

FAULT CURRENT CALCULATION

TRANSFORMER SIZE (KVA)	500
TRANSFORMER Z (%)	4.5
"C" FACTOR (#350 KCMIL COND.)	19,704
NUMBER OF CONDUCTORS PER PHASE	2
LINE TO LINE VOLTAGE	208
LINE TO NEUTRAL VOLTAGE	120
LENGTH OF SERVICE	165
$I = \frac{500 \times 1000}{1.73 \times 208} = 1,388$	
$I_{(sc)} = \frac{1,388 \times 100}{4.5} = 30,841$	
$F = \frac{30,841 \times 1.73 \times 165}{2 \times 19,704 \times 208} = 1.06$	
$M = \frac{1}{1+1.06} = 0.48$	
Isc AT SERVICE ENTRANCE = 30,841 X 0.48 = 14,861	

SERVICE EQUIPMENT RATING = 18,000 A.I.C.

NOTE TO CONTRACTOR:
AVAILABLE SHORT CIRCUIT RATINGS FOR THE SERVICE DISTRIBUTION EQUIPMENT AND PANELS HAVE BEEN ESTIMATED BASED ON AN ASSUMED SERVICE TRANSFORMER SIZE AND IMPEDANCE. FAULT CURRENTS HAVE BEEN CALCULATED ASSUMING AN "INFINITE BUS" AT THE SERVICE TRANSFORMER PRIMARY. ACTUAL AVAILABLE SHORT CIRCUIT CURRENT AT THE SERVICE DISTRIBUTION EQUIPMENT WILL DEPEND UPON FINAL UTILITY COMPANY TRANSFORMER SELECTION AND PRIMARY FAULT CALCULATIONS. THE AVAILABLE SHORT CIRCUIT CURRENT MAY VARY FROM THE ENGINEER'S CALCULATED VALUES. THE CONTRACTOR SHALL OBTAIN THE ACTUAL TRANSFORMER AVAILABLE SHORT CIRCUIT INFORMATION FROM THE ELECTRICAL UTILITY PROVIDER AT THE TIME OF CONSTRUCTION AND PRIOR TO ORDERING DISTRIBUTION EQUIPMENT AND PANELS. THIS INFORMATION SHALL BE USED TO DETERMINE EXACT A.I.C. RATINGS NEEDED FOR THIS EQUIPMENT. THIS INFORMATION SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING EQUIPMENT.
UTILITY CONTACT: (insert utility name/contact person/phone number)

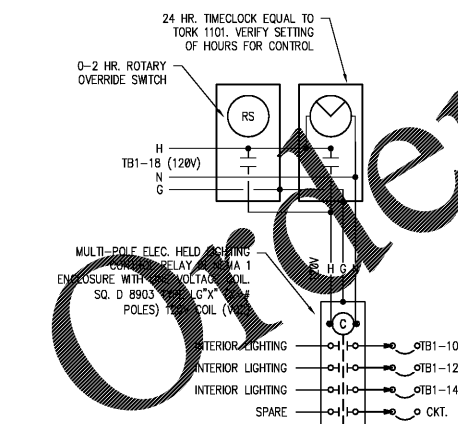
FAULT CURRENT CALCULATION

AVAILABLE FAULT CURRENT AT SERVICE ENTRANCE	11,248
"C" FACTOR (#3/0 CU COND.)	13,923
NUMBER OF CONDUCTORS PER PHASE	2
LINE TO LINE VOLTAGE	208
LINE TO NEUTRAL VOLTAGE	120
LENGTH OF SERVICE	20
$F = \frac{11,248 \times 1.73 \times 20}{2 \times 13,923 \times 208} = 0.07$	
$M = \frac{1}{1+0.07} = 0.94$	
Isc AT PANEL TB = 11,248 X 0.94 = 10,539	

PANELS TB&TB2 SERIES RATED WITH T-FUSES FOR = 10,000 A.I.C.

MAIN SERVICE SWITCH IS RATED IN EXCESS OF 30,000 WITH FUSES INDICATED ON RISER. PROVIDE PANELS THAT ARE SERIES RATED FOR 10KMC WITH CLASS T FUSES PER MANUFACTURERS TESTING AND PUBLISHED DOCUMENTS. MANUFACTURE PROVIDE LABELS PER NEC SERIES RATING.
ANY CHANGES TO THE SUPPLY POWER, OR INTERNAL ELECTRICAL SYSTEM, THAT COULD CAUSE THIS UTILITY FURNISHED OR CALCULATED VALUE TO INCREASE, SHALL BE EVIDENCE THAT A QUALIFIED PERSON REPEAT THE CALCULATIONS AND MAKE ADJUSTMENTS TO THE SYSTEM IF REQUIRED.
(CHANGE THIS LABEL TO REFLECT REVISED DATA AND NEW DATE).
PLACE ON A VISIBLE SURFACE OF THE SERVICE ENTRANCE DISCONNECT. USE A LABEL THAT HAS MINIMUM 1/8" HIGH LETTERING AND SUITABLE FOR THE ENVIRONMENT AT THE LOCATION.

ELECTRICAL FAULT CALCULATIONS
SCALE: NOT TO SCALE

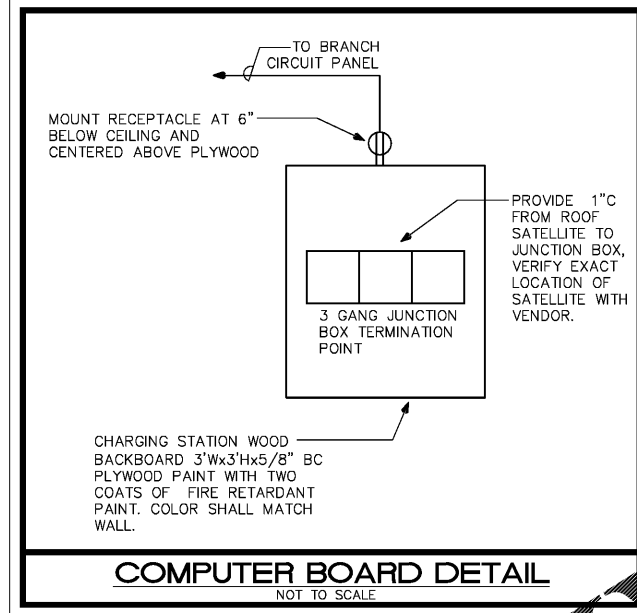


LIGHTING CONTROL DIAGRAM - INT.
NTS

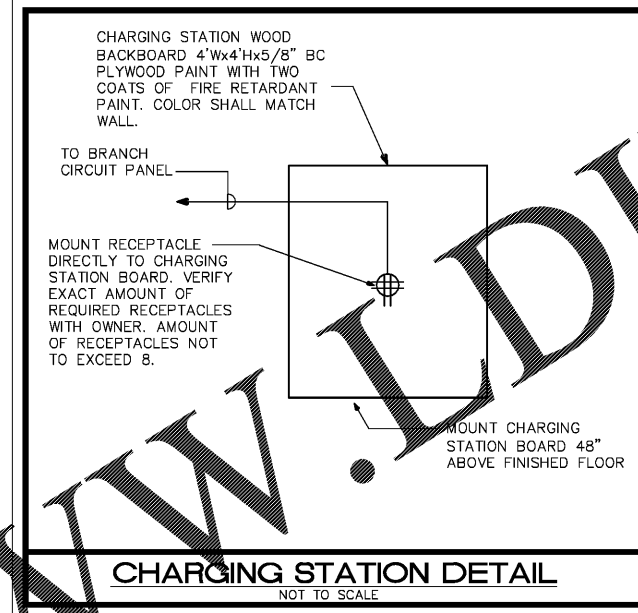
VOLTAGE DROP CALCULATIONS

CIRCUIT	VOLTS (L-N)	VOLTS (L-L)	PHASE	AMPS (per conductor)	CIRCUIT WIRES (# & SIZE)	SYSTEM	WIRE SIZE (AWG or KCMIL)	WIRE TYPE (CU, AL)	CONDUIT TYPE (PL, PVC, STL, PVC, AL)	ONE-WAY LENGTH (FT)	INCREMENTAL VOLTAGE DROP (MILS)	INCREMENTAL VOLTAGE DROP (%)	TOTAL V.D. FROM SOURCE (VOLTS)	TOTAL V.D. AT LOAD (%)
TRANS WIREWAY	208	3	3	500.0	2	0.90	350	CU	PVC	165	3.62	1.8%	3.62	1.8%
WIREWAY PNL TB	208	3	3	403.0	2	0.90	3/0	CU	PVC	20	0.61	0.3%	0.61	0.3%
WIREWAY PNL TA	208	3	3	203.0	1	0.90	3/0	CU	PVC	65	1.97	0.9%	1.97	0.9%
WIREWAY PNL HP	208	3	3	103.0	1	0.90	3	CU	PVC	25	1.06	0.5%	1.06	0.5%
PNL HP CKT TB1-26	120	1	1	10.0	1	0.90	10	CU	STL	100	2.21	1.8%	2.21	1.8%

VOLTAGE DROP CALCULATIONS
SCALE: NOT TO SCALE

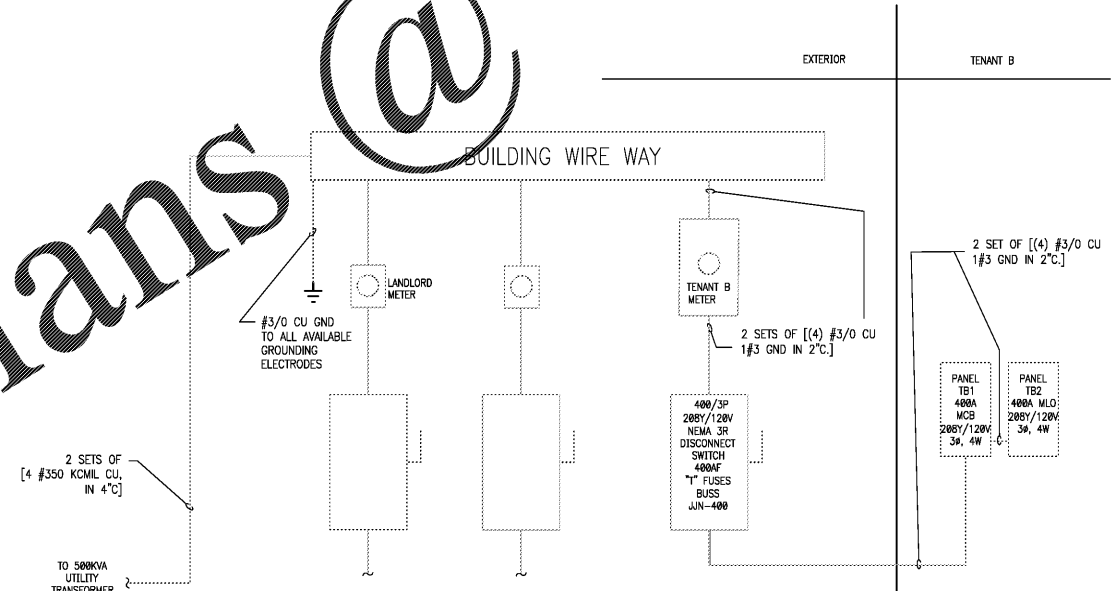


COMPUTER BOARD DETAIL
SCALE: NOT TO SCALE



CHARGING STATION DETAIL
SCALE: NOT TO SCALE

EXISTING ELECTRICAL DISTRIBUTION SYSTEM.



ELECTRICAL RISER
SCALE: NOT TO SCALE

LEGEND (NOT ALL SYMBOLS ARE USED WITHIN THIS SET OF DRAWINGS)

LIGHTING	
[Symbol]	EXIT LIGHT (HATCHING DENOTES FACE)
[Symbol]	SURFACE MOUNTED OR RECESSED EMERGENCY LIGHTING FIXTURE
[Symbol]	SWITCH (P) PILOT LIGHT (R) ROTARY SWITCH
[Symbol]	MOTOR RATED SWITCH
[Symbol]	TOGGLE SWITCH (x) DENOTES CONTROL LABEL
[Symbol]	OCCUPANCY SENSOR
[Symbol]	PHOTOCELL OR DAYLIGHT SENSOR
[Symbol]	TIMECLOCK
POWER	
[Symbol]	SINGLE RECEPTACLE
[Symbol]	DUPLEX RECEPTACLE
[Symbol]	QUADRUPLX RECEPTACLE
[Symbol]	CENTRAL MOUNTED RECEPTACLE
[Symbol]	CENTRAL MOUNTED RECEPTACLE DENOTES ISOLATED GROUND
[Symbol]	SHROUDED RECEPTACLE DENOTES GFCI PROTECTED
[Symbol]	SPECIAL PURPOSE RECEPTACLE (AS NOTED)
[Symbol]	TELEPHONE OUTLET
[Symbol]	DATA OUTLET
[Symbol]	VOICE/DATA COMBINATION OUTLET
[Symbol]	JUNCTION BOX
[Symbol]	SYMBOL IN SQUARE DENOTES FLOORMOUNTED
[Symbol]	MOTOR, FAN, PUMP OR AIR CONDITIONING UNIT
[Symbol]	PANELBOARD
[Symbol]	FUSED DISCONNECT SWITCH, RATING AS NOTED.
[Symbol]	NON-FUSED DISCONNECT SWITCH, RATING AS NOTED.
FIRE ALARM	
[Symbol]	FIRE ALARM PULL STATION NOM. 42" A.F.F. PER ADA
[Symbol]	FIRE ALARM AUDIO/VISUAL STATION 80" A.F.F. PER ADA
[Symbol]	FIRE ALARM VISUAL STATION 80" A.F.F. PER ADA
[Symbol]	FIRE ALARM AUDIO STATION 80" A.F.F. PER ADA
[Symbol]	REMOTE INDICATOR LIGHT/TEST SWITCH FOR DUCT SMOKE DETECTORS
[Symbol]	DUCT SMOKE DETECTOR WITH REMOTE INDICATOR LIGHTS AND TEST SWITCH
[Symbol]	SMOKE DETECTOR
[Symbol]	FLOW SWITCH
[Symbol]	TAMPER SWITCH
[Symbol]	FIRE ALARM CONTROL PANEL
[Symbol]	FIRE ALARM ANNUCIATOR PANEL
ABBREVIATIONS	
WP	WEATHERPROOF
AFF	ABOVE FINISHED FLOOR
UNO	UNLESS NOTED OTHERWISE
GFI	GROUND FAULT INTERRUPT
O.C	ON CENTER
ETR	EXISTING TO REMAIN
STANDARD MOUNTING HEIGHTS	
A.F.F. (IN.)	DESCRIPTION
84"	AUDIBLE APPLIANCES
48"	ALARMS
48"	ANNUNCIATOR PANELS
84"	CLOCK OUTLETS (CENTERLINE)
48"	CONTROLS (CENTERLINE)
80"	EXIT SIGNS (WALL MOUNTED, BOTTOM)
60"	FIRE ALARM ANNUCIATOR PANEL (DISPLAY)
120"	FIRE ALARM BELL (EXTERIOR)
60"	FIRE ALARM CONTROL PANEL/UNIT (DISPLAY)
36"	INTERCOM (AREA ONLY)
48"	INTERCOMS
72"	PANELS/PANELBOARDS (TOP)
48"	PULL STATIONS (HANDLE)
144"	PHOTOCELLS
18"	RECEPTACLES (CENTERLINE)
24"	RECEPTACLES (EXTERIOR)
26"	RECEPTACLES (GARAGES)
48"	RECEPTACLES IN EQUIPMENT ROOMS
48"	REMOTE INDICATING LIGHT (EQUIPMENT ROOMS)
CEILING	REMOTE INDICATING LIGHT (FINISHED AREAS)
48"	SAFETY SWITCHES
48"	STARTERS
48"	SWITCHES (CENTERLINE)
1048", 1036"	TELEPHONES (PUBLIC)
18"	TELEPHONE DATA OUTLETS (CENTERLINE)
6"	TELEPHONE TERMINAL BOARD (BOTTOM)
18"	TELEVISION OUTLETS
84"	VISIBLE APPLIANCES (CENTERLINE)

04.04.18 PERMIT SUBMIT
03.26.18 OWNER REVIEW
03.23.18 OWNER REVIEW

NO DATE REMARKS

REVISIONS

SHERWIN WILLIAMS

8909 IMMOKALEE ROAD
NAPLES, FL 34120

PROJECT NO: 2018.0102
DATE: 03.19.18

E301
ELECTRICAL DETAILS

CHECKED: SN DRAWN: CJB

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