

C:\Users\taylor.petrik\Documents\190833-000 Elec-R17_taylor.petrik.rvt 12/17/2019 10:06:51 AM

SYMBOL LIST

SYMBOL	DESCRIPTION	MOUNTING	SYMBOL	DESCRIPTION	MOUNTING
POWER					
	SINGLE GROUNDED RECEPTACLE	18" AFF		BRANCH CIRCUIT PANEL AND PANEL DESIGNATION	72" TO TOP
	DUPLEX GROUNDED RECEPTACLE	18" AFF		ELECTRICAL DISTRIBUTION EQUIP	
	DOUBLE DUPLEX GROUNDED REC	18" AFF		EQUIPMENT - SEE EQUIPMENT CONNECTION SCHEDULE	
	GROUND FAULT DUPLEX REC	18" AFF		CONDUIT SLEEVE (GEN NOTE 13)	
	GRD FAULT DOUBLE DUPLEX REC	18" AFF		CABLE TRAY (GEN NOTE 14)	
	DUPLEX GRD REC BOTTOM SWITCHD	18" AFF		MOTOR	
	TAMPER-PROOF DUPLEX REC	18" AFF		DISCONNECT SWITCH	
	TAMPER-PROOF GFCI DUPLEX REC	18" AFF		MANUAL STARTER	
	SPECIAL OUTLET (SEE SCHEDULE OR AS NOTED)	FLOOR/WALL		CIRCUIT BREAKER	
	SPECIAL DEVICE (AS NOTED)			STARTER OR ATS (AS NOTED)	
	FEEDER DESIGNATION			COMBINATION STARTER/DISC	
	JUNCTION BOX - 1-GANG			RELAY	
	JUNCTION BOX - 2-GANG			PUSHBUTTON (1-BUTTON, 2-BUTTON)	46" AFF
	FUSTAT BUSS #SSY			BOX MOUNTED TRANSFORMER	
	THERMOSTAT/TEMP SENSOR	46" AFF		CONTACTOR	
	PLUG LOAD SENSOR	CEILING		METER	
	HANDICAP DOOR PUSHBUTTON	36" AFF		PLUGMOLD SURFACE RACEWAY	WALL
	BUSDUCT PLUG				

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

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 BACKSPASH 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.
- 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.
- 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" = 10 CABLES
2 1/2" = 20 CABLES
3" = 30 CABLES
4" = 50 CABLES
- 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.
- PROVIDE DIMMER PER THE SPECIFICATIONS. COORDINATE DIMMER TYPE AND WIRING WITH ASSOCIATED LIGHT FIXTURE DIMMING REQUIREMENTS (I.E. 3-WIRE, 0-10V, 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.


SYMBOL LIST

SYMBOL	DESCRIPTION	MOUNTING	SYMBOL	DESCRIPTION	MOUNTING
ABBREVIATIONS					
NL	NIGHT LIGHT - WIRE AHEAD OF CONTROLS		AF	ABOVE FINISHED FLOOR	
EM	ON EMERGENCY POWER		AFG	ABOVE FINISHED GRADE	
WP	WEATHERPROOF		DF	DRINKING FOUNTAIN - SEE GENERAL NOTE 11	
CT	COURTERTOP (SEE GEN. NOTE 9)				
UON	UNLESS OTHERWISE NOTED				
W	WALL				
CONDUIT AND WIRING					
	EMERGENCY CIRCUIT	CLG/WALL		CONDUIT HOME RUN, 1 CIRCUIT. 2#12 & 1#12 GRD. - 1/2" C.	CLG/WALL
	MASTER/SLAVE FIXTURE WHIP	CEILING		CONDUIT HOME RUN, 2 CIRCUITS. 4#12 & 1#12 GRD. - 1/2" C.	CLG/WALL
	LOW VOLTAGE WIRING	CLG/WALL		CONDUIT HOME RUN, 3 CIRCUITS. 6#12 & 1#12 GRD. - 1/2" C.	CLG/WALL
	CDT RUN 2#12 & 1#12 GRD. - 1/2" C. OR CDT RUN AS NOTED ON PLAN	CLG/WALL		CONDUIT HOME RUN, 2 CIRCUITS. PHASE CONDUCTORS/ NEUTRAL CONDUCTOR (#12 UON) SWITCH LEGS (#12 UON) GROUND CONDUCTOR (#12 UON)	CLG/WALL
	CDT RUN 2#12 & 1#12 GRD. - 3/4" C. OR CDT RUN AS NOTED ON PLAN	EARTH/ FLOOR			
	CONDUIT HOME RUN, 1 CIRCUIT. 2#10 & 1#10 GRD.	CLG/WALL			
	CONDUIT RUN PARTIAL CIRCUIT. 2#12 & 1#12 GRD. - 1/2" C.	CLG/WALL			
	MISC. EQUIPMENT CONNECTION				
	CONDUIT SEAL OFF				
ONE-LINE					
	CIRCUIT BREAKER ACCESSORIES: L SIG = LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND FAULT			FUSIBLE SWITCH (CIRCUIT NUMBER / SWITCH SIZE / FUSE SIZE / # OF POLES) (# OF POLES IF OTHER THAN 3)	
	GFI = GROUND FAULT			STARTER WITH FUSIBLE SWITCH (CIRCUIT NUMBER / SWITCH SIZE / FUSE SIZE / # OF POLES / STARTER SIZE) (# OF POLES IF OTHER THAN 3)	
	ST = SHUNT TRIP			CIRCUIT BREAKER (MOLDED CASE NON-ADJUSTABLE TRIP / ADJUSTABLE TRIP) (CIRCUIT NUMBER / TRIP SIZE / # OF POLES) (FRAME SIZE / TRIP SIZE) (# OF POLES IF OTHER THAN 3)	
	K = KIRK KEY INTERLOCK			3Ø TRANSFORMER (DELTA PRIMARY / WYE SECONDARY)	
	INDICATOR LIGHT(G=GREEN, R=RED)			1Ø TRANSFORMER	
	CONTACTS (N.O., N.C.)			PANELBOARD (BUILT-IN SPD)	
	FUSE			TRANSFER SWITCH (ATS = AUTOMATIC, MTS = MANUAL) (AMP SIZE / VOLTAGE / POLES / AIC RATING / NEMA RATING) (NEMA RATING IF OTHER THAN NEMA-1)	
	CIRCUIT BREAKER			MOTOR STARTER (SINGLE SPEED ACROSS-THE-LINE (UON)) (NEMA SIZE / RV AT = REDUCED VOLTAGE / AUTO-TRANSFORMER / SS = SOLID STATE)	
	OVERLOADS				
	DRAWOUT CONTACTS				
	DISCONNECT SWITCH (SEE EQUIP CONN SCHED) (VOLTAGE / SWITCH SIZE / FUSE SIZE / # OF POLES - NOTED IF EQUIPMENT NOT SCHEDULED)				
	STARTER (SEE EQUIP CONN SCHED) (VOLTAGE / STARTER SIZE / # OF POLES - NOTED IF EQUIPMENT NOT SCHEDULED)				
	GROUND CONNECTION				
	LIGHTNING ARRESTOR				
	FEEDER DESIGNATION				
	SURGE PROTECTIVE DEVICE				
	METER (UTILITY / PANEL MOUNTED)				
	EQUIPMENT (SINGLE MOTOR / MULTI MOTOR OR OTHER TYPE AS NOTED)				
	VARIABLE FREQUENCY DRIVE (HP SIZE IF NOT SCHEDULED)				
PEN WEIGHT LEGEND					
ALL DEVICES, LIGHT FIXTURES, ETC., DRAWN IN DARK SOLID LINES ARE NEW TO BE INSTALLED			ALL DEVICES, LIGHT FIXTURES, ETC., DRAWN IN DARK DASHED LINES ARE EXISTING TO BE REMOVED		
	NEW DUPLEX GROUNDED RECEPTACLE			DUPLEX GROUNDED REC TO BE REMOVED	
	NEW LIGHT FIXTURE			LIGHT FIXTURE TO BE REMOVED	
ALL DEVICES, LIGHT FIXTURES, ETC., DRAWN IN LIGHT SOLID LINES ARE EXISTING TO REMAIN			ALL DEVICES, LIGHT FIXTURES, ETC., DRAWN IN LIGHT DASHED LINES ARE EXISTING TO BE RELOCATED		
	EXISTING DUPLEX GROUNDED REC TO REMAIN			DUPLEX GROUNDED REC TO BE RELOCATED	
	EXISTING LIGHT FIXTURE TO REMAIN			LIGHT FIXTURE TO BE RELOCATED	

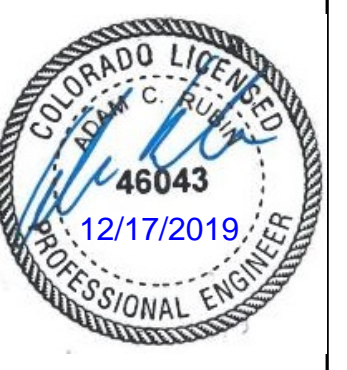
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ELECTRICAL SHEET INDEX

SHEET NO.	SHEET TITLE
E0.0	ELECTRICAL COVER SHEET
E0.1	ELECTRICAL SPECIFICATIONS
E1.1	POWER PLAN
E2.1	ELECTRICAL DIAGRAMS AND SCHEDULES



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12/17/2019
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SHEET CONTENTS

ELECTRICAL COVER SHEET

PSD CLP MIDDLE SCHOOL
3515 Co. Rd. 54G
Laporte, CO 80535



NO.	DATE	REVISIONS
BY		
DESCRIPTION		

DATE: 12-17-2019

DESIGNER: JMG

CHECKED: ACR

DATE: 12-17-2019

SHEET NO. E0.0

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, 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 WORK DONE BY THE MECHANICAL CONTRACTOR

A. THE MECHANICAL CONTRACTOR SHALL FURNISH WIRING DIAGRAMS AND TEMPERATURE CONTROL DRAWINGS OF ALL EQUIPMENT FURNISHED TO THE ELECTRICAL CONTRACTOR. CATALOG INFORMATION IS UNACCEPTABLE, PROVIDE POINT TO POINT DRAWINGS.

B. THE MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL CONTROL EQUIPMENT REQUIRING CONNECTIONS TO AIR, WATER, STEAM, ETC., SUCH AS PNEUMATIC ELECTRIC RELAYS, REMOTE BULB TEMPERATURE CONTROLS, SOLENOID VALVES, AQUASTATS AND PRESSURE CONTROLS.

C. THE MECHANICAL CONTRACTOR SHALL REIMBURSE THE ELECTRICAL CONTRACTOR FOR ANY CHANGES IN SYSTEM DESIGN I.E. CONTROL OR EQUIPMENT WHICH EFFECTS THE ELECTRICAL CONTRACTOR.

1.9 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.

C. MECHANICAL EQUIPMENT SERVICE CLEARANCES AND ELECTRICAL APPARATUS SERVICE CLEARANCES AS SPECIFIED IN THEIR RESPECTIVE MANUFACTURER'S PRODUCT DATA SHALL BE MAINTAINED FREE FROM CONDUIT.

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.

1.10 EQUIPMENT CONNECTIONS, CONTROLS AND INSTRUMENTATION

A. GENERAL: THE FOLLOWING APPLIES TO ALL ELECTRICAL POWER AND CONTROL CONNECTIONS FOR ALL EQUIPMENT REQUIRING ELECTRICAL INSTALLATION WORK PROVIDED BY OTHERS.

B. THE ELECTRICAL CONTRACTOR SHALL FURNISH, INSTALL AND CONNECT ALL WIRING, CONDUIT, BOXES, TOGGLE SWITCHES, THERMAL SWITCHES, DISCONNECT SWITCHES, REMOTE PUSHBUTTON STATIONS NOT INCLUDED IN MAGNETIC STARTERS, ETC. FOR ALL EQUIPMENT REQUIRING ELECTRICAL POWER THAT IS EITHER FURNISHED OR SPECIFIED BY OTHER CONTRACTORS AND/OR THE OWNER, SHOWN ON DRAWINGS OR LISTED BELOW. THE ELECTRICAL CONTRACTOR SHALL RECEIVE, INSTALL AND CONNECT ALL MAGNETIC STARTERS AND CONTROLLERS, CAPACITORS, POWER FACTOR CORRECTION DEVICES, TRANSFORMERS, ALARMS, BELLS, HORNS, RELAYS, REMOTE SWITCHES FOR EQUIPMENT SUPPLIED BY OTHERS (I.E. STARTERS OR CAPACITORS OR POWER FACTOR CORRECTION DEVICES FOR MECHANICAL EQUIP., ETC.). IN GENERAL, ALL MAJOR EQUIPMENT WILL BE SPECIFIED TO BE FACTORY PREWIRED WITH ONLY SERVICE AND INTERCONNECTING REQUIRED AT THE SITE BY THE ELECTRICAL CONTRACTOR; HOWEVER, ALL DIVISIONS OF THE SPECIFICATION SHALL BE REVIEWED TO VERIFY WHETHER THE EQUIPMENT IS SPECIFIED TO BE FACTORY PREWIRED AND IF NOT, THEN IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO PROVIDE THE COMPLETE WIRING OF THE EQUIPMENT IN ACCORDANCE WITH WIRING DIAGRAMS PROVIDED BY OTHER CONTRACTORS AND/OR OWNER TO THE ELECTRICAL CONTRACTOR. ALL INTERCONNECTING OF EQUIPMENT SHALL BE BY THE ELECTRICAL CONTRACTOR.

C. ALL LINE VOLTAGE WIRING AND CONNECTIONS REQUIRED TO CONTROL THE EQUIPMENT ARE A PART OF THIS SECTION. ALL WIRING SHALL BE IN CONDUIT. LOW VOLTAGE CONTROL WIRING SHALL BE IN CONDUIT. CONDUIT SYSTEM, WIRING AND TERMINATIONS OF LOW VOLTAGE CONTROL WIRING SHALL BE THE RESPONSIBILITY OF THE TEMPERATURE CONTROLS CONTRACTOR.

D. THE ELECTRICAL CONTRACTOR SHALL PROVIDE 120 VOLT CONTROL POWER SUPPLY; #12 GAUGE CU. THWN IN 3/4"-INCH C. MINIMUM AT ALL POINTS REQUIRED BY CONTROLS, AND INSTRUMENTATION AND SPRINKLER RISERS. CIRCUIT TO THE NEAREST 120 VOLT PANEL. USE SPARE 20 AMP. BREAKERS. EACH CONTROL PANEL SHALL BE ON A SEPARATE CIRCUIT UNLESS OTHERWISE INDICATED.

E. THE CONTRACTOR SHALL BE FAMILIAR WITH THE EQUIPMENT TO BE FURNISHED BY THE OTHER CONTRACTORS AND/OR THE OWNER IN CONNECTION WITH THIS WORK AND PROVISIONS FOR SUCH CONNECTIONS AND WORK SHALL BE INCLUDED IN THE CONTRACTOR'S PRICE. IN NO CASE WILL EXTRA REMUNERATION BE ALLOWED FOR SUCH WORK.

F. CONNECTIONS TO ALL EQUIPMENT HAVE BEEN DESIGNED FROM UNITS AS SPECIFIED ON THE DRAWINGS OR IN THE SPECIFICATIONS. IN THE EVENT EQUIPMENT DIFFERS ON APPROVED SHOP DRAWINGS IT SHALL BE THE RESPONSIBILITY OF THE SUPPLYING CONTRACTOR TO COORDINATE ELECTRICAL CONNECTIONS TO THE UNITS AND REIMBURSE ELECTRICAL CONTRACTOR FOR ANY CHANGES IN SYSTEM DESIGN. THESE CHANGES SHALL NOT INVOLVE ADDITIONAL COST TO THE OWNER.

G. REVIEW ALL PLANS AND SPECIFICATIONS TO VERIFY ALL EQUIPMENT CONNECTIONS THAT ARE REQUIRED BY MECHANICAL AND/OR OTHER CONTRACTORS. ALTHOUGH THE ELECTRICAL DRAWINGS WILL SHOW EQUIPMENT CONNECTION REQUIREMENTS, IT IS THE ELECTRICAL CONTRACTORS RESPONSIBILITY TO CONNECT ALL EQUIPMENT FURNISHED BY OTHER CONTRACTORS AT NO EXTRA COST TO THE OWNER EVEN IF THIS EQUIPMENT CONNECTION IS NOT SHOWN ON THE ELECTRICAL DRAWINGS. COORDINATE ALL REQUIRED CONNECTIONS NOT SHOWN ON THE ELECTRICAL DRAWINGS WITH THE ENGINEER.

1.11 NAMEPLATES

A. PROVIDE PANELBOARD WITH ENGRAVED PLASTIC LABEL 1/4" WHITE LETTERS ON BLACK BACKGROUND WITH VOLTAGE AND PHASE. ATTACH WITH SCREWS OR RIVETS.

B. PROVIDE SEPARATELY MOUNTED DISCONNECTS AND STARTERS WITH 3/16" LABEL (SAME STYLE AS ABOVE). NAMEPLATE SHALL PROVIDE MOTOR DESIGNATION, VOLTAGE, AND PHASE, IN ADDITION TO PANEL AND CIRCUIT NUMBER. INSCRIPTION: NAMEPLATES SHALL ADEQUATELY DESCRIBE THE FUNCTION OR USE OF THE PARTICULAR EQUIPMENT INVOLVED.

C. ALL BRANCH CIRCUIT PANELBOARDS SHALL HAVE THEIR DIRECTORIES NEATLY TYPED.

D. ALL SWITCHES THAT CONTROL MECHANICAL EQUIPMENT, PUMPS, FANS, BOILERS, ETC., SHALL HAVE PLASTIC NAMEPLATES WITH A MINIMUM LETTER HEIGHT OF 1/8".

E. DEVICE COVERS (RECEPTACLES, SWITCHES) SHALL BE LABELED NEATLY WITH A PERMANENT MARKER OR LABEL MAKER WITH PANEL & CIRCUIT NUMBER. (EX. L1A-10)

F. 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.

G. 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)

1.12 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.

1.14 MANUFACTURER'S INSTRUCTIONS

A. APPLY, INSTALL, CONNECT, ERECT, USE, CLEAN, AND CONDITION ARTICLES, MATERIALS AND EQUIPMENT AS DIRECTED BY THE MANUFACTURER.

1.15 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.

D. HOLES THROUGH CONCRETE SHALL BE CAREFULLY DONE WITH A "CONCRETE TERMITE" DRILL. A STAR DRILL OR AIR HAMMER WILL NOT BE PERMITTED. STRUCTURAL MEMBERS SHALL NOT BE CUT WITHOUT APPROVAL FROM THE ARCHITECT.

E. ANY PENETRATIONS THRU ROOF SHALL BE MADE WITH "STONEMAN" FLASHING CONNECTIONS AS MANUFACTURED BY STONEMAN ENGINEERING AND MANUFACTURING CO., INGLEWOOD, CALIFORNIA, AND ANY PENETRATIONS MADE IN EXTERIOR OR BASEMENT FOUNDATION WALLS SHALL BE SEALED WITH THUNDERLINE "LINK-SEAL" CONNECTIONS, AS MANUFACTURED BY THUNDERLINE CORPORATION, WAYNE, MICHIGAN.

1.16 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.

1.17 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.

1.18 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.

1.19 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 - 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).

2. 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.

3. ALL CONDUIT EXPOSED TO PHYSICAL ABUSE (I.E. INDUSTRIAL LOCATIONS), INSTALLED IN WET LOCATIONS, IN SLABS, BELOW GRADE OR EXPOSED EXTERIOR TO THE BUILDING, SHALL BE RIGID STEEL OR INTERMEDIATE METAL CONDUIT (IMC).

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 IN AN ORDERLY FASHION.

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 PENETRATIONS THROUGH EXTERIOR WALLS/FLOORS/ROOFS SHALL HAVE SEALED FITTINGS TO PREVENT PASSAGE OF WATER VAPOR.

7. 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, #14 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 FIRE BARRIER PENETRATION SEALS

A. MANUFACTURER: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE FIRE BARRIER PENETRATION SEALS SHALL BE EQUAL TO ELECTRO PRODUCTS DIV.3/M.

B. PROVIDE SEALS FOR ANY OPENING THROUGH FIRE-RATED WALLS, FLOORS OR CEILINGS USED AS PASSAGE FOR COMPONENTS SUCH AS CONDUITS OR CABLES.

1. CRACKS, VOIDS OR HOLES UP TO 4-INCHES DIAMETER: USE PUTTY OR CAULKING, ONE-PIECE INTUMESCENT ELASTOMER, NON-CORROSIVE TO METAL, COMPATIBLE WITH SYNTHETIC CABLE JACKETS, AND CAPABLE OF EXPANDING 10 TIMES WHEN EXPOSED TO FLAME OR HEAT, UL-LISTED.

2. EXECUTION: FILL ENTIRE OPENING WITH SEALING COMPOUND. ADHERE TO MANUFACTURER'S INSTALLATION INSTRUCTIONS. ALL FIRE BARRIER SEALS SHALL MEET THE RATING OF THE WALL.

1.4 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.

1.5 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.

1.6 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 1/2" & 3/4" CONCENTRIC KO'S.

1.7 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.

F. FUSTATS SHALL BE BUSSMANN "SSY" WITH FUSTAT AND INTEGRAL TOGGLE SWITCH FOR MOTORS 1/2 HP 120V. AND LESS. FUSES FOR MOTORS SHALL BE SIZED BASED ON 125 PERCENT OF MANUFACTURER'S NAMEPLATE FULL LOAD AMPERAGE UNLESS OTHERWISE INDICATED ON DRAWINGS.

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 PANELBOARDS

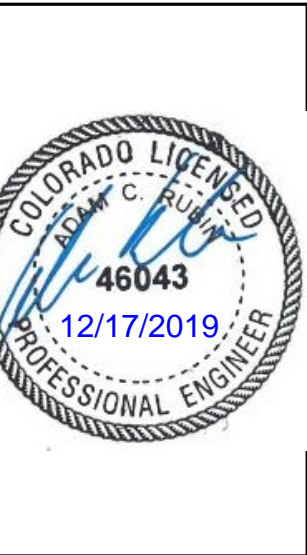
A. PROVIDE PANEL BY SQUARE D WITH THERMAL MAGNETIC BREAKERS AND GROUND BUS. LOAD CENTER CONSTRUCTION IS NOT PERMITTED. PROVIDE DOOR-IN-DOOR CONSTRUCTION WITH NAMEPLATE MOUNTED ON FRONT OF PANEL.

B. PROVIDE LOCKS WITH TWO KEYS FURNISHED PER LOCK.

1.3 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

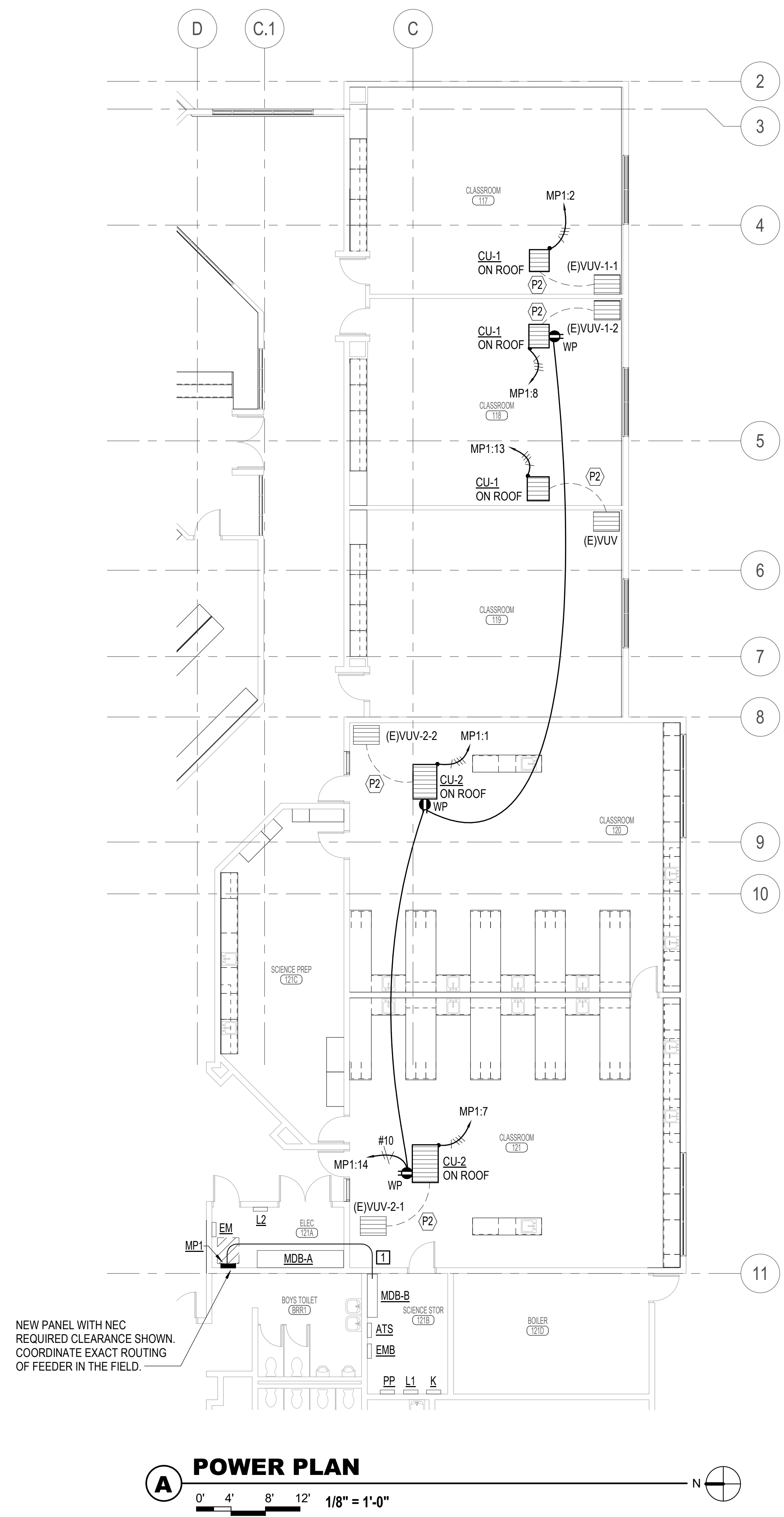


SHEET CONTENTS
ELECTRICAL SPECIFICATIONS

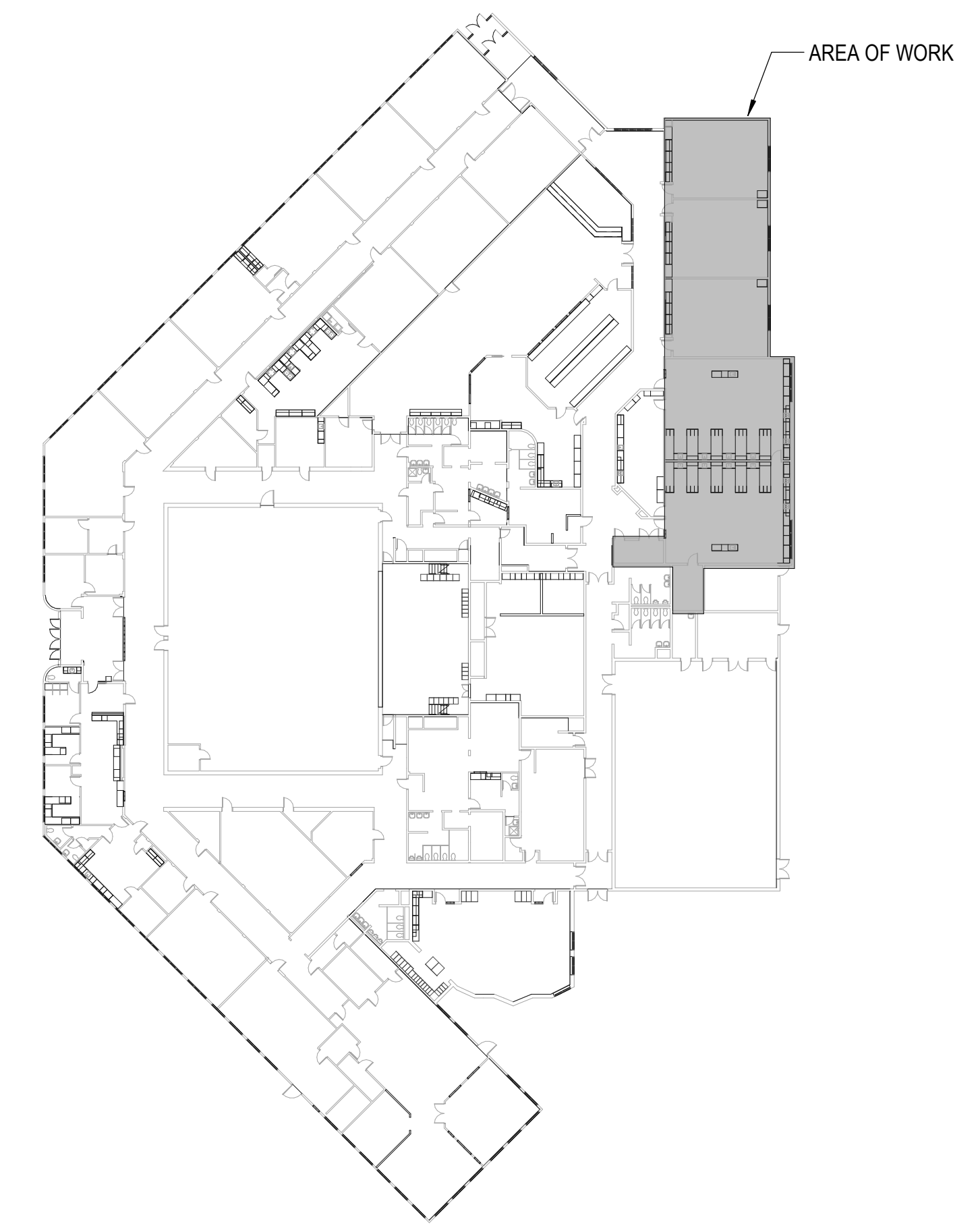
PSD CLP MIDDLE SCHOOL
3515 Co. Rd. 54G
Laporte, CO 80535

Table with columns: NO., BY, DATE, DESCRIPTION, REVISIONS. Includes a grid for tracking changes and a date stamp for 12-17-2019.

EO.1



A POWER PLAN
 0' 4' 8' 12' 1/8" = 1'-0"



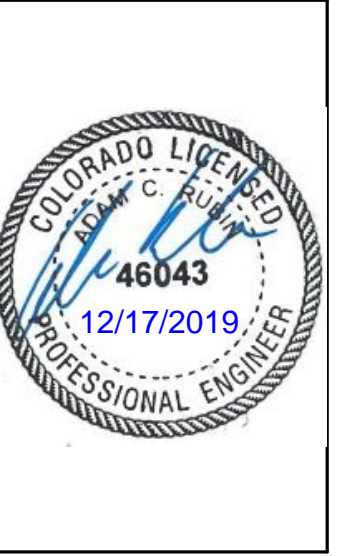
1 KEY PLAN
 NO SCALE

POWER PLAN NOTES:

- 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.
- A GROUND CONDUCTOR SIZED PER N.E.C. ARTICLE 250 IS REQUIRED IN ALL CONDUITS.
- FOR CONNECTION REQUIREMENTS TO MECHANICAL UNITS, SEE MECHANICAL EQUIPMENT CONNECTION SCHEDULE.
- 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.
- 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:

- P2 CONDENSING UNIT MATCHED WITH (E)VUV. DASHED LINE INDICATES WHICH CONDENSING UNIT MATCHES TO WHICH VUV. PROVIDE 3/4" WITH PULLSTRING BETWEEN VUV AND CONDENSING UNIT FOR CONTROL WIRING BY MECHANICAL CONTRACTOR.



SHEET CONTENTS

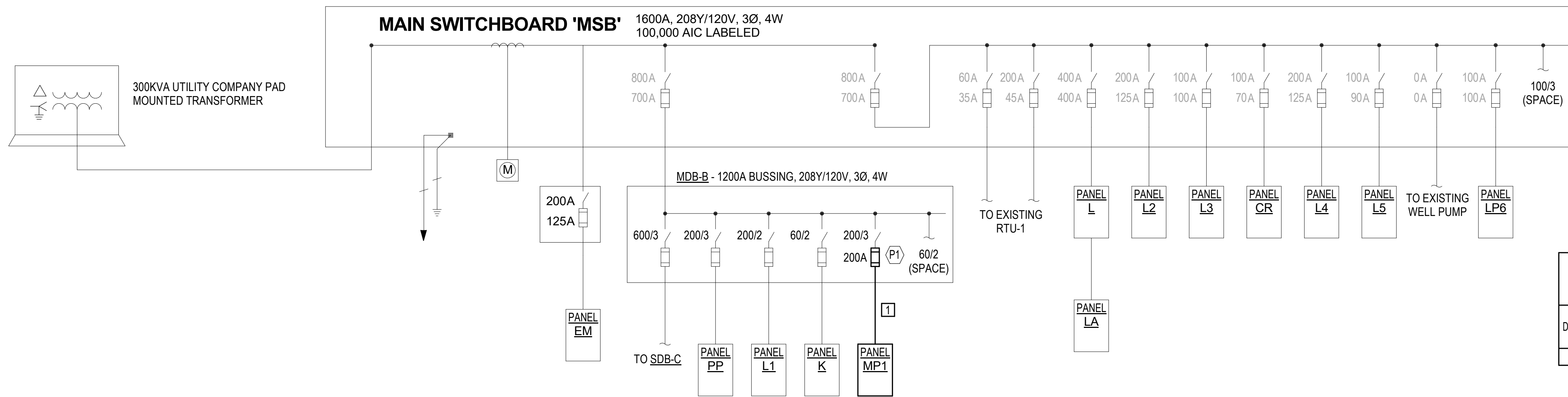
POWER PLAN

PSD CLP MIDDLE SCHOOL
 3515 Co. Rd. 54G
 Laporte, CO 80535

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NO.	BY	DESCRIPTION	DATE

DESIGNER JMG	DRAWN BY ACR	CHECKED BY ACR	DATE 12-17-2019
SHEET NO. E1.1			REVISIONS



GENERAL ONE-LINE DIAGRAM NOTES:

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

KEYED NOTES:

P1 UTILIZE EXISTING SPARE DISCONNECT IN EXISTING SWITCHBOARD FOR NEW PANEL FEED AND PROVIDE NEW FUSES. PROVIDE NAMEPLATE TO IDENTIFY NEW PANEL.

FEEDER SCHEDULE

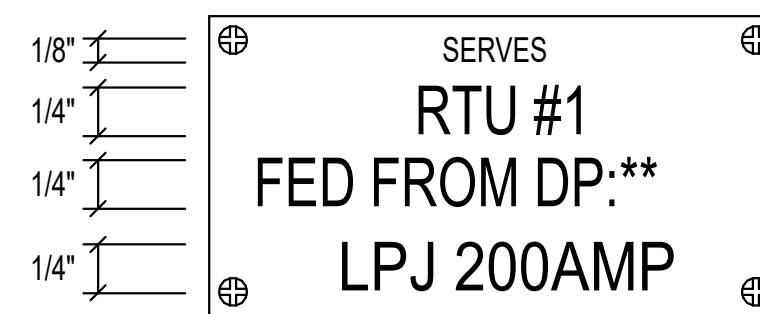
DESIG.	EQUIPMENT SERVED	CONDUCTORS		GROUND SIZE PER SET	ISOLATED GROUND SIZE	CONDUIT SIZE PER SET	SPARE CONDUIT
		SETS	NO.				
1	PANELBOARD:MP1	1	4	#3/0 AWG CU	#6	2"	--

1 ONE-LINE DIAGRAM

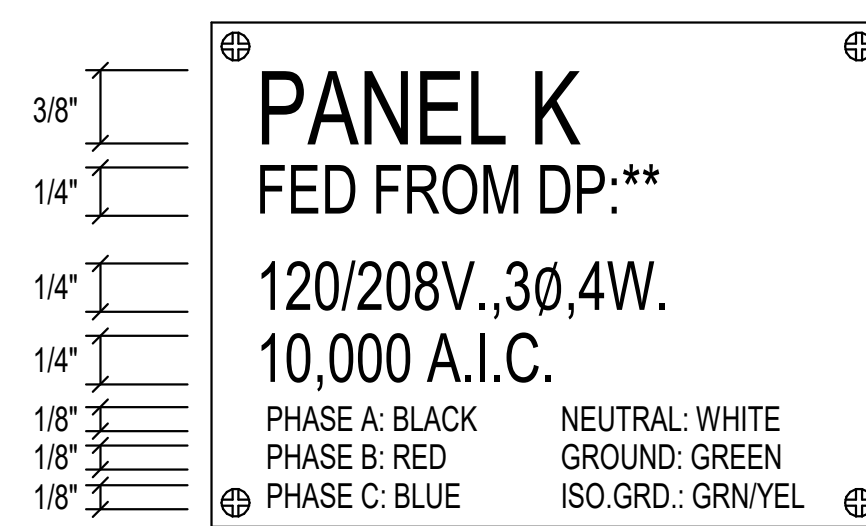
NO SCALE



SWITCHBOARD/DISTRIBUTION PANEL/MOTOR CONTROL CENTER BREAKER/SWITCH



DISCONNECT SWITCH



BRANCH CIRCUIT/DISTRIBUTION PANEL

PANELBOARD: MP1												
208Y/120 VOLTS, 3 PHASE, 4 WIRE												
225 AMP MLO, SURFACE MTD.												
10000 AIC LABELED												
W/GRD. BUS												
CIRC NO.	LOAD V. A.	LOAD TYPE	LOAD DESCRIPTION	P	AMP SIZE	PHASE	AMP SIZE	P	LOAD DESCRIPTION	LOAD TYPE	LOAD V. A.	CIRC NO.
1	9360	MOTR	CU-2	3	50	A	40	3	CU-1	MOTR	7056	2
3	--	--	-----	--	--	B	--	--	-----	--	--	4
5	--	--	-----	--	--	C	--	--	-----	--	--	6
7	9360	MOTR	CU-2	3	50	A	40	3	CU-1	MOTR	7056	8
9	--	--	-----	--	--	B	--	--	-----	--	--	10
11	--	--	-----	--	--	C	--	--	-----	--	--	12
13	7056	MOTR	CU-1	3	40	A	20	1	RECS - S. ROOF, S. EXTERIOR	RCPT	600	14
15	--	--	-----	--	--	B	20	1	SPARE	SPAR	--	16
17	--	--	-----	--	--	C	20	1	SPARE	SPAR	--	18
19	--	SPAR	SPARE	1	20	A	20	1	SPARE	SPAR	--	20
21	--	SPAR	SPARE	1	20	B	20	1	SPARE	SPAR	--	22
23	--	SPAR	SPARE	1	20	C	20	1	SPARE	SPAR	--	24
25	--	SPAR	SPARE	1	20	A	--	--	SPACE	--	--	26
27	--	SPAR	SPARE	1	20	B	--	--	SPACE	--	--	28
29	--	SPAR	SPARE	1	20	C	--	--	SPACE	--	--	30
31	--	--	SPACE	--	--	A	--	--	SPACE	--	--	32
33	--	--	SPACE	--	--	B	--	--	SPACE	--	--	34
35	--	--	SPACE	--	--	C	--	--	SPACE	--	--	36
37	--	--	SPACE	--	--	A	--	--	SPACE	--	--	38
39	--	--	SPACE	--	--	B	--	--	SPACE	--	--	40
41	--	--	SPACE	--	--	C	--	--	SPACE	--	--	42

	CONNECTED KVA:			DEMAND FACTOR	CONT. KVA	CONT. FACT	SIZING AMPS:				
	PH-A	PH-B	PH-C				TOTAL	PH-A	PH-B	PH-C	
Receptacles	0.6	0.0	0.0	0.6	1.0	0.6	1.0	1.7	5.0	0.0	0.0
Motors	13.3	13.3	13.3	39.9	1.0	39.9	1.0	110.8	110.8	110.8	110.8
Spare				0.2	8.1	1.0		22.5	22.5	22.5	22.5
TOTAL KVA:	13.9	13.3	13.3	40.5		48.6		TOTAL AMPS:	PH-A	PH-B	PH-C
TOTAL AMPS:	116.0	111.0	111.0	112.5				135.0	138.3	133.3	133.3

LOAD JUSTIFICATION:
 ELECTRICAL SERVICE PEAK DEMAND PER UTILITY BILLS: 109 kW
 125% OF PEAK DEMAND PER NEC 220.87: 136.3 kW
 ADDITIONAL LOAD ON SERVICE: 48.6 kW
 NEW TOTAL LOAD ON SERVICE: 184.9 kW OR 516A AT 208/3.
 TOTAL SERVICE IS RATED AT 1600A AND DISTRIBUTION BOARD MDB-B POWERING NEW LOADS IS FUSED AT 700A SO THERE IS SUFFICIENT CAPACITY FOR ADDITIONAL LOADS.

2 3 EQUIPMENT CONNECTION SCHEDULE

MECHANICAL EQUIPMENT CONNECTIONS															
UNIT DESIG.	UNIT VOLTAGE	LOAD			PANEL DEVICE			DEVICE AT UNIT			FEEDER DESCRIPTION OR SEE THE FEEDER SCHEDULE	REMARKS OR SEE THE INDICATED NOTES BELOW			
		H.P.	FLA	KVA	CIRCUIT NUMBER	BKR	SW	FUSE	NEMA START	BKR			SW	FUSE	NEMA START
CU	AIR COOLED CONDENSING UNIT														
1	208/3	24.5A	24.5	8.82	SEE DWGS:	40		3		60	40	3	NEMA-3R	1	3 #8 AWG THWN; #10 AWG GRD; 3/4"
2	208/3	82.5A	32.5	11.7	SEE DWGS:	50		3		60	50	3	NEMA-3R	1	3 #8 AWG THWN; #10 AWG GRD; 1"

- ALL CONNECTIONS AND ELECTRICAL EQUIPMENT LISTED IN SCHEDULE SHALL BE PROVIDED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. FIELD VERIFY CONNECTION REQUIREMENTS AND EQUIPMENT PROVIDED BY OTHERS PRIOR TO ROUGH-IN.
- REFER TO MECHANICAL DRAWINGS AND SPECIFICATIONS FOR THE REQUIREMENTS ASSOCIATED WITH WIRING AND CONNECTIONS OF INTERLOCKING, THERMOSTAT LOCATIONS, EXHAUST FAN CONTROL SWITCHES, AND OTHER CONTROLS OF MECHANICAL EQUIPMENT.
- SIZE FUSES FOR MOTOR FUSTATS BASED ON 125% OF MANUFACTURER'S NAMEPLATE FULL LOAD AMPERAGE UNLESS OTHERWISE NOTED ON THE DRAWINGS.

2 TYPICAL NAME PLATES

NO SCALE

PEEC
 PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
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 12/17/2019
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SHEET CONTENTS
 ELECTRICAL DIAGRAMS AND SCHEDULES

PSD CLP MIDDLE SCHOOL
 3515 Co. Rd. 54G
 Laporte, CO 80535

DATE: _____
 DESCRIPTION: _____
 BY: _____
 NO. _____
 DRAWN: JMG
 CHECKED: ACR
 DATE: 12-17-2019

REVISIONS
 E2.1