ELECTRICAL LEGEND

F	MANUAL FIRE PULL STATION
SD	AREA SMOKE DETECTOR, CEILING MOUNTED
SD	AREA SMOKE DETECTOR, WALL MOUNTED
SD	SMOKE DETECTOR, MOUNTED IN DUCT
HD	HEAT DETECTOR, CEILING MOUNTED
W	SPRINKLER WATER FLOW SWITCH
T	SPRINKLER TAMPER SWITCH
A	AUDIBLE FIRE ALARM STROBE, CEILING MOUNTED
A	AUDIBLE FIRE ALARM STROBE, WALL MOUNTED
AV	AUDIO/VISUAL FIRE ALARM STROBE, CEILING MOUNTED
AV	AUDIO/VISUAL FIRE ALARM STROBE WALL MOUNTED
V	VISUAL FIRE ALARM STROBE, CEILING MOUNTED
V	VISUAL FIRE ALARM STROBE, WALL MOUNTED
FJ	FIREMAN'S JACK
FB	FIRE ALARM BELL
F/S	FIRE/SMOKE DAMPER
S	SMOKE DAMPER
FACP	FIRE ALARM CONTROL PANEL
FAAP	FIRE ALARM REMOTE ANNUNCIATOR PANEL
	SIMPLEX RECEPTACLE, WALL MOUNTED
	DUPLEX RECEPTACLE, WALL MOUNTED
	DUPLEX RECEPTACLE, CEILING MOUNTED
	DUPLEX RECEPTACLE, TOP HALF SWITCHED
	QUADRUPLEX RECEPTACLE, WALL MOUNTED
	SPECIAL PURPOSE RECEPTACLE, WALL MOUNTED, COORDINATE NEMA PLUG TYPE WITH OWNER
GFI	DUPLEX RECEPTACLE, GROUND FAULT INTERRUPTER
IG	DUPLEX RECEPTACLE, ISOLATED GROUND
WP	DUPLEX RECEPTACLE, WEATHERPROOF
	COMBINATION POWER/TELECOM FLOOR BOX OR FIRE RATED POKE THRU DEVICE, REFER TO PLANS FOR SPECIFICATION
	TELECOM OUTLET. PROVIDE BACK BOX/COVER PLATE. INSTALL 3/4"C W/BUSHING AND PULLSTRING, STUBBED TO ACCESSIBLE CEILING.
TV	TELEVISION OUTLET. PROVIDE BACK BOX/COVER PLATE. INSTALL 3/4"C W/BUSHING AND PULLSTRING, STUBBED TO ACCESSIBLE CEILING.
$	SINGLE POLE SWITCH
$2	DOUBLE POLE SWITCH
$3	THREE WAY SWITCH
$4	FOUR WAY SWITCH
$K	KEY LOCKED SWITCH
$MC	MOMENTARY CONTACT SWITCH
$T	TIMER SWITCH
$D	WALL DIMMER
$LV	LOW VOLTAGE SWITCH
$O	OCCUPANCY SENSOR SWITCH
$V	VACANCY SENSOR SWITCH
PC	PHOTOCELL
VS OS	VACANCY OR OCCUPANCY SENSOR SWITCH WATTSTOPPER DW-100 SERIES
VS OS	CEILING MOUNTED VACANCY OR OCCUPANCY SENSOR WATTSTOPPER DT-300 SERIES

ELECTRICAL LEGEND

	SURFACE MOUNTED PANEL
	PANEL RECESSED IN WALL
T/F	STEP DOWN TRANSFORMER
	GROUND BUS BAR
	HEAVY DUTY DISCONNECT SWITCH
	HEAVY DUTY FUSED DISCONNECT SWITCH
	COMBINATION MOTOR STARTER/DISCONNECT SWITCH
VFD	VFD WITH DISCONNECT, COORDINATE WITH MECHANICAL CONTRACTOR
EPO	EMERGENCY POWER OFF SWITCH
$MS	MOTORIZED SHADE CONTROL
$T	THERMAL OVERLOAD SWITCH
10	MOTOR CONNECTION, HP AS NOTED
M 1/2	SINGLE PHASE MOTOR CONNECTION, HP AS NOTED
J	JUNCTION BOX, CEILING MOUNTED
J	JUNCTION BOX, WALL MOUNTED
P B	PULL BOX
	GROUND ROD
	GROUND WELL
	CIRCUIT BREAKER
	SWITCH AND FUSE
	ENCLOSED CIRCUIT BREAKER
	NORMALLY OPEN CONTACT
	NORMALLY CLOSED CONTACT
	NUMBERED NOTE
	EXIT SIGN; WALL MOUNTED
	EXIT SIGN; CEILING MOUNTED
	FIXED CLOSED CIRCUIT CAMERA
CR	CARD READER
EL	ELECTRIC LOCK
ES	ELECTRIC STRIKE
	CONDUIT CONCEALED IN CEILING OR WALL
	CONDUIT BELOW FLOOR OR IN SLAB
	CONDUIT STUBBED OUT AND CAPPED W/PULLSTRING
	CONDUIT HOMERUN BACK TO PANEL

ELECTRICAL ABBREVIATIONS

(E)/EXIST	EXISTING
(N)	NEW
(R)/RELOC	EXISTING TO BE RELOCATED
A	AMPERES
A/V	AUDIO/VISUAL
AF	AMPERE FUSE RATING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERES INTERRUPTING CAPACITY
AL	ALUMINUM
AT	AMPERE TRIP RATING
ATS	AUTOMATIC TRANSFER SWITCH
BKR	BREAKER
BLDG	BUILDING
C	CONDUIT
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
CM	CEILING MOUNTED
CU	COPPER
DIA	DIAMETER
DPDT	DOUBLE POLE DOUBLE THROW
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
EP	EXPLOSION PROOF
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FWE	FURNISHED WITH EQUIPMENT
GC	GENERAL CONTRACTOR
GFI/GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND
HP	HORSEPOWER
IG	ISOLATED GROUND
KVA	KILO-VOLT AMPERE
KW	KILO-WATT
LTG	LIGHTING
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
NC	NORMALLY CLOSED
NEUT	NEUTRAL
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
PB	PULL BOX
PNL	PANEL
PVC	POLYVINYL CHLORIDE CONDUIT
SH	SHIELDED
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TC	TIME CLOCK
TS	TIME SWITCH
TVSS	TRANSIENT VOLTAGE SURGE SUPRESSOR
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTABLE POWER SUPPLY
V	VOLT
WP	WEATHERPROOF

BRANCH CIRCUIT WIRING SCHEDULE

BREAKER		
AMPERAGE	POLE	WIRE SIZE
20A	1P	2#12, #12G, 3/4"C
20A	2P	3#12, #12G, 3/4"C
20A	3P	4#12, #12G, 3/4"C
30A	1P	2#10, #10G, 3/4"C
30A	2P	3#10, #10G, 3/4"C
30A	3P	4#10, #10G, 3/4"C
40A	1P	2#8, #10G, 3/4"C
40A	2P	3#8, #10G, 3/4"C
40A	3P	4#8, #10G, 1"C
50A	2P	3#6, #10G, 1"C
50A	3P	4#6, #10G, 1-1/2"C
60A	2P	3#6, #10G, 1"C
60A	3P	4#6, #10G, 1-1/2"C
70A	2P	3#4, #8G, 1-1/2"C
70A	3P	4#4, #8G, 1-1/2"C
80A	2P	3#4, #8G, 1-1/2"C
80A	3P	4#4, #8G, 1-1/2"C
100A	2P	3#3, #8G, 1-1/2"C
100A	3P	4#3, #8G, 1-1/12"C

NOTES:

1. BASED ON 30C AMBIENT AND 90C CONDUCTORS. RESIZE FEEDER PER NEC FOR OTHER AMBIENT TEMPERATURES.
2. ALL FEEDERS SHALL BE THHN/THWN-2 COPPER, UNLESS NOTED OTHERWISE.
3. BRANCH CIRCUITS DO NOT ACCOUNT FOR VOLTAGE DROP.
4. BASED ON 3 CURRENT CARRYING CONDUCTORS IN RACEWAY.

ELECTRICAL GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY ALL EXISTING FIELD CONDITIONS IN THE DEMOLITION AREA PRIOR TO SUBMITTING A BID. THE CONTRACTOR SHALL INCLUDE IN THEIR BID THE COST OF REPLACEMENT, REPAIR, RELOCATION OR REMOVAL OF EXISTING MEP ELEMENTS AS REQUIRED TO COMPLETE INSTALLATION OF ALL SYSTEMS AS SPECIFIED, AND AS SHOWN ON THESE DRAWINGS. THE CONTRACTOR, BY SUBMITTING THEIR PROPOSAL, AGREES TO ACCEPT ALL EXISTING SITE CONDITIONS NOT SPECIFICALLY EXCEPTED. RETURN REUSABLE ITEMS REMOVED FROM THE DEMOLITION AREA TO THE OWNER'S STOCK. REUSE OF ANY EXISTING ITEM ON THIS PROJECT, INCLUDING THOSE INDICATED ON THE DRAWING TO BE RELOCATED, SHALL BE APPROVED BY THE ENGINEER AND SHALL BE IN ACCORDANCE WITH ALL APPLICABLE CODES AND STANDARDS. WHERE THESE DRAWINGS CONFLICT WITH EXISTING FIELD CONDITIONS, A RECORD OF THE FIELD CONDITIONS SHALL BE MADE AVAILABLE TO THE OWNER, ENGINEER, AND ARCHITECT.
2. REMOVE ALL UNUSED CABLING, WIRE AND CONDUIT IN THIS SPACE. CONDUIT SHALL BE TAKEN BACK TO OUTSIDE ELECTRICAL ROOM INTO A J-BOX. LABEL UNUSED BREAKERS AS SPARE.
3. ALL EXISTING CONDUITS, CONDUCTORS, AND EQUIPMENT SERVING HVAC SYSTEM TO BE DEMOLISHED SHALL BE REMOVED, THE CIRCUITS SHALL BE REMOVED BACK TO THE PANEL BOARD AND DE-ENERGIZED.
4. EXISTING EQUIPMENT WHICH IS SHOWN AS EXISTING TO REMAIN ON THE DRAWINGS SHALL BE RENDERED FULLY FUNCTIONAL BY THE CONTRACTOR. RE-CIRCUIT AND REPLACE EXISTING DEVICES WHERE REQUIRED TO COMPLY WITH CONSTRUCTION DOCUMENTS. THE ELECTRICAL CONTRACTOR SHALL ENSURE THAT THE RESULTANT LOAD DUE TO THIS TENANT REVISION ON ANY GIVEN BRANCH CIRCUIT DOES NOT EXCEED 80% OF THE SERVING BREAKER AMPACITY RATING.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOSS OR DAMAGE TO THE EXISTING FACILITIES CAUSED BY HIM AND HIS WORKMEN, AND SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING SUCH LOSS OR DAMAGE. THE CONTRACTOR SHALL SEND PROPER NOTICES, MAKE NECESSARY ARRANGEMENTS, AND PERFORM OTHER SERVICES REQUIRED FOR THE CARE, PROTECTION AND IN-SERVICE MAINTENANCE OF ALL ELECTRICAL SERVICES FOR THE EXISTING FACILITIES. THE CONTRACTOR SHALL ERECT TEMPORARY BARRICADES, WITH NECESSARY SAFETY DEVICES, AS REQUIRED TO PROTECT PERSONNEL AND THE GENERAL PUBLIC FROM INJURY, REMOVING ALL SUCH TEMPORARY PROTECTION UPON COMPLETION OF THE WORK.
6. THE CONTRACTOR SHALL MODIFY, REMOVE AND/OR REPLACE ALL MATERIALS AND ITEMS SO INDICATED ON THE DRAWINGS OR REQUIRED BY THE INSTALLATION OF NEW FACILITIES. SALVAGE MATERIALS SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE DELIVERED TO SUCH DESTINATION AS DIRECTED BY THE OWNER. DISPOSE OF SALVAGE MATERIAL IF NOT RETAINED BY OWNER.
7. WHERE EXISTING CONSTRUCTION IS REMOVED TO PROVIDE WORKING AND EXTENSION ACCESS TO EXISTING FACILITIES, CONTRACTOR SHALL REMOVE CEILING GRIDS, TILES, DOORS, PIPING, AIR CONDITIONING DUCTWORK AND EQUIPMENT, ETC., TO PROVIDE THIS ACCESS AND SHALL REINSTALL SAME UPON COMPLETION OF WORK IN THE AREAS AFFECTED.
8. CONTRACTOR SHALL REMOVE ALL OWNER STANDARD LIGHTS INDICATED TO BE REMOVED AND RETURN TO OWNER STOCK AS DIRECTED BY OWNER. CONTRACTOR SHALL TAKE CARE SO AS NOT TO DAMAGE LIGHTS DURING REMOVAL AND STORAGE.
9. WORK IN OCCUPIED AREAS: WORK IN, ABOVE, BELOW OR NEAR OCCUPIED AREAS SHALL BE AT OWNER'S CONVENIENCE AND MAY BE DURING EVENINGS OR WEEKENDS. SCHEDULE ALL REQUIRED POWER OUTAGES A MINIMUM OF 7 DAYS IN ADVANCE WITH BUILDING OWNER.
10. ELECTRICAL SERVICE OUTAGE: SERVICE TO THE EXISTING BUILDING SHALL BE MAINTAINED DURING NORMAL WORKING HOURS. ANY SERVICE OUTAGE REQUIRED TO COMPLETE THE WORK SHALL BE THE TIME AND FOR THE LENGTH OF TIME AS DIRECTED BY THE OWNER. NOTIFY OWNER MINIMUM OF 48 HOURS PRIOR TO SHUTDOWN. ALL PREMIUM TIME SHALL BE INCLUDED IN CONTRACTOR'S BID.
11. FIRE PROTECTION CONTRACTOR SHALL MODIFY ALL EXISTING FIRE PROTECTION AND SPRINKLER PIPES AS REQUIRED TO MEET THE MAINTENANCE AND REMOVAL CLEARANCES OF ALL EXISTING MECHANICAL, ELECTRICAL AND PLUMBING EQUIPMENT.

ELECTRICAL SHEET LIST

SHEET NUMBER	SHEET NAME
E0.01	ELECTRICAL COVER SHEET
E0.02	ELECTRICAL SPECIFICATIONS
E0.03	ELECTRICAL SPECIFICATIONS
E2.01	POWER PLAN - LEVEL 1
E2.02	POWER PLAN - LEVEL 2
E2.03	ELECTRICAL ROOF PLAN
E3.01	LIGHTING PLAN - LEVEL 1
E3.02	LIGHTING PLAN - LEVEL 2
E4.01	ELECTRICAL DETAILS
E7.00	ELECTRICAL RISER DIAGRAM
E8.01	PANEL SCHEDULES

CODE SUMMARY

1. APPLICABLE CODES INCLUDE BUT ARE NOT LIMITED TO:
   - A. NATIONAL ELECTRICAL CODE (2020 NEC) WITH LOCAL AMENDMENTS.
   - B. INTERNATIONAL BLDG CODE 2015.
   - C. LIFE SAFETY CODE (NFPA 101).
   - D. COLORADO ACCESSIBILITY STANDARDS, AMERICANS WITH DISABILITIES ACT.
   - E. ENERGY CONSERVATION CODE: ASHRAE 90.1 – 2013 OR IECC 2015.
   - F. REFER TO BUILDING OWNER FOR ANY STANDARDS ABOVE CODE REQUIREMENT.

FEEDER SCHEDULE (COPPER)

FEEDER TAG	FEEDER SIZE
15.3, 20.3	3#12, #12G, 3/4"C
15.4, 20.4	4#12, #12G, 3/4"C
30.3	3#10, #10G, 3/4"C
30.4	4#10, #10G, 3/4"C
40.3	3#8, #10G, 3/4"C
40.4	4#8, #10G, 3/4"C
50.3	3#6, #10G, 3/4"C
50.4	4#6, #10G, 1"C
60.3	3#4, #10G, 1"C
60.4	4#4, #10G, 1-1/4"C
70.3	3#4, #8G, 1"C
70.4	4#4, #8G, 1-1/2"C
80.3	3#3, #8G, 1-1/4"C
80.4	4#3, #8G, 1-1/4"C
90.3	3#2, #8G, 1-1/4"C
90.4	4#2, #8G, 1-1/4"C
100.3	3#1, #8G, 1-1/4"C
100.4	4#1, #8G, 1-1/2"C
110.3	3#1, #8G, 1-1/4"C
110.4	4#1, #8G, 1-1/2"C
125.3, 150.3	3#1/0, #6G, 1-1/2"C
125.4 150.4	4#1/0, #6G, 2"C
175.3	3#2/0, #6G, 2"C
175.4	4#2/0, #6G, 2"C
200.3	3#3/0, #6G, 2"C
200.4	4#3/0, #6G, 2"C
225.3	3#4/0, #4G, 2"C
225.4	4#4/0, #4G, 2-1/2"C
250.3	3#250, #4G, 2-1/2"C
250.4	4#250, #4G, 2-1/2"C
300.3	3#350, #4G, 2-1/2"C
300.4	4#350, #4G, 3"C
350.3	3#500, #3G, 3"C
350.4	4#500, #3G, 3-1/2"C
400.3	2 SETS OF 3#3/0, #3G, 2"C
400.4	2 SETS OF 4#3/0, #3G, 2-1/2"C
500.3	2 SETS OF 3#250, #2G, 2-1/2"C
500.4	2 SETS OF 4#250, #2G, 2-1/2"C
600.3	2 SETS OF 3#350, #1G, 2-1/2"C
600.4	2 SETS OF 4#350, #1G, 2-1/2"C
700.3	2 SETS OF 3#1/0, #2G, 3"C
700.4	2 SETS OF 4#500, #1/0G, 3-1/2"C
800.3	2 SETS OF 3#600, #1/0G, 3-1/2"C
800.4	2 SETS OF 4#600, #1/0G, 4"C
1000.3	3 SETS OF 3#500, #2/0G, 3"C
1000.4	3 SETS OF 4#500, #2/0G, 3"C
1200.3	4 SETS OF 3#350, #3/0G, 3"C
1200.4	4 SETS OF 4#350, #3/0G, 3-1/2"C
1600.3	5 SETS OF 3#500, #4/0G, 3"C
1600.4	5 SETS OF 4#500, #4/0G, 3"C
2000.3	6 SETS OF 3#500, #4/0G, 3"C
2000.4	6 SETS OF 4#500, #4/0G, 3"C
2500.3	7 SETS OF 3#500, #4/0G, 3-1/2"C
2500.4	7 SETS OF 4#500, #4/0G, 3-1/2"C
3000.3	8 SETS OF 3#500, #4/0G, 3"C
3000.4	8 SETS OF 4#500, #4/0G, 3-1/2"C
3200.3	8 SETS OF 3#600, #4/0G, 4"C
3200.4	8 SETS OF 4#600, #4/0G, 4"C
4000.3	10 SETS OF 3#600, #4/0G, 4"C
4000.4	10 SETS OF 4#600, #4/0G, 4"C

NOTES: (9)

1. BASED ON 30C AMBIENT AND 75C CONDUCTORS. RESIZE FEEDER PER NEC FOR OTHER AMBIENT TEMPERATURES.
2. ALL FEEDERS SHALL BE THHN/THWN-2 COPPER, UNLESS NOTED OTHERWISE.
3. BRANCH CIRCUITS DO NOT ACCOUNT FOR VOLTAGE DROP.
4. BASED ON 3 CURRENT CARRYING CONDUCTORS IN RACEWAY.

MBA ENERGY & INDUSTRIAL

Date Issued:

2022/07/27	IFP
2022/08/26	OWNER REV 1
2023/10/20	IFC SET

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PALMER RAIL MILL 2
OPERATIONS & MAINTENANCE BUILDING

Project Address:
PUEBLO, CO

COLORADO REGISTERED 33379 PROFESSIONAL ENGINEER
10/20/23

Sheet Content:

ELECTRICAL COVER SHEET

SCALE: NOT TO SCALE

Drawn By: GL
Checked By: AH
Plot Date: 07/27/22
Project Number: 1493-00

Sheet:

E0.01