SCOPE OF WORK

1– PROVIDE NEW DESIGN POWER & LIGHTING ELECTRICAL DISTRIBUTION FOR A NEW RESIDENCE.

ELECTRICAL SPECIFICATIONS

ELECTRICAL — DIVISION 16

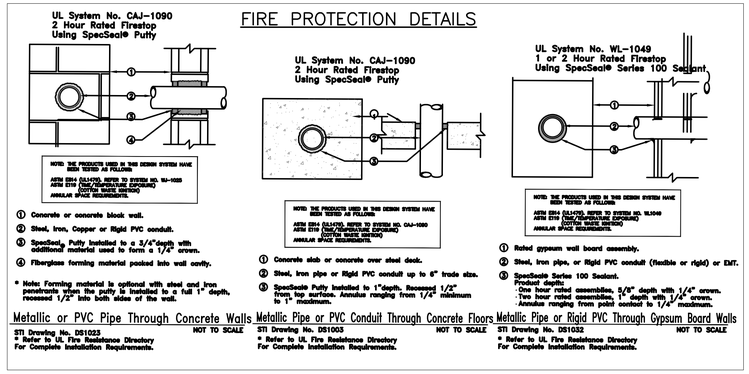
1. THE WORK SHALL COMPLY WITH THE LATEST APPLICABLE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE 2020, FLORIDA BUILDING CODE 2023 8TH EDITION, O.S.H.A. (LOCAL) REQUIREMENTS AND ALL OTHER LOCAL CODES AND ORDINANCES GOVERNING THIS INSTALLATIONS, AS A MINIMUM STANDARD, UNLESS SPECIFICATIONS LISTED HEREIN OR SHOWN ON PLANS REQUIRE A HIGHER STANDARD. ALL ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 2020 ART. 110.26.THE WORK INCLUDED CONSISTS OF ALL SUPERVISION, LABOR, MATERIAL, EQUIPMENT FACILITIES AND INSTALLATION REQUIRED FOR THE COMPLETE SATISFACTORY AND APPROVED ELECTRICAL SYSTEM AS INDICATED ON THE DRAWINGS AND CALLED FOR IN THIS SPECIFICATION OR AS MAY BE REASONABLY IMPLIED BY EITHER. ALL NOTES ON THE DRAWINGS PERTAINING TO THE WORK OF THIS TRADE SHALL BE CONSIDERED AS PART OF THIS SPECIFICATIONS AND CONTRACT.THE CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE DRAWINGS AND ANY APPLICABLE SPECIFICATIONS. IF A PROBLEM IS ENCOUNTERED IN COMPLYING WITH THIS REQUIREMENT, THE CONTRACTOR SHALL NOTIFY THE OWNER OR HIS REPRESENTATIVE AS SOON AS POSSIBLE AFTER DISCOVERY OF THE PROBLEM, AND SHALL NOT PROCEED WITH THAT PORTION OF THE WORK UNTIL THE OWNER HAS DIRECTED THE CORRECTIVE ACTION TO BE TAKEN. THE CONTRACTOR IS REFERRED TO THE ARCHITECTURAL, STRUCTURAL AND MECHANICAL DRAWINGS AND SPECIFICATIONS, SUCH PLANS AND SPECIFICATIONS ARE TO BE CONSIDERED PART OF THE ELECTRICAL CONTRACT DOCUMENTS. DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW APPROXIMATE LOCATIONS AND ARRANGEMENTS ONLY. THE CONTRACTOR SHALL COORDINATE THE PROPOSED LOCATIONS OF ALL ELECTRICAL MATERIALS AND EQUIPMENT WITH THE REPRESENTATIVES OF THE OTHER TRADES INVOLVED BEFORE STARTING INSTALLATIONS OF THOSE ITEMS. COORDINATE THE INSTALLATIONS OF REQUIRED SUPPORTING DEVICES, CONDUIT, AND SLEEVES TO BE SET IN CAST–IN–PLACE CONCRETE AND OTHER STRUCTURAL COMPONENTS, AS THEY ARE CONSTRUCTED, ALL SLAB AND FIREWALL PENETRATIONS MUST BE FIRE RATED AND MUST CONFORM TO OWNER'S APPROVAL AS TO LOCATION AND CONSTRUCTION DETAILS.
2. MATERIALS: THE MATERIALS AND EQUIPMENT FURNISHED SHALL BE AS INDICATED ON THE DRAWINGS; SUBSTITUTIONS SHALL NOT BE MADE EXCEPT WHERE EXPRESSLY APPROVED BY THE OWNER OR HIS REPRESENTATIVE PRIOR TO STARTING INSTALLATION OF THE ITEMS. THE ELECTRICAL MATERIALS AND EQUIPMENT FURNISHED SHALL BE LISTED OR LABELED BY UNDERWRITERS LABORATORIES OR OTHER RECOGNIZED TESTING ORGANIZATION, AND SHALL BE ACCEPTABLE TO THE LOCAL BUILDING AUTHORITY.
3. GROUNDING: GROUNDING SHALL BE IN ACCORDANCE WITH ARTICLE 250 NEC. PROVIDE GROUND WIRES IN ALL CONDUITS UNLESS OTHERWISE NOTED.
4. THE ELECTRICAL CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN TEMPORARY ELECTRIC POWER AND LIGHTING FOR ALL TRADES.
5. ALL EXPOSED CONDUITS SHALL BE RUN AS NEAT AND INCONSPICUOUS AS POSSIBLE AND PAINTED TO MATCH COLOR OR SURROUNDINGS. PROVIDE FIRE STOP IN ALL ELECTRICAL CONDUITS CROSSING FIRE RATED WALLS.
6. FLEXIBLE CONDUITS SHALL BE USED FOR CONNECTION TO ALL VIBRATING EQUIPMENT SUCH AS MOTORS, LIGHTING FIXTURES, ETC. FLEXIBLE CONDUIT SHALL BE "LIQUID TIGHT" WHEN EXPOSED TO WEATHER.
7. CONDUCTORS SIZE #8 AND LARGER SHALL BE TYPE THWN STRANDED, COPPER. CONDUCTORS SIZE #10 AND SMALLER SHALL BE COPPER, TYPE THHN SOLID, UNLESS NOTED OTHERWISE., CONDUCTORS SHALL CONSIST OF 98% CONDUCTIVITY COPPER AS INDICATED. SIZE ARE AWG. ALL CONDUCTORS SHALL BE RUN IN CONDUIT EXCEPT AS NOTED ON PLANS. POWER, LIGHTING, AND GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN #12 AWG. EXCEPT WHERE OTHERWISE INDICATED. CONTROL CONDUCTORS SHALL NOT BE SMALLER THAN #14 AWG. CONDUCTORS SHALL BE CONTINUOUS FROM OUTLET WITHOUT SPLICES EXCEPT WITHIN WIREWAY OR JUNCTION BOXES. MARK CONDUCTORS IN PANELS. PULL BOXES OR WIREWAYS AND TERMINAL STRIP TERMINALS FOR IDENTIFICATION OF CIRCUITS. CONDUCTORS SHALL BE JOINED USING COMPRESSION SPLICES, EXCEPT THAT CONDUCTORS #10 AND SMALLER MAY BE JOINED USING WIRE NUT TYPE CONNECTORS. CONDUCTORS SHALL BE TERMINATED USING COMPRESSION OR PRESSURE TYPE TERMINAL LUGS, OR IN PRESSURE TERMINAL. COMPRESSION SPLICES SHALL BE INSULATED USING 3M #33+ OR #88 PLASTIC TAPE. SPLICES IN WET LOCATIONS SHALL BE INSULATED WITH ELECTRICAL TAPE AND ENCAPSULATED WITH SCOTCHCAST OR EQUAL POTTING COMPOUND.
8. RECEPTACLES SHALL BE 15/20A, 125 V AS 2 POLE, 3 WIRE SINGLE OR DUPLEX GROUNDED TYPE EXCEPT WHERE SPECIFIC PURPOSE, LOCKING OR HIGHER RATED RECEPTACLES ARE SHOWN ON THE DRAWINGS.
9. ALL SWITCHES SHALL BE OF THE TOTALLY ENCLOSED TUMBLER TYPE WITH BODIES OF PHENOLIC COMPOUND. HANDLES SHALL BE IVORY COLORED.
10. CONTRACTOR SHALL VERIFY ALL EQUIPMENT NAMEPLATE DATA FOR WIRING AND OVERCURRENT PROTECTION REQUIREMENTS BEFORE PERFORMING ROUGH–IN WORK. NEC 110–16A, 215–5, 220–2, 240–3,240–6 AND 384–2 SHALL APPLY.
11. PROVIDE AND INSTALL JUNCTION AND PULL BOXES WHERE INDICATED AND WHERE NECESSARY TO TERMINATE, TAP OFF, OR REDIRECT MULTIPLE CONDUIT RUNS, OF SIZE INDICATED OR A REQUIRED BY NEC. WHERE FEEDER SPLICES ARE TO BE MADE, INSTALL BOXES LARGE ENOUGH TO PROVIDE AMPLE WORK SPACE.
12. FIXTURES WITH ADJUSTMENTS AFFECTING LIGHT DISTRIBUTION SHALL BE SET TO PROVIDE THE REQUIRED LIGHT PATTERNS PRIOR TO THE FINAL DEMONSTRATION TEST. ALL RECESSED LIGHTING FIXTURES SHALL CONFORM TO NEC 410–64.
13. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY CONTROL WIRING FOR ALL EQUIPMENT. ELECTRICAL POWER AND CONTROL WIRING FOR HVAC, POOL EQUIPMENT AND MECHANICAL EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. SEE MECHANICAL DRAWINGS AND SPECIFICATIONS FOR WIRING DIAGRAMS AND REQUIREMENTS.
14. PANEL DIRECTORIES SHALL BE TYPED ACCURATELY TO SHOW AS BUILT CONDITIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY BALANCING ALL BRANCH CIRCUITS BETWEEN THE PHASES OF THE SYSTEM REGARDLESS OF CIRCUITING INDICATED.
15. ELECTRICAL CONTRACTOR SHALL COORDINATE HIS WORK WITH THE ARCHITECT BEFORE ROUGH INSTALLATIONS OF LIGHTS, RECEPTACLES AND SWITCHES FOR EXACT LOCATION.
16. THE ENTIRE INSTALLATIONS SHALL BE PERFORMED IN A FIRST–CLASS WORK MANNER. THE CONTRACTOR SHALL TOUCH–UP OR REFINISH THE FACTORY FINISH OF EQUIPMENT MARRED DURING SHIPMENT OR INSTALLATION.
17. TESTS: AFTER EACH SYSTEM HAS BEEN COMPLETED, A FUNCTIONAL TEST SHALL BE PERFORMED TO DEMONSTRATE THAT THE SYSTEM OPERATES IN ACCORDANCE WITH THE REQUIREMENTS OF THE DRAWINGS. THE TEST SHALL BE PERFORMED BY THE CONTRACTOR IN THE PRESENCE OF THE OWNER OR HIS REPRESENTATIVE. ALL WORK SHALL BE GUARANTEED FREE FROM DEFECTS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. AT THE COMPLETION OF THE WORK, THE CONTRACTOR SHALL REMOVE ALL RUBBISH CAUSED BY HIS WORK AND SHALL THOROUGHLY CLEAN ALL ELECTRICAL EQUIPMENT.
18. IT IS THE INTENT OF THE DRAWINGS AND SPECIFICATIONS TO OBTAIN A COMPLETE AND SATISFACTORY INSTALLATIONS. AN ATTEMPT HA BEEN MADE TO SEPARATE AND COMPLETELY DEFINE THE WORK IN SEPARATE SECTIONS OF THE SPECIFICATIONS; HOWEVER, SUCH SEPARATIONS SHALL NOT RELIEVE THE CONTRACTOR FROM FULL RESPONSIBILITY OF COMPLIANCE WITH THE WORK OF HIS/HER TRADE WHICH MAY BE INDICATED ON ANY OF THE DRAWINGS AND OTHER SECTIONS OF THE SPECIFICATIONS.
19. THE CONTRACTOR SHALL CAREFULLY REVIEW AND VERIFY THE ARCHITECTURAL, STRUCTURAL, POOL EQUIPMENT, MECHANICAL DRAWINGS AND SPECIFICATIONS IN ADDITION TO THE ELECTRICAL AND OTHER RELATED TRADES AND SECTIONS. SHOULD ANY DISCREPANCIES BE FOUND THE ARCHITECT/ENGINEER MUST BE NOTIFIED. THIS COORDINATION SHALL BE DONE PRIOR TO SUBMITTING THE BID.
20. THE ARCHITECTURAL AND STRUCTURAL DRAWINGS SHALL TAKE PRECEDENCE OVER THE ELECTRICAL DRAWINGS WITH REFERENCE TO BUILDING CONSTRUCTION AND DIMENSIONS. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC BUR ARE TO BE FOLLOWED AS CLOSELY AS THE ACTUAL CONSTRUCTION OF THE BUILDING AND THE WORK OF THE OTHER TRADES WILL PERMIT.
21. ALL JUNCTION BOXES SHALL BE ACCESSIBLE AS PER NEC
22. ALL PANELBOARDS MAIN BUS BARS SHALL BE COPPER, SIZED IN ACCORDANCE WITH STANDARDS TO LIMIT THE TEMPERATURE RISE ON ANY CURRENT CARRYING PART TO A MAXIMUM OF 50 DEGREES C. ABOVE AN AMBIENT OF 40 DEGREE C. MAXIMUM. PROVIDE MAIN CIRCUIT, CIRCUIT BREAKERS, MAIN LUGS OR SUB–FEED LUGS AS REQUIRED. ALL NEW PANELBOARDS 400A OR ABOVE SHALL BE SQ."D" I–LINE, SIEMENS P2, ALL OTHERS MANUFACTURER SHALL BE EQUIVALENT TO THIS
23. NOT LESS THAN 90% OF THE LAMPS IN PERMANENTLY INSTALLED LUMINARIES SHALL HAVE AN EFFICACY OF AT LEAST 45 LUMENS–PER–WATT OR SHALL UTILIZE LAMPS WITH AN EFFICIENCY OF NOT LESS THAN 65 LUMENS–PER–WATT AS PER R404.1 AND C405.1 2023 FBC EC.
24. SAFETY SWITCHES/CIRCUIT BREAKER DISCONNECTS: SAFETY SWITCHES SHALL BE HEAVY DUTY TYPE KD, FUSIBLE OR NON–FUSIBLE WITH POLES, AMPERAGE, VOLTAGE, HORSEPOWER AND AIC RATINGS INDICATED AND SHALL HAVE SOLID NEUTRALS. LUGS SHALL BE U.L. LISTED FOR COPPER–ALUMINUM.
ENCLOSURES FOR SAFETY SWITCHES SHALL BE NEMA–1, GENERAL PURPOSE, EXCEPT THAT SWITCHES INDICATED (WP) WEATHERPROOF, SHALL BE NEMA–3R ENCLOSURES WITH SUITABLE GASKETS AND BONDING MEANS.
SWITCHES AND DISCONNECT SHALL BE AS MANUFACTURED BY SQUARE "D" OR APPROVED EQUAL. CIRCUIT BREAKER DISCONNECTS MAY BE USED IN LIEU OF SAFETY SWITCHES PROVIDING THEY COMPLY WITH THE SAFETY SWITCH REQUIREMENTS AND ARE SUPPLIED WITHIN THEIR RATINGS AND A SCHEDULE IS SUBMITTED FOR APPROVAL

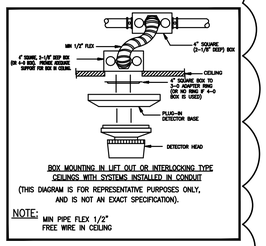
VOLTAGE DROP:

FEEDERS:
ALL FEEDER CONDUCTORS ARE SIZED FOR A MAXIMUM VOLTAGE DROP OF 2.0% AT DESIGN LOAD.

BRANCH CIRCUITS:
ALL BRANCH CIRCUITS CONDUCTORS ARE SIZED FOR A MAXIMUM VOLTAGE DROP OF 3.0% AT DESIGN LOAD.

FIRE PROTECTION DETAILS

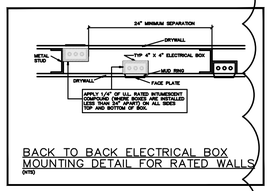




BOX MOUNTING IN LIFT OUT OR INTERLOCKING TYPE CEILINGS WITH SYSTEMS INSTALLED IN CONDUIT

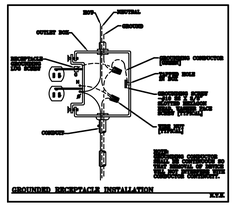
(THIS DIAGRAM IS FOR REPRESENTATIVE PURPOSES ONLY, AND IS NOT AN EXACT SPECIFICATION).

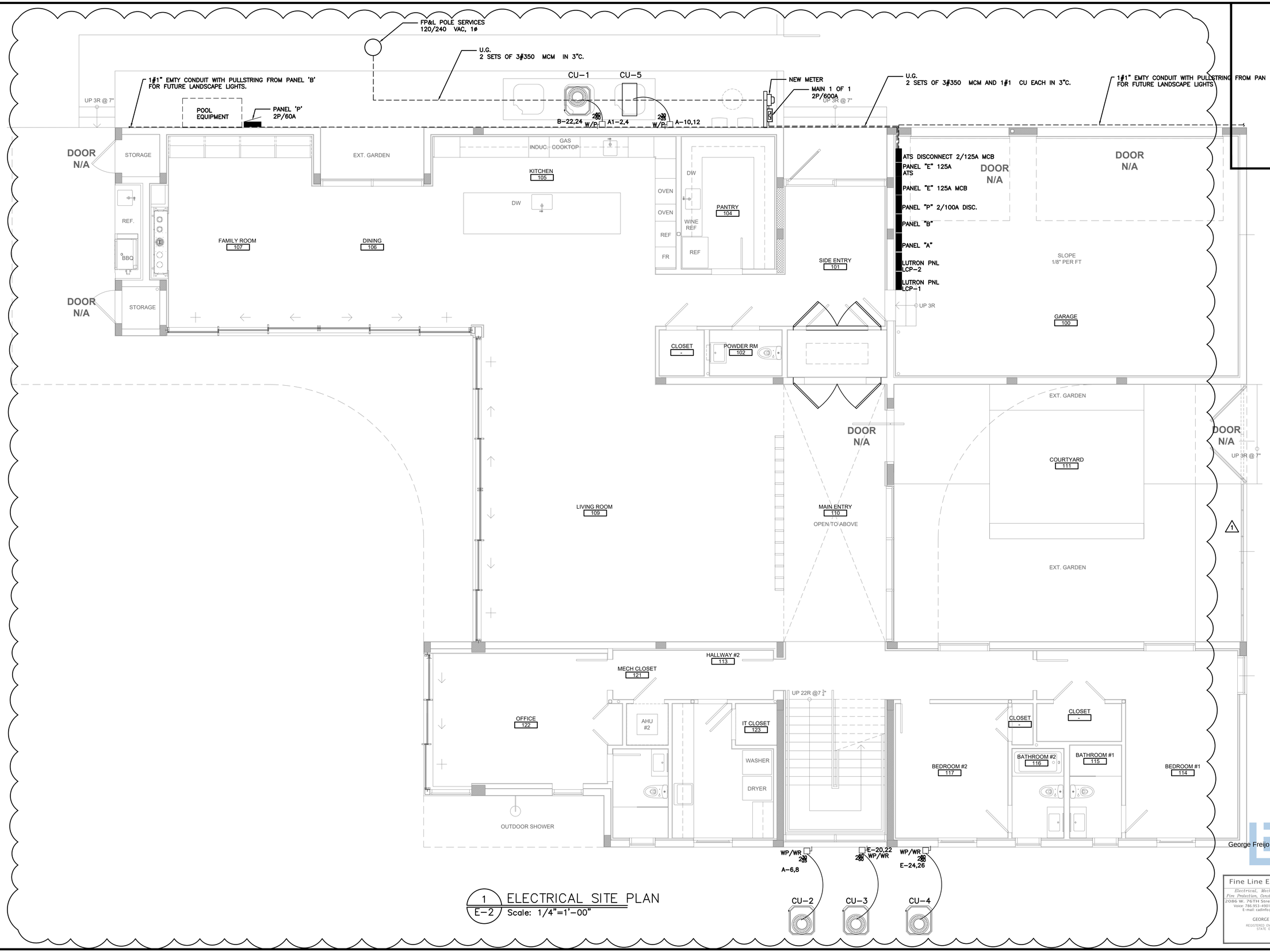
NOTE:
MIN PIPE FLEX 1/2"
FREE WIRE IN CEILING



BACK TO BACK ELECTRICAL BOX MOUNTING DETAIL FOR RATED WALLS

(WTS)


BOX
CENTERLINE
GROUND
OUTLET BOX
CONDUCTOR
CONDUCTOR
NM
NM
NM



1 ELECTRICAL SITE PLAN
E-2 Scale: 1/4"=1'-00"

Fine Line Engineers Inc.
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Construction Administration Services
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FINE LINE ENGINEERS

REVISION BLOCK

NO.	DATE	DESCRIPTION
1	1/5/26	COORDINATION/NEW ENGINEER

SUBMITTAL BLOCK

NO.	DATE	DESCRIPTION

HUBER RESIDENCE
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Pinecrest, Fl 33156

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Fire Protection, Construction Administration
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GEORGE FREIJO, P.E.
REGISTERED ENGINEER NO. 32578
STATE OF FLORIDA CA# 29796

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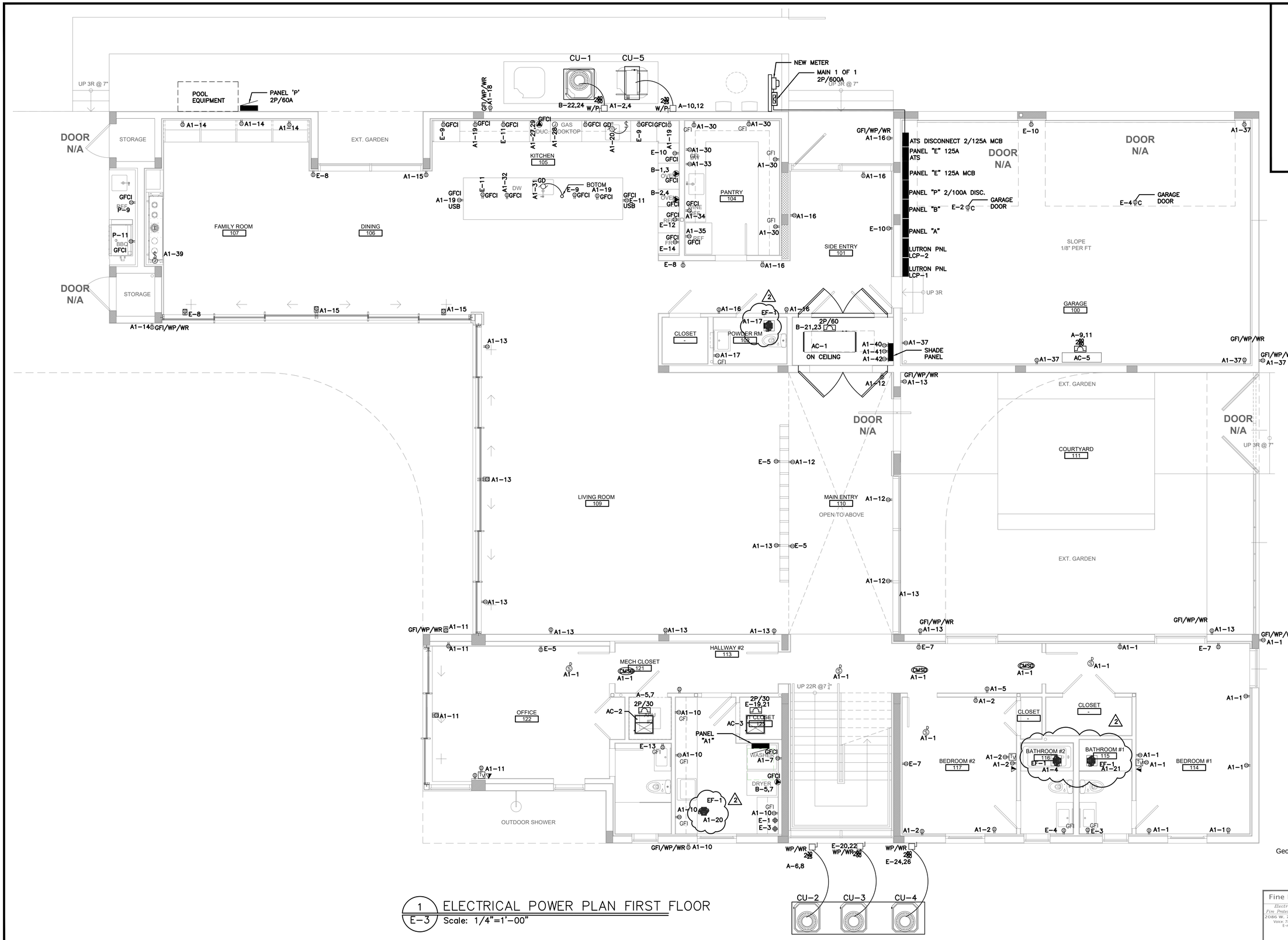
E-2



1 ELECTRICAL POWER PLAN FIRST FLOOR
E-3 Scale: 1/4"=1'-00"

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2	2/12/26	COORDINATION/OWNER CHANGES

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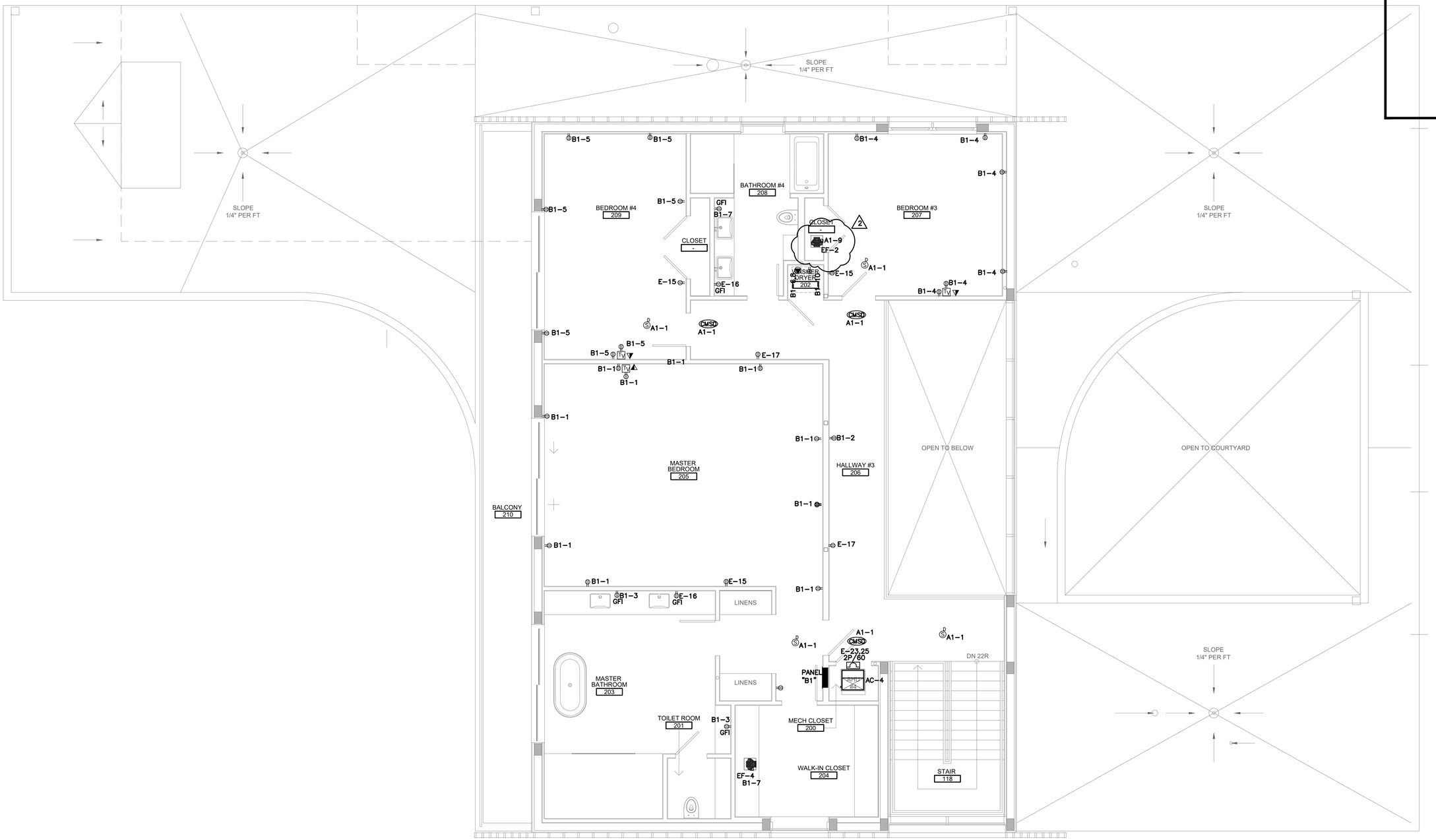
E-3



1 ELECTRICAL POWER PLAN SECOND FLOOR
E-4 Scale: 1/4"=1'-00"

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FLE DESIGN BY FINE LINE ENGINEERS

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SUBMITTAL BLOCK

NO.	DATE	DESCRIPTION

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STATE OF FLORIDA CA# 29796

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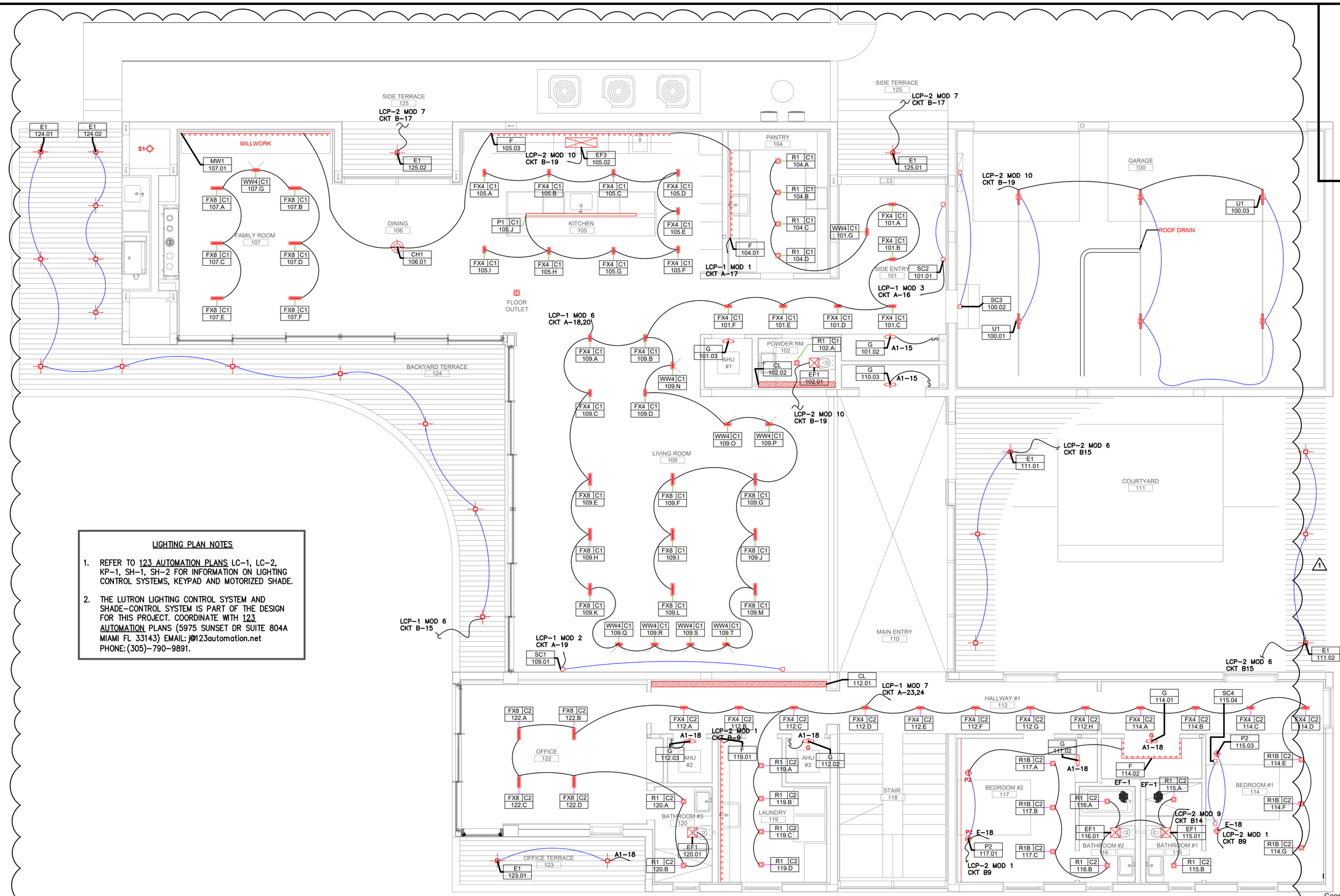
E-4



LIGHTING PLAN NOTES

1. REFER TO 123 AUTOMATION PLANS LC-1, LC-2, KP-1, SH-1, SH-2 FOR INFORMATION ON LIGHTING CONTROL SYSTEMS, KEYPAD AND MOTORIZED SHADE.
2. THE LUTRON LIGHTING CONTROL SYSTEM AND SHADE-CONTROL SYSTEM IS PART OF THE DESIGN FOR THIS PROJECT. COORDINATE WITH 123 AUTOMATION PLANS (5975 SUNSET DR SUITE 804A MIAMI FL 33143) EMAIL: j@123automation.net PHONE: (305)-790-9891.

1 / E-5 ELECTRICAL LIGHTING PLAN FIRST FLOOR
Scale: 1/4"=1'-00"

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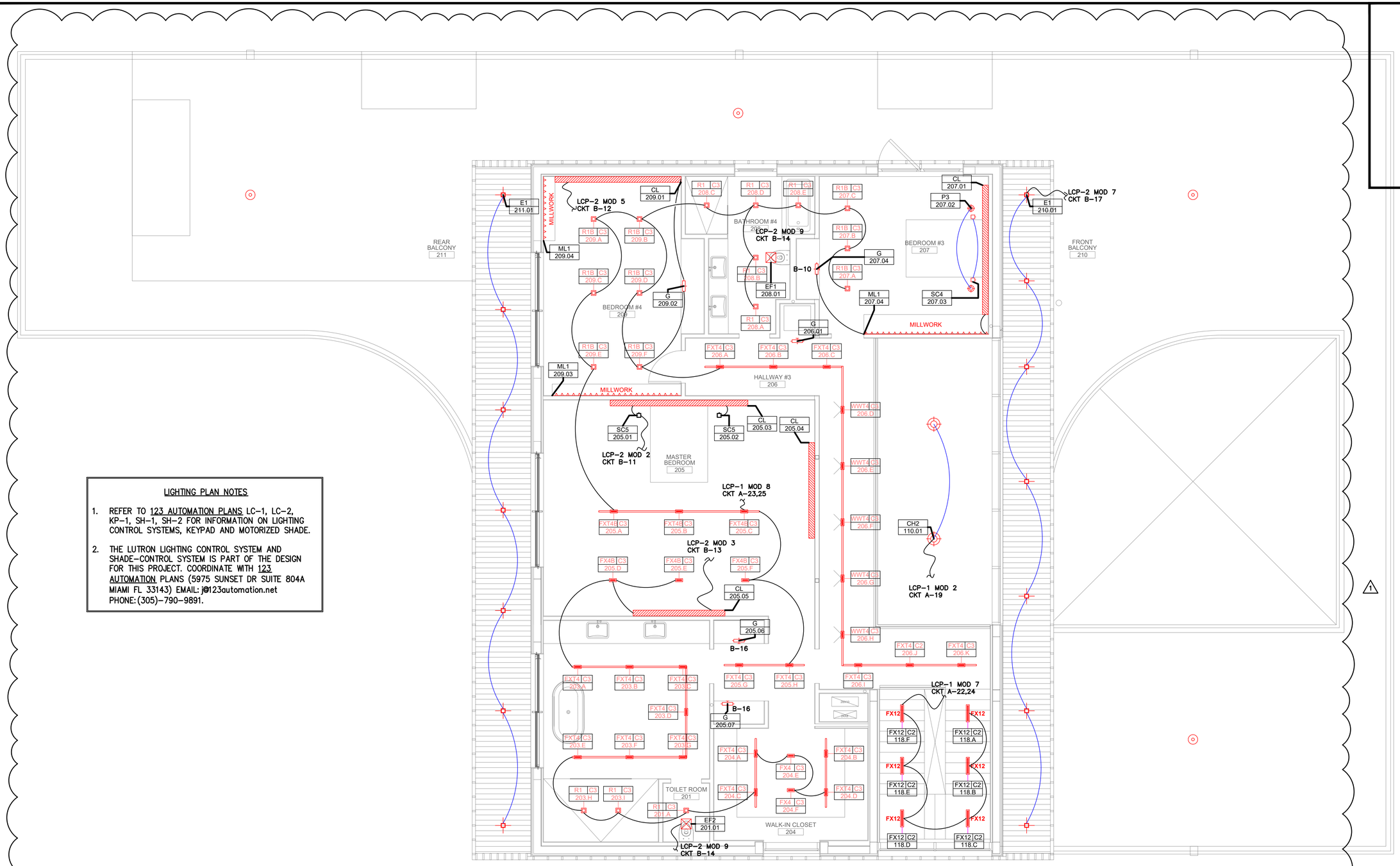
E-5



LIGHTING PLAN NOTES

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1 / E-6 ELECTRICAL LIGHTING PLAN SECOND FLOOR
Scale: 1/4"=1'-00"

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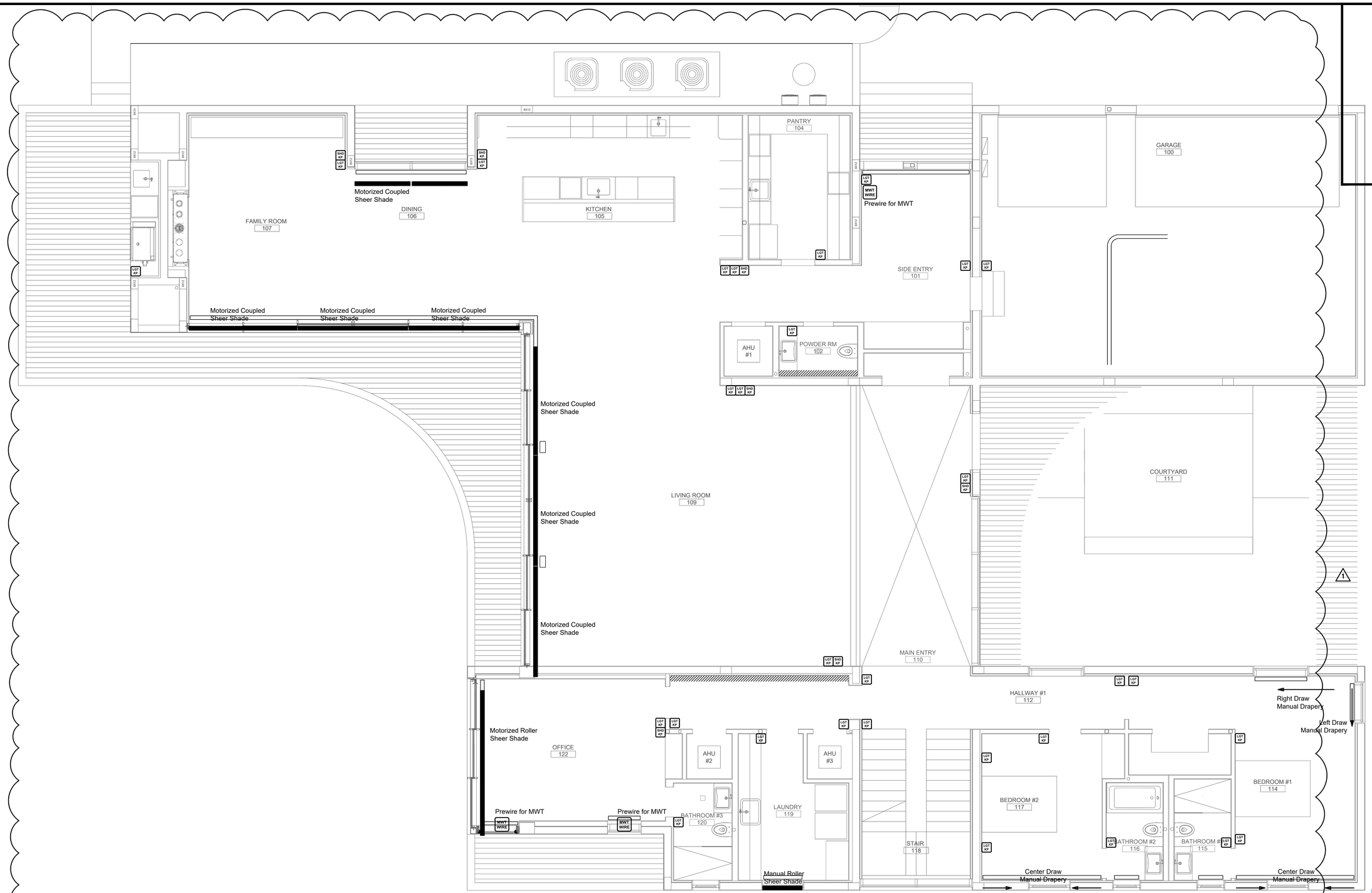
E-6



1 ELECTRICAL KP PLAN FIRST FLOOR
E-7 Scale: 1/4"=1'-00"

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Pinecrest, Fl 33156

George Freijo
Digitally signed by George Freijo
DN: CN=George Freijo, C=US, O=FINE LINE ENGINEERS INCORPORATED, OU=ENGINEERING, E=cadinfo@flengineers.com, 2.5.4.5=FLE-E-29796
Date: 2026.05.05 10:08:24-05'00'

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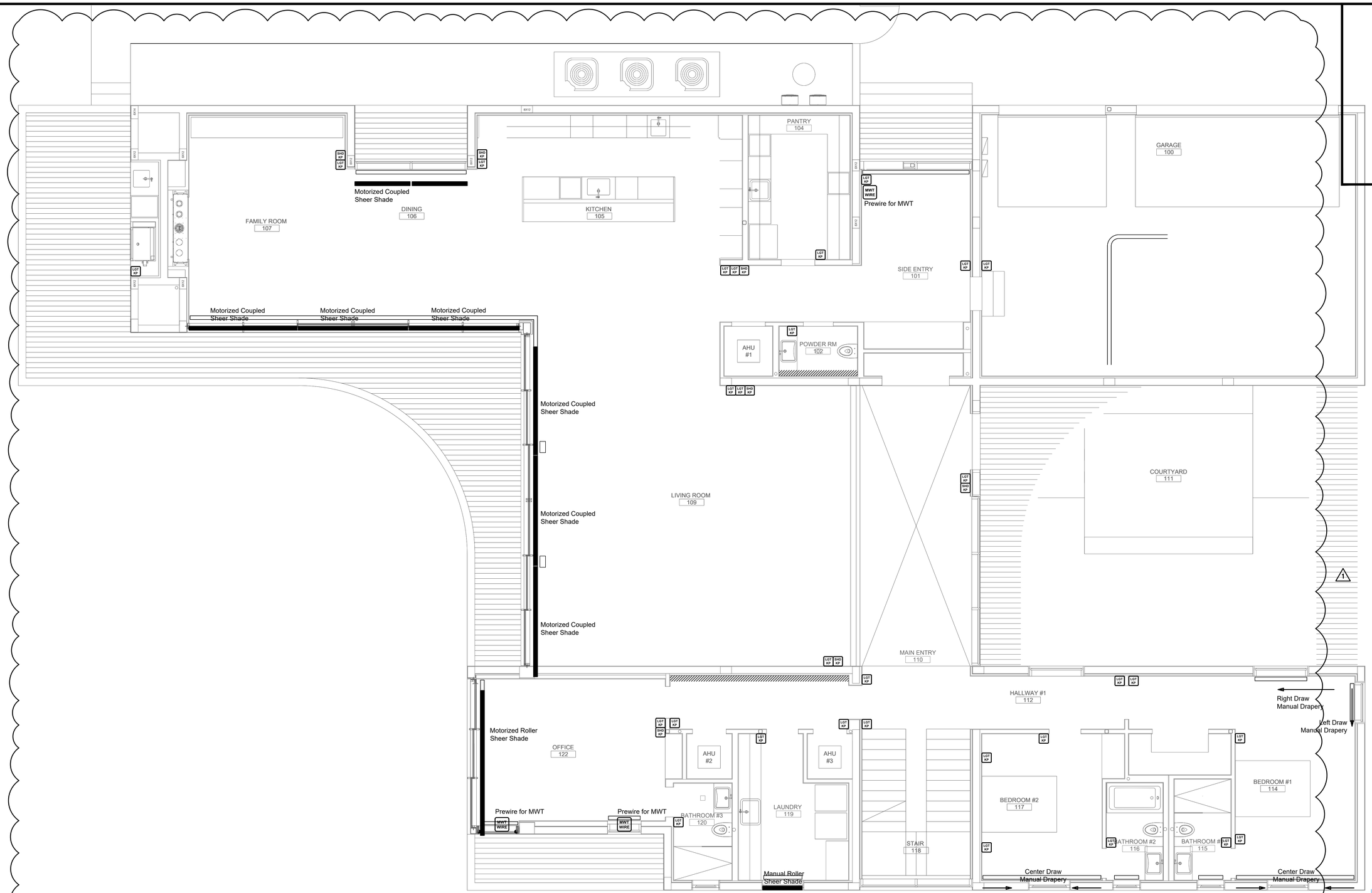
The Co. Opinions

E-7



1 ELECTRICAL KP PLAN SECOND FLOOR
E-8 Scale: 1/4"=1'-00"

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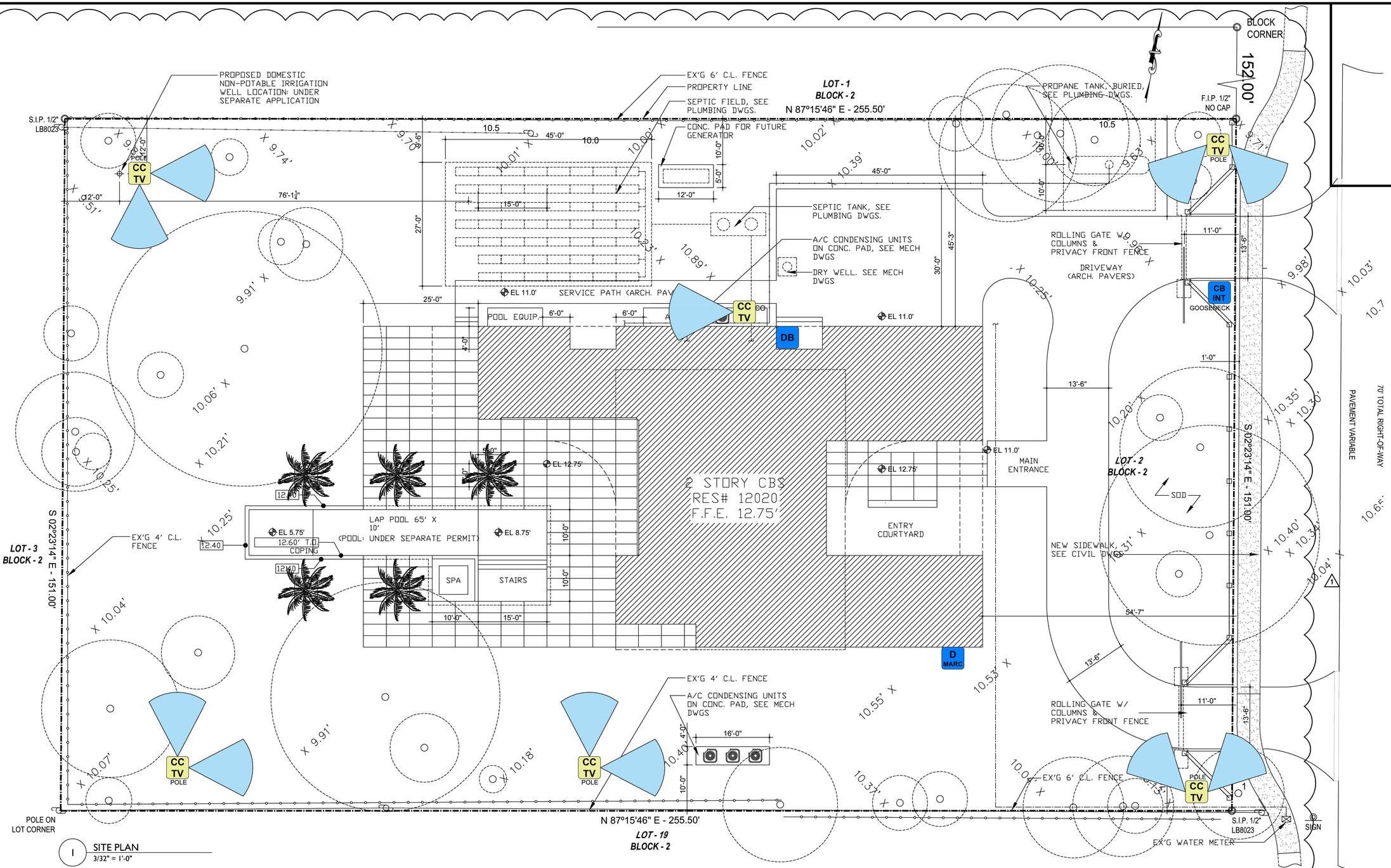
E-8



1 SITE PLAN
3/32" = 1'-0"

1 ELECTRICAL AUDIO/VIDEO DEVICE
E-8.1 Scale: 3/32"=1'-00"

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REVISION BLOCK

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1	5/26	COORDINATION/NEW ENGINEER

SUBMITAL BLOCK

NO.	DATE	DESCRIPTION

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REGISTERED ENGINEER NO. 32578
STATE OF FLORIDA CA# 29796

HUBER RESIDENCE
12020 SW 77th Ave
Pinecrest, Fl 33156

E-8.1

NEW

TYPE: SIEMENS
SERVICE: 120/240 V 1ø 3W
MOUNTING: FLUSH
POLES: 42

PANEL "A"

MAIN BUS: 225 AMP
NEUTRAL: FULL
MAINS: M.L.O.
A.I.C. 10K SERIES RATED

DEM. K.VA.	NO DEM. K.VA.	TRIP POLE	CON-DUIT	WIRE	REMARKS	CKT. NO.	PHASE	CKT. NO.	REMARKS	WIRE	CON-DUIT	TRIP POLE	NO DEM. K.VA.	DEM. K.VA.
	3.50	2	1/2"	12	INDUCTION	1		2	PANEL 'A1'	3	1-1/2"	2	11.88	
						3		4						
1	5.95	2	3/4"	10	AC-2	5		6	CU-2	12	1/2"	2	2.99	1
						7		8						
1	11.36	2	1"	6	AC-5	9		10	CU-5	12	1/2"	2	5.89	1
						11		12						
(4)(5)	–	1-20	1/2"	12	HALWAYS LTS	13		14	TERRACE & CLOSET LTS	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	CLOSET LTS	15		16	LCP1 MOD 3 DL9 THRU DL12	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	LCP1 MOD 1 DL1 THRU DL4	17		18	LCP1 MOD 6_1 THRU 28	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	LCP1 MOD 2 DL5 THRU DL8	19		20	LCP1 MOD 6_29 THRU 49	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	MOD#2 CONTROL ASSEMBLY	21		22	LCP1 MOD 7_1 THRU 20	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	LCP1 MOD 8_1 THRU 24	23		24	LCP1 MOD 7_21 THRU 39	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	LCP1 MOD 8_25 THRU 49	25		26	TWO IGNITER GAS HEATER	12	1/2"	1-20	0.30	
						27		28						
						29		30						
						31		32						
						33		34						
						35		36						
						37		38						
						39		40						
						41		42						

TOTAL DEMAND LOAD 30.96 KVA = 129.01 AMPS

1 HEATING AND COOLING ARE NON-CONCURRENT LOADS.
HIGHEST LOAD SHOWN AS PER N.E.C.

FEED: SEE ELECTRICAL RISER DIAGRAM

NEW

TYPE: SIEMENS
SERVICE: 120/240 V 1ø 3W
MOUNTING: FLUSH
POLES: 42

PANEL "B"

MAIN BUS: 225 AMP
NEUTRAL: FULL
MAINS: M.L.O.
A.I.C. 10K SERIES RATED

DEM. K.VA.	NO DEM. K.VA.	TRIP POLE	CON-DUIT	WIRE	REMARKS	CKT. NO.	PHASE	CKT. NO.	REMARKS	WIRE	CON-DUIT	TRIP POLE	NO DEM. K.VA.	DEM. K.VA.
	8.00	2	1"	8	OVEN	1		2	OVEN	8	1"	2	8.00	
						3		4						
	5.00	2	3/4"	10	DRYER	5		6	SPACE	12	1/2"	1-20	–	
						7		8	REC/LTS	12	1/2"	1-20	11.30	
(4)(5)	–	1-20	1/2"	12	LCP2 MOD 1 DL1 THRU DL4	9		10	LCP2 MOD 4 DL12 THRU DL16	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	LCP2 MOD 2 DL5 THRU DL8	11		12	LCP2 MOD 5 DL17 THRU DL19	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	LCP2 MOD 3 DL9	13		14	LCP2 MOD 9 DL35 THRU DL36	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	LCP2 MOD 6 DL21 THRU DL24	15		16	CLOSET LTS	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	LCP2 MOD 7 DL25 THRU DL28	17		18	PANEL 'B1'	3	1-1/2"	2	9.90	
(4)(5)	–	1-20	1/2"	12	LCP2 MOD 10_1 THRU 4	19		20				100		
1	11.36	2	1"	6	AC-1	21		22	CU-1	8	3/4"	2	5.89	1
			60			23		24				50		
						25		26						
						27		28						
						29		30						
						31		32						
						33		34						
						35		36						
						37		38						
						39		40						
						41		42						
	–												–	

TOTAL DEMAND LOAD 45.10 KVA = 187.92 AMPS

FEED: SEE ELECTRICAL RISER DIAGRAM

NEW

TYPE: SIEMENS
SERVICE: 120/240 V 1ø 3W
MOUNTING: FLUSH
POLES: 30

PANEL "P"

MAIN BUS: 60 AMP
NEUTRAL: FULL
MAINS: 60 M.L.O.
A.I.C. 10K SERIES RATED

DEM. K.VA.	NO DEM. K.VA.	TRIP POLE	CON-DUIT	WIRE	REMARKS	CKT. NO.	PHASE	CKT. NO.	REMARKS	WIRE	CON-DUIT	TRIP POLE	NO DEM. K.VA.	DEM. K.VA.
	2.88	2	3/4"	12	BLOWER (2HP)	1		2	POOL PUMP	10	1"	2	3.67	
						3		4						
	3.67	2	1"	10	SPA PUMP	5		6	IGNITER GAS HEATER	12	1/2"	1-20	0.20	
						7		8	SPA LTS	12	1/2"	1-20	0.05	
	0.05	1-20	1/2"	12	POOL LTS	9		10	BOARD	12	1/2"	1-20	0.10	
	0.10	1-20	1/2"	12	SALT CHLOR	11		12						
						13		14						
						15		16						
						17		18						
						19		20						
						21		22						
						23		24						
						25		26						
						27		28						
						29		30						
	6.70												4.02	

TOTAL CONNECTED LOAD 10.72 KVA = 44.66 AMPS

FEED: SEE ELECTRICAL RISER DIAGRAM

NEW

TYPE: SIEMENS
SERVICE: 120/240 V 1ø 3W
MOUNTING: FLUSH
POLES: 42

PANEL "A1"

(FIRST FLOOR)

MAIN BUS: 100 AMP
NEUTRAL: FULL
MAINS: 100 M.L.O.
A.I.C. 10K SERIES RATED

DEM. K.VA.	NO DEM. K.VA.	TRIP POLE	CON-DUIT	WIRE	REMARKS	CKT. NO.	PHASE	CKT. NO.	REMARKS	WIRE	CON-DUIT	TRIP POLE	NO DEM. K.VA.	DEM. K.VA.
(4)(5)	11.30	1-20	1/2"	12	REC/LTS	1		2	BEDROOM #2 REC.	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	BEDROOM #1 REC.	3		4	BATHROOM #2 REC.	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	HALLWAY #1 REC.	5		6	SPACE	12	1/2"	1-20	–	–
	1.50	1-20	1/2"	12	WASHER REC.	7		8	SPACE	12	1/2"	1-20	–	–
(4)(5)	–	1-20	1/2"	12	BATHROOM #3 REC.	9		10	LAUNDRY REC.	12	1/2"	1-20	1.50	
(4)(5)	–	1-20	1/2"	12	OFFICE/HALLWAY #2 REC.	11		12	MAIN ENTRY REC.	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	LIVING ROOM REC.	13		14	FAMILY ROOM REC. .	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	DINING ROOM REC.	15		16	SIDE ENTRY REC.	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	POWDER ROOM REC.	17		18	TERRACE & CLOSET LTS	12	1/2"	1-20	–	(4)(5)
	1.50	1-20	1/2"	12	APPLIANCE OUTLET	19		20	ROOM REC.	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	BATHROOM #1 REC.	21		22	SPACE	12	1/2"	1-20	–	–
	–	1-20	1/2"	12	SPACE	23		24	SPACE	12	1/2"	1-20	–	–
	1.00	1-20	1/2"	12	REFRIGERATOR	25		26	SPACE	12	1/2"	1-20	–	–
	–	1-20	1/2"	12	SPACE	27		28	KITCHEN HOOD	12	1/2"	1-20	0.20	
	–	1-20	1/2"	12	SPACE	29		30	PANTRY APPLIANCE REC.	12	1/2"	1-20	–	(4)(5)
	0.80	1-20	1/2"	12	GARBAGE DISPOSAL	31		32	DISHWASHER	12	1/2"	1-20	1.20	
	0.80	1-20	1/2"	12	PANTRY DISHWASHER	33		34	PANTRY WINE REFRIG.	12	1/2"	1-20	1.20	
	0.80	1-20	1/2"	12	PANTRY REFRIG.	35		36	SPACE	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	GARAGE REC.	37		38	SPACE	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	FIREPLACE IGNITION	39		40	SHADE PANEL	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	SHADE PANEL	41		42	SHADE PANEL	12	1/2"	1-20	–	(4)(5)

TOTAL DEMAND LOAD 11.88 KVA = 49.51 AMPS

1 EXISTING CIRCUIT EXTEND AS NEEDED IN KITCHEN RENOVATION

FEED: SEE ELECTRICAL RISER DIAGRAM

NEW

TYPE: SIEMENS
SERVICE: 120/240 V 1ø 3W
MOUNTING: FLUSH
POLES: 42

PANEL "B1"

MAIN BUS: 100 AMP
NEUTRAL: FULL
MAINS: 100 M.L.O.
A.I.C. 10K SERIES RATED

DEM. K.VA.	NO DEM. K.VA.	TRIP POLE	CON-DUIT	WIRE	REMARKS	CKT. NO.	PHASE	CKT. NO.	REMARKS	WIRE	CON-DUIT	TRIP POLE	NO DEM. K.VA.	DEM. K.VA.
(4)(5)	6.91	1-20	1/2"	12	REC/LTS	1		2	HALLAWAY #3 REC.	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	MASTER BATHROOM REC.	3		4	BEDROOM #3 REC.	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	BEDROOM #4 REC.	5		6	DRYER	10	3/4"	2	5.00	
(4)(5)	–	1-20	1/2"	12	BATHROOM #4 REC.	7		8				30		
						9		10	WASHER	12	1/2"	1-20	1.5	
						11		12						
						13		14						
						15		16						
						17		18						
						19		20						
						21		22						
						23		24						
						25		26						
						27		28						
						29		30						
						31		32						
						33		34						
						35		36						
						37		38						
						39		40						
						41		42						
	–													

TOTAL DEMAND LOAD 9.90 KVA = 41.23 AMPS

FEED: SEE ELECTRICAL RISER DIAGRAM

NEW

TYPE: SIEMENS
SERVICE: 120/240 V 1ø 3W
MOUNTING: FLUSH
POLES: 42

PANEL "E"

MAIN BUS: 125 AMP
NEUTRAL: FULL
MAINS: 125 M.L.O.
A.I.C. 10K SERIES RATED

DEM. K.VA.	NO DEM. K.VA.	TRIP POLE	CON-DUIT	WIRE	REMARKS	CKT. NO.	PHASE	CKT. NO.	REMARKS	WIRE	CON-DUIT	TRIP POLE	NO DEM. K.VA.	DEM. K.VA.
(4)(5)	0.36	1-20	1/2"	12	IT ROOM	1		2	GARAGE DOOR	12	1/2"	1-20	0.60	(4)(5)
(4)(5)	0.36	1-20	1/2"	12	IT ROOM	3		4	GARAGE DOOR	12	1/2"	1-20	0.80	(4)(5)
(4)(5)	0.54	1-20	1/2"	12	OFFICE MAIN IN ENT & LR OUTLET	5		6	IGNITION FOR BOILER	12	1/2"	1-20	0.20	
(4)(5)	0.54	1-20	1/2"	12	BED RM 1,2 HALLWAY OUTLET	7		8	FAMILY RM,DINING HWY REC.	12	1/2"	1-20	0.54	
(3)	1.5	1-20	1/2"	12	SMALL APP OUTLETS	9		10	GARAGE & RIDE SIDE ENTRY REC	12	1/2"	1-20	0.36	
(3)	1.5	1-20	1/2"	12	SMALL APP OUTLETS	11		12	REFRIGERATOR	12	1/2"	1-20	0.80	
(4)(5)	0.36	1-20	1/2"	12	FIRST FLOOR BATHRM REC.	13		14	FREEZER	12	1/2"	1-20	0.80	
(4)(5)	0.54	1-20	1/2"	12	SECOND FLOOR BATHRM REC.	15		16	BATHRM REC	12	1/2"	1-20	0.50	
(4)(5)	0.36	1-20	1/2"	12	HALLWAY REC	17		18	GATE MOTOR	12	1/2"	1-20	0.50	
1	5.95	2	3/4"	10	AC-3	19		20	CU-3	8	3/4"	2	2.99	1
						21		22						
1	11.36	2	1"	6	AC-4	23		24	CU-4	8	3/4"	2	5.89	1
			60			25		26				50		
						27		28						
						29		30						
						31		32						
						33		34						
						35		36						
						37		38						
						39		40						
						41		42						
	23.37												5.10	

TOTAL CONNECTED LOAD 28.47 KVA = 118.62 AMPS

1 HEATING AND COOLING ARE NON-CONCURRENT LOADS.
HIGHEST LOAD SHOWN AS PER N.E.C.

FEED: SEE ELECTRICAL RISER DIAGRAM

PANEL SCHEDULE NOTES

1. REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATION AND CHARACTERISTICS OF HVAC EQUIPMENT. PROVIDE HACR RATED CIRCUIT BREAKER. HEATING & COOLING ARE NON-CONCURRENT LOADS. HIGHEST VALUE USED FOR KVA CALCULATIONS.
2. ELECTRICAL CONTRACTOR SHALL VERIFY ALL KITCHEN EQUIPT. REQUIREMENTS WITH MANUFACTURER PRIOR TO ROUGH-IN.
3. ALL SMALL APPLIANCE RECEPTACLES IN KITCHEN SHALL BE GFCI PROTECTED IN ACCORDANCE WITH NEC 2017 210-8.
4. THIS IS PART OF GENERAL LIGHTING LOAD AS SET FORTH IN NEC 2017 220-82(b). 3 WATT PER SQ. FT.
5. ALL BEDROOMS, FAMILY ROOMS, DINNING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DENS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS, KITCHENS AND LAUNDRY AREAS CIRCUITS SHALL BE PROTECTED BY USE OF A LISTED COMBINATION TYPE ARC FAULT INTERRUPTER CIRCUIT BREAKERS (A.F.C.I.) AND (G.F.C.I.)AS REQUIRED BY N.E.C. 2017 210.12 (A) (B)
6. THIS BREAKERS MUST BE ABLE LOCKED IN THE OFF POSITION
7. GFCI PROTECTED CIRCUIT BREAKER.
8. ALL 125-VOLT, 15 AND 20 AMPER OUTLETS THROUGHOUT THE DWELLING UNITS SHALL BE TAMPER RESISTANT TYPE WITH DISTINCTIVE MARKINGS OF T.R. (TAMPER RESISTANT) AS PER N.E.C. 2014 EDITION, ARTICLE 406.12
9. VERIFY EQUIPMENT ELECTRICAL LOAD WITH EQUIPMENT "CUTSHEET" AND NAMEPLATE OF EQUIPMENT BEFORE INSTALLATION OF POWER CONDUCTORS.

1 ELECTRICAL PANEL SCHEDULE
E-9 Scale: N.T.S.

Fine Line Engineers Inc.
Electrical, Mechanical, Plumbing, Fire Protection, Construction Administration Services
2089 WEST 76TH STREET, HIALEAH, FLORIDA, 33016
Tel: 786-953-4901
E-mail: cadinfo@flengineers.com

FLE DESIGN BY FINE LINE ENGINEERS

REVISION BLOCK

NO.	DATE	DESCRIPTION
1	/5/26	COORDINATION/NEW ENGINEER

SUBMITAL BLOCK

NO.	DATE	DESCRIPTION

George Freijo

Fine Line Engineers Inc.
Electrical, Mechanical, Plumbing
Fire Protection, Construction Administration
2086 W. 76TH Street Hialeah, Fl. 33016
Voice: 786.953-4901 - Fax: 786.953-4907
E-mail: cadinfo@flengineers.com
GEORGE FREIJO, P.E.
REGISTERED ENGINEER NO: 32578
STATE OF FLORIDA CA# 29796

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Fine Line Engineers Inc.

HUBER RESIDENCE
12020 SW 77th Ave
Pinecrest, Fl 33156

E-9

FineLine Engineers Inc.
DESIGN CALCULATIONS

JOB NAME: HUBER RES 1 1 OR 3 PHASE?
VOLTAGE: 120 / 240 , 1 PHASE, 3W PANEL - "A1"

LIGHTING LOAD 3 W/SQFT (NEC 220.12)	3,768	SQFT	11.30 KVA
SMALL APPLIANCE @ 1.5 KVA EA.(NEC 220.52)			1.50 KVA
WASHER			1.50 KVA
GENERAL LIGHTING LOAD		**SUB-TOTAL**	**14.30** KVA
FIRST 3 KVA @ 100%			3.00 KVA
REMAINDER KVA	11.30 KVA	AT 35 %	3.96 KVA
NET LOAD			**6.96** KVA
FASTENED IN PLACE APPLIANCES			
REFRIGERATOR			2.00 KVA
DISHWASHER			2.00 KVA
LAUNDRY REC			1.50 KVA
DISPOSAL			0.80 KVA
MICROWAVE			0.00 KVA
		SUB-TOTAL	**6.30** KVA
NET LOAD			**4.73** KVA
CLOTHES DRYER			**0.00** KVA
COOKING EQUIPMENT			**0.00** KVA
NON COINCEDENT HEAT (A/C)			**0.00** KVA
25% OF LARGEST MOTOR	**0.00** AMP X	**240V X 25%**	**0.00** KVA
OTHER LOADS			
WATER HEATER			**0.00** KVA
POOL EQUIPMENT			**0.00** KVA
SPRINKLER PUMP			**0.00** KVA
EXTRACTOR HOOD			**0.20** KVA
GATE MOTOR			**0.00** KVA
		SUBTOTAL	**0.20** KVA
		TOTAL	**11.88**

PER N.E.C.
TOTAL CALCULATED LOAD **11.88** KVA = **49.51** AMPS

FineLine Engineers Inc.
DESIGN CALCULATIONS

JOB NAME: HUBER RES 1 1 OR 3 PHASE?
VOLTAGE: 120 / 240 , 1 PHASE, 3W PANEL - "B1"

LIGHTING LOAD 3 W/SQFT (NEC 220.12)	2,306	SQFT	6.92 KVA
SMALL APPLIANCE @ 1.5 KVA EA.(NEC 220.52)			0.00 KVA
WASHER			1.50 KVA
GENERAL LIGHTING LOAD		**SUB-TOTAL**	**8.42** KVA
FIRST 3 KVA @ 100%			3.00 KVA
REMAINDER KVA	5.42 KVA	AT 35 %	1.90 KVA
NET LOAD			**4.90** KVA
FASTENED IN PLACE APPLIANCES			
REFRIGERATOR			0.00 KVA
DISHWASHER			0.00 KVA
RANGE			0.00 KVA
DISPOSAL			0.00 KVA
MICROWAVE			0.00 KVA
		SUB-TOTAL	**0.00** KVA
NET LOAD			**0.00** KVA
CLOTHES DRYER			**5.00** KVA
COOKING EQUIPMENT			**0.00** KVA
NON COINCEDENT HEAT (A/C)			**0.00** KVA
25% OF LARGEST MOTOR	**0.00** AMP X	**240V X 25%**	**0.00** KVA
OTHER LOADS			
WATER HEATER			**0.00** KVA
POOL EQUIPMENT			**0.00** KVA
SPRINKLER PUMP			**0.00** KVA
EXTRACTOR HOOD			**0.00** KVA
GATE MOTOR			**0.00** KVA
		SUBTOTAL	**0.00** KVA
		TOTAL	**9.90**

PER N.E.C.
TOTAL CALCULATED LOAD **9.90** KVA = **41.23** AMPS

Engineering Corporation
DESIGN CALCULATIONS

JOB NAME: **HUBER RES** 1 1 OR 3 PHASE?
VOLTAGE: 120 / 240 , 1 PHASE, 3W PANEL - **"MDP"**

LIGHTING LOAD 3 W/SQFT (NEC 220.12)	6,074	SQFT	18.22 KVA
SMALL APPLIANCE @ 1.5 KVA EA.(NEC 220.52)			4.50 KVA
RANGE			**0.00** KVA
REFRIGERATOR			**3.00** KVA
DISHWASHER (2)			3.00 KVA
WASHER (2)			3.00 KVA
DRYER (2)			10.00 KVA
WATER HEATER			**18.00** KVA
MICROWAVE OVEN			0.80 KVA
OVEN (2)			16.00 KVA
DISPOSAL (2)			1.80 KVA
UC REF'S			**0.00** KVA
LOAD			**0.00** KVA
LOAD			**0.00** KVA
LOAD			**0.00** KVA
LOAD			**0.00** KVA
LOAD			**0.00** KVA
LOAD			**0.00** KVA
LOAD			**0.00** KVA
LOAD			**0.00** KVA
PANEL 'P'			**10.72** KVA
PANEL 'E'			**28.47** KVA
PER N.E.C. 220.82		SUB-TOTAL	**117.51** KVA
FIRST 8 KVA @ 100%			8.00 KVA
REMAINDER KVA	109.51 KVA	AT 40 %	43.80 KVA
AC LOAD - COOLING @ 100% =	**23.65** KVA		23.65 KVA
- 4 A/C OR MORE @ 40%	**45.98** KVA x 40=		29.89 KVA
WHICHEVER GREATER			29.89 KVA
			81.69 KVA
		TOTAL	**81.69** KVA

PER N.E.C.
TOTAL DEMAND LOAD **81.69** KVA = **340.38** AMPS

FineLine Engineers Inc.
DESIGN CALCULATIONS

JOB NAME: HUBER RES 1 1 OR 3 PHASE?
VOLTAGE: 120 / 240 , 1 PHASE, 3W PANEL - "A"
SEE PANEL 'A1'

LIGHTING LOAD 3 W/SQFT (NEC 220.12)	0	SQFT	0.00 KVA
SMALL APPLIANCE @ 1.5 KVA EA.(NEC 220.52)			0.00 KVA
WASHER			0.00 KVA
GENERAL LIGHTING LOAD		**SUB-TOTAL**	**0.00** KVA
FIRST 3 KVA @ 100%			0.00 KVA
REMAINDER KVA	0.00 KVA	AT 35 %	0.00 KVA
NET LOAD			**0.00** KVA
FASTENED IN PLACE APPLIANCES			
REFRIGERATOR			0.00 KVA
DISHWASHER			0.00 KVA
RANGE			0.00 KVA
DISPOSAL			0.00 KVA
MICROWAVE			0.00 KVA
		SUB-TOTAL	**0.00** KVA
NET LOAD			**0.00** KVA
CLOTHES DRYER			**0.00** KVA
COOKING EQUIPMENT			**0.00** KVA
NON COINCEDENT HEAT (A/C)			**17.31** KVA
25% OF LARGEST MOTOR	**24.54** AMP X	**240V X 25%**	**1.47** KVA
OTHER LOADS			
WATER HEATER			**0.30** KVA
POOL EQUIPMENT			**0.00** KVA
SPRINKLER PUMP			**0.00** KVA
EXTRACTOR HOOD			**0.00** KVA
PANEL 'A1'			**11.88** KVA
		SUBTOTAL	**12.18** KVA
		TOTAL	**30.96**

PER N.E.C.
TOTAL CALCULATED LOAD **30.96** KVA = **129.01** AMPS

FineLine Engineers Inc.
DESIGN CALCULATIONS

JOB NAME: HURBER RES 1 1 OR 3 PHASE?
VOLTAGE: 120 / 240 , 1 PHASE, 3W PANEL - "B"
SEE PANEL 'B1'

LIGHTING LOAD 3 W/SQFT (NEC 220.12)	0	SQFT	0.00 KVA
SMALL APPLIANCE @ 1.5 KVA EA.(NEC 220.52)			0.00 KVA
WASHER			0.00 KVA
GENERAL LIGHTING LOAD		**SUB-TOTAL**	**0.00** KVA
FIRST 3 KVA @ 100%			0.00 KVA
REMAINDER KVA	0.00 KVA	AT 35 %	0.00 KVA
NET LOAD			**0.00** KVA
FASTENED IN PLACE APPLIANCES			
REFRIGERATOR			0.00 KVA
DISHWASHER			0.00 KVA
OVEN			16.00 KVA
DISPOSAL			0.00 KVA
MICROWAVE			0.00 KVA
		SUB-TOTAL	**16.00** KVA
NET LOAD			**16.00** KVA
CLOTHES DRYER			**5.00** KVA
COOKING EQUIPMENT			**0.00** KVA
NON COINCEDENT HEAT (A/C)			**11.36** KVA
25% OF LARGEST MOTOR	**47.33** AMP X	**240V X 25%**	**2.84** KVA
OTHER LOADS			
WATER HEATER			**0.00** KVA
POOL EQUIPMENT			**0.00** KVA
SPRINKLER PUMP			**0.00** KVA
EXTRACTOR HOOD			**0.00** KVA
PANEL B1			**9.90** KVA
		SUBTOTAL	**9.90** KVA
		TOTAL	**45.10**

PER N.E.C.
TOTAL CALCULATED LOAD **45.10** KVA = **187.92** AMPS

1 ELECTRICAL CALCULATION
E-10 Scale: N.T.S.

1

Fine Line Engineers Inc.
Electrical, Mechanical, Plumbing, Fire Protection, Construction Administration Services
2089 WEST 76TH STREET, HIALEAH, FLORIDA, 33016
Tel: 786-953-4901
E-mail: cadinfo@flengineers.com

FLE DESIGN BY FINE LINE ENGINEERS

REVISION BLOCK

NO.	DATE	DESCRIPTION
1	5/26	COORDINATION/NEW ENGINEER

SUBMITTAL BLOCK

NO.	DATE	DESCRIPTION

HUBER RESIDENCE
12020 SW 77th Ave
Pinecrest, Fl 33156

George Freijo

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GEORGE FREIJO, P.E.
REGISTERED ENGINEER NO. 32578
STATE OF FLORIDA CA# 29796

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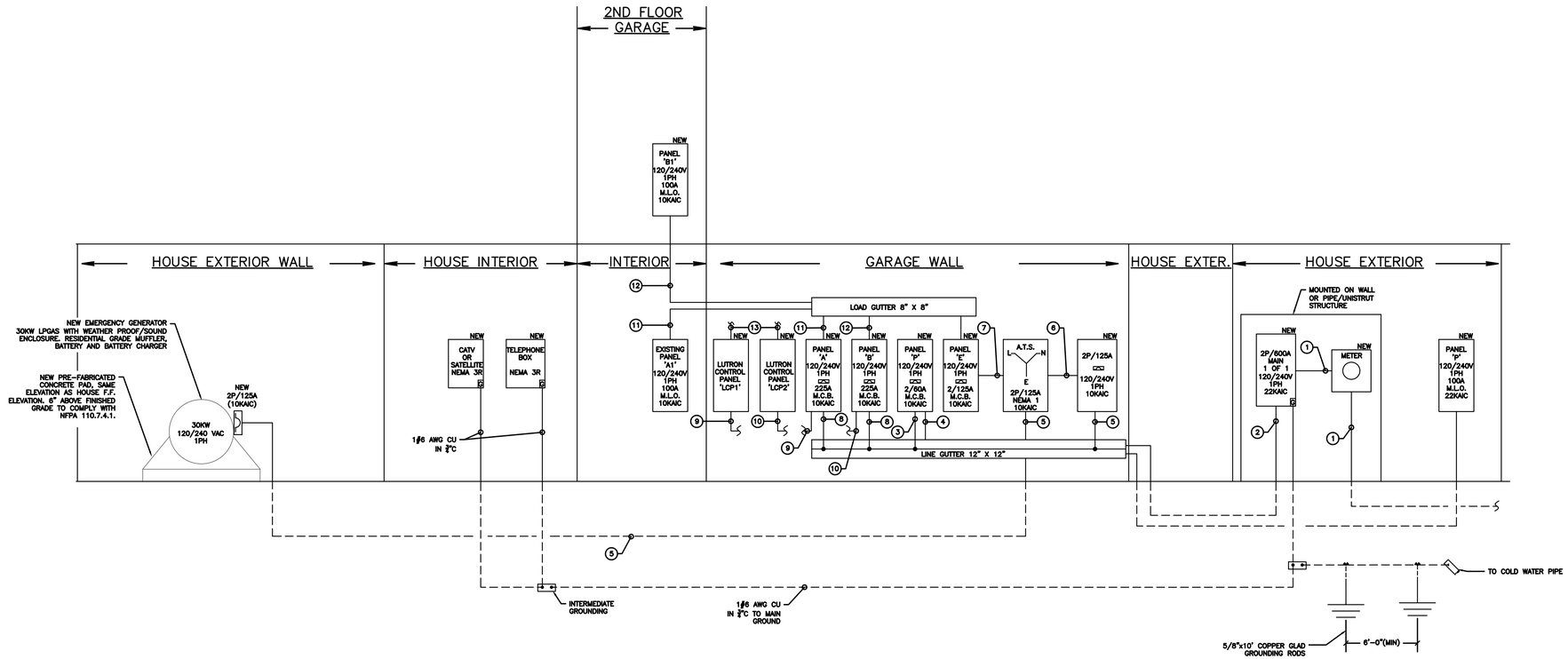
The Co. Operating

E-10



ELECTRICAL RISER DIAGRAM KEY NOTES:

1. – TO FP&L TRANSFORMER WITH 2 SETS OF 3#350MCM CU EACH IN A 3"C.
2. – TO LINE GUTTER WITH 2 SETS OF 3#350MCM & 1#1 CU EACH IN A 3"C.
3. – 3#3 CU & 1#3 GND IN 1½"C TO FEED DISCONNECT TO PANEL 'P' FEED FROM LINE GUTTER.
4. – 3#3 CU & 1#8 GND IN 1½"C TO FEED PANEL 'P' FROM 100A DISCONNECT.
5. – 3#1 CU & 1#6 GND IN 1½"C.
6. – 3#3 CU & 1#3 GND IN 1½"C FROM ATS TO 100A DISCONNECT.
7. – 3#3 CU & 1#8 GND IN 1½"C FROM ATS TO PANEL 'E'.
8. – 3-4/0 CU & 1#3 GND IN 2½"C FED FROM LINE GUTTER.
9. – 2-2" CONDUITS FROM PANEL 'A' TO LCP-1 FOR CIRCUITS TO FEED MODULES OF LCP-1.
10. – 2-2" CONDUITS FROM PANEL 'B' TO LCP-2 FOR CIRCUITS TO FEED MODULES OF LCP-2.
11. – 3#3 CU & 1#8 GND IN 1½"C TO FEED PANEL 'A1' FROM PANEL 'A'.
12. – 3#3 CU & 1#8 GND IN 1½"C TO FEED PANEL 'B1' FROM PANEL 'B'.
13. – CONDUITS FOR LOW VOLTAGE CIRCUITS FROM MODULES TO LED LIGHTING FIXTURES. REFER TO DRAWINGS LC-1, LC-2, KP-1, & KP-2 FROM 123 AUTOMATION 305-790-9891. PLANS LC-1, LC-3, KP-1, & KP-2 ARE APART OF AND INCLUDED IN THIS PROJECT.

1 / E-11 ELECTRICAL RISER
Scale: N.T.S.

1

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E-11