

No.	Description	Date
05/12/20	Owner Review	06/04/20
06/04/20	Owner Review 2	

CASCO DIVERSIFIED
CORPORATION PROFESSIONAL
ENGINEERING CERTIFICATE OF
AUTHORITY #000613
EXP. 12/31/21

6/17/20
HARRY J. AJMAN
LIC. #E16827
EXP. 12/31/20

Drawn By/Checked By: EAV/DAW
Project Number 320488

Permit Date 06-17-20

ELECTRICAL
PANEL
SCHEDULES
E302

UT. XFRM FAULT CALC	320488 LOAD.xlsm
SERVICE ENTRANCE	CALCULATION
VOLTAGE (L-L):	208V
PHASE (PH):	3
AMPS:	1000A
FULL LOAD KVA:	360KVA
TRANSFORMER:	500KVA
IMPEDANCE (%Z):	1.2%Z
CALCULATION IS BASED ON ESTIMATED TRANSFORMER SIZE WITH %Z FROM BUSSMANN SPD. 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 CALC	320488 LOAD.xlsm
STARTING I-SC:	10 KA
MOTOR LOAD (KVA):	30KVA
MOTOR LOAD (A):	84A

LL METER CENTER FEEDER FAULT CALC	320488 LOAD.xlsm
STARTING I-SC:	11 KA
VOLTAGE (L-L):	208V
PHASE (PH):	3
FEEDER SIZE:	400
FEEDER MATERIAL:	CU
PARALLEL SETS (Q):	3 SETS
FEEDER LENGTH (L):	65FT
FEET PER OHMS (C):	24.297 FT/OHMS

SBA & SBB FEEDER FAULT CALC	320488 LOAD.xlsm
STARTING I-SC:	10 KA
VOLTAGE (L-L):	208V
PHASE (PH):	3
FEEDER SIZE:	3/0
FEEDER MATERIAL:	CU
PARALLEL SETS (Q):	2 SETS
FEEDER LENGTH (L):	60FT
FEET PER OHMS (C):	13.923 FT/OHMS

FM FEEDER FAULT CALC	320488 LOAD.xlsm
STARTING I-SC:	10 KA
VOLTAGE (L-L):	208V
PHASE (PH):	3
FEEDER SIZE:	3/0
FEEDER MATERIAL:	CU
PARALLEL SETS (Q):	2 SETS
FEEDER LENGTH (L):	30FT
FEET PER OHMS (C):	13.923 FT/OHMS

HP FEEDER FAULT CALC	320488 LOAD.xlsm
STARTING I-SC:	10 KA
VOLTAGE (L-L):	208V
PHASE (PH):	3
FEEDER SIZE:	3
FEEDER MATERIAL:	CU
PARALLEL SETS (Q):	1 SETS
FEEDER LENGTH (L):	30FT
FEET PER OHMS (C):	4.811 FT/OHMS

VOLTAGE DROP CALCULATIONS											
PANEL/LOAD	FEEDER				OHMS/K-FT NEC TABLES	LENGTH	Z	LOAD	V-DROP	V	%V-DROP
	AWG	SETS	CU/AL	PH							
LL METER CENTER	#400	3	CU	3	0.056 OHMK-FT	65 FT	0.0012 OHM	107 A	0.13 V	208 V	0.06%
SBA	3/0	2	CU	1	0.094 OHMK-FT	60 FT	0.0056 OHM	96 A	0.54 V	208 V	0.26%
FM	3/0	2	CU	1	0.094 OHMK-FT	30 FT	0.0028 OHM	1 A	0.00 V	208 V	0.00%
HP	#3	1	CU	1	0.245 OHMK-FT	30 FT	0.0147 OHM	11 A	0.16 V	208 V	0.08%
SBA-2,4,6	#6	1	CU	3	0.450 OHMK-FT	60 FT	0.0270 OHM	42 A	1.14 V	208 V	0.55%
HP-3,5	#10	1	CU	1	1.210 OHMK-FT	300 FT	0.7260 OHM	3 A	2.18 V	208 V	1.05%
NOTES: SBA-2,4,6 (RTU-2) REPRESENTS THE HEAVIEST LOAD AND HP-3,5 (SITE LIGHTING) REPRESENTS THE LONGEST LOAD. TOGETHER THESE ARE THE WORST CASE BRANCH CIRCUITS. 1-PHASE V-DROP CALC IS BASED ON NEC TABLE 8, DC RESISTANCE, UNCOATED WIRES. IF #1/0 OR LARGER, USE TABLE 9 DUE TO SKIN AFFECT. 3-PHASE V-DROP CALC IS BASED ON NEC TABLE 9, EFFECTIVE Z AT 0.85 PF, UNCOATED WIRES, STEEL CONDUIT (WORST CASE).											
EQUATIONS: Z (1-PH) = (TABLE 8 OHMS/K-FT) * (K-FT/1000) * (LENGTH) * (2) / (SETS) - NOTE: IF #1/0 OR LARGER, USE TABLE 9 DUE TO SKIN AFFECT Z (3-PH) = (TABLE 9 OHMS/K-FT) * (K-FT/1000) * (LENGTH) / (SETS) V-DROP = Z * LOAD											
320488 LOAD.xlsm											

NOTE	MOUNT: SURFACE					120/208	3-PHASE, 4W	PANEL		FM		CAPACITY: 400A					INT CAP: 200KA					NOTE
	LOCATION: FUTURE MEDICAL OFFICE					LUGS:		MLO		DEMAND LOAD: A		AV. FAULT: 9KA										
	CKT	LTG	REC	HVAC	MISC	NP	DESCRIPTION	AMP	POLE	Φ	AMP	POLE	DESCRIPTION	LTG	REC	HVAC	MISC	NP	CKT			
	1	0.1					EGRESS EMERG. LTG	20	1	A	20	1	SPARE							2		
	3						SPARE	20	1	B	20	1	SPARE							4		
	5						SPARE	20	1	C	20	1	SPARE							6		
	7						SPARE	20	1	A	20	1	SPARE							8		
	9						SPARE	20	1	B	20	1	SPARE							10		
	11						SPARE	20	1	C	20	1	SPARE							12		
	13						SPARE	20	1	A	20	1	SPARE							14		
	15						SPARE	20	1	B	20	1	SPARE							16		
	17						SPARE	20	1	C	20	1	SPARE							18		
	19						SPARE	20	1	A	20	1	SPARE							20		
	21						SPARE	20	1	B	20	1	SPARE							22		
	23						SPARE	20	1	C	20	1	SPARE							24		
	25						SPARE	20	1	A	20	1	SPARE							26		
	27						SPARE	20	1	B	20	1	SPARE							28		
	29						SPARE	20	1	C	20	1	SPARE							30		
	31						SPARE	20	1	A	20	1	SPARE							32		
	33						SPARE	20	1	B	20	1	SPARE							34		
	35						SPARE	20	1	C	20	1	SPARE							36		
	37						SPARE	20	1	A	20	1	SPARE							38		
	39						SPARE	20	1	B	20	1	SPARE							40		
	41						SPARE	20	1	C	20	1	SPARE							42		
	43						SPARE	20	1	A	20	1	SPARE							44		
	45						SPARE	20	1	B	20	1	SPARE							46		
	47						SPARE	20	1	C	20	1	SPARE							48		
	49						SPARE	20	1	A	20	1	SPARE							50		
	51						SPARE	20	1	B	20	1	SPARE							52		
	53						SPARE	20	1	C	20	1	SPARE							54		
	55						SPARE	20	1	A	20	1	SPARE							56		
	57						SPARE	20	1	B	20	1	SPARE							58		
	59						SPARE	20	1	C	20	1	SPARE							60		
	61						SPARE	20	1	A	20	1	SPARE							62		
	63						SPARE	20	1	B	20	1	SPARE							64		
	65						SPARE	20	1	C	20	1	SPARE							66		
	67						SPARE	20	1	A	20	1	SPARE							68		
	69						SPARE	20	1	B	20	1	SPARE							70		
	71						SPARE	20	1	C	20	1	SPARE							72		
	73						SPARE	20	1	A	20	1	SPARE							74		
	75						SPARE	20	1	B	20	1	SPARE							76		
	77						SPARE	20	1	C	20	1	SPARE							78		
	79						SPARE	20	1	A	20	1	SPARE							80		
	81						SPARE	20	1	B	20	1	SPARE							82		
	83						SPARE	20	1	C	20	1	SPARE							84		

PHASE BALANCE			LOAD TYPE	CONNECTED	DEMAND	DEMAND FORMULA	TOTAL LOAD	
			LIGHTING	0.1 KVA	0.1 KVA	LOAD X 125% NEC 210.19 CONTINUOUS	CONNECTED	DEMAND
Φ	LOAD	%	RECEPTACLE	0.0 KVA	0.0 KVA	10KVA + 50% REMAINDER NEC 220.44	0.1 KVA	0.1KVA
A	0.1 KVA	100%	HVAC	0.0 KVA	0.0 KVA	LOAD X 80% (USED MCA IN CALCULATION)	0.3A	0.3A
B	0.0 KVA	0%	MISC	0.0 KVA	0.0 KVA	LOAD X 100% NEC 210.19 NON-CONT.	FILENAME:	
C	0.0 KVA	0%	NP	0.0 KVA	0.0 KVA	0 NONCOINCIDENTAL LOADS NEC 220.60	320488 LOAD.xlsm	

NOTES:
A. AIC RATING: STANDARD 10,000 AIC CIRCUIT BREAKERS. SERIES RATED AT 200,000 AMPS WITH BUSSMANN JLN-400 FUSES.

NOTE	MOUNT: SURFACE					120/208	3-PHASE, 4W		PANEL		HP		CAPACITY: 100A				INT CAP: 200KA				NOTE
	LOCATION: LANDLORD UTILITY ROOM					LUGS:		MLO		DEMAND LOAD: 11A				AV. FAULT: 6KA							
	CKT	LTG	REC	HVAC	MISC	NP	DESCRIPTION	AMP	POLE	Φ	AMP	POLE	DESCRIPTION	LTG	REC	HVAC	MISC	NP	CKT		
TC	3	0.1					EGRESS EMERG. LTG	20	1	A	20	1	SECURITY LTG	0.3						2	TC
	5	0.1					SITE LIGHTING	20	2	C	20	1	EAST MOVEMENT	1.2						4	TC
	6	0.1								C	20	1	BUILDING LTG							6	TC
TC	7	0.2					SITE LIGHTING	20	2	A	20	1	TIMECLOCK				0.2			8	
	9	0.2								B	20	1	HOUSE RECEPTACLES	0.4						10	
	11						SPARE	20	1	C	20	1	SPARE							12	
	13						SPARE	20	CO	A	20	1	SPARE							14	
	16						SPARE	20	1	B	20	1	SPARE							16	
	17						SPARE	20	1	C	20	1	SPARE							18	
	19						SPARE	20	1	A	20	1	SPARE							20	
	21						SPARE	20	1	B	20	1	SPARE							22	
	23						SPARE	20	1	C	20	1	SPARE							24	
	26						SPARE	20	1	A	20	1	SPARE							26	
	27						SPARE	20	1	B	20	1	SPARE							28	
	29						SPARE	20	1	C	20	1	SPARE							30	
	31						SPARE	20	1	A	20	1	SPARE							32	
	33						SPARE	20	1	B	20	1	SPARE							34	
	35						SPARE	20	1	C	20	1	SPARE							36	
	37						SPARE	20	1	A	20	1	SPARE							38	
	39						SPARE	20	1	B	20	1	SPARE							40	
	41						SPARE	20	1	C	20	1	SPARE							42	