

ELECTRICAL NOTES AND SPECIFICATIONS:

- 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.
- 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 SHALL BE DONE IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS, LOCAL, STATE AND NATIONAL CODES.
- 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.
- 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.
- 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 THE PROVISIONS OF THIS SECTION CERTIFYING THAT THE CONTROL AND SOFTWARE ARE CALIBRATED, ADJUSTED, PROGRAMMED AND IN PROPER WORKING CONDITION IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND MANUFACTURER'S INSTRUCTIONS. FUNCTIONAL TESTING SHALL BE IN ACCORDANCE WITH SECTIONS C408.3.1.1 THRU C408.3.1.3 FOR THE APPLICABLE CONTROL TYPE.
- 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.
- THE ELECTRICAL CONTRACTOR WILL PROVIDE A COMPLETE GROUNDING SYSTEM PER APPLICABLE SECTIONS OF THE N.E.C. BOND SERVICE ENTRANCE CONDUIT TO BUILDING STEEL, METAL WATER MAINS, MADE ELECTRODES, ETC. AS NECESSARY.
- 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.
- 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.
- 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 WITH 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 REQUIREMENTS OF OPERATIONS AS DETAILLED ON THE MECHANICAL PLANS. THE E.C. WILL NOTIFY THE ARCHITECT/ENGINEER OF ANY CHANGES REQUIRED TO CIRCUITING PRIOR TO COMMENCING THE WORK.
- 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/ #10 TO THE FIRST JUNCTION BOX OR LIGHT FIXTURE AND 2-#12 W/ #10 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 THHW-2 OR THHW-2 SHALL BE USED FOR CONDUCT OWNER TRAILING PLAN FOR INSTALLED EQUIPMENT AND CONTROLS. PROVIDE NECESSARY PERSONNEL TO ASSIST THE ELECTRICAL TESTING AGENT IN HIS RESPONSIBILITIES AS DESCRIBED LATER IN THIS SPECIFICATION.
- 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 (7).
- ELECTRICAL CONTRACTOR WILL CONTACT LOCAL ELECTRICAL UTILITY AND COORDINATE EXACT LOCATION OF ELECTRICAL SERVICE SOURCE. THE CONTRACTOR SHALL COORDINATE SHORT CIRCUIT RATINGS FOR ALL ELECTRICAL EQUIPMENT. COORDINATE USE OF HAND HOLE / UTILITY POLE / PAD MOUNT TRANSFORMER PRIOR TO BID AND/OR ROUGH-IN.
- 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.
- 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.
- 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 AND 1117
 - 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
- 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.
- CONTRACTOR TO PROVIDE MANUFACTURER CERTIFICATION, WITH SHOP DRAWING SUBMITTALS, THAT POLE ASSEMBLY WITH SPECIFIED HEADS AND ALL SPECIFIED OPTIONS MEETS WIND LOAD REQUIREMENTS PER 2017 FLORIDA BUILDING CODE FIGURE 1609.3.
- 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.
- ELEVATOR SIZE IS BASED ON A 1/2 HP MOTOR. ELECTRICAL CONTRACTOR TO VERIFY WITH ELEVATOR MANUFACTURER FOR EXACT SIZE OF ELEVATOR PRIOR TO PROVIDE CIRCUIT BREAKER AND DISCONNECT SIZES RECOMMENDED BY ELEVATOR SHOP DRAWINGS. THE ELEVATOR CIRCUIT BREAKER WILL BE SECT-UNTYP, E.G. 8000V/100A ARCHITECT/ENGINEER OF MOTOR SIZE CHANGES TO COMMERCIAL TRAFFIC.
- PROVIDE LIGHTING PROTECTION IN ACCORDANCE WITH SECTION 25.11. LIGHTING SYSTEM GROUND SYSTEM SHALL BE BONDED TO THE BUILDING GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH NEC 250.10.
- ELECTRICAL CONTRACTOR TO PROVIDE AS BUILT DOCUMENTS, RATIO OF LOADS, MAINTENANCE MANUALS TO THE OWNER. PROVIDE PLAYS OF ACCEPTANCE OF SYSTEMS AS PER FBC C405.6.4-7.

ELECTRICAL COMMISSIONING

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 C408 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 MANUFACTURER'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:

- ALL MODES AS DESCRIBED IN THE SEQUENCE OF OPERATION OR MANUFACTURER'S OPERATING INSTRUCTIONS
- REDUNDANT OR AUTOMATIC BACK-UP MODE
- PERFORMANCE OF LIGHTING OVERDRIVE
- MODE OF OPERATION UPON A LOSS OF POWER AND RESTORATION OF POWER.

THE GENERAL CONTRACTOR SHALL:

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

THE SUB-CONTRACTORS SHALL:

- PREPARE OWNER TRAINING PLAN FOR INSTALLED EQUIPMENT AND CONTROLS.
- PROVIDE NECESSARY PERSONNEL TO ASSIST THE ELECTRICAL TESTING AGENT IN HIS RESPONSIBILITIES AS DESCRIBED LATER IN THIS SPECIFICATION.
- PREPARE AND SCHEDULE EQUIPMENT START-UP WITH THE GENERAL CONTRACTOR AND ELECTRICAL TESTING AGENT.
- EXECUTE ALL REQUIRED EQUIPMENT AND SYSTEM TESTING AS MANDATED BY 2017 FLORIDA BUILDING CODE, PROJECT PLANS AND SPECIFICATIONS.
- 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 CLOSURE DOCUMENTS INCLUDING BUT NOT LIMITED TO:
 - AS-BUILT DRAWINGS
 - WARRANTIES
 - OPERATIONAL AND MAINTENANCE MANUALS FOR INSTALLED EQUIPMENT.
 - 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:

- SUBMITTAL DATA STATING EQUIPMENT SIZE AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE.
- 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 RESULTS" SHALL BE DELIVERED TO THE BUILDING OWNER AND SHALL INCLUDE:

- RESULTS OF FUNCTIONAL PERFORMANCE TESTS.
- DISPOSITION OF DEFICIENCIES FOUND DURING TESTING, INCLUDING DETAILS OF CORRECTIVE MEASURES USED OR PROPOSED.
- 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:

- TESTING SHALL ENSURE THAT CONTROL HARDWARE AND SOFTWARE ARE CALIBRATED, ADJUSTED, PROGRAMMED AND IN PROPER WORKING CONDITION IN ACCORDANCE WITH THE INSTRUCTION MANUALS AND MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- PROCESSED HARDWARE AND SOFTWARE SHALL BE IDENTIFIED FROM THE DESIGN OR CONSTRUCTION OF THE PROJECT AND SHALL BE AVAILABLE FOR FUNCTIONAL TESTING AND SHALL PROVIDE DOCUMENTATION TO THE REGISTERED DESIGN PROFESSIONAL AND CODE OFFICIAL. CERTIFYING THAT THE INSTALLED LIGHTING CONTROLS MEET THE PROVISIONS OF SECTION C408.3.1.2. PHOTOSENSOR LIGHTING CONTROLS ARE INSTALLED, THE FOLLOWING PROCEDURES SHALL BE PERFORMED:
 - CONFIRM THAT THE PLACEMENT, SENSITIVITY AND TIME-OUT ADJUSTMENTS FOR OCCUPANCY SENSORS YIELD ACCEPTABLE PERFORMANCE AS PER FBC-C408.3.
 - 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.
 - 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 IDENTIFICATION NOTES

EXPOSURES 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/CABLE IDENTIFICATION TAPE: CONDUCTOR/CABLING IDENTIFICATION TAPE SHALL BE SCOTCH #33 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. ACCEPTABLE LABELS SHALL BE SIZED TO ACCOMMODATE THAT CIRCUMFERENCE OF THE CONDUCTOR/CABLE.

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. 480V/277V, 208V/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.

CLEAR 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 USING SPRAY-PAINTED COVERS AS FOLLOWS:

SECONDARY POWER - 480V/277V	BROWN
SECONDARY POWER - 208V/120V, 240/120V	WHITE
EMERGENCY SYSTEM - LIFE SAFETY BRANCH (NEC 700) - 480V/277V	BROWN/RED
EMERGENCY SYSTEM - LIFE SAFETY BRANCH (NEC 700) - 208V/120V	WHITE/RED
LEGALLY REQUIRED STANDBY SYSTEM (NEC 701) - 480V/277V	BROWN/BLUE
LEGALLY REQUIRED STANDBY SYSTEM (NEC 701) - 208V/120V	WHITE/BLUE
OPTIONAL STANDBY SYSTEM (NEC 702) - 480V/277V	BROWN/YELLOW
OPTIONAL STANDBY SYSTEM (NEC 702) - 208V/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	BLUE
DATA	BLUE JUNCTION

BOXES AND PULL BOXES FOR POWER CONDUCTORS SHALL BE LABELED WITH CIRCUIT NUMBERS AND SOURCE PANELS AND IDENTIFICATION. IDENTIFICATION OF 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 (IT) EQUIPMENT SHALL BE LABELED IN ACCORDANCE WITH ANSI/TIA/EIA-606. ALL TERMINATIONS OF THE CONDUITS SHALL BE IDENTIFIED.

ALL LABELS SHALL BE MACHINE-PRODUCED. HANDWRITTEN LABELS SHALL NOT BE ACCEPTABLE, UNLESS OTHERWISE INDICATED.

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

POWER AND LOW-VOLTAGE CONDUCTOR IDENTIFICATION:

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

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

WRITING IDENTIFICATION:

WALL SWITCHES, RECEPTACLES, OCCUPANCY SENSORS, DEVICE PLATES, BOX COVERS, POKE-THROUGH FITTINGS, FLOOR BOXES, PHOTOCELLS, AND TIME CLOCKS SHALL BE IDENTIFIED WITH CIRCUIT NUMBER 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 SOURCE, LOCATION AND LOCATION OF THE SOURCE. FOR 240V/208V SYSTEMS, PROVIDE PANELBOARD IDENTIFICATION AS REQUIRED BY 2014 NEC SECTION 408.3. PANELS SHALL BE MARKED "CAUTION B 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.

SEQUENCE OF OPERATION MATRIX:

SYSTEM OPERATION NARRATIVE:

1. SEQUENCE OF OPERATION:

- ACTIVATION OF BUILDING MANUAL OR AUTOMATIC ALARM INITIATING DEVICES SHALL PERFORM THE FOLLOWING OPERATION:
 - GENERAL ALARM STATUS SIGNALS SHALL BE TRANSMITTED TO AN U.L. LISTED 24HR/7 DAY REMOTE STATION.
 - THE CORRESPONDING ALARM DEVICE SHALL SHOW THE EXACT DESCRIPTION, POINT, TIME AND DATE OF ALARM AND DEFINED MESSAGES ON THE FIRE ALARM CONTROL PANEL DISPLAY (FACP). THE LOBBY ANNUNCIATOR PANEL, IF INSTALLED SHALL ALSO SHOW THE EXACT DESCRIPTION, POINT, TIME AND DATE OF THE ALARM AND DEFINED MESSAGES ON THE DISPLAY.
 - SOUND AN AUDIBLE ALARM SIGNAL AT THE FACP.
 - ALL WORKS SHALL SOUND AND ALL STROBES SHALL FLASH.
- FIRE ALARM SYSTEM FUNCTIONS WHEN A SUPERVISORY CONDITION(S) DEVELOPS:
 - SUPERVISORY CONDITIONS SHALL BE TRANSMITTED TO AN U.L. LISTED 24HR/7 DAY REMOTE STATION.
 - AN ALARM CONDITION SHALL OVERRIDE THE SUPERVISORY CONDITION BY EXTINGUISHING ALL TROUBLE CONDITIONS. WHEN THE ALARM CONDITION HAS BEEN ENDED BY RESETTING THE CONTROL PANEL, SUPERVISORY INDICATIONS SHALL REAPPEAR.
 - IF THE SUPERVISORY CONDITION HAS BEEN SILENCED AND NOT CORRECTED WITH IN 24 HRS AN AUDIBLE NOTIFICATION AT THE FIRE ALARM PANEL AND REMOTE ANNUNCIATOR SHALL BE REACTIVATED.
- FIRE ALARM SYSTEM FUNCTIONS WHEN A TROUBLE CONDITION(S) DEVELOPS:
 - TROUBLE STATUS SIGNALS ARE TRANSMITTED TO AN U.L. LISTED 24HR/7 DAY REMOTE STATION.
 - AN ALARM CONDITION SHALL OVERRIDE THE TROUBLE CONDITION BY EXTINGUISHING ALL TROUBLE CONDITIONS. WHEN THE ALARM CONDITION HAS BEEN ENDED BY RESETTING THE CONTROL PANEL, TROUBLE INDICATIONS SHALL REAPPEAR.
 - IF A GROUND FAULT DEVELOPS ON EITHER THE POSITIVE (+) OR NEGATIVE (-) OF ANY ADDRESSABLE OR NOTIFICATION APPLIANCE CIRCUIT, AN AUDIBLE AND VISUAL, TROUBLE SIGNAL WILL BE INDICATED AT THE FIRE ALARM CONTROL PANEL AND REMOTE ANNUNCIATOR PANEL.
 - IF THE TROUBLE CONDITION HAS BEEN SILENCED AND NOT CORRECTED WITH IN 24 HRS AN AUDIBLE NOTIFICATION AT THE FIRE ALARM PANEL AND REMOTE ANNUNCIATOR SHALL BE REACTIVATED.

FIRE ALARM AND DETECTION SYSTEM NOTES:

- PROVIDE AN ADDRESSABLE FIRE ALARM SYSTEM IN ACCORDANCE WITH THE FIRE ALARM RISER DIAGRAM.
- UNDERGROUND FIRE ALARM CONDUCTORS SHALL BE TYPE FPL AND LISTED FOR DIRECT BURIAL AND WET LOCATIONS. FIRE ALARM CONDUCTORS IN SPACES UTILIZED AS RETURN AIR PLenums SHALL BE TYPE FPLR. FIRE ALARM RISER CONDUCTORS SHALL BE TYPE FPLR. ALL OTHER FIRE ALARM CONDUCTORS SHALL BE TYPE FPL.
- ALL CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS BUT IN NO CASE SMALLER THAN 14 AWG FOR NOTIFICATION APPLIANCE CIRCUITS AND 18 AWG FOR SIGNALING LINE CIRCUITS.
- ALL UNDERGROUND FIRE ALARM CONDUCTORS SHALL BE INSTALLED IN MINIMUM 3/4" CONDUIT. ALL FIRE CONDUCTORS CONCEALED IN WALLS SHALL BE IN MINIMUM 1/2" CONDUIT STUBBED 6" ABOVE CEILING W/90° BEND. (CONDUITS SHALL NOT EXCEED 30% FILL) THE WRAP ALL EXPOSED FIRE ALARM WIRES TIGHT TO CEILING.
- ALL VISUAL ALARMS SHALL BE RATED PER NFPA 72, 101, AND ANSI 117.1.4.26 AND ADA REQUIREMENTS. AUDIBLE AND VISUAL DEVICES FOR FIRE ALARM SHALL COMPLY WITH THE FLORIDA ACCESSIBILITY CODE. FIRE ALARM SYSTEM SHALL BE AS REQUIRED PER FLORIDA BUILDING CODE 2017, NFPA 101-2015, NFPA 72-2013, AND LOCAL CODES.
- ALL NOTIFICATION APPLIANCE CIRCUITS SHALL BE CLASS B AND ALL SIGNALING LINE CIRCUITS SHALL BE CLASS B STYLE 4, UNLESS OTHERWISE INDICATED.
- ALL FIRE ALARM WIRING TO BE SOLID COPPER CONDUCTOR OF THE MINIMUM SIZE RECOMMENDED BY THE FIRE ALARM SYSTEM MANUFACTURER AND INSTALLED IN CONDUIT WHERE CONCEALED OR ABOVE STORAGE SPACES. ALL WIRING TO BE COLOR COORDINATED AND PROPERLY IDENTIFIED. INSTALLATION WILL BE BY A STATE LICENSED AND APPROVED INSTALLER AND COMPLY WITH ALL APPLICABLE CODES AND ORDINANCES.
- ALL FIRE ALARM COMPONENTS SHALL BE COMPATIBLE AND SHALL BE UL LISTED FOR FIRE ALARM SERVICE.
- VERIFY ALL REQUIREMENTS WITH LOCAL AUTHORITY HAVING JURISDICTION (LAH).
- FIRE ALARM AND FIRE SPRINKLER CONTRACTORS SHALL OBTAIN SEPARATE PERMITS.
- BATTERY CALCULATIONS SHALL BE PROVIDED WITH EQUIPMENT SUBMITTALS AND PERMITS DOCUMENTS AS REQUIRED.
- FIRE ALARM PLANS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF THE FIRE ALARM SYSTEM AND MEETS REQUIREMENTS IN ACCORDANCE WITH FLORIDA ADMINISTRATIVE CODE 61G13-32.008 AND 33.006. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS IN ACCORDANCE WITH ALL APPLICABLE CODES THAT SHALL BE PROVIDED TO THE OWNER. POINT TO POINT WIRING DIAGRAM, WIRE SIZES, BATTERY CALCULATIONS, EQUIPMENT SUBMITTALS, A INSTALLATION DETAILS. IT SHALL ALSO BE THE RESPONSIBILITY OF SAID CONTRACTOR TO PROVIDE DOCUMENTS AS REQUIRED FOR THE FIRE ALARM SYSTEM. CONTRACTOR SHALL PROVIDE ADDITIONAL ITEMS AS REQUIRED FOR A COMPLETE AND COORDINATED INSTALLATION IN ACCORDANCE WITH THE LOCAL REQUIREMENTS AND THE APPLICABLE CODES AND ORDINANCES.
- FIRE ALARM CONTRACTOR SHALL NOTIFY THE OWNER AND OTHERS OPERATING PERSONNEL TRAINING AS REQUIRED FOR THE PROPER OPERATION AND MAINTENANCE OF THEIR FIRE ALARM SYSTEM. PROVIDE MANUALS, SYSTEM DOCUMENTATION AND A COPY OF THE PROGRAMMING WITHIN 30 DAYS OF ACCEPTANCE OF THE FIRE ALARM SYSTEM TO THE OWNER.
- FIRE ALARM CONTRACTOR SHALL COORDINATE THE FINAL LOCATIONS & QUANTITY OF ALL SMOKE & SMOKE/FEEL DETECTORS WITH THE MECHANICAL PLANS AND THE MECHANICAL CONTRACTOR PRIOR TO BID & ROUGH-IN. PROVIDE A CONTROL RELAY & CONTROL WIRE FROM THE FACP. CRITICAL CONTRACTOR SUBMITTALS SHALL INCLUDE 120V CIRCUIT TO DAMPERS & 120V/24V STEP-DOWN TRANSFORMER FOR DAMPER OPERATION AS REQUIRED PER THE MECHANICAL CONTRACTOR'S SUBMITTALS AND INSTALLATION DETAILS. IT SHALL ALSO BE THE EQUIPMENT SHOP DRAWINGS.
- PROVIDE FIRE ALARM PANEL WITH ADEQUATE SPARE CAPACITY FOR FUTURE DEVICE CONNECTIONS. FINAL BUILD-OUT BASED UPON LISTED OCCUPANCY AND SQUARE FOOTAGE.
- NOTICE EVAC. SYSTEM WITH THE APPROVAL OF THE AHJ MAY BE USED AS A MASS NOTIFICATION SYSTEM AS PER NFPA 72 2013.
- COORDINATE THE EXACT LOCATIONS AND QUANTITY OF THE FIRE ALARM DEVICES WITH THE FLOOR PLANS.
- VERIFY THE EXACT LOCATIONS AND QUANTITIES OF FLOW AND TAMPER SWITCHES WITH THE FIRE SPRINKLER RISER PRIOR TO BID.
- FIRE ALARM SYSTEM TESTING SHALL BE AS PER NFPA 72 CHAPTER 14 REQUIREMENTS.
- FIRE ALARM SYSTEM TO PROVIDE A GENERAL EVACUATION SIGNAL.
- FIRE ALARM SYSTEM IS TO BE REMOTE MONITORED.
- BUILDING OCCUPANCY TYPE IS 'S'-1.

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PROJECT NAME: **ROCKLEDGE MULTI-FAMILY**
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CLIENT NAME: **ROCKLEDGE MULTI-FAMILY**

SHEET TITLE: **ELECTRICAL SPECIFICATIONS**

NOV 02, 2015

Revision	Schedule	Date
1	DESCRIPTION	

PROJECT NO:	0540150010
DATE:	20/01/10
DRAWN BY:	NA/NA
CHECKED BY:	Checker

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