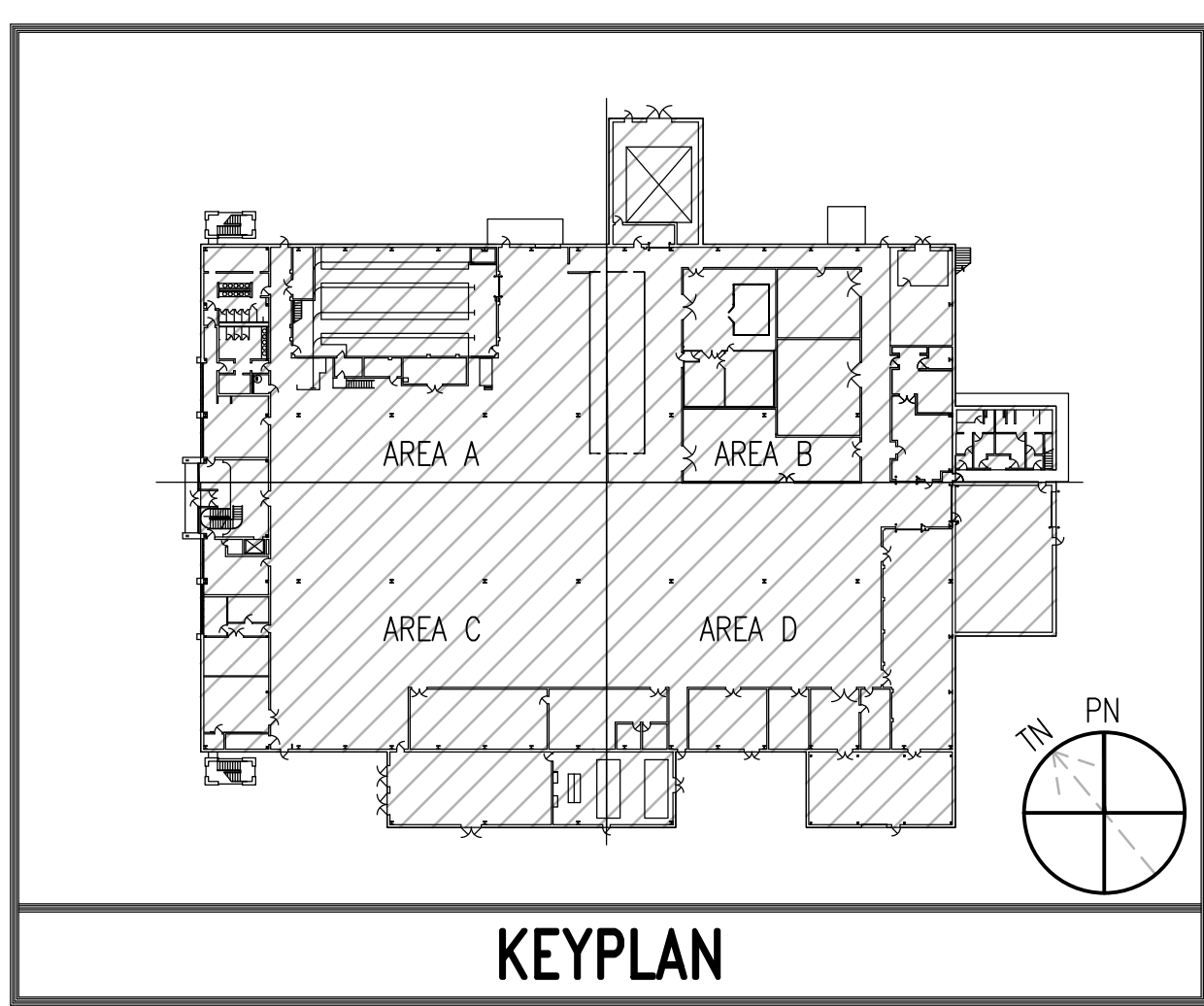
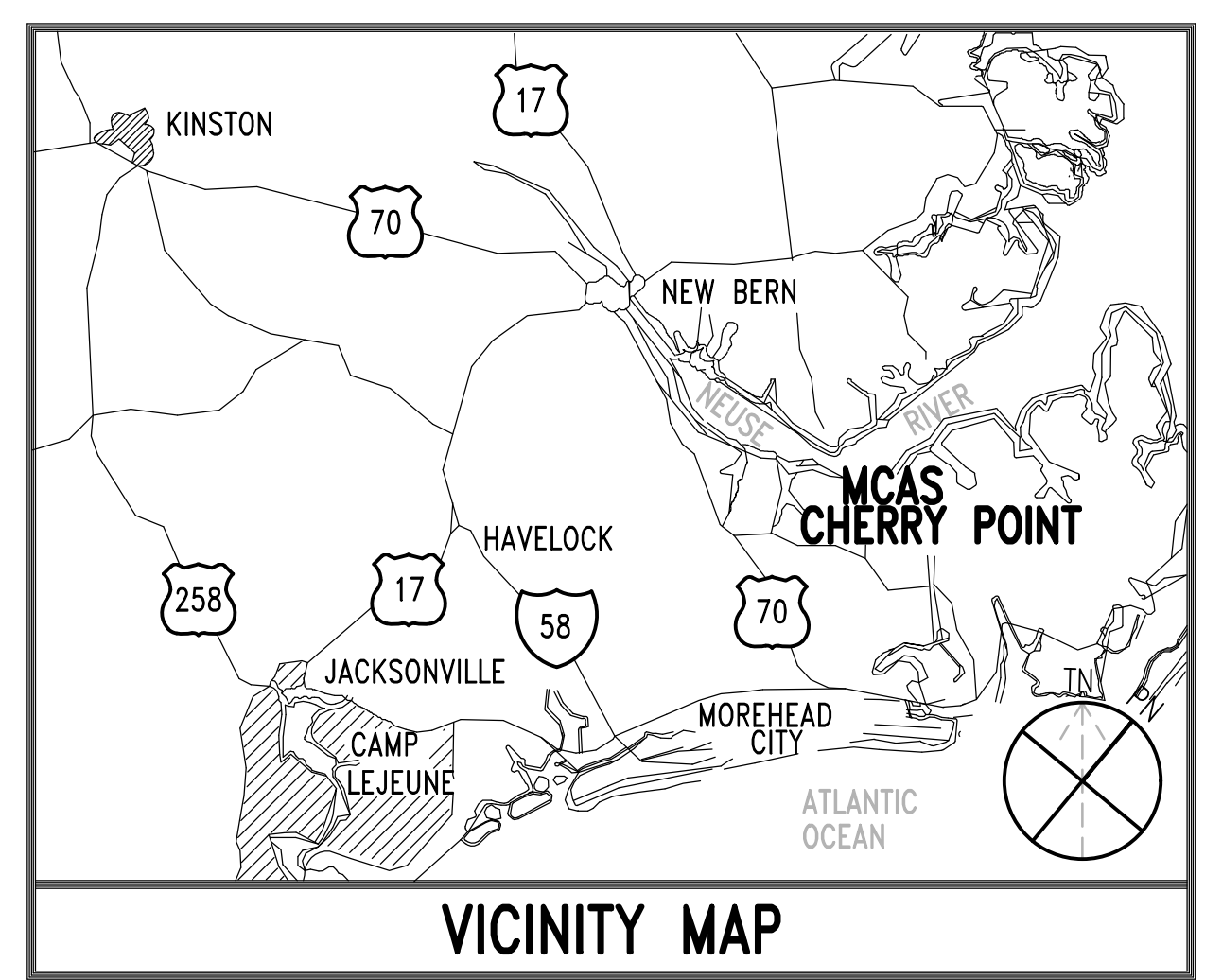
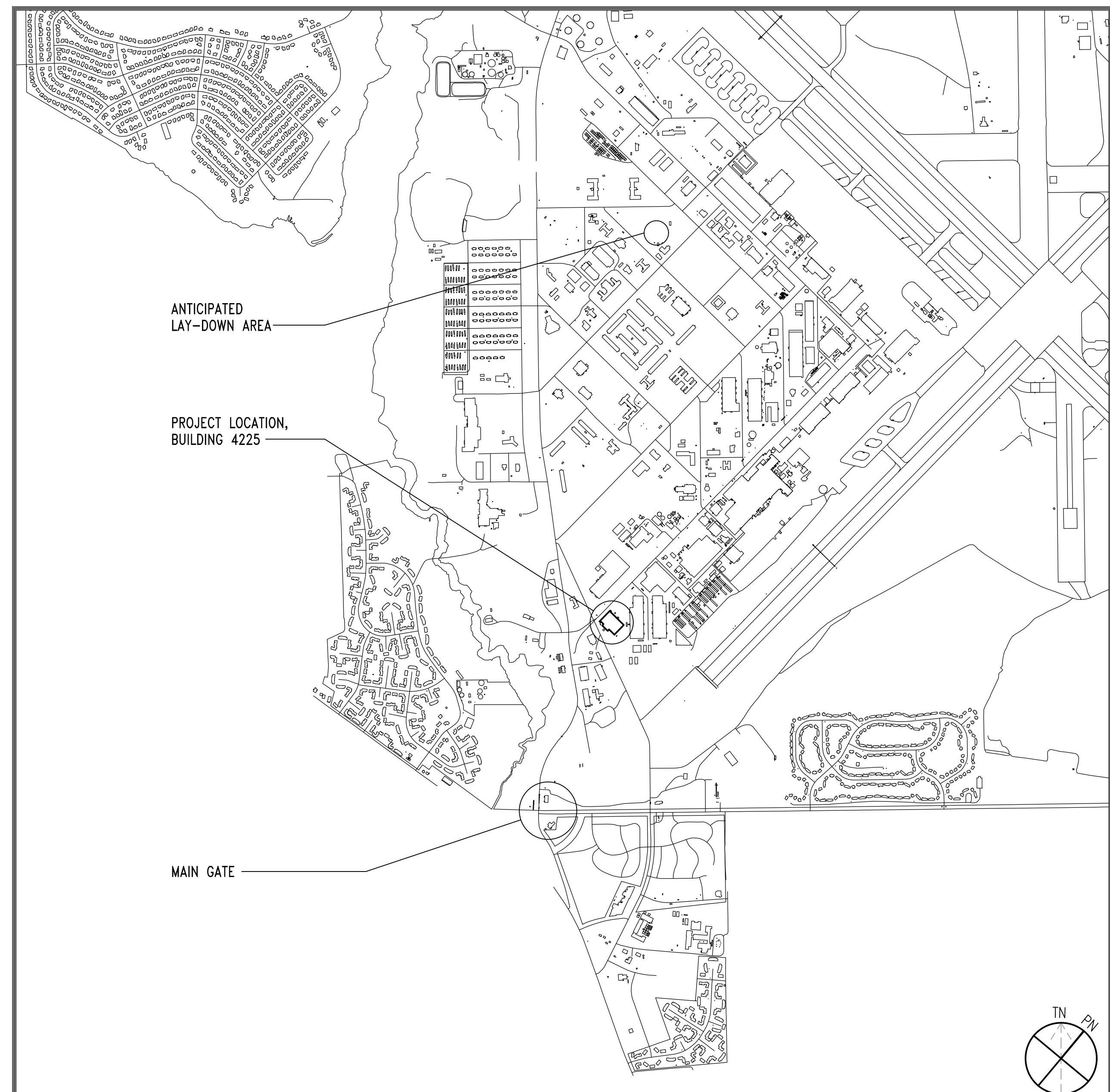


REPLACE HVAC AND CONTROLS PHASE II AT BUILDING 4225 MARINE CORPS AIR STATION CHERRY POINT, NORTH CAROLINA



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				12782436	35	M-103	MECHANICAL DUCTWORK PARTIAL FLOOR PLAN - AREA C
12782403	2	CD101	SITE PLAN - EXISTING CONDITIONS AND DEMOLITION	12782437	36	M-104	MECHANICAL DUCTWORK PARTIAL FLOOR PLAN - AREA D
12782404	3	CS101	SITE PLAN - NEW WORK	12782438	37	M-201	MECHANICAL PIPING PARTIAL FLOOR PLAN - AREA A
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12782410	9	S-104	MODIFIED ROOF FRAMING PLAN - AREA D	12782445	44	M-304	MECHANICAL PARTIAL ROOF PLAN - AREA D
12782411	10	S-501	TYPICAL DETAILS	12782446	45	M-401	MECHANICAL ROOM ENLARGED PLAN
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12782412	11	AD101	DEMOLITION ROOF PLAN	12782448	47	M-502	MECHANICAL DETAILS
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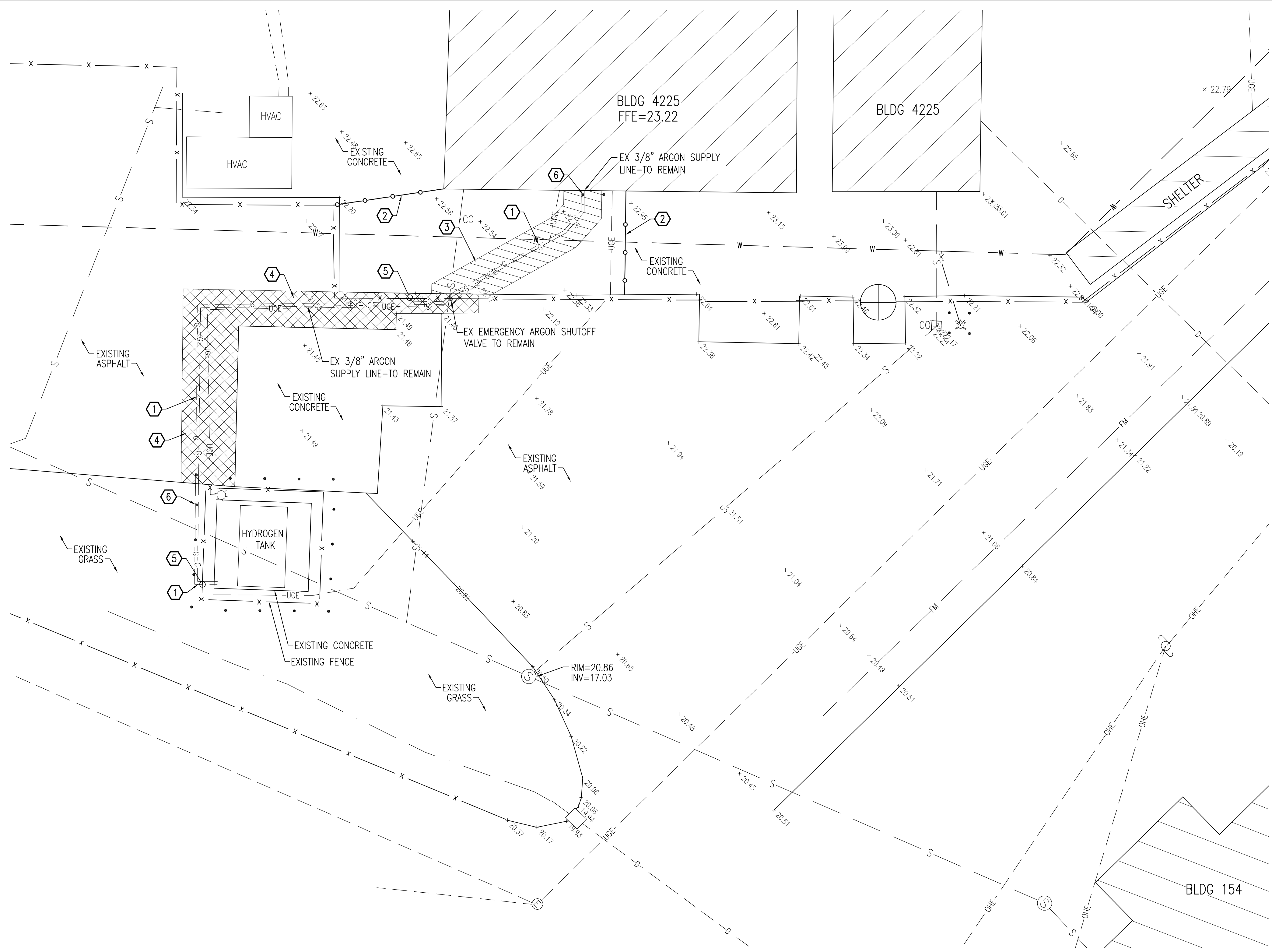
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ACTIVITY		
SATISFACTORY TO		
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U.S. MARINE CORPS AIR STATION CHERRY POINT, NORTH CAROLINA REPLACE HVAC AND CONTROLS PHASE II AT BUILDING 4225 TITLE SHEET		
SCALE: AS NOTED	PROJECT NO.: ST-14507A	
MAXIMO WORK ORDER NO. 6878897		
NAVFAC DRAWING NO. 12782402		
SHEET 1 OF 68		
GI001		
DRAWN/REVISED: 10 MAY 2014		

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 Timothy N. Hahn
 Lic. No. 058039
 05-31-19
 PROFESSIONAL ENGINEER
 #18166 SEAL

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CIVIL LEGEND		
EXISTING	DESCRIPTION	NEW
	WATER VALVE	
	SANITARY SEWER MANHOLE	
	CLEANOUT	
	FIRE HYDRANT	
	COMMUNICATIONS PEDESTAL	
	UTILITY POLE/POLE WITH LIGHT	
	SANITARY SEWER (GRAVITY)	
	SEWER FORCE MAIN	
	DOMESTIC/FIRE WATER	
	UNDERGROUND GAS	
	OVERHEAD ELECTRICAL	
	UNDERGROUND ELECTRICAL	
	UNDERGROUND COMMUNICATIONS	
	FENCE	
	CONCRETE	
	ASPHALT	
	SURVEY CONTROL POINT	
	SPOT ELEVATIONS	
	SOURCE/DESTINATION UNKNOWN	
	DEMOLITION ITEMS	

GENERAL CONSTRUCTION NOTES:

1. THE LOCATION AND DEPTHS OF EXISTING UTILITIES SHOWN ARE APPROXIMATE. THE CONTRACTOR MUST BE RESPONSIBLE FOR SCANNING THE AREA OF WORK TO IDENTIFY TO HIS OWN SATISFACTION THE EXTENT OF UTILITIES PRESENT INCLUDING THE UTILITIES INDICATED TO BE PRESENT, THOSE NOT SHOWN, AND THOSE SHOWN TO BE IN A DIFFERENT LOCATION.
2. PHYSICAL SITE FEATURES OUTSIDE THE AREA OF WORK OR THOSE FEATURES NOT RELEVANT TO THE WORK BEING PERFORMED ARE NOT SHOWN FOR CLARITY.
3. ALL TRENCH EXCAVATION SHALL BE PROVIDED IN ACCORDANCE WITH DETAIL C3, SHEET CS501.
4. ALL DISTURBED VEGETATED AREAS SHALL BE RESTORED IN ACCORDANCE WITH THE PROJECT VEGETATION PLAN, SEE DETAIL A3, SHEET CS501.

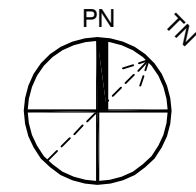
DEMOLITION KEYNOTES:

- 1 REMOVE EXISTING HYDROGEN PIPING—SEE SHEET MD204 FOR DEMOLITION INSIDE BUILDING 4225.
- 2 PROVIDE 7' HIGH TEMPORARY CHAINLINK SECURITY FENCE TO MAINTAIN SECURITY.
- 3 CONCRETE APRON CUT AND PATCH—SEE DETAIL D1, SHEET CS501
- 4 ASPHALT CUT AND PATCH—SEE DETAIL B1, SHEET CS501
- 5 REMOVE AND REINSTALL EXISTING FENCE TO FACILITATE PIPE INSTALLATION.
- 6 EXISTING BOLLARD TO BE REMOVED TO FACILITATE HYDROGEN PIPE REPLACEMENT (TYP. OF 5).

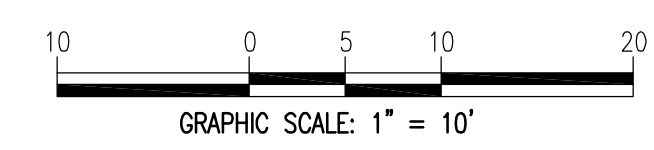
SPECIAL ENVIRONMENTAL CONDITIONS APPLICABLE TO PROJECT:

1. THIS PROJECT IS LOCATED WITHIN THE DEFINED LIMITS OF OPERABLE UNIT 1. THIS OPERABLE UNIT HAS A RECORD OF DECISION (ROD) THAT REQUIRES CERTAIN REPORTING ACTIONS BE COMPLETED IN ORDER TO BE IN COMPLIANCE WITH THE ROD. NO DEWATERING ACTIVITIES CAN OCCUR IN THESE AREAS WITHOUT PRIOR WRITTEN APPROVAL. SEE SPECIFICATION SECTION 01 14 00 "WORK RESTRICTIONS".
2. SPECIFICATION SECTION 31 23 00.00 20 "EXCAVATION AND FILL" OUTLINES THE REQUIREMENTS FOR HANDLING SUSPECTED CONTAMINATED SOILS AND ALL FILL MATERIALS IMPORTED TO THE BASE.
3. ALL EXCAVATED MATERIAL SHALL BE CONSIDERED CONTAMINATED AND SHALL BE HANDLED IN ACCORDANCE WITH SPECIFICATION SECTION 31 23 00.00 20 "EXCAVATION AND FILL."

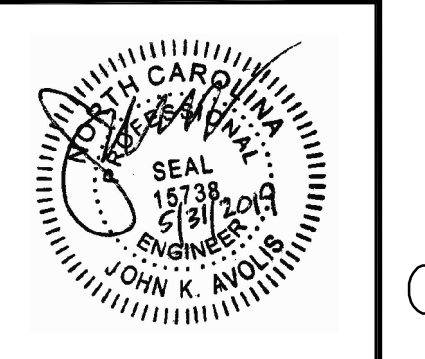
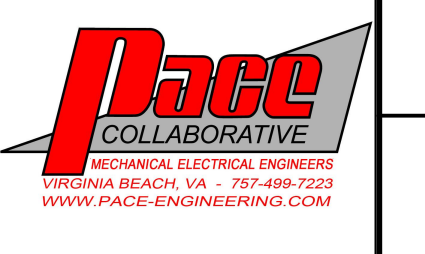
SITE PLAN-EXISTING CONDITIONS AND DEMOLITION
SCALE: 1" = 10'



GRAPHIC SCALE:



DATE	DESCRIPTION	APP'R



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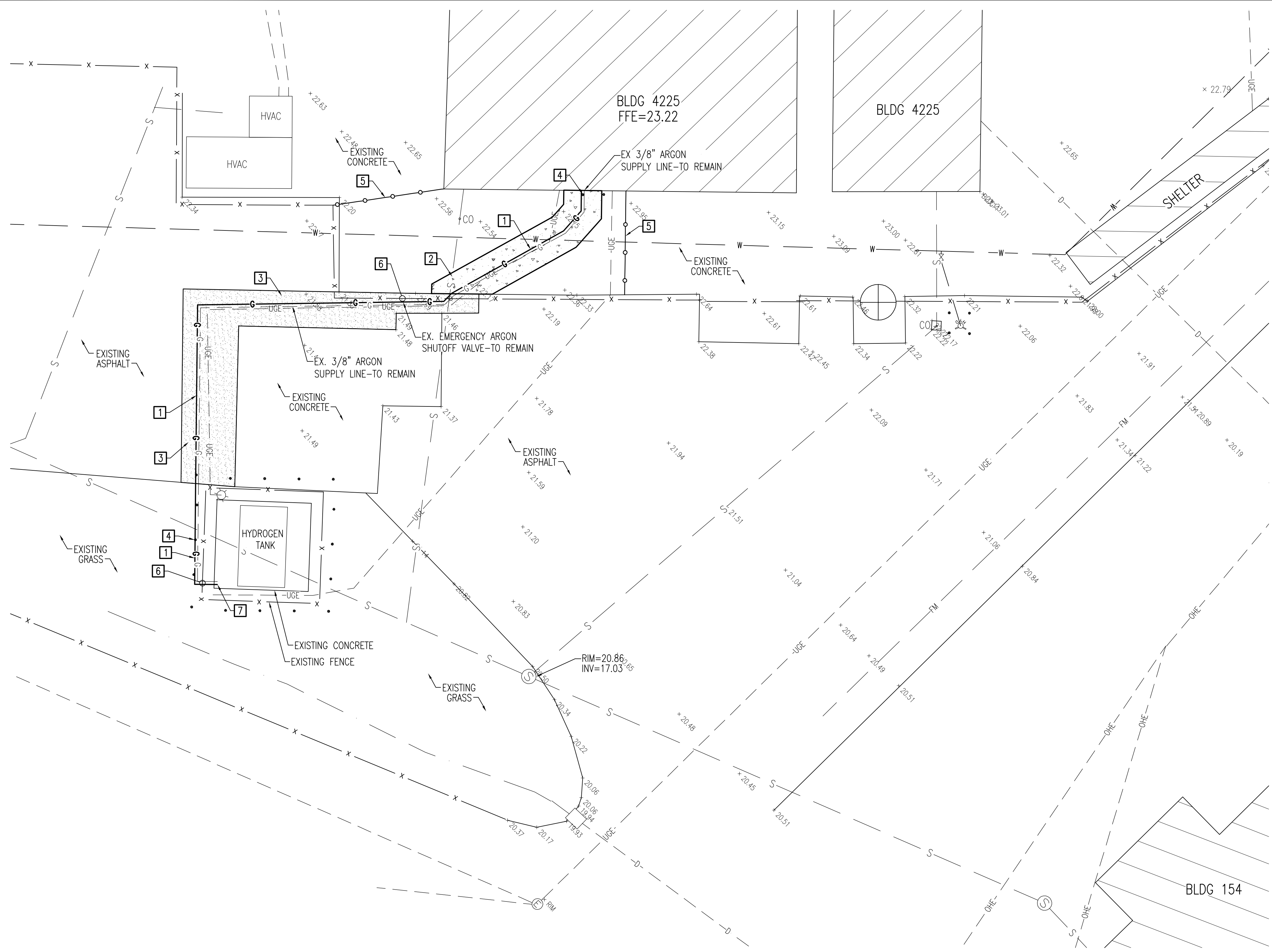
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PER COMMANDER NAVFAC:	
ACTIVITY:	
SATISFACTORY TO:	
DES:	JKA
DRW:	JKA
CHK:	JKA

U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
SITE PLAN - EXISTING CONDITIONS AND DEMOLITION

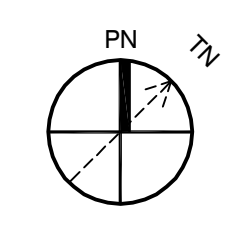
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PROJECT NO.:	ST-14507A
MAXIMO WORK ORDER NO.:	6676412
NAVFAC DRAWING NO.:	12782403
SHEET:	2 OF 68
CD101	

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SITE PLAN - NEW WORK
SCALE: 1" = 10'



GENERAL CONSTRUCTION NOTES:

1. THE LOCATION AND DEPTHS OF EXISTING UTILITIES SHOWN ARE APPROXIMATE. THE CONTRACTOR MUST BE RESPONSIBLE FOR SCANNING THE AREA OF WORK TO IDENTIFY TO HIS OWN SATISFACTION THE EXTENT OF UTILITIES PRESENT INCLUDING THE UTILITIES INDICATED TO BE PRESENT, THOSE NOT SHOWN, AND THOSE SHOWN TO BE IN A DIFFERENT LOCATION.
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4. ALL DISTURBED VEGETATED AREAS SHALL BE RESTORED IN ACCORDANCE WITH THE PROJECT VEGETATION PLAN, SEE DETAIL A3, SHEET CS501.

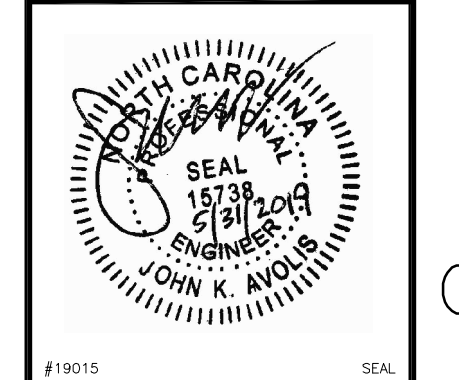
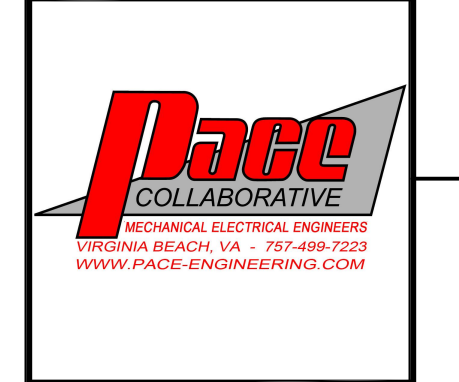
SITE WORK KEYNOTES:

- 1 PROVIDE NEW HYDROGEN PIPING-SEE SHEET M-204 FOR CONTINUATION INSIDE BUILDING 4225.
- 2 CONCRETE APRON CUT AND PATCH-SEE DETAIL D1, SHEET CS501
- 3 ASPHALT CUT AND PATCH-SEE DETAIL B1, SHEET CS501
- 4 PROVIDE BOLLARD - SEE DETAIL A1, CS501 (TYPICAL OF 5).
- 5 PROVIDE 7' HIGH TEMPORARY CHAINLINK SECURITY FENCE TO MAINTAIN SECURITY.
- 6 REMOVE AND REINSTALL EXISTING FENCE TO FACILITATE PIPE INSTALLATION.
- 7 CONNECT TO EXISTING HYDROGEN PIPING 6" ABOVE GRADE.

SPECIAL ENVIRONMENTAL CONDITIONS APPLICABLE TO PROJECT:

1. THIS PROJECT IS LOCATED WITHIN THE DEFINED LIMITS OF OPERABLE UNIT 1. THIS OPERABLE UNIT HAS A RECORD OF DECISION (ROD) THAT REQUIRES CERTAIN REPORTING ACTIONS BE COMPLETED IN ORDER TO BE IN COMPLIANCE WITH THE ROD. NO DEWATERING ACTIVITIES CAN OCCUR IN THESE AREAS WITHOUT PRIOR WRITTEN APPROVAL. SEE SPECIFICATION SECTION 01 14 00 "WORK RESTRICTIONS".
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APPR	DATE	DESCRIPTION

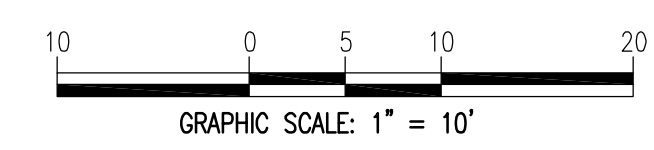


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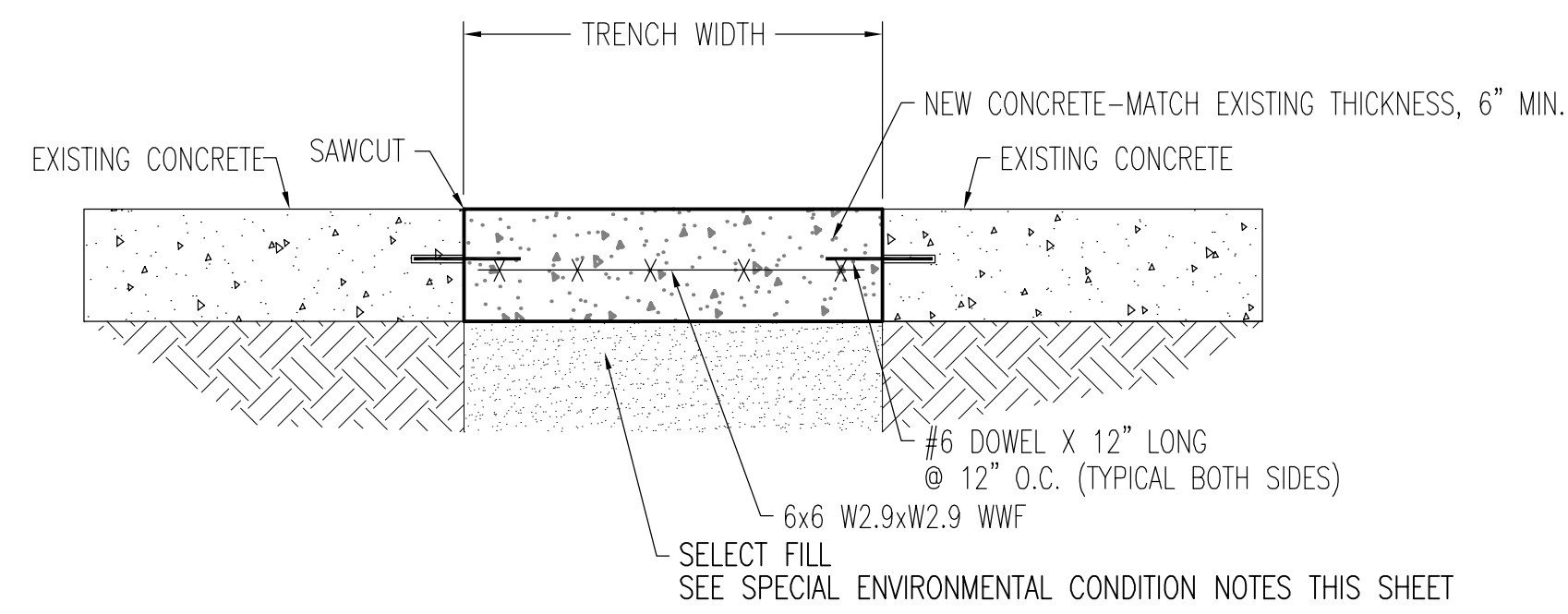
APPROVED:
PER COMMANDER NAVFAC
ACTIVITY:
SATISFACTORY TO:
DES: JKA DRW: JKA CHK: JKA

U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
SITE PLAN - NEW WORK

GRAPHIC SCALE:



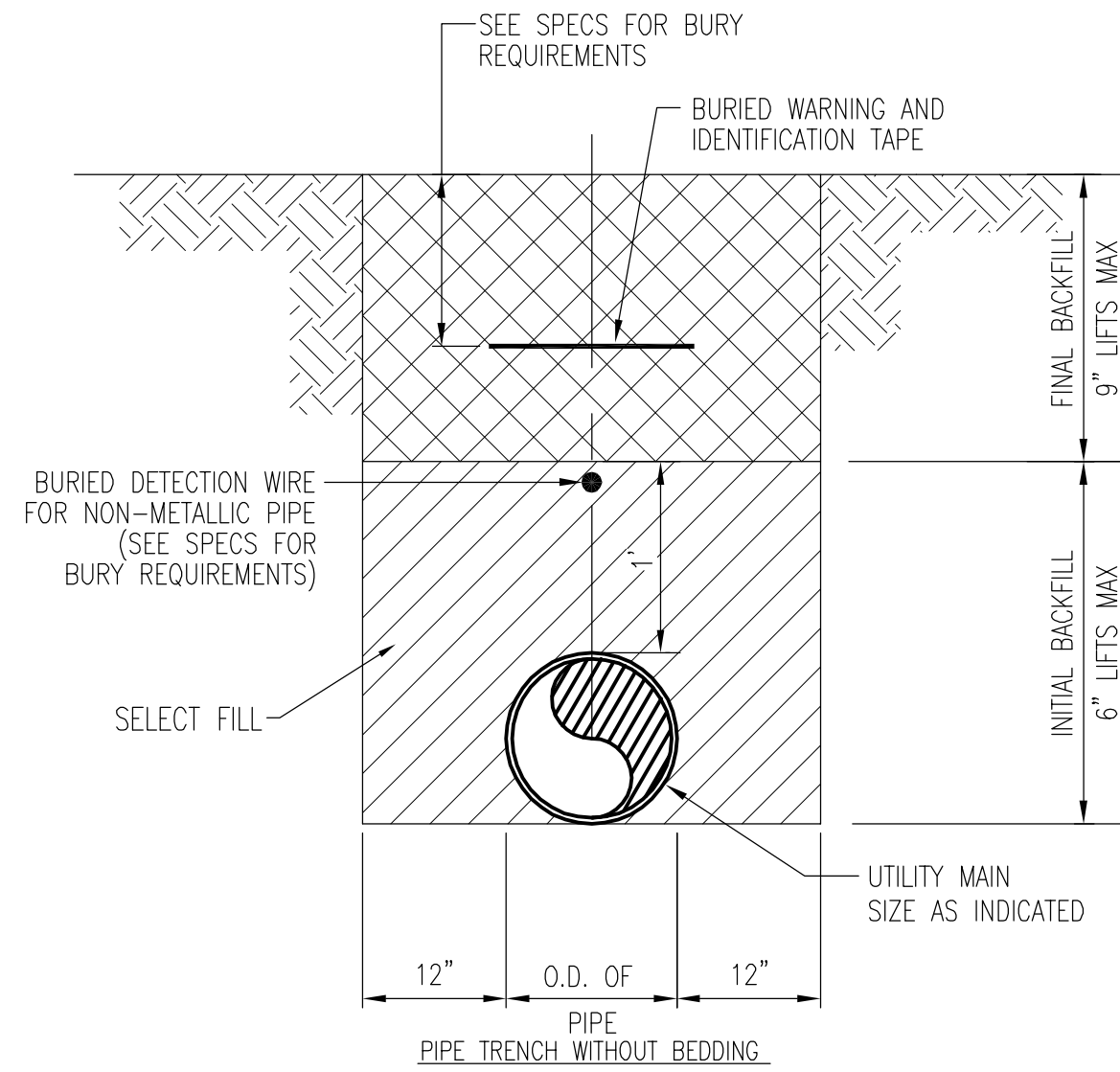
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PROJECT NO.: **ST-14507A**
MAXIMO WORK ORDER NO.: **6676412**
NAVFAC DRAWING NO.: **12782404**
SHEET **3** OF **68**
CS101



NOTE: REMOVE CONCRETE AT JOINTS WHEN JOINTS ARE LOCATED WITHIN 5 FEET OF AREA OF WORK. CONCRETE FINISH & JOINT PATTERN SHALL MATCH EXISTING.

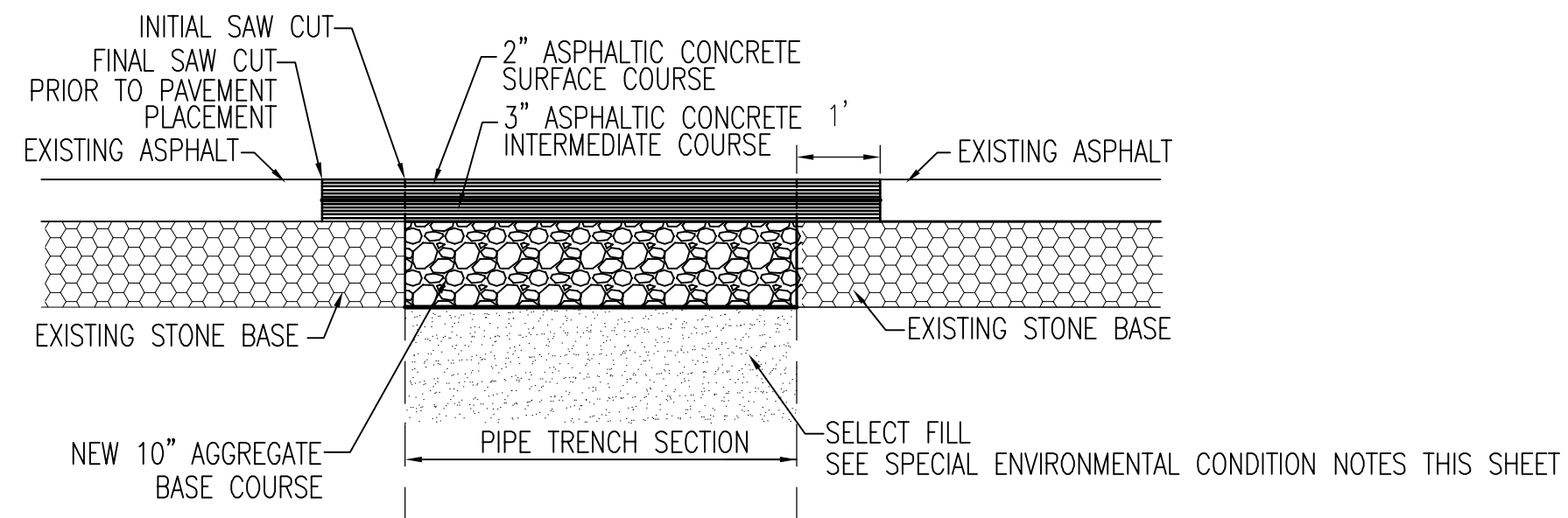
D1 CONCRETE CUT AND PATCH

SCALE: NTS



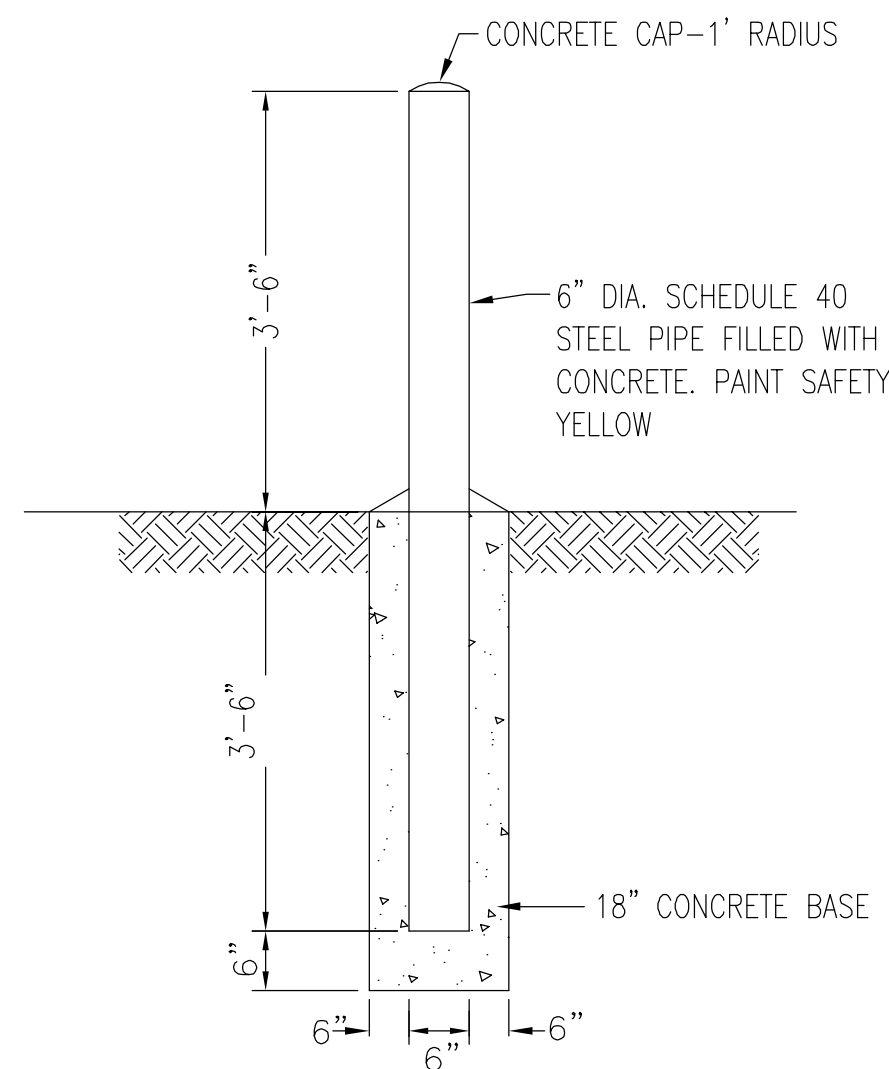
C3 PIPE TRENCH SECTION

SCALE: NTS



B1 ASPHALT CUT AND PATCH

SCALE: NTS



A1 BOLLARD

SCALE: NTS

TEMPORARY VEGETATIVE SEEDING (PRIOR TO ESTABLISHING PERMANENT VEGETATION)

AFTER COMPLETION OF GRADING ACTIVITIES AND THE CONSTRUCTION OF SWALES, ALL EXPOSED AREAS MUST BE SEED TO THE FOLLOWING SPECIFICATIONS:

SEED BED	
LIME	1-1/2 TON PER ACRE
FERTILIZER	1/2-TON PER ACRE
SEED	
RYE GRAIN	50 LBS PER ACRE
TALL FESCUE	100 LBS PER ACRE

SUPPLEMENTAL SEED

MAY THROUGH AUGUST:	
CENTPEDE	5 LBS PER ACRE

PROCEDURE

STRAW MULCH MUST BE APPLIED AT A RATE WHICH WILL INSURE APPROXIMATELY 75% COVERAGE OF THE SEEDING AREA. THE STRAW AND SOWN SEED WILL BE LIGHTLY DISCED INTO THE BED TO GIVE IT FURTHER RESISTANCE TO BLOWING AND WASHING. THE CONTRACTOR MUST GUARANTEE A FULL STAND OF GRASS OVER THE ENTIRE DISTURBED AREA. IF NECESSARY THE CONTRACTOR WILL WET DOWN THE AREAS TO ASSIST IN SEED GERMINATION OR AID IN GROWTH IN TIMES OF EXCESSIVELY DRY WEATHER. A STAND OF GRASS WILL BE CONSIDERED ACCEPTABLE WHEN THE ENTIRE STAND OF GRASS IS AT LEAST FOUR INCHES HIGH AND HAS ACHIEVED AT LEAST 95% COVERAGE OF DISTURBED AREAS. RESEEDING WILL BE REQUIRED AS NECESSARY BY THE CONTRACTOR TO OBTAIN THE SPECIFIED STAND OF GRASS.

PERMANENT VEGETATION

ALL DISTURBED AREAS NOT COVERED WITH BUILDINGS, PAVEMENTS, OR OTHER IMPERMEABLE SURFACES MUST BE SODDED WITH CENTPEDE SOLID SOD AS THE FINAL/PERMANENT VEGETATION.

SPECIAL SEEDING NOTE:

ALL DENUDED AREAS WILL, WITHIN 7 CALENDAR DAYS OF COMPLETION OF ANY PHASE OF GRADING OR CEASING OF GRADING ACTIVITIES, BE PLANTED AND PROVIDED WITH TEMPORARY OR PERMANENT GROUND COVER, DEVICES, OR STRUCTURES SUFFICIENT TO RESTRAIN EROSION.

ALL DENUDED AREAS WILL, WITHIN 7 DAYS OF COMPLETION OF CONSTRUCTION, BE PROVIDED PERMANENT GROUND COVER.

A3 VEGETATION PLAN

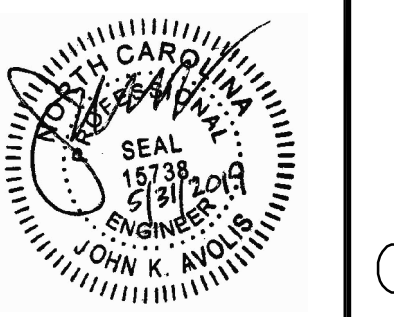
SCALE: NTS

SPECIAL ENVIRONMENTAL CONDITIONS APPLICABLE TO PROJECT:

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3. ALL EXCAVATED MATERIAL SHALL BE CONSIDERED CONTAMINATED AND SHALL BE HANDLED IN ACCORDANCE WITH SPECIFICATION SECTION 31 23 00.00 20 "EXCAVATION AND FILL."

GRAPHIC SCALE:

DATE	
DESCRIPTION	
SW	



DESIGNED & ENGINEERED BY:
AE
 AVOLIS ENGINEERING, P.A.
 P.O. BOX 15564
 NEW BERN, NC 28561
 PH. (252) 633-0068

APPROVED	
FOR COMMANDER NAVFAC	
ACTIVITY	
SATISFACTORY TO	
DES JKA	DRW JKA
CHK JKA	

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225
 DETAILS

SCALE	AS NOTED
PROJECT NO.:	ST-14507A
MAXIMO WORK ORDER NO.	6676412
NAVFAC DRAWING NO.	12782405
SHEET	4 OF 68
CS501	

GENERAL NOTES:

GENERAL NOTES:

- ALL WORK MUST COMPLY WITH THE CODES LISTED BELOW AND IN THE SPECIFICATIONS.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH THE PROVISIONS OF THE INTERNATIONAL BUILDING CODE, 2015 EDITION, AS MODIFIED BY UFC 1-200-01, AND IN ACCORDANCE WITH UFC 3-301-01 "STRUCTURAL ENGINEERING", DATED 01 JUNE 2013, CHANGE 4, NOVEMBER 2018.
- VERIFY ALL DRAWINGS FOR COORDINATION BETWEEN TRADES, LOCATE SLOTS, SLEEVES AND TRENCHES AS REQUIRED FOR MECHANICAL TRADES. PROVIDE AND INSTALL ANCHORS, INSERTS, HANGERS, ETC. AS REQUIRED FOR VARIOUS TRADES.
- THE CONTRACTOR WILL BE RESPONSIBLE FOR DIMENSIONS, ELEVATIONS, ETC., NECESSARY FOR THE PROPER CONSTRUCTION AND ALIGNMENT OF THE NEW PORTIONS OF THE STRUCTURE TO THE EXISTING STRUCTURE. THE CONTRACTOR MUST MAKE ALL MEASUREMENTS NECESSARY PRIOR TO THE FABRICATION AND ERECTION OF STRUCTURAL MEMBERS.
- BEFORE PROCEEDING WITH ANY WORK WITHIN THE EXISTING STRUCTURE, THE CONTRACTOR MUST FAMILIARIZE HIMSELF WITH STRUCTURAL CONDITIONS OF THE EXISTING STRUCTURE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL NECESSARY SAFEGUARDS, TO MAINTAIN ALL PARTS OF THE STRUCTURE IN A SAFE CONDITION AT ALL TIMES DURING THE PROCESS OF CONSTRUCTION AND TO PROTECT FROM DAMAGE THOSE PORTIONS OF THE EXISTING STRUCTURE WHICH IS TO REMAIN.
- UNDER NO CIRCUMSTANCES SHALL REPRODUCTION OF CONTRACT DRAWINGS BE USED AS SHOP DRAWINGS.
- THE DUTY OF THE CONTRACTING OFFICER IN CONDUCTING CONSTRUCTION REVIEW OF CONTRACTOR'S PERFORMANCE IS NOT INTENDED TO INCLUDE REVIEW OF ADEQUACY OF CONTRACTOR'S SAFETY MEASURES IN, ON, OR NEAR THE CONSTRUCTION SITE.
- TYPICAL DETAILS AND GENERAL NOTES APPLY TO ALL PARTS OF THE JOB EXCEPT WHERE SPECIFICALLY DETAILED OR NOTED OTHERWISE.
- STRUCTURAL DRAWINGS SHOW ONLY THE BASIC STRUCTURAL FRAMING. REFER TO ARCHITECTURAL AND MECHANICAL DRAWINGS FOR NON-STRUCTURAL ITEMS.
- THE CONTRACTOR IS RESPONSIBLE FOR, AND MUST MAKE GOOD AT HIS OWN EXPENSE, ANY AND ALL DAMAGES TO ANY WORK OR MATERIALS IN PLACE ON THE PREMISES, OR INCLUDED IN THIS CONTRACT.
- THE CONTRACTOR MUST TREAT ALL PAINT ON EXISTING FRAMING AS LEAD-CONTAINING PAINT. THE CONTRACTOR MUST COMPLY WITH OSHA REGULATION 29 CFR 1926.62 CONCERNING LEAD EXPOSURE TO WORKERS DURING CONSTRUCTION ACTIVITIES. UNDER NO CONDITION SHOULD UNPROTECTED WORKERS PERFORM SANDING, CUTTING OR WELDING ACTIVITIES ON ANY SURFACE WITH LEAD-CONTAINING PAINT.
- THE CONTRACTOR MUST NOT USE THE ROOF TO STORE MATERIALS OR TOOLS. THE CONTRACTOR IS LIABLE FOR DAMAGE DONE TO THE EXISTING SOPREMA ROOF MEMBRANE AND MUST ONLY USE SOPREMA PRODUCTS TO MAKE ADDITIONS OR REPAIRS. ANY WORK TO THE EXISTING MEMBRANE TO INCLUDE CURBS MUST BE INSPECTED BY THE SOPREMA TECH REPRESENTATIVE, MR. DALLAS MARSHBURN WHO CAN BE CONTACTED AT DMARSHBURN@SOPREMA.US.

STRUCTURAL STEEL NOTES:

- ALL STRUCTURAL STEEL MUST BE NEW, CLEAN AND STRAIGHT. ALL STEEL SHAPES MUST CONFORM TO ASTM 36 UNLESS OTHERWISE NOTED.
- STRUCTURAL STEEL FABRICATION AND ERECTION MUST COMPLY WITH THE INTERNATIONAL BUILDING CODE AND THE "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS," ANSI/AISC 360-05, WITH ITS LATEST AMENDMENTS.
- UNLESS OTHERWISE NOTED ALL SHOP CONNECTIONS SHALL BE WELDED AND ALL FIELD CONNECTIONS SHALL BE BOLTED. THE FABRICATOR IS RESPONSIBLE FOR THE DESIGN OF ALL CONNECTIONS.
- WELDING MUST COMPLY WITH THE "STRUCTURAL WELDING CODE" PREPARED BY THE A.W.S., MINIMUM WELD SIZE SHALL BE 3/16" FILLET WELD, ELECTRODES SHALL BE E70XX.
- UNLESS OTHERWISE NOTED BOLTS MUST COMPLY WITH ASTM A-325 AND ANCHOR BOLTS SHALL COMPLY WITH ASTM F1554.

DESIGN CRITERIA:

- UFC 3-301-01, STRUCTURAL ENGINEERING.

DESIGN LOADS:

DESIGN LIVE LOADS USED IN THE DESIGN OF THIS STRUCTURE ARE AS FOLLOWS:

- OCCUPANCY RISK CATEGORY: II
- UNIFORM LIVE LOADS:
ROOF: 20PSF
EQUIPMENT: AS INDICATED ON PLAN SHEETS.
- WIND LOADS:
WIND VELOCITY (ULTIMATE) 138 MPH
IMPORTANCE FACTOR I = 1.0, BUILDING CATEGORY II
WIND EXPOSURE CATEGORY: C
- SEISMIC LOADS:
IMPORTANCE FACTOR: 1.0
0-2 SECOND SPECTRAL RESPONSE, $S_S = 12\%g$
1-0 SECOND SPECTRAL RESPONSE, $S_1 = 6\%g$
SOIL SITE CLASS = D (ASSUMED)
SEISMIC DESIGN CATEGORY: B
- SNOW LOADS:
GROUND SNOW LOAD: 10 PSF

ABBREVIATIONS LIST

ARCH.	ARCHITECT
CJ	CONTROL JOINT
C.L.	CENTER LINE
C.M.U.	CONCRETE MASONRY UNIT
CONT.	CONTINUOUS
DIA.	DIAMETER
DIAM.	ELEVATION
DWGS.	DRAWINGS
ELEV.	ELEVATION
EQ.	EQUAL
EXIST.	EXISTING
F.O.	FACE OF
GA.	GAGE
GALV.	GALVANIZED
L-	ANGLE
MECH.	MECHANICAL
MIN.	MINIMUM
MPH	MILES PER HOUR
O.C.	ON CENTER
PL	PLATE
P.S.I.	POUNDS PER SQUARE INCH
P.S.F.	POUNDS PER SQUARE FOOT
STD.	STANDARD
TYP.	TYPICAL
@	AT

NO.	DATE	DESCRIPTION



APPROVED

PER COMMANDER NAVFAC

ACTIVITY

SAISFACTORY TO

DES: KMR | DRW: MTW | CHK: KMR

DES:

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
 REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225
 GENERAL NOTES

SCALE: AS NOTED

PROJECT NO.: ST-14507A

MAXIMO WORK ORDER NO. 6878897

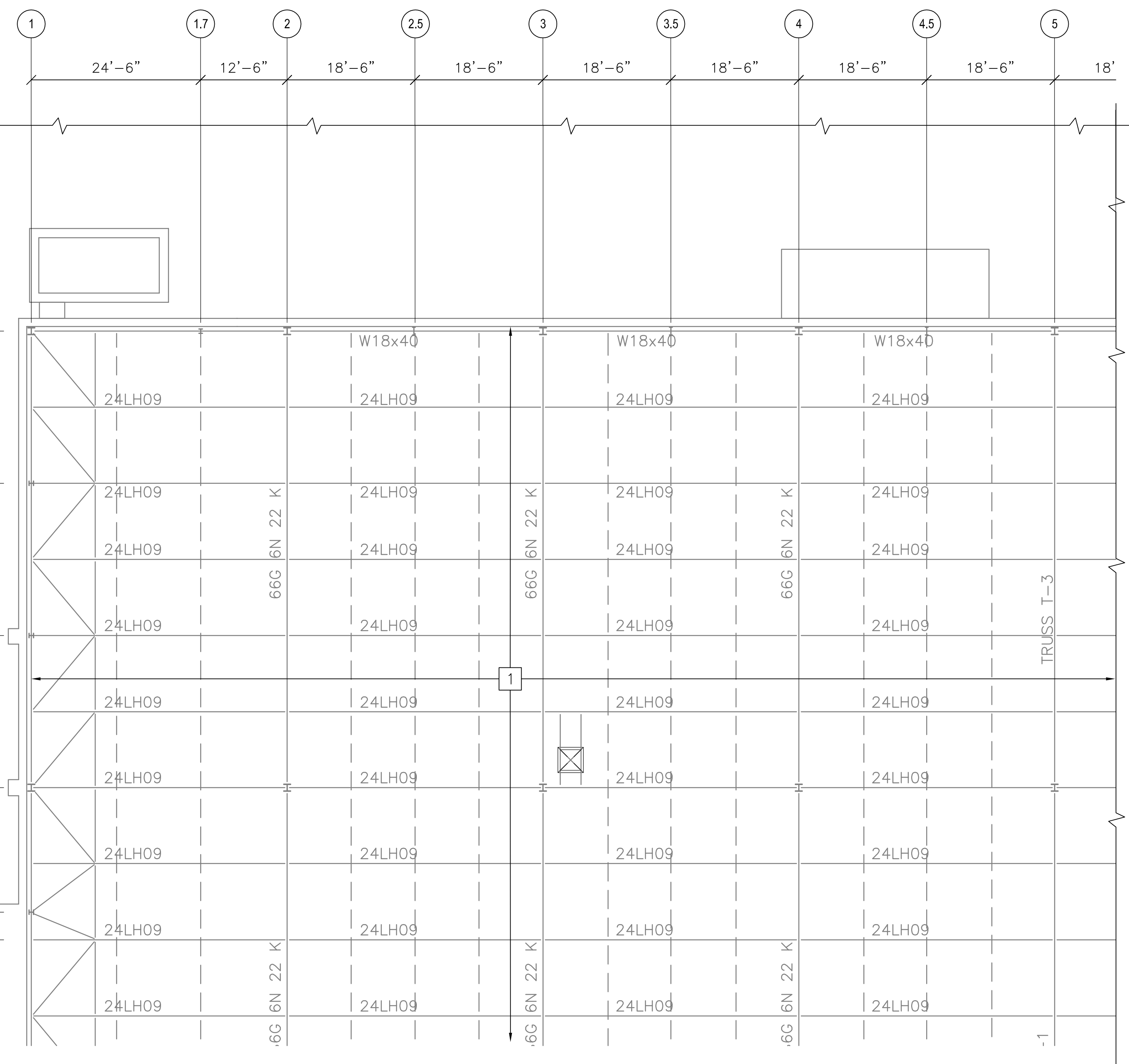
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SHEET 5 OF 68

S-001

DRAWING REVISION: 10 MAY 2014

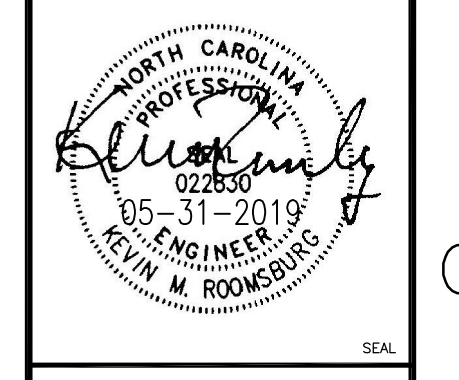
1 2 3 4 5



PLAN NOTES

- DATUM FOR ALL ELEVATIONS GIVEN ON THIS PLAN IS FINISHED FIRST FLOOR ELEV. = 0'-0".
- UNLESS OTHERWISE NOTED, EXISTING ROOF CONSTRUCTION IS 3" DEEP, 20 GA. TYPE 'N' STEEL ROOF DECK SUPPORTED ON OPEN WEB STEEL JOIST, JOIST GIRDERS AND STEEL BEAMS.
- FOR GENERAL NOTES REFER TO SHEET S-001.
- FOR TYPICAL DETAILS REFER TO SHEET S-501.

NO.	DESCRIPTION	DATE	APPR.



NRW ENGINEERING
Structural Consultants
748 Lord Dunmore Drive, Suite 101
Virginia Beach, VA 23464
Phone 757-474-0812
Fax 757-474-0919

APPROVED	A/E INFO
FOR COMMANDER NAVFAC	ACTIVITY
SATISFACTORY TO	DES: KMR DRW: MTW CHK: KMR

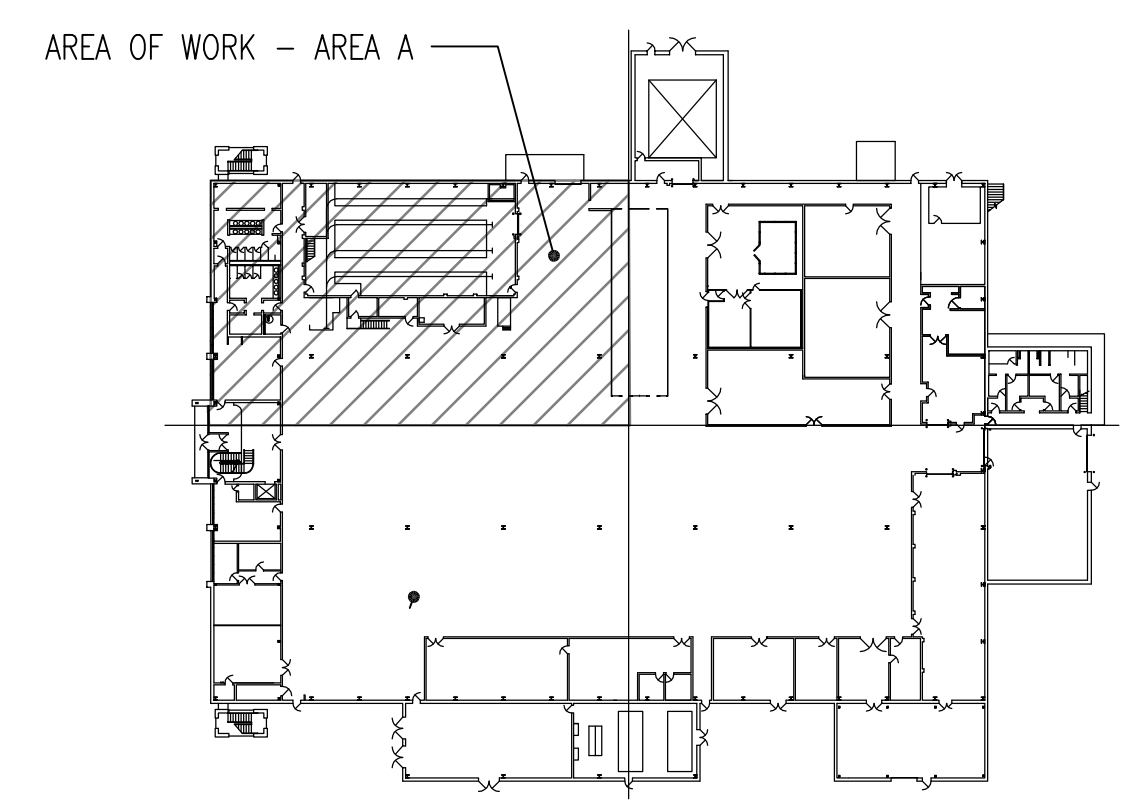
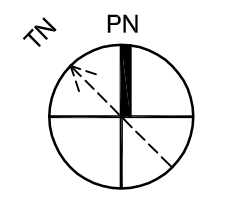
U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
MODIFIED ROOF FRAMING PLAN - AREA A

MODIFIED ROOF FRAMING PLAN - AREA A

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

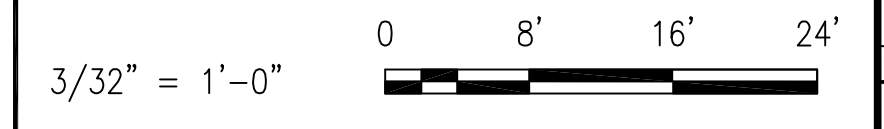
KEY NOTES #

- NO STRUCTURAL WORK THIS AREA.



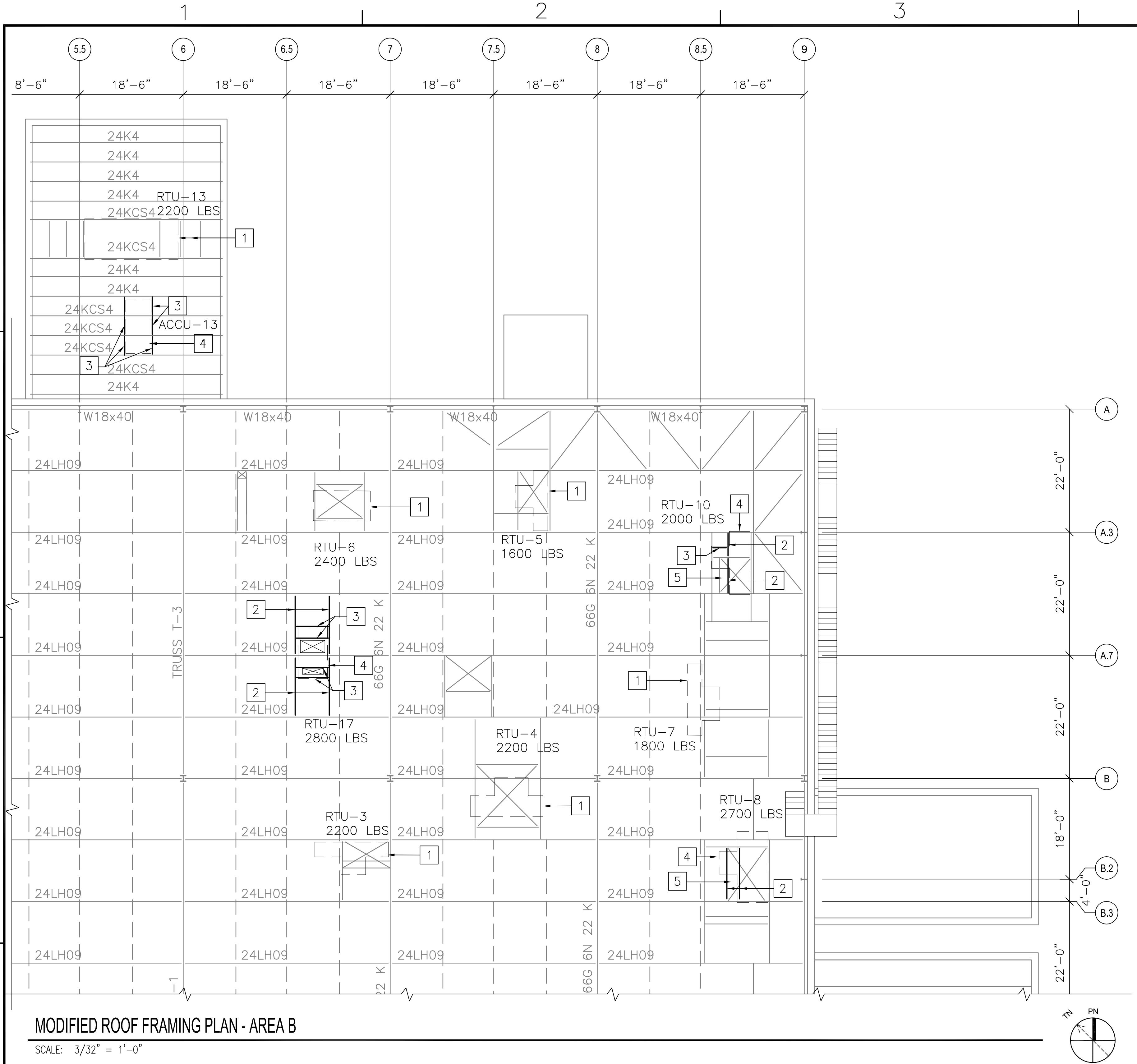
KEY PLAN NOT TO SCALE

GRAPHIC SCALE:



SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782407
SHEET 6 OF 68
S-101

1 2 3 4 5



MODIFIED ROOF FRAMING PLAN - AREA B

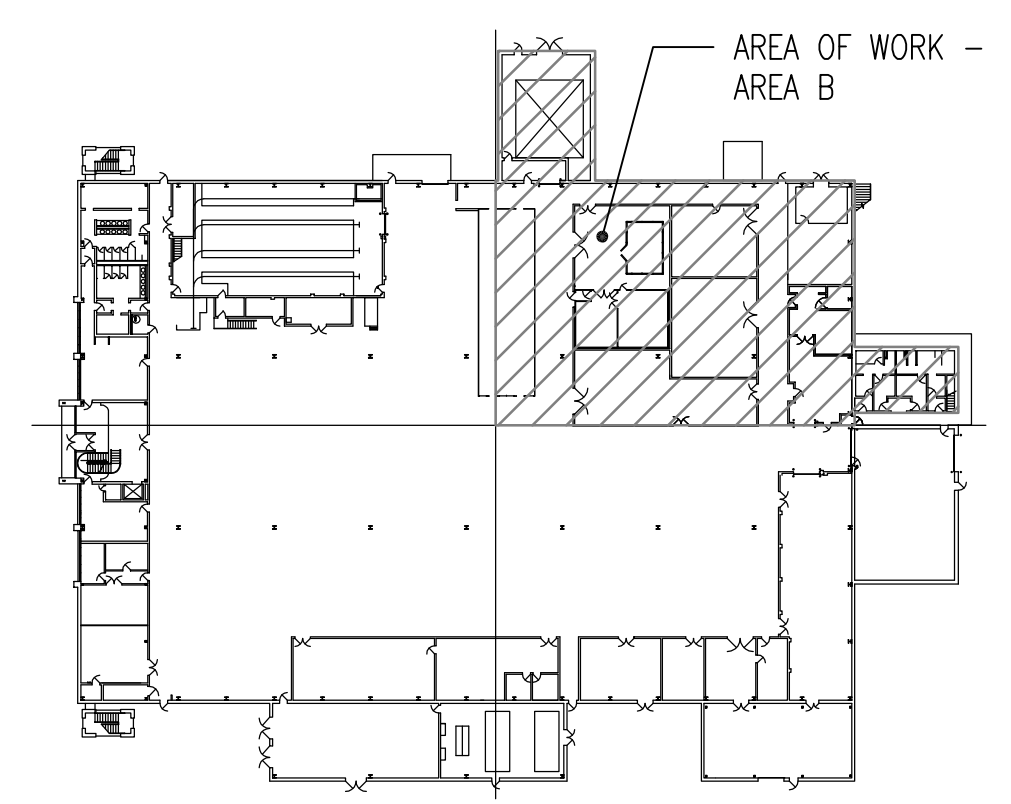
SCALE: 3/32" = 1'-0"

PLAN NOTES

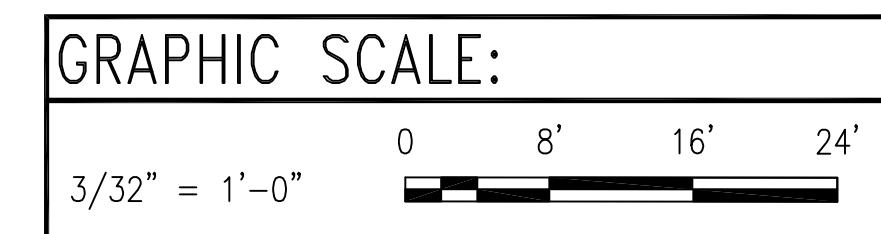
- DATUM FOR ALL ELEVATIONS GIVEN ON THIS PLAN IS FINISHED FIRST FLOOR ELEV. = 0'-0".
- UNLESS OTHERWISE NOTED, EXISTING ROOF CONSTRUCTION IS 3" DEEP, 20 GA. TYPE 'N' STEEL ROOF DECK SUPPORTED ON OPEN WEB STEEL JOIST, JOIST GIRDERS AND STEEL BEAMS.
- APPROXIMATE MECHANICAL UNIT WEIGHTS ARE SHOWN ON PLAN. REFER TO MECHANICAL DRAWINGS FOR MECHANICAL UNITS.
- FOR GENERAL NOTES REFER TO SHEET S-001.
- FOR TYPICAL DETAILS REFER TO SHEET S-501.

KEY NOTES #

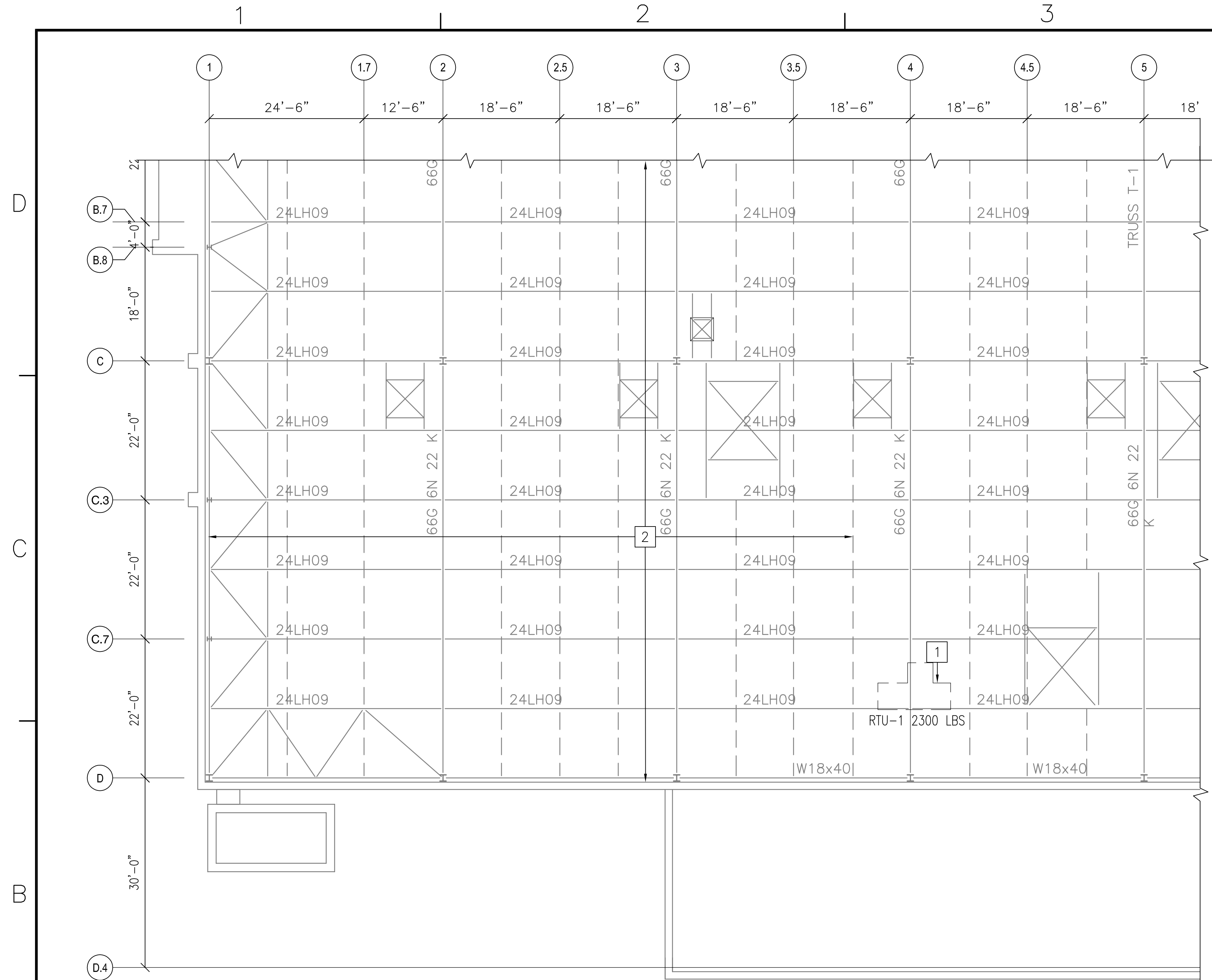
- OUTLINE OF NEW ROOF TOP MECHANICAL UNIT SUPPORTED ON EXISTING CURB WITH CURB ADAPTOR. REFER TO MECHANICAL DRAWINGS (TYP)
- PROVIDE C8x11.5 TIGHT TO UNDERSIDE OF ROOF DECK. LOCATE UNDER ROOF CURB OR EDGE OF ROOF OPENING AS APPLICABLE.
- PROVIDE L-4x4x1/4 TIGHT TO UNDERSIDE OF ROOF DECK. LOCATE UNDER ROOF CURB.
- OUTLINE OF NEW ROOF TOP MECHANICAL UNIT SUPPORTED ON ROOF CURB. REFER TO MECHANICAL DRAWINGS (TYP).
- INFILL EXISTING ROOF OPENING WITH 3" TYPE 'N' GALVANIZED ROOF DECK.



KEY PLAN
NOT TO SCALE



DATE	APP'R
DESCRIPTION	SW
NRW ENGINEERING Structural Consultants 748 Lord Dunmore Drive, Suite 101 Virginia Beach, VA 23464 Phone 757-474-0812 Fax 757-474-0919	
APPROVED	A/E INFO
FOR COMMANDER NAVFAC	ACTIVITY
SATISFACTORY TO	DES: KMR DRW: MTW CHK: KMR
U.S. MARINE CORPS AIR STATION CHERRY POINT, NORTH CAROLINA REPLACE HVAC AND CONTROLS PHASE II AT BUILDING 4225 MODIFIED ROOF FRAMING PLAN - AREA B	
SCALE: AS NOTED	PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO.	6878897
NAVFAC DRAWING NO.	12782408
SHEET 7 OF 68	S-102
DRAWING REVISION: 10 MAY 2014	



MODIFIED ROOF FRAMING PLAN - AREA C

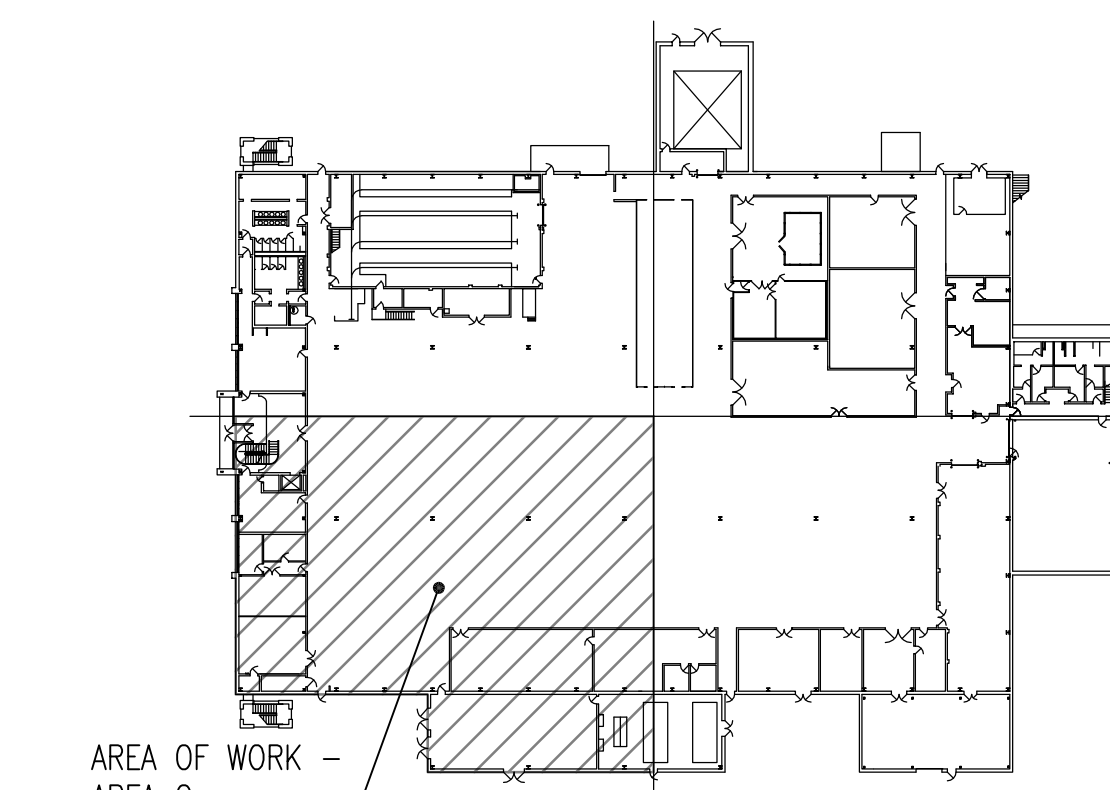
SCALE: 3/32" = 1'-0"

KEY NOTES #

1. OUTLINE OF NEW ROOF TOP MECHANICAL UNIT SUPPORTED ON EXISTING CURB WITH CURB ADAPTOR. REFER TO MECHANICAL DRAWINGS (TYP)
2. NO STRUCTURAL WORK THIS AREA.

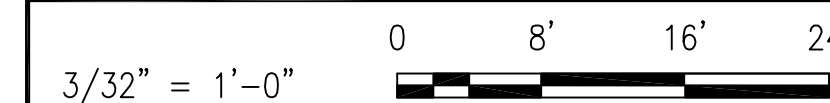
PLAN NOTES

1. DATUM FOR ALL ELEVATIONS GIVEN ON THIS PLAN IS FINISHED FIRST FLOOR ELEV. = 0'-0".
2. UNLESS OTHERWISE NOTED, EXISTING ROOF CONSTRUCTION IS 3" DEEP, 20 GA. TYPE 'N' STEEL ROOF DECK SUPPORTED ON OPEN WEB STEEL JOIST, JOIST GIRDERS AND STEEL BEAMS.
3. APPROXIMATE MECHANICAL UNIT WEIGHTS ARE SHOWN ON PLAN. REFER TO MECHANICAL DRAWINGS FOR MECHANICAL UNITS.
4. FOR GENERAL NOTES REFER TO SHEET S-001.
5. FOR TYPICAL DETAILS REFER TO SHEET S-501.



KEY PLAN
NOT TO SCALE

GRAPHIC SCALE:



APPR	DATE	DESCRIPTION	SN



NRW ENGINEERING
Structural Consultants
748 Lord Dunmore Drive, Suite 101
Virginia Beach, VA 23464
Phone 757-474-0612
Fax 757-474-0919

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO

DES: KMR | DRW: MTW | CHK: KMR

DES:

U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
MODIFIED ROOF FRAMING PLAN - AREA C

SCALE: AS NOTED

PROJECT NO.: ST-14507A

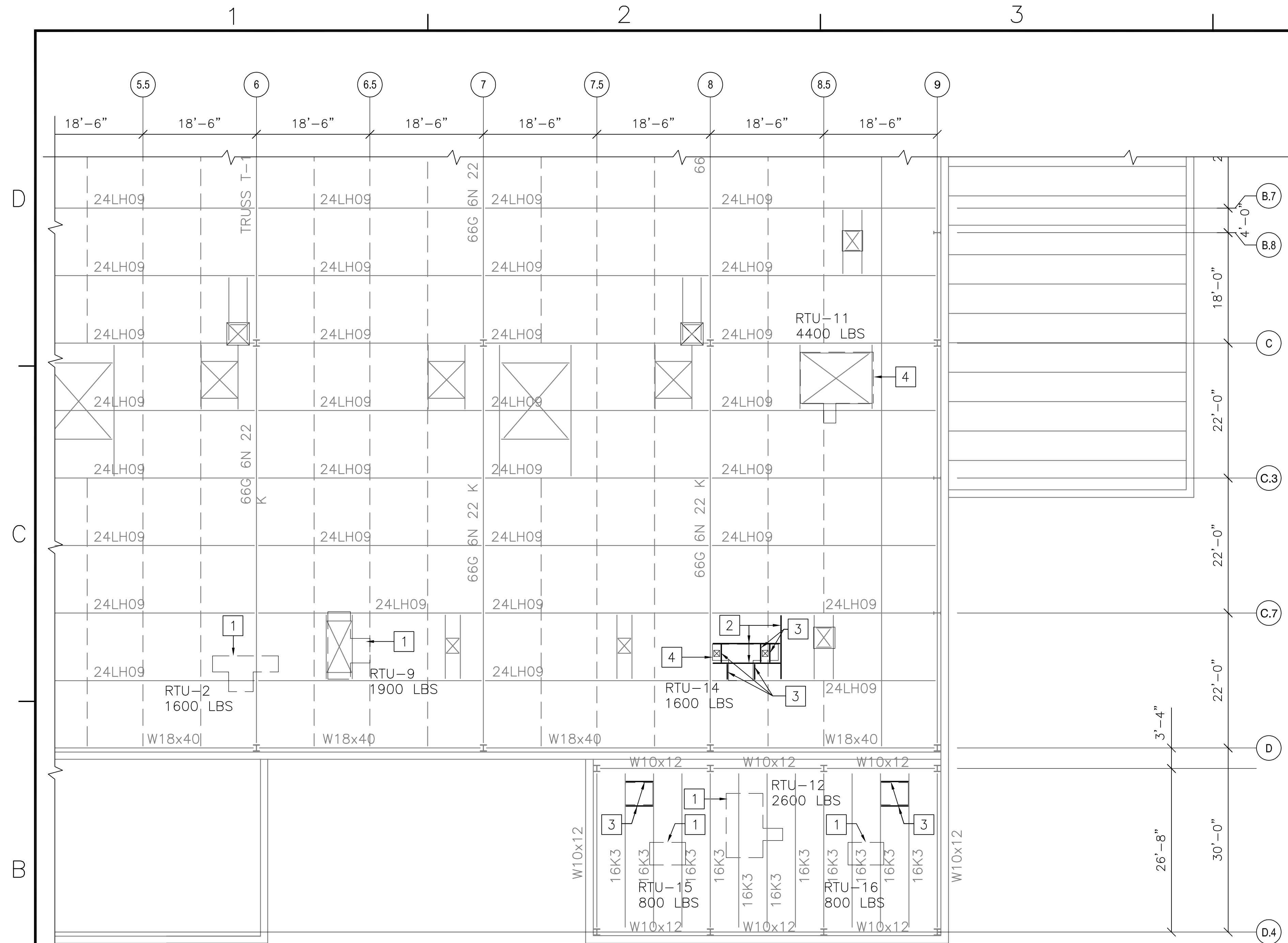
MAXIMO WORK ORDER NO. 6878897

NAVFAC DRAWING NO. 12782409

SHEET 8 OF 68

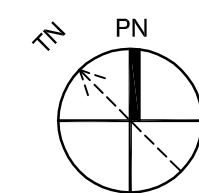
S-103

DRAWING REVISION: 10 MAY 2014



MODIFIED ROOF FRAMING PLAN - AREA D

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

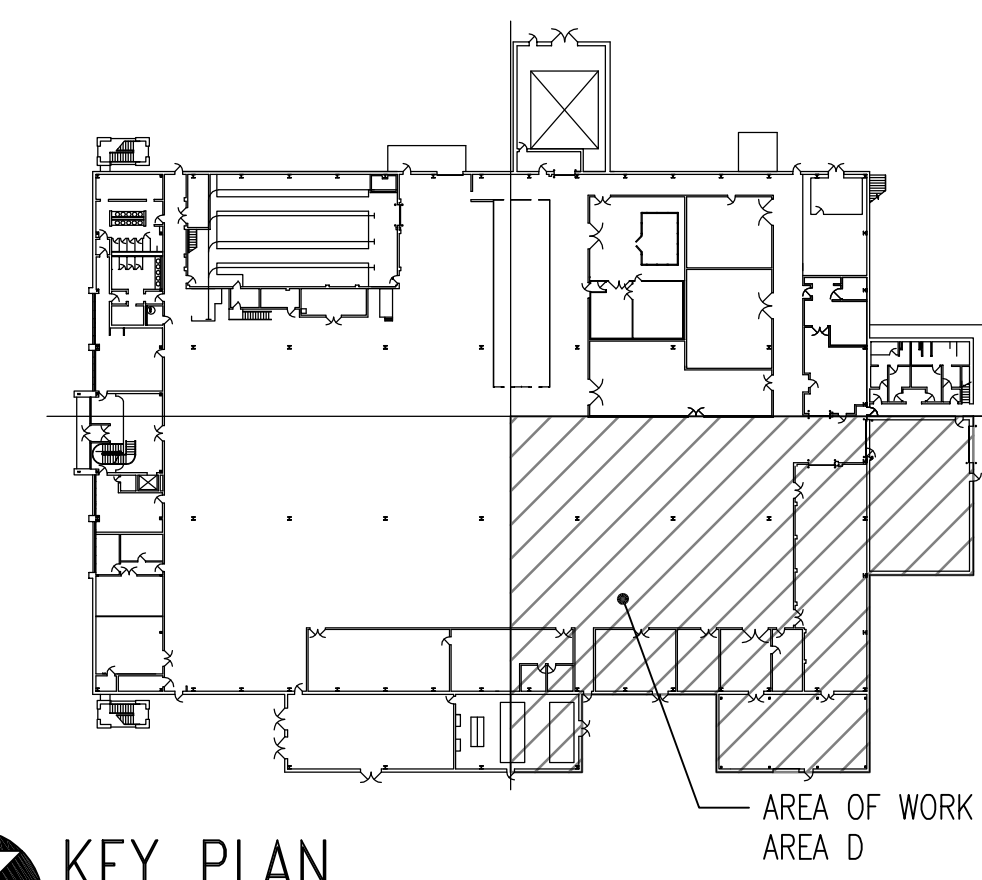


PLAN NOTES

- DATUM FOR ALL ELEVATIONS GIVEN ON THIS PLAN IS FINISHED FIRST FLOOR ELEV. = 0'-0".
- UNLESS OTHERWISE NOTED, EXISTING ROOF CONSTRUCTION IS 3" DEEP, 20 GA. TYPE 'N' STEEL ROOF DECK SUPPORTED ON OPEN WEB STEEL JOIST, JOIST GIRDERS AND STEEL BEAMS.
- APPROXIMATE MECHANICAL UNIT WEIGHTS ARE SHOWN ON PLAN. REFER TO MECHANICAL DRAWINGS FOR MECHANICAL UNITS.
- FOR GENERAL NOTES REFER TO SHEET S-001.
- FOR TYPICAL DETAILS REFER TO SHEET S-501.

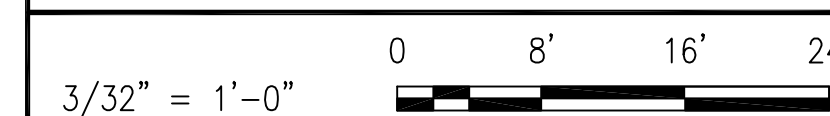
KEY NOTES #

- OUTLINE OF NEW ROOF TOP MECHANICAL UNIT SUPPORTED ON EXISTING CURB WITH CURB ADAPTOR. REFER TO MECHANICAL DRAWINGS (TYP)
- PROVIDE C8x11.5 TIGHT TO UNDERSIDE OF ROOF DECK. LOCATE UNDER ROOF CURB.
- PROVIDE L-4x4x1/4 TIGHT TO UNDERSIDE OF ROOF DECK. LOCATE UNDER ROOF CURB.
- OUTLINE OF NEW ROOF TOP MECHANICAL UNIT SUPPORTED ON ROOF CURB. REFER TO MECHANICAL DRAWINGS (TYP).



KEY PLAN
NOT TO SCALE

GRAPHIC SCALE:



3/32" = 1'-0"

NO.	DESCRIPTION	DATE	APPR.



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Structural Consultants
748 Lord Dunmore Drive, Suite 101
Virginia Beach, VA 23464
Phone 757-474-0812
Fax 757-474-0919

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO

DES: KMR | DRW: MTW | CHK: KMR

DES:

U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
MODIFIED ROOF FRAMING PLAN - AREA D

SCALE: AS NOTED

PROJECT NO.: ST-14507A

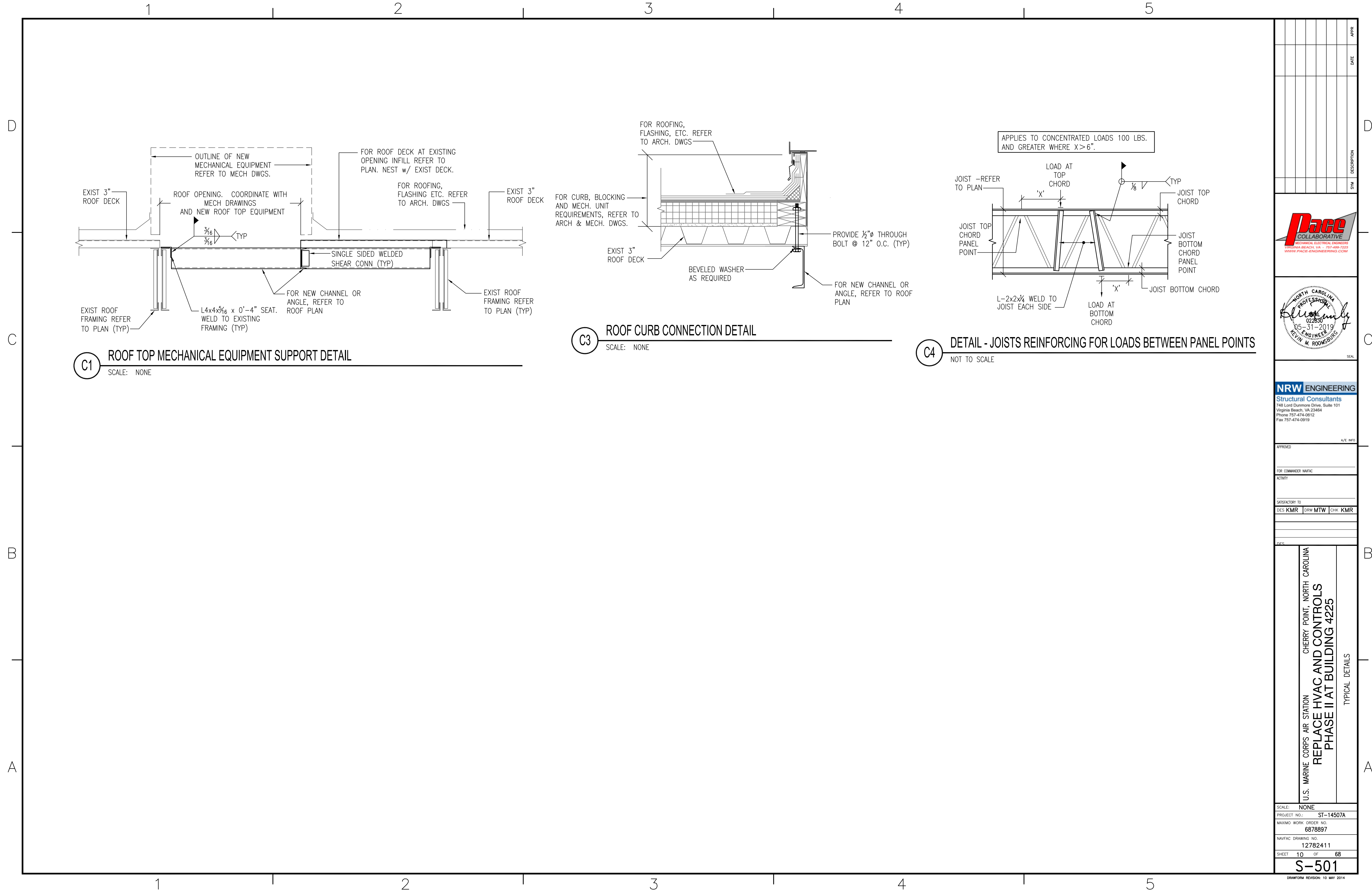
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NAVFAC DRAWING NO. 12782410

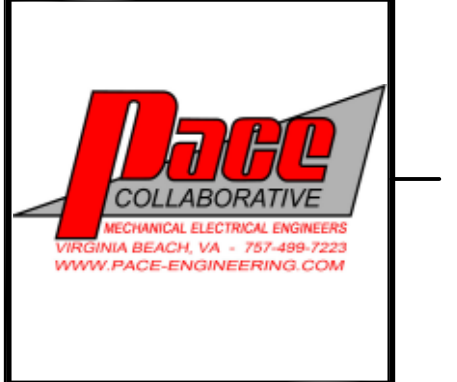
SHEET 9 OF 68

S-104

DRAWING REVISION: 10 MAY 2014



NO.	DATE	DESCRIPTION	BY	CHK



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Structural Consultants
748 Lord Dunmore Drive, Suite 101
Virginia Beach, VA 23464
Phone 757-474-0812
Fax 757-474-0919

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PER COMMANDER NAVFAC

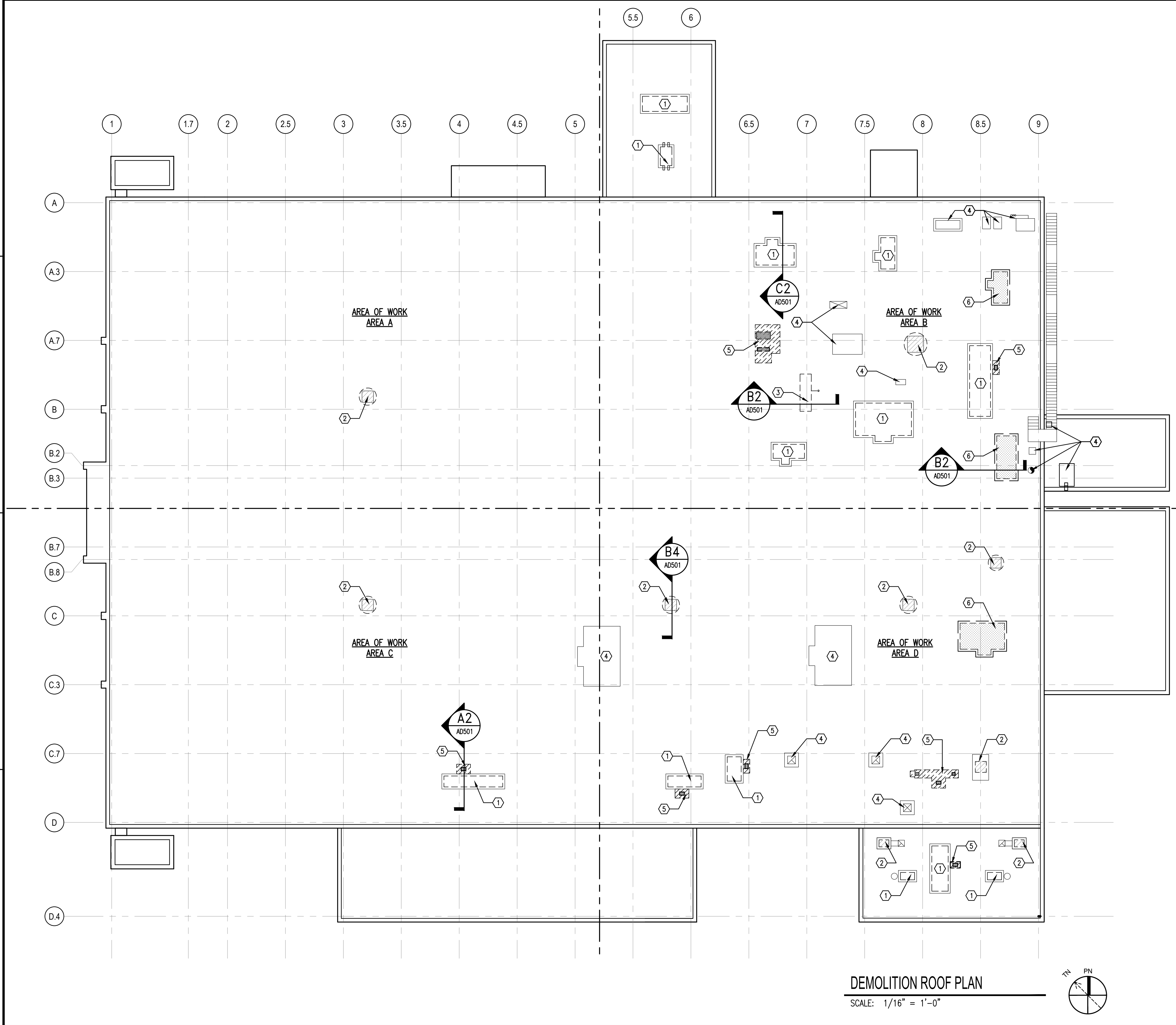
SATISFACTORY TO
DES: KMR | DRW: MTW | CHK: KMR

U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
TYPICAL DETAILS

SCALE: NONE
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782411
SHEET 10 OF 68
S-501

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DEMOLITION ROOF PLAN
 SCALE: 1/16" = 1'-0"

GENERAL NOTES

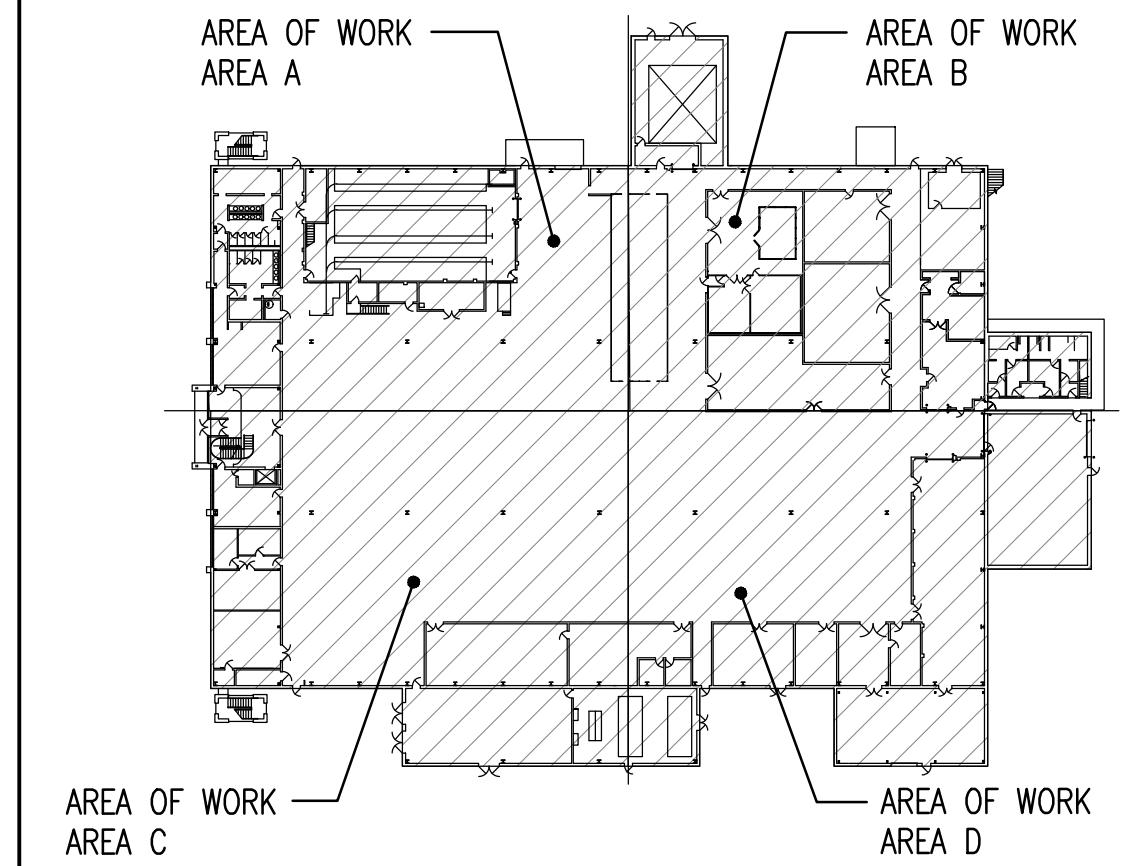
1. CONTRACTOR TO FIELD VERIFY ALL EXISTING DIMENSIONS BEFORE COMMENCING WORK.
2. SEE FIRE PROTECTION, PLUMBING, MECHANICAL, AND ELECTRICAL DRAWINGS FOR ADDITIONAL NOTES.
3. CONTRACTOR TO PROTECT EXISTING ITEMS TO REMAIN.
4. ALL EXISTING EQUIPMENT NOT SHOWN IS TO REMAIN, PROTECT.
5. EXISTING ROOF WARRANTY SHALL BE MAINTAINED. CONTACT GOV'T FOR ROOF WARRANTY DETAILS

DEMOLITION KEYNOTES

MARK	DESCRIPTION
①	REMOVE ROOFTOP HVAC UNIT. EXISTING ROOF CURB TO REMAIN. PREPARE CURB FOR CURB ADAPTER. SEE CONSTRUCTION ROOF PLAN AND SEE MECHANICAL FOR ADDITIONAL NOTES.
②	REMOVE ROOFTOP EXHAUST FAN. EXISTING ROOF CURB AND DUCT SUPPORTS TO REMAIN AND BE REUSED. SEE MECHANICAL SHEETS MD-201 THROUGH MD-104 AND ED-201. SEE B4/AD501.
③	REMOVE CONDENSING UNIT AND REMOVE ROOF CURB, FLASHING, AND PIPING. CLEAN AND PREPARE OPENING FOR INFILL TO MATCH EXISTING ROOF. SEE MECHANICAL SHEETS MD-101 THROUGH MD-104 AND ED-201. SEE B2/AD501. SEE DETAIL C4/AD501 FOR PIPING REMOVAL.
④	EXISTING EQUIPMENT TO REMAIN, SEE MECHANICAL SHEETS MD-101 THROUGH MD-104 AND ED-201.
⑤	CUT AND REMOVE EXISTING MODIFIED BITUMEN ROOF SYSTEM, RECOVERY BOARD, INSULATION, THERMAL BARRIER TO ACCOMMODATE NEW MECHANICAL CURB. CUT STEEL DECKING FOR DUCTWORK/PIPING. SEE MECHANICAL SHEETS MD-101 THROUGH MD-104 AND ED-201. COORDINATE OPENING SIZES WITH NEW ROOFTOP UNIT PROVIDED.
⑥	REMOVE ROOFTOP HVAC UNIT. CUT AND REMOVE EXISTING MODIFIED BITUMEN ROOF SYSTEM, RECOVERY BOARD, INSULATION, AND THERMAL BARRIER DOWN TO EXISTING STEEL DECKING TO ACCOMMODATE NEW MECHANICAL CURB. COORDINATE OPENING SIZE WITH NEW ROOFTOP UNIT PROVIDED. SEE MECHANICAL SHEETS MD-101 THROUGH MD-104 AND ED-201. SEE B2/AD501.

DEMOLITION LEGEND

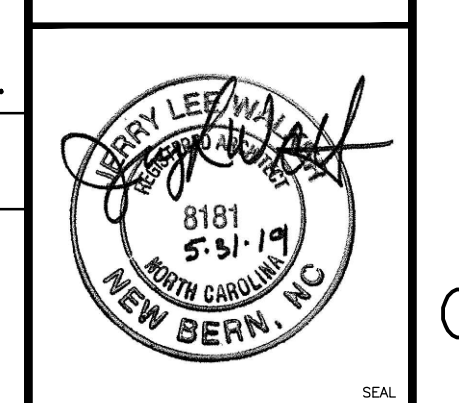
- REMOVE ROOFTOP HVAC UNIT. EXISTING ROOF CURB TO REMAIN.
- REMOVE ROOFTOP EXHAUST FAN. EXISTING ROOF CURB AND DUCT SUPPORTS TO REMAIN.
- REMOVE CONDENSING UNIT AND REMOVE ROOF CURB AND FLASHING.
- EXISTING EQUIPMENT TO REMAIN.
- CUT AND REMOVE EXISTING MODIFIED BITUMEN ROOF SYSTEM DOWN TO STEEL DECK.
- CUT STEEL DECK FOR NEW PIPING ACCESS
- REMOVE ROOFTOP HVAC UNIT. CUT AND REMOVE EXISTING MODIFIED BITUMEN ROOF SYSTEM DOWN TO STEEL DECKING.



KEY PLAN
 NOT TO SCALE

1/16" = 1'-0" 0 8' 16' 32'

NO.	DATE	DESCRIPTION	APP.



APPROVED	
FOR COMMANDER NAVFAC	
ACTIVITY	
SATISFACTORY TO	
DES: CBW DRW: CMC CHK: JLW	

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225**
 DEMOLITION ROOF PLAN

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782412
SHEET 11 OF 68
AD101

D

C

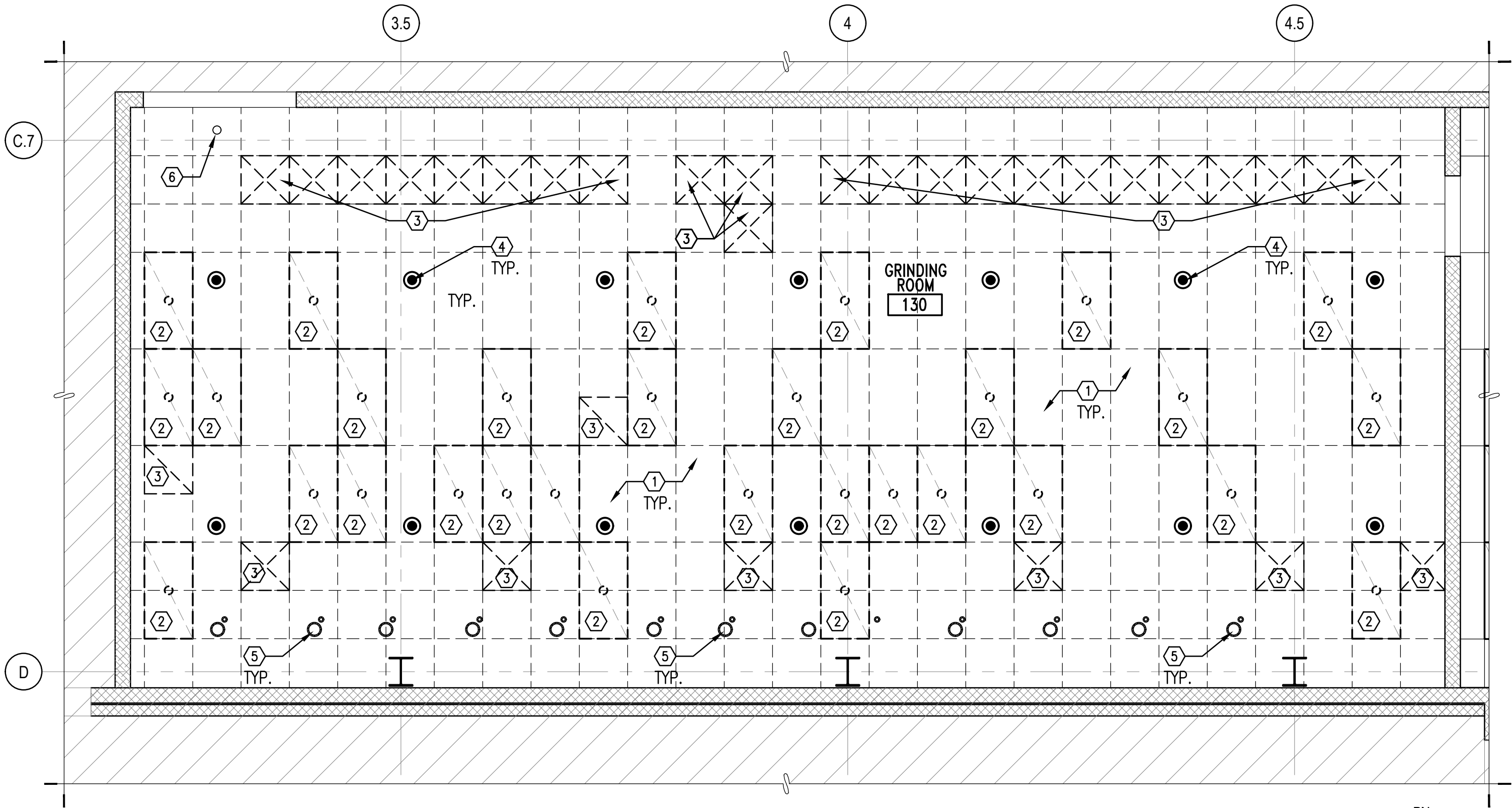
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PLOT DATE/TIME: 5/15/2019 - 2:48pm

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A

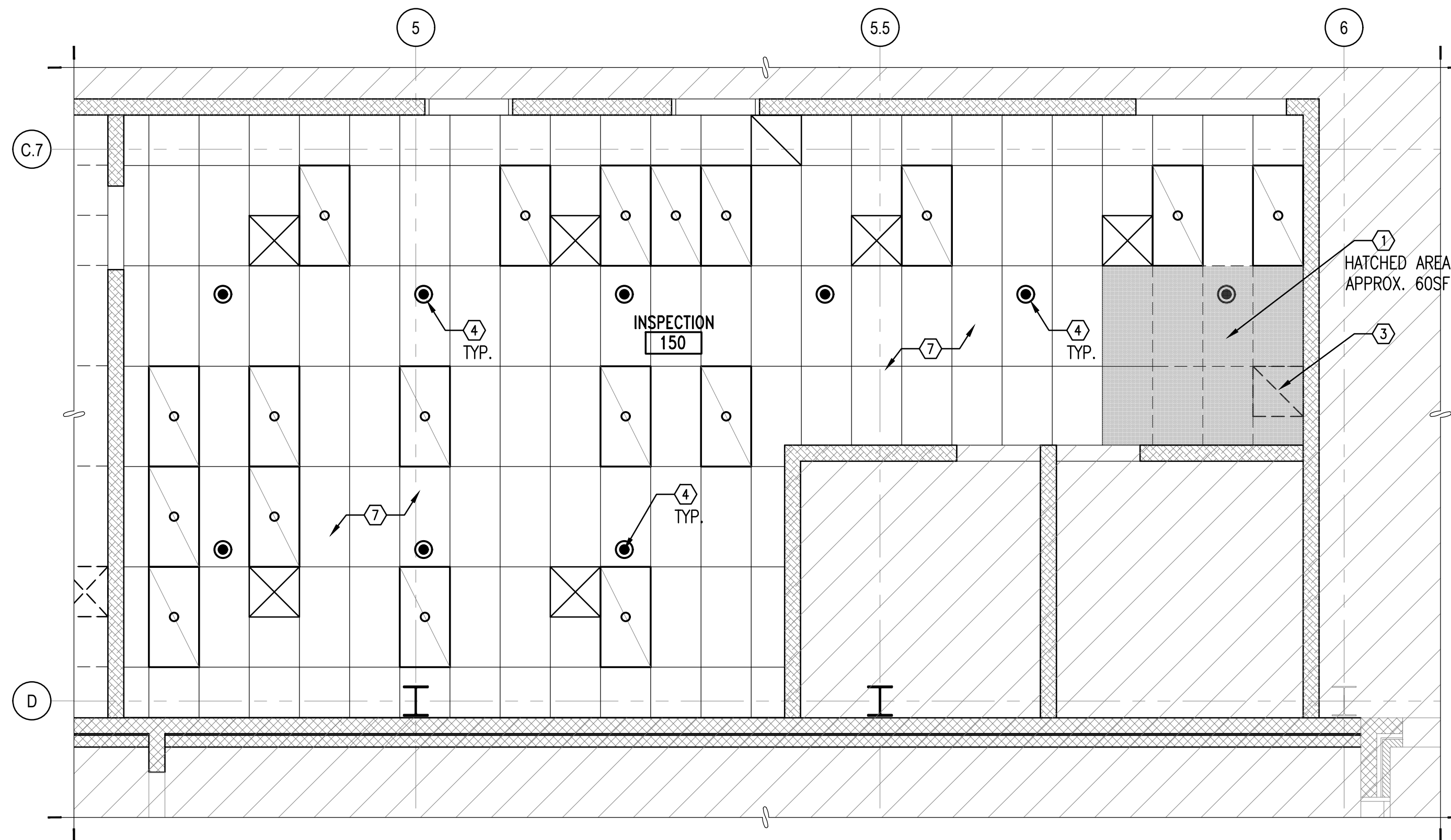
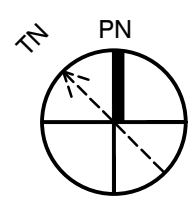
1



NOTE: CONTRACTOR TO PROVIDE TEMPORARY SUPPORT FOR ITEMS NOTED TO BE REMOVED AND REINSTALLED.

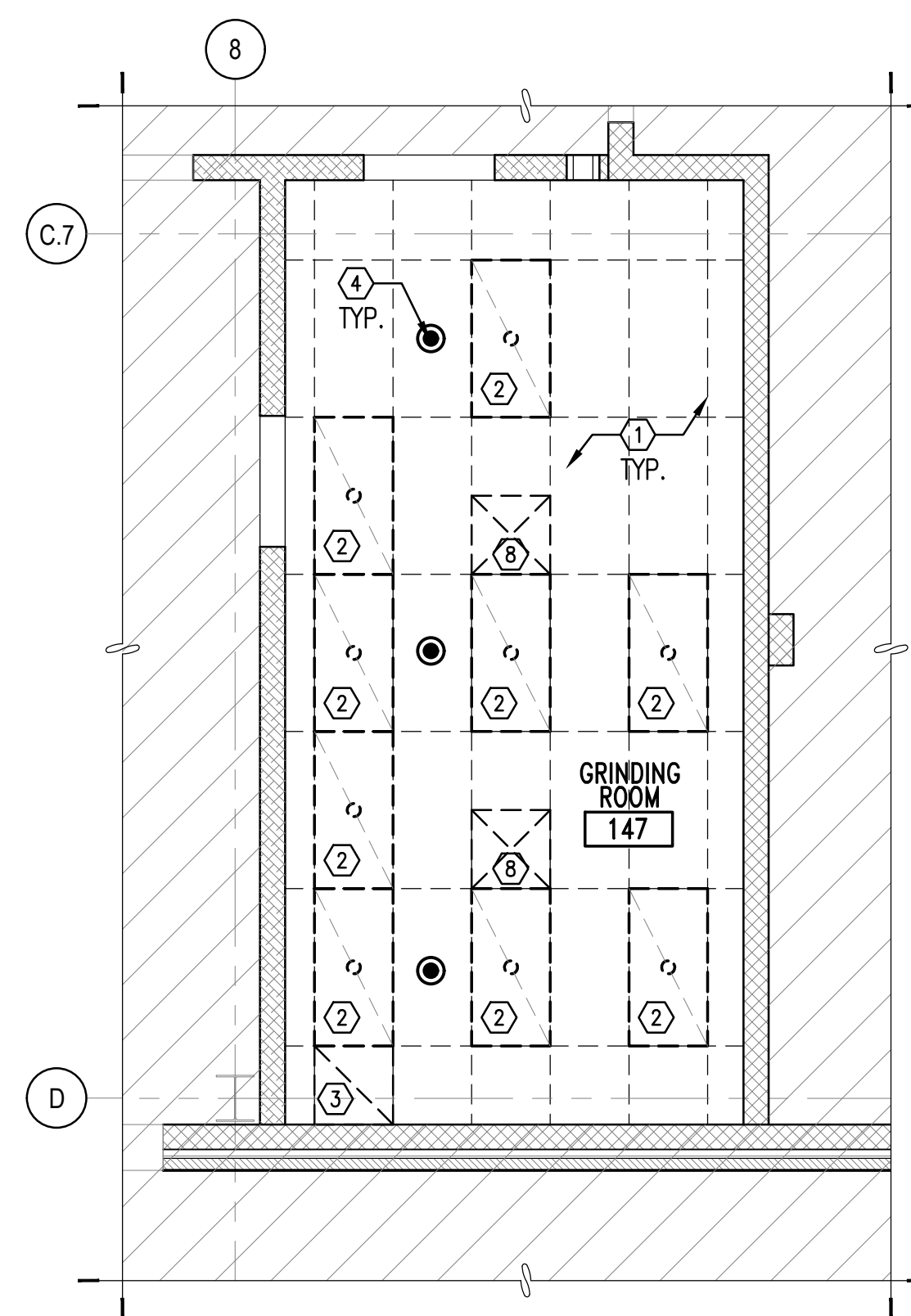
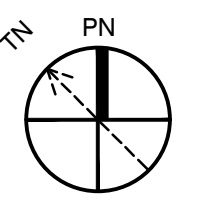
DEMOLITION REFLECTED PLAN: CEILING 'A'

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



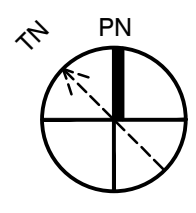
DEMOLITION REFLECTED PLAN: CEILING 'B'

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



DEMOLITION REFLECTED PLAN: CEILING 'C'

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



GENERAL NOTES

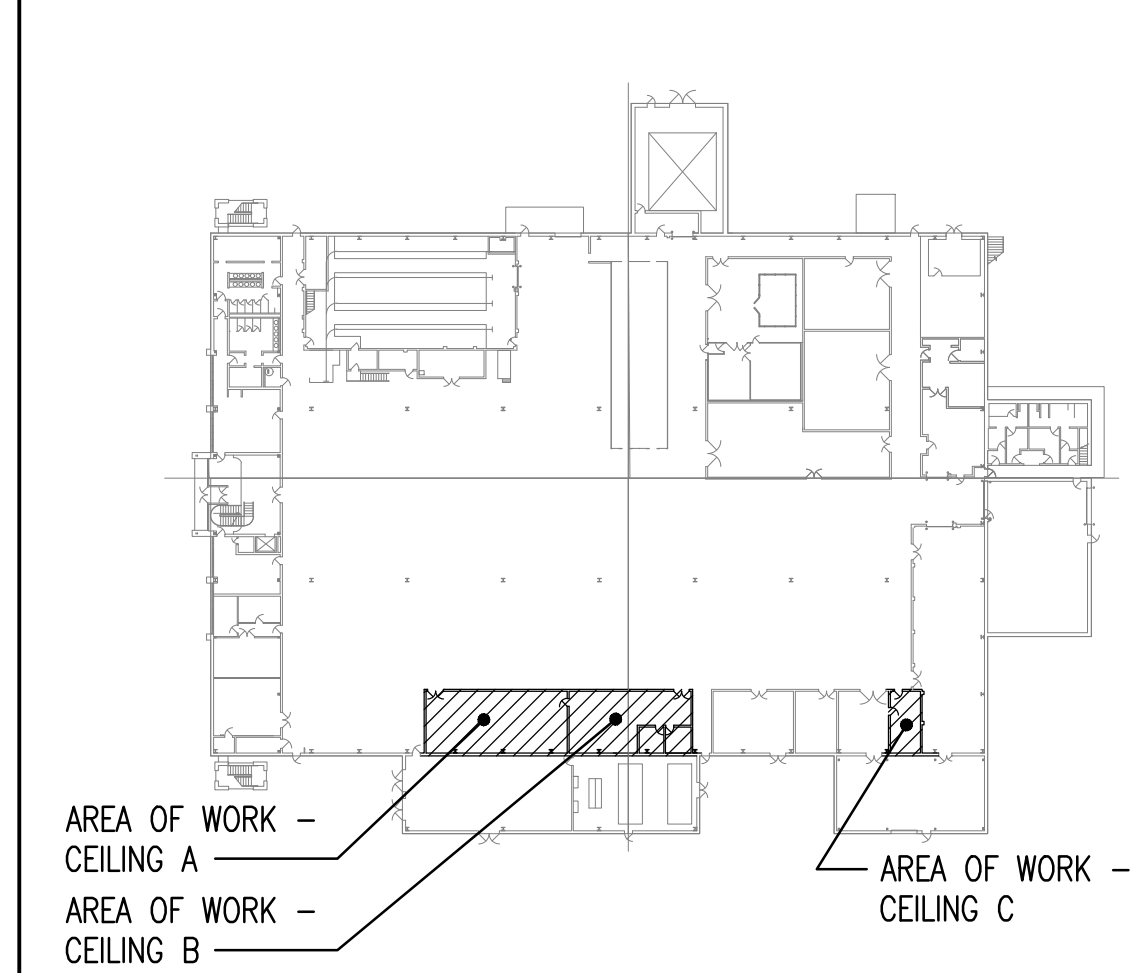
1. CONTRACTOR TO FIELD VERIFY ALL EXISTING DIMENSIONS BEFORE COMMENCING WORK.
2. SEE FIRE PROTECTION, PLUMBING, MECHANICAL, AND ELECTRICAL DRAWINGS FOR ADDITIONAL NOTES.
3. CONTRACTOR TO PROTECT EXISTING ITEMS TO REMAIN.
4. ALL EXISTING EQUIPMENT NOT SHOWN IS TO REMAIN, PROTECT.
5. EXISTING ROOF WARRANTY SHALL BE MAINTAINED. CONTACT GOV'T FOR ROOF WARRANTY DETAILS

DEMOLITION KEYNOTES

MARK	DESCRIPTION
①	REMOVE CEILING TILES, GRID, AND HANGERS, SEE DEMOLITION LEGEND.
②	EXISTING LIGHTING TO BE REINSTALLED, TEMPORARILY SUPPORT AND PREPARE FOR REINSTALLATION IN NEW CEILING GRID.
③	EXISTING HVAC DIFFUSERS TO BE REINSTALLED, SEE MECHANICAL.
④	EXISTING SPRINKLERS TO REMAIN. REMOVE ESCUTCHEONS, TYPICAL.
⑤	EXISTING EXHAUST LINES AND PIPING TO REMAIN.
⑥	WARNING LIGHT TO REMAIN, SEE ELECTRICAL.
⑦	CEILING TILES AND GRID TO REMAIN, SEE DEMOLITION LEGEND.
⑧	REMOVE HVAC DIFFUSERS, SEE MECHANICAL.

DEMOLITION LEGEND

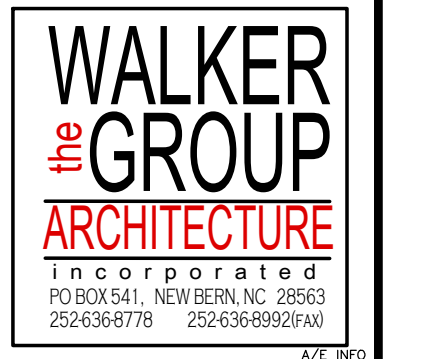
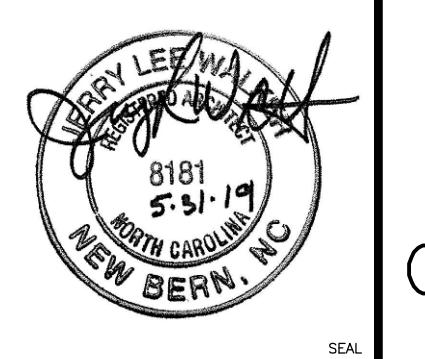
	CEILING TILES, GRID, AND HANGERS TO REMAIN.
	REMOVE CEILING TILES, GRID, AND HANGERS.
	TEMPORARILY SUPPORT LIGHTING, SEE ELECTRICAL.
	EXISTING LIGHTING TO REMAIN.
	REMOVE HVAC DIFFUSERS, SEE MECHANICAL.
	EXISTING HVAC DIFFUSERS TO REMAIN.
	EXISTING SPRINKLERS TO REMAIN, REMOVE ESCUTCHEONS
	EXISTING EXHAUST LINES AND PIPING TO REMAIN.
	AREA NOT IN SCOPE OF WORK



KEY PLAN
NOT TO SCALE

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

DATE	DESCRIPTION	APPR



APPROVED	
FOR COMMANDER NAVFAC	
ACTIVITY	
SATISFACTORY TO	
DES: CBW DRW: CMC CHK: JLW	

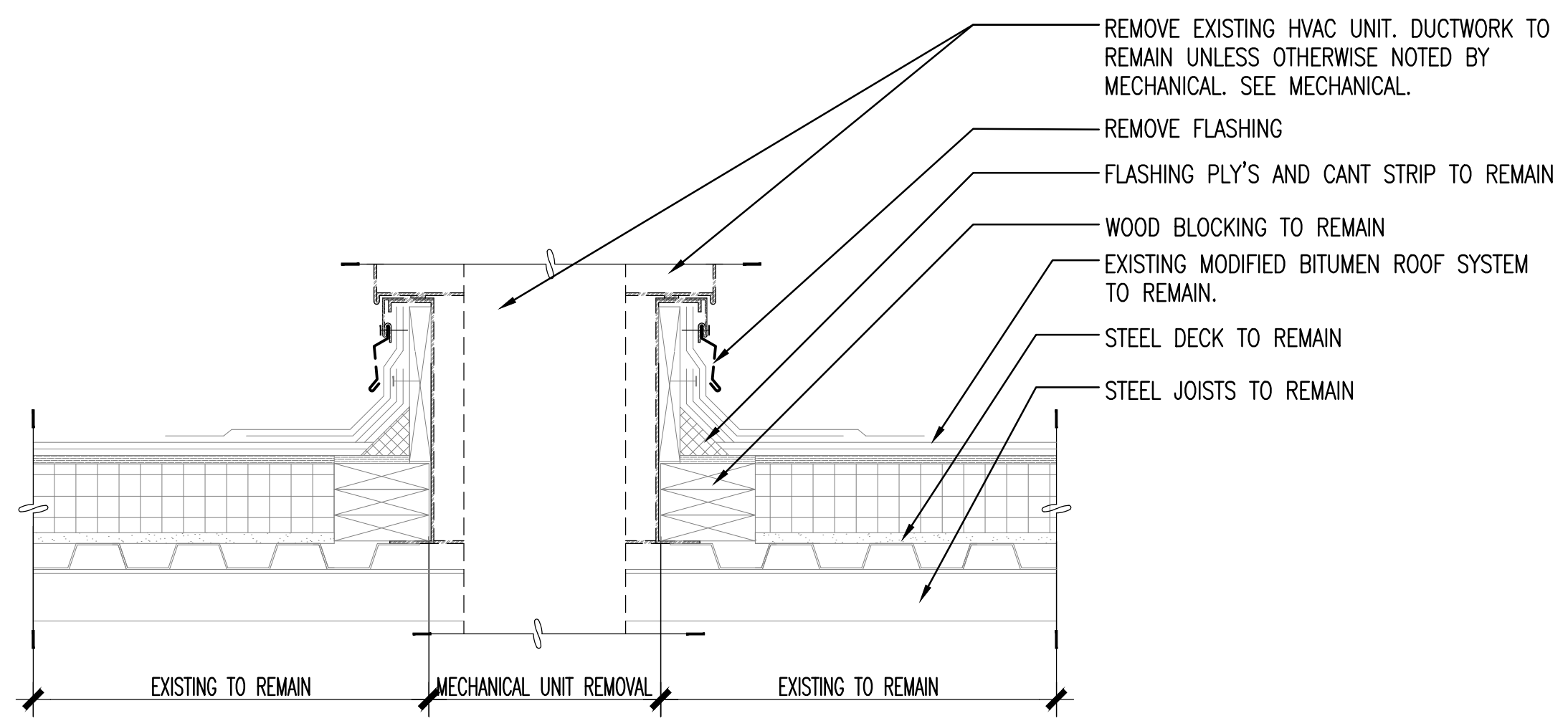
U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225
DEMOLITION REFLECTED CEILING PLANS

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782413
SHEET 12 OF 68
AD102

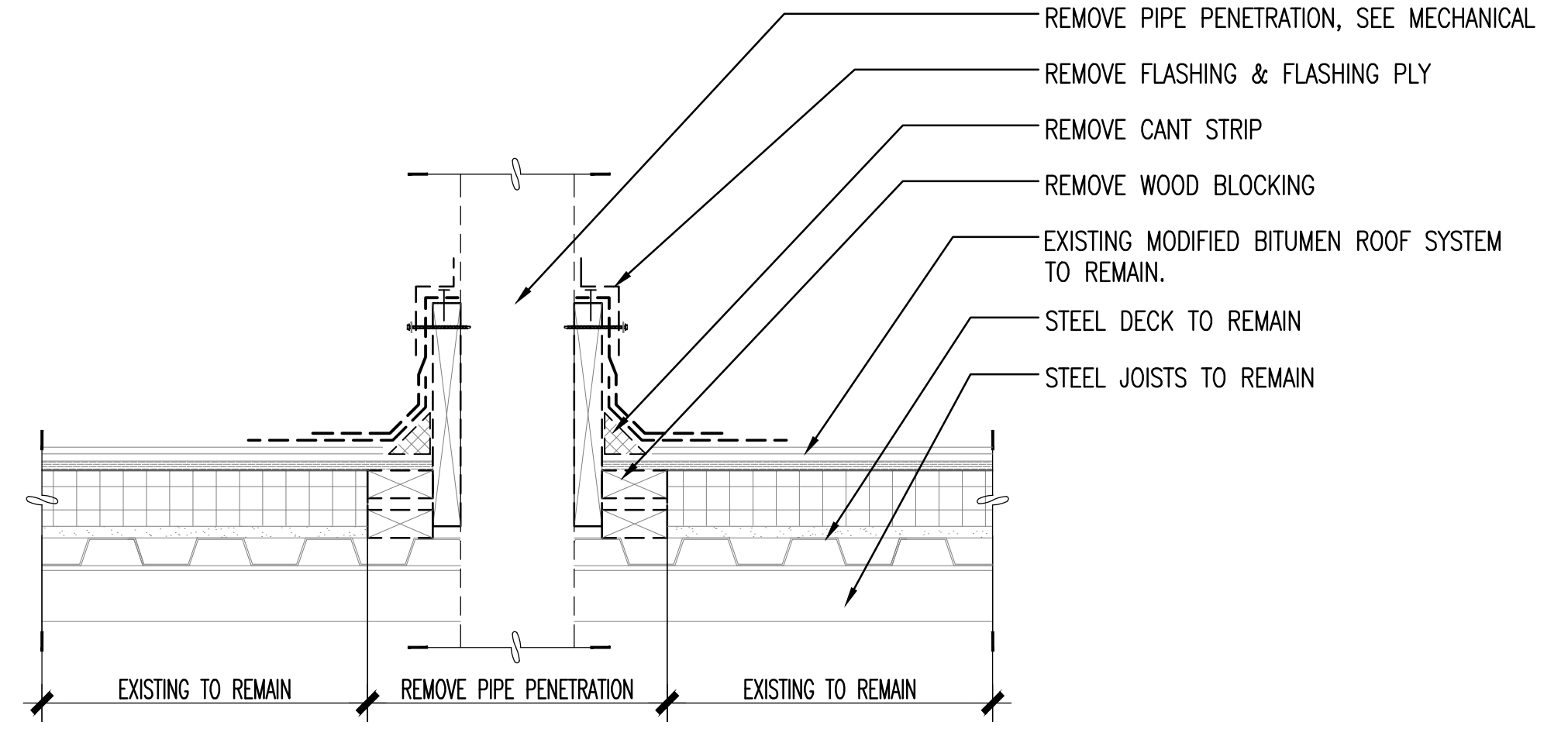
DRAWN/REVISED: 10 MAY 2014

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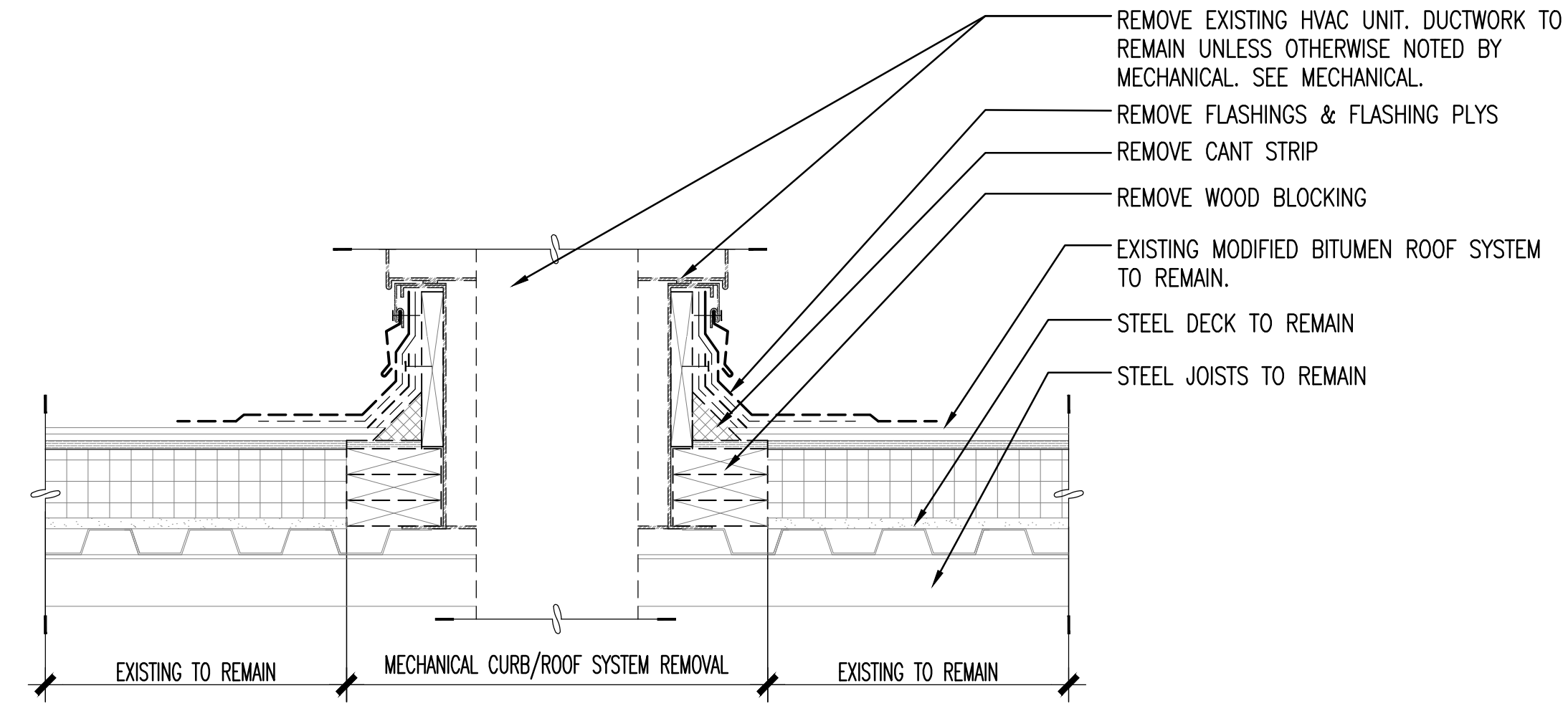
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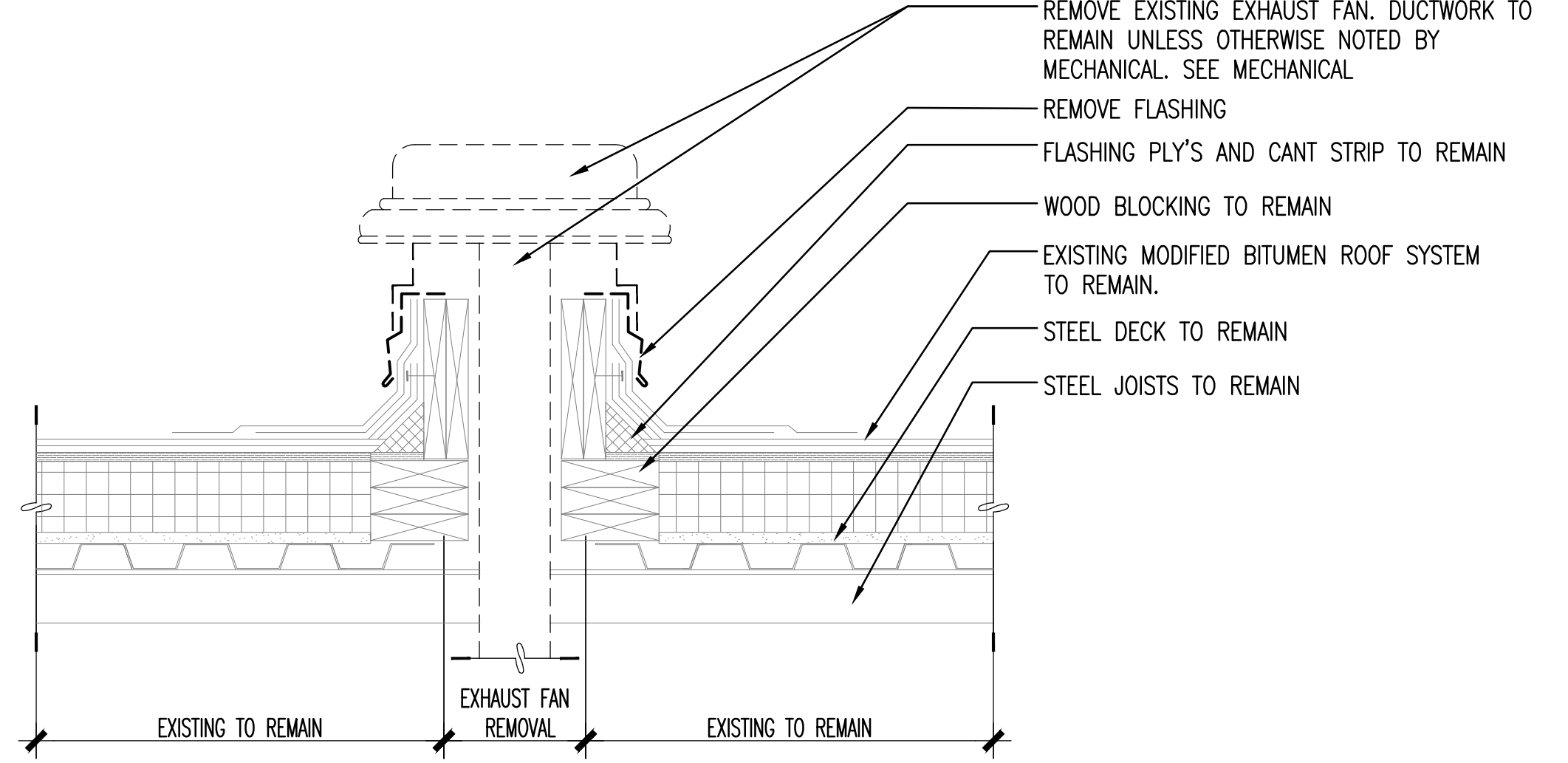
C2 MECHANICAL UNIT DEMOLITION DETAIL (CURB TO REMAIN)
 SCALE: 1-1/2" = 1'-0" AD101



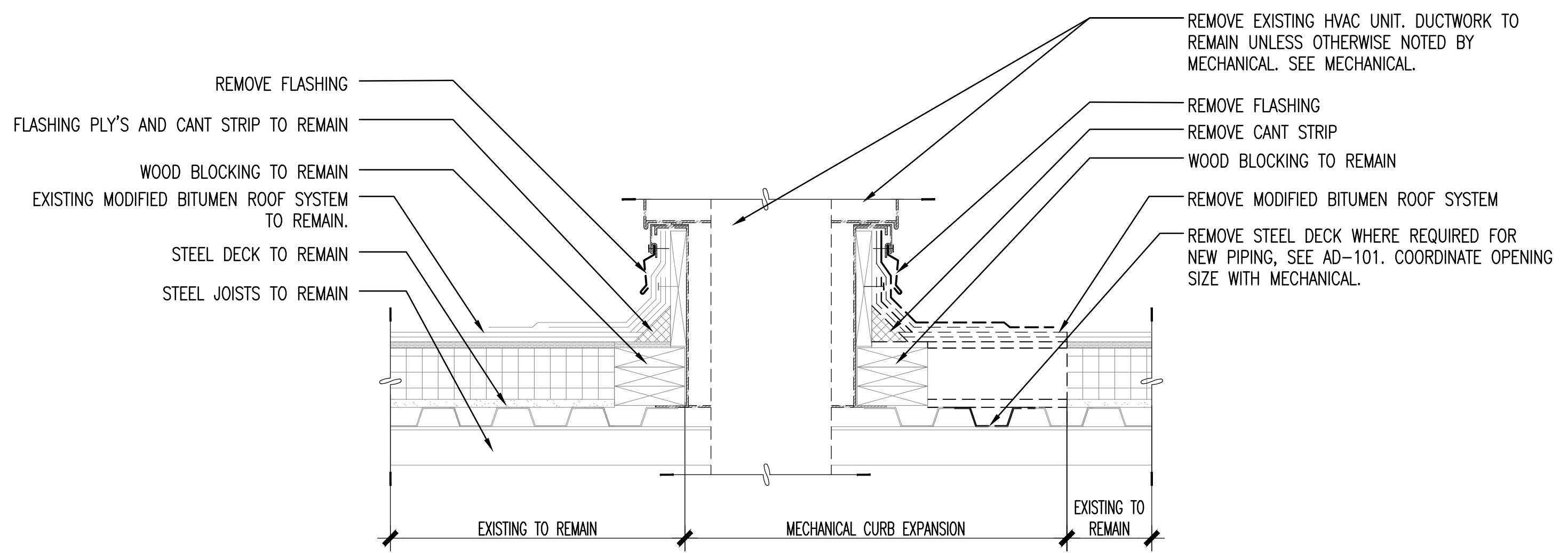
C4 PIPE PENETRATION DEMOLITION DETAIL
 SCALE: 1-1/2" = 1'-0" AD101



B2 MECHANICAL UNIT DEMOLITION DETAIL (CURB TO BE REMOVED)
 SCALE: 1-1/2" = 1'-0" AD101



B4 EXHAUST FAN DEMOLITION DETAIL (CURB TO REMAIN)
 SCALE: 1-1/2" = 1'-0" AD101



A2 MECHANICAL UNIT DEMOLITION DETAIL (CURB EXPANSION)
 SCALE: 1-1/2" = 1'-0" AD101



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CAD FILE: G:\Projects\2018\1813\HWC\Drawings\1813 AD501.dwg PLOT DATE/TIME: 5/31/2019 - 2:48pm

NO.	DESCRIPTION	DATE	APPR.



APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO
DES: CBW DRW: CMC CHK: JLW

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
 REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225
 DEMOLITION DETAILS

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782414
SHEET 13 OF 68
AD501

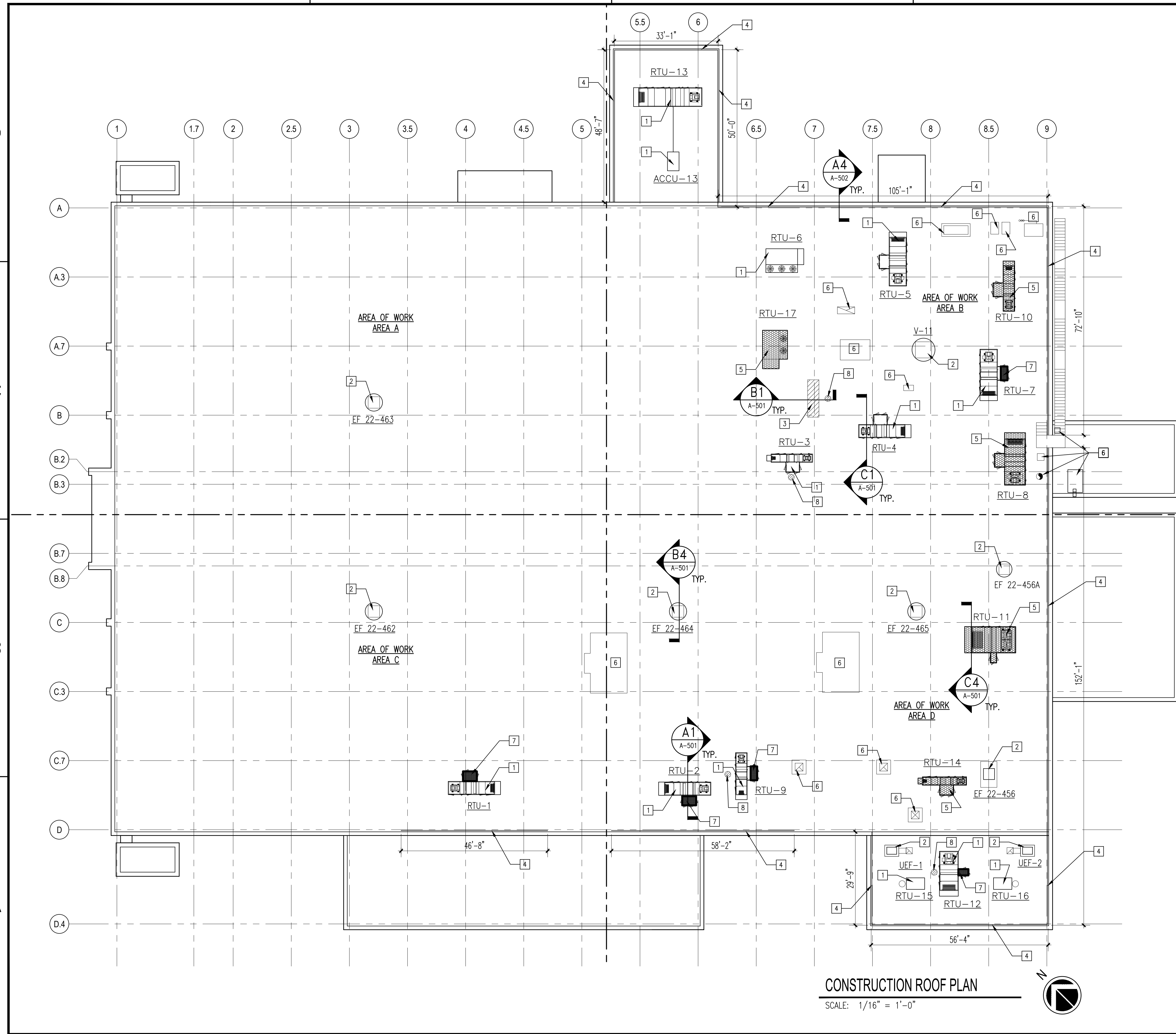
D

C

B

A

C:\01\1816\1\01\Inc\Project Information\190522 100% Submittal from consultants\Arch\190521\4225 HVAC 100% Drawings\dwg\12782415.dwg



CONSTRUCTION ROOF PLAN

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



GENERAL NOTES

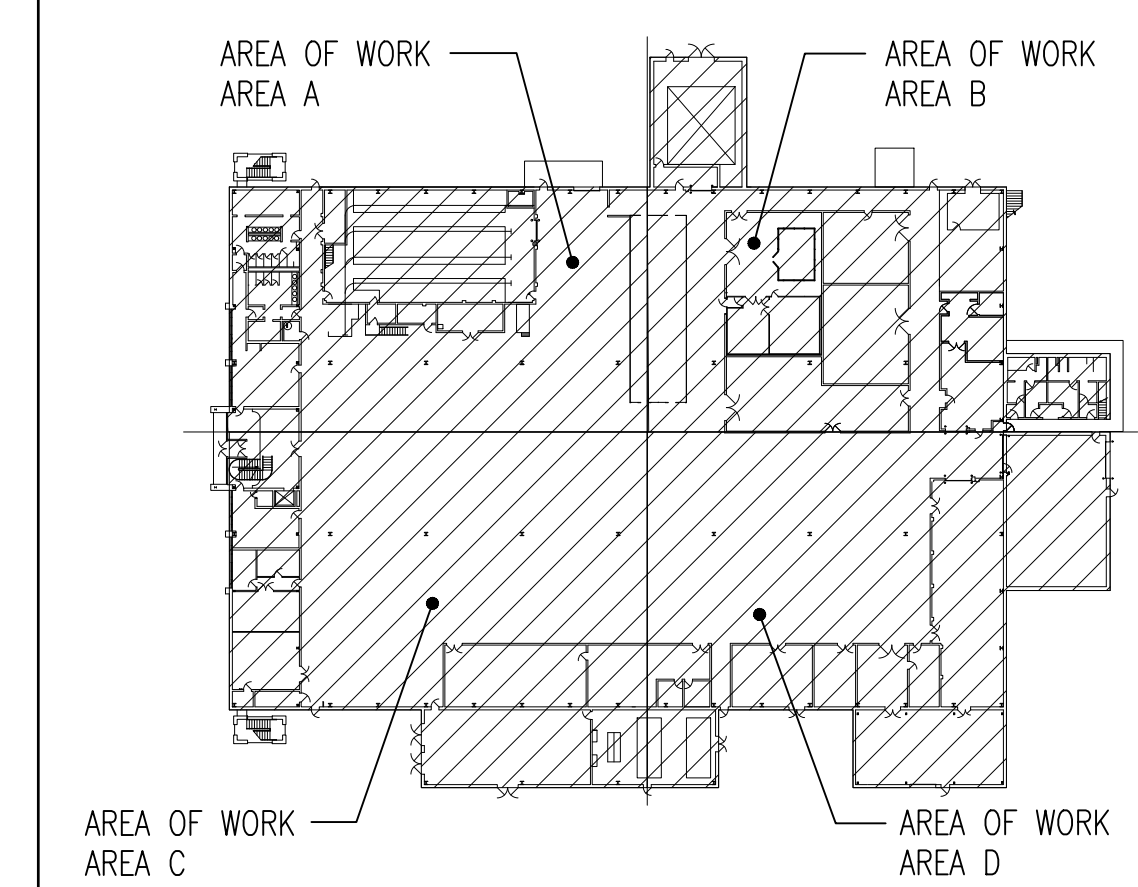
1. CONTRACTOR TO FIELD VERIFY ALL EXISTING DIMENSIONS BEFORE COMMENCING WORK.
2. SEE FIRE PROTECTION, PLUMBING, MECHANICAL, AND ELECTRICAL DRAWINGS FOR ADDITIONAL NOTES.
3. CONTRACTOR TO PROTECT EXISTING ITEMS TO REMAIN.
4. ALL EXISTING EQUIPMENT NOT SHOWN IS TO REMAIN, PROTECT.
5. EXISTING ROOF WARRANTY SHALL BE MAINTAINED. CONTACT GOV'T FOR ROOF WARRANTY DETAILS

CONSTRUCTION KEYNOTES

MARK	DESCRIPTION
1	PROVIDE ROOFTOP HVAC UNIT AT EXISTING ROOF CURB. PROVIDE CURB ADAPTER AND FLASHING. SEE MECHANICAL FOR ADDITIONAL NOTES.
2	PROVIDE ROOFTOP EXHAUST FAN AT EXISTING ROOF CURB. EXISTING DUCT SUPPORTS TO REMAIN AND BE REUSED. SEE MECHANICAL FOR ADDITIONAL NOTES. SEE B/A-501.
3	INFILL OPENING WITH STEEL DECKING, THERMAL BARRIER, INSULATION, RECOVERY BOARD, AND MODIFIED BITUMEN ROOF. SEE A3/A-501. MATCH ADJACENT INSULATION THICKNESS.
4	PROVIDE NEW GUARDRAIL AT PARAPET WALL, SEE DETAIL A4/A-502.
5	PROVIDE ROOFTOP HVAC/CONDENSING UNIT AND CURB. PROVIDE CRICKETS TO SLOPE DRAINAGE. SEE MECHANICAL FOR ADDITIONAL NOTES. SEE C2/A-501.
6	EXISTING EQUIPMENT TO REMAIN, SEE MECHANICAL SHEET M-301.
7	EXTEND ROOFTOP CURB AT MECHANICAL PIPING VESTIBULE. NEW CURB SHALL CONNECT TO EXISTING CURB AND PROVIDE A CONTINUOUS ANCHOR FOR MECHANICAL CURB ADAPTER. PROVIDE CRICKETS TO SLOPE DRAINAGE. SEE MECHANICAL FOR ADDITIONAL NOTES.
8	INFILL OPENING FROM REMOVED PIPING IN A MANNER TO ENSURE ROOF WARRANTY IS PRESERVED. SEE DETAIL B1/A-501.

CONSTRUCTION LEGEND

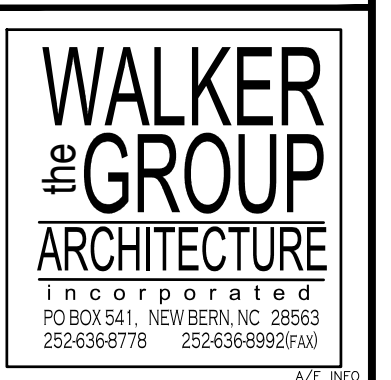
- PROVIDE ROOFTOP HVAC UNIT AT EXISTING ROOF CURB.
- PROVIDE ROOFTOP EXHAUST FAN AT EXISTING ROOF CURB.
- INFILL OPENING WITH STEEL DECKING, THERMAL BARRIER, INSULATION, RECOVERY BOARD, AND MODIFIED BITUMEN ROOF.
- EXISTING EQUIPMENT TO REMAIN.
- PROVIDE ROOFTOP HVAC UNIT AND CURB.
- EXTEND ROOFTOP CURB AT MECHANICAL PIPING VESTIBULE.
- ROOF PEDESTAL. SEE DETAIL A4/A-501.
- INFILL OPENING FROM REMOVED PIPING IN A MANNER TO ENSURE ROOF WARRANTY IS PRESERVED. SEE DETAIL A3/A-501.



KEY PLAN
NOT TO SCALE

1/16" = 1'-0" 0 8' 16' 32'

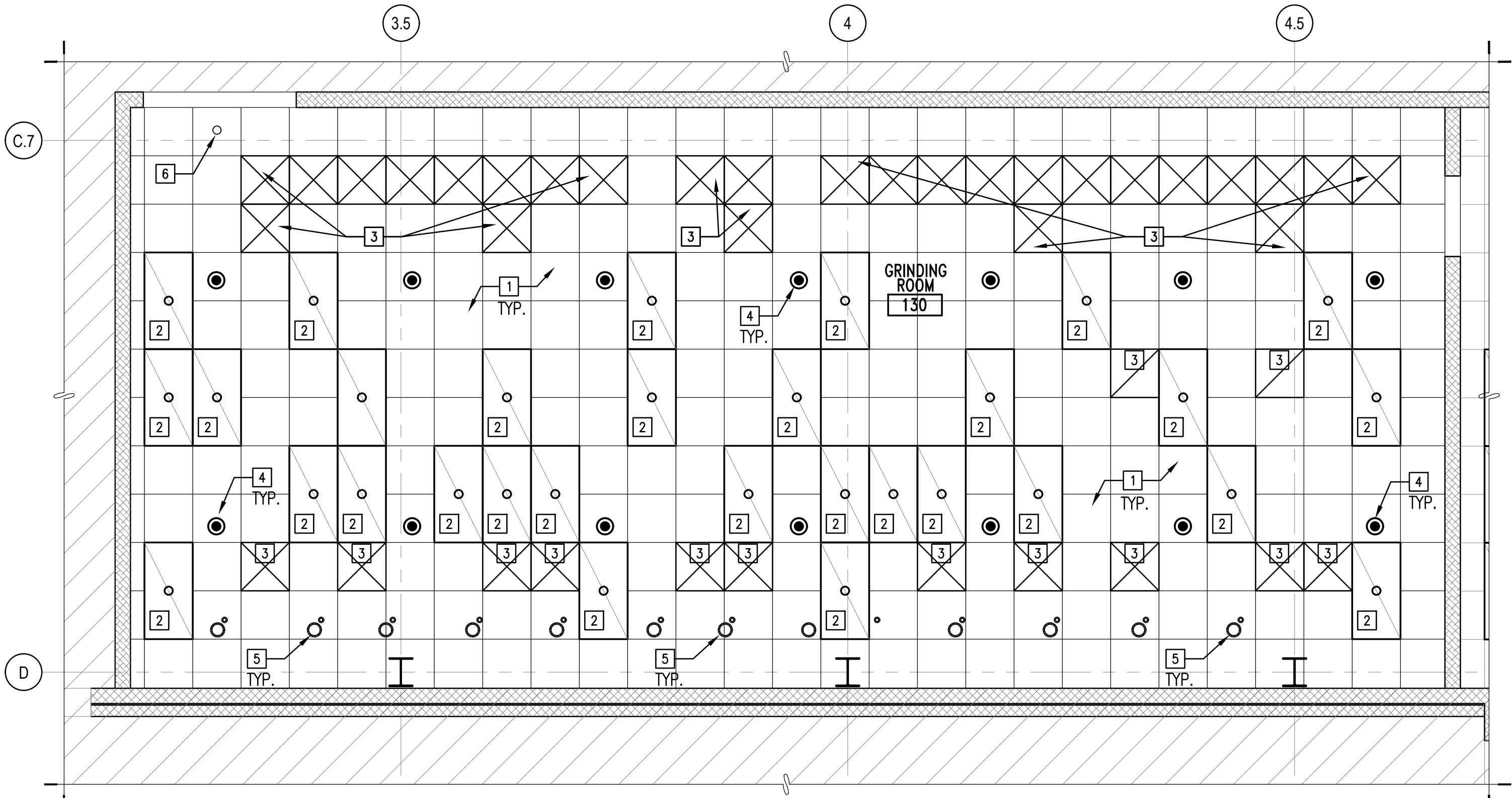
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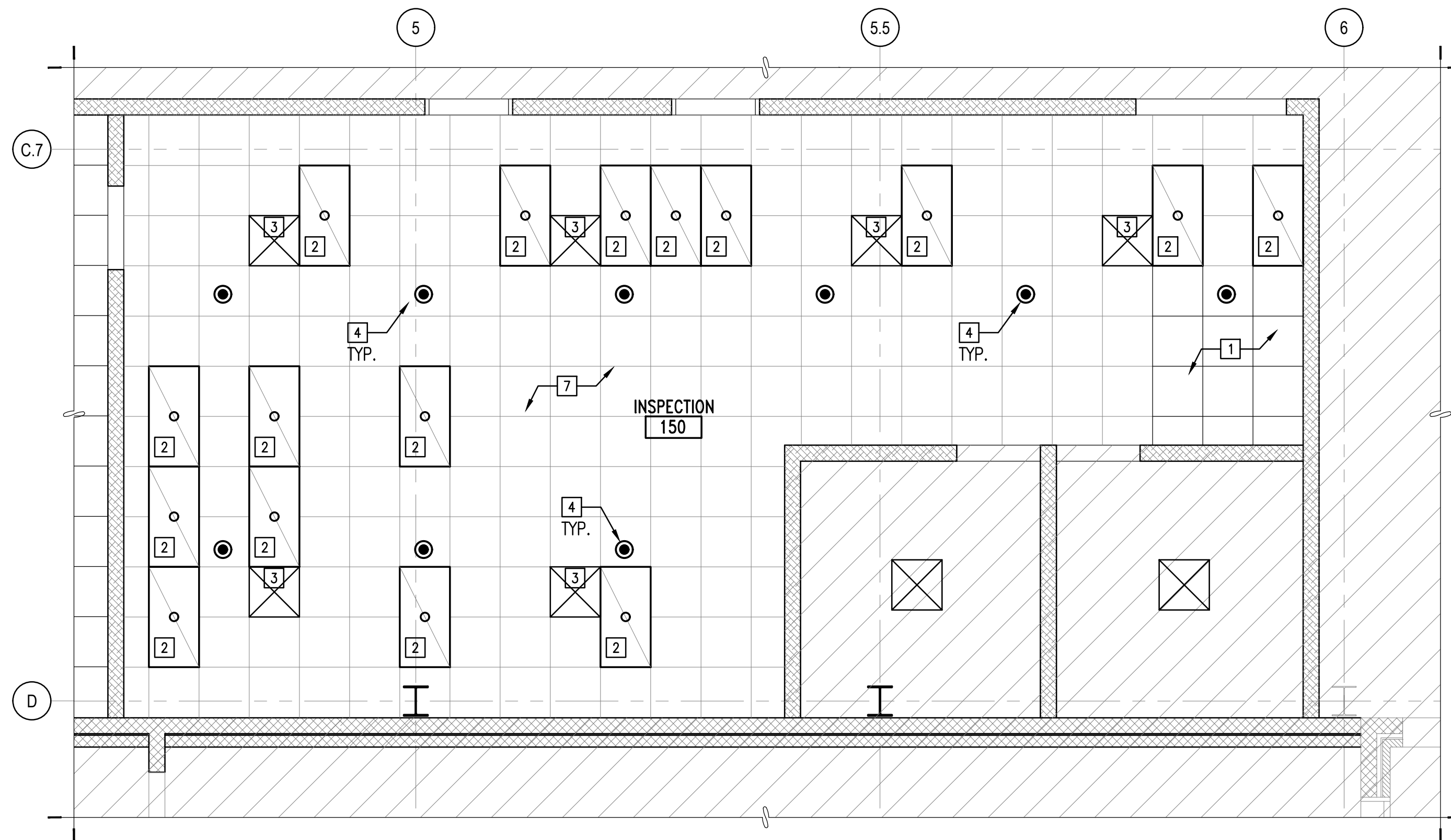
APPROVED	
FOR COMMANDER NAVFAC	
SATISFACTORY TO	
DES: CBW	DRW: CMC
CHK: JLW	

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225**
 CONSTRUCTION ROOF PLAN

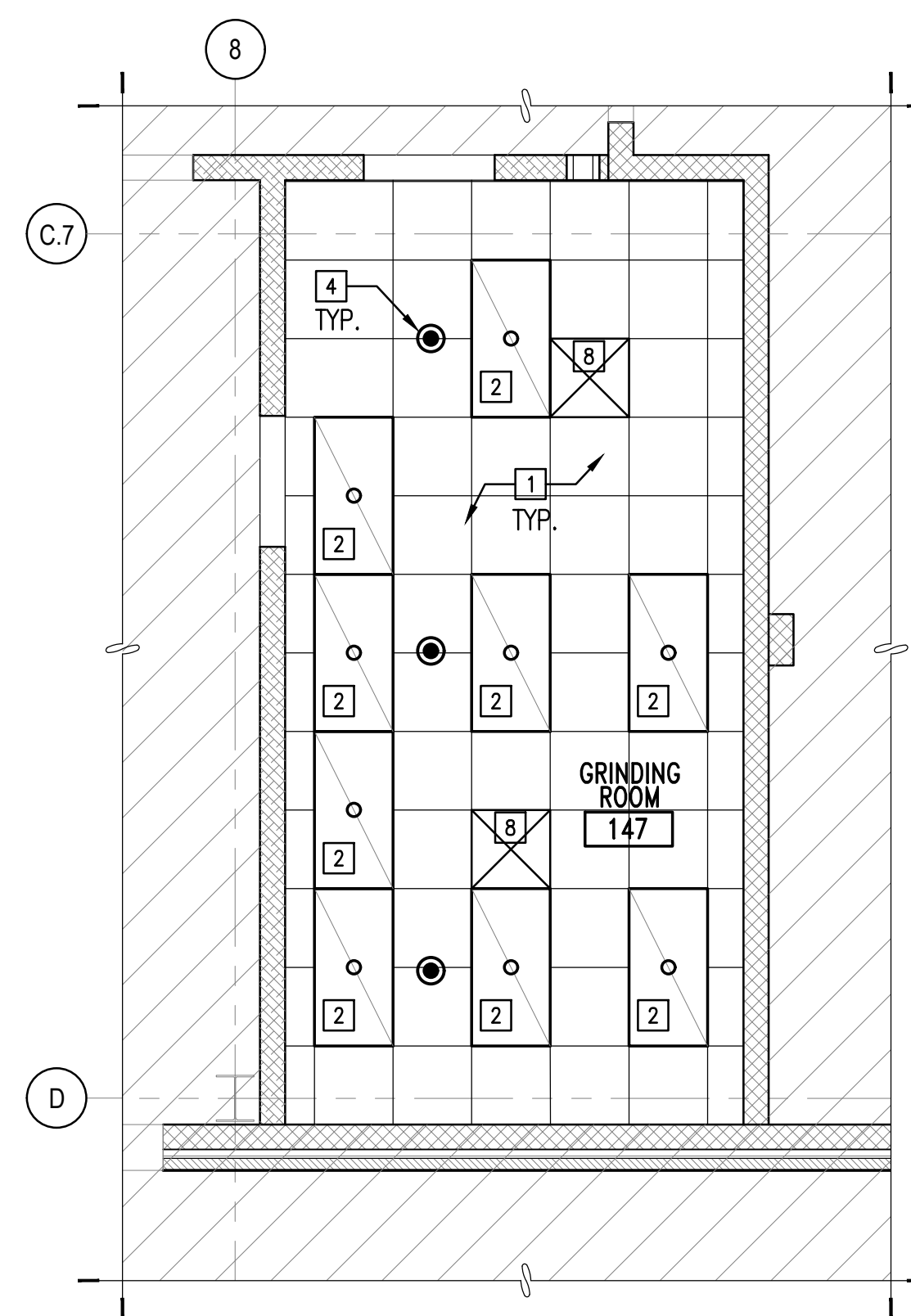
SCALE: AS NOTED
 PROJECT NO.: ST-14507A
 MAXIMO WORK ORDER NO.: 6878897
 NAVFAC DRAWING NO.: 12782415
 SHEET 14 OF 68
A-101



CONSTRUCTION REFLECTED PLAN: CEILING 'A'
 SCALE: 1/4" = 1'-0"



CONSTRUCTION REFLECTED PLAN: CEILING 'B'
 SCALE: 1/4" = 1'-0"



CONSTRUCTION REFLECTED PLAN: CEILING 'C'
 SCALE: 1/4" = 1'-0"

GENERAL NOTES

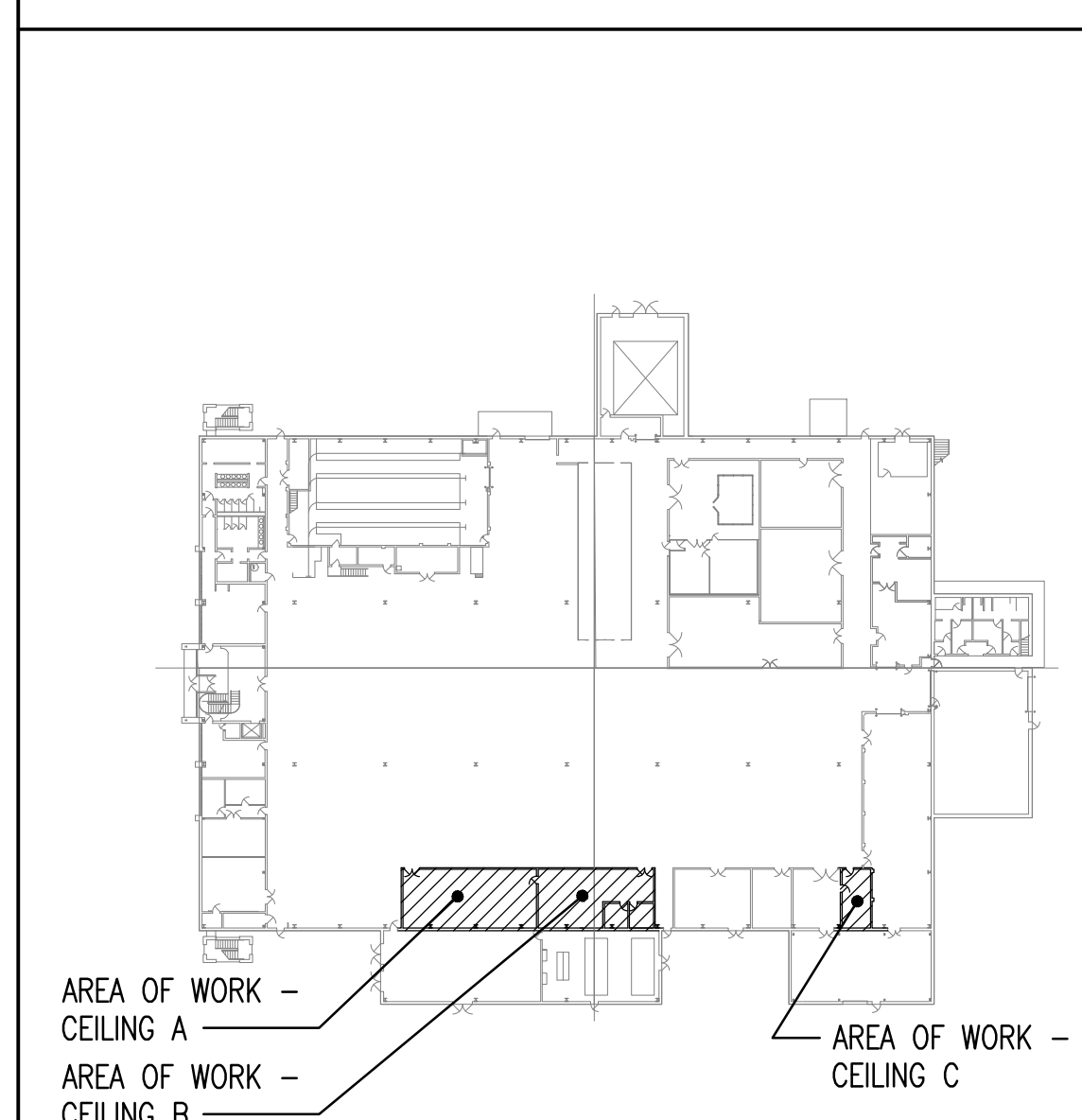
1. CONTRACTOR TO FIELD VERIFY ALL EXISTING DIMENSIONS BEFORE COMMENCING WORK.
2. SEE FIRE PROTECTION, PLUMBING, MECHANICAL, AND ELECTRICAL DRAWINGS FOR ADDITIONAL NOTES.
3. CONTRACTOR TO PROTECT EXISTING ITEMS TO REMAIN.
4. ALL EXISTING EQUIPMENT NOT SHOWN IS TO REMAIN, PROTECT.
5. EXISTING ROOF WARRANTY SHALL BE MAINTAINED. CONTACT GOV'T FOR ROOF WARRANTY DETAILS

CONSTRUCTION KEYNOTES

MARK	DESCRIPTION
1	PROVIDE NEW ACOUSTICAL CEILING TILES, GRID, AND HANGERS. CEILING HEIGHT TO MATCH ORIGINAL.
2	REINSTALL LIGHTING FIXTURES, SEE ELECTRICAL.
3	REINSTALL HVAC DIFFUSERS, SEE MECHANICAL.
4	EXISTING SPRINKLERS TO REMAIN, PROVIDE NEW ESCUTCHEONS, TYP.
5	EXISTING EXHAUST LINES AND PIPING TO REMAIN.
6	REINSTALL WARNING LIGHT, SEE ELECTRICAL.
7	EXISTING ACOUSTICAL CEILING TILES, GRID, AND HANGERS.
8	PROVIDE NEW HVAC DIFFUSERS, SEE MECHANICAL.

CONSTRUCTION LEGEND

	PROVIDE NEW ACOUSTICAL CEILING TILES, GRID, AND HANGERS. CEILING HEIGHT TO MATCH ORIGINAL.
	EXISTING ACOUSTICAL CEILING TILES, GRID, AND HANGERS.
	REINSTALL EXISTING LIGHTING FIXTURES
	REINSTALL HVAC DIFFUSERS, SEE MECHANICAL.
	EXISTING SPRINKLERS TO REMAIN, PROVIDE ESCUTCHEONS
	EXISTING EXHAUST LINES AND PIPING TO REMAIN.
	AREA NOT IN SCOPE OF WORK



KEY PLAN
 NOT TO SCALE
 SCALE: 1/4" = 1'-0"

APPR	DATE	DESCRIPTION	SN



APPROVED	FOR COMMANDER NAVFAC
ACTIVITY	
SATISFACTORY TO	
DES: CBW	DRW: CMC
CHK: JLW	

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225**
 CONSTRUCTION REFLECTED CEILING PLANS

SCALE: AS NOTED
 PROJECT NO.: ST-14507A
 MAXIMO WORK ORDER NO. 6878897
 NAVFAC DRAWING NO. 12782416
 SHEET 15 OF 68
A-102

DRAWN/REVISED: 10 MAY 2014

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CAD FILE: G:\Projects\2018\1803\HMC\Drawings\1803_A-102.dwg
 PLOT DATE/TIME: 5/31/2019 - 2:02pm

1

2

3

4

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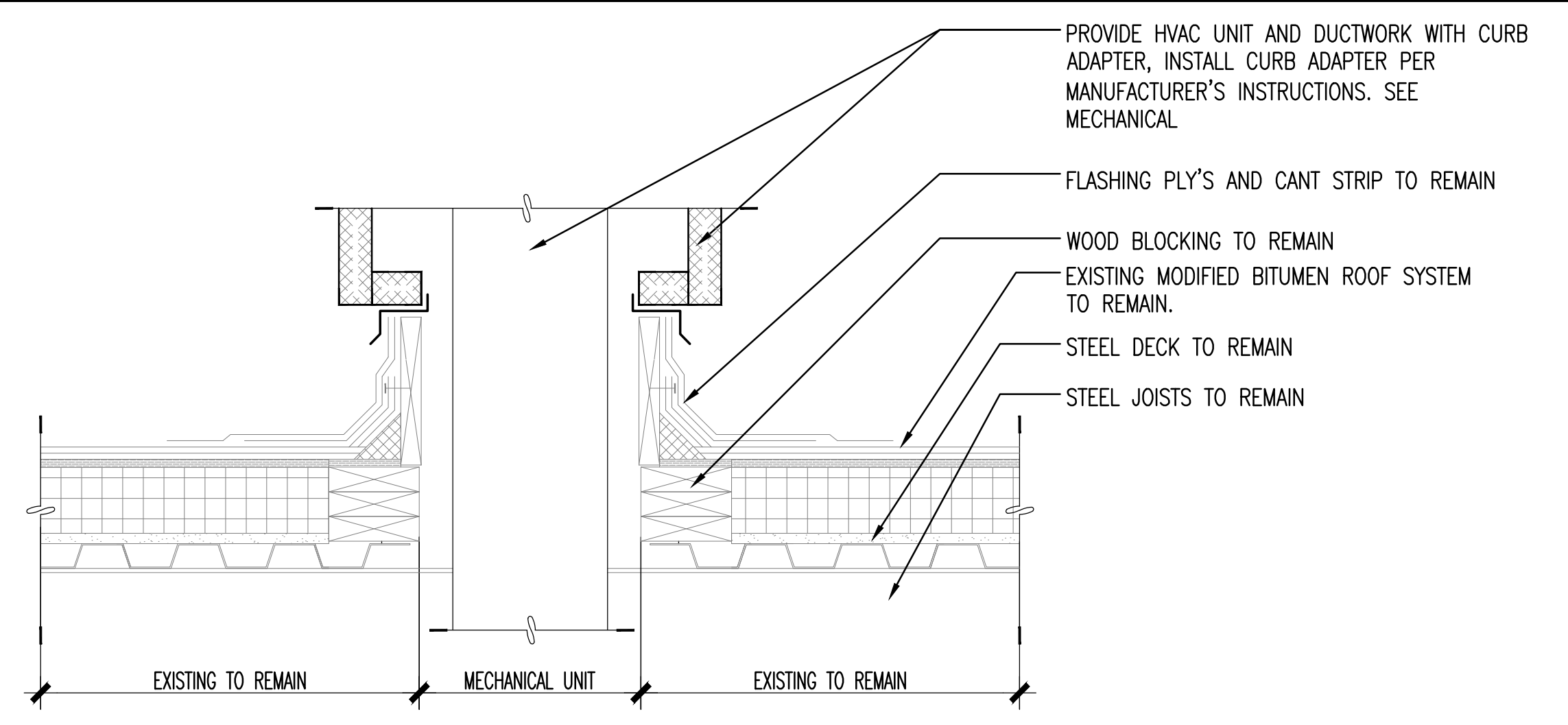
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C

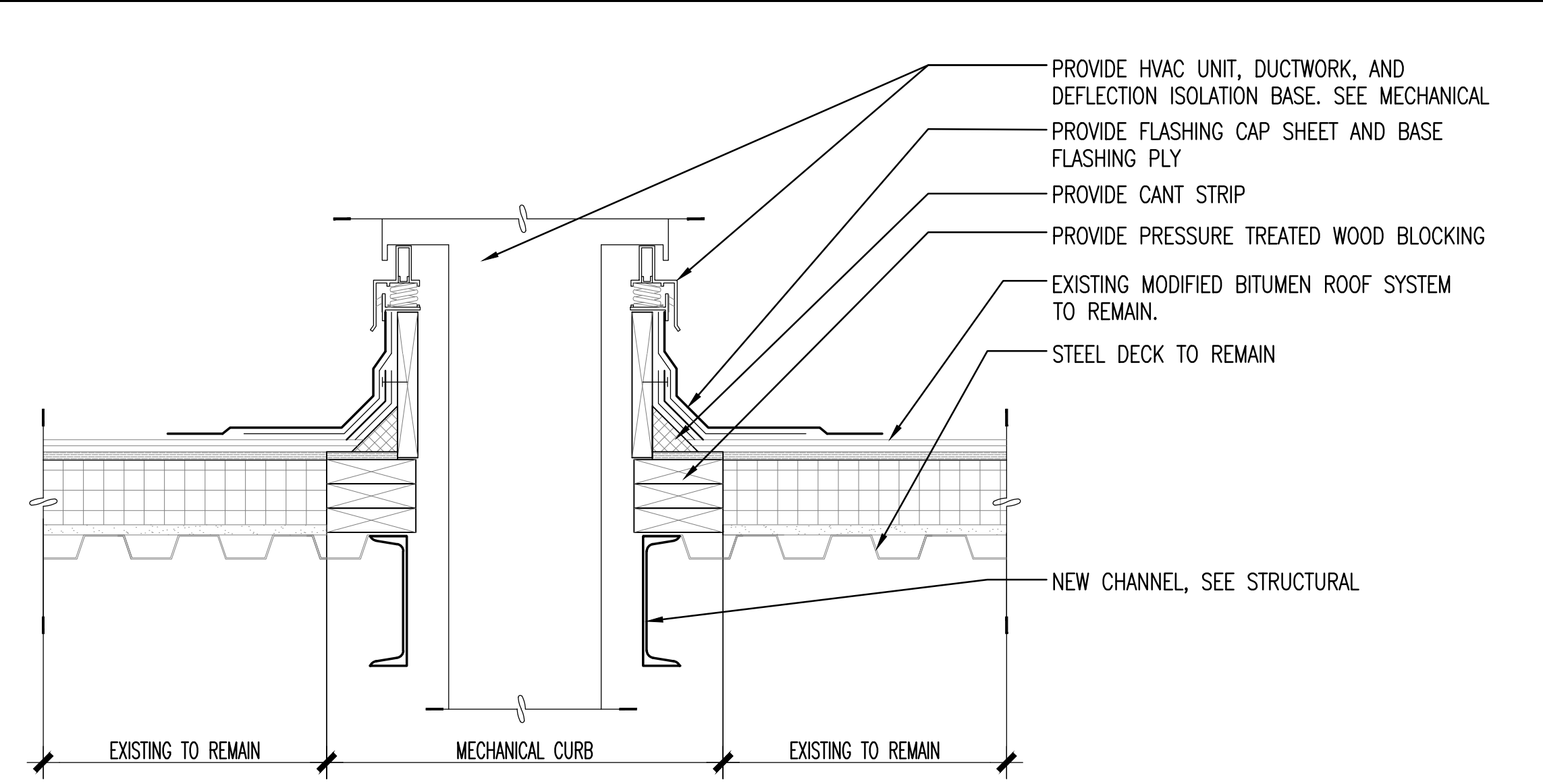
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A

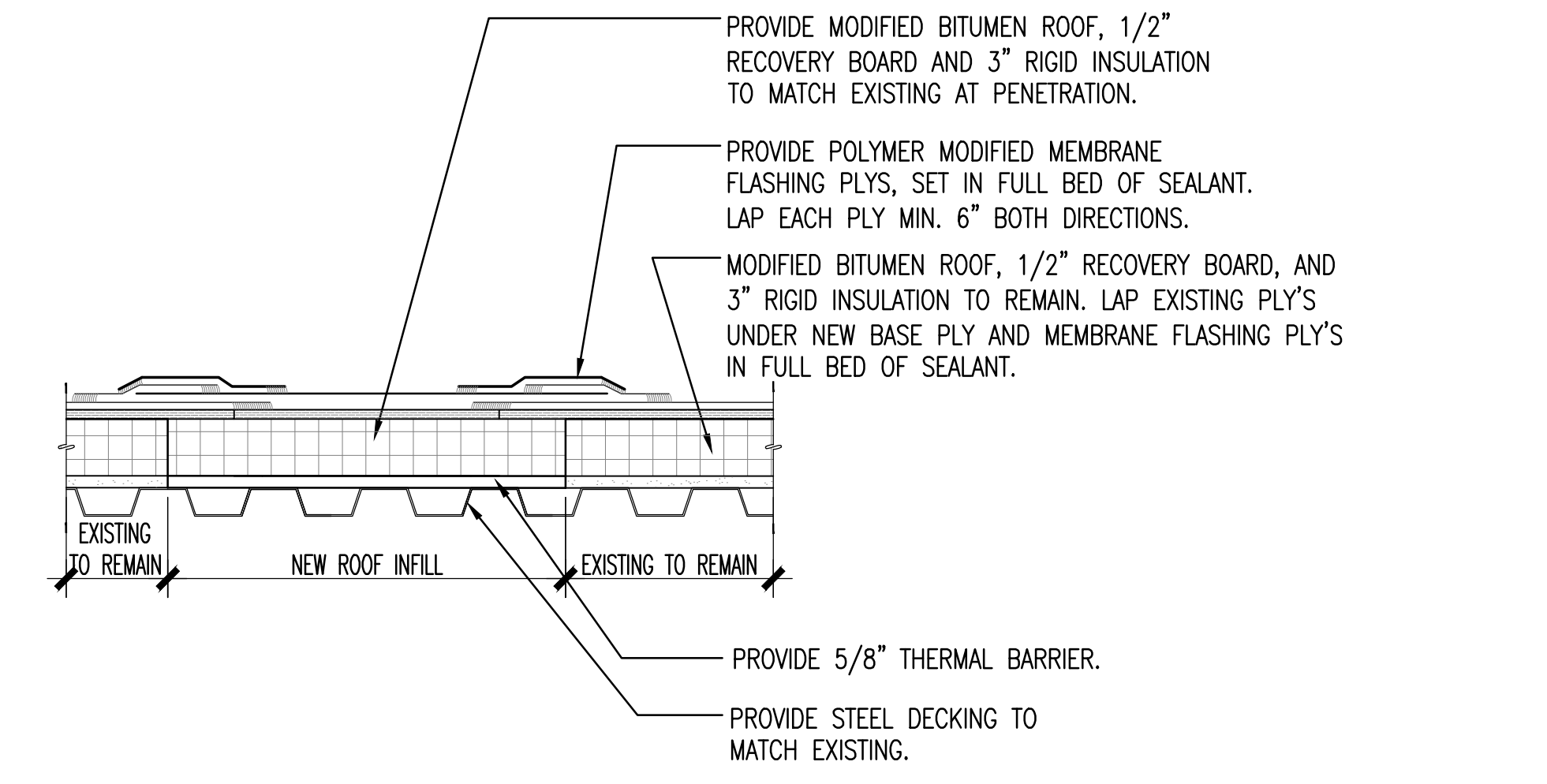
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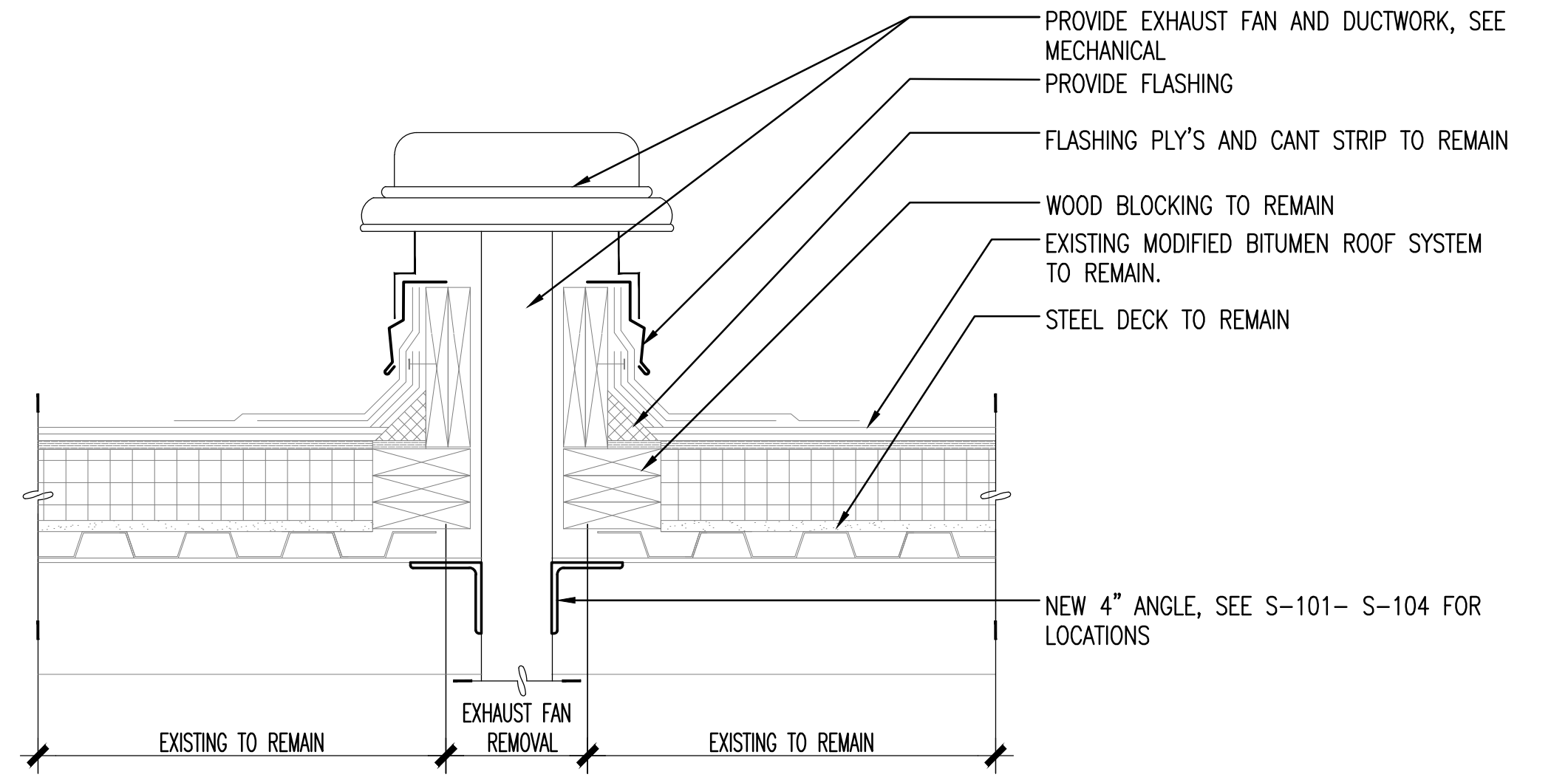
C1 ROOFTOP MECHANICAL UNIT DETAIL (EXISTING CURB WITH WITH CURB ADAPTER)
SCALE: 1-1/2" = 1'-0" A-101



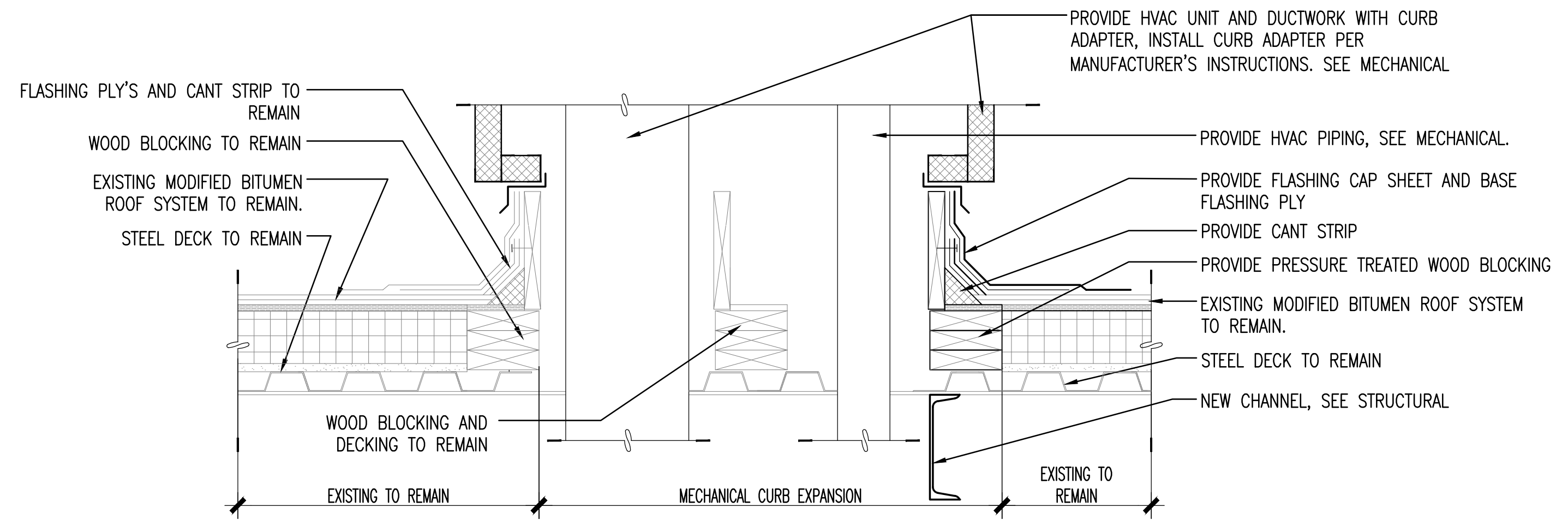
C4 ROOFTOP MECHANICAL UNIT DETAIL (WITH NEW CURB)
SCALE: 1-1/2" = 1'-0" A-101



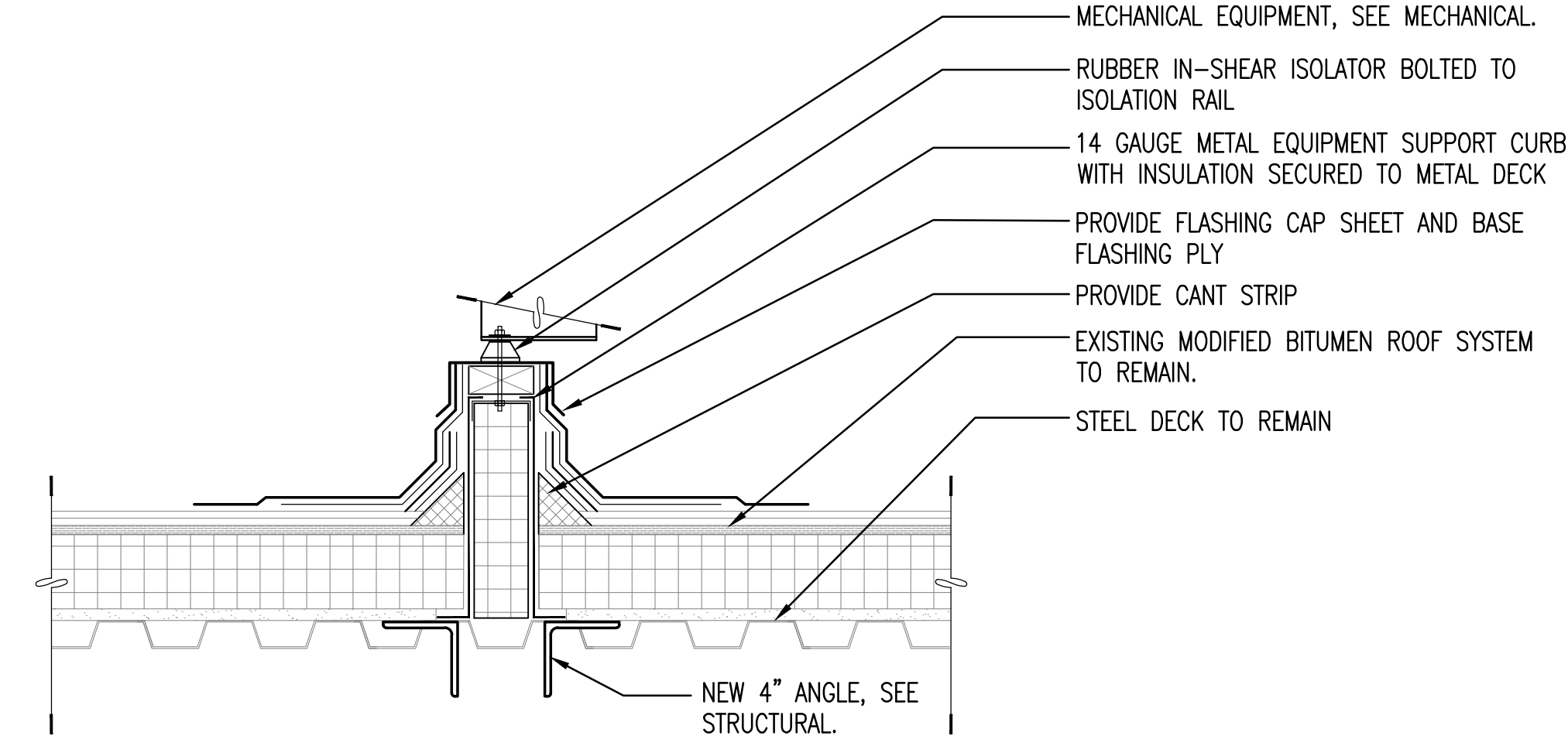
B1 ROOF INFILL DETAIL
SCALE: 1-1/2" = 1'-0" A-101



B4 EXHAUST FAN DETAIL (AT EXISTING CURB)
SCALE: 1-1/2" = 1'-0" A-101



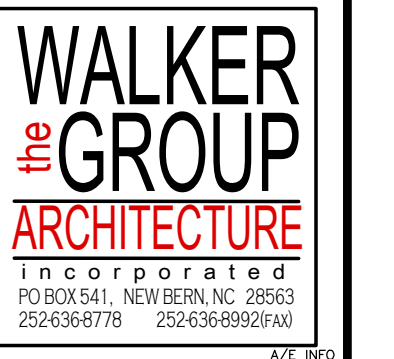
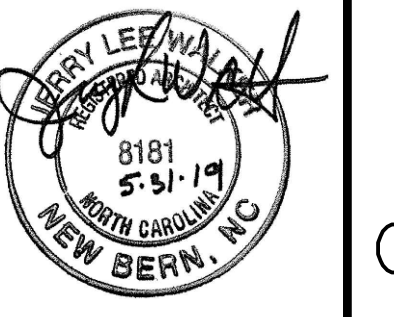
A1 ROOFTOP MECHANICAL UNIT DETAIL (EXPANDED CURB WITH WITH CURB ADAPTER)
SCALE: 1-1/2" = 1'-0" A-101



A4 ROOF PEDESTAL FOR MECHANICAL EQUIPMENT
SCALE: 1-1/2" = 1'-0" A-101



NO.	DATE	DESCRIPTION



APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO
DES: CBW DRW: CMC CHK: JLW

U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
CONSTRUCTION DETAILS

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782417
SHEET 16 OF 68
A-501

1

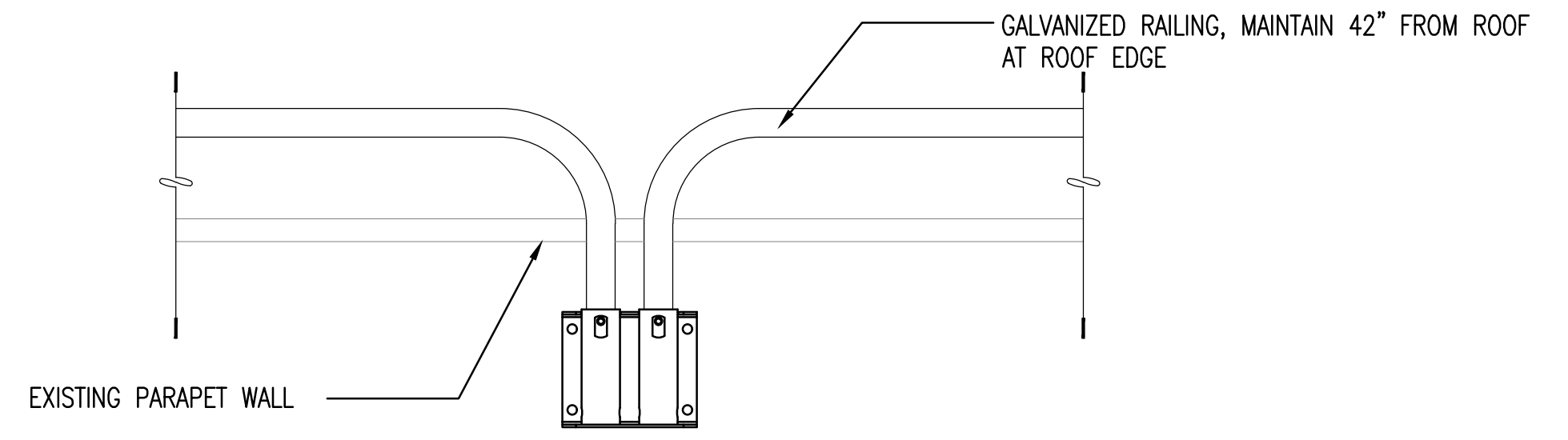
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3

4

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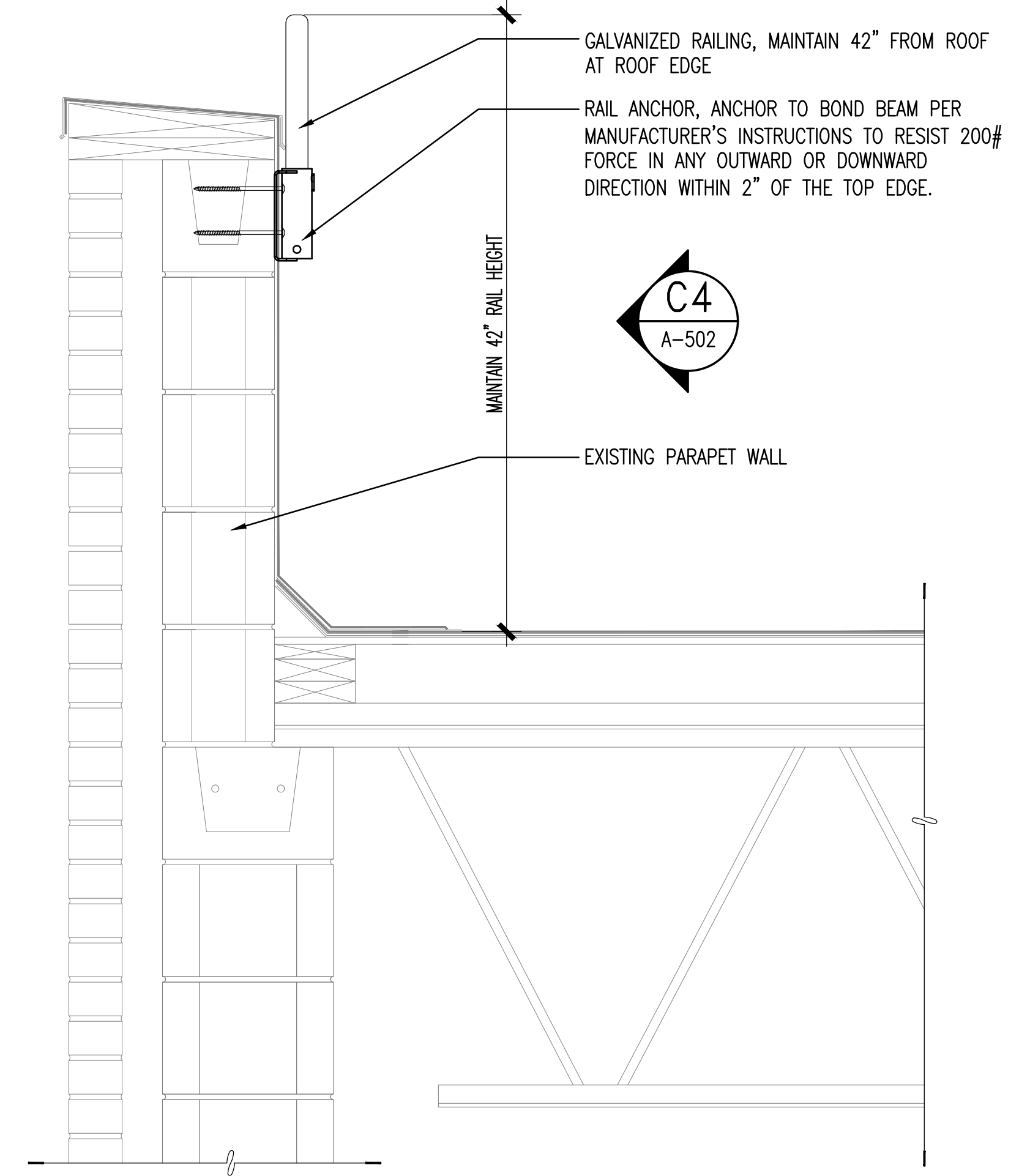
CAD FILE: G:\Projects\2018\1813\HWC\Drawings\100%1813 A-502.dwg PLOT DATE/TIME: 5/31/2019 - 2:03pm



ANCHOR RAIL BRACKET TO PARAPET WITH HILTI HIT-HY270 ADHESIVE ANCHOR SYSTEM* USING (4) 1/2" DIAMETER THREADED RODS CONFORMING TO ASTM A36, OR APPROVED EQUAL. MINIMUM ANCHOR SPACING IS 8 INCHES IN EACH DIRECTION. MINIMUM ANCHOR EDGE DISTANCE IS 4".

* APPROVED EQUAL ADHESIVE ANCHOR SYSTEM MUST HAVE AN ALLOWABLE ADHESIVE BOND TENSION LOAD OF 2035 POUNDS AT 4 1/2" MINIMUM EMBEDMENT.

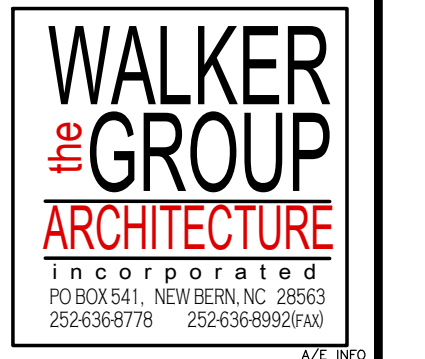
C4 ROOFTOP GUARDRAIL ELEVATION
SCALE: 1-1/2" = 1'-0" A-502



A4 ROOFTOP GUARDRAIL DETAIL
SCALE: 1-1/2" = 1'-0" A-101



NO.	DESCRIPTION	DATE	APPR.



APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO
DES: CBW DRW: CMC CHK: JLW

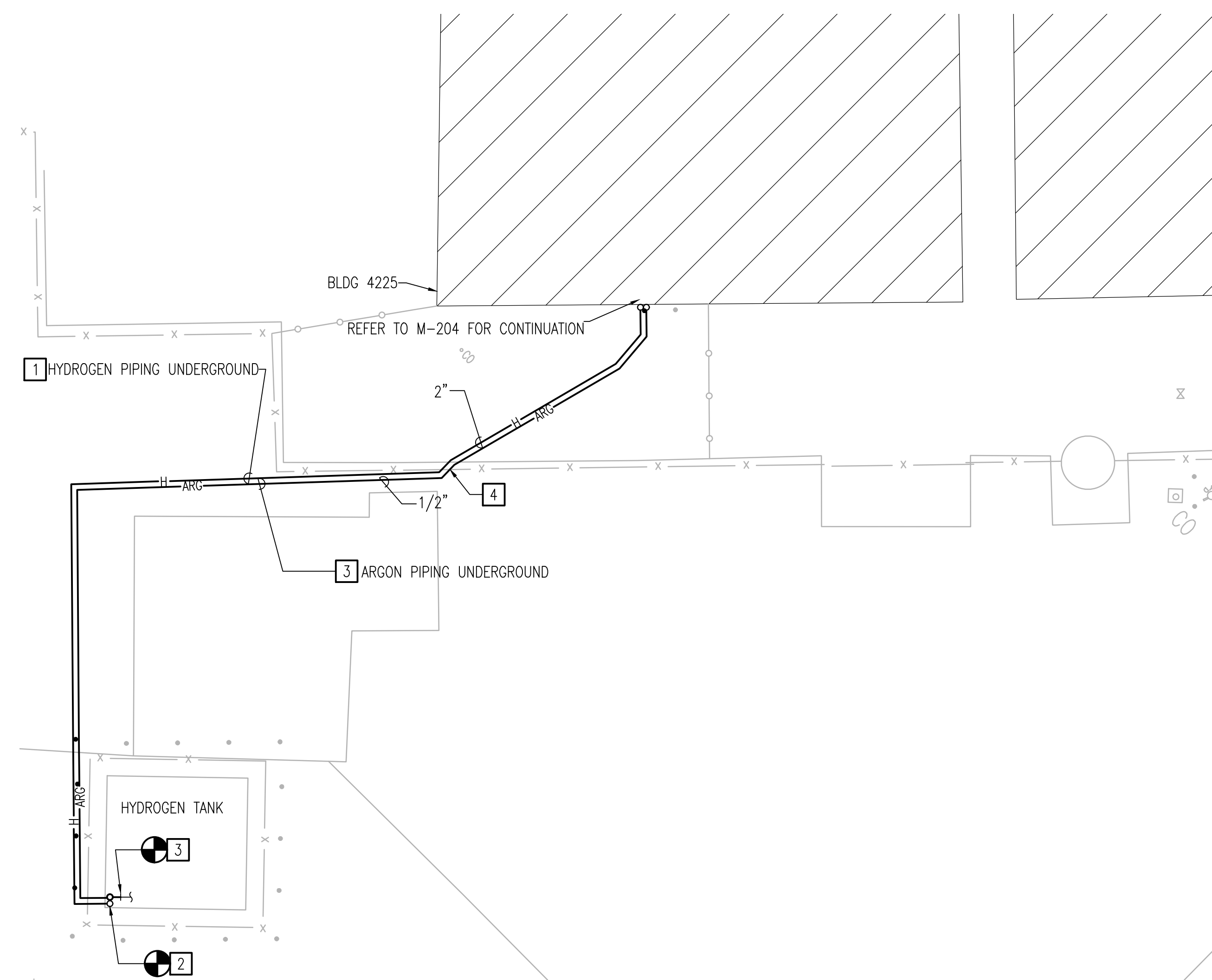
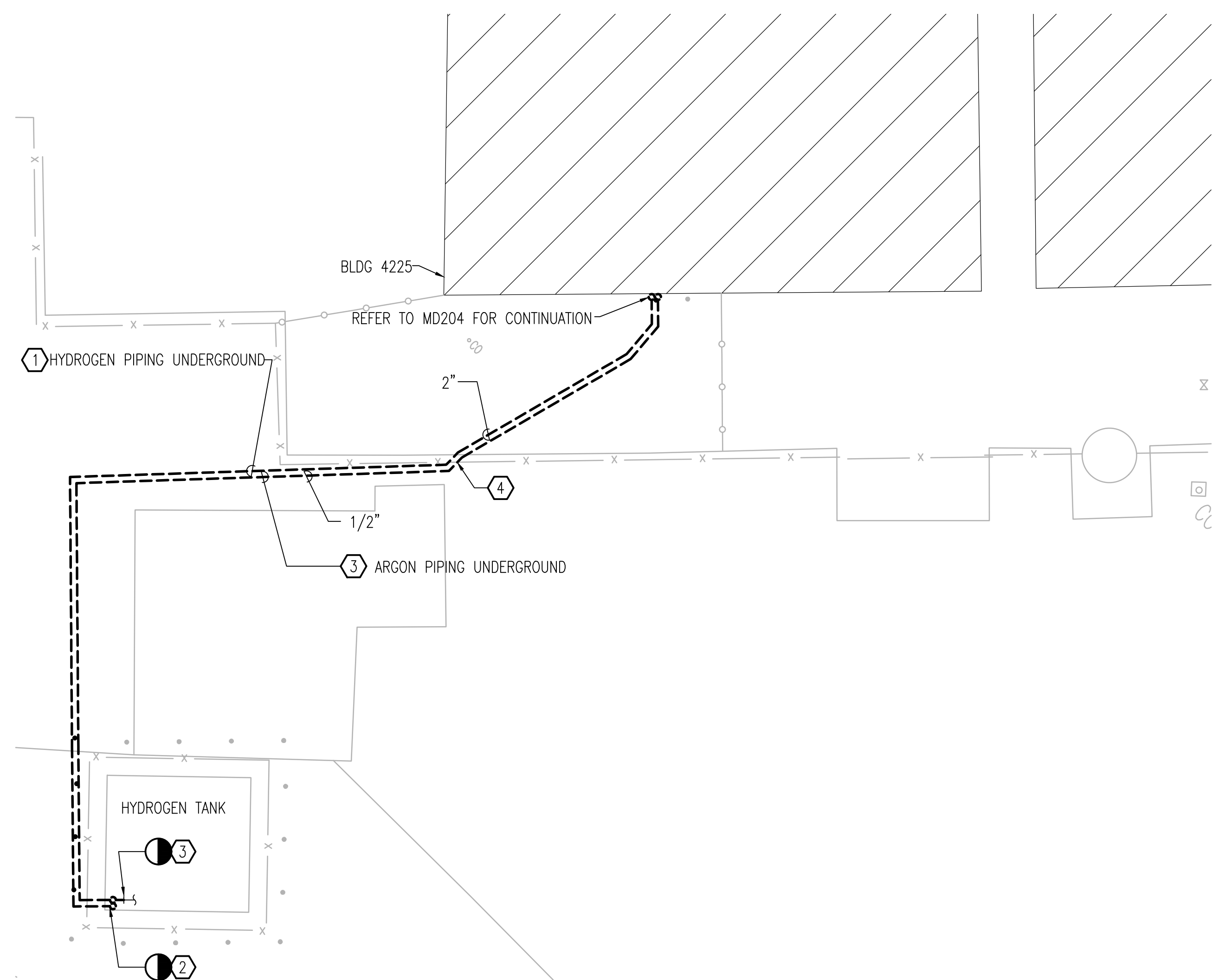
U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225
CONSTRUCTION DETAILS

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782418
SHEET 17 OF 68
A-502

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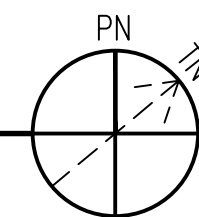
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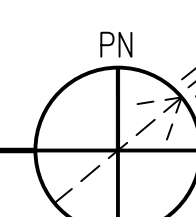
MECHANICAL SITE PLAN - DEMOLITION

SCALE: 1" = 10'-0"



MECHANICAL SITE PLAN - NEW WORK

SCALE: 1" = 10'-0"

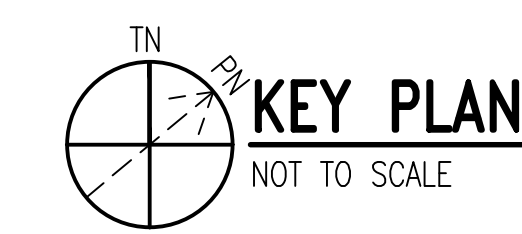
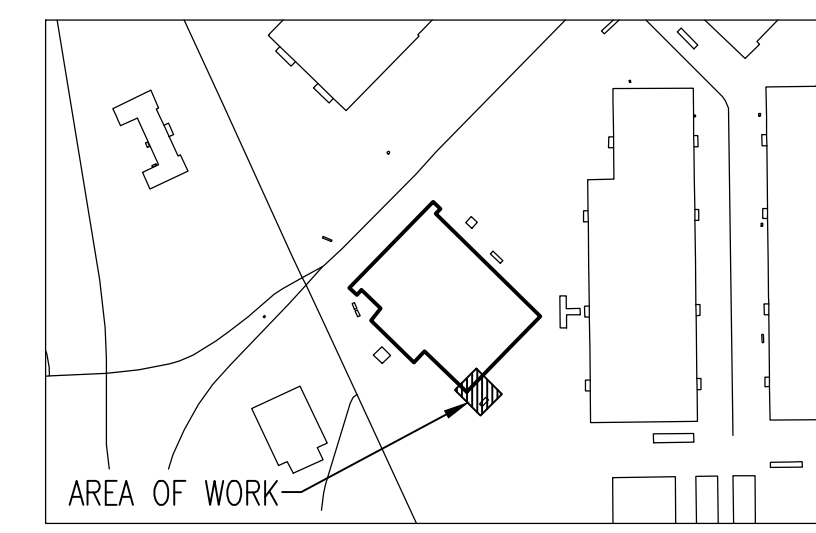


DEMOLITION NOTES

- 1 REMOVE HYDROGEN PIPING, HANGERS, AND SUPPORTS COMPLETE. REFER TO SPECIFICATIONS AND CIVIL DOCUMENTS FOR ADDITIONAL REQUIREMENTS. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY. CONTRACTOR MUST CONFIRM AND DOCUMENT ACTUAL PIPE SIZES PRIOR TO DEMOLITION. SUBMIT RED-LINED DRAWINGS, INDICATING ANY PIPE SIZES THAT DIFFER FROM DRAWINGS, TO THE GOVERNMENT FOR REVIEW. NEW PIPING MUST MATCH SIZES OF EXISTING PIPING.
- 2 REMOVE PIPING BACK TO TRANSITION POINT TO EXISTING STAINLESS STEEL PIPING APPROX. 18" ABOVE GRADE.
- 3 REMOVE ARGON PIPING, HANGERS, AND SUPPORTS COMPLETE. REFER TO SPECIFICATIONS AND CIVIL DOCUMENTS FOR ADDITIONAL REQUIREMENTS. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY. CONTRACTOR MUST CONFIRM AND DOCUMENT ACTUAL PIPE SIZES PRIOR TO DEMOLITION. SUBMIT RED-LINED DRAWINGS, INDICATING ANY PIPE SIZES THAT DIFFER FROM DRAWINGS, TO THE GOVERNMENT FOR REVIEW. NEW PIPING MUST MATCH SIZES OF EXISTING PIPING.
- 4 REMOVE ARGON SHUT-OFF VALVE ON FENCE COMPLETE.

NEW WORK NOTES

- 1 PROVIDE HYDROGEN PIPING, HANGERS, AND SUPPORTS COMPLETE. REFER TO SPECIFICATIONS AND CIVIL DOCUMENTS FOR ADDITIONAL REQUIREMENTS. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY. CONTRACTOR MUST CONFIRM AND DOCUMENT ACTUAL PIPE SIZES PRIOR TO DEMOLITION. SUBMIT RED-LINED DRAWINGS, INDICATING ANY PIPE SIZES THAT DIFFER FROM DRAWINGS, TO THE GOVERNMENT FOR REVIEW. NEW PIPING MUST MATCH SIZES OF EXISTING PIPING.
- 2 ROUTE PIPING UP AND CONNECT TO EXISTING STAINLESS STEEL PIPING APPROX. 18" ABOVE GRADE.
- 3 PROVIDE ARGON PIPING, HANGERS, AND SUPPORTS COMPLETE. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY. CONTRACTOR MUST CONFIRM AND DOCUMENT ACTUAL PIPE SIZES PRIOR TO DEMOLITION. SUBMIT RED-LINED DRAWINGS, INDICATING ANY PIPE SIZES THAT DIFFER FROM DRAWINGS, TO THE GOVERNMENT FOR REVIEW. NEW PIPING MUST MATCH SIZES OF EXISTING PIPING.
- 4 PROVIDE ARGON SHUTOFF VALVE SIMILAR TO EXISTING VALVE COMPLETE. MOUNT APPROX. 42" ABOVE FINISHED GRADE.



GRAPHIC SCALE:



DATE	DESCRIPTION	APPR



APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO
DES: TNH | DRW: MTF | CHK: JAK

U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
MECHANICAL SITE PLANS

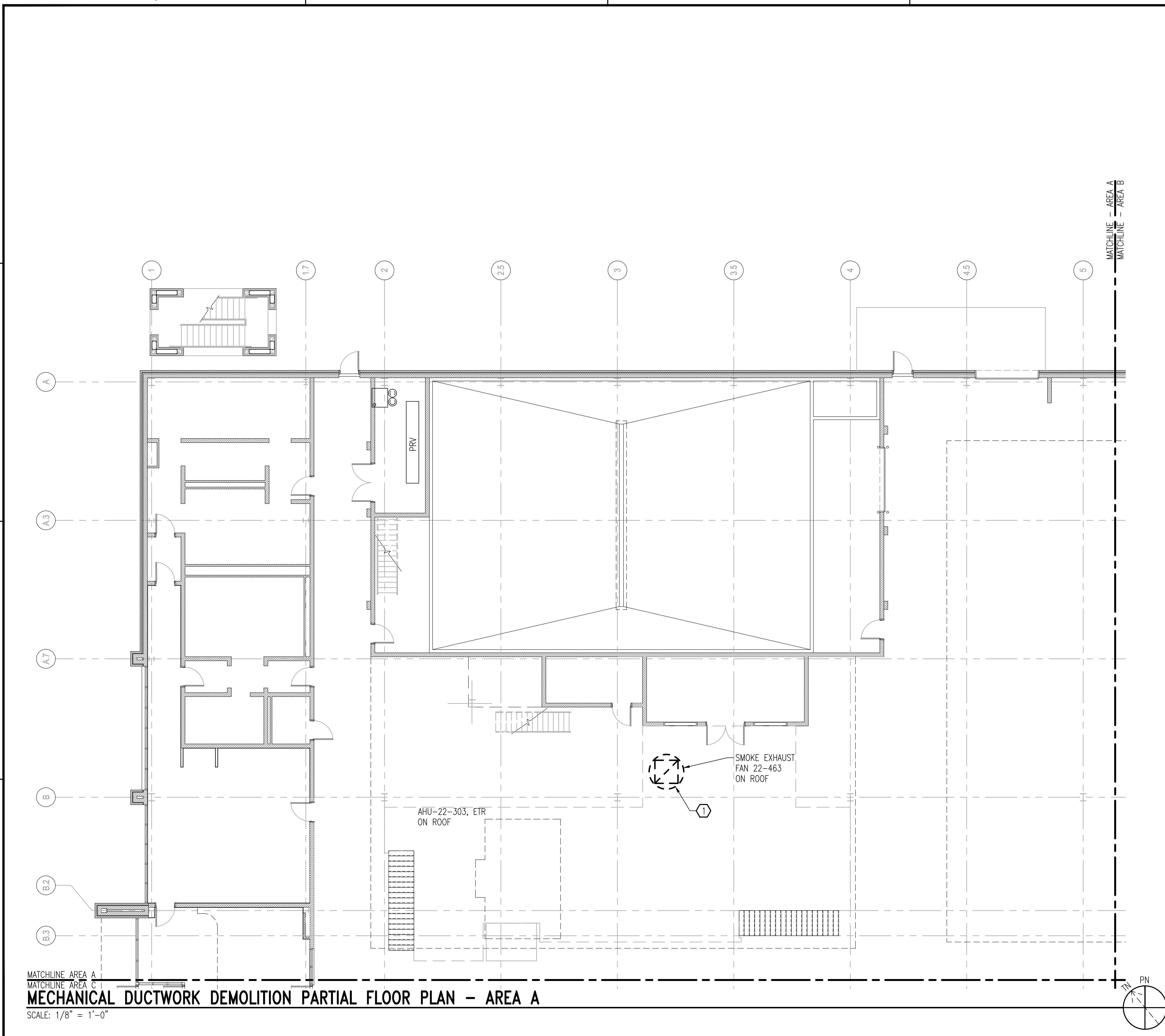
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MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782420
SHEET 19 OF 68
MS101

DRAWING REVISION: 10 MAY 2014

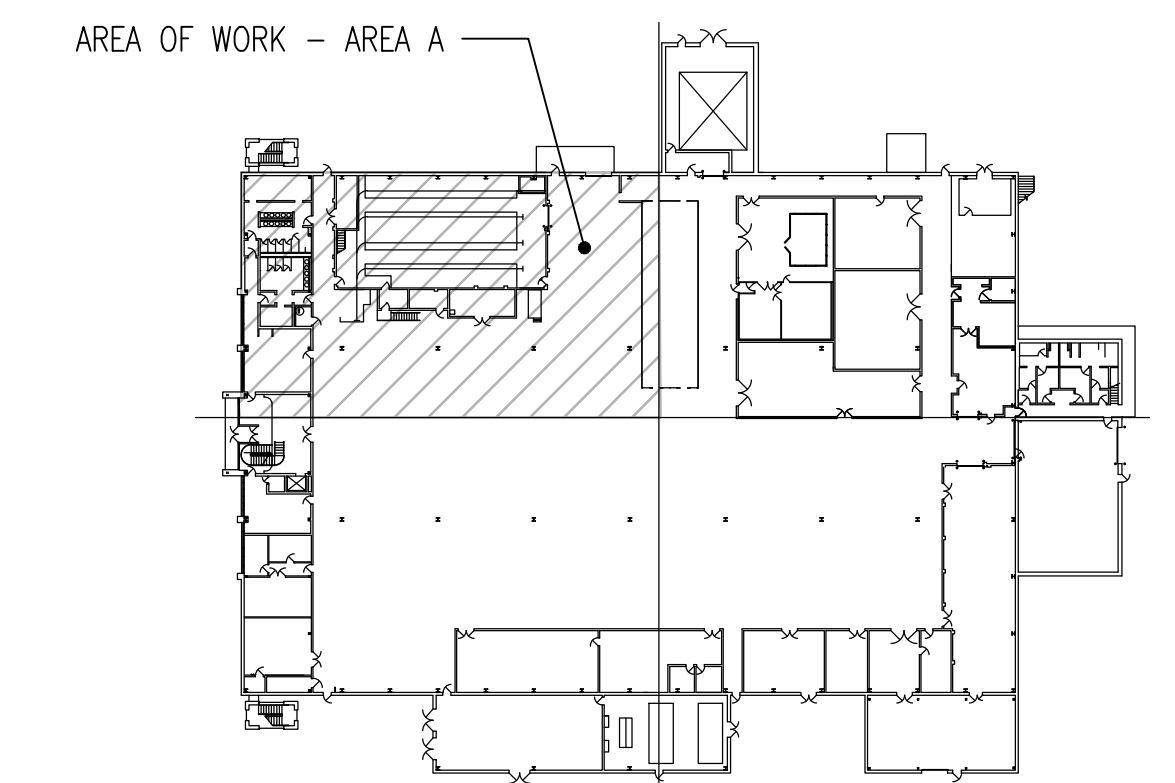
DEMOLITION NOTES

① REFER TO DEMOLITION ROOF PLAN FOR DEMOLITION WORK.

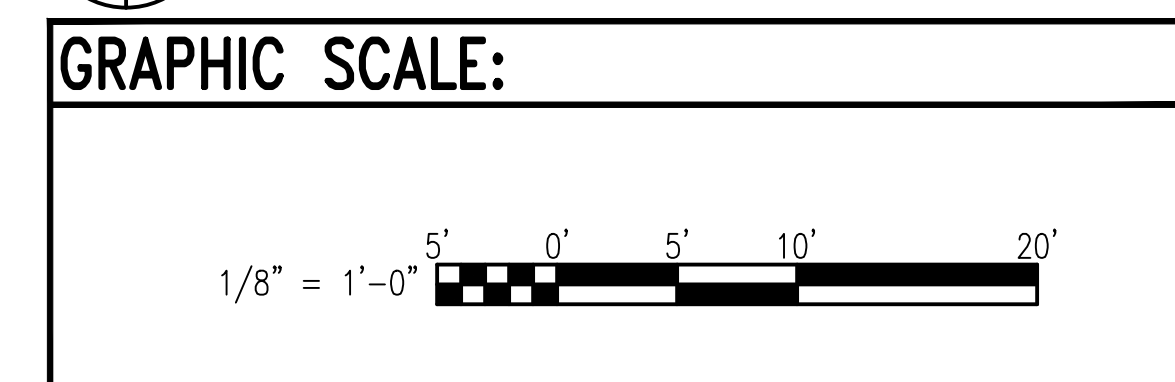
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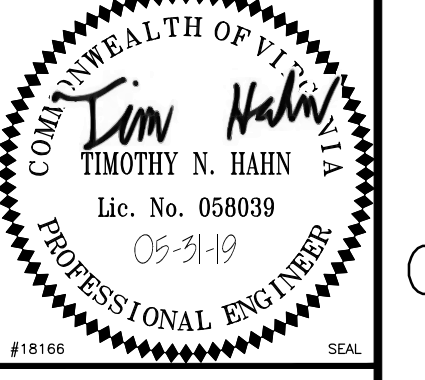
MATCHLINE AREA A
 MATCHLINE AREA C
MECHANICAL DUCTWORK DEMOLITION PARTIAL FLOOR PLAN - AREA A
 SCALE: 1/8" = 1'-0"



KEY PLAN
 NOT TO SCALE



DATE	DESCRIPTION	APP'R



APPROVED	A/E INFO
FOR COMMANDER NAVFAC	ACTIVITY
SATISFACTORY TO	DES TNH DRW MTF CHK JAK

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225**
 MECHANICAL DUCTWORK DEMOLITION
 PARTIAL FLOOR PLAN - AREA A

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782421
SHEET 20 OF 68
MD101

DEMOLITION NOTES

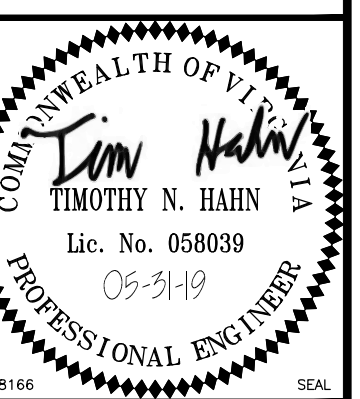
- ① REMOVE DUCTWORK, INSULATION, HANGERS, AND SUPPORTS COMPLETE.
- ② REFER TO ROOF DEMOLITION PLAN FOR DEMOLITION WORK.
- ③ REMOVE AHU AND ASSOCIATED APPURTENANCES COMPLETE.
- ④ REMOVE STEAM HEATING COIL AND ASSOCIATED APPURTENANCES COMPLETE. REMOVE DUCTWORK TO ALLOW INSTALLATION OF NEW HOT WATER COIL UNDER THE NEW WORK PHASE.
- ⑤ REMOVE AIR HANDLER, HUMIDIFIER, DUCTWORK, SUPPORTS, AND ASSOCIATED APPURTENANCES COMPLETE THROUGH NEW ROOF OPENING. REFER TO SPECIFICATIONS FOR PHASING REQUIREMENTS PRIOR TO DEMOLITION.

DUCTWORK ELEVATION NOTE:

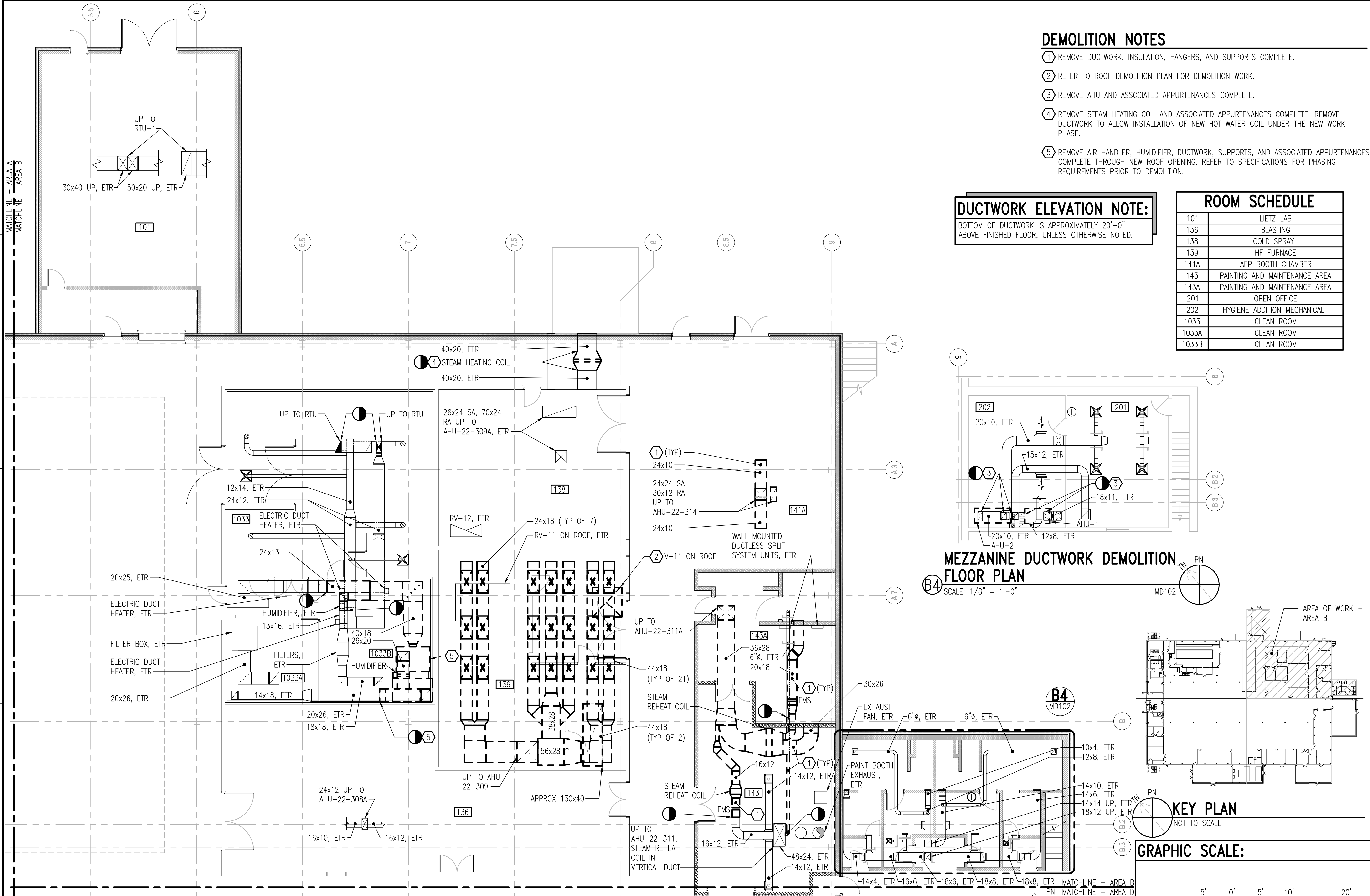
BOTTOM OF DUCTWORK IS APPROXIMATELY 20"-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.

ROOM SCHEDULE

101	LIETZ LAB
136	BLASTING
138	COLD SPRAY
139	HF FURNACE
141A	AEP BOOTH CHAMBER
143	PAINTING AND MAINTENANCE AREA
143A	PAINTING AND MAINTENANCE AREA
201	OPEN OFFICE
202	HYGIENE ADDITION MECHANICAL
1033	CLEAN ROOM
1033A	CLEAN ROOM
1033B	CLEAN ROOM

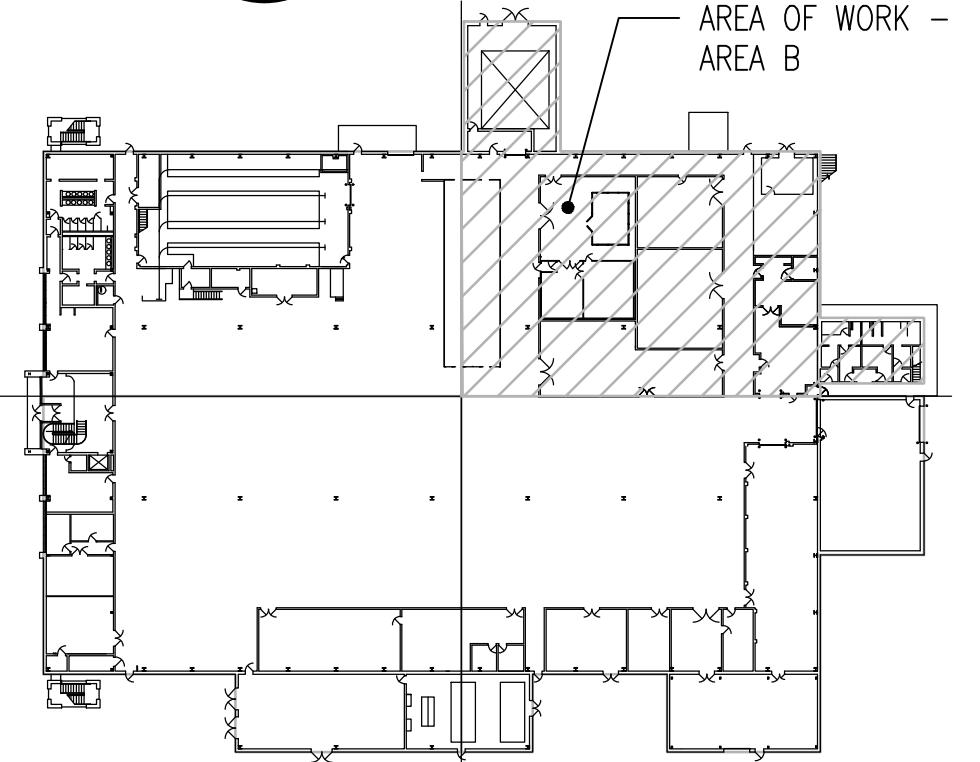
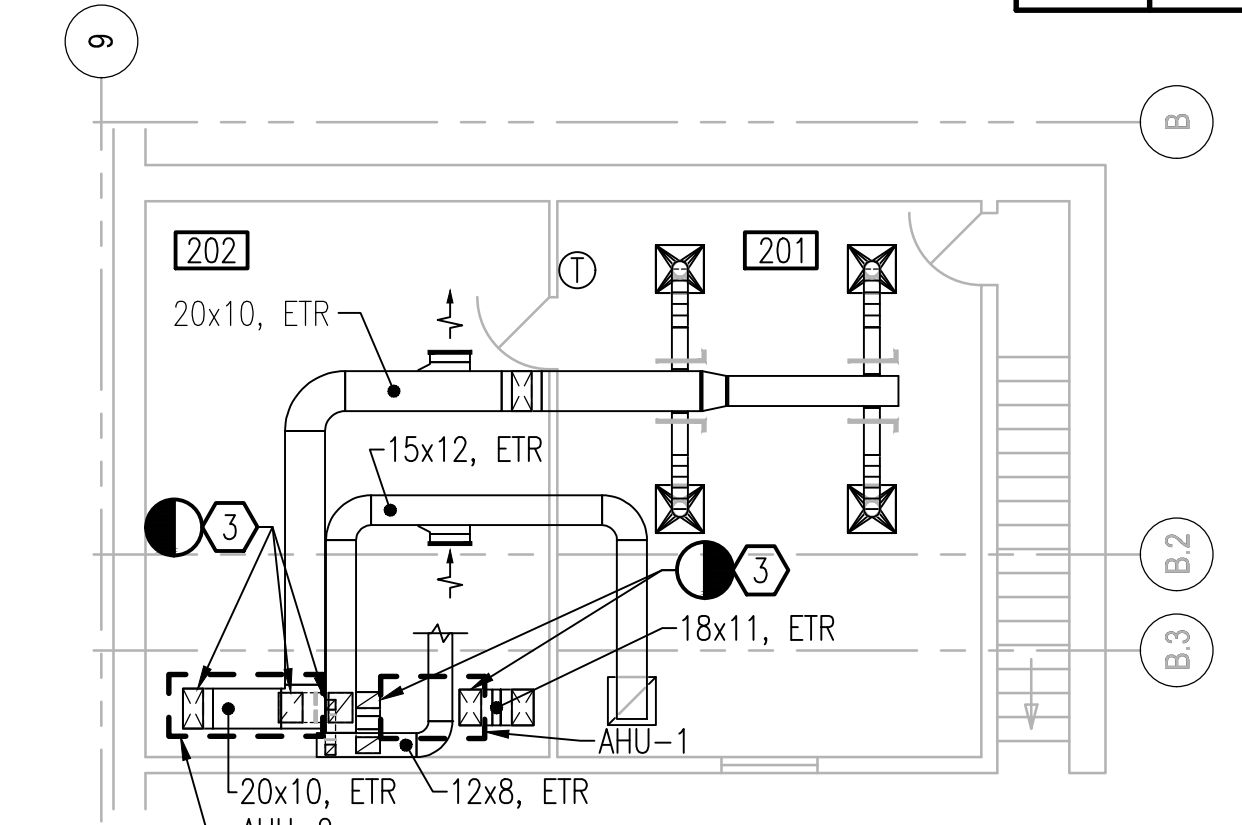


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MEZZANINE DUCTWORK DEMOLITION FLOOR PLAN

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



KEY PLAN

NOT TO SCALE

GRAPHIC SCALE:



MECHANICAL DUCTWORK DEMOLITION PARTIAL FLOOR PLAN - AREA B

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

<p>APPROVED: _____</p> <p>FOR COMMANDER NAVFAC</p> <p>ACTIVITY</p> <p>SAFACTORY TO</p> <p>DES: TNH DRW: MTF CHK: JAK</p>	<p>U.S. MARINE CORPS AIR STATION CHERRY POINT, NORTH CAROLINA</p> <p>REPLACE HVAC AND CONTROLS PHASE II AT BUILDING 4225</p> <p>MECHANICAL DUCTWORK DEMOLITION PARTIAL FLOOR PLANS - AREA B</p>
<p>SCALE: AS NOTED</p> <p>PROJECT NO.: ST-14507A</p> <p>MAXIMO WORK ORDER NO. 6878897</p> <p>NAVFAC DRAWING NO. 12782422</p> <p>SHEET 21 OF 68</p> <p>MD102</p> <p style="font-size: small;">DRAWN/REVISED: 10 MAY 2014</p>	

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DEMOLITION NOTES

- ① REMOVE DUCTWORK, INSULATION, HANGERS, AND SUPPORTS COMPLETE BACK TO LIMIT INDICATED.
- ② REFER TO DEMOLITION ROOF PLAN FOR DEMOLITION WORK.
- ③ REMOVE MAKE-UP AIR UNIT AND ASSOCIATED APPURTENANCES COMPLETE.
- ④ REMOVE CONCRETE BOLLARD AND PATCH HOLES TO MATCH ADJACENT CONDITIONS.

ROOM SCHEDULE

130	MANUAL GRINDING STATION
150	QE INSPECTION OFFICE

DUCTWORK ELEVATION NOTE:

BOTTOM OF DUCTWORK IS APPROXIMATELY 20'-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.

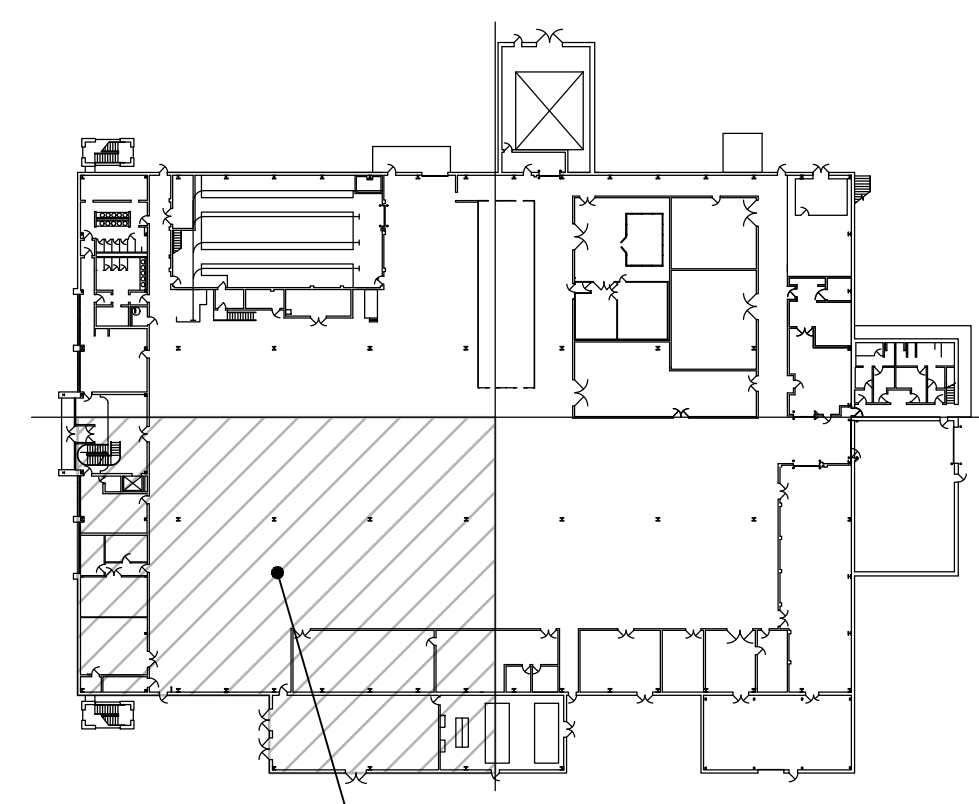


PRE-FINAL NOT FOR CONSTRUCTION
 #18166 SEAL
 A/E INFO

APPROVED
 PER COMMANDER NAVFAC
 ACTIVITY
 SATISFACTORY TO
 DES TNH DRW MTF CHK JAK

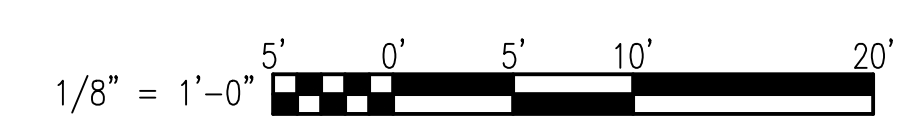
U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
REPLACE HVAC AND CONTROLS PHASE II AT BUILDING 4225
 MECHANICAL DUCTWORK DEMOLITION
 PARTIAL FLOOR PLAN - AREA C

SCALE: AS NOTED
 PROJECT NO.: ST-14507A
 MAXIMO WORK ORDER NO. 6878897
 NAVFAC DRAWING NO. 12782423
 SHEET 22 OF 68
MD103
DRAWN FOR REVISION: 10 MAY 2014



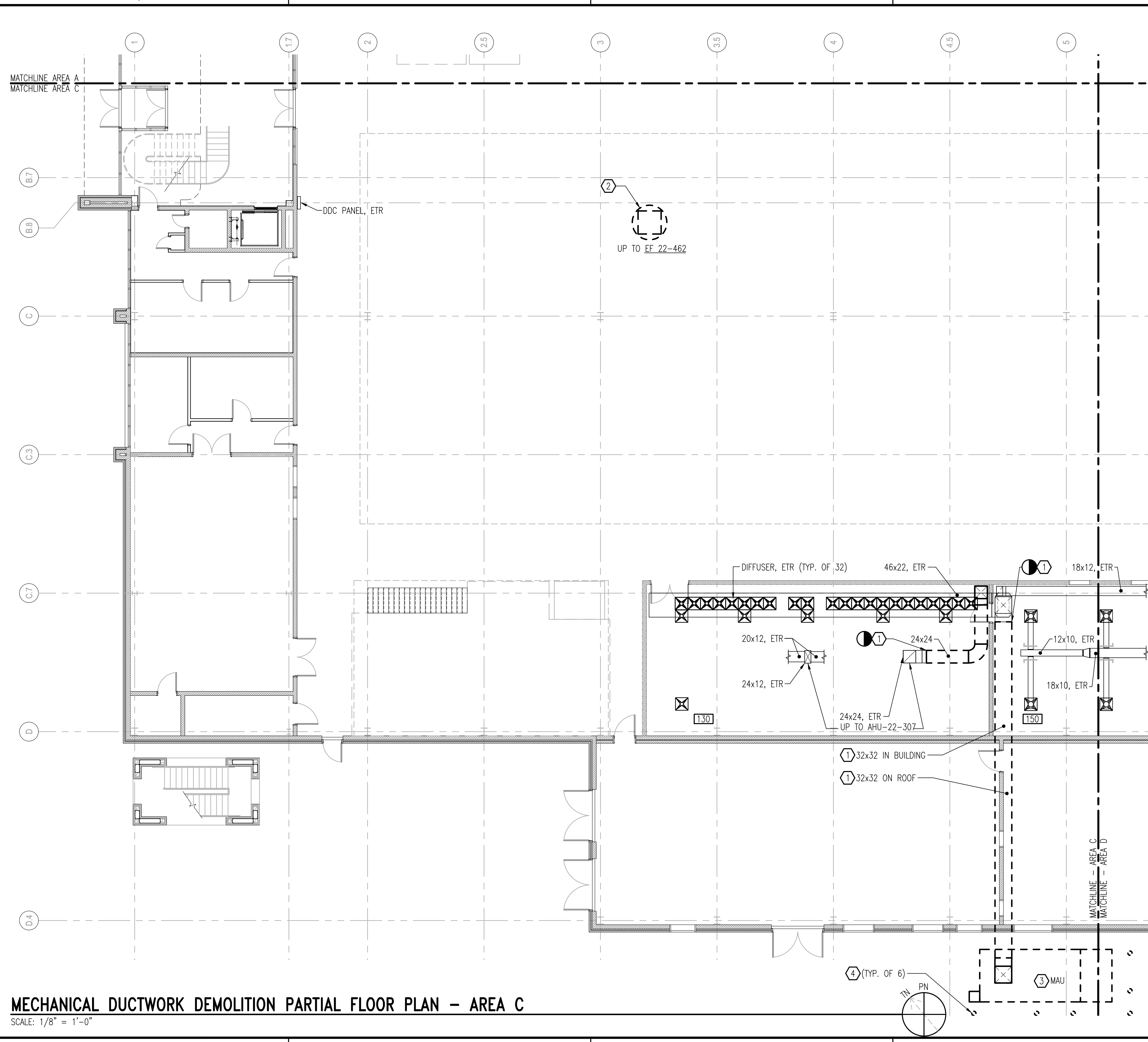
KEY PLAN
NOT TO SCALE

GRAPHIC SCALE:



MECHANICAL DUCTWORK DEMOLITION PARTIAL FLOOR PLAN - AREA C

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



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DEMOLITION NOTES

- 1 REMOVE VAV TERMINAL UNIT, HANGERS, SUPPORTS, AND ASSOCIATED APPURTENANCES COMPLETE.
- 2 REMOVE DUCTWORK, INSULATION, HANGERS, AND SUPPORTS COMPLETE.
- 3 REFER TO DEMOLITION ROOF PLAN FOR DEMOLITION WORK.
- 4 REMOVE EXHAUST FAN, DAMPERS, AND ASSOCIATED DUCTWORK IN SPACE.

ROOM SCHEDULE

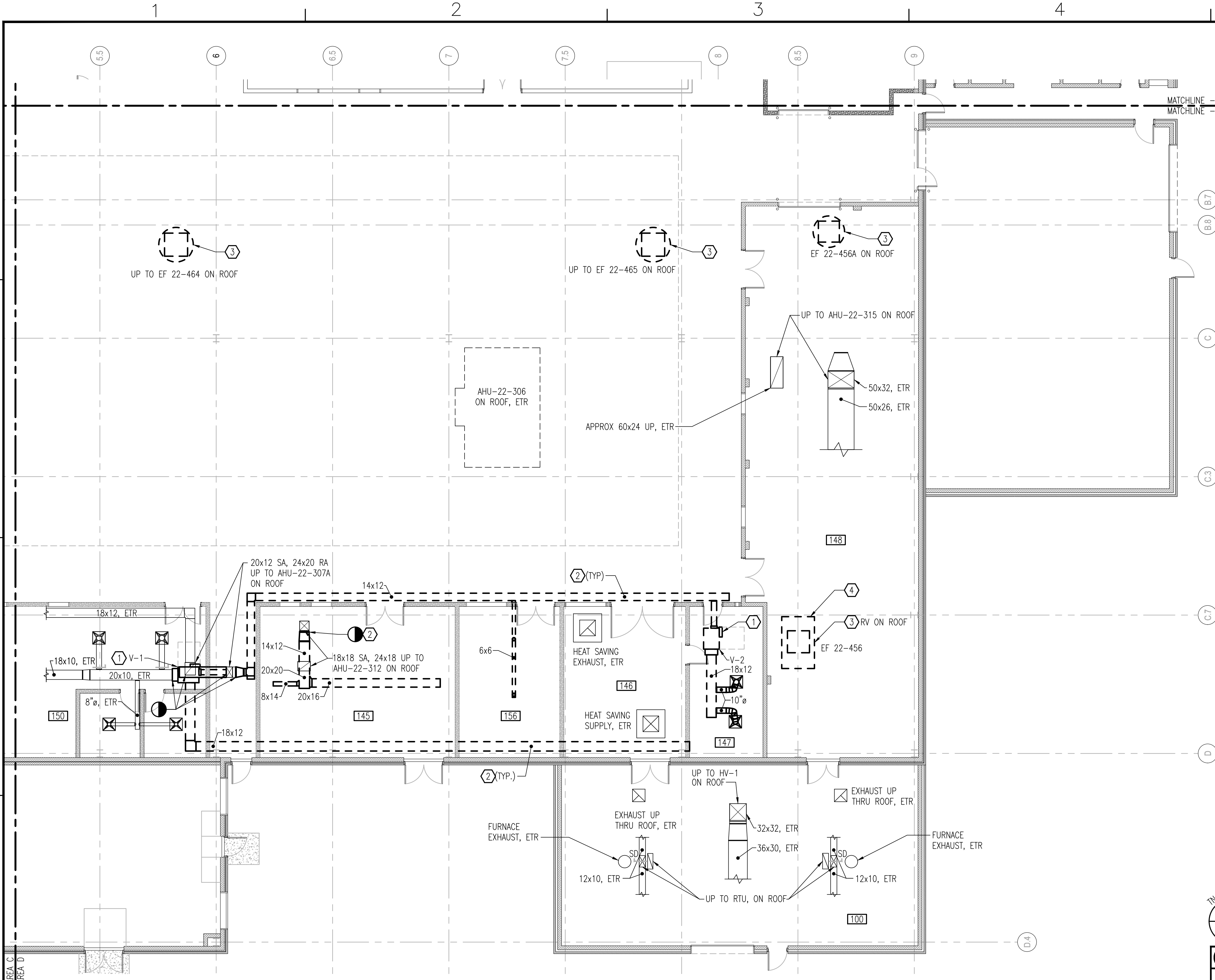
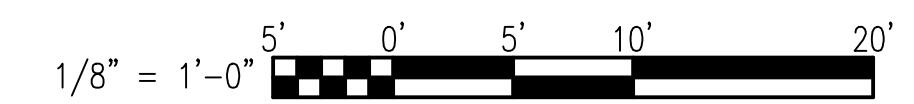
100	HEAT TREAT ADDITION FURNACE
145	HVOF AND PLASMA SPRAY
146	HEAT TREAT STAGING
147	HEAT TREAT CONTROL
148	HEAT TREAT FURNACE
150	QE INSPECTION OFFICE
156	GLOVE BOX

DUCTWORK ELEVATION NOTE:

BOTTOM OF DUCTWORK IS APPROXIMATELY 20'-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.



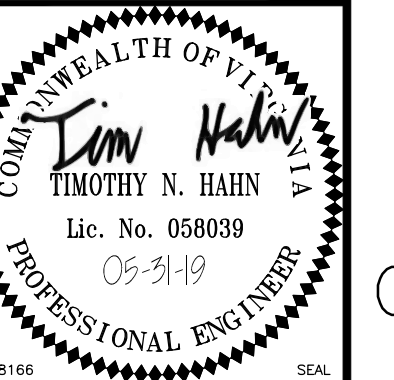
GRAPHIC SCALE:



MECHANICAL DUCTWORK DEMOLITION PARTIAL FLOOR PLAN - AREA D

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

REV	DATE	DESCRIPTION



APPROVED: _____
 PER COMMANDER NAVFAC

SATISFACTORY TO: _____
 DES TNH | DRW MTF | CHK JAK

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA

REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225
 MECHANICAL DUCTWORK DEMOLITION
 PARTIAL FLOOR PLAN - AREA D

SCALE: AS NOTED
 PROJECT NO.: ST-14507A
 MAXIMO WORK ORDER NO. 6878897
 NAVFAC DRAWING NO. 12782424
 SHEET 23 OF 68
MD104

PIPING NOTE
NO DEMOLITION WORK IS SHOWN ON THIS PLAN. PIPING IS SHOWN DIAGRAMMATICALLY FOR INFORMATIONAL PURPOSES ONLY.

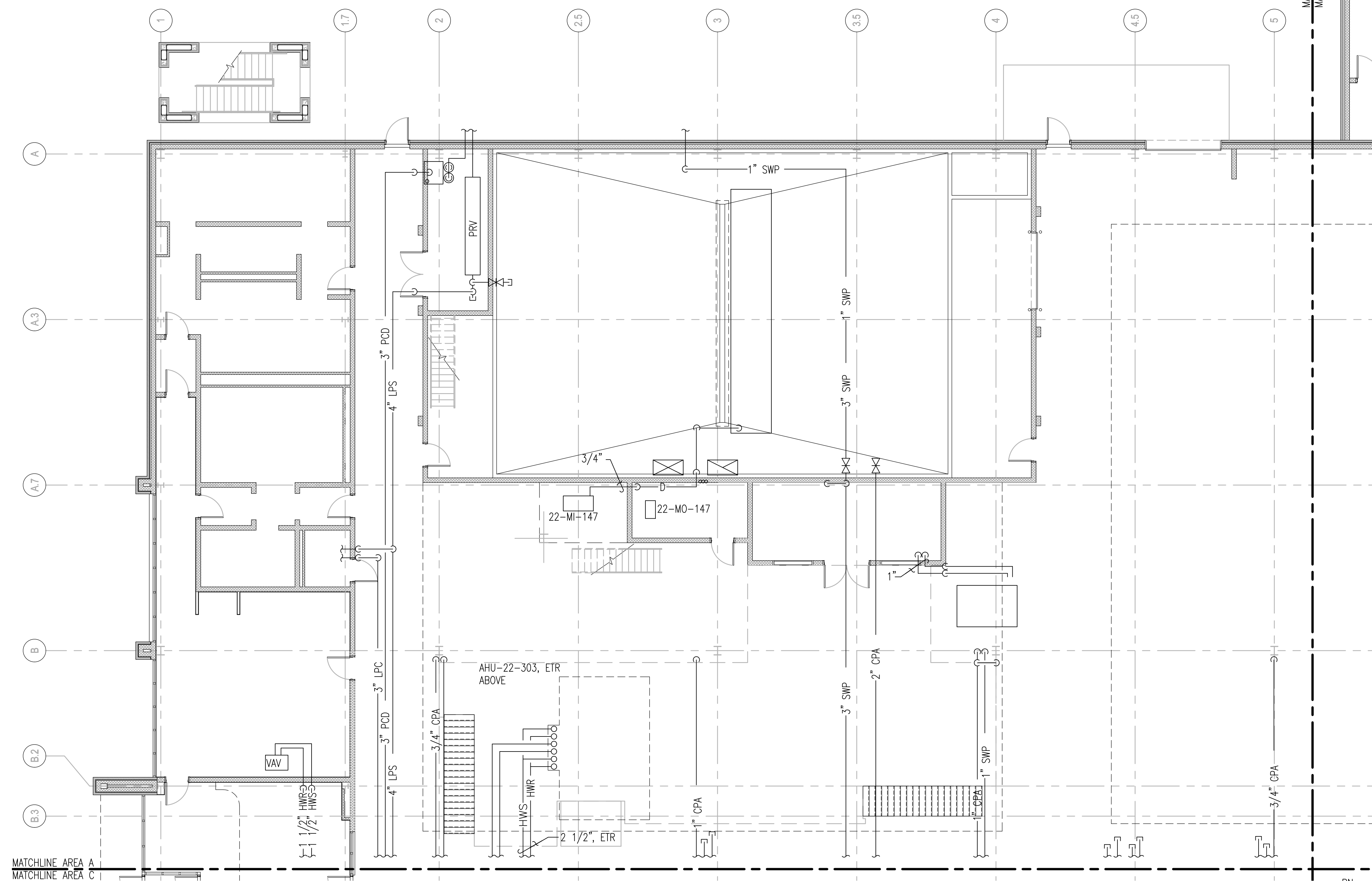
PIPING ELEVATION NOTE:
BOTTOM OF PIPING IS APPROXIMATELY 22'-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.

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D

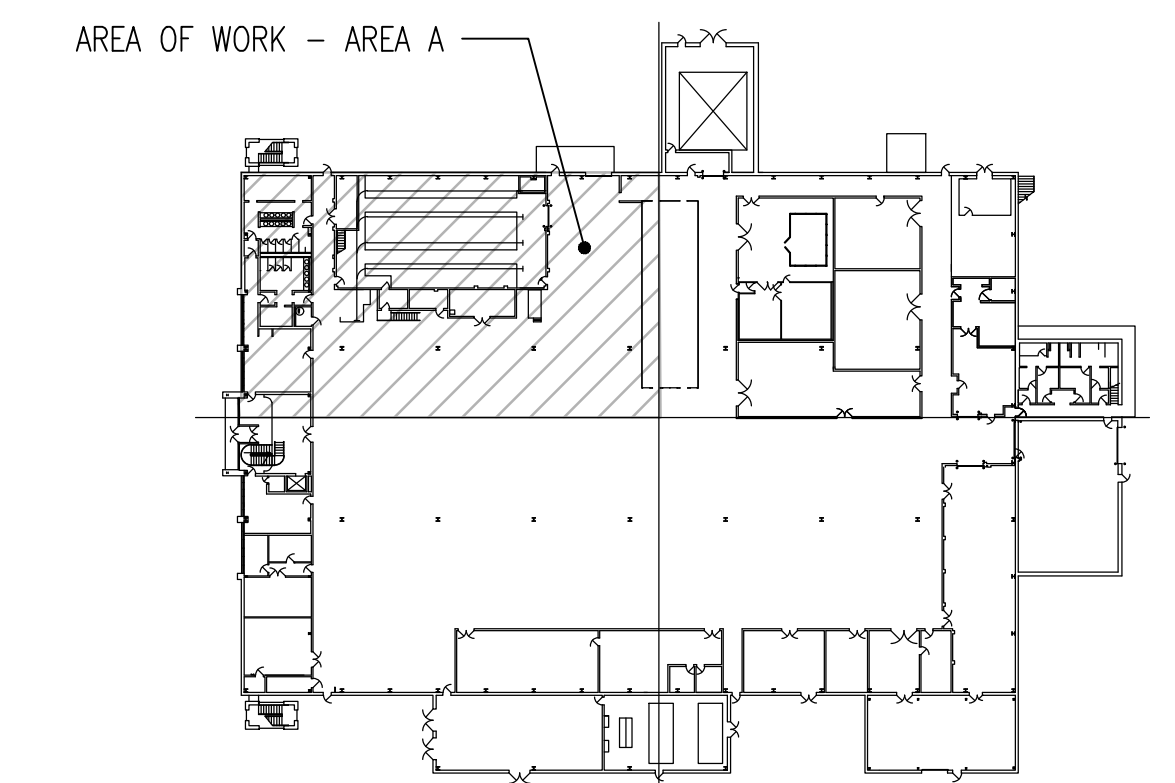
C

A

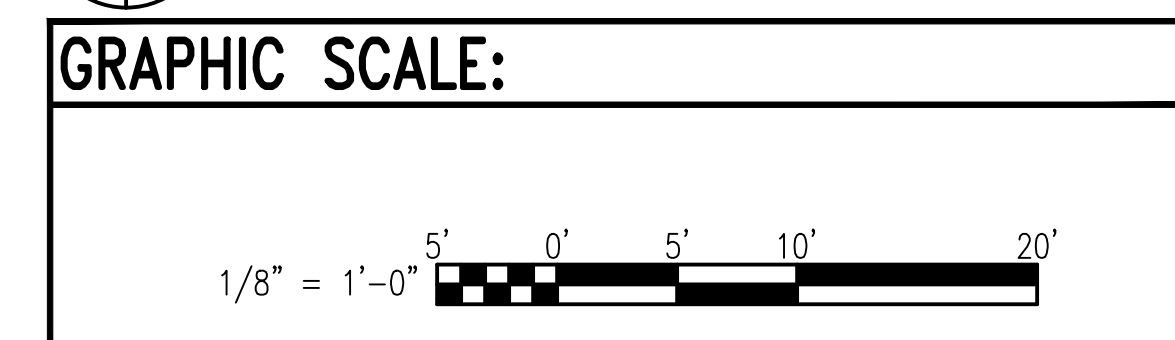


MECHANICAL PIPING DEMOLITION PARTIAL FLOOR PLAN - AREA A

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

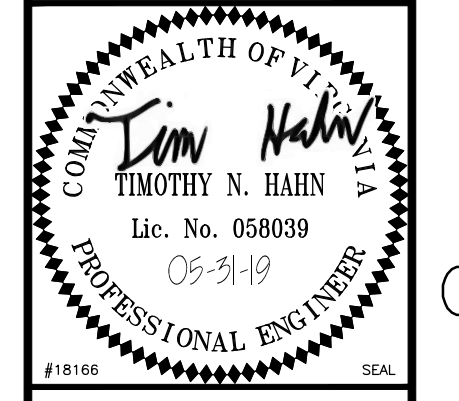


KEY PLAN
NOT TO SCALE



GRAPHIC SCALE:

DATE	DESCRIPTION	APPR



APPROVED
FOR COMMANDER NAVFAC
ACTIVITY

SATISFACTORY TO
DES: TNH | DRW: MTF | CHK: JAK

U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
MECHANICAL PIPING DEMOLITION
PARTIAL FLOOR PLAN - AREA A

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO.: 6878897
NAVFAC DRAWING NO.: 12782425
SHEET 24 OF 68
MD201

DEMOLITION NOTES

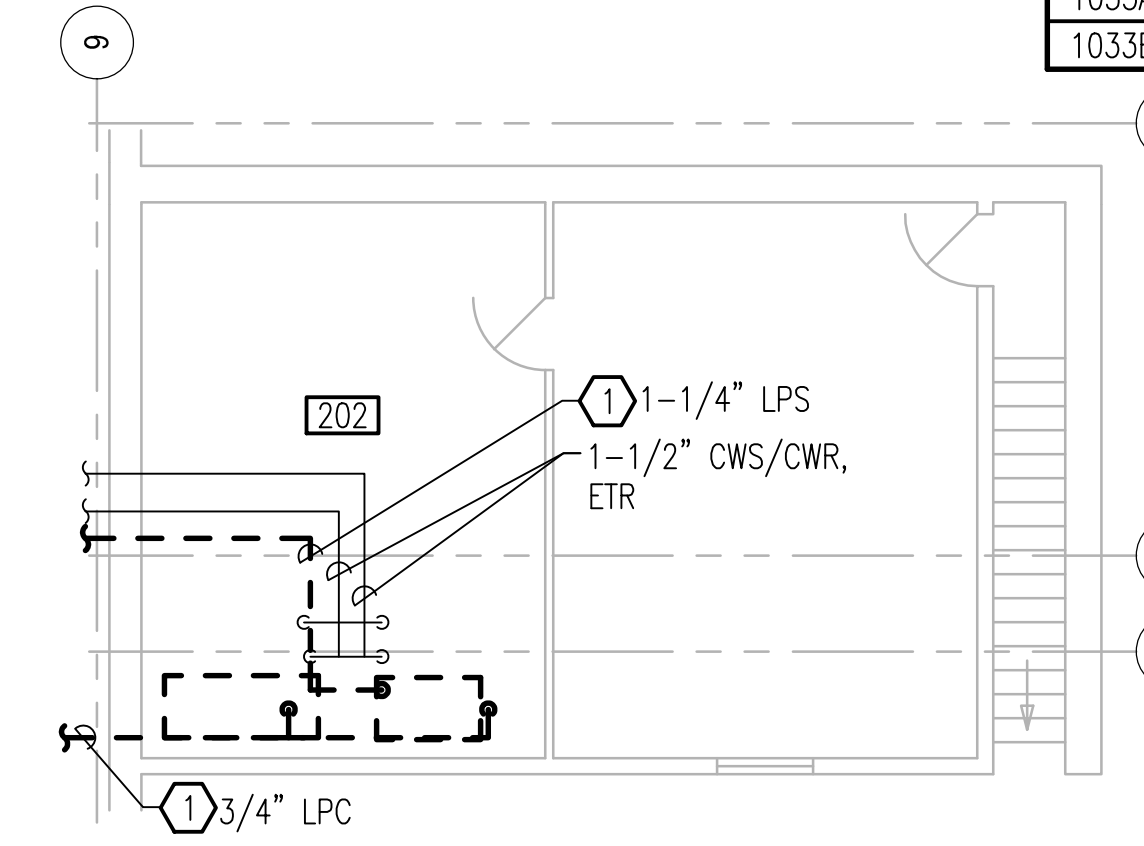
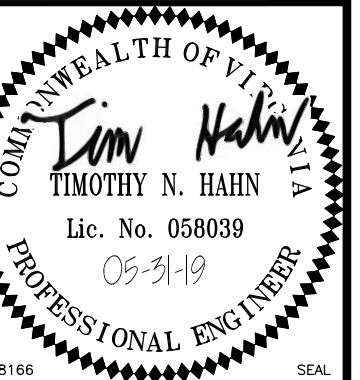
- ① REMOVE STEAM AND CONDENSATE PIPING, INSULATION, HANGERS, AND SUPPORTS COMPLETE.
- ② REFER TO DEMOLITION ROOF PLAN FOR DEMOLITION WORK.
- ③ REMOVE CONDENSATE PUMP, CONTROLS, AND ASSOCIATED APPURTENANCES COMPLETE.
- ④ REMOVE HYDROGEN PIPING, HANGERS, AND SUPPORTS COMPLETE TO LIMIT INDICATED. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY. CONTRACTOR MUST CONFIRM AND DOCUMENT ACTUAL PIPE SIZES PRIOR TO DEMOLITION. SUBMIT RED-LINED DRAWINGS, INDICATING ANY PIPE SIZES THAT DIFFER FROM DRAWINGS, TO THE GOVERNMENT FOR REVIEW. NEW PIPING MUST MATCH SIZES OF EXISTING PIPING.
- ⑤ REMOVE STEAM HEATING COIL AND ASSOCIATED APPURTENANCES COMPLETE. PATCH DUCTWORK TO MATCH ADJACENT CONDITIONS.
- ⑥ REMOVE HUMIDIFIER AND ASSOCIATED PIPING AS INDICATED COMPLETE. SEE HUMIDIFIER DETAIL ON SHEET M-502 FOR DEMOLITION EXTENTS.
- ⑦ REMOVE CWS/CWR PIPING, INSULATION, PIPING SPECIALTIES, HANGERS, AND SUPPORTS COMPLETE.

PIPING ELEVATION NOTE:

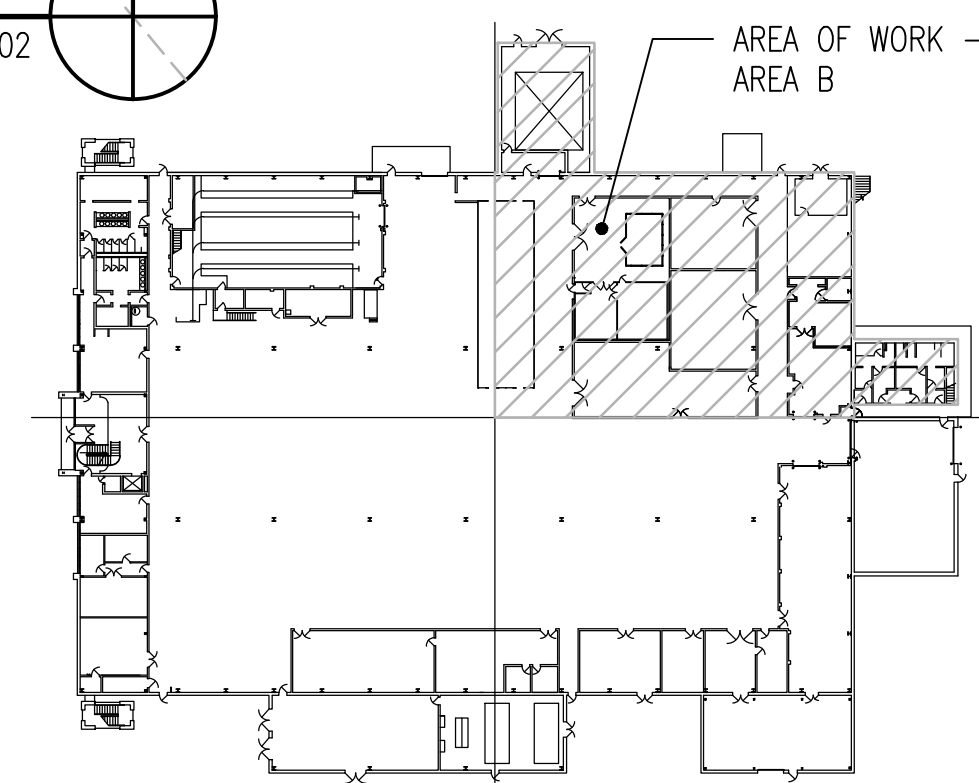
BOTTOM OF PIPING IS APPROXIMATELY 22'-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.

ROOM SCHEDULE

101	LIETZ LAB
136	BLASTING
138	COLD SPRAY
139	HF FURNACE
141A	AEP BOOTH CHAMBER
143	PAINTING AND MAINTENANCE AREA
143A	PAINTING AND MAINTENANCE AREA
201	OPEN OFFICE
202	HYGIENE ADDITION MECHANICAL
1033	CLEAN ROOM
1033A	CLEAN ROOM
1033B	CLEAN ROOM

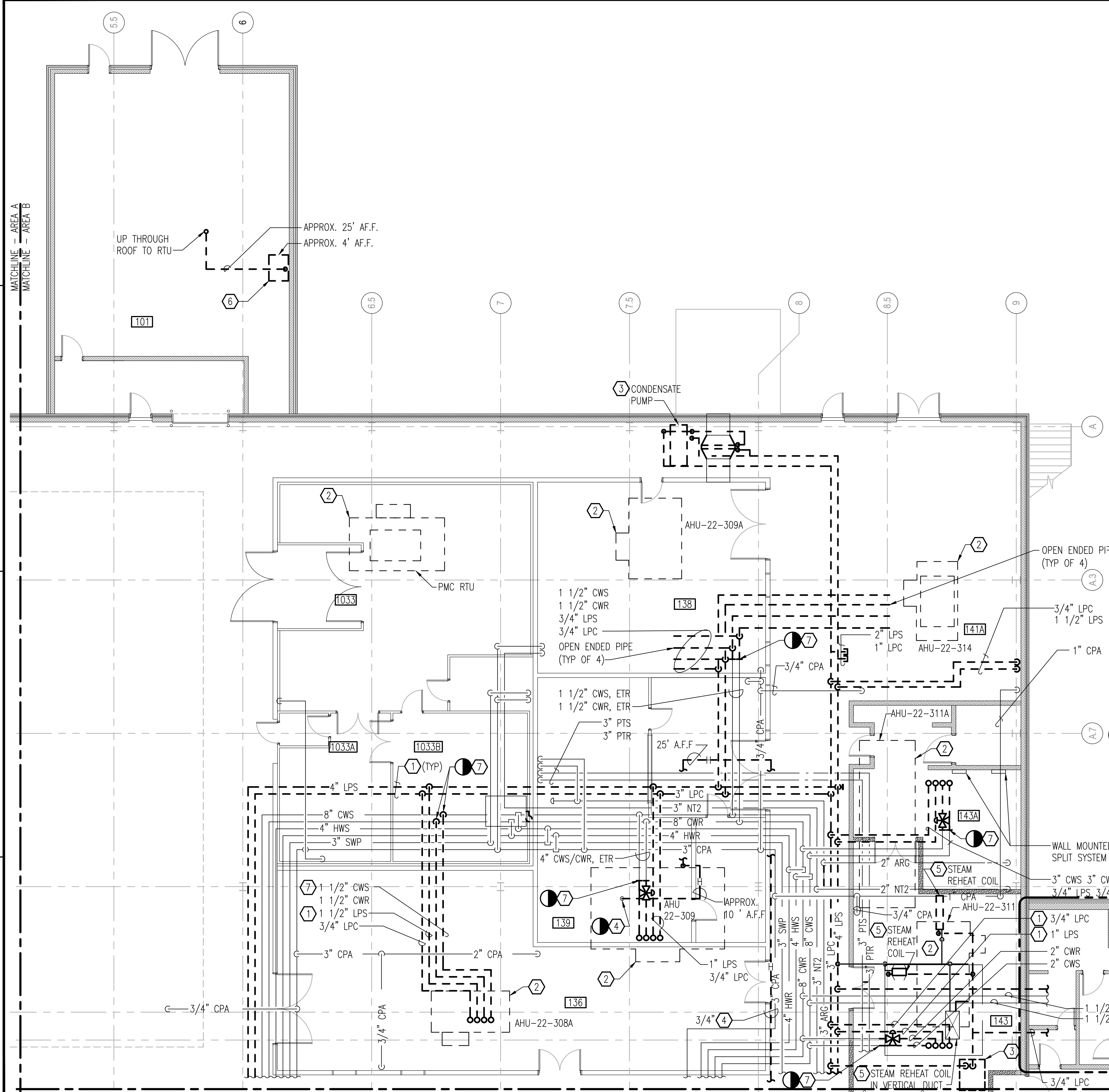
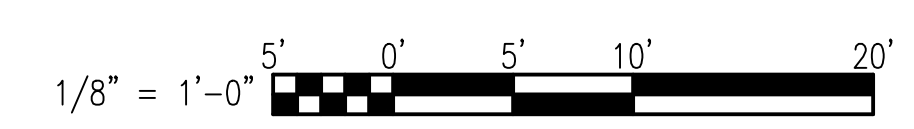


MEZZANINE PIPING DEMOLITION FLOOR PLAN
SCALE: 1/8" = 1'-0"



KEY PLAN
NOT TO SCALE

GRAPHIC SCALE:



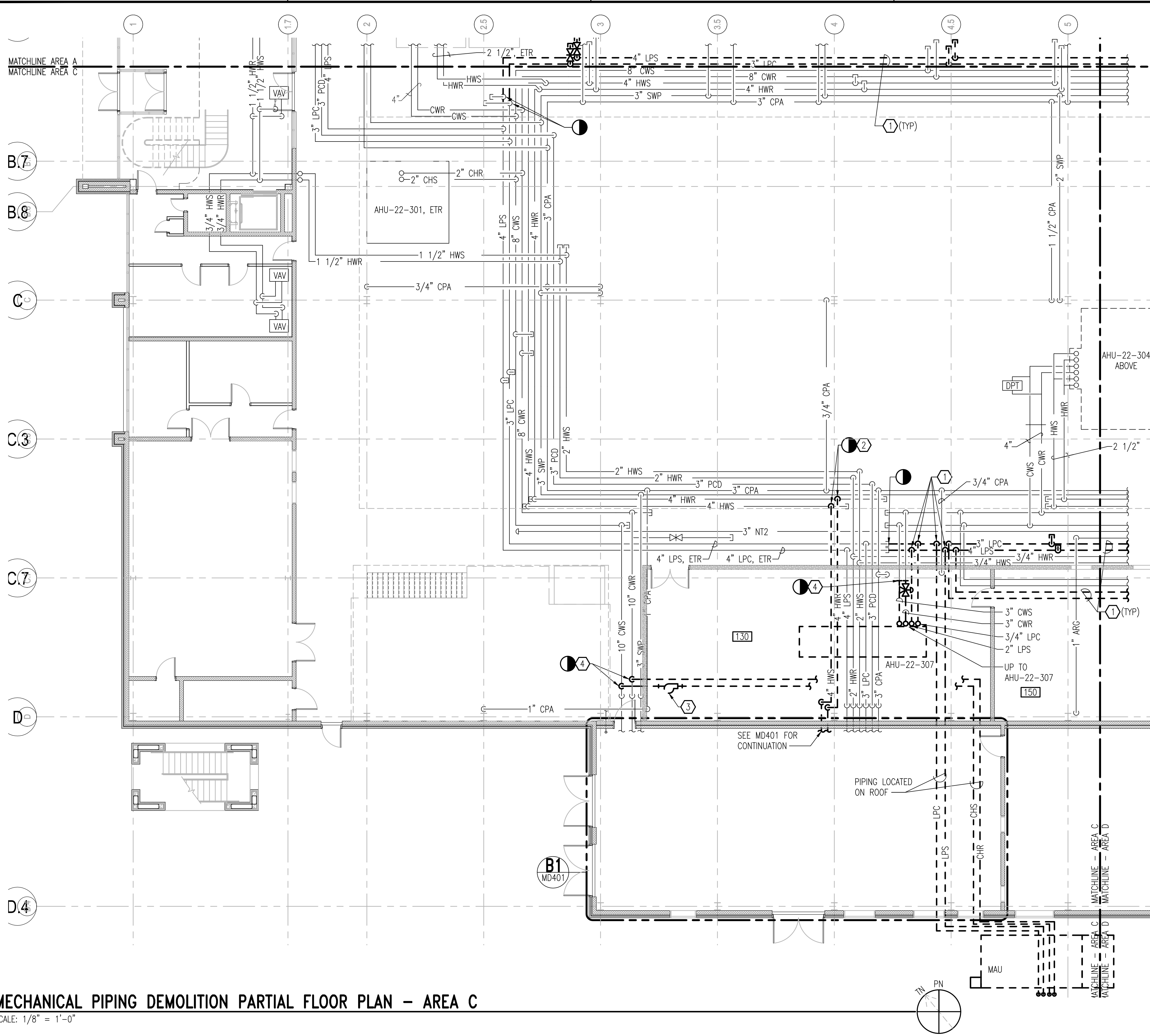
MECHANICAL PIPING DEMOLITION PARTIAL FLOOR PLAN - AREA B
SCALE: 1/8" = 1'-0"

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U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
MECHANICAL PIPING DEMOLITION
PARTIAL FLOOR PLAN - AREA B

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782426
SHEET 25 OF 68
MD202



DEMOLITION NOTES

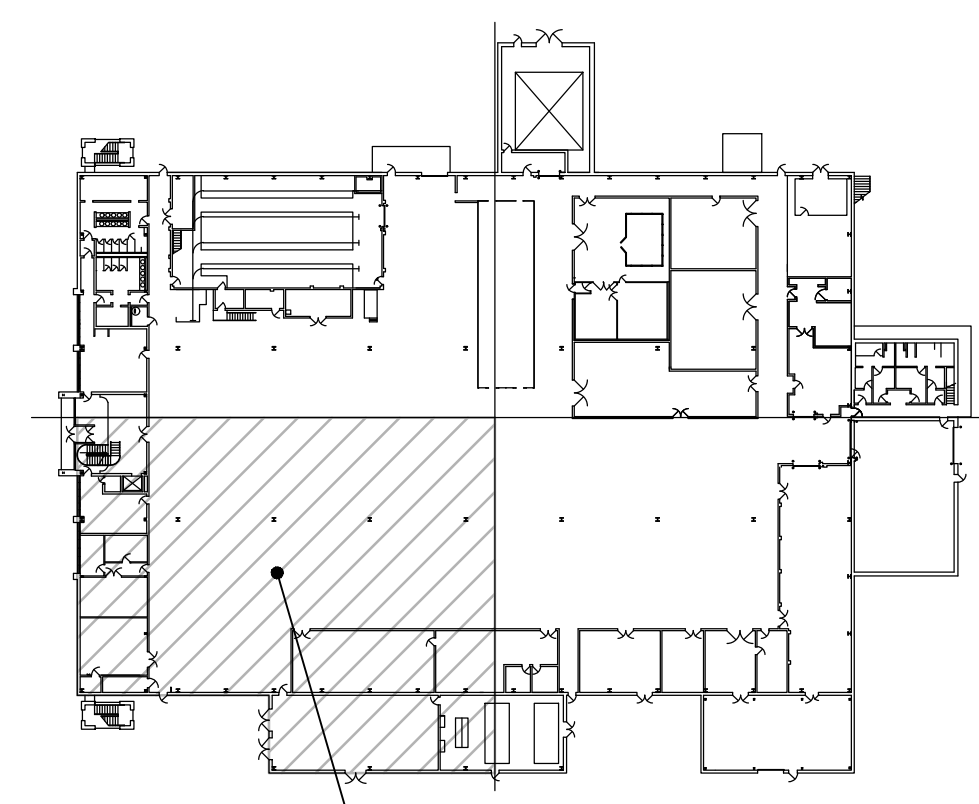
- ① REMOVE STEAM AND CONDENSATE PIPING, INSULATION, HANGERS, AND SUPPORTS COMPLETE.
- ② REMOVE HWS/HWR, INSULATION, HANGERS, AND SUPPORTS COMPLETE.
- ③ REMOVE CIRCULATOR PUMP COMPLETE.
- ④ REMOVE CWS/CWR, INSULATION, HANGERS, PIPING SPECIALTIES, AND SUPPORTS COMPLETE.

ROOM SCHEDULE

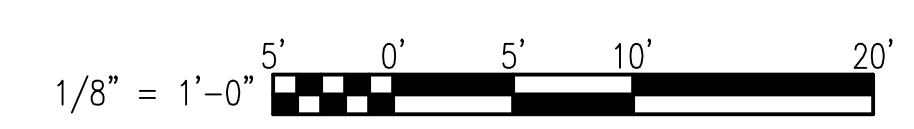
130	MANUAL GRINDING STATION
150	QE INSPECTION OFFICE

PIPING ELEVATION NOTE:

BOTTOM OF PIPING IS APPROXIMATELY 22'-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.



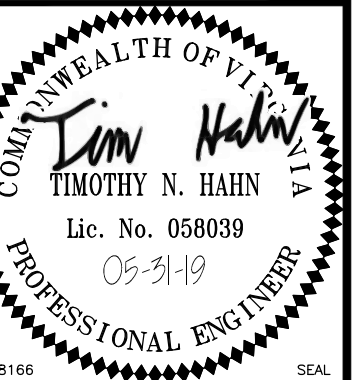
GRAPHIC SCALE:



MECHANICAL PIPING DEMOLITION PARTIAL FLOOR PLAN - AREA C

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

DATE	DESCRIPTION	APPR



APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO

DES: TNH | DRW: MTF | CHK: JAK

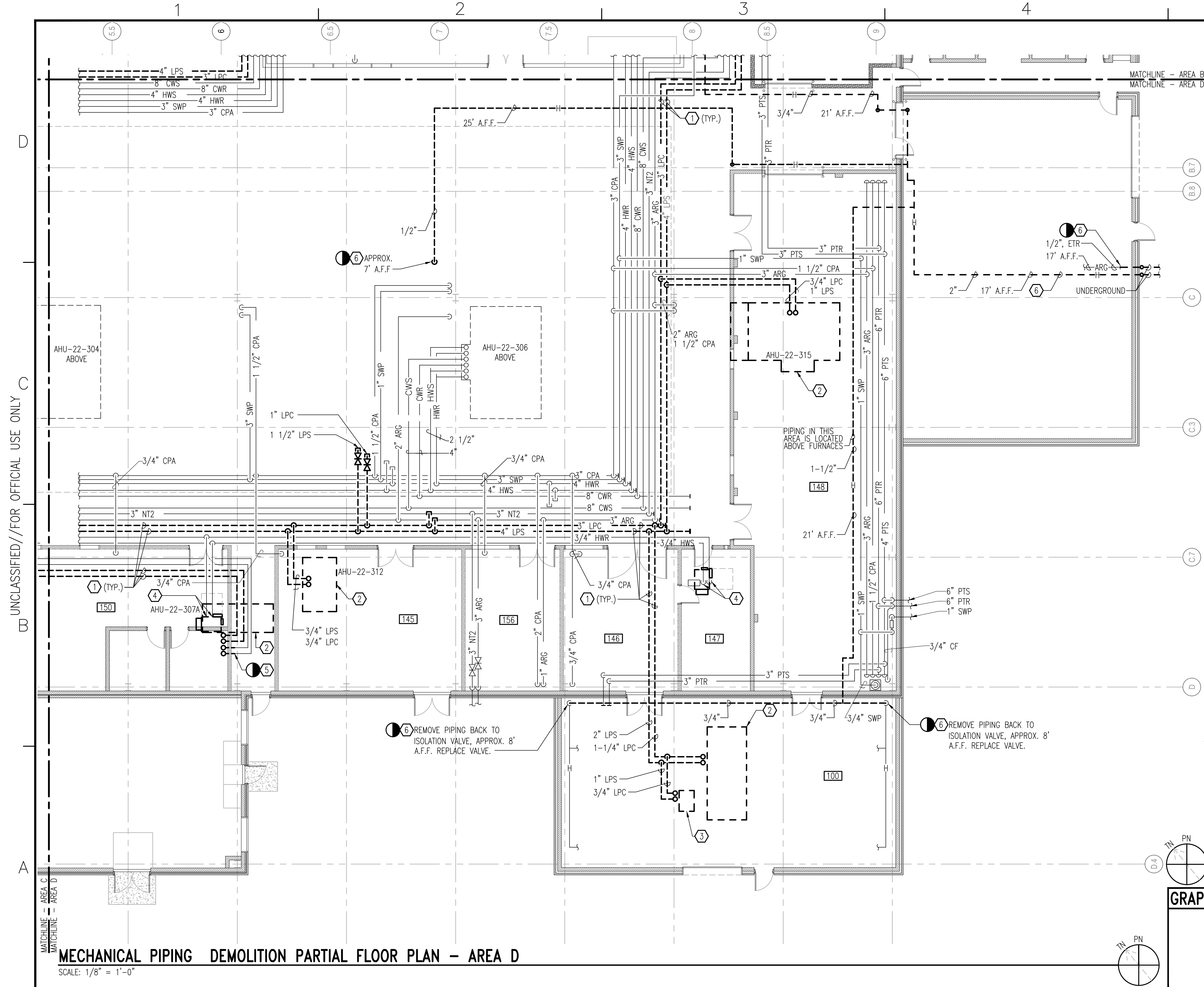
U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225**
 MECHANICAL PIPING DEMOLITION
 PARTIAL FLOOR PLAN - AREA C

SCALE: AS NOTED
 PROJECT NO.: ST-14507A
 MAXIMO WORK ORDER NO. 6878897
 NAVFAC DRAWING NO. 12782427
 SHEET 26 OF 68
MD203

DRAWN/REVISED: 10 MAY 2014

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DEMOLITION NOTES

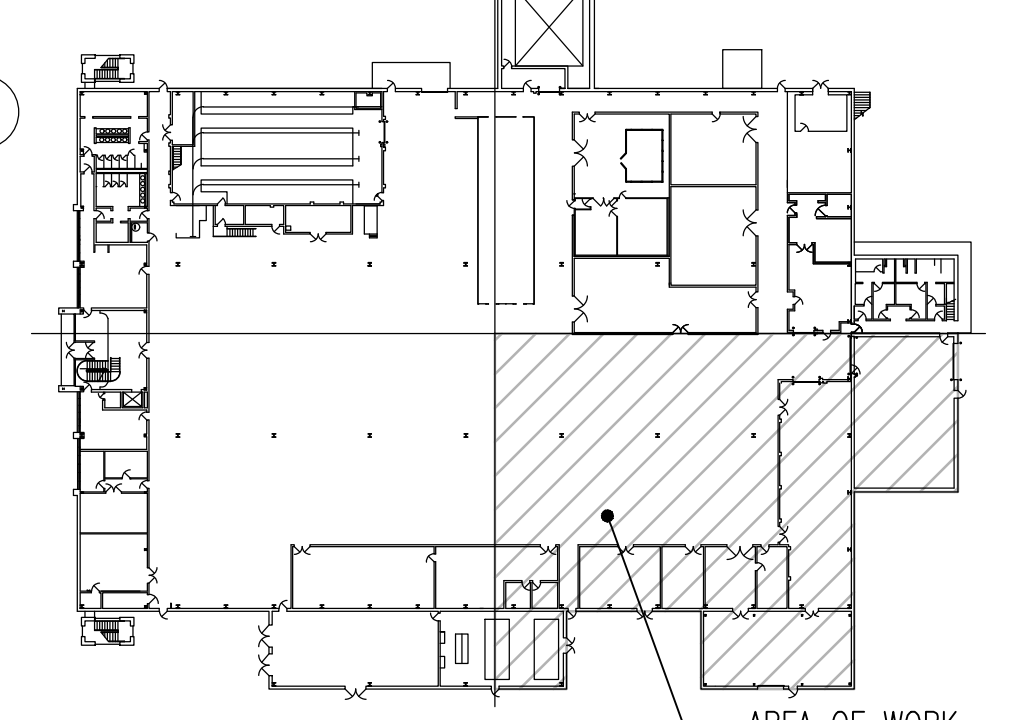
- ① REMOVE STEAM AND CONDENSATE PIPING, INSULATION, HANGERS, AND SUPPORTS COMPLETE.
- ② REFER TO ROOF PLAN FOR DEMOLITION WORK.
- ③ REMOVE STEAM UNIT HEATER AND CONTROLS COMPLETE.
- ④ DISCONNECT HYDRONIC PIPING FROM VAV TERMINAL UNIT. CAP, SEAL, AND PROVIDE INSULATION/JACKETING TO MATCH ADJACENT CONDITIONS.
- ⑤ REMOVE CWS/CWR PIPING, INSULATION, PIPING SPECIALTIES, HANGERS, AND SUPPORTS COMPLETE.
- ⑥ REMOVE HYDROGEN AND ARGON PIPING, HANGERS, AND SUPPORTS COMPLETE TO LIMIT INDICATED. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY. CONTRACTOR MUST CONFIRM AND DOCUMENT ACTUAL PIPE SIZES PRIOR TO DEMOLITION. SUBMIT RED-LINED DRAWINGS, INDICATING ANY PIPE SIZES THAT DIFFER FROM DRAWINGS, TO THE GOVERNMENT FOR REVIEW. NEW PIPING MUST MATCH SIZES OF EXISTING PIPING.

ROOM SCHEDULE

100	HEAT TREAT ADDITION FURNACE
145	HVOF AND PLASMA SPRAY
146	HEAT TREAT STAGING
147	HEAT TREAT CONTROL
148	HEAT TREAT FURNACE
150	QE INSPECTION OFFICE
156	GLOVE BOX

PIPING ELEVATION NOTE:

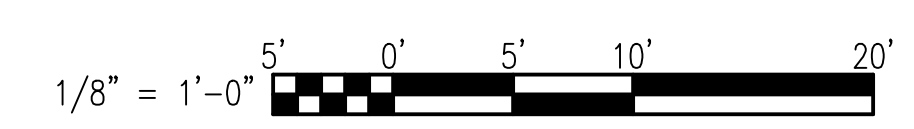
BOTTOM OF PIPING IS APPROXIMATELY 22'-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.



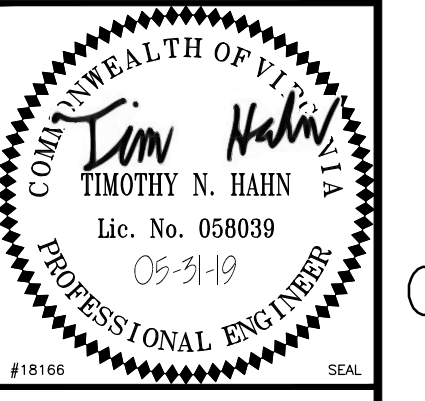
KEY PLAN

NOT TO SCALE

GRAPHIC SCALE:



DATE	DESCRIPTION	APP'R



APPROVED
PER COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO
DES TNH DRW MTF CHK JAK

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225**
 MECHANICAL PIPING DEMOLITION
 PARTIAL FLOOR PLAN - AREA D

SCALE: AS NOTED
 PROJECT NO.: ST-14507A
 MAXIMO WORK ORDER NO. 6878897
 NAVFAC DRAWING NO. 12782428
 SHEET 27 OF 68
MD204

DRAWN/REVISED: 10 MAY 2014

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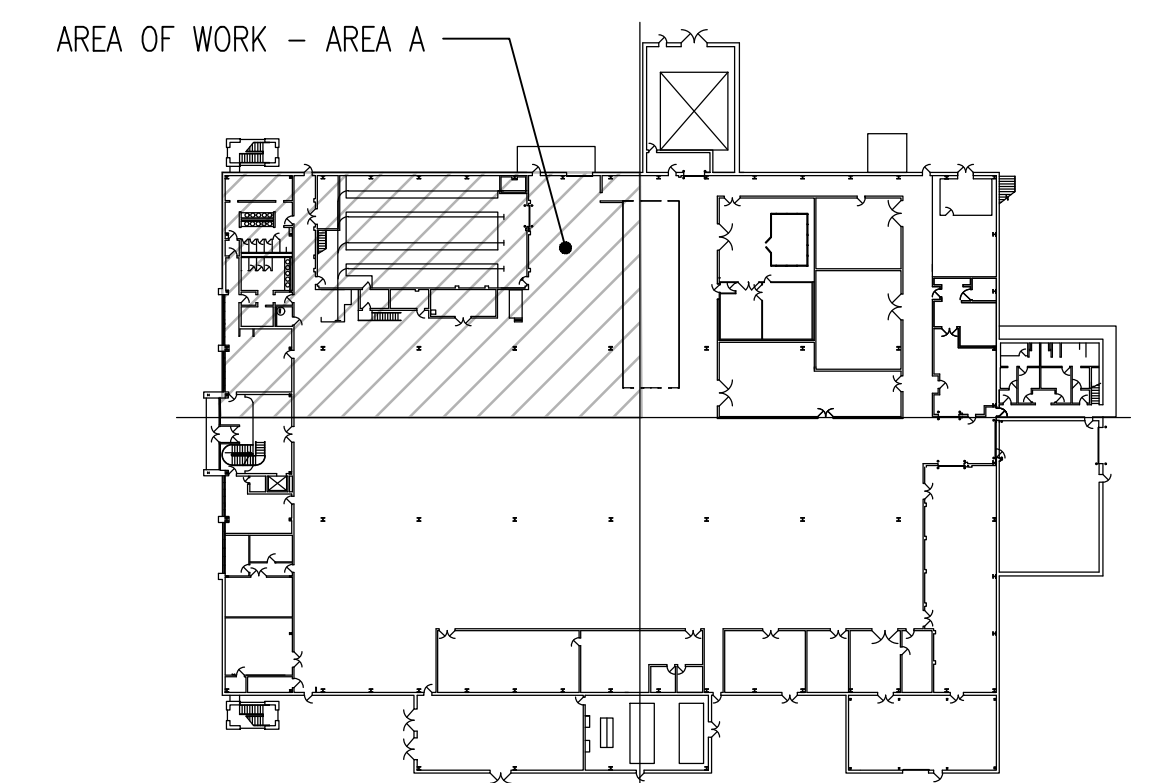
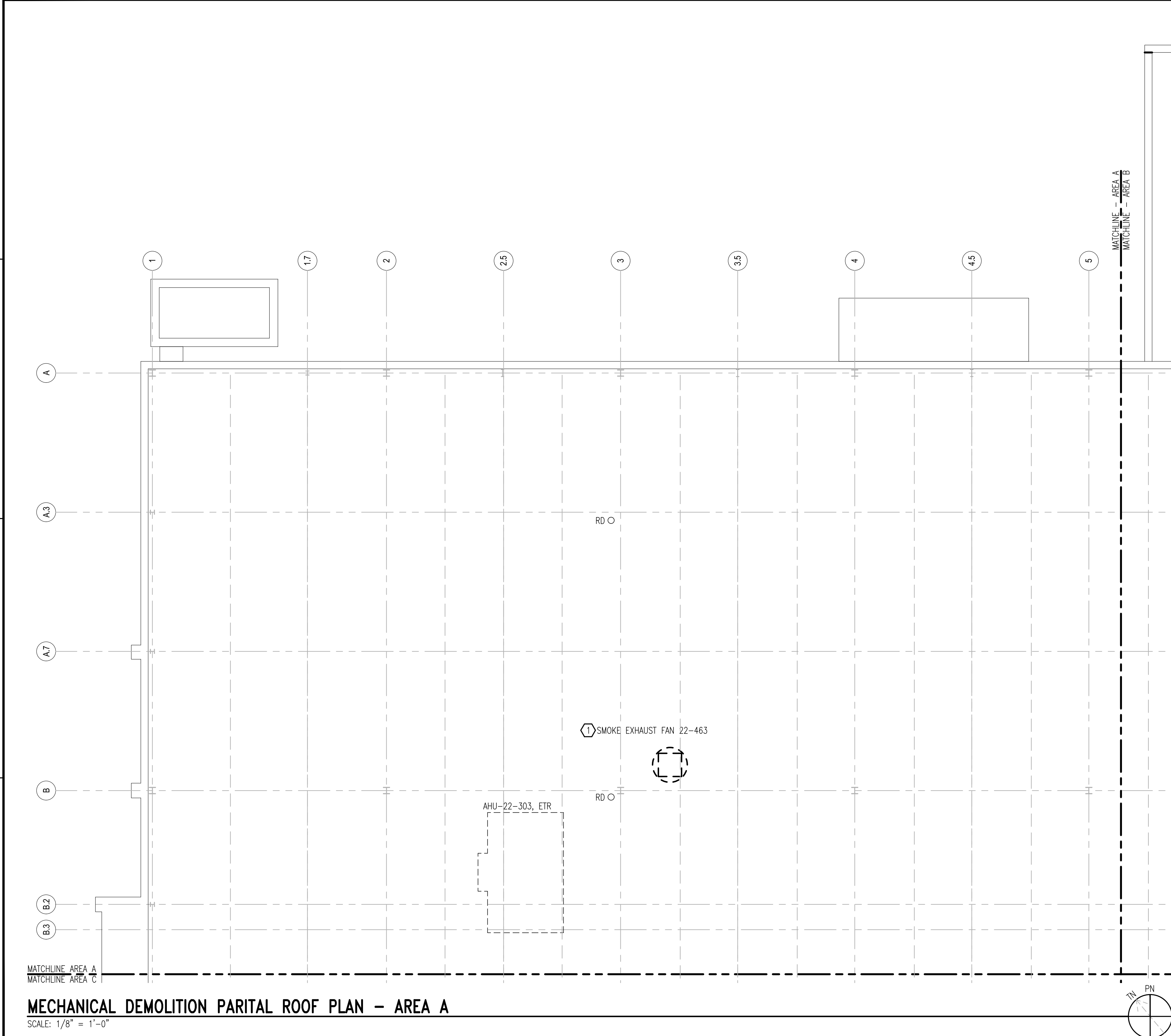
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MECHANICAL PIPING DEMOLITION PARTIAL FLOOR PLAN - AREA D
 SCALE: 1/8" = 1'-0"

DEMOLITION NOTES

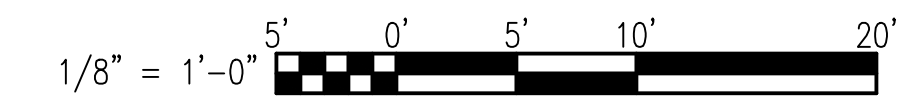
- ① REMOVE EXHAUST FAN AND ASSOCIATED CONTROLS COMPLETE. ROOF CURB MUST REMAIN IN PLACE.

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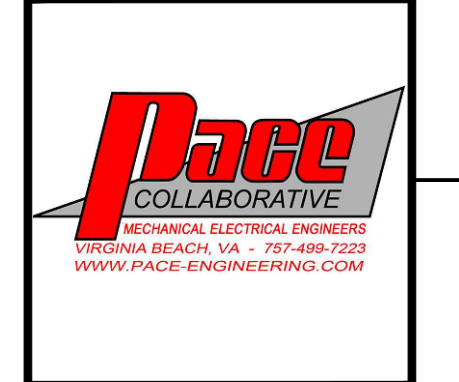
KEY PLAN
NOT TO SCALE

GRAPHIC SCALE:



MECHANICAL DEMOLITION PARITAL ROOF PLAN - AREA A
SCALE: 1/8" = 1'-0"

APP'R	DATE	DESCRIPTION	SW



APPROVED
FOR COMMANDER NAVFAC
ACTIVITY

DES	DRW	CHK
TNH	MTF	JAK

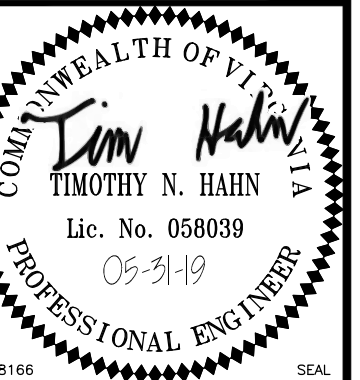
U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
MECHANICAL DEMOLITION PARITAL ROOF PLAN - AREA A

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782429
SHEET 28 OF 68
MD301

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DEMOLITION NOTES

- ① REMOVE ROOFTOP UNIT AND ASSOCIATED APPURTENANCES COMPLETE. ROOF CURB IS EXISTING TO REMAIN.
- ② REMOVE EXHAUST FAN AND ASSOCIATED CONTROLS COMPLETE. ROOF CURB IS EXISTING TO REMAIN.
- ③ REMOVE CONDENSING UNIT COMPLETE.
- ④ REMOVE REFRIGERANT PIPING, INSULATION, AND SUPPORTS COMPLETE.
- ⑤ REFER TO SPECIFICATIONS FOR PHASING REQUIREMENTS PRIOR TO DEMOLITION.
- ⑥ REMOVE ROOFTOP UNIT, ROOF CURB, AND ASSOCIATED APPURTENANCES COMPLETE.
- ⑦ REMOVED EXPOSED LPS/LPC PIPING, INSULATION, AND JACKETING THROUGH ROOF COMPLETE. REFER TO ARCHITECTURAL DOCUMENTS FOR ADDITIONAL INFORMATION.
- ⑧ REMOVE ROOFTOP UNIT, ROOF CURB ADAPTER, AND ASSOCIATED APPURTENANCES COMPLETE. ROOF CURB IS EXISTING TO REMAIN.
- ⑨ REMOVE PVC CONDENSATE PIPE AND SUPPORTS COMPLETE.



APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

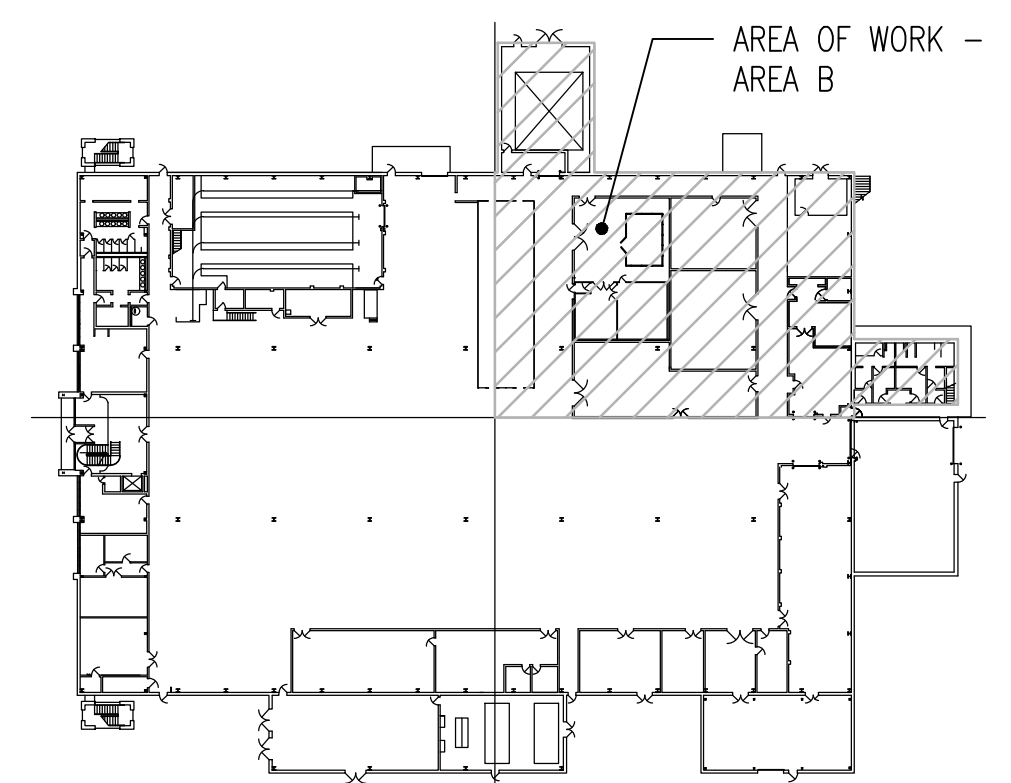
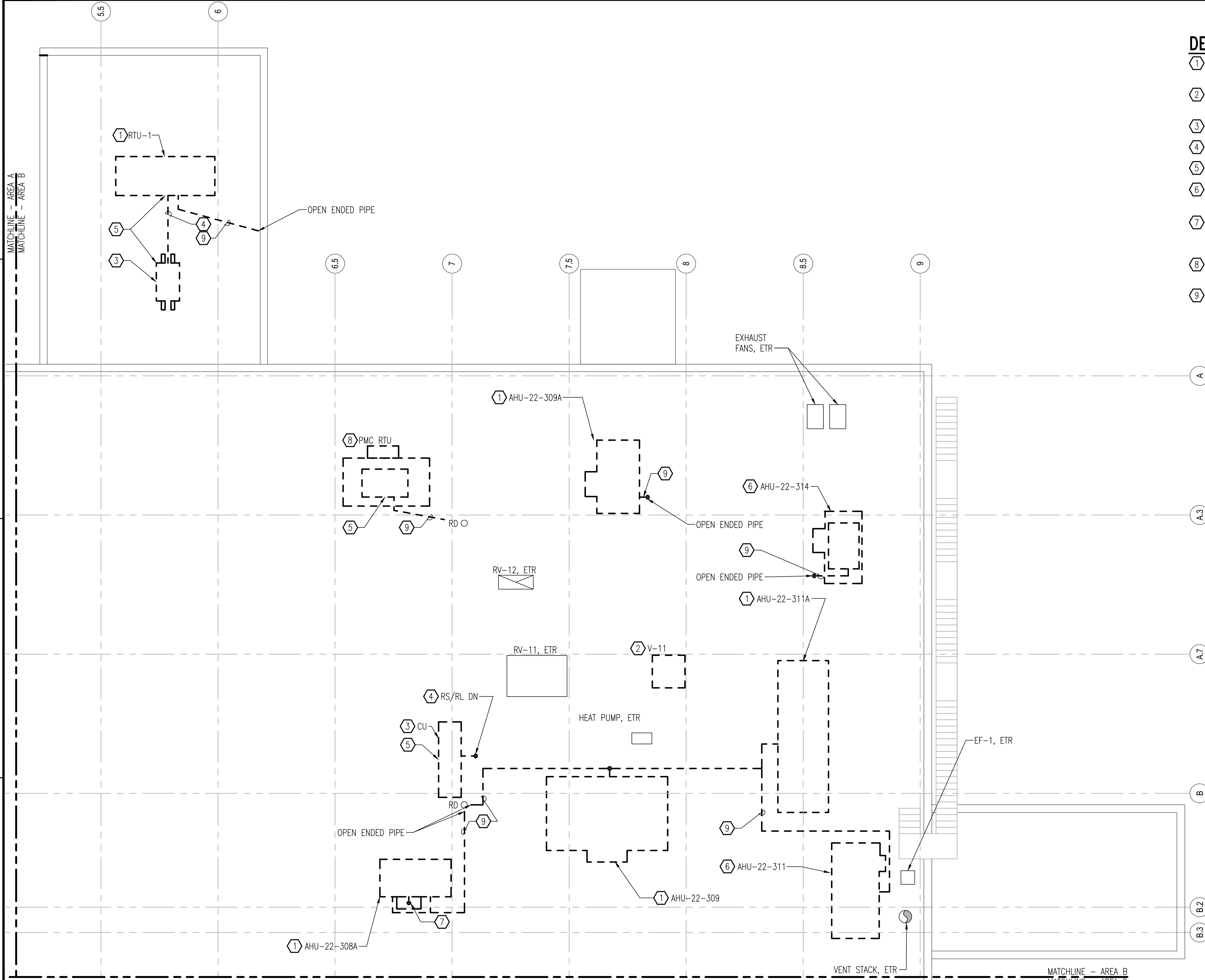
SATISFACTORY TO

DES: TNH | DRW: MTF | CHK: JAK

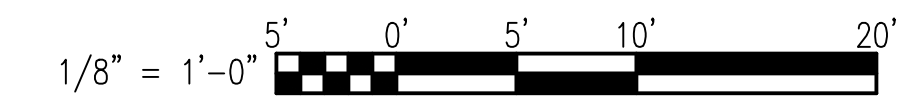
U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225**
 MECHANICAL DEMOLITION PARTIAL ROOF PLAN - AREA B

SCALE: AS NOTED
 PROJECT NO.: ST-14507A
 MAXIMO WORK ORDER NO.: 6878897
 NAVFAC DRAWING NO.: 12782430
 SHEET 29 OF 68
MD302

DRAWING REVISION: 10 MAY 2014



GRAPHIC SCALE:



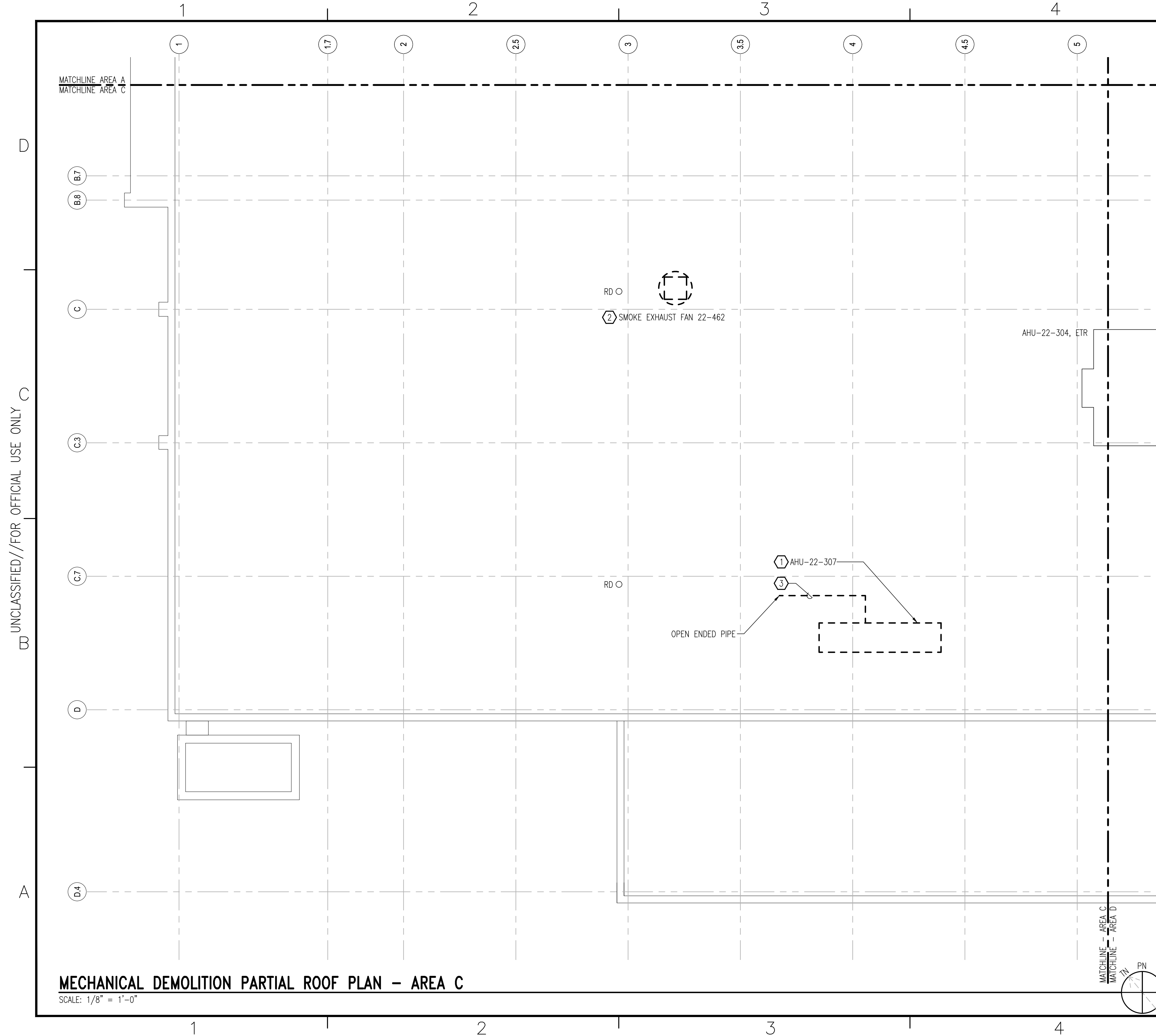
MECHANICAL DEMOLITION PARTIAL ROOF PLAN - AREA B

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

MATCHLINE - AREA B
 MATCHLINE - AREA D

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DEMOLITION NOTES

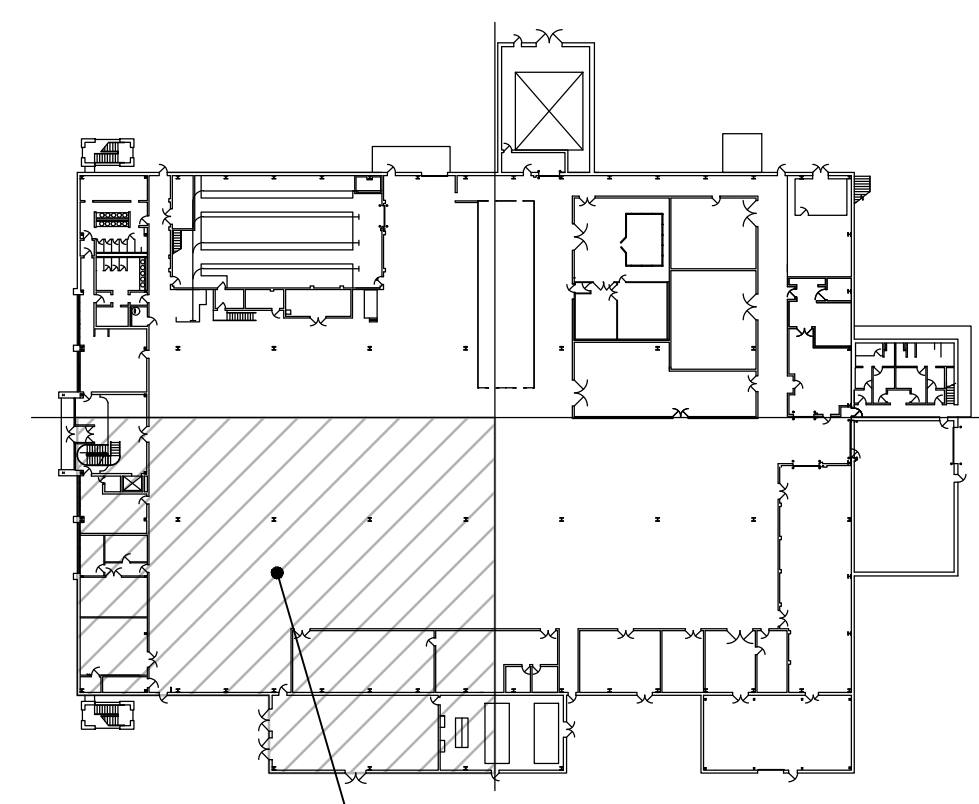
- ① REMOVE ROOFTOP UNIT AND ASSOCIATED APPURTENANCES COMPLETE. ROOF CURB IS EXISTING TO REMAIN.
- ② REMOVE EXHAUST FAN AND ASSOCIATED CONTROLS COMPLETE. ROOF CURB IS EXISTING TO REMAIN.
- ③ REMOVE PVC CONDENSATE PIPING AND SUPPORTS COMPLETE.

APPR	DATE	DESCRIPTION	SW



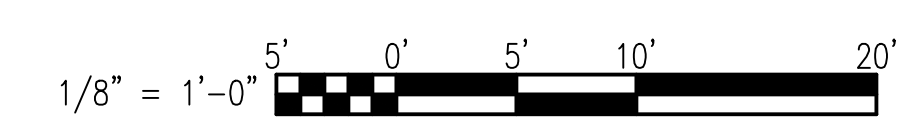
APPROVED
 PER COMMANDER NAVFAC
 ACTIVITY
 SATISFACTORY TO
 DES: TNH | DRW: MTF | CHK: JAK

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225**
 MECHANICAL DEMOLITION PARTIAL ROOF PLAN - AREA C



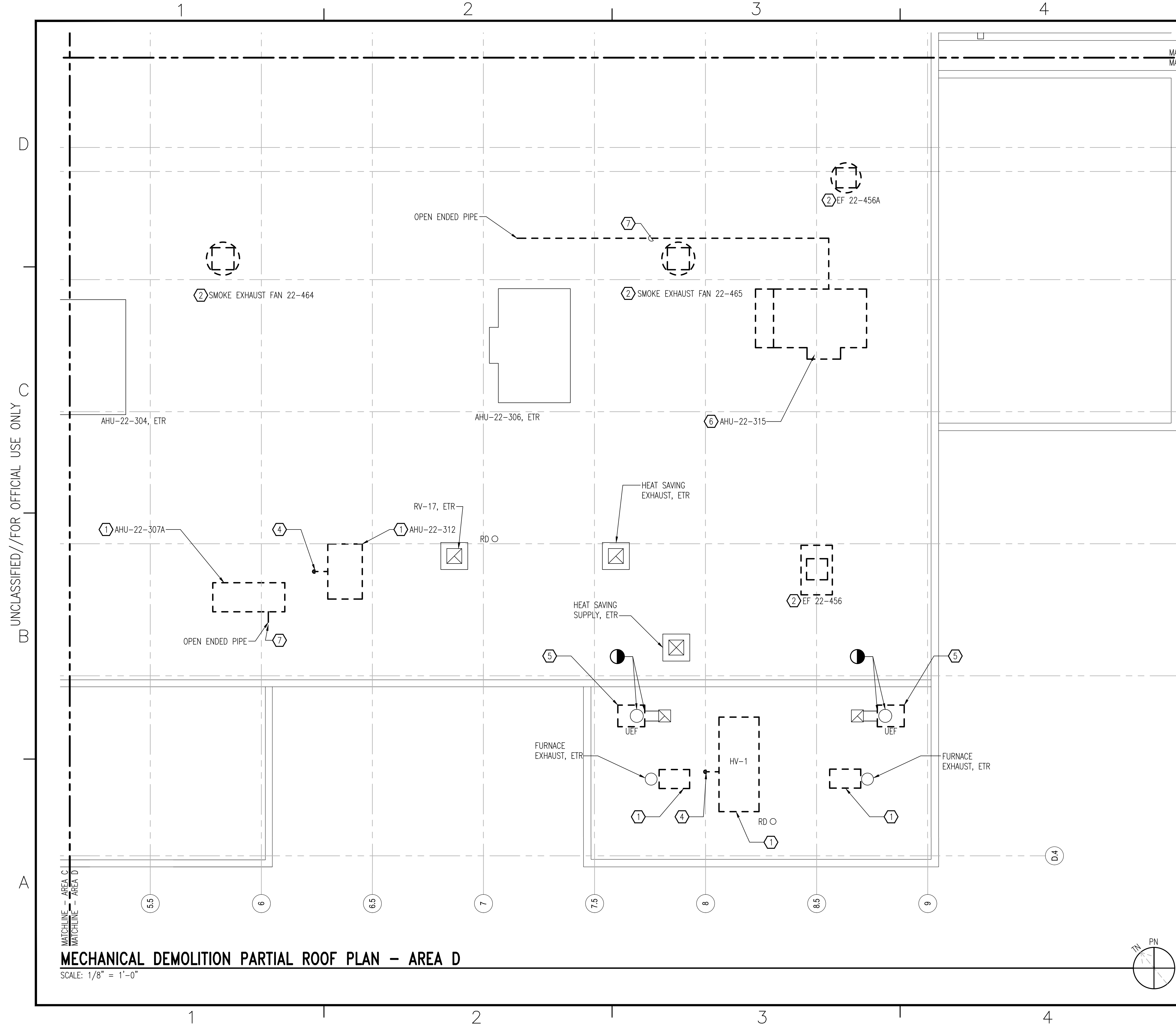
KEY PLAN
 NOT TO SCALE

GRAPHIC SCALE:



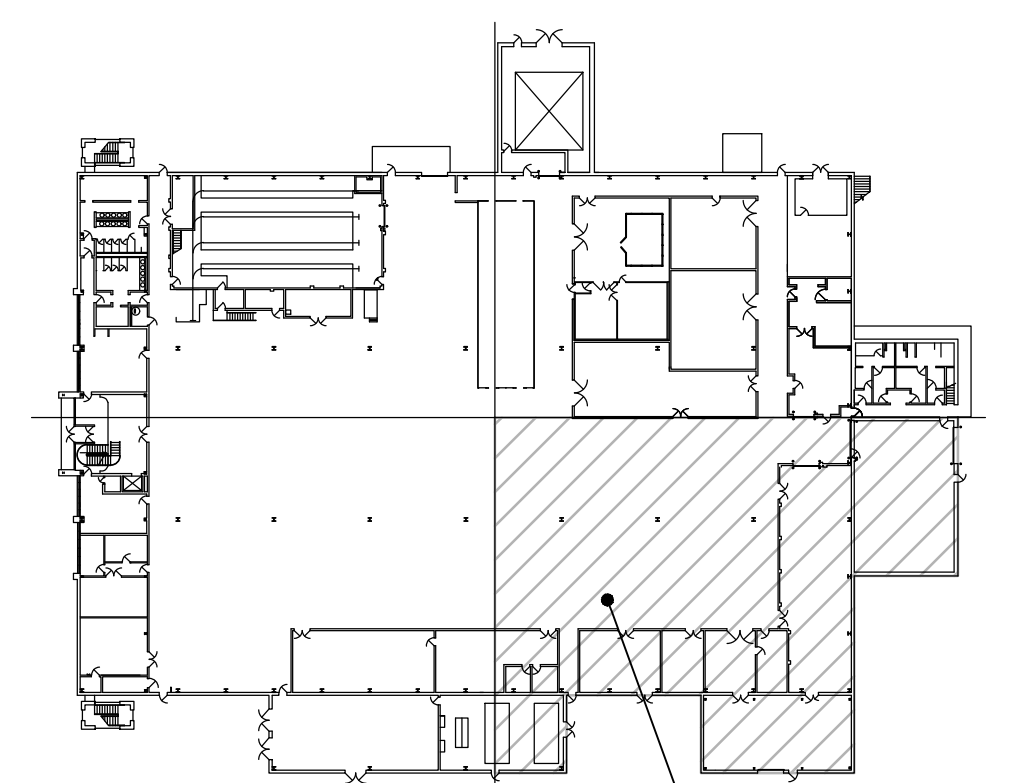
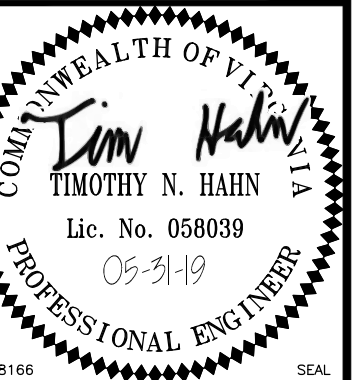
MECHANICAL DEMOLITION PARTIAL ROOF PLAN - AREA C
 SCALE: 1/8" = 1'-0"

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782431
SHEET 30 OF 68
MD303



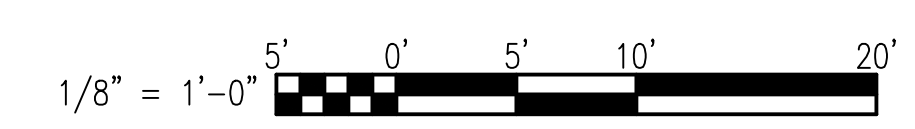
DEMOLITION NOTES

- ① REMOVE ROOFTOP UNIT AND ASSOCIATED APPURTENANCES COMPLETE. ROOF CURB IS EXISTING TO REMAIN.
- ② REMOVE EXHAUST FAN AND ASSOCIATED CONTROLS COMPLETE. ROOF CURB IS EXISTING TO REMAIN.
- ③ REMOVE CONDENSING UNIT COMPLETE.
- ④ REMOVED EXPOSED LPS/LPC PIPING, INSULATION, AND JACKETING THROUGH ROOF COMPLETE. REFER TO ARCHITECTURAL DOCUMENTS FOR ADDITIONAL INFORMATION.
- ⑤ REMOVE UTILITY EXHAUST FAN COMPLETE. SAVLAGE DISCHARGE DUCTWORK FOR REUSE UNDER NEW WORK PHASE.
- ⑥ REMOVE ROOFTOP UNIT, ROOF CURB, AND ASSOCIATED APPURTENANCES COMPLETE.
- ⑦ REMOVE PVC CONDENSATE PIPE AND SUPPORTS COMPLETE.



KEY PLAN
NOT TO SCALE

GRAPHIC SCALE:



MECHANICAL DEMOLITION PARTIAL ROOF PLAN - AREA D

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

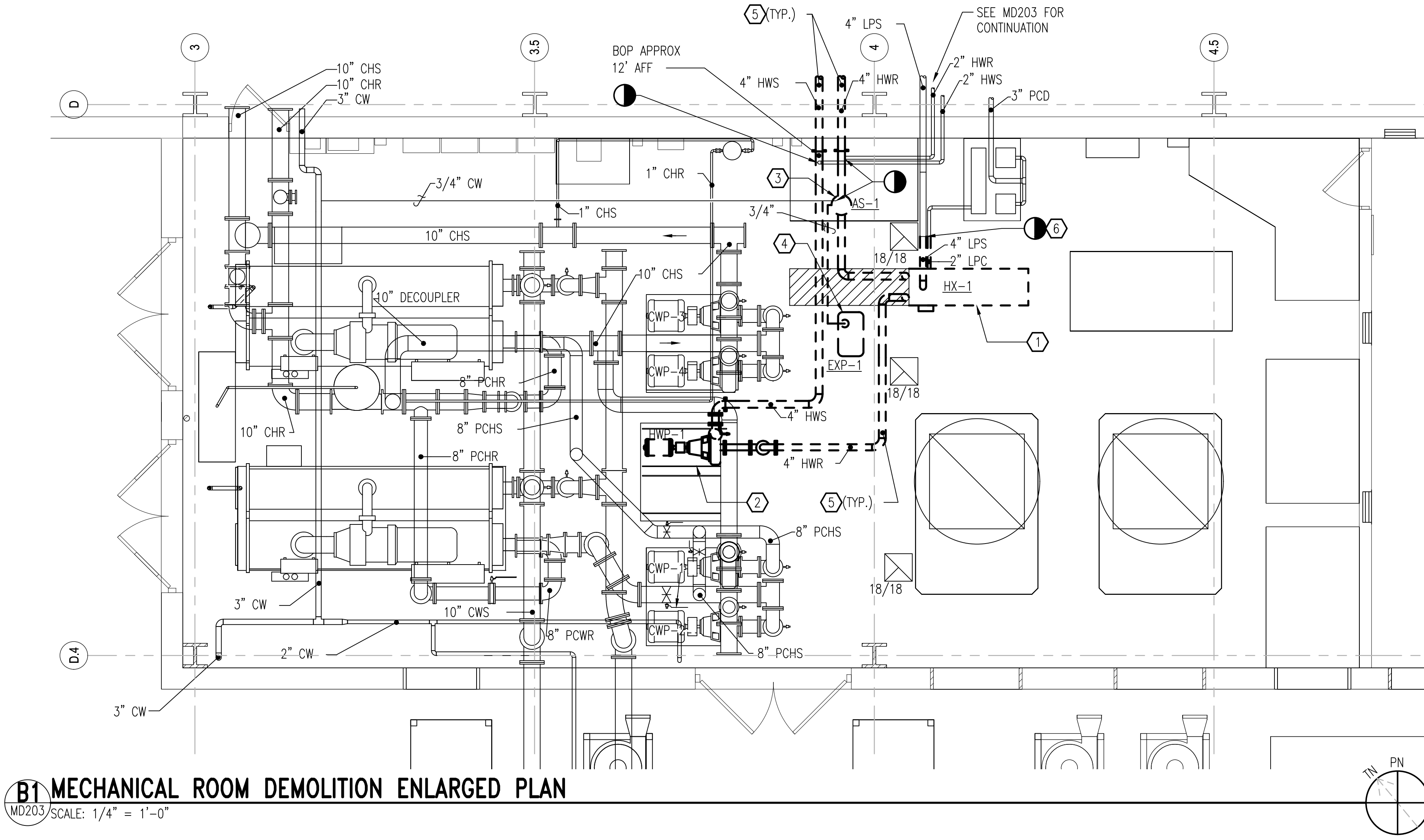
APPROVED	DATE
FOR COMMANDER NAVFAC	DESCRIPTION
ACTIVITY	SW
SATISFACTORY TO	
DES: TNH DRW: MTF CHK: JAK	
U.S. MARINE CORPS AIR STATION CHERRY POINT, NORTH CAROLINA REPLACE HVAC AND CONTROLS PHASE II AT BUILDING 4225 MECHANICAL DEMOLITION PARTIAL ROOF PLAN - AREA D	
SCALE: AS NOTED	
PROJECT NO.: ST-14507A	
MAXIMO WORK ORDER NO. 6878897	
NAVFAC DRAWING NO. 12782432	
SHEET 31 OF 68	
MD304	
DRAWN FOR REVISION: 10 MAY 2014	

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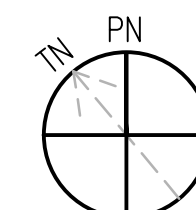
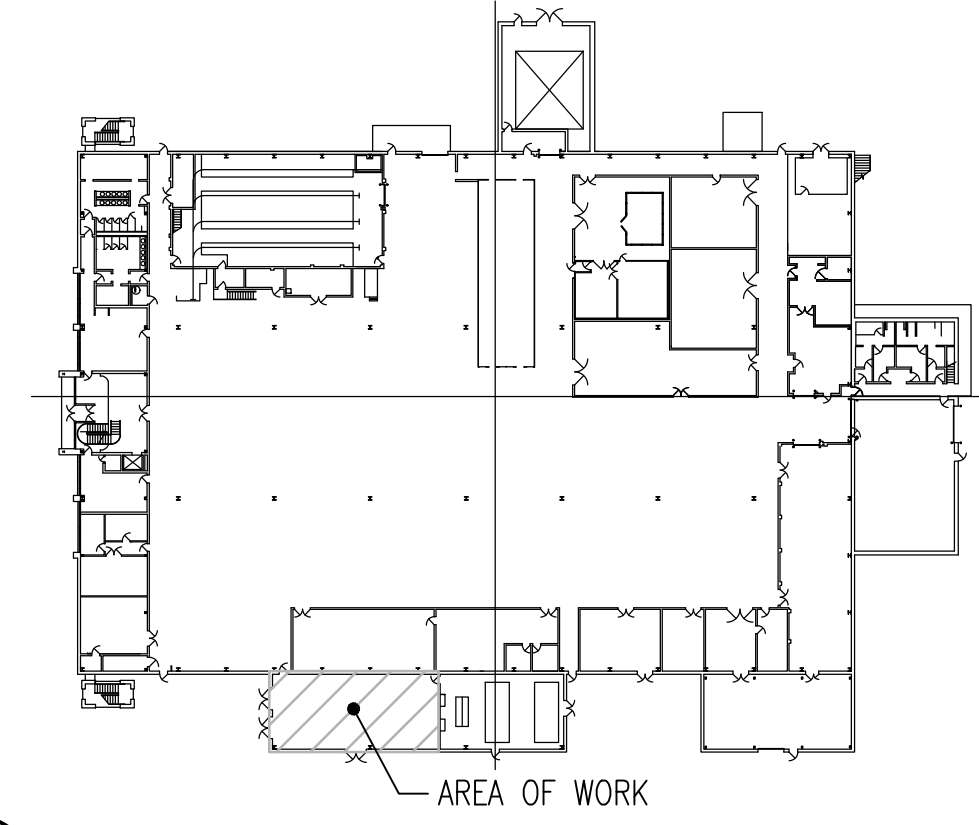


DEMOLITION NOTES

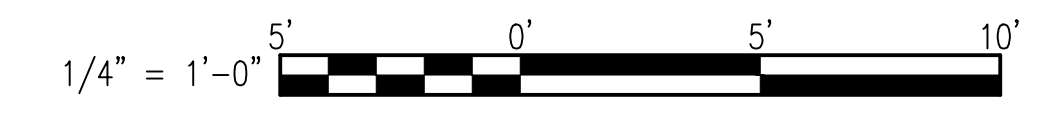
- 1 REMOVE HEAT EXCHANGER AND ASSOCIATED APPURTENANCES COMPLETE.
- 2 REMOVE HOT WATER PUMP COMPLETE.
- 3 REMOVE AIR SEPARATOR AND SUPPORTS COMPLETE.
- 4 REMOVE EXPANSION TANK AND ASSOCIATED PIPING COMPLETE.
- 5 REMOVE HWS/HWR PIPING, INSULATION, HANGERS AND SUPPORTS COMPLETE.
- 6 REMOVE LPS/LPR PIPING, INSULATION, PIPING SPECIALTIES, AND SUPPORTS COMPLETE TO LIMIT INDICATED.

PIPING ELEVATION NOTE:

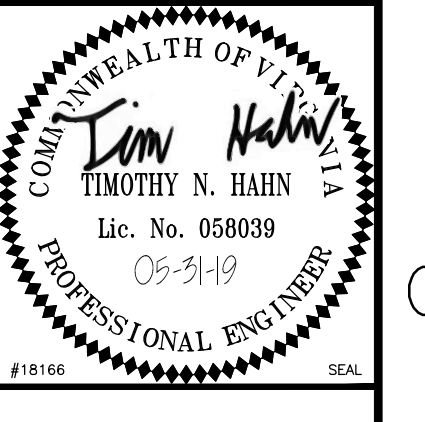
BOTTOM OF PIPING IS APPROXIMATELY 9'-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.



GRAPHIC SCALE:



REV	DESCRIPTION	DATE	APPR



APPROVED

FOR COMMANDER NAVFAC

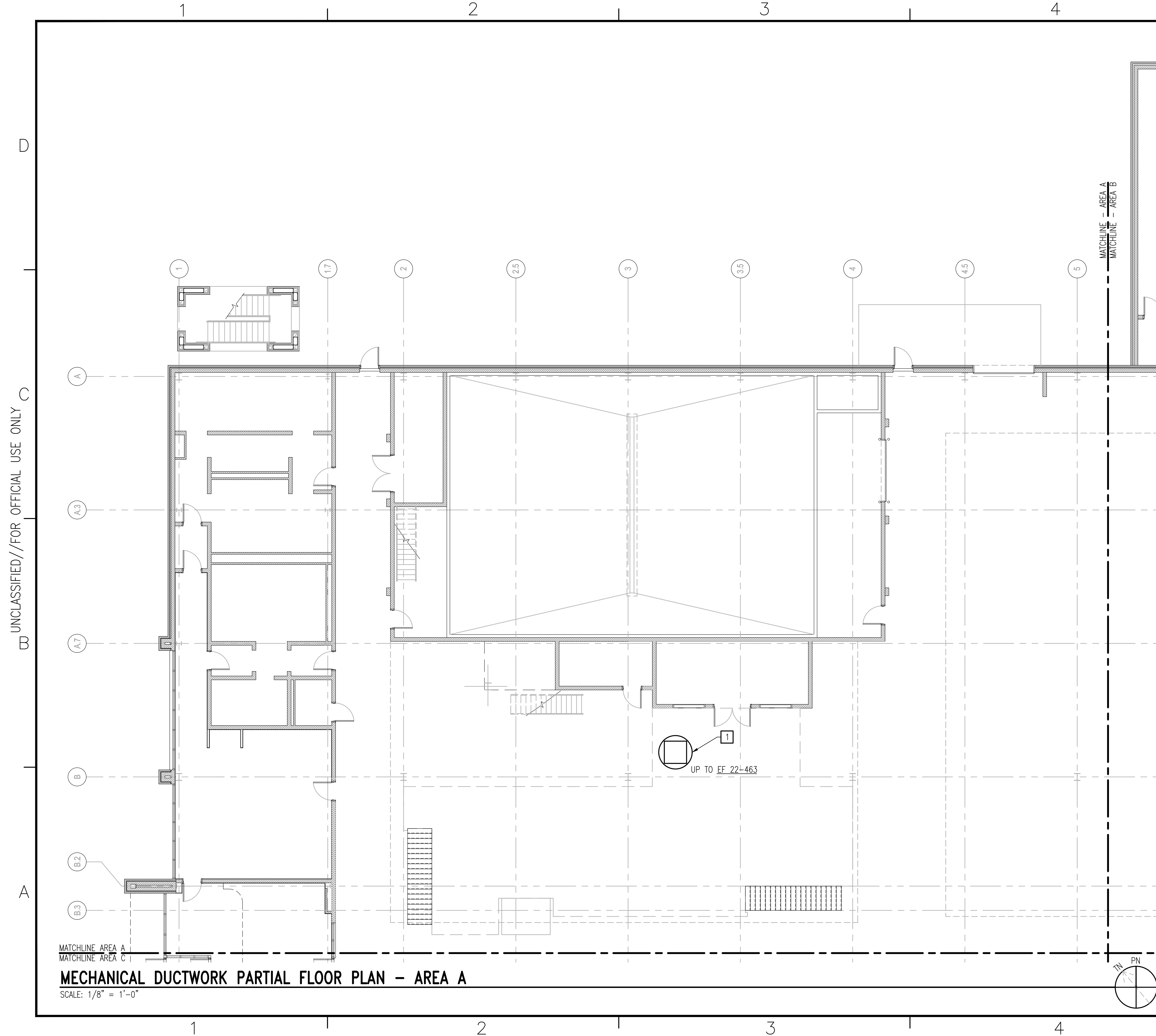
ACTIVITY

SATISFACTORY TO

DES: TNH | DRW: MTF | CHK: JAK

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225**
 MECHANICAL ROOM DEMOLITION ENLARGED PLAN

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782433
SHEET 32 OF 68
MD401

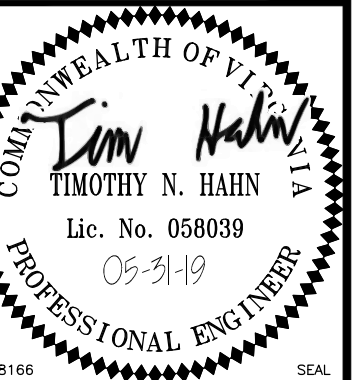


NEW WORK NOTES

1 REFER TO ROOF PLAN FOR CONTINUATION.

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APPROVED

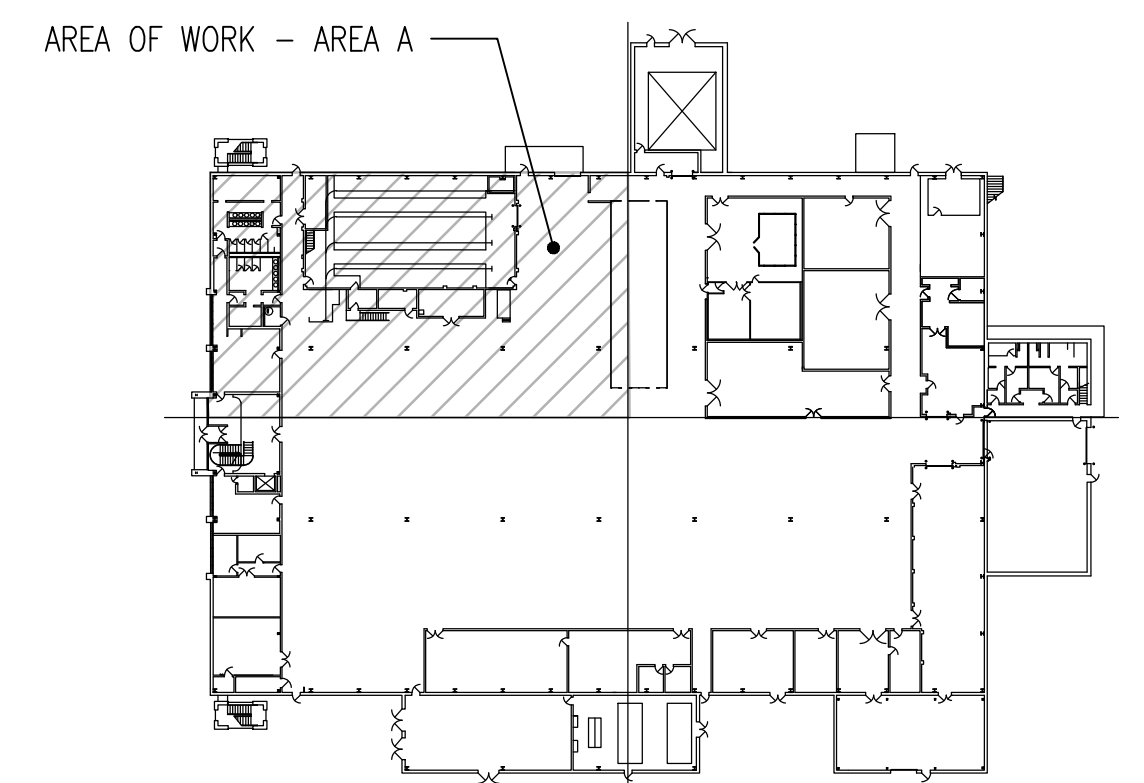
FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO

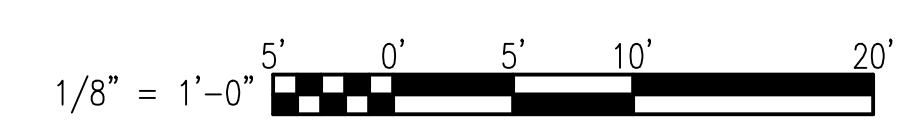
DES TNH | DRW MTF | CHK JAK

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225**
 MECHANICAL DUCTWORK PARTIAL FLOOR PLAN - AREA A



KEY PLAN
NOT TO SCALE

GRAPHIC SCALE:



MATCHLINE AREA A
 MATCHLINE AREA C
MECHANICAL DUCTWORK PARTIAL FLOOR PLAN - AREA A
 SCALE: 1/8" = 1'-0"

SCALE: AS NOTED
 PROJECT NO.: ST-14507A
 MAXIMO WORK ORDER NO. 6878897
 NAVFAC DRAWING NO. 12782434
 SHEET 33 OF 68
M-101

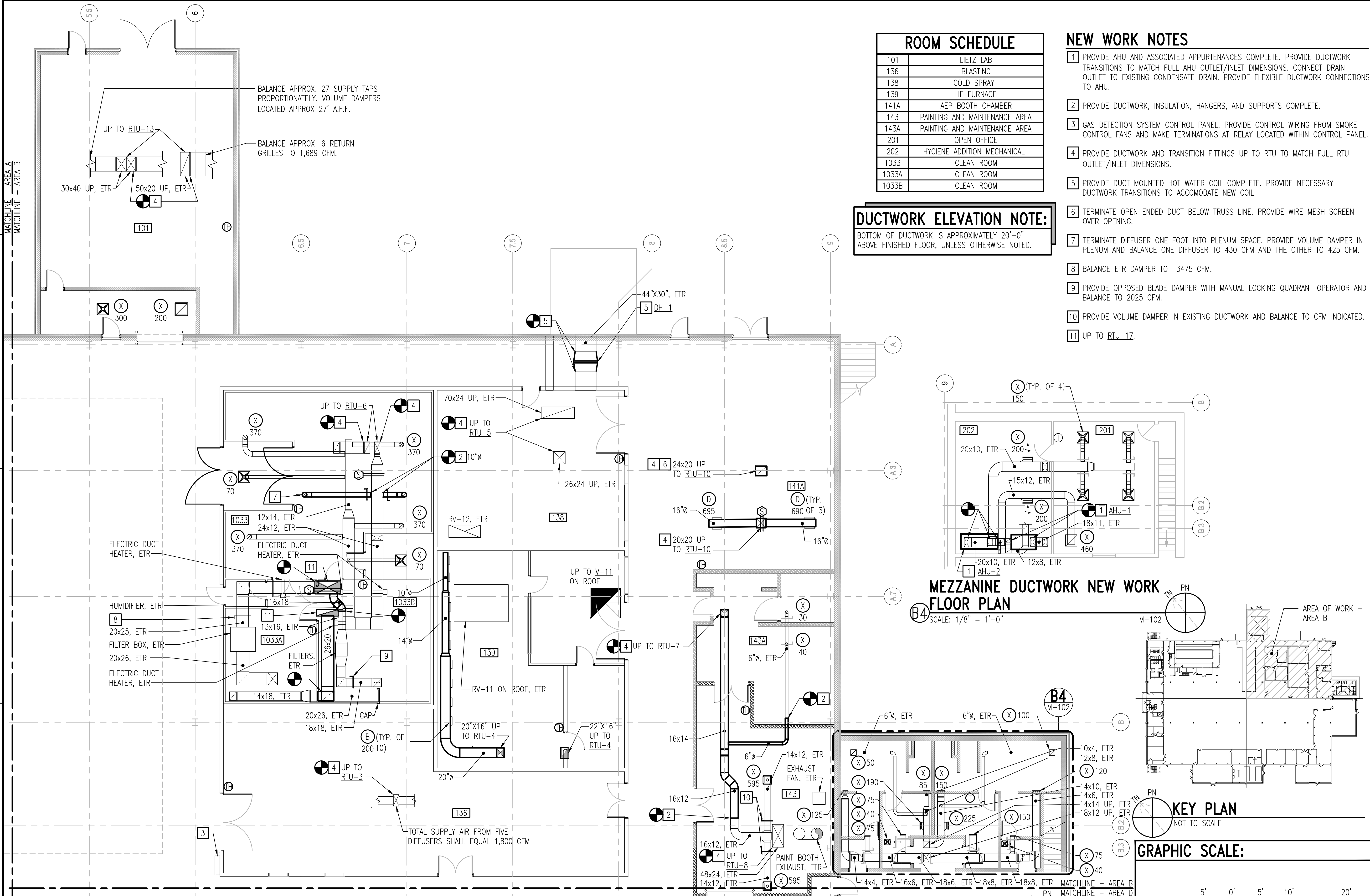
ROOM SCHEDULE	
101	LIETZ LAB
136	BLASTING
138	COLD SPRAY
139	HF FURNACE
141A	AEP BOOTH CHAMBER
143	PAINING AND MAINTENANCE AREA
143A	PAINING AND MAINTENANCE AREA
201	OPEN OFFICE
202	HYGIENE ADDITION MECHANICAL
1033	CLEAN ROOM
1033A	CLEAN ROOM
1033B	CLEAN ROOM

- ### NEW WORK NOTES
- 1 PROVIDE AHU AND ASSOCIATED APPURTENANCES COMPLETE. PROVIDE DUCTWORK TRANSITIONS TO MATCH FULL AHU OUTLET/INLET DIMENSIONS. CONNECT DRAIN OUTLET TO EXISTING CONDENSATE DRAIN. PROVIDE FLEXIBLE DUCTWORK CONNECTIONS TO AHU.
 - 2 PROVIDE DUCTWORK, INSULATION, HANGERS, AND SUPPORTS COMPLETE.
 - 3 GAS DETECTION SYSTEM CONTROL PANEL. PROVIDE CONTROL WIRING FROM SMOKE CONTROL FANS AND MAKE TERMINATIONS AT RELAY LOCATED WITHIN CONTROL PANEL.
 - 4 PROVIDE DUCTWORK AND TRANSITION FITTINGS UP TO RTU TO MATCH FULL RTU OUTLET/INLET DIMENSIONS.
 - 5 PROVIDE DUCT MOUNTED HOT WATER COIL COMPLETE. PROVIDE NECESSARY DUCTWORK TRANSITIONS TO ACCOMMODATE NEW COIL.
 - 6 TERMINATE OPEN ENDED DUCT BELOW TRUSS LINE. PROVIDE WIRE MESH SCREEN OVER OPENING.
 - 7 TERMINATE DIFFUSER ONE FOOT INTO PLENUM SPACE. PROVIDE VOLUME DAMPER IN PLENUM AND BALANCE ONE DIFFUSER TO 430 CFM AND THE OTHER TO 425 CFM.
 - 8 BALANCE ETR DAMPER TO 3475 CFM.
 - 9 PROVIDE OPPOSED BLADE DAMPER WITH MANUAL LOCKING QUADRANT OPERATOR AND BALANCE TO 2025 CFM.
 - 10 PROVIDE VOLUME DAMPER IN EXISTING DUCTWORK AND BALANCE TO CFM INDICATED.
 - 11 UP TO RTU-17.

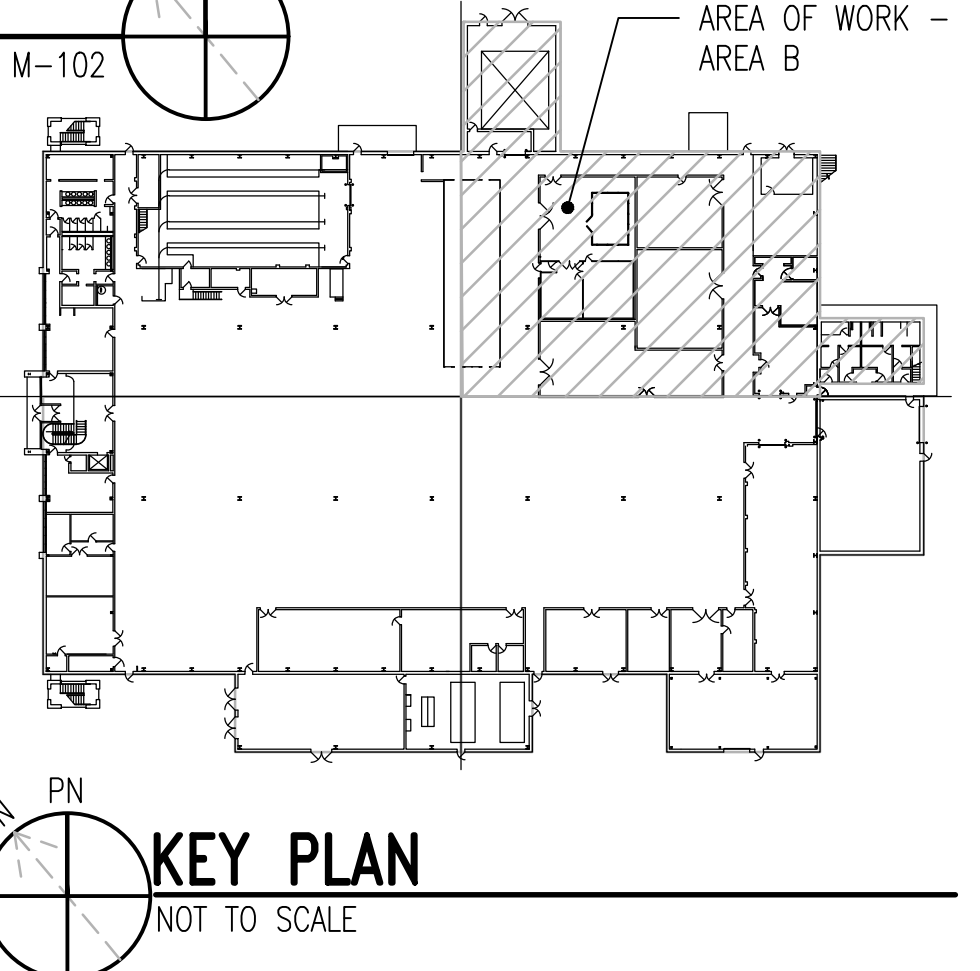
DUCTWORK ELEVATION NOTE:
 BOTTOM OF DUCTWORK IS APPROXIMATELY 20'-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.

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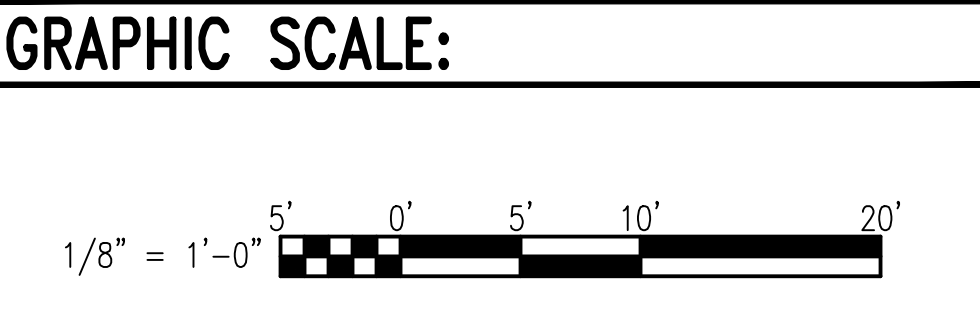
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MEZZANINE DUCTWORK NEW WORK FLOOR PLAN
 SCALE: 1/8" = 1'-0"

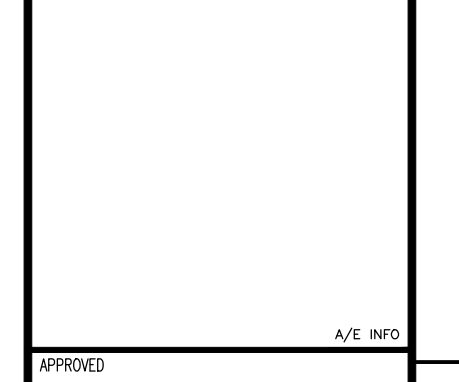
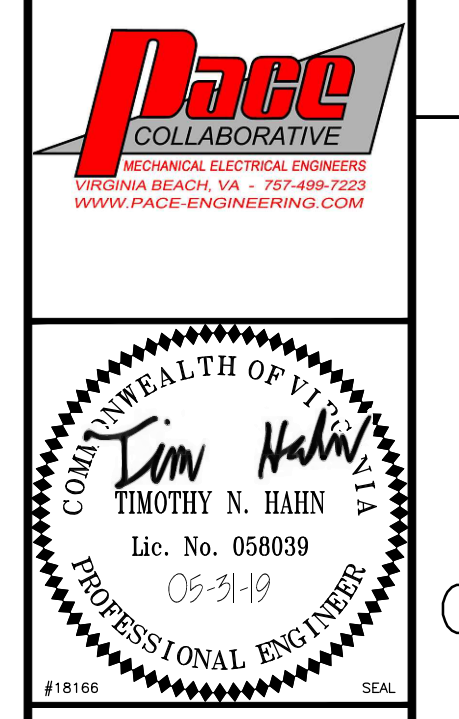


KEY PLAN
 NOT TO SCALE



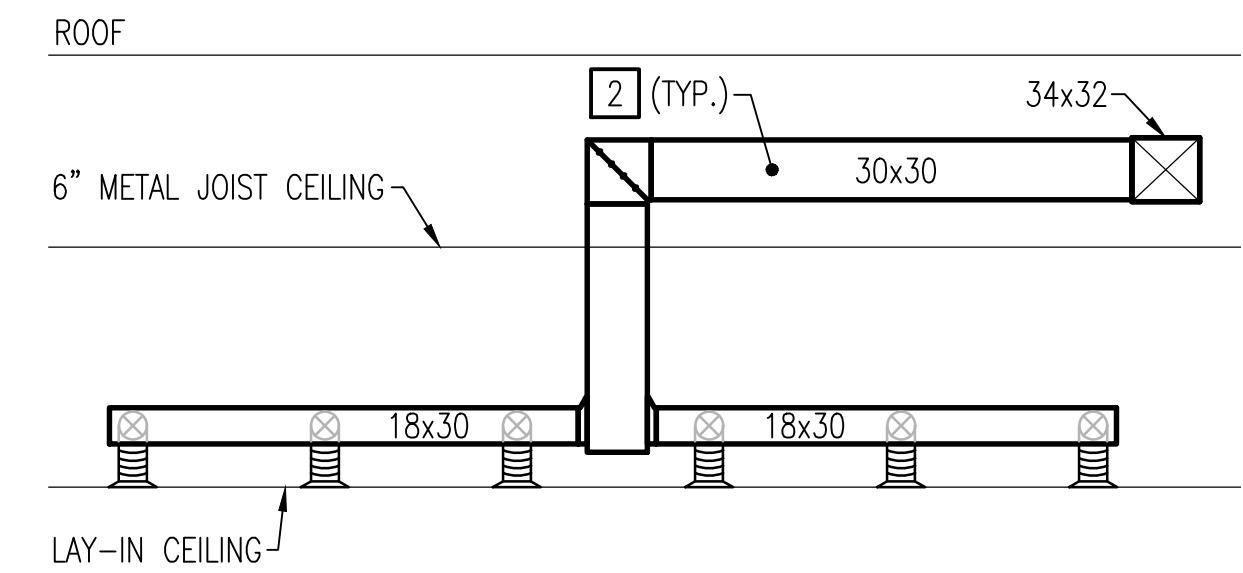
MECHANICAL DUCTWORK PARTIAL FLOOR PLAN - AREA B
 SCALE: 1/8" = 1'-0"

APPROVED	DATE
FOR COMMANDER NAVFAC	DESCRIPTION
ACTIVITY	SW
SATISFACTORY TO	DATE
DES: TNH DRW: MTF CHK: JAK	
U.S. MARINE CORPS AIR STATION CHERRY POINT, NORTH CAROLINA REPLACE HVAC AND CONTROLS PHASE II AT BUILDING 4225 MECHANICAL DUCTWORK PARTIAL FLOOR PLANS - AREA B	
SCALE: AS NOTED	PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897	NAVFAC DRAWING NO. 12782435
SHEET 34 OF 68	M-102
DRAWN/REVISION: 10 MAY 2014	



NEW WORK NOTES

- 1 PROVIDE NEW TRANSITION DUCTWORK UP TO RTU TO MATCH FULL RTU OUTLET/INLET DIMENSIONS.
- 2 PROVIDE DUCTWORK, INSULATION, HANGERS, AND SUPPORTS COMPLETE.
- 3 PROVIDE ALTERNATE POSITION PUSHBUTTON AT FIRE ALARM CONTROL PANEL THAT IS CONNECTED IN PARALLEL TO THE AUTOMATIC HYDROGEN GAS EXHAUST FANS RELAY WITHIN THE DRAGER PANEL. PUSHBUTTON SHALL PROVIDE MANUAL CONTROL OF EXHAUST FANS TO TURN ON AND OFF.
- 4 PROVIDE AHU AND ASSOCIATED APPURTENANCES COMPLETE. COORDINATE EQUIPMENT CLEARANCES WITH COOLING TOWER ENCLOSURE WALL.
- 5 PROVIDE DUCTWORK, INSULATION, JACKETING, HANGERS, AND SUPPORTS COMPLETE. REFER TO MECHANICAL DETAILS FOR DUCTWORK PENETRATION.
- 6 PROVIDE VOLUME DAMPER COMPLETE IN EXISTING DUCTWORK. BALANCE DAMPER TO CFM INDICATED.



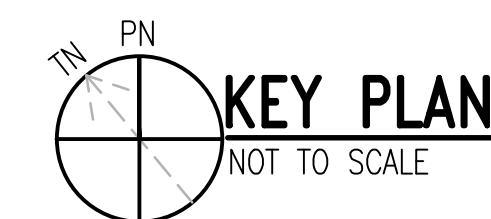
SECTION C4

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

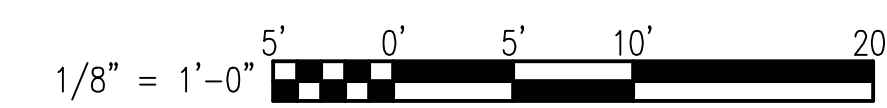
ROOM SCHEDULE	
130	MANUAL GRINDING STATION
150	QE INSPECTION OFFICE

DUCTWORK ELEVATION NOTE:

BOTTOM OF DUCTWORK IS APPROXIMATELY 20'-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.



GRAPHIC SCALE:



MATCHLINE AREA A
MATCHLINE AREA C

3 FIRE ALARM CONTROL PANEL

DDC PANEL, ETR

UP TO EF 22-462

DIFFUSER, ETR (TYP. OF 32)

24x24 DOWN TO 24x20 PLENUM BOX CONNECTED TO EACH RETURN GRILLE IN CEILING

X (TYP. OF 10)
330

46x22, ETR

20x12, ETR

24x24, ETR

C (TYP. OF 6)
665

24x12, ETR

UP TO RTU-1

30x18

30x30 ABOVE, 30x18 BELOW

BALANCE TO 3990 CFM

5 DUCTWORK LOCATED ON ROOF

34x32

RTU-1

X (TYP. OF 4)
105

18x12, ETR

18x10, ETR

12x10, ETR

BALANCE TO 14010 CFM

150

6

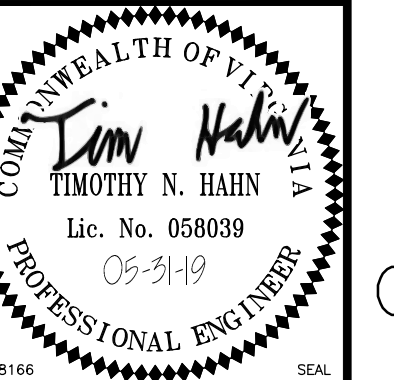
4 AHU-4

MATCHLINE - AREA C
MATCHLINE - AREA D

MECHANICAL DUCTWORK PARTIAL FLOOR PLAN - AREA C

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

APPR.	DATE	DESCRIPTION	SYN



APPROVED

PER COMMANDER NAVFAC

ACTIVITY

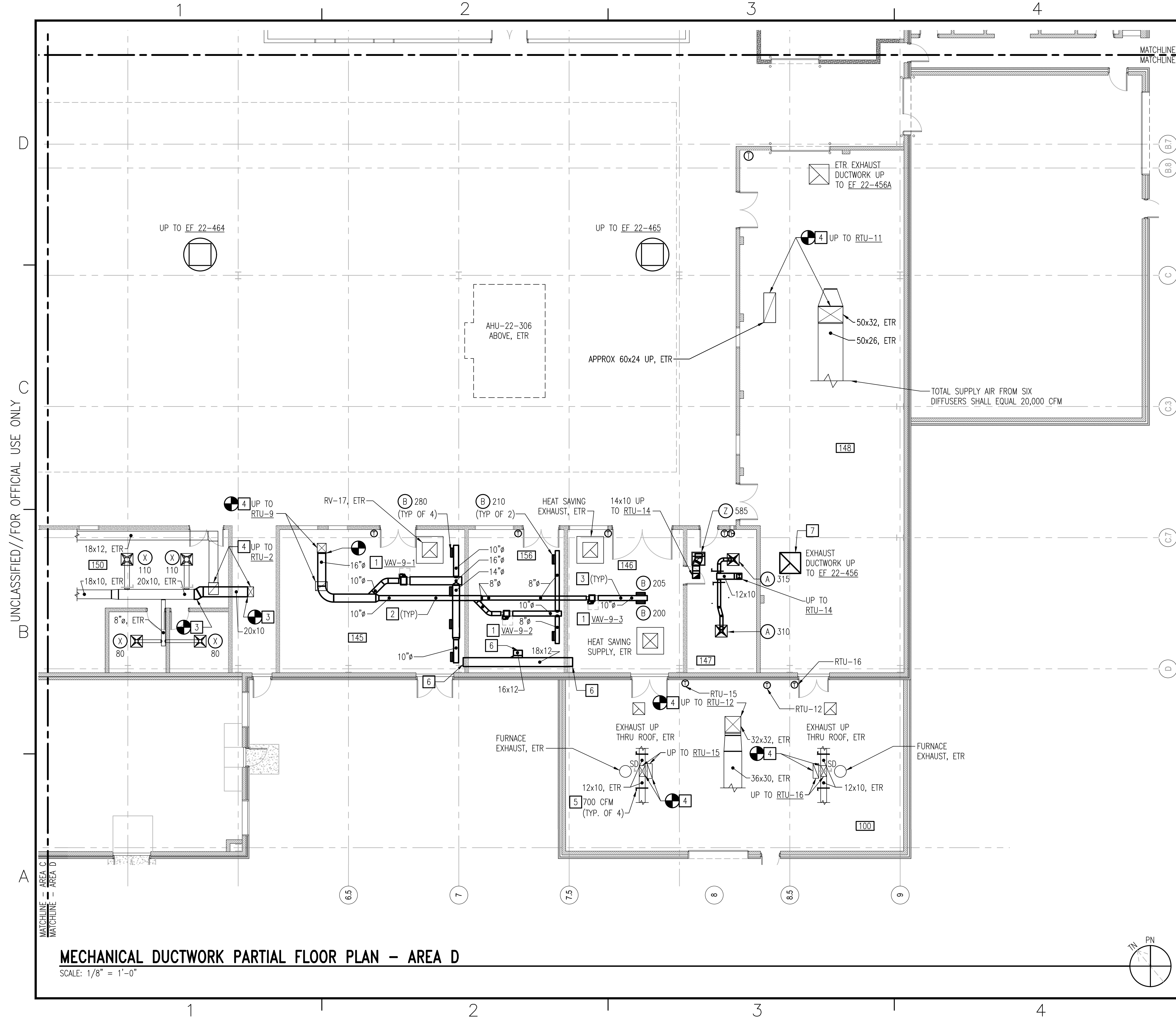
SATISFACTORY TO

DES: TNH | DRW: MTF | CHK: JAK

U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
MECHANICAL DUCTWORK PARTIAL FLOOR PLAN - AREA C

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782436
SHEET 35 OF 68
M-103

DRAWING REVISION: 10 MAY 2014



NEW WORK NOTES

- 1 PROVIDE VAV TERMINAL UNIT, HANGERS, AND SUPPORTS COMPLETE.
- 2 PROVIDE MEDIUM PRESSURE DUCTWORK, INSULATION, HANGERS, AND SUPPORTS COMPLETE.
- 3 PROVIDE LOW PRESSURE DUCTWORK, INSULATION, HANGERS, AND SUPPORTS COMPLETE.
- 4 PROVIDE DUCTWORK AND TRANSITION FITTINGS UP TO RTU TO MATCH FULL RTU OUTLET/INLET DIMENSIONS.
- 5 PROVIDE VOLUME DAMPER COMPLETE IN EXISTING DUCTWORK. BALANCE TO CFM INDICATED.
- 6 OPEN ENDED DUCT WITH WIRE MESH SCREEN.
- 7 PROVIDE APPROXIMATELY 36" x 36" DUCTWORK 4' BELOW ROOF. TERMINATE OPEN ENDED DUCT WITH WIRE MESH SCREEN. DIMENSION LISTED FOR REFERENCE ONLY. CONTRACTOR MUST CONFIRM NEW DUCTWORK WILL FIT WITHIN EXISTING ROOF OPENING.

ROOM SCHEDULE

100	HEAT TREAT ADDITION FURNACE
145	HVOF AND PLASMA SPRAY
146	HEAT TREAT STAGING
147	HEAT TREAT CONTROL
148	HEAT TREAT FURNACE
150	QE INSPECTION OFFICE
156	GLOVE BOX

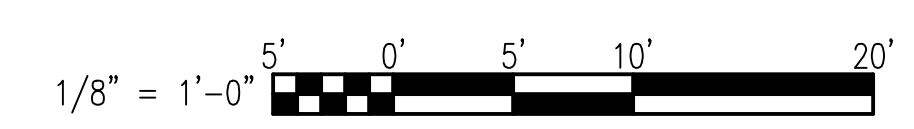
DUCTWORK ELEVATION NOTE:

BOTTOM OF DUCTWORK IS APPROXIMATELY 20'-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.

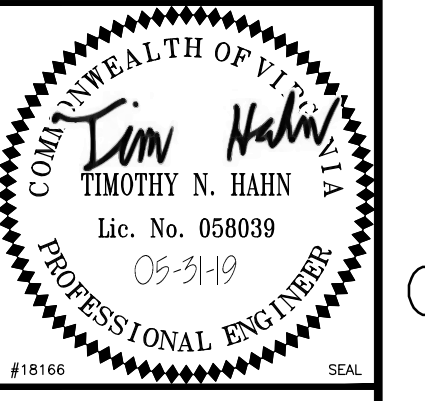


KEY PLAN
NOT TO SCALE

GRAPHIC SCALE:



NO.	DATE	DESCRIPTION	BY	APPR.



APPROVED	A/E INFO
PER COMMANDER NAVFAC	ACTIVITY
SATISFACTORY TO	DES: TNH DRW: MTF CHK: JAK

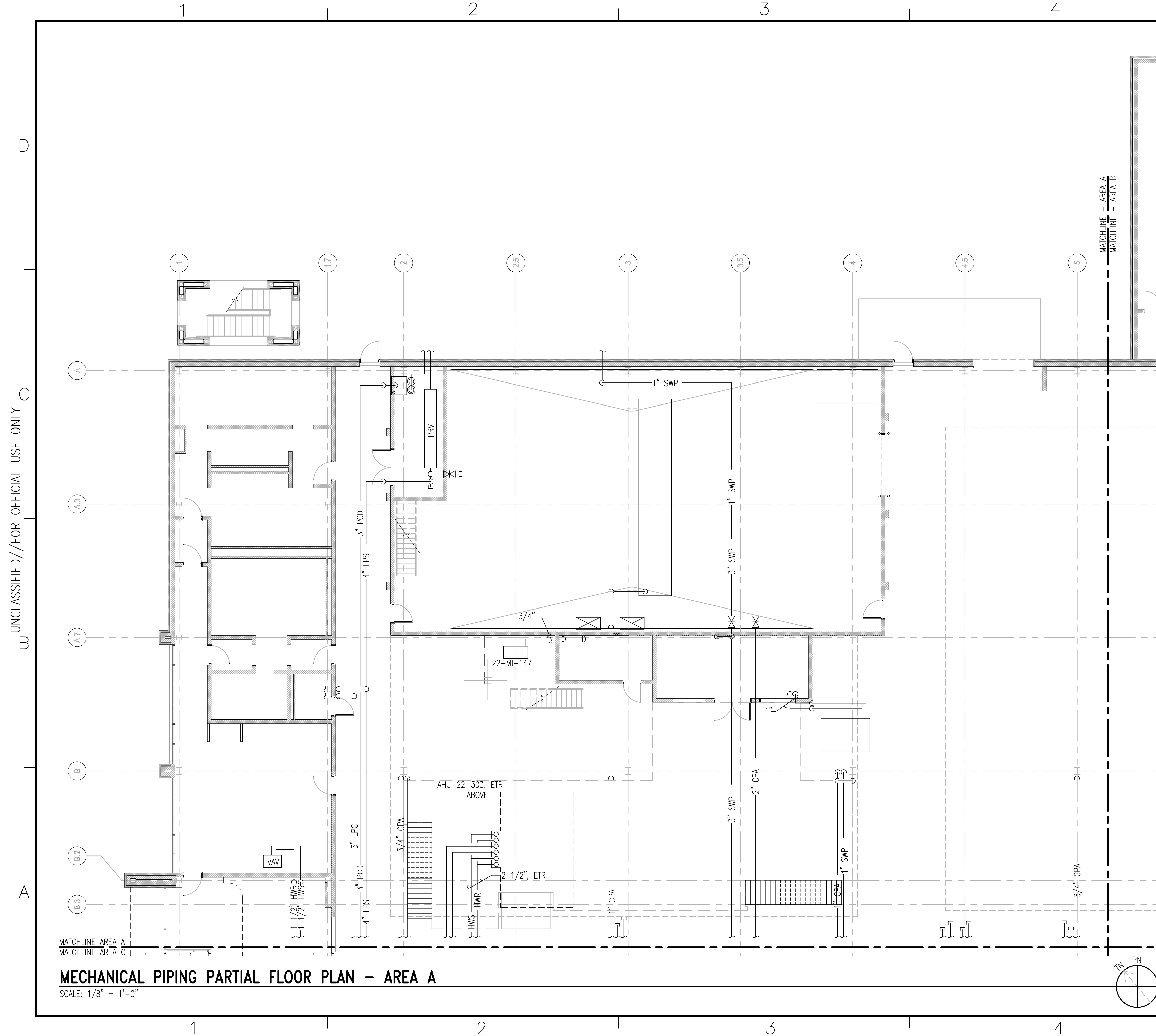
U.S. MARINE CORPS AIR STATION	CHERRY POINT, NORTH CAROLINA
REPLACE HVAC AND CONTROLS	
PHASE II AT BUILDING 4225	
MECHANICAL DUCTWORK	PARTIAL FLOOR PLAN - AREA D

SCALE: AS NOTED	PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897	NAVFAC DRAWING NO. 12782437
SHEET 36 OF 68	M-104

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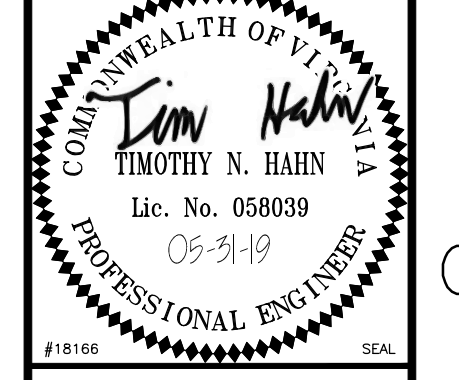
MECHANICAL DUCTWORK PARTIAL FLOOR PLAN - AREA D
SCALE: 1/8" = 1'-0"



PIPING NOTE
 NO NEW WORK IS SHOWN ON THIS PLAN. PIPING IS SHOWN DIAGRAMMATICALLY FOR INFORMATIONAL PURPOSES ONLY.

PIPING ELEVATION NOTE:
 BOTTOM OF PIPING IS APPROXIMATELY 22'-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.

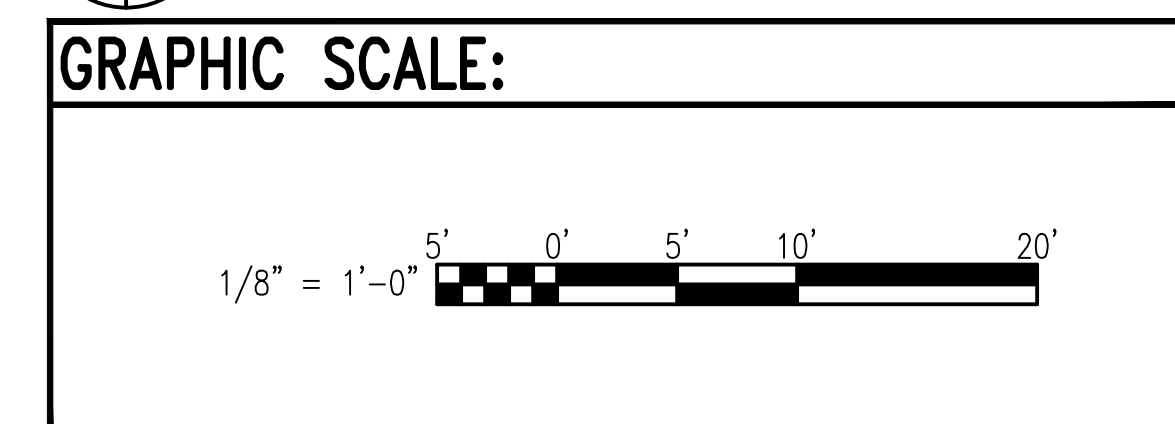
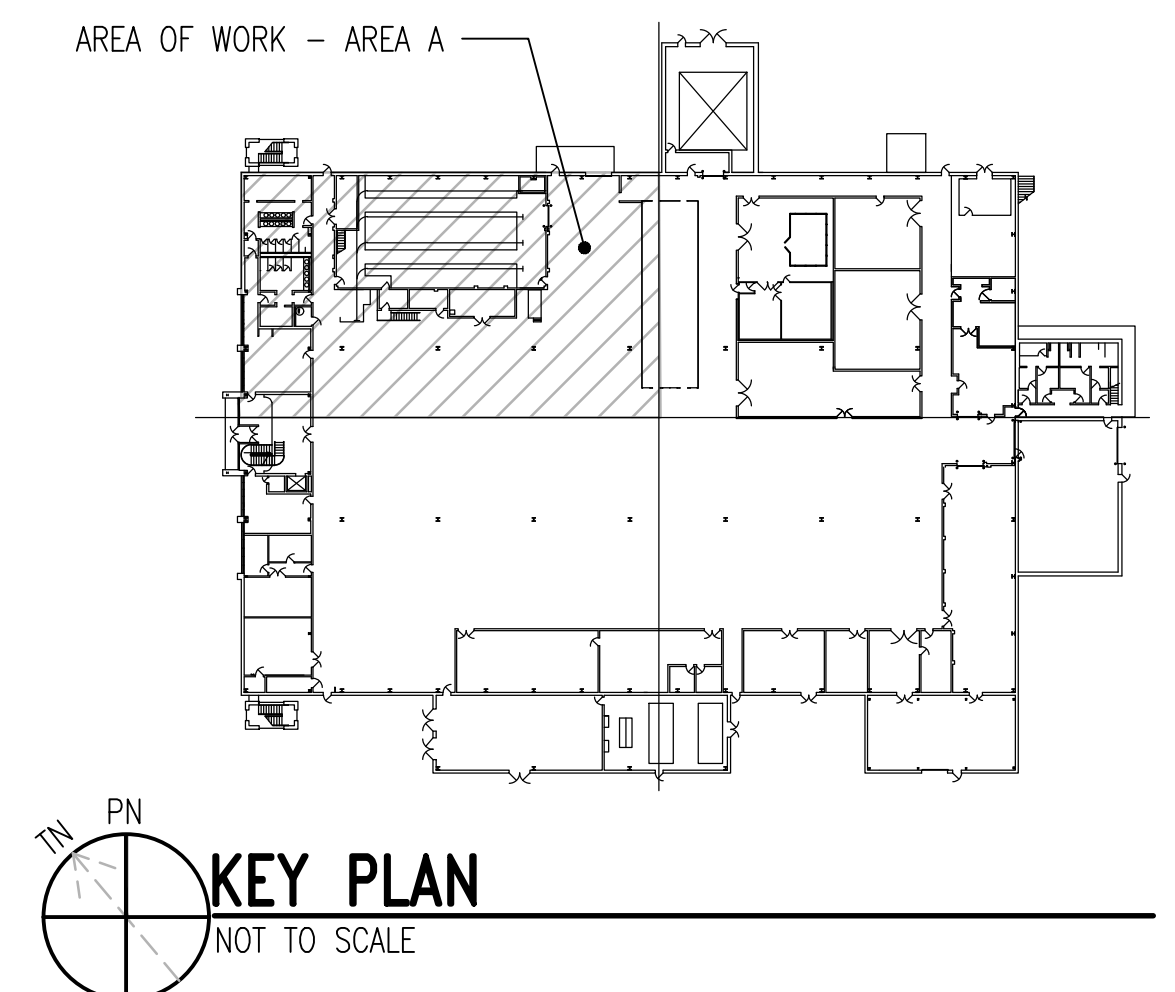
NO.	DESCRIPTION	DATE	APPR.



APPROVED
 PER COMMANDER NAVFAC
 ACTIVITY

SATISFACTORY TO	DES	DRW	CHK
	TNH	MTF	JAK

A/E INFO



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

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225**
 MECHANICAL PIPING PARTIAL FLOOR PLAN - AREA A

SCALE: AS NOTED
 PROJECT NO.: ST-14507A
 MAXIMO WORK ORDER NO. 6878897
 NAVFAC DRAWING NO. 12782438
 SHEET 37 OF 68
M-201

DRAWN/REVISED: 10 MAY 2014

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NEW WORK NOTES

- 1 PROVIDE HWS/HWR PIPING, INSULATION, HANGERS, AND SUPPORTS COMPLETE.
- 2 PROVIDE CWS/CWR PIPING, INSULATION, HANGERS, AND SUPPORTS COMPLETE.
- 3 PROVIDE HUMIDIFIER AND ASSOCIATED APPURTENANCES COMPLETE. MOUNT HUMIDIFIER APPROX. 48" A.F.F. CONNECT EXISTING DOMESTIC WATER AND CONDENSATE PIPING TO HUMIDIFIER. SEE DETAIL ON SHEET M-502
- 4 PROVIDE HYDROGEN PIPING, HANGERS, AND SUPPORTS TO LIMIT INDICATED COMPLETE. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY. NEW PIPING MUST MATCH EXISTING PIPE SIZES. CONTRACTOR MUST CONFIRM EXISTING PIPE SIZES. PROVIDE ISOLATION VALVE AT NEW WORK LIMIT.
- 5 PROVIDE HUMIDIFIER AND ASSOCIATED APPURTENANCES COMPLETE ON MEZZANINE. PROVIDE DOMESTIC WATER AND CONDENSATE PIPING TO STEAM GENERATOR, REROUTED FROM ABANDONED STEAM GENERATOR. ROUTE STEAM LINE TO DUCT MOUNTED DISPERSION TUBE IN THE MAIN DUCT OF RTU-17.

PIPING ELEVATION NOTE:

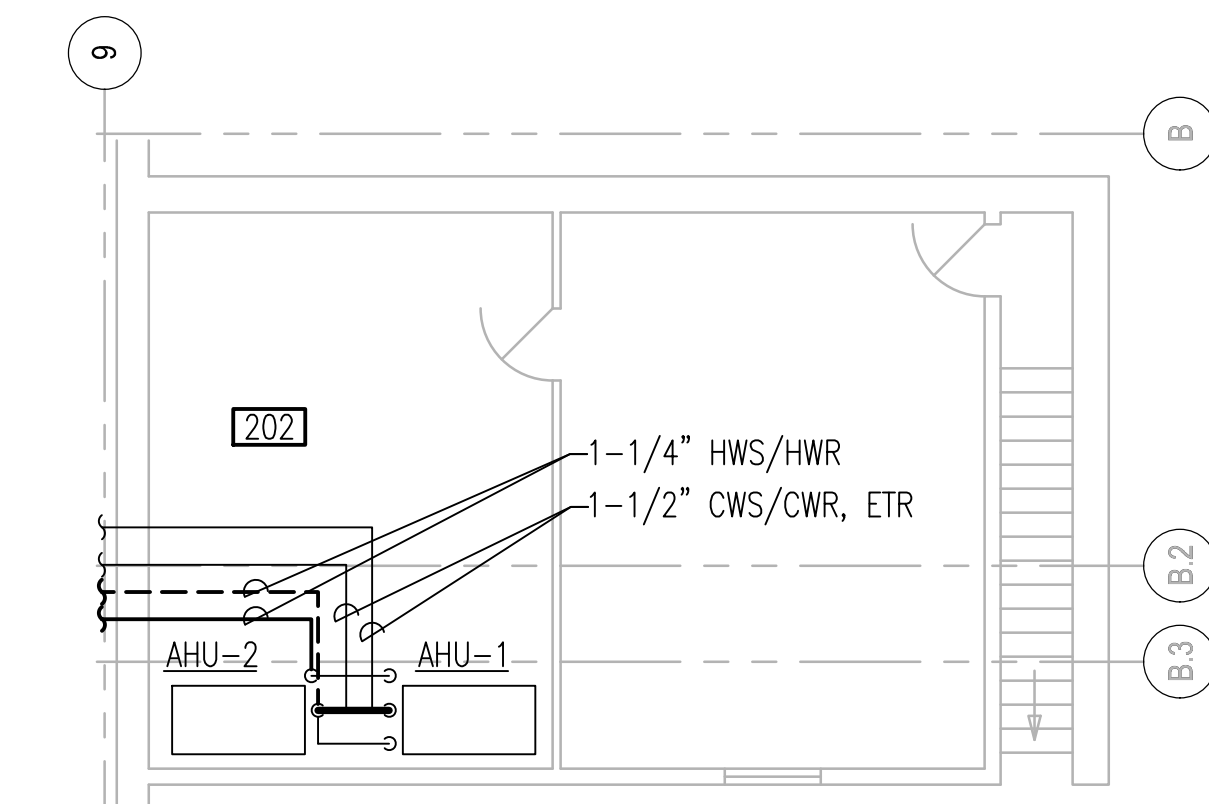
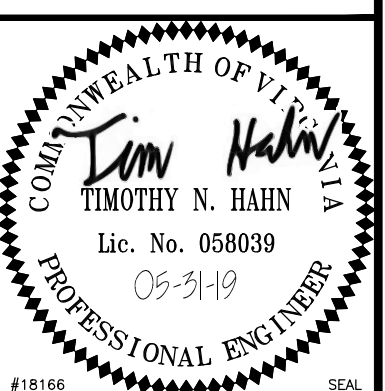
BOTTOM OF PIPING IS APPROXIMATELY 22'-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.

HYDRONIC SPECIALTIES NOTE:

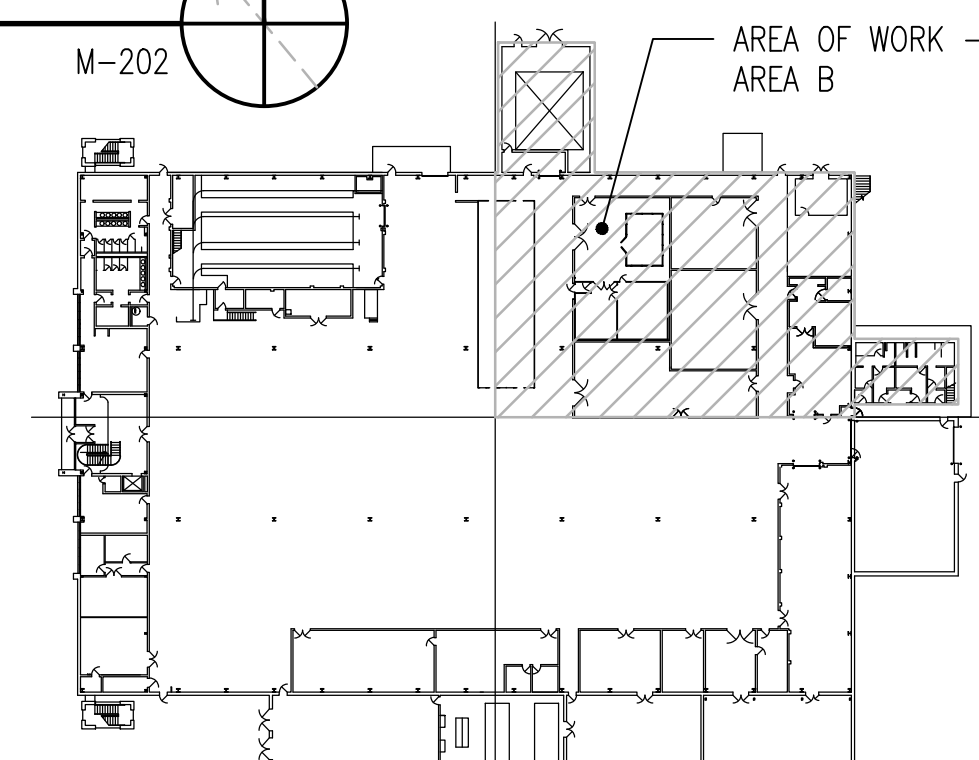
ALL AND SPECIALTIES VALVES FOR HYDRONIC ROOFTOP UNITS MUST BE LOCATED WITHIN THE PIPING VESTIBULES ON THE ROOF.

ROOM SCHEDULE

101	LIETZ LAB
136	BLASTING
138	COLD SPRAY
139	HF FURNACE
141A	AEP BOOTH CHAMBER
143	PAINTING AND MAINTENANCE AREA
143A	PAINTING AND MAINTENANCE AREA
202	HYGIENE ADDITION MECHANICAL
1033	CLEAN ROOM
1033A	CLEAN ROOM
1033B	CLEAN ROOM

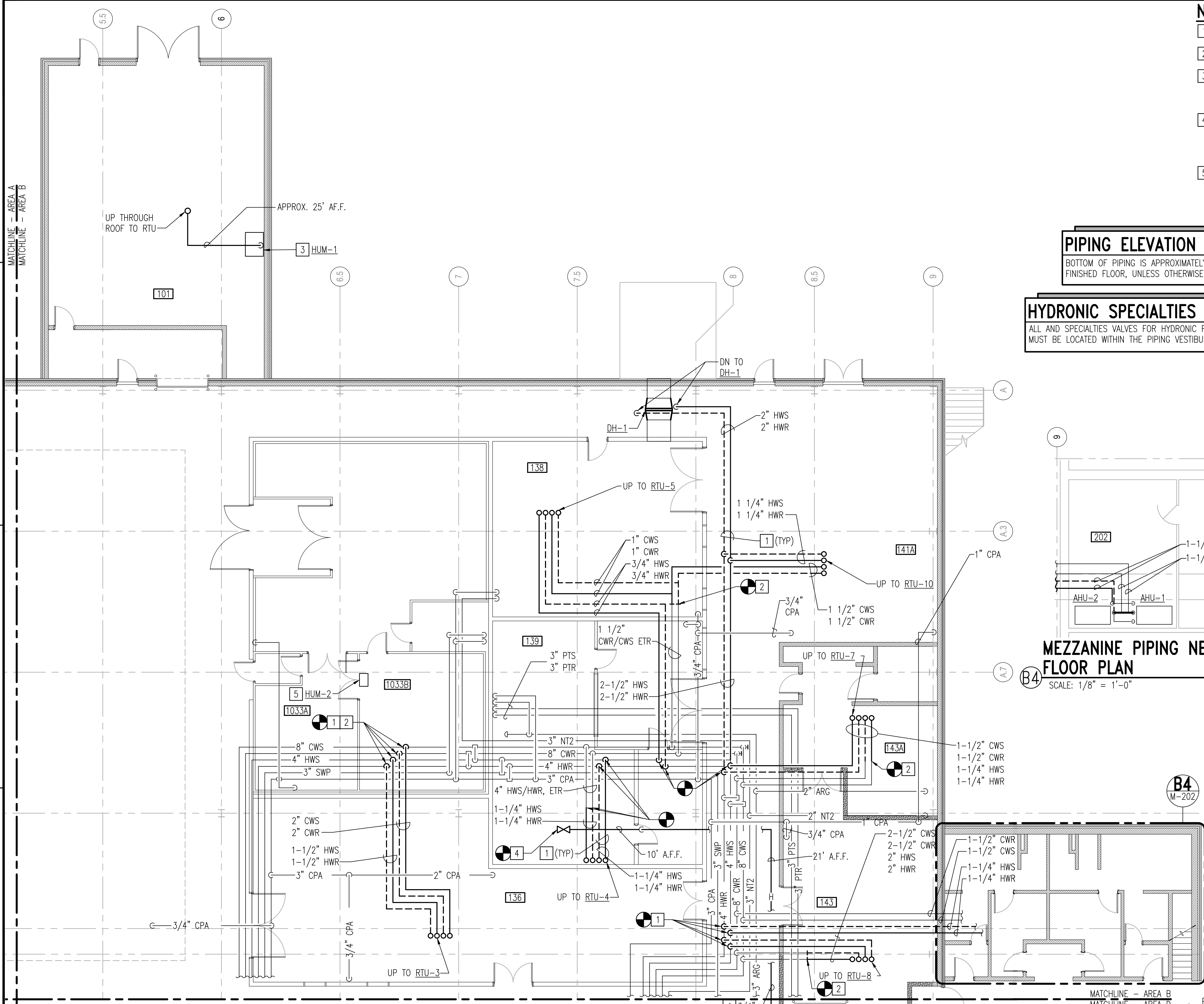
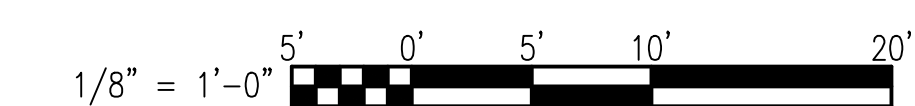


MEZZANINE PIPING NEW WORK FLOOR PLAN
SCALE: 1/8" = 1'-0"



KEY PLAN
NOT TO SCALE

GRAPHIC SCALE:



MECHANICAL PIPING PARTIAL FLOOR PLAN - AREA B

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

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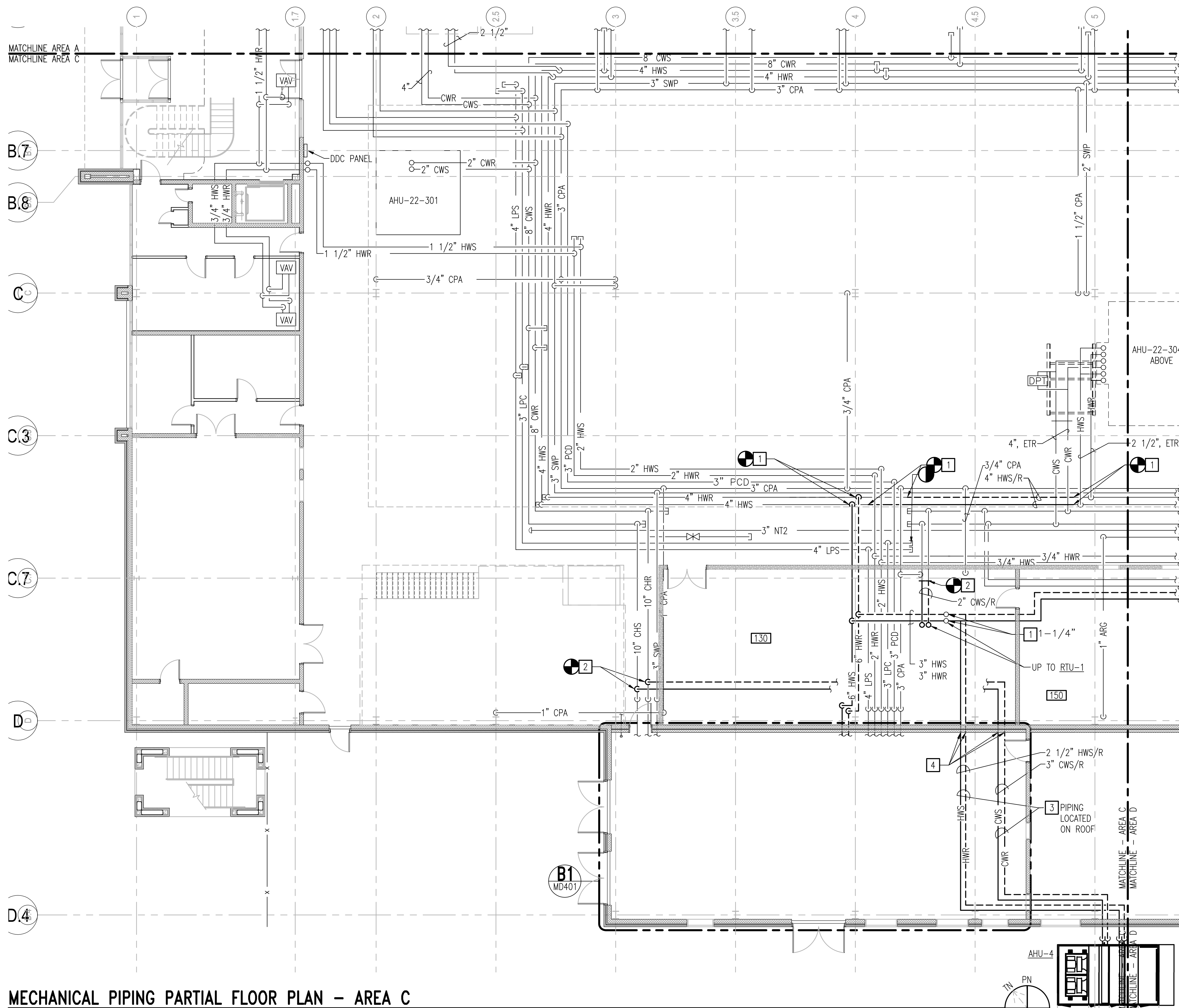
APPROVED: _____
 PER COMMANDER NAVFAC
 ACTIVITY: _____
 SATISFACTORY TO: _____
 DES: TNH | DRW: MTF | CHK: JAK

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225**
 MECHANICAL PIPING PARTIAL FLOOR PLANS - AREA B

SCALE: AS NOTED
 PROJECT NO.: ST-14507A
 MAXIMO WORK ORDER NO.: 6878897
 NAVFAC DRAWING NO.: 12782439
 SHEET 38 OF 68
M-202
 DRAWN/REVISION: 10 MAY 2014

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NEW WORK NOTES

- 1 PROVIDE HWS/HWR PIPING, INSULATION, HANGERS, AND SUPPORTS COMPLETE.
- 2 PROVIDE CWS/CWR PIPING, INSULATION, HANGERS, AND SUPPORTS COMPLETE.
- 3 PROVIDE ELECTRIC HEAT TAPE FOR PIPING LOCATED OUTDOORS.
- 4 REFER TO MECHANICAL DETAILS AND SPECIFICATIONS FOR PENETRATION REQUIREMENTS.

HYDRONIC SPECIALTIES NOTE:

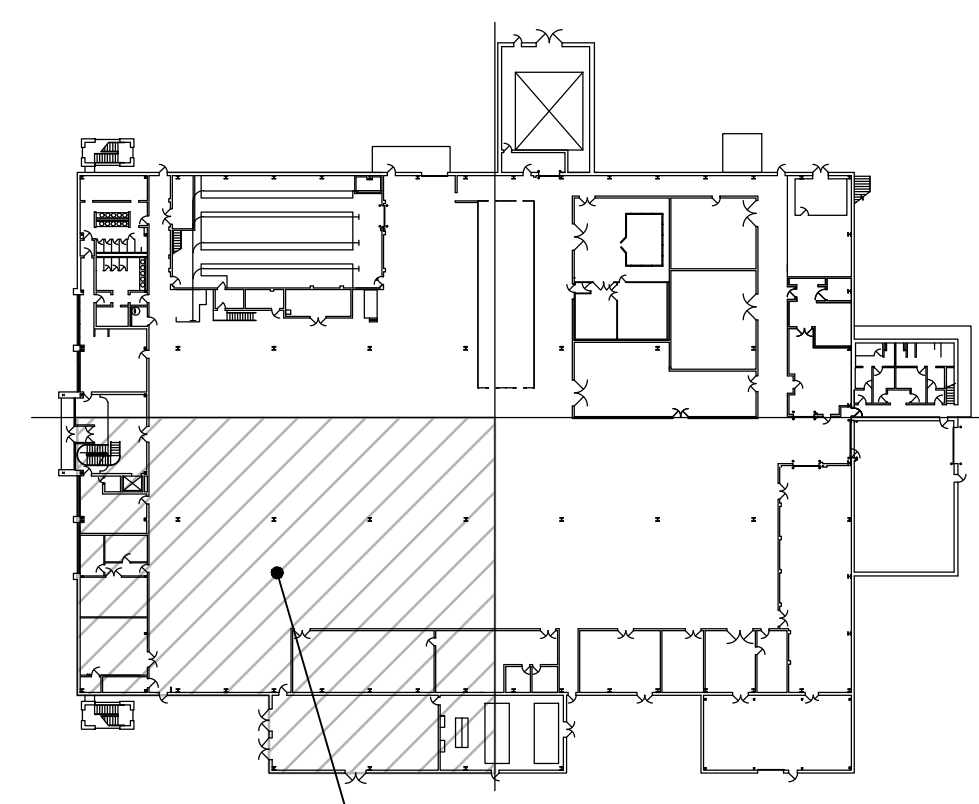
ALL AND SPECIALTIES VALVES FOR HYDRONIC ROOFTOP UNITS MUST BE LOCATED WITHIN THE PIPING VESTIBULES ON THE ROOF.

PIPING ELEVATION NOTE:

BOTTOM OF PIPING IS APPROXIMATELY 22'-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.

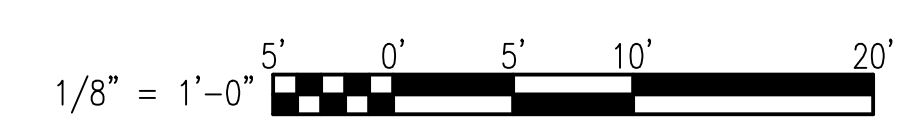
ROOM SCHEDULE

130	MANUAL GRINDING STATION
150	QE INSPECTION OFFICE



KEY PLAN
NOT TO SCALE

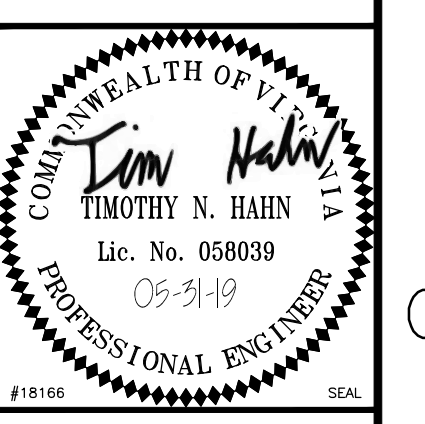
GRAPHIC SCALE:



MECHANICAL PIPING PARTIAL FLOOR PLAN - AREA C

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

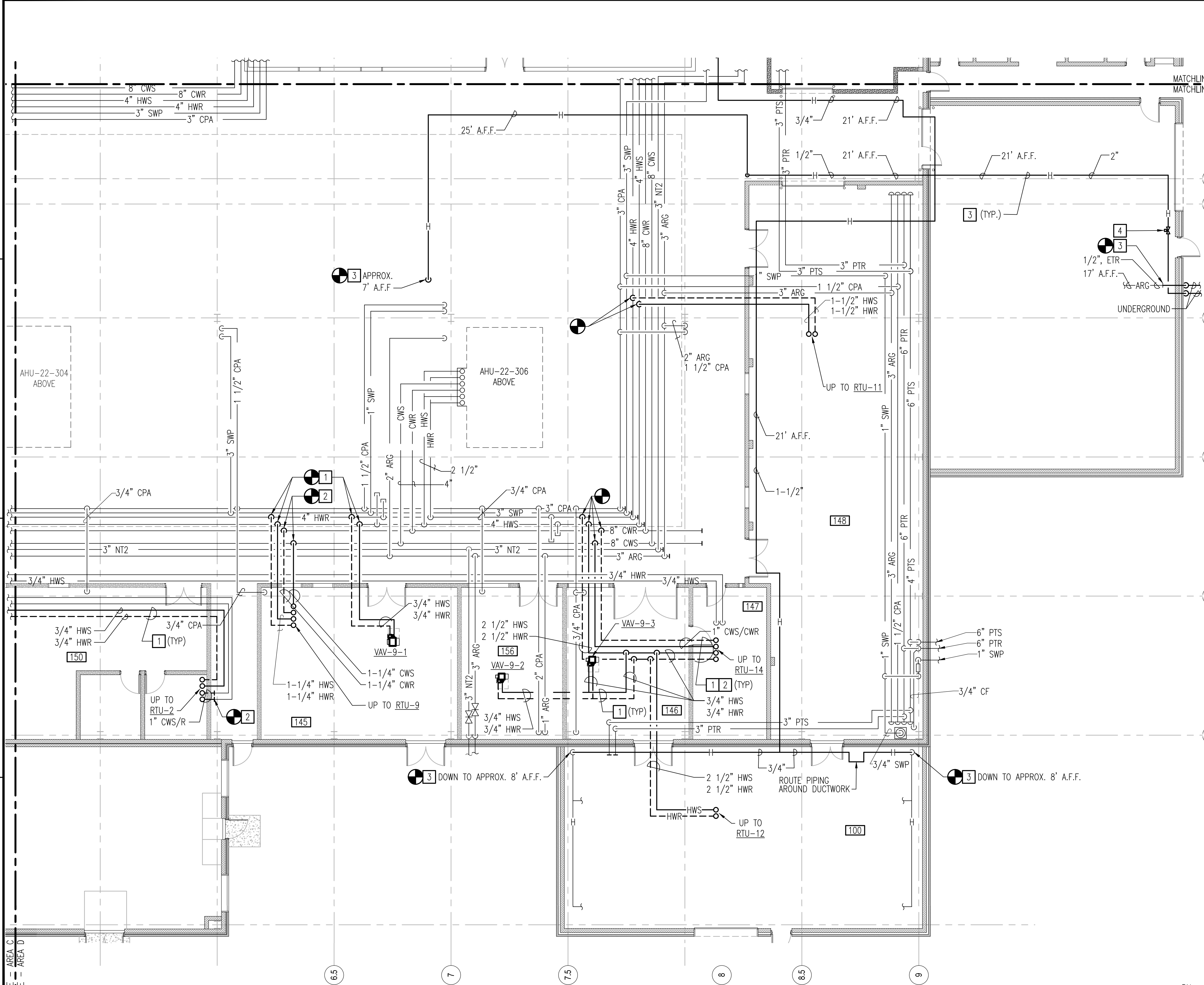
NO.	DATE	DESCRIPTION	APPR.



APPROVED	A/E INFO
FOR COMMANDER NAVFAC	ACTIVITY
SATISFACTORY TO	DES: TNH DRW: MTF CHK: JAK

U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
MECHANICAL PIPING PARTIAL FLOOR PLAN - AREA C

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO.: 6878897
NAVFAC DRAWING NO.: 12782440
SHEET 39 OF 68
M-203
DRAWN/REVISED: 10 MAY 2014



NEW WORK NOTES

- 1 PROVIDE HWS/HWR PIPING, INSULATION, HANGERS, AND SUPPORTS COMPLETE.
- 2 PROVIDE CWS/CWR PIPING, INSULATION, HANGERS, AND SUPPORTS COMPLETE.
- 3 PROVIDE HYDROGEN AND ARGON PIPING, HANGERS, AND SUPPORTS TO LIMIT INDICATED COMPLETE. DIMENSIONS SHOWN ARE FOR REFERENCE ONLY. NEW PIPING MUST MATCH EXISTING PIPE SIZES DOCUMENTED DURING DEMOLITION PHASE. PROVIDE ISOLATION VALVE AT EACH POINT OF NEW CONNECTION.
- 4 PROVIDE AUTOMATIC SHUT-OFF VALVE AND CONTROL WIRING COMPLETE. VALVE SHALL CLOSE UPON ALARM ACTIVATION FROM EXISTING DRAGER SYSTEM.

ROOM SCHEDULE

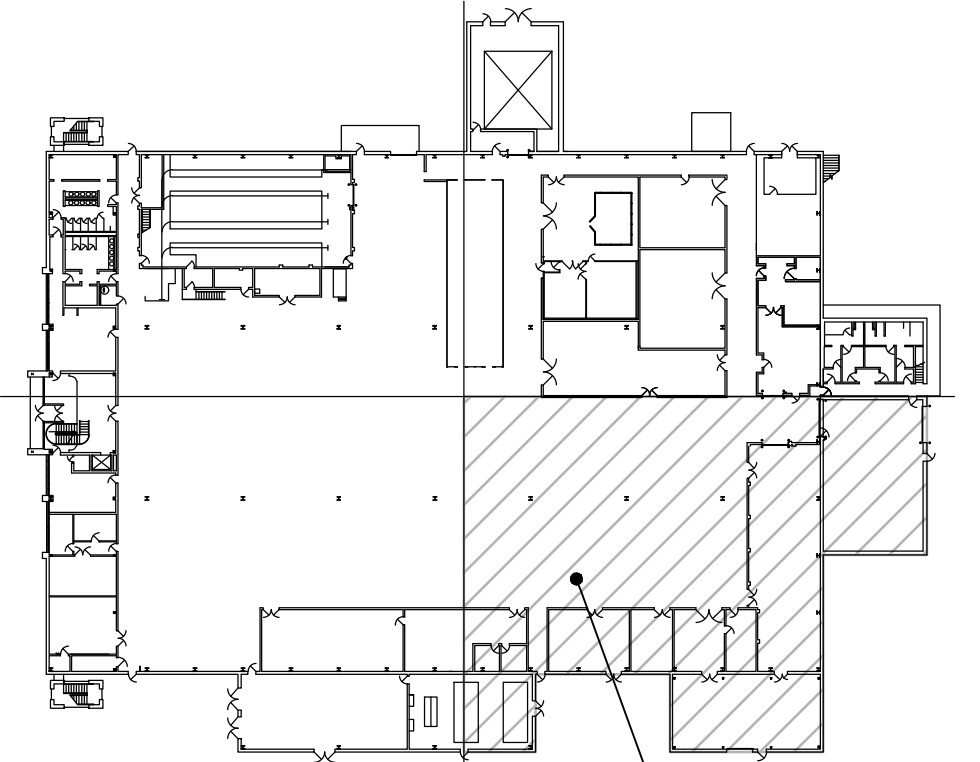
100	HEAT TREAT ADDITION FURNACE
145	HVOF AND PLASMA SPRAY
146	HEAT TREAT STAGING
147	HEAT TREAT CONTROL
148	HEAT TREAT FURNACE
150	QE INSPECTION OFFICE
156	GLOVE BOX

PIPING ELEVATION NOTE:

BOTTOM OF PIPING IS APPROXIMATELY 22'-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.

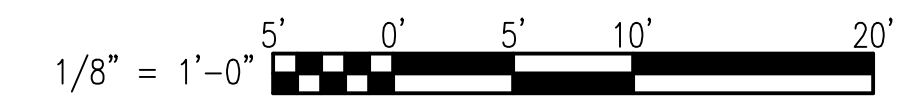
HYDRONIC SPECIALTIES NOTE:

ALL AND SPECIALTIES VALVES FOR HYDRONIC ROOFTOP UNITS MUST BE LOCATED WITHIN THE PIPING VESTIBULES ON THE ROOF.



KEY PLAN
NOT TO SCALE

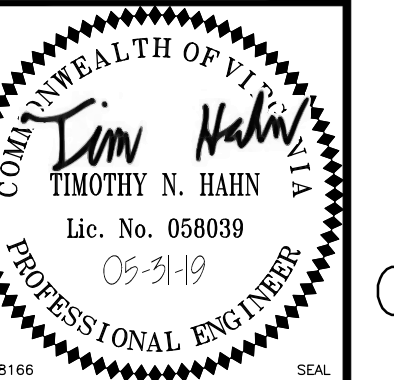
GRAPHIC SCALE:



MECHANICAL PIPING PARTIAL FLOOR PLAN - AREA D

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

DATE	DESCRIPTION	APPR



APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO
DES TNH DRAW MTF CHK JAK

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225**
 MECHANICAL PIPING PARTIAL FLOOR PLAN - AREA D

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782441
SHEET 40 OF 68
M-204

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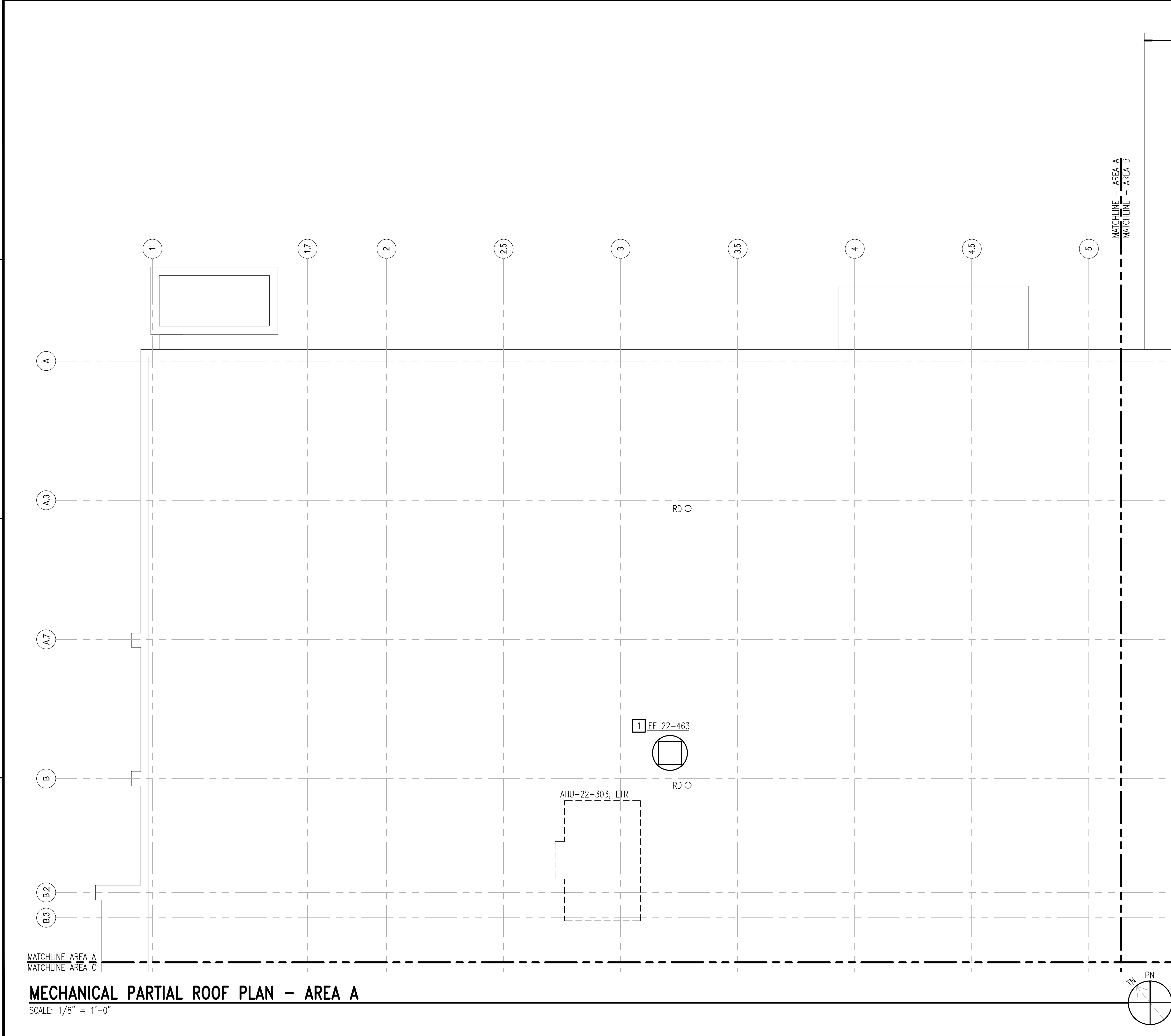
UNCLASSIFIED//FOR OFFICIAL USE ONLY

D

C

B

A



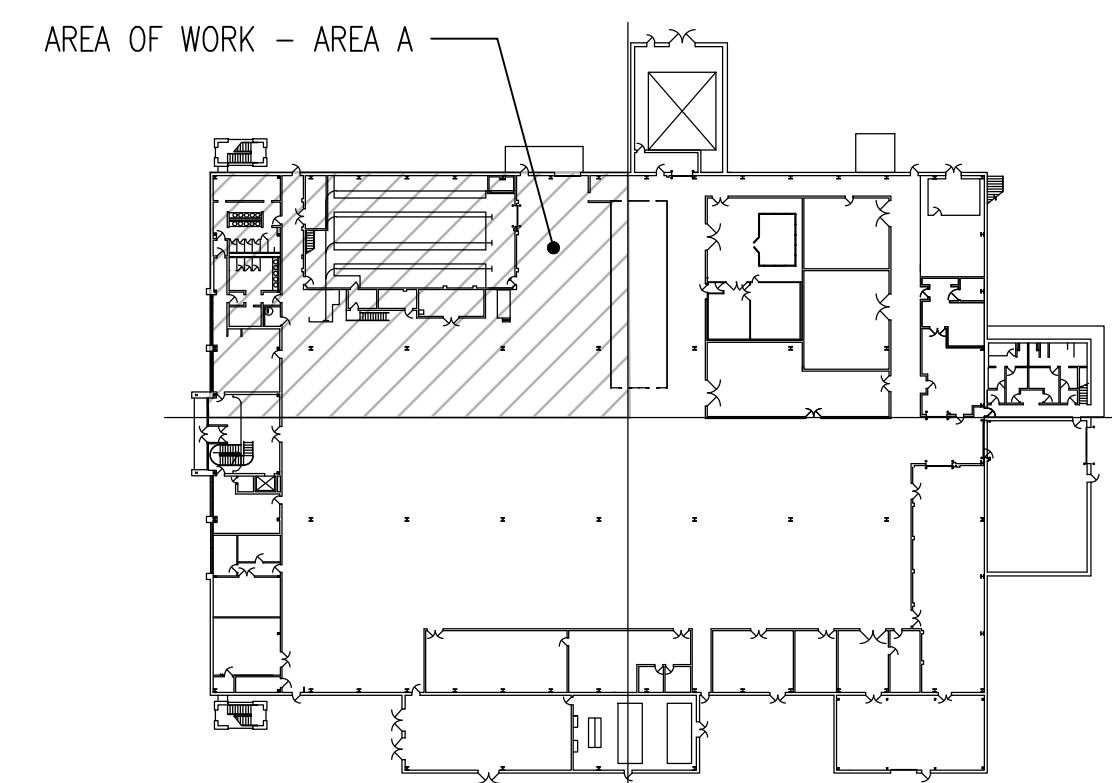
NEW WORK NOTES

- 1 PROVIDE EXHAUST FAN, CURB ADAPTER, AND ASSOCIATED APPURTENANCES COMPLETE.

ROOF CURB ADAPTER NOTE:

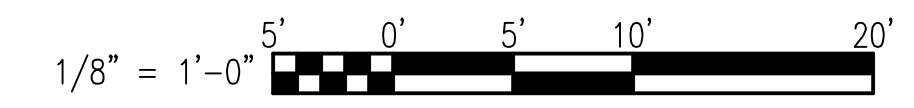
ALL EQUIPMENT INSTALLED ON THE ROOF MUST BE CAPABLE OF WITHSTANDING AN ULTIMATE WIND SPEED OF 130 MILES PER HOUR. SUBMIT PROFESSIONAL ENGINEER SEALED AND SIGNED CALCULATIONS FOR REVIEW AND APPROVAL. FOR EQUIPMENT UTILIZING CURB ADAPTERS, THE INSTALLATION AND SUPPORTING CALCULATIONS AND DETAILS SHALL INCLUDE THE CONNECTION BETWEEN THE CURB ADAPTER AND EQUIPMENT. INSTALL ROOF CURB ADAPTERS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

AFTER THE EQUIPMENT HAS BEEN REMOVED AND PRIOR TO INSTALLATION OF NEW EQUIPMENT, CONTRACTOR SHALL NOTIFY THE COFR OF ANY DEFECTIVE WOOD OR OTHER STRUCTURAL MEMBERS WITHIN THE EXISTING ROOF CURBS.



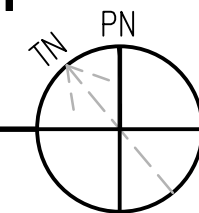
KEY PLAN
NOT TO SCALE

GRAPHIC SCALE:



MECHANICAL PARTIAL ROOF PLAN - AREA A

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



DATE	DESCRIPTION	APPR



APPROVED

PER COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO

DES: TNH | DRW: MTF | CHK: JAK

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225**
 MECHANICAL PARTIAL ROOF PLAN - AREA A

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782442
SHEET 41 OF 68
M-301

DRAWING REVISION: 10 MAY 2014

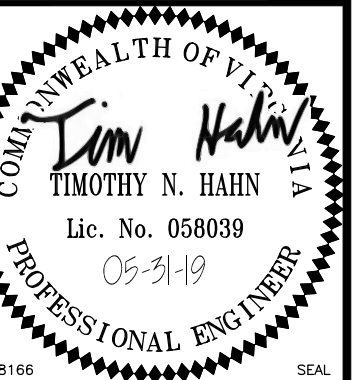
NEW WORK NOTES

- 1 PROVIDE ROOFTOP UNIT, INSULATED CURB ADAPTER, AND ASSOCIATED APPURTENANCES COMPLETE. CONNECT DRAIN OUTLET TO EXISTING CONDENSATE DRAIN PIPE.
- 2 PROVIDE EXHAUST FAN, CURB ADAPTER, AND ASSOCIATED APPURTENANCES COMPLETE.
- 3 PROVIDE AIR COOLED CONDENSING UNIT AND SUPPORTS COMPLETE.
- 4 PROVIDE RS/RL PIPING, INSULATION, JACKETING, AND SUPPORTS COMPLETE.
- 5 PROVIDE ROOFTOP UNIT, ROOFCURB, AND ASSOCIATED APPURTENANCES COMPLETE.
- 6 PROVIDE PVC CONDENSATE PIPE AND SUPPORTS COMPLETE. ROUTE CONDENSATE PIPE TO NEAREST ROOF DRAIN AND TERMINATE WITHIN ONE FOOT OF THE ROOF DRAIN. SUPPORTS SHALL BE PROVIDED ON BOTH SIDES OF EVERY ELBOW AND SPACED AT A MAXIMUM OF 10 FEET.
- 7 PROVIDE PVC CONDENSATE PIPE AND SUPPORTS COMPLETE. ROUTE CONDENSATE PIPE TO WITHIN ONE FOOT OF DOWNSPOUT. SUPPORTS SHALL BE PROVIDED ON BOTH SIDES OF EVERY ELBOW AND SPACED AT A MAXIMUM OF 10 FEET.

ROOF CURB ADAPTER NOTE:

ALL EQUIPMENT INSTALLED ON THE ROOF MUST BE CAPABLE OF WITHSTANDING AN ULTIMATE WIND SPEED OF 130 MILES PER HOUR. SUBMIT PROFESSIONAL ENGINEER SEALED AND SIGNED CALCULATIONS FOR REVIEW AND APPROVAL. FOR EQUIPMENT UTILIZING CURB ADAPTERS, THE INSTALLATION AND SUPPORTING CALCULATIONS AND DETAILS SHALL INCLUDE THE CONNECTION BETWEEN THE CURB ADAPTER AND EQUIPMENT. INSTALL ROOF CURB ADAPTERS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

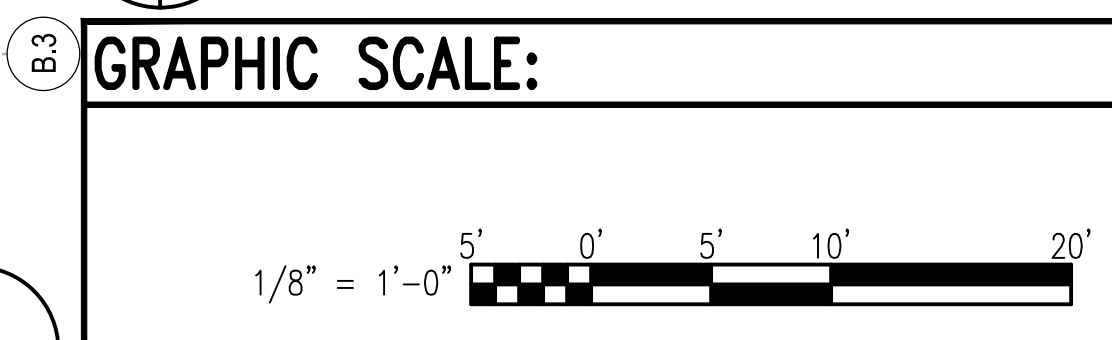
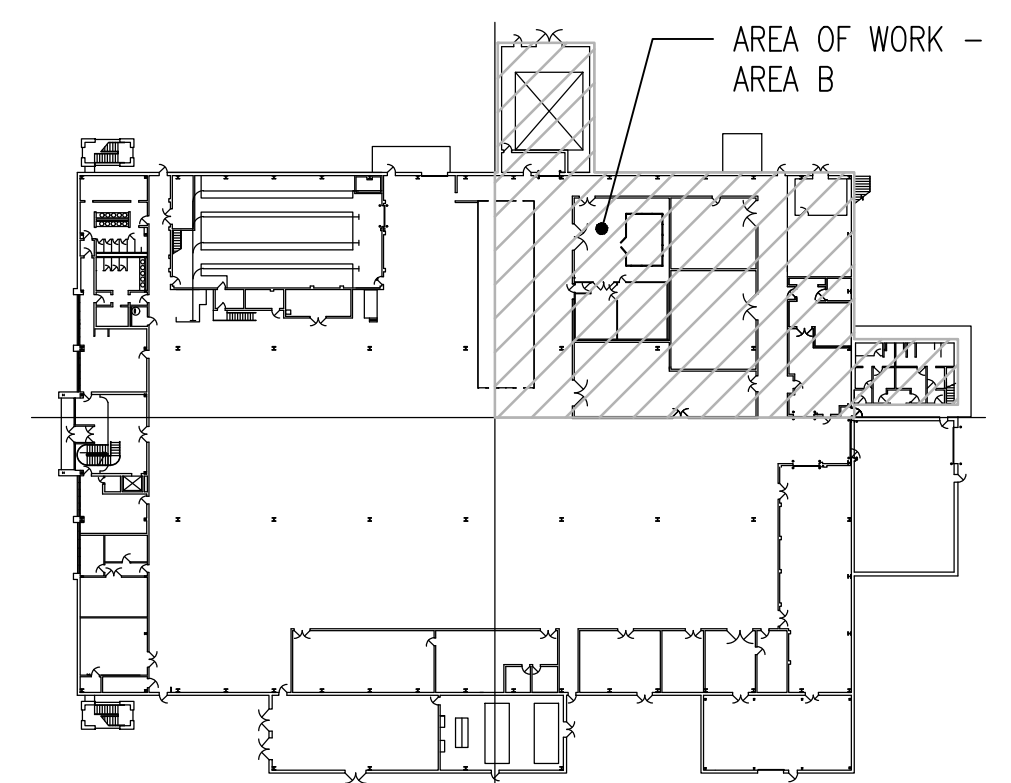
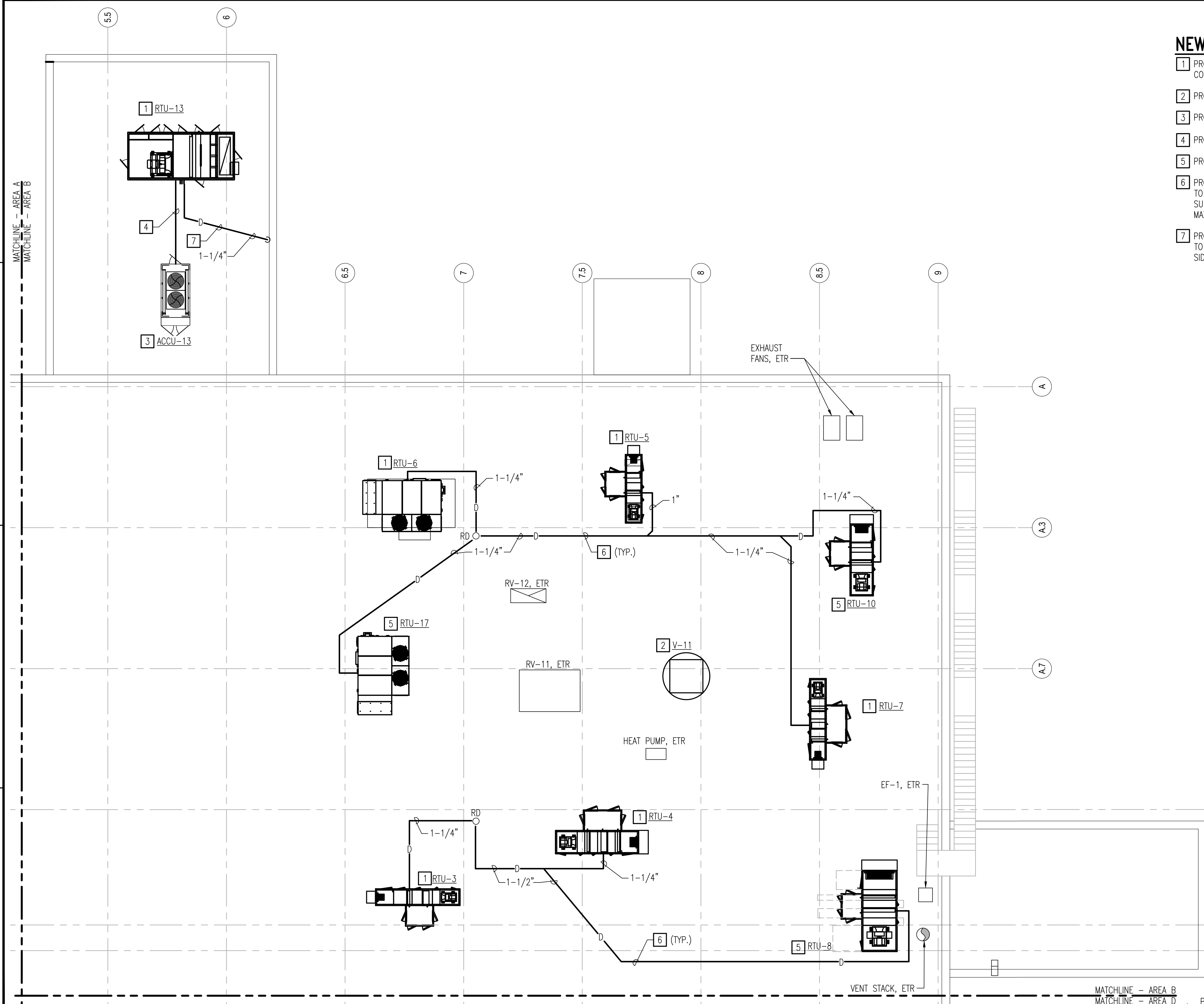
AFTER THE EQUIPMENT HAS BEEN REMOVED AND PRIOR TO INSTALLATION OF NEW EQUIPMENT, CONTRACTOR SHALL NOTIFY THE COFR OF ANY DEFECTIVE WOOD OR OTHER STRUCTURAL MEMBERS WITHIN THE EXISTING ROOF CURBS.



APPROVED	A/E INFO
FOR COMMANDER NAVFAC	ACTIVITY
SATISFACTORY TO	
DES: TNH	DRW: MTF
CHK: JAK	

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225**
 MECHANICAL PARTIAL ROOF PLAN - AREA B

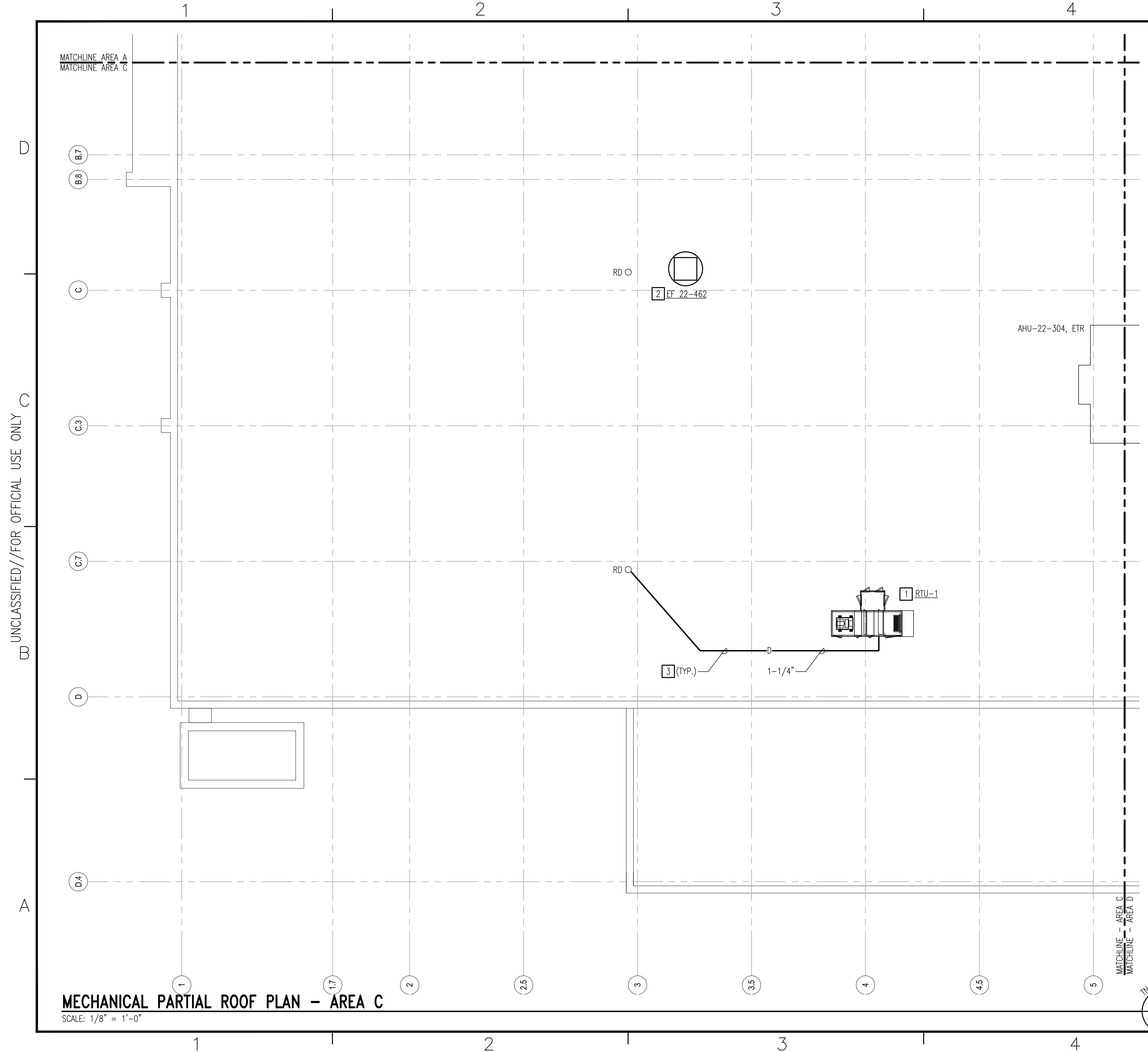
SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782443
SHEET 42 OF 68
M-302



MECHANICAL PARTIAL ROOF PLAN - AREA B
 SCALE: 1/8" = 1'-0"

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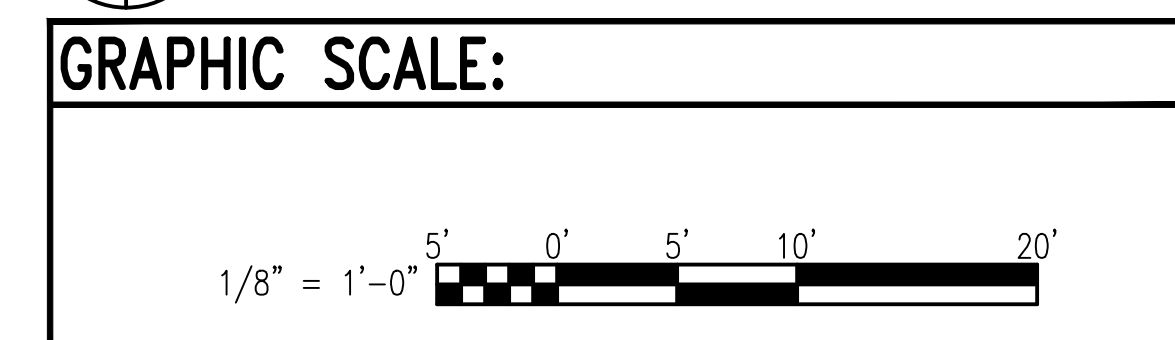
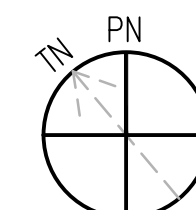
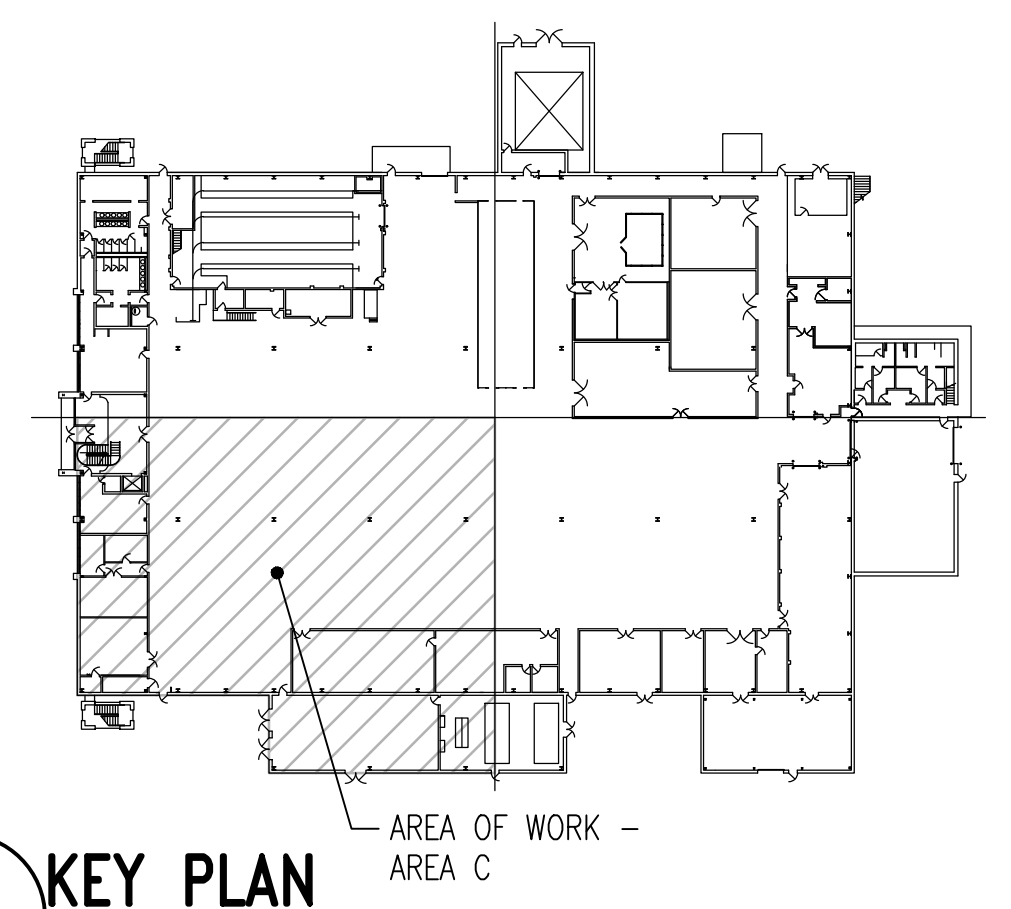


- ### NEW WORK NOTES
- 1 PROVIDE ROOFTOP UNIT, INSULATED CURB ADAPTER, AND ASSOCIATED APPURTENANCES COMPLETE.
 - 2 PROVIDE EXHAUST FAN, CURB ADAPTER, AND ASSOCIATED APPURTENANCES COMPLETE.
 - 3 PROVIDE PVC CONDENSATE PIPE AND SUPPORTS COMPLETE. ROUTE CONDENSATE PIPE TO NEAREST ROOF DRAIN AND TERMINATE WITHIN ONE FOOT OF THE ROOF DRAIN. SUPPORTS SHALL BE PROVIDED ON BOTH SIDES OF EVERY ELBOW AND SPACED AT A MAXIMUM OF 10 FEET.

ROOF CURB ADAPTER NOTE:

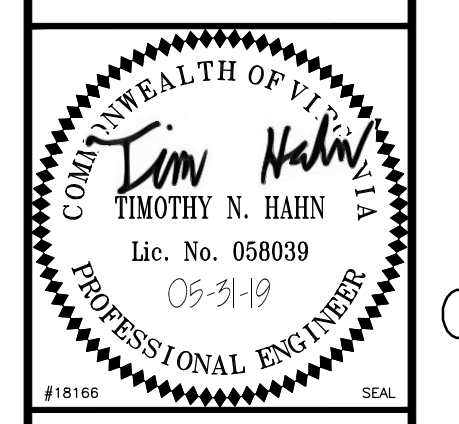
ALL EQUIPMENT INSTALLED ON THE ROOF MUST BE CAPABLE OF WITHSTANDING AN ULTIMATE WIND SPEED OF 130 MILES PER HOUR. SUBMIT PROFESSIONAL ENGINEER SEALED AND SIGNED CALCULATIONS FOR REVIEW AND APPROVAL. FOR EQUIPMENT UTILIZING CURB ADAPTERS, THE INSTALLATION AND SUPPORTING CALCULATIONS AND DETAILS SHALL INCLUDE THE CONNECTION BETWEEN THE CURB ADAPTER AND EQUIPMENT. INSTALL ROOF CURB ADAPTERS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

AFTER THE EQUIPMENT HAS BEEN REMOVED AND PRIOR TO INSTALLATION OF NEW EQUIPMENT, CONTRACTOR SHALL NOTIFY THE COFR OF ANY DEFECTIVE WOOD OR OTHER STRUCTURAL MEMBERS WITHIN THE EXISTING ROOF CURBS.



MECHANICAL PARTIAL ROOF PLAN - AREA C
SCALE: 1/8" = 1'-0"

SYN	DESCRIPTION	DATE	APPR



APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO
DES: TNH | DRW: MTF | CHK: JAK

U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
MECHANICAL PARTIAL ROOF PLAN - AREA C

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782444
SHEET 43 OF 68
M-303

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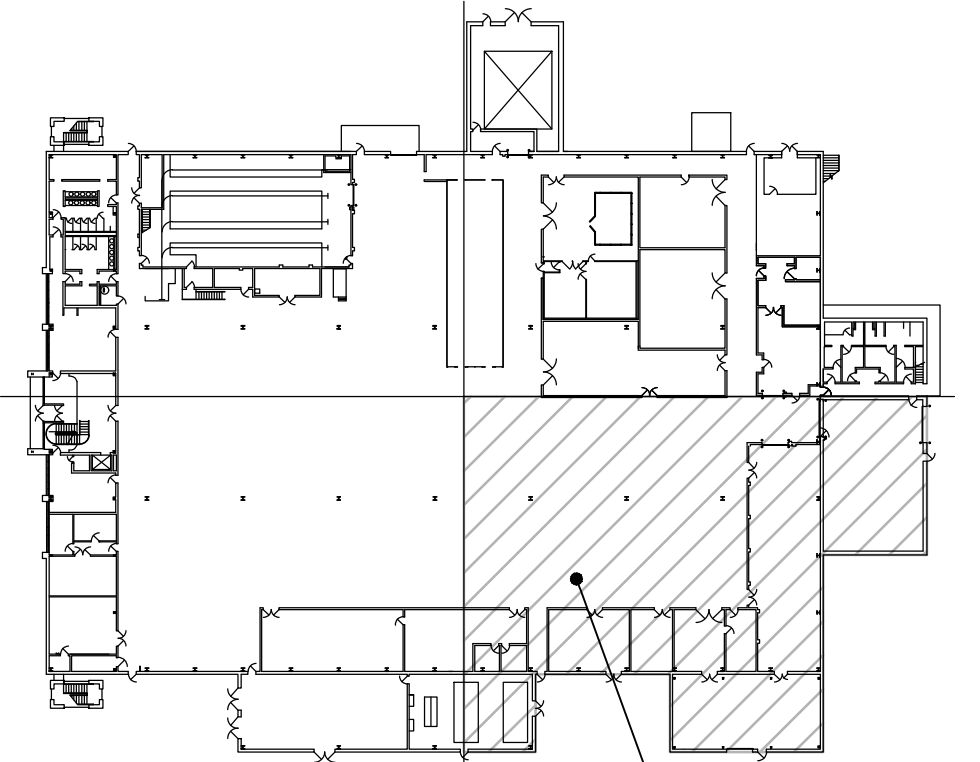
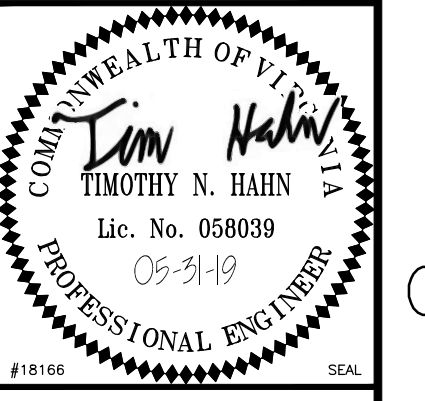
NEW WORK NOTES

- 1 PROVIDE ROOFTOP UNIT, INSULATED CURB ADAPTER, AND ASSOCIATED APPURTENANCES COMPLETE.
- 2 PROVIDE EXHAUST FAN, CURB ADAPTER, AND ASSOCIATED APPURTENANCES COMPLETE.
- 3 PROVIDE ROOFTOP UNIT, ROOF CURB, AND ASSOCIATED APPURTENANCES COMPLETE.
- 4 PROVIDE RS/RL PIPING, INSULATION, JACKETING, AND SUPPORTS COMPLETE.
- 5 PROVIDE UTILITY SET FAN AND ASSOCIATED APPURTENANCES COMPLETE. MOUNT FAN ON EXISTING SUPPORTS. INSTALL DISCHARGE DUCT SALVAGED FROM DEMOLITION PHASE. PROVIDE DUCTWORK TRANSITION AS REQUIRED.
- 6 PROVIDE PVC CONDENSATE PIPE AND SUPPORTS COMPLETE. ROUTE CONDENSATE PIPE TO NEAREST ROOF DRAIN AND TERMINATE WITHIN ONE FOOT OF THE ROOF DRAIN. SUPPORTS SHALL BE PROVIDED ON BOTH SIDES OF EVERY ELBOW AND SPACED AT A MAXIMUM OF 10 FEET.

ROOF CURB ADAPTER NOTE:

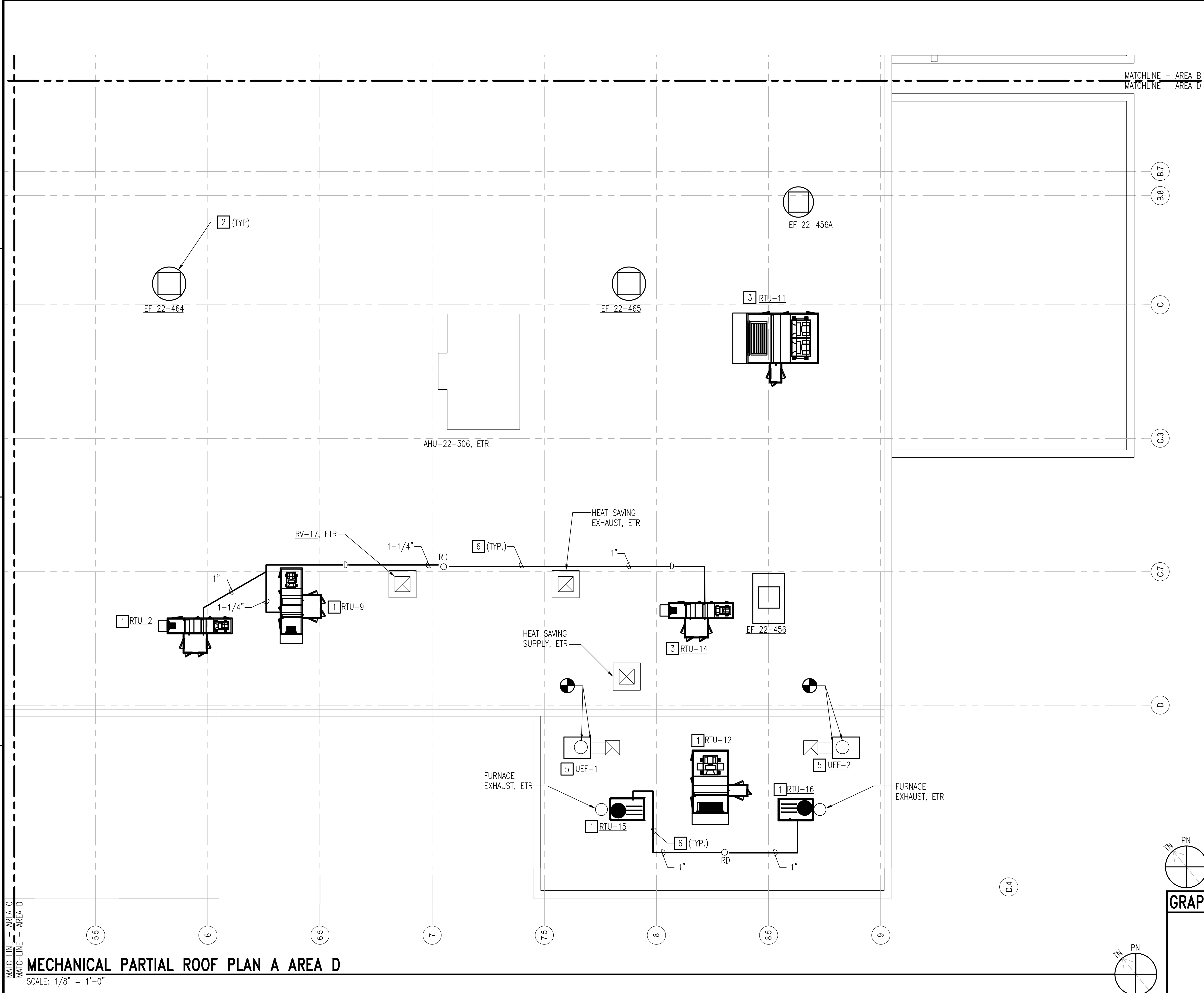
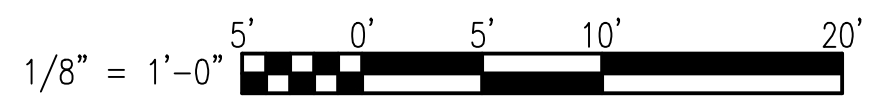
ALL EQUIPMENT INSTALLED ON THE ROOF MUST BE CAPABLE OF WITHSTANDING AN ULTIMATE WIND SPEED OF 130 MILES PER HOUR. SUBMIT PROFESSIONAL ENGINEER SEALED AND SIGNED CALCULATIONS FOR REVIEW AND APPROVAL. FOR EQUIPMENT UTILIZING CURB ADAPTERS, THE INSTALLATION AND SUPPORTING CALCULATIONS AND DETAILS SHALL INCLUDE THE CONNECTION BETWEEN THE CURB ADAPTER AND EQUIPMENT. INSTALL ROOF CURB ADAPTERS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

AFTER THE EQUIPMENT HAS BEEN REMOVED AND PRIOR TO INSTALLATION OF NEW EQUIPMENT, CONTRACTOR SHALL NOTIFY THE COTR OF ANY DEFECTIVE WOOD OR OTHER STRUCTURAL MEMBERS WITHIN THE EXISTING ROOF CURBS.



KEY PLAN
NOT TO SCALE

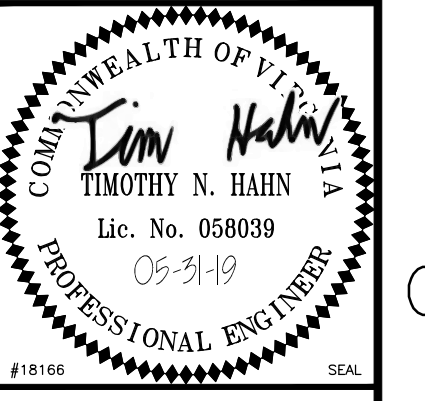
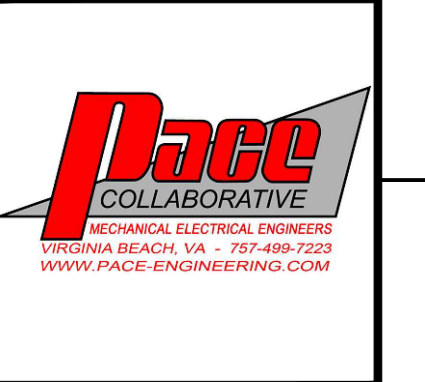
GRAPHIC SCALE:



MECHANICAL PARTIAL ROOF PLAN A AREA D

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

NO.	DATE	DESCRIPTION	BY	CHK	APPR



APPROVED
PER COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO
DES TNH | DRW MTF | CHK JAK

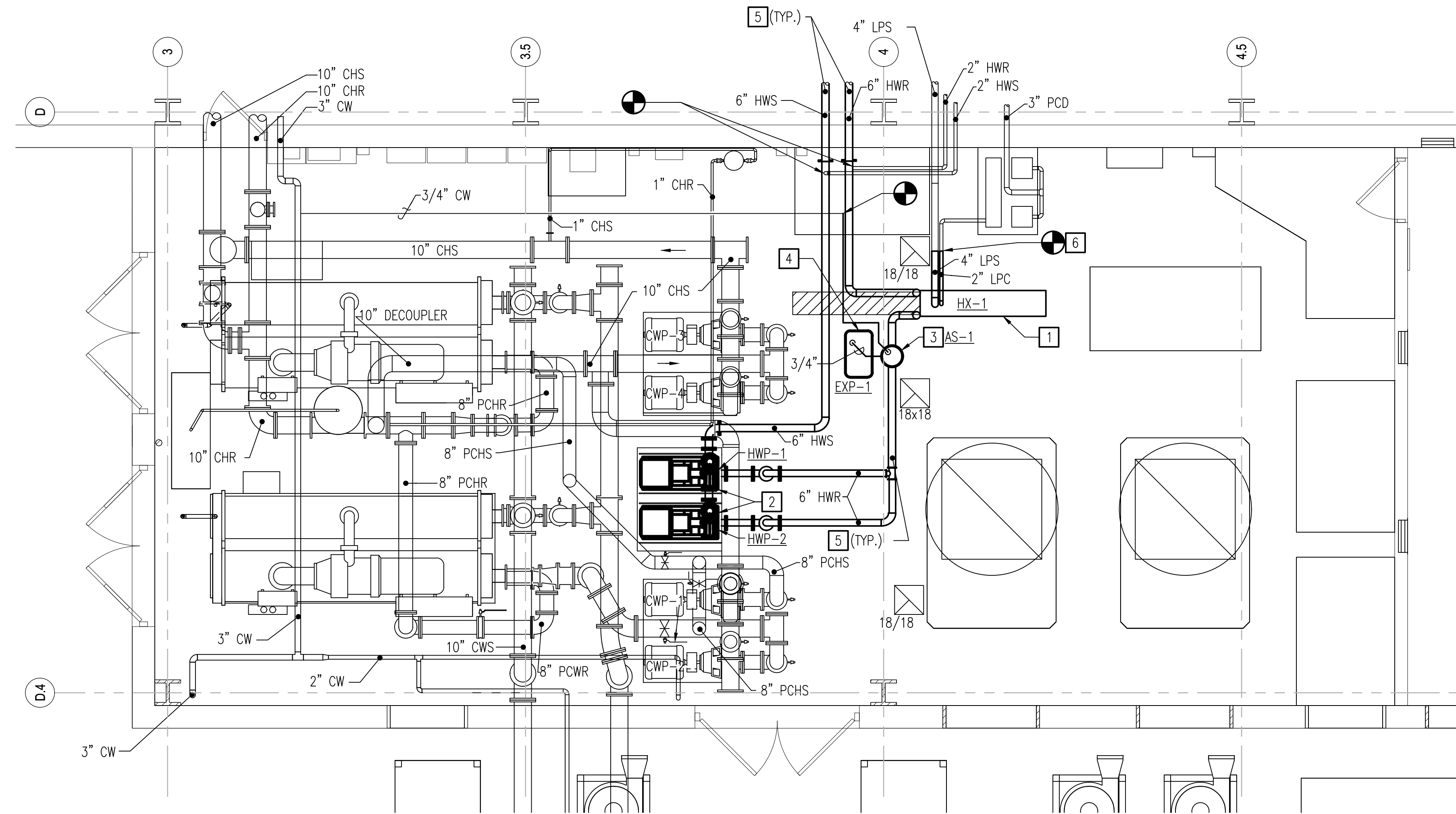
U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
MECHANICAL PARTIAL ROOF PLAN A AREA D

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782445
SHEET 44 OF 68
M-304

DRAWN BY: JAK
CHECKED BY: MTF
DATE: 10 MAY 2014

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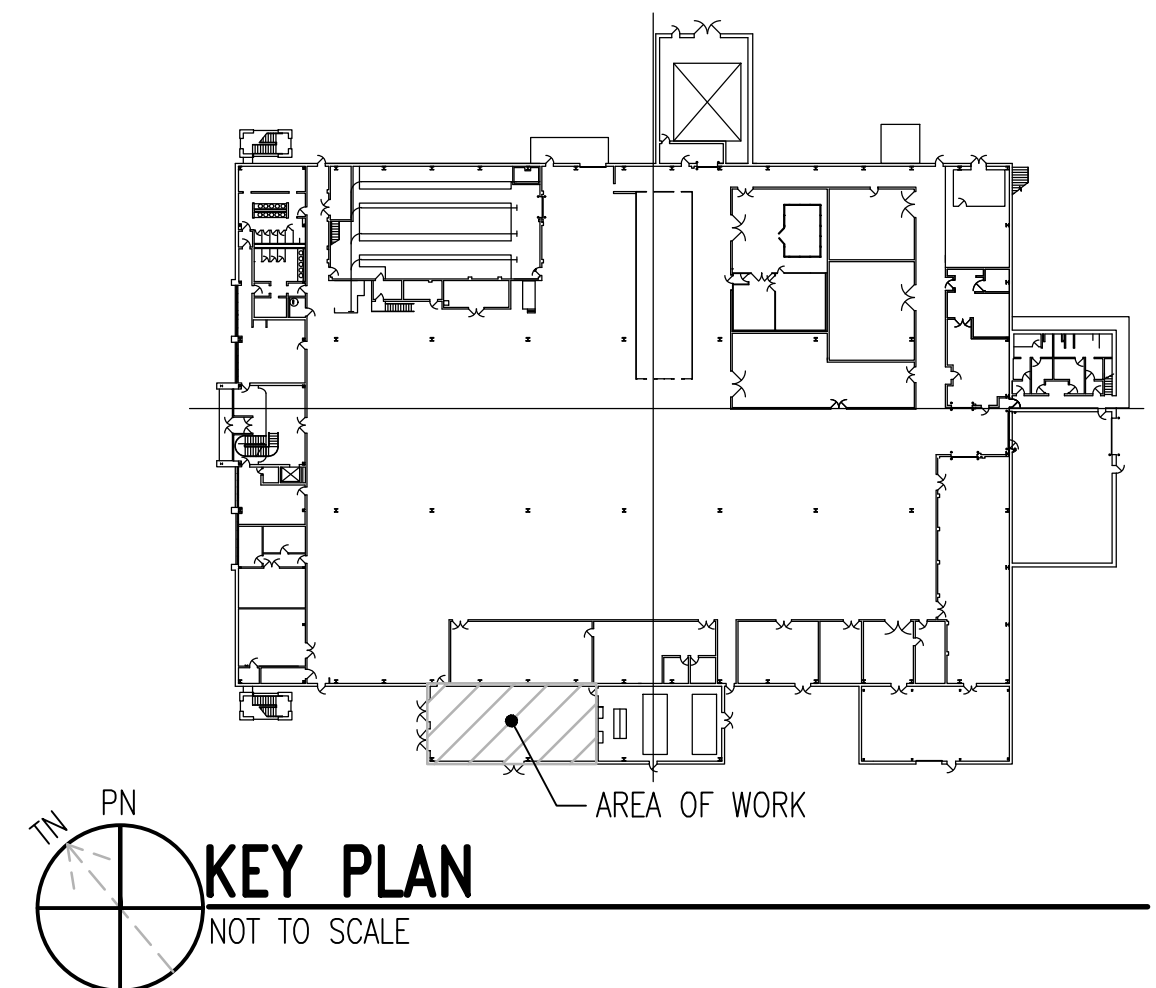
B1 MECHANICAL ROOM ENLARGED PLAN
 M-203 SCALE: 1/4" = 1'-0"

NEW WORK NOTES

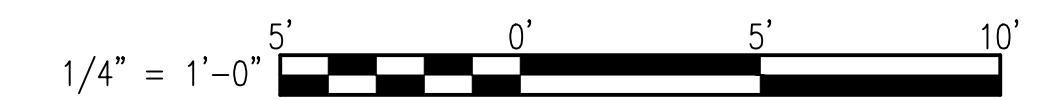
- 1 PROVIDE HEAT EXCHANGER AND ASSOCIATED APPURTENANCES COMPLETE.
- 2 PROVIDE HOT WATER PUMP COMPLETE.
- 3 PROVIDE AIR SEPARATOR AND SUPPORTS COMPLETE.
- 4 PROVIDE EXPANSION TANK AND ASSOCIATED PIPING COMPLETE.
- 5 PROVIDE HWS/HWR PIPING, INSULATION, HANGERS AND SUPPORTS COMPLETE.
- 6 PROVIDE LPS/LPC PIPING, INSULATION, PIPING SPECIALTIES, HANGERS, AND SUPPORTS COMPLETE.

PIPING ELEVATION NOTE:

BOTTOM OF PIPING MUST BE EQUAL TO OR HIGHER THAN 9'-0" ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED.



GRAPHIC SCALE:



APPR.	DATE
DESCRIPTION	DATE



APPROVED

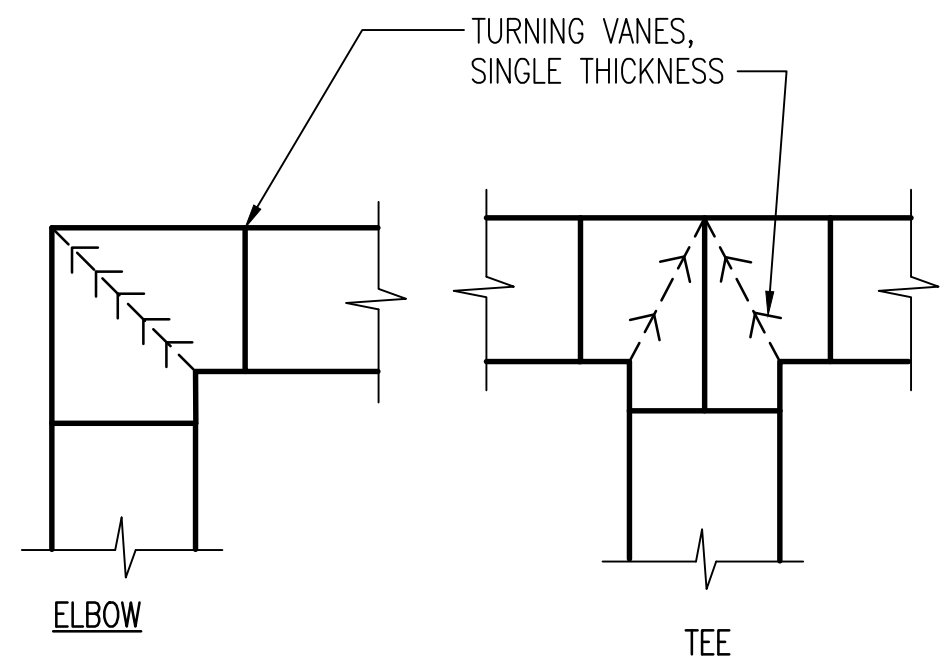
FOR COMMANDER NAVFAC

ACTIVITY

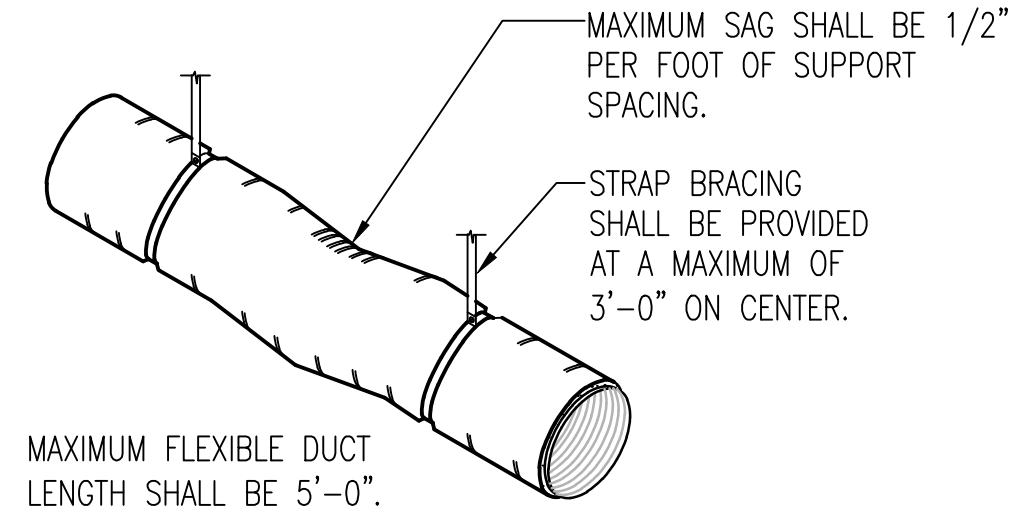
SATISFACTORY TO:
DES: TNH | DRW: MTF | CHK: JAK

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225**
 MECHANICAL ROOM ENLARGED PLAN

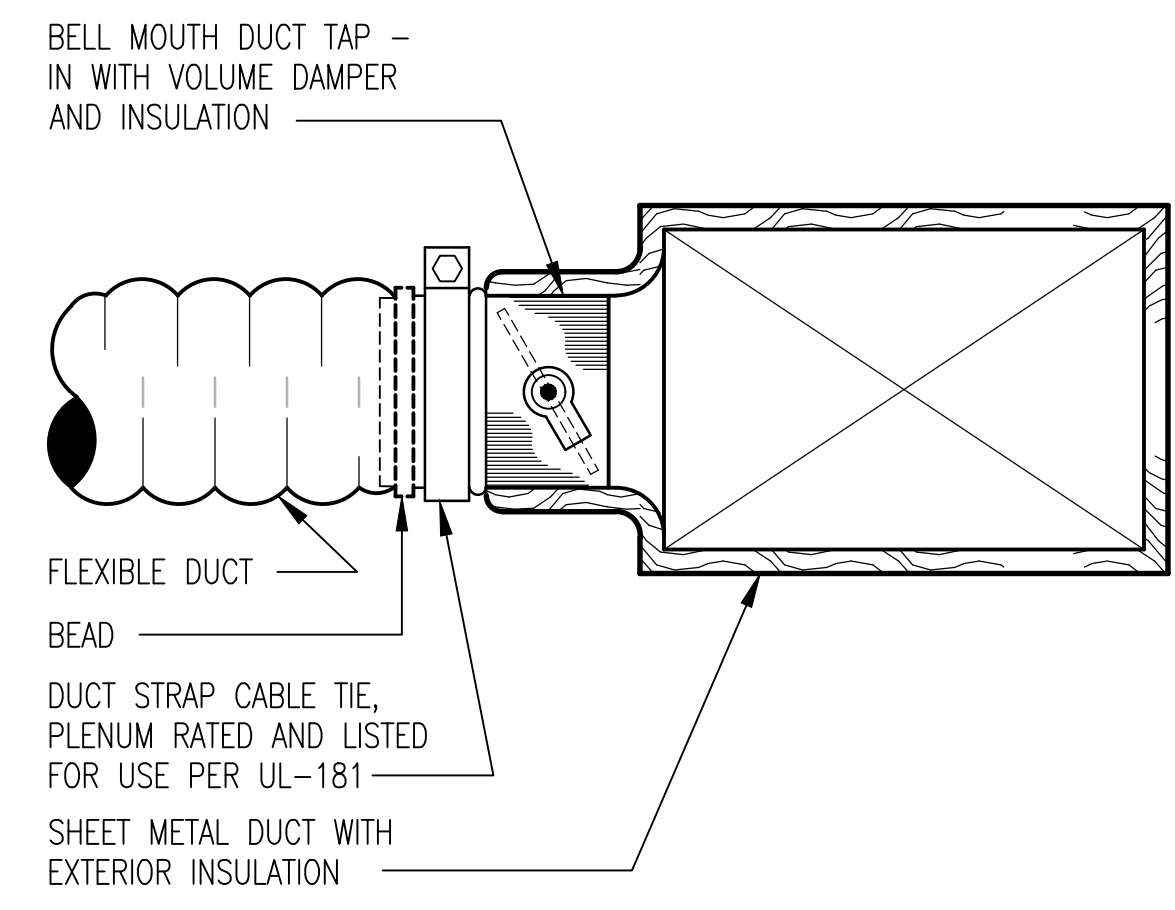
SCALE: AS NOTED
 PROJECT NO.: ST-14507A
 MAXIMO WORK ORDER NO. 6878897
 NAVFAC DRAWING NO. 12782446
 SHEET 45 OF 68
M-401



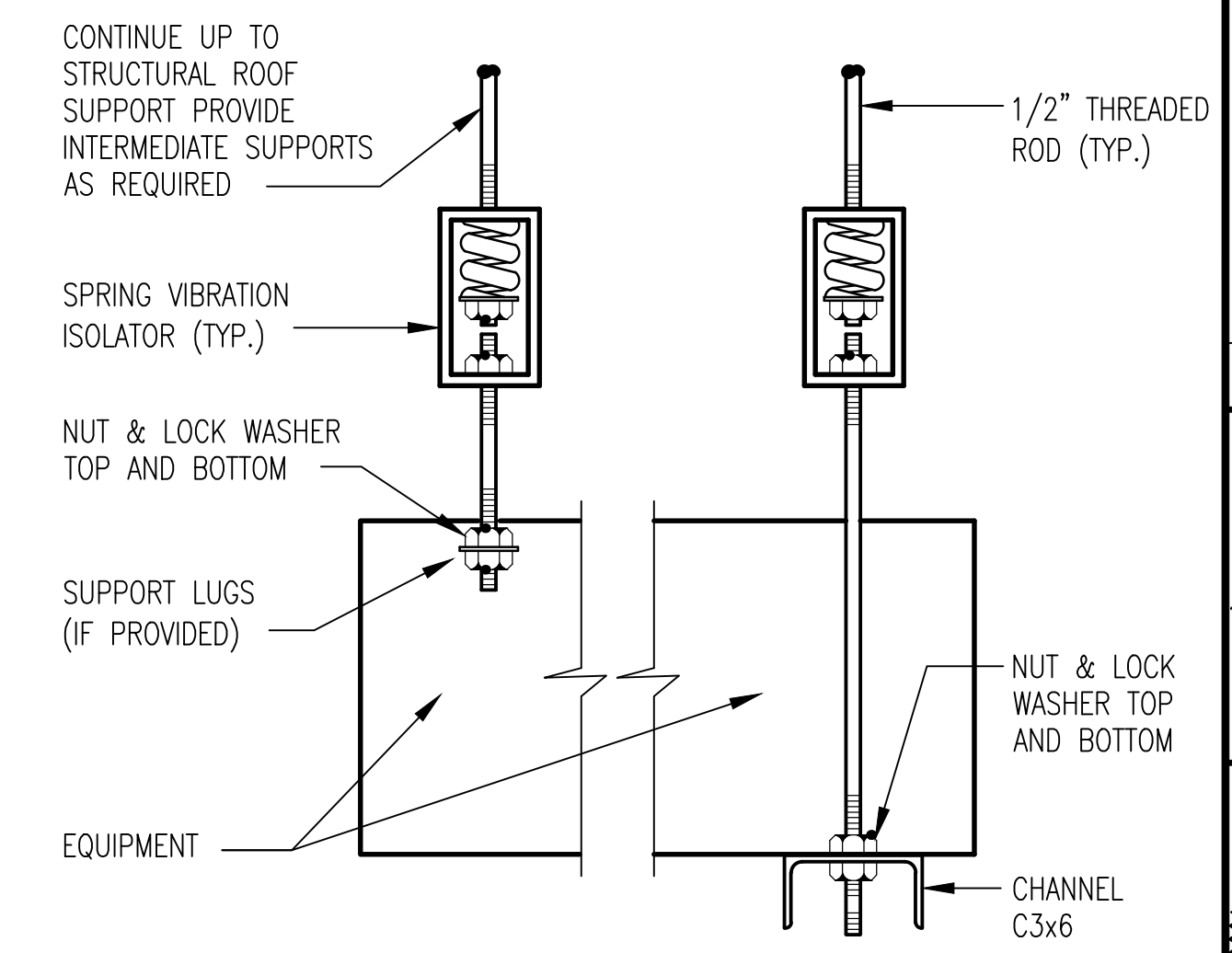
D1 DUCTWORK FITTING DETAIL
NO SCALE



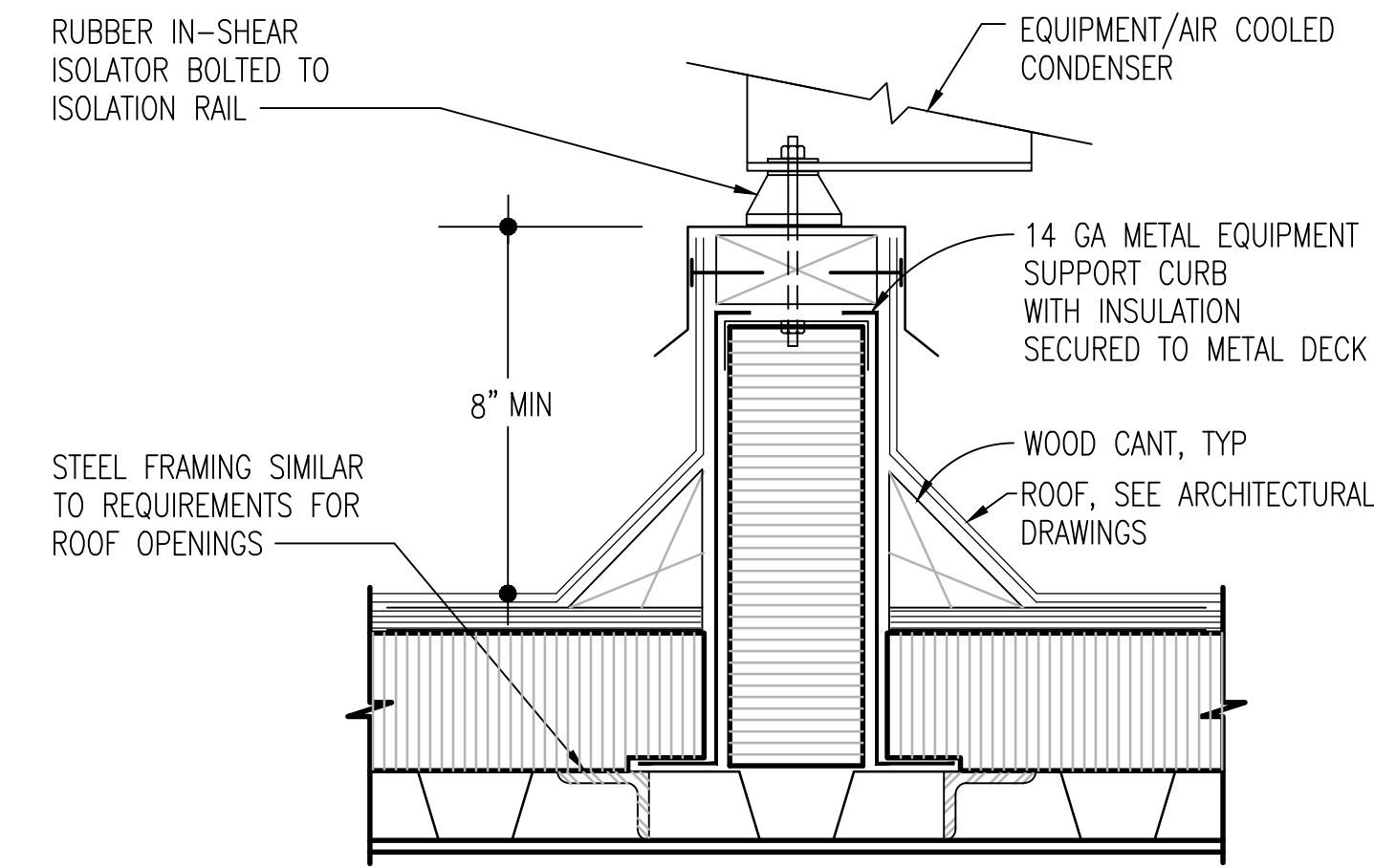
D2 INSULATED FLEXIBLE DUCTWORK DETAIL
NO SCALE



C3 FLEXIBLE DUCT INSTALLATION DETAIL
NO SCALE

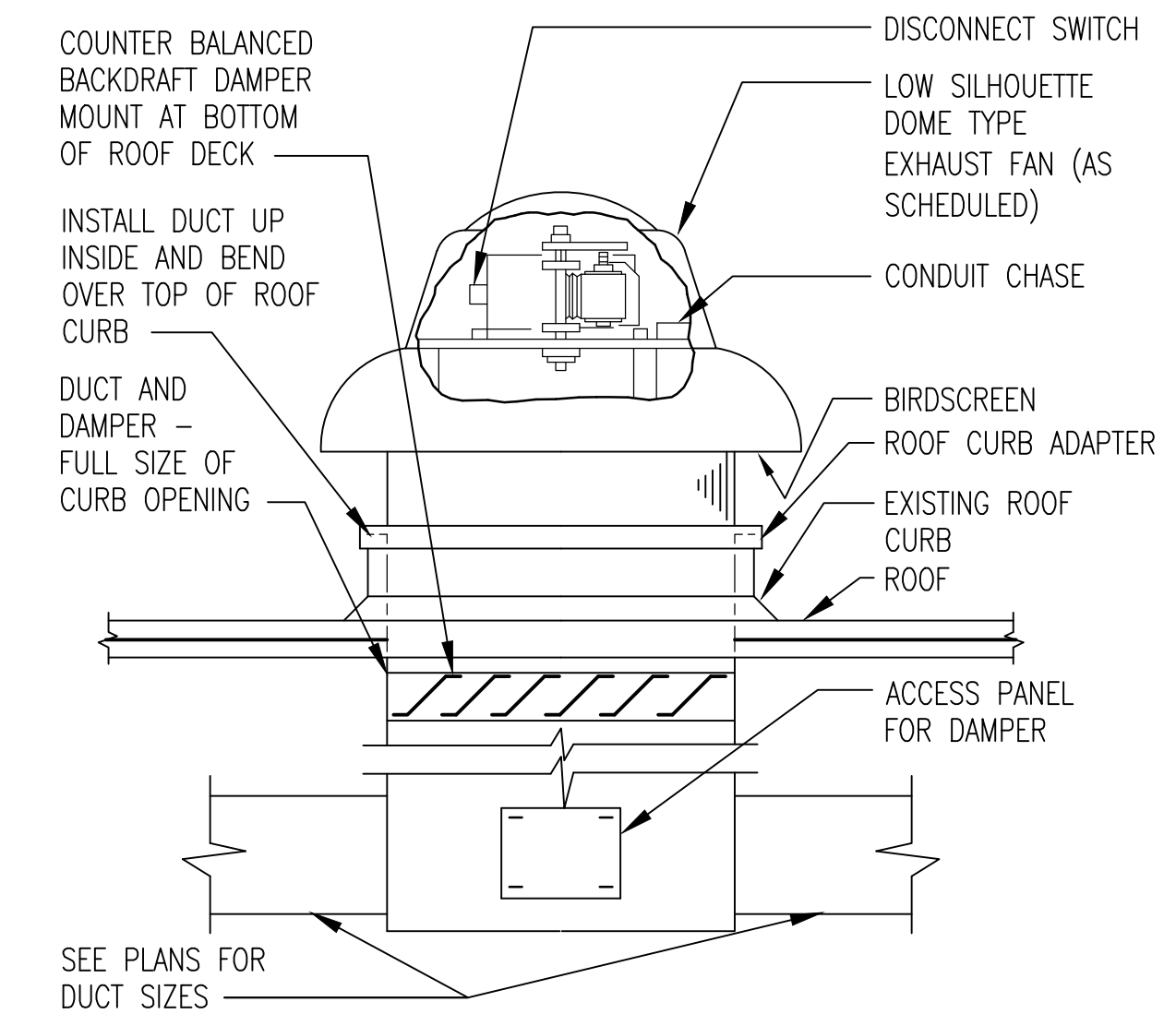


C4 SUSPENDED EQUIPMENT SUPPORT DETAIL
NO SCALE

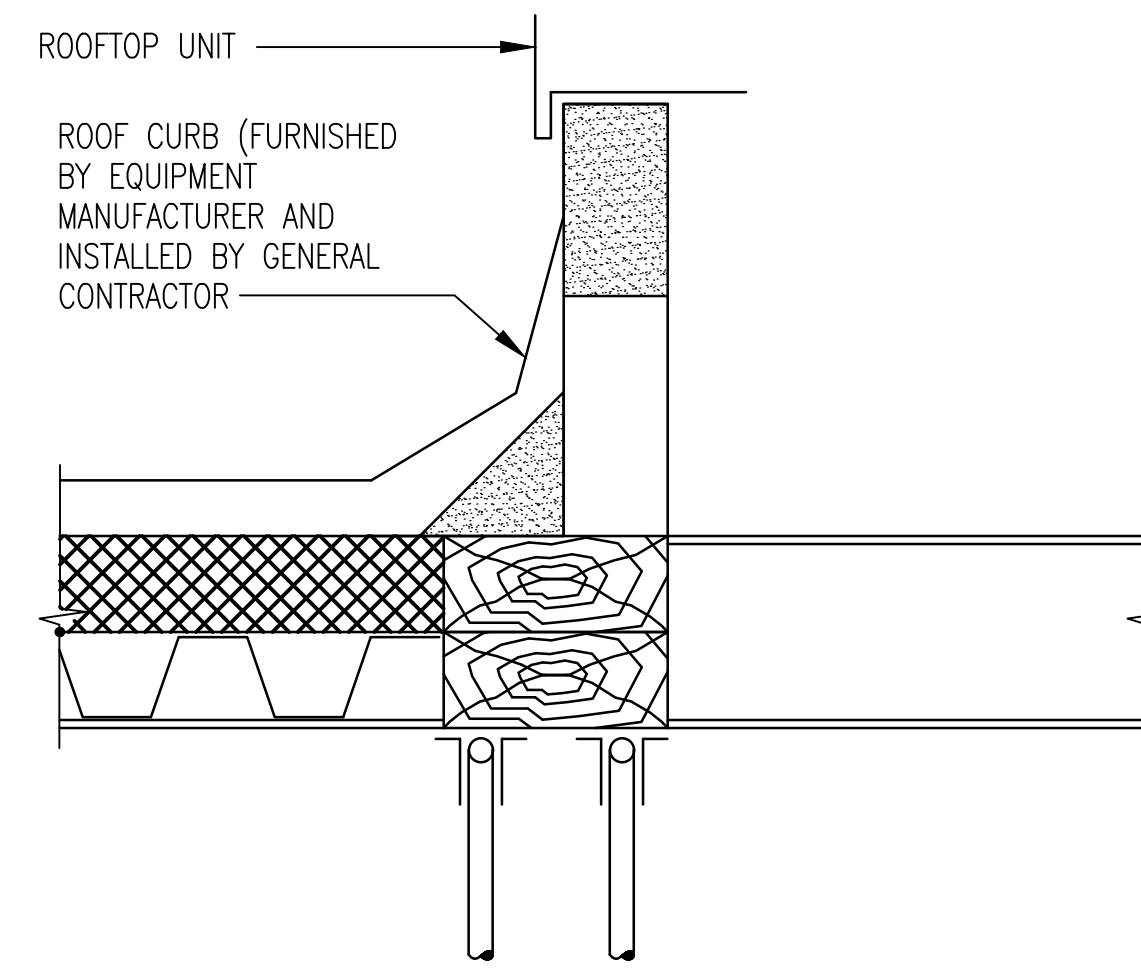


B1 MECHANICAL CURB/PEDESTAL DETAIL
NO SCALE

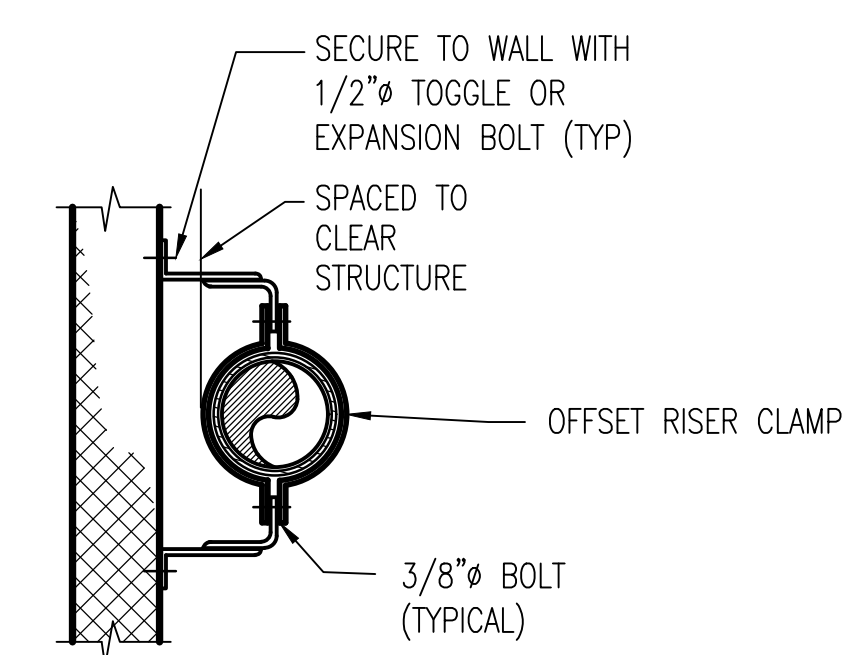
NOTES:
CONTRACTOR SHALL COORDINATE CURB/SUPPORT DETAILS WITH EXISTING ROOF MANUFACTURER'S REQUIREMENTS SO AS TO MAINTAIN WARRANTIES.
PROVIDE EQUIP/MECH SUPPORT CURBS FOR ALL ROOFTOP EQUIP, ETC. WITHOUT INTEGRAL CURBS OR ROOF PENETRATIONS.
LOCATE CURBS DIRECTLY ABOVE STEEL JOIST OR SPAN ACROSS TWO JOISTS IF CURB IS PERPENDICULAR TO JOIST DIRECTION.



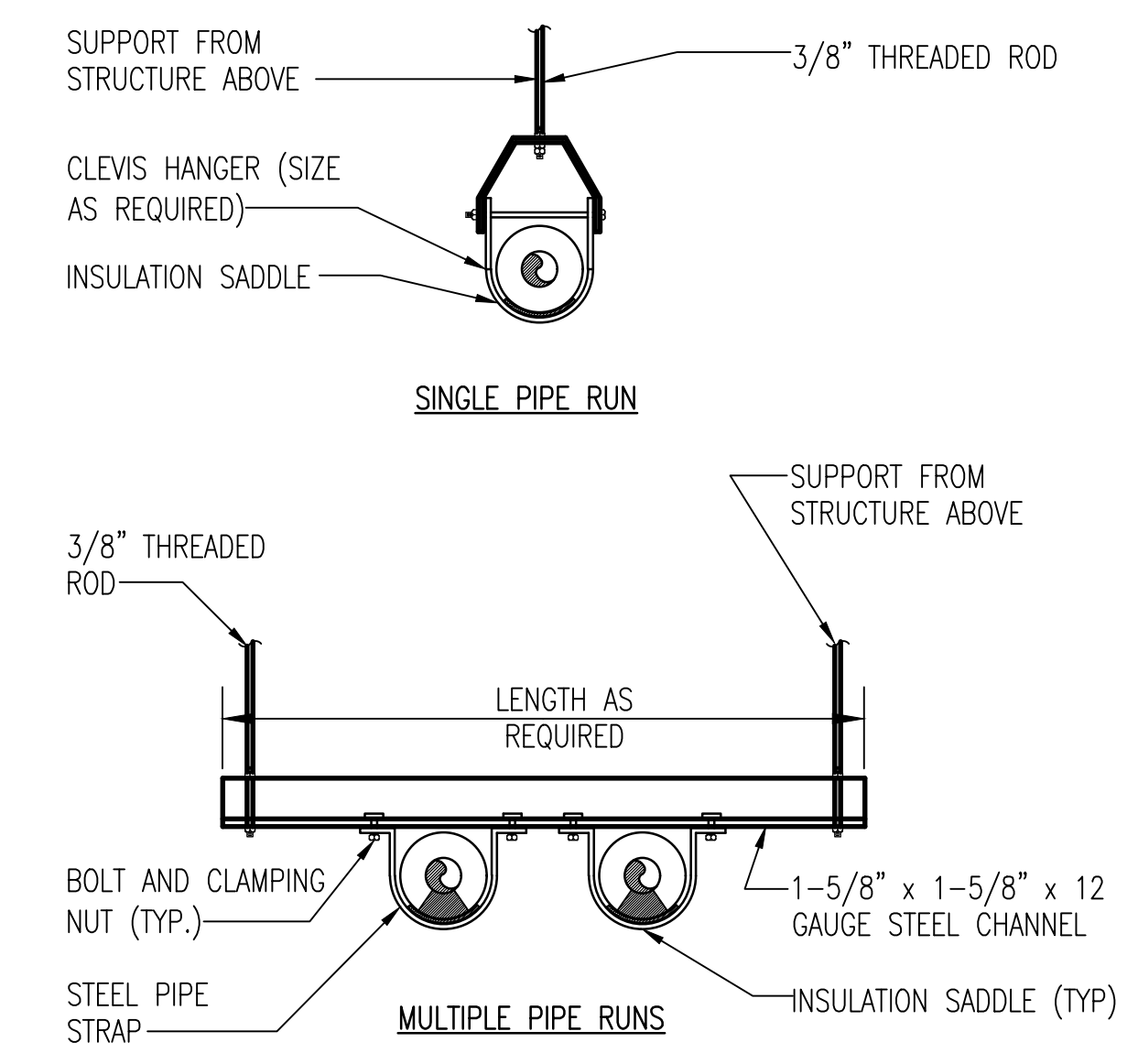
B2 ROOF EXHAUST FAN DETAIL (W/ DUCTWORK)
NO SCALE



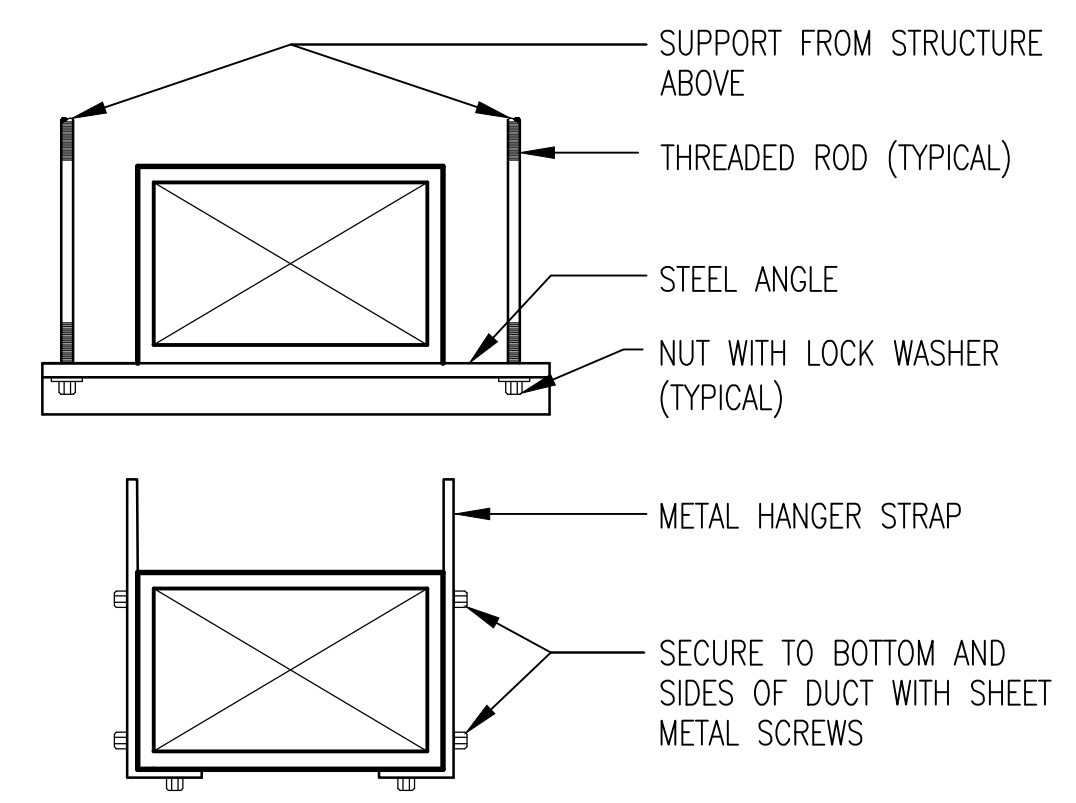
B3 ROOFTOP UNIT CURB DETAIL
NO SCALE



A1 WALL SUPPORT DETAIL
NO SCALE

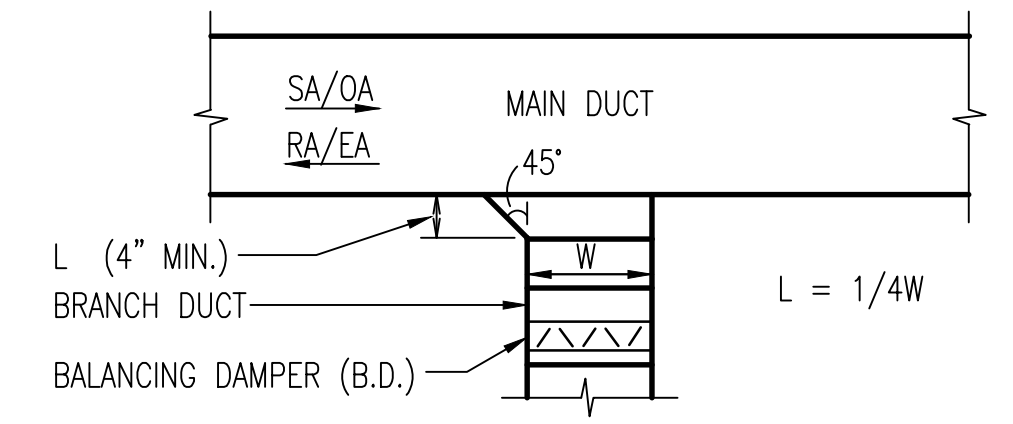
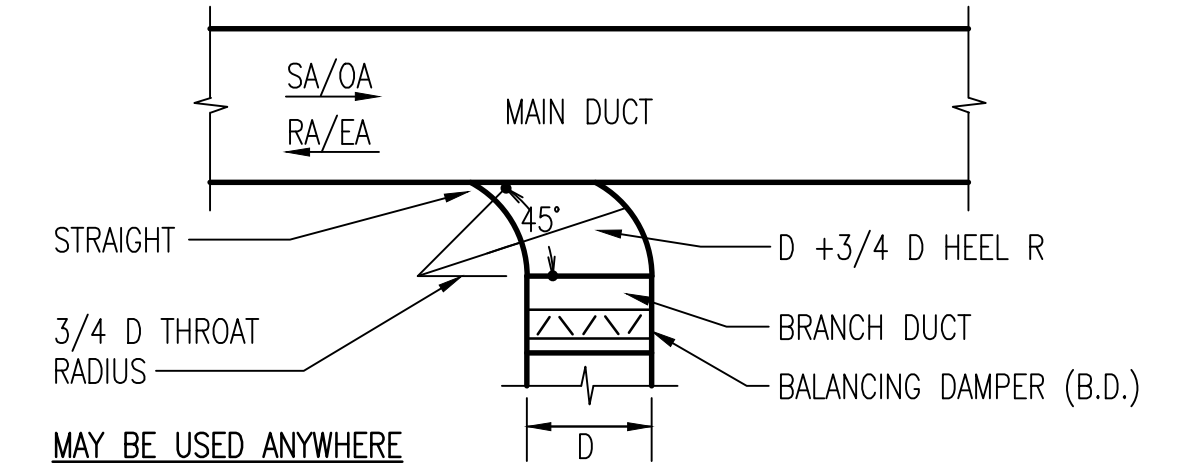


A2 PIPE SUPPORT DETAILS
NO SCALE

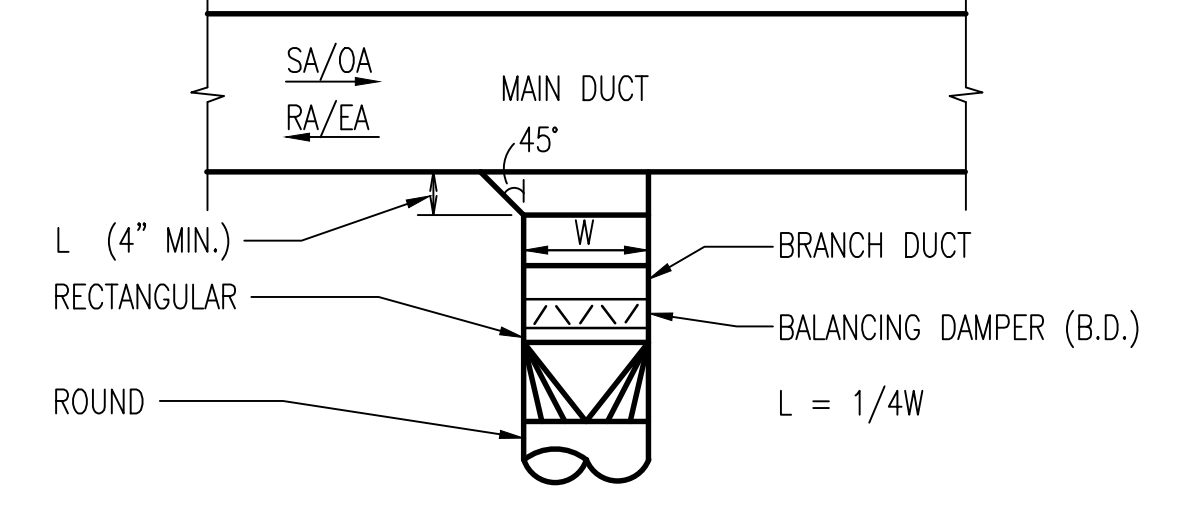


A3 DUCT SUPPORT DETAIL
NO SCALE

NOTE: FOR ANGLE SIZE AND HANGER STRAP GAUGE, SEE SMACNA LOW PRESSURE DUCT CONSTRUCTION STANDARDS.



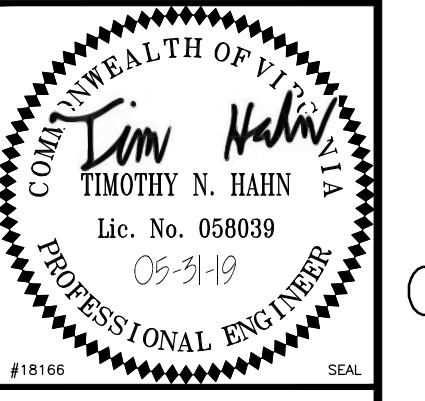
USE ONLY WHERE RECTANGULAR RUN-OUTS ARE INDICATED ON DRAWINGS



USE ONLY WHERE ROUND RUN-OUTS ARE INDICATED ON DRAWINGS

A4 TYPICAL BRANCH CONNECTION
NO SCALE

NO.	DESCRIPTION	DATE	APPR.



APPROVED	A/E INFO
FOR COMMANDER NAVFAC	ACTIVITY
SATISFACTORY TO	DES: TNH DRW: MTF CHK: JAK

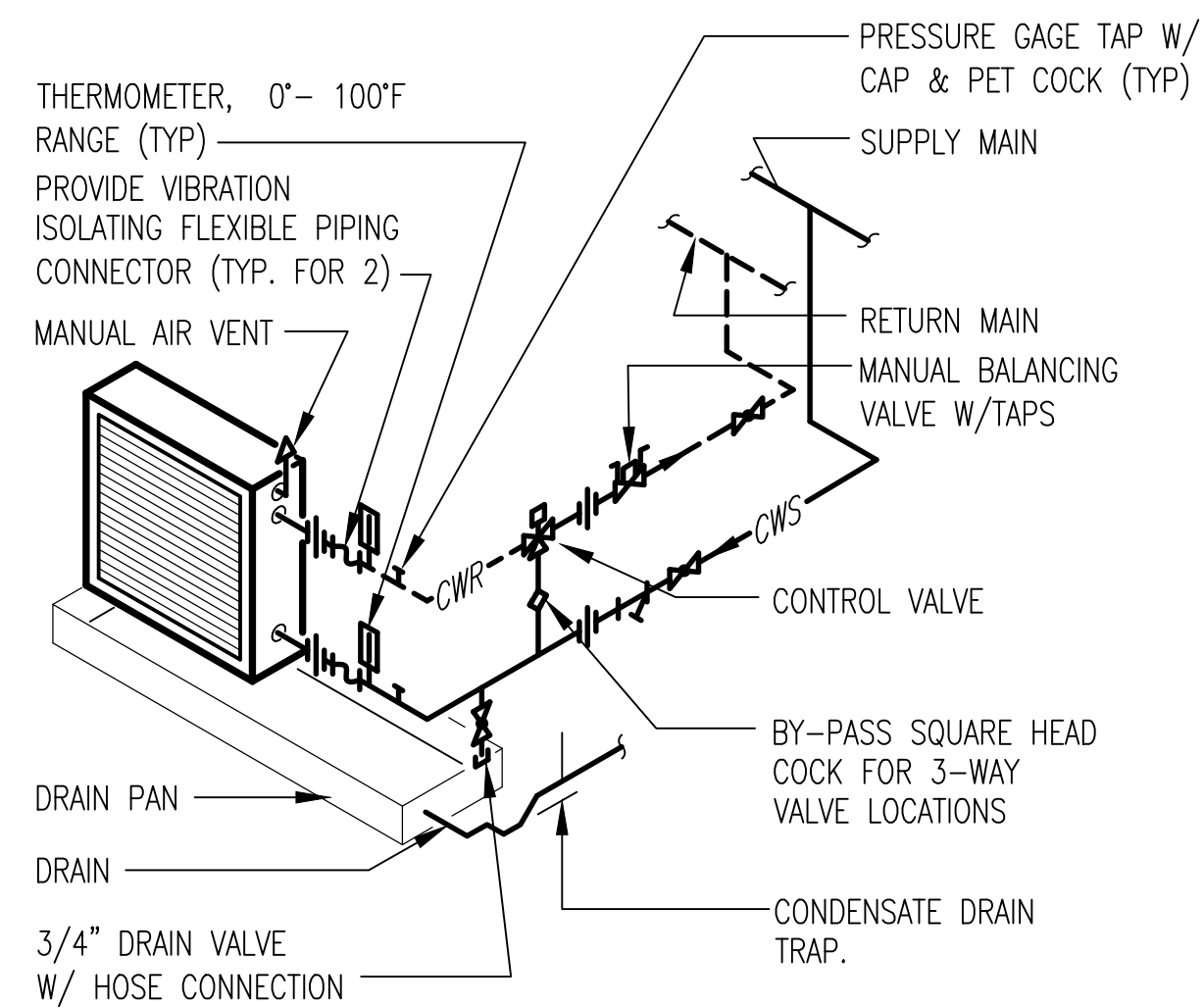
U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
MECHANICAL DETAILS

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782447
SHEET 46 OF 68
M-501

DRAWN/REVISED: 10 MAY 2014

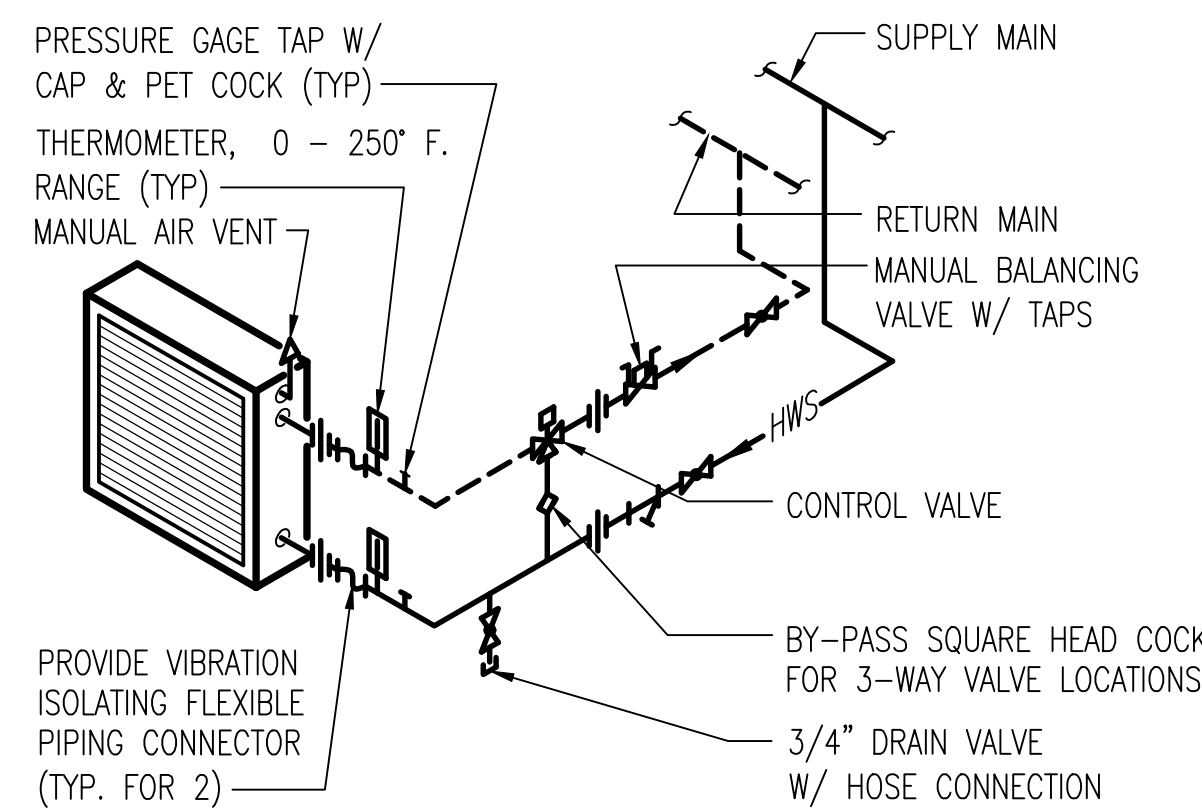
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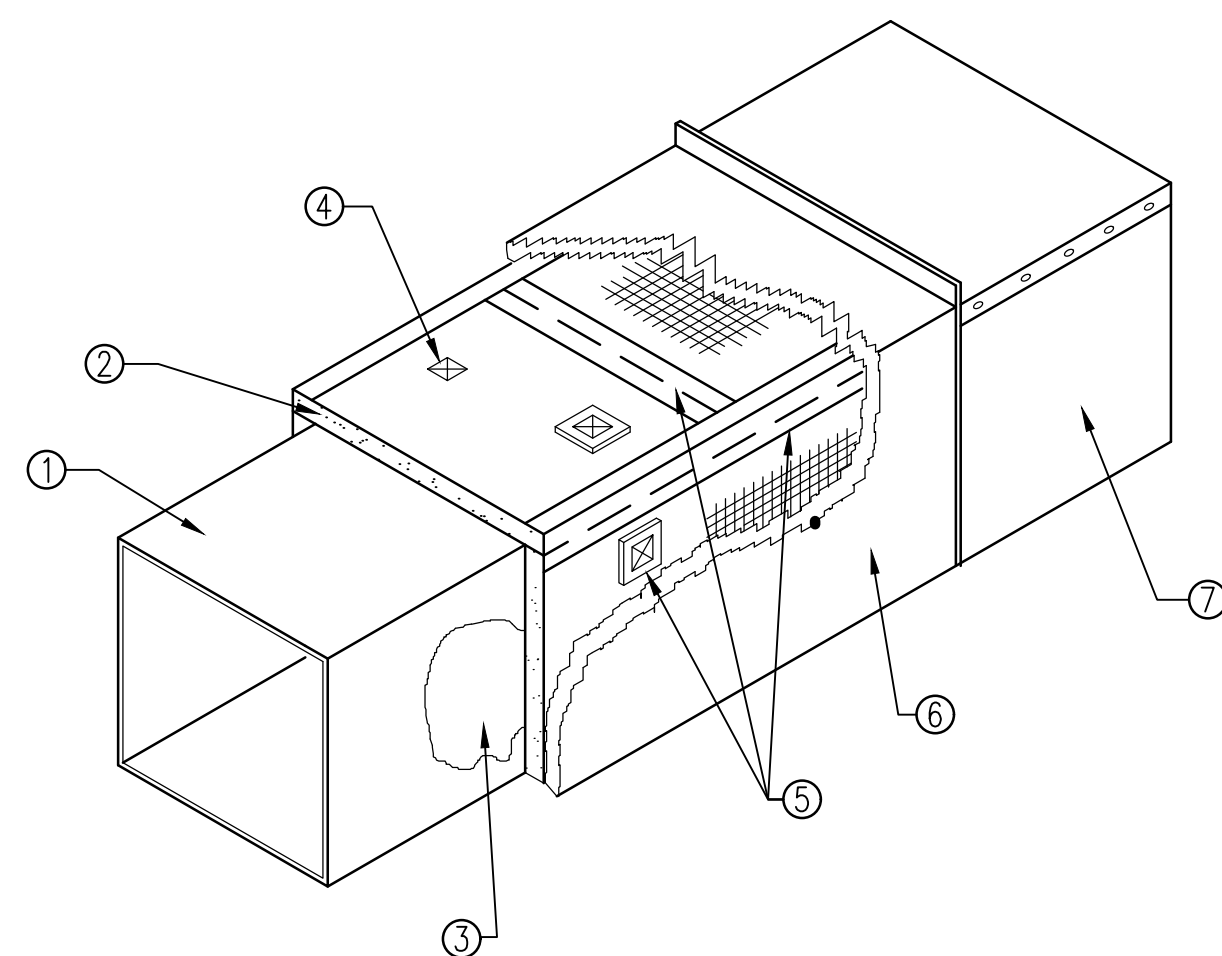
- NOTES:**
1. ARRANGE PIPING TO PERMIT REMOVAL OF COIL.
 2. THE MANUAL BALANCING VALVES SHALL BE INSTALLED BY THE CONTRACTOR IN CONFORMANCE WITH VALVE MANUFACTURER'S RECOMMENDED SPACING UP AND DOWNSTREAM FROM PIPE CHANGES IN DIRECTION AND/OR OTHER VALVES AND COMPONENTS IN THE PIPING.

C1 CHILLED WATER COIL PIPING DETAIL
NO SCALE



- NOTES:**
1. ARRANGE PIPING TO PERMIT REMOVAL OF COIL.
 2. THE MANUAL BALANCING VALVES SHALL BE INSTALLED BY THE CONTRACTOR IN CONFORMANCE WITH VALVE MANUFACTURER'S RECOMMENDED SPACING UP AND DOWNSTREAM FROM PIPE CHANGES IN DIRECTION AND/OR OTHER VALVES AND PIPING COMPONENTS.

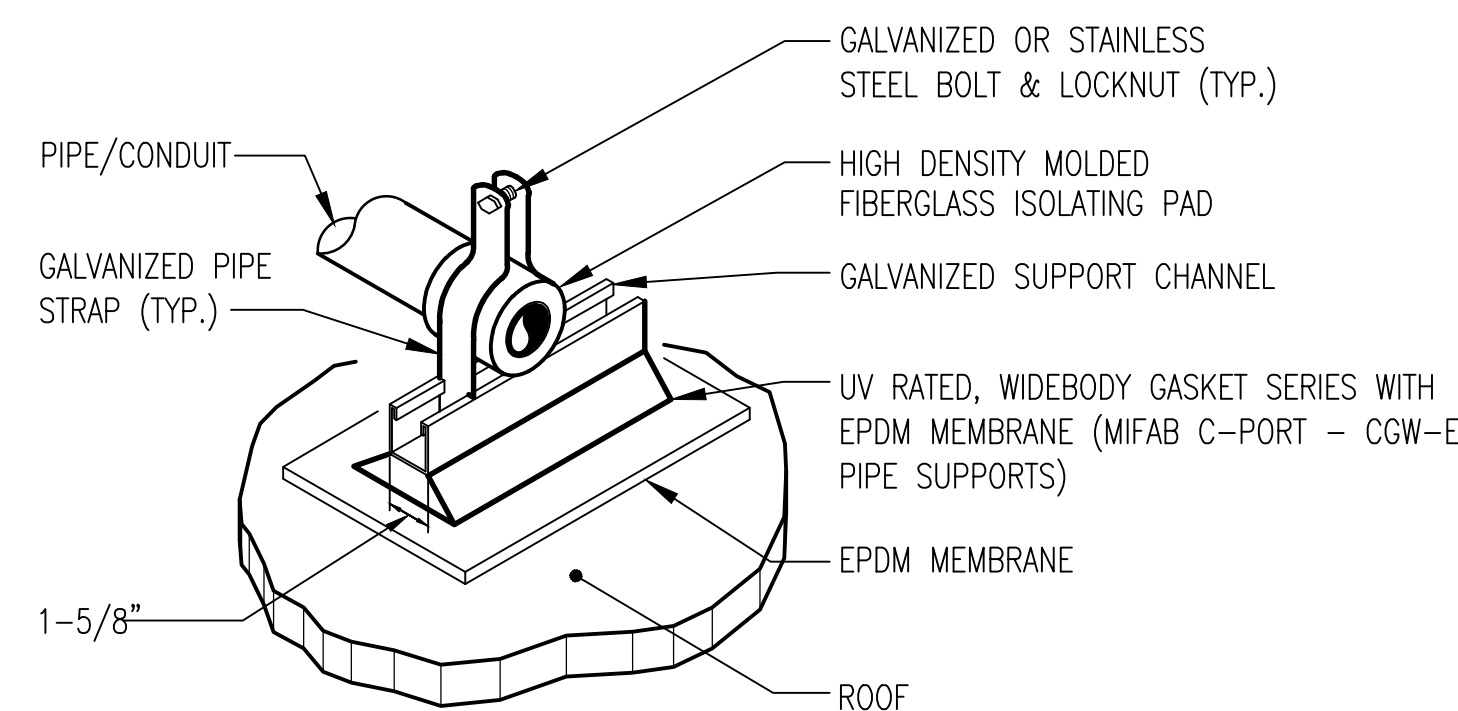
C2 HOT WATER COIL PIPING DETAIL
NO SCALE



NOTES:

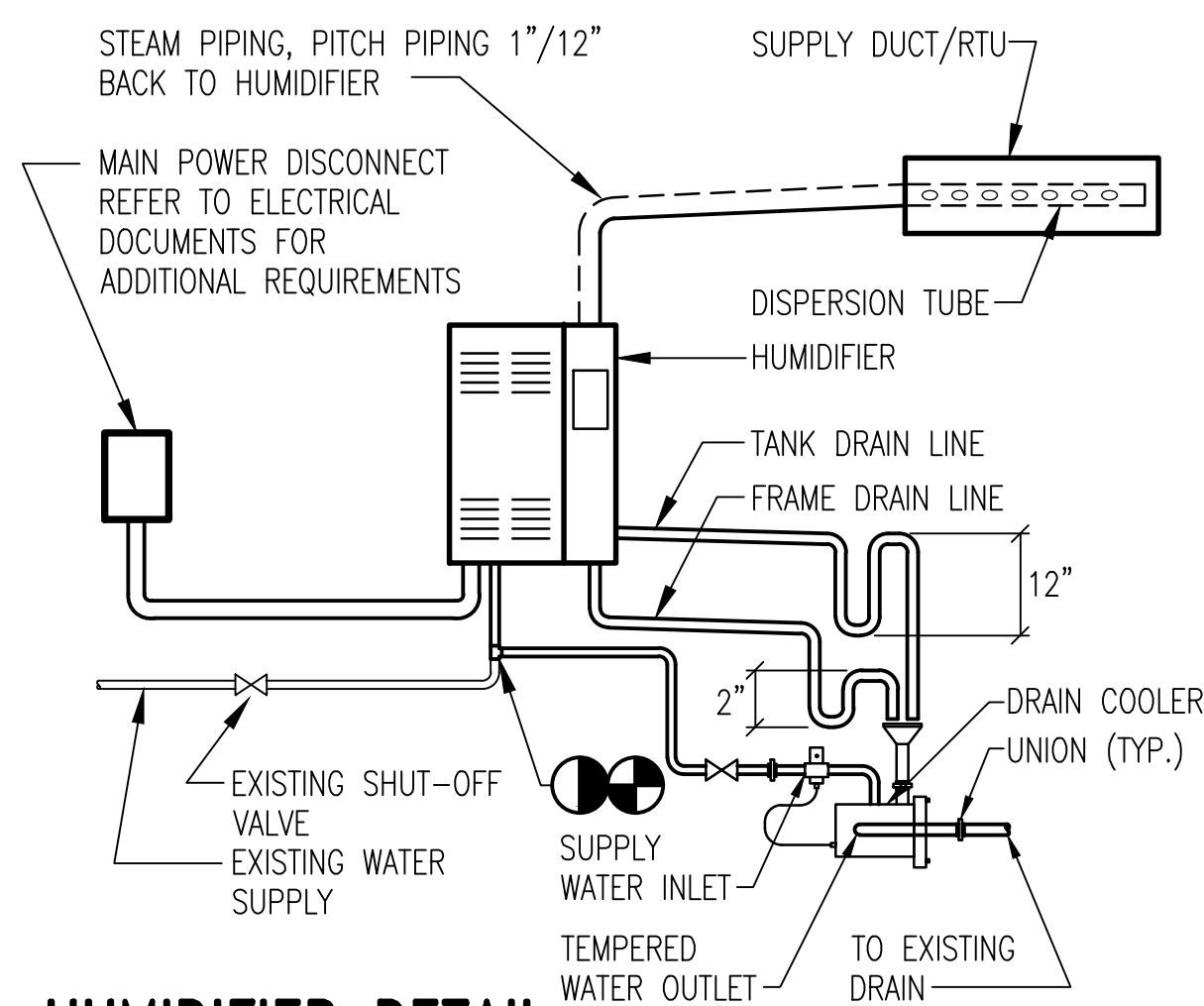
- 1 SHEET METAL DUCT
- 2 RIGID FIBERGLASS
- 3 INSULATION, 3" THICK, 3.0 PCF WITH VAPOR BARRIER JACKET. INSULATION ADHESIVE, 100% COVERAGE
- 4 MECHANICAL FASTENERS, 12" O.C., BEGINNING A MAXIMUM OF 3" FROM SEAM, EDGE OR JOINT.
- 5 VAPOR RETARDING TAPE OVER JOINTS, BREAKS, SEAMS, FASTENERS AND PENETRATIONS OF VAPOR BARRIER JACKET.
- 6 WEATHER-BARRIER MASTIC REINFORCED WITH FABRIC OR MESH. APPLY ONE COAT OVER INSULATION. THEN WRAP WITH FAB-CLOTH THEN APPLY TWO ADDITIONAL COATS OF BITUMASTIC SEALER.
- 7 ALUMINUM OR GALVANIZED JACKETING APPLIED FOR MECHANICAL ABUSE PROTECTION AND WEATHER PROTECTION. CAULK AND SEAL ALL JOINTS AND SEAMS W/ELASTOMERIC SEALANT. PAINT ENTIRE JACKET WITH WHITE MULE HIDE ELASTOMERIC SELANT, TYPE A-300.

A1 EXTERIOR DUCTWORK DETAIL
NO SCALE

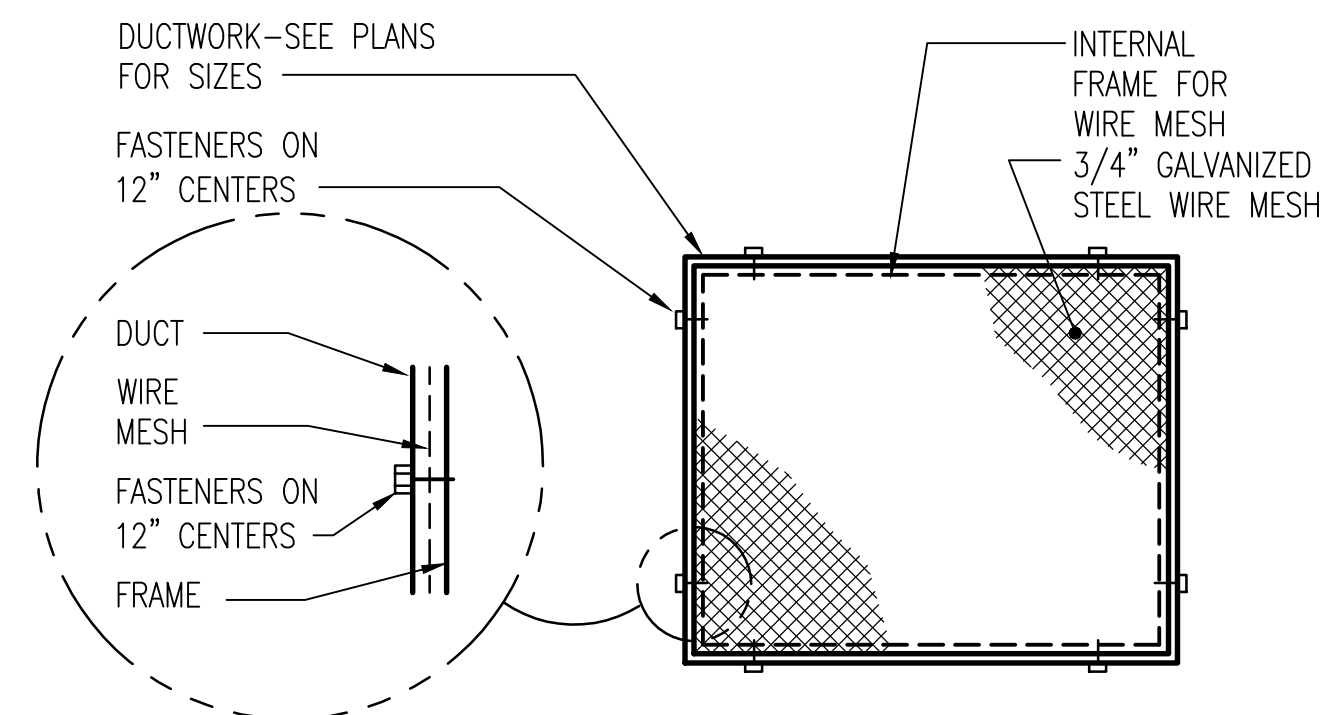


NOTE: COORDINATE PIPE ROOF SUPPORT SPACING REQUIREMENTS WITH MANUFACTURER.

B2 ROOFTOP PIPE SUPPORT DETAIL
NO SCALE

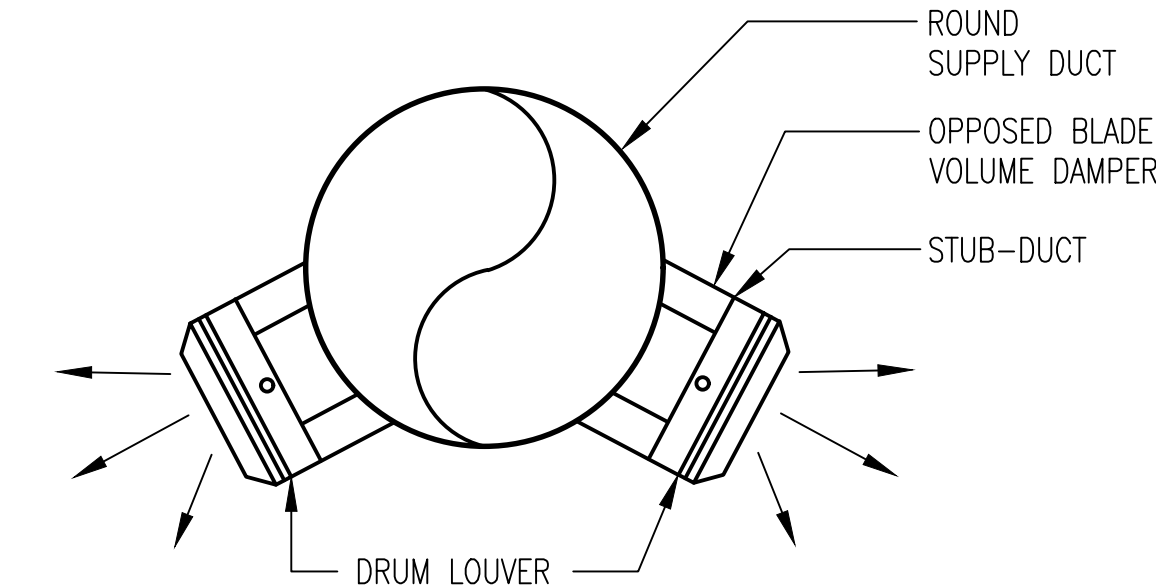


A2 HUMIDIFIER DETAIL
NO SCALE

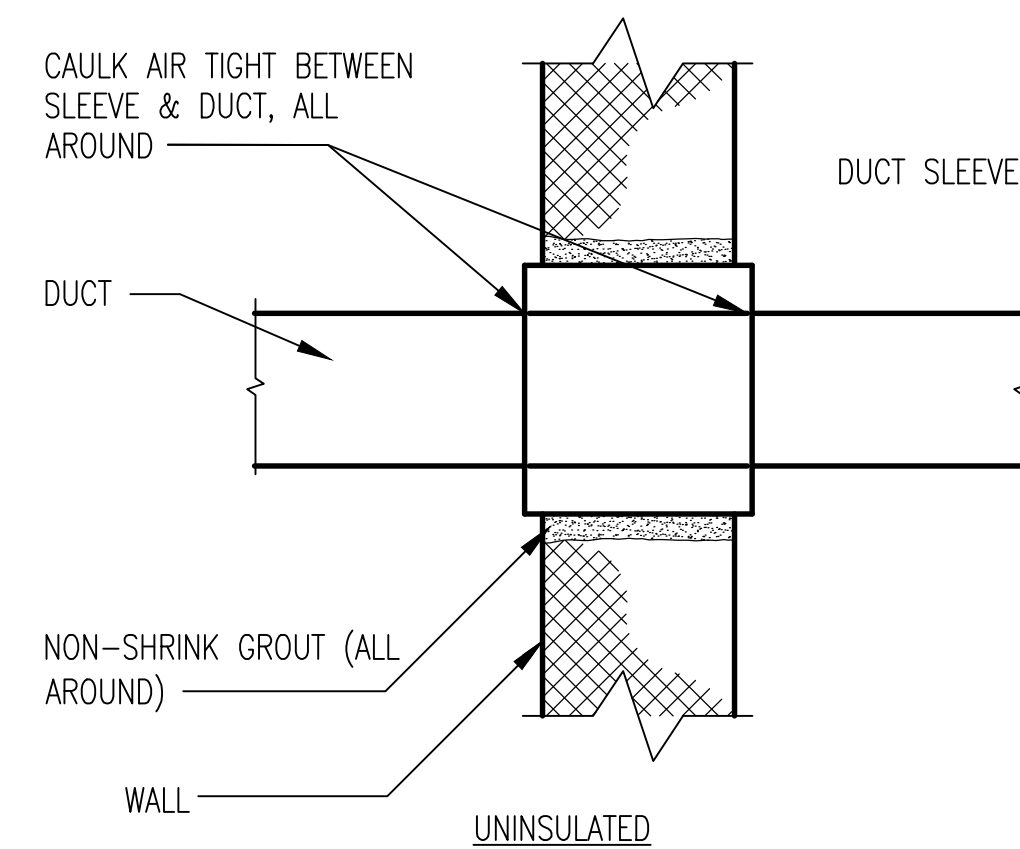


NOTE: SECURE FRAME TO DUCT AND MESH TO FRAME.

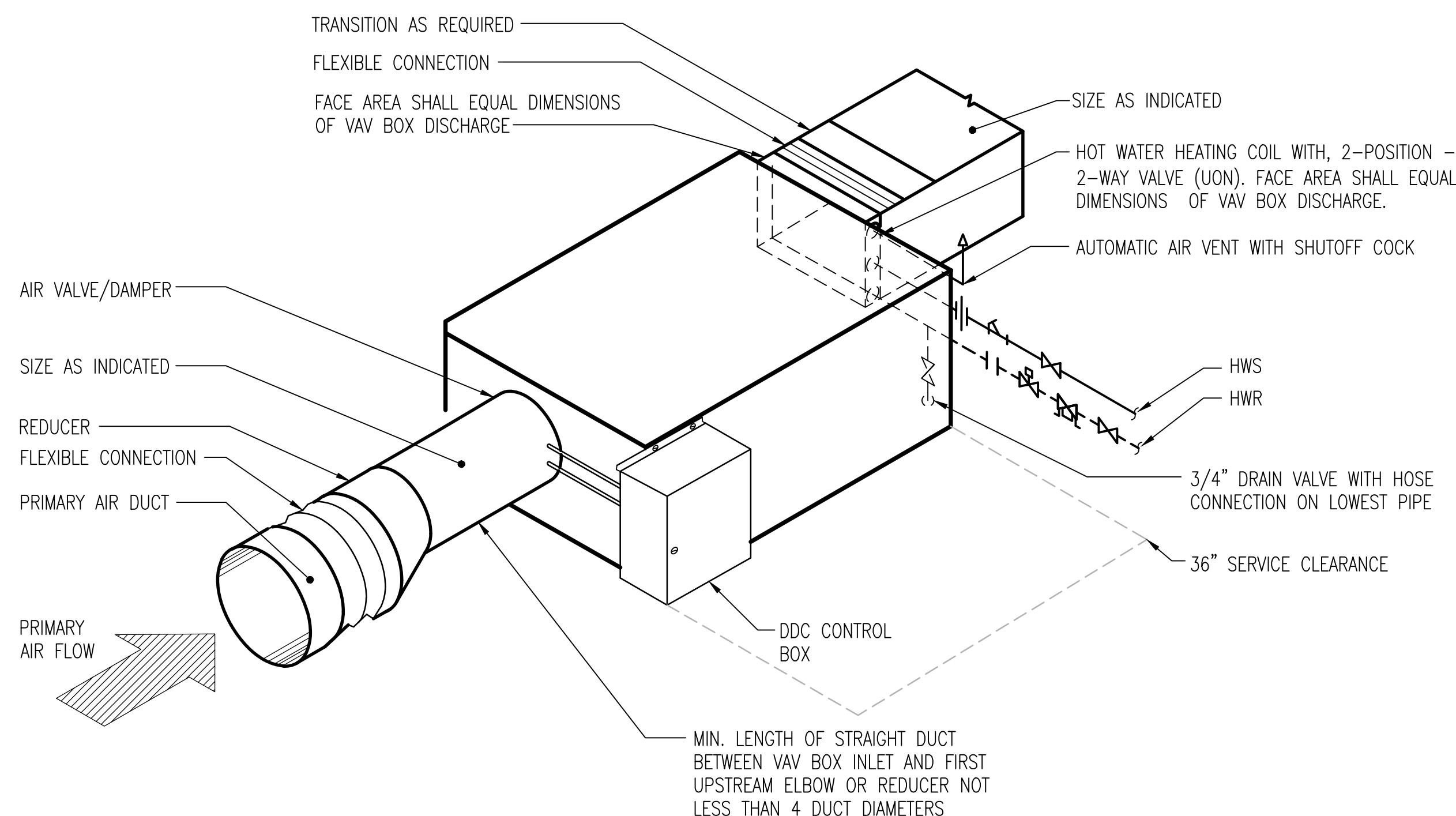
D3 OPEN END DUCT WIRE MESH DETAIL
NO SCALE



D4 DRUM LOUVER DETAIL
NO SCALE



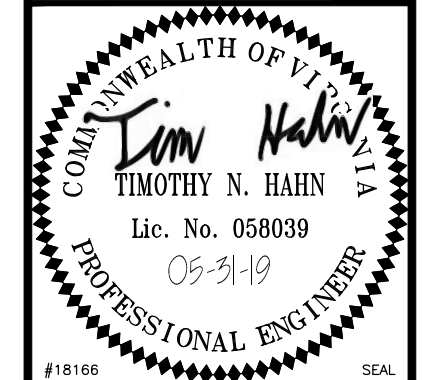
B4 DUCT PENETRATION DETAIL (TYPICAL)
NO SCALE



NOTE: THERE IS A 3 FOOT CLEARANCE RESTRICTION IN FRONT OF AND BESIDE OF VAV BOX FOR ELECTRICAL DISCONNECTS. THERE SHALL BE NO SPRINKLER PIPE, LIGHTS, WALLS, ETC. WITHIN THIS AREA.

A3 SHUT-OFF VAV TERMINAL UNIT WITH HOT WATER REHEAT DETAIL
NO SCALE

APPROVED	DATE
DESCRIPTION	DATE
SYN	DATE



APPROVED	A/E INFO
FOR COMMANDER NAVFAC	ACTIVITY
SATISFACTORY TO	
DES: TNH	DRW: MTF
CHK: JAK	

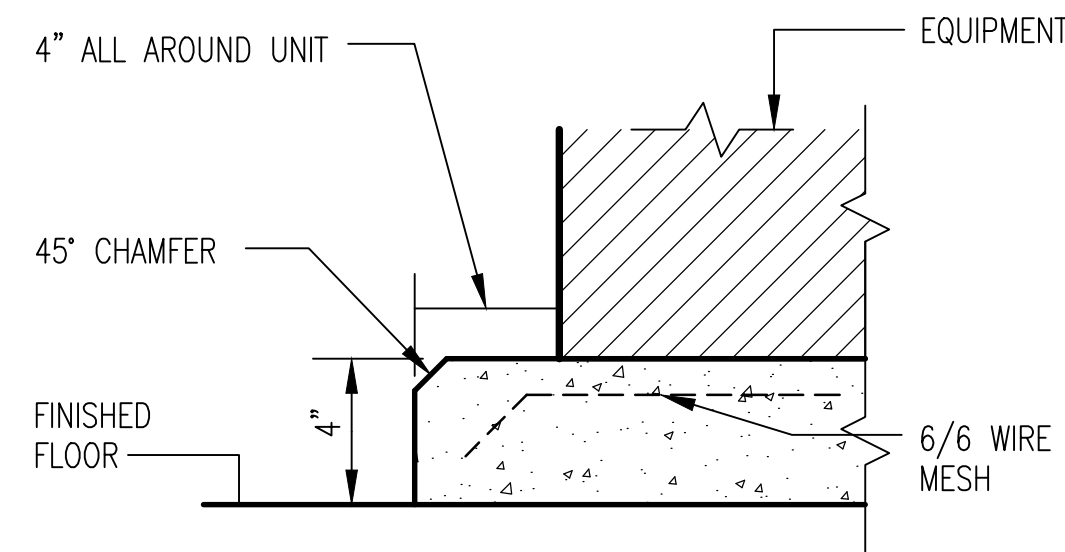
U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
MECHANICAL DETAILS

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782448
SHEET 47 OF 68
M-502

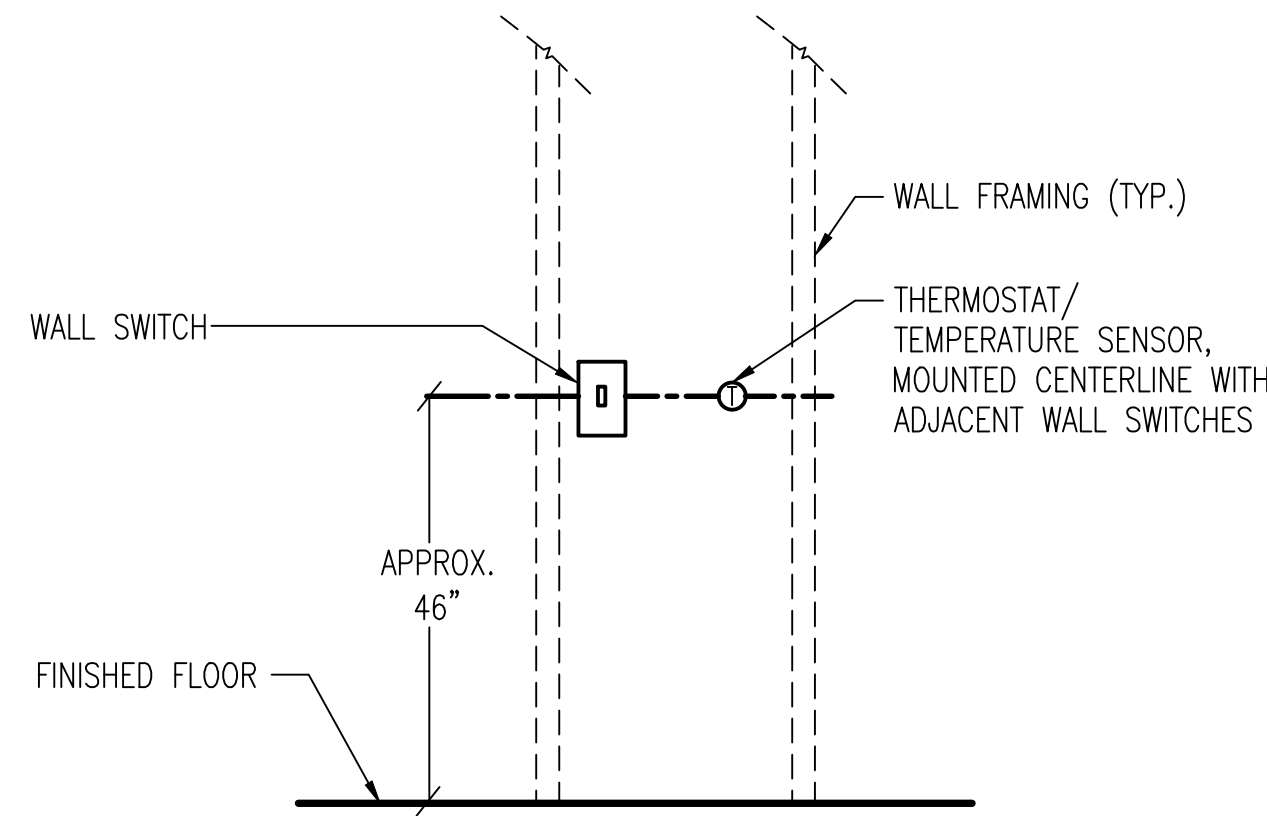
DRAWN/REVISION: 10 MAY 2014

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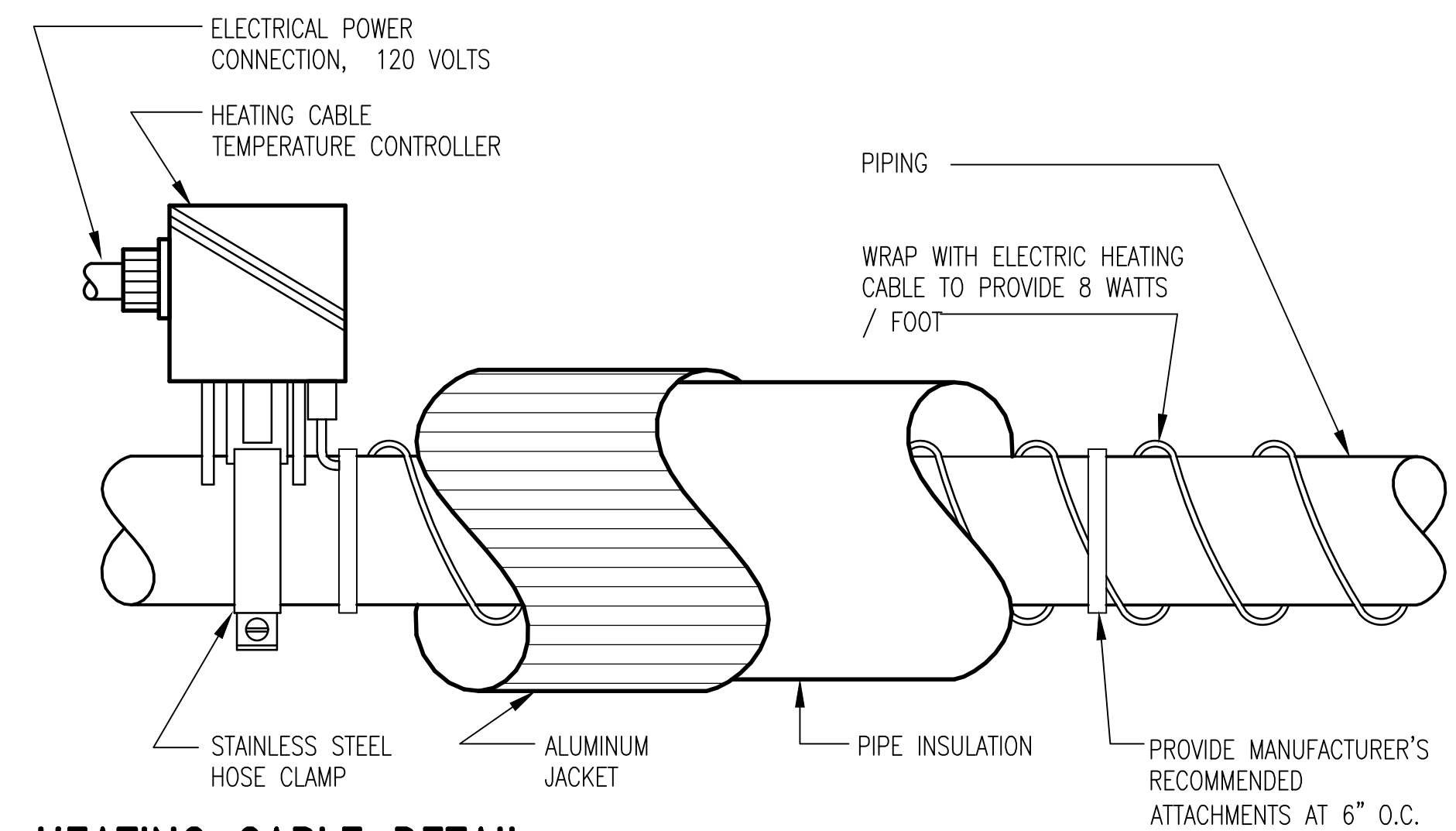
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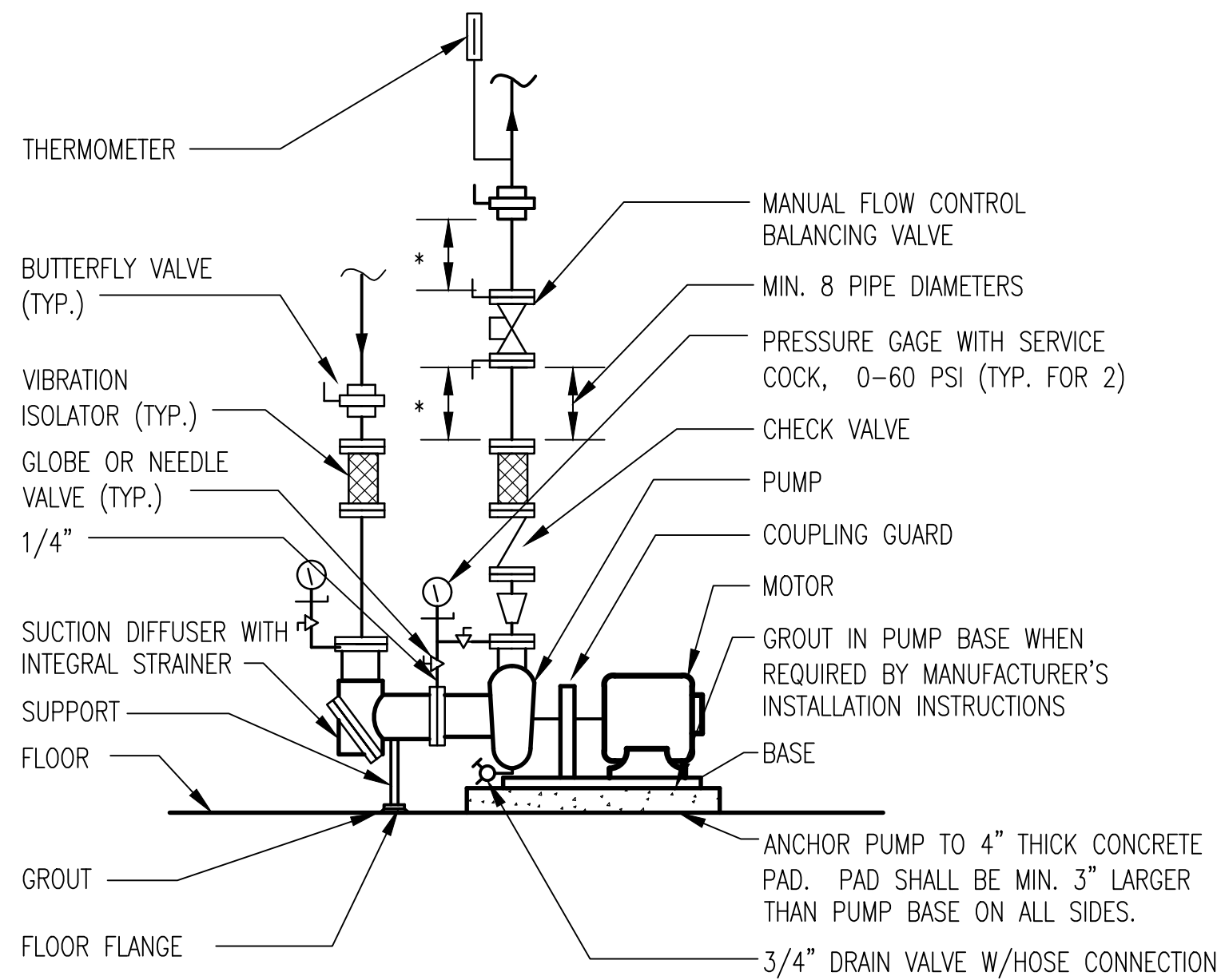
D1 CONCRETE PAD DETAIL - INTERIOR
NO SCALE



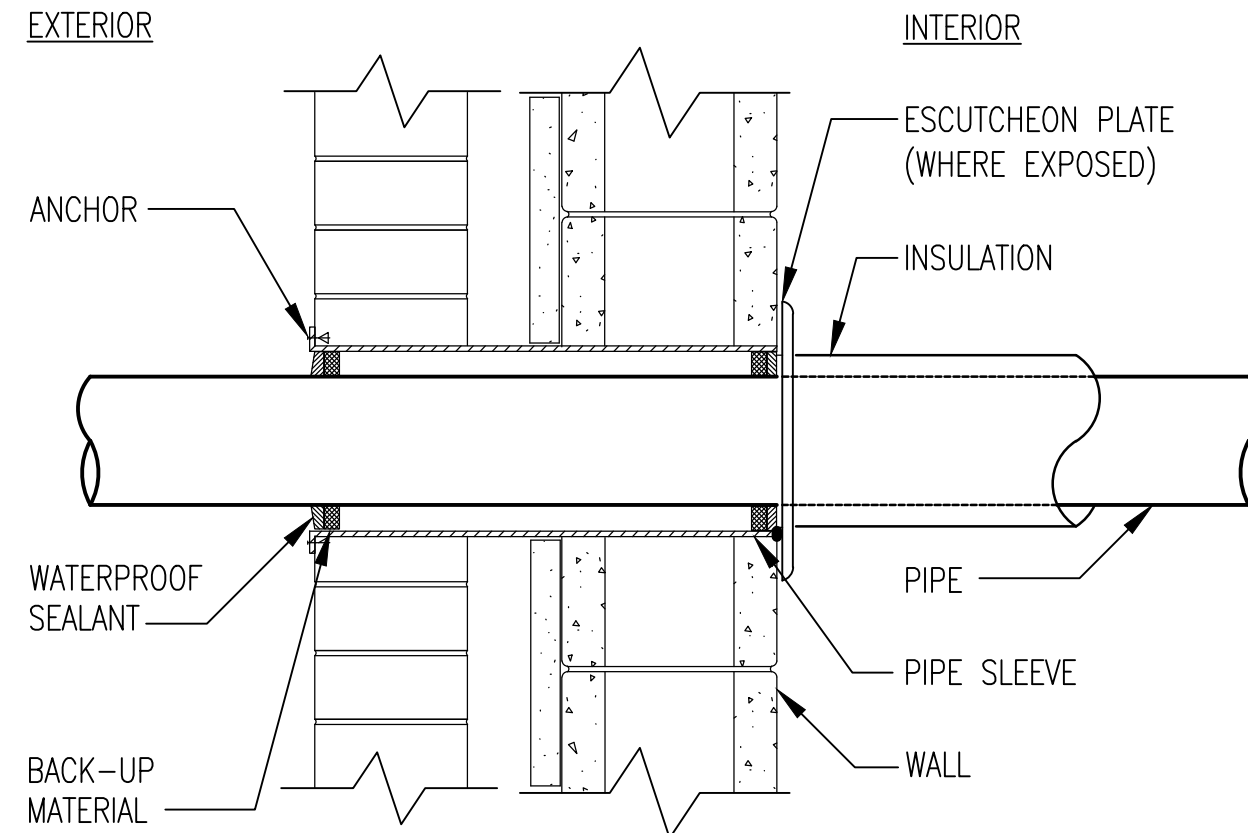
C2 SWITCH/THERMOSTAT MOUNTING HEIGHT DETAIL
NO SCALE



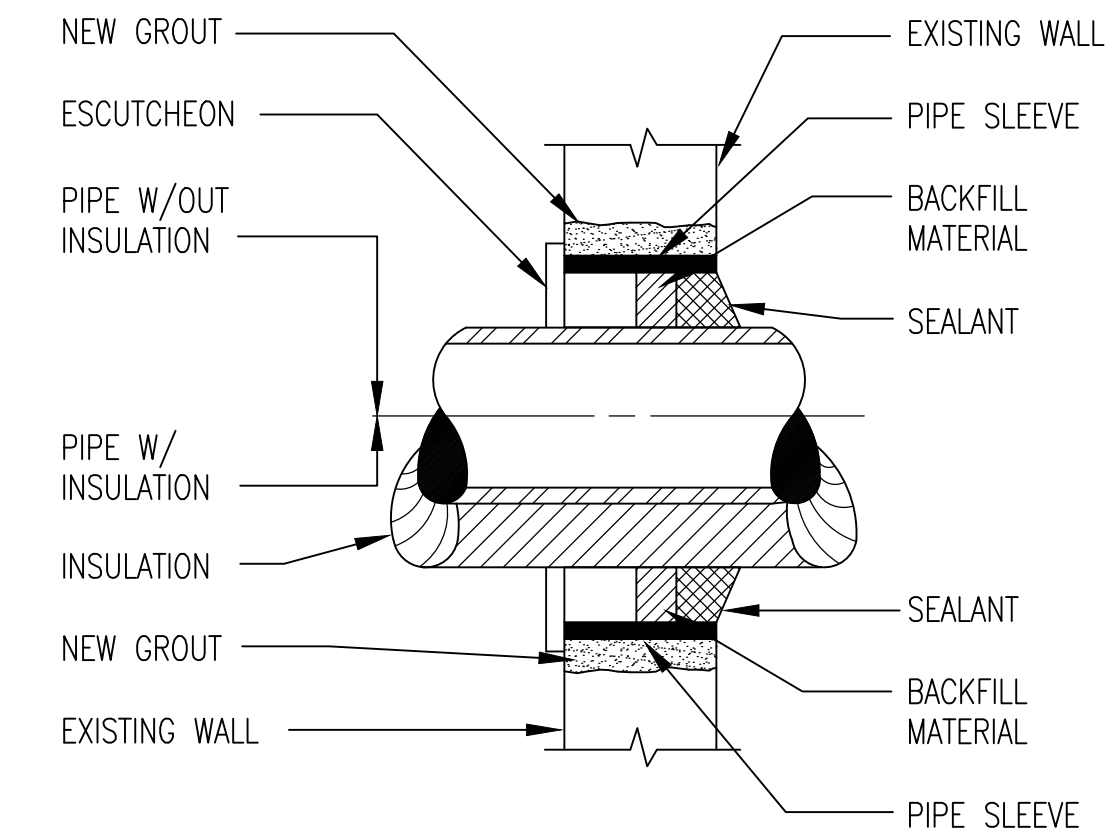
C4 HEATING CABLE DETAIL
NO SCALE



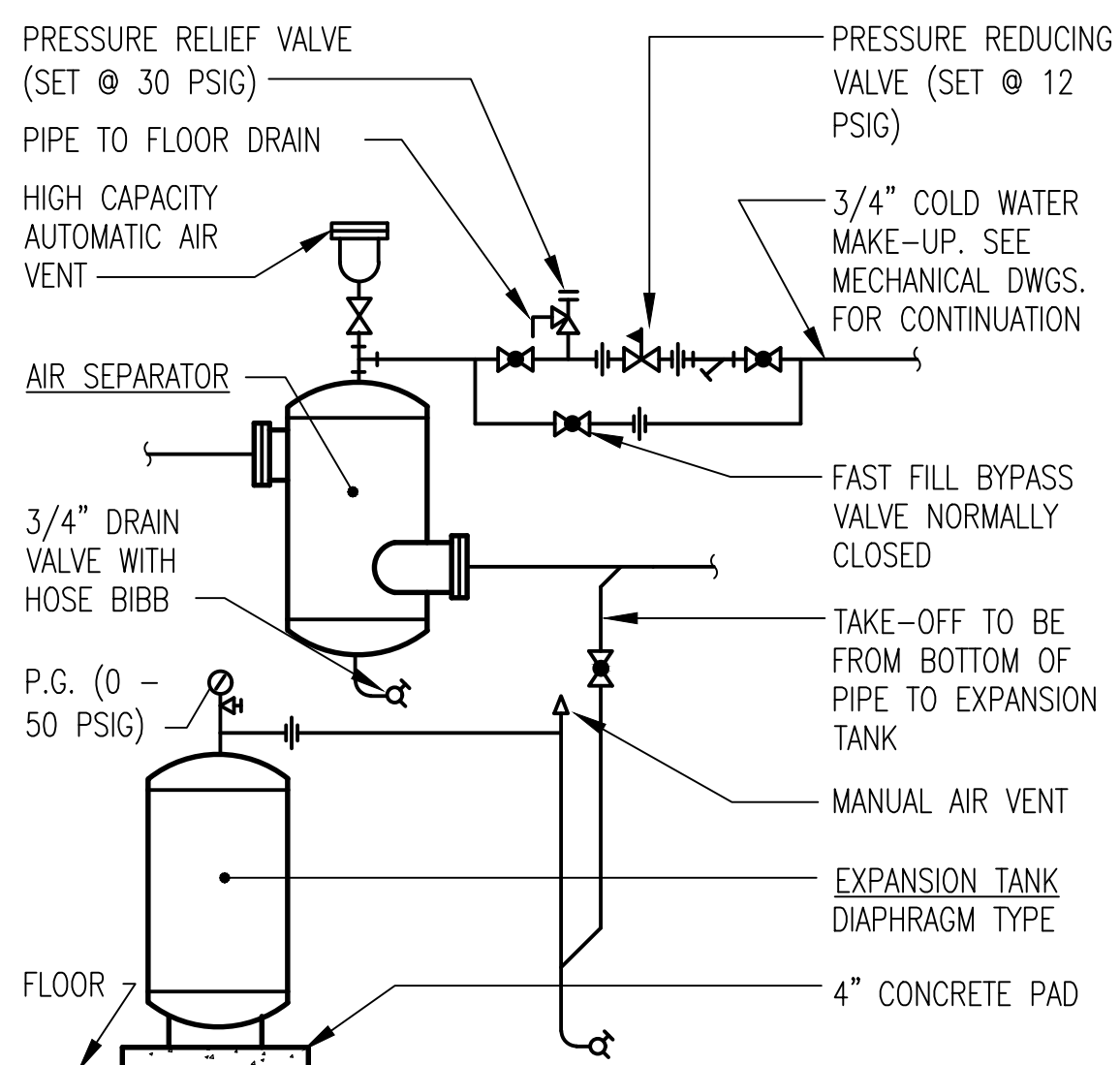
B1 BASE MOUNTED CENTRIFUGAL PUMP DETAIL
NO SCALE



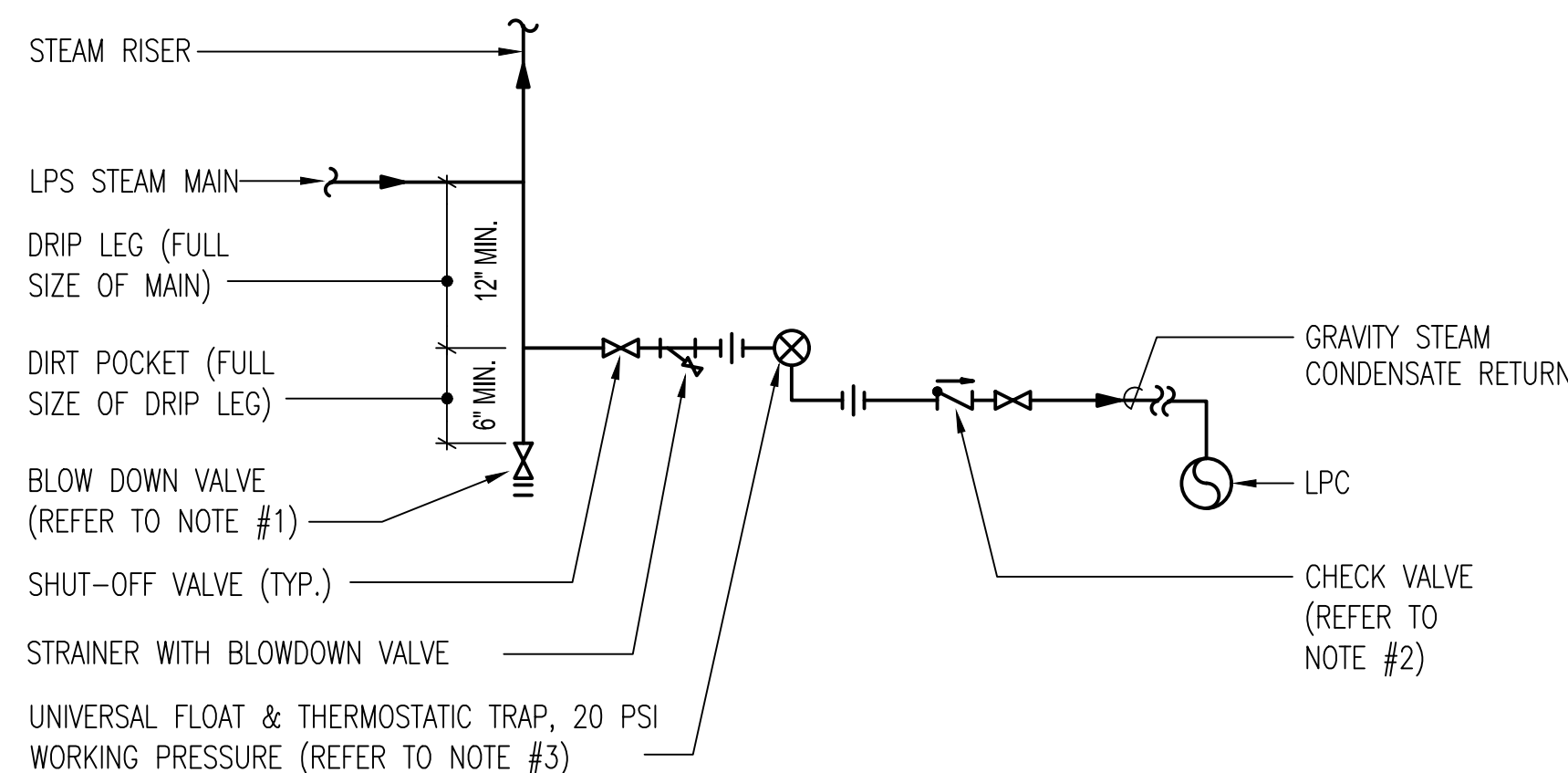
B2 PIPE SLEEVE THRU EXTERIOR WALL DETAIL
NO SCALE



B4 PIPE SLEEVE DETAIL
NO SCALE

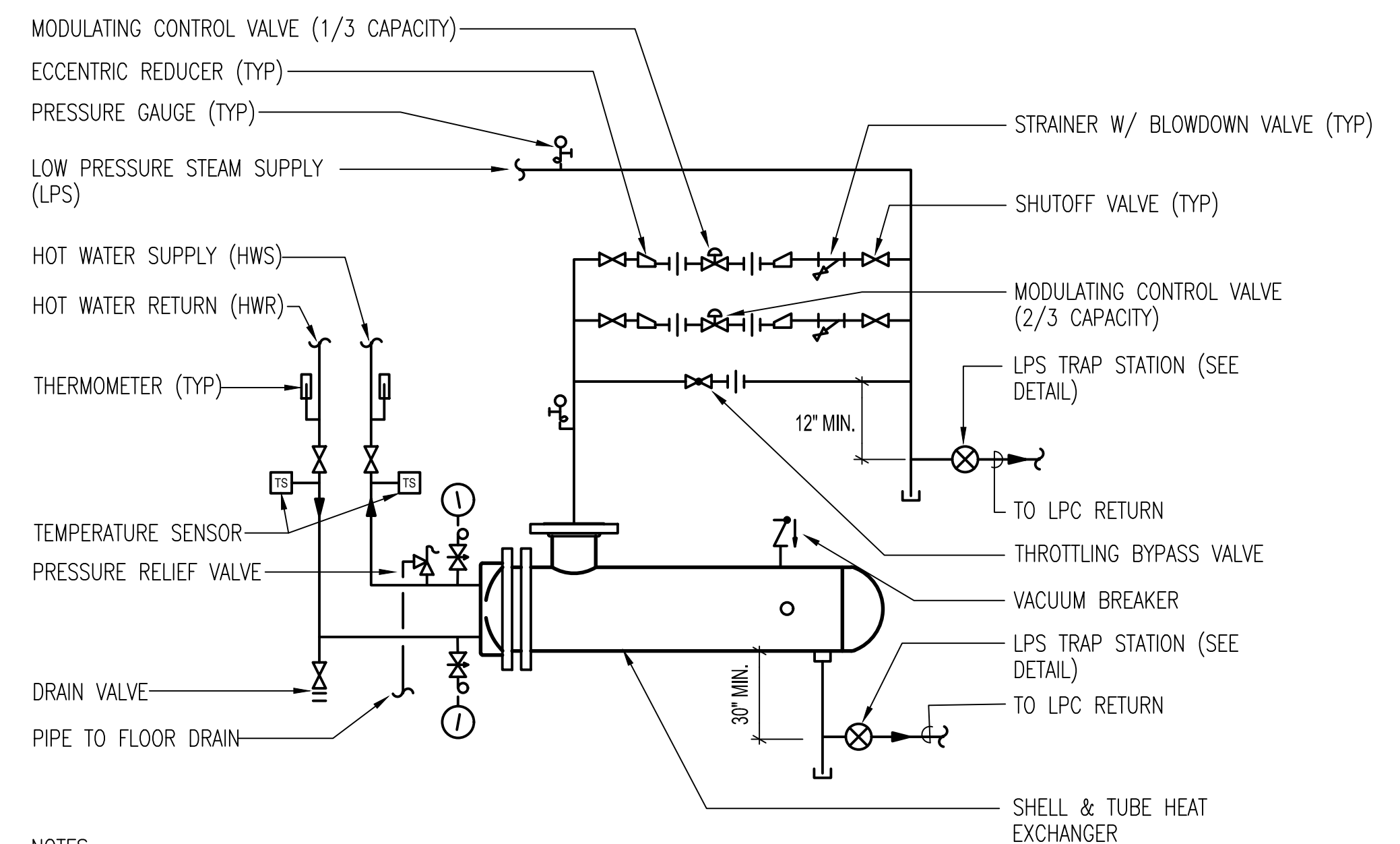


A1 EXPANSION TANK AND AIR SEPARATOR PIPING DETAIL
NO SCALE



- NOTES:**
- BLOWDOWN VALVE TO BE USED DURING SUPERVISED START-UP.
 - PROVIDE CHECK VALVE WHENEVER DISCHARGING CONDENSATE TO AN ELEVATED RETURN LINE.
 - UNIVERSAL STEAM TRAP STATION INCLUDES FLOAT AND THERMOSTATIC TRAP, INTEGRAL STRAINER, CHECK VALVE, INLET/OUTLET PISTON ISOLATION VALVES (WITH HANDLES), AND BLOWDOWN AND TEST VALVE.

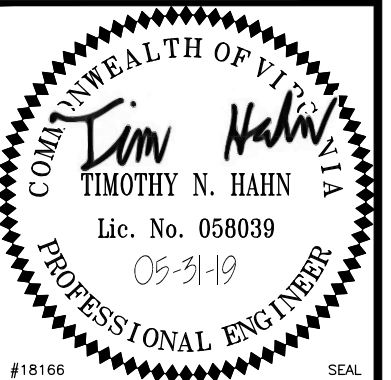
A2 LOW PRESSURE STEAM TRAP STATION PIPING DETAIL
NO SCALE



- NOTES:**
- PROVIDE UNIONS OR FLANGES AND ARRANGE WATER PIPING TO FACILITATE TUBE BUNDLE REMOVAL WITH MINIMUM DISTURBANCE TO PIPING.
 - PRESSURE RELIEF VALVE SET AT WATER-SIDE EQUIPMENT'S RATED PRESSURE.

A4 HEAT EXCHANGER PIPING DETAIL
NO SCALE

NO.	DESCRIPTION	DATE	APP'R.



APPROVED	A/E INFO
FOR COMMANDER NAVFAC	ACTIVITY
SATISFACTORY TO	DES: TNH DRW: MTF CHK: JAK

U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
MECHANICAL DETAILS

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782449
SHEET 48 OF 68
M-503

CHILLED / HOT WATER ROOF TOP UNIT (RTU) SCHEDULE

TAG	TYPE	SERVICE	SUPPLY FAN DATA				HOT WATER PREHEAT COIL DATA					CHILLED WATER COOLING COIL DATA						HOT WATER REHEAT COIL DATA				ELECTRICAL DATA				UNIT WEIGHT (LBS)	REMARKS		
			S.A. C.F.M. (MAX./MIN.)	O.A. C.F.M.	E.S.P. (IN. WG.)	H.P.	TOTAL CAPACITY M.B.H.	E.D.B. (°F)	G.P.M.	MAX. A.P.D. (IN. WG.)	W.P.D. (FT. WG.)	TOTAL CAPACITY M.B.H.	SENS. CAPACITY M.B.H.	E.D.B. (°F)	E.W.B. (°F)	G.P.M.	MAX. A.P.D. (IN. WG.)	W.P.D. (FT. WG.)	TOTAL CAPACITY M.B.H.	E.D.B. (°F)	G.P.M.	MAX. A.P.D. (IN. WG.)	W.P.D. (FT. WG.)	VOLTS	PHASE			M.C.A.	M.O.C.P.
RTU-1	SZ VAV	MANUAL GRINDING	3300	370	0.5	3	-	-	-	-	142.0	85.0	78.4	68.5	23.6	0.58	3.96	118.0	56.0	11.80	0.06	0.46	480	3	5.3	15	2250	SEE NOTES	
RTU-2	SZ VAV	QE INSPECTION	800	125	0.5	1	-	-	-	-	28.6	21.6	79.5	66.5	4.8	0.26	0.56	30.6	60.7	3.10	0.03	0.10	480	3	1.9	15	1530	SEE NOTES	
RTU-3	CV	BLASTING ROOM	1800	1800	0.5	2	85.9	26.0	8.60	0.06	0.63	161.8	67.9	88.7	79.6	26.9	0.79	4.70	55.8	64.0	5.50	0.06	0.27	480	3	3.6	15	2150	SEE NOTES
RTU-4	SZ VAV	HF FURNACE	2000	255	0.6	3	66.5	58.0	6.60	0.07	0.38	75.0	55.0	80.0	67.0	12.5	0.89	1.17	63.8	54.5	6.40	0.07	0.35	480	3	5.3	15	2185	SEE NOTES
RTU-5	SZ VAV	COLD SPRAY	905	90	0.5	1	-	-	-	-	26.2	21.2	76.3	64.4	4.3	0.31	0.52	31.5	65.5	3.10	0.04	0.08	480	3	1.9	15	1530	SEE NOTES	
RTU-7	CV	PAINTING AND MAINT.	1260	1260	0.5	2	89.6	26.0	8.90	0.13	1.14	113.2	47.5	88.7	79.6	18.8	0.85	4.08	33.6	62.4	3.40	0.07	0.09	480	3	3.1	15	1815	SEE NOTES
RTU-8	CV	PAINTING	6000	6000	0.5	5	261.8	26.0	26.10	0.09	2.14	350.0	154.2	88.7	79.6	58.1	0.50	6.62	-	-	-	-	480	3	8.4	15	2661	SEE NOTES	
RTU-9	VAV	HVOF	1730 / 900	340	0.6	2	77.1	26.0	7.70	0.05	0.51	78.3	53.7	79.2	66.2	13.0	0.76	3.02	-	-	-	-	480	3	3.6	15	1856	SEE NOTES	
RTU-10	SZ VAV	AEP BOOTH AREA	2765	200	0.5	3	-	-	-	-	124.3	72.7	78.8	69.0	20.6	0.73	3.58	91.6	57.5	9.10	0.07	0.31	480	3	5.3	15	2000	SEE NOTES	
RTU-11	SZ VAV	HEAT TREAT FURNACE	20000	20000 / 600	0.7	10	400.0	66.6	13.30	0.10	0.38	-	-	-	-	-	-	-	-	-	-	-	480	3	15.6	25	4347	SEE NOTES	
RTU-12	SZ VAV	HEAT TREAT ADDITION	10000 / 5000	10000 / 5000	0.7	15	507.0	26.0	50.50	0.15	6.65	-	-	-	-	-	-	-	-	-	-	-	480	3	23.1	40	2590	SEE NOTES	
RTU-14	CV	HEAT TREAT CONTROL ROOM	625	40	0.5	1	-	-	-	-	24.5	16.5	77.9	66.7	4.1	0.19	0.50	28.5	60.0	2.80	0.03	0.07	480	3	1.9	15	1530	SEE NOTES	

- NOTES:
- SELECTIONS BASED ON TRANE.
 - LEAVING AIR TEMPERATURE IS TO BE PROVIDED AT THE UNIT DISCHARGE, TOTAL & SENSIBLE CAPACITIES ARE "NET" VALUES TO BE PROVIDED DOWNSTREAM OF THE SUPPLY FAN.
 - PROVIDE CONSTANT VOLUME UNITS WITH MOTOR STARTER(S) SIZED IN ACCORDANCE WITH NEMA RECOMMENDATIONS. PROVIDE WITH INVERTER DUTY RATED MOTOR(S) AND VARIABLE FREQUENCY DRIVE(S) FOR V.A.V. UNITS.
 - EXTERNAL STATIC PRESSURE INCLUDES SUPPLY, RETURN AND OUTSIDE AIR DISTRIBUTION SYSTEMS.
 - PROVIDE WITH THE FOLLOWING SECTIONS: MIXING BOX, MERV 8 FLAT FILTER, MEDIUM ACCESS, PREHEAT COIL, MEDIUM ACCESS, COOLING COIL, MEDIUM ACCESS, REHEAT COIL, MEDIUM ACCESS, FAN, AND PIPING VESTIBULE.
 - CHILLED WATER EWT/LWT: 46°F/58°F. HOT WATER EWT/LWT: 200°F/180°F U.O.N. HEATING COIL PERFORMANCE FOR RTU-11 IS BASED ON 140°F LWT.
 - RTU-11 SHALL BE PROVIDED WITH TWO FANS. H.P. INDICATED IS FOR EACH FAN.
 - SEE CONTROL DIAGRAMS ON SHEET M-701 - M-705 FOR ADDITIONAL REQUIREMENTS. EQUIPMENT MANUFACTURER SHALL COORDINATE WITH CONTROLS CONTRACTOR TO ENSURE ALL REQUIREMENTS FOR A COMPLETE AND OPERABLE SYSTEM ARE MET.

PUMP SCHEDULE

TAG	SERVICE	TYPE	G.P.M.	HEAD (FT.)	ELECTRICAL DATA				UNIT WEIGHT (LBS)	REMARKS
					H.P.	VOLTS	PHASE	R.P.M.		
HWP-1	HOT WATER	BASE MOUNTED	450	100	20	480	3	1750	695	SEE NOTES
HWP-2	HOT WATER	BASE MOUNTED	450	100	20	480	3	1750	695	SEE NOTES

- NOTES:
- SELECTIONS BASED ON BELL AND GOSSETT.
 - PROVIDE NON-OVERLOADING MOTOR SELECTION.
 - PROVIDE INVERTER DUTY RATED MOTOR SUITABLE FOR USE WITH A VFD.

AIR CONTROL SCHEDULE

SYSTEM	TAG	AIR SEPARATOR			TAG	EXPANSION TANK				REMARKS
		G.P.M.	MAX. P.D. FT.	SIZE		CAPACITY (GAL.)	ACCEPTED CAPACITY (GAL.)	APPROX. DIAMETER	APPROX. HEIGHT	
HOT WATER	AS-1	450	0.7	6	EXP-1	106	35	24	65	SEE NOTES

- NOTES:
- SELECTIONS BASED ON BELL & GOSSETT.
 - PROVIDE CENTRIFUGAL TYPE AIR SEPARATOR WITH HIGH CAPACITY AIR VENT.
 - PROVIDE VERTICAL BLADDER TYPE EXPANSION TANK WITH FLOOR SKIRT, PRE-CHARGE TO 60 PSIG.

FAN SCHEDULE

TAG	LOCATION	FAN TYPE	C.F.M. (MAX./MIN.)	E.S.P. (IN. WG.)	MAX SONES	DRIVE	ELECTRICAL DATA			MODEL NO.	UNIT WEIGHT (LBS)	REMARKS
							H.P.	VOLTS	PHASE			
EF 22-456	HEAT TREAT FURNACE	UPBLAST	10000	0.375	12	BELT	2	480	3	ACRU-B	345	SEE NOTES
EF 22-456A	HEAT TREAT FURNACE	UPBLAST	10000	0.375	12	BELT	2	480	3	ACRU-B	345	SEE NOTES
EF 22-462	HIGH BAY - SMOKE CONTROL	UPBLAST	14000	0.375	26	BELT	5	480	3	ACSC	390	SEE NOTES
EF 22-463	HIGH BAY - SMOKE CONTROL	UPBLAST	14000	0.375	26	BELT	5	480	3	ACSC	390	SEE NOTES
EF 22-464	HIGH BAY - SMOKE CONTROL	UPBLAST	14000	0.375	26	BELT	5	480	3	ACSC	390	SEE NOTES
EF 22-465	HIGH BAY - SMOKE CONTROL	UPBLAST	14000	0.375	26	BELT	5	480	3	ACSC	390	SEE NOTES
V-11	HF FURNACE	UPBLAST	26045	0.05	19	BELT	5	480	3	ACRU-B	585	SEE NOTES
UEF-1	HEAT TREAT ADDITION	UTILITY	5000 / 3000	0.50	-	BELT	1-1/2	480	3	CPS	380	SEE NOTES
UEF-2	HEAT TREAT ADDITION	UTILITY	5000 / 3000	0.50	-	BELT	1-1/2	480	3	CPS	380	SEE NOTES

- NOTES:
- SELECTIONS BASED ON COOK.
 - PROVIDE ROOF TOP CENTRIFUGAL FANS WITH CHATTERPROOF BACKDRAFT DAMPER, INTREGAL ELECTRICAL DISCONNECT, ALUMINUM CONSTRUCTION, REMOVABLE DOME, BIRDSCREEN AND MANUFACTURER'S ROOF CURB.
 - SMOKE CONTROL FANS SHALL BE PROVIDED WITH A STEEL PROPELLER AND HINGED BUTTERFLY DISCHARGE DAMPERS.
 - PROVIDE UTILITY FANS WITH DRAIN, ACCESS DOOR, AND BACKDRAFT DAMPER.
 - PROVIDE INVERTER DUTY RATED MOTOR SUITABLE FOR USE WITH A VFD AND A NEMA 3R VFD ENCLOSURE. FOR EACH OF THE FOLLOWING FANS: EF 22-456, EF 22-456A, UEF-1, AND UEF-2.
 - SMOKE CONTROL FANS AND V-11 SHALL BE CONSTRUCTED TO SPARK RESISTANT CLASS B.

SPLIT SYSTEM DX ROOF TOP UNIT (RTU) SCHEDULE

TAG	TYPE	SERVICE	SUPPLY FAN DATA				OUTSIDE AIR DX COIL DATA						RETURN AIR DX COIL DATA						ELECTRIC SUPPLEMENTAL HEAT		ELECTRICAL DATA				CONDENSING UNIT ELECTRICAL DATA				UNIT WEIGHT (LBS)	REMARKS				
			S.A. C.F.M.	O.A. C.F.M.	E.S.P. (IN. WG.)	H.P.	O.A. C.F.M.	TOTAL CAPACITY M.B.H.	SENS. CAPACITY M.B.H.	E.D.B. (°F)	E.W.B. (°F)	L.D.B. (°F)	L.W.B. (°F)	R.A. C.F.M.	TOTAL CAPACITY M.B.H.	SENS. CAPACITY M.B.H.	E.D.B. (°F)	E.W.B. (°F)	L.D.B. (°F)	L.W.B. (°F)	SELECTED KW	SELECTED STAGES	VOLTS	PHASE	M.C.A.	M.O.C.P.	TAG	VOLTS			PHASE	M.C.A.	M.O.C.P.	
RTU-13	CV	LEITZ LAB	11054	670	1.5	15	670	73.9	36.0	95.0	79.4	46.4	46.2	10384	104.5	104.5	68.0	54.2	58.0	50.3	25.0	SCR	480	3	67	80	4300	ACCU-13	208	3	63	70	2200	SEE NOTES

- NOTES:
- SELECTION BASED ON 4 SEASONS.
 - LEAVING AIR TEMPERATURE IS TO BE PROVIDED AT THE UNIT DISCHARGE, TOTAL & SENSIBLE CAPACITIES ARE "NET" VALUES TO BE PROVIDED DOWNSTREAM OF THE SUPPLY AIR FAN.
 - PROVIDE WITH INVERTER DUTY RATED MOTOR AND FACTORY MOUNTED VARIABLE FREQUENCY DRIVE IN A NEMA 3R ENCLOSURE. PROVIDE UNIT WITH SERVICE LIGHT WITH SWITCH AND 120 VOLT, 10 AMP CONVIENCE OUTLET FACTORY MOUNTED.
 - RTU SHALL BE PROVIDED WITH 3 MODULATING DIGITAL SCROLL COMPRESSORS, MERV 8 PRE-FILTER, MERV 16 PRIMARY FILTER, COOLING COIL, SCR ELECTRIC HEAT. PROVISIONS SHALL BE MADE TO ALLOW HUMIDIFIER TO MOUNTED WITHIN CABINET OF RTU.
 - EXTERNAL STATIC PRESSURE INCLUDES SUPPLY, RETURN AND OUTSIDE AIR DISTRIBUTION SYSTEMS.
 - SEE CONTROL DIAGRAMS ON SHEET M-701 - M-705 FOR ADDITIONAL REQUIREMENTS. EQUIPMENT MANUFACTURER SHALL COORDINATE WITH CONTROLS CONTRACTOR TO ENSURE ALL REQUIREMENTS FOR A COMPLETE AND OPERABLE SYSTEM ARE MET.

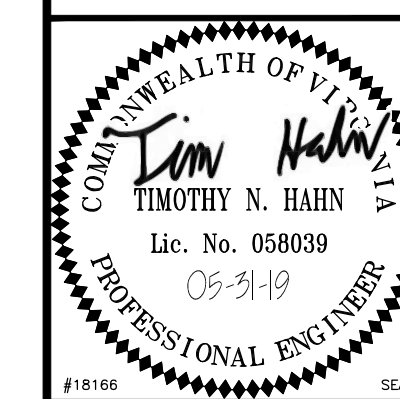
DX ROOF TOP UNIT (RTU) SCHEDULE

TAG	TYPE	SERVICE	SUPPLY FAN DATA				DX COIL DATA						ELECTRICAL DATA				UNIT WEIGHT (LBS)	REMARKS
			S.A. C.F.M. (MAX./MIN.)	O.A. C.F.M.	E.S.P. (IN. WG.)	H.P.	TOTAL CAPACITY M.B.H.	SENS. CAPACITY M.B.H.	E.D.B. (°F)	E.W.B. (°F)	L.D.B. (°F)	L.W.B. (°F)	VOLTS	PHASE	M.C.A.	M.O.C.P.		
RTU-6	CV	PMC	2475	360	1.5	1.5	104.9	76.0	71.1	59.4	43.1	42.8	480	3	26	30	2335	SEE NOTES
RTU-15	CV	HEAT TREAT ADDITION	1400	240	0.8	1	48.0	35.8	80.0	67.0	57.7	56.4	480	3	11	15	730	SEE NOTES
RTU-16	CV	HEAT TREAT ADDITION	1400	240	0.8	1	48.9	34.5	80.0	67.0	57.7	56.4	480	3	11	15	730	SEE NOTES
RTU-17	CV	CMM	5500	275	3.5	7.5	203.6	165.5	70.5	57.7	43.0	43.0	480	3	49	60	2735	SEE NOTES

- NOTES:
- SELECTIONS BASED ON TRANE.
 - LEAVING AIR TEMPERATURE IS TO BE PROVIDED AT THE UNIT DISCHARGE, TOTAL & SENSIBLE CAPACITIES ARE "NET" VALUES TO BE PROVIDED DOWNSTREAM OF THE SUPPLY AIR FAN.
 - PROVIDE WITH MOTOR STARTER(S) SIZED IN ACCORDANCE WITH NEMA RECOMMENDATIONS.
 - PROVIDE WITH THE FOLLOWING SECTIONS: MIXING BOX, MERV 8 FILTER, COOLING COIL, AND FAN. PROVIDE RTU-6 WITH MERV 16 FINAL FILTER. PROVIDE RTU-6 AND RTU-17 WITH MODULATING HOT GAS REHEAT AND DIGITAL SCROLL COMPRESSOR.
 - EXTERNAL STATIC PRESSURE INCLUDES SUPPLY, RETURN AND OUTSIDE AIR DISTRIBUTION SYSTEMS.
 - SEE CONTROL DIAGRAMS ON SHEET M-701 - M-705 FOR ADDITIONAL REQUIREMENTS. EQUIPMENT MANUFACTURER SHALL COORDINATE WITH CONTROLS CONTRACTOR TO ENSURE ALL REQUIREMENTS FOR A COMPLETE AND OPERABLE SYSTEM ARE MET.

VARIABLE FREQUENCY DRIVE NOTE:

ALL VARIABLE FREQUENCY DRIVES SHALL BE PROVIDED WITH AN AC LINE REACTOR AND DC CHOKE FOR HARMONIC DISTORTION MITIGATION. REFER TO ELECTRICAL DOCUMENTS FOR ADDITIONAL REQUIREMENTS.



APPROVED: [Signature]

FIR COMMANDER NAVFAC
ACTIVITY: [Blank]
SATISFACTORY TO:
DES: TNH | DRW: MTF | CHK: JAK

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
 REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225
 MECHANICAL SCHEDULES

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO.: 6878897
NAVFAC DRAWING NO.: 12782450
SHEET 49 OF 68

M-601

DRAWING REVISION: 10 MAY 2014

CHILLED / HOT WATER AIR HANDLING UNIT SCHEDULE

TAG	TYPE	SUPPLY FAN DATA				CHILLED WATER COOLING COIL DATA								HOT WATER HEATING COIL DATA (PRE-HEAT)				ELECTRICAL DATA				UNIT WEIGHT (LBS)	REMARKS			
		S.A. C.F.M. (MAX./MIN.)	O.A. C.F.M.	E.S.P. (IN. WG.)	H.P.	TOTAL CAPACITY M.B.H.	SENS. CAPACITY M.B.H.	E.D.B. (*F)	E.W.B. (*F)	L.D.B. (*F)	L.W.B. (*F)	G.P.M.	MAX. A.P.D. (IN. WG.)	MAX. W.P.D. (FT. WG.)	TOTAL CAPACITY M.B.H.	E.D.B. (*F)	L.D.B. (*F)	G.P.M.	MAX. A.P.D. (IN. WG.)	MAX. W.P.D. (FT. WG.)	VOLTS			PHASE	MCA	MOCP
AHU-1	CV	800	800	0.50	1	62.9	39.4	94	74	49.5	49.4	10.45	0.5	9.2	71.1	18.0	100.0	7.1	0.07	0.4	480	3	1.9	15.0	750	SEE NOTES
AHU-2	SZ VAV	800	140	0.50	1	35.5	25.86	82	67	52.6	52.3	5.9	0.29	2.8	36.4	60.0	102.0	3.6	0.04	0.1	480	3	1.9	15.0	833	SEE NOTES
AHU-4	SZ VAV	18,000 / 6,000	18,000 / 6000	1.50	7.5	530.9	275.3	88.7	78	75	70.9	88.2	0.23	8.84	709.2	26.0	62.3	51.0	0.1	5.2	480	3	42.0	70.0	4545	SEE NOTES

- NOTES:
- SELECTIONS BASED ON TRANE.
 - LEAVING AIR TEMPERATURE IS TO BE PROVIDED AT THE UNIT DISCHARGE, TOTAL & SENSIBLE CAPACITIES ARE "NET" VALUES TO BE PROVIDED DOWNSTREAM OF THE SUPPLY AIR FAN.
 - PROVIDE WITH THE FOLLOWING SECTIONS: MIXING BOX, MERV 8 FLAT FILTER, MEDIUM ACCESS, PREHEAT COIL, MEDIUM ACCESS, COOLING COIL, MEDIUM ACCESS, REHEAT COIL, MEDIUM ACCESS, FAN, AND PIPING VESTIBULE.
 - PROVIDE WITH THE FOLLOWING SECTIONS: MIXING BOX, FLAT FILTER, COOLING COIL, PREHEAT COIL, AND FAN. AHU-4 SHALL BE PROVIDED WITH TWO FANS, EACH WITH THE HORSEPOWER INDICATED.
 - CHILLED WATER EWT/LWT: 45°F/54°F. HOT WATER EWT/LWT: 200°F/180°F.
 - AHU-1 SHALL HAVE A MAXIMUM LENGTH OF 58". AHU-2 SHALL HAVE A MAXIMUM LENGTH OF 75".

SHELL & TUBE HEAT EXCHANGER SCHEDULE

TAG	MINIMUM CAPACITY (M.B.H.)	TUBE SIDE			SHELL SIDE		UNIT WEIGHT (LBS)	
		G.P.M.	E.W.T. (*F)	L.W.T. (*F)	MAXIMUM WATER PD (PSIG)	ENTRANCE STEAM PRESSURE (PSIG)		LB/HR
HX-1	4378	450.0	180	200	34.6	15.0	4629	880

- NOTES:
- SELECTION BASED ON ARMSTRONG.
 - PROVIDE WITH COPPER TUBES.
 - FOULING FACTOR = 0.00115.

VARIABLE FREQUENCY DRIVE NOTE:

ALL VARIABLE FREQUENCY DRIVES SHALL BE PROVIDED WITH AN AC LINE REACTOR AND DC CHOKER FOR HARMONIC DISTORTION MITIGATION. REFER TO ELECTRICAL DOCUMENTS FOR ADDITIONAL REQUIREMENTS.

GRILLE, REGISTER & DIFFUSER SCHEDULE

TAG	TYPE	SERVICE	C.F.M. RANGE	NECK SIZE	MAX. P.D.	MODEL NO.	REMARKS
A	DIFFUSER	SUPPLY	315	10"	0.1	TDCA-AA	LAY IN, 24X24 PANEL, 4-WAY BLOW PATTERN
B	DRUM LOUVER	SUPPLY	200-280	18X6	0.1	DL	PROVIDE WITH EXTRACTOR AND SUITABLE FOR DUCT MOUNTING
C	DIFFUSER	SUPPLY	665	12"	0.1	TMS	LAY IN, 24X24 PANEL, 4-WAY BLOW PATTERN
D	DRUM LOUVER	SUPPLY	690 - 700	20x10	0.1	DL	PROVIDE WITH EXTRACTOR AND SUITABLE FOR DUCT MOUNTING
X	VARIES	VARIES	VARIES	VARIES	-	-	EXISTING AIR TERMINAL
Y	GRILLE	RETURN	1465	22x22	0.1	350FL	24X24 PANEL, 3/4" BLADE SPACING, 35° DEFLECTION
Z	GRILLE	RETURN	585	12X12	0.1	350FL	24X24 PANEL, 3/4" BLADE SPACING, 35° DEFLECTION

- THE FOLLOWING NOTES ARE TYPICAL UNLESS OTHERWISE NOTED:
- SELECTIONS BASED ON TITUS.
 - PROVIDE ALUMINUM DIFFUSERS AND REGISTERS WITH OPPOSED BLADE VOLUME DAMPERS, BAKED STANDARD WHITE ENAMEL FINISH (INCLUDING HEAD OF SCREWS), MAXIMUM NC=25 AT HIGHEST CFM AND PROVIDE SQUARE TO ROUND TRANSITION AS REQUIRED.
 - PROVIDE 4-WAY PATTERN CEILING DIFFUSERS, U.O.N. ON PLANS OR SCHEDULE.
 - MAXIMUM PRESSURE DROP SHALL INCLUDE VOLUME DAMPER WHERE DAMPER IS PROVIDED.

HUMIDIFIER SCHEDULE

TAG	AIFLOW C.F.M.	CAPACITY LBS./HR WATER VAPOR	TYPE	ELECTRICAL DATA			
				M.C.A.	M.O.C.P.	VOLTS	PHASE
HUM-1	11000	30	ELECTRIC	29.0	40.0	208	3
HUM-2	5500	20	ELECTRIC	13.0	20.0	480	1

- NOTES:
- SELECTIONS BASED ON DRISTEEM, MODEL VM.
 - EQUIPMENT SHALL BE PROVIDED WITH BACNET MS/TP INTERFACE.
 - HUM-1 SHALL BE PROVIDED WITH DISPERSION TUBE SUITABLE FOR MOUNTING WITHIN RTU.
 - HUM-2 SHALL BE PROVIDED WITH DISPERSION TUBE SUITABLE FOR DUCT MOUNTING.
 - HUMIDIFIER SHALL BE PROVIDED WITH WATER SKIM FEATURE AND DRAIN COOLER.

DUCT HEATING COIL SCHEDULE - HOT WATER

TAG	SERVICES	C.F.M.	M.B.H.	AIR TEMP (*F)		G.P.M.	E.W.T. (*F)	MAX. W.P.D. (FT. WG.)	MAX. A.P.D. (IN. WG.)	NOMINAL SIZE (HxW)	UNIT WEIGHT (LBS)	REMARKS
				E.A.T.	L.A.T.							
DH-1	COLD SPRAY	10000	369.0	26.0	60.0	36.7	200	0.68	0.39	30x44	70.0	SEE NOTES

- NOTES:
- PROVIDE WITH DUCT FLANGES.
 - SELECTION BASED ON TRANE.

SHUT OFF V.A.V. TERMINAL BOX SCHEDULE (HOT WATER)

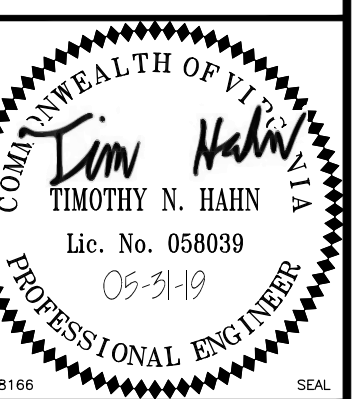
TAG	INLET SIZE (IN.)	VOL. REG. C.F.M.		MAX INLET S.P. (IN. WG.)	HEATING COIL				UNIT WEIGHT (LBS)	REMARKS
		MIN.	MAX.		M.B.H.	G.P.M.	W.P.D. (FT. WG.)	A.P.D. (IN. WG.)		
VAV-9-1	10"	340	1120	0.3	18.2	1.8	7.9	0.28	29	SEE NOTES
VAV-9-2	6"	130	420	0.3	6.8	0.7	0.8	0.31	21	SEE NOTES
VAV-9-3	6"	125	405	0.3	6.6	0.7	0.8	0.31	21	SEE NOTES

- NOTES:
- HEATING COIL SELECTION BASED ON 55°F E.A.T. AT 50% OF MAX. AIRFLOW.
 - SELECT UNITS FOR MAXIMUM NOISE CRITERIA OF 35.
 - SELECTIONS BASED ON TRANE.

DUCT CONSTRUCTION AND LEAK TEST SCHEDULE

TAG	DUCT PRESSURE CLASS				SUPPLY				RETURN/OUTSIDE/EXHAUST AIR		DUCT TEST PRESSURE S.P.	DUCT TEST TYPE
	SUPPLY DUCT S.P.	RETURN DUCT S.P.	EXHAUST DUCT S.P.	OUTSIDE AIR DUCT S.P.	ROUND/OVAL		RECTANGULAR		DUCT SEAL CLASS	DUCT LEAK CLASS CFM/100 S.F.		
					DUCT SEAL CLASS	DUCT LEAK CLASS CFM/100 S.F.	DUCT SEAL CLASS	DUCT LEAK CLASS CFM/100 S.F.				
VAV AIR HANDLING UNIT	4	-2		-2	A	3	A	6			4.0	NOTE 1
100% OUTSIDE AIR UNIT	2	-2	-2	-2	A	3	A	6			2.0	NOTE 1
VAV TERMINAL UNIT	2				A	12	A	24			2.0	NOTE 1

- NOTES:
- TEST ALL DUCTWORK IN ACCORDANCE WITH THE PROCEDURES OUTLINED IN THE SMACNA HVAC AIR DUCT LEAKAGE TEST MANUAL. ALL DUCTWORK ASSOCIATED WITH AHU-4 AND RTU-9 IS SUBJECT TO 100% D.A.L.T., UNLESS OTHERWISE NOTED.



APPROVED

FOR COMMANDER NAVFAC

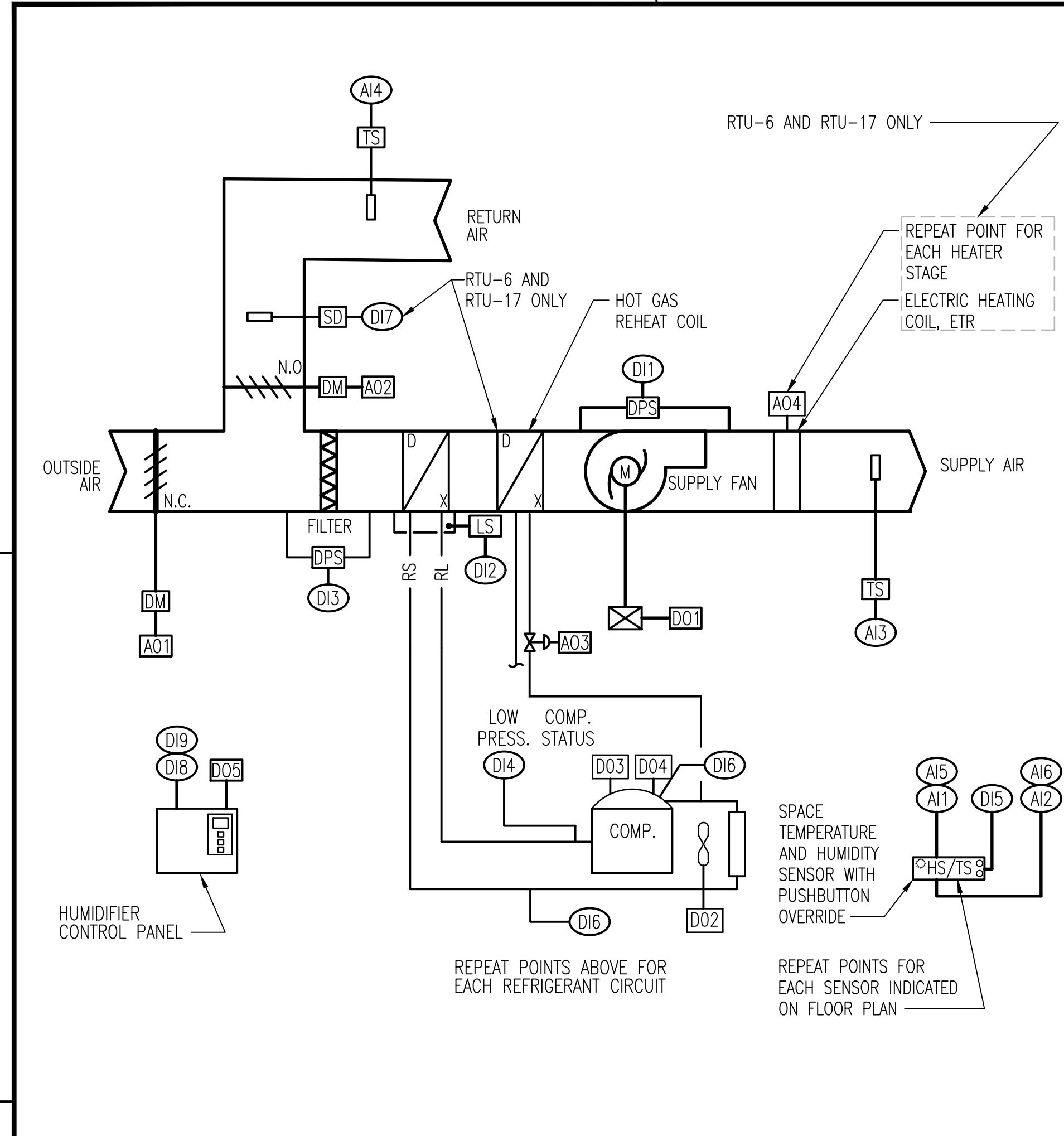
ACTIVITY

SATISFACTORY TO

DES: TNH | DRW: MTF | CHK: JAK

U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
MECHANICAL SCHEDULES

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782451
SHEET 50 OF 68
M-602
DRAWING REVISION: 10 MAY 2014



C.V. DX RTU/AHU/SPLIT SYSTEM	
LOCAL DDC CONTROLLER	
INPUTS	
ANALOG	(AI1) SPACE TEMPERATURE
	(AI2) SPACE TEMPERATURE SETPOINT
	(AI3) SUPPLY AIR TEMPERATURE
	(AI4) RETURN AIR TEMPERATURE
	(AI5) SPACE HUMIDITY
	(AI6) SPACE HUMIDITY SETPOINT
DIGITAL	(DI1) SUPPLY AIR FAN STATUS
	(DI2) MOISTURE SENSOR
	(DI3) DIRTY FILTER
	(DI4) REFRIGERANT LOW PRESSURE ALARM
	(DI5) UNOCCUPIED OVERRIDE
	(DI6) REFRIGERANT HIGH PRESSURE ALARM
	(DI7) SMOKE DETECTOR
	(DI8) HUMIDIFIER ALARM
	(DI9) HUMIDIFIER STATUS
OUTPUTS	
ANALOG	(AO1) OUTSIDE AIR DAMPER CONTROL
	(AO2) RETURN AIR DAMPER CONTROL
	(AO3) HOT GAS REHEAT
	(AO4) ELECTRIC HEAT
DIGITAL	(DO1) SUPPLY AIR FAN START
	(DO2) CONDENSER FAN (ON/OFF)
	(DO3) COMPRESSOR STAGE 1
	(DO4) COMPRESSOR STAGE 2
	(DO5) HUMIDIFIER START/STOP

SEQUENCE OF OPERATION

THE SYSTEM SHALL BE AUTOMATICALLY INDEXED INTO OCCUPIED OR UNOCCUPIED MODE BASED ON A SCHEDULE DEFINED BY THE USER. THE SYSTEM SHALL ALSO BE CAPABLE OF BEING MANUALLY INDEXED FROM UNOCCUPIED TO OCCUPIED MODE THRU AN OVERRIDE BUTTON INTEGRAL TO THE SPACE TEMPERATURE SENSOR.

COOLING, OCCUPIED: DURING OCCUPIED MODE, THE OUTSIDE AIR DAMPER SHALL MODULATE OPEN TO ITS MINIMUM POSITION WHILE THE RETURN AIR DAMPER MODULATES CLOSED A PROPORTIONAL AMOUNT. THE CONTROLLER SHALL ENERGIZE THE SUPPLY FAN AND CYCLE COMPRESSORS TO MAINTAIN OCCUPIED SPACE TEMPERATURE SETPOINT (ADJ. U.O.N.). FOR RTU-6, FAN AND COMPRESSORS SHALL OPERATE TO SATISFY THE COOLING SETPOINT FOR THE SPACE WITHIN THE HIGHEST COOLING DEMAND. THE DUCT HEATER SERVING THE ALTERNATE SPACE SHALL MODULATE TO MEET ITS SPACE SETPOINT.

COOLING, UNOCCUPIED: THE CONTROLLER SHALL CYCLE UNIT SUPPLY FAN AND COMPRESSORS TO MAINTAIN SETBACK SETPOINT (ADJ.). FOR RTU-6, FAN AND COMPRESSORS SHALL OPERATE TO SATISFY THE COOLING SETPOINT FOR THE SPACE WITHIN THE HIGHEST COOLING DEMAND. THE DUCT HEATER SERVING THE ALTERNATE SPACE SHALL MODULATE TO MEET ITS SPACE SETPOINT. OUTSIDE AIR DAMPER SHALL BE CLOSED DURING UNOCCUPIED MODE.

AUTOMATIC OFF: A CONDENSATE HIGH LEVEL SWITCH SHALL BE PROVIDED IN THE PRIMARY DRAIN PAN. SWITCH SHALL DISABLE UNIT UPON SENSING HIGH WATER LEVEL IN PAN.

HEATING, OCCUPIED (RTU-6, RTU-17): DURING OCCUPIED MODE, THE OUTSIDE AIR DAMPER SHALL MODULATE OPEN TO ITS MINIMUM POSITION WHILE THE RETURN AIR DAMPER MODULATES CLOSED A PROPORTIONAL AMOUNT. SUPPLY FAN SHALL BE ENERGIZED AND RUN CONTINUOUSLY. THE CONTROLLER SHALL ENERGIZE THE EXISTING TO REMAIN SCR ELECTRIC DUCT HEATERS (TYP. OF 2, EACH SYSTEM) TO MAINTAIN OCCUPIED SPACE TEMPERATURE SETPOINT (ADJ.).

HEATING, UNOCCUPIED (RTU-6, RTU-17): THE CONTROLLER SHALL CYCLE UNIT SUPPLY FAN AND ENERGIZE/ DE-ENERGIZE THE EXISTING TO REMAIN SCR ELECTRIC HEAT TO MAINTAIN SPACE SETBACK SETPOINT (ADJ.). OUTSIDE AIR DAMPER SHALL BE CLOSED DURING UNOCCUPIED MODE.

DEHUMIDIFICATION CYCLE: UPON A CALL FOR DEHUMIDIFICATION BY ANY OF THE SPACE HUMIDISTATS, FACTORY PROVIDED HOT GAS REHEAT SHALL BE CYCLED TO MAINTAIN SETPOINT.

HUMIDIFICATION CYCLE (RTU-6, RTU-17): UPON A CALL FOR HUMIDIFICATION BY ANY OF THE SPACE HUMIDISTATS, THE ASSOCIATED HUMIDIFIER SHALL ENERGIZE.

OPTIMUM START: THROUGH THE DDC CONTROLLER, THE SYSTEM START TIME SHALL BE AUTOMATICALLY ADJUSTED IN ORDER TO BRING SPACE TO DESIRED SETPOINT IMMEDIATELY PRIOR TO SCHEDULED OCCUPANCY.

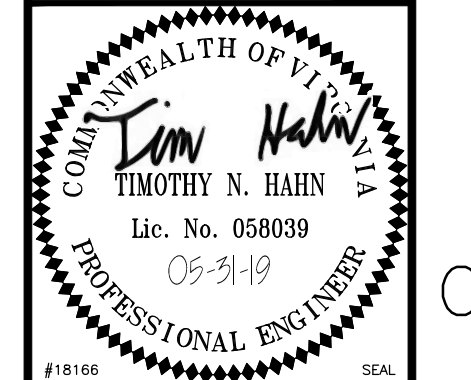
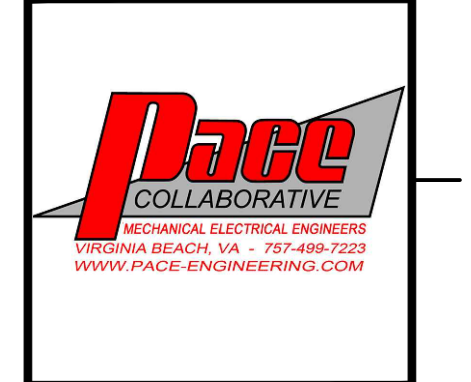
SAFETIES (RTU-6, RTU-17): ON DETECTION OF PRODUCTS OF COMBUSTION, THE SMOKE DETECTOR SHALL STOP THE UNIT SUPPLY FAN AND CLOSE THE OUTSIDE AIR DAMPER.

ALARMS: ALARM FOR DIRTY FILTER: WHEN PRESSURE DROP EXCEEDS 0.5" WG ABOVE INITIAL PRESSURE DROP. ALARM IF LEAVING AIR TEMPERATURE EXCEEDS 60°F IN COOLING MODE OR DROPS BELOW 65°F IN HEATING MODE. ALARM IF SUPPLY FAN OR COMPRESSOR FAILS TO START OR FAILS DURING OPERATION. ALARM ON DETECTION OF HIGH CONDENSATE LEVEL. ALARM UPON SMOKE DETECTOR ACTIVATION. ALARM UPON TEMPERATURE AND HUMIDITY FALLING OUTSIDE OF ACCEPTABLE LEVELS IN SPACES 1033A, 1033B, AND 1033.

CONTROLS LEGEND

- AHU-1 AIR HANDLING UNIT DESIGNATION
- CWR CHILLED WATER RETURN
- CWS CHILLED WATER SUPPLY
- CSR CURRENT SENSING RELAY
- CV VAV CONSTANT VOLUME VAV
- D-1 MOTORIZED DAMPER
- EA EXHAUST AIR
- EF EXHAUST FAN
- EF-1 EXHAUST FAN DESIGNATION
- HWR HOT WATER RETURN
- HWS HOT WATER SUPPLY
- MZ VAV MULTI ZONE VAV
- N.C. NORMALLY CLOSED
- N.O. NORMALLY OPEN
- OAD OUTSIDE AIR DAMPER
- P-1 PUMP DESIGNATION
- RA RETURN AIR
- RTU-1 ROOFTOP UNIT DESIGNATION
- SB SENSING BULB
- SA SUPPLY AIR
- SAF SUPPLY AIR FAN
- SV VAV SINGLE ZONE VAV
- (TYP.) TYPICAL
- UH-1 UNIT HEATER DESIGNATION
- VAV VARIABLE AIR VOLUME
- AMS AIR FLOW MEASURING STATION
- ATS AIR TEMPERATURE SENSOR
- AI1 ANALOG INPUT POINT
- AO1 ANALOG OUTPUT POINT
- CSR CURRENT SENSING RELAY
- DI1 DIGITAL INPUT
- DM DAMPER MOTOR ACTUATOR
- DO1 DIGITAL OUTPUT
- DPS DIFFERENTIAL PRESSURE SWITCH (DIGITAL) OR SENSOR (ANALOG)
- FS FREEZE STAT
- H HUMIDITY SENSOR
- L LIMIT SWITCH
- M MOTOR ACTUATOR
- SD SMOKE DETECTOR
- SP STATIC PRESSURE SENSOR
- TS TEMPERATURE SENSOR
- VFD VARIABLE FREQUENCY DRIVE
- ☒ MOTOR STARTER

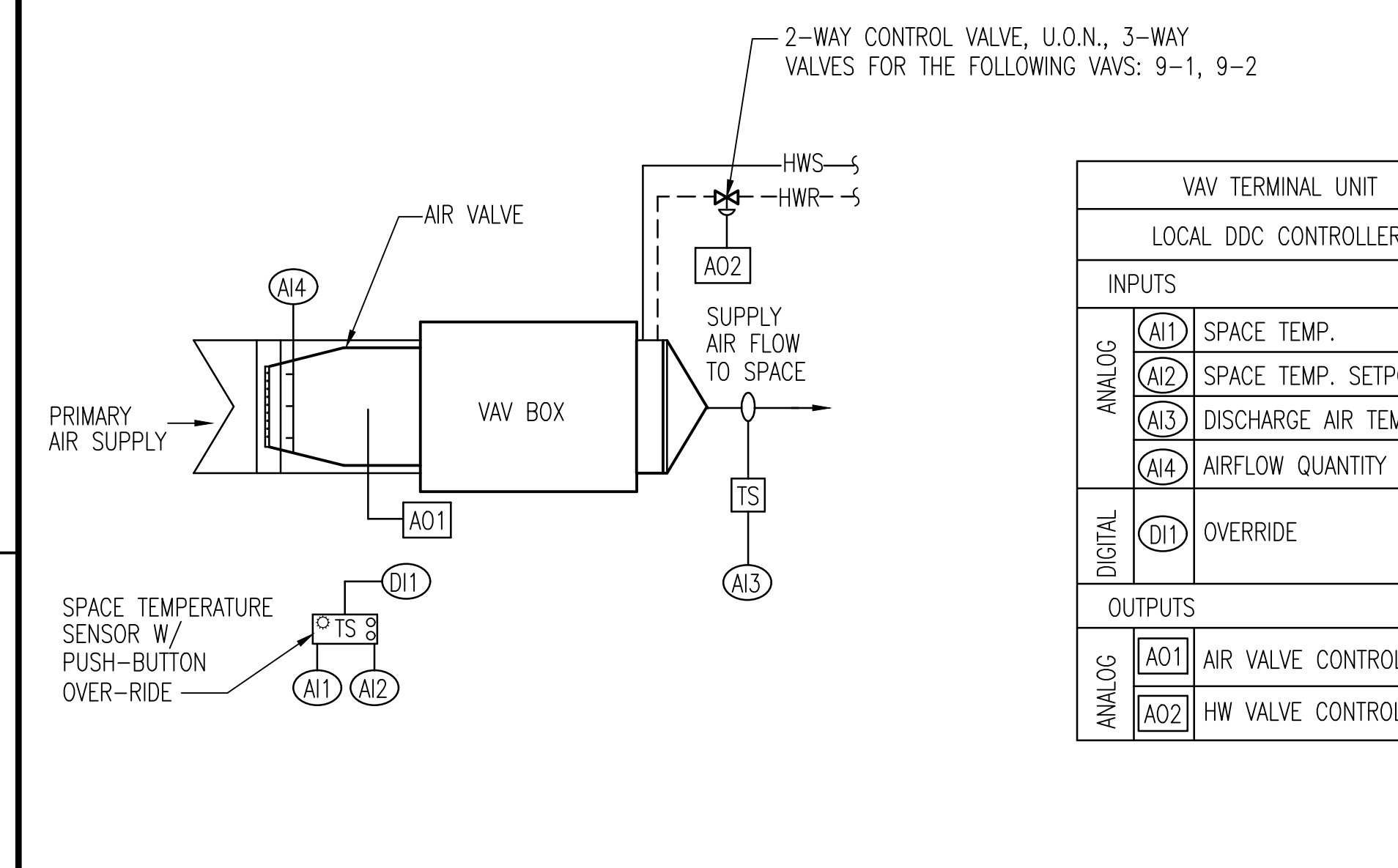
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DATE	DESCRIPTION	BY	APPR.

CONSTANT VOLUME DX PACKAGED RTU/AHU CONTROL DIAGRAM (TYP OF RTU-6, -15, -16, -17)

NO SCALE



VAV TERMINAL UNIT	
LOCAL DDC CONTROLLER	
INPUTS	
ANALOG	(AI1) SPACE TEMP.
	(AI2) SPACE TEMP. SETPOINT
	(AI3) DISCHARGE AIR TEMP.
	(AI4) AIRFLOW QUANTITY
DIGITAL	(DI1) OVERRIDE
OUTPUTS	
ANALOG	(AO1) AIR VALVE CONTROL
	(AO2) HW VALVE CONTROL

SEQUENCE OF OPERATION

GENERAL: THIS SEQUENCE IS TYPICAL FOR ALL VAV BOXES. AN OVERRIDE SWITCH INTEGRAL TO EACH ZONE TEMPERATURE SENSOR SHALL RETURN THE RESPECTIVE RTU FROM UNOCCUPIED MODE TO OCCUPIED MODE, BUT ONLY THE ZONE OVERRIDDEN SHALL RETURN TO OCCUPIED MODE. WHEN ANY OVERRIDE SWITCH IS ENERGIZED, RTU AND ALL VAV BOXES ASSOCIATED WITH THE ZONE OVERRIDDEN SHALL BE ENERGIZED THROUGH DDC CONTROL BUT ONLY THE ZONE OVERRIDDEN SHALL RETURN TO OCCUPIED MODE TEMPERATURE SETPOINTS. AFTER TWO HOURS (ADJ.), THE ZONE SHALL RETURN TO UNOCCUPIED MODE. ENERGIZED RTU AND ALL ASSOCIATED VAV BOXES SHALL BE DE-ENERGIZED UNLESS RTU IS UNDER CONTROL OF ANOTHER ZONE IN OVERRIDE POSITION.

COOLING-OCCUPIED: THE ZONE TEMPERATURE SENSOR THROUGH DDC CONTROL SHALL MODULATE THE PRIMARY AIR VALVE IN THE VAV BOX TO MAINTAIN ZONE TEMPERATURE SETPOINT (ADJ.), OPENING THE AIR VALVE ON A RISE IN SPACE TEMPERATURE, OR CLOSING IT ON A FALL IN SPACE TEMPERATURE. AIRFLOW SHALL NOT FALL BELOW MINIMUM SCHEDULED PRIMARY AIRFLOW).

HEATING-OCCUPIED: THE PRIMARY AIR VALVE SHALL START IN ITS MINIMUM SCHEDULED POSITION THRU DDC CONTROL. THE ZONE TEMPERATURE SENSOR THROUGH DDC CONTROL SHALL MODULATE THE HOT WATER CONTROL VALVE TO MAINTAIN ZONE TEMPERATURE SETPOINT. ON A RISE IN ZONE TEMPERATURE, THE OPPOSITE SHALL OCCUR. IF SPACE TEMPERATURE IS SLOW TO RESPOND, CONTROLLER SHALL MODULATE PRIMARY AIR VALVE OPEN TO A MAX OF 80%. ON A RISE IN ZONE TEMPERATURE, THE OPPOSITE SHALL OCCUR.

COOLING-UNOCCUPIED: THE VAV BOX PRIMARY AIR VALVE SHALL BE FULLY CLOSED UNLESS THE ASSOCIATED RTU SUPPLY FAN IS ENERGIZED. ON A RISE IN ZONE TEMPERATURE ABOVE SETBACK SETPOINT (ADJ.), THE VAV BOX PRIMARY AIR VALVE SHALL MODULATE TO MAINTAIN SETPOINT. DDC CONTROLLER SHALL MAINTAIN 55°F (ADJ.) SUPPLY AIR TEMPERATURE. RTU SHALL REMAIN ENERGIZED UNTIL ZONE SETBACK TEMPERATURE SETPOINT IS ACHIEVED. IF ZONE TEMPERATURE FALLS BELOW SETBACK SETPOINT, VAV BOX SHALL CLOSE AIR VALVE TO MIN. POSITION.

HEATING-UNOCCUPIED: THE VAV BOX PRIMARY AIR VALVE SHALL BE FULLY CLOSED UNLESS THE ASSOCIATED RTU SUPPLY FAN IS ENERGIZED. ON A FALL IN ZONE TEMPERATURE BELOW SETBACK SETPOINT, THE PRIMARY AIR VALVE SHALL OPEN TO 80%. DDC CONTROLLER SHALL MODULATE VAV BOX HOT WATER CONTROL VALVE TO MAINTAIN ZONE SETBACK TEMPERATURE SETPOINT. IF ZONE TEMPERATURE RISES ABOVE SETBACK SETPOINT, THE OPPOSITE SHALL OCCUR.

DDC/EMCS SIGNAL-FUNCTION:

- ZONE TEMPERATURE SENSOR - AIR VALVE CONTROL, HOT WATER VALVE CONTROL, STATUS, ALARM
- OVERRIDE SWITCH - OCCUPIED CONTROL, STATUS
- HOT WATER CONTROL VALVE - ZONE TEMPERATURE CONTROL, STATUS
- AIR VALVE - ZONE TEMPERATURE CONTROL, STATUS (AIRFLOW)

EXISTING DDC SYSTEM NOTE:

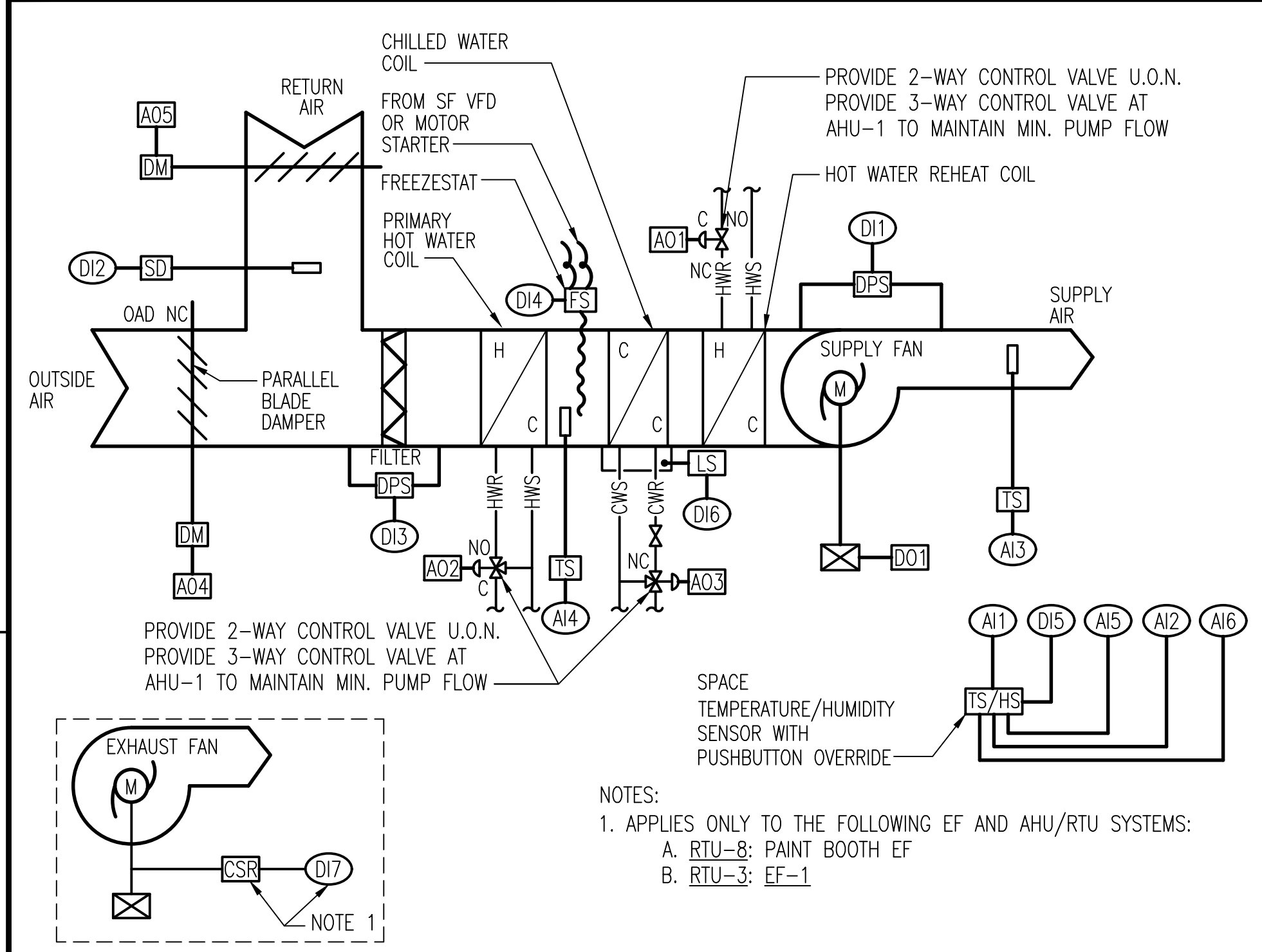
BUILDING 4225 IS CURRENTLY SERVED BY AN EXISTING JOHNSON CONTROLS "METASYS" DIRECT DIGITAL CONTROL SYSTEM. CONTRACTOR SHALL UPGRADE SOFTWARE, GRAPHICS, CONTROL POINTS AND HARDWARE AS REQUIRED FOR REPLACED EQUIPMENT. RE-USE OF EXISTING CONTROL RACEWAYS AND CONDUCTORS IS PERMITTED; HOWEVER, THEY MUST BE WARRANTED AS NEW.

VAV SHUT-OFF TERMINAL UNIT W/ HOT WATER COIL CONTROL DIAGRAM

NO SCALE

SPACE		INDOOR ENVIRONMENTAL PARAMETERS									
		SUMMER					WINTER				
		TEMPERATURE		HUMIDITY			TEMPERATURE		HUMIDITY		
SYSTEM	DB (°F)	PRECISION (°F)	% RH	PRECISION (% RH)	UNOCCUPIED	DB (°F)	PRECISION (°F)	% RH	PRECISION (% RH)	UNOCCUPIED	
COORDINATE MEASURING MACHINES (CMM)	RTU-17	68	0.5	42	2	68	68	0.5	42	2	68
PRECISION MEASUREMENT CENTER (PMC)	RTU-6	68	0.5	42	2	68	68	0.5	42	2	68
LEITZ LAB	RTU-13	68	1	40	5	68	68	1	40	5	68
HEAT TREAT FURNACE	RTU-11	80	-	-	-	85	68	-	-	-	63
HEAT TREAT ADDITION	RTU-12	80	-	-	-	85	68	-	-	-	63
ALL OTHER	-	78	-	50	-	83	68	-	50	-	63

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782452
SHEET 51 OF 68
M-701



SINGLE ZONE CONSTANT VOLUME RTU/AHU CONTROL DIAGRAM (DDC)
(TYP OF RTU-3, -7, -8, -14, AHU-1)
NO SCALE

CV AHU	
LOCAL DDC CONTROLLER	
INPUTS	
ANALOG	AI1 SPACE TEMPERATURE
ANALOG	AI2 SPACE HUMIDITY SENSOR
ANALOG	AI3 SUPPLY AIR TEMPERATURE
ANALOG	AI4 HW COIL DISCHARGE AVERAGE
ANALOG	AI5 SPACE TEMPERATURE SETPOINT
ANALOG	AI6 SPACE HUMIDITY SETPOINT
DIGITAL	DI1 SUPPLY AIR FAN STATUS
DIGITAL	DI2 SMOKE DETECTOR
DIGITAL	DI3 DIRTY FILTER
DIGITAL	DI4 FREEZESTAT
DIGITAL	DI5 UNOCCUPIED OVERRIDE
DIGITAL	DI6 CONDENSATE HI-LEVEL
DIGITAL	DI7 EXHAUST FAN STATUS (NOTE 1)
OUTPUTS	
ANALOG	AO1 REHEAT HW VALVE CONTROL
ANALOG	AO2 PRE-HEAT HW VALVE CONTROL
ANALOG	AO3 CW VALVE CONTROL
ANALOG	AO4 OUTSIDE AIR DAMPER CONTROL
ANALOG	AO5 RETURN AIR DAMPER CONTROL
DIGITAL	DO1 SUPPLY FAN START

SEQUENCE OF OPERATION

OCCUPIED MODE: WHEN THE SYSTEM IS INDEXED TO OCCUPIED OR SYSTEM IS MANUALLY INDEXED FROM UNOCCUPIED TO OCCUPIED MODE BY OVERRIDE BUTTON INTEGRAL TO SPACE TEMPERATURE SENSOR, THE RESPECTIVE CONTROL VALVE SHALL MODULATE TO MAINTAIN RESPECTIVE PROGRAMMED TEMPERATURE SETTINGS. THE SUPPLY FAN SHALL RUN CONTINUOUSLY. THE OUTSIDE AIR DAMPER SHALL OPEN.

RTU-3: SF SHALL BE INTERLOCKED WITH ASSOCIATED EXHAUST FAN, EF-1. EF-1 SHALL OPERATE WHEN SF IS ENABLED TO MAINTAIN A SLIGHTLY NEGATIVE SPACE PRESSURE DIFFERENTIAL WITH ADJACENT SPACES.

RTU-8: SHALL BE INTERLOCKED WITH ASSOCIATED EXHAUST FAN, PAINT BOOTH EF. RTU SHALL OPERATE WHENEVER PAINT BOOTH EF IS ENABLED.

UNOCCUPIED MODE: WHEN THE SYSTEM IS INDEXED TO UNOCCUPIED, THE UNIT SHALL BE DE-ENERGIZED UNTIL SPACE TEMPERATURE RISES ABOVE OR FALLS BELOW PROGRAMMED SETBACK TEMPERATURES (ADJ.). THE RESPECTIVE CONTROL VALVE SHALL OPEN FULLY. THE OUTSIDE AIR DAMPER SHALL BE CLOSED.

COOLING-OCCUPIED: THE SUPPLY FAN SHALL BE ENERGIZED WHEN THE SYSTEM IS INDEXED TO OCCUPIED. IF THE SPACE TEMPERATURE RISES ABOVE THE COOLING SETPOINT (ADJ.), THE CHILLED WATER CONTROL VALVE SHALL MODULATE TO MAINTAIN SETPOINT. WHEN THE SPACE TEMPERATURE DROPS BELOW THE SETPOINT, THE OPPOSITE SHALL OCCUR.

HEATING-OCCUPIED: THE SUPPLY FAN SHALL BE ENERGIZED WHEN THE SYSTEM IS INDEXED TO OCCUPIED. IF THE SPACE TEMPERATURE DROPS BELOW THE HEATING SETPOINT (ADJ.) THE PRE-HEAT HOT WATER CONTROL VALVE SHALL MODULATE TO MAINTAIN SETPOINT. WHEN THE SPACE TEMPERATURE RISES ABOVE THE SETPOINT, THE OPPOSITE SHALL OCCUR.

REHEAT (EXCLUDING RTU-8 AND AHU-1): WHEN THE SYSTEM IS IN OCCUPIED COOLING MODE AND UPON A RISE IN SPACE HUMIDITY ABOVE 60 PERCENT, THE CHILLED WATER VALVE SHALL OPEN FULLY AND THE HOT WATER REHEAT CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SPACE TEMPERATURE SETPOINT. UPON A FALL IN SPACE HUMIDITY BELOW 50 PERCENT, THE HOT WATER COIL CONTROL VALVE SHALL BE FULLY CLOSED TO THE COIL AND THE CHILLED WATER COIL CONTROL VALVE SHALL RETURN TO COOLING OPERATION.

SAFETY CONTROL: SMOKE DETECTOR SHALL BE PROVIDED BY THE FIRE ALARM CONTRACTOR. THROUGH DDC CONTROL IT SHALL DE-ENERGIZE THE ASSOCIATED AHU, ALL ASSOCIATED EXHAUST FANS, SIGNAL FIRE ALARM PANEL AND CLOSE THE OUTSIDE AIR DAMPER UPON THE DETECTION OF THE PRODUCTS OF COMBUSTION.

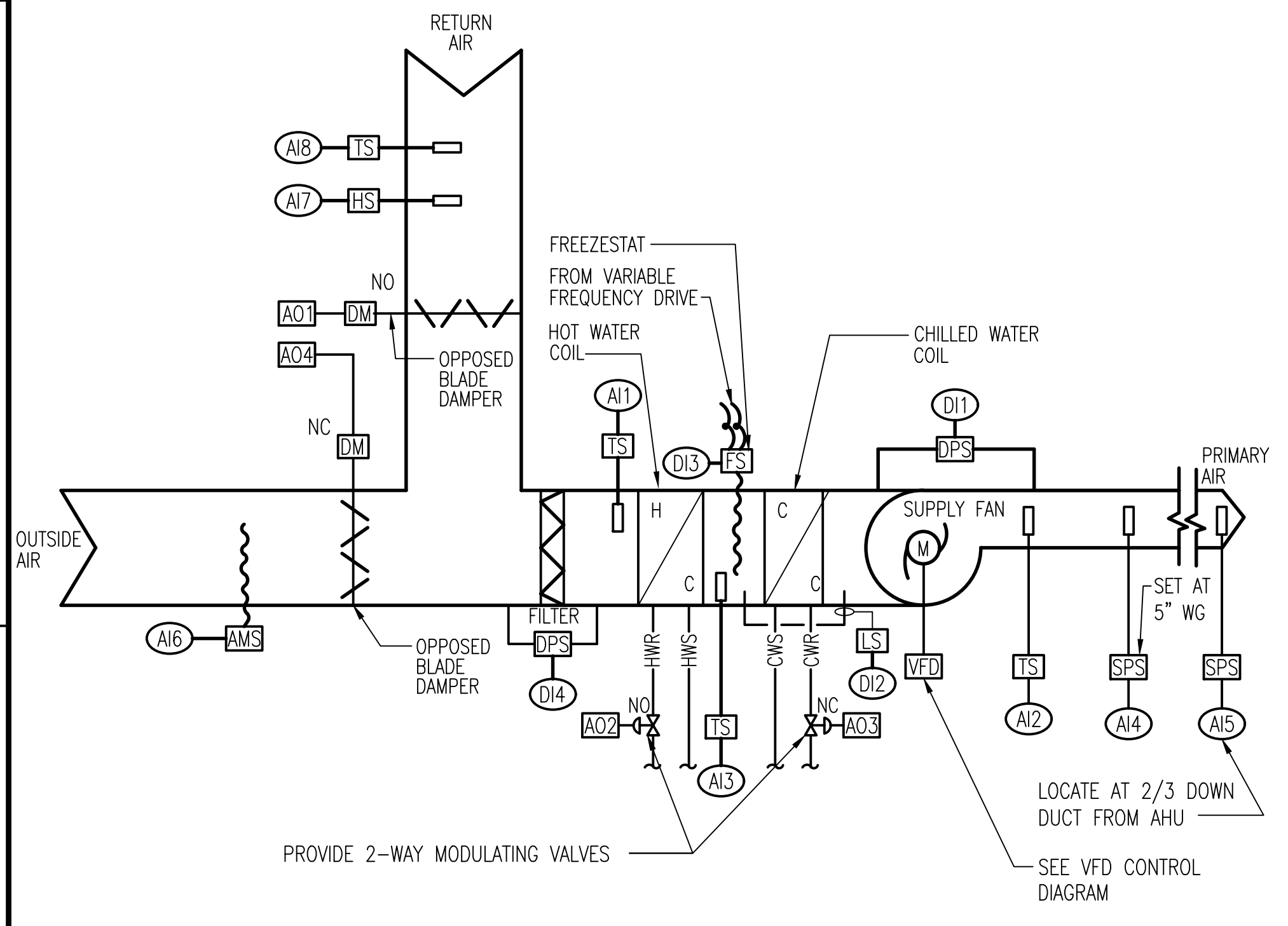
CONDENSATE HIGH LEVEL PROTECTION: IF CONDENSATE HIGH LEVEL SWITCH IS ACTIVATED, UNIT SHALL BE DE-ACTIVATED AND AN ALARM INITIATED.

FREEZE PROTECTION: THE INITIAL OUTDOOR AIR DAMPER OPENING RATE SHALL BE LIMITED TO 2% PER MINUTE UNTIL THE DAMPER HAS REACHED ITS MINIMUM VENTILATION POSITION. THE OUTDOOR AIR DAMPER SHALL MODULATE TO A POSITION LESS THAN THE MINIMUM DAMPER POSITION IF THE MIXED AIR TEMPERATURE DROPS BELOW 50°F (ADJ.). IF THE MIXED AIR TEMPERATURE SENSOR FAILS, THE OUTDOOR AIR DAMPER SHALL CLOSE AND AN ALARM SHALL BE SENT TO THE BAS. A HARDWIRED, LOW LIMIT TEMPERATURE SWITCH SHALL BE ELECTRICALLY INTERLOCKED WITH THE SUPPLY FAN VARIABLE SPEED DRIVE/MOTOR STARTER. IF THE FREEZESTAT SWITCH IS TRIPPED (38°F ADJ.), THE OUTDOOR AIR DAMPER SHALL CLOSE, ALL VALVES SHALL OPEN TO 100% AND AN ALARM SHALL BE SENT TO THE BAS. A MANUAL RESET OF THE LOW LIMIT TEMPERATURE SWITCH SHALL BE REQUIRED TO RESTART THE FANS.

MORNING WARM-UP: THE UNIT SHALL EMPLOY OPTIMUM START, PRIOR TO OCCUPIED STATUS. THE CHILLED WATER COIL CONTROL VALVE SHALL BE CLOSED TO THE COIL. THE OA DAMPER SHALL BE CLOSED. THE SUPPLY FAN SHALL BE ENERGIZED AND THE HW VALVE SHALL BE FULLY OPEN TO THE COIL UNTIL OCCUPIED SPACE TEMPERATURE SETPOINT IS ACHIEVED.

MORNING COOL-DOWN: THE UNIT SHALL EMPLOY OPTIMUM START, PRIOR TO OCCUPIED STATUS. THE OA DAMPER SHALL FULLY CLOSE, THE SUPPLY FAN SHALL BE ENERGIZED, THE CW VALVE SHALL MODULATE TO MAINTAIN A 55°F LEAVING AIR TEMPERATURE AND THE HOT WATER VALVE SHALL BE FULLY CLOSED TO THE COIL.

ALARMS: ALARM FOR DIRTY FILTER: WHEN PRESSURE DROP EXCEEDS 0.5" WG ABOVE INITIAL PRESSURE DROP. ALARM IF LEAVING AIR TEMPERATURE EXCEEDS 60°F IN COOLING MODE OR DROPS BELOW 50°F IN HEATING MODE. ALARM IF SUPPLY FAN FAILS TO START OR FAILS DURING OPERATION. ALARM ON DETECTION OF HIGH CONDENSATE LEVEL. ALARM UPON SMOKE DETECTOR ACTIVATION.



MULTIZONE VAV AHU CONTROL DIAGRAM (DDC) (APPLIES TO RTU-9)
NO SCALE

MZ VAV AHU	
LOCAL DDC CONTROLLER	
INPUTS	
ANALOG	AI1 MIXED AIR TEMPERATURE
ANALOG	AI2 SUPPLY AIR TEMPERATURE
ANALOG	AI3 HW COIL DISCHARGE AVERAGE
ANALOG	AI4 UNIT HIGH DISCHARGE STATIC PRESSURE
ANALOG	AI5 SA DOWN DUCT PRESSURE TRANSMITTER
ANALOG	AI6 OA AIRFLOW MEASURE STATION
ANALOG	AI7 RA HUMIDITY
ANALOG	AI8 RA TEMPERATURE
DIGITAL	DI1 SUPPLY AIR FAN STATUS
DIGITAL	DI2 CONDENSATE HI-LEVEL
DIGITAL	DI3 FREEZESTAT
DIGITAL	DI4 FILTER STATUS
OUTPUTS	
ANALOG	AO1 RETURN AIR DAMPER CONTROL
ANALOG	AO2 HW VALVE CONTROL
ANALOG	AO3 CW VALVE CONTROL
ANALOG	AO4 OUTSIDE AIR DAMPER CONTROL

SEQUENCE OF OPERATION

GENERAL: AHU SUPPLY FAN SPEED SHALL BE DETERMINED BY DISCHARGE AIR PRESSURE AND POLLING OF VAV BOX DAMPER POSITIONS. DISCHARGE AIR PRESSURE SHALL INCLUDE A "CRITICAL ZONE RESET STRATEGY" WHICH REDUCES DISCHARGE AIR PRESSURE UNTIL AT LEAST ONE ZONE VAV BOX DAMPER IS 90% OPEN. THE INITIAL AIR PRESSURE SETPOINT SHALL BE 2" W.G., ADJUSTABLE.

COOLING-OCCUPIED/OVERRIDE: AHU SUPPLY FAN SHALL BE ENERGIZED AND RUN CONTINUOUSLY. OUTSIDE AND RETURN AIR DAMPERS SHALL MODULATE TO MAINTAIN MIN. O.A. FLOW AS MEASURED BY THE OUTSIDE AIR AIRFLOW MEASUREMENT STATION. THE O.A. DAMPER SHALL FULLY STROKE BEFORE THE R.A. DAMPER STARTS MODULATING. DISCHARGE AIR TEMPERATURE CONTROLLER SHALL MODULATE THE CHILLED WATER CONTROL VALVE TO MAINTAIN 55°F (ADJ.) LEAVING AIR TEMPERATURE. HOT WATER CONTROL VALVE SHALL BE FULLY CLOSED TO COIL. A SUPPLY AIR TEMPERATURE RESET STRATEGY SHALL BE EMPLOYED. SUPPLY AIR TEMPERATURE SHALL BE RAISED IN ONE DEGREE INCREMENTS UNTIL ONE ZONE DAMPER IS 90% OPEN. IF OA ENTHALPY IS 26 BTU/LB (ADJ.) OR GREATER, THE SUPPLY AIR TEMPERATURE RESET SHALL BE NO HIGHER THAN 58°F. IF ANY ZONE DAMPER IS 100% OPEN AND ZONE TEMPERATURE RISES ABOVE SETPOINT, SUPPLY AIR TEMPERATURE SHALL BEGIN TO RESET LOWER.

COOLING-UNOCCUPIED: UNIT SHALL BE DE-ENERGIZED UNLESS THE AVERAGE OF THE ZONE TEMPERATURES RISES ABOVE THE SETBACK TEMPERATURE SETPOINT. THE OA DAMPER SHALL BE CLOSED.

HEATING-OCCUPIED: AHU SUPPLY FAN SHALL BE ENERGIZED AND RUN CONTINUOUSLY. O.A. FLOW SHALL BE MAINTAINED AS DESCRIBED IN COOLING-OCCUPIED MODE ABOVE. WHEN MIXED AIR TEMPERATURE DROPS TO 52°F, DISCHARGE AIR TEMPERATURE CONTROLLER THRU DDC CONTROL SHALL MODULATE THE HOT WATER CONTROL VALVE TO MAINTAIN 55°F (ADJ.) LEAVING AIR TEMPERATURE. THE CHILLED WATER VALVE SHALL BE FULLY CLOSED TO THE COIL.

HEATING-UNOCCUPIED: IF THE AVERAGE OF THE ASSOCIATED ZONE TEMPERATURES FALLS BELOW THE HEATING NIGHT SETBACK TEMPERATURE THE AHU SHALL BE ENERGIZED. THE OA DAMPER SHALL BE FULLY CLOSED. THE SUPPLY FAN SHALL MODULATE TO MAINTAIN DUCT STATIC PRESSURE WHILE THE VAV BOXES ARE INITIALLY AT MAXIMUM AIRFLOW. THE HOT WATER CONTROL VALVE SHALL REMAIN CLOSED UNLESS DISCHARGE AIR TEMPERATURE FALLS BELOW 55°F. ZONE HEATING SHALL BE MAINTAINED AT VAV BOXES. AS VAV BOX ZONES REACH SETPOINT AIR VALVES SHALL MODULATE TO MAINTAIN SETPOINT.

TRANSITION FROM OCCUPIED TO UNOCCUPIED: AUTOMATICALLY THRU DDC CONTROL AND PRESET TIME SCHEDULE, SYSTEM SHALL ALSO BE ABLE TO BE RETURNED TO OCCUPIED MODE FROM UNOCCUPIED MODE BY THE OPERATOR WORKSTATION. TRANSITION FROM COOLING TO HEATING SHALL OCCUR WHEN CHILLED WATER CONTROL VALVE IS CLOSED AND MIXED AIR TEMP. FALLS BELOW 52°F.

FREEZE PROTECTION: THE INITIAL OUTDOOR AIR DAMPER OPENING RATE SHALL BE LIMITED TO 2% PER MINUTE UNTIL THE DAMPER HAS REACHED ITS MINIMUM VENTILATION POSITION. THE OUTDOOR AIR DAMPER SHALL MODULATE TO A POSITION LESS THAN THE MINIMUM DAMPER POSITION IF THE MIXED AIR TEMPERATURE DROPS BELOW 50°F (ADJ.). IF THE MIXED AIR TEMPERATURE SENSOR FAILS, THE OUTDOOR AIR DAMPER SHALL CLOSE AND AN ALARM SHALL BE SENT TO THE BAS. A HARDWIRED, LOW LIMIT TEMPERATURE SWITCH SHALL BE ELECTRICALLY INTERLOCKED WITH THE SUPPLY FAN VARIABLE SPEED DRIVE/MOTOR STARTER. IF THE FREEZESTAT SWITCH IS TRIPPED (38°F ADJ.), THE OUTDOOR AIR DAMPER SHALL CLOSE, ALL VALVES SHALL OPEN TO 100% AND AN ALARM SHALL BE SENT TO THE BAS. A MANUAL RESET OF THE LOW LIMIT TEMPERATURE SWITCH SHALL BE REQUIRED TO RESTART THE FANS.

PRESSURE PROTECTION: A HIGH PRESSURE TRANSMITTER LOCATED AT THE SUPPLY FAN DISCHARGE SHALL DE-ENERGIZE THE SUPPLY FAN IF ITS SETPOINT, 5" WG, IS REACHED.

CONDENSATE HIGH LEVEL PROTECTION: IF CONDENSATE HIGH LEVEL SWITCH IS ACTIVATED, UNIT SHALL BE DE-ACTIVATED AND AN ALARM INITIATED.

MORNING WARM-UP: AHU SHALL EMPLOY OPTIMUM START PRIOR TO OCCUPIED STATUS. THE OA DAMPER SHALL BE FULLY CLOSED. THE SUPPLY FAN SHALL MODULATE TO MAINTAIN DUCT STATIC PRESSURE WHILE VAV BOXES ARE INITIALLY AT MAXIMUM AIRFLOW. HOT WATER COIL VALVE SHALL BE FULLY OPEN. AS VAV BOX ZONES REACH SETPOINT, PRIMARY AIR VALVES SHALL MODULATE TO MINIMUM AIRFLOW.

MORNING COOL-DOWN: THE UNIT SHALL EMPLOY OPTIMUM START PRIOR TO OCCUPIED STATUS. THE OA DAMPER SHALL FULLY CLOSE, THE SUPPLY FAN SHALL MODULATE TO MAINTAIN DUCT STATIC PRESSURE, THE CW VALVE SHALL MODULATE TO MAINTAIN A 55°F LEAVING AIR TEMPERATURE AND THE HOT WATER VALVE SHALL BE FULLY CLOSED TO THE COIL. ASSOCIATED VAV BOX AIR VALVES SHALL INITIALLY BE FULLY OPEN AND THEN MODULATE TO MAINTAIN SPACE OCCUPIED TEMPERATURE SETPOINT. VAV BOX HW VALVES SHALL BE FULLY CLOSED TO THE COIL.

ALARMS: ALARM FOR DIRTY FILTER WHEN PRESSURE DROP EXCEEDS 0.5" WG ABOVE INITIAL PRESSURE DROP. ALARM IF LEAVING AIR TEMPERATURE EXCEEDS 60°F IN COOLING MODE OR DROPS BELOW 50°F IN HEATING MODE. ALARM IF AHU SUPPLY FAN FAILS TO START OR FAILS DURING OPERATION. ALARM IF UNIT DISCHARGE STATIC PRESSURE EXCEEDS 5" W.G. ALARM IF CONDENSATE REACHES HIGH LEVEL.

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FOR COMMANDER NAVFAC	
ACTIVITY	
SATISFACTORY TO	
DES	DRW
TNH	MTF
CHK	JAK
U.S. MARINE CORPS AIR STATION	
CHERRY POINT, NORTH CAROLINA	
REPLACE HVAC AND CONTROLS PHASE II AT BUILDING 4225	
MECHANICAL CONTROLS	
SCALE: AS NOTED	
PROJECT NO.: ST-14507A	
MAXIMO WORK ORDER NO. 6878897	
NAVFAC DRAWING NO. 12782453	
SHEET	52 OF 68
M-702	
DRAWING REVISION: 10 MAY 2014	

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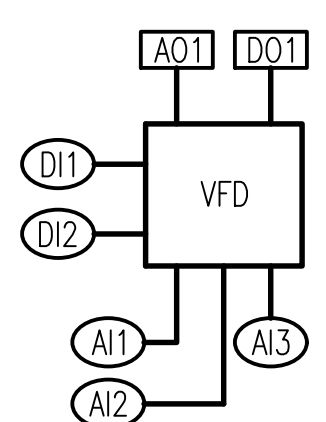
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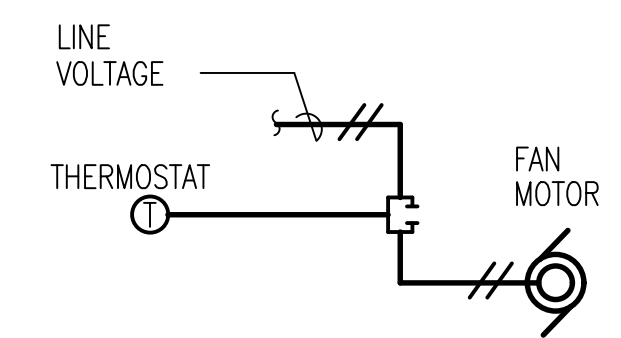
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VFD	
LOCAL DDC CONTROLLER	
INPUTS	
ANALOG	AI1 SPEED, %
ANALOG	AI2 KWH CONSUMPTION
ANALOG	AI3 CURRENT, AMPS
DIGITAL	DI1 DRIVE STATUS
DIGITAL	DI2 DRIVE FAULT
OUTPUTS	
ANALOG	AO1 SPEED CONTROL
DIGITAL	DO1 ENABLE/DISABLE



NOTE: MULTIPLE UNITS

EXHAUST FAN WITH THERMOSTAT (NON-DDC)

SEQUENCE OF OPERATION

EXHAUST FAN SHALL BE CONTROLLED BY THERMOSTAT ACTIVATION. WHEN THE SPACE TEMPERATURE RISES ABOVE 85°F, THE ASSOCIATED EXHAUST FAN SHALL BE ENERGIZED. WHEN THE SPACE TEMPERATURE IS BELOW 85°F, THE ASSOCIATED EXHAUST FAN SHALL BE DE-ENERGIZED.

VFD CONTROL DIAGRAM (TYP. U.O.N.)

NO SCALE

SEQUENCE OF OPERATION

HEATING HOT WATER SYSTEM

GENERAL: HEATING HOT WATER SHALL BE GENERATED USING A STEAM-TO-HOT WATER HEAT EXCHANGER. STEAM IS SUPPLIED FROM THE CENTRAL STEAM LOOP. SYSTEM SHALL UTILIZE 1/3, 2/3 STEAM CONTROL VALVE ARRANGEMENT.

HEATING (OUTSIDE TEMPERATURE < 55°F):

GENERAL: THE CONTROL STRATEGY IS TO OPERATE A VARIABLE SPEED PUMP IN ORDER TO MINIMIZE PUMPING POWER REQUIREMENTS. THE SPEED DRIVE OF THE VARIABLE SPEED PUMP IS CONTROLLED TO MAINTAIN A SETPOINT DIFFERENTIAL PRESSURE ACROSS THE AIR HANDLING UNIT COIL FURTHEST FROM THE PUMP.

THE DDC CONTROLLER SHALL BE DESIGNED TO START AND STOP THE PUMP AND MODULATE SPEED AS REQUIRED TO MEET THE SYSTEM DEMANDS. THE SYSTEM SHALL BE DESIGNED TO MAINTAIN A DIFFERENTIAL PRESSURE SETPOINT AT RTU-5.

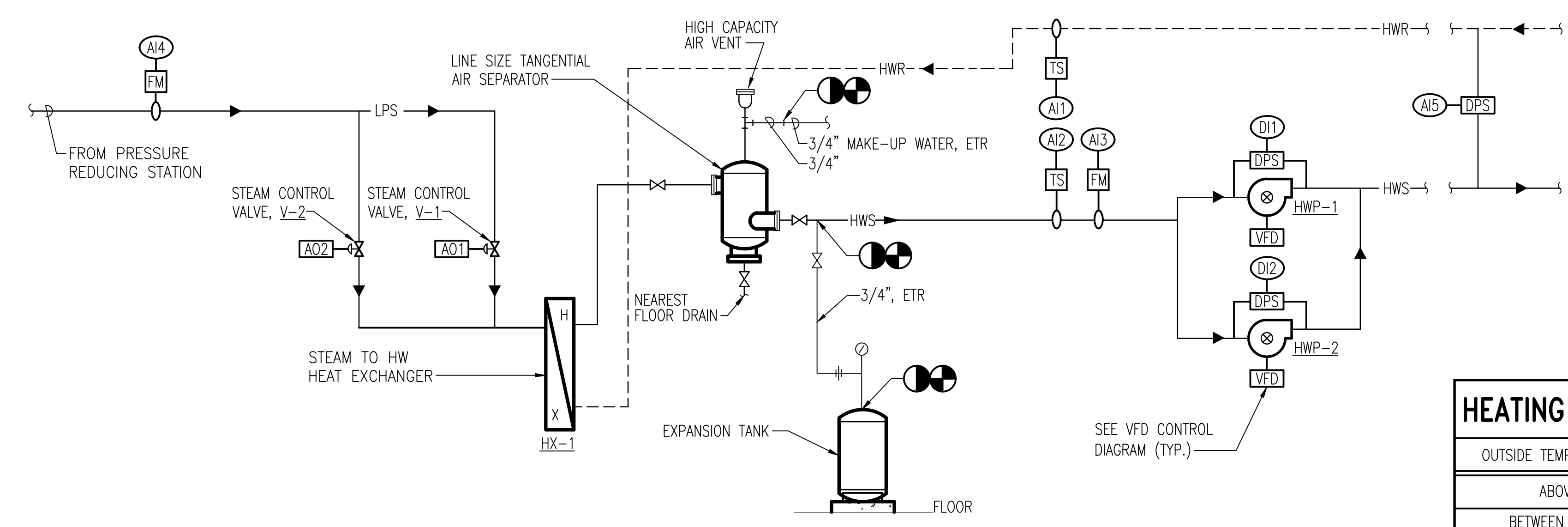
THE LEAD PUMP SHALL BE STARTED AND STOPPED BY THE DDC CONTROLLER. THE LEAD PUMP SPEED SHALL BE MODULATED AS REQUIRED TO MAINTAIN THE SYSTEM DIFFERENTIAL SETPOINT. THE DDC CONTROLLER SHALL ALTERNATE PUMPS WEEKLY BY SELECTING THE PUMP WITH THE LEAST TOTAL ACCUMULATED RUN TIME AS CALCULATED AND STORED AT THE DDC CONTROLLER. IF EITHER SELECTED LEAD PUMP'S PROOF SWITCH DOES NOT DETECT FLOW WITHIN 30 SECONDS FROM THE START SIGNAL, THE DDC CONTROLLER SHALL DE-ENERGIZE THE FAILED PUMP, START THE STANDBY PUMP, AND TRANSMIT A PUMP FAILURE ALARM. A PROGRAMMED ANTI-RECYCLE TIMER SHALL PREVENT PUMP SHORT CYCLING. THE DDC CONTROLLER SHALL AUTOMATICALLY ATTEMPT A RESTART OF THE PUMPS ON A PERIODIC BASIS TO ACCOMMODATE SERVICE SHUTDOWNS AND EXTENDED POWER OUTAGES.

THE STEAM-TO-HOT WATER HEAT EXCHANGER HX-1 STEAM CONTROL VALVES SHALL MODULATE TO MAINTAIN HEATING HOT WATER SUPPLY TEMPERATURE SETPOINT. HOT WATER SUPPLY TEMPERATURE SHALL BE RESET BASED ON RESET SCHEDULE THIS SHEET.

ALARMS: ALARM IF HWP-1 OR HWP-2 FAIL TO START OR FAIL DURING OPERATION. ALARM IF HEAT EXCHANGER LEAVING HOT WATER TEMPERATURE EXCEEDS ±5°F OF SCHEDULED OR RESET SETPOINT.

BAS/EMCS SIGNAL-FUNCTION:

- HX-1 HOT WATER RETURN TEMPERATURE - STATUS, ALARM
- PUMP HWP-1 VFD - START/STOP, STATUS, RUNTIME, ALARM
- PUMP HWP-2 VFD - START/STOP, STATUS, RUNTIME, ALARM
- DIFFERENTIAL PRESSURE SENSOR - PUMP HWP-1 & HWP-2 VFD CONTROL
- STEAM CONTROL VALVE V-1/V-2 - HEATING HOT WATER SUPPLY TEMPERATURE CONTROL, STATUS
- STEAM FLOW METER - STATUS
- HOT WATER FLOW METER - STATUS, HEATING LOAD (MBH)



HEATING HOT WATER SYSTEM	
LOCAL DDC CONTROLLER	
INPUTS	
ANALOG	AI1 HWR TEMPERATURE
ANALOG	AI2 HWS TEMPERATURE
ANALOG	AI3 HOT WATER FLOWRATE
ANALOG	AI4 STEAM FLOW METER
ANALOG	AI5 HOT WATER SYSTEM DIFFERENTIAL PRESSURE
DIGITAL	DI1 HWP-1 STATUS
DIGITAL	DI2 HWP-2 STATUS
OUTPUTS	
ANALOG	AO1 STEAM VALVE V-1 CONTROL
ANALOG	AO2 STEAM VALVE V-2 CONTROL

HEATING HOT WATER RESET SCHEDULE

OUTSIDE TEMPERATURE (°F)	HOT WATER TEMPERATURE (°F)
ABOVE 50°	110° (ADJ.)
BETWEEN 0° AND 50°	PROPORTIONAL
BELOW 0°	180° (ADJ.)

HEATING HOT WATER SYSTEM CONTROL DIAGRAM

NO SCALE

DATE	DESCRIPTION



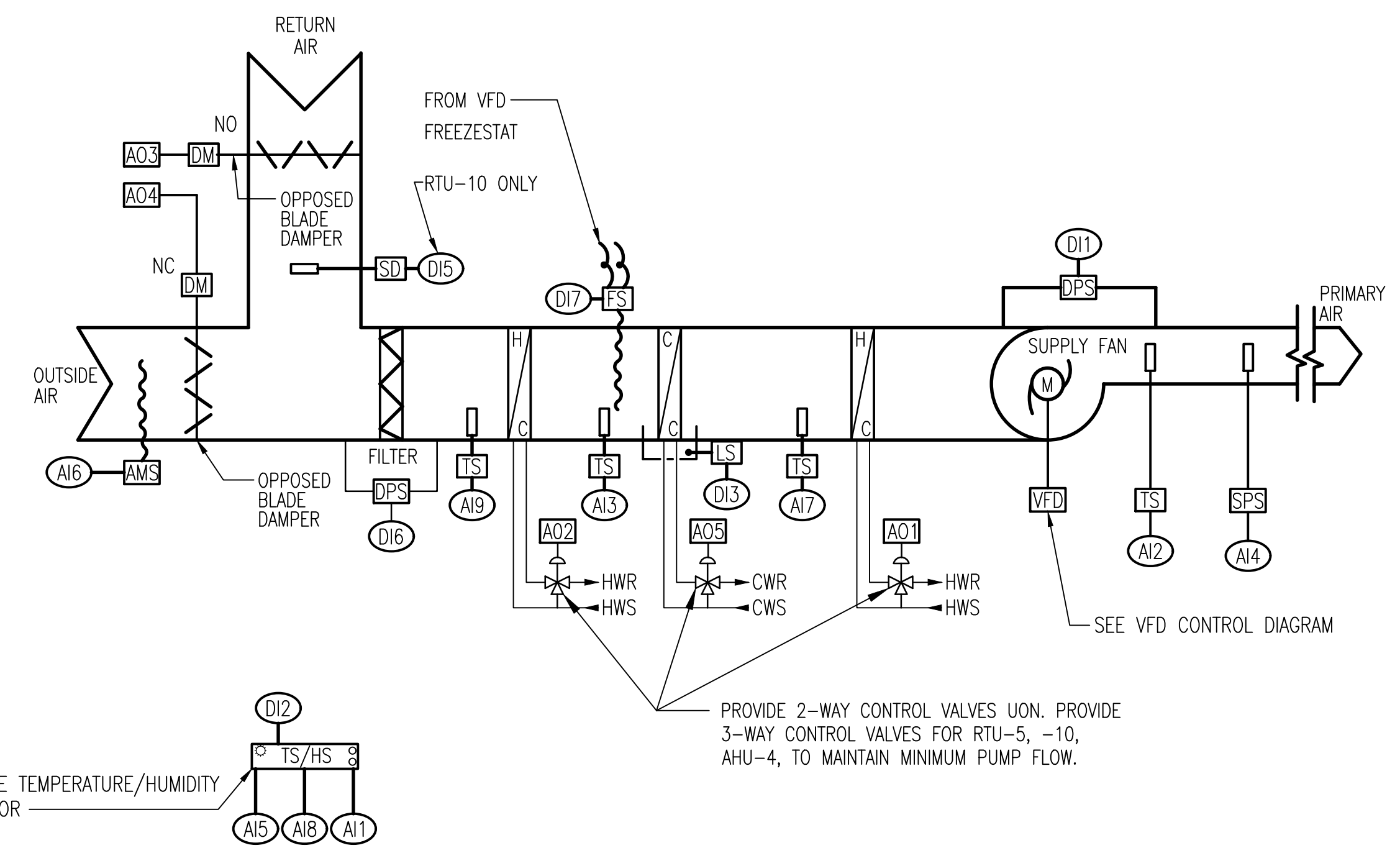
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FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO
DES: TNH DRW: MTF CHK: JAK

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225**
 MECHANICAL CONTROLS

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782454
SHEET 53 OF 68
M-703

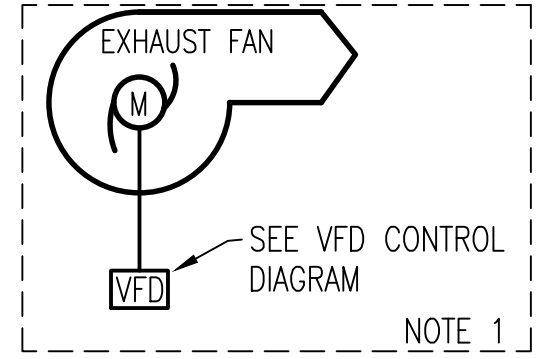
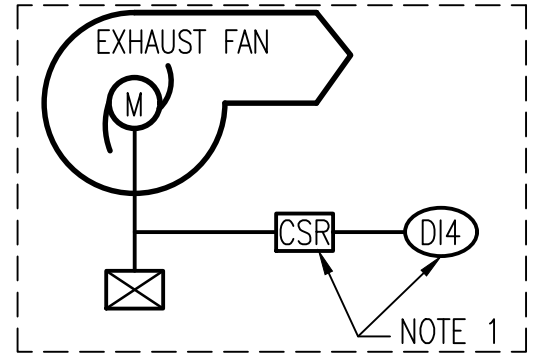
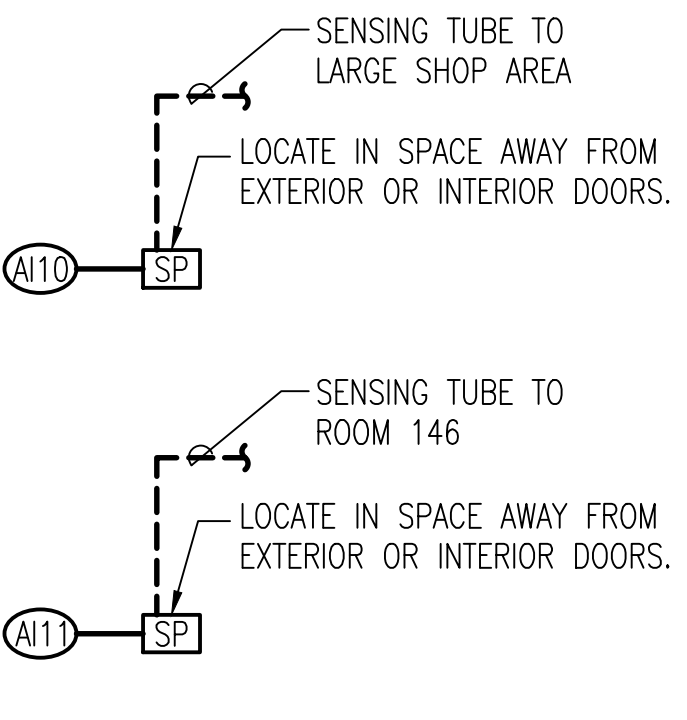
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SINGLE ZONE VAV AHU/RTU	
LOCAL DDC CONTROLLER	
INPUTS	
AI1	SPACE TEMPERATURE SETPOINT
AI2	SUPPLY AIR TEMPERATURE
AI3	PREHEAT COIL DISCHARGE TEMPERATURE
AI4	UNIT DISCHARGE STATIC PRESSURE
AI5	SPACE TEMPERATURE
AI6	OA AIRFLOW MEASURING STATION
AI7	COOLING COIL DISCHARGE TEMPERATURE
AI8	SPACE HUMIDITY
AI9	MIXED AIR TEMPERATURE
AI10	SPACE PRESSURE (RM. 148)
AI11	SPACE PRESSURE (RM. 100)
DIGITAL	
DI1	SUPPLY FAN STATUS
DI2	OVERRIDE
DI3	CONDENSATE HI-LEVEL
DI4	EXHAUST FAN STATUS (NOTE 1)
DI5	SMOKE DETECTOR
DI6	FILTER STATUS
DI7	FREEZESTAT
OUTPUTS	
AO1	REHEAT HW CONTROL VALVE
AO2	PRE-HEAT HW CONTROL VALVE
AO3	RETURN AIR DAMPER CONTROL
AO4	OUTSIDE AIR DAMPER CONTROL
AO5	CW CONTROL VALVE

- NOTES:
 1. APPLIES ONLY TO THE FOLLOWING EF AND AHU/RTU SYSTEMS:
 A. RTU-11: EF-22-456, EF-22-456A
 B. RTU-12: UEF-1, UEF-2
 C. AHU-4: THREE DUST COLLECTOR/EXHAUST FANS



SINGLE ZONE VAV AHU/RTU CONTROL DIAGRAM (DDC) (TYP OF RTU-1, -2, -4, -5, -10, -11, -12, AHU-2, -4)

NO SCALE

SEQUENCE OF OPERATION

BUILDING AUTOMATION SYSTEM INTERFACE:
 THE BUILDING AUTOMATION SYSTEM (BAS) SHALL SEND THE DDC CONTROLLER OCCUPIED, UNOCCUPIED, OPTIMUM START, NIGHT HEAT/COOL, AND TIMED OVERRIDE COMMANDS. THE BAS SHALL ALSO SEND SPACE TEMPERATURE SETPOINT TO THE CONTROLLER. IF COMMUNICATION IS LOST WITH THE BAS, THE CONTROLLER SHALL OPERATE IN THE OCCUPIED COOLING MODE USING ITS DEFAULT SPACE TEMPERATURE SETPOINT.

SUPPLY FAN:
 THE SUPPLY FAN SHALL BE OFF IN UNOCCUPIED MODE. WHEN THE CONTROLLER IS IN THE OCCUPIED MODE, THE SUPPLY FAN SHALL BE ENABLED. IF THE SUPPLY FAN FAILS TO PROVE STATUS FOR 30 SECONDS (ADJ), THE FAN SHALL BE COMMANDED OFF, THE OUTDOOR AIR DAMPER SHALL BE CLOSED, COOLING/HEATING SHALL BE DISABLED, AND AN ALARM SHALL BE SENT TO THE BAS. A MANUAL RESET SHALL BE REQUIRED TO RESTART THE FAN.

RTU-11: SF SHALL BE INTERLOCKED WITH ASSOCIATED EXHAUST FANS, EF-22-456 AND EF-22-456A. THESE FANS SHALL OPERATE TO MAINTAIN A SLIGHTLY NEGATIVE SPACE PRESSURE DIFFERENTIAL WITH ADJACENT SPACES.

RTU-12: SF SHALL BE INTERLOCKED WITH ASSOCIATED EXHAUST FANS, UEF-1 AND UEF-2. THESE FANS SHALL OPERATE TO MAINTAIN SLIGHTLY NEGATIVE SPACE PRESSURE DIFFERENTIAL WITH ADJACENT SPACES.

AHU-4: SF SHALL BE INTERLOCKED WITH ASSOCIATED DUST COLLECTOR EXHAUST FANS. UPON ANY ONE OF THE THREE EXHAUST FANS ENERGIZING, SF SHALL OPERATE AT 6,000 CFM. UPON ANY TWO OF THE THREE FANS ENERGIZING, SF SHALL OPERATE AT 12,000 CFM. UPON ALL THREE EXHAUST FANS BEING ENERGIZED, SF SHALL OPERATE AT 18,000 CFM.

HEATING/COOLING MODE:
 WHEN THE SPACE TEMPERATURE RISES ONE DEGREE (ADJ) ABOVE THE OCCUPIED COOLING SETPOINT, THE MODE SHALL TRANSITION TO COOLING. WHEN THE SPACE TEMPERATURE FALLS ONE DEGREE (ADJ) BELOW THE OCCUPIED HEATING SETPOINT, THE MODE SHALL TRANSITION TO HEATING. WHEN THE SPACE TEMPERATURE IS BETWEEN ONE DEGREE (ADJ) ABOVE THE OCCUPIED COOLING SETPOINT AND ONE DEGREE (ADJ) BELOW THE OCCUPIED HEATING SETPOINT, THE MODE SHALL REMAIN IN ITS LAST STATE. IF THE SPACE TEMPERATURE INPUT FAILS, THE MODE SHALL REMAIN IN ITS LAST STATE AND AN ALARM SHALL BE SENT TO THE BAS. IF THE LOCAL (AND COMMUNICATED) SETPOINT(S) FAIL, THE CONTROLLER WILL USE ITS DEFAULT SETPOINTS AND AN ALARM SHALL BE SENT TO THE BAS.

OCCUPIED MODE (OUTDOOR AIR CONTROL):
 DURING OCCUPIED MODE, THE SUPPLY FAN SHALL RUN CONTINUOUSLY AND THE OUTDOOR AIR DAMPER SHALL OPEN AND MODULATE TO MAINTAIN MINIMUM VENTILATION CFM SETPOINT AS MEASURED BY THE OUTDOOR AIR FLOW STATION.

OCCUPIED MODE (RTU-12):
 DURING OCCUPIED MODE, THE OUTDOOR AIR DAMPER SHALL BE OPEN AND THE SUPPLY FAN SHALL OPERATE AND MODULATE ITS SPEED AS REQUIRED TO MEET THE SPACE TEMPERATURE SETPOINT. ONCE THE SETPOINT HAS BEEN ACHIEVED, THE OUTDOOR AIR DAMPER SHALL BE CLOSED AND THE SUPPLY FAN SHALL BE DISABLED.

COOLING MODE (EXCLUDING RTU-11 AND RTU-12):
 ON A RISE IN SPACE TEMPERATURE ABOVE THE SPACE COOLING SETPOINT S.P. (ADJ) THE DDC CONTROLLER SHALL MODULATE THE CHILLED WATER VALVE TO MAINTAIN DISCHARGE AIR TEMPERATURE SETPOINT, 55 DEGREES (ADJ). (75 DEGREES FOR AHU-4) ON A CONTINUED RISE IN SPACE TEMPERATURE ABOVE THE SPACE COOLING SETPOINT (ADJ), ONCE THE CHILLED WATER VALVE IS FULLY OPEN, THE DDC CONTROLLER SHALL SIGNAL THE SUPPLY FAN VFD (EXCLUDING AHU-4) TO MODULATE THE SUPPLY FAN SPEED UP TO ITS MAXIMUM SETTING AS REQUIRED TO MAINTAIN THE SPACE TEMPERATURE SETPOINT. ON A FALL IN SPACE TEMPERATURE, THE SUPPLY FAN SPEED SHALL BE MODULATED BACK TO ITS MINIMUM SPEED SETTING. ON A CONTINUED FALL IN SPACE TEMPERATURE BELOW THE SPACE TEMPERATURE SETPOINT, AND WHEN THE SUPPLY FAN IS AT ITS MINIMUM SPEED, THE DISCHARGE TEMPERATURE SETPOINT SHALL BE GRADUALLY RESET UP TO NEUTRAL SPACE TEMPERATURE, 75° (ADJ).

COOLING MODE (RTU-11 AND RTU-12):
RTU-11: ON A RISE IN SPACE TEMPERATURE ABOVE THE SPACE COOLING SETPOINT (ADJ), THE DDC CONTROLLER SHALL OPEN THE OUTDOOR AIR DAMPER TO MAXIMUM POSITION AND SHALL SIGNAL THE SUPPLY FAN VFD TO MODULATE THE SUPPLY FAN SPEED UP TO ITS MAXIMUM SETTING AS REQUIRED TO MAINTAIN THE SPACE TEMPERATURE SETPOINT. ON A FALL IN SPACE TEMPERATURE, THE SUPPLY FAN SPEED SHALL BE MODULATED BACK TO ITS MINIMUM SPEED SETTING. DURING OCCUPIED MODE, IF THE SPACE COOLING SETPOINT IS SATISFIED, THE OUTDOOR AIR DAMPER SHALL BE AT MINIMUM POSITION.

RTU-12: ON A RISE IN SPACE TEMPERATURE ABOVE THE SPACE COOLING SETPOINT (ADJ), THE DDC CONTROLLER SHALL OPEN THE OUTDOOR AIR DAMPER AND SHALL SIGNAL THE SUPPLY FAN VFD TO MODULATE THE SUPPLY FAN SPEED UP TO ITS MAXIMUM SETTING AS REQUIRED TO MAINTAIN THE SPACE TEMPERATURE SETPOINT. ON A FALL IN SPACE TEMPERATURE, THE SUPPLY FAN SPEED SHALL BE MODULATED BACK TO ITS MINIMUM SPEED SETTING. WHEN THE SPACE COOLING SETPOINT IS SATISFIED, THE SF SHALL BE OFF AND THE OUTDOOR AIR DAMPER SHALL BE CLOSED.

HEATING MODE (EXCLUDING AHU-12):
 ON A FALL IN SPACE TEMPERATURE BELOW THE SPACE HEATING TEMPERATURE SETPOINT (ADJ), THE DDC CONTROLLER SHALL MODULATE THE HOT WATER RE-HEAT VALVE TO MAINTAIN DISCHARGE AIR TEMPERATURE TO THE SETPOINT OF THE DDC

CONTROLLER. ON A CONTINUED FALL IN SPACE TEMPERATURE BELOW THE SPACE HEATING TEMPERATURE SETPOINT (ADJ), ONCE THE HOT WATER VALVE IS FULLY OPEN, THE DDC CONTROLLER SHALL SIGNAL THE SUPPLY FAN VFD (EXCLUDING AHU-4) TO MODULATE THE SUPPLY FAN SPEED UP TO ITS MAXIMUM SETTING AS REQUIRED TO MAINTAIN THE SPACE SETPOINT. ON A RISE IN SPACE TEMPERATURE, THE SUPPLY FAN SPEED SHALL BE MODULATED BACK TO ITS MINIMUM SPEED SETTING. ON A CONTINUED RISE IN SPACE TEMPERATURE ABOVE THE SPACE HEATING SETPOINT, AND WHEN THE SUPPLY FAN IS AT MINIMUM SPEED, THE DISCHARGE TEMPERATURE SETPOINT SHALL BE GRADUALLY RESET UP TO NEUTRAL SPACE TEMPERATURE, 75°F (ADJ). THE DISCHARGE AIR SETPOINT SHALL BE INVERSELY RESET FROM SPACE TEMPERATURE.

HEATING MODE (RTU-12):
 ON A FALL IN SPACE TEMPERATURE BELOW THE SPACE HEATING TEMPERATURE SETPOINT (ADJ), THE DDC CONTROLLER SHALL OPEN THE OUTDOOR AIR DAMPER, ENABLE AND INDEX THE SUPPLY FAN TO ITS MINIMUM SPEED, AND MODULATE THE HOT WATER RE-HEAT VALVE TO MAINTAIN DISCHARGE AIR TEMPERATURE TO THE SETPOINT OF THE DDC CONTROLLER. ON A CONTINUED FALL IN SPACE TEMPERATURE BELOW THE SPACE HEATING TEMPERATURE SETPOINT (ADJ), ONCE THE HOT WATER VALVE IS FULLY OPEN, THE DDC CONTROLLER SHALL SIGNAL THE SUPPLY FAN VFD TO MODULATE THE SUPPLY FAN SPEED UP TO ITS MAXIMUM SETTING AS REQUIRED TO MAINTAIN THE SPACE TEMPERATURE SETPOINT. ON A RISE IN SPACE TEMPERATURE, THE SUPPLY FAN SPEED SHALL BE MODULATED BACK TO ITS MINIMUM SPEED SETTING. WHEN THE HEATING SETPOINT IS SATISFIED, THE SF SHALL BE OFF AND THE OUTDOOR AIR DAMPER SHALL BE CLOSED.

DEHUMIDIFICATION MODE (EXCLUDING RTU-11 AND RTU-12):
 ON A RISE IN SPACE RELATIVE HUMIDITY TO THE SETPOINT OF THE DDC CONTROLLER, THE DDC CONTROLLER SHALL MODULATE THE CHILLED WATER VALVE FULLY OPEN TO THE COIL. SHOULD THE DEHUMIDIFICATION PROCESS CAUSE THE SPACE TO OVER COOL, THE DDC CONTROLLER SHALL MODULATE THE REHEAT VALVE OPEN TO MAINTAIN THE SPACE HEATING TEMPERATURE SETPOINT.

MORNING WARM-UP (EXCLUDING RTU-11 AND RTU-12):
 DURING OPTIMAL START, IF THE SPACE TEMPERATURE IS 1.5°F (ADJ) OR MORE BELOW THE OCCUPIED HEATING SETPOINT, THE MORNING WARM-UP SEQUENCE SHALL BE ACTIVATED. THE SUPPLY FAN SHALL START, THE HOT WATER VALVE SHALL MODULATE OPEN, AND THE OUTDOOR AIR DAMPER SHALL REMAIN CLOSED. MORNING WARM-UP MODE SHALL TERMINATE WHEN THE SPACE TEMPERATURE REACHES THE OCCUPIED HEATING SETPOINT OR THE OCCUPIED TIME PERIOD HAS STARTED.

MORNING COOL-DOWN (EXCLUDING RTU-11 AND RTU-12):
 DURING OPTIMAL START, IF THE SPACE TEMPERATURE IS 1.5°F (ADJ) OR MORE ABOVE THE OCCUPIED COOLING SETPOINT, THE MORNING COOL-DOWN SEQUENCE SHALL BE ACTIVATED. THE SUPPLY FAN SHALL START, THE CHILLED WATER VALVE SHALL MODULATE OPEN, AND THE OUTDOOR AIR DAMPER SHALL REMAIN CLOSED. MORNING COOL-DOWN MODE SHALL TERMINATE WHEN THE SPACE TEMPERATURE REACHES THE OCCUPIED COOLING SETPOINT OR THE OCCUPIED TIME PERIOD HAS STARTED.

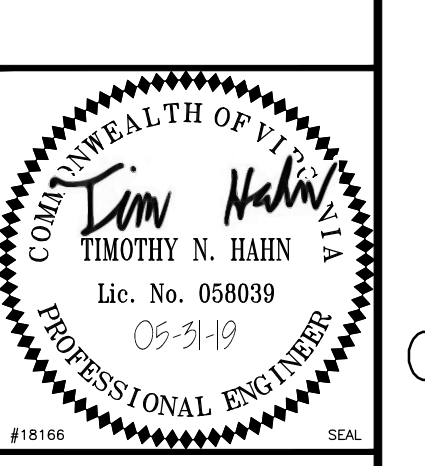
FREEZE PROTECTION:
 THE INITIAL OUTDOOR AIR DAMPER OPENING RATE SHALL BE LIMITED TO 2% PER MINUTE UNTIL THE DAMPER HAS REACHED ITS MINIMUM VENTILATION POSITION. THE OUTDOOR AIR DAMPER SHALL MODULATE TO A POSITION LESS THAN THE MINIMUM DAMPER POSITION IF THE MIXED AIR TEMPERATURE DROPS BELOW 50°F (ADJ). IF THE MIXED AIR TEMPERATURE SENSOR FAILS, THE OUTDOOR AIR DAMPER SHALL CLOSE AND AN ALARM SHALL BE SENT TO THE BAS. A HARDWIRED, LOW LIMIT TEMPERATURE SWITCH SHALL BE ELECTRICALLY INTERLOCKED WITH THE SUPPLY FAN VARIABLE SPEED DRIVE/MOTOR STARTER. IF THE FREEZESTAT SWITCH IS TRIPPED (38°F ADJ), THE OUTDOOR AIR DAMPER SHALL CLOSE, ALL VALVES SHALL OPEN TO 100% AND AN ALARM SHALL BE SENT TO THE BAS. A MANUAL RESET OF THE LOW LIMIT TEMPERATURE SWITCH SHALL BE REQUIRED TO RESTART THE FANS.

UNOCCUPIED MODE:
 DURING UNOCCUPIED MODE THE DDC CONTROLLER SHALL CYCLE THE UNIT TO MAINTAIN A REDUCED HEATING SETPOINT, 55°F (ADJ), AND A RAISED COOLING AND RELATIVE HUMIDITY SETPOINT, 85°F/60% RH (ADJ), WHILE MAINTAINING THE OUTDOOR AIR DAMPER FULLY CLOSED.

SAFETY CONTROL (RTU-10):
 SMOKE DETECTOR SHALL BE PROVIDED BY FIRE ALARM CONTRACTOR. THROUGH DDC CONTROL IT SHALL DE-ENERGIZE THE ASSOCIATED AHU, ALL ASSOCIATED VAV SUPPLY AND EXHAUST FANS (INCLUDING INTERLOCKS), SIGNAL FIRE ALARM PANEL AND CLOSE THE OUTSIDE AIR DAMPER UPON THE DETECTION OF THE PRODUCTS OF COMBUSTION.

ALARMS:
 ALARM FOR DIRTY FILTER WHEN PRESSURE DROP EXCEEDS 0.5" WG ABOVE INITIAL PRESSURE DROP. ALARM IF LEAVING AIR TEMPERATURE EXCEEDS 60°F IN COOLING MODE OR DROPS BELOW 50°F IN HEATING MODE. ALARM IF AHU SUPPLY FAN FAILS TO START OR FAILS DURING OPERATION. ALARM IF UNIT DISCHARGE STATIC PRESSURE EXCEEDS 5" W.G. ALARM IF CONDENSATE REACHES HIGH LEVEL. ALARM UPON SMOKE DETECTOR ACTIVATION.

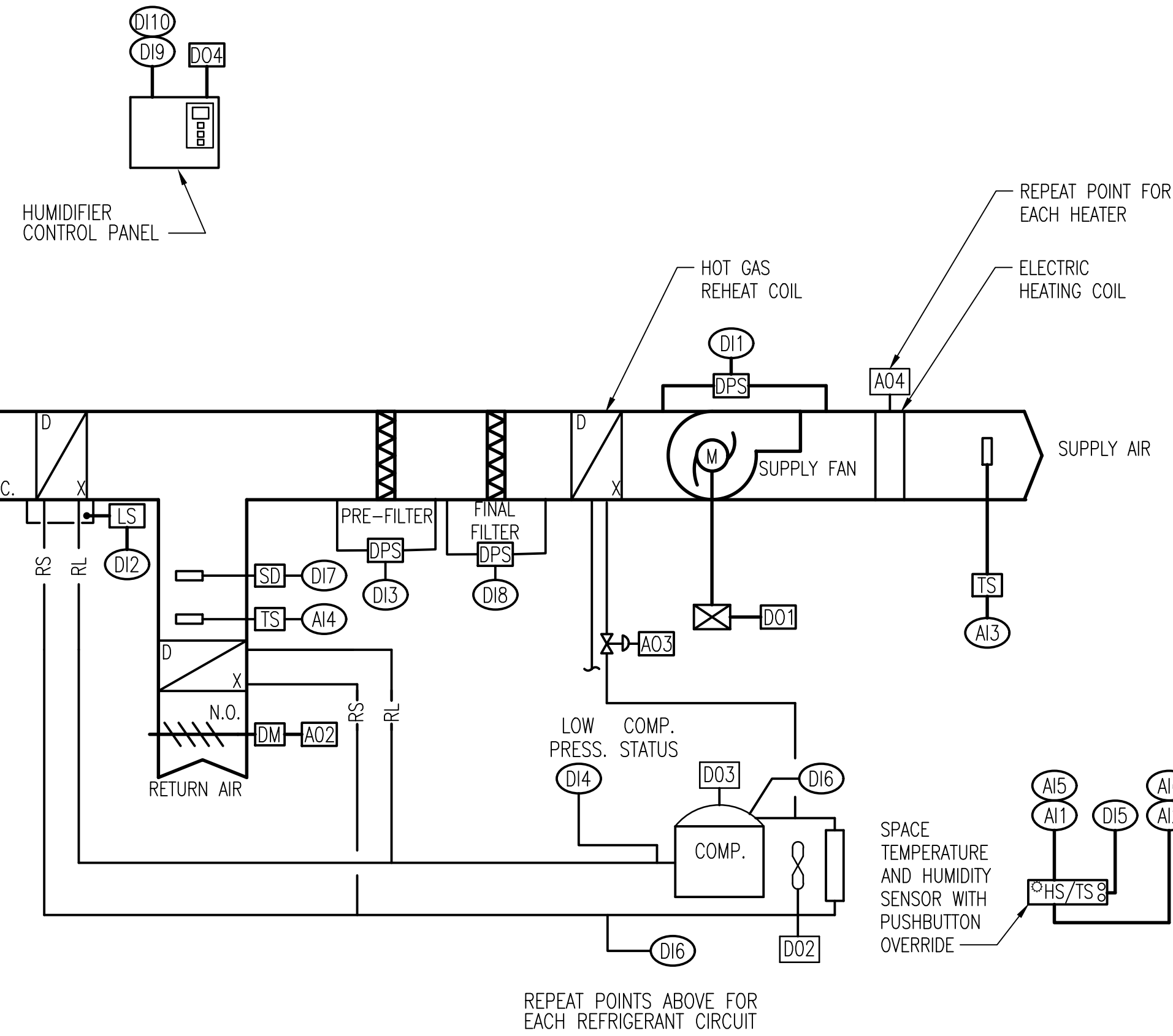
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A/E INFO	
APPROVED	
FOR COMMANDER NAIFAC	
ACTIVITY	
SATISFACTORY TO	
DES: TNH	DRW: MTF
CHK: JAK	

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225**
 MECHANICAL CONTROLS

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAIFAC DRAWING NO. 12782455
SHEET 54 OF 68
M-704



SEQUENCE OF OPERATION

THE SYSTEM SHALL BE AUTOMATICALLY INDEXED INTO OCCUPIED OR UNOCCUPIED MODE BASED ON A SCHEDULE DEFINED BY THE USER. THE SYSTEM SHALL ALSO BE CAPABLE OF BEING MANUALLY INDEXED FROM UNOCCUPIED TO OCCUPIED MODE THRU AN OVERRIDE BUTTON INTEGRAL TO THE SPACE TEMPERATURE SENSOR.

COOLING, OCCUPIED: DURING OCCUPIED MODE, THE OUTSIDE AIR DAMPER SHALL MODULATE OPEN TO ITS MINIMUM POSITION WHILE THE RETURN AIR DAMPER MODULATES CLOSED A PROPORTIONAL AMOUNT. THE CONTROLLER SHALL ENERGIZE THE SUPPLY FAN AND MODULATE THE COMPRESSOR TO MAINTAIN OCCUPIED SPACE TEMPERATURE SETPOINT (ADJ.).

COOLING, UNOCCUPIED: THE CONTROLLER SHALL CYCLE UNIT SUPPLY FAN AND MODULATE THE COMPRESSOR TO MAINTAIN SETBACK SETPOINT (ADJ.). OUTSIDE AIR DAMPER SHALL BE CLOSED DURING UNOCCUPIED MODE.

AUTOMATIC OFF: A CONDENSATE HIGH LEVEL SWITCH SHALL BE PROVIDED IN THE PRIMARY DRAIN PAN. SWITCH SHALL DISABLE UNIT UPON SENSING HIGH WATER LEVEL IN PAN.

HEATING, OCCUPIED: DURING OCCUPIED MODE, THE OUTSIDE AIR DAMPER SHALL MODULATE OPEN TO ITS MINIMUM POSITION WHILE THE RETURN AIR DAMPER MODULATES CLOSED A PROPORTIONAL AMOUNT. SUPPLY FAN SHALL BE ENERGIZED AND RUN CONTINUOUSLY. THE CONTROLLER SHALL ENERGIZE FIRST AND SECOND STAGES OF ELECTRIC HEAT TO MAINTAIN OCCUPIED SPACE TEMPERATURE SETPOINT (ADJ.).

HEATING, UNOCCUPIED: THE CONTROLLER SHALL CYCLE UNIT SUPPLY FAN AND ENERGIZE/ DE-ENERGIZE THE FIRST AND SECOND STAGES OF ELECTRIC HEAT TO MAINTAIN SPACE SETBACK SETPOINT (ADJ.). OUTSIDE AIR DAMPER SHALL BE CLOSED DURING UNOCCUPIED MODE.

DEHUMIDIFICATION CYCLE: UPON A CALL FOR DEHUMIDIFICATION BY THE SPACE HUMIDISTAT, FACTORY PROVIDED HOT GAS REHEAT SHALL BE CYCLED TO MAINTAIN SETPOINT.

HUMIDIFICATION CYCLE: UPON A CALL FOR HUMIDIFICATION BY THE SPACE HUMIDISTAT, THE ASSOCIATED HUMIDIFIER SHALL ENERGIZE.

SAFETIES: ON DETECTION OF PRODUCTS OF COMBUSTION, THE SMOKE DETECTOR SHALL STOP THE UNIT SUPPLY FAN AND CLOSE THE OUTSIDE AIR DAMPER.

ALARMS: ALARM FOR DIRTY FILTER: WHEN PRESSURE DROP EXCEEDS 0.5" WG ABOVE INITIAL PRESSURE DROP. ALARM IF LEAVING AIR TEMPERATURE EXCEEDS 65°F IN COOLING MODE OR DROPS BELOW 55°F IN HEATING MODE. ALARM IF SUPPLY FAN OR COMPRESSOR FAILS TO START OR FAILS DURING OPERATION. ALARM ON DETECTION OF HIGH CONDENSATE LEVEL. ALARM UPON SMOKE DETECTOR ACTIVATION. ALARM UPON TEMPERATURE AND HUMIDITY LEVELS FALLING OUTSIDE OF ACCEPTABLE LEVELS IN SPACE 101.

C.V. DX RTU/AHU/SPLIT SYSTEM	
LOCAL DDC CONTROLLER	
INPUTS	
ANALOG	AI1 SPACE TEMPERATURE
	AI2 SPACE TEMPERATURE SETPOINT
	AI3 SUPPLY AIR TEMPERATURE
	AI4 RETURN AIR TEMPERATURE
	AI5 SPACE HUMIDITY
	AI6 SPACE HUMIDITY SETPOINT
DIGITAL	DI1 SUPPLY AIR FAN STATUS
	DI2 MOISTURE SENSOR
	DI3 DIRTY PRE-FILTER
	DI4 REFRIGERANT LOW PRESSURE ALARM
	DI5 UNOCCUPIED OVERRIDE
	DI6 REFRIGERANT HIGH PRESSURE ALARM
	DI7 SMOKE DETECTOR (EXISTING)
	DI8 DIRTY FINAL FILTER
	DI9 HUMIDIFIER ALARM
	DI10 HUMIDIFIER STATUS
OUTPUTS	
ANALOG	AO1 OUTSIDE AIR DAMPER CONTROL
	AO2 RETURN AIR DAMPER CONTROL
	AO3 HOT GAS REHEAT
	AO4 ELECTRIC HEAT
DIGITAL	DO1 SUPPLY AIR FAN START
	DO2 CONDENSER FAN (ON/OFF)
	DO3 COMPRESSOR (MODULATING)
	DO4 HUMIDIFIER START/STOP

CONSTANT VOLUME DX SPLIT SYSTEM CONTROL DIAGRAM (DDC) - RTU-13

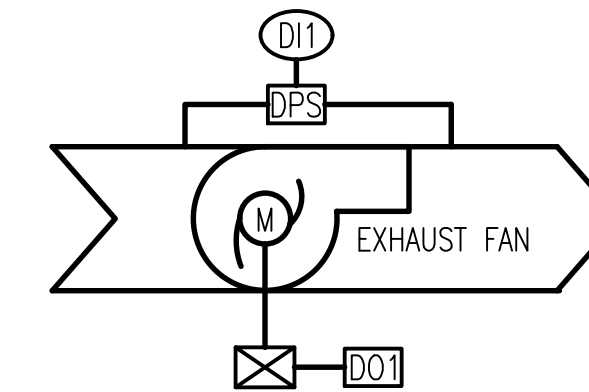
NO SCALE

CHILLED WATER DEMAND NOTE:

CONTRACTOR SHALL UPDATE DDC SYSTEM POINTS AND GRAPHICS TO INCLUDE OPERATING TONNAGE OF SECONDARY CHILLED WATER LOOP UTILIZING EXISTING FLOW METER, AND CHILLED WATER SUPPLY AND RETURN TEMPERATURE SENSORS.

SEQUENCE OF OPERATION

V-11: FAN MUST BE ENERGIZED BY FAN SWITCH.

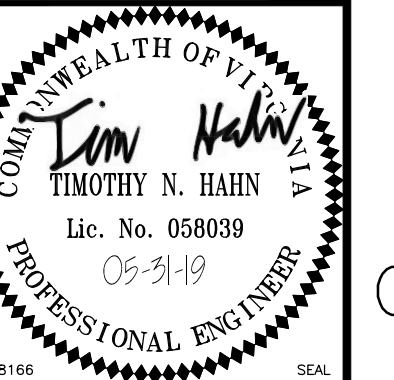


SEQUENCE OF OPERATION

EF 22-462/463/464/465: EXHAUST FANS SHALL BE CONTROLLED BY A HAND-OFF-AUTO CONTROLLER. EXHAUST FANS MUST BE ENERGIZED AUTOMATICALLY BY THE HYDROGEN DETECTION SYSTEM PANEL. ACTIVATION OF THE FANS SHALL TRIGGER AN ALARM. FANS MUST NOT BE ENERGIZED BY THE FIRE ALARM SYSTEM.

SMOKE CONTROL FANS	
LOCAL DDC CONTROLLER	
INPUTS	
DIGITAL	DI1 EXHAUST FAN STATUS
OUTPUTS	
DIGITAL	DO1 EXHAUST FAN START/STOP

NO.	DATE	DESCRIPTION	BY



APPROVED	A/E INFO
FOR COMMANDER NAVFAC	ACTIVITY
SATISFACTORY TO	DES: TNH DRAW: MTF CHK: JAK

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225**
 MECHANICAL CONTROLS

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782456
SHEET 55 OF 68
M-705

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ELECTRICAL DEMOLITION NOTES

GENERAL: DEMOLITION DRAWINGS ARE BASED ON EXISTING PLANS AND FIELD INVESTIGATION PRIOR TO DEMOLITION.

DASHED ITEMS: ALL ITEMS SHOWN DASHED ON DEMOLITION PLANS ARE EXISTING AND MUST BE REMOVED.

SOLID ITEMS: ALL ITEMS SHOWN SOLID ON DEMOLITION PLANS ARE EXISTING TO REMAIN.

EXISTING CONDUIT: ALL EXISTING CONDUITS AND WIRING THAT WILL NOT BE REUSED MUST BE REMOVED WHERE THEY WILL BE EXPOSED UPON COMPLETION OF NEW WORK.

REPAIR DAMAGE: EXERCISE CARE IN REMOVAL OF DEMOLITION ITEMS. REPAIR, AT NO ADDITIONAL COST TO THE OWNER, ANY DAMAGE CAUSED TO EXISTING CONSTRUCTION AND/OR EQUIPMENT TO REMAIN.

ASSOCIATED APPURTENANCES: REMOVE ALL ELECTRICAL APPURTENANCES (DISCONNECTS, STARTERS, WIRING, CONDUIT, ETC.) ASSOCIATED WITH EQUIPMENT TO BE REMOVED BY OTHERS.

KNOCKOUT PLUGS AND COVERS: ALL CONDUIT REMOVED MUST BE REMOVED IN ITS ENTIRETY, INCLUDING FITTINGS, MOUNTING DEVICES, MOUNTING HARDWARE, ETC.

DEMOLISHED MATERIALS: ALL MATERIALS REMOVED UNDER DEMOLITION, NOT TO BE RELOCATED OR DESIGNATED TO BE TURNED OVER TO THE OWNER, MUST BECOME THE PROPERTY OF THE CONTRACTOR AND MUST BE REMOVED COMPLETELY FROM THE SITE.

SCHEDULE OUTAGES: ALL WORK AND ALL POWER OUTAGES IN THE EXISTING BUILDING MUST BE SCHEDULED AT TIMES COORDINATED WITH THE CONTRACTING OFFICER.

NOTIFICATION: NOTIFY THE CONTRACTING OFFICER 28 DAYS PRIOR TO TURNING OFF ANY CIRCUITS.

ABANDONED COMMUNICATIONS CABLING: ABANDONED COMMUNICATIONS CABLING (TELEPHONE OR DATA) ABOVE THE CEILING MUST BE REMOVED PER NEC ARTICLE 645.

GENERAL ELECTRICAL NOTES

GENERAL: UNLESS SPECIFICALLY INDICATED OTHERWISE, ALL WORK SHOWN ON ELECTRICAL DRAWINGS IS NEW WORK TO BE PROVIDED UNDER THIS CONTRACT.

COORDINATION: COORDINATE AND COOPERATE WITH ALL TRADES ON THE PROJECT. THE CONTRACTOR MUST REVIEW ALL CONTRACT DOCUMENTS INCLUDING CIVIL, STRUCTURAL, ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.

AS-BUILT DRAWINGS: SECURE AN EXTRA SET OF ELECTRICAL DRAWINGS TO BE KEPT ON SITE AND MARK, DAILY, THE DRAWINGS IN RED AS THE PROJECT PROGRESSES IN ORDER TO KEEP AN ACCURATE RECORD OF ALL DEVIATIONS BETWEEN THE WORK SHOWN ON THE DRAWINGS AND THE WORK WHICH IS ACTUALLY INSTALLED.

TESTS: TEST ALL WIRING FOR CONTINUITY AND GROUNDS BEFORE CONNECTING ANY FIXTURES OR DEVICES. PERFORM INSULATION RESISTANCE TESTS ON ALL WIRING #6 OR LARGER TO INSURE THAT ALL PORTIONS ARE FREE FROM SHORT-CIRCUITS AND GROUNDS.

INSPECTIONS: ARRANGE ALL NECESSARY INSPECTIONS. DELIVER ALL REQUIRED INSPECTION CERTIFICATES TO THE CONTRACTING OFFICER.

GROUNDING: PROVIDE GROUNDING IN ACCORDANCE WITH THE NEC FOR THE ENTIRE ELECTRICAL SYSTEM INCLUDING EQUIPMENT FRAMES, CONDUITS, SWITCHES, CONTROLLERS, WIRE-WAYS, NEUTRAL CONDUCTORS, AND OTHER EQUIPMENT.

LABELS: PROVIDE LABELS FOR ALL SWITCHBOARDS, SWITCHBOARD BREAKERS, PANELBOARDS, CABINETS, SAFETY SWITCHES, MOTOR-DISCONNECT SWITCHES, AND MOTOR CONTROLLERS. LABELS MUST BE MACHINE ENGRAVED, LAMINATED PLASTIC, PERMANENTLY ATTACHED WITH SELF-TAPPING SCREWS OR RIVETS.

J-BOX LABELING: LABEL ALL JUNCTION BOXES WITH PERMANENT MARKER IDENTIFYING CIRCUIT NUMBER AND PANELBOARD OF CIRCUITS WITHIN.

PANEL DIRECTORY: PROVIDE TYPEWRITTEN PANELBOARD DIRECTORY CARD IN EACH PANELBOARD WITH CIRCUIT LOAD INFORMATION AND ROOM NUMBER CLEARLY IDENTIFIED. USE ACTUAL ROOM NUMBERS IN THE BUILDING, NOT THE ROOM NUMBERS SHOWN ON THE CONTRACT DRAWINGS, AS THEY ARE OFTEN DIFFERENT.

CONDUCTORS AND MATCHING LUGS: IN SITUATIONS WHERE CONDUCTOR SIZES AND/OR QUANTITIES OF PARALLEL SETS HAVE BEEN INCREASED DUE TO VOLTAGE DROP OR FOR OTHER REASONS, CONTRACTOR MUST PROVIDE THE APPROPRIATE LUG SIZES/QUANTITIES WITHIN THE EQUIPMENT CONNECTED (SWITCHBOARD, PANELBOARD, DISCONNECT SWITCH, TRANSFER SWITCH ETC.) TO PERMIT SATISFACTORY CONNECTION OF THE INDICATED CONDUCTORS.

MOTOR COORDINATION: MOTORS, MOTOR STARTERS, CONTROLLERS, INTEGRAL DISCONNECT SWITCHES, AND CONTACTORS MUST BE PROVIDED WITH THEIR RESPECTIVE PIECES OF EQUIPMENT BY THE EQUIPMENT SUPPLIER.

MOTOR DISCONNECTS: ALL MOTORS MUST HAVE DISCONNECTING MEANS.

MOTOR FUSE PROTECTION: WHERE FUSE PROTECTION IS SPECIFICALLY REQUIRED BY THE EQUIPMENT MANUFACTURER, PROVIDE FUSED SWITCHES IN LIEU OF NON-FUSED SWITCHES OR IN LIEU OF ENCLOSED CIRCUIT BREAKERS, OR OTHER DEVICES INDICATED.

CONNECTION DETAILS: SECURE APPROVED SHOP DRAWINGS SHOWING WIRING DIAGRAMS, ROUGH-IN AND HOOK UP DETAILS FROM OTHER INVOLVED CONTRACTORS FOR EQUIPMENT WHICH MUST BE CONNECTED ELECTRICALLY.

COORDINATION DETAILS: MECHANICAL EQUIPMENT WILL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR. THE LOCATIONS SHOWN ON THE ELECTRICAL DRAWINGS ARE APPROXIMATE.

WORKING CLEARANCE: COORDINATE FINAL LOCATIONS OF ELECTRICAL EQUIPMENT WITH MECHANICAL DUCTWORK, PIPING ETC. AND ASSURE WORKING CLEARANCE REQUIRED BY NEC WILL BE MET.

STARTER MOUNTING: WHERE AN INDIVIDUALLY MOUNTED SAFETY SWITCH, STARTER OR CIRCUIT BREAKER IS SHOWN ADJACENT TO ITS RESPECTIVE LOAD AND NOT MOUNTED ON A WALL, PROVIDE ALL SUPPORTS, BRACKETS, ANCHORING, ETC. NECESSARY TO PROPERLY SUPPORT THE DEVICE.

MOUNTING HEIGHTS: MOUNTING HEIGHTS INDICATED ARE FROM THE FINISHED FLOOR TO THE CENTERLINE OF THE WIRING DEVICE UNLESS OTHERWISE NOTED.

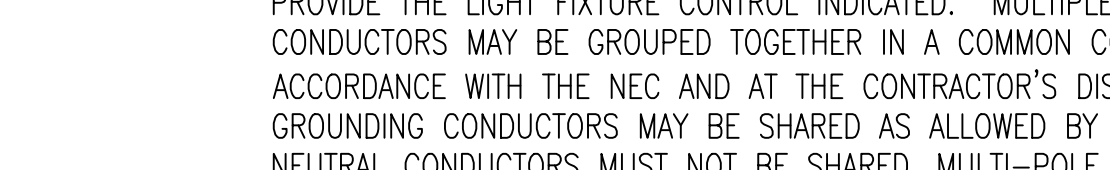
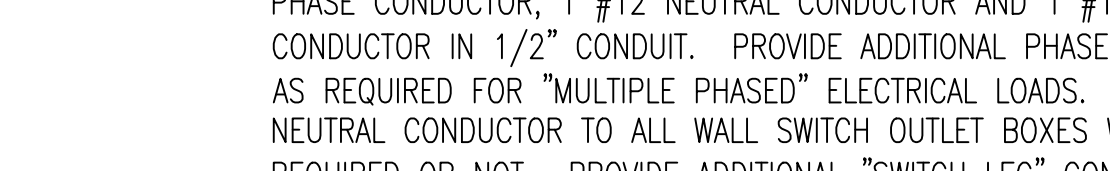
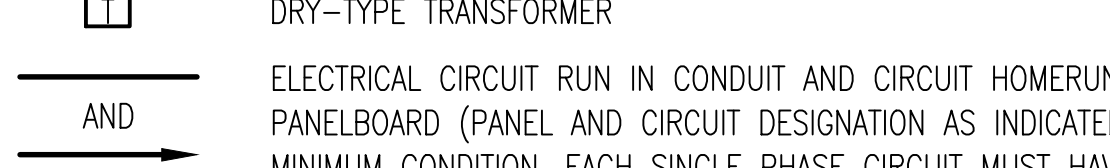
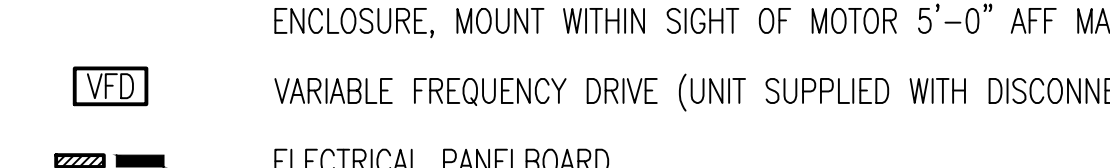
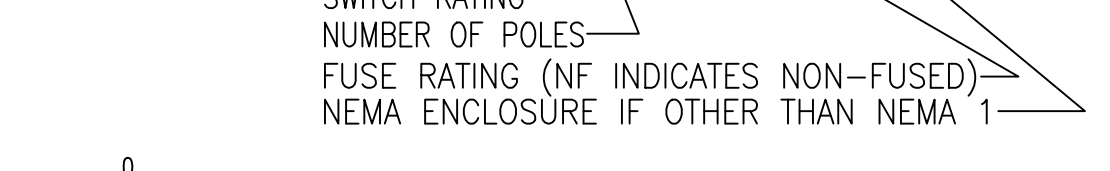
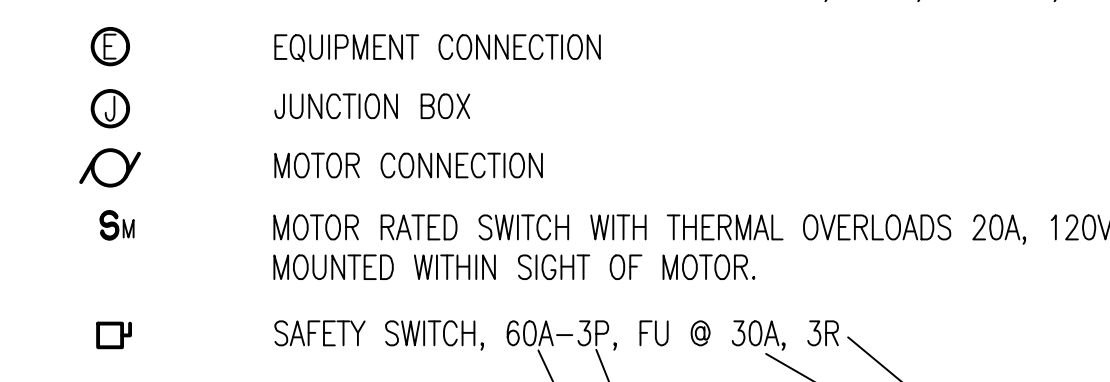
FIRE STOPPING: FOR ANY WALL OR FLOOR PENETRATIONS THROUGH FIRE-RATED STRUCTURES PROVIDE FIRE-STOPPING TO SEAL ALL THE PENETRATIONS AFTER THE CONDUIT HAS BEEN INSTALLED.

CLEAN UP: ON PROJECT CLOSE-OUT CLEAN ALL ELECTRICAL DEVICES, LIGHTING FIXTURES, LAMPS AND LENSES, AND REMOVE ALL PAINT SPATTERS FROM DEVICES, FIXTURES AND PLATES.

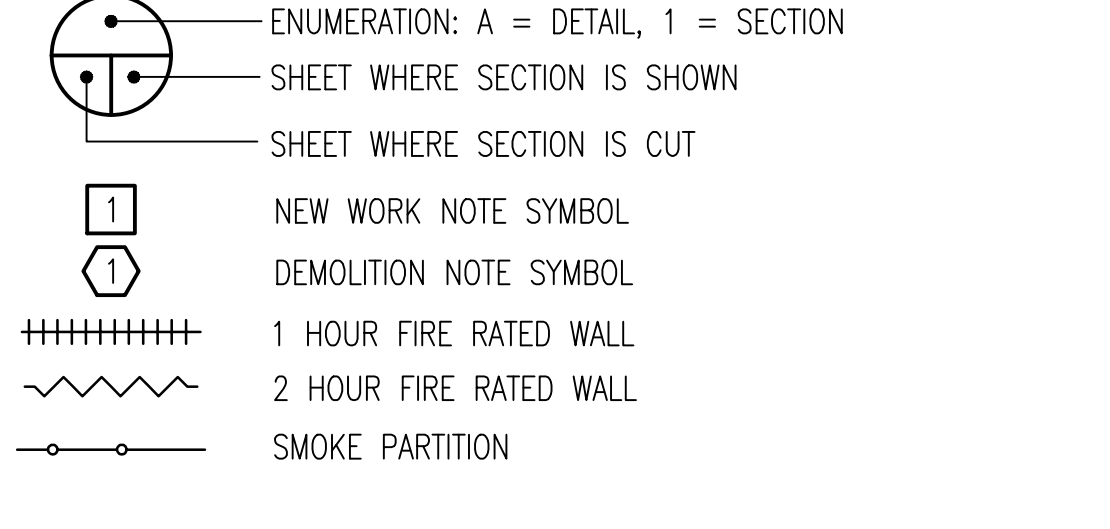
HVAC DAMPERS, ETC.: CONTRACTORS MUST COORDINATE WITH THE EQUIPMENT AND SYSTEM BEING PROVIDED AND PROVIDE POWER CONNECTIONS ACCORDINGLY.

ELECTRICAL LEGEND

- GFI: GROUND FAULT INTERRUPTING TYPE RECEPTACLE
+XX": DEVICE MOUNTING HEIGHT DESIGNATION ABOVE FINISHED FLOOR IF OTHER THAN 18" OR 46".
WP: WEATHER RESISTANT GFI RECEPTACLE WITH WEATHERPROOF WHILE-IN-USE COVER.



GENERAL



ABBREVIATIONS

Table listing electrical abbreviations such as ACCU (Air Cooled Condensing Unit), AFF (Above Finished Floor), AFG (Above Finished Grade), AHU (Air Handling Unit), etc.

Professional Engineer Seal for James E. Barkley, Jr., Lic. No. 043854, State of Virginia.

Administrative form for approval, activity, and satisfaction, with fields for DES, SAJ, DRW, SAJ, CHK, ETA.

U.S. MARINE CORPS AIR STATION, CHERRY POINT, NORTH CAROLINA. REPLACE HVAC AND CONTROLS PHASE II AT BUILDING 4225.

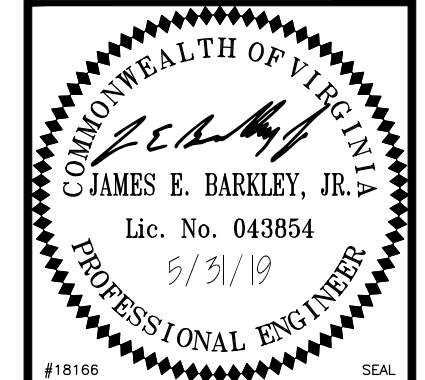
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DEMOLITION WORK NOTES

① REMOVE EXISTING UNIT CONNECTION, DISCONNECT SWITCH, AND CONDUIT & CONDUCTORS TO SOURCE.

SYN	DESCRIPTION	DATE	APPR



A/E INFO

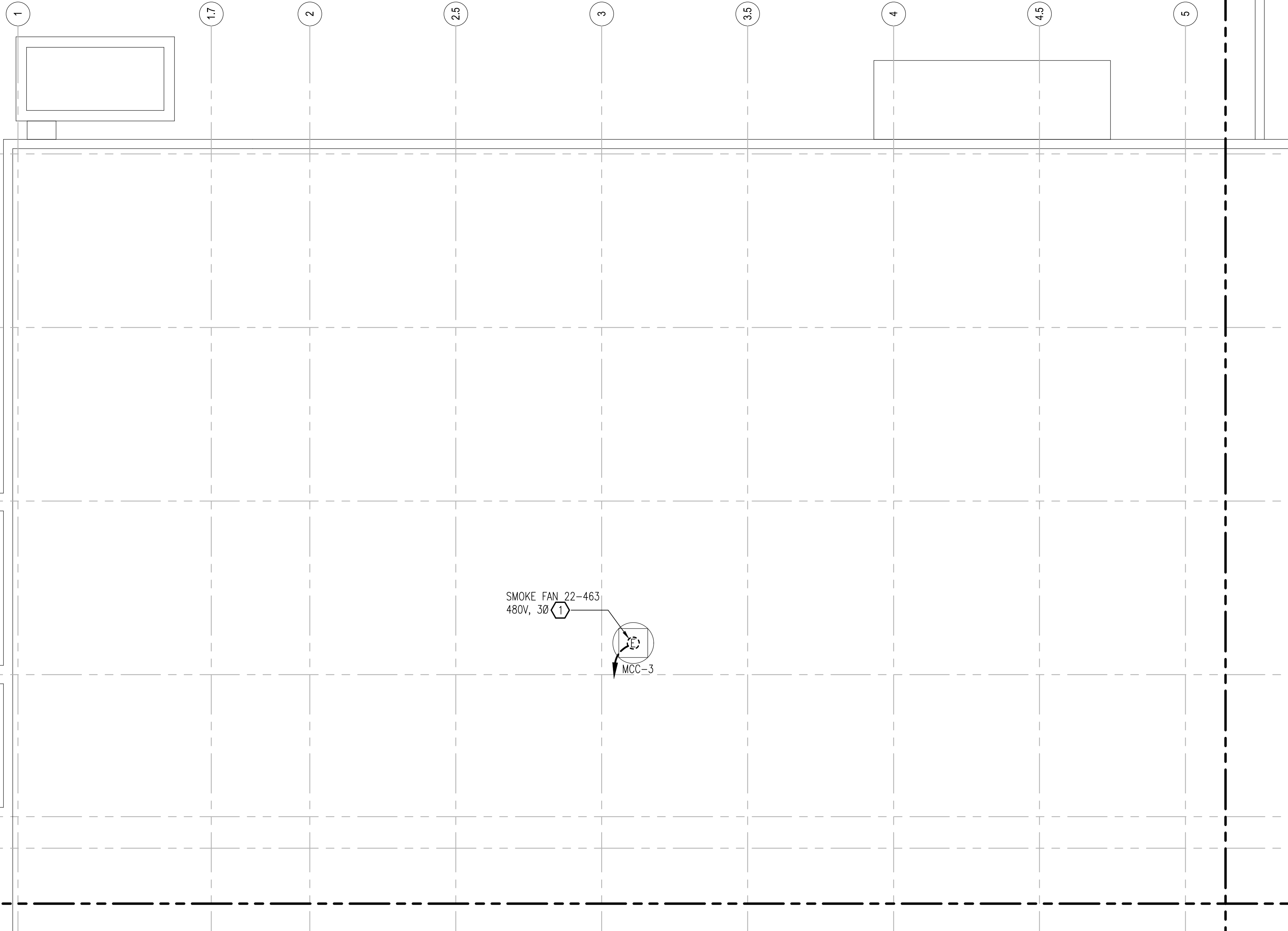
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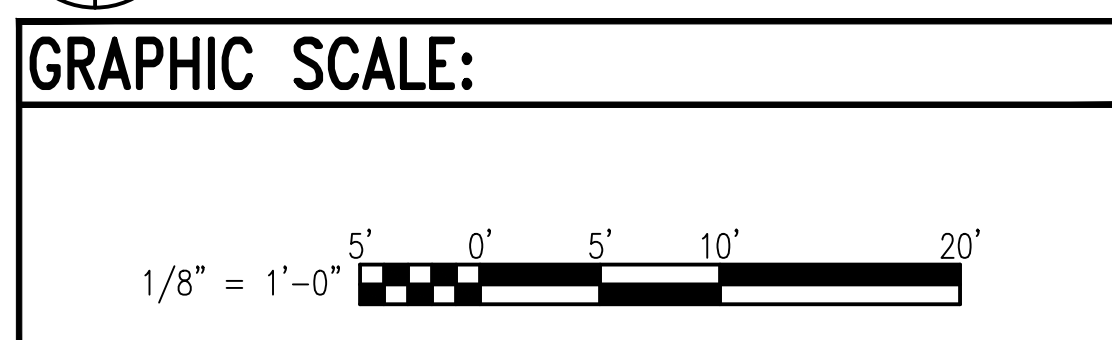
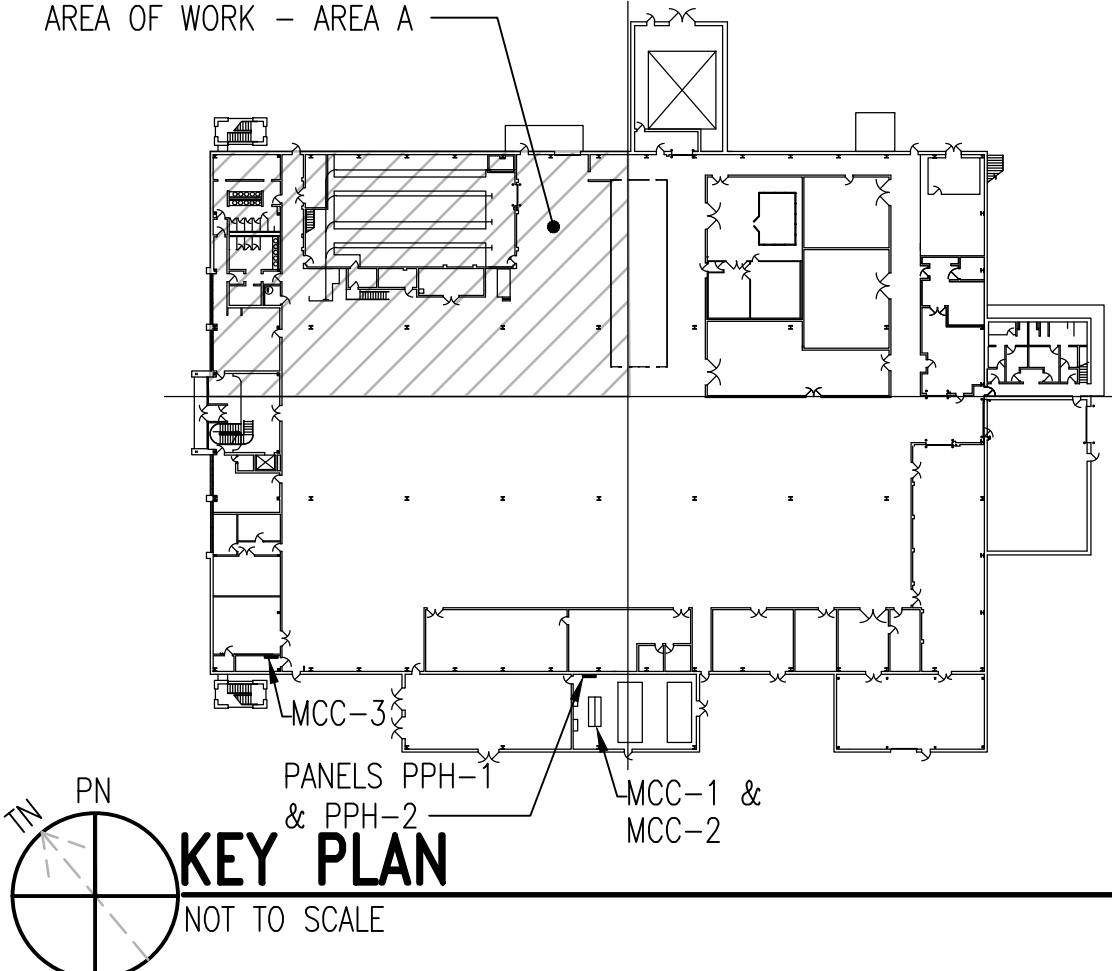
ACTIVITY

SATISFACTORY TO

DES SAJ | DRW SAJ | CHK ETA



REFER TO SHEET E-701 FOR MCC-1 & MCC-2 CUBICAL LOCATIONS AND SHEET E-601 FOR MCC3 DISCONNECT LOCATIONS.



ELECTRICAL PARTIAL DEMOLITION ROOF PLAN - AREA A

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

SCALE: AS NOTED

PROJECT NO.: ST-14507A

MAXIMO WORK ORDER NO. 6878897

NAVFAC DRAWING NO. 12782458

SHEET 57 OF 68

ED201

DRAWN BY: SAJ

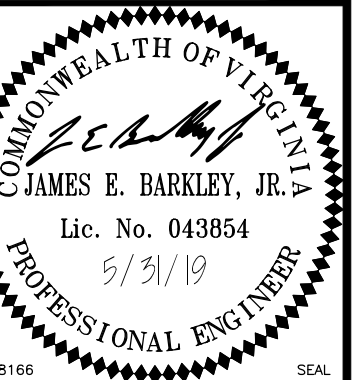
CHECKED BY: ETA

DATE: 10 MAY 2014

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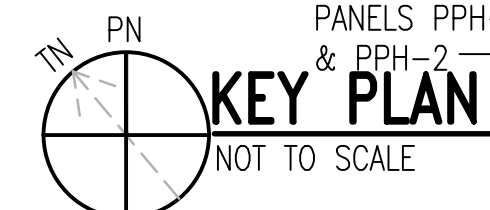
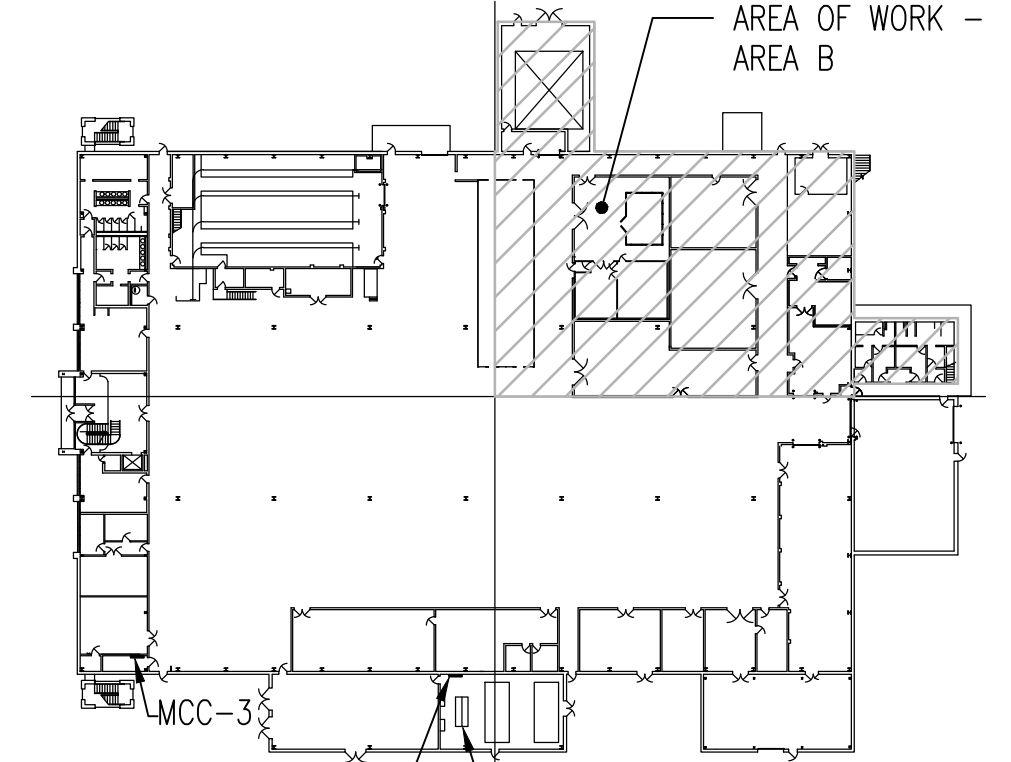
DEMOLITION WORK NOTES

- ① REMOVE EXISTING UNIT CONNECTION, DISCONNECT SWITCH, AND CONDUIT & CONDUCTORS TO SOURCE.
- ② REMOVE EXISTING FAN CONNECTION AND CONDUIT & CONDUCTORS TO SOURCE.
- ③ REMOVE EXISTING CONDENSING UNIT CONNECTION, DISCONNECT SWITCH, AND CONDUIT & CONDUCTORS TO SOURCE.
- ④ CONDENSATE PUMP, 120V, 1Ø, WALL MOUNTED BELOW ROOF. REMOVE CONNECTION, DISCONNECT SWITCH, AND CONDUIT & CONDUCTORS TO SOURCE.
- ⑤ AHU LOCATED BELOW ROOF.
- ⑥ HUMIDIFIER LOCATED BELOW ROOF: REMOVE EXISTING CONDENSING UNIT CONNECTION, DISCONNECT SWITCH, AND CONDUIT & CONDUCTORS TO SOURCE.
- ⑦ REMOVE EXISTING UNIT CONNECTION, AND CONDUIT & CONDUCTORS TO SOURCE. EXISTING DISCONNECT SWITCH TO REMAIN AND BE REUSED.
- ⑧ EXISTING PANELBOARD LOCATED INSIDE AT GROUND FLOOR LEVEL - ETR

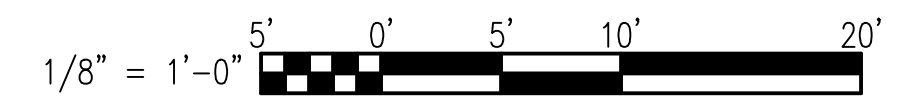


APPROVED	A/E INFO
FOR COMMANDER NAVFAC	ACTIVITY
SATISFACTORY TO	
DES SAJ	DRW SAJ
CHK ETA	

REFER TO SHEET E-701 FOR MCC-1 & MCC-2 CUBICAL LOCATIONS AND SHEET E-601 FOR MCC3 DISCONNECT LOCATIONS.



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

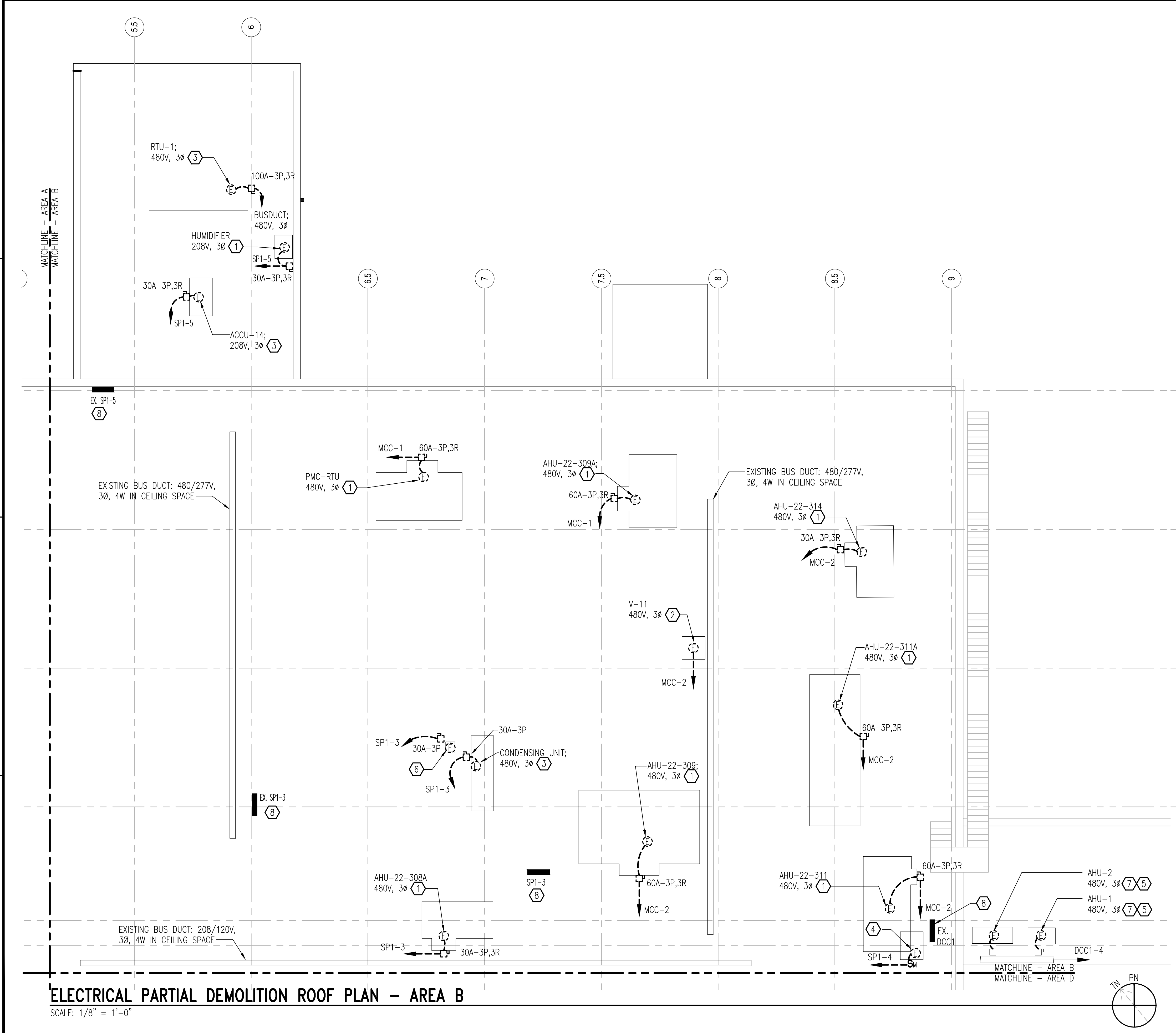


ELECTRICAL PARTIAL DEMOLITION ROOF PLAN - AREA B

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

UNCLASSIFIED//FOR OFFICIAL USE ONLY

UNCLASSIFIED//FOR OFFICIAL USE ONLY



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8.5

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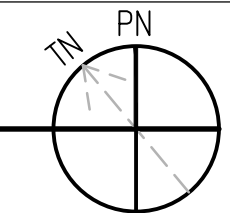
A

A.3

A.7

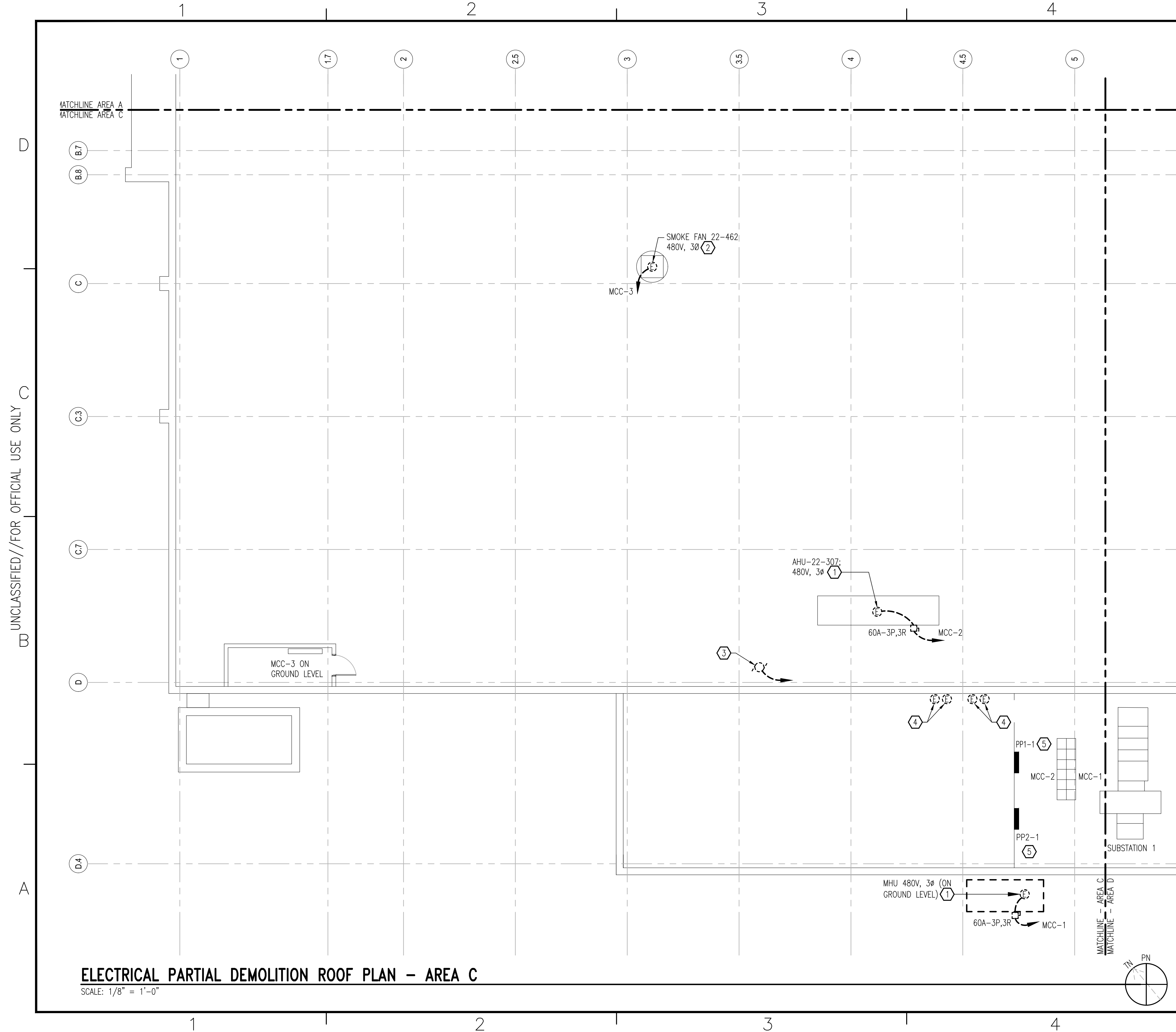
B

A



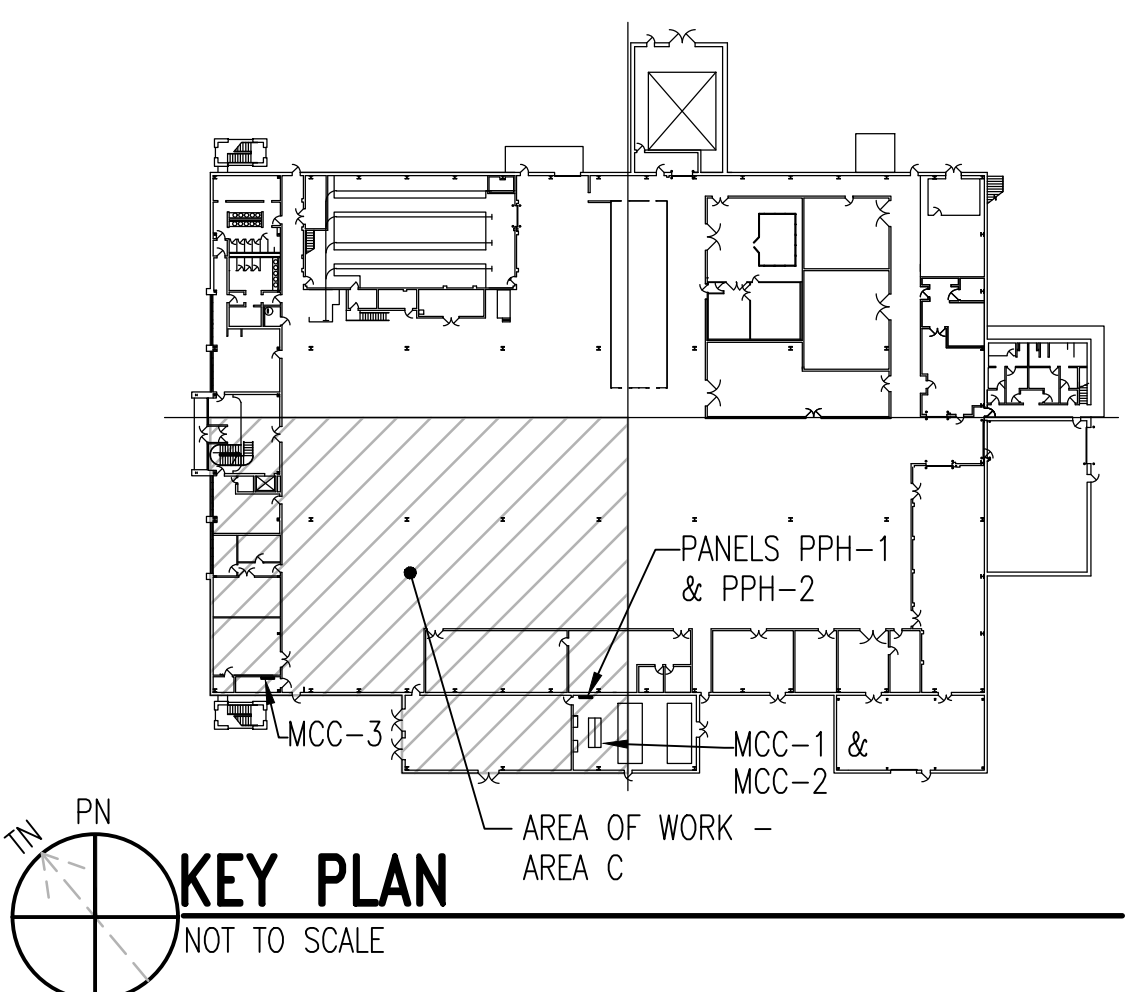
ED202

DRAWING REVISION: 10 MAY 2014



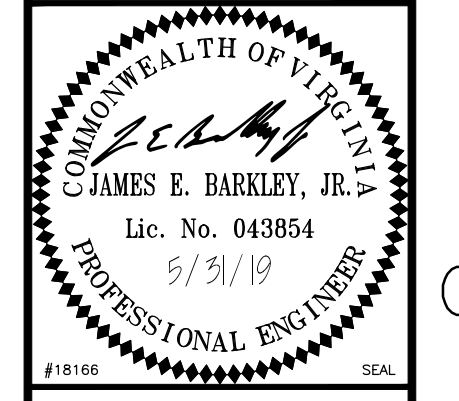
- ### DEMOLITION WORK NOTES
- 1 REMOVE EXISTING UNIT CONNECTION, DISCONNECT SWITCH, AND CONDUIT & CONDUCTORS TO SOURCE.
 - 2 REMOVE EXISTING FAN CONNECTION AND CONDUIT & CONDUCTORS TO SOURCE.
 - 3 REMOVE EXISTING CIRCULATION PUMP CONNECTION, DISCONNECT SWITCH, AND CONDUIT & CONDUCTORS TO SOURCE. PUMP IS LOCATED BELOW ROOF AT SECOND MEZZANINE LEVEL.
 - 4 REMOVE EXISTING HEAT TRACE CONNECTION, AND CONDUIT & CONDUCTORS TO SOURCE.
 - 5 EXISTING PANELBOARD LOCATED INSIDE AT GROUND FLOOR LEVEL - ETR

REFER TO SHEET E-701 FOR MCC-1 & MCC-2 CUBICAL LOCATIONS AND SHEET E-601 FOR MCC3 DISCONNECT LOCATIONS.



ELECTRICAL PARTIAL DEMOLITION ROOF PLAN - AREA C
SCALE: 1/8" = 1'-0"

APPR	DATE	DESCRIPTION	SW



APPROVED
FOR COMMANDER NAVFAC
ACTIVITY

SATISFACTORY TO:
DES SAJ | DRW SAJ | CHK ETA

U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
ELECTRICAL PARTIAL DEMOLITION ROOF PLAN - AREA C

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO.: 6878897
NAVFAC DRAWING NO.: 12782460
SHEET 59 OF 68
ED203
DRAWN/REVISED: 10 MAY 2014

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1

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A

A

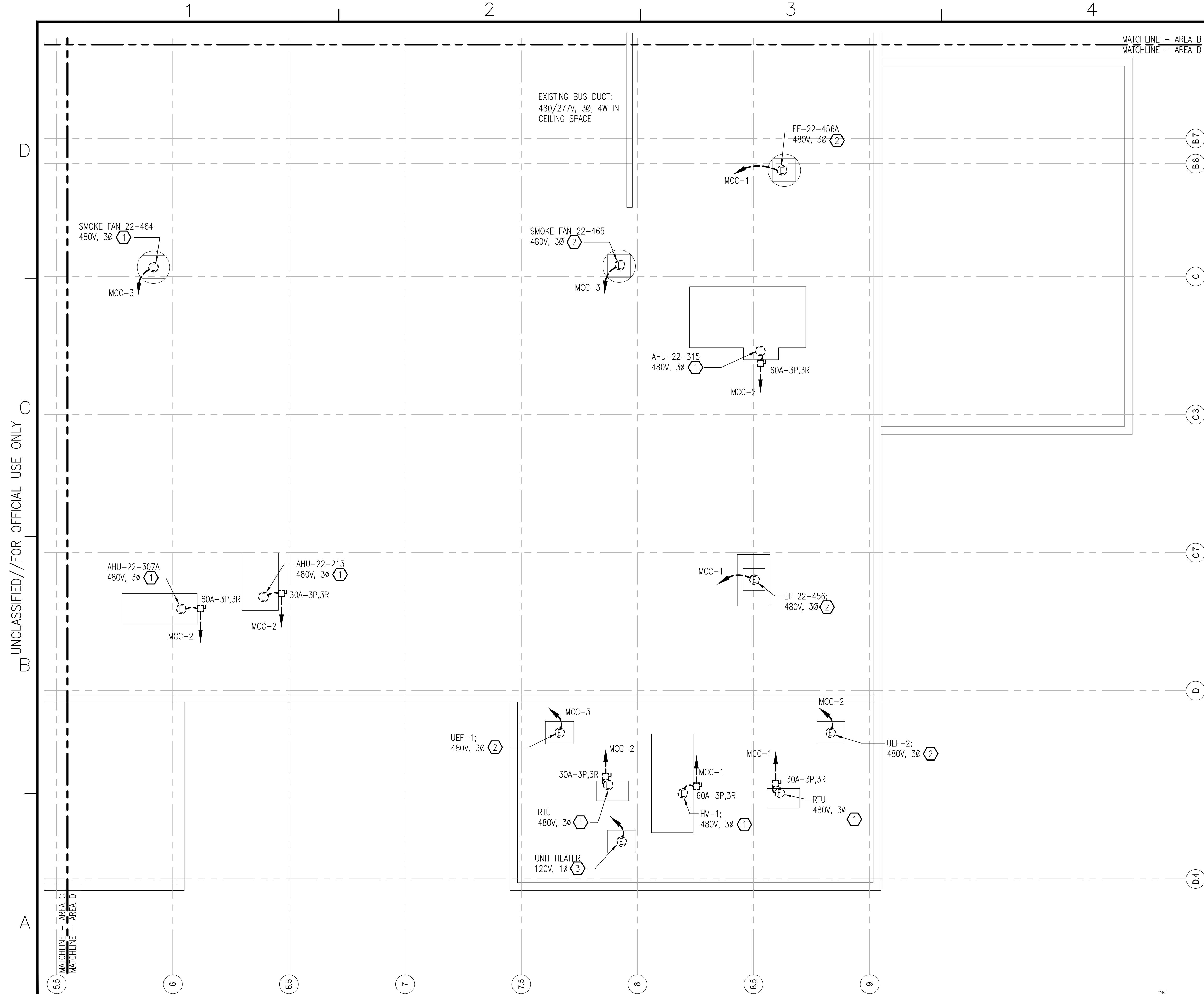
1

2

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4

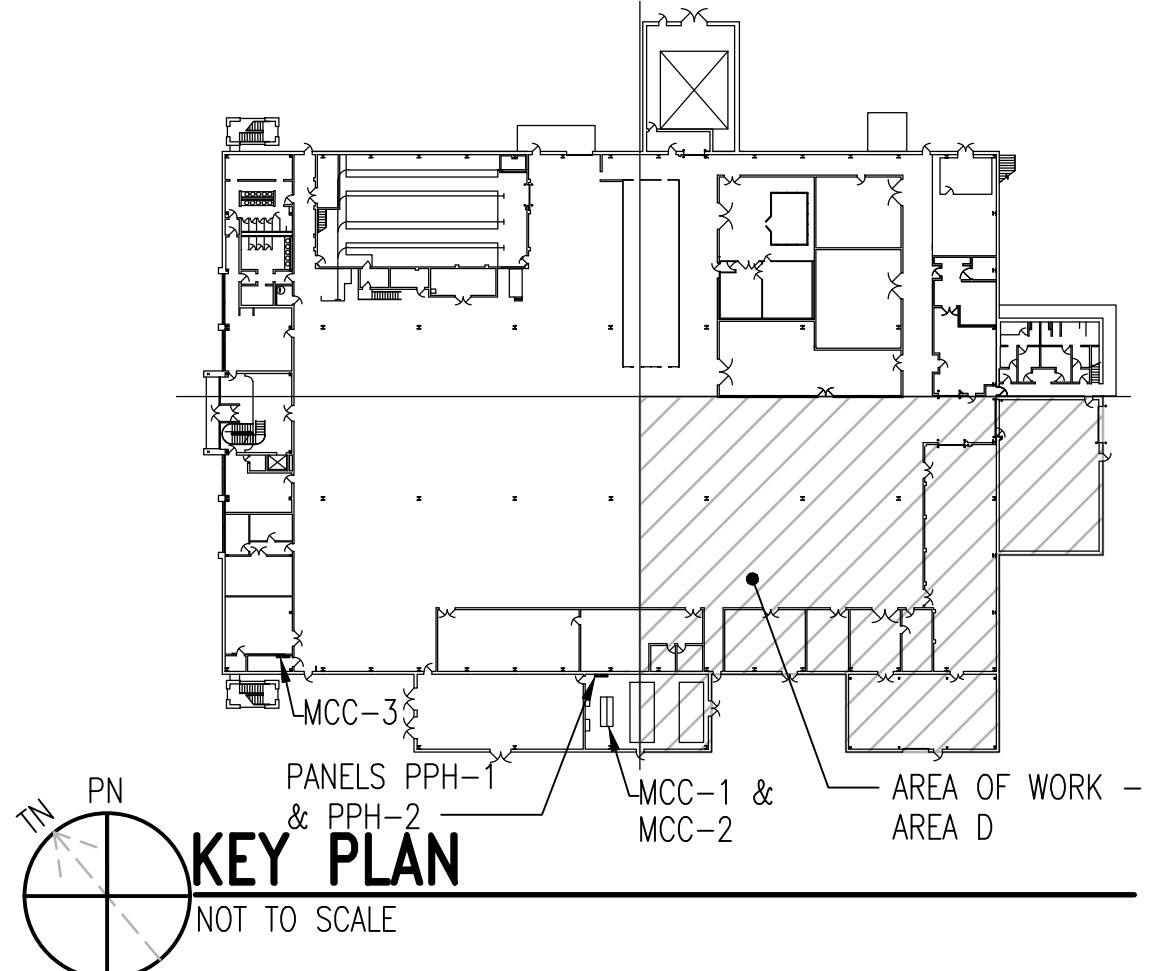
5



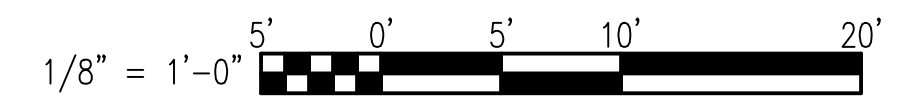
DEMOLITION WORK NOTES

- ① REMOVE EXISTING UNIT CONNECTION, DISCONNECT SWITCH, AND CONDUIT & CONDUCTORS TO SOURCE.
- ② REMOVE EXISTING FAN CONNECTION AND CONDUIT & CONDUCTORS TO SOURCE.
- ③ REMOVE EXISTING STEAM UNIT HEATER CONNECTION AND CONDUIT & CONDUCTORS TO SOURCE. (UNIT HEATER IS LOCATED INSIDE BUILDING).

REFER TO SHEET E-701 FOR MCC-1 & MCC-2 CUBICAL LOCATIONS AND SHEET E-601 FOR MCC-3 DISCONNECT LOCATIONS.



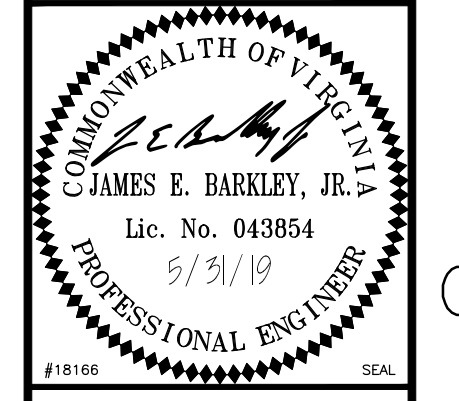
GRAPHIC SCALE:



ELECTRICAL PARTIAL DEMOLITION ROOF PLAN - AREA D

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

DATE	DESCRIPTION	APPR



APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO
DES SAJ DRW SAJ CHK ETA

U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
ELECTRICAL PARTIAL DEMOLITION ROOF PLAN - AREA D

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782461
SHEET 60 OF 68
ED204

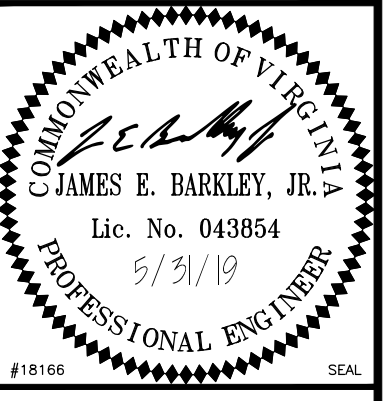
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NEW WORK NOTES

- 1 3 #12, 1#12 GND - 1/2" TO MCC-3.

SYN	DESCRIPTION	DATE	APPR

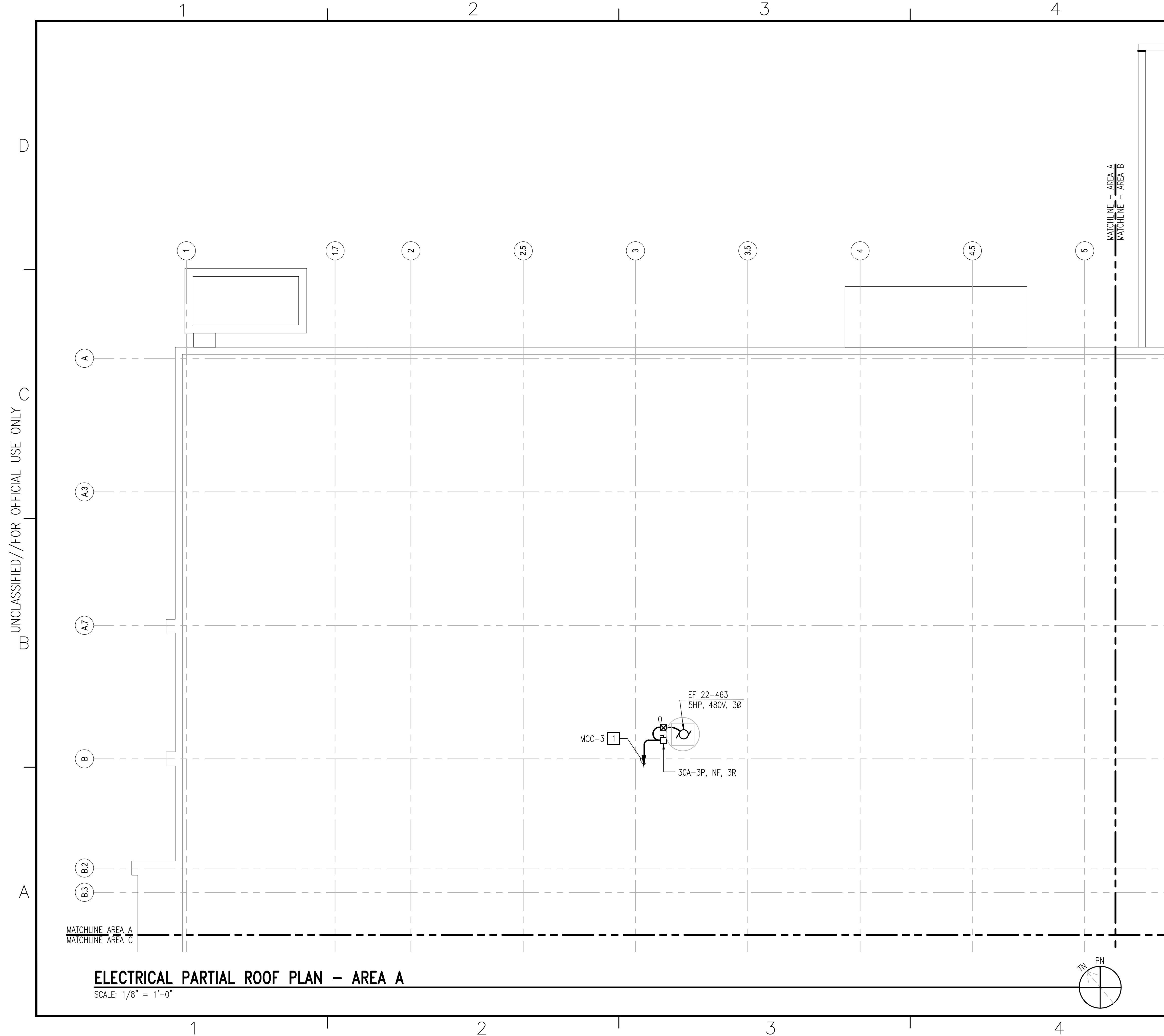


APPROVED
FOR COMMANDER NAVFAC
ACTIVITY

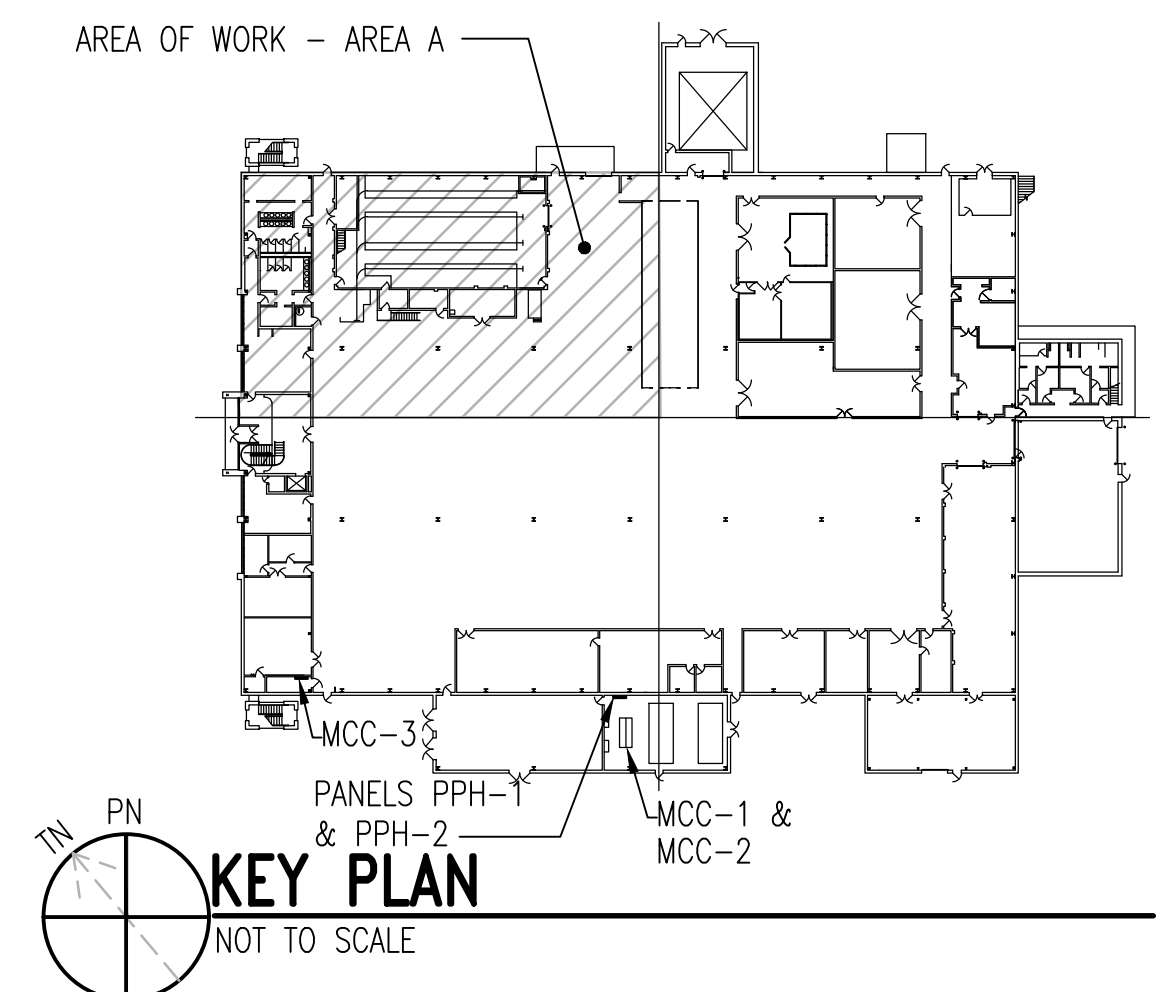
SATISFACTORY TO
DES SAJ | DRW SAJ | CHK ETA

U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
ELECTRICAL PARTIAL ROOF PLAN - AREA A

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782462
SHEET 61 OF 68
E-201

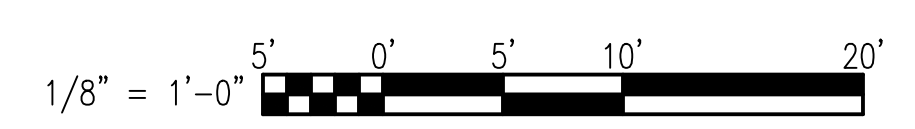


REFER TO SHEET E-701 FOR MCC-1 & MCC-2 CUBICAL LOCATIONS AND SHEET E-601 FOR MCC-3 DISCONNECT LOCATIONS.



KEY PLAN
NOT TO SCALE

GRAPHIC SCALE:



ELECTRICAL PARTIAL ROOF PLAN - AREA A

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

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UNCLASSIFIED//FOR OFFICIAL USE ONLY

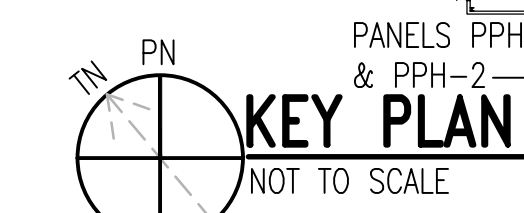
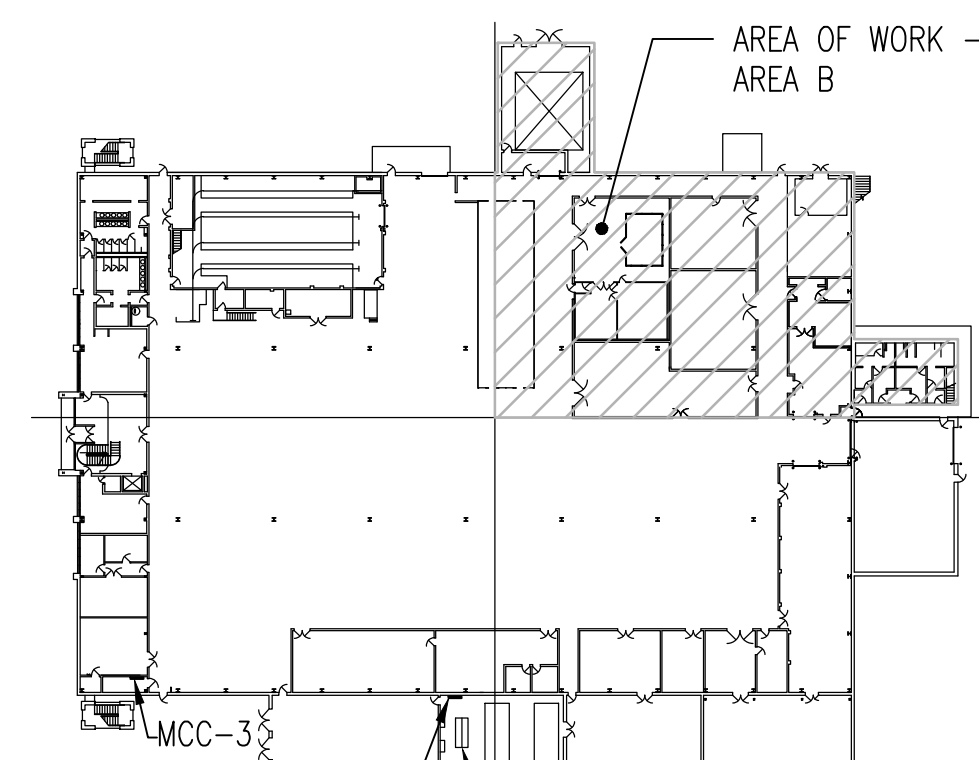
NEW WORK NOTES

- 1 3 #12, 1 #12 GND - 1/2"C.
- 2 3 #8, 1 #10 GND - 3/4"C.
- 3 3 #6, 1 #8 GND - 1"C.
- 4 CONNECT TO EXISTING 125A-3P CIRCUIT BREAKER IN BUSDUCT;
3 #1/0, 1 #6 GND - 2"C.
- 5 3 #10, 1 #10 GND - 1/2"C.
- 6 PROVIDE THREE (3) 15A FUSES IN EXISTING DISCONNECT SWITCH.
- 7 EXISTING PANELBOARD LOCATED ON INSIDE AT GROUND FLOOR LEVEL.

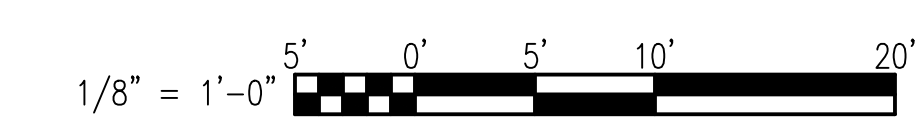
EXISTING PANELBOARD SP1-5 SCHEDULE														
225A MLO, 208/120V, 3 PHASE, 4 WIRE 10 KAIC SURFACE MOUNTED														
LOAD SERVED	LOAD (AMPS)			BKR TRIP	CKT NO.	PHASE			BKR TRIP	LOAD (AMPS)			LOAD SERVED	
	A	B	C			A	B	C		A	B	C		
LIGHTING	15.0			20/1P	1				2	20/1P			ROOF TOP RECEPT	
LIGHTING		12.0		20/1P	3				4	20/1P	6.0		RECEPTACLES	
LIGHTING			10.0	20/1P	5				6	20/1P		6.0	RECEPTACLES	
LIGHTING	8.0			20/1P	7				8	20/1P			SPARE	
SPARE				20/1P	9				10	20/1P	8.0		COMPUTER RECEPT	
SPARE				20/1P	11				12	20/1P		8.0	COMPUTER RECEPT	
SPARE				20/1P	13				14	20/1P			SPARE	
SPARE				20/1P	15				16	20/1P			SPARE	
SPARE				20/1P	17				18	20/1P			SPARE	
SPARE				20/1P	19				20	20/1P			SPARE	
SPARE				20/1P	21				22	20/1P			SPARE	
SPARE				20/1P	23				24	20/1P		5.0	DDC PANEL	
ROLLING DOOR	1.0			15/3P	25				26	40/3P	29.0		HUMIDIFIER	
		1.0									29.0			
			1.0									29.0		
ACCU-13	60.0			70/3P	31				32	20/1P			SPARE	
		60.0		NOTE 2					34	20/1P			SPARE	
			60.0						36	20/1P			SPARE	
SPARE				20/1P	37				38	20/1P			SPARE	
SPARE				20/1P	39				40	20/1P			SPARE	
SPARE				20/1P	41				42	20/1P			SPARE	
TOTAL	84.0	73.0	71.0								31.0	43.0	48.0	TOTAL
TOTAL CONNECTED AMPS				A: 115.0	B: 116.0	C: 119.0								

- NOTES:**
1. REMOVE EXISTING 20A-3P CIRCUIT BREAKER. PROVIDE 40A-3P CIRCUIT BREAKER IN PLACE.
 2. PROVIDE 70A-3P CIRCUIT BREAKER IN EXISTING SPACE ONLY

REFER TO SHEET E-701 FOR MCC-1 & MCC-2 CUBICAL LOCATIONS AND SHEET E-601 FOR MCC-3 DISCONNECT LOCATIONS.



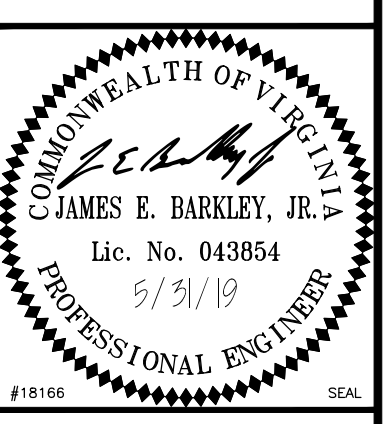
GRAPHIC SCALE:
1/8" = 1'-0"



ELECTRICAL PARTIAL ROOF PLAN - AREA B

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

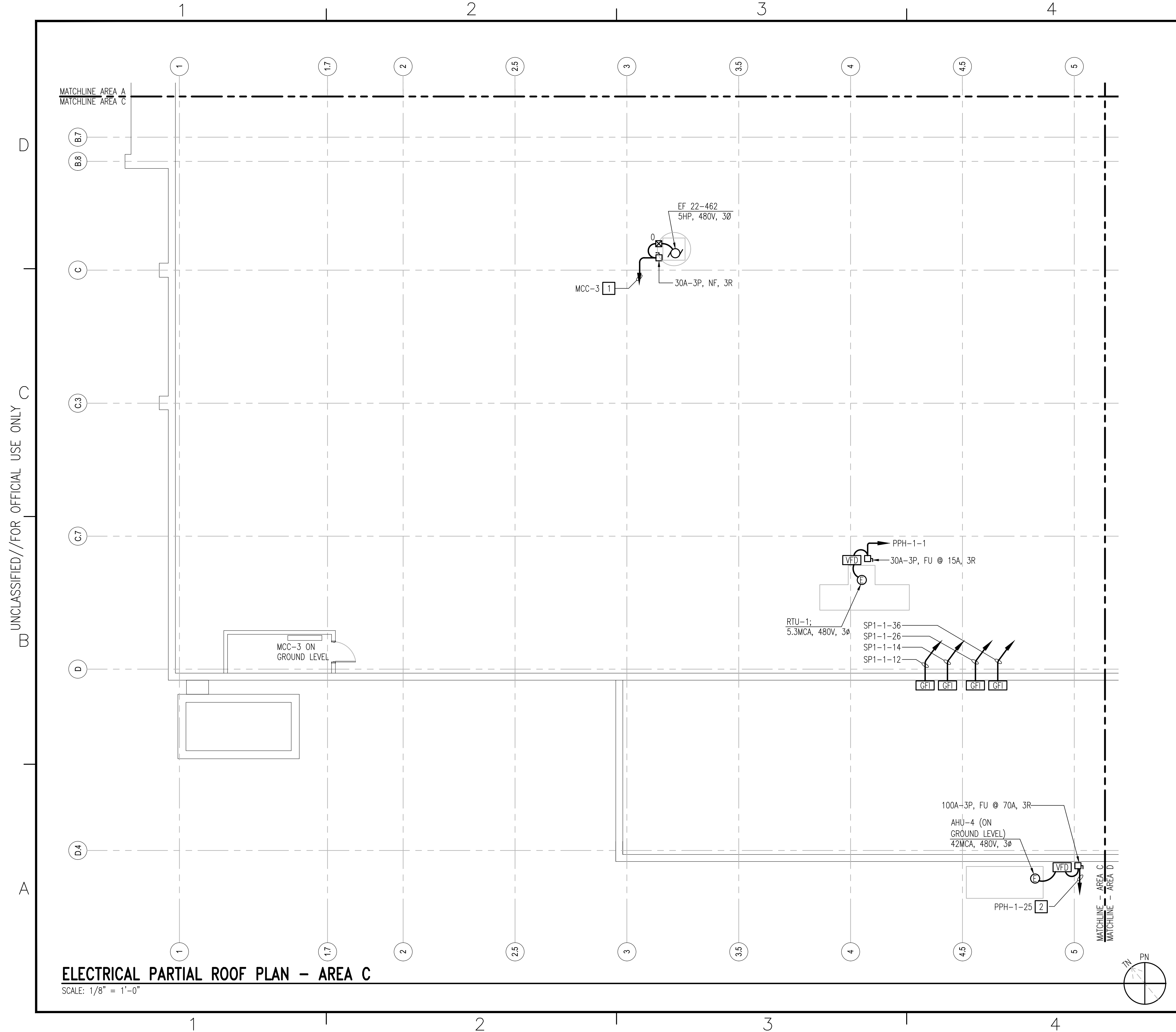
NO.	DATE	DESCRIPTION



APPROVED: _____
FOR COMMANDER NAVFAC
ACTIVITY: _____
SATISFACTORY TO:
DES: SAJ | DRW: SAJ | CHK: ETA

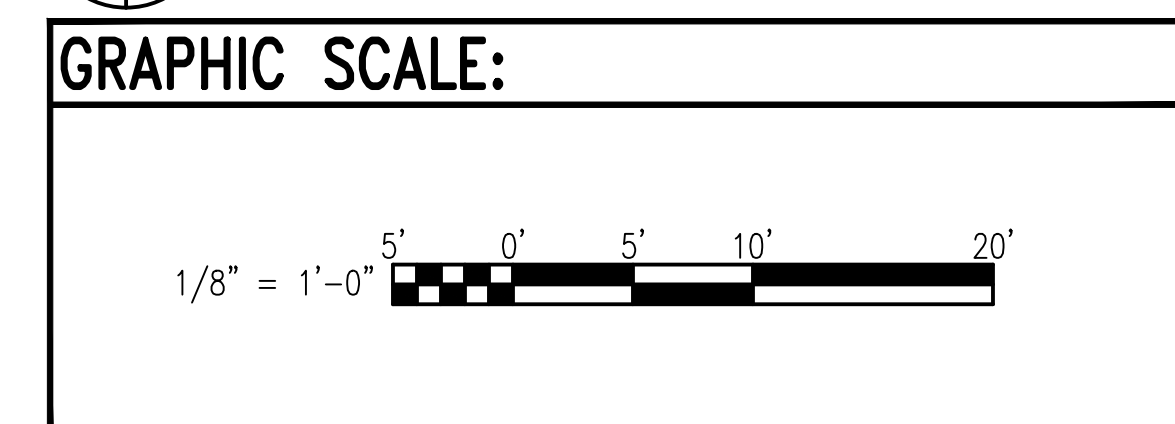
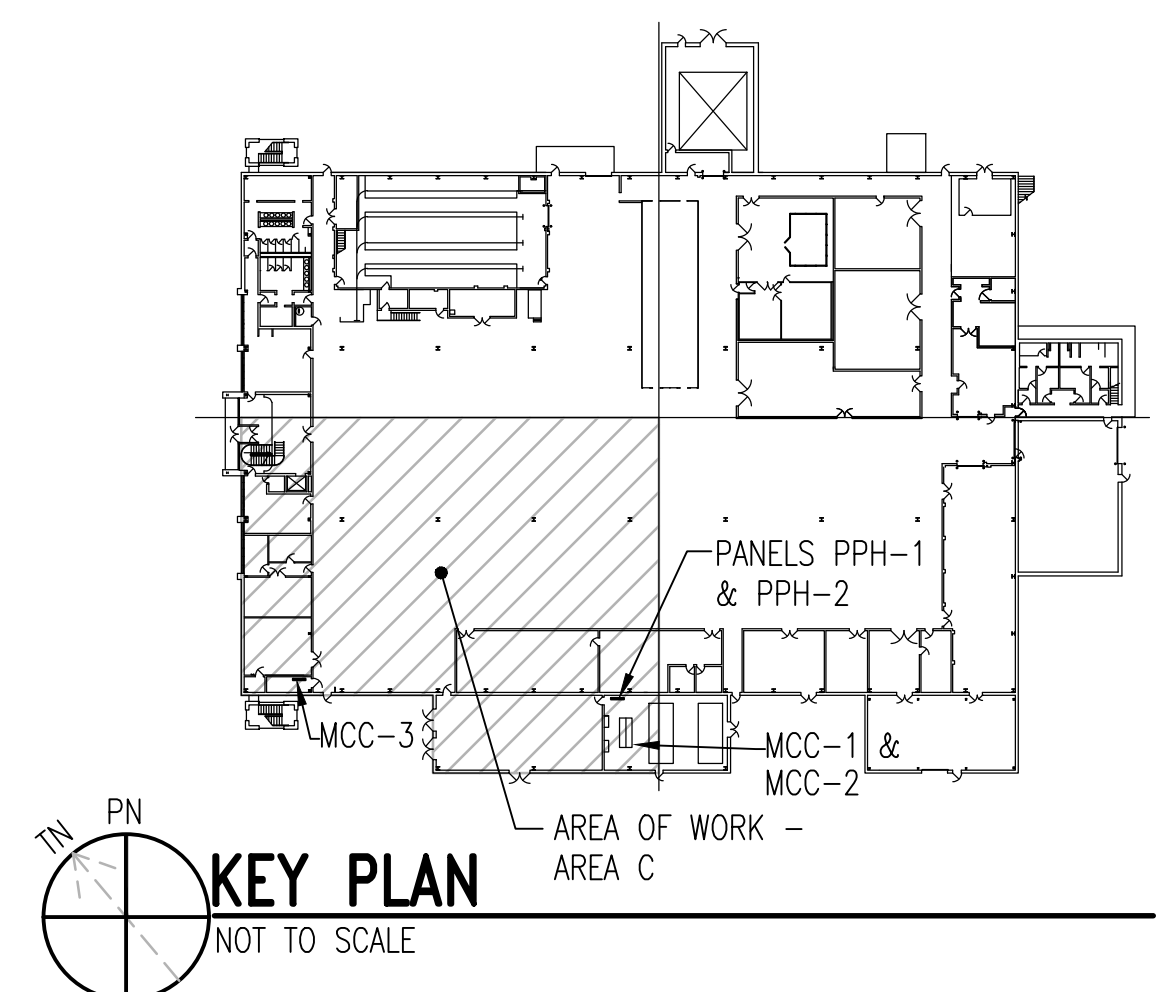
U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
ELECTRICAL PARTIAL ROOF PLAN - AREA B

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO.: 6878897
NAVFAC DRAWING NO.: 12782463
SHEET 62 OF 68
E-202



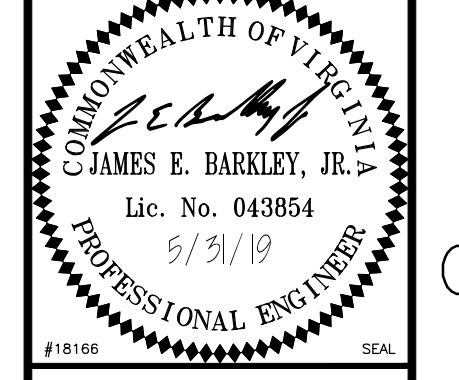
- NEW WORK NOTES**
- 1 3 #12, 1 #12 GND - 1/2"Ø.
 - 2 3 #4, 1 #8 GND - 1-1/4"Ø.

REFER TO SHEET E-701 FOR MCC-1 & MCC-2 CUBICAL LOCATIONS AND SHEET E-601 FOR MCC3 DISCONNECT LOCATIONS.



ELECTRICAL PARTIAL ROOF PLAN - AREA C
SCALE: 1/8" = 1'-0"

NO.	DESCRIPTION	DATE	APPR.



APPROVED
FOR COMMANDER NAVFAC
ACTIVITY

SATISFACTORY TO:
DES SAJ | DRW SAJ | CHK ETA

U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
ELECTRICAL PARTIAL ROOF PLAN - AREA C

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782464
SHEET 63 OF 68
E-203

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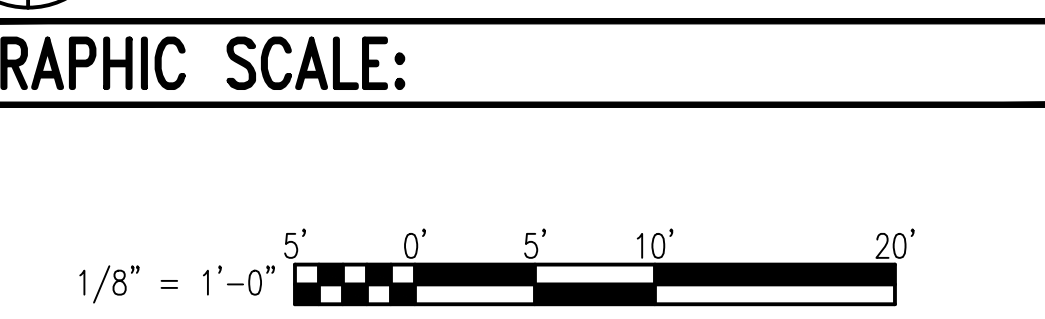
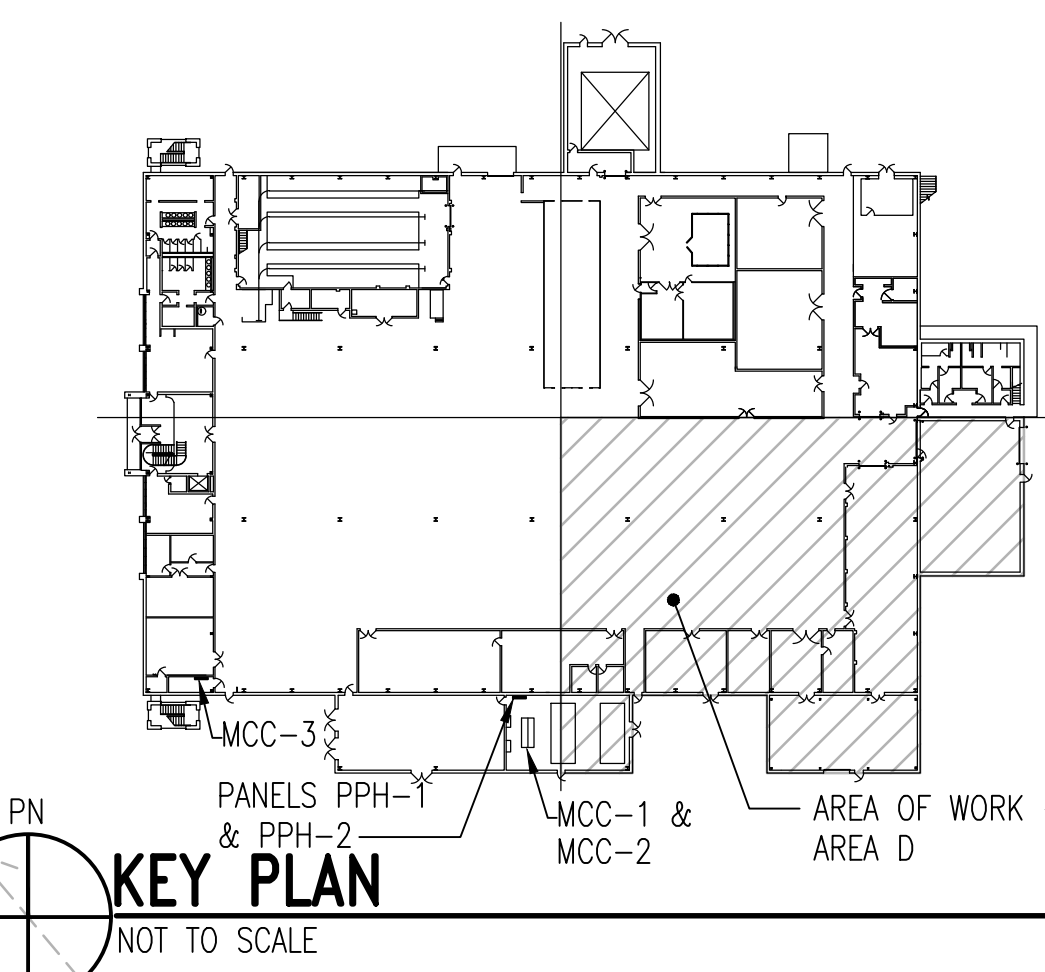
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NEW WORK NOTES

- 1 3 #12, 1#12 GND - 1/2" C.
- 2 3 #10, 1 #10 GND - 1/2" C.
- 3 3 #8, 1 #10 GND - 3/4" C.

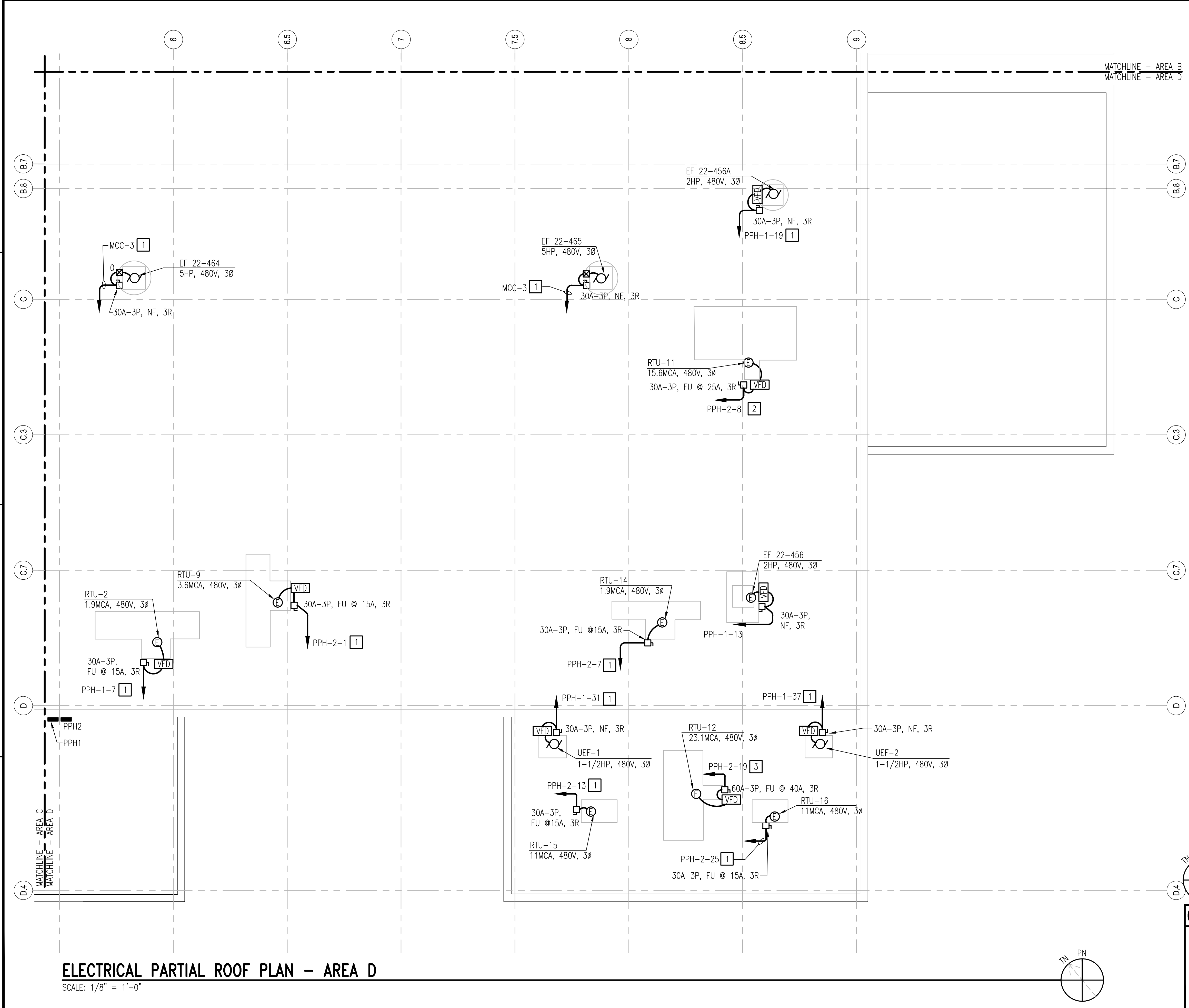
REFER TO SHEET E-701 FOR MCC-1 & MCC-2 CUBICAL LOCATIONS AND SHEET E-601 FOR MCC3 DISCONNECT LOCATIONS.



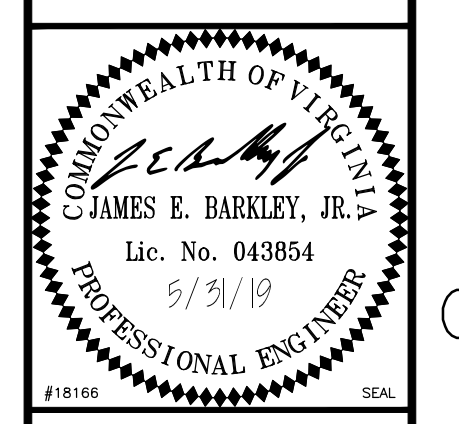
MATCHLINE -- AREA B
MATCHLINE -- AREA D

ELECTRICAL PARTIAL ROOF PLAN - AREA D

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



APPR	DATE	DESCRIPTION	SW



APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO
DES SAJ DRW SAJ CHK ETA

U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
ELECTRICAL PARTIAL ROOF PLAN - AREA D

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782465
SHEET 64 OF 68
E-204
<small>DRAWN BY: REVISION: 10 MAY 2014</small>

A

A

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7.5

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8.5

9

B7
B8

B7
B8

C

C

C3

C3

C7

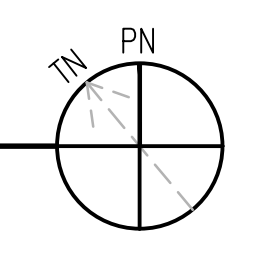
C7

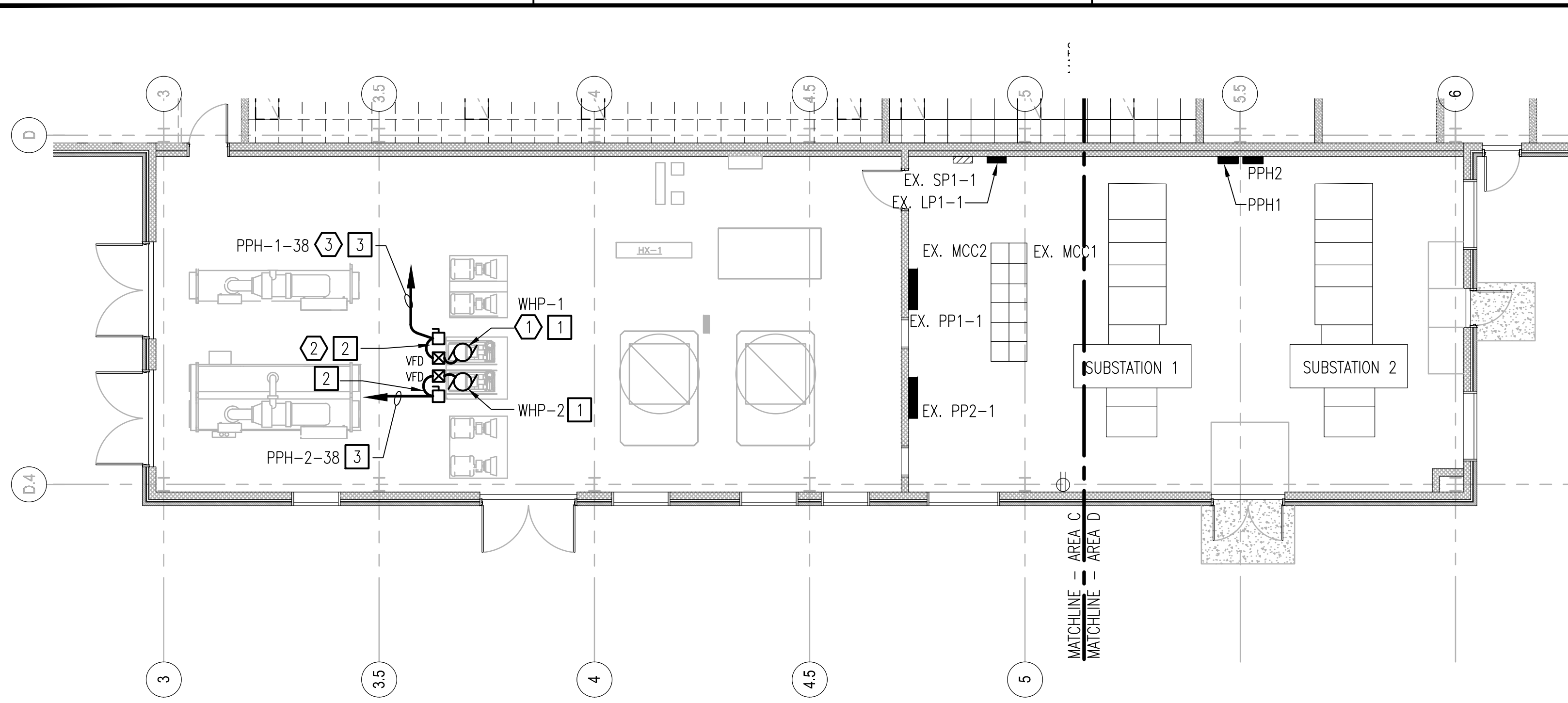
D

D

D4

D4





DEMOLITION NOTES THIS SHEET

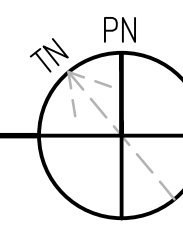
- ① DISCONNECT EXISTING PUMP; 10HP, 480V, 3Ø.
- ② REMOVE EXISTING DISCONNECT SWITCH, EXISTING MOUNTING FRAME TO REMAIN AND BE MODIFIED.
- ③ REMOVE EXISTING BRANCH CIRCUITING TO MCC-2.

NEW WORK NOTES THIS SHEET

- ① HOT WATER PUMP CONNECTION; 20HP, 480V, 3Ø.
- ② DISCONNECT SWITCH; 60A-3P, NON-FUSED AND VFD STARTER, MOUNT TO FRAME. MODIFY EXISTING MOUNTING FRAME, SEE DETAIL A1, THIS SHEET.
- ③ PUMP BRANCH CIRCUIT; 3 #8, 1#10 GND - 3/4" C

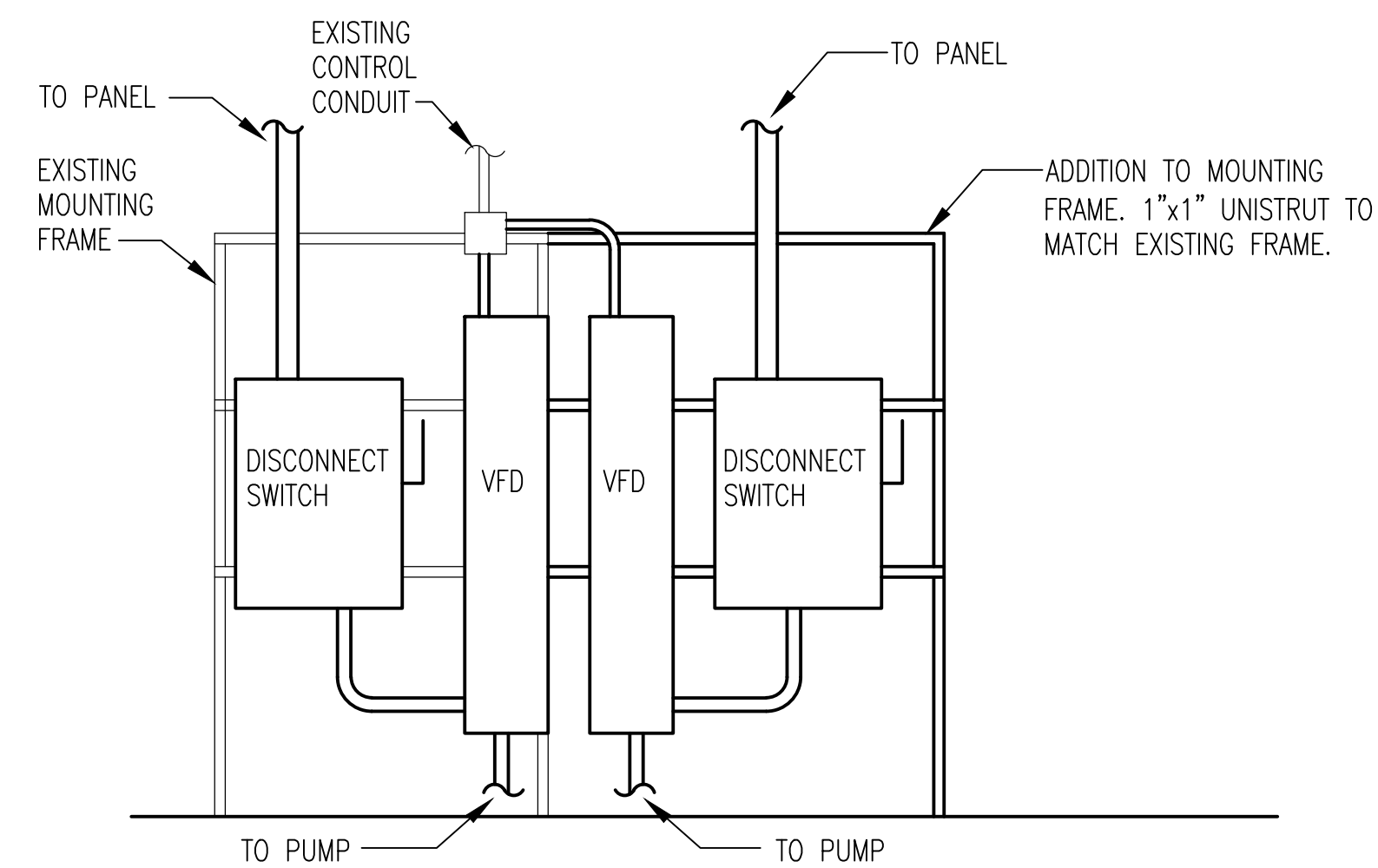
ELECTRICAL PLAN - MECHANICAL AND ELECTRIC ROOM

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



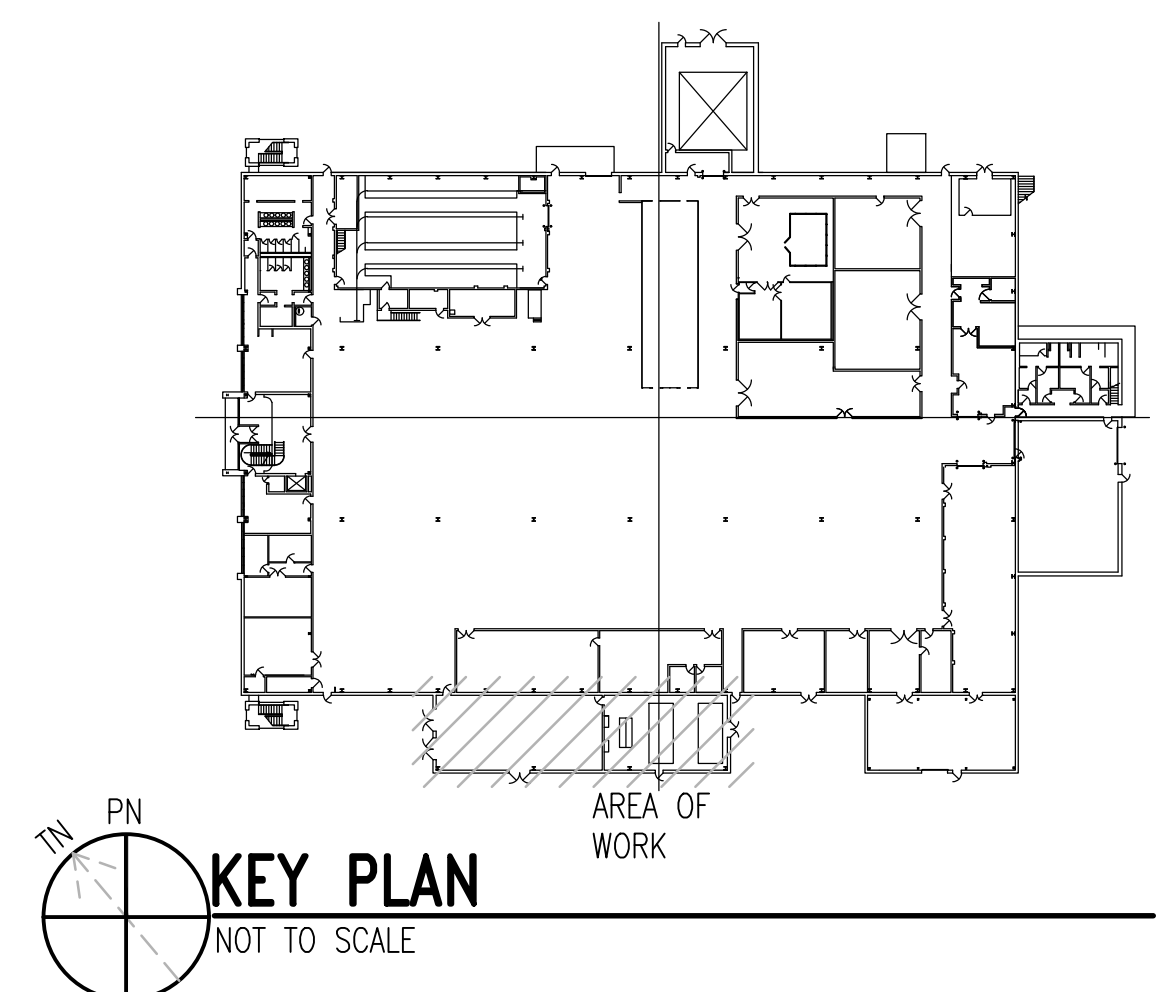
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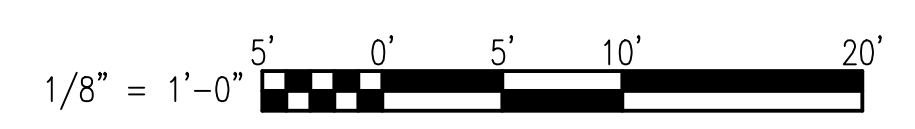
A1 MOUNTING FRAME DETAIL
NOT TO SCALE

PANELBOARD SP1-1 SCHEDULE															
SEE POWER RISER DIAGRAM FOR RATINGS															
LOAD SERVED	LOAD (AMPS)			BKR TRIP	CKT NO.	PHASE			CKT NO.	BKR TRIP	LOAD (AMPS)			LOAD SERVED	
	A	B	C			A	B	C			A	B	C		
DISC SW BY PNL				20/2P	1				2	20/1P				RECEPTACLES	
RECEPTACLES				20/1P	5				4	20/1P				HEATER CHILLER	
RECEPTACLES				20/1P	7				6	20/1P				OFFICE HEAT TREAT	
OFFICE HEAT TRBAT				20/1P	9				8	20/1P				HEATER CHILLER	
HWATER 2				20/1P	11				10	20/1P				REEPT QC	
RECEPTACLES				20/1P	13				12	20/1P				HEAT TRACE	
WATER METER				20/1P	15				14	20/1P				HEAT TRACE	
SPARE				20/1P	17				16	20/2P				SUPERVISOR A/C	
VAV UNITS				20/1P	19				20	20/1P				HEAT TRACING	
RECEPT HEAT TRBAT				20/1P	21				22	20/1P				HEAT TRACING	
KM ATC PANEL				20/1P	23				24	20/1P				SUH-1 DOOR OPENER	
KN TA SYSTEM				20/1P	25				26	20/1P				HEAT TRACE	
FRON OFFICE A/C				20/2P	27				28	20/1P				HEAT TRACING	
RECEPT HEAT TRBAT				20/1P	31				30					SPACE ONLY	
HEAT TRACE				20/1P	33				32	20/1P				CHBM FEED	
RECEPTACLES				20/1P	35				34	20/1P				HEAT TRACING	
MET SYS				20/1P	37				36	20/1P				HEAT TRACE	
AIR COMP PANEL				20/1P	39				38	20/1P				SECURITY CAMERAS	
LOUVERS				20/1P	41				40	20/1P				SECURITY SYSTEM	
									42	20/1P				SPARE	
TOTAL	0.0	0.0	0.0								0.0	0.0	0.0	TOTAL	
				TOTAL CONNECTED AMPS			A: 0.0			B: 0.0			C: 0.0		

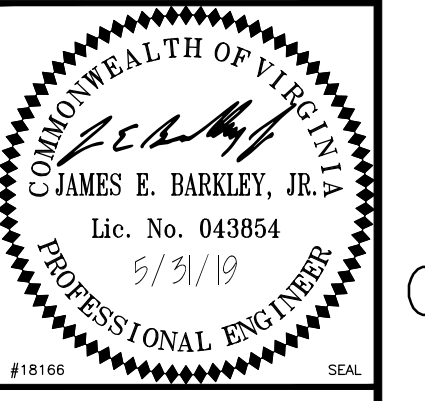


KEY PLAN
NOT TO SCALE

GRAPHIC SCALE:



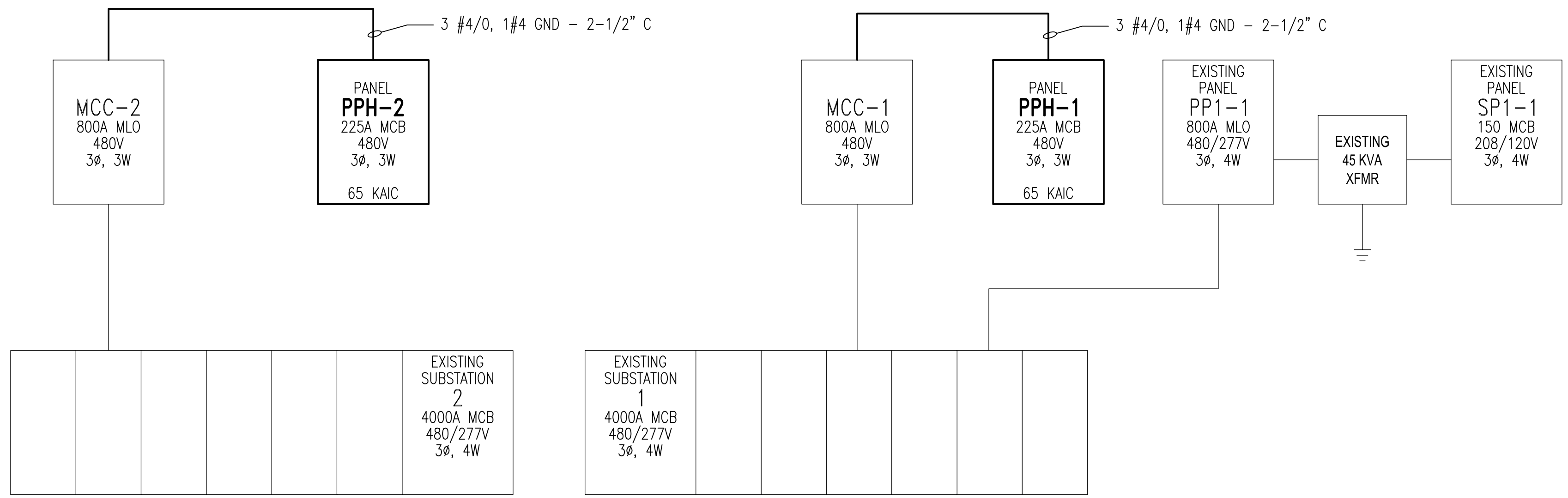
DATE	DESCRIPTION	APPR



APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
SATISFACTORY TO
DES SAJ DRW SAJ CHK ETA

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225
 ELECTRICAL PLANS - MECHANICAL AND ELECTRICAL ROOM

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782466
SHEET 65 OF 68
E-501



PARTIAL POWER RISER DIAGRAM
NO SCALE

PARTIAL POWER RISER DIAGRAM
NO SCALE

PANELBOARD PPH-1 SCHEDULE

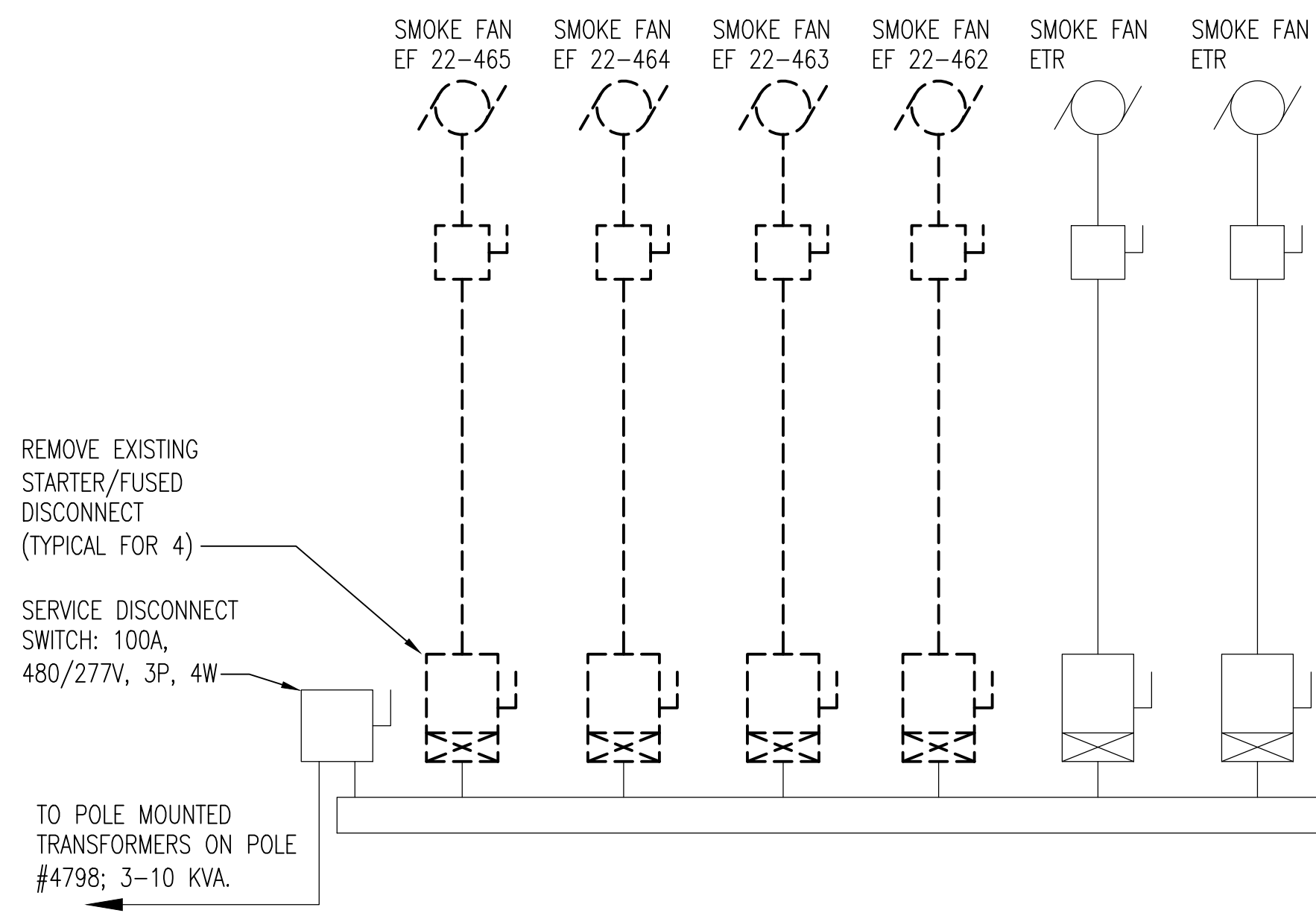
SEE POWER RISER DIAGRAM FOR RATINGS

LOAD SERVED	LOAD (AMPS)			BKR TRIP	CKT NO.	PHASE A B C	CKT NO.	BKR TRIP	LOAD (AMPS)			LOAD SERVED
	A	B	C						A	B	C	
RTU-1	5.3			15/3P	1		2	30/3P	26.0			RTU-6
		5.3								26.0		
			5.3								26.0	
RTU-2	1.9			15/3P	7		8	15/3P	1.9			RTU-5
		1.9								1.9		
			1.9								14.0	
EF 22-456	7.6			20/3P	13		14	15/3P	3.1			RTU-7
		7.6								3.1		
			7.6								3.1	
EF 22-456A	3.4			15/3P	19		20					SPACE ONLY
		3.4										
			3.4									
AHU-4	42.0			70/3P	25		26					SPACE ONLY
		42.0										
			42.0									
UEF-1	3.0			20/3P	31		32					SPACE ONLY
		3.0										
			3.0									
UEF-2	3.0			20/3P	37		38	50/3P	27.0			HWP-1
		3.0								27.0		
			3.0								27.0	
TOTAL	66.2	66.2	66.2						58.0	58.0	70.1	TOTAL
TOTAL CONNECTED AMPS A: 124.2 B: 124.2 C: 136.3												

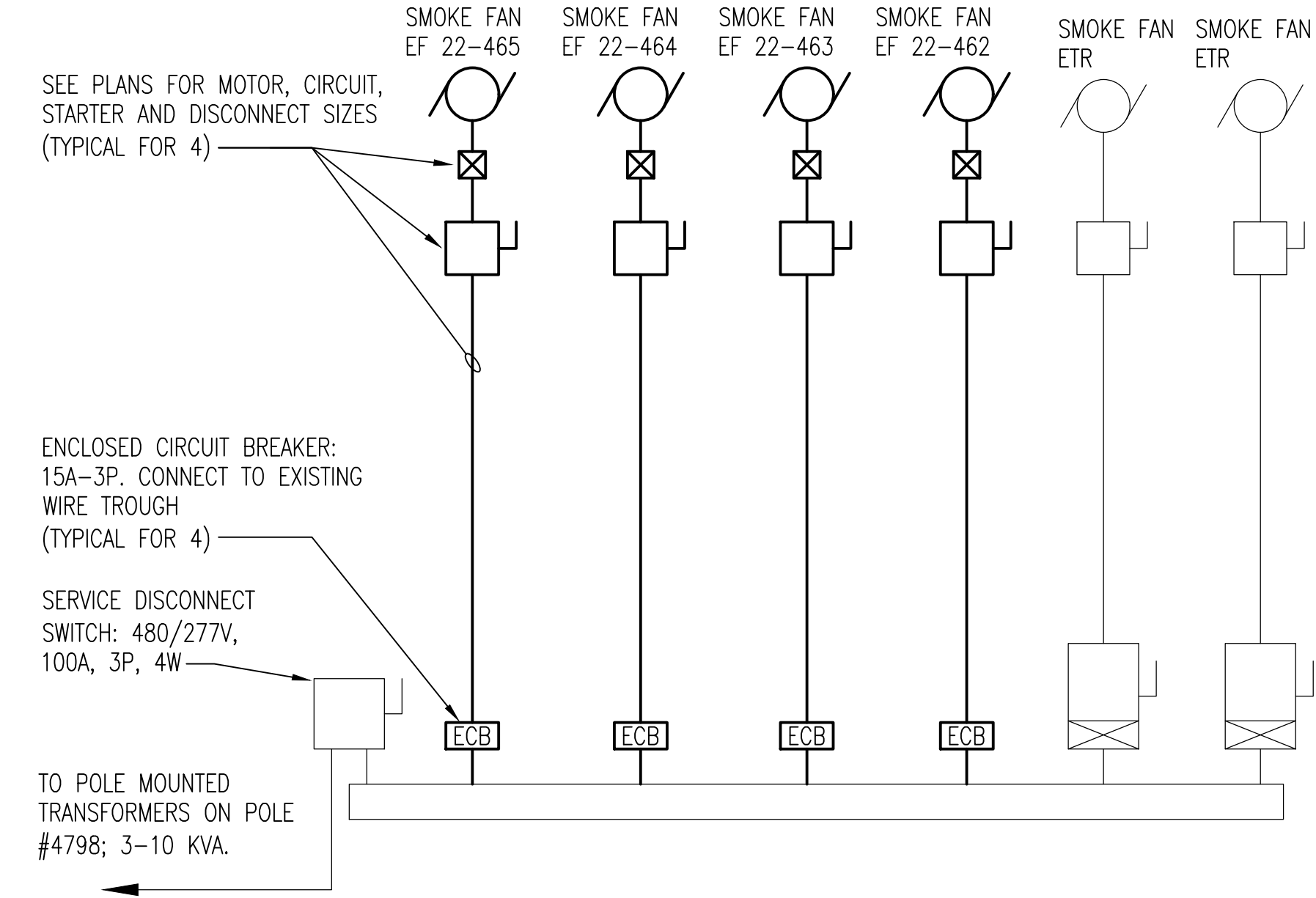
PANELBOARD PPH-2 SCHEDULE

SEE POWER RISER DIAGRAM FOR RATINGS

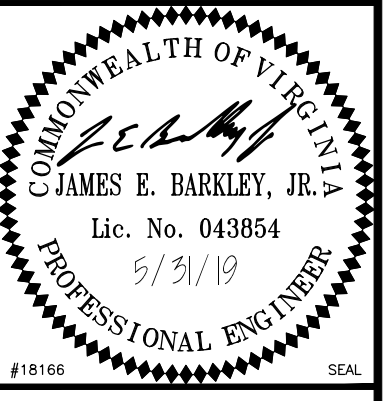
LOAD SERVED	LOAD (AMPS)			BKR TRIP	CKT NO.	PHASE A B C	CKT NO.	BKR TRIP	LOAD (AMPS)			LOAD SERVED
	A	B	C						A	B	C	
RTU-9	3.6			15/3P	1		2	60/3P	49.0			RTU-17
		3.6								49.0		
			3.6								49.0	
RTU-14	1.9			15/3P	7		8	25/3P	15.6			RTU-11
		1.9								15.6		
			1.9								15.6	
RTU-15	11.0			15/3P	13		14	15/3P	3.6			RTU-3
		11.0								3.6		
			11.0								3.6	
RTU-12	23.1			40/3P	19		20	15/3P	5.3			RTU-10
		23.1								5.3		
			23.1								5.3	
RTU-16	11.0			15/3P	25		26	15/3P	8.4			RTU-8
		11.0								8.4		
			11.0								8.4	
V-11	7.6			20/3P	31		32	20/3P	13.0			HUMIDIFIER
		7.6								13.0		
			7.6								13.0	
RTU-4	5.3			15/3P	37		38	50/3P	27.0			HWP-2
		5.3								27.0		
			5.3								27.0	
TOTAL	63.5	63.5	63.5						121.9	121.9	121.9	TOTAL
TOTAL CONNECTED AMPS A: 185.4 B: 185.4 C: 185.4												



MCC-3 DIAGRAM - DEMOLITION
NO SCALE



MCC-3 DIAGRAM - NEW WORK
NO SCALE



APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

SATISFACTORY TO

DES SAJ DRW SAJ CHK ETA

U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
ELECTRICAL POWER RISER DIAGRAMS

SCALE: AS NOTED

PROJECT NO.: ST-14507A

MAXIMO WORK ORDER NO. 6878897

NAVFAC DRAWING NO. 12782467

SHEET 66 OF 68

EXISTING MCC-1				
INCOMING	AHU 22-306 70A-3P	MAU-1 22-311 50A-3P	SPARE -3P	P-2 COLD WATER PUMP
EXHAUST FAN 22-451	AHU 22-309A 15A-3P	HEAT SAVER EXHAUST 22-456A 15A-3P	SPARE -3P	50A-3P CHILLER OIL PUMP
EXHAUST FAN 22-452	AHU 22-310 15A-3P	MAU-2 -3P	P-1 COLD WATER PUMP	70A-3P
AHU 22-301	HEAT SAVER EXHAUST 22-454 40A-3P	S-1 -3P	50A-3P	SPARE
CWP-2	HEAT SAVER EXHAUST 22-454A 70A-3P	EF-1 -3P	WATER PUMP 04-007A	SPARE
AHU 22-304	AHU 22-315 70A-3P	ABANDONED 70A-3P	SPACE ONLY -- 3P	SPARE
				70A-3P

EXISTING MCC-2					
SPARE	VEF-1	CWP-4	AHU 22-311 (EMPTY) 50A-3P	AHU 22-303 70A-3P	INCOMING
50A-3P	15A-3P	CT-2 FAN	AHU 22-314 15A-3P	AHU 22-308 15A-3P	EXHAUST FAN 22-453
CT-1 FAN	SPARE	HWP-1	AHU 22-317 15A-3P	AHU 22-312 15A-3P	30A-3P
70A-3P		CWP-3	SPARE	AHU 22-309 50A-3P	SPARE
HV-1	50A-3P	70A-3P	BLEND	HEAT SAVER SUPPLY FAN 22-455 15A-3P	70-3P
50A-3P	COOLING TOWER 22-202	WATER PUMP 04-007B	AHU X20-760 15A-3P	HEAT SAVER EXHAUST FAN 22-456 15A-3P	CWP-1
SPARE	50A-3P				50A-3P
HW CIRC PUMP 04-004B 70A-3P	SPARE				VEF-2
HW CIRC PUMP 04-008A 15A-3P	50A-3P	100A-3P			15A-3P

NOTES THIS SHEET

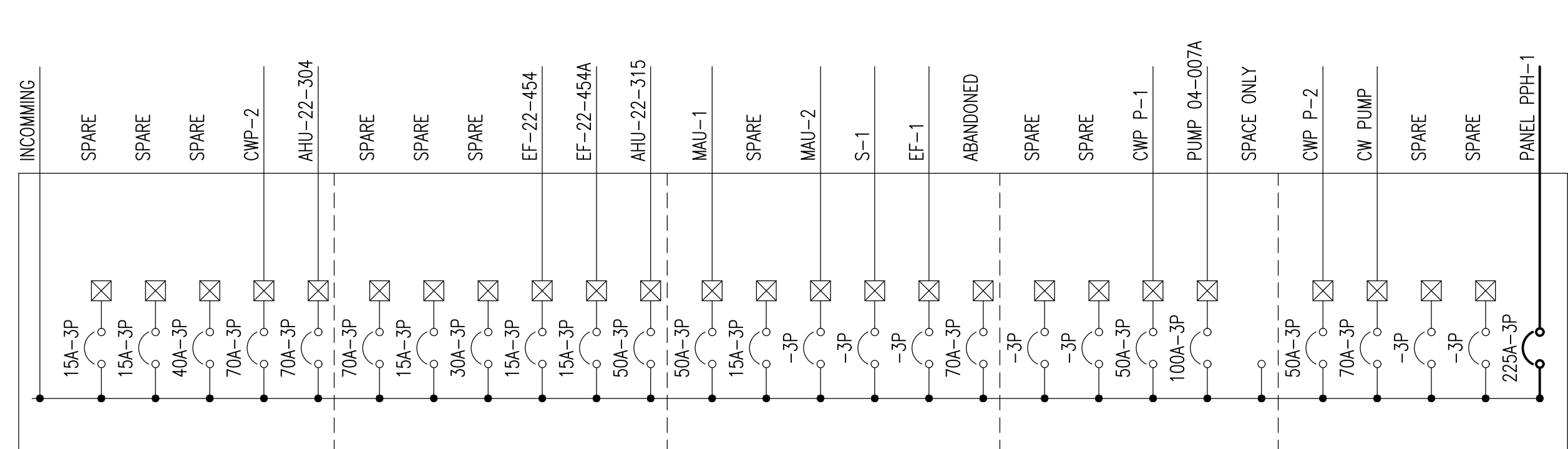
- 1 PROVIDE 225A-3P CIRCUIT BREAKER IN EXISTING SPARE COMPARTMENT.
- 2 REMOVE EXISTING 30A-3P CIRCUIT BREAKER AND STARTER. LABEL COMPARTMENT AS SPARE.
- 3 UPDATE SWITCH LABELS FOR EQUIPMENT BEING RECIRCUITED FROM SWITCHBOARD TO PANELS, AND NEW CIRCUITS BEING ADDED TO SWITCHBOARD.

REVISED MCC-1 3				
INCOMING	SPARE	MAU-1 22-311 50A-3P	SPARE -3P	P-2 COLD WATER PUMP
SPARE	SPARE	SPARE	SPARE	50A-3P
15A-3P	15A-3P	15A-3P	-3P	CHILLER OIL PUMP
SPARE	SPARE	MAU-2 -3P	P-1 COLD WATER PUMP	70A-3P
15A-3P	30A-3P	S-1 -3P	50A-3P	SPARE
SPARE	HEAT SAVER EXHAUST 22-454 40A-3P	EF-1 -3P	WATER PUMP 04-007A	SPARE
CWP-2	HEAT SAVER EXHAUST 22-454A 70A-3P	EF-1 -3P	100A-3P	-3P
AHU 22-304	AHU 22-315 70A-3P	ABANDONED 70A-3P	SPACE ONLY	PANEL PPH-1
			-- 3P	1
				225A-3P

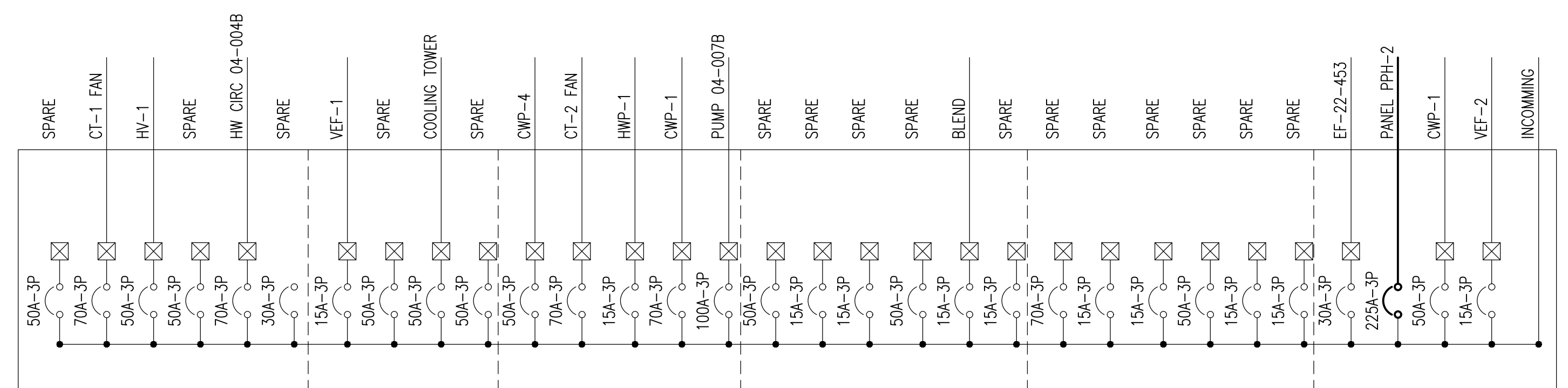
REVISED MCC-2 3					
SPARE	VEF-1	CWP-4	SPARE	SPARE	INCOMING
50A-3P	15A-3P	CT-2 FAN	SPARE	SPARE	EXHAUST FAN 22-453
CT-1 FAN	SPARE	HWP-1	SPARE	SPARE	30A-3P
70A-3P		CWP-3	SPARE	SPARE	PANEL PPH-2
HV-1	50A-3P	70A-3P	SPARE	SPARE	1
50A-3P	COOLING TOWER 22-202	WATER PUMP 04-007B	50A-3P	50A-3P	225-3P
SPARE	50A-3P		50A-3P	50A-3P	CWP-1
50A-3P	SPARE		BLEND	SPARE	50A-3P
HW CIRC PUMP 04-004B 70A-3P	SPARE		15A-3P	15A-3P	VEF-2
SPARE	50A-3P	100A-3P	SPARE	SPARE	
30A-3P			15A-3P	15A-3P	15A-3P

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UNCLASSIFIED//FOR OFFICIAL USE ONLY

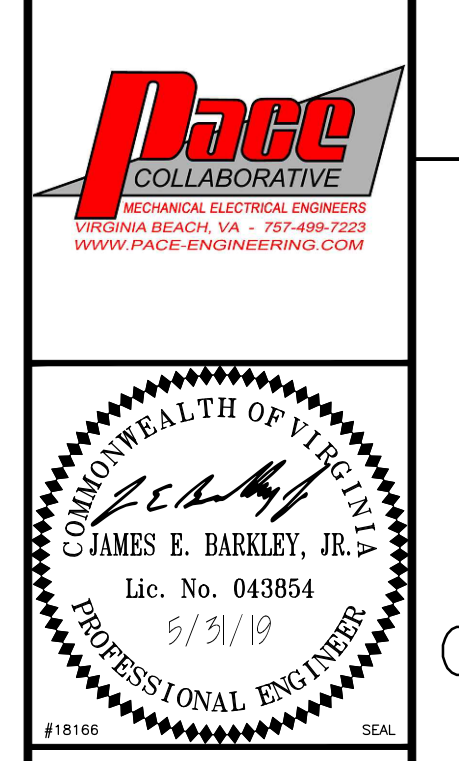


ONE LINE DIAGRAM MCC-1
NOT TO SCALE



ONE LINE DIAGRAM MCC-2
NOT TO SCALE

DATE	DESCRIPTION	SW

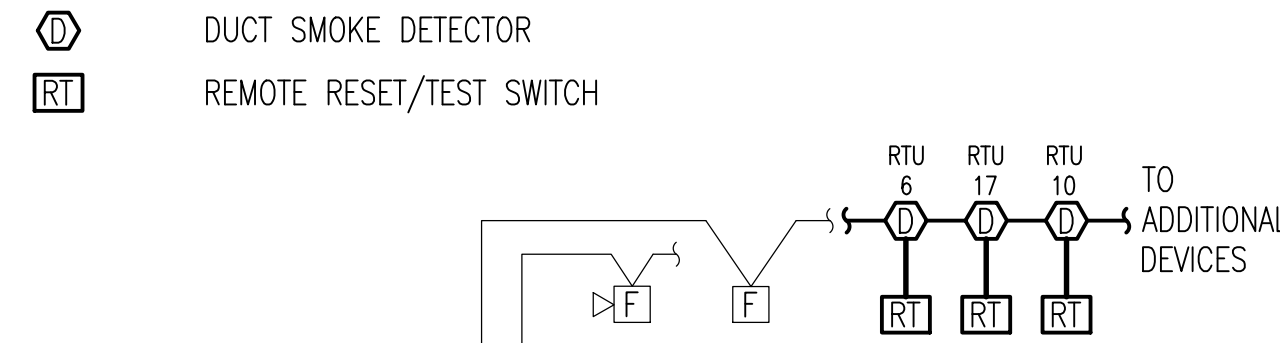


APPROVED: _____
 PER COMMANDER NAVFAC
 ACTIVITY: _____
 SATISFACTORY TO:
 DES SAJ DRW SAJ CHK ETA

U.S. MARINE CORPS AIR STATION
 CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
 PHASE II AT BUILDING 4225**
 ELECTRICAL MCC SCHEDULES

SCALE: AS NOTED
 PROJECT NO.: ST-14507A
 MAXIMO WORK ORDER NO. 6878897
 NAVFAC DRAWING NO. 12782468
 SHEET 67 OF 68
E-701

FIRE ALARM SYSTEM LEGEND



NOTE:
CONTRACTOR MUST REPROGRAM THE CONTROL PANEL FOR ADDITIONAL DEVICES.

PARTIAL FIRE ALARM RISER DIAGRAM

NOT TO SCALE

GENERAL FIRE ALARM NOTES

GENERAL: UNLESS SPECIFICALLY INDICATED OTHERWISE, ALL WORK SHOWN ON FIRE ALARM DRAWINGS IS NEW WORK TO BE PROVIDED UNDER THIS CONTRACT.

COORDINATION: THE CONTRACTOR MUST REVIEW ALL CONTRACT DOCUMENTS INCLUDING FIRE ALARM DRAWINGS AND SPECIFICATIONS. CONTRACTOR MUST COORDINATE AND ADJUST ACCORDINGLY AS DIRECTED BY THE CONTRACTING OFFICER.

AS-BUILT DRAWINGS: SECURE AN EXTRA SET OF DRAWINGS TO BE KEPT ON SITE AND MARK DAILY, THE DRAWINGS IN RED AS THE PROJECT PROGRESSES IN ORDER TO KEEP AN ACCURATE RECORD OF ALL DEVIATIONS BETWEEN THE WORK SHOWN ON THE DRAWINGS AND THE WORK WHICH IS ACTUALLY INSTALLED. THESE MARKED DRAWINGS MUST REFLECT ANY AND ALL CHANGES AND REVISIONS TO THE ORIGINAL DESIGN WHICH EXISTS IN THE COMPLETED WORK. DELIVER THE MARKED DRAWINGS TO THE COTR AT PROJECT CLOSE-OUT. IN ADDITION, PROVIDE CONTACT ID POINT DESCRIPTIONS FOR EACH DEVICE.

INSPECTIONS: ARRANGE ALL NECESSARY INSPECTIONS. DELIVER ALL REQUIRED INSPECTION CERTIFICATES TO THE CONTRACTING OFFICER.

WORKING CLEARANCE: COORDINATE FINAL LOCATIONS OF FIRE ALARM EQUIPMENT WITH MECHANICAL DUCTWORK, PIPING ETC. AND ASSURE WORKING CLEARANCE WILL BE MET. SUFFICIENT ACCESS AND WORKING SPACE MUST BE PROVIDED AND MAINTAINED AROUND FIRE ALARM EQUIPMENT AS REQUIRED BY THE NATIONAL ELECTRICAL CODE. CONTRACTOR MUST COORDINATE FINAL LOCATION OF EQUIPMENT PROVIDED.

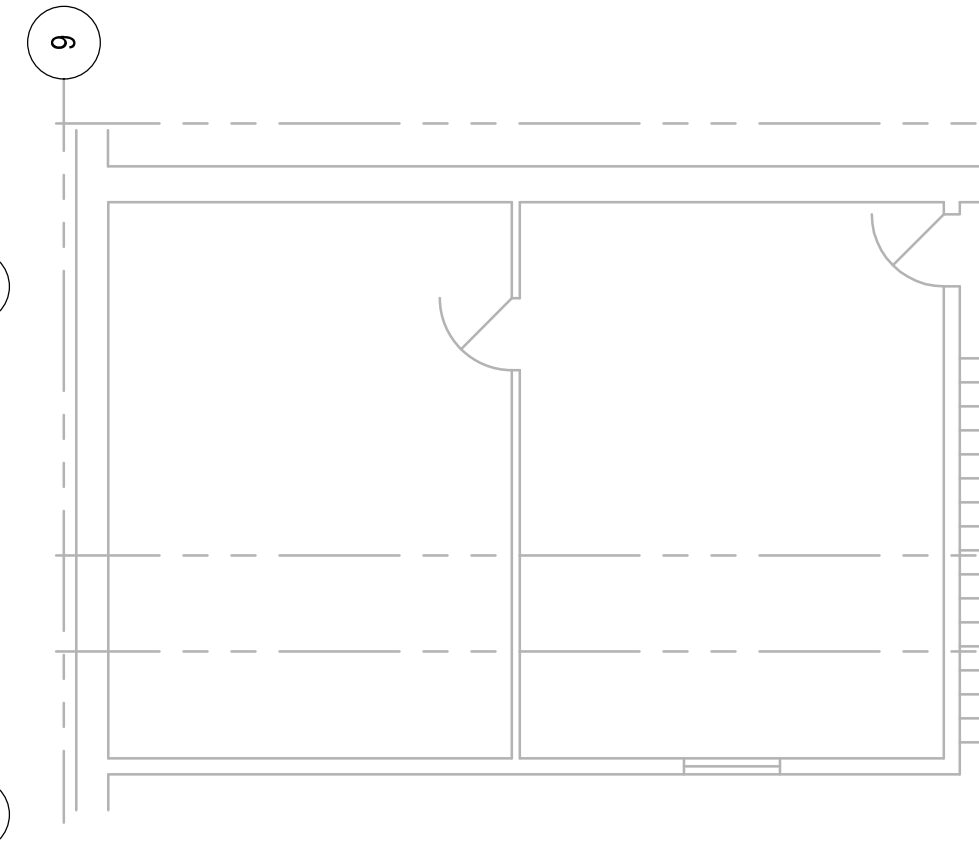
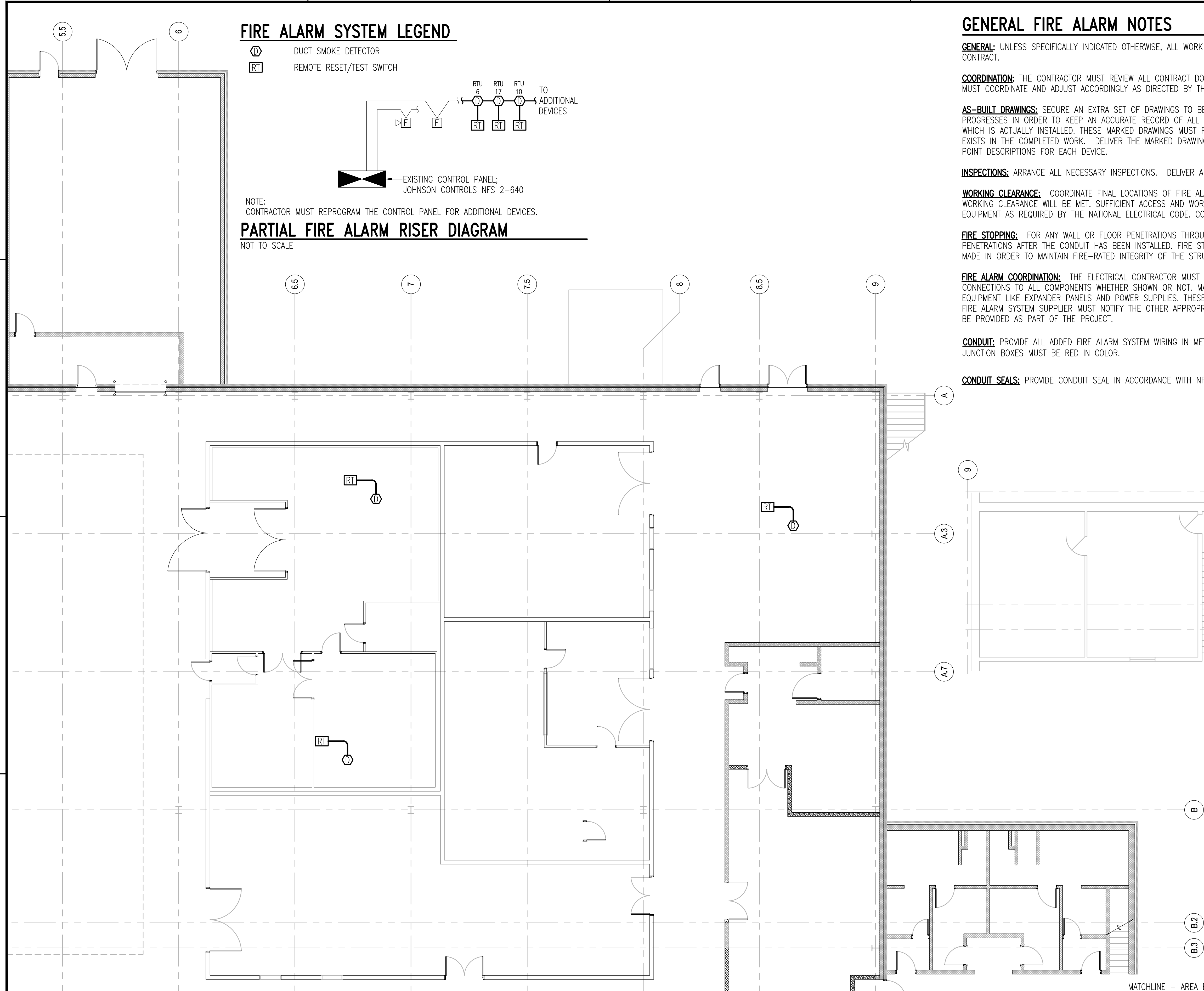
FIRE STOPPING: FOR ANY WALL OR FLOOR PENETRATIONS THROUGH FIRE-RATED STRUCTURES PROVIDE FIRE-STOPPING TO SEAL ALL THE PENETRATIONS AFTER THE CONDUIT HAS BEEN INSTALLED. FIRE STOPPING FOR PENETRATIONS MUST BE UL APPROVED PER THE PENETRATION MADE IN ORDER TO MAINTAIN FIRE-RATED INTEGRITY OF THE STRUCTURE.

FIRE ALARM COORDINATION: THE ELECTRICAL CONTRACTOR MUST COORDINATE WITH THE FIRE ALARM SYSTEM PROVIDER AND PROVIDE POWER CONNECTIONS TO ALL COMPONENTS WHETHER SHOWN OR NOT. MANUFACTURERS REQUIRE VARYING QUANTITIES OF POWER CONNECTIONS FOR EQUIPMENT LIKE EXPANDER PANELS AND POWER SUPPLIES. THESE DEVICES ARE DEPENDENT UPON THE SPECIFIC MANUFACTURERS SYSTEM. THE FIRE ALARM SYSTEM SUPPLIER MUST NOTIFY THE OTHER APPROPRIATE SUB-CONTRACTORS ABOUT THESE REQUIREMENTS AND CONNECTION MUST BE PROVIDED AS PART OF THE PROJECT.

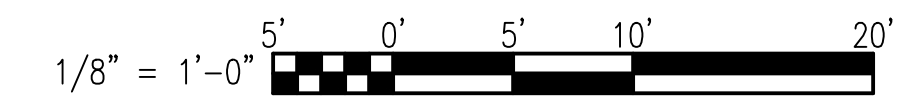
CONDUIT: PROVIDE ALL ADDED FIRE ALARM SYSTEM WIRING IN METALLIC CONDUIT. MINIMUM SIZE TO BE 3/4". ALL FIRE ALARM CONDUITS AND JUNCTION BOXES MUST BE RED IN COLOR.

CONDUIT SEALS: PROVIDE CONDUIT SEAL IN ACCORDANCE WITH NFPA 70 300.7 TO RACEWAYS EXPOSED TO DIFFERENT TEMPERATURES.

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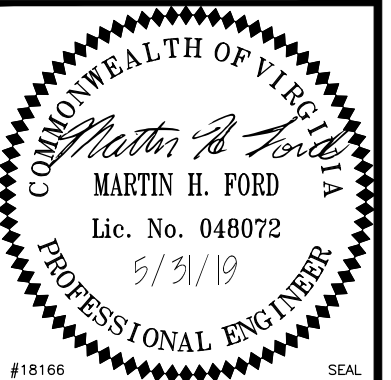


GRAPHIC SCALE:



PARTIAL FIRE ALARM NEW WORK PLAN - AREA B
SCALE: 1/8" = 1'-0"

DATE	DESCRIPTION	BY	APPR



APPROVED	A/E INFO
FOR COMMANDER NAVFAC	ACTIVITY
SATISFACTORY TO	DES: MHF DRW: CAR CHK: TNH

U.S. MARINE CORPS AIR STATION
CHERRY POINT, NORTH CAROLINA
**REPLACE HVAC AND CONTROLS
PHASE II AT BUILDING 4225**
PARTIAL FIRE ALARM NEW WORK PLAN - AREA B

SCALE: AS NOTED
PROJECT NO.: ST-14507A
MAXIMO WORK ORDER NO. 6878897
NAVFAC DRAWING NO. 12782469
SHEET 68 OF 68
FA101