

# ELECTRICAL SPECIFICATIONS

1. SCOPE
  - 1.1. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL LABOR, MATERIALS, EQUIPMENT AND FIXTURES AND PERFORM ALL OPERATIONS REQUIRED FOR THE COMPLETE INSTALLATION OF ALL ELECTRICAL WORK AND RELATED SYSTEMS AS SHOWN ON THE DRAWINGS, SPECIFIED HEREIN, OR AS MAY BE REASONABLY REQUIRED.
  - 1.2. IN ADDITION, THE CONTRACTOR SHALL VERIFY THE ELECTRICAL REQUIREMENTS, AND MAKE ALL CONNECTIONS REQUIRED TO EQUIPMENT BEING FURNISHED UNDER THIS CONTRACT AS SHOWN ON EQUIPMENT FURNISHED BY OTHERS FOR INSTALLATION UNDER THIS CONTRACT.
2. PERMITS, CODES AND INSPECTIONS
  - 2.1. THE CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND INSPECTIONS REQUIRED FOR THE WORK INCLUDED IN THIS PROJECT. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL DELIVER CERTIFICATES OF FINAL INSPECTION AND APPROVAL BY THE LOCAL AUTHORITY HAVING JURISDICTION, AS WELL AS THE FIRE UNDERWRITERS, TO THE OWNER.
  - 2.2. ALL WORK INSTALLED UNDER THIS CONTRACT SHALL BE IN STRICT CONFORMANCE WITH ALL APPLICABLE STATE, COUNTY AND LOCAL CODES.
3. COORDINATION AND SUPERVISION
  - 3.1. OUTLET AND EQUIPMENT LOCATIONS ARE DIAGRAMATIC IN NATURE, AND SHALL BE SUBJECT TO MINOR MODIFICATIONS AS REQUIRED BY FIELD CONDITIONS OR AS DIRECTED BY THE ARCHITECT.
  - 3.2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE WORK AND EQUIPMENT SPECIFIED HEREIN WITH THE WORK TO BE COMPLETED AND SATISFACTORY INSTALLATION MEETING WITH THE APPROVAL OF THE ARCHITECT.
  - 3.3. THE CONTRACTOR SHALL MAINTAIN ON SITE AT ALL TIMES, A COMPETENT ELECTRICAL FOREMAN TO CHECK LAYOUT, COORDINATE AND SUPERVISE ALL WORK TO BE PERFORMED ON THIS PROJECT.
4. MATERIAL AND EQUIPMENT
  - 4.1. ALL MATERIALS AND EQUIPMENT INSTALLED AS PART OF THE PERMANENT INSTALLATION SHALL BE NEW, UNLESS OTHERWISE NOTED, AND SHALL BE APPROVED BY UL FOR INSTALLATION IN EACH PARTICULAR CASE WHERE STANDARDS HAVE BEEN ESTABLISHED, WHERE APPLICABLE, THE ITEM SHALL BEAR THE APPROVAL LABEL OF UNDERWRITERS LABORATORIES.
  - 4.2. MANUFACTURER'S CATALOG DATA, DESCRIPTIONS AND NUMBERS USED HEREIN OR INDICATED IN THE DRAWINGS ARE TO INDICATE THE MINIMUM STANDARD OF QUALITY, PERFORMANCE AND PERFORMANCE THAT WILL BE ACCEPTABLE. THE CONTRACTOR MAY SUBMIT EQUAL EQUIPMENT OF ANOTHER MANUFACTURER LISTED.
5. SHOP DRAWINGS
  - 5.1. THE CONTRACTOR SHALL SUBMIT, IN A TIMELY MANNER, SHOP DRAWINGS OF AT LEAST THE FOLLOWING ITEMS AND SYSTEMS TO THE ARCHITECT FOR APPROVAL:
    - 5.1.1. WIRING DEVICES
    - 5.1.2. LIGHTING FIXTURES
    - 5.1.4. FIRE ALARM SYSTEM (DEVICES AND RISER DIAGRAM INDICATING CONNECTION OF NEW DEVICES TO EXISTING SYSTEM)
6. EXISTING CONDITIONS
  - 6.1. THE CONTRACTOR SHALL VISIT THE SITE, DETERMINE ALL CONDITIONS AND CIRCUMSTANCES UNDER WHICH THE WORK MUST BE DONE OR OTHER CIRCUMSTANCES WHICH WILL AFFECT THE WORK, AND MAKE ALL NECESSARY ALLOWANCES BEFORE SUBMITTING HIS BID. NO SUBSEQUENT ALLOWANCES SHALL BE MADE FOR WORK REQUIRED TO BE PERFORMED, BUT NOT INCLUDED IN THE BID.
7. TEMPORARY ELECTRICAL SERVICE
  - 7.1. THE CONTRACTOR SHALL FURNISH AND INSTALL TEMPORARY ELECTRICAL SERVICE TO THE SITE AS IS NECESSARY TO ENABLE HIS WORK AND THE WORK OF OTHERS ON THE JOB SITE TO PROCEED AND TO TEST THE OPERATION OF ALL APPARATUS, DEVICES, SYSTEMS, ETC., WHICH REQUIRE ELECTRICAL ENERGY, ALL COSTS AND CHARGES ASSOCIATED WITH THE TEMPORARY SERVICE SHALL BE PAID BY THE CONTRACTOR.
8. CUTTING, PATCHING AND WATERPROOFING
  - 8.1. CUTTING, PROVIDE CUTTING, CHAMFERING, CHASING AND DRILLING OF FLOORS, WALLS, PARTITIONS, CEILINGS AND OTHER SURFACES NECESSARY FOR INSTALLATION OF ELECTRICAL WORK, ALL CUTTING SHALL BE PERFORMED BY SKILLED MECHANICS OF THE TRADES INVOLVED.
  - 8.2. PATCHING, REPAIR CUT SURFACES TO MATCH ADJACENT SURFACES. ALL SURFACES DISTURBED AS A RESULT OF SUCH CUTTING SHALL BE RESTORED UNDER THIS DIVISION TO MATCH ORIGINAL WORK, AND ALL MATERIALS USED FOR ANY PATCHING, REPAIR OR FINISHING SHALL CONFORM TO THE CLASS OF MATERIALS ORIGINALLY INSTALLED.
9. CLOSING OF OPENINGS
  - 9.1. FIRESTOPPING: UNUSED SLOTS, SLEEVES AND OTHER PENETRATIONS IN FLOORS, WALLS OR OTHER GENERAL CONSTRUCTION SHALL BE CLOSED AND SEALED WITH AN APPROVED FIRESTOPPING MATERIAL TO MAINTAIN APPLICABLE RATING.
10. REACTIVATION OF EXISTING EQUIPMENT OR CIRCUITS
  - 10.1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REACTIVATION OF EQUIPMENT OR CIRCUITS NOTED ON THE DRAWINGS, PRIOR TO ENERGIZING ANY EQUIPMENT OR CIRCUIT. THE CONTRACTOR SHALL INSPECT THE EQUIPMENT TO SEE IF ALL NECESSARY WORK HAS BEEN COMPLETED AND THE EQUIPMENT IS IN A CONDITION TO BE REACTIVATED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REACTIVATION OF EQUIPMENT WHICH MIGHT BE REQUIRED TO MAKE THE EQUIPMENT OR CIRCUIT FUNCTIONALLY OPERATIONAL.
11. GROUNDING AND BONDING
  - 11.1. THE ENTIRE INSTALLATION SHALL BE THOROUGHLY AND EFFECTIVELY GROUND AND BONDED IN ACCORDANCE WITH ALL REQUIREMENTS OF THE NATIONAL ELECTRIC CODE.
12. CONDUIT
  - 12.1. EXCEPT AS SPECIFIED HEREINAFTER, ALL WIRING INSTALLED UNDER THIS CONTRACT SHALL BE RUN IN CONDUIT. CONDUIT SHALL BE AS FOLLOWS:
    - 12.1.1. INDOORS: USE THE FOLLOWING WIRING METHODS:
      - A) EXPOSED: ELECTRICAL METALLIC TUBING WITH COMPRESSION CONNECTORS
      - B) CONCEALED: ELECTRICAL METALLIC TUBING WITH COMPRESSION CONNECTORS (MC CABLE MAY BE USED IN EXISTING WALLS AND FOR WHIPS TO LIGHT FIXTURES)
    - 12.2. WHERE CONDUIT IS SPECIFIED TO BE USED ABOVE, IT SHALL BE SIZED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, EXCEPT THAT THE MINIMUM CONDUIT SIZE SHALL BE 3/4".
13. WIRING
  - 13.1. ALL CONDUCTORS SHALL BE SOFT DRAWN COPPER, MINIMUM WIRE SIZE SHALL BE NUMBER 12 AWG. INSULATION SHALL BE TYPE THHN OR THWN, RATED 600V, 90 DEG C DRY, 75 DEG C WET.
  - 13.2. THE USE OF ALUMINUM WIRE SHALL NOT BE PERMITTED.
14. OUTLET BOXES AND EQUIPMENT CABINETS
  - 14.1. OUTLET AND DEVICE BOXES SHALL BE GALVANIZED STEEL AND OF SUFFICIENT SIZE TO ACCOMMODATE ALL WIRING AND DEVICES TO BE INSTALLED.
  - 14.2. EQUIPMENT AND PANELBOARD CABINETS, LARGE PULL BOXES AND SIMILAR CABINETS SHALL BE GALVANIZED STEEL OF GAUGE REQUIRED BY THE NATIONAL ELECTRICAL CODE.
15. WIRING DEVICES
  - 15.1. WIRING DEVICES USED ON THIS PROJECT SHALL BE SPECIFICATION GRADE, AS MANUFACTURED BY HUBBELL, LEVITON OR PASS & SEMOUR. REFER TO ELECTRICAL LEGEND FOR BASIS OF DESIGN MANUFACTURER AND MODEL NUMBER. DEVICE COLOR SHALL MATCH EXISTING DEVICES IN SPACE. COVER PLATE SHALL MATCH EXISTING COVERPLATES IN SPACE.
16. LIGHTING FIXTURES
  - 16.1. FURNISH AND INSTALL A COMPLETE UL LISTED LIGHTING FIXTURE FOR EACH OUTLET SHOWN ON THE DRAWINGS.
  - 16.2. EACH LIGHTING FIXTURE SHALL BE FURNISHED COMPLETE WITH ALL ACCESSORIES, HANGERS, TRIMS, LAMPS, BALLASTS, ETC., AS RECOMMENDED BY THE MANUFACTURER OR AS REQUIRED FOR A COMPLETE AND SATISFACTORY INSTALLATION.
  - 16.3. ALL PLASTIC EMPLOYED IN LIGHTING FIXTURES SHALL BE 100 % VIRGIN ACRYLIC.
  - 16.4. FLUORESCENT BALLASTS SHALL BE ELECTRONIC WITH SOUND RATING "A" AND LESS THAN 10% THD.
  - 16.5. PERMANENT LIGHTING FIXTURES SHALL NOT BE USED FOR TEMPORARY LIGHTING DURING CONSTRUCTION.
  - 16.6. ALL LIGHTING FIXTURES SHALL BE ADEQUATELY SUPPORTED FROM THE BUILDING STRUCTURE OR AS REQUIRED.
  - 16.7. LIGHTING FIXTURES SHALL BE AS INDICATED IN THE LIGHTING FIXTURE SCHEDULE ON THE DRAWINGS.
17. LIGHTING CONTROL DEVICES
  - 17.1. WALLBOX OCCUPANCY SENSORS SHALL BE PIR (PASSIVE INFRARED) TYPE AND RATED 120V/277V, COLOR AS SELECTED BY ARCHITECT MANUFACTURER: WATTSOPPER #WI-200 OR EQUAL BY LEVITON OR HUBBELL.
  - 17.2. CEILING TYPE OCCUPANCY SENSORS SHALL BE DUAL TECHNOLOGY TYPE WITH REMOTE POWER MODULE MANUFACTURER: WATTSOPPER #DI-500 OR EQUAL BY LEVITON OR HUBBELL.
  - 17.3. VERIFY TIME OFF SETTING WITH OWNER PRIOR TO FINAL PROGRAMMING OF OCCUPANCY SENSORS.
18. FIRE ALARM SYSTEM
  - 18.1. ALL FIRE ALARM SYSTEM WIRING SHALL BE INSTALLED IN EMT OR IN ACCORDANCE WITH BUILDING STANDARD. FIRE ALARM SYSTEM WIRING QUANTITIES, SIZES AND ROUTING SHALL BE IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS AND REQUIREMENTS OF THE FIRE ALARM SYSTEM MANUFACTURER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING NOTHING ON THESE DRAWINGS SHALL BE CONSIDERED AS TO CONTRACTOR THE FIRE ALARM SYSTEM MANUFACTURER'S INSTRUCTIONS. THE MINIMUM FIRE ALARM SYSTEM WIRE SIZE SHALL BE #14 AWG FOR INDICATING CIRCUITS AND #18 AWG FOR INITIATING AND ANNUNCIATION CIRCUITS. THE MINIMUM CONDUIT SIZE SHALL BE 3/4". NO WIRING OTHER THAN THAT DIRECTLY ASSOCIATED WITH THE FIRE ALARM SYSTEM AND ITS AUXILIARY FUNCTIONS SHALL BE PERMITTED IN FIRE ALARM RACEWAYS. ALL FIRE ALARM SYSTEM JUNCTION BOXES, ETC. SHALL BE PAINTED RED AND SHALL BE NEATLY STENCILED IN BLACK LETTERS "FIRE ALARM".
  - 18.2. FIRE ALARM STROBES SHALL MEET REQUIREMENTS OF NFPA 72 AND ADA FOR LOCATIONS AND INTENSITIES.
19. AS-BUILT DRAWINGS AND OPERATION AND MAINTENANCE MANUALS
  - 19.1. THE CONTRACTOR SHALL TURN OVER TO THE ARCHITECT AT THE FINAL INSPECTION ONE BROCHURE CONTAINING A CLEAN SET OF MARKED-UP "AS BUILT" DRAWINGS, AS WELL AS A COMPLETE SET OF WIRING DIAGRAMS FOR EACH SYSTEM AND/OR EQUIPMENT ITEM.
  - 19.2. THE CONTRACTOR SHALL ALSO FURNISH TO THE OWNER THREE (3) COPIES OF A BUILDING OPERATION AND MAINTENANCE MANUAL. EACH MANUAL SHALL BE A COMPLETE SET OF AS-BUILT DRAWINGS AND WIRING DIAGRAMS. THE CONTRACTOR SHALL PROVIDE ONE COPY OF EACH SHOP DRAWING OF EQUIPMENT USED ON THE PROJECT. COMPLETE PARTS LIST FOR EACH ITEM OF EQUIPMENT OR SYSTEM, FULL WIRING DIAGRAMS, COMPLETE MAINTENANCE INSTRUCTIONS, AND A LOCAL NAME, ADDRESS AND TELEPHONE NUMBER OF THE SUPPLIER OR SOURCE OF SERVICE AND REPLACEMENT PARTS.
20. PROJECT CLOSEOUT
  - 20.1. AT THE COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL GATHER IN ONE PLACE AND AT ONE TIME ALL LOOSE EQUIPMENT, KEYS, OPERATION MANUALS, AS-BUILT DRAWINGS, ETC. THIS MATERIAL SHALL BE ITEMIZED ON A TYPED WRITTEN TRANSMITTAL, WHICH SHALL BE SIGNED BY THE OWNER'S REPRESENTATIVE AS A RECEIPT FOR THE MATERIALS.
21. TESTS
  - 21.1. UPON COMPLETION OF THE WORK AND AT SUCH TIME AS THE ARCHITECT MAY DIRECT, THE CONTRACTOR SHALL CONDUCT ANY OPERATING TEST FOR APPROVAL. ALL SYSTEMS SHALL BE DEMONSTRATED TO BE IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS. DEFECTS REVEALED SHALL BE CORRECTED PROMPTLY AND THE TEST RE-CONDUCTED AS THE ARCHITECT MAY DIRECT.
22. GUARANTEE
  - 22.1. THE CONTRACTOR SHALL GUARANTEE THE ENTIRE INSTALLATION FREE FROM ANY MECHANICAL OR ELECTRICAL DEFECTS FOR NINE (9) MONTHS OR FOR THE PERIOD ESTABLISHED BY THE PROJECT GENERAL CONDITIONS.

## 1 SPECIFICATIONS - ELECTRICAL

E-0.01 Scale: None

NOTE:  
SEE ARCHITECTURAL, INTERIOR ELEVATIONS, FLOOR PLANS, AND / OR REFLECTED CEILING PLANS (AS APPROPRIATE) FOR SPECIFIC LOCATIONS OF PANELS, FIXTURES, CONTROLS, OUTLETS, SWITCHES, DRAINS, DEVICES, DIFFUSERS, ETC. ANY LOCATIONS SHOWN FOR THESE OR SIMILAR ITEMS ON THE ARCHITECTURAL DRAWINGS SHALL TAKE PRECEDENCE OVER LOCATIONS SHOWN ON THE MECHANICAL, PLUMBING, OR ELECTRICAL DRAWINGS. CONTACT THE ARCHITECT FOR EXACT LOCATIONS OF ANY VISIBLE ITEMS INDICATED ON THE MECHANICAL, PLUMBING, OR ELECTRICAL DRAWINGS THAT ARE NOT SPECIFICALLY SHOWN ON THE ARCHITECTURAL INTERIOR ELEVATIONS, FLOOR PLANS, AND / OR REFLECTED CEILING PLANS. THE LOCATION OF ALL SUCH MECHANICAL, PLUMBING, OR ELECTRICAL DEVICES SHOULD BE COORDINATED/CONFIRMED WITH THE ARCHITECT PRIOR TO ROUGH-IN.

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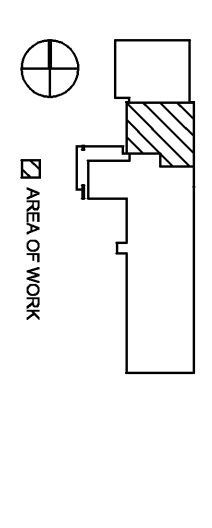
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BUILDING



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Drawing Title:  
**SPECIFICATIONS - ELECTRICAL**  
Phase 1A  
Graphic Scale: None

| Drawn By: | Checked By: |
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| DAW       | SGH         |

| Project No.: | Date:      |
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| 071065       | 2009.06.12 |

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