WORCESTER WATER TREATMENT PLANT
FIRE ALARM REPLACEMENT

71 STONEHOUSE HILL RD
HOLDEN, MA 01520
FEBRUARY 22, 2023

DRAWING LIST	
FIRE ALARM	
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FP106	ELECTRICAL SITE LAYOUT
FA501	FIRE ALARM DETAILS

ISSUED FOR: BID

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
C	CONDUIT
EC	ELECTRICAL CONTRACTOR
FL	FLOOR
GND	GROUND
JB	JUNCTION BOX
MTG	MOUNTING
NMC	NON-METALLIC CONDUIT
NTS	NOT TO SCALE
PVC	POLYVINYL CHLORIDE CONDUIT
RE	DENOTES EXISTING EQUIPMENT TO BE DISCONNECTED AND REMOVED
RSC	RIGID GALVANIZED STEEL CONDUIT
WP	WEATHERPROOF

ELECTRICAL LEGEND

(H)	FIRE ALARM SYSTEM HEAT DETECTOR (135°F RATE OF RISE)
(H) F	FIRE ALARM SYSTEM HEAT DETECTOR. "F" INDICATES FIXED TEMPERATURE 190°F.
(S)	FIRE ALARM SMOKE DETECTOR. "E" DENOTES ELEVATOR RECALL.
(S) D	FIRE ALARM DUCT SMOKE DETECTOR
[F]	FIRE ALARM SYSTEM MANUAL PULL STATION
N [F] 15	NEW ADA COMPLIANT FIRE ALARM AUDIO/VISUAL ALARM DEVICE. NUMERAL SHOWN DENOTES CANDELA RATING.
[F] 15	EXISTING FIRE ALARM AUDIO/VISUAL UNIT TO BE REPLACED WITH NEW ADA COMPLIANT FIRE ALARM AUDIO/VISUAL ALARM DEVICE. NUMERAL SHOWN DENOTES CANDELA RATING.
[S]	ADA COMPLIANT FIRE ALARM VISUAL ALARM UNIT ONLY
[H]	ADA COMPLIANT FIRE ALARM AUDIO ALARM UNIT ONLY
(S)	FIRE ALARM SYSTEM FLUSH CEILING MOUNTED SPEAKER
	LED PILOT LIGHT FOR SMOKE/HEAT DETECTORS
[FS]	WATER FLOW SWITCH
[PS]	WATER PRESSURE SWITCH
[RTS]	FIRE ALARM REMOTE TEST STATION FOR DUCT MOUNTED SMOKE DETECTORS
[RAI]	FIRE ALARM REMOTE ALARM INDICATOR FOR LIMITED ACCESS SPACE SMOKE DETECTORS
[FATC]	FIRE ALARM SYSTEM TERMINAL CABINET
[M]	FIRE ALARM RADIO MASTER BOX
[FACP]	FIRE ALARM CONTROL PANEL
[PACP]	PRE-ACTION CONTROL PANEL
F	FIREFIGHTER'S PHONE JACK
[K]	KEY REPOSITORY (KNOX BOX)
(F)	FIRE ALARM SYSTEM EXTERIOR MOUNTED WEATHERPROOF RED ROTATING LOCATOR BEACON
(CO)	CARBON MONOXIDE DETECTOR

GENERAL NOTES

1. DRAWINGS ARE DIAGRAMMATIC ONLY. THE EXACT LOCATION, MOUNTING HEIGHTS, SIZE OF EQUIPMENT AND ROUTING OF RACEWAYS SHALL BE COORDINATED AND DETERMINED IN THE FIELD.
2. ALL FIRE ALARM SYSTEM CONDUIT RUNS SHALL BE PROVIDED WITH SUFFICIENT PULL BOXES TO LIMIT THE MAXIMUM LENGTH OF ANY SINGLE CABLE PULL TO 150 FEET. EXACT SIZES OF PULL BOXES AND LOCATIONS TO BE DETERMINED IN THE FIELD BY THE CONTRACTOR.
3. SLEEVES ARE TO BE UTILIZED FOR PASSAGE OF CONDUITS THROUGH FLOORS OR WALLS. CONDUITS AND BOXES ARE TO BE SUPPORTED BY THE USE OF PRESET FASTENERS INSTALLED IN FLOORS, WALLS OR COLUMNS. CONDUITS AND BOXES ARE TO BE INSTALLED CONCEALED IN MASONRY WALLS AND ABOVE HUNG CEILINGS. ALL SLEEVES ARE TO BE SEALED WITH APPROVED FIRE STOPPING SEALANT.
4. INSTALLATION OF BACK TO BACK DEVICES ARE TO BE AVOIDED. ALLOW ONE WALL FRAMING MEMBER BETWEEN EACH BACK TO BACK DEVICE AS A MINIMUM.
5. WORK SHALL CONFORM TO THE MASSACHUSETTS ELECTRICAL CODE, MASSACHUSETTS BUILDING CODE, NFPA AND REQUIREMENTS OF LOCAL AUTHORITIES HAVING JURISDICTION.
6. CONTRACTOR SHALL PAY FOR ALL PERMITS, INSURANCE AND TESTS, AND SHALL PROVIDE LABOR AND MATERIAL TO COMPLETE THE ELECTRICAL WORK SHOWN.
7. EXCEPT AS OTHERWISE NOTED, THE ELECTRICAL WORK SHALL INCLUDE DEMOLITION, WIRING, RACEWAYS, FIRE ALARM SYSTEMS, AND CONNECTION NECESSARY TO OPERATE EQUIPMENT.
8. DURING CONSTRUCTION, THE ELECTRICAL CONTRACTOR SHALL KEEP HIS PORTION OF THE WORK NEAT, CLEAN AND ORDERLY.
9. ALL SYSTEMS SHALL BE TESTED FOR SHORT CIRCUIT AND GROUNDS PRIOR TO ENERGIZING AND ANY DEFECTS SHALL BE CORRECTED.
10. ALL CUTTING AND PATCHING REQUIRED FOR ELECTRICAL WORK SHALL BE INCLUDED AS PART OF THIS SECTION.
11. COMPLETE SHOP DRAWINGS SHALL BE SUBMITTED FOR ELECTRICAL EQUIPMENT. WHERE SPECIFIED ELECTRICAL EQUIPMENT IS SUBSTITUTED, THE ELECTRICAL CONTRACTOR SHALL SUBMIT COMPLETE SPECIFICATIONS ON THE SUBSTITUTE AS WELL AS THE ITEM ORIGINALLY SPECIFIED.
12. MATERIALS SHALL BE SPECIFICATION GRADE AND UL LISTED.
13. WHERE MATERIAL IS CALLED OUT IN THE LEGEND BY MANUFACTURER, TYPE OR CATALOG NUMBER, SUCH DESIGNATIONS ARE TO ESTABLISH STANDARDS OR DESIRED QUALITY. ACCEPTANCE OR REJECTIONS OF PROPOSED SUBSTITUTIONS SHALL BE SUBJECT TO THE APPROVAL OF THE OWNER.
14. ELECTRICAL WORK SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF WHICH SYSTEM IS PUT INTO SERVICE.
15. WORK SHALL BE GROUNDED IN ACCORDANCE WITH CODE REQUIREMENTS.
33. BOXES SHALL BE GALVANIZED STEEL AND SHALL BE SIZED TO ACCOMMODATE THE EQUIPMENT OR APPARATUS TO BE INSTALLED. WHERE BOXES OF A STANDARD MAKE ARE NOT AVAILABLE, SPECIAL BOXES SHALL BE MANUFACTURED. FIXTURES SUPPORTED ON THE CEILING OR ON THE WALL SHALL HAVE SUITABLE FIXTURE SUPPORT FOR THE SPECIFIC FIXTURE.
34. FURNISH AND INSTALL SLEEVES IN FLOORS, BEAMS, WALLS, ETC. REQUIRED FOR INSTALLING THIS WORK.
35. CONDUIT PASSING THROUGH FIRE RATED WALLS AND FLOORS SHALL BE PROVIDED WITH ALL NECESSARY MATERIALS TO ENSURE THAT THE FIRE RATED INTEGRITY IS MAINTAINED.
36. CONTRACTOR SHALL CHECK EXISTING CONDITIONS TO DETERMINE EXACT EXTENT OF WORK TO BE PERFORMED PRIOR TO BIDDING. DIMENSIONS RELEVANT TO EXISTING WORK SHALL BE VERIFIED IN THE FIELD.
37. IN AREAS NOT AFFECTED BY THIS RENOVATION, THIS SUBCONTRACTOR SHALL MAINTAIN CONTINUITY OF ELECTRIC SERVICE.
38. THE CONTRACTOR SHALL PROVIDE ALL REQUIRED POWER SUPPLIES, APPURTENANCES, FINAL CONNECTIONS, TESTING AND WORK REQUIRED FOR ADDITIONS TO THE EXISTING FIRE ALARM SYSTEM. PAY ALL COSTS ARISING THERE FROM, FOR A COMPLETE AND OPERATIONAL SYSTEM.
39. PROVIDE AS-BUILT "CADD" DRAWINGS AT THE COMPLETION OF THE PROJECT.
40. CONTRACTOR SHALL RETURN BETWEEN 3 MONTHS AND 6 MONTHS TO TEST AND INSPECT THE SYSTEM TO VERIFY ALL PROGRAMMING AND WORK IS IN GOOD CONDITION AND NO ISSUES HAVE BEEN REVEALED SINCE SYSTEM WENT INTO SERVICE. ANY ISSUES IDENTIFIED WITH THE WORK PROVIDED UNDER THIS CONTRACT WILL BE RECTIFIED AT THE CONTRACTORS EXPENSE (PER GUARANTEE/WARRANTY). CONTRACTOR SHALL MAKE SURE ALL NECESSARY PERSONNEL ARE PRESENT DURING THIS RETURN TO ENSURE ENTIRE SYSTEM CAN BE TESTED AND INSPECTED PROPERLY.
41. CONTRACTOR SHALL PROVIDE AN AIA SCHEDULE OF VALUES.
42. CONTRACTOR IS RESPONSIBLE FOR ALL FIRE WATCHES DURING ANY SHUTDOWN OF THE FIRE ALARM SYSTEM. ALL SHUTDOWNS SHALL BE COORDINATED WITH THE OWNER.
43. THE EXISTING FIRE ALARM SYSTEM SHALL REMAIN OPERATIONAL WHILE THE NEW SYSTEM IS BEING INSTALLED. COORDINATE THE SWITCH OVER WITH THE OWNER.

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Project:

CITY OF WORCESTER, MA

WATER TREATMENT PLANT
FIRE ALARM REPLACEMENT

71 STONEHOUSE HILL RD
HOLDEN, MA 01520

Weston & Sampson Engineers, Inc.
427 Main Street, Suite 400
Worcester, MA 01608
978.532.1900 800.SAMPSON
www.westonandsampson.com

Consultants:

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FIRE ALARM LEGEND, NOTES AND ABBREVIATIONS

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FA001

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FIRE ALARM SPEC

PART 1 - GENERAL

A. THE WORK COVERED CONSISTS OF FURNISHING ALL LABOR AND MATERIALS NECESSARY TO INSTALL, COMPLETE AND READY FOR CONTINUOUS OPERATION, THE ELECTRICAL SYSTEMS, APPARATUS AND EQUIPMENT.

B. SHOP DRAWINGS OF ALL SPECIFIED FIXTURES, EQUIPMENT AND APPARATUS SHALL BE SUBMITTED TO THE OWNER FOR APPROVAL.

C. CODES: ALL EQUIPMENT AND MATERIALS FURNISHED UNDER THE CONTRACT AND LABOR PERFORMED HEREIN SHALL BE IN COMPLETE ACCORDANCE WITH THE MASSACHUSSETTS STATE BUILDING, MASSACHUSSETTS ELECTRICAL CODE, THE CITY OF WORCESTER, MA, NATIONAL FIRE PROTECTION ASSOCIATION AND INSURANCE REGULATIONS AND REQUIREMENTS GOVERNING SUCH WORK.

D. PERMITS: ANY AND ALL PERMITS REQUIRED FOR INSTALLATION OF ANY MATERIAL SHALL BE OBTAINED AS PART OF THE WORK OF THE SPECIFICATION INCLUDING ALL FEES OR EXPENSES INCURRED.

E. INSTRUCTIONS: DURING THE ASSEMBLY AND INSTALLATION OF ALL ELECTRICAL SYSTEMS, THE OWNER'S OPERATING PERSONNEL SHALL BE INSTRUCTED REGARDING ITS OPERATION AND MAINTENANCE. A TWO (2) WEEK INSTRUCTION PERIOD SHALL BE PROVIDED AFTER COMPLETION OF PROJECT. OPERATION AND MAINTENANCE MANUALS SHALL BE REQUIRED.

F. GUARANTEE: ALL MATERIALS AND EQUIPMENT, FURNISHED AND INSTALLED, SHALL BE GUARANTEED IN WRITING FOR ONE (1) YEAR, FROM THE DATE OF ACCEPTANCE OF THE BUILDING BY THE OWNER.

G. RECORD DRAWINGS: THE ELECTRICAL SUBCONTRACTOR SHALL MAINTAIN AT THE JOB, AT ALL TIMES, A COMPLETE AND SEPARATE SET OF BLACKLINE PRINTS OF THE ELECTRICAL DRAWINGS OF HIS TRADE ON WHICH HE SHALL MARK CLEARLY, NEATLY, ACCURATELY AND PROMPTLY AS THE WORK PROGRESSES. MYLAR REPRODUCIBLE "AS_BUILTS" SHALL BE FURNISHED BY THE ELECTRICAL SUBCONTRACTOR AT THE JOB COMPLETION.

H. INSPECTION: ALL WORK SHALL BE SUBJECT TO THE INSPECTION OF THE OWNER, THE ARCHITECT AND SUCH OTHER INSPECTORS HAVING JURISDICTION. A PROPERLY EXECUTED CERTIFICATE OF INSPECTION SHALL BE PROVIDED.

I. TESTS: THE ELECTRICAL SUBCONTRACTOR SHALL PERFORM ALL TESTS AT THE COMPLETION OF THE WORK AND THE RESULTS FURNISHED TO THE OWNER AND ENGINEER IN WRITING. TESTS SHALL INCLUDE BUT NOT BE LIMITED TO: ALL SYSTEMS TEST FREE OF SHORTS OR GROUNDS, PROPER NEUTRAL CONNECTIONS, ALL LIGHTING FIXTURES WITH LAMPS IN PLACE FOR TEN (10) HOURS.

J. UPON COMPLETION OF ALL WORK, THE ELECTRICAL CONTRACTOR SHALL FURNISH, IN DUPLICATE, CERTIFICATES OF INSPECTIONS FROM ALL INSPECTORS AND AUTHORITIES, HAVING JURISDICTION, NOTARIZED LETTERS FROM THE MANUFACTURERS, STATING THAT AUTHORIZED FACTORY ENGINEERS HAVE INSPECTED AND TESTED THE INSTALLATION OF THEIR RESPECTIVE SYSTEMS AND FOUND SAME TO BE IN PERFECT OPERATING CONDITION.

II. SCOPE

A. THE WORK OF THIS SECTION CONSISTS OF ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED TO PROVIDE ALL ELECTRICAL WORK, NOT SPECIFICALLY DESCRIBED IN OTHER TRADES COMPLETE, IN PLACE, AS SHOWN ON THE DRAWINGS, SPECIFIED HEREIN AND AS NECESSARY FOR A PROPER INSTALLATION.

B. THE EXTENT OF THE ELECTRICAL SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:

1. FIRE ALARM SYSTEM DEVICES AND WIRING.

III. SEISMIC RESTRAINTS

A. INSTALLATION OF ELECTRICAL EQUIPMENT, ACCESSORIES AND COMPONENTS SHALL BE IN ACCORDANCE WITH THE SEISMIC REQUIREMENTS IDENTIFIED IN THE MASSACHUSETTS STATE BUILDING CODE, NINTH (9TH) EDITION.

IV. MATERIALS

V. FIRE ALARM SYSTEM

A. SUMMARY
1. SECTION INCLUDES:
   a. MANUAL FIRE-ALARM BOXES.
   b. SYSTEM SMOKE DETECTORS.
   c. HEAT DETECTORS.
   d. NOTIFICATION APPLIANCES.
   e. REMOTE ANNUNCIATOR.
   f. ADDRESSABLE INTERFACE DEVICE.
   g. MASTER BOX (CITY OF HOLDEN).
   h. CENTRAL STATION MONITORING (CITY OF WORCESTER)
   i. DUCT SMOKE DETECTORS

B. ACTION SUBMITTALS
1. GENERAL SUBMITTAL REQUIREMENTS:

SUBMITTALS SHALL BE APPROVED BY AUTHORITIES HAVING JURISDICTION PRIOR TO SUBMITTING THEM TO ARCHITECT. DEVICES DESCRIPTION / LABELING IS TO BE PREAPPROVED AUTHORITY HAVING JURISDICTIONS.

2. SHOP DRAWINGS SHALL BE PREPARED BY PERSONS WITH THE FOLLOWING QUALIFICATIONS:
   a. TRAINED AND CERTIFIED BY MANUFACTURER IN FIRE-ALARM SYSTEM DESIGN.
   b. NICET-CERTIFIED, FIRE-ALARM TECHNICIAN; LEVEL IV MINIMUM.
   c. LICENSED OR CERTIFIED BY AUTHORITIES HAVING JURISDICTION.
3. PRODUCT DATA: FOR EACH TYPE OF PRODUCT, INCLUDING FURNISHED OPTIONS AND ACCESSORIES.
4. SHOP DRAWINGS: FOR FIRE-ALARM SYSTEM.
   a. COMPLY WITH RECOMMENDATIONS AND REQUIREMENTS IN THE "DOCUMENTATION" SECTION OF THE "FUNDAMENTALS" CHAPTER IN NFPA 72.
   b. INCLUDE PLANS, ELEVATIONS, SECTIONS, DETAILS, AND ATTACHMENTS TO OTHER WORK.
   c. INCLUDE DETAILS OF EQUIPMENT ASSEMBLIES. INDICATE DIMENSIONS, WEIGHTS, LOADS, REQUIRED CLEARANCES, METHOD OF FIELD ASSEMBLY, COMPONENTS, AND LOCATIONS. INDICATE CONDUCTOR SIZES, INDICATE TERMINATION LOCATIONS AND REQUIREMENTS, AND DISTINGUISH BETWEEN FACTORY AND FIELD WIRING.
   d. DETAIL ASSEMBLY AND SUPPORT REQUIREMENTS.
   e. INCLUDE VOLTAGE DROP CALCULATIONS FOR NOTIFICATION-APPLIANCE CIRCUITS.
   f. INCLUDE BATTERY-SIZE CALCULATIONS.
   g. INCLUDE INPUT/OUTPUT MATRIX.
   h. INCLUDE STATEMENT FROM MANUFACTURER THAT ALL EQUIPMENT AND COMPONENTS HAVE BEEN TESTED AS A SYSTEM AND MEET ALL REQUIREMENTS IN THIS SPECIFICATION AND IN NFPA 72.
   i. INCLUDE PERFORMANCE PARAMETERS AND INSTALLATION DETAILS FOR EACH DETECTOR.
   j. VERIFY THAT EACH DUCT DETECTOR IS LISTED FOR COMPLETE RANGE OF AIR VELOCITY, TEMPERATURE, AND HUMIDITY POSSIBLE WHEN AIR-HANDLING SYSTEM IS OPERATING.
   k. SHOW CRITICAL DIMENSIONS THAT RELATE TO PLACEMENT AND SUPPORT OF SAMPLING TUBES, DETECTOR HOUSING, AND REMOTE STATUS AND ALARM INDICATORS.
   l. SHOW FIELD WIRING REQUIRED FOR HVAC UNIT SHUTDOWN ON ALARM.
   m. LOCATE DETECTORS ACCORDING TO MANUFACTURER'S WRITTEN RECOMMENDATIONS.
   n. INCLUDE FLOOR PLANS TO INDICATE FINAL OUTLET LOCATIONS SHOWING ADDRESS OF EACH ADDRESSABLE DEVICE. SHOW SIZE AND ROUTE OF CABLE AND CONDUITS AND POINT-TO-POINT WIRING DIAGRAMS.

C. INFORMATIONAL SUBMITTALS
1. QUALIFICATION DATA: FOR INSTALLER.
2. SEISMIC QUALIFICATION DATA: CERTIFICATES, FOR FIRE-ALARM CONTROL UNIT, ACCESSORIES, AND COMPONENTS, FROM MANUFACTURER.
3. FIELD QUALITY-CONTROL REPORTS.
4. SAMPLE WARRANTY.

D. CLOSEOUT SUBMITTALS
1. OPERATION AND MAINTENANCE DATA: FOR FIRE-ALARM SYSTEMS AND COMPONENTS TO INCLUDE IN EMERGENCY, OPERATION, AND MAINTENANCE MANUALS.
   a. INCLUDE THE FOLLOWING AND DELIVER COPIES TO AUTHORITIES HAVING JURISDICTION:
   b. COMPLY WITH THE "RECORDS" SECTION OF THE "INSPECTION, TESTING AND MAINTENANCE" CHAPTER IN NFPA 72.
   c. PROVIDE "FIRE ALARM AND EMERGENCY COMMUNICATIONS SYSTEM RECORD OF COMPLETION DOCUMENTS" ACCORDING TO THE "COMPLETION DOCUMENTS" ARTICLE IN THE "DOCUMENTATION" SECTION OF THE "FUNDAMENTALS" CHAPTER IN NFPA 72.
   d. COMPLETE WIRING DIAGRAMS SHOWING CONNECTIONS BETWEEN ALL DEVICES AND EQUIPMENT.
   e. RISER DIAGRAM.
   f. RECORD COPY OF SITE-SPECIFIC SOFTWARE.
   g. PROVIDE "INSPECTION AND TESTING FORM" ACCORDING TO THE "INSPECTION, TESTING AND MAINTENANCE" CHAPTER IN NFPA 72, AND INCLUDE THE FOLLOWING:
   h. EQUIPMENT TESTED.
   i. FREQUENCY OF TESTING OF INSTALLED COMPONENTS.
   j. FREQUENCY OF INSPECTION OF INSTALLED COMPONENTS.
   k. REQUIREMENTS AND RECOMMENDATIONS RELATED TO RESULTS OF MAINTENANCE.
   l. MANUFACTURER'S USER TRAINING MANUALS.
   m. MANUFACTURER'S REQUIRED MAINTENANCE RELATED TO SYSTEM WARRANTY REQUIREMENTS.
   n. ABBREVIATED OPERATING INSTRUCTIONS FOR MOUNTING AT FIRE-ALARM CONTROL UNIT AND EACH ANNUNCIATOR UNIT.
2. SOFTWARE AND FIRMWARE OPERATIONAL DOCUMENTATION:
   a. SOFTWARE OPERATING AND UPGRADE MANUALS.
   b. PROGRAM SOFTWARE BACKUP: ON MAGNETIC MEDIA OR COMPACT DISK, COMPLETE WITH DATA FILES.
   c. DEVICE ADDRESS LIST.
   d. PRINTOUT OF SOFTWARE APPLICATION AND GRAPHIC SCREENS.

E. QUALITY ASSURANCE
1. INSTALLER QUALIFICATIONS: PERSONNEL SHALL BE TRAINED AND CERTIFIED BY MANUFACTURER FOR INSTALLATION OF UNITS REQUIRED FOR THIS PROJECT.
2. INSTALLER QUALIFICATIONS: INSTALLATION SHALL BE BY PERSONNEL CERTIFIED BY NICET AS FIRE-ALARM LEVEL IV TECHNICIAN.
3. NFPA CERTIFICATION: OBTAIN CERTIFICATION ACCORDING TO NFPA 72.

F. WARRANTY
1. SPECIAL WARRANTY: MANUFACTURER AGREES TO REPAIR OR REPLACE FIRE-ALARM SYSTEM EQUIPMENT AND COMPONENTS THAT FAIL IN MATERIALS OR WORKMANSHIP WITHIN SPECIFIED WARRANTY PERIOD.
   a. WARRANTY EXTENT: ALL EQUIPMENT AND COMPONENTS NOT COVERED IN THE MAINTENANCE SERVICE AGREEMENT.
   b. WARRANTY PERIOD: 1 YEAR FROM DATE SYSTEM IS PUT INTO OPERATION.

PART 2 - PRODUCTS

A. SYSTEM DESCRIPTION
1. DESCRIPTIONS IN THIS ARTICLE ARE EXAMPLES ONLY; REVISE TO SUIT PROJECT.
2. SOURCE LIMITATIONS FOR FIRE-ALARM SYSTEM AND COMPONENTS: COMPONENTS SHALL BE COMPATIBLE WITH, AND OPERATE AS AN EXTENSION OF, EXISTING SYSTEM. PROVIDE SYSTEM MANUFACTURER'S CERTIFICATION THAT ALL COMPONENTS PROVIDED HAVE BEEN TESTED AS, AND WILL OPERATE AS, A SYSTEM.
3. NONCODED, UL-CERTIFIED ADDRESSABLE SYSTEM, WITH MULTIPLEXED SIGNAL TRANSMISSION AND HORN/STROBE EVACUATION.
4. AUTOMATIC SENSITIVITY CONTROL OF CERTAIN SMOKE DETECTORS.
5. ALL COMPONENTS PROVIDED SHALL BE LISTED FOR USE WITH THE SELECTED SYSTEM.
6. 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.

B. SYSTEMS OPERATIONAL DESCRIPTION
1. FIRE-ALARM SIGNAL INITIATION SHALL BE BY ONE OR MORE OF THE FOLLOWING DEVICES:
   a. MANUAL STATIONS.
   b. HEAT DETECTORS.
   c. SMOKE DETECTORS.
   d. DUCT SMOKE DETECTORS.
2. FIRE-ALARM SIGNAL SHALL INITIATE THE FOLLOWING ACTIONS:
   a. CONTINUOUSLY OPERATE ALARM NOTIFICATION APPLIANCES.
   b. IDENTIFY ALARM AND SPECIFIC INITIATING DEVICE AT FIRE-ALARM CONTROL UNIT AND REMOTE ANNUNCIATORS.
   c. TRANSMIT AN ALARM SIGNAL VIA MASTER BOX AND CENTRAL STATION TO THE CITYS OF HOLDEN AND WORCESTER.
   d. SWITCH HEATING, VENTILATING, AND AIR-CONDITIONING EQUIPMENT CONTROLS TO FIRE-ALARM MODE.
   e. CLOSE SMOKE DAMPERS IN AIR DUCTS OF DESIGNATED AIR-CONDITIONING DUCT SYSTEMS.
   f. RECORD EVENTS IN THE SYSTEM MEMORY.
3. SUPERVISORY SIGNAL INITIATION SHALL BE BY ONE OR MORE OF THE FOLLOWING DEVICES AND ACTIONS:
   a. LOSS OF COMMUNICATION WITH ANY PANEL ON THE NETWORK.
4. SYSTEM TROUBLE SIGNAL INITIATION SHALL BE BY ONE OR MORE OF THE FOLLOWING DEVICES AND ACTIONS:
   a. OPEN CIRCUITS, SHORTS, AND GROUNDS IN DESIGNATED CIRCUITS.
   b. OPENING, TAMPERING WITH, OR REMOVING ALARM-INITIATING AND SUPERVISORY SIGNAL-INITIATING DEVICES.
   c. LOSS OF COMMUNICATION WITH ANY ADDRESSABLE SENSOR, INPUT MODULE, RELAY, CONTROL MODULE, OR REMOTE ANNUNCIATOR.
   d. LOSS OF PRIMARY POWER AT FIRE-ALARM CONTROL UNIT.
   e. GROUND OR A SINGLE BREAK IN INTERNAL CIRCUITS OF FIRE-ALARM CONTROL UNIT.
   f. ABNORMAL AC VOLTAGE AT FIRE-ALARM CONTROL UNIT.
   g. BREAK IN STANDBY BATTERY CIRCUITRY.
   h. FAILURE OF BATTERY CHARGING.
   i. ABNORMAL POSITION OF ANY SWITCH AT FIRE-ALARM CONTROL UNIT OR ANNUNCIATOR.
5. SYSTEM SUPERVISORY SIGNAL ACTIONS:
   a. INITIATE NOTIFICATION APPLIANCES.
   b. IDENTIFY SPECIFIC DEVICE INITIATING THE EVENT AT FIRE-ALARM CONTROL UNIT AND REMOTE ANNUNCIATORS.
   c. AFTER A TIME DELAY OF 200 SECONDS TRANSMIT A TROUBLE OR SUPERVISORY SIGNAL TO THE REMOTE ALARM RECEIVING STATION.

C. PERFORMANCE REQUIREMENTS
1. SEISMIC PERFORMANCE: FIRE-ALARM CONTROL UNIT AND RACEWAYS SHALL WITHSTAND THE EFFECTS OF EARTHQUAKE MOTIONS DETERMINED ACCORDING TO ASCE/SEI 7.
   a. THE TERM "WITHSTAND" MEANS "THE UNIT WILL REMAIN IN PLACE WITHOUT SEPARATION OF ANY PARTS FROM THE DEVICE WHEN SUBJECTED TO THE SEISMIC FORCES SPECIFIED AND THE UNIT WILL BE FULLY OPERATIONAL AFTER THE SEISMIC EVENT."

D. MANUAL FIRE-ALARM BOXES
1. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY THE FOLLOWING:
   a. NOTIFIER BY HONEYWELL
   b. GAMEWELL FCI.
   c. EST/EDWARDS.
   d. FIRE-LITE / SILENT KNIGHT
   e. SIEMENS
2. GENERAL REQUIREMENTS FOR MANUAL FIRE-ALARM BOXES: COMPLY WITH UL 38.
   a. SINGLE-ACTION MECHANISM, BREAKING-GLASS TYPE; WITH INTEGRAL ADDRESSABLE MODULE ARRANGED TO COMMUNICATE MANUAL-STATION STATUS (NORMAL, ALARM, OR TROUBLE) TO FIRE-ALARM CONTROL UNIT.
   b. STATION RESET: KEY- OR WRENCH-OPERATED SWITCH.

E. SYSTEM SMOKE DETECTORS
1. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY THE FOLLOWING:
   a. NOTIFIER BY HONEYWELL
   b. GAMEWELL FCI.
   c. EST/EDWARDS.
   d. FIRE-LITE / SILENT KNIGHT
   e. SIEMENS
2. GENERAL REQUIREMENTS FOR SYSTEM SMOKE DETECTORS:
   a. COMPLY WITH UL 268; OPERATING AT 24-V DC, NOMINAL.
   b. INTEGRAL ADDRESSABLE MODULE: ARRANGED TO COMMUNICATE DETECTOR STATUS (NORMAL, ALARM, OR TROUBLE) TO FIRE-ALARM CONTROL UNIT.
   c. BASE MOUNTING: DETECTOR AND ASSOCIATED ELECTRONIC COMPONENTS SHALL BE MOUNTED IN A TWIST-LOCK MODULE THAT CONNECTS TO A FIXED BASE. PROVIDE TERMINALS IN THE FIXED BASE FOR CONNECTION TO BUILDING WIRING.
   d. SELF-RESTORING: DETECTORS DO NOT REQUIRE RESETTING OR READJUSTMENT AFTER ACTUATION TO RESTORE THEM TO NORMAL OPERATION.
   e. INTEGRAL VISUAL-INDICATING LIGHT: LED TYPE, INDICATING DETECTOR HAS OPERATED AND POWER-ON STATUS.
   f. RETAIN "REMOTE CONTROL" SUBPARAGRAPH BELOW FOR ANALOG-ADDRESSABLE SYSTEM WHERE REMOTELY ADJUSTABLE DETECTORS ARE USED.
   g. REMOTE CONTROL: UNLESS OTHERWISE INDICATED, DETECTORS SHALL BE DIGITAL-ADDRESSABLE TYPE, INDIVIDUALLY MONITORED AT FIRE-ALARM CONTROL UNIT FOR CALIBRATION, SENSITIVITY, AND ALARM CONDITION AND INDIVIDUALLY ADJUSTABLE FOR SENSITIVITY BY FIRE-ALARM CONTROL UNIT.
   h. MULTIPLE LEVELS OF DETECTION SENSITIVITY FOR EACH SENSOR.
   i. SENSITIVITY LEVELS BASED ON TIME OF DAY.
3. PHOTOELECTRIC SMOKE DETECTORS:
   a. DETECTOR ADDRESS SHALL BE ACCESSIBLE FROM FIRE-ALARM CONTROL UNIT AND SHALL BE ABLE TO IDENTIFY THE DETECTOR'S LOCATION WITHIN THE SYSTEM AND ITS SENSITIVITY SETTING.
   b. AN OPERATOR AT FIRE-ALARM CONTROL UNIT, HAVING THE DESIGNATED ACCESS LEVEL, SHALL BE ABLE TO MANUALLY ACCESS THE FOLLOWING FOR EACH DETECTOR:
   c. PRIMARY STATUS.
   d. DEVICE TYPE.
   e. PRESENT AVERAGE VALUE.
   f. PRESENT SENSITIVITY SELECTED.
   g. SENSOR RANGE (NORMAL, DIRTY, ETC.).
4. IONIZATION SMOKE DETECTOR:
   a. DETECTOR ADDRESS SHALL BE ACCESSIBLE FROM FIRE-ALARM CONTROL UNIT AND SHALL BE ABLE TO IDENTIFY THE DETECTOR'S LOCATION WITHIN THE SYSTEM AND ITS SENSITIVITY SETTING.
   b. AN OPERATOR AT FIRE-ALARM CONTROL UNIT, HAVING THE DESIGNATED ACCESS LEVEL, SHALL BE ABLE TO MANUALLY ACCESS THE FOLLOWING FOR EACH DETECTOR:
   c. PRIMARY STATUS.
   d. DEVICE TYPE.
   e. PRESENT AVERAGE VALUE.
   f. PRESENT SENSITIVITY SELECTED.
   g. SENSOR RANGE (NORMAL, DIRTY, ETC.).
5. DUCT SMOKE DETECTORS: PHOTOELECTRIC TYPE COMPLYING WITH UL 268A.
   a. DETECTOR ADDRESS SHALL BE ACCESSIBLE FROM FIRE-ALARM CONTROL UNIT AND SHALL BE ABLE TO IDENTIFY THE DETECTOR'S LOCATION WITHIN THE SYSTEM AND ITS SENSITIVITY SETTING.
   b. AN OPERATOR AT FIRE-ALARM CONTROL UNIT, HAVING THE DESIGNATED ACCESS LEVEL, SHALL BE ABLE TO MANUALLY ACCESS THE FOLLOWING FOR EACH DETECTOR:
   c. PRIMARY STATUS.
   d. DEVICE TYPE.
   e. PRESENT AVERAGE VALUE.
   f. PRESENT SENSITIVITY SELECTED.
   g. SENSOR RANGE (NORMAL, DIRTY, ETC.).
   h. WEATHERPROOF DUCT HOUSING ENCLOSURE: NEMA 250, TYPE 4X; NRTL LISTED FOR USE WITH THE SUPPLIED DETECTOR FOR SMOKE DETECTION IN HVAC SYSTEM DUCTS.
   i. EACH SENSOR SHALL HAVE MULTIPLE LEVELS OF DETECTION SENSITIVITY.
   j. SAMPLING TUBES: DESIGN AND DIMENSIONS AS RECOMMENDED BY MANUFACTURER FOR SPECIFIC DUCT SIZE, AIR VELOCITY, AND INSTALLATION CONDITIONS WHERE APPLIED.
   k. RELAY FAN SHUTDOWN: FULLY PROGRAMMABLE RELAY RATED TO INTERRUPT FAN MOTOR-CONTROL CIRCUIT.

F. CARBON MONOXIDE DETECTORS
1. GENERAL: CARBON MONOXIDE DETECTOR LISTED FOR CONNECTION TO FIRE-ALARM SYSTEM.
   a. MOUNTING: ADAPTER PLATE FOR OUTLET BOX MOUNTING.
   b. TESTABLE BY INTRODUCING TEST CARBON MONOXIDE INTO THE SENSING CELL.
   c. DETECTOR SHALL PROVIDE ALARM CONTACTS AND TROUBLE CONTACTS.
   d. DETECTOR SHALL SEND TROUBLE ALARM WHEN NEARING END-OF-LIFE, POWER SUPPLY PROBLEMS, OR INTERNAL FAULTS.
   e. COMPLY WITH UL 2075.
   f. LOCATE, MOUNT, AND WIRE ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.
   g. PROVIDE MEANS FOR ADDRESSABLE CONNECTION TO FIRE-ALARM SYSTEM.
   h. TEST BUTTON SIMULATES AN ALARM CONDITION.

G. HEAT DETECTORS
1. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY THE FOLLOWING:
   a. SIMPLEXGRINNELL LP.
   b. GAMEWELL FCI.
   c. EST/EDWARDS.
2. GENERAL REQUIREMENTS FOR HEAT DETECTORS: COMPLY WITH UL 521.
   a. TEMPERATURE SENSORS SHALL TEST FOR AND COMMUNICATE THE SENSITIVITY RANGE OF THE DEVICE.
3. HEAT DETECTOR, COMBINATION TYPE: ACTUATED BY EITHER A FIXED TEMPERATURE OR A RATE OF RISE.
   a. MOUNTING: TWIST-LOCK BASE INTERCHANGEABLE WITH SMOKE-DETECTOR BASES.
   b. INTEGRAL ADDRESSABLE MODULE: ARRANGED TO COMMUNICATE DETECTOR STATUS (NORMAL, ALARM, OR TROUBLE) TO FIRE-ALARM CONTROL UNIT.
4. HEAT DETECTOR, FIXED-TEMPERATURE TYPE: ACTUATED BY TEMPERATURE THAT EXCEEDS A FIXED TEMPERATURE.
   a. MOUNTING: TWIST-LOCK BASE INTERCHANGEABLE WITH SMOKE-DETECTOR BASES.
   b. INTEGRAL ADDRESSABLE MODULE: ARRANGED TO COMMUNICATE DETECTOR STATUS (NORMAL, ALARM, OR TROUBLE) TO FIRE-ALARM CONTROL UNIT.

H. NOTIFICATION APPLIANCES
1. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY THE FOLLOWING:
   a. NOTIFIER BY HONEYWELL
   b. GAMEWELL FCI.
   c. EST/EDWARDS.
   d. FIRE-LITE / SILENT KNIGHT
   e. SIEMENS
2. GENERAL REQUIREMENTS FOR NOTIFICATION APPLIANCES: CONNECTED TO NOTIFICATION-APPLIANCE SIGNAL CIRCUITS, ZONED AS INDICATED, EQUIPPED FOR MOUNTING AS INDICATED, AND WITH SCREW TERMINALS FOR SYSTEM CONNECTIONS.
   a. COMBINATION DEVICES: FACTORY-INTEGRATED AUDIBLE AND VISIBLE DEVICES IN A SINGLE-MOUNTING ASSEMBLY, EQUIPPED FOR MOUNTING AS INDICATED, AND WITH SCREW TERMINALS FOR SYSTEM CONNECTIONS.
3. CHIMES: VIBRATING TYPE.
4. HORNS: ELECTRIC-VIBRATING-POLARIZED TYPE, 24-V DC; WITH PROVISION FOR HOUSING THE OPERATING MECHANISM BEHIND A GRILLE. COMPLY WITH UL 464.
5. VISIBLE NOTIFICATION APPLIANCES: XENON STROBE LIGHTS COMPLYING WITH UL 1971, WITH CLEAR OR NOMINAL WHITE POLYCARBONATE LENS MOUNTED ON AN ALUMINUM FACEPLATE. THE WORD "FIRE" IS ENGRAVED IN MINIMUM 1-INCH HIGH LETTERS ON THE LENS.
   a. MOUNTING: WALL MOUNTED UNLESS OTHERWISE INDICATED.
   b. FLASHING SHALL BE IN A TEMPORAL PATTERN, SYNCHRONIZED WITH OTHER UNITS.
   c. STROBE LEADS: FACTORY CONNECTED TO SCREW TERMINALS.
   d. MOUNTING FACEPLATE: FACTORY FINISHED, RED.

I. REMOTE ANNUNCIATOR
1. DESCRIPTION: ANNUNCIATOR FUNCTIONS SHALL MATCH THOSE OF FIRE-ALARM CONTROL UNIT FOR ALARM, SUPERVISORY, AND TROUBLE INDICATIONS. MANUAL SWITCHING FUNCTIONS SHALL MATCH THOSE OF FIRE-ALARM CONTROL UNIT, INCLUDING ACKNOWLEDGING, SILENCING, RESETTING, AND TESTING.
   a. MOUNTING: SURFACE CABINET, NEMA 250, TYPE 1.
2. DISPLAY TYPE AND FUNCTIONAL PERFORMANCE: ALPHANUMERIC DISPLAY AND LED INDICATING LIGHTS SHALL MATCH THOSE OF FIRE-ALARM CONTROL UNIT. PROVIDE CONTROLS TO ACKNOWLEDGE, SILENCE, RESET, AND TEST FUNCTIONS FOR ALARM, SUPERVISORY, AND TROUBLE SIGNALS.

J. ADDRESSABLE INTERFACE DEVICE
1. GENERAL:
   a. INCLUDE ADDRESS-SETTING MEANS ON THE MODULE.
   b. STORE AN INTERNAL IDENTIFYING CODE FOR CONTROL PANEL USE TO IDENTIFY THE MODULE TYPE.
   c. LISTED FOR CONTROLLING HVAC FAN MOTOR CONTROLLERS.
2. MONITOR MODULE: MICROELECTRONIC MODULE PROVIDING A SYSTEM ADDRESS FOR ALARM-INITIATING DEVICES FOR WIRED APPLICATIONS WITH NORMALLY OPEN CONTACTS.
3. INTEGRAL RELAY: CAPABLE OF PROVIDING A DIRECT SIGNAL TO ELEVATOR CONTROLLER TO INITIATE ELEVATOR RECALL
   a. ALLOW THE CONTROL PANEL TO SWITCH THE RELAY CONTACTS ON COMMAND.
   b. HAVE A MINIMUM OF TWO NORMALLY OPEN AND TWO NORMALLY CLOSED CONTACTS AVAILABLE FOR FIELD WIRING.
4. CONTROL MODULE:
   a. OPERATE NOTIFICATION DEVICES.
   b. OPERATE SOLENOIDS FOR USE IN SPRINKLER SERVICE.

K. FIRE ALARM RADIO BOX (CITY OF WORCESTER)
1. DESCRIPTION
   a. THE 7788F SUBSCRIBER UNIT IS AN AES-INTELLINET RF COMMUNICATOR, WHICH IS TYPICALLY USED TO LINK AN ALARM PANEL TO AN ALARM MONITORING CENTRAL STATION. THIS SERIES UNIT IS UL LISTED AND NFPA COMPLIANT FOR COMMERCIAL FIRE ALARM MONITORING. THIS UNIT HAS 8 WIRED ALL 8 INPUTS ARE OF THE END OF LINE RESISTOR (EOL) TYPE. CITY OF WORCESTER
   b. CITY OF HOLDEN SHALL UTILIZE A HAND LINE OR CELLULAR DIALER FOR CENTRAL STATION NOTIFICATION
2. FEATURES

THIS SECTION IS INCLUDED FOR THOSE CUSTOMERS FAMILIAR WITH OTHER AES INTELLINET UL SUBSCRIBER PRODUCTS. LISTED BELOW ARE THE NEW FEATURES INCORPORATED INTO THE UNIT.

   a. FAIL SECURE RELAY ON BOARD FOR ACKNOWLEDGE DELAY / ANTENNA CUT / LOW BATTERY / CHARGER FAIL OUTPUT. FORMERLY WAS A FAIL SAFE OPEN COLLECTOR OUTPUT AND ONLY FOR ANTENNA CUT / ACKNOWLEDGE DELAY.
   b. SEPARATE POWER NO LONGER REQUIRED FOR THE ZONE INPUT MODULE AS REQUIRED ON THE 7750-F-4X4 AND 7750-F-8.
   c. AC FAILURE RANDOM REPORTING DELAY. AC FAILURE/RESTORE MESSAGES ARE GENERATED WHEN THEY EXIST CONTINUOUSLY FOR 100 MINUTES. THE ACTUAL TRANSMISSION OF THE GENERATED MESSAGE IS DELAYED A RANDOM NUMBER OF MINUTES BETWEEN 0 AND 60, BUT CAN BE SET TO A VALUE BY THE USER. THE DELAY IS SET AT THE TIME THE EVENT IS GENERATED. THIS SETTING HAS NO EFFECT ON THE TIME OF DETECTION OF THE FAILURE. THAT IS HARDCODED AT 100 MINUTES.
   d. TRANSCEIVER POWER PTC IS ADDED. IT IS INSTALLED IN SERIES WITH THE POWER LINE TO THE TRANSCEIVER DISCONNECTING POWER IF THE TRANSCEIVER DRAWS TOO MUCH CURRENT.
   e. REMOTE PROGRAMMING USING SOFTWARE AT THE CENTRAL STATION IS DISABLED WHEN TROUBLE PACKETS ARE ENABLED. THIS CAN TEMPORARILY BE ENABLED USING A DIRECTLY ATTACHED PROGRAMMER IN THE PROGRAMMER JACK. THIS IS TO COMPLY WITH UL/NFPA REQUIREMENTS. TROUBLE PACKETS ARE ENABLED WHEN "Y" IS THE RESPONSE TO THE QUESTION "FIRE/FIRE ZONES" IN ZONE PROGRAMMING <CTRL> + F3.
   f. ALL EQUIPMENT MUST BE INSTALLED IN ACCORDANCE WITH NATIONAL ELECTRIC CODE, NFPA 70, NATIONAL FIRE CODE NFPA 72 AND LOCAL BUILDING CODES.
   g. BE CERTAIN TO PROPERLY GROUND THE ANTENNA, 7788F ENCLOSURE AND ANY SURGE PROTECTION DEVICES TO HELP DISSIPATE SURGES AWAY FROM THE EQUIPMENT AND PERSONNEL. THE GROUNDING OF THE ANTENNA AND SURGE PROTECTOR IS FOR YOUR SAFETY AND THE SAFETY OF YOUR EQUIPMENT AND SHOULD NOT BE NEGLECTED.

L. TECHNICAL SPECIFICATIONS
1. SIZE: 13.25"H X 8.5"W X 4.3"D (34 CM X 21.5 CM X 11 CM) EXCLUDING ANTENNA
2. WEIGHT: 5.8 POUNDS (2.6 KILOGRAMS) WITHOUT BATTERY (ADD 6 POUNDS WITH BATTERY)
3. TRANSFORMER SECONDARY POWER INPUT: 16.5VAC, 40V / 45VA CLASS 2 (DRY) SOURCE ONLY
4. VOLTAGE: 12VDC NOMINAL
5. MAINS INPUT CURRENT: 150 MA STANDBY; 1.2A TRANSMIT
6. MAINS INPUT CURRENT WITH OPTIONAL ACCESSORIES: 210 MA STANDBY; 1.3 A TRANSMIT (2 WATT TRANSCEIVER)
7. OPERATING TEMPERATURE RANGE: 0° TO 49° C (32° TO 120°F)
8. STORAGE TEMPERATURE RANGE: -10° TO 60° C (14° TO 140°F)
9. RELATIVE HUMIDITY RANGE: 0 TO 93% RHC, NON CONDENSING
10. BACK-UP BATTERY: 12V, 7.5AH – 12 AH (24 HOUR STANDBY), 1.2A MAX. (MIN), LEAD ACID GEL TYPE; REQUIRED FOR ALL INSTALLATIONS
11. BATTERY FUSE: ONBOARD SELF-RESETTING FUSE. NOT SERVICEABLE
12. ALARM SIGNAL INPUTS: 8 SUPERVISED INDIVIDUALLY PROGRAMMABLE ZONES: ALL 8 ARE EOL TYPE WITH, TROUBLE & RESTORE
13. LOW BATTERY REPORTING: BELOW 11V. 22.5 MINUTE TEST CYCLE (APPROX..)
14. AC FAILURE REPORTING: AC FAIL MESSAGES ARE QUEUED FOR TRANSMISSION TO CENTRAL STATION AFTER APPROXIMATELY 100 CONTINUOUS MINUTES WITHOUT AC POWER. TRANSMISSION TO CENTRAL STATION IS THEN DELAYED RANDOMLY BETWEEN 0 TO 60 MINUTES. RESTORE IS SIMILAR WITH RESTORE MESSAGE QUEUED FOR TRANSMISSION AFTER APPROXIMATELY 100 CONTINUOUS MINUTES WITH AC POWER RESTORED. AC FAIL/RESTORE MESSAGES WILL BE SENT BETWEEN 100 AND 160 MINUTES AFTER THE FAILURE OR RESTORE OCCURS THAT REMAINS FOR 100 MINUTES. SEE SECTION 4.3 - TIMING PARAMETERS FOR ADDITIONAL INFORMATION AND PROGRAMMING OPTIONS.
15. ANTENNA CUT / LOW BATTERY / CHARGER FAIL LOCAL REPORTING: FORM C FAIL SECURE RELAY CONTACT. ENGAGED FOR NORMAL OPERATION. DISENGAGES ON RESET, ANTENNA CUT/ACKNOWLEDGE DELAY, TOTAL POWER LOSS CONDITION, LOW BATTERY OR CHARGER FAIL. CONTACT RATING – 24VDC 1-AMP MAX, NOT SUPERVISED
16. RESET BUTTON: LOCATED ON THE PCB.
17. TRANSCEIVER:
18. STANDARD UHF FREQUENCY RANGES (410-440MHZ, 440-470MHZ, 470-512MHZ)
19. TRANSCEIVER FUSE: 400 MILLIAMP PTC, NOT SERVICEABLE
20. STANDARD RF OUTPUT POWER: 2 WATTS
21. ZONES 1-8: DRY CONTACT SUPERVISED WITH 2.2K EOL RESISTOR
22. GROUND FAULT: A GROUND FAULT AS TESTED BY UL, IS WHEN AN ISOLATED GROUND TERMINAL OF A SUPERVISED ZONE LABELED "G" IS LESS THAN 0.1 OHM IMPEDANCE TO EARTH GROUND. A ZONE 10 TROUBLE IS TRANSMITTED FOR THIS FAULT. THE CID CODE GENERATED AT ALARM AUTOMATION FOR A GROUND FAULT IS E370 C010.

M. COAXIAL CABLE OPTIONS
1. CABLES W/CONNECTORS, BNC ↔ N, FOR ALL AES SUBSCRIBER UNITS, HIGH
2. PERFORMANCE, LOW LOSS CABLES FOR ALL -UM, -UC
3. AND -US ANTENNAS ABOVE.
4. 10 FT RG-58 CABLE, P/N 7220-10-N
5. 25 FT RG-58 CABLE, P/N 7220-25-N
6. BNC PLUG/CONNECTOR (MALE) CRIMP STYLE FOR
7. RG-58 COAX, P/N 12-0102
8. 100 FT. RG-8 W/1 N MALE (ON SPOOL),
9. P/N 13-0345-100 - THIS COAX IS AVAILABLE FOR LONGER
10. RUNS, CUT TO LENGTH AND INSTALLER TERMINATED.
11. LOOSE CONNECTORS REQUIRED TO COMPLETE RG-8
12. ASSEMBLY, P/N 12-0101
13. CRIMP TOOL REQUIRED FOR 12-0101, P/N 7244
14. CABLE ASSEMBLY; 18" RG-58 (N FEMALE, BULKHEAD ↔ BNC MALE) USED TO CONNECT
15. RG-8 WITH N MALE TO ENCLOSURE BODY, P/N 13-0346

PART 3 - EXECUTION

A. EQUIPMENT INSTALLATION
1. COMPLY WITH NFPA 72, NFPA 101, 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."
2. CONNECTING TO EXISTING EQUIPMENT: VERIFY THAT EXISTING FIRE-ALARM SYSTEM IS OPERATIONAL BEFORE MAKING CHANGES OR CONNECTIONS.
3. INSTALL WALL-MOUNTED EQUIPMENT, WITH TOPS OF CABINETS NOT MORE THAN 78 INCHES ABOVE THE FINISHED FLOOR.
4. MANUAL FIRE-ALARM BOXES:
   a. INSTALL MANUAL FIRE-ALARM BOX IN THE NORMAL PATH OF EGRESS WITHIN 60 INCHES OF THE EXIT DOORWAY.
   b. MOUNT MANUAL FIRE-ALARM BOX ON A BACKGROUND OF A CONTRASTING COLOR.
   c. THE OPERABLE PART OF MANUAL FIRE-ALARM BOX SHALL BE BETWEEN 42 INCHES AND 48 INCHES ABOVE FLOOR LEVEL. ALL DEVICES SHALL BE MOUNTED AT THE SAME HEIGHT UNLESS OTHERWISE INDICATED.
5. SMOKE- OR HEAT-DETECTOR SPACING: COMPLY WITH NFPA 72.
6. DUCT SMOKE DETECTORS: COMPLY WITH NFPA 72 AND NFPA 90A. INSTALL SAMPLING TUBES SO THEY EXTEND THE FULL WIDTH OF DUCT. TUBES MORE THAN 36 INCHES LONG SHALL BE SUPPORTED AT BOTH ENDS.
7. ELEVATOR SHAFTS: COORDINATE TEMPERATURE RATING AND LOCATION WITH SPRINKLER RATING AND LOCATION. DO NOT INSTALL SMOKE DETECTORS IN SPRINKLERED ELEVATOR SHAFTS.
8. REMOTE STATUS AND ALARM INDICATORS: INSTALL IN A VISIBLE LOCATION NEAR EACH SMOKE DETECTOR, SPRINKLER WATER-FLOW SWITCH, AND VALVE-TAMPER SWITCH THAT IS NOT READILY VISIBLE FROM NORMAL VIEWING POSITION.
9. AUDIBLE ALARM-INDICATING DEVICES: INSTALL NOT LESS THAN 6 INCHES BELOW THE CEILING. INSTALL BELLS AND HORNS ON FLUSH-MOUNTED BACK BOXES WITH THE DEVICE-OPERATING MECHANISM CONCEALED BEHIND A GRILLE. INSTALL ALL DEVICES AT THE SAME HEIGHT UNLESS OTHERWISE INDICATED.
10. VISIBLE ALARM-INDICATING DEVICES: INSTALL ADJACENT TO EACH ALARM BELL OR ALARM HORN AND AT LEAST 6 INCHES BELOW THE CEILING. INSTALL ALL DEVICES AT THE SAME HEIGHT UNLESS OTHERWISE INDICATED.
11. DEVICE LOCATION-INDICATING LIGHTS: LOCATE IN PUBLIC SPACE NEAR THE DEVICE THEY MONITOR.

B. PATHWAYS
1. PATHWAYS SHALL BE INSTALLED IN RMC.
2. EXPOSED BOXES SHALL BE PAINTED RED ENAMEL.

3. MAKE ADDRESSABLE CONNECTIONS WITH A SUPERVISED INTERFACE DEVICE TO THE FOLLOWING DEVICES AND SYSTEMS. INSTALL THE INTERFACE DEVICE LESS THAN 36 INCHES THE DEVICE CONTROLLED. MAKE AN ADDRESSABLE CONFIRMATION CONNECTION WHEN SUCH FEEDBACK IS AVAILABLE AT THE DEVICE OR SYSTEM BEING CONTROLLED.
   a. SMOKE DAMPERS IN AIR DUCTS OF DESIGNATED HVAC DUCT SYSTEMS.
   b. SUPERVISORY CONNECTIONS AT ELEVATOR SHUNT-TRIP BREAKER.
   c. SUPERVISORY CONNECTIONS AT FIRE-EXTINGUISHER LOCATIONS.

C. IDENTIFICATION
1. INSTALL FRAMED INSTRUCTIONS IN A LOCATION VISIBLE FROM FIRE-ALARM CONTROL UNIT.

E. GROUNDING
1. 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.
2. GROUND SHIELDED CABLES AT THE CONTROL PANEL LOCATION ONLY. INSULATE SHIELD AT DEVICE LOCATION.

F. FIELD QUALITY CONTROL
1. FIELD TESTS SHALL BE WITNESSED BY OWNER AND ALL WHO THE OWNER DEEMS NECESSARY TO WITNESS TESTING. COORDINATE WITH OWNER PRIOR TO SCHEDULING TEST
2. PERFORM THE FOLLOWING TESTS AND INSPECTIONS WITH THE ASSISTANCE OF A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE:
   a. VISUAL INSPECTION: CONDUCT VISUAL INSPECTION PRIOR TO TESTING.
   b. INSPECTION SHALL BE BASED ON COMPLETED RECORD DRAWINGS AND SYSTEM DOCUMENTATION THAT IS REQUIRED BY NFPA 72 IN ITS "COMPLETION DOCUMENTS, PREPARATION" TABLE IN THE "DOCUMENTATION" SECTION OF THE "FUNDAMENTALS" CHAPTER.
   c. COMPLY WITH THE "VISUAL INSPECTION FREQUENCIES" TABLE IN THE "INSPECTION" SECTION OF THE "INSPECTION, TESTING AND MAINTENANCE" CHAPTER IN NFPA 72; RETAIN THE "INITIAL/REACCEPTANCE" COLUMN AND LIST ONLY THE INSTALLED COMPONENTS.
   d. SYSTEM TESTING: COMPLY WITH THE "TEST METHODS" TABLE IN THE "TESTING" SECTION OF THE "INSPECTION, TESTING AND MAINTENANCE" CHAPTER IN NFPA 72.
   e. TEST AUDIBLE APPLIANCES FOR THE PUBLIC OPERATING MODE ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS. PERFORM THE TEST USING A PORTABLE SOUND-LEVEL METER COMPLYING WITH TYPE 2 REQUIREMENTS IN ANSI S1.4.
   f. TEST AUDIBLE APPLIANCES FOR THE PRIVATE OPERATING MODE ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.
   g. TEST VISIBLE APPLIANCES FOR THE PUBLIC OPERATING MODE ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.
   h. FACTORY-AUTHORIZED SERVICE REPRESENTATIVE SHALL PREPARE THE "FIRE ALARM SYSTEM RECORD OF COMPLETION" IN THE "DOCUMENTATION" SECTION OF THE "FUNDAMENTALS" CHAPTER IN NFPA 72 AND THE "INSPECTION AND TESTING FORM" IN THE "RECORDS" SECTION OF THE "INSPECTION, TESTING AND MAINTENANCE" CHAPTER IN NFPA 72.
3. REACCEPTANCE TESTING: PERFORM REACCEPTANCE TESTING TO VERIFY THE PROPER OPERATION OF ADDED OR REPLACED DEVICES AND APPLIANCES.
4. FIRE-ALARM SYSTEM WILL BE CONSIDERED DEFECTIVE IF IT DOES NOT PASS TESTS AND INSPECTIONS.
5. PREPARE TEST AND INSPECTION REPORTS.
6. MAINTENANCE TEST AND INSPECTION PERFORMED BY OWNER: PERFORM TESTS AND INSPECTIONS LISTED FOR WEEKLY, MONTHLY, QUARTERLY, AND SEMIANNUAL PERIODS. USE FORMS DEVELOPED FOR INITIAL TESTS AND INSPECTIONS.
7. ANNUAL TEST AND INSPECTION PERFORMED BY OWNER: ONE YEAR AFTER DATE OF SUBSTANTIAL COMPLETION, TEST FIRE-ALARM SYSTEM COMPLYING WITH VISUAL AND TESTING INSPECTION REQUIREMENTS IN NFPA 72. USE FORMS DEVELOPED FOR INITIAL TESTS AND INSPECTIONS.

G. SOFTWARE SERVICE AGREEMENT
1. COMPLY WITH UL 864.
2. TECHNICAL SUPPORT: BEGINNING AT SUBSTANTIAL COMPLETION, SERVICE AGREEMENT SHALL INCLUDE SOFTWARE SUPPORT FOR TWO YEARS.
3. UPGRADE SERVICE: AT SUBSTANTIAL COMPLETION, UPDATE SOFTWARE TO LATEST VERSION. INSTALL AND PROGRAM SOFTWARE UPGRADES THAT BECOME AVAILABLE WITHIN TWO YEARS FROM DATE OF SUBSTANTIAL COMPLETION. UPGRADING SOFTWARE SHALL INCLUDE OPERATING SYSTEM AND NEW OR REVISED LICENSES FOR USING SOFTWARE.
   a. UPGRADE NOTICE: AT LEAST 30 DAYS TO ALLOW OWNER TO SCHEDULE ACCESS TO SYSTEM AND TO UPGRADE COMPUTER EQUIPMENT IF NECESSARY.

H. DEMONSTRATION
1. TRAIN OWNER'S MAINTENANCE PERSONNEL TO ADJUST, OPERATE, AND MAINTAIN FIRE-ALARM SYSTEM. TRAINING SHALL INCLUDE BUT NOT BE LIMITED TO REVIEW OF ALL ALARMS/TROUBLES/SUPERVISORY SIGNALS, ACKNOWLEDGE/SILENCE ALL ALARMS/TROUBLES/SUPERVISORY SIGNALS, RESET OF PANEL, ETC.

I. SPARE PARTS
1. TWO SPARE DEVICES FOR EACH TYPE OF ACTIUATION / NOTIFICATION DEVICE SHALL BE FURNISHED AND PROVIDED TO THE OWNER FOR FUTURE USE.

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Project:

CITY OF WORCESTER, MA

WATER TREATMENT PLANT
FIRE ALARM REPLACEMENT

71 STONEHOUSE HILL RD
HOLDEN, MA 01520

Weston & Sampson Engineers, Inc.
427 Main Street, Suite 400
Worcester, MA 01608
978.532.1900 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

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keyplan:

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Scale: AS NOTED

Date: 02 / 22 / 2023
Drawn By: AI
Reviewed By: DMN
Approved By: RFM

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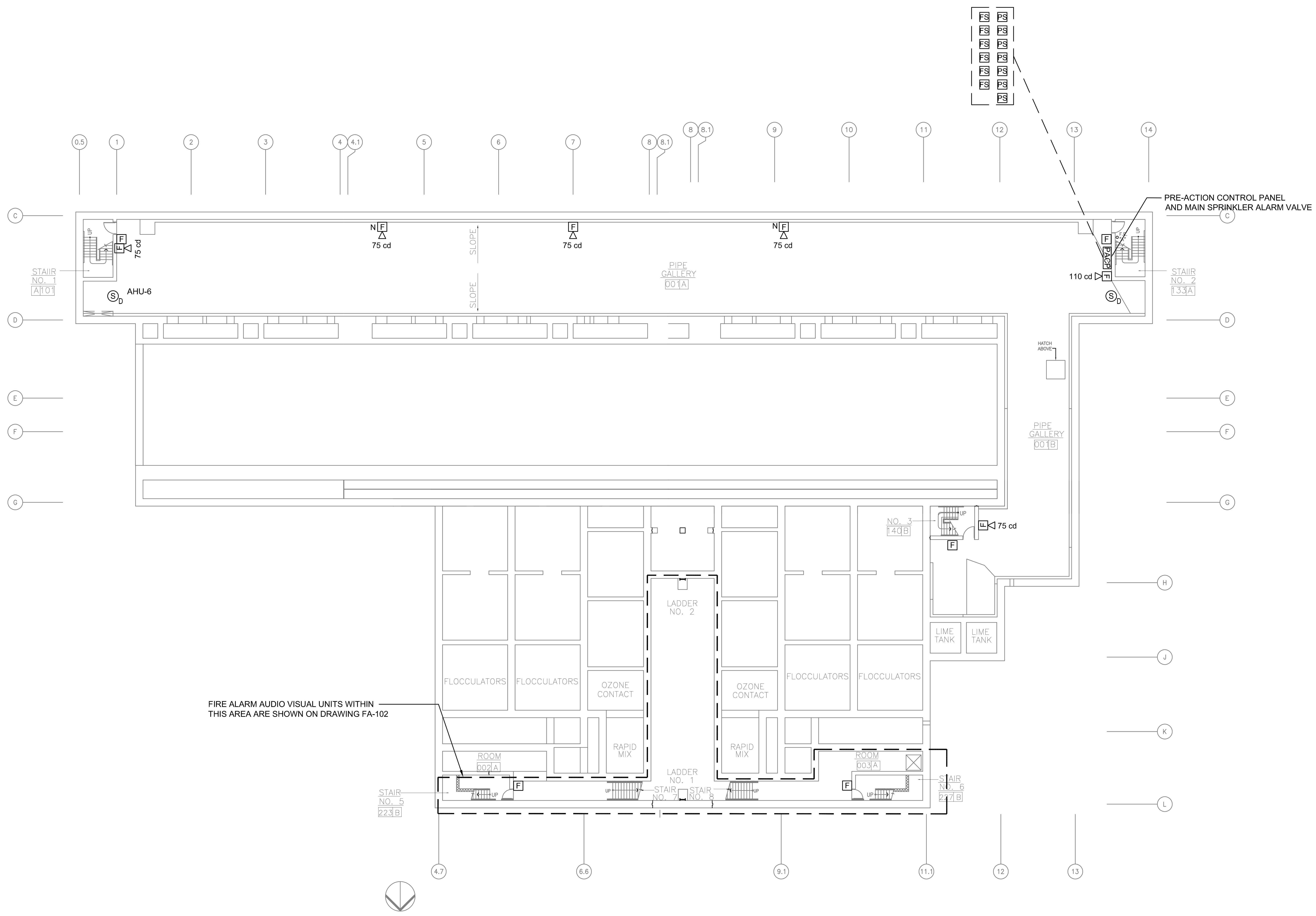
FIRE ALARM
SPECIFICATIONS

Sheet Number:

FA002

Rev: 1.6 Date: 04/10/2019



BASEMENT FLOOR PLAN

SCALE: 1/16" = 1'-0"

NOTES:

1. REFER TO FA001 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
2. ALL FIRE ALARM DEVICES INDICATED ON THIS DRAWING ARE EXISTING TO BE REPLACED WITH A NEW DEVICES INSTALLED ON THE EXISTING BACKBOX, UNLESS NOTED WITH AN "N" ADJACENT TO THE DEVICE WHICH INDICATES A COMPLETELY NEW DEVICE TO BE PROVIDED WITH NEW BACKBOX AND NEW RMC CONDUIT TO THE NEAREST EXISTING DEVICE LOCATION. EXISTING FLOW, TAMPER SWITCH & PRESSURE SWITCHES SHALL BE FURNISHED W / NEW MONITOR MODULES WIRED TO THE NEW FIRE ALARM CONTROL PANEL.
3. WIRING FOR INITIATION AND NOTIFICATION CIRCUITS SHALL BE CLASS A" UNLESS OTHERWISE NOTED.
4. WHERE NEW DEVICES ARE INDICATED OR REQUIRED NEW RMC AND WIRING SHALL BE RUN FROM THE NEW DEVICE TO THE NEAREST EXISTING DEVICE.
5. HORNS AND STROBE LIGHTS SHALL BE SYNCHRONIZED, EACH CIRCUIT DESIGNED WITH 30% SPARE CAPACITY. HORN SILENCE CAPABILITY SHALL BE PROVIDED IF REQUIRED BY THE AHJ.
6. THE ELECTRICAL CONTRACTOR WILL REMOVE AND DISPOSE OF ALL FIRE ALARM SYSTEM MATERIALS TO BE REPLACED INCLUDING BUT NOT LIMITED TO FACP, DEVICES RACEWAYS, CABLE , ETC.
7. THE INTENT OF THIS PROJECT IS TO REPLACE THE ENTIRE FIRE ALARM SYSTEM WITH A NEW ADDRESSABLE SYSTEM. EXISTING DEVICES SHALL BE REPLACED WITH NEW ADDRESSABLE DEVICES INSTALLED ON EXISTING BACKBOXES AND NEW DEVICES "N" SHALL BE ADDED AND WIRED INTO THE EXISTING CONDUIT SYSTEM. ALL WIRING SHALL BE REMOVED AND NEW WIRING PULLED TO WIRE ALL DEVICES TO THE NEW FACP.

0' 8' 16' 32'

SCALE: 1/16" = 1'-0"

Project:

CITY OF WORCESTER, MA

WATER TREATMENT PLANT
FIRE ALARM REPLACEMENT

71 STONEHOUSE HILL RD
HOLDEN, MA 01520

Weston & Sampson

Weston & Sampson Engineers, Inc.
427 Main Street, Suite 400
Worcester, MA 01608
978.532.1900 800.SAMPSON

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Drawing Title:

ELECTRICAL
BASEMENT NEW
WORK
FIRE ALARM PLAN

Sheet Number:

FA101

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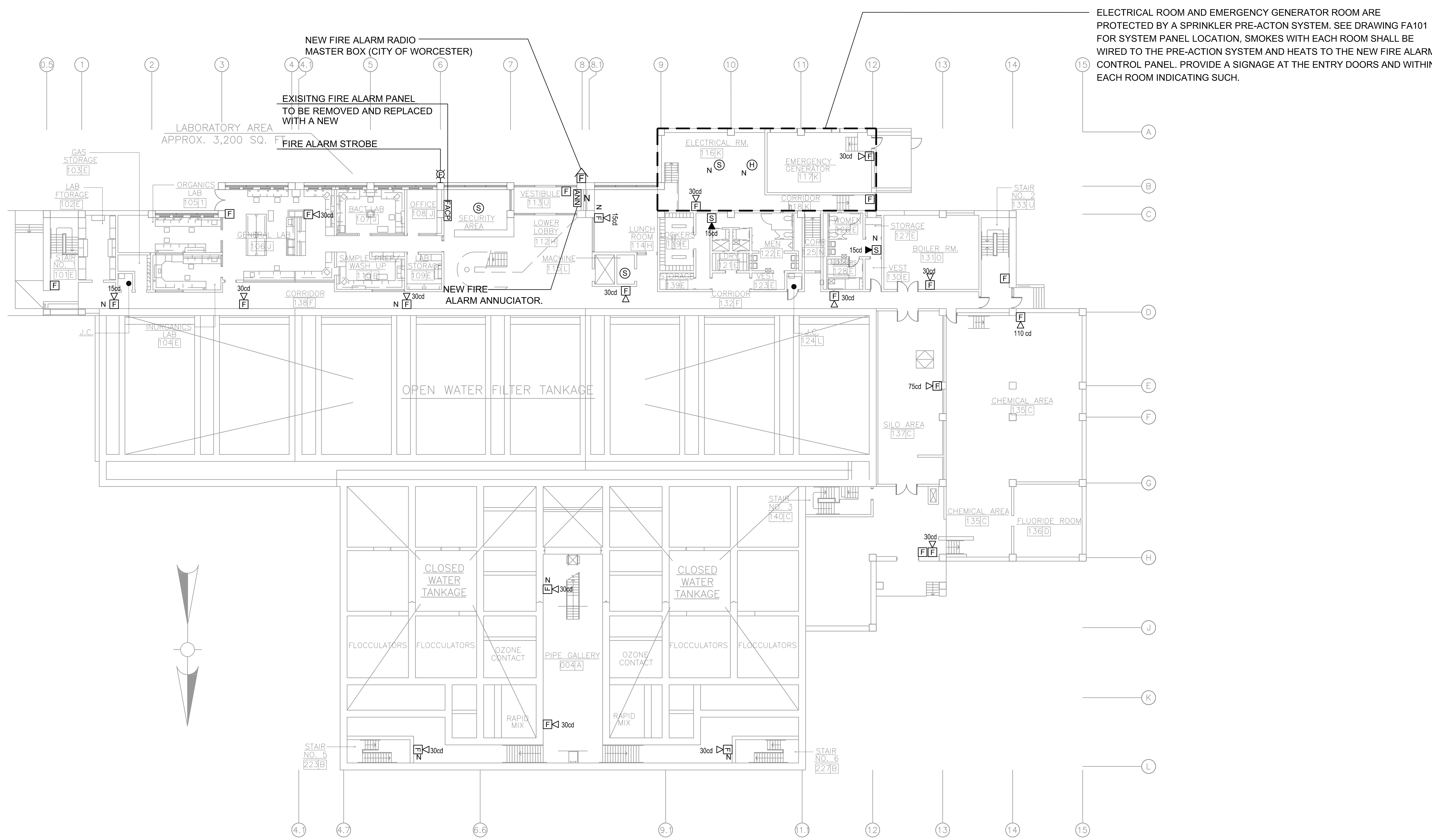

FIRST FLOOR PLAN

SCALE: 1/16' = 1'-0"

NOTES:

1. REFER TO FA001 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
2. ALL FIRE ALARM DEVICES INDICATED ON THIS DRAWING ARE EXISTING TO BE REPLACED WITH A NEW DEVICES INSTALLED ON THE EXISTING BACKBOX, UNLESS NOTED WITH AN "N" ADJACENT TO THE DEVICE WHICH INDICATES A COMPLETELY NEW DEVICE TO BE PROVIDED WITH NEW BACKBOX AND NEW RMC CONDUIT TO THE NEAREST EXISTING DEVICE LOCATION. EXISTING FLOW, TAMPER SWITCH & PRESSURE SWITCHES SHALL BE FURNISHED W / NEW MONITOR MODULES WIRED TO THE NEW FIRE ALARM CONTROL PANEL.
3. WIRING FOR INITIATION AND NOTIFICATION CIRCUITS SHALL BE CLASS A" UNLESS OTHERWISE NOTED.
4. WHERE NEW DEVICES ARE INDICATED OR REQUIRED NEW RMC AND WIRING SHALL BE RUN FROM THE NEW DEVICE TO THE NEAREST EXISTING DEVICE.
5. HORNS AND STROBE LIGHTS SHALL BE SYNCHRONIZED, EACH CIRCUIT DESIGNED WITH 30% SPARE CAPACITY. HORN SILENCE CAPABILITY SHALL BE PROVIDED IF REQUIRED BY THE AHJ.
6. THE ELECTRICAL CONTRACTOR WILL REMOVE AND DISPOSE OF ALL FIRE ALARM SYSTEM MATERIALS TO BE REPLACED INCLUDING BUT NOT LIMITED TO FACP, DEVICES RACEWAYS, CABLE , ETC.
7. THE INTENT OF THIS PROJECT IS TO REPLACE THE ENTIRE FIRE ALARM SYSTEM WITH A NEW ADDRESSABLE SYSTEM. EXISTING DEVICES SHALL BE REPLACED WITH NEW ADDRESSABLE DEVICES INSTALLED ON EXISTING BACKBOXES AND NEW DEVICES "N" SHALL BE ADDED AND WIRED INTO THE EXISTING CONDUIT SYSTEM. ALL WIRING SHALL BE REMOVED AND NEW WIRING PULLED TO WIRE ALL DEVICES TO THE NEW FACP.

0' 8' 16' 32'
SCALE: 1/16" = 1'-0"

Project:

CITY OF WORCESTER, MA

WATER TREATMENT PLANT
FIRE ALARM REPLACEMENT

71 STONEHOUSE HILL RD
HOLDEN, MA 01520

Weston & Sampson

Weston & Sampson Engineers, Inc.
427 Main Street, Suite 400
Worcester, MA 01608
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Consultants:

Revisions:

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Date:	02 / 22 / 2023
Drawn By:	AI
Reviewed By:	DMN
Approved By:	RFM
W&S Project No.:	ENG22-0648
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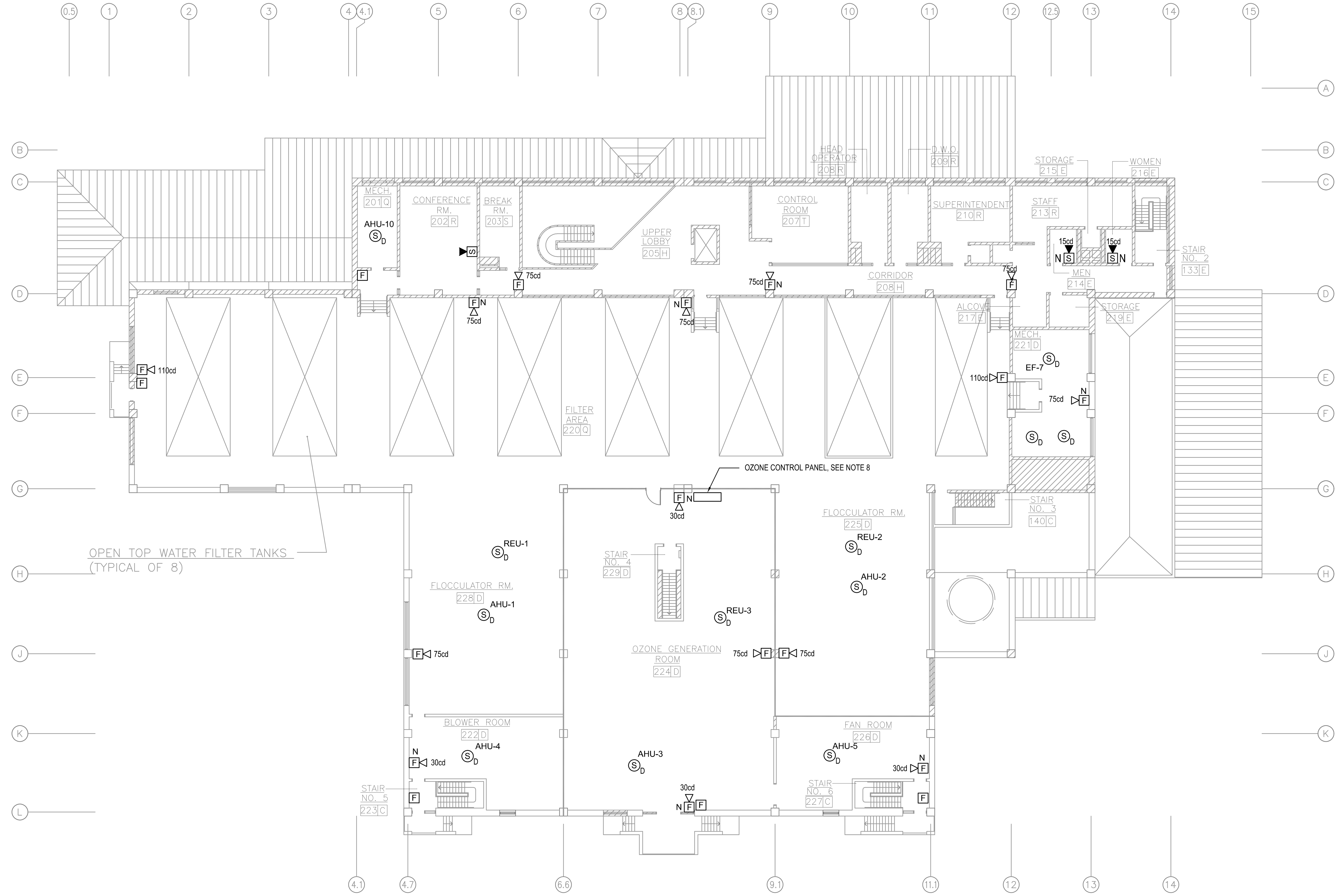
Drawing Title:

ELECTRICAL
FIRST FLOOR
NEW WORK
FIRE ALARM PLAN

Sheet Number:

FA102

Rev: 1.6 Date: 04/10/2019



SECOND FLOOR

SCALE: 1/16" = 1'-0"

NOTES:

1. REFER TO FA001 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
2. ALL FIRE ALARM DEVICES INDICATED ON THIS DRAWING ARE EXISTING TO BE REPLACED WITH A NEW DEVICES INSTALLED ON THE EXISTING BACKBOX, UNLESS NOTED WITH AN "N" ADJACENT TO THE DEVICE WHICH INDICATES A COMPLETELY NEW DEVICE TO BE PROVIDED WITH NEW BACKBOX AND NEW RMC CONDUIT TO THE NEAREST EXISTING DEVICE LOCATION. EXISTING FLOW, TAMPER SWITCH & PRESSURE SWITCHES SHALL BE FURNISHED W / NEW MONITOR MODULES WIRED TO THE NEW FIRE ALARM CONTROL PANEL.
3. WIRING FOR INITIATION AND NOTIFICATION CIRCUITS SHALL BE CLASS A" UNLESS OTHERWISE NOTED.
4. WHERE NEW DEVICES ARE INDICATED OR REQUIRED NEW RMC AND WIRING SHALL BE RUN FROM THE NEW DEVICE TO THE NEAREST EXISTING DEVICE.
5. HORNS AND STROBE LIGHTS SHALL BE SYNCHRONIZED, EACH CIRCUIT DESIGNED WITH 30% SPARE CAPACITY. HORN SILENCE CAPABILITY SHALL BE PROVIDED IF REQUIRED BY THE AHJ.
6. THE ELECTRICAL CONTRACTOR WILL REMOVE AND DISPOSE OF ALL FIRE ALARM SYSTEM MATERIALS TO BE REPLACED INCLUDING BUT NOT LIMITED TO FACP, DEVICES RACEWAYS, CABLE , ETC.
7. THE INTENT OF THIS PROJECT IS TO REPLACE THE ENTIRE FIRE ALARM SYSTEM WITH A NEW ADDRESSABLE SYSTEM. EXISTING DEVICES SHALL BE REPLACED WITH NEW ADDRESSABLE DEVICES INSTALLED ON EXISTING BACKBOXES AND NEW DEVICES "N" SHALL BE ADDED AND WIRED INTO THE EXISTING CONDUIT SYSTEM. ALL WIRING SHALL BE REMOVED AND NEW WIRING PULLED TO WIRE ALL DEVICES TO THE NEW FACP.
8. CONTRACTOR SHALL OBTAIN EXISTING OZONE ALARM SYSTEM POINTS IN EXISTING SCADA SYSTEM INCLUDING LOW OXYGEN, AND SHALL TIE THESE POINTS INTO THE NEW FIRE ALARM PANEL.

0' 8' 16' 32'
SCALE: 1/16" = 1'-0"

Project:

CITY OF WORCESTER, MA

WATER TREATMENT PLANT
FIRE ALARM REPLACEMENT

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W&S File No.:	

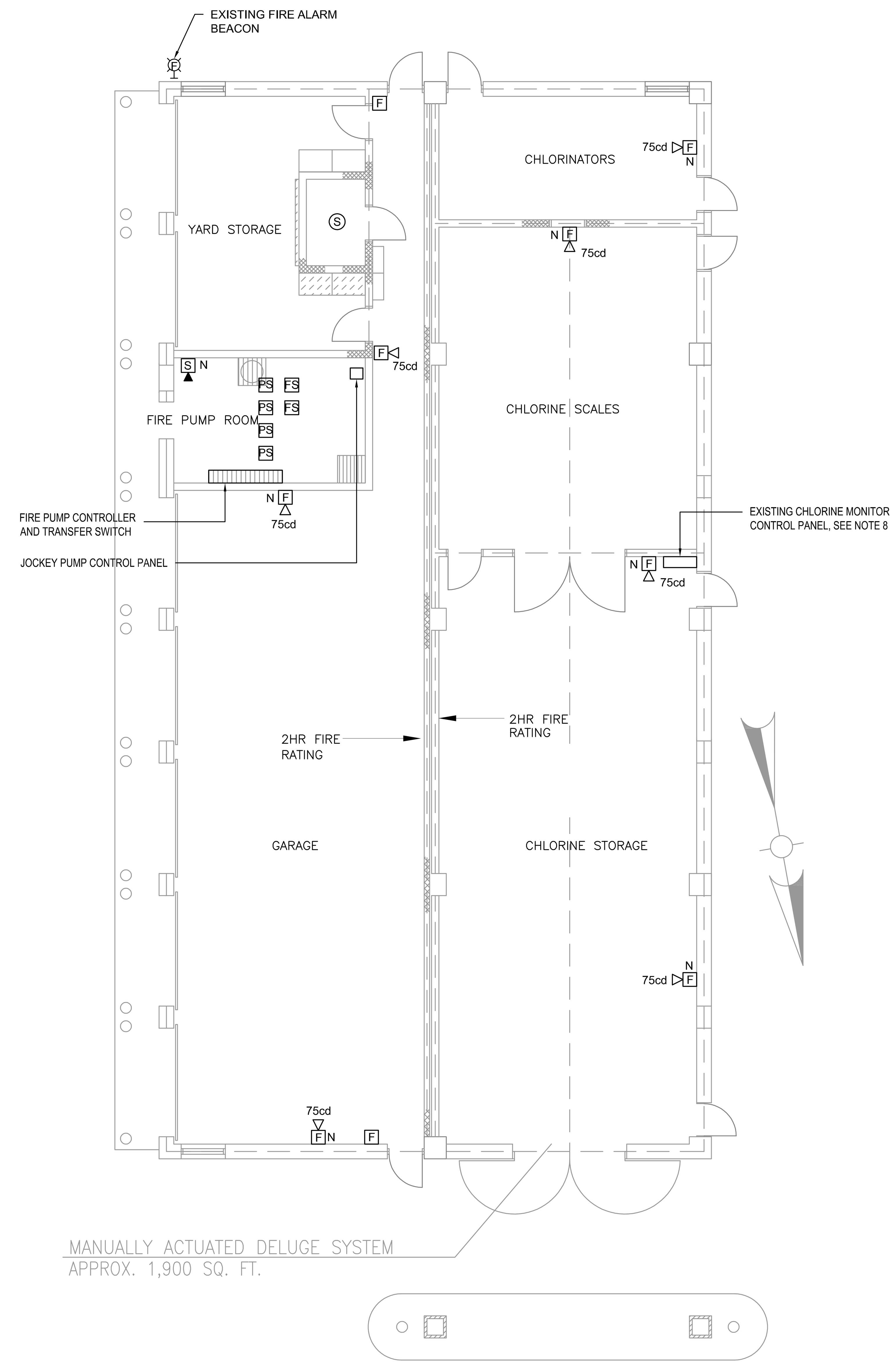
Drawing Title:

ELECTRICAL
SECOND FLOOR
NEW WORK
FIRE ALARM PLAN

Sheet Number:

FA103

Rev. 1.6 Date: 04/10/2019



CHLORINE/GARAGE BUILDING

SCALE: 1/8" = 1'-0"

NOTES:

1. REFER TO FA001 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
2. ALL FIRE ALARM DEVICES INDICATED ON THIS DRAWING ARE EXISTING TO BE REPLACED WITH A NEW DEVICES INSTALLED ON THE EXISTING BACKBOX, UNLESS NOTED WITH AN "N" ADJACENT TO THE DEVICE WHICH INDICATES A COMPLETELY NEW DEVICE TO BE PROVIDED WITH NEW BACKBOX AND NEW RMC CONDUIT TO THE NEAREST EXISTING DEVICE LOCATION. EXISTING FLOW, TAMPER SWITCH & PRESSURE SWITCHES SHALL BE FURNISHED W / NEW MONITOR MODULES WIRED TO THE NEW FIRE ALARM CONTROL PANEL.
3. WIRING FOR INITIATION AND NOTIFICATION CIRCUITS SHALL BE CLASS A" UNLESS OTHERWISE NOTED.
4. WHERE NEW DEVICES ARE INDICATED OR REQUIRED NEW RMC AND WIRING SHALL BE RUN FROM THE NEW DEVICE TO THE NEAREST EXISTING DEVICE.
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8. CONTRACTOR SHALL OBTAIN EXISTING CHLORINE SYSTEM ALARM SYSTEM POINTS IN EXISTING SCADA SYSTEM INCLUDING CHLORINE DETECTION, AND SHALL TIE THESE POINTS INTO THE NEW FIRE ALARM PANEL.

0 8 16 24
SCALE: 1/8"=1'-0"

Project:

CITY OF WORCESTER, MA

WATER TREATMENT PLANT
FIRE ALARM REPLACEMENT

71 STONEHOUSE HILL RD
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Consultants:

Revisions:

No.	Date	Description

Seal:

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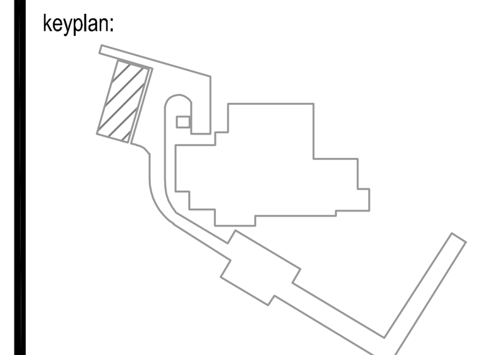

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Scale:	1/8" = 1'-0"
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Reviewed By:	DMN
Approved By:	RFM
W&S Project No.:	ENG22-0648
W&S File No.:	

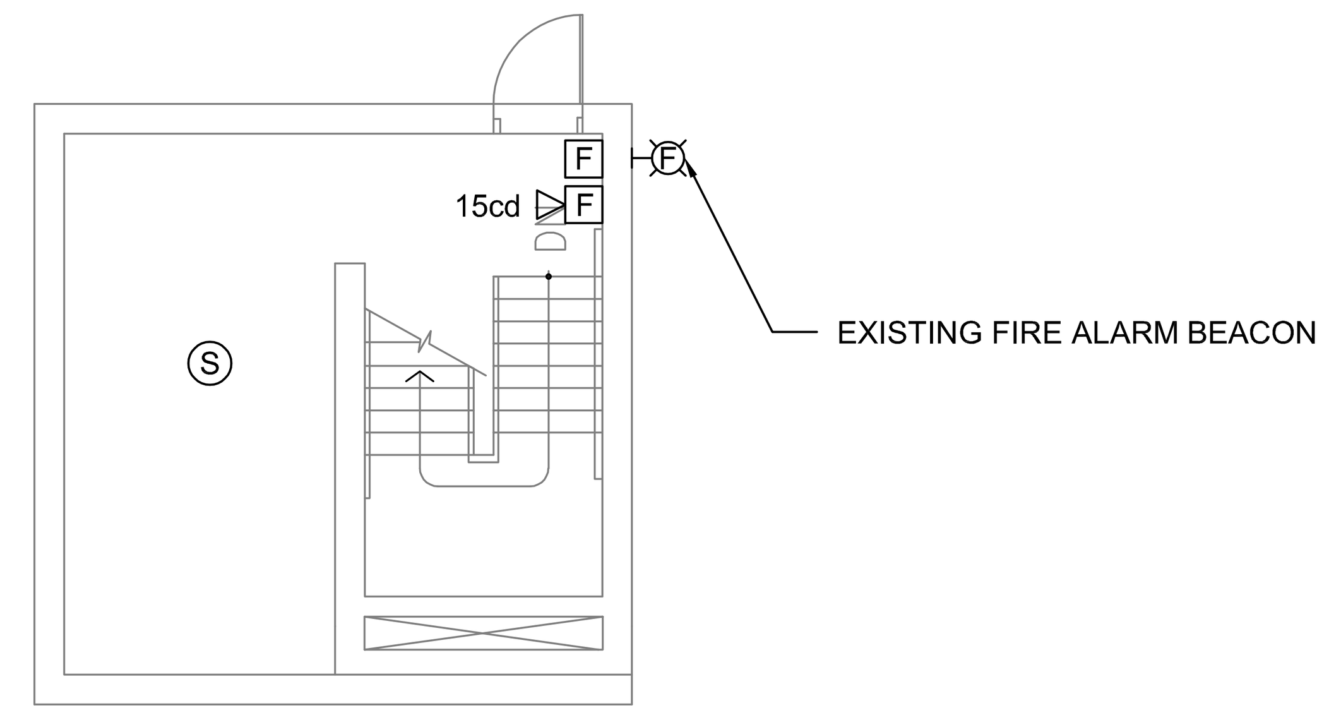
Drawing Title:

CHLORINE/GARAGE BUILDING NEW WORK FIRE ALARM PLAN

Sheet Number:

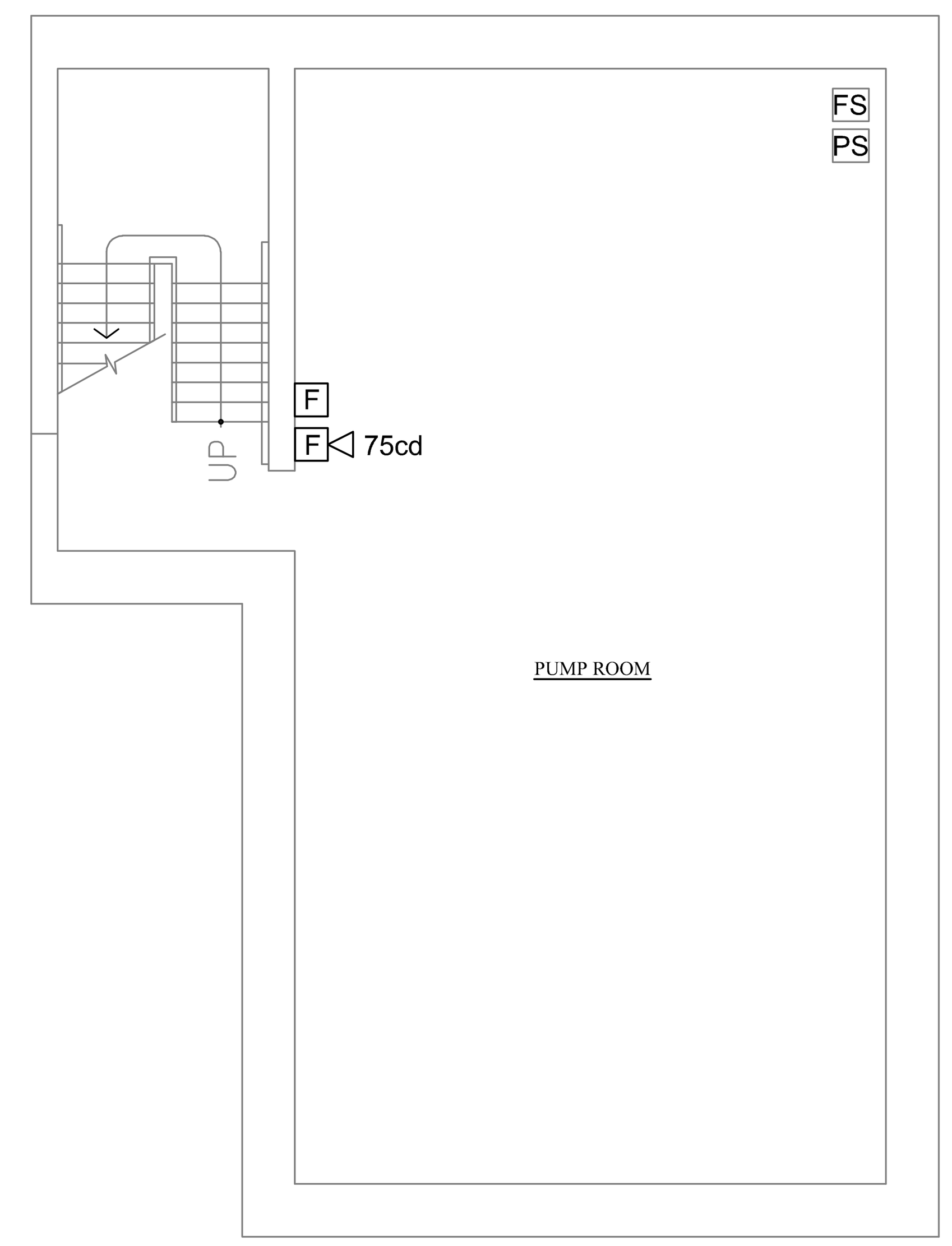
FA104

Rev. 1.6 Date: 04/10/2019



FIRST FLOOR @715.50 LEVEL

SCALE: 1/8' = 1'-0"



BASEMENT FLOOR @701.50 LEVEL

SCALE: 1/8' = 1'-0"

NOTES:

1. REFER TO FA001 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
2. ALL FIRE ALARM DEVICES INDICATED ON THIS DRAWING ARE EXISTING TO BE REPLACED WITH A NEW DEVICES INSTALLED ON THE EXISTING BACKBOX, UNLESS NOTED WITH AN "N" ADJACENT TO THE DEVICE WHICH INDICATES A COMPLETELY NEW DEVICE TO BE PROVIDED WITH NEW BACKBOX AND NEW RMC CONDUIT TO THE NEAREST EXISTING DEVICE LOCATION. EXISTING FLOW, TAMPER SWITCH & PRESSURE SWITCHES SHALL BE FURNISHED W / NEW MONITOR MODULES WIRED TO THE NEW FIRE ALARM CONTROL PANEL.
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0 8 16 24

SCALE: 1/8"=1'-0"

Project:

CITY OF WORCESTER, MA

WATER TREATMENT PLANT
FIRE ALARM REPLACEMENT

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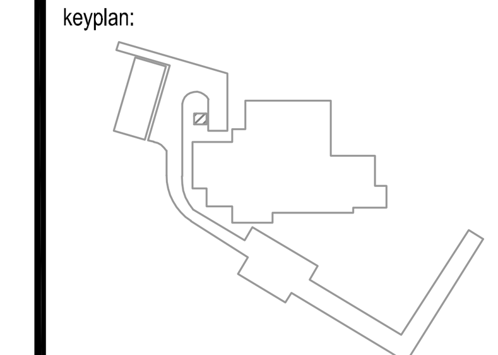
Consultants:

Revisions:

No.	Date	Description

Seal:

keyplan:



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Drawing Title:

SUMP PUMP BUILDING
NEW WORK
FIRE ALARM PLAN

Sheet Number:

FA105

Rev: 1.6 Date: 04/10/2019

NOTES:

1. CONTRACTOR SHALL FURNISH AND INSTALL (TWO) KNOX BOXES, ONE FOR WORCESTER AND ONE FOR HOLDEN TO BE LOCATED AT OPPOSITE SITE ENTRANACES, COORDINATE SPECIFIC REQUIREMENTS AND LOCATION W / RESPECTIVE FIRE DEPARTMENT
2. CONTRACTOR SHALL FURNISH AND INSTALL SIGNAGE AT EACH FIRE DEPARTMENT CONNECTION INDICATING WHAT IS BEING SERVED

CHLORINE / GARGAE BUILDING

SPRINKLER DRY ALARM VALVE

EXISTING FIRE ALARM BEACON

FIRE PUMP ROOM

N (B)

WASHER FILTRATION PLANT

EXISTING 1" UNDERGROUND F/A & 1"& 2" SPARE CONDUITS

(F)

EXISTING FIRE ALARM BEACON

FIRE DEPARTMENT CONNECTION

DELUGE SYSTEM POST INDICATOR VALVE

POST INDICATOR VALVE FOR MAIN FIRE SERVICE

POST INDICATOR VALVE

SPRINKLER ALARM VALVE

PROCESS BUILDING

EXISTING 1" UNDERGROUND F/A & 1"& 2" SPARE CONDUITS

FIRE DEPARTMENT CONNECTION

FIRE ALARM ANNUNCIATOR

FIRE ALARM CONTROL PANEL

ANN

ANN

FIRE DEPARTMENT CONNECTION

(B) N

(B) N

(F)

EXISTING FIRE ALARM BEACON

STONEHOUSE HILL ROAD

SITE LAYOUT

SCALE: 1/16" = 1'-0"

0' 8' 16' 32'

SCALE: 1/16" = 1'-0"

Project:

CITY OF WORCESTER, MA

WATER TREATMENT PLANT
FIRE ALARM REPLACEMENT

71 STONEHOUSE HILL RD
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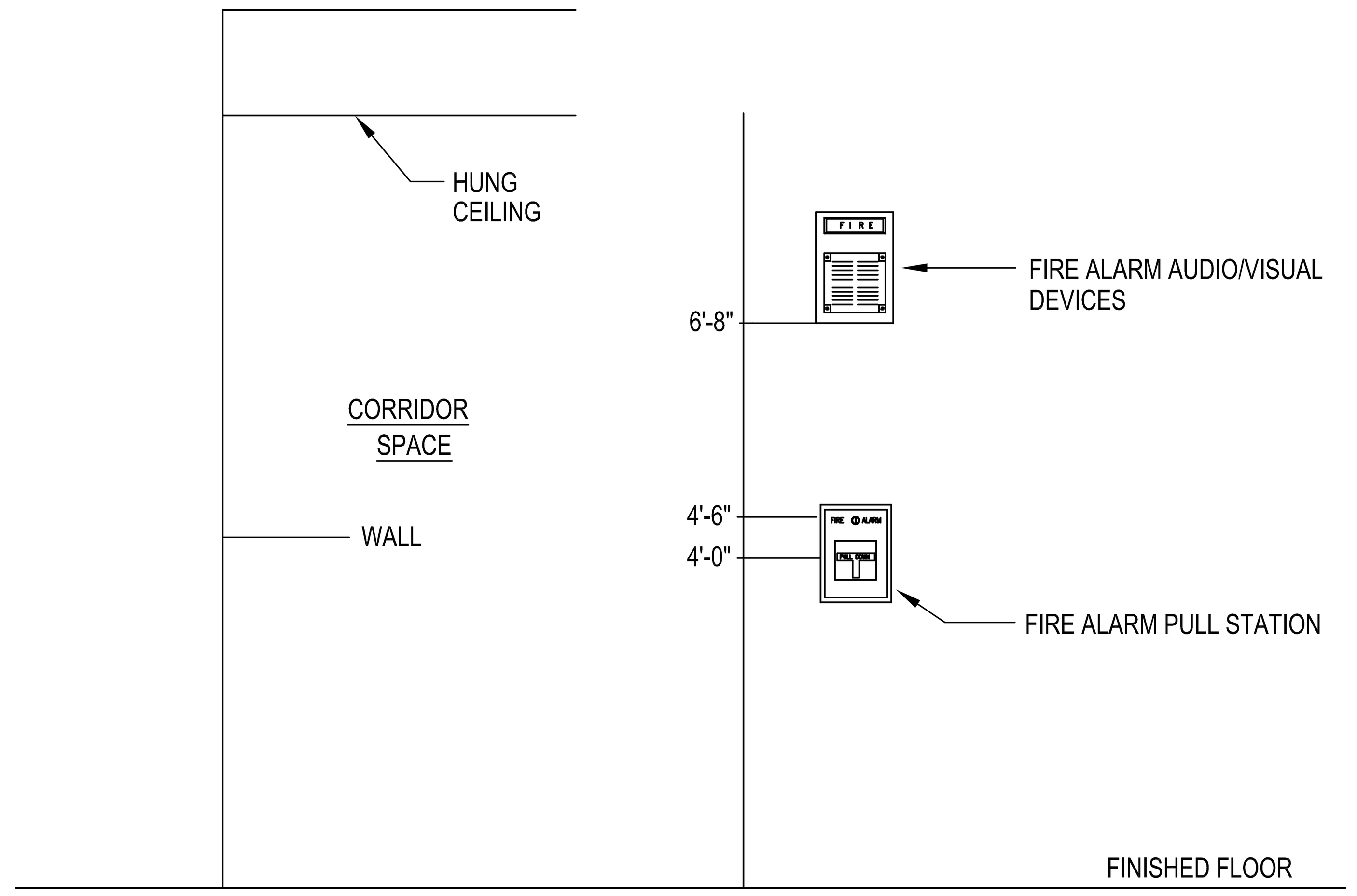
Drawing Title:

ELECTRICAL SITE PLAN

Sheet Number:

FA106

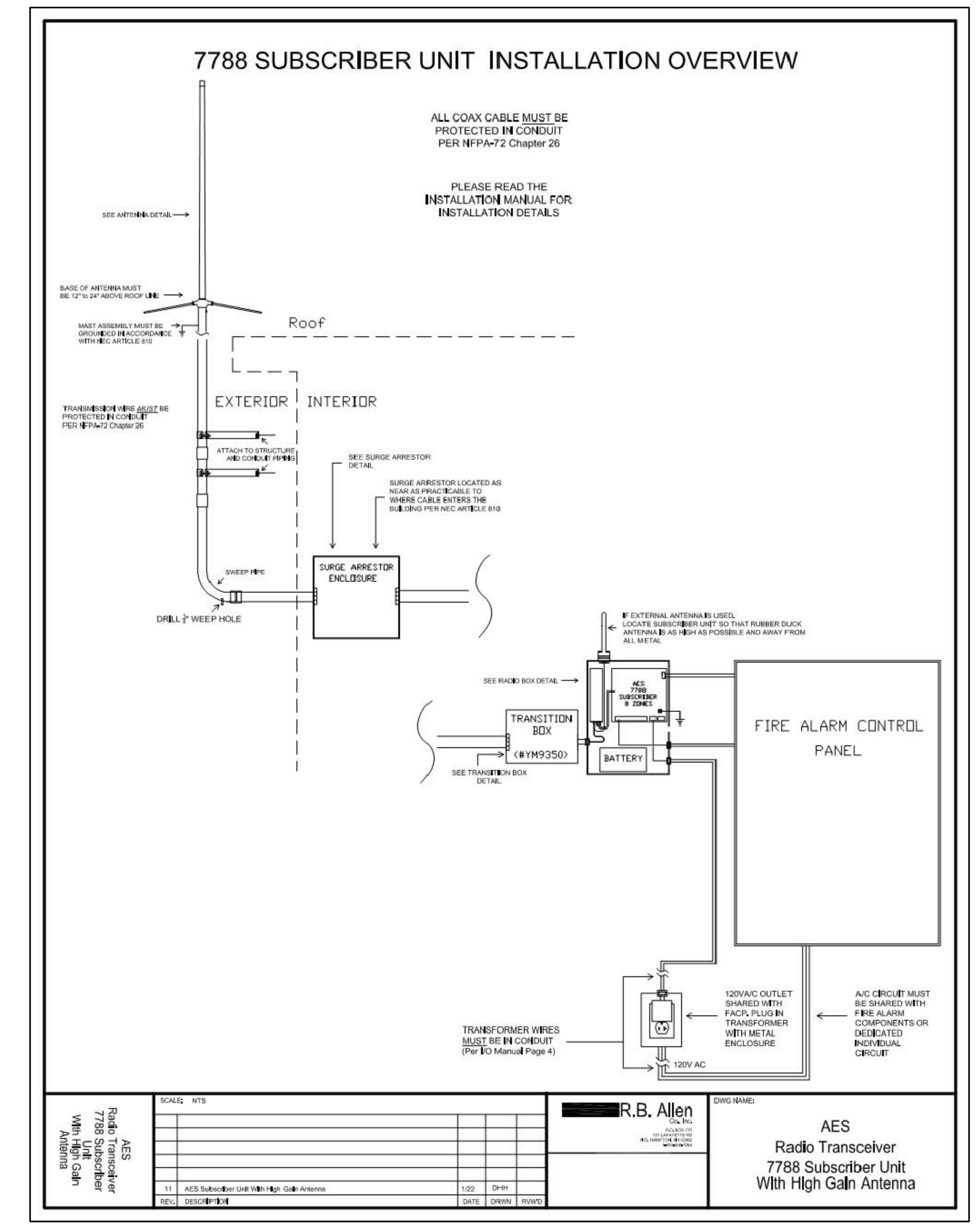
Rev: 1.6 Date: 04/10/2019



NOTES:

1. ALL MOUNTING HEIGHTS SHALL BE MEASURED FROM FINISHED FLOOR TO CENTERLINE OF DEVICE.
2. DEVICES SHALL BE INSTALLED ON A COMMON VERTICAL CENTERLINE WHEREVER POSSIBLE.
3. ALL DEVICES SHALL BE INSTALLED AT MOUNTING HEIGHTS AS INDICATED ON THIS DETAIL UNLESS OTHERWISE NOTED.

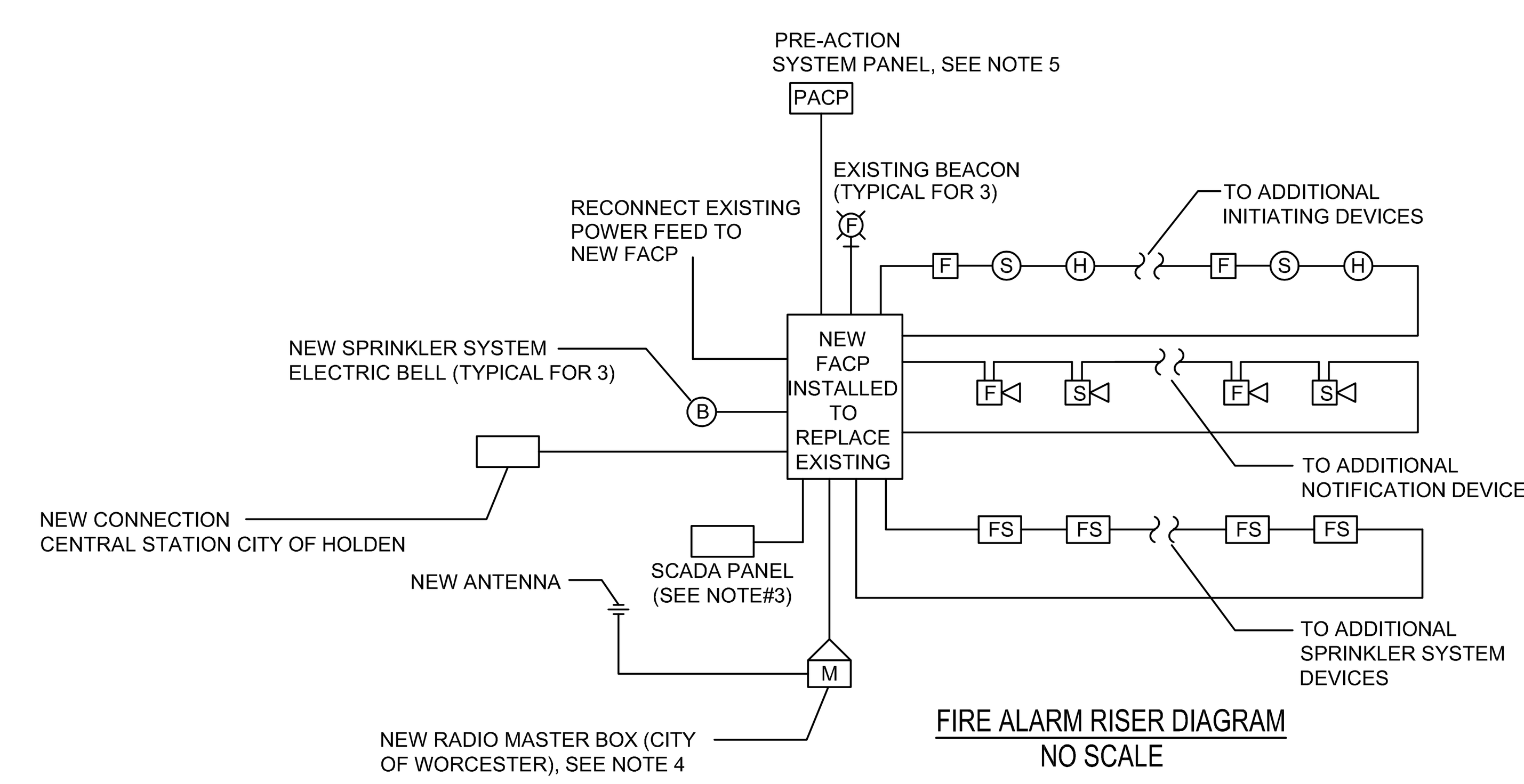
TYPICAL DEVICE MOUNTING HEIGHT DETAIL
NO SCALE



CONTRACTOR SHALL PROVIDE MONITOR MODULES

System Outputs

System Inputs	Alarm Signal to Worcester and holden FD	Annunciate at FACP and Remote Annunciator	Activate Horn Strobe Circuits	Activate Exterior Beacon	Recall Elevators to primary recall floor	Recall Elevators to alternate recall floor	Record Event in System Memory	Supervisory Signal to Central Station (Holden) and Master Radio Box (Worcester)	Trouble Signal to Central Station (Holden) and Master Radio Box (Worcester)
	A	B	C	D	E	F	J	K	L
Manual Pull Stations	●	●	●	●			●		
Smoke detectors - Basement	●	●	●	●			●		
Elevator Smoke Detectors	●	●	●	●	●	●	●		
Heat detectors	●	●	●	●			●		
In-duct smoke detectors	●	●	●	●			●		
Fire alarm ac power failure		●					●		
Fire alarm system low battery		●					●		
Signal Line Open Circuit		●					●		●
Signal Line Ground Fault		●					●		●
Strobe Circuit Open		●					●		●
Strobe Circuit Ground		●					●		●
System Ground Fault		●					●		●
Water Flow	●	●	●	●			●		
Pre-action system (Generator Room)	●	●	●	●			●		
Pre-action system (Elec Room)	●	●	●	●			●		
Chlorine Detection	●	●	●	●			●		
Ozone System (Low Oxygen)	●	●	●	●			●		
	A	B	C	D	E	F	J	K	L



FIRE ALARM RISER DIAGRAM
NO SCALE

BUILDING SYSTEM

NOTES:

1. COORDINATE CENTRAL STATION REPORTING WITH CITY OF HOLDEN FIRE OFFICIALS.
2. FOR EXACT LOCATIONS & QUANTITIES OF ALL DEVICES SEE FIRE ALARM FLOOR PLANS.
3. FROM THE EXISTING SCADA SYSTEM THE CONTRACTOR SHALL PICK UP ALARM POINTS FOR THE CHLORINE DETECTION SYSTEM AND THE OZONE SYSTEM
4. FIRE ALARM SYSTEM RADIO MASTER BOX INTERFACE:
   - ZONE 1 - GENERAL FIRE ALARM - LATCHING - RESTORE ON ALARM SILENCE AND/OR SYSTEM RESET - RESOUND ON SUBSEQUENT ALARM
   - ZONE 2 - WATER FLOW ALARM - LATCHING - RESTORE ON ALARM SILENCE AND/OR SYSTEM RESET - RESOUND ON SUBSEQUENT ALARM
   - ZONE 3 - SPRINKLER TAMPER SWITCH ACTIVE - NON-LATCHING
   - ZONE 4 - CHLORINE ALARM - LATCHING - RESTORE ON SYSTEM RESET
   - ZONE 5 - OZONE / LOW OXYGEN ALARM
   - ZONE 6 - RADIO MASTERBOX BYPASS ACTIVE - NON-LATCHING
   - ZONE 7 - GENERAL SYSTEM SUPERVISORY ACTIVE - NON-LATCHING
   - ZONE 8 - GENERAL SYSTEM TROUBLE ACTIVE - NON-LATCHING
   - J4 TROUBLE CONTACT - LOCAL SUPERVISORY INPUT TO FACP
5. EXISTING PRE-ACTION SYSTEM CONTROL PANEL TO REMAIN. CONTRACTOR SHALL BE PROVIDED MONITOR MODULE AND TIE-IN TO FIRE ALARM CONTROL PANEL ELECTRICAL ROOM AND GENERATOR ROOM ALARM ZONES.

Project:

CITY OF WORCESTER, MA

WATER TREATMENT PLANT
FIRE ALARM REPLACEMENT

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Consultants:

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keyplan:

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FIRE ALARM DETAILS

Sheet Number:

FA501

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