Exhibit B

SIE	MENS - T	YPE	S1, W/GRD. BUS						22000 AIC LABELEI)		
CIRC			LOAD		AMP SIZE	IASE	AMP		LOAD	LOAD		CIRC
NO.	V. A.	TYPE	DESCRIPTION	۲.	SIZE	ᆸ	SIZE	۲.	DESCRIPTION	TYPE	V. A.	NO.
1	15000	POWR	RTU-4	3	60	Α	30	2	RTU-E4	POWR	4500	2
3						В						4
5						С	30	2	RTU-2	POWR	4500	6
7	11000	POWR	RTU-5	3	40	Α						8
9						В	40	2	RTU-3	POWR	6000	10
11	-					С						12
13	13000	POWR	RTU-6	3	50	Α	40	2	RTU-E7	POWR	6000	14
15				-		В					-	16
17	-					С			SPACE			18
19	21500	POWR	RTU-7	3	80	Α	50	3	RTU-SOUTH	POWR	13000	20
21	-					В						22
23	ł					С					-	24
25	1000	POWR	EXISTING CU-1	3	20	Α	100	3	SPARE	SPAR	26000	26
27						В		-			-	28
29	-					С					-	30
31	600	POWR	EF-1 RELAY	1	20	Α	20	2	GATE	POWR	600	32
33	600	POWR	POP MACHINE	1	20	В						34
35	600	POWR	IRRIGATION PUMP	1	20	С	30	3	CU-1	MOTR	4104	36
37	13000	POWR	RTU-NORTH	3	50	Α		-				38
39				-		В		-				40
41				-		С	20	1	CU-1 HEATERS	POWR	300	42

- 1. ALL CIRCUITS BREAKERS AND LOADS ARE EXISTING TO REMAIN UNLESS NOTED OTHERWISE
- 2. UPDATE PANEL DIRECTORY WITH ALL CHANGES.
- 3. UTILIZE CIRCUIT BREAKER MADE SPARE IN DEMOLITION FOR CONNECTION. LOAD ON PANEL IS BEING REDUCED WITH SMALLER COOLING EQUIPMENT BEING PROVIDED

GENERAL NOTES

- ALL ELECTRICAL WORK SHALL COMPLY WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) & THE AMERICANS WITH DISABILITIES ACT (ADA).
- REFER TO RELATED ARCHITECTURAL, MECHANICAL, STRUCTURAL, AND CIVIL DRAWINGS FOR RELATED INFORMATION.
- REFER TO THE SPECIFICATIONS FOR DATA NOT ON THE DRAWINGS.
- E.C. SHALL REFER TO MECHANICAL DRAWINGS AND SPECIFICATIONS FOR THE REQUIREMENTS ASSOCIATED WITH WIRING AND CONNECTION OF INTERLOCKING AND CONTROLS OF MECHANICAL UNITS AND THERMOSTAT LOCATIONS.
- COORDINATE OUTLET BOX LOCATIONS WITH MASONRY TO MINIMIZE CUTTING OF BRICK OR BLOCK.
- ALL MOUNTING HEIGHTS TO CENTERLINE OF ITEM UNLESS OTHERWISE NOTED. VERIFY ALL OUTLET LOCATIONS ON THE JOB PRIOR TO ROUGH-IN.
- CONDUIT RUN W/CONDUCTORS AS INDICATED & GROUND WIRE SIZED PER N.E.C. 250.122. CONDUIT SIZE AS REQUIRED.
- WHEN INCREASED CONDUCTOR SIZES ARE SHOWN ON THE PLANS, THE LARGER CONDUCTOR SIZE SHALL BE USED THROUGHOUT THE LENGTH OF THE CIRCUIT, INCLUDING NEUTRAL AND GROUND.
- "CT" INDICATED ADJACENT TO DEVICE INDICATES DEVICE MOUNTED ABOVE BACKSPLASH OF COUNTER TOP. VERIFY EXACT HEIGHT WITH ARCHITECTURAL PLANS AND ELEVATIONS.
- BRANCH CIRCUITS ARE INDICATED AS ONE CIRCUIT HOME RUNS WITH INDIVIDUAL NEUTRALS. A MAXIMUM OF THREE CIRCUITS (MAXIMUM OF THREE PHASE CONDUCTORS) MAY BE GROUPED IN A SINGLE CONDUIT. WHERE MULTIPLE CIRCUITS ARE LOCATED IN THE SAME RACEWAY, JUNCTION BOX OR ENCLOSURE, NEUTRALS SHALL BE MARKED OR LABELED TO INDICATE WHICH CIRCUIT THEY ARE ASSOCIATED WITH. SEE SPECIFICATION SECTION "LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES" FOR ADDITIONAL INFORMATION.
- JUNCTION BOX OR RECEPTACLE FOR DRINKING FOUNTAINS SHALL BE LOCATED BEHIND THE EQUIPMENT SKIRT UNLESS OTHERWISE NOTED. COORDINATE CONNECTION TYPE AND LOCATION WITH EQUIPMENT PROVIDED.

NOTED ON THE DRAWINGS.

- 12. LABEL THE FRONT OF EACH RECEPTACLE COVERPLATE WITH PANEL DESIGNATION AND CIRCUIT NUMBER USING CLEAR THERMAL TRANSFER (ELECTRONIC DYMO) LABELS WITH 1/8" HIGH BLACK LETTERS (OR CONTRASTING COLOR IF COVERPLATES ARE BLACK OR BROWN). LABELS SHALL BE SUITABLE FOR INDOOR/OUTDOOR USE. LABEL THE BACK OF EACH LIGHT SWITCH COVERPLATE WITH PANEL DESIGNATION AND CIRCUIT NUMBER USING A FINE BLACK PERMANENT MARKER.
- 13. PROVIDE 18" LONG (MIN.) CONDUIT SLEEVES THRU ALL WALLS WHERE CABLES ARE INDICATED OR REQUIRED TO PASS THRU WALLS. PROVIDE BUSHINGS ON BOTH ENDS. SIZE CONDUIT FOR CABLES INSTALLED. AT CABLE TRAYS PROVIDE ONE 4" CONDUIT SLEEVE FOR EACH 4" WIDTH OF CABLE TRAY. MAXIMUMS SHALL BE:

1"C. = 10 CABLES 2 1/2"C. = 20 CABLES 3"C. = 30 CABLES 4"C. = 50 CABLES

- 14. LOCATE CABLE TRAYS 6" ABOVE CEILING. OFFSET TRAY UP AND OVER LIGHT FIXTURES AND DUCTWORK (FIELD VERIFY AND PROVIDE AS REQUIRED). IF PHYSICALLY IMPOSSIBLE TO RUN CABLE TRAY UP AND OVER, THEN PROVIDE CABLE SUPPORT HOOKS FROM STRUCTURE ABOVE. SIZED AND RATED FOR INSTALLED CABLES PLUS 25% SPARE.
- 15. PROVIDE DIMMER PER THE SPECIFICATIONS. COORDINATE DIMMER TYPE AND WIRING WITH ASSOCIATED LIGHT FIXTURE DIMMING REQUIREMENTS (I.E 3-WIRE, O-10V, ELECTRONIC OR MAGNETIC LOW VOLTAGE ETC.) OR WITH LIGHTING CONTROL SYSTEM PROPRIETARY REQUIREMENTS (I.E. LUTRON, nLIGHT, DALI, ETC.) AS NECESSARY. 3-WIRE DIMMERS SHALL BE PROVIDED WITH A DEDICATED NEUTRAL FOR EACH CONTROL ZONE. 0-10V DIMMERS SHALL BE PROVIDED WITH DIM/ON/OFF CONTROL. COORDINATE PHASE CONTROL OF LED DRIVERS (I.E. REVERSE PHASE, FORWARD PHASE, ETC.) WITH LIGHT FIXTURE MANUFACTURER'S RECOMMENDATIONS. LOW VOLTAGE CONTROL WIRING IS NOT SHOWN ON PLANS FOR CLARITY, BUT SHALL BE PROVIDED AS REQUIRED.

© © © © EQUIPMENT CONNECTION SCHEDULE																
	MECHANICAL EQUIPMENT CONNECTIONS															
		LOAD					DEVICE						AT UNIT	S		REMARKS
UNIT DESIG	UNIT VOLTAGE	H.P.	FLA	KVA	CIRCUIT NUMBER	BKR. AMPS	SW. FL AMPSAN	JSE P MPS E	NEMA B START. SIZE AI	KR. SW MPSAMP	. FUS SAMP	P NEMA STAR SE SIZE	OTHER] 	FEEDER DESCRIPTION OR SEE THE FEEDER SCHEDULE	OR SEE THE INDICATED NOTES BELOW
AC	AIR COND															
1	208/3	24.4A	79.1	28.47	MDB:		200 1	10 3		200)	3		1	3 #1 AWG THWN; #6 AWG GRD; 1-1/2"C.	INDOOR UNIT
CU	AIR COOL	ED CO	NDFI	NSING	L GUNIT											
)1					MN:36	30		3		30	15	3	NEMA-3R	1	3 #10 AWG THWN; #10 AWG GRD; 3/4"C.	OUTDOOR UNIT
							\vdash	_			+			+		
															I ED AND INSTALLED BY THE ELECT BY OTHERS PRIOR TO ROUGH-IN.	RICAL
															CIATED WITH WIRING AND CONNE	

3 SIZE FUSES FOR MOTOR FUSTATS BASED ON 125% OF MANUFACTURER'S NAMEPLATE FULL LOAD AMPERAGE UNLESS OTHERWISE

4 UTILIZE EXISTING WIRING FOR CONNECTION TO EQUIPMENT WHICH REPLACES OLD EQUIPMENT IN THE SAME LOCATION.

SYMBOL LIST SYMBOL DESCRIPTION MOUNTING SYMBOL MOUNTING DESCRIPTION **ABBREVIATIONS** ABOVE FINISHED FLOOR NIGHT LIGHT - WIRE AHEAD OF CONTROLS AFG ABOVE FINISHED GRADE EM ON EMERGENCY POWER DRINKING FOUNTAIN -**SEE GENERAL NOTE 11** WP **WEATHERPROOF** CT COUNTERTOP (SEE GEN. NOTE 9) UON UNLESS OTHERWISE NOTED NALL**CONDUIT AND WIRING** EMERGENCY CIRCUIT CONDUIT HOME RUN, 1 CIRCUIT. CLG/WALL 2#12 & 1#12 GRD. - 1/2"C. MASTER/SLAVE FIXTURE WHIP **CEILING** LOW VOLTAGE WIRING CLG/WALL CONDUIT HOME RUN, 2 CIRCUITS. CLG/WALI 4#12 & 1#12 GRD. - 1/2"C. CDT RUN 2#12 & 1#12 GRD.- 1/2"C. CLG/WALL OR CDT RUN AS NOTED ON PLAN CONDUIT HOME RUN, 3 CIRCUITS **CLG/WALL** 6#12 & 1#12 GRD. - 1/2"C. CDT RUN 2#12 & 1#12 GRD.- 3/4"C. EARTH/ OR CDT RUN AS NOTED ON PLAN **FLOOR** CONDUIT HOME RUN. 2 CIRCUITS CLG/WALL PHASE CONDUCTORS/ CONDUIT HOME RUN, 1 CIRCUIT. CLG/WALL 2#10 & 1#10 GRD. NEUTRAL CONDUCTOR (#12 UON) SWITCH LEGS (#12 UON) CONDUIT RUN PARTIAL CIRCUIT. **CLG/WALL** 2#12 & 1#12 GRD. - 1/2"C. GROUND CONDUCTOR (#12 UON) MISC. EQUIPMENT CONNECTION **CONDUIT SEAL OFF POWER** 18" AFF SINGLE GROUNDED RECEPTACLE BRANCH CIRCUIT PANEL AND 72" TO TOP \oplus PANEL DESIGNATION 18" AFF DUPLEX GROUNDED RECEPTACLE DUPLEX GROUNDED RECEPTACLE CEILING ELECTRICAL DISTRIBUTION EQUIP DOUBLE DUPLEX GROUNDED REC 18" AFF EQUIPMENT - SEE EQUIPMENT CONNECTION SCHEDULE GROUND FAULT DUPLEX REC 18" AFF **4** GRD FAULT DOUBLE DUPLEX REC 18" AFF **CONDUIT SLEEVE (GEN NOTE 13)** \Rightarrow 18" AFF DUPLEX GRD REC BOTTOM SWITCH CABLE TRAY (GEN NOTE 14) **⟨M/** 18" AFF TAMPER-PROOF DUPLEX REC TAMPER-PROOF GFCI DUPLEX REC 18" AFF DISCONNECT SWITCH MANUAL STARTER CIRCUIT BREAKER SPECIAL OUTLET (SEE LOOR/WAL SCHEDULE OR AS NOTED) \boxtimes STARTER OR ATS (AS NOTED) COMBINATION STARTER/DISC SPECIAL DEVICE (AS NOTED) FEEDER DESIGNATION JUNCTION BOX - 1-GANG PUSHBUTTON (1-BUTTON, 2-BUTTON 46" AFF JUNCTION BOX - 2-GANG BOX MOUNTED TRANSFORMER С FUSTAT BUSS #SSY CONTACTOR THERMOSTAT/TEMP SENSOR 46" AFF METER PLUG LOAD SENSOR CEILING PLUGMOLD SURFACE RACEWAY HANDICAP DOOR PUSHBUTTON 36" AFF BUSDUCT PLUG PEN WEIGHT LEGEND ALL DEVICES, LIGHT FIXTURES, ETC., DRAWN IN DARK ALL DEVICES, LIGHT FIXTURES, ETC., DRAWN IN DARK DASHED LINES ARE EXISTING TO BE REMOVED SOLID LINES ARE NEW TO BE INSTALLED NEW DUPLEX GROUNDED RECEPTACLE DUPLEX GROUNDED REC TO BE REMOVED LIGHT FIXTURE TO BE REMOVED NEW LIGHT FIXTURE

--- SYMBOL LIST IS FOR REFERENCE ONLY. ALL SYMBOLS MAY NOT BE USED ON THIS PROJECT. ---

ALL DEVICES, LIGHT FIXTURES, ETC., DRAWN IN LIGHT

DUPLEX GROUNDED REC TO BE RELOCATED

LIGHT FIXTURE TO BE RELOCATED

DASHED LINES ARE EXISTING TO BE RELOCATED

EL	ELECTRICAL SHEET INDEX											
SHEET NO.	SHEET TITLE											
E-00	ELECTRICAL COVER SHEET											
E-01	ELECTRICAL SPECIFICATIONS											
E-10	ELECTRICAL FLOOR PLANS											

ALL DEVICES, LIGHT FIXTURES, ETC., DRAWN IN LIGHT

EXISTING DUPLEX GROUNDED REC TO REMAIN

EXISTING LIGHT FIXTURE TO REMAIN

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ELECTRICAL SPECIFICATIONS

SECTION 16050 - BASIC METHODS AND REQUIREMENTS (ELECTRICAL)

PART 1 - GENERAL

- 1.1 GENERAL CONDITIONS
- A. THE GENERAL CONDITIONS, SUPPLEMENTARY GENERAL CONDITIONS, GENERAL REQUIREMENTS, AND SPECIAL CONDITIONS SHALL BE AND ARE HEREBY MADE A PART OF THIS SECTION OF THE SPECIFICATIONS.
- 1.2 EXAMINATION OF SITE
- A. VISIT THE SITE, INSPECT THE EXISTING CONDITIONS AND CHECK THE DRAWINGS AND SPECIFICATIONS SO AS TO BE FULLY INFORMED OF THE REQUIREMENTS FOR COMPLETION OF THE WORK.
- B. LACK OF SUCH INFORMATION SHALL NOT JUSTIFY AN EXTRA TO THE CONTRACT PRICE.
- 1.3 SCOPE
- A. THE ELECTRICAL WORK SHALL INCLUDE ALL LABOR, MATERIALS, TOOLS, TRANSPORTATION, EQUIPMENT, SERVICES AND FACILITIES, REQUIRED FOR THE COMPLETE, PROPER AND SUBSTANTIAL INSTALLATION OF ALL ELECTRICAL WORK SHOWN ON THE PLANS, AND/OR OUTLINED IN THESE SPECIFICATIONS. THE INSTALLATION SHALL INCLUDE ALL MATERIALS, APPLIANCES, AND APPARATUS NOT SPECIFICALLY MENTIONED HEREIN OR NOTED ON THE DRAWINGS BUT WHICH ARE NECESSARY TO MAKE A COMPLETE WORKING INSTALLATION OF ALL ELECTRICAL SYSTEMS.
- B. ALL OF THE ELECTRICAL RELATED WORK REQUIRED FOR THIS PROJECT (UNLESS SPECIFIED OTHERWISE) IS A PART OF THE ELECTRICAL CONTRACT PRICE AND IS NOT NECESSARILY SPECIFIED UNDER THIS DIVISION OF THE SPECIFICATIONS OR SHOWN ON THE ELECTRICAL DRAWINGS. THEREFORE, ALL DIVISIONS OF THE SPECIFICATIONS AND ALL DRAWINGS SHALL BE CONSULTED.
- C. THE DRAWINGS SHOWING THE LAYOUT OF THE WORK INDICATE THE APPROXIMATE LOCATIONS OF OUTLETS, APPARATUS, AND EQUIPMENT. THE DRAWINGS ARE SCHEMATIC ONLY AND ARE NOT INTENDED TO SHOW THE EXACT ROUTING OF CONDUITS, ETC. THE FINAL DETERMINATION AS TO THE ROUTING SHALL BE GOVERNED BY STRUCTURAL CONDITIONS AND OTHER OBSTRUCTIONS. THIS SHALL NOT BE CONSTRUED TO MEAN THE DESIGN OF THE SYSTEM MAY BE CHANGED. IT MERELY REFERS TO THE EXACT RUN OF A RACEWAY BETWEEN GIVEN POINTS. THE CONTRACTOR SHALL CONSULT ALL CONTRACT DRAWINGS WHICH MAY AFFECT THE LOCATION OF ANY OUTLET, APPARATUS OR EQUIPMENT TO AVOID POSSIBLE INTERFERENCE AND PERMIT FULL COORDINATION OF ALL WORK. THE RIGHT TO MAKE ANY REASONABLE CHANGE (WITHIN 6"-0") IN THE LOCATION OF APPARATUS, OUTLETS, AND EQUIPMENT UP TO THE TIME OF ROUGHING-IN IS RESERVED BY THE ARCHITECT WITHOUT INVOLVING ANY ADDITIONAL EXPENSE TO THE OWNER.
- D. SHOW ON BLUE LINE PRINTS IN RED INK ALL CHANGES FROM ORIGINAL PLANS MADE DURING THE INSTALLATION. RETURN TWO (2) SETS OF RED MARKED DRAWINGS, SPECIFICATIONS AND ADDENDA, AS SET FORTH IN THE GENERAL CONDITIONS, TO THE ARCHITECT UPON COMPLETION OF THE PROJECT.
- E. PROVIDE SUBMITTALS IN ELECTRONIC FORM FOR LIGHT FIXTURES, PANELBOARDS, WIRING DEVICES, ETC.
- 1.4 CODES RULES AND REGULATIONS
- A. EXECUTE ALL WORK UNDER THE LATEST RULES AND REGULATIONS OF THE NATIONAL ELECTRICAL CODE STANDARD OF THE NATIONAL BOARD OF FIRE UNDERWRITERS AND WITH ALL LAWS, REGULATIONS AND ORDINANCES OF THE COUNTY, STATE, AND CITY.
- B. CODES SHALL GOVERN IN CASE OF ANY DIRECT CONFLICT BETWEEN CODES AND PLANS AND SPECIFICATIONS; EXCEPT WHEN PLANS AND SPECIFICATIONS REQUIRE HIGHER STANDARDS THAN THOSE REQUIRED BY CODE. VARIANCE FROM THE PLAN AND SPECIFICATIONS MADE TO COMPLY WITH CODE MUST BE APPROVED BY THE ARCHITECT. IF APPROVED THEY SHALL BE MADE WITH NO INCREASED COST TO THE OWNER.
- 1.5 PERMITS
- A. OBTAIN AND PAY FOR ALL LICENSES AND PERMITS, FEES, INSPECTION AND CERTIFICATES REQUIRED FOR THE EXECUTION OF THIS WORK.
- B. DELIVER PERMITS AND CERTIFICATES TO THE ARCHITECT TO BE TRANSMITTED TO THE OWNER.
- 1.6 RESPONSIBILITY
- A. THIS CONTRACTOR WILL BE HELD RESPONSIBLE FOR ANY AND ALL DAMAGE TO ANY PART OF THE BUILDING OR TO THE WORK OF OTHER CONTRACTORS, AS MAY BE CAUSED THROUGH HIS OPERATION.
- 1.7 WORK TO BE DONE BY GENERAL CONTRACTOR
- A. BUILD IN ALL OPENINGS SLEEVES, CHASES ETC., FOR CONDUIT AND EQUIPMENT AS ESTABLISHED, FURNISHED AND SET BY THIS CONTRACTOR. HE SHALL SEAL OR GROUT ALL OPENINGS AFTER THIS CONTRACTOR HAS INSTALLED HIS CONDUITS.
- 1.8 WORKMANSHIP AND COORDINATION
- A. MAKE INSTALLATION SUBSTANTIALLY AS SHOWN ON THE PLANS.
- B. MAKE ALTERATIONS IN LOCATION OF APPARATUS OR CONDUIT AS MAY BE REQUIRED TO CONFORM TO BUILDING CONSTRUCTION WITHOUT EXTRA CHARGE.
- SERVICE CLEARANCES AS SPECIFIED IN THEIR RESPECTIVE MANUFACTURER'S PRODUCT DATA SHALL BE MAINTAINED FREE FROM CONDUIT.

C. MECHANICAL EQUIPMENT SERVICE CLEARANCES AND ELECTRICAL APPARATUS

- D. COOPERATE WITH OTHER CONTRACTORS IN THEIR INSTALLATION OF WORK.
- E. COMPLETE THE INSTALLATION IN A WORKMANLIKE MANNER, COMPLETELY CONNECTED AND READY TO GIVE PROPER AND CONTINUOUS SERVICE.
- F. USE ONLY EXPERIENCED LICENSED ELECTRICIANS.

1.9 NAMEPLATES

- A. ALL BRANCH CIRCUIT PANELBOARD DIRECTORIES SHALL BE UPDATED WITH CHANGES.
- B. DEVICE COVERS (RECEPTACLES, SWITCHES) SHALL BE LABELED NEATLY WITH A PERMANENT MARKER OR LABEL MAKER WITH PANEL & CIRCUIT NUMBER. (EX. L1A-10)
- C. ON THE COVER OF EACH JUNCTION BOX AND PULL BOX: THE CIRCUIT NUMBER(S) OF THE ENCLOSED CONDUCTORS ARE TO BE LEGIBLY WRITTEN WITH A BLACK PERMANENT INK BROAD TIP MARKING PEN AND THE SYSTEM IDENTIFICATION.
- D. PANELBOARD DIRECTORIES SHALL BE LABELED WITH THE ACTUAL FINISHED BUILDING ROOM NUMBERS FOR CIRCUIT IDENTIFICATION AND NOT THE ROOM NUMBERS FROM THE CONSTRUCTION PLANS. (UNLESS THEY ARE THE SAME)

1.10 MATERIALS

- A. MATERIAL AND EQUIPMENT SHALL BE NEW, OF BEST QUALITY AND DESIGN AND FREE FROM DEFECTS. A MANUFACTURER'S NAMEPLATE AFFIXED IN A CONSPICUOUS PLACE WILL BE REQUIRED ON EACH MAJOR COMPONENT OF EQUIPMENT STATING MANUFACTURER'S NAME, ADDRESS AND CATALOG NUMBER. ALL ITEMS USED ON THIS PROJECT SHALL BE OF ASBESTOS FREE MATERIAL.
- B. WHERE ITEMS OF EQUIPMENT AND/OR MATERIALS ARE SPECIFICALLY IDENTIFIED HEREIN BY A MANUFACTURER'S NAME, MODEL OR CATALOG NUMBER, ONLY SUCH SPECIFIC ITEMS MAY BE USED IN THE BASE BID.
- 1.11 MANUFACTURER'S INSTRUCTIONS
- A. APPLY, INSTALL, CONNECT, ERECT, USE, CLEAN, AND CONDITION ARTICLES, MATERIALS AND EQUIPMENT AS DIRECTED BY THE MANUFACTURER.
- 1.12 CUTTING AND PATCHING
- A. NOTIFY THE GENERAL CONTRACTOR IN AMPLE TIME, OF THE LOCATION OF ALL CHASES, SLEEVES, AND ANY OTHER OPENINGS REQUIRED IN CONNECTION WITH THE WORK OF THIS CONTRACT.
- B. CUTTING AND PATCHING MADE NECESSARY BECAUSE OF FAILURE TO COMPLY WITH THE ABOVE SHALL BE DONE BY THE GENERAL CONTRACTOR AT THE EXPENSE OF THE ELECTRICAL CONTRACTOR.
- C. WHEN IT IS NECESSARY FOR THE ELECTRICAL CONTRACTOR TO CUT BUILDING MATERIALS TO INSTALL HIS WORK, IT SHALL BE DONE IN A NEAT AND WORKMANLIKE MANNER MEETING WITH THE APPROVAL OF THE ARCHITECT.

1.13 MUTILATION

A. ANY MUTILATION OF FINISHING INITIATED BY ELECTRICAL CONSTRUCTION SHALL BE PROPERLY CORRECTED BY THE RESPECTIVE FINISHING CONTRACTOR AND PAID FOR BY THE ELECTRICAL CONTRACTOR.

1.14 TESTING AND ADJUSTMENT

- A. WHEN INSTALLATION IS COMPLETE, TEST ALL ELECTRICAL CONDUCTORS TO INSURE CONTINUITY, FREEDOM FROM GROUNDS, AND INSULATION RESISTANCE VALUES..
- B. ALL FEEDERS AND BRANCH CIRCUITS SHALL BE MEGGER TESTED BETWEEN PHASE CONDUCTORS AND GROUND, USING A 1,000V MEGGER. TESTS SHALL BE MADE UPON COMPLETION OF ALL CONNECTIONS AND SPLICES AND INSERTION OF ALL OVERCURRENT DEVICES. TESTS SHALL INDICATE FREEDOM FROM SHORT CIRCUITS AND GROUNDS.
- 1.15 FINAL INSPECTION
- A. FINAL INSPECTION WILL BE MADE UPON WRITTEN REQUEST FROM THE GENERAL CONTRACTOR AFTER THE PROJECT IS COMPLETED; IN ACCORDANCE WITH THE SUPPLEMENTARY GENERAL CONDITIONS.
- 1.16 GUARANTEE
- A. GUARANTEE ALL WORK, MATERIAL AND EQUIPMENT FOR A PERIOD OF TWO YEARS AFTER DATE OF SUBSTANTIAL COMPLETION. PROVIDE WRITTEN DOCUMENTATION OF WARRANTY TO OWNER WITH RELEVANT CONTACT INFO.
- B. DURING THE YEAR GUARANTEE PERIOD THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DEFECTS WHICH DEVELOP IN THE ELECTRICAL SYSTEMS. UPON NOTIFICATION OF A DEFECT BY THE GENERAL CONTRACTOR, THE ELECTRICAL CONTRACTOR SHALL MAKE IMMEDIATE EFFORT TO CORRECT IT AND SHALL NOTIFY THE ARCHITECT WHEN THIS WORK IS COMPLETED.
- C. REPAIRS AND/OR REPLACEMENTS SHALL BE MADE WITH NO COST TO OWNER.

END OF SECTION SECTION 16100 - R

SECTION 16100 - BASIC MATERIALS

1.1 CONDUIT

- A. MATERIALS:
- 1. EMT TUBING SHALL BE ALLIED, REPUBLIC, LTV, OR EQUAL WITH U.L. APPROVED NATIONAL ELECTRIC CODE TYPE FITTINGS. INDENTER TYPE FITTINGS SHALL NOT BE USED. A GROUND WIRE SIZED PER N.E.C. ART. 250-122 SHALL BE PULLED IN EACH CONDUIT CONTAINING PHASE CONDUCTOR(S).
- LIQUID-TIGHT FLEXIBLE METAL CONDUIT: FLEXIBLE GALVANIZED STEEL TUBING COVERED WITH EXTRUDED LIQUID-TIGHT JACKET OF POLYVINYL CHLORIDE (PVC). PROVIDE CONDUIT WITH A CONTINUOUS COPPER BONDING CONDUCTOR SPIRAL BETWEEN THE CONVOLUTIONS. PROVIDE STEEL OR MALLEABLE IRON FITTINGS. CONNECTORS SHALL HAVE INSULATED THROATS.
- B. BUSHINGS AND LOCKNUTS:
- 1. BUSHINGS FOR TERMINATING CONDUITS SMALLER THAN 1-1/4-INCHES ARE TO HAVE FLARED BOTTOM AND RIBBED SIDES, WITH SMOOTH UPPER EDGES TO PREVENT INJURY TO CABLE INSULATION.
- 2. WHERE REQUIRED, BUSHINGS OF STANDARD OR INSULATED TYPE SHALL HAVE SCREW TYPE GROUNDING TERMINAL.

C. CONDUIT INSTALLATION:

- 1. ALL EXPOSED CONDUITS SHALL BE ROUTED PARALLEL OR PERPENDICULAR TO BUILDING ELEMENTS.
- 2. CONDUIT SHALL BE INSTALLED TO THE REQUIREMENTS OF THE STRUCTURE AND TO REQUIREMENTS OF ALL THE OTHER WORK ON THE PROJECT. CONDUIT SHALL BE INSTALLED TO CLEAR ALL OPENINGS, DEPRESSIONS, PIPES, DUCTS, REINFORCING STEEL, ETC.
- 3. CONDUIT SHALL BE INSTALLED CONTINUOUS BETWEEN CONNECTIONS TO OUTLETS, BOXES AND CABINETS WITH A MINIMUM POSSIBLE NUMBER OF BENDS AND NOT MORE THAN THE EQUIVALENT OF 4-90 DEGREE BENDS BETWEEN CONNECTIONS. BENDS SHALL BE SMOOTH AND EVEN AND SHALL BE MADE WITHOUT FLATTENING CONDUIT OR FLAKING ENAMEL. RADIUS OF BENDS SHALL BE AS LONG AS POSSIBLE AND NEVER SHORTER THAN THE CORRESPONDING TRADE ELBOW. LONG RADIUS ELBOWS SHALL BE USED WHERE NECESSARY.
- 4. CONDUITS SHALL BE SECURELY FASTENED IN PLACE WITH APPROVED STRAPS, HANGERS, AND SUPPORTS AS REQUIRED.
- 5. ALL WORK SHALL BE PROTECTED AGAINST DAMAGE DURING CONSTRUCTION AND ANY WORK DAMAGED OR MOVED OUT OF LINE AFTER ROUGHING-IN SHALL BE REPAIRED AND RESET TO THE APPROVAL OF THE ARCHITECT WITHOUT ADDITIONAL COST TO THE OWNER.
- 6. CONDUIT TERMINATIONS AT PANELBOARDS, JUNCTION BOXES, ETC., SHALL BE ALIGNED AND INSTALLED TRUE AND PLUMB. WOOD OR STEEL BUCKS OR TEMPLATES SHALL BE USED WHERE REQUIRED.
- 1.2 WIRES AND CABLES
- A. HARBIRSHAW, CRESCENT, SOUTHWIRE, GENERAL CABLE, AMERICAN, U.S. RUBBER COMPANY OR EQUAL CODE GAUGE WIRE, FINISHED WITH FADELESS COLOR SOLUTION FOR NATIONAL ELECTRIC CODE SYSTEM OF COLOR CODING AND BEARING UNDERWRITER'S LABEL. WIRES SHALL BE SOFT ANNEALED STRANDED COPPER WITH PROPERTIES CONFORMING TO THE NATIONAL ELECTRIC CODE REQUIREMENTS. NO. 10 GAUGE AND LARGER SHALL BE STRANDED. NO. 12 GAUGE CAN BE SOLID OR STRANDED.
- B. WIRE SMALLER THAN NO. 12 GAUGE SHALL NOT BE USED UNLESS SPECIFICALLY CALLED FOR.
- C. WIRES FOR GENERAL USE WITHIN THE BUILDING SHALL BE TYPE THWN, XHHW, OR COMBINATION THHN/THWN EXCEPT WHERE CALLED FOR ON THE DRAWINGS. ALL CONDUCTOR SIZES MUST BE AS SPECIFIED ON DRAWINGS REGARDLESS OF INSULATION TYPE.
- D. A GROUND WIRE SIZED PER N.E.C. ART. 250-122 SHALL BE INSTALLED IN EACH CONDUIT CONTAINING PHASE CONDUCTORS.
- E. ALL CONTROL WIRING SHALL BE COPPER, SOLID OR STRANDED, #L4 GA. OR LARGER DEPENDING UPON CURRENT REQUIREMENTS. INSULATION TYPE FOR 90 DEGREE C. WHERE STRANDED CONDUCTORS ARE USED PROVIDE WITH SPADE TYPE INSULATED COPPER TERMINALS.
- F. ALL CONDUCTORS SHALL BE IDENTIFIED AT ALL TERMINATION POINTS AND IN ALL PULL AND JUNCTION BOXES BY THE FOLLOWING METHOD OF COLOR CODING.

 MEANS OF IDENTIFICATION SHALL BE PERMANENTLY POSTED AT EACH BRANCH CIRCUIT PANEL WITH A NAMEPLATE IDENTIFYING COLOR CODING WHERE MORE THAN ONE NOMINAL VOLTAGE SYSTEM IS IN THE SAME BUILDING.
- 208Y/120 VOLT SYSTEM:
 - PHASE A BLACK PHASE B - RED
 - PHASE C BLUE
 - NEUTRAL WHITE

GROUND - GREEN

- G. ALL CONDUCTORS SIZE #8 AWG AND SMALLER SHALL HAVE COLORED INSULATION. WHERE CONDUCTORS WITH BLACK INSULATION ARE USED FOR THE LARGER WIRE SIZES (#6 AWG AND LARGER) COLOR CODING SHALL BE PROVIDED WITH TWO LAYERS-ONE HALF LAPPED OF NO. 35 COLORED SCOTCH VINYL ELECTRICAL TAPE.
- 1.3 WIRE CONNECTIONS
- A. ALL WIRES SHALL BE RUN IN CONDUIT, SHALL BE CONTINUOUS BETWEEN OUTLETS AND BOXES (WITH NO SPLICES OR TAPS IN CONDUITS). SPLICES AND TAPS FOR #6 AND LARGER CONDUCTORS SHALL BE WITH BLOCK TYPE WITH INSULATING JACKET OR SPLIT BOLT CONNECTORS, COVERED AND COMPLETELY INSULATED WITH A MINIMUM OF THREE HALF-LAPPED LAYERS OF SCOTCH NO. 33+ (105°C) PLASTIC ELECTRICAL TAPE OR BY APPROVED INSULATED FASTENER. ALL SPLICES AND TAPS HAVING IRREGULAR SURFACES SHALL BE PROPERLY PADDED WITH SCOTCHFIL PUTTY BEFORE APPLICATION OF INSULATING PLASTIC TAPE. SCOTCHLOK ELECTRICAL PRE-INSULATED SPRING PRESSURE CONNECTORS OR EQUAL MAY BE USED FOR UP TO #8 CONDUCTORS. CONNECTORS SHALL BE INSTALLED SO THAT ALL WIRES ARE PROPERLY INSULATED.
- 1.4 PULL AND JUNCTION BOXES
- A. PULL AND JUNCTION BOXES SHALL BE CODE GAUGE STEEL BOXES WITH HINGED, BOLTED OR SCREWED COVERS. BOXES SHALL BE FLUSH OR SURFACE MOUNTED AS SHOWN OR REQUIRED.
- B. PROVIDE JUNCTION AND PULL BOX AS REQUIRED FOR PULLING OF WIRE AS REQUIRED BY THE NEC. ALL BOXES SHALL BE CODE CONSTRUCTION WITH SCREW TYPE COVER AND SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS.
- 1.5 OUTLET BOXES
- A. J-BOXES IN BOILER ROOMS, MECH./ELECT. ROOMS, STORAGE ROOMS OR ABOVE CEILINGS SHALL BE A MINIMUM OF 2 1/8" DEEP 4" SQ. BOXES W/ COMBO ½" & ¾" CONCENTRIC KO'S.

1.6 WIRING DEVICES

- A. RECEPTACLES SHALL BE 20A COMMERCIAL GRADE. DUPLEX RECEPTACLES SHALL BE EXTRA HEAVY-DUTY TYPE WITH NYLON FRONTS AND BACKS.
- B. THE GROUND WIRE SHALL BE PIGTAILED TO THE BOX WITH A 10/32 GREEN SCREW AND WRAPPED ON THE GROUNDING SCREW / YOKE OF THE DEVICE.
- C. METAL COVER PLATES SHALL BE USED ON ALL FLUSH DEVICES.
- D. SWITCHES SHALL BE EXTRA HEAVY-DUTY TYPE WITH NYLON FRONTS AND BACKS.
- E. DEVICES SHALL BE PIGTAILED FROM BRANCH CIRCUIT FOR EASE OF DEVICE REMOVAL OR REPLACEMENT.

1.7 SUPPORTING DEVICES

- A. CONDUITS SHALL BE SUPPORTED AT INTERVALS NOT GREATER THAN 10 FT., WITHIN 3 FT. OF ANY BEND AND EVERY OUTLET OR JUNCTION BOX. THIS SHALL APPLY ON VERTICAL RUNS AS WELL AS HORIZONTAL RUNS.
- B. ALL SUPPORTS FOR CONDUITS SHALL BE INDEPENDENT FROM OTHER TRADES UNLESS NOTED OTHERWISE ON DRAWINGS OR WRITTEN APPROVAL BY THE ENGINEER. CONTRACTOR SHALL WORK WITH OTHER TRADES WHERE A COMMON SUPPORT STRUCTURE IS PROVIDED AND HAS BEEN APPROVED BY ENGINEER.
- C. ANCHORS:
- 10. ONLY ANCHORS THAT USE REMOVABLE BOLTS OR SCREWS ARE ALLOWED.

 SCREW TYPE ANCHORS APPROVED FOR THE APPLICATION WILL BE THE ONLY

 TYPE OF FASTENER ACCEPTED. ANCHORS SHALL BE USED AND APPROVED FOR

 USE PER MANUFACTURER INSTRUCTIONS. EXAMPLES LISTED.
 - i. DRYWALL: MOLLY, E-Z (SCREW IN TYPE), TOGGLE BOLT AND OTHER.
 - ii. MASONRY, BLOCK, CONCRETE: PLASTIC, LEAD W/ MACHINE SCREW BOLT, DROP-IN AND OTHER.
 - iii. NAIL IN OR PIN TYPE ANCHORS SHALL NOT BE USED TO MOUNT FIXTURES, STRAPS, BOXES, OR ANY DEVICE ASSOCIATED WITH THE ELECTRICAL SYSTEM.

SECTION 16400 - SERVICE AND DISTRIBUTION

1.1 GROUNDING

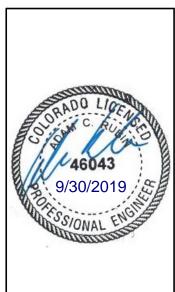
A. ALL CONDUCTORS, MOTOR FRAMES, ETC., THAT REQUIRE GROUNDING SHALL BE GROUNDED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE.

1.2 DISCONNECT SWITCHES

A. THE CONTRACTOR SHALL FURNISH AND INSTALL SQUARE 'D' EXTERNALLY OPERATED, HEAVY DUTY, HORSEPOWER RATED DISCONNECT SWITCHES AT ALL POINTS INDICATED ON THE DRAWINGS OR REQUIRED BY CODE. THE ENCLOSURE SHALL HAVE THE PROPER NEMA RATING FOR THE ENVIRONMENT.

END OF SECTION

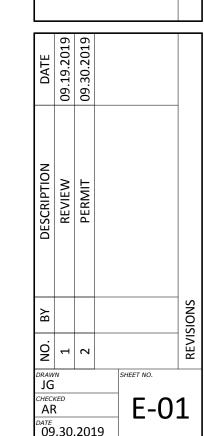




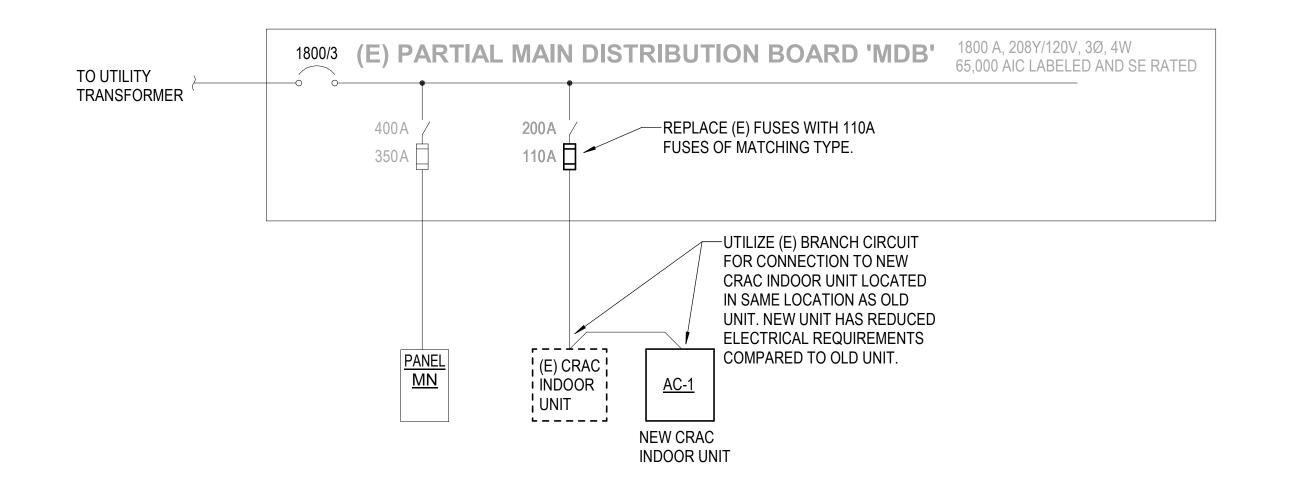
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- 1. UNLESS OTHERWISE NOTED, ALL CIRCUIT BREAKERS AND/OR SWITCHES ARE THREE POLE.
- 2. ALL ELECTRICAL EQUIPMENT AND WIRING SHOWN IN A LIGHT LINE, IS EXISTING TO REMAIN.
- 3. ALL ELECTRICAL EQUIPMENT AND WIRING SHOWN IN A DARK LINE, IS NEW WORK UNDER THIS CONTRACT. —
- 4. ALL ELECTRICAL EQUIPMENT AND WIRING SHOWN IN A DARK DASHED LINE. IS TO BE REMOVED UNDER THIS CONTRACT. -----

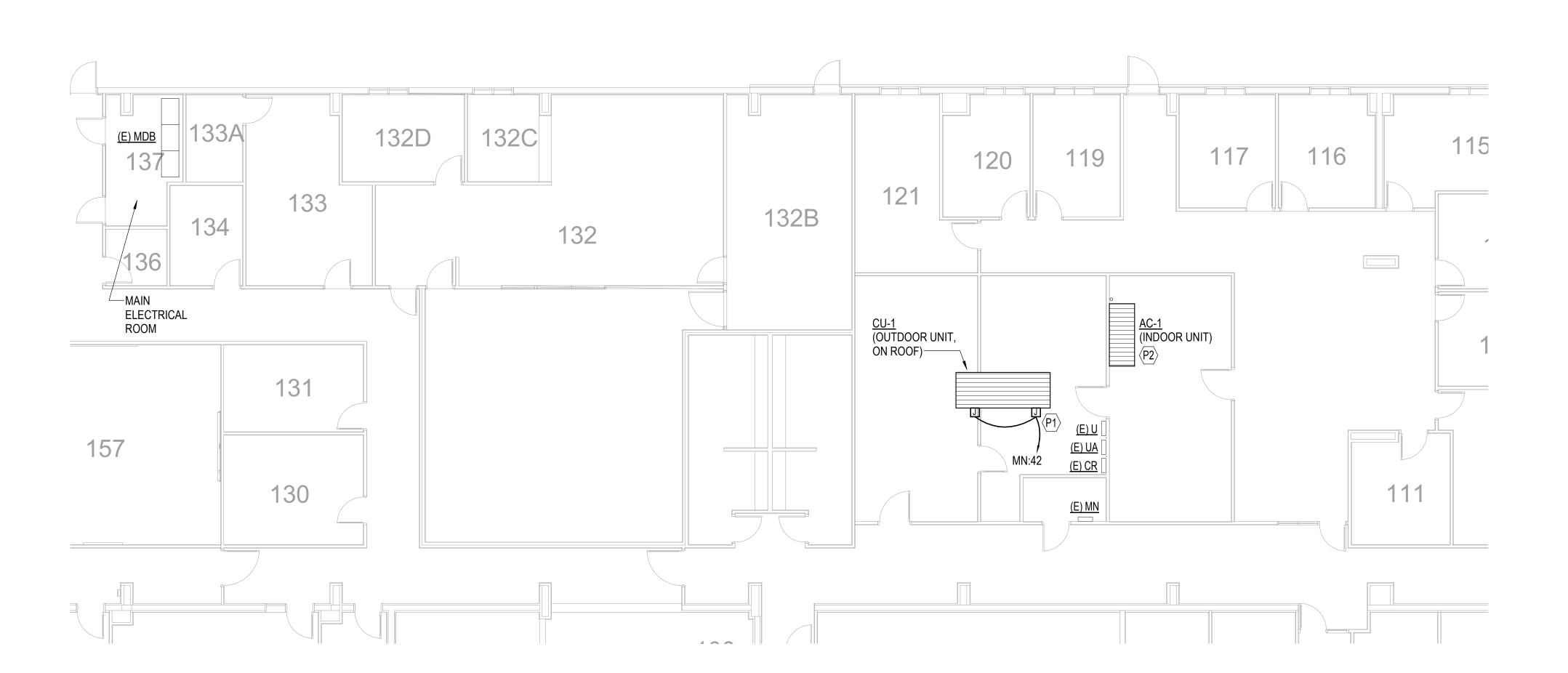


PARTIAL ONE-LINE DIAGRAM











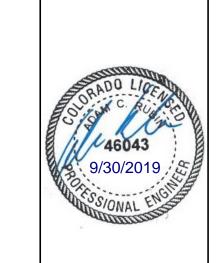


3. FOR CONNECTION REQUIREMENTS TO MECHANICAL UNITS, SEE MECHANICAL EQUIPMENT CONNECTION SCHEDULE.

- 4. ALL PENETRATIONS IN THE RATED WALLS AND CEILINGS SHALL BE SEALED WITH A MATERIAL CAPABLE OF PREVENTING THE PASSAGE OF FLAMES AND HOT GASSES. THE SEALANT SHALL HAVE A T-RATING OF ONE HOUR.
- 5. ALL PIPING, CONDUIT, AND OUTLET BOXES (ELECTRIC, TELEPHONE, COMPUTER, ETC.) IN THE RATED WALLS OR CEILING SHALL BE CONSTRUCTED OF NON-COMBUSTIBLE MATERIAL.

KEYED NOTES:

- D1 MAINTAIN (E)2"C IN THIS LOCATION WHICH CONTAINS (E) BRANCH CIRCUIT FOR INDOOR CRAC UNIT FROM MAIN SWITCHBOARD 'MDB' IN CEILING SPACE TO UNDER RAISED FLOOR WITH FINAL CONNECTION TO EQUIPMENT UNDER FLOOR WITH FLEXIBLE CONDUIT.
- D2 REMOVE ELECTRICAL CONNECTION TO (E) CRAC CONDENSING UNIT. CAPTURE (E) BRANCH CIRCUIT FOR REUSE WITH NEW EQUIPMENT IN SAME
- D3 REMOVE ELECTRICAL CONNECTION TO (E) HEATER WITHIN CONDENSING UNIT. CAPTURE (E) BRANCH CIRCUIT FOR REUSE.
- D4 REMOVE ELECTRICAL CONNECTION TO (E) CRAC INDOOR UNIT. CAPTURE (E) BRANCH CIRCUIT FOR REUSE WITH NEW EQUIPMENT IN SAME LOCATION. DISCONNECT ANY FIRE ALARM WIRING TO EXISTING RETURN AIR DUCT DETECTOR AS REQUIRED. CONFIRM IN THE FIELD.
- P1 PROVIDE 120V CONNECTION FOR (2) CONDENSING UNIT HEATERS (150W EACH). UTILIZE EXISTING BRANCH CIRCUIT MADE AVAILABLE FROM DEMOLITION. COORDINATE EXACT REQUIREMENTS WITH EQUIPMENT SUPPLIED.
- RECONNECT FIRE ALARM WIRING MADE AVAILABLE IN DEMOLITION AS REQUIRED TO INTEGRAL DUCT DETECTOR PROVIDED WITH INDOOR CRAC UNIT. COORDINATE EXACT REQUIREMENTS WITH EQUIPMENT INSTALLER.



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