

1.01 RELATED DOCUMENTS

- A. CONDITIONS OF THE CONTRACT, DRAWINGS, GENERAL REQUIREMENTS AND DIVISION 1 SPECIFICATION APPLY TO THE WORK OF THIS SECTION.
1.02 SUMMARY
A. PROVIDE ALL REQUIRED LABOR, WARRANTY LABOR, MATERIALS, EQUIPMENT, SYSTEM PROGRAMMING, TESTING, SUBMITTALS AND SERVICES NECESSARY FOR A COMPLETE AND OPERATIONAL FIRE ALARM SYSTEM AS HEREINAFTER DESCRIBED, AND AS SHOWN ON THE ENGINEERING DRAWINGS.
B. WORK SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
1. FIRE ALARM CONTROL PANEL (EXISTING)
2. AUXILIARY POWER SUPPLY
3. DATA CIRCUITS
4. INITIATION CIRCUITS
5. NOTIFICATION CIRCUITS
6. DETECTION DEVICES
7. AUDIBLE/VISUAL APPLIANCES
8. HVAC SHUTDOWN
C. PROVIDE A MINIMUM OF ONE (1) HOUR TRAINING FOR STAFF PERSONNEL IN THE OPERATION AND USE OF THE SYSTEM.
D. IT IS INTENDED THAT THE ENGINEERING DRAWINGS AND SPECIFICATIONS SHALL DESCRIBE AND PROVIDE FOR A WORKING INSTALLATION COMPLETE IN EVERY DETAIL AND ALL ITEMS NECESSARY FOR SUCH COMPLETE INSTALLATION SHALL BE PROVIDED WHETHER OR NOT SPECIFICALLY MENTIONED HEREIN OR SHOWN ON THE ENGINEERING DRAWINGS.

1.03 DEFINITIONS

- A. DEFINITIONS REFERENCED IN THESE SPECIFICATIONS ARE AS FOLLOWS:
1. AHJ: AUTHORITY HAVING JURISDICTION
2. FACP: FIRE ALARM CONTROL PANEL
3. UL: UNDERWRITERS LABORATORIES, INC.
4. LED: LIGHT-EMITTING DIODE
5. NICE1: NATIONAL INSTITUTE FOR CERTIFICATION IN ENGINEERING TECHNOLOGIES
6. NFPA: NATIONAL FIRE PROTECTION ASSOCIATION
7. FAEM: FIRE ALARM EQUIPMENT MANUFACTURER
8. NRTL: NATIONALLY RECOGNIZED TESTING LABORATORY

1.04 REFERENCES

- A. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE CODES AND REFERENCED DESIGN STANDARDS:
1. 2012 INTERNATIONAL BUILDING CODE WITH GEORGIA AMENDMENTS
2. 2012 NFPA 70 LIFE SAFETY CODE WITH GEORGIA AMENDMENTS
3. 2012 INTERNATIONAL MECHANICAL WITH GEORGIA AMENDMENTS
4. 2017 NFPA 70 NATIONAL ELECTRICAL CODE WITH GEORGIA AMENDMENTS
5. 2013 EDITION OF NFPA 72 NATIONAL FIRE ALARM & SIGNALING CODE WITH GEORGIA AMENDMENTS
B. IF THERE IS A CONFLICT BETWEEN THE APPLICABLE CODES, REFERENCED DESIGN STANDARDS, OR LOCAL AMENDMENTS AND THIS SPECIFICATION, IT IS THE CONTRACTOR'S RESPONSIBILITY TO IMMEDIATELY BRING THE CONFLICT TO THE ENGINEER FOR RESOLUTION.

1.05 SYSTEM DESCRIPTION

- A. THE SYSTEM CONTINUE TO SHALL OPERATE AS A LOW VOLTAGE FIRE ALARM SYSTEM AND SUPERVISED FIRE ALARM SYSTEM AS HEREINAFTER SPECIFIED. THE SYSTEMS FIRE ALARM CONTROL PANEL AND DEVICES SHALL REMAIN AND BE REUSED AS CURRENTLY CONFIGURED. NEW INITIATING DEVICE CIRCUITS SHALL MEET THE MINIMUM REQUIREMENTS OF CLASS B. NEW NOTIFICATION APPLIANCE CIRCUITS SHALL MEET THE MINIMUM REQUIREMENTS OF CLASS B. NEW SIGNALING LINE CIRCUITS SHALL MEET THE MINIMUM REQUIREMENTS OF CLASS B. CIRCUITS FOR RELAY COIL OPERATION SHALL BE 24 VOLT MAXIMUM WITH A SEPARATE OR INTEGRAL HEAT COLLAPSING DEVICE.
B. UPON LOSS OF BUILDING POWER, THE ENTIRE SYSTEM SHALL TRANSFER TO WITHIN TEN (10) SECONDS, AND WITHOUT LOSS OF SIGNALS. THE SYSTEM SHALL OPERATE UNDER SECONDARY POWER IN NORMAL OR TROUBLE CONDITIONS FOR TWENTY-FOUR (24) HOURS AND HAVE SUFFICIENT POWER TO SUPPORT COMPLETE ALARM CONDITION OPERATION FOR A SUBSEQUENT FIVE (5) MINUTES.
C. SYSTEM OPERATION SHALL BE AS FOLLOWS:
1. ANOMALY CONTROL CONDITIONS OR DEVICES AS REQUIRED FOR THE CLASS OF THE CIRCUIT, SHALL INITIATE A "TROUBLE" CONDITION AT THE CONTROL PANEL FOR THAT SPECIFIC CIRCUIT OR DEVICE. THE "TROUBLE" INDICATION SHALL DESCRIBE THE NATURE OF THE CONDITION ON THE AFFECTED CIRCUIT OR DEVICE. THE FIRE ALARM SYSTEM SHALL TRANSMIT A "TROUBLE" CONDITION OFF-SITE AS CURRENTLY CONFIGURED.
2. ACTIVATION OF ANY SUPERVISORY DEVICE AS INDICATED ON THE ENGINEERING DRAWINGS SHALL INITIATE A "SUPERVISORY" CONDITION AT THE CONTROL FOR THAT SPECIFIC DEVICE. THE "SUPERVISORY" INDICATION SHALL DESCRIBE THE NATURE OF THE CONDITION AND SPECIFIC ADDRESS AND ALPHANUMERIC DESCRIPTION OF THE DEVICE AFFECTED. THE FIRE ALARM SYSTEM SHALL TRANSMIT A "SUPERVISORY" CONDITION OFF-SITE AS CURRENTLY CONFIGURED.
3. ACTIVATION OF ANY ALARM DEVICE AS INDICATED ON THE ENGINEERING DRAWINGS SHALL INITIATE AN "ALARM" CONDITION AT THE CONTROL PANEL FOR THAT SPECIFIC DEVICE. THE "ALARM" INDICATION SHALL DESCRIBE THE NATURE OF THE CONDITION AND SPECIFIC ADDRESS AND ALPHANUMERIC DESCRIPTION OF THE DEVICE AFFECTED. THE FIRE ALARM SYSTEM SHALL TRANSMIT AN "ALARM" CONDITION OFF-SITE AS CURRENTLY CONFIGURED.
4. INITIATION OF AN "ALARM" CONDITION SHALL RESULT IN THE FOLLOWING FUNCTIONS TO BE PERFORMED BY THE SYSTEM:
a. INITIATE AN ALARM INDICATION ON THE CONTROL PANEL BY TONE AND ILLUMINATION OF THE CORRESPONDING DEVICE. THE ALPHANUMERIC LED DESCRIPTION, MANUAL INITIATING DEVICES, AND "ALARM" SEQUENCE SHALL BE TONE, THE CONTROL PANEL, THE ALARM ALPHANUMERIC DISPLAY, AND REMAIN "ON" AT THE CONTROL PANEL UNTIL THE CONDITION CAUSING THE "ALARM" IS CORRECTED AND RESET. AN ALARM SHALL BE INITIATED BY THE CONTROL PANEL AND SHALL BE ACTIVATED BY THE CONTROL PANEL.
b. INITIATE AN "ALARM" INDICATION ON THE CONTROL PANEL BY TONE AND ILLUMINATION OF THE CORRESPONDING DEVICE. THE ALPHANUMERIC LED DESCRIPTION, MANUAL INITIATING DEVICES, AND "ALARM" SEQUENCE SHALL BE TONE, THE CONTROL PANEL, THE ALARM ALPHANUMERIC DISPLAY, AND REMAIN "ON" AT THE CONTROL PANEL UNTIL THE CONDITION CAUSING THE "ALARM" IS CORRECTED AND RESET. AN ALARM SHALL BE INITIATED BY THE CONTROL PANEL AND SHALL BE ACTIVATED BY THE CONTROL PANEL.

1.06 QUALITY ASSURANCE

- A. ALL WORK SHALL MEET THE REQUIREMENTS OF THE OWNER, ARCHITECT, ENGINEER AND AUTHORITY HAVING JURISDICTION (AHJ).
B. ALL EQUIPMENT AND COMPONENTS SHALL BE LISTED, FOR THE ACTUAL INTENDED USE, UNLESS HEREINAFTER SPECIFICALLY EXCLUDED FROM SUCH LISTINGS.
C. INSTALLATION AND SUPERVISION OF INSTALLATION SHALL BE IN STRICT COMPLIANCE WITH THE REQUIREMENTS OF THE REGULATIONS, LICENSES, AND PERMITS FOR FIRE ALARM SYSTEM INSTALLERS IN THIS JURISDICTION.
D. INSTALLER MUST HAVE BEEN ACTIVELY ENGAGED IN THE BUSINESS OF DESIGN, INSTALLING, AND SERVICING FIRE ALARM SYSTEMS FOR AT LEAST FIVE (5) YEARS.
E. INSTALLER MUST BE AN AUTHORIZED REPRESENTATIVE OF THE FIRE ALARM EQUIPMENT MANUFACTURER (FAEM) AND HAVE TECHNICAL FACTORY TRAINING SPECIFICALLY FOR THE SYSTEM PROPOSED.
F. THE FAEM SHALL HAVE A REPRESENTATIVE SUPERVISE THE FINAL CONNECTION OF DEVICES, WIRING, AND PROGRAMMING OF THE CONTROL PANELS. THE FAEM REPRESENTATIVE SHALL BE NATIONAL INSTITUTE FOR CERTIFICATION IN ENGINEERING TECHNOLOGIES (NICE1) OR HIGHER FIRE ALARM PROTECTION / FIRE ALARM SYSTEMS ENGINEERING TECHNICIAN.

1.07 REGULATORY REQUIREMENTS

- A. ALL WORK SHALL MEET THE REQUIREMENTS OF ALL APPLICABLE CODES AND REFERENCED DESIGN STANDARDS.
B. NO APPROVALS OR INTERPRETATIONS OF THE DESIGN DOCUMENTS SHALL BE PURSUED EXCEPT THROUGH THE ENGINEER.
C. ANY WORK PERFORMED PRIOR TO THE SATISFACTORY REVIEW OF THE SHOP DRAWINGS BY THE ENGINEER, APPROVAL BY THE AHJ, AND DETERMINED TO BE NON-COMPLIANT WITH THE CONTRACT DOCUMENTS OR APPLICABLE CODES BY THE OWNER OR AHJ WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
D. THE SYSTEM WILL NOT BE ACCEPTABLE UNTIL FINAL TESTING AND RECEIPT OF THE INSPECTION AND TESTING FORM HAS BEEN OBTAINED.

1.08 SUBMITTALS

- A. THE ENGINEERING DRAWINGS HAVE BEEN PREPARED USING AUTOCAD. THESE DOCUMENTS WILL BE MADE AVAILABLE EITHER IN ELECTRONIC OR HARD COPY FORM. UTILIZATION OF THESE DOCUMENTS FOR THE DEVELOPMENT OF SHOP DRAWINGS AND SUBMITTALS DOES NOT RELIEVE THE CONTRACTOR FROM ANY RESPONSIBILITIES REQUIRED HEREIN.
B. IN THE SUBMITTALS, THE CONTRACTOR MUST CLEARLY IDENTIFY ALL AREAS AND SECTIONS OF THIS SPECIFICATION TO WHICH THEY TAKE EXCEPTION OR ARE NOT CAPABLE OF PROVIDING.
C. SUBMITTALS WILL BE DISAPPROVED UNLESS REQUIRED EQUIPMENT LITERATURE, CALCULATIONS, AND COMPLETE SHOP DRAWINGS ARE SUBMITTED TOGETHER AS ONE PACKAGE FOR REVIEW.
D. THE ENGINEER SHALL REVIEW THE CONTRACTOR'S SUBMITTALS TO VERIFY CONFORMANCE TO THE PROJECT SPECIFICATIONS AND DESIGN CONCEPTS EXPRESSED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL ALLOW SUFFICIENT TIME TO PERMIT ADEQUATE REVIEW. REVIEW OF SUCH SUBMITTALS IS NOT CONDUCTED FOR THE PURPOSE OF DETERMINING THE ACCURACY AND COMPLETENESS OF DETAILS AND DIMENSIONS, OR SUBMITTALS MUST BE COMPLETED IN FULL. THE ENGINEER'S REVIEW SHALL NOT CONSTITUTE APPROVAL OF SUCH PRELIMINARY CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OF PROCEDURES, OR APPROVAL OF A SPECIFIC ASSEMBLY.
E. PRIOR TO RELEASE OF EQUIPMENT FOR SHIPMENT OR INSTALLATION, SUBMIT TO THE ENGINEER THE FOLLOWING:
1. SHOP DRAWINGS: THE SPECIFIC QUANTITY TO BE SUBMITTED SHALL BE CONFIRMED WITH THE GENERAL CONTRACTOR AND OWNER. ELECTRONIC SUBMITTALS ARE ACCEPTABLE. SUBMITTALS MUST BE COMPLETED BY THE ENTIRE PROJECT, COMPLETE IN ALL DETAIL, AND INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
a. FLOOR PLANS SHOWING EQUIPMENT PLACEMENT, POINT TO POINT WIRING, WIRING TYPES AND SIZES, CONDUIT TYPES AND SIZES, WIRING AND RACEWAY ROUTES, AND PROPOSED MOUNTING METHODS FOR CONDUIT AND BACKBOXES. FLOOR PLANS SHALL BE AUTO-CAD GENERATED.
b. SEQUENCE OF OPERATIONS IN MATRIX FORM TO INCLUDE A DETAILED DESCRIPTION OF THE OPERATION OF EACH SYSTEM FUNCTION FOR ALL POSSIBLE CONDITIONS.
c. RISER DIAGRAM SHOWING TYPICAL WIRING CONNECTIONS FOR EACH TYPE OF DEVICE AND MODULE.
d. SUPPLEMENTARY AND ALARM CURRENT CALCULATIONS FOR PRIMARY POWER AND EMERGENCY BATTERY SIZES OF ALL CONTROL PANELS AND AUXILIARY POWER SUPPLIES.
2. BATTERY CALCULATIONS SHALL SHOW THE TYPE OF BATTERY, VOLTAGE, AMPERES, DURATION, AND MAINTENANCE PERIODS FOR EACH DEVICE. THE MANUFACTURER'S DRAWING SHALL INCLUDE EACH PANEL'S BATTERY HOUR RATING.
3. THE CALCULATED LOAD SHALL BE THE DESIGN LOAD, INCLUDING ALL REQUIRED SPARE CAPACITY.
4. THE BATTERY IS REQUIRED TO MEET THE CALCULATED LOAD SHALL BE A MINIMUM OF EIGHTY (80) PERCENT OF THE AMPHOURS LISTED BY THE MANUFACTURER.
5. A COMPLETE LIST OF ALL PROPOSED DEVICES AND THEIR ASSOCIATED ZONES AND CIRCUIT NUMBER.
6. VOLTAGE DROP CALCULATIONS FOR ALL NOTIFICATION APPLIANCE CIRCUITS.
7. CALCULATIONS SHALL FOLLOW THE VOLTAGE DROP CALCULATION CRITERIA AS OUTLINED IN NFPA 72 AND UL 664.
8. CALCULATIONS SHALL USE THE WORST CASE OPERATING VOLTAGE OF EACH CONTROL PANEL OR POWER SUPPLY AS A STARTING VOLTAGE. THE STARTING VOLTAGE SHALL BE 20.4 VDC, UNLESS WRITTEN DOCUMENTATION IS PROVIDED CONFIRMING THAT THE SPECIFIC CONTROL PANEL OR POWER SUPPLY IS CAPABLE OF MAINTAINING A VOLTAGE HIGHER THAN 20.4 VDC.
9. CALCULATIONS SHALL USE THE LOWEST OPERATING VOLTAGE OF THE NOTIFICATION APPLIANCES AND THE ASSOCIATED INCREASED CURRENT DRAW. THE LOWEST OPERATING VOLTAGE SHALL BE THE UL STANDARD

OPERATING VOLTAGE OF 18 VDC, UNLESS APPROVED OTHERWISE BY THE ENGINEER.

- 2. MANUFACTURER'S LITERATURE ON ALL SYSTEM EQUIPMENT. THE SPECIFIC QUANTITY TO BE SUBMITTED SHALL BE CONFIRMED WITH THE GENERAL CONTRACTOR AND OWNER. ELECTRONIC SUBMITTALS ARE ACCEPTABLE. LITERATURE WHICH IS NOT CLEARLY IDENTIFIED WILL BE REJECTED.
a. LITERATURE SHALL INCLUDE SPECIFICATION AND DESCRIPTION OF RECOMMENDED SUPPORTING METHODS, ENCLOSURES OR BOXES, AND WIRING CONNECTIONS.
b. THE EXACT COMPONENTS TO BE UTILIZED ON THIS SPECIFIC PROJECT SHALL BE INDICATED, BY HIGHLIGHTING OR ARROWS, ON EACH DATA SHEET OF THE EQUIPMENT LITERATURE.
3. QUALIFICATIONS AND AUTHORIZATION OF THE REPRESENTATIVE OF THE FAEM.
F. THE ENGINEER SHALL REVIEW FOR ACCURACY ALL SUBMITTALS REQUIRED TO BE RECEIVED BY THE ENGINEER PRIOR TO EQUIPMENT RELEASE OR INSTALLATION. THE OWNER, OWNER'S REPRESENTATIVE, OR DESIGN FIRMS RETAINED BY THE OWNER SHALL NOT BE RESPONSIBLE FOR ANY ADDITIONAL COSTS RESULTING FROM REPLACEMENT OF EQUIPMENT OR MATERIALS NOT REVIEWED PRIOR TO INSTALLATION.
G. AFTER SATISFACTORY REVIEW OF THE SUBMITTALS BY THE ENGINEER, THE CONTRACTOR SHALL SUBMIT ALL REQUIRED SHOP DRAWINGS AND LITERATURE TO PERFORM SCHEDULED TESTING AND INSPECTIONS AS REQUIRED BY THE AHJ. THE OWNER MAY ELECT TO HAVE A REPRESENTATIVE PRESENT AT THE SCHEDULED TESTING DURING THE WARRANTY PERIOD.
H. FORWARD TO THE ENGINEER A COPY OF THE TRANSMITTAL OF THE PERMIT APPLICATION.
I. FORWARD TO THE ENGINEER, IN WRITING, ANY COMMENTS FROM THE AHJ OR THE INSURANCE UNDERWRITER WITHIN FIVE (5) WORKING DAYS AFTER THE RECEIPT OF THEIR COMMENTS.

1.09 PROJECT RECORD DOCUMENTS

- A. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ON SITE AN UP-TO-DATE RECORD SET OF SATISFACTORY SHOP DRAWINGS WHICH SHALL BE MARKED TO SHOW EACH AND EVERY CHANGE MADE TO THE FIRE ALARM SYSTEM FROM THE ORIGINAL APPROVED SHOP DRAWINGS. THIS SHALL NOT BE CONSTRUED AS AUTHORIZATION TO DEVIATE FROM OR MAKE CHANGES TO THE SYSTEM AS DESCRIBED IN THE ORIGINAL APPROVED SHOP DRAWINGS OR WRITTEN INSTRUCTIONS FROM THE ENGINEER IN EACH CASE. THIS SET OF DRAWINGS SHALL BE ISSUED ONLY AS A RECORD SET. THESE DRAWINGS SHALL BE MADE AVAILABLE TO THE OWNER, OR THE OWNER'S REPRESENTATIVE, UPON REQUEST.
B. THE CONTRACTOR SHALL CONTINUALLY DOCUMENT SOFTWARE AND PROGRAMMING CHANGES. THIS DOCUMENTATION SHALL INCLUDE:
1. A COMPLETE PRINTOUT OF THE SYSTEM PRIOR TO THE CHANGE.
2. A COMPLETE PRINTOUT OF THE SYSTEM PROGRAM SUBSEQUENT TO THE CHANGE, WITH ALL MODIFICATIONS HIGHLIGHTED.
3. A LETTER PREPARED AND SIGNED BY THE INDIVIDUAL WHO MADE THE CHANGES, DESCRIBING EACH CHANGE MADE AND WHY, AND THE REASON FOR THE CHANGE. THIS LETTER SHALL CERTIFY THAT THE PROGRAMMER HAS PERSONALLY REVIEWED AND COMPARED THE BEFORE AND AFTER PROGRAM PRINTOUT AND VERIFIED THE CORRECTNESS OF THE MODIFICATIONS.
4. AN EQUIVALENT MEANS PERFORMED AUTOMATICALLY IN THE SOFTWARE SYSTEMS, WHICH VERIFIED THE RESULTS OF CHANGES MADE IS ACCEPTABLE.
C. ONCE THE FIRE ALARM SYSTEM IS PUT INTO SERVICE, IN WHOLE OR IN PART, AND THE ASSOCIATED BUILDING IS ARE PARTIALLY OR WHOLLY OCCUPIED, NO SOFTWARE CHANGES SHALL BE PERFORMED WITHOUT PRIOR WRITTEN PERMISSION OF THE OWNER, OR OWNER'S REPRESENTATIVE.
D. ONLY A CERTIFIED MANUFACTURER'S REPRESENTATIVE TRAINED IN THE SPECIFIC PROGRAMMING SOFTWARE SHALL MAKE CHANGES TO THE FIRE ALARM SYSTEM SOFTWARE ONCE THE SYSTEM IS IN SERVICE.

2.01 ADDRESSABLE MANUAL PULL STATIONS

- 1. PROVIDE DUAL ALARM AND POWER STATUS LEDS. FLASH STATUS LEDS UNDER NORMAL CONDITIONS, INDICATING THAT THE DETECTOR IS OPERATIONAL AND IN REGULAR COMMUNICATION WITH THE CONTROL PANEL. BOTH LEDS MAY BE PLACED INTO STEADY ILLUMINATION BY THE CONTROL PANEL, INDICATING THAT THE ALARM CONDITION HAS BEEN DETECTED AND VERIFIED.
2. PROVIDE ADDRESSABLE MONITOR MODULES WHERE REQUIRED TO INTERFACE WITH CONTACT ALARM DEVICES, OR TO CONNECT A SUPERVISED ZONE OF CONVENTIONAL INITIATING DEVICES (ANY NORMALLY OPEN DRY CONTACT DEVICE) TO AN INTELLIGENT SLC LOOP.
3. PROVIDE ADDRESS-SETTING MEANS AND STORE AN INTERNAL IDENTIFICATION CODE WHICH THE CONTROL PANEL SHALL USE TO IDENTIFY THE TYPE OF DEVICE. FLASH STATUS LED UNDER NORMAL CONDITIONS, INDICATING THAT THE DETECTOR IS OPERATIONAL AND IN REGULAR COMMUNICATION WITH THE CONTROL PANEL. THE LED MAY BE PLACED INTO STEADY ILLUMINATION BY THE CONTROL PANEL, INDICATING THAT AN ALARM CONDITION HAS BEEN DETECTED.
4. ACCEPTABLE MANUFACTURER IS FIRE-LITE MIMF-300.

2.02 ADDRESSABLE MODULES

- A. ADDRESSABLE INPUT MODULES (AIM)
1. PROVIDE ADDRESSABLE MONITOR MODULES WHERE REQUIRED TO INTERFACE WITH CONTACT ALARM DEVICES, OR TO CONNECT A SUPERVISED ZONE OF CONVENTIONAL INITIATING DEVICES (ANY NORMALLY OPEN DRY CONTACT DEVICE) TO AN INTELLIGENT SLC LOOP.
2. PROVIDE ADDRESS-SETTING MEANS AND STORE AN INTERNAL IDENTIFICATION CODE WHICH THE CONTROL PANEL SHALL USE TO IDENTIFY THE TYPE OF DEVICE. FLASH STATUS LED UNDER NORMAL CONDITIONS, INDICATING THAT THE DETECTOR IS OPERATIONAL AND IN REGULAR COMMUNICATION WITH THE CONTROL PANEL. THE LED MAY BE PLACED INTO STEADY ILLUMINATION BY THE CONTROL PANEL, INDICATING THAT AN ALARM CONDITION HAS BEEN DETECTED.
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4. ACCEPTABLE MANUFACTURER IS FIRE-LITE MIMF-300.

2.03 CONDUCTORS

- A. INITIATION, NOTIFICATION AND AUXILIARY DEVICE CIRCUIT CONDUCTORS FOR POWER LIMITED CIRCUITS SHALL BE TYPE RPL, PFLP, OR PFLR. WHERE CONDUCTORS ARE INSTALLED IN COMPLETE RACEWAY SYSTEMS, TYPE THIN OR THIN MAY BE USED IF APPROVED BY THE MANUFACTURER, WHERE THE SIZE OR TYPE OF CONDUCTOR HEREINAFTER SPECIFIED CONFORMS WITH THE FAEM'S REQUIREMENTS, THE LARGER SIZE OR MORE SPECIALIZED CONDUCTOR TYPE WILL BE USED.
B. CONDUCTORS FOR WET LOCATIONS SHALL BE AS FOLLOWS:
1. TYPES RHH, TW, THW, THHW, THWN, XHHW OR OTHER TYPE LISTED FOR USE IN WET LOCATIONS.
2. TYPE LISTED FOR DIRECT BURIAL.
D. ALL ELECTRICAL CHARACTERISTICS (CONDUCTOR-TO-CONDUCTOR CAPACITANCE, DC RESISTANCE, ETC.) OF THE FIRE ALARM CONDUCTORS SHALL MEET THE REQUIREMENTS OF THE SELECTED FAEM FOR THE INTENDED APPLICATION.
E. ALL FIRE ALARM CONDUCTORS SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 760 OF THE NATIONAL ELECTRICAL CODE, AND ALL LOCAL CODES AND STANDARDS.

2.04 ADDRESSABLE MANUAL PULL STATIONS

- 1. PROVIDE DUAL ALARM AND POWER STATUS LEDS. FLASH STATUS LEDS UNDER NORMAL CONDITIONS, INDICATING THAT THE DETECTOR IS OPERATIONAL AND IN REGULAR COMMUNICATION WITH THE CONTROL PANEL. BOTH LEDS MAY BE PLACED INTO STEADY ILLUMINATION BY THE CONTROL PANEL, INDICATING THAT THE ALARM CONDITION HAS BEEN DETECTED AND VERIFIED.
2. PROVIDE ADDRESS-SETTING MEANS AND STORE AN INTERNAL IDENTIFICATION CODE WHICH THE CONTROL PANEL SHALL USE TO IDENTIFY THE TYPE OF DEVICE. FLASH STATUS LED UNDER NORMAL CONDITIONS, INDICATING THAT THE DETECTOR IS OPERATIONAL AND IN REGULAR COMMUNICATION WITH THE CONTROL PANEL. THE LED MAY BE PLACED INTO STEADY ILLUMINATION BY THE CONTROL PANEL, INDICATING THAT AN ALARM CONDITION HAS BEEN DETECTED.
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B. CONDUCTORS FOR WET LOCATIONS SHALL BE AS FOLLOWS:
1. TYPES RHH, TW, THW, THHW, THWN, XHHW OR OTHER TYPE LISTED FOR USE IN WET LOCATIONS.
2. TYPE LISTED FOR DIRECT BURIAL.
D. ALL ELECTRICAL CHARACTERISTICS (CONDUCTOR-TO-CONDUCTOR CAPACITANCE, DC RESISTANCE, ETC.) OF THE FIRE ALARM CONDUCTORS SHALL MEET THE REQUIREMENTS OF THE SELECTED FAEM FOR THE INTENDED APPLICATION.
E. ALL FIRE ALARM CONDUCTORS SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 760 OF THE NATIONAL ELECTRICAL CODE, AND ALL LOCAL CODES AND STANDARDS.

EQUIPMENT INSTALLED.

- 6. UPDATED LIST OF SPARE PARTS AND ACCESSORIES RECOMMENDED BY THE MANUFACTURER SHALL BE STOCKED FOR MAINTENANCE OF THE SYSTEM.
7. A DETAILED DESCRIPTION OF THE OPERATION OF THE SYSTEMS, INCLUDING OPERATOR RESPONSES, COPIES OF THE APPROVED SEQUENCE OF OPERATION SHALL BE PLACED IN OR ADJACENT TO THE CONTROL PANEL.
H. A COPY OF ALL SOFTWARE DOCUMENTATION REQUIRED BY THIS SECTION SHALL BE MAINTAINED ON-SITE BY THE CONTRACTOR, IN BINDER, ARRANGED IN CHRONOLOGICAL ORDER. THIS BINDER SHALL BE PROVIDED TO THE OWNER'S REPRESENTATIVE AT THE COMPLETION OF THE PROJECT.
1.10 WARRANTY
A. REPAIR ALL DEFECTIVE WORKMANSHIP OR REPLACE ALL DEFECTIVE MATERIALS FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER'S REPRESENTATIVE. WORKMANSHIP OR EQUIPMENT FOUND TO BE DEFECTIVE COST TO THE OWNER.
B. THE WARRANTY OR ANY PART OF THE WARRANTY SHALL NOT BE MADE VOID BY ANY REQUIRED OPERATION OR INSPECTION OF THE SYSTEM AFTER ACCEPTANCE DURING THE WARRANTY PERIOD. THE OWNER MAY SELECT QUALIFIED FIRMS OTHER THAN WARRANTOR TO PROVIDE REQUIRED TESTS AND INSPECTIONS. SYSTEM TESTING AND INSPECTIONS WILL BE CONDUCTED ONLY BY A DULY LICENSED COMPANY UNDER CONTRACT WITH THE MANUFACTURER. TESTING AND INSPECTIONS AS REQUIRED BY THE AHJ. THE OWNER MAY ELECT TO HAVE A REPRESENTATIVE PRESENT AT THE SCHEDULED TESTING DURING THE WARRANTY PERIOD.

PART 2 - PRODUCTS

2.01 ADDRESSABLE MANUFACTURERS

- A. FIRE-LITE

2.02 CONTROL PANELS

- A. THE EXISTING FIRE-LITE IMS-5020ULDS FIRE ALARM CONTROL PANEL WILL REMAIN AS CURRENTLY CONFIGURED.

2.03 AUXILIARY POWER SUPPLY

- 1. PROVIDE EACH AUXILIARY POWER SUPPLY (APS) UNIT IN AN INDIVIDUAL, SINGLE, SELF-CONTAINED, LOCKABLE CABINET. INPUT SHALL BE 120 VOLT AC NOMINAL WITH AN OUTPUT OF REGULATED 24 VOLT DC. EACH APS SHALL BE CAPABLE OF ACTUATING FROM EITHER THE CONTROL PANEL NOTIFICATION CIRCUIT, OR PROGRAMMED DRY CONTACTS. EACH APS SHALL PROVIDE "TROUBLE" INDICATION TO THE CONTROL PANEL UPON LOSS OF AC POWER, LOW BATTERY OR ABNORMAL CONDITIONS ON INDIVIDUAL OUTPUT CIRCUITS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REDESIGN, CIRCUITING, AND ADDITIONAL EQUIPMENT COSTS TO PROVIDE THE NECESSARY OUTPUT AMPERAGE. EACH APS SHALL HAVE A MINIMUM OF TWENTY (20) PERCENT SPARE CAPACITY ON EACH CIRCUIT. THE ASSUMING THE TOTAL AVAILABLE CURRENT IS DIVIDED EQUALLY BETWEEN ALL AVAILABLE CIRCUITS.

2.04 FIRE ALARM ANNUNCIATOR

- 1. PROVIDE AN EXISTING ANNUNCIATOR WITH A MINIMUM 800 (40) CHARACTER LIQUID CRYSTAL DISPLAY (LCD) WHICH DISPLAYS THE FIRE ALARM CONTROL PANEL DISPLAY. THE REMOTE ANNUNCIATOR SHALL HAVE AN ENABLE KEY FOR OPERATION OF THE ANNUNCIATOR. THE ANNUNCIATOR SHALL BE OPERATIONAL AND IN REGULAR COMMUNICATION WITH THE CONTROL PANEL. BOTH LEDS MAY BE PLACED INTO STEADY ILLUMINATION BY THE CONTROL PANEL, INDICATING THAT THE ALARM CONDITION HAS BEEN DETECTED AND VERIFIED.

2.05 ADDRESSABLE PHOTOELECTRIC SMOKE DETECTORS FOR DUCT APPLICATIONS

- 1. PROVIDE DUCT MOUNTED ANALOG PHOTOELECTRIC TYPE SMOKE DETECTORS WITH DUAL ALARM AND POWER STATUS LEDS. FLASH STATUS LED UNDER NORMAL CONDITIONS, INDICATING THAT THE DETECTOR IS OPERATIONAL AND IN REGULAR COMMUNICATION WITH THE CONTROL PANEL. BOTH LEDS MAY BE PLACED INTO STEADY ILLUMINATION BY THE CONTROL PANEL, INDICATING THAT THE ALARM CONDITION HAS BEEN DETECTED AND VERIFIED.

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2.07 ADDRESSABLE MANUAL PULL STATIONS

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- 1. PROVIDE DUAL ALARM AND POWER STATUS LEDS. FLASH STATUS LEDS UNDER NORMAL CONDITIONS, INDICATING THAT THE DETECTOR IS OPERATIONAL AND IN REGULAR COMMUNICATION WITH THE CONTROL PANEL. BOTH LEDS MAY BE PLACED INTO STEADY ILLUMINATION BY THE CONTROL PANEL, INDICATING THAT THE ALARM CONDITION HAS BEEN DETECTED AND VERIFIED.

2.09 ADDRESSABLE MANUAL PULL STATIONS

- 1. PROVIDE DUAL ALARM AND POWER STATUS LEDS. FLASH STATUS LEDS UNDER NORMAL CONDITIONS, INDICATING THAT THE DETECTOR IS OPERATIONAL AND IN REGULAR COMMUNICATION WITH THE CONTROL PANEL. BOTH LEDS MAY BE PLACED INTO STEADY ILLUMINATION BY THE CONTROL PANEL, INDICATING THAT THE ALARM CONDITION HAS BEEN DETECTED AND VERIFIED.
2. PROVIDE ADDRESS-SETTING MEANS AND STORE AN INTERNAL IDENTIFICATION CODE WHICH THE CONTROL PANEL SHALL USE TO IDENTIFY THE TYPE OF DEVICE.
3. CONSTRUCT WITH IMPACT RESISTANT MOLDED LEXAN OR DIE-CAST METAL WITH INSTRUCTIONS FOR STATION OPERATION IN RAISED WHITE LETTERS.
4. WHERE POSSIBLE, PROVIDE FLUSH MOUNTING OF PULL STATIONS. SURFACE MOUNTING OF PULL STATIONS WILL BE ALLOWED IF SURFACE MOUNTING IS NOT POSSIBLE OR AS INDICATED ON THE ENGINEERING DRAWINGS.
5. PROVIDE PROTECTIVE COVERS WITH INTEGRAL SOUNDER AS INDICATED BY THESE SPECIFICATIONS AND THE ENGINEERING DRAWINGS FOR ALL COMMON AREA MANUAL PULL STATIONS.
6. PROVIDE MOUNTING ON BACKBOXES UNLISTED FOR USE WITH THE PULL STATION.
7. ACCEPTABLE MANUFACTURER IS FIRE-LITE BS-12LX.

2.10 NOTIFICATION APPLIANCES

- A. VISUAL NOTIFICATION APPLIANCES - CEILING MOUNTED
1. PROVIDE VISUAL NOTIFICATION APPLIANCES OPERABLE AT 24 VOLT DC AND POLARIZED SUPERVISION. THE APPLIANCES SHALL UTILIZE A HIGH INTENSITY SOLID STATE XENON STORE TUBE WITH ASSOCIATED LENS/REFLECTOR SYSTEM. THE APPLIANCES SHALL BE CONSTRUCTED OF HIGH-IMPACT WHITE THERMOPLASTIC, SHALL INDICATE "FIRE," AND SHALL BE LISTED FOR CEILING MOUNTED APPLICATIONS.
2. WHERE POSSIBLE, PROVIDE FLUSH MOUNTING OF APPLIANCES. WHERE SURFACE MOUNTING IS NECESSARY, PROVIDE A CONCAVE BACKBOX SKIRT COVERING THE APPLIANCE BACKBOX.
3. PROVIDE SYNCHRONIZATION OF ALL VISUAL NOTIFICATION APPLIANCES. THE SYNCHRONIZATION MODULES SHALL BE CAPABLE OF SYNCHRONIZING APPLIANCES WITH CANDELA RATINGS RANGING FROM 60 CD TO 185 CD.
4. ACCEPTABLE MANUFACTURER IS SYSTEM SENSOR SCVIL.

2.11 RACEWAY

- A. THE FOLLOWING RACEWAY TYPES SHALL BE PERMITTED:
1. EMT CONDUIT (3/4 INCH MINIMUM).
2. RIGID CONDUIT (3/4 INCH MINIMUM).
3. NONMETALLIC CONDUIT FOR WET LOCATIONS (3/4 INCH MINIMUM).
4. SURFACE MOUNTED METALLIC RACEWAY WITH A MINIMUM SIZE EQUIVALENT TO THREE QUARTER (3/4) INCH NOMINAL CONDUIT.
5. ALL RACEWAY TYPES SHALL BE NEW. INSTALLING USED RACEWAY IS UNACCEPTABLE.
6. USING EXISTING RACEWAY IS UNACCEPTABLE. PRIOR WRITTEN PERMISSION OF THE ENGINEER OR OWNER REPRESENTATIVE.
7. BOXES, SUPPORTS, AND OTHER ACCESSORIES FOR THE RACEWAY INSTALLATION SHALL BE PROVIDED FOR THE INTENDED APPLICATION.

2.12 COORDINATION WITH OTHER TRADES

- A. COORDINATE CLOSELY WITH ALL OTHER TRADES TO EXPEDITE CONSTRUCTION AND AVOID UNNECESSARY DELAYS AND INTERFERENCES.

2.13 INSTALLATION/APPLICATION

- A. FURNISH AND INSTALL ALL CONTROL WIRING, RACEWAY AND OUTLET BOXES FOR THE FIRE ALARM SYSTEM.
B. FURNISH AND INSTALL ALL BACKBOXES, EQUIPMENT AND DEVICES FOR THE FIRE ALARM SYSTEM.
C. DEVICES AND EQUIPMENT MUST BE INSTALLED BY PERSONNEL LEGALLY PERMITTED AND CURRENTLY LICENSED TO INSTALL THE DEVICES AND EQUIPMENT. THE COST OF INSTALLATION, WARRANTY OF INSTALLATION AND EQUIPMENT, COORDINATION OF THE INSTALLATION, AND SUPERVISION OF THE INSTALLATION ARE RESPONSIBILITIES OF THE CONTRACTOR.
D. ALL FIRE ALARM CONDUIT, JUNCTION BOXES, PULL BOXES, CABLE SPLICES AND TERMINAL CABINETS SHALL BE ACCESSIBLE, PAINTED RED OR CLEARLY MARKED "FIRE ALARM." THE CONTRACTOR SHALL COMPLY WITH ANY LOCAL CODES OR AHJ REQUIREMENTS FOR IDENTIFICATION. ALL ACCESS PANELS REQUIRED FOR THE ACCESSIBILITY TO THE JUNCTION BOXES, PULL BOXES, CABLE SPLICES AND TERMINAL CABINETS SHALL BE THE RESPONSIBILITY OF THE FIRE ALARM CONTRACTOR.
E. ALL WIRING CONDUCTORS AND CONDUITS SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER AT RIGHT ANGLES TO THE BUILDING WALLS, FLOORS AND CEILINGS, AND SUPPORTED FROM THE BUILDING STRUCTURE AT INTERVALS COMPLIANT WITH NEC REQUIREMENTS.
F. ALL POWER LIMITED WIRING CONDUCTORS FOR THE FIRE ALARM SYSTEM SHALL BE INSTALLED IN CONDUIT IN THE FOLLOWING LOCATIONS:
1. SEVEN (7) FEET OR LESS ABOVE THE FINISHED FLOOR.
2. ELECTRICAL AND MECHANICAL ROOMS.
3. ELEVATOR HOISTWAYS AND ELEVATOR MACHINE ROOMS.
4. CONCEALED ABOVE CEILINGS OR PARTITIONS.
5. AREAS SUBJECT TO PHYSICAL DAMAGE.
6. WHERE REQUIRED BY APPLICABLE CODES.
7. WIRING CONDUCTORS IN FINISHED AREAS THAT CANNOT BE CONCEALED ARE ALLOWED TO BE INSTALLED IN SURFACE-MOUNTED METALLIC RACEWAY ONLY UPON APPROVAL OF THE OWNER'S REPRESENTATIVE.
G. ALL NON-POWER LIMITED WIRING CONDUCTORS FOR THE FIRE ALARM SYSTEM SHALL BE INSTALLED IN CONDUIT.
H. EXPOSED WIRING CONDUCTORS AND CONDUITS SHALL BE CONCEALED FROM PUBLIC VIEW AT ALL LOCATIONS BY ROUTING ON THE INSIDE OF JOISTS, ABOVE LAY-IN CEILINGS, OVER GIRDERS, WITHIN PARTITIONS OR IN ANY OTHER MANNER ACCEPTABLE TO THE OWNER'S REPRESENTATIVE.
I. WIRING CONDUCTORS AND CONDUITS INSTALLED ABOVE LAY-IN CEILINGS SHALL BE SUPPORTED FROM THE ORIGINAL BUILDING STRUCTURE AND SHALL NOT BE PERMITTED LESS THAN NINE (9) INCHES ABOVE OR BEHIND REMOVABLE PANELS OR CEILING TILES.
J. EXPOSED WIRING CONDUCTORS SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE AT INTERVALS OF NO MORE THAN FIVE (5) FEET.
K. ALL WIRING CONDUCTORS SHALL BE TAGGED AT ALL JUNCTION POINTS AND SHALL BE FREE FROM GROUNDS OR CROSSES

2.14 ADDRESSABLE MANUAL PULL STATIONS

- 1. PROVIDE DUAL ALARM AND POWER STATUS LEDS. FLASH STATUS LEDS UNDER NORMAL CONDITIONS, INDICATING THAT THE DETECTOR IS OPERATIONAL AND IN REGULAR COMMUNICATION WITH THE CONTROL PANEL. BOTH LEDS MAY BE PLACED INTO STEADY ILLUMINATION BY THE CONTROL PANEL, INDICATING THAT THE ALARM CONDITION HAS BEEN DETECTED AND VERIFIED.

2.15 ADDRESSABLE MANUAL PULL STATIONS

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2.28 ADDRESSABLE MANUAL PULL STATIONS

- 1. PROVIDE DUAL ALARM AND POWER STATUS LEDS. FLASH STATUS LEDS UNDER NORMAL CONDITIONS, INDICATING THAT THE