ELECTRICAL SPECIFICATIONS

1.1 THE ELECTRICAL CONTRACT WORK SHALL INCLUDE ALL ELECTRICAL MATERIALS AND INSTALLATION TO RESULT IN A BUILDING READY AND SUITABLE FOR USE AS INTENDED BY OWNER. THE CONTRACTOR SHALL REFER TO THE SITE, ARCHITECTURAL, AND MECHANICAL PLANS.

1.2 ALL ELECTRICAL INSTALLATIONS SHALL BE MADE IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE AND ITS SUPPLEMENTS IN FORCE AT THE TIME OF BID OPENING, AND ALL MATERIALS EMPLOYED SHALL BE UL LISTED AND APPROVED AND BEAR THE UL OFFICIAL LABELS WHERE SUCH LABELING IS CUSTOMARY. IN THE EVENT THAT LOCAL CODES ARE MORE RIGID THAN THE NATIONAL CODE, BOTH CODES SHALL THEN BE CONSIDERED AS JOINTLY GOVERNING AND THE REQUIREMENTS OF THE MOST RIGID SHALL THEN PREVAIL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER SELECTION AND APPLICATION OF MATERIALS AND METHODS OF THEIR INSTALLATION. PRINCIPAL FEATURES ARE AS FOLLOWS:

A. CONNECTIONS TO HVAC UNITS.

B. WIRING DEVICES, OUTLETS, AND ETC.

C. A SYSTEM OF PANELBOARDS, DRY TYPE TRANSFORMER, FEEDER LINES, AND BRANCH WIRING FOR A COMPLETE POWER DISTRIBUTION SYSTEM FOR THE OFFICE AREA.

D. CONNECTION OF MECHANICAL EQUIPMENT.

E. COMMUNICATIONS SYSTEM RACEWAY PROVISIONS.

1.3 POWER SERVICE

A. POWER SERVICE IS EXISTING 120/208-VOLTS, 3-PHASE, 4-WIRE.

1.4 DISTRIBUTION EQUIPMENT

A. DISTRIBUTION EQUIPMENT AND BRANCH CIRCUIT PANELBOARDS SHALL BE MOLDED CASE CIRCUIT BREAKER EQUIPMENT HAVING THE NECESSARY INTERRUPTING RATINGS BUT NOT LESS THAN 10,000 AIC. GROUND FAULT SENSING AND AUTOMATIC INTERRUPTING SHALL BE FURNISHED ON ANY OUTDOOR POWER CIRCUITS AND AS OTHERWISE REQUIRED. EQUIPMENT SHALL BE SQUARE-D OR EQUAL. ALL BUS SHALL BE COPPER

1.5 GROUNDING

A. PROVIDE CODE GROUNDING FOR ANY SYSTEM ADDITIONS.

1.6 CONNECTION OF EQUIPMENT

A. THE ELECTRICAL CONTRACTOR SHALL CONNECT ALL MECHANICAL EQUIPMENT FURNISHED BY OTHER TRADES INCLUDING HVAC EQUIPMENT AND PLUMBING EQUIPMENT. CONNECTION SHALL BE EXTENDED TO ALL ELECTRICALLY OPERATED EQUIPMENT INCLUDING THE EQUIPMENT FURNISHED BY THE OWNER. THE ELECTRICAL CONTRACTOR SHALL VERIFY VOLTAGE, CAPACITY AND PHASE OF EQUIPMENT REQUIRING CONNECTION BEFORE CONNECTION AND NOTIFY THE ARCHITECT AND/OR ENGINEER IN THE EVENT OF DIFFERENCES. WHERE REQUIRED, THE ELECTRICAL CONTRACTOR SHALL FURNISH DISCONNECT SWITCHES AND MANUAL MOTOR STARTERS. ALL MOTOR STARTER HEATER ELEMENTS AND OVERCURRENT PROTECTION SHALL BE CHECKED FOR PROPER APPLICATION TO THE DEVICE BEING SERVED. DISCONNECTS AND SWITCHES SHALL BE SQUARE-D COMPANY OR EQUAL.

1.7 CONVENIENCE

A. FURNISH AND INSTALL CONVENIENCE OUTLETS WHERE ILLUSTRATED ON THE PLANS. ALL OUTLET DEVICES AND SWITCH DEVICES SHALL BE COMMERCIAL GRADE RATED 20-AMPERES FOR COMMERCIAL SERVICE OR DESIGNATED EQUIPMENT. DEVICES SHALL BE HUBBELL COMPANY OR EQUAL.

1.8 TYPES OF WIRING AND RACEWAYS

A. THE TYPES AND GRADES OF MATERIALS TO BE EMPLOYED IN THE WIRING SYSTEMS ARE SUBJECT TO BUILDING STRUCTURAL CONDITIONS AND THE GOVERNING CODES. THE WIRING SHALL BE GALVANIZED CONDUIT AND GALVANIZED STEEL AND DEVICE BOXES WHERE NECESSARY AND REQUIRED.

WHERE PERMITTED BY CODE WIRING SYSTEMS MAY BE EMT OR INTERMEDIATE METALLIC CONDUIT. ALL CONDUCTORS SHALL BE COPPER.

B. UNLESS PARTICULARLY STATED OTHERWISE, ALL WIRING SHALL BE RUN CONCEALED AND OUTLETS SHALL BE FLUSH MOUNTED IN WALLS AND CEILINGS.

C. ALL CONDUITS INSTALLED UNDERGROUND, IN CONCRETE SLABS, OR EXTERIOR OF BUILDINGS, MAY BE PLASTIC "PVC" EXCEPT WHEN EXPOSED, THEY SHALL BE SUITABLE GALVANIZED STEEL.

D. WIRING SYSTEMS WITH OUTLET DEVICES AND BOXES, SHALL BE GROUNDED AS REQUIRED BY THE GOVERNING CODES.

1.9 MATERIALS

A. BASIC MATERIALS AND DEVICES REQUIRED IN THE WIRING SYSTEMS SHALL BE UL APPROVED STANDARDS. IN THE EVENT THAT UL STANDARD IS REVISED, SUPPLEMENTED, OR MODIFIED, ETC., THE LATEST REQUIREMENTS SHALL THEN GOVERN.

B. AT THE REQUEST OF THE OWNER OR HIS DESIGNATED REPRESENTATIVE, THE CONTRACTOR SHALL SUBMIT A LIST OF MATERIALS PROPOSED TO BE USED IN THE CONSTRUCTION OR PROVIDE SAMPLES, ETC., FULLY ESTABLISHING THE TYPE, GRADE, AND QUALITY OF EACH DEVICE OR ITEM OF MATERIAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ONLY SUCH DEVICES AND MATERIALS AS OBVIOUSLY MEET GOVERNING REQUIREMENTS.

C. FIRE ALARM SYSTEM SHALL BE ADDRESSABLE. PROVIDE CONDUIT IN ALL AREAS (3/4"MIN.) PROVIDE ONE DEDICATED AND ONE BACKUP PHONE LINE. PROVIDE ONE YEAR MONITORING AT NO COST TO THE OWNER. ALL WORK SHALL BE IN COMPLIANCE WITH LOCAL, STATE, AND NATIONAL CODES.

1.10 CABINETS

A. CABINETS SHALL BE CONSTRUCTED OF SHEET STEEL, OF CODE GAUGE, AND FOR EITHER SURFACE OR FLUSH MOUNTING AS SHOWN ON DRAWINGS. SURFACES SHALL BE BONDERIZED TO RESIST CORROSION OR RUSTING.

B. CABINETS FOR INTERIOR INSTALLATION SHALL HAVE DOOR AND TRIMS PAINTED TO MATCH SURROUNDINGS.

C. CABINETS MOUNTED OUTDOORS SHALL BE OF WEATHERPROOF CONSTRUCTION WITH A FINISH TO ADEQUATELY PROTECT THE METAL AGAINST ACTION OF THE ELEMENTS PROVIDING MEANS OF LOCKING COVERS OR DOORS OVER THE CIRCUIT PROTECTIVE SECTIONS AND FURNISH A PIN-TYPE TUMBLER OR PADLOCK ARRANGED FOR MASTER-KEYING OR EACH ASSEMBLY.

1.11 WORK QUALITY

A. ALL ELECTRICAL WORK SHALL BE SPECIFIED TO BE PERFORMED IN A WORKMANLIKE AND PROFESSIONAL MANNER BY WORKMEN SKILLED IN THE TRADE REQUIRED. THE WORK SHALL RESULT IN A FINISHED AND OPERATING SYSTEM.

1.12 GUARANTEE

A. THE ELECTRICAL CONTRACTOR SHALL GUARANTEE ALL WORK TO BE FREE OF GROUNDS AND SHORT CIRCUITS AND SHALL REPAIR OR REPLACE ALL DEFECTIVE WORK WITHIN A PERIOD OF ONE YEAR AFTER ACCEPTANCE BY THE OWNER.

1.13 CODES, PERMITS, FEES

A. THE ELECTRICAL CONTRACTOR SHALL PAY FOR AND SECURE ALL NECESSARY PERMITS. THE ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND CONFORMING TO ALL LOCAL, STATE AND NATIONAL GOVERNING CODES.

ELECTRICAL LEGEND

STANDARD ABBREVIATIONS AND NOTATIONS

A	AMPERE (AMPS)	KVA	KILOVOLT-AMPS	WG	INDICATES DEVICE SHALL BE PROVIDED WITH WIRE GUARD
AC	INDICATES DEVICE SHALL BE MOUNTED ABOVE COUNTERTOP	KW	KILOWATT	WP	WEATHERPROOF
AFF	ABOVE FINISHED FLOOR	LC	LEXON COVER	XFMR	TRANSFORMER
AFG	ABOVE FINISHED GRADE	MCA	MINIMUM CIRCUIT AMPS		
AFI	ARC FAULT INTERRUPTER (AT CKT. BKR.)	MCC	MOTOR CONTROL CENTER		EXISTING DEVICE NOTATIONS
AIC	AMPS INTERRUPTING CURRENT	MCM	1000 CIRCULAR MILS. SAME AS "KCMIL".	EX	EXISTING DEVICE TO REMAIN
BKR	BREAKER	N	NEUTRAL	EXM	EXISTING DEVICE TO BE MOVED TO NEW LOCATION SHOWN
C	CONDUIT	NIC	NOT IN CONTRACT	EXR	EXISTING DEVICE TO BE RECONNECTED TO NEW CONTROL SYSTEM AT A DIFFERENT LOCATION. SUPPLY ALL WIRING, MODULES, ETC, AS REQUIRED.
CKT	CIRCUIT	NL	NIGHT LIGHT. LUMINAIRE SHALL BE UNSWITCHED EXCEPT FOR CIRCUIT BREAKER.		
CU	COPPER CONDUCTOR	PC	INDICATES DEVICE IS CONTROLLED BY PHOTOCELL OR TIMECLOCK		
DISC.	DISCONNECT	PVC	POLYVINYLCHLORIDE CONDUIT. CLASSIFIED AS RIGID NONMETALLIC CONDUIT PER NEC. SCHEDULE 40 UON.		
DN	DOWN	QR	INDICATES LUMINAIRE SHALL BE PROVIDED WITH QUARTZ RESTRIKE		
EM	CONNECTED TO EMERGENCY POWER	SCCR	SHORT-CIRCUIT CURRENT RATING		
EMT	ELECTRICAL METALLIC TUBING	TR	TAMPER RESISTANT		
FLA	FULL LOAD AMPS	UC	UNDER COUNTER. INDICATES DEVICE SHALL BE LOCATED BELOW THE COUNTERTOP.		
G	GROUND (ALSO "GND")	UON	UNLESS OTHERWISE NOTED		
GFI	GROUND-FAULT CIRCUIT-INTERRUPTER (ALSO "GFCI")	V	VOLTS		
GRS	GALVANIZED RIGID STEEL CONDUIT	W	WATTS		
HP	HORSEPOWER				
IMC	INTERMEDIATE METALLIC CONDUIT				
KCMIL	1000 CIRCULAR MILS. SAME AS "MCM".				

SYMBOL	DESCRIPTION
	FUSED DISCONNECT SWITCH – RATING TO MATCH THE REQUIREMENTS OF THE EQUIPMENT BEING SERVED. NORMAL DUTY INDOORS AND HEAVY DUTY NEMA 3R OUTDOORS UNLESS NOTED OTHERWISE.
AC GFCI 3	GROUND FAULT CIRCUIT INTERRUPTING DUPLEX RECEPTACLE – 120-VOLT, 20-AMP WITH GFCI PROTECTION IN THE RECEPTACLE. MOUNT 18" ABOVE FINISHED FLOOR OR 8" ABOVE COUNTERTOPS OR BACK SPLASHES UNLESS OTHERWISE NOTED. "3" REFERS TO THE CIRCUIT NUMBER.
(EX)"A"	EXISTING PANELBOARD – FLUSH OR SURFACE MOUNTED AS INDICATED. "A" INDICATES THE PANEL DESIGNATION. SEE PANELBOARD SCHEDULE FOR PANELBOARD REQUIREMENTS.
	CONDUIT INSTALLED IN CEILING OR WALL CONSTRUCTION.
	CONDUIT INSTALLED UNDERGROUND OR BELOW THE FLOOR CONSTRUCTION.
	LOW-VOLTAGE WIRING INSTALLED ABOVE LAY-IN CEILING WITHOUT CONDUIT.
A-1,3 ###	HOMERUN – EXTEND CONDUIT TO THE PANELBOARD OR DEVICE INDICATED. NUMBER OF CROSSHATCHED LINES INDICATES THE QUANTITY OF CURRENT CARRYING CONDUCTORS (NOT INCLUDING THE GROUND CONDUCTOR) WHERE MORE THAN TWO. CIRCUITS SHALL ALL HAVE SEPARATE NEUTRALS AND SHALL BE CONNECTED TO DIFFERENT PHASES WITHIN THE PANELBOARD REGARDLESS OF THE NUMBERING ON THE DRAWINGS. ALL CONDUIT RUNS SHALL BE PROVIDED WITH A GREEN CODE SIZE EQUIPMENT GROUNDING CONDUCTOR THAT SHALL BOND TO THE GROUNDING BUS BAR IN THE PANELBOARD.
3S4	WALL SWITCH – RATED FOR 20-AMP OPERATION AT LINE VOLTAGE. SINGLE POLE UNLESS NOTED 3-WAY OR 4-WAY. MOUNT 48" ABOVE FINISHED FLOOR EXCEPT IN MASONRY WHERE THE HEIGHT SHALL BE ADJUSTED TO HAVE EDGE OCCUR AT NEAREST JOINT.
T	THERMOSTAT – MOUNT 54" ABOVE FINISHED FLOOR. EXTEND CONDUIT AND CONDUCTORS TO EQUIPMENT BEING CONTROLLED AND CONNECT.
J	JUNCTION BOX – SIZE AND USE AS REQUIRED. WHEN RECESSED COVERPLATE SHALL OVERLAP THE BOX EDGE BY 1/2".

DEMOLITION AND GENERAL NOTES:

1. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO PREPARING HIS BID IN ORDER TO FAMILIARIZE HIMSELF WITH CONDITIONS AS THEY EXIST AND SHALL STUDY ALL AVAILABLE BUILDING PLANS AND ARCHITECTURAL AND MECHANICAL DRAWINGS TO SATISFY HIMSELF AS TO THE EXTENT OF ALL CONTINGENCIES AND SHALL INCLUDE THE COST OF THE SAME IN HIS BID.
2. THE CONTRACTOR SHALL NOT CREATE INTERRUPTION OF THE EXISTING BUILDING SERVICES WITHOUT PRIOR SCHEDULING OF SUCH OUTAGES WITH THE OWNER'S REPRESENTATIVE.
3. CIRCUIT NUMBERS ARE FOR DESIGN INTENT. FIELD VERIFY EXACT ROUTING AND CIRCUIT NUMBERS. PROVIDE NEW DIRECTORIES FOR ALL PANELBOARDS.

DRAWING NOTES:

1. CONNECT TO NEAREST UNSWITCHED 120V CIRCUIT THIS AREA.
2. EXISTING THRU-WALL UNIT AND COMPONENTS TO BE REMOVED AND REPLACED WITH NEW DUCTLESS SPLIT SYSTEM. REMOVE EXISTING 3 POLE BREAKERS IN THE EXISTING PANEL SERVING THE EXISTING UNITS. PROVIDE AND INSTALL NEW 30/2 BREAKER IN EXISTING PANEL TO FEED NEW DUCTLESS SPLIT SYSTEMS, 3#10, 1#10G, 3/4 C. PROVIDE ALL NECESSARY HARDWARE FOR MOUNTING BREAKERS. PROVIDE BLANK PROVISIONS WHERE NECESSARY.
3. INTERCEPT EXISTING CIRCUITS FEEDING THE EXISTING THRU-WALL UNITS AND EXTEND WIRING TO NEW UNITS ON ROOF.

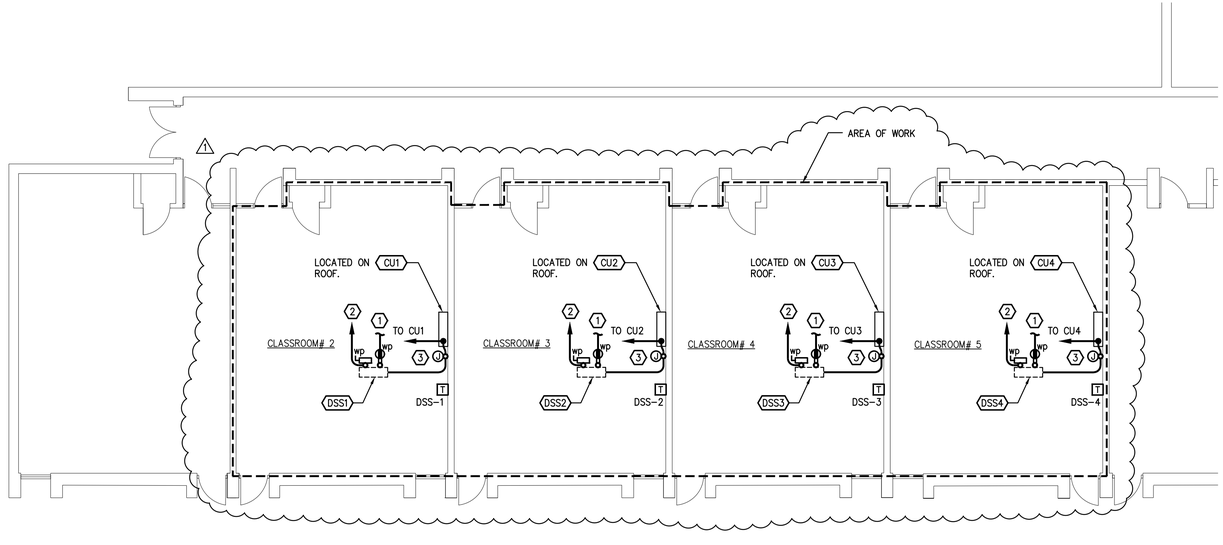
HVAC WIRING NOTES:

- CU: CU 1-4, 17.1MCA, 208V., 1PH. PROVIDE A 30/2 DISCONNECT WITH 30AMP. FUSES. 1", 2#8, #10GND. OUTDOOR UNIT POWERS ITS RESPECTIVE INDOOR UNIT.
- DSS: DSS 1-4, 1.0MCA, 208V., 1PH. INDOOR UNIT POWERED BY RESPECTIVE OUTDOOR UNIT.

VERIFY NAMEPLATE RATINGS PRIOR TO ROUGH-IN.

PANELBOARD GENERAL NOTE:

ELECTRICAL CONTRACTOR SHALL TRACE ALL EXISTING CIRCUITS PRIOR TO STARTING WORK AND VERIFY SPACE FOR NEW CONNECTIONS AND RE-CONNECTING TO EXISTING CIRCUITS. AFTER WORK IS COMPLETE, FURNISH AND INSTALL A NEW DIRECTORY LISTING ALL BREAKERS NEW AND EXISTING.



FLOOR PLAN - HVAC NEW WORK

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

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HVAC FOR 4 CLASSROOMS

FLOOR PLANS - HVAC

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