

**SPECIFICATIONS**

**I. SCOPE**

- A. INSTALL ALL ELECTRICAL WORK COVERED BY THESE SPECIFICATIONS AND APPROVED DRAWINGS. PROVIDE ALL MATERIAL, LABOR, TRANSPORTATION, TOOLS, SUPERVISION, ETC., NECESSARY TO COMPLETE THE TOTAL ELECTRICAL JOB. ALL ITEMS NOT SPECIFICALLY MENTIONED HEREIN WHICH ARE OBVIOUSLY NECESSARY TO MAKE A COMPLETE WORKING INSTALLATION SHALL BE PROVIDED.
- B. ELECTRICAL COMPONENTS INCLUDING BUT NOT LIMITED TO CONDUCTOR SIZE, OVERCURRENT PROTECTIVE DEVICE AND DISCONNECT SWITCHES ARE BASED ON POWER REQUIREMENTS FOR EQUIPMENT SPECIFIED AS SHOWN ON THE CONTRACT DOCUMENTS. PRIOR TO INSTALLING WORK, CONTRACTOR SHALL COORDINATE ELECTRICAL REQUIREMENTS WITH EQUIPMENT OF ALL TRADES REQUIRING ELECTRICAL CONNECTIONS.
- C. FINAL CONNECTION TO EQUIPMENT SHALL BE PER MANUFACTURER'S APPROVED WIRING DIAGRAMS, DETAILS AND INSTRUCTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE MATERIALS AND EQUIPMENT COMPATIBLE WITH ACTUAL EQUIPMENT SUPPLIED.
- D. VERIFY EXACT LOCATIONS OF EXISTING AND NEW UNDERGROUND UTILITIES, PIPING AND RACEWAY SYSTEMS PRIOR TO TRENCHING, PROVIDE NECESSARY TRENCHING, BACKFILL, EXCAVATION, SUPPORTS, SERVICES (CONDUIT AND/OR WIRE) PULLBOXES, TRANSFORMER PADS, SAWCUTTING AND PATCHING, CONCRETE/PAVING, ETC. AS REQUIRED, CONTRACTOR SHALL OBTAIN AND VERIFY EXACT UTILITY COMPANY DRAWINGS AND REQUIREMENTS.
- E. EXAMINATION OF BIDDING DOCUMENTS
  - 1. EACH BIDDER SHALL EXAMINE THE BIDDING DOCUMENTS CAREFULLY AND MAKE WRITTEN REQUEST TO THE ARCHITECT FOR INTERPRETATION OR CORRECTION OF ANY DISCREPANCIES, AMBIGUITY, INCONSISTENCY OR ERROR THEREIN. ANY INTERPRETATION OR CORRECTION WILL BE ISSUED BY THE ARCHITECT AS AN ADDENDUM. ONLY WRITTEN INTERPRETATION OR CORRECTIONS BY ADDENDUM SHALL BE BINDING. CONTRACTOR SHALL INCLUDE IN HIS BID, LABOR, MATERIALS AND METHODS OF CONSTRUCTION FOR COMPLETE INSTALLATION. AFTER AWARD OF CONTRACT, NO ALLOWANCE OR EXTRA COMPENSATION WILL BE MADE IN BEHALF OF THE CONTRACTOR DUE TO HIS FAILURE TO MAKE THE WRITTEN REQUEST AS DESCRIBED ABOVE.
  - 2. FAILURE TO REQUEST CLARIFICATION OF ANY INADEQUACY, OMISSION OR CONFLICT WILL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY. THE SIGNING OF THE CONTRACT WILL BE CONSIDERED IMPLICITLY DENOTING THAT THE CONTRACTOR HAS A THOROUGH COMPREHENSION OF THE FULL INTENT AND THE SCOPE OF WORKING DRAWINGS AND SPECIFICATIONS.

**II. CODES AND FEES**

- A. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT EDITION OF THE NATIONAL ELECTRICAL CODE, N.E.P.A. 70 AND ALL LOCAL AND STATE CODES AND REGULATIONS. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS AND INSPECTIONS REQUIRED BY THE BUILDING AND SAFETY CODES AND ORDINANCES, AND THE RULES AND REGULATIONS OF ANY LEGAL BODY HAVING JURISDICTION.

**III. WORKMANSHIP**

- A. THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF ELECTRICAL EQUIPMENT. COORDINATE DEVICE LOCATIONS WITH DOOR SWINGS, CABINETS, COUNTERS, ETC., AS INDICATED ON THE ARCHITECTURAL DRAWINGS. DO NOT SCALE ELECTRICAL PLANS. OBTAIN DIMENSIONS FOR LAYOUT OF EQUIPMENT FROM ARCHITECTURAL PLANS UNLESS INDICATED ON ELECTRICAL PLANS.
- B. COORDINATE WITH ALL OTHER TRADES AND SUBCONTRACTORS PERFORMING WORK ON THIS PROJECT. MINOR OFFSETS IN LOCATIONS OF FIXTURES, DEVICES, ETC. SHALL BE MADE TO AVOID CONFLICTS WITH OTHER TRADES. SUCH MODIFICATIONS SHALL BE APPROVED BY THE ARCHITECT PRIOR TO THE WORK BEING PERFORMED.
- C. MOUNTING HEIGHTS, UNLESS OTHERWISE NOTED, ARE TO THE CENTER LINE OF THE EQUIPMENT AND/OR DEVICE EXCEPT THE MOUNTING HEIGHT OF SUSPENDED LIGHT FIXTURES WHICH IS TO THE BOTTOM OF FIXTURE.
- D. CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING EQUIPMENT WHICH IS DAMAGED DUE TO INCORRECT FIELD WIRING PROVIDED UNDER THIS SECTION OR FACTORY WIRING IS EQUIPMENT PROVIDED UNDER THIS SECTION.

**IV. SUBSTITUTIONS**

- A. ALL COST INCURRED BY THE ACCEPTANCE OF SUBSTITUTIONS SHALL BE BORNE BY THE CONTRACTOR. PROOF FOR THE EQUALITY OF SUBSTITUTIONS SHALL BE BY THE CONTRACTOR.

**V. U.L. LISTING**

- A. ALL ELECTRICAL ITEMS COVERED BY THIS SPECIFICATION SHALL BE U.L. LABELED AND LISTED FOR THEIR SPECIFIC USE.

**VI. ELECTRICAL SERVICE**

- A. THE ELECTRICAL CONTRACTOR SHALL PAY ALL COSTS REQUIRED BY THE LOCAL UTILITY COMPANY PROVIDING SERVICES INDICATED. ELECTRICAL CONTRACTOR SHALL COORDINATE METERING, TRANSFORMER PAD, CONNECTION POINTS AND GROUNDING WITH UTILITY COMPANY.
- B. ALL SERVICE ENTRANCE EQUIPMENT INCLUDING BUT NOT LIMITED TO ANY MAIN DISCONNECT SWITCH, PANEL, OR SWITCHBOARD SHALL BE LISTED AND LABELED AS "SUITABLE FOR USE AS SERVICE ENTRANCE EQUIPMENT".

**VII. WARRANTY**

- A. WORK SHALL BE WARRANTED FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER.

**VIII. SPECIFICATIONS**

**A. GROUNDING**

- 1. THE BUILDING ELECTRICAL SYSTEMS SHALL BE SOLIDLY GROUNDED. ALL NON-CURRENT CARRYING METAL PARTS OF THE ELECTRICAL SYSTEM, I.E., RACEWAYS, EQUIPMENT ENCLOSURES, FRAMES, JUNCTION AND OUTLET BOXES AND OTHER CONDUCTIVE ITEMS IN CLOSE PROXIMITY WITH ELECTRICAL CIRCUITS, SHALL BE GROUNDED TO PROVIDE A LOW IMPEDANCE PATH FOR POTENTIAL GROUND FAULTS.
- 2. EQUIPMENT GROUNDING CONDUCTORS SHALL BE INSTALLED IN ALL RACEWAYS AND CABLES.
- 3. THE NEUTRAL AND GROUND BUS SHALL BE BONDED TOGETHER AT ALL SERVICE EQUIPMENT.

**B. RACEWAYS AND CONDUITS**

- 1. CONDUITS INSTALLED IN DIRECT CONTACT WITH GRADE OR WITHIN CONCRETE SLABS SHALL BE SCHEDULE 40 PVC. CONDUITS CONCEALED WITHIN WALLS AND ABOVE CEILINGS, AND EXPOSED IN INDOOR AREAS SHALL BE ELECTRICAL METALLIC TUBING (E.M.T.). COUPLINGS SHALL BE STEEL SET SCREW TYPE FOR INDOOR LOCATIONS, AND COMPRESSION TYPE FOR OUTDOOR AND WET LOCATIONS. CONDUIT SHALL BE INTERMEDIATE OR GALVANIZED RIGID STEEL IN AREAS WHERE SUBJECT TO ABUSE.
- 2. CONDUITS SHALL BE RUN PARALLEL OR AT RIGHT ANGLES TO WALLS, CEILINGS, AND STRUCTURAL MEMBERS.
- 3. LIQUID TIGHT FLEXIBLE METAL OR NON-METALLIC CONDUIT SHALL BE USED FOR OUTDOOR EXPOSED CONNECTIONS TO GROUND OR ROOF-MOUNTED EQUIPMENT.
- 4. ALL RACEWAYS SHALL BE INSTALLED CONCEALED EXCEPT IN UNFINISHED SPACES OR WHERE INDICATED ON THE DRAWINGS.
- 5. FASTENERS AND SUPPORTS SHALL BE AS MANUFACTURED Y GEDNEY, EFCOR OR EQUAL. SUPPORTING DEVICES SHALL BE THOSE AS MANUFACTURED FOR A SPECIFIC PURPOSE. NAILS, WIRE OR PIPE STRAP SHALL NOT BE USED.
- 6. PROVIDE FLEXIBLE EXPANSION CONDUIT FITTINGS ON ALL CONDUIT CROSSING EXPANSION JOINTS. SEE ARCHITECTURAL PLANS FOR EXPANSION JOINT LOCATIONS.

**C. CONDUCTORS**

- 1. ALL BRANCH CIRCUIT CONDUCTORS SHALL BE COPPER, 90 DEG C THHN/THWN INSULATION.
- 2. UNLESS NOTED OTHERWISE, SERVICE AND FEEDER CONDUCTORS SHALL BE COPPER, THHN/THWN-2 INSULATION. WHERE APPROVED, ALUMINUM CONDUCTORS SHALL BE COMPACT, AA-8000 SERIES, XHHW-2, 90 DEG C.
- 3. WIRE NO. 8 AWG AND LARGER SHALL BE STRANDED, NO. 10 AND SMALLER SHALL BE SOLID.
- 4. ALL BRANCH CIRCUIT AND FEEDER CONDUCTORS, NO. 8 AWG AND SMALLER, SHALL BE COLOR CODED AS FOLLOWS (WHERE APPROVED BY THE AUTHORITY HAVING JURISDICTION):
 

|                     |                     |
|---------------------|---------------------|
| 120/208 VOLT SYSTEM | 277/480 VOLT SYSTEM |
| PHASE A - BLACK     | PHASE A - BROWN     |
| PHASE B - RED       | PHASE B - ORANGE    |
| PHASE C - BLUE      | PHASE C - YELLOW    |
| NEUTRAL - WHITE     | NEUTRAL - GREY      |
| GROUND - GREEN      | GROUND - GREEN      |
- 5. MC CABLE SHALL BE LIMITED TO BRANCH CIRCUITS CONCEALED IN WALLS AND ABOVE CEILINGS, AND MAY NOT BE RUN DIRECTLY INTO SURFACE MOUNTED EQUIPMENT. ALL CIRCUIT HOMERUNNS FROM THE PANELBOARD TO THE FIRST BRANCH CIRCUIT DEVICE SHALL BE ROUTED IN CONDUIT. MC CABLE SHALL NOT BE ALLOWED FOR WIRING TO MECHANICAL EQUIPMENT.
- 6. SIZES INDICATED ARE FOR INSTALLATION IN A MAXIMUM 30 DEGREE C AMBIENT.

**D. OUTLET/JUNCTION BOXES**

- 1. ALL OUTLET/JUNCTION BOXES SHALL BE GALVANIZED STEEL.
- 2. WALL AND CEILING OUTLET BOXES SHALL BE 4" SQUARE, WITH A DEPTH OF 2 1/2". CEILING BOXES SHALL BE 4" OCTAGONAL WHERE REQUIRED DUE TO NUMBER OF WIRES.
- 3. WHERE BOXES ARE INSTALLED BACK-TO-BACK IN WALLS AND LOCATED LESS THAN 24" APART, MOLDABLE PUTTY PADS SHALL BE INSTALLED TO MAINTAIN THE REQUIRED FIRE RATING.

**E. PANELBOARDS**

- 1. PANELBOARDS SHALL HAVE BOLT-IN CIRCUIT BREAKERS AND ALUMINUM BUSSING. WHERE APPLICABLE, LOAD CENTERS SHALL HAVE PLUG-IN BREAKERS AND ALUMINUM BUSSING.
- 2. OVERCURRENT PROTECTIVE DEVICES SHALL BE AUTOMATIC TRIP THERMAL MAGNETIC TPE WITH QUICK-MAKE QUICK-BREAK FIR BOTH MANUAL AND AUTOMATIC OPERATION. ALL MULTIPOLE BREAKERS SHALL BE COMMON TRIP; HANDLE TIES WILL NOT BE ACCEPTED.
- 3. SWITCHBOARDS, DISTRIBUTION BOARDS, PANELBOARDS, DISCONNECT SWITCHES AND MOTOR CONTROL CENTERS SHALL BE MANUFACTURED BY GENERAL ELECTRIC, SIEMENS, SQUARE 'D' OR EATON/CUTLER HAMMER. BOLT FREE STANDING EQUIPMENT TO 4" HIGH EQUIPMENT HOUSEKEEPING PADS. SWITCHBOARD SECTIONS SHALL BE FULLY BUSSED.
- 4. TYPEWRITTEN DIRECTORIES AND PANELBOARD DESIGNATION PLATES SHALL BE PROVIDED BY THE CONTRACTOR FOR ALL PANELBOARDS. PANELBOARD DESIGNATIONS SHALL BE PHENOLIC-ENGRAVED.
- 5. WIRE TERMINATION PROVISIONS FOR PANELBOARDS, CIRCUIT BREAKERS, SAFETY SWITCHES AND ALL OTHER ELECTRICAL APPARATUS SHALL BE LISTED AS SUITABLE FOR 75 DEGREE C. MINIMUM.

**F. LIGHTING FIXTURES**

- 1. UNLESS INDICATED ON DRAWINGS, BALLASTS PROVIDED WITH FIXTURES SHALL BE ETL-CBM APPROVED, HIGH POWER FACTOR, WITH U.L. LABEL. ALL BALLASTS FOR RAPID START LAMPS SHALL BE PREMIUM CLASS P.
- 2. FIXTURES RECESSED IN T-BAR CEILING SHALL BE SUPPORTED INDEPENDENTLY OF CEILING SYSTEM, WITH TWO (2) NUMBER TWELVE (12) HANGER WIRES UP TO STRUCTURE. SECURE HANGER WIRES TO CORNERS OF FIXTURE. CLIP FIXTURE TO GRID ON TWO SIDES WITH FACTORY FURNISHED CLIPS. FINAL CONNECTION TO FIXTURE SHALL BE MADE WITH A FLEXIBLE U.L. APPROVED ASSEMBLY.

A LICENSED FIRE ALARM CONTRACTOR SHALL SUBMIT THE FIRE ALARM SYSTEM DRAWINGS TO THE AHJ FOR APPROVAL PRIOR TO INSTALLATION. THE INSTALLATION MUST BE APPROVED BEFORE THE CERTIFICATE OF OCCUPANCY MAY BE ISSUED.

**G. WIRING DEVICES**

- 1. DUPLEX RECEPTACLES SHALL BE TAMPER RESISTANT TYPE RATED 20 AMP, PASS & SEYMOUR TR63 OR APPROVEDE EQUAL.
- 2. GFCI RECEPTACLES SHALL BE TAMPER RESISTANT TYPE RATED 20 AMP, PASS & SEYMOUR 2095-TR OR APPROVED EQUAL.
- 3. TOGGLE SWITCHES SHALL BE 20 AMP, HUBBELL CS1221 OR APPROVED EQUAL.
- 4. DIMMER SWITCHES SHALL BE SLIDER TYPE, LUTRON VARED SERIES.
- 5. DEVICE PLATES SHALL BE NYLON (UNLESS NOTED OTHERWISE).
- 6. COLOR OF DEVICES AND DEVISE PLATES SHALL BE AS DETERMINED BY ARCHITECT.

**H. DRY TYPE TRANSFORMERS**

- 1. TRANSFORMERS SHALL BE U.L. LISTED AND SHALL HAVE CLASS 155 OR HIGHER INSULATION SYSTEMS.
- 2. TRANSFORMERS SHALL BE MOUNTED WITH 5/8" THICK NEOPRENE PADS FOR VIBRATION ISOLATION.
- 3. 4" HIGH CONCRETE HOUSEKEEPING PADS SHALL BE INSTALLED FOR ALL FLOOR MOUNTED TRANSFORMERS.
- 4. ACCEPTABLE MANUFACTURERS: EATON/CUTLER HAMMER, G.E., SIEMENS OR SQUARE D.

**I. DISCONNECT SWITCHES**

- 1. SAFETY-TYPE DISCONNECT SWITCHES SHALL BE HEAVY DUTY WITH QUICK-MAKE, QUICK-BREAK MECHANISM WITH INTERLOCKING COVER WHICH NORMALLY CANNOT BE OPENED WHEN THE SWITCH IS IN THE "ON" POSITION. SWITCH SHALL HAVE PROVISIONS FOR PAD-LOCKING IN THE OPEN OR CLOSED POSITION.
  - 2. FUSIBLE DISCONNECT SWITCHES SHALL HAVE REJECTION-TYPE FUSEHOLDERS. FUSES SHALL BE NON-RENEWABLE, DUAL ELEMENT TIME-DELAY "RK1" OR "RK3", OR AS SPECIFIED OTHERWISE.
  - 3. ACCEPTABLE MANUFACTURERS: EATON/CUTLER HAMMER, G.E., SIEMENS OR SQUARE D.
- J. FIRE ALARM SYSTEM**
- 1. PROVIDE A COMPLETE, U.L. LISTED, ADDRESSABLE FIRE ALARM SYSTEM IN ACCORDANCE WITH THESE SPECIFICATIONS, AND ALL APPLICABLE CODES.
  - 2. CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, TOOLS AND EQUIPMENT FOR A COMPLETE FIRE ALARM SYSTEM, INCLUDING THE FOLLOWING:
    - A) ENGINEERED DRAWINGS, CALCULATIONS, AND MATERIAL SUBMITTALS APPROVED BY AUTHORITY HAVING JURISDICTION.
    - B) COORDINATION OF WORK IN THIS SECTION WITH ALL TRADES.
    - C) COMPLETE MONITORING SERVICE CONNECTION TO TELEPHONE BACKBOARD.
    - D) INSPECTIONS AND TESTS.
    - E) ONE (1) YEAR WARRANTY

**K. MISCELLANEOUS EQUIPMENT**

- 1. TIME CLOCK SHALL BE ELECTRONIC TYPE WITH ASTRONOMICAL FUNCTIONS (TORK DZS 200BP OR APPROVED EQUAL).
- 2. PHOTOCELL SHALL HAVE RAINIGHT PHOTOELECTRIC SELF-CONTAINED CONTROL FOR SWITCHING. PHOTOCELL SHALL HAVE DIE-CAST HOUSING WITH ADJUSTABLE SENSOR. (ACCEPTABLE MANUFACTURERS: TORK 2100 SERIES OR APPROVED EQUAL).

**L. PENETRATIONS**

- 1. ALL PENETRATIONS THROUGH RATED WALLS, FLOORS AND/OR CEILINGS SHALL BE SEALED WITH THE APPROPRIATELY RATED FIRE-SEALING MATERIAL BY 3M COMPANY, THOMAS & BETTS, METACAULK, OR APPROVED EQUAL.

**M. SUBMITTALS**

- 1. PANELBOARDS, WIRING DEVICES, SWITCHES AND DISCONNECTS, LIGHTING FIXTURES, AND FUSE SUBMITTALS SHALL BE REQUIRED, AND ARE TO INCLUDE MANUFACTURER'S DATA, TEST REPORTS, PERFORMANCE DATA AND CERTIFICATIONS.

**N. COMMUNICATIONS CONDUIT/BOXES**

- 1. TWO (2) 4" SCHEDULE 40 PVC CONDUITS SHALL EXTEND FROM THE PUBLIC RIGHT-OF-WAY TO THE MAIN TELECOMMUNICATIONS ROOM OR ENTRANCE FACILITY.
- 2. THE NUMBER OF BENDS IN A CONDUIT SECTION RUN SHALL NOT EXCEED TWO (2) 90-DEGREE BENDS OR EQUIVALENT OF SWEEPS AND RADIUS BENDS.
- 3. IN AREAS WITH NON-ACCESSIBLE CEILINGS, TELEPHONE CONDUITS SHALL BE CONTINUOUS FROM THE OUTLET BOX TO THE TELEPHONE EQUIPMENT BACKBOARD AND TERMINATED WITH A NYLON GROMMET.
- 4. EACH HORIZONTAL HOME-RUN CONDUIT CAN SERVE FROM ONE (1) TO THREE (3) OUTLET BOXES. FOR ONE (1) OUTLET BOX, A 3/4" CONDUIT SHALL BE USED, MINIMUM. FOR TWO (2) OUTLET BOXES, A 1" CONDUIT SHALL BE USED, MINIMUM. FOR THREE (3) OUTLET BOXES, A 1-1/4" CONDUIT SHALL BE USED, MINIMUM.
- 5. THE DIMENSIONS OF THE OUTLET BOX SHALL BE 4" X 4" SQUARE WITH A MINIMUM DEPTH OF 2-1/8". BOXES SHALL BE EQUIPPED WITH SINGLE DEVICE ADAPTERS (OR TWO-DEVICE ADAPTERS WHERE NEEDED). WHERE INSTALLED IN PLASTER, GYPSUM BOARD, TILE, ETC., ADAPTERS SHALL BE RAISED TO COMPENSATE FOR THE THICKNESS OF THE WALL FINISH.

**O. ELECTRICAL MATERIALS AND EQUIPMENT**

- 1. NO ELECTRICAL MATERIALS, APPARATUS, DEVICES, APPLIANCES, FIXTURES, OR EQUIPMENT SHALL BE SOLD OR INSTALLED IN THE CITY UNLESS THEY ARE IN CONFORMANCE WITH THE PROVISIONS OF THIS CODE, THE LAWS OF THE STATE OF TEXAS, AND ANY APPLICABLE RULES AND REGULATIONS ISSUED UNDER THE AUTHORITY OF THE STATE STATUTES. THE MAKER'S NAME, TRADEMARK, OR OTHER IDENTIFICATION SYMBOL SHALL BE PLACED ON ALL ELECTRICAL MATERIALS, APPARATUS, DEVICES, APPLIANCES, FIXTURES, AND EQUIPMENT USED OR INSTALLED UNDER THE PROVISIONS OF THIS CODE. ALL ELECTRICAL MATERIALS AND EQUIPMENT SHALL BE LISTED AND LABELED FOR THE INTENDED USE AND SHALL BE INCLUDED IN A LIST PUBLISHED BY AN APPROVED AGENCY.

| LEGEND |  |
|--------|--|
|        | FLOOD FIXTURE 2'X4' CLG FLUSH MTD<A'=TYPE A FIXTURE)         |
|        | FLUORESCENT FIXTURE 4' CEILING SURFACE OR RECESSED MOUNTED   |
|        | TRACK LIGHTS DN STANDARD TRACK (4' DR 8' IN LENGTH)          |
|        | WALL MOUNTED INCANDESCENT OR H.I.D. FIXTURE                  |
|        | INCANDESCENT DR H.I.D. FIXTURE                               |
|        | EXIT LT- CEILING DR WALL MTD W/ BATTERY PACK                 |
|        | EMERGENCY LIGHT FIXTURE W/ BATTERY PACK                      |
|        | SINGLE POLE SWITCH, 20A-120/277V (A=LTS TO BE CONTROLLED)    |
|        | SINGLE POLE SWITCH, 20A-120/277V (DIMMER-1 DR 2 KVA)         |
|        | 3 WAY SWITCH , S4- 4 WAY, S2- 2 POLE                         |
|        | KEY OPERATED SWITCH, Sp- PILOT, WP- WEATHERPROOF             |
|        | COMPUTER REC-ISOLATED GND(HUBBELL#LGS251 DRANGE)             |
|        | DUPLEX RECEPTACLE, 20A 125V, 3 WIRE GND TYPE< F=FLOOR MTD)   |
|        | 125/250 VOLT 1ø (AMP AS NOTED)                               |
|        | SINGLE RECEPTACLE 125 VOLT - 10 (AMPS AS NOTED)              |
|        | 250 VOLT 3ø, SPECIAL POWER OUTLET (AMPS AS NOTED)            |
|        | FLUSH FLOOR TELE/DATA OUTLET                                 |
|        | FLUSH FLOOR DUPLEX RECEPTACLE OUTLET (WP-WEATHERPROOF)       |
|        | TELEPHONE OUTLET MTD @ 12" AFF<F=FLOOR MTD)                  |
|        | FIRE ALARM PULL STATION                                      |
|        | JUNCTION BOX (SURFACE MTD. AS DESCRIBED DN DWGS.)            |
|        | JUNCTION BOX (FLUSH WALL MTD. - AS DESCRIBED DN DWGS.)       |
|        | PRE-WIRED DEVICE   |
|        | WEATHERPROOF   |
|        | DISCONNECT SWITCH, NF=NON FUSED                              |
|        | MAGNETIC MOTOR STARTER                                       |
|        | MANUAL MOTOR STARTER   |
|        | MOTOR DR FAN   |
|        | DUCT DETECTOR/SMOKE DETECTOR                                 |
|        | ELECTRICAL PANEL   |
|        | L1 or H1,3,5 HOMERUN TO PANEL<L1orL2,4=2W+GX(H1,3,5=3W+G)    |
|        | CONDUIT IN OR UNDER FLOOR OR SLAB                            |
|        | CONDUIT IN CEILING DR WALLS                                  |
|        | HATCH MARKS FOR NUMBER OF WIRES IN CONDUIT                   |
|        | MANUAL PULL STATION @ 4'-6" AFF                              |
|        | AUDIBLE/VISUAL ALARM HORN<75 CAND.) 80" AFF DR 6' BELOW CLG. |
|        | FIRE ALARM VISUAL DEVICE WALL MTD 80" AFF DR 6' BELOW CLG.   |
|        | HEAT DETECTOR CLG MTD  |
|        | SMOKE DETECTOR CLG MTD                                       |
|        | CAMERA, DATA, PHONE BY OTHERS                                |

| LIGHTING FIXTURE SCHEDULE |   |         |            |            |            |        |
|---------------------------|---|---------|------------|------------|------------|--------|
| TYPE                      | MANUFACTURER  | VOLTAGE | LAMPS      | MOUNTING   | REMARKS    | IEC VA |
| A1                        | LITHONIA<br>#ZBLT4-60L-ADSM-MVOLT-EZ1-LP835         | MVOLT   | LED, 3500K | RECESSED   |            | 53     |
| A4                        | LITHONIA<br>#ZBLT2-33L-ADSM-MVOLT-EZ1-LP835         | MVOLT   | LED, 3500K | RECESSED   | 1,4        | 30     |
| C                         | LITHONIA<br>#ZL2N-148-5000LM-MDD-MVOLT-80CRI-WH     | MVOLT   | LED, 3500K | SURFACE    |            | 72     |
| D6                        | GOTHAM<br>#EVO 40/15 6AR-WD-LSS                     | MVOLT   | LED, 4000K | RECESSED   |            | 18.5   |
| D6E                       | LITHONIA<br>#WST LED P3-40K-VF-MVOLT-E20WC-DXXX     | MVOLT   | LED, 4000K | WALL       |            | 50     |
| E                         | LITHONIA<br>#ELMT-W-LP06VS-LTP                      | MVOLT   | LED        | WALL       |            | 14.2   |
| F                         | LITHONIA<br>#LBL4 48L MVOLT LP835                   | MVOLT   | LED, 3500K | SURFACE    |            | 48     |
| G                         | GOTHAM<br>#EVO 35/15 6AR WD LD EZ1 MVOLT TRW        | MVOLT   | LED, 3500K | RECESSED   |            | 18.5   |
| H1                        | LITHONIA<br>#DSW2 LED 30C700 40K TFTM MVOLT BBW DXX | MVOLT   | LED, 4000K | WALL       |            | 71     |
| J                         | LITHONIA<br>#OFLR 6LC 120 P WH                      |         | 120        | LED, 5000K | WALL       | 19.9   |
| X                         | LITHONIA<br>#LQM S W 3 R 120/277 ELN                | MVOLT   | LED        | SURFACE    |            | 0.92   |
| XC                        | LITHONIA<br>#LQMH LED R HO                          | MVOLT   | LED        | SURFACE    | EGRESS 1,2 | 4.3    |

- NOTES:
- 1. COORDINATE MOUNTING HEIGHT WITH ARCHITECT.
  - 2. PROVIDE UNSWITCHED BRANCH CIRCUIT TO BATTERY SYSTEM.
  - 3. FIXTURE MUST BE VAPOR TIGHT FOR EXTERIOR LOCATIONS.
  - 4. ARCHITECT APPROVAL REQUIRED FOR ALL LIGHT FIXTURES.

REVISIONS AND ISSUANCE

| NO. | DATE       | DESCRIPTION |
|-----|------------|-------------|
| 1   | 08/13/2018 | PRICING     |

**IVY KIDS EARLY LEARNING CENTER**  
 4434 CR 94  
 Manvel, Tx 77578

MEP Consultants  
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THESE DOCUMENTS ARE FOR INTERIM REVIEW AND NOT FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES.

RESPONSIBLE ENGINEER:  
 CHH-TAI KENG  
 79201  
 08-13-2018

DRAWING TITLE

**ELECTRICAL NOTES**

DRAWN BY DATE CHECKED BY CK

JOB NO. 05/10/2018 SEDONA LAKES

DRAWING NO. **E-7.0**