STATE OF FLORIDA. 2. LIFE SAFETY CODE - NFPA 101.

12. FLORIDA ACCESSIBILITY CODE.

- 3. UNDERWRITERS LABORATORIES, INC. PUBLICATIONS NATIONAL FIRE PROTECTION ASSOCIATION (NFPA).
- AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI). NATIONAL ELECTRICAL CODE - NFPA 70.
- 7. INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE).
- NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION (NEMA). REQUIREMENTS OF LOCAL POWER COMPANY.
- 10. 2014 FLORIDA BUILDING CODE WITH 2009 SUPPLEMENT. 11. THE AMERICANS WITH DISABILITIES ACT (ADA)
- REFER TO THE ARCHITECTURAL, MECHANICAL, PLUMBING, AND FIRE PROTECTION DRAWINGS FOR RELATED INFORMATION AND ADDITIONAL INSTALLATION REQUIREMENTS TO BE PERFORMED AS PART OF THE WORK.
- REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- REFER TO MECHANICAL DRAWINGS AND SPECIFICATIONS FOR THE REQUIREMENTS ASSOCIATED WITH WIRING AND CONNECTION OF INTERLOCKING AND CONTROLS OF MECHANICAL UNITS AND
- 5. COORDINATE OUTLET BOX LOCATIONS WITH MASONRY TO AVOID CUTTING ON MORTAR JOINTS.
- ALL MOUNTING HEIGHTS SHOWN ARE TO THE CENTERLINE OF THE DEVICE UNLESS NOTED OTHERWISE. VERIFY ALL OUTLET LOCATIONS ON THE JOB PRIOR TO ROUGH-IN.
- EACH DATA, TELEPHONE, VIDEO OR OTHER SYSTEMS OUTLET REQUIRES 1" C. WITH PULL STRING STUBBED TO TB UNLESS OTHERWISE NOTED ON PLANS. PROVIDE INSULATED BUSHINGS ON ALL CONDUITS. LABEL CONDUIT TO IDENTIFY ITS INTENDED USE (IE: TELEPHONE, DATA, ETC.).
- EACH BRANCH CIRCUIT RACEWAY SHALL HAVE A FULL SIZE EQUIPMENT GROUND CONDUCTOR. WHERE ISOLATED GROUND CIRCUITS ARE SHOWN ON THE PLANS, PROVIDE AN ISOLATED GROUND CONDUCTOR THROUGHOUT THE LENGTH OF THE CIRCUIT IN ADDITION TO THE PHASE, NEUTRAL AND EQUIPMENT GROUND CONDUCTORS.
- PROVIDE 18" LONG (MIN). CONDUIT SLEEVES THRU ALL WALLS WHERE CABLES ARE INDICATED OR REQUIRED TO PASS THRU WALLS. PROVIDE BUSHINGS ON BOTH ENDS. SIZE CONDUIT FOR CABLES INSTALLED. AT CABLE TRAYS, PROVIDE ONE 4" CONDUIT SLEEVE FOR EACH 4" WIDTH OF CABLE TRAY.
- 10. ALL BRANCH CIRCUIT HOMERUNS SHALL BE ROUTED IN 3/4"C. MINIMUM. MC CABLE IS NOT ALLOWED.
- 11. LIGHT SWITCHES SHALL BE MOUNTED 48 INCHES ABOVE FINISHED FLOOR TO CENTER LINE OF DEVICE, UNLESS NOTED OTHERWISE.
- RECEPTACLES SHALL BE LOCATED 18 INCHES ABOVE FINISHED FLOOR TO CENTER LINE OF DEVICE, UNLESS NOTED OTHERWISE. ABOVE-COUNTER RECEPTACLES SHALL BE MOUNTED 6" ABOVE BACK SPLASH TO CENTERLINE OF DEVICE UNLESS NOTED OTHERWISE.
- 13. EQUIPMENT SHALL BE OF MATERIALS SUITABLE FOR AND RATED FOR THE ENVIRONMENT IN WHICH THEY ARE TO BE INSTALLED, WITH APPROPRIATE NEMA ENCLOSURE RATING.
- A. WORKING CLEARANCES AND DEDICATED SPACE FOR ELECTRICAL EQUIPMENT SHALL BE IN COMPLIANCE WITH NEC 110. SUBMIT COORDINATION DRAWINGS OF ELECTRICAL ROOMS SHOWING COMPLIANCE.
- WHEN ELECTRICAL BOXES ARE LOCATED IN VERTICAL FIRE-RESISTIVE ASSEMBLIES, (CLASSIFIED AS FIRE/SMOKE AND SMOKE PARTITIONS), THEY SHALL BE INSTALLED WITHOUT AFFECTING THE FIRE CLASSIFICATION. ALL OF THE FOLLOWING CONDITIONS SHALL BE MET:
- A. ALL ELECTRICAL BOXES SHALL BE METALLIC.
- B. BOX OPENING SHALL OCCUR ONLY ON ONE SIDE OF FRAMING SPACE.
- C. BOX OPENING SHALL NOT EXCEED 16 SQUARE INCHES.
- D. ALL CLEARANCES BETWEEN OUTLET BOX AND GYPSUM BOARD SHALL BE COMPLETELY FILLED WITH JOINT COMPOUND (OR OTHER APPROVED MATERIAL).
- E. PROVIDE A WALL AROUND OUTLETS LARGER THAT 16 SQUARE INCHES. THE INTEGRITY OF THE WALL RATING SHALL BE MAINTAINED.
- F. THE TOTAL AGGREGATE SURFACE AREA OF THE BOXES SHALL NOT EXCEED 100 SQUARE INCHES PER 100 SQUARE FEET.
- G. OUTLET BOXES LOCATED ON OPPOSITE SIDES OF FIRE-RESISTIVE ASSEMBLIES SHALL BE
- SEPARATED BY A MINIMUM HORIZONTAL DISTANCE OF 24 INCHES.
- H. OUTLET BOXES SHALL BE SECURELY FASTENED TO WALL FRAMING MEMBERS.
- I. THE OPENING IN THE GYPSUM BOARD FACING SHALL BE CUT NOT TO EXCEED 1/8 INCH BETWEEN THE EDGES OF THE OUTLET BOX AND THE EDGES OF THE OPENING.
- ALL CONDUCTORS INSTALLED ABOVE THE ROOF SHALL BE DERATED FOR AMBIENT TEMPERATURE INCLUDING AMBIENT TEMPERATURE ADJUSTMENT IN ACCORDANCE WITH ARTICLE 310.15 (B)(2)(c).
- PROVIDE GFCI PROTECTION FOR ALL RECEPTACLES FOR DRINKING FOUNTAIN, WATER COOLERS. HEAT TRACE, ELEVATOR ROOMS AND SHAFTS, MECHANICAL ROOM, JANITOR CLOSETS, OUTDOORS, KITCHENS AND ALL OTHER LOCATIONS WITHIN 6 FEET OF A SINK OR OTHER WATER SOURCE IN ACCORDANCE WITH THE NEC.
- PROVIDE SURGE PROTECTION AS REQUIRED FOR NFPA 780 4.18.2 FOR ANY POWER OR LOW VOLTAGE (FIRE ALARM, TELECOMM, ETC.) CIRCUIT EXITING THE BUILDING.
- 18. ALL CONDUIT IN PUBLIC AREAS SHALL BE CONCEALED UNLESS NOTED OTHERWISE.
- 19. ALL WIRING DEVICES SHALL BE MOUNTED VERTICALLY, UNLESS NOTED OTHERWISE.
- 20. ALL RECEPTACLES SHALL BE MOUNTED SUCH THAT THE GROUND PIN IS MOUNTED UP.
- 21. ALL BRANCH CIRCUIT CONDUITS SHALL CONTAIN A MINIMUM OF (2) #12 AWG INSULATED COPPER CONDUCTORS, PLUS A MINIMUM OF (1) #12 AWG GROUND WIRE UNLESS NOTED OTHERWISE. ALL BRANCH CIRCUITS AND FEEDERS SHALL HAVE INDIVIDUAL NEUTRAL
- COORDINATE THE LOCATION OF ALL DEVICES AND BOXES WITH WINDOWS, BUILT-INS, AND CABINETS PRIOR TO INSTALLATION OF CONDUITS OR BOXES, CONTRACTOR SHALL CONSULT ALL CONTRACT DRAWINGS TO ASCERTAIN ANY CONFLICTS PRIOR TO BIDDING. CONTRACTOR SHALL OBTAIN CLARIFICATION FROM THE ARCHITECT/ENGINEER. CONTRACTOR SHALL NOT BE ENTITLED TO ADDITIONAL COMPENSATION FOR WORK REQUIRED TO RELOCATE OUTLET BOXES THAT ARE/OR BECOME NECESSARY FOR COORDINATION WITH OTHER TRADES WORK.

- 23. COORDINATE HEIGHTS OF WALL MOUNTED LIGHTING FIXTURES TO CLEAR MIRRORS. CABINETS AND
- PROVIDE A PERMANENT SIGN ON THE MAIN ELECTRICAL ROOM DOOR TO THE BUILDING STATING THAT THE MAIN SERVICE DISCONNECTING MEANS ARE LOCATED INSIDE.
- 25. COORDINATE INSTALLATION OF ANY DEVICE LOCATED IN MILLWORK WITH ARCHITECTURAL DRAWINGS AND DETAILS PRIOR TO ROUGHING IN BOXES AND ROUTING CONDUIT.
- 26. LOCATIONS OF EQUIPMENT SPECIFIED BY OTHER TRADES OR PROVIDED BY OWNER ARE APPROXIMATE.
- COORDINATE EXACT LOCATIONS IN FIELD PRIOR TO ROUGHING IN AND ROUTING CONDUIT. 27. SEE ARCHITECTURAL REFLECTED CEILING PLANS AND ELEVATIONS FOR EXACT LOCATIONS OF LIGHT
- FIXTURES IN CEILINGS, AND ON INTERIOR AND EXTERIOR WALLS. 28. RECEPTACLES FOR ELECTRIC WATER COOLERS SHALL BE LOCATED DIRECTLY BEHIND ELECTRIC WATER
- COOLER, CONCEALED FROM DIRECT VIEW. PROVIDE DIMMABLE BALLASTS FOR ALL DIMMABLE FLUORESCENT LIGHT FIXTURES, AND A DIMMER
- 30. CONTRACTOR SHALL UPSIZE BRANCH CIRCUIT WIRE SIZE AS REQUIRED TO COMPENSATE VOLTAGE DROP FROM LENGTHENING OF CIRCUITS DUE TO FIELD ROUTING. FINAL INSTALLATION SHALL MEET FLORIDA BUILDING CODE REQUIREMENT OF: MAXIMUM BRANCH CIRCUIT VOLTAGE DROP OF 3%:

MIN. CONDUCTOR

#12 AWG

#10 AWG

#8 AWG

UP SIZE FOR VOLTAGE DROP

31. REFER TO VOLTAGE DROP CHART BELOW FOR CONDUCTOR SIZES FOR BRANCH CIRCUITS

120 VOLT (BASIS 1500 WATT) CIRCUIT LENGTH 0 - 70' 71' - 115' 116' - 180'

SWITCH RATED NOT LESS THAN 2000 WATTS.

- 181' AND ABOVE TO BE SUBMITTED BY CONTRACTOR AND APPROVED BY ENGINEER.
- EMERGENCY BALLAST BATTERY PACKS AND EMERGENCY EXIT SIGNS, WHERE USED, SHALL BE CONNECTED TO UNSWITCHED LEG OF CIRCUIT DESIGNATED ON DRAWINGS.
- 33. PROVIDE HACR RATED CIRCUIT BREAKERS FOR ALL HVAC EQUIPMENT.
- WITHIN 30 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE CONTRACTOR SHALL PROVIDE RECORD DRAWINGS OF THE ACTUAL INSTALLATION INCLUDING: SINGLE LINE DIAGRAM OF THE BUILDING ELECTRICAL DISTRIBUTION SYSTEM, SITE PLANS AND ALL ELECTRICAL FLOOR PLANS.
- CONTRACTOR SHALL PROVIDE AN OPERATING MANUAL AND MAINTENANCE MANUAL TO OWNER. THE MANUAL SHALL INCLUDE AT A MINIMUM: (1) SUBMITTAL DATA STATING EQUIPMENT RATING AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE. (2) OPERATION AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE. REQUIRED ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY IDENTIFIED. (3) NAMES AND ADDRESSES OF AT LEAST ONE QUALIFIED SERVICE AGENCY.
- CONTRACTOR SHALL PROVIDE TEMPORARY ELECTRICAL SERVICE AS REQUIRED FOR USE BY ALL TRADES DURING CONSTRUCTION. REMOVE TEMPORARY POWER AT THE COMPLETION OF THE PROJECT. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS TO OBTAIN TEMPORARY ELECTRICAL SERVICE.
- ALL CONDUCTORS SHALL BE COPPER. ALUMINUM CONDUCTORS ARE NOT PERMITTED.
- 38. RECEPTACLES IN DAMP/WET LOCATIONS SHALL BE LISTED WEATHER RESISTANT.
- PROVIDE AN ADDRESSABLE FIRE ALARM SYSTEM PER NFPA AND ALL STATE AND LOCAL CODE REQUIREMENTS. COMPLY WITH NFPA 72 AND ADA REQUIREMENTS. ALL WIRE SHALL BE INSTALLED IN CONDUIT. STATE CERTIFIED AND LICENSED FIRE ALARM SYSTEMS CONTRACTOR SHALL PREPARE AND SUBMIT SIGNED AND SEALED DRAWINGS FOR LOCAL JURISDICTION PERMITTING AUTHORITY.
- 40. FIELD VERIFY LOCATION OF AREA SMOKE DETECTORS AND HEAT DETECTORS. DO NOT LOCATE WITHIN 36" OF A HVAC DIFFUSER (SUPPLY OR RETURN), IN A DIRECT AIR FLOW PATH OR WITHIN 36" OF A SPRINKLER HEAD. SMOKE DETECTORS FOR DOOR RELEASE SHALL BE LOCATED ON THE CENTER LINE OF THE DOOR AND A MAXIMUM OF 5 FEET FROM THE DOOR. THE MINIMUM DISTANCE FROM THE DOOR IS THE DEPTH OF THE WALL SECTION ABOVE THE DOOR, BUT NOT LESS THAN 12".
- LABEL REMOTE ALARM INDICATOR FOR DUCT MOUNTED SMOKE DETECTORS (IE: RTU-1 SUPPLY, RTU-2 RETURN. FIRE/SMOKE DAMPER. ETC.), DUCT DETECTORS SHOULD BE LOCATED IN THE AREA BETWEEN 6 AND 10 DUCT EQUIVALENT DIAMETERS OF STRAIGHT, UNINTERRUPTED DUCTWORK. DUCT DETECTORS FOR FIRE/SMOKE DAMPERS SHOULD BE LOCATED BETWEEN THE LAST INLET OR OUTLET UPSTREAM OF THE DAMPER AND THE FIRST INLET OR OUTLET DOWNSTREAM OF THE DAMPER.
- 42. EQUIPMENT SHUTDOWN RELAY SHALL BE LOCATED WITHIN 3 FEET OF THE EQUIPMENT CONTROLS AND THE WIRING TO THE RELAY SHALL BE MONITORED.
- 43. FOR EACH FIRE/SMOKE DAMPER: INTERLOCK WITH FIRE ALARM CONTROL PANEL TO CLOSE FIRE/SMOKE DAMPER AND TO CONTROL THE ASSOCIATED MECHANICAL UNIT PER THE MECHANICAL
- 44. ALL FIRE ALARM WIRING SHALL BE IN CONDUIT, 1/2" CONDUIT MINIMUM.
- 45. ALL FLOOR BOXES WITH OUTLETS SHALL BE PROTECTED BY GFCI BREAKER
- 46. PROVIDE 2 PHONE LINES AND MODULE AND PROVIDE CENTRAL STATION MONITORING SYSTEM TO MONITOR SPRINKLER FLOW AND TAMPER SWITCHES, PIV AND COMPLY WITH NFPA 13. VERIFY LOCATIONS BEFORE CONSTRUCTION.

### ELECTRICAL SYMBOL LEGEND

# BASIC MATERIALS

- SINGLE POLE SWITCH
- (SUBSCRIPT LETTER INDICATES ITEM CONTROLLED)
- THREE WAY SWITCH (SUBSCRIPT LETTER INDICATES ITEM CONTROLLED)
- MANUAL MOTOR STARTER WITH OVERLOAD ELEMENTS WP = WEATHERPROOF ENCLOSURE.
- DUAL TECHNOLOGY OCCUPANCY SENSOR WALL SWITCH. SWITCH SHALL BE FAIL-SAFE ON WITH MIN. 15 MINUTE TIMER.
- DUAL TECHNOLOGY OCCUPANCY SENSOR 2-POLE WALL SWITCH. SWITCH SHALL BE FAIL-SAFE ON WITH MIN. 15 MINUTE TIMER.
- CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR WITH ASSOCIATED RELAYS FOR LIGHTING AND ADJUSTABLE TIME 0-30 MINUTES. ADJUST SENSORS AS DIRECTED BY OWNER FOR OPTIMUM LIGHTING CONTROL. PROVIDE ADDITIONAL SENSORS IF NECESSARY.

## POWER

- DUPLEX RECEPTACLE
- DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER HEIGHT OR 42" AFF
- GFI RECEPTACLE. WP DENOTES WEATHERPROOF IN-USE COVER
- GFI RECEPTACLE MOUNTED ABOVE COUNTER HEIGHT OR 42" AFF
- JUNCTION BOX WITH IDENTIFIED BLANK COVER
- TWO DUPLEX RECEPTACLES WITH COMMON COVER
- TWO DUPLEX RECEPTACLES WITH COMMON COVER MOUNTED ABOVE COUNTER HEIGHT
- TWO GFI DUPLEX RECEPTACLES WITH COMMON COVER

FLUSH CEILING MOUNTED DUPLEX RECEPTACLE

- SPECIAL PURPOSE RECEPTACLE. FIELD COORDINATE THE EXACT NEMA RATING NUMBER INDICATES AMPERAGE

# SERVICE AND DISTRIBUTION

- FUSED DISCONNECT SWITCH. 3=3-POLE, 60=60 AMP. ASTERISK INDICATES TO FUSE ACCORDING TO MANUFACTURERS RECOMMENDATIONS. NEMA 4X RATED OUTDOOR LOCATIONS. NEMA 1 INDOOR LOCATIONS.
- NON-FUSED DISCONNECT SWITCH, 3=POLE, 60=60 AMP, NEMA 4X RATED OUTDOOR LOCATIONS. NEMA 1 INDOOR LOCATIONS.
- COMBINATION FUSED DISCONNECT MOTOR STARTER. ASTERISK INDICATES TO FUSE ACCORDING TO EQUIPMENT MANUFACTURERS RECOMMENDATIONS. NEMA 1 RATED INDOOR, NEMA 4X RATED OUTDOORS. NEMA SIZE AS INDICATED ON DRAWINGS.

ELECTRICAL DRAWING LIST

LIGHT FIXTURE SCHEDULE

SHEET NAME

E-3 ELECTRICAL ONE LINE DIAGRAM, PANEL SCHEDULE, AND

VARIABLE FREQUENCY DRIVE WITH INTEGRAL FUSED DISCONNECT

AND NOTES

E-2 ELECTRICAL PLAN

E-4 | ELECTRICAL DETAILS

GND **GROUND BAR** 

Discipline | SHEET#

Electrical

Electrical

Electrical

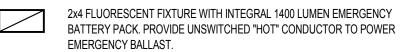
Electrical

SURGE PROTECTION DEVICE TYPE 1 = SERVICE ENTRANCE DEVICE TYPE 2 = PANELBOARD DEVICE

#### LIGHTING

(SEE LIGHTING FIXTURE SCHEDULE)

2x4 FLUORESCENT FIXTURE. NUMBER INDICATES BRANCH CIRCUIT WHICH FIXTURE IS CONNECTED. UPPER CASE LETTER INDICATES FIXTURE TYPE. LOWER CASE LETTER INDICATES SWITCH WHICH CONTROLS FIXTURE. NL NEXT TO FIXTURE INDICATES FIXTURE CONNECTED TO "HOT" UNSWITCHED CIRCUIT.



- RECESSED DOWNLIGHT
- RECESSED DOWNLIGHT WITH INTEGRAL EMERGENCY BATTERY PACK. PROVIDE UNSWITCHED "HOT" CONDUCTOR TO POWER EMERGENCY
- EMERGENCY EXIT SIGN, CONNECT TO UNSWITCHED "HOT" CONDUCTORS. CONNECT TO UNSWITCHED LOCAL LIGHTING CIRCUIT.
- WALL MOUNTED LIGHT FIXTURE

FLUORESCENT STRIP FIXTURE

TIMECLOCK

### FIRE ALARM

- PHOTOELECTRIC DUCT SMOKE DETECTOR
- S = SUPPLY, R = RETURN.

DEVICE. ALL DEVICES 75CD MINIMUM.

- FIRE ALARM SHUTDOWN RELAY. MOUNT WITHIN 36" OF CONTROLLER.
- DUCT DETECTOR REMOTE TROUBLE INDICATOR. MOUNT ADJACENT TO UNIT. COMBINATION AUDIBLE/VISUAL SIGNALING UNIT - SPEAKER STROBE/FLASHING LIGHT. WP = WEATHERPROOF UNIT. MOUNT @ 80" AFF TO BOTTOM OF
- CEILING MOUNTED SMOKE DETECTOR
- VISUAL SIGNALING UNIT, WALL MOUNTED FLASHING LIGHT ONLY (NO AUDIO DEVICE). ALL DEVICES 75CD MINIMUM.
- FIRE ALARM MANUAL PULL STATION. MOUNT @ 48" AFF.
- FIRE ALARM THERMAL DETECTOR. 135° UNLESS OTHERWISE NOTED
- FIRE ALARM SPRINKLER TAMPER SWITCH.

EXP = EXPLOSION PROOF.

FIRE ALARM SPRINKLER WATERFLOW SWITCH.

#### DATA/COMM

DATA/COMM OUTLET WITH FLUSH MOUNTED 4" SQUARE SINGLE GANG JUNCTION BOX WITH 2"x4" DRYWALL PENETRATION. PROVIDE BLANK COVER PLATE. EXTEND 1" CONDUIT TO ABOVE ACCESSIBLE CEILING AND STUB-OUT WITH PLASTIC BUSHING. INSTALL PULL WIRE. CH = MOUNTED ABOVE COUNTER HEIGHT.

TELEVISION OUTLET @ 80" WITH FLUSH MOUNTED 4" SQUARE SINGLE

STUB-OUT WITH PLASTIC BUSHING. INSTALL PULL WIRE. PROVIDE

GANG JUNCTION BOX WITH 2"x4" DRYWALL PENETRATION. PROVIDE BLANK

COVER PLATE. EXTEND 1" CONDUIT TO ABOVE ACCESSIBLE CEILING AND

ADDITIONAL BLOCKING FOR A SECURE INSTALLATION. E-1 ELECTRICAL SPECIFICATIONS, ABBREVIATIONS, SYMBOLS

LIGHTNING PROTECTION SYSTEM

CONTRACTOR SHALL PROVIDE A COMPLETE, FULLY CONCEALED, ROOF MOUNTED LIGHTNING PROTECTION SYSTEM FOR THE ENTIRE FACILITY PER THE REQUIREMENTS OF THE DIVISION 26 SPECIFICATIONS. SYSTEM SHALL BE DESIGNED AND INSTALLED PER NFPA 780 & SHALL BE UL LISTED. PROVIDE SHOP DRAWINGS/PRODUCT DATA FOR REVIEW PRIOR TO CONSTRUCTION.

REVISIONS

REVISION 1 2/4/16

11-523 JOB NO. 01.28.16 DATE DRAWN BY BWM

CHECKED BY SBC

SHEET .□ □