ELECTRICAL NOTES AND SPECIFICATIONS:

1. DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED IN THE CONTRACT. DRAWINGS ARE NOT TO BE SCALED. THE DRAWINGS AND DETAILS WILL BE EXAMINED FOR EXACT LOCATION OF FIXTURES AND EQUIPMENT. ANYTHING MENTIONED IN THE SPECIFICATION AND NOT SHOWN ON THE DRAWINGS, OR SHOWN ON THE DRAWINGS BUT NOT IN THE SPECIFICATIONS WILL BE INTERPRETED AS BEING IN BOTH. CONFLICTS WILL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER OR ENGINEER BEFORE PROCEEDING WITH THE WORK.

2. THE ELECTRICAL CONTRACTOR TO FURNISH ALL EQUIPMENT, MATERIAL, LABOR, ETC. NECESSARY TO PROVIDE A COMPLETE, WORKABLE AND CODE APPROVED ELECTRICAL POWER DISTRIBUTION SYSTEM. ALL WORK TO BE DONE IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS, LOCAL, STATE AND NATIONAL CODES.

3. THE ELECTRICAL CONTRACTOR WILL GIVE ALL NECESSARY NOTICES, OBTAIN ALL PERMITS AND PAY ALL GOVERNMENT FEES, SALES TAXES AND OTHER COSTS IN CONNECTION WITH HIS WORK, FILE ALL NECESSARY APPROVALS OF ALL GOVERNMENTAL DEPARTMENTS HAVING JURISDICTION, OBTAIN ALL REQUIRED CERTIFICATES OF INSPECTION FOR HIS WORK, AND DELIVER TO THE GENERAL CONTRACTOR THE SAME CERTIFICATES BEFORE REQUEST FOR ACCEPTANCE AND FINAL PAYMENT FOR THE WORK.

4. THE ELECTRICAL CONTRACTOR (E.C.) WILL GIVE FULL COOPERATION TO OTHER TRADES AND WILL FURNISH IN WRITING TO THE GENERAL CONTRACTOR, ANY INFORMATION NECESSARY TO PERMIT THE WORK OF ALL TRADES TO BE INSTALLED SATISFACTORILY AND WITH THE LEAST POSSIBLE INTERFERENCE OR DELAY. THE E.C. MUST COORDINATE ALL CONDUIT RUNS AND EQUIPMENT MOUNTING LOCATIONS WITH OTHER TRADES PRIOR TO ROUGH-IN.

5. THE ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL ALL ELECTRICAL DEVICES AS SHOWN, VERIFYING ALL MOUNTING HEIGHTS AND EXACT LOCATIONS OF ALL WALL-MOUNTED ELECTRICAL DEVICES WITH GENERAL CONTRACTOR PRIOR TO ROUGH-IN. IN THE EVENT OF A CODE CONFLICT, THE CONTRACTOR WILL NOTIFY THE ARCHITECT/ENGINEER PRIOR TO COMMENCING THE WORK.

6. ALL SPARE CONDUITS TO BE INSTALLED FOR FUTURE USE WILL BE CAPPED WITH PULL WIRE INSTALLED. UNDERGROUND SPARE CONDUITS WILL BE STUBBED UP 12" A.F.F. WHERE INDICATED AND CAPPED WITH PULL WIRE. ALL CAPPED CONDUIT WILL BE LABELED WITH ITS PURPOSE.

7. THE ELECTRICAL CONTRACTOR WILL PROVIDE A COMPLETE GROUNDING SYSTEM PER APPLICABLE SECTIONS OF THE N.E.C. BOND SERVICE ENTRANCE GROUND TO BUILDING STEEL, METAL WATER MAINS, MADE ELECTRODES, ETC. AS NECESSARY.

8. ALL ELECTRICAL DISTRIBUTION EQUIPMENT TO HAVE ONLY COPPER BUSING. ALL EXTERIOR ELECTRICAL EQUIPMENT TO BE RAIN-PROOF TYPE NEMA 3R. ALL DISCONNECTS TO BE GENERAL DUTY TYPE. ALL EXTERIOR DISCONNECTS TO BE RAIN-PROOF TYPE NEMA 3R. ALL CIRCUIT BREAKERS TO BE 20A MINIMUM OR AS SHOWN ON THE PANEL SCHEDULES.

9. ALL DISCONNECTS SHALL BE HEAVY DUTY TYPE AND INSTALLED AS REQUIRED FOR CONDENSING AND AIR HANDLING UNITS, EXHAUST FANS, KITCHEN EQUIPMENT, WATER HEATERS, ETC. SUPPLIED BY MECHANICAL, PLUMBING AND FOOD SERVICE CONTRACTOR(S). SUPPLY AND INSTALL ALL REQUIRED CONDUIT AND DEVICE BOXES FOR HVAC TEMPERATURE CONTROLS.

10. ELECTRICAL CONTRACTOR TO SUPPLY ALL REQUIRED DISCONNECTS AND WIRE ALL EXHAUST FANS, AIR HANDLER UNITS, CONDENSING UNITS, SMOKE DAMPERS, ETC. PROVIDED BY THE MECHANICAL E.C. WILL VERIFY NAMEPLATE RATINGS OF ALL MECHANICAL EQUIPMENT PRIOR TO ROUGH-IN. E.C. TO PROVIDE DISCONNECTS AND CIRCUIT BREAKERS PER NAMEPLATE RATING. THE E.C. SHALL PROVIDE ALL HARDWARE(CONTROL RELAYS, LOW VOLTAGE TRANSFORMER POWER SUPPLIES, & ENCLOSURES) FOR THE PROPER OPERATION OF MECH. UNITS, EXHAUST FANS & SMOKE DAMPERS PER THE "SEQUENCE OF OPERATIONS" AS DETAILED ON THE MECHANICAL PLANS. THE E.C. WILL NOTIFY THE ARCHITECT/ENGINEER OF ANY CHANGES REQUIRED TO CIRCUITING PRIOR TO COMMENCING THE WORK.

11. ALL INTERIOR POWER/LIGHTING CIRCUITS TO BE 2-#12, 1-#12 G. IN MINIMUM 1/2" C. W/MAXIMUM 30% FILL, UNLESS SHOWN OTHERWISE ON THE PLANS. INTERIOR HOME RUNS TO BE A MINIMUM OF 3/4" C. W/MAXIMUM 40% FILL. ALL EXTERIOR LIGHTING CIRCUITS TO BE A MINIMUM OF 2-#10 W/#10G TO THE FIRST JUNCTION BOX OR LIGHT FIXTURE AND 2-#12 W/#10G TO THE REMAINING FIXTURES OR AS INDICATED ON PLANS. ALL UNDERGROUND CONDUIT TO BE A MINIMUM OF 1". TYPE MC CABLE HAVING STRANDED COPPER CONDUCTORS SHALL BE ACCEPTABLE FOR BRANCH CIRCUITS IN CONDITIONED SPACES ONLY. ALL FEEDER CONDUCTORS SHALL BE COPPER WITH TYPE THHN INSULATION. TYPE XHHW-2 OR THWN-2 SHALL BE USED FOR CONDUCTORS INSTALLED IN WET AND DAMP LOCATIONS. SPECIFIC EQUIPMENT CIRCUITS (HVAC, PUMPS, WATER HEATERS, ETC.) SHALL BE AS REQUIRED PER NAMEPLATE RATING(S).

12. THE ELECTRICAL CONTRACTOR SHALL PROPERLY AND PERMANENTLY IDENTIFY ALL BOXES, ENCLOSURES, ETC. FOR EMERGENCY CIRCUITS IN ACCORDANCE WITH NEC 700.10. LABEL ALL PANEL CIRCUITS TO IDENTIFY UNIT EQUIPMENT CONNECTED IN ACCORDANCE WITH NEC 700.12 (F).

13. ELECTRICAL CONTRACTOR WILL CONTACT LOCAL ELECTRICAL UTILITY AND COORDINATE EXACT LOCATION OF ELECTRICAL SERVICE SOURCE. THE CONTRACTOR SHALL COORDINATE SHORT CIRCUIT RATING (A.I.C.) WITH UTILITY PRIOR TO BID AND PROVIDE THE APPROPRIATE SHORT CIRCUIT RATINGS FOR ALL ELECTRICAL EQUIPMENT. COORDINATE USE OF HAND HOLE / UTILITY POLE / PAD MOUNT TRANSFORMER PRIOR TO BID AND/OR ROUGH-IN.

14. MINOR DETAILS, NOT USUALLY SHOWN OR SPECIFIED, BUT NECESSARY FOR PROPER OPERATION AND CONSISTENT WITH GOOD WORKMANSHIP, WILL BE INCLUDED IN THE ESTIMATE, THE SAME AS IF SHOWN ON DRAWINGS.

15. PROVIDE CONDUIT STUBS, BACK BOXES AND PULL STRINGS ETC. FOR ALL LOW VOLTAGE SYSTEMS PROVIDED BY OTHERS TO DEVICES LOCATED IN ALL SPACES. PROVIDE SEPARATE PERMITS FOR ALL LOW VOLTAGE SYSTEMS.

16. ALL MATERIALS FURNISHED AND ALL WORK INSTALLED UNDER THIS SECTION SHALL COMPLY WITH THE FOLLOWING:
    - LIFE SAFETY CODE NFPA 101-2015
    - APPLICABLE NFPA FIRE CODES
    - APPLICABLE STATE AND LOCAL CODES
    - NATIONAL BUREAU OF FIRE UNDERWRITERS
    - ACCESSIBILITY FOR THE HANDICAPPED ANSI A117
    - AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES
    - FLORIDA DEPARTMENT OF COMMUNITY AFFAIRS ACCESSIBILITY REQUIREMENTS MANUAL
    - NATIONAL ELECTRICAL CODE NFPA 70-2014
    - THE SERVING UTILITY COMPANIES
    - FLORIDA BUILDING CODE 2017, SIXTH EDITION
    - FLORIDA BUILDING CODE - ENERGY CONSERVATION 2017
    - FLORIDA BUILDING CODE - MECHANICAL 2017
    - FLORIDA BUILDING CODE - PLUMBING 2017

17. ALL ELECTRICAL SYSTEM COMPONENTS AND INSTALLATIONS SHALL BE WARRANTED TO BE FREE OF DEFECTS (MATERIALS AND LABOR) FOR A PERIOD OF NOT LESS THAN ONE (1) YEAR FROM RECEIPT OF CERTIFICATE OF OCCUPANCY. THE CONTRACTOR SHALL PROVIDE FOR OWNER'S OPTION A MAINTENANCE CONTRACT AND/OR AN EXTENDED WARRANTY

18. CONTRACTOR TO PROVIDE MANUFACTURER CERTIFICATION, WITH SHOP DRAWING SUBMITTALS, THAT POLE ASSEMBLY WITH SPECIFIED HEADS AND ALL SPECIFICATIONS MEETS WIND LOAD REQUIREMENTS PER 2017 FLORIDA BUILDING CODE FIGURE [illegible]. ELECTRICAL CONTRACTOR TO SUBMIT MANUFACTURER RECOMMENDED CHANGES FOR A CODE COMPLYING INSTALLATION TO OWNER/ENGINEER FOR APPROVAL. ADDITIONALLY, CONTRACTOR SHALL PROVIDE CERTIFICATION THAT POLE MOUNTING METHOD; I.E., DIRECT BURY/ANCHOR BASE MEETS THE ABOVE REQUIREMENTS. POLE MOUNTING CERTIFICATION SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA.

19. ELEVATOR SIZE IS BASED ON A XX HORSEPOWER MOTOR. ELECTRICAL CONTRACTOR WILL VERIFY WITH ELEVATOR MANUFACTURER FOR EXACT SIZE OF ELEVATOR PRIOR TO BID. E.C. TO PROVIDE CIRCUIT BREAKER AND DISCONNECT SIZES RECOMMENDED BY ELEVATOR SHOP DRAWINGS. THE ELEVATOR CIRCUIT BREAKER WILL BE SHUNT-TRIP. E.C. WILL NOTIFY ARCHITECT/ENGINEER OF MOTOR SIZE CHANGES PRIOR TO COMMENCING THE WORK.

20. PROVIDE LIGHTNING PROTECTION IN ACCORDANCE WITH SPECIFICATION SECTION 264114. LIGHTNING SYSTEM GROUND SYSTEM SHALL BE BONDED TO THE BUILDING GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH NEC 250.106.

21. ELECTRICAL CONTRACTOR TO PROVIDE AS-BUILT DOCUMENTS, OPERATION MANUALS, MAINTENANCE MANUALS TO THE OWNER WITHIN 30 DAYS OF ACCEPTANCE OF SYSTEMS AS PER FBC C405.6.4.2.

ELECTRICAL IDENTIFICATION NOTES

PRODUCTS AND MATERIALS
ALL LABELS SHALL BE PERMANENT AND MACHINE-PRODUCED. HANDWRITTEN LABELS SHALL NOT BE ACCEPTABLE, UNLESS OTHERWISE INDICATED.

CONDUCTOR/CABLING LABELS: ALL CONDUCTOR/CABLING LABELS SHALL BE CONSTRUCTED OF TRANSPARENT VINYL OR VINYL CLOTH, SELF-LAMINATING TAPE. FLAG-TYPE LABELS SHALL NOT BE ACCEPTABLE. LABELS SHALL BE SIZED TO ACCOMMODATE THAT CIRCUMFERENCE OF THE CONDUCTOR/CABLE.

CONDUCTOR/CABLING IDENTIFICATION TAPE: CONDUCTOR/CABLING IDENTIFICATION TAPE SHALL BE SCOTCH #35 VINYL ELECTRICAL TAPE, COLORED IN ACCORDANCE WITH THE SYSTEM VOLTAGE AND TYPE OF CONDUCTOR.

NAMEPLATES: NAMEPLATES SHALL BE PHENOLIC, ENGRAVED TYPE. EMBOSSED TAPE SHALL NOT BE ACCEPTABLE. NORMAL SYSTEMS SHALL UTILIZE WHITE LETTERS ON A BLACK BACKGROUND. EMERGENCY SYSTEMS SHALL UTILIZE WHITE LETTERS ON A RED BACKGROUND. LEGALLY-REQUIRED STANDBY SYSTEMS SHALL UTILIZE WHITE LETTERS ON A BLUE BACKGROUND. OPTIONAL STANDBY SYSTEMS SHALL UTILIZE WHITE LETTERS ON A YELLOW BACKGROUND.

ADHESIVE LABELS: ADHESIVE LABELS SHALL NOT BE ACCEPTABLE, EXCEPT FOR THE IDENTIFICATION OF CONDUCTORS/CABLING, DEVICE FACEPLATES, AND JUNCTION BOXES SIZED 8" SQ. OR SMALLER.

GENERAL
WHERE MULTIPLE SYSTEM VOLTAGES (E.G. 480/277V, 208/120V, ETC.) ARE UTILIZED IN THE SAME BUILDING, ALL DISCONNECT SWITCHES, JUNCTION BOXES, PANELBOARDS, SWITCHBOARDS, TRANSFORMERS, AND MISCELLANEOUS EQUIPMENT SHALL BE LABELED TO INDICATE THE SYSTEM VOLTAGE, IN ADDITION TO THE REQUIREMENTS LISTED BELOW.

CLEAN ALL MOUNTING SURFACES PRIOR TO AFFIXING LABELS. UTILIZE THE LABEL MANUFACTURER'S RECOMMENDED CLEANING AGENT. INSTALL LABELS NEATLY AND FIRMLY AND IN ACCORDANCE WITH THE LABEL MANUFACTURER'S RECOMMENDATIONS.

AFFIX NAMEPLATES TO EQUIPMENT UTILIZING SCREWS, RIVETS, OR OTHER MATERIALS APPROVED BY THE MANUFACTURER.

PROVIDE A PLACARD AT EACH SERVICE DISCONNECT WITH THE WORDS "SERVICE DISCONNECT." LOCATE ABOVE THE MAIN DISCONNECT SWITCH OR CIRCUIT BREAKER.

JUNCTION BOX AND PULL BOX IDENTIFICATION
JUNCTION BOXES AND PULL BOXES SHALL BE IDENTIFIED UTILIZING SPRAY-PAINTED COVERS AS FOLLOWS:

SECONDARY POWER - 480Y/277V	BROWN
SECONDARY POWER - 208Y/120V, 240/120V	WHITE
EMERGENCY SYSTEM - LIFE SAFETY BRANCH (NEC 700) - 480Y/277V	BROWN/RED
EMERGENCY SYSTEM - LIFE SAFETY BRANCH (NEC 700) - 208Y/120V	WHITE/RED
LEGALLY REQUIRED STANDBY SYSTEM (NEC 701) - 480Y/277V	BROWN/BLUE
LEGALLY REQUIRED STANDBY SYSTEM (NEC 701) - 208Y/120V	WHITE/BLUE
OPTIONAL STANDBY SYSTEM (NEC 702) - 480Y/277V	BROWN/YELLOW
OPTIONAL STANDBY SYSTEM (NEC 702) - 208Y/120V	WHITE/YELLOW
FIRE ALARM	RED
TEMPERATURE CONTROL	GREEN
DOOR CONTROL AND DOOR MONITORING SYSTEM	ORANGE
SOUND AND INTERCOM SYSTEMS	GRAY
VIDEO SURVEILLANCE SYSTEM/MATV	YELLOW
DATA	BLUE JUNCTION

BOXES AND PULL BOXES FOR POWER CONDUCTORS SHALL BE LABELED WITH CIRCUIT NUMBERS AND SOURCE PANELBOARD DESIGNATIONS. JUNCTION BOXES AND PULL BOXES FOR OTHER SYSTEMS SHALL BE IDENTIFIED IN ACCORDANCE WITH THE SHOP DRAWINGS FOR THEIR RESPECTIVE SYSTEMS.

EXPOSED JUNCTION BOXES EXCEEDING A SIZE OF 8" SQ. SHALL BE IDENTIFIED WITH PHENOLIC, ENGRAVED PLACARDS. LETTERING HEIGHT SHALL BE A MINIMUM OF 1/2". IDENTIFY THE SYSTEM SOURCE(S) AND LOAD(S) SERVED.

EXPOSED JUNCTION BOXES 8" SQ. AND SMALLER SHALL BE IDENTIFIED WITH ADHESIVE LABELS.

JUNCTION BOXES INSTALLED ABOVE AN ACCESSIBLE CEILING SHALL BE PERMITTED TO BE IDENTIFIED VIA PERMANENT MARKER. LETTERING SHALL BE NEAT AND LEGIBLE.

COMMUNICATIONS CONDUIT LABELING
ALL CONDUITS INSTALLED BETWEEN ELECTRICAL AND/OR INFORMATION TECHNOLOGY (I.T.) ROOMS SHALL BE LABELED IN ACCORDANCE WITH ANSI/TIA/EIA-606. BOTH TERMINATION POINTS OF THE CONDUITS SHALL BE IDENTIFIED.

ALL LABELS SHALL BE MACHINE-PRODUCED. HANDWRITTEN LABELS SHALL NOT BE ACCEPTABLE.

THE LABEL SHALL INDICATE THE LOCATION OF THE TERMINATION POINT OF THE CONDUIT AND A UNIQUE IDENTIFICATION NUMBER.

POWER AND LOW-VOLTAGE CONDUCTOR/CABLE IDENTIFICATION
PROVIDE CONDUCTOR/CABLE LABELS ON EACH CONDUCTOR IN PANELBOARD GUTTERS, JUNCTION BOXES, PULL BOXES, AND OUTLET BOXES AT LOAD CONNECTIONS. IDENTIFY THE BRANCH CIRCUIT OR FEEDER NUMBER FOR ALL POWER AND LIGHTING BRANCH CIRCUITS. FOR LOW-VOLTAGE SYSTEMS, INDICATE THE WIRE NUMBER IN ACCORDANCE WITH SHOP DRAWINGS.

ALL CONDUCTORS/CABLING SHALL BE LABELED WITHIN 2 TO 4 INCHES OF TERMINATION. EACH END OF A CONDUCTOR/CABLE SHALL BE LABELED IMMEDIATELY UPON TERMINATION.

WIRING DEVICE IDENTIFICATION
WALL SWITCHES, RECEPTACLES, OCCUPANCY SENSORS, DEVICE PLATES, BOX COVERS, POKE-THROUGH FITTINGS, ACCESS FLOOR BOXES, PHOTOCELLS, AND TIME CLOCKS SHALL BE IDENTIFIED WITH CIRCUIT NUMBERS AND SOURCE. IN EXPOSED SPACES, IDENTIFICATION SHALL BE MADE INSIDE OF DEVICE COVERS. USE MACHINE-PRODUCED ADHESIVE LABELS OR PERMANENT MARKER. HANDWRITTEN LABELS SHALL BE NEAT AND LEGIBLE.

NAMEPLATES FOR ELECTRICAL EQUIPMENT
PROVIDE NAMEPLATES OF THE MINIMUM LETTER HEIGHT AS LISTED BELOW.

DISTRIBUTION PANELBOARDS, SUBPANELS, AND SWITCHBOARDS: 1 INCH NAME PLATE MIN. IDENTIFY THE SYSTEM VOLTAGE, SOURCE, AND LOCATION OF THE SOURCE. FOR 240V/3PH SYSTEMS: PROVIDE PANEL AND IDENTIFICATION AS REQUIRED BY 2014 NEC SECTION 408.3; PANELS SHALL BE MARKED "CAUTION: PHASE HAS 208 VOLTS TO GROUND" WITH PHENOLIC ENGRAVED LABEL.

ENCLOSED CIRCUIT BREAKERS AND DISCONNECT SWITCHES: 1/2 INCH NAME PLATE MIN. IDENTIFY THE SOURCE CIRCUIT, LOAD SERVED, AND LOCATION.

TRANSFORMERS: 1 INCH NAME PLATE MIN. IDENTIFY PRIMARY AND SECONDARY VOLTAGES, PRIMARY SOURCE AND LOCATION, SECONDARY LOAD AND LOCATION.

PANELBOARD/SWITCHBOARD DIRECTORIES
SHALL BE TYPEWRITTEN AND COVERED WITH CLEAR PLASTIC WITH METAL FRAMING.

ELECTRICAL COMMISIONING

BUILDING COMMISSIONING
GENERAL REQUIREMENTS:

THE 2017 FLORIDA BUILDING CODE - "ENERGY CONSERVATION" PROVIDES THE REQUIREMENTS FOR COMMERCIAL BUILDING EFFICIENCY. THE CODE DEFINES THE ENERGY EFFICIENCY REQUIREMENTS FOR THE ELECTRICAL POWER AND LIGHTING SYSTEM, TOTAL BUILDING PERFORMANCE, AND COMMISSIONING. THIS CODE CHAPTER REQUIRES A CERTAIN SET OF ACTIVITIES AND PROCESSES TO BE ADMINISTERED AND DOCUMENTED IN ACCORDANCE WITH DEFINED STANDARDS. THIS SPECIFICATION IS THE OWNER'S MEANS OF VERIFYING THAT THE PLANNING, DESIGN, CONSTRUCTION AND OPERATION OF ELECTRICAL SYSTEMS ACHIEVE THEIR GOALS AND DELIVER A HIGH QUALITY BUILDING WITH MAXIMUM ASSET VALUES.

COMMISSIONING OF THE BUILDING ELECTRICAL POWER AND LIGHTING SYSTEMS AS PER SECTION 408 SHALL BE AS DEFINED HEREIN. PRIOR TO PASSING THE FINAL ELECTRICAL INSPECTION, THE CONTRACTOR SHALL PROVIDE EVIDENCE OF SYSTEM COMMISSIONING AND COMPLETION IN ACCORDANCE WITH THE PROVISIONS OF THIS SECTION CERTIFYING THAT THE INSTALLED LIGHTING CONTROLS MEET THE DOCUMENTED PERFORMANCE CRITERIA OF SECTION C405 AND SUBMIT TO THE REGISTERED DESIGN PROFESSIONAL (ENGINEER OF RECORD) FOR APPROVAL, AND TO THE BUILDING OWNER WITHIN 90 DAYS FROM THE DATE OF RECEIPT OF THE CERTIFICATION OF OCCUPANCY.

ELECTRICAL SYSTEMS TO BE COMMISSIONED INCLUDE:
ALL AUTOMATIC CONTROLS FOR INTERIOR AND EXTERIOR LIGHTING/ELECTRICAL SYSTEMS SHALL BE SUBJECT TO THESE REQUIREMENTS.

SCOPE:
FUNCTIONAL TESTING PRIOR TO PASSING FINAL INSPECTION, THE REGISTERED DESIGN PROFESSIONAL SHALL PROVIDE
EVIDENCE THAT THE LIGHTING CONTROL SYSTEMS HAVE BEEN TESTED TO ENSURE THAT CONTROL AND SOFTWARE ARE CALIBRATED, ADJUSTED, PROGRAMMED AND IN PROPER WORKING CONDITION IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND MANUFACTURE'S INSTRUCTIONS. FUNCTIONAL TESTING SHALL BE IN ACCORDANCE WITH SECTIONS C408.3.1.1 THRU C408.3.1.3 FOR THE APPLICABLE CONTROL TYPE.

THE PROJECT GENERAL CONTRACTOR SHALL HIRE A FIRM QUALIFIED IN THE TESTING OF LIGHTING AND ELECTRICAL SYSTEM PERFORMANCE FUNCTIONALITY OF THE SYSTEMS LISTED IN THIS SPECIFICATION. THE TESTING FIRM SHALL DETERMINE THE EXTENT AND SCOPE OF THE SYSTEMS REQUIRING COMMISSIONING NEEDED ON A PROJECT BASIS.

ALL TEST DATA SHALL BE PROVIDED TO THE REGISTERED DESIGN PROFESSIONAL FOR FINAL REVIEW AND APPROVAL PRIOR TO THE FINAL INSPECTION AND WALK THROUGH OF THE ARCHITECTURAL AND/OR ENGINEERING TEAM.

A FUNCTIONAL PERFORMANCE TEST SHALL BE CONDUCTED TO DEMONSTRATE THE INSTALLATION AND OPERATION OF COMPONENTS, SYSTEMS, AND SYSTEM-TO-SYSTEM INTERFACING RELATIONSHIPS IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS SUCH THAT OPERATION, FUNCTION, AND MAINTENANCE SERVICEABILITY FOR EACH OF THE COMMISSIONED SYSTEMS IS CONFIRMED. TESTING SHALL INCLUDE ALL MODES AND SEQUENCE OF OPERATION, INCLUDING UNDER FULL-LOAD, PART-LOAD AND THE FOLLOWING EMERGENCY CONDITIONS:

1. ALL MODES AS DESCRIBED IN THE SEQUENCE OF OPERATION OR MANUFACTURES OPERATING INSTRUCTIONS
2. REDUNDANT OR AUTOMATIC BACK-UP MODE
3. PERFORMANCE OF LIGHTING OVERRIDE
4. MODE OF OPERATION UPON A LOSS OF POWER AND RESTORATION OF POWER.

THE GENERAL CONTRACTOR SHALL:

1. INCORPORATE COMMISSIONING ACTIVITIES INTO THE CONSTRUCTION SCHEDULE.
2. FACILITATE COOPERATION OF SUB-CONTRACTORS IN COMMISSIONING WORK.
3. PROVIDE SUB-CONTRACTOR ASSISTANCE IN OPERATING EQUIPMENT TO BE COMMISSIONED.
4. INSURE EQUIPMENT START-UP IS COMPLETED PRIOR TO BEGINNING THE COMMISSIONING PROCESS.
5. WORK WITH SUB-CONTRACTORS IN DEVELOPING TESTING SCHEDULE AND PLAN FOR APPROVAL BY THE OWNER.
6. VERIFY THE PRE-FUNCTIONAL CHECKLISTS ARE COMPLETED PRIOR TO SYSTEM TESTING.
7. VERIFY THE EQUIPMENT START-UP AND CONTROLS VERIFICATIONS ARE COMPLETE.
8. INSURE RESOLUTION OF NON-COMPLIANT AND DEFICIENT CONSTRUCTION RELATED ITEMS IDENTIFIED BY THE COMMISSIONING TEAM.
9. ASSIST IN WARRANTY REVIEW OF SYSTEM AND EQUIPMENT PERFORMANCE.

THE SUB-CONTRACTOR SHALL:

1. PREPARE OWNER TRAINING PLAN FOR INSTALLED EQUIPMENT AND CONTROLS.
2. PROVIDE NECESSARY PERSONNEL TO ASSIST THE ELECTRICAL TESTING AGENT IN HIS RESPONSIBILITIES AS DESCRIBED LATER IN THIS SPECIFICATION.
3. PREPARE AND SCHEDULE EQUIPMENT START-UP WITH THE GENERAL CONTRACTOR AND ELECTRICAL TESTING AGENT.
4. EXECUTE ALL REQUIRED EQUIPMENT AND SYSTEM TESTING AS MANDATED BY 2017 FLORIDA BUILDING CODE, PROJECT PLANS AND SPECIFICATIONS.
5. ENSURE INSTALLATION WORK IS COMPLETE AND IN COMPLIANCE WITH THE CONTRACT DOCUMENTS AND READY FOR FUNCTION PERFORMANCE TESTING.
   PROVIDE CERTIFIED AND CALIBRATED INSTRUMENTATION REQUIRED TO TAKE MEASUREMENTS OF SYSTEM AND EQUIPMENT PERFORMANCE DURING THE FUNCTIONAL PERFORMANCE TESTING.
   PREPARE CLOSEOUT DOCUMENTS INCLUDING BUT NOT LIMITED TO:
   a. AS-BUILT DRAWINGS
   b. WARRANTIES.
   c. OPERATIONAL AND MAINTENANCE MANUALS FOR INSTALLED EQUIPMENT.
   d. DELIVERY OF ANY SPARE PARTS REQUIRED BY THE PROJECT SPECIFICATION.

THE CODE OFFICIAL SHALL BE PERMITTED TO REQUIRE THAT A COPY OF THE FINAL COMMISSIONING REPORT BE MADE AVAILABLE FOR HIS/HER REVIEW.

CONSTRUCTION DOCUMENTS SHALL INCLUDE THE LOCATION ON EACH PIECE OF EQUIPMENT.

AN OPERATION AND MAINTENANCE MANUAL SHALL BE PROVIDED AND INCLUDE ALL OF THE FOLLOWING:

1. SUBMITTAL DATA STATING EQUIPMENT SIZE AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE.
2. MANUFACTURER'S OPERATION MANUALS AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE, EXCEPT EQUIPMENT NOT FURNISHED AS PART OF THE PROJECT. REQUIRED ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY IDENTIFIED.

A REPORT OF TEST PROCEDURES AND RESULTS IDENTIFIED AS "FINAL COMMISSIONING REPORT" SHALL BE DELIVERED TO THE BUILDING OWNER AND SHALL INCLUDE:

1. RESULTS OF FUNCTIONAL PERFORMANCE TESTS.
2. DISPOSITION OF DEFICIENCIES FOUND DURING TESTING, INCLUDING DETAILS OF CORRECTIVE MEASURES USED OR PROPOSED.
3. FUNCTIONAL PERFORMANCE TEST PROCEDURES USED DURING THE COMMISSIONING PROCESS INCLUDING MEASURABLE CRITERIA FOR TEST ACCEPTANCE, PROVIDED HEREIN FOR REPEATABILITY.

CONTROLS FOR AUTOMATIC LIGHTING SYSTEMS SHALL COMPLY AS FOLLOWS:

1. TESTING SHALL ENSURE THAT CONTROL HARDWARE AND SOFTWARE ARE CALIBRATED, ADJUSTED, PROGRAMMED AND IN PROPER WORKING CONDITION IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND MANUFACTURER'S INSTALLATION INSTRUCTIONS.
2. AN APPROVED THIRD PARTY INDEPENDENT FROM THE DESIGN OR CONSTRUCTION OF THE PROJECT SHALL BE RESPONSIBLE FOR THE FUNCTIONAL TESTING AND SHALL PROVIDE DOCUMENTATION TO THE OWNER, REGISTERED DESIGN PROFESSIONAL AND CODE OFFICIAL CERTIFYING THAT THE INSTALLED LIGHTING CONTROLS MEET THE PROVISIONS OF SECTION C405. WHERE OCCUPANT SENSORS, TIME SWITCHES, PROGRAMMABLE SCHEDULE CONTROLS, PHOTOSENSORS OR DAYLIGHTING CONTROLS ARE INSTALLED, THE FOLLOWING PROCEDURES SHALL BE PERFORMED:
   a. CONFIRM THAT THE PLACEMENT, SENSITIVITY AND TIME-OUT ADJUSTMENTS FOR OCCUPANT SENSORS YIELD ACCEPTABLE PERFORMANCE AS PER FBC-C408.3.
   b. CONFIRM THAT THE TIME SWITCHES AND PROGRAMMABLE SCHEDULE CONTROLS ARE PROGRAMMED TO TURN THE LIGHTS OFF AS PER THE OWNER SCHEDULE AND FBC-C408.3.1.2.
   c. CONFIRM THAT THE PLACEMENT AND SENSITIVITY ADJUSTMENTS FOR PHOTOSENSOR CONTROLS REDUCE ELECTRIC LIGHT BASED ON THE AMOUNT OF USABLE DAYLIGHT IN THE SPACE AS SPECIFIED AND PER C408.3.

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
$	SINGLE POLE SWITCH, MOUNT 48" AFF U.O.N.
$3, $4	THREE-WAY/FOUR-WAY SWITCH RESPECTIVELY, MOUNT 48" AFF U.O.N.
$M	MOTOR-RATED SWITCH, SINGLE/DOUBLE POLE AS INDICATED ON PLANS
$D	SLIDE DIMMER W/PRESET ON/OFF SWITCH, MATCH DIMMER RATING WITH ASSOCIATED LOAD, MOUNT 48" AFF U.O.N.
$T	SPRINGWOUND TIMER SWITCH, INTERMATIC "F"-SERIES, MOUNT 48" AFF U.O.N.
$OC	WALL SWITCH OCCUPANCY SENSOR (DUAL), LEGRAND "RW3U600" (24'W X 25'L), MOUNT 48" AFF U.O.N.
$OC3	WALL SWITCH OCCUPANCY SENSOR 3-WAY (DUAL), LEGRAND "RW3U600" (24'W X 25'L), MOUNT 48" AFF U.O.N.
$OC4	WALL SWITCH OCCUPANCY SENSOR 4-WAY (DUAL), LEGRAND "RW3U600" (24'W X 25'L), MOUNT 48" AFF U.O.N.
$VC	WALL SWITCH VACANCY SENSOR (DUAL), LEGRAND "RW3U600" (24'W X 25'L), MOUNT 48" AFF U.O.N.
$VC3	WALL SWITCH VACANCY SENSOR 3-WAY (DUAL), LEGRAND "RW3U600" (24'W X 25'L), MOUNT 48" AFF U.O.N.
$VC4	WALL SWITCH VACANCY SENSOR 4-WAY (DUAL), LEGRAND "RW3U600" (24'W X 25'L), MOUNT 48" AFF U.O.N.
$DV	WALL SWITCH DIMMING VACANCY SENSOR (DUAL), LEGRAND "DW-311", MOUNT 48" AFF U.O.N.
OCI	CEILING MOUNT OCCUPANCY SENSOR (120-277V), LEGRAND "DT-355" (360 DEG 25'W), MOUNT 8' AFF U.O.N.
$K	KEY SWITCH, MOUNT 48" AFF U.O.N.
$C	COMBINATION FAN SPEED CONTROL & FAN LIGHT SWITCH, MOUNT 48" U.O.N.
	SIMPLEX RECEPTACLE, MOUNT 18" AFF U.O.N.
	DUPLEX RECEPTACLE, MOUNT 18" AFF U.O.N.
	DUPLEX RECEPTACLE, MOUNT 42" AFF (48" AFF IN TOILET/UTILITY CLOSETS) U.O.N.
	SWITCHED SPLIT-WIRE DUPLEX RECEPTACLE, MOUNT 18" AFF U.O.N.
	FLOOR MOUNTED DUPLEX RECEPTACLE. REFER TO PLANS FOR SIZE & CONFIGURATION.
	FLOOR MOUNTED SWITCHED SPLIT-WIRE DUPLEX RECEPTACLE. REFER TO PLANS FOR SIZE & CONFIGURATION.
	QUADRAPLEX RECEPTACLE, MOUNT 18" AFF U.O.N.
	QUADRAPLEX RECEPTACLE, MOUNT 42" AFF U.O.N.
	SWITCHED SPLIT-WIRE QUADRAPLEX RECEPTACLE, MOUNT 18" AFF U.O.N.
	FLOOR MOUNTED QUADRAPLEX RECEPTACLE. REFER TO PLANS FOR SIZE & CONFIGURATION.
	FLOOR MOUNTED SWITCHED SPLIT-WIRE QUADRAPLEX RECEPTACLE. REFER TO PLANS FOR SIZE & CONFIGURATION.
	1Ø, 208/240-VOLT RECEPTACLE, MOUNT 18" AFF U.O.N.
	SPECIAL PURPOSE RECEPTACLE, MOUNT 18" AFF U.O.N.
	BUILDING EXTERIOR/ROOF-MOUNTED WEATHER-RESISTANT DUPLEX RECEPTACLE, MOUNT 18" AFF U.O.N. DEVICE SHALL INCLUDE WEATHERPROOF BACK-BOX WITH DIE-CAST, WEATHERPROOF IN-USE LOCKING COVER - INTERMATIC WP3110MXD. RECEPTACLE SHALL BE G.F.I. PROTECTED EITHER AT THE RECEPTACLE OR FROM THE CIRCUIT BREAKER IN THE PANELBOARD SERVING CKT. IF TOTAL BRANCH CIRCUIT ONE-WAY LENGTH IS GREATER THAN 200', UTILIZE GFCI RECEPTACLES IN PLACE OF GFCI BREAKER (PER MANUFACTURER RECOMMENDATIONS).
	RECEPTACLE CONTROL RELAY
	TELEPHONE OUTLET - MOUNT 18" AFF U.O.N., 4" SQ. J-BOX w/1-GANG PLASTER RING, 1"C TO ACCESSIBLE CEILING. PROVIDE PULLSTRING.
	DATA OUTLET - MOUNT 18" AFF U.O.N., 4" SQ. J-BOX w/1-GANG PLASTER RING, 1"C TO ACCESSIBLE CEILING. PROVIDE PULLSTRING.
	TELECOM OUTLET(DATA/TELEPHONE) - MOUNT 18" AFF U.O.N., 4" SQ. J-BOX w/1-GANG PLASTER RING, 1"C TO ACCESSIBLE CEILING. PROVIDE PULLSTRING.
	FLOOR/CEILING-MOUNTED TELECOM OUTLET. REFER TO PLANS FOR BOX TYPE, CONDUIT SIZE/QUANTITY & CONFIGURATION.
TV	CABLE TELEVISION OUTLET - MOUNT 18" AFF U.O.N., 4" SQ. J-BOX w/1-GANG PLASTER RING, 1"C TO ACCESS. CLG. PROVIDE PULLSTRING.
TTB	TTB (TELEPHONE TERMINAL BOARD) MARINE PLYWOOD BACKBOARD 3/4"x4'x4' PAINTED W/FIRE RETARDANT GRAY PAINT. PROVIDE (2)4" CONDUITS TO PROPERTY LINE. COORDINATE FINAL CONDUIT SIZES AND LOCATIONS W/UTILITY. PROVIDE SOLID COPPER GROUND BAR WITH INSULATED STAND-OFFS.
J	JUNCTION BOX(4"X4"X2"), MOUNT 18" AFF U.O.N.
LC	LIGHTING CONTROLLER
TC	TIMECLOCK WITH INTEGRAL MANUAL OVERRIDE USE INTERMATIC ET90000 SERIES OR EQUAL.
PTD	POWER TRANSFER DEVICE/RELAY.
PC	STEM AND SWIVEL MOUNT PHOTOCELL USE INTERMATIC SERIES K4221C FOR 120V AND K4223C FOR 277V OR EQUAL.
	ELECTRICAL PANELBOARD (SURFACE OR FLUSH-MOUNTED AS SHOWN). REFER TO SCHEDULES/RISER FOR INFO.
	ENCLOSED CIRCUIT BREAKER. PROVIDE WEATHERPROOF ENCLOSURE FOR EXTERIOR APPLICATIONS. VERIFY SIZE W/EQUIP. NAMEPLATE RATING.
	HP RATED SWITCH AS DISC. PROVIDE WEATHERPROOF ENCLOSURE FOR EXTERIOR APPLICATIONS. VERIFY SIZE W/EQUIP. NAMEPLATE RATING.
	HP RATED COMBINATION MOTOR STARTER DISC. PROVIDE WP ENCLOSURE FOR EXT. APPS. VERIFY SIZE W/EQUIP. NAMEPLATE RATING.
	HP RATED MOTOR STARTER. PROVIDE WP ENCLOSURE FOR EXT. APPS. VERIFY SIZE W/EQUIP. NAMEPLATE RATING.
T	TRANSFORMER
	HOMERUN TO PANEL NOTED (DASHED LINE INDICATES CIRCUIT)
	SWITCHLEG (SOLID LINE) INDICATING A GROUP OF LIGHTS OPERATED BY A COMMON SWITCH
	LOW-VOLTAGE (DOUBLE-DASHED LINE)
AFF/AFG	ABOVE FINISHED FLOOR / ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
CU	CONDENSING UNIT
EF	EXHAUST FAN
GFI	GROUND FAULT INTERRUPTER
ETR	EXISTING TO REMAIN.
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
LC	LOCKING COVER
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
TR	TAMPER RESISTANT
UON	UNLESS OTHERWISE NOTED
WP	WEATHER PROOF
SS	SINGLE/MULTI-STATION, NON-SYSTEM TYPE, RESIDENTIAL STYLE, LINE-POWERED, COMBINATION CARBON MONOXIDE/SMOKE DETECTOR WITH BATTERY BACKUP. ACTIVATION SHALL SOUND ALL DEVICES WITHIN EACH UNIT. CONNECT TO NEAREST ARC-FAULT PROTECTED CIRCUIT WITHIN UNIT. MAINTAIN A MINIMUM DISTANCE OF 3'-0" FROM ALL CEILING-MOUNTED HVAC SUPPLY/RETURN REGISTERS, 3'-0" FROM THE OUTER EDGE OF PADDLE FAN BLADES, AND 10'-0" FROM ALL WALL-MOUNTED HVAC SUPPLY/RETURN REGISTERS.
	EMERGENCY GENERATOR SHUTOFF PUSH-BUTTON
	EXIT SIGN - FACES AS REQUIRED - WITH BATTERY BACKUP
	EXIT SIGN W/DIRECTION ARROW - FACES AS REQUIRED - WITH BATTERY BACKUP
EM	EMERGENCY LIGHT FIXTURE WITH BATTERY BACKUP (CONNECT TO LINE SIDE OF NEAREST SWITCH SERVING THAT AREA OR ON THE LINE SIDE OF LIGHTING CONTROL PANEL THAT CONTROLS THE LIGHTING CIRCUIT IN THAT AREA).
	EMERGENCY LIGHT REMOTE HEAD.
X Y	"X"= HP" Y"= PHASE

NOTES:

1. ELECTRICAL CONTRACTOR SHALL VERIFY EXACT LOCATIONS & MOUNTING HEIGHTS OF ALL ELECTRICAL DEVICES WITH OWNER/ARCHITECT BEFORE ROUGH-IN. MOUNTING HEIGHTS ARE MEASURED TO CENTER OF BOX.
2. ALL RECEPTACLES & SWITCHES SHALL BE ARCH/DECORA TYPE WITH MATCHING FACE PLATES. COOR. FINAL COLOR WITH ARCH. PRIOR TO ORDERING
3. ALL SYMBOLS AND ABBREVIATIONS DO NOT NECESSARILY APPEAR ON THIS PROJECT.
4. MANUFACTURERS SHOWN IN THIS LEGEND ARE "BASIS OF DESIGN" AND "OR EQUAL" DEVICES MAY BE SUBMITTED FOR APPROVAL.

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PROJECT NAME
ROCKLEDGE MULTI-FAMILY
220 Barton Boulevard
Rockledge, FL 32955

SHEET TITLE
ELECTRICAL SPECIFICATIONS & LEGEND

NOV 03, 2015

Revision Schedule		
No.	Description	Date

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