



GENERAL SPECIFICATIONS – TO BE USED IN CONJUNCTION WITH ENGINEER’S SPECS

PART 1 – GENERAL:

- 1.01 ALL WORK SHALL COMPLY WITH THE 2008 EDITION OF THE ELECTRICAL CODE BASED ON THE 2007 CALIFORNIA ELECTRICAL CODE (BASED ON THE 2005 NATIONAL ELECTRICAL CODE) WITH LA CITY AMENDMENTS.
- 1.02 SHUTDOWN OF ELECTRICAL SERVICE TO BUILDING SHALL BE DONE ONLY WITH PRIOR WRITTEN APPROVAL BY THE UNIVERSITY. THE CONTRACTOR SHALL SUBMIT SHUTDOWN REQUEST IN WRITING (14) WORKING DAYS PRIOR TO DESIRED DATE/TIME TO FACILITIES MANAGEMENT SERVICES. WRITTEN APPROVAL AND CONFIRMATION WILL BE PROVIDED BY THE UNIVERSITY.
- 1.03 IT IS THE INTENT THAT A COMPLETE AND WORKABLE ELECTRICAL INSTALLATION BE PROVIDED.
- 1.04 ALL MATERIALS SHALL BE NEW AND OF THE HIGHEST QUALITY, AND SHALL MEET WITH THE FULL APPROVAL OF THE UNIVERSITY AND ITS REPRESENTATIVES.
- 1.05 ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BEAR THE UNDERWRITER’S LABEL (UL) AND/OR MEET THE STANDARDS OF AN LA CITY APPROVED TESTING AGENCY. MATERIALS AND EQUIPMENT SHALL BE INSTALLED IN THE MANNER FOR WHICH THEY ARE DESIGNED AND APPROVED. ALL DOCUMENTATION RELATED TO THE UL LISTING SHALL BE PROVIDED TO THE ELECTRICAL INSPECTOR AS NEED AND SHALL BE PROVIDED AS PART OF CLOSE OUT DOCUMENTATION.
- 1.06 SUBSTITUTIONS OF SPECIFIED MATERIALS SHALL BE MADE ONLY WITH WRITTEN APPROVAL OF THE UNIVERSITY OR ENGINEER.
- 1.07 CONTRACTOR SHALL RECEIVE, STORE, AND INSTALL ALL ELECTRICAL ITEMS AS DESIGNATED BY THE PROJECT. EQUIPMENT SHALL BE PROTECTED FROM WEATHER AND DAMAGE FOR LENGTH OF PROJECT.
- 1.08 CONTRACTOR SHALL MAINTAIN, ON THE JOB, A SET OF PRINTS ON WHICH ALL CHANGES IN LOCATION OR RUNS SHALL BE CAREFULLY INDICATED. THESE PRINTS SHALL BE DELIVERED TO THE ENGINEER FOR REVIEW. ALL CHANGES SHALL BE INCORPORATED INTO THE FINAL RECORD CAD DRAWINGS. ELECTRONIC CAD FILES SHALL BE PROVIDED TO UNIVERSITY AT COMPLETION OF PROJECT AS PART OF CLOSE OUT DOCUMENTATION.
- 1.09 ALL WORK AND MATERIALS OF CONTRACT SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE. LIGHTING FIXTURE BALLASTS SHALL BE GUARANTEED FOR TWO (2) YEARS.
- 1.09 SHOP DRAWINGS AND/OR PROJECT DATA SHEETS, AND/OR SUBMITTALS SHALL BE PROVIDED TO THE ENGINEER AND UNIVERSITY FOR REVIEW AND APPROVAL. SUBMITTALS AND/OR PRODUCT DATA SHEETS SHALL INCLUDE PICTURES AND SHALL INDICATE ALL MATERIALS, RATINGS, DIMENSIONS AND FINISHES.

PART 2 – MATERIALS:

- 2.01 ALL INTERNAL BUS BARS, WINDINGS, AND THE LIKE SHALL BE COPPER. ALUMINUM IS NOT ACCEPTABLE AS PART OF ANY SWITCHBOARD, DISTRIBUTION BOARD, PANEL, TRANSFORMER OR OTHER LIKE EQUIPMENT.
- 2.02 ALL CONDUITS INSIDE BUILDING SHALL BE ELECTRICAL METALLIC TUBING (EMT) UNLESS IF SUBJECT TO DAMAGE. EXPOSED CONDUIT SUBJECT TO PHYSICAL DAMAGE SHALL BE RIGID GALVANIZED STEEL CONDUIT. SUBJECT TO PHYSICAL DAMAGE IS DEFINED AS BELOW 8 FEET ABOVE FINISHED FLOOR OR GRADE.
- 2.03 FLEXIBLE LIQUID TIGHT METAL CONDUIT SHALL BE USED ONLY FOR FINAL CONNECTIONS TO LIGHT FIXTURES AND ROTATING MACHINES. LENGTH SHALL BE A MAXIMUM OF 6 FEET.
- 2.04 CONDUCTORS SHALL BE COPPER WITH THHN/THWN INSULATION. INSULATED WIRES AND CABLES MANUFACTURED MORE THAN SIX MONTHS PRIOR TO THE DATE OF DELIVERY TO THE SITE SHALL NOT BE USED. ALL WIRE SHALL BE UL LISTED, RATED FOR 600 VOLTS, #12 MINIMUM SIZE EXCEPT FOR CONTROLS.
- 2.05 THE USE OF METAL-CLAD CABLE (MCO, ARMORED CABLE (AC), OR NON-METALLIC SHEATHED CABLE (NM OR NMC) IS NOT PERMITTED.

PART 3 – DEMOLITION:

- 3.01 ALL EXISTING CONDUIT, EQUIPMENT, ETC, IN THE EXISTING BUILDING WHICH IS TO BE REPLACED OR WHICH INTERFERES IN ANY WAY WITH THE INSTALLATION OF NEW EQUIPMENT, SHALL BE REMOVED FROM THE PREMISES OR RELOCATED BY THE CONTRACTOR, AS DIRECTED. CONTRACTOR SHALL NOT REMOVE FROM THE PREMISES ANY EQUIPMENT THAT MAY HAVE MAINTENANCE VALUE TO THE UNIVERSITY WITHOUT PRIOR PERMISSION.

PART 4 – INSTALLATION:

- 4.01 WIRE COLORS SHALL ADHERE TO UNIVERSITY STANDARDS AND SHALL NOT CHANGE FROM ORIGINATING BREAKER TO FINAL CONNECTION.
- 4.01.01 CONDUCTOR COLOR CODING SHALL ADHERE TO THE FOLLOWING TABLE:
 

208/120 VOLTS	PHASE	480/277 VOLTS
BLACK	A	BROWN
RED	B	ORANGE
BLUE	C	YELLOW
WHITE	NEUTRAL	GRAY
GREEN	GROUND	GREEN
- 4.02 RECEPTACLES
- 4.02.01 RECEPTACLES SHALL BE INSTALLED WITH GROUND PRONG UP.
- 4.02.02 RECEPTACLE COLORS SHALL ADHERE TO THE FOLLOWING:  
  
THE DEFAULT RECEPTACLE COLOR SHALL BE WHITE. DEFAULT PLATE COLOR IS WHITE.  
  
EMERGENCY RECEPTACLES SHALL BE RED. PREFERRED PLATE COLOR IS RED.  
  
UPS RECEPTACLES SHALL BE ORANGE. PREFERRED PLATE COLOR IS ORANGE.  
  
ISOLATED GROUND RECEPTACLES SHALL BE WHITE WITH AN ORANGE TRIANGLE. NO PREFERENCE ON PLATE COLOR.
- 4.02.03 RECEPTACLES SHALL BE LABELED WITH PANEL AND CIRCUIT DESIGNATION. LABELS SHALL BE P-TOUCH OR SIMILAR TYPE LABELING.
- 4.03 CONTRACTOR SHALL PROVIDE TYPE WRITTEN PANEL SCHEDULES IN ALL PANELS AT COMPLETION OF PROJECT. PANEL SCHEDULES SHALL ALSO BE INCLUDED IN AS BUILT DOCUMENTATION.
- 4.04 ALL CONDUIT SHALL BE CONCEALED WHEREVER POSSIBLE.
- 4.05 THE CONTRACTOR SHALL INSTALL ALL CONDUITS AND WIRES WITH A MINIMUM NUMBER OF BENDS AND IN SUCH A MANNER AS TO CONFORM TO THE STRUCTURE, AVOID OBSTRUCTIONS, PRESERVE HEAD ROOM, KEEP OPENINGS AND PASSAGEWAYS CLEAR AND MEET ALL STRUCTURAL CODE REQUIREMENTS. CODE SIZED PULL BOXES SHALL BE INSTALLED IN RUNS OF OVER 100 FEET OR MORE THAN 4 BENDS.
- 4.06 IDENTIFICATION
- 4.06.01 NAMEPLATE COLOR SCHEDULE
 

OVER 600V:	BROWN LETTERS ON WHITE LABEL
277 THROUGH 600V:	ORANGE LETTERS ON WHITE LABEL
120 THROUGH 240V:	BLACK LETTERS ON WHITE LABEL
EMERGENCY SYSTEM:	WHITE LETTERS ON RED LABEL
DEVICES CONNECTED AHEAD OF SERVICE MAINS AND SUBSTATION SECONDARY MAINS:	LETTER COLOR AS PER SWITCHBOARD VOLTAGE ON YELLOW LABEL
FIRE ALARM SYSTEM:	BLACK LETTERS ON RED LABEL
COMMUNICATION OR SIGNAL SYSTEMS:	WHITE LETTERS ON BLACK LABEL IDENTIFY SYSTEM AND VOLTAGE
BUILDING CONTROL SYSTEM:	WHITE LETTERS ON GREEN LABEL
- 4.06.02 NAMEPLATES:
  - 1. PROVIDE LAMINATED, ENGRAVED PLASTIC NAMEPLATES WITH 1/2 INCH HIGH LETTERS FOR ALL SWITCHGEAR, SWITCHBOARDS, MOTOR CONTROL CENTERS, TRANSFER SWITCHES, PANELBOARDS, SIGNAL SYSTEM EQUIPMENT CABINETS, AND TERMINAL CABINETS. PROVIDE SIMILAR NAMEPLATES WITH 3/8 INCH HIGH LETTERS FOR TRANSFORMERS, TIME SWITCHES, INDIVIDUALLY MOUNTED BREAKERS, SWITCHES AND CONTROLS, SWITCHBOARDS, AND MOTOR CENTER BRANCH DEVICES. ATTACH NAMEPLATES TO GEAR WITH SHEET METAL SCREWS. ADHESIVE MOUNTED NAMEPLATES ARE NOT ACCEPTABLE. REFER TO SINGLE LINE DIAGRAMS AND SCHEDULES FOR ACTUAL DESIGNATIONS AND CIRCUIT NUMBERS THAT APPLY TO THIS PROJECT.

- 2. INCLUDE NAMEPLATE SCHEDULE ON SHOP DRAWING SUBMITTALS.
- 3. INDICATE ON GEAR NAMEPLATES:
  - a. LINE 1: EQUIPMENT DESIGNATION, PRIMARY VOLTAGE, PHASE, NUMBER OF WIRES.
    - 1) IN ADDITION, INCLUDE KVA RATING FOR SUBSTATIONS, TRANSFORMERS, AND GENERATORS
    - 2) IN ADDITION, INCLUDE AMPERES FOR SWITCHGEAR
  - b. LINE 2:
    - 3) FOR SINGLE FEEDER SUPPLY, INDICATE SOURCE FEEDER.
    - 4) FOR TWO FEEDER SUPPLY, INDICATE NORMAL SOURCE AND STANDBY SOURCE FEEDERS.
    - 5) FOR AUTOMATIC TRANSFER SWITCH, INDICATE NORMAL AND EMERGENCY SOURCE FEEDERS AND PRIORITY NUMBER.
  - c. LINE 3:
    - 6) SECONDARY EQUIPMENT: INDICATE VOLTAGE, PHASE, NUMBER OF WIRES, AMPERES.
  - d. EXAMPLE #1:  
SUBSTATION SS6A, 4.16KV, 3 PH, 3 WIRE 1500/1680/1932 KVA  
NORMAL SOURCE B6, STANDBY SOURCE A1  
480/277, 3 PH, 4 WIRE SECONDARY
  - e. EXAMPLE #2:  
AUTOMATIC TRANSFER SWITCH ATS-EQ1  
NORMAL SOURCE MSS-6, EMERGENCY SOURCE ESS-3  
PRIORITY NO. 3  
480V, 3 PH, 4 WIRE, 600A
- 4. INDICATE EQUIPMENT AND/OR EQUIPMENT CONTROLLED AND DESIGNATION ON COMPONENT NAMEPLATES. EXAMPLES:
  - a. SWITCHBOARD BREAKER: CKT 3 – PANEL H3
  - b. MOTOR SWITCH: TOILET EXHAUST FAN EC-3
  - c. SUBMETER: KWHR SUBMETER AIR CONDITIONING
  - d. TIME-SWITCH: TSA – PARKING LIGHTS (SERVED FROM PANEL A)
  - e. FIRE ALARM TERMINAL CABINET: FIRE ALARM SYSTEM 24V DC
- 5. INSTALL PANELBOARD NAMEPLATES BEHIND PANEL DOOR IN PUBLIC AREAS AND ON PANEL FACE IN EQUIPMENT ROOMS.

PART 5 – START UP AND TESTING:

- 5.01 CONTRACTOR SHALL DEMONSTRATE THAT ALL EQUIPMENT AND CIRCUITRY IS WORKING PROPERLY AND MEETS THE DESIGN INTENT OF THE DRAWINGS.

PART 6 – TRAINING:

- 6.01 TRAINING SHALL BE PROVIDED FOR ALL MAJOR ELECTRICAL EQUIPMENT INCLUDING, BUT NOT LIMITED TO, LIGHTING CONTROL PANELS, AND UNIQUE SYSTEMS.
- 6.02 CONTRACTOR SHALL PROVIDE (2) WEEKS NOTICE OF PROPOSED TRAINING DATE TO SCHEDULE WITH UNIVERSITY. TRAINING AGENDA AND MATERIALS SHALL BE PROVIDED TO THE UNIVERSITY AT THE TIME OF TRAINING.

PART 7 – CLOSE OUT AND AS BUILT DOCUMENTATION:

- 7.01 CLOSE OUT DOCUMENTATION SHALL BE PROVIDED TO THE UNIVERSITY AT THE COMPLETION OF THE PROJECT. CLOSE OUT DOCUMENTATION INCLUDES, BUT IS NOT LIMITED TO, AS BUILT DRAWINGS, MAINTENANCE MANUALS, KEYS, SPARE HARDWARE, AND OTHER WRITTEN EQUIPMENT MANUFACTURER DOCUMENTATION.
- 7.02 CAD AS BUILT DRAWINGS SHALL BE PROVIDED TO THE UNIVERSITY AT THE COMPLETION OF THE PROJECT. CAD AS BUILT DRAWINGS SHALL BE UPDATED BY THE ENGINEER/CONTRACTOR AS PER THE ACTUAL INSTALLATION. CAD AS BUILT DRAWINGS SHALL BE PROVIDED IN EDITABLE DWG FORMAT ON CD/DVD. PDF DRAWINGS IN DWG FORMAT ARE NOT ACCEPTABLE.

Building

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LOS ANGELES, CA 90089



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Revisions

Date

Drawn

Checked

Project No.

Drawing:

ELECTRICAL  
SPECIFICATIONS

SCALE: NTS

Sheet No.

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