LIGHTING CONTROL PROGRAMMING:

A. THE ACTUAL PROGRAMMING FOR EACH SCENE, THE NUMBER OF SCENES, THE ASSOCIATED CONTROLLED LUMINAIRE/S AND ROOM DARKENING SHADES SHALL BE DETERMINED BY LIGHTING DESIGNER OR ARCHITECT. COORDINATE WITH ARCHITECT.

B. PROVIDE ENGRAVED WALL MOUNTED PRESET SCENE CONTROL STATIONS SEPARATE FROM INDIVIDUAL LOCAL DIMMER CONTROL STATIONS.

C. PROVIDE MULTI-SCENE CONTROLS WHERE REQUIRED TYPICAL AS FOLLOWS: BUTTON 1 = ALL ON; BUTTON 2 = ALL OFF; BUTTON 3 = ALL 50% DIMMED

D. IN ALL CONFERENCE ROOMS AND WHERE REQUIRED, PROVIDE LIGHTING CONTROLLER SERIAL DATA INTERFACE RS-232 FOR CONNECTION TO THE AV SYSTEM. IN ADDITION TO THE MANUAL AND AUTOMATIC DAYLIGHT DIMMING CONTROLS, LIGHTS SHALL BE CONTROLLABLE/DIMMABLE VIA THE AV CONTROLLER. COORDINATE WITH THE AV VENDOR. PROVIDE ALL SYSTEM COMPONENTS COMPLETE TO INTERFACE WITH WATTSTOPPER DLM DIGITAL LIGHTING CONTROL SYSTEM. AV CONTROLLERS SHALL BE PROVIDED IN ADDITION TO DIMMER, OCCUPANCY SENSOR, DAY LIGHT SENSOR SWITCHES, MOTORIZED PARTITION AND SHADE/SOLAR CONTROLLERS IF APPLICABLE. PROVIDE ALL HARDWARE, ACCESSORIES, PROGRAMMING, ETC AS REQUIRED FOR A COMPLETE INTERFACE.

LIGHTING CONTROL SYSTEM:

WATTSTOPPER DLM OR APPROVED EQUAL

# BUILDING LIGHTING CONTROL SYSTEM

## STANDARD SEQUENCE OF OPERATION

| | OCC SENSOR | | | | | PHOTOCELL | | | | DIMMING | | | TIME CLOCK | | | | SWITCHES | | | SYSTEM | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROOM TYPE | AUTO ON | MANUAL ON | AUTO OFF | PARTIAL OFF AT NORMAL HOURS | AUTO OFF FOR AFTER HOURS | AUTO OFF @ TARGET FC | AUTO DIM @ TARGET FC | SET LEVEL TO 50 FC | CONTINUOUS | STEP | MULTIZONE | TIME ON | TIME OFF | ASTRONOMICAL TIME CLOCK | WALL SWITCH | DIMMER SWITCH | SCENE CONTROL | PLUG LOAD | NETWORK | STAND-ALONE | CURRENT MONITORING | AUXILIARY RELAY | REMOTE SIGNAL CONTROL | DEMAND RESPONSE | REMARKS |
| COMMERCIAL BLDG (>10,000 sq ft) | | | | | | | | | | | | | | | | | | | | | | | | | DEMAND RESPONSE IS NOT REQUIRED IF RESULTING LIGHTING POWER, COMPARED TO LIGHTING POWER ALLOWANCE SPECIFIED IN 140.6.c.2 AREA CATEGORY METHOD IS EQUAL TO OR LESS THAN 85% OF LIGHTING POWER ALLOWANCE. |
| AREA W/ 1-2 LAMP SINGLE LUMINAIRE (<100 sq ft) | 100% | | 20 MIN | | | | | | | | | | | | | X | | | | | | | | | SPACES WITH MORE THAN 100 SQ FT WILL REQUIRE EITHER CONTINUOUS DIMMING OR 4 LEVELS OF STEP DIMMING, DEPENDING ON LIGHTING TYPE |
| SMALL OFFICE (≤250 sq ft) | | X | 20 MIN | | | | X | | X | | | | | | | X | | | | X | | | | | |
| LARGE OFFICE (>250 sq ft) | | X | 20 MIN | | | | X | | X | | X | 7AM | 7PM | | | X | | | | X | | | | | |
| OPEN OFFICE AREA | | X | 20 MIN | | | | X | | X | | X | 7AM | 7PM | | | X | | | | X | X | | | | |
| LARGE CONFERENCE ROOM | | X | 30 MIN | | | X | X | | X | | X | | | | | X | X | | | | | | | | |
| COPY ROOM | | X | 20 MIN | | | | | | X | | | | | | | X | | | | X | | | | | |
| ELECTRICAL ROOM (<100 SQ FT) | | | | | | | | | | | | | | | | | | | | | | | | | |
| JANITOR CLOSET | | | | | | | | | | | | | | | | | | | | | | | | | |
| RESTROOM (<100 sq ft) | 100% | | 20 MIN | | | | | | X | | | | | | | X | | | | X | | | | | |
| OFFICE KITCHENS (≥ 100 sq ft) | | X | 20 MIN | | | | | | X | | | | | | | X | | | | X | | | | | |
| CORRIDOR | 100% | | | 50% 10 MIN | 10 MIN | | | | X | | | | | | | X | | | | X | | | | | |
| LOBBY | | | | | | | | | | | | | | | | | | | | | | | | | |
| STORAGE ROOM (< 100 sq ft) | 100% | | 20 MIN | | | | | | | | | | | | | X | | | | | | | | | |

NOTES:
1 Continuous dimming and step dimming are chosen based on light source type per Title 24 130.1A.
If continuous dimming is not necessary per lighting source, then 50% for step dimming is required.
2 Multizone is shown chosen due to typical rooms. For example, if there is a primary daylight zone and a non-daylighting zone, then these zones must be separated. Therefore, an open office will need separated zones.
3 There are no Title 24 requirements for manual on and auto on. There are only requirements for partial off NH and auto off AH.
4 Daylighting is not necessary when areas do not include skylights or glazing < 24 sq ft or skylit+primary sidelit zone is less than 120W. Luminaires in or at least 50% within daylighting zones must be controlled.
5 Timeclock settings can be changed to have different time on/off settings. Typical schedules were added in chart above.
6 Scene control is not necessary per Title 24 as long as dimming provided is per lighting source standards. Scene control can be checked off by end user if needed.

## PANELBOARD NOTES

1. ALL MULTIWIRE BRANCH CIRCUITS SHALL BE PROVIDED WITH A MEANS THAT WILL DISCONNECT ALL UNGROUNDED CONDUCTORS AT THE POINT WHERE THE BRANCH CIRCUIT ORIGINATES, PER NEC 2014/CEC 2016 SECTION 210.4(B), WHETHER SHOWN ON PANEL SCHEDULES OR NOT. FOR SINGLE PHASE MULTIWIRE BRANCH CIRCUITS, PROVIDE AND INSTALL TWO SINGLE-POLE CIRCUIT BREAKERS WITH A LISTED AND FACTORY-SUPPLIED HANDLE-TIE, OR A 2-POLE SWITCH OR CIRCUIT BREAKER. FOR A 3-PHASE INSTALLATION, PROVIDE AND INSTALL A 3-POLE CIRCUIT BREAKER, SEE FLOOR PLANS FOR LOCATIONS AND CIRCUIT NUMBERS OF ALL MULTIWIRE BRANCH CIRCUIT HOMERUNS.

# ELECTRICAL LEGEND

THIS IS A STANDARD LEGEND SHEET. SOME SYMBOLS AND/OR ABBREVIATIONS MAY APPEAR ON THIS SHEET, BUT NOT ON PROJECT PLANS.

- F — FIRE ALARM MANUAL PULL STATION – MH+46"
- FIRE ALARM COMBINATION CEILING MOUNTED HORN/STROBE
- FIRE ALARM WALL MOUNTED HORN WITH STROBE LIGHT MH +80" A.F.F.
- CEILING MOUNTED FIRE ALARM HORN
- H — FIRE ALARM WALL MOUNTED HORN MH +80" A.F.F.
- FIRE ALARM CEILING MOUNTED STROBE LIGHT – MH +80" A.F.F.
- H — FIRE ALARM WALL MOUNTED STROBE LIGHT – MH +80" A.F.F.
- H — MAGNETIC DOOR HOLDER – COORDINATE WITH HARDWARE FOR VOLTAGE AND PROVIDE 20A/1P CIRCUIT
- D — FIRE ALARM DUCT DETECTOR
- FSD — FIRE SMOKE DAMPER BY DIV15. PROVIDE 120V POWER AND CONNECT TO BLDG. FIRE ALARM
- SD — SMOKE DAMPER BY DIV15. PROVIDE 120V POWER AND CONNECT TO BLDG. FIRE ALARM
- NON-FUSED DISCONNECT SWITCH
- FUSED DISCONNECT SWITCH (FUSES AS SHOWN ON PLAN)
- FBO — MOTOR CONTROLLER FURNISHED BY OTHERS
- COMBINATION TYPE MAGNETIC MOTOR STARTER WITH HOA SWITCH AND CONTROL TRANSFORMER (OR TWO (2) SPEED MOTOR STARTER AS REQUIRED)
- $T — MANUAL MOTOR STARTER WITH THERMAL OVERLOAD
- $P — FAN SWITCH WITH PILOT LIGHT. MH +46"
- $SC — COMBINATION FAN SPEED CONTROLLER – MOUNTED ON FAN (FURNISHED BY MECHANICAL, INSTALLED BY ELECT.)
- T — THERMOSTAT OR TIME CLOCK
- VFD — VARIABLE SPEED DRIVE. VFD WITH DISCONNECT IS PROVIDED BY MECHANICAL. VERIFY VFD HAS INTERNAL DISCONNECT. IF NOT, PROVIDE DISCONNECT WITH INLINE WIRING.
- M — MOTOR OUTLET (PROVIDED BY MECH. WIRED BY ELECT.)
- DR — DR — PUSH BUTTON DOOR RELEASE PROVIDE 1/2"CO TO ACCESSIBLE CEILING SPACE
- CR — CR — CARD READER PROVIDE 1/2"CO TO ACCESSIBLE CEILING SPACE.
- AV — FLUSH FLOOR MOUNTED 2-GANG POKE-THRU AUDIO VISUAL BOX, PROVIDE 2-1"CO AV. RUN UNDERSLAB TO NEAREST WALL/COLUMN AND UP TO TELECOMM CABLE TRAY.
- AV — IN-WALL ENCLOSURE FOR AV BY OTHERS. PROVIDE DUPLEX RECEPTACLE AS SHOWN ON PLAN AND 2-1"CO STUB 6" ABOVE CEILING
- AP — WIRELESS ACCESS POINT: RING AND COVERPLATE ONLY ON CEILING
- J — JUNCTION BOX
- PANELBOARD – 120/208 VOLTS
- PANELBOARD – 277/480 VOLTS
- M — THERMOSTAT (PROVIDE 120V POWER IF REQUIRED) –MH46".
- T — J — J-BOX TO SUPPLY POWER AND TELECOMM FOR ELECTRIFIED FURNITURE SYSTEM – MOUNT +18"AFF
- EPO — EMERGENCY POWER OFF SWITCH-MH +46" FROM THE TOP OF OUTLET BOX U.O.N. MANUFACTURER: APC
- SURFACE MOUNTED RACEWAY (AS NOTED)
- GROUND ROD
- CONDUIT UP
- CONDUIT DOWN
- CONDUIT CONCEALED IN CEILING OR WALL
- CONDUIT UNDERFLOOR 1"C MIN (UON) FOR BUILDING TRENCH SYSTEM: HOMERUN TO PANEL IN TRENCH
- HOMERUN TO PANEL WITH TICKMARKS- 3/4"C – 2#12 MIN. + 1#12 GROUND, UON. PROVIDE #10 OVERSIZE NEUTRAL FOR MULTIPLE CIRCUITS. TICKMARKS ARE ON HOMERUNS ONLY AND TICK MARK FOR GROUND WIRE IS TYPICALLY NOT SHOWN.
- CIRCUIT BREAKER
- FUSE
- DISCONNECT SWITCH
- ST — SHUNT TRIP
- M — TENANT METERING WITH POTENTIAL AND CURRENT TRANSFORMERS
- L1 F1 — LUMINAIRE IDENTIFICATION TAG

- CEILING-MOUNTED SELF ILLUMINATED EXIT SIGN ARROW INDICATES DIRECTION. SHADING INDICATES LIGHTED FACE. ON EMERGENCY LED BATTERY DRIVER
- WALL-MOUNTED SELF ILLUMINATED EXIT SIGN ARROW INDICATES DIRECTION. SHADING INDICATES LIGHTED FACE. ON EMERGENCY LED BATTERY DRIVER
- EM — 2X2 LUMINAIRE ON EMERGENCY LED BATTERY DRIVER
- EM — 2X4 LUMINAIRE ON EMERGENCY LED BATTERY DRIVER
- PENDANT OR RECESSED LUMINAIRE ON EMERGENCY LED BATTERY DRIVER
- EM — DOWNLIGHT LUMINAIRE ON EMERGENCY LED BATTERY DRIVER
- DUAL-HEAD LED EMERGENCY LIGHTING FIXTURE WITH 90 MINUTE EMERGENCY BATTERY DRIVER
- $ — SINGLE POLE SWITCH – MH +46"
- $PS — PROJECTION SCREEN CONTROLLER – MH +46"
- DS — DAYLIGHT SENSOR – CEILING MOUNTED
- Da abc — DIMMER SWITCH – MH +46" "a" DENOTES SINGLE ZONE OF CONTROL "abc" DENOTES THREE INDIVIDUAL ZONES OF CONTROL
- Dm — MASTER DIMMER SWITCH – MH +46" "M" DENOTES MASTER ON/OFF SWITCH
- D3 — THREE WAY DIMMER SWITCH – MH +46"
- Da — OCCUPANCY SENSOR WALL MOUNTED +46"AFF "a" DENOTES CONTROLLED LUMINAIRE "D" DENOTES COMBO-DIMMER/OCCUPANCY SENSOR SWITCH TYPE
- a — OCCUPANCY SENSOR CEILING MOUNTED "a" DENOTES CONTROLLED LUMINAIRE
- RC — SINGLE OR MULTI-RELAY LIGHTING CONTROLLER, DIMMING AND OR SWITCHING INCLUDING OCCUPANCY SENSOR SWITCH
- SM — WATTSTOPPER SEGMENT MANAGER
- LM — LIGHTING MANAGEMENT ZONE CONTROLLER (TIME CLOCK) WATTSTOPPER
- TELECOMM OUTLET DRYWALL RING AND STRING ONLY TO CEILING SPACE. +18"AFF
- FLOOR MOUNTED POKE-THRU AND 1"CONDUIT ONLY. RUN UNDERSLAB TO NEAREST WALL/COLUMN AND STUB-UP ABOVE CEILING.
- EM — EMERGENCY TELEPHONE COMMUNICATIONS SYSTEM
- DUPLEX RECEPTACLE RECESSED WALL MOUNTED +18"AFF
- FOURPLEX RECEPTACLE RECESSED WALL MOUNTED +18"AFF
- DUPLEX RECEPTACLE RECESSED POKE-THRU FLOOR MOUNTED
- FOURPLEX RECEPTACLE RECESSED POKE-THRU FLOOR MOUNTED
- DUPLEX RECEPTACLE RECESSED CEILING MOUNTED
- A — DUPLEX RECEPTACLE NEMA 5-15 (UON) RECESSED WALL MOUNTED +18"AFF. IF DUPLEX RECEPTACLE IS SHOWN ON DEDICATED CIRCUIT, PROVIDE NEMA 5-20 "A" = NEMA L6-20 "B" = NEMA L6-30
- SPECIALTY RECEPTACLE WALL MOUNTED +18"AFF UON. SEE PLAN FOR NEMA CONFIGURATION
- SPECIALTY RECEPTACLE FLOOR MOUNTED. SEE PLAN FOR NEMA CONFIGURATION
- RECESSED POKE-THRU ASSEMBLIES FOR POWER WITH HARDWIRE CONNECTION
- SHEET NOTE IDENTIFICATION TAG

## GENERAL SHEET NOTES

AS PER CALIFORNIA BUILDING CODE SECTION 11B-308, ELECTRICAL RECEPTACLES, CONTROLS OR SWITCHES SHALL BE MOUNTED AS FOLLOWS:

A. 48 INCHES MAXIMUM TO TOP OF THE OUTLET BOX MEASURED FROM THE FINISH FLOOR.
B. 15 INCHES MINIMUM TO BOTTOM OF THE OUTLET BOX MEASURED FROM THE FINISH FLOOR.

## ABBREVIATIONS

| | |
|---|---|
| A | AMPS OR AMPERES |
| AFF | ABOVE FINISHED FLOOR |
| CKT | CIRCUIT |
| C | CONDUIT |
| C.O. | CONDUIT ONLY (EMPTY CONDUIT) |
| CU | COPPER |
| (D) | DEMOLISH |
| (E) | EXISTING |
| EM | EMERGENCY |
| FATC | FIRE ALARM TERMINAL CABINET |
| FSD | FIRE SMOKE DAMPER |
| FBO | FURNISHED BY OTHERS |
| GFCI | GROUND FAULT CIRCUIT INTERRUPTER |
| HT | HEAT TRACE |
| IPS | INTERRUPTIBLE POWER SUPPLY |
| JB | JUNCTION BOX |
| MIN/MAX | MINIMUM/MAXIMUM |
| MTD | MOUNTED |
| MH | MOUNTING HEIGHT |
| (N) N | NEW |
| NC | NORMALLY CLOSED |
| NTS | NOT TO SCALE |
| NIC | NOT IN CONTRACT |
| NL | NIGHT LIGHT |
| OC | ON CENTER |
| PH, ø | PHASE |
| PNL | PANEL |
| (RL) (R) | RELOCATED |
| (RR) | REMOVED AND RELOCATED |
| (RN) | RENAME |
| (RE) | REMOVE |
| SAD | SEE ARCHITECTURAL DRAWINGS |
| SMD | SEE MECHANICAL DRAWINGS |
| SPD | SEE PLUMBING DRAWINGS |
| SD | SMOKE DAMPER |
| TTB | TELEPHONE TERMINAL BOARD |
| XFMR | TRANSFORMER |
| TYP | TYPICAL |
| UON, U.O.N. | UNLESS OTHERWISE NOTED |
| V | VOLTS |
| VIF | VERIFY IN FIELD |
| W | WIRE |
| WP | WEATHERPROOF |

## DRAWING INDEX



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Co/ Title: Date:

# ELECTRICAL LEGEND AND DRAWING INDEX

Scale: NONE Issue Date: 17APR19
Drawn By: PL Reviewed By: LA
Sheet: 1 of X

1E1.1

## FIRE ALARM GENERAL NOTES

1. FIRE ALARM SYSTEM AND INSTALLATION SHALL BE PER STATE OF CALIFORNIA FIRE MARSHAL AND THE CITY PLANNING DEPARTMENT COMPLYING WITH 2016 NFPA 72.
2. FIRE ALARM DRAWINGS ARE PROVIDED UNDER DEFERRED PERMIT.
3. SUBMIT FIRE ALARM DRAWINGS TO THE BUILDING MANAGEMENT FOR THEIR REVIEW AND APPROVAL.
4. LOCATION OF FIRE ALARM DEVICES IS SCHEMATIC. NUMBER OF DEVICES SHOWN ON DRAWINGS ARE MINIMUM REQUIREMENTS, PROVIDE ADDITIONAL DEVICES ESPECIALLY SPEAKER/STROBE OR HORN/STROBE, AS REQUIRED BY THE FIRE MARSHAL. EXACT LOCATIONS SHALL MEET ALL CODES, AND AS SHOWN ON FIRE ALARM SHOP DRAWINGS. PROVIDE SYNCHRONIZED DEVICES.
5. FIRE SMOKE DAMPERS SERVING CORRIDORS SHALL BE ACTUATED BY CORRIDOR SMOKE DETECTORS AND A RELAY IN FACP. ALL OTHERS PROVIDE DUCT TYPE SMOKE DETECTOR LOCATED WITHIN 3' TO 5' TO CONTROL DAMPERS.
6. COORDINATE WITH FIRE PROTECTION CONTRACTOR FOR LOCATION AND QUANTITY OF SPRINKLER VALVES, FLOW AND TAMPER SWITCHES, PROVIDE WIRING, CONDUITS, CONNECTION AND ANNUNCIATION AS REQUIRED BY CODE. PROVIDE FLOW AND TAMPER SWITCHES PER FLOOR.
7. UPON COMPLETION OF SYSTEM INSTALLATION, SYSTEM SHALL BE TESTED IN PRESENCE OF AND IN A MANNER ACCEPTABLE TO CITY FIRE DEPARTMENT. CONTRACTOR SHALL SUPPLY NECESSARY EQUIPMENT INCLUDING A "DECIMETER" TO CHECK ACCEPTABLE SOUND LEVELS OF DEVICES. TEST RESULTS SHALL BE PROVIDED PER NFPA 72 TO ARCHITECT, OWNER, CITY FIRE DEPARTMENT, AND THE STATE FIRE MARSHALL. PROVIDE ADDITIONAL DEVICES INCLUDING SPEAKERS AS REQUIRED BY FIRE DEPARTMENT.
8. VERIFY WITH FIRE MARSHALL THAT CEILING MOUNTED STROBES AND STROBE/SPEAKERS OR HORN/STROBE ARE ALLOWED PRIOR TO INSTALLATION.
9. ALL FIRE ALARM CABLING MUST BE RUN IN EMT CONDUIT (RED CONDUITS) ABOVE CEILING. ALL CONDUITS SHALL BE RED IN COLOR.
10. PROVIDE FIRE ALARM POWER SUPPLY IF REQUIRED. PROVIDE 120V POWER TO POWER SUPPLY.
11. THE ELEVATOR LOBBY DOORS SHALL UNLOCK (BUT STAY LATCHED) IMMEDIATELY AND AUTOMATICALLY ON ANY OF THE FOLLOWING CONDITIONS:
    A. ACTIVATION OF THE RELEASING DEVICE
    B. LOSS OF POWER TO THE LOCK CIRCUIT, OR ACCESS CONTROL SYSTEM
    C. ACTIVATION OF THE SMOKE DETECTOR WITHIN 5 FEET OF THE DOOR
    D. ACTIVATION OF ANY FIRE ALARM INITIATING DEVICE SUCH AS SMOKE DETECTOR, SPRINKLER WATER-FLOW DETECTOR, MANUAL PULL STATION, ETC. ON THE FLOOR.
    E. ACTIVATION OF ANY FIRE ALARM NOTIFICATION APPLIANCES SUCH AS HORNS, BELLS, STROBES, VOICE ALARM, ETC., ON THE FLOOR.
    F. LOSS OF POWER OF THE SMOKE DETECTOR SYSTEM.

## BUILDING STANDARDS & FINISHES

1. ALL ELECTRICAL, COMMUNICATION AND FIRE ALARM DEVICES INCLUDING WIRING METHODS, REQUIRED MANUFACTURER, STYLE, COLOR AND ALL OTHER FINISHES SHALL BE PER BUILDING STANDARDS, NO SUBSTITUTION.
2. LABEL PANEL & CIRCUIT NUMBER ON ALL OUTLETS. USE 3-LAYER LAMINATED PLASTIC WITH WHITE LETTERS ON BLACK BACKGROUNDS AND GLUE TO FACE PLATE.
3. UPDATE PANELBOARD SCHEDULES (TYPEWRITTEN) AT COMPLETION OF WORK. ALL EXISTING AND NEW CIRCUITS IN THE AREA OF WORK SHALL BE LABELED.
4. SHOULD A CONFLICT ARISE BETWEEN THE BUILDING STANDARD SPECIFICATIONS AND THE TENANT IMPROVEMENT SPECIFICATIONS, IT SHALL BE BROUGHT TO THE ATTENTION OF THE APPROPRIATE PARTIES IN THE PROJECT TO CONSIDER WHAT IS THE APPROPRIATE COURSE OF ACTION PRIOR TO THAT WORK OCCURRING.
5. ALL LOW VOLTAGE CABLING FOR TELECOM, DATA, AND OTHER TECHNOLOGY USES, SHALL COMPLY WITH THE BUILDING CODES, BUILDING RULES AND SPECIFICATIONS. FIRE STOPPING IS REQUIRED.
6. ALL DATA CABLING BACK TO THE RISER MUST BE COORDINATED THROUGH THE BUILDING RISER MANAGEMENT COMPANY.
7. LUMINAIRES THAT ARE SERVED BY MORE THAN ONE POWER SOURCE, OR STRUCTURED TO FAIL TO EMERGENCY AUTOMATICALLY SHALL BE IDENTIFIED AND LABELED IN THE BALLAST PAN, AND AT THE SWITCH, SO AS TO PREVENT ELECTRIC SHOCK WHEN SERVICING TAKES PLACE. INSTALLATION OF A RELAY FOR EMERGENCY LIGHTING SHALL INCLUDE NOTATION TO SUFFICIENTLY LABEL THE SWITCH PLATE AND BALLAST PAN FOR EACH LUMINAIRE WHERE THE LUMINAIRE CAN BE SERVED FROM MORE THAN ONE SOURCE. THIS IS AN ELECTRICAL SAFETY CODE AND SAFETY NOTATION AND LABELING TO ASSURE THAT SOMEONE SERVICING THE LUMINAIRE IS AWARE OF THE MULTIPLE SOURCES AND RELATED ELECTRIC SHOCK HAZARD.
8. LABEL PANEL & CIRCUIT NUMBER ON ALL OUTLETS. USE 3-LAYER LAMINATED PLASTIC WITH WHITE LETTERS ON BLACK BACKGROUNDS AND GLUE TO FACE PLATE.
9. UPDATE PANELBOARD SCHEDULES (TYPEWRITTEN) AT COMPLETION OF WORK. ALL EXISTING AND NEW CIRCUITS IN THE AREA OF WORK SHALL BE LABELED.
10. ALL ELECTRICAL DEVICES AT HARD LID CEILING MUST BE ACCESSIBLE FOR MAINTENANCE AND AS REQUIRED BY CODE.

## SPECIFICATIONS - ELECTRICAL

1. THIS IS A STANDARD LEGEND SHEET. SOME SYMBOLS AND/OR ABBREVIATIONS MAY APPEAR ON THIS SHEET, BUT NOT ON PROJECT PLANS.
2. THIS PROJECT SHALL COMPLY WITH THE 2014 NATIONAL ELECTRICAL CODE AS AMENDED BY THE 2016 CALIFORNIA ELECTRICAL CODE AS WELL AS ANY APPLICABLE LOCAL CODES AND REQUIREMENTS, INCLUDING CA TITLE 24 2016 AND 2016 CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS.
3. ALL EQUIPMENT SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY AND PROPERLY LABELED, PER C.E.C. SECTION 110.2.
4. ALL EXIT SIGNS SHALL BE ILLUMINATED AT ALL TIMES, AND COMPLY WITH C.B.C. 2016 SECTION 1011.1
5. PRIOR TO BID, CONTRACTOR SHALL VISIT THE SITE TO ADEQUATELY DETERMINE ALL PRE-EXISTING CONDITIONS. BY THE ACT OF SUBMITTING A BID, THE CONTRACTOR WILL BE DEEMED TO HAVE COMPLIED WITH THE FOREGOING, TO HAVE ACCEPTED SUCH CONDITIONS, AND TO HAVE MADE ALLOWANCES THEREFORE IN PREPARING HIS BID.
6. ALL ELECTRICAL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE LATEST EDITION OF THE N.E.C., AS WELL AS STATE, AND LOCAL CODES AND REQUIREMENTS.
7. UNLESS OTHERWISE NOTED, ALL WORK SHOWN ON DRAWINGS IS NEW AND TO BE PROVIDED AND INSTALLED UNDER THIS CONTRACT.
8. ALL GROUNDING SHALL CONFORM TO ART.250 OF CALIFORNIA ELECTRICAL CODE, LATEST APPLICABLE EDITION. PROVIDE SEPARATE GROUND WIRE IN ALL POWER/LIGHTING CONDUIT.
9. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS, ELEVATIONS, AND DETAILS FOR EXACT LOCATION OF ALL LIGHTING FIXTURES. COORDINATE LOCATIONS OF ALL LIGHTING FIXTURES, OUTLETS AND JUNCTION BOXES WITH DIVISION 15 PRIOR TO ROUGH-IN.
10. VERIFY EXACT CONNECTION REQUIREMENTS, OUTLET TYPE, HEIGHT, AND LOCATION OF ALL OWNER SUPPLIED EQUIPMENT OR EQUIPMENT PROVIDED UNDER OTHER SECTIONS OF THE SPECIFICATIONS PRIOR TO ROUGH-IN. REFER TO ARCHITECTURAL AND MECHANICAL DRAWINGS FOR EQUIPMENT LOCATIONS.
11. ALL PIPES, CONDUITS, ETC. PASSING THROUGH FIRE RATED WALLS OR FLOORS SHALL HAVE A U.L. RATED ASSEMBLY, WITH 3M FIRE STOP SEALS, WITH PIPE CONDUIT SUPPORTED PER U.L. REQUIREMENTS ON BOTH SIDES OF PENETRATION.
12. OUTLET AND DEVICES IN FIRE RATED WALL SHALL BE SEPARATED BY MINIMUM OF 24" IN ADJACENT STUDS. IF NOT POSSIBLE, PROVIDE WRAP AND BOXES WITH FIRE RATED PUTTY PER FIRE MARSHAL APPROVAL.
13. MAINTAIN "AS-BUILT" RECORDS AT ALL TIMES, SHOWING EXACT LOCATION OF ALL UNDERGROUND AND/OR CONCEALED CONDUITS AND SERVICES INSTALLED UNDER THIS CONTRACT, INCLUDING CIRCUIT IDENTIFICATION WHERE APPLICABLE. PROVIDE OWNER WITH "AS-BUILT" DOCUMENTS AS INDICATED IN THE PROJECT MANUAL.
14. DRAWINGS INDICATE THE LOCATION OF DEVICES, FIXTURES AND EQUIPMENT AND THE CIRCUIT NUMBER AND PANEL DESIGNATION WHICH SUPPLIES THEM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETELY CONNECTING ALL ELECTRICAL DEVICES TO CIRCUITS INDICATED ON THE DRAWINGS.
15. ALL EQUIPMENT GROUNDING SHALL CONFORM TO ARTICLE 250 OF THE CALIFORNIA ELECTRIC CODE, LATEST EDITION.
16. ALL CONDUIT SHALL BE CONCEALED, UNLESS OTHERWISE NOTED.
17. EQUIPMENT OVERLOADS AND FUSES SHALL BE PROVIDED AND INSTALLED AS PER NAME PLATE ON THE EQUIPMENT TO BE INSTALLED.
18. TELEPHONE AND COMMUNICATION OUTLETS SHALL BE FURNISHED WITH BOX AND PLASTER RING AND 3/4" CONDUIT TO ACCESSIBLE CEILING.
19. FLOOR MOUNTED TELEPHONE AND COMMUNICATION OUTLETS SHALL BE FURNISHED WITH CONDUIT INTO ACCESSIBLE CEILING.
20. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS WITH THE ARCHITECTURAL DRAWINGS PRIOR TO ROUGH-IN.
21. ALL DIVISION 23 EQUIPMENT LOW VOLTAGE CONTROL WIRING AND RACEWAY REQUIREMENTS SHALL BE PROVIDED BY DIVISION 23 U.O.N.
22. COORDINATE INSTALLATION OF ALL RECESSED LIGHT FIXTURES WITH DIVISION 23 PRIOR TO INSTALLATION OF HVAC DUCTS AND SPRINKLER HEADS. ENSURE AFTER INSTALLATION OF FIXTURES THAT THERE IS NO CONTACT BETWEEN DUCTS AND FIXTURES TO AVOID VIBRATION IN FIXTURES.
23. EXISTING ELECTRICAL INSTALLATION IS TO BE ALTERED IN THE AREA INDICATED. RELOCATE EXISTING OUTLETS, SWITCHES, RECEPTACLES AND LIGHT FIXTURES WHERE REQUIRED TO ACCOMMODATE WORK UNDER THIS PROJECT. WHERE WORK OF THIS TRADE OR WORK OF OTHERS TRADES INTERRUPTS EXISTING ELECTRICAL CIRCUITS, ALL SUCH SERVICES SHALL BE REESTABLISHED AND CONTROL TO ALL OUTLETS WHICH ARE TO REMAIN IN SERVICE.
24. COPPER CONDUCTORS SHALL BE USED THROUGHOUT THE JOB. SIZE NO. 8 AND SMALLER SHALL BE TYPE THWN OR THHN AND SIZE NO. 6 AND LARGER SHALL BE TYPE THHN OR XHHW.
25. PERMANENTLY AND EFFECTIVELY GROUND RACEWAYS, CONTROL EQUIPMENT AND UTILIZATION EQUIPMENT IN ACCORDANCE WITH REQUIREMENTS OF APPLICABLE CODES.
26. ELECTRICAL METALLIC TUBING (EMT) SHALL BE USED UP TO THE PANELBOARD AND FROM PANELBOARD TO J-BOXES AND INSIDE ALL WALLS. EMT SHALL BE USED IN INTERIOR SPACES BETWEEN ELECTRICAL DEVICES EXCEPT MC CABLE MAY BE USED NO MORE THAN 15 FT. LF FROM J-BOX TO ADJACENT ELECTRICAL DEVICES. MC CABLE SHALL NOT BE USED FROM ONE DEVICE (LIGHT FIXTURES, OUTLETS, ETC.) TO ANOTHER. MC CABLE MAY ONLY BE USED FROM J-BOX TO DEVICE. PROVIDE MULTIPLE J-BOXES AS REQUIRED TO LIMIT MC CABLE LENGTH TO 15 FEET FROM ANY J-BOX. FLEXIBLE LIQUID TIGHT SHALL BE USED FOR FINAL MOTOR CONNECTIONS REGARDLESS OF LOCATION. RIGID METAL CONDUIT SHALL BE USED IN WET LOCATIONS, IN CONCRETE SLABS ON GRADE AND IN SLABS EXPOSED TO WEATHER, ONLY EMT SHALL BE USED IN THE CEILING OF FLOOR BELOW FOR FLOOR ELECTRICAL OUTLETS. ALSO IN OPEN CEILING AREAS USE ONLY EMT CONDUIT.
27. RIGID METAL CONDUITS JOINTS, FITTINGS, COUPLINGS AND TERMINATIONS SHALL BE THREADED TYPE. REAM CONDUIT AFTER THREADS ARE CUT. EMT COUPLING AND CONNECTORS SIZED 3/4" AND LESS SHALL BE SET SCREW OR COMPRESSION TYPE 1" AND LARGER SHALL BE COMPRESSION TYPE. CONNECTORS MUST HAVE INSULATED THROATS.
28. OUTLET BOXES:
    A. INTERIOR: GALVANIZED OR SHERARDIZED, ONE PIECE PRESSED STEEL, KNOCK OUT TYPE, STANDARD SIZE SUITABLE FOR USE AS INTENDED.
    B. MANUFACTURERS: APPLETTON, BRYANT, STEEL CITY, OR APPROVED EQUAL.
    C. ALL WIRING DEVICES SHALL BE SPECIFICATION GRADE AS MANUFACTURED BY LEVITON, HUBBELL OR SIERRA.
29. LIGHTING: ALL LUMINAIRE SHALL HAVE BE LED. MOUNTING HARDWARE SHALL BE COMPATIBLE WITH FIXTURE TYPE, CEILING CONSTRUCTION AND MOUNTING POSITION PER CODE SPECIFIED SEISMIC CONSTRAINT REQUIREMENTS.
30. WHERE OUTLETS ARE SHOWN BACK-TO-BACK, INSTALL THE OUTLETS WITH 24" SEPARATION IN FIRE RATED WALLS. ALL OTHER WALLS INSTALL OUTLETS WITH A STUD IN BETWEEN.
31. CONTRACTOR SHALL REVIEW BUILDING STANDARDS AND VERIFY THAT ALL EQUIPMENT AND WIRING METHODS MEET THE REQUIREMENTS.
32. PROVIDE NEMA 5-15R FOR RECEPTACLES EXCEPT 5-20R FOR DEDICATED RECEPTACLES PER CODE.
33. ALL PANELBOARD SHALL BE BOLT ON TYPE COPPER MAIN BUS AND COPPER GROUND BAR (DOUBLE SIZE NEUTRAL REQUIRED FOR K-13 TRANSFORMER AIC TO MATCH EXISTING U.O.N. DISTRIBUTION EQUIPMENT SHALL BE SQUARE D, CUTLER HAMMER, GE OR SIEMENS. ALL PANELBOARD SHALL BE PROVIDED WITH AN ENGRAVED PLASTIC NAMEPLATE INDICATED PANEL NAME AND VOLTAGE ON THE EXTERIOR OF ENCLOSURE. DOOR WITH IN DOOR HINGE TYPE.
34. ALL ELECTRICAL AND VOICE/DATA WIRING LOCATION IN RATED FIRE WALLS SHOULD BE INSTALLED IN METAL CONDUIT, AND ASSEMBLIES SHALL COMPLY WITH BUILDING CODE.
35. ALL NEW TRANSFORMER SHALL BE K-13 WITH FLUKE FLK-075-CLV-INFRARED WINDOW. SQUARE D, CUTLER HAMMER, GE, SIEMENS, OR POWERSMITH.
36. PROVIDE PULL STRING IN ALL TEL/DATA/AV CONDUITS INCLUDING CONDUITS PROVIDED FROM TEL/DATA/AV OUTLETS (IN FLOOR AND WALL) TO ACCESSIBLE CEILING.
37. TELE/DATA/AV VENDOR NEEDS TO PROVIDE DRAWINGS, APPLY AND OBTAIN PERMITS FOR ALL THEIR WORK.
38. 3D GPR SCAN/XRAY SLAB IS REQUIRED AT ALL FLOOR ANCHORS, FLOOR BOLTS, AND CONCRETE CORE LOCATIONS; CORING MUST BE PERFORMED AFTER HOURS. ALL CORE LOCATIONS SHALL BE APPROVED BY BUILDING MANAGEMENT PRIOR TO CORING.
39. PROVIDE PANELBOARD SCHEDULES (TYPEWRITTEN) AT COMPLETION OF WORK. ALL EXISTING AND NEW CIRCUITS IN THE AREA OF WORK SHALL BE DOCUMENTED.
40. ALL COMMUNICATION WIRING SHALL BE PLENUM-RATED AND SHALL BE INDEPENDENTLY SUPPORTED FROM THE SLAB ABOVE AND NOT FROM CEILING WIRES.
41. CIRCUIT NUMBER SHOWN ARE FOR REFERENCE ONLY, VERIFY IN FIELD FOR ACTUAL CIRCUITS.
42. LABEL ALL J-BOXES WITH VOLTAGE, PANEL AND CIRCUIT NUMBERS.
43. ALL OUTLETS MUST BE LABELED, (P-TOUCH) (PNL9A CTI).
44. EACH MULTIWIRE BRANCH CIRCUIT SHALL BE PROVIDED WITH A MEANS THAT WILL SIMULTANEOUSLY DISCONNECT ALL UNGROUNDED CONDUCTORS AT THE POINT WHERE THE BRANCH CIRCUIT ORIGINATES, PER 2016 CEC SECTION 210.4(B).
45. ALL SUPPORTS/J-BOXES MUST BE DRILLED AND ANCHORED AND NOT POWER ACTUATED SHOTS.
46. PER 2016 CEC TABLE 310.15(B)(3)(A), WIRE AMPACITY SHALL BE DERATED BASED UPON THE NUMBER OF CURRENT CARRYING CONDUCTORS (CCC) IN A COMMON RACEWAY. DERATED AMPACITY SHALL BE GREATER THAN OR EQUAL TO UPSTREAM CIRCUIT BREAKER. PROVIDE #12AWG FOR COMMON RACEWAYS CONTAINING BETWEEN 2-6 CCC'S. PROVIDE #10AWG FOR COMMON RACEWAYS CONTAINING 7-9 CCC'S. PROVIDE #8AWG FOR COMMON RACEWAYS ENCLOSING BETWEEN 10-20 CCCS.
47. FOR BUILDING WITH TRENCH SYSTEM, USE TRENCH SYSTEM FOR WIRES FROM SINGLE SOURCE (TRANSFORMER, ETC.). DO NOT RUN WIRES FROM 2 DIFFERENT SOURCES IN A COMMON TRENCH.
48. CONTRACTOR SHALL XRAY SLAB PRIOR TO ANY CORE DRILLING. THIS IS TO VERIFY THAT THE CORE WILL NOT HIT ANY STRUCTURAL MEMBERS OR EXISTING CONDUCTORS. THIS PRICE SHALL BE INCLUDED IN THE BID.
49. ALL ELECTRICAL EQUIPMENT AND DEVICES AT HARD LID (OR DRYWALL) AND SUSPENDED CEILINGS MUST BE ACCESSIBLE FOR MAINTENANCE AND AS REQUIRED BY CODE.
50. REPLACEMENT OF LAMPS, DRIVERS, AND OTHER LIGHTING MAINTENANCE ITEMS WHICH ARE NOT BUILDING STANDARD ARE SUBJECT TO TENANT BILL-BACK CHARGES.
51. THE WIRING OF LUMINAIRES, WIRING DEVICES AND CONTROL DEVICES, WITHIN EACH INTENDED CONTROL SCHEME, SHALL BE FULLY IMPLEMENTED USING THE PROPER TYPE AND NUMBER OF WIRES WITH CONNECTIONS AS REQUIRED.
52. ALL NEW CIRCUITRY SHOWN ON THESE DOCUMENTS IS DONE PER THE "ROUNDHOUSE" METHOD. SIZE COMMON NEUTRAL TO 150% OF PHASE WIRES IN ALL RECEPTACLE CIRCUITS.
53. PROVIDE SIX SETS OF PRODUCT SUBMITTALS EACH IN A THREE-RING BINDER FOR REVIEW AS FOLLOWS:
    A. LIFE SAFETY SYSTEMS
    a. LIFE SAFETY STROBE UNITS
    b. LIFE SAFETY SPEAKER/STROBE UNITS
    c. LIFE SAFETY SPEAKER UNITS
    d. LIFE SAFETY PULL STATIONS
    e. SMOKE DETECTORS
    B. LUMINAIRES
    C. DIGITAL LIGHTING CONTROL SYSTEMS
    D. DEVICES: RECEPTACLES, SWITCHES, TELECOMM DEVICES, ETC.
    E. COVERPLATES: RECEPTACLES, SWITCHES, TELECOMM DEVICES, ETC
    F. RECESSED POKE-THRU ASSEMBLIES
    G. PANELBOARDS
    H. DIGITAL METERING SYSTEM
    I. OTHER DEVICES LISTED ON PLANS AND SPECS.
54. AIC BRACING/SCCR/INTERRUPTING RATING OF NEW PANELS AND CIRCUIT BREAKERS SHALL EXCEED MAXIMUM FAULT CURRENT AT PANEL LOCATION. VERIFY WITH BASE BUILDING SHORT CIRCUIT AND COORDINATION STUDY.
55. A COMPLETE CLOSE-OUT PACKAGE AS DETAILED IN TENANT IMPROVEMENT MANUAL, INCLUDING (2) HARD COPIES ON STANDARD 30X42 PLAN SHEET AND (1) AUTOCAD VERSION OF ARCHITECTURAL RECORD AND MEP AS-BUILT DRAWINGS MUST BE SUBMITTED TO LANDLORD WITHIN THIRTY DAYS OF PROJECT COMPLETION.
56. ALL WORK MUST BE PERFORMED IN ACCORDANCE WITH THE TENANT IMPROVEMENT MANUAL.

## LUMINAIRE SCHEDULE NOTES

1. LUMINAIRE SCHEDULE LISTED IS FOR SIZING/ASSIGNING CIRCUITS ONLY. DO NOT USE THIS SCHEDULE TO ORDER FIXTURES. USE LIGHT FIXTURE SCHEDULE SHOWN ON ARCHITECTURAL DRAWINGS/SPECIFICATIONS FOR PRICING, BIDDING AND ORDERING.
2. SUBMIT CUTSHEETS TO ARCHITECT FOR REVIEW.
3. PROVIDE DIMMING DRIVERS.
4. THE CONTRACTOR SHALL VERIFY ALL CEILING TYPES BEFORE ORDERING OF FIXTURES. ALSO VERIFY THAT ALL FEATURES CALLED FOR IN FIXTURE DESCRIPTIONS ON THE FIXTURE SCHEDULE ARE INCLUDED WITH CATALOG NUMBERS LISTED ON THE LIGHTING SUBMITTALS FOR THIS PROJECT.
5. DIMMING DRIVERS SHALL BE COMPATIBLE WITH LIGHTING CONTROL SYSTEM.
6. REFER TO LIGHTING PLAN FOR LUMINAIRE SCHEDULE. CONTRACTOR SHALL SUBMIT LUMINAIRE SUBMITTAL TO ARCHITECT AND ENGINEER FOR REVIEW.
7. LUMINAIRES SPECIFIED BY ARCHITECT. ALL FIXTURE COLORS AND FINISHES BY ARCHITECT. COORDINATE WITH ARCHITECT FOR UPDATED FIXTURE SCHEDULE AND FIXTURE CUT SHEETS.

## DEMOLITION NOTES

1. EXISTING ELECTRICAL INSTALLATION IS TO BE ALTERED IN THE AREA INDICATED. RELOCATE EXISTING OUTLETS, SWITCHES, RECEPTACLES AND LUMINAIRES WHERE REQUIRED TO ACCOMMODATE WORK UNDER THIS PROJECT. WHERE WORK OF THIS TRADE OR WORK OF OTHER TRADES INTERRUPTS EXISTING ELECTRICAL CIRCUITS, ALL SUCH SERVICES SHALL BE REESTABLISHED AND CONTROL TO ALL OUTLETS WHICH ARE TO REMAIN IN SERVICE.
2. SCOPE OF DEMOLITION SHALL BE PER ARCHITECTURAL DRAWING.
3. DEMOLISH ALL UNUSED EXISTING ELECTRICAL AND TELEPHONE RECEPTACLES. REMOVE UNUSED CONDUCTORS FROM EXISTING RACEWAYS. INCLUDING FLOOR ELECTRICAL TRENCH (IF APPLICABLE), CUT AND CAP ABANDONED FLOOR RACEWAYS FLUSH WITH CONCRETE FLOOR OR BEHIND WALLS AND CEILINGS. ALL ABANDONED FLOOR PENETRATIONS AND CORES MUST BE BACK FILLED WITH CONCRETE AND BROUGHT BACK TO THE ORIGINAL FIRE RATING.
4. RE-USE POWER OUTLETS/JACKS WHERE POSSIBLE; INSTALL COVER PLATE ON ALL ABANDONED POWER OUTLETS/JACKS WHICH WILL BE COVERED BY FURNITURE; ALL OTHER ABANDONED OUTLETS VISIBLE TO THE PUBLIC TO BE REMOVED, PATCH GWB AND PAINT TYPICAL
5. ALL EXISTING UNUSED/ABANDONED CONDUIT AND CABLES SHALL BE REMOVED BACK TO SOURCE.
6. TRACE ALL UNUSED/DEMOLISHED CIRCUITS BACK TO THE PANEL. ALL UNUSED/DEMOLISHED CIRCUITS SHALL BE MADE AVAILABLE FOR USE ON THIS PROJECT.
7. COORDINATE WITH BUILDING ENGINEER, PRIOR TO SHUTTING OFF EMERGENCY CIRCUIT.

## FUNCTIONAL TESTING, COMMISSIONING AND TRAINING

THE ENTIRE LIGHTING CONTROL SYSTEM (INCLUDING ALL CONTROLLERS, SWITCHES, RELAYS, CONTROLLED RECEPTACLES, OCCUPANCY SENSORS, ETC) SHALL BE FUNCTIONALLY TESTED AND COMMISSIONED TO THE SATISFACTION OF THE CHIEF BUILDING ENGINEER BY ELECTRICAL CONTRACTOR/CONTRACTOR'S AGENT, INCLUDING ALL RELEVANT DEVICE CALIBRATION AND CONFIGURATION AS REQUIRED. FOLLOW MANUFACTURERS' GUIDELINES AND AND PROVIDE ADDITIONAL DEVICES, SENSORS, ETC AS REQUIRED.

CONTRACTOR/CONTRACTOR'S AGENT SHALL PROVIDE ADEQUATE TRAINING TO THE BUILDING'S ENGINEERING STAFF. FACTORY AUTHORIZED TECHNICIAN AND THE CONTRACTOR SHALL INCLUDE A MINIMUM OF 8 HOURS OF THOROUGH AND DETAILED TRAINING. THIS TRAINING TIME IS IN ADDITION TO THE STARTUP AND FUNCTIONALITY COMMISSIONING.

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Co/ Title: Date:

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Drawn By: PL Reviewed By: LA
Sheet: 1 of X

1E1.2

## (E) PANEL-DPR

ENCL NEMA: 1

**SERVICE:** 277 /480V,3ø,4W
**MAIN BREAKER:** NONE
**LOCATION:** ELECTRICAL ROOM
**MOUNTING:** SURFACE
**MAIN BUS:** 225A
**FEEDER:** 200A/3P 4W FROM MSB-B

| DESCRIPTION | TYPE | VA A | VA B | VA C | CIR# | BRK | SN | BRK | CIR# | VA A | VA B | VA C | TYPE | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1 | 20/1 | * | | 2 | 7990 | | | H | |
| | | | | | 3 | 20/1 | * | 40/3 | 4 | | 7990 | | H | CU 1-1 |
| | | | | | 5 | 20/1 | * | | 6 | | | 7990 | H | |
| | | | | | 7 | 20/1 | * | 20/1 | 8 | | | | | |
| | | | | | 9 | 20/1 | * | 20/1 | 10 | | | | | |
| | | | | | 11 | 20/1 | * | 20/1 | 12 | | | | | |
| | | | | | 13 | 20/1 | * | 20/1 | 14 | | | | | |
| | | | | | 15 | 20/1 | * | 20/1 | 16 | | | | | |
| | | | | | 17 | 20/1 | * | 20/1 | 18 | | | | | |
| | | | | | 19 | 20/1 | * | 20/1 | 20 | | | | | |
| | | | | | 21 | 20/1 | * | 20/1 | 22 | | | | | |
| | | | | | 23 | 20/1 | * | 20/1 | 24 | | | | | |
| | | | | | 25 | 20/1 | * | | 26 | 8000 | | | H | |
| | | | | | 27 | 20/1 | * | 70/3 | 28 | | 8000 | | H | (E ) AC-1 |
| | | | | | 29 | 20/1 | * | | 30 | | | 8000 | H | |
| | | | | | 31 | 20/1 | * | 20/1 | 32 | | | | | |
| | | | | | 33 | 20/1 | * | 20/1 | 34 | | | | | |
| | | | | | 35 | 20/1 | * | 20/1 | 36 | | | | | |
| | | | | | 37 | 20/1 | * | 20/1 | 38 | | | | | |
| | | | | | 39 | 20/1 | * | 20/1 | 40 | | | | | |
| | | | | | 41 | 20/1 | * | 20/1 | 42 | | | | | |
| **TOTAL PHASE A** | | | | | | | 15,990 VA | | | 15990 | | | | |
| **TOTAL PHASE B** | | | | | | | 15,990 VA | | | | 15990 | | | |
| **TOTAL PHASE C** | | | | | | | 15,990 VA | | | | | 15990 | | |
| **TOTAL CONNECTED LOAD** | | | | | | | 47,970 VA | | | | | | | |

| DEMAND LOAD SUMMARY | CONN. VA | DEMAND FACTOR | DEMAND VA | DEMAND AMP |
|---|---|---|---|---|
| TYPE "M": NON-CONTINUOUS / MISC. LOADS | | 100% | | |
| TYPE "L": LIGHTING / CONTINUOUS LOADS | | 125% | | |
| TYPE "R": RECEPTACLES (FIRST 10KVA) | | 100% | | |
| TYPE "R": RECEPTACLES (OVER 10KVA) | | 50% | | |
| TYPE "H": HVAC / MECHANICAL LOADS | 47,970 | 100% | 47,970 | |
| TYPE "K": KITCHEN EQUIPMENT LOADS | | 65% | | |
| | 47,970 | | 47,970 | 58 |

## (E) PANEL-B6

ENCL NEMA: 1

**SERVICE:** 120 /208V,3ø,4W
**MAIN BREAKER:** NONE
**LOCATION:** ELECTRICAL ROOM
**MOUNTING:** SURFACE
**MAIN BUS:** 225A
**FEEDER:** EXISTING

| DESCRIPTION | TYPE | VA A | VA B | VA C | CIR# | BRK | SN | BRK | CIR# | VA A | VA B | VA C | TYPE | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FCU 1-1 | H | 890 | | | 1 | 15/2 | * | 20/1 | 2 | 900 | | | M | (E) SERVER RM |
| | H | | 890 | | 3 | | * | 20/1 | 4 | | 900 | | M | (E) SERVER RM |
| FCU 1-2 | H | | | 7 | 5 | 15/2 | * | 20/1 | 6 | | | | | SPARE |
| | H | 7 | | | 7 | | * | 20/1 | 8 | | | | | SPARE |
| FCU 1-3 | H | | 309 | | 9 | 15/2 | * | 20/1 | 10 | | | | | SPARE |
| | H | | | 309 | 11 | | * | 20/1 | 12 | | | | | SPARE |
| FCU 1-4 | H | 149 | | | 13 | 15/2 | * | 20/1 | 14 | 200 | | | R | DD |
| | H | | 149 | | 15 | | * | 20/1 | 16 | | 180 | | R | (E) ROOF RECEP. |
| FCU 1-5 | H | | | 7 | 17 | 15/2 | * | 20/1 | 18 | | | 1000 | H | (E) BOILER (ROOF) |
| | H | 7 | | | 19 | | * | 20/1 | 20 | | | | | SPARE |
| CONDU. PUMP | H | | 1000 | | 21 | 20/1 | * | 20/1 | 22 | | | | | SPARE |
| SPARE | | | | | 23 | 20/1 | * | 20/1 | 24 | | | | | SPARE |
| SPARE | | | | | 25 | 20/1 | * | 20/1 | 26 | | | | | SPARE |
| SPARE | | | | | 27 | 20/1 | * | 20/1 | 28 | | | | | SPARE |
| SPARE | | | | | 29 | 20/1 | * | 20/1 | 30 | | | | | SPARE |
| SPARE | | | | | 31 | 20/1 | * | 20/1 | 32 | 900 | | | M | (E) SERVER RM |
| SPARE | | | | | 33 | 20/1 | * | 20/1 | 34 | | 900 | | M | (E) SERVER RM |
| SPARE | | | | | 35 | 20/1 | * | 20/1 | 36 | | | 900 | M | (E) SERVER RM |
| SPARE | | | | | 37 | 20/1 | * | 20/1 | 38 | | | | | SPARE |
| SPARE | | | | | 39 | 20/1 | * | 20/1 | 40 | 500 | | | M | (E) FA CABINET |
| SPARE | | | | | 41 | 20/1 | * | 20/1 | 42 | | | | | SPARE |
| **TOTAL PHASE A** | | 1053 | | | | | 3,053 VA | | | 2000 | | | | |
| **TOTAL PHASE B** | | | 2348 | | | | 4,828 VA | | | | 2480 | | | |
| **TOTAL PHASE C** | | | | 323 | | | 2,223 VA | | | | | 1900 | | |
| **TOTAL CONNECTED LOAD** | | | | | | | 10,104 VA | | | | | | | |

| DEMAND LOAD SUMMARY | CONN. VA | DEMAND FACTOR | DEMAND VA | DEMAND AMP |
|---|---|---|---|---|
| TYPE "M": NON-CONTINUOUS / MISC. LOADS | 5,000 | 100% | 5,000 | |
| TYPE "L": LIGHTING / CONTINUOUS LOADS | | 125% | | |
| TYPE "R": RECEPTACLES (FIRST 10KVA) | 380 | 100% | 380 | |
| TYPE "R": RECEPTACLES (OVER 10KVA) | | 50% | | |
| TYPE "H": HVAC / MECHANICAL LOADS | 4,724 | 100% | 4,724 | |
| TYPE "K": KITCHEN EQUIPMENT LOADS | | 65% | | |
| | 10,104 | | 10,104 | 28 |

## (R) PANEL-B7

ENCL NEMA: 1

**SERVICE:** 120 /208V,3ø,4W
**MAIN BREAKER:** NONE
**LOCATION:** IDF ROOM
**MOUNTING:** SURFACE
**MAIN BUS:** 225A
**FEEDER:** 100A/3P,4W EXTEND CONDUIT AND WIRES

| DESCRIPTION | TYPE | VA A | VA B | VA C | CIR# | BRK | SN | BRK | CIR# | VA A | VA B | VA C | TYPE | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (E) LOAD | R | 540 | | | 1 | 20/1 | * | 20/1 | 2 | 720 | | | R | ELECTRIFIED FURNITURE |
| L-OFFICE | L | | 120 | | 3 | 20/1 | * | 20/1 | 4 | | 900 | | K | REC-PANTRY |
| ELECTRIFIED FURNITURE | R | | | 720 | 5 | 20/1 | * | 20/1 | 6 | | | 900 | K | REC-PANTRY |
| ELECTRIFIED FURNITURE | R | 720 | | | 7 | 20/1 | * | 20/1 | 8 | 720 | | | R | ELECTRIFIED FURNITURE |
| ELECTRIFIED FURNITURE | R | | 720 | | 9 | 20/1 | * | 20/1 | 10 | | 720 | | R | ELECTRIFIED FURNITURE |
| ELECTRIFIED FURNITURE | R | | | 720 | 11 | 20/1 | * | 20/1 | 12 | | | 720 | R | ELECTRIFIED FURNITURE |
| ELECTRIFIED FURNITURE | R | 720 | | | 13 | 20/1 | * | 20/1 | 14 | 720 | | | R | ELECTRIFIED FURNITURE |
| ELECTRIFIED FURNITURE | R | | 720 | | 15 | 20/1 | * | 20/1 | 16 | | 900 | | K | REC-PANTRY |
| ELECTRIFIED FURNITURE | R | | | 720 | 17 | 20/1 | * | 20/1 | 18 | | | 900 | K | REC-PANTRY |
| REC-OFFICE | R | 540 | | | 19 | 20/1 | * | 20/1 | 20 | 900 | | | K | REC-PANTRY |
| REC-OFFICE | R | | 720 | | 21 | 20/1 | * | 20/1 | 22 | | 900 | | K | REC-PANTRY |
| REC-OFFICE | R | | | 180 | 23 | 20/1 | * | 20/1 | 24 | | | 720 | R | REC-OFFICE |
| REC-OFFICE | R | 720 | | | 25 | 20/1 | * | 20/1 | 26 | 720 | | | R | REC-OFFICE |
| REC-OFFICE | R | | 720 | | 27 | 20/1 | * | 20/1 | 28 | | 720 | | R | REC-OFFICE |
| REC-OFFICE | R | | | 720 | 29 | 20/1 | * | 20/1 | 30 | | | 360 | R | REC-OFFICE |
| REC-OFFICE | R | 900 | | | 31 | 20/1 | * | 20/1 | 32 | 1080 | | | R | REC-OFFICE |
| REC-OFFICE | R | | 900 | | 33 | 20/1 | * | 20/1 | 34 | | 1080 | | R | REC-OFFICE |
| SPARE | | | | | 35 | 20/1 | * | 20/1 | 36 | | | 720 | R | REC-OFFICE |
| SPARE | | | | | 37 | 20/1 | * | 20/1 | 38 | 400 | | | H | DD/VRV |
| SPARE | | | | | 39 | 20/1 | * | 20/1 | 40 | | 670 | | H | EF 1-1 |
| SPARE | | | | | 41 | 20/1 | * | 20/1 | 42 | | | | | SPARE |
| **TOTAL PHASE A** | | 4140 | | | | | 9,400 VA | | | 5260 | | | | |
| **TOTAL PHASE B** | | | 3900 | | | | 9,790 VA | | | | 5890 | | | |
| **TOTAL PHASE C** | | | | 3060 | | | 7,380 VA | | | | | 4320 | | |
| **TOTAL CONNECTED LOAD** | | | | | | | 26,570 VA | | | | | | | |

| DEMAND LOAD SUMMARY | CONN. VA | DEMAND FACTOR | DEMAND VA | DEMAND AMP |
|---|---|---|---|---|
| TYPE "M": NON-CONTINUOUS / MISC. LOADS | | 100% | | |
| TYPE "L": LIGHTING / CONTINUOUS LOADS | 120 | 125% | 150 | |
| TYPE "R": RECEPTACLES (FIRST 10KVA) | 10,000 | 100% | 10,000 | |
| TYPE "R": RECEPTACLES (OVER 10KVA) | 9,980 | 50% | 4,990 | |
| TYPE "H": HVAC / MECHANICAL LOADS | 1,070 | 100% | 1,070 | |
| TYPE "K": KITCHEN EQUIPMENT LOADS | 5,400 | 65% | 3,510 | |
| | 26,570 | | 19,720 | 55 |

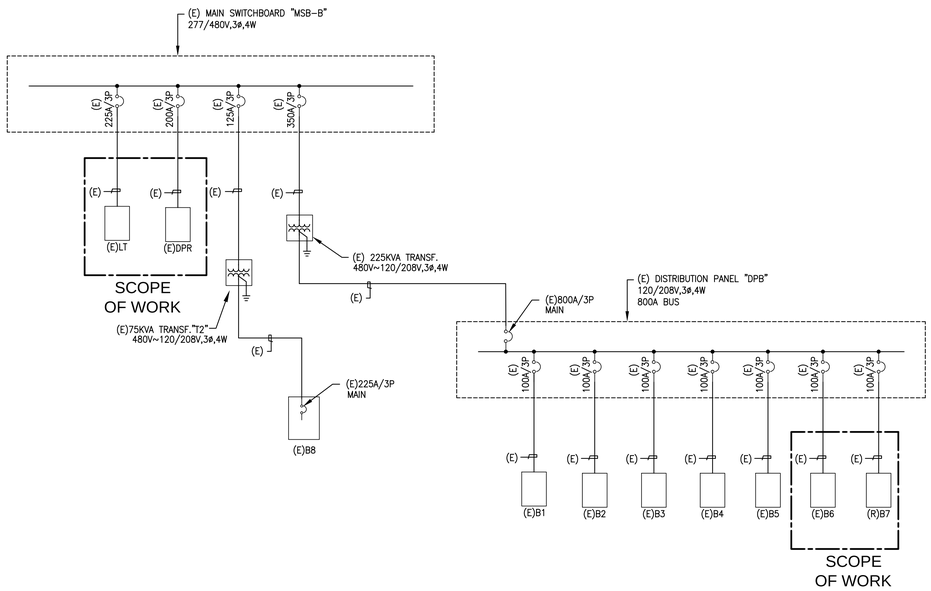
## (E) PANEL- LT

ENCL NEMA: 1

**SERVICE:** 277 /480V,3ø,4W
**MAIN BREAKER:** NONE
**LOCATION:** ELECTRICAL ROOM
**MOUNTING:** SURFACE
**MAIN BUS:** 225A
**FEEDER:** EXISTING

| DESCRIPTION | TYPE | VA A | VA B | VA C | CIR# | BRK | SN | BRK | CIR# | VA A | VA B | VA C | TYPE | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IWH 1-1 | H | 4600 | | | 1 | 20/1 | * | 20/1 | 2 | 2000 | | | L | (E ) LIGHTS |
| IWH 1-2 | H | | 4600 | | 3 | 20/1 | * | 20/1 | 4 | | 2000 | | L | (E ) LIGHTS |
| SPARE | | | | | 5 | 20/1 | * | 20/1 | 6 | | | 2000 | L | (E ) LIGHTS |
| SPARE | | | | | 7 | | * | 20/1 | 8 | 2000 | | | L | (E ) LIGHTS |
| SPARE | | | | | 9 | 20/3 | * | 20/1 | 10 | | 2000 | | L | (N ) LIGHTS |
| SPARE | | | | | 11 | | * | 20/1 | 12 | | | 2000 | L | (N ) LIGHTS |
| **TOTAL PHASE A** | | 4600 | | | | | 8,600 VA | | | 4000 | | | | |
| **TOTAL PHASE B** | | | 4600 | | | | 8,600 VA | | | | 4000 | | | |
| **TOTAL PHASE C** | | | | | | | 4,000 VA | | | | | 4000 | | |
| **TOTAL CONNECTED LOAD** | | | | | | | 21,200 VA | | | | | | | |

| DEMAND LOAD SUMMARY | CONN. VA | DEMAND FACTOR | DEMAND VA | DEMAND AMP |
|---|---|---|---|---|
| TYPE "M": NON-CONTINUOUS / MISC. LOADS | | 100% | | |
| TYPE "L": LIGHTING / CONTINUOUS LOADS | 12,000 | 125% | 15,000 | |
| TYPE "R": RECEPTACLES (FIRST 10KVA) | | 100% | | |
| TYPE "R": RECEPTACLES (OVER 10KVA) | | 50% | | |
| TYPE "H": HVAC / MECHANICAL LOADS | 9,200 | 100% | 9,200 | |
| TYPE "K": KITCHEN EQUIPMENT LOADS | | 65% | | |
| | 21,200 | | 24,200 | 29 |




**PARTIAL ELECTRIC SINGLE LINE DIAGRAM** — 1 / E-1.3
**NOT TO SCALE**

### PANELBOARD NOTES

1. ALL MULTIWIRE BRANCH CIRCUITS SHALL BE PROVIDED WITH A MEANS THAT WILL DISCONNECT ALL UNGROUNDED CONDUCTORS AT THE POINT WHERE THE BRANCH CIRCUIT ORIGINATES, PER NEC 2014/CEC 2016 SECTION 210.4(B), WHETHER SHOWN ON PANEL SCHEDULES OR NOT. FOR SINGLE PHASE MULTIWIRE BRANCH CIRCUITS, PROVIDE AND INSTALL TWO SINGLE-POLE CIRCUIT BREAKERS WITH A LISTED AND FACTORY-SUPPLIED HANDLE-TIE, OR A 2-POLE SWITCH OR CIRCUIT BREAKER. FOR A 3-PHASE INSTALLATION, PROVIDE AND INSTALL A 3-POLE CIRCUIT BREAKER, SEE FLOOR PLANS FOR LOCATIONS AND CIRCUIT NUMBERS OF ALL MULTIWIRE BRANCH CIRCUIT HOMERUNS.

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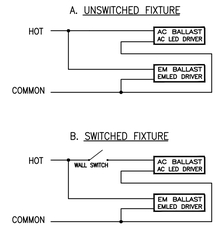
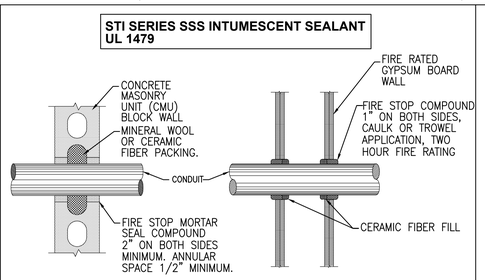
# SINGLE LINE DIAGRAM AND PANEL SCHEDULES

Scale: NONE Issue Date: 17APR19
Drawn By: PL Reviewed By: LA
Sheet: 1 of X

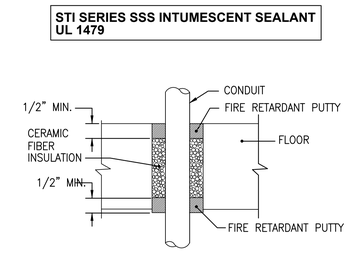
# 1E1.3



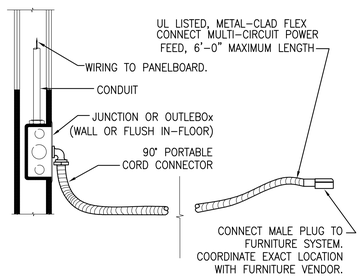

**EMERGENCY BALLAST WIRING DIAGRAM** — 1 / -
NOT TO SCALE



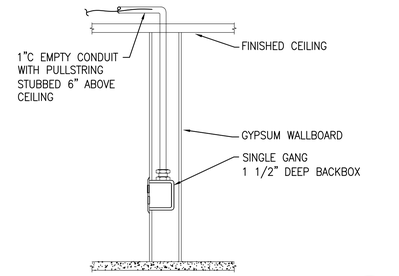

**CONDUIT PENETRATION DETAIL**
**FIRE RATED WALL** — 2 / -
NOT TO SCALE



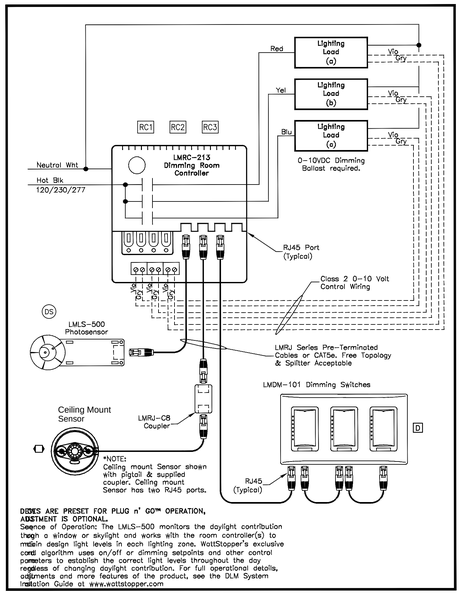

**FLOOR PENETRATION DETAIL** — 3 / -
NOT TO SCALE



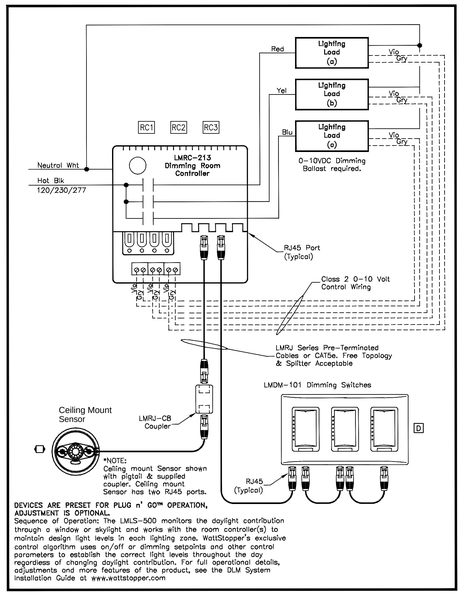

**ELECTRICAL CONNECTION DETAIL**
**TYPICAL FURNITURE SYSTEM** — 4 / -
NOT TO SCALE



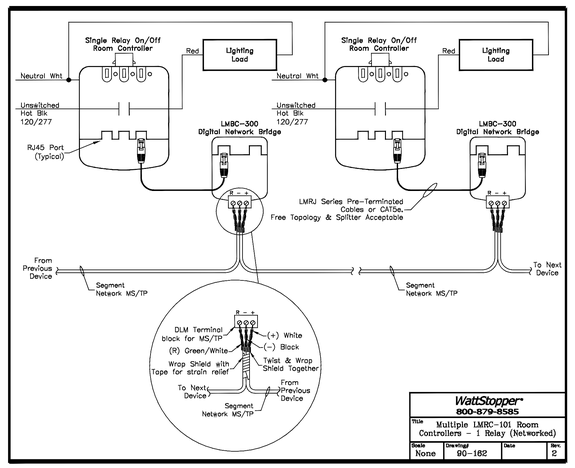

**CONDUIT STUB-UP FOR TELECOM WALL BOX** — 8 / -
NOT TO SCALE




**WATTSTOPPER DLM TYPICAL OPEN LOOP PHOTOSENSOR WIRING DIAGRAM** — 9 / -
NOT TO SCALE




**WATTSTOPPER DLM TYPICAL OPEN LOOP WIRING DIAGRAM** — 10 / -
NOT TO SCALE




**WATTSTOPPER DLM TYPICAL NETWORK BRIDGE CONNECTION DIAGRAM** — 11 / -
NOT TO SCALE

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# ELECTRICAL DETAILS AND PANEL SCHEDULES

Scale: NONE
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Sheet: 1 of X
Issue Date: 17APR19
Reviewed By: LA

1E1.4

## LIGHT FIXTURE SCHEDULE

| | TAG | SYMBOL | QUANTITY | MANUFACTURER | DESCRIPTION | SPECIFICATION | |
|---|---|---|---|---|---|---|---|
| 6 | F1 | | SEE PLAN | LITHONIA | 2X4 RECESSED DIRECT/INDIRECT FIXTURE | 2TL2-40L-FW-MWS-BLANK-EZ1-LP835-N80 | 32W LED 277V |
| 6 | F2 | | SEE PLAN | LITHONIA | 2X2 RECESSED DIRECT/INDIRECT FIXTURE | 2TL4-40L-FW-MWS-BLANK-EZ1-LP835-N80 | 35W LED 277V |
| 6 | F3 | | SEE PLAN | INFINIUM | LED DOWNLIGHT, 4" SQUARE | SGE4SQLEDOS | 13W LED 277V |
| | F4 | | SEE PLAN | KELVIX | UNDER-COUNTER LIGHTING | PQ35K-24V | 5W/FT LED 120V |
| | F5 | | SEE PLAN | FINELITE | RECESSED LINEAR | HP-4 R-4FT-H-835-F-277V-SC-SF | 3.6W/FT LED 277V |
| 6 | F6 | | SEE PLAN | FINELITE | LED LINEAR PENDANT (18', 24', 32' LENGTHS) | HP-4 D-X'-S-835-F-277V-H-835-F-277V-FM-SC-C1-OBD | 3.6W/FT LED 277V |


1 **1ST FLOOR - LIGHTING PLAN**
SCALE: 1/8"=1'-0"

## SHEET NOTES

1. ALL NEW LUMINAIRES SHALL BE CIRCUITED TO (E) PANEL-LT UON.
2. EMERGENCY FIXTURE WITH 90 MINUTE EMERGENCY BATTERY PACK/EMERGENCY LED DRIVER HIGH-LUMEN EMERGENCY BATTERY PACK/LED DRIVER.
3. ROOM CONTROLLER SHALL BE LOCATED IN CEILING DIRECTLY ABOVE DIMMER/SWITCH AND ABOVE ACCESSIBLE CEILING OR IN NON-PUBLIC/ LEAST VISIBLE AREAS. PROVIDE ADDITIONAL WIRING TO ACCOMPLISH THIS AS REQUIRED. FIELD COORDINATE EXACT LOCATION PRIOR TO INSTALLATION. PROVIDE SEPARATE ROOM CONTROLLERS FOR LUMINAIRES OF DIFFERENT CIRCUITS, DIFFERENT SYSTEM VOLTAGES AND LAMP SOURCE BUT CONTROLLED BY COMMON SWITCH, DIMMER, OCCUPANCY SENSOR SWITCH AND DAY LIGHT SENSOR.
4. ALL LOCATION OF WALL DIMMERS, WALL SWITCHES, CEILING DAY LIGHT SENSORS AND CEILING OCCUPANCY SENSORS SHALL BE COORDINATED WITH ARCHITECT.
5. ALL EXIT SIGN "EM" FIXTURE WITH 90 MINUTE EMERGENCY BATTERY PACK/EMERGENCY LED DRIVER HIGH-LUMEN EMERGENCY BATTERY PACK/LED DRIVER.
6. PROVIDE INTEGRAL OR REMOTE EMERGENCY LED DRIVER FOR ALL EMERGENCY FIXTURES AS REQUIRED. REMOTE EMERGENCY LED DRIVER SHALL MOUNTED IN ACCESSIBLE CEILING SPACE. PROVIDE EXTRA LED DRIVER FOR EMERGENCY SECTION.
7. EXISTING LIGHTING FIXTURE AND EXISTING SWITCHING TO REMAIN.
8. WATTSTOPPER SEGMENT MANAGER WITH BMS INTEGRATION.

## KEY NOTES

27 LINEAR PENDANTS TO BE MOUNTED 9'-0" A.F.F.

## GENERAL SHEET NOTES

1. ALL SHOWN IS NEW, UON.
2. WHERE SWITCHES ARE SHOWN ADJACENT TO EACH OTHER, THEY SHALL BE GANGED AND COVERED BY A SINGLE PLATE. SWITCH COVER PLATES TO BE WHITE.
3. PROVIDE SEISMIC BRACING FOR ALL LUMINAIRES AS REQUIRED.
4. THE DIMMING DRIVERS SHALL BE COMPATIBLE WITH DIMMER/ LIGHTING CONTROL SYSTEM.
5. IF LUMINAIRES ARE SHOWN ON THE PLAN CONTROLLED BY DIMMERS, PROVIDE COMPATIBLE DIMMING BALLAST/ DRIVERS/ POWER SUPPLIES WHETHER THE EXACT LUMINAIRE SPECIFICATION NUMBER INCLUDES DIMMING PROVISION OR NOT.
6. PROVIDE AUTOMATIC DAYLIGHT DIMMING (PRIMARY/SECONDARY) FOR ALL PERIMETER LIGHTING ADJACENT TO WINDOWS.
7. DISTANCE OF THE DAY LIGHT SENSORS FROM THE WINDOW SHALL BE PER MANUFACTURER'S RECOMMENDATIONS BASED ON THE WINDOW AND CEILING HEIGHT.
8. PROVIDE ALL LOW VOLTAGE INTERCONNECTION WIRING BETWEEN ALL ROOM CONTROLLERS, SENSORS, WALL SWITCHES, AND NETWORK HUBS FOR COMPLETE WORKING SYSTEM. REFER TO EQUIPMENT INSTALLATION MANUALS FOR DETAILED INFORMATION.
9. PROVIDE 0-10V DIMMABLE DRIVER FOR ALL LED FIXTURE. PROVIDE DIMMABLE DRIVER OR DIMMING BALLAST EVEN IF LUMINAIRE SCHEDULE SPECIFICATION NUMBER INCLUDES DIMMING PROVISION OR NOT.
10. FOR ALL DEVICE MOUNTING HEIGHTS, SAD.
11. LOCATION OF ALL DEVICES (SWITCHES, DIMMERS, RECEPTACLES, THERMOSTATS, STROBES, ETC) SHALL BE COORDINATED WITH AND APPROVED IN THE FIELD BY THE ARCHITECT. DO NOT INSTALL/ ROUGH-IN WITHOUT ARCHITECT'S REVIEW AND APPROVAL. NO EXCEPTION.
12. ALL SENSORS TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. LOCATIONS SHOWN ON PLANS FOR REFERENCE ONLY. COORDINATE PRE-INSTALLATION MEETING WITH MANUFACTURER'S REPRESENTATIVE TO VERIFY EXACT DEVICE LOCATIONS PRIOR TO ROUGH-IN.
13. WHERE NO SUSPENDED CEILING IS SHOWN, PROVIDE PENDANT MOUNTED, USING THREADED ROD AND SMALL J-BOX, OCCUPANCY SENSOR SWITCHES, AND DAY-LIGHT SENSOR SWITCHES. PAINT THE ENTIRE ASSEMBLY PER ARCHITECT'S DIRECTION. MOUNTING HEIGHT OF DEVICES PER MANUFACTURER'S RECOMMENDATIONS.
14. ALL CONDUITS, DISCONNECT SWITCHES, ROOM CONTROLLERS, ETC IN ALL EXPOSED CEILING AREA SHALL BE PAINTED AS DIRECTED BY ARCHITECT.
15. PROVIDE DEDICATED 20A/120V CONTROL CIRCUIT POWER FOR EQUIPMENT. PROVIDE GROUNDING VIA 3/4"C, 1#6 G TO NEAREST BUILDING GROUND SYSTEM. LIGHTING CONTROL SYSTEM HUB SHALL INTERFACE-READY WITH THE BUILDING BMS FOR FULL REMOTE OPERATION.

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1ST FLOOR - LIGHTING PLAN

Scale: 1/8"=1'-0" Issue Date: 17APR19
Drawn By: PL Reviewed By: LA
Sheet: 1 of X

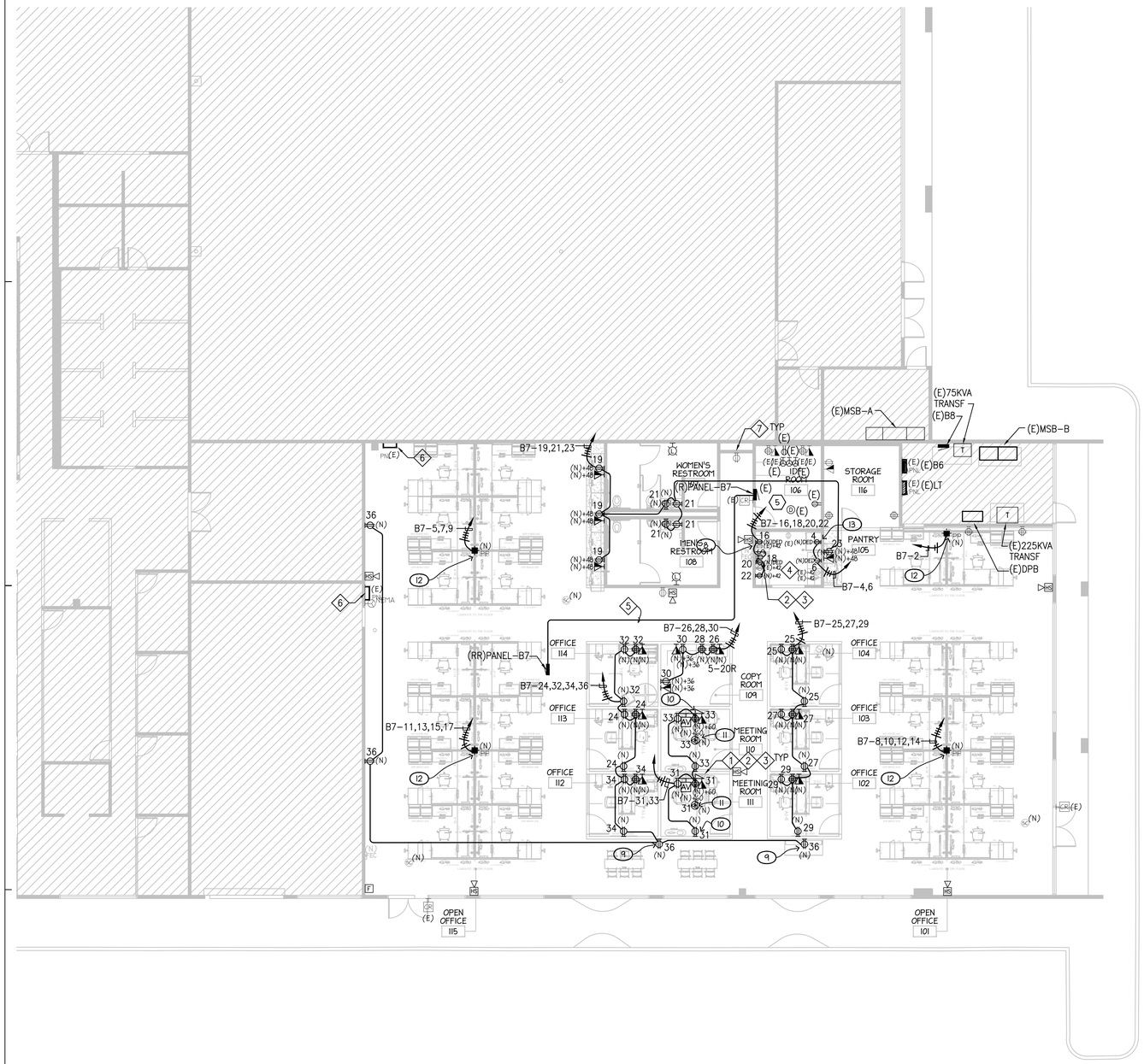
1E2.1

## SYMBOL LEGEND

- DUPLEX POWER OUTLET
- FOURPLEX POWER OUTLET
- DED DEDICATED DUPLEX POWER OUTLET
- GFI GROUND FAULT INTERCEPTOR DUPLEX POWER OUTLET PROTECTION
- NEMA SPECIAL PURPOSE POWER OUTLET
- COMBINATION FLOOR-MOUNTED TELEPHONE/DATA/ DUPLEX POWER OUTLET
- WALL MOUNTED COMBINATION TELEPHONE/DATA OUTLET, NUMBER INDICATES PORTS, TYP.
- CR CARD READER (N.I.C.) COORDINATE REQUIREMENTS WITH TENANTS' SECURITY VENDOR
- AV WALL MOUNTED AUDIO/VISUAL EQUIPMENT (NIC), COORDINATE WITH TENANTS' A/V CONSULTANT
- PP ELECTRIFIED FURNITURE BASE FEED, POWER POLE
- (X) EQUIPMENT TYPE IDENTIFIER
- (E) EXISTING ITEM
- (N) NEW ITEM
- SC SECURITY CAMERAS PROVIDED AND INSTALLED BY OWNER.

## KEY NOTES

8. PROVIDE DEDICATED OUTLET FOR DISHWASHER.
9. CENTER OUTLET ON WALL.
10. WALL MOUNTED AUDIO/VISUAL EQUIPMENT, COORDINATE WITH TENANTS' A/V CONSULTANT.
11. PROVIDE (N) LEGRAND FLUSH FLOOR CORE. VERIFY LOCATIONS AND SPECIFICATION WITH TENANT AND FURNITURE VENDOR. IS TRENCHING REQUIRED.
12. POWER POLE, PROVIDED BY FURNITURE VENDOR.
13. PROVIDE DEDICATED OUTLET FOR REFRIGERATOR.
5. SERVER BY TENANT.




## 1 1ST FLOOR - POWER & SIGNAL PLAN

SCALE: 1/8"=1'-0"

## SHEET NOTES

1. PROVIDE 1"CONDUIT SYSTEM AND 120V CONTROL CIRCUIT FOR ALL COMPONENTS OF ACCESS/CAMERA/SECURITY CONTROL SYSTEMS. FOR EXACT REQUIREMENTS, COORDINATE WITH SECURITY VENDOR FOR EXACT REQUIREMENTS PRIOR TO COMMENCEMENT FOR WORK.
2. FOR WATER LEAK DETECTOR CONTROLLER (SPD). CONNECT TO NEAREST GENERAL PURPOSE RECEPTACLE CIRCUIT.
3. HALF-SWITCHED RECEPTACLE FOR GARBAGE DISPOSAL. PROVIDE WALL SWITCH.
4. PROVIDE GFI RECEPTACLE FOR ALL COUNTERTOP RECEPTACLES.
5. RELOCATE EXISTING FLUSH MOUNTED ELECTRICAL PANEL. EXTEND CONDUIT AND WIRES AS REQUIRED.
6. REMOVE EXISTING DIST. CONNECT SWITCH AND SPECIAL RECEPTACLE. REMOVE CONDUIT AND WIRES BACK TO SOURCE.
7. ALL EXISTING TO REMAIN RECEPTACLES SHALL BE KEPT EMERGIZED. EXTEND CIRCUITING TO RELOCATD PANEL-B7. (TYP. FOR ALL EXISTING TO REMAIN OUTLETS SHOWN).

## GENERAL SHEET NOTES

1. ALL SHOWN IS NEW (OR NOTED WITH "N"), UON.
2. FOR ADDITIONAL GENERAL AND SHEET NOTES, SAD.
3. EXTEND CONDUIT AND WIRES TO ALL EXISTING TO REMAIN RECEPTACLES TO MAINTAIN CONTINUOUS CIRCUITRY.
4. ALL TELECOMMUNICATION CABLING / LOW VOLTAGE POWER CABLING TO BE PLENUM-RATED.
5. ALL TELECOMMUNICATION CABLING SHALL BE IN EMT CONDUIT (UON) IN WALLS AND STUBBED ABOVE CEILING.
6. CONTRACTOR TO COORDINATE WITH ARCHITECT FINAL LOCATION OF CORE DRILLS FOR X-RAYING AND DRILLING.
7. ALL POWER, DATA, PHONE COVERS AND SWITCH PLATES TO BE WHITE.
8. PROVIDE NEW FIRE ALARM NOTIFICATION AND DETECTION DEVICES AS INDICATED. TIE NEW DEVICES INTO EXISTING BASE BUILDING SYSTEM. PROVIDE ADDITIONAL BOOSTER PANELS/POWER SUPPLIES AS REQUIRED. COORDINATE WITH APPROVED VENDOR SHOP DRAWINGS.
9. ALL CONDUIT PENETRATION THRU RATED WALL AND FLOOR SHALL BE FIRE SEALED TO MAINTAIN RATING.
10. ALL RECEPTACLES SHALL BE LABELED WITH ASSOCIATED PANEL NAME AND CIRCUIT NUMBER.
11. WHERE CONDUITS CROSS BUILDING EXPANSION JOINTS, PROVIDE FLEX CONDUIT SYSTEM FOR 2"MOVEMENT ON EITHER SIDE.
12. ALTHOUGH THESE PLANS ARE BASED ON RECENT CURSORY FIELD SURVEY, THE ACCURACY OF THE CIRCUITS USED FOR THIS ALTERATION IS NOT GUARANTEED. THE ELECTRICAL CONTRACTOR IS REQUIRED TO AT ONCE CONTACT THE ELECTRICAL ENGINEER OR ARCHITECT FOR SOLUTIONS IF ACTUAL FIELD CONDITIONS DEVIATE FROM THE CONTRACT DOCUMENTS THAT GREATLY AFFECT ELECTRICAL DESIGN. THE ELECTRICAL CONTRACTOR AT HIS OPTION IS ALLOWED TO REARRANGE CIRCUITING TO MATCH FIELD CONDITIONS.
13. FOR ALL DEVICE MOUNTING HEIGHTS AND OTHER SPECIFIC REQUIREMENTS (GFCI, ETC), SAD.
14. ALL CONDUITS, DISCONNECT SWITCHES, ESNs, ETC IN ALL EXPOSED CEILING AREA SHALL BE PAINTED AS DIRECTED BY ARCHITECT.
15. (E) RECEPTACLE OR TELECOMM BOXES THAT WILL BECOME PERMANENTLY COVERED BY NEW WALL, MILLWORK OR BASE CABINETS SHALL BE DEMOLISHED (PROVIDE BLANKING COVER) OR RELOCATED. VIF. ALL OTHER EXISTING RECEPTACLES SHALL REMAIN. EXISTING CIRCUIT/S TO THOSE SHALL REMAIN.
16. ALL RECEPTACLES ABOVE COUNTER WITHIN 6FT OF ANY SINK SHALL BE GFCI PROTECTED.

**TITLE 24 COMPLIANCE STATEMENT:**

**AS PER 2016 TITLE 24 130.5, THIS ALTERATION DOES NOT REQUIRE AN ENTIRELY NEW OR COMPLETE REPLACEMENTS OF THE ELECTRICAL POWER DISTRIBUTION SYSTEMS. THEREFORE, CONTROLLED RECEPTACLES ARE NOT REQUIRED.**

## ELECTRIFIED FURNITURE NOTES

1. ELECTRIFIED FURNITURE SYSTEM:
   FOR 2-CIRCUIT HOMERUN, PROVIDE 2#12 HOT, 1#10 NEUTRAL AND 1#12 GROUND IN 1"C; FOR 3-CIRCUIT HOMERUN, PROVIDE 3#12 HOT, 2#10 NEUTRAL AND 2#12 GROUND IN 1"C; FOR 4-CIRCUIT HOMERUN, PROVIDE 4#12 HOT, 2#10 NEUTRAL AND 2#12 GROUND IN 1"C, IS ASSUMED (4-CIRCUIT 8-WIRE, 3+1CONFIGURATION). CONTRACTOR SHALL COORDINATE EXACT WIRING REQUIREMENTS WITH FURNITURE VENDOR, AND PROVIDE WIRING AS REQUIRED. COORDINATE EXACT WIRING SYSTEM (INTERNAL TELEDATA AND POWER DISTRIBUTION) WITH THE FURNITURE VENDOR. FURNITURE VENDOR SHALL PROVIDE RECEPTACLE LAYOUT IN ELECTRIFIED FURNITURE PARTITIONS).

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## 1ST FLOOR - POWER AND SIGNAL PLAN

Scale: 1/8"=1'-0" Issue Date: 17APR19
Drawn By: PL Reviewed By: LA
Sheet: 1 of X

# 1E3.1


## 1 1ST FLOOR - MECHANICAL POWER PLAN

SCALE: 1/8"=1'-0"

## SHEET NOTES

1. PROVIDE RECEPTACLE FOR PLUG-IN TYPE CONDENSATE PUMP. PROVIDE MANUAL MOTOR STARTER FOR HARD WIRE TYPE CONDENSATE PUMP. CONDENSATE PUMP PROVIDED BY MECHANICAL.

## WATER HEATER SCHEDULE

| CODE | REMARKS | LOCATION ROOM NO. | ELECTRIC INPUT V/KW/PH |
|---|---|---|---|
| IWH 1-1 | CHRONNMITE TANKLESS | UNDER COUNTER PANTRY 105 | 277V/4.6KW/1PH |
| IWH 1-2 | CHRONNMITE TANKLESS | UNDER COUNTER MEN'S 108 | 277V/4.6KW/1PH |

## FAN COIL UNIT SCHEDULE

| CODE | SERVICE | MOTOR DATA VOLT/ø | MCA | MOCP |
|---|---|---|---|---|
| FCU 1-1 | OPEN OFFICE 101 | 230 | 10.7 | 15 |
| FCU 1-2 | ELECTRICAL ROOM 117 | 230 | 0.6 | 15 |
| FCU 1-3 | CORRIDOR | 230 | 2.9 | 15 |
| FCU 1-4 | CORRIDOR | 230 | 1.8 | 15 |
| FCU 1-5 | IDF ROOM 106 | 230 | 0.6 | 15 |

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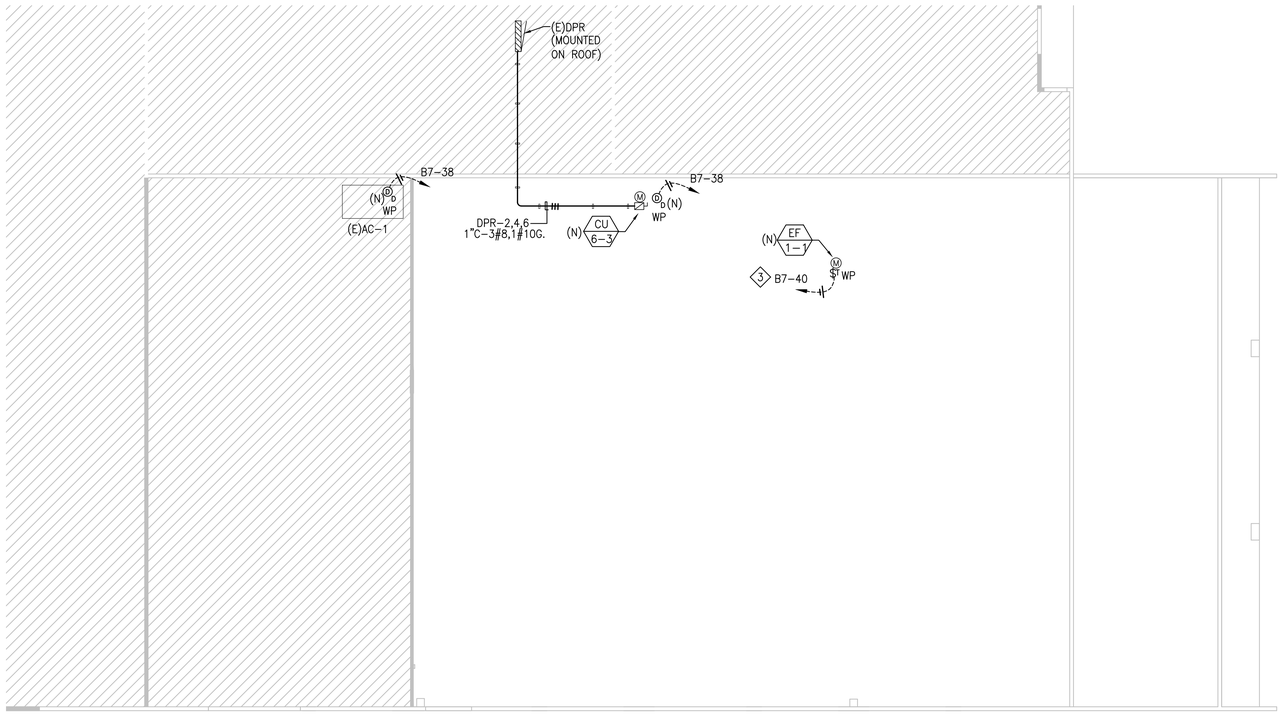
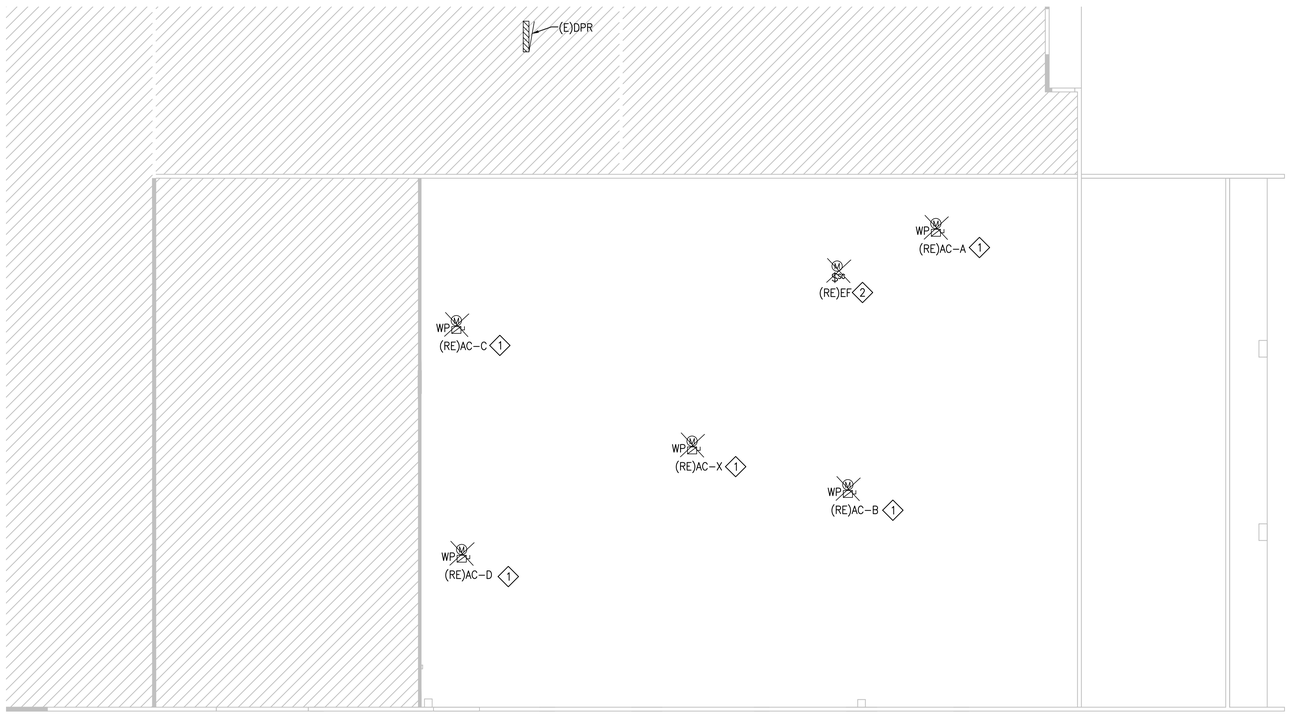



## 1 ROOF ELECTRICAL PLAN

SCALE: 1/8"=1'-0"




## 2 ROOF ELECTRICAL DEMOLITION PLAN

SCALE: 1/8"=1'-0"

## SHEET NOTES

1. EXTENT OF DEMOLITION IS TO SAFE-OFF ONLY. ALL DEMOLITION OF HP, CONTROLS AND ASSOC. DUCT DETECTOR IS BY OTHERS.
2. EXTENT OF DEMOLITION IS TO SAFE-OFF ONLY. ALL DEMOLITION OF FAN AND ASSOC. CONTROLS IS BY OTHERS.
3. ROUTE TO PANEL VIA (N) TIME SWITCH IN ELECTRICAL ROOM.

## EXHAUST FAN SCHEDULE

| CODE | MTR. WATTS | VOLTS PHASE | SERVICE |
|---|---|---|---|
| EF 1-1 | 1/4HP | 120V/1ø | RESTROOM/COPY/PANITRY |

## CONDENSER UNIT

| CODE | ELECTRICAL(EACH MODULE) | | | | |
|---|---|---|---|---|---|
| | VOLT | PH | Hz | MCA | MOCP |
| CU 1-1 | 460 | 3 | 60 | 36.1 | 40 |

RICHMOND LAKESIDE
TENANT IMPROVEMENT

4114 Lakeside Drive
Richmond, CA 94806

brereton

909 Montgomery St., Suite 260
San Francisco, California 94133
T 415 546 1212 brereton.com

Stamp

REGISTERED PROFESSIONAL ENGINEER
LEO I. G. ABASTA
No. E-17622
Exp. 09/30/19
ELECTRICAL
STATE OF CALIFORNIA

Consultant

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19036

Issue/Revision:

| No. | Proj. No. Date: | Description |
|---|---|---|
| 1 | 32243.01 29MAR19 | ISSUE FOR REVIEW |
| 2 | 32243.01 22APR19 | ISSUE FOR PERMIT |



Approval Signature:

Co/ Title: Date:

ROOF ELECTRICAL PLAN

Scale: 1/8"=1'-0" Issue Date: 17APR19
Drawn By: PL Reviewed By: LA
Sheet: 1 of X

1E5.1

STATE OF CALIFORNIA
**INDOOR LIGHTING**
CEC-NRCC-LTI-01-E (Revised 04/16) — CALIFORNIA ENERGY COMMISSION

| CERTIFICATE OF COMPLIANCE | NRCC-LTI-01-E |
|---|---|
| Indoor Lighting | (Page 1 of 6) |
| Project Name: BAAQMD | Date Prepared: 04/01/19 |

**A. General Information**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Climate Zone: 3 | Conditioned Floor Area: 7257 SF | | | | | | |
| | Unconditioned Floor Area: | | | | | | |
| Building Type: | | ☑ | Nonresidential | ☐ | High-Rise Residential | ☐ | Hotel/Motel |
| ☐ Schools | | ☐ | Relocatable Public Schools | ☑ | Conditioned Spaces | ☐ | Unconditioned Spaces |
| Phase of Construction: | | ☐ | New Construction | ☐ | Addition | ☑ | Alteration |
| Method of Compliance: | | ☐ | Complete Building | ☑ | Area Category | ☐ | Tailored |

Project Address: 4124 LAKESIDE DRIVE, SUITE 118, RICHMOND, CA

**B. Lighting Compliance Documents** (select yes for each document included)

*For detailed instructions on the use of this and all Energy Efficiency Standards compliance documents, refer to the Nonresidential Manual published by the California Energy Commission.*

| YES | NO | COMP. DOC. | TITLE |
|---|---|---|---|
| ◉ | ○ | NRCC-LTI-01-E | Certificate of Compliance. All Pages required on plans for all submittals. |
| ◉ | ○ | NRCC-LTI-02-E | Lighting Controls, Certificate of Compliance, and PAF Calculation. All Pages required on plans for all submittals. |
| ◉ | ○ | NRCC-LTI-03-E | Indoor Lighting Power Allowance |
| ○ | ◉ | NRCC-LTI-04-E | Tailored Method Worksheets |
| ○ | ◉ | NRCC-LTI-05-E | Line Voltage Track Lighting Worksheets |
| ○ | ○ | NRCC-LTI-06-E | Indoor Lighting Existing Conditions |



STATE OF CALIFORNIA
**INDOOR LIGHTING**
CEC-NRCC-LTI-01-E (Revised 04/16) — CALIFORNIA ENERGY COMMISSION

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|---|---|
| Indoor Lighting | (Page 2 of 6) |
| Project Name: BAAQMD | Date Prepared: 04/01/19 |

**C. Summary of Allowed Lighting Power**

Conditioned and Unconditioned space Lighting must not be combined for compliance

| | Indoor Lighting Power for Conditioned Spaces | | Watts | | Indoor Lighting Power for Unconditioned Spaces | | Watts | |
|---|---|---|---|---|---|---|---|---|
| 01 | **Installed** Lighting NRCC-LTI-01-E, Table H, page 5 | + | 4716 | | **Installed** Lighting NRCC-LTI-01-E, Table H, page 5 | + | | |
| 02 | Portable Only for Offices NRCC-LTI-01-E, Table G, page 4 | + | | | | | | |
| 03 | Minus Lighting Control Credits NRCC-LTI-02-E, page 2 | - | | | Minus Lighting Control Credits NRCC-LTI-02-E, page 2 | - | | |
| 04 | Adjusted **Installed** Lighting Power (row 1 plus row 2 minus row 3) | = | 4716 | | Adjusted **Installed** Lighting Power (row 1 minus row 3) | = | | 0 |
| | Complies ONLY if **Installed** ≤ **Allowed** (Box 04 < Box 05) | | | | Complies ONLY if **Installed** ≤ **Allowed** (Box 04 < Box 05) | | | |
| 05 | **Allowed** Lighting Power Conditioned NRCC-LTI-03-E, page 1 Alterations with replacement luminaires that have at least 50/35%lower power compared to the original existing luminaires, may instead use the allowed wattage from NRCC-LTI-06, page 2 | | 5553 | | **Allowed** Lighting Power Unconditioned NRCC-LTI-03-E, page 1 Alterations with replacement luminaires that have at least 50/35% lower power compared to the original existing luminaires, may instead use the allowed wattage from NRCC-LTI-06, page 2 | | | |

**D. Declaration of Required Certificates of Installation**

Declare by selecting yes for all of the Certificates that will be submitted. (Retain copies and verify forms are completed and signed.)

| YES | NO | Form/Title | |
|---|---|---|---|
| ◉ | ○ | NRCI-LTI-01-E - Must be submitted for all buildings | ☐ Field Inspector |
| ◉ | ○ | NRCI-LTI-02-E - Must be submitted for a lighting control system, or for an Energy Management Control System (EMCS), to be recognized for compliance. | ☐ Field Inspector |
| ○ | ◉ | NRCI-LTI-03-E - Must be submitted for a line-voltage track lighting integral current limiter, or for a supplementary overcurrent protection panel used to energize only line-voltage track lighting, to be recognized for compliance. | ☐ Field Inspector |
| ○ | ◉ | NRCI-LTI-04-E - Must be submitted for two interlocked systems serving an auditorium, a convention center, a conference room, a multipurpose room, or a theater to be recognized for compliance. | ☐ Field Inspector |
| ○ | ◉ | NRCI-LTI-05-E - Must be submitted for a Power Adjustment Factor (PAF) to be recognized for compliance. | ☐ Field Inspector |
| ○ | ◉ | NRCI-LTI-06-E - Must be submitted for additional wattage installed in a video conferencing studio to be recognized for compliance. | ☐ Field Inspector |



STATE OF CALIFORNIA
**INDOOR LIGHTING**
CEC-NRCC-LTI-01-E (Revised 04/16) — CALIFORNIA ENERGY COMMISSION

| CERTIFICATE OF COMPLIANCE | NRCC-LTI-01-E |
|---|---|
| Indoor Lighting | (Page 3 of 6) |
| Project Name: BAAQMD | Date Prepared: 04/01/19 |

**E. Declaration of Required Certificates of Acceptance**

Declare by selecting yes for all of the Certificates of Acceptance that will be submitted. (Retain copies and verify forms are completed and signed.)

| YES | NO | FORM/TITLE | |
|---|---|---|---|
| ◉ | ○ | NRCA-LTI-02-A - Must be submitted for occupancy sensors and automatic time switch controls. | ☐ Field Inspector |
| ◉ | ○ | NRCA-LTI-03-A - Must be submitted for automatic daylight controls. | ☐ Field Inspector |
| ○ | ◉ | NRCA-LTI-04-A - Must be submitted for demand responsive lighting controls. | ☐ Field Inspector |
| ○ | ◉ | NRCA-LTI-05-A - Must be submitted for institutional tuning power adjustment factor (PAF). | |

*A Separate Lighting Schedule Must Be Filled Out for Conditioned and Unconditioned Spaces. Installed Lighting Power listed on this Lighting Schedule is only for:* ☑ **CONDITIONED SPACE** ☐ **UNCONDITIONED SPACE**

**F. Indoor Lighting Schedule and Field Inspection Energy Checklist**

- ☑ The actual indoor lighting power listed on the next 2 pages includes all installed permanent and planned portable lighting systems.
- ☐ When Complete Building Method is used for compliance, list each different type of luminaire on separate lines.
- ☑ When Area Category Method or Tailored Method is used for compliance, list each different type of luminaire by each different function area on separate lines
- ☐ Also include track lighting in schedule, and submit the track lighting compliance document (NRCC-LTI-05-E) when line-voltage track lighting is installed.



STATE OF CALIFORNIA
**INDOOR LIGHTING**
CEC-NRCC-LTI-01-E (Revised 04/16) — CALIFORNIA ENERGY COMMISSION

| CERTIFICATE OF COMPLIANCE | NRCC-LTI-01-E |
|---|---|
| Indoor Lighting | (Page 4 of 6) |
| Project Name: BAAQMD | Date Prepared: 04/01/19 |

**G. Installed Portable Luminaires in Offices – Exception to Section 140.6(a)**

- This section shall be filled out ONLY for portable luminaires in offices (As defined in §100.1). All other planned portable luminaires shall be documented on next page of this compliance document.
- This section is used to determine if greater than 0.3 watts of portable lighting is planned for any office
- Fill out a separate line for each different office. Small offices that are typical (having the same general and portable lighting) may be grouped together. This allowance shall not be traded between offices having different lighting systems.

| Office Portable Luminaire Schedule | Office Installed Portable Luminaire W/ft² | | | | | | | | Office Location | Field Inspector | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | | 08 | 09 | 10 | |
| Complete Luminaire Description (i.e., LED, under cabinet, furniture mounted direct/indirect) | Watts per Luminaire | Number of Luminaires | Installed portable luminaire watts in this office (G02 x G03) | Square feet of this office | Watts per square foot (G04 / G05) | If G06 ≤ 0.3, enter zero; If G06 > 0.3, (G06-0.3) | | (G05 x G07 ) | Identify Office area in which these portable luminaires are installed | Pass | Fail |
| | | | 0 | | | | | 0 | | ○ | ○ |
| | | | 0 | | | | | 0 | | ○ | ○ |
| | | | 0 | | | | | 0 | | ○ | ○ |
| | | | 0 | | | | | 0 | | ○ | ○ |
| | | | 0 | | | | | 0 | | ○ | ○ |
| Total installed portable luminaire watts that are greater than 0.3 W/ft² per office: | | | | | | | | | Enter sum total of all pages into NRCC-LTI-01-E; Page 2 | | |



STATE OF CALIFORNIA
**INDOOR LIGHTING**
CEC-NRCC-LTI-01-E (Revised 04/16) — CALIFORNIA ENERGY COMMISSION

| CERTIFICATE OF COMPLIANCE | NRCC-LTI-01-E |
|---|---|
| Indoor Lighting | (Page 5 of 6) |
| Project Name: BAAQMD | Date Prepared: 04/01/19 |

*A Separate Lighting Schedule Must Be Filled Out for Conditioned and Unconditioned Spaces. Installed Lighting Power listed on this Lighting Schedule is only for:* ☑ **CONDITIONED SPACE** ☐ **UNCONDITIONED SPACE**

**H. Indoor Lighting Schedule and Field Inspection Energy Checklist**

| Luminaire Schedule | | Installed Watts | | | | | Location | Field Inspector[1] | |
|---|---|---|---|---|---|---|---|---|---|
| 01 | 02 | 03 | 04 | | 05 | 06 | 07 | 08 | |
| Name or Item Tag | Complete Luminaire Description (i.e., 3 lamp fluorescent troffer, F32T8, one dimmable electronic ballast) | Watts per Luminaire | How wattage was determined: CEC Default from NA8 | According to §130.0(c) | Number Luminaires | Total Installed Watts in this area (H03 x H05 ) | Primary Function area in which these luminaires are installed | Pass | Fail |
| F1 | 2X4 RECESSED DIRECT/INDIRECT FIXTURE LED 0–10V | 32W | ☑ | ☐ | 29 | 928 | OPEN OFFICE | ○ | ○ |
| F2 | 2X2 RECESSED DIRECT/INDIRECT FIXTURE LED 0–10V | 35W | ☑ | ☐ | 68 | 2380 | OFFICE/CORRIDORS/IDF/STORAGE | ○ | ○ |
| F3 | 4"SQUARE DOWNLIGHT LED 0–10V | 13W | ☑ | ☐ | 16 | 208 | RESTROOMS | ○ | ○ |
| F4 | (2)4' +(2)8' UNDER COUNTER LED 5W/FT 0–10V | 120W | ☑ | ☐ | 1 | 120 | PANTRY/COPY | ○ | ○ |
| F5 | 12' RECESSED LINEAR LED 3.6W/FT 0–10V | 43.2W | ☑ | ☐ | 2 | 86.4 | OPEN OFFICE/REST | ○ | ○ |
| F5 | 22' RECESSED LINEAR LED 3.6W/FT 0–10V | 79.2W | ☑ | ☐ | 2 | 158.4 | OPEN OFFICE | ○ | ○ |
| F6 | 18' LINEAR PENDANT LED 3.6W/FT 0–10V | 64.8W | ☑ | ☐ | 2 | 129.6 | OPEN OFFICE | ○ | ○ |
| F6 | 24' LINEAR PENDANT LED 3.6W/FT 0–10V | 86.4W | ☑ | ☐ | 2 | 172.8 | OPEN OFFICE | ○ | ○ |
| F6 | 32' LINEAR PENDANT LED 3.6W/FT 0–10V | 115.2W | ☑ | ☐ | 4 | 460.8 | OPEN OFFICE | ○ | ○ |
| | | | INSTALLED WATTS PAGE TOTAL: | | | 4644 | Enter sum total of all pages into NRCC-LTI-01-E; Page 2 | | |



STATE OF CALIFORNIA
**INDOOR LIGHTING**
CEC-NRCC-LTI-01-E (Revised 04/16) — CALIFORNIA ENERGY COMMISSION

| CERTIFICATE OF COMPLIANCE | NRCC-LTI-01-E |
|---|---|
| Indoor Lighting | (Page 6 of 6) |
| Project Name: BAAQMD | Date Prepared: 04/01/19 |

**DOCUMENTATION AUTHOR'S DECLARATION STATEMENT**

1. I certify that this Certificate of Compliance documentation is accurate and complete.

| | |
|---|---|
| Documentation Author Name: Levi Abarte | Documentation Author Signature: |
| Company: Amit Wadhwa & Assoc. | Signature Date: 04/01/19 |
| Address: 870 Market St Suite 846 | CEA Certification Identification (if applicable): |
| City/State/Zip: San Francisco, CA 94102 | Phone: 415-596-9344 |

**RESPONSIBLE PERSON'S DECLARATION STATEMENT**

I certify the following under penalty of perjury, under the laws of the State of California:
1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

| | |
|---|---|
| Responsible Designer Name: Levi Abarte | Responsible Designer Signature: |
| Company : Amit Wadhwa & Assoc. | Date Signed: 04/01/19 |
| Address: 870 Market St Suite 846 | License: E-17622 |
| City/State/Zip: San Francisco, CA 94102 | Phone: 415-596-9344 |



A. TITLE 24 NOTES:
INSTALLING CONTRACTOR SHALL PROVIDE AS FOLLOWS:

1. PERFORM AND SUBMIT ALL REQUIRED FUNCTIONAL TESTING OF LIGHTING CONTROLS AS REQUIRED ON TITLE 24 DOCUMENTATION FORMS.
2. PERFORM AND SUBMIT ALL ACCEPTANCE FORMS.
3. PERFORM AND SUBMIT ALL INSTALLATION FORMS.
4. PERFORM AND SUBMIT ALL VERIFICATION FORMS.

B. 1. TITLE 24 COMPLIANCE STATEMENT:

AS PER 2016 TITLE 24 130.5, THIS ALTERATION DOES NOT REQUIRE AN ENTIRELY NEW OR COMPLETE REPLACEMENTS OF THE ELECTRICAL POWER DISTRIBUTION SYSTEMS. THEREFORE, CONTROLLED RECEPTACLES ARE NOT REQUIRED.

RICHMOND LAKESIDE
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Richmond, CA 94806

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REGISTERED PROFESSIONAL ENGINEER
LEVI G. ABARTE
No. E-17622
Exp. 09/30/19
ELECTRICAL
STATE OF CALIFORNIA

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Issue/Revision:

| No. | Proj. No. Date: | Description |
|---|---|---|
| 1 | 32243.01 29MAR19 | ISSUE FOR REVIEW |
| 2 | 32243.01 22APR19 | ISSUE FOR PERMIT |



Approval Signature:

Co/ Title: Date:

# TITLE 24 FORMS

Scale: NONE Issue Date: 17APR19
Drawn By: PL Reviewed By: LA
Sheet: 1 of X

1ET.1

STATE OF CALIFORNIA
## INDOOR LIGHTING – LIGHTING CONTROLS
CEC-NRCC-LTI-02-E (Revised 01/16) — CALIFORNIA ENERGY COMMISSION

| CERTIFICATE OF COMPLIANCE | NRCC-LTI-02-E |
|---|---|
| Indoor Lighting - Lighting Controls | (Page 1 of 3) |
| Project Name: BAAQMD | Date Prepared: 04/01/19 |

**A. Mandatory Lighting Control Declaration Statements** (Indicate if the measure applies by checking yes or no below.)

| YES | NO | Control Requirements |
|---|---|---|
| ◉ | ○ | Lighting shall be controlled by self-contained lighting control devices which are certified to the Energy Commission according to the Title 20 Appliance Efficiency Regulations in accordance with Section 110.9. |
| ◉ | ○ | Lighting shall be controlled by a lighting control system or energy management control system in accordance with §110.9. An Installation Certificate shall be submitted in accordance with Section 130.4(b). |
| ○ | ◉ | One or more Track Lighting Integral Current Limiters shall be installed which have been certified to the Energy Commission in accordance with §110.9 and §130.0. Additionally, an Installation Certificate shall be submitted in accordance with Section 130.4(b). |
| ○ | ◉ | A Track Lighting Supplementary Overcurrent Protection Panel shall be installed in accordance with Section 110.9 and Section 130.0. Additionally, an Installation Certificate shall be installed in accordance with Section 130.4(b). |
| ◉ | ○ | All lighting controls and equipment shall comply with the applicable requirements in §110.9 and shall be installed in accordance with the manufacturer's instructions in accordance with Section 130.1. |
| ◉ | ○ | All luminaires shall be functionally controlled with manual ON and OFF lighting controls in accordance with Section 130.1(a). |
| ◉ | ○ | General lighting shall be separately controlled from all other lighting systems in an area. Floor and wall display, window display, case display, ornamental, and special effects lighting shall each be separately controlled on circuits that are 20 amps or less. When track lighting is used, general, display, ornamental, and special effects lighting shall each be separately controlled; in accordance with Section 130.1(a)4. |
| ◉ | ○ | The general lighting of any enclosed area 100 square feet or larger, with a connected lighting load that exceeds 0.5 watts per square foot shall meet the multi-level lighting control requirements in accordance with Section 130.1(b). |
| ◉ | ○ | All installed indoor lighting shall be equipped with controls that meet the applicable Shut-OFF control requirements in Section 130.1(c). |
| ◉ | ○ | Lighting in all Daylit Zones shall be controlled in accordance with the requirements in Section 130.1(d) and daylit zones are shown on the plans. |
| ○ | ◉ | Lighting power in buildings larger than 10,000 square feet shall be capable of being automatically reduced in response to a Demand Responsive Signal in accordance with Section 130.1(e). |
| ◉ | ○ | Before an occupancy permit is granted for a newly constructed building or area, or a new lighting system serving a building, area, or site is operated for normal use, indoor lighting controls serving the building, area, or site shall be certified as meeting the Acceptance Requirements for Code Compliance in accordance with Section 130.4.(a). The controls required to meet the Acceptance Requirements include automatic daylight controls, automatic shut-OFF controls, and demand responsive controls. |



STATE OF CALIFORNIA
## INDOOR LIGHTING – LIGHTING CONTROLS
CEC-NRCC-LTI-02-E (Revised 01/16) — CALIFORNIA ENERGY COMMISSION

| CERTIFICATE OF COMPLIANCE | NRCC-LTI-02-E |
|---|---|
| Indoor Lighting - Lighting Controls | (Page 2 of 3) |
| Project Name: BAAQMD | Date Prepared: 04/01/19 |

A separate document must be filled out for Conditioned and Unconditioned Spaces. This page is used only for the following:
☑ CONDITIONED SPACES ☐ UNCONDITIONED SPACES

**B. Mandatory and Prescriptive Indoor Lighting Control Schedule, PAF Calculation, and Field Inspection Checklist**

| Lighting Control Schedule | | | Standards Complying With [1] (✓ all that apply, or leave empty if Exempted) | | | | | | | | PAF Credit Calculation [2] | | | | Field Inspector | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Watts of Controlled Lighting | PAF | Control Credit (11 x 12) | ✓ If Acceptance Tests Required | | |
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | | |
| Location in Building | Type/ Description of Lighting Control (i.e.: occupancy sensor, automatic time switch, dimmer, automatic daylight, etc...) | # of Units | §130.1(a) | §130.0(b) | §130.1(c) | §130.1(d) | §130.1(e) | §130.2(d) | §140.6(d) | | | | | | Pass | Fail |
| | | | | | | | | | | | | 0 | ☐ | ○ | ○ | |
| PERIMETER OPEN OFFICES/CONF | DAY LIGHT SWITCH | SEE PLAN | | | | • | | | | | | 0 | ☐ | ○ | ○ | |
| ALL | DIMMERS | SEE PLAN | • | • | | | | | | | | 0 | ☐ | ○ | ○ | |
| ALL | OCCUPANCY SENSORS | SEE PLAN | | | • | | | | | | | 0 | ☐ | ○ | ○ | |
| | | | | | | | | | | | | 0 | ☐ | ○ | ○ | |
| | | | | | | | | | | | | 0 | ☐ | ○ | ○ | |
| | | | | | | | | | | | | 0 | ☐ | ○ | ○ | |
| Control Credit PAGE TOTAL (Sum of Column 13): | | | | | | | | | | | | 0 | | | | |
| IF MULTIPLE PAGES ARE USED, ENTER SUM TOTAL OF Control Credit for all pages HERE (Sum of all Column 13): | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | Enter Control Credit total into NRCC-LTI-01-E; Page 1. | | | | |

*1. §130.1(a) = Manual area controls; §130.0(b) = Multi Level; §130.1(c) = Auto Shut-Off; §130.1(d) = Mandatory Daylight; §130.1(e) = Demand Responsive; §140.6(d) = Additional lighting controls installed to earn a PAF; §140.6(d) = Prescriptive Secondary Sidelit Daylight Controls.*
*2. Check Table 140.6-A for correct Factor. PAFs shall not be traded between conditioned and unconditioned spaces. As a condition to earn a PAF, an Installation Certificate is also required to be filled out, signed, and submitted.*



STATE OF CALIFORNIA
## INDOOR LIGHTING – LIGHTING CONTROLS
CEC-NRCC-LTI-02-E (Revised 01/16) — CALIFORNIA ENERGY COMMISSION

| CERTIFICATE OF COMPLIANCE | NRCC-LTI-02-E |
|---|---|
| Indoor Lighting - Lighting Controls | (Page 3 of 3) |
| Project Name: BAAQMD | Date Prepared: 04/01/19 |

**DOCUMENTATION AUTHOR'S DECLARATION STATEMENT**
1. I certify that this Certificate of Compliance documentation is accurate and complete.

| Documentation Author Name: Levi Abarte | Documentation Author Signature: |
|---|---|
| Company: Amit Wadhwa & Assoc. | Signature Date: 04/01/19 |
| Address: 870 Market St Suite 846 | CEA Certification Identification (if applicable): |
| City/State/Zip: San Francisco, CA 94102 | Phone: 415-596-9344 |

**RESPONSIBLE PERSON'S DECLARATION STATEMENT**
I certify the following under penalty of perjury, under the laws of the State of California:
1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

| Responsible Designer Name: Levi Abarte | Responsible Designer Signature: |
|---|---|
| Company: Amit Wadhwa & Assoc. | Date Signed: 04/01/19 |
| Address: 870 Market St Suite 846 | License: E-17622 |
| City/State/Zip: San Francisco, CA 94102 | Phone: 415-596-9344 |



STATE OF CALIFORNIA
## INDOOR LIGHTING POWER ALLOWANCE
CEC-NRCC-LTI-03-E (Revised 04/16) — CALIFORNIA ENERGY COMMISSION

| CERTIFICATE OF COMPLIANCE | NRCC-LTI-03-E |
|---|---|
| Certificate of Compliance - Indoor Lighting Power Allowance | (Page 1 of 4) |
| Project Name: BAAQMD | Date Prepared: 04/01/19 |

A separate page must be filled out for Conditioned and Unconditioned Spaces. This page is only for:
☑ CONDITIONED spaces ☐ UNCONDITIONED spaces

**A. SUMMARY TOTALS OF LIGHTING POWER ALLOWANCES**
If using Complete Building Method for compliance, use only the total in column (a) as total allowed building watts.
If using Area Category Method, Tailored Method, or a combination of Area Category and Tailored Method for compliance, use only the total in column (b) as the total allowed building watts

| | (a) | | (b) |
|---|---|---|---|
| 01 Complete Building Method Allowed Watts. Documented in section B of NRCC-LTI-03-E (below on this page) | 0 | | |
| 02 Area Category Method Allowed Watts. Documented in section C-1 of NRCC-LTI-03-E (below on this page) | | | 5553 |
| 03 Tailored Method Allowed Watts. Documented in section A of NRCC-LTI-04-E | | | |
| **TOTAL ALLOWED BUILDING WATTS. Enter number into correct cell on NRCC-LTI-01, Page 2, Row 1** | 0 | | 5553 |

☐ Check here if building contains both conditioned and unconditioned areas.

**B. COMPLETE BUILDING METHOD LIGHTING POWER ALLOWANCE**

| 01 | 02 | | 03 | | 04 |
|---|---|---|---|---|---|
| TYPE OF BUILDING (From §140.6 Table 140.6-B) | WATTS PER ft² | X | COMPLETE BLDG. AREA | = | ALLOWED WATTS |
| | | | | | 0 |
| Total Area: | | | | | |
| Total Watts. Enter Total Watts into section A, row 1 (Above on this page) | | | | | 0 |

**C -1 AREA CATEGORY METHOD TOTAL LIGHTING POWER ALLOWANCES** — **Watts**

| | |
|---|---|
| Total from section C-2. | 5553 |
| Total from section C-3. | |
| Total Watts. Enter Total Watts into section A, row 2 (Above on this page). | 5553 |
| **For Alterations Only** – Reduced lighting power option (Total Allowed Watts x 0.85). Enter this value into section A, row 2 if using this option. | |



STATE OF CALIFORNIA
## INDOOR LIGHTING POWER ALLOWANCE
CEC-NRCC-LTI-03-E (Revised 04/16) — CALIFORNIA ENERGY COMMISSION

| CERTIFICATE OF COMPLIANCE | NRCC-LTI-03-E |
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| Certificate of Compliance - Indoor Lighting Power Allowance | (Page 3 of 4) |
| Project Name: BAAQMD | Date Prepared: 04/01/19 |

A separate page must be filled out for Conditioned and Unconditioned Spaces. This page is only for:
☐ CONDITIONED spaces ☐ UNCONDITIONED spaces

**C-3 AREA CATEGORY METHOD ADDITIONAL LIGHTING WATTAGE ALLOWANCE (from Table 140.6-C Footnotes)**

| 01 | 02 | 03 [2] | 04 | 05 | 06 | 07 |
|---|---|---|---|---|---|---|
| Primary Function | Sq Ft or Linear ft [1] | Additional Watts Allowed | Wattage Allowance (02 x 03) | Description(s) and Quantity of Special Luminaire Types in each Primary Function Area | Total Design Watts [3] | ALLOWED WATTS Smaller of 04 or 06 |
| | | | 0 | | | |
| | | | 0 | | | |
| | | | 0 | | | |
| | | | 0 | | | |
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| | | | 0 | | | |
| | | | 0 | | | |
| TOTALS – Enter into TOTAL AREA CATEGORY METHOD ADDITIONAL ALLOWANCES – Section C-1 | | | | | | |

1. Use linear feet only for additional allowance for white board or chalk board. All other additional Area Category allowances shall use watts per square foot.
2. Additional watts are available only when allowed according to the footnotes on bottom of Table 140.6-C, which include: Specialized task work; Ornamental lighting; Precision commercial and industrial work; Per linear foot of white board or chalk board; Accent, display and feature lighting; and Videoconferencing studio lighting..
3. Luminaire classification and wattage shall be determined in accordance with §130.0(c) of the Standards.



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## INDOOR LIGHTING POWER ALLOWANCE
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A separate page must be filled out for Conditioned and Unconditioned Spaces. This page is only for:
☑ CONDITIONED spaces ☐ UNCONDITIONED spaces

**C -2 AREA CATEGORY METHOD GENERAL LIGHTING POWER ALLOWANCE**
- Do not include portable lighting for offices. Portable lighting for offices shall be documented only in Section G of NRCC-LTI-01-E.
- Separately list lighting for each primary function area as defined in §100.1 of the Standards.

| 01 | | 02 | | 03 | | 04 |
|---|---|---|---|---|---|---|
| AREA CATEGORY (From §140.6 Table 140.6-C) | | WATTS PER ft² | X | AREA (ft²) | = | ALLOWED WATTS |
| Location in Building | Primary Function Area per Table 140.6-C | | | | | |
| PRIVATE OFFICE | OFFICES <250 | 1.00 | | 652 | | 652 |
| OPEN OFFICE | OFFICES >250 | 0.75 | | 5325 | | 3993.75 |
| TRANSITION/RESTROOM/COPY/STORAGE | SUPPORT | 0.60 | | 870 | | 522 |
| BREAKROOM | LOUNGE | 0.90 | | 80 | | 72 |
| IDF | IDF | 0.55 | | 128 | | 70.4 |
| CONFERENCE | CONFERENCE | 1.20 | | 202 | | 242.4 |
| | | | | | | 0 |
| | | | | | | 0 |
| | | | | | | 0 |
| | | | | | | 0 |
| | | | | | | 0 |
| | | | | | | 0 |
| | | | | | | 0 |
| | | | | | | 0 |
| | | | | | | 0 |
| | | | | | | 0 |
| | | | | | | 0 |
| TOTALS | | | | 7257 | | |
| Enter sum total Area Category allowed watts into section C-1 of NRCC-LTI-03-E (this compliance document) | | | | | | 5552.55 |
| | | | | | | WATTS |



STATE OF CALIFORNIA
## INDOOR LIGHTING POWER ALLOWANCE
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|---|---|
| Certificate of Compliance - Indoor Lighting Power Allowance | (Page 4 of 4) |
| Project Name: BAAQMD | Date Prepared: 04/01/19 |

**DOCUMENTATION AUTHOR'S DECLARATION STATEMENT**
1. I certify that this Certificate of Compliance documentation is accurate and complete.

| Documentation Author Name: Levi Abarte | Documentation Author Signature: |
|---|---|
| Company: Amit Wadhwa & Assoc. | Signature Date: 04/01/19 |
| Address: 870 Market St Suite 846 | CEA Certification Identification (if applicable): |
| City/State/Zip: San Francisco, CA 94102 | Phone: 415-596-9344 |

**RESPONSIBLE PERSON'S DECLARATION STATEMENT**
I certify the following under penalty of perjury, under the laws of the State of California:
1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

| Responsible Designer Name: Levi Abarte | Responsible Designer Signature: |
|---|---|
| Company: Amit Wadhwa & Assoc. | Date Signed: 04/01/19 |
| Address: 870 Market St Suite 846 | License: E-17622 |
| City/State/Zip: San Francisco, CA 94102 | Phone: 415-596-9344 |



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REGISTERED PROFESSIONAL ENGINEER
LEVI G. ABARTE
No. E-17622
Exp. 09/30/19
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Issue/Revision:

| No. | Proj. No. Date: | Description |
|---|---|---|
| 1 | 32243.01 29MAR19 | ISSUE FOR REVIEW |
| 2 | 32243.01 22APR19 | ISSUE FOR PERMIT |



Approval Signature:

Co/ Title: Date:

# TITLE 24 FORMS

Scale: NONE
Drawn By: PL
Sheet: 1 of X
Issue Date: 17APR19
Reviewed By: LA

1ET.2

STATE OF CALIFORNIA
**Electrical Power Distribution**
CEC-NRCC-ELC-01-E (Revised 01/16) — CALIFORNIA ENERGY COMMISSION

| CERTIFICATE OF COMPLIANCE | NRCC-ELC-01-E |
|---|---|
| Electrical Power Distribution | Page 1 of 4 |
| Project Name: BAAQMD | Date Prepared: 04/01/19 |

**General Information**

| | | | |
|---|---|---|---|
| Project Address: 4124 LAKESIDE DRIVE, SUITE 118, RICHMOND, CA | Climate Zone: 3 | Conditioned Floor Area : | 7257 SF |
| | | Unconditioned Floor Area : | |

Building Type: ☑ Nonresidential ☐ High-Rise Residential ☐ Hotel/Motel ☐ Schools ☐ Relocatable Public Schools ☑ Conditioned Spaces ☐ Unconditioned Spaces
Phase of Construction: ☐ New Construction ☐ Addition ☑ Alteration

*In the table below identify all applicable construction documents that specify the requirements for the scope of responsibility reported by this certificate. Use additional pages as needed to list all construction documents related to compliance of Section 130.5.*

| Document Number | Document Title/Descriptions (include description information for Table or Schedule if it contains compliance information) | Document Sheet # or Page # | Indicate which subsection of Section 130.5 is related to the document (e.g. 130.5(a) for service electrical metering) |
|---|---|---|---|
| THIS PLAN | VOLTAGE DROP CALCS | THIS PLAN | 130.5(c) |

Add Row | Remove Last

**A. Service Electrical Metering**

***Check one of the three boxes below if the electrical power distribution system is in compliance with Section 130.5(a).***

☐ For newly installed electrical service in newly constructed buildings, Service Electrical Metering is required according to Section 130.5(a). *Fill out Column 1 through 6 of table below.*

☐ For new or replacement electrical service equipment in existing buildings, Service Electrical Metering is required according to Section 141.0(b)2Pi. *Fill out Column 1 through 6 of table below.*

☐ EXCEPTION to Electrical Service Metering: Service or feeder for which the utility company provides a metering system that indicates instantaneous kW demand and kWh for a utility-defined period. *Fill out Column 1, 2 and 6 of table below with the compliance information.*

*Fill out a separate line for each electrical service that is connected to the building.*

| Electrical Service Schedule | Electrical Service Rating | Metering Capabilities (check all that are present) | | | | Exception to 130.5 (a) | Field Inspector |
|---|---|---|---|---|---|---|---|
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 |
| Electrical Service Designation/ Location/Description | kVA | Instantaneous (at the time) kW | Historical peak (kW) | Tracking kWh for a user-definable period | kWh per rate period | Utility metering system | Check that the metering complies |
| | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

Add Row | Remove Last



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**B. Separation of Electrical Circuits for Electrical Energy Monitoring**

*Check all boxes below if the electrical power distribution system is in compliance with Section 130.5(b).*

☐ The electrical power distribution system meets the separation of electrical circuits for electrical energy monitoring requirement of Section 130.5(b). The electrical power distribution systems is designed so that measurement devices can monitor the electrical energy usage of load types according to TABLE 130.5-B.

☐ Describe the electrical power distribution system installed and the compliance method chosen in meeting the requirement of Section 130.5(b). Use the space below to include the information. Examples of compliance methods are detailed in Nonresidential Compliance Manual Chapter 8.

*Fill out Column 1 thru 3 with the compliance information.*

| General Information | Electrical Power Distribution System information and Method of compliance | Electrical Service Rating | Enforcement Agency |
|---|---|---|---|
| 01 | 02 | 03 | 04 |
| Electrical Service Designation/Location/Description | Describe the electrical power distribution system installed and the compliance method used | kVA | Check that the system complies |
| | | | ☐ |

Field Inspector Notes:

**C. Voltage Drop**

*Check all boxes below if he electrical power distribution system is in compliance with Section 130.5(c).*

| | Enforcement Agency Check that the system complies |
|---|---|
| ☑ The electrical power distribution system meets the voltage drop requirement of Section 130.5(c). The maximum combined voltage drop on feeder conductors and branch circuit conductors to the farthest connected load or outlet, do not exceed 5%. | ☐ |
| ☑ Voltage drop calculation documents showing compliance to Section 130.5(c) are submitted as part of the compliance document submittal. | ☐ |

**D. Circuit Controls for 120-Volt Receptacles and Controlled Receptacles**

*Check one or more boxes below for applicable requirements of Section 130.5(d) for the electrical power distribution system.*

| | Field Inspector Check that the system complies |
|---|---|
| ☐ The control is capable of automatically shutting OFF the controlled receptacles when the space is typically unoccupied, either at the receptacle or circuit level. For the automatic time switch control, it incorporates an override control that allows the controlled receptacle to remain ON for no more than 2 hours when an override is initiated and an automatic holiday "shut-OFF" feature that turns OFF all loads for at least 24 hours and then resumes the normally scheduled operation. Countdown timer switches are not be used to comply with the automatic time switch control requirements. The controls meet the requirement of Section 130.5(d)1. | ☐ |
| ☐ There is at least one controlled receptacle within 6 ft from each uncontrolled receptacle. Where receptacles are installed in modular furniture in open office area, at least one controlled receptacle is installed at each workstation. The receptacles meet the requirement of Section 130.5(d)2. | ☐ |
| ☐ There are installed split wired receptacles with at least one controlled and one uncontrolled receptacle. Where receptacles are installed in modular furniture in open office area, at least one controlled receptacle is installed at each workstation. The receptacles meet the requirement of Section 130.5(d)2. | ☐ |
| ☐ Permanent and durable marking for controlled receptacles or circuits to differentiate them from uncontrolled receptacles or circuits is provided. The markings meet the requirement of Section 130.5(d)3. | ☐ |
| ☐ For hotel and motel guest rooms, there are controlled receptacles for at least one-half of the 120-volt receptacles in each guest room. Electric circuits serving controlled receptacles in guestrooms are installed to have captive key controls, occupancy sensing controls, or automatic controls so the power is switched off no longer than 30 minutes after the guest room has been vacated. The receptacles meet the requirement of Section 130.5(d)4. | ☐ |
| ☐ Receptacles that are only for the following purposes are excepted from Section 130.5(d):<br>- Receptacles specifically for refrigerators and water dispensers in kitchenareas.<br>- Receptacles located a minimum of six ft above the floor that are specifically for clocks.<br>- Receptacles for network copiers, fax machines, A/V and data equipment other than personal computers in copy rooms.<br>- Receptacles on circuits rated more than 20 amperes.<br>- Receptacles connected to an uninterruptible power supply (UPS) that are intended to be in continuous use, 24 hours per day/365 days per year, and are marked to differentiate them from other uncontrolled receptacles or circuits. | ☐ |



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STATE OF CALIFORNIA
**Electrical Power Distribution**
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| Electrical Power Distribution | Page 4 of 4 |
| Project Name: BAAQMD | Date Prepared: 04/01/19 |

**DOCUMENTATION AUTHOR'S DECLARATION STATEMENT**

1. I certify that this Certificate of Compliance documentation is accurate and complete.

| | |
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| Documentation Author Name: Levi Abarte | Documentation Author Signature: |
| Company: Amit Wadhwa & Assoc. | Signature Date: 04/01/19 |
| Address: 870 Market St Suite 846 | CEA/ HERS Certification Identification (if applicable): |
| City/State/Zip: San Francisco, CA 94102 | Phone: 415-596-9344 |

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3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
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| Address: 870 Market St Suite 846 | License: E-17622 |
| City/State/Zip: San Francisco, CA 94102 | Phone: 415-596-9344 |



## Data Entry Window

Printable View: No

| | | |
|---|---|---|
| 1 | 120 | Select voltage |
| 2 | 3% | Select the max desired voltage drop (0%-5%) |
| 3 | Single Phase | Select phase type |
| 4 | Stranded Copper Uncoated | Select the type of wire |
| 5 | AWG 10 * | Select the size of wire if known |
| 6 | 120 * | Enter the length of wire (0-5000') if known |
| 7 | 9 * | Enter Amps (0-6000) if known |
| 8 | 1 | Select the number of parallel wires (1 is non-parallel) or 2-25 pairs |

Note: If only one of cells 5,6 and 7 is left blank, then a calculated value will appear to the left of the cell.

If the wire is smaller than AWG 1/0 then parallel wires are not allowed except per 310.4 exceptions.

## Results Window

| | | | | |
|---|---|---|---|---|
| 9 | 3.6 | Maximum voltage drop allowed | 7 | 2.68 volts (ok) Actual voltage drop |
| 10 | 116.40 | Minimum voltage allowed at load | 18 | 117.32 volts (ok) Actual voltage with load |
| 11 | 2 | Multiplier | 19 | 0.92 volts (ok) Voltage difference |
| 12 | 1.24 | Resistance/1000' of wire | 20 | 0.0012400 ohms Total resistance per foot |
| 13 | AWG 10 | Wire Size | 21 | AWG 10 Minimum wire size for voltage drop |
| 14 | 120.00 | Distance | 22 | 161 feet Maximum distance with this load |
| 15 | 9 | Maximum Amps | 23 | 30 amps@60°F Max ampacity of the wire in Cell 13 per Table 310.16 of the 2011 NEC |
| 16 | 1 | Minimum number of parallel wires | 24 | 21.00 amps (ok) Ampacity above or below load |

VOLTAGE DROP CALCULATION NOTES:

A. VOLTAGE DROP CALCULATIONS ABOVE APPLY TO CIRCUITS BEYOND 80FT FROM ELECTRIC CLOSET. THESE CIRCUITS ALL USE #10 WIRES. ALL OTHER RECEPTACLE CIRCUITS ARE WITHIN 80 FEET OF SOURCE PANELBOARD/S, USE #12 WIRES AND ARE WITHIN 3%VD.

B. ALL OTHER BRANCH CIRCUITS INCLUDING 120/208V-480V MECHANICAL ARE WITHIN 3% VD.

C. (E) FEEDER FOR ALL PANELS USED ON THESE RENOVATION ARE ESTIMATED TO BE WITHIN 2%VD OR LESS.

RICHMOND LAKESIDE TENANT IMPROVEMENT

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REGISTERED PROFESSIONAL ENGINEER
LEVI G. ABARTE
No. E-17622
Exp. 09/30/19
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Approval Signature:

Co/ Title: Date:

# TITLE 24 FORMS

Scale: NONE Issue Date: 17APR19
Drawn By: PL Reviewed By: LA
Sheet: 1 of X

# 1ET.3