

PANEL M													
VOLTAGE: 240 / 120 V				DIMENSION: PER NEC				LOCATION: EXTERIOR					
PANEL AMP RATING: 600A				WITH 600A CB		MOUNTING: SURFACE				NEMA ENCLOSURE: 3R			
WIRES: 3		PHASE: 1 FEED: BOTTOM				TYPE:		SQUARE D I-LINE TYPE HCN					
LOAD DESCRIPTION	PH	LOAD	BKR	CKT NO	LOAD		CKT NO	BKR	LOAD	PH	LOAD DESCRIPTION		
		WATT	AMPS		A	B		AMPS	WATT				
PANEL A	A	12000	200	1	16656	2	60	4656	A	FURNACE F-2			
2 POLE	B	12000						16656	4656		B	2 POLE	
PANEL B	A	12000	200	3	12000	4			A	BLANK			
2 POLE	B	12000						12000			B	100A PREPARED SPACE 2 POLE	
STEAM HUMIDIFIER	A	1900	30	5	1900	6			A	BLANK			
2 POLE	B	1900						1900			B	100A PREPARED SPACE 2 POLE	
STEAM HUMIDIFIER	A	1900	30	7	1900	8			A	BLANK			
2 POLE	B	1900						1900			B	100A PREPARED SPACE 2 POLE	
FURNACE F-1	A	5616	60	9	5616	10			A	BLANK			
2 POLE	B	5616						5616			B	100 A PREPARED SPACE 2 POLE	
FURNACE F-1	A	4800	50	11	4800	12	30		A	SURGE SUPPRESSOR			
2 POLE	B	4800						4800			B	2 POLE	
FEEDER BREAKER		TOTAL LOAD PER PHASE-WATTS				32456	32456	FEED FROM: C.T. ENCLOSURE					
RATING: 600A		TOTAL LOAD PER PHASE-AMPS				271	271	PANEL ISC RATING 25,000 AVAILABLE ISC					
WIRE SIZE: 2 RUNS OF 3-500 KCMIL AL & 1#2/0 AL GND						CONDUIT SIZE: 2-4"C 19,906							

NOTE:
ALL CODE REFERENCES
FROM NEC 2017 EDITION

TABLE 250.66 FROM NEC

SIZE OF LARGEST UNGROUNDED SERVICE-ENTRANCE CONDUCTOR (AWG/KCMIL)	SIZE OF GROUNDING ELECTRODE CONDUCTOR (AWG/KCMIL)	MAX SERVICE SIZE
2 OR SMALLER	8	100A
1 OR 1/0	6	150A
2/0 OR 3/0	4	200A
OVER 3/0 THROUGH 350	2	300A
OVER 350 THROUGH 600	1/0	400A
OVER 600 THROUGH 1100	2/0	500A
OVER 1100	3/0	1000A

FOR OVER 1100 KCMIL ALSO REFER TO NEC PARAGRAPH 250.24(C)(1)
GROUNDED CONDUCTOR SHALL NOT BE SMALLER THAN 12-1/2% OF THE
AREA OF THE LARGEST SERVICE CONDUCTOR

INTERSYSTEM BONDING
GROUND BAR PER NEC 250.94
ARLINGTON #GBB5P OR EQUAL

#6 BC TO MADE ELECTRODE
PER NEC 250.52A(5 & 6)
& 250.53(B)

(see table) BC TO WATER PIPE
PER NEC 250.52A(1)

#3/0 BC TO 20 FT OF #3/0
ENCASED IN CONCRETE
(UFER) PER NEC 250.52A(3)
& NEC 250.66(B)

TRIANGULAR GROUND ROD SYSTEM
3-5/8" X 8 FT GROUND RODS 6 FT
APART. PER NEC 250.53B
CADWELD ALL CONNECTIONS

GROUNING SHALL BE COMPLETED TO ALL TYPES SHOWN

03 GROUNDING DETAIL

SCALE: NTS

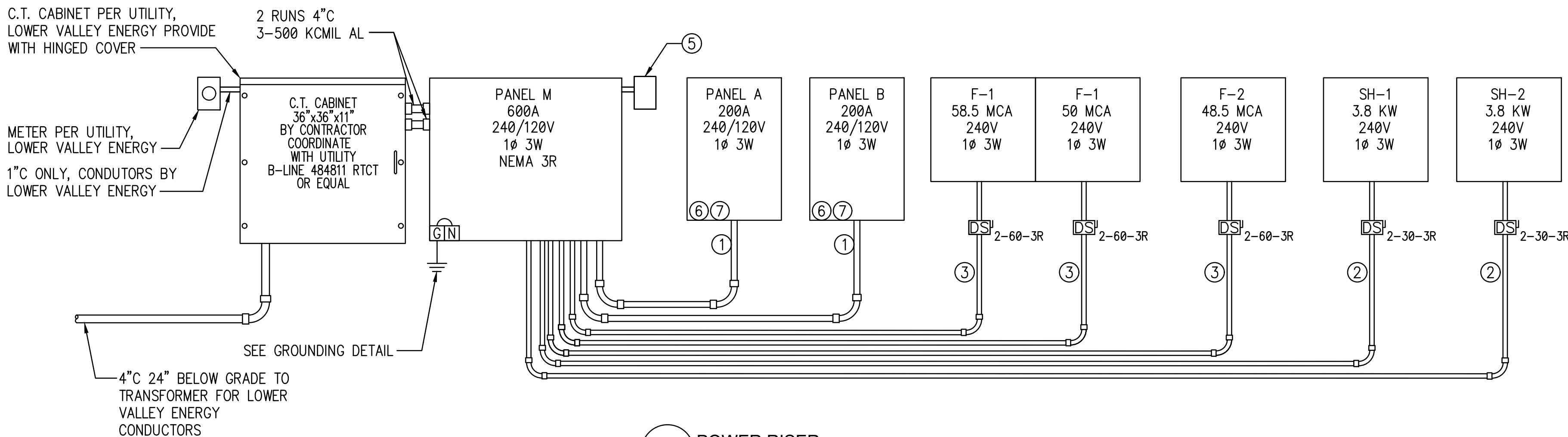
FAULT CURRENT CALC NOTES

1. FAULT CURRENT BASED ON FAULT CALCULATIONS AT NEW 75 KVA SINGLE PHASE TRANSFORMER WITH 1.5% IMPEDANCE LOCATED 75 FT FROM THE HOUSE. IF CHANGES ARE MADE TO THE SERVICE TRANSFORMER PLEASE CONTACT BRADLEY ENGINEERING AT 208-523-2862 TO REVIEW THE CHANGES TO SERVICE AND FAULT CURRENT CALCULATIONS.

AVAILABLE FAULT CURRENTS HOUSE

AT 75 KVA TRANSFORMER	31,251 AMPS L-N
PANEL M ASSUMED 75 FT FROM TRANSFORMER	19,906 AMPS L-N
PANEL A ASSUMED 20 FT FROM PANEL M	13,673 AMPS L-L
PANEL B ASSUMED 20 FT FROM PANEL M	13,673 AMPS L-L

L-L= LINE TO LINE
L-N= LINE TO NEUTRAL



01 POWER RISER

SCALE: NTS

RICHARDSON RESIDENCE

Voltage 240/120V single phase

Dwelling Size

Main Level	1727 Sq ft
Upper Level	1628 Sq ft
Garage	552 Sq ft
Total	3905 Sq ft

Lighting and Receptacle Circuits at 3 wts / sq ft

11715 watts

Exhaust Fans EF-1 (4)	84 watts
Range Hood	250 watts
Radon Fan	50 watts

Furnace F-1	20832 watts
Furnace F-2	9312 watts
Steam Humidifier	7600 watts
Electric Radiant Floor ERF-1, 2, 3, 4, 5	6000 watts
Electric Unit Heater	7500 watts
Electric Baseboard Heatert	1320 watts
Air to Air Heat Exchanger AHE-1, DH-1	1040 watts
Recirc Pump	25 watts

Range	9600 watts
Fridge	1500 watts
Freezer	1500 watts
Microwave	1100 watts
Dishwasher	1200 watts
Garbage Disposal	1152 watts
2 appliance circuits (2)	6000 watts

Washer	1500 watts
Dryer	5000 watts
Water Heater (4)	18000 watts
Garage Doors (2)	2352 watts
Steam Bath	9000 watts

Total	123632 watts	240 volts	515 amps
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Derated per NEC 220.82 B

A/C at 0%	
Heating at 100%	53629
First 10 KVA of other loads at 100%	10000
Remainder of other loads at 40%	24001
Total derated load	87630 watts

Minimum Service Size	87630 watts/	240 Volt	365 amps
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Total

365 amps

Install new 400 amp service for Home

GENERAL ELECTRICAL NOTES

1. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL EQUIPMENT AND MATERIALS TO MAKE A COMPLETE INSTALLATION AS SHOWN ON THESE PLANS.
2. ALL WORK SHALL MEET THE NATIONAL ELECTRICAL CODE, NEC.
3. ALL EQUIPMENT SHALL BE UL LISTED.
4. THE "NECA STANDARDS OF INSTALLATION" SHALL BE THE STANDARD OF QUALITY FOR INSTALLATION.
5. RACEWAYS SHALL BE 1/2" MINIMUM AND USED AS FOLLOWS:
 - A. RIGID GALVANIZED STEEL (RGS) – SERVICE, FEEDERS, IN WET LOCATIONS AND HAZARDOUS AREAS.
 - B. INTERMEDIATE METAL CONDUIT (IMC) – SAME AS RGS.
 - C. PVC – UNDERGROUND, ON SERVICES, AND UNDER SLABS. INCLUDE GROUND WIRE PER NEC.
 - D. EMT – ALL OTHER LOCATIONS PER NEC.
 - E. FLEXIBLE METAL CONDUIT – LAST 12" ON MOTORS, FANS, ETC.
 - F. FITTINGS SHALL BE CAST FOR RGS AND IMC AND SET SCREWS ON EMT. OUTSIDE WALLS WATERTIGHT.
 - G. TYPE MC CABLE
 - H. TYPE NM CABLE FOR RESIDENTIAL OCCUPANCY
6. POWER CONDUCTORS SHALL BE NO 12 AWG CU TW OR THHN OR THWN MIN. NO 6 AWG WIRE AND LARGER SHALL HAVE THHN, THWN OR XHHW INSULATION. ALUMINUM WIRE MAY BE USED ON SERVICES AND FEEDERS WITH BURNDY "HYPLUG" ADAPTERS.
7. PANELS, DISCONNECT SWITCHES, AND OTHER POWER EQUIPMENT SHALL BE GE, SQUARE D, OR CUTLER HAMMER.
8. EQUIPMENT SHALL BE FURNISHED AS SPECIFIED. SUBSTITUTION OF EQUAL OR BETTER EQUIPMENT BY APPROVAL ONLY.
9. THE ELECTRICAL CONTRACTOR SHALL APPLY FOR, SECURE, AND PAY FOR ALL REQUIRED PERMITS, FEES, AND LICENSES TO ACCOMPLISH THE WORK.
10. ALL CIRCUITS IN THE RESIDENCE AND GARAGE SHALL BE PROVIDED WITH ARC FAULT OR GROUND FAULT INTERRUPTER PROTECTION AS REQUIRED BY ARTICLE 210 OF THE NEC.
11. ALL KITCHEN & BATHROOM CIRCUITS SHALL REQUIRE GROUND FAULT CIRCUIT PROTECTION (GFI).
12. ALL GARAGE CIRCUITS SHALL REQUIRE GROUND FAULT CIRCUIT PROTECTION (GFI).
13. ALL WORK SHALL BE GUARANTEED FOR ONE YEAR EXCEPT LAMPS.

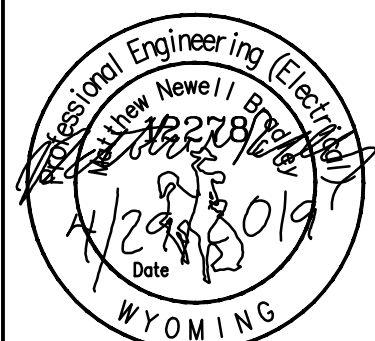
POWER RISER KEY NOTES:

- ① 2 1/2"C 3#250 KCMIL AL AND 1#4 AL GND
- ② 3/4"C 2#10 CU AMD 1#10 CU GND
- ③ 3/4"C 2#6 CU AND 1#10 CU GND
- ④ 1"C 2#4 CU AND 1#8 CU GND
- ⑤ PROVIDE TVSS SURGE SUPPRESSOR. TVSS DEVICE SHALL BE EFT ELECTRONICS TITAN T80W 120/240 OR EQUAL.
- ⑥ PANELS A AND B SHALL BE SQUARE D QO LOAD CENTERS OR EQUAL.
- ⑦ ELECTRICAL CONTRACTOR SHALL CIRCUIT SECONDARY FEEDERS TO LOADS AS REQUIRED

Richardson Residence
Lot 10, Unit 1
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Teton County, Wyoming

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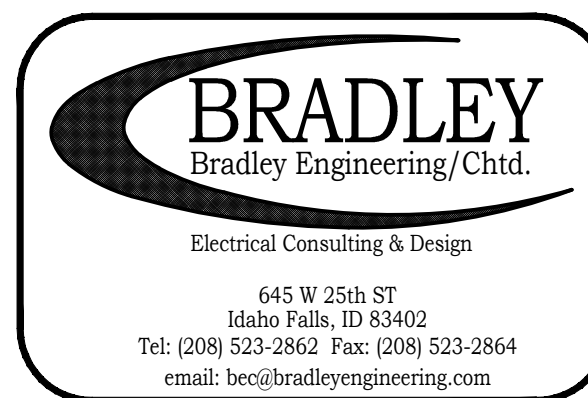
Date/Revision:

4.29.19 Permit Set

Sheet:

E1.0

POWER RISER AND
LOAD CALCULATIONS



JOB NUMBER: 18-141