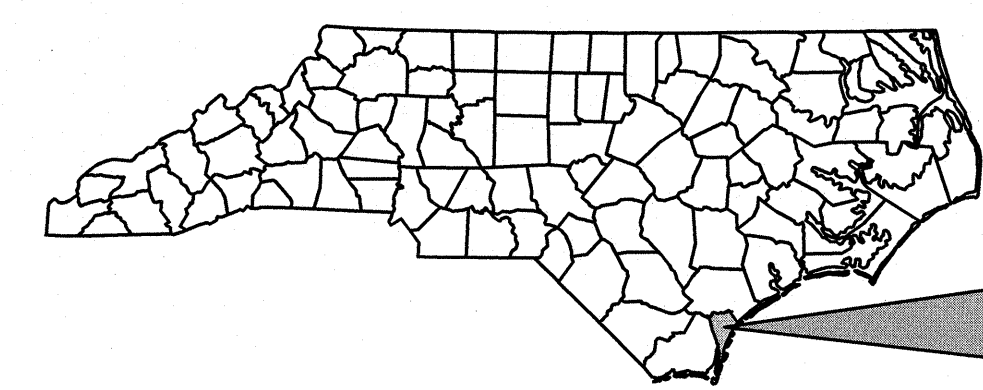
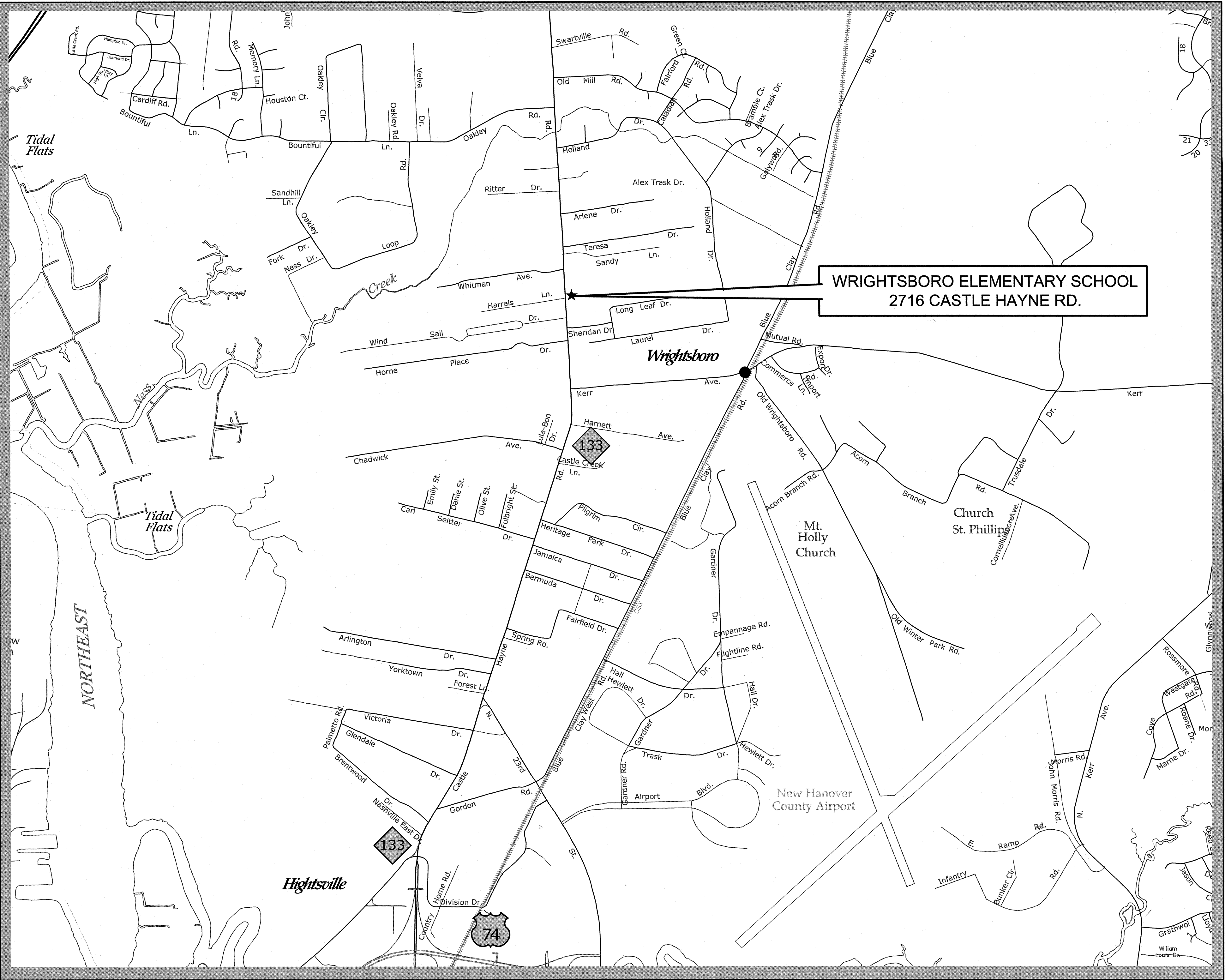


WRIGHTSBORO ELEMENTARY SCHOOL KITCHEN/DINING HVAC RENOVATIONS

WRIGHTSBORO ELEMENTARY SCHOOL 2716 CASTLE HAYNE RD.
WILMINGTON, NC 28401
NHCS PROJECT# 21-9230



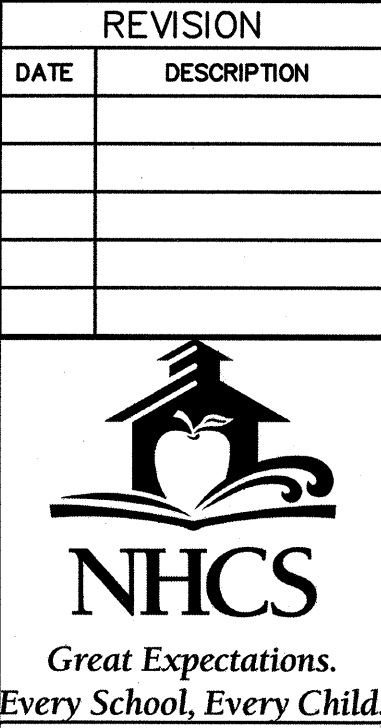
NEW HANOVER COUNTY
NORTH CAROLINA



WRIGHTSBORO ELEMENTARY SCHOOL	
SHEET NUMBER	SHEET TITLE
	COVER SHEET
M-001	LEGEND, SCHEDULES AND GENERAL NOTES
M-100	PARTIAL MECHANICAL PLAN BUILDING 500 - DEMOLITION
M-200	PARTIAL MECHANICAL PLAN BUILDING 500 - RENOVATION
M-700	CONTROL DIAGRAMS
E-101	ELECTRICAL PLANS

 CHEATHAM AND ASSOCIATES, P.A.
CONSULTING ENGINEERS

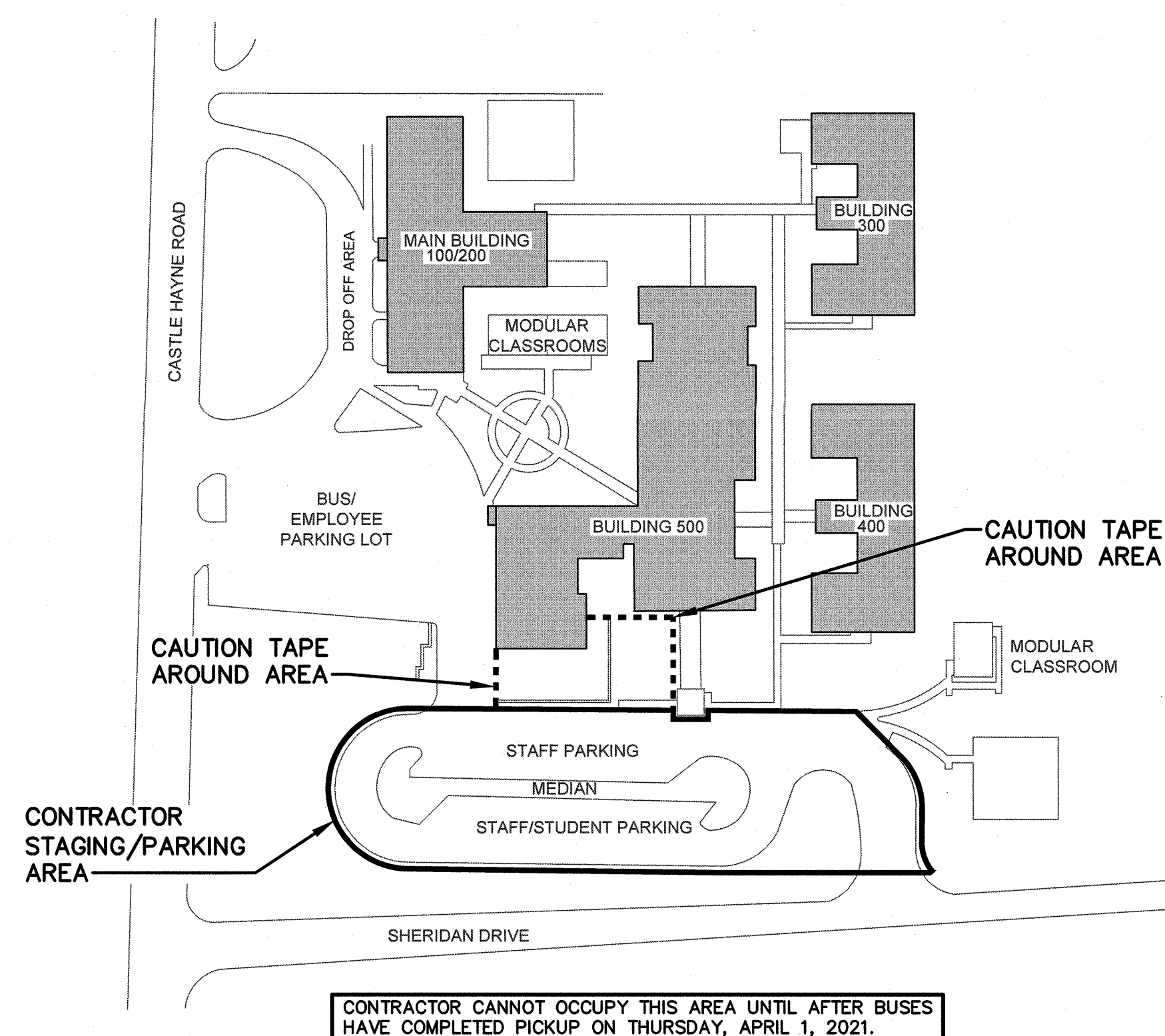
3412 ENTERPRISE DRIVE
WILMINGTON, NORTH CAROLINA 28405
(910)452-4210 FAX (910)452-4211
EMAIL: office@cheathampa.com
www.cheathampa.com



WRIGHTSBORO ELEMENTARY SCHOOL BUILDING 500
KITCHEN/DINING HVAC RENOVATION
WRIGHTSBORO ELEMENTARY SCHOOL
2716 CASTLE HAYNE RD.
WILMINGTON, NC 28401
NHCS PROJECT#21-9230

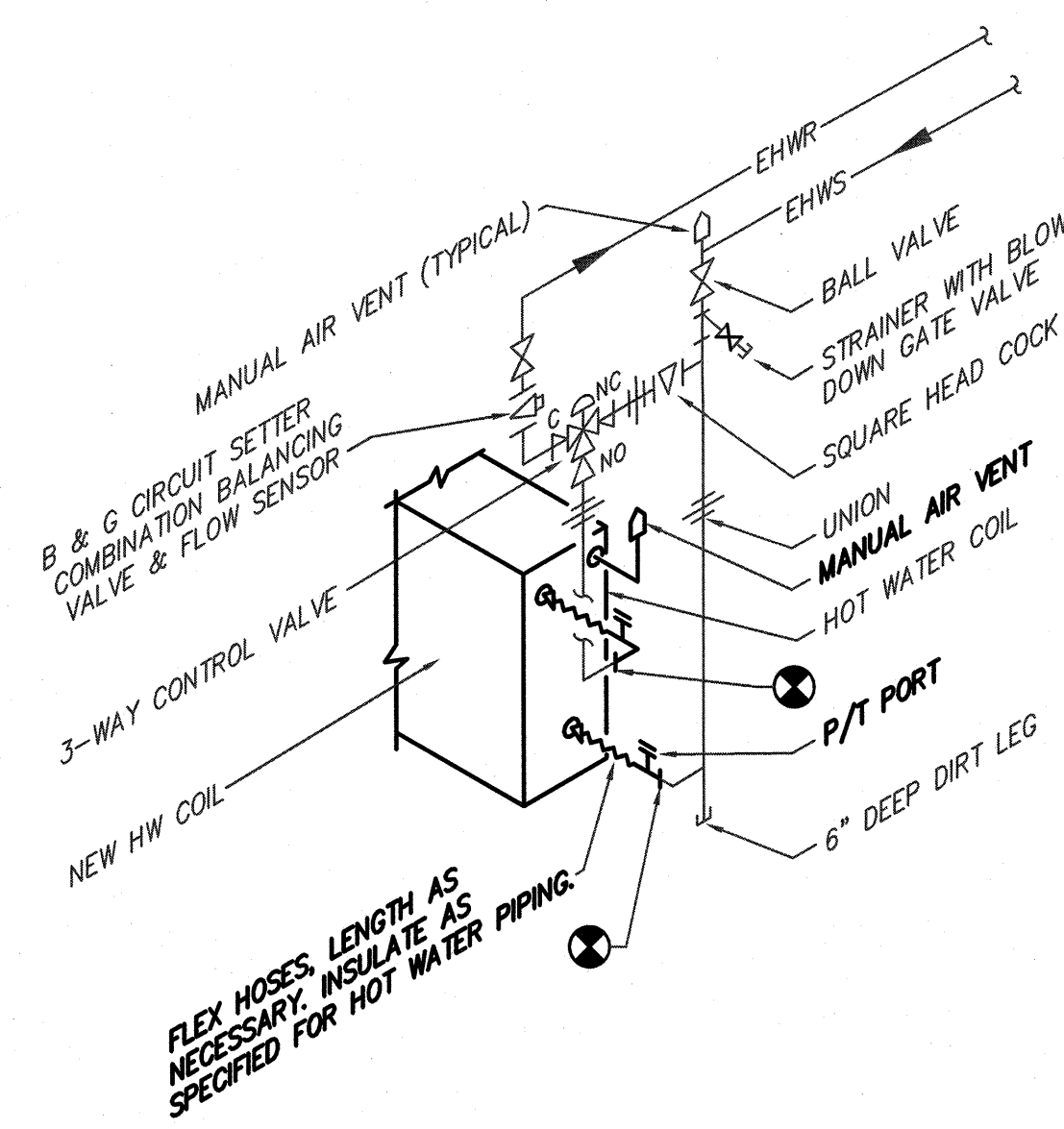
 CHEATHAM AND ASSOCIATES, P.A.
CONSULTING ENGINEERS
3412 ENTERPRISE DRIVE
WILMINGTON, NORTH CAROLINA 28405
PH: (910)452-4210 FAX: (910)452-4211
NC LICENSE #E-1073

JOB NUMBER 20048
SHEET
COVER
DATE
DECEMBER 14, 2020



- KEYED NOTES: THIS SHEET ONLY

- ① EXISTING REFRIGERANT PIPING, TO CONFIRM REUSE, PRESSURE TEST, CLEAN AND PURGE. PROVIDE NEW ACCESSORIES PER EQUIPMENT MANUFACTURER'S INSTALLATION INSTRUCTIONS. INSULATE NEW PIPING AS SPECIFIED.
- ② FILTER ACCESS IN AIR HANDLING UNITS.
- ③ CONDENSATE TRAP.
- ④ FLOAT SWITCH MOUNTED ON SIDE OF AUXILIARY CONDENSATE PAN TO DENERGIZE UNIT IF WATER IS PRESENT IN THE PAN.
- ⑤ HOT WATER PIPING AND REFRIGERANT PIPING TO BE INSTALLED SO IT DOES NOT BLOCK UNIT ACCESS PANELS
- ⑥ EXISTING PAD TO REMAIN AND BE REUSED.
- ⑦ REUSE EXISTING CONCRETE PAD. CLEAN PAD AND PAINT OSHA APPROVED YELLOW.
- ⑧ CONTRACTOR TO CHECK AND CONFIRM OPERATION OF MANUAL DAMPERS (MD'S) AND MOTOR OPERATED DAMPERS (MOD'S) AS PART OF THIS SCOPE OF WORK. IF ANY MD IS NONFUNCTIONAL, DAMPER AND/OR ACTUATOR ON MOD WILL BE REPLACED AGAINST THE PROJECT'S ALLOWANCE OR BY CHANGE ORDER.
- ⑨ AIR HANDLING UNIT MOUNTING SHALL BE SUCH TO ALIGN WITH EXISTING DUCTWORK.
- ⑩ PROTECT DUCT MOUNTED SMOKE DETECTOR AND SAMPLING TUBE INSIDE OF EXISTING DUCT WITH PLASTIC COVERING DURING THE CONSTRUCTION PROCESS.
- ⑪ CLEAN INTERIOR OF DUCTWORK, SEE ADDITIONAL NOTES, SPECIFICATION SECTION 230330, AND DESCRIPTION OF ALTERNATE. PROVIDE DUCT ACCESS DOORS TO FACILITATE CLEANING.



TYPICAL COIL PIPING DETAIL
SCALE: NONE

(B) SPLIT SYSTEM AC UNIT WITH HOT WATER COIL
M-001 NO SCALE

SPLIT SYSTEM AIR CONDITIONING UNIT SCHEDULE																		
AIR HANDLING UNIT SECTION									OUTDOOR CONDENSING SECTION									
SYMBOL	AIR QUANTITY		EXT. S.F. ①	ELECTRICAL		HEATING COIL ③			SYMBOL	ELECTRICAL			COOLING CAPACITY MBH ②	EER	CONTROL VALVE	REMARKS		
	TOTAL CFM	OUTSIDE CFM		FAN HP	VOLTAGE & PHASE	EAT °F	GTH-MBH	GPM		RUNOUT SIZE	MCA	MOCF					VOLTAGE & PHASE	
AHU#17	5600	1125	1.30	5	208V-3ø	60.6	170.0	17.0	⑤	1-1/4"	CU#17	74.0	100	208V-3ø	185.0	④	11.2	3-WAY
AHU#18	2700	1000	1.10	3	208V-3ø	52.6	120.0	12.0	⑤	1-1/4"	CU#18	32.0	100	208V-3ø	90.0	④	11.4	3-WAY

- ① EXT. S.P. INCLUDES SUPPLY & RETURN AIR DUCTWORK, MERV 8 FILTERS IN ROOM RETURN AIR GRILLES, AND DUCT MOUNTED HEATING COILS.
- ② CAPACITY WHEN MATCHED WITH INDOOR SECTION AT AHRI CONDITIONS.
- ③ BASED ON 180°F EWT AND 20°F WATER TEMPERATURE DROP. WATER PRESSURE DROP SHALL BE 10 FT. MAXIMUM FOR COIL PLUS CONTROL VALVE. COIL AIR PRESSURE DROP SHALL BE 0.40" WATER COLUMN MAXIMUM. HEATING COILS SHALL BE A MINIMUM OF TWO ROWS.
- ④ DUAL COMPRESSOR DUAL CIRCUIT SYSTEM.
- ⑤ TAB WATERFLOW TO NEW HOT WATER COIL.

PIPE INSULATION THICKNESS SCHEDULE			
PIPE SIZE	INSULATION THICKNESS		REMARKS
	HOT WATER	REFRIGERANT	
3/4"	1-1/2"	1-1/2"	
1"	1-1/2"	1-1/2"	
1-1/4"	1-1/2"	1-1/2"	
1-1/2"	1-1/2"	1-1/2"	
2"	2"	1-1/2"	
2-1/2"	2"	1-1/2"	
3"	2"	1-1/2"	

LEGEND

Legend:

- REMOVE EXISTING DUCTWORK
- REMOVE EXISTING PIPING, LINE SYMBOL INDICATES SERVICE
- EXISTING DUCTWORK TO REMAIN
- EXISTING HOT WATER SUPPLY
- EXISTING HOT WATER RETURN
- HWS HOT WATER SUPPLY PIPING
- HWR HOT WATER RETURN PIPING
- ER EXISTING REFRIGERANT PIPING
- EC EXISTING AIR CONDITIONING CONDENSATE PIPING
- R REFRIGERANT PIPING
- C AIR CONDITIONING CONDENSATE PIPING
- BALL VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- 3-WAY CONTROL VALVE
- AUTOMATIC FLOW CONTROL VALVE
- VALVE IN RISE OR DROP
- STRAINER WITH BALL VALVE BLOWDOWN, NIPPLE AND CAP
- 1 HOUR WALL DESIGNATION
- 2 HOUR WALL DESIGNATION
- HEATING AND COOLING THERMOSTAT WITH # INDICATING UNIT
- DISCONNECT SWITCH
- KEYED NOTE SYMBOL
- FIRE DAMPER (1-1/2 HOUR RATED) MOUNTED IN WALL WITH DUCT ACCESS DOOR AND CEILING ACCESS DOOR (16"x16" MIN.) WHERE NECESSARY.

Table of Symbols:

Symbol	Description
	SUPPLY AIR
	RETURN AIR
	OUTSIDE AIR
	EXHAUST AIR
	NORMALLY OPEN
	NORMALLY CLOSED
	MANUAL DAMPER
	MOTOR OPERATED DAMPER
	ABOVE FINISHED FLOOR
	FINISHED FLOOR
	ABOVE FINISHED GRADE
	CONCRETE
	CONTINUATION
	CONTRACTOR
	ACCESS DOOR
	TERMINATION POINT OF DEMOLITION
	POINT OF NEW CONNECTION TO EXISTING
	AIR FLOW MONITORING STATION
	DIFFERENTIAL PRESSURE SWITCH
	BUILDING STATIC PRESSURE SENSOR
	FLOW SENSOR
	TEMPERATURE SENSOR
	HEATING AND COOLING THERMOSTAT WITH STAINLESS STEEL FACEPLATE AND # INDICATING UNIT
	HUMIDITY SENSOR
	VARIABLE SPEED DRIVE
	CONTROL RELAY
	EMERGENCY SWITCH
	MOTOR OPERATED TWO POSITION ELECTRIC
	MOTOR OPERATED PROPORTIONAL ELECTRIC
	FIRE ALARM RELAY
	STATIC PRESSURE SENSOR
	SYSTEM OVERRIDE TIMER
	OCCUPANCY/VACANCY SENSOR
	CONTROL VALVE
	CURRENT SENSOR
	STARTER

Furnace Assembly Schematic:

The schematic shows a furnace unit with various components labeled:

- RAJUAL AIR VENT (TYPICAL)
- BETTER ALARMING SENSOR
- DL VALVE
- EHWR
- EHWS
- BALL VALVE
- STRAINER WITH BLOW DOWN GATE VALVE
- SQUARE HEAD COCK
- UNION
- MANUAL AIR VENT
- HOT WATER COIL
- P/T PORT
- ** DEEP DIRT LEG

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND
EQUIPMENT METHOD OF COMPLIANCE

- ☒ COMPLIANCE PER CHAPTER 4 NORTH CAROLINA ENERGY CONSERVATION CODE – SECTIONS C403.2 (MANDATORY), C403.3 ECONOMIZERS (PRESCRIPTIVE) AND C408 ADDITIONAL EFFICIENCY PACKAGE OPTIONS.
- ☐ COMPLIANCE PER CHAPTER 4 NORTH CAROLINA ENERGY CONSERVATION CODE – SECTIONS C403.2 (MANDATORY), C403.3 ECONOMIZERS (PRESCRIPTIVE), C403.4 HYBRIDIC AND MULTIPLE ZONE (PRESCRIPTIVE) AND C408 ADDITIONAL EFFICIENCY PACKAGE OPTIONS.
- ☐ COMPLIANCE PER CHAPTER 4 NORTH CAROLINA ENERGY CONSERVATION CODE – SECTIONS C402.2, C403.2, C404, C405.2, C405.3, C405.6, C405.6 AND C407 TOTAL BUILDING PERFORMANCE. THE ENERGY COST MUST BE EQUAL TO OR LESS THAN 80 PERCENT OF THE STANDARD REFERENCE DESIGN BUILDING.
- ☐ COMPLIANCE PER ANSI/ASHRAE/IESNA 90.1-2013.
- ☐ COMPLIANCE PER NORTH CAROLINA SPECIFIC COMCHECK OR ASHRAE 90.1-2013 COMCHECK.

CLIMATE ZONE 3A

EXTERIOR DESIGN CONDITIONS
winter dry bulb: 26°F
summer dry bulb: 92°F DB/76°F WB

INTERIOR DESIGN CONDITIONS
winter dry bulb: 70°F
summer dry bulb: 75°F
relative humidity: 50%

BUILDING HEATING LOAD: BLOCK LOAD = 256.0 MBH - HVAC REPLACEMENT AREAS ONLY
BUILDING COOLING LOAD: BLOCK LOAD = 21.4 TONS - HVAC REPLACEMENT AREAS ONLY

MECHANICAL SPACING CONDITIONING SYSTEM

MECHANICAL SPACING CONDITIONING SYSTEM

Unitary:

description of unit:
heating efficiency:
cooling efficiency:
heat output of unit:
cooling output of unit:

} SEE SCHEDULE


Boiler: EXISTING
total boiler output. If oversized, state reason.
Chiller: N/A

LIST EQUIPMENT EFFICIENCIES: SEE SCHEDULES ON THIS SHEET
EQUIPMENT SCHEDULES WITH MOTORS (MECHANICAL SYSTEMS)

motor horsepower:	}	SEE SCHEDULES ON THIS SHEET
number of phases:		
minimum efficiency:		
motor type:		
# of poles:		

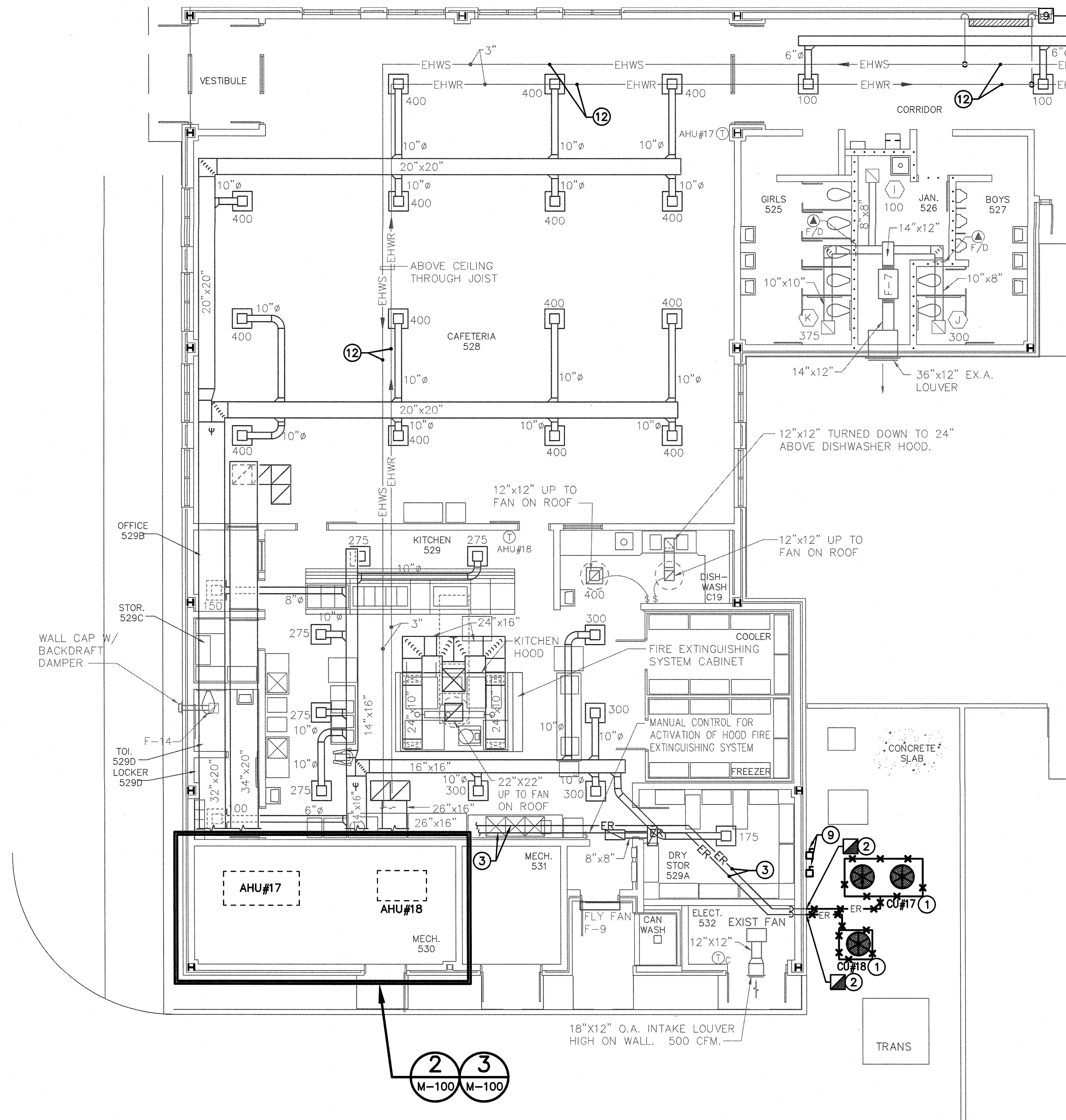
DESIGNER STATEMENT

To the best of my knowledge and belief, the design of this building complies with the mechanical systems, service systems and equipment requirements of the North Carolina Energy Conservation Code.

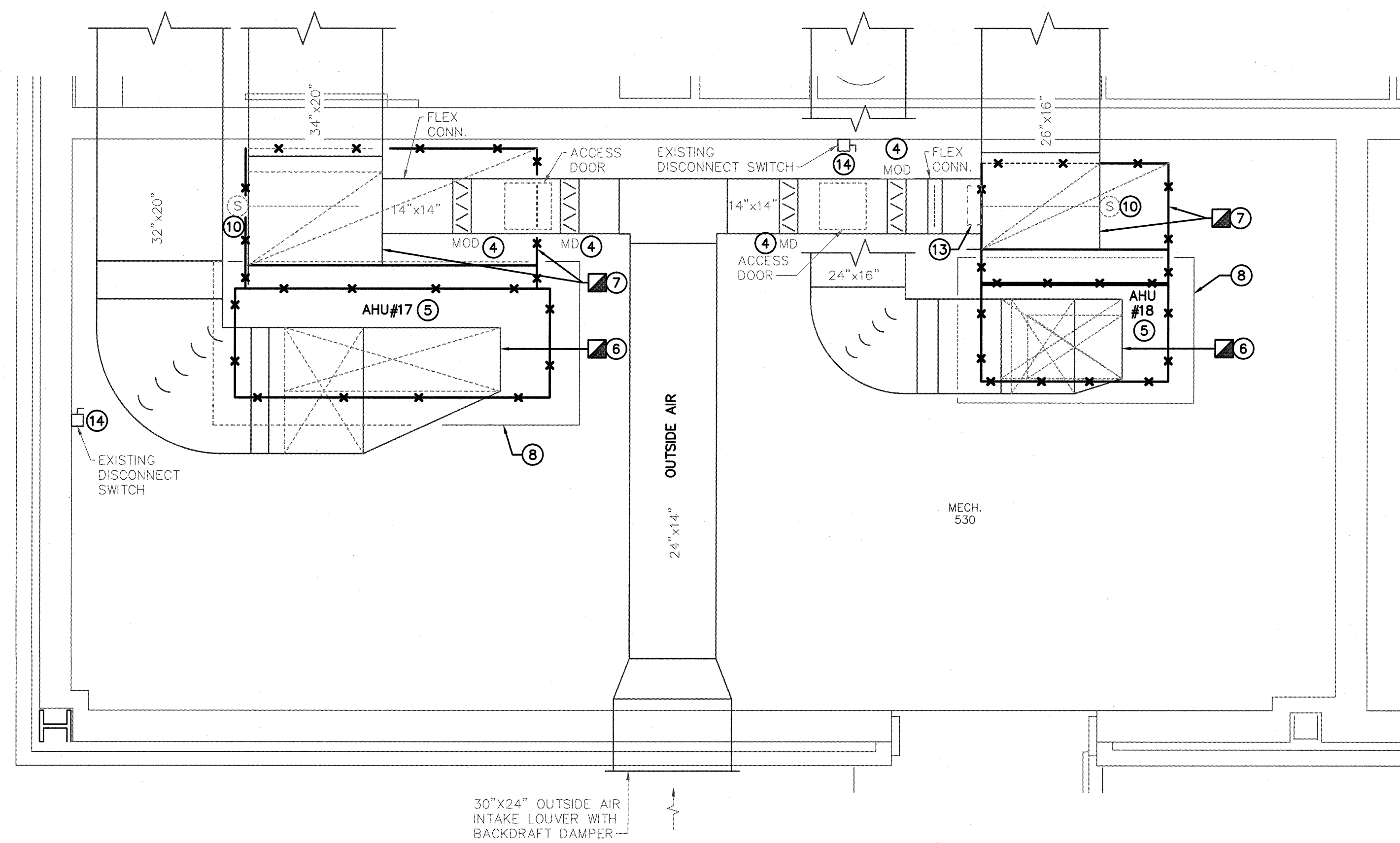
SIGNED: 
NAME: Kenneth Lynch, P.E.
TITLE: Professional Engineer

GENERAL NOTES:

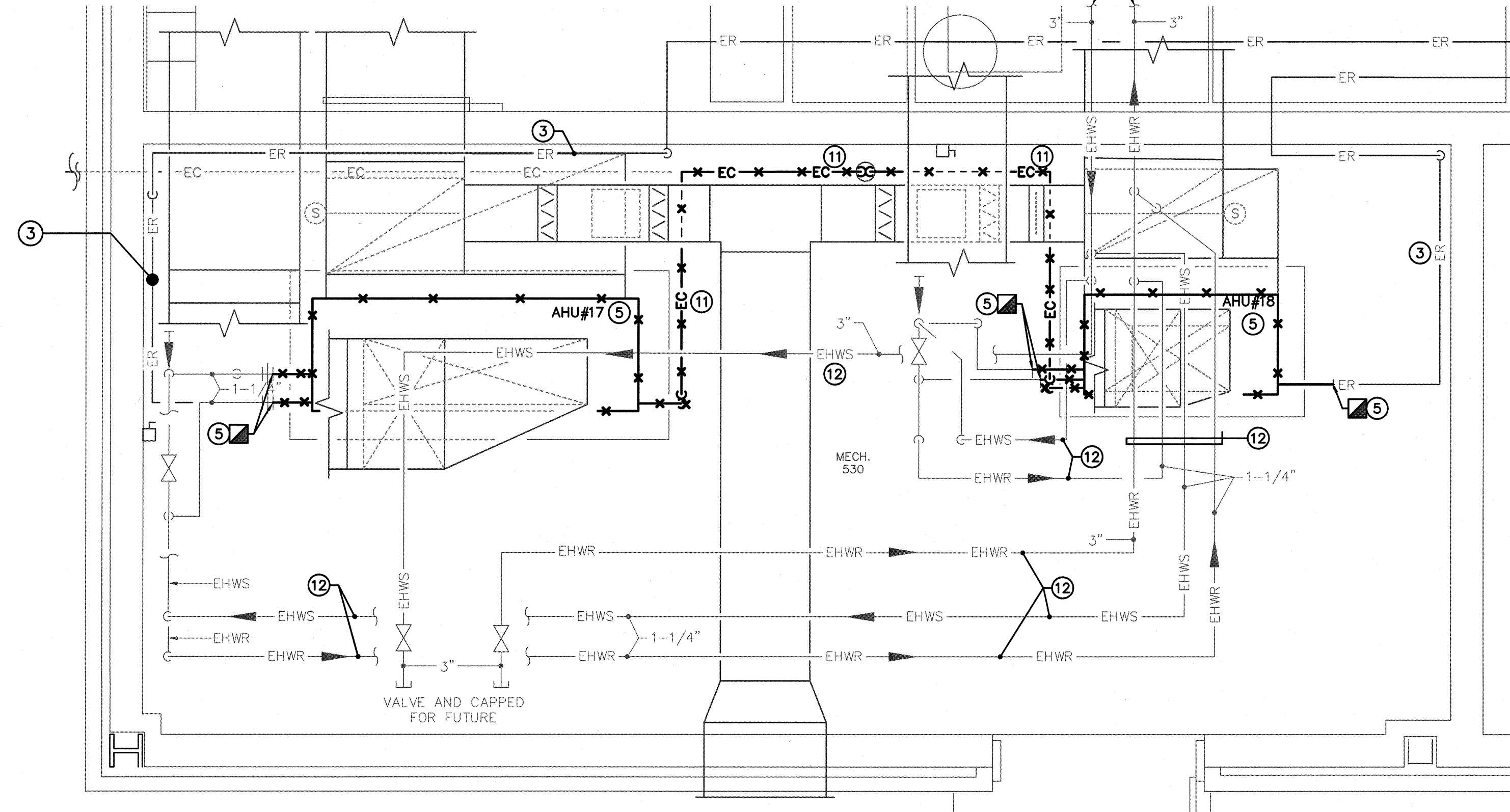
1. HVAC CONTRACTOR SHALL FIELD VERIFY ALL RELEVANT DIMENSIONS, CLEARANCES, LOCATIONS AND ELEVATIONS PRIOR TO ORDERING, FABRICATION, AND INSTALLATION OF HIS WORK. DISCREPANCIES OR INTERFERENCE'S SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER AS SOON AS POSSIBLE. THE DRAWINGS SHALL INDICATE THE GENERAL LOCATION OF DUCTS, PIPING AND EQUIPMENT AND DO NOT SHOW ALL SUPPORTS, OFFSETS, FITTINGS, BOLTS, CONNECTIONS, ETC. REQUIRED FOR A COMPLETE SYSTEM. WHILE THE DRAWINGS SHALL FOLLOW, THE CONTRACTOR SHALL AS CLOSELY AS POSSIBLE, IF IT IS FOUND NECESSARY TO CHANGE THE LOCATION OF ANY WORK TO ACCOMMODATE THE CONDITIONS AT THE BUILDING, SUCH CHANGES SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER, AS DIRECTED BY THE ENGINEER, WHILE SOME OFFSETS MAY BE SHOWN ON THE DRAWINGS, THE DRAWINGS DO NOT SHOW ALL OFFSETS, SUPPORTS, ETC.
2. ALL SUPPLY AND RETURN CONNECTIONS TO AHU SHALL BE MADE WITH A FLEXIBLE DUCT CONNECTION.
3. PIPING, DUCTWORK, ETC., SHALL NOT BE SUPPORTED FROM BAR JOIST BRIDGING OR ROOFDECK. EQUIPMENT SUPPORTED BY BAR JOISTS SHALL HAVE SUPPORTS ATTACHED AS CLOSE AS POSSIBLE TO BAR JOIST PANEL POINTS. HVAC CONTRACTOR SHALL SUPPLY ANY AND ALL STRUCTURAL MEMBERS NECESSARY TO SUPPORT WORK FROM BAR JOISTS, BEAMS, ETC.
4. ALL DUCT JOINTS SHALL BE SEALED AS SPECIFIED.
5. IN AREAS WITH GYPBOARD CEILINGS, HVAC CONTRACTOR SHALL INSTALL EQUIPMENT, DUCTWORK AND PIPE HANGERS PRIOR TO GYPBOARD INSTALLATION.
6. HVAC CONTRACTOR / CONTROLS CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR FOR PROVISIONS OF POWER TO DDC CONTROL SYSTEM CONTROL PANELS, CONTROLLERS, ETC., NOT SHOWN ON M O R E DRAWINGS. ELECTRICAL CONTRACTOR WILL PROVIDE POWER TO GENERAL POINTS, JUNCTION BOXES, ETC. AND POWER WIRING FROM THOSE POINTS TO EQUIPMENT SHALL BE BY THE HVAC CONTRACTOR/CONTROL CONTRACTOR.
7. SEE SCHEDULES FOR PIPE SIZES TO EQUIPMENT NOT SHOWN ON DRAWINGS.
8. SEE 1/AH-001 FOR CONTRACTOR STAGING/PARKING AREA AND REQUIREMENTS FOR CORROSION OFF LIMITS OF CONSTRUCTION
9. EXISTING CENTRAL HOT WATER PLANT INCLUDING BOILER, PUMPS, AND AIR SEPARATOR TO REMAIN.
10. KITCHEN DISHWASHER'S HOOD AND KITCHEN HOOD TO REMAIN - NO WORK.
11. EXISTING EXHAUST FANS AND SYSTEMS FOR RESTROOMS, ETC. TO REMAIN - NO WORK.
12. FLUSHING OF NEW HOT WATER PIPING WILL BE BY CONTRACTOR. CHEMICAL CLEANING AND TREATMENT OF SYSTEM WILL BE BY NHCS'S CHEMICAL TREATMENT CONTRACTOR AS DIRECTED BY NHCS.
13. INTENT IS FOR CONTRACTOR TO ACCOMPLISH ALL WORK BY CAREFULLY REMOVING EXISTING AIR HANDLING THROUGH THE EXISTING CEILING. AS NECESSARY, DAMAGED CEILING GRID AND/OR TILES SHALL BE REPLACED BY THE CONTRACTOR.



1 PARTIAL MECHANICAL PLAN BUILDING 500 - DEMOLITION
SCALE: 1/8" = 1'-0"



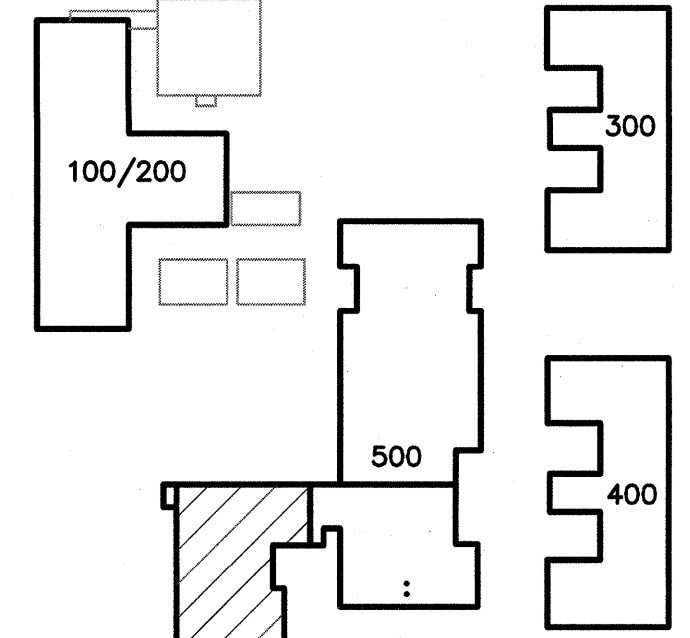
2 ENLARGED MECHANICAL DUCTWORK PLAN - DEMOLITION
SCALE: 1/2" = 1'-0"



3 ENLARGED MECHANICAL PIPING PLAN - DEMOLITION
SCALE: 1/2" = 1'-0"

GRAPHIC SCALE: 1/8" = 1'-0"
0 2 4 8 16

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



KEY PLAN

- KEYED NOTES: (THIS SHEET ONLY)**
- REMOVE EXISTING CONDENSING UNIT. RECOVER ALL REFRIGERANT IN APPROVED REFRIGERANT CONTAINERS AND IN COMPLIANCE WITH SECTION 608 OF THE EPA CLEAN AIR ACT. REMOVAL AND DISPOSAL MUST BE CONDUCTED UNDER SUPERVISION OF AN EPA CERTIFIED TECHNICIAN. EXISTING CONCRETE PAD TO REMAIN AND BE REUSED.
 - REMOVE REFRIGERANT PIPE AS SHOWN. EXISTING UNISTRUT PIPE SUPPORTS TO REMAIN AND BE REUSED.
 - EXISTING REFRIGERANT PIPE TO REMAIN.
 - CONTRACTOR TO CHECK AND CONFIRM OPERATION OF MANUAL DAMPERS (MD'S) AND MOTOR OPERATED DAMPERS (MOD'S) AS PART OF THIS SCOPE OF WORK. IF FOUND TO BE NONFUNCTIONAL, DAMPER AND/OR ACTUATOR ON MOD WILL BE REPLACED AGAINST THE PROJECT'S ALLOWANCE OR BY CHANGE ORDER.
 - REMOVE EXISTING AIR HANDLING UNIT AND ASSOCIATED OUTDOOR CONDENSING UNIT. DISCONNECT HOT WATER RETURN, HOT WATER SUPPLY, CONDENSATE, AND REFRIGERANT PIPING AS NECESSARY. RECOVER ALL REFRIGERANT IN APPROVED REFRIGERANT CONTAINERS AND IN COMPLIANCE WITH SECTION 608 OF THE EPA CLEAN AIR ACT. REMOVAL AND DISPOSAL MUST BE CONDUCTED UNDER SUPERVISION OF AN EPA CERTIFIED TECHNICIAN.
 - DISCONNECT THE SUPPLY AIR DUCT AT THE EXISTING AIR HANDLER SUPPLY AIR OUTLET.
 - DISCONNECT RETURN AIR DUCT FROM THE RETURN AIR PLENUM BOX AND REMOVE THE RETURN AIR PLENUM BOX AND IT SUPPORT LEGS.
 - CONCRETE PAD TO REMAIN AND BE REUSED PROVIDE NEW PAD EXTENSION AS NECESSARY FOR NEW UNIT. EXTENSION SHALL BE CONCRETE REINFORCED AS SPECIFIED DOWELED INTO EXISTING PAD, SAME THICKNESS AS PAD.
 - EXISTING DISCONNECT SWITCH REPLACE PER ALTERNATE NO. 2, SEE ELECTRICAL DRAWINGS FOR WORK.
 - PROTECT DUCT MOUNTED SMOKE DETECTOR AND SAMPLING TUBE INSIDE OF EXISTING DUCT WITH PLASTIC COVERING DURING THE CONSTRUCTION AND DUCT CLEANING PROCESS.
 - REMOVE EXISTING CONDENSATE PIPE.
 - EXISTING HOT WATER SUPPLY AND RETURN PIPING TO REMAIN.
 - EXISTING JCI METASYS CONTROL PANEL MOUNTED ON DUCTWORK TO REMAIN.
 - EXISTING DISCONNECT SWITCH, SEE ELECTRICAL DRAWINGS.

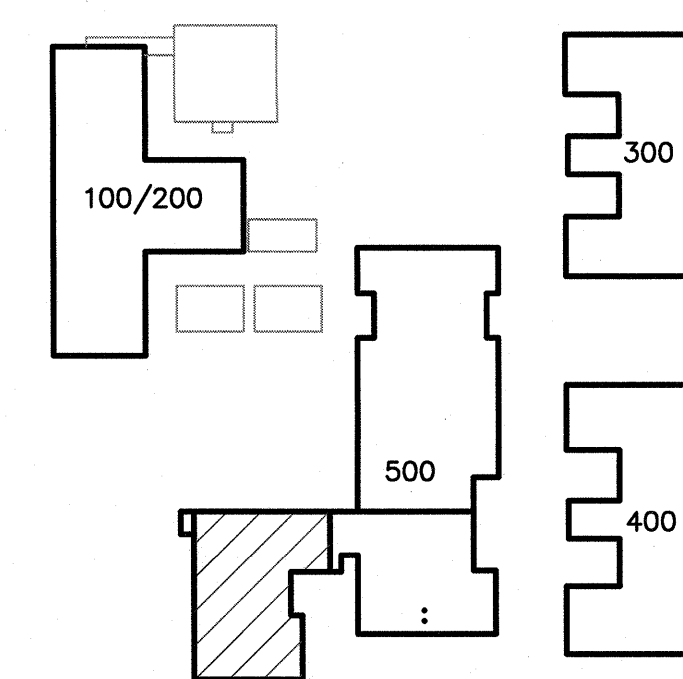
**WRIGHTSBORO ELEMENTARY SCHOOL BUILDING 500
KITCHEN/DINING HVAC RENOVATION**

WRIGHTSBORO ELEMENTARY SCHOOL
2716 CASTLE WAYNE RD.
WILMINGTON, NC 28401

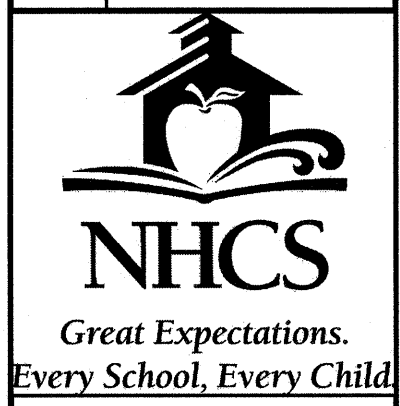
NHOS PROJECT#21-9230



- DUCT CLEANING - ALTERNATE NO. 1**
- A. CLEAN INTERIOR OF EXISTING DUCT SYSTEMS ASSOCIATED WITH AHU#17 AND AHU#18 TO REMAIN IN ACCORDANCE WITH NADCA ACR BY NADCA CERTIFIED SUBCONTRACTOR TO THE HVAC CONTRACTOR.
- B. SYSTEMS AND COMPONENTS TO BE CLEANED:
1. AIR DEVICES FOR SUPPLY AND RETURN AIR INCLUDING EXISTING REGISTERS, GRILLES, AND DIFFUSERS.
 2. DUCTWORK:
 - a. SUPPLY AIR DUCTS, INCLUDING TURNING VANES AND REHEAT COILS, TO THE AIR-HANDLING UNIT.
 - b. RETURN AIR DUCTS TO THE AIR-HANDLING UNIT.
 - c. OUTSIDE AIR DUCTS TO THE AIR-HANDLING UNIT.
 4. TRANSFER DUCTS.
- C. EXHAUST SYSTEMS ARE NOT A PART OF THE DUCT CLEANING SCOPE OF WORK.
- D. PROTECT NEW DUCTWORK, NEW AIR DEVICES, NEW HVAC UNITS AND THEIR COILS, ETC. DURING THE CLEANING PROCESS. DEENERGIZE EQUIPMENT DURING THE CLEANING PROCESS. ANY NEW WORK FOUND TO BE DIRTY AS A PART OF THE CLEANING PROCESS SHALL BE CLEANED IN ACCORDANCE WITH SECTION 2300.
- E. SEE SPECIFICATION SECTION 230130 FOR COMPLETE DESCRIPTION OF SCOPE OF WORK AND REQUIREMENTS.



REVISION	
DATE	DESCRIPTION



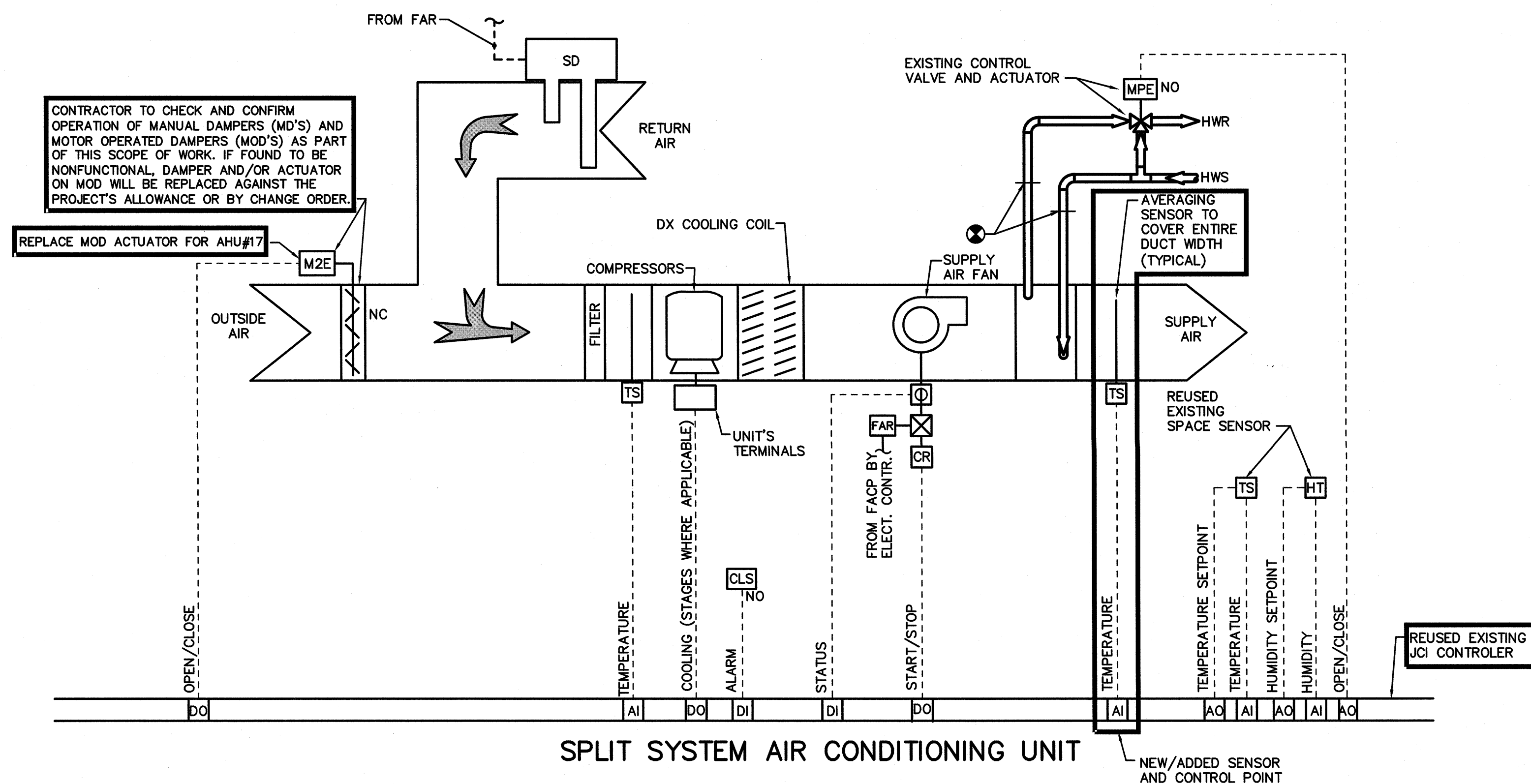
WRIGHTSBORO ELEMENTARY SCHOOL BUILDING 500
KITCHEN/DINING HVAC RENOVATION
WRIGHTSBORO ELEMENTARY SCHOOL
2716 CASTLE ROCK AVE. RD.
WILMINGTON, NC 28401

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WILMINGTON, NORTH CAROLINA 28405
E-MAIL: OFFICE@CHATHAMPA.COM
NC LICENSE #C-1073



DESIGNED BY	KL
DRAWN BY	EG/KCL
CHECKED BY	KL
JOB NUMBER	20048
SHEET	
M-700	
OF	4
DATE	DECEMBER 14, 2020

- DIRECT DIGITAL CONTROL SYSTEM SCOPE OF WORK:**
1. NEW WORK TO BAS SYSTEM SHALL BE PER THE NEW HANOVER COUNTY SCHOOLS CURRENT DESIGN GUIDELINES FOR DDC CONTROLS.
 2. EXISTING CONTROLS ARE JOHNSON CONTROLS N2 SYSTEM.
 3. CONNECT NEW EQUIPMENT TO EXISTING JOHNSON CONTROLS DDC BAS SYSTEM. AS PART OF COMPLETION, VERIFY CONTROLS AND GRAPHICS ARE WORKING AND TO THE SATISFACTION OF THE ENGINEER AND NHCS CONTROLS OPERATOR (910-254-4404).
 4. EXCEPT WHERE NOTED OTHERWISE, INTENT IS TO DISCONNECT EXISTING JCI DDC, REUSE EXISTING CONTROLLERS, SENSORS, ACTUATORS, CONTROL WIRING, COMMUNICATIONS WIRING, JACE, ETC. AND RECONNECT TO NEW UNIT FOR A COMPLETE FUNCTIONAL SYSTEM.
 5. UPDATE BAS GRAPHICS AS NECESSARY FOR NEW WORK.



SEQUENCE OF OPERATION

SHALL MATCH EXISTING SEQUENCE OF OPERATION – CONFIRM SEQUENCES WITH NHCS (910-254-4404)

AIR HANDLER UNIT:
THE AIR HANDLING UNIT SHALL BE COMMANDED ON FOR DAY OPERATION BY THE BAS SOFTWARE SCHEDULE. UPON INITIAL STARTUP THE MOTOR OPERATED OUTDOOR AIR DAMPER SHALL OPEN TO SUPPLY OUTSIDE AIR.

COOLING MODE:
AS THE ZONE TEMPERATURE CONTROLLING THE AIR HANDLER RISES ABOVE THE COOLING SETPOINT, THE COOLING MODE WILL BE ENERGIZED. THE COOLING STAGES WHERE APPLICABLE, WILL BE STAGED ON AS THE COOLING DEMAND INCREASES. AS THE ZONE TEMPERATURE FALLS BELOW THE COOLING SETPOINT THE COOLING MODE WILL BE DEENERGIZED.

HEATING MODE:
AS THE ZONE TEMPERATURE CONTINUES TO DROP THROUGH A DEADBAND TO BELOW THE HEATING SETPOINT, THE HOT WATER VALVE SHALL OPEN. AS THE ZONE TEMPERATURE RISES ABOVE THE HEATING SETPOINT THE HOT WATER VALVE SHALL CLOSE.

NIGHT SETBACK/TEMPERATURE OCCUPANCY MODE:
BAS SHALL MONITOR ALL THE ZONE TEMPERATURE SENSORS TO MAINTAIN A NIGHT SETBACK HIGH OR LOW SETPOINT. UPON SPACE TEMPERATURE RISING ABOVE OR DROPPING BELOW THE SETBACK SETPOINT, BAS SHALL COMMAND THAT UNIT ON FOR DAY OPERATION. OUTSIDE AIR DAMPER SHALL REMAIN CLOSED. TEMPORARY OCCUPANCY SHALL BE ACHIEVED THROUGH A PUSH BUTTON ON THE AIR HANDLER UNIT'S THERMOSTAT. WHEN DEPRESSED THE UNIT SHALL OPERATE IN THE DAY MODE FOR AN OWNER SPECIFIED TIME.

DEHUMIDIFICATION:

1. ON A CALL FOR DEHUM IN THE SPACE, ENABLE THE HOT WATER SYSTEM.
2. MEASURE HOT WATER FOR PROOF PRIOR TO CLASSROOM UNIT DEHUM ENABLE.
3. COMMAND COOLING "ON".
4. RESET ROOM HEATING SETPOINT TO 0.1 DEGREE FAHRENHEIT BELOW ROOM COOLING SETPOINT. THIS IS OUR DEHUM SETPOINT.
5. MODULATE HOT WATER VALVE TO MAINTAIN DEHUM ROOM HEATING SETPOINT.
6. WHEN THE ROOM HUMIDITY DROPS 5% (ADJ) BELOW ROOM RH SETPOINT, THE COOLING WILL BE COMMANDED OFF.
7. COMPRESSOR ANTI-CYCLE TIMERS REMAIN THE SAME.

SHUTDOWN:
UPON DETECTION OF FIRE OR PHASE ALARM, THE FA SYSTEM SHALL INITIATE A GLOBAL SHUTDOWN OF ALL UNITS. THROUGH RELAY MODULES OF EACH UNIT. A FLOAT SWITCH IN THE CONDENSATE DRAIN PAN SHALL SHUTDOWN ITS RESPECTIVE UNIT UPON ACTIVATION.

FAILURE MODE:
UPON LOSS OF POWER TO THE DIGITAL CONTROLLER THE OUTDOOR AIR DAMPERS SHALL RETURN THEIR NORMAL POSITION, AND THE HOT WATER VALVE WILL OPEN WITH WATER FLOWING THROUGH THE HOT WATER COIL.

1. ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.
2. PERMITS FOR ELECTRICAL WORK SHALL BE OBTAINED BY AND PAID BY THE ELECTRICAL CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL PAY FOR ANY ADDITIONAL FEES FOR INSPECTIONS, TESTS, AND OTHER SERVICES AS REQUIRED FOR THE COMPLETION OF THE WORK.
3. THE ELECTRICAL CONTRACTOR AND ANY OF HIS SUBCONTRACTORS SHALL VISIT THE PROJECT SITE TO WITNESS EXISTING CONDITIONS AND BECOME FAMILIAR WITH THE SCOPE OF THE WORK REQUIRED PRIOR TO SUBMITTING PROPOSALS. WORK REQUIRED BY EXISTING JOB CONDITIONS NOT INDICATED ON DRAWINGS SHALL BE INCLUDED IN THE BID.
4. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO RESULT IN THE PRODUCTION OF A COMPLETE AND FUNCTIONAL ELECTRICAL SYSTEM. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL MATERIAL, LABOR, EQUIPMENT, AND OTHER SERVICES AS NECESSARY TO COMPLETE THE WORK.
5. DISCREPANCIES IN THE DRAWINGS AND SPECIFICATIONS THAT WILL AFFECT THE WORK SHALL BE BROUGHT TO THE OWNER'S ATTENTION IMMEDIATELY AND OWNER PRIOR TO SUBMITTING PROPOSALS. UNLESS OTHERWISE NOTED OTHERWISE, ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND INCLUDE A 3RD PARTY LABEL (I.E., UL, CSA, ETC.) LISTING APPROVAL FOR ITS INSTALLED APPLICATION.
6. REVIEW PLANS OF OTHER TRADES FOR COORDINATION OF WORK AND FOR RELATED AND ADJOINING WORK.
7. PENETRATIONS OF EXTERIOR BUILDING WALLS, FLOORS, OR ROOFS SHALL BE SEALED WATERTIGHT. INTERIORS OF RACEWAY PENETRATIONS THROUGH EXTERIOR WALLS SHALL BE SEALED WITH NON-HARDENING ELECTRICAL PUTTY.
8. CUTTING AND PATCHING TO INSTALL DEVICES AND EQUIPMENT SHALL BE COMPLETED WITH FINISHES CONFORMING TO THE ORIGINAL CONDITION. SUCH WORK SHALL BE COMPLETED TO A DEGREE THAT IS ACCEPTABLE TO THE ENGINEER, AND OWNER.
9. COORDINATE PRECISE LOCATION OF HVAC EQUIPMENT WITH THE MECHANICAL CONTRACTOR.
10. FOR HVAC EQUIPMENT, VERIFY CIRCUIT BREAKER RATINGS, FUSE RATINGS, AND WIRE SIZES. IF RATINGS DIFFER FROM THOSE INDICATED ON THE DRAWINGS, NOTIFY THE ENGINEER AND OWNER FOR DIRECTION. PROVIDE OVERCURRENT PROTECTION IN ACCORDANCE WITH EQUIPMENT MANUFACTURER NAMEPLATE DATA. IF THE EQUIPMENT LISTING LABEL REQUIRES FUSED PROTECTION, ENSURE THAT FUSES IN A FUSED DISCONNECT SWITCH AT THE EQUIPMENT ARE SIZED AS INDICATED ON THE EQUIPMENT LABEL.
11. IF HORSEPOWER OR LOAD RATINGS OF EQUIPMENT DIFFER FROM THOSE INDICATED ON THE DRAWINGS, NOTIFY THE ARCHITECT, ENGINEER, AND OWNER FOR DIRECTION.
12. PROVIDE NATIONAL ELECTRICAL CODE REQUIRED CLEARANCES FOR ALL ELECTRICAL EQUIPMENT. COORDINATE RESOLUTION OF CONFLICTS WITH OTHER TRADES.
13. NO MOUNTING HARDWARE SHALL BE ATTACHED TO ROOF DECKS. ATTACHMENTS SHALL BE MADE TO THE ROOF SUPPORTING STRUCTURE.
14. WHERE WORKING IN EXISTING BUILDINGS, FACILITIES, OR STRUCTURES; PROTECT AND MAINTAIN IN OPERATION EXISTING LIFE SAFETY SYSTEMS, PUBLIC ADDRESS SYSTEMS, ELECTRICAL SYSTEMS, ETC. IF DRAWINGS ARE REQUIRED, NOTIFY THE ARCHITECT, ENGINEER, AND OWNER FOR COORDINATION WELL IN ADVANCE OF ANY SYSTEM SHUTDOWN. WHEN AN OUTAGE OF EXTENDED DURATION IS NOT ACCEPTABLE TO THE OWNER, PROVIDE TEMPORARY CONNECTIONS AS REQUIRED TO MAINTAIN SERVICE.
15. WHERE WORKING IN EXISTING BUILDINGS, FACILITIES, OR STRUCTURES; WORK MAY BE REQUIRED TO BE PERFORMED WHILE REMAINING OCCUPIED BY OWNER STAFF. WORK SHALL BE COORDINATED WITH THE OWNER TO MINIMIZE DISRUPTION TO THE OWNER.
16. WHERE WORKING IN EXISTING BUILDINGS, FACILITIES, OR STRUCTURES; EXISTING ABANDONED CIRCUITS USED TO CONNECT NEW CIRCUITS SHALL BE CLEARLY IDENTIFIED ON A BUILT MARK-UP DRAWINGS WITH REGARD TO PANEL-CIRCUIT AND CIRCUITRY ROUTING CONFIGURATION.
17. ABANDONED CIRCUITRY (RACEWAY & CONDUCTORS) SHALL BE REMOVED IN ITS ENTIRETY FROM ITS SOURCE. ABANDONED LOW VOLTAGE CABLING SHALL BE REMOVED IN ITS ENTIRETY UNLESS OTHERWISE NOTED.

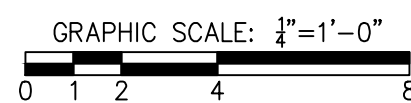
AFV	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AIC	AMPS INTERRUPTING CAPABILITY
BKR	BREAKER
	CONDUIT
C/B	CIRCUIT BREAKER
CLG	CEILING
CKT	CIRCUIT
CU	CONDENSING UNIT
CU	COPPER
DWG	DRAWING
EC	ELECTRICAL CONTRACTOR
EXSTG	EXISTING
Q	EQUIPMENT GROUND
GPC	GROUNDING ELECTRODE CONDUCTOR
HP	HORSEPOWER
K	KILO (THOUSAND)
M/C	MECHANICAL CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MFR	MANUFACTURER
N/A	NOT APPLICABLE
NEMA	NATIONAL ELECTRICAL CODE
	NATIONAL ELECTRICAL MANUFACTURERS ASSOC.
	NOT TO SCALE
SYS	SYSTEM
S/N	SOLID NEUTRAL
THP	TYPICAL
UNO	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
V	VOLTS
V/A	VOLTS - AMPS

The diagram shows a rectangular box labeled "DISCONNECT" at the top. To the left of the box, four labels are listed: "DISCONNECT DESIGNATION", "SOURCE DESIGNATION", "RATING DESIGNATION", and "VOLTAGE & PHASE DESIGNATION". Arrows point from each of these labels to the left side of the box. Inside the box, the following text is displayed: "DISCONNECT: DOAS #1", "SOURCE: PANEL 4M/CKT #", "RATING: 200 AMPS", and "VOLTAGE: 480V, 3PH, 3W".

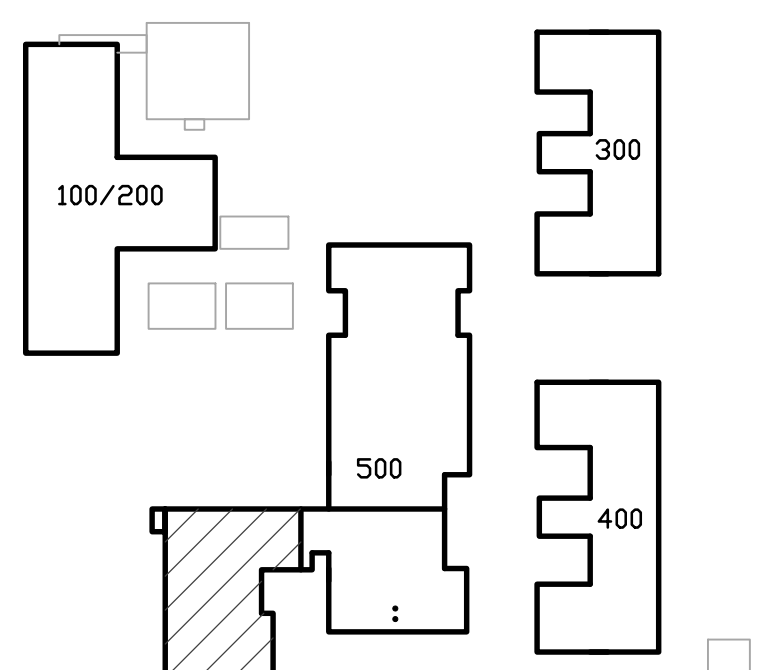
NOTES:

1. ENGRAVED PLASTIC FOR NAMEPLATE.
2. HIGH PERFORMANCE, DOUBLE COATED TAPE WITH ADHESIVE TO ATTACH LABELS.
DESIGN BASIS: 3M #06383 OR APPROVED EQUIVALENT.
3. 3/8" ENGRAVED LETTERS EQUIPMENT NAME DESIGNATION AND 1/4" ENGRAVED LETTERS ON ALL OTHER DESIGNATIONS.

1 ELECTRICAL POWER PLAN
SCALE: 1/4" = 1'-0"



- ① DISCONNECT EXISTING AHU#17 POWER CIRCUIT. REMOVE EXISTING MC CABLE CIRCUITRY BACK TO SOURCE MAIN-1,3,5. DISCONNECT SHUTDOWN CIRCUITRY FROM FIRE ALARM CONTROL MODULE TO UNIT. REPLACE EXISTING 30 AMP DISCONNECT WITH NEW 60 AMP FUSIBLE DISCONNECT. INSTALL NEW POWER CIRCUITRY INDICATED. RECONNECT SHUTDOWN CIRCUITRY FROM FIRE ALARM CONTROL MODULE TO UNIT. INSTALL ENGRAVED LABEL.
- ② DISCONNECT EXISTING AHU#18 POWER CIRCUIT. REMOVE EXISTING CIRCUITRY BETWEEN EQUIPMENT & EXISTING FUSIBLE DISCONNECT. DISCONNECT SHUTDOWN CIRCUITRY FROM FIRE ALARM CONTROL MODULE TO UNIT. INSTALL NEW 1" C, 3/8"ID, #10G FROM EXISTING FUSIBLE DISCONNECT TO NEW EQUIPMENT. SIZE FUSES AT EQUIPMENT NAMEPLATE. RECONNECT SHUTDOWN CIRCUITRY FROM FIRE ALARM CONTROL MODULE TO UNIT. INSTALL ENGRAVED LABEL.
- ③ REMOVE EXISTING CIRCUITRY AND INSTALL NEW FROM MAIN-33,35,37 AS INDICATED IN RISERS ABOVE. REPLACE 100 AMP FUSIBLE DISCONNECT IF ALTERNATE NO. 2 IS ACCEPTED. SIZE NEW FUSES AT EQUIPMENT NAMEPLATE. INSTALL NEW ENGRAVED LABEL.
- ④ REMOVE EXISTING CIRCUITRY AND INSTALL NEW FROM MAIN-8,10,12 AS INDICATED IN RISERS ABOVE. REPLACE EXISTING 50A BREAKER IF ALTERNATE NO. 2 IS ACCEPTED. FUSIBLE DISCONNECT IF ALTERNATE NO. 2 IS ACCEPTED. SIZE NEW FUSES AT EQUIPMENT NAMEPLATE. INSTALL NEW ENGRAVED LABEL.
- ⑤ EXISTING PANEL MAIN-1; GE A SERIES, 208/120V, 3P4W, 22K AIC. PROVIDE THE FOLLOWING BREAKERS:
 - REPLACE 3P/20AMP BREAKER IN POSITION 1,5,5 WITH NEW 3P/40AMP BREAKER FOR NEW AHU#17.
 - REPLACE 3P/20AMP BREAKER IN POSITION 2,4,6 WITH NEW 3P/30AMP BREAKER FOR NEW AHU#18.
 - REPLACE 3P/90AMP BREAKER IN POSITION 3,3,5,37 WITH NEW 3P/100AMP BREAKER NEW CU#17.



REVISION	
DATE	DESCRIPTION



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KITCHEN/DINING HVAC RENOVATION

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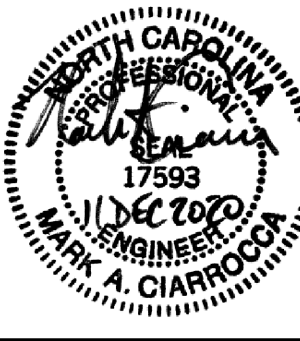
NHCS PROJECT#21-9230

 CHEATHAM AND ASSOCIATES, P.A.

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E-MAIL: OFFICE@CHEATHAMPA.COM

CNC LICENSE #C-1073



DESIGNED BY M. GIARDINO

<div style="text-align: right;">M. CIARROCCA</div> <div>DRAWN BY</div>
--

DATE OF BIRTH	C. BEVERLY
DATE OF DEATH	

CHECKED BY M. CIARROCCA

JOB NUMBER 20048

SHEET

1. *Journal of the American Medical Association*, 2000; 284: 2689-2694.

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OF

DATE _____

DECEMBER 14, 2020

ACTION DOCUMENTS

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