



WSU Project: 023-341771 DeRoy Auditorium Fire Alarm Upgrade
150-342741 General Lecture Hall Fire Alarm Upgrade
509-342742 Knapp Building Fire Alarm Upgrade

General Notes:

- WSU Design and Construction standards apply to this project, the link for the standards is https://facilities.wayne.edu/design/d_c_standards_nov_2018.pdf
- This is design and build project
- Asbestos abatement is WSU scope of work
- Working hours 7:00AM-4:00PM

Fire Alarm System

PART 1 - GENERAL

1.1 APPLICABLE STANDARDS

Comply with standards in effect as of date of the Contract Documents unless otherwise indicated:

- Michigan building code
- NFPA 72 National fire alarm and signaling code
- NFPA 101 Life safety code
- National Electrical Code
- State of Michigan BFS fire safety rules
- WSU ERM Fire Safety Manual

1.2 PROJECT SUMMARY

- A. The new fire alarm system shall be able to notify the building occupants, Wayne State University public safety in case of fire. The new system shall override HVAC operation, and activate auxiliary systems to inhibit the spread of smoke and fire and to facilitate the safe evacuation of building occupants.
- B. The system shall be capable of onsite programming to accommodate system expansion and facilitate changes in operation. The manufacturer shall provide all software and hardware required, including a programmer.
- C. The system shall have the capability of recalling alarms and trouble conditions in chronological order for the purpose of recreating an event history. At least two pair of alarm dry contacts shall be provided for connection to the University Public Safety Department and building automation system. Conduit to the appropriate communication closet or building automation system panel shall be installed, as required by fire alarm contractor.
- D. All equipment furnished shall be new and include the latest state of the art products from a single manufacturer. All equipment and devices shall be VL and FM listed approved.
- E. Provide a complete addressable Fire Alarm Detection and Notification System including all work for a complete, functioning and approved installation but not limited to the following major items:
 - 1. System design.
 - 2. Device location.



3. Battery calculations and Circuit voltage drop calculations.
4. Fire alarm shop drawings with location of all devices and equipment.
5. Interface with other systems or equipment.
6. Provide at least 2 contacts for transmitting signals to the WSU Campus Safety via fiber optic cable.
7. Prepare the system design and related construction documents, to obtain system approval by the local authority having jurisdiction: SOM-BFS and WSU fire marshal.
8. System design shall provide for 25% spare capacity all across in the front end control equipment and in every circuit capacity and conductor sizing.
9. Provide system testing and correct all defects prior to final demonstration and Owner acceptance. Certificate of completion and electrical permit are required.
10. Provide four (4) hours training for the end user.

1.3 PERMITS AND FEES

All required permits, licenses, inspections, approvals and fees for the fire alarm system shall be secured and paid for by the Contractor.

1.4 DRAWINGS

The drawings show the existing fire alarm system and mechanical systems.

1.5 SUBMITTALS

Submit project specific submittals and shop drawings.

1.6 WARRANTY

Contractor shall warranty that the materials and installation is free from defects and agrees to replace or repair, to the Owner's satisfaction within a period of one year.

1.7 PROJECT COMPLETION

The completion date of this project including the State of Michigan final inspection and approval is 08/06/2021 for DeRoy Auditorium, 08/13/2021 for General Lecture Hall and 08/20/2021 for Knapp building.

1.8 SCOPE OF WORK

This overview of scope of work is included to give the contractor a general overview of the project requirements. This overview of scope includes, but not limited to the following:

DeRoy Auditorium

Remove the existing fire alarm system and install new fire alarm system. The existing system is 120V Hard wired non-addressable from Standard Time Company. The existing system includes pull stations and horns without smoke detectors except the elevator lobby. The new fire alarm system shall be addressable with voice communication. The contractor shall provide main fire alarm control panel. The contractor shall provide all the initiating devices including pull stations at egress doors and stairwells, smoke detectors at elevator lobby for elevator capture and control and duct detectors at mechanical air handling units. Notification devices in this project includes speakers, strobes and combination speaker/strobe. Smoke detectors are required in mechanical, electrical, storage, janitor, IDF/MDF and A/V rooms. This building is a class room building and under the authority of State of Michigan, Bureau of Fire Services.



General Lecture Hall

Remove the existing fire alarm system and install new fire alarm system. The existing system is 120V Hard wired non-addressable from Standard Time Company. The existing system includes pull stations and horns without smoke detectors except the elevator lobby. The new fire alarm system shall be addressable with voice communication. The contractor shall provide main fire alarm control panel. The contractor shall provide all the initiating devices including pull stations at egress doors and stairwells, smoke detectors at elevator lobby for elevator capture and control and duct detectors at mechanical air handling units. Notification devices in this project includes speakers, strobes and combination speaker/strobe. Smoke detectors are required in mechanical, electrical, storage, janitor, IDF/MDF and A/V rooms. This building is a class room building and under the authority of State of Michigan, Bureau of Fire Services.

Knapp Building

Remove the existing fire alarm system and install new fire alarm system. The existing system is 120V Hard wired non-addressable from Standard Time Company. The existing system includes pull stations and bells (No horns) without smoke detectors except the elevator lobby. The new fire alarm system shall be addressable with voice communication. The contractor shall provide main fire alarm control panel. The contractor shall provide all the initiating devices including pull stations at egress doors and stairwells, smoke detectors at elevator lobby for elevator capture and control and duct detectors at mechanical air handling units. Notification devices in this project includes speakers, strobes and combination speaker/strobe. Smoke detectors and visual notification are required in mechanical, electrical, storage, janitor, IDF/MDF, A/V rooms and children spaces area. This building will be inspected by WSU Fire Marshal.

PART 2 - PRODUCTS

The following specifications is to provide general requirement:

2.1 FIRE ALARM CONTROL PANEL

- A. Approved Manufacturers:
 - a. National Time
 - b. Siemens Industry
 - c. SimplexGrinnell
- B. The Fire Alarm Control Panel (FACP) shall be multi-processor based network system of latest technology. The panel shall be able to monitor and control all the fire alarm devices and voice control equipment. The panel shall include all required hardware and software to have an operational system. The system shall be designed and equipped to receive, monitor and annunciate signals from devices and circuits installed throughout the building.
- C. The fire alarm panel shall be equipped with Class B circuits to initiate devices, signaling line and notification appliance.
- D. Emergency voice alarm communication systems.
- E. The FACP shall be located in the command center or electrical room.
- F. The annunciator panel must be installed at the main entrance.
- G. The control panel shall include the capacities needed for this project such as: analog/addressable points, network connections to other control panels and annunciators, digital dialers and modems and communication ports and protocols approved by WSU police.
- H. The control panel shall contain a standby power supply that automatically supplies electrical energy to the system upon primary power supply failure. The system shall include a charging circuit to automatically maintain the electrical charge of the battery.



- I. Alarm acknowledging, alarm silencing and system resetting shall be accomplished only from the main building FACP or Network Reporting Terminal in the Electrical room and panel at building entrance.

2.2 ADDRESSABLE SMOKE DETECTORS

- A. The detector shall be designed for use in open area and insensitive to air velocity changes
- B. For the detectors where required, there shall be available a locking kit and detector guard to prevent unauthorized detector removal.
- C. The detector shall be operational with the use of a relay bases, audible bases and remote indicating LED's programmable by the control panel.

2.3 DUCT SMOKE DETECTOR:

- A. Provide detectors for mechanical equipment as required
- B. Provide smoke detector duct housing assemblies with air sampling tube sized per NFPA 72 and 90A for duct location to mount an analog addressable detector.
- C. Insensitive to air velocity changes.
- D. Remote indicating LED programmable from central panel.

2.4 NOTIFICATION APPLIANCES

- A. Alarm Speakers
 - a. Alarm horns/speakers fully enclosed and dustproof.
 - b. Horn shall have a selectable steady or synchronized temporal output and shall be wired separately from strobes.
 - c. Synchronize devices when multiple devices are within the same line of sight.
- B. Alarm Strobes
 - a. Flush back boxes, complying with A.D.A. guidelines for light intensity
 - b. Unfiltered or clear white light.
 - c. Synchronize devices when multiple devices are within the same line of sight.
 - d. Coordinate quantity, location and intensity for adequate coverage.

2.5 MANUAL PULL STATION:

- A. Semi flush, addressable and with priority alarm modules. Manual stations shall be individually identified by the fire alarm control panel.

PART 3 - EXECUTION

3.1 WORK IN EXISTING BUILDINGS

- A. The Owner will provide access to existing buildings as required. Access requirements to occupied buildings shall be identified on the project schedule.
- B. Adequately protect and preserve all existing and newly installed Work. Promptly repair any damage to same at Contractor's expense.
- C. Control and other panels shall be mounted with sufficient clearance for observation and testing. All fire alarm junction boxes must be clearly marked for easy identification.

3.2 WIRING

- A. All fire alarm wiring shall be accordance with manufacturer's recommendations and run in a red metal conduit per WSU standards.
- B. Where exposed raceway is permitted coordinate approval of raceway type, routing and finish with Local Authority and with WSU.



- C. No wiring other than that directly associated with fire alarm detection, alarm or auxiliary fire protection functions shall be permitted in fire alarm conduits. All wiring shall be checked and tested to insure that there are no grounds, opens, or shorts.
- D. Location and routing shall be accessed by WSU operations.
- E. Vertical riser of terminal cabinets are required on each floor.
- F. Raceway fill shall be less than 40%.

3.3 EQUIPMENT INSTALLATION

- A. Manual Pull Stations: mount semi-flush in recessed back boxes.
- B. Smoke Detectors: Install detectors indicated to be ceiling mounted not less than 4 inches from a side wall to the near edge.
- C. Audio/Visual Alarm Indicating Devices: Mount at 80 inches above the highest floor level within space or 6 inches below the ceiling, whichever is lower.
- D. Fire Alarm Panel (FAP): Top of cabinet not more than 6 feet above the finished floor.

3.4 ACCEPTANCE PROCEDURE

- A. Upon successful completion of start-up and recalibration, but prior to building acceptance, substantial completion and commencement of warranties, WSU Fire Marshal shall be requested in writing to witness occupancy test.
- B. Upon WSU approval, contractor to schedule State of Michigan BFS acceptance test.