ELECTRICAL SPECIFICATIONS — COMMERCIAL

1. MATERIALS AND INSTALLATION, AS A MINIMUM, ARE TO CONFORM WITH THE ADOPTED EDITION OF THE NATIONAL ELECTRIC CODE NEC 2011, FBC 2014 (5TH EDITION), FFPC 2014, NFPA 72 2010, LOCAL CODES, ORDINANCES, INCLUDING ALL AMENDMENTS TO THE N.E.C., EQUIPMENT, WHERE APPLICABLE, WILL BE LISTED WITH THE UNDERWRITERS LABORATORIES, INC., QUALITY AND WORKMANSHIP ESTABLISHED BY DRAWINGS AND SPECIFICATIONS ARE NOT TO BE REDUCED BY THE ABOVE MENTIONED CODES.

2. TO THE BEST OF OUR KNOWLEDGE AND ABILITY THESE DRAWINGS REPRESENT AN ACCURATE PRESENTATION OF EXISTING CONDITIONS BASED UPON CAREFUL EVALUATION OF OBSERVED CONDITIONS TO THE EXTENT REASONABLY POSSIBLE. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND IMEDIATELY NOTIFY ENGINEER WITH ANY DISCREPANCY.

   BIDDERS ARE TO VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS AND SATISFY THEMSELVES AS TO THE NATURE AND SCOPE OF WORK. THE SUBMISSION OF A BID WILL BE EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE. LATER CLAIMS FOR LABOR, EQUIPMENT, OR MATERIALS REQUIRED, OR FOR DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD AN EXAMINATION BEEN MADE, WILL NOT BE ALLOWED.

3. ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR IN A FIRST-CLASS WORKMANLIKE MANNER. THE COMPLETED SYSTEM IS TO BE FULLY OPERABLE AND ACCEPTANCE OF THIS SYSTEM BY THE ENGINEER MUST BE A CONDITION OF THE SUB CONTRACT.

4. ALL WORK TO BE COORDINATED WITH OTHER TRADES TO AVOID INTERFERENCE WITH THE PROGRESS OF CONSTRUCTION.

5. CONTRACTOR TO GUARANTEE ALL MATERIALS AND WORKMANSHIP FREE FROM DEFECTS FOR PERIOD OF NOT LESS THAN ONE (1) YEAR FROM DATE OF ACCEPTANCE.

6. CORRECTION OF ANY DEFECTS TO BE COMPLETED WITHOUT ADDITIONAL CHARGE AND TO INCLUDE REPLACEMENT OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN DAMAGED THEREBY.

7. ALL REQUIRED INSURANCE TO BE PROVIDED FOR PROTECTION AGAINST PUBLIC LIABILITY OF PROPERTY DAMAGE FOR THE DURATION OF THE WORK.

8. CONTRACTOR TO PAY FOR ALL PERMITS, FEES INSPECTIONS AND TESTINGS.

9. ELECTRICAL INSTALLATION TO MEET ALL STANDARD REQUIREMENTS OF LOCAL POWER AND TELEPHONE COMPANIES. ELECTRICAL CONTRACTOR SHALL CONTACT LOCAL POWER AND TELEPHONE COMPANIES PRIOR TO START OF CONSTRUCTION.

10. ALL WIRING SHALL BE IN CONDUIT UNLESS OTHERWISE NOTED, MINIMUM WIRE SIZE SHALL BE #12 AWG, EXCLUDING CONTROL WIRING. ALL CONDUCTORS SHALL BE COPPER WITH THWN/THHN INSULATION. CONDUCTORS #10 AND SMALLER MAY BE SOLID; ALL THOSE #8 AND LARGER TO BE STRANDED.

11. ALL UNDERGROUND RACEWAYS SHALL BE MINIMUM 3/4". GALVANIZED RIGID STEEL CONDUIT OR SCHEDULE 40 PVC. ALL OTHER RACEWAYS TO COMPLY WITH GOVERNING CODES. WHERE RIGID STEEL IS USED, IT SHALL BE COMPLETELY COATED WITH AN ALKALI AND RUST RESISTANT BITUMASTIC PAINT, COPPER NO. 50, AND THREADS SHALL BE COATED WITH ZINC CHROMATE. RIGID STEEL SHALL ALSO BE USED WHEN CONDUIT IS EXPOSED TO EXTERIOR ENVIRONMENT SUCH AS EXTERIOR OF BUILDING OR WHERE IT IS EXPOSED AND SUBJECT TO DAMAGE, INSIDE OF BUILDING.

12. OUTLET BOXES SHALL BE PRESSED STEEL IN DRY LOCATIONS, CAST ALLOY WITH THREADED HUBS IN WET OR DAMP LOCATIONS, AND BE OF SPECIAL CONSTRUCTION FOR OTHER CLASSIFIED AREAS. ALL BOXES SHALL BE RECESSED (FLUSH) IN WALLS OR CEILINGS WHENEVER POSSIBLE.

13. DISCONNECT SWITCHES SHALL BE H.P. RATED, GENERAL DUTY, QUICK-MAKE, QUICK-BREAK TYPE. ENCLOSURES SHALL BE AS REQUIRED BY N.E.C. AND LOCATION (WEATHERPROOF, EXPLOSION PROOF, ETC.). ENGRAVED LAMINATED PLASTIC IDENTIFICATION PLATES SHALL BE FURNISHED AND INSTALLED ON ALL DISCONNECT SWITCHES, CONTACTORS AND STARTERS.

14. ALL FUSES FOR SAFETY SWITCHES SHALL BE DUAL ELEMENT, CARTRIDGE TYPE. FUSES SHALL BE THOSE MANUFACTURED BY EITHER BUSSMAN OR LITTLEFUSE. THE CONTRACTOR SHALL FURNISH TO THE OWNER ONE SPARE FUSE FOR EACH SIZE AND TYPE OF FUSE INSTALLED. FUSES 600 AMPS OR LESS SHALL BE CLASS RK1, TYPICAL UNLESS OTHERWISE NOTED. FUSES OVER 600 AMPS SHALL BE CLASS L.

15. ALL GENERAL PURPOSE SWITCHES AND RECEPTACLES SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER. CATALOG NUMBERS LISTED ARE LEVITON; HOWEVER, COMPARABLE DEVICES BY PASS & SEYMOUR, BRYANT, OR ARROW HART WILL BE ACCEPTED. COLOR OF DEVICES AND PLATES SHALL BE WHITE UNLESS DICTATED OTHERWISE BY ARCHITECT/OWNER.

16. IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. THE CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM, AND PROVIDE ALL NECESSARY DEVICES AND COMPONENTS FOR EQUIPMENT BE PLACED IN PROPER WORKING ORDER.

17. A SEPARATE, GREEN TYPE THWN COPPER GROUND CONDUCTOR SHALL BE RUN FROM GROUND LUG OF EACH GROUNDED RECEPTACLE TO AN APPROVED CONNECTION INSIDE THE ENCLOSING STEEL OUTLET BOX. DEVICE MOUNTING SCREWS SHALL NOT BE CONSIDERED AN APPROVED GROUND. A SEPARATE GROUND CONDUCTOR SHALL BE INSTALLED IN EVERY CONDUIT AND RACEWAY AND SECURELY BONDED IN AN APPROVED GROUNDING TERMINAL AT BOTH ENDS OF THE RUN. THE GROUNDING CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH TABLE 250-122 OF THE N.E.C. CONTRACTOR SHALL SIZE CONDUIT TO ACCOMMODATE ADDITIONAL CONDUCTOR.

18. LOAD DATA IS BASED ON INFORMATION GIVEN TO THE ENGINEER AT THE TIME OF DESIGN. VERIFY ALL EQUIPMENT NAMEPLATE RATINGS BEFORE ORDERING.

19. CIRCUITS SHOWN ON PLANS ARE TO DETERMINE LOAD DATA AND PANEL SIZES. THE CONTRACTOR IS TO PROVIDE CIRCUITS AND ROUTING OF CONDUITS TO SUIT JOB CONDITIONS.

20. FURNISH AND INSTALL DISCONNECT SWITCHES, WIRING, AND CONNECTIONS ON AIR CONDITIONING SYSTEM AS SHOWN ON PLANS. ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUIT AND WIRING FROM C.U.TO A.H.U. ,TERMINATION SHALL BE PERFORMED BY MECHANICAL CONTRACTOR.

21. ALL FLUORESCENT LIGHT FIXTURES SHALL HAVE IN LINE FUSING AND ENERGY SAVING BALLASTS. (ONLY REQUIRED IN MIAMI DADE COUNTY)

22. ALL SWITCHGEAR, PANELS, STARTERS, CONTACTORS ETC., SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER, THE SYSTEM DESIGN IS BASED ON SQUARE "D"; HOWEVER, COMPARABLE EQUIPMENT BY G.E. & SIEMENS ONLY WILL BE ACCEPTABLE. TANDEM AND HALF-SPACE CIRCUIT BREAKERS SHALL NOT BE USED.

23. PROVIDE IDENTIFICATION FOR ALL PANELS, CABINETS, ENCLOSURES, DISCONNECTS & TRANSFORMERS USING ENGRAVED NAMEPLATES, WHITE LETTERING ON A BLACK BACKGROUND. NAMEPLATES SHALL IDENTIFY PANEL DESIGNATION (NAME,) VOLTAGE, PHASE & WIRE CONFIGURATION. PROVIDE TYPEWRITTEN DIRECTORIES UNDER PLASTIC COVER FOR ALL PANEL BRANCH CIRCUITS, CLEARLY INDICATING AREA AND TYPE OF LOAD SERVED BY EACH BRANCH CKT PROTECTIVE DEVICE, INCLUDING SPARES. HAND PRINTED WILL NOT BE ACCEPTED.

24. ENGRAVED, LAMINATED PLASTIC IDENTIFICATION PLATES SHALL BE FURNISHED AND INSTALLED ON ALL PANELS AND SWITCHGEAR. PLATES SHALL BE AFFIXED TO FRONT OF PANELS, INDICATING PANEL NAME, VOLTAGE AND AMPERAGE.

25. ALL UNDERGROUND PVC CONDUIT RUNS SHALL HAVE RIGID STEEL ELBOWS AND RIGID STEEL SECTIONS AT SLAB PENETRATIONS WHERE SUBJECT TO POSSIBLE DAMAGE. WHERE RIGID STEEL IS USED, IT SHALL BE COMPLETELY COATED WITH AN ALKALI AND RUST-RESISTANT BITUMASTIC PAINT, COPPER NO. 50, AND THREADS SHALL BE COATED WITH ZINC CHROMATE.

26. THE ELECTRICAL CONTRACTOR SHALL MEET AND COORDINATE WITH THE LOCAL POWER COMPANY AT THE SITE PRIOR TO CONSTRUCTION. AT THAT TIME, THE CONTRACTOR SHALL COORDINATE ALL RELATED WORK WITH THE UTILITY COMPANY'S RESPONSIBILITIES TO MEET THE OWNER'S SCHED.

27. ALL ELECTRICAL CONDUCTORS SHALL BE INSTALLED IN AN APPROVED RACEWAY, EMT, IMC, RIGID GALVANIZED CONDUIT OR SCHEDULE 40 P.V.C. THERE SHALL BE NO TYPE 'NM' AND ELECTRICAL NON-METALLIC TUBING USED FOR BRANCH CIRCUITING. MAXIMUM NUMBER OF 120V CIRCUITS ALLOWED IN A COMMON CONDUIT SHALL BE SIX (6). "MC" TYPE CABLE SHALL NOT BE USED AS HOME RUNS. THE CONTRACTOR SHALL STRICTLY CONFORM TO THE N.E.C. REQUIREMENTS OF DERATING FOR CONDUCTOR AMPACITY AND CONDUIT FILL.

28. CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS:

208V SYSTEM	240V (HIGH LEG) SYSTEM	480V SYSTEM	PHASE SEQUENCE
NEUTRAL - WHITE	NEUTRAL - WHITE	NEUTRAL - WHITE	ABC, TOP TO BOTTOM
PHASE A - BLACK	PHASE A - BLACK	PHASE A - BROWN	LEFT TO RIGHT,
PHASE B - RED	PHASE B - ORANGE	PHASE B - PURPLE	FRONT TO BACK
PHASE C - BLUE	PHASE C - BLUE	PHASE C - YELLOW	
GRD.CON - GREEN	GRD.CON - GREEN	GRD.CON - GREEN	

29. CONTRACTOR SHALL BE RESPONSIBLE FOR SEALING ALL CONDUIT PENETRATIONS MADE THROUGH FIRE RATED WALLS, CEILINGS, SLABS, ETC. PENETRATION SEALS SHALL BE PER U.L. ASSEMBLY.

30. CONTRACTOR SHALL MAINTAIN A COMPLETE SET OF CONTRACT DRAWINGS AT JOB SITE WITH COLORED MARKINGS INDICATING PROGRESS OF WORK. THIS SET OF CONTRACT DRAWINGS IS TO BE SEPARATE FROM AND IN ADDITION TO CONTRACTOR'S CONSTRUCTION SET. EVERY UNIT OF EQUIPMENT, DEVICE, CONDUIT AND WIRE IS TO MARKED WHEN INSTALLED. USE GREEN TO INDICATE INSTALLATION AS SHOWN ON DRAWINGS AND USE RED TO INDICATE FIELD CHANGES. UPON COMPLETION OF WORK, THIS SET OF CONTRACT DRAWINGS IS TO BE TURNED OVER TO, AND BECOME PROPERTY OF THE ELECTRICAL ENGINEER.

31. IF ELECTRICAL CONTRACTOR HAS QUESTIONS, OR IN THEIR OPINION FINDS OMISSIONS OR ERRORS ON ELECTRICAL DOCUMENTS, IT IS THEIR RESPONSIBILITY TO BRING THIS TO THE ATTENTION OF THE ELECTRICAL ENGINEER IMMEDIATELY. IF ELECTRICAL CONTRACTOR PROCEEDS WITH ANY CHANGES TO THE CONTRACT DOCUMENTS, WITHOUT WRITTEN PRIOR APPROVAL FROM THE ELECTRICAL ENGINEER, CONTRACTOR WILL NOT BE COMPENSATED.

VOLTAGE DROP CALCULATIONS

1. 3% VOLTAGE DROP CALCULATED FOR EVERY BRANCH CIRCUIT SHOWS MAXIMUM DISTANCE ALLOWED FOR THE SPECIFIED WIRE SIZE BASED ON DESIGNED LOAD.

2. ALL CIRCUITS HAVE BEEN VERIFIED ON FLOOR PLANS BASED ON HORIZONTAL STRAIGHT RUNS WITH ADDITIONAL 30 FEET OF VERTICAL RUNS. ACTUAL DISTANCES FOR EVERY CIRCUIT RUN SHALL BE FIELD MEASURED BY THE ELECTRICAL CONTRACTOR. CONTRACTOR SHALL PROVIDE NEXT WIRE SIZE FOR RUNS OVER MAXIMUM DISTANCE SHOWN ON PANEL SCHEDULES.

NOTES:

AN OPERATING MANUAL AND MAINTENANCE MANUAL SHALL BE PROVIDED TO THE BUILDING OWNER AS PER FBC 2014 405.7.4.2. 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. REQUIRED ROUTINE MAINTENANCE SHALL BE CLEARLY IDENTIFIED.
3. NAMES AND ADDRESSES OF AT LEAST ONE QUALIFIED SERVICE AGENCY.

SHORT CIRCUIT CALCULATION

FAULT CURRENT AT UTILITY TRANSFORMER SECONDARY

CURRENT SOURCE (INFINITE) **69396** A.I.C.

TRANSFORMER	FLA (A)	SIZE (KVA)	Z (%)
	830	300	1.2

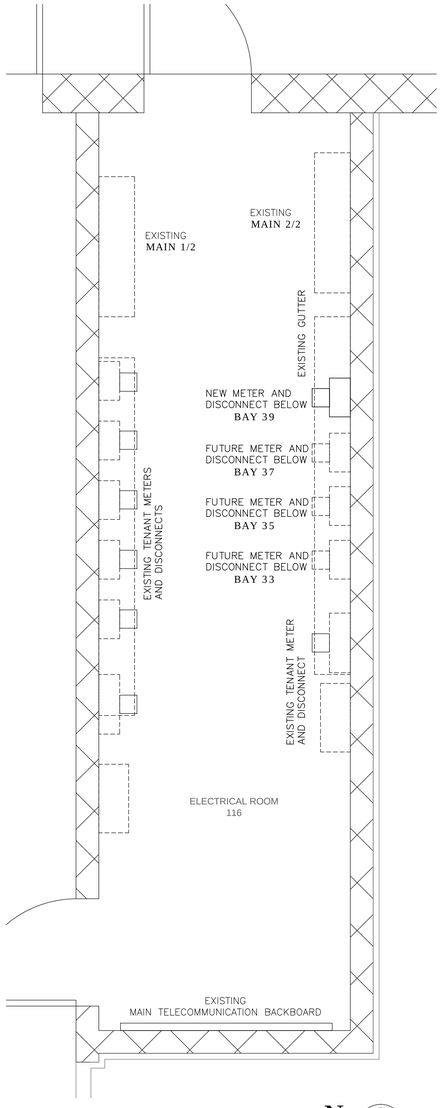
FAULT CURRENT AT SERVICE DISCONNECT

NO MOTOR CONTRIBUTION **46889** A.I.C.
WITH MOTOR CONTRIBUTION **47209** A.I.C.

WIRE SIZE **500** KCMIL CU
LENGTH OF RUNS **75** FEET
NUMBER OF RUNS **3**

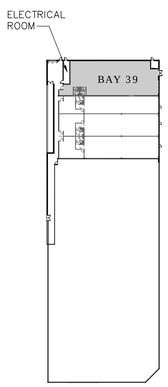
FAULT CURRENT AT PANEL A

NO MOTOR CONTRIBUTION **19300** A.I.C.
WITH MOTOR CONTRIBUTION **19620** A.I.C.
MOTOR CONTRIBUTION 160 AMP
WIRE SIZE **#3/0** AWG
LENGTH OF RUNS **50** FEET
NUMBER OF RUNS **1**



ELECTRICAL ROOM PLAN — N

scale: 1/2" = 1'-0"



KEY PLAN — N

PANEL SCHEDULE A — NEW

Rated Voltage: 120/208V — 3PH,4W
Rated Amps: (Cu bus) 200A — SPACES: 42
Main: 200A MCB

Manufacturer: SQUARE D NQ OR EQAUL
Location: SEE FLOOR PLAN
Project No: 1623.00

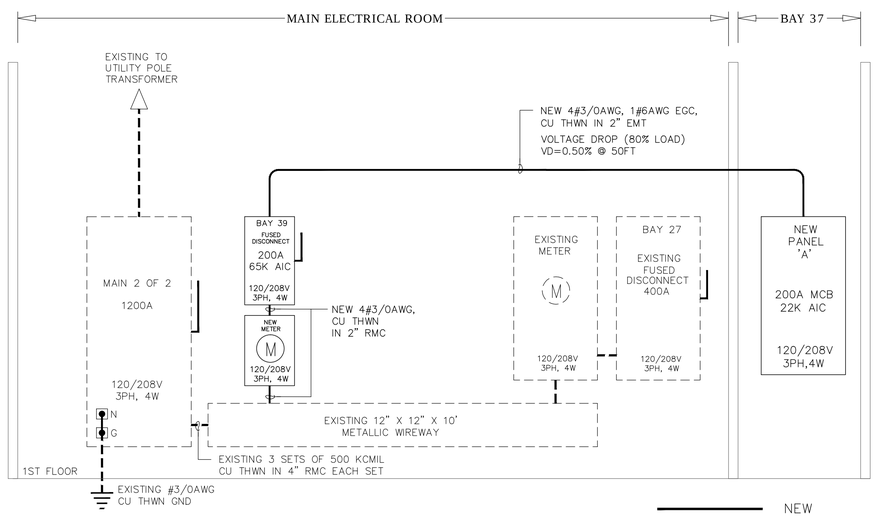
Mounting: SURFACE
Type: NEMA 1
A.I.C: 22K

NOTE		CIRCUIT DESIGNATION	O.C.P.	AWG	MAX. DIST.(ft)	VOLT DROP	RCPT KVA	LTG/CONT KVA	KITCHEN KVA	MOTOR/APP. KVA	PH	RCPT KVA	LTG/CONT KVA	KITCHEN KVA	MOTOR/APP. KVA	MAX. DIST.(ft)	VOLT DROP	AWG	O.C.P.	CIRCUIT DESIGNATION		NOTE
	1	RTU-1	60/3	6	152	3%		3.3			A				3.30					RTU-2	2		
1,5	3							3.3			B				3.30	99	3%	8	50/3		4		
	5							3.3			C				3.30						6		
	7	ROOF SERVICE RECEPTACLE	20/1	12	731	3%	0.18				A		1.20			110	3%	12	20/1	SIGN	8	3
	9	TELECOM BACKBOARD REC.	20/1	12	366	3%	0.36				B		1.02			129	3%	12	20/1	BAY LIGHTS	10	
	11	DRINKING FOUNTAIN	20/1	12	263	3%				0.50	C		1.36			97	3%	12	20/1	BACK RM LIGHTS/EMERGENCY	12	
	13	BACK ROOM RECEPTACLES	20/1	12	366	3%	0.36				A		1.36			97	3%	12	20/1	BAY LIGHTS	14	
	15	BAY RECEPTACLES	20/1	12	183	3%	0.72				B		1.20			110	3%	12	20/1	BAY LIGHTS	16	
	17	BAY RECEPTACLES	20/1	12	183	3%	0.72				C		0.40			329	3%	12	20/1	BACK RM LIGHTS / EMERGENCY	18	
	19	BAY RECEPTACLES	20/1	12	183	3%	0.72				A		1.80			73	3%	12	20/1	SHOW WINDOWS RECEPTACLE	20	
	21	BAY RECEPTACLES	20/1	12	244	3%	0.54				B		1.80			73	3%	12	20/1	SHOW WINDOWS RECEPTACLE	22	
	23	SPARE	20/1								C		1.80			73	3%	12	20/1	SHOW WINDOWS RECEPTACLE	24	
	25	SPARE	20/1								A		1.80			73	3%	12	20/1	SHOW WINDOWS RECEPTACLE	26	
	27	SPARE	20/1								B		1.60			82	3%	12	20/1	SHOW WINDOWS RECEPTACLE	28	
	29	SPACE									C		1.60			82	3%	12	20/1	SHOW WINDOWS RECEPTACLE	30	
	31	SPACE									A									SPACE	32	
	33	SPACE									B									SPACE	34	
	35	SPACE									C									SPACE	36	
	37	SPACE									A									SPACE	38	
	39	SPACE									B									SPACE	40	
	41	SPACE									C									SPACE	42	
		SUBTOTAL CONNECTED LOAD					3.6	9.9	0.0	0.5		0.0	16.9	0.0	9.9					SUBTOTAL CONNECTED LOAD		

CONNECTED LOAD PHASE A:	14.0
CONNECTED LOAD PHASE B:	13.8
CONNECTED LOAD PHASE C:	13.0
TOTAL CONNECTED LOAD:	40.8
RECEPT. CONNECTED LOAD PH.A:	1.3
RECEPT. CONNECTED LOAD PH.B:	1.6
RECEPT. CONNECTED LOAD PH.C:	0.7

PHASE:	A	B	C	TOTAL	
CONTINUOUS & LARGEST MOTOR @ 25%:	2.4	2.2	2.1	6.7	
CONNECTED MOTOR LOADS @ 100%:	3.3	3.3	3.8	10.4	
CONNECTED LIGHTING LOAD @100%:	9.5	8.9	8.5	26.8	
CONNECTED KITCHEN LOADS @ 65%::	0.0	0.0	0.0	0.0	
RECEPTACLE COMPUTED LOAD:	1.3	1.6	0.7	3.6	
TOTAL COMPUTED LOAD:	**16.4**	**16.1**	**15.1**	**47.6**	**KVA**
	137	**134**	**126**	**132.0**	**A**

note 1 verify max. O.C.P.D. with nameplate
note 2 lockable circuit breaker
note 3 RUN THRU TIME CLOCK
note 4 G.F.C.I. type circuit breaker
note 5 HACR C.B.
note 6 non concurrent load
note 7 Provide isolated ground
note 8 Provide lockable type circuit breaker



ELECTRICAL RISER

N.T.S.

PROVIDE PROPER SIGNAGE AS PER 110-16. SIGNAGE TO STATE: "WARNING ARC FLASH HAZARD. APPROPRIATE PPE REQUIRED. FAILURE TO COMPLY CAN RESULT IN DEATH OR INJURY. REFER TO NFPA 70 E."

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ELECTRICAL, MECHANICAL, PLUMBING:

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FORT LAUDERDALE, FL 33317
PHONE: (954) 471-8657

PROJECT:

BAY 39
WESTGATE SHOPPING CENTER
100 N STATE ROAD 7
LAUDERDALE LAKES, FL 33317

INTERIOR IMPROVEMENTS

FINAL CONTRACT DOCUMENTS

PROJECT NUMBER: 2016.00-4
DATE: 06-06-2016
CAD FILE NO:

ADDENDA/REVISIONS

SEAL:

CYNTHIA C. SPRAY, AIA AR-94167

DRAWING TITLE:
ELECTRICAL RISER
PANEL SCHEDULE
SPECIFICATIONS

DRAWING NO: E-2

DAN PIENARU LICENSE No. 73022 STATE OF FLORIDA PROFESSIONAL ENGINEER
Dan Pienaru, PE
LICENSE No. 73022
STATE OF FLORIDA
date

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