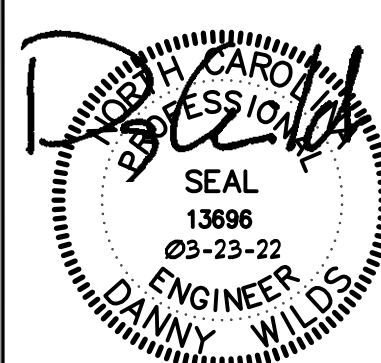


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**SCHNEIDER ELECTRIC ENERGY SERVICES PROJECT
FOR
BRUNSWICK COUNTY SCHOOL DISTRICT**

**WEST BRUNSWICK HIGH SCHOOL
550 WHITEVILLE ROD NW
SHALLOTTE, NC 28470**

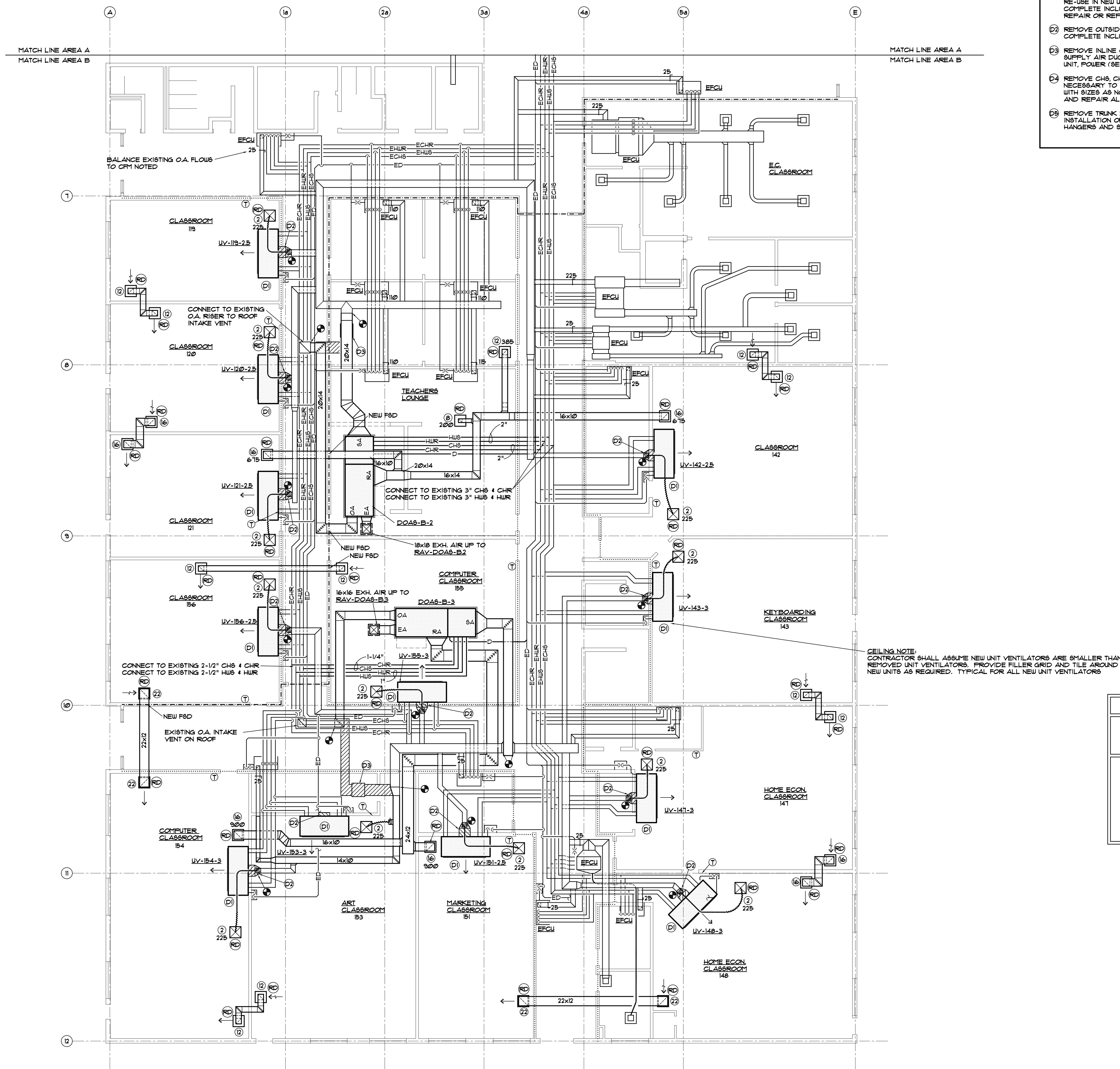
PROJECT TITLE
PARTIAL HVAC FLOOR PLAN
AERA 'B' - ECM-3-1A

[illegible]

SHEET NUMBER

M102

SHT. OF



DEMOLITION NOTES

- ① REMOVE HORIZONTAL, CEILING MOUNTED CLASSROOM VENTILATOR COMPLETE INCLUDING CHILLED WATER AND HOT WATER RUNOUTS, POWER (SEE ELECTRICAL) TEMPERATURE CONTROLS AND HANGER SUPPORTS. REMOVE EXISTING CONDENSATE PUMPS, CONDENSATE PIPING AND RE-USE IN NEW UNIT VENTILATORS. REMOVE CONDENSATE PUMPS COMPLETE INCLUDING INLET PIPING AND POWER (SEE ELECTRICAL). REPAIR OR REPLACE MOUNTING AS REQUIRED.
- ② REMOVE OUTSIDE AIR SUPPLY DUCT INDICATED BY HATCHING COMPLETE INCLUDING ASSOCIATED HANGER SUPPORTS.
- ③ REMOVE INLINE OUTSIDE AIR SUPPLY FAN COMPLETE INCLUDING SUPPLY AIR DUCT, EXISTING INSULATION, EXISTING CONDENSATE PIPING, POWER (SEE ELECTRICAL) CONTROLS AND HANGER SUPPORTS.
- ④ REMOVE CHRS, CHR, HUS, AND HUR PIPING ABOVE CEILING AS NECESSARY TO REPLACE WITH NEW CHRS, CHR, HUS, AND HUR PIPING WITH SIZES AS NOTED. INSULATE NEW CHRS, CHR, HUS, AND HUR PIPES AND REPAIR ALL DAMAGED INSULATION ON EXISTING PIPES AT
- ⑤ REMOVE TRUNK DUCT INDICATED BY HATCHING AS REQUIRED FOR NEW HANGERS AND SUPPORTS. REMOVAL SHALL INCLUDE DUCT HANGERS AND SUPPORTS.

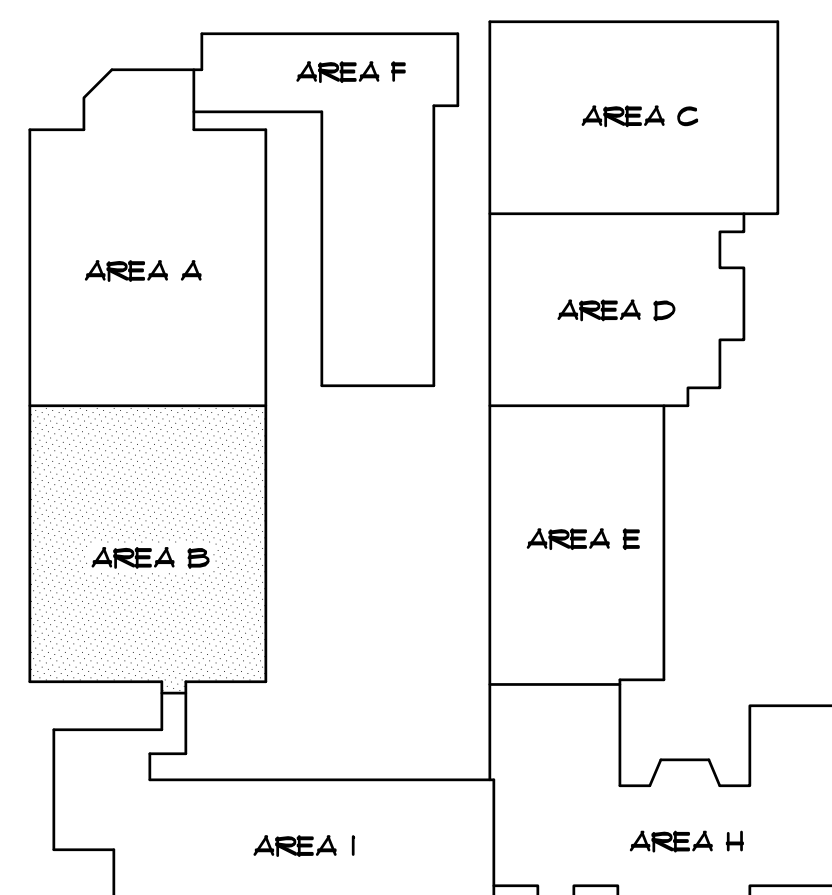
CEILING NOTE:
CONTRACTOR SHALL ASSUME NEW UNIT VENTILATORS ARE SMALLER THAN REMOVED UNIT VENTILATORS. PROVIDE FILLER GRID AND TILE AROUND NEW UNITS AS REQUIRED. TYPICAL FOR ALL NEW UNIT VENTILATORS

FIRE & SMOKE WALL INDICATIONS

- EXISTING ONE HOUR WALL
- EXISTING SMOKE PARTITION
SEALED TO DECK

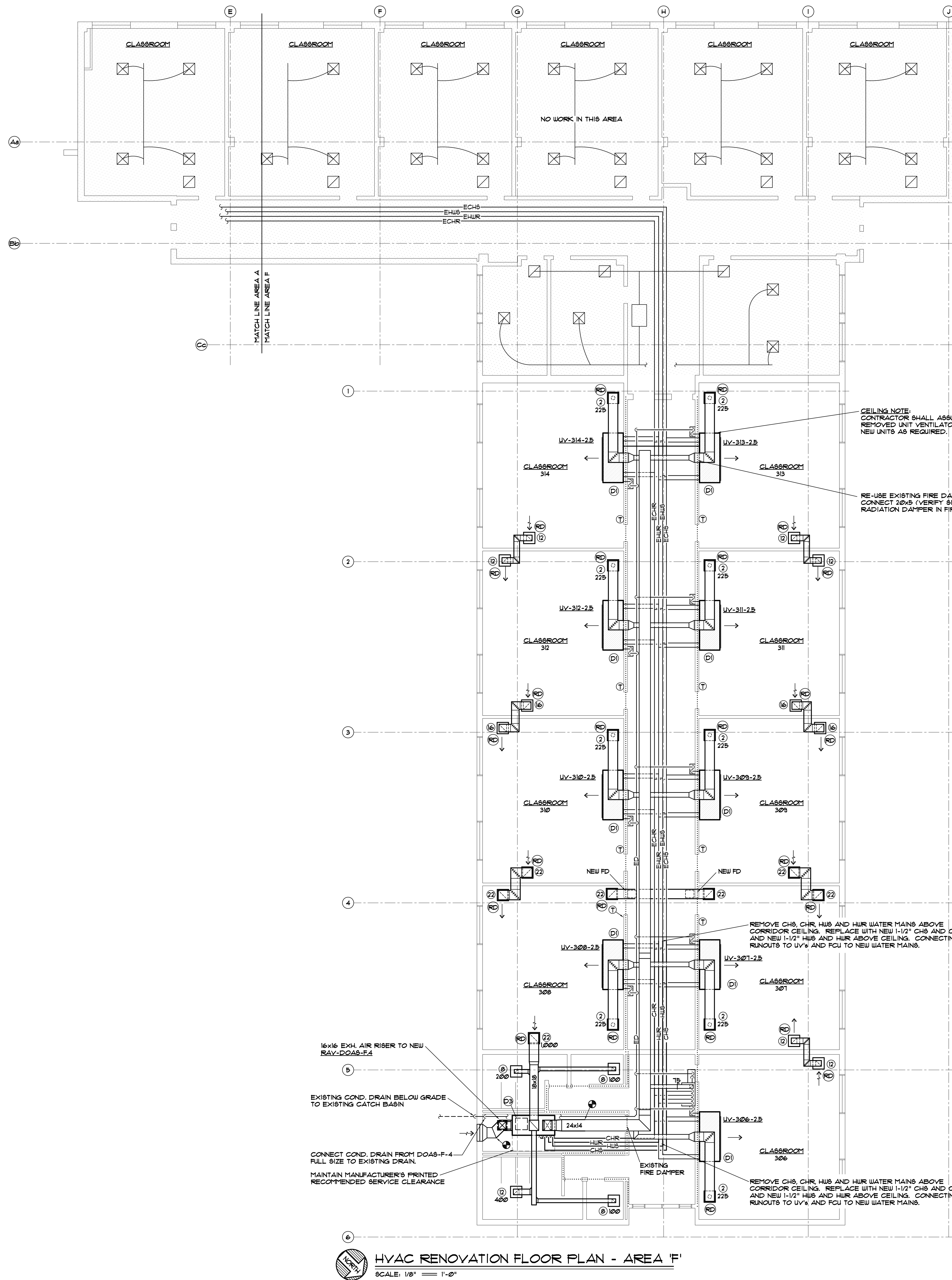
NOTES:

- ① FIELD VERIFY RATED FLOOR AND WALL ASSEMBLY TYPES AND LOCATIONS.
- ② SEAL ALL DUCT AND PIPE PENETRATIONS THROUGH SMOKE RATED WALL ASSEMBLIES WITH ANGLE AND CAULK.
- ③ PROVIDE UL RATED ASSEMBLIES ON ALL DUCT AND PIPE PENETRATIONS THROUGH RATED WALL ASSEMBLIES.



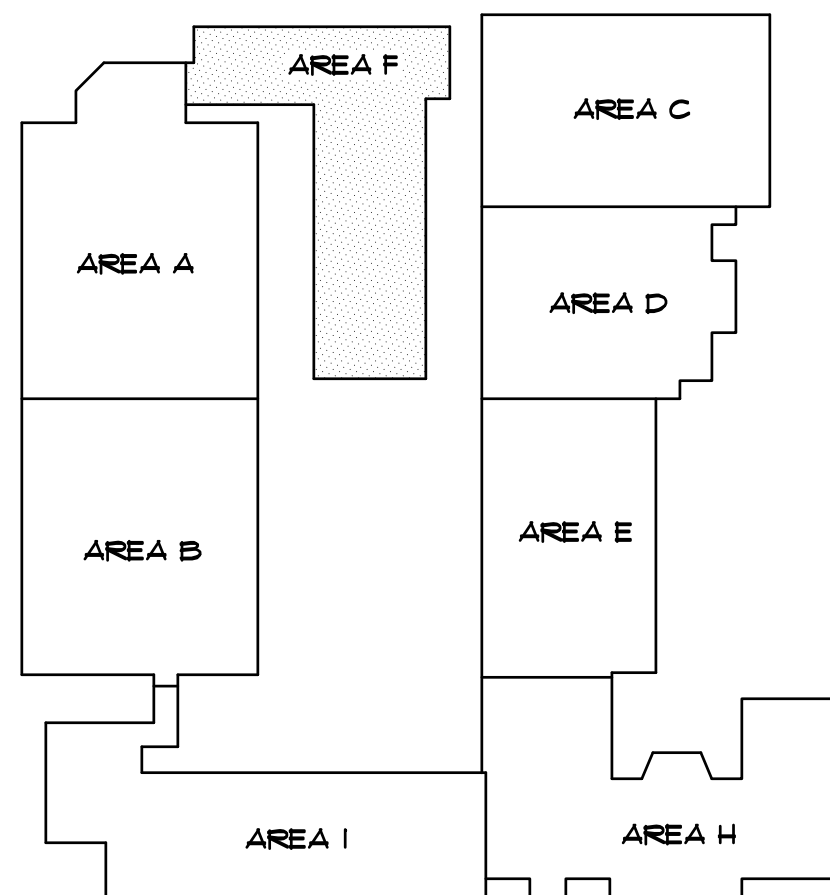
 HYAC RENOVATION FLOOR PLAN - AREA 'B'
SCALE: 1/8" = 1'-0"

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- DEMOLITION NOTES**
- ① REMOVE HORIZONTAL, CEILING MOUNTED CLASSROOM VENTILATOR COMPLETE INCLUDING CHILLED WATER AND HOT WATER RUNOUTS, FOWER (SEE ELECTRICAL) TEMPERATURE CONTROLS AND HANGER SUPPORTS. REMOVE AND STORE BI-POLAR IONIZATION KITS, AND RE-USE IN NEW UNIT VENTILATORS. REMOVE CONDENSATE PIPES COMPLETE INCLUDING INLET PIPING AND FOWER (SEE ELECTRICAL). REPAIR OR REPLACE MOUNTING AS REQUIRED.
 - ② REMOVE OUTSIDE AIR SUPPLY DUCT INDICATED BY HATCHING COMPLETE INCLUDING ASSOCIATED HANGER SUPPORTS.
 - ③ REMOVE INLINE OUTSIDE AIR SUPPLY FAN COMPLETE INCLUDING SUPPLY AIR DUCT NECESSARY FOR INSTALLATION OF NEW DOAS UNIT, FOWER (SEE ELECTRICAL) CONTROLS AND HANGER SUPPORTS.
 - ④ REMOVE CHS, CHR, HUS, AND HUR PIPING ABOVE CEILING AS NECESSARY TO REPLACE WITH NEW CHS, CHR, HUS, AND HUR PIPING WITH SIZES AS NOTED. INSULATE NEW CHS, CHR, HUS, AND HUR PIPES AND REPAIR ALL DAMAGED INSULATION ON EXISTING PIPES AT
 - ⑤ REMOVE TRUNK DUCT INDICATED BY HATCHING AS REQUIRED FOR INSTALLATION OF NEW DOAS UNIT. REMOVAL SHALL INCLUDE DUCT HANGERS AND SUPPORTS.

- FIRE & SMOKE WALL INDICATIONS**
- EXISTING ONE HOUR WALL
 - EXISTING SMOKE PARTITION SEALED TO DECK
- NOTES:**
- ① FIELD VERIFY RATED FLOOR AND WALL ASSEMBLY TYPES AND LOCATIONS.
 - ② SEAL ALL DUCT AND PIPE PENETRATIONS THROUGH SMOKE RATED WALL ASSEMBLIES WITH ANGLE AND CAULK.
 - ③ PROVIDE UL RATED ASSEMBLIES ON ALL DUCT AND PIPE PENETRATIONS THROUGH RATED WALL ASSEMBLIES.



KEY PLAN
NO SCALE

SCHNEIDER ELECTRIC ENERGY SERVICES PROJECT
FOR
BRUNSWICK COUNTY SCHOOL DISTRICT
WEST BRUNSWICK HIGH SCHOOL
550 WHITEVILLE ROAD NW
SHALLOTTE, NC 28470

SHEET TITLE
PARTIAL HVAC FLOOR PLAN
AERA 'F' - ECM-3-1A

DATE	MARK	DATE	DESCRIPTION
DRAWN BY: DJ	CHECKED BY: CDW	DATE	DESCRIPTION
DESIGNED BY: DJ	APPROVED BY: CDW	DATE	DESCRIPTION
DATE: 03-23-22	PROJECT: PC21P0006	DATE	DESCRIPTION

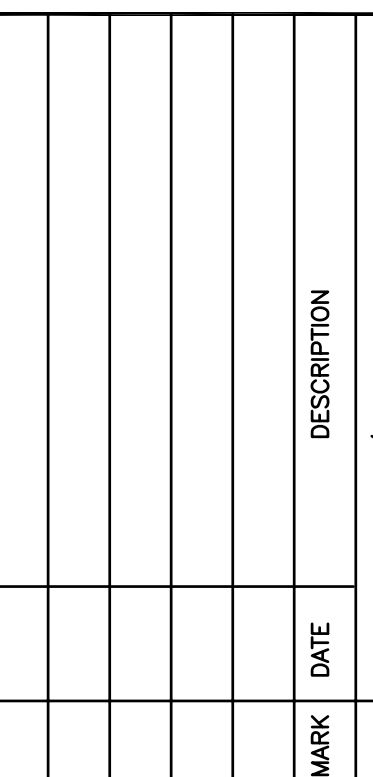
SHEET NUMBER
M103
SHT. OF

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Schneider Electric
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03-23-22
ENGINEER
DRAWN BY: WJL
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Carrilton, TX 75006 USA

**SCHNEIDER ELECTRIC ENERGY SERVICES PROJECT
FOR
BRUNSWICK COUNTY SCHOOL DISTRICT**

**WEST BRUNSWICK HIGH SCHOOL
550 WHITEVILLE RD NW
SAVANNAH, NC 29407**

- SHEET TITLE
-
- HVAC SCHEDULES
ECM-3A



DRAWN BY: DJ	CHECKED BY: CDW
DESIGNED BY: DJ	APPROVED BY: CDW
DATE: 03-23-22	PROJECT: PC21P0006

SHEET NUMBER

M201

SHT OF

- ① OR APPROVED EQUAL. HORIZONTAL EXPOSED (AT THE CEILING) WITH FRONT BAR GRILLE DISCHARGE, BAR GRILLE BOTTOM RETURN AIR GRILLE, NO O.A. OPENING, FILTER RACKS AND 2" MERV 8 FLEAT THROUAWAY TYPE FILTERS, BOTTOM ACCESS PANEL, NON-FUSED DISCONNECT SWITCH.
- ② CONTRACTOR SHALL ENSURE ANY UNIT VENTILATOR SUBSTITUTED FOR THOSE SPECIFIED SHALL BE COORDINATED WITH ELECTRICAL AND PHYSICAL DIFFERENCES.
- ③ ECM MOTORS, VOLTAGE SHALL MATCH AVAILABLE ELECTRICAL SERVICE, SEE ELECTRICAL.
- ④ PROVIDE MERV 8 THROUAWAY FILTERS TO MAINTAIN A CLEAN SYSTEM DURING TEMPORARY SERVICE.
- ⑤ ALL COOLING COILS SHALL HAVE 2-WAY PRESS. INDEPENDENT CONTROL VALVES WITH UNIONS, 2-WAY CONTROL VALVES WITH AUTO-FLOW CONTROL VALVES FOR HEATING COILS, STAINLESS STEEL DRAIN PANS, AND UNION CONNECTIONS TO COILS. SEE WATER PIPING DIAGRAM ON M202. SCHNEIDER ELECTRIC TO RUSHNIK CONTROL VALVES, THIS CONTRACTOR SHALL INSTALL THEM IN PIPING RUNOUTS.
- ⑥ RE-USE EXISTING BI-POLAR IONIZATION KITS FROM REMOVED UNIT VENTILATORS.
- ⑦ PROVIDE NEW CONDENSATE PUMPS EQUAL TO LITTLE GIANT VCM4-15, 0.5 GALLON TANK, 50 GPH (0.83 GPM) AT 5 FT. HEAD, 115 VOLT / 1/8" AMF, BUILT-IN CHECK VALVE, AND 3/8" BARBED DISCHARGE. PRIOR TO ORDERING PUMPS, VERIFY INSIDE DIMENSIONS OF EXISTING WALL MOUNTED PUMP ENCLOSURES AND VERIFY PUMP WILL FIT INSIDE ENCLOSURE. REPORT ANY PROBLEMS TO ENGINEER OR PROJECT MANAGER FOR SUBSTITUTION.
- ⑧ PROVIDE UNIT VENTILATORS WITH CONTROL 6 TERMINAL STRIP. SCHNEIDER ELECTRIC TO TAKE FULL CONTROL OF UNIT VENTILATORS AND COMMUNICATION WITH BAS.



SHEET TITLE
HVAC DETAILS
ECM-3A

DRAWN BY: DJ	CHECKED BY: CDW
DESIGNED BY: DJ	APPROVED BY: CDW
DATE: 03-23-22	PROJECT: PC21P0006

SHEET NUMBER

SHT. C



NOTE:
 SMOKE DETECTOR WIRING TO FIRE ALARM PANEL BY DIVISION 26.
 SMOKE DETECTOR INSTALLATION BY DIVISION 23
 SMOKE DETECTOR INTERLOCK TO SHUT DAMPER BY DIVISION 23.
 SMOKE DETECTOR INTERLOCK TO SHUT DOWN DOAS UNIT BY DIVISION 23
 SMOKE DETECTOR POWER BY DIVISION 26.



NOT TO SCALE

NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING FIRESTOPPING AND JOINT SEALS AS REQUIRED FOR THE WORK IN THIS SECTION. ALL PENETRATIONS THROUGH FIRE RESISTIVE CONSTRUCTION SHALL BE MADE IN ACCORDANCE WITH THE APPROVED FIRESTOPPING SCHEDULE. FIRESTOPPING SHALL BE PROVIDED BY THE SAME MANUFACTURER THROUGHOUT THE BUILDING FOR ALL TRADES. COORDINATE FIRESTOPPING WORK WITH THE GENERAL CONTRACTOR AND OTHER TRADES.
2. SUBMIT DETAILED SHOP DRAWINGS/DATA SHEETS FOR UL RATED PIPE PENETRATIONS FOR REVIEW. FAILURE TO COMPLY PRIOR TO COORDINATION AND INSTALLATION OF CAULKING MATERIALS SHALL REQUIRE THE REMOVAL AND REPLACEMENT OF MATERIALS WITH SPECIFIED PRODUCTS.



MECHANICAL SPECIFICATIONS

GENERAL

1.1

All material and work shall comply with the National Fire Codes of the NFPA, National and local codes and the 2018 North Carolina State Building Code, ASHRAE Standard 90.1 – 2016 and 2017 National Electrical Code.

1.2

Drawings for work under Division 23 are diagrammatic and generally include reasonable arrangements. Work under Division 23 includes all work necessary to make HVAC systems complete and fully operational.

1.3

MATERIAL AND EQUIPMENT SUBMITTALS: Submit for review detailed drawings of all equipment and all material listed in this section. All submitted data shall be bound in a hardcover binder. Partial submittals will not be reviewed by the Engineer. Furnish six (6) copies of equipment submittals. Review received on equipment submittals shall not be considered as a guarantee of performance of building components. HOW DRAWINGS ARE REVIEWED, SAID REVIEW DOES NOT MEAN THAT DRAWINGS HAVE BEEN CHECKED BY THE SAE REVIEW DOES NOT IN ANY WAY RELIEVE THE CONTRACTOR FROM HIS RESPONSIBILITY OR NECESSITY OF OBTAINING THE NECESSARY PERFORMING WORK AS REQUIRED BY THE CONTRACT DOCUMENTS. Submit for the following materials and equipment for review by the Engineer:

1. Unit Ventilators,

2. Duct and Pipe Insulation,

3. Roof Air Vents (see schedule),

4. Grilles and Diffusers (see schedule),

5. Pressure Gauges and Pipe Thermometers,

6. Piping and Valves,

7. Dedicated Outside Air Systems (DOAS),

8. Seismic Submittal,

1.4

WORKMANSHIP: Work that is not of good quality will require removal and reinstallation.

1.5

COORDINATION: No work shall be performed on this project before thoroughly coordinating all space requirements for pipes, control panels, and control components with all trades concerned and existing conditions. Temperature and equipment control wiring is included under Division 23.

1.6

The responsibility for obtaining, cutting, and patching for work under Division 23 of the specifications is included Division 23.

1.7

DAMAGES DURING CONSTRUCTION: Contractor shall be responsible for any costs of repairing any damages caused by this contractor, to the building, building contents, and site during construction with warranty period.

1.8

WARRANTY: Warrant all control components, piping and any other materials specified under Division 23. Warrant all equipment, ductwork, piping and any other materials specified under Division 23 for a period of one (1) year from the date of project acceptance unless otherwise indicated. Upon failure of any portion of the system during the warranty period, the affected part(s) shall be replaced or replaced promptly by and at the expense of the Contractor.

1.9

IDENTIFICATION: Identify each piece control component. Items shall be identified by name and numerical sequence. Namesplates shall be 1/16" thick plates with 1/2" high white letters on black background. Namesplates shall be attached securely with screws, not glued.

1.10

RECORD DRAWINGS: Provide record drawings for all work included in Division 23. Maintain on the job site one complete set of drawings for project. All changes authorized by the Engineer shall be made by the Owner as to locations, sizes and routing of equipment, ductwork, piping and other material shall be indicated in red ink on the drawings as work progresses. Before final drawings, the Contractor shall obtain the latest set of AutoCAD drawings from the Engineer which shall include the information outlined on the schedule drawings (including schedules, details, and sections) shall be corrected to depict all substituted materials and equipment.

2.0

SEISMIC REQUIREMENTS: All materials shall comply with the 2018 International Building Code (IBC) for seismic requirements.

2.1

Provide seismic submittals including calculations to determine restraint loads resulting from seismic forces presented in IBC. Seismic calculations shall be certified and stamped by a Structural Engineer or the employ of the seismic engineering firm with a minimum of 5 years experience, and licensed in the project's jurisdiction.

2.2

Provide seismic calculations and submittals for all new roof mounted equipment.

2.3

Manufacturers of seismic restraints must be a member of the Vibration Isolation and Seismic Control Manufacturers Association (VISCMA).

2.4

Provide Letter of Acceptance from the manufacturer's agent prior to project closed including manufacturer reviewed installed seismic restraints for new equipment throughout project.

3.0

TESTING, ADJUSTING, AND BALANCING

3.1

Work under this section includes the testing, adjusting and balancing of all new heating, ventilating and air conditioning systems. The results of all tests, adjustments and balancing shall be submitted to the Engineer for approval.

3.2

Instruments used shall be of high quality and as recommended by AABC or NEBB for the application. Instruments shall be properly calibrated and certified within the last six months.

3.3

The balancing firm shall warrant, solely that the system will be set to within 10% of the values as established by the drawings and specifications and also adjust to minimize drafts in all areas. The testing, balancing and adjusting shall be performed as many times as required to prove project requirements have been met. If requested by the Engineer, tests shall be performed in his presence.

3.4

Any changes that are required for the final balancing results as determined by the balancing firm shall be provided under this section of the specification. Such changes shall include, but are not limited to, changing of pulleys, belts, dampers or adding dampers or access panels.

3.5

Prior to acceptance of the systems by the Owner, submit to the Engineer for his review, a written testing, adjusting and balancing report, in triplicate, contained in a hard-backed three ring notebook. All reports, forms and data sheets shall generally be the standards of AABC or NEBB.

4.0

INSULATION

4.1

Insulation all on new chilled water pipes shall be 1" thick and 1-1/2" thick on hot water pipes. Fiberglass pipe insulation shall be equal to Owens Corning one piece, heavy density with AS/SS-1 jacket. Insulation shall have a conductivity not to exceed 0.03. Insulation shall be lapped, stapled, and coated with two coats of vapor sealing mastic applied over the staples.

4.2

New supply, return, exhaust and outside air supply ducts shall be insulated with 2" thick duct wrap equal to Mansville Microlite "Commercial Grade", 1 lb density, R-6.0 min. with FRK vapor barrier. Adhere to clean sheet metal joints with bonding adhesive. Secure on ducts over 24" wide with weld pins and clip washers. Stoppe all seams and joints, and vapor seal with glass fabric and coat with flame retarded mastic.

5.0

DUCTWORK

5.1

Coordinate routing of new ducts with existing conditions and other trades in the field. Provide offsets and vary sizes as required to avoid existing structural and any other interferences. Do not construct any ducts until all space requirements have been thoroughly coordinated with all other trades and existing conditions.

5.2

New supply, return, exhaust and outside air supply ducts shall be constructed with strict adherence to SMACNA Pressure Duct Standards. A copy of the SMACNA Low Pressure Duct Standards shall be kept on the job site. All new ducts shall be galvanized sheet metal, 26 gauge minimum.

5.3

New flexible supply air ducts to ceiling diffusers shall be minimum 1" thick U.L. 181 Class 1 Air Duct. Each section shall have locking sheet metal rings for connection to take-off fittings and ceiling diffusers. Maximum run of flexible ducts shall be six feet (6').

5.4

Supply air duct take-offs from sheet metal trunks shall be a factory fabricated fitting with an adhesive bonded collar and screw holes at each end. The fitting shall be secured to the trunk with locking mechanism. The fitting shall be secured to the trunk with sheet metal screws and coated with duct sealant.

5.5

Support ducts from the building structure with 1" wide galvanized sheet metal hangers on eight foot (8') centers and at each change in direction. Flexible ducts shall be supported on three foot (3') centers. Crimping or sagging of flexible ducts will not be accepted.

6.0

PIPING

6.1

Piping shall comply with best trade practice. Provide clearance between pipe and building structure so pipes can expand without damage to building structure. All work and materials to meet local requirements and comply with the 2018 North Carolina State Building Code. Pipe and equipment locations show equipment. Exact location of equipment and pipes to be determined in field.

6.2

Condensate drain piping shall be type L copper with soldered fittings. Provide P-traps at all condensate drain connections to floor mounted heat pumps. P-trap shall be twice the total discharge pipe sized by the cooling equipment fan. Slope condensate drain pipes minimum 1/4" per foot in direction of flow and connect to existing drain pipe.

6.3

Chilled water and hot water piping inside the building 2" and smaller shall be type L copper with sweat fitting.

6.4

Connection hoses for new unit ventilators shall be U.L. 94 rated stainless steel braided flexible hose rated for 300 psi working pressure and 212°F temperature. Fittings shall be male NPT with swivel NPSH thread. The inner core shall be EPDM Ethylene Propylene Diene Monomer per ASTM 64-10.

6.5

Stop valves for chilled water and hot water piping shall be bronze body ball valves designed for 125 psi working pressure. Ball valves shall be Federal Spec WW-V-35, Type II, Class A, Style 3, full port. Handles shall zinc dichromate plated steel, plastic coated.

6.7

Strainers shall Y-type, 20 mesh type 304 stainless steel screens, 125 psi working pressure with blow-down valves and removable strainers.

6.8

Flow control valves (balance valves) shall be complete with in-line flow controller capable of +/- 5% accuracy, and rated for 150 psi working pressure. Valves shall include pressure/temperature test port with a cap and union.

6.9

Motor control valves shall be 2-way, equal percentage bronze plug valves rated for 125 psi working pressure. Provide control threaded connections and unions. Actuators shall meet class requirements and have a 5 year warranty. Valves shall fail open to the coils.

7.0

UNIT VENTILATORS:

7.1

Provide horizontal exposed unit ventilators, UL listed, NFPA-90A compliant, certified or rated in accordance with AHRI-840 and AHRI-350.

7.2

Exterior cabinets shall be heavy-gauge metal. All interior shall be galvanized sheet metal. Bottom shall be 2-ply, removable by 2-ply, removable control compartment without removing bottom panel. See schedule for supply air outlet and return air inlet. Units shall include access to access for inspection of drain coils and fan sections. Final finish shall be phosphatized and painted with an electrostatic powder spray with 1.5 mil minimum thickness.

7.3

Cabinet insulation shall be 1/2" thick, dual density bonded glass fiber, suitable for 4500 fpm air flow. Insulation shall meet Fire Hazard Classification.

7.4

Piping and control end pockets shall be minimum 12" wide.

7.5

Hydraulic coils shall be plate-fan, mechanically bonded to tubes, tested to 350 350 psi, and rated in accordance with AHRI-440 or 220. Coils shall include threaded drain plug and manual air vent. Heating coils shall be in the re-heat position.

7.6

Fans shall be double width, double inlet forward curved centrifugal. Wheels shall be galvanized metal, dynamically balanced with direct drive ECM motors. Fan coils shall be blow-thru design. Motors shall be enclosed in thermal overload protection, permanently lubricated. Motors shall be capable of starting at 50% of rated voltage and operating at 50% of rated voltage. Motors shall be able to operate up to 10% over voltage.

7.8

Drain pan pad of a corrosion resistant design for quick removal of condensate. Pan shall be insulated on the bottom, and be removable for cleaning. Pan shall be reversible for either side pipe connection.

7.9

Provide units with filter rack for 1" MERV 13 filter based on ASHRAE Standard 52.2 atmospheric dust spot method.

7.10

Piping package shall include union, strainer, P/T port, and ball valve in the chilled water and hot water supply/return piping. Chilled water and hot water return piping package shall include union, 2-way 2-position control valve, auto-flow balance device, P/T port, and ball valve.

8.0

DEDICATED OUTSIDE AIR UNIT (DOAS):

8.1

Provide low profile horizontal DOAS unit above the existing ceiling as shown and scheduled on the drawings. Units shall be chilled water cooling (dehumidification) and hot water heating (DOAS-F) shall be chilled water and hot water vertical unit with vertical supply air supply air discharge.

8.2

Due to confined space above the existing ceiling, units with dimensions greater than that listed in the schedule shall be accepted.

8.3

Units shall be double wall construction foam injected panel construction with thermal breaks.

8.4

Chilled water dehumidification coil shall be sized to provide moisture removal and leaving air dewpoint temperature scheduled. Coils shall be copper tubes mechanically bonded to aluminum plate fins, leak tested and rated for 400 psi. Coil shall be rated in accordance with AHR standards. Coils shall be half serpentine. Coils shall have union connections.

8.5

Hot water heating coil shall be sized to deliver the leaving air temperature scheduled. Coils shall be copper tubes mechanically bonded to aluminum plate fins, leak tested and rated for 150 psi. Coils shall have union connections.

8.6

Drain pans shall be stainless steel, double sloped to prevent standing water and microbial growth.

8.7

Energy recovery wheels shall be total enthalpy types with high airflow (cfm) polymer. Wheel cabinet shall include return air / exhaust air and outside air connections. Energy recovery wheels shall be meet the leaving air dry bulb and wet bulb temperatures listed in the schedule based on entering air dry bulb and wet bulb temperatures listed.

8.8

Supply air blower shall be backward curved plenum fan with EC motor. Return air / exhaust air blower shall be backward curved plenum fan with EC motor. Fans shall perform as listed in the schedule.

8.9

Units shall include filter rack on the outside air supply for 2" pleated media MERV 13. Filter rack on return/exhaust upstream of the energy recovery wheel for 2" pleated media MERV 8.

8.11

Piping package shall include union, strainer, P/T port, and ball valve in the chilled water and hot water supply/return piping. Chilled water and hot water return piping package shall include union, 2-way 2-position control valve, auto-flow balance device, P/T port, and ball valve.

END OF DIVISION 23

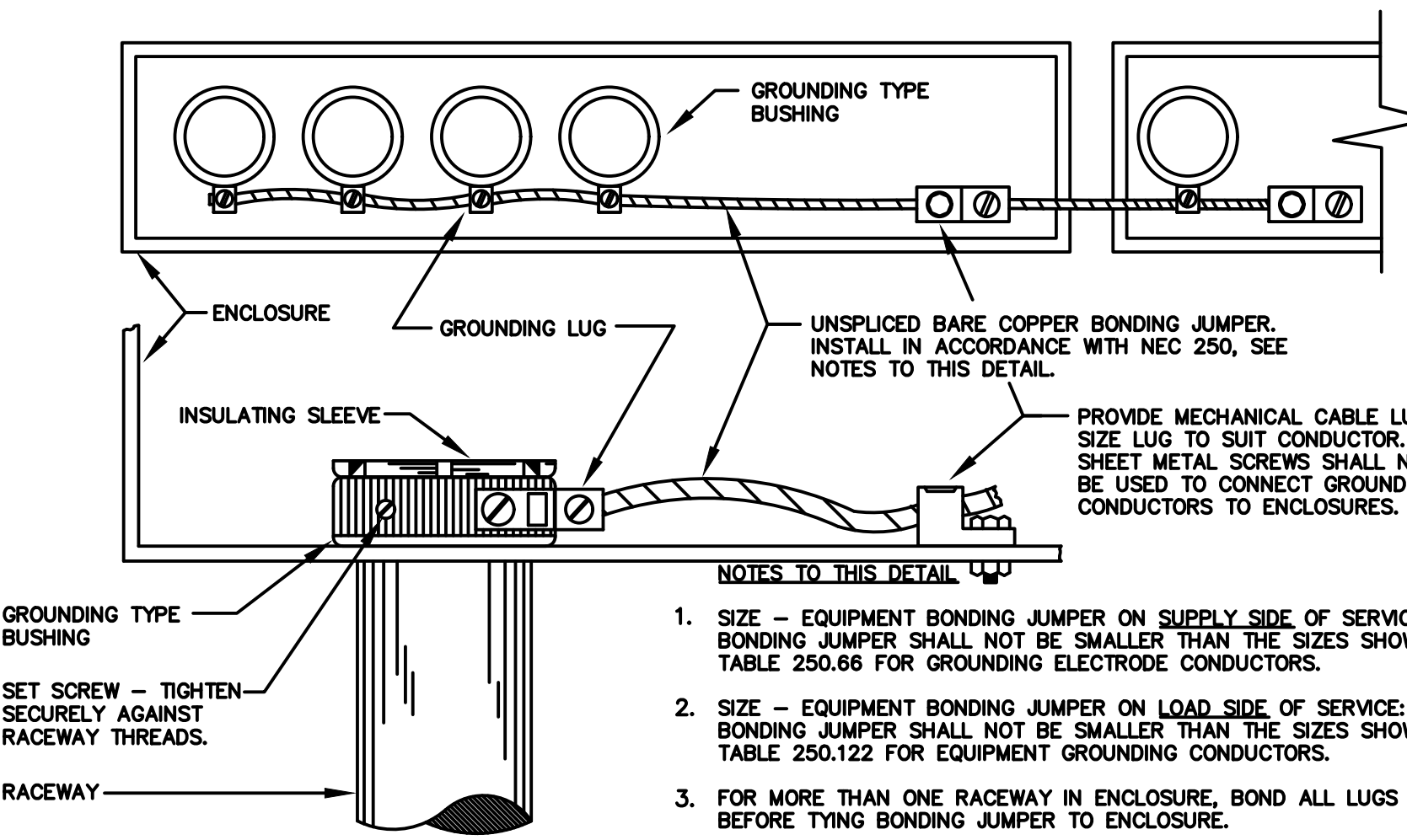
END OF DIVISION 23

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APPLICATION		ENT	IMC	GRS	RAC	ENT	SCH 40 PVC	HDPE	AC/VC CABLE	MFJ WIRING
CONTRACTOR MAY USE, IF ANY MATERIAL MARKED (●) FOR APPLICATION LISTED. IF MATERIAL IS NOT MARKED FOR AN APPLICATION, IT SHALL NOT BE USED FOR THAT APPLICATION.		ENT	IMC	GRS	RAC	ENT	SCH 40 PVC	HDPE	AC/VC CABLE	MFJ WIRING
BRANCH CIRCUITS	CONCEALED ABOVE CEILING	●	●	●	●					
	CONCEALED IN WALLS	●	●	●	●					
	EXPOSED FROM FLOOR TO 7'-0" A.F.F. (INTERIOR)		●	●	●					
	EXPOSED FROM 7'-0" A.F.F. AND ABOVE (INTERIOR)	●								
	IN OR UNDER CONCRETE FLOORS		⊙	⊙						
	OUTDOORS – BELOW GRADE		⊙	⊙			●	●		
	OUTDOORS – EXPOSED		●	●	●					
	STUB-UPS BELOW PANELS & ENCLOSURES				●					
FEEDER CONDUITS		●	●	●		⊙				
SERVICE ENTRANCE		●	●			⊙				

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The diagram illustrates the electrical path for a branch circuit. It begins at the **UTILITY**, which connects to the **SERVICE ENTRANCE**. The service entrance leads into the **SERVICE EQUIPMENT**, which contains a **SERVICE DISCONNECT**. From the service equipment, the circuit continues through a **PANEL**. The panel contains a **FINAL OVERCURRENT DEVICE** and a **BRANCH CIRCUIT**. A **DUPLEX RECEPTACLE** is shown as a load on the branch circuit. The circuit then proceeds through a **FEEDER** to a **FEEDER DEVICE**, which is another **FINAL OVERCURRENT DEVICE**. Finally, the circuit reaches the **MOTOR**, which is also connected to a **BRANCH CIRCUIT**.



AND LARGER
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NO SCALE

A.F.F.	ABOVE FINISHED FLOOR
B.F.F.	BELOW FINISHED FLOOR
A.F.G.	ABOVE FINISHED GRADE
B.F.G.	BELOW FINISHED GRADE
U.N.O.	UNLESS NOTED OTHERWISE
C.K.T.	CIRCUIT
C	CONDUIT
C.L.	EMPTY CONDUIT
F.L.C.	FLEXIBLE CONDUIT
W.F.R.	WEATHER RESISTIBLE CONDUIT
E.H.W.H.	ELECTRIC WATER HEATER
VEF	VENTILATING FAN
CE	CEILING EXHAUST FAN
A.H.L.	AIR HANDLING UNIT
FCU	FAN COIL UNIT
CO	CONDENSING UNIT
R.O.U.	ROOM TOP HEATING/COOLING UNIT
P	PUMP
EDH	ELECTRIC DRY HEATER
RAC	ROOM AIR CONDITIONING/HEATING UNIT
CHL	CHILLER
H.P.	HEAT PUMP OR HORSEPOWER

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NO SCALE

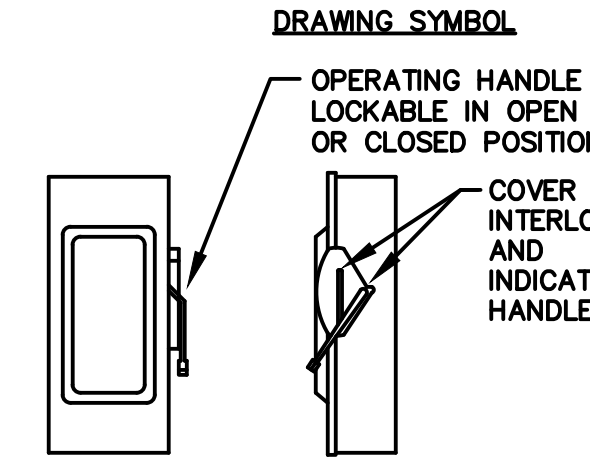
BRANCH CIRCUITS SHOWN ON THESE DRAWINGS MAY INCLUDE HASHMARKS WHICH INDICATE THE NUMBER OF WIRES TO BE PROVIDED IN A CONDUIT RUN BETWEEN OUTLETS OR JUNCTION BOXES. WIRE SIZES SHALL BE AS TABULATED IN PANELBOARD SCHEDULES UNLESS OTHERWISE INDICATED ON PLAN. SEE SYMBOL SCHEDULE FOR CONDUIT ROUTING NOTATION. HASHMARK CODE IS AS FOLLOWS:

 TWO WIRES (NO HASHMARKS)
 THREE WIRES (3 HASHMARKS)
 FOUR WIRES (4 HASHMARKS)
 FIVE WIRES (5 HASHMARKS)
 . . . AND SO FORTH.

NOTE: CONTRACTOR IS CAUTIONED THAT MULTIWIRE (LINE-TO-NEUTRAL) BRANCH CIRCUITS DO NOT INDICATE ALL REQUIRED NEUTRAL CONDUCTORS. PROVIDE SEPARATE NEUTRAL CONDUCTORS (WITH COLORED STRIPE TO MATCH PHASE CONDUCTOR) FOR EACH PHASE CONDUCTOR.

SWITCH TYPE NUMBER:
SEE SCHEDULE 7

☐ S-



NOTES TO THIS DETAIL

1. ALL SWITCHES MUST BE HEAVY DUTY TYPE. FED. SPEC. W-3-B85, U.L. 98, NEMA KSI-1975; 240 V. OR 600 V. TO SUIT. OVERVOLTAGE, QUICK MAKE—QUICK BREAK OPERATION.
2. ALL SWITCHES FUSELESS UNLESS NOTED ON DRAWINGS. PROVIDE FUSES TO SUIT LOAD.
3. ENCLOSURES NEMA 3R OUTDOORS AND IN WET LOCATIONS NEMA 1 ELSEWHERE UNLESS NOTED ON DRAWINGS.
4. PROVIDE ENGRAVED LABELS AS SPECIFIED.
5. PROVIDE FACTORY INSTALLED AUXILIARY CONTACT FOR ALL AUXILIARY SWITCHES USED AS MOTOR DISCONNECT AND LOCATED ON LOAD SIDE OF VARIABLE FREQUENCY DRIVES (VFD). COORDINATE WITH VFD VENDOR AND VFD MANUFACTURER TO OBTAIN INSTRUCTIONS TO COMMUNICATE DISCONNECT POSITION TO VFD.

SAFETY SWITCH SCHEDULE		
SYMBOL	AMP	POLES
S-1	30	2
S-2	30	3
S-3	30	4WSN
S-4	60	2
S-5	60	3
S-6	60	4WSN
S-7	100	2
S-8	100	3
S-9	100	4WSN
S-10	200	2
S-11	200	3
S-12	200	4WSN
S-13	400	2
S-14	400	3
S-15	400	4WSN
S-16	600	2
S-17	600	3
S-18	600	4WSN
S-19	800	2
S-20	800	3
S-21	800	4WSN
S-22	1200	2
S-23	1200	3
S-24	1200	4WSN

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NO SCALE

1. BIDDERS SHALL VISIT THE SITE OF WORK PRIOR TO BIDDING AND SHALL INCLUDE IN BID ALL WORK REQUIRED TO PROVIDE NEW WORK AND TO MODIFY EXISTING WORK AS REQUIRED TO CONTINUE IN OPERATION.	7. SEE MECHANICAL DRAWINGS FOR EXTENT OF DEMOLITION WORK REQUIRED. REMOVE ELECTRICAL WORK COMPLETE FOR MECHANICAL SYSTEMS BEING REMOVED BY OTHERS. CONTRACTOR IS CAUTIONED THAT THIS EQUIPMENT MAY BE LOCATED OUTSIDE OF GENERAL DEMOLITION AREA (SUCH AS IN MECHANICAL ROOMS, MEZZANINES, ROOFTOP OR SIMILAR LOCATIONS).	12. FOR ALL LIGHTING BEING RELOCATED OR NOTED AS EXISTING TO REMAIN, REMOVE, CLEAN, RE-LAMP AND REINSTALL COMPLETE IN LOCATIONS AS INDICATED ON NEW WORK PLANS. PROVIDE NEW CONTROL AS INDICATED.
2. DEMOLITION WORK SHALL COMPLY WITH ANSI 10.6, NFPA 241, OSHA, AHERA AND ALL OTHER APPLICABLE LOCAL, STATE AND FEDERAL STANDARDS, CODES AND GUIDELINES.	8. INCLUDE IN BID ALL WORK REQUIRED FOR TEMPORARY WIRING AND ASSOCIATED ELECTRICAL WORK REQUIRED TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING DEMOLITION PHASE. INTERRUPTIONS IN ANY ELECTRICAL SERVICE OR SYSTEM (POWER, LIGHTING, COMMUNICATION, FIRE ALARM, ETC.) SHALL BE COORDINATED WITH AND APPROVED BY OWNER A MINIMUM OF 48 HOURS PRIOR TO PERFORMING WORK U.N.O.	13. ALL ELECTRICAL COMPONENTS AND DEVICES INDICATED AS TO REMAIN OR TO BE RELOCATED SHALL BE PROTECTED AGAINST DAMAGE DURING DEMOLITION PROCESS AND CLEANED PRIOR TO BEING RESTORED INTO SERVICE.
3. CONTRACTOR IS CAUTIONED THAT DEMOLITION PLANS BASED ON RECORD DRAWINGS AND VISUAL FIELD OBSERVATION AND ARE INTENDED TO COMMUNICATE INTENT OF DEMOLITION AND DO NOT INDICATE EVERY COMPONENT OF ELECTRICAL SYSTEMS.	9. ELECTRICAL DEMOLITION GENERALLY INCLUDES REMOVAL OF EXISTING OUTLETS, DEVICES, AND OTHER ELECTRICAL COMPONENTS. REMOVE, DEMOLISH CIRCUITS BACK TO PANELBOARD(S), WHERE ONLY PORTIONS OF CIRCUIT LOADS ARE TO BE REMOVED, REMOVE CIRCUITS AND RECONNECT TO CONTINUE REMAINING LOADS IN SERVICE BEYOND THE DEMOLITION AREA.	14. REMOVE ALL EXISTING, ABANDONED WIRING SYSTEMS IN CEILING SPACE, EQUIPMENT ROOMS, SHAFTS, CRAWL SPACES AND SIMILAR CAVITIES OF THE WORK AREA INCLUDING WIRING, RACEWAYS, BOXES AND SUPPORTS.
4. OWNER SHALL RETAIN FIRST RIGHT OF REFUSAL ON ELECTRICAL EQUIPMENT BEING DEMOLISHED. PRIOR TO BEGINNING DEMOLITION WORK, CONTRACTOR SHALL WALL DEMOLITION AREA WITH OWNER REPRESENTATIVE AND IDENTIFY ITEMS TO BE REMOVED AND TURNED OVER TO OWNER. ALL SUCH ITEMS SHALL BE CAREFULLY REMOVED, PROTECTED AND DELIVERED TO OWNER.	10. WIRING SYSTEMS SHALL BE REMOVED BACK TO THE SOURCE OF SUPPLY UNLESS OTHERWISE NOTED. CIRCUIT BREAKERS, FUSIBLE SWITCHES, ETC. SUPPLYING LOADS DEMOLISHED AS PART OF THIS CONTRACT SHALL BE LABELED AS SPARE AND SET TO THE OFF POSITION.	15. EXISTING CABLE SYSTEMS ARE BEING REMOVED AND REPLACED IN SOME AREAS UNDER THIS CONTRACT. INCLUDE IN BID ALL WORK AS REQUIRED FOR RELOCATION OF ALL EXISTING CABLE MOUNTED ELECTRICAL DEVICES (FIRE ALARM, SENSORS, CAMERAS, CLOCKS, SPEAKERS, ETC.) TO BE REMOVED. PROVIDE REMOVAL, PROTECTION OF, TEMPORARY SUPPORT AND REINSTALLATION COMPLETE.
5. EXISTING RACEWAY AND WIRING SYSTEMS REUSED AS PART OF THIS CONTRACT SHALL BE REWORKED AS REQUIRED TO COMPLY WITH REQUIREMENTS FOR NEW WORK AND CURRENT CODES AND STANDARDS.	11. PROVIDE REVISED CIRCUIT DIRECTORIES IN ALL PANELBOARDS AFFECTED BY NEW OR DEMOLITION WORK. INDICATE ALL LOADS, NEW, SPARE OR MODIFIED.	16. COORDINATE WITH PRIME CONTRACTOR FOR ALL PATCHING AND PAINTING AS REQUIRED DUE TO DEMOLITION WORK. NEW FINISHES SHALL MATCH ADJACENT SURFACES.
6. CONTRACTOR SHALL EXAMINE DEMOLITION AND NEW WORK PLANS FOR ALL TRADES AND INCLUDE IN BID ALL REQUIRED REWORK AND/OR RELOCATION OF EXISTING RACEWAY, JUNCTION BOXES, DEVICES, WIRING SYSTEMS AND THE LIKE AS REQUIRED TO ACCOMMODATE NEW CONSTRUCTION.		

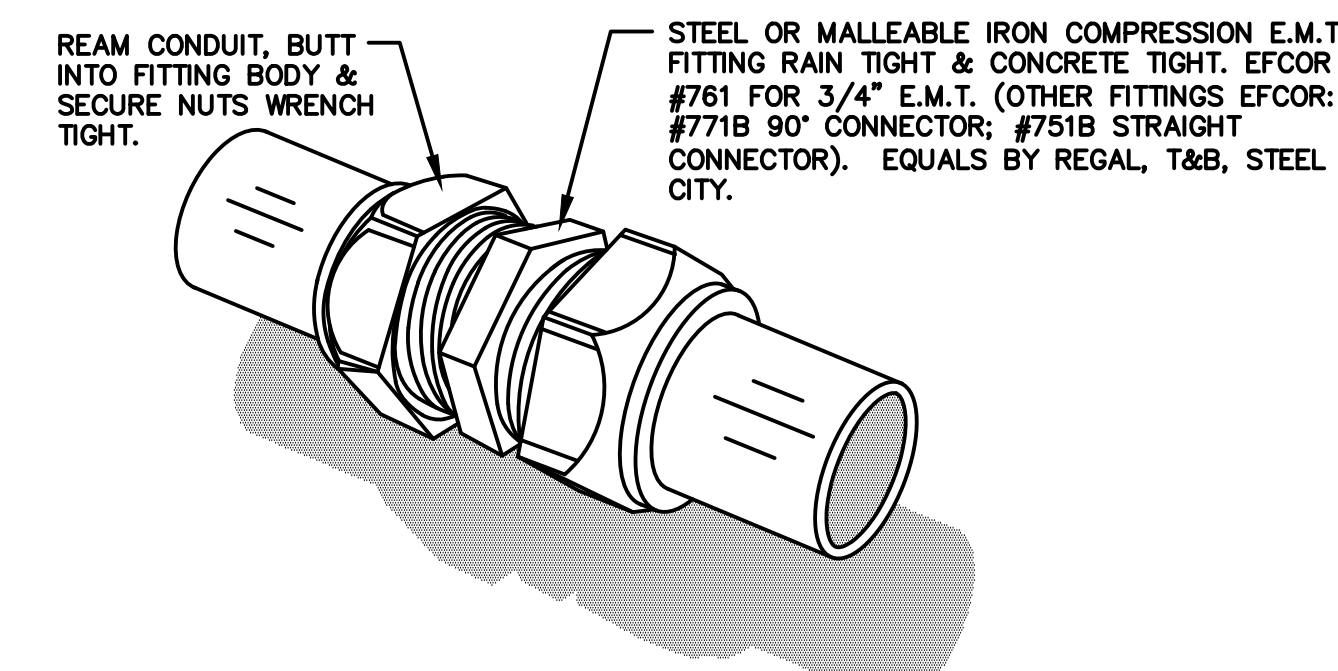
1. DO NOT SCALE DRAWINGS UNLESS DIMENSIONS ARE SHOWN. LOCATE OUTLETS AND EQUIPMENT AS OBVIOUSLY INDICATED AND COORDINATE WITH OTHER TRADES TO AVOID CONFLICTS.
2. MINIMUM SIZE CONDUCTOR FOR POWER SHALL BE NO. 12 AWG.
3. ALL FUSES SHALL BE DUAL-ELEMENT TYPE, "FUSETRON" BY BUSSMAN, OR "ECON" BY ECONOMY.
4. BRANCH CIRCUIT SIZES ARE AWG 12-1/2". UNLESS OTHERWISE NOTED IN PANELBOARD SCHEDULES.
5. ALL BRANCH CIRCUIT LOADS SHALL BE BALANCED ACROSS PANELBOARD BUSES TO OBTAIN MINIMUM NEUTRAL CURRENT.
6. ALL FLEXIBLE CONDUIT SHALL CONTAIN A GREEN WIRE BONDED TO RIGID RACEWAY, BOX OR FIXTURE AT EACH END OF FLEX. SIZE GROUND WIRE PER N.E.C. TABLE 250-122.
7. ALL ELECTRICAL WORK ABOVE CEILINGS UTILIZED AS RETURN AIR PLENUMS SHALL COMPLY WITH N.E.C. AND LOCAL CODES FOR WIRING USED IN ENVIRONMENTAL AIR.
8. CONTRACTOR SHALL MINIMIZE REMOVAL OF STRUCTURAL STEEL FIREPROOFING FOR INSTALLATION OF CONDUIT AND EQUIPMENT HANGERS. OBTAIN APPROVAL OF GENERAL CONTRACTOR PRIOR TO REMOVAL.
9. COORDINATE WITH OTHER TRADES TO CONCEAL ELECTRICAL WORK AND PROVIDE OUTLETS IN CORRECT LOCATIONS FOR EACH PIECE OF MECHANICAL OR ELECTRICAL EQUIPMENT CONNECTED.
10. COORDINATE DEVICE REQUIREMENTS AND MOUNTING HEIGHTS FOR THRU-WALL UNITS AND THE LIKE WITH EQUIPMENT FURNISHED.
11. ALL PENETRATIONS THRU WALLS, FLOORS, BARRIERS, PARTITIONS AND THE LIKE SHALL BE SEALED. SEAL ALL PENETRATIONS THRU SMOKE TIGHT PARTITIONS WITH U.L. LISTED ASSEMBLIES OR METHODS. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF SMOKE PARTITIONS.
12. FIRESTOP ALL RACEWAYS PASSING THRU FIRE-RATED WALLS, FLOORS OR PARTITIONS. USE U.L. LISTED THROUGH-PENETRATION FIRESTOP SYSTEMS APPROPRIATE FOR CONSTRUCTION AND WITH RATING EQUAL TO THAT BEING PENETRATED. SUBMIT SHOP DRAWINGS FOR SYSTEM(S) PROPOSED. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS AND RATINGS.
13. OPENINGS GREATER THAN SIXTEEN(16) SQUARE INCHES IN FIRE-RATED WALLS AND PARTITIONS SHALL BE PROTECTED WITH U.L. LISTED SYSTEMS, COMPONENTS AND METHODS AS REQUIRED TO MAINTAIN RATING. PROVIDE PUDDY PADS, LIGHT COVERS, INSERTS, WRAPS, COLLARS AND THE LIKE AS REQUIRED.
14. ALL TYPEWRITTEN PANELBOARD DIRECTORIES, FIRE ALARM PROGRAMMING, LIGHTING CONTROL PROGRAMMING, LABELING AND THE LIKE SHALL UTILIZE FINAL OFFICIAL ROOM NAMING SYSTEM. THIS SHALL REFLECT FINAL ROOM DESIGNATIONS. COORDINATE WITH ARCHITECT AND OWNER FOR FINAL NAMING.
15. WHERE DUCT SMOKE DETECTORS ARE SHOWN, PROVIDE NEW DEVICES TO EXISTING FIRE ALARM SYSTEM COMPLETE.

	TRANSFORMER		CONNECTION TO EXISTING CIRCUIT
	PANELBOARD		BRANCH CIRCUIT RACEWAY – CONCEALED IN WALL OR CEILING
	SAFETY SWITCH		BRANCH CIRCUIT RACEWAY – CONCEALED IN FLOOR OR UNDERGROUND
	ENCLOSED, MOLDED CASE CIRCUIT BREAKER		BRANCH CIRCUIT RACEWAY – EXPOSED
	MOTOR CONTROLLER OR CONTACTOR		EXISTING; TO REMAIN
	FLUSH JUNCTION BOX CEILING (①=I-WALL)		EXISTING; BEING RELOCATED
	PULL BOX OR JUNCTION BOX IN FLOOR		EXISTING; NEW LOCATION
	TRANSIENT VOLTAGE SURGE SUPPRESSOR (TVSS)		
	ELECTRIC MOTOR		
	CONDUIT STUB		-TYPICAL: SYMBOLS DENOTE EXISTING.
	MOTOR RATED SWITCH		REMOVE COMPLETE.
	DUCT SMOKE DETECTOR		TYPICAL: "X" ON PLAN SYMBOLS DENOTES EXISTING. REMOVE COMPLETE.

NOTE: ALL DEVICES SHOWN ON THIS SCHEDULE ARE SYMBOLIC ONLY. SEE ELECTRICAL SPECIFICATIONS FOR EXACT DEVICE REQUIREMENTS AND PERFORMANCE CHARACTERISTICS.

1. WHERE RAISEWAYS PASS THRU FIRE-RATED WALLS, FLOORS OR OTHER PARTITIONS, PROVIDE A UL-LISTED THROUGH PENETRATION SYSTEM WITH RATING EQUAL TO THAT OF CONSTRUCTION BEING PENETRATED.
2. EACH ASSEMBLY SHALL BE SPECIFIC TO THE PENETRATING DEVICE (E.G., SINGLE CONDUIT, MULTIPLE CONDUITS, CABLE TRAY, ETC.) AND SHALL BE A UL LISTED SYSTEM AS PUBLISHED IN THE UL FIRE RESISTANCE DIRECTORY, LATEST EDITION.
3. FIRESTOP SYSTEMS SHALL MEET REQUIREMENTS OF ASTM E-814/UL 1749 TESTED ASSEMBLIES THAT PROVIDE A FIRE RESISTANCE TO THAT CONSTRUCTION BEING PENETRATED.
4. FOR THOSE FIRESTOP APPLICATIONS THAT EXIST FOR WHICH NO UL TESTED SYSTEM IS AVAILABLE THROUGH THE UL LISTING SERVICE, THE MANUFACTURER'S ENGINEERING JUDGEMENT DERIVED FROM SIMILAR UL SYSTEM DESIGNS OR OTHER TESTS SHALL BE SUBMITTED TO LOCAL AUTHORITY HAVING JURISDICTION FOR THEIR APPROVAL PRIOR TO INSTALLATION. ENGINEERING JUDGEMENT DRAWINGS SHALL FOLLOW REQUIREMENTS SET FORTH BY THE INTERNATIONAL FIRESTOP COUNCIL.
5. INSTALLATION SHALL BE IN COMPLIANCE WITH MANUFACTURER'S INSTRUCTION AND IN ACCORDANCE WITH UL FIRE RESISTANCE DIRECTORY FOR EACH SYSTEM UTILIZED.
6. FIRESTOP MATERIALS SHALL BE BY 3M COMPANY, ULTI USA, SPECIFIED TECHNOLOGIES INC (ST), METACALK, TREMCO OR APPROVED EQUAL.
7. SUBMIT UL SYSTEM DETAIL AND PRODUCT DATA FOR EACH FIRE STOP COMPONENT UTILIZED, INCLUDING DETAILED DRAWINGS, INSTALLATION INSTRUCTIONS, ASSEMBLY LISTING NUMBER, CERTIFICATED OF CONFORMANCE AND MATERIAL SAFETY DATA SHEETS. MAINTAIN A COPY OF APPROVED SHOP DRAWINGS ON SITE FOR REVIEW BY ENGINEER, THIRD PARTY INSPECTOR AND AHJ.
8. COORDINATE WITH OTHER TRADES AND CONTRACTOR REQUIREMENTS FOR ADDITIONAL FIRESTOPPING REQUIREMENTS. WHERE REQUIRED, ALL FIRESTOP MATERIAL SHALL BE BY SAME MANUFACTURER AND/OR SAME FIRESTOPPING SUB-CONTRACTOR.

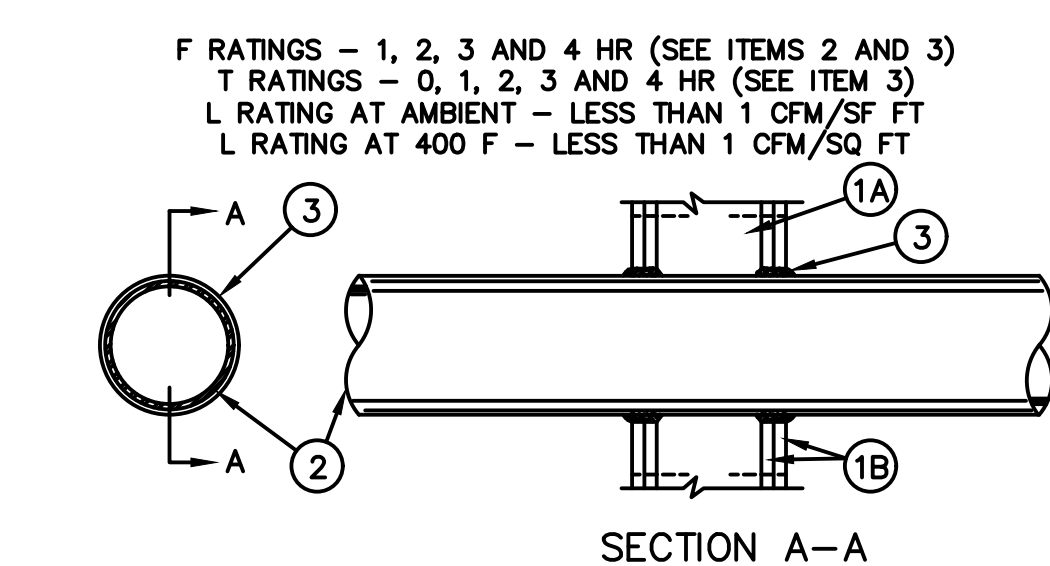
1. PROVIDE COMPLETE AND READY FOR OPERATION, A FIRE ALARM SYSTEM EXTENSION OF THE EXISTING SIMPLEX SYSTEM AS INDICATED. ALL ELECTRONICS WORK SHALL BE PROVIDED BY A FRANCHISED DISTRIBUTOR-REPRESENTATIVE OF THE SYSTEM EQUIPMENT MANUFACTURER.
2. ALL WORK SHALL BE IN ACCORDANCE WITH NC IBC (2018), NC IFC (2018), NFPA 70 (2017), NFPA 72 (2013), ADA AND ICC/ANSI A117.1, AND ALL LOCAL CODES AND REGULATIONS.
3. ALL DEVICES AND SYSTEM COMPONENTS SHALL BE UL LISTED FOR APPLICATION AND SHALL BE COMPATIBLE WITH EXISTING FIRE ALARM SYSTEM.
4. SYSTEM COMPONENTS AND RACEWAY SHALL BE SUPPORTED IN COMPLIANCE WITH IBC SEISMIC REQUIREMENTS.
5. ALL RACEWAYS SHALL BE METALLIC CONDUIT, MINIMUM 3/4" SIZE. ALL CONDUCTORS AND CABLES SHALL BE AS REQUIRED BY SYSTEM MANUFACTURER FOR EQUIPMENT FURNISHED AND SHALL BE IN COMPLIANCE WITH UL, NFPA, NEC, AND IFC IN RATE, TYPE, SURVIVABILITY AND INSTALLATION.
6. FIRESTOP ALL PENETRATIONS THRU RATED PARTITIONS AND FLOORS. USE UL LISTED THROUGH-PENETRATION FIRESTOP SYSTEMS APPROPRIATE FOR CONSTRUCTION TYPE AND WITH RATING EQUAL TO THAT BEING PENETRATED.
7. DUCT SMOKE DETECTORS AND SMOKE DAMPERS:
 - REFER TO MECHANICAL DRAWINGS AND COORDINATE WITH MECHANICAL CONTRACTOR FOR SMOKE DAMPERS, MECHANICAL UNIT TYPES AND CHARACTERISTICS, LOCATIONS, QUANTITIES AND FUNCTIONS.
 - PROVIDE DUCT AND AREA DETECTORS COMPLETE, INCLUDING POWER INPUT AND FIRE ALARM CIRCUITS. CONTROL WIRING FOR FANS AND DAMPERS SHALL BE BY MECHANICAL CONTRACTOR.
 - DUCT DETECTORS SHALL HAVE ENCLOSED DETECTOR UNIT AND CONTACTS MOUNTED EXTERIOR TO DUCT WITH AN INLET TUBE EXTENDING INTO DUCT. COORDINATE INLET TUBE LENGTHS AND LOCATIONS WITH MECHANICAL CONTRACTOR.
 - ALL DUCTS SHALL BE IN ACCORDANCE WITH CODES AND MANUFACTURER GUIDELINES.
 - PROVIDE DETECTORS WITH AT LEAST TWO(2) SETS OF SPDT AUXILIARY CONTACTS FOR CONNECTION OF FAN AND SMOKE DAMPER CONTROLS.
 - CONNECT COMPLETE AND PROVIDE FIRE ALARM PROGRAMMING MODIFICATIONS AS REQUIRED FOR AIR HANDLER SHUTDOWN IN ACCORDANCE WITH LOCAL CODES.
8. PROVIDE SHOP DRAWINGS, CALCULATIONS AND PRODUCT DATA IN COMPLIANCE WITH NFPA 72.
9. ENGAGE A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE FOR ALL MODIFICATIONS TO CURRENT FIRE ALARM PROGRAMMING TO SUIT ANY REQUIRED DEMOLITION AND NEW WORK/ INSPECTION AND TESTING OF FIRE ALARM SYSTEM IN COMPLIANCE WITH NFPA 72; CERTIFICATION OF OPERATION; AND SYSTEM TRAINING FOR OWNER'S MAINTENANCE PERSONNEL.



FITTING

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SYSTEM NO. W-L-1001

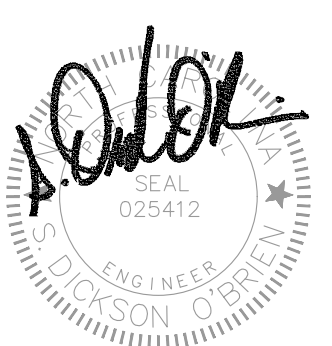


1. WALL ASSEMBLY - THE 1, 2, 3 OR 4 HR FIRE RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING RESTRICTIONS:
- A. STUDS - WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS (MAX 2 H FIRE RATED ASSEMBLIES) OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM. 2 BY 4 IN. LUMBER SPACED 16" ON CENTER. STEEL STUDS BY 2 BY 4 IN. CHANNELS AND COLD ROLLED STEEL STUDS TO BE MIN. 3" C/O IN. WIDE BY 1-3/8 IN. DEEP CHANNELS SPACED MAX. 24 IN. ON C.
- B. WALLBOARD GYPSUM - NOM. 1/2 OR 5/8 IN. THICK, 4 FT. WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM WALLBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPES AND SHEET ORIENTATION SHALL BE AS LISTED IN THE U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX. DIAM. OF OPENING IS 13-1/2 IN.
2. PIPE OR CONDUIT - NOM. 12 IN. DIAM. (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE, NOM. 12 IN. DIAM. (OR SMALLER) SERVICE WEIGHT (OR HEAVIER) CAST IRON SOIL PIPE, NOM. 12 IN. DIAM. (OR SMALLER) CLASS 50 (OR HEAVIER) DUCTILE IRON PRESSURE PIPE, NOM. 6 IN. DIAM. (OR SMALLER) STEEL CONDUIT, NOM. 4 IN. DIAM. (OR SMALLER) FIBERGLASS REINFORCED PLASTIC CONDUIT, NOM. 4 IN. DIAM. (OR SMALLER) HEAVIER COPPER TUBING OR NOM. 1 IN. DIAM. (OR SMALLER) FLEXIBLE STEEL CONDUIT, WHEN COPPER PIPE IS USED, MAX. F RATING OF FIRESTOP SYSTEM (ITEM 3) IS 2. STEEL PIPES OR CONDUITS LARGER THAN NOM. 4 IN. DIAM. MAY ONLY BE USED IN WALLS CONSTRUCTED USING STEEL CHANNEL STUDS, A MAX. OF ONE CONDUIT PER STUD. THE FIRESTOP SYSTEM SHALL BE INSTALLED NEAR CENTER OF STUD CAVITY WIDTH AND TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY.
3. FILL VOID OR CAVITY MATERIAL* - CAULK - CAULK FILLS MATERIAL INSTALLED TO COMPLETELY FILL ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND GYPSUM WALLBOARD AND WITH A MIN. 1/4 IN. DIAM. BEAD OF CAULK APPLIED TO PERIMETER OF PIPE OR CONDUIT AT ITS EGRESS FROM THE WALL. CAULK INSTALLED SYMMETRICALLY TO PERIMETER OF PIPE OR CONDUIT. THE TYPE OF CAULK TO BE USED SHALL BE AS LISTED IN THE FOLLOWING TABLE. THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS SHOWN IN THE FOLLOWING TABLE. THE HOURLY T RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE TYPE OR SIZE OF THE PIPE OR CONDUIT AND THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS TABULATED BELOW.

MAX. PIPE OR CONDUIT DIAM., IN.	ANNULAR SPACE IN.	F RATING HR	T RATING HR
1	0 TO 3/16	1 OR 2	0+, 1 OR 2
1	1/4 TO 1/2	3 OR 4	3 OR 4
4	0 TO 1/4	1 OR 2	0
4	0 TO 1-1/2	1 OR 2	0
6	1/4 TO 1/2	3 OR 4	0
12	3/16 TO 3/8	1 OR 2	0

* WHEN COPPER PIPE IS USED, T RATING IS 0 H.
0 TO 1-1/2 IN. UNUSUAL SPACE APPLIES ONLY WHEN TYPE CP-25 WB - CAULK IS USED AND ONLY WHEN THE MIN. THICKNESS OF THE GYPSUM WALLBOARD IS 5/8 IN. FOR 1 HR RATED WALLS AND 1-1/4 IN. FOR 2 HR RATED WALLS.
CAULK=3M COMPANY-TYPE CP 25WB+ OR FB-3000WT
* BEARING THE UL CLASSIFICATION MARKING.

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3/23/2022

SCHNEIDER ELECTRIC ENERGY SERVICES PROJECT

**FOR
BRUNSWICK COUNTY SCHOOL DISTRICT**

T BRUNSWICK HIGH SCHOOL

CHIEFVILLE ROAD NW
LOTTE, NC 28470

SHEET TITLE

ELECTRICAL SYMBOLS,
SCHEDULES AND DETAILS[illegible]

HEET NUMBER

E001

SHT. 1 OF 6

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ELECTRICAL PLAN - PART "A" - DEMOLITION
SCALE: 1/8" = 1'-0"

ELECTRICAL PLAN - PART "A" - NEW WORK
SCALE: 1/8" = 1'-0"

KEY PLAN
SCALE: NONE

GWA: 21-3670

GWA inc.
Electrical Engineers

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SHEET TITLE
ELECTRICAL PLAN - DEMO AND
NEW WORK - AREA A

DATE	DESCRIPTION	SUBMISSION / REVISION

DRAWN BY: CJA	CHECKED BY: SDO
DESIGNED BY: CJA	APPROVED BY: SDO
DATE: 03-23-22	PROJECT: PC21PD006

SHEET NUMBER

E101

SHT. 2 OF 6

SCHNEIDER ELECTRIC ENERGY SERVICES PROJECT
FOR
BRUNSWICK COUNTY SCHOOL DISTRICT
WEST BRUNSWICK HIGH SCHOOL
550 WHITEVILLE ROAD NW
SHALLOTTE, NC 28470

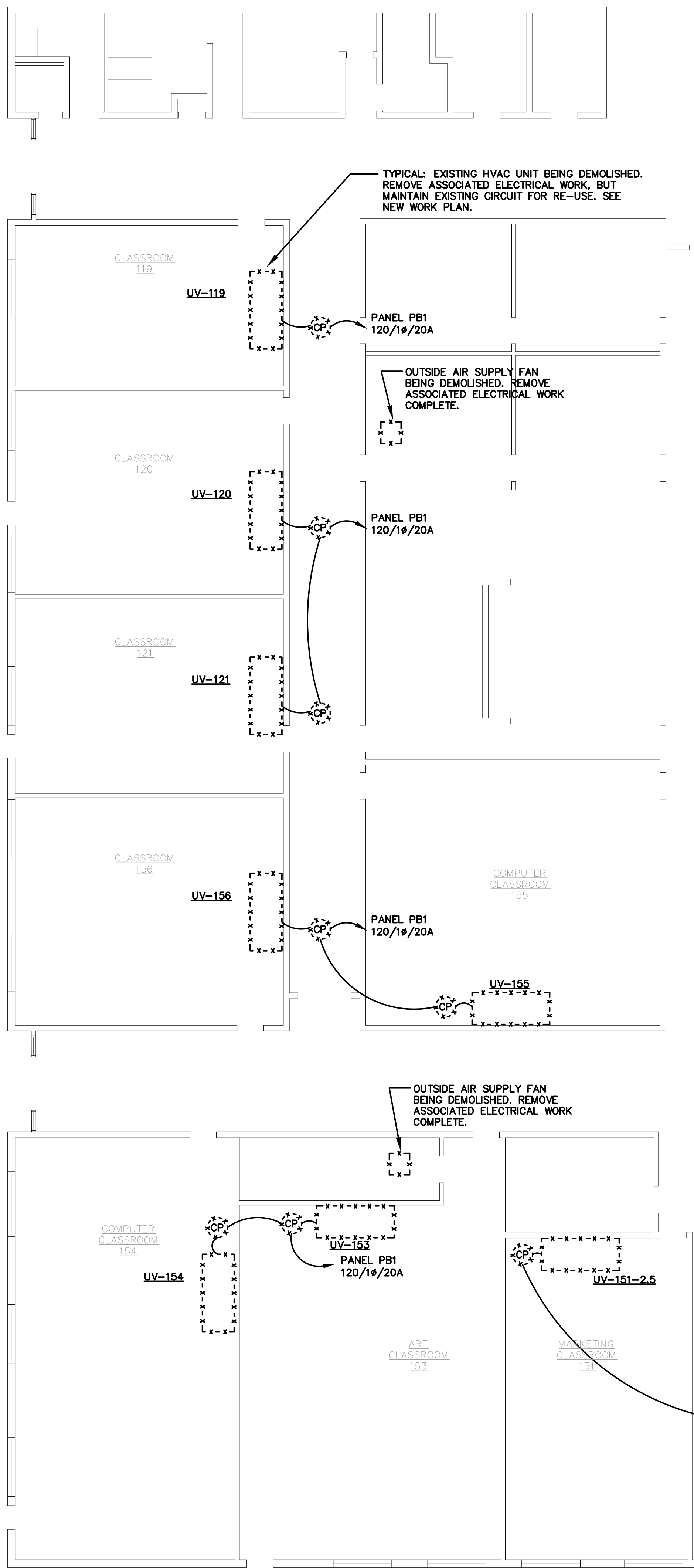
3/23/2022



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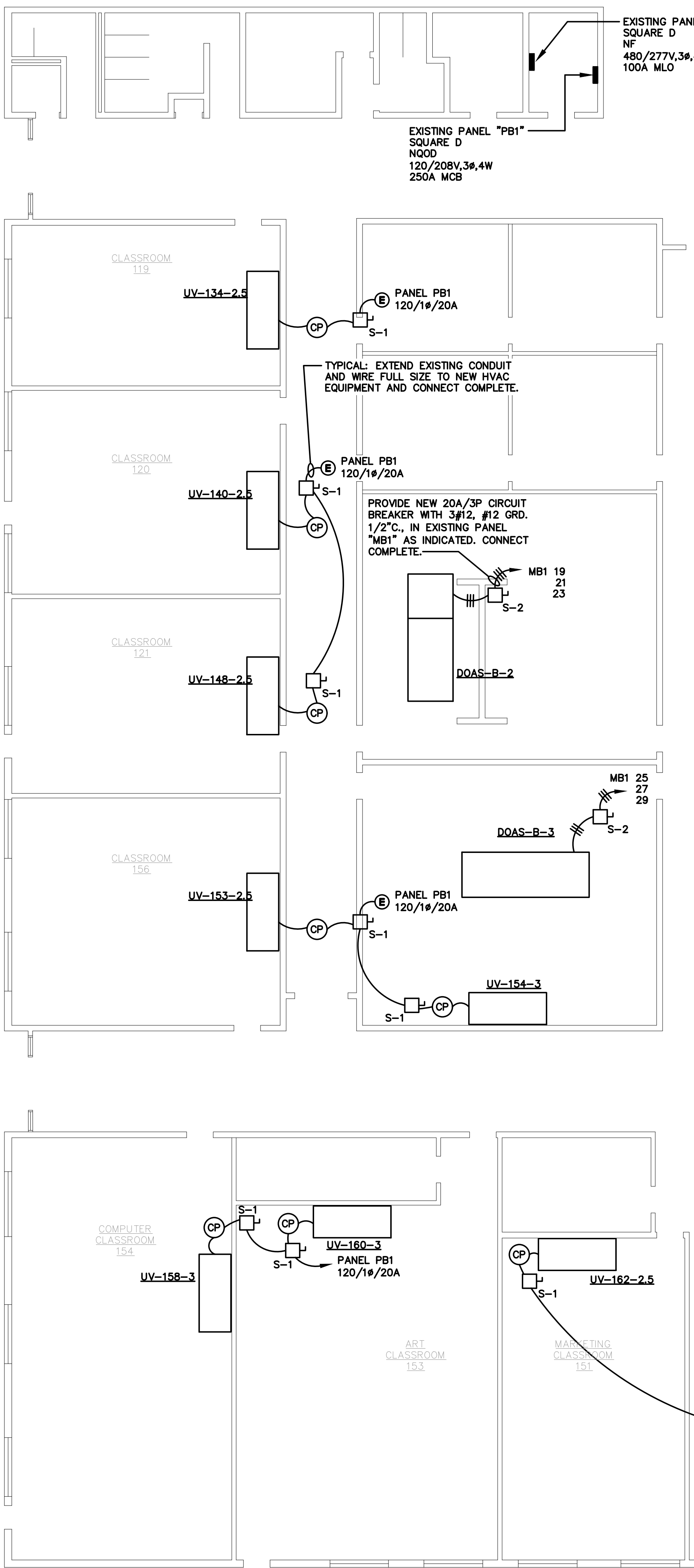
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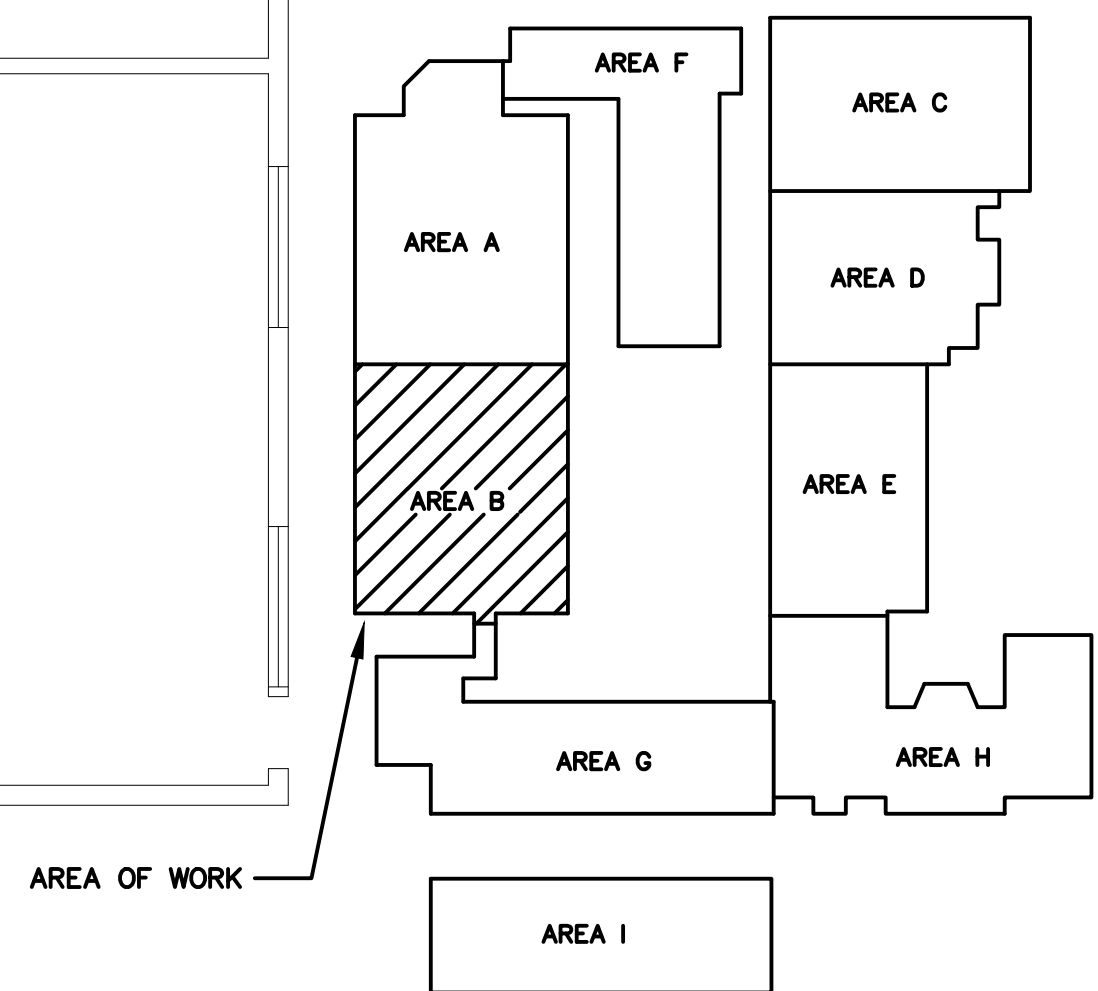


ELECTRICAL PLAN - PART "A" - DEMOLITION
SCALE: 1/8" = 1'-0"

- NOTES TO ELECTRICAL WORK - THIS SHEET.**
- CIRCUITS INDICATED ON EXISTING EQUIPMENT ARE BASED ON VISUAL OBSERVATION - CONTRACTOR SHALL VERIFY AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO NEW WORK BEING COMPLETED.
 - PROVIDE FUSING IN SAFETY SWITCHES (FUSED DISCONNECTS) TO SUIT NAMEPLATE OF EQUIPMENT CONNECTED. FUSE RATING SHALL NOT EXCEED MOCP/MFS RATING OF MECHANICAL EQUIPMENT SERVED.
 - PROVIDE UPDATED PANELBOARD DIRECTORIES FOR ALL CIRCUITS AFFECTED BY THIS WORK. SEE DEMOLITION NOTES AND SPECIFICATIONS.



ELECTRICAL PLAN - PART "A" - NEW WORK
SCALE: 1/8" = 1'-0"



KEY PLAN
SCALE: NONE

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SHALLOTTE, NC 28470

SHEET TITLE
ELECTRICAL PLAN - DEMO AND
NEW WORK - AREA B

DATE	DESCRIPTION	SUBMISSION / REVISION
03-23-22	DESIGNED BY: CJA	APPROVED BY: SDO
03-23-22	CHECKED BY: SDO	PROJECT: PC21PD006
03-23-22	DRAWN BY: CJA	SHEET NUMBER

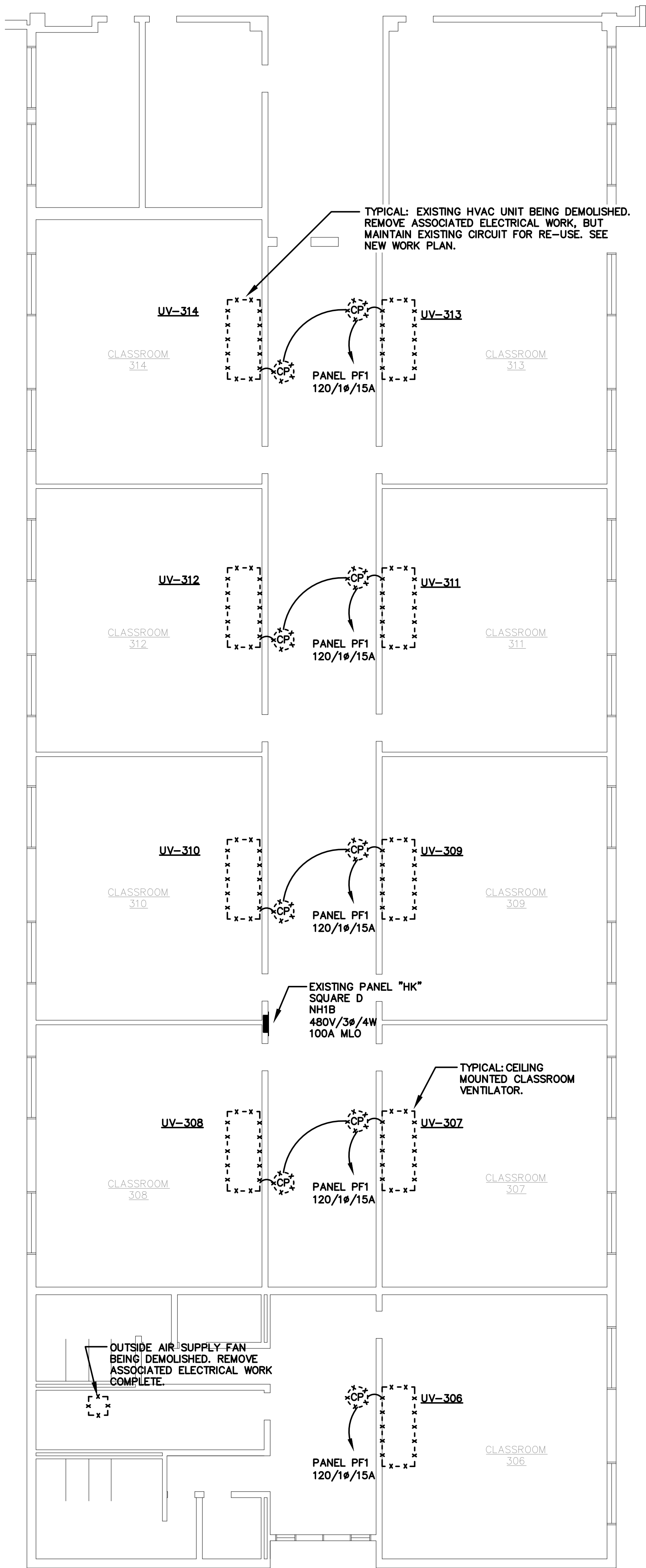
E102

SHT. 3 OF 6



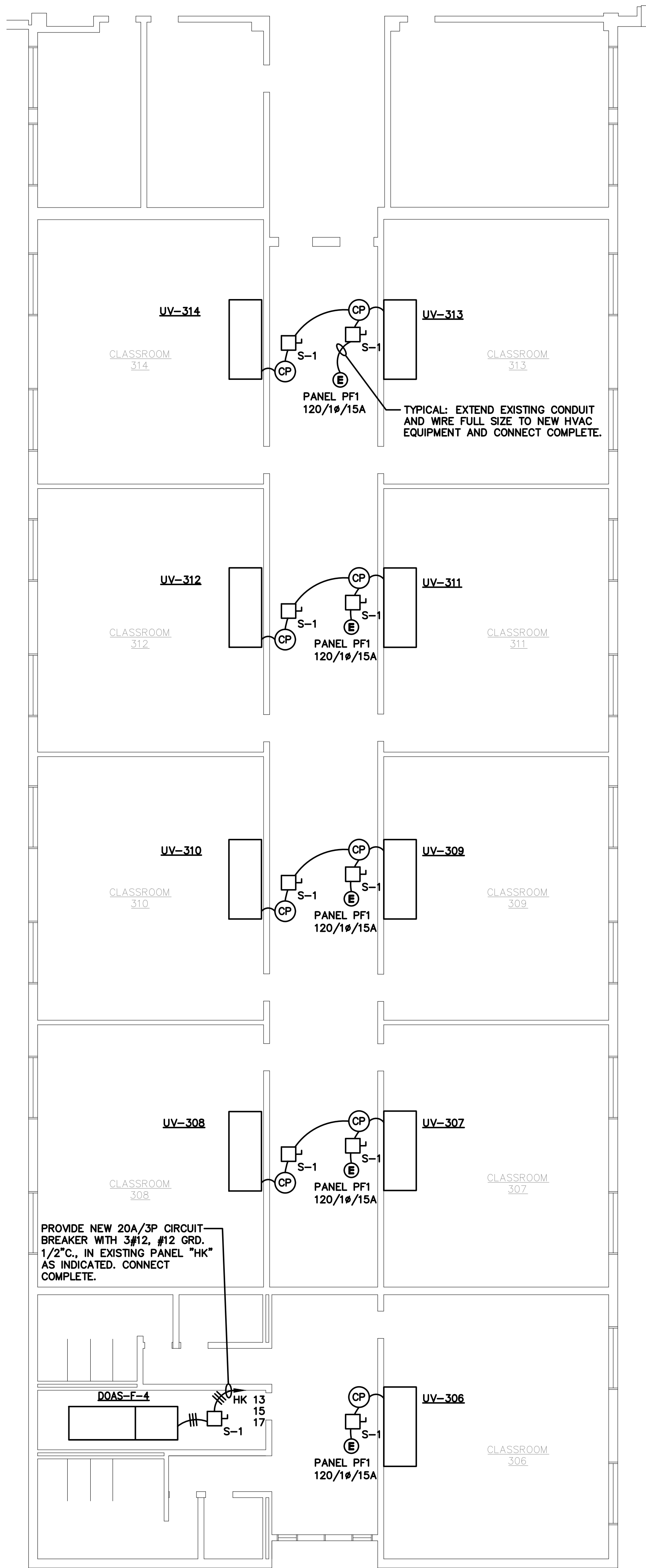
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Carrollton, TX 75006 USA
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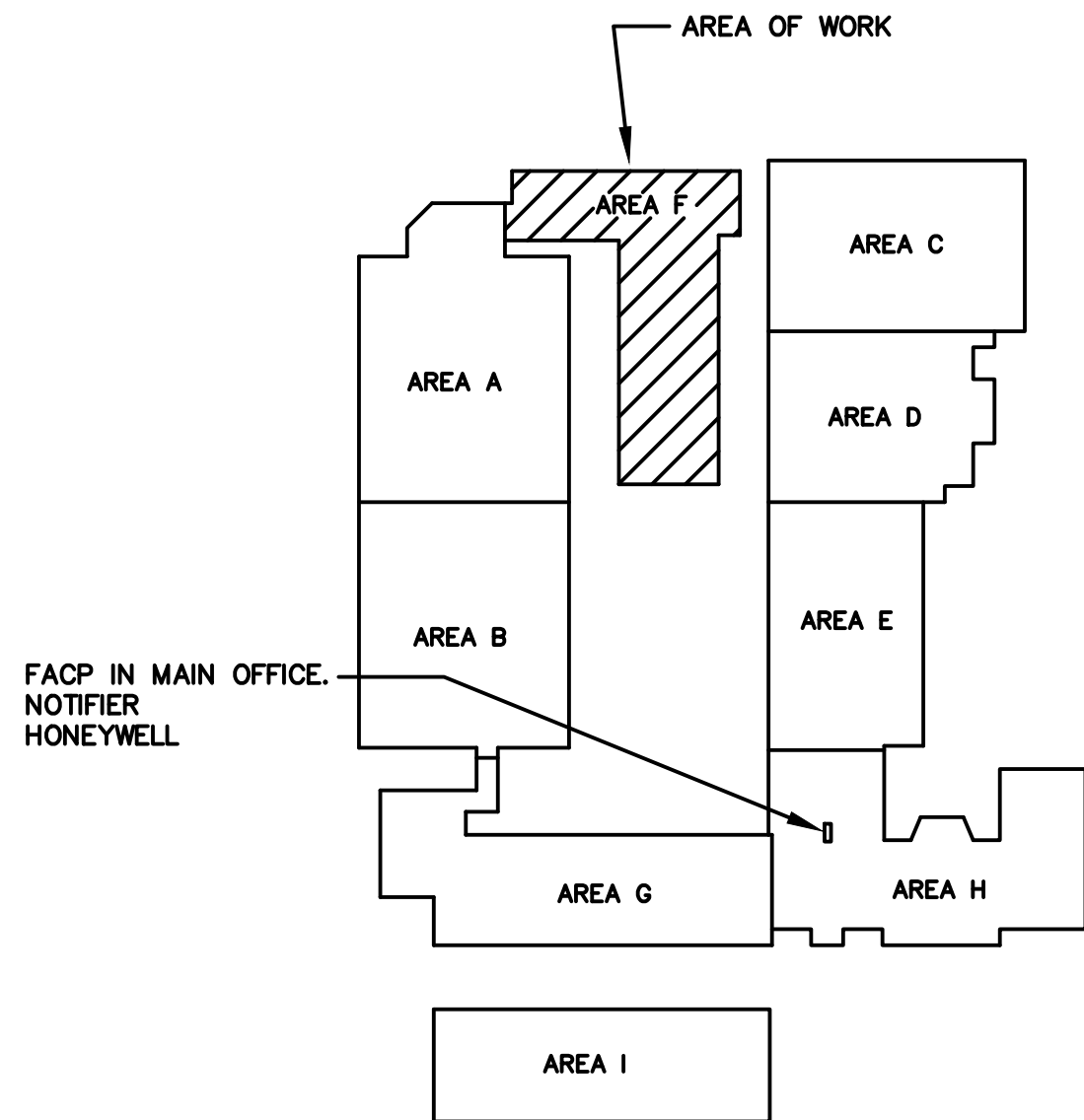


ELECTRICAL PLAN - PART "A" - DEMOLITION
SCALE: 1/8" = 1'-0"

- NOTES TO ELECTRICAL WORK - THIS SHEET**
- CIRCUITS INDICATED ON EXISTING EQUIPMENT ARE BASED ON VISUAL OBSERVATION - CONTRACTOR SHALL VERIFY AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO NEW WORK BEING COMPLETED.
 - PROVIDE FUSING IN SAFETY SWITCHES (FUSED DISCONNECTS) TO SUIT NAMEPLATE OF EQUIPMENT CONNECTED. FUSE RATING SHALL NOT EXCEED MOCP/MFS RATING OF MECHANICAL EQUIPMENT SERVED.
 - PROVIDE UPDATED PANELBOARD DIRECTORIES FOR ALL CIRCUITS AFFECTED BY THIS WORK. SEE DEMOLITION NOTES AND SPECIFICATIONS.



ELECTRICAL PLAN - PART "A" - NEW WORK
SCALE: 1/8" = 1'-0"



KEY PLAN
SCALE: NONE

GWA: 21-3670

GWA inc.
Electrical Engineers

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Columbia, SC 29210
(803)252-6919
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SCHNEIDER ELECTRIC ENERGY SERVICES PROJECT
FOR
BRUNSWICK COUNTY SCHOOL DISTRICT
WEST BRUNSWICK HIGH SCHOOL
560 WHITEVILLE ROD NW
SHALLOTTE, NC 28470

SHEET TITLE
ELECTRICAL PLAN - DEMO AND
NEW WORK - AREA F

DATE	DESCRIPTION	SUBMISSION / REVISION
03-23-22	PROJECT: PC21PD006	
03-23-22	DESIGNED BY: CJA	
03-23-22	CHECKED BY: SDO	
03-23-22	APPROVED BY: SDO	
03-23-22	DRAWN BY: CJA	

SHEET NUMBER

E103

SHT. 4 OF 6



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