

Residential Calculation - Village Drive North 2020 NFPA 70 ART. 220 PART III

2020 NEC 220.14(J), 220.42 & 220.52	
371 SQFT Garage Level	
1014 SQFT Main Level	
686 SQFT Upper Level	
136 SQFT Upper Stairwell	
2207 SQFT General Lighting Load	6621 VA
2 CCT Small Appliance	3000 VA
1 CCT Laundry Circuit	1500 VA
Total General Load:	11121 VA
3000 VA @ 100% 3000 VA	
8121 VA @ 35% 2842.35 VA	

2020 NEC 220.51 and 220.60	
Cooling Loads	Heating Loads
Equipment Power	Power
CU Heat P 5760 VA	CU Heat Pump 5760 VA
	CU Heat Trace 1200 VA
	EUH - Garage Unit Heat 1500 VA
	Radiant Pumps 2400 VA
Connected: 10860 VA Greater of Noncoincidental Loads: 10860 VA	
General Lighting Load: 5842 VA	

2020 NEC 220.53	
Appliance Loads	Load Each
1 Refrigerator	600 VA
1 Dishwasher	1200 VA
1 Disposal	900 VA
1 Microwave	1200 VA
1 Gas Range/ Hood	1000 VA
4900 VA @ 75%	Appliance Load: 3675 VA

2020 NEC 220.14(A)	
QTY Description	Load Each
1 Humidifier	1200 VA
1 Boiler	1440 VA
2 Circ Pumps	720 VA
1 Gas Dryer	1200 VA
1 Hot Tub	9600 VA
1 EVCL Level II	7200 VA
22080 VA	125% LARGEST MOTOR: 480 VA
42937 VA	Total Other Load: 22560 VA
240 V	Connected: 49441 VA Demand: 178.9 A
1 Ø	206.0 A

Residential Calculation - Village Drive South 2020 NFPA 70 ART. 220 PART III

2020 NEC 220.14(J), 220.42 & 220.52	
1286 SQFT Garage Level	
1018 SQFT Upper Level	
136 SQFT Upper Stairwell	
2440 SQFT General Lighting Load	7320 VA
2 CCT Small Appliance	3000 VA
1 CCT Laundry Circuit	1500 VA
Total General Load:	11820 VA
3000 VA @ 100% 3000 VA	
8820 VA @ 35% 3087 VA	

2020 NEC 220.51 and 220.60	
Cooling Loads	Heating Loads
Equipment Power	Power
GF-1 Air 1032 VA	GF-1 Gas Furnace 1032 VA
CU AC 4800 VA	EUH - Garage Unit Heat 1500 VA
	CU Heat Trace 1200 VA
	EUH - Garage Unit Heat 1500 VA
	Radiant Pumps 2400 VA
Connected: 11232 VA Greater of Noncoincidental Loads: 6432 VA	
General Lighting Load: 6087 VA	

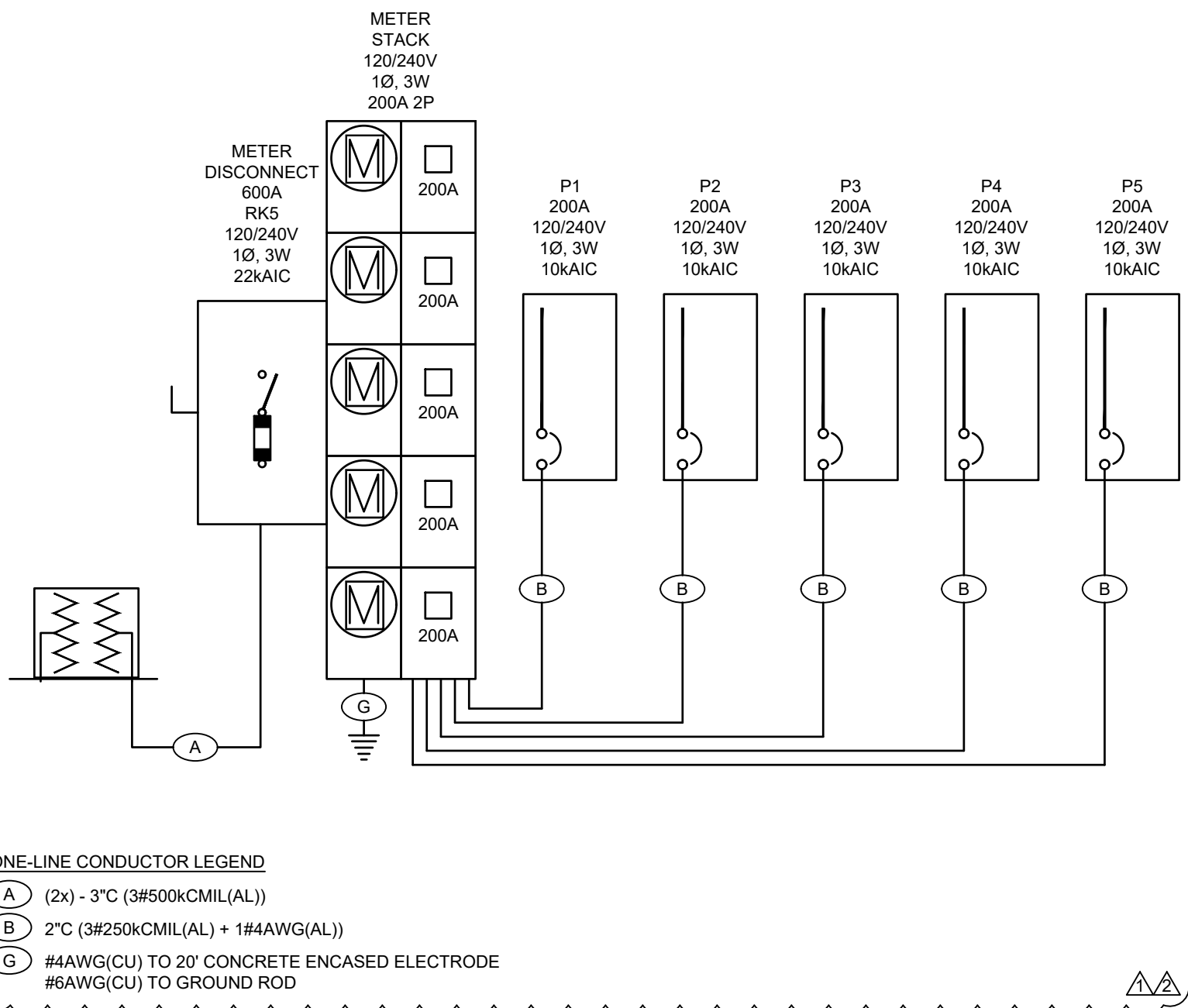
2020 NEC 220.53	
Appliance Loads	Load Each
1 Refrigerator	600 VA
1 Dishwasher	1200 VA
1 Disposal	900 VA
1 Microwave	1200 VA
1 Gas Range/ Hood	1000 VA
4900 VA @ 75%	Appliance Load: 3675 VA

2020 NEC 220.14(A)	
QTY Description	Load Each
1 Humidifier	1200 VA
1 Boiler	1440 VA
2 Circ Pumps	720 VA
1 Gas Dryer	1200 VA
1 Hot Tub	9600 VA
1 EVCL Level II	7200 VA
22080 VA	125% LARGEST MOTOR: 400 VA
50432 VA	Total Other Load: 22480 VA
240 V	Connected: 50432 VA Demand: 161.1 A
1 Ø	210.1 A

PANEL SCHEDULE - P1		TYPE: VOLTAGE: ENCLOSURE:	LOADCENTER 120/240 NEMA1	BUS SIZE: MAIN BRKR: MOUNTING:	225 200 FLUSH	PHASES: WIRES: SC RATING: 1 3 10000	NEUTRAL BUS: GROUND BUS:	YES YES
LOAD TYPE	LOAD DESCRIPTION	AMPS POLES	CKT# LOAD	Ø	CKT# LOAD	AMPS POLES	LOAD TYPE	LOAD DESCRIPTION
RECEPTACLE	RCPT - MAST. BED CAFCI	20A 1P	1 1440	A	2 50A 2880	30A 2P	MECH YEAR ROUND	CU-1 - HEAT PUMP HACR
RECEPTACLE	RCPT - MAST. BATH	20A 1P	3 500	B	4 2880	---	MECH YEAR ROUND	---
RECEPTACLE	RCPT - POWDER ROOM	20A 1P	5 300	A	6 50A 4800	20A 2P	MISCELLANEOUS	SPA - ROOF
MISCELLANEOUS	WASHER CAFCI/GFCI 5mA	20A 1P	7 1500	B	8 4800	---	MISCELLANEOUS	---
MISCELLANEOUS	DRYER CAFCI/GFCI 5mA	20A 1P	9 1200	A	10 20A 180	20A 1P	RECEPTACLE	RCPT - ROOF
SPACE	---	---	11 0	B	12 20A 1000	20A 2P	MECH HEATING	GUTTER HEAT TRACE GFCI 30mA
APPLIANCE	FRIDGE CAFCI	15A 1P	13 600	A	14 3500	---	MECH HEATING	---
APPLIANCE	MICROWAVE DRAWER CAFCI	20A 1P	15 1500	B	16 20A 20	1A 20 1P	MECH HEATING	EUH-1 - UNIT HEATER
RECEPTACLE	RCPT - KITCHEN COUNTER CAFCI/GFCI 5mA	20A 1P	17 1500	A	18 1A 20	1P	MECH YEAR ROUND	BL-1 BOILER
RECEPTACLE	RCPT - KITCHEN COUNTER CAFCI/GFCI 5mA	20A 1P	19 1500	B	20 20A 1500	20A 1P	MOTOR	CP1/3-BOILER/LOOP PUMP
APPLIANCE	GAS RANGE/hood CAFCI	20A 1P	21 1500	A	22 20A 1500	20A 1P	MOTOR	CP2/7- WATER HEATER/DOMESTIC
SPACE	---	---	23 0	B	24 20A 1500	20A 1P	MOTOR	CP4/6 - SNOWMELT / LOOP
RECEPTACLE	RCPT - ISLAND COUNTER CAFCI	20A 1P	25 1500	A	26 20A 1500	20A 1P	MOTOR	CP6/7-RADIANT/LOOP
APPLIANCE	DISHWASHER CAFCI/GFCI 5mA	20A 1P	27 1200	B	28 20A 1200	20A 1P	MISCELLANEOUS	HUMIDIFIER CAFCI/GFCI 5mA
RECEPTACLE	RCPT - LIVING/DINING CAFCI	20A 1P	29 1200	A	30 40A 3500	20A 2P	MISCELLANEOUS	EVC - GARAGE
RECEPTACLE	RCPT - FIREPLACE/TV CAFCI	20A 1P	31 1200	B	32 3500	---	MISCELLANEOUS	---
RECEPTACLE	RCPT - BEDROOM E CAFCI	20A 1P	33 1080	A	34 20A 1080	20A 1P	RECEPTACLE	RCPT - GARAGE GFCI 5mA
RECEPTACLE	RCPT - 3RD BATH E	20A 1P	35 500	B	36 20A 1500	20A 1P	RECEPTACLE	RCPT - GARAGE GFCI 5mA
RECEPTACLE	RCPT - BEDROOM W CAFCI	20A 1P	37 1080	A	38 0	---	SPACE	---
RECEPTACLE	RCPT - 3RD BATH W	20A 1P	39 500	B	40 0	---	SPACE	---

PANEL SCHEDULE - P1		TYPE: VOLTAGE: ENCLOSURE:	LOADCENTER 120/240 NEMA1	BUS SIZE: MAIN BRKR: MOUNTING:	225 200 FLUSH	PHASES: WIRES: SC RATING: 1 3 10000	NEUTRAL BUS: GROUND BUS:	YES YES
LOAD TYPE	LOAD DESCRIPTION	AMPS POLES	CKT# LOAD	Ø	CKT# LOAD	AMPS POLES	LOAD TYPE	LOAD DESCRIPTION
RECEPTACLE	RCPT - MAST. BED CAFCI	20A 1P	1 1440	A	2 50A 4800	20A 2P	MISCELLANEOUS	SPA - ROOF
RECEPTACLE	RCPT - MAST. BATH	20A 1P	3 500	B	4 4800	---	MISCELLANEOUS	---
RECEPTACLE	RCPT - POWDER ROOM	20A 1P	5 300	A	6 20A 180	20A 1P	RECEPTACLE	RCPT - ROOF
MISCELLANEOUS	WASHER CAFCI/GFCI 5mA	20A 1P	7 1500	B	8 20A 1000	20A 1P	MECH HEATING	GUTTER HEAT TRACE GFCI 30mA
MISCELLANEOUS	DRYER CAFCI/GFCI 5mA	20A 1P	9 1200	A	10 1000	---	MECH HEATING	---
SPACE	---	---	11 0	B	12 30A 2P	---	MECH COOLING	CU-1 - CONDENSING UNIT
APPLIANCE	FRIDGE CAFCI	15A 1P	13 600	A	14 2498	---	MECH COOLING	---
APPLIANCE	MICROWAVE DRAWER CAFCI	20A 1P	15 1500	B	16 20A 1500	20A 1P	MECH YEAR ROUND	GF1 - GAS FIRED FURNACE
RECEPTACLE	RCPT - KITCHEN COUNTER CAFCI/GFCI 5mA	20A 1P	17 1500	A	18 0	---	SPACE	---
RECEPTACLE	RCPT - KITCHEN COUNTER CAFCI/GFCI 5mA	20A 1P	19 1500	B	20 1A 20	1A 20 1P	MECH HEATING	EUH-1 - UNIT HEATER
APPLIANCE	RANGE/hood CAFCI	20A 1P	21 1500	A	22 1A 1P	1P	MECH YEAR ROUND	BL-1 BOILER
SPACE	---	---	23 0	B	24 20A 1500	20A 1P	MOTOR	CP1/3-BOILER/LOOP PUMP
RECEPTACLE	RCPT - ISLAND COUNTER CAFCI/GFCI 5mA	20A 1P	25 1500	A	26 20A 1500	20A 1P	MOTOR	CP2/7- WATER HEATER/DOMESTIC
APPLIANCE	DISHWASHER CAFCI/GFCI 5mA	20A 1P	27 1200	B	28 20A 1500	20A 1P	MOTOR	CP4/6 - SNOWMELT / LOOP
RECEPTACLE	RCPT - LIVING/DINING CAFCI	20A 1P	29 1200	A	30 20A 1200	20A 1P	MOTOR	CP6/7-RADIANT/LOOP
RECEPTACLE	FIREPLACE OUTLETS CAFCI	20A 1P	31 700	B	32 40A 3500	20A 2P	MISCELLANEOUS	EVC - GARAGE
RECEPTACLE	RCPT - 2ND COMMON CAFCI	20A 1P	33 720	A	34 3500	---	MISCELLANEOUS	---
RECEPTACLE	RCPT - BEDROOM N CAFCI	20A 1P	35 1080	B	36 20A 1500	20A 1P	RECEPTACLE	RCPT - GARAGE GFCI 5mA
RECEPTACLE	RCPT - 2ND BATH N	20A 1P	37 1500	A	38 20A 1500	20A 1P	RECEPTACLE	RCPT - GARAGE GFCI 5mA
RECEPTACLE	RCPT - BEDROOM S CAFCI	20A 1P	39 1080	B	40 0	---	SPACE	---
RECEPTACLE	RCPT - 2ND BATH S	20A 1P	41 500	A	42 0	---	SPACE	---

PANEL SCHEDULE - PH		TYPE: VOLTAGE: ENCLOSURE:	LOADCENTER 120/240 NEMA3R	BUS SIZE: MAIN BRKR: MOUNTING:	60 60 SURFACE	PHASES: WIRES: SC RATING: 1 3 10000	NEUTRAL BUS: GROUND BUS:	YES YES
LOAD TYPE	LOAD DESCRIPTION	AMPS POLES	CKT# LOAD	Ø	CKT# LOAD	AMPS POLES	LOAD TYPE	LOAD DESCRIPTION
MECH YEAR ROUND	BOILER	20A 1P	1 1440	A	2 20A 200	20A 1P	SPARE	SPARE
MOTOR	CP-1 - BOILER PUMP	20A 1P	3 720	B	4 20A 200	20A 1P	SPARE	SPARE
MOTOR	CP-2 - CIRC PUMP	20A 1P	5 720	A	6 20A 200	20A 1P	SPARE	SPARE
MOTOR	CP-3 - CIRC PUMP	20A 1P	7 720	B	8 20A 200	20A 1P	SPARE	SPARE
MOTOR	CP-4 - LOOP PUMP	20A 1P	9 720	A	10 200	---	SPACE	---
SPACE	---	---	11 0	B	12 0	---	SPACE	---
SPACE	---	---	13 0	A	14 0	---	SPACE	---
SPACE	---	---	15 0	B	16 0	---	SPACE	---
SPACE	---	---	17 0	A	18 0	---	SPACE	---
SPACE	---	---	19 0	B	20 0	---	SPACE	---
LOADS BY TYPE:		DEMAND FACTOR		DEMAND LOAD (VA)		BALANCE (PERCENT)		
LOAD TYPE	CONNECTED LOAD (VA)							
LIGHTING	0.00	1.25	0.00					
KITCHEN PROCESS	0.00	0.00	0.00					
RECEPTACLES	0.00	1.00	0.00					
MECH HEATING	0.00	1.00	0.00					
MECH COOLING	0.00	1.00	0.00					
MECH YEAR ROUND	1440.00	1.00	1440.00					
APPLIANCE	0.00	1.00	0.00					
MISCELLANEOUS MOTOR	2880.00	1.00	4320.00					
SPARE	800.00	1.00	800.00					
LARGEST MOTOR	ABOVE	0.25	360.00					
TOTAL	5120.00		5480.00					
LOADS BY PHASE:		CONNECTED LOAD (AMPS)		CONNECTED LOAD (VA)		BALANCE (PERCENT)		
PHASE								
A	3290.00		27.33					
B	1840.00		15.33					
C	---		---					
TOTAL/AVERAGE	5120.00		21.33					
NOTES:		1. THE LARGEST CONNECTED MOTOR LOAD IS INCLUDED IN MECHANICAL, PROCESS, OR MOTOR LOADS.						

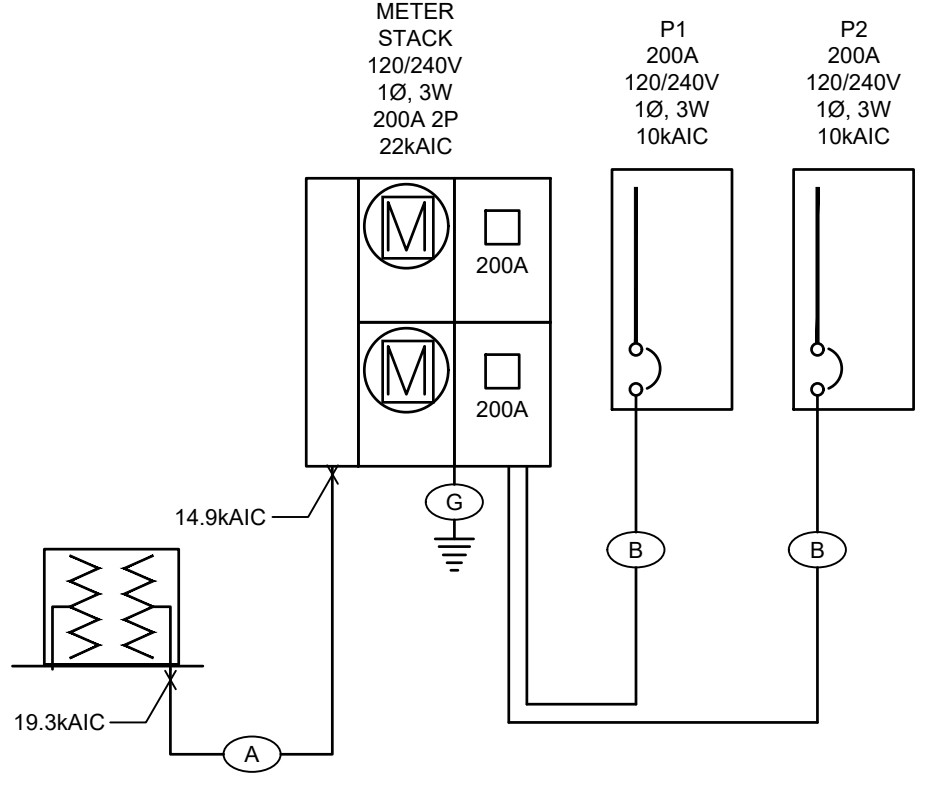


ELECTRICAL - ONE LINE - NORTH BUILDING

SCALE: NO SCALE

ELECTRICAL ONE-LINE NOTES:

1. PROVIDE GROUNDING AND BONDING MEETING 2020 NEC ARTICLE 250.64(D) REQUIREMENTS.
2. PROVIDE SURGE SUPPRESSIVE DEVICES IN ALL RESIDENTIAL PANELS PER 230.67.
3. UTILIZE SERIES RATED BREAKER COMBINATIONS IN RESIDENTIAL PANELS TO REDUCE BRANCH BREAKER INTERRUPT RATINGS.
4. CIRCUITS IDENTIFIED WITHIN 2020 NEC 210.8(A) AND 210.12(A) ARE TO RECEIVE GROUND FAULT AND ARC FAULT PROTECTION, RESPECTIVELY. WHERE OUTLETS ARE BEHIND LARGE EQUIPMENT OR UNDER COUNTERS PROTECTION IS TO BE AT THE BREAKER.
5. SHORT CIRCUIT VALUES BASED UPON AN ANTICIPATED 167KVA UTILITY TRANSFORMER LOCATED AT A DISTANCE OF 100 FEET TO THE SERVICE. ELECTRICAL CONTRACTOR TO FIELD VERIFY INSTALLED TRANSFORMER AND DISTANCES TO RECALCULATE AS NECESSARY.
6. FEEDERS EXTENDING FROM SERVICE GEAR TO INDIVIDUAL TENANT PANELS ARE TO BE INSTALLED UNDER SLAB SO THAT THE FEEDERS DO NOT EXTEND THROUGH NEIGHBORING UNITS.

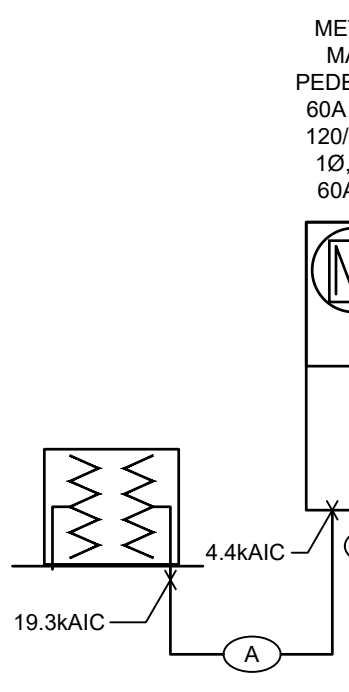


ELECTRICAL - ONE LINE - SOUTH BUILDING

SCALE: NO SCALE

ELECTRICAL ONE-LINE NOTES:

1. PROVIDE GROUNDING AND BONDING MEETING 2020 NEC ARTICLE 250 REQUIREMENTS.
2. PROVIDE SURGE SUPPRESSIVE DEVICES IN ALL RESIDENTIAL PANELS PER 230.67.
3. UTILIZE SERIES RATED BREAKER COMBINATIONS IN RESIDENTIAL PANELS TO REDUCE BRANCH BREAKER INTERRUPT RATINGS.
4. PROVIDE LABELING AT MAIN DISCONNECTS TO MEET 230.85.
5. CIRCUITS IDENTIFIED WITHIN 2020 NEC 210.8(A) AND 210.12(A) ARE TO RECEIVE GROUND FAULT AND ARC FAULT PROTECTION, RESPECTIVELY. WHERE OUTLETS ARE BEHIND LARGE EQUIPMENT OR UNDER COUNTERS PROTECTION IS TO BE AT THE BREAKER.
6. SHORT CIRCUIT VALUES BASED UPON AN ANTICIPATED 109KVA UTILITY TRANSFORMER LOCATED AT A DISTANCE OF 50 FEET TO THE SERVICE. ELECTRICAL CONTRACTOR TO FIELD VERIFY INSTALLED TRANSFORMER AND DISTANCES TO RECALCULATE AS NECESSARY.
7. FEEDERS EXTENDING FROM SERVICE GEAR TO INDIVIDUAL TENANT PANELS ARE TO BE INSTALLED UNDER SLAB SO THAT THE FEEDERS DO NOT EXTEND THROUGH NEIGHBORING UNITS.



ELECTRICAL - ONE LINE - SITE SNOWMELT

SCALE: NO SCALE

ELECTRICAL ONE-LINE NOTES:

1. PROVIDE GROUNDING AND BONDING MEETING 2020 NEC ARTICLE 250 REQUIREMENTS.
2. REFERENCE SITE PLAN FOR LOCATION ON PROPERTY.
3. SHORT CIRCUIT VALUES BASED UPON AN ANTICIPATED 109KVA UTILITY TRANSFORMER LOCATED AT A DISTANCE OF 50 FEET TO THE SERVICE. ELECTRICAL CONTRACTOR TO FIELD VERIFY INSTALLED TRANSFORMER AND DISTANCES TO RECALCULATE AS NECESSARY.

MECHANICAL EQUIPMENT SCHEDULE - NORTH BUILDING

COMB:	COMBINATION MOTOR STARTER		NR: NONE REQUIRED		CONT: CONTRACTOR							
MAG:	MAGNETIC MOTOR STARTER		P1: PLUG-IN UNIT		MAN: MANUAL MOTOR STARTER							
			WU: SUPPLIED WITH UNIT:									
UNIT NO	FUNCTION (NOTES)	LOAD	VOLTS	Ø	MIN CIRC AMP	BRANCH CIRCUIT CONDUIT SIZE	NO. OF WIRE SIZE	WIRE SIZE	BRKR SIZE	START	DISC FUSE	
CU	HEAT PUMP CONDENSING UNIT	4TON	240V	1	29.0A	1/2"	2	10	10	30A	WU	30A 50A
HP	HEAT PUMP INTERIOR CASSETTE TYPICAL OF HP-2.384		240V	1	0.4A	1/2"	2	14	14	--	WU	--
EF	EXHAUST FAN - BATH		10W	120V	1	0.1A	1/2"	2	12	12	15A	WU
EF	EXHAUST FAN - GARAGE		64W	120V	1	0.5A	1/2"	2	12	12	15A	WU
EL	ELECTRIC UNIT HEATER		1.5KW	120V	1	12A	1/2"	2	12	12	20A	WU
BL	GAS FIRED BOILER		14400W	120V	1	12A	1/2"	2	12	12	20A	WU
CP	CIRCULATION PUMP		270W	120V	1	5A	1/2"	2	12	12	15A	WU
CP	CIRCULATION PUMP TYPICAL OF CP-3.487		270W	120V	1	5A	1/2"	2	12	12	15A	WU
CP	CIRCULATION PUMP		118HP	120V	1	2A	1/2"	2	12	12	15A	WU
CP	CIRCULATION PUMP		370W	120V	1	3A	1/2"	2	12	12	15A	WU