



1 ELECTRICAL SINGLE LINE DIAGRAM
E6.04 SCALE: NONE

GENERAL ELECTRICAL NOTES:

- ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE MOST RECENT ADOPTED NFPA, NATIONAL ELECTRIC CODE, AND LOCAL CODES.
- ALL MATERIALS, DEVICES, APPLIANCES, AND EQUIPMENT SHALL BE NEW AND LABEL LISTED BY AN APPROVED THIRD PARTY TESTING AGENCY APPROVED BY THIS STATE.
- WIRING SHALL BE COPPER SINGLE CONDUCTORS. MINIMUM WIRE SIZE IS #12 AWG. CONDUCTORS #8 AND LARGER SHALL BE TYPE THHN OR THWN STRANDED. #12 THRU #10 SHALL BE THWN SOLID. WIRE TO LIGHT FIXTURES SHALL BE AS REQUIRED BY U.L. LABEL. COLOR CODE CONDUCTORS.
- CONDUITS SHALL BE STEEL INDOORS AND SCHEDULE 40 PVC OUTDOORS OR BELOW FLOOR SLAB. EMT SHALL BE USED FOR SIZES 1/2" THROUGH 3 1/2".
- CONNECT ALL HVAC, PLUMBING AND OTHER CONTRACTOR OR OWNER FURNISHED EQUIPMENT. VERIFY ALL LOCATIONS OF HVAC, PLUMBING AND OTHER CONTRACTOR OR OWNER FURNISHED EQUIPMENT PRIOR TO ROUGH-IN. CHECK EQUIPMENT SHOP DRAWINGS AND COORDINATE WITH HVAC, PLUMBING, AND ALL OTHER EQUIPMENT CONTRACTORS FOR DISCONNECT SWITCH, CONDUIT, WIRING REQUIREMENTS, FUSE AND BREAKER SIZES, VOLTAGE REQUIREMENTS AND LOCATIONS. PROVIDE A TIMER FOR ALL PLUMBING RECIRCULATION PUMPS. MAKE ALL NECESSARY REVISIONS TO THESE ITEMS AT NO ADDITIONAL COST TO THE OWNER.
- ELECTRICAL CONTRACTOR SHALL PROVIDE LOAD DATA SHEET, TO THE POWER COMPANY, AT THE BEGINNING OF THE PROJECT, AS PER LOAD BREAKDOWN SHOWN ON PLANS.
- ELECTRICAL CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS FOR ONE YEAR EFFECTIVE THE DAY THE PROJECT IS ACCEPTED BY THE OWNER. EXCEPTION: INCANDESCENT LIGHT BULBS SHALL BE GUARANTEED FOR 30 DAYS.
- THE ELECTRICAL CONTRACTOR SHALL VISIT THE JOBSITE PRIOR TO SUBMISSION OF BID TO FAMILIARIZE HIMSELF WITH THE CONDITIONS UNDER WHICH THE WORK WILL BE PERFORMED AND THE EXTENT OF WORK REQUIRED. INCLUDE ALL COST IN BID PRICE.
- SUPPORT ALL CONDUITS WITH STRAPS AND CLAMPS. RUN ALL CONDUIT PARALLEL OR PERPENDICULAR TO BUILDINGS.
- ELECTRICAL DEMOLITION, RELOCATION OF EXISTING EQUIPMENT, CUTTING AND PATCHING REQUIRED FOR THE INSTALLATION OF THIS NEW WORK IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. THE EXTENT OF THE WORK REQUIRED SHALL BE DETERMINED DURING THE PREBID JOBSITE VISIT.
- ALL STRAPPING OF CONDUIT SHALL COMPLY WITH ARTICLE 162.1 OF THE INTERNATIONAL BUILDING CODE.
- FOR ALL BREAKERS AND DEVICES:
 - SERIES RATING NOT ALLOWED.
 - THE MANUFACTURER OF THE MAIN SWITCHGEAR, AND/OR PANEL BOARDS SHALL PROVIDE A COORDINATION STUDY AND A SHORT CIRCUIT STUDY, AND ARC FLASH ANALYSIS TO DETERMINE ALL SETTINGS OF ELECTRONIC BREAKERS, GFI SETTINGS, AND ADJUSTABLE TRIP SETTINGS ON ALL NON-ELECTRONIC BREAKERS. THESE SETTINGS SHALL BE INCLUDED IN THE SHOP DRAWINGS FOR THE ENGINEERS REVIEW. SHOP DRAWINGS WILL BE REJECTED IF SETTINGS ARE NOT INCLUDED THE MANUFACTURER OF THE MAIN SWITCHGEAR, AND/OR PANELBOARDS SHALL BE RESPONSIBLE FOR OBTAINING ALL INFORMATION FROM THE GENERATOR MANUFACTURER, HVAC MANUFACTURER, FIELD VERIFYING ANY EXISTING BREAKERS, OR OBTAINING ANY PIECE OF BREAKER DATA WHICH WILL BE NEEDED FOR THE COORDINATION STUDY.
 - THE ELECTRICAL CONTRACTOR TO PROVIDE ARC FLASH LABELS ON ALL PANELS AS REQUIRED PER N.E.C. LABELING SHALL INCLUDE:
 - THE PANEL NAME
 - THE CLASSIFICATION
 - THE SHOCK HAZARD LEVEL WHEN COVER IS REMOVED AND LIMITED.
 - THE PROTECTION REQUIRED.
 - THE RESTRICTED AND PROHIBITED APPROACH BOUNDARIES.
 - THE MANUFACTURER OF THE MAIN SWITCHGEAR, AND/OR PANELBOARDS SHALL SELECT BREAKERS THAT ARE CAPABLE OF BEING ADJUSTED TO ALLOW FOR A MAXIMUM ARC FLASH RATING OF 3.
- PROVIDE MIN. 24" HORIZONTAL SEPARATION BETWEEN BOXES INSTALLED IN OPPOSITE SIDES OF A SAME WALL AS INDICATED IN N.E.C. 300.21
- ALL DISCONNECTS SHALL BE HEAVY DUTY RATED, WITH ARC GUARD, AND SHALL HAVE A MECHANICAL INTERLOCK TO PREVENT THE DOOR FROM BEING OPENED, WITHOUT DEFEATING THE INTERLOCK. THE MECHANICAL INTERLOCK SHALL ALSO PREVENT ACTIVATING THE SWITCH WHEN THE DOOR IS OPEN. THE MECHANICAL INTERLOCK SHALL BE DEFEATABLE BY A SPECIAL TOOL, AND SHALL BE U.L. LISTED AS PART OF THE DISCONNECT.
- SERVICE GROUND IMPEDANCE SHALL BE MEASURED, AND SHALL BE 5 OHMS OR LESS. IF UPON MEASUREMENT, SERVICE GROUND READING EXCEEDS 5 OHMS, THEN ADDITIONAL GROUND RODS SHALL BE DRIVEN TO REDUCE READING TO 5 OHMS OR LESS. NOTIFY ENGINEER OF FINAL SERVICE GROUND MEASUREMENT.
- BREAKERS THAT FEED CONTACTORS AND TIME CLOCKS TO BE CURRENT LIMITING TO ALLOW A MAXIMUM LET THRU OF 22K AIC WITH 80K AIC AVAILABLE.
- ALL TERMINATIONS ON PANELS SHALL HAVE DUAL RATED 60°C/75°C LUGS.
- PROVIDE INTERNAL OR EXTERNAL DISCONNECTING MEANS FOR EACH FLUORESCENT LUMINARE THAT UTILIZES DOUBLE-ENDED LAMPS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE TO COMPLY WITH N.E.C. 410.130(G).
- ELECTRICAL CONTRACTOR TO PROVIDE SEPARATE NEUTRAL FOR EACH BRANCH CIRCUIT TO MEET NEC 210.4. NO SHARED NEUTRALS OR MULTIPLE BRANCH BREAKERS.

- SERVICE CONDUCTORS SHALL CONFORM TO N.E.C. 230.6
- ALL METAL HALIDE BALLAST SHALL BE PULSE START TYPE.
- ALL TELECOMMUNICATIONS CONDUIT, SLEEVES, OR PATHWAYS ARE TO BE LONG SWEEPING TYPE. ALL CONDUITS (BENDING RADIUS) ARE TO BE INSTALLED PER MANUFACTURER'S AND TELECOM CONTRACTOR'S RECOMMENDATIONS.
- THE ELECTRICAL CONTRACTOR SHALL FIELD SURVEY THE INTERIORS OF ALL PANELS AND SWITCHGEAR IN WHICH BREAKERS ARE BEING INSTALLED, AND VERIFY THAT ALL INTERIOR BUSSING AND FRAMES ARE AVAILABLE PRIOR TO SUBMISSION OF BID. ANY ADDITIONAL BUSSING REQUIRED WITHIN PANELS AND SWITCHGEAR SHALL BE INCLUDED IN BID PRICE.
- ALL EGRESS LIGHTING SHALL COMPLY WITH N.C. BUILDING CODE SECTION 1006.2. THE ELECTRICAL CONTRACTOR SHALL VERIFY THIS IN THE FIELD AND ADD ADDITIONAL EMERGENCY LIGHTS IF REQUIRED.
- NO OPEN FLAME DEVICES SHALL BE UTILIZED TO BEND PVC CONDUIT. ALL HEATING DEVICES MUST BE ENCLOSED FLAME (HEAT GUN OR HEAT ROLLER, NO TORCHES). ALL HEATING METHODS MUST BE APPROVED BY ELECTRICAL ENGINEER PRIOR TO INSTALLATION. ANY CONDUIT THAT HAS BEEN HEATED TO WHERE PVC IS DAMAGED OR DISCOLORED SHALL BE REMOVED AND REPLACED AT NO ADDITIONAL COST.
- ELECTRICAL CONTRACTOR TO VERIFY REFRIGERATION CIRCUITS ARE NOT OVERLOADED. LARGEST SIZE OF BREAKERS TO BE 30A FOR A/S AND LIGHTS, 15A ON CASE FANS (TYP.).
- ENERGY MANAGEMENT SYSTEM LIMITS COINCIDENTAL DEMAND PER MDP TO LESS THAN 800 AMPS, ALLOWING FOR MORE THAN 20% SPARE CAPACITY. NO FUTURE EXPANSIONS ARE PLANNED. PANEL SIZE SHALL NOT BE INCREASED WITHOUT PRIOR APPROVAL OF OWNER.
- FOR PANEL REQUIREMENTS VERIFY WITH REFRIGERATION SUMMARY. REFRIGERATION SUMMARY SHALL GOVERN DESIGN.
- ELECTRICAL CONTRACTOR TO REMOVE ANY MULTIPLE LANDED CONDUCTORS ON A SINGLE BREAKER AND CONNECT EACH CONDUCTOR TO A SINGLE BREAKER.
- ALL CIRCUITS FEEDING CASES SHALL BE LABELED WITH CASE REFRIGERATION CIRCUIT NUMBER ALONG WITH CASE TYPE. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY ALL CIRCUITS.
- ELECTRICAL CONTRACTOR VERIFY ALL CIRCUITS AND REMOVE ANY UNUSED CONDUCTORS IN ALL PANELS (FIELD VERIFY EACH BREAKER)

ELECTRICAL CONTRACTOR SHALL ENSURE THE FOLLOWING ITEMS ARE COMPLETE PRIOR TO CRESCENT COMMISSIONING VISIT:

- REPLACE ALL MISSING, BROKEN, OR OTHERWISE DEFICIENT JUNCTION BOX/DEVICE COVERS FOR PROJECT CLOSEOUT. NON WEATHER PROOF DEVICE COVERS ARE TO BE STAINLESS STEEL. WEATHERPROOF DEVICE COVERS ARE TO BE INSTALLED IN PREP AREAS AND OUTSIDE. ALL WP COVERS ARE TO BE AL (ALUMINUM.) SEE CRESCENT REPORT FOR FURTHER INFO.
- PROPERLY SEAL ALL CONDUITS ENTERING WALK-IN COOLERS AND FREEZERS TO PREVENT MOISTURE. SEE CRESCENT REPORT FOR FURTHER INFO.
- PROVIDE AND INSTALL FOUR (4) 1" EMPTY CONDUITS WITH PULL STRINGS FROM NEW PANEL "OW" TO ABOVE ACCESSABLE CEILING SPACE FOR FUTURE USE.
- REPLACE ALL MISSING LABELS AND TAGS ON PANELS, SAFETY DISCONNECTS, ELECTRICAL DISTRIBUTION EQUIPMENT MAIN BREAKERS. ALL CIRCUITS SHOULD BE PROPERLY LABELED WITH PHENOLIC TAGS. BLACK ON WHITE, 1.5" TALL. COORDINATE PHENOLIC TAG LABELS WITH ARCH FLASH REPORT PROVIDED BY CRESCENT.
- VACUUM ALL BRANCH CIRCUIT PANELBOARDS AND ALL ELECTRICAL ENCLOSURE COVERS SHALL BE INSTALLED AND ADEQUATELY SECURE TO OBTAIN PROJECT CLOSEOUT. SEE CRESCENT REPORT FOR FURTHER INFO.
- PLACE REFRIGERATION CONTROL CABLE IN CONDUIT.
- TIE UP ALL LOW VOLTAGE AND MC CABLE. NO NEW MC CABLE IS TO BE INSTALLED AS A HOME RUN OR BE VERTICALLY EXPOSED ON A WALL/ CONSTRUCTED ASSEMBLY.
- VERIFY ALL EMERGENCY LIGHTING BE ON A SCHEDULED CIRCUIT AND ON THE LINE SIDE OF ANY ENERGY MANAGEMENT CONTROL.
- PROVIDE AND INSTALL CORRECTED TYPE-WRITTEN DATED PANEL SCHEDULES IN ELECTRICAL PANELS (NEW AND EXISTING) AT THE END OF THE PROJECT. HAND WRITTEN SCHEDULES SHALL BE MAINTAINED THROUGHOUT THE PROJECT.
- ALL NEW DISCONNECTS SHALL BE GENERAL ELECTRIC, GENERAL DUTY AT MINIMUM ER RATED AS REQUIRED, AND NON FUSED UNLESS SPECIFIED OTHERWISE BY EQUIPMENT NAMEPLATE.
- TRACE ALL CIRCUITS AND PROPERLY IDENTIFY THOSE CIRCUITS ON THE PANEL SCHEDULES. WHERE THE FOOD LION CONSTRUCTION MANAGER HAS DIRECTED THE ELECTRICAL CONTRACTOR TO LEAVE A SPARE BREAKER WIRED TO A CERTAIN END LOCATION, THE BREAKER SHALL BE LABELED "SPARE TO JUNCTION BOX AT END LOCATION." ALL SPARE UNUSED BREAKERS SHALL HAVE UNUSED WIRE REMOVED AND BREAKER LABELED AS SPARE.
- CORRECT TERMINATIONS IN SWEAT MISCER PANEL. SEE CRESCENT REPORT FOR FURTHER INFO.

ELECTRICAL SINGLE LINE KEY NOTES

- REPLACE EXISTING FLEXIBLE CONDUIT CONNECTION TO ROOF-MOUNTED EQUIPMENT. PROVIDE LIQUIDTIGHT FLEXIBLE METAL CONDUIT WITH METAL FITTINGS. (CRESCENT POST-110)
- PROVIDE NEW 3-POLE 65KVA CIRCUIT BREAKER, AMP RATING INDICATED, TO MATCH LOAD EQUIPMENT MOPD. (CRESCENT POST-68)

ELECTRICAL CONTRACTOR SWITCHGEAR NOTES:

ELECTRICAL CONTRACTOR TO FURNISH AND INSTALL IN EXISTING "MDP-2":
(1) NEW 50A/3P 65KVA CIRCUIT BREAKER FOR CONDENSER "A".

COORDINATE FINAL REFRIGERATION SUMMARY WITH RISER DIAGRAM AND NOTIFY ENGINEER OF ANY DISCREPANCIES. COORDINATE REFRIGERATION RACK BREAKERS WITH FINAL REFRIGERATION SUMMARY PRIOR TO ORDERING ANY NEW BREAKERS.
THIS WORK SHALL BE COMPLETED EARLY IN THE PROJECT SEE EQUIPMENT DUTY REPORT IN ARC FLASH STUDY FOR DETAILS.

ELECTRICAL DEFICIENCIES TO BE REPAIRED

THE FOLLOWING ITEMS HAVE BEEN NOTED AS FOOD LION REQUIRED REPAIRS AS INDICATED ON THE CRESCENT CONSTRUCTION SERVICES, LLC. ELECTRICAL SURVEY REPORT AND ALL COST INVOLVED WITH MAKING THE REPAIRS SHALL BE INCLUDED IN THE ELECTRICAL CONTRACTOR'S SCOPE OF WORK FOR THIS PROJECT. ELECTRICAL CONTRACTOR SHALL REFER TO THE CRESCENT CONSTRUCTION SERVICES, LLC. ELECTRICAL SURVEY REPORT FOR ADDITIONAL INFORMATION AND REVIEW NOTES IN THIS LIST. THE ELECTRICAL CONTRACTOR SHALL LABEL ALL PANELS, COMPRESSOR RACKS AND DISCONNECTS WITH PROPER PHENOLIC TAGS.

NO	DESCRIPTION	SEE
POST-81	Existing Neutrals, Case Lighting & Fans: Existing refrigeration conduits in panelized gear suggest lights and fans are sharing neutrals. This only applies to new and relocated case work - lights and fans are to have dedicated neutrals.	SEE E1.03
POST-107	B #5; Bad Breaker: Replace, 15 amp, labeled as 6 DR FROZEN DELI AS LF	SEE E4.01
POST-110	RTU DB; Replace Broken "Seal Tite"Flex	SEE E6.04
POST-87	Install Egress Lighting (6): Install fixtures on the following doors: right side exit, DSD, drivers door, left side exit, & both front doors.	SEE E1.01
POST-79	Emergency Lighting: Fed from LA 1 & LB 40, 42, E Lights: front wall at IT, and at left entrance; along with both front Exits were confirmed to not illuminate when above circuits were deenergized. Repair, all emergency lighting shall be fed from a branch circuit panelboard, on the line side of any energy management controls, and shall be labeled / scheduled as such.	SEE E1.01
POST-68	Refrigeration Circuit Sizing: Engineer to size main breakers / conductors per MOPD / MCA requirements in revised refrigeration summary. See Disconnect Inventory for relative data.	SEE E6.04
POST-66	Panel Schedule Labeling: All schedules are to be 100% accurate, on a card stock, typed, dated, and installed in a clear pocket. EC shall go through ALL existing electrical panels to trace and verify all circuits for accuracy. Receptacles and lighting are to be labeled by area/location. Sales floor lighting circuits are to include row number. Case circuits are to reference refrigeration circuits. Spare is to be a breaker with no wire. Blank is an empty slot. All wired and active breakers shall be properly scheduled. Note: Wired breakers with no active load / device shall be labeled as Spare, Ending Location. Do Not remove existing panel schedules. Electronic copies of all panel schedules are required at closeout.	SEE E4.01, E6.01
POST-97	Panel LA Data; Schedule Incorrect:	SEE E6.01
POST-98	Panel LB Data; Schedule Incorrect	SEE E6.01
POST-99	Panel LC Data; Schedule Incorrect	SEE E6.01
POST-100	Panel PA Data; Schedule Incorrect	SEE E6.01
POST-101	Panel PB Data; Schedule Incorrect	SEE E6.01
POST-102	Panel PC Data; Schedule Incorrect	SEE E6.01
POST-103	Panel E Data; Schedule Incorrect	SEE E6.01
POST-104	Panel R Data; Schedule Incorrect	SEE E6.01
POST-106	Panel D Data; Schedule Incorrect	SEE E4.01
POST-111	Panel B Data; Schedule Incorrect	SEE E4.01
POST-108	Panel OW Data; Schedule Incorrect	SEE E6.01
POST-109	Panel CR Data; Schedule Incorrect	SEE E6.01

PROFESSIONAL'S SEAL:



08/29/2022

CORPORATE SEAL:

REVISIONS
NO DATE REMARKS

PROJECT NO: 1657/FLMK22
DATE: 08/29/2022

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E6.04

ELECTRICAL RISER
DIAGRAM & NOTES

CHECKED: DOD DRAWN: BDB