

NOTES	MOUNT: SURFACE		120/208		3-PHASE, 4W		PANEL A		CAPACITY: 200A		INT CAP: 200KA		NOTES							
	LOCATION: BACK OF BLDG.	LTG	REC	HVAC	MISC	NP	DESCRIPTION	AMP	POLE	Φ	MCB	POLE		DESCRIPTION	LTG	REC	HVAC	MISC	NP	CKT
	1						RTU 1	100	3	A	20	1	AUTOMATIC DOOR						2	C
	3						RTU 1	100	3	B	20	1	PHONE BOARD/BUZZER						4	C
	5						RTU 1	100	3	C	20	1	ENERGY MANAGEMENT						6	C
	7						RTU 2	100	3	A	20	1	SPARE						8	C
	9						RTU 2	100	3	B	20	1	OUTDOOR HVAC REC						10	C
	11						RTU 2	100	3	C	20	1	OUTDOOR DRINK VEND						12	C
	13						SPARE	20	1	A	20	1	SPARE						14	C
	15						SPARE	20	1	B	20	1	SPARE						16	C
	17						SPARE	20	1	C	20	1	INTERFACE EQUIP						18	C
	19						SPARE	20	1	A	20	1	VSAT SATE HUB EQUIP						20	C
	21						WATER HEATER	20	1	B	20	1	CCTV EQUIP						22	C
	23						DRINKING FOUNTAIN	20	1	C	20	1	SECURITY REC						24	C
	25						OUTDOOR ICE REC	20	1	A	20	1	OFFICE REC						26	C
	27						COOLER	20	1	B	20	1	BREAK ROOM REC						28	C
	29						FREEZER #4	15	2	C	20	1	SPARE						30	C
	31						FREEZER #4	15	2	A	20	1	SPARE						32	C
	33						FREEZER #5	15	2	B	20	1	ICE CREAM FREEZER						34	C
	35						FREEZER #5	15	2	C	20	1	GATORADE						36	C
	37						SPARE	20	1	A	20	1	SPARE						38	C
	39						SPARE	20	1	B	20	1	SPARE						40	C
	41						SPARE	20	1	C	20	1	SPARE						42	C

PHASE BALANCE	LOAD TYPE		CONNECTED		DEMAND		DEMAND FORMULA		TOTAL LOAD	
	Φ	LOAD	%	RECEPTACLE	0.0 KVA	4.7 KVA	4.7 KVA	LOAD X 125% NEC 210.19 CONTINUOUS	CONNECTED	DEMAND
A	23.6 KVA	31%	HVAC	60.0 KVA	48.0 KVA	LOAD X 80% (USED MCA IN CALCULATION)	213.2A	179.9A		
B	27.8 KVA	36%	MISC	12.1 KVA	12.1 KVA	LOAD X 100% NEC 210.19 NON-CONT.				
C	25.4 KVA	33%	NP	0.0 KVA	0.0 KVA	0 NONCOINCIDENTAL LOADS NEC 220.60	#N/A			

NOTES:
A. AIC RATING: SERIES RATED AT 200,000 AMPS WITH BUSSMANN JIN FUSES.
B. BREAKERS FOR HVAC UNITS SHALL BE SIZED PER MANUFACTURER REQUIREMENTS.
C. BREAKER LOCK.
D. ISOLATED GROUND BUS.

NOTES	MOUNT: SURFACE		120/208		3-PHASE, 4W		PANEL B		CAPACITY: 200A		INT CAP: 200KA		NOTES							
	LOCATION: BACK OF BLDG.	LTG	REC	HVAC	MISC	NP	DESCRIPTION	AMP	POLE	Φ	MCB	POLE		DESCRIPTION	LTG	REC	HVAC	MISC	NP	CKT
	B,C	1					NIGHT LTS	20	1	A	20	1	PWR TERM BROWN						2	C
	B,C	3					RECEIVING LTS	20	1	B	20	1	PWR TERM BROWN						4	C
	B	5					70% SALES LTS	20	1	C	20	1	PWR TERM GREEN						6	C
	B	7					70% SALES LTS	20	1	A	20	1	PWR TERM GREEN						8	C
	B	9					70% SALES LTS	20	1	B	20	1	PWR TERM GREEN						10	C
	B	11					70% SALES LTS	20	1	C	20	1	PWR TERM GREEN						12	C
	B	13					30% SALES LTS	20	1	A	20	1	SPARE						14	C
	B	15					30% SALES LTS	20	1	B	20	1	SPARE						16	C
	B	17					30% SALES LTS	20	1	C	20	1	SPARE						18	C
	C	19					EMERGENCY/EVIT LTS	20	1	A	20	1	SPARE						20	C
	C	21					BREAK/OFFICE LTS/EPS	20	1	B	20	1	FREEZER #1						22	C
	B	23					BUILDING SIGN	20	1	C	25	2	FREEZER #2						24	C
	B	25					PYLON SIGN	20	1	A	40	2	FREEZER #2						26	C
	B	27					SITE LIGHTING	20	1	B	40	2	FREEZER #3						28	C
	B	29					SITE LIGHTING	20	1	C	40	2	FREEZER #3						30	C
	B	31					SPARE	20	1	A	40	2	SPARE						32	C
	B	33					EXTERIOR LTS	20	1	B	20	1	SODA COOLERS						34	C
	B	35					PRNT WALL/CANOPY LTG	20	1	C	20	1	DRINK COOLERS						36	C
	B	37					SPARE	20	1	A	20	1	SPARE						38	C
	B	39					SPARE	20	1	B	20	1	SPARE						40	C
	B	41					EXTERIOR DUSK/DOWN	20	1	C	20	1	SPARE						42	C

PHASE BALANCE	LOAD TYPE		CONNECTED		DEMAND		DEMAND FORMULA		TOTAL LOAD	
	Φ	LOAD	%	RECEPTACLE	10.2 KVA <th>12.8 KVA <th>LOAD X 125% NEC 210.19 CONTINUOUS</th> <th>CONNECTED</th> <th>DEMAND</th> </th>	12.8 KVA <th>LOAD X 125% NEC 210.19 CONTINUOUS</th> <th>CONNECTED</th> <th>DEMAND</th>	LOAD X 125% NEC 210.19 CONTINUOUS	CONNECTED	DEMAND	
A	13.3 KVA	31%	HVAC	0.0 KVA	0.0 KVA	LOAD X 80% (USED MCA IN CALCULATION)	42.9 KVA	45.5 KVA		
B	15.9 KVA	37%	MISC	32.6 KVA	32.6 KVA	LOAD X 100% NEC 210.19 NON-CONT.	119.2A	128.2A		
C	13.7 KVA	32%	NP	0.0 KVA	0.0 KVA	0 NONCOINCIDENTAL LOADS NEC 220.60	#N/A			

NOTES:
A. AIC RATING: SERIES RATED AT 200,000 AMPS WITH BUSSMANN JIN FUSES.
B. ROUTING TO THE EMS PANEL.
C. BREAKER LOCK.
D. ISOLATED GROUND BUS.

LOAD TYPE	3-PHASE, 4W		PANEL LOAD		CAPACITY: 400A		TOTAL LOAD	
	CONNECTED	DEMAND	DEMAND FORMULA	CONNECTED	DEMAND	CONNECTED	DEMAND	
LIGHTING	10.2 KVA	12.8 KVA	LOAD X 125% NEC 210.19 CONTINUOUS	112.1 KVA	102.6 KVA			
RECEPTACLE	5.1 KVA	5.1 KVA	10KVA + 80% REMAINDER NEC 220.44	311.1A	284.8A			
HVAC	60.1 KVA	48.1 KVA	LOAD X 80% (USED MCA IN CALCULATION)					
MISC	36.7 KVA	36.7 KVA	LOAD X 100% NEC 210.19 NON-CONT.					
NP	0.0 KVA	0.0 KVA	0 NONCOINCIDENTAL LOADS NEC 220.60					

EQUIPMENT SCHEDULE									
PLAN MARK	EQUIPMENT SERVED	LOAD	VOLT / PHASE	FED BY	DISC	MCA	MOC PD	FEEDER	REMARKS
RTU 1	ROOF TOP UNIT	29.90KVA	208/3	A	EC	83.0A	100A	#3, #8G 1-1/2"	PROVIDE 60A/3P NF DISCONNECT
RTU 2	ROOF TOP UNIT	28.10KVA	208/3	A	EC	78.0A	100A	#3, #8G 1-1/2"	PROVIDE 60A/3P NF DISCONNECT

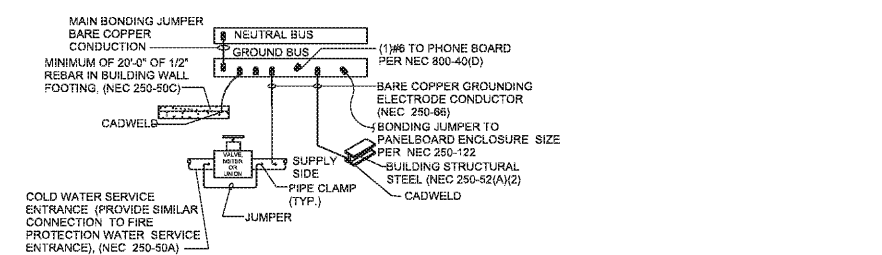
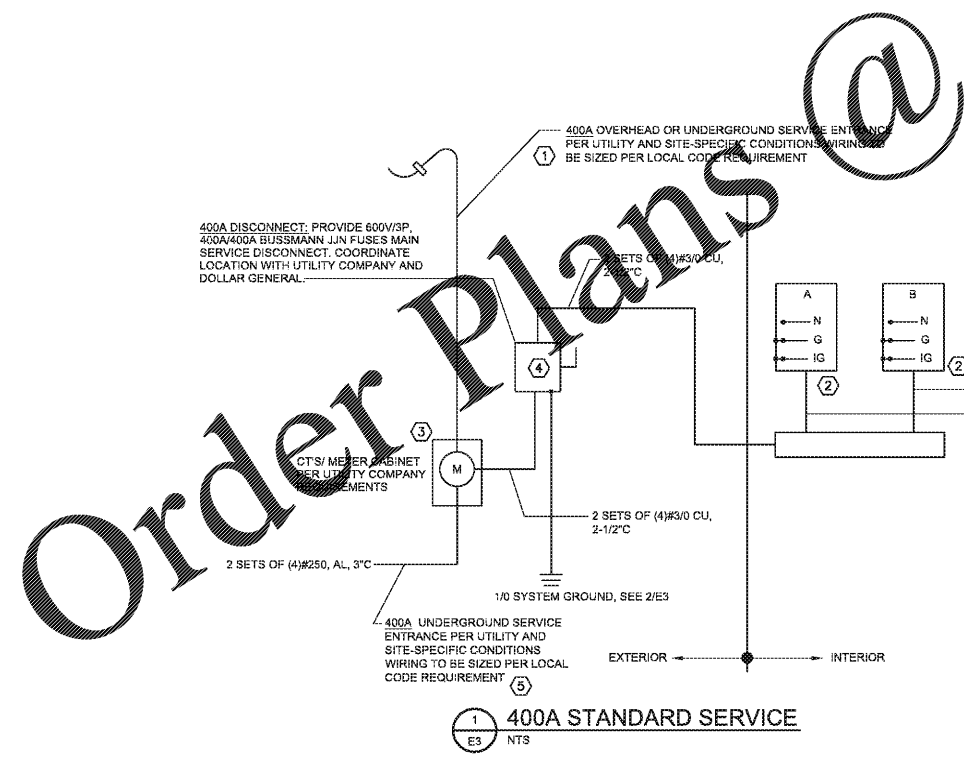
UTILITY TRANSFORMER FAULT CALCULATION	
SERVICE ENTRANCE	CALCULATION
VOLTAGE (L-L): 208V	I-FLA=[RATED KVA * 1000] / [V-LL*SQRT(3)]
PHASE (PH):	I-FLA= 416A
FAULT LOAD KVA: 14.4KVA	M=100%/Z= 93.5
TRANSFORMER: 150KVA	I-SC=I-FLA*M= 39 KA
IMPEDANCE (%): 1.1%	
CALCULATION BASED ON ESTIMATED TRANSFORMER SIZE WITH 1/2" FROM BUSSMANN I-PD. CONTRACTOR SHALL CONTACT UTILITY AND VERIFY I-SC AVAILABLE AT SECONDARY OF TRANSFORMER. CONTACT ENGINEER FOR RE-CALCULATION IF LARGER THAN CALCULATED.	

MOTOR LOAD FAULT CALCULATION	
STARTING I-SC:	39 KA
MOTOR LOAD (KVA):	36KVA
MOTOR LOAD (A):	101A
CALCULATION	
I-SC(ML)=I-ML*6=	606A
I-SC=I-SC+I-SC(ML)=	40 KA

FEEDER FAULT CALCULATION	
STARTING I-SC:	40 KA
VOLTAGE (L-L):	208V
PHASE (PH):	3
FEEDER SIZE:	250
FEEDER MATERIAL:	AL
PARALLEL SETS (Q):	2
FEEDER LENGTH (L):	20FT
FEET PER OHMS (C):	12.862 FT/OHMS
IMPEDANCE BASED ON 3 SINGLE CONDUCTORS IN NON-MAGNETIC CONDUIT	
CALCULATION	
F=[SQRT(3)*L*(C)]	F=0.256
M=1/(1+F)	M=0.796
I-SC=I-SC*M=	31 KA

- POWER DISTRIBUTION SYSTEM NOTES:**
- SERVICE TRANSFORMER WITH 240Y/120V, 1PH, 3W SECONDARY AND SOLIDLY GROUNDED NEUTRAL. COORDINATE EXACT LOCATION AND PROVIDE ALL EQUIPMENT, MATERIAL AND LABOR AS REQUIRED BY THE POWER COMPANY.
 - BRANCH PANELBOARD. SEE PANEL SCHEDULES FOR REQUIREMENTS.
 - PROVIDE METERING AND CT CABINET PER POWER COMPANY REQUIREMENTS.
 - PROVIDE 3" HIGH WHITE LETTERS PLACARD STATING "SERVICE DISCONNECT". DISPLAY PLACARD IN A CONSPICUOUS PLACE NEXT TO THE MAIN DISCONNECT SWITCH.
 - BID ALTERNATE FOR PAD MOUNTED SERVICE TRANSFORMER WITH 208Y/120V, 3PH, 4W SECONDARY AND SOLIDLY GROUNDED NEUTRAL, FOR UNDERGROUND SERVICE. COORDINATE EXACT LOCATION AND PROVIDE ALL EQUIPMENT, MATERIAL AND LABOR AS REQUIRED BY THE POWER COMPANY.

NEC CODE ART. 230.95
A WRITTEN RECORD OF THE GROUND FAULT PERFORMANCE TEST SHALL BE MADE AVAILABLE TO LOCAL AUTHORITY HAVING JURISDICTION (ELECTRICAL INSPECTOR) PRIOR TO FINAL INSPECTION.



Robert E. Walker, IV
Architect
2229 FIRST AVE. SOUTH
SUITE 110
BIRMINGHAM, Alabama
35233
T-205.254.3212
F-205.254.3269

ROBERT M. BEATTIE, PE
2815 SOUTH OAK CREEK - CHASED HILL DRIVE
BIRMINGHAM, AL 35205-1000
TEL: 205-988-1111 FAX: 205-988-1112
WWW.MBEATTIE.COM EMAIL: RMB@MBEATTIE.COM
ELECTRICAL, MECHANICAL, PLUMBING, PIPING, HVAC, REFRIGERATION, GAS, AND ALL OTHER TRADES
REGISTERED PROFESSIONAL ENGINEER - ELECTRICAL (NO. 28905)
REGISTERED PROFESSIONAL ENGINEER - MECHANICAL (NO. 28905)
REGISTERED PROFESSIONAL ENGINEER - PLUMBING (NO. 28905)
REGISTERED PROFESSIONAL ENGINEER - PIPING (NO. 28905)
REGISTERED PROFESSIONAL ENGINEER - REFRIGERATION (NO. 28905)
REGISTERED PROFESSIONAL ENGINEER - GAS (NO. 28905)
REGISTERED PROFESSIONAL ENGINEER - ALL TRADES (NO. 28905)
ROBERT M. BEATTIE, PE #



DG

DOLLAR GENERAL BUILDING
Prototype 9100 SF B
Store # 22718

DG Woodstock
Bells Ferry Rd.
Woodstock, GA

CONSTRUCTION DOCUMENTS

PROJECT NO.: 8095.97
ISSUED: 01/15/2021

POWER RISER DIAGRAM AND SCHEDULES

E3.1

DISCLAIMER: THESE DOCUMENTS WERE PREPARED BY THE DESIGNER FOR THE PROJECT AND ARE NOT TO BE USED FOR ANY OTHER PROJECT. THE DESIGNER SHALL BE RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING CONDITIONS PRIOR TO CONSTRUCTION. ANY DISCREPANCIES BETWEEN THESE DOCUMENTS AND ACTUAL FIELD CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO ANY WORK BEING DONE. ANY REQUIRED ENGINEERING CHANGES TO MATCH THE EXISTING SITE CONDITIONS SHALL BE TREATED AS ADDITIONAL SERVICES.