The following information shall be included in specifications prepared for use on all University of Cincinnati projects. This information is supplemental and not intended to be a complete specification.

GENERAL STANDARDS

Summary of Work
All new systems must be UL Listed as part of the Simplex 4120 Network System.

Design a complete system, including controls, stations, speakers, heat detectors, smoke detectors, flow switches, door releases, and any other devices that are electrically a part of the system. All components of the system shall be of an approved type and shall be installed in accordance with the provisions of the latest revisions of the Ohio Basic Building code and all Referenced Standards (NFPA 72, NFPA 101) accepted by the OBBC listed in Appendix A and ADA (American Disability Act). Each piece of equipment shall be approved and carry an Underwriter's Laboratory label. Each control panel shall point alarm and trouble location provided at both the building control panel and the University Central Station. The system in use at the University of Cincinnati is a Simplex 4120 Network system.

Project Conditions
Auditoriums or other areas of assembly with an occupancy greater than 300 will have a separate voice announcement control unit with microphone to serve that area of assembly. This unit will be for the sole purpose of emergency evacuation instructions, and will not be used for routine announcement purposes. The control will be located at the stage managers console, or other point staffed by responsible personnel during use of the area. The control will allow emergency instructions to be given in the assembly area, while allowing the normal evacuation message to play simultaneously in the remainder of the building. In areas of assembly with permanently installed public address systems, the fire alarm will be interfaced with the public address. The interface may allow the fire alarm to override the public address with the emergency announcements, or may simply shut down the public address system during emergency announcements, depending upon the space and audibility requirements.

Project Warranty
ACCEPTANCE BY THE UNIVERSITY: Specify that the system shall be demonstrated in the presence of the University Architect Project Manager in conjunction with the Department of Public Safety (Protection Systems and Fire Prevention), State of Ohio fire/building representative(s), and appropriate municipal fire/building representative(s). The system will not be accepted until all components are determined to be operating properly with the University of Cincinnati's campus wide fire alarm monitoring system. The system shall report alarm and trouble signals by point.

PRODUCT STANDARDS

Product Manufacturers
System shall be SimplexGrinnell voice alarm.
**Product Requirements**

**Pull Stations** shall be surface mounted or semi-flush mounted as conditions dictate. Pull stations shall be red in color and shall be push-pull double action, and individually addressable.

**Pull stations** in locations exposed to weather or high levels of moisture under normal conditions shall be protected with an appropriate weather cover, UL listed for the purpose. Pull stations located in parking structures specifically are included. Type, STI Weather Stopper II, or equivalent.

**Pull stations** in Residence Life housing, or otherwise in high risk locations for false alarms shall be protected with an appropriate false alarm deterrence cover, UL listed for the purpose. This cover shall provide a local audible alarm when lifted, and shall be powered by a standard 9 volt alkaline battery. Type, STI Stopper II, or equivalent.

**Alarm Indicating Devices** shall be speakers and strobes. Speakers shall be located so that their operation will be heard clearly in all areas regardless of the ambient noise level. Speakers shall provide a minimum sound pressure of 15 dBA above the average ambient sound level in every occupied space in the building. Particular attention shall be paid to areas that are subject to high ambient sound levels as a normal part of their operation (arenas, auditoriums, recreational areas, server rooms, etc.) and the system designed to provide adequate warning under all normal operating conditions. Typical ambient sound levels are 55db for Business Occupancies, 85dBA for mechanical rooms, and 55dBA for places of Assembly. The minimum sound pressure shall be seventy (70) dBA in buildings of Use Group R and I-1, ninety (90) dBA in mechanical equipment rooms, and sixty (60) in all other use groups. The maximum dBA shall be not more than 115 dBA (OSHA Regulation) for audible alarm indicating devices.

**The standard audible** shall be a 4" speaker, adjustable from 1/4 Watt to 2 Watts that can be installed by itself or in conjunction with a visual strobe.

**The high output audible** shall be a 4" speaker, adjustable from 2 Watts to 15 Watts that can be installed by itself or in conjunction with a visual strobe.

**Speaker/strobe units** designed for exterior use shall be located outside each main entrance to the building, or other entrance that may serve as a congregation area for persons evacuating the building during an emergency. Outside speakers shall be on a separate circuit. If the building interconnects with other buildings, strobe devices with signage stating, “DO NOT ENTER insert building name WHEN FLASHING” shall be placed outside each connecting door to prevent inadvertent entry into the building during an emergency.

**The system shall be** capable of voice communication via site microphone from the main fire alarm panel, and from the annunciator panel (if used). The system shall be capable of voice communication from the University Central Station utilizing the existing Campus Emergency Warning System. This capability is only possible with the Simplex control.

**Visual indicating devices** shall be provided to meet current NFPA and ADA standards. The system shall be designed to allow for expansion of additional audio/visual indicating devices and circuits in public areas without a major upgrading of the electrical or wiring components in order to comply with changing ADA requirements. At a minimum, a separate audio and visual circuit shall be run for each
floor. Visual strobes shall be coordinated for handicap residential occupancy to ensure that they are tied into room smoke detectors.

**The standard visual** signal shall be a Xenon strobe.

**The visual and audible signals** used will be the Simplex True-Alert addressable signals.

**The system will be programmed** to allow silent testing of visual and audible signals utilizing the True-Alert feature.

**Heat Detectors** shall be of the combination rate of rise, fixed heat type, unless environmental conditions require a fixed heat type. The detectors shall be rated properly for the prevalent environmental conditions at the installed location. They shall be tied into the fire alarm system, and shall be of the addressable type. Heat detectors shall be installed to comply with all requirements of NFPA 72, and other applicable code. Heat detectors located in Residence Life housing areas, or in other areas where there is a high risk of physical damage (gymnasiums, etc.) shall have a protective wire housing UL listed for the purpose installed over the device. Type, STI-9601 or equiv.

**Gas Detectors** shall be incorporated in to the design for any lab using gas. They shall set off the Building Fire Alarm System.

**Carbon monoxide and Gas Detectors** shall be coordinated with project requirements.

**Protective Housing:** Audio/visual units located in Residence Life housing areas, or in other areas where there is a high risk of physical damage (gymnasiums, mechanical rooms etc.) shall have a protective wire housing UL listed for the purpose installed over the device. Smoke detectors located in areas where there is a high risk of physical damage (gymnasiums, etc.) shall have a protective wire housing UL listed for the purpose installed over the device. Type, STI-9601 or equiv.

**Water Flow Alarms, Sprinkler Tampers,** and other Sprinkler Supervisory switches shall comply with NFPA 72, 101, and other appropriate NFPA codes regarding the installation, locations, and sensitivity of flow alarms and sprinkler supervision. All such switches shall provide specific point annunciation.

**Monitor ZAM (zone adaptor module)** shall be used to monitor a dry contact device, water flow, tamper, etc. and convert the signal to a specific point in the system, type 2190-9155.

**Control ZAM** shall be used to provide a dry contact activation of a function such as AHU shutdown, type 2190-9163.

**Magnetic Door Holders** shall be of the 120VAC type, used in conjunction with Simplex True Alarm Smoke Sensors. Door holders will be released by the use of a Control ZAM relay module. Smoke check door closer type devices, or other stand-alone type devices shall not be used.

**Control unit** shall be installed in a suitable steel cabinet with hinged cover, secured with lock and key. The control panel shall be a Simplex 4100U type with audio voice capability, and shall include:

- Line terminals for 120/208 volt single phase power.
The secondary power supply shall be a battery back-up system provided by the fire alarm manufacturer that conforms to Section 2706.0 (OBBC) and appropriate NFPA codes, and shall be capable of operating the system under maximum normal load for 24 hours and then be capable of fifteen minutes operation in full evacuation mode.

Reset switch, password protected.
Signal silence switch, password protected.
Signal selection and bypass switches, password protected.

Modules as necessary, including:
- Master Controller
- Modular Network Interface Module
- RS-485 Media Card (wire)
- Fiber Optic Media Module
- Notification Appliance Circuit Module
- 4-DPDT Auxiliary Relay Module
- Expansion Power Supply
- Mapnet Addressable Module
- Dual RS232/2120 Comm. Module
- Single Channel Audio Controller
- 100 Watt Amplifier
- Microphone and Enclosure
- Standard Evacuation Message
- Speaker Selector Switch Module
- AHU hand off auto switch module
- 6 Unit Package with Glass Door

The quantity of these modules will be determined based upon the individual needs of each building, other modules may also be added to meet the needs of a particular building.

**Product Coordination**

**Smoke Detection Systems** shall comply with NFPA 72 requirements for smoke detection. Smoke detection devices in any one building shall be of one manufacture (Simplex) and shall be connected as a part of the fire alarm system. Smoke detectors shall be addressable with adjustable sensitivity (from the control panel). The fire alarm system shall include relays for output signals to shut down fans, close dampers, and operate door releases, where required, as a result of smoke detector operation. These smoke detectors shall be: Simplex True Alarm Smoke Sensor, Simplex True Alarm Smoke Sensor Base, Simplex True Alarm Smoke Sensor Base with Relay, used in conjunction with the Smoke Sensor when a programmable relay would be needed, such as to release door holders.

**Simplex True Alarm Duct Smoke Sensor**. Duct smoke detectors shall be programmed as Supervisory points, and generate a supervisory signal at both the building control panel and at the University central station.

**Dormitory (Typical R Occupancy) smoke detectors** shall be programmed as supervisory points and generate a supervisory signal at both the building control panel and at the University Central Station.
Smoke detectors and Duct Detectors shall not be located in areas subject to high humidity, steam, or other expected potential nuisance alarms. If alternate placement of the smoke detector is not possible, the use of combination heat/rate-of-rise detectors should be considered for these locations.

Alarm Signals: Unless otherwise specifically approved by the Department of Public Safety, all buildings will be designed for full evacuation on any fire alarm. The standard alarm signal shall be the standard UC evacuation message. The system will also incorporate the UC standard all clear and weather alert messages.

Access to the fire control functions shall be protected by passwords, and shall be controlled as follows:

- Alarm Silence: Level 2
- System Reset: Level 2
- Set Time and Date: Level 3
- Control Key 1 (Campus bypass): Level 3
- Control Key 2 (Elevator bypass): Level 3
- Control Key 3: Level 3
- Control Key 4 (Weather Alert): Level 1
- Control Key 5 (ORL room smoke reset): Level 1
- Enable/Disable Points: Level 3
- On/Off/Auto: Level 3
- Clear Trouble Log: Level 4
- Clear Alarm Log: Level 4
- Walk Test: Level 3
- Clear Alarm Verification Tally: Level 3

Passwords will be programmed as defined by the Department of Public Safety (Emergency Services Manager).

Keys for all pull boxes, control cabinets, and other system components which are locked shall be turned over to the Department of Public Safety, Emergency Services Manager. The control panel and any annunciator shall have a special UC Public Safety Department Key. Coordinate exact requirements with UC Emergency Services. Typical Control Panel Key is not acceptable.

FIRE DEPARTMENT ACCESS: The Engineer shall meet with the Department of Public Safety (Fire Prevention Unit) for review of the Fire Dept. access and any necessary coordination with the Fire Dept. prior to final plan approval.

FIREMAN COMMUNICATION: The University has a fireman's radio communication system installed on the three campuses located in the City of Cincinnati. This system shall be utilized whenever a Fireman's Communication System is required in the City of Cincinnati. The Engineer is responsible to coordinate the incorporation of the new building into this system, including pre-planning with the Department of Public Safety (Emergency Services Unit). Prior to acceptance, the new system must be tested and certified by the Department of Public Safety (Emergency Services Unit) and the City of Cincinnati Fire Department.

Locate the control panel in the lobby area of the building for Fire Department access. The use of a separate Fire Control Room off of the main lobby area is preferred provided that it is dedicated to that
purpose. The placement of the control panel in the main lobby area is acceptable. If there is not sufficient space in the Fire Control Room or the lobby for the control panel, locate a remote annunciator panel in the Control Room or lobby. This remote annunciator panel shall consist of:

- Remote LCD Display
- Remote Microphone and Enclosure
- Speaker Selector Switch Module
- 4 Unit Package with Glass Door

The exact location of the control panel and/or annunciator shall be coordinated with the Department of Public Safety (Emergency Services) by the Associate. Control Panels are typically located by the Building Main Entrance. Multiple annunciator locations may be required for large complexes, or buildings with multiple main entrances.

ELEVATOR RECALL: Elevator recall shall be provided where required, by system smoke detectors connected to the building fire alarm system. Elevator recall shall be installed in accordance with the OBBC Elevator Code, and all other applicable codes. Elevator recall detectors shall be addressable analog photoelectric smoke detectors with Control ZAM modules used for relay outputs.

DUCT SMOKE DETECTION: Duct smoke detection shall be provided where required by addressable, analog duct smoke detectors connected to the building fire alarm system. Duct smoke detectors shall not be used to replace area smoke detection, and are not to be used as life safety devices. Their primary purpose shall be to shut down air handling equipment in order to prevent or control the spread of smoke through the building. Duct detectors shall be installed in accordance with NFPA 72 and all other applicable codes. Duct detectors will be programmed as supervisory devices.

Extra Material
Spare parts shall be provided in the amount recommended by the system manufacturer, being no less than 2 of each type of device installed. Spare parts shall be turned over to the Department of Public Safety, Emergency Services Manager.

EXECUTION STANDARDS

Installation – General

DEVICE IDENTIFICATION: Install address plates on all addressable components, indicating the address of the device. Labels to be of a permanent type, 24 point height black letter on white tape, with clear laminate overlay. Hand lettering is specifically not acceptable.

All wiring shall be run in conduit. Metal raceway (Wiremold type) may be used in exposed locations.

WIRING AND BOX COLOR CODES: All wiring and boxes shall be color coded as specified in NFPA 72 and the National Electrical Code. All pull and junction boxes will specifically be painted red.

Wire shall be color coded as follows:
Red & Black TSP 18 AWG - IDnet, Mapnet & RUI
Red & Black TSP 16 AWG - Speaker  
Red & Black Twisted 14, or 12 AWG - Strobe  
Blue & Orange 14 AWG - 24VDC Power  
Brown & Yellow 14 AWG - Door Holder  

**Fire Alarm cable** shall be manufactured by Anixter, Belden, or West Penn. Provide submittals for fire alarm cables along with the fire alarm equipment submittals. The approved Anixter cables are as follows:

- **Data Loop Circuit**: #18 twisted shielded pair, FPLR  
  SG1802S10-03  
- **24VDC Power**: #14 twisted pair, FPLR  
  SG1402N10-03  
- **Strobe Circuit**: #12 twisted pair, FPLR  
  SG1202N10-03  
- **Speaker Circuit**: #16 twisted shielded pair, FPLR  
  SG1602S10-03  
- **Control Circuit**: #14 pair, FPLR  
  SG1402N19-03

**Wiring and devices** shall be under constant electrical supervision. An open or ground in any wire shall cause a trouble signal to operate at the building panel. The trouble signal shall also operate on loss of AC power. The system shall be supervised, and all trouble signals will also report to the University Central Station.

**Provisions for silencing** the trouble signals shall be included on the control panel. The trouble signal shall sound until manually silenced, or the trouble condition is corrected.

**Access to all fire alarm equipment** must not put personnel at risk and shall not require that personnel bring equipment such as ladders or lifts unless approved by the Construction Management plan review.

**Installation - Accessories**

**KEY AND DRAWING CABINET:** Provide a cabinet for storage of system documents and keys next to the fire alarm control or annunciator in the building lobby. Cabinet to be 14.5"W x 18"H x 7"D, constructed of 11 ga plate steel, with full length welded hinge, and one ‘double D’ cutout for a cam style lock. Locks to be supplied by the University of Cincinnati, Department of Public Safety (Access Control Unit). Cabinet to be provided with a tamper switch that activates a supervisory point on the fire alarm system when the cabinet is opened. This supervisory point shall communicate to the University Central Station. Palmer security products or equivalent.

**Testing & Commissioning**

**DRAWINGS AND SUBMITTALS:** The following shall be submitted to the University, and turned over to the Department of Public Safety (Emergency Services):

- **Typical layout** of all wall mounted equipment, either flush or recessed, accurately dimensioned. Each possible method of installation shall be illustrated. Three sets.

- **Schematics and wiring** diagrams showing all interconnection wiring. Three sets.

- **A single line drawing** showing the physical location of each device, it’s system address, and the type of device. A single line riser diagram of the system. Complete list of points on system, and all programming data for panel. Three sets.
Layout of all equipment as it will be installed in the control panel(s). Three sets.

Bill of material of all equipment. Three sets.

Detail description of system operation as it will be installed, with only those features included that are used. Three sets.

Reduced size (8.5”x11”) laminated single line drawing(s) on multiple sheets if necessary to preserve legibility, and list of points, as described in .5.3. One set in three ring binder, permanently labeled with the building name. To be placed in key and drawing cabinet (see .11).

AutoCad compatible (.DWG) files of all drawings, point list file, and panel programming description, acceptable to the University. Two sets.

Service manuals for all components of the system. In three ring binders, three sets.

General catalog sheets shall not be submitted in lieu of shop drawings. When illustrative of a series of products or variations of products, the one model or type intended to be used shall be clearly highlighted, and all non-pertinent description shall be crossed out.

A record of completion as specified in NFPA 72, section 1-7.2. Three copies.

Cleaning & Protection
(No Standards for this Section)