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

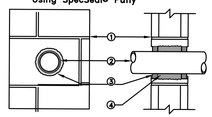
VOLTAGE DROP:

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

UL System No. CAJ-1090
2 Hour Rated Firestop
Using SpecSeal® Putty



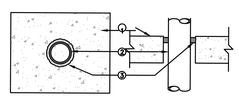
NOTE: THE PRODUCTS USED IN THIS DESIGN SYSTEM HAVE BEEN TESTED AS FOLLOWS
ASTM E814 (UL1479), REFER TO SYSTEM NO. WL-1025
ASTM E119 (TIME/TEMPERATURE EXPOSURE)
(COTTON WASTE IGNITION)
ANNULAR SPACE REQUIREMENTS.

① Concrete or concrete block wall.
② Steel, Iron, Copper or Rigid PVC conduit.
③ SpecSeal® Putty installed to a 3/4"depth with additional material used to form a 1/4" crown.
④ Fiberglass forming material packed into wall cavity.

* Note: Forming material is optional with steel and iron penetrants when the putty is installed to a full 1" depth, recessed 1/2" into both sides of the wall.

Metallic or PVC Pipe Through Concrete Walls
STI Drawing No. DS1023 NOT TO SCALE
* Refer to UL Fire Resistance Directory For Complete Installation Requirements.

UL System No. CAJ-1090
2 Hour Rated Firestop
Using SpecSeal® Putty

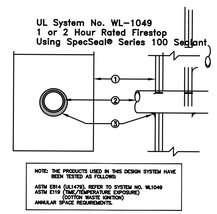


NOTE: THE PRODUCTS USED IN THIS DESIGN SYSTEM HAVE BEEN TESTED AS FOLLOWS
ASTM E814 (UL1479), REFER TO SYSTEM NO. CAJ-1090
ASTM E119 (TIME/TEMPERATURE EXPOSURE)
(COTTON WASTE IGNITION)
ANNULAR SPACE REQUIREMENTS.

① Concrete slab or concrete over steel deck.
② Steel, iron pipe or Rigid PVC conduit up to 6" trade size.
③ SpecSeal® Putty installed to 1"depth. Recessed 1/2" from top surface. Annulus ranging from 1/4" minimum to 1" maximum.

Metallic Pipe or PVC Conduit Through Concrete Floors
STI Drawing No. DS1003 NOT TO SCALE
* Refer to UL Fire Resistance Directory For Complete Installation Requirements.

UL System No. WL-1049
1 or 2 Hour Rated Firestop
Using SpecSeal® Series 100 Sealant.



NOTE: THE PRODUCTS USED IN THIS DESIGN SYSTEM HAVE BEEN TESTED AS FOLLOWS
ASTM E814 (UL1479), REFER TO SYSTEM NO. WL1049
ASTM E119 (TIME/TEMPERATURE EXPOSURE)
(COTTON WASTE IGNITION)
ANNULAR SPACE REQUIREMENTS.

① Rated gypsum wall board assembly.
② Steel, Iron pipe, or Rigid PVC conduit (flexible or rigid) or EMT.
③ SpecSeale Series 100 Sealant.
Product depth:
- One hour rated assemblies, 5/8" depth with 1/4" crown.
- Two hour rated assemblies, 1" depth with 1/4" crown.
- Annulus ranging from point contact to 1/4" maximum.

Metallic Pipe or Rigid PVC Through Gypsum Board Walls
STI Drawing No. DS1032 NOT TO SCALE
* Refer to UL Fire Resistance Directory For Complete Installation Requirements.

GENERAL ELECTRICAL NOTES:

1- ALL LIGHT FIXTURE TYPES SHALL BE SELECTED BY OWNER/ARCHITECT.

2- ALL CEILING RECESSED LIGHT FIXTURES IN DIRECT CONTACT WITH INSULATION SHALL BE 'IC' TYPE AS REQUIRED BY N.E.C. AIR TIGHT AND HOUSING SHALL BE SEALED WITH A GASKET OR CAULK TO CEILING OR WALL. R402.4

3- ALL LIGHTING, EXIT SIGN & EMERGENCY LIGHT TO BE SELECTED BY OWNER.

4- VERIFY EQUIPMENT LOCATIONS WITH ARCHITECTURAL DRAWINGS.

5- NOT USED.

6- CONTRACTOR SHALL COORDINATE WITH OWNER/ARCHITECT PROPER INSTALLATION AND FINAL LOCATION OF ALL HVAC DIFFUSERS AND LIGHTS PRIOR TO ROUGH-INS AND INSTALLATIONS.

7- VERIFY EQUIPMENT ELECTRICAL LOADS WITH EQUIPMENT "CUT SHEETS" AND NAMEPLATE OF EQUIPMENT BEFORE INSTALLATION OF POWER CONDUCTORS.

8- REFER TO MECHANICAL PLANS FOR EXACT LOCATION OF MECH. EQUIPMENT.

9- PROVIDE AND INSTALL ALL NEEDED RELAYS, STARTERS AND CONTROL WIRING NOT SHOWN ON THESE PLANS FOR COMPLETE INSTALLATION OF A/C SYSTEMS SHOWN.

10- ALL NEW INTERIOR AND EXTERIOR LIGHT FIXTURES SHALL BE SELECTED BY THE OWNER OR OWNER'S INTERIOR DESIGNER.

11- NOT USED.

12- ALL LED LIGHT FIXTURES SHALL BE FULL SPECTRUM WITH WARM WHITE LIGHT

13- 90% OF ALL FIXTURES/LAMPS SHALL BE ENERGY EFFICIENT.

14- INTERSYSTEM BONDING REQUIRED TELEPHONE AND LOW VOLTAGE SYSTEM AS PER NEC ARTICLE 250.94

COMPLETION REQUIREMENTS: (TO COMPLY WITH CHAPTER 13-413.1 ABC.2 FBC 2023 8TH EDITION)
DRAWINGS.

CONSTRUCTION DOCUMENTS SHALL REQUIRE THAT WITHIN 30 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS OF THE ACTUAL INSTALLATION SHALL BE PROVIDED TO THE BUILDING OWNER, INCLUDING:

1. A SINGLE-LINE DIAGRAM OF THE BUILDING ELECTRICAL DISTRIBUTION SYSTEM AND
2. FLOOR PLANS INDICATING LOCATION AND AREA SERVED FOR ALL DISTRIBUTION.

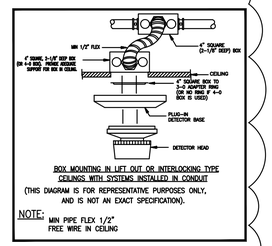
MANUALS
CONSTRUCTION DOCUMENTS SHALL REQUIRE THAT AN OPERATING MANUAL AND MAINTENANCE MANUAL BE PROVIDED TO THE ESTABLISHMENT OWNER. THE MANUALS SHALL INCLUDE, AT A MINIMUM, THE FOLLOWING:

1. SUBMITTAL DATA STATING EQUIPMENT RATING AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE.
2. OPERATION MANUALS AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE. REQUIRE ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY IDENTIFIED.
3. NAMES AND ADDRESSES OF AT LEAST ONE QUALIFIED SERVICE AGENCY

ELECTRICAL SYMBOL LEGEND

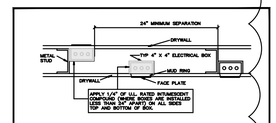
- CEILING LIGHT / FAN
- FLAT LENS 2' x 4' FLUORESENT FIXTURE
- PARABOLIC 2' x 4' FLUORESCENT LIGHT FIXTURE
- 2' x 4' FLUORESCENT LIGHT FIXTURE W/ EMERG. BALLAST.
- RECESSED INCANDESCENT OR FLUORESCENT DOWNLIGHT
- RECESSED INCANDESCENT DOWNLIGHT
- OPEN EGG CRATE 2' x 2' FLUORESCENT LIGHT FIXTURE LUMAX 3PG33224-C09L18--FX1-L941-AH04
- TRACK LIGHTING
- WALL MOUNTED EXIT SIGN W/ BATT. BACK-UP
- EXTERIOR WALL PACKS
- CEILING MOUNTED CORD RECEPTACLES
- 20AMP, 115V, SINGLE RECEPT. @ 18" AFF
- 20AMP, 115V, DUPLEX RECEPT. @ 18" AFF
- 20AMP QUADPLEX RECEPT. @ 18" AFF
- GFCI 20AMP, 115V, DUPLEX RECEPT. W/ G.F.C.I.
- 20AMP, 115V, DUPLEX RECEPT. 6" ABOVE COUNTER
- 20AMP, 115V, FLOOR RECPTACLE
- SPECIAL RECEPTACLE 36" AFF U.N.O.
- TELEPHONE JUNCTION BOX @ 18" AFF
- DATA OUTLET BOX @ 18" AFF
- M MOTORIZED SWITCH
- TELEPHONE/DATA JUNCTION BOX @ 18" AFF
- TV T.V. CABLE OR ANTENNA OUTLET
- FLOOR MOUNTED RECEPT. AND VOICE/DATA
- DR MOTOR OR FAN
- CEILING MOUNT OCCUPANCY SENSOR
- WALL MOUNTED EMERGENCY LIGHT W/ BATTERY BACK-UP
- A LIGHTING FIXTURE TYPE. LETTER REFERS TO SCH.
- W.H. WATER HEATER
- J JUNCTION BOX
- GFCI GROUND FAULT CIRCUIT INTERRUPTER
- MOTOR STARTER OR CONTACTOR
- CONDUIT
- DR BRANCH CIRCUIT HOMERUN. LONG HASHMARK W/FLAG DENOTES GROUND WIRE, LONG HASHMARK W/O FLAG DENOTES NEUTRAL WIRE, SHORT HASHMARK DENOTES PHASE WIRE.
- C.U. CONDENSING UNIT
- A.F.F. ABOVE FINISHED FLOOR
- SECURITY CAMERAS
- $ SINGLE POLE LIGHT SWITCH - 48" AFF
- $3 THREE WAY SWITCH - 48" AFF U.N.O.
- A.F.G. ABOVE FINISHED GRADE
- 3 15/30 DISCONNECT HEAVY DUTY (3) POLES, 15A FUSE, 30A FRAME
- $D SINGLE POLE LIGHT DIMMER SWITCH - 48" A.F.F., U.N.O. WITH AUTOMATIC SHUT-OFF, DUAL (PDT) TYPE FEATURE.
- DSC CEILING MOUNT OCCUPANCY SENSOR
- AHU AIR HANDLING UNIT
- DUCT HEATER
- ELECTRICAL PANEL - SURFACE MOUNTED
- U.N.O. UNLESS OTHERWISE NOTED
- WP WEATHER PROOF
- EF EXHAUST FAN
- CMSD COMBINATION TYPE SMOKE DETECTOR/CARBON MONOXIDE. USE MANUFACTURERS BRK ELECTRONICS CAT#SC6120B 120VAC/DC WITH BATTERY BACK UP.

* NOT ALL SYMBOLS SHOWN HERE MAY APPLY FOR THIS PROJECT

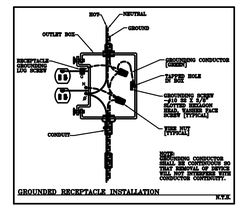


BOX MOUNTING IN LIFT OUT OR INTERLOCKING TYPE CEILINGS WITH SYSTEMS INSTALLED IN CONDUIT
(THIS DIAGRAM IS FOR REPRESENTATIVE PURPOSES ONLY, AND IS NOT AN EXACT SPECIFICATION).

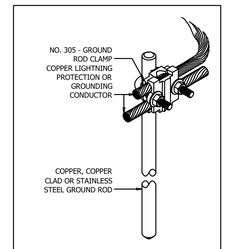
NOTE:
MIN PIPE FLEX 1/2"
FREE WIRE IN CEILING



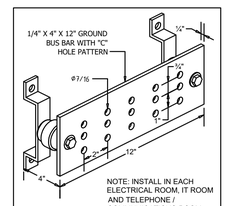
BACK TO BACK ELECTRICAL BOX MOUNTING DETAIL FOR RATED WALLS
(UL)



GROUNDED RECEPTACLE INSTALLATION
N.T.S.



GROUND ROD DETAIL



NOTE: INSTALL IN EACH ELECTRICAL ROOM, IT ROOM AND TELEPHONE / COMMUNICATIONS ROOM.

1

1 E-1 ELECTRICAL NOTE AND DETAILS

Scale: N.T.S.

Fine Line Engineers Inc.
Electrical, Mechanical, Plumbing, Fire Protection, Construction, Administration Services
2086 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

HUBER RESIDENCE
12020 SW 77th Ave
Pinecrest, Fl 33156

E-1

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

LOT - 1
BLOCK - 2
N 87°15'46" E - 255.50'

F.I.P. 1/2"
NO CAP

1/2"
023

IRRIGATION
PUMP
P-12,14
2#8
3R

FPAL POLE SERVICES
120/240 VAC, 1ø

U.G.
2 SETS OF 3#350 MCM IN 3"C.

1#1 EMTY CONDUIT WITH PULLSTRING FROM PANEL 'B'
FOR FUTURE LANDSCAPE LIGHTS.

POOL
EQUIPMENT

PANEL 'P'
2P/40A

CU-1
CU-5

B-22,24
A1-2,4
A-10,12

NEW METER
MAIN 1 OF 1
2P/400A

U.G.
2 SETS OF 3#350 MCM AND 1#1 CU EACH IN 3"C.

1#1 EMTY CONDUIT WITH PULLSTRING FROM PANEL 'A'
FOR FUTURE LANDSCAPE LIGHTS

ATS DISCONNECT 2/125A MCB
PANEL 'E' 125A
ATS
PANEL 'E' 125A MCB
PANEL 'P' 2/100A DISC.
PANEL 'B'
PANEL 'A'
LUTRON PNL
LCP-2
LUTRON PNL
LCP-1

STORAGE
EXT. GARDEN
KITCHEN
PANTRY
FAMILY ROOM
DINING
RIDE ENTRY
GARAGE
CLOSET
POWDER RM
SLOPE
1/8" PER FT
DOOR
N/A
COURTYARD
MAIN
ENTRANCE

2 STORY CBS
RES# 12020
F.F.E. 12.75'

MAIN ENTRY
OPEN TO ABOVE

ENT. GARDEN
ENTRY
COURTYARD

LOT - 2
BLOCK - 2

POOL
SPA
STAIRS

OFFICE
MECH CLOSET
HALLWAY #2
AVU #2
F.CLOSET
WASHER
DRYER
OUTDOOR SHOWER
BEDROOM #2
BATHROOM #2
BATHROOM #1
BEDROOM #1
CLOSET

CU-2
CU-3
CU-4
WP/WR
A-6,8
C-20,22
E-24,26

POOL EQUIPMENT
AREA
PANEL 'P'

S 02°23'14" E - 151.00'

N 87°15'46" E - 255.50'

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

LOT - 19
BLOCK - 2

George Freijo

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

FINE LINE ENGINEERS

REVISION BLOCK

NO.	DATE	DESCRIPTION
1	1/5/26	COORDINATION/NEW ENGINEER
2	6/30/26	COORDINATION

SUBMITAL BLOCK

NO.	DATE	DESCRIPTION

HUBER RESIDENCE
12020 SW 77th Ave
Pinecrest, Fl 33156

E-2

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 Cert#. 29796

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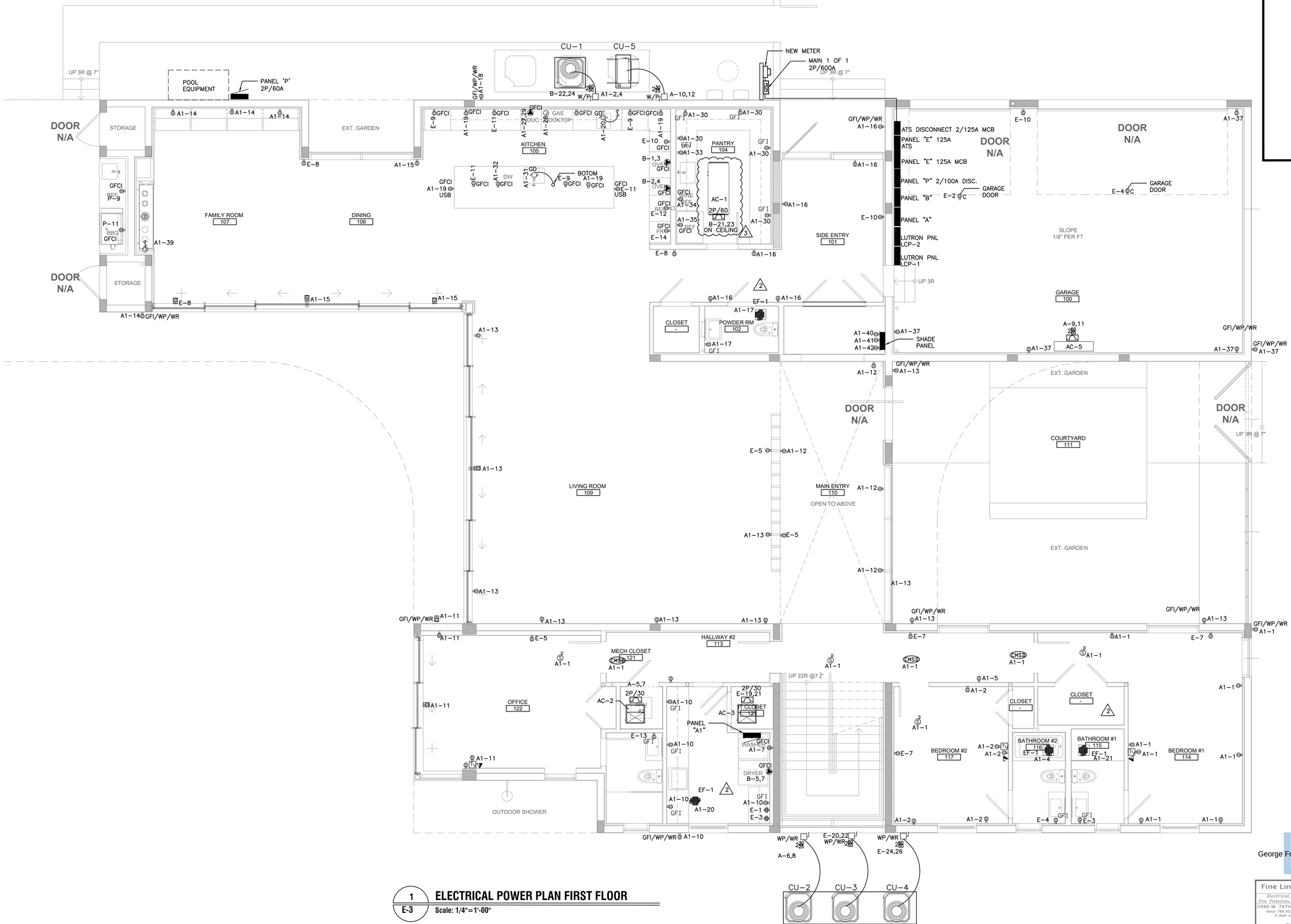

1 ELECTRICAL POWER PLAN FIRST FLOOR

E-3 Scale: 1/4"=1'-00"

Fine Line Engineers Inc.
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2089 WEST 76TH STREET, HIALEAH, FLORIDA, 33016
Tel: 786-953-4901
E-mail: cadinfo@flengineers.com

FINE LINE ENGINEERS

REVISION BLOCK

NO.	DATE	DESCRIPTION
1.	1/5/26	COORDINATION/NEW ENGINEER
2.	2/12/26	COORDINATION/OWNER CHANGES
3.	3/11/26	OWNER CHANGE

SUBMITAL BLOCK

NO.	DATE	DESCRIPTION

HUBER RESIDENCE
12020 SW 77th Ave
Pinecrest, Fl 33156

E-3

George Freijo

Fine Line Engineers Inc.
Electrical, Mechanical, Plumbing
Fire Protection, Construction Administration
2086 W. 76TH Street Hialeah, Fl. 33016
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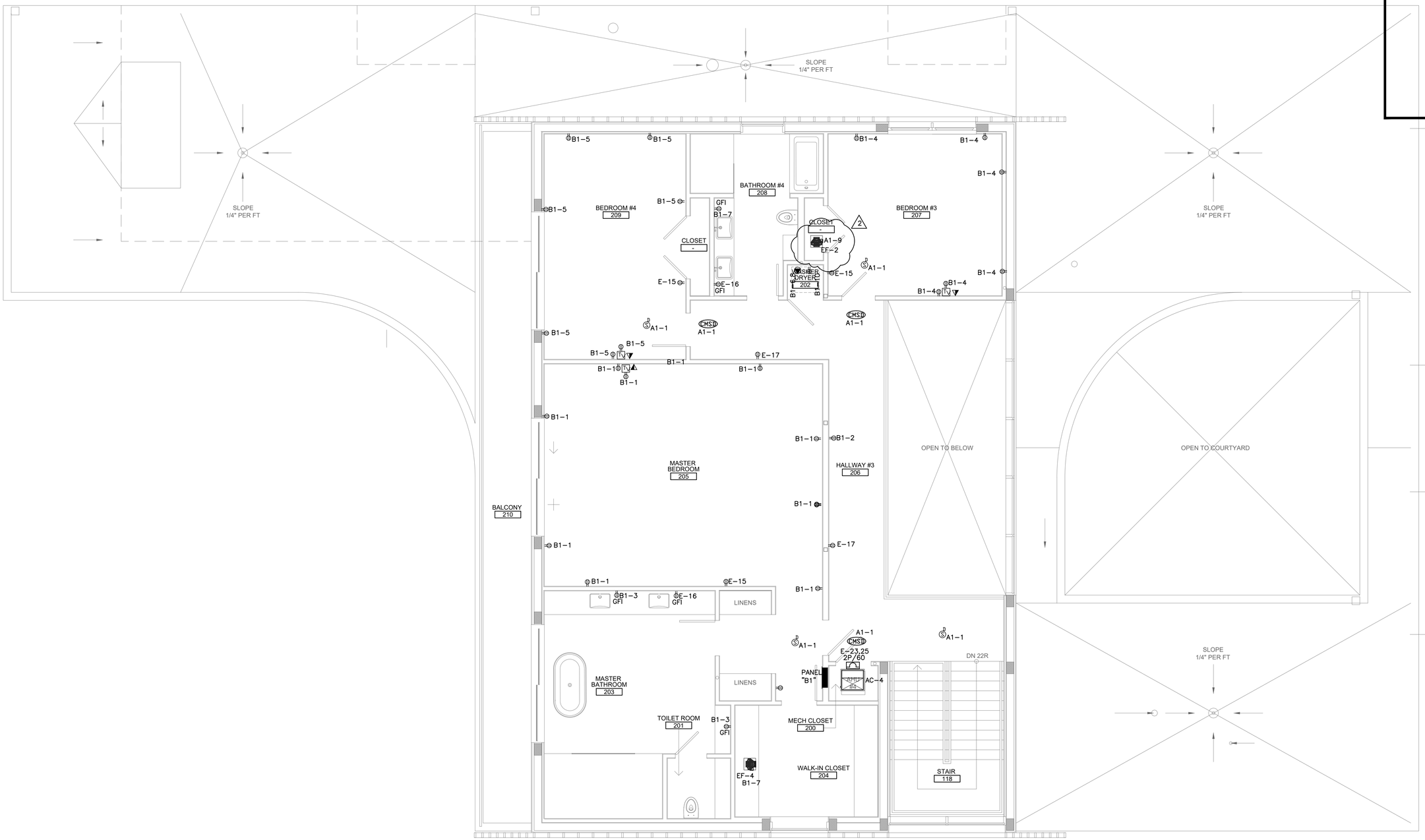

1 / E-4 **ELECTRICAL POWER PLAN SECOND FLOOR**

Scale: 1/4"=1'-00"

Fine Line Engineers Inc.

Electrical, Mechanical, Plumbing, Fire Protection, Construction Administration Services

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E-mail: cadinfo@flengineers.com

FINE LINE ENGINEERS

REVISION BLOCK

NO.	DATE	DESCRIPTION
1.	1/5/26	COORDINATION /NEW ENGINEER
2.	2/12/26	COORDINATION/OWNER CHANGES

SUBMITAL BLOCK

NO.	DATE	DESCRIPTION

HUBER RESIDENCE
12020 SW 77th Ave
Pinecrest, Fl 33156

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

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REGISTERED ENGINEER NO. 32578
STATE OF FLORIDA CA# 29796

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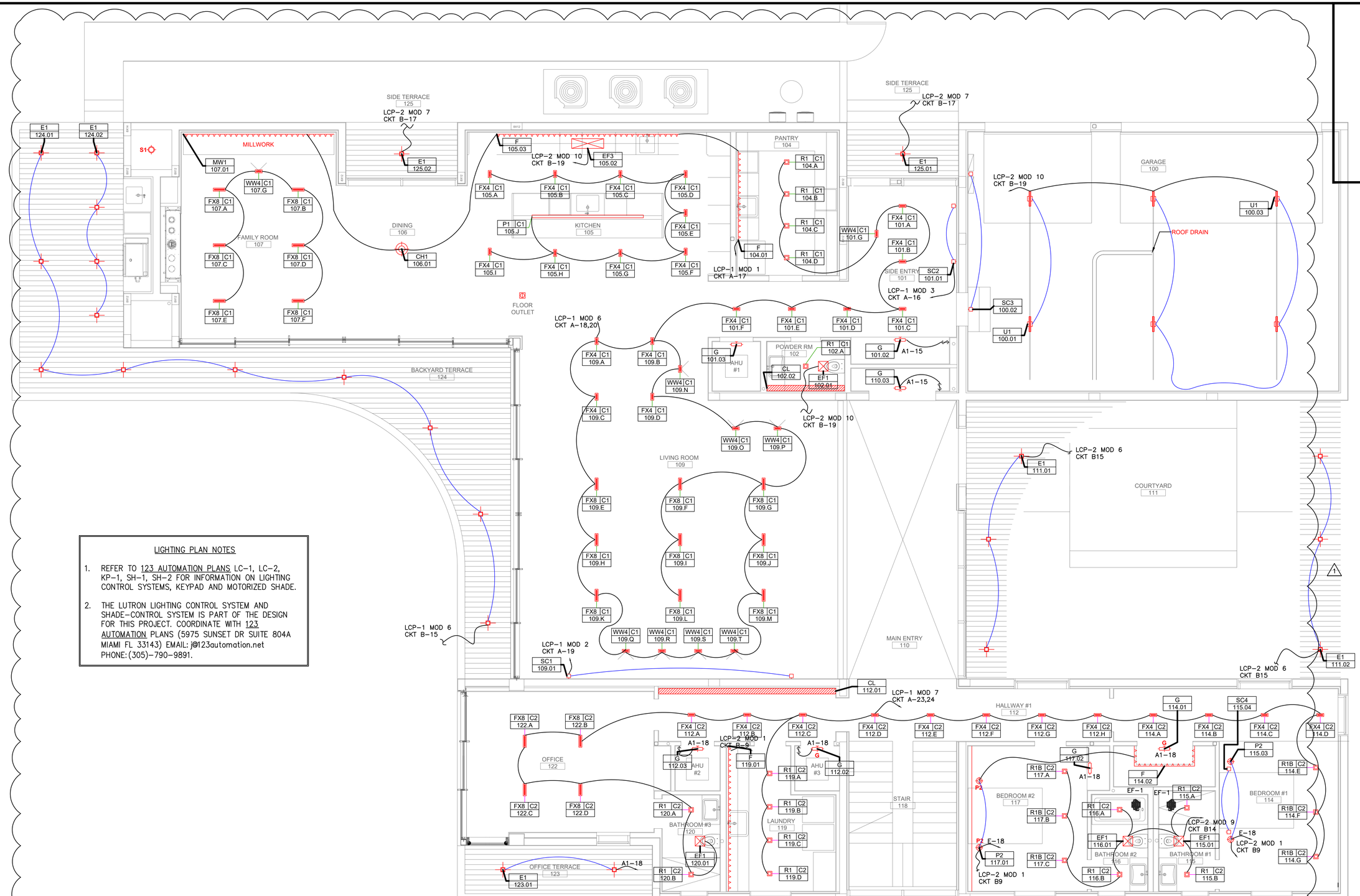
E-4



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"

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 C.A.#. 29796

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Tel: 786-953-4901
E-mail: cadinfo@flengineers.com
FINE LINE ENGINEERS

REVISION BLOCK

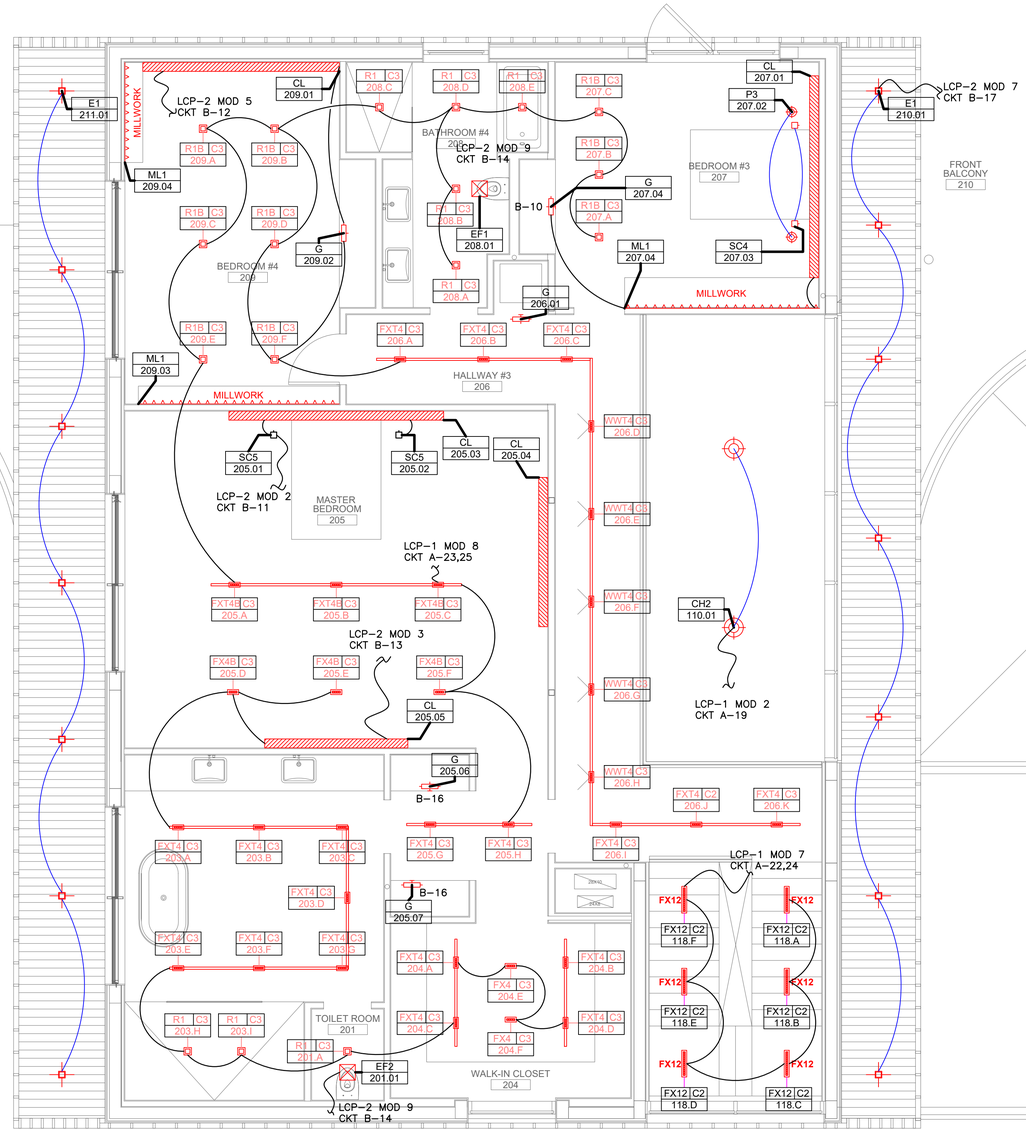
NO.	DATE	DESCRIPTION
1	1/5/26	COORDINATION/NEW ENGINEER

SUBMITAL BLOCK

NO.	DATE	DESCRIPTION

HUBER RESIDENCE
12020 SW 77th Ave
Pinecrest, Fl 33156

E-5



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

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2089 WEST 76TH STREET, HIALEAH, FLORIDA, 33016
Tel: 786-953-4901
E-mail: cadinfo@flengineers.com

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

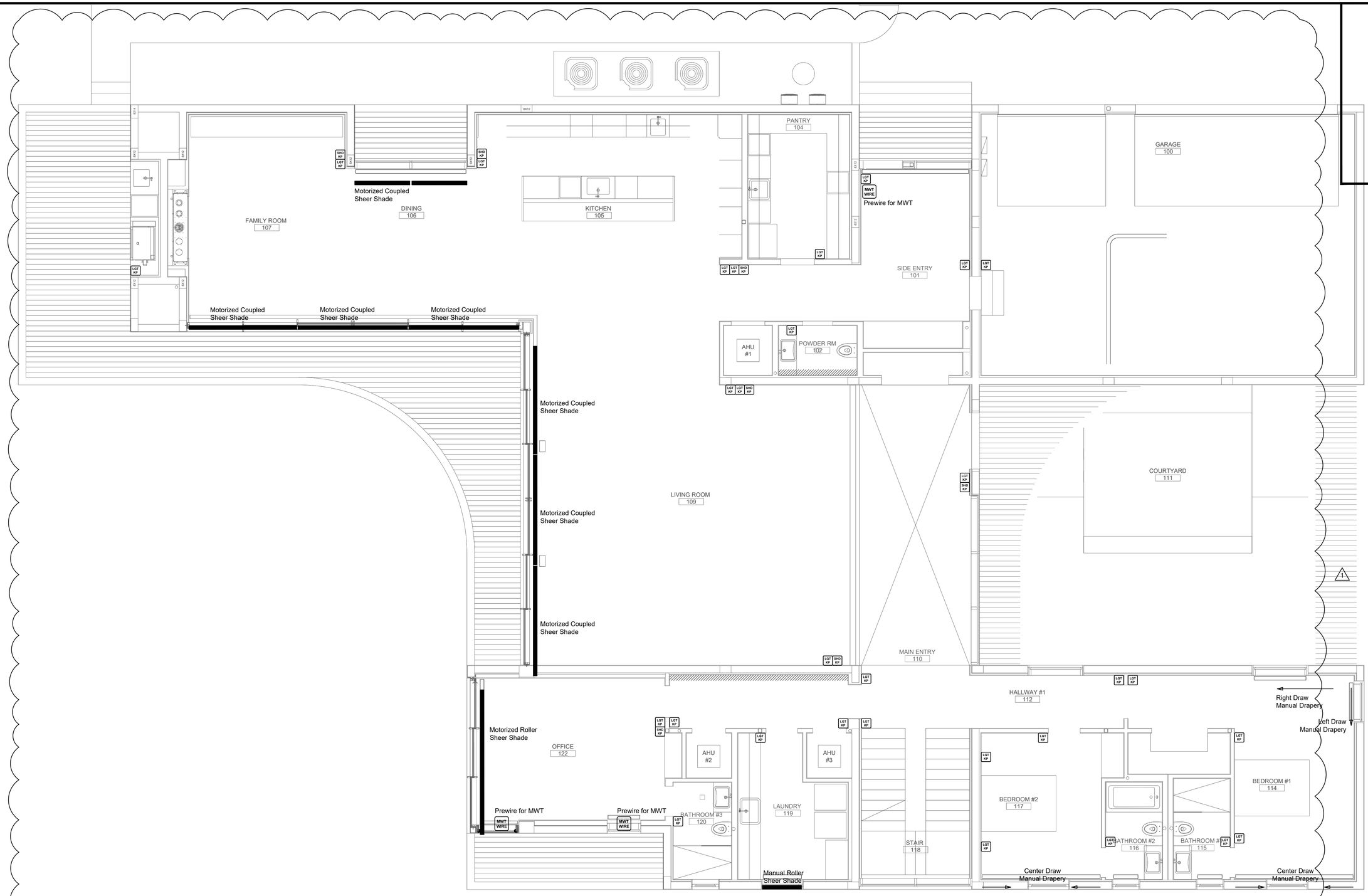
SUBMITAL BLOCK		
NO.	DATE	DESCRIPTION

HUBER RESIDENCE
12020 SW 77th Ave
Pinecrest, Fl 33156

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

E-6



1 ELECTRICAL KP PLAN FIRST FLOOR

E-7 Scale: 1/4"=1'-00"

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
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2089 WEST 76TH STREET, HIALEAH, FLORIDA, 33016
Tel: 786-953-4901
E-mail: cadinfo@flengineers.com

FLE DESIGN BY FINE LINE ENGINEERS

REVISION BLOCK

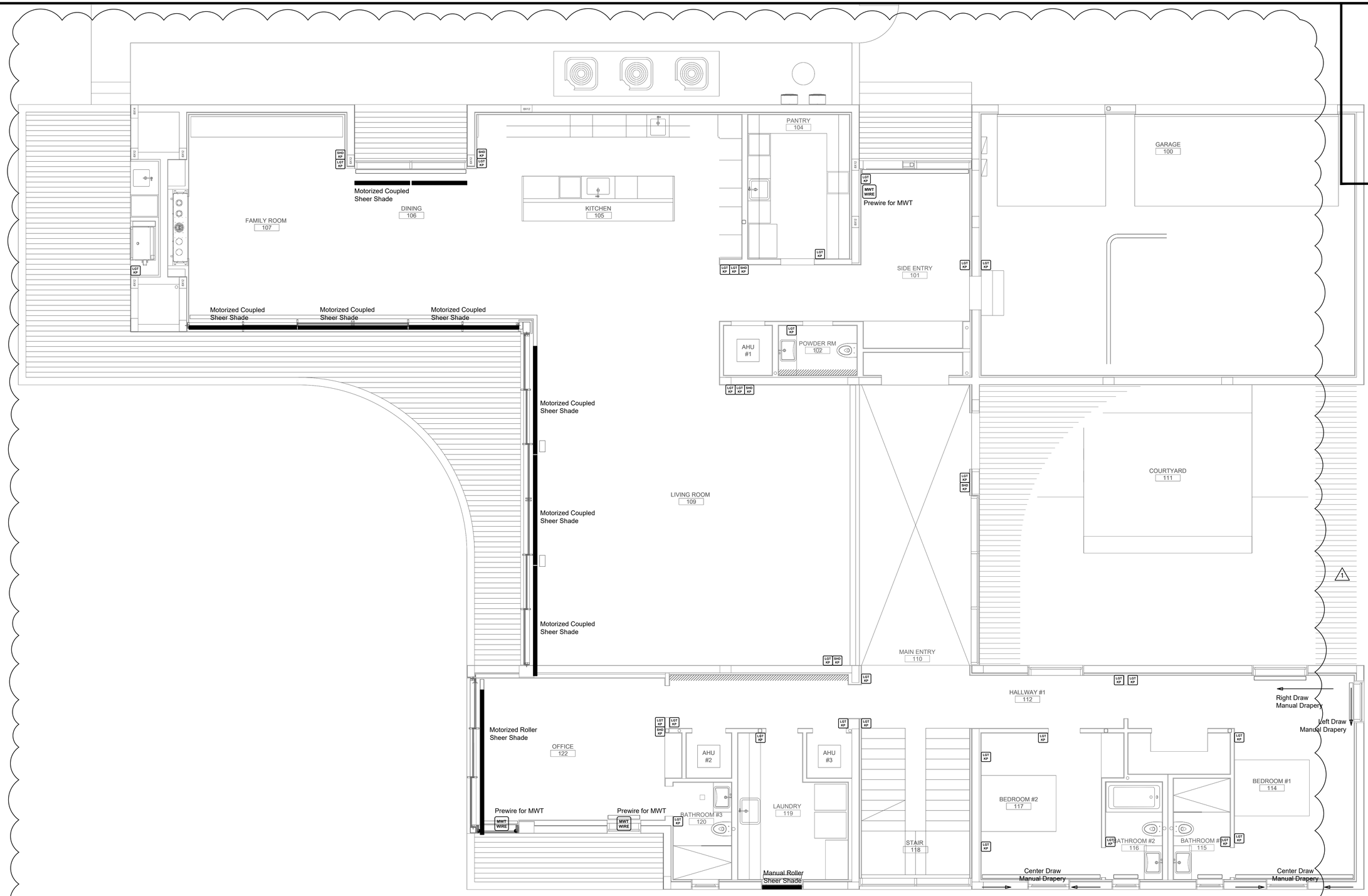
NO.	DATE	DESCRIPTION
1	1/5/26	COORDINATION/NEW ENGINEER

SUBMITTAL BLOCK

NO.	DATE	DESCRIPTION

HUBER RESIDENCE
12020 SW 77th Ave
Pinecrest, Fl 33156

E-7



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

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
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FLE DESIGN BY FINE LINE ENGINEERS

REVISION BLOCK

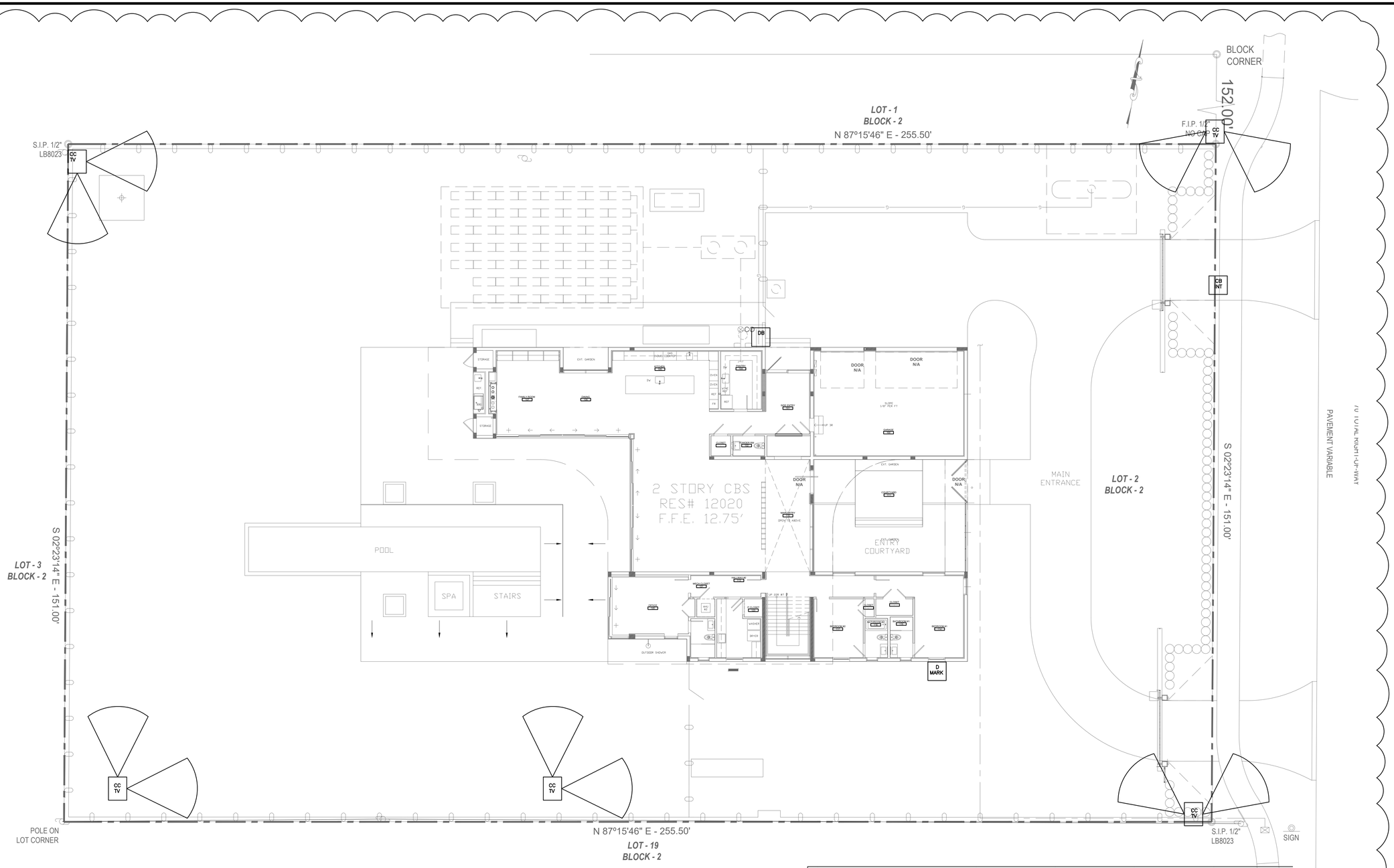
NO.	DATE	DESCRIPTION
1	1/5/26	COORDINATION/NEW ENGINEER

SUBMITTAL BLOCK

NO.	DATE	DESCRIPTION

HUBER RESIDENCE
12020 SW 77th Ave
Pinecrest, Fl 33156

E-8



AUDIO/VIDEO DEVICE LEGEND:

SPK	SPEAKER	SPK	INVISIBLE SPEAKER	APW	WIRELESS ACCESS POINT WALL	D MARC	D MARC
SUB	SUBWOOFER	SUB	INVISIBLE SUBWOOFER	APC	WIRELESS ACCESS POINT CEILING	AV RACK	AV RACK
TV	TELEVISION	ST SPK	STEREO SPEAKER	APO	WIRELESS ACCESS POINT OUTDOOR	N RACK	NETWORK RACK
TV ML	TELEVISION IN MOTORIZED LIFT		DATA	GC	MOTOR FOR GATE CONTROL	CB INT	CALL-BOX/ INTERCOM
S BAR	SOUNDBAR	AP	WIRELESS ACCESS POINT			DB	DOORBELL

CC TV	FIXED CAMERA
CC TV	BULLET CAMERA
CC TV	TURRET CAMERA
CC TV	PTZ CAMERA

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

Fine Line Engineers Inc.
Electrical, Mechanical, Plumbing, Fire Protection, Construction Administration, Services
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FINE LINE ENGINEERS

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NO.	DATE	DESCRIPTION

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

E-8.1

NEW

PANEL "A"

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

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

DEM. K.V.A.	NO DEM. K.V.A.	TRIP POLE	CON-DUIT	WIRE	REMARKS	CKT. NO.	PHASE	CKT. NO.	REMARKS	WIRE	CON-DUIT	TRIP POLE	NO DEM. K.V.A.	DEM. K.V.A.
	3.50	2 / 20	1/2"	12	INDUCTION	1		2	PANEL 'A1'	3	1-1/2"	2 / 100	11.88	
[1]	5.95	2 / 30	3/4"	10	AC-2	3		4						
						5		6	CU-2	12	1/2"	2 / 25	2.99	[1]
[1]	11.36	2 / 60	1"	6	AC-5	7		8						
						9		10	CU-5	12	1/2"	2 / 25	5.89	[1]
(4)(5)	–	1-20	1/2"	12	HALWAYS LTS	11		12						
(4)(5)	–	1-20	1/2"	12	CLOSET LTS	13		14	TERRACE & CLOSET LTS	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	LCP1 MOD 1 DL1 THRU DL4	15		16	LCP1 MOD 3 DL9 THRU DL12	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	LCP1 MOD 2 DL5 THRU DL8	17		18	LCP1 MOD 6_1 THRU 28	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	MOD#2 CONTROL ASSEMBLY	19		20	LCP1 MOD 6_29 THRU 49	12	1/2"	1-20	–	(4)(5)
(4)(5)	–	1-20	1/2"	12	LCP1 MOD 8_1 THRU 24	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_25 THRU 49	23		24	LCP1 MOD 7_21 THRU 39	12	1/2"	1-20	–	(4)(5)
						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

PANEL "B"

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

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

DEM. K.V.A.	NO DEM. K.V.A.	TRIP POLE	CON-DUIT	WIRE	REMARKS	CKT. NO.	PHASE	CKT. NO.	REMARKS	WIRE	CON-DUIT	TRIP POLE	NO DEM. K.V.A.	DEM. K.V.A.
	8.00	2 / 50	1"	8	OVEN	1		2	OVEN	8	1"	2 / 50	8.00	
	5.00	2 / 30	3/4"	10	DRYER	3		4						
						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 / 100	9.90	
[1]	11.36	2 / 60	1"	6	AC-1	19		20						
						21		22	CU-1	8	3/4"	2 / 50	5.89	[1]
						23		24						
						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

PANEL "P"

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

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

DEM. K.V.A.	NO DEM. K.V.A.	TRIP POLE	CON-DUIT	WIRE	REMARKS	CKT. NO.	PHASE	CKT. NO.	REMARKS	WIRE	CON-DUIT	TRIP POLE	NO DEM. K.V.A.	DEM. K.V.A.
	2.88	2 / 25	3/4"	12	BLOWER (2HP)	1		2	POOL PUMP	10	1"	2 / 30	3.67	
	3.67	2 / 30	1"	10	SPA PUMP	3		4						
						5		6	IGNITER GAS HEATER	12	1/2"	1-20	0.20	
	0.05	1-20	1/2"	12	POOL LTS	7		8	SPA LTS	12	1/2"	1-20	0.05	
	0.10	1-20	1/2"	12	SALT CHLOR	9		10	BOARD	12	1/2"	1-20	0.10	
						11		12	IRRIGATION PUMP	10	3/4"	2 / 30	1.92	
						13		14						
						15		16						
						17		18						
						19		20						
						21		22						
						23		24						
						25		26						
						27		28						
						29		30						
	6.70												5.94	

TOTAL CONNECTED LOAD 12.64 KVA = 52.66 AMPS

FEED: SEE ELECTRICAL RISER DIAGRAM

NEW

PANEL "A1"

<FIRST FLOOR>

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

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

DEM. K.V.A.	NO DEM. K.V.A.	TRIP POLE	CON-DUIT	WIRE	REMARKS	CKT. NO.	PHASE	CKT. NO.	REMARKS	WIRE	CON-DUIT	TRIP POLE	NO DEM. K.V.A.	DEM. K.V.A.
(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

PANEL "B1"

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

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

DEM. K.V.A.	NO DEM. K.V.A.	TRIP POLE	CON-DUIT	WIRE	REMARKS	CKT. NO.	PHASE	CKT. NO.	REMARKS	WIRE	CON-DUIT	TRIP POLE	NO DEM. K.V.A.	DEM. K.V.A.
(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 / 30	5.00	
(4)(5)	–	1-20	1/2"	12	BATHROOM #4 REC.	7		8						
						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

PANEL "E"

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

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

DEM. K.V.A.	NO DEM. K.V.A.	TRIP POLE	CON-DUIT	WIRE	REMARKS	CKT. NO.	PHASE	CKT. NO.	REMARKS	WIRE	CON-DUIT	TRIP POLE	NO DEM. K.V.A.	DEM. K.V.A.
(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 / 30	3/4"	10	AC-3	19		20	CU-3	8	3/4"	2 / 50	2.99	[1]
						21		22						
[1]	11.36	2 / 60	1"	6	AC-4	23		24	CU-4	8	3/4"	2 / 50	5.89	[1]
						25		26						
						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 E-9 **ELECTRICAL PANEL SCHEDULE**
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

FINE LINE ENGINEERS DESIGN/BIM

REVISION BLOCK

NO.	DATE	DESCRIPTION
1	1/5/26	COORDINATION/NEW ENGINEER
2	6/30/26	COORDINATION

SUBMITAL BLOCK

NO.	DATE	DESCRIPTION

HUBER RESIDENCE
12020 SW 77th Ave
Pinecrest, Fl 33156

E-9

George Freijo
Digitally signed by George Freijo
DN: cn=George Freijo, o=FLORIDA REGISTERED ENGINEER, ou=PROFESSIONAL ENGINEER, email=cadinfo@flengineers.com, c=US
Date: 2026.07.16 15:58:54-04'00'

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 Cert# 29796

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File no. Engineering Plans

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
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	29.89 KVA
WHICHEVER GREATER			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	5/5/26	COORDINATION/NEW ENGINEER

SUBMITAL BLOCK

NO.	DATE	DESCRIPTION

George Freijo — Digitally signed by George Freijo, DN: CN=George Freijo, O=Fine Line Engineers Inc, OU=Electrical & Mechanical Engineering, C=US, Date: 2026.05.11 08:28:54 -04'00'

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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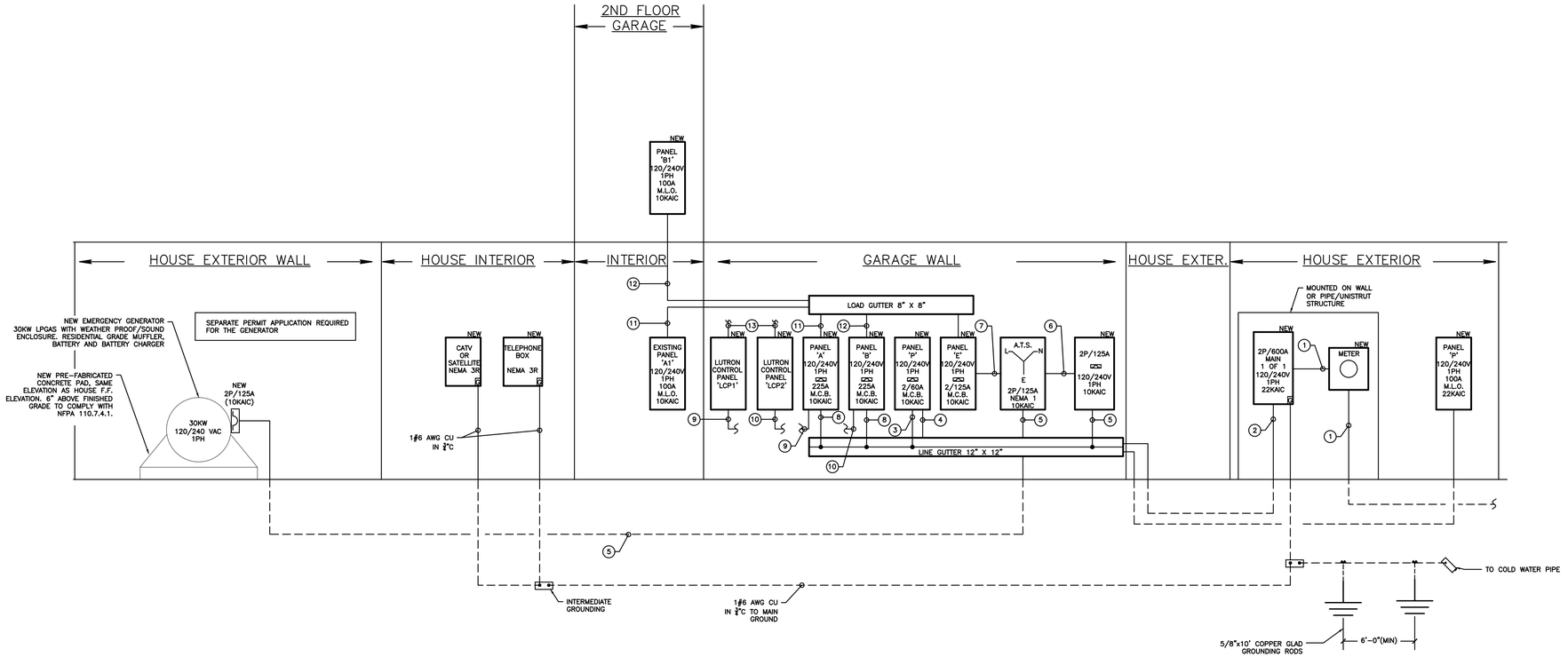
HUBER RESIDENCE
12020 SW 77th Ave
Pinecrest, Fl 33156

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

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	1/5/26	COORDINATION/NEW ENGINEER

SUBMITTAL BLOCK

NO.	DATE	DESCRIPTION

HUBER RESIDENCE
12020 SW 77th Ave
Pinecrest, Fl 33156

E-11

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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