

PANELBOARD SCHEDULE NOTES:

(NOT ALL NOTES MAY BE USE)			8 - KITCHEN EQUIPMENT LOAD: # OF UNIT OF EQUIPMENT			DEMAND FACTOR		
1	-	CONTINUOUS LOAD OR LARGEST MOTOR TAKEN AT 125%.		1		100%		
2	-	VIA TIMECLOCK/CONTACTOR		2		100%		
3	-	CIRCUIT BREAKER WITH LOCK-ON DEVICE.		3		80%		
4	-	CIRCUIT BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION		4		80%		
5	-	CIRCUIT BREAKER WITH GROUND FAULT CIRCUIT INTERRUPTER		5		70%		
6	-	CIRCUIT BREAKER WITH SHUNT TRIP		6 & OVER		65%		
7	-	LABEL IN RED BOLD LETTERS "EMERGENCY LIGHT" IN COMPLIANCE WITH NEC 700.12(F).						
			NE - DENOTES NEW LOAD ON EXISTING CIRCUIT BREAKER.					
			S - NEW SWITCH RATED CIRCUIT BREAKER.					
			EX - DENOTES EXISTING LOAD/ WIRE/ CIRCUIT BREAKER					
			N - DENOTES NEW LOAD AND CIRCUIT BREAKER TO MATCH EXISTING MAKE, MODEL, TYPE, ETC. COORDINATE WITH MANUFACTURER CORRECT TYPE OF CIRCUIT BREAKER TO ACHIEVE SERIES RATING SYSTEM 65-10 KAC PRIOR TO ORDERING. IF NOT FEASIBLE, FULLY RATE NEW CB. SEE FAULT CURRENT CALCULATION.					

PANELBOARD GENERAL NOTES:

- 1.) EACH MULTIWIRE BRANCH CIRCUIT SHALL BE PROVIDED WITH MEANS THAT WILL SIMULTANEOUSLY DISCONNECT ALL UNGROUNDED CONDUCTORS AT THE POINT WHERE THE BRANCH CIRCUIT ORIGINATES. (NEC 210.4 (B)):  
FOR SINGLE PHASE INSTALLATION: PROVIDE 2-POLE CIRCUIT BREAKER OR (2) SINGLE-POLE CIRCUIT BREAKERS WITH U.L. LISTED HANDLE-TIE.  
FOR THREE PHASE INSTALLATION: PROVIDE 3-POLE CIRCUIT BREAKERS OR (3) SINGLE-POLE CIRCUIT BREAKERS WITH U.L. LISTED HANDLE-TIE.
- 2.) THE UNGROUNDED AND GROUNDED CONDUCTORS OF EACH MULTIWIRE BRANCH CIRCUIT SHALL BE GROUPED BY WIRE TIES OR SIMILAR MEANS IN AT LEAST ONE LOCATION WITHIN THE PANELBOARD OR OTHER POINT OF ORIGINATION.
- 3.) ELECTRICAL CONTRACTOR SHALL PROVIDE TYPE WRITTEN PANELBOARD CIRCUIT DIRECTORY CARDS FOR EACH PANELBOARD THAT LEGIBLY IDENTIFY EVERY CIRCUITS CLEAR, EVIDENT AND SPECIFIC PURPOSE OR USE. THE IDENTIFICATION SHALL INCLUDE SUFFICIENT DETAL TO ALLOW EACH CIRCUITS TO BE DISTINGUISHED FROM ALL OTHERS (NEC 408.4) ADDITIONALLY, ELECTRICAL CONTRACTOR SHALL ETCH OR PERMANENTLY MARK THE COVERPLATES OF RECEPTACLES AND THE JUNCTION BOXES OF LUMINAIRES AND EQUIPMENT WITH THE CIRCUIT'S IDENTIFICATION (STICK-ON LABELS ARE NOT ACCEPTABLE). TAG EACH CIRCUIT CONDUCTOR AT EACH JUNCTION BOX, OUTLET, SWITCH, ETC. WITH THE CIRCUIT'S IDENTIFICATION. (PANEL ORIGINATION AND CIRCUIT NO.)
- 4.) ELECTRICAL CONTRACTOR SHALL UPDATE PANELBOARD DIRECTORIES.

LIGHTING FIXTURE SCHEDULE

FIXTURE ID	MANUFACTURER	DESCRIPTION/CATALOG NO.	LAMPS		VOLT	MOUNTING & HEIGHT	REMARKS	SEE NOTE
			NO	TYPE				
D1	SECURITY LIGHTING	RDA-136LM30-FL-S / RDA-136-H	1	16W LED 1360 LUMENS	120	RECESSED/ CEILING	4" ADJUSTABLE AMBIENT DOWNLIGHT HOUSING, IC RATED, FOR USE WITH RDA-136LM TRIMS	
D1E	SECURITY LIGHTING	RDA-136LM30-FL-S / RDA-136-H / LG11XX	1	16W LED 1360 LUMENS	120	RECESSED/ CEILING	4" ADJUSTABLE AMBIENT DOWNLIGHT HOUSING, IC RATED, FOR USE WITH RDA-136LM TRIMS. XX-VERIFY CEILING TYPE. REFER TO LIGHTING PLAN ON SHEET E3.0	
D2	SECURITY LIGHTING	RDA-60LM30-NF-S / RDA-60-H	1	7W LED 600 LUMENS	120	RECESSED/ CEILING	3.5" ADJUSTABLE ACCENT DOWNLIGHT HOUSING, IC RATED, FOR USE WITH RDA-60LM TRIMS	
D3E	SECURITY LIGHTING	LF4SL-4LFSL20L-35K-SP-SL-DL-B24	1	25W LED 2000 LUMENS	120	RECESSED/ CEILING	4" LED RECESSED DOWNLIGHT XX-VERIFY CEILING TYPE. REFER TO LIGHTING PLAN ON SHEET E3.0	
D3M	SECURITY LIGHTING	LF4SL-4LFSL20L-35K-SP-SL-DL-B24/ LG125TX	1	25W LED 2000 LUMENS	120	RECESSED/ CEILING	4" LED RECESSED DOWNLIGHT XX-VERIFY CEILING TYPE. REFER TO LIGHTING PLAN ON SHEET E3.0	
D3	SECURITY LIGHTING	PEL2-30ML-FPW-EDU-LHVQM5	1	100W LED 12901 LUMENS	120	PENDANT	INDUSTRIAL 2' LED W/ FROSTED POLYCARBONATE WIDE LENS. VERIFY MOUNTING HEIGHT WITH MCDONALDS REPRESENTATIVE. PROVIDE COMPLETE MOUNTING ACCESSORIES AS REQUIRED. LIGHT FIXTURE WITH EMERGENCY BATTERY PACK.	
D3E	SECURITY LIGHTING	PEL2-30ML-FPW-EDU-ELL14-LHVQM5	1	100W LED 12901 LUMENS	120	PENDANT	INDUSTRIAL 2' LED W/ FROSTED POLYCARBONATE WIDE LENS. VERIFY MOUNTING HEIGHT WITH MCDONALDS REPRESENTATIVE. PROVIDE COMPLETE MOUNTING ACCESSORIES AS REQUIRED. LIGHT FIXTURE WITH EMERGENCY BATTERY PACK.	
E2	CS ILLUMINATION	LED-6797-BPS-1388-94 SLIM MEDIUM PENDANT	1	15W LED / LINEAR FT	120	PENDANT/ CEILING	SLIM LARGE PENDANT GREY, 94"LONG PENDANT	
E1	CS ILLUMINATION	BLUE ROUND PENDANT/4888-SP-D627	1	31W LED	120	PENDANT/ CEILING	PENDANT MOUNT FIXTURE 23" D. X 21.5" T. INTEGRATED LED. FINISH: TURQUOISE, rai 5025. INTERIOR FINISH: MATTE WHITE.	
CL1	INTEGRAL WITH CANOPY	AALEDS, BLAZER MODULE #LS-0766-XX WITH MEAN WELL LED DRIVER	33FT AT 1.5W LED/ LINEAR FT		120	SURFACE	PROVIDE WITH (1) 75W COMPATIBLE LED DRIVER	
CL2	INTEGRAL WITH CANOPY	AALEDS, BLAZER MODULE #LS-0766-XX WITH MEAN WELL LED DRIVER	28FT AT 1.5W LED/ LINEAR FT		120	SURFACE	PROVIDE WITH (1) 50W COMPATIBLE LED DRIVER	
CL3	INTEGRAL WITH CANOPY	AALEDS, BLAZER MODULE #LS-0766-XX WITH MEAN WELL LED DRIVER	28FT AT 1.5W LED/ LINEAR FT		120	SURFACE	PROVIDE WITH (1) 50W COMPATIBLE LED DRIVER	
SLED4-HE	SECURITY LIGHTING	SLED-HE-48-DO-U-BK CUSTOM BUILT FOR EXTERIOR ACCENT CHANNELS.	1	19W LED	120	SURFACE/ WALL	SMOOTH BRACING IS REQUIRED FOR LED FIXTURE INSTALLATION UNDER COPING/FLASHING. (TYPICAL)	
F20	SECURITY LIGHTING	EVEURWE	FURNISHED W/ FIXTURE		120	SURFACE/ CEILING	FIXTURE SHALL HAVE INTEGRAL BATTERY BACK-UP. PROVIDE DIRECTIONAL ARROW IF REQUIRED. SEE LIGHTING PLAN.	
F22	SECURITY LIGHTING	EV4D-02L-0 /EVODB	FURNISHED W/ FIXTURE		120	SURFACE / WALL / CEILING	EMERGENCY BATTERY AND 2 REMOTE HEADS. U.L. LISTED FOR WET LOCATION	
S1W	SECURITY LIGHTING	RWSC-36L-5K-DO-U-WH	1	14W LED 11626 LUMENS	120	SURFACE/ WALL	"DOWN ONLY" RADIAL WALL SCONCE WITH TEMPERED GLASS- SILVER	

FED FROM EXISTING 'MDP'

PANELBOARD SCHEDULE

LOCATION MOUNTING ENCLOSURE				BACK OF HOUSE FLUSH NEMA 1				VOLTAGE PHASE WIRE				120 / 208 3 4				M.N. AC RATING MAINS RATING C.B. TYPE				10,000 250A MLO EXISTING			
NOTE	WIRE SIZE			CIRCUIT DESCRIPTION / AREA SERVED	CONN. LOAD (VA)	CB	POLE	CK T	DEMAND LOADS (VA)			CK T	POLE	CB	CONN. LOAD (VA)	CIRCUIT DESCRIPTION / AREA SERVED	WIRE SIZE			NOTE			
	G	N	H						A	B	C						H	N	G				
EX	EX	EX	EX	RED BOX	1000	20	1	1	1000 1250			2	2	20	1000	ROOF SIGN	EX	-	EX	1,EX			
1,2,N	10	10	10	LTS- BUILDING EXTERIOR (WALL SCONCE)	42	20	1	3		53 1250		4	-	"	1000	"	EX	-	-	1,EX			
1,EX	EX	EX	EX	LOT LIGHTS	1000	20	1	5			1250 1620	6	1	20	1296	"MCDONALDS" FACIA SIGN	EX	EX	EX	1,EX			
EX	EX	EX	EX	TEA	1500	20	1	7	1500 1412			8	1	20	1412	MENU BOARD AND POP	EX	EX	EX	1,EX			
EX	EX	EX	EX	TEA	1500	20	1	9		1500 1250		10	1	20	1000	OUTSIDE MENU	EX	EX	EX	1,EX			
1,NE	10	10	10	LTS- DINING AREA (WALL WASHER / PENDANTS)	444	20	1	11			555 1250	12	1	20	1000	OUTSIDE MENU	EX	EX	EX	1,EX			
1,EX	EX	EX	EX	BUILDING LIGHTS	1000	20	1	13	1250 1500			14	1	20	1200	ENT/EXIT SIGN	EX	EX	EX	1,EX			
1,EX	EX	EX	EX	BUILDING LIGHTS	1000	20	1	15		1250 355		16	1	20	284	SEC. LIGHT/DOOR ALARM	EX	EX	EX	1,EX			
1,EX	EX	EX	EX	BUILDING LIGHTS	1000	20	1	17			1250 2080	18	2	30	1664	LOT LIGHTING	EX	-	EX	1,EX			
EX	EX	EX	EX	ENT/EXIT LIGHTS	1200	20	1	19	1500 2080			20	-	"	1664	"	EX	-	-	1,EX			
EX	EX	EX	EX	ROOF RECP.	720	20	1	21		720 266		22	1	20	213	LTS- BUILDING EXTERIOR (WALL BRAND / LED CANOPY)	10	10	10	1,2,N			
EX	EX	EX	EX	REST ROOM FAN	600	20	1	23			600 2080	24	2	30	1664	LOT LIGHTING	EX	-	EX	1,EX			
EX	EX	EX	EX	TRASH AREA RECEPT.	900	20	1	25	900 2080			26	-	"	1664	"	EX	-	-	1,EX			
1,7,N	10	10	10	LTS- PLAYPLACE (LED HIGHBAY LIGHT)	300	20	1	27		375 240		28	1	20	192	PLAYPLACE LOGO SIGNAGE	10	10	10	1,2,N			
1,NE	12	12	12	LTS- CUSTOMER SERVICE AREA / P.O.S. (RECESSED DOWNLIGHT)	200	20	1	29			250 2080	30	2	30	1664	LOT LIGHTING	EX	-	EX	1,EX			
1,NE	10	10	10	LTS- DINING AREA / VESTIBULE (RECESSED DOWNLIGHT)	464	20	1	31	580 2080			32	-	"	1664	"	EX	-	-	1,EX			
1,7, NE	10	10	10	LTS- CUSTOMER SERVICE / DINING AREA / VESTIBULE (NL / EL / EXIT SIGN)	242	20	1	33		303 375		34	1	20	300	LTS- PLAYPLACE (LED HIGHBAY LIGHT)	10	10	10	1,7,N			
EX	EX	EX	EX	KITCHEN LIGHTS	1132	20	1	35			1415 1800	36	2	30	1800	"BAD"	EX	-	EX	EX			
1,7, NE	EX	EX	EX	LTS- RESTROOM	176	20	1	37	220 1800			38	-	"	1800	"	EX	-	-	EX			
1,EX	EX	EX	EX	SUPPORT LIGHTS	608	20	1	39		760 3120		40	2	30	2496	ROAD SIGN	EX	-	EX	1,EX			
1,EX	EX	EX	EX	NIGHT/EXIT/EM LTS	777	20	1	41		971 3120		42	-	"	2496	"	EX	-	-	1,EX			
TOTAL LOAD PER PHASE									19152	11816	20321	20,321 VA / 120 V =					169 AMPS						

FED FROM EXISTING 'MDP'

PANELBOARD SCHEDULE

'CP1'														PROVIDE WITH ISOLATED GROUND BUSS				
LOCATION MOUNTING ENCLOSURE		OFFICE SURFACE NEMA 1		VOLTAGE PHASE WIRE		120 / 208 3 4		MIN. AC RATING MAINS RATING C.B. TYPE		10,000 225A MLO BOLT-ON		SERIES RATED: 65-10KAIC						
NOTE	WIRE SIZE G N H	CIRCUIT DESCRIPTION / AREA SERVED		CONN. LOAD (VA)	CB	POLE	CK T	DEMAND LOADS (VA) A B C	CK T	POLE	CB	CONN. LOAD (VA)	CIRCUIT DESCRIPTION / AREA SERVED		WIRE SIZE H N G		NOTE	
	12	12	12	RECEPT - P.O.S. COUNTER (FUTURE GOOD DISPLAY CASE)	360	20	1	1 360 360			2	1	20	360	RECEPT - SERVING AREA ORB MONITOR (MINI)/ ORB SCANNER	12	12	12
	10	10	10	RECEPT- SPARKLE TABLE TOP	180	20	1	3 180 1080			4	1	20	1080	KIOSK 1	10	10	10
	10	10	10	LED PUCK LIGHT FOR HAPPY MEAL DISPLAY	180	20	1	5 180 1080			6	1	20	1080	KIOSK 2	10	10	10
1	8	-	6	RTU-4 @ 32.8A	3934	50	3	7 4918 360			8	1	20	360	RECEPT- ROOF	10	10	10
1	-	-	6	"	3934	"	-	9 4918 200			10	1	20	200	DUCK SMOKE DETECTOR	10	10	10 3
1	-	-	6	"	3934	"	-	11 4918 540			12	1	20	540	RECEPT- N.W. DINING AREA	10	10	10
	10	10	10	RECEPT- S.W. DINING AREA	720	20	1	13 720 360			14	1	20	360	RECEPT- N.E. DINING AREA	10	10	10
	10	10	10	RECEPT- KIDZPACE GAME	720	20	1	15 720 360			16	1	20	360	RECEPT- S.E. PLAYPLACE AREA	10	10	10
	10	10	10	RECEPT- N.E. PLAYPLACE AREA	360	20	1	17 360 218			18	1	20	312	RECEPT- BLENDER-MCFLURRY-COUNTERTOP	12	12	8
8	12	12	12	RECEPT- BASE REFRIGERATOR	384	20	1	19 269 432			20	1	20	432	RECEPT- STICKY LABEL PRINTER & POS-VIDEO MONITOR & RECEIPT PRINTER	12	12	12
	12	12	12	RECEPT- DELIVERY TABLET	360	20	1	21 360 540			22	1	20	540	RECEPT- POS REGISTER-DELIVERY AND POS-VIDEO MONITOR WITH SUPPORT	12	12	12
8	12	12	12	RECEPT- ICE MACHINE-1000LB.	132	15	1	23 92 1252			24	1	20	1788	RECEPT- ABS PRE-COOLER	12	12	12 8
8	12	12	12	RECEPT- AUTOMATED BEVERAGE SYTEM	600	20	1	25 420 1295			26	3	15	1295	ICE MACHINE REMOTE CONDENSER- 1000 LB @ 10.8A	10	-	10
				SPARE	0	20	1	27 0 1295			28	-	"	1295	"	10	-	-
				SPARE	0	20	1	29 0 1295			30	-	"	1295	"	10	-	-
				SPARE	0	20	1	31 0 0						0	SPACE			
				SPARE	0	20	1	33 0 0						0	SPACE			
				SPARE	0	20	1	35 0 0						0	SPACE			
				SPARE	0	20	1	37 0 0						0	SPACE			
				SPARE	0	20	1	39 0 0						0	SPACE			
				SPARE	0	20	1	41 0 0						0	SPACE			
TOTAL LOAD PER PHASE								9493	9653	9935	9,935 VA / 120 V =		83 AMPS					

REVIEWED FOR CODE COMPLIANCE  
City Planning & Development  
Development Services  
City of Kansas City, Missouri

Jeff Lee, PE

Building Official

Date: 01/18/2022

By: [Signature]

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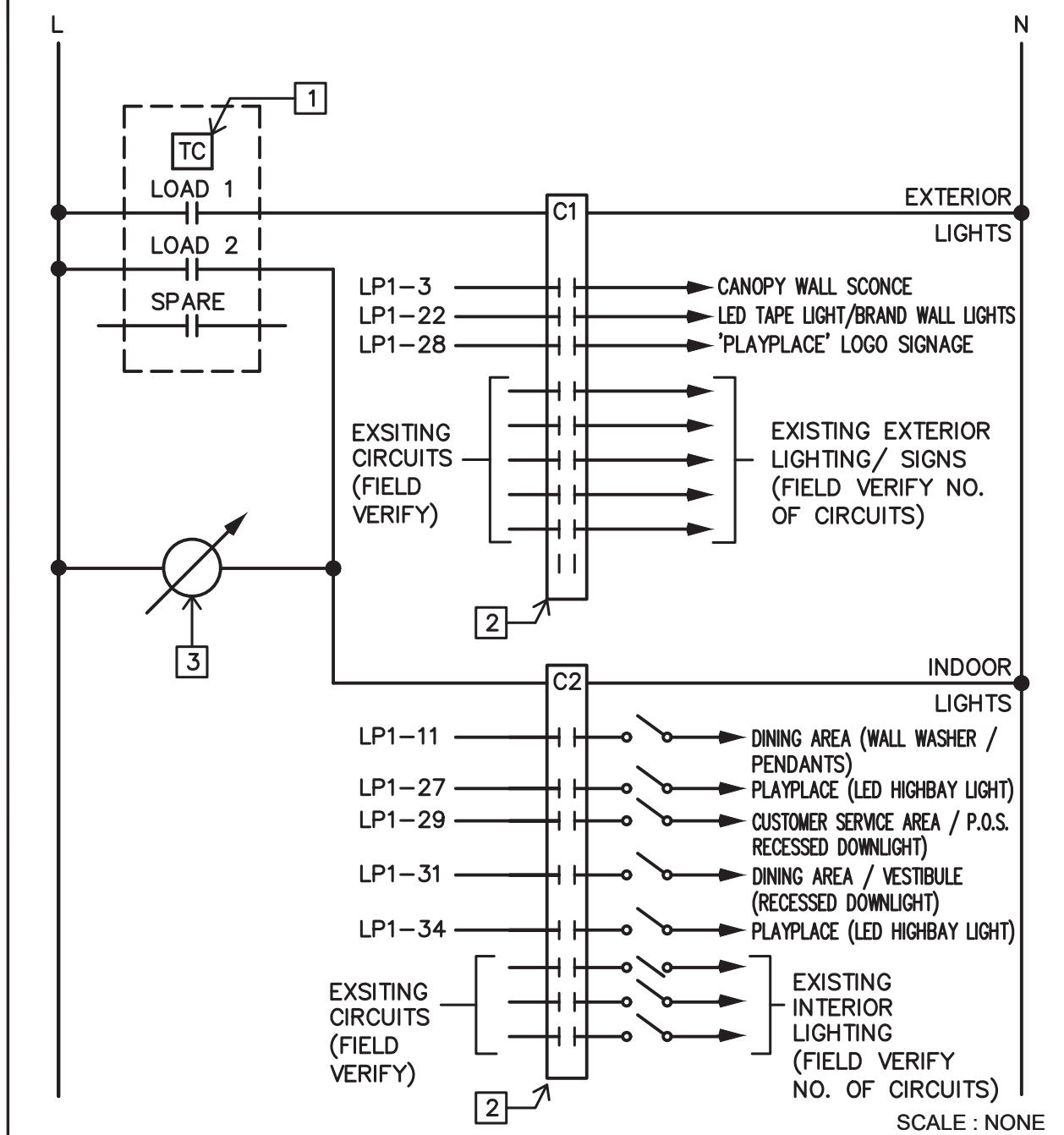
SIGNED BY:



DATE:



## 2 LIGHTING CONTROL DIAGRAM



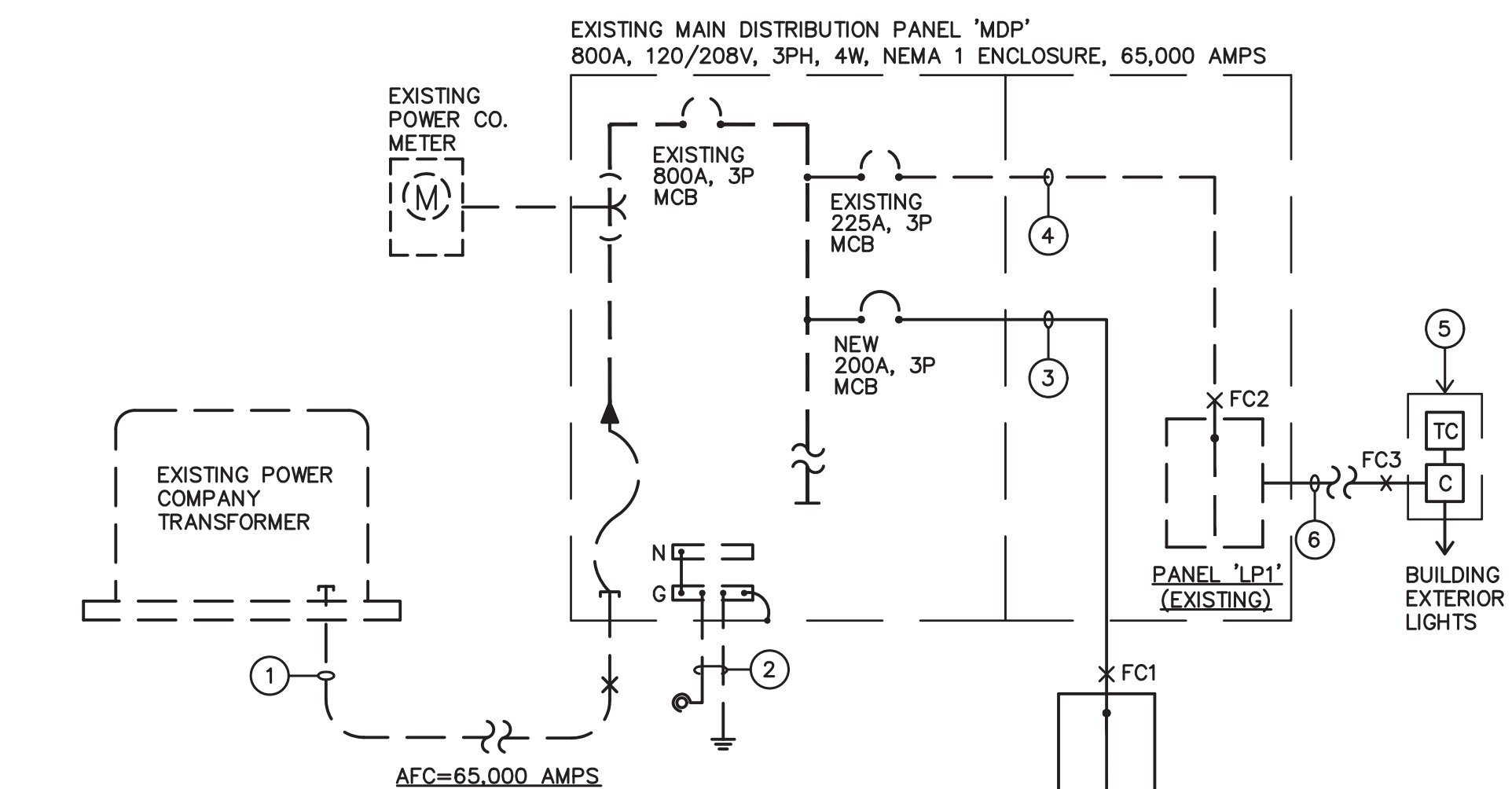
### KEYED NOTES:

- EXISTING LIGHTING CONTROLLER WITH ASTRONOMICAL DIGITAL TIMSWITCH. SEE NOTE BELOW.
  - 20A, ELECTRICAL PANEL LIGHTING CONTROL WITH 220V CULIN WITH 1 ENCLOSURE AND NUMBER 5 POLES AND 250V BREAKERS. SCAIC.
  - BYPASS TIMER SWITCH. ADJUSTABLE 120 MINUTES MAXIMUM.
- NOTE: CONTRACTOR SHALL FIELD LIGHTING CONTROLLER IS COMPLIANT WITH IECC C405.2.2. SWITCH CONTROL DEVICES. IF NOT, PROVIDE WITH NEW LIGHTING CONTROLLER WITH ASTRONOMICAL DIGITAL TIMSWITCH, TORK CAT. #DZS21 AND CUSTOMER SERVICE AREA DESCRIBED IN THE ABOVE DIAGRAM.
- Jeff Lee, P.E., M.C.P.

### LOAD CALCULATIONS SUMMARY (MDP)

Date: 01/18/2022 By: jnewport

EXISTING MAIN DISTRIBUTION PANEL 'MDP' (800A, 120/208V, 3PH, 4W)	
<b>REMOVED LIGHTING LOADS:</b>	
DINING AREA/CUSTOMER SERVICE AREA/P.O.S. AREA/BREAK ROOM/RESTROOM:	
* (8) RECESSED DOWNLIGHT (2-26W) AT 52W LED EACH X 125% .....	4420 VA
* (14) DECORATIVE PENDANT (1-60W) AT 60W EACH X 125% .....	1050 VA
* (2) 2'x4' FLOURESCENT RECESSED (3-32W T8 LAMPS) AT 96W EACH X 125% .....	238 VA
SUB-TOTAL .....	5708 VA
<b>BUILDING EXTERIOR:</b>	
* (3) ARCADE UP LIGHTING AT 60W EACH X 125% .....	225 VA
* (2) RECESSED MOUNTED UNDER CANOPY LIGHT AT 100W EACH X 125% .....	250 VA
SUB-TOTAL .....	475 VA
<b>TOTAL LIGHTING LOADS REMOVED .....</b>	<b>6183 VA</b>
<b>NEW LIGHTING LOADS:</b>	
DINING AREA/CUSTOMER SERVICE AREA/P.O.S. AREA/BREAK ROOM/RESTROOM:	
* (56) TYPE 'D1' & 'D1E' LED RECESSED DOWNLIGHT AT 18W EACH X 125% .....	1120 VA
* (7) TYPE 'D2' WALL WASH RECESSED DOWNLIGHT AT 7W EACH X 125% .....	61 VA
* (10) TYPE 'F1B' & 'F1SE' LED RECESSED DOWNLIGHT AT 25W EACH X 125% .....	313 VA
* (2) TYPE 'E2' SLM MEDIUM PENDANT LIGHT AT (15W/FT) EACH X 125% .....	300 VA
* (5) TYPE 'E1' LED BLUE ROUND PENDANT LIGHT AT 31W EACH X 125% .....	194 VA
* (6) TYPE 'D3' LED HIGHBAY LIGHT FIXTURE AT 100W EACH .....	750 VA
(14) RECEPTACLE AT 180W EACH .....	2520 VA
(4) RECEPTACLE OUTLET FOR KIDSPACE GAME AT 180W EACH .....	720 VA
(1) RECEPTACLE OUTLET FOR SPARKLE TABLE TOP AT 180W EACH .....	180 VA
(2) KIOSK AT 1080W EACH .....	2160 VA
(1) BASE REFRIGERATOR (3.2A AT 120V, 1PH) .....	384 VA
(1) BLENDER-MCFLURRY-COUNTERTOP (2.6A AT 120V, 1PH) .....	360 VA
(1) AUTOMATED BEVERAGE SYSTEM (5A AT 120V, 1PH) .....	600 VA
(1) ABS PRE-COOLER (14.9A AT 120V 1PH) .....	1788 VA
(1) ICE MACHINE-1000 LB. (1.1A AT 120V, 1PH) .....	132 VA
(1) LED PLUCK LIGHT IN HAPPY MEAL DISPLAY AT 200W EACH .....	200 VA
(1) RECEPT FOR POS-RECEIPT PRINTER AT 84W EACH .....	84 VA
(1) RECEPT FOR STICKEY LABEL PRINTER AT 84W EACH .....	84 VA
(1) RECEPT FOR POS-VIDEO MONITOR WITH SUPPORT AT 180W EACH .....	180 VA
(1) RECEPT FOR POS-VIDEO MONITOR AT 180W EACH .....	180 VA
(2) RECEPT FOR DELIVERY TABLET AT 180W EACH .....	360 VA
(1) RECEPT FOR POS REGISTER-DELIVERY AT 360W EACH .....	360 VA
(1) RECEPT FOR ORB MINI MONITOR AND ORB SCANNER .....	360 VA
(2) RECEPT FOR FUTURE BAKED GOODS DISP. CASE AT 180W EACH .....	360 VA
SUB-TOTAL .....	13750 VA
<b>BUILDING EXTERIOR:</b>	
* TYPE 'CL1' LED TAPE LIGHT WITH (1) 75W DRIVER X 125% .....	94 VA
* TYPE 'CL2' LED TAPE LIGHT WITH (1) 50W DRIVER X 125% .....	63 VA
* TYPE 'CL3' LED TAPE LIGHT WITH (1) 50W DRIVER X 125% .....	63 VA
* (1) 'PLAYPLACE' LOGO SIGNAGE (LED ILLUM. CHANNEL, 1.6A AT 120V) X 125% .....	240 VA
* (2) TYPE 'SLED4-H' LED STRIP LIGHT AT 19W EACH X 125% .....	48 VA
* (3) TYPE 'S1W' LED WALL SCONCE AT 14W EACH X 125% .....	53 VA
(1) ICE MACHINE REMOTE CONDENSER-1000 LB. (10.8A AT 208V, 3PH) .....	3886 VA
(1) RTU-4 (32.8A AT 208V, 3PH) .....	11803 VA
(3) RECEPT FOR HVAC UNIT SERVICE AT 180W EACH .....	360 VA
(1) J-BOX FOR DUCK SMOKE DETECTOR AT 200W EACH .....	200 VA
SUB-TOTAL .....	16810 VA
<b>TOTAL NEW ADDITIONAL LIGHTING LOADS .....</b>	<b>30560 VA</b>
<b>TOTAL NEW ADDED LOADS (NEW LOADS - REMOVED LOADS) .....</b>	<b>24377 VA</b>
<b>TOTAL NEW ADDED LOADS IN AMPS (AT 120/208V, 3PH) .....</b>	<b>68 AMPS</b>



## 1 ONE-LINE DIAGRAM - PARTIAL

N.T.S

### IMPORTANT NOTES:

- ELECTRICAL CONTRACTOR SHALL CONDUCT ELECTRICAL LOAD MONITORING TEST TO EXISTING PANEL 'LP1' IN ACCORDANCE WITH NEC 220.87, TO ENSURE EXISTING PANEL CAN ACCOMMODATE NEW LOADS, PRIOR TO COMMENCEMENT OF WORK. PROVIDE ENGINEER OF RECORD WITH THE RESULTS. COORDINATE WITH ENGINEER OF RECORD FOR FURTHER DIRECTION. (LOAD MONITORING TEST SHALL CONTINUOUSLY RECORDED OVER A MINIMUM 30-DAY PERIOD MEASURING OF AVERAGE POWER DEMAND OVER A 15-MINUTE PERIOD, NEC 220.87 (1) EXCEPTION.)
- ELECTRICAL CONTRACTOR SHALL SECURE 'MDP' HIGH KW DEMAND FROM POWER COMPANY, PRIOR TO COMMENCEMENT OF WORK. PROVIDE ENGINEER OF RECORD WITH THE DATA. COORDINATE WITH ENGINEER OF RECORD FOR FURTHER DIRECTION.
- CHANGES ON THE ELECTRICAL DESIGN WHICH RESULTED FROM THE LOAD TEST FROM THE EXISTING PANEL AND 'MDP' SHALL REQUIRE ELECTRICAL PLAN CITY RESUBMITTAL.

### FAULT CURRENT CALCULATIONS (SINGLE PHASE)

FAULT 'FC'	POINT OF CALCULATED FAULT	FAULT ORIGIN	FAULT @ ORIGIN AFC	LINE VOLTS (V)	CU-MAG=1 CU-NMAG=2 AL-MAG=3 AL-NMAG=4	WIRE LENGTH L (FT)	WIRE SIZE (AWG)	NO OF SETS N	"C" VALUE (COND.)	"F" FACTOR	"M" FACTOR 1/(1+F)	CALCULATED FAULT 'FC'
FC3	LIGHTING CONTROL	PANEL 'LP1'	50,514	120	1	7	12	1	617	9.55	0.09	4,787

### FAULT CURRENT CALCULATIONS (THREE PHASE)

FAULT 'FC'	POINT OF CALCULATED FAULT	FAULT ORIGIN	FAULT @ ORIGIN AFC	LINE VOLTS (V)	CU-MAG=1 CU-NMAG=2 AL-MAG=3 AL-NMAG=4	WIRE LENGTH L (FT)	WIRE SIZE (AWG)	NO OF SETS N	"C" VALUE (COND.)	"F" FACTOR	"M" FACTOR 1/(1+F)	CALCULATED FAULT 'FC'
FC1	PANEL 'CP1'	MDP	65,000	208	1	20	4/0	1	15082	0.72	0.58	37,859
FC2	PANEL 'LP1'	MDP	65,000	208	1	8	4/0	1	15082	0.29	0.78	50,514

### FAULT CURRENT NOTES:

- PROVIDE ENGRAVED NAMEPLATES TO COMPLY WITH NEC 110.22 AS FOLLOWS  
A. NAMEPLATE AT DOWNSTREAM PANEL 'CP1' TO READ: (FOR TWO TIERED SERIES RATED SYSTEMS)  
**CAUTION - SERIES COMBINATION SYSTEM RATED 65,000/10,000 AMPERES. IDENTIFIED REPLACEMENT COMPONENTS REQUIRED.**
- NO DESIGN CHANGES MAY BE MADE TO THE SYSTEMS WITHOUT PRIOR APPROVAL FROM THE DESIGN ELECTRICAL ENGINEER AND THE ELECTRICAL INSPECTOR.
- REFER TO PANELBOARD SCHEDULES FOR PANEL RATING.
- CONDUCTOR LENGTH SHOWN ARE SHORTEST PATH FOR USE IN CALCULATIONS ONLY AND ARE NOT INTENDED FOR USE IN BIDDING OR CONSTRUCTION. ACTUAL LENGTH MUST BE FIELD MEASURED AND VERIFY BY THE CONTRACTOR, AND REPORTED TO ENGINEER IF DESIGN CHANGES ARE REQUIRED.

### GENERAL NOTES:

- CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS UNDER WHICH HE IS TO PERFORM HIS WORK. NO ALLOWANCE WILL BE MADE FOR FAILURE TO COMPLY.
- ELECTRICAL WORK SHALL COMPLY WITH THE LATEST ENACTED EDITIONS OF THE NEC AND ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES AND ORDINANCES.
- FURNISH AND INSTALL ALL NECESSARY LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS REQUIRED TO INSTALL COMPLETE AND OPERATIONAL ELECTRICAL SYSTEMS ACCORDING TO THE INTENT OF THESE DRAWINGS AND ASSOCIATED SPECIFICATIONS WHETHER ITEMIZED OR NOT.
- THE ELECTRICAL CONTRACTOR SHALL HAVE THOROUGHLY EXAMINED THE SITE AND FAMILIARIZED HIMSELF WITH THE EXISTING CONDITIONS, AND SHALL HAVE MADE ALLOWANCE THEREFORE IN PREPARING HIS PROPOSAL. HE SHALL VERIFY EXISTING CONDITIONS, PULL BOXES, ELECTRICAL DISTRIBUTION SYSTEMS AND DEMOLITION REQUIREMENTS PRIOR TO SUBMITTING A BID.
- IN THE EVENT OF DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THE DRAWINGS, THE ELECTRICAL CONTRACTOR SHALL BID NEW CONDITIONS, WIRES AND NECESSARY EQUIPMENT IN ORDER TO COMPLETE THE JOB AND PROVIDE A FULLY OPERABLE AND ACCEPTABLE SYSTEMS. EXTRAS WILL NOT BE ALLOWED FOR WORK NOT INDICATED OR NOTED ON THE DRAWINGS WHEN SUCH WORK IS APPARENT FROM AN INSPECTION OF THE PREMISES AT THAT TIME.
- ALL MATERIALS USED ON THIS PROJECT SHALL BE LISTED AND BEAR THE LABEL OF UNDERWRITERS LABORATORIES AND APPROVED FOR ITS INTENDED USE.
- ALL MATERIAL AND EQUIPMENT IS TO BE LISTED AND INSTALLED PER MANUFACTURER'S SPECIFICATIONS AND NEC 110.3.
- ALL EQUIPMENT EXPOSED TO WEATHER CONDITIONS SHALL BE WEATHERPROOF, NEMA RATED AS REQUIRED PER NEMA AND U.L. STANDARDS UNO.
- ALL RACEWAYS AND CONDUITS SHALL HAVE A SEPARATE INSULATED EQUIPMENT GROUNDING CONDUCTOR COLOR GREEN, SIZED IN CONFORMITY WITH NEC 250.122.
- ADDITIONAL EXIT SIGNS AND EMERGENCY LIGHTING MAY BE REQUIRED. ADDITIONAL FIXTURES SHALL BE LOCATED AS DIRECTED BY THE LOCAL BUILDING INSPECTOR OR ARCHITECT.
- THE ELECTRICAL CONTRACTOR SHALL TAG EACH CIRCUIT CONDUCTOR AT EACH JUNCTION BOX, OUTLET, SWITCH, ETC. WITH THE CORRESPONDING PANEL AND BRANCH CIRCUIT DESIGNATION IN COMPLIANCE WITH NEC 408.4 FOR REQUIRED CIRCUIT IDENTIFICATION.
- WORKMANSHIP SHALL BE OF THE HIGHEST GRADE. DEFECTIVE EQUIPMENT OR EQUIPMENT DAMAGED IN THE COURSE OF INSTALLATION OR TEST SHALL BE REPLACED OR REPAIRED IN A MANNER MEETING WITH THE APPROVAL OF THE OWNER.

### KEYED NOTES:

- EXISTING POWER COMPANY SECONDARY FEEDERS.
- EXISTING GROUNDING SYSTEM TO REMAIN.
- NEW 4 #4/0 XHHW CU., 1 #4 CU. ISOLATED GRD., 1 #4 CU. GRD. IN 2-1/2" C.
- EXISTING 4 #4/0 CU., 1 #4 CU. BOND IN 2-1/2" C.
- EXISTING LIGHTING CONTROLLER TIMSWITCH (ASTROMICAL DIGITAL TIME-SWITCH). SEE LIGHTING CONTROL DIAGRAM DETAIL 2.
- 2 #12 THWN CU., 1 #12 CU. BOND, 1/2" C. CONDUCTORS FROM PANEL 'LP1' TO LIGHTING CONTROL IF REQUIRED. PROVIDE WITH 7FT MINIMUM WIRE LENGTH TO BRING DOWN FAULT CURRENT. FIELD VERIFY.

### NOTE:

THE FEEDER SIZES SHOWN ON THE ONE-LINE DIAGRAM WERE SIZED BASED ON THE SIZE OF OVER CURRENT PROTECTION (CB/FUSE) RATINGS, PER NEC TABLE 310.16. THE ELECTRICAL CONTRACTOR SHALL FIELD VERIFY ACTUAL CONDUCTOR SIZES PRIOR TO COMMENCEMENT OF WORK. ANY DISCREPANCIES SHALL INFORM THE ENGINEER OF RECORD.

### RENOVATION NOTES:

- ELECTRICAL SYSTEM LAYOUTS INDICATED ARE GENERALLY DIAGRAMMATIC AND LOCATIONS OF OUTLETS AND EQUIPMENT ARE APPROXIMATE. EXACT ROUTING OF RACEWAYS, CABLES, WIRING, LOCATIONS OF OUTLETS AND EQUIPMENT SHALL BE GOVERNED BY STRUCTURAL CONDITIONS AND COORDINATED WITH WORK OF OTHER TRADES. DO NOT SCALE INFORMATION OFF OF DRAWINGS, UNLESS EXACT DIMENSIONS ARE GIVEN.
- ANY ITEMS NOT MENTIONED ON THESE NOTES OR NOT INDICATED ON THE PLANS BUT WHICH ARE NECESSARY FOR SUCCESSFUL AND EFFICIENT OPERATION OF THE WORK SHALL BE HELD TO BE IMPLIED AND SHALL BE FURNISHED AND INSTALLED AS PART OF THE CONTRACT.
- GROUT AND SEAL ALL CONDUIT PENETRATIONS OF WALLS AND FLOOR SLABS TO PRESERVE FIRE RATING AND WATERTIGHT INTEGRITY.
- EXISTING CONDUIT RUNS ARE GENERALLY NOT SHOWN. EXISTING RUN SHALL BE VERIFIED AS TO EXACT LOCATION.
- EXISTING ELECTRICAL WIRING WHICH WILL NOT BE MADE OBSOLETE AND WHICH WILL BE DISTURBED DUE TO CONSTRUCTION CHANGES REQUIRED BY THIS CONTRACT SHALL BE RESTORED TO OPERATING CONDITION AS REQUIRED AND/OR DIRECTED. OUTLETS AND CONDUIT RUNS SHALL BE SHOWN AND/OR DIRECTED. OUTLETS AND CONDUIT RUNS SHALL BE RELOCATED. IN SOME CASES IT MAY BE NECESSARY TO EXTEND CONDUITS AND PULL IN NEW WIRING OR INSTALL JUNCTION BOXES AND SPLICE IN NEW WIRING OR REPLACE OLD WIRING WITH NEW.
- MAINTAIN CONTINUITY OF CIRCUIT WHERE EXISTING EQUIPMENT OR DEVICE IS TO BE REMOVED AND DOWN STREAM DEVICES MAY BE AFFECTED.
- OUTLETS FROM WHICH FIXTURES, SWITCHES, RECEPTACLES AND/OR OTHER ELECTRICAL DEVICES ARE MOVED AND WHICH ARE NOT REPLACED OR REUSED SHALL BE REMOVED OR, IF IT IS NOT POSSIBLE TO REMOVE, PLACE A BLANK COVER ON THE OUTLET BOX. WHERE OUTLETS, BOXES, ETC., ARE COMPLETELY REMOVED, THE CONTRACTOR SHALL CUT OFF CONDUITS AND REMOVE WIRING.
- WHERE CONDUITS EXTENDING THROUGH FLOORS ARE TO BE ABANDONED, THE CONTRACTOR SHALL CUT AND CAP OR PLUG CONDUIT, THAT IT WILL NOT PROTRUDE ABOVE THE FLOOR.
- WHERE EXISTING CONDUIT IS TO BE ABANDONED, THE CONDUIT SHALL BE REMOVED IF IT IS EXPOSED, IN A CRAWL SPACE OR IN AN ACCESSIBLE CEILING. REMOVE ALL CONDUIT AND WIRE BACK TO PANEL IF NOT BEING REUSED. WHERE IT IS IMPOSSIBLE TO REMOVE THE CONDUIT, IT SHALL BE CUT OFF CAPPED OR PLUGGED.
- THE CONTRACTOR SHALL FULLY RESPONSIBLE FOR THE PROPER RESTORATION OF OF ALL EXISTING SURFACES REQUIRING PATCHING, PLASTERING PAINTING AND/OR OTHER REPAIR DUE TO THE INSTALLATION OF ELECTRICAL WORK UNDER THE TERMS OF THIS SPECIFICATION. CLOSE ALL OPENINGS, REPAIR ALL SURFACES, ETC., AS REQUIRED.
- THE CONTRACTOR SHALL EMPLOY QUALIFIED AND EXPERIENCED WORKMEN FOR THIS WORK. ALL RESTORATION WORK SHALL BE SUBJECT TO THE APPROVAL OF THE ARCHITECT.
- THE CONTRACTOR SHALL EXERCISE CARE SO THAT ONLY THE CONSTRUCTION INDICATED OR REASONABLY IMPLIED TO REMOVED SHALL BE DEMOLISHED. THE EXISTING CONSTRUCTION TO REMAIN SHALL BE LEFT INTACT AND UNDAMAGED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL DEMOLITION AND CONSTRUCTION DEBRIS GENERATED FROM ALL WORK. TAKING CARE TO PREVENT EXCESSIVE LOADING OF FLOOR ASSEMBLIES.

### NOTES:

- PROVIDE ARC-FLASH MARKINGS. SWITCHBOARDS, PANELBOARDS, INDUSTRIAL CONTROL PANELS, METER SOCKET ENCLOSURES, AND MOTOR CONTROL CENTERS THAT ARE IN OTHER THAN DWELLING OCCUPANCIES AND ARE LIKELY TO REQUIRE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE WHILE ENERGIZED SHALL BE FIELD MARKED TO WARN QUALIFIED PERSONS OF POTENTIAL ELECTRIC ARC FLASH HAZARDS. THE MARKING SHALL BE LOCATED SO AS TO BE CLEARLY VISIBLE TO QUALIFIED PERSONS BEFORE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE OF THE EQUIPMENT. IN COMPLIANCE WITH N.E.C. 110.16.
- COORDINATE WITH PANELBOARD MANUFACTURER CORRECT TYPE OF CIRCUIT BREAKERS TO ACHIEVE SERIES RATING SYSTEM PRIOR TO ORDERING.
- ELECTRICAL CONTRACTOR SHALL UPDATE PANELBOARD CIRCUIT DIRECTORIES.

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FIRM C OF A NO:

SIGNED BY:  
OMID ARDEBILI  
PROFESSIONAL ENGINEER  
EXP. 12/31/2021

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PROJECT TITLE  
MCDONALD'S RESTAURANT  
KC MO-OAK: 2019 MOD C  
ELECTRICAL ONE-LINE DIAGRAM,  
LOAD CALCULATIONS AND GENERAL NOTES  
9551 N MCGEE STREET KANSAS  
CITY MO 64155

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