

1. GENERAL:

- A. THE WORK COVERED BY THESE SPECIFICATIONS CONSISTS OF FURNISHING ALL LABOR, EQUIPMENT, MATERIALS AND SUPPLIES NECESSARY FOR THE COMPLETE AND SATISFACTORY OPERATING ELECTRICAL SYSTEMS AS SHOWN ON THE PLANS.
B. ALL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, NFPA, STATE BUILDING CODE, AND ANY OTHER LOCAL REQUIREMENTS THAT MAY APPLY.
C. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL ELECTRICAL PERMITS AND INSPECTION FEES.
D. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BE LISTED BY THE UNDERWRITER'S LABORATORIES, INC. OR BY A STATE APPROVED THIRD PARTY TESTING AGENCY FOR THE USE INTENDED WHERE A STANDARD FOR SUCH MATERIALS AND ITEMS OF THE SAME TYPE AND RATING SHALL BE IDENTICAL AND OF THE SAME MANUFACTURER.

- 2. RACEWAYS:
A. CONDUIT SHALL BE MANUFACTURED BY ALLED, WHEATLAND, REPUBLIC CONDUIT, WESTERN TUBE, OR APPROVED EQUIVALENT.
B. FOR INTERIOR WORK, CONDUIT SHALL BE ZINC COATED EMT EXCEPT WHERE NOT PERMITTED BY CODE. USE SCHEDULE 40 PVC BELOW GROUND, RIGID PVC IN DUCTBANKS, AND FOR EXTERIOR WORK WHERE NOT SUBJECT TO DAMAGE, IMC WHERE SUBJECT TO PHYSICAL DAMAGE.
C. ALL FITTINGS SHALL BE COMPRESSED PLANO TYPE OF WALLESE STEEL. CONNECTORS SHALL HAVE INSULATED THROATS. CAST, STEEL, CONDUIT IDENTIFIER TYPE FITTINGS ARE NOT ACCEPTABLE. ALL FITTINGS AND EMT SHALL BE MADE OF STEEL.

- 3. OUTLET BOXES:
A. JUNCTION AND PULL BOXES SHALL BE CODE GAUGE GALVANIZED STEEL. ACCEPTED MANUFACTURERS SHALL BE STEEL CITY (THOMAS & BETTS), RACO, CROUSE-HINDS, APPLIED ELECTRONIC, OR APPROVED EQUIVALENT.
B. OUTLET BOXES SHALL NOT BE MOUNTED BACK TO BACK IN COMMON WALLS.
C. ATTACH EMT WITH CONNECTORS HAVING INSULATED THROAT.
D. ATTACH BOXES TO STUD WORK USING CADDY BAR STRAPS THAT CONNECT TO TWO ADJACENT STUDS TO PREVENT TWISTING OF BOX IN WALL.
E. ALL OUTLET BOXES (INCLUDING TELEPHONE, CABLE TV, AND COMPUTER) SHALL HAVE COVER PLATES, BLANK IF NOT USED.
F. ALL EXTERIOR BOXES SHALL BE WATER-TIGHT.

- 4. CONDUCTORS:
A. CONDUCTORS SHALL BE MANUFACTURED BY SOUTHWIRE (SIMPULL), ENCORE (SUPERSLICK), UNITED COPPER (ULTEC (SP), OR APPROVED EQUAL, "PRE-LUBRICATED" BY THE MANUFACTURER.
B. ALL CONDUCTORS SHALL BE COPPER, RATED 75° C WET/DRY EXCEPT WHERE OTHERWISE NOTED OR OTHERWISE NOTED ON THE DRAWINGS.
C. ALL CONDUCTORS SHALL BE SINGLE INSULATED CONDUCTOR, THHN/THHN-2, SIZES #10 AWG AND SMALLER SHALL BE SOILD, SIZES #8 AWG AND LARGER SHALL BE STRANDED.

- 5. WIRING DEVICES:
A. WIRING DEVICES SHALL BE SPECIFICATION GRADE, MINIMUM EQUAL TO COPPER QUALITY INDICATED ON THE DRAWINGS.
B. SWITCHES (120/277V) SHALL BE AS FOLLOWS:
TABLE:
VOLTAGE | CONDUCTOR LENGTH | BRANCH CIRCUIT
---|---|---
120 | 0' - 30' | #12
120 | 31' - 90' | #10
120 | 91' - 140' | #8
120 | 141 - 225' | #6
277 | 0' - 120' | #12
277 | 126' - 200' | #10
277 | 201 - 330' | #8
277 | 331' - 525' | #6
C. THE LENGTH IS MEASURED FROM THE CIRCUIT BREAKER TO THE FIRST DEVICE WHICH THE BRANCH CIRCUIT SERVES. WHERE THE DISTANCE EXCEEDS ABOVE, CONSULT WITH THE ENGINEER.

- 6. SUPPORTS:
A. ALL EQUIPMENT SHALL BE ADEQUATELY SUPPORTED FROM STRUCTURE, BRACKETS AND HANGERS SHALL BE LEAD OR FIBER IN DRILLED HOLES, OR CAST IN PLACE.
B. NAILS OR POWDER ACTUATED FASTENERS SHALL NOT BE USED.
C. EXTERIOR SUPPORTS SHALL BE A MAXIMUM OF 6'-0" APART AND A MAXIMUM OF 3'-0" FROM BOXES.
D. LIGHTING FIXTURES MOUNTED IN OR ON CEILING SHALL BE SUPPORTED FROM STRUCTURE VIA 1/2 GAUGE STEEL WIRE. PROVIDE A MINIMUM OF FOUR WIRES, ONE ATTACHED TO EACH CORNER OF LAY-IN FIXTURES. RECESSED DOWNLIGHT FIXTURES SHALL BE SUPPORTED THE SAME. DO NOT SUPPORT RACEWAY OR TRAYS ON RECESSED GRID OR DUCT WORK. USE ULL LISTED GRID CLIPS ON ALL LAY-IN FIXTURES.

- 7. PAINTING:
A. SUITABLE FINISH COAT SHALL BE PROVIDED FOR ALL EQUIPMENT, PANEL TUBS, COVERS, ETC. SHALL BE PRIMED AND ENAMELED TO MATCH ADJACENT SURFACES, OR SHALL BE MANUFACTURER'S STANDARD COLOR BAKED ENAMEL FINISH, OR AS DIRECTED BY THE ARCHITECT.
B. CONDUCTORS TO PAINT WHERE EXISTING EXPOSED PANELBOARDS, SURFACE RACEWAY, SURFACE BOXES, ETC. HAVE BEEN REMOVED DURING THE DEMOLITION PHASE, EITHER FOR TEMPORARY WORK OR PERMANENTLY.

- 8. TELECOMMUNICATIONS:
A. FURNISH A COMPLETE TELEPHONE CONDUIT SYSTEM AS INDICATED ON THE DRAWINGS.
B. TELECOMMUNICATIONS OUTLETS SHALL CONSIST OF A 4" SQUARE DEEP BOX WITH SINGLE GANG PLASTER RING AND CONDUIT BLANK FLATE PER NEC 210.4.
C. PROVIDE MINIMUM 1" RACEWAY, UNLESS OTHERWISE NOTED, FROM EACH BOX TO ABOVE NEAREST ACCESSIBLE CLEAR SPACE FOR J-HOOK SYSTEM OR TO CABLE TRAY AS APPLICABLE. PROVIDE MINIMUM 210# TEST NYLON PULL CORD AND NYLON BUSHINGS IN ALL EMPTY RACEWAYS.
D. PROVIDE RACEWAYS FOR ALL EXTERIOR AND/OR EXPOSED LOCATIONS.

- 9. LIGHTING FIXTURES:
A. TYPES AND MANUFACTURERS ARE SCHEDULED ON THE PLANS. EQUIVALENT GROUND ALL EQUIPMENT PER NEC ARTICLE 250. WHERE WERE CONDUITS ENTER ENCLLOSURES THROUGH CONCENTRIC KNOCKOUTS. ALL FLEX, INCLUDING FIBER TAPPS, SHALL INCLUDE GREEN GROUNDING CONDUCTOR, #12 AWG MINIMUM.
B. ALL CONDUCTORS INSTALLED IN VERTICAL RACEWAYS SHALL BE SUPPORTED AT BASE OF THE ENCLLOSURE AS REQUIRED BY THE CODE.
C. THE ELECTRICAL CONTRACTOR SHALL FOLLOW AND APPLY THE TABLE BELOW, REGARDLESS OF THE PANEL SCHEDULE INDICATES, FOR SIZES ALL 120V & 277V 20 AMP BRANCH CIRCUITS (COPPER) TO ALLOW A MAXIMUM OF 3% VOLTAGE DROP FROM THE CIRCUIT BREAKER TO THE FIRST DEVICE ON THE BRANCH CIRCUIT AND ACHIEVE A MAXIMUM OF 5% VOLTAGE DROP ACROSS THE ENTIRE BRANCH CIRCUIT.

- 10. LIGHTING CONTROLS:
A. FURNISH AND INSTALL WHERE SHOWN AN ELECTRONIC TIME CONTROLLER AS MANUFACTURED BY TORQ (NS), PARAGON, INTRAMIC, OR APPROVED EQUAL. CONTACTS SHALL BE SPST OR AS INDICATED, RATED 120/277V AT 20A BALLAST LOAD, AND MINIMUM 30,000 SWITCHING CYCLES. PROVIDE WITH MINIMUM 2 CHANNELS INDICATED (MINIMUM 2 CHANNELS) OR AS REQUIRED TO MEET THE INTENT OF THE DRAWINGS. EACH CHANNEL SHALL BE INDIVIDUALLY PROGRAMMABLE WITH 128 ON-OFF OPERATIONS PER WEEK PLUS FOUR SCHEDULES TO MODIFY THE BASIC PROGRAM AND A HOLIDAY SCHEDULE THAT OVERRIDES THE WEEKLY OPERATION. THE CONTROLLER SHALL BE PROVIDED WITH A PHOTOELECTRIC SENSOR, ASTRONOMIC DIAL, AND A VALVE CONTROLLED TO MODIFY THE BASIC PROGRAM AND A HOLIDAY SCHEDULE THAT OVERRIDES THE WEEKLY OPERATION. THE CONTROLLER SHALL BE PROVIDED WITH A PHOTOELECTRIC SENSOR, ASTRONOMIC DIAL, AND A VALVE CONTROLLED TO MODIFY THE BASIC PROGRAM AND A HOLIDAY SCHEDULE THAT OVERRIDES THE WEEKLY OPERATION.
B. LIGHTING CONTROLS SHALL SWITCH LOADS AT THE VOLTAGE AND AMPERE INDICATED AND SHALL HAVE THE NUMBER OF POLES INDICATED ON THE DRAWINGS OR AS REQUIRED. THE CONTACTS AND CONTACTS SHALL BE CONTINUOUSLY RATED FOR THE LOAD SERVED, INCLUDING TUNGSTEN FILAMENT, FIBER OPTIC, AND OTHER DETECTS SHALL BE INSTALLED IN THE FIRE ALARM SYSTEM.

- 11. EQUIPMENT IDENTIFICATION:
A. PROVIDE ENGRAVED PHENOLIC NAMEPLATES FOR ALL ELECTRICAL EQUIPMENT SUPPLIED FOR THE PROJECT, INCLUDING BUT NOT LIMITED TO, WIRING TROUGH, SWITCHES, SWITCHES, DISCONNECTS, TRANSFORMERS, PANELBOARDS, ETC.
B. EACH DUPLEX RECEPTACLE INDICATED TO BE ON A DEDICATED CIRCUIT SHALL BE 20 AMP TYPE.
C. ALL FIRE ALARM WIRING SHALL BE CLASS A.
D. ALL FIRE ALARM WIRING SHALL BE CLASS A.
E. PROVIDE ALL REQUIRED MODULES, POWER EXTENDERS, PROGRAMMING, ETC. FOR A COMPLETE AND OPERATIONAL SYSTEM.

- 12. PANELBOARDS:
A. PANELBOARDS SHALL BE PROVIDED AS MANUFACTURED BY EATON, SQUARE-D, GENERAL ELECTRIC, OR APPROVED EQUAL. ALL NEW EQUIPMENT FOR THE PROJECT SHALL BE BY THE SAME MANUFACTURER. LOAD CENTER TYPE PANELBOARDS SHALL BE USED WHERE THE PANELBOARD SERVES A DWELLING UNIT.
B. ALL BUSSING, INCLUDING NEUTRAL AND GROUND, SHALL BE COPPER.
C. ALL BREAKERS SHALL BE AUTOMATIC THERMAL-MAGNETIC TYPE MOLDED CASE BLOC TYPE, OR APPROVED EQUAL FOR 40 DEGREE C. OR AMBIENT TEMPERATURE, UNLESS OTHERWISE NOTED.

adwarchitects
environmentsforlife
architecture planning interiors
8 coliseum centre,
2816 coliseum drive, suite 500
charlotte, north carolina 28217
(7) 704 379 1919
www.adwarchitects.com

optima engineering
1937 South Tryon St., Suite 300, Charlotte, NC 28203
150 Fayetteville St., Suite 520, Raleigh, NC 27601
Phone 704-398-1952 • www.optimaengineering.com

DEMOLITION NOTES:
PARTIAL AND TOTAL DEMOLITION OF PORTIONS SHALL BE PERFORMED ALONG WITH ANY WORK NECESSARY TO BRING EXISTING BUILDING WHICH SHALL REMAIN SO THAT IT CONTINUES TO FUNCTION.
B. ALL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, NFPA, STATE BUILDING CODE, AND ANY OTHER LOCAL REQUIREMENTS THAT MAY APPLY.

RICHMOND COMMUNITY COLLEGE
SCO #16-15889-02A

RICHMOND COMMUNITY COLLEGE
LEE BUILDING
STUDENT SERVICES & CAREER CENTER
VOL.2

BID DOCUMENTS
ELECTRICAL SPECIFICATIONS

DATE 4-5-2019
PROJECT NO 16063

REVISIONS
NO DATE DESCRIPTION:
1) ALL SHOP AND COORDINATION DRAWINGS WILL BE 1/8"=1'-0" SCALE.
2) DRAWINGS WILL BE ORIGINAL DRAWINGS AND NOT OVERLAYS OF THE ORIGINAL/DRAWING.
3) COORDINATION DRAWINGS WILL BE DRAWN ON REPRODUCIBLE MATERIAL.
4) COORDINATION DRAWINGS ARE NOT SHOP DRAWINGS AND ARE REQUIRED IN ADDITION TO SHOP DRAWINGS.
5) ONCE THE COMPLETE COORDINATION DRAWINGS HAVE BEEN COMPLETED, THE MECHANICAL CONTRACTOR SHALL BE REQUIRED TO SUBMIT TO EACH OF THE FOLLOWING CONTRACTORS: ELECTRICAL, PLUMBING, FIRE PROTECTION, IT/DATA, AND GENERAL. ADDITIONAL SETS WILL BE SENT TO THE OWNER, ARCHITECT, AND ENGINEER.

THE DRAWING IS THE PROPERTY OF ADW ARCHITECTS, PA, AND SHALL NOT BE REPRODUCED OR COPIED IN WHOLE OR IN PART. IT SHALL NOT BE USED ON ANY OTHER PROJECT OR FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN CONSENT OF ADW ARCHITECTS, PA.
NORTH CAROLINA STATE BOARD OF ARCHITECTS
SEAL 15
ADW ARCHITECTS, PA
DATE 04/05/19

SHEET NUMBER
OF 34
E002
OPTIMA # 17-0017