

WILMINGTON CHRISTIAN ACADEMY
1600 ELECTRICAL SPECIFICATIONS

- 1601 GENERAL
- A. INSTALLATION SHALL COMPLY WITH THE LATEST EDITION OF THE NORTH CAROLINA STATE BUILDING CODE, VOLUME I AND VOLUME X, NATIONAL ELECTRIC CODE, LOCAL BUILDING CODES AND ORDINANCES AND OTHER NATIONAL CODES AND ORDINANCES. IN THE CASE OF CONFLICT BETWEEN THE CODE AND THE DRAWINGS AND SPECIFICATIONS OR BETWEEN THE VARIOUS CODES, THEN THE MOST RESTRICTIVE SHALL TAKE PRECEDENT.
- B. PROVIDE AND PAY ALL LICENSES, FEES, PERMITS, POWER CONNECTION CHARGES, IF ANY, INSURANCE, ETC., REQUIRED FOR EXECUTION OF THIS WORK.
- C. ELECTRICAL CONTRACTOR SHALL PROVIDE THE MATERIALS, PERFORM THE WORK AND TEST AND PAY ALL FEES NECESSARY TO MAKE THE ELECTRICAL SYSTEM OPERABLE AND READY FOR USE BY THE OWNER. GUARANTEE - EQUIPMENT, MATERIALS AND INSTALLATION SHALL BE GUARANTEED TO BE FREE OF DEFECTS FOR A PERIOD OF ONE (1) YEAR AFTER FINAL ACCEPTANCE OF WORK OR IN ACCORDANCE WITH THE MANUFACTURER'S STANDARD GUARANTEE, IF LONGER.
- E. IT IS UNDERSTOOD AND AGREED THAT THESE PLANS AND SPECIFICATIONS SHALL BE FULFILLED IN THEIR TRUE SPIRIT AND INTENT SO THAT ANY MINOR MATERIALS OR DEVICES ESSENTIAL TO PROPER AND CONVENIENT OPERATION, REQUIRED OR IMPLIED, SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR WITHOUT EXTRA CHARGE, EVEN THOUGH NOT SPECIFICALLY CALLED OUT.
- F. INSTALLATION SHALL COMPLY WITH OSHA STANDARDS.
- G. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR HIS OWN CLEAN UP AND REMOVAL OF SCRAP FROM THE JOB SITE. THE ELECTRICAL CONTRACTOR SHALL MAINTAIN A CLEAN AND SAFE WORK AREA.
- H. IN CASE OF CONFLICT BETWEEN THE PLANS AND SPECIFICATIONS OR CONFLICT BETWEEN INFORMATION PRESENTED ON THE PLANS OR IN THE SPECIFICATIONS, THEN THE MOST RESTRICTIVE SHALL TAKE PRECEDENT.
- I. DIVISION I SHALL BECOME APART OF THESE SPECIFICATIONS BY REFERENCE.

- 1602 SCOPE
- WORK SHALL INCLUDE BUT IS NOT LIMITED TO:
- A. PROVIDE 120/240V-1-W AND 277/480V-3-W SERVICE TO THE BUILDING AND SUB FEED THE EXISTING SERVICE.
- B. PROVIDE AND INSTALL FIXTURES AS SHOWN ON THE PLANS.
- C. PROVIDE AND INSTALL WIRING DEVICES, PANELS, AND CONDUIT.
- D. PROVIDE AND INSTALL TELEPHONE PANEL, CONDUIT TO TELEPHONE COMPANY POINT OF DELIVERY, TELEPHONE BOXES AND COMPUTER BOXES.
- E. PROVIDE CONNECTIONS TO MECHANICAL AND PLUMBING EQUIPMENT.
- F. EXPAND THE EXISTING FIRE ALARM SYSTEM.
- G. PROVIDE ALL REQUIRED DEMOLITION.

- 1603 MATERIALS
- A. CONDUCTORS
1. ALL WIRE SHALL BE COPPER, WIRE #8 AND LARGER SHALL BE STRANDED.
2. USE WIRE WITH THHN/THWN INSULATION FOR ALL WIRE #8.
3. POWER CONDUCTORS SHALL BE #12 AWG MINIMUM. PILOT AND CONTROL CIRCUITS MAY BE #14 AWG.
- B. CONDUIT
1. UNDERGROUND CONDUIT SHALL BE PVC, CHANGE TO RIGID GALVANIZED BELOW CONCRETE FLOOR AND STUB UP THROUGH FLOOR WITH RIGID GALVANIZED.
2. ARMOR CLO. CABLE SHALL BE ALLOWED IN CONCEALED AREAS.
3. OTHER ABOVE GRADE CONDUIT SHALL BE EMT WITH STEEL COMPRESSION FITTINGS. IF EXPOSED TO MECHANICAL DAMAGE CONDUIT SHALL BE RIGID GALVANIZED.
4. CONNECTIONS TO EQUIPMENT AND FIXTURES SHALL BE MADE WITH SEAL TIGHT FLEX CONDUIT FOR EXTERIOR CONNECTIONS AND GREENFIELD FOR INTERIOR CONNECTION.
- C. WIRING DEVICES SHALL BE ONE MAKE, UNDERWRITERS APPROVED, MANUFACTURED BY G.E., BRYANT, HUBBELL, OR EQUIVALENT. WIRING DEVICES SHALL BE WEATHERPROOF FOR EXTERIOR COVERS, PLASTIC FOR INTERIOR. WIRING DEVICES SHALL BE STANDARD GRADE. COORDINATE WITH ARCHITECT FOR COLOR OF WIRING DEVICES.
- D. DISTRIBUTION EQUIPMENT SHALL BE THE LATEST PRODUCTS, MANUFACTURER SHALL BE G.E., SQUARE D, WESTINGHOUSE, OR ITC. INTERIOR EQUIPMENT SHALL BE NEMA 1 AND EXTERIOR EQUIPMENT SHALL BE NEMA 3R MINIMUM.
- E. COORDINATE WITH POWER COMPANY TO OBTAIN BREAKER KAIC RATINGS. DRAWINGS SHALL INDICATE MINIMUM RATING. ALL BREAKERS SHALL BE BOLT ON TYPE. MAIN PANEL SHALL BE SERVICE ENTRY RATED AND LABELED. BREAKERS SHALL BE SERIES AND CURRENT LIMITING RATED. PROVIDER RATED SWITCHES SERVING MOTORS AS REQUIRED.
- F. FUSES SHALL BE CURRENT LIMITING TIME DELAY FUSES "CLASS RK5".
- G. ALL EQUIPMENT AND FIXTURES SHALL BE UL APPROVED.
- H. PROVIDE LAMPS FOR ALL FIXTURES. LAMPS SHALL BE G.E., OR SYLVANIA.

- 1604 EXECUTION
- A. UNLESS OTHERWISE NOTED, SET ALL RECEPTACLES AT 16" AFF, AND SET ALL SWITCHES AT 48" AFF.
- B. HOLES SHALL BE DRILLED OR CUT. DO NOT BREAK HOLES.
- C. PATCHING SHALL BE DONE BY THE ELECTRICAL CONTRACTOR. ALL PATCHING SHALL BE DONE BY A CRAFTSMAN SKILLED IN THE WORK BEING PERFORMED.
- D. WIRE SHALL BE COLOR CODED AS FOLLOWS:

PHASE A	BLACK	BROWN
PHASE B	WHITE	ORANGE
PHASE C	RED	YELLOW
NEUTRAL	WHITE	GRAY
GROUND	GREEN	GREEN

- E. CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL EQUIPMENT AND POWER REQUIREMENTS FOR ALL EQUIPMENT BEFORE RUNNING SERVICE.
- F. CONDUIT AND WIRING IN FINISHED AREAS SHALL BE CONCEALED. ANY EXPOSED CONDUIT SHALL BE RUN IN A NEAT FASHION AND SHALL BE RUN PERPENDICULAR AND PARALLEL TO THE BUILDING LINES.
- G. TELEPHONE AND COMPUTER OUTLETS SHALL BE DUPLEX RECEPTACLE BOXES WITH 3/4" EMT STUBBED INTO THE CEILING.
- H. CONTRACTOR SHALL PRESERVE ALL FIRE RATED WALLS AND CEILINGS. VERIFY RATING WAS OFF THE ARCHITECTURAL PLAN. THIS SHALL INCLUDE USING CAULKING THAT IS UL APPROVED FOR THE APPLICATIONS, OFF SETTING BOXES AS REQUIRED AND PROVIDING RATED CAPS OR COVERS FOR LIGHTS, AS REQUIRED.
- I. PROVIDE ALL REQUIRED DEMOLITION. DELIVER TO THE OWNER ALL EQUIPMENT THE OWNER WOULD LIKE TO RETAIN. ALL OTHER MATERIALS AND DEBRIS SHALL BE REMOVED FROM THE SITE.

- 1605 DIRECTORY CARDS, NAME PLATES & EQUIPMENT LABELS
- A. PROVIDE A TYPED DIRECTORY CARD IN EACH PANELBOARD INDICATING ELECTRICAL DEVICES OR EQUIPMENT SERVED BY EACH CIRCUIT BREAKER. FURNISH BLANK COVERPLATE.
- B. PROVIDE NAMEPLATES FOR PANELS AND DISCONNECTS. NAMEPLATES SHALL BE LAMINATED PLASTIC. EACH NAMEPLATE SHALL IDENTIFY THE PANEL AND THE VOLTAGE. NAMEPLATES SHALL BE NEAMINE PLASTIC, 0.125 INCH THICK, BLACK WITH WHITE CENTER CORE. SURFACE SHALL BE MATTE FINISH. CORNERS SHALL BE SQUARE. ACCURATELY ALIGN LETTERING AND ENGRAVE INTO CORE. MINIMUM SIZE OF NAMEPLATES SHALL BE 1 1/2 X 5 INCHES. LETTERING SHALL BE A MINIMUM OF 0.25 INCHES HIGH, NORMAL BLOCK STYLE.

- 1606 TEST & ADJUSTMENTS
- A. TEST AND ADJUST THE ELECTRICAL SYSTEM AND RELATED WORK PROVIDED UNDER THIS DIVISION OF THE SPECIFICATIONS.
- B. TEST ALL CIRCUITS WITH A "MEGGER" TEST TO DETERMINE THAT THE SYSTEM IS FREE OF SHORT CIRCUITS AND THAT PHASE CONDUCTORS ARE NOT GROUNDED. CHECK ALL ELECTRICAL EQUIPMENT FOR PROPER OPERATIONS.

- 1607 GROUNDING
- A. THE SERVICE EQUIPMENT, CONDUIT SYSTEM SUPPORT CABINETS, EQUIPMENT AND NEUTRAL CONDUCTOR SHALL BE GROUNDED IN ACCORDANCE WITH ARTICLE 250 OF THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE. GROUNDING CONDUCTORS SHALL BE SO ROUTED AS TO PERMIT, AS FAR AS PRACTICAL, THE SHORTEST AND MOST DIRECT PATH TO THE GROUND ELECTRODE SYSTEM. ALL GROUND CONNECTIONS SHALL HAVE A CLEAN CONTACT SURFACE.
- B. RUN A SEPARATE EQUIPMENT GROUND IN ALL FEEDS.

- 1608 SUBSTITUTION
- A. ALL MATERIALS SHALL BE NEW UNLESS OTHERWISE SHOWN OR SPECIFIED AND SHALL BE OF THE VERY BEST QUALITY AS SPECIFIED.
- B. REQUESTS TO SUBSTITUTE OTHER MATERIALS OR PRODUCTS FOR THOSE SPECIFIED SHALL BE SENT IN WRITING TO THE OWNER. REQUESTS SHALL BE ACCOMPANIED BY ENGINEERING DATA, SPECIFICATION SHEETS, ETC., AS NECESSARY TO FULLY IDENTIFY AND APPRAISE THE PRODUCTS.
- C. APPROVAL OF EQUIPMENT WILL NOT RELIEVE THE CONTRACTOR OF NONCOMPLIANCE WITH THE SPECIFICATIONS EVEN IF SUCH APPROVAL IS MADE IN WRITING, UNLESS THE ENGINEER IS CALLED TO THE NONCONFORMING FEATURES BY LETTER ACCOMPANYING THE SUBMITTAL DATA.

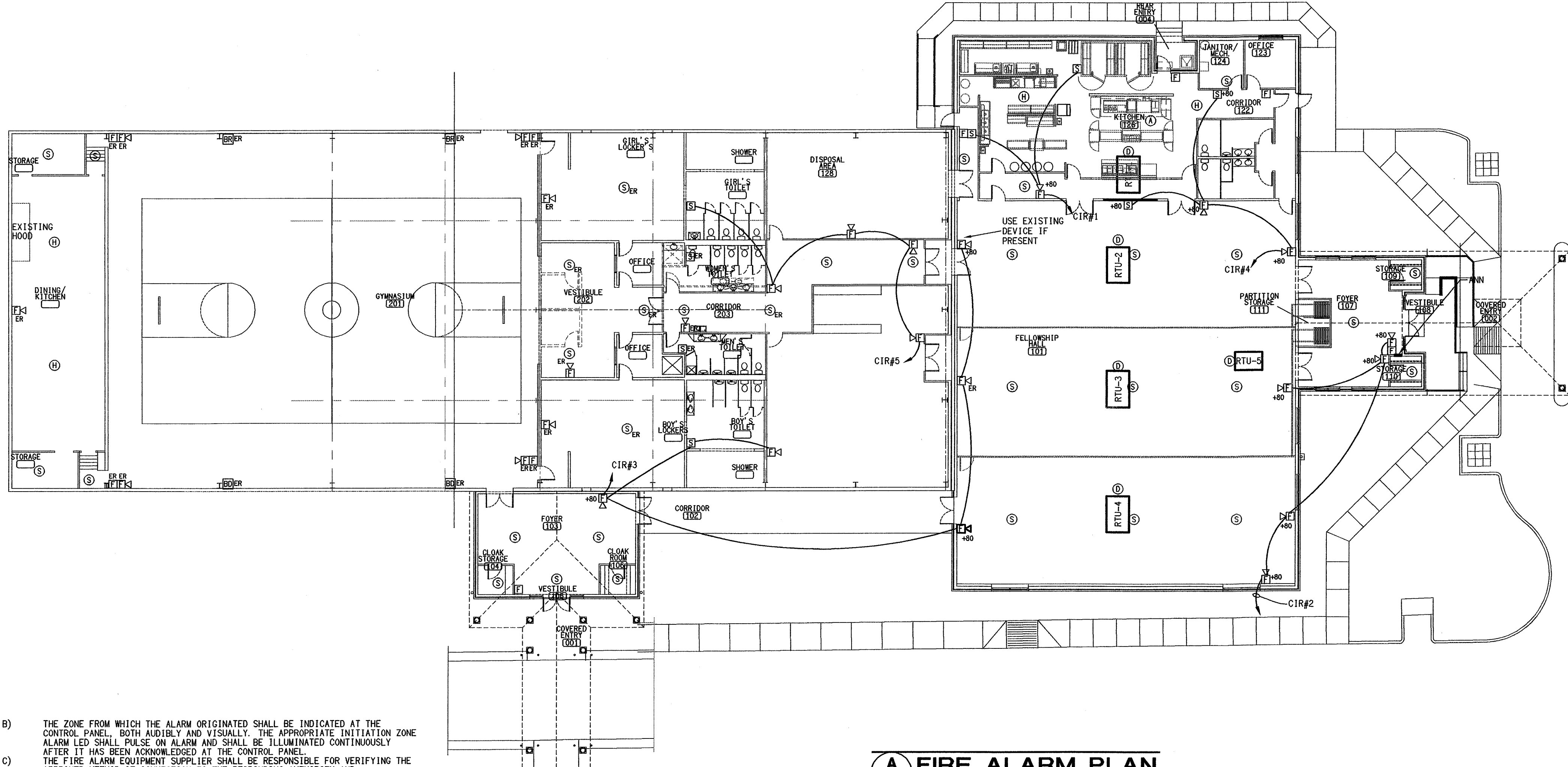
- 1609 VISIT TO SITE
- ALL BIDDERS ON THIS WORK SHALL VISIT THE SITE AND THOROUGHLY FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS BEFORE SUBMITTING THEIR BIDS. NO ALLOWANCE WILL BE MADE FOR LACK OF KNOWLEDGE OF EXISTING CONDITION.

- 1610 FIRE ALARM SYSTEM
- A. GENERAL
1. EXPAND THE EXISTING SYSTEM AND CONNECT TO THE EXISTING ADDRESSABLE PANEL.
2. PRESERVE THE EXISTING DEVICES.
3. PROVIDE ALL REQUIRED DEMOLITION.
4. THE FIRE ALARM SYSTEM SHALL INCLUDE EMPTY RACEWAY SYSTEMS WITH PULLWIRE, ETC., OR USE OF UL FIRE RATED CABLE TO MEET THE NATIONAL ELECTRICAL CODE, THE STATE CODES AND THE LOCAL BUILDING CODES AND NFPA 72 AND ADA REQUIREMENTS.

- B. FIRE ALARM SYSTEM
1. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL CONDUIT, WIRING, OUTLETS AND EQUIPMENT AS SHOWN ON THE DRAWINGS AND/OR HEREIN SPECIFIED. ALL SYSTEM COMPONENTS SPECIFIED HEREIN, AS WELL AS THEIR INSTALLATION, SHALL COMPLY WITH APPLICABLE STANDARD OF THE NATIONAL ELECTRICAL CODE, NATIONAL FIRE PROTECTION ASSOCIATION-72, N.C. STATE BUILDING CODE, LOCAL CODES, AND THE JURISDICTION HAVING AUTHORITY. ALL EQUIPMENT SHALL BE UNDERWRITERS' LABORATORIES LISTED FOR FIRE ALARM SYSTEM USE AND SHALL BE UL LISTED COMPATIBLE.
2. THE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND SHALL BE INSTALLED AND CONNECTED UNDER THE DIRECTION AND SUPERVISION OF A MANUFACTURER'S REPRESENTATIVE UPON COMPLETION OF INSTALLATION, THE MANUFACTURER'S REPRESENTATIVE SHALL PERFORM ALL OPERATIONAL TESTS AND ADJUSTMENTS AND CERTIFY IN WRITING THAT THE SYSTEM IS PROPERLY INSTALLED AND FUNCTIONS AS SPECIFIED (SEE ALSO TESTING BELOW).
3. ALL WIRING SHALL BE IN A COMPLETELY SEPARATE CONDUIT SYSTEM OR UL LISTED FIRE RATED CABLE AND COLOR CODED TO ALLOW EASE OF IDENTIFICATION OF THE DIFFERENT CIRCUITRY REQUIRED FOR THE SYSTEM.
4. THE MANUFACTURER'S AUTHORIZED REPRESENTATIVE SHALL PROVIDE SUPERVISION OF SYSTEM, AND SUBMIT A WRITTEN REPORT TO THE CONTRACTOR ATTESTING TO THE PROPER OPERATION OR THE COMPLETED SYSTEM.
5. THE CONTRACTOR SHALL PROVIDE THE FOLLOWING WARRANTY FOR THE FIRE ALARM SYSTEM: ALL EQUIPMENT SHALL BE WARRANTED BY THE MANUFACTURER FOR A PERIOD OF ONE YEAR FOLLOWING ACCEPTANCE. THE WARRANTY SHALL INCLUDE PARTS, LABOR, AND FIELD SERVICE.
6. SYSTEM OPERATION
- A) THE OPERATION OF ANY SMOKE DETECTOR, DUCT DETECTOR, OR ANY OTHER SYSTEM ALARM INDICATOR, SHALL CAUSE ALL ALARM SIGNALS, BOTH AUDIBLE AND VISUAL TO ENERGIZE.

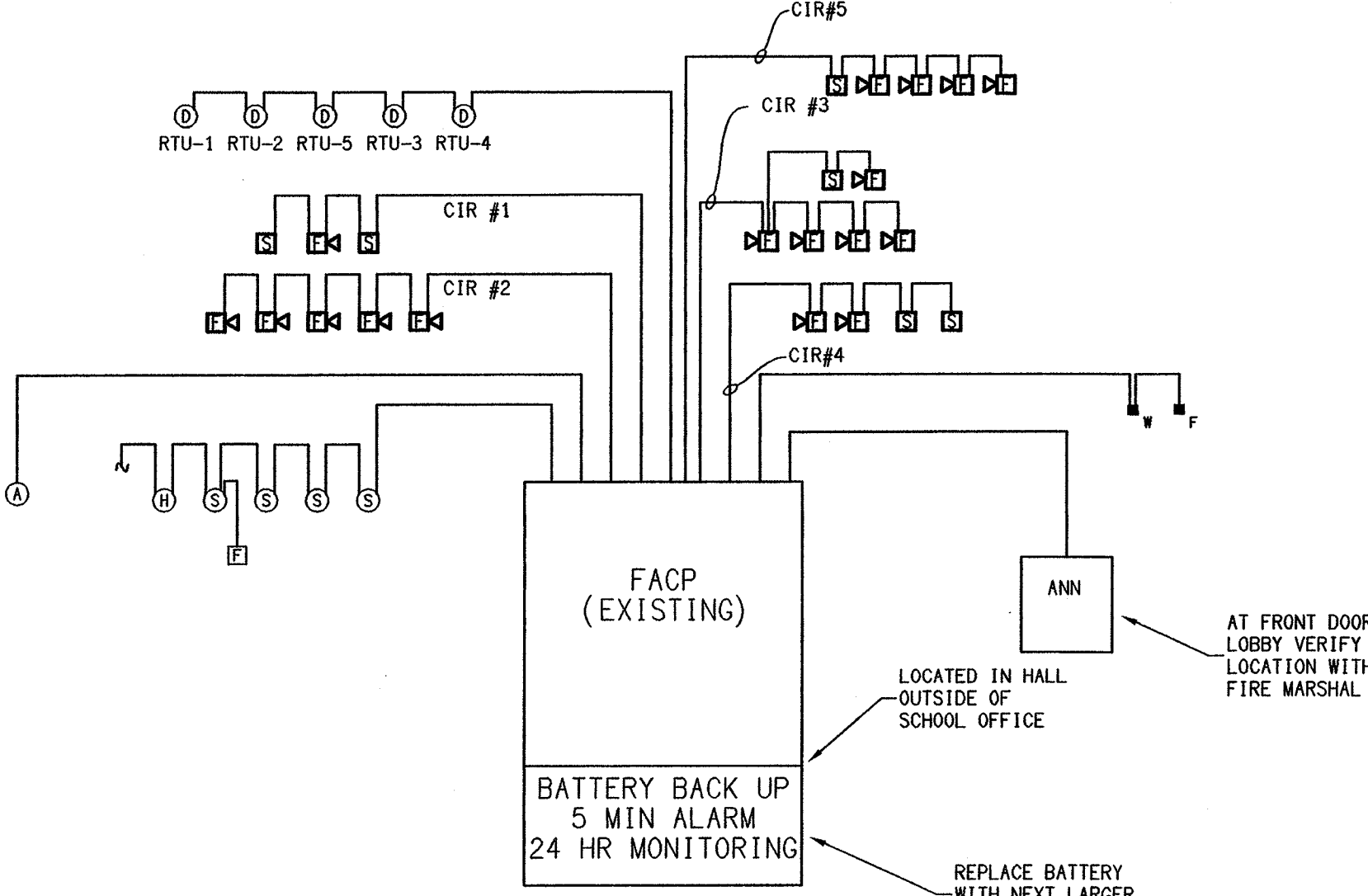
1611

SHOP DRAWINGS AS SOON AS POSSIBLE (AND NOT MORE THAN 30 DAYS) AFTER THE CONTRACT IS SIGNED, THE CONTRACTOR SHALL SUBMIT FIVE (5) COPIES OF SHOP DRAWINGS COVERING LIGHTING FIXTURES, PANELS, CIRCUIT BREAKERS, AND WIRING DEVICES, AND ANY SPECIAL EQUIPMENT WHICH HE INTENDS TO USE. SHOP DRAWINGS SHALL BE SUBMITTED TO THE OWNER FOR HIS APPROVAL.



A
E5 FIRE ALARM PLAN
SCALE: 1/16" = 1' - 0"

VOLTAGE DROP
MOST REMOTE CIRCUIT IS CIR#2
STROBES 1x.110 AMPS .11
STROBE HORNS 3x.16 AMPS .55
WIRE - 14GA
ADD DIST TO FACP 35V
VOLTAGE DROP
-59.12.5V/1700 = 1.04 VOLTS
100V
DEVICE WILL OPERATE AT 22 VOLTS - VOLTAGE DROP -OK



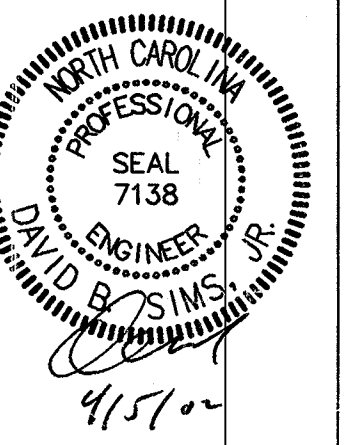
B
E5 FACP
SCALE: NTS

LEGEND	
SYMBOL	DESCRIPTION
[Symbol]	PULL STATION MOUNTED AT 48" - NEW
[Symbol]	EXISTING STATION REPLACE DEVICE
[Symbol]	SMOKE DETECTOR - NEW
[Symbol]	SMOKE DETECTOR - EXISTING TO REMAIN
[Symbol]	HEAT DETECTOR - NEW
[Symbol]	STROBE HORN, MOUNT AS SHOWN - NEW
[Symbol]	STROBE/HORN - EXISTING STATION TO REMAIN
[Symbol]	STROBE ONLY, MOUNT AS SHOWN - NEW
[Symbol]	STROBE ONLY - EXISTING STATION TO REMAIN
[Symbol]	FIRE ALARM CONTROL PANEL
[Symbol]	ANNUNCIATOR - NEW
[Symbol]	HOOD ANSUL SYSTEM - NEW
[Symbol]	BEAM DETECTOR - EXISTING TO REMAIN
[Symbol]	BEAM REFLECTOR - EXISTING TO REMAIN
[Symbol]	MAGNETIC DOOR HOLDER WALL MOUNTED
[Symbol]	MAGNETIC DOOR HOLDER FLOOR MOUNTED

NOT FOR CONSTRUCTION

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DRAWN BY: -
CHECKED BY: -

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REVISIONS:

DRAWING:
FIRE ALARM PLAN

SHEET:
E-5

OF: FIVE