

ATTACHMENT A

UF BID NO. ITB21KO-108

UF FINE ARTS "D" - BUILDING No. 0269

REPLACE AIR HANDLING UNIT AHU-1

UNIVERSITY OF FLORIDA - GAINESVILLE, FLORIDA

MINOR PROJECT No. MP04488

PREPARED FOR THE

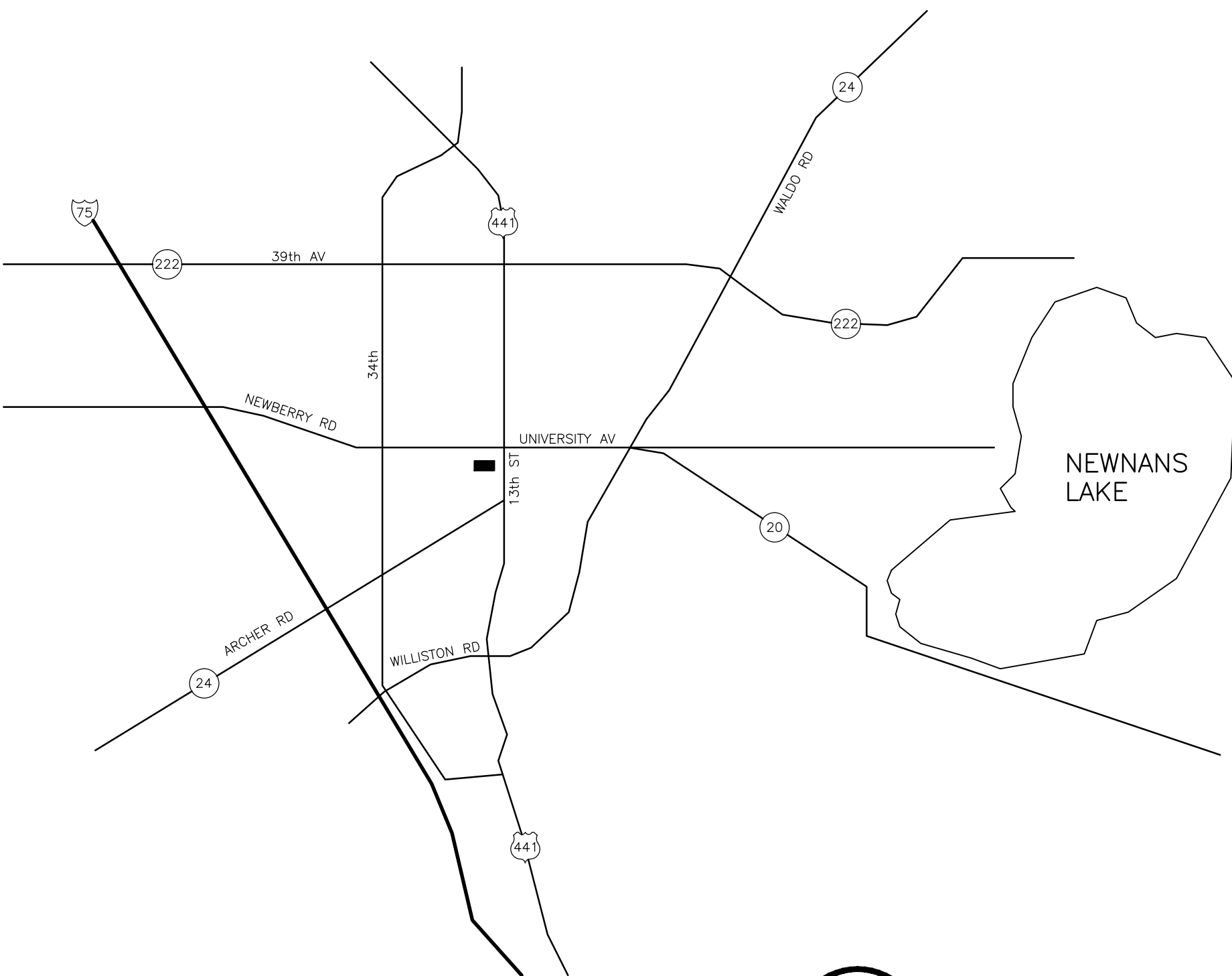
UNIVERSITY OF FLORIDA

ELECTRIC LOAD SUMMARY TABLE

REMOVED LOAD	-	17430 VA
ADDED LOAD	+	28386 VA
NET ADDED LOAD	+	10956 VA
$\frac{10956 \text{ VA}}{480\text{V.} \times 1.73} = 13.2 \text{ AMPS}$		
NET ADDITION OF 13.2 AMPS AT 480V., 3Ø		

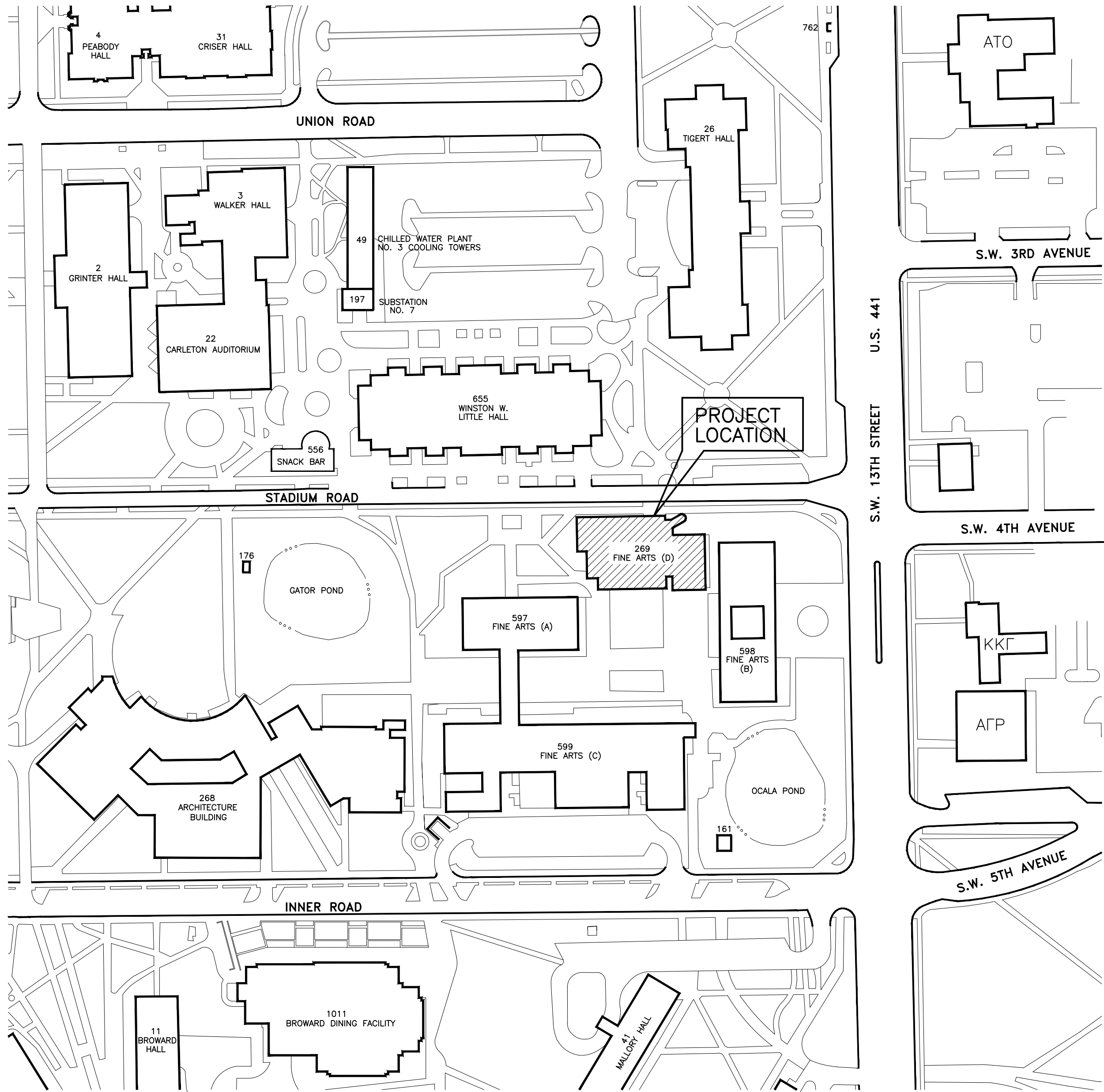
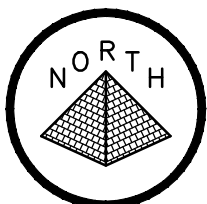
CHILLED WATER LOAD SUMMARY TABLE

EXISTING CHILLED WATER TONS	:	61
NEW CHILLED WATER TONS		61
ADDED CHILLED WATER TONS		0



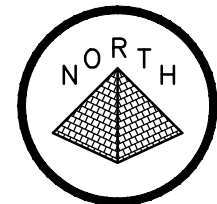
VICINITY MAP

NOT TO SCALE



LOCATION MAP

NOT TO SCALE



PROJECT DATA

OWNER: UNIVERSITY OF FLORIDA
PLANNING, DESIGN AND CONSTRUCTION
232 STADIUM ROAD
P.O. BOX 115050
GAINESVILLE, FL., 32611-5050
(352) 273-4000

PROJECT
MANAGER: GREGORY DOYAL ROBERTS
352-294-3574

ENGINEER: CADWALLADER AND ASSOCIATES, INC
4000 SW 35TH TERRACE, SUITE D
GAINESVILLE, FL., 32608
(352) 376-0520

SHEET INDEX

- | | |
|-----|--|
| CS | COVER SHEET. |
| M-1 | MECHANICAL LEGEND, GENERAL NOTES, SCHEDULES AND DETAILS. |
| M-2 | MECHANICAL DETAILS, DIAGRAMS AND CONTROL SCHEDULE. |
| M-3 | SECOND FLOOR HVAC PLAN. |
| M-4 | THIRD FLOOR HVAC PLAN. |
| M-5 | THIRD FLOOR MECHANICAL ROOM 334 HVAC 1/4" SCALE PLANS. |
| E-1 | ELECTRICAL LEGEND, GENERAL NOTES AND ONE-LINE DIAGRAM. |
| E-2 | PARTIAL THIRD FLOOR ELECTRICAL PLANS. |

THE UNDERSIGNED ENGINEER DOES HEREBY CERTIFY THAT THE DESIGN OF THIS PROJECT ALONG WITH THE PREPARATION OF ALL CONSTRUCTION DOCUMENTS FOR THIS PROJECT ARE IN COMPLETE CONFORMANCE WITH UNIVERSITY OF FLORIDA DESIGN AND CONSTRUCTION STANDARDS.

CADWALLADER AND ASSOCIATES INC., CONSULTING ENGINEERS
M. Stephen Cadwallader, P.E. 4/29/19
M. STEPHEN CADWALLADER, P.E. DATE



AIR HANDLING UNIT SCHEDULE		
UNIT DATA	UNITS	AHU-1
PRODUCER AND MODEL No.	TEMROL	ITF
UNIT TYPE		HORIZONTAL
MINIMUM MOTOR H.P.	HP	6--5HP
ELECTRICAL CHARACTERISTICS	V-Ø-Hz	480-3-60
FAN	CFM	18,220
OUTSIDE AIR	CFM	2,800
TOTAL STATIC PRESSURE	In. H ₂ O	4.9
EXTERNAL STATIC PRESSURE	In. H ₂ O	1.6
FAN	RPM	2,747
DESIGN TEMPERATURES		
WINTER-OUTDOOR AND INDOOR	*F	31-70
SUMMER-OUTDOOR	*Fdb°Fwb	96-80
SUMMER-INDOOR	*Fdb°Fwb	73-61
COOLING COIL DATA		
SENSIBLE CAPACITY	BTU/Hr.	467,000
TOTAL CAPACITY	BTU/Hr.	729,700
MINIMUM FACE AREA	Sq.Ft.	40.42
ENTERING AIR TEMPERATURE	*Fdb°Fwb	77.3-66.8
LEAVING AIR TEMPERATURE	*Fdb°Fwb	54.0-53.7
ENTERING & LEAVING WATER TEMPERATURE	*F	45-60
WATER FLOW	GPM	97
PRESSURE DROP	Ft. H ₂ O	12.9
PIPE RUNOUT SIZE	In.	3
AIR PRESSURE DROP	In. H ₂ O	0.63
MINIMUM ROWS AND MAXIMUM FINS	In.	8-7
CONTROL VALVE TYPE	In.	2-WAY 2 1/2"

NOTES:

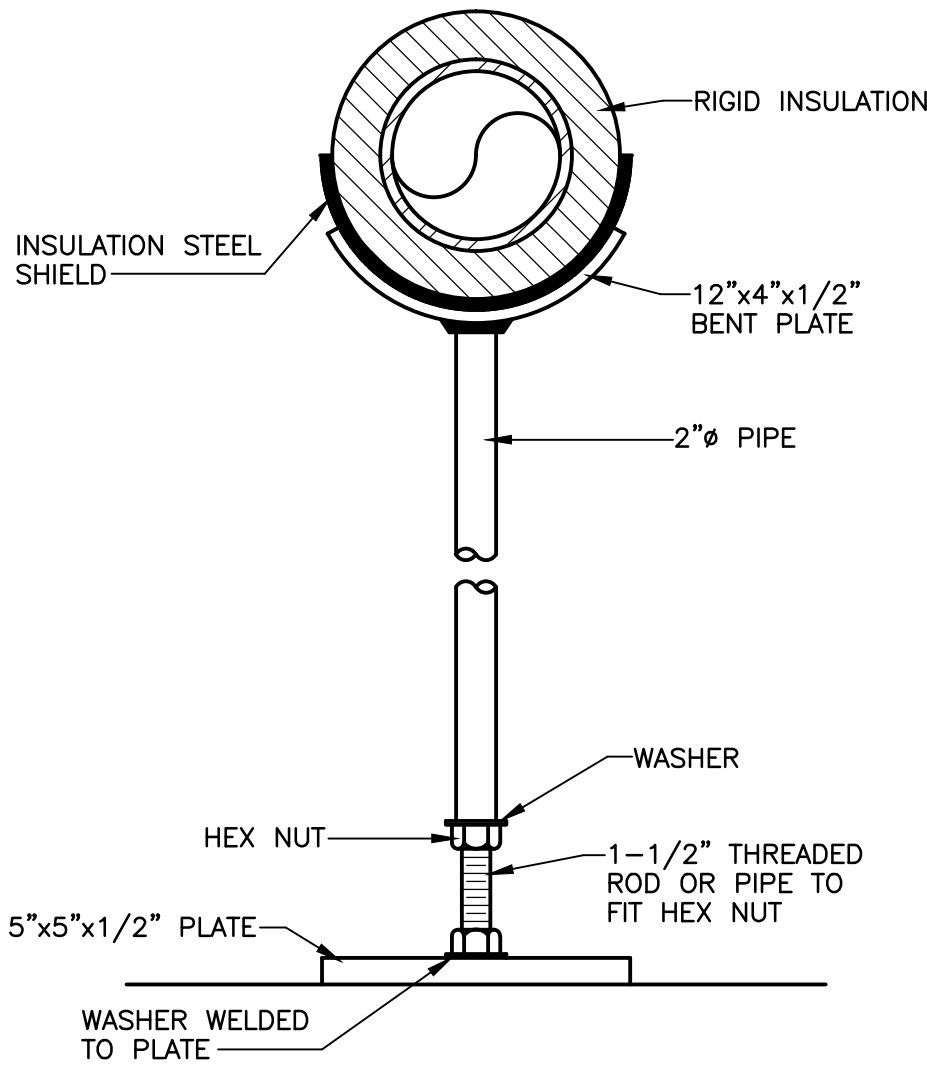
- PROVIDE 4-INCH MERV. 13 FILTERS. DOUBLE WALL CONSTRUCTION.
- PROVIDE STAINLESS STEEL CONDENSATE DRAIN PAN AND 16 GAUGE 304 STAINLESS STEEL COIL CASING.
- UV LIGHT: EVERGREEN UV AR60-S-IR2-24, 1.3 AMPS AT 120 VOLTS WITH PL-L60WTUV LAMP, JUNCTION BOX AND SWITCH.
- PENTACUBE FANWALL. 5HP MAXIMUM SINGLE MOTOR SIZE.
- PREMIUM EFFICIENCY MOTOR SHALL HAVE MINIMUM EFFICIENCY OF 89.5%, WITH SHAFT GROUNDING.
- PROVIDE FILTER PRESSURE ΔP GAUGE.
- PROVIDE VARIABLE SPEED DRIVE FOR AIR HANDLING UNIT: MOTOR CONTROL, VARIABLE SPEED DRIVE. INCLUDE SHAFT GROUNDING. YASKAWA Z1000 SERIES VARIABLE SPEED DRIVE WITH BYPASS. LCD KEYPAD, HAND-OFF-AUTO, HARMONIC MITIGATION, NOISE FILTER, SERIAL COMMUNICATIONS WITH EMBEDDED BACNET (METASYS, MODBUS, APOGEE), UL LISTED, INTERNAL REAL-TIME CLOCK, PI FEATURE SET-UP MACROS AND ETHERNET IP, 30HP, 480V.-3ø-60HZ.
- HORIZONTAL DRAW THRU WITH MULTIZONE DAMPER WITH NO BYPASS DECK.

ELECTRIC RESISTANCE DUCTWORK MOUNTED HEATER SCHEDULE								
ZONE	SYMBOL	CFM	KW	EAT/LAT °F	ΔP °H ₂ O	V-ø-HZ	STEPS	DUCT SIZE
AHU1-1	(1)	1055	5.0	56/71	0.05	480-3-60	1	12"x14"
AHU1-2	(2)	980	5.0	56/71	0.05	480-3-60	1	12"x14"
AHU1-3	(3)	740	4.0	56/76	0.05	480-3-60	2	8"x14"
AHU1-4	(4)	1225	6.0	56/72	0.05	480-3-60	2	12"x16"
AHU1-5	(5)	0	---	----	----	----	--	----
AHU1-6	(6)	1460	8.0	56/75	0.05	480-3-60	2	15"x14"
AHU1-7	(7)	1395	8.0	56/74	0.05	480-3-60	2	15"x14"
AHU1-8	(8)	1770	12.0	56/78	0.05	480-3-60	2	19"x14"
AHU1-9	(9)	1450	8.0	56/73	0.05	480-3-60	2	28"x8"
AHU1-10	(10)	1390	8.0	56/74	0.05	480-3-60	2	28"x8"
AHU1-11	(11)	3200	15.0	56/72	0.05	480-3-60	3	30"x12"
AHU1-12	(12)	2175	11.0	56/73	0.05	480-3-60	2	17"x14"
AHU1-13	(13)	1330	6.0	56/73	0.05	480-3-60	2	18"x10"

NOTES:

- PROVIDE DISCONNECT SWITCHES INTERLOCKED WITH CONTROL TERMINAL BOX.
- PROVIDE P.E. SWITCH FOR EACH STEP IN CONTROL CABINET.
- PROVIDE AIR FLOW SWITCH.
- PROVIDE AUTOMATIC RESET THERMAL SAFETY CONTROL AND SECONDARY OVER-TEMPERATURE CONTROL.
- MARKEL OPEN COIL INCERT ELECTRIC RESISTANCE HEATER BASIS OF DESIGN.
- EXISTING HVAC CONTROLS ARE JOHNSON.
- ZONE 1-5 IS CAPPED.
- COORDINATE DUCT HEATER DIMINSIONS WITH FIELD MEASURED DUCTWORK SIZES.

—CHWS—	CHILLED WATER SUPPLY
—CHWR—	CHILLED WATER RETURN
—C—	CONDENSATE
FD	FLOOR DRAIN
TCP	TEMPERATURE CONTROL PANEL
BAS	BUILDING AUTOMATION SYSTEM
SOV	SHUT-OFF BALL VALVE, BRONZE TWO PIECE BODY, FULL PORT NIBCO T-585-70 2" AND SMALLER, IRON BODY RISING STEM 2 1/2" AND ABOVE.
	PIPE UNION
	BALANCING VALVE WITH PORTS
	PRESSURE GUAGE
	DIAL THERMOMETER WITH 1/2" WELL
	TEMPERATURE SENSOR
	DENOTES CONNECT TO EXISTING
	AUTOMATIC CONTROL DAMPER
	AIR VOLUME DAMPER
	DUCT MOUNTED SMOKE DETECTOR
	VARIABLE SPEED FAN DRIVE



FLOOR PIPE SUPPORT

NO SCALE

DESIGN CRITERIA	
DESIGN TEMPERATURES:	
OUTSIDE WINTER	31°Fdb
INSIDE WINTER	70°Fdb
OUTSIDE SUMMER	96°Fdb-80°Fwb
INSIDE SUMMER	73°Fdb-61°Fwb
CONTROLS:	
1. AUTOMATIC CONTROLS AND VSD.	

GENERAL NOTES AND SPECIFICATIONS

- MECHANICAL AND PLUMBING WORK SHALL COMPLY WITH ALL APPLICABLE CODES AS ENFORCED BY THE AUTHORITIES HAVING JURISDICTION, INCLUDING (BUT NOT LIMITED TO):
2017 FLORIDA BUILDING CODE, SIXTH EDITION.
2017 FLORIDA BUILDING CODE - MECHANICAL.
2017 FLORIDA BUILDING CODE - PLUMBING.
2014 NATIONAL ELECTRICAL CODE.
2018 UF DESIGN AND CONSTRUCTION STANDARDS.
ASHRAE
- PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
- CONTRACT DOCUMENT DRAWINGS FOR MECHANICAL WORK ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
- INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
- USE FIRE-RATED PIPING SLEEVES FOR PIPING PENETRATIONS WITH FIRE RATED SEALANT AT FIRE-RATED WALLS. PROVIDE ESCUTCHEONS AT EXPOSED PIPING PENETRATIONS.
- LOCATE FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH STRAIGHT SECTION OF PIPE AS RECOMMENDED BY THE MANUFACTURER FOR GOOD ACCURACY.
- TESTING, ADJUSTING, AND BALANCING AGENCY SHALL BE A MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL (AABC) OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). TESTING, ADJUSTING, AND BALANCING SHALL BE PERFORMED IN ACCORDANCE WITH THE AABC STANDARDS. SUBMIT FOUR (4) COPIES. PERFORM PRE-TESTING OF AHU AND ZONES PRIOR TO DEMOLITION. SUBMIT REPORT TO ENGINEER.
- THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS THAT ARE NOT DEFINITELY FIXED BY DIMENSIONS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS.
- ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION AND AS SHOWN IN DETAILS FOR PIPING, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.
- INSTALL PIPING SO THAT ALL VALVES, FLANGES, AND OTHER APPURTENANCES REQUIRING ACCESS ARE ACCESSIBLE.
- ALL VALVES (EXCEPT CONTROL VALVES) AND STRAINERS SHALL BE FULL SIZE OF PIPE BEFORE REDUCING SIZE TO MAKE CONNECTIONS TO EQUIPMENT AND CONTROLS.
- PERMIT AND INSPECTIONS BY UF EH&S ARE REQUIRED. INSPECTIONS BY FACILITIES SERVICES: CONTACT DAN PETERS (352-294-8627) OR MELODY FONTANA (352-284-5258) AND DAVID LOPEZ (352-294-0672).
- ALL PIPING WORK SHALL BE COORDINATED WITH EXISTING CONDITIONS AT THE SITE. OFFSET PIPING AROUND OBSTRUCTIONS.
- SCHEDULE ALL WORK AND UTILITY INTERRUPTIONS TWO WEEKS IN ADVANCE WITH GREG ROBERTS (352-294-3574).
- ALL PIPING SYSTEMS MUST BE CLEANED, CHEMICALLY TREATED, TESTED AND ACCEPTED BY HSC PHYSICAL PLANT DIVISION OPERATIONS ENGINEERING PRIOR TO BEING PLACED INTO SERVICE. CONTACT PHONE: 392-5050, FAX: 392-5715 FOR INSPECTIONS.
- COMPLY WITH UF EH&S HOT WORK SAFETY POLICY: SEE <http://www.ehs.ufl.edu/programs/os/hotwork/>
UF HOT WORK PERMIT FORM: SEE http://www.ehs.ufl.edu/hotwork_permit.pdf
- PROVIDE PRODUCT SUBMITTALS FOR ALL EQUIPMENT, MATERIALS AND MECHANICAL CONTROLS TO ARCHITECT/ENGINEER FOR REVIEW.
- PROVIDE OPERATION AND MAINTENANCE MANUALS AT PROJECT CLOSE OUT PRIOR TO FINAL INSPECTION. INCLUDE WIRING DIAGRAMS, CONTROL DIAGRAMS, WARRANTIES, TEST AND BALANCE REPORT (4 COPIES). PROVIDE ONE PAPER COPY O&M'S AND ELECTRONIC MEDIA.
- MAINTAIN AND SUBMIT RECORD DRAWINGS OF AS-BUILT CONDITIONS.
- PROVIDE MOUNTED IDENTIFICATION TAGS FOR INSTALLED EQUIPMENT. IDENTIFY PIPING.
- THERMOMETERS: 2 1/2" DIAMETER DIAL THERMOMETERS (0-100°F) WITH ALUMINUM CASE, GLASS WINDOW AND COPPER STEM EQUAL TO WEISS.
- PRESSURE GAUGES: 4 1/2" DIAMETER, BRASS CASE WITH GLASS LENS (0-100psig)
- PROVIDE AUTOMATIC AIR VENTS AT HIGH POINTS AND DRAIN VALVES AT LOW POINTS.

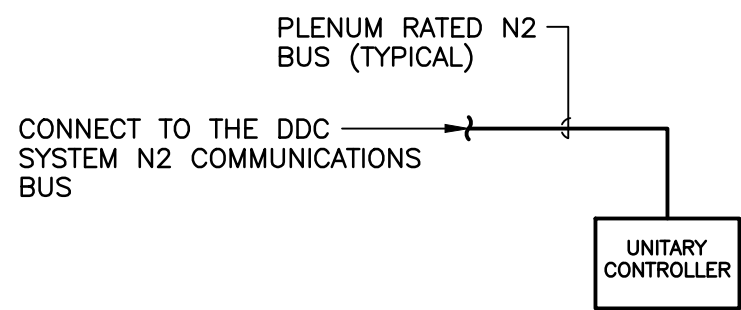
PIPE SCHEDULE

CHILLED WATER:
SCHEDULE 40 BLACK STEEL OR TYPE L COPPER WITH 1 1/2" CELLULAR GLASS INSULATION WITH VAPOR BARRIER SEALANT AND ALUMINUM JACKET.

CONDENSATE PIPING:
TYPE L COPPER WITH ARMA FLEX INSULATION.

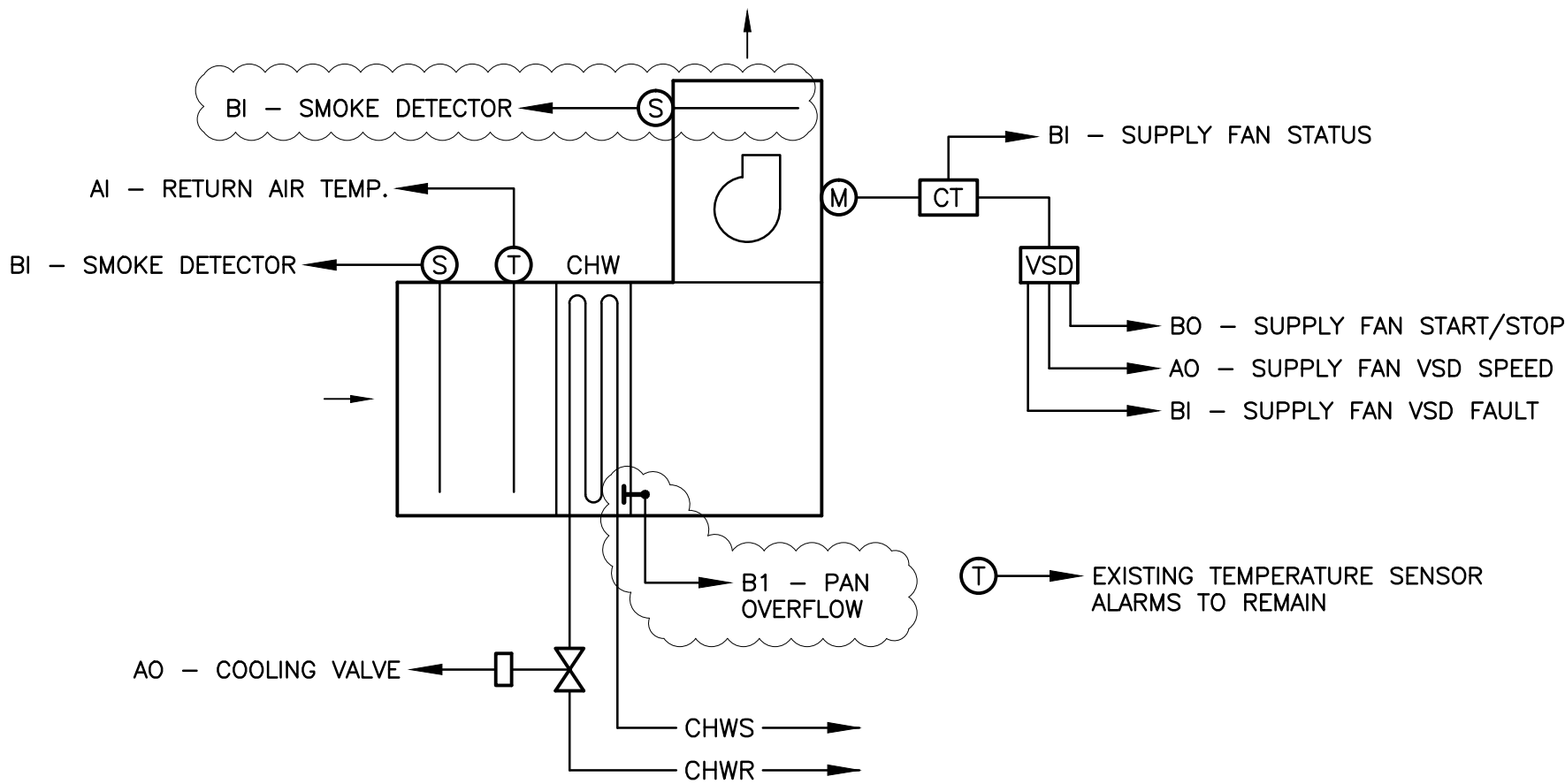
DUCTWORK SCHEDULE

GALVANIZED STEEL CONSTRUCTED IN ACCORDANCE WITH SMACNA AND ASHRAE STANDARDS. INSULATE SUPPLY AND RETURN AIR DUCTWORK WITH 1 1/2-INCH (R=4.2) FIBERGLASS WITH VAPOR BARRIER. EXPOSED DUCTWORK SHALL BE INSULATED WITH RIGID DUCT BOARD. DUCTWORK SIZES ON DRAWINGS ARE SHEETMETAL SIZES.



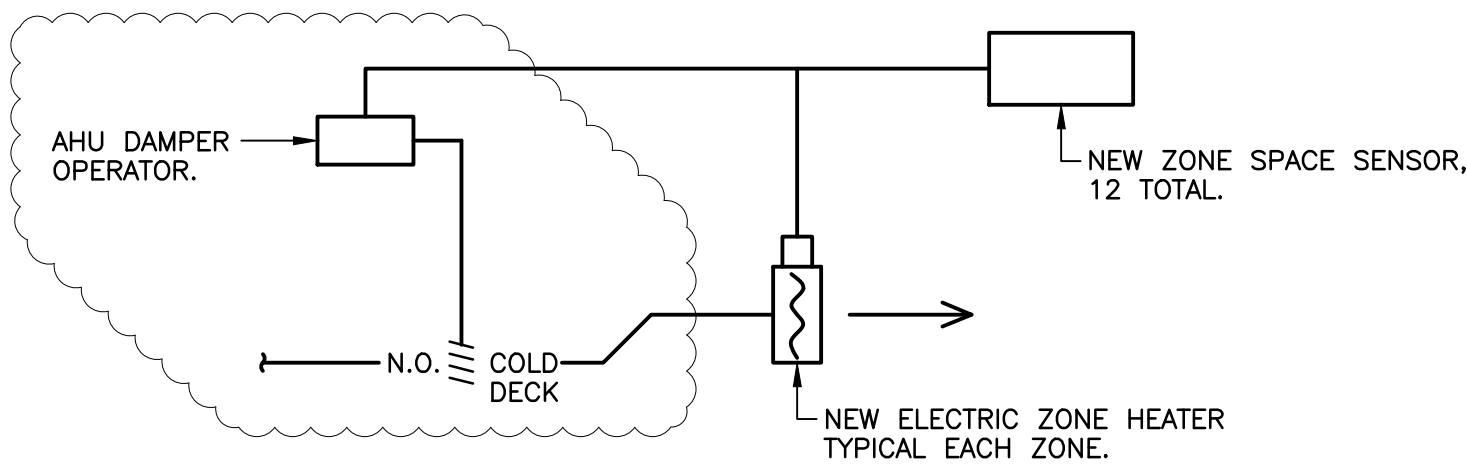
- NOTES:
- DIVISION 15 SHALL PROVIDE ALL CABLE AND CONDUIT FOR EMCS. ALL CABLE IN EQUIPMENT ROOM SHALL BE IN CONDUIT.
 - THE CONTROLS CONTRACTOR SHALL VERIFY DDC EQUIPMENT, AND THE APPLICATIONS FOR UTILIZATION, WITH UF FACILITIES SERVICES DEPARTMENT. THE NEW JOHNSON "METASYS" BASED SYSTEM SHALL INTERFACE WITH THE EXISTING JOHNSON CONTROL SYSTEMS.

EMCS CONTROL DIAGRAM
NO SCALE



AHU-1 CONTROL DIAGRAM
NO SCALE

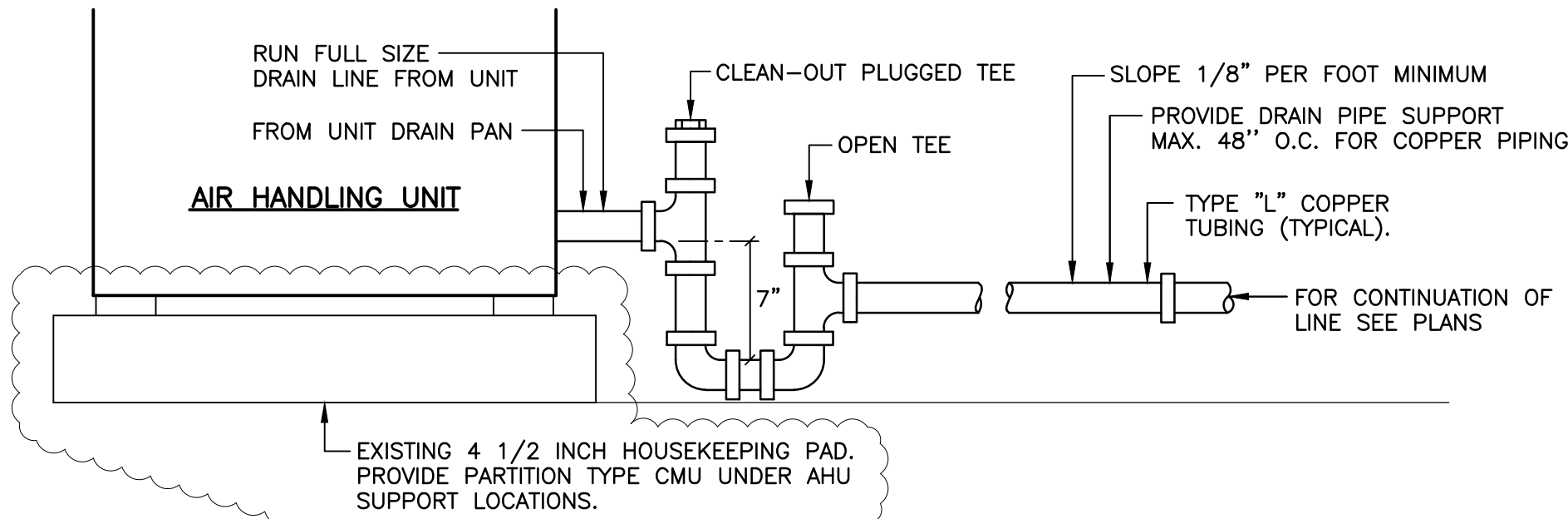
HVAC CONTROL POINT SCHEDULE											
	INPUTS					OUTPUTS			SYSTEM FEATURES		
	ANALOG		BINARY			BINARY		ANALOG	ALARMS		PROGRAMS
	CHW FLOW (GPM)	WATER TEMP	RETURN AIR TEMP	LEAVING AIR TEMP	ZONE TEMPERATURE	AHU STATIC PRESSURE	MIXED AIR HUMIDITY	WASH AIR TEMP			



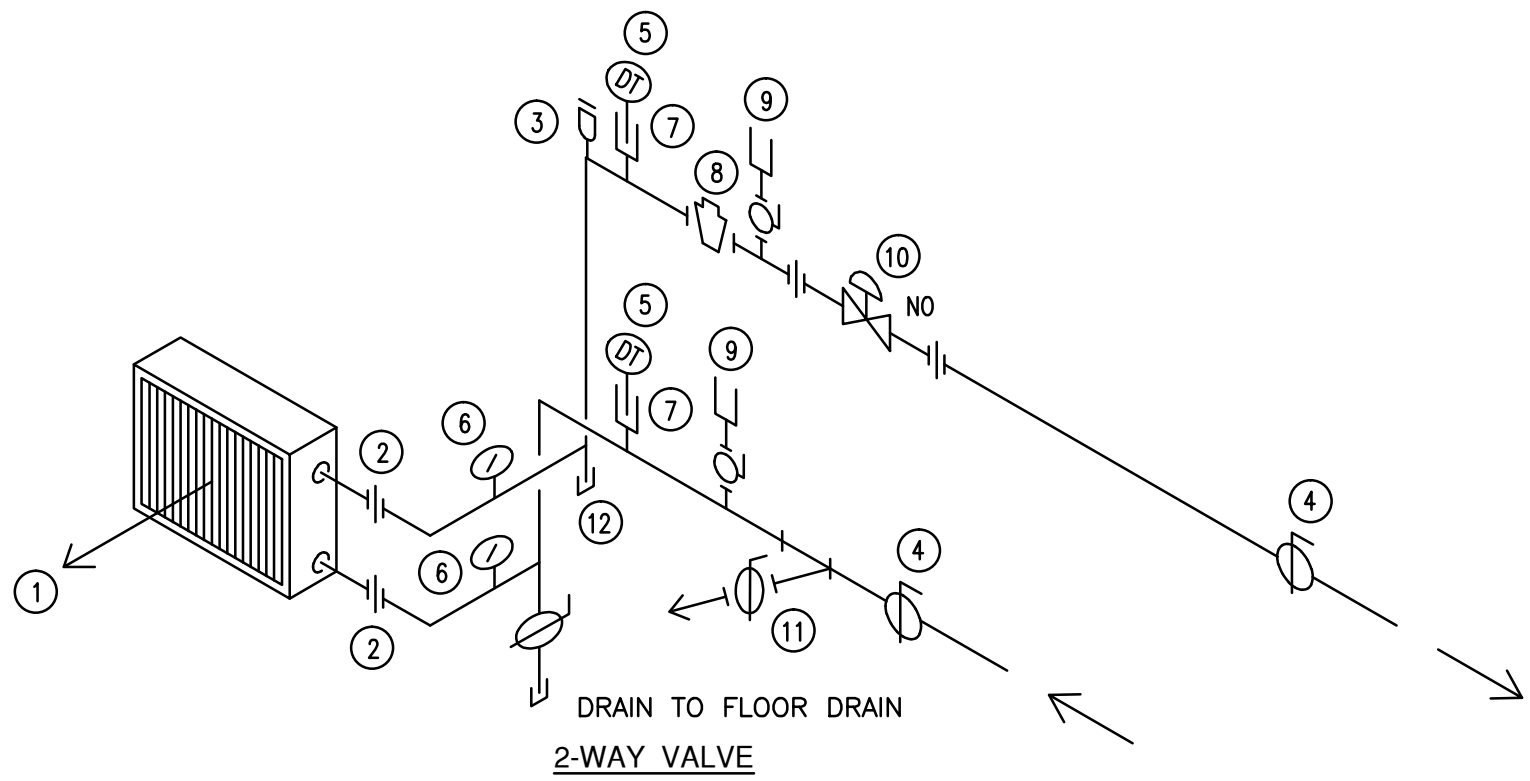
ZONE CONTROL: ROOM TEMPERATURE SENSOR WILL MODULATE ZONE DAMPER AND ELECTRIC DUCT HEATER IN SEQUENCE TO MAINTAIN ADJUSTABLE ZONE TEMPERATURE SETPOINT.

NOTE: EXISTING CONTROLS ARE JOHNSON. CONTROLS TO CAMPUS N-2 AT FIRST FLOOR MECHANICAL EQUIPMENT ROOM.

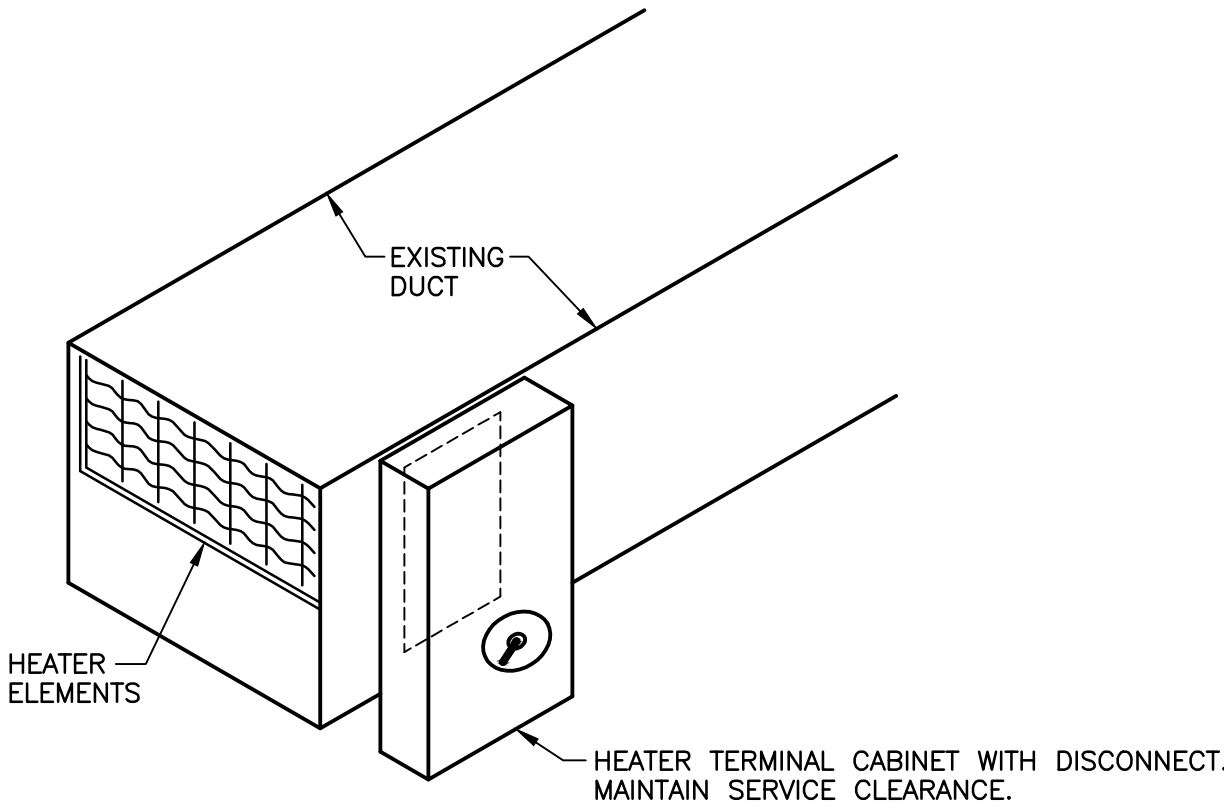
ZONE ELECTRIC HEATER CONTROL DIAGRAM
NOT TO SCALE



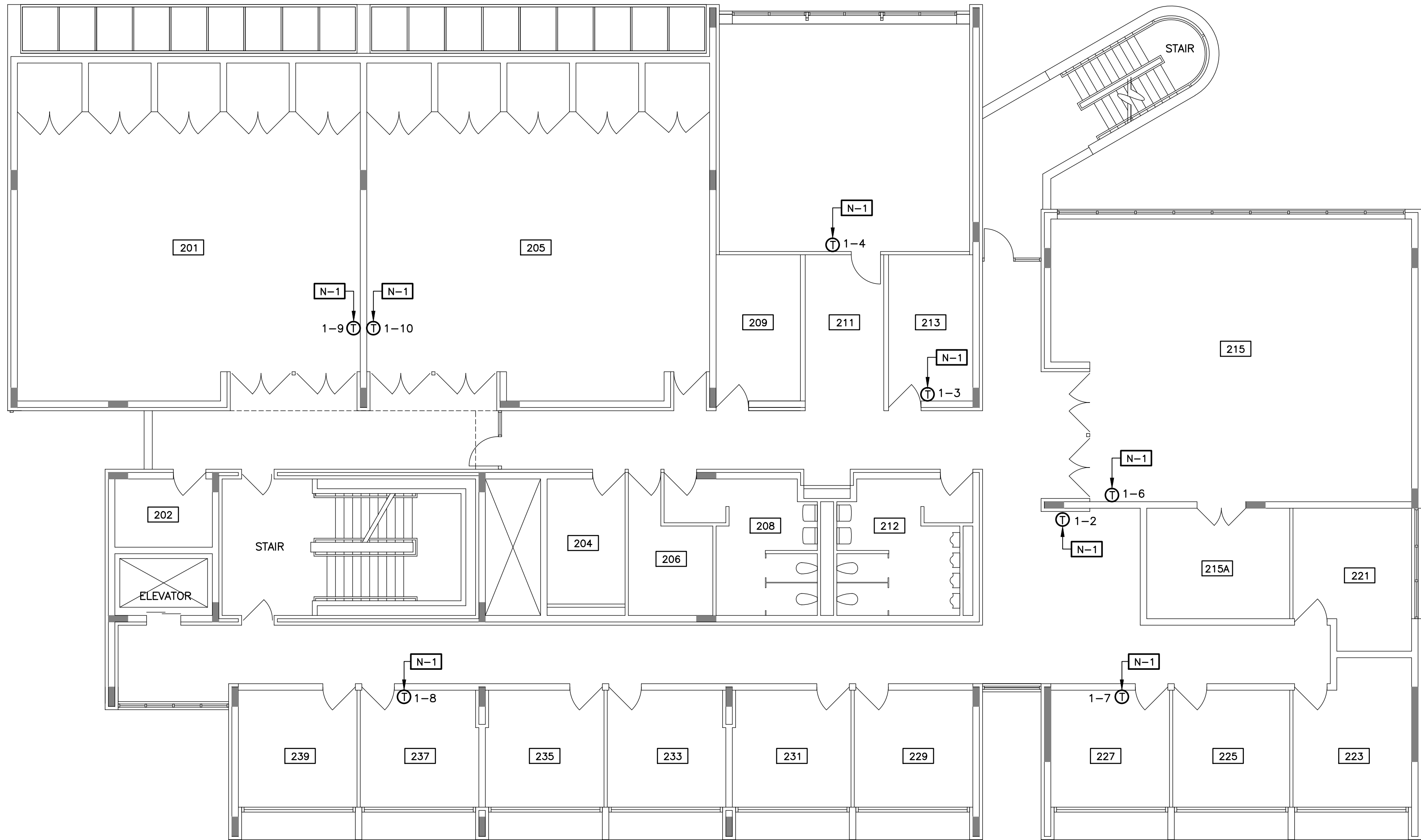
AIR HANDLING UNIT CONDENSATE DRAIN DETAIL
NO SCALE



AIR HANDLING UNIT PIPING DIAGRAM
NO SCALE



ELECTRIC DUCT MOUNTED HEATER DETAIL
NOT TO SCALE

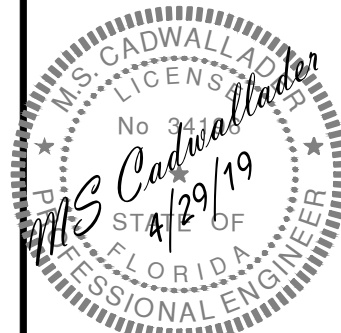
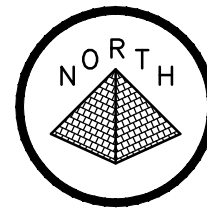


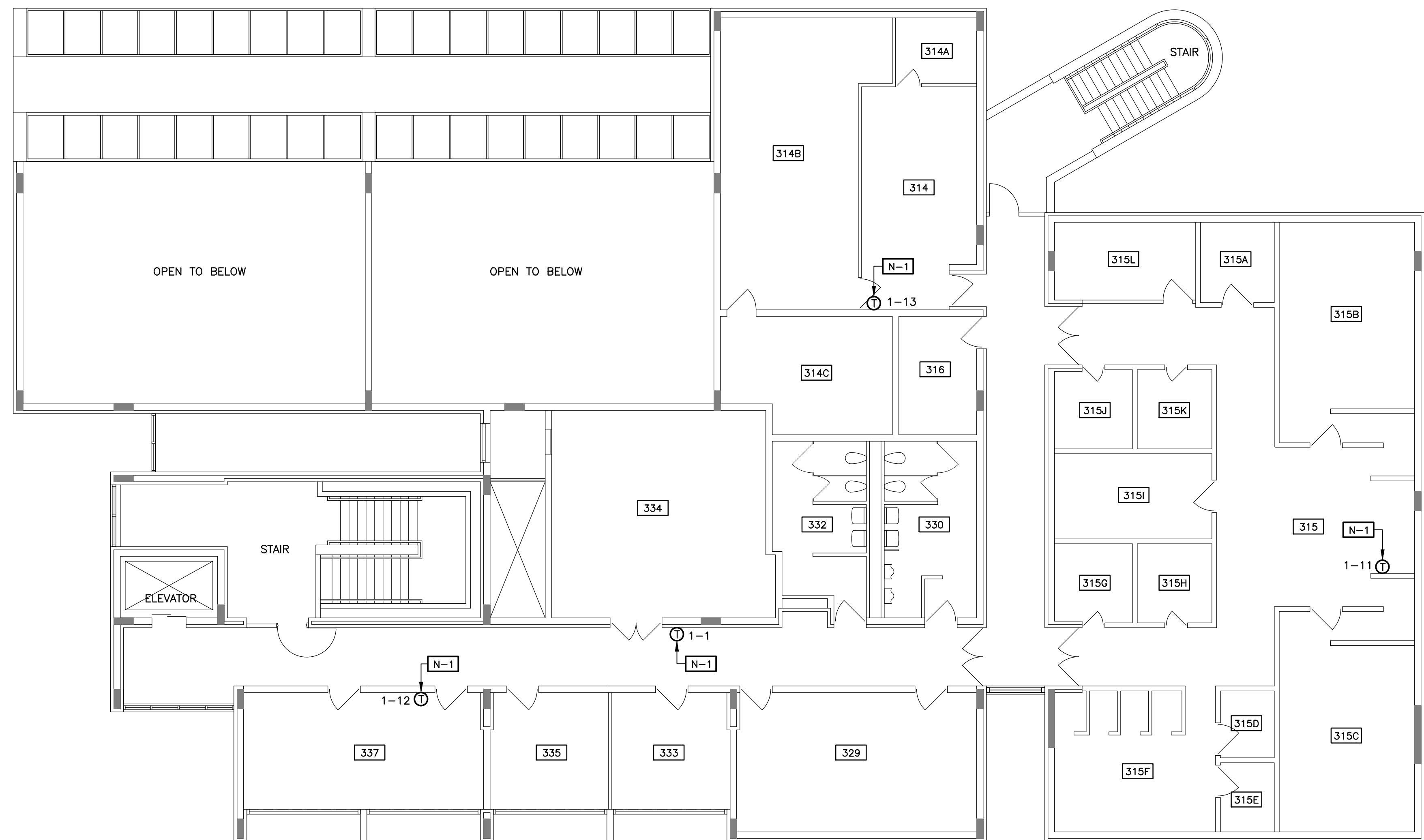
SECOND FLOOR HVAC PLAN

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

PLAN NOTES:

N-1 REPLACE PNEUMATIC THERMOSTATS WITH DIGITAL ZONE SENSORS.



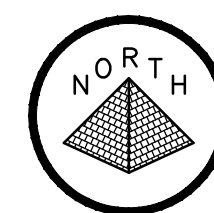


THIRD FLOOR HVAC PLAN

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

PLAN NOTES:

N-1 REPLACE PNEUMATIC THERMOSTATS WITH DIGITAL ZONE SENSORS.

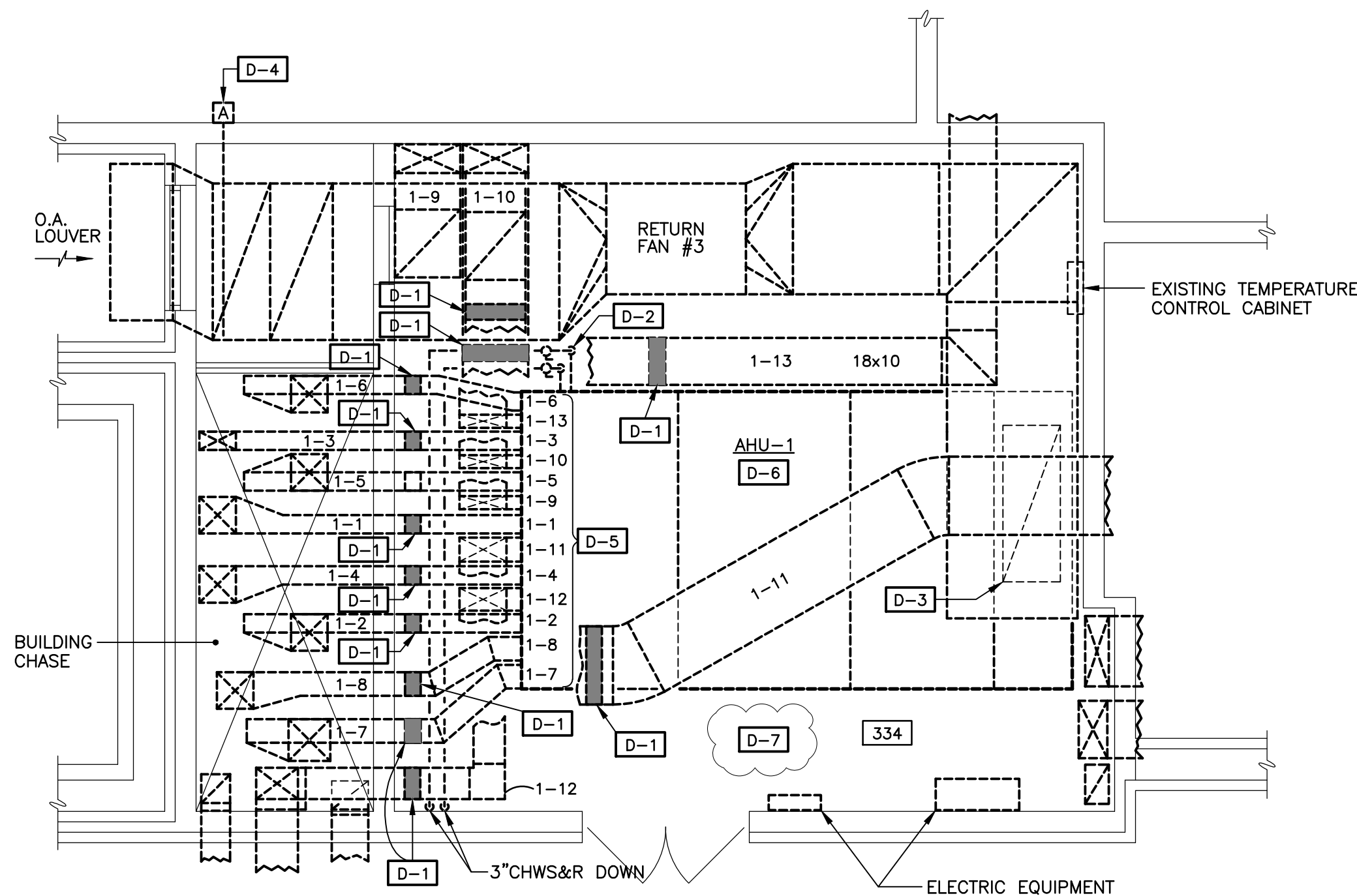


DATE:
4/29/19
DRAWN:
JRW
APPROVED:
MSC

1823

M-4

OF
SHEETS 5



THIRD FLOOR MECHANICAL ROOM 334 HVAC DEMOLITION PLAN

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

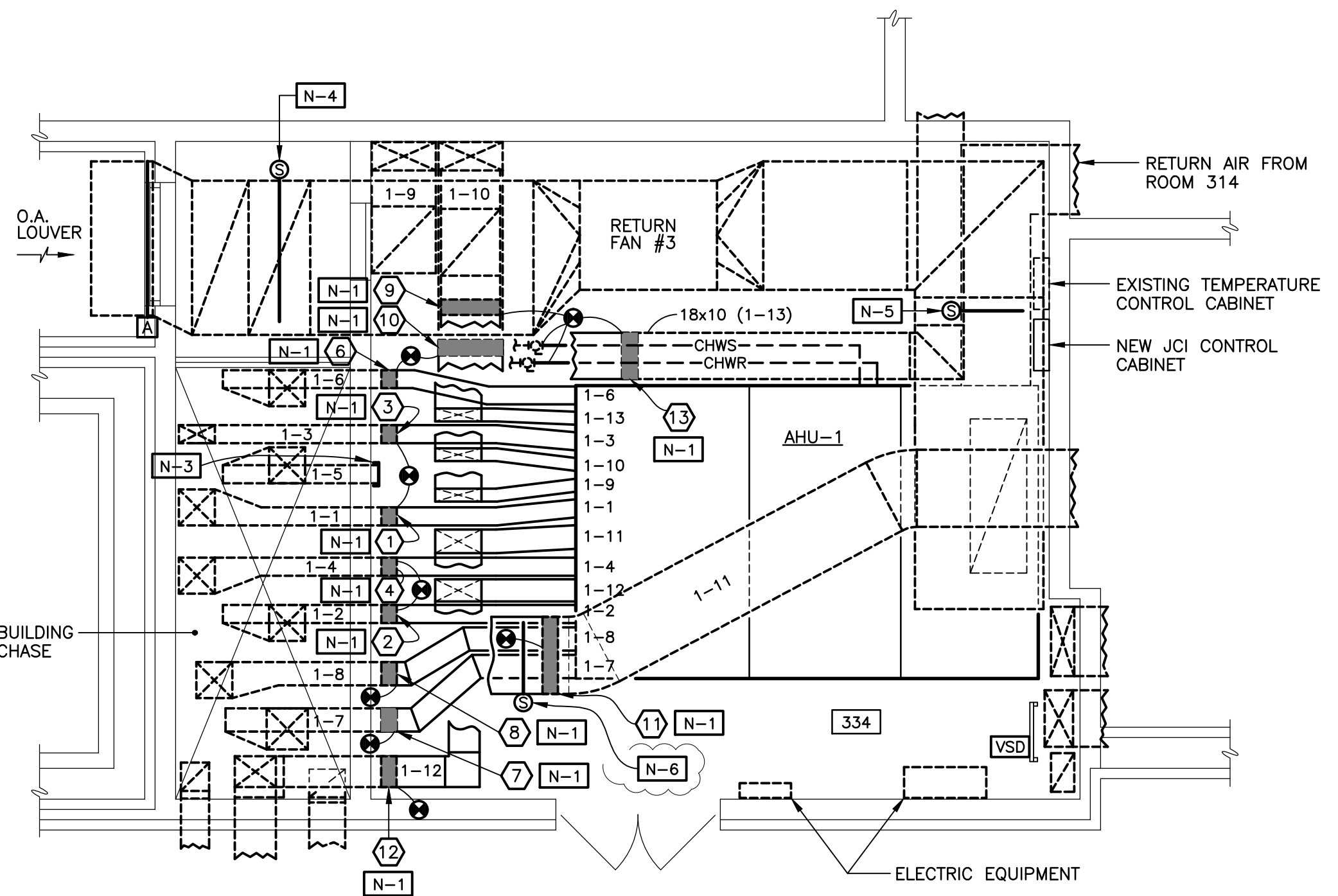
DEMOLITION NOTES:

- D-1** REMOVE ZONE ELECTRIC RESISTANCE DUCT MOUNTED HEATER AND MECHANICAL CONTROLS.
- D-2** REMOVE 3" CHWS&R PIPING, INSULATION, PIPING DEVICES FROM SHUT-OFF VALVES TO AHU-1 CHILLED WATER COIL.
- D-3** REMOVE RETURN AIR DUCTWORK DROP TO AHU-1 MIXING BOX.
- D-4** REMOVE PNEUMATIC CONTROLLED AUTOMATIC OUTSIDE AIR DAMPER AND CONTROLS.
- D-5** REMOVE ZONE SUPPLY AIR DUCTWORK, INSULATION FROM ZONE AHU DAMPERS UP TO ELECTRIC DUCT HEATER LOCATION.
- D-6** DISASSEMBLE AHU-1 IN SECTIONS AND REMOVE FROM SITE.
- D-7** PERFORM PRE TEST AND BALANCE REPORT. SUBMIT TO ENGINEER PRIOR TO DEMOLITION.

EXISTING AHU-1 ZONE SCHEDULE

ZONE #	EXISTING CFM	ROOM SERVED
1-1	1055	399
1-2	980	210
1-3	640	213
1-4	1225	211
1-5	0	---
1-6	1360	215
1-7	1395	227
1-8	1770	237
1-9	1450	201
1-10	1390	205
1-11	3050	315
1-12	2025	337
1-13	1150	314
TOTAL	17,490	---

- TESTING UNIT PRIOR TO AHU REPLACEMENT IS PART OF SCOPE.
- ZONE 5 IS CAPPED.

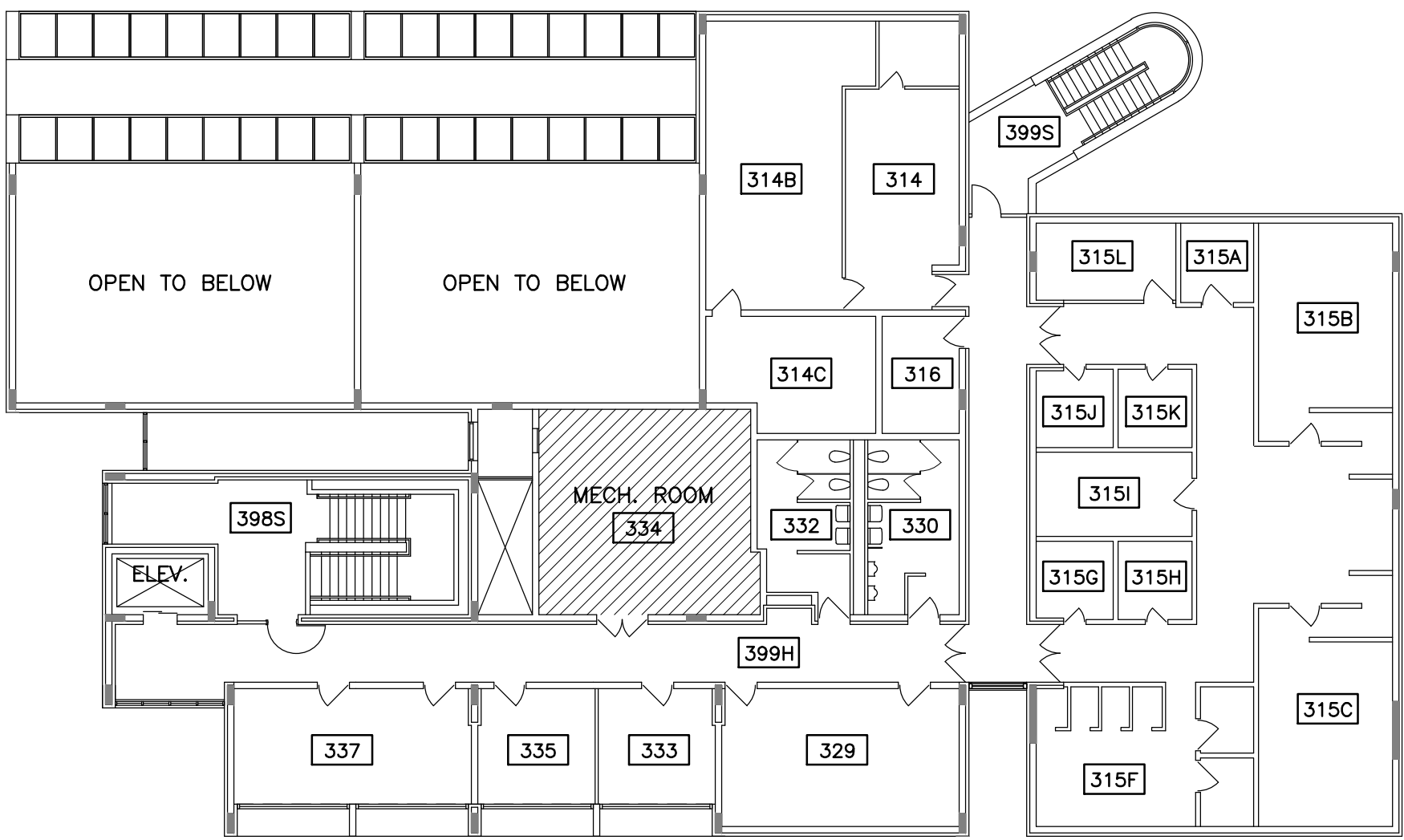


THIRD FLOOR MECHANICAL ROOM 334 HVAC PLAN

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

DRAWING NOTES:

- N-1** INSTALL NEW ZONE ELECTRIC HEATER IN EXISTING ZONE DUCTWORK. PATCH DUCTWORK AND REINSULATE ZONE DUCTWORK AS REQUIRED.
- N-2** DUCTWORK PENETRATIONS OF BUILDING CHASE ARE PROTECTED BY FIRE DAMPERS.
- N-3** CAP ZONE 1-5. REMOVE DUCTWORK TO AHU-1.
- N-4** INSTALL DUCT MOUNTED SMOKE DETECTOR IN RETURN AIR RISER IN DUCT CHASE PRIOR TO OUTDOOR AIR MIXING.
- N-5** INSTALL DUCT MOUNTED SMOKE DETECTOR IN RETURN AIR DUCT SERVING ROOM 314.
- N-6** INSTALL DUCT MOUNTED SMOKE DETECTOR IN SUPPLY AIR DUCT.

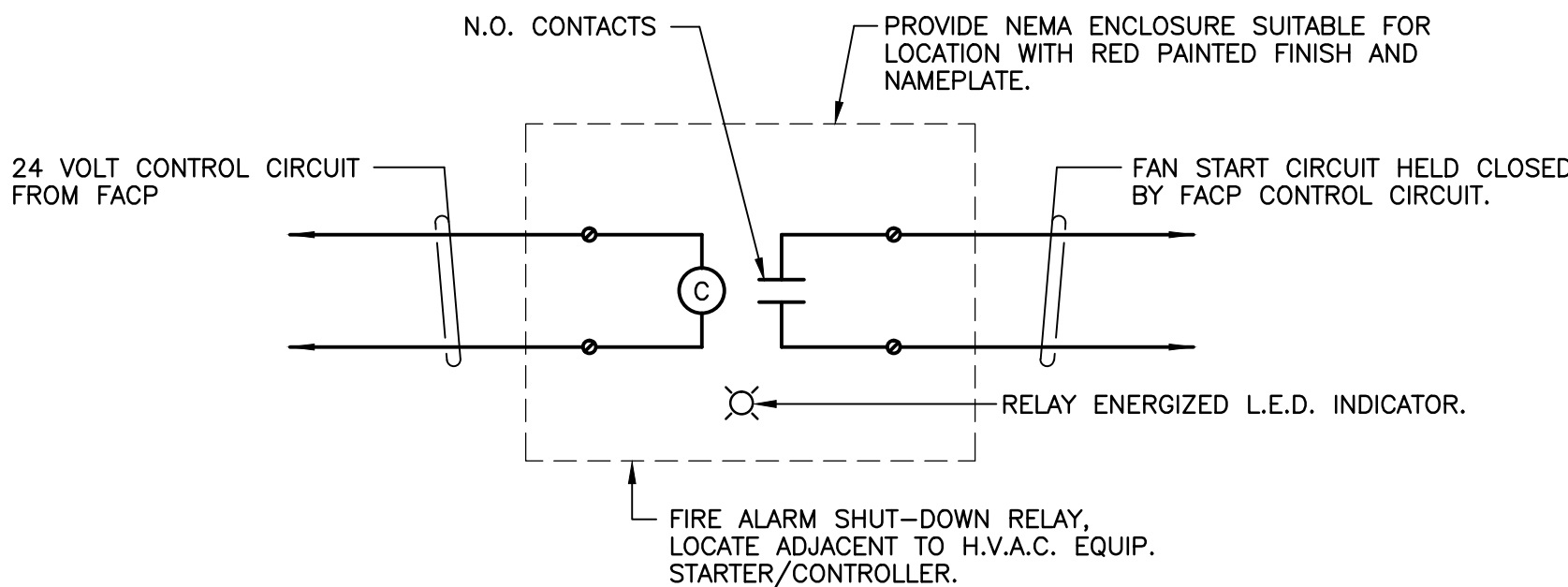


KEY PLAN - THIRD FLOOR

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

GENERAL NOTES

- ELECTRICAL WORK SHALL COMPLY WITH ALL APPLICABLE CODES AS ENFORCED BY THE AUTHORITIES HAVING JURISDICTION, INCLUDING (BUT NOT LIMITED TO):
2017 FLORIDA BUILDING CODE, SIXTH EDITION.
2018 FLORIDA FIRE PREVENTION CODE, SIXTH EDITION.
2014 NFPA 70 NATIONAL ELECTRICAL CODE.
2013 NFPA 72 NATIONAL FIRE ALARM CODE.
2018 UF DESIGN AND CONSTRUCTION STANDARDS
- ALL NEW ELECTRICAL EQUIPMENT AND DEVICES SHALL BE UL LISTED.
- COMPLY WITH UF EH&S HOT WORK SAFETY POLICY: SEE http://www.efs.ufi.edu/programs/os/hotwork/uf_hot_work_permit_form: SEE http://www.efs.ufi.edu/hotwork_permit.pdf
- PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE ELECTRICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
- COORDINATE ALL WORK WITH APPROVED SHOP DRAWINGS AND MANUFACTURERS' RECOMMENDATIONS. COORDINATE WORK WITH OTHER TRADES.
- PROVIDE ALL MOUNTING HARDWARE AND SUPPORTS AS REQUIRED.
- CONTRACT DOCUMENT DRAWINGS FOR ELECTRICAL WORK ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
- PRIOR TO BID THE CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING EXISTING SITE CONDITIONS AND REPORTING TO THE ENGINEER ANY CONDITION THAT WILL PROHIBIT, ADD TO, OR REQUIRE MODIFICATION OF, THE WORK INDICATED ON THE CONSTRUCTION DOCUMENTS. BID SHALL ACCOUNT FOR WORK DIFFICULTIES RELATED TO EXISTING SITE CONDITIONS.
- EXISTING ELECTRICAL ITEMS NOT INTENDED FOR REMOVAL SHALL BE MAINTAINED IN PRESENT CONDITION AND STATE OF OPERATION THROUGH-OUT CONSTRUCTION. ANY DISRUPTION OF OPERATION REQUIRED FOR INSTALLATION OF NEW WORK SHALL BE PLANNED TO BE BRIEF AS POSSIBLE AND ARRANGED AT LEAST TWO WEEKS IN ADVANCE WITH THE OWNER.
- PERFORM COMPLETE DEMOLITION OF EXISTING ELECTRICAL ITEMS AS INDICATED. RE-USE ITEMS ONLY AS DIRECTED ON DRAWINGS OR BY OWNER. REMOVE ALL ABANDONED WIRING. SEAL UP ALL UNUSED OPENINGS IN WALLS, FLOORS AND ELECTRICAL EQUIPMENT AS REQUIRED.
- SEAL RACEWAY PENETRATIONS THROUGH FIRE RATED WALLS AND FLOORS WITH METACAULK FIRESTOPPING SYSTEM, MATCH EXISTING STRUCTURE FIRE RATING.
- ALL ELECTRICAL EQUIPMENT, DEVICES, WIRING, RACEWAY, ETC., SHOWN ON PLANS SHALL BE NEW UNLESS NOTED OTHERWISE.
- DASHED LINES DENOTE EXISTING ITEMS.
- POWER CONDUCTORS SHALL BE COPPER WITH 90°C THHN/THWN-2 INSULATION, #12 AWG MINIMUM AND BE ENCLOSED IN METAL RACEWAY. TIC MARKS ALONG RACEWAYS INDICATE NEUTRAL (LONG MARKS) AND PHASE (SHORT MARK) CONDUCTORS WHEN MORE THAN 1 OF EITHER ARE PRESENT. PROVIDE GROUND WIRE IN ALL POWER RACEWAYS (NOT SHOWN).
- PROVIDE SEPARATE NEUTRAL FOR ALL 120V. AND 277V. CIRCUITS. NEUTRAL SHALL BE IDENTIFIED BY ASSOCIATED CIRCUIT NUMBER AT ALL TERMINATIONS, SPLICES AND WITHIN ALL JUNCTION/OUTLET BOXES.
- LABEL ALL POWER RACEWAYS WITH VOLTAGE, PANEL NAME AND CIRCUIT NUMBER AT 10' INTERVALS. LABEL ALL DISCONNECT SWITCHES WITH EQUIPMENT SERVED, VOLTAGE, PANEL/SWITCHBOARD NAME AND CIRCUIT NUMBER. TAG ALL POWER WIRES AT JUNCTION BOXES AND AT ALL TERMINATIONS WITH PANEL/SWITCHBOARD NAME AND CIRCUIT NUMBER.
- ALL NEW RACEWAY/WIRING SHALL BE CONCEALED IN WALL AND/OR CEILING WHEREVER PRACTICAL IN FINISHED AREAS.
- FINAL CONNECTIONS TO MECHANICAL OR MOTORIZED EQUIPMENT SHALL BE LIQUIDTIGHT FLEXIBLE METAL CONDUIT.
- REFER TO MECHANICAL DRAWINGS AND SUBMITTALS PRIOR TO ROUGH-IN FOR LOCATIONS OF EQUIPMENT AND EQUIPMENT CONNECTION DETAILS.
- UPDATE EXISTING PANEL DIRECTORIES TO REFLECT BRANCH CIRCUIT REVISIONS.
- PROVIDE NEW FIRE ALARM WIRING PER MANUFACTURERS RECOMMENDATIONS AND ENCLOSED IN METAL RACEWAY. MATCH EXISTING WIRING COLOR CODE.
- PAINT FIRE ALARM JUNCTION BOXES AND RACEWAY RED.
- THE NEW DUCT SMOKE DETECTORS SHALL NOT INITIATE A BUILDING-WIDE ALARM WHEN ACTIVATED. THEY SHALL PERFORM A SHUT DOWN OF THE ASSOCIATED HVAC AIR HANDLER UNIT AND INITIATE AN AUDIBLE AND VISUAL TROUBLE SIGNAL AT THE FACP. THIS SIGNAL SHALL ALSO BE SENT TO UFPD.
- PROVIDE PRODUCT SUBMITTALS FOR ALL ELECTRICAL EQUIPMENT AND MATERIALS TO ENGINEER FOR REVIEW.
- PROVIDE OPERATION AND MAINTENANCE MANUALS AT PROJECT CLOSE OUT PRIOR TO FINAL INSPECTION. INCLUDE WIRING DIAGRAMS, CONTROL DIAGRAMS, WARRANTIES, ETC. PROVIDE ONE PAPER COPY O&M'S AND ELECTRONIC MEDIA.
- MAINTAIN AND SUBMIT RECORD DRAWINGS OF AS-BUILT CONDITIONS.
- THE CONTRACTOR SHALL GUARANTEE ALL MATERIALS, EQUIPMENT AND WORKMANSHIP AGAINST DEFECTS FOR ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE AND SHALL CORRECT ANY DEFECTS AT NO ADDITIONAL COST TO THE OWNER.
- ALL FUSED DISCONNECT SWITCHES SHALL HAVE SPARE FUSES. PROVIDE CONTAINER MARKED "SPARE FUSES" AND MOUNT ADJACENT TO DISCONNECT SWITCH.



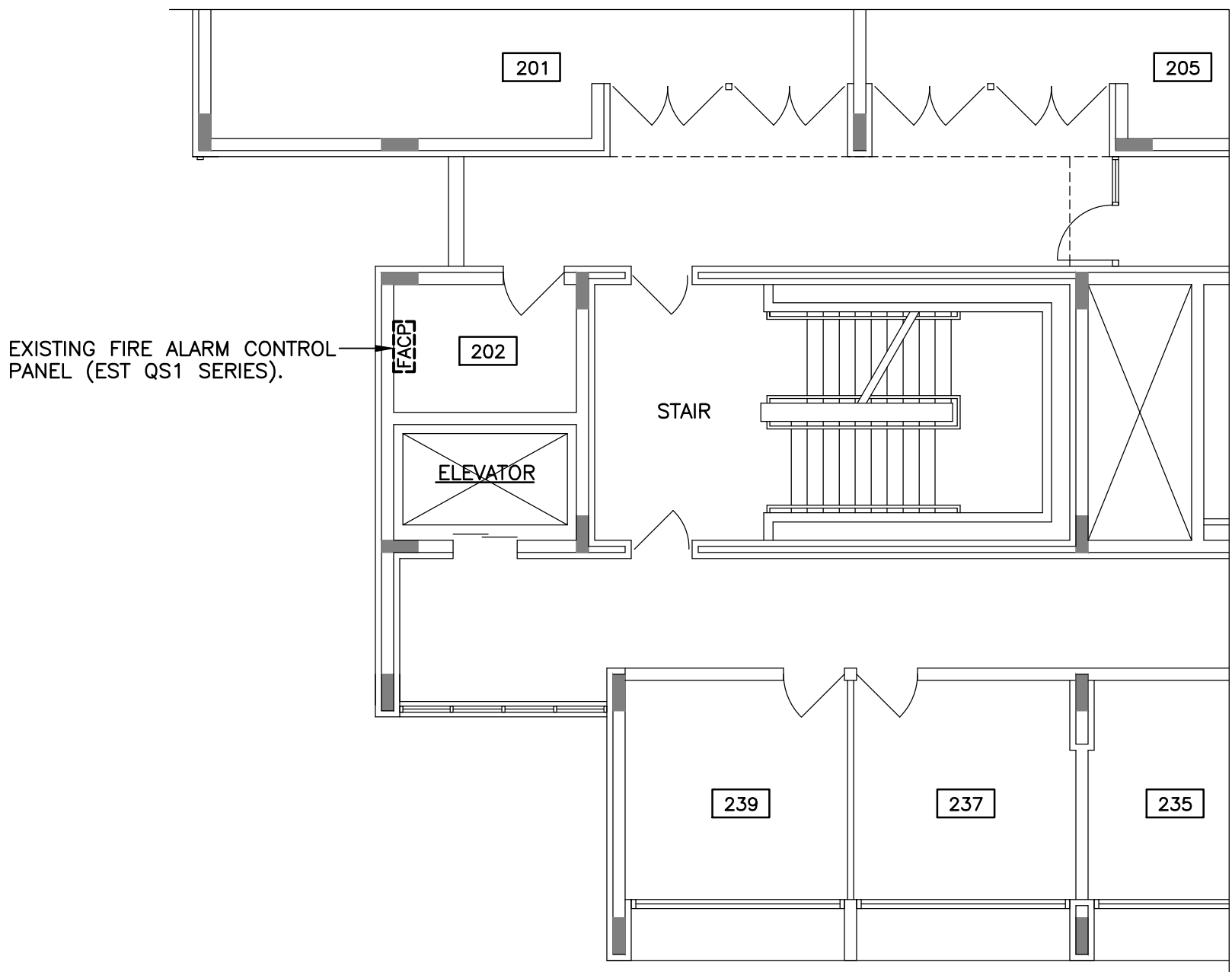
FIRE ALARM SHUT-DOWN RELAY SCHEMATIC
NOT TO SCALE

LEGEND

- BRANCH CIRCUIT OR FEEDER HOME-RUN TO SOURCE INDICATED
- RACEWAY
- LIQUIDTIGHT FLEXIBLE METAL CONDUIT
- HEAVY DUTY DISCONNECT SWITCH. LARGE # DENOTES POLES. TOP # DENOTES AMP RATING / BOTTOM # DENOTES FUSE RATING - "NF" DENOTES NON-FUSED. MANUFACTURERS: SQUARE D, GENERAL ELECTRIC, SIEMENS, CUTLER HAMMER. ALL FUSED DISCONNECT SWITCHES SHALL HAVE SPARE FUSES. PROVIDE CONTAINER MARKED "SPARE FUSES" AND MOUNT ADJACENT TO DISCONNECT SWITCH.
- VARIABLE SPEED DRIVE FURNISHED BY HVAC CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.
- JUNCTION BOX
- MOTOR CONNECTION
- ELECTRICAL CONNECTION.
- DUCT MOUNTED SMOKE DETECTOR; DUCT SENSOR HOUSING; SAMPLING TUBE. MATCH EXISTING DEVICES.
- FIRE ALARM CONTROL RELAY.
- REMOTE MOUNTED DUCT SMOKE DETECTOR TEST STATION WITH KEY SWITCH AND RED LED ALARM INDICATOR. PROVIDE SINGLE GANG STAINLESS STEEL STEEL COVERPLATE AND LABEL. MOUNT IN ACCESSIBLE LOCATION.
- FIRE ALARM HORN/STROBE UNIT - A.D.A. COMPLIANT; ENTIRE STROBE LENS SHALL NOT BE LESS THAN 80" A.F.F. AND NOT GREATER THAN 96" A.F.F.; 75CD INDICATES CANDELA RATING. MATCH EXISTING DEVICES. PROVIDE BOX AND ADAPTER PLATE ACCESSORIES FOR SURFACE MOUNTING.
- EXISTING FIRE ALARM CONTROL PANEL TO REMAIN. MANUF. BY EST (QS1 SERIES) PROVIDE NEW COMPONENTS AS REQUIRED TO ACCOMMODATE NEW DEVICES. PROVIDE WIRING TO NEW DEVICES PER MANUFACTURERS RECOMMENDATIONS.
- PLAN NOTE REFERENCE

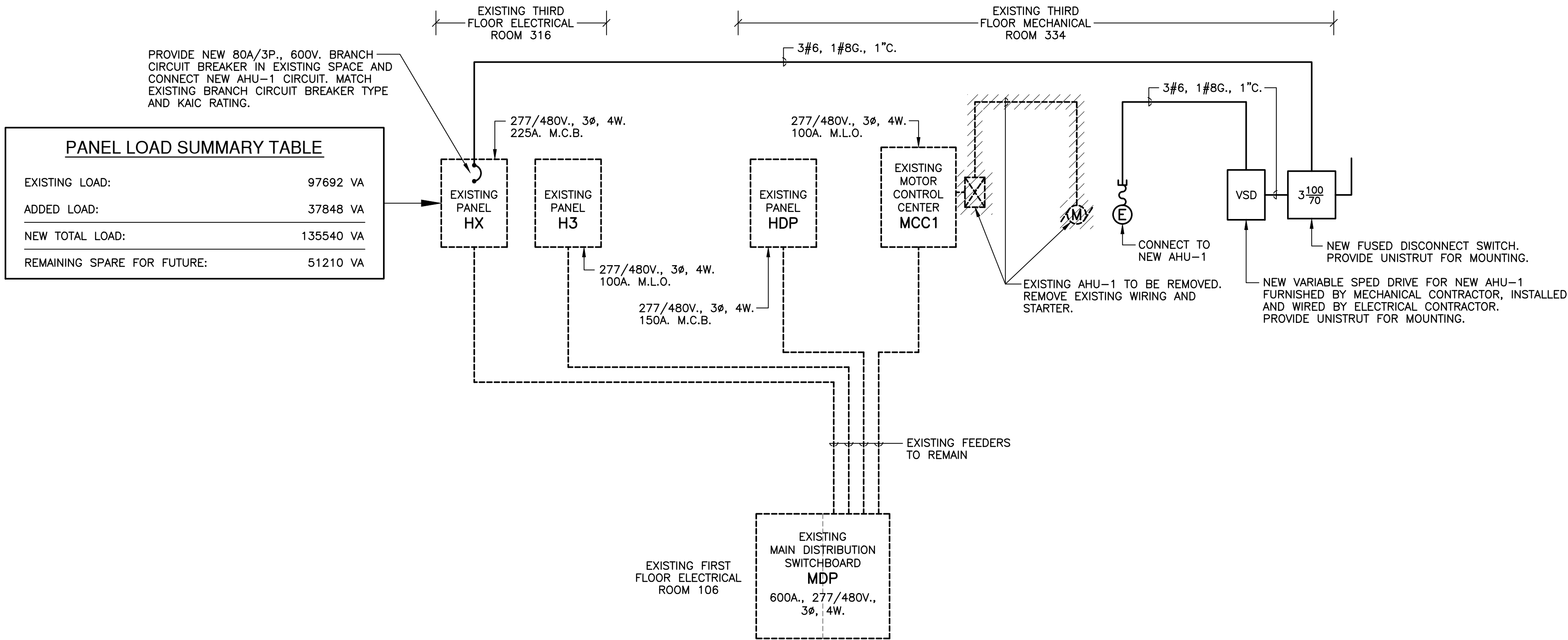
ABBREVIATIONS

- | | | | |
|---------|---|--------|------------------------------------|
| A. | - AMPERES | KAIC | - KILOAMPERE INTERRUPTING CAPACITY |
| BKR. | - BREAKER | KVA | - KILOVOLT-AMPERES |
| C. | - CONDUIT | M.C.B. | - MAIN CIRCUIT BREAKER |
| CKT. | - CIRCUIT | M.L.O. | - MAIN LUGS ONLY |
| EF | - EXHAUST FAN | N. | - NEUTRAL |
| FACP | - FIRE ALARM CONTROL PANEL | N.E.C. | - NATIONAL ELECTRICAL CODE |
| G./GND. | - GROUND | Ø | - PHASE |
| HVAC | - HEATING, VENTILATING & AIR CONDITIONING | P. | - POLE |
| HP | - HORSEPOWER | V. | - VOLTS |
| | | VA | - VOLT-AMPERES |



PARTIAL SECOND FLOOR ELECTRICAL PLAN

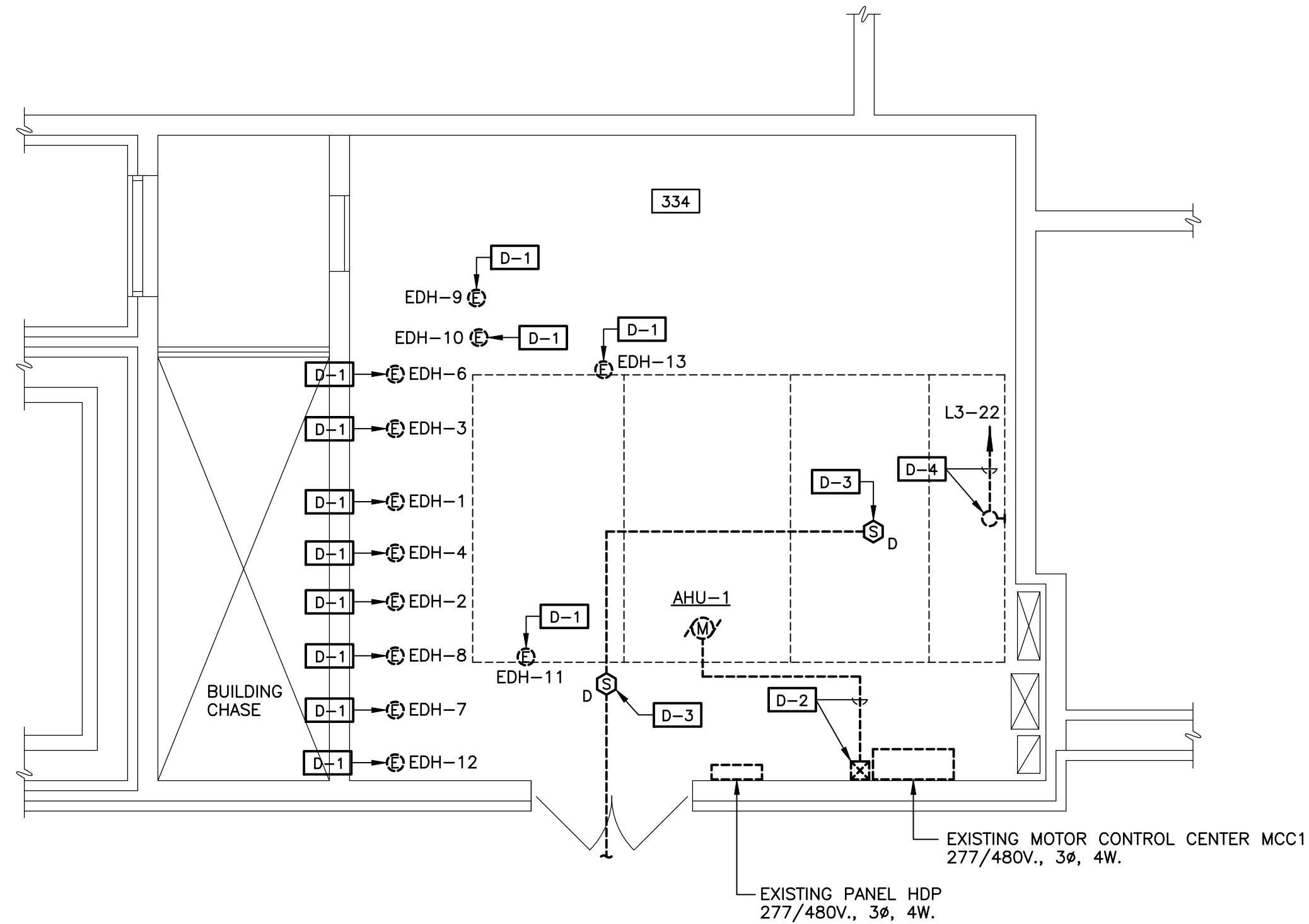
SCALE: 1/8" = 1'-0"



PARTIAL EXISTING POWER ONE-LINE DIAGRAM

NOT TO SCALE

CONSTRUCTION DOCUMENTS



THIRD FLOOR MECHANICAL ROOM 334

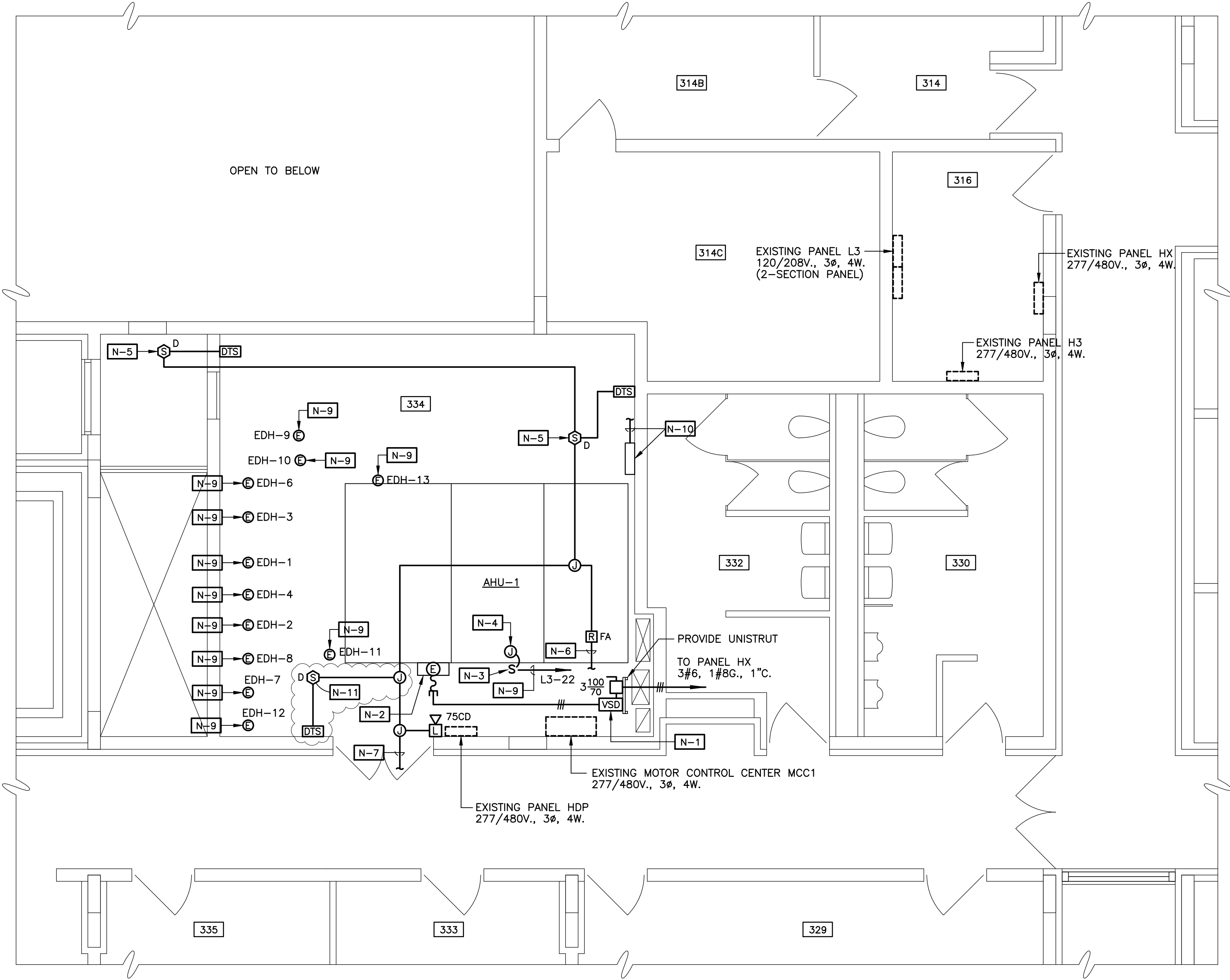
ELECTRICAL DEMOLITION PLAN

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

DEMOLITION NOTES:

- D-1** EXISTING 480V., 3Ø ELECTRIC DUCT HEATERS TO BE REPLACED WITH NEW ELECTRIC DUCT HEATERS. DISCONNECT EXISTING DUCT HEATERS AND RECONNECT EXISTING CIRCUITS TO NEW DUCT HEATERS AS REQUIRED. DISCONNECT SWITCHES ARE FURNISHED WITH DUCT HEATERS. EXISTING CIRCUITS LISTED BELOW:

EDH-1 SERVED BY PANEL HDP, CIRCUITS 1,3,5 (15A/3P)
EDH-3 SERVED BY PANEL HDP, CIRCUITS 7,9,11 (15A/3P)
EDH-6 SERVED BY PANEL HDP, CIRCUITS 13,15,17 (15A/3P)
EDH-8 SERVED BY PANEL HDP, CIRCUITS 19,21,23 (20A/3P)
EDH-10 SERVED BY PANEL HDP, CIRCUITS 25,27,29 (15A/3P)
EDH-12 SERVED BY PANEL HDP, CIRCUITS 31,33,35 (20A/3P)
- EDH-2 SERVED BY PANEL HDP, CIRCUITS 2,4,6 (15A/3P)
EDH-4 SERVED BY PANEL HDP, CIRCUITS 8,10,12 (15A/3P)
EDH-7 SERVED BY PANEL HDP, CIRCUITS 14,16,18 (15A/3P)
EDH-9 SERVED BY PANEL HDP, CIRCUITS 20,22,24 (15A/3P)
EDH-11 SERVED BY PANEL HDP, CIRCUITS 26,28,30 (25A/3P)
EDH-13 SERVED BY PANEL HDP, CIRCUITS 32,34,36 (15A/3P)
- D-2** REMOVE EXISTING AIR HANDLING UNIT AHU-1 STARTER AND WIRING BACK TO MCC1.
- D-3** REMOVE EXISTING DUCT SMOKE DETECTORS AND WIRING. PROVIDE NEW DUCT SMOKE DETECTOR AND WIRING AS INDICATED ON NEW ELECTRICAL PLAN. THE EXISTING FIRE ALARM CONTROL PANEL (EST QS1 SERIES) IS LOCATED IN SECOND FLOOR ROOM 202, SEE PARTIAL SECOND FLOOR ELECTRICAL PLAN ON SHEET E-1.
- D-4** DISCONNECT EXISTING AHU-1 LIGHT, REUSE EXISTING 120V. CIRCUIT (L3-22) FOR NEW AHU-1 UV LIGHT AS SHOWN ON NEW PLAN.



PARTIAL THIRD FLOOR ELECTRICAL PLAN

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

PLAN NOTES:

- N-1** NEW VARIABLE SPEED DRIVE FURNISHED BY HVAC CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO PROVIDE CLOSED-LOOP CRIMP TYPE TERMINATIONS FOR VARIABLE SPEED DRIVE POWER CONNECTIONS PER MANUFACTURER'S RECOMMENDATIONS AND SHOP DRAWINGS.
- N-2** PANEL FURNISHED WITH AIR HANDLING UNIT CONTAINING MOTOR OVERLOAD PROTECTION AND DISCONNECTS FOR EACH AIR HANDLING UNIT FAN.
- N-3** NEW TOGGLE SWITCH FOR UV LIGHTS FURNISHED WITH AHU UNIT. ELECTRICAL CONTRACTOR TO MOUNT AND CONNECT PER MANUFACTURER RECOMMENDATIONS.
- N-4** NEW JUNCTION BOX FOR UV LIGHTS FURNISHED WITH AHU UNIT. ELECTRICAL CONTRACTOR TO CONNECT AS REQUIRED.
- N-5** MOUNT IN AIR HANDLING UNIT AHU-1 RETURN AIR DUCT, COORDINATE LOCATION WITH HVAC CONTRACTOR.
- N-6** TO AHU-1 CONTROLS FOR DUCT SMOKE DETECTOR SHUT-DOWN OF HVAC UNIT.
- N-7** CONNECT TO EXISTING FIRE ALARM SYSTEM AS REQUIRED. THE EXISTING FIRE ALARM CONTROL PANEL (EST QS1 SERIES) IS LOCATED IN SECOND FLOOR ROOM 202, SEE PARTIAL SECOND FLOOR ELECTRICAL PLAN ON SHEET E-1.
- N-8** EXISTING 480V., 3Ø ELECTRIC DUCT HEATERS TO BE REPLACED WITH NEW ELECTRIC DUCT HEATERS. DISCONNECT EXISTING DUCT HEATERS AND RECONNECT EXISTING CIRCUITS TO NEW DUCT HEATERS AS REQUIRED. NEW DISCONNECT SWITCHES ARE FURNISHED WITH NEW DUCT HEATERS. EXISTING CIRCUITS LISTED BELOW:

EDH-1 SERVED BY PANEL HDP, CIRCUITS 1,3,5 (15A/3P)
EDH-3 SERVED BY PANEL HDP, CIRCUITS 7,9,11 (15A/3P)
EDH-6 SERVED BY PANEL HDP, CIRCUITS 13,15,17 (15A/3P)
EDH-8 SERVED BY PANEL HDP, CIRCUITS 19,21,23 (20A/3P)
EDH-10 SERVED BY PANEL HDP, CIRCUITS 25,27,29 (15A/3P)
EDH-12 SERVED BY PANEL HDP, CIRCUITS 31,33,35 (20A/3P)

EDH-2 SERVED BY PANEL HDP, CIRCUITS 2,4,6 (15A/3P)
EDH-4 SERVED BY PANEL HDP, CIRCUITS 8,10,12 (15A/3P)
EDH-7 SERVED BY PANEL HDP, CIRCUITS 14,16,18 (15A/3P)
EDH-9 SERVED BY PANEL HDP, CIRCUITS 20,22,24 (15A/3P)
EDH-11 SERVED BY PANEL HDP, CIRCUITS 26,28,30 (25A/3P)
EDH-13 SERVED BY PANEL HDP, CIRCUITS 32,34,36 (15A/3P)
- N-9** REUSE EXISTING AHU-1 120V. LIGHT CIRCUIT (L3-22) FOR NEW AHU-1 UV LIGHTS AS REQUIRED.
- N-10** NEW TEMPERATURE CONTROL PANEL BY HVAC CONTRACTOR. CONNECT TO EXISTING 120V. HVAC CONTROLS CIRCUIT AS REQUIRED.
- N-11** MOUNT IN AIR HANDLING UNIT AHU-1 SUPPLY AIR DUCT, COORDINATE LOCATION WITH HVAC CONTRACTOR.