324 ELECTRICAL FLOOR PLAN			
DES. JLG	DR. JLG	CHK. WAC	18013
SUBMITTED BY: WAC		DESIGN DIR. T H BURTON, PE	
APPROVED: PWO OR OICC	DATE	SIZE CODE IDENT. NO	NAVFAC DRAWING NO.
		F 80091	60023568
SATISFACTORY TO:		DATE	CONST. CONTR.
		SCALE: -	SPEC. 05-17-0003
		SHEET 22 OF 32	

REVISIONS		
SYM	DATE	APPROVED

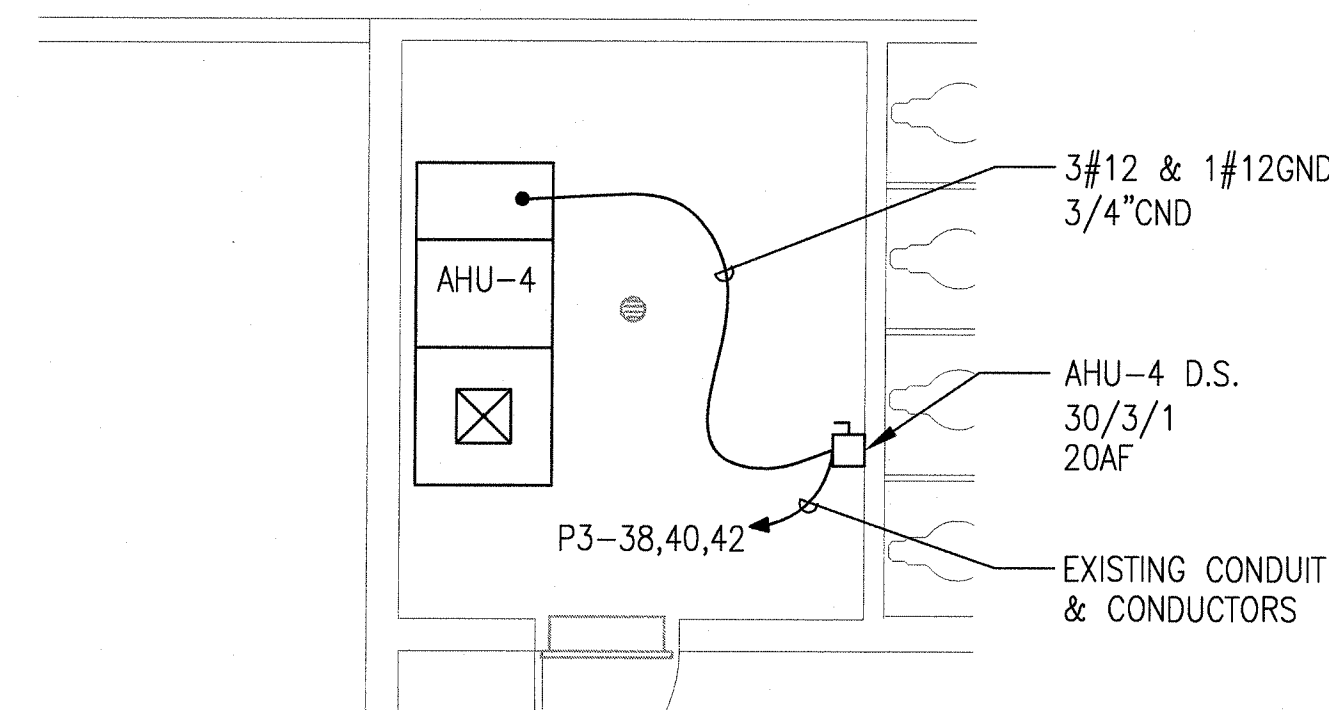
ELECTRICAL KEYED NOTES

- CONTRACTOR SHALL INSTALL, BOX, DEVICE AND WP IN-USE COVER USING CONDUIT AND CONDUCTORS PROTECTED DURING DEMOLITION.
- CONTRACTOR SHALL WIRE EXHAUST FAN/POWER VENTILATORS USING EXISTING FEED PROTECTED DURING DEMOLITION.
- CONTRACTOR SHALL RE-USE EXISTING CONDUITS PROTECTED DURING DEMOLITION ROUTING FROM THE EXTERIOR EXISTING WIREWAY LOCATION INTO THE TOP OF SWITCH GEAR 'A'. CONTRACTOR SHALL PROVIDE CONDUCTORS AS INDICATED.
- HEAT TRACE: CONTRACTOR SHALL INSTALL HEAT TRACE DISCONNECT, CONTROLLER, WIRE AND ACCESSORIES SUPPLIED AND INSTALLED BY CONTRACTOR. INSTALLATION INCLUDES MOUNTING, WIRING OF CONTROLLER AND HEAT TRACE COMPONENTS. CONTRACTOR SHALL COORDINATE FINAL LOCATION OF HEAT TRACE EQUIPMENT WITH THE MECHANICAL CONTRACTOR.
- HWP DISCONNECT: CONTRACTOR SHALL RE-USE DISCONNECT PROTECTED DURING DEMOLITION AND INSTALL FUSES AS INDICATED.
- HWP VARIABLE FREQUENCY DRIVE(VFD): CONTRACTOR SHALL RE-USE VFD PROTECTED DURING DEMOLITION.
- VARIABLE COOLING & HEATING VAV DIFFUSER POWER: CONTRACTOR SHALL PROVIDE 120V SOURCE FOR CONTROLS CONTRACTOR 24v TRANSFORMER. COORDINATE FINAL LOCATIONS WITH CONTROLS CONTRACTOR.



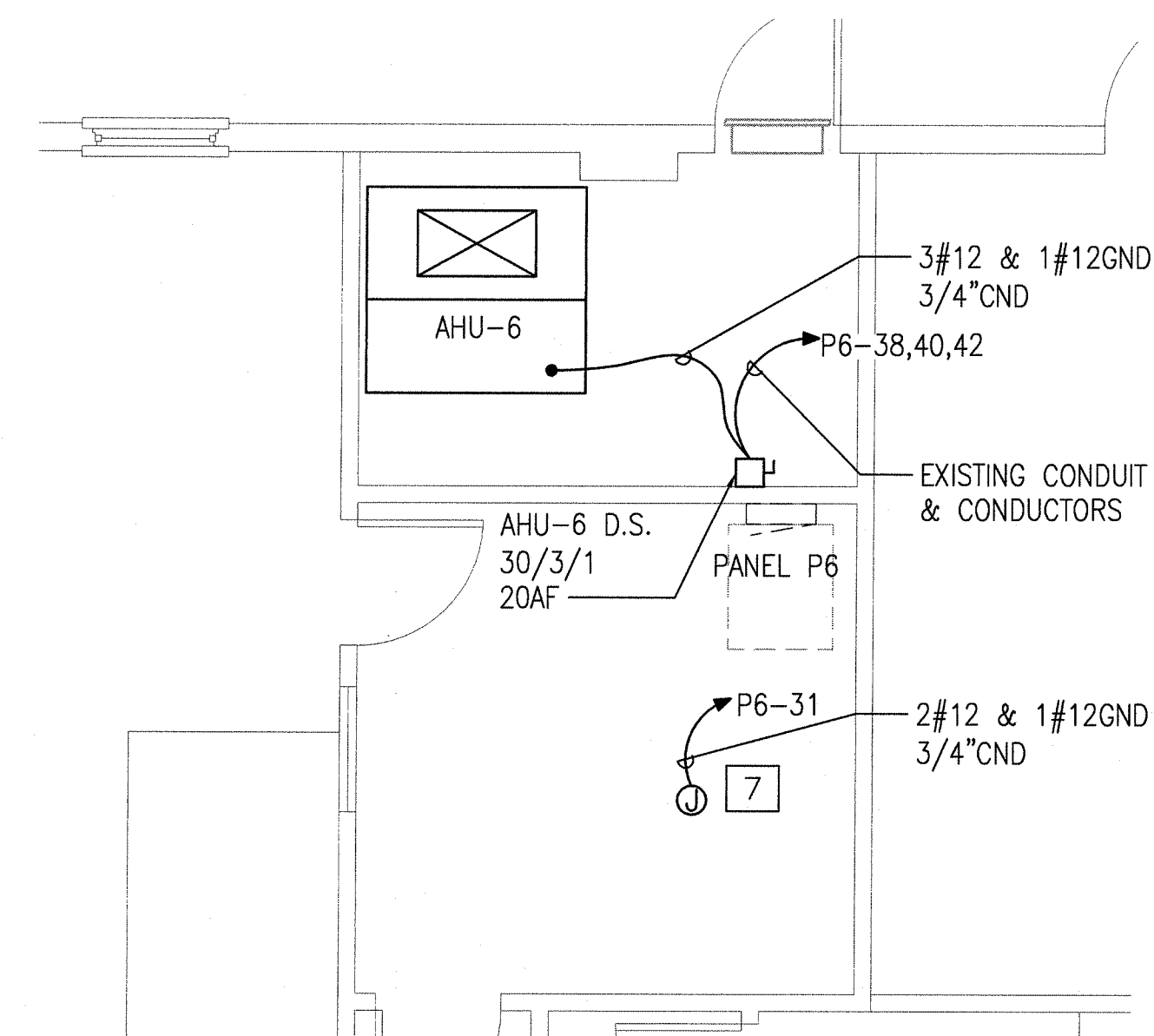
ENLARGED MECHANICAL ROOM 1 PLAN

1/4"=1'-0"



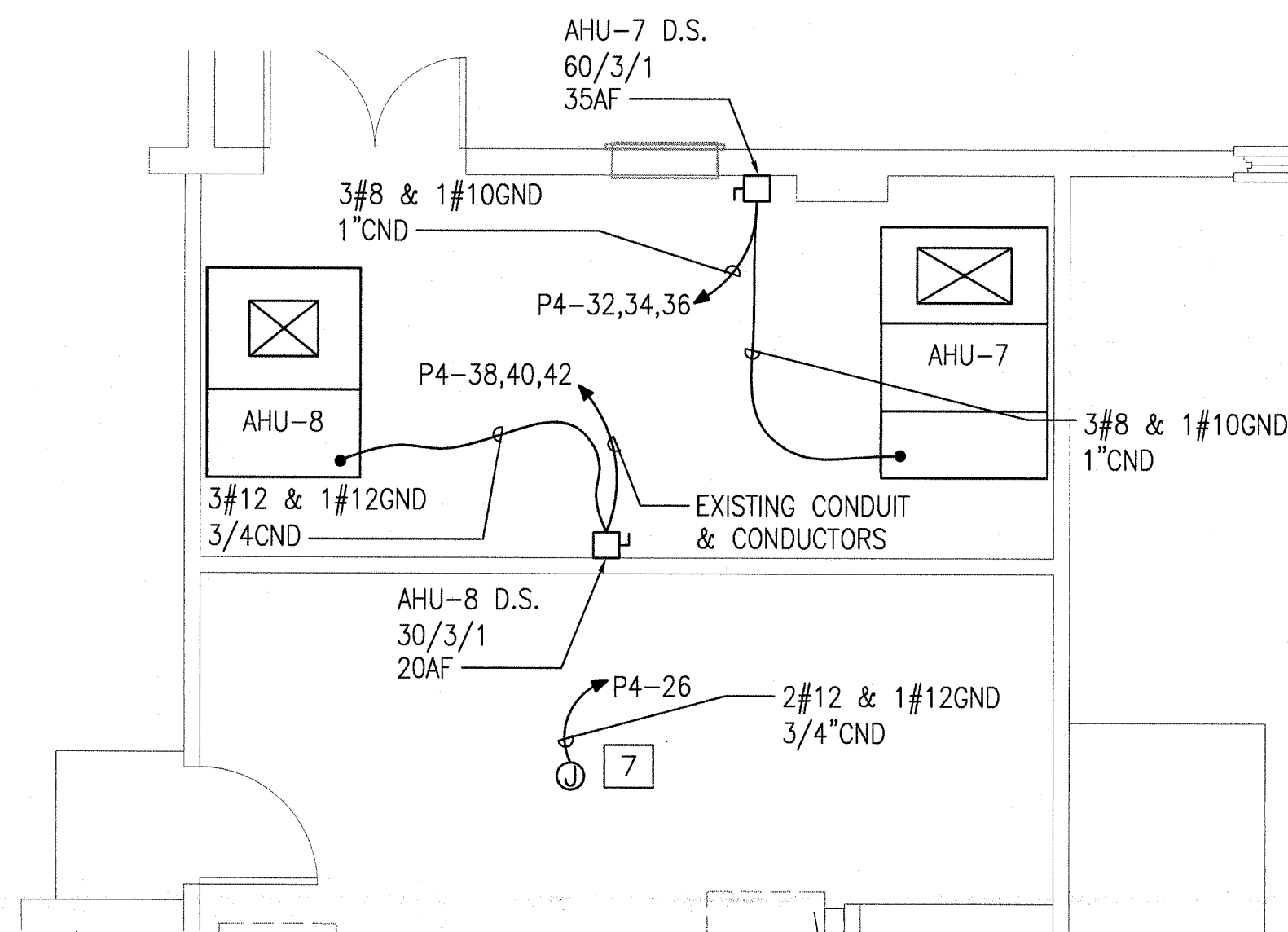
ENLARGED MECHANICAL ROOM 2 PLAN

1/4"=1'-0"



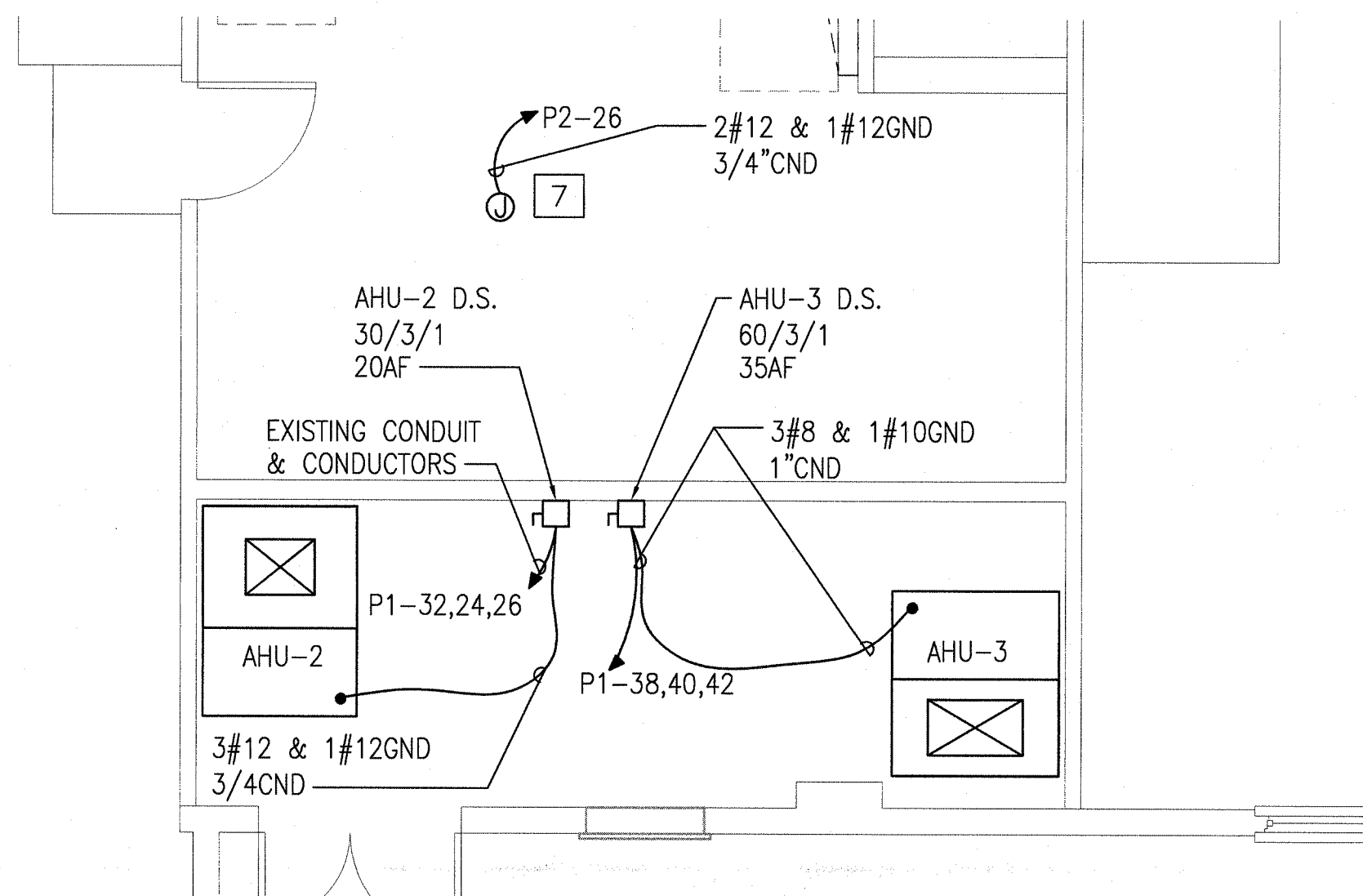
ENLARGED MECHANICAL ROOM 3 PLAN

1/4"=1'-0"



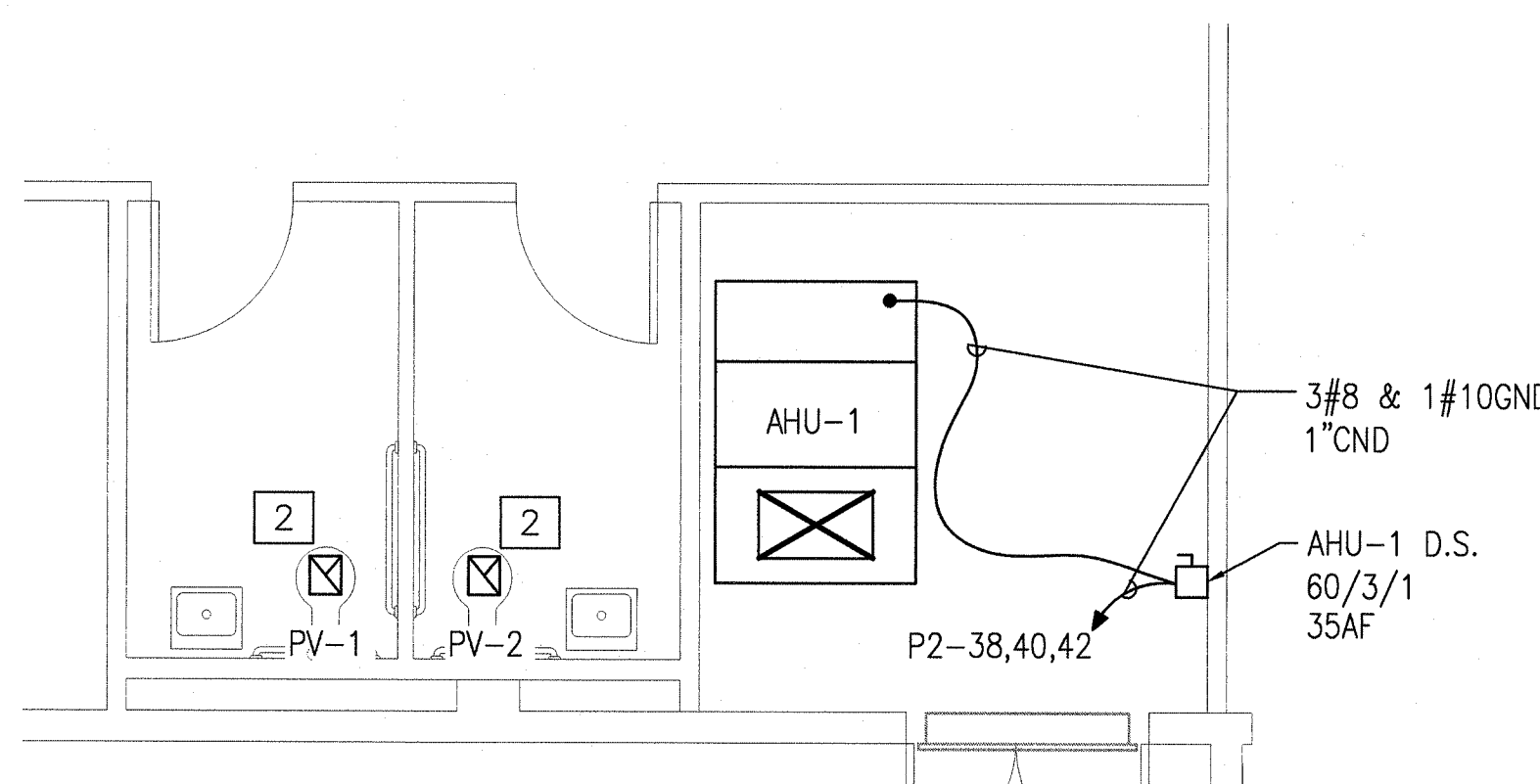
ENLARGED MECHANICAL ROOM 4 PLAN

1/4"=1'-0"



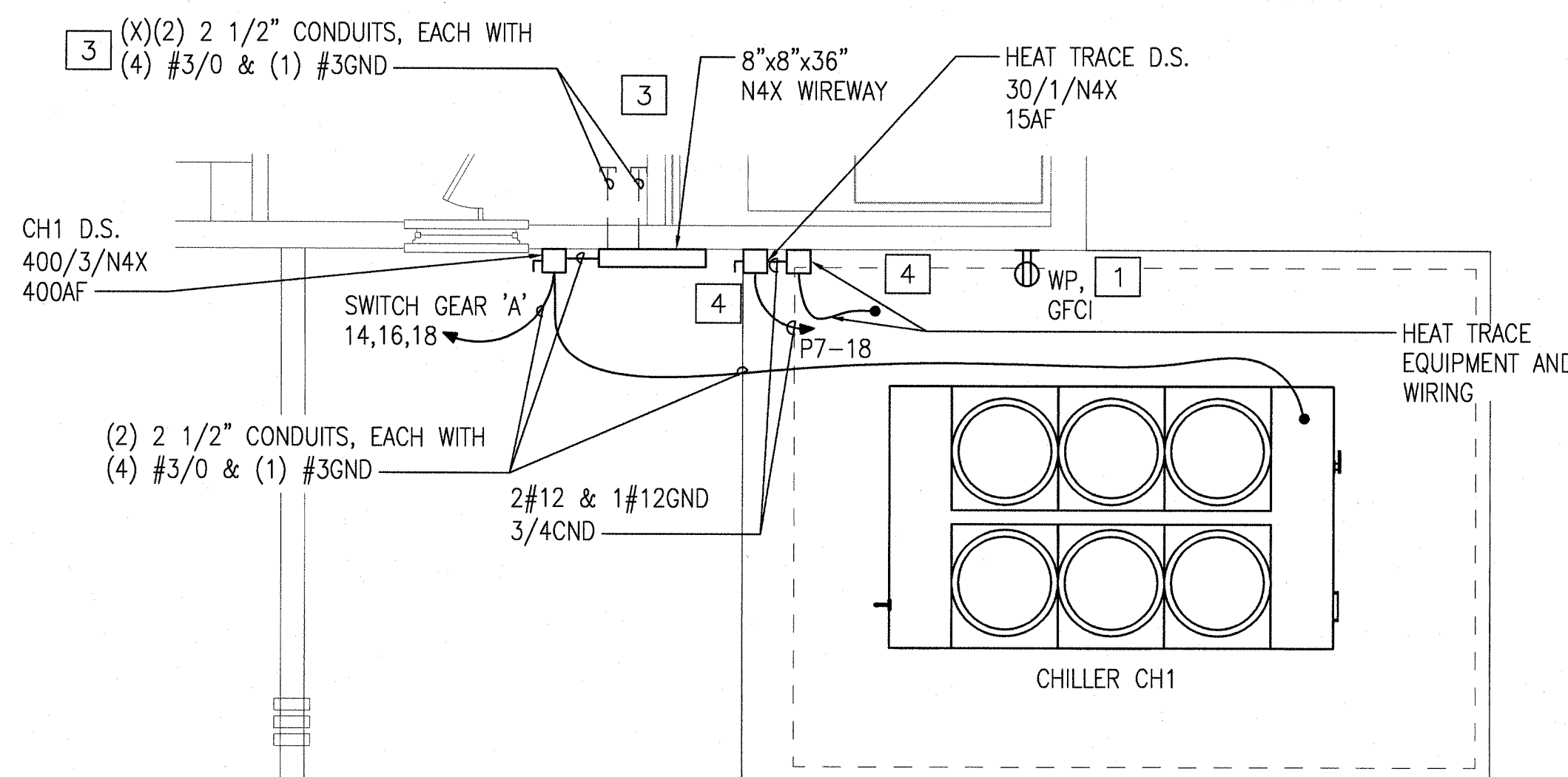
ENLARGED MECHANICAL ROOM 5 PLAN

1/4"=1'-0"



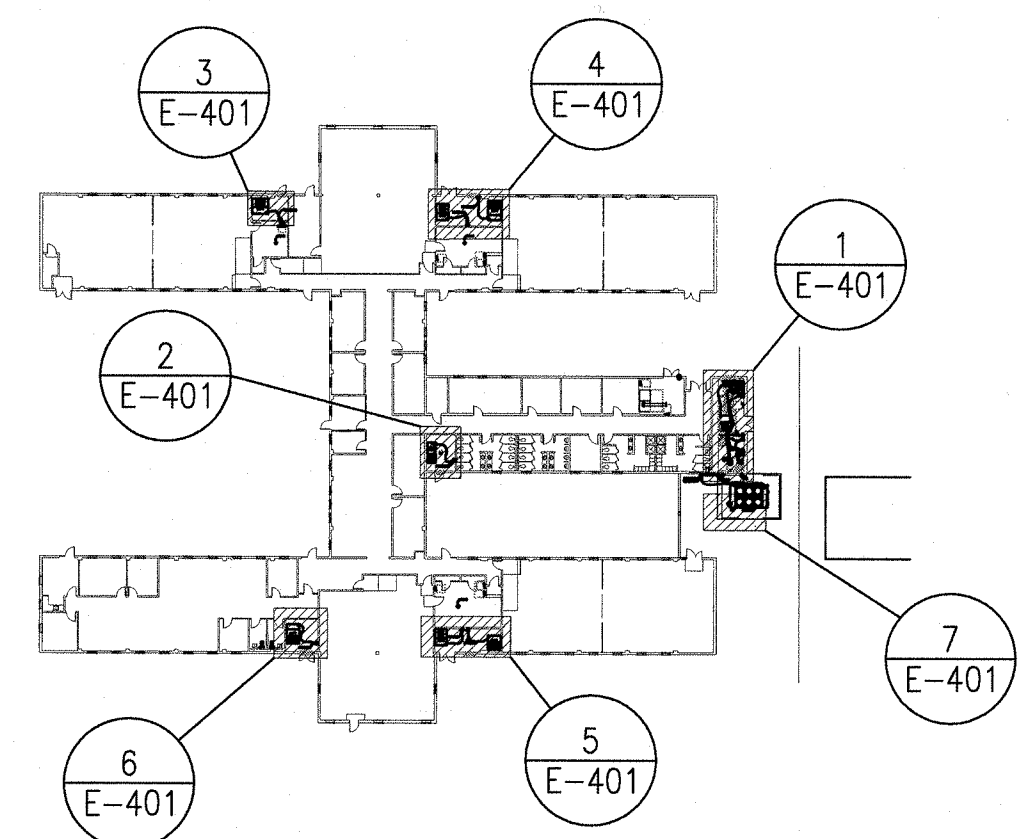
ENLARGED MECHANICAL ROOM 6 PLAN

1/4"=1'-0"



ENLARGED CHILLER PLAN

1/4"=1'-0"



KEY PLAN

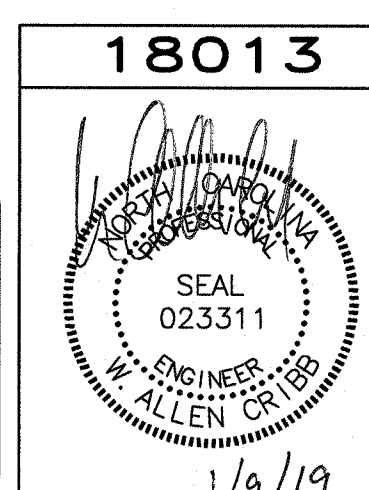
NOT TO SCALE

PLAN NORTH



GRAPHIC SCALE

1/4"=1'-0" 1' 0' 1' 5'



FINAL

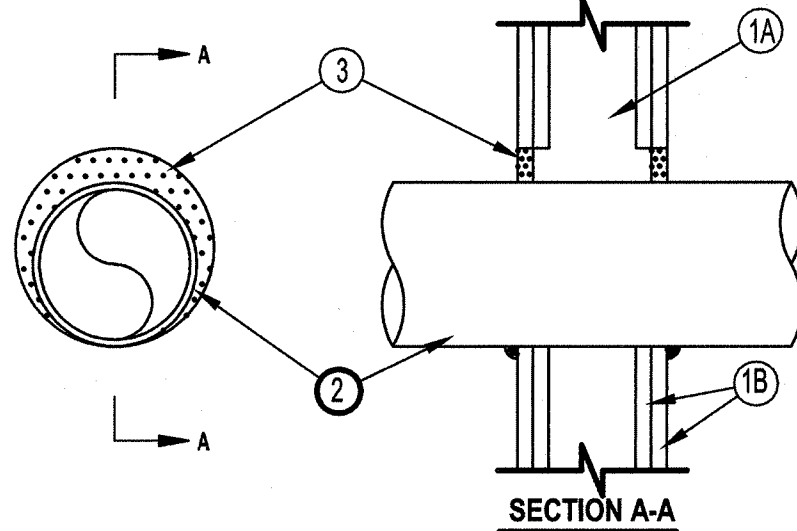
E-401

DES. JLG		MARINE CORPS BASE	
DR. JLG		CAMP LEJEUNE, NORTH CAROLINA	
CHK. WAC		17-0003	
SUBMITTED BY: WAC		REPLACE AHU'S AT	
DESIGN DIR. T.H. BURTON, PE		M324	
APPROVED: PWO OR OICC		ELECTRICAL	
DATE		ENLARGED FLOOR	
SATISFACTORY TO:		PLAN	
DATE		NAVFAC DRAWING NO.	
F 80091		60023569	
SCALE: -		CONST. CONTR.	
SPEC. 05-17-0003		SHEET 23 OF 32	

REVISIONS			
SYM		DATE	APPROVED

System No W-L-1054

ANSI / UL1479 (ASTM E814)
F Ratings -- 1 and 2 Hr (See Items 1 & 3)
T Ratings -- 0 Hr
L Ratings at Ambient -- Less Than 1 CFM / sq ft
L Ratings at 400 F -- Less Than 1 CFM / sq ft

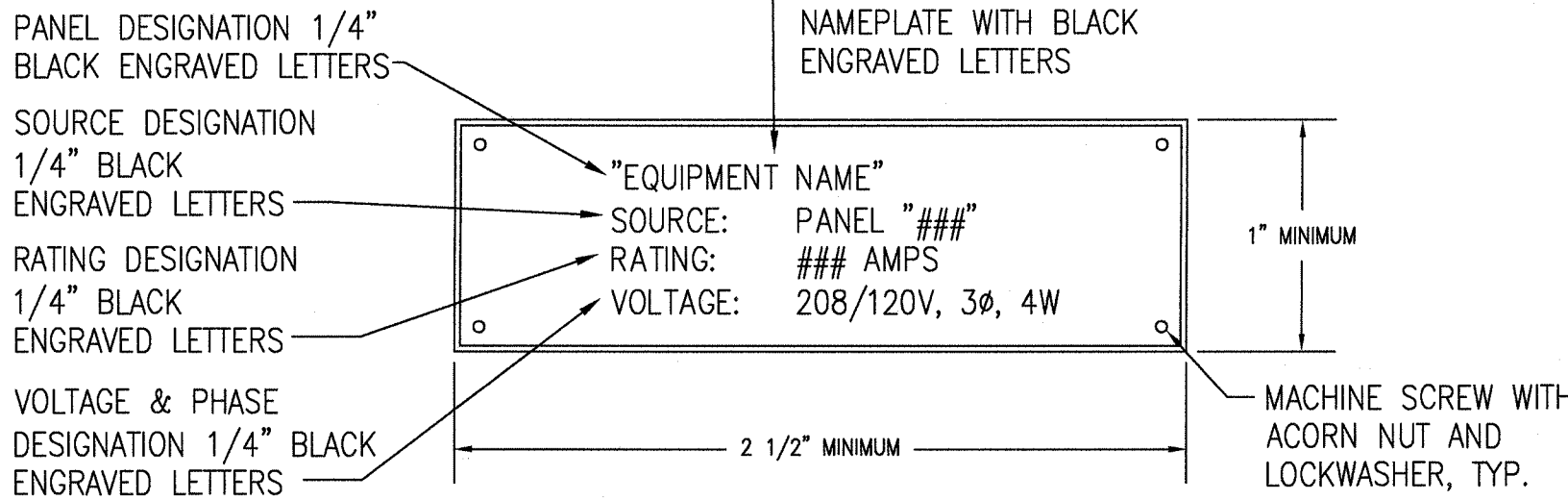


1. WALL ASSEMBLY --- THE 1 OR 2 HR FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300A OR U400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
- A. STUDS --- WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED 16 IN. OC. STEEL STUDS TO BE MIN 2-1/2 IN. WIDE AND SPACED MAX 24 IN. OC. WHEN STEEL STUDS ARE USED AND THE DIAM OF OPENING EXCEEDS THE WIDTH OF STUD CAVITY, THE OPENING SHALL BE FRAMED ON ALL SIDES USING LENGTHS OF STEEL STUD INSTALLED BETWEEN THE VERTICAL STUDS AND SCREW-ATTACHED TO THE STEEL STUDS AT EACH END. THE FRAMED OPENING IN THE WALL SHALL BE 4 TO 6 IN. WIDER AND 4 TO 6 IN. HIGHER THAN THE DIAM OF THE PENETRATING ITEM SUCH THAT, WHEN THE PENETRATING ITEM IS INSTALLED IN THE OPENING, A 2 TO 3 IN. CLEARANCE IS PRESENT BETWEEN THE PENETRATING ITEM AND THE FRAMING ON ALL FOUR SIDES.
- B. GYPSUM BOARD* --- 5/8 IN. THICK, 4 FT WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM BOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAM OF OPENING IS 32-1/4 IN. FOR STEEL STUD WALLS. MAX DIAM OF OPENING IS 14-1/2 IN. FOR WOOD STUD WALLS.
- THE F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE FIRE RATING OF THE WALL ASSEMBLY.
2. THROUGH-PENETRANTS --- ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE SHALL BE MIN 0 IN. TO MAX 2-1/4 IN. PIPE MAY BE INSTALLED WITH CONTINUOUS POINT CONTACT. PIPE, CONDUIT OR TUBING MAY BE INSTALLED AT AN ANGLE NOT GREATER THAN 45 DEGREES FROM PERPENDICULAR. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:
- A. STEEL PIPE --- NOM 30 IN DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
- B. IRON PIPE --- NOM 30 IN. DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.
- C. CONDUIT --- NOM 4 IN DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR 6 IN. DIAM STEEL CONDUIT.
- D. COPPER TUBING --- NOM 6 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
- E. COPPER PIPE --- NOM 6 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
3. FILL, VOID OR CAVITY MATERIAL* --- SEALANT --- MIN 5/8 IN. (16 MM) THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH BOTH SURFACES OF WALL. AT THE POINT OR CONTINUOUS CONTACT LOCATIONS BETWEEN PIPE AND WALL, A MIN 1/2 IN. (13 MM) DIAM BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE PIPE WALL INTERFACE ON BOTH SURFACES OF WALL.
- HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC --- FS-ONE SEALANT
- *INDICATES SUCH PRODUCTS SHALL BEAR THE UL OR CUL CERTIFICATION MARK FOR JURISDICTIONS EMPLOYING THE UL OR CUL CERTIFICATION (SUCH AS CANADA), RESPECTIVELY.

1 AND 2 HOUR FIREWALL PENETRATION

NOT TO SCALE

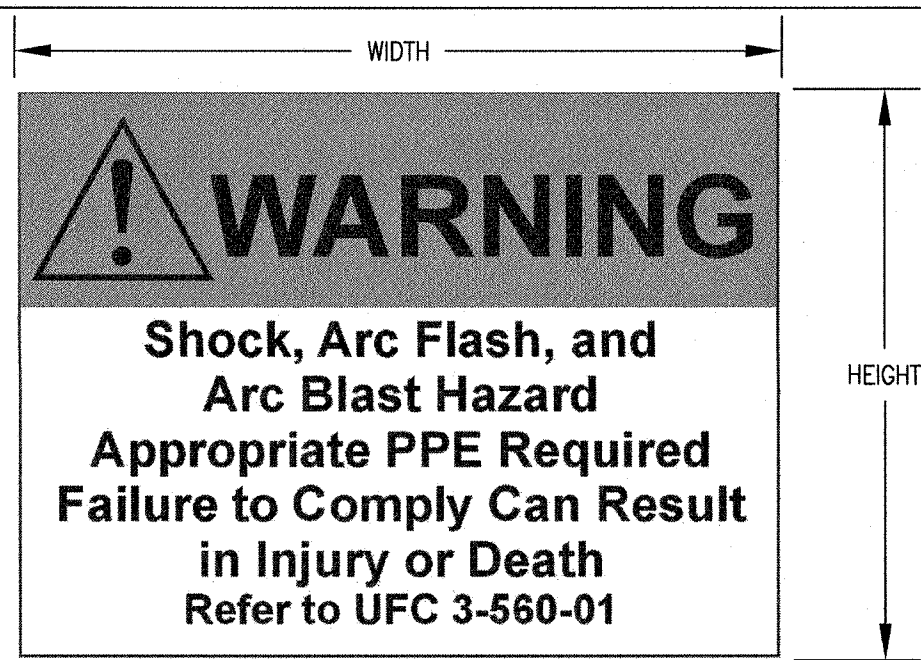
1



TYPICAL EQUIPMENT NAMEPLATE DETAIL

NOT TO SCALE

2



NOTES:

1. PROVIDE SELF-ADHESIVE VINYL LABEL TO AFFIX TO ELECTRICAL EQUIPMENT TO WARN OF ARC FLASH HAZARDS.
2. THE LABEL FORMAT AND TEXT SHALL BE IN ACCORDANCE WITH THE FIGURE.
3. THE LABEL SHALL BE LOCATED ON THE EQUIPMENT TO BE CLEARLY VISIBLE TO QUALIFIED PERSONS BEFORE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE OF THE EQUIPMENT.
4. THE SIZE OF THE LABEL SHALL BE MINIMUM:
- | EQUIPMENT TYPE | HEIGHT | WIDTH |
|----------------|--------|-------|
| INDOOR | 2" | 3" |
| OUTDOOR | 3" | 4.5" |
5. A DOWNLOADABLE WINDOWS METAFILE IS AVAILABLE ON THE WHOLE BUILDING DESIGN GUIDE WEBSITE ([WWW.WBDG.ORG](http://www.wbdg.org)) FOR USE IN A LABEL MAKING MACHINE.
- A. THE FILE IS LOCATED ON THE "NAVFAC CADD DETAILS" PAGE. TO NAVIGATE TO THIS LOCATION, FOLLOW: [HOME > DOCUMENTS & REFERENCES > CCB > CADD LIBRARY > NAVFAC CADD RESOURCES > NAVFAC CADD DETAILS.](#)
- B. ALTERNATIVELY, TYPE IN THE FOLLOWING ADDRESS IN INTERNET EXPLORER: [HTTP://WWW.WBDG.ORG/CCB/BROWSE_CAT.PHP?C=232](http://www.wbdg.org/ccb/browse_cat.php?C=232)

GENERAL ARC FLASH WARNING LABEL

ELECTRICAL EQUIPMENT WARNING LABEL DETAIL

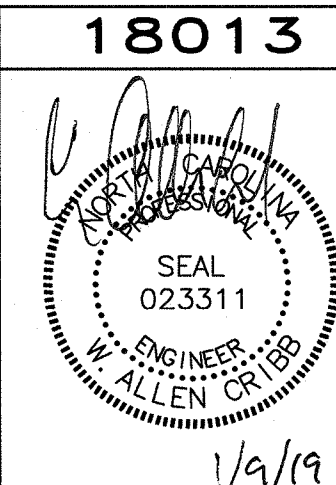
NOT TO SCALE

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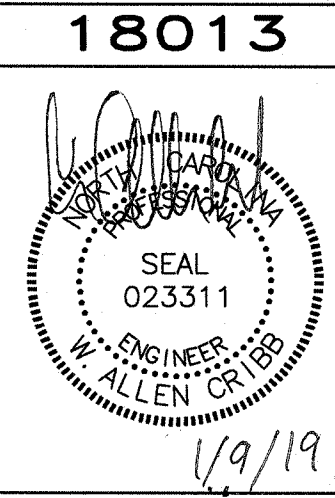
DISCLOSURE OF INFORMATION:

CONTRACTOR SHALL COMPLY AS FOLLOWS:

- A. THE CONTRACTOR SHALL NOT RELEASE TO ANYONE OUTSIDE THE CONTRACTOR'S ORGANIZATION ANY UNCLASSIFIED INFORMATION, REGARDLESS OF MEDIUM (E.G. FILM, TAPE, DOCUMENT), PERTAINING TO ANY PART OF THIS CONTRACT OR ANY PROGRAM RELATED TO THIS CONTRACT, UNLESS--
1. THE CONTRACTING OFFICER HAS GIVEN PRIOR WRITTEN APPROVAL; OR
2. THE INFORMATION IS OTHERWISE IN THE PUBLIC DOMAIN BEFORE THE DATE OF THE RELEASE.
- B. REQUESTS FOR APPROVAL SHALL IDENTIFY THE SPECIFIC INFORMATION TO BE RELEASED, THE MEDIUM TO BE USED, AND THE PURPOSE FOR THE RELEASE. THE CONTRACTOR SHALL SUBMIT ITS REQUEST TO THE CONTRACTING OFFICER AT LEAST 45 DAYS BEFORE THE PROPOSED DATE FOR RELEASE.
- C. THE CONTRACTOR AGREES TO INCLUDE A SIMILAR REQUIREMENT IN EACH SUBCONTRACT UNDER THIS CONTRACT. SUBCONTRACTORS SHALL SUBMIT REQUESTS FOR AUTHORIZATION TO RELEASE THROUGH THE PRIME CONTRACTOR TO THE CONTRACTING OFFICER.



FINAL		E-501	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA			
17-0003 REPLACE AHU'S AT M324 ELECTRICAL RISER DIAGRAM & DETAILS			
DES. JLG	DR. JLG	CHK. WAC	SUBMITTED BY: WAC
DESIGN DIR. T H BURTON, PE	APPROVED: PWO OR OICC	DATE	SIZE CODE IDENT. NO
SATISFACTORY TO:		DATE	NAVFAC DRAWING NO.
			60023570
			CONST. CONTR.
SCALE: -		SPEC. 05-17-0003	SHEET 24 OF 32



REVISIONS			
SYM		DATE	APPROVED

(X)PANEL P4

TYPE: NEMA 1 BOLT-ON DOOR-IN-DOOR WITH-IN HINGED TRIM FRONT COVER	208 MOUNT:	120 SURFACE	V,	3 PH,	4 WIRE	PROVIDE IF CHECKED:	EQUIP. GROUND BUS NEUTRAL BUS GUTTER TAPS SUB-FEED LUGS			
LOAD SERVED	LOAD VA	CKT BKR	CKT #	LOAD VA			CKT #	CKT BKR	LOAD VA	LOAD SERVED
(X)PROJECTOR	300	20/1	1	A	B	C	2	20/1	700	(X)PC
(X)PC	1,000	20/1	3		2,000		4	20/1	1,000	(X)PC
(X)PC	1,000	20/1	5			1,700	6	20/1	700	(X)PC
(X)PC	700	20/1	7	1,700			8	20/1	1,000	(X)PC
(X)PC	1,000	20/1	9		1,600		10	20/1	600	(X)RECEPT
(X)PC	700	20/1	11			1,200	12	20/1	500	(X)RECEPT
(X)PC	1,000	20/1	13	1,800			14	20/1	800	(X)RECEPT
(X)PC	700	20/1	15		1,300		16	20/1	600	(X)RECEPT
(X)PC	1,000	20/1	17			1,600	18	20/1	600	(X)RECEPT
(X)PC	700	20/1	19	1,500			20	20/1	800	(X)RECEPT
(X)PC	1,000	20/1	21		1,600		22	20/1	600	(X)RECEPT
(X)PC	700	20/1	23			1,200	24	20/1	500	(X)RECEPT & UH
(X)PC	1,000	20/1	25	1,100			26	20/1	100	VAV DIFFUSER (NOTE 3)
(X)SPARE		20/1	27				28	-		(X)SPACE
(X)SPARE		20/1	29				30	-		(X)SPACE
(X)SPACE		-	31	2,042			32	35/3	2,042	AHU-7 (NOTE 2)
(X)SPACE		-	33		2,042		34		2,042	
(X)SPACE		-	35			2,042	36		2,042	
(X)SPACE		-	37	1,165			38	20/3	1,165	AHU-8 (NOTE 2)
(X)SPACE		-	39		1,165		40		1,165	
(X)SPACE		-	41			1,165	42		1,165	
NOTES:				10,307	9,707	8,907	TOTAL VOLT AMPS		225	A. BUS (COPPER)
1. HVAC & REFRIGERATION EQUIPMENT SHALL USE TYPE HACR BREAKERS.				86	81	74	CONN. AMPS		225	A. MAIN LUGS
2. CONTRACTOR SHALL REPLACE EXISTING BREAKER WITH BREAKER AS INDICATED.										
BREAKER SHALL BE COMPATIBLE AND SHALL MATCH EXISTING PANEL AIC RATING.										
3. CONTRACTOR SHALL INSTALL BREAKER AS INDICATED.										
BREAKER SHALL BE COMPATIBLE AND SHALL MATCH EXISTING PANEL AIC RATING.										

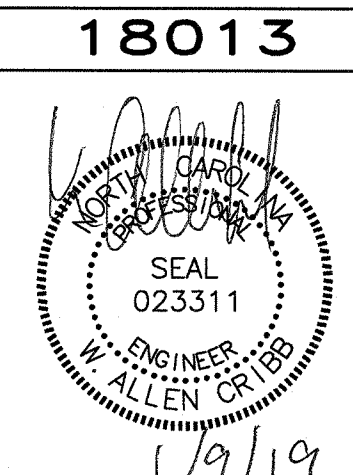
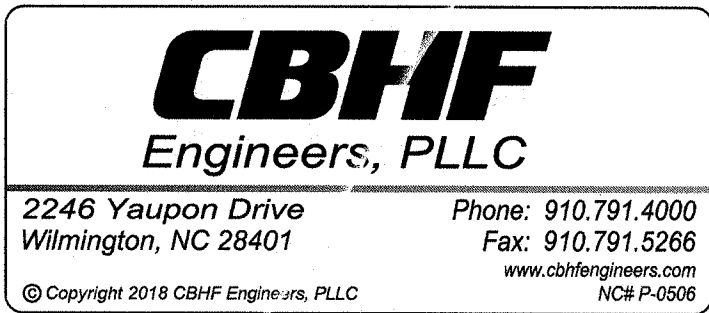
(X)PANEL P7

TYPE: NEMA 1 BOLT-ON DOOR-IN-DOOR WITH-IN HINGED TRIM FRONT COVER	208 MOUNT:	120 SURFACE	V,	3 PH,	4 WIRE	PROVIDE IF CHECKED:	EQUIP. GROUND BUS NEUTRAL BUS GUTTER TAPS SUB-FEED LUGS			
LOAD SERVED	LOAD VA	CKT BKR	CKT #	LOAD VA			CKT #	CKT BKR	LOAD VA	LOAD SERVED
CWP1	901	15/3	1	A	B	C	2	15/3	792	HWP1
	901		3	1,693			4		792	
	901		5				6		792	
(X)FAN		15/3	7	901			8	15/3	901	CWP2
			9		901		10		901	
			11			901	12		901	
AHU-5	1,165	15/3	13	1,165			14	20/1		(X)RCPT
	1,165		15		1,165		16	20/1		(X)IN LINE PUMP
	1,165		17			2,365	18	20/1	1,200	HEAT TRACE (NOTE 2.3)
(X)RCPT & UH		20/1	19				20	30/2		(X)SPARE
(X)EF		20/1	21				22			
(X)B1-1 & BP1-1 (SEE NOTE 1)	1,164	15/1	23			1,956	24	15/3	792	HWP2
(X)B1-3 & BP1-3 (SEE NOTE 1)	1,164	15/1	25	1,956			26		792	
(X)B1-3 & BP1-3 (SEE NOTE 1)	1,164	15/1	27		1,956		28		792	
(X)GWH1-1 (SEE NOTE 1)	744	15/1	29			744	30			SPACE
NOTES:							TOTAL VOLT AMPS		100 A. BUS (COPPER)	
1. HVAC & REFRIGERATION EQUIPMENT SHALL USE TYPE HACR BREAKERS.							48		100 A. MAIN LUGS	
2. PROVIDE GFI BREAKER BREAKER SHALL BE COMPATIBLE AND SHALL MATCH EXISTING PANEL AIC RATING.							48			
3. CONTRACTOR SHALL REPLACE EXISTING BREAKER WITH BREAKER AS INDICATED.							64			
BREAKER SHALL BE COMPATIBLE AND SHALL MATCH EXISTING PANEL AIC RATING.										

(X)PANEL P6

TYPE: NEMA 1 BOLT-ON DOOR-IN-DOOR WITH-IN HINGED TRIM FRONT COVER	208 MOUNT:	120 FLUSH	V,	3 PH,	4 WIRE	PROVIDE IF CHECKED:	EQUIP. GROUND BUS NEUTRAL BUS CUTTER TAPS SUB-FEED LUGS				
LOAD SERVED	LOAD VA	CKT BKR	CKT #	LOAD VA			CKT #	CKT BKR	LOAD VA	LOAD SERVED	
(X)PROJECTOR	300	20/1	1	A	B	C	2	20/1	700	(X)PC	
(X)PC	1,000	20/1	3	1,000	2,000		4	20/1	1,000	(X)PC	
(X)PC	1,000	20/1	5			1,700	6	20/1	700	(X)PC	
(X)PC	700	20/1	7	1,700			8	20/1	1,000	(X)PC	
(X)PC	1,000	20/1	9		1,600		10	20/1	600	(X)RECEPT	
(X)PC	700	20/1	11			1,200	12	20/1	500	(X)RECEPT	
(X)PC	1,000	20/1	13	1,800			14	20/1	800	(X)RECEPT	
(X)PC	700	20/1	15		1,300		16	20/1	600	(X)RECEPT	
(X)PC	1,000	20/1	17			1,600	18	20/1	600	(X)RECEPT	
(X)PC	700	20/1	19	1,500			20	20/1	800	(X)RECEPT	
(X)PC	1,000	20/1	21		1,600		22	20/1	600	(X)RECEPT	
(X)PC	700	20/1	23			1,200	24	20/1	500	(X)RECEPT & UH	
(X)PC	1,000	20/1	25	1,000			26	20/1		(X)A.S.P.	
(X)SPACE	-	-	27				28	-		(X)SPACE	
(X)SPACE	-	-	29				30	-		(X)SPACE	
VAV DIFFUSER (NOTE 3)	300	20/1	31	900			32	15/3	600	(X)AIR COMPRESSOR	
(X)SPARE		20/1	33		600		34	/	600	(X) /	
(X)SPARE		20/1	35			600	36	/	600	(X) /	
(X)SPARE		20/1	37	1,921			38	35/3	1,921	AHU-6 (NOTE 2)	
(X)SPARE		20/1	39		1,921		40	/	1,921	/	
(X)SPARE		20/1	41			1,921	42	/	1,921	/	
NOTES:	9,821						9,021	8,221	TOTAL VOLT AMPS		100 A. BUS (COPPER)
1. HVAC & REFRIGERATION EQUIPMENT SHALL USE TYPE HACR BREAKERS.	82						75	69	CONN. AMPS		100 A. MAIN LUGS
2. CONTRACTOR SHALL REPLACE EXISTING BREAKER WITH BREAKER AS INDICATED.											
BREAKER SHALL BE COMPATIBLE AND SHALL MATCH EXISTING PANEL AIC RATING.											
3. CONTRACTOR SHALL INSTALL BREAKER AS INDICATED.											
BREAKER SHALL BE COMPATIBLE AND SHALL MATCH EXISTING PANEL AIC RATING.											

- DISCLOSURE OF INFORMATION:
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1. THE CONTRACTING OFFICER HAS GIVEN PRIOR WRITTEN APPROVAL;
OR
2. THE INFORMATION IS OTHERWISE IN THE PUBLIC DOMAIN BEFORE THE DATE OF THE RELEASE.
- B. REQUESTS FOR APPROVAL SHALL IDENTIFY THE SPECIFIC INFORMATION TO BE RELEASED, THE MEDIUM TO BE USED, AND THE PURPOSE FOR THE RELEASE. THE CONTRACTOR SHALL SUBMIT ITS REQUEST TO THE CONTRACTING OFFICER AT LEAST 45 DAYS BEFORE THE PROPOSED DATE FOR RELEASE.
- C. THE CONTRACTOR AGREES TO INCLUDE A SIMILAR REQUIREMENT IN EACH SUBCONTRACT UNDER THIS CONTRACT. SUBCONTRACTORS SHALL SUBMIT REQUESTS FOR AUTHORIZATION TO RELEASE THROUGH THE PRIME CONTRACTOR TO THE CONTRACTING OFFICER.



FINAL		E-602	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA			
DES. JLG		17-0003 REPLACE AHU'S AT M324 ELECTRICAL PANEL SCHEDULES	
DR. JLG		NAVJAC DRAWING NO. 60023572	
CHK. WAC		CONSTR. CONTR.	
SUBMITTED BY: WAC			
DESIGN DIR. T H BURTON, PE			
APPROVED: PWO OR OICC		DATE	
SATISFACTORY TO:		DATE	
F 80091		SCALE: -	SPEC. 05-17-0003
		SHEET 26 OF 32	

DESIGN CRITERIA - FIRE ALARM SYSTEM:

THE SYSTEM MODIFICATIONS SHALL COMPLY WITH THE FOLLOWING CODES AND STANDARDS:

- 1. NFPA 70 NATIONAL ELECTRICAL CODE – 2017 ED.
- 2. NFPA 72 NATIONAL FIRE ALARM AND SIGNALING CODE – 2016 ED.
- 3. NFPA 90A INSTALLATION OF AIR-CONDITIONING AND VENTING – 2015 ED.
- 4. NFPA 101 LIFE SAFETY CODE – 2015 ED.



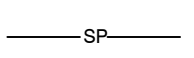
GENERAL NOTES

- 1. THE LAYOUT SHOWN IS TO CONVEY THE DESIGN INTENT. THE FINAL SYSTEM LAYOUT WILL BE COMPLETED BY THE CONTRACTOR IN ACCORDANCE WITH THE LISTED DESIGN CRITERIA.
- 2. FIRE ALARM WORK MUST BE PHASED TO MAINTAIN SERVICE TO THE EXISTING PORTION OF THE FACILITY DURING CONSTRUCTION.
- 3. DURATION OF SERVICE OUTAGES MUST BE MINIMIZED TO THE GREATEST EXTENT POSSIBLE. PROVIDE ALL ROUGH-IN WORK PRIOR TO DISCONNECTION OF EXISTING WIRING TO HELP MINIMIZE OUTAGE DURATIONS.

SHEET NOTES

- 1. REFERENCE SHEET FD101 FOR DEMOLITION PLANS.
- 2. REFERENCE SHEET FA101 FOR RENOVATION PLANS.

LEGEND

-  SMOKE DETECTOR
-  IN DUCT SMOKE DETECTOR
-  SMOKE PARTITION

WIRING, CONDUIT:

- 1. ALL CONDUCTORS TO BE RUN IN 3/4" MINIMUM RIGID METAL CONDUIT (EMT). PROVIDE CONDUIT SIZES, QUANTITIES, AND CONFIGURATION IN ACCORDANCE WITH LISTED DESIGN CRITERIA AND MANUFACTURER'S APPROVED SHOP DRAWINGS.
- 2. ALL CONDUCTORS SHALL BE EITHER STRANDED OR SOLID COPPER. 18 AWG MIN FOR IDC AND 16 AWG MIN. FOR NAC CIRCUITS.
- 3. ALL CONDUIT, WIRES, AND CABLES IN FINISHED SPACES SHALL BE CONCEALED IN WALLS, CEILING SPACES, AND SIMILAR SPACES.
- 4. ALL CONDUCTORS TO RUN SPLICE FREE FROM DEVICE TO DEVICE. WIRE NUTS, CRIMPED CONNECTORS, OR TWISTING OF CONDUCTORS IS PROHIBITED.
- 5. CONNECTIONS SHALL BE SCREW TERMINALS OR TERMINAL STRIPS MOUNTED WITHIN THE JUNCTION BOX.
- 6. ALL CONDUIT, JUNCTION/BACK BOXES, COVERS, AND COUPLINGS ARE TO BE FACTORY PAINTED RED IN UNFINISHED AREAS.

DEMOLITION NOTES

- 1. DEMOLISH EXISTING IN-DUCT SMOKE DETECTORS AS SHOWN ON FD101.
- 2. DEMOLISH EXISTING SPOT SMOKE DETECTORS AS SHOWN ON FD101.
- 3. DEMOLITION OF FIRE ALARM DEVICES AND WIRING SHALL BE COORDINATED BETWEEN THE FIRE ALARM CONTRACTOR AND GENERAL CONTRACTOR.
- 4. DEMOLITION SHALL BE PERFORMED IN A FASHION SO AS NOT TO DAMAGE REMAINING PORTIONS OF THE SYSTEM AND ASSOCIATED CONNECTIONS
- 5. DEMOLITION SHALL BE PERFORMED, SUCH THAT THE FIRE ALARM SYSTEM WILL REMAIN OPERATIVE.
- 6. REMOVE ABANDONED CONDUIT.

RENOVATIONS/EXISTING SYSTEM:

- 1. EXISTING FACP IS A SIMPLEX MODEL 4005 LOCATED IN ELECTRICAL ROOM #8. REFER TO DRAWING E-101 FOR ROOM LOCATION.
- 2. CONNECT NEW DEVICES TO EXISTING FACP CIRCUITS AND PROGRAM SOFTWARE TO RECOGNIZE NEW DEVICES.
- 3. EXISTING FUNCTIONAL OPERATIONS OF FACP SYSTEM TO BE MAINTAINED.
- 4. MODIFICATIONS TO THE FACP SYSTEM SHALL COMPLY WITH THE LISTED DESIGN CRITERIA.
- 5. EXISTING IN PLACE JUNCTION BOXES, PULL BOXES AND CONDUIT MAY BE REUSED, PROVIDED THEY ARE IN GOOD CONDITION, MEET CURRENT CODES AND THE CONTRACTOR WILL WARRANT AS THOUGH NEW.
- 6. NEW IN-DUCT SMOKE DETECTOR TO HAVE A DUAL RELAY FOR HVAC SHUT DOWN AND FACP.

DISCLOSURE OF INFORMATION:

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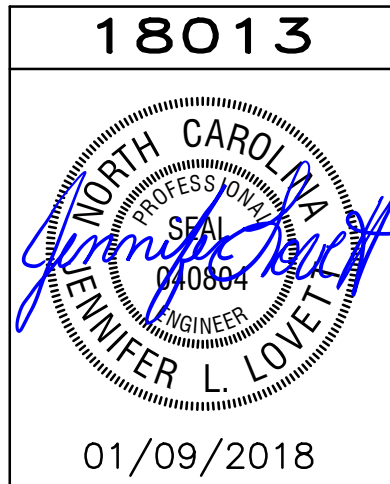
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2. THE INFORMATION IS OTHERWISE IN THE PUBLIC DOMAIN BEFORE THE DATE OF THE RELEASE.

B. REQUESTS FOR APPROVAL SHALL IDENTIFY THE SPECIFIC INFORMATION TO BE RELEASED, THE MEDIUM TO BE USED, AND THE PURPOSE FOR THE RELEASE. THE CONTRACTOR SHALL SUBMIT ITS REQUEST TO THE CONTRACTING OFFICER AT LEAST 45 DAYS BEFORE THE PROPOSED DATE FOR RELEASE.

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Fire Protection & Building Code Specialists

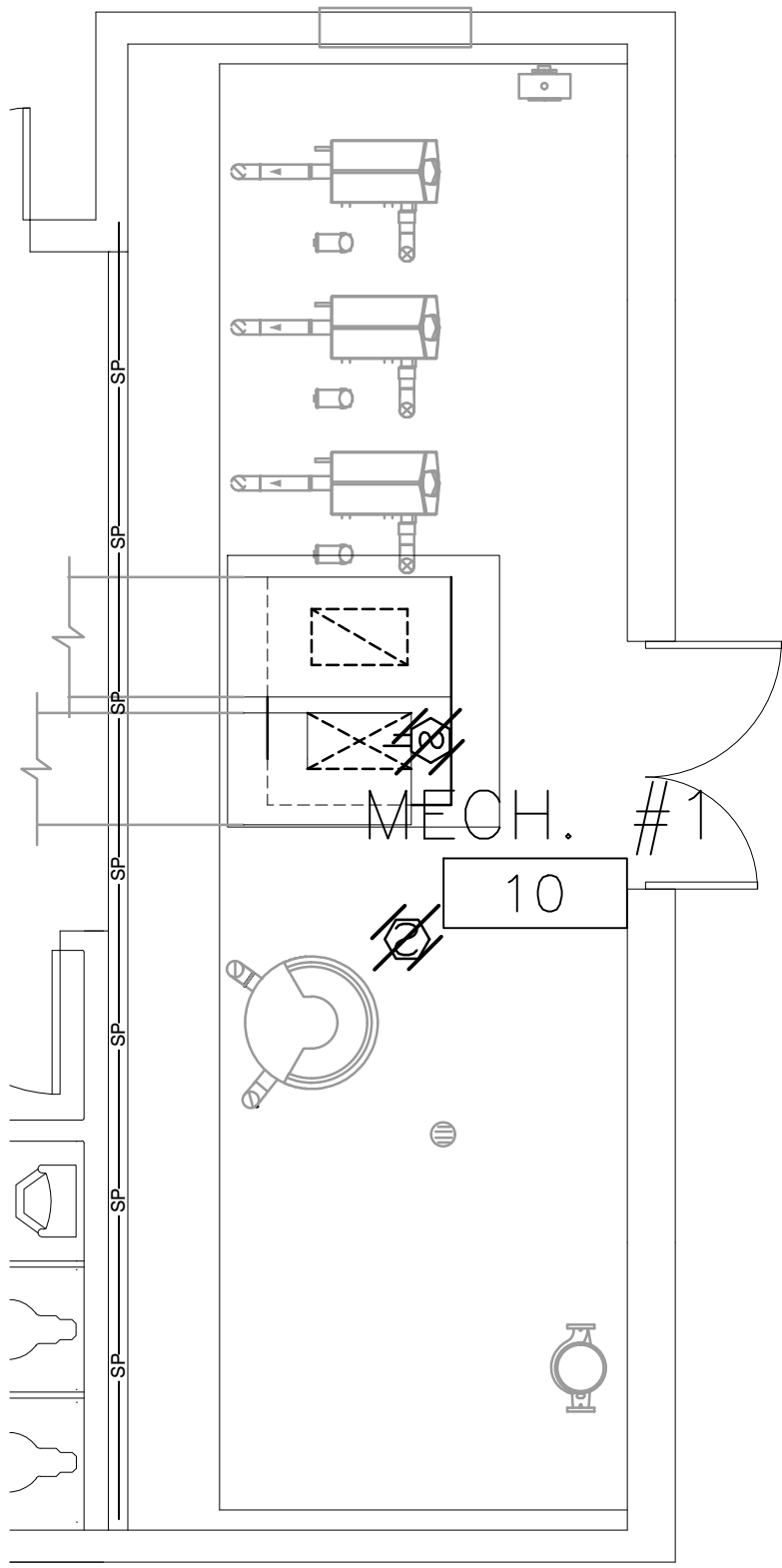


FINAL		FA001	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA		17-0003 REPLACE AHU'S AT M324 FIRE ALARM LEGEND AND NOTES	
DES. BML	DR. JLL	CHK. JLL	SUBMITTED BY: JLL
DESIGN DIR. T H BURTON, PE	APPROVED: PWO OR OICC	DATE	SIZE CODE IDENT. NO
SATISFACTORY TO:	DATE	F 80091	NAVFAC DRAWING NO. 60023573
		CONST. CONTR.	
SCALE: -		SPEC. 05-17-0003	SHEET 27 OF 32

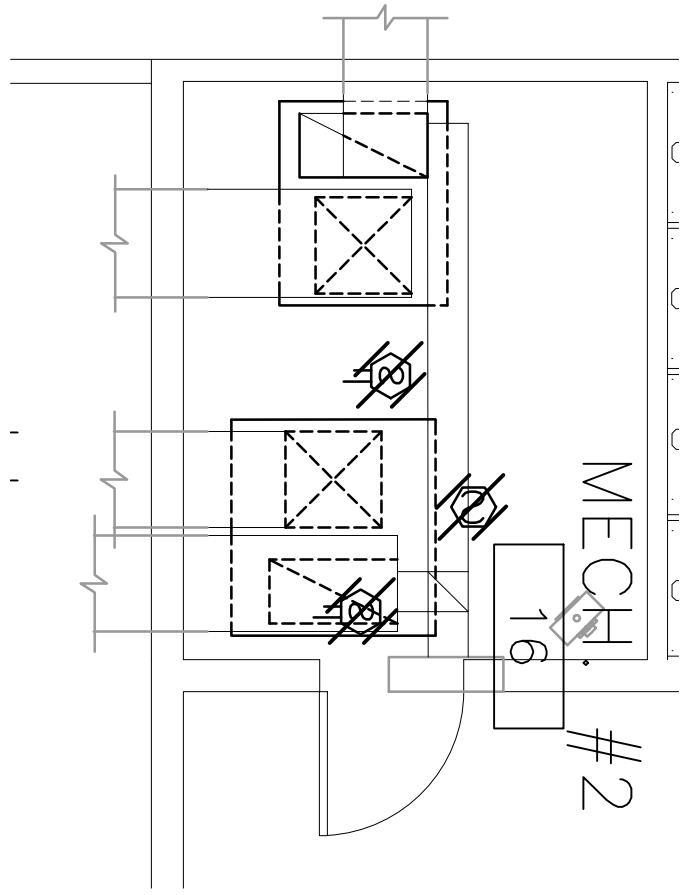
REVISIONS			
SYM		DATE	APPROVED

SHEET NOTES

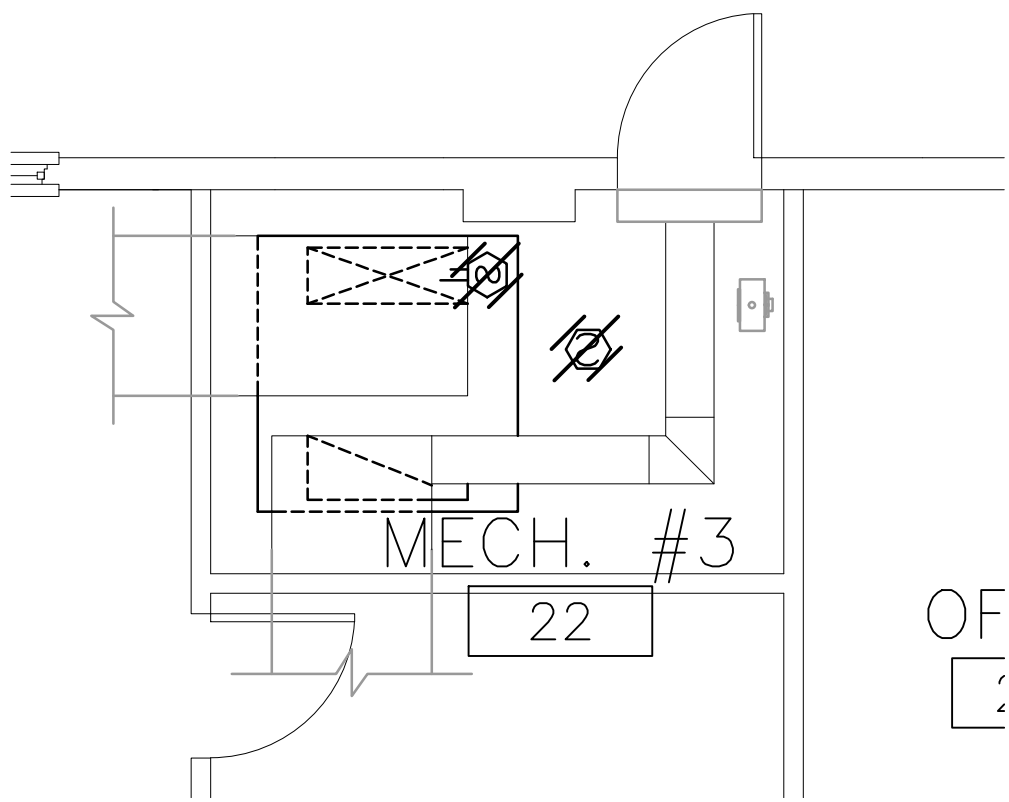
- ONLY EXISTING DEVICES TO BE REMOVED ARE SHOWN.
- REFERENCE SHEET FA001 FOR LEGEND AND NOTES.
- REFERENCE SHEET FA101 FOR RENOVATION PLANS.



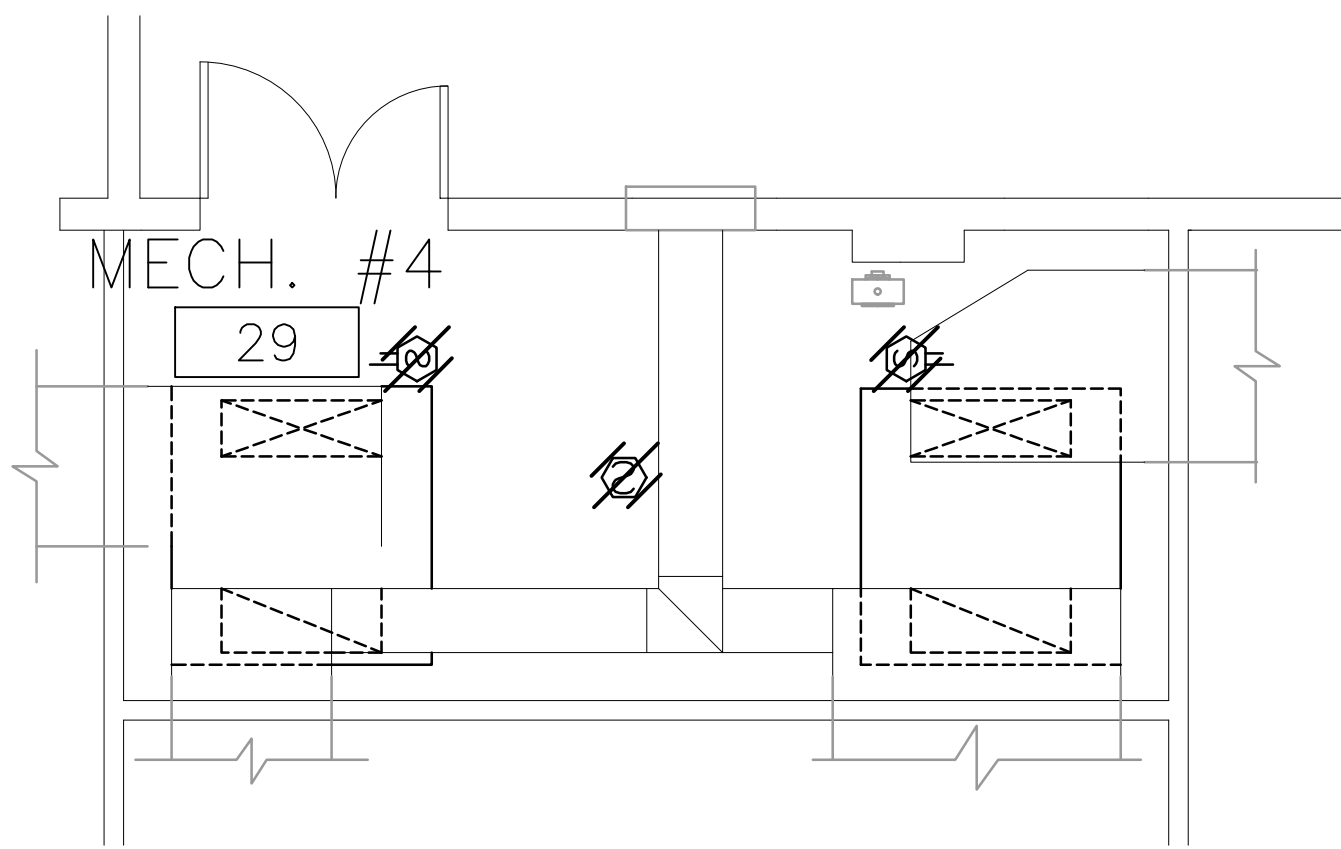
MECHANICAL ROOM 1 DEMOLITION PLAN 1
1/4"=1'-0"



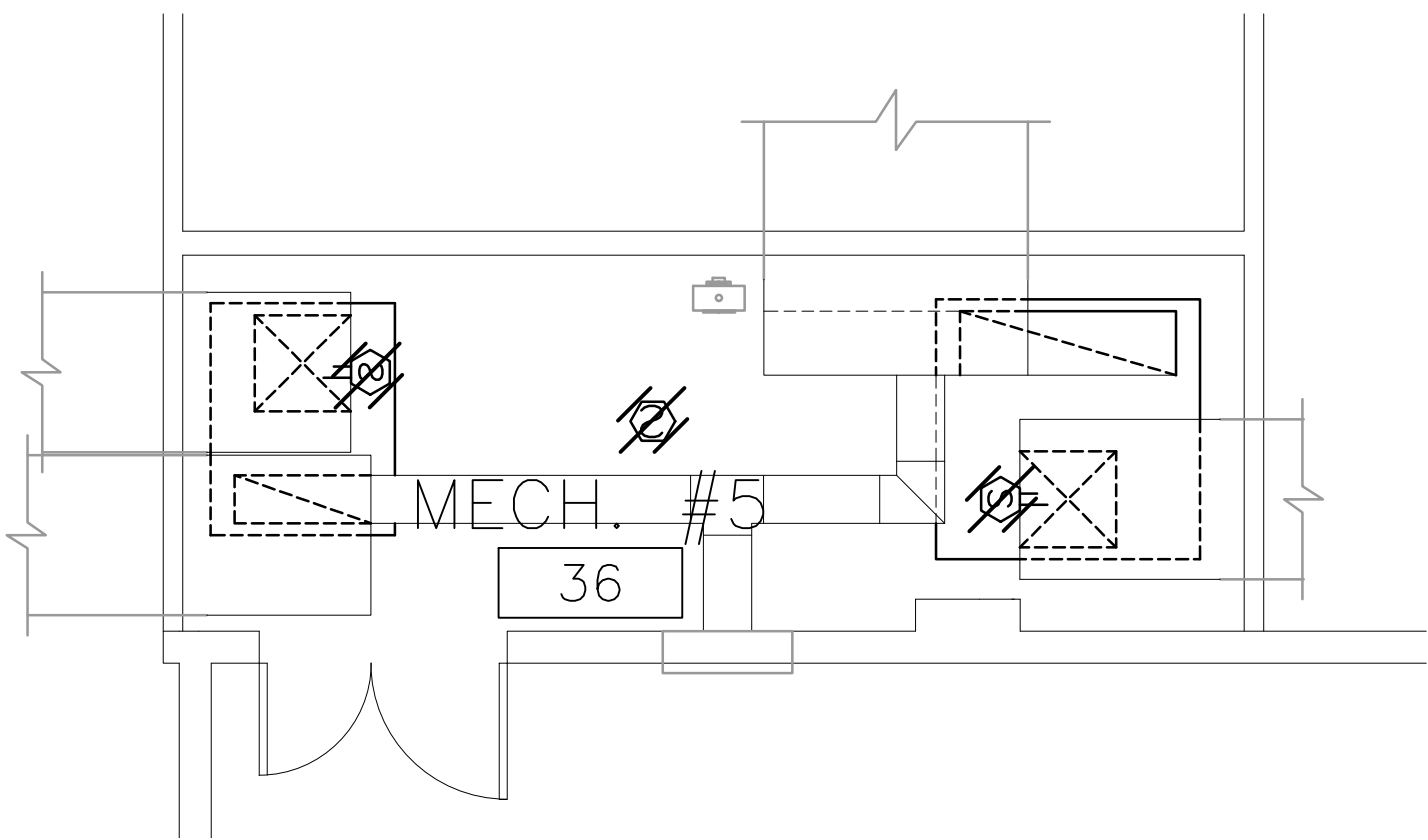
MECHANICAL ROOM 2 DEMOLITION PLAN 2
1/4"=1'-0"



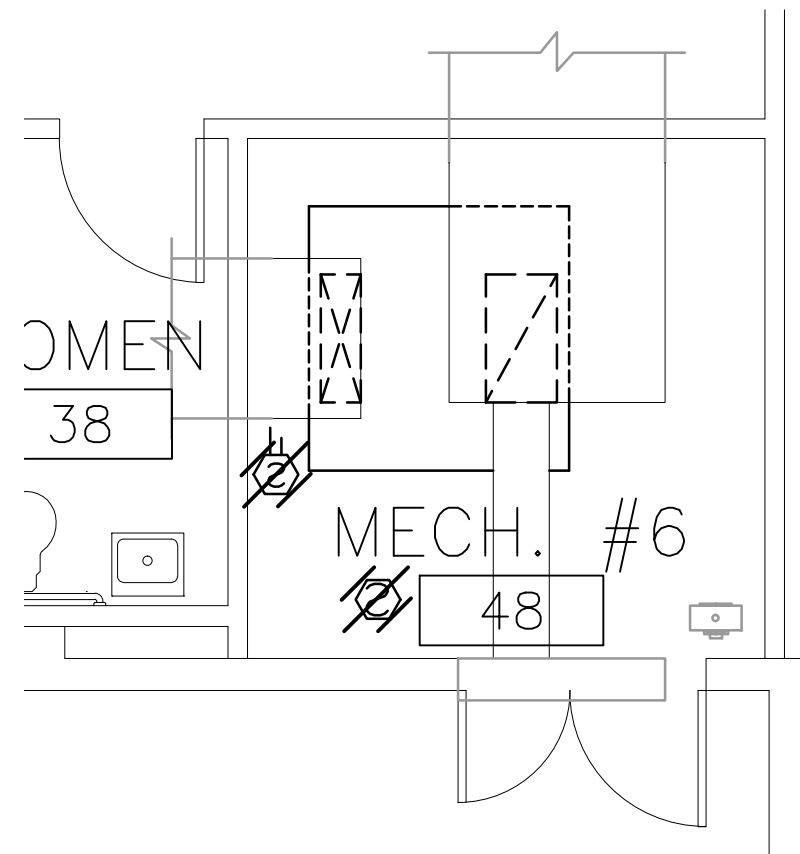
MECHANICAL ROOM 3 DEMOLITION PLAN 3
1/4"=1'-0"



MECHANICAL ROOM 4 DEMOLITION PLAN 4
1/4"=1'-0"



MECHANICAL ROOM 5 DEMOLITION PLAN 5
1/4"=1'-0"



MECHANICAL ROOM 6 DEMOLITION PLAN 6
1/4"=1'-0"

DISCLOSURE OF INFORMATION:

CONTRACTOR SHALL COMPLY AS FOLLOWS:

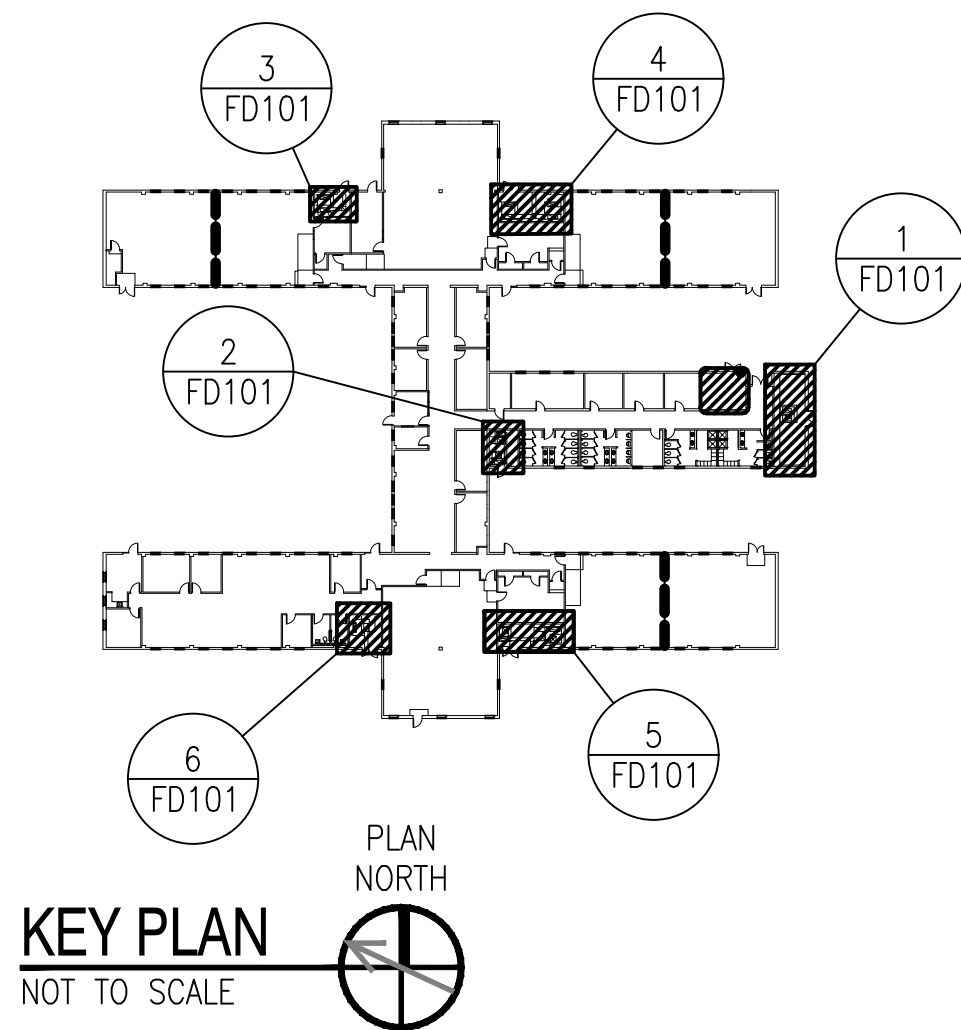
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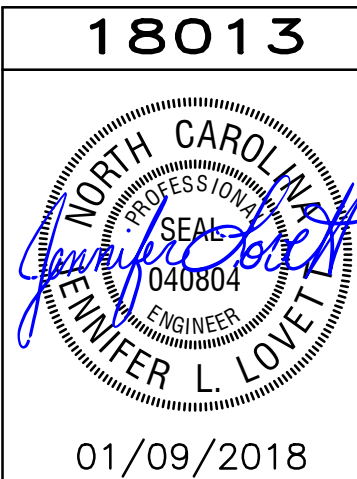
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FINAL		FD101	
DEPARTMENT OF THE NAVY		NAVAL FACILITIES ENGINEERING COMMAND	
MARINE CORPS BASE		CAMP LEJEUNE, NORTH CAROLINA	
DES. BML		17-0003	
DR. JLL		REPLACE AHU'S AT	
CHK. JLL		M324	
SUBMITTED BY: JLL		FIRE ALARM DEMOLITION	
DESIGN DIR. T H BURTON, PE		ENLARGED FLOOR PLANS	
APPROVED: PWO OR OICC		DATE	SIZE CODE IDENT. NO
SATISFACTORY TO:		DATE	CONST. CONTR.
18013		01/09/2018	80091
SCALE: -		SPEC. 05-17-0003	SHEET 28 OF 32

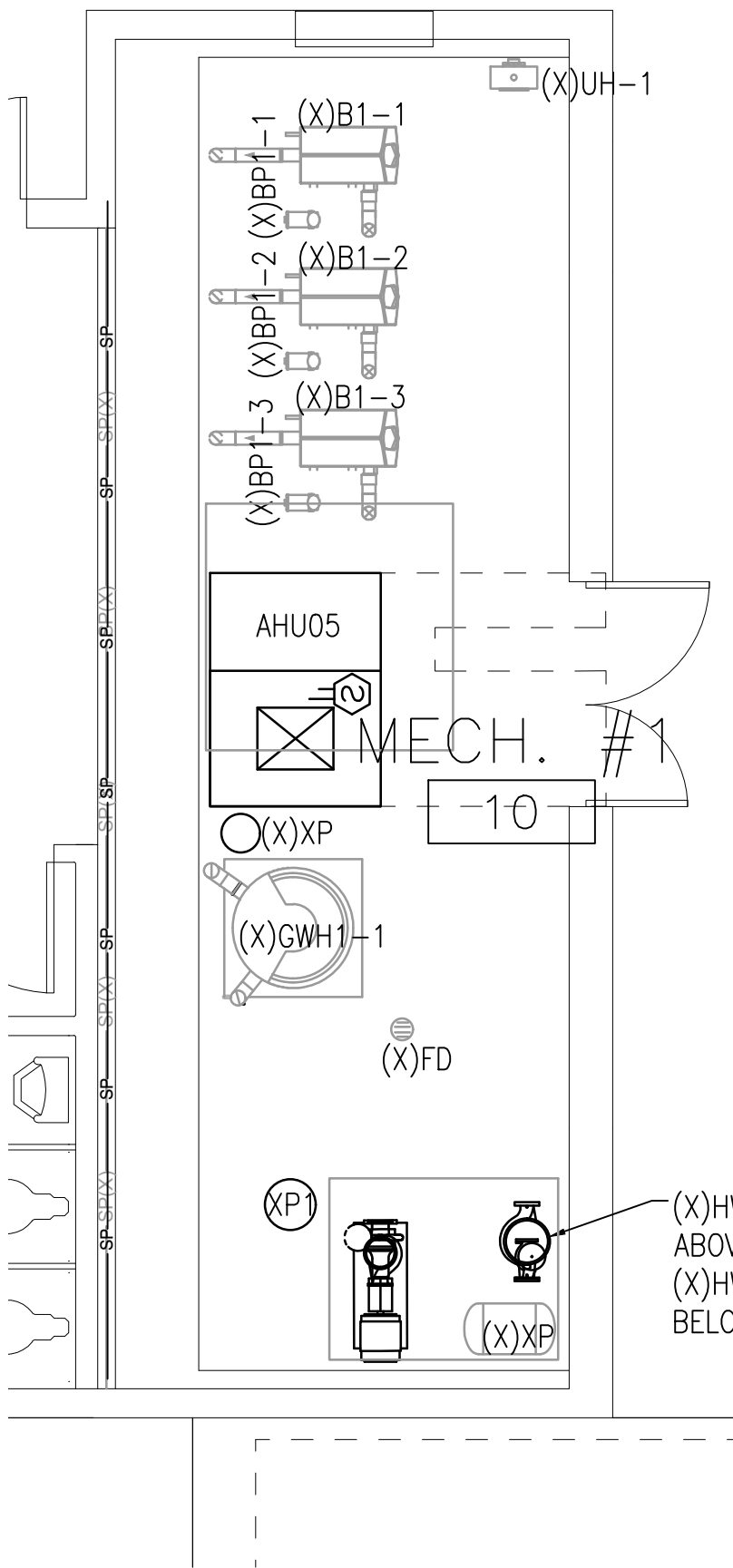
REVISIONS			
SYM		DATE	APPROVED

SHEET NOTES

- ONLY NEW DEVICES ARE SHOWN.
- REFERENCE SHEET FA001 FOR LEGEND AND NOTES.
- REFERENCE SHEET FD102 FOR DEMOLITION PLANS.

KEY NOTES

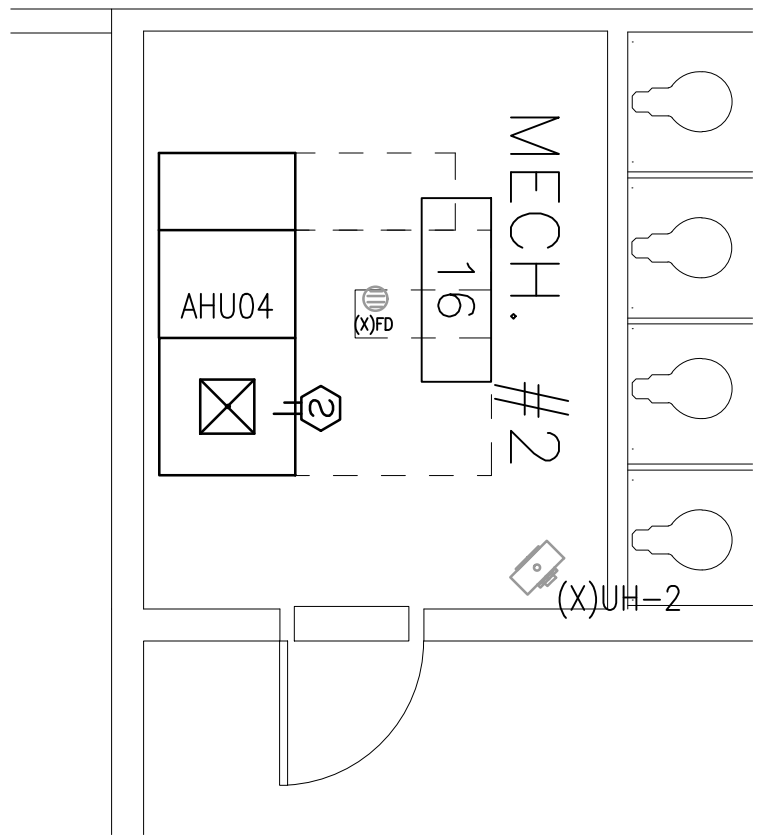
- 1 ADD TERMINAL STRIP AND CONNECT EXISTING WIRES. ADD RED COVER PLATE AND PAINT JUNCTION BOX RED.



ENLARGED MECHANICAL ROOM 1 PLAN

1/4"=1'-0"

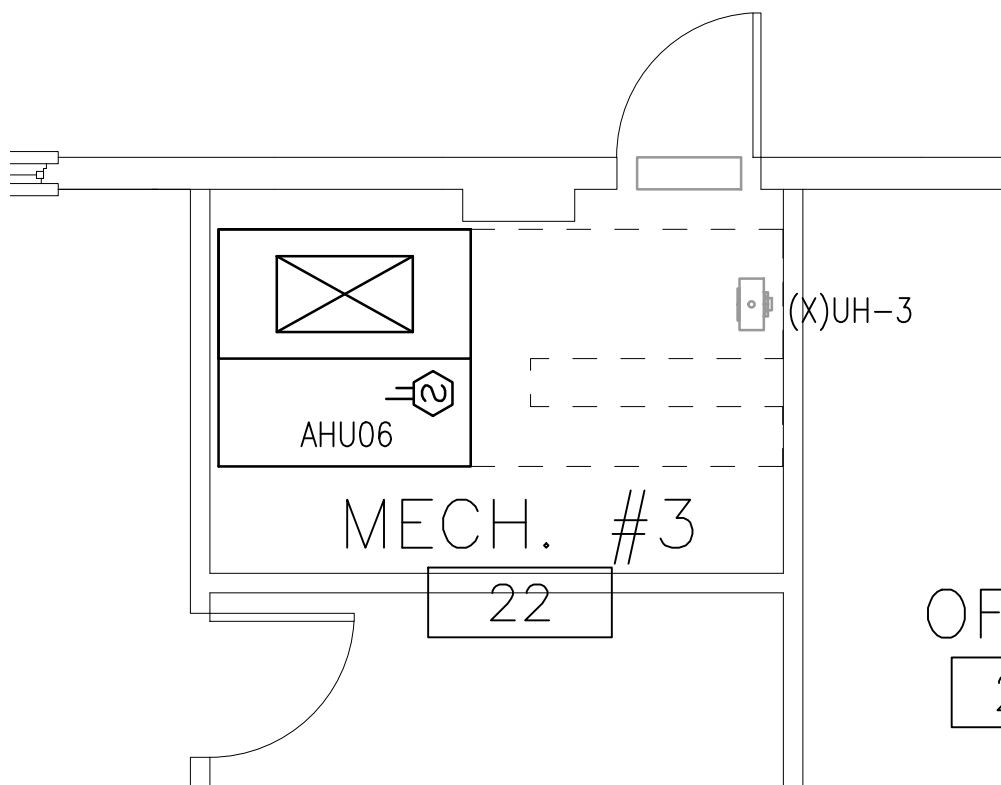
1



ENLARGED MECHANICAL ROOM 2 PLAN

1/4"=1'-0"

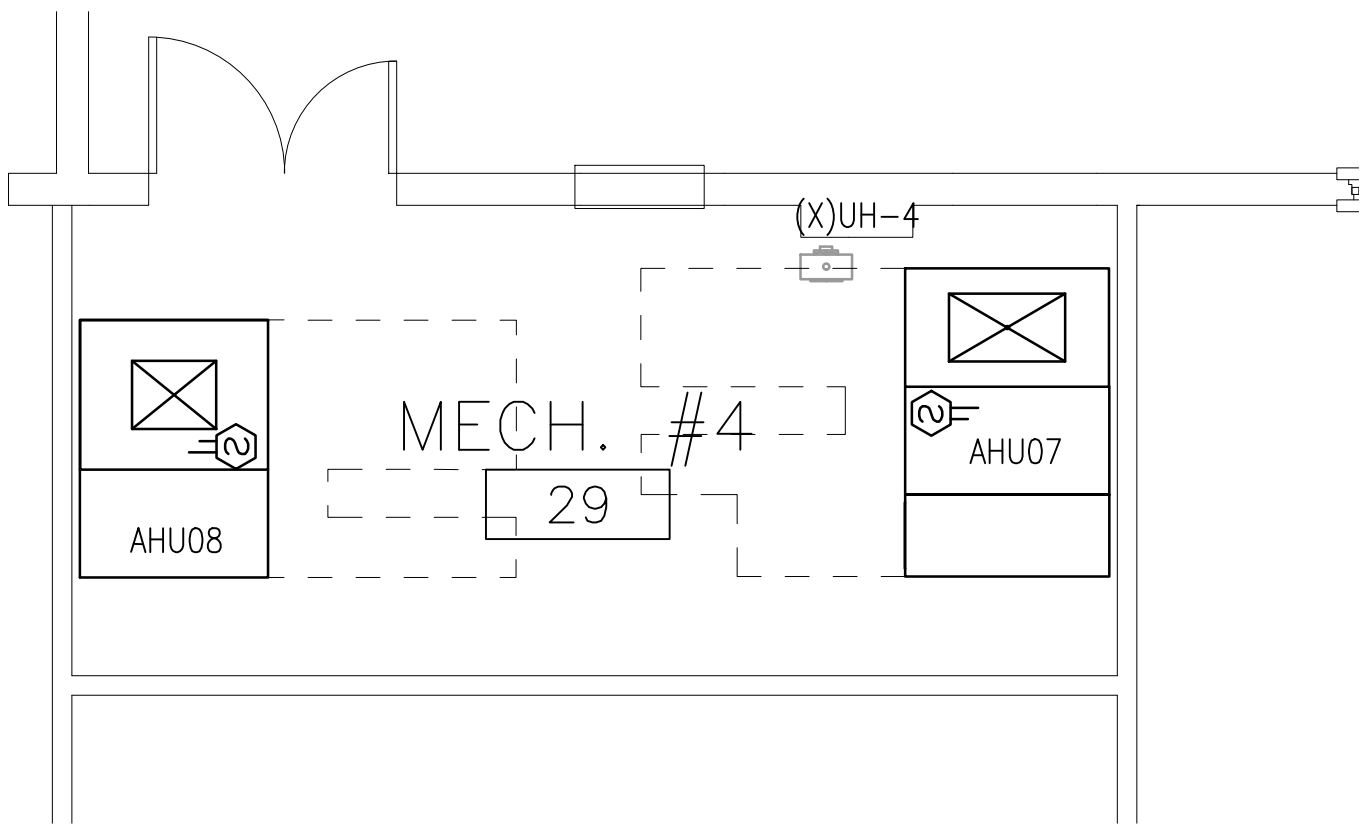
2



ENLARGED MECHANICAL ROOM 3 PLAN

1/4"=1'-0"

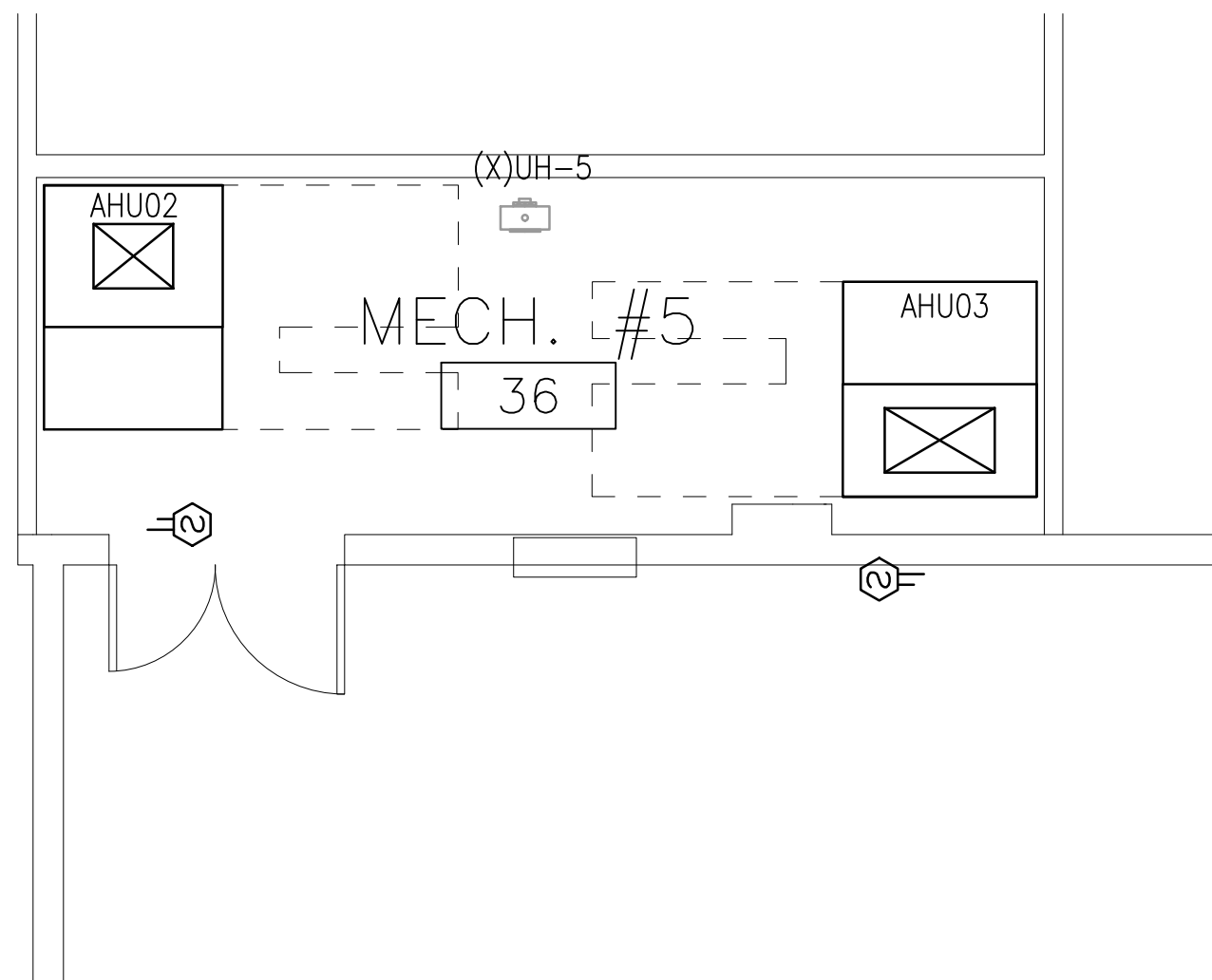
3



ENLARGED MECHANICAL ROOM 4 PLAN

1/4"=1'-0"

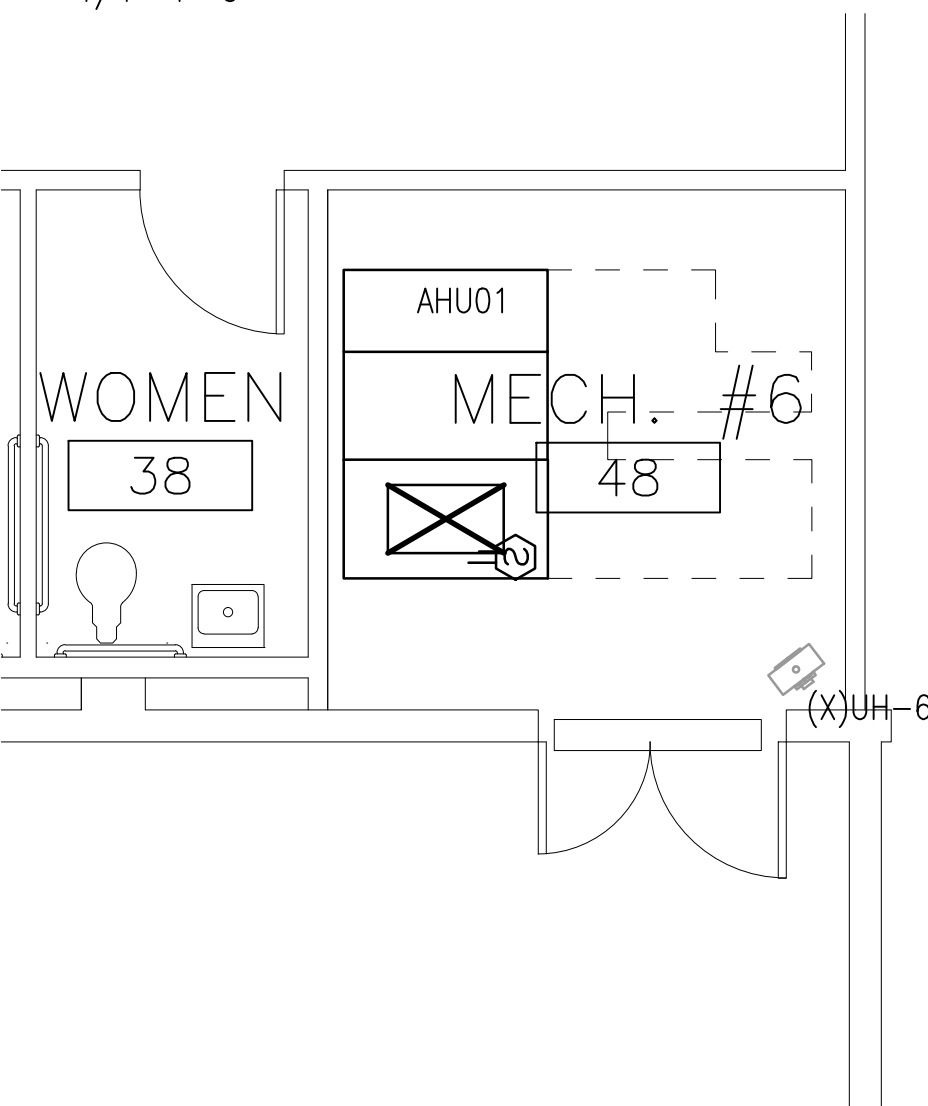
4



ENLARGED MECHANICAL ROOM 5 PLAN

1/4"=1'-0"

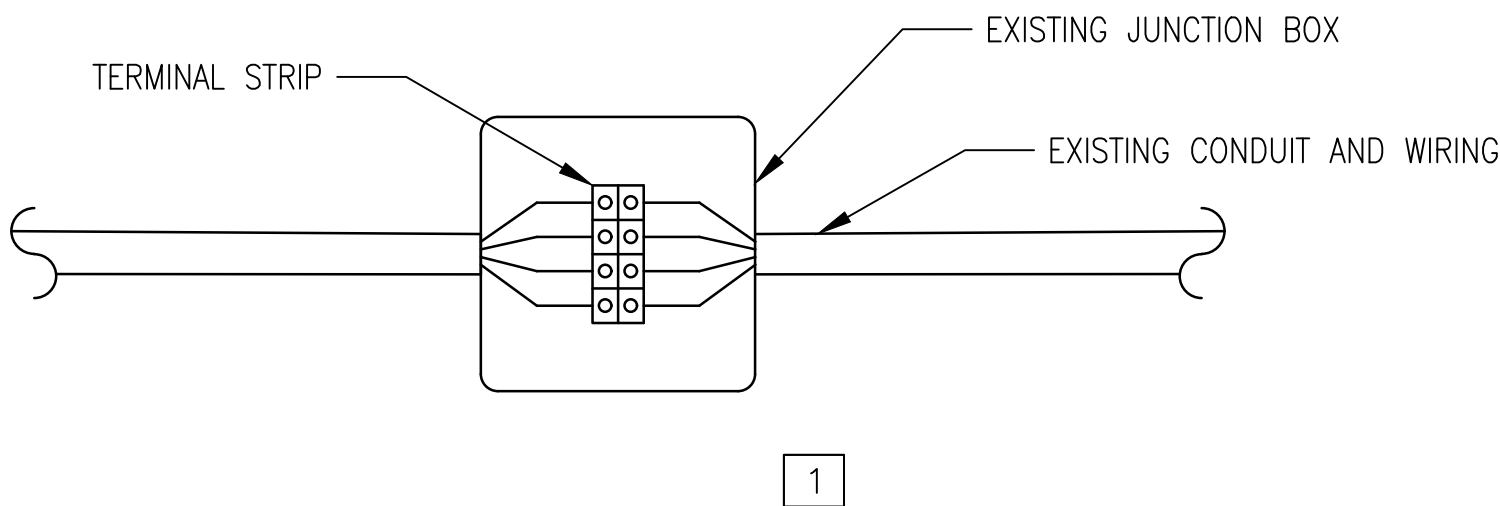
5



ENLARGED MECHANICAL ROOM 6 PLAN

1/4"=1'-0"

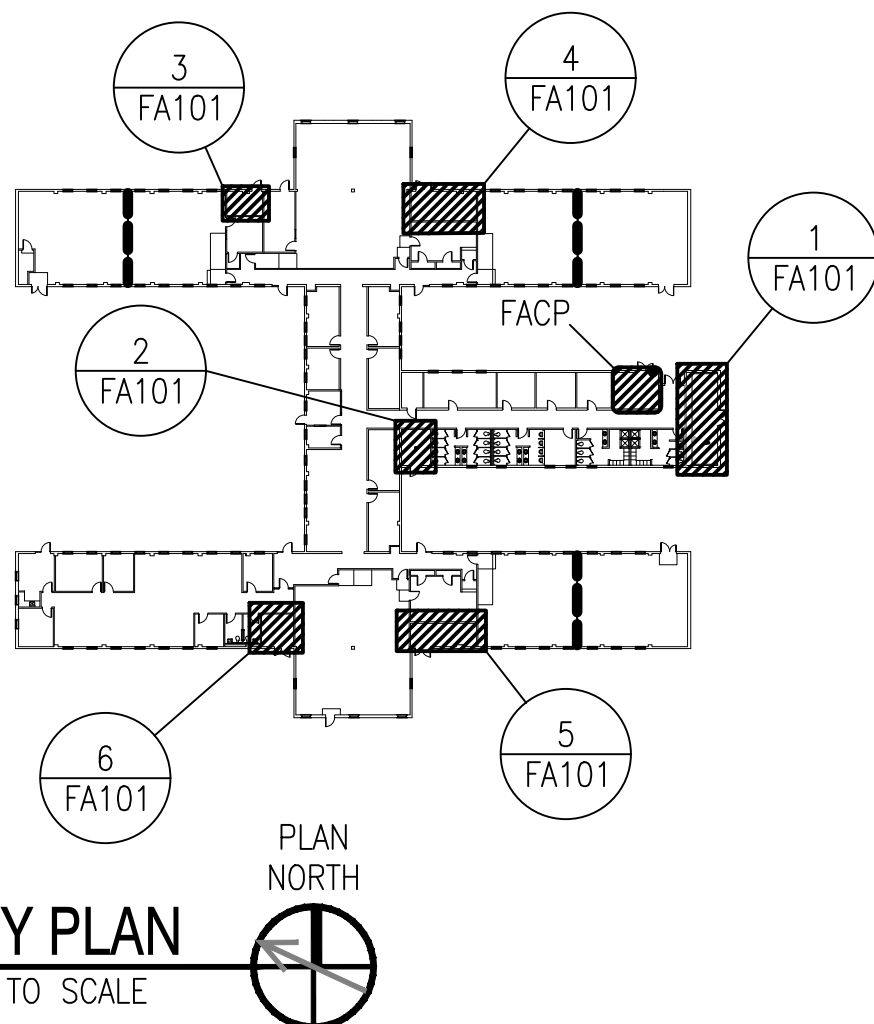
6



SPOT DETECTOR JUNCTION BOX

NTS

7

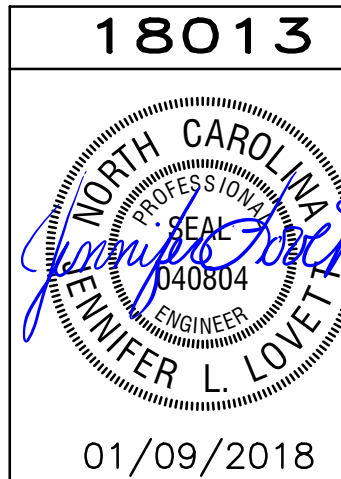


KEY PLAN

NOT TO SCALE



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FINAL		FA101	
DEPARTMENT OF THE NAVY		NAVAL FACILITIES ENGINEERING COMMAND	
MARINE CORPS BASE		CAMP LEJEUNE, NORTH CAROLINA	
DES. BML		17-0003	
DR. JLL		REPLACE AHU'S AT	
CHK. JLL		M324	
SUBMITTED BY: JLL		FIRE ALARM	
DESIGN DIR. T H BURTON, PE		ENLARGED PLANS	
APPROVED: PWO OR OICC		DATE	SIZE CODE IDENT. NO
SATISFACTORY TO:		DATE	F 80091
SCALE: -		SPEC. 05-17-0003	CONST. CONTR.
SHEET 29		OF 32	

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DESIGN CRITERIA - DENSITY/AREA METHOD

THE SYSTEM SHALL COMPLY WITH NFPA 13 – 19 ED. AND TABLE 9.3 IN UFC 3–600–1

MECHANICAL AND BOILER ROOMS (ORDINARY HAZARD GROUP II WET PIPE FIRE SPRINKLER SYSTEMS):

DENSITY: 0.20 GPM/SQ. FT.

MAXIMUM FIRE SPRINKLER SPACING: 130 SQ. FT.

SPRINKLERS

UPRIGHTS:

FINISH: BRONZE
TEMP: ORDINARY
K: 5.6

SPRINKLERS NEAR A HEAT SOURCE (UNIT HEATER, DIFFUSER, STEAM MAINS, SKYLIGHT, ETC) SHALL HAVE TEMPERATURE RATING IN ACCORDANCE WITH NFPA 13 – 19 ED.

GENERAL NOTES:

1. SPRINKLER SYSTEM MODIFICATIONS TO BE INSTALLED COMPLETE AND OPERATIVE IN ACCORDANCE WITH NFPA 13 – 19 ED. AND UFC 3–600–01
2. SPRINKLER CONTRACTOR SHALL REVIEW AND FIELD VERIFY JOB CONDITIONS AND VERIFY ALL MEASUREMENTS, DISTANCES, ELEVATIONS, CLEARANCES, PIPE SIZES, ETC. THAT MAY AFFECT THE SYSTEM INSTALLATION OR COMPLIANCE WITH NFPA 13 – 19 ED. BEFORE BEGINNING INSTALLATION.
3. FINAL SPRINKLER PLACEMENT, PIPE ROUTING, AND QUANTITY SHALL BE COORDINATED BETWEEN SPRINKLER CONTRACTOR AND GENERAL CONTRACTOR.
4. ARCHITECTURAL, CIVIL, STRUCTURAL, MECHANICAL, AND ELECTRICAL BACKGROUND INFORMATION SHOWN IS FOR COORDINATION PURPOSES ONLY. REFER TO THE PROPER DRAWINGS FOR EXACT LOCATIONS, SIZES, AND QUANTITIES OF OTHER TRADES' WORK.
5. PIPE TO BE SCHEDULE 40 BLACK STEEL FOR PIPES 2" AND SMALLER, MINIMUM SCHEDULE 10 FOR PIPE LARGER THAN 2".
6. EXTENDED COVERAGE SPRINKLERS ARE NOT PERMITTED.
7. EXPOSED PIPING TO BE COLOR CODED, PAINTED RED OR INTERMITTENT LABELS.
8. COORDINATE ALL HANGER TYPES AND LOCATION WITH NFPA 13 – 19 ED.
9. PROVIDE SPRINKLER GUARDS ON ALL MECHANICAL ROOM SPRINKLERS.

DEMOLITION NOTES

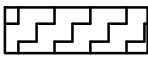
1. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS THAT MAY AFFECT THE SYSTEM INSTALLATION OR COMPLIANCE WITH NFPA 13 – 19 ED. AND NOTIFY THE CONTRACTING OFFICER PRIOR TO BEGINNING WORK
2. DEMOLITION OF MECHANICAL ROOM SPRINKLER SYSTEM SHALL BE COORDINATED BETWEEN THE SPRINKLER CONTRACTOR AND GENERAL CONTRACTOR.
3. DEMOLITION SHALL BE PERFORMED IN A FASHION SO AS NOT TO DAMAGE PORTIONS TO REMAIN AND ASSOCIATED CONNECTIONS
4. DEMOLITION SHALL BE PERFORMED, SUCH THAT THE SPRINKLER SYSTEM AND MAJOR PORTIONS REMAIN OPERATIVE.

REVISIONS			
SYM		DATE	APPROVED

SHEET NOTES

1. REFERENCE SHEET FPD101 FOR DEMOLITION PLANS.
2. REFERENCE SHEET FP101 FOR RENOVATION PLANS.

LEGEND



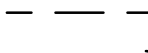
AREA TO RECEIVE NEW PIPING AND SPRINKLER HEADS
– 130 SQ. FT. PER SPRINKLER



SPRINKLER RISER ASSEMBLY



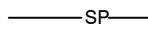
UPRIGHT SPRINKLER



EXISTING SPRINKLER PIPING



PIPING CONTINUES



SMOKE PARTITION



AREA OF SPRINKLER DEMOLITION

DISCLOSURE OF INFORMATION:

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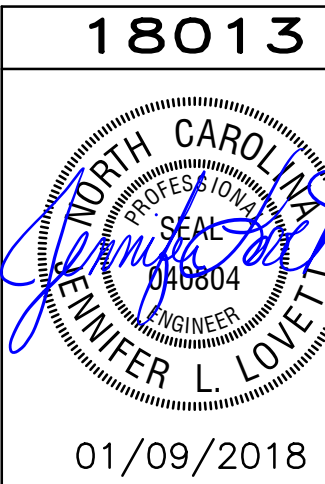
1. THE CONTRACTING OFFICER HAS GIVEN PRIOR WRITTEN APPROVAL;
- OR
2. THE INFORMATION IS OTHERWISE IN THE PUBLIC DOMAIN BEFORE THE DATE OF THE RELEASE.

B. REQUESTS FOR APPROVAL SHALL IDENTIFY THE SPECIFIC INFORMATION TO BE RELEASED, THE MEDIUM TO BE USED, AND THE PURPOSE FOR THE RELEASE. THE CONTRACTOR SHALL SUBMIT ITS REQUEST TO THE CONTRACTING OFFICER AT LEAST 45 DAYS BEFORE THE PROPOSED DATE FOR RELEASE.

C. THE CONTRACTOR AGREES TO INCLUDE A SIMILAR REQUIREMENT IN EACH SUBCONTRACT UNDER THIS CONTRACT. SUBCONTRACTORS SHALL SUBMIT REQUESTS FOR AUTHORIZATION TO RELEASE THROUGH THE PRIME CONTRACTOR TO THE CONTRACTING OFFICER.



Lovett Consultants
4455 Morris Park Dr. Suite H
Mint Hill, NC 28227
Ph. 704.545.8383
NC Firm License No: F-0296
Fire Protection & Building Code Specialists



FINAL		FP001	
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND		MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA	
DES. BML		17-0003 REPLACE AHU'S AT M324 FIRE PROTECTION	
DR. JLL		LEGEND AND NOTES	
CHK. JLL		NAVFAC DRAWING NO. 60023576	
SUBMITTED BY: JLL		CONST. CONTR.	
DESIGN DIR. T H BURTON, PE			
APPROVED: PWO OR OICC	DATE	SIZE F	CODE IDENT. NO 80091
SATISFACTORY TO:		DATE	
SCALE: -		SPEC. 05-17-0003	SHEET 30 OF 32

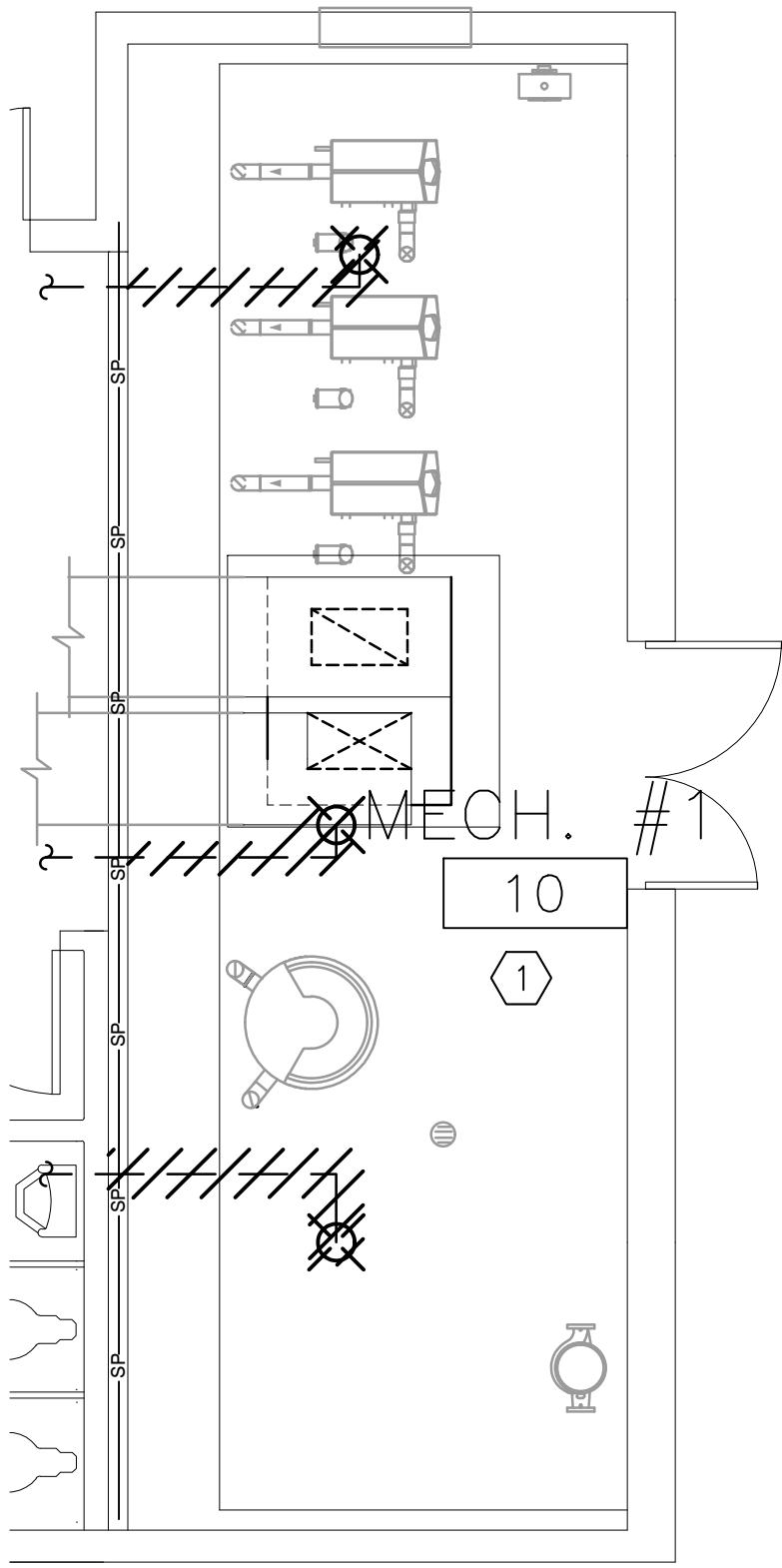
REVISIONS			
SYM		DATE	APPROVED

SHEET NOTES

- REFERENCE SHEET FP001 FOR LEGEND AND NOTES.
- REFERENCE SHEET FP101 FOR RENOVATION PLANS.

KEY NOTES

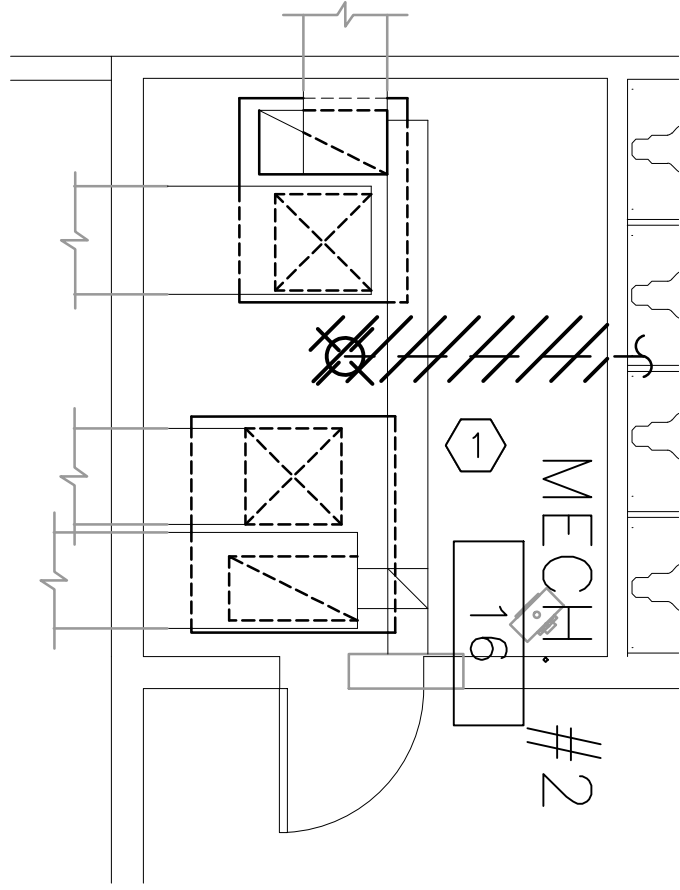
- DEMOLISH SPRINKLERS, ARM-OVERS, BRANCH PIPING AND HANGARS WITHIN MECHANICAL ROOMS.
- SPRINKLER PIPING ROUTED THROUGH THE MECHANICAL ROOM MAY REMAIN, PROVIDED IT DOES NOT INTERFERE WITH THE HVAC SYSTEM CONVERSION.



MECHANICAL ROOM 1 DEMOLITION PLAN

1/4"=1'-0"

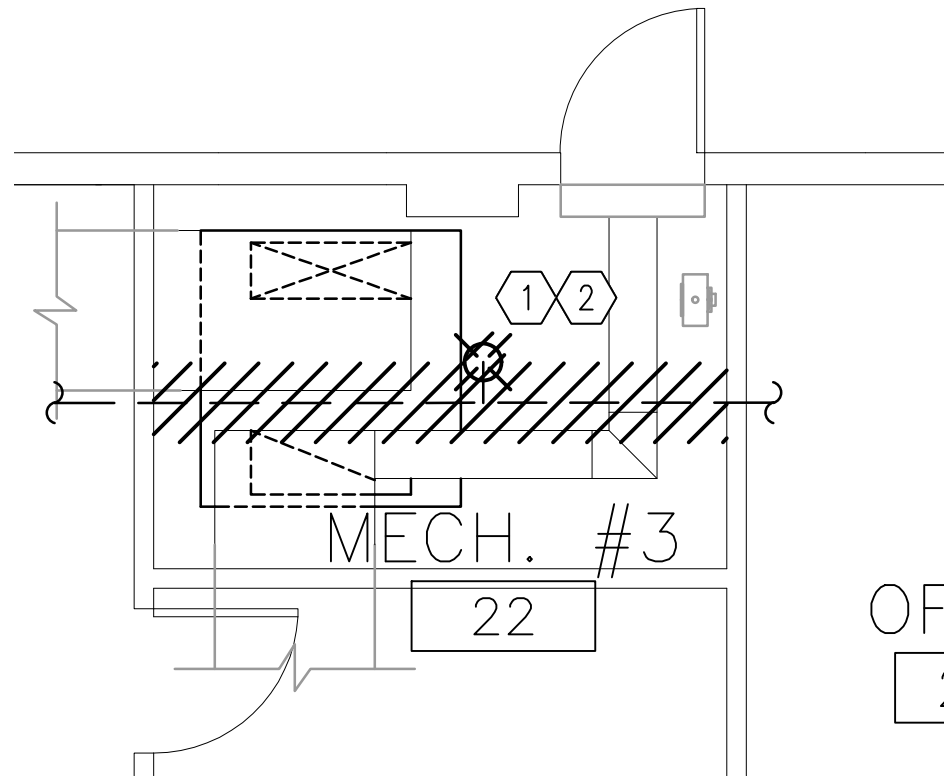
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MECHANICAL ROOM 2 DEMOLITION PLAN

1/4"=1'-0"

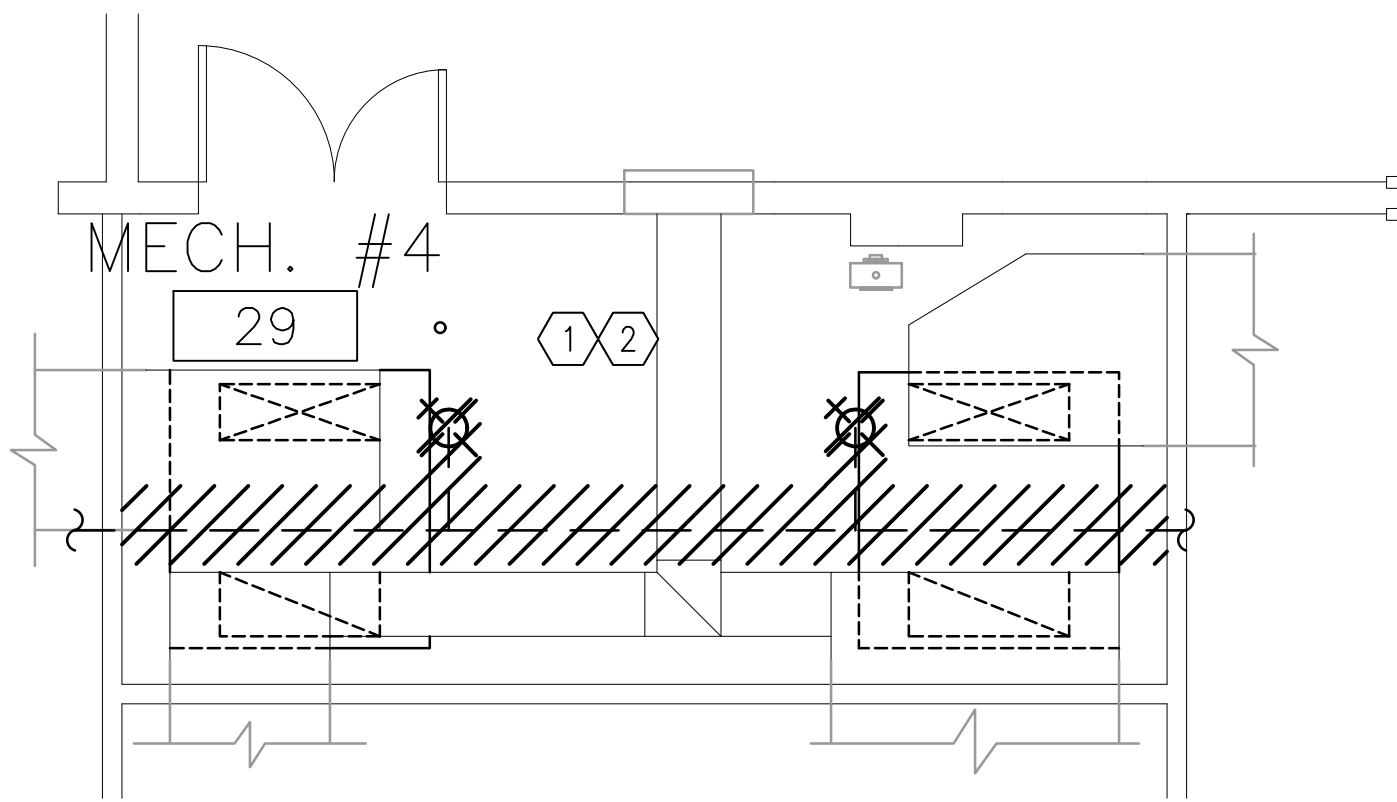
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MECHANICAL ROOM 3 DEMOLITION PLAN

1/4"=1'-0"

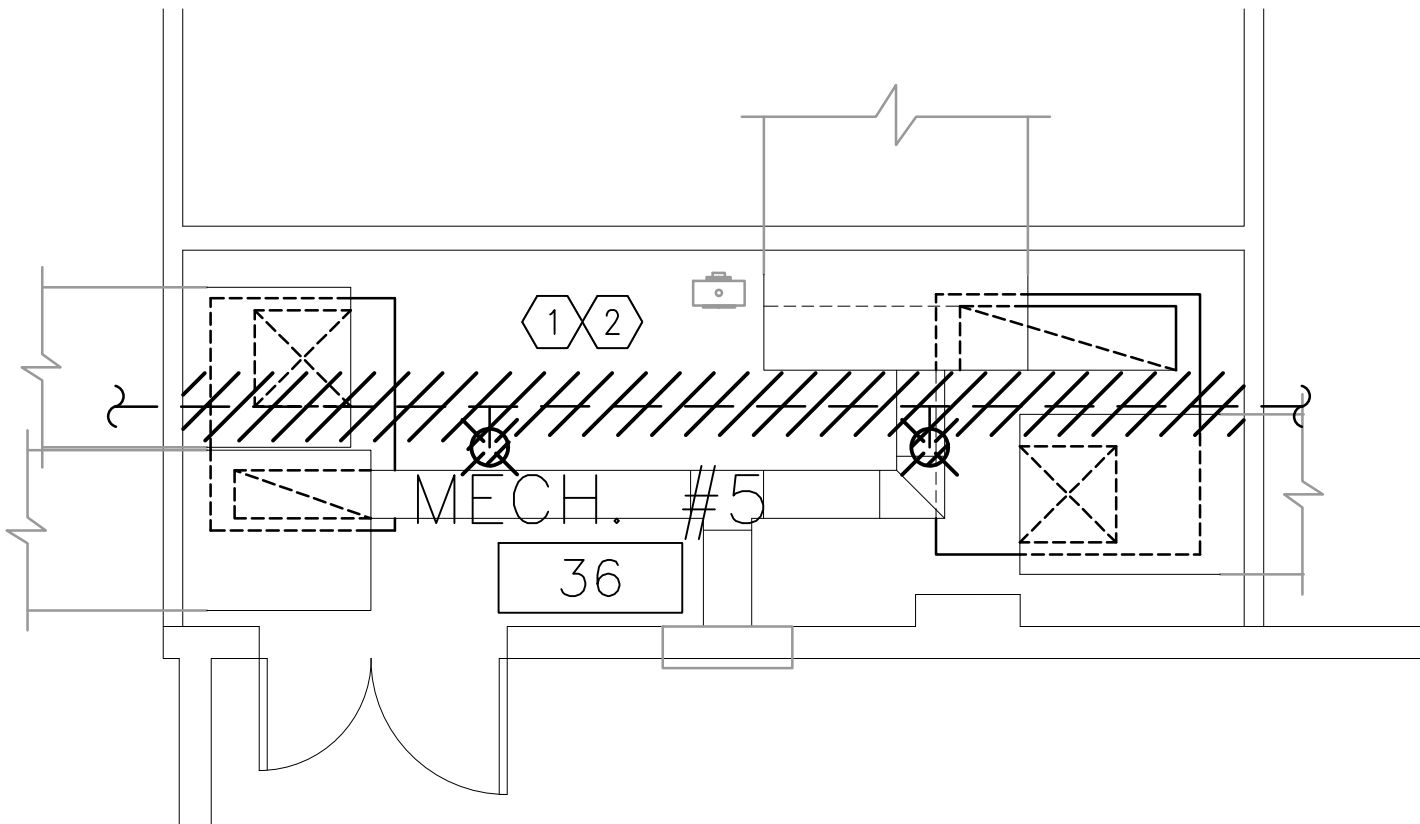
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MECHANICAL ROOM 4 DEMOLITION PLAN

1/4"=1'-0"

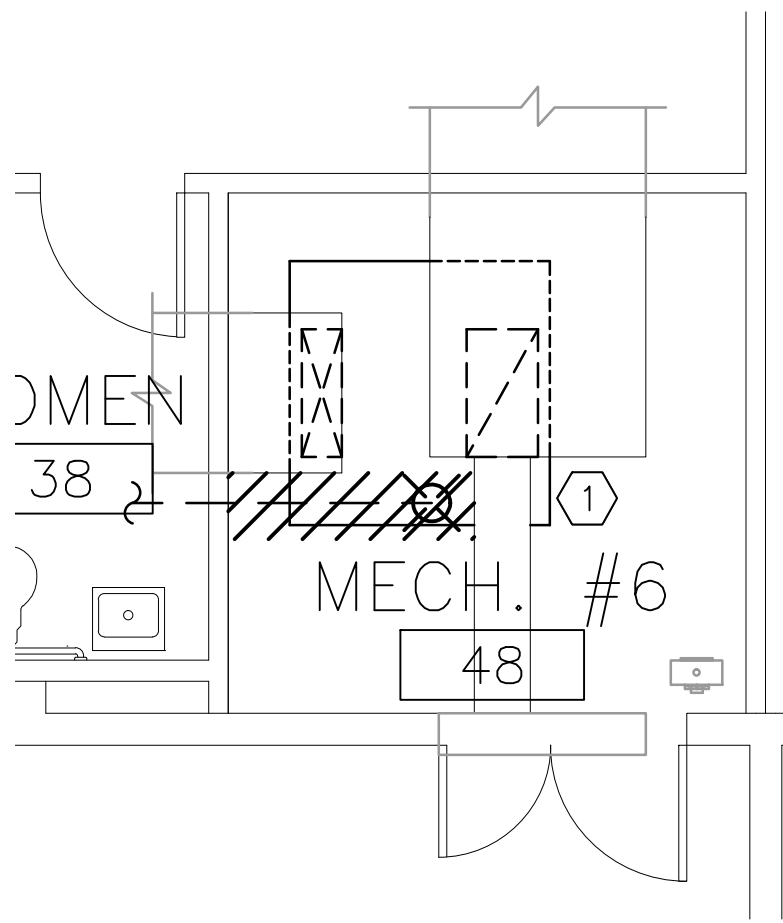
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MECHANICAL ROOM 5 DEMOLITION PLAN

1/4"=1'-0"

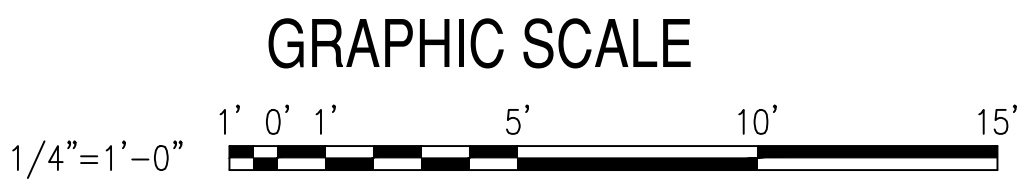
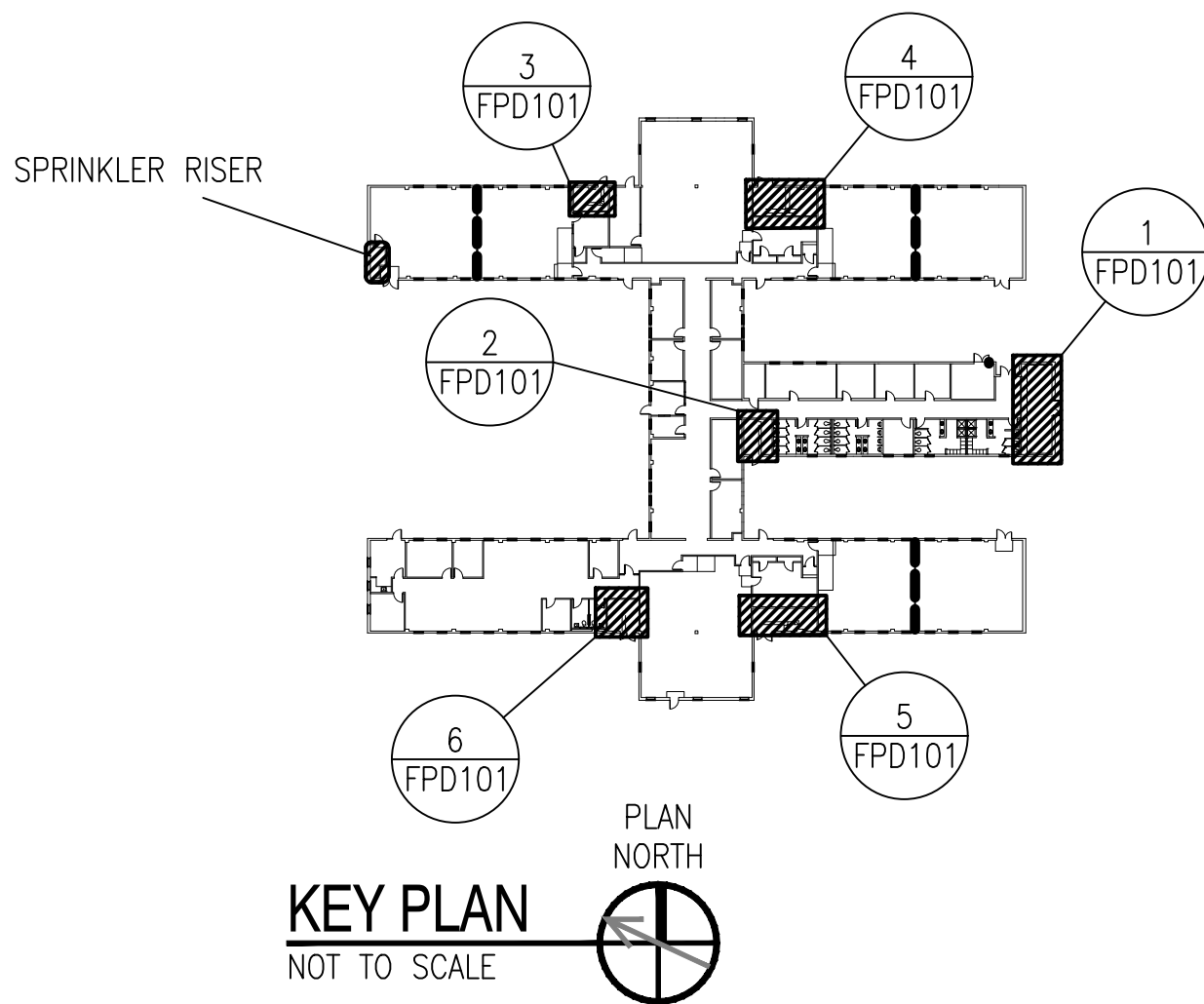
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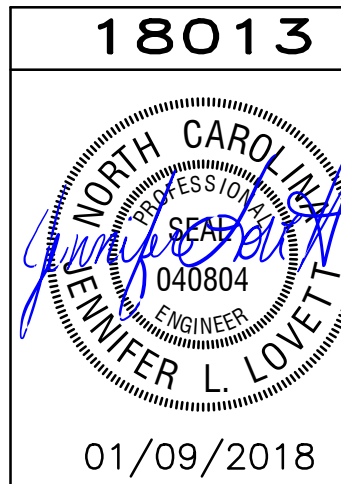
MECHANICAL ROOM 6 DEMOLITION PLAN

1/4"=1'-0"

6



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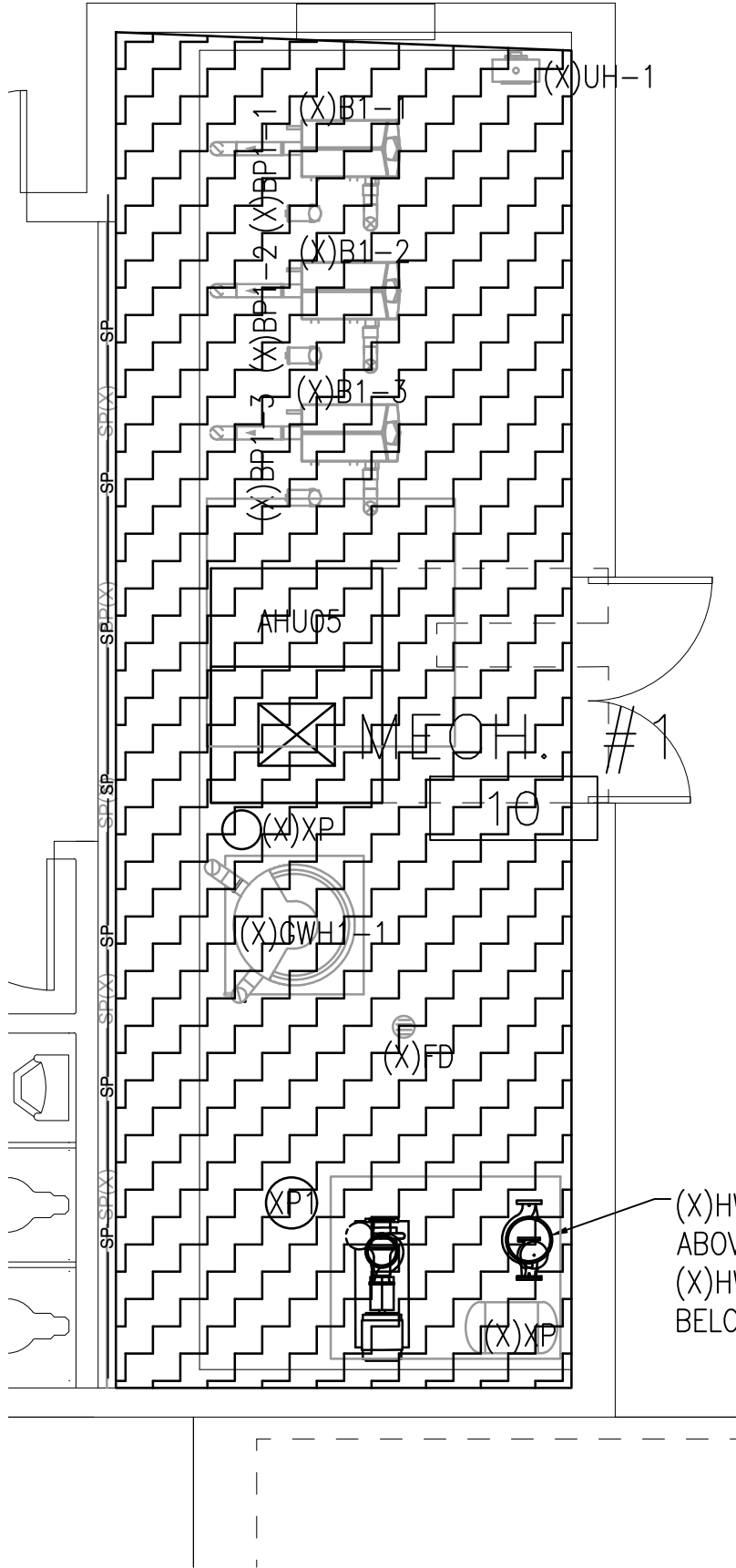
FINAL		FPD101	
		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND	
		MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA	
DES. BML		17-0003 REPLACE AHU'S AT M324 FIRE PROTECTION DEMOLITION ENLARGED FLOOR PLANS	
DR. JLL			
CHK. JLL			
SUBMITTED BY: JLL			
DESIGN DIR. T H BURTON, PE		NAVFAC DRAWING NO. 60023577	
APPROVED: PWO OR OICC		DATE	CONST. CONTR.
SATISFACTORY TO:		DATE	
		SCALE: -	SPEC. 05-17-0003
		SHEET 31 OF 32	

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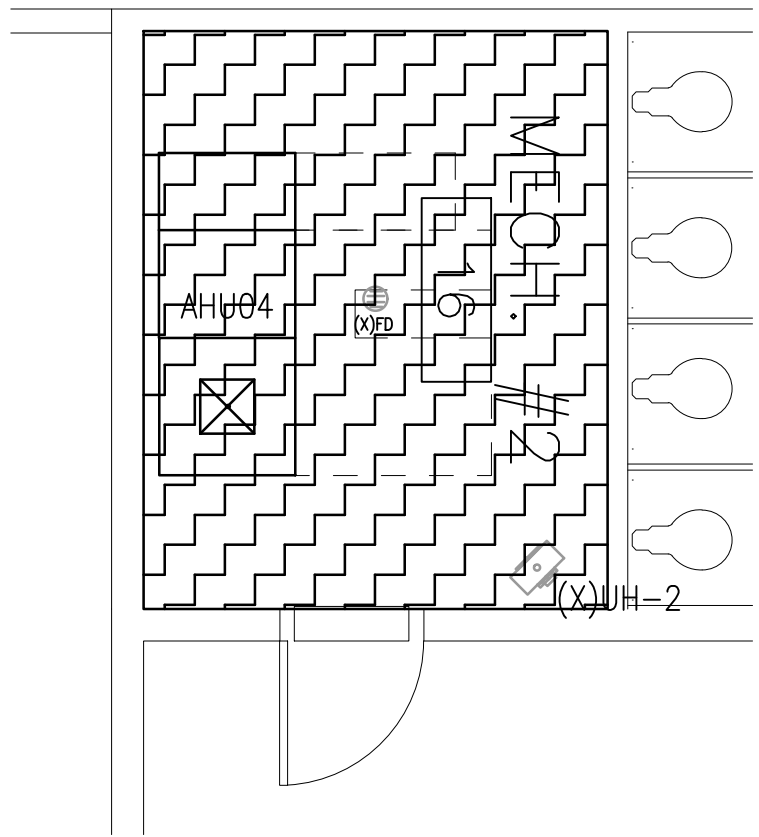
REVISIONS			
SYM		DATE	APPROVED

SHEET NOTES

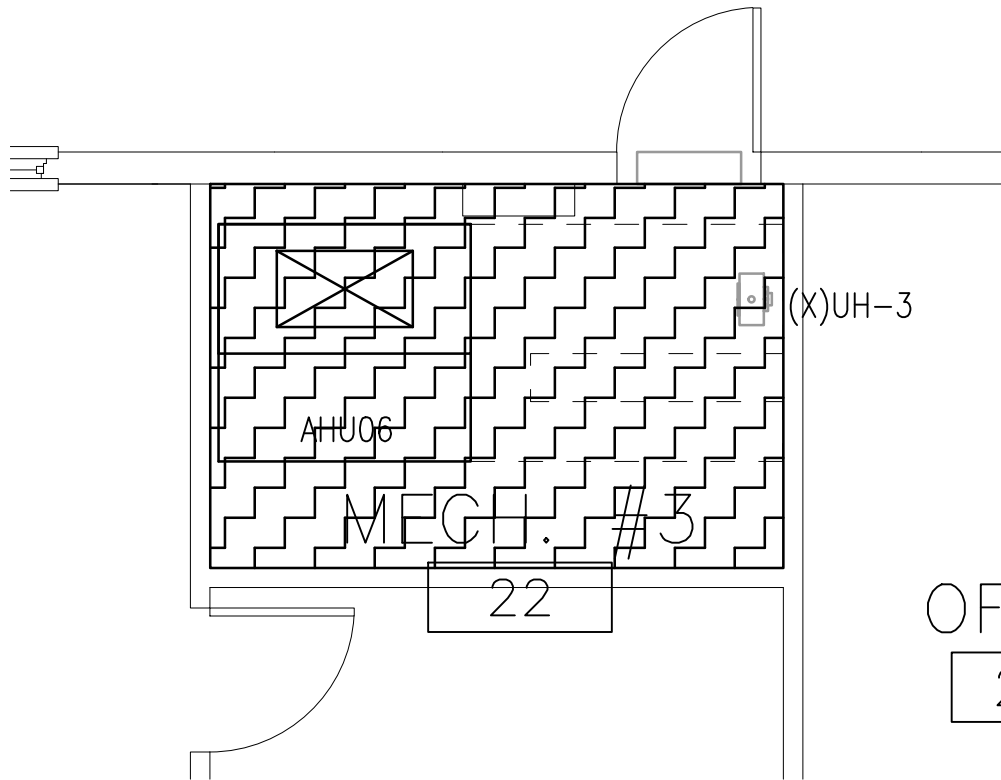
- REFERENCE SHEET FP001 FOR LEGEND AND NOTES.
- REFERENCE SHEET FPD101 FOR DEMOLITION PLAN.



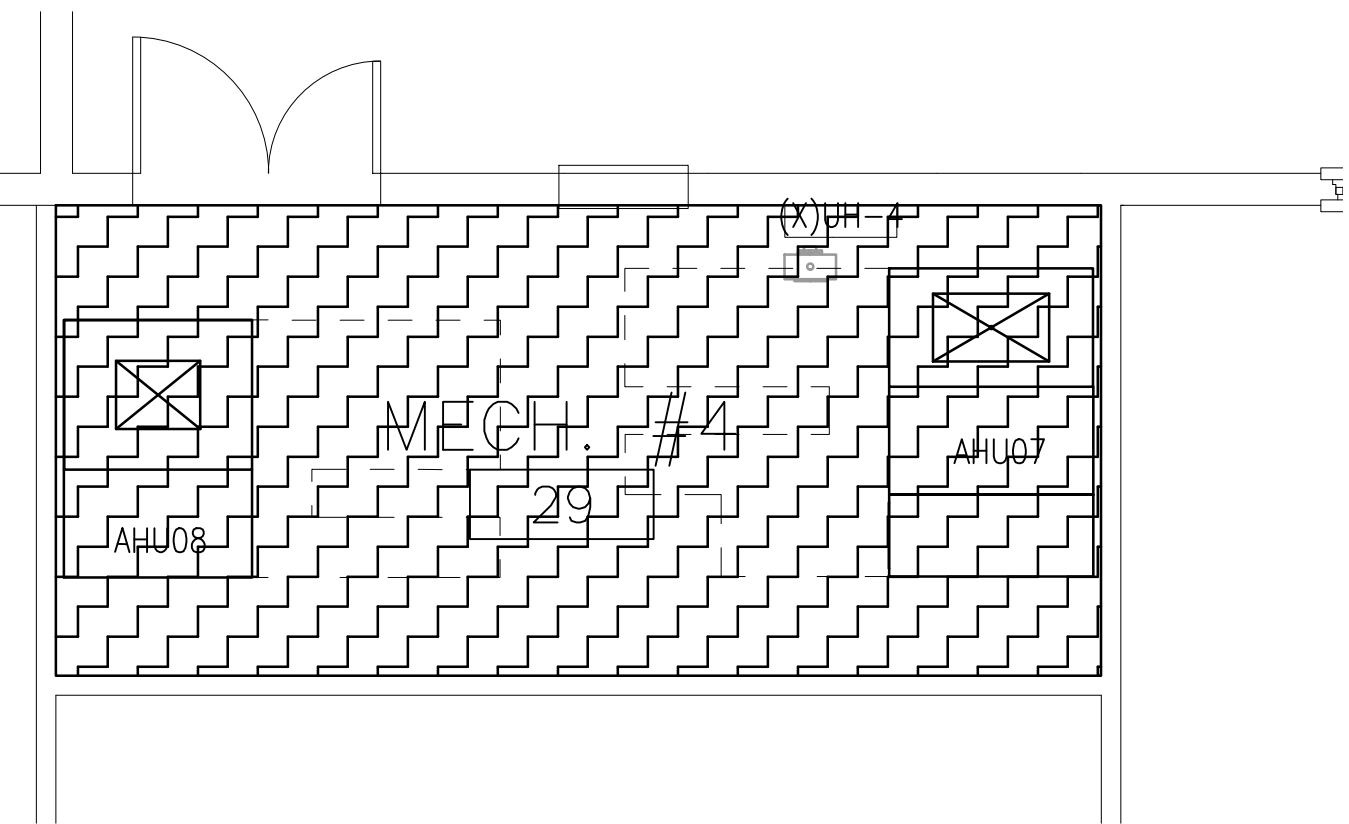
ENLARGED MECHANICAL ROOM 1 PLAN
1/4"=1'-0"



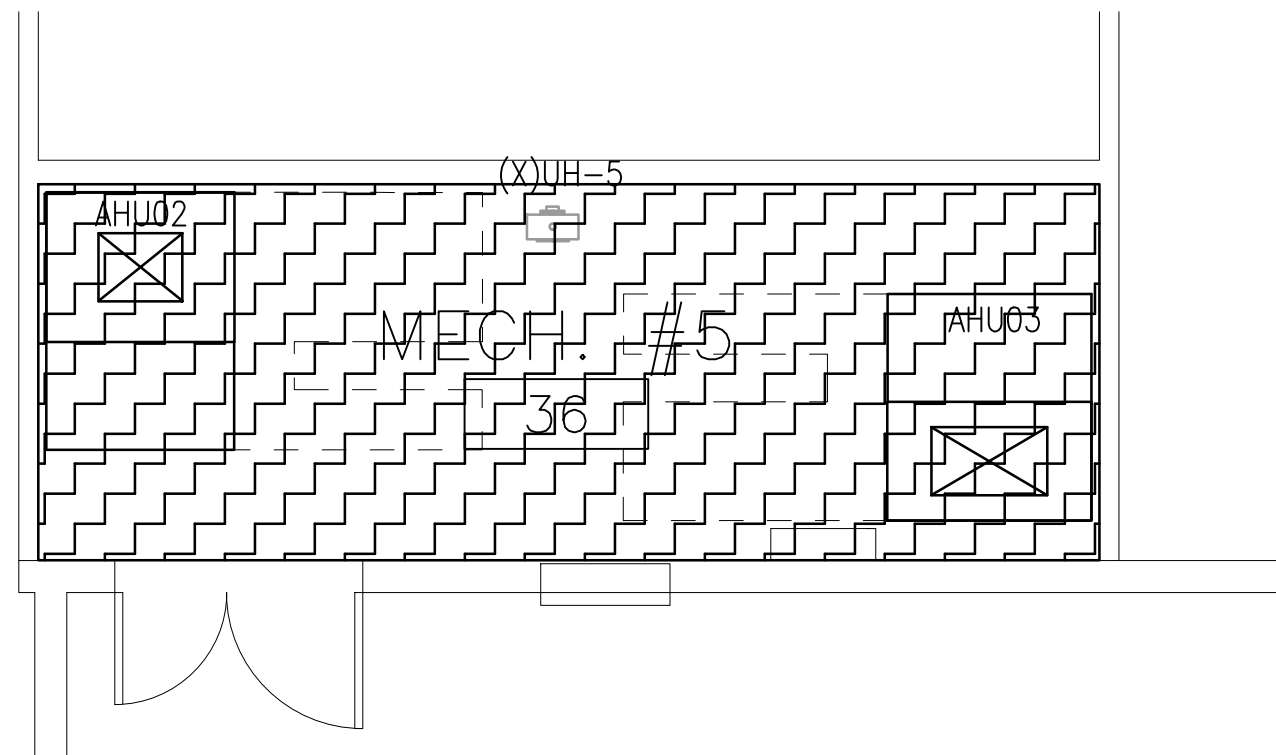
ENLARGED MECHANICAL ROOM 2 PLAN
1/4"=1'-0"



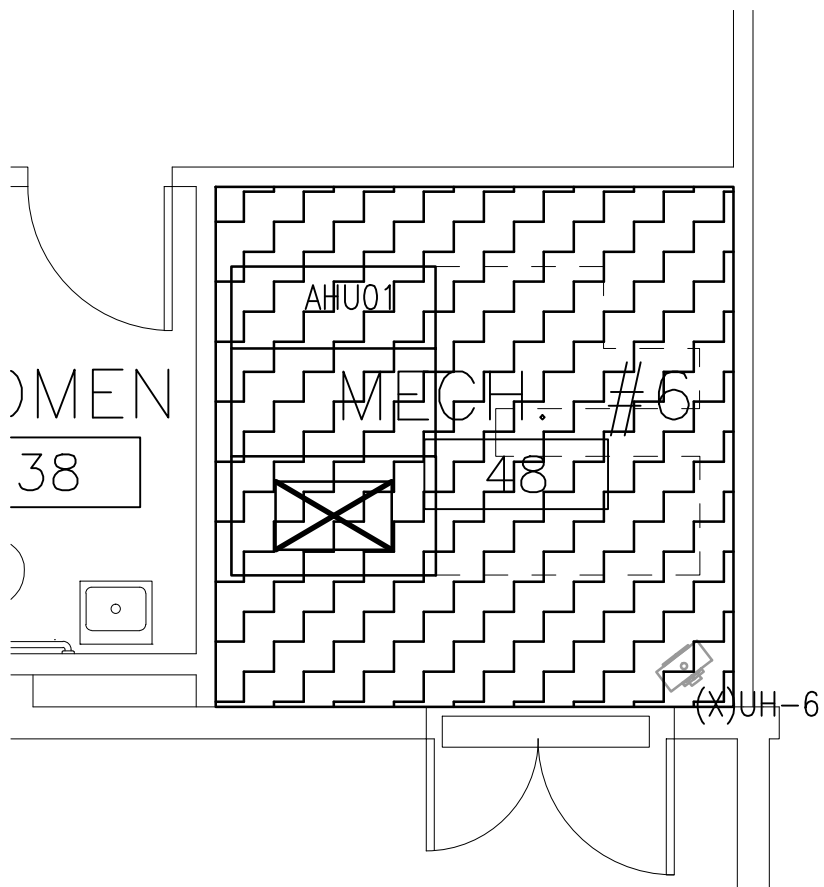
ENLARGED MECHANICAL ROOM 3 PLAN
1/4"=1'-0"



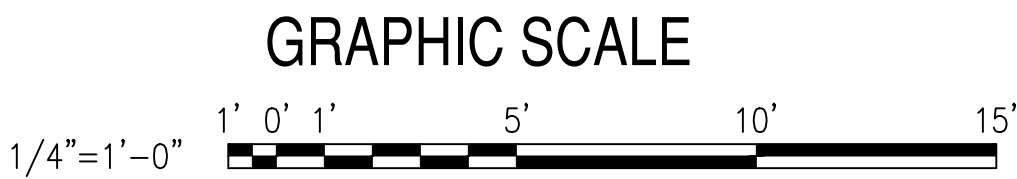
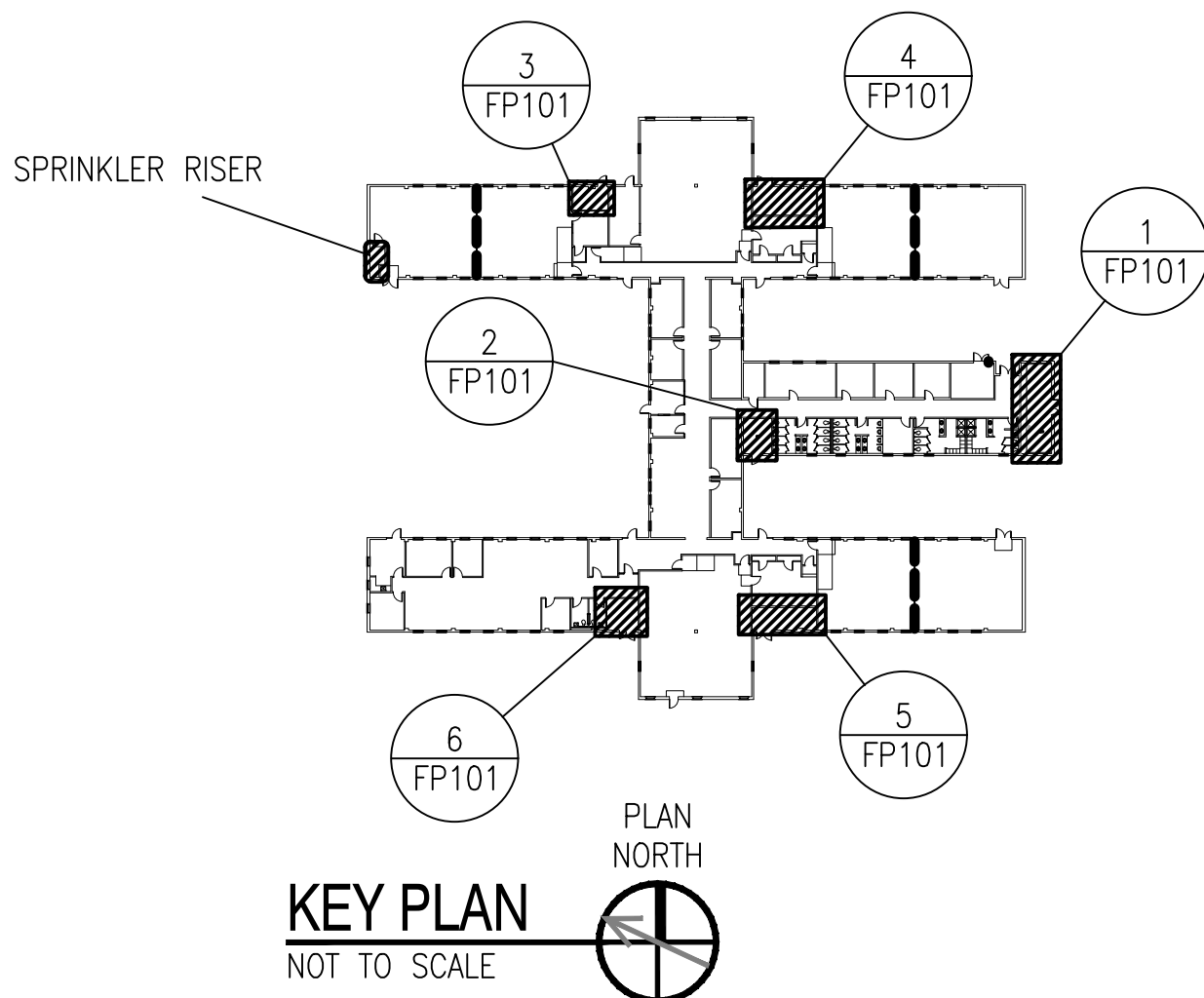
ENLARGED MECHANICAL ROOM 4 PLAN
1/4"=1'-0"



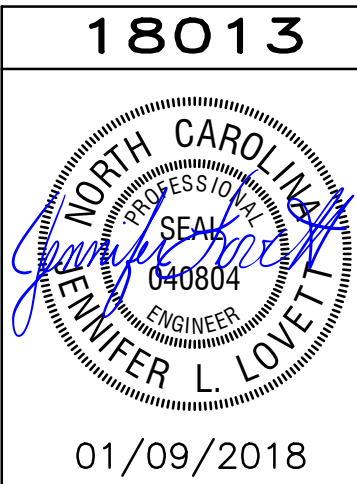
ENLARGED MECHANICAL ROOM 5 PLAN
1/4"=1'-0"



ENLARGED MECHANICAL ROOM 6 PLAN
1/4"=1'-0"



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FINAL		FP101	
DES. BML		MARINE CORPS BASE	
DR. JLL		CAMP LEJEUNE, NORTH CAROLINA	
CHK. JLL		17-0003	
SUBMITTED BY: JLL		REPLACE AHU'S AT	
DESIGN DIR. T H BURTON, PE		M324	
APPROVED: PWO OR OICC		FIRE PROTECTION	
SATISFACTORY TO:		ENLARGED FLOOR PLANS	
DATE		NAVFAC DRAWING NO.	
SIZE		60023578	
CODE IDENT. NO		CONST. CONTR.	
F 80091		SCALE: -	
SPEC. 05-17-0003		SHEET 32 OF 32	

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