



**1 FIRE ALARM SYSTEM WITH VOICE CONTROL RISER DIAGRAM**  
SCALE: NONE

**KEY NOTES**

1. RESIDENT SUITE AND APARTMENT COMBINATION SMOKE/CO DETECTORS AND HEAT DETECTOR SHALL BE EQUIPPED WITH SOUNDER BASES AND BE WIRED SUCH THAT IN THE EVENT OF ONE OF THE DETECTORS GOING INTO AN ALARM CONDITION, ALL OTHER DETECTORS WITHIN THE SUITE SHALL SOUND LOCALLY AND IN ADDITION, A SIGNAL SHALL BE SENT TO THE MAIN CONTROL PANEL. EACH BEDROOM COMBINATION SMOKE/CO DETECTOR SHALL BE EQUIPPED WITH A SOUNDER BASE AND EACH VESTIBULE AND HALLWAY COMBINATION SMOKE/CO DETECTOR AND TOILET ROOM HEAT DETECTOR SHALL BE EQUIPPED WITH A STANDARD SOUNDER BASE.

AN ALARM CONDITION OF ANY RESIDENT SUITE OR APARTMENT DETECTOR SHALL CAUSE THE SMOKE DAMPER SERVING THE SUITE OR APARTMENT TO CLOSE BY INTERRUPTING THE 120VAC POWER TO THE DAMPER MOTOR VIA A CONTROL MODULE AND INTERPOSING RELAY.

**TYPICAL ADDRESSABLE FIRE ALARM SYSTEM FUNCTIONAL DESCRIPTION OF OPERATION**

AN ALARM SIGNAL IS THE HIGHEST PRIORITY. SUPERVISORY AND TROUBLE SIGNALS HAVE SECOND AND THIRD LEVEL PRIORITY. HIGHER PRIORITY SIGNALS TAKE PRECEDENCE OVER SIGNALS OF LOWER PRIORITY, EVEN WHEN THE LOWER PRIORITY CONDITION OCCURS FIRST.

**NON-INTERFERENCE** : A SIGNAL ON ONE ZONE SHALL NOT PREVENT THE RECEIPT OF SIGNALS FROM OTHER ZONES.

ALARM, SUPERVISORY, AND TROUBLE SIGNALS ARE TO BE AUTOMATICALLY ROUTED TO A REMOTE ALARM STATION BY MEANS OF A DIGITAL ALARM COMMUNICATOR TRANSMITTER AND TELEPHONE LINES.

LOSS OF PRIMARY POWER AT THE FACP INITIATES A TROUBLE SIGNAL AT THE FACP AND THE ANNUNCIATOR.

OPERATION OF A MANUAL STATION, AUTOMATIC OPERATION OF A SMOKE OR HEAT DETECTOR, OR ACTIVATION OF A SUPPRESSION SYSTEM WATER FLOW DEVICE, INITIATES THE FOLLOWING:

1. NOTIFICATION - APPLIANCE OPERATION
2. IDENTIFICATION AT THE FACP AND THE REMOTE ANNUNCIATOR OF THE ZONE ORIGINATING THE ALARM.
3. TRANSMISSION OF AN ALARM SIGNAL TO THE REMOTE ALARM RECEIVING STATION.
4. RELEASE OF FIRE AND SMOKE DOORS HELD OPEN BY MAGNETIC DOOR HOLDERS.
5. SHUTDOWN OF FANS AND OTHER AIR HANDLING EQUIPMENT SERVING THE ZONE WHERE ALARM WAS INITIATED.
6. RECORDING OF THE EVENT IN THE SYSTEM MEMORY.

AND IN ADDITION TO INITIATING THE ABOVE:

1. AUTOMATIC OPERATION OF A HEAT DETECTOR IN THE ELEVATOR MACHINE ROOM/CLOSET SHALL ACTIVATE THE SHUNT-TRIP MECHANISM ON THE POWER CIRCUIT BREAKER FEEDING THE RESPECTIVE ELEVATOR, THEREBY SHUTTING DOWN POWER TO THE ELEVATOR CONTROLLER IN THE ELEVATOR MACHINE ROOM/CLOSET.
2. AUTOMATIC OPERATION OF A SMOKE DETECTOR IN THE ELEVATOR SHAFT, ELEVATOR MACHINE ROOM/CLOSET, OR ELEVATOR LOBBY SHALL INITIATE A PHASE I OR PHASE II ELEVATOR RECALL FOR ELEVATORS; ALARM SILENCING, SYSTEM RESET AND INDICATION: CONTROLLED BY SWITCHES IN THE FACP ONLY.

THE CONTRACTOR SHALL RETAIN THE SERVICES OF A NEW JERSEY LICENSED PROFESSIONAL ARCHITECT OR ENGINEER TO SIGN AND SEAL ALL FIRE ALARM SYSTEM SHOP DRAWINGS AND DOCUMENTS TO BE SUBMITTED BY THE CONTRACTOR TO THE DESIGN PROFESSIONAL FOR REVIEW. REFER TO SPECIFICATIONS FOR ADDITIONAL FIRE ALARM SYSTEM SUBMITTAL REQUIREMENTS.

**ADDRESSABLE FIRE ALARM SYSTEM RISER DIAGRAM NOTES:**

1. CONTRACTOR SHALL FURNISH AND INSTALL A NEW SIMPLEX 4100ES, NON-CODED, FM GLOBAL-PLACARDED ADDRESSABLE FIRE ALARM SYSTEM WITH VOICE CONTROL IN ACCORDANCE WITH THE 2013 EDITION OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 72. INCLUDE THE COST OF INSTALLATION SUPERVISION, FINAL WIRING TERMINATIONS AT CONTROL PANEL AND PROGRAMMING OF THE SYSTEM BY THE SYSTEM MANUFACTURER'S AUTHORIZED SYSTEM EQUIPMENT DISTRIBUTOR.
2. THE FIRE ALARM SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH DATA SHEET 5-40, FIRE ALARM SYSTEMS. FM GLOBAL DATA SHEETS ARE AVAILABLE AT [WWW.FMGLOBAL.COM/RESEARCH-AND-RESOURCES/FM-GLOBAL-DATA-SHEETS](http://WWW.FMGLOBAL.COM/RESEARCH-AND-RESOURCES/FM-GLOBAL-DATA-SHEETS). ONLY FIRE DETECTORS (HEAT, SMOKE, RATE OF RISE) LISTED IN THE CURRENT APPROVAL GUIDE, A PUBLICATION OF FM APPROVALS, SHALL BE USED IN THIS INSTALLATION. FM GLOBAL APPROVAL GUIDE IS AVAILABLE AT [WWW.FMAPPROVALS.COM/APPROVAL-GUIDE](http://WWW.FMAPPROVALS.COM/APPROVAL-GUIDE).
3. IN GENERAL, ALL REQUIRED FIRE ALARM SYSTEM WIRING IS NOT SHOWN ON THE PLAN DRAWINGS. INSTALLATION AND ROUTING OF THESE CIRCUITS AND WIRING SHALL BE DETERMINED BY THE ELECTRICAL CONTRACTOR IN ACCORDANCE WITH FIELD CONDITIONS, FIRE ALARM DIAGRAMS, SPECIFICATIONS AND CODES.
4. LOCATIONS OF FIRE ALARM DEVICES AND EQUIPMENT SHOWN ON THE PLAN DRAWINGS IS DIAGNOSTIC. EXACT LOCATIONS SHALL BE DETERMINED BY THE ELECTRICAL CONTRACTOR IN ACCORDANCE WITH FIELD CONDITIONS AND THE FOLLOWING:
5. CEILING MOUNTED DEVICES SHALL BE COORDINATED WITH SUSPENDED CEILING, LIGHT FIXTURES, SPEAKERS, DIFFUSERS, DUCTWORK, SPRINKLER HEADS, ETC., AND NFPA REQUIREMENTS.
6. WALL MOUNTED DEVICES SHALL BE COORDINATED WITH ALL OTHER WALL MOUNTED DEVICES. WALL CONSTRUCTION, ETC., AND NFPA AND IBC REQUIREMENTS. WHEREVER POSSIBLE LOCATE WALL MOUNTED DEVICES ON WALLS WHICH WILL PERMIT DEVICES TO BE FLUSH OR SEMI-FLUSH MOUNTED. SURFACE MOUNTED DEVICES WILL BE PERMITTED ONLY IN MECHANICAL ROOMS AND WHERE APPROVED BY THE ENGINEER, ARCHITECT, AND OWNER.
7. SOME DEVICES QUANTITY MAY NOT BE USED ON THIS PROJECT. REFER TO PLAN DRAWINGS FOR TYPES OF DEVICES, QUANTITIES AND LOCATIONS.
8. REFER TO SPECIFICATIONS FOR TESTING DETAILS.
9. A 100% TOTAL ACCEPTANCE TEST SHALL BE PERFORMED AT THE COMPLETION OF THE NEW FIRE ALARM SYSTEM INSTALLATION ACCORDING TO IBC 2015 917.10. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
10. THE FIRE ALARM SYSTEM POWER-LIMITED CIRCUIT CABLES SHALL NOT BE PLACED IN ANY CABINET, COMPARTMENT, ENCLOSURE, OUTLET BOX, RACEWAY, OR SIMILAR FITTING CONTAINING CONDUCTORS OR ELECTRIC LIGHT, POWER, CLASS 1, OR NON-POWER LIMITED CIRCUITS.
11. ALL ADDRESSABLE SIGNAL LOOP CIRCUIT CABLES SHALL BE 2/C #18 SHIELDED FIRE RESISTANT PLENUM RATED POWER LIMITED FIRE PROTECTIVE SIGNALING CIRCUIT CABLES INDEPENDENTLY SUPPORTED ABOVE SUSPENDED CEILING AND IN CONDUIT/RACEWAY CONCEALED IN WALLS OR WHERE ALLOWED TO BE EXPOSED IN UNFINISHED SPACES.
12. ALL VISUAL/STROBE ALARM SIGNAL CABLES SHALL BE MINIMUM 2/C #14 NON-SHIELDED, FIRE RESISTANT PLENUM RATED POWER LIMITED FIRE PROTECTIVE SIGNALING CIRCUIT CABLES ABOVE SUSPENDED CEILING, CONCEALED IN WALLS OR IN CONDUIT/RACEWAY, WHERE EXPOSED IN UNFINISHED SPACES OR IN SURFACE METAL RACEWAYS WHERE ALLOWED EXPOSED IN FINISHED SPACES.
13. ALL AUDIBLE ALARM TONE SIGNAL/VOICE CIRCUIT CABLES SHALL BE MINIMUM 2/C #14 SHIELDED FIRE RESISTANT PLENUM RATED POWER LIMITED FIRE PROTECTIVE SIGNALING CIRCUIT CABLES ABOVE SUSPENDED CEILING, CONCEALED IN WALLS OR IN CONDUIT/RACEWAY, WHERE EXPOSED IN UNFINISHED SPACES OR IN SURFACE METAL RACEWAYS WHERE ALLOWED EXPOSED IN FINISHED SPACES.
14. ALL 120 VOLT A.C. POWER SUPPLY CABLES SHALL BE 1/C #12 TYPE THIN-THIN WITH INSULATED GROUND IN 3/4" CONDUIT/RACEWAY.
15. ALL REMOTE/INTERCONNECT SIGNAL CIRCUIT CABLES SHALL BE MINIMUM 1/C #14 TYPE THIN-THIN IN 3/4" CONDUIT/RACEWAY.
16. CABLES BETWEEN FIRE ALARM CONTROL PANEL AND REMOTE ANNUNCIATOR SHALL BE (2) 2/C #18 SHIELDED AND (1) 2/C #14 NON-SHIELDED FIRE RESISTANT PLENUM RATED FIRE PROTECTIVE SIGNALING CIRCUIT CABLES INDEPENDENTLY SUPPORTED ABOVE SUSPENDED CEILING AND IN CONDUIT CONCEALED IN WALLS.
17. INSTALL A MAXIMUM OF 70% INTELLIGENT ANALOG ADDRESSABLE DETECTORS/PULL STATIONS AND 70% MODULES (CONTROL AND MONITOR) PER SIGNAL LOOP CIRCUIT. PROVIDE ADDITIONAL SIGNAL LOOP CIRCUITS AS REQUIRED.
18. ONE ISOLATOR BASE SHALL BE PROVIDED IN LIEU OF A STANDARD BASE FOR EVERY TEN (10) DETECTORS/PULL STATIONS.
19. ELEVATOR MACHINE ROOM/CLOSET 135 DEGREE FIXED TEMPERATURE HEAT DETECTORS SHALL BE PROGRAMMED FOR SIGNAL TO CONTROL MODULES FOR ELEVATOR SHUTDOWN VIA INTERPOSING RELAYS SHUNT TRIP OF ELEVATOR FEEDER CIRCUIT BREAKERS.
20. ELEVATOR MACHINE ROOM/CLOSET, PIT, AND TOP OF SHAFT SMOKE DETECTORS AND EACH ELEVATOR LOBBY SMOKE DETECTOR SHALL BE PROGRAMMED FOR PRIMARY AND SECONDARY ELEVATOR RECALL SIGNALS TO ELEVATOR CONTROL PANEL VIA CONTROL MODULES.
21. A DUCT SMOKE DETECTOR SHALL BE PROVIDED ON THE RETURN AND SUPPLY DUCT OF EACH NEW HVAC SYSTEM OVER 2,000 CFM IN ACCORDANCE WITH IBC AND NFPA RESPECTIVELY. DETECTORS INCLUDING HOUSINGS AND SAMPLING TUBES SHALL BE FURNISHED AND WIRED BY THE ELECTRICAL CONTRACTOR AND INSTALLED BY THE MECHANICAL CONTRACTOR.
22. PROVIDE A DEDICATED CONTROL RELAY MODULE FOR EACH DUCT SMOKE DETECTOR TO BE PROGRAMMED FOR SHUTDOWN SIGNAL OF HVAC SYSTEM TO INCLUDE FAN MOTOR(S) AND DAMPERS). LOCATE CONTROL RELAY MODULES ADJACENT TO RESPECTIVE ATC PANEL(S). LOW VOLTAGE ATC CIRCUIT WIRING BETWEEN ATC PANEL(S) AND CONTROL RELAY MODULES SHALL BE FURNISHED AND INSTALLED BY THE ATC CONTRACTOR.
23. LOCATE REMOTE INDICATING LIGHT/TEST SWITCH ASSOCIATED WITH EACH DUCT SMOKE DETECTOR IN RECESSED WALL OUTLET BOX 1'0" BELOW SUSPENDED CEILING WITH IDENTIFICATION LABEL ON NEAREST AVAILABLE WALL IN FINISHED SPACES.
24. ALL DETECTORS AND ALARM SIGNAL (HORN/STROBE) DEVICES LOCATED IN MECHANICAL EQUIPMENT ROOMS/SPACES SHALL BE FURNISHED WITH A WIRE GUARD FOR PROTECTION.
25. FIRE ALARM CONTRACTOR SHALL PROVIDE NEW PLEXIGLASS FRAMED GRAPHIC DISPLAYS INDICATING THE ENTIRE BUILDING FLOOR PLAN WITH DESIGNATIONS OF ROOM NAMES AND NUMBERS CORRESPONDING TO PROGRAMMING AND DESIGNATIONS OF ANY NON-ADDRESSABLE AREA(S) AND SHALL LOCATE THEM AT EACH REMOTE ANNUNCIATOR AND THE MAIN FIRE ALARM CONTROL PANEL.
26. ALL SMOKE DETECTOR HEADS SHALL NOT BE INSTALLED UNTIL THE CONSTRUCTION CLEAN UP OF ALL TRADES IS COMPLETE AND FINAL. ALL DETECTOR BASES SHALL BE PROTECTED UNTIL HEADS CAN BE INSTALLED.
27. ANY CONTRACTOR PERFORMING FIRE PROTECTION EQUIPMENT WORK SHALL HAVE THE APPROPRIATE CERTIFICATION OR IN THE CASE OF FIRE ALARM SYSTEM WORK, SP5 CERTIFICATION, LICENSED ELECTRICAL CONTRACTORS OR LICENSED FIRE ALARM CONTRACTORS. CERTIFICATION SHALL BE PROVIDED AT TIME OF PERMIT APPLICATION FOR FIRE ALARM, SPRINKLER, HOOD SUPPRESSION, OR OTHER RELATED WORK.
28. INSTALLATION OF FIRE ALARM SYSTEM AND ASSOCIATED COMPONENTS REQUIRE DCA REVIEW, APPROVAL, AND RELEASE OF SHOP DRAWINGS BEFORE STARTING ANY INSTALLATION WORK.
29. ALL FIRE ALARM WIRING SHALL COMPLY WITH NEC ARTICLE 760.
30. OBTAIN CERTIFICATION ACCORDING TO NFPA 72 IN THE FROM OF A PLACARD BY AN FM GLOBAL-APPROVED ALARM COMPANY.
31. THE FIRE ALARM SYSTEM DESIGN INDICATED ON THESE PLANS ARE "FOR REFERENCE ONLY". RELEASE OF THE FIRE ALARM SYSTEM DESIGN WILL BE CONDITIONAL UPON SUBMITTAL OF SIGNED AND SEALED FIRE ALARM SYSTEM SHOP DRAWINGS. SHOP DRAWINGS SHALL BE PROVIDED FOR REVIEW AND APPROVAL TO DCA PRIOR TO SYSTEM INSTALLATION, AND SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL OF THE FOLLOWING: A) A FLOOR PLAN DRAWING TO 1/8" SCALE THAT INDICATES THE USE OF ALL ROOMS; B) LOCATIONS OF ALARM-INITIATING DEVICES; C) LOCATIONS OF ALARM NOTIFICATION APPLIANCES, INCLUDING CANDLE BATONS FOR VISIBLE ALARM NOTIFICATION APPLIANCES; D) DESIGN MINIMUM AUDIBILITY LEVEL FOR OCCUPANT NOTIFICATION; E) LOCATION OF FIRE ALARM CONTROL UNIT, TRANSDUCERS AND NOTIFICATION POWER SUPPLIES; F) ANNUNCIATORS G) POWER CONNECTION H) BATTERY CALCULATIONS I) CONDUCTOR TYPE AND SIZES J) VOLTAGE DROP CALCULATIONS K) MANUFACTURERS' DATA SHEETS INDICATING MODEL NUMBERS AND LISTING INFORMATION FOR EQUIPMENT, DEVICES AND MATERIALS L) DETAILS OF CEILING HEIGHT AND CONSTRUCTION M) THE INTERFACE OF FIRE SAFETY CONTROL FUNCTIONS N) CLASSIFICATION OF THE SUPERVISING STATION O) PROVIDE DETAILS OF TELEPHONE CONNECTION(S) AND METHOD OF BACK-UP TRANSMISSION IF NOT TELEPHONE FOR FIRE ALARM PANEL. DETAILS ON TYPE OF TELEPHONE SERVICE ARE REQUIRED TO DETERMINE CAPABILITY OF SIGNAL TRANSMISSION TO MONITORING POINT IN THE EVENT OF A POWER FAILURE. VOIP SERVICE, FIBER OPTIC SERVICE AND OTHER MEANS OF TELEPHONE SERVICE HAVE DIFFERENT CAPABILITIES OF MAINTAINING CAPABILITY OF TRANSMITTING SIGNALS IF THERE IS A POWER FAILURE. ONSITE GENERATORS MAY OR MAY NOT PROVIDE ABILITY FOR SIGNAL TRANSMISSION. P) FIRE DEPARTMENT RESPONSE POINT(S) AND ANNUNCIATOR LOCATION(S) Q) COMPLETE SEQUENCE OF OPERATIONS DETAILING ALL INPUTS AND OUTPUTS.

INSTALLATION OF FIRE ALARM SYSTEM AND ASSOCIATED COMPONENTS REQUIRE LOCAL SUB-CODE REVIEW AND RELEASE OF SHOP DRAWINGS BEFORE STARTING ANY INSTALLATION WORK.

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