ELECTRICAL SPECIFICATIONS

I. GENERAL REQUIREMENTS:

A. DO ALL WORK IN COMPLIANCE WITH THE LATEST ADOPTED EDITION OF THE FLORIDA BUILDING CODE (FBC-2017), NFPA 70 (NEC-2017) AND NFPA 101 (LIFE SAFETY CODE-2015), AND THE REGULATIONS OF THE LOCAL UTILITY TELEPHONE, CABLE TELEVISION AND POWER UTILITY COMPANIES. OBTAIN AND PAY FOR ANY AND ALL REQUIRED PERMITS, INSPECTIONS, CERTIFICATES OF INSPECTIONS AND APPROVAL, AND THE LIKE, AND DELIVER SUCH CERTIFICATES TO THE ENGINEER.

B. THE CONTRACTOR SHALL FURNISH, PERFORM, OR OTHERWISE PROVIDE ALL LABOR (INCLUDING, BUT NOT LIMITED TO, ALL PLANNING, PURCHASING, PAINTING, TRANSPORTING, RIGGING, HOISTING, STORING, INSTALLING, TESTING, CHASING, CHANNELING, CUTTING, TRENCHING, EXCAVATING AND BACKFILLING), COORDINATION, FIELD VERIFICATION, EQUIPMENT INSTALLATION, SUPPORT, AND SAFETY, SUPPLIES, AND MATERIALS NECESSARY FOR THE CORRECT INSTALLATION OF COMPLETE AND FUNCTIONAL ELECTRICAL SYSTEMS (AS DESCRIBED OR IMPLIED BY THESE SPECIFICATIONS AND THE APPLICABLE DRAWINGS).

C. ALL DRAWINGS AND SPECIFICATIONS ON THE PROJECT ARE COMPLEMENTARY, EACH TO ALL OTHER SETS, AND THEY SHALL BE USED IN COMBINATION FOR THE EXECUTION OF THIS WORK. DIVISION 16 WORK SHOWN ON ANY ONE SET OF DRAWINGS, INCLUDING ALL ARCHITECTURAL DRAWINGS, MECHANICAL, PLUMBING AND FIRE PROTECTION DRAWINGS FOR GENERAL WORK AND EQUIPMENT, AND DIVISION 16 WORK CALLED FOR UNDER ANY SECTION OF THE PROJECT SPECIFICATIONS, SHALL BE CONSIDERED AS INCLUDED IN THIS WORK UNLESS SPECIFICALLY EXCLUDED BY INCLUSION IN SOME OTHER BRANCH OF THE WORK. THIS SHALL INCLUDE ROUGHING-IN FOR CONNECTIONS AND EQUIPMENT AS CALLED FOR OR INFERRED. THE CONTRACTOR SHALL CHECK ALL DRAWINGS AND SPECIFICATIONS FOR THE PROJECT AND SHALL BE RESPONSIBLE FOR THE INSTALLATION OF ALL DIVISION 16 WORK.

D. THE CONTRACTOR SHALL CAREFULLY CHECK THE DRAWINGS AND SPECIFICATIONS OF ALL OTHER TRADES AND DIVISIONS BEFORE INSTALLING ANY OF HIS WORK. HE SHALL IN ALL CASES CONSIDER THE WORK OF ALL OTHER TRADES, AND SHALL COORDINATE HIS WORK WITH THEM SO THAT THE BEST ARRANGEMENTS OF ALL EQUIPMENT, PIPING, CONDUIT, DUCTS, ROUGH-IN, ETC., CAN BE OBTAINED.

E. LOCATIONS DESIGNATED FOR OUTLETS, SWITCHES, DEVICES, EQUIPMENT, ETC., ARE APPROXIMATE AND FINAL LOCATIONS SHALL BE VERIFIED IN THE FIELD. CONTRACTOR SHALL LOCATE ALL DEVICES UP TO 5 FEET IN ANY DIRECTION AS DIRECTED BY OWNER AND PER CODE. WHERE INSTRUCTIONS OR NOTES ARE INSUFFICIENT TO CONVEY THE INTENT OF THE DESIGN, CONSULT THE OWNER PRIOR TO BIDDING AND INSTALLATION.

F. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND COORDINATING THE LOCATIONS OF DEVICES TO BE USED AND COORDINATING THE FINAL LOCATIONS OF ELECTRICAL EQUIPMENT WITH MILLWORK, SINKS, BENCHES, COUNTERS AND SHELVING PRIOR TO BIDDING AND INSTALLATION. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER.

G. DIVISION 16 CONTRACTOR SHALL HAVE HAD EXPERIENCE OF AT LEAST THE SAME SIZE AND SCOPE AS THIS PROJECT, ON AT LEAST TWO OTHER PROJECTS WITHIN THE LAST FIVE YEARS IN ORDER TO BE QUALIFIED TO BID THIS PROJECT.

H. CONTRACTOR SHALL AND DOES HEREBY WARRANT ALL MATERIALS AND EQUIPMENT FURNISHED UNDER THIS SECTION OF THE SPECIFICATIONS TO BE FREE FROM DEFECTS AND TO FUNCTION OR OPERATE SATISFACTORILY FOR ONE YEAR AFTER FINAL ACCEPTANCE OF THE WORK, AND THAT ANY ITEMS NOT MEETING THIS REQUIREMENT WILL BE MADE GOOD BY HIM WITHOUT COST TO OWNER, PROVIDED SUCH DEFECTS OR FAILURES ARE NOT DUE TO ABUSE, NEGLECT, OR LACK OF REASONABLE AND ORDINARY MAINTENANCE.

I. ALL WORK SHALL BE EXECUTED IN A WORKMANSHIP MANNER DISPLAYING A NEAT MECHANICAL APPEARANCE UPON COMPLETION.

J. BALANCE TOTAL PHASE LOADS IN EACH ELECTRICAL PANEL TO A VALUE WITHIN 10% OF EACH OTHER.

K. THE CONTRACTOR SHALL PROVIDE ADEQUATE PROTECTION, WHEREVER WORK IS TO BE PERFORMED IN FINISHED/OCCUPIED SPACES, TO PREVENT DAMAGE TO ADJACENT AREAS, EQUIPMENT, OR FURNISHINGS; TO PREVENT ACCIDENTAL INJURY TO BUILDING OCCUPANTS AND THE PUBLIC; TO PREVENT THE SPREADING OF DUST, DIRT, DEBRIS, AND MOISTURE FROM THE AREA WHERE WORK IS BEING PERFORMED; AND TO PREVENT DUST, DIRT, DEBRIS, AND MOISTURE FROM GETTING ON OR IN THE BUILDING OCCUPANT'S FURNISHINGS OR EQUIPMENT.

L. THE CONTRACTOR SHALL REPAIR, AT NO COST TO THE OWNER, ANY DAMAGE DONE BY HIMSELF OR HIS EMPLOYEES. HE SHALL ALSO BE RESPONSIBLE FOR ALL CUTTING AND PATCHING REQUIRED TO PROPERLY INSTALL HIS WORK. THIS SHALL ALSO INCLUDE THE PATCHING OF EXISTING ROADWAYS (PAVED OR IMPROVED), PARKING AREAS, SIDEWALKS, WALLS, STAIRS, MECHANICAL WORK, CURBS, GUTTERS, ETC., CUT TO INSTALL WORK PROVIDED BY THE CONTRACTOR. PATCH WORK SHALL COMPLY WITH THE APPLICABLE SECTIONS OF THESE SPECIFICATIONS AND SHALL MATCH THE EXISTING FINISHES.

M. UPON COMPLETION OF WORK, THE ENTIRE WIRING SYSTEM SHALL BE TESTED, AND SHALL BE SHOWN TO BE IN PROPER WORKING CONDITION IN ACCORDANCE WITH INTENT OF SPECIFICATIONS AND DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE ALL SYSTEMS READY FOR OPERATION AND TO HAVE AN ELECTRICIAN AVAILABLE TO OPERATE SAME IN ACCORDANCE WITH AND UNDER THE SUPERVISION OF THE INSPECTION REPRESENTATIVE OF THE ENGINEER. THE CONTRACTOR SHALL BE AVAILABLE TO ASSIST IN REMOVAL OF PANEL FRONTS, ETC., TO PERMIT INSPECTION AS REQUIRED.

N. IN ACCORDANCE WITH DIVISION 1 AND THE CONDITIONS OF THE CONTRACT, THE CONTRACTOR SHALL PROVIDE AND KEEP UP TO DATE A COMPLETE RECORD SET OF CONSTRUCTION "AS-BUILTS" BLUELINE PRINTS WHICH SHALL BE CORRECTED DAILY, AND SHALL SHOW EVERY CHANGE FROM THE ORIGINAL CONTRACT DRAWINGS, INCLUDING ADDENDA AND CHANGE ORDERS IN ACCORDANCE WITH GENERAL REQUIREMENTS AND SPECIAL CONDITIONS. THIS SET OF PRINTS SHALL BE KEPT ON THE JOB SITE, AND SHALL BE USED ONLY AS A RECORD SET. THIS SHALL NOT BE CONSTRUED AS AUTHORIZATION FOR THE CONTRACTORS TO MAKE CHANGES IN THE LAYOUT WITHOUT DEFINITE INSTRUCTION IN EACH CASE.

II. ELECTRICAL SCOPE:

A. FURNISHING AND INSTALLATION OF POWER SYSTEMS, AND AUXILIARY SYSTEMS AS SHOWN OR HEREIN SPECIFIED.

B. CONNECTION OF ALL EQUIPMENT REQUIRING ELECTRICAL CONNECTION, MENTIONED IN THIS DIVISION OR SHOWN ON DRAWINGS, WHETHER FURNISHED BY DIVISION 16 OR UNDER OTHER DIVISIONS, OR FURNISHED BY OWNER.

C. FURNISHING AND INSTALLATION OF OUTLET BOXES, CONDUIT RACEWAYS, FOR A TELEPHONE AND DATA RACEWAY DISTRIBUTION SYSTEM. (TELEPHONE AND DATA HARDWARE, AS WELL AS WIRING AND SOFTWARE IS NOT INCLUDED.)

D. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR CONTACTING THE OFFICES OF ALL LOCAL AND/OR STATE AUTHORITIES HAVING JURISDICTION OVER THIS PROJECT IN ORDER TO SCHEDULE ALL REQUIRED INSPECTIONS AND OBTAIN ALL NECESSARY PERMITS, ETC. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER OF ALL SCHEDULED INSPECTIONS AT LEAST TWO WEEKS IN ADVANCE OF THE SCHEDULED DATE.

E. THE CONTRACTOR SHALL REPLACE ANY DEFECTIVE MATERIALS, EQUIPMENT, OR WORKMANSHIP WITHOUT COST TO THE OWNER WITHIN THE STIPULATED GUARANTEED PERIOD.

F. IT SHALL BE THE RESPONSIBILITY OF THE DIVISION 16 CONTRACTOR TO HAVE ALL SYSTEMS READY FOR OPERATION AND TO HAVE AN ELECTRICIAN AVAILABLE FOR ALL INSPECTIONS. THE CONTRACTOR SHALL PROVIDE PERSONNEL TO ASSIST IN REMOVAL OF PANEL FRONTS, ETC. TO PERMIT INSPECTION AS REQUIRED.

G. SUBMIT TO THE ARCHITECT/ENGINEER PROMPTLY AFTER AWARD OF CONTRACT AND PRIOR TO PURCHASING, SIX COPIES OF MANUFACTURER'S SHOP DRAWINGS IN ACCORDANCE WITH DIVISION 1, SECTION 01300 - SUBMITTALS FOR THE FOLLOWING ITEMS. ALL SHOP DRAWINGS OF A SPECIFIC ITEM OR SYSTEM SHALL BE MADE IN ONE SUBMITTAL AND WITHIN TEN DAYS AFTER AWARD OF CONTRACT.

1. PANELBOARDS
2. SUPPORTS
3. WIRING DEVICES
4. DISCONNECT SWITCHES
5. CONDUIT
6. WIRE

H. COMPLETED WIRING SYSTEMS SHALL BE FREE FROM SHORT CIRCUITS AND AFTER COMPLETION, PERFORM TESTS FOR INSULATION RESISTANCE IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE. ALL WIRING SYSTEMS SHALL BE COMPLETELY AND TOTALLY "SAFED" DURING CONSTRUCTION. ONLY QUALIFIED PERSONNEL SHALL HANDLE ELECTRICAL SYSTEMS.

I. BEFORE ROUGH-IN OF CIRCUITRY OR CONNECTING TO EQUIPMENT, FURNISHED UNDER THIS DIVISION, ANY OTHER DIVISION, OR BY THE OWNER, THE CONTRACTOR SHALL VERIFY THE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF THE EQUIPMENT BEING FURNISHED AND FOR THAT SPECIFIED AND SHOWN ON THE DRAWINGS AND PROVIDE FOR PROPER ROUGH-IN AND CONNECTION.

J. THE ELECTRICAL CIRCUITS, COMPONENTS, AND CONTROLS FOR ALL EQUIPMENT ARE SELECTED AND SIZED, BASED ON THE EQUIPMENT SPECIFIED. IF SUBSTITUTIONS AND/OR EQUIVALENT EQUIPMENT ARE FURNISHED, IT SHALL BE THE RESPONSIBILITY OF ALL PARTIES CONCERNED, INVOLVED IN, AND FURNISHING THE SUBSTITUTE AND/OR EQUIVALENT EQUIPMENT TO VERIFY AND COMPARE THE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF THAT FURNISHED TO THAT SPECIFIED AND/OR SHOWN. IF GREATER CAPACITY OR MORE MATERIALS OR LABOR IS REQUIRED FOR THE ROUGH-IN, CIRCUITRY OR CONNECTIONS THAN FOR THE ITEM SPECIFIED AND PROVIDED FOR, THEN IT SHALL BE THE RESPONSIBILITY OF THE PARTIES INVOLVED IN PROVIDING THE SUBSTITUTE AND/OR EQUIVALENT ITEMS OF EQUIPMENT TO PROVIDE ALL COMPENSATION FOR ADDITIONAL CHARGES MADE FOR THE PROPER ROUGH-IN, CIRCUITRY AND CONNECTIONS FOR THE EQUIPMENT FURNISHED. NO ADDITIONAL CHARGES ABOVE THE BASE BID SHALL BE ALLOWED FOR SUCH REVISIONS.

K. EXCAVATION FOR UNDERGROUND ELECTRICAL STRUCTURES: CONFORM TO ELEVATIONS AND DIMENSIONS SHOWN WITHIN A TOLERANCE OF PLUS OR MINUS 0.10'; PLUS A SUFFICIENT DISTANCE TO PERMIT PLACING AND REMOVAL OF CONCRETE FORMWORK, INSTALLATION OF SERVICES, OTHER CONSTRUCTION, AND FOR INSPECTION.

L. TRENCHING: EXCAVATE TRENCHES FOR ELECTRICAL INSTALLATIONS AS FOLLOWS:

1. EXCAVATE TRENCHES TO THE UNIFORM WIDTH, SUFFICIENTLY WIDE TO PROVIDE AMPLE WORKING ROOM AND A MINIMUM OF 6" TO 9" CLEARANCE ON BOTH SIDES OF RACEWAYS AND EQUIPMENT.
2. EXCAVATE TRENCHES TO DEPTH INDICATED OR REQUIRED.
3. LIMIT THE LENGTH OF OPEN TRENCH TO THAT IN WHICH INSTALLATIONS CAN BE MADE AND THE TRENCH BACKFILLED WITHIN THE SAME DAY.
4. WHERE ROCK IS ENCOUNTERED, CARRY EXCAVATION BELOW REQUIRED ELEVATION AND BACKFILL WITH A LAYER OF CRUSHED STONE OR GRAVEL PRIOR TO INSTALLATION OF RACEWAYS AND EQUIPMENT. PROVIDE A MINIMUM OF 6" OF STONE OR GRAVEL CUSHION BETWEEN ROCK BEARING SURFACE AND ELECTRICAL INSTALLATIONS.

M. THE CONTRACTOR SHALL PROVIDE ALL INSERTS FOR THE SUPPORT OF DIVISION 16 EQUIPMENT TO BE PLACED IN CONCRETE OR THROUGH CONCRETE SLABS AS CONSTRUCTION PROGRESSES. HE SHALL PROVIDE ALL MISCELLANEOUS HANGING AND SUPPORTING HARDWARE. ALL ELECTRICAL WORK IS TO BE CONCEALED IN OR BUILT INTO GENERAL CONSTRUCTION SHALL BE PLACED AS CONSTRUCTION PROGRESSES. FAILURE OF THE CONTRACTOR TO COORDINATE WORK WITH OTHER TRADES AND THE PROJECT CONSTRUCTION PROGRESS SHALL MAKE HIM RESPONSIBLE FOR ALL COST OF CUTTING AND PATCHING, AS REQUIRED TO INSTALL WORK. NO STRUCTURAL MEMBER, MASONRY CONSTRUCTION OR FINISHED WORK SHALL BE CUT OR ALTERED WITHOUT PRIOR WRITTEN APPROVAL BY THE ARCHITECT/ENGINEER. CONTRACTOR SHALL FIRE RATE ALL PENETRATIONS THROUGH ALL FIRE RATED SLABS OR WALLS PER THE INTENDED RATING.

N. THE CONTRACTOR SHALL SUPPLY AND SET INTO PLACE ALL WALL SLEEVES FOR CONDUITS AND CEILING INSERTS FOR HANGERS IN AREAS OF NEW CONSTRUCTION AS BUILDING CONSTRUCTION PROGRESSES. INSTALL EQUIPMENT NOTED TO BE CONCEALED IN WALLS BEFORE WALLS ARE CONSTRUCTED IN ORDER THAT WALLS MAY BE CONSTRUCTED AROUND CONDUITS, ENCLOSURES, ETC.

O. METALLIC MATERIALS SHALL BE PROTECTED AGAINST CORROSION. EQUIPMENT ENCLOSURES SHALL BE GIVEN RUST-INHIBITING TREATMENT AND STANDARD FINISH BY MANUFACTURER. ALUMINUM SHALL NOT BE USED ON CONTACT WITH EARTH, AND, WHERE CONNECTED TO DISSIMILAR METAL, SHALL BE PROTECTED BY SUITABLE FITTINGS AND TREATMENT. ALL FERROUS METALS SUCH AS ANCHORS, BOLTS, BRACES, BOXES, BODIES, CLAMPS, FITTINGS, GUARDS, NUTS, PINS, RODS, SHIMS, THIMBLES, WASHERS, AND MISCELLANEOUS PARTS, NOT OF STAINLESS STEEL OR NONFERROUS MATERIALS, SHALL BE HOT-DIPPED GALVANIZED.

P. ALL CONDUITS STUBBED OUT FOR FUTURE USE SHALL HAVE A PULL WIRE INSTALLED, A PLASTIC CAP INSTALLED AND BE IDENTIFIED AS TO THE CONDUIT ORIGIN.

Q. THE RESPONSIBILITY FOR ANY CUTTING OF CONSTRUCTION WHICH IS REQUIRED FOR THE INSTALLATION OF DIVISION 16 WORK, SHALL BE BY THE CONTRACTOR. THE CONTRACTOR SHALL COORDINATE WITH ALL OTHER TRADES AND THE OWNER BEFORE ANY CUTTING AND OBTAIN APPROVAL FROM THE ARCHITECT/ENGINEER PRIOR TO ANY CUTTING. ALL PATCHING AND FINISHING SHALL BE BY THE CONTRACTOR.

R. WHERE OPENINGS OR HOLES ARE CUT IN CONSTRUCTION AND THE CUTTING BREAKS ELECTRICAL CIRCUITRY OR CONTROL CIRCUITRY CONDUIT AND WIRING, THEN IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REROUTE THE CIRCUITRY CONDUIT AND REWIRING AND TO COMPLETE THE CIRCUITRY AS REQUIRED AND AS APPROVED BY THE ARCHITECT/ENGINEER. TEMPORARY COMPLETION SHALL BE PROVIDED WHERE NECESSARY BEFORE THE PERMANENT REROUTING AND COMPLETION WORK IS FINISHED.

S. ANY PENETRATIONS OF FIRE OR SMOKE RATED ASSEMBLIES MADE BY THIS CONTRACTOR IN VERTICAL OR HORIZONTAL CONSTRUCTION SHALL BE SEALED AND PROTECTED BY THIS CONTRACTOR IN ORDER TO MAINTAIN THE ESTABLISHED FIRE RATING WITH METHODS AS APPROVED BY THE AUTHORITY HAVING JURISDICTION.

III. IDENTIFICATION:

A. IDENTIFICATION NAMEPLATES SHALL BE LAMINATED PLASTIC, SECURED TO EQUIPMENT WITH TWO SCREWS.

B. EACH PANELBOARD AND SWITCHBOARD SHALL BE EQUIPPED WITH A PERMANENT PLASTIC NAMEPLATE WITH 1/2" MINIMUM LETTERS, SECURELY FASTENED TO THE DEVICE.

C. EACH INDIVIDUALLY MOUNTED CIRCUIT BREAKER, SWITCH, TRANSFER SWITCH, MOTOR STARTER, LIGHTING CONTACTOR, TRANSFORMER AND/OR ANY OTHER CONTROL OR PROTECTIVE DEVICE INCLUDING EQUIPMENT DISCONNECT SWITCHES SHALL BE EQUIPPED WITH A PERMANENT PLASTIC NAMEPLATE WITH 1/2" MINIMUM LETTERS.

D. PANELBOARDS SHALL HAVE TYPEWRITTEN DIRECTORIES. ALL CIRCUITS TO BE IDENTIFIED BY DEVICES SERVED AND ROOM NUMBERS (I.E., LIGHTING ROOM 216). HANDWRITTEN DIRECTORIES WILL NOT BE ALLOWED.

E. EACH JUNCTION BOX CABINET OR WIREWAY LARGER THAN 6" X 6" SHALL BE EQUIPPED WITH A PLASTIC NAMEPLATE WITH 1/2" MINIMUM LETTERS INDICATING THE SYSTEM ENCLOSED.

F. ALL SYSTEMS JUNCTION BOXES AND CONDUIT SHALL BE COLOR CODED INSIDE AND OUTSIDE OF THE BOX PRIOR TO THE INSTALLATION OF CONDUCTORS PER THE FOLLOWING:

1. CCTV SYSTEM: GREEN
2. TELEPHONE DATA SYSTEM: BLUE
3. FIRE ALARM SYSTEM: RED

G. ENTIRE BOX INSIDE AND OUT, INCLUDING COVER, SHALL BE PAINTED PRIOR TO INSTALLING CONDUCTORS.

IV. WIRING DEVICES:

A. SWITCHES AND RECEPTACLES IN LOBBIES, CORRIDORS OR COMMERCIAL SPACES, UNFINISHED AND MECHANICAL SPACES SHALL BE 20 AMP COMMERCIAL GRADE 125 VAC. IN COLOR WITH STAINLESS STEEL COVERPLATES.

B. WEATHERPROOF RECEPTACLES SHALL BE GFCI TYPES WITH GASKETED STAINLESS STEEL KEY LOCKABLE FLIP COVER TYPE COVERPLATES. SURGE SUPPRESSION TYPE OUTLETS IN MDFS AND IDFS SHALL BE HUBBELL #83625 (BLUE) OR EQUAL.

C. RECEPTACLES PROVIDED FOR ATTACHMENT OF CORD AND PLUG EQUIPMENT SHALL BE HEAVY DUTY, SPECIFICATION GRADE, NON-INTERCHANGEABLE, FLUSH MOUNTED TYPES OF THE PROPER NEMA CONFIGURATION TO SERVE THE EQUIPMENT. NEMA CONFIGURATIONS SHALL BE VERIFIED PRIOR TO INSTALLATION OF CIRCUIT CONDUCTORS. CONTRACTOR TO PROVIDE ALL CONNECTION, WIRING, PIGTAILS FOR DISHWASHERS, COOKING RANGES, OVENS AND GARBAGE DISPOSALS.

D. ALL DEVICES SHALL HAVE PROPER PLATES, CARPET FLANGES, TRIMS, RINGS, ESCUTCHEONS, ETC., AS MANUFACTURED BY SAME MANUFACTURER AS DEVICES. ANY TELEPHONE OR OTHER OUTLET WHICH IS NOT EQUIPPED WITH A PLATE FURNISHED BY OTHERS SHALL HAVE ONE PROVIDED BY THIS CONTRACTOR. DEVICE PLATES SHALL BE COLOR AND TYPE AS SHOWN BELOW.

1. FINISHED SPACES DECORA LINE:
   a. WHITE DEVICES
   b. WHITE NYLON PLATES
2. UNFINISHED OR INDUSTRIAL OR COMMERCIAL TYPE SPACES:
   a. GRAY DEVICES
   b. STAINLESS STEEL OR STAMPED GALVANIZED STEEL ON SURFACE MOUNTED BOXES
   c. STAINLESS STEEL PLATES ON FLUSH MOUNTED BOXES

E. MOUNTING HEIGHTS ARE APPROXIMATE. THE EXACT LOCATIONS AND MOUNTING HEIGHTS SHALL BE DETERMINED ON THE JOB AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH ALL TRADES TO INSURE CORRECT INSTALLATION, I.E., OVER COUNTERS IN OR ABOVE BACK-SPLASHES, IN BLOCK WALLS, TILE, AND OTHER SPECIFIC CONSTRUCTION FEATURES. LOCATION OF OUTLETS MOUNTED IN BUILT-INS, MILLWORK, AND CABINETRY SHALL BE VERIFIED. OUTLETS MOUNTED IN KICK OR TOE SPACES SHALL BE MOUNTED HORIZONTALLY. OUTLET BOXES SHALL BE MOUNTED TO PREVENT DEVICE PLATE FROM OVERLAPPING BACKSPLASH, TRIM, TILE, ETC. LOCATE SO DEVICE PLATE WILL LAY FLAT AGAINST SURFACE COMPLETELY AROUND THE PERIMETER OF PLATE.

F. OUTLETS, OTHER THAN THOSE COORDINATED WITH COUNTER TOPS, SHELVES, AND CABINETS, SHALL BE LOCATED WITH THE CENTER LINE OF OUTLET BOXES THE FOLLOWING DISTANCE ABOVE THE FINISHED FLOOR, UNLESS OTHERWISE INDICATED:

1. RECEPTACLES, GENERAL: 1'-6" AFF
2. TELEPHONE OUTLETS: 1'-6" AFF
3. SWITCHES, GENERAL: 4'-0" AFF

V. RACEWAYS

A. SHALL BE GALVANIZED OUTSIDE AND INSIDE BY HOT DIPPING. E.M.T. SHALL BE ELECTRO-GALVANIZED. CONDUITS SHALL BE AS MANUFACTURED BY REPUBLIC, PITTSBURGH STANDARD, WHEATLAND, TRIANGLE, ALLIED, OR YOUNGSTOWN.

B. SHALL BE STANDARD THREADED TYPE, GALVANIZED OUTSIDE AND INSIDE BY HOT DIPPING. THREADLESS AND CLAMP TYPE NOT ACCEPTABLE. SHALL BE AS MANUFACTURED BY RACO, EFCOR, OR APPLETON.

C. SHALL BE STEEL THREADED COMPRESSION TYPE. ALL COUPLINGS AND CONNECTORS SHALL BE EFCOR OR RACO. PRESSURE INDENTED TYPE CONNECTORS OR CAST METAL WILL NOT BE APPROVED FOR ANY LOCATION.

D. CONNECTORS SHALL HAVE PLASTIC INSULATED THROAT INSERTS.

E. THE USE OF METAL CLAD CABLE IS ACCEPTABLE IN LOCATIONS AS ACCEPTED BY THE NEC AND ALL LOCAL JURISDICTIONAL CODES.

F. STEEL METAL CLAD CABLE, TYPE MC, EMPLOYING CIRCUIT CONDUCTORS #12 SOLID TO #2 AWG, SOLID OR STRANDED COPPER WITH THHN INSULATION, AN INSULATED GREEN GROUNDING CONDUCTOR AND GALVANIZED STEEL INTERLOCKED ARMOR CLADDING. THE CABLES SHALL BE SUITABLE FOR USE IN DRY LOCATIONS AT TEMPERATURES NOT EXCEEDING 90° C ON AD CIRCUITS UP TO 600 VOLTS IN ACCORDANCE WITH N.E.C., ARTICLE 334. THE CABLE SHALL BE ONE AND TWO HOUR FIRE RATED PER ANSI/UL 1479 FOR USE IN WALL, CEILING AND FLOOR ASSEMBLIES.

G. FLEXIBLE METALLIC CONDUIT RACEWAYS MAY BE USED TO CONNECT HVAC UNITS LOCATED IN INTERIOR MECHANICAL AREAS. MINIMUM SIZE 3/4".

H. CONDUIT SHALL BE SIZED IN ACCORDANCE WITH THE LATEST NATIONAL ELECTRICAL CODE EXCEPT THAT NO CONDUIT SHALL BE SMALLER THAN 3/4" UNLESS OTHERWISE NOTED. CONDUIT SHALL BE SIZED LARGER THAN REQUIRED ABOVE WHEN SO SHOWN ON THE DRAWINGS OR WHEN REQUIRED BY LOCAL CODE.

I. ANY CONDUIT STUBBED OUT FOR FUTURE SHALL BE CAPPED WITH A PLASTIC CAP AND MARKED WITH A 2" MINIMUM RED METAL TAG WHICH IDENTIFIES CONDUIT ORIGIN. CONDUITS STUBBED UP ABOVE GRADE OR ROOF SHALL BE TAGGED ON THE CONDUIT. CONDUIT STUBBED OUT BELOW GRADE SHALL BE TAGGED ON NEAREST BUILDING WALL, CURB, ETC., DIRECTLY OVER THE CONDUIT RUN. ALL EMPTY CONDUITS SHALL HAVE PULL WIRES.

VI. SCHEDULE 40 RIGID PVC:

A. CONDUIT SHALL BE COMPOSED OF POLYVINYLCHLORIDE AND SHALL BE UL RATED TYPE 40 FOR USE WITH 90EC RATED CONDUCTORS. CONDUIT SHALL CONFORM TO NEMA STANDARDS AND APPLICABLE SECTIONS OF NEC.

B. INSTALLATION OF RIGID NON-METALLIC CONDUIT SHALL COMPLY WITH ARTICLE 347 OF THE NATIONAL ELECTRICAL CODE (NFPA 70) AND THESE SPECIFICATIONS.

C. PROVIDE A CONTINUOUS, INSULATED, GROUNDING CONDUCTOR IN EVERY RIGID, NON-METALLIC RACEWAY EVEN IF NOT SHOWN ON THE DRAWINGS. THE GROUNDING CONDUCTOR SHALL BE CONNECTED TO GROUND AT EACH END OF THE RACEWAY IN ACCORDANCE WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE (NFPA 70).

D. WHERE RIGID NON-METALLIC CONDUIT TRANSITIONS TO METALLIC CONDUIT, THE LOCATION OF THE TRANSITION SHALL BE UNDERGROUND.

E. NO PVC CONDUIT SHALL BE RUN EXPOSED, OR ABOVE GRADE.

VII. WIRE AND CABLE 600 VOLT:

A. CONDUCTORS SHALL HAVE CURRENT CARRYING CAPACITIES AS PER NEC AND WITH 600 VOLT INSULATION, #12 AVERAGE MINIMUM FOR 20 AMP CIRCUITS AND #14 FOR 15 AMP CIRCUITS EXCEPT FOR CONTROLS, AND FIXTURE WIRE. CONDUCTORS SHALL BE COPPER.

B. #12 AND #10 SHALL BE SOLID, TYPE THW/THWN INSULATION.

C. #8 AND LARGER, AND ANY SIZE TO MOTORS SHALL BE STRANDED TYPE THW.

D. SHALL BE MADE WITH T & B STA-KON WIRE JOINTS, PT SERIES, COMPLETE WITH INSULATING CAPS AND INSTALLED WITH WT161 TOOL OR WT2000 TOOL, IDEAL SUPER-NUTS (NOT WIRE NUTS), IDEAL WING NUTS, OR BUCHANAN ELEC. PRODUCTS B CAP OR SERIES 2000 PRES-SURE CONNECTORS COMPLETE WITH NYLON SNAP-ON INSULATORS AND INSTALLED WITH C24 PRESSURE TOOL.

E. ALL JOINTS AND SPLICES IN WIRE SHALL BE MADE WITH APPROVED SOLDERLESS CONNECTORS, AND COVERED SO THAT INSULATION IS OWNER APPROVED EQUAL TO CONDUCTOR INSULATION. SPLICES SHALL NOT BE PERMITTED IN CONTROL, SECURITY, FIRE ALARM, TELEVISION OR COMMUNICATIONS SYSTEMS, OR WHERE OTHERWISE NOTED. SPLICING OF WIRE OR CABLES WILL NOT BE ALLOWED BELOW GRADE, INCLUDING IN BOXES BELOW GRADE.

F. BOTH CONDUCTORS AND CONDUITS SHALL BE CONTINUOUS FROM OUTLET TO OUTLET.

G. IN INSTALLING THE MAIN ELECTRICAL SERVICE, ADDITIONAL SLACK CONDUCTORS SHALL BE PROVIDED AND TERMINATED AS REQUIRED BY ELECTRIC UTILITY FOR CONNECTION TO THEIR EQUIPMENT. FIELD COORDINATE WITH UTILITY PRIOR TO INSTALLING CONDUCTORS.

H. IN INSTALLING PARALLEL CONDUCTORS IT IS MANDATORY THAT ALL CONDUCTORS MAKING UP THE FEEDER BE EXACTLY THE SAME LENGTH, THE SAME SIZE AND THE SAME TYPE OF CONDUCTOR WITH THE SAME INSULATION. FURTHER, EACH GROUP OF CONDUCTORS MAKING UP A PHASE OR NEUTRAL MUST BE BONDED AT BOTH ENDS IN AN APPROVED MANNER.

I. CONDUCTOR SIZES INDICATED ON CIRCUIT HOMERUNS OR IN PANELBOARD SCHEDULES SHALL BE INSTALLED OVER THE ENTIRE LENGTH OF THE CIRCUIT UNLESS NOTED OTHERWISE ON THE DRAWINGS.

J. CONDUCTORS SHALL BE CONTINUOUS AND UNSPLICED WHERE INSTALLED IN CONDUIT. SPLICES SHALL OCCUR ONLY WITHIN WIRING TROUGHS, WIREWAYS, JUNCTION BOXES, OUTLET BOXES, OR EQUIPMENT ENCLOSURES WHERE SUFFICIENT ADDITIONAL ROOM IS PROVIDED FOR ALL SPLICES.

K. EACH BRANCH CIRCUIT AND FEEDER CONDUCTOR SHALL BE COLOR CODED. FOR CONDUCTOR SIZES THRU NO. 6 AWG, THE INSULATION SHALL BE OF THE COLOR AS INDICATED BELOW. COLOR CODE SHALL BE STRICTLY ADHERED TO. FOR CONDUCTOR SIZES NO. 4 AWG AND LARGER, COLOR CODED PHASE TAPE MAY BE APPLIED COMPLETELY AROUND THE CONDUCTOR INSULATION WITHIN 8" OF EACH END OF THE CONDUCTOR AND IN EACH PULL OR JUNCTION BOX OR WHENEVER CONDUCTORS ARE PHYSICALLY EXPOSED TO VIEW. GROUNDING CONDUCTORS AND GROUNDED CONDUCTORS SHALL HAVE INSULATION COLOR AS INDICATED FOR SIZES THROUGH #6 AWG.
120/208 V, 3PHASE,4W

PHASE A,	COLOR: BLACK
PHASE B,	COLOR: RED
PHASE C,	COLOR: BLUE
NEUTRAL,	COLOR: WHITE
GROUND,	COLOR: GREEN

VIII. GROUNDING:

A. THIS SECTION DEALS WITH THE GROUNDING OF SERVICE EQUIPMENT, TRANSFORMERS, NON-CURRENT CARRYING CONDUCTIVE SURFACES OF EQUIPMENT, METAL BUILDING, STRUCTURES AND OTHER EQUIPMENT.

B. ALL GROUNDING CONNECTIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND ALL LOCAL CODES AND REQUIREMENTS. SUCH CODES SHALL BE CONSIDERED MINIMUM REQUIREMENTS AND THE INSTALLATION OF THE GROUNDING SYSTEM SHALL INSURE FREEDOM FROM DANGEROUS SHOCK EXPOSURE AND SHALL PROVIDE A LOW IMPEDANCE GROUND FAULT PATH TO PERMIT OPERATION OF OVERCURRENT AND GROUND FAULT PROTECTIVE DEVICES.

C. ALL SERVICE AND EQUIPMENT GROUNDING CONDUCTORS, AND BONDING JUMPERS SHALL BE INSULATED COPPER, TYPE THHN, THWN, OR THW CONDUCTORS (UNLESS NOTED OTHERWISE) AND SHALL BE SIZED IN ACCORDANCE WITH THE APPLICABLE PORTIONS OF ARTICLES 250 AND 517 OF THE NATIONAL ELECTRICAL CODE. GROUNDING CONDUCTORS #6 AWG AND SMALLER SHALL HAVE A GREEN COLOR INSULATION. ALL GROUNDING CONDUCTORS #4 AWG AND LARGER SHALL BE ADEQUATELY IDENTIFIED WITH A GREEN TRACER AND/OR GREEN COLORED TAPE AT EACH END OF THE GROUNDING CONDUCTOR AND AT EACH PULLBOX OR OTHER ACCESSIBLE LOCATION.

D. THE MAIN SERVICE GROUNDING ELECTRODE SYSTEM SHALL CONSIST OF THE FOLLOWING ITEMS BONDED TOGETHER BY THE GROUNDING ELECTRODE CONDUCTORS IN ACCORDANCE WITH NEC ARTICLE 250, PART H:

1. THE MAIN UNDERGROUND COLD WATER PIPE, IF METAL, NEC 250- 81(A)
2. METAL FRAME OF BUILDING WHERE AVAILABLE, NEC 250-81(B)
3. CONCRETE ENCASED ELECTRODE, NEC 250-81(C)
4. THE BUILDING LIGHTNING PROTECTION SYSTEM.

E. THE NEUTRAL CONDUCTOR SHALL BE GROUNDED AT THE SERVICE ENTRANCE MAIN DISCONNECT, AND AT EACH SEPARATELY DERIVED SYSTEM ONLY PER NEC ARTICLE 250.

F. A #4 INSULATED COPPER CONDUCTOR INSTALLED IN 3/4" CONCEALED CONDUIT SHALL BE CONNECTED FROM THE BUILDING GROUNDING ELECTRODE SYSTEM TO EACH BUILDING TELEPHONE TERMINAL/DATA IDF TERMINAL BOARDS, OR CABINETS, FIRE ALARM CONTROL CABINETS, CCTV SYSTEM CABINETS, EMS CABINETS, AND SECURITY SYSTEM CABINETS. TERMINATE ON AN APPROPRIATELY SIZED (8) TERMINAL MULTI-CONDUCTOR CONNECTION GROUNDING LUG LOCATED WITHIN CABINET OR ON TERMINAL BOARDS.

IX. PANELBOARDS:

A. PANELBOARDS SHALL BE DEAD FRONT TYPE AND SHALL BE IN ACCORDANCE WITH UNDERWRITERS' LABORATORIES, INC., STANDARD FOR PANELBOARDS AND ENCLOSING CABINETS AND SO LABELED.

B. PANELBOARDS SHALL BE FACTORY ASSEMBLED WITH BRANCH BREAKERS ARRANGED AS SHOWN IN SCHEDULES. BREAKERS SHALL BE NUMBERED VERTICALLY BEGINNING TOP LEFT. BREAKER NUMBERS SHALL BE PERMANENTLY ATTACHED TO TRIM. PANEL SHALL BE MINIMUM 20" WIDE OR 16" FOR RESIDENTIAL LOAD CENTERS, UNLESS SPECIFICALLY NOTED OTHERWISE.

C. ANY SPECIAL REQUIREMENTS ON THE DRAWINGS OR SCHEDULES, SUCH AS GROUND FAULT PROTECTION, ARC-FAULT CIRCUIT BREAKERS, INCREASED INTERRUPTING CAPACITY, SHUNT TRIP TYPE CIRCUIT BREAKER, FEED THRU PANELBOARDS, ETC., SHALL SUPERSEDE THESE SPECIFICATIONS, BUT ONLY INSOFAR AS THAT PARTICULAR REQUIREMENT IS CONCERNED AND AS INDICATED.

D. WIRING IN PANELBOARD GUTTERS SHALL BE DONE IN A NEAT AND WORKMANLIKE MANNER. WIRING SHALL BE GROUPED INTO NEAT BUNDLES AND SECURED WITH NYLON TIE WRAPS.

E. PROVIDE TYPE WRITTEN DIRECTORIES FOR EACH PANELBOARD INDICATING THE LOAD SERVED.

X. LIGHTING FIXTURES:

A. LIGHTING FIXTURES SHALL BE FURNISHED AS SHOWN ON DRAWINGS AND IN THE LIGHTING FIXTURE SCHEDULE. IT SHALL SPECIFICALLY BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY EXACT TYPE CEILING AND RECESSING DEPTH OF ALL RECESSED FIXTURES AND TO FURNISH THE MOUNTING TRIMS AND ACCESSORIES OF THE SPECIFIED AND/OR APPROVED FIXTURES FOR THE CEILING TO BE INSTALLED. LIGHTING FIXTURES SHALL BE PROVIDED WITH JOINER PLATES, END CAPS, RETAINING CLIPS, PLASTER FRAMES, HOUSINGS, AND ALL OTHER ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION.

B. ALL FIXTURES SHALL BE EQUIPPED WITH LAMPS UNLESS OTHERWISE NOTED. LAMPS SHALL BE INSTALLED NEW, IMMEDIATELY PRIOR TO FINAL INSPECTION, AND SHALL NOT BE USED FOR CONSTRUCTION.

C. FIXTURE CATALOG NUMBER REPRESENTS BASIC LUMINARY SIZE, TYPE, QUALITY AND CONFIGURATION. ACCESSORIES SHALL BE FURNISHED WITH EACH UNIT AS REQUIRED FOR A COMPLETE FINISHED INSTALLATION. BASIC ACCESSORIES SHALL INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

1. JOINING PLATES, END CAPS, RETAINING CLIPS, ETC.
2. TRIMS FOR RECESSED FIXTURES.
3. FIXTURE STEMS AND CANOPIES FINISHED TO MATCH FIXTURES.
4. SPECIAL MOUNTING BRACKETS, TENONS, SLIP FILTERS, CONCRETE BASES, POLES, ANCHOR BOLTS, JUNCTION BOXES, AND STANCHIONS FOR ALL EXTERIOR LIGHTING FIXTURES. PROVIDE ALL WEATHERPROOFING FOR ALL LIGHTING FIXTURES TO BE INSTALLED IN EXTERIOR LOCATIONS.

D. STRUCTURAL SUPPORT OF ALL FIXTURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

E. THE SYSTEM GROUNDING CONDUCTOR SHALL BE SECURED TO EACH FIXTURE BODY BY MEANS OF A BONDING SCREW.

F. OWNER/DEVELOPER WILL HAVE RIGHT TO RELOCATE LIGHTING FIXTURES OR LIGHTING SWITCHES WITHIN 72" OF LOCATION SHOWN ON FIRST WALK-THROUGH AT NO ADDITIONAL EXPENSE. COORDINATE THE WALK-THROUGH PRIOR TO THE INSTALLATION OF THE WIRING.

XI. FIRE ALARM SYSTEMS

A. THIS SECTION INCLUDES AUTOMATIC ADDRESSABLE VOICE EVACUATION FIRE ALARM SYSTEMS, INCLUDING FIRE ALARM CONTROL PANEL, AND REMOTE ANNUNCIATOR, MANUAL PULL STATIONS, HEAT AND SMOKE DETECTORS, FIRE ALARM AUDIO, VISUAL SIGNAL EQUIPMENT, CONTROLS, AND SURGE PROTECTION DEVICES. COORDINATE ALL WIRING AND DEVICE INTERFACES WITH OWNER'S REPRESENTATIVE. THE FIRE ALARM SYSTEM SHALL MEET THE LATEST ADOPTED EDITION OF NFPA 72 WITH ALL LOCAL AND STATE AMENDMENTS AND FEDERAL ADA REQUIREMENTS. ALL DEVICES SHALL BE WHITE IN COLOR WITH RED LETTERING.

B. GENERAL: COMPLETE, ZONED, NONCODED, ADDRESSABLE, MICROPROCESSOR-BASED FIRE DETECTION ALARM SYSTEM WITH MANUAL AND AUTOMATIC ALARM INITIATION SIGNALS FROM A SUPERVISED FIRE ALARM SOUND DISTRIBUTION SYSTEM. DEVICES LOCATED OUTDOORS SHALL BE SPECIFICALLY DESIGNED FOR EXTERIOR SERVICE. PROVIDE BATTERY BACK-UP BASED UPON TOTAL LOAD PER NFPA 72. ALARM SHALL ACHIEVE A MINIMUM OF 80 DB THROUGHOUT OCCUPIABLE SPACES AND MEET ADA REQUIREMENTS.

C. TRANSMISSION TO REMOTE CENTRAL STATION: PROVIDE WIRING TO AUTOMATICALLY ROUTE AN ALARM, SUPERVISORY, AND TROUBLE SIGNALS TO THE GRAND SANDESTIN CENTRAL STATION SERVICE TRANSMITTER LOCATED IN MAIN FIRE ALARM CONTROL PANEL USING LISTED AND APPROVED EQUIPMENT. PROVIDE ALL NECESSARY WIRING CONNECTION BY THIS CONTRACTOR.

D. GENERAL ALARM: A SYSTEM GENERAL ALARM INCLUDES:

1. INDICATING THE GENERAL ALARM CONDITION AT THE FACP AND THE INTEGRAL ANNUNCIATOR.
2. IDENTIFYING THE DEVICE THAT IS THE SOURCE OF THE ALARM AT THE FACP AND THE ANNUNCIATOR.
3. INITIATING AUDIBLE AND VISIBLE ALARM SIGNALS THROUGHOUT THE BUILDING.
4. STOPPING HVAC SUPPLY AND RETURN FANS.
5. INITIATING TRANSMISSION OF ALARM SIGNAL TO REMOTE CENTRAL STATION.
6. MANUAL STATION ALARM OPERATION INITIATES A GENERAL ALARM.
7. SMOKE OR HEAT DETECTION INITIATES A GENERAL ALARM.

E. INSTALLER QUALIFICATIONS: A CERTIFIED FACTORY-TRAINED TECHNICIAN IS TO PERFORM THE WORK OF THIS SECTION, MAKING UP ALL TERMINAL CABINETS, INSTALLING ALL SURGE SUPPRESSORS, AND INCLUDING LANDING AND TESTING EACH WIRE, MOUNTING AND CONNECTING ALL DEVICES, PROGRAMMING THE MAIN FACP, TROUBLE SHOOTING AND CERTIFYING THE FINAL SYSTEM. THE CONTRACTOR SHALL BE CURRENTLY LICENSED BY THE STATE OF FLORIDA FOR FIRE ALARM WORK, AND SHALL BE A CERTIFIED FACTORY-TRAINED TECHNICIAN. CONTRACTOR IS RESPONSIBLE FOR OBTAINING NECESSARY FIRE ALARM PERMITS FROM AUTHORITY HAVING JURISDICTION.

F. FIRE ALARM DEVICES AND EQUIPMENT TO BE INSTALLED OUTDOORS IN EXTERIOR LOCATIONS SHALL BE SPECIFICALLY DESIGNED AND U.L. LISTED AS WEATHER AND WATERPROOF. PROVIDE WEATHERPROOF NEOPRENE GASKETS BETWEEN WALL MOUNTING SURFACE AND FIRE ALARM DEVICE FOR ALL DEVICES MOUNTED OUTDOORS.

G. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS. ALL DEVICES SHALL BE PROVIDED FOR AND MANUFACTURED BY SIMPLEX, EST, NOTIFIER, OR PYROTRONICS.

H. DESCRIPTION: DOUBLE-ACTION NON-BREAK GLASS, ADDRESSABLE TYPE, FABRICATED OF METAL OR PLASTIC, AND FINISHED IN WHITE WITH MOLDED, RAISED-LETTER OPERATING INSTRUCTIONS OF RED COLOR. ADDRESS OF UNIT SHALL BE FIELD-SETTABLE WITHOUT SPECIAL TOOLS.

I. INITIATION CIRCUITS (LOOP): INITIATION LOOP CONDUCTORS SHALL BE WEST PENN #D991 FOR 3000'-0" IN LENGTH AND LESS. WEST PENN #D995 SHALL BE USED FOR CIRCUITS OVER 3000'-0" IN LENGTH. BELOW GRADE, WET OR DAMP LOCATION INSTALLED CABLE, INCLUDING CABLE INSTALLED ON THE TOP OF EXTERIOR WALKWAYS, SHALL BE WEST PENN AQUASEAL MULTI-CONDUCTOR (14 GAUGE), UNLESS NOTED OTHERWISE, SHALL BE INSTALLED IN CONDUIT.

J. SIGNAL CIRCUITS: SIGNAL CIRCUITS SHALL BE #12 AWG THWN 19 STRAND COPPER.

K. ANNUNCIATOR CIRCUITS: #12 AWG THWN 19 STRAND COPPER.

L. EACH AND EVERY WIRE SHALL BE LABELED AT EACH END WITH SLC #, CHANNEL # OR SIGNAL #. EACH SEPARATE CIRCUIT, INITIATION, SIGNAL AND AUXILIARY SHALL HAVE A SPECIFIC NUMBER. LABEL EACH CONDUCTOR BY THIS CIRCUIT NUMBER AT THE CONTROL CONNECTIONS AND AT EACH TERMINAL CONNECTION IN THE TERMINAL CABINETS.

M. PROVIDE COMPLETE SIGNAL, SPEAKER DATA LOOP AND POWER SIDE SURGE SUPPRESSION MODULES ON ALL WIRING ENTERING OR LEAVING EACH BUILDING. THE CONTRACTOR SHALL REPAIR ANY DAMAGED COMPONENTS OR WIRING DUE TO TRANSIENT VOLTAGE SURGES FOR A PERIOD OF ONE YEAR FROM SUBSTANTIAL COMPLETION DATE AT NO ADDITIONAL COST.

N. PROVIDE RELAYS FOR OTHER LOCAL CONTROL SUCH AS HVAC SHUTDOWN AND/OR STAIR PRESSURIZATION FAN INITIATION, ROLL-UP DOOR ACTIVATION, FIRE/SMOKE DAMPER RELEASE OR SMOKE EVACUATION INITIATION. RELAYS SHALL BE 10 AMP RATED RELAYS. UPON ACTIVATION OF THE FIRE ALARM SYSTEM, THE RELAY SHALL ACTIVATE AND SHUTDOWN THE CONTROLLED EQUIPMENT. LOCATE ALL RELAYS WITHIN 36" OF EQUIPMENT CONTROLLED. PROVIDE WEATHERPROOF UNITS WHERE INDICATED OR INSTALL IN WEATHERPROOF BOXES.

O. PROVIDE REMOTE AUDIO/VISUAL POWER SUPPLY AND BATTERY CHARGER IN A SELF-CONTAINED LOCKABLE CABINET. PROVIDE (4) STYLE Y NOTIFICATION CIRCUITS, AND AN INTEGRAL BATTERY CHARGER. PROVIDE UNIT WITH INTEGRAL 120 VOLT INPUT A/C POWER AND INTEGRAL LEAD ACID BATTERY. PROVIDE SURGE SUPPRESSION FOR 120 VOLT BRANCH CIRCUIT AND PROVIDE A 20 AMP 125 VAC SPECIFICATION GRADE KEY TYPE SWITCH TO CONTROL THE POWER TO THE SIGNAL EXPANDER FOR MAINTENANCE. IDENTIFY THE 120 VOLT CIRCUIT SERVING THE SWITCH (I.E. PANELBOARD AND BRANCH CIRCUIT NUMBER).

P. PROVIDE A FLUSH MOUNTED LCD REMOTE ANNUNCIATOR. UNIT SHALL BE NO LARGER THAN 12" TALL X 16" LONG, AND SHALL BE COMPLETELY FLUSH MOUNTED IN THE MAIN LOBBY OF THE FACILITY.

Q. INSTALLATION: CONTRACTOR SHALL PROVIDE ALL CONDUIT, WIRING RELAYS, CONTROLS AND ASSOCIATED DEVICES AND DETECTORS FOR PHASE I AND PHASE II RECALL PER FLORIDA BUILDING CODE (FBC) REQUIREMENTS AND STATE ELEVATOR INSPECTOR REQUIREMENTS.

R. WIRING METHOD: INSTALL WIRING IN METAL RACEWAY. CONCEAL RACEWAY EXCEPT IN UNFINISHED SPACES AND AS INDICATED.

S. NO FIRE ALARM CONDUCTORS SHALL BE INSTALLED BELOW GRADE WITH THE EXCEPTION OF CONDUCTORS ROUTED FROM BUILDING TO BUILDING, AS NOTED, OR WHERE ABSOLUTELY NECESSARY AND WITH PRIOR WRITTEN PERMISSION OF THE OWNER AND ENGINEER. ALL OTHER WIRING SHALL BE OVERHEAD INSTALLED IN CONCEALED CONDUIT MINIMUM 1/2". NO UNDERGROUND, ON GROUND OR UNDERGROUND SPLICES IN PULL BOXES WILL BE ALLOWED.

T. MOUNTING BOXES FOR SPEAKERS/HORN/STROBES, CONTROL AND MONITOR MODULES SHALL BE INSTALLED IN DEEP JUNCTION BOXES WITH EXTENSION RING ATTACHED.

U. MINIMUM SYSTEM TESTS: TEST THE SYSTEM ACCORDING TO THE PROCEDURES OUTLINED IN NFPA 72. MINIMUM REQUIRED TESTS ARE AS FOLLOWS:

1. VERIFY THE ABSENCE OF UNWANTED VOLTAGES BETWEEN CIRCUIT CONDUCTORS AND GROUND.
2. MEGGER TEST ALL CONDUCTORS OTHER THAN THOSE INTENTIONALLY AND PERMANENTLY GROUNDED WITH ELECTRONIC COMPONENTS DISCONNECTED. TEST FOR RESISTANCE TO GROUND. REPORT READINGS OF LESS THAN 1-MEGOHM FOR EVALUATION.
3. TEST ALL CONDUCTORS FOR SHORT CIRCUITS UTILIZING AN INSULATION-TESTING DEVICE.
4. WITH EACH CIRCUIT PAIR, SHORT CIRCUIT AT THE FAR END OF THE CIRCUIT AND MEASURE THE CIRCUIT RESISTANCE WITH AN OHMMETER. RECORD THE CIRCUIT RESISTANCE OF EACH CIRCUIT ON THE RECORD DRAWINGS.
5. VERIFY THE CONTROL UNIT IS IN THE NORMAL CONDITION AS DETAILED IN THE MANUFACTURER'S OPERATING AND MAINTENANCE MANUAL.
6. TEST INITIATING AND INDICATING CIRCUITS FOR PROPER SIGNAL TRANSMISSION UNDER OPEN CIRCUIT CONDITIONS. ONE CONNECTION EACH SHOULD BE OPENED AT NOT LESS THAN 10 PERCENT OF THE INITIATING AND INDICATING DEVICES. OBSERVE PROPER SIGNAL TRANSMISSION ACCORDING TO CLASS OF WIRING USED.
7. TEST EACH INITIATING AND INDICATING DEVICE FOR ALARM OPERATION AND PROPER RESPONSE AT THE CONTROL UNIT. TEST SMOKE DETECTORS WITH ACTUAL PRODUCTS OF COMBUSTION.
8. TEST THE SYSTEM FOR ALL SPECIFIED FUNCTIONS ACCORDING TO THE MANUFACTURER'S OPERATING AND MAINTENANCE MANUAL. SYSTEMATICALLY INITIATE SPECIFIED FUNCTIONAL PERFORMANCE ITEMS AT EACH STATION INCLUDING MAKING ALL POSSIBLE ALARM AND MONITORING INITIATIONS AND USING ALL COMMUNICATIONS OPTIONS. FOR EACH ITEM, OBSERVE RELATED PERFORMANCE AT ALL DEVICES REQUIRED TO BE AFFECTED BY THE ITEM UNDER ALL SYSTEM SEQUENCES. OBSERVE INDICATING LIGHTS, DISPLAYS, SIGNAL TONES, AND ANNUNCIATOR INDICATIONS. OBSERVE ALL VOICE AUDIO FOR ROUTING, CLARITY, QUALITY, FREEDOM FROM NOISE AND DISTORTION, AND PROPER VOLUME LEVEL.
9. TEST BOTH PRIMARY POWER AND SECONDARY POWER. VERIFY, BY TEST, THE SECONDARY POWER SYSTEM IS CAPABLE OF OPERATING THE SYSTEM FOR THE PERIOD AND IN THE MANNER SPECIFIED.

V. OCCUPANCY ADJUSTMENTS: WHEN REQUESTED WITHIN ONE YEAR OF DATE OF SUBSTANTIAL COMPLETION, PROVIDE ON-SITE ASSISTANCE IN ADJUSTING SOUND LEVELS AND ADJUSTING CONTROLS AND SENSITIVITIES TO SUIT ACTUAL OCCUPIED CONDITIONS. PROVIDE UP TO FIVE PREPAID VISITS TO THE SITE FOR THIS PURPOSE.

W. PROVIDE THE SERVICES OF A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE TO DEMONSTRATE THE SYSTEM AND TRAIN OWNER'S MAINTENANCE PERSONNEL AS SPECIFIED BELOW:

1. TRAIN OWNER'S MAINTENANCE PERSONNEL IN THE LOCATION OF DEVICES, BOXES, PROCEDURES AND SCHEDULES INVOLVED IN OPERATING, TROUBLESHOOTING, SERVICING, AND PREVENTIVE MAINTAINING OF THE SYSTEM. PROVIDE A MINIMUM OF 4 HOURS TRAINING. TRAINING SHALL INCLUDE A COMPLETE PROJECT WALKDOWN WITH OWNER'S AUTHORIZED REPRESENTATIVE TO IDENTIFY DEVICE LOCATIONS, JUNCTION BOX LOCATIONS AND SURGE SUPPRESSION MODULE LOCATIONS.
2. SCHEDULE TRAINING WITH THE OWNER AT LEAST SEVEN WORKING DAYS IN ADVANCE.

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SEAL: NOT FOR REGULATORY APPROVAL, PERMITTING OR CONSTRUCTION UNLESS THE ARCHITECTS OR ENGINEER'S SIGNATURE AND SEAL APPEAR BELOW

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NO DATE REMARKS
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PROJECT NO: 2019.0172
DATE: APRIL 08, 2019

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CHECKED: BLS DRAWN: NMO