

FIRE ALARM SYSTEMS

DESIGN GUIDELINES

1. Summary:
 - a. This section provides guidelines and standards for Fire Alarm Systems.
2. Design:
 - a. Fire alarm design shall be full design build. The fire alarm contractor shall provide signed and sealed fire alarm drawings, wiring diagrams, battery calcs, voltage drop calcs, etc.
 - b. The providers are Notifier (Tech. Elec.), and Siemens.
 - c. The fire alarm system shall be addressable.
 - d. Photo sensors shall be used for general open area protection. Smoke detectors are not to be used in autoclave areas. Use Ionization type for special applications only.
 - e. Duct detectors shall be photoelectric type, located upstream of humidifiers.
 - f. Elevators need speaker and shielded traveling cable if voice system is used or required.
 - g. Strobes and speakers must be suitable for the environment (i.e., wet and cold areas).
 - h. Fireman's telephone jack must have insulating sleeve to prevent grounds.
 - i. Telephone in elevator shall be ADA - Rath Microtech type, linked to outside monitoring.
 - j. Fire Alarm Control Panel (FACP) to have owner specified bypass function. FACP reports to the central facility in the North Building basement over hard wired copper, fiber or to central station monitoring via IP/Cellular at owner's direction.
 - k. Fire alarm combination speaker/strobes, individual speakers and strobes shall be used for all buildings.
 - l. Fire alarm circuits: Power limited fire protective signaling circuit cable. Where staged evacuation is used, the riser cable and horizontal cable to next zone shall be CIC (Circuit Integrity in Conduit) cable.
 - m. Fire alarm wiring shall be in conduit when located exposed, such as in mechanical rooms or rooms without ceiling as well as above hard ceilings. Flexible metal conduit may be used where it is infeasible to install hard conduit.
 - n. Fire alarm wiring above lay-in ceilings to be routed through support rings (or J-hooks) dedicated for fire alarm wiring.
 - o. All fire alarm wiring shall be plenum rated, red in color. Used in all areas except where CIC or other special type cable is required. CIC cable shall not be terminated directly to fire alarm panel terminals.
 - p. Fire Alarm System shall be designed per ADA and NFPA 72. Use the stricter requirements of either.
 - q. Wall-mount or ceiling mount devices are acceptable. Wall-mounted fire alarm speaker and strobes or combinations to be mounted 80" above finished floor to center unless otherwise noted. When ceiling heights exceed 9'-0", consult with owner for approval for installation of ceiling devices. Engineer to determine locations that require a ceiling mounted device.

- r. All new fire alarm systems shall have an Alertus mass notification system installed to communicate emergency messages to the building occupants via the fire alarm speaker system. Program the fire alarm system such that a fire alarm takes precedence over the Alertus messaging.
- s. A remodel or expansion of an existing building that affects the fire alarm system shall take into consideration the Alertus mass notification intelligible coverage.
- t. Fire Alarm Installations:
 - Risers shall be a minimum of 1-1/2" rigid conduit connected to a 12"x12" minimum Hoffman box at each floor level. (preference in electrical rooms). A meyers hub shall be provided at the conduit entrance on the type of the Hoffman box. Provide terminal strips with 25% spare terminals within the box.
 - Utilize line isolation modules where possible.
 - All fire alarm system panels shall be connected to a dedicated 120v, 20 amp emergency circuit (if available).
 - Fire alarm system wiring in conduit shall be a minimum of 3/4" EMT unless noted to be larger.
 - All device junction boxes shall be minimum 2-1/8" deep 4" square boxes with extension ring, if required. (unless noted to be larger).
 - All junction box covers shall be painted RED.
 - Follow fire alarm manufacturers device back box requirements, device wire size and type. All devices to be mounted in or on a box.
 - Mark all initiation devices with node, loop and device number in visible location. Follow manufacturer's programming nomenclature.
 - Notification appliance circuits: Mark where end-of-line devices are located. All end-of-line devices shall be in an accessible location above the corridor ceiling.

3. Related Sections

- a. Building Wire and Cable
- b. Conduits, Fittings and Boxes

EQUIPMENT and PRODUCT REQUIREMENTS

1. Fire Alarm Systems

- a. Approved Manufacturers:
 - Notifier
 - Siemens

END OF SECTION