

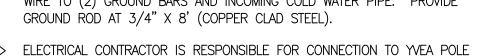
- 5. VERIFY AIC RATINGS WITH ELECTRICAL ENGINEER AND YVEA PRIOR TO PURCHASING ELECTRICAL EQUIPMENT.
- 3. REMOVE ALL CONDUCTORS, DEVICES AND CONDUIT RENDERED UNUSED BY THIS PROJECT.

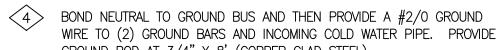
1. ALL WORK SHOWN IS NEW UNLESS OTHERWISE NOTED.

- 4. ALL WRING SHOWN IS SIZED FOR COPPER CONDUCTORS, UON

2. BRING ANY DISCOVERED CODE VIOLATIONS TO THE OWNER'S ATTENTION.

RISER NOTES





AS AN ADD-ALTERNATE PRICE: REPLACE EXISTING PANELS WITH NEW

AND RE-CIRCUIT ACCORDING TO EXISTING CONDITIONS.

LOCATE NEW PANEL D IN BREAK ROOM AREA. CONSULT WITH SHOP MANAGER ON BEST LOCATION OF NEW PANEL.

SHOP MANAGER ON BEST LOCATION OF NEW PANEL.

LOCATE NEW PANEL E IN EXPANDED SHOP AREA. CONSULT WITH



	GROUND ROD AT 3/4" X 8' (COPPER CLAD STEEL).
5>	ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR CONNECTION TO YVEA POLE

Aa 22	FIXTURE DESIGNATION  UPPER CASE LETTER INDICATES FIXTURE TYPE.  LOWER CASE LETTER INDICATES SWITCH LEG  NUMBER INDICATES CIRCUIT NUMBER (WHERE SHOWN).
•	LETTER INDICATES FIXTURES CONTROL (WHERE SHOWN)
22	NUMBER INDICATES CIRCUIT NUMBER (WHERE SHOWN)

NOTES

	SYMBOLS	WIRING DEVICE SYMBOLS	GENERAL NOTES
-	STWIDULS	WIRTING DEVICE STWIDOLS	1. ALL WORK SHOWN IS NEW, UNLESS NOTED OTHERWISE.
	•	20A, 125V, DUPLEX RECEPTACLE OUTLET +18" UNLESS NOTED OTHERWISE	2. ALL WORK TO BE IN ACCORDANCE WITH NATIONAL ELECTR
	Ħ	SURFACE 20A, 125V, DUPLEX RECEPTACLE OUTLET +18" UNLESS NOTED OTHERWISE	3. SEAL ALL CONDUIT PENETRATIONS OF FLOORS AND FIRE MAINTAIN FIRE RATING.
	•	20A, 125V, DOUBLE DUPLEX RECEPTACLE OUTLET +18" UNLESS NOTED OTHERWISE	4. PROVIDE NEW TYPEWRITTEN DIRECTORIES REFLECTING WOR
-	⊨₩	SURFACE 20A, 125V, DOUBLE DUPLEX RECEPTACLE OUTLET +18" UNO	NEW PANELBOARDS IN THIS PROJECT.  5. PLANS ARE PREPARED WITH REQUIRED BRANCH CIRCUITS
	•	SPECIAL PURPOSE RECEPTACLE OUTLET, +18" UNLESS NOTED OTHERWISE, NEMA CONFIGURATION AS NOTED ON PLANS	NUMBERS. PROVIDE AND INSTALL ALL CONDUITS, CONDUCTO MISCELLANEOUS FITTINGS, ETC. FOR A COMPLETE AND OPER (HOMERUN SHOWN). BRANCH CIRCUIT INSTALLATION SHALL
	⊭	SURFACE SPECIAL PURPOSE RECEPTACLE OUTLET, +18" UNLESS NOTED OTHERWISE, NEMA CONFIGURATION AS NOTED ON PLANS	L ÉDECIFICATIONS AND N.E.C.
	•	20A, 125V, DEDICATED DUPLEX RECEPTACLE OUTLET +18" UON	DE WITE STREET STREET
	<b>€</b> GFI	DUPLEX OUTLET WITH GROUND FAULT INTERRUPTER	CHEET LICT
	Ф	CEILING MOUNTED 20A, 125V, DUPLEX RECEPTACLE OUTLET	SHEET LIST
1	<b>#</b>	CEILING MOUNTED 20A, 125V, DOUBLE DUPLEX RECEPTACLE OUTLET	E-100 SYMBOL LIST, SCHEDULES AND SINGL
		FLOOR MOUNTED DUPLEX CONVENIENCE/TELECOM OUTLET WITH BLANK STAINLESS STEEL COVER. COORDINATE TYPE AND FINISH WITH ARCHITECT.	E-101 NEW PANELBOARD SCHEDULES AND LE-200 SPECIFICATIONS
	\$	SPST WALL SWITCH, LETTERS INDICATE THE NUMBER OF SWITCHES AND OUTLETS THEY CONTROL	
	<b>\$</b> D	DIMMER SWITCH	

	20A, 125V, DUPLEX RECEPTACLE OUTLET +18" UNLESS NOTED OTHERWISE	2. ALL WORK TO BE IN ACCORDANCE WITH NATIONAL ELECTRIC CODE, 2014 EDITION.
	SURFACE 20A, 125V, DUPLEX RECEPTACLE OUTLET +18" UNLESS NOTED OTHERWISE	3. SEAL ALL CONDUIT PENETRATIONS OF FLOORS AND FIRE RATED ASSEMBLIES TO MAINTAIN FIRE RATING.
	20A, 125V, DOUBLE DUPLEX RECEPTACLE OUTLET +18" UNLESS NOTED OTHERWISE	4. PROVIDE NEW TYPEWRITTEN DIRECTORIES REFLECTING WORK PERFORMED FOR ALL
	SURFACE 20A, 125V, DOUBLE DUPLEX RECEPTACLE OUTLET +18" UNO	NEW PANELBOARDS IN THIS PROJECT.  5. PLANS ARE PREPARED WITH REQUIRED BRANCH CIRCUITS INDICATED BY CIRCUIT
l	SPECIAL PURPOSE RECEPTACLE OUTLET, +18" UNLESS NOTED OTHERWISE, NEMA CONFIGURATION AS NOTED ON PLANS	NUMBERS. PROVIDE AND INSTALL ALL CONDUITS, CONDUCTORS, BOXES, MISCELLANEOUS FITTINGS, ETC. FOR A COMPLETE AND OPERABLE SYSTEM (HOMERUN SHOWN). BRANCH CIRCUIT INSTALLATION SHALL COMPLY WITH
	SURFACE SPECIAL PURPOSE RECEPTACLE OUTLET, +18" UNLESS NOTED OTHERWISE, NEMA CONFIGURATION AS NOTED ON PLANS	SPECIFICATIONS AND N.E.C.  6. ALL NEUTRAL CONDUCTORS ON POWER BRANCH CIRCUITING ROUNDHOUSES TO BE #10 AWG UNLESS NOTED OTHERWISE.
	20A, 125V, DEDICATED DUPLEX RECEPTACLE OUTLET +18" UON	DE TIO AND GREESS NOTED OTHERWISE.
FI	DUPLEX OUTLET WITH GROUND FAULT INTERRUPTER	
	BOLLEX GOLLET WITH GROOMS TAGET WITHKING TEN	CUEFT LIGT
	CEILING MOUNTED 20A, 125V, DUPLEX RECEPTACLE OUTLET	SHEET LIST
		SHEET LIST  E-100 SYMBOL LIST, SCHEDULES AND SINGLE LINE DIAGRAM
) )	CEILING MOUNTED 20A, 125V, DUPLEX RECEPTACLE OUTLET	
0	CEILING MOUNTED 20A, 125V, DUPLEX RECEPTACLE OUTLET  CEILING MOUNTED 20A, 125V, DOUBLE DUPLEX RECEPTACLE OUTLET  FLOOR MOUNTED DUPLEX CONVENIENCE/TELECOM OUTLET WITH BLANK STAINLESS	E-100 SYMBOL LIST, SCHEDULES AND SINGLE LINE DIAGRAM E-101 NEW PANELBOARD SCHEDULES AND LOAD CALCULATIONS
	CEILING MOUNTED 20A, 125V, DUPLEX RECEPTACLE OUTLET  CEILING MOUNTED 20A, 125V, DOUBLE DUPLEX RECEPTACLE OUTLET  FLOOR MOUNTED DUPLEX CONVENIENCE/TELECOM OUTLET WITH BLANK STAINLESS STEEL COVER. COORDINATE TYPE AND FINISH WITH ARCHITECT.  SPST WALL SWITCH, LETTERS INDICATE THE NUMBER OF SWITCHES AND OUTLETS	E-100 SYMBOL LIST, SCHEDULES AND SINGLE LINE DIAGRAM E-101 NEW PANELBOARD SCHEDULES AND LOAD CALCULATIONS
) os	CEILING MOUNTED 20A, 125V, DUPLEX RECEPTACLE OUTLET  CEILING MOUNTED 20A, 125V, DOUBLE DUPLEX RECEPTACLE OUTLET  FLOOR MOUNTED DUPLEX CONVENIENCE/TELECOM OUTLET WITH BLANK STAINLESS STEEL COVER. COORDINATE TYPE AND FINISH WITH ARCHITECT.  SPST WALL SWITCH, LETTERS INDICATE THE NUMBER OF SWITCHES AND OUTLETS THEY CONTROL	E-100 SYMBOL LIST, SCHEDULES AND SINGLE LINE DIAGRAM E-101 NEW PANELBOARD SCHEDULES AND LOAD CALCULATIONS

NEW BUILDING LOADS

OVERALL BUILDING LOADS

Lighting Total

Wall Receptacles

Existing Panel A

Existing Panel B

15% Growth/Spare

Total Amperes @120/208V

LOAD CALCULATIONS

DESCRIPTION

GENERAL ILLUMINATION

EXIT SIGN WITH BATTERY

BACKUP EGRESS LIGHTING

BATTERY BACKUP EGRESS

1. ALL LAMPS SHALL BE PROVIDED BY THE CONTRACTOR.

LIGHTING FIXTURE

LIGHTING SCHEDULE NOTES

LIGHTING SCOPE NOTES

POWER SCOPE NOTES

APART, 10 FEET ON CENTER.

FLUORESCENT HIGH BAYS FOR

New Panel D

Total KVA

TYPE SYMBOL

X1

X2

lacksquare

**Block Heaters** 

Mechanical

3-phase Receptacle

Area Load Load

SF VA/SF KVA

1.5

9.00

9.00

Notes

See above

Double Duplex & Duplex @ 20' on center

(4) 3-phase, 30-amp outlets

(20) 15-amp block heaters

(5) Tube Heaters, (3) Exhaust Fans

ALTERNATE MANUFACTURER

APPROVED EQUAL

APPROVED EQUAL

APPROVED EQUAL

6,000.0

KVA

9.00

8.64

21.66

36.00

42.10

67.10

6.30

28.77

220.57

611.00

MANUFACTURER

LITHONIA

LITHONIA

ELM2

IBZT5-4L-WD

EXG-LED-EL-M6

LITHONIA - LED EXIT SIGN

2. CONTRACTOR TO SUBMIT FIXTURE TYPES TO OWNER AND ENGINEER PRIOR TO PURCHASE AND INSTALLATION.

1. LIGHTING LAYOUT FOR GENERAL NEW SPACE SHALL BE USING FIXTURE TYPE F1 IN 4 ROWS, SPACED 18 FEET

2. CONTRACTOR SHALL CONSULT WITH OWNER ON SEPARATE LIGHTING LAYOUTS FOR MECHANIC, WELDING AND SHOP ADDITION AREAS. FIXTURE TYPE F1 TO BE USED UNLESS DIRECTED OTHERWISE BY OWNER.

4. EXIT SIGNS AND EGRESS LIGHTING TO BE INSTALLED AS NEEDED AND VERIFIED IN THE FIELD.

3. ONE EXTERIOR BUILDING MOUNTED LIGHT SHALL BE ADDED BETWEEN MAN DOOR AND GARAGE DOOR. FIXTURE TO MATCH EXISTING.

1. NEW WALL RECEPTACLES IN NEW SPACE SHALL BE A DOUBLE DUPLEX OUTLET AND A DUPLEX OUTLET EVERY 20 FEET ON CENTER ON INTERIOR WALLS.

2. PROVIDE (4) 3—PHASE RECEPTACLES, SPECIFIED BY OWNER, ONE IN MECHANICS AREA, ONE IN WELDING AREA AND ONE ON EACH SIDE WALL OF ADDITION AREA.

3. PROVIDE EXTERIOR FUSES AND HARD WIRING FOR (20) BLOCK HEATER CONTROLLERS, AS SPECIFIED BY OWNER. LOCATION TO BE DETERMINED IN THE FIELD.

1.00

GENERAL NOTES



OAK CREEK

24500 County Road 27

TYKE PIERCE

38615 Klein Road

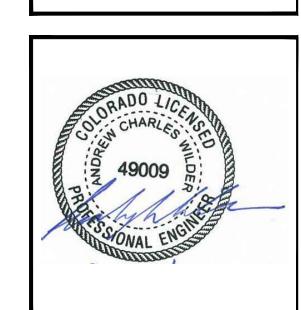
**CONSTRUCTION** 

Steamboat Springs, CO 80477

SHOP

Oak Creek, CO

1170 Blue Sage Drive Steamboat Springs, CO 80487 P: 970-819-7848 E: andy@wilder-eng.com



Issue By Date & Issue Description By  - PERMIT SET - 5.16.16 AW			
·	1		
- PERMIT SET - 5.16.16 AW	issue	By Date & Issue Description	ву
	_	PERMIT SET - 5.16.16	AW
i			

Scale	2:	
	24x36_NTS	
	·	
Desc	ription: LEGEND, SINGLE LINE D	OIAGS

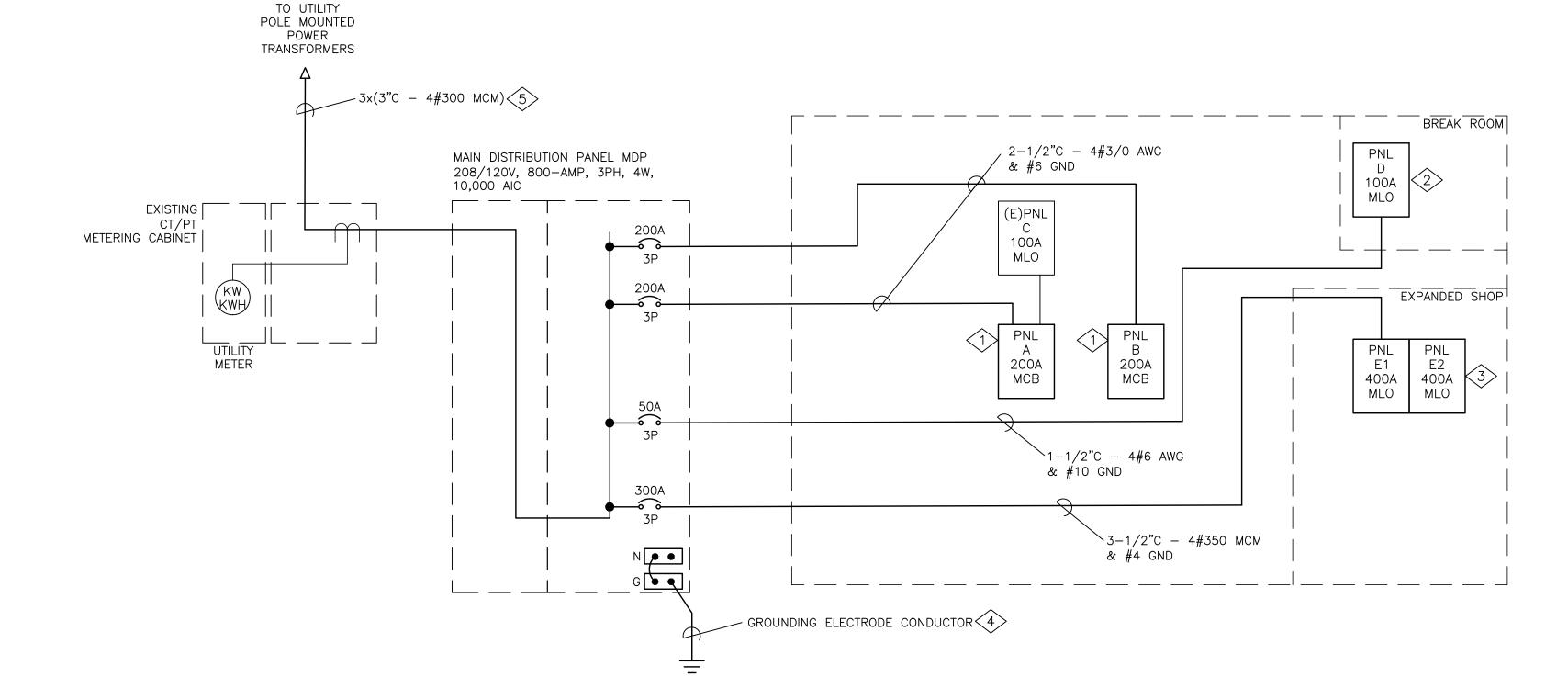
Description: LEGEND, S	SINGLE LINE
Project Name: OAK CR	EEK SHOP

Project Number: 201626

Sheet No.

E-100

LIGHTING SCHEDULE AND POWER SCOPE NOTES



NOTES

SYMBOL:

MOTOR OUTLET

→ JUNCTION BOX

FUSED DISCONNECT SWITCH

COMBINATION MOTOR STARTER

SWITCH AND FUSE; RATING AS SHOWN ON PLANS

SWITCH AND FUSE; RATING AS SHOWN ON PLANS

SWITCH XX/XX = AMP SWITCH/POLES

ABBREVIATIONS

A, AMP

CKT

EC

ELEC

EMT

FA

G, GND

HP

MECH

MCB

NEC

NTS

ø, PH

PNL

PVC

PWR

RSC

TEL

TYP

UON

VA

(X)

AMPERE

CONDUIT

CIRCUIT

AMPERE INTERRUPTING CAPACITY

FRAME RATING IN AMPERES

SWITCH RATING IN AMPERES

TRIP RATING IN AMPERES

AMERICAN WIRE GAUGE

EXISTING TO REMAIN

ELECTRO METALLIC TUBING

MAIN CIRCUIT BREAKER NEW EQUIPMENT OR DEVICE NATIONAL ELECTRIC CODE

NORMALLY OPEN

POLYVINYL CHLORIDE CONDUIT

RIGID STEEL CONDUIT

UNLESS OTHERWISE NOTED

EXISTING TO BE DEMOLISHED

<u>DIAGRAM NOTES</u>

NOT TO SCALE

PHASE

PANEL

POWER

TELEPHONE

**VOLT AMPERES** 

TYPICAL

VOLT

NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION

EMPTY CONDUIT

ELECTRICAL

FIRE ALARM

HORSEPOWER

MECHANICAL

GROUND

SYMBOLS	DESIGNATION SYMBOLS	NOTES
Aa 22	FIXTURE DESIGNATION  UPPER CASE LETTER INDICATES FIXTURE TYPE.  LOWER CASE LETTER INDICATES SWITCH LEG  NUMBER INDICATES CIRCUIT NUMBER (WHERE SHOWN).	
\$	LETTER INDICATES FIXTURES CONTROL (WHERE SHOWN)	
<sup>22</sup>	NUMBER INDICATES CIRCUIT NUMBER (WHERE SHOWN)	

POWER SYMBOLS

SWITCH XX/XX/XX = AMP SWITCH/POLES/AMP FUSEHEAVY DUTY NON-FUSED DISCONNECT SWITCH

MANUAL MOTOR STARTER WITH THERMAL OVERLOAD

SURFACE MOUNTED PANELBOARD OR TERMINAL CABINET

STATIONARY - CIRCUIT BREAKER; RATING AS

MOUN	ITING	SURF	ACE			P	A	N	E	L		Ε(	1)		(1)	10,0	000	A.I.C.	SYM
208/	120	VOLTS	3 PI	HASE	4	WII	RE			M	AIN		ML	0_				BUS	400 A
VC	DLT AM	PS			R	L	O	В	C		C	В	O	L	R		V	DLT AM	PS
Ø A	ØВ	ØС	DESCRI	PTION	E C	T G	L E	K R	I R		I R	K R	L E	T G	E C	DESCRIPTION	ØA	ØВ	ØС
1800			3-Phas	e Rec			3	20	1	A	2	20	1			Lighting	1200		
	1800		-				1	1	3	В	4	20	1			Lighting		1200	
		1800	-				ı		5	C	6	20	1			Lighting			1200
1800			3-Phas	e Rec			3	20	7	A	8	20	1			Lighting	1200		
	1800		-				ı	ī	9	В	10	20	1			Lighting		1200	
		1800	-				-	-	11	C	12	20	1			Lighting			1200
1800			3-Phas	e Rec			3	20	13	A	14	20	1			Lighting	1200		
	1800		-				_	-	15	В	16	20	1			Lighting		600	
		1800	-				I	-	17	С	18	20	1			Mechanical			1000
1800			3-Phas	e Rec			3	20	19	A	20	20	1			Spare			
	1800		Η.				-	-	21	В	22	20	1			Spare			
		1800	-				-	-	23	С	24	20	1			Spare			
1080			Wall Re	cepts	6		1	20	25	A	26					Space			
	1080		Wall Re	cepts	6		1	20	27	В	28					Space			
		1080	Wall Re	cepts	6		1	20	29	C	30					Space			
1080			Wall Re	cepts	6		1	20	31	A	32					Space			
	1080		Wall Re	cepts	6		1	20	33	В	34					Space			
		1080	Wall Re	cepts	6		1	20	35	С	36					Space			
1080			Wall Re	cepts	6		1	20	37	A	38					Space			
	1080		Wall Re	cepts	6		1	20	39	В	40					Space			
			Spa	re			1	20	41	С	42					Space			
10440	10440	9360							V	A/LIN	Œ						3600	3000	3400
Ø A= 14040 Ø B= 13440										Ø C=	12760								
CO	NTINUC	OUS LOA	DS							]	NON-	CON	TIN	UOU	IS LC	OADS			
9000	x1.25=	11250	RI	ECEPTAC	PTO CLES REM				40		0.50=	86	40			OTHER	58600	x1.00	58600
		TO	TAL DES	SIGN kV	/A=	7	8		Τ	OTA	L D	ESIC	GN A	AM	PS=	218			

) Provide feed-through lugs.
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MOUN		P	A	N	E	L	10,	10,000		SYM								
208/	120	VOLTS	3 PHASE	4	4 WIRE MAIN FEED THRU												BUS	400 A
VC	DLT AM	PS		R E	L T	O	B K	C		C I	В	O	L T	R		VC	OLT AM	PS
Ø A	ØВ	ØС	DESCRIPTION	C	G	L E	R	I R		R	K R	L E	G	E C	DESCRIPTION	ØA	ØB	ØC
1800			Block Heater			1	20	43	A	44	20	1			Block Heater	1800		
	1800		Block Heater			1	20	45	В	46	20	1			Block Heater		1800	
		1800	Block Heater			1	20	47	C	48	20	1			Block Heater			1800
1800			Block Heater			1	20	49	A	50	20	1			Block Heater	1800		
	1800		Block Heater			1	20	51	В	52	20	1			Block Heater		1800	
		1800	Block Heater			1	20	53	C	54	20	1			Block Heater			1800
1800			Block Heater			1	20	55	A	56	20	1			Block Heater	1800		
	1800		Block Heater			1	20	57	В	58	20	1			Block Heater		1800	
		1800	Block Heater			1	20	59	C	60	20	1			Block Heater			1800
1800			Block Heater			1	20	61	A	62	20	1			Block Heater	1800		
			Spare			1	20	63	В	64	20	1			Spare			
			Spare			1	20	65	C	66	20	1			Spare			
			Spare			1	20	67	A	68	20	1			Spare			
			Space					69	В	70					Space			
			Space					71	C	72					Space			
			Space					73	A	74					Space			
			Space					75	В	76					Space			
			Space					77	С	78					Space			
			Space					79	A	80					Space			
			Space					81	В	82					Space			
			Space					83	С	84					Space			
7200	5400	5400						V	A/LIN	Œ						7200	5400	5400
Ø A=	14400						ØB=	10	800							Ø C=	10800	
CO	NTINUC	OUS LOA	DS							NON	-CON	TIN	UOU	S LC	OADS			
	x1.25=		RECEPTA	UP TO CLES REM						1.00= 0.50=			-		OTHER	36000	x1.00	36000
		TO	OTAL DESIGN k					Г	OTA	L D	ESIC	GN .	AM	PS=	100			

MOUNTING SURFACE								I		L		E	<b>)</b>			10,0	000	A.I.C.	SYN
208/	120	VOLTS	3 PF	IASE .	4	WIF	RE			MAIN			200	) A				BUS	225
VC	DLT AM	PS			R E	L T	O	В	C I		C I	B K	O L	L T	R E		VO	OLT AM	PS
ØA	ØВ	ØС	DESCRI	PTION	C	G	L E	R	R		R	R	E	G	C	DESCRIPTION	Ø A	ØВ	Ø
750			Center	Heat			1	20	1	A	2	20	1			Heat/Fans	750		
	1000		Lath	ie			3	20	3	В	4	20	1			Heat/Flag Ltg		1000	
		1000	-				-	-	5	C	6	20	1		4	Recept			720
1000			-				-	-	7	A	8	20	1			Welding Fan	750		
			Spa	ce					9	В	10	20	2			Plasma Cutter		1000	
			Spa	ce					11	C	12	-	Ξ			-			100
2000			Hoi	st			3	30	13	A	14	100	2			Welder	5000		
	2000		-				-	-	15	В	16	-	-1			=		5000	
		2000	-				1	1	17	C	18					Space			
750			VR Sys	tem			1	20	19	A	20	30	1			Fuel Is	2200		
	3000		Air Comp	ressor			3	50	21	В	22	15	1		2	Recept		360	
		3000	-				-	-	23	C	24	20	2			Roof Fan			100
3000			-				-	Ξ	25	A	26	-	-			=	1000		
	2600		S Out	Rec			2	50	27	В	28	20	2			Wall Fan		1000	
		2600					-	-	29	C	30	-	-			=			100
1800			Patch	Trlr			2	30	31	A	32	20	2			Roof Fan	1000		
	1800		-				-	-	33	В	34	-	-			-		1000	
			Spa	ce					35	C	36	100	3			Welder			500
			Spa	ce					37	A	38	-	-			-	5000		
			Spa	ce					39	В	40	-	н			-		5000	
									41	C	42								
9300	10400	8600		VA/LINE 15700									14360	872					
	25000							Ø B=	24	760							Ø C=	17320	
CO	NTINUC	US LOA	.DS					- 10						UOU	S LC	DADS			
							«VA	10	080	xl	=00.1	10	80	-					
	x1.25=		RI	CEPTAC		AIN					).50=					OTHER	66000	x1.00	660

10UN	TING	SURF	ACE		P	A	N	E	L			)			10,0	000	A.I.C.	SYM
208/	120	VOLTS	3 PHASE	4	WII	RE			M	AIN		MI	0		·		BUS	100 A
VO	LT AM	PS		R	L	O	В	C		С	В	O	L	R		VO	OLT AM	PS
ØA	ØВ	ØС	DESCRIPTION	E C	T G	L E	K R	I R		I R	K R	L E	T G	E C	DESCRIPTION	ØA	ØB	ØС
360			Recepts	2		1	20	1	A	2	30	2			Pressure Washer	2400		
	360		Recepts	2		1	20	3	В	4	L	Ι			-		2400	
			Space					5	C	6					Space			
			Space					7	A	8					Space			
			Space					9	В	10					Space			
			Space					11	C	12					Space			
			Space					13	A	14					Space			
			Space					15	В	16					Space			
			Space					17	C	18					Space			
			Space					19	A	20					Space			
			Space					21	В	22					Space			
			Space					23	C	24					Space			
			Space					25	A	26					Space			
			Space					27	В	28					Space			
			Space					29	C	30					Space			
360	360				•			V	A/LIN	ΙE						2400	2400	
ØA=	2760	•					ØB=	27	760							ØC=		
CON	NTINUC	OUS LOA	DS						]	NON-	CON	TIN	UOU	IS LO	DADS			
	x1.25=		RECEPTA	CLES			72			0.50=					OTHER	4800	x1.00	4800

MOUN	NTING	SURF	ACE			P	A	N	E	L			)			10,0	000	A.I.C.	SYM
208/	<sup>/</sup> 120	VOLTS	3	PHA SE	4	WII	RE			M	AIN		MI	_O				BUS	100 A
VOLT AMPS			R E	L T	P O	B K	C		C	B K	P O L	L T	R E		V	OLT AM	PS		
ØA	ØB	ØС	DESC	RIPTION	C	G	E	R	R		R	R	E	G	C	DESCRIPTION	Ø A	ØB	ØС
1200			Refr	igerator			1	20	1	A	2	20	1		4	Office Recept	720		
	360		Re	cepts	2		1	20	3	В	4	20	1		2	Bathroom		860	
		900	Re	cepts	5		1	20	5	C	6	20	1			Spare			
720			Re	cepts	4		1	20	7	A	8	20	1			Spare			
	1200		Lig	ghting			1	20	9	В	10	20	1			Spare			
			S	pare			1	20	11	C	12					Space			
			S	pare			1	20	13	A	14					Space			
			S	pare			1	20	15	В	16					Space			
			S	pace					17	C	18					Space			
1920	1560	900							V	A/LIN	Œ						720	860	
$\emptyset A =$	2640	51						Ø B=	24	20							Ø C=	900	
CO	NTINUC	OUS LOA	DS							]	NON	-CON	TIN	UOU	S LC	DADS			
1200	x1.25=	1500		RECEPTAC	IP TO CLES REM				60		).50=	30	60	-		OTHER	1700	x1.00	1700
		TC	TAL D	ESIGN kV	/A=	(	6		Τ	OTA	L D	ESIC	GN A	AMI	PS=	17			

MAIN	SERVICE L	OAD SU	MMAR	Y						
		kVA								
Load	Cont	Rec	Other	Total	A					
PANEL A	4.3	7.6	29.2	42.1	117					
PANEL B		1.1	66.0	67.1	186					
PANEL D	1.2	3.1	1.7	6.3	17					
PANEL E(1)	9.0	8.6	58.6	78.5	218					
Growth/Spare			29.5	29.5	82					
SubTotal	14.5	20.3	185.0	218.2	kVA					
25% of Largest Motor					kVA					
Total				218.2	kVA					
			605.8	Amps at	208 V					



		SURF	-ACE				1		L							000	A.I.C.	
208,	/120	VOLTS	3 PHA SE	4	WII	RE			M	AIN		200	0 A				BUS	225
V	OLT AM	PS		R	L	0	B K	C I		C I	В	O	L	R		VC	OLT AM	PS
ØA	ØВ	ØС	DESCRIPTION	E C	T G	L E	R	R		R	K R	L E	T G	E C	DESCRIPTION	ØA	ØВ	ØC
1000			South Door			1	20	1	A	2	20	1		4	Recept	720		
	1000		Lighting			1	25	3	В	4	20	1		4	Recept		720	
		1000	North Door			1	20	5	C	6	20	1		4	Recept			720
1000			Lighting			1	25	7	A	8	20	1			Break Room	1000		
	1000		Lighting			1	25	9	В	10	20	1			Break Room		1000	
		1000	Lighting			1	25	11	C	12	20	1		4	Recept			720
720			Recept	4		1	20	13	A	14	20	1		4	Recept	720		
	1000		Drill Press			1	20	15	В	16	20	1			Work Bench		1000	
		720	Recept	4		1	20	17	C	18	20	1			Office			1000
720			Recept	4		1	20	19	A	20	20	2			Recept	1000		
			Space					21	В	22	-	-			-		1000	
			Space					23	C	24	20	2			Recept			1000
			Space					25	A	26	-	-			-	1000		
			Space					27	В	28	60	2			Bench		3100	
		1000	Water Heater			1	20	29	C	30	-	-			-			310
720			Recept	4		1	20	31	Α	32	60	2			Dryer	3100		
	610		Bathroom	2		1	20	33	В	34	1	-			-		3100	
		2760	Panel C			3	100	35	C	36					Space			
2760			IH.			-	-	37	A	38					Space			
			-			-	-	39	В	40					Space			
								41	C	42								
6920	3610	6480						V	A/LIN	Œ						7540	9920	654
ØA=	14460						ØB=	13	530							Ø C=	13020	
CC	NTINU (	OUS LOA											UOU	S LC	DADS			
4250	x1.25=	5313	RECEPTA				75	60	•	1.00= 0.50=		60	-		OTHER	29200	x1.00	2920
		TO				2		7	•				A N /	DC-	117			
		10	TAL DESIGN k	VA=	4				OTA	IL D	E31	JIN	AIVII	2=	117			



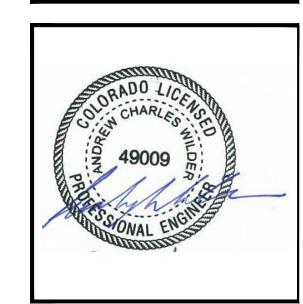
## OAK CREEK SHOP

24500 County Road 27 Oak Creek, CO

## TYKE PIERCE CONSTRUCTION

38615 Klein Road Steamboat Springs, CO 80477





Issue	By Date & Issue Description	Ву
_	PERMIT SET - 5.16.16 A	W

Scale:
24x36_NTS
Description: SCHEDULES
Project Name: OAK CREEK SHOP
Project Number: 201626
Sheet No.
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E-101

**SECTION 16010 - BASIC ELECTRICAL REQUIREMENTS** 

1) PART 1 GENERAL

a) POWER AND CONTROL WIRING

i) Provide power system conduit and wiring to mechanical equipment. Controls system conduit and wiring for mechanical systems is included under Division 15. "Power" wiring includes line voltage wiring from distribution apparatus to disconnecting means provided or installed under this section, and from such disconnecting means to motors, and to terminal boxes of 'package' equipment. "Controls" wiring includes wiring, regardless of voltage, which provides start-stop control for mechanical equipment and/or which is used to monitor functions of mechanical systems. Where line voltage wiring is extended from a local disconnecting means to relays, thermostats, by-pass timers, starter coils or the like, or from mechanical control panels or motor control centers to control devices, such extensions are considered "control" wiring.

b) MOUNTING HEIGHTS

i) Mounting heights and locations: verify the exact location of equipment with architect prior to installation. Wall mounted devices requiring operational access shall be mounted a minimum of 15 inches above finished floor to bottom of device and a maximum of 48 inches above finished floor to top of device. Visual alarms shall be mounted not less than 80 inches to the bottom or 96 inches to the top of the device.

c) REGULATORY REQUIREMENTS

i) Conform to:

(1) NFPA-70 - National Electric Code.

ii) Comply with the current applicable codes, ordinances, and regulations of the authority or authorities having jurisdiction, the Owner's insurance underwriter, and applicable base building standards.

iii) When conflict exists between two or more governing codes, comply with the stricter requirement.

iv) Obtain permits, and request inspections from authority having jurisdiction.

d) PROJECT/SITE CONDITIONS

i) Install Work in locations shown on Drawings, unless prevented by Project conditions. Coordinate installation of work in available space with work furnished under other Divisions.

2) PRODUCTS

a) Where manufacturer's model or series numbers are specified or shown, these indicate generally acceptable types required. Furnish products which comply with all requirements, as specified or shown.

b) When more than one unit of the same class of equipment is required, provide units produced by a single manufacturer.

a) Furnish test equipment, facilities, and technical personnel required to perform field tests.

b) At completion of job, check voltage at several points of utilization on the system. Energize all loads installed.

a) Clean all fixtures and equipment at the completion of the project. Wipe clean exposed lighting fixture reflectors and trim pieces with a non-abrasive cloth just prior to occupancy.

5) RECORD DRAWINGS

a) Upon completion of the Work, deliver to Architect and up-to-date set of "as-built" record drawings on a reproducible medium including AutoCAD.

6) DEMOLITION

a) Remove, relocate, and reroute existing electrical equipment to facilitate new construction or remodeling work.

b) Examine the site to observe and note existing conditions prior to submitting a bid.

c) Schedule demolition in advance. Schedule work to avoid disruption of normal operations.

d) Reconnect circuits serving equipment required to remain in service to other panelboards, motor control centers, or other appropriate distribution equipment. Provide additional panelboards, motor control centers, or other appropriate distribution equipment where there is insufficient available capacity in remaining existing equipment for reconnection.

e) Remove existing conduit and wire back to panelboard, motor control center, or other distribution source.

f) Where a circuit is interrupted by removal of a device or fixture from that circuit, provide additional conduit and wire to restore service to the remaining devices and fixtures on that circuit.

g) Electrical equipment to be removed that is in good working order shall be carefully removed and offered to the Owner. Items rejected by the Owner shall be removed from the project site and properly disposed of.

**SECTION 16100 - BASIC MATERIALS AND METHODS** 

1) PART 1 GENERAL

a) REFERENCES

i) All equipment and installations shall meet or exceed minimum requirements of ADA, ANSI, ASTM, IEEE, IES, NEC, NEMA, NETA, NFPA, OSHA, SMACNA, UL, and the State Fire Marshal. Equipment shall be certified for use in the State of the project and shall meet the State energy code. Provide products and materials that are new, clean, free of defects, and free of damage and corrosion.

b) PERFORMANCE REQUIREMENTS

i) Provide support system for equipment and conduit, including wiring, with a minimum safety factor of 4. For empty conduits, include weight of 4 type XHHW wires of maximum permissible size.

c) QUALITY ASSURANCE

i) All equipment and installations shall meet or exceed minimum requirements of ADA, ANSI, ASTM, IEEE, IES, NEC, NEMA, NETA, NFPA, OSHA, SMACNA, UL, and the State Fire Marshal. Equipment shall be certified for use in the State of the project and shall meet the State energy code. Provide products and materials that are new, clean, free of defects, and free of damage and corrosion.

2) PART 2 PRODUCTS

a) CONDUIT

i) General

(1) Exposed Dry and Damp Locations:

(a)Use electrical metallic tubing.

(2) Concealed Locations:

(a)Furred, Ceiling Spaces and Stud Walls: Use electrical metallic tubing. (b) Connections to Lighting Fixtures in Accessible Ceilings: Use flexible conduit.

(3) Equipment Connections:

(4) Equipment for Dry Systems in Dry Locations: Use flexible conduit.

(1) Continuous, seamless steel tubing, galvanized or sherardized on exterior, coated on interior with smooth hard finish of lacquer, varnish or enamel, with steel, set screw or compression type fittings. Provide concrete type fittings where required.

(a)Connections to Liquid-Handling Equipment in Dry Locations: Use liquid-tight flexible conduit.

(2) Use for general purpose feeders and branch circuits.

iii)Flexible Steel Conduit:

ii) Electrical Metallic Tubing:

(1) Single strip, continuous, flexible interlocked double-wrapped steel, hot dip galvanized inside and out forming smooth internal wiring channel, with steel, compression type fittings.

(2) Use in dry locations only, connections to lighting fixtures in suspended ceilings, connections to equipment installed above suspended ceilings, transformer connections, busway plug in units, and connections to equipment

where vibration isolation is required, maximum length of 6 feet. iv)Liquid Tight Flexible Steel Conduit:

(1) Same as flexible steel conduit except with tough, inert, watertight plastic outer jacket. Fittings shall be cast malleable iron body and gland nut, cadmium plated with one-piece brass grounding bushings threaded to interior of conduit. Spiral molded vinyl sealing ring between gland nut and bushing and nylon insulated throat.

(2) Use same as flexible steel conduit in damp or wet locations and at motor connections.

b) BUILDING WIRE AND CABLE

i) Provide wire with a minimum insulating rating of 600 volts, except for wire used in low voltage (below 50 volts) control or signal systems. The use of teflon (multi-conductor) for low tension systems may be permitted for fire alarm, signal and communication systems (voice and data) as approved on shop drawings by engineers and where permitted by local codes and union practice.

ii) Conductors

(1) Electrical grade, annealed copper, and fabricated in accordance with ASTM standards. Minimum size number 12 AWG for branch circuits; number 14 AWG for control wiring.

(2) Unless otherwise specified, all wires numbers 10 and smaller shall be solid.

(3) All wires number 8 and larger shall be stranded in accordance with ASTM Class B stranding designations.

(4) Control wires shall be stranded in accordance with ASTM Class B stranding designations. (5) Cables for low tension systems shall be multi-conductor, 16 gauge, color coded and insulated in armored cable

assembly, with number of conductors as required. (6) All 600 volt wire and cables unless otherwise specified shall be single conductor suitable for use in wet and dry

iii)Connectors

(1) Make connections, splices, taps and joints with solderless devices, mechanically and electrically secure. Protect exposed wires and connecting devices with electrical tape or insulation to provide insulation values not less than on conductor.

iv) Cables (No. 8 and Larger):

(1) Use set screw or compression type connectors, taps and splices specifically designed for the particular connection. Insulate splice either by taping or by use of "Bakelite" covers designed to fit around splice.

v) Branch Circuit Wires (Number 10 and Smaller): Use any of the following types of terminals and connecting devices: (1) Hand Applied: Coiled, tapered, spring wound devices with a conducting corrosion-resistant coating over the spring steel and a plastic cover and skirt providing full insulation for splice and wired ends. Screw connector on by

(2) Tool Applied: Steel cap, with conduction and corrosion resistant metallic plating, open at both ends, fitted around the twisted ends of the wire and compressed or crimped by means of a special die designed for the

c) BOXES

i) Pressed steel, galvanized or cadmium-plated, 4 inches minimum octagonal or square with galvanized cover or extension

ii) Back-to-back outlets in the same wall, or "through-wall" type boxes are not permitted. Provide 12 inch minimum spacing for outlets shown on opposite sides of a common wall. Provide acoustical potting compound on all outlet

purpose. Specifically fitted plastic or rubber insulating cover wrap over each connector.

d) WIRING DEVICES

i) Switches and Receptacles: Arrow Hart, Hubbell, Leviton, Pass & Seymour, or Slater.

ii) Wall Dimmers: Lutron.

iii)Occupancy Sensors: Mytech, Novitas, or Watt Stopper.

iv)Floor Boxes and Fittings:

(1) Poke through type: Wiremold Legrand.

(2) Recessed flush floor box type: Steel City or Wiremold Legrand.

v) Plugstrip: Wiremold.

vi)Device and cover plate colors shall be as selected by Architect.

e) SUPPORTS

i) Support raceways on accepted types of wall brackets, specialty steel clips, or hangers, ceiling trapeze hangers, or malleable iron straps. Plumber's perforated straps are not permitted. Acceptable manufacturers' brackets or hangers are Kindorf, Elcan, Binkley, Multi-Frame, Power-Strut, or Unistrut. Do not suspend raceways or equipment from other raceways, steam, water, or other piping or ductwork, except as otherwise permitted. Provide independent and secure support methods.

f) PANELBOARDS

i) Acceptable Manufacturers: Cutler-Hammer/Westinghouse, General Electric, Siemens, or Square D/Groupe Schneider.

ii) AIC Rating: Branch panelboards and overcurrent protection devices shall have a minimum short circuit rating of 10,000 RMS symmetrical amperes minimum interrupting capacity (120/208V) or 14,000 RMS symmetrical amperes minimum interrupting capacity (277/480V).

iii) AIC Rating: Distribution panelboards and overcurrent protection devices shall have a minimum short circuit rating of 42,000 RMS symmetrical amperes minimum interrupting capacity (120/208V) or 200,000 RMS symmetrical amperes minimum interrupting capacity (277/480V).

iv) Enclosures: Corrosion resistant galvanized (zinc finished) sheet steel. Fronts shall be cold rolled steel, finish coated with ANSI 61 grey enamel over a rust inhibitor. Panel locks shall be keyed alike.

v) Doors: One piece bolt on front with a lockable hinged door over the overcurrent protection devices.

vi)Bus Bars: Silver plated aluminum or copper. Neutral bus shall be full size. Neutral bus shall be 200% rated when supplied from a double neutral feeder. Provide an equipment ground bus in each panelboard. In addition to the equipment ground bus, provide an isolated ground bus when supplied from a feeder which includes an isolated grounding conductor.

vii) Overcurrent Protection Devices: Molded case circuit breakers for branch panelboards and 120/208V rated distribution panels, and fusible switch units for 277/480V rated distribution panels.

g) MOTOR STARTERS

i) Acceptable Manufacturers: Eaton/Cutler-Hammer, General Electric, Siemens, or Square D/Groupe Schneider. ii) Manual Motor Starters

iii)Fractional Horsepower Manual Starter: General-purpose, Class A, manually operated, full-voltage controller for

fractional horsepower induction motors, with thermal overload unit, and toggle operator.

iv) Voltage, Rating and Thermal Element: As required by motor controller. v) Enclosure: NEMA ICS 6; Type 1.

i) 1/8 inch diameter braided yellow polypropylene.

h) PULL LINE

3) PART 3 EXECUTION

a) INSTALLATION i) Conduit

(1) Install conduit in accordance with NECA "Standard of Installation".

(2) Do not combine individual homeruns into common conduit.

(3) Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports.

(4) Arrange conduit to maintain headroom and present neat appearance.

(5) Use conduit hubs to fasten conduit to cast boxes.

(6) Provide insulated equipment ground conductor in flexible conduit.

(7) Install conduit to preserve fire resistance rating of partitions and other elements.

(8) Do not attach conduit to ceiling support wires. ii) Building Wire and Cable

(1) Use conductor not smaller than 12 AWG for power and lighting circuits.

(2) Neatly train and lace wiring inside boxes, equipment, and panelboards. (3) Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.

(4) Use hardened and tempered steel, tin-plated or stainless steel Belleville washer with slightly larger tin-plated mild steel flat washer for aluminum lugs.

(5) Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, 8 AWG and smaller.

(1) Install electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment

connections and compliance with regulatory requirements.

(2) Install electrical boxes to maintain headroom and to present neat mechanical appearance.

(3) Install boxes to preserve fire resistance rating of partitions and other elements; arrange boxes to meet regulatory requirements.

(4) Align adjacent wall-mounted outlet boxes for switches, thermostats, and similar devices to each other. (5) Do not use through-walls boxes or install flush mounting boxes back-to-back in walls; provide minimum 6 inch

separation. Provide minimum24 inches separation in acoustic rated walls. (6) Use stamped steel bridges in bar hanger assemblies to fasten flush mounting outlet box between studs.

(7) Use adjustable steel channel fasteners for hung ceiling outlet box.

(8) Do not fasten boxes to ceiling support wires.

(9) Support steel metal boxes independently of conduit.

(10) Use gang box where more than one device is mounted together, including floor boxes. Do not use sectional

(11) Plaster Rings: Use for all concealed work; depth of rings as required to reach finished surfaces.

(12) Coordinate trimming of openings for outlet boxes in partitions to achieve neat, closely-fitting openings.

(13) Install knockout closure in unused box opening.

iv) Wiring Devices (1) Install devices plumb, level, and rigidly in place.

(2) Install switches 2 inches to 8 inches from trim on the strike side.

(3) Install decorative plates on switch, receptacle, and blank outlets in finished areas. Use multi-gang plates for

multiple devices. (4) Connect wiring devices by wrapping conductor around screw terminal.

v) Supporting Devices

(1) Fasten hanger rods, conduit clamps, and outlet and junction boxes to building structure using expansion anchors, beam clamps, steel ramset fasteners.

(2) Use toggle bolts or hollow wall fasteners in plaster or gypsum board partitions and walls; sheet metal screws or spring steel bar retainer clips in sheet metal studs.

(3) Do not fasten supports to piping, ductwork, mechanical equipment, or conduit.

(4) Do not use powder-actuated anchors without specific permission.

(5) Do not drill structural steel members without specific permission. (6) Fabricate supports from structural steel or steel channel, rigidly welded or bolted to present a neat appearance.

Use hexagon head bolts with spring lock washers under nuts.

vi)Electrical Identification (1) Provide wire markers on each conductor in panelboard gutters, pull boxes, and at load connection. Identify with branch circuit for power and lighting circuits, and with control wire number as indicated on equipment manufacturer's shop drawings for control wiring. If more than one neutral conductor is present, mark each with

related circuit numbers. (2) Color code all secondary branch circuit and feeder conductors as follows:

(a)Four Wire, Three Phase, Grounded Wye System: For 120/208 volt systems, use one black, one red, one blue,

one white (neutral). For 277/480 volt systems, use one brown, one orange, one yellow and one gray (neutral). (3) Use wire with insulation of required color. For sizes of wire, which may not be available in specified colors use

self-adhesive wrap around, markers of solid colors to color code conductors.

(4) Color code conductors at accessible locations. (5) Pull Rope Marking: Affix label identifying termination point at each end of pull rope.

vii) Disconnect Switches (1) Install disconnect switches shown mounted on walls at +4'-6" to centerline of switch.

(2) Install disconnect switches shown on or adjacent to equipment on field fabricated galvanized steel frames. viii) Panelboards

(1) Provide filler plates for unused spaces in panelboards. (2) Provide typed circuit directory in plastic holder for each branch circuit panelboard.

ix) Motor Starters

(1) Install motor control equipment in accordance with manufacturer's instructions.

(2) Select and install heater elements in motor starters to match installed motor characteristics.

x) Pull Line: Provide in each empty conduit except sleeves and nipples; leave 8 inches of slack at each outlet. xi)Firestopping: Provide firestopping around all pipes, conduits, sleeves, etc., which pass through rated walls, partitions and floors.

**END OF SECTION** 

OAK CREEK

24500 County Road 27 Oak Creek, CO

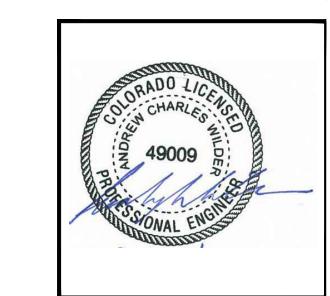
TYKE PIERCE **CONSTRUCTION** 

Steamboat Springs, CO 80477

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Issue	By Date 8	ፄ Issu	e D	escription	Ву
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Scale:
24x36_NTS
Description: SPECIFICATIONS

Project Number: 201626

Project Name: OAK CREEK SHOP

Sheet No.

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