ELECTRICAL SPECIFICATIONS COMMERCIAL	VOLTAGE DROP CALCULATIONS
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.	1. 3% VOLTAGE DROP CALCULATED FOR EVERY BRANCH CIRCU SHOWS MAXIMUM DISTANCE ALLOWED FOR THE SPECIFIED V SIZE BASED ON DESIGNED LOAD.
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.	2. ALL CIRCUITS HAVE BEEN VERIFIED ON FLOOR PLANS BASE ON HORIZONTAL STRAIGHT RUNS WITH ADDITIONAL 30 FEET OF VERTICAL RUNS. ACTUAL DISTANCES FOR EVERY CIRCUI
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.	RUN SHALL BE FIELD MEASURED BY THE ELECTRICAL CONTRACTOR. CONTRACTOR SHALL PROVIDE NEXT WIRE SI FOR RUNS OVER MAXIMUM DISTANCE SHOWN ON PANEL SCHEDULES.
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.	NOTES: AN OPERATING MANUAL AND MAINTENANCE MANUAL SHALL PROVIDED TO THE BUILDING OWNER AS PER FBC 2014 405.7.4.2.
4. ALL WORK TO BE COORDINATED WITH OTHER TRADES TO AVOID INTERFERENCE WITH THE PROGRESS OF CONSTRUCTION.	MANUALS SHALL INCLUDE, AT A MINIMUM, THE FOLLOWING: 1. SUBMITTAL DATA STATING EQUIPMENT RATING AND SELEC
 CONTRACTOR TO GUARANTEE ALL MATERIALS AND WORKMANSHIP FREE FROM DEFECTS FOR PERIOD OF NOT LESS THAN ONE (1) YEAR FROM DATE OF ACCEPTANCE. CORRECTION OF ANY DEFECTS TO BE COMPLETED WITHOUT ADDITIONAL CHARGE AND TO 	OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANC 2. OPERATION MANUALS AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE. REQUIRED
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	ROUTINE MAINTENANCE SHALL BE CLEARLY IDENTIFIED. 3. NAMES AND ADDRESSES OF AT LEAST ONE QUALIFIED
 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. 	SERVICE AGENCY.
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.	EXISTING
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.	EXISTING MAIN 1/2
 15. ALL GENERAL PURPOSE SWITCHES AND RECEPTACLES 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. 	GUTTER GUTTER
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	FUTURE METER AND
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.	NEW METER AND DISCONNECT BELOW
 LOAD DATA IS BASED ON INFORMATION GIVEN TO THE ENGINEER AT THE TIME OF DESIGN. VERIFY ALL EQUIPMENT NAMEPLATE RATINGS BEFORE ORDERING. 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. 	S BAY 37 H H H H H FUTURE METER AND H H
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.	FUTURE METER AND
 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 	BAY 33
 22. ALL SWITCHOLAR, TARLES, STARTERS, CONTACTORS LEED, STALL BE THE HODGET 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	G TENANT SCONNECT
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.	ELECTRICAL ROOM
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 NEUTRAL - WHITE240V (HIGH LEG) SYSTEM NEUTRAL - WHITE480V SYSTEM NEUTRAL - WHITEPHASE SEQUENCE ABC, TOP TO BOTTOM PHASE A - BLACKPHASE A - BLACK PHASE B - RED PHASE C - BLUEPHASE A - BLACK PHASE B - ORANGE GRD.CON - GREENPHASE A - BROWN PHASE B - PURPLEPHASE SEQUENCE ABC, TOP TO BOTTOM PHASE B - POROND GRD.CON - GREEN	EXISTING
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.	MAIN TELECOMMUNICATION BACKBOARD
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 <u>GREEN</u> TO INDICATE INSTALLATION AS SHOWN ON DRAWINGS AND USE <u>RED</u> 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.	ELECTRICAL ROOM PLAN N
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	scale: $1/2" = 1'-0"$
PROCEEDS WITH ANY CHANGES TO THE CONTRACT DOCUMENTS, WITHOUT WRITTEN PRIOR APPROVAL FROM THE ELECTRICAL ENGINEER, CONTRACTOR WILL NOT BE COMPENSATED.	

IONS	SHORT CIRCUIT	Γ CALCULATION						
NCH CIRCUIT	FAULT CURRENT AT UTILITY	TRANSFORMER SECONDARY						
PECIFIED WIRE	CURRENT SOURCE (INFINI	CURRENT SOURCE (INFINITE) 69396 A.I.C.						
		A (A) SIZE (KVA) Z (%) 30 300 1.2						
ANS BASED								
L 30 FEET	FAULT CURRENT AT S	FAULT CURRENT AT SERVICE DISCONNECT						
RY CIRCUIT CAL	NO MOTOR CONTRIBUTION	46889 A.I.C.						
(T WIRE SIZE	WITH MOTOR CONTRIBUTIO	ON 47049 A.I.C.						
PANEL	WIRE SIZE	500 KCMIL CU						
	LENGTH OF RU	INS 75 FEET						
	NUMBER OF RI	UNS 3						
JAL SHALL BE	FAULT CURREN	NT AT PANEL A						
405.7.4.2. THE	NO MOTOR CONTRIBUTION	19300 A.I.C.						
ING:	WITH MOTOR CONTRIBUTIO	DN 19460 A.I.C.						
AND SELECTED	MOTOR CONTRIBUTION	160 AMP						
AINTENANCE.	WIRE SIZE	#3/O AWG						
UALS FOR	LENGTH OF RU	INS 50 FEET						
REQUIRED		UNS 1						

	PANEL SCHEDULE Rated Voltage:			A NEW 120/208V 3PH,4W					,			
	Rated Amps: (Cu bus) Main:		200A SPA 200A MCB				SPACES:	SPACES: 42			Loc Pro	
									KVA			
NOTE		CIRCUIT DESIGNATION	0.C.P.	AWG	MAX. DIST.(ft)	VOLT DROP	RCPT	LTG/CONT	KITCHEN	MOTOR/APP.	PH	
	1							3.3			A	
1,5	3	RTU-1	50/3	8	99	3%		3.3			В	
	5							3.3			С	
	7	ROOF SERVICE RECEPTACLE	20/1	12	731	3%	0.18				A	
	9	TELECOM BACKBOARD REC.	20/1	12	366	3%	0.36				В	
	11	DRINKING FOUNTAIN	20/1	12	263	3%				0.50	С	
	13	BACK ROOM RECEPTACLES	20/1	12	146	3%	0.90				A	
	15	BAY RECEPTACLES	20/1	12	146	3%	0.90				В	
	17	BAY RECEPTACLES	20/1	12	183	3%	0.72				С	
	19	BAY RECEPTACLES	20/1	12	183	3%	0.72				A	
	21	SPARE	20/1								В	
	23	SPARE	20/1								С	
	25	SPARE	20/1								A	
	27	SPARE	20/1								В	
	29	SPACE									С	
	31	SPACE									A	
	33	SPACE									В	
	35	SPACE									С	
	37	SPACE									A	
	39	SPACE									В	
	41	SPACE									С	
		SUBTOTAL CO		LOAD:			3.8	9.9	0.0	0.5		
CONNECTED LOAD PHASE A: CONNECTED LOAD PHASE B: CONNECTED LOAD PHASE C:			7.5 6.4						CONNE	JS & LARGES CTED MOTOR ECTED LIGHTII CTED KITCHEN	LOA NG LO	
	F	TOTAL CONNECTED LOAD: ECEPT. CONNECTED LOAD PH.A:								ECEPTACLE C		
	F	RECEPT. CONNECTED LOAD PH.B:	1.3			TOTAL COMPU				PUT		
	F	RECEPT. CONNECTED LOAD PH.C:	0.7									





