

3-PHASE SHORT CIRCUIT CALCULATIONS BASED ON THE "POINT-BY-POINT" METHOD

$I_{sc} = I_{sc} \times M$ $M = 1/(1 + f)$ Cable: $f = 1.73 \times L \times I / C \times \sqrt{M}$ $I_p = I_p \times V_p \times \sqrt{2} / 100000 \times KVA$
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 where:
 I_{sc} = the available short-circuit current, in amperes, at the beginning of the circuit. I_p = primary current, in amperes.
 L = the length of circuit to the fault, in feet. V_p = primary line-to-line voltage of transformer, in volts.
 C = the constant from Table C for the type of conductors and circuit arrangement. V_s = secondary line-to-line voltage of transformer, in volts.
 For parallel runs, multiply "C" value by the number of conductors per phase. * Use row 'ca' for feeder cables; and row 'xf' for transformers.

Fault Point	Description	Source Isc (amps)	Wire / Cable Size	No. of cond. per phase	Type of conduit	"C" value	E (volts)	L (length) in feet	XFMR. KVA	XFMR. %Z	Vp (volts)	Vs (volts)	f	M	I _{sc} (amps)
ca	FROM CPE XFMR	35500.00											0.00	1.00	35500.00
xf	WIREWAY	35500.00	#400 KCML AL	3	NM	24297	480	280					0.49	0.67	23801.65
ca	PANEL HA	23801.65	#350 KCML CU	2	MET	19704	480	100					0.00	1.00	0.00
xf	PANEL HB	19546.65	3/0 CU	1	MET	12844	480	8					0.04	0.96	18725.00
ca	75KVA XFMR PRIMARY	19546.65	#1 CU	1	MET	7293	480	6					0.06	0.95	18475.81
xf	75KVA XFMR SECONDARY	18475.81	#4/0 CU	1	MET	15082	208	8	75	4	480	208	8.18	0.11	4643.20
ca	PANEL LA	4643.20	#4/0 CU	1	MET	15082	208	8					0.02	0.98	4549.99
xf	PANEL LB	4549.99	#4/0 CU	1	MET	15082	208	6					0.00	1.00	0.00
ca	PANEL LC	4482.51	#1 CU	1	MET	7293	208	6					0.03	0.97	4349.11
xf	TIME SWITCH	4549.99	#12 CU	1	MET	389	120	4					0.67	0.60	2717.21
ca													0.00	1.00	0.00

Note: The above calculations neglected motor short-circuit contributions. If significant, motor short-circuit contribution may be added to the transformer secondary short-circuit current value. A practical estimate of motor contribution is to multiply the total motor load in amperes by 6. Lengths are for calculations only. DO NOT USE for cost estimating or take-off purposes.

PROVIDE APPROVED ARC-FLASH HAZARD WARNING ON ALL REQUIRED ELECTRICAL EQUIPMENT PER NEC 110.16



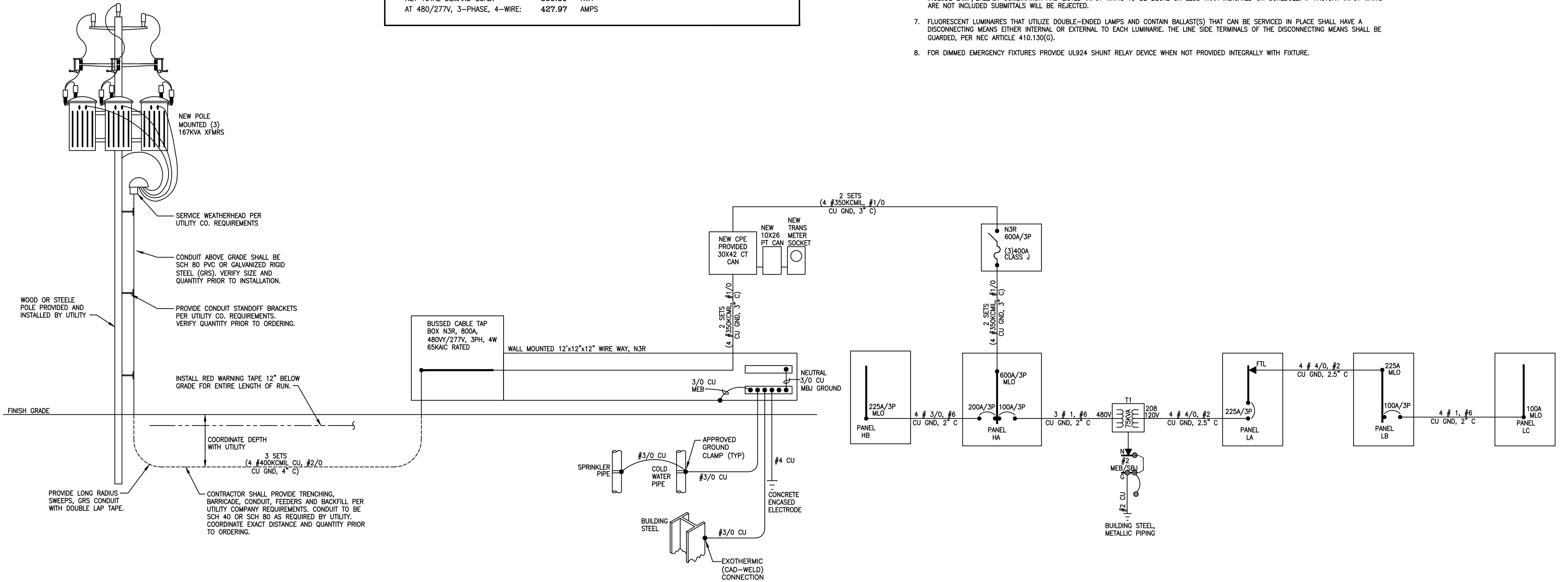
Will cause severe injury or death
 Wear proper protective equipment before opening or performing diagnostic measurements while energized. (See NFPA 70E)

SINGLE-LINE GENERAL NOTES

- COORDINATION OF OVERCURRENT PROTECTIVE DEVICES SHALL BE BY ELECTRICAL CONTRACTOR AT THEIR OWN EXPENSE, INCLUDING SETTINGS OF CIRCUIT BREAKERS, FUSES AND GROUND FAULT DEVICES. CONTRACTOR SHALL PROVIDE COORDINATION STUDY AND SET ALL CIRCUIT PROTECTIVE DEVICE SETTINGS AS RECOMMENDED AT THE COMPLETION OF THE PROJECT.
- ALL CONDUIT AND CONDUCTORS ARE BASED ON COPPER CONDUCTORS IN EMT.
- OPENINGS AROUND ELECTRICAL PENETRATIONS THROUGH FIRE-RATED WALLS, PARTITIONS, FLOORS, AND CEILING SHALL BE FIRE STOPPED USING APPROVED METHODS AND MATERIALS LISTED FOR THIS PURPOSE. REFER TO NEC ARTICLE 300.21 FOR REQUIREMENTS.
- CONCRETE ENCASED ELECTRODE (UFER) PER NEC 250.50 & 250-52(A)(3).
- ELECTRICAL CONTRACTOR SHALL PROVIDE LABELING OF THE AVAILABLE FAULT CURRENT FOR EACH PANEL AS NOTED, PER NEC 110.24.
- ELECTRICAL CONTRACTOR SHALL PROVIDE LABELING TO INDICATE WHERE EACH PIECE OF EQUIPMENT ORIGINATES, PER 408.4(B).

ELECTRICAL LOAD CALCULATIONS - 480 /277V, 3PHASE, 4W

NEW TOTAL LOADS:	
PANEL HA (HB, LA, LB & LC)	355.80 KVA
NET TOTAL DEMAND LOAD:	355.80 KVA
AT 480/277V, 3-PHASE, 4-WIRE:	427.97 AMPS



LUMINAIRE SCHEDULE

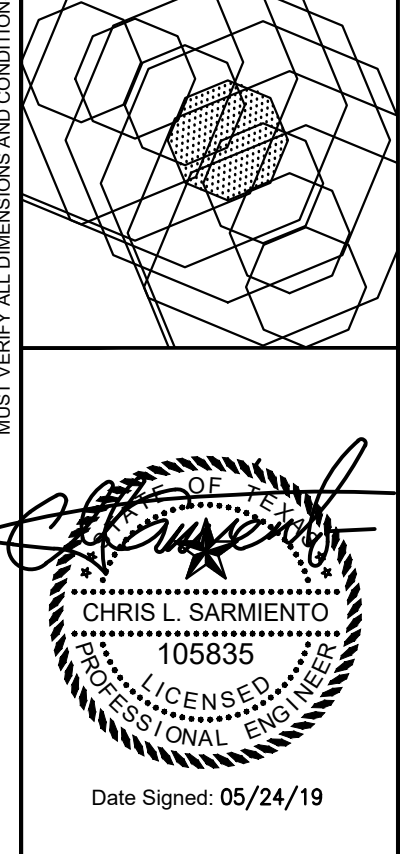
MARK	MANUFACTURER MODEL NUMBER	VOLTAGE/ INPUT WATTS	LAMP TYPE	MOUNTING AND HEIGHT	DIMMING	FINISH	REMARKS
A	METALUX 2GRB-332A-UNV-E8B1-U LAMP - TCP L128D5041K	277V/40.5W	1900 LUMEN 4100K LED	LAY-IN	N/A		2X4 PRISMATIC, BALLAST SHALL BE REMOVED, DIRECT FEED FOR (3) LED T8 LAMPS.
B	METALUX - APPX-332 LAMP - TCP L128D5041K	277V/40.5W	1900 LUMEN 4100K LED	LAY-IN	N/A		2X4 PARABOLIC, 18 CELL, BALLAST SHALL BE REMOVED, DIRECT FEED FOR (3) LED T8 LAMPS.
C	METALUX 2GRB-217A-UNV-E8B1-U LAMP - TCP L128D5041K	277V/18W	1200 LUMEN 4100K LED	LAY-IN	N/A		2X2 PRISMATIC, BALLAST SHALL BE REMOVED, DIRECT FEED FOR (2) LED T8 LAMPS.
D	HALO - H7T HOUSING HALO - RL56QWH12940 LAMP	120V/17.6W	1200 LUMEN 4000K LED	RECESSED	N/A	WHITE TRIM	INCANDESCENT DOWN LIGHT HOUSING WITH LED RETROFIT MODULE-TRIM.
E	OWNER SELECTED, CONTRACTOR PROVIDED AND INSTALLED	120V/40W		SURFACE WALL	N/A		DECORATIVE WALL SCONCE
F	RAB LIGHTING - BHH250P16PSQ LAMP - LUNERA SN-Y-E39-L-20KLM-840-G3	277V/230W	20000 LUMEN 4000K LED	PENDANT	N/A		METAL HALIDE, HIGH BAY WITH BALLAST BYPASS RETROFIT-TRIM LAMP
G	OWNER SELECTED, CONTRACTOR PROVIDED AND INSTALLED	120V/40W		SURFACE WALL	N/A		DECORATIVE WALL SCONCE, WET LOCATION LISTED
WP	EATON AXCL6A-W-BK	277V/56W	3000K LED	SURFACE	N/A	BLACK	LED WALL PACK, WET LOCATION LISTED
S1	EATON MCGRAW EDISON GLEON-AF-04-LED-E1-T3-BZ-7050 -MS/DIM-L40	277V/258W	24568 LUMEN 4000K LED	POLE MOUNT	INTEGRAL	DARK BRONZE	LED POLE LIGHT, SINGLE HEAD, WET LOCATION LISTED, MOTION SENSE AND DIMMING AS REQUIRED BY 2015 IECC
S2	VISTA LIGHTING 1043-DZ-WF-40-E-MV-ND	277V/19W	24568 LUMEN 4000K LED	SIGN LIGHT	N/A	DARK BRONZE	ARCHITECTURAL SERIES, UP AND ACCENT LIGHT. PROVIDE IN GROUND BASE.
FP	VISTA LIGHTING 1059-DZ-NS-40-F-MV-ND-FS	277V/60W	4281 LUMEN 4000K LED	FLAG LIGHT	N/A	DARK BRONZE	FLAG POLE LIGHT WITH FULL LIGHT SHIELD, WET LOCATION LISTED
EM	EATON SURE-LITES APEL	277V/5W	INCLUDED	SURFACE	N/A	WHITE	BUG EYE EMERGENCY WITH INTEGRAL 90 MIN EMERGENCY BATTERY.
EM2	EATON SURE-LITES SELW2S8Z	277V/5W	INCLUDED	SURFACE	N/A	DARK BRONZE	EGRESS EMERGENCY LIGHT WITH INTEGRAL 90 MIN EMERGENCY BATTERY. WET LOCATION LISTED.
X	EATON SURE-LITES APXTR	277V/5W	RED LED	UNIVERSAL	N/A	WHITE	LED EXIT SIGN WITH INTEGRAL 90 MIN EMERGENCY BATTERY.

- THE LUMINAIRE SCHEDULE INDICATES GENERAL DESCRIPTION OF LUMINAIRE AND MANUFACTURERS CATALOG NUMBERS IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE CORRECT CEILING CONFIGURATION AND PROVIDE THE LUMINAIRES WITH ALL NECESSARY TRIMS AND MOUNTING HARDWARE SO THAT BOTH THE CEILING SYSTEM AND THE LUMINAIRE CONSTRUCTION MATCHES.
- IT SHALL BE CONTRACTORS RESPONSIBILITY TO VERIFY EXACT LOCATION OF ALL LUMINAIRES AND TYPE OF CEILING WITH ARCHITECTURAL REFLECTED CEILING PLANS AND ELEVATIONS PRIOR TO ANY WORK.
- A JUNCTION BOX MUST BE PROVIDED WITH ALL EXIT SIGNS CONNECTED TO MORE THAN ONE SET OF CONDUCTORS UNLESS THE EXIT SIGN IS FURNISHED WITH AN APPROVED OUTLET BOX FOR THROUGH WIRING.
- IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO COORDINATE THE FINAL LOCATION OF LUMINAIRES IN MECHANICAL, ELECTRICAL AND OTHER EQUIPMENT ROOMS WHERE CONDUITS, DUCT WORK, PIPING, ETC., ARE PRESENT TO AVOID CONFLICT AND ENABLE PROPER ILLUMINATION DISTRIBUTION.
- ALL FLUORESCENT LUMINAIRES SHALL BE EQUIPPED WITH ELECTRONIC BALLASTS.
- NO SUBSTITUTIONS SHALL BE APPROVED WITHOUT WRITTEN PERMISSION FROM THE ARCHITECT, ENGINEER OR THE CITY. SUBMITTALS SHALL INCLUDE LAMP/BALLAST COMBINATION AND LISTED INPUT WATTS TO BE EQUAL OR LESS THAN INDICATED ON SCHEDULE. IF FACTORY INPUT WATTS ARE NOT INCLUDED SUBMITTALS WILL BE REJECTED.
- FLUORESCENT LUMINAIRES THAT UTILIZE DOUBLE-ENDED LAMPS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE SHALL HAVE A DISCONNECTING MEANS EITHER INTERNAL OR EXTERNAL TO EACH LUMINAIRE. THE LINE SIDE TERMINALS OF THE DISCONNECTING MEANS SHALL BE GUARDED, PER NEC ARTICLE 410.130(G).
- FOR DIMMED EMERGENCY FIXTURES PROVIDE UL924 SHUNT RELAY DEVICE WHEN NOT PROVIDED INTEGRALLY WITH FIXTURE.

THE MONTESSORIOM AT BELLA TERRA
 23421 FM 1093 RD.
 RICHMOND, TX 77406

NO.	DESCRIPTION	DATE
1	FINAL SCHEME	02.01.19
2	REVISION SCHEME	02.07.19
3	PERMIT	05.24.19

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Date Signed: 05/24/19
 Project No. 1801.74
 Date 02/11/19
 Drawn by JG
 Checked by NL

Sheet No. **E5.1**

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