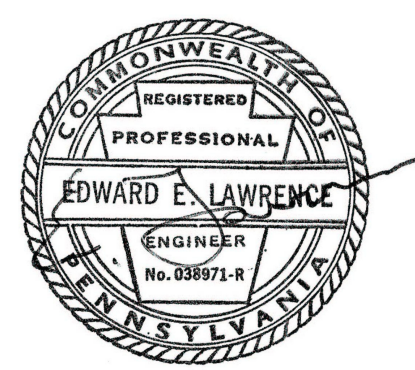




**BURGER KING RESTAURANT #3534**  
ALTERNATIONS TO EXISTING RESTAURANT  
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Quakertown PA 18951,  
Richland Township, Bucks County



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**SINGLE LINE DIAGRAM E1.0**

- ELECTRICAL CONTRACTOR (EC) - GENERAL NOTES:**
- ALL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND OTHER APPLICABLE CODES AND STANDARDS.
  - ALL DEVICE BOXES SHALL BE INSTALLED FLUSH AND CONDUITS RUN CONCEALED IN FINISHED AREAS EXCEPT AS SPECIFICALLY SHOWN/NOTED OTHERWISE.
  - INSTALL POWER AND CONTROL WIRING AND REQUIRED CONTROL COMPONENTS FOR AIR CONDITIONING SYSTEMS AS SHOWN/NOTED ON THE DRAWINGS AND PER OTHER APPLICABLE DRAWINGS/INSTRUCTIONS. REFERENCE MECHANICAL DRAWINGS.
  - WIRE SIZE SHALL BE #12 (MINIMUM) UNLESS OTHERWISE NOTED. WIRE SIZES SMALLER THAN #6 AWG SHALL BE THHN/THWN. #6 AWG WIRE AND LARGER SHALL BE THW, UNLESS NOTED OTHERWISE.
  - WIRE (CONDUCTOR) COLORS SHALL BE AS PER APPLICABLE CODES.
  - ALL CONDUCTORS SHALL BE COPPER.
  - ALL CONDUCTORS SHALL BE RUN IN CONDUIT, EXCEPT LOW VOLTAGE CONTROL AND COMMUNICATIONS CABLES.
  - ALL MATERIALS SHALL BE UL APPROVED.
  - ALL BRANCH CIRCUITS TO HAVE A GREEN EQUIPMENT GROUNDING CONDUCTOR SIZED AS PER NEC 250-122.
  - PVC (SCHEDULE 40) PERMITTED BELOW SLAB AND BELOW GRADE ONLY.
  - IT IS INTENDED THAT AN EQUIPMENT GROUND CONDUCTOR (GREEN) SHALL BE RUN IN POWER CIRCUIT CONDUITS WHETHER OR NOT THE CONDUIT IS PVC.
  - ALL EMPTY CONDUITS TO BE PROVIDED WITH NYLON PULL STRING.
  - NEW TYPEWRITTEN PANEL DIRECTORY SHALL BE FURNISHED AFTER JOB IS COMPLETED REFLECTING ALL AS BUILT CONDITIONS.
  - ALL BRANCH CIRCUITS SHALL BE PROPERLY PHASE BALANCED.
  - ALL DATA EQUIPMENT TO BE FED BY A DEDICATED CIRCUIT WHICH CONSISTS OF A POWER CIRCUIT THAT FEEDS THIS TYPE OF EQUIPMENT ONLY WITH A SEPARATE ADDITIONAL GREEN GROUNDING CONDUCTOR CARRIED ALL THE WAY BACK TO THE PANEL TO BE CONNECTED TO THE ISOLATED GROUNDING SYSTEM.
  - FUSES SHALL BE DUAL ELEMENT, TIME DELAY TYPE UNLESS OTHERWISE NOTED.
  - EC SHALL VERIFY INTERIOR DECOR THEME TO BE USED AND COORDINATE WITH SAID THEME.
  - EC SHALL INSTALL AND CONNECT WIRING TO ALL SIGNS.
  - EC TO COORDINATE ROUGHING-IN TO ALL EQUIPMENT WITH EQUIPMENT SUPPLIER PRIOR TO INSTALLING CONDUITS.
  - ALL CONDUIT RUNS TO KITCHEN EQUIPMENT SHALL BE RUN ABOVE CEILING.
  - MAINTAIN 12" CLEARANCE BETWEEN P.O.S. COMMUNICATION CONDUITS AND LIGHTING FIXTURES AS WELL AS POWER CONDUITS..
  - CUTTING AND NOTCHING OF 2x4 BEARING WALL FRAMING NOT TO EXCEED 7/8". BORING HOLES IN 2x4 BEARING WALL FRAMING NOT TO EXCEED 2 1/8".

- ELECTRICAL CONTRACTOR (EC) - H.V.A.C.:**
- THE EC SHALL FURNISH AND INSTALL PITCH PANS FOR POWER AND CONTROL WIRING AND TO MAINTAIN 12" MINIMUM CLEARANCE FROM BACK PANEL OF AIR CONDITIONING UNITS.
  - EC SHALL INSTALL ALL LOW-VOLTAGE CONTROL WIRING FOR ALL AIR CONDITIONING UNITS AND FANS. COORDINATE AIR CONDITIONING AND ELECTRICAL PLANS.
  - EC SHALL FURNISH AND INSTALL DISCONNECTS FOR AIR CONDITIONING UNITS.
  - EC SHALL USE A MINIMUM OF 4'-6" SEALTITE FLEXIBLE CONDUIT WHEN WIRING KITCHEN HOOD EXHAUST FANS ON ROOF SO THAT FANS MY BE REMOVED FROM CURBS AND PLACED ON ROOF FOR CLEANING EXHAUST DUCTWORK.
  - IF REQUIRED BY LOCAL CODE, EC SHALL PROVIDE COMPONENTS - AUDIBLE AND VISUAL ANNUNCIATORS AND SINGLE-GANG RECEPTACLES TEST STATIONS WITH GREEN AND RED LIGHT INDICATORS. EACH KITCHEN UNIT WILL BE EQUIPPED AND THE FIRE AND MECHANICAL INSPECTORS WILL DETERMINE SUITABLE LOCATION FOR TEST STATIONS. ANNUNCIATORS AND TEST STATION WILL BE LOOPED IN THE CIRCUITRY OF THE SMOKE DETECTION DEVICES. WIRING WILL BE SUPPLIED AND COMPLETED BY THE EC.

- ELECTRICAL CONTRACTOR (EC) - KITCHEN EQUIPMENT:**
- EC TO PROVIDE AND INSTALL RECEPTACLES, CAPS AND CORDS AS REQUIRED. CAPS AND CORDS ARE TO BE INSTALLED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
  - EC TO CONNECT ELECTRICAL SERVICE DIRECTLY TO EQUIPMENT ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
  - EC TO RECONNECT ELECTRICAL CIRCUITS ON PRE-WIRED EQUIPMENT DISASSEMBLED FOR SHIPMENT.
  - WHERE EQUIPMENT IS NOT PRE-WIRED, EC TO CONNECT THE ELECTRICAL SERVICE AND PROVIDE INTER-WIRING AS REQUIRED.
  - WHERE RECEPTACLES ARE PROVIDED WITH THE EQUIPMENT, EC TO PROVIDE AND INSTALL ELECTRICAL SERVICE DOWN FROM ABOVE THROUGH THE SERVICE CHASE PROVIDE WITH THE EQUIPMENT.
  - KITCHEN EQUIPMENT SUPPLIER DRAWINGS INCLUDE ONLY THOSE RECEPTACLES REQUIRED FOR SPECIFIC KITCHEN EQUIPMENT. REFER TO THE ARCHITECTS/ENGINEERS ELECTRICAL DRAWINGS FOR LOCATIONS OF UTILITY AND GENERAL PURPOSE RECEPTACLES.
  - EC TO VERIFY THE UTILITY REQUIREMENTS FOR ITEMS NOT PROVIDED BY THE KITCHEN EQUIPMENT SUPPLIER.
  - ALL PORTIONS OF WORK SHALL BE DONE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND NATIONAL CODES, ORDINANCES AND STANDARDS.
  - NOTIFY THE KITCHEN EQUIPMENT SUPPLIER PROJECT MANAGER IMMEDIATELY IF COMPLIANCE WITH A LOCAL, STATE OR NATIONAL CODE IS IN CONFLICT WITH THESE DRAWINGS.

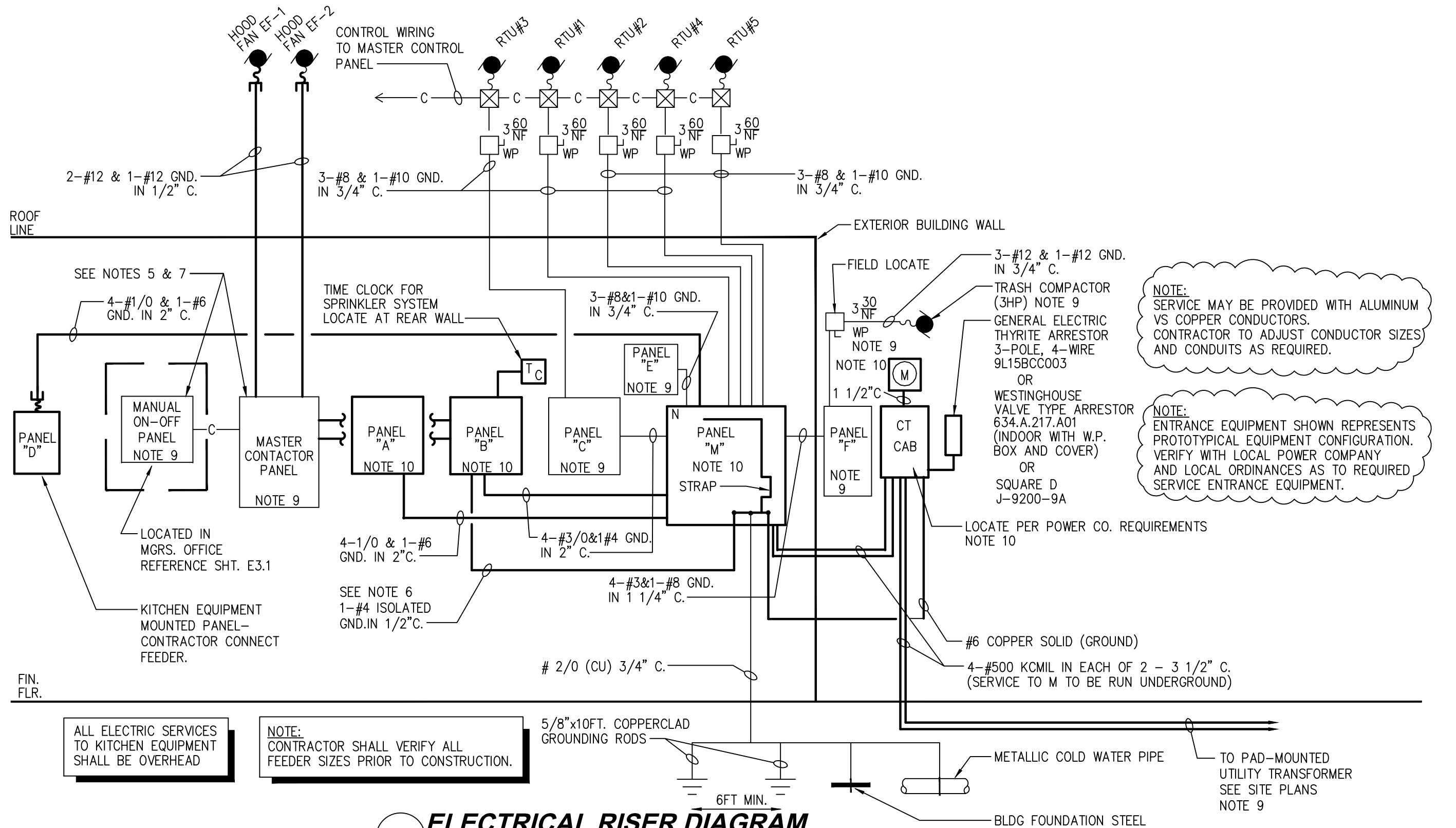
- ELECTRICAL CONTRACTOR (EC) - WALK-IN COOLER/FREEZER:**
- EC TO PROVIDE AND INSTALL A HEATING ELEMENT ON THE COOLER AND FREEZER CONDENSATE DRAIN LINES.
  - EC TO CONNECT THE PRIMARY ELECTRICAL SERVICE TO THE CONDENSING UNITS AND INTER-WIRE TO THE EVAPORATOR COIL(S), CONTROLS, LIGHTING FIXTURES AND DOOR PERIMETER HEATERS.

- RISER NOTES:**
- ALL FUSED DISCONNECT SWITCHES TO BE PROVIDED BY CONTRACTOR.
  - REFER TO PANEL NOTES.
  - REFER TO GENERAL NOTES, THIS SHEET.
  - "T.C." INDICATES TIME CLOCK (OR TIME SWITCH)
  - MASTER CONTACTOR PANEL AND MANUAL ON-OFF PANEL SHALL INCLUDE EXHAUST FAN STARTERS AND ALL CONTACTOR SWITCHES, CONTROLS AND WIRING TO CONTROL HVAC, LIGHTING (INTERIOR AND EXTERIOR) AND SIGNAGE PER BURGER KING'S STANDARDS AND SEQUENCES OF OPERATION.
  - PROVIDE AN ISOLATED GROUND BUS IN PANEL & RUN CIRCUIT GROUND WIRE TO THIS BUS. RUN A #4 GREEN GROUND FROM THIS BUS TO MAIN SERVICE GROUND POINT.
  - MASTER CONTACTOR PANEL AND MANUAL ON-OFF PANEL TO BE INCLUDED IN ELECTRICAL CONTRACTORS SCOPE OF WORK.
  - THE SHORT CIRCUIT RATINGS ARE BASED ON AN AVAILABLE SHORT CIRCUIT CURRENT OF 56,000A AT THE UTILITY TRANSFORMER SECONDARY. VERIFY THAT THE UTILITY SHORT CIRCUIT AVAILABLE CURRENT DOES NOT EXCEED THIS VALUE PRIOR TO ORDERING MDP.
  - REUSE EXISTING EQUIPMENT.
  - PROVIDE NEW PANEL. PANEL M SHALL BE A SIEMENS PANEL WITH CIRCUIT BREAKERS WHICH MAINTAIN THE SERIES RATING OF EXISTING PANEL C, E & F.

ELECTRICAL DISTRIBUTION PANELS, MASTER CONTACTOR PANEL AND MANUAL ON/OFF PANEL MAY BE PURCHASED AS A LOOSE GEAR PACKAGE THROUGH:  
SUNCOAST ENVIRONMENTAL CONTROLS, INC.  
8565 115TH AVENUE NORTH  
LARGO, FLORIDA 34643  
PHONE (877) 544-6679

SYMBOL LEGEND	
DETAIL	DESCRIPTION
§	TOGGLE SWITCH - SINGLE POLE HUBBELL #1221-1
⚡	FAN SPEED CONTROL SWITCH MOUNT @ 3'-10" AFF, UNLESS OTHERWISE NOTED (FURNISHED BY MC, INSTALLED & WIRED BY EC)
⚡	AUTOMATIC TIMER SWITCH - TORK #SSA200 20 AMP, 120/277 VOLT MOUNT @ 3'-10" AFF, UNLESS OTHERWISE NOTED *-PRESET FOR MAXIMUM OF 2 HOUR OVERIDE.
⊞	PUSHBUTTON SWITCH
⊞	SINGLE RECEPTACLE HUBBELL #5361-1
⊞	DUPLEX RECEPTACLE HUBBELL #5362-1, T (TAMPER PROOF) USB (WITH DC CHARGER PORTS)
⊞	SPECIAL RECEPTACLES HUBBELL 120V, 1φ - #E352-1 208V, 1φ - #E410 208V, 3φ - #E420
⊞	TELEPHONE OUTLET WITH BUSHED HOLE COVERPLATE
⊞	JUNCTION OR GANG BOX
⊞	CABLE TELEVISION OUTLET
⊞	BUZZER / BELL
⊞	REAR DOOR ALARM
FS IS	FLOW/TAMPER SWITCHES FURNISHED BY OTHERS, CONTRACTOR SHALL PROVIDE MONITORING MODULE
⊞	DUCT SMOKE DETECTOR, SEE KEYED NOTE 17
⊞	TRANSFORMER

ABBREVIATIONS	
A-3	CONDUIT RUN WITH ARROW DENOTING HOMERUN. SUBSCRIPT INDICATES PANEL AND CIRCUIT NO. GROUND CONDUCTOR REQUIRED IN ALL CONDUITS BUT NOT INDICATED. 2 #12 & 1 #12G, 3/4" CND, UNLESS OTHERWISE NOTED
GFCI	GROUND FAULT CIRCUIT INTERRUPTING
W.P.	WEATHERPROOF
A.F.F.	ABOVE FINISHED FLOOR.
I.G.	ISOLATED GROUND (ADD 2ND GROUND CONDUCTOR)
H.O.T.W.	HOME OF THE WHOPPER
NL	NIGHT LIGHT

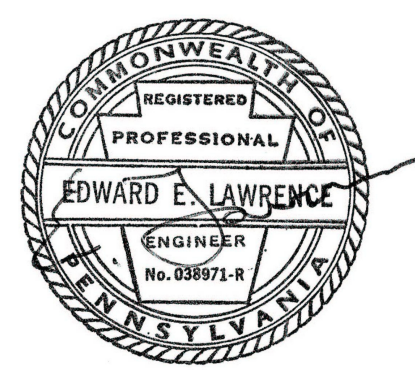


**ELECTRICAL RISER DIAGRAM**  
SCALE: NONE





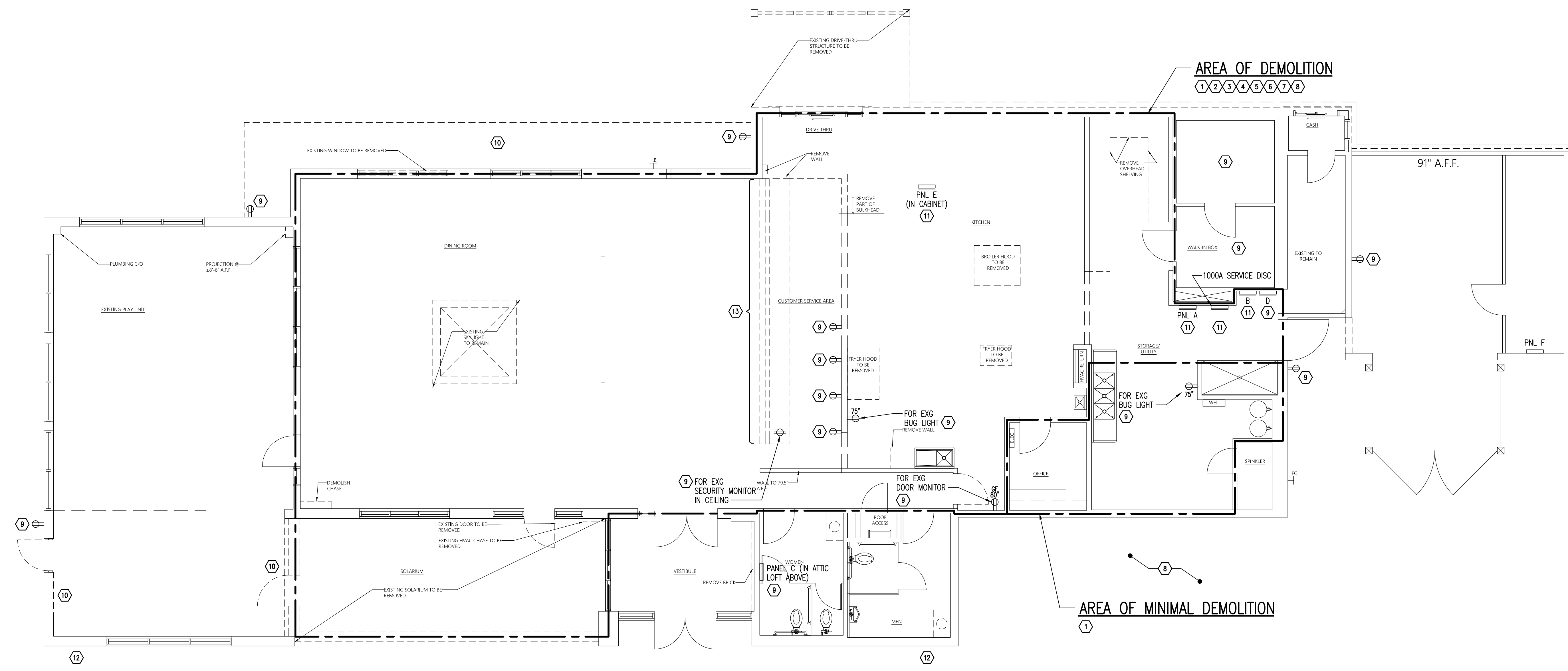
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**DEMOLITION**  
**PLAN**  
**E1.1**



**ELECTRICAL FLOOR PLAN - DEMOLITION**  
SCALE: 3/16" = 1'-0"

**GENERAL DEMOLITION NOTES:**

- WHERE IT IS INDICATED THAT A CIRCUIT, CONDUIT OR WIRING IS TO BE REMOVED IN ITS ENTIRETY, THIS SHALL MEAN THAT THE WIRE, CONDUIT, HANGERS, CONNECTORS, COUPLINGS, CONTROLS, DISCONNECT SWITCHES, ETC. SHALL BE REMOVED FROM THE DEVICE TO THE SOURCE, EXCEPT THAT CONDUIT EMBEDDED IN WALLS OR FLOORS NOT BEING DEMOLISHED MAY BE ABANDONED IN PLACE AS LONG AS THE WIRE IS REMOVED AND THE CONDUIT ENDS ARE SATISFACTORILY CLOSED.
- CIRCUITS WHICH ORIGINATE IN OR PASS THROUGH THE AREA OF DEMOLITION BUT WHICH SUPPLY LOADS OUTSIDE OF THE AREA OF DEMOLITION OR WHICH FEED EQUIPMENT IN THE AREA OF DEMOLITION WHICH IS TO REMAIN, SHALL BE RETAINED, UNLESS OTHERWISE NOTED. PORTIONS OF SUCH CIRCUITS WHICH CONFLICT WITH CLEARANCES FOR NEW CONSTRUCTION SHALL BE REMOVED AND WIRE AND CONDUIT (MATCH EXISTING TYPE AND SIZE) SHALL BE PROVIDED TO EXTEND THE CIRCUIT TO ITS ORIGINAL SOURCE AND TO MAINTAIN THE FUNCTIONALITY OF THE CIRCUIT.
- CIRCUITS WHICH SUPPLY DEVICES BOTH INSIDE AND OUTSIDE OF THE AREA OF DEMOLITION SHALL BE REMOVED ONLY WITHIN THE AREA OF DEMOLITION. REMOVE THE CIRCUITS TO THE NEAREST JUNCTION BOX OR DEVICE OUTSIDE THE AREA OF DEMOLITION. PORTIONS OF THE CIRCUITS WHICH SUPPLY DEVICES OUTSIDE THE AREA OF DEMOLITION OR DEVICES TO REMAIN INSIDE THE AREA OF DEMOLITION SHALL REMAIN AND WIRE AND CONDUIT (MATCH EXISTING TYPE AND SIZE) SHALL BE PROVIDED TO EXTEND THE CIRCUIT TO ITS ORIGINAL SOURCE AND TO MAINTAIN THE FUNCTIONALITY OF THE CIRCUIT, UNLESS OTHERWISE NOTED.
- EXISTING PANELBOARDS AND THEIR FEEDER CIRCUITS SHALL BE RETAINED, UNLESS OTHERWISE NOTED.
- DRAWING DEMOLITION NOTES LISTED UNDER THE DEMOLITION AREA IDENTIFICATION SHALL APPLY TO ALL ROOMS/AREAS WITHIN THE AREA OF DEMOLITION. OTHER INDIVIDUAL DRAWING DEMOLITION NOTES ARE IN ADDITION TO THOSE UNDER THE AREA IDENTIFICATION AND APPLY ONLY TO INDIVIDUAL ROOMS OR EQUIPMENT.
- ABANDONED WIRE, CONDUIT, DEVICES AND CIRCUITS IN THE AREA OF DEMOLITION OR INDIVIDUALLY IDENTIFIED SHALL BE REMOVED IN THEIR ENTIRETY.
- DEVICE BOXES WITH USABLE CONDUIT TO ACCESSIBLE SPACES LOCATED IN THE SAME LOCATION AS NEW DEVICES MAY BE REUSED WITH NEW WIRING AND DEVICES.
- CONTRACTOR SHALL FIELD VERIFY QUANTITY AND LOCATION OF ALL WIRING DEVICES PRIOR TO BID. ANY ADDITIONAL DEVICES LOCATED SHALL BE TREATED THE SAME AS OTHER DEVICES IN THE SAME AREA.
- RETAIN LOFT, PLAYGROUND AND TRASH AREA CIRCUITS AND EQUIPMENT UNLESS OTHERWISE NOTED.

**DRAWING DEMOLITION NOTES:**

- REMOVE ALL LIGHT FIXTURES INCLUDING EXTERIOR BUILDING FIXTURES, EMERGENCY LIGHT FIXTURES, EXIT SIGNS, LIGHT SWITCHES, LIGHT CONTROLS AND LIGHTING CIRCUITS IN THEIR ENTIRETY, UNLESS OTHERWISE NOTED. PARKING LOT AND SITE LIGHTING AND THEIR CIRCUITS SHALL BE RETAINED.
- REMOVE ALL RECEPTACLES, DEVICE BOXES AND RECEPTACLE CIRCUITS IN THEIR ENTIRETY, UNLESS OTHERWISE NOTED.
- RETAIN ALL ALARM SYSTEM DEVICES, DEVICE BOXES AND ALARM CIRCUITS INCLUDING SMOKE DETECTORS, SECURITY, ETC. UNLESS OTHERWISE DIRECTED BY THE SECURITY ALARM CONTRACTOR.
- EXISTING DEVICES IN THE SAME LOCATION AS NEW DEVICES OF THE SAME TYPE MAY BE REUSED. OTHERWISE, REMOVE ALL TELEPHONE OUTLETS, DEVICE BOXES AND TELEPHONE CIRCUITS IN THEIR ENTIRETY, UNLESS OTHERWISE NOTED.
- EXISTING DEVICES IN THE SAME LOCATION AS NEW DEVICES OF THE SAME TYPE MAY BE REUSED. OTHERWISE, REMOVE ALL LOCAL AREA NETWORK DEVICES, DEVICE BOXES AND LOCAL AREA NETWORK CIRCUITS IN THEIR ENTIRETY, UNLESS OTHERWISE NOTED.
- REMOVE KITCHEN SERVING EQUIPMENT, OWNER'S EQUIPMENT, FREEZER, ETC. AND THEIR CIRCUITS IN THEIR ENTIRETY, EXCEPT WHERE OTHERWISE NOTED. VERIFY OWNER EQUIPMENT TO BE REMOVED WITH OWNER PRIOR TO START OF DEMOLITION.
- REMOVE IN THEIR ENTIRETY ALL CIRCUITS TO ONE MECHANICAL ROOFTOP UNIT, ANY ICE MACHINE CONDENSING UNITS AND PLUMBING WATER HEATER. SEE MECHANICAL AND PLUMBING DRAWINGS FOR LOCATION OF EQUIPMENT. RETAIN CIRCUITS TO OTHER FIVE MECHANICAL ROOFTOP UNITS AND TO WALK-IN FREEZER/FRIDGE ROOFTOP UNITS.
- EXISTING SITE, PYLON AND SIGN LIGHTING AND CIRCUITS TO REMAIN.
- EXISTING TO REMAIN. DISCONNECT, EXTEND AND RECONNECT FEEDER CIRCUITS AT SOURCE.
- REMOVE AND/OR RELOCATE DEVICES AND CIRCUITS IN/ON WALL, OVERHANG, DRIVE-THRU OR NEW DOOR OPENING TO ALLOW REMOVAL.
- REMOVE EXISTING PANEL AND FEEDER CIRCUIT.
- REMOVE LOGO SIGN, JUNCTION BOX AND CIRCUIT. PATCH WALL FINISH TO MATCH EXISTING.
- IF THERE ARE EXISTING COMPARABLE RECEPTACLES AND CIRCUITS IN THIS AREA, THEY MAY BE RETAINED AND REUSED.

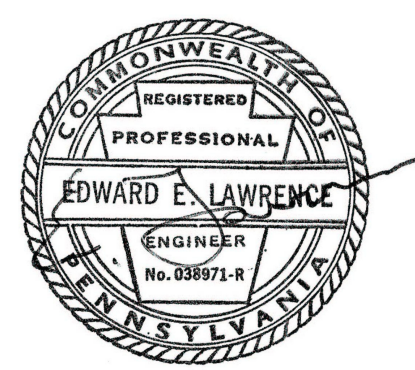






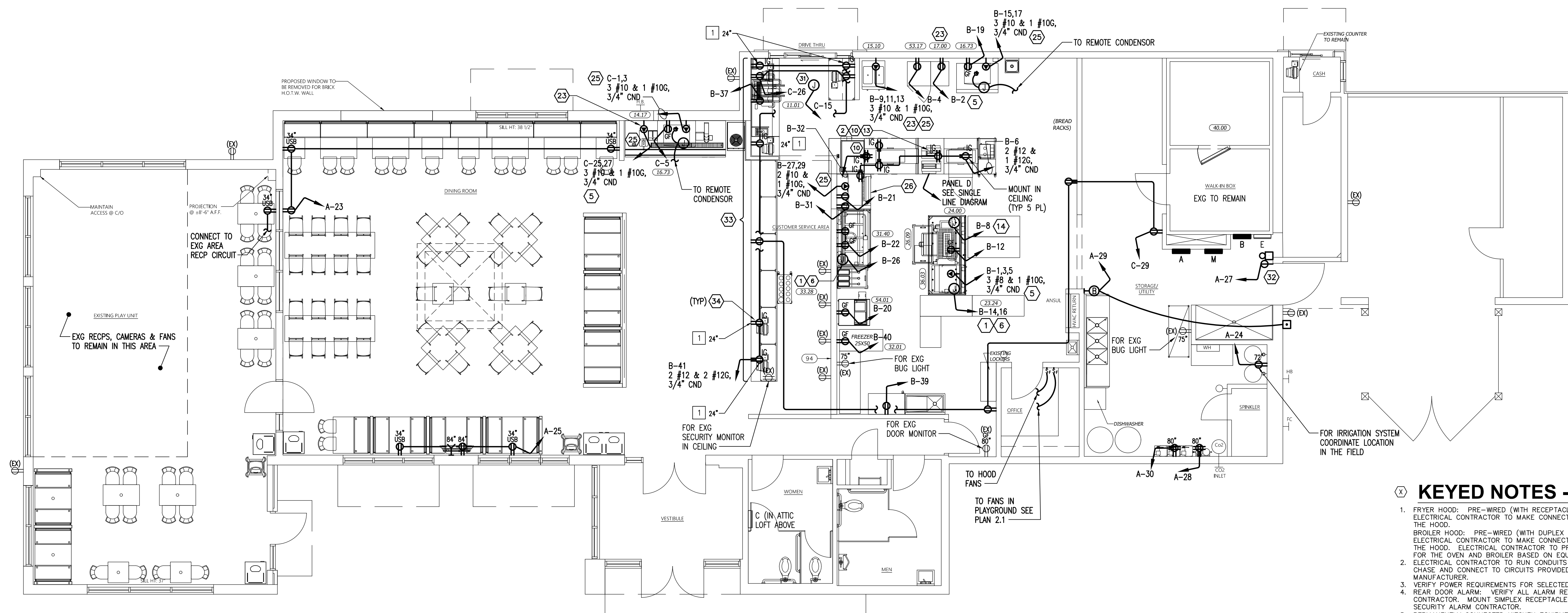


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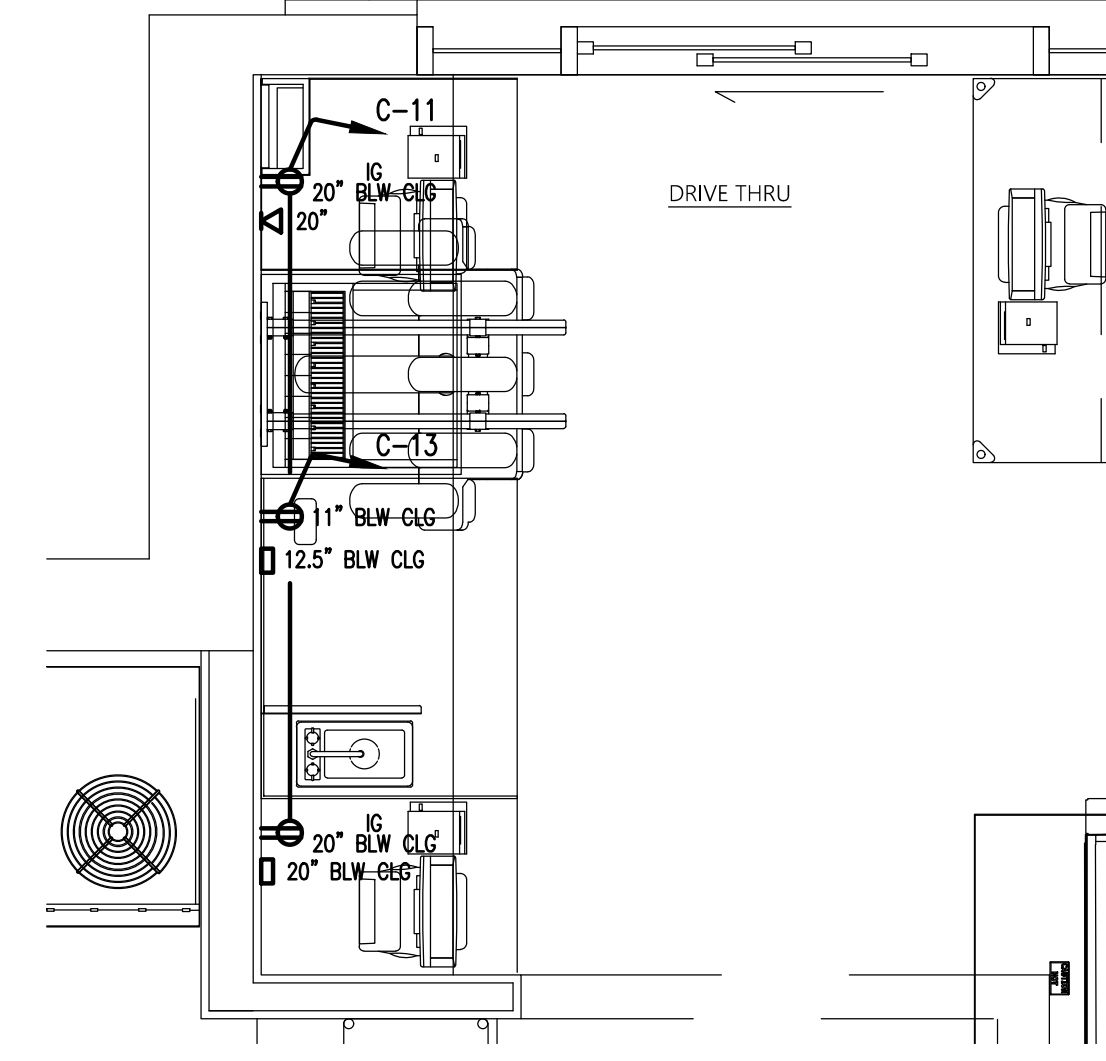
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**ELECTRICAL FLOOR PLAN - NEW WORK - POWER**  
SCALE: 1/4" = 1'-0"

**KEYED NOTES - PLAN:**

- FRYER HOOD: PRE-WIRED (WITH RECEPTACLES BY HOOD MANUFACTURER. ELECTRICAL CONTRACTOR TO MAKE CONNECTION AT JUNCTION BOX AT THE TOP OF THE HOOD.
- BROILER HOOD: PRE-WIRED (WITH DUPLEX RECEPTACLES) BY HOOD MANUFACTURER. ELECTRICAL CONTRACTOR TO MAKE CONNECTION AT JUNCTION BOX AT THE TOP OF THE HOOD. ELECTRICAL CONTRACTOR TO PROVIDE RECEPTACLE AND COVER PLATE FOR THE OVEN AND BROILER BASED ON EQUIPMENT SELECTED.
- ELECTRICAL CONTRACTOR TO RUN CONDUITS AND WIRE THROUGH THE EQUIPMENT CHASE AND CONNECT TO CIRCUITS PROVIDED IN THE JUNCTION BOX BY EQUIPMENT MANUFACTURER.
- VERIFY POWER REQUIREMENTS FOR SELECTED WATER HEATER.
- REAR DOOR ALARM: VERIFY ALL ALARM REQUIREMENTS WITH PLAN BY ALARM CONTRACTOR. MOUNT SIMPLEX RECEPTACLE FOR POWER SUPPLY AS DIRECTED BY SECURITY ALARM CONTRACTOR.
- PERMANENTLY CONNECTED KITCHEN EQUIPMENT NOT SUPPLIED WITH ON/OFF UNIT SWITCH (WHICH IS PART OF THE APPLIANCE) TO SERVE AS A DISCONNECTING MEANS. UNIT SHALL BE SUPPLIED WITH A DISCONNECT OR RECEPTACLE WITH CORD AND PLUG AS PER N.E.C., FURNISHED BY THE ELECTRICAL CONTRACTOR.
- S.C. TO VERIFY ELECTRICAL REQUIREMENTS FOR FIRE SUPPRESSION SYSTEM AND AUTO-SELENOID GAS SHUT-OFF VALVE.
- RUN 2" CONDUIT TO MANAGERS OFFICE FOR CABLE TV.
- HEAT TAPE IS PROVIDED BY THE WALK-IN BOX MANUFACTURER AND INSTALLED BY THE ELECTRICAL CONTRACTOR. CONTRACTOR SHALL COORDINATE INSTALLATION AND SUPPLY 120V CIRCUIT AND RECEPTACLE AS DIRECTED BY BOX MANUFACTURER.
- DIGITAL MENU BOARDS (VERIFY 3 OR 4 BOARD INSTALLATION): PROVIDE (1) DUPLEX RECEPTACLE FOR 120V CIRCUIT AND (1) P-RING FOR DATA CABLE AT EACH MENU BOARD SCREEN. REFER TO DETAIL, THIS SHEET.
- STAINLESS STEEL SERVICE CHASE TO CEILING FURNISHED BY THE EQUIPMENT MANUFACTURER.
- CONTRACTOR SHALL OBTAIN WIRING DIAGRAM FROM THE WALK-IN BOX MANUFACTURER AND INSTALL AS DIRECTED.
- CONTRACTOR SHALL COORDINATED EQUIPMENT INSTALLATION WITH THE EQUIPMENT MANUFACTURER'S INSTALLATION PERSONNEL.
- PRE-WIRED BRANCH CIRCUITS DISCONNECTED FOR SHIPMENT TO BE RE-CONNECTED BY MANUFACTURER'S INSTALLATION PERSONNEL ON SITE.
- ELECTRICAL CONTRACTOR TO PROVIDE CORD AND PLUG AND WIRE TO BROILER BASED ON EQUIPMENT SELECTED.
- CONTRACTOR SHALL COORDINATE CONDUIT RUN BETWEEN FREEZER/COOLER EVAPORATORS AND ROOF-TOP REFRIGERATION UNIT WITH THE MANUFACTURER'S FURNISHED WIRING HARNESS.
- ELECTRICAL CONTRACTOR TO PROVIDE JUNCTION BOXES INSIDE WALL @ 48" A.F.F. WITH STUB-UPS TO CEILING FOR AMEREX-PULL STATION AS REQUIRED BY EQUIPMENT SUPPLIER.
- SMOKE DETECTOR ALARM PANEL: REFER TO SHEET M1.0 FOR LOCATION OF A/C UNITS SMOKE DETECTORS. PANEL SHALL ALSO MONITOR SPRINKLER SYSTEM IF APPLICABLE.
- (2) 2" CONDUIT TO BASE OF DRIVE-THROUGH ORDER STATION FOR DRIVE-THROUGH COMMUNICATIONS SYSTEM, SOUND, DATA AND POWER, PER DETAILS ON E4.1.
- 6" BELOW CEILING FOR CONDENSATE DRAIN LINE TAPE HEATER.
- TO MASTER RELAY PANEL. REFER TO SHEET E5.1
- MANUAL ON-OFF CONTROL PANEL. REFER TO SHEET E5.1
- CONTRACTOR AND MANUAL CONTROL PANEL. REFER TO SHEET E5.1 AND SINGLE LINE DIAGRAM ON SHEET E1.1.
- COORDINATE BEVERAGE EQUIPMENT AND OUTLET PLACEMENTS SO THAT EQUIPMENT LEGS WILL NOT BE IN FRONT OF OUTLETS.
- NOT USED.
- PROVIDE SPECIAL RECEPTACLE AS REQUIRED TO MATCH EQUIPMENT PLUG.
- ALL OUTLETS UNDER HOOD FOR FRYERS, FRY HOLDING STATIONS, ETC. ARE TO BE SURFACE MOUNTED ON/UNDER FRYER HOOD.
- USB CHARGER, 15A/125V RECEPTACLE, MOUNT @ 34" A.F.F. HORIZONTAL. COORDINATE W/ SEATING SO FULLY EXPOSED.
- NOT USED.
- NOT USED.
- ALL RECEPTACLES IN THE KITCHEN SHALL BE GROUND FAULT PROTECTED.
- PROVIDE JUNCTION BOX AND 120V BRANCH CIRCUIT FOR OWNER FURNISHED ELECTRONIC LOOP SYSTEM AT DRIVE-THRU WINDOW. CONTRACTOR SHALL PROVIDE ALL MATERIAL, DEVICES AND COMPONENTS SHOWN ON THE ELECTRONIC LOOP SYSTEM MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONTRACTOR SHALL CONFIRM AND/OR COORDINATE FINAL LOCATION OF ALL ELECTRONIC LOOP DEVICES, COMPONENTS, CIRCUITS, ETC. WITH MANUFACTURER'S REPRESENTATIVE PRIOR TO START OF WORK. COORDINATE LOCATION OF ALL EQUIPMENT IN FIELD.
- COORDINATE ALL NEW RECEPTACLES/SWITCHES COVER PLATE FINISHES WITH ARCHITECT.
- IF THERE ARE EXISTING COMPARABLE RECEPTACLES AND CIRCUITS IN THIS AREA, THEY MAY BE RETAINED AND REUSED.
- POS RECEPTACLES SHALL BE SOLID ORANGE WITH BLACK COVER PLATES.



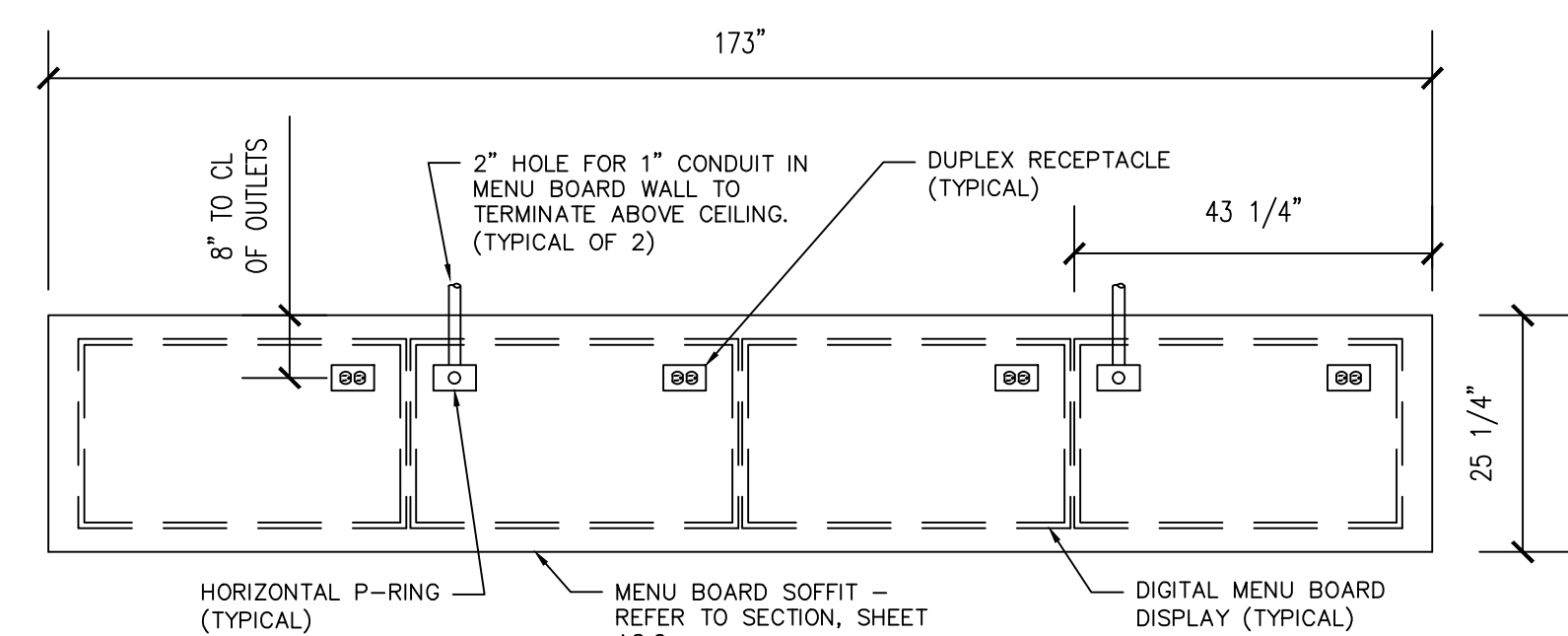
**ENLARGED PARTIAL PLAN - DRIVE-THRU WINDOW - POWER & SIGNAL**  
SCALE: 1/2" = 1'-0"

**TECHNOLOGY POWER KEYED PLAN NOTES:**

- J-BOX W/ 1" CONDUIT BELOW COUNTER TO ADJACENT WALL AND UP TO ABOVE CLG.
- J-BOX W/ 2" CONDUIT TO ABOVE CLG. AND TURNED TOWARDS INTERIOR OF THE BLDG.

**NOTES:**

- (1) DUPLEX RECEPTACLE PER SCREEN.
- P-RING WITH 1" CONDUIT TO ABOVE CEILING. DATA CABLE TO RUN TO MEDIA PLAYER(S) IN OFFICE.
- VERIFY LOCATION OF MENU BOARD WITH OWNER.
- DETERMINE SCREEN AND MOUNTING BRACKET MODELS PRIOR TO INSTALLATION OF RECEPTACLES AND P-RINGS. REFER TO THIS SHEET, POWER PLAN FOR CIRCUITING REQUIREMENTS.
- 5/8" PLYWOOD MUST BE INSTALLED BEHIND BOARDS AND BRACKETS SCREWED INTO THIS 4 1/2" DOWN FROM CEILING. BRACKETS MUST BE PLUMB AND CROSSBAR LEVEL.

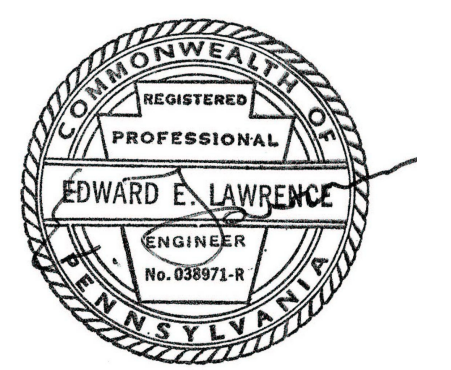


**DIGITAL MENU BOARD INSTALLATION**  
SCALE: 1/2" = 1'-0"



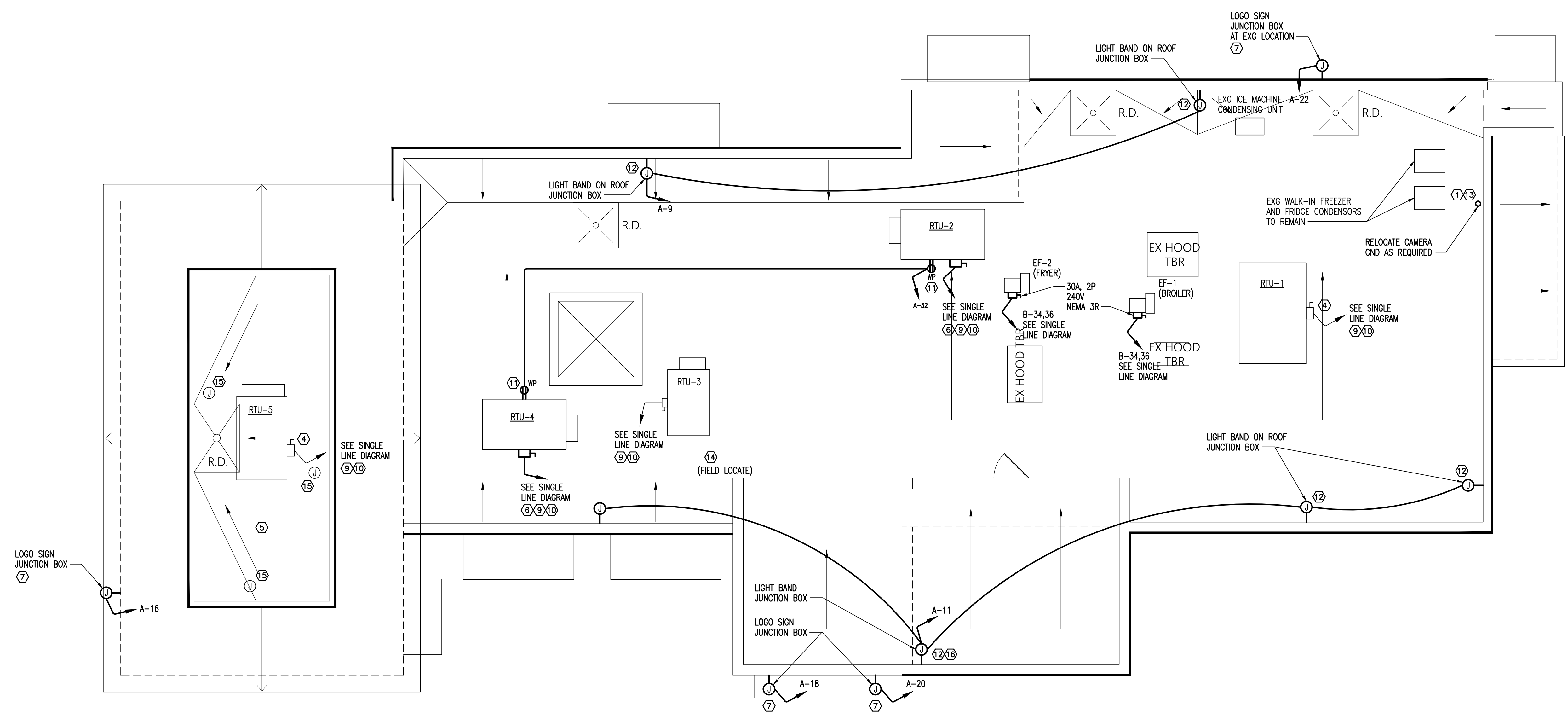


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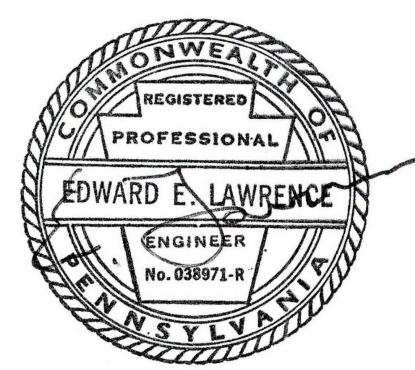


**ELECTRICAL ROOF PLAN – LIGHTING AND POWER**  
SCALE: 1/4" = 1'-0"

**KEYED NOTE - ROOF:**

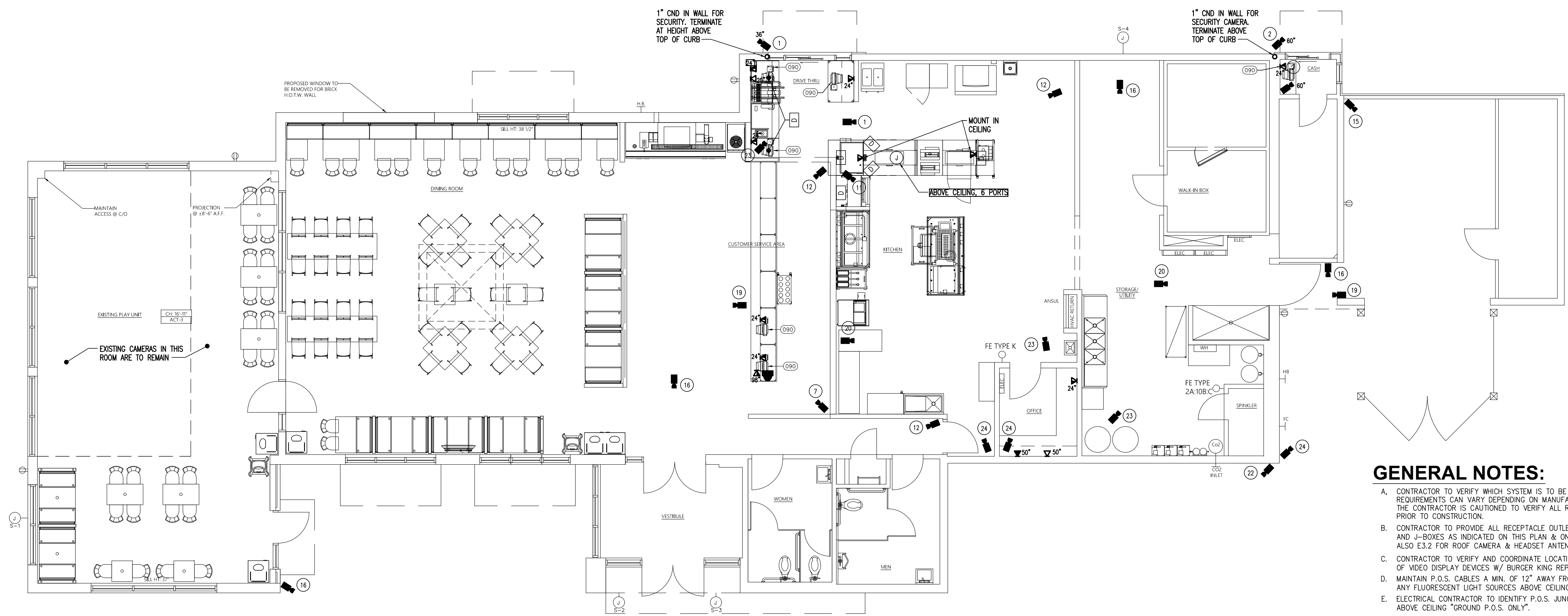
- 1 WEATHERPROOF OUTLET 30" A.F.R. FOR TV VIDEO CAMERA TO REMAIN. RUN CONDUIT TO BLDG. INT. VERIFY SIZE AND LOCATION WITH OWNER.
- 2 NOT USED.
- 3 NOT USED.
- 4 RETAIN EXISTING WEATHERPROOF RECEPTACLES AND CIRCUITS.
- 5 RETAIN EXISTING CAMERAS AND CIRCUITS.
- 6 STUB-UP CONDUIT ADJACENT TO ROOF CURB AND PROVIDE SEAL TIGHT CONNECTION TO WEATHERPROOF DISCONNECT WITH SUFFICIENT SLACK TO ALLOW REMOVAL OF FAN FOR SERVICING.
- 7 NOT USED.
- 8 NOT USED.
- 9 SEE ELECTRICAL RISER SHEET E-1.0 FOR ELECTRICAL REQUIREMENTS TO MECHANICAL EQUIPMENT
- 10 RUN CONTROL WIRES VIA MASTER RELAY CONTROL PANEL. SEE SHEET E5.1.
- 11 120V/ 1Ø WATER PROOF, GFCI RECEPTACLE BY ELECTRICAL CONTRACTOR.
- 12 PROVIDE 100VA TRANSFORMER (120-25V) AT JUNCTION BOX FOR EACH SECTION OF LIGHT BAND. WIRE TRANSFORMER AND INSTALL LIGHT BAND PER MANUFACTURER'S INSTALLATION GUIDE.
- 13 1 1/2" CND FEED FOR DRIVE-THRU VIDEO CAMERA. VERIFY THAT LOCATION FACES DRIVE-THRU ORDER STATIONS. TERMINATE 18" ABOVE ROOF W/ 90° TURN TO PREVENT WATER INFILTRATION.
- 14 1 1/2" CND FEED FOR EXG HEADSET ANTENNA. TERMINATE 18" ABOVE ROOF W/ 90° TURN TO PREVENT WATER INFILTRATION. VERIFY LOCATION WITH OWNER.
- 15 EXISTING JUNCTION BOXES AND CIRCUITS FOR LIGHT BAND TO REMAIN. LIGHT BAND TO BE REPLACED USING EXISTING ELECTRIC CIRCUITS.
- 16 LOCATE LIGHT BAND JUNCTION BOX INSIDE LOFT AREA AT HEIGHT OF LIGHT BAND.





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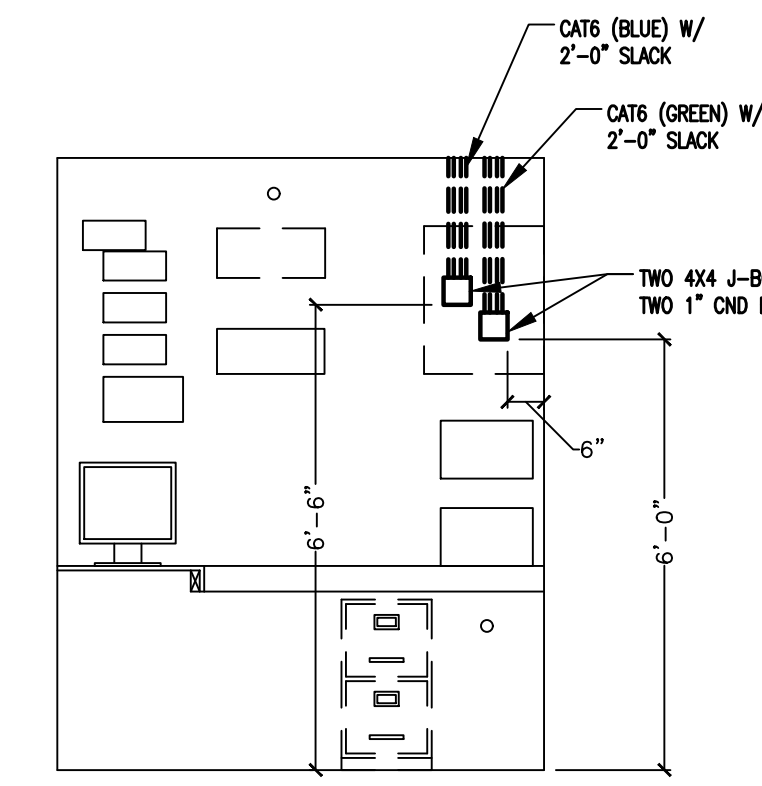
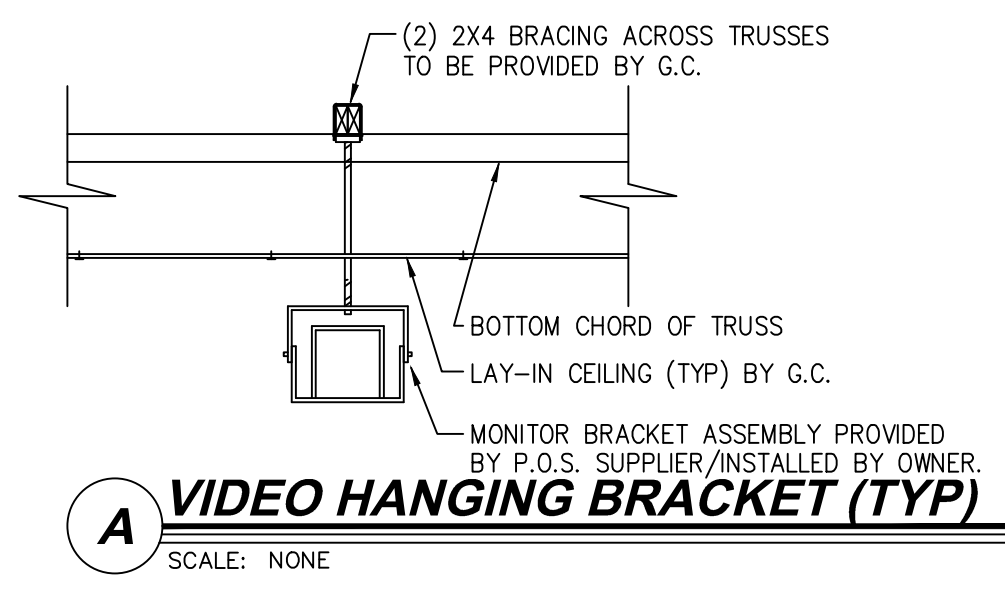


**GENERAL NOTES:**

- A. CONTRACTOR TO VERIFY WHICH SYSTEM IS TO BE INSTALLED. REQUIREMENTS CAN VARY DEPENDING ON MANUFACTURER. THE CONTRACTOR IS CAUTIONED TO VERIFY ALL REQUIREMENTS PRIOR TO CONSTRUCTION.
- B. CONTRACTOR TO PROVIDE ALL RECEPTACLE OUTLETS, CONDUITS AND J-BOXES AS INDICATED ON THIS PLAN & ON E3.1. SEE ALSO E3.2 FOR ROOF CAMERA & HEADSET ANTENNA.
- C. CONTRACTOR TO VERIFY AND COORDINATE LOCATION OF VIDEO DISPLAY DEVICES W/ BURGER KING REPRESENTATIVE.
- D. MAINTAIN P.O.S. CABLES A MIN. OF 12" AWAY FROM ANY FLUORESCENT LIGHT SOURCES ABOVE CEILING.
- E. ELECTRICAL CONTRACTOR TO IDENTIFY P.O.S. JUNCTION BOXES ABOVE CEILING "GROUND P.O.S. ONLY".
- F. VERIFY WITH SITE PLANS THE NUMBER AND CONFIGURATION OF DT ORDER STATIONS.

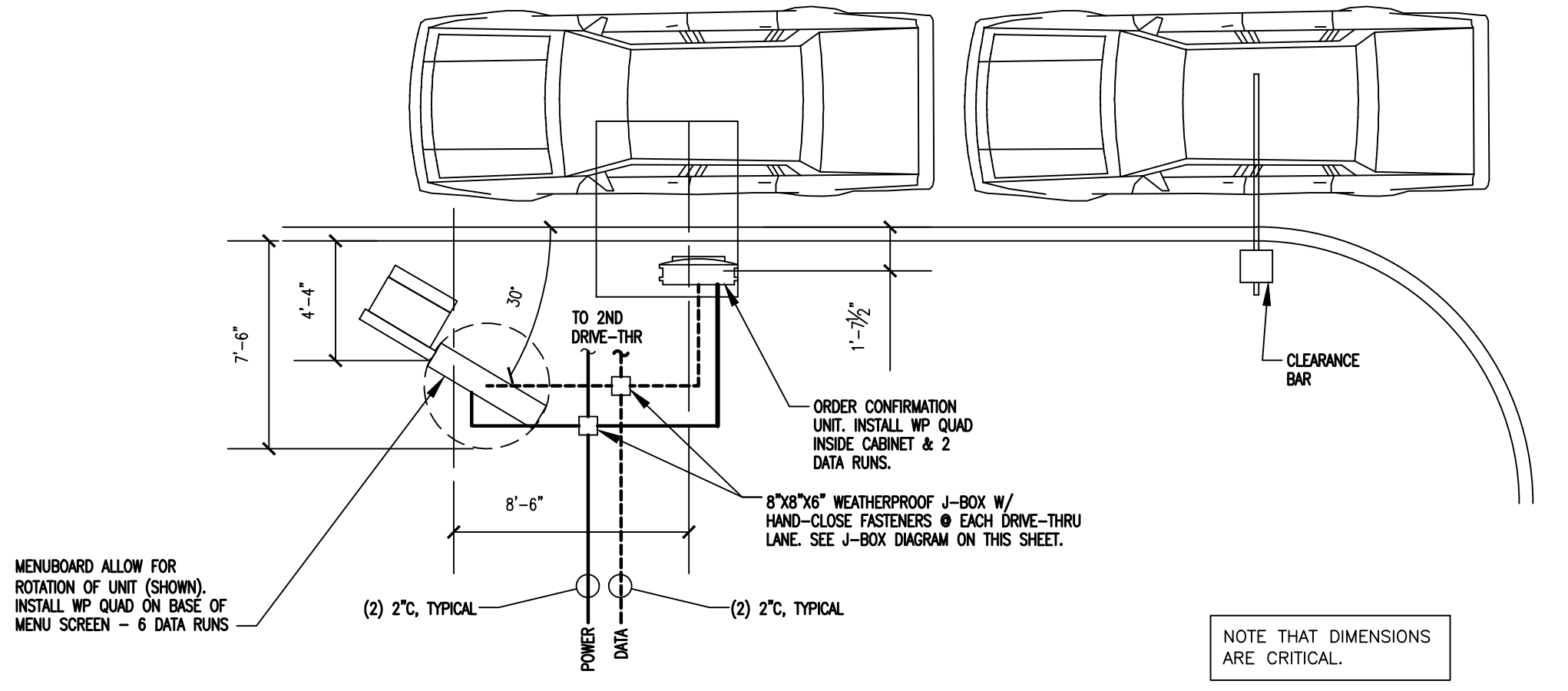
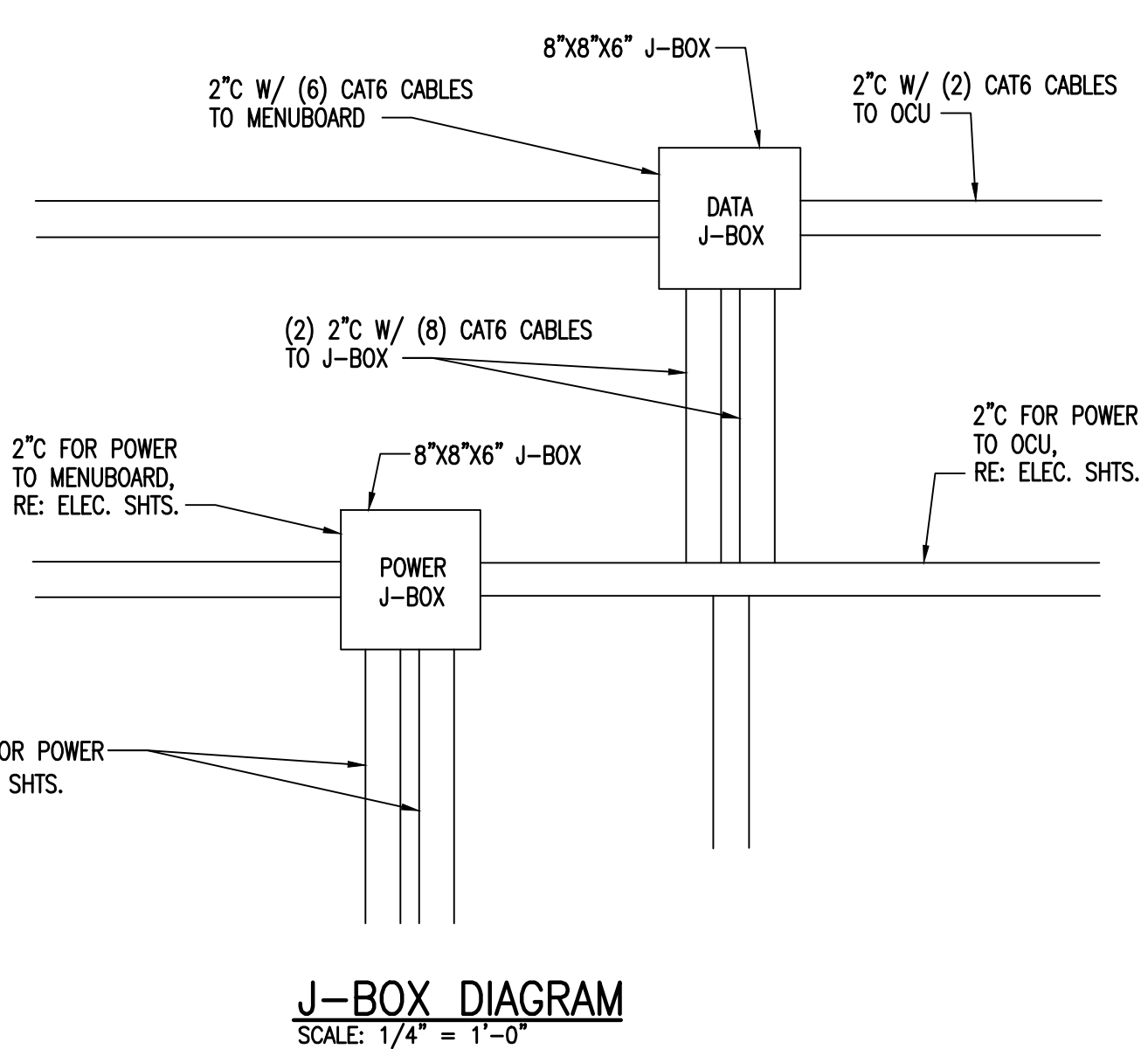
DETAIL	DESCRIPTION
	DUPLEX 125V-20A-2 POLE-3 WIRE STRAIGHT BLADE RECEPTACLE OUTLET - WALL MTD. (24" A.F.F., - U.O.N.)
	SINGLE 125V-20A-2 POLE-3 WIRE STRAIGHT BLADE RECEPTACLE OUTLET - WALL MTD. (24" A.F.F., - U.O.N.)
	DRYWALL P-RING
	BUMP-BAR
	TELEPHONE OUTLET FOR P.O.S. MODEM (ALL OUTLETS HOMERUN IN 3/4" CONDUIT TO TELEPHONE BACKBOARD) MOUNT 96" A.F.F.
	P.O.S. PRINTER DEVICE
	P.O.S. REGISTER DEVICE
	VIDEO DISPLAY DEVICE (CEILING MTD.)
	SECURITY CAMERA BY "PRIVID-EYE" & CAMERA NUMBER NOTE
	SECURITY MONITOR BY "PRIVID-EYE" PROVIDE DUPLEX RECEPTACLE @ 98" A.F.F. (VERIFY) CONNECT TO P.O.S. CIRCUIT

**ELECTRICAL FLOOR PLAN - TECHNOLOGY SYSTEMS**  
SCALE: 3/16" = 1'-0"

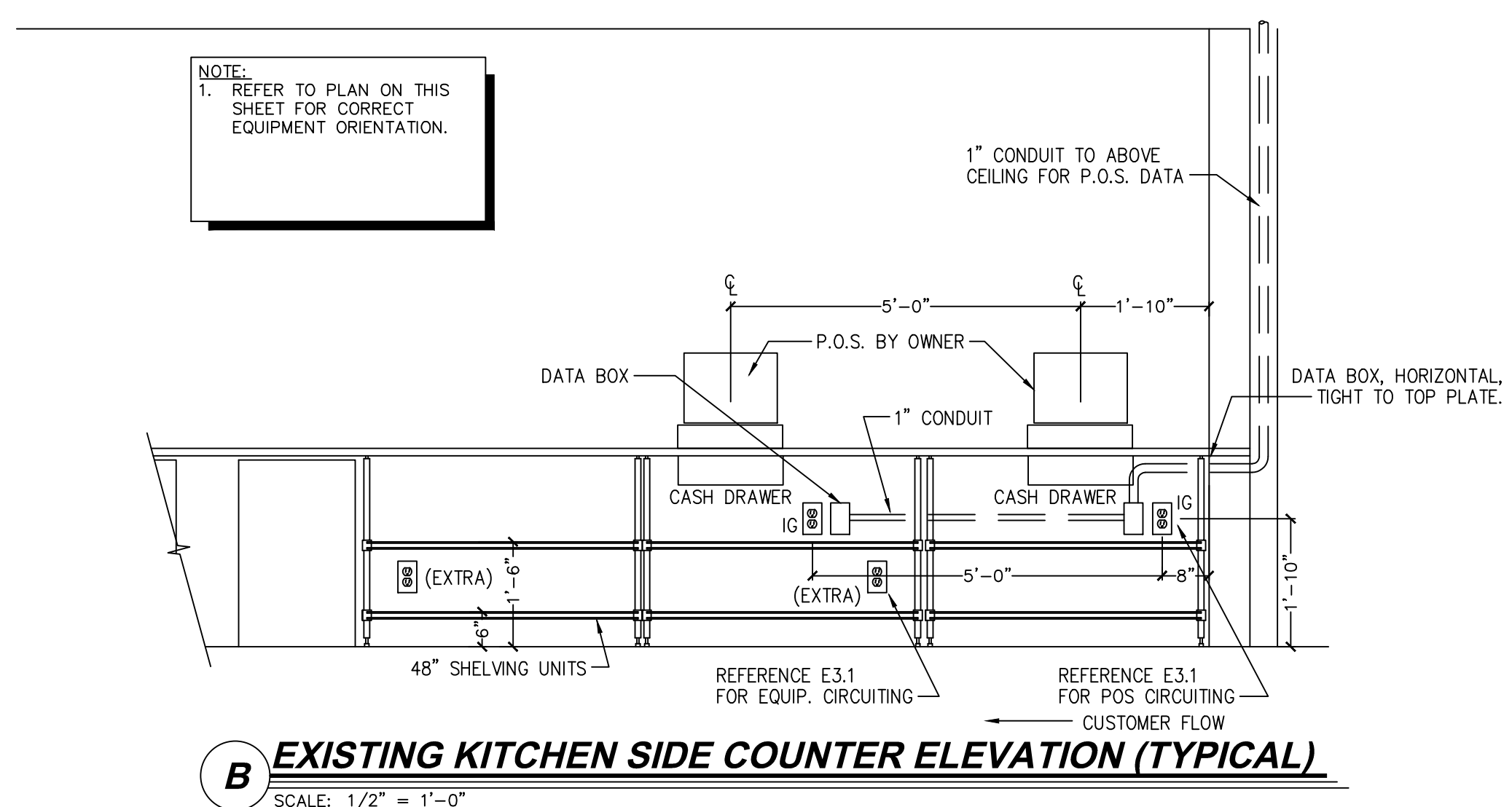


**OFFICE ELEVATION NOTES**

- ALL DATA - 4 CAT6
- ALL CAMERAS - 2 CAT6 (GREEN)
- ALL MONITORS - 2 CAT6 (BLUE)
- COORDINATE DEVICE LOCATIONS WITH WALL CABINETS



NOTE: THE PREFERRED LAYOUT SHOULD BE USED WHENEVER SPACE ALLOWS. 30° ROTATION ANGLE SHOULD BE CONSIDERED OPTIMAL. ANGLES BETWEEN THE PREFERRED LAYOUT AND MINIMUM LAYOUT ARE ACCEPTABLE AS LONG AS:  
(1) THE DISTANCES FROM THE CENTERLINES OF THE SUPPORT POLES OF THE MENU BOARD AND PREVIEW BOARD TO THE FACE OF CURB ARE REDUCED BY 4" FOR EVERY 5 DEGREES OF ROTATION, AND;  
(2) THE DISTANCE FROM THE CENTERLINE OF THE ORDER CONFIRMATION UNIT AND THE CENTERLINE OF THE MENU BOARD IS REDUCED BY 3" FOR EVERY 5 DEGREES OF ROTATION.  
(3) VERIFY WITH SITE PLANS THE NUMBER AND CONFIGURATION OF DT ORDER STATIONS. THE CENTERLINE OF MENU BOARD TO CENTERLINE OF PREVIEW BOARD REMAINS AT 20".





LOCATION: STORAGE/UTILITY		PANEL A SCHEDULE										35 KAIC
		PHASE: 3			WIRE: 4			VOLTS: 208/120				
		CURRENT RATING: 250 AMP - MAIN LUGS ONLY										
CKT NO	DESCRIPTION	BREAKER		KVA LOADS			BREAKER			DESCRIPTION	CKT NO	
		TRIP	POLE	CKT	A	B	C	CKT	POLE			TRIP
1	EXG PLAYGROUND LTG	20	1	0.65	1.32			0.67	1	20	LTG - EXTERIOR	2
3	LTG - SERVICE COUNTER	20	1	0.49		1.21		0.72	1	20	EXG OCU LIGHTING	4
5	LTG - DINING ROOM	20	1	0.62			1.34	0.72	1	20	EXG OCU/CREDIT CARD SWIPE	6
7	LTG - UTILITY & EF-3	20	1	1.77	2.49			0.72	1	20	EXG OCU LIGHTING	8
9	LIGHT BAND	20**	1	0.40		1.12		0.72	1	20	EXG OCU/CREDIT CARD SWIPE	10
11	LIGHT BAND	20**	1	0.40			1.12	0.72	1	20	EXG DRIVE-THRU MENU SIGN	12
13	SPARE	20	1	0.00	0.72			0.72	1	20	EXG DRIVE-THRU MENU SIGN	14
15	SPARE	20	1	0.00		1.20		1.20	1	20	SIGNAGE	16
17	SPARE	20	1	0.00			1.20	1.20	1	20	SIGNAGE	18
19	EXG PLAYGROUND RECP	20	1	0.72	1.92			1.20	1	20	SIGNAGE	20
21	EXG PLAYGROUND FANS	20	1	1.44		2.64		1.20	1	20	SIGNAGE	22
23	RECP - DINING	20	1	0.54			0.90	0.36	1	20	RECP - IRRIGATION SYSTEM	24
25	RECP - DINING	20	1	0.54	1.02			0.48	1	20	EXG WTR HTR	26
27	REAR DOOR BUZZER	20	1	0.72		1.46		0.74	1	20	WATER BOOSTER	28
29	DOOR ALARM	20	1	0.72			1.46	0.74	1	20	WATER BOOSTER	30
31	EXG OUTDOOR RECP	20	1	0.90	1.80			0.90	1	20	RECP - ROOFTOP	32
33	SPARE	20	1	0.00		0.36		0.36	1	20*	SMOKE DETECTOR ALARM PANEL	34
35	SPARE	20	1	0.00			0.60	0.60	1	20*	LIGHTING CONTROLS	36
37	SPARE	20	1	0.00	0.90			0.90	1	20	EXG DIGITAL MENU BOARD	38
39	SPARE	20	1	0.00		0.00		0.00	1	-	SPACE	40
41	SPARE	20	1	0.00			0.00	0.00	1	-	SPACE	42
*BREAKER LOCKON DEVICE		CIRCUIT TOTALS:		9.91			14.87					
**SHUNT TRIP BREAKER		PHASE TOTALS:		10.17			7.99				6.62	
***HACR BREAKER		PANEL TOTAL:		24.78								
****BREAKER PADLOCK OFF DEVICE												

LOCATION: STORAGE/UTILITY		PANEL B SCHEDULE										35 KAIC
		PHASE: 3			WIRE: 4			VOLTS: 208/120				
		CURRENT RATING: 150 AMP - MAIN BREAKER										
CKT NO	DESCRIPTION	BREAKER		KVA LOADS			BREAKER			DESCRIPTION	CKT NO	
		TRIP	POLE	CKT	A	B	C	CKT	POLE			TRIP
1	CONVECTION OVEN #36.03	30**	3	3.24	5.04			1.80	1	20	COFFEE/TEA BREWER #17.00	2
3	"	-	-	3.24		3.84		0.60	1	20	UC REFRIGERATOR #53.17	4
5	"	-	-	3.24			4.14	0.90	1	20	RECP - KITCHEN	6
7	S.T.	-	-	0.00	0.24			0.24	1	20**	BROILER #24.00	8
9	SHAKE/SOFT SERVE MACHINE #15.10	30	3	2.88		2.88		0.00	-	-	S.T.	10
11	"	-	-	2.88			3.56	0.68	1	20	MEAT FREEZER #26.09	12
13	"	-	-	2.88	3.40			0.52	2	15**	BROILER HOOD #023.24	14
15	ICE CUBER #016A CONDENSER	15	2	1.11		1.63		0.52	-	-	"	16
17	"	-	-	1.11			1.11	0.00	-	-	S.T.	18
19	ICE CUBER #016A	20	1	1.80	2.16			0.36	1	20	REFRIGERATED BATTER STATION #54.01	20
21	FRY HOLD STATION #30.17	20	1	0.36		0.70		0.34	1	20**	4-BANK FRYER #31.40	22
23	EXG DISHWASHER HEATER #96	40	2	3.00			3.00	0.00	-	-	S.T.	24
25	"	-	-	3.00	3.60			0.60	1	20**	FRYER HOOD #33A	26
27	FRY HOLD STATION #30.17	30	2	2.18		2.18		0.00	-	-	S.T.	28
29	"	-	-	2.18			3.01	0.83	1	20	FRY FREEZER #32.01	30
31	FRY HOLD STATION #30.17	20	1	0.36	0.72			0.36	1	20	RECP - EQUIPMENT CHASE	32
33	EXG DISHWASHER #92	20	1	1.44		2.23		0.79	2	20	EF-1	34
35	EXG SHORTNING STORAGE UNIT #29	20	1	1.20			1.99	0.79	-	-	"	36
37	12V SODA SYSTEM	20	1	0.60	1.52			0.92	2	20	EF-2	38
39	WATER TREATMENT	20	1	0.60		1.52		0.92	-	-	"	40
41	POS RECP	20*	1	1.26			1.44	0.18	1	20(N)	EXG DRIVE-THRU MENU	42
43	SPARE	20	1	0.00	0.00			0.00	1	20	SPARE	38
45	SPARE	20	1	0.00		0.00		0.00	1	20	SPARE	40
47	SPARE	20	1	0.00			0.00	0.00	1	20	SPARE	42
49	SPARE	20	1	0.00	0.00			0.00	1	20	SPARE	38
51	SPARE	20	1	0.00		0.00		0.00	1	20	SPARE	40
53	SPARE	20	1	0.00			0.00	0.00	1	20	SPARE	42
*BREAKER LOCKON DEVICE		CIRCUIT TOTALS:		38.56			11.35				PROVIDE A SEPARATE ISOLATED GROUND BUS GFCI CIRCUIT & BREAKERS MAY BE USED INSTEAD OF PROVIDING GFCI RECEPTACLES.	
**SHUNT TRIP BREAKER		PHASE TOTALS:		16.68			14.98				18.25	
***HACR BREAKER		PANEL TOTAL:		49.91								
****BREAKER PADLOCK OFF DEVICE												

LOCATION: ATTIC LOFT		PANEL C SCHEDULE										EXISTING	
		PHASE: 3			WIRE: 4			VOLTS: 208/120					
		CURRENT RATING: 225 AMP - MAIN LUGS ONLY											
CKT NO	DESCRIPTION	BREAKER		KVA LOADS			BREAKER			DESCRIPTION	CKT NO		
		TRIP	POLE	CKT	A	B	C	CKT	POLE			TRIP	
1	SPARE	20	2	0.00	2.88			2.88	3	30	EXG FREEZER WALK-IN	2	
3	"	-	-	0.00		2.88		2.88	-	-	"	4	
5	SPARE	20	1	0.00			2.88	2.88	-	-	"	6	
7	EXG RECP - ROOFTOP CAMERA	20(NX)	1	0.60	1.88			1.28	3	20	EXG FRIDGE WALK-IN	8	
9	EXG CONTACTOR/MANUAL CONTROLS	20(NX)	1	0.60		1.88		1.28	-	-	"	10	
11	RECP - DRIVE THRU EQUIPMENT	20(NX)	1	0.36			1.64	1.28	-	-	"	12	
13	RECP - HME HEADSET CONTROL	20(NX)	1	0.18	0.30			0.12	1	20(NX)	EXG SAFE	14	
15	ELECTRONIC LOOP SYSTEM	20(NX)	1	1.44		2.04		0.60	1	20	EXG WALK-IN LTS/HEATER	16	
17	RTU-3 (EXG ATRIUM A/C)	40	3	2.40			3.30	0.90	1	20(N)	EXG RECP - OFFICE	18	
19	"	-	-	2.40	3.48			1.08	1	20(N)	EXG RECP - OFFICE	20	
21	"	-	-	2.40		2.94		0.54	1	20(NX)	EXG RECP - OFFICE	22	
23	EXG SECURITY MONITOR	20*	1	0.18			0.36	0.18	1	20(NX)	EXG OFFICE DOOR MONITOR	24	
25	FROZEN COKE MACHINE #14.17	30(NX)	2	3.12	3.66			0.54	1	20(N)	RECP - DRIVE-THRU WINDOWS	26	
27	"	-	-	3.12		3.12		0.00	1	20(N)	SPARE	28	
29	RECP - KITCHEN	20(NX)	1	0.72				0.72	0.00	1	20(N)	SPARE	30
31	EXG BUG LIGHT	20(NX)	1	0.18	0.18			0.00	2	30	SPARE	32	
33	EXG BUG LIGHT	20(N)	1	0.18				0.00	-	-	"	34	
35	SPARE	-	-	0.00				0.00	0.00	1	-	SPACE	36
*BREAKER LOCKON DEVICE		CIRCUIT TOTALS:		17.88			16.44				(NX) CONNECT TO EXISTING BREAKER (N) PROVIDE NEW BREAKER		
**SHUNT TRIP BREAKER		PHASE TOTALS:		12.38			13.04				8.90		
***HACR BREAKER		PANEL TOTAL:		34.32									
****BREAKER PADLOCK OFF DEVICE													

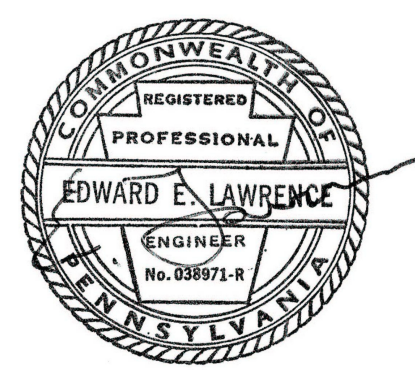
LOCATION: UTILITY RM		PANEL M SCHEDULE										42 KAIC
		PHASE: 3			WIRE: 4			VOLTS: 208/120				
		CURRENT RATING: 800 AMP - MAIN BREAKER										
CKT NO	DESCRIPTION	BREAKER		KVA LOADS			BREAKER			DESCRIPTION	CKT NO	
		TRIP	POLE	CKT	A	B	C	CKT	POLE			TRIP
1	PANEL A	150	3	10.17	22.55			12.38	3	200	PANEL C (IN ATTIC LOFT)	2
3	"	-	-	7.99		21.03		13.04	-	-	"	4
5	"	-	-	6.62			15.52	8.90	-	-	"	6
7	PANEL B	200	3	16.68	31.24			14.56	3	150	PANEL D (IN KITCHEN)	4
9	"	-	-	14.98		31.30		16.32	-	-	"	6
11	"	-	-	18.25			29.69	11.44	-	-	"	8
13	RTU-4 (REAR A/C)	45	3	3.13	8.53			5.40	3	90	RTU-1 (EXG KITCHEN A/C)	6
15	"	-	-	3.13		8.53		5.40	-	-	"	8
17	"	-	-	3.13			8.53	5.40	-	-	"	10
19	RTU-5 (EXG PLAYROOM A/C)	50	3	3.00	3.72			0.72	2	50	PANEL E	8
21	"	-	-	3.00		3.18		0.18	-	-	"	10
23	"	-	-	3.00			3.00	0.00	1	-	SPACE	12
25	RTU-2 (FRONT LINE A/C)	45	3	3.13	8.13			5.00	3	100	PANEL F (TRASH AREA)	10
27	"	-	-	3.13		8.13		5.00	-	-	"	12
29	"	-	-	3.13			8.13	5.00	-	-	"	14
31	SPACE	-	3	0.00	0.00			0.00	3	-	SPACE	12
33	"	-	-	0.00		0.00		0.00	-	-	"	14
35	"	-	-	0.00		0.00		0.00	-	-	"	16
37	SPACE	-	3	0.00	0.00			0.00	3	-	SPACE	14
39	"	-	-	0.00		0.00		0.00	-	-	"	16
41	"	-	-	0.00		0.00		0.00	-	-	"	18
*BREAKER LOCKON DEVICE		CIRCUIT TOTALS:		102.47			108.74				PANEL SHALL BE SIEMENS WITH BREAKER TYPES WHICH PROVIDE SERIES RATING FOR PANELS C, E & F.	
**SHUNT TRIP BREAKER		PHASE TOTALS:		74.17			72.17				64.87	
***HACR BREAKER		PANEL TOTAL:		211.21								

LOCATION: MAIN BOARD EQUIPMENT PANEL		PANEL D SCHEDULE										22 KAIC
		PHASE: 3			WIRE: 4			VOLTS: 208/120				
		CURRENT RATING: 150 AMP - MAIN LUGS ONLY										
CKT NO	DESCRIPTION	BREAKER		KVA LOADS			BREAKER			DESCRIPTION	CKT NO	
		TRIP	POLE	CKT	A	B	C	CKT	POLE			TRIP
1	PHU/MICROWAVE	20	2	1.92	3.84			1.92	2	20	PHU/MICROWAVE	2
3	"	-	-	1.92		3.84		1.92	-	-	"	4
5	PHU/MICROWAVE	20	2	1.92			3.84	1.92	2	20	PHU/MICROWAVE	6
7	"	-	-	1.92	3.84			1.92	-	-	"	8
9	BREAKFAST TOASTER #049	20	2	1.92		3.84		1.92	2	20	EGG COOKER #052	10
11	"	-	-	1.92			3.84	1.92	-	-	"	12
13	VERTICAL TOASTER	30	2	2.88	4.80			1.92	1	20	SAND,HOLD/HEAT LAMP #51	14
15	"	-	-	2.88		4.80		1.92	1	20	SAND,HOLD/HEAT LAMP #51	16
17	HEATED SURFACES	20	1	0.24			2.32	2.08	2	25	MICROWAVE OVEN #050	18
19	SPACE	-	1	0.00	2.08			2.08	-	-	"	20
21	UTILITY	20	1	1.92		3.84		1.92	1	20	UTILITY	22
23	SPACE	-	1	0.00			1.44	1.44	1	20	H/K HEAT CHUTE #030B	24
*LOCKED BREAKER		CIRCUIT TOTAL										





**BURGER KING RESTAURANT #3534**  
ALTERNATIONS TO EXISTING RESTAURANT  
100 N. West End Boulevard  
Quakertown PA 18951,  
Richland Township, Bucks County



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SPECIFICATIONS

E6.1

**ELECTRICAL SPECIFICATIONS**

- 1.1 THE ARCHITECTURAL GENERAL CONDITIONS SHALL APPLY TO AND FORM A PART OF THE ELECTRICAL SECTION OF THESE SPECIFICATIONS.
- 1.2 PROVIDE ALL MATERIALS, LABOR, EQUIPMENT, AND TOOLS NECESSARY FOR A COMPLETE AND WORKABLE ELECTRICAL SYSTEM AS INDICATED ON THE DRAWINGS. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC), LOCAL AND STATE CODES HAVING JURISDICTION, AND APPLICABLE MANUFACTURER'S RECOMMENDATIONS.
- 1.3 UNLESS NOTED OTHERWISE, THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL CONTROL DEVICES TOGETHER WITH CONTROL WIRING, CONDUIT, AND ALL APPURTENANCES AND ACCESSORIES NECESSARY TO PERFORM THE OPERATING FUNCTIONS AS SPECIFIED. CONTROL DEVICES SHALL INCLUDE, BUT NOT BE LIMITED TO, MOTOR STARTERS, THERMOSTATS, SWITCHING RELAYS, CONTROL RELAYS, AND TRANSFORMERS. WIRING MATERIALS AND INSTALLATION SHALL CONFORM WITH THE NATIONAL ELECTRIC CODE. CONTROL WIRING SHALL INCLUDE, BUT IS NOT LIMITED TO, 120 VOLT CONTROL WIRING AS WELL AS LOW VOLTAGE DIMMING WIRING, OCCUPANCY SENSOR WIRING, AND OTHER LOW VOLTAGE WIRING. ALL CONTROL SYSTEM WIRING EXCEPT LOW VOLTAGE WIRING, SHALL BE 14 AWG MINIMUM INSTALLED IN 1/2-INCH DIAMETER MINIMUM CONDUIT. FLEXIBLE METAL CONDUIT SHALL BE PERMITTED TO MAKE RUNS OF THREE FEET OR LESS FOR FINAL EQUIPMENT CONNECTIONS. LOW VOLTAGE, CONTROL WIRING SHALL BE OPEN, PLENUM RATED, CABLE, ROUTED IN ACCESSIBLE, CONCEALED SPACES ON J-HOOKS WITH CLOSURE TIES ON FIVE FOOT CENTERS WHEREVER POSSIBLE. IN INACCESSIBLE SPACES, INCLUDING IN WALLS, LOW VOLTAGE CONTROL WIRING SHALL BE ROUTED IN 3/4-INCH CONDUIT. OPEN CONTROL WIRING SHALL NOT REST ON OR IMPEDE THE REMOVAL OF CEILING TILES.
- 1.4 THE CONTRACTOR SHALL VISIT THE SITE, EXAMINE ALL CONDITIONS, AND MAKE ALLOWANCES FOR DIFFICULTIES AND CONTINGENCIES AFFECTING THE PROPER EXECUTION OF THIS CONTRACT.
- 1.5 THE CONTRACTOR SHALL OBTAIN AND PAY ALL FEES NECESSARY FOR PERMITS AND INSPECTIONS REQUIRED WITH HIS WORK. ALL ELECTRICAL WORK SHALL BE INSPECTED AND CERTIFIED BY AN INDEPENDENT INSPECTION AGENCY SUCH AS THE MIDDLE DEPARTMENT INSPECTION AGENCY (MDIA).
- 1.6 VERIFY ALL ELECTRICAL SERVICE INFORMATION SHOWN ON THE DRAWINGS WITH THE LOCAL POWER COMPANY PRIOR TO SUBMITTING A BID. ANY CHANGES OR SERVICE CHARGES IMPOSED BY THE POWER COMPANY SHALL BE QUALIFIED AND INCLUDED IN THE BID.
- 1.7 ALL MATERIALS SHALL BE MANUFACTURED WITHIN THE SCOPE OF THE UNDERWRITER'S LABORATORIES, SHALL CONFORM TO UL STANDARDS, CARRY UL APPROVAL, AND SHALL BE USED FOR THE PURPOSE FOR WHICH THEY ARE APPROVED.
- 1.8 ALL EQUIPMENT, MATERIALS, AND WORKMANSHIP SHALL BE GUARANTEED FOR A MINIMUM OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER.
- 1.9 WHERE PRODUCTS ARE SPECIFIED BY BRAND NAME, CATALOG NUMBERS, OR BY NAMES OF MANUFACTURERS, THE REFERENCE IS INTENDED TO BE DESCRIPTIVE AND NOT RESTRICTIVE AND IS SOLELY FOR THE PURPOSE OF INDICATING THE TYPE OF QUALITY OF ITEM THAT WILL BE ACCEPTABLE. AN APPROVED EQUAL WILL BE CONSIDERED UNLESS INDICATED OTHERWISE.
- 1.10 SHOP DRAWINGS SHALL BE SUBMITTED AND REVIEWED PRIOR TO ORDERING ANY EQUIPMENT.
- 1.11 THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH ALL OTHER TRADES.
- 1.12 ALL CUTTING AND PATCHING OF EVERY NATURE REQUIRED IN CONNECTION WITH THIS CONTRACT SHALL BE DONE BY THE CONTRACTOR WITH MECHANICS EXPERIENCED IN THEIR RESPECTIVE TRADES. ALL PATCHING SHALL MATCH ADJACENT FINISHES.
- 1.13 CONTRACTOR SHALL ENGAGE THE SERVICES OF A FIRE PROTECTION CONTRACTOR TO REVIEW THE DRAWINGS AND INSTALL FIRE PROTECTION PRODUCTS TO MAINTAIN THE INTEGRITY OF ALL PIPE, WIRE, CONDUIT, ETC. PENETRATIONS THROUGH ANY AND ALL FIRE RATED WALLS, FLOORS, BARRIERS, AND ASSEMBLIES. FIRE STOP TRAINING AND PRODUCTS SHALL BE 3M OR APPROVED EQUAL.
- 1.14 ALL EXCAVATIONS SHALL HAVE SOLID, UNDISTURBED BOTTOMS, SUBJECT TO APPROVAL BY THE OWNER'S REPRESENTATIVE PRIOR TO CONDUIT PLACEMENT. SHOULD BOTTOMS BECOME SOFT OR WET BEFORE CONDUIT IS PLACED, ALL SUCH UNSUITABLE BOTTOMS MUST BE REMOVED AT NO COST TO THE OWNER AND FILLED WITH CONCRETE. NO SLOPING BEARING WILL BE PERMITTED.
- 1.15 EXTEND ELECTRICAL SERVICE FROM THE POWER COMPANY'S TRANSFORMER. SERVICE EQUIPMENT AND INSTALLATION SHALL BE AS FOLLOWS:
  - A. SERVICE METER BASE SHALL BE AS SPECIFIED BY THE POWER COMPANY AND PROVIDED AND INSTALLED BY THE CONTRACTOR. CONDUIT (SIZE AS SPECIFIED BY THE POWER COMPANY) BETWEEN THE METER BASE AND CT CABINET BY CONTRACTOR; METERING CONDUCTORS AND TERMINATIONS BY POWER COMPANY.
  - B. CT CABINET SHALL BE AS SPECIFIED BY THE POWER COMPANY AND PROVIDED BY THE CONTRACTOR. THE CONTRACTOR SHALL INSTALL THE CT CABINET IN ACCORDANCE WITH POWER COMPANY REQUIREMENTS.
  - C. ELECTRIC METER SHALL BE PROVIDED AND INSTALLED BY THE POWER COMPANY.
  - D. CT'S SHALL BE PROVIDED BY THE POWER COMPANY AND INSTALLED BY THE CONTRACTOR. PRIMARY AND SECONDARY WIRING CONNECTIONS SHALL BE BY THE CONTRACTOR.
  - E. REUSE EXISTING TRANSFORMER VAULT. REUSE EXISTING TRANSFORMER PROVIDED BY THE POWER COMPANY.
- F. SECONDARY SERVICE CONDUIT AND CONDUCTORS SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR.
- 1.16 CONDUIT SHALL BE CONCEALED WHERE POSSIBLE UNLESS APPROVED OTHERWISE BY THE OWNER.
- 1.17 CONDUIT SHALL BE 3/4-INCH MINIMUM, UNLESS NOTED OTHERWISE, AND SHALL BE IN ACCORDANCE WITH THE FOLLOWING TYPES OF USAGE:
  - A. EMT – USE FOR INTERIOR EXPOSED AND CONCEALED WORK NOT SUBJECT TO DAMPNENESS OR SEVERE PHYSICAL DAMAGE. USE FOR EXTERIOR WORK NOT SUBJECT TO PHYSICAL DAMAGE. DO NOT USE WHEN IN CONTACT WITH CINDER FILL UNLESS PROTECTED BY AT LEAST TWO INCHES OF CONCRETE OR UNLESS TUBING IS AT LEAST 18 INCHES UNDER THE FILL. DO NOT USE EMT IN HAZARDOUS LOCATIONS. USE WITH COMPRESSION FITTINGS FOR EXTERIOR WORK. USE WITH SET SCREW FITTINGS FOR INTERIOR WORK.
  - B. RIGID METAL CONDUIT – USE FOR INTERIOR WORK SUBJECT TO CORROSIVE INFLUENCES, DAMPNENESS AND/OR SEVERE PHYSICAL DAMAGE. USE FOR EXTERIOR WORK SUBJECT TO PHYSICAL DAMAGE.
  - C. PVC – USE SCHEDULE 40 FOR BELOW GRADE CONCEALED AREAS AND SCHEDULE EB ENCASED IN CONCRETE FOR UNDERGROUND DUCT BANK INSTALLATIONS. DO NOT USE FOR SUPPORT OF FIXTURES OR EQUIPMENT, WHERE SUBJECT TO PHYSICAL DAMAGE, WHERE SUBJECT TO HIGH AMBIENT TEMPERATURES, IN RETURN AIR PLENUMS, OR WITH CONDUCTORS WHOSE INSULATION TEMPERATURE LIMITATIONS EXCEED THOSE FOR WHICH THE CONDUIT IS APPROVED. DO NOT USE PVC CONDUIT IN HAZARDOUS LOCATIONS.
  - D. MC CABLE IS ONLY PERMITTED FOR LIGHTING FIXTURE WHIPS.
- 1.18 INSTALL FLEXIBLE METALLIC CONDUIT AT ALL MOTOR CONNECTIONS INSIDE THE BUILDING AND LIQUID-TIGHT FLEXIBLE METAL CONDUIT AT MOTOR CONNECTIONS OUTSIDE THE BUILDING. CONDUIT SHALL NOT EXCEED 18 INCHES IN LENGTH.
- 1.19 UNLESS OTHERWISE NOTED, ALL WIRE SHALL BE OF SOFT DRAWN COPPER, SOLID OR STRANDED OF 98 PERCENT CONDUCTIVITY WITH INSULATION RATED 600 VOLTS. ALL SIZES SHOWN ON THE DRAWINGS ARE BASED ON COPPER. ALUMINUM CONDUCTORS FOR #2 AWG AND LARGER MAY BE USED WHEN RESIZED IN STRICT ACCORDANCE WITH NEC REQUIREMENTS. CONDUCTORS SHALL BE AS FOLLOWS:
  - A. #8 AND LARGER SHALL BE STRANDED WITH TYPE THHN/THWN INSULATION.
  - B. #10 AND SMALLER SHALL BE SOLID WITH TYPE THHN/THWN INSULATION.
  - C. #12 SHALL BE MINIMUM SIZE CONDUCTOR EXCEPT #14 MAY BE USED FOR CONTROL CIRCUIT WIRING AND #10 SHALL BE THE MINIMUM SIZE FOR CIRCUITS OVER 100 FEET LONG.
- 1.20 ANY EMPTY CONDUIT INSTALLED FOR FUTURE USE SHALL HAVE A 200 POUND TEST NYLON PULL LINE.
- 1.21 WIRE CONNECTIONS FOR SPlicing #8 AWG AND SMALLER SHALL BE MADE WITH PRESSURE CONNECTORS CONSISTING OF CONE-SHAPED COIL SPRINGS WITH INSULATED COVERS. SPlicing OF CONDUCTORS LARGER THAN #8 SHALL BE MADE USING MECHANICAL SPlicing OR COMPRESSION TYPE DEVICES.
- 1.22 ALL LUGS AND/OR CIRCUIT BREAKER LUG CONNECTORS SHALL BE COPPER OR HIGH PERCENTAGE COPPER ALLOY RATED FOR USE WITH 75 DEGREE C WIRING.
- 1.23 PIN ADAPTER TERMINALS SHALL BE INSTALLED ON ALL ALUMINUM CONDUCTOR TERMINATIONS. TERMINALS SHALL CONSIST OF A TIN-PLATED STRANDED COPPER WIRE PIGTAIL AND A TIN-PLATED ALUMINUM BARREL PRE-FILLED WITH OXIDE INHIBITOR AND CAPPED. PIN ADAPTER TERMINALS SHALL BE PROVIDED WITH COMPATIBLE INSULATING COVERS AND HAVE A 90 DEGREES C RATING PER UL 466B.
- 1.24 OUTLET BOXES OF PROPER TYPE AND NOT LESS THAN FOUR INCHES SQUARE SHALL BE USED AT ALL LIGHTING, RECEPTACLE AND SWITCH LOCATIONS. PLASTER RINGS SHALL BE USED AT EACH BOX LOCATION WHERE NECESSARY. SURFACE MOUNTED WIRING DEVICES SHALL BE INSTALLED IN "HANDY BOX" TYPE OUTLET BOXES WITH CORRESPONDING COVER PLATES. OUTLET BOXES SHALL BE AS MANUFACTURED BY AMERICAN ELECTRIC, RACO, CARLON, OR APPROVED EQUAL.
- 1.25 JUNCTION BOXES OF AMPLE SIZE SHALL BE PROVIDED AS REQUIRED BY CONSTRUCTION IN ACCORDANCE WITH THE NEC. BOXES SHALL BE CONSTRUCTED OF CAST RUST-RESISTING METAL OR OF 14 GAUGE GALVANIZED STEEL WITH RIVETED OR WELDED JOINTS AND PROVIDED WITH COVERS OF THE SAME MATERIAL WHICH SHALL BE SCREWED OR HINGED TO THE BOX. BOXES SHALL BE FLANGED AND TAPPED TO RECEIVE MACHINE SCREWS. HOLES IN COVERS SHALL BE IN ALIGNMENT WITH TAPPED HOLES IN BOX. WHERE NO SIZES ARE GIVEN ON THE DRAWINGS, BOXES SHALL BE NO SMALLER THAN THE MINIMUM SIZE ALLOWED BY NEC. WHERE FEEDERS OF DIFFERENT SYSTEMS OR VOLTAGES PASS THROUGH THE SAME BOX, BARRIERS SHALL BE PROVIDED FOR PROPER SEPARATION.
- 1.26 SWITCHES SHALL BE SPECIFICATION GRADE, 120/277 VOLTS AC, TOGGLE TYPE RATED 20 AMPERES. DIMMER SWITCHES SHALL BE MATCHED TO THE DIMMING BALLAST OR DRIVER AND SHALL HAVE A CAPACITY GREATER THAN THE COMBINED FIXTURE LOAD TO BE DIMMED. SWITCH TYPE AND NUMBER OF POLES SHALL BE AS INDICATED ON THE DRAWINGS. SWITCHES SHALL BE AS MANUFACTURED BY LEVITON, HUBBELL, GENERAL ELECTRIC, OR APPROVED EQUAL.
- 1.27 DUPLEX RECEPTACLES SHALL BE SPECIFICATION GRADE, POLARIZED, GROUNDED, NEMA 5-20R, 20 AMPERE, 125 VOLTS AC. RECEPTACLES SHALL BE AS MANUFACTURED BY LEVITON, HUBBELL, GENERAL ELECTRIC, OR APPROVED EQUAL. RECEPTACLES WITH INTEGRAL GROUND FAULT CIRCUIT INTERRUPTING CAPACITY SHALL BE PROVIDED AS INDICATED ON THE DRAWINGS.
- WEATHERPROOF DUPLEX RECEPTACLES SHALL BE WEATHER RESISTANT, GROUND FAULT CIRCUIT INTERRUPTING TYPE MOUNTED IN A WEATHERPROOF ENCLOSURE WHICH RETAINS ITS RATING WHILE IN USE. USB RECEPTACLES SHALL HAVE TWO 5VDC, 3.0A USB CHARGING PORTS IN ADDITION TO THE STANDARD DUPLEX REQUIREMENTS.
- 1.28 WIRING DEVICES AND COVER PLATES ARE TO BE COLOR COORDINATED WITH THE OWNER'S REPRESENTATIVE. ONE-PIECE DEVICE COVER PLATES SHALL BE PROVIDED FOR ALL OUTLETS. PLATES SHALL BE SMOOTH THERMOPLASTIC TYPE AS MANUFACTURED BY LEVITON, HUBBELL, GENERAL ELECTRIC, OR APPROVED EQUAL.
- 1.29 SAFETY SWITCHES SHALL BE THE SIZE AND TYPE AS SHOWN ON THE DRAWINGS. FUSE SIZE, IF REQUIRED, SHALL BE AS SHOWN ON THE DRAWINGS. SWITCHES SHALL BE HEAVY DUTY WITH QUICK-MAKE, QUICK-BREAK OPERATING MECHANISM. THE HANDLE AND MECHANISM SHALL BE AN INTEGRAL PART OF THE BOX AND NOT THE COVER WITH POSITIVE PAD LOCKING PROVISIONS IN THE "OFF" POSITION. SWITCHES SHALL BE NEMA 1 (INTERIOR) AND NEMA 3R (EXTERIOR) AND SHALL BE AS MANUFACTURED BY SQUARE D, SIEMENS, GENERAL ELECTRIC, OR APPROVED EQUAL.
- 1.30 PROVIDE FOR EVERY FUSE CLIP TO WHICH A CIRCUIT HAS BEEN CONNECTED, A NONRENEWABLE CARTRIDGE FUSE OF THE SIZE INDICATED ON THE DRAWINGS OR AS REQUIRED IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. ALL FUSES SHALL BE DUAL ELEMENT TIME DELAY UNLESS NOTED OTHERWISE.
- 1.31 PANELBOARDS SHALL BE DEAD FRONT, SURFACE OR FLUSH MOUNT, AS INDICATED ON THE DRAWINGS, WITH CAPACITY AND VOLTAGE CHARACTERISTICS AS SHOWN ON THE PANEL SCHEDULES. PANELBOARDS SHALL BE COMPLETE WITH COVERS, KEY LOCKED DOORS, COPPER BUS, COPPER GROUNDING BAR, AND SOLID NEUTRAL BAR, WITH NEUTRAL BAR INSULATED FROM THE CABINET. PROVIDE WARNING LABELS ON THE FRONT OF ENCLOSURES WARNING OF POTENTIAL ELECTRIC ARC FLASH HAZARD IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE. PANELBOARDS SHALL BE AS MANUFACTURED BY SIEMENS AND SHALL HAVE BREAKER TYPES WHICH MAINTAIN THE SHORT CIRCUIT SERIES RATING OF DOWNSTREAM PANELS.
- 1.32 CIRCUIT BREAKERS SHALL BE ENCLOSED MOLDED CASE, BOLT-ON (EXCEPT THAT SQUARE D I-LINE BREAKERS ARE ACCEPTABLE), WITH QUICK-MAKE, QUICK-BREAK TOGGLE MECHANISM, NON-FUSIBLE CONTACTS, AND INVERSE TIME SHORT CIRCUIT CHARACTERISTICS. BREAKERS SHALL BE TRIP-FREE ON OVERLOAD AND SHALL INDICATE CLEARLY WHETHER THEY ARE OPENED, CLOSED, OR TRIPPED. MULTI-POLE UNITS SHALL HAVE THERMAL ELEMENT IN EACH POLE AND SHALL HAVE A SINGLE HANDLE. CIRCUIT BREAKER SHORT CIRCUIT RATINGS SHALL BE AS INDICATED ON THE DRAWINGS; 10,000 AMPERES SYMMETRICAL MINIMUM FOR 208/120 VOLT SYSTEM. CONTRACTOR SHALL OBTAIN SYSTEM SHORT CIRCUIT CURRENTS FROM THE POWER COMPANY AND SHALL INCLUDE THIS INFORMATION IN HIS SHOP DRAWING SUBMITTAL TO THE OWNER'S REPRESENTATIVE. BREAKERS SHALL BE COMPATIBLE WITH PANELBOARDS PROVIDED. ALL 20 AMPERE, SINGLE POLE CIRCUIT BREAKERS FOR LIGHTING CIRCUITS SHALL BE "SWD" RATED. CIRCUIT BREAKERS FOR DWELLING UNIT BEDROOMS SHALL BE AFCI RATED AND CIRCUIT BREAKERS FOR AIR CONDITIONING AND REFRIGERATION UNITS SHALL BE HACR RATED.
- 1.33 ALL PANELBOARDS SHALL CONTAIN AN UPDATED TYPEWRITTEN PANEL DIRECTORY TO INDICATE AREA OR EQUIPMENT SERVED.
- 1.34 THE CONTRACTOR SHALL PROVIDE THE OWNER WITH A BALANCED THREE-PHASE ELECTRICAL SYSTEM BY ARRANGING THE SINGLE PHASE LOADS AS NECESSARY TO ACHIEVE THE BALANCE. SHOULD THE POWER COMPANY, OWNER, OR OWNER'S REPRESENTATIVE FIND AN UNFAVORABLE OPERATING CONDITION AS A RESULT OF AN IMPROPER LOAD BALANCE, THE CONTRACTOR SHALL MAKE SUCH CHANGES AS NECESSARY TO BALANCE THE LOAD WITHOUT ADDITIONAL COST TO THE OWNER.
- 1.35 PROVIDE 2/0 COPPER GROUNDING ELECTRODE CONDUCTOR FROM SERVICE ENTRANCE TO THE INTERIOR METAL WATER PIPING SYSTEM AND OTHER GROUNDING ELECTRODES AS REQUIRED BY NEC. CONNECT GROUND "JUMPER" TO WATER LINE ON BOTH SIDES OF WATER METER WITH MECHANICAL GROUND CONNECTION. PROVIDE 3/4-INCH BY 10-FOOT COPPER-CLAD GROUND ROD AS SUPPLEMENTAL GROUND. INSTALL AND CONNECT TO THE GROUNDING ELECTRODE SYSTEM 20 FEET OF AWG #4 BARE COPPER GROUND CONDUCTOR COVERED BY TWO INCHES OF CONCRETE IN AN EXTERIOR FOUNDATION OR FOOTER NEAR THE SERVICE ENTRANCE IN DIRECT CONTACT WITH THE EARTH.
- 1.36 LIGHTING FIXTURES AND LAMPS SHALL BE AS SCHEDULED ON THE DRAWINGS OR APPROVED EQUAL. FIXTURES SHALL BE PURCHASED FROM THE OWNER'S NATIONAL ACCOUNT.
- 1.37 FLUORESCENT LIGHTING FIXTURES THAT UTILIZE DOUBLE-ENDED LAMPS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE SHALL HAVE A DISCONNECTING MEANS INTERVAL TO THE FIXTURE WHICH DISCONNECTS ALL CONDUCTORS TO THE BALLAST AND IS LOCATED TO ALLOW SERVICING THE BALLAST IN PLACE. FOR FIXTURES CONNECTED TO MULTIWIRE CIRCUITS, THE DISCONNECTING MEANS SHALL SIMULTANEOUSLY BREAK ALL SUPPLY CONDUCTORS TO THE BALLASTS, INCLUDING THE NEUTRAL.
- 1.38 LED FIXTURES SHALL COMPLY WITH UL 1598 AND UL 8750. LED MODULES SHALL BE UL RECOGNIZED COMPONENTS WHICH COMPLY WITH IESNA LM-79 AND LM-80 STANDARDS. INDOOR LUMINAIRES SHALL BE UL LISTED FOR 25 DEGREES C AMBIENT ENVIRONMENTS. FIXTURES SHALL INCLUDE LONG-LIFE LED SYSTEMS COUPLED WITH AN ELECTRICAL DRIVER TO DELIVER OPTIMAL PERFORMANCE. FIXTURES SHALL HAVE A PROJECTED LIFE OF 60,000 HOURS MINIMUM AT 70 PERCENT LUMEN OUTPUT. THE DRIVER SHALL HAVE A UNIVERSAL VOLTAGE RATING OF 120-277V AND SHALL INCLUDE 0-10V DIMMING AS A STANDARD FEATURE. THE DIMMING DRIVER SHALL BE MATCHED TO THE DIMMER SWITCH. UNLESS OTHERWISE NOTED, FIXTURES SHALL BE 3500K WITH A CRI OF 85.
- 1.39 THE ELECTRICAL CONTRACTOR SHALL CONSULT THE ROOM FINISH SCHEDULE AS TO THE TYPE OF CEILING CONSTRUCTION. HE SHALL BE RESPONSIBLE FOR ORDERING THE PROPER FIXTURES WITH HARDWARE FOR INSTALLATION IN OR ON THE TYPE OF CEILING SPECIFIED.
- 1.40 FLUORESCENT LIGHTING FIXTURES SHALL HAVE LOW NOISE LEVEL, HIGH POWER FACTOR (HPF) ENERGY SAVING ELECTRONIC BALLASTS OR DRIVER, BE CLASS "P" TYPE AND EMPLOY 32 WATT T8 LAMPS. DIMMING BALLASTS SHALL BE 0-10V, 10-100 PERCENT TYPE UNLESS OTHERWISE NOTED AND SHALL BE MATCHED TO THE DIMMER SWITCH.
- 1.41 ALL UNHEATED SPACES SHALL BE PROVIDED WITH A ZERO DEGREE MINIMUM STARTING TEMPERATURE BALLAST.
- 1.42 ALL ADDITIONAL WIRING AND/OR CONDUCTORS REQUIRED FOR LIGHTING CONTROL INCLUDING THAT REQUIRED FOR SWITCHED RECEPTACLES, THREE-WAY SWITCHING, UNSWITCHED CONDUCTORS FOR EXIT SIGNS, EMERGENCY LIGHTS, NIGHT LIGHTS, AND OCCUPANCY SENSORS; AND LOW VOLTAGE WIRING FOR OCCUPANCY SENSING AND DIMMING CONTROL SHALL BE PROVIDED EVEN THOUGH NOT SPECIFICALLY SHOWN ON THE DRAWINGS.
- 1.43 MANUAL MOTOR STARTER SHALL BE NEMA 1, FRACTIONAL HORSEPOWER TYPE FOR "ON-OFF" CONTROL OF SMALL MOTORS. PROVIDE STARTER WITH MELTING ALLOY TYPE THERMAL OVERLOAD RELAY. STARTERS SHALL BE AS MANUFACTURED BY SQUARE D, GENERAL ELECTRIC, SIEMENS, OR APPROVED EQUAL.
- 1.44 MOTOR STARTER RELAYS FOR SINGLE PHASE, SINGLE SPEED, NON-REVERSING MOTORS UP TO ONE HORSEPOWER SHALL BE HORSEPOWER RATED WITH ONE N.O. CONTACT. MOTOR STARTER RELAYS SHALL BE CONTROLLED BY A CONTINUOUS RATED COIL OF AC OR DC VOLTAGE AS REQUIRED BY THE ATC CONTRACTOR. COORDINATE REQUIREMENTS WITH THE ATC CONTRACTOR PRIOR TO PURCHASE. FOR INSTALLATION NOT CONTROLLED BY THE ATC SYSTEM, PROVIDE 120 VAC COILS. INDOOR INSTALLATIONS SHALL BE PROVIDED IN THE AVAILABLE NEMA 1 ENCLOSURE. OUTDOOR INSTALLATIONS SHALL BE AN OPEN RELAY MOUNTED IN A SEPARATE NEMA 3R OR 4 BOX. MOTOR STARTER RELAYS SHALL BE CLASS 8501 TYPE C MANUFACTURED BY SQUARE D.
- 1.45 COMBINATION MAGNETIC MOTOR STARTER/DISCONNECT SWITCH SHALL BE THREE POLE, NEMA 1 INDOOR OR NEMA 3R OUTDOOR, FULL VOLTAGE, NON-REVERSING, THERMAL MAGNETIC CIRCUIT BREAKER (TYPE AND SIZES AS SHOWN ON THE DRAWINGS), WITH SOLID STATE OVERLOAD RELAYS, SURGE PROTECTED COILS, RED PILOT LIGHT, HAND-OFF-AUTO SWITCH, AND 120 VOLTS CONTROL POWER TRANSFORMER, UNLESS OTHERWISE NOTED. UNITS SHALL BE AS MANUFACTURED BY SQUARE D, GENERAL ELECTRIC, SIEMENS, OR APPROVED EQUAL.
- 1.46 MAGNETIC MOTOR STARTERS SHALL BE THE SAME AS THE COMBINATION STARTER WITHOUT THE CIRCUIT BREAKER.
- 1.47 PHOTOELECTRIC CONTROL SHALL BE SPST, 120 VOLTS, 2000 WATTS SUITABLE FOR MOUNTING ON A 1/2-INCH CONDUIT FITTING. CONTROL SHALL BE EQUIPPED WITH A 180 DEGREE SWIVEL; TORK, MODEL NO. 2001 OR APPROVED EQUAL.
- 1.48 UNLESS OTHERWISE SHOWN, THE TIME CLOCK SHALL BE A MOTOR OPERATED TIME SWITCH WITH SEVEN DAY DIAL AND CONTACTS RATED 40 AMP AT 120 VOLTS. SWITCH SHALL BE DPST, NEMA-1, COMPLETE WITH 120-VOLT CLOCK MOTOR, SKIP-A-DAY FEATURE, MANUAL ON-OFF BYPASS SWITCH AND A 12-HOUR SPRING DRIVEN RESERVE POWER FEATURE (TORK MODEL 7200L OR EQUAL). PROVIDE ASTRONOMICAL DIAL FOR TIME SWITCHES WHICH CONTROL OUTDOOR LIGHTING (TORK MODEL 7200ZL OR EQUAL). MOTOR OPERATED TIME SWITCH SHALL BE MANUFACTURED BY TORK, INTERMATIC, PARAGON OR APPROVED EQUAL.
- 1.49 CONTROL RELAY SHALL BE ELECTRICALLY HELD WITH 24 VOLT COIL, TWO POLE AND CONTACTS RATED 20 AMPERES EACH. RELAY SHALL BE PROVIDED IN NEMA 1 ENCLOSURE AS MANUFACTURED BY SQUARE D, GENERAL ELECTRIC, ALLEN BRADLEY, OR APPROVED EQUAL.
- 1.50 LIGHTING CONTACTOR SHALL BE ELECTRICALLY HELD WITH 120 VOLT COIL AND PROVIDED WITH THE NUMBER OF POLES, RATED 20 AMPERES EACH, AS INDICATED ON THE DRAWINGS. CONTACTOR SHALL BE PROVIDED IN NEMA 1 ENCLOSURE AS MANUFACTURED BY SQUARE D, GENERAL ELECTRIC, ALLEN BRADLEY, OR APPROVED EQUAL.
- 1.51 TELEPHONE/DATA SYSTEM
  - A. TELEPHONE/DATA SYSTEM WIRING IN WALLS AND CONCEALED LOCATIONS SHALL BE INSTALLED IN 3/4-INCH EMT TO AN ACCESSIBLE LOCATION, UNLESS NOTED OTHERWISE. ALL CONDUIT WITH PULL WIRE SHALL BE STUBBED ABOVE SUSPENDED CEILING FOR INSTALLATION OF OPEN PLENUM RATED WIRING TO TELEPHONE AND/OR DATA EQUIPMENT AREA BY OTHERS.
  - B. THE CONTRACTOR SHALL LOCATE TELEPHONE AND/OR DATA OUTLETS AS INDICATED ON THE DRAWINGS AND IN ACCORDANCE WITH OWNER'S REQUIREMENTS. PROVIDE OUTLET BOX WITH BLANK COVER OR COVER WITH BUSHED OPENING AS DIRECTED BY THE OWNER OF THE SAME COLOR AS OTHER DEVICES IN THE AREA.
  - C. THE CONTRACTOR SHALL INSTALL OWNER FURNISHED TELEPHONE EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND LOCAL TELEPHONE COMPANY REQUIREMENTS.
- 1.52 ALARM SYSTEM
  - A. THIS SECTION OF THE SPECIFICATIONS COVERS THE FURNISHING OF ALL LABOR, MATERIALS, AND ACCESSORIES NECESSARY FOR, BUT NOT NECESSARILY LIMITED TO, THE RECONFIGURATION OF THE EXISTING ALARM SYSTEM FOR THIS PROJECT.
  - B. THE ALARM SYSTEM SHALL BE A SUPERVISED, ADDRESSABLE AND ANNUNCIATED, NON-CODED LOCAL ALARM SYSTEM AS DESCRIBED HEREIN AND

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AS SHOWN ON THE PLANS. THE SYSTEM SHALL BE UL APPROVED AND MEET ALL STATE AND LOCAL FIRE ALARM CODES.

C. THE SYSTEM SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF NFPA.

D. THE SYSTEM SHALL BE OF ONE MANUFACTURER EXPERIENCED IN THE FIELD OF FIRE ALARM SYSTEM MANUFACTURE FOR A MINIMUM OF FIVE YEARS. THE SYSTEM SHALL BE A NON-PROPRIETARY SYSTEM.

E. THE SYSTEM SHALL OPERATE FROM 120 VOLTS, 60 HZ POWER AND SHALL INCLUDE ALL FIRE ALARM BELLS/HORNS, PANELS, BATTERIES, ANNUNCIATORS, CONDUIT, WIRE, OUTLET BOXES, AND ANY OTHER APPURTENANCES NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM INCLUDING PROVISION OF 20 AMPERE, 120 VOLTS CIRCUITS FROM THE NEAREST PANELBOARDS WITH SPARE CAPACITY AS REQUIRED.

F. AUXILIARY POWER FOR SYSTEM SHALL BE WET CELL LEAD CALCIUM BATTERIES SIZED TO OPERATE SYSTEM UNDER SUPERVISORY CONDITIONS FOR 24 HOURS AND THEN SUBSEQUENTLY OPERATE ALL ALARM SIGNAL DEVICES UNDER ALARM CONDITIONS FOR FIVE MINUTES. FOR EXTENSION OF EXISTING SYSTEMS PROVIDE ADDITIONAL BATTERIES AND CHARGERS AS REQUIRED TO MAINTAIN THE ABOVE OPERATION FOR ADDITIONAL INITIATION AND INDICATING DEVICES.

G. SMOKE DETECTORS SHALL BE PHOTOELECTRIC TYPE. DETECTOR CIRCUITS SHALL BE OF THE TWO-WIRE TYPE WHEREBY THE DETECTOR OPERATING POWER IS TRANSMITTED OVER THE SAME CONDUCTORS AS THE INITIATING CIRCUIT. DETECTORS SHALL BE COMPATIBLE WITH THE CONTROL PANEL AND SHALL BE SUITABLE FOR USE IN A SUPERVISED CIRCUIT.

H. ALL DEVICES SHALL MATCH EXISTING IN USE.

I. INSTALLATION OF ALL WIRING FOR ALARM SYSTEMS SHALL BE IN CABLE TRAY, CONDUIT, OR ELECTRICAL METALLIC TUBING EXCEPT THAT OPEN PLENUM RATED CABLE MAY BE USED IN CONCEALED, ACCESSIBLE AREAS. OPEN CONDUCTORS SHALL BE SUPPORTED IN ACCESSIBLE CONCEALED AREAS THROUGH THE USE OF J-HOOKS WITH CLOSURE TIES. J-HOOKS SHALL BE INSTALLED ON FOUR TO FIVE FOOT INTERVALS. CONDUCTOR SUPPORT THROUGH THE USE OF BRIDLE RINGS, TIE WRAPS, ELECTRICAL TAPE, OR 'HOMEMADE' HANGERS IS NOT PERMITTED. CONDUCTORS SHALL NOT REST ON SUSPENDED CEILING OR BE TIED TO CEILING WIRE SUPPORTS. ALL CIRCUIT CONDUCTORS SHALL BE IDENTIFIED WITHIN EACH ENCLOSURE WHERE A TAP, SPLICE, OR TERMINATION IS MADE.

J. THE CONTRACTOR AND EQUIPMENT MANUFACTURER SHALL JOINTLY GUARANTEE ALL WIRING AND EQUIPMENT FOR THIS SYSTEM TO BE FREE OF DEFECT IN WORKMANSHIP AND MATERIAL FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE.

K. THE ENTIRE FIRE ALARM SYSTEM INCLUDING ANY PREVIOUSLY EXISTING PORTIONS SHALL BE TESTED IN THE PRESENCE OF THE OWNER AND LOCAL AUTHORITIES. ALL NEW AND/OR EXTENDED FIRE ALARM SYSTEMS FOR FULL BUILDING OR PARTIAL BUILDING AREAS REQUIRING NEW, MODIFIED, OR SUPPLEMENTAL FIRE ALARM CONTROL PANELS SHALL BE TESTED IN ACCORDANCE WITH NFPA 72 INITIAL ACCEPTANCE TESTING. EXTENDED FIRE ALARM SYSTEMS REQUIRING ONLY NEW INDICATING, INITIATING, CONTROL, AND/OR MONITORING DEVICES SHALL BE TESTED IN ACCORDANCE WITH NFPA 72 REACCEPTANCE TESTING. THE CONTRACTOR SHALL PROVIDE ALL LABOR, EQUIPMENT, AND MATERIAL NEEDED FOR THE TEST WITHOUT ADDITIONAL CHARGE.