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SPRINGFIELD, MO

ALL PANELBOARDS, TRANSFORMERS, TRANSFER SWITCH KIT AND DISCONNECTS WILL BE SUPPLIED BY THE OWNER (O'REILLY). ELECTRICAL GEAR SHALL BE DIRECT ORDERED AND/OR RELEASED FROM THE LISTED ELECTRICAL EQUIPMENT DISTRIBUTOR. SEE 'ELECTRIC SERVICE RESPONSIBILITIES' FOR ADDITIONAL CLARIFICATION:

GRAYBAR ELECTRIC CO. INC.
11885 LACKLAND ROAD
ST. LOUIS, MO. 63146

GRAYBAR OREILLY TEAM
EMAIL: oreilly@graybar.com
TOLL FREE: (314) 573-2080

MP PANELBOARD SCHEDULE

MAINS:	400A MAIN LUGS ONLY	VOLTAGE:	208
TYPE:	SQUARE D, NQ	PHASE:	3ø,4W
MOUNTING:	SURFACE	WIDTH:	20
SCCR:	22K AIC	SPACE(S):	42

ACCESSORIES:
1. EQUIPMENT GROUND BAR
2. ISOLATED GROUND BAR
3. * 'SQ. D' #Q01PA – WITH LOCKABLE CLIPS
4. + MUST BE TYPE "HACR" BREAKER
5. FEED THRU LUGS

CKT	CKT BRK	WIRE	LOAD DESCRIPTION	(KVA)	A(KVA)	B(KVA)	C(KVA)	(KVA)	LOAD DESCRIPTION	WIRE	CKT BRK	CKT
1	20A/1P	#12s	LIGHTING/EXHAUST FAN	0.53	4.46			3.93	RTU-1 7.5-TON	#8s	+50A/3P	2
3	20A/1P	#12s	LIGHTING	1.10		5.03		3.93				4
5	20A/1P	#12s	LIGHTING	1.35			5.28	3.93				6
7	20A/1P	#12s	LIGHTING	1.24	4.02			2.78	RTU-2 5-TON	#8s	+45A/3P	8
9	20A/1P	#12s	LIGHTING	1.08		3.86		2.78				10
11	20A/1P	#12s	LIGHTING	0.77			3.55	2.78				12
13	20A/1P	#12s	LIGHTING	0.82	4.75			3.93	RTU-3 7.5-TON	#8s	+50A/3P	14
15	.	.	SPACE	0		3.93		3.93				16
17	.	.	SPACE	0			3.93	3.93				18
19	.	.	SPACE	0	0.00			0	SPACE	.	.	20
21	.	.	SPACE	0		0.00		0	SPACE	.	.	22
23	20A/1P	#12s	BUILDING LIGHTING	0.24			0.24	0	SPACE	.	.	24
25	20A/1P	#12s	SITE LIGHTING	0.15	0.15			0	SPACE	.	.	26
27	20A/1P	#12s	SITE LIGHTING	0.15		0.15		0	SPACE	.	.	28
29	20A/1P	#12s	SITE SIGN	1.30			1.30	0	SPACE	.	.	30
31	20A/1P	#12s	SITE SIGN	1.30	1.30			0	SPACE	.	.	32
33	*20A/1P	#12s	LED SIGN BUILDING	1.20		1.20		0	SPACE	.	.	34
35	20A/3P	#12s	GRIDPOINT 1204	0.03			0.03	0	SPACE	.	.	36
37				0.03	0.03			0	SPACE	.	.	38
39				0.03		0.63		0.60	WATTSBOX ENCLOSURE	#12s	20A/1P	40
41	20A/1P	#12s	XFMR J-BOX	0.60			1.20	0.60	LCP	#12s	20A/1P	42

TOTAL PHASE A (KVA)	TOTAL PHASE B (KVA)	TOTAL PHASE C (KVA)	TOTAL CONNECTED LOAD (KVA)	TOTAL AMPS
22.57	27.45	24.74	74.76	207.52

LIGHTING 6.89 | EXTERIOR LIGHTING 4.34 | TOTAL LIGHTING 11.23 | HVAC 31.92 | RECEPTACLES 13.97

PLP PANELBOARD SCHEDULE

MAINS:	400A MAIN LUGS ONLY	VOLTAGE:	208
TYPE:	SQUARE D, NQ	PHASE:	3ø,4W
MOUNTING:	SURFACE	WIDTH:	20
SCCR:	22K AIC	SPACE(S):	42

ACCESSORIES:
1. EQUIPMENT GROUND BAR
2. ISOLATED GROUND BAR
3. *** GFI BREAKER CKT. #16 & #23
4. ** 'SQ. D' #Q01PAF CKT. #33
5. + MUST BE TYPE "HACR" BREAKER

CKT	CKT BRK	WIRE	LOAD DESCRIPTION	(KVA)	A(KVA)	B(KVA)	C(KVA)	(KVA)	LOAD DESCRIPTION	WIRE	CKT BRK	CKT
1	20A/1P	#10s	LATHE	1.70	2.20			0.50	CHECK IN RECEPT. (I.G.)	#12s	20A/1P	2
3	20A/1P	#10s	CUTOFF SAW	1.73		1.91		0.18	BATTERY RACK RECEPT.	#10s	20A/1P	4
5	20A/1P	#12s	CRIMPER	1.77			1.95	0.18	BATTERY RACK RECEPT.	#10s	20A/1P	6
7	20A/1P	#12s	RECEPTACLES	0.54	0.90			0.36	BREAK AREA RECEPTS.	#12s	20A/1P	8
9	20A/1P	#10s	STARTER/ALT. TESTER	1.68		1.68		0	SPACE	.	.	10
11	20A/1P	#10s	STARTER/ALT. TESTER	1.68			2.22	0.54	RTU RECEPTACLES	#12s	20A/1P	12
13	20A/1P	#10s	STARTER/ALT. TESTER	1.64	2.00			0.36	RECEPTACLES	#12s	20A/1P	14
15	20A/1P	#12s	RECEPTACLES	0.36		2.11		1.75	COKE MACHINE (ONLY)	#12s	***20A/1P	16
17	20A/1P	#12s	ISOLATED GRD. RECEPTS.	0.36			0.72	0.36	ISOLATED GRD. RECEPTS.	#12s	20A/1P	18
19	20A/1P	#12s	RECEPTACLES	0.18	0.54			0.36	ISOLATED GRD. RECEPTS.	#12s	20A/1P	20
21	30A/1P	#10s	BATTERY BACKUP (I.G.)	3.00		3.36		0.36	ISOLATED GRD. RECEPTS.	#12s	20A/1P	22
23	***20A/1P	#12s	WATER COOLER RECEPT.	0.90			1.26	0.36	ISOLATED GRD. RECEPTS.	#12s	20A/1P	24
25	20A/1P	#12s	RECEPTACLES	1.00	1.36			0.36	ISOLATED GRD. RECEPTS.	#12s	20A/1P	26
27	20A/1P	#12s	SECURITY	0.50		0.86		0.36	ISOLATED GRD. RECEPTS.	#12s	20A/1P	28
29	20A/1P	#12s	RECEPTACLES (OS)	1.08			1.44	0.36	ISOLATED GRD. RECEPTS.	#12s	20A/1P	30
31	.	.	SPACE	0	0.36			0.36	ISOLATED GRD. RECEPTS.	#12s	20A/1P	32
33	**20A/1P	#12s	TANK WATER HEATER	1.65		2.01		0.36	ISOLATED GRD. RECEPTS.	#12s	20A/1P	34
35	20A/1P	#12s	ISOLATED GRD. RECEPTS.	0.36			0.72	0.36	ISOLATED GRD. RECEPTS.	#12s	20A/1P	36
37	.	.	SPACE	0	0.50			0.50	PRINTER RECEPTACLE	#12s	20A/1P	38
39	.	.	SPACE	0		0.72		0.72	PHONE EQUIP. RECEPTS.	#12s	15A/1P	40
41	.	.	SPACE	0			0.90	0.90	RECEPTACLES	#12s	20A/1P	42

TOTAL PHASE A (KVA)	TOTAL PHASE B (KVA)	TOTAL PHASE C (KVA)	TOTAL CONNECTED LOAD (KVA)	TOTAL AMPS
7.86	12.65	9.21	29.72	82.50

MISCELLANEOUS 14.79 | WATER HEATER 1.65 | 73.56

E TRANSFER SWITCH SCHEDULE

POSITION	CIRCUIT BREAKER	LOAD DESCRIPTION	(KVA)	BREAKER
A	20A/1P	OFFICE COMPUTER	0.36	PLP-36
B	20A/1P	COUNTER RECEPTACLES	0.36	PLP-34
C	20A/1P	PRINTER	0.50	PLP-38
D	20A/1P	TELEPHONE EQUIPMENT RECEPTACLE	0.72	PLP-40
E	20A/1P	LIGHTING OFFICE/BATHROOMS (100% ON)	0.53	MP-1
F	20A/1P	LIGHTING SECURITY (100% ON)	0.82	MP-13
G	20A/1P	LIGHTING HARD PARTS (DIMMED TO 40% ON)	0.44	MP-3
H	20A/1P	LIGHTING HARD PARTS (DIMMED TO 40% ON)	0.54	MP-5
I	20A/1P	INSTALLER (ISOLATED GRD RECEPTACLE)	0.36	PLP-17
J	20A/1P	INSTALLER (RECEPTACLE)	0.18	PLP-19
GENERATOR (6,000 WATTS) RATED. MAX KVA=5.0 LOAD			4.81	TOTAL

NOTE:
ALL BRANCH CIRCUITS SHALL HAVE AN EQUIPMENT GROUNDING CONDUCTOR ROUTED WITH THE CIRCUIT CONDUCTORS. THIS MEANS ALL CONDUITS MUST HAVE A GREEN WIRE INSTALLED IN THEM AND SIZED IN ACCORDANCE WITH TABLE 250.122 OF THE N.E.C.

DOT-HATCH REPRESENTS CIRCUITS THAT ARE ASSOCIATED WITH OPTIONAL STANDBY GENERATOR CONTROL.

WIRING & LABELING OF EXIT & EMERGENCY LIGHT CIRCUITS

1. SEE DETAIL 1/E1 FOR WIRING OF EXIT & EMERGENCY LIGHTS ON THESE CIRCUITS.
2. ALL EXIT & EMERGENCY LIGHTING CIRCUITS SHALL BE LABELED BY THE CONTRACTOR ON THE "PANEL DIRECTORY". (SPEC: NFPA 70 408.4 & 700.12.)

EQUIPMENT LABELS CHART

SEE ELECTRICAL SERVICE DIAGRAM.

EQUIPMENT	LABELS: SERVICE DISCONNECT	OPTIONAL STANDBY SOURCE	GENERATOR POWER INLET	SERIES RATING	AVAILABLE FAULT CURRENT
DISCONNECT	X	X			
GENERATOR POWER INLET			X		
MP					
PLP					
E					
CT CABINET					

GENERATOR POWER INLET LABEL

PERMANENT LABEL SHALL BE 2 x 3 IN SIZE AND SHALL BE BLUE LETTERING ON A CONTRASTING BACKGROUND. LABEL TO BE PLACED 6 INCHES ABOVE GENERATOR RECEPTACLE.

WARNING:
FOR CONNECTION OF A NONSEPARATELY DERIVED (FLOATING NEUTRAL) SYSTEM ONLY
(MAX. 6,000 WATT GENERATOR)

EXAMPLE OF LABELING ABOVE.

OPTIONAL STANDBY SOURCE LABEL

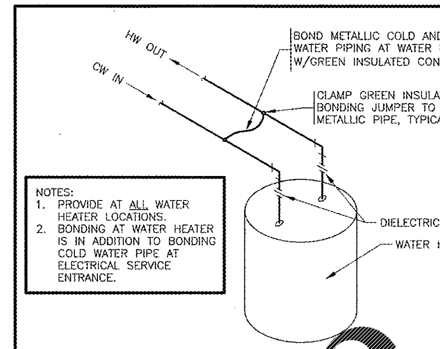
PERMANENT LABEL SHALL BE 2 x 3 IN SIZE AND SHALL BE BLUE LETTERING ON A CONTRASTING BACKGROUND. LABEL TO BE PLACED ON DISCONNECT DOOR.

CAUTION
TWO SOURCES OF SUPPLY
STANDBY POWER SOURCE: PORTABLE 6kw GENERATOR LOCATION: OVERHEAD DOOR

EXAMPLE OF OPTIONAL STANDBY SOURCE LABELING ABOVE.

SERVICE DISCONNECT LABEL

THE SERVICE DISCONNECTING MEANS SHALL BE PROPERLY MARKED "SERVICE DISCONNECT". REFER TO SPEC SECTION 26 00 20 FOR FURTHER IDENTIFICATION PLATE REQUIREMENTS.



NOTES:
1. PROVIDE AT ALL WATER HEATER LOCATIONS.
2. BONDING AT WATER HEATER IS IN ADDITION TO BONDING COLD WATER PIPE AT ELECTRICAL SERVICE ENTRANCE.

METALLIC WATER PIPE BONDING (4/E3)

N.T.S.

BRENT L. COU... REGISTERED ENGINEER ... AGRICULTURE ... STATE OF TENNESSEE No. ...59
08/23/18

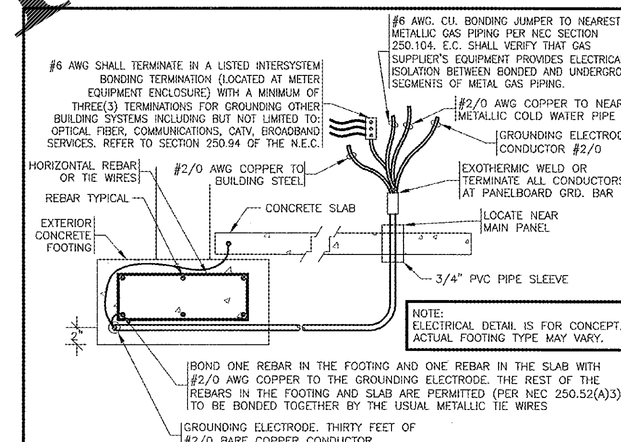
DRAWN BY: CEV

NOTE:
1. BOND ALL NONCURRENT CARRYING METAL PARTS OF SERVICE EQUIPMENT (INCLUDING METER ENCLOSURE) TO GROUNDING ELECTRODE AS REQUIRED. PER NEC 250-92.
2. THE GROUNDED NEUTRAL CONDUCTOR SHALL BE RUN TO AND BONDED TO EACH SERVICE DISCONNECTING MEANS ENCLOSURE IN ACCORDANCE WITH NEC 250-24c.
3. BONDING OF OTHER ENCLOSURES SHALL BE IN ACCORDANCE WITH NEC 250-96.

SERVICE EQUIPMENT GROUNDING & BONDING SHALL BE IN ACCORDANCE WITH: *NEC 250-24 *NEC 250-28 *NEC 250-50 *NEC 250-66 *NEC 250-90 *NEC 250-92 *NEC 250-130

BONDING REQUIREMENTS (3/E3)

N.T.S.

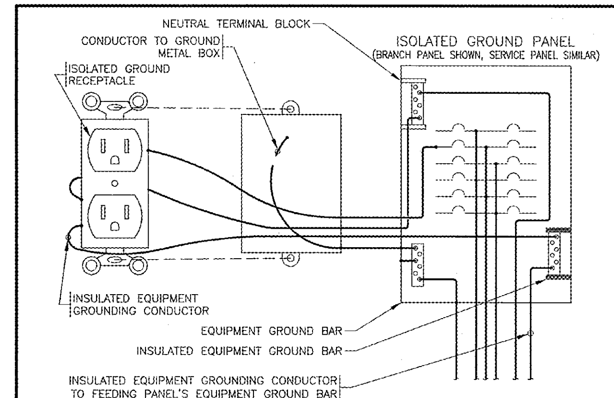


NOTE:
ELECTRICAL DETAIL IS FOR CONCEPT. ACTUAL FOOTING TYPE MAY VARY.

NOTE:
GROUNDING ELECTRODE TEST MEASURE AND RECORD GROUND RESISTANCE FROM SYSTEM NEUTRAL CONNECTION AT SERVICE ENTRANCE TO CONVENIENT GROUND REFERENCE POINT USING SUITABLE GROUND TESTING EQUIPMENT. MAXIMUM ACCEPTABLE RESISTANCE: 10 OHMS. WHEN RESISTANCE EXCEEDS 10 OHMS; DRIVE AND BOND (#6 COPPER MINIMUM) ANOTHER GROUND ROD, ONE GROUND ROD LENGTH AWAY (MINIMUM 6'-0") AND REPEAT TEST. CONTINUE THIS PROCESS UNTIL RESISTANCE IS BELOW 10 OHMS.

GROUNDING ELECTRODE (UFER TYPE) & BONDING JUMPER(S) DETAIL (2/E3)

N.T.S.



TYPICAL ISOLATED GROUND RECEPTACLE (1/E3)

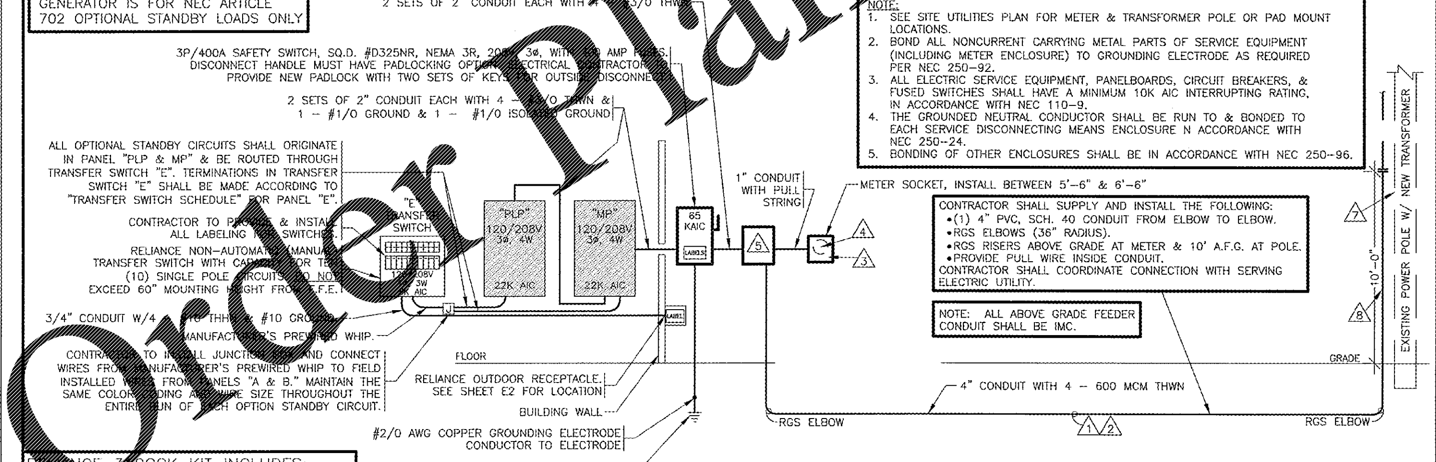
N.T.S.

ELECTRIC SERVICE RESPONSIBILITIES

SEE SITE PLAN FOR UTILITY COMPANY CONTACT.

ITEM NO.	DESCRIPTION (IF APPLICABLE)	FURNISHED BY: UTILITY CO.	FURNISHED BY: CONTRACTOR	INSTALLED BY: UTILITY CO.	INSTALLED BY: CONTRACTOR
1	SERVICE LATERAL		X		X
2	SERVICE LATERAL RACEWAY		X		X
3	METER BASE	X			X
4	METER	X		X	
5	CT CABINET		X		X
6	OH SERVICE RISER @ BUILDING				
7	SERVICE DROP POLE				
8	SERVICE RISER @ POLE	X		X	
9	TRANSFORMER PAD				
10	PAD MOUNT TRANSFORMER				

GENERATOR IS FOR NEC ARTICLE 702 OPTIONAL STANDBY LOADS ONLY



NOTE:
1. SEE SITE UTILITIES PLAN FOR METER & TRANSFORMER POLE OR PAD MOUNT LOCATIONS.
2. BOND ALL NONCURRENT CARRYING METAL PARTS OF SERVICE EQUIPMENT (INCLUDING METER ENCLOSURE) TO GROUNDING ELECTRODE AS REQUIRED PER NEC 250-92.
3. ALL ELECTRIC SERVICE EQUIPMENT, PANELBOARDS, CIRCUIT BREAKERS, & FUSED SWITCHES SHALL HAVE A MINIMUM 10K AIC INTERRUPTING RATING, IN ACCORDANCE WITH NEC 110-9.
4. THE GROUNDED NEUTRAL CONDUCTOR SHALL BE RUN TO & BONDED TO EACH SERVICE DISCONNECTING MEANS ENCLOSURE N ACCORDANCE WITH NEC 250-24.
5. BONDING OF OTHER ENCLOSURES SHALL BE IN ACCORDANCE WITH NEC 250-96.

CONTRACTOR SHALL SUPPLY AND INSTALL THE FOLLOWING:
- (1) 4" PVC, SCH. 40 CONDUIT FROM ELBOW TO ELBOW.
- RGS ELBOWS (36" RADIUS).
- RGS RISERS ABOVE GRADE AT METER & 10' A.F.G. AT POLE.
- PROVIDE PULL WIRE INSIDE CONDUIT.

CONTRACTOR SHALL COORDINATE CONNECTION WITH SERVING ELECTRIC UTILITY.

NOTE: ALL ABOVE GRADE FEEDER CONDUIT SHALL BE IMC.

RELIANCE 310CGK KIT INCLUDES:

MODEL #	DESCRIPTION
310C	TRANSFER SWITCH "E"
PC3010	10' LONG POWER CORD
PB30	OUTDOOR RECEPTACLE

ELECTRIC SERVICE DIAGRAM (400AMP/3-PHASE)

N.T.S.

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ELECTRICAL SCHEDULES

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COMM #	4219
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REVISION DATE:	

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