THE WORK UNDER THIS SECTION INCLUDES ALL LABOR, MATERIALS, FEES, AND ACTIVITIES REQUIRED TO INSTALL AND / OR MODIFY, TEST, AND COMMISSION AN ADDRESSABLE FIRE ALARM AND SIGNALING SYSTEM

RELATED DOCUMENTS

THE WORK REQUIREMENTS DESCRIBED WITHIN DIVISION 20 "COMMON MECHANICAL / ELECTRICAL REQUIREMENTS" FORM COMPLIMENTARY REQUIREMENTS TO THE SCOPE OF WORK OF THIS SECTION.

<u>SUBMITTALS</u>

COMPLY WITH DRAWINGS: STATE/LOCAL REGULATIONS: AND NFPA 72 CHAPTER "DOCUMENTATION". FOR PURPOSES OF APPLYING NFPA 72, ALL IDENTIFIED DOCUMENTATION REQUIREMENTS ARE A MANDATORY PART OF THE WORK. INCLUDING THOSE THAT "APPLY ONLY WHERE REQUIRED BY OTHER GOVERNING LAWS, CODES, OR STANDARDS, BY OTHER PARTS OF THE CODE; OR BY PROJECT SPECIFICATIONS OR DRAWINGS".

SUBMIT ACTION SUBMITTALS PRIOR TO APPLYING FOR AUTHORITY HAVING JURISDICTION INSTALLATION PERMITS (WHERE REQUIRED) AND SYSTEM

SUBMIT INFORMATIONAL SUBMITTALS AFTER SUCCESSFUL INITIAL SYSTEM TESTING AND PRIOR TO SCHEDULING AUTHORITY HAVING JURISDICTION FINAL APPROVAL DEMONSTRATION TESTING.

SUBMIT CLOSEOUT SUBMITTALS AS PART OF PROJECT CLOSEOUT PROCEDURE. ACTION SUBMITTALS

PRODUCT DATA: FOR EACH TYPE OF PRODUCT, INCLUDING FURNISHED OPTIONS AND ACCESSORIES, INCLUDE STATEMENT FROM MANUFACTURER. THAT ALL EQUIPMENT AND COMPONENTS HAVE BEEN TESTED AS A SYSTEM AND MEET ALL REQUIREMENTS OF THIS SPECIFICATION AND OF NFPA 72. INCLUDE STATEMENT ENDORSED BY THE MANUFACTURER'S AUTHORIZED REPRESENTATIVE THAT THE ELECTRICAL CHARACTERISTICS OF THE SUBMITTED FIRE ALARM CABLES ARE WITHIN ALL OPERATING PARAMETERS OF THE FIRE ALARM SYSTEM AS DESIGNED AND REPRESENTED BY THE DETAILED FIRE ALARM SYSTEM SHOP DRAWINGS.

SHOP DRAWINGS: FOR FIRE ALARM SYSTEM AND FIRE SAFETY CONTROL INTERFACES, INCLUDE FLOOR PLANS, RISER DIAGRAM, COMPONENT WIRING DIAGRAMS, VOLTAGE DROP CALCULATIONS, POWER SUPPLY AND BATTERY CALCULATIONS, AMPLIFIER LOADING CALCULATIONS, SPEAKER CIRCUIT DB LOSS CALCULATIONS, CONDUIT FILL CALCULATIONS, AND SEQUENCE OF OPERATIONS.

INFORMATIONAL SUBMITTALS

QUALIFICATION DATA: FOR QUALIFIED INSTALLER AND CERTIFIED ENGINEERING

SEISMIC QUALIFICATION CERTIFICATES: WHERE APPLICABLE, FOR FIRE ALARM CONTROL UNIT, ACCESSORIES, AND COMPONENTS, FROM MANUFACTURER.

RECORD OF INSPECTION AND TESTING. DETAILED DOCUMENTATION OF COMPLETED 100 PERCENT FIRE ALARM AND SIGNALING SYSTEM INITIAL ACCEPTANCE TESTING: OR FOR EXISTING SYSTEMS REACCEPTANCE TESTING. USE NFPA 72 "SYSTEM RECORD OF INSPECTION AND TESTING" FORMS.

STATEMENT OF COMPLETION: WRITTEN STATEMENT THAT SYSTEM HAS BEEN INSTALLED IN ACCORDANCE WITH APPROVED PLANS AND TESTED IN ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED INSTRUCTIONS AND APPROPRIATE NFPA 72 REQUIREMENTS.

CLOSEOUT SUBMITTALS

RECORDS OF COMPLETION. PROVIDE DETAILED DESCRIPTION OF INSTALLED. ESTED. AND APPROVED FIRE ALARM AND SIGNALING SYSTEM: INCLUDING DESCRIPTION OF PROTECTED PREMISES, FIRE ALARM SYSTEM AND COMPONENT SUB-SYSTEMS, FIRE SAFETY FUNCTION INTERFACES, MONITORING SERVICE, AND ALL OTHER INFORMATION REQUIRED BY NFPA 72. USE NFPA 72 "SYSTEM RECORD OF COMPLETION" FORMS. FOR MODIFICATIONS TO EXISTING SYSTEMS, FORMAT AS A DATED REVISION TO THE ORIGINAL RECORD OF COMPLETION.

RECORD DRAWINGS. PROVIDE COMPLETE SHOP DRAWING RE-SUBMITTAL UPDATED TO REFLECT ACTUAL FINAL SYSTEM INSTALLATION AND SEQUENCE OF OPERATION OF ALL COMPONENTS, FOR MODIFICATIONS TO EXISTING SYSTEMS, FORMAT AS A DATED REVISION TO THE ORIGINAL RECORD DRAWINGS

DEVICE ADDRESS LIST. PROVIDE COMPLETE DEVICE ADDRESS LIST ORGANIZED BY SLC LOOP AND SYSTEM NODE. FOR MODIFICATIONS TO EXISTING SYSTEMS. FORMAT AS A DATED REVISION TO THE ORIGINAL DEVICE ADDRESS LIST.

OPERATION AND MAINTENANCE DATA: FOR FIRE ALARM SYSTEMS AND COMPONENTS TO INCLUDE IN EMERGENCY, OPERATION, AND MAINTENANCE MANUALS.

QUALITY ASSURANCE

INSTALLER QUALIFICATIONS: PERSONNEL LICENSED BY THE GOVERNING LICENSING AUTHORITY FOR THE INSTALLATION OF FIRE ALARM SYSTEMS. SUCCESSFULLY INSTALLED, TESTED, OBTAINED APPROVALS FOR, AND PUT INTO SERVICE NO LESS THAN THREE (3) FIRE ALARM SYSTEMS SIMILAR IN TYPE, SIZE, AND COMPLEXITY TO THAT OF THE WORK OF THIS SECTION.

CERTIFIED ENGINEERING TECHNICIAN QUALIFICATIONS: PERSONNEL TRAINED AND CERTIFIED BY THE FIRE ALARM SYSTEM MANUFACTURER AS AN APPROVED TECHNICIAN. SHOP DRAWINGS AND CALCULATIONS PREPARED BY PERSONNEL CERTIFIED BY NICET AS FIRE ALARM LEVEL III OR IV TECHNICIAN, OR LICENSED AS A PROFESSIONAL FIRE PROTECTION ENGINEER BY THE GOVERNING LICENSING AUTHORITY.

SOURCE LIMITATIONS FOR FIRE ALARM SYSTEM AND COMPONENTS: SINGLE VENDOR SOURCE TO PROVIDE FIRE ALARM SYSTEM COMPONENTS AND CONNECTED NON-SYSTEM COMPONENTS AS A SINGLE LISTED ADDRESSABLE FIRE ALARM AND SIGNALING SYSTEM.

MODIFICATIONS TO EXISTING SYSTEMS: COMPONENTS COMPATIBLE WITH, AND OPERATE AS AN EXTENSION OF, EXISTING SYSTEM

PRODUCT STANDARDS: LISTED IN THE "FIRE PROTECTION EQUIPMENT DIRECTORY" PUBLISHED BY UL OR THE "APPROVAL GUIDE" PUBLISHED BY FM

SUBJECT TO COMPLIANCE WITH REQUIREMENTS, INDICATION OF A UL PRODUCT REQUIREMENT WITHIN PART 2 SHALL BE CONSTRUED TO BE INCLUSIVE OF A CORRESPONDING FM GLOBAL APPROVED PRODUCT, WITH OR WITHOUT UL LISTING.

PRODUCT STANDARDS: UL'S "FIRE PROTECTION EQUIPMENT DIRECTORY" LISTING AND "APPROVAL GUIDE," PUBLISHED BY FM GLOBAL.

SUBJECT TO COMPLIANCE WITH REQUIREMENTS, INDICATION OF A UL PRODUCT REQUIREMENT WITHIN PART 2 SHALL BE CONSTRUED TO REQUIRE A UL LISTED AND FM APPROVED PRODUCT.

ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70. BY A QUALIFIED TESTING AGENCY. AND MARKED FOR INTENDED LOCATION AND APPLICATION.

NRTL (NATIONALLY RECOGNIZED TESTING LABORATORY).

EXPLOSION-PROOF: LISTED AND LABELED FOR USE IN "HAZARDOUS (CLASSIFIED) LOCATIONS"; CLASS AND DIVISION LISTING APPROPRIATE

TO INTENDED LOCATION AND APPLICATION. NFPA CERTIFICATION: OBTAIN CERTIFICATION ACCORDING TO NFPA 72 BY AN

PART 1 - GENERAL

COORDINATION

COORDINATE CONSTRUCTION OPERATIONS WITH THOSE OF OTHER SECTIONS OF THE WORK AND OTHER ENTITIES TO ENSURE EFFICIENT AND ORDERLY INSTALLATION OF EACH PART OF THE WORK, COORDINATE OPERATIONS AND PRODUCT SELECTIONS OF THIS SECTION WITH OPERATIONS AND PRODUCT SELECTIONS INCLUDED IN DIFFERENT SECTIONS THAT DEPEND ON EACH OTHER FOR PROPER INSTALLATION, CONNECTION, AND OPERATION. SCHEDULE CONSTRUCTION OPERATIONS IN SEQUENCE REQUIRED TO OBTAIN THE BEST RESULTS WHERE INSTALLATION OF ONE PART OF THE WORK DEPENDS ON INSTALLATION OF OTHER COMPONENTS, BEFORE OR AFTER ITS OWN INSTALLATION. COORDINATE INSTALLATION OF DIFFERENT COMPONENTS WITH OTHER SECTIONS OF THE WORK TO ENSURE MAXIMUM PERFORMANCE AND ACCESSIBILITY FOR REQUIRED MAINTENANCE, SERVICE, AND REPAIR. MAKE ADEQUATE PROVISIONS TO ACCOMMODATE ITEMS SCHEDULED FOR LATER INSTALLATION.

COORDINATION DRAWINGS: CONTRIBUTE TO PREPARATION OF COORDINATION DRAWINGS IN THE SEQUENCE ESTABLISHED UNDER DIVISION 1 AND DIVISION 20; INDICATE WATER-BASED FIRE SUPPRESSION SYSTEM WORK COORDINATED WITH OTHER SECTIONS OF THE WORK.

MAINTENANCE MATERIALS

WARRANTY

MANUFACTURERS

FURNISH EXTRA MATERIALS THAT MATCH PRODUCTS INSTALLED AND THAT ARE PACKAGED WITH PROTECTIVE COVERING FOR STORAGE AND IDENTIFIED WITH LABELS DESCRIBING CONTENTS.

SMOKE DETECTORS AND HEAT DETECTORS: FIVE (5) OF EACH TYPE

DETECTOR BASES: FIVE (5) OF EACH TYPE INSTALLED.

AUDIBLE AND VISUAL NOTIFICATION APPLIANCES: FIVE (5) OF EACH TYPE INSTALLED.

KEYS AND TOOLS: ONE EXTRA SET FOR ACCESS TO LOCKED OR TAMPER-PROOF COMPONENTS. FUSES: TWO (2) OF EACH TYPE INSTALLED IN THE SYSTEM. PROVIDE IN

A BOX OR CABINET WITH COMPARTMENTS MARKED WITH FUSE TYPES AND SIZE.

SPECIAL WARRANTY: MANUFACTURER AGREES TO REPAIR OR REPLACE FIRE ALARM SYSTEM EQUIPMENT AND COMPONENTS THAT FAIL IN MATERIALS ORWORKMANSHIP WITHIN SPECIFIED WARRANTY PERIOD. WARRANTY EXTENT: ALL EQUIPMENT AND COMPONENTS NOT

COVERED IN THE MAINTENANCE SERVICE AGREEMENT. WARRANTY PERIOD: FIVE (5) YEARS FROM DATE OF SUBSTANTIAL COMPLETION.

PART 2 - PRODUCTS

SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS LISTED AS A COMPONENT OF A SINGLE ADDRESSABLE FIRE ALARM AND SIGNALING SYSTEM TECHNOLOGY PLATFORM BY THE FOLLOWING:

• SAME MANUFACTURER AS THE SELECTED MANUFACTURER OF THE FIRE ALARM AND SIGNALING SYSTEM TECHNOLOGY PLATFORM.

WHERE ADDITIONAL MANUFACTURER LISTINGS OR BASIS OF DESIGN PRODUCTS

ARE INDICATED, PROVIDE PRODUCTS LISTED AND DUTY-RATED AS COMPATIBLE

WITH THE SELECTED FIRE ALARM AND SIGNALING TECHNOLOGY PLATFORM.

PERFORMANCE REQUIREMENTS

OPERATIONAL PERFORMANCE: FIRE ALARM SYSTEM SHALL PROCESS ALARM, SUPERVISORY, AND TROUBLE STATUS SIGNALS AND PERFORM ASSOCIATED OUTPUT FUNCTIONS IN COMPLIANCE WITH NFPA 72. DIVISION 28 AND

CIRCUIT INTEGRITY AND FAULT PERFORMANCE: FIRE ALARM SYSTEM CIRCUIT INTEGRITY AND FUNCTIONAL PERFORMANCE CAPABILITY UNDER FAULT CONDITIONS SHALL COMPLY WITH THE NFPA 72 CIRCUIT CLASS DESIGNATIONS. SURVIVABILITY PERFORMANCE: FIRE ALARM SYSTEM FIRE RESISTIVE PERFORMANCE CAPABILITY SHALL COMPLY WITH THE NFPA 72 CIRCUIT LEVEL DESIGNATIONS.

SEISMIC PERFORMANCE: WHERE APPLICABLE, FIRE ALARM CONTROL UNIT AND RACEWAYS SHALL WITHSTAND THE EFFECTS OF EARTHQUAKE MOTIONS DETERMINED ACCORDING TO ASCE/SEI 7.

POWER SUPPLIES

GENERAL: SWITCHED-MODE SUPERVISED POWER SUPPLY BASE AND EXPANSION MODULES SUPPLYING REGULATED AND FILTERED 24-V DC POWER TO SYSTEM COMPONENTS, NOTIFICATION APPLIANCES, AND AUXILIARY POWER

RPS APPLICATIONS: POWER SUPPLY MODULES AND BATTERIES MOUNTED WITHIN DISTRIBUTED REMOTE POWER SUPPLY (RPS) EQUIPMENT CABINETS TO PROVIDE SUPPLEMENTAL POWER TO CONNECTED NOTIFICATION APPLIANCE CIRCUITS AND CONNECTED AUXILIARY POWER CIRCUITS.

SYSTEM SMOKE DETECTORS

COMPLY WITH "SYSTEM FIRE DETECTORS".

UL 268, PHOTOELECTRIC SPOT-TYPE WITH INSECT-SCREEN PROTECTED SENSING CHAMBER; FOR INSTALLATION IN TWIST-LOCK SYSTEM BASES.

OPERATING TEMPERATURE RANGE: 32 – 100 DEG F (0 – 38DEG C).

OPERATING HUMIDITY RANGE: 10 - 95 PERCENT RH. SENSITIVITY RANGE: 0.2 - 3.7 PERCENT OBS/FT.

AIR VELOCITY RATING: 0 - 4,000 FPM (0 - 1220 MPM).

PART 2 - PRODUCTS

NOTIFICATION APPLIANCES

MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:

• SAME MANUFACTURER AS THE SELECTED MANUFACTURER OF

THE FIRE ALARM AND SIGNALING SYSTEM TECHNOLOGY PLATFORM. MOUNTING: WALL OR CEILING MOUNT AS INDICATED ON DRAWINGS. HOUSING: THERMOPLASTIC, IMPACT RESISTANT, AND FLAME RETARDANT FINISH: WHITE HOUSING WITH RED CNTRASTING ENGRAVED LETTERING IDENTIFICATION: ENGRAVED LETTERING ON HOUSING INDICATING "FIRE"

AUDIBLE/INTELLIGIBLE NOTIFICATION APPLIANCES

COMPLY WITH "NOTIFICATION APPLIANCES".

SPEAKERS: UL 1480, 25 OR 70 NOMINAL VRMS SPEAKER WITHIN DEDICATED HOUSING, LISTED SOUND PRESSURE LEVEL OF 90 DBA MEASURED AT 10 FEET.

FREQUENCY RANGE: 400 TO 4000 HZ. WATTAGE TAPS: FIELD SELECTABLE 0.25 W, 0.50 W, 1.0 W, 2.0W.

VISIBLE NOTIFICATION APPLIANCES

COMPLY WITH "NOTIFICATION APPLIANCES".

STROBES: UL 1971, XENON STROBE WITH CLEAR POLYCARBONATE LENS MOUNTED ON AN ALUMINUM FACEPLATE AND FIELD SELECTABLE CANDELA OUTPUT SETTING WITHIN DEDICATED HOUSING, 24-V DC; WITH CANDELA SETTING INDICATOR VISIBLE THROUGH VIEWING WINDOW. STROBE FLASHING IN TEMPORAL PATTERN, SYNCHRONIZED THROUGHOUT EACH EVACUATION ZONE AND SYNCHRONIZED BETWEEN EVACUATION ZONES WHERE STROBES FROM MULTIPLE EVACUATION ZONES CAN BE OBSERVED BY A SINGLE VIEWER. COMPLY WITH DRAWINGS FOR APPLIANCE CANDELA OUTPUT.

COMBINATION AUDIBLE/INTELLIGIBLE AND VISIBLE NOTIFICATION APPLIANCES COMBINATION AUDIBLE/INTELLIGIBLE AND VISIBLE NOTIFICATION APPLIANCE WITH AUDIBLE AND VISIBLE SIGNALING ELEMENTS ASSEMBLED WITHIN A COMMON HOUSING.

AUDIBLE/INTELLIGIBLE SPEAKERS - COMPLY WITH "AUDIBLE/INTELLIGIBLE NOTIFICATION APPLIANCES".

VISIBLE STROBE - COMPLY WITH "VISIBLE NOTIFICATION APPLIANCES".

FIRE ALARM WIRE AND CABLE

MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:

 ANIXTER INC. BELDEN INC.

 SOUTHWIRE CC WEST PENN WIRE FIRE ALARM CABLE: UL 1424, TYPE FPL, [FPLR AND FPLP,] POWER-LIMITED FIRE

ALARM CABLE: RED-JACKETED. TWISTED-PAIR AND PARALLEL-PAIR INSULATED

SOLID COPPER CONDUCTORS; UNSHIELDED AND SHIELDED. FIRE ALARM METAL-CLAD CABLE: UL 1424, TYPE MC-FPLP, POWER-LIMITED FIRE ALARM CABLE: JACKETED. TWISTED-PAIR SOLID COPPER CONDUCTORS WITH RED ALUMINUM INTERLOCKING OUTER ARMOR JACKET; UNSHIELDED AND SHIELDED.

BASIS-OF-DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE RED ALERT MC-FPLP CABLE.

MANUFACTURED BY SOUTHWIRE CO. MINIMUM FIRE ALARM CABLE CONDUCTOR SIZE:

 AUXILIARY (24 VDC) POWER: 14 AWG / 2C. • DATA COMMUNICATIONS NETWORK: 16 AWG / 2C. • DIGITAL VOICE RISER: 16 AWG / 2C. • NOTIFICATION APPLIANCE CIRCUITS: 14 AWG / 2C.

• RELAY CIRCUITS: 14 AWG / 2C. • RS SERIAL DATA COMMUNICATIONS: 18 AWG / 2C. • SIGNALING LINE CIRCUITS: 16 AWG / 2C. SPEAKER CIRCUITS: 16 AWG / 2C. • UPERVISION CIRCUITS: 16 AWG / 2C.

DATA AND VOICE CIRCUITS:

• FIRE ALARM CABLE FOR DATA COMMUNICATIONS NETWORK, DIGITAL VOICE RISER, SIGNALING LINE CIRCUITS, SPEAKER CIRCUITS, RS SERIAL DATA COMMUNICATIONS, AND OTHER MANUFACTURER-SPECIFIC DATA AND VOICE CIRCUITS SHALL BE SHIELDED. TWISTED-PAIR UNLESS FIRE ALARM MANUFACTURER'S INSTALLATION GUIDELINES RECOMMEND OR REQUIRE UNSHIELDED TWISTED-PAIR CABLE. • FIRE ALARM CABLE ELECTRICAL CHARACTERISTICS FOR DATA COMMUNICATIONS NETWORK, SIGNALING LINE CIRCUITS, RS SERIAL DATA COMMUNICATIONS, AND OTHER MANUFACTURER-SPECIFIC DATA CIRCUITS SHALL COMPLY WITH THE FIRE ALARM MANUFACTURER

LIMITATIONS FOR LINEAR-UNIT AND TOTAL-CIRCUIT CAPACITANCE AND

FIRE ALARM RACEWAY AND BOXES

COMPLY WITH DIVISION 26.

RESISTANCE.

FINISH: FACTORY APPLIED RED FINISH FOR COVER PLATES AND CONNECTORS.

PART 3 - EXECUTION

PART 3 - EXECUTION

PREPARATION

PREPARE AND SUBMIT "ACTION SUBMITTALS" PRIOR TO EQUIPMENT PROCUREMENT.

TECHNICIAN DESIGN AND LAYOUT

ROLES AND RESPONSIBILITIES SHALL BE AS SET FORTH IN NSPE POSITION STATEMENT NO. 1749 "SFPE/NSPE/NICET JOINT POSITION OF THE ENGINEER AND THE ENGINEERING TECHNICIAN DESIGNING THE FIRE PROTECTION SYSTEM". AVAILABLE AT NSPE.ORG. AS APPLIED TO THE WORK, THE CONTRACT DOCUMENTS HAVE BEEN PREPARED BY THE "ENGINEER" AND SHOP DRAWINGS REQUIRED BY THIS SECTION OF THE WORK ARE PREPARED BY THE "CERTIFIED ENGINEERING TECHNICIAN".

AS THE CERTIFIED ENGINEERING TECHNICIAN, PREPARE SHOP DRAWINGS INCLUDING DRAWINGS, CALCULATIONS, CERTIFICATIONS, AND STATEMENTS INDICATING SYSTEM LAYOUT, CIRCUITING, AND CAPACITIES IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

DESIGN AND INSTALLATION STANDARD(S): NFPA 70 AND NFPA 72.

COMPLY WITH THE PERFORMANCE REQUIREMENTS INDICATED BY THE CONTRACT DOCUMENTS WHERE SUCH REQUIREMENTS ARE MORE STRINGENT THAN THOSE OF THE DESIGN AND INSTALLATION STANDARD(S); OTHERWISE, COMPLY WITH THE PERFORMANCE REQUIREMENTS OF THE DESIGN AND INSTALLATION STANDARD(S).

EXAMINATION

ELECTRICAL SYSTEMS.

EXAMINE AREAS AND CONDITIONS FOR COMPLIANCE WITH REQUIREMENTS FOR VENTILATION, TEMPERATURE, HUMIDITY, AND OTHER CONDITIONS AFFECTING PERFORMANCE OF THE WORK. VERIFY THAT MANUFACTURER'S WRITTEN INSTRUCTIONS FOR ENVIRONMENTAL CONDITIONS HAVE BEEN PERMANENTLY ESTABLISHED IN SPACES WHERE EQUIPMENT AND WIRING ARE INSTALLED, BEFORE INSTALLATION BEGINS.

CONFIRM FIRE RESISTANCE RATING OF BUILDING CONSTRUCTION REQUIRED TO PERFORM AS FIRE ALARM SYSTEM SURVIVABILITY PROTECTION BEFORE INSTALLATION.

EXAMINE DEPTH OF STUD WALLS TO VERIFY CLEARANCE FOR FLUSH-MOUNT EQUIPMENT BEFORE INSTALLATION.

EXAMINE ROUGHING-IN FOR ELECTRICAL CONNECTIONS TO VERIFY ACTUAL LOCATIONS OF CONNECTIONS BEFORE INSTALLATION. EXAMINE PROPOSED MOUNTING LOCATIONS OF EQUIPMENT CABINETS WITH

USER DISPLAYS AND/OR CONTROLS WITH THE LOCAL FIRE OFFICIAL TO VERIFY SATISFACTORY ACCESS AND EASE OF IDENTIFICATION BEFORE INSTALLATION. PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

EQUIPMENT INSTALLATION COMPLY WITH THE MOST RESTRICTIVE REQUIREMENTS OF THIS SECTION AND APPLICABLE DIVISION 26 SECTIONS FOR THE INSTALLATION OF LOW VOLTAGE

COMPLY WITH NFPA 72. AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION FOR INSTALLATION AND TESTING OF FIRE ALARM EQUIPMENT. INSTALL ALL ELECTRICAL WIRING TO COMPLY WITH REQUIREMENTS IN NFPA 70 INCLUDING, BUT NOT LIMITED TO, ARTICLE 760, "FIRE ALARM SYSTEMS."

INSTALL FIRE ALARM SYSTEM IN ACCORDANCE WITH THE REVIEWED FIRE ALARM SYSTEM SHOP DRAWINGS. WHERE FIELD MODIFICATIONS OF LAYOUT ARE NECESSARY, OBTAIN PRIOR APPROVAL FROM THE FIRE ALARM SYSTEM VENDOR'S QUALIFIED FIRE ALARM SYSTEM DESIGNER.

ARRANGE EQUIPMENT CABINETS, WIRE-WAYS, AND CONDUITS WITH ADEQUATE CLEARANCES TO FACILITATE ACCESS FOR INSPECTION, MAINTENANCE, AND COMPONENT REPLACEMENT.

INSTALL EQUIPMENT CABINETS WITH TOP AND BOTTOM OF CABINETS NOT MORE THAN 72 INCHES ABOVE FINISHED FLOOR AND NOT LESS THAN 12 INCHES ABOVE FINISHED FLOOR, RESPECTIVELY.

INSTALL BATTERY CABINETS WITH TOP AND BOTTOM OF CABINETS NOT MORE THAN 48 INCHES ABOVE FINISHED FLOOR AND NOT LESS THAN 12 INCHES ABOVE FINISHED FLOOR, RESPECTIVELY.

INSTALL FIRE ALARM SYSTEM MODULES AND AUXILIARY COMPONENTS IN ACCESSIBLE LOCATIONS WITH BOTTOM OF MODULES AND COMPONENTS NOT LESS THAN 12 INCHES

INSTALL EQUIPMENT CABINETS WITH USER DISPLAYS AND/OR CONTROLS INCLUDING FIRE ALARM CONTROL UNIT NODES AND REMOTE ANNUNCIATORS WITH DISPLAYS AND/OR CONTROLS AT NATURAL USER HEIGHT.

FLUSH-MOUNT EQUIPMENT CABINETS/BACK-BOXES NOT LOCATED IN

DESIGNATED EQUIPMENT ROOMS. FLUSH-MOUNT WALL- AND CEILING-MOUNTED INITIATING DEVICES, MODULES INDICATORS, AND NOTIFICATION APPLIANCES UNLESS OTHERWISE INDICATED.

SURFACE-MOUNT EQUIPMENT CABINETS/BACK-BOXES LOCATED IN DESIGNATED EQUIPMENT ROOMS. SURFACE-MOUNT INITIATING DEVICES, MODULES, INDICATORS, AND

NOTIFICATION APPLIANCES INSTALLED ON CONCRETE OR MASONRY UNIT SURFACE-MOUNT INITIATING DEVICES INSTALLED TO THE UNDERSIDE OF

SURFACE-MOUNT OR PENDANT-MOUNT NOTIFICATION APPLIANCES INSTALLED TO THE UNDERSIDE OF STRUCTURE. INSTALL CEILING MOUNTED DEVICES, MODULES, INDICATORS AND NOTIFICATION

APPLIANCES IN ALIGNMENT WITH ADJACENT CEILING FIXTURES AND CENTERED WITHIN CEILING TILES. INSTALL WALL MOUNTED DEVICES, MODULES, INDICATORS AND NOTIFICATION APPLIANCES IN ALIGNMENT WITH ADJACENT SWITCHES AND WALL FIXTURES.

ADDRESSABLE MONITOR MODULES REMOTELY LOCATED WITHIN AN ADJACENT CONDITIONED SPACE.

BUILDING STRUCTURE.

FIRE ALARM PATHWAY INSTALLATION PATHWAYS FOR FIRE ALARM: THE PATHWAY SYSTEM FOR FIRE ALARM SHALL BE

DO NOT INSTALL ADDRESSABLE DEVICES IN AREAS SUBJECT TO TEMPERATURE

EXTREMES. USE CONVENTIONAL INITIATING DEVICES SUPERVISED BY

CONDITIONS AND RESISTANCE TO PHYSICAL DAMAGE.

DEDICATED CONTINUOUS METAL RACEWAY THROUGHOUT. COMPLY WITH DIVISION 26 FOR APPLICATION AND INSTALLATION OF EMT, IMC, RGS, FMC, AND LFMC WITH RESPECT TO ENVIRONMENTAL

PATHWAYS BENEATH SLAB, WITHIN SLAB, AND BURIED: COMPLY WITH DIVISION 26 FOR APPLICABLE RNC INSTALLATION REQUIREMENTS. CLASS A AND X PATHWAYS: UNLESS GREATER DISTANCES ARE INDICATED ON THE DRAWINGS OR SPECIFICATIONS, INSTALL CLASS A AND X PATHWAYS IN

COMPLIANCE WITH NFPA 72 RECOMMENDATIONS FOR MINIMUM HORIZONTAL

AND VERTICAL SEPARATION BETWEEN SUPPLY AND RETURN PATHWAYS. SYSTEM SPOT-TYPE FIRE DETECTOR INSTALLATION

COMPLY WITH DRAWINGS, AND:

LOCATE SPOT-TYPE FIRE DETECTORS IN A MANNER THAT READILY PERMITS ACCESS – WITHOUT THE NEED OF A LIFT - FROM THE FLOOR BELOW FOR DETECTOR INSPECTION, TESTING, AND MAINTENANCE.

INSTALL FIRE DETECTORS ONLY AFTER ALL DUST AND DEBRIS PRODUCING

WORK IS COMPLETED. MAINTAIN FACTORY PROVIDED DETECTOR COVERS ON FIRE DETECTORS UNTIL FIRE ALARM SYSTEM IS APPROVED FOR CLOSEOUT AND TURNOVER. INSTALL REMOTE ALARM INDICATORS IN A VISIBLE LOCATION AS REQUIRED BY NFPA 72 FOR CONCEALED FIRE DETECTORS AND AS INDICATED BY THE

DRAWINGS SPOT-TYPE SMOKE- AND HEAT-DETECTOR LOCATIONS AND SPACING:

• COMPLY WITH NFPA 72 "SMOKE-SENSING FIRE DETECTORS". • COMPLY WITH NFPA 72 "HEAT-SENSING FIRE DETECTORS". SUBMIT NFPA 72 "STATEMENT OF COMPLETION" AND COMPLETED NFPA 72 "SYSTEM RECORD OF INSPECTION AND TESTING" REPORT.

PROVIDE WRITTEN NOTIFICATIONS FOR ACCEPTANCE FIELD TESTS; INCLUDE TEST PLAN. NFPA 72 "STATEMENT OF COMPLETION". NFPA 72 "SYSTEM RECORD OF INSPECTION AND TESTING" REPORT, AND NFPA 72 "SYSTEM RECORD OF PERFORM ACCEPTANCE FIELD TESTING, DEMONSTRATE SYSTEM OPERATION

TO THE SATISFACTION OF THE AHJ. CORRECT AHJ NOTED DEFICIENCIES. REPEAT FUNCTIONAL TESTING INCLUDING RETESTING OF UNAFFECTED COMPONENTS IN ACCORDANCE WITH NFPA 72 FOR "REACCEPTANCE TESTING". AMEND NFPA 72 "SYSTEM RECORD OF INSPECTION AND TESTING" REPORT, AND NFPA 72 "SYSTEM RECORD OF COMPLETION".

PLACE SYSTEM INTO NORMAL OPERATING SERVICE WITHOUT SYSTEM FAULTS OR OUTSTANDING WORK.

PART 3 - EXECUTION

NOTIFICATION APPLIANCE INSTALLATION

COMPLY WITH DRAWINGS AND NFPA 72 "NOTIFICATION APPLIANCES".

WALL-MOUNTED AUDIBLE NOTIFICATION APPLIANCES: INSTALL WITH TOP OF APPLIANCE NOT LESS THAN 6 INCHES BELOW THE FINISHED CEILING AND NOT LESS THAN 90 INCHES BELOW THE FINISHED FLOOR. WALL-MOUNTED VISIBLE AND -COMBINATION AUDIBLE/VISIBLE NOTIFICATION

APPLIANCES: INSTALL WITH TOP OF APPLIANCE NOT LESS THAN 6 INCHES BELOW THE FINISHED CEILING AND THE ENTIRE APPLIANCE STROBE LENS NOT LESS THAN 80 INCHES AND NOT MORE THAN 96 INCHES ABOVE THE FINISHED FLOOR.

INSTALL ALL WALL-MOUNTED NOTIFICATION APPLIANCES WITH TOP OF APPLIANCE AT A COMMON ELEVATION WITH RESPECT TO FINISHED FLOOR. CONNECTIONS AND INTERFACES

MAKE CONNECTIONS TO PREMISES BUILDING SYSTEMS AND COMPONENTS VIA ADDRESSABLE INTERFACE MODULES. INCLUDE NECESSARY INTERFACE MODULES, RELAYS, WIRING, RESISTORS, AND COMPONENTS AS REQUIRED TO ACHIEVE THE INPUT/OUTPUT SEQUENCE OF OPERATIONS PERFORMANCE CRITERIA INDICATED BY THE DRAWINGS.

COORDINATE VOLTAGE AND CURRENT RATINGS OF CONNECTED COMPONENTS SUCH THAT CONNECTIONS AND INTERFACES OPERATE WITHIN LISTED LIMITATIONS. USE INTERPOSING RELAYS WHERE CONNECTED LOADS EXCEED RATING OF ADDRESSABLE INTERFACE MODULES.

ARRANGE CONNECTIONS AND INTERFACES SUCH THAT CIRCUITS ARE MONITORED FOR INTEGRITY AS REQUIRED BY NFPA 72.

INTERFACE TO PREMISES SYSTEMS AND COMPONENTS REQUIRING FIRE ALARM SUPERVISION OF STATUS WITH ADDRESSABLE INTERFACE MONITOR MODULES. INTERFACE TO PREMISES PREACTION SPRINKLER SOLENOIDS AND/OR FIRE EXTINGUISHING SYSTEM ACTUATORS WITH ADDRESSABLE INTERFACE CONTROL MODULES LISTED FOR RELEASING SERVICE. INSTALL A KEY OPERATED MAINTENANCE DISCONNECT SWITCH IN THE RELEASING CIRCUIT TO PERMIT FIRE ALARM SYSTEM COMPONENT TESTING WITHOUT SOLENOID/ACTUATOR RELEASE. OPERATION OF THE MAINTENANCE DISCONNECT SWITCH BE MONITORED BY THE FIRE ALARM SYSTEM AS A

INTERFACE TO PREMISES SYSTEMS AND COMPONENTS REQUIRING EMERGENCY CONTROL FUNCTION INTERFACE WITH ADDRESSABLE INTERFACE RELAY MODULES INSTALLED WITHIN 36 INCHES OF THE INTERFACE WIRING TERMINATION POINT.

EACH ADDRESSABLE INTERFACE RELAY MODULE USED FOR EMERGENCY CONTROL FUNCTION INTERFACE SHALL INCLUDE ONE (1) SET OF SPARE CONTACTS FOR MONITORING CONNECTION TO THE PREMISES BUILDING MANAGEMENT SYSTEM, SECURITY SYSTEM, OR SIMILAR SECONDARY PREMISES

FOR EACH HVAC AIR DISTRIBUTION UNIT, COORDINATE WITH DIVISION 23 FOR EXACT INTERFACE REQUIREMENTS, QUANTITY OF FAN DRIVES, AND DETAILED SEQUENCING FOR PROPER SHUTDOWN OF THE ASSOCIATED AIR DISTRIBUTION EQUIPMENT.

NEC CLASSIFIED HAZARDOUS LOCATIONS

SUPERVISORY CONDITION.

COMPLY WITH NFPA 70 AND DIVISION 26.

IDENTIFICATION

IDENTIFY SYSTEM COMPONENTS, WIRING, CABLING, AND TERMINALS. COMPLY WITH DIVISION 26.

LABEL ADDRESSABLE INITIATING DEVICES AND BASES AND NOTIFICATION APPLIANCES. COMPLY WITH DRAWINGS.

INSTALL FRAMED INSTRUCTIONS ADJACENT TO THE FIRE ALARM CONTROL UNIT. INSTALLED INSTRUCTIONS SHALL BE TYPEWRITTEN COMPUTER PRINTOUT INSTRUCTION CARD MOUNTED BEHIND A PLASTIC OR GLASS COVER IN A STAINLESS-STEEL OR ALUMINUM FRAME. INCLUDE INTERPRETATION AND DESCRIBE APPROPRIATE RESPONSE FOR DISPLAYS AND SIGNALS. BRIEFLY DESCRIBE THE FUNCTIONAL OPERATION OF THE SYSTEM UNDER NORMAL. ALARM, AND TROUBLE CONDITIONS.

<u>GROUNDING</u>

FIELD QUALITY CONTROL

CLEANUP SHALL BE REPLACED.

COMPLY WITH DIVISION 26. COMPLY WITH FIRE ALARM SYSTEM MANUFACTURER INSTALLATION GUIDELINES FOR GROUNDING.

GROUND FIRE ALARM CONTROL UNIT AND ASSOCIATED CIRCUITS; COMPLY WITH IEEE 1100. INSTALL A GROUND WIRE FROM MAIN SERVICE GROUND TO FIRE ALARM CONTROL UNIT

FROM CONSTRUCTION DUST, DEBRIS, DIRT, MOISTURE, AND DAMAGE

ACCORDING TO MANUFACTURER'S WRITTEN STORAGE INSTRUCTIONS. DEVICES PLACED IN SERVICE BEFORE ALL OTHER TRADES HAVE COMPLETED

DEVICES INSTALLED BUT NOT YET PLACED IN SERVICE SHALL BE PROTECTED

FIELD INSPECTIONS AND TESTING SHALL BE PERFORMED BY FIRE ALARM SYSTEM MANUFACTURER'S FACTORY-AUTHORIZED SERVICE TECHNICIANS. SMOKE CONTROL SYSTEMS: IN ADDITION TO DIV. 28 FIRE ALARM SYSTEM INSPECTION AND TESTING REQUIREMENTS, PERFORM ADDITIONAL INSPECTIONS AND INTEGRATED FUNCTIONAL TESTING AS REQUIRED TO SUPPORT SMOKE CONTROL SYSTEM SPECIAL INSPECTIONS COMMISSIONING. PREPARE A TYPEWRITTEN COMPUTER-OUTPUT TEST PLAN THAT CLEARLY ESTABLISHES THE SCOPE OF FIRE ALARM AND SIGNALING SYSTEM TESTING. INCLUDE AT A MINIMUM TESTING METHODS, PERSONNEL, DURATION, PLANNED

EMERGENCY CONTROL FUNCTION INTERFACES. FUNCTIONAL FIELD TESTS SHALL BE WITNESSED BY THE CONSTRUCTION

MANAGER (CM) AND THEIR DESIGNEES; PROVIDE NOTIFICATIONS A MINIMUM OF

IMPAIRMENTS, AND REQUIRED COORDINATION FOR INTEGRATED TESTING OF

TWO (2) WEEKS IN ADVANCE. ACCEPTANCE FIELD TESTING SHALL BE WITNESSED BY THE CM, THEIR DESIGNEES, AND AUTHORITIES HAVING JURISDICTION (AHJ); PROVIDE NOTIFICATIONS A MINIMUM OF TWO (2) WEEKS IN ADVANCE.

MANUFACTURER RECOMMENDATIONS AND NFPA 72 FOR INITIAL ACCEPTANCE INSPECTIONS. CORRECT DEFICIENCIES. DOCUMENT INSPECTIONS BY COMPLETING APPLICABLE SECTIONS OF THE NFPA 72 "SYSTEM RECORD OF INSPECTION AND TESTING" REPORT.

PERFORM VISUAL INSPECTIONS IN ACCORDANCE WITH FIRE ALARM SYSTEM

PROVIDE WRITTEN NOTIFICATIONS FOR FUNCTIONAL FIELD TESTS; INCLUDE PERFORM FUNCTIONAL TESTING IN ACCORDANCE WITH ACCORDANCE WITH FIRE ALARM SYSTEM MANUFACTURER RECOMMENDATIONS AND NFPA 72 FOR "INITIAL ACCEPTANCE TESTING". CORRECT DEFICIENCIES. REPEAT FUNCTIONAL TESTING INCLUDING RETESTING OF UNAFFECTED COMPONENTS IN ACCORDANCE WITH NFPA 72 FOR "REACCEPTANCE TESTING". FOR MODIFICATIONS OF EXISTING SYSTEMS, PERFORM FUNCTIONAL TESTING IN

ACCORDANCE WITH FIRE ALARM SYSTEM MANUFACTURER RECOMMENDATIONS

DOCUMENT 100 PERCENT SATISFACTORY FUNCTIONAL TESTS BY COMPLETING REMAINING SECTIONS OF THE NFPA 72 "SYSTEM RECORD OF INSPECTION AND

SUBMIT NFPA 72 "STATEMENT OF COMPLETION" AND COMPLETED NFPA 72 "SYSTEM RECORD OF INSPECTION AND TESTING" REPORT.

AND NFPA 72 FOR "REACCEPTANCE TESTING".

MAINTENANCE SERVICE

INITIAL MAINTENANCE SERVICE: BEGINNING AT SUBSTANTIAL COMPLETION. MAINTENANCE SERVICE SHALL INCLUDE TWELVE (12) MONTHS' FULL MAINTENANCE BY SKILLED EMPLOYEES OF MANUFACTURER'S DESIGNATED SERVICE ORGANIZATION. PARTS AND SUPPLIES SHALL BE MANUFACTURER'S PERFORM VISUAL INSPECTIONS AT INTERVALS REQUIRED BY NFPA 72

CHAPTER "INSPECTION, TESTING, AND MAINTENANCE".

"INSPECTION, TESTING, AND MAINTENANCE". TECHNICAL SUPPORT: BEGINNING WITH SUBSTANTIAL COMPLETION, PROVIDE SOFTWARE SUPPORT FOR TWELVE (12) MONTHS. UPDATE SOFTWARE TO LATEST VERSION AT PROJECT COMPLETION. PROVIDE 30 DAYS' NOTICE TO OWNER TO ALLOW SCHEDULING AND ACCESS TO SYSTEM AND TO ALLOW

OWNER TO UPGRADE COMPUTER EQUIPMENT IF NECESSARY.

PERFORM TESTS AT INTERVALS REQUIRED BY NFPA 72 CHAPTER

EXISTING SYSTEMS WITH SERVICE AGREEMENTS: COMPLY WITH TERMS OF EXISTING SERVICE AGREEMENT. DEMONSTRATION

ENGAGE A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE TO TRAIN OWNER'S MAINTENANCE PERSONNEL TO ADJUST, OPERATE, AND MAINTAIN FIRE ALARM SYSTEM.

CROCKFORDS -

Monticello. NY 1270

JCJARCHITECTURE

120 HUYSHOPE AVENUE

HARTFORD, CT 06106

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274 Summer Street

Boston, MA 02210

SUITE 400

860.247.9226

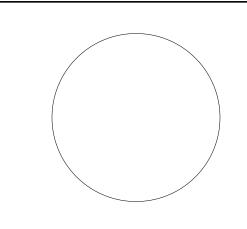
CONSULTANT:

R.G. Vanderweil Engineers, LLP 617,423,7423 TEL

. 617.423.7401 FAX

vanderweil.com

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REVISIONS

FIRE ALARM

SPECIFICATIONS